Town of Londonderry Planning Board
268B Mammoth Road - Moose Hill Conference
Agenda
April 1, 2026
7:00 p.m.

I. **Call to Order**

II. **Administrative Board Work**

A. Approval of Minutes

B. Regional Impact Determinations

C. Discussions with Town Staff

III. **Old Business**

A. Public hearing for an application for formal review of a subdivision of Map 10 Lot 41 to create a new 12- acre lot on Pillsbury and Gilcreast Road. 15 Pillsbury Road, Map 10, Lot 41 zoned Agricultural Residential (AR-1) and Woodmont Commons Planned Unit Development (PUD). Procopio Companies (Applicant) & Pillsbury Realty Development, LLC (Owner).

(Continued from December 3, 2025, January 7, 2026, and April 1, 2026)
Applicant has requested continuance to April 8, 2026

Documents:

15 Pillsbury Rd Proposed Subdivision Application and Checklist_Redacted.pdf
15 Pillsbury Subdiv - Endorsed.pdf

B. Public hearing for an application for formal review of a site plan and conditional use permit for 250 single family cottage court style dwellings along with associated site improvements. 36 Pillsbury Road (Map 10, Lot 42) zoned Agricultural Residential (AR-1) and Woodmont Commons Planned Unit Development (PUD). Procopio Companies (Applicant) & Pillsbury Realty Development, LLC (Owner).Public hearing for an application for formal review of a site plan and conditional use permit for 250 single family cottage court style dwellings along with associated site improvements. 36 Pillsbury Road (Map 10, Lot 42) zoned Agricultural Residential (AR-1) and Woodmont Commons Planned Unit Development (PUD). Procopio Companies (Applicant) & Pillsbury Realty Development, LLC (Owner).

(Continued from December 3, 2025, January 7, 2026, and April 1, 2026) Applicant has requested continuance to April 8, 2026

Documents:

Thornton Hill - Site Plan Review Set - Planning Board Submission.pdf
Thornton Hill - Site Plan - Drainage Report - Planning Board Submission.pdf
Thornton Hill - Site Plan Application and Checklist_Redacted.pdf

C. Public hearing on an application for a formal review of a site plan to construct 60 single family condominiums along with associated site plan improvements. 44 Pillsbury Road (Map 10, Lot 15) Zoned Woodmont Commons PUD (PUD-1) and Agricultural Residential (AR-1), Pillsbury Realty Development, LLC (owner) and Procopio Enterprises, Inc. (applicant).

(Continued from March 4, 2026 and April 1, 2026) Applicant has requested continuance to April 8, 2026

Documents:

Rosecrans Drive - 44 Pillsbury - Site Plans.pdf
Rosecrans Drive - 44 Pillsbury - Sewer Calculations.pdf

IV. New Plans/Conceptual Plans

A. Public hearing of an application for a formal review of a site plan for a retail car dealership and associated site improvements in the Commercial II (C-II) Zoning District. 6 Dickey Street, Tax Map 10, Lot 109, Leon & Tamara Lampes (Owner/Applicant).

Documents:

6 dickey st plan set.pdf
6 dickey st Stormwater Report_R1 (1).pdf
6 Dickey St Site Plan Staff Memo 4.1.2026.pdf

B. Public hearing of an application for a formal review of a site plan and conditional use permit for a 12-unit townhome development and associated site improvements, and a condominium conversion permit, lot consolidation and a conditional use permit for 1,400 square feet of wetland buffer impact in the Commercial II (C-II) District. 3 Page Road, Tax Map 15, Lot 235, Page Rock, LLC (Owner/Applicant).

Documents:

Page Rock Traffic Impact Analysis.pdf
Page Rock Site Plan.pdf
Page Rock Stormwater Management Report.pdf
3 Page Road Site Plan Staff Memo 4.1.2026.pdf

C. Public hearing of an application for formal review of a site plan and conditional use permit for a 12-unit townhome development and associated site improvements, a condominium conversion permit, and a conditional use

permit for 1,522 square feet of wetland buffer impact in the Commercial II (C-II) District. 295 Rockingham Road, Tax Map 17, Lot 25, Page Rock, LLC (Owner/Applicant).

Documents:

Rock Road Architectural Plans.pdf
Rock Road Site Plan.pdf
Rock Road Stormwater Management Report.pdf
Rock Road Traffic Impact Analysis.pdf
295 Rockingham Road Site Plan Staff Memo 4.1.2026.pdf

D. Non-binding review and discussion will be conducted in accordance with RSA 674:54 regarding a proposed governmental land use project. The project consists of the construction of a 5,000-square-foot addition and associated parking expansion to the existing Town Hall (SAU 25), as well as a 5,300-square-foot addition to the Police Department impound storage area. Additional site improvements include stormwater management upgrades, installation of sidewalks, and ADA accessibility enhancements. The proposal further includes a request for a Conditional Use Permit for permanent wetland impacts totaling 5,614 square feet and temporary wetland impacts totaling 916 square feet. 268B Mammoth Road, Map 9 Lot 45, Zoned AR-1, Town of Londonderry (Owner/Applicant)

Documents:

6-12434-04 Drainage Memo_2026-03-12.pdf
7c-Aerial Overview.pdf
7a-Conditional Use Permit Application - CO District - Form A (PDF).pdf
7b-CUP Narrative_revised.pdf
4-12434-03 SAU25_SitePlans_2026-03-12.pdf
SAU Staff Memo_04.01.26.pdf

V. Other Business

A. Woodmont PUD Annual Update

Documents:

WM Annual Update Memo_04.01.26.pdf

VI. Adjournment

Docusign Envelope ID: 7FE3CA01-683D-4FEB-9882-2D3EAC038316

EXHIBIT 5

LONDONDERRY PLANNING BOARD
SUBDIVISION APPLICATION & CHECKLIST

❑ **Design Review** ■ **Formal Application**

All information provided and submitted with this Application Checklist shall conform to the Londonderry Site Plan Regulations. **Please note that the Planning Board may not accept and consider the application complete if the required items as outlined in the checklist are missing from the submittal.**

I. General Information:

A. Name of Project: 15 Pillsbury Road Subdivision

B. Location of Project: Pillsbury Road (street) | 41 (Map) | 105 (lot)

PUD-1 (zoning)

C. Owner:

Name: Pillsbury Realty Development, LLC

Address: [redacted]

Phone:

Fax:

E-Mail: [redacted]

Signature:

D. Applicant:

Name: Procopio Enterprises, Inc.

Address: [redacted]

Phone:

Fax:

E-Mail:

Signature:

E. Design Firm:
Name: Vanasse Hangen Brustlin, Inc. (VHB)

Address: [redacted] H 03110

Phone:

Fax:

E-Mail:

F. Name of Licensed Land Surveyor: Michael Hammer, LLS, PLS
(in responsible charge)
Signature:

G. Name of Licensed Professional Engineer: N/A: No Improvements Proposed
(in responsible charge)
Signature:

H. Name of Certified Soil Scientist: N/A, no SSSM prepared

I. Name of Certified Wetland Scientist: Jake Tinus, CWS, CPESC

J. Date of Submittal to Planning Department: November 13th, 2025

II. General Requirements (All Applications):

		Provided	N/A
1.	Executed Subdivision Formal Application Request Form (Exhibit 2)	☒	☐
2.	Executed Subdivision Design Review Request Form (Exhibit 3)	☐	☒
3.	Complete abutters list	☒	☐
4.	All Required Fees	☒	☐
5.	Four (4) sets of plans and electronic "PDF" plans (12 sets if electronic plans not possible) submitted with all required information in accordance with the site plan regulations and this checklist	☒	☐
6.	Copies of any proposed easement deeds, protective Covenants or other legal documents	☒	☐
7.	Any waiver request(s) submitted with justification in writing	☒	☐
8.	Technical reports and supporting documents (see Sections X & XI of this checklist)	☒	☐
9.	Completed Subdivision Application Checklist	☒	☐

		Provided	N/A
10.	Letter explaining how DRC comments have been addressed and two (2) sets of highlighted, revised drawings (applicable if pre-application design review process was followed).	☐	■

III. General Plan Information (All Plans):

1.	Size and presentation of sheet(s) per requirements of the subdivision regulations	■	☐
2.	Title block information:		
	a. Drawing title	■	☐
	b. Name of site plan	☐	■
	c. Location of site plan	■	☐
	d. Tax map & lot #s of subject parcel(s)	■	☐
	e. Name & address of owner(s)	■	☐
	f. Date of plan	■	☐
	g. Scale of plan	■	☐
	h. Sheet number	■	☐
	i. Name, address, & telephone number of design firm	■	☐
	j. Name and address of Applicant	■	☐
3.	Revision block	■	☐
4.	Planning Board approval block provided on appropriate sheets (Cover sheet, boundary plans only)	■	☐
5.	Certification block (for engineer, surveyor, soil scientist, or wetland scientist)	■	☐
6.	Match lines (if any)	☐	■

IV. Title Sheet:
(may be consolidated with Boundary Plan)

1.	The following notes shall be provided:		
	a. Purpose of plan	■	☐
	b. Tax map and lot #s of all subject parcels	■	☐
	c. Area (existing & proposed) of subject parcel(s)	■	☐
	d. Zoning designation of subject parcel(s)	■	☐
	e. Min. lot area, frontages & setback dimensions	■	☐
	f. Existing and proposed use	■	☐
	g. Sanitary sewer source (name of provider (company) if offsite)	■	☐
	h. Water supply source (name of provider (company) if offsite)	■	☐
	i. Zoning variances/special exceptions with conditions	☐	■
	j. List FEMA sheet(s) used to identify 100-year flood elevation. (Note if no flood zone present as applicable)	■	☐
	k. List of required permits and permit approval numbers	☐	■
	l. List of Planning Board waivers (if applicable)	■	☐
	m. Note identifying # of bedrooms per dwelling for residential use	☐	■

			Provided	N/A	
	n.	Phasing notes, as required, under Section 4.18i as applicable	☐	■	
	o.	Note identifying which plans are to be recorded and which are on file at the town	■	☐	
	p.	Note the following: "If, during construction, it becomes apparent that deficiencies exist in the approved design drawings, the Owner shall be required to correct the deficiencies to meet the requirements of the regulations at no expense to the Town."	☐	■	
	q.	Note the following: "If, during construction, it becomes apparent that additional erosion control measures are required to stop any erosion on the construction site due to actual site conditions, the Owner shall be required to install the necessary erosion protection at no expense to the Town.	☐	■	
	r.	Note the following: "All materials and methods of construction shall conform to Town of Londonderry Subdivision Regulations and the latest edition of the New Hampshire Department of Transportation's Standard Specifications for Road & Bridge Construction."	☐	■	
2.		Tax map sketch plan (or detail) showing proposed lot configuration at a scale 1" = 400'	■	☐	
3.		Vicinity plan (at a scale of 1"=2500')	☐	■	
4.		Plan index indicating all sheets	■	☐	
V.		**Boundary Plan (Subdivision, Consolidation and Lot Line Adjustment:**			
1.		Surveyor's certification stamped and signed by LLS	■	☐	
2.		Boundary of entire property by metes and bounds	☐	☐	Waiver Request Enclosed
3.		Proposed lot configuration defined by metes and bounds	■	☐	
4.		Boundary monuments:			
	a.	Monuments found	■	☐	
	b.	Monuments to be set	■	☐	
5.		Map # and Lot #, name addresses, and zoning of all abutting land owners	■	☐	
6.		Existing streets:			
	a.	Name labeled	■	☐	
	b.	Status noted or labeled	■	☐	
	c.	Right-of-way dimensioned	■	☐	
	d.	Pavement width dimensioned	■	☐	
7.		Municipal boundaries (if any)	☐	■	
8.		Existing easements (identified by type)	☐	■	

		Provided	N/A
9.	Proposed easements defined by metes & bounds. Check each type of proposed easement applicable to this application:		
	a. Drainage easement(s)	☐	■
	b. Slope easement(s)	☐	■
	c. Utility easement(s)	■	☐
	d. Temporary easement(s) (such as temporary turnaround)	☐	■
	e. No-cut zone(s), including those along streams & wetlands (as may be requested by the Conservation Commission)	☐	■
	f. Vehicular & pedestrian access easement(s)	☐	■
	g. Visibility easements	☐	■
	h. Fire pond/cistern easement(s)	☐	■
	i. Roadway widening easement(s)	☐	■
	j. Walking trail easement(s)	☐	■
	k. Other easement(s) _____ Note type(s) _____	☐	■
10.	Designation of each proposed lot (by map & lot #s as provided by the assessor)	■	☐
11.	Area of each lot (in acres & square feet):		
	a. Existing lot(s)	■	☐
	b. Proposed lot(s)	■	☐
12.	North Arrow	■	☐
13.	Locus map (at a scale of 1" = 2,500)	■	☐
14.	Limits of wetlands & CO District Boundary	■	☐
15.	Wetland delineation:		
	a. Wetland delineation criteria & Certification	☐	■
16.	Owner(s) signature(s)	■	☐
17.	Proposed streets:		
	a. Name(s) labeled	☐	■
	b. Width of right-of-way dimensioned	☐	■
18.	All required setbacks (including any applicable buffers)	■	☐
19.	Physical features:		
	a. Existing features -- Buildings	☐	■
	Wells	☐	■
	Septic systems	☐	■
	Stonewalls	☐	■
	Paved drives	■	☐
	Gravel drives	■	☐
20.	Location & name (if any) of any streams or waterbodies	■	☐
21.	Location & elevation(s) of 100-year flood zone per FEMA Flood Insurance Study or as determined by drainage study	■	☐
22.	Location of existing overhead utility lines, poles, towers, etc.	■	☐

		Provided	N/A	
23.	Plan and deed references	■	☐	
24.	Zoning District boundary lines (if any)	■	☐	
VI.	**Topographical/HISS Plan Requirements):**			
1.	Surveyor's stamp and signature by LLS	■	☐	
2.	Boundary of entire property to be subdivided	☐	☐	Waiver Request Enclosed
3.	Proposed lot configuration defined by metes and bounds	■	☐	
4.	Boundary monuments:			
	a. Monuments found	■	☐	
	b. Monuments to be set	■	☐	
5.	Map # and lot #, name addresses, and zoning of all abutting land owners	■	☐	
6.	Existing streets:			
	a. Name labeled	■	☐	
	b. Status noted or labeled	■	☐	
	c. Right-of-way dimensioned	■	☐	
	d. Pavement width dimensioned	■	☐	
7.	Municipal boundaries (if any)	☐	■	
8.	Existing easements (identified by type)	☐	■	
9.	Proposed easements defined by metes & bounds. Check each type of proposed easement applicable to this application:			
	a. Drainage easement(s)	☐	■	
	b. Slope easement(s)	☐	■	
	c. Utility easement(s)	■	☐	
	d. Temporary easement(s) (such as temporary turnaround)	☐	■	
	e. No-cut zone(s) along streams & wetlands (as may be requested by the Conservation Commission)	☐	■	
	f. Vehicular & pedestrian access easement(s)	☐	■	
	g. Visibility easements	☐	■	
	h. Fire pond/cistern easement(s)	☐	■	
	i. Roadway widening easement(s)	☐	■	
	j. Walking trail easement(s)	☐	■	
	k. Other easement(s) _____ Note type(s) _____	☐	■	
10.	Designation of each proposed lot (by map & lot #s as provided by the assessor)	■	☐	
11.	Area of each lot (in acres & square feet):			
	a. Existing lot(s)	☐	■	
	b. Proposed lot(s)	■	☐	
12.	North arrow	■	☐	

		Provided	N/A
13.	Locus map (at a scale of 1" = 2,500) shown	☑	☐
14.	Limits of wetlands	☑	☐
15.	Wetland delineation:		
	a. Wetland delineation criteria	☑	☐
	b. Wetland scientist certification	☑	☐
16.	Owner(s) signature(s)	☐	☑
17.	Proposed streets:		
	a. Name(s) labeled	☐	☑
	b. Width of right-of-way dimensioned	☐	☑
	c. Pavement width dimensioned	☐	☑
18.	All required setbacks (including any applicable buffers)	☑	☐
19.	Physical features (Existing Features):		
	a. Buildings	☐	☑
	b. Wells	☐	☑
	c. Septic systems	☐	☑
	d. Stone walls	☐	☑
	e. Paved drives	☑	☐
	f. Gravel drives	☑	☐
20.	Location & name (if any) of any streams or waterbodies	☑	☐
21.	Location & elevation(s) of 100-year flood zone per FEMA Flood Insurance Study or as determined by drainage study	☑	☐
22.	Location of existing overhead utility lines, poles, towers, etc.	☑	☐
23.	Plan and deed references	☐	☑
24.	Two-foot contour interval topography shown over all subject parcels	☑	☐
25.	Source and datum of topographic information (USGS required)	☑	☐
26.	Show at least one benchmark per sheet (min.) and per 5 acres (min.) of total site area	☑	☐
27.	USDA-SCS soil survey information (where municipal sewer is to be provided)	☑	☐
28.	Location, type, size & inverts of the following (as applicable):		
	a. Existing water systems	☑	☐
	b. Existing sewer systems	☑	☐
	c. Existing drainage systems	☑	☐
	d. Existing utilities	☑	☐

		Provided	N/A
29.	4K Areas with test pits on all proposed lots (meeting NHDES & Town setback requirements)	☐	■
30.	Location of all water wells with protective radii as required by the NHDES (meeting Town and NHDES setback requirements)	☐	■
31.	Existing treelines	■	☐
32.	Existing ledge outcroppings & other significant natural features	■	☐
33.	HISS requirements:		
	a. Criteria for HISS delineation	☐	■
	b. Soil scientist certification on plan (if HISS required)	☐	■
	c. HISS mapping shown over all subject parcels (where no municipal sewer exists)	☐	■
34.	Plan as submitted to the NHDES	☐	■
VII.	**Improvement Plans (Stamped by Engineer Licensed in NH):**		
1.	Grading and Drainage:		
	a. Existing topography (two-foot contour interval minimum)	☐	■
	b. Proposed contours	☐	■
	c. Existing spot elevations	☐	■
	d. Proposed spot elevations	☐	■
	e. Existing edge of pavement	☐	■
	f. Proposed edge of pavement	☐	■
	g. Existing curb line	☐	■
	h. Proposed curb line	☐	■
	i. Existing buildings and structures	☐	■
	j. Proposed buildings and structures	☐	■
	k. Existing retaining walls	☐	■
	l. Proposed retaining walls	☐	■
	m. Existing stone walls	☐	■
	n. Reconstructed stone walls	☐	■
	o. Existing treeline	☐	■
	p. Proposed treeline	☐	■
	q. Benchmarks	☐	■
	r. Existing drainage systems:		
	1.) Pipes/culverts (each location):		
	i. Type	☐	■
	ii. Size	☐	■
	iii. Length and slope	☐	■
	iv. Inverts	☐	■
	v. End sections/Headwalls	☐	■
	2.) Structures (catchbasins, drain manholes, special structures):		
	i. Location (sta. and off-set)	☐	■
	ii. Type	☐	■
	iii. Size	☐	■
	iv. Rim Elevations	☐	■
	v. Inverts	☐	■

		Provided	N/A
3.)	Swales/Ditches/Waterways:		
i.	Flow arrows (direction of flow)	☐	■
ii.	Topography	☐	■
iii.	Spot elevations	☐	■
t.	Proposed Drainage Systems:		
1.)	Pipes/culverts (each location):		
i.	Type	☐	■
ii.	Size	☐	■
iii.	Length and slope	☐	■
iv.	Inverts	☐	■
v.	End sections/headwalls	☐	■
vi.	Identify minimum cover and location	☐	■
vii.	Outlet erosion protection	☐	■
2.)	Structures (catchbasins, drain manholes, special structures):		
i.	Location (sta. and off-set)	☐	■
ii.	Type	☐	■
iii.	Size	☐	■
iv.	Rim elevations	☐	■
v.	Inverts	☐	■
3.)	Swales/ditches/waterways:		
i.	Flow arrows (direction of flow)	☐	■
ii.	Grading	☐	■
iii.	Spot elevations	☐	■
iv.	Erosion protection (riprap, matting, etc.)	☐	■
u.	Temporary erosion protection during construction:		
1.)	Silt fence, haybales, etc.	☐	■
2.)	Matting, mulch, etc.	☐	■
2. Utilities:			
a.	Existing sanitary sewer system:		
1.)	Pipes:		
i.	Type	☐	■
ii.	Size	☐	■
iii.	Length and slope	☐	■
2.)	Structures:		
i.	Location (sta. and off-set)	☐	■
ii.	Type	☐	■
iii.	Size	☐	■
iv.	Rim elevations	☐	■
v.	Inverts	☐	■
b	Proposed sanitary sewer system:		
1.)	Pipes (gravity):		
i.	Type	☐	■
ii.	Size	☐	■
iii.	Length and slope	☐	■
iv.	Separation (18" below water)	☐	■
v.	Identify minimum cover and locations	☐	■

			Provided	N/A
2.)	Force Main:			
	i.	Type	☐	■
	ii.	Size	☐	■
	iii.	Direction of flow (flow arrows)	☐	■
	iv.	Bends and thrust blocking	☐	■
	v.	Air relief valves and structures	☐	■
	vi.	Clean-out structures	☐	■
	vii.	Identify minimum cover and locations	☐	■
3.)	Structures:			
	i.	Location (sta. and off-set)	☐	■
	ii.	Type	☐	■
	iii.	Size	☐	■
	iv.	Rim elevations	☐	■
	v.	Inverts	☐	■
4.)	Service laterals to each individual lot:			
	i.	Type	☐	■
	ii.	Size	☐	■
	iii.	Length and slope	☐	■
	iv.	Separation (18" below water)	☐	■
	v.	Minimum cover and locations identified	☐	■
	vi.	Location of connection	☐	■
c.	Existing Water System:			
1.)	Pipes:			
	i.	Type	☐	■
	ii.	Size	☐	■
2.)	Hydrants		☐	■
3.)	Valves		☐	■
4.)	Bends and thrust blocks		☐	■
5.)	Tees		☐	■
d.	Proposed Water System:			
1.)	Pipes:			
	i.	Type	☐	■
	ii.	Size	☐	■
2.)	Hydrants			
	i.	Locations approved by Fire Department	☐	■
3.)	Valves		☐	■
4.)	Bends and thrust blocks		☐	■
5.)	Tees		☐	■
e.	Existing Gas Lines:			
1.)	Pipes:			
	i.	Type	☐	■
	ii.	Size	☐	■
2.)	Valves		☐	■
f.	Proposed Gas Lines:			
1.)	Pipes:			
	i.	Type	☐	■
	ii.	Size	☐	■
2.)	Valves		☐	■

	Provided	N/A
3.) Services to each lot	☐	■
g. Telephone/Electrical/Cable:		
1.) U-poles	☐	■
2.) Pedestals/transformers	☐	■
3.) Overhead lines	☐	■
4.) Underground lines	☐	■
5.) Services to each lot	☐	■
3. Roadways:		
a. Plan and profile drawings (stamped by engineer licensed in NH)	☐	■
1.) All items required above under a. Grading and Drainage	☐	■
2.) All items required above under b. Utilities	☐	■
3.) Profile grid (station and elevation) with horizontal To vertical scale (ratio = 10:1) and datum	☐	■
4.) Existing grade profile	☐	■
5.) Proposed profile:		
i. PVIs (station and elevation)	☐	■
ii. PVCs (station and elevation)	☐	■
iii. PVTs (station and elevation)	☐	■
iv. Length of vertical curve	☐	■
v. K-values	☐	■
vi. Tangent slopes	☐	■
vii. Drainage system	☐	■
viii. Sewer system	☐	■
ix. Water system	☐	■
x. Crest stations identified (stations and elevations)	☐	■
xi. Sag station identified (stations and elevations)	☐	■
xii. Existing and proposed grades at fifty (50) foot stations	☐	■
6.) Road intersection (equation of stations)	☐	■
7.) Label street name	☐	■
8.) Right-of-way lines	☐	■
9.) Easement lines:		
i. Drainage	☐	■
ii. Sewer	☐	■
iii. Visibility	☐	■
iv. Utility	☐	■
v. Access	☐	■
vi. Slope	☐	■
10.) Wetlands Mapping:		
i. Wetland limits identified	☐	■ Included in Boundary Plans
ii. Impact area identified in square feet for each individual location	☐	■
11.) Driveway shown to each individual lot (with grading and culverts if required)	☐	■

		Provided	N/A
12.)	Centerline geometry including:		
	i. Bearings and distances labeled	☐	■
	ii. Tangents	☐	■
	iii. Curve data	☐	■
	iv. PC's	☐	■
	v. PT's	☐	■
13.)	Pavement:		
	i. Width	☐	■
	ii. Corner radius (edge of pavement)	☐	■
	iii. Curbing	☐	■
14.)	Existing and proposed lot lines	☐	■
15.)	Lot designations	☐	■
16.)	Underdrain location (beginning and end stations)	☐	■
17.)	Guardrail Location (beginning and end stations, off-set)	☐	■
18.)	Traffic control signs (stop, street, etc.)	☐	■
19.)	Pavement markings	☐	■

VIII. Construction Detail Drawings:

Note: Construction details to conform with NHDOT Standards & Specifications for Roads & Bridges, Town of Londonderry Department of Public Works requirements, and Subdivision Regulations

1.	Typical cross-section of pavement	☐	■
2.	Typical driveway apron detail	☐	■
3.	Curbing detail	☐	■
4.	Guardrail detail	☐	■
5.	Sidewalk detail	☐	■
6.	Traffic signs and pavement markings	☐	■
7.	Typical underdrain trench detail	☐	■
8.	Drainage structure(s):		
	a. Catchbasin (including frame and grate)	☐	■
	b. Manhole (including frame and cover)	☐	■
	c. Outlet structure (detention basins)	☐	■
	d. Headwalls	☐	■
	e. Flared end sections	☐	■
9.	Outlet protection riprap apron	☐	■
10.	Level spreader	☐	■
11.	Treatment swale	☐	■
12.	Typical section at detention basin	☐	■

		Provided	N/A
13.	Typical pipe trench:		
	a. Drainage	☐	■
	b. Sewer	☐	■
	c. Water	☐	■
	d. Utilities	☐	■
14.	Sewer structures:		
	a. Manholes (including frame and cover, inverts)	☐	■
	b. Drop manholes	☐	■
	c. Special structures (pump stations, blowoffs, etc.)	☐	■
	d. Pipe manhole joint details	☐	■
15.	Typical sewer lateral service connection detail	☐	■
16.	Typical chimney detail	☐	■
17.	Project specific sewer details (sleeves, etc.)	☐	■
18.	Typical sewer notes (as per NHDES and Sewer Division requirements)	☐	■
19.	Hydrant detail	☐	■
20.	Thrust block details	☐	■
21.	Valve box detail	☐	■
22.	Typical water connection service detail	☐	■
23.	Erosion control details:		
	a. Haybale barriers at waterways	☐	■
	b. Silt fence	☐	■
	c. Stone check dam	☐	■
	d. Stone construction entrance	☐	■
	e. Inlet filter basket	☐	■
	f. Haybale barrier at catchbasin	☐	■
24.	Notes:		
	a. General notes as required by the Department of Public Works	☐	■
	b. Construction sequence	☐	■
	c. Erosion control notes	☐	■
	d. Turf establishment notes	☐	■
	e. Sewer construction notes (as required by Sewer Ordinance)	☐	■
	f. Water system construction notes (as required by local water company)	☐	■

IX. Cross-Sections:

1.	Roadway cross sections at 50-foot intervals	☐	■
2.	Roadway cross sections at culvert locations (inlet/outlet)	☐	■

		Provided	N/A
3.	Scale of sections at 1" = 5' H & V	☐	■
4.	Existing & finish centerline grades	☐	■
5.	Proposed pavement, crushed gravel and bank run gravel limits	☐	■
6.	Right-of-way and easement limits	☐	■
7.	Roadway & shoulder cross slopes	☐	■
8.	Embankment slopes	☐	■
9.	Underdrains	☐	■
10.	Drainage piping and structures	☐	■
11.	Sewer piping and structures	☐	■
12. Utilities:			
	a. Water lines	☐	■
	b. Gas lines	☐	■
	c. Telephone/electric/cable	☐	■
13.	Guardrail	☐	■

X. Supporting Documentation:

1.	Lot sizing calculations	☐	■
2.	Test pit/perc.test data	☐	■
3.	Stormwater management report including the following:		
	a. Table of contents	☐	■
	b. Narrative statement (including conclusions)	☐	■
	c. Summary table comparing existing and post-development conditions	☐	■
	d. Summary table of data for each pipe & piping system:		
	1.) Discharge	☐	■
	2.) Depth of flow	☐	■
	3.) Velocity	☐	■
	e. Summary table of data for each swale & channel:		
	1.) Discharge	☐	■
	2.) Depth of flow	☐	■
	3.) Velocity	☐	■
	f. Project location plan (on USGS quadrangle)	☐	■
	g. Watershed area plan for existing condition	☐	■
	h. Watershed area plan for post-development condition	☐	■
	i. Runoff calculations for existing & post-development conditions	☐	■
	j. Flood routing calculations for each detention basin	☐	■

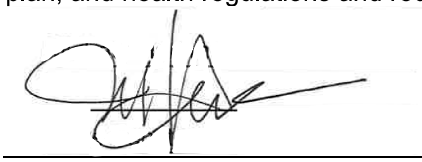
			Provided	N/A
	k.	Design for water quality treatment facilities (level spreaders, treatment swales, etc.)	☐	■
	l.	Riprap design calculations	☐	■
	m.	Report stamped by licensed professional engineer in NH	☐	■
4.	Traffic Impact Analysis:			
	a.	Traffic Impact analysis as required by Section 3.14	☐	■
5.	Fiscal impact study provided (if required)		☐	■
6.	Off-site improvements:			
	a.	Design plans included in the project drawings	☐	■
	b.	Arrangements and agreements	☐	■
	c.	Easements	☐	■
7.	Utility clearance letters (as applicable):			
	a.	Electric	☐	■
	b.	Telephone	☐	■
	c.	Cable television	☐	■
	d.	Gas	☐	■
	e.	Water	☐	■
	f.	Sewer	☐	■
8.	Other project-specific information as required by the Design Review Committee (DRC)		☐	■

XI. Required Project Permits (as applicable to applications):

		Provided	N/A	App Submitted
1.	NHDES subdivision approval	☐	■	☐
2.	NHDES site-specific approval	☐	■	☐
3.	NHDES wetlands permit	☐	■	☐
4.	NHDES sewer discharge permit	☐	■	☐
5.	NHDES water supply permit	☐	■	☐
6.	NHDES dam permit	☐	■	☐
7.	NHDOT driveway permit	☐	■	☐
8.	Londonderry ZBA variance(s)/special exception(s)	☐	■	☐
9.	Londonderry sewer discharge permit	☐	■	☐
10.	Army Corps of Engineers	☐	■	☐
11.	Federal Aviation Administration	☐	■	☐
12.	Other federal, state or local permits (if applicable) for project	☐	■	☐

XII. Acknowledgment and Signature:

The undersigned acknowledges he/she has read and understands all of the Town's current zoning, subdivision, site plan, and health regulations and requirements for obtaining all required local, state, and federal permits.



(Signature of person preparing plans)

Michael Hammer, LLS, PLS

(Name)

Bedford Geomatics Manager

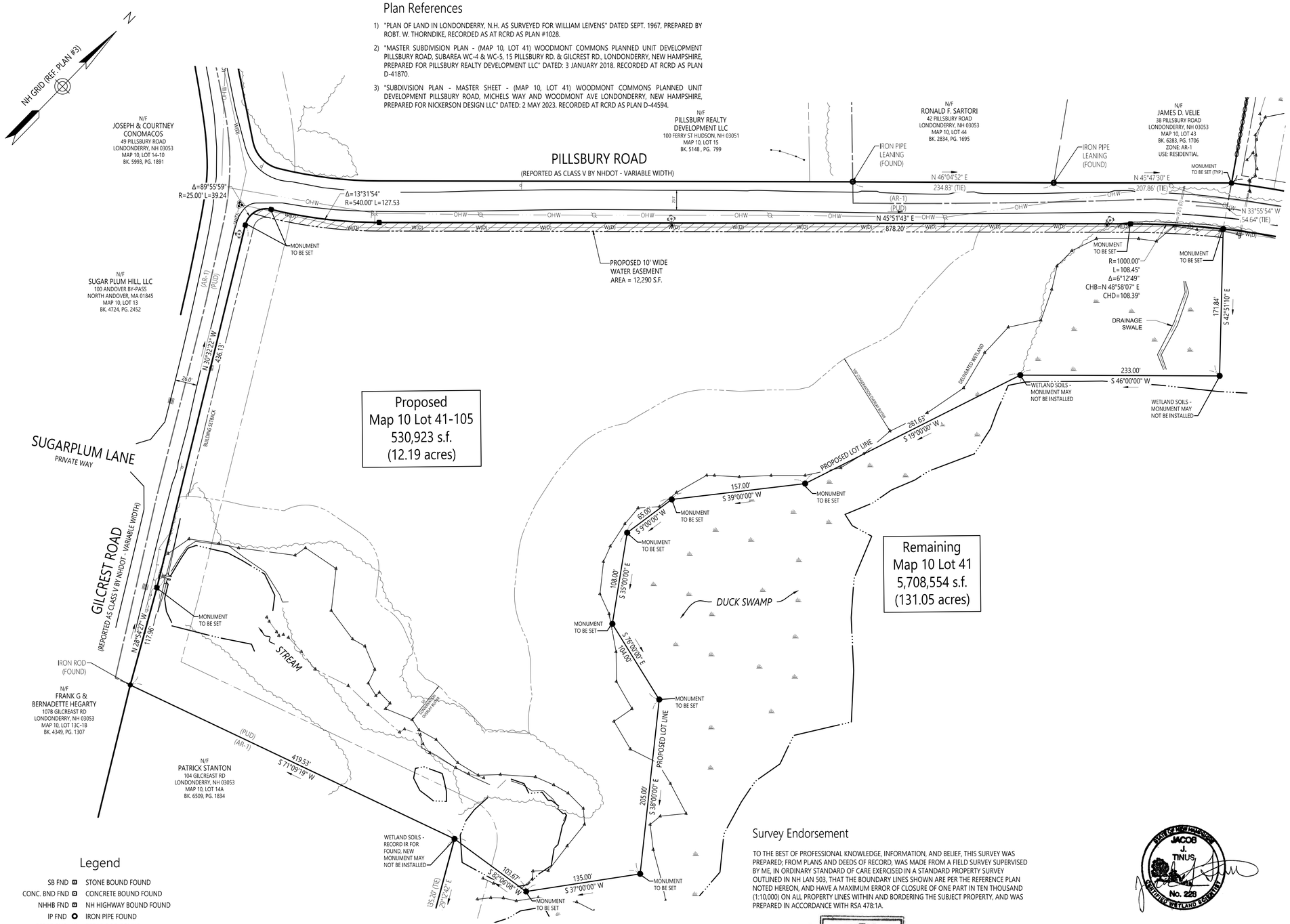
(Title)

11/13/2025

(Date)

Plan References

1) "PLAN OF LAND IN LONDONDERRY, N.H. AS SURVEYED FOR WILLIAM LEIVENS" DATED SEPT. 1967, PREPARED BY ROBT. W. THORNDIKE, RECORDED AS AT RCRD AS PLAN #1028.
2) "MASTER SUBDIVISION PLAN - (MAP 10, LOT 41) WOODMONT COMMONS PLANNED UNIT DEVELOPMENT PILLSBURY ROAD, SUBAREA WC-4 & WC-5, 15 PILLSBURY RD. & GILCREST RD., LONDONDERRY, NEW HAMPSHIRE, PREPARED FOR PILLSBURY REALTY DEVELOPMENT LLC" DATED: 3 JANUARY 2018. RECORDED AT RCRD AS PLAN D-41870.
3) "SUBDIVISION PLAN - MASTER SHEET - (MAP 10, LOT 41) WOODMONT COMMONS PLANNED UNIT DEVELOPMENT PILLSBURY ROAD, MICHELS WAY AND WOODMONT AVE LONDONDERRY, NEW HAMPSHIRE, PREPARED FOR NICKERSON DESIGN LLC" DATED: 2 MAY 2023. RECORDED AT RCRD AS PLAN D-44594.



Legend

- SB FND — STONE BOUND FOUND
- CONC. BND FND — CONCRETE BOUND FOUND
- NHHB FND — NH HIGHWAY BOUND FOUND
- IP FND — IRON PIPE FOUND
- REBAR FND — REBAR ROD FOUND
- STONE WALL
- VEGETATED WETLAND BOUNDARY
- AREA OF WETLAND
- EDGE OF PAVEMENT
- PROPERTY LINE
- ZONE LINE
- EXISTING POND

Survey Endorsement

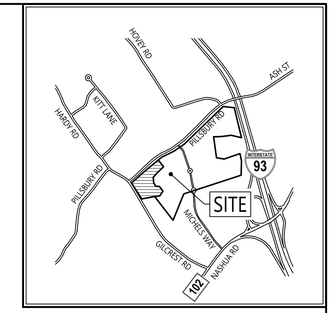
TO THE BEST OF PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF, THIS SURVEY WAS PREPARED; FROM PLANS AND DEEDS OF RECORD, WAS MADE FROM A FIELD SURVEY SUPERVISED BY ME, IN ORDINARY STANDARD OF CARE EXERCISED IN A STANDARD PROPERTY SURVEY OUTLINED IN NH LAN 503, THAT THE BOUNDARY LINES SHOWN ARE PER THE REFERENCE PLAN NOTED HEREON, AND HAVE A MAXIMUM ERROR OF CLOSURE OF ONE PART IN TEN THOUSAND (1:10,000) ON ALL PROPERTY LINES WITHIN AND BORDERING THE SUBJECT PROPERTY, AND WAS PREPARED IN ACCORDANCE WITH RSA 478:1A.

STATE OF NEW HAMPSHIRE — LICENSED LAND SURVEYOR — No. 1036 — MICHAEL J. HAMMER — SIGNATURE

DATE — LICENSED LAND SURVEYOR

JACOB J. TINUS — No. 228 — CERTIFIED WETLAND SCIENTIST

NO.	REVISION	DATE	APPVD.



Locus Map
(SCALE: 1" = 2,500')

General Notes

1) THE PURPOSE OF THE PLAN IS TO THE SUBDIVISION OF MAP 10 LOT 41 TO CREATE A NEW LOT, LOT 41-107, A 12 ACRE FRONTAGE LOT ON PILLSBURY AND GILCREST ROADS.
2) THE OWNER OF RECORD OF MAP 10 LOT 41 IS PILLSBURY REALTY DEVELOPMENT, LLC BY DEEDS RECORDED IN RCRD BOOK 5085 PAGE 1884, BOOK 5243 PAGE 2204, BOOK 5994, PAGE 660 AND BOOK 6164 PAGE 1821.
3) THIS PLAN SET CONSISTS OF TWO SHEETS, THE SUBDIVISION PLAN WHICH IS TO BE RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS (RCRD) AND A TOPOGRAPHIC PLAN THAT WILL BE ON FILE WITH THE TOWN OF LONDONDERRY
4) THE PROPERTY LINES SHOWN ON THIS PLAN ARE BASED UPON AN FIELD SURVEY CONDUCTED BY VHB, INC. IN JULY AND SEPTEMBER 2024, AND FROM DEEDS AND PLANS OF RECORD.
5) THIS APPLICATION INCLUDES A WAIVER FROM DEPICTING THE ENTIRE PERIMETER OF LOT 41. FOR DIMENSIONS OF THE COURSES NOT SHOWN HEREON, SEE REFERENCE PLANS #2 AND #3.
6) BASIS OF BEARING OF THIS SURVEY IS REFERENCE PLAN #3.
7) THE PROPOSED LOT SHALL BE SERVICED BY: TOWN SEWER, EVERSOURCE (ELECTRIC), CONSOLIDATED COMMUNICATIONS (TELEPHONE), AND PENNICHUCK WATER WORKS.
8) THE EXISTING USE OF THE LAND IS AN ORCHARD. THE CONTEMPLATED USE OPEN SPACE.
9) THE EXISTING LOT AREA OF MAP 10 LOT 41 IS 6,239,447 S.F. (143 ACRES)
10) THE LOT LIES ENTIRELY WITHIN THE WOODMONT COMMONS PUD DISTRICT (PUD-1) AS SHOWN ON THE "TOWN OF LONDONDERRY, NEW HAMPSHIRE ZONING MAP", DATED APRIL 24, 2023. DIMENSIONAL REQUIREMENTS FOR A (PUD-1) AT THE TIME OF THIS SURVEY ARE:

MINIMUM LOT AREA	N/A
MINIMUM FRONTAGE	50 FEET
MINIMUM FRONT YARD SETBACK	10 FEET
MINIMUM SIDE YARD SETBACK	10 FEET
MINIMUM REAR YARD SETBACK	5 FEET
MAXIMUM BUILDING HEIGHT	50 FEET
MINIMUM FRONT YARD PARKING SETBACK	6 FEET
MINIMUM SIDE/REAR PARKING SETBACK	0 FT

OWNER'S SIGNATURE
Signed by: kevin Smith
E7446E1218205B4E...
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

Certified By: _____

_____

SUBDIVISION PLAN OF LAND
MAP 10 LOT 41
IN

LONDONDERRY
NEW HAMPSHIRE

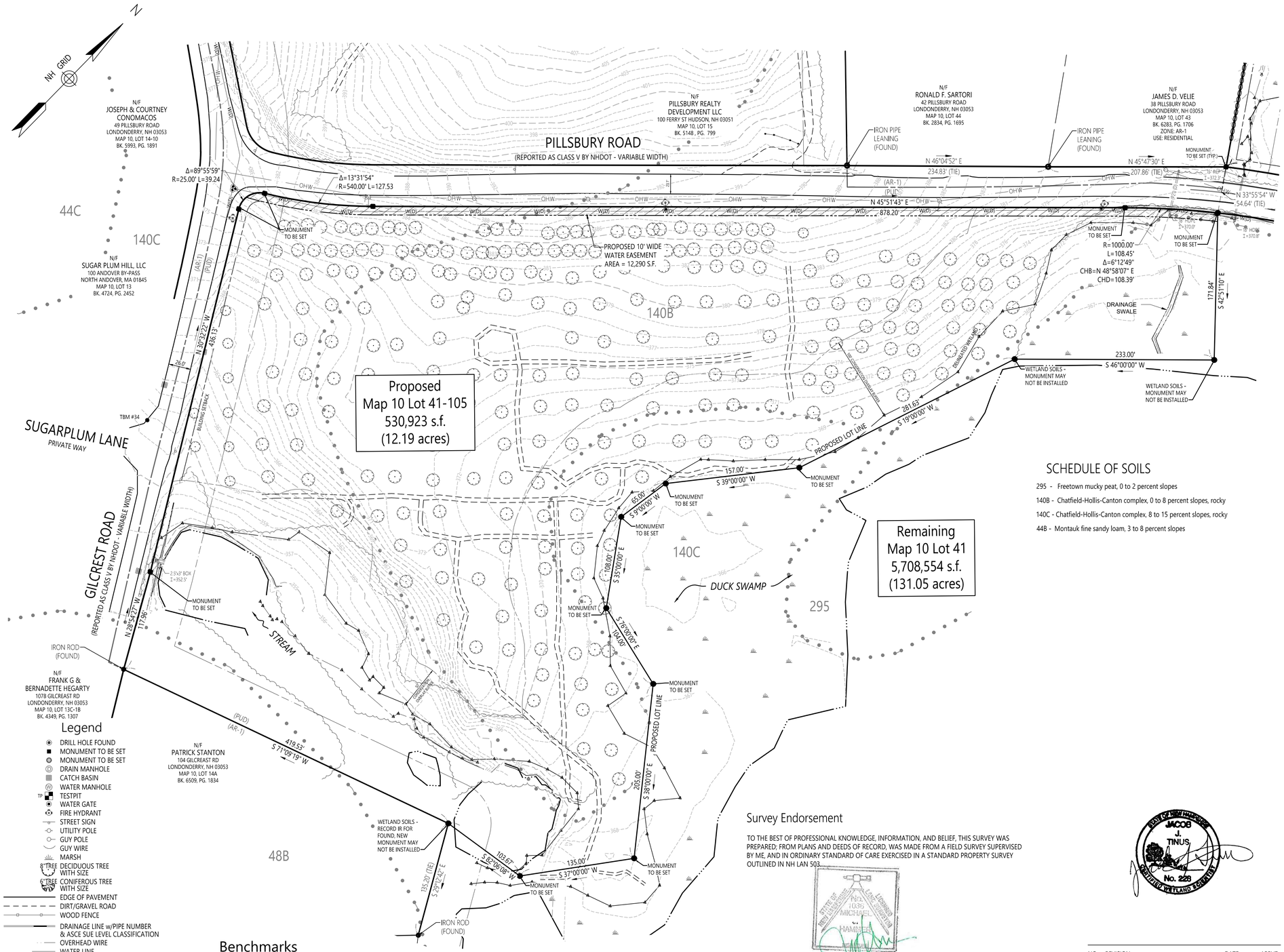
PREPARED FOR: PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETON, MA 01949

RECORD OWNER: PILLSBURY REALTY DEVELOPMENT, LLC
100 FERRY STREET
HUDSON, NH 03051

PREPARED BY: Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

SCALE: 1 INCH = 60 FEET

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\sr\planset\53140.00-Subdiv 15.dwg



Legend

- DRILL HOLE FOUND
- MONUMENT TO BE SET
- MONUMENT TO BE SET
- DRAIN MANHOLE
- CATCH BASIN
- WATER MANHOLE
- TESTPIT
- WATER GATE
- FIRE HYDRANT
- STREET SIGN
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MARSH
- 8"TREE DECIDUOUS TREE WITH SIZE
- 6"TREE CONIFEROUS TREE WITH SIZE
- EDGE OF PAVEMENT
- DIRT/GRAVEL ROAD
- WOOD FENCE
- DRAINAGE LINE w/PIPE NUMBER & ASCE SUE LEVEL CLASSIFICATION
- OVERHEAD WIRE
- WATER LINE
- STONE WALL
- TREE LINE
- 8F1-100 LIMIT OF BANK VEGETATED WETLAND BOUNDARY
- SOILS LINE
- AREA OF WETLAND

Benchmarks

1. TBM 31 - MAG NAIL SET IN PAVEMENT ON PILLSBURY ROAD NEAR NORTH EDGE OF DRIVEWAY TO HOUSE #51, ELEV.=368.09' NAVD88/18
2. TBM 34 - MAG NAIL SET IN PAVEMENT ON PILLSBURY ROAD AT SUGARPLUM LANE, ELEV.=361.87' NAVD88/18.

Survey Endorsement

TO THE BEST OF PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF, THIS SURVEY WAS PREPARED; FROM PLANS AND DEEDS OF RECORD, WAS MADE FROM A FIELD SURVEY SUPERVISED BY ME, AND IN ORDINARY STANDARD OF CARE EXERCISED IN A STANDARD PROPERTY SURVEY OUTLINED IN NH LAN 503.

DATE LICENSED LAND SURVEYOR

General Notes

1) THE PURPOSE OF THE PLAN IS TO THE SUBDIVISION OF MAP 10 LOT 41 TO CREATE A NEW LOT, LOT 41-107, A 12 ACRE FRONTAGE LOT ON PILLSBURY AND GILCREST ROADS.
2) THIS PLAN SET CONSISTS OF TWO SHEETS, THE SUBDIVISION PLAN WHICH IS TO BE RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS (RCRD) AND A TOPOGRAPHIC PLAN THAT WILL BE ON FILE WITH THE TOWN OF LONDONDERRY
3) THE PROPERTY LINES SHOWN ON THIS PLAN ARE BASED UPON AN FIELD SURVEY CONDUCTED BY VHB, INC. IN JULY AND SEPTEMBER 2024, AND FROM DEEDS AND PLANS OF RECORD.
4) THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON A COMBINATION OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB, INC. IN JULY AND SEPTEMBER 2024, AND DERIVED FROM DIGITAL ORTHOGRAPHIC IMAGERY AND LIDAR CAPTURED BY VHB, INC. WITH LEAF ON CONDITIONS DURING SEPTEMBER 2024 USING UAV TECHNOLOGIES. VERTICAL INFORMATION DEPICTED AS AN 1-FOOT CONTOUR INTERVAL OR SPOT ELEVATION SHOWN HEREON WERE DERIVED FROM THE SAME AND CONFORM WITH THE CURRENT NATIONAL MAP ACCURACY STANDARDS.
5) THE LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THIS PLAN WERE MAPPED PER AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD 38-22, QUALITY LEVEL(S) 'X' AS SPECIFIED IN THE CONTRACT BETWEEN 'THE CLIENT' AND VHB. PLEASE NOTE THAT WHILE BEST PRACTICES WERE FOLLOWED, NOT ALL UTILITIES MAY BE SHOWN AND THE ACCURACY OF UTILITY LOCATIONS CANNOT BE GUARANTEED.
6) ELEVATIONS SHOWN ON THIS PLAN REFER TO NAVD OF 1988/2018 ESTABLISHED FROM STATIC GPS OBSERVATIONS MADE ON JULY 31, 2024, POSTPROCESSED USLING TRIMBLE RTX-PP.
7) THE LOT LIES ENTIRELY WITHIN ZONE X (UNSHADED) (AREAS TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR ROCKINGHAM COUNTY, NEW HAMPSHIRE, MAP NUMBER 33015C0338E, EFFECTIVE DATE MAY 17, 2005.
8) NO WELLS WERE OBSERVED ON THE PROPERTY IN THE COURSE OF THIS SURVEY.
9) THE LOT LIES ENTIRELY WITHIN THE WOODMONT COMMONS PUD DISTRICT (PUD-1) AS SHOWN ON THE "TOWN OF LONDONDERRY, NEW HAMPSHIRE ZONING MAP", DATED APRIL 24, 2023. DIMENSIONAL REQUIREMENTS FOR A (PUD-1) AT THE TIME OF THIS SURVEY ARE:

MINIMUM LOT AREA	N/A
MINIMUM FRONTAGE	50 FEET
MINIMUM FRONT YARD SETBACK	10 FEET
MINIMUM SIDE YARD SETBACK	10 FEET
MINIMUM REAR YARD SETBACK	5 FEET
MAXIMUM BUILDING HEIGHT	50 FEET
MINIMUM FRONT YARD PARKING SETBACK	6 FEET
MINIMUM SIDE/REAR PARKING SETBACK	0 FT

SCHEDULE OF SOILS

295 - Freetown mucky peat, 0 to 2 percent slopes

140B - Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky

140C - Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky

44B - Montauk fine sandy loam, 3 to 8 percent slopes

Wetland Notes

1) THE WETLANDS DEPICTED WERE DELINEATED BY JAKE TINUS CERTIFIED WETLAND SCIENTIST (NH CWS #228) ON OCTOBER 9 THRU 11, 2024, AND REFERENCE JURISDICTIONAL WETLANDS AND SURFACE WATERS WITHIN THE PROJECT SITE. THE WETLAND DELINEATION WAS PERFORMED IN ACCORDANCE WITH THE PROCEDURES AND STANDARDS OUTLINED IN THE *1987 CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND THE REGIONAL SUPPLEMENT TO THE U.S. ARMY CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0 (JANUARY 2012)*, SUPPLIMENTED WITH *FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN THE UNITED STATES, VERSION 8.2*, PUBLISHED BY THE NATURAL RESOURCE CONSERVATION SERVICE AND THE *FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4.0*, PUBLISHED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION. DOMINANT WETLAND VEGETATION WAS ASSESSED USING THE *NORTHCENTRAL AND NORTHEAST REGIONAL WETLAND PLANT LIST* PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. WETLANDS AND SURFACE WATERS WERE CLASSIFIED USING THE USFWS METHODOLOGY *CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES (COWARDIN ET AL. 1979, REVISED 1985).*

JACOB J. TINUS No. 228 CERTIFIED WETLAND SCIENTIST

NO.	REVISION	DATE	APPVD.

TOPOGRPHIC PLAN OF LAND
MAP 10 LOT 41
IN

LONDONDERRY
NEW HAMPSHIRE

PREPARED FOR: PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETON, MA 01949

RECORD OWNER: PILLSBURY REALTY DEVELOPMENT, LLC
100 FERRY STREET
HUDSON, NH 03051

PREPARED BY: Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

SCALE: 1 INCH = 60 FEET

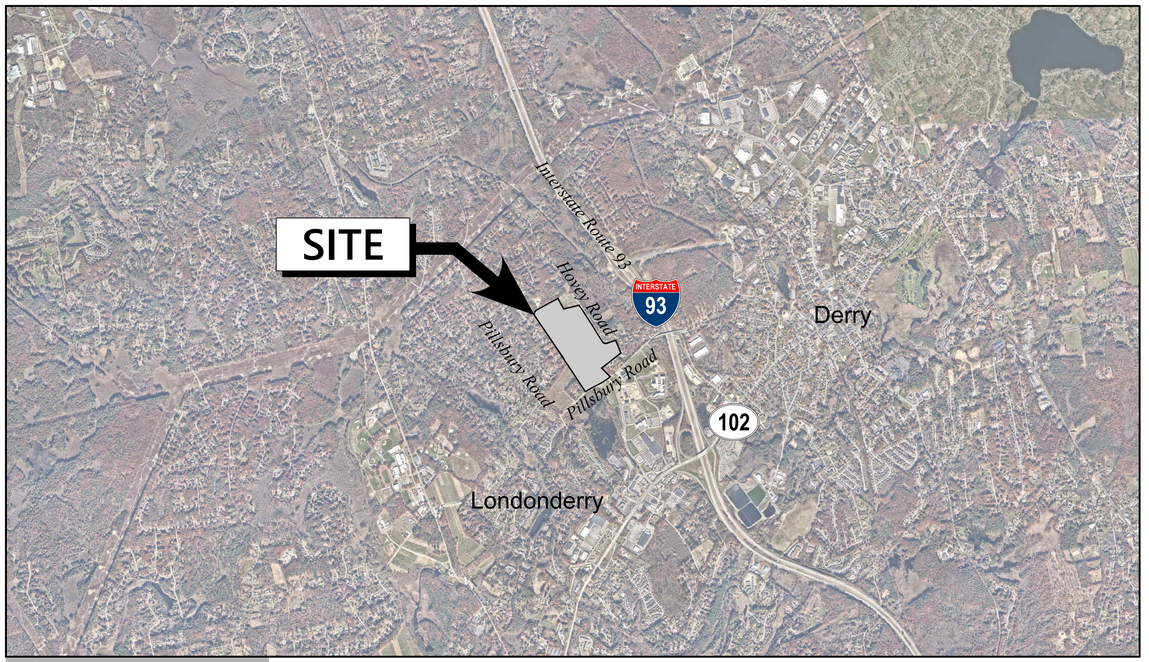
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\sr\planset\53140.00-Subdiv 15.dwg

Site Plans

Issued for	**Permitting**
Date Issued	**February 20, 2025**
Latest Issue	**November 13, 2025**

Thornton Hill

36 Pillsbury Road
Londonderry, NH 03053



Sheet Index

No.	Drawing Title	Latest Issue
C1.00	Legend and General Notes	November 13, 2025
C2.00	Overall Site Plan	November 13, 2025
C2.01-C2.08	Layout and Materials Plans	November 13, 2025
C2.09-C2.15	Sight Distance Plans	November 13, 2025
C2.16	Overall Vehicle Access Plan	November 13, 2025
C2.17-C2.24	Vehicle Access Plans	November 13, 2025
C3.00	Overall Grading and Drainage Plan	November 13, 2025
C3.01-C3.08	Grading and Drainage Plans	November 13, 2025
C4.00	Overall Utility Plan	November 13, 2025
C4.01-C4.08	Utility Plans	November 13, 2025
C4.09-C4.15	Sanitary Plan and Profile Plans	November 13, 2025
C5.00	Overall Profile View Plan	November 13, 2025
C5.01-C5.08	Profile View Plans	November 13, 2025
C5.09-C5.14	Thornton Hill Avenue Profiles	November 13, 2025
C5.15-C5.16	Oxford Court Profiles	November 13, 2025
C5.17-C5.18	Redfield Court Profiles	November 13, 2025
C5.19-C5.20	Bramley Court Profiles	November 13, 2025
C5.21-C5.22	Kingston Court Profiles	November 13, 2025
C5.23-C5.24	Porters Court Profiles	November 13, 2025
C6.00	Overall Erosion and Sediment Control Plan	November 13, 2025
C6.01-C6.08	Erosion and Sediment Control Plans	November 13, 2025
C7.01-C7.09	Site Details	November 13, 2025
C8.00	Overall Sequencing Plan	November 13, 2025
C9.01	Inspection & Maintenance Notes	November 13, 2025
C9.02	Inspection & Maintenance Logs	November 13, 2025
L1.00	Overall Landscape Plan	November 13, 2025
L1.01-L1.10	Landscape Plans	November 13, 2025
L2.01-L2.03	Landscape Details	November 13, 2025

Reference Drawings

No.	Drawing Title	Latest Issue
Sv1.0	Existing Conditions Master Plan	November 13, 2025
Sv1.1-Sv1.8	Existing Conditions Plan of Land	November 13, 2025
A3.01-A3.10	Exterior Elevations & Axonometric Plans	November 10, 2025
L-1	Photometric Calculation Plan	November 12, 2025

Northern Black Racer

(New Hampshire state-threatened species)

NHFG Wildlife Biologist Contacts:
Melissa Winters 603-479-1129 and Brendan Clifford 603-944-0885

- **Emerge from hibernacula in April, Basking April - August**
- **Hatchlings emerge August - September, Return to hibernacula mid-September - mid-October**
- **Found in a variety of habitats but prefer early successional and sandy (sand pit) sites.**





- Solid black with a white thrat and chin
- Slender with glossy scales, 3-6 ft. long
- Hatchlings are very small and patterned





Northern black racers are protected by state laws. It is illegal to capture, harass or harm these species, including their nests. Handle ONLY if necessary to move out of harms way. Move to the nearest location in the direction they were moving and contact NHFG. Do not disturb nests. Fis 1401.03 (a) No person shall take or possess a black racer (Coluber constrictor)...or any egg or part thereof.

Report sightings in accordance with NHFG permit conditions. Contact NHFG Wildlife Biologist Melissa Winters 603-479-1129 (cell) and Brendan Clifford 603-944-0885 (group text preferred) if a turtle is observed nesting or a nest site is suspected within the project area. Please report promptly, noting specific location, project site and date – Photographs strongly encouraged to be included with report.

NEW HAMPSHIRE SPECIES OF CONCERN

WOOD TURTLE

Report Sightings: Contact Wildlife Biologist Josh Megyesy at (603) 271 – 1125 or the Wildlife Division at (603) 271 – 2461. Observation reports can be sent to RAARP@wildlife.nh.gov. Photographs and exact locations are strongly encouraged.



Specific Information:

- Adults are 5 – 8 inches long.
- Neck and front limbs are orange.
- Associated with streams and rivers where they hibernate. Use surrounding fields, forests, and floodplains extensively during active period.
- Turtles are frequently concealed by leaves and undergrowth and may not be easily visible.
- Turtles are most active from April 15 – October 15.
- During nesting season (May 15 – July 15) turtles are attracted to disturbed ground.





This species is protected under Fis 1400. Thank you for reporting any observations.

PLEASE DO NOT DISTURB OR HANDLE WILDLIFE

vhb.com

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Architect
Utile
115 Kingston Street
Boston, MA 02111
617.423.7200

Civil Engineer/Landscape Architect
VHB
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Surveyor
VHB
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Applicant

Procopio Enterprises, Inc.
35 Village Road
7th Floor (702)
Middleton, MA 01949

Owner

Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Assessor's Map: 10
Lot: 42

OWNER'S SIGNATURE
Signed by: Kevin Smith
E746E121B2B6...
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board
on Date: _____
Certified By: _____
_____

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

\\VHB\GBL\PRO\BEDFORD\53140.00 36 PILLSBURY RD. LONDONDY\CAD\LD\PLANSET\53140000-COV 12 November 2025

VHB Project : 53140.00 36 Pillsbury Road
Issued for : Permitting 11/13/2025

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-LG.dwg

Legend

Exist.	Prop.	
		PROPERTY LINE
		PROJECT LIMIT LINE
		RIGHT-OF-WAY/PROPERTY LINE
		EASEMENT
		BUILDING SETBACK
		PARKING SETBACK
10+00	10+00	BASELINE
		CONSTRUCTION LAYOUT
		ZONING LINE
		TOWN LINE
		LIMIT OF DISTURBANCE
		WETLAND LINE WITH FLAG
		FLOODPLAIN
	BLSF	BORDERING LAND SUBJECT TO FLOODING
	BZ	WETLAND BUFFER ZONE
	NDZ	NO DISTURB ZONE
	200'RA	200' RIVERFRONT AREA
		SWALE
		GRAVEL ROAD
EOP	EOP	EDGE OF PAVEMENT
BB	BB	BITUMINOUS BERM
BC	BC	BITUMINOUS CURB
CC	CC	CONCRETE CURB
CG	CG	CURB AND GUTTER
ECC	ECC	EXTRUDED CONCRETE CURB
MCC	MCC	MONOLITHIC CONCRETE CURB
PCC	PCC	PRECAST CONC. CURB
SGE	SGE	SLOPED GRAN. EDGING
VGC	VGC	VERT. GRAN. CURB
		LIMIT OF CURB TYPE
		SAWCUT
		BUILDING
	EN	BUILDING ENTRANCE
	LD	LOADING DOCK
		BOLLARD
D	D	DUMPSTER PAD
		SIGN
		DOUBLE SIGN
		STEEL GUARDRAIL
		WOOD GUARDRAIL
		PATH
		TREE LINE
		WIRE FENCE
		FENCE
		STOCKADE FENCE
		STONE WALL
		RETAINING WALL
		STREAM / POND / WATER COURSE
		DETENTION BASIN
		HAY BALES
		SILT FENCE
		SILT SOCK / STRAW WATTLE
4	4	MINOR CONTOUR
20	20	MAJOR CONTOUR
10	10	PARKING COUNT
	C10	COMPACT PARKING STALLS
DYL	DYL	DOUBLE YELLOW LINE
SL	SL	STOP LINE
		CROSSWALK
		ACCESSIBLE CURB RAMP
		ACCESSIBLE PARKING
VAN	VAN	VAN-ACCESSIBLE PARKING

Exist.	Prop.	
		CONCRETE
		HEAVY DUTY PAVEMENT
		BUILDINGS
		RIPRAP
		CONSTRUCTION EXIT
27.35 TC×	27.35 TC×	TOP OF CURB ELEVATION
26.85 BC×	26.85 BC×	BOTTOM OF CURB ELEVATION
132.75 ×	132.75 ×	SPOT ELEVATION
45.0 TW 38.5 BW×	45.0 TW× 38.5 BW	TOP & BOTTOM OF WALL ELEVATION
		BORING LOCATION
		TEST PIT LOCATION
MW	MW	MONITORING WELL
UD	UD	UNDERDRAIN
12"D	12"D	DRAIN
6"RD	6"RD	ROOF DRAIN
12"S	12"S	SEWER
FM	FM	FORCE MAIN
OHW	OHW	OVERHEAD WIRE
6"W	6"W	WATER
4"FP	4"FP	FIRE PROTECTION
	2"DW	DOMESTIC WATER
S"G	G	GAS
E	E	ELECTRIC
STM	STM	STEAM
T	T	TELEPHONE
FA	FA	FIRE ALARM
CATV	CATV	CABLE TV
		CATCH BASIN CONCENTRIC
		CATCH BASIN ECCENTRIC
		DOUBLE CATCH BASIN CONCENTRIC
		DOUBLE CATCH BASIN ECCENTRIC
		GUTTER INLET
		DRAIN MANHOLE CONCENTRIC
		DRAIN MANHOLE ECCENTRIC
TD		TRENCH DRAIN
		PLUG OR CAP
CO	CO	CLEANOUT
		FLARED END SECTION
		HEADWALL
S	S	SEWER MANHOLE CONCENTRIC
S	S	SEWER MANHOLE ECCENTRIC
GS	GS	CURB STOP & BOX
WV	WV	WATER VALVE & BOX
TSV	TSV	TAPPING SLEEVE, VALVE & BOX
		FIRE DEPARTMENT CONNECTION
HYD	HYD	FIRE HYDRANT
WM	WM	WATER METER
PIV	PIV	POST INDICATOR VALVE
W	W	WATER WELL
GS	GS	GAS GATE
GM	GM	GAS METER
E	EMH	ELECTRIC MANHOLE
EM	EM	ELECTRIC METER
		LIGHT POLE
T	TMH	TELEPHONE MANHOLE
T	T	TRANSFORMER PAD
		UTILITY POLE
		GUY POLE
HH		GUY WIRE & ANCHOR
HH	HH	HAND HOLE
PB	PB	PULL BOX
		MATCHLINE

Abbreviations

General

ABAN	ABANDON
ACR	ACCESSIBLE CURB RAMP
ADJ	ADJUST
APPROX	APPROXIMATE
BIT	BITUMINOUS
BS	BOTTOM OF SLOPE
BWLL	BROKEN WHITE LANE LINE
CONC	CONCRETE
DYCL	DOUBLE YELLOW CENTER LINE
EL	ELEVATION
ELEV	ELEVATION
EV	ELECTRIC VEHICLE CHARGING SPACE
EX	EXISTING
FDN	FOUNDATION
FFE	FIRST FLOOR ELEVATION
GRAN	GRANITE
GTD	GRADE TO DRAIN
LA	LANDSCAPE AREA
LOD	LIMIT OF DISTURBANCE
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PERF	PERFORATED
PROP	PROPOSED
REM	REMOVE
RET	RETAIN
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
SWEL	SOLID WHITE EDGE LINE
SWLL	SOLID WHITE LANE LINE
TS	TOP OF SLOPE
TYP	TYPICAL

Utility

CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
DCB	DOUBLE CATCH BASIN
DMH	DRAIN MANHOLE
CIP	CAST IRON PIPE
COND	CONDUIT
DIP	DUCTILE IRON PIPE
FES	FLARED END SECTION
FM	FORCE MAIN
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GI	GUTTER INLET
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
INV	INVERT ELEVATION
I=	INVERT ELEVATION
LP	LIGHT POLE
MES	METAL END SECTION
PIV	POST INDICATOR VALVE
PWW	PAVED WATER WAY
PVC	POLYVINYLCHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
R=	RIM ELEVATION
RIM=	RIM ELEVATION
SMH	SEWER MANHOLE
TSV	TAPPING SLEEVE, VALVE AND BOX
UG	UNDERGROUND
UP	UTILITY POLE

Notes

General

1. THE PURPOSE OF THESE PLANS IS TO DEPICT THE PROPOSED SITE DEVELOPMENT OF 250 COTTAGE COURT STYLE DWELLINGS (2-3 BEDROOMS) WITH ASSOCIATED AMENITIES, INCLUDING THE FULL SUBJECT PARCEL AND ABUTTING PARCEL INFORMATION. FOR GREATER DESIGN DETAIL RELATIVE TO THE PROPOSED DEVELOPMENT, REFER TO THE OTHER SHEETS PROVIDED HEREIN.
2. CONTRACTOR SHALL NOTIFY "DIG-SAFE" (811 OR 1-888-344-7233) AT LEAST 72 HOURS BEFORE EXCAVATING.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
4. ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
5. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE 6 INCHES LOAM AND SEED.
6. WITHIN THE LIMITS OF THE BUILDING FOOTPRINT, THE SITE CONTRACTOR SHALL PERFORM EARTHWORK OPERATIONS REQUIRED UP TO SUBGRADE ELEVATIONS.
7. WORK WITHIN THE LOCAL RIGHTS-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS. WORK WITHIN STATE RIGHTS-OF-WAY SHALL CONFORM TO THE LATEST EDITION OF THE STATE HIGHWAY DEPARTMENTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
8. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
9. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
10. 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.
11. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
12. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
13. DAMAGE RESULTING FROM CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
14. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
15. THIS PROJECT DISTURBS MORE THAN ONE ACRE OF LAND AND FALLS WITHIN THE NPDES CONSTRUCTION GENERAL PERMIT (CGP) PROGRAM AND EPA JURISDICTION. PRIOR TO THE START OF CONSTRUCTION CONTRACTOR IS TO FILE A CGP NOTICE OF INTENT WITH THE EPA AND PREPARE A STORMWATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH THE NPDES REGULATIONS. CONTRACTOR SHALL CONFIRM THE OWNER HAS ALSO FILED A NOTICE OF INTENT WITH THE EPA.
16. ALL FUTURE TENANTS OF THIS SITE SHALL BE REQUIRED TO COMPLY WITH THE TOWN OF LONDONDERRY ZONING ORDINANCE SECTION 5.16.

Utilities

1. THE UTILITY COMPANIES SERVICING THE PROJECT AREA ARE:
   A. WATER: MANCHESTER WATER WORKS
   B. SEWER: LONDONDERRY DEPARTMENT OF PUBLIC WORKS
   C. ELECTRIC: EVERSOURCE
   D. TELEPHONE: CONSOLIDATED COMMUNICATIONS
   E. CABLE TV: COMCAST
   F. GAS: LIBERTY UTILITIES
2. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR IT'S REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND, SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY.
3. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT AND CONTRACTOR'S FAILURE TO NOTIFY PRIOR TO PERFORMING ADDITIONAL WORK RELEASES OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT.
4. SET CATCH BASIN RIMS, AND INVERTS OF SEWERS, DRAINS, AND DITCHES IN ACCORDANCE WITH ELEVATIONS ON THE GRADING AND UTILITY PLANS.
5. RIM ELEVATIONS FOR DRAIN AND SEWER MANHOLES, WATER VALVE COVERS, GAS GATES, ELECTRIC AND TELEPHONE PULL BOXES, AND MANHOLES, AND OTHER SUCH ITEMS, ARE APPROXIMATE AND SHALL BE SET/RESET AS FOLLOWS:
   A. PAVEMENTS AND CONCRETE SURFACES: FLUSH
   B. ALL SURFACES ALONG ACCESSIBLE ROUTES: FLUSH
   C. LANDSCAPE, LOAM AND SEED, AND OTHER EARTH SURFACE AREAS: ONE INCH ABOVE SURROUNDING AREA AND TAPER EARTH TO THE RIM ELEVATION.
6. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT.
7. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITIES COMPANY.
8. UTILITY PIPE MATERIALS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED ON THE PLAN:
   A. WATER PIPES SHALL BE CEMENT LINED DUCTILE IRON CLASS 52
   B. SANITARY SEWER PIPES SHALL BE POLYVINYL CHLORIDE SDR 35 MINIMUM (PVC) SEWER PIPE
   C. STORM DRAINAGE PIPES SHALL BE REINFORCED CONCRETE PIPE OR ADS N12 PIPE
9. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR AND SHALL FURNISH EXCAVATION, INSTALLATION, AND BACKFILL OF ELECTRICAL FURNISHED SITEWORK RELATED ITEMS SUCH AS PULL BOXES, CONDUITS, DUCT BANKS, LIGHT POLE BASES, AND CONCRETE PADS. SITE CONTRACTOR SHALL FURNISH CONCRETE ENCASEMENT OF DUCT BANKS IF REQUIRED BY THE UTILITY COMPANY AND AS INDICATED ON THE DRAWINGS.
10. CONTRACTOR SHALL EXCAVATE AND BACKFILL TRENCHES FOR GAS IN ACCORDANCE WITH GAS COMPANY'S REQUIREMENTS.
11. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN.) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS AND LOCAL MUNICIPAL STANDARDS. FOR MANHOLES THAT ARE 15 FEET IN DEPTH AND GREATER, THE MINIMUM DIAMETER SHALL BE 5 FEET.
12. CONTRACTOR SHALL CONSTRUCT SANITARY SEWER WITH FORCE MAIN CONSTRUCTION MATERIALS THAT MEET THE REQUIREMENTS IN ENV-WQ 704.08 WHERE MINIMUM SEPARATION OF 18" FROM WATER IS NOT ACHIEVABLE.

Layout and Materials

5. DIMENSIONS ARE FROM THE FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
6. CURB RADII ARE 3 FEET UNLESS OTHERWISE NOTED.
7. CURBING SHALL BE CAPE COD BERM (CCB) WITHIN THE SITE UNLESS OTHERWISE INDICATED ON THE PLANS.
8. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND DETAILS CONTIGUOUS TO THE BUILDING, INCLUDING SIDEWALKS, RAMPS, BUILDING ENTRANCES, STAIRWAYS, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
9. PROPOSED BOUNDS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A LICENSED LAND SURVEYOR (LLS).
10. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.

Document Use

1. THESE PLANS AND CORRESPONDING CADD DOCUMENTS ARE INSTRUMENTS OF PROFESSIONAL SERVICE, AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN FOR WHICH IT WAS CREATED WITHOUT THE EXPRESSED, WRITTEN CONSENT OF VHB. ANY UNAUTHORIZED USE, REUSE, MODIFICATION OR ALTERATION, INCLUDING AUTOMATED CONVERSION OF THIS DOCUMENT SHALL BE AT THE USER'S SOLE RISK WITHOUT LIABILITY OR LEGAL EXPOSURE TO VHB.
2. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.
3. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.
4. ALL APPROVED PROJECT PLANS WILL BE ON FILE AT THE TOWN OF LONDONDERRY DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT.

Construction Sequence

1. SURVEY AND STAKE LIMITS OF CLEARING AND GRUBBING.
2. INSTALL SILT FENCING, STRAW BALES, CONSTRUCTION EXITS, ETC. PRIOR TO START OF CONSTRUCTION, TO BE MAINTAINED UNTIL COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER.
3. CLEAR AND GRUB ALL AREAS TO BE DISTURBED BY CONSTRUCTION AND PERFORM DEMOLITION OPERATIONS.
4. REPAIR, CLEAN, AND REPLACE ANY SEDIMENT CONTROLS DAMAGED DURING AND/OR AFTER RAINFALL EVENTS.
5. STRIP LOAM AND PAVEMENT, OR RECLAIM EXISTING PAVEMENT WITHIN LIMITS OF WORK AND STOCKPILE EXCESS MATERIAL.
6. CONSTRUCT TEMPORARY SEDIMENTATION BASINS AS REQUIRED.
7. PONDS AND SWALES SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE.
8. PERFORM PRELIMINARY SITE GRADING AND CONSTRUCT TEMPORARY DIVERSION SWALES AS REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT THE PRELIMINARY GRADING ALLOWS SURFACE WATER RUN-OFF FROM UNSTABILIZED AREAS TO FLOW TOWARDS THE TEMPORARY SEDIMENTATION BASINS.
9. PREPARE BUILDING PAD TO ENABLE BUILDING CONSTRUCTION TO BEGIN.
10. INSTALL SEWER SYSTEM, DRAINAGE SYSTEM, AND OTHER UTILITIES IN ACCORDANCE WITH THE PLANS AND DETAILS.
11. INSTALL STRAW BALES AND INLET PROTECTION AT ALL CATCH BASINS AS THEY ARE CONSTRUCTED, IN ACCORDANCE WITH THE DETAILS.
12. PERFORM FINAL/FINE GRADING INCLUDING SLOPE STABILIZATION BLANKETS.
13. PERFORM ALL REMAINING SITE CONSTRUCTION. (I.E. BUILDING AND PAVEMENT AREAS).
14. LOAM AND SEED ALL DISTURBED AREAS.
15. REMOVE TEMPORARY EROSION CONTROL MEASURES, SILT FENCE, ETC. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER.
16. CLEAN ALL DRAINAGE BASINS, STRUCTURES, PIPES, AND SUMPS WITHIN THE PROJECT LIMITS OF ALL SILT AND DEBRIS.

Demolition

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMIT OF WORK INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITY POLES, SIGNS, ETC. UNLESS INDICATED OTHERWISE ON THE DRAWINGS. REMOVE AND DISPOSE OF EXISTING UTILITIES, FOUNDATIONS AND UNSUITABLE MATERIAL BENEATH AND FOR A DISTANCE OF 10 FEET BEYOND THE PROPOSED BUILDING FOOTPRINT INCLUDING EXTERIOR COLUMNS.
2. EXISTING UTILITIES SHALL BE TERMINATED, UNLESS OTHERWISE NOTED, IN CONFORMANCE WITH LOCAL, STATE AND INDIVIDUAL UTILITY COMPANY STANDARD SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES.
3. CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.
4. THE DEMOLITION LIMITS DEPICTED IN THE PLANS IS INTENDED TO AID THE CONTRACTOR DURING THE BIDDING AND CONSTRUCTION PROCESS AND IS NOT INTENDED TO DEPICT EACH AND EVERY ELEMENT OF DEMOLITION. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THE DETAILED SCOPE OF DEMOLITION BEFORE SUBMITTING ITS BID/PROPOSAL TO PERFORM THE WORK AND SHALL MAKE NO CLAIMS AND SEEK NO ADDITIONAL COMPENSATION FOR CHANGED CONDITIONS OR UNFORESEEN OR LATENT SITE CONDITIONS RELATED TO ANY CONDITIONS DISCOVERED DURING EXECUTION OF THE WORK.
5. UNLESS OTHERWISE SPECIFICALLY PROVIDED ON THE PLANS OR IN THE SPECIFICATIONS, THE ENGINEER HAS NOT PREPARED DESIGNS FOR AND SHALL HAVE NO RESPONSIBILITY FOR THE PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF HAZARDOUS MATERIALS, TOXIC WASTES OR POLLUTANTS AT THE PROJECT SITE. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY CLAIMS OF LOSS, DAMAGE, EXPENSE, DELAY, INJURY OR DEATH ARISING FROM THE PRESENCE OF HAZARDOUS MATERIAL AND CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE ENGINEER FROM ANY CLAIMS MADE IN CONNECTION THEREWITH. MOREOVER, THE ENGINEER SHALL HAVE NO ADMINISTRATIVE OBLIGATIONS OF ANY TYPE WITH REGARD TO ANY CONTRACTOR AMENDMENT INVOLVING THE ISSUES OF PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF ASBESTOS OR OTHER HAZARDOUS MATERIALS.

Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE OCCURRENCE OF A STORM EVENT THAT PRODUCES 0.25 INCHES OR MORE OF RAIN WITHIN A 24-HOUR PERIOD, OR WITHIN 24 HOURS OF A SNOWMELT DISCHARGE FROM A STORM EVENT THAT PRODUCES 3.25 INCHES OR MORE OF SNOW IN A 24-HOUR PERIOD. THE CONTRACTOR SHALL ADDRESS DEFICIENCIES AND MAINTENANCE ITEMS WITHIN TWENTY-FOUR HOURS OF INSPECTION. CONTRACTOR SHALL PROPERLY DISPOSE OF SEDIMENT SUCH THAT IT DOES NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.

Existing Conditions Information

1. BASE PLAN: THE PROPERTY LINES SHOWN WITHIN THE "EXISTING CONDITIONS PLAN OF LAND" PLAN WERE DETERMINED BY AN ACTUAL FIELD SURVEY CONDUCTED BY VHB, INC., IN SEPTEMBER 2024. THE TOPOGRAPHY AND PHYSICAL FEATURES ARE BASED ON AN ACTUAL FIELD SURVEY PERFORMED ON THE GROUND BY VHB, INC., DURING SEPTEMBER 2024.

   A. DELINEATION OF THE WETLANDS AND PLACEMENT OF THE FLAGS WAS PERFORMED BY: VHB, INC. IN SEPTEMBER AND OCTOBER 2024.
   B. FLAGS MARKING THE WETLANDS WERE LOCATED BY: VHB, INC. IN SEPTEMBER AND OCTOBER 2024.

2. TOPOGRAPHY: ELEVATIONS ARE BASED ON NAVD OF 1988.
3. PARCEL USES: USES SHOWN BELOW ARE BASED ON AVAILABLE PROPERTY CARD INFORMATION.
   EXISTING USE: VACANT LAND
   PROPOSED USE: RESIDENTIAL DEVELOPMENT

Waivers/Variances

1. WAIVER REQUESTED FROM SECTION 3.09.R OF SUBDIVISION REGULATIONS - REQUESTING 8% ROAD SLOPES FOR 500 FT OR LESS
2. WAIVER REQUESTED FROM SECTION 3.04 OF SITE PLAN REGULATIONS - GOVERNING UTILITY SPACING FROM ROAD CENTERLINE

Required Permits

1. NHDES ALTERATION OF TERRAIN PERMIT: SUBMITTED & UNDER REVIEW - APPLICATION 250716-129
2. NHDES STANDARD DREDGE AND FILL PERMIT: SUBMITTED & UNDER REVIEW - FILE No. 2025-01554
3. NHDES SEWER DISCHARGE PERMIT: TO BE SUBMITTED
4. EPA CONSTRUCTION GENERAL PERMIT: TO BE SUBMITTED
5. LONDONDERRY SEWER DISCHARGE PERMIT: TO BE SUBMITTED
6. LONDONDERRY STORMWATER PERMIT: TO BE SUBMITTED

Rock Blasting

BEST MANAGEMENT PRACTICES FOR BLASTING: ALL ACTIVITIES RELATED TO BLASTING ADHERE TO THE FOLLOWING BEST MANAGEMENT PRACTICES (BMPS) TO PREVENT CONTAMINATION OF GROUNDWATER INCLUDING PREPARING, REVIEWING AND FOLLOWING AN APPROVED BLASTING PLAN; PROPER DRILLING, EXPLOSIVE HANDING AND LOADING PROCEDURES; OBSERVING THE ENTIRE BLASTING PROCEDURES; EVALUATING BLASTING PERFORMANCE; AND HANDLING AND STORAGE OF BLASTED ROCK.

1. LOADING PRACTICES: THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:

   A. DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS.
   B. EXPLOSIVE PRODUCTS SHALL BE MANAGED ON-SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF-SITE DISPOSAL.
   C. SPILLAGE AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF-SITE DISPOSAL.
   D. LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED.
   E. LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT.
   F. EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING AND COLUMN RISE NEED TO BE ATTENDED TO.

2. EXPLOSIVE SELECTION: THE FOLLOWING BMPS SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDWATER CONTAMINATION WHEN EXPLOSIVES ARE USED:

   A. EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION.
   B. EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT TO MINIMIZE THE POTENTIAL FOR HAZARDOUS EFFECT OF THE PRODUCT UPON GROUNDWATER.

3. PREVENTION OF MISFIRES:

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-OSP.dwg

Wetland & Stream Impacts

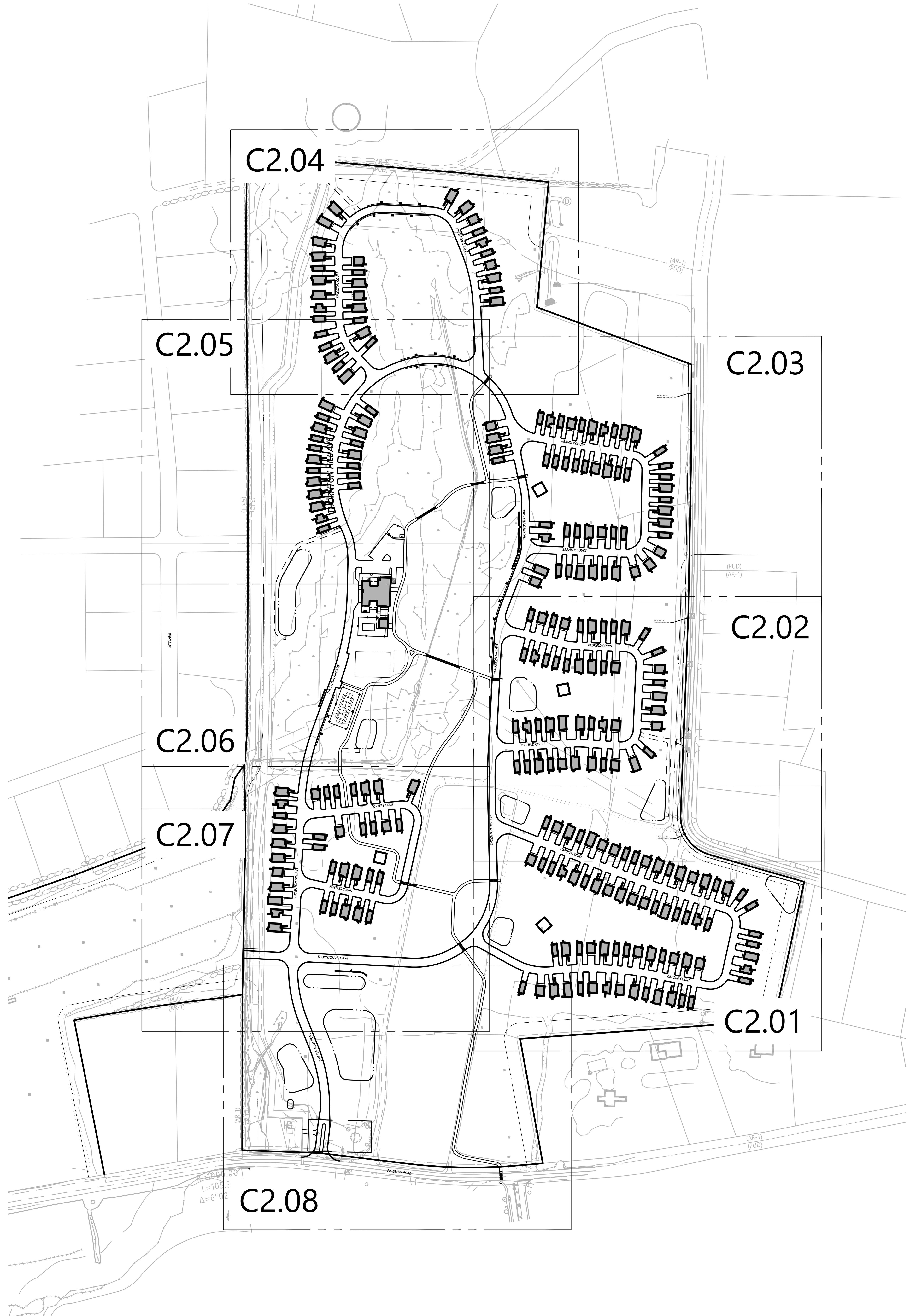
Impact Type	Area (SF)	
	Permanent Impacts	Temporary Impacts
STREAM CROSSINGS (3)	1286	294
WETLAND IMPACTS	14583	1865
TOTAL IMPACTS *	18028	

* TOTAL IMPACTS, AS DENOTED ABOVE, ARE THE SUMMATION OF BOTH THE TEMPORARY AND PERMANENT IMPACTS FROM STREAM CROSSINGS AND WETLAND IMPACTS SITE-WIDE.

NHB25-0249 New Hampshire Fish And Game Conservation Measures

1. NORTHERN BLACK RACER (STATE THREATENED) OCCURS WITHIN THE VICINITY OF THE PROJECT AREA. ALL OPERATORS AND PERSONNEL WORKING ON OR ENTERING THE SITE SHALL BE MADE AWARE OF THE POTENTIAL PRESENCE OF THESE SPECIES AND SHALL BE PROVIDED FLYERS THAT HELP TO IDENTIFY THESE SPECIES, ALONG WITH NHFG CONTACT INFORMATION. SEE COVER SHEET.
2. RARE SPECIES INFORMATION (E.G. IDENTIFICATION, OBSERVATION AND REPORTING OF OBSERVATIONS, WHEN TO CONTACT NHFG IMMEDIATELY AND NHFG CONTACT INFORMATION) SHALL BE COMMUNICATED DURING MORNING MEETINGS PRIOR TO WORK COMMENCEMENT DURING THE CONSTRUCTION PHASE OF THE PROJECT. SEE COVER SHEET.
3. OBSERVATIONS OF NORTHERN BLACK RACER IN THE MONTHS OF APRIL-MAY AND SEPTEMBER-OCTOBER MAY INDICATE THE POTENTIAL FOR A DEN SITE ON OR NEAR THE PROJECT SITE. ALL OBSERVATIONS OF THIS SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM. PLEASE CONTACT MELISSA WINTERS AND BRENDAN CLIFFORD - VIA GROUP TEXT PREFERRED. A PHOTOGRAPH WITH TEXT IS PREFERRED IF FEASIBLE. SEE SPECIES FLYERS, SEE COVER SHEET FOR NHFG CONTACT INFORMATION.
4. THE PROJECT SITE IN IT'S CURRENT CONDITION PROVIDES SUITABLE HABITAT FOR VARIOUS SNAKE SPECIES. NHFG ENCOURAGES REPORTS OF ALL OTHER SNAKE OBSERVATIONS FOUND ON THE PROJECT SITE TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM. PLEASE CONTACT MELISSA WINTERS AND BRENDAN CLIFFORD - VIA GROUP TEXT PREFERRED. A PHOTOGRAPH WITH TEXT IS PREFERRED IF FEASIBLE. SEE NORTHERN BLACK RACER SPECIES FLYERS, SEE COVER SHEET FOR NHFG CONTACT INFORMATION.
5. TURTLES AND SNAKES MAY BE ATTRACTED TO DISTURBED GROUND DURING THE NESTING SEASON (MAY 15TH - JULY 15TH). TURTLE AND SNAKE NESTS ARE PROTECTED BY NH LAWS. IF A NEST IS OBSERVED OR SUSPECTED, OPERATORS SHALL CONTACT MELISSA WINTERS AND BRENDAN CLIFFORD FOR SNAKES AND JOSH MEGYESY FOR TURTLES AT NHFG IMMEDIATELY FOR FURTHER CONSULTATION. SEE SPECIES FLYERS, SEE COVER SHEET FOR NHFG CONTACT INFORMATION.
   - 5.1. THE NEST OR SUSPECTED NEST SHALL BE MARKED (SURROUNDING ROPED OFF OR CONE BUFFER DEPLOYED) AND AVOIDED; THIS SHALL BE COMMUNICATED TO ALL PERSONNEL ONSITE.
   - 5.2. SITE ACTIVITIES SHALL NOT OCCUR IN THE AREA SURROUNDING THE NEST OR SUSPECTED NEST UNTIL FURTHER GUIDANCE IS PROVIDED BY NHFG.
6. NHFG WOULD PREFER THAT CATCH BASINS NOT CONTAIN SUMPS. CATCH BASINS AND OUTLET CONTROL STRUCTURES SHALL HAVE DOUBLE-TYPE 'A' GRATES WITH GRATE OPENINGS NO LARGER THAN 1-13/64" X 21".
7. OUTLET CONTROL STRUCTURES SHALL NOT CONTAIN SUMPS AND SHALL NOT BE PLACED ADJACENT TO THE SIDE SLOPES BUT RATHER AS FAR AWAY AS POSSIBLE TO DETER WILDLIFE FROM CRAWLING ONTO THEM AND FALLING THROUGH THE GRATE OPENINGS. THESE STRUCTURES SHALL BE A MINIMUM OF 12"-18" ABOVE GRADE.
8. RIP-RAP SHALL BE FILLED WITH FINER MATERIAL (I.E., NATIVE WETLAND MATERIAL, NATIVE WETLAND SEED MIX, 3/4" SMALLER SIZED STONE, OR CLEAN GRAVEL IN BETWEEN RIP-RAP) TO CREATE A RELATIVELY SMOOTH SURFACE FOR WILDLIFE TO TRAVERSE.
9. A NATIVE SEED MIXTURE SHALL BE APPLIED TO ALL AREAS AFFECTED BY CONSTRUCTION. THE SEED MIXTURE SHALL NOT CONTAIN INVASIVE SPECIES SUCH AS CROWN VETCH, BIRD'S-FOOT TREFOIL, ALSIKE CLOVER, OR FLAT PEA.
10. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, WITH THE EXCEPTION OF TURF REINFORCEMENT MATS, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN PLASTIC, OR MULTIFILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES.
11. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES ON THE PROJECT SITE SHALL BE REPORTED IMMEDIATELY TO THE NHFG NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV, WITH THE EMAIL SUBJECT LINE CONTAINING THE NHB DATACHECK TOOL RESULTS LETTER ASSIGNED NUMBER, THE PROJECT NAME, AND THE TERM WILDLIFE SPECIES OBSERVATION.
    - 11.1. PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHFG IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION, AS FEASIBLE.
12. 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 NHFG AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHFG.
    - 12.1. SITE OPERATORS SHALL BE ALLOWED TO RELOCATE WILDLIFE ENCOUNTERED IF DISCOVERED WITHIN THE ACTIVE WORK ZONE IF IN DIRECT HARM FROM PROJECT ACTIVITIES.
    - 12.2. WILDLIFE SHALL BE RELOCATED IN CLOSE PROXIMITY TO THE CAPTURE LOCATION BUT OUTSIDE OF THE WORK ZONE AND IN THE DIRECTION THE INDIVIDUAL WAS HEADING.
    - 12.3. NHFG SHALL BE CONTACTED IMMEDIATELY IF THIS ACTION OCCURS.
13. NHFG, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.
14. WOOD TURTLE (SPECIAL CONCERN, PROTECTED UNDER FIS 1400 RULES) OCCUR WITHIN THE VICINITY OF THE PROJECT AREA. ALL OPERATORS AND PERSONNEL WORKING ON OR ENTERING THE SITE SHOULD BE MADE AWARE OF THE POTENTIAL PRESENCE OF THIS SPECIES AND SHOULD BE PROVIDED NHFG CONTACT INFORMATION. SEE COVER SHEET.

Saved Friday, November 7, 2025 1:41:13 PM JHOWE Plotted Tuesday, November 11, 2025 3:24:34 PM Jason Howe



Zoning Summary Chart

Zoning District(S): (PUD-1)	Woodmont Commons PUD	
Overlay District(S):	Conservation Overlay (CO)	
Zoning Regulation Requirements	**Required***	**Provided**
MINIMUM LOT AREA	-	94.2 Acres **
FRONTAGE	150 Feet	2,160 Feet
FRONT YARD SETBACK	40 Feet	56.4 Feet
SIDE YARD SETBACK	30 Feet	57.6 Feet
REAR YARD SETBACK	35 Feet	55.9 Feet
MAXIMUM BUILDING HEIGHT	50 Feet	<50 Feet
PERCENT BUILDING COVERAGE	-	5.3 %
PERCENT GREEN AREA	-	82.1%

* Zoning regulation requirements as specified in the Town of Londonderry, NH Zoning Ordinance as Amended Through June 6, 2022.
** Project specific lot area, sub area to Woodmont Commons PUD

Parking Summary Chart

Description	Size		Spaces	
	Required	Provided	Required	Provided
RESIDENTIAL DWELLING SPACES	9 x 20	9 x 20	500	500
OUTDOOR RECREATION	9 x 20	9 x 20	3	4
AMENITY SPACES **	9 x 20	9 x 20	27	27
STANDARD ACCESSIBLE SPACES *	8 x 20	9 x 20	1	1
VAN ACCESSIBLE SPACES	8 x 20	9 x 20	1	2
TOTAL SPACES			530	534

* ADA/STATE/LOCAL REQUIREMENTS
** INCLUDES 1 VAN ACCESSIBLE AND 1 STANDARD ACCESSIBLE SPACE

Parking Requirements:

RESIDENTIAL DWELLING	250 UNITS	x	2 SPACES	/	1 UNIT	=	500 SPACES
OUTDOOR RECREATION FACILITIES - SPORTS COURT	1 COURT	x	3 SPACES	/	1 COURT	=	3 SPACES
COMMUNITY CENTER	6,710 SF	x	4 SPACES	/	1,000 SF	=	27 SPACES
			TOTAL PARKING REQUIRED			=	530 SPACES

Notes

1. THE SITE PLAN IS GOVERNED BY THE 2013 WOODMONT COMMONS MASTER PLAN AND THE TOWN OF LONDONDERRY'S LAND USE REGULATIONS IN EFFECT AT THAT TIME. ON DECEMBER 11TH, 2024, THE LONDONDERRY PLANNING BOARD APPROVED A COMPLIANCE ALTERNATIVE REQUEST ALLOWING FOR A VARIATION TO THE LOT TYPE, EXISTING DIMENSIONAL SETBACK AND FRONTAGE REQUIREMENTS.
2. THE PURPOSE OF THIS PLAN IS TO DEPICT THE OVERALL PROPOSED SITE DEVELOPMENT, INCLUDING THE FULL SUBJECT PARCEL AND ABUTTING PARCEL INFORMATION. FOR GREATER DESIGN DETAIL RELATIVE TO THE PROPOSED DEVELOPMENT, REFER TO THE OTHER SHEETS PROVIDED HEREIN.
3. MAP 10, LOT 42 LIES ENTIRELY WITHIN ZONE X (UNSHADED) (AREAS TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR ROCKINGHAM COUNTRY, NEW HAMPSHIRE, MAP NUMBER 33015C0338E, EFFECTIVE DATE MAY 17, 2005.
4. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT DEFICIENCIES EXIST IN THE APPROVED DESIGN DRAWINGS, THE OWNER SHALL BE REQUIRED TO CORRECT THE DEFICIENCIES TO MEET THE REQUIREMENTS OF THE REGULATIONS AT NO EXPENSE TO THE TOWN.
5. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE TOWN.
6. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO TOWN OF LONDONDERRY SITE PLAN REGULATIONS AND THE LATEST EDITION OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
7. IN ACCORDANCE WITH SECTION 6.01 OF THE LONDONDERRY SITE PLAN REGULATIONS AND RSA § 676:13, ALL IMPROVEMENTS SPECIFIED ON THESE SITE PLANS SHALL BE CONSTRUCTED, COMPLETED, AND INSPECTED AND APPROVED BY THE TOWN OF LONDONDERRY PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
8. IN ACCORDANCE WITH SECTION 6.01 OF THE LONDONDERRY SITE PLAN REGULATIONS AND RSA § 676:12, ALL OFF-SITE IMPROVEMENTS SPECIFIED ON THESE PLANS SHALL BE CONSTRUCTED, COMPLETED, AND INSPECTED AND APPROVED BY THE TOWN OF LONDONDERRY (AND/OR NHDOT, IF APPLICABLE) PRIOR TO THE ISSUANCE OF OCCUPANCY.
9. PARCEL USES: USES SHOWN BELOW ARE BASED ON AVAILABLE PROPERTY CARD INFORMATION.
   EXISTING USE: VACANT LAND
   PROPOSED USE: RESIDENTIAL DEVELOPMENT
10. CONTRACTOR TO COORDINATE WITH THE TOWN OF LONDONDERRY FIRE DEPARTMENT FOR THEIR REQUIREMENTS FOR FIRE ACCESS AND MAINTENANCE THROUGHOUT THE CONSTRUCTION PHASE. FIRE DEPARTMENT ACCESS ROADS SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS AND BE PROVIDED WITH AN ALL WEATHER DRIVING SURFACE.

OWNER'S SIGNATURE
Signed by: Kevin Smith
E746E121820...
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: ____________________

Certified By: ____________________

____

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Sign Summary

M.U.T.C.D. Number	Specification Width	Specification Height	Desc.
D3-1	VAIRES	8"	STREET NAME
R1-1	30"	30"	STOP
R2-1-15	24"	30"	SPEED LIMIT 15
R2-1-25	24"	30"	SPEED LIMIT 25
R7-8	12"	18"	RESERVED PARKING
R7-8aP	12"	6"	VAN ACCESSIBLE
R8-31	12"	18"	NO PARKING FIRE LANE
W11-2	30"	30"	
W16-7P	24"	12"	

0 100 200 400Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ — Checked by DHF

Issued for: **Permitting** — Date: **February 20, 2025**

Not Approved for Construction

Drawing Title: **Overall Site Plan**

Drawing Number: **C2.00**

STATE OF NEW HAMPSHIRE - DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 2 of 111

Project Number 53140.00

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-LM.dwg

Match Line
See Sheet C2.06

THORNTON HILL AVE

36'R

STOP

R1-1
D3-1

EOP

R2-1-15

R8-31
SPACING 100'
(TYP)

OXFORD COURT

A75 -2A/B
A73-3B
A71-3A
A69 -2A/B
A67-2C
A65-3B
A63-3B
A61 -2A/B
A59 -2A/B
A57-3B
A55-3A
A53 -2A/B
A51-3A
A49-3B
A47-3A
A45 -2A/B
A43-3A
A41 -2A/B
A39-2A/B
A37-2A/B
A35-2A/B
A33-2C
A31-1
A29-2A/B
A60-3B
A58 -2A/B
A56 -2A/B
A54-1
A52-3A
A50 -2A/B
A48-3A
A46-3B
A44-3A
A42-3B
A40-3B
A38 -2A/B
A36-2C
A34 2A/B
A32 -2A/B
A30-1
A28 -2A/B

12' ACCESS PATH
(SEE DETAIL)(TYP)

PROPOSED 10'
DRAINAGE EASEMENT

10'

S 71°46'20" W
312.18'

N/F
EDWARD J.
TROMBLEY
24 HOVEY ROAD
LONDONDERRY,
NH 03053
MAP 10, LOT 39
BK. 4774, PG. 1178
ZONE: AR-1
USE: RESIDENTIAL

N/F
CHRISTEN ANN GOODWIN
20 HOVEY ROAD
LONDONDERRY, NH 03053
MAP 10, LOT 39-1
BK. 6513, PG. 140
ZONE: AR-1
USE: RESIDENTIAL

Match Line
See Sheet C2.02

24' PRIVATE ROAD
TO BE MAINTAINED
BY OWNER (TYP)

STONE DUST
PATH (TYP)

W11-2
W16-7P

8' X 8' STONE
DUST PAD

CROSSWALK (TYP)

R2-1-25

23.6'R

24'

CLUSTER A
68 Dwelling Units

AMENITY PERGOLA
(DESIGN BY OTHERS)

STORMWATER DETENTION
BASIN RIM, SEE GRADING AND
DRAINAGE PLANS (TYP)

CCB

A2 -2A/B
A4-3A
A6 -2A/B
A8-3B
A10-3A
A12 -2A/B
A14 -2A/B
A16-3B
A18-3A
A20 2A/B
A22-3B
A24-3A
A26-3B

REFER TO DETAILS FOR UNIT
DRIVEWAY DIMENSIONS

A1 -2A/B
A3-3B
A5-3A
A7-2C
A9 -2A/B
A11-3B
A13-1
A15-3B
A17-3A
A19 -2A/B
A21-2C
A23-3A
A25 -2A/B
A27 -2A/B

50' PERIMETER BUFFER

805.73'
S 51°54'05" W

56.41'

N/F
RICHARD J. & LORI E.
HILLARD
9 HOVEY ROAD
LONDONDERRY, NH 03053
MAP 10, LOT 42-5
BK. 6386, PG. 2149
ZONE: AR-1
USE: RESIDENTIAL

N/F
MARC CHARTIER
11 HOVEY ROAD
LONDONDERRY, NH 03053
MAP 10, LOT 42-6
BK. 5511, PG. 908
ZONE: AR-1
USE: RESIDENTIAL

N/F
DANIEL R. PACHECO JR. &
KATHERINE M. PACHECO
22 PILLSBURY ROAD
LONDONDERRY, NH 03053
MAP 10, LOT 40
BK. 6059, PG. 338
ZONE: AR-1
USE: RESIDENTIAL

N/F
MEGHAN MASURY
18 PILLSBURY ROAD
LONDONDERRY, NH 03053
MAP 10, LOT 40-1
BK. 6282, PG. 340
ZONE: AR-1

Match Line
See Sheet C2.07

Match Line
See Sheet C2.08

OWNER'S SIGNATURE

Signed by: Kevin Smith
E746E1218206...
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

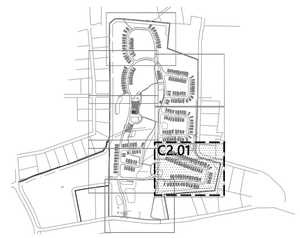
Certified By: _____

_____

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: **Permitting**
Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Layout and Materials Plan

Drawing Number
C2.01

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Sheet 3 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 2:47:46 PM JHOWE Plotted Tuesday, November 11, 2025 3:26:22 PM Jason Howe

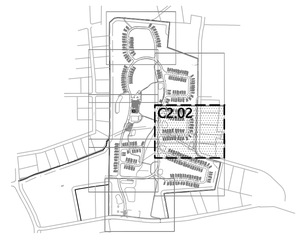
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-LM.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title
Layout and Materials Plan

OWNER'S SIGNATURE
Signed by:
Kevin Smith
E746E121820E0
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board
on Date:
Certified By:

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Drawing Number
C2.02

Sheet 4 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 2:47:46 PM JHOWE Plotted Tuesday, November 11, 2025 3:26:39 PM Jason Howe

Match Line
See Sheet C2.04

Match Line
See Sheet C2.05

Match Line
See Sheet C2.06

Match Line
See Sheet C2.02

8' X 8' STONE DUST PAD

W11-2
W16-7P

CROSSWALK (TYP)

CCB

24'

T8-3B
T6-3A
T4-3A
T2-2A/B

EOP

R1-1
D3-1

100'R

50'R

R2-1-15

R2-1-25

BRAMLEY COURT

C53 -2A/B
C51-1
C49 -2A/B
C47-3B
C45 -2A/B
C43-3A
C41-1
C39 -2A/B
C37-2C
C35-3A
C33 -2A/B
C31-2A/B
C29-2A/B
C27-3A
C25-2A/B
C23-3A
C21-3A
C19-2A/B
C17-3B
C15-3B
C13-3B
C11-3A
C9 -2A/B
C7-3A
C5-2C
C3 -2A/B
C1 -2A/B
C30 -2A/B
C28 -2A/B
C26 -2A/B
C24 -2A/B
C22 -2A/B
C20-3B
C18-3A
C16 -2A/B
C14 -2A/B
C12 -2A/B
C10 -2A/B
C8-3B
C6-3A
C4 -2A/B
C2 -2A/B

T7-2A/B
T5-1
T3-2C
T1-3B

W11-2
W16-7P

STONE DUST PATH (TYP)

50' WETLAND BUFFER

CROSSWALK (TYP)
8' X 8' STONE DUST PAD

AMENITY PERGOLA
(DESIGN BY OTHERS)

24' PRIVATE ROAD
TO BE MAINTAINED
BY OWNER (TYP)

STORMWATER
DETENTION BASIN
RIM, SEE GRADING
AND DRAINAGE
PLANS (TYP)

R8-31
SPACING 100' (TYP)

CLUSTER C
50 Dwelling Units

THORNTON HILL AVE

GUARDRAIL
(TYP)

FIELD STONE
RETAINING WALL

186'R

40'S

35'R

REFER TO DETAILS FOR UNIT
DRIVEWAY DIMENSIONS

PROPOSED 10'
DRAINAGE EASEMENT

10'

28.7'

35.5'

57.6'

340.82'

200.68'

S 33°47'32" E

499.66'

S 32°58'14" E

N/F
PILLSBURY REALTY
DEVELOPMENT, LLC
100 FERRY STREET
HUDSON, NH 03051
MAP 10, LOT 23
BK. 5140, PG. 2432
ZONE: AR-1
USE: RESIDENTIAL

N/F
GAIL M. ROY
REVOCABLE TRUST
32 HOVEY ROAD
LONDONDERRY, NH
03053
MAP 10, LOT 38-5
BK. 3586, PG. 1446
ZONE: AR-1

(PUD)

(AR-1)

OWNER'S SIGNATURE

Signed by:
Kevin Smith
E746E121B2B2...

OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

Certified By: _____

_____

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title
Layout and Materials Plan

Drawing Number
C2.03

Sheet 5 of 111

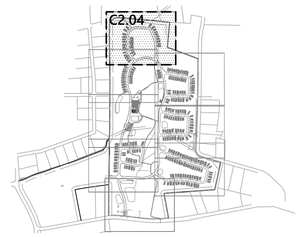
Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Saved Tuesday, November 11, 2025 2:47:46 PM JHOWE Plotted Tuesday, November 11, 2025 3:26:52 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-LM.dwg

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



N/F
PENNICHUCK
EAST UTILITY, INC.
25 WALNUT ST.
P.O. BOX 428
NASHUA, NH 03060
MAP 10, LOT 142
BK. 5214, PG. 246
ZONE: AR-1
USE: COMMERCIAL

N/F
IWG II, LLC.
1199 N. FAIRFAX ST. SUITE 700
ALEXANDRIA, VA 22314
MAP 10, LOT 18
BK. 5869, PG. 2469
ZONE: AR-1
USE: COMMERCIAL

N/F
TOWN OF
LONDONDERRY
268B MAMMOTH ROAD
LONDONDERRY, NH 0305
MAP 10, LOT 154
BK. 4294, PG. 2802
ZONE: AR-1 / PUD-1
USE: CEMETERY

N/F
VID COSCIA
4 KITT LANE
NDERRY, NH 03053
10, LOT 16-25
5160, PG. 1344
ZONE: AR-1
: RESIDENTIAL

N/F
A J. BALDWIN
ABLE TRUST
KITT LANE
ERRY, NH 03053
0, LOT 16-24
37, PG. 1734
NE: AR-1
RESIDENTIAL

N/F
R F. GALLO
KITT LANE
ERRY, NH 03053
0, LOT 16-23
369, PG. 181
NE: AR-1
RESIDENTIAL

N/F
E ANTHONY
PELLETIER
8 KITT LANE
NDERRY, NH 03053
P 10, LOT 16-22
6186, PG. 2584
ZONE: AR-1
E RESIDENTIAL

N 46°01'58" E 62.14'
N 46°00'28" E 91.17'
N 60°57'55" E 386.50'
(AR-1)
(PUD)
N 60°35'59" E 148.78'
N 61°53'45" E 288.53'
N 23°20'29" W 216.00'
N 34°43'28" W 257.72'
N 24°14'38" E 398.10'

TIE INTO EXISTING GRAVEL ACCESS

12' WIDE GRAVEL UTILITY ACCESS ROAD - FOR UTILITY SERVICE USE ONLY

20 FT. WIDE UTILITY EASEMENT BK. 6539, PG. 2559

50' PERIMETER BUFFER

WETLAND BUFFER

55.85'

D19-3A
D17-3A
D15-3B
D13-2A/B
D11-1
D9-2A/B
D7-3B
D5-3A
D3-2A/B
D1-3A
D21-3A
D23-2C
D25-3A
D27-3A
D29-2A/B
D31-3A
D33-3A
D35-1
D37-2A/B
D39-2A/B
D41-2A/B
D43-3A
D45-2A/B
D47-2C
D28-3B
D30-2A/B
D32-3A
D34-3B
D36-3A
D38-2A/B
D40-3A
D42-2A/B

R8-31
SPACING 100' (TYP)

GUARDRAIL (TYP)

726'R

26'R

KINGSTON COURT

REFER TO DETAILS FOR UNIT DRIVEWAY DIMENSIONS

488'R

CLUSTER D
32 Dwelling Units

Match Line
See Sheet C2.05

Match Line
See Sheet C2.03

EOP

160'R

24'

R2-1-15

36'R

CCB

238'R

R8-31
SPACING 100' (TYP)

R1-1
D3-1

24' PRIVATE ROAD
TO BE MAINTAINED
BY OWNER (TYP)

GUARDRAIL (TYP)

8' X 8'
STONE
DUST PAD

W11-2
W16-7P

CROSSWALK (TYP)

10' BUILDING SETBACK

EDGE OF BRUSH

EDGE OF WOODS

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title
Layout and Materials Plan

Drawing Number
C2.04

Sheet 6 of 111

Project Number
53140.00

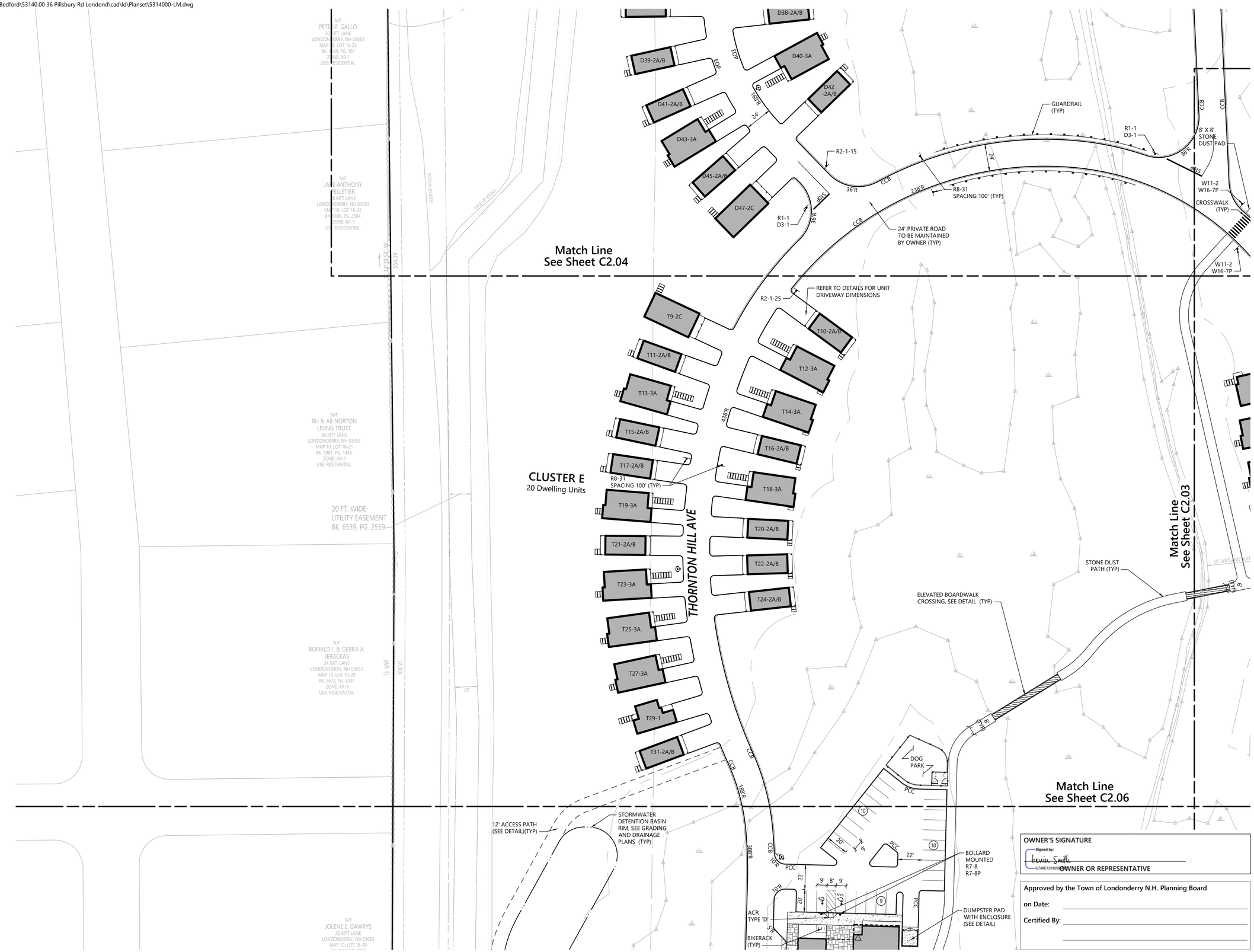
OWNER'S SIGNATURE
Signed by: Erwin Smith
E746E121820...
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board
on Date: _____
Certified By: _____

DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
11/13/2025

Saved Tuesday, November 11, 2025 2:47:46 PM JHOWE Plotted Tuesday, November 11, 2025 3:27:07 PM Jason Howe

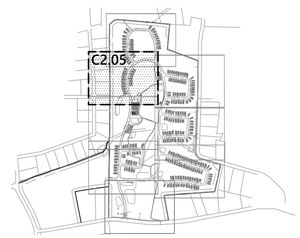
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-LM.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ
Checked by DHF

Issued for Permitting
Date February 20, 2025

Not Approved for Construction

Drawing Title
Layout and Materials Plan

OWNER'S SIGNATURE
Signed by:
Kevin Smith
E746E121820E
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board
on Date:
Certified By:

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Drawing Number
C2.05

Sheet 7 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 2:47:46 PM JHOWE Plotted Tuesday, November 11, 2025 3:27:23 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-LM.dwg



OWNER'S SIGNATURE

Signed by: Kevin Smith

E746E1218208 OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

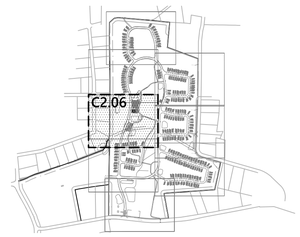
on Date:

Certified By:

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ
Checked by DHF

Issued for Permitting
Date February 20, 2025

Not Approved for Construction

Drawing Title
Layout and Materials Plan

Drawing Number
C2.06

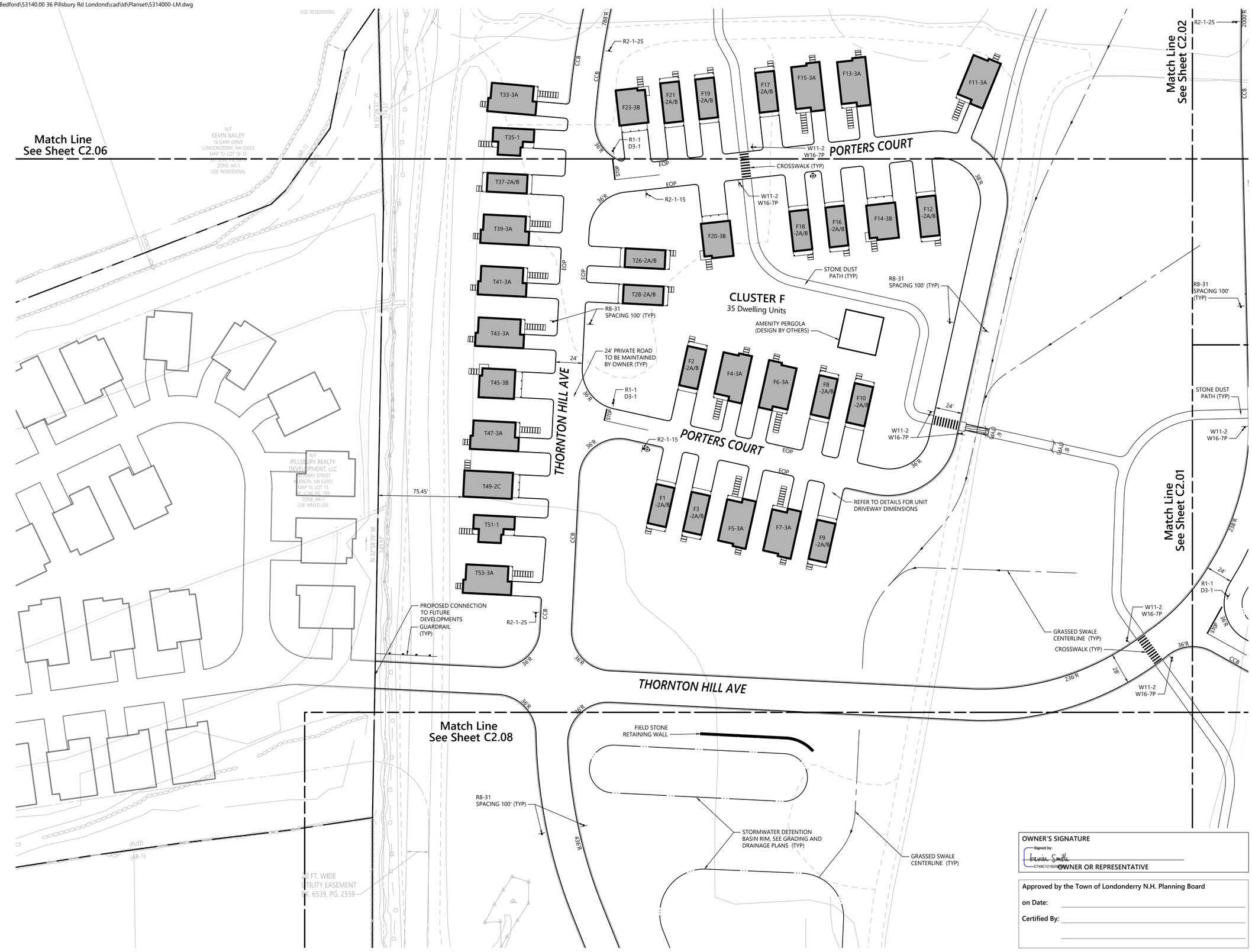
STATE OF NEW HAMPSHIRE DAVID H. FENSTERMACHER No. 13332 LICENSED PROFESSIONAL ENGINEER
11/13/2025

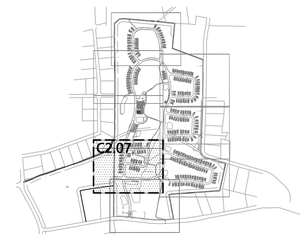
Sheet 8 of 111

Project Number 53140.00

Saved Tuesday, November 11, 2025 2:47:46 PM JHOWE Plotted Tuesday, November 11, 2025 3:27:37 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-LM.dwg





vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ
Checked by DHF

Issued for Permitting
Date February 20, 2025

Not Approved for Construction

Drawing Title
Layout and Materials Plan

OWNER'S SIGNATURE
Signed by:
Kevin Smith
E746E1218209
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

Certified By: _____

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

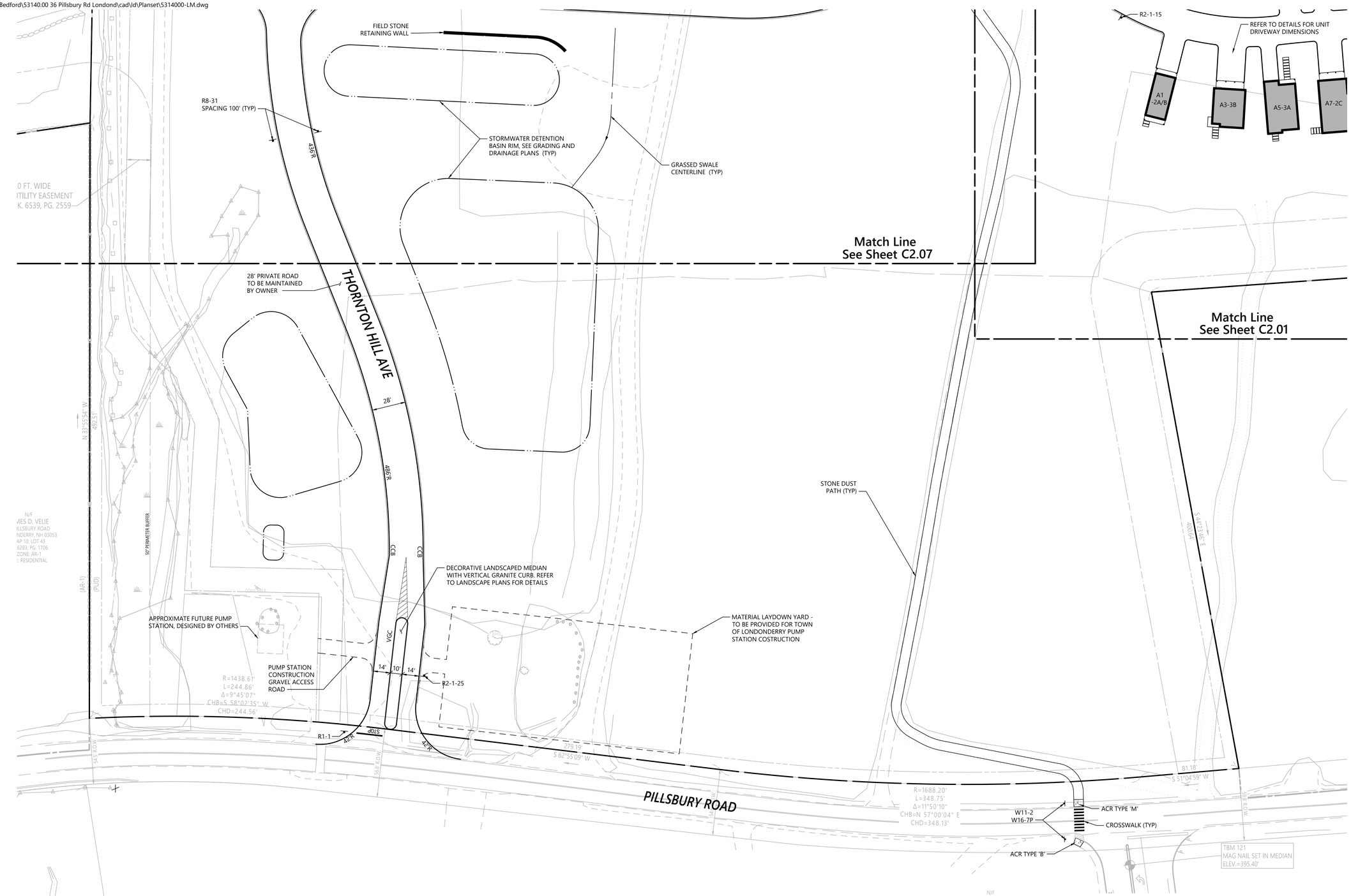
Drawing Number
C2.07

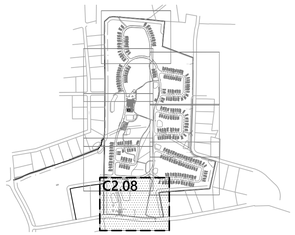
Sheet 9 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 2:47:46 PM JHOWE Plotted Tuesday, November 11, 2025 3:27:54 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-LM.dwg





0 20 40 80 Feet

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF
Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title
Layout and Materials Plan

OWNER'S SIGNATURE
Signed by:
Kevin Smith
E746E121820E
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board
on Date:
Certified By:

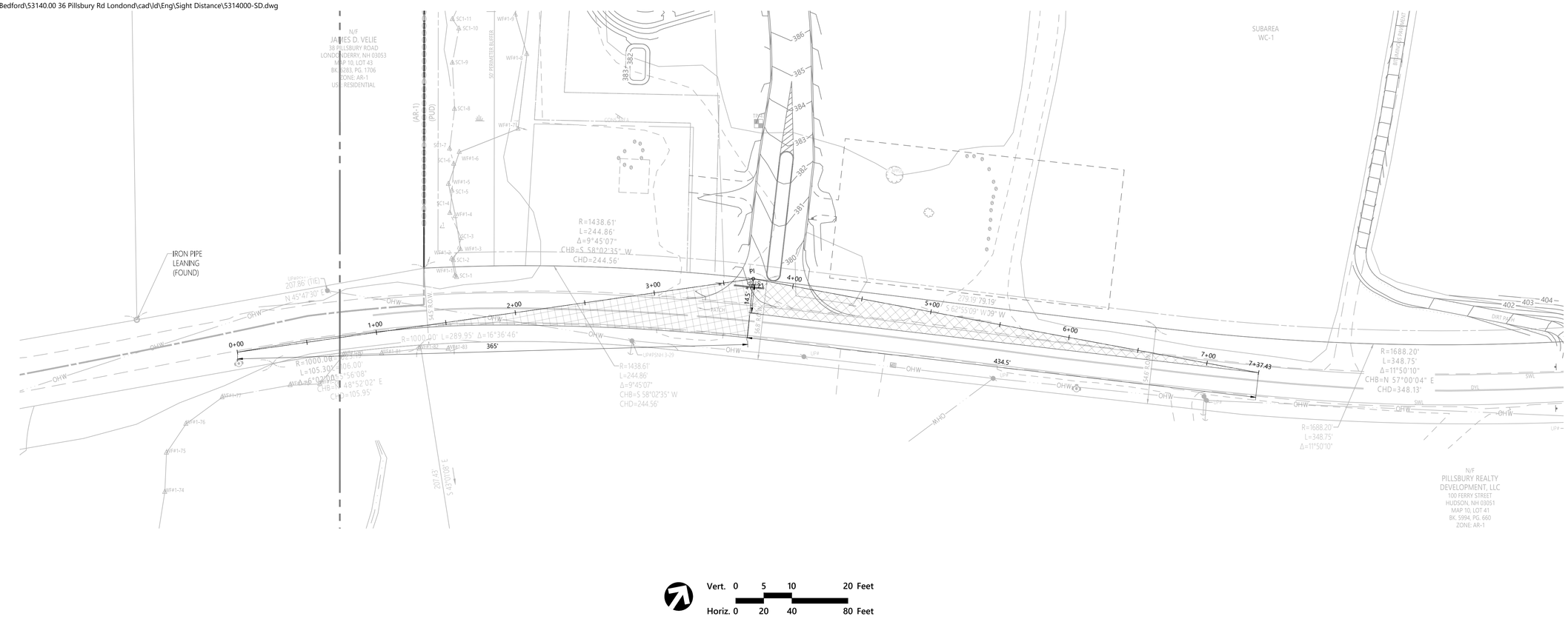
STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13332
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

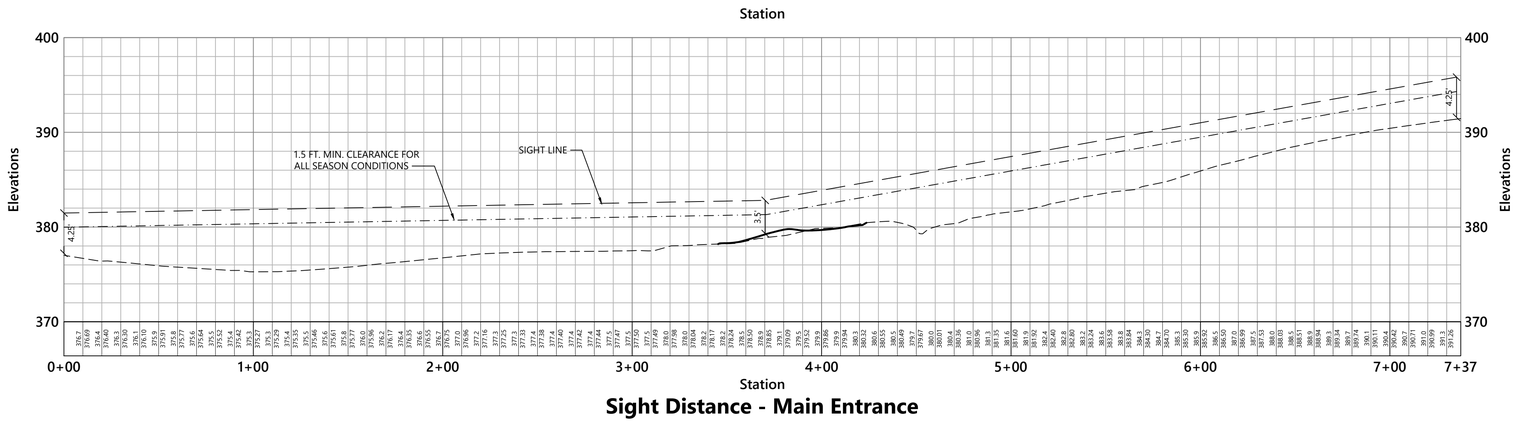
Drawing Number
C2.08

Sheet 10 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 2:47:46 PM JHOWE Plotted Tuesday, November 11, 2025 3:28:07 PM Jason Howe





Sight Distance - Main Entrance

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Sight Distance Plan
Pillsbury Road

Drawing Number
C2.09

Sheet 11 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13935
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Eng\Sight Distance\5314000-SD.dwg

Saved Tuesday, November 11, 2025 10:13:30 AM JHOWE Plotted Tuesday, November 11, 2025 3:30:41 PM Jason Howe



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: **Permitting**
Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Sight Distance Plan
Oxford Court

Drawing Number
C2.10

Sheet 12 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Eng\Sight Distance\5314000-SD.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: **Permitting**
Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Sight Distance Plan
Redfield Court

Drawing Number
C2.11

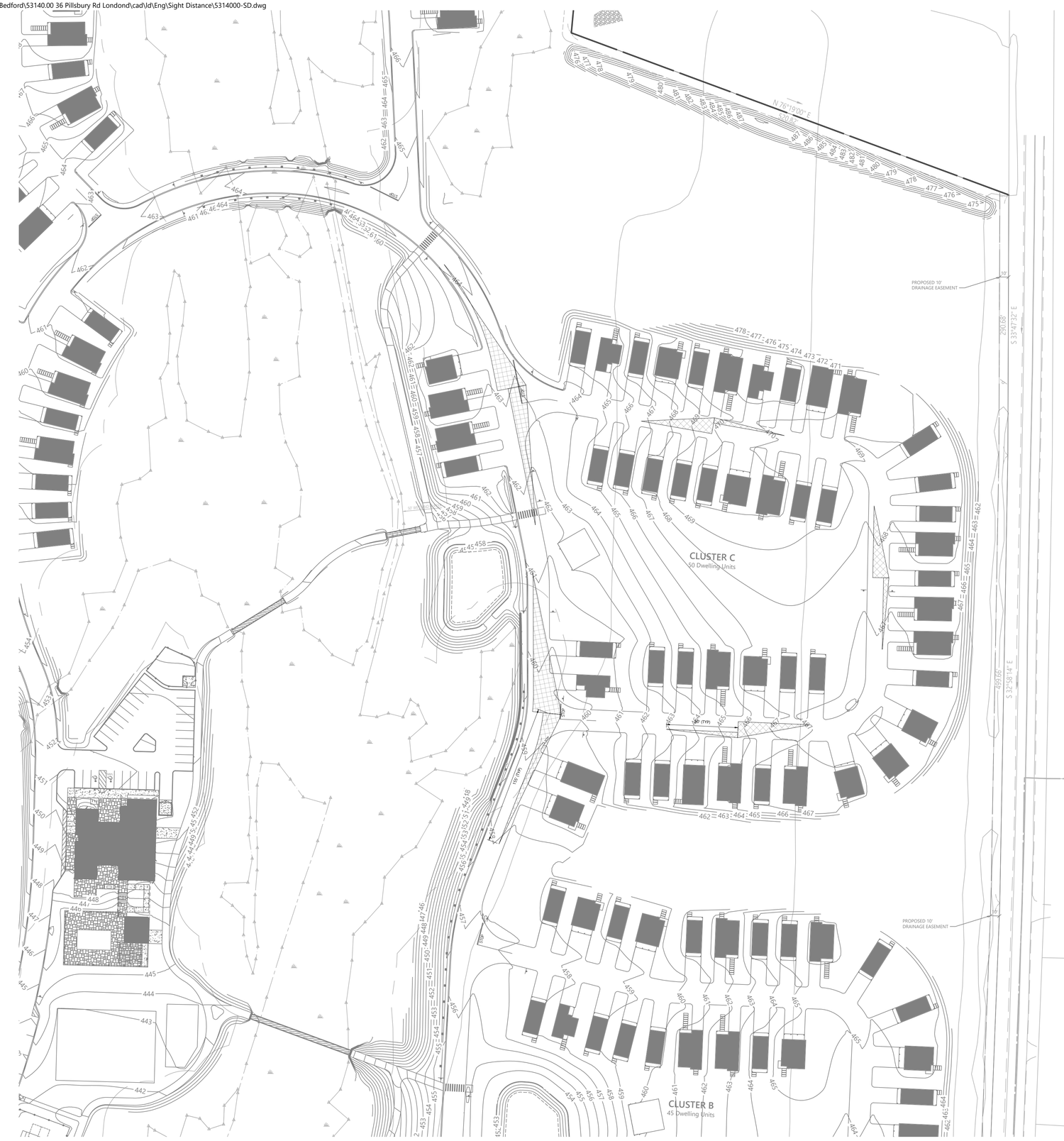
Sheet 13 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Tuesday, November 11, 2025 10:13:30 AM JHOWE Plotted Tuesday, November 11, 2025 3:30:58 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\d\Eng\Sight Distance\5314000-SD.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title

Sight Distance Plan
Bramley Court

Drawing Number

C2.12

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 14 of 111

Project Number 53140.00

Saved Tuesday, November 11, 2025 10:13:30 AM JHOWE Plotted Tuesday, November 11, 2025 3:31:11 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\d\Eng\Sight Distance\5314000-SD.dwg

Saved Tuesday, November 11, 2025 10:13:30 AM JHOWE Plotted Tuesday, November 11, 2025 3:31:27 PM Jason Howe



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: **Permitting**
Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Sight Distance Plan
Kingston Court

Drawing Number
C2.13

Sheet 15 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: **Permitting**
Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Sight Distance Plan
Thornton Hill Avenue

Drawing Number
C2.14

Sheet 16 of 111

STATE OF NEW HAMPSHIRE – DAVID H. FENSTERMACHER No. 13302 – LICENSED PROFESSIONAL ENGINEER
11/13/2025

Project Number
53140.00

Saved Tuesday, November 11, 2025 10:13:30 AM JHOWE Plotted Tuesday, November 11, 2025 3:31:41 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Eng\Sight Distance\5314000-SD.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title
Sight Distance Plan
Porters Court

Drawing Number
C2.15

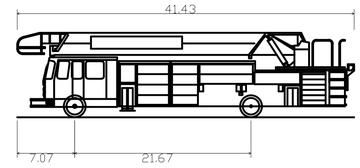
STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 17 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 10:13:30 AM JHOWE Plotted Tuesday, November 11, 2025 3:31:56 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Eng\Vehicle Tracking\5314000-VTM.dwg



Londonderry Fire Truck V1	
Overall Length	41.430ft
Overall Width	7.702ft
Overall Body Height	10.380ft
Min Body Ground Clearance	0.810ft
Track Width	7.702ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	45.00°

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 100 200 400 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, Inc.
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Overall Vehicle Access Plan

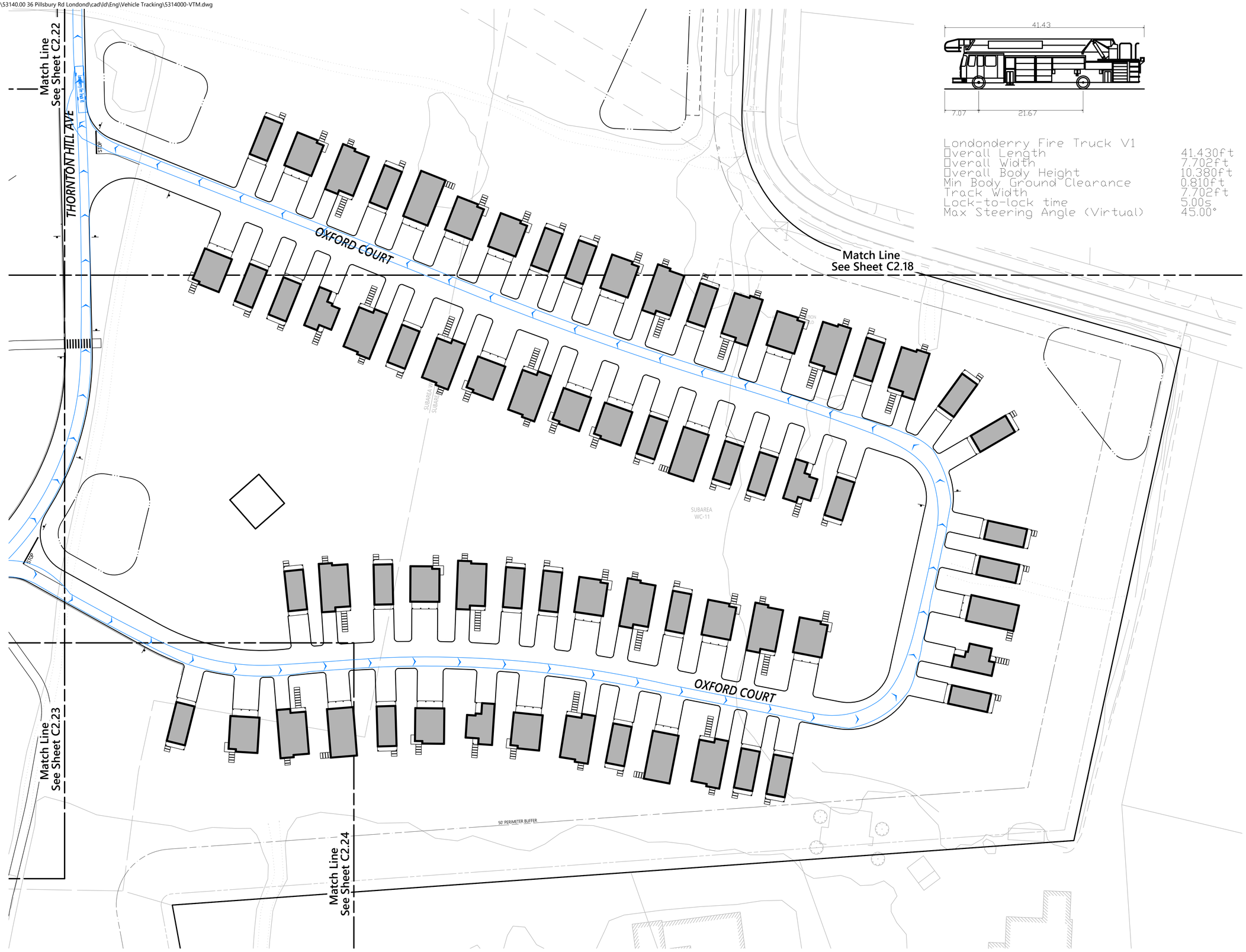
Drawing Number
C2.16

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 18 of 111

Project Number 53140.00

Saved Wednesday, November 12, 2025 1:47:00 AM BZOLLER Plotted Wednesday, November 12, 2025 8:04:00 AM Jason Howe



Londonderry Fire Truck V1	
Overall Length	41.430ft
Overall Width	7.702ft
Overall Body Height	10.380ft
Min Body Ground Clearance	0.810ft
Track Width	7.702ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	45.00°

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, Inc.
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Vehicle Access Plan

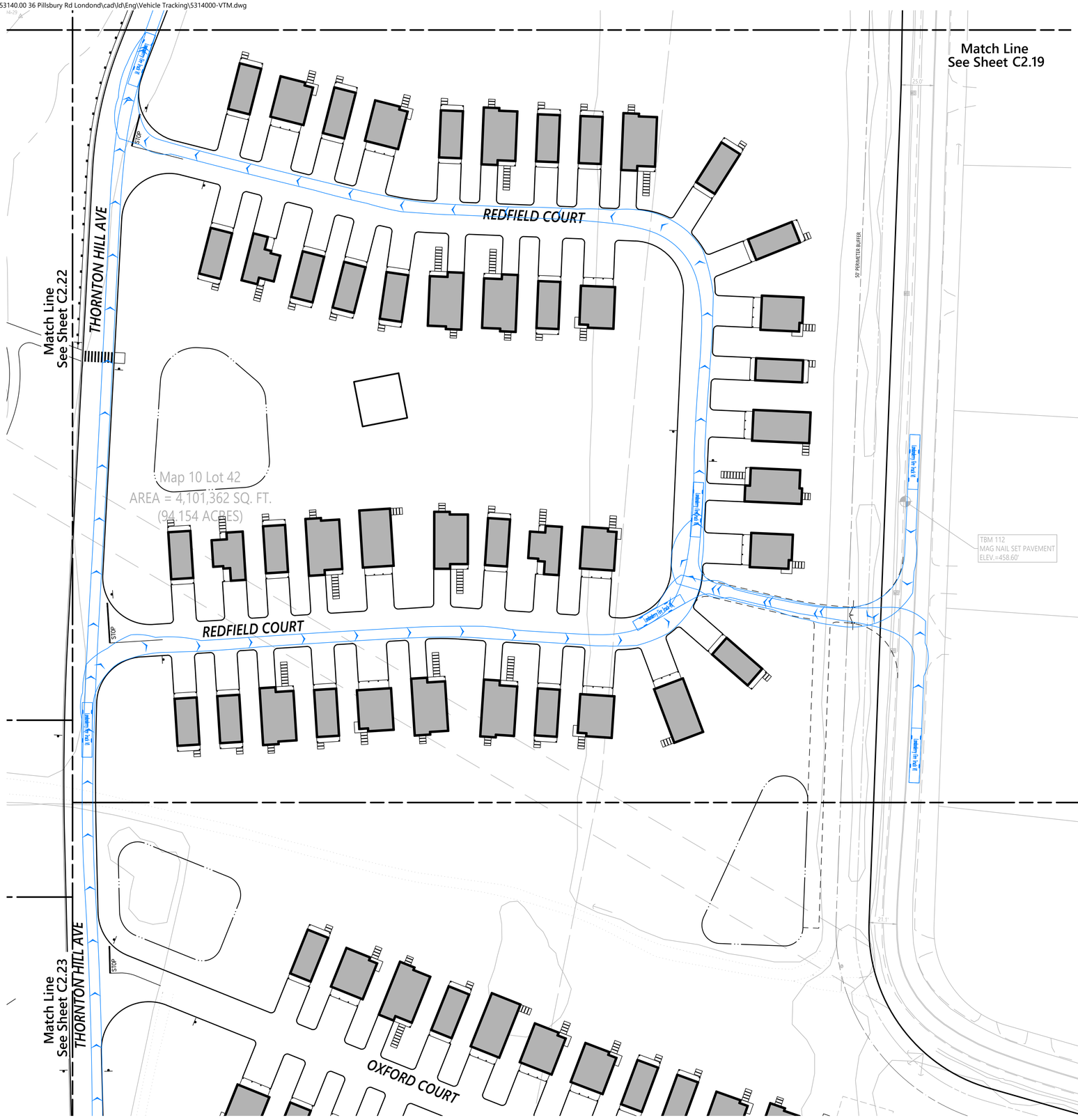
Drawing Number
C2.17

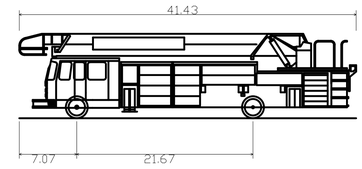
Sheet 19 of 111

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Project Number
53140.00

Saved Tuesday, November 11, 2025 7:15:29 PM JHOWE Plotted Wednesday, November 12, 2025 1:18:45 AM Ben Zoller





Londonderry Fire Truck V1	
Overall Length	41.430ft
Overall Width	7.702ft
Overall Body Height	10.380ft
Min Body Ground Clearance	0.810ft
Track Width	7.702ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	45.00°

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Vehicle Access Plan

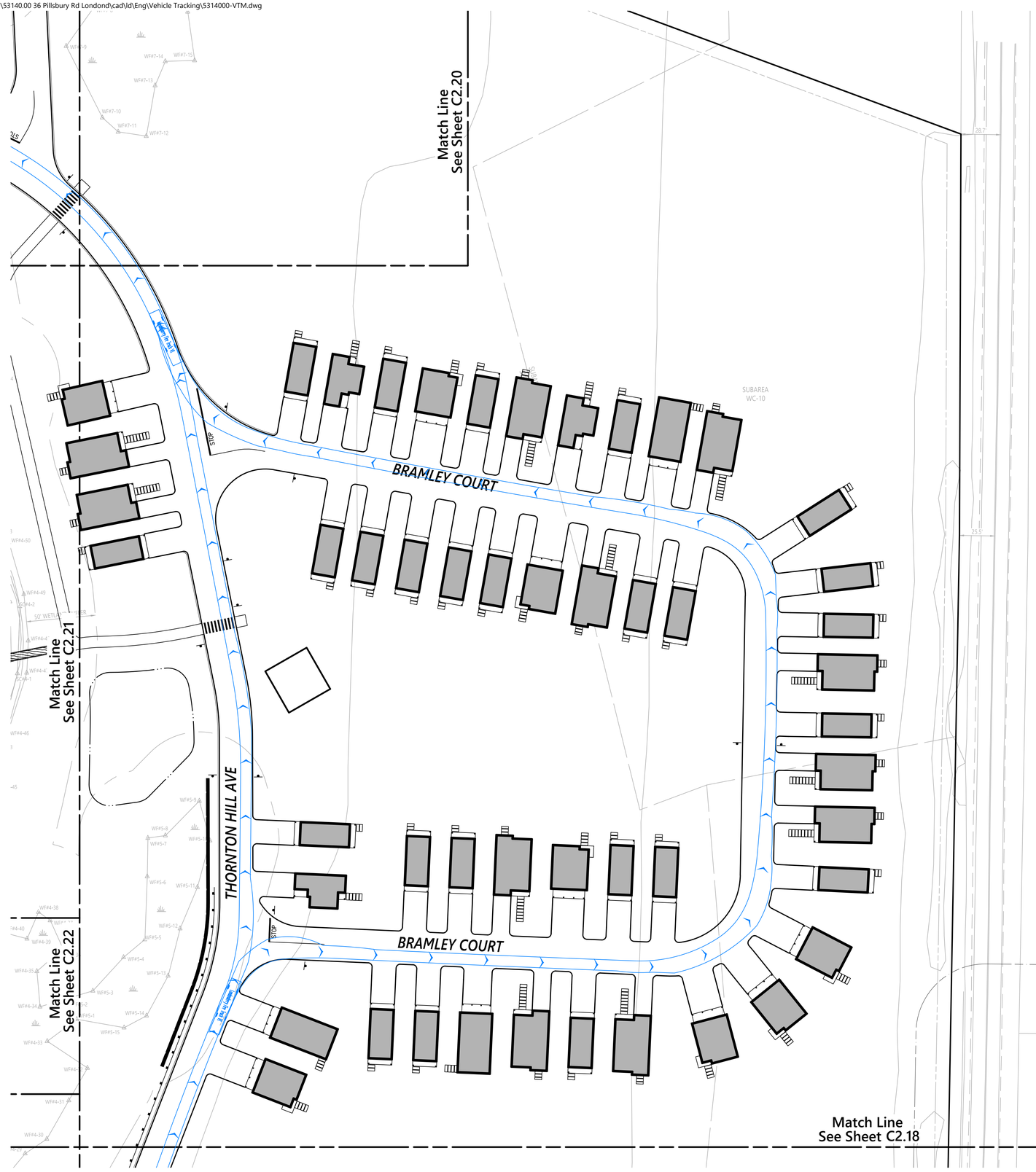
Drawing Number
C2.18

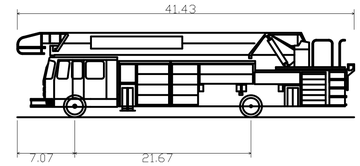
Sheet 20 of 111

Project Number 53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Friday, November 7, 2025 1:39:47 PM JHOWE Plotted Tuesday, November 11, 2025 3:34:01 PM Jason Howe





Londonderry Fire Truck V1	
Overall Length	41.430ft
Overall Width	7.702ft
Overall Body Height	10.380ft
Min Body Ground Clearance	0.810ft
Track Width	7.702ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	45.00°

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title
Vehicle Access Plan

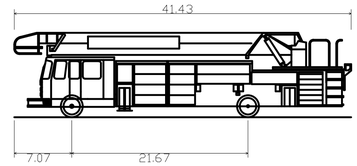
Drawing Number
C2.19

Sheet 21 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Friday, November 7, 2025 1:39:47 PM JHOWE Plotted Tuesday, November 11, 2025 3:34:13 PM Jason Howe



Londonderry Fire Truck V1	
Overall Length	41.430ft
Overall Width	7.702ft
Overall Body Height	10.380ft
Min Body Ground Clearance	0.810ft
Track Width	7.702ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	45.00°

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

50' PERIMETER BUFFER

WETLAND BUFFER

KINGSTON COURT

KINGSTON COURT

AREA WC-7

AREA WC-8

EDGE OF WOODS

EDGE OF BRUSH

Match Line
See Sheet C2.21

Match Line
See Sheet C2.18

10' BUILDING SETBACK

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title:
Vehicle Access Plan

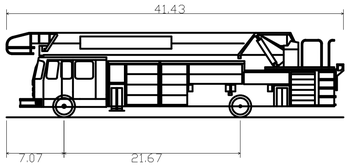
Drawing Number:
C2.20

Sheet 22 of 111

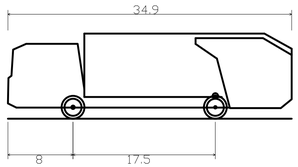
STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Project Number: 53140.00

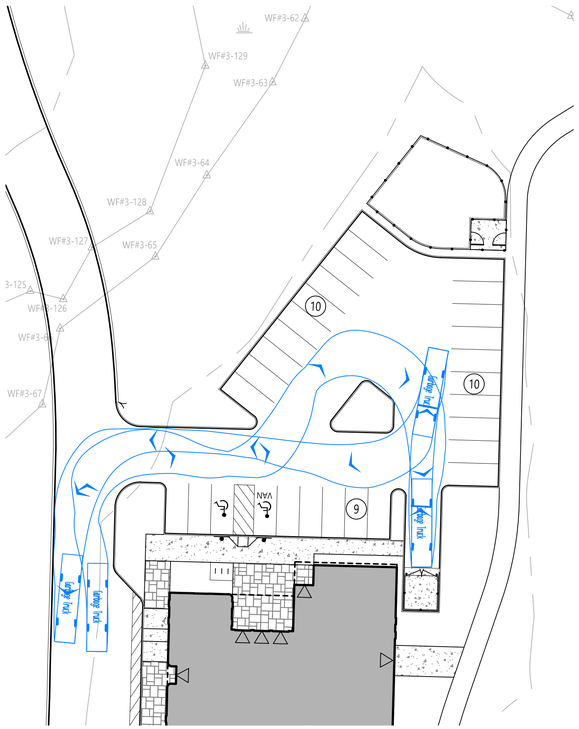
Saved Friday, November 7, 2025 1:39:47 PM JHOWE Plotted Tuesday, November 11, 2025 3:34:28 PM Jason Howe



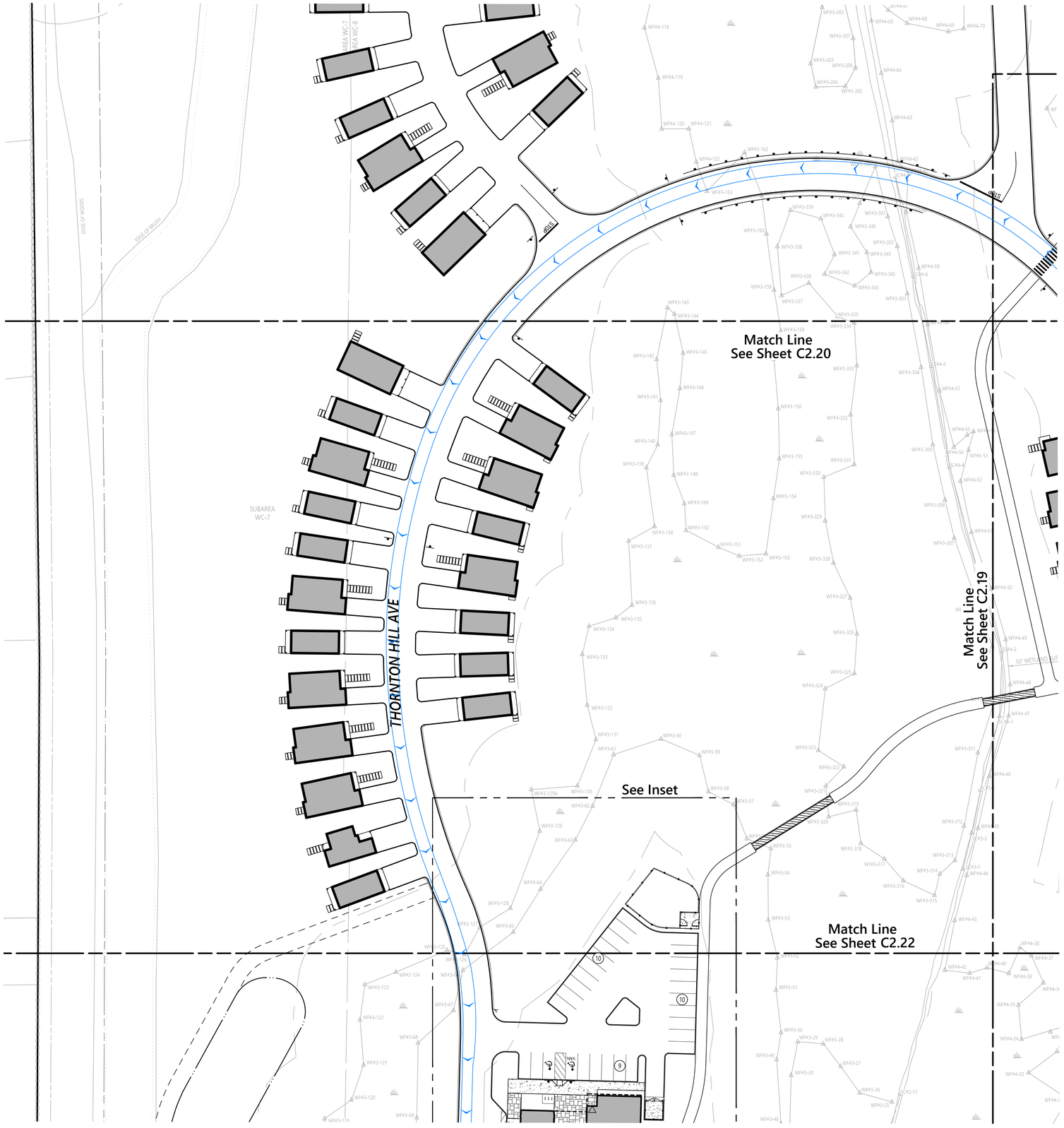
Londonderry Fire Truck V1	
Overall Length	41.430ft
Overall Width	7.702ft
Overall Body Height	10.380ft
Min Body Ground Clearance	0.810ft
Track Width	7.702ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	45.00°



Garbage Truck	
Overall Length	34.900ft
Overall Width	8.000ft
Overall Body Height	10.481ft
Min Body Ground Clearance	1.311ft
Track Width	8.000ft
Lock-to-lock time	4.00s
Max Steering Angle (Virtual)	37.00°



Inset
1" = 30'



0 20 40 80 Feet

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, Inc.
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Vehicle Access Plan

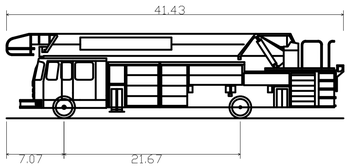
Drawing Number
C2.21

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

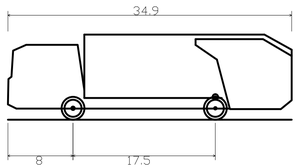
Sheet 23 of 111

Project Number 53140.00

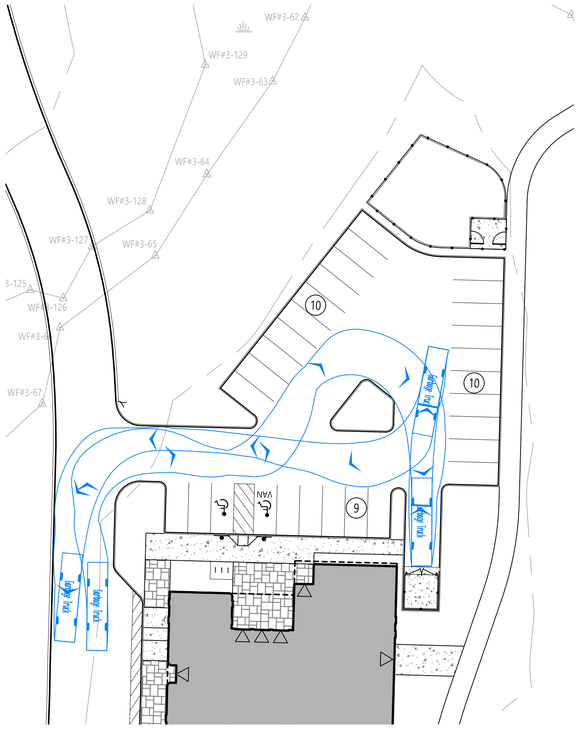
Saved Tuesday, November 11, 2025 7:15:29 PM JHOWE Plotted Wednesday, November 12, 2025 1:19:01 AM Ben Zoller



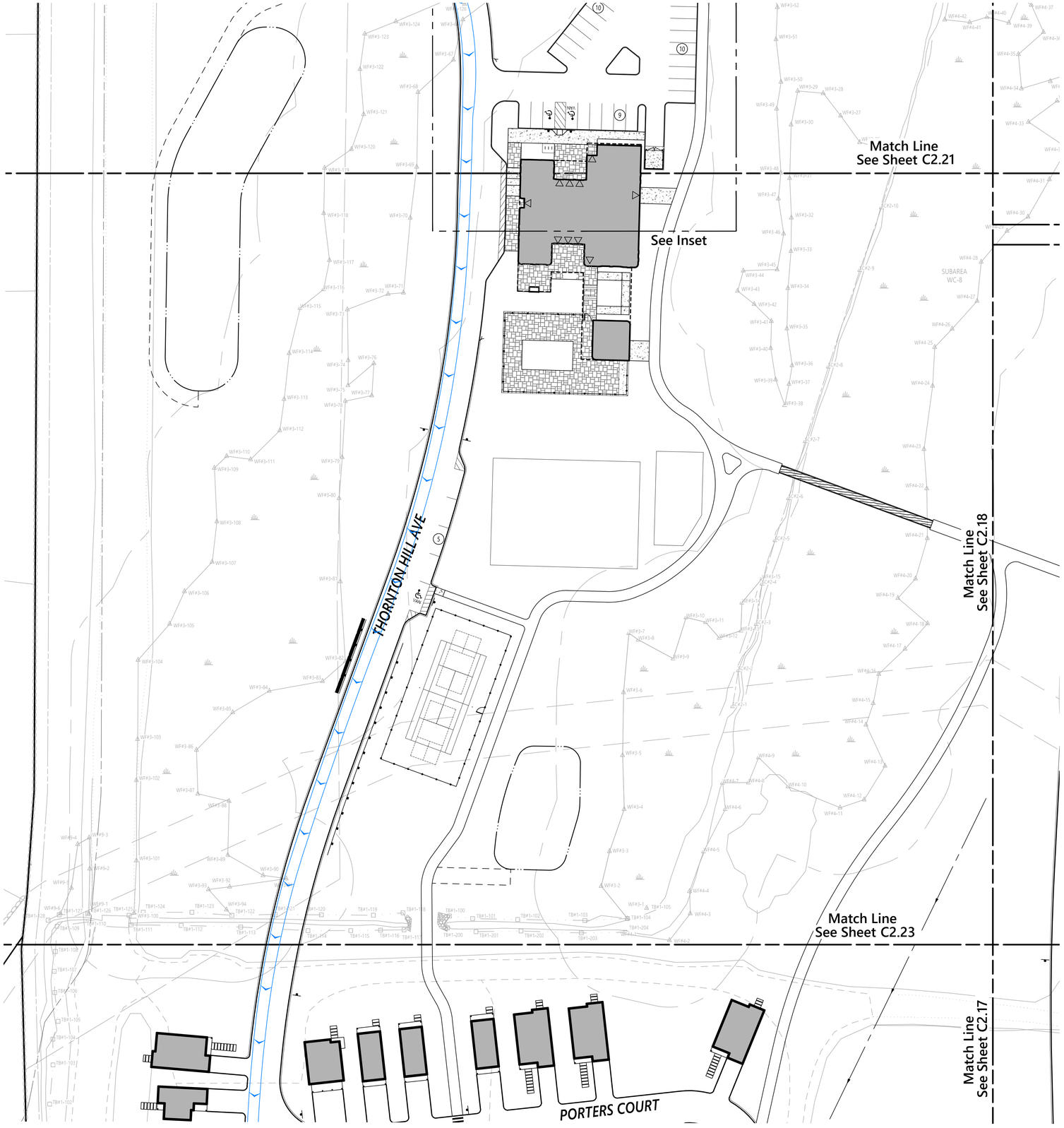
Londonderry Fire Truck V1	
Overall Length	41.430ft
Overall Width	7.702ft
Overall Body Height	10.380ft
Min Body Ground Clearance	0.810ft
Track Width	7.702ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	45.00°



Garbage Truck	
Overall Length	34.900ft
Overall Width	8.000ft
Overall Body Height	10.481ft
Min Body Ground Clearance	1.311ft
Track Width	8.000ft
Lock-to-lock time	4.00s
Max Steering Angle (Virtual)	37.00°



Inset
1" = 30'



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, Inc.
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title: Vehicle Access Plan

Drawing Number: C2.22

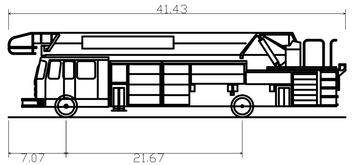
Sheet 24 of 111

Project Number: 53140.00

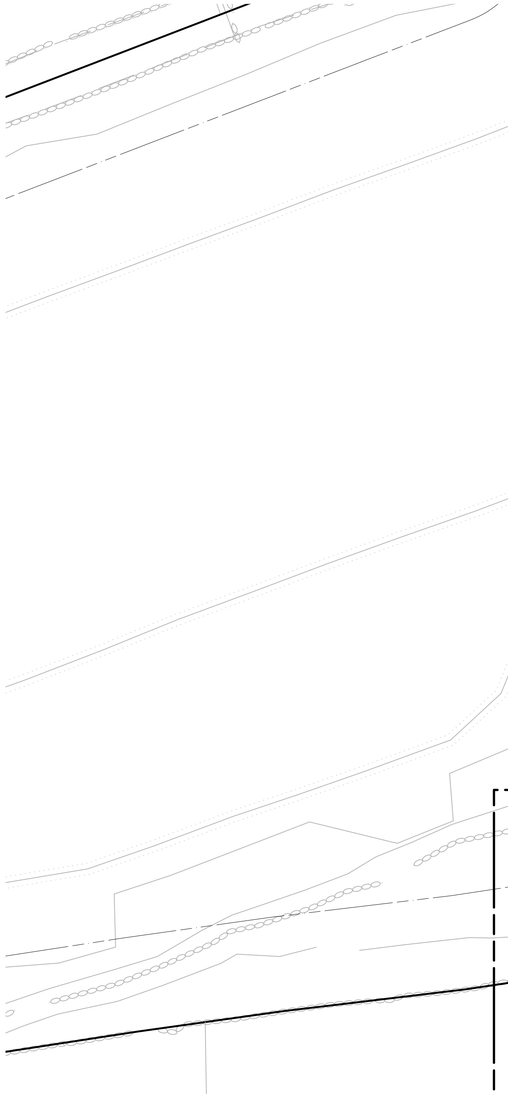
vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

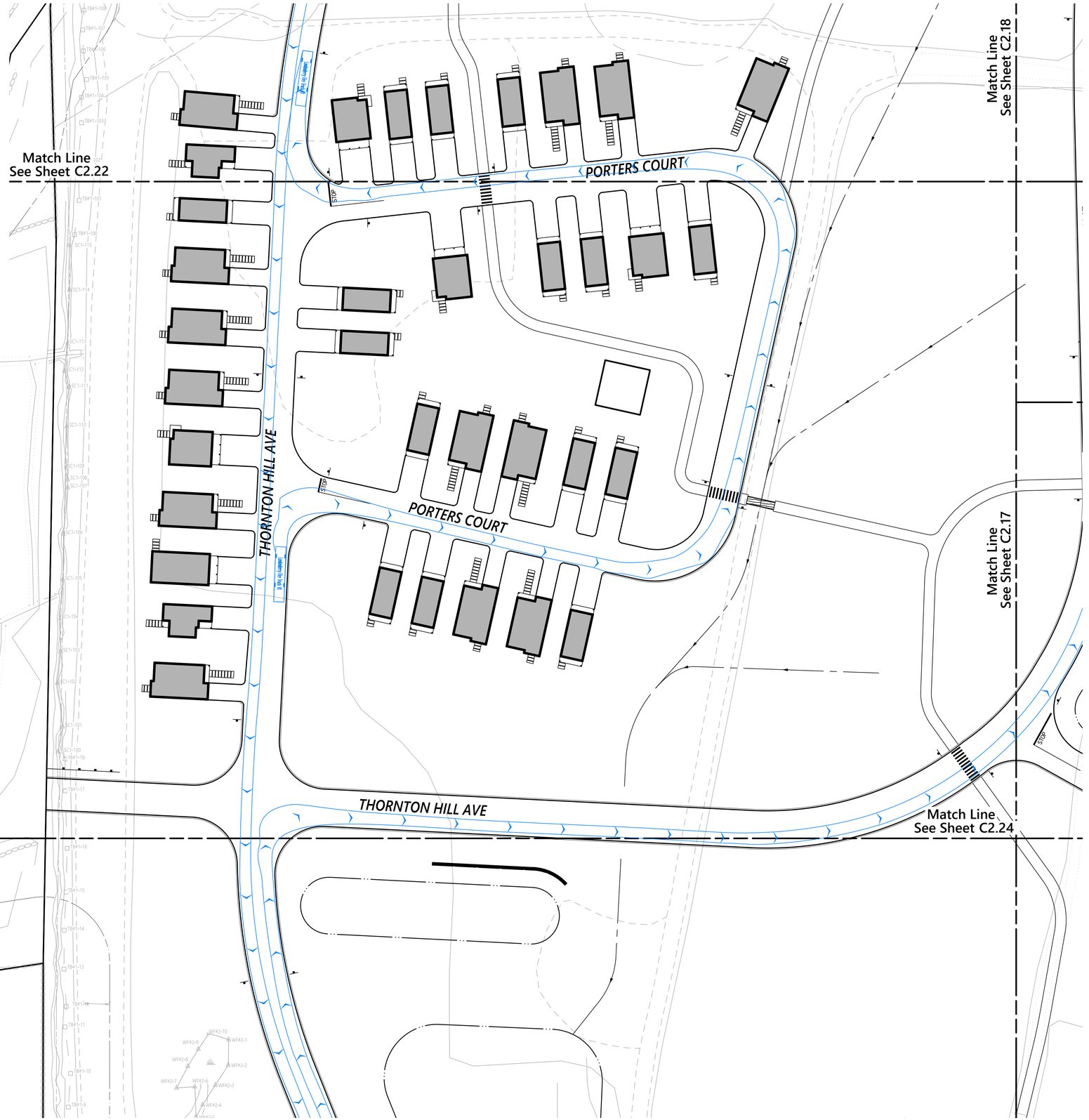
STATE OF NEW HAMPSHIRE - DAVID H. FENSTERMACHER No. 13302 - LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Tuesday, November 11, 2025 7:15:29 PM JHOWE Plotted Wednesday, November 12, 2025 1:19:20 AM Ben Zoller



Londonderry Fire Truck V1	
Overall Length	41.430ft
Overall Width	7.702ft
Overall Body Height	10.380ft
Min Body Ground Clearance	0.810ft
Track Width	7.702ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	45.00°





vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title: **Vehicle Access Plan**

Drawing Number: **C2.23**

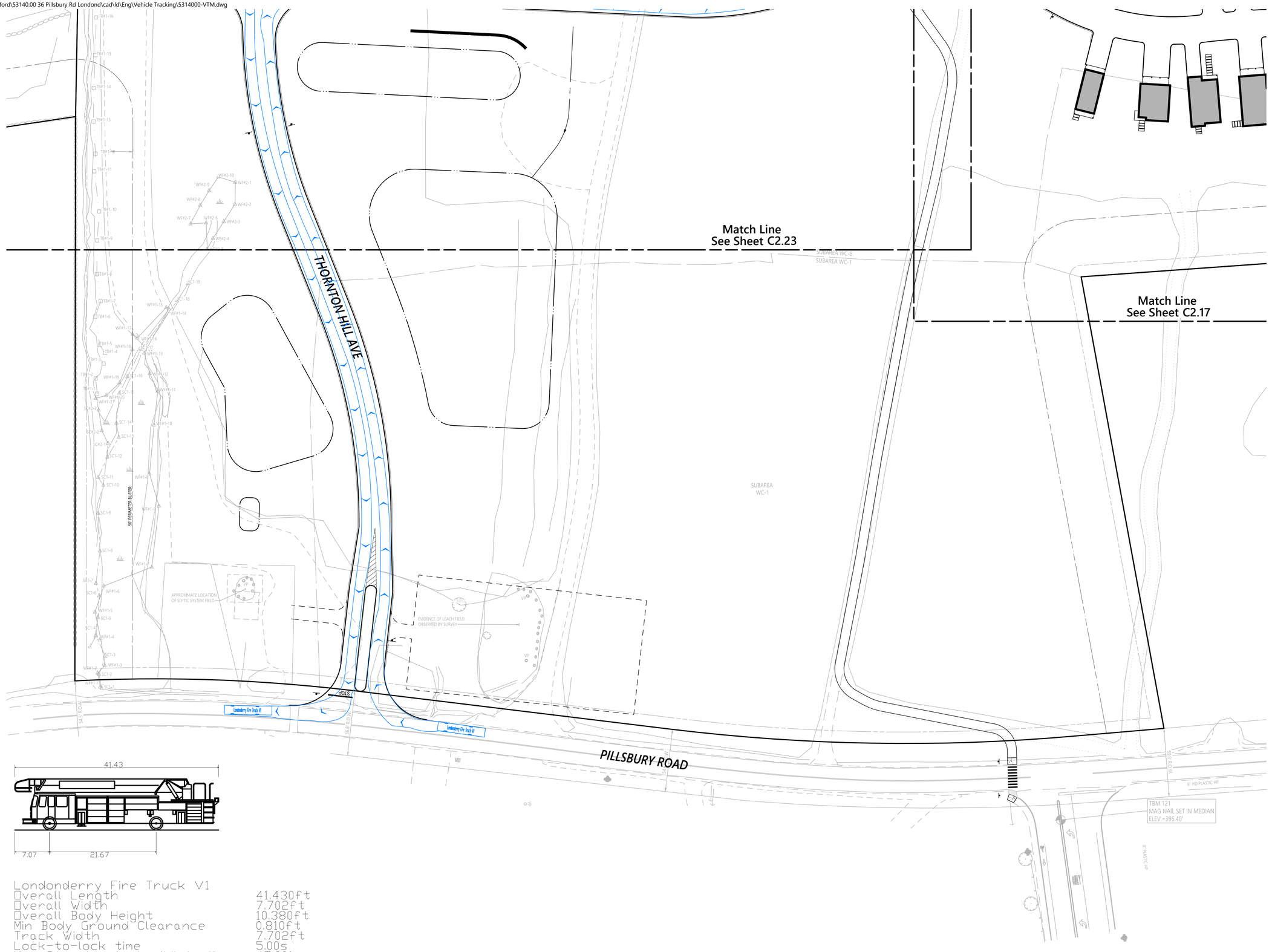
Sheet 25 of 111

Project Number: 53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13938
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Friday, November 7, 2025 1:39:47 PM JHOWE Plotted Tuesday, November 11, 2025 3:35:17 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Eng\Vehicle Tracking\5314000-VTM.dwg



Londonderry Fire Truck V1

Overall Length	41.430ft
Overall Width	7.702ft
Overall Body Height	10.380ft
Min Body Ground Clearance	0.810ft
Track Width	7.702ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	45.00°

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: Permitting | Date: February 20, 2025

Not Approved for Construction

Drawing Title: Vehicle Access Plan 8

Drawing Number: C2.24

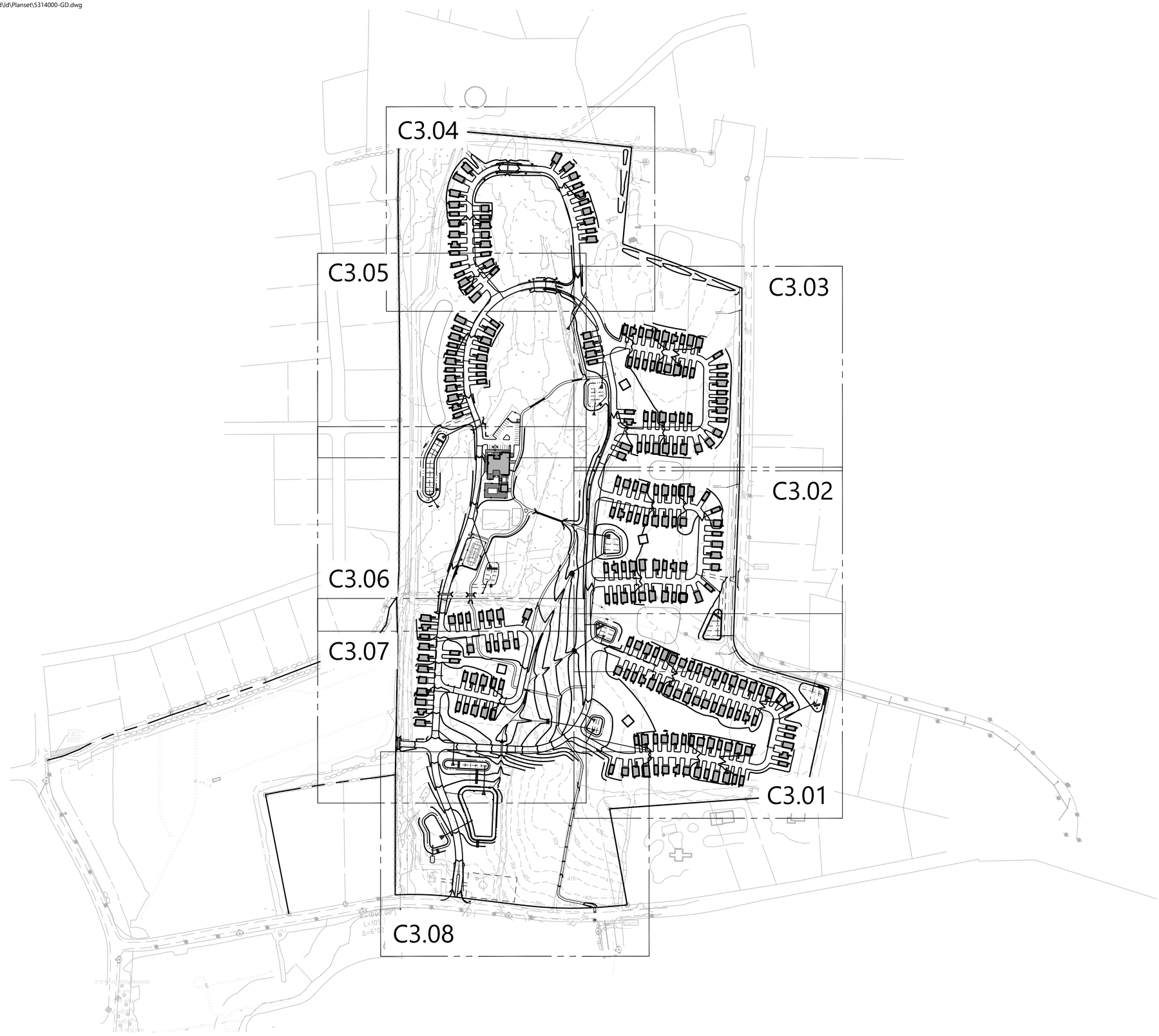
Sheet 26 of 111

Project Number: 53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Saved Friday, November 7, 2025 1:39:47 PM JHOWE Plotted Tuesday, November 11, 2025 5:40:58 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-GD.dwg



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 100 200 400Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: Permitting | Date: February 20, 2025

Not Approved for Construction

Drawing Title
Overall Grading and Drainage Plan 1

Drawing Number
C3.00

STATE OF NEW HAMPSHIRE - DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 27 of 111

Project Number 53140.00

Saved Sunday, November 9, 2025 1:17:03 PM JHOWE Plotted Tuesday, November 11, 2025 3:40:23 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-GD.dwg

Match Line
See Sheet C3.06

Match Line
See Sheet C3.07

Match Line
See Sheet C3.02

Match Line
See Sheet C3.08

CLUSTER A

SEDIMENT FOREBAY
WITH PLACED STONE
SURFACE SAND FILTER 11
TOP OF BERM = 456.0'
OVERFLOW BERM = 455.0'
BOTTOM ELEV = 454.0'

POTENTIAL SOIL STORAGE AREA.
SIZING TO BE DETERMINED BY
CONSTRUCTION NEEDS

PROPOSED 10'
DRAINAGE EASEMENT

SURFACE SAND FILTER #7
TOP OF BERM = 450.0'
OVERFLOW BERM = 449.0'
BOTTOM ELEV = 446.5'

10' WIDE
EMERGENCY
OVERFLOW
STONE SWALE

SEDIMENT FOREBAY
WITH PLACED STONE

SURFACE SAND FILTER #4
TOP OF BERM = 452.2'
OVERFLOW BERM = 451.2'
BOTTOM ELEV = 449.2'

SURFACE SAND FILTER #3
TOP OF BERM = 448.6'
OVERFLOW BERM = 447.6'
BOTTOM ELEV = 443.6'
UNDERDRAIN (TYP)

50' PERIMETER BUFFER

GARDEN AREA
(APPARENT
ENCROACHMENT)

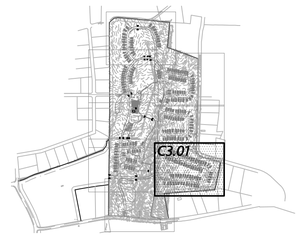
RAISED GARDEN
(APPARENT
ENCROACHMENT)

PILE OF ROCKS

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Grading and Drainage Plan

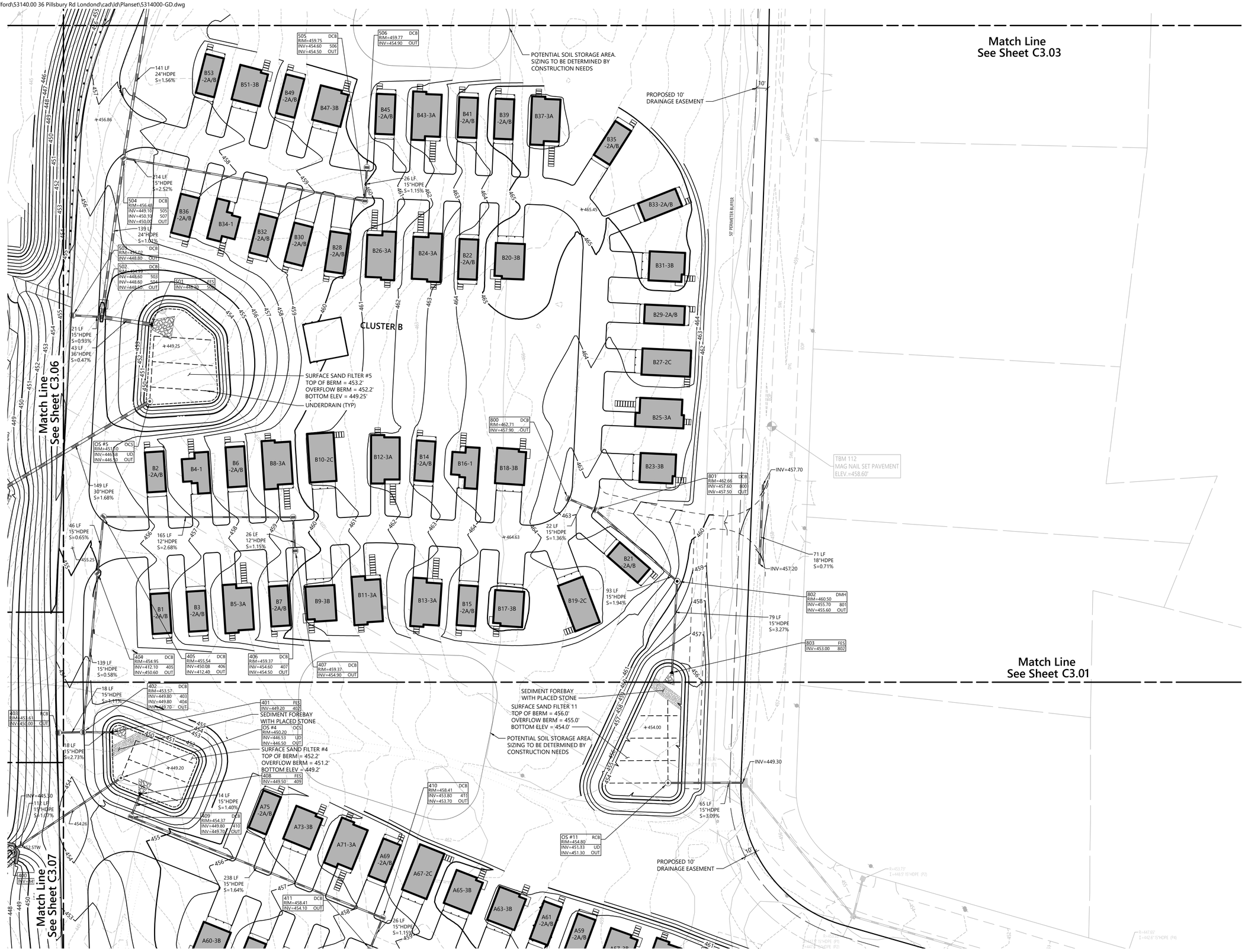
Drawing Number
C3.01

Sheet 28 of 111

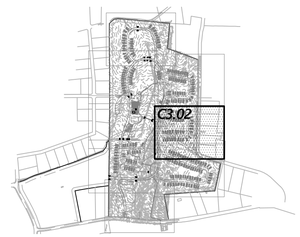
Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Saved Tuesday, November 11, 2025 5:52:28 PM JHOWE Plotted Tuesday, November 11, 2025 5:59:16 PM Jason Howe



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Grading and Drainage Plan

Drawing Number
C3.02

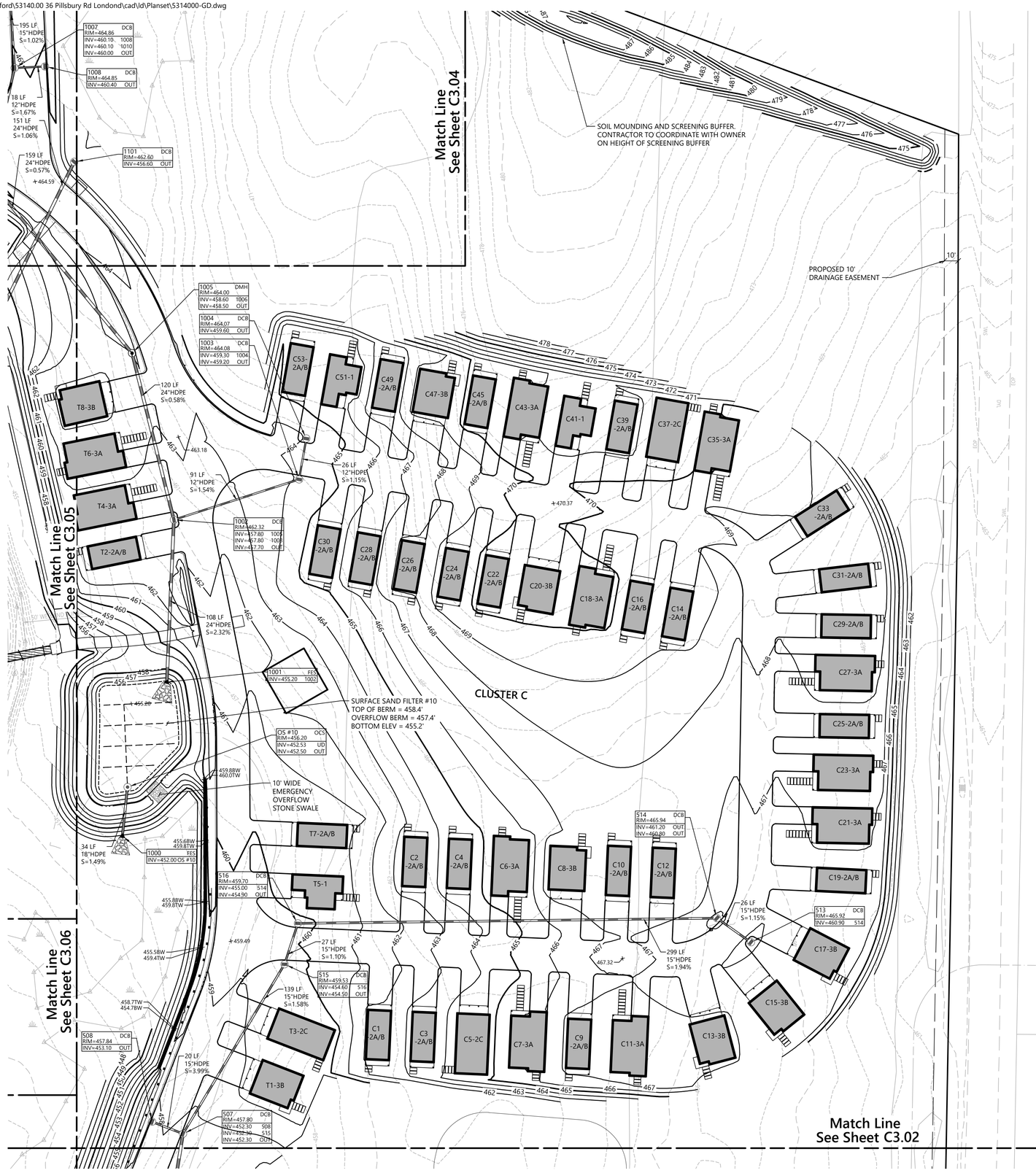
STATE OF NEW HAMPSHIRE
DAVID N. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 29 of 111

Project Number 53140.00

Saved Tuesday, November 11, 2025 5:52:28 PM JHOWE Plotted Tuesday, November 11, 2025 5:59:41 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-GD.dwg

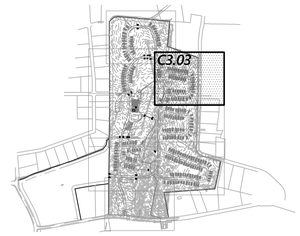


Saved Tuesday, November 11, 2025 5:52:28 PM JHOWE Plotted Tuesday, November 11, 2025 6:00:06 PM Jason Howe

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title
Grading and Drainage Plan

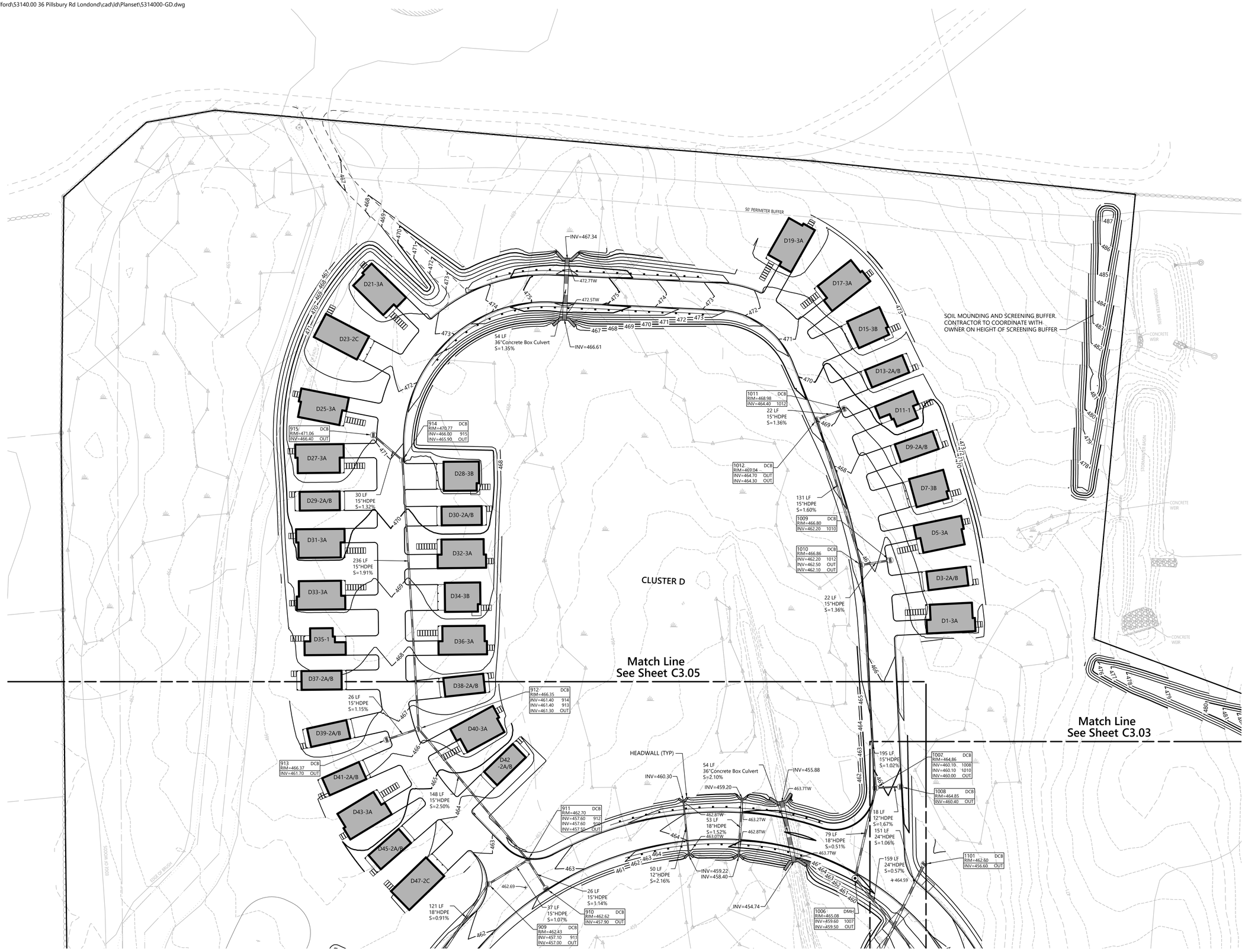
Drawing Number
C3.03

Sheet 30 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE - PROFESSIONAL ENGINEERS - DAVID H. FENSTERMACHER No. 13302 LICENSED
11/13/2025

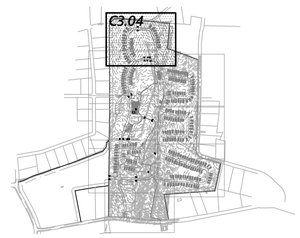
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-GD.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: Permitting | Date: February 20, 2025

Not Approved for Construction

Drawing Title: Grading and Drainage Plan

Drawing Number: C3.04

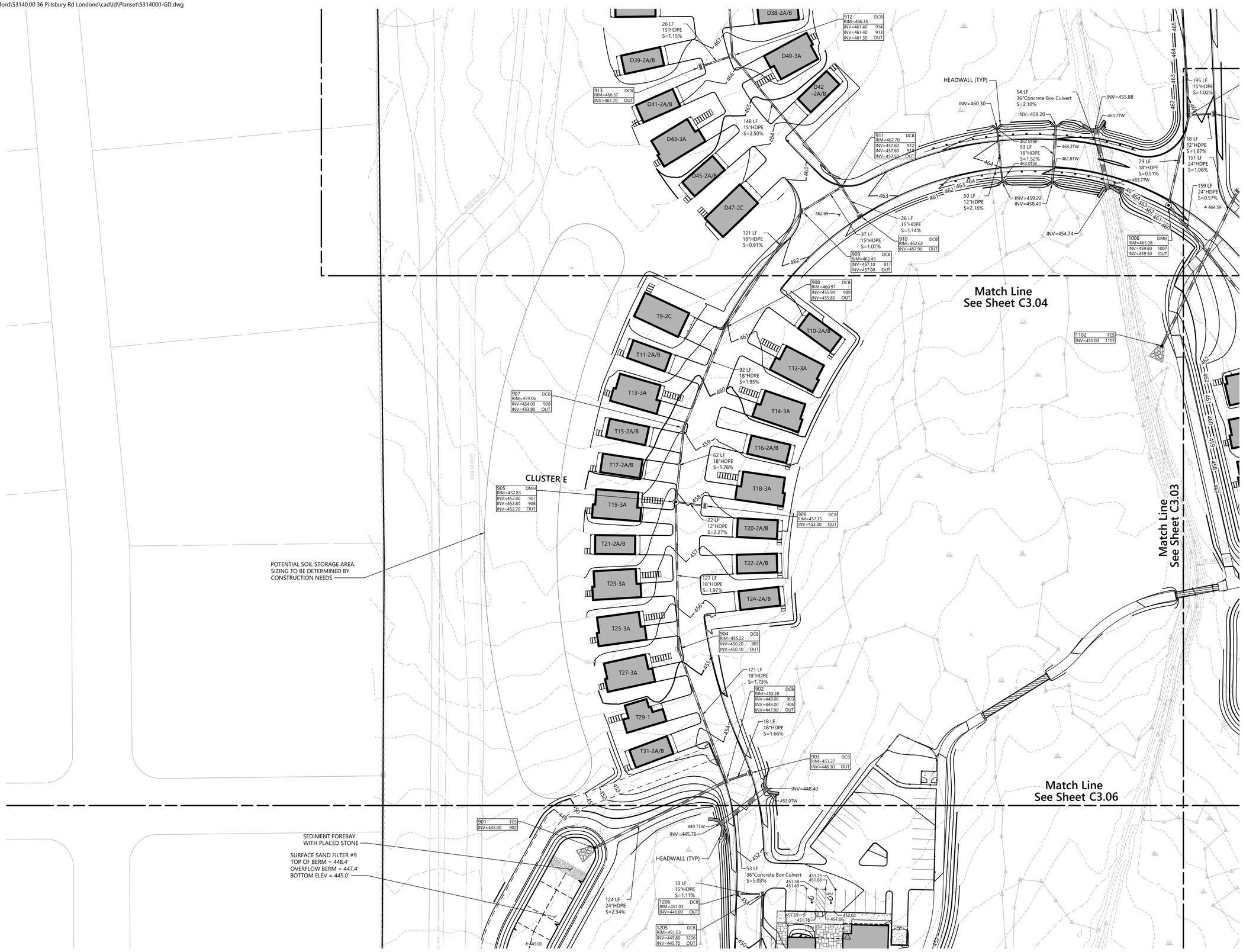
Sheet 31 of 111

STATE OF NEW HAMPSHIRE - DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025

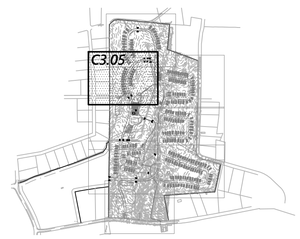
Project Number: 53140.00

Saved Tuesday, November 11, 2025 5:52:28 PM JHOWE Plotted Tuesday, November 11, 2025 6:00:31 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-GD.dwg



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title: **Grading and Drainage Plan**

Drawing Number: **C3.05**

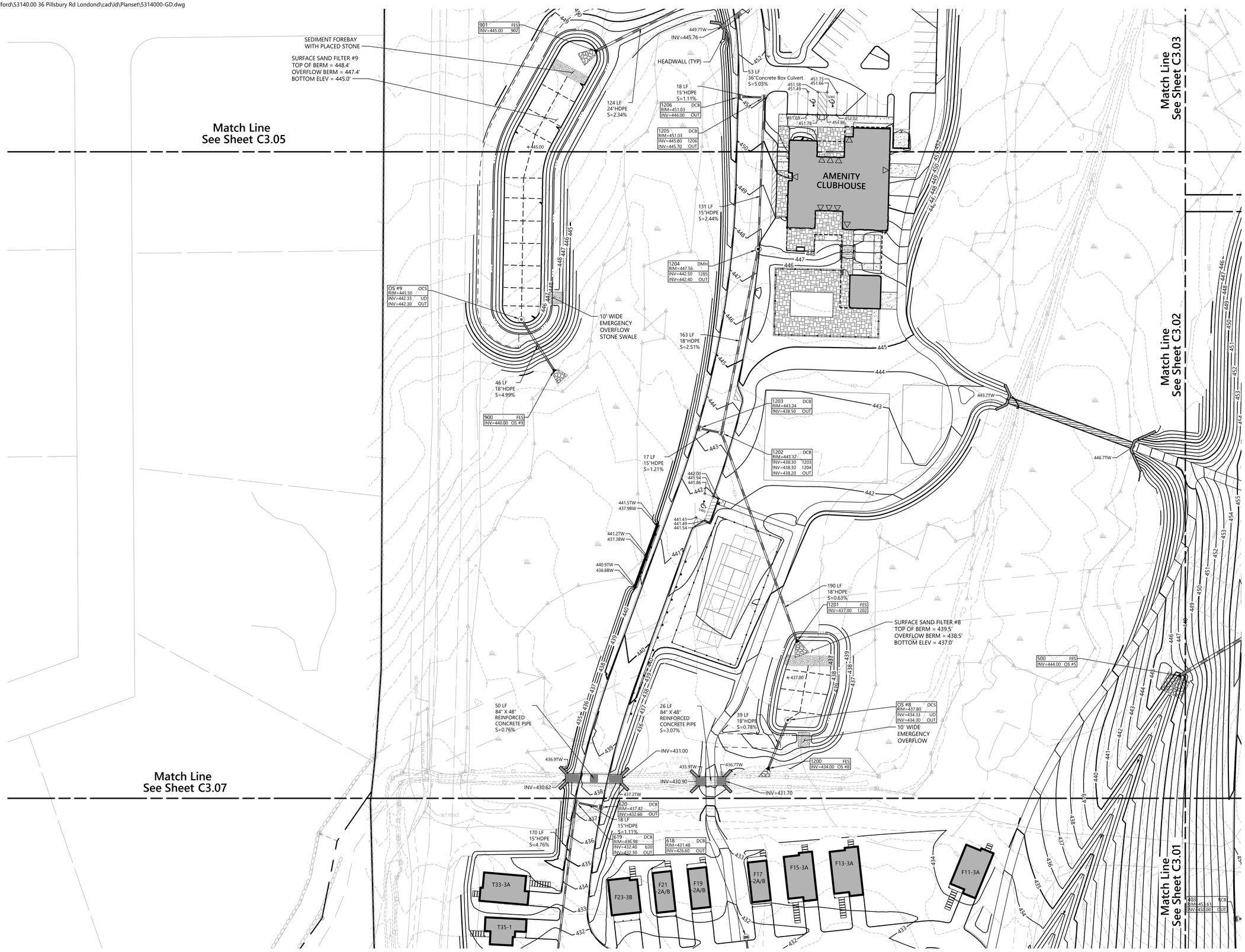
Sheet 32 of 111

Project Number: **53140.00**

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Saved Tuesday, November 11, 2025 5:52:28 PM JHOWE Plotted Tuesday, November 11, 2025 6:00:56 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-GD.dwg



0 20 40 80 Feet

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title

Grading and Drainage Plan

Drawing Number

C3.06

Sheet 33 of 111

Project Number 53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Tuesday, November 11, 2025 5:52:28 PM JHOWE Plotted Tuesday, November 11, 2025 6:01:21 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-GD.dwg



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title

Grading and Drainage Plan

Drawing Number

C3.07

Sheet 34 of 111



Project Number 53140.00

Saved Tuesday, November 11, 2025 5:52:28 PM JHOWE Plotted Tuesday, November 11, 2025 6:01:47 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-GD.dwg

602 DCB
RIM=409.78
INV=403.60 606
INV=403.60 604
INV=403.50 OUT

602 FES
INV=403.00 603

44 LF
24"HDPE
S=1.15%

MTD-1
4' x 8' FILTERRA BOX
W/ 6" PVC OUTLET PIPE

SEDIMENT FOREBAY
WITH PLACED STONE

MTD-2
4' x 8' FILTERRA BOX
W/ 6" PVC OUTLET PIPE

10' WIDE
EMERGENCY
OVERFLOW
STONE SWALE

INV=413.90

604 DCB
RIM=427.53
INV=415.10 605
INV=415.00 OUT

22 LF
12"HDPE
S=1.82%

50 LF
60"W x 48"H Concrete Box Culvert
S=1.20%

OS #6 OCS
RIM=403.31
INV=400.30 UD
INV=396.00 OUT

SURFACE SAND FILTER #6
TOP OF BERM = 407.1'
OVERFLOW BERM = 406.1'
BOTTOM ELEV = 403.0'
UNDERDRAIN (TYP)

INV=390.00

6"PVC

INV=395.00

95 LF
24"HDPE
S=6.32%

601 FES
INV=390.00 OS #6

Match Line
See Sheet C3.07

DETENTION BASIN #2
TOP OF BERM = 388.0'
OVERFLOW BERM = 387.0'
BOTTOM ELEV = 383.0'

OS #1
RIM=393.90
INV=390.00 WEIR
INV=387.00 OUT

DETENTION BASIN #1
TOP OF BERM = 396.0'
OVERFLOW BERM = 395.0'
BOTTOM ELEV = 390.0'

123 LF
24"HDPE
S=3.24%

10' WIDE
EMERGENCY
OVERFLOW
STONE SWALE

600 FES
INV=383.00 OS #1

OS#2 CB
INV=383.00 OUT

43 LF
36"HDPE
S=2.31%

LEVEL
SPREADER

10' WIDE
EMERGENCY
OVERFLOW

MTD-3
4' x 8' FILTERRA BOX
W/ 6" PVC OUTLET PIPE

MTD-4
4' x 8' FILTERRA BOX
W/ 6" PVC OUTLET PIPE

50' PERIMETER BUFFER

Match Line
See Sheet C3.01

A1
2A/B

A3-3B

A5-3A

A7-2C

TBM #21
MAG NAIL SET IN MEDIAN
ELEV.=395.40'

(2) RAISED CONDUIT

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

C3.08

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ
Checked by DHF

Issued for
Permitting

Date
February 20, 2025

Not Approved for Construction

Drawing Title
Grading and Drainage Plan

Drawing Number
C3.08

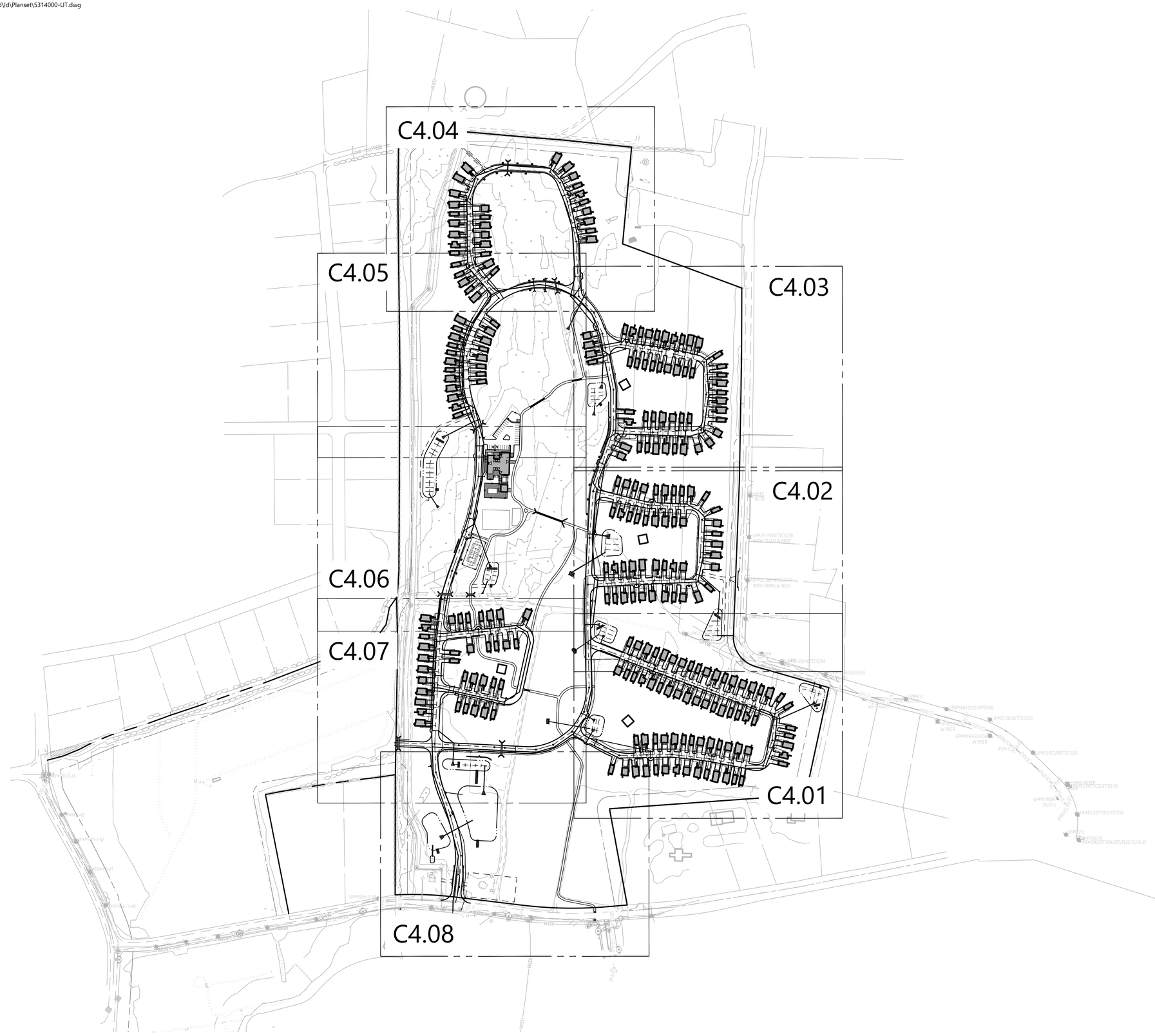
STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 35 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 5:52:28 PM JHOWE Plotted Tuesday, November 11, 2025 6:02:11 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-UT.dwg



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 100 200 400Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Overall Utility Plan

Drawing Number
C4.00

Sheet 36 of 111

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Project Number
53140.00

Saved Wednesday, November 5, 2025 12:13:05 PM JHOWE Plotted Tuesday, November 11, 2025 3:47:07 PM Jason Howe

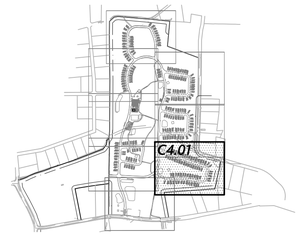
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-UT.dwg

Saved Wednesday, November 5, 2025 12:13:05 PM JHOWE Plotted Tuesday, November 11, 2025 3:47:28 PM Jason Howe

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



Match Line
See Sheet C4.06

Match Line
See Sheet C4.07

Match Line
See Sheet C4.02

Match Line
See Sheet C4.08

CLUSTER A

- 2" WATER CONNECTION (TYP)
- 4" SEWER CONNECTION (TYP)
- ELECTRIC CONNECTION (TYP)

100-250 kVA PAD (TYP)

FIRE HYDRANT (TYP)

109 SMH (DROP)
RIM=454.27
INV=439.60 108
INV=444.40 100A
INV=439.50 OUT
5' Diameter

100A SMH
RIM=458.78
INV=446.10 101A
INV=446.00 OUT
4' Diameter

101A SMH
RIM=462.30
INV=447.50 102A
INV=447.40 OUT
5' Diameter

102A SMH
RIM=459.50
INV=449.00 103A
INV=448.90 OUT
4' Diameter

103A SMH (DROP)
RIM=458.37
INV=450.10 104A
INV=449.60 OUT
5' Diameter

104A SMH (DROP)
RIM=458.42
INV=451.70 105A
INV=450.70 OUT
5' Diameter

105A SMH
RIM=459.16
INV=452.40 OUT
4' Diameter

106A SMH
RIM=459.69
INV=453.00 OUT
4' Diameter

107A SMH
RIM=460.67
INV=452.50 106A
INV=452.40 OUT
4' Diameter

108A SMH (DROP)
RIM=457.42
INV=450.70 107A
INV=448.30 OUT
5' Diameter

109A SMH
RIM=454.84
INV=447.80 108A
INV=447.60 OUT
4' Diameter

110 SMH
RIM=451.21
INV=438.60 109
INV=438.50 OUT
5' Diameter

110A SMH (DROP)
RIM=452.02
INV=445.30 109A
INV=441.30 OUT
5' Diameter

111 SMH (DROP)
RIM=449.11
INV=438.00 110
INV=434.40 OUT
5' Diameter

50' PERIMETER BUFFER

GARDEN AREA (APPARENT ENCROACHMENT)

RAISED GARDEN (APPARENT ENCROACHMENT)

PILE OF ROCKS

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Utility Plan

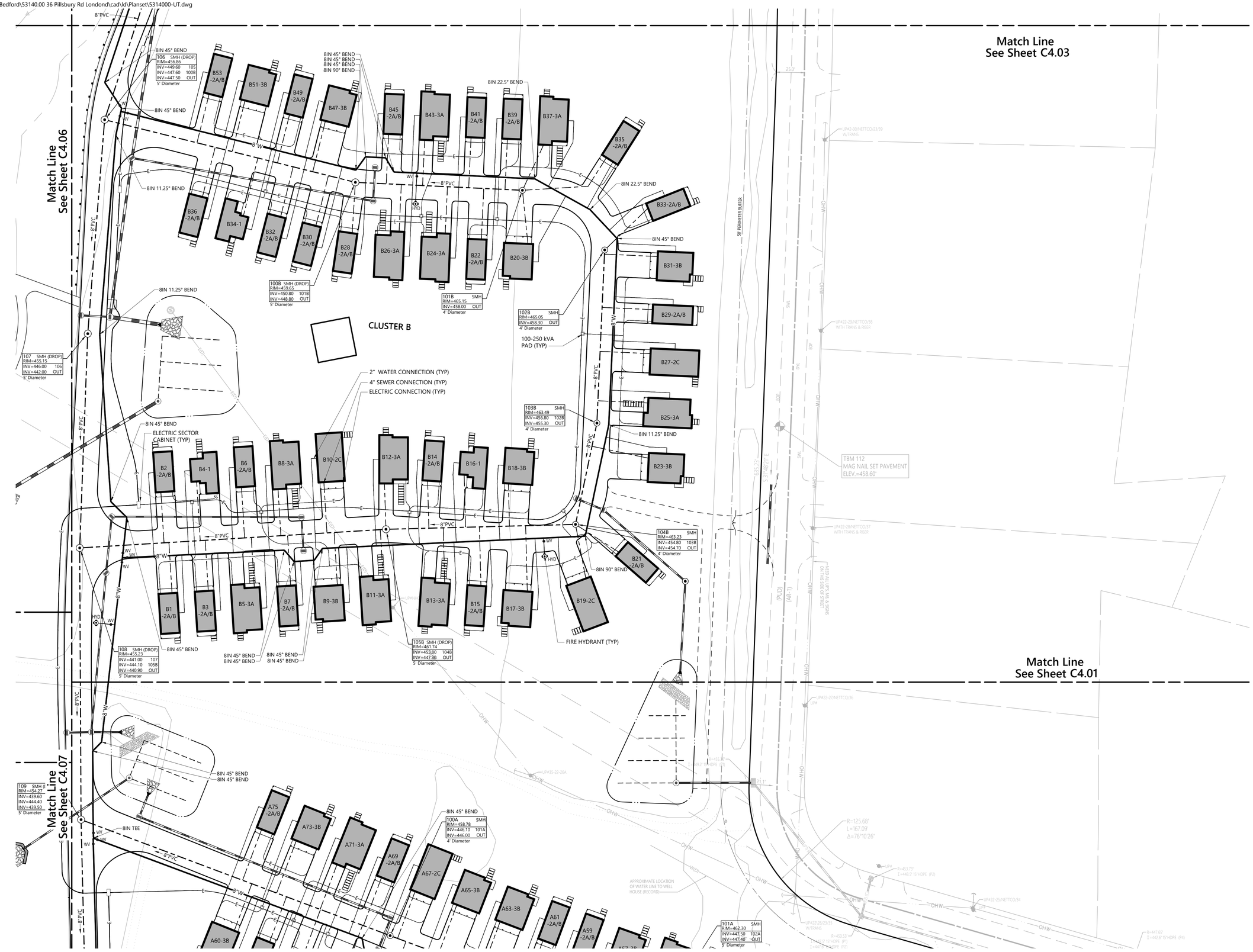
Drawing Number
C4.01

Sheet 37 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

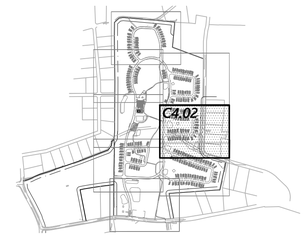
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-UT.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Utility Plan

Drawing Number
C4.02

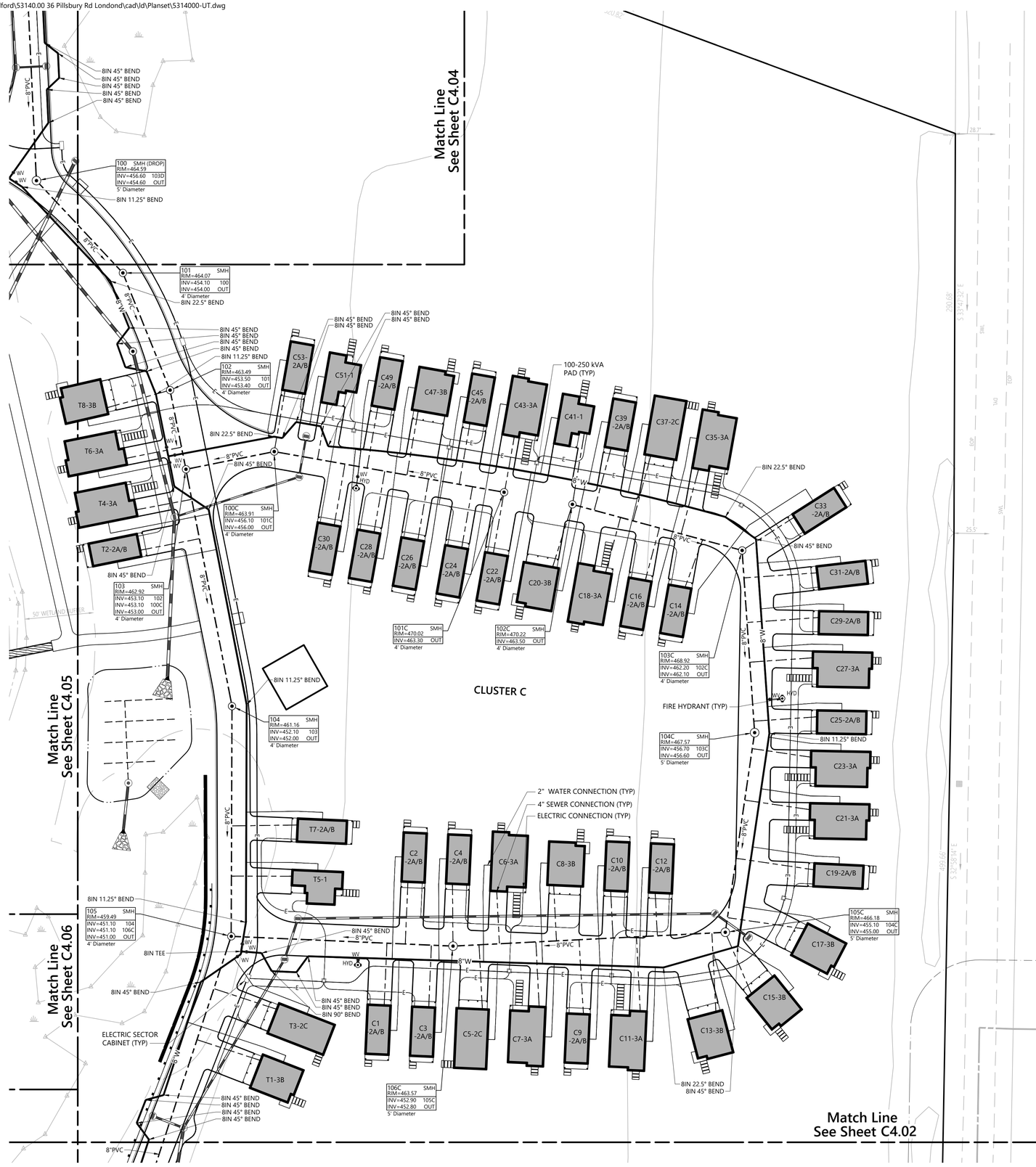
Sheet 38 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Wednesday, November 5, 2025 12:13:05 PM JHOWE Plotted Tuesday, November 11, 2025 6:20:30 PM Jason Howe

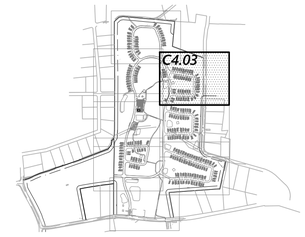
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-UT.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Utility Plan

Drawing Number
C4.03

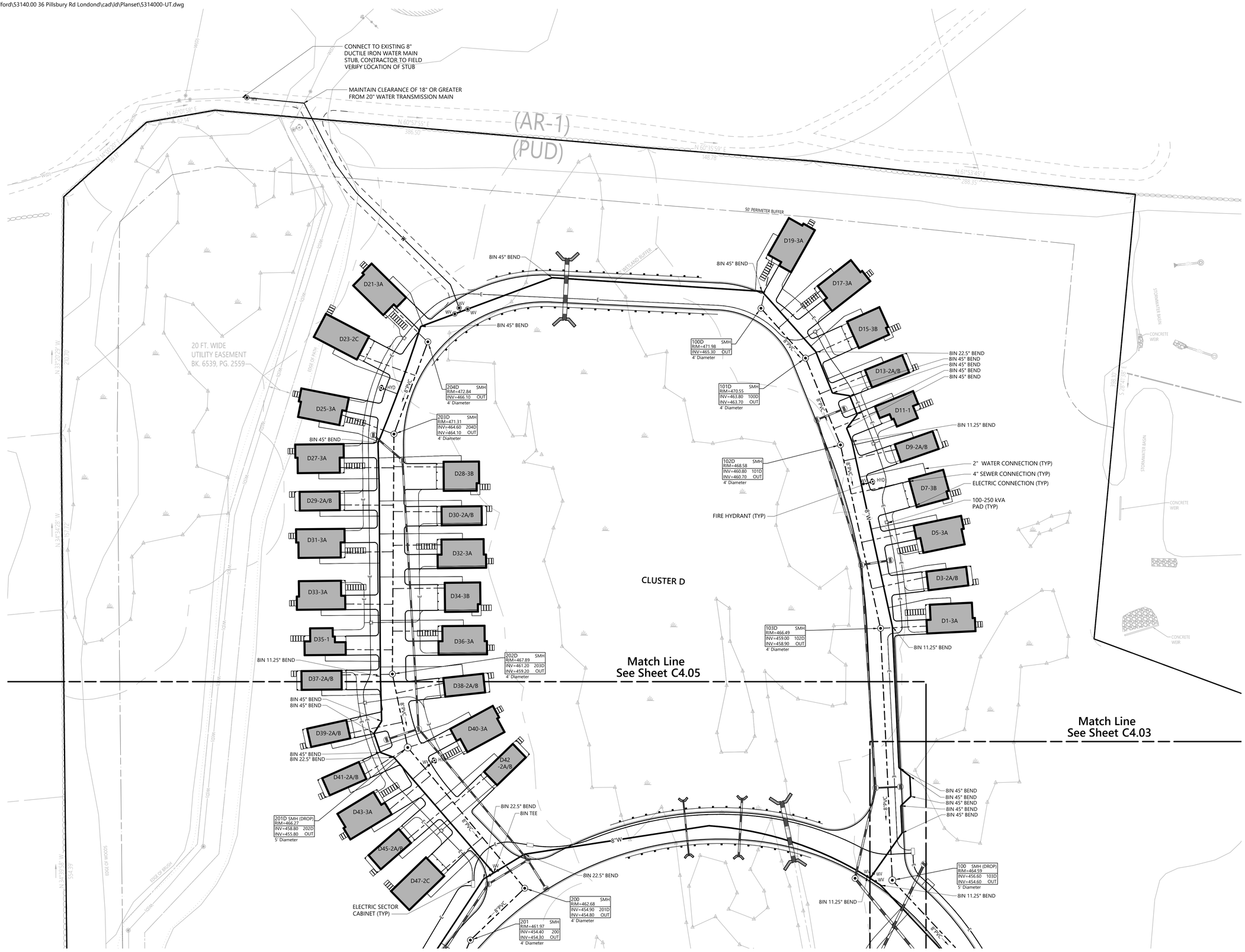
Sheet 39 of 111

Project Number
53140.00

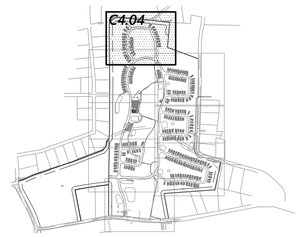
STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Wednesday, November 5, 2025 12:13:05 PM JHOWE Plotted Tuesday, November 11, 2025 6:37:09 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-UT.dwg



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: Permitting | Date: February 20, 2025

Not Approved for Construction

Drawing Title: Utility Plan

Drawing Number: C4.04

STATE OF NEW HAMPSHIRE DAVID N. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025

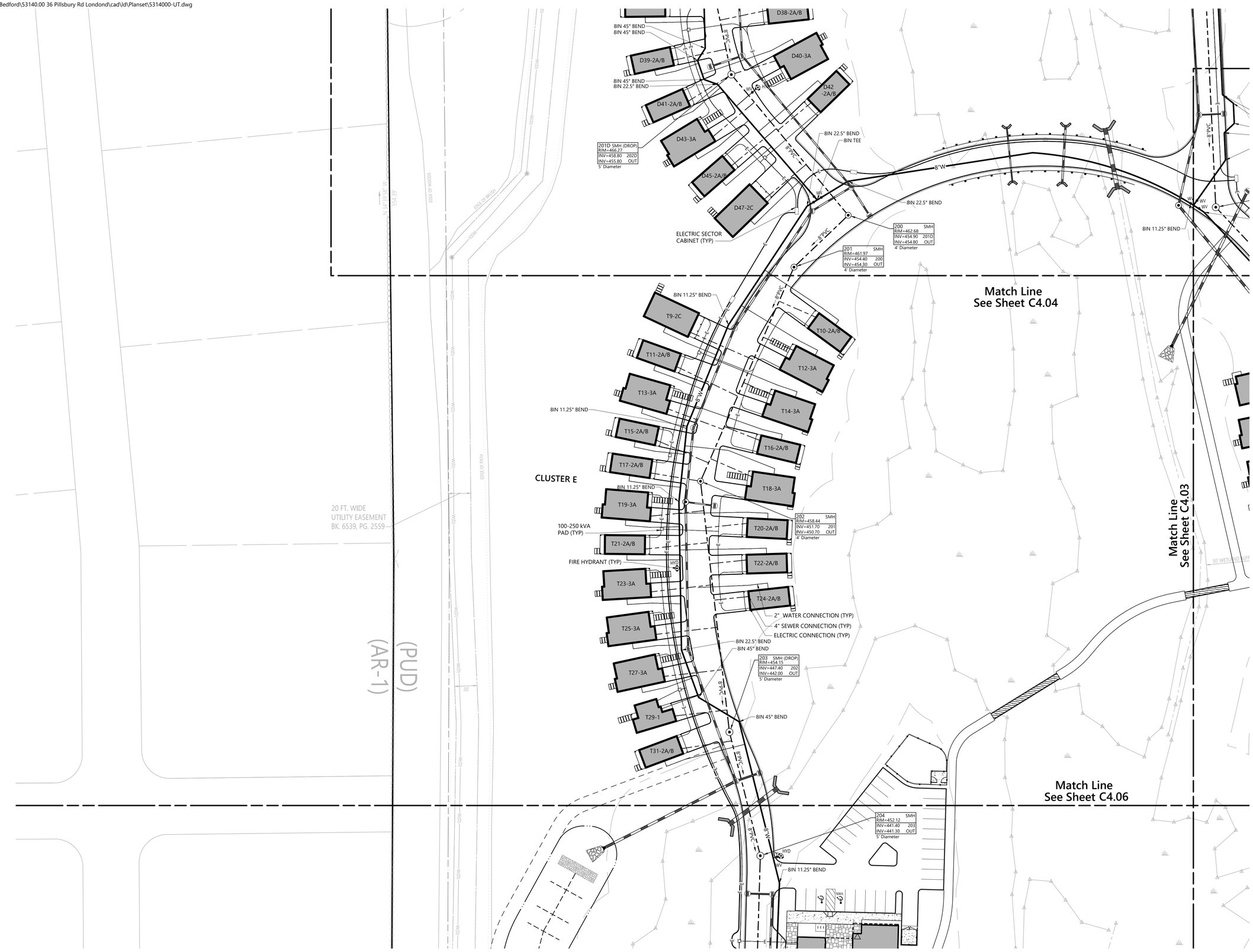
Sheet 40 of 111

Project Number 53140.00

Saved Wednesday, November 5, 2025 12:13:05 PM JHOWE Plotted Tuesday, November 11, 2025 6:43:39 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-UT.dwg

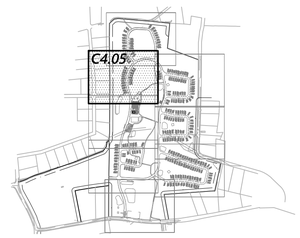
Saved Wednesday, November 5, 2025 12:13:05 PM JHOWE Plotted Tuesday, November 11, 2025 3:48:53 PM Jason Howe



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Utility Plan

Drawing Number
C4.05

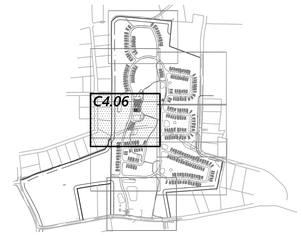


Sheet 41 of 111

Project Number 53140.00



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title: Utility Plan

Drawing Number: C4.06

Sheet 42 of 111

Project Number: 53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Wednesday, November 5, 2025 12:13:05 PM JHOWE Plotted Tuesday, November 11, 2025 3:49:13 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-UT.dwg

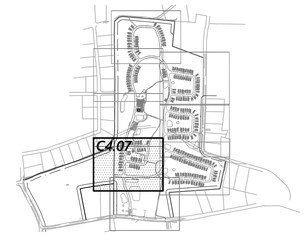
Saved Wednesday, November 5, 2025 12:13:05 PM JHOWE Plotted Tuesday, November 11, 2025 3:49:41 PM Jason Howe



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: Permitting | Date: February 20, 2025

Not Approved for Construction

Drawing Title
Utility Plan

Drawing Number
C4.07

Sheet 43 of 111

Project Number 53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

THREE-WAY ELECTRIC MANHOLE (TYP)

213 SMH
RIM=403.14
INV=396.40 212
INV=394.90 OUT
4' Diameter

8IN 11.25° BEND

8"PVC

214 SMH (DROP)
RIM=393.77
INV=387.10 213
INV=380.10 OUT
5' Diameter

ELECTRIC VAULT (TYP)

215 SMH
RIM=385.75
INV=379.00 214
INV=378.90 OUT
4' Diameter

8IN 22.5° BEND

Match Line
See Sheet C4.07

0 FT. WIDE
ITILITY EASEMENT
K. 6539, PG. 2559

(AR-1)

(PUD)

50' PERIMETER BUFFER

APPROXIMATE FUTURE PUMP STATION, DESIGNED BY OTHERS

CONNECTION INTO FUTURE MUNICIPAL PUMP STATION, DESIGNED BY OTHERS

APPROXIMATE LOCATION OF SEPTIC SYSTEM FIELD

SMH P6 TO BE CONSTRUCTED BY OTHERS

EX-P6 SMH
RIM=379.03
INV=373.00 216
INV=368.63 OUT
4' Diameter

EVIDENCE OF LEACH FIELD OBSERVED BY SURVEY

216 SMH
RIM=380.86
INV=374.10 215
INV=374.00 OUT
4' Diameter

8IN 11.25° BEND

CONTRACTOR TO CONFIRM LOCATION AND INVERT OF FUTURE SEWER MANHOLE AND SUBMIT TO ENGINEER PRIOR TO INSTALLATION OF SEWER NETWORK

TIE INTO EXISTING 12" DUCTILE IRON WATER MAIN

CONTRACTOR TO COORDINATE WITH EVERSOURCE ON SITE ELECTRIC CONNECTION POINT

CONTRACTOR TO CONFIRM CLEARANCE OF 20" HDPE TRANSMISSION WATER MAIN. CROSSING TO BE IN ACCORDANCE WITH PENNICHUCK STANDARDS

110A SMH (DROP)
RIM=452.02
INV=445.30 109A
INV=441.30 OUT
5' Diameter

8"PVC

8"W

A1 -2A/B

A3-3B

A5-3A

A7-2C

8IN 11.25° BEND

109A SMH
RIM=454.84
INV=447.80 108A
INV=447.60 OUT
4' Diameter

8IN 45° BEND

Match Line
See Sheet C4.01

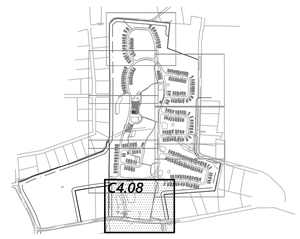
TBM 121
MAG NAIL SET IN MEDIAN
ELEV.=395.40'

(2) RAISED CONDUIT

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ
Checked by DHF

Issued for
Permitting

Date
February 20, 2025

Not Approved for Construction

Drawing Title
Utility Plan

Drawing Number
C4.08

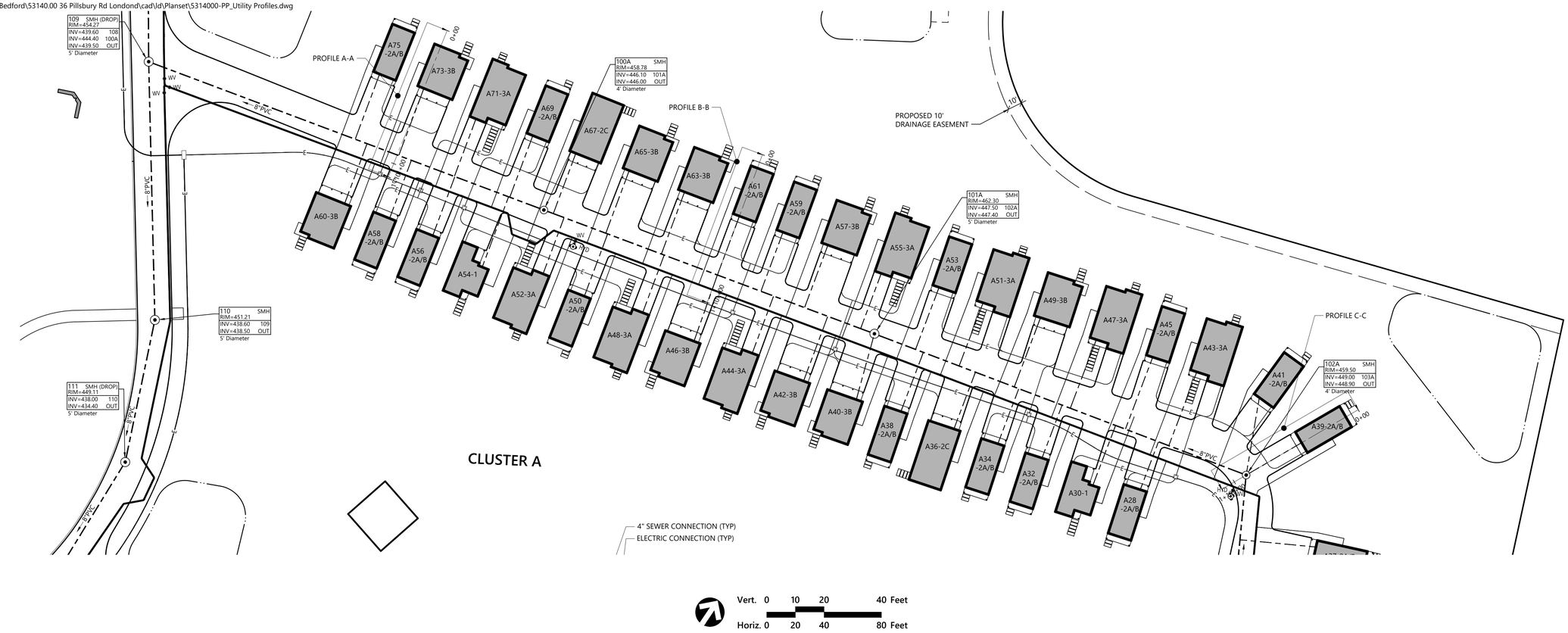
Sheet 44 of 111

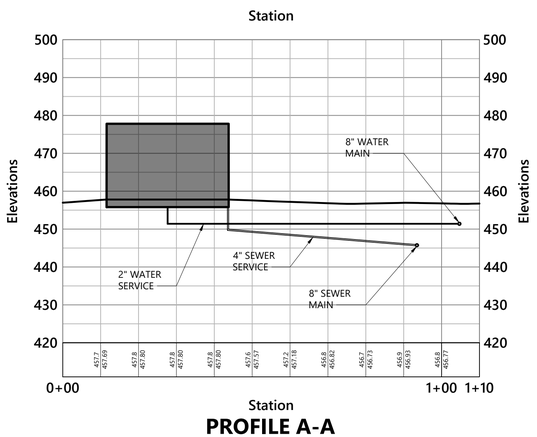
Project Number
53140.00

STATE OF NEW HAMPSHIRE - PROFESSIONAL ENGINEERS - LICENSED - DAVID H. FENSTERMACHER No. 13382
11/13/2025

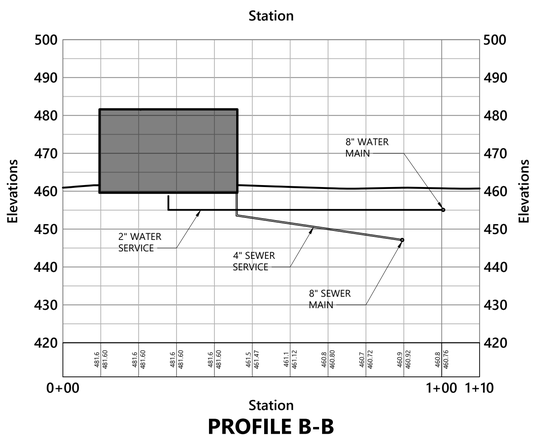
Saved Wednesday, November 5, 2025 12:13:05 PM JHOWE Plotted Tuesday, November 11, 2025 3:50:05 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-PP_Utility Profiles.dwg

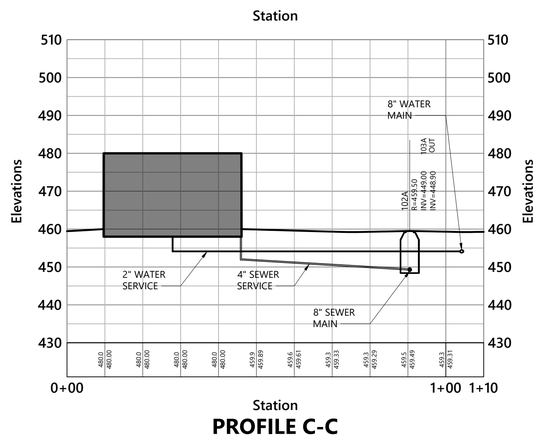




PROFILE A-A



PROFILE B-B



PROFILE C-C

vhb.com
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Sanitary Plan and Profile
Oxford Court

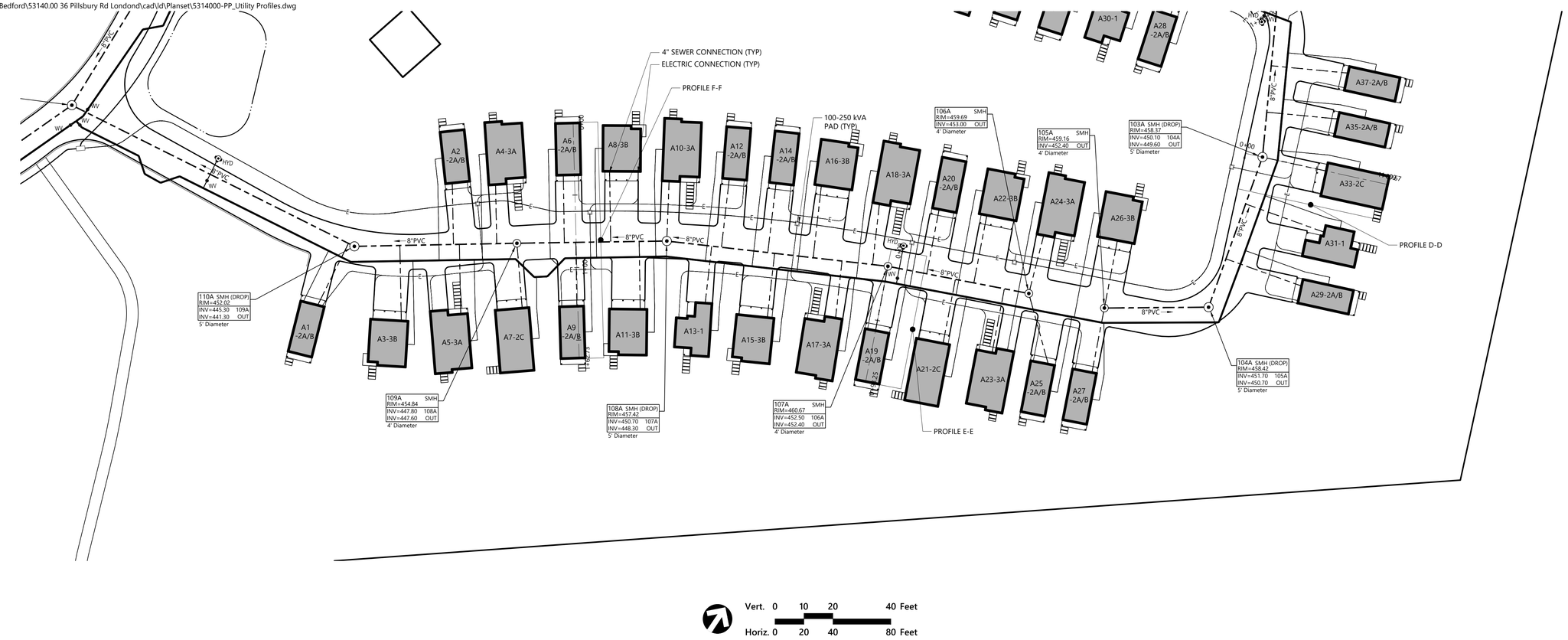
Drawing Number
C4.09

Sheet 45 of 111

Project Number
53140.00

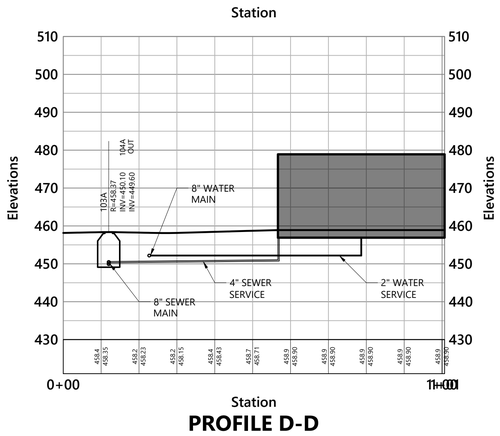
STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13332
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Saved Tuesday, November 4, 2025 5:26:34 PM JHOWE Plotted Tuesday, November 11, 2025 3:52:13 PM Jason Howe

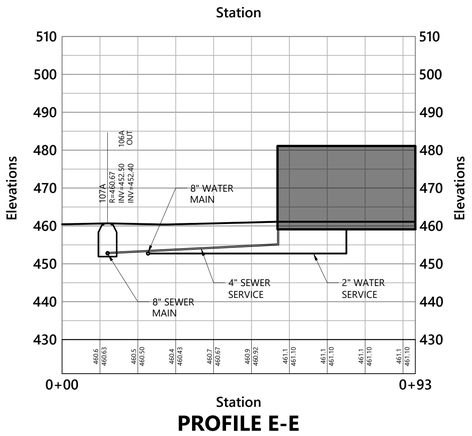


Vert. 0 10 20 40 Feet

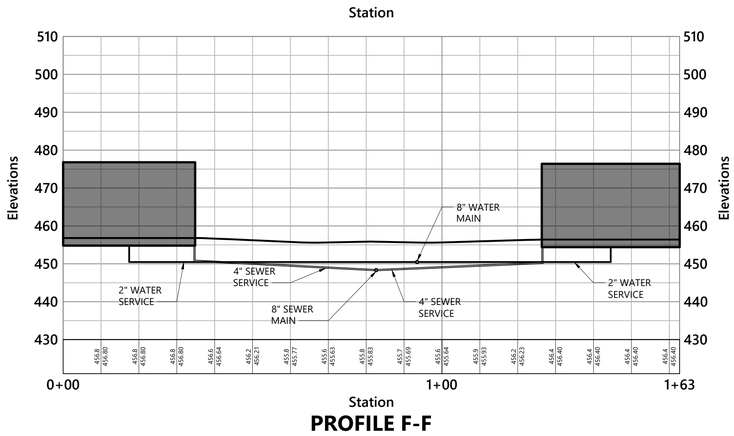
Horiz. 0 20 40 80 Feet



PROFILE D-D



PROFILE E-E



PROFILE F-F

vhb.com
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title

Sanitary Plan and Profile Oxford Court

Drawing Number

C4.10

Sheet 46 of 111

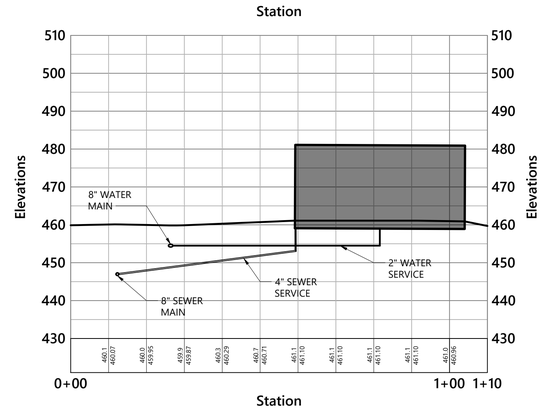
Project Number 53140.00

STATE OF NEW HAMPSHIRE DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER 11/13/2025

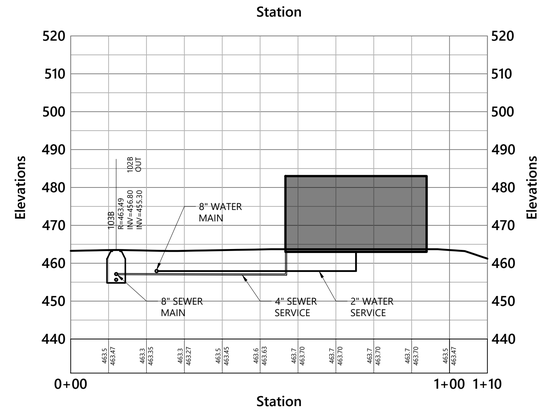
Saved Tuesday, November 4, 2025 5:26:34 PM JHOWE Plotted Tuesday, November 11, 2025 3:52:32 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-PP_Utility Profiles.dwg

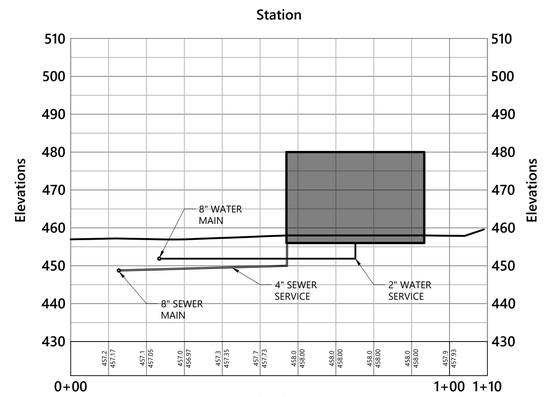




PROFILE A-A



PROFILE B-B



PROFILE C-C

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 10 20 40 Feet
Horiz. 0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: February 20, 2025

Not Approved for Construction

Drawing Title
Sanitary Plan and Profile Redfield Court

Drawing Number
C4.11

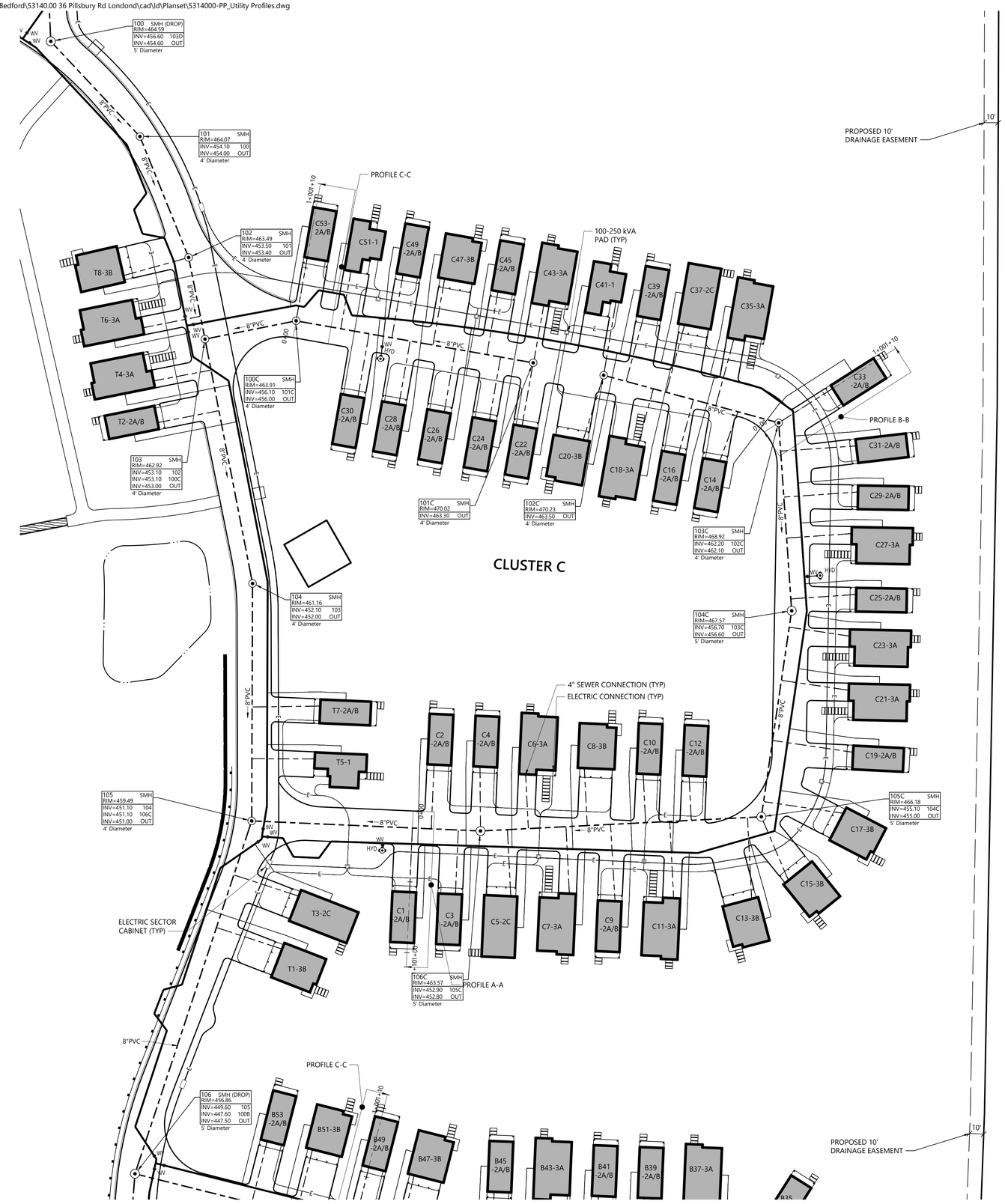
Sheet 47 of 111

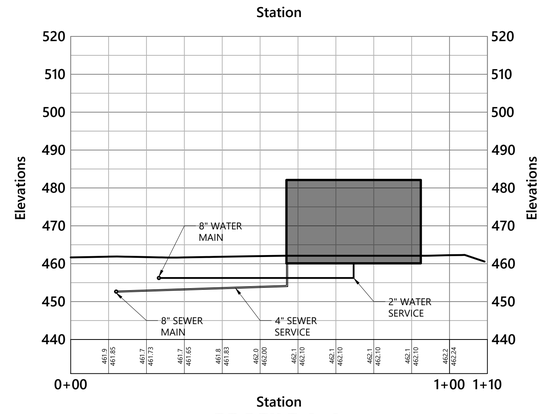
Project Number 53140.00

STATE OF NEW HAMPSHIRE - DAVID H. FENSTERMACHER No. 13382 - PROFESSIONAL ENGINEER - LICENSED
11/13/2025

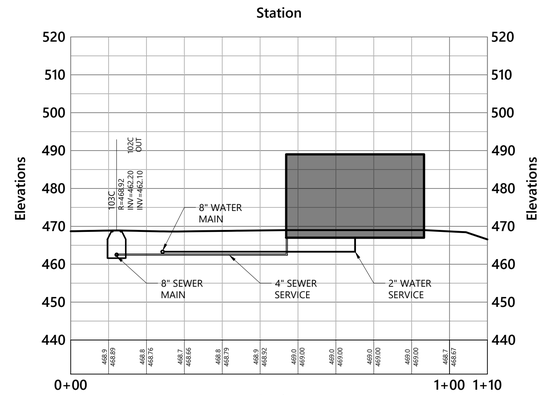
Saved Tuesday, November 4, 2025 5:26:34 PM JHOWE Plotted Tuesday, November 11, 2025 3:52:50 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-PP_Utility Profiles.dwg

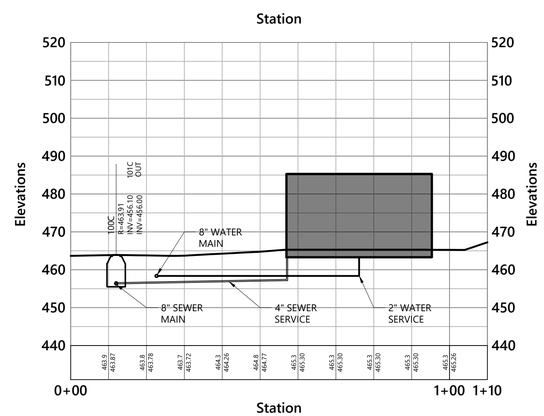




PROFILE A-A



PROFILE B-B



PROFILE C-C

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 10 20 40 Feet
Horiz. 0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: February 20, 2025

Not Approved for Construction

Drawing Title
Sanitary Plan and Profile Bramley Court

Drawing Number
C4.12

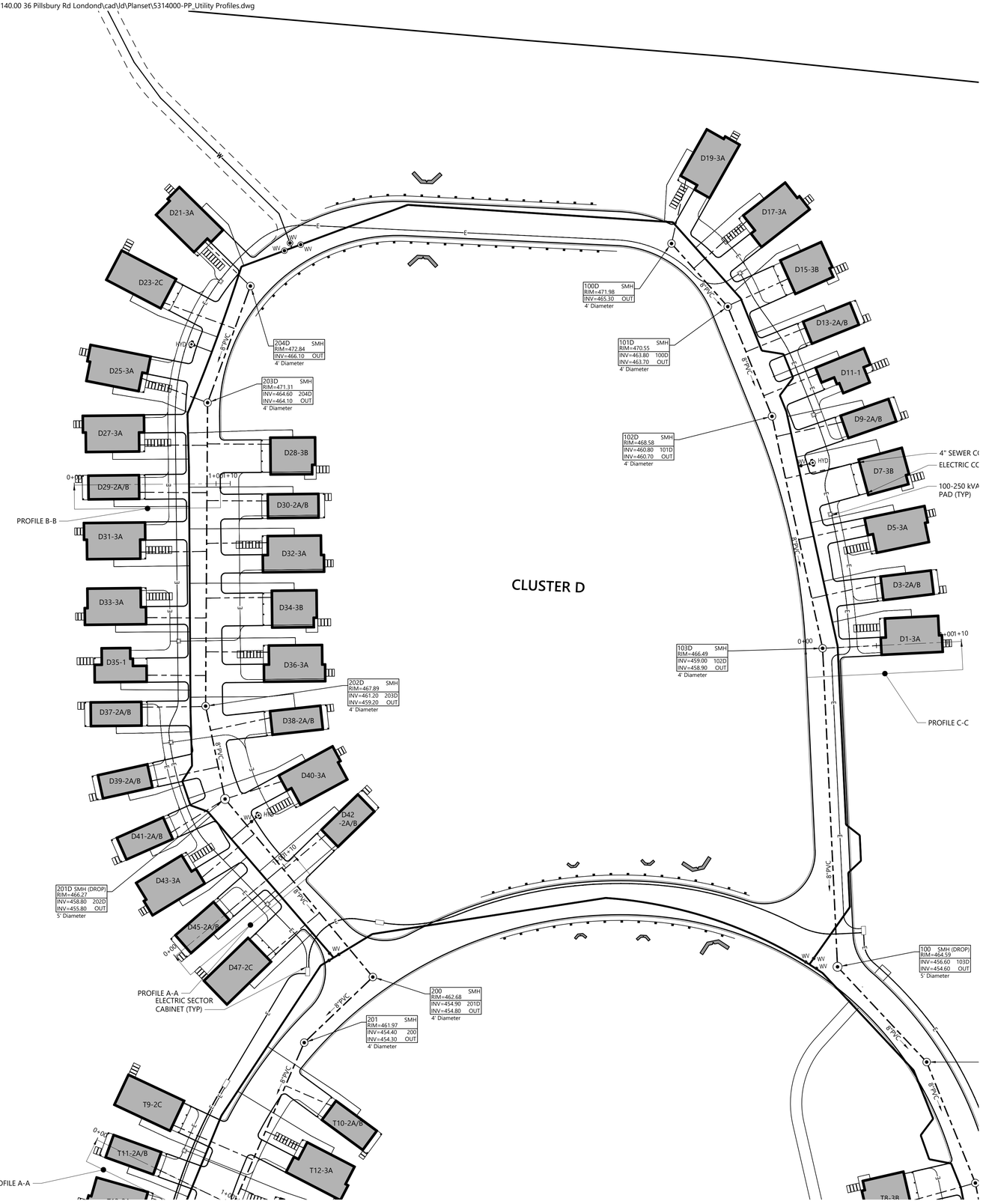
Sheet 48 of 111

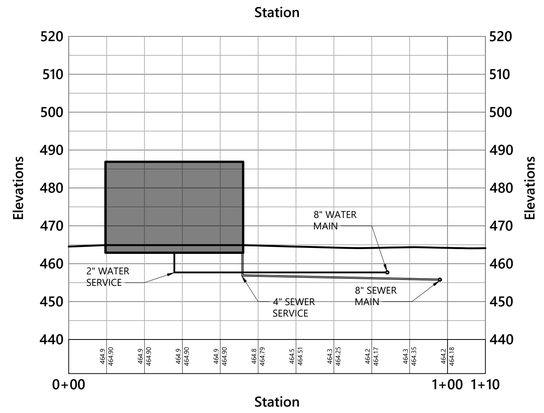
STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Project Number 53140.00

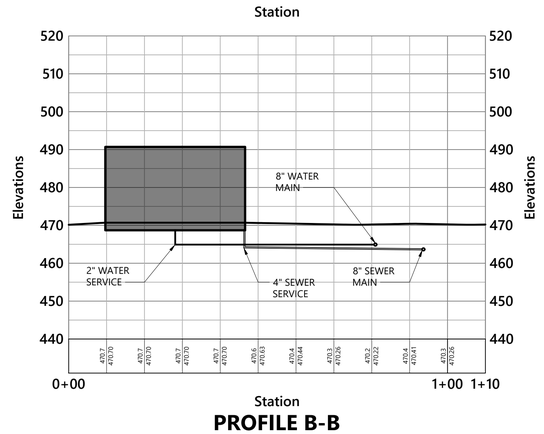
Saved Tuesday, November 4, 2025 5:26:34 PM JHOWE Plotted Tuesday, November 11, 2025 3:53:08 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-PP_Utility Profiles.dwg

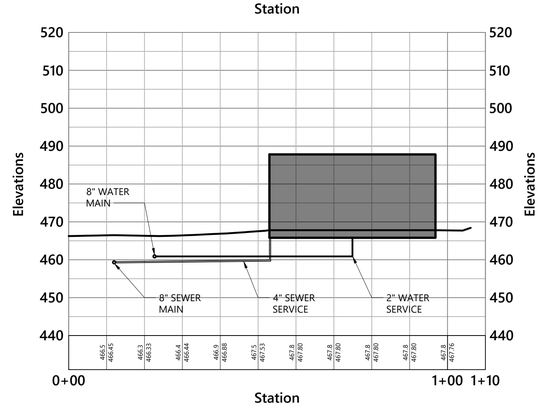




PROFILE A-A



PROFILE B-B



PROFILE C-C

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 10 20 40 Feet
Horiz. 0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: February 20, 2025

Not Approved for Construction

Drawing Title
Sanitary Plan and Profile Kingston Court

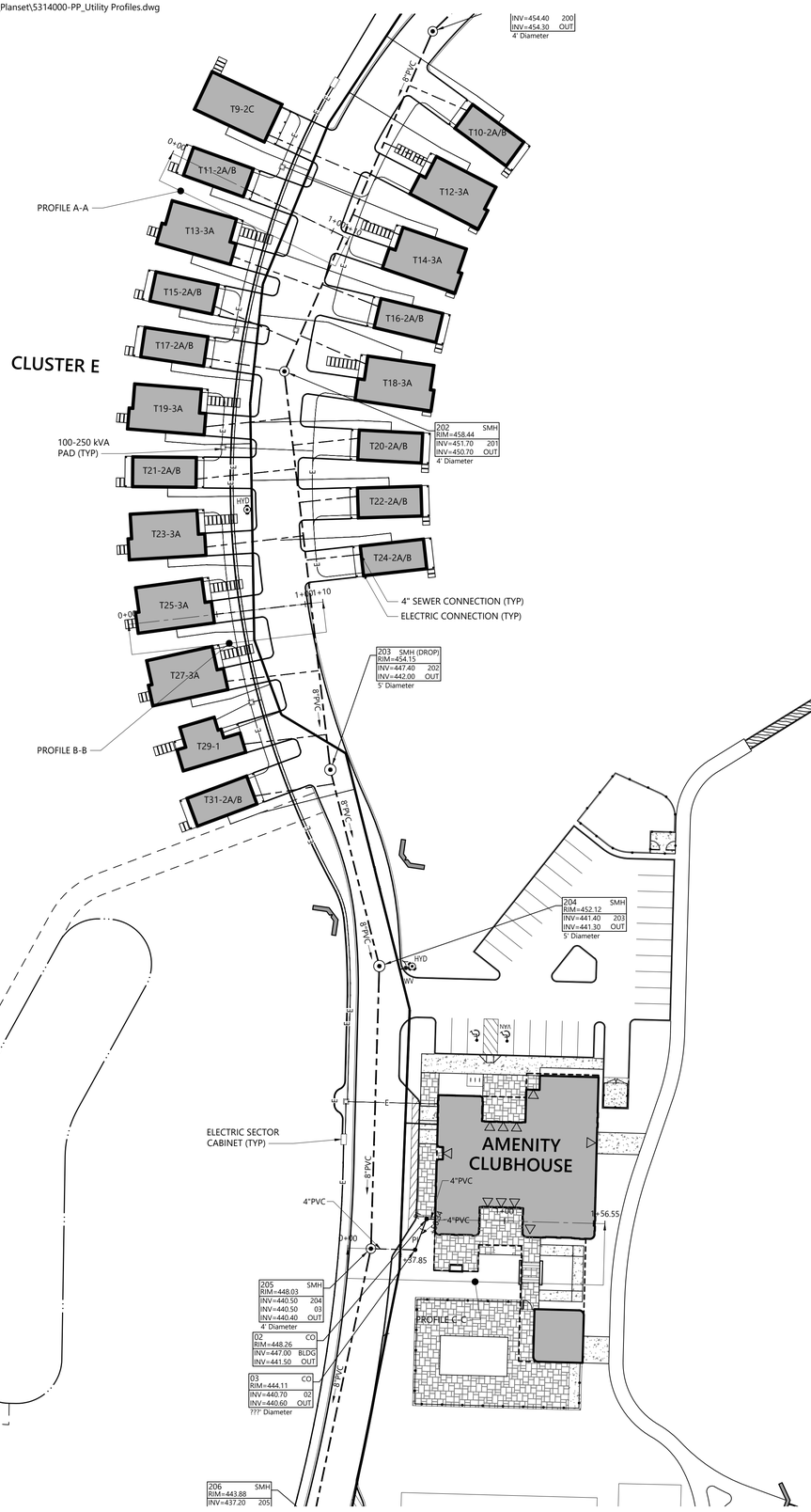
Drawing Number
C4.13

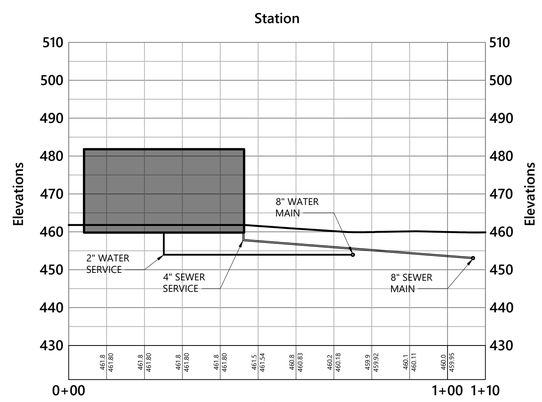
Sheet 49 of 111

STATE OF NEW HAMPSHIRE DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025

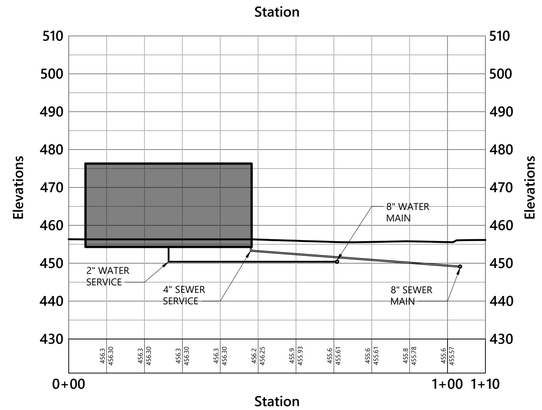
Project Number 53140.00

Saved Tuesday, November 4, 2025 5:26:34 PM JHOWE Plotted Tuesday, November 11, 2025 3:53:29 PM Jason Howe

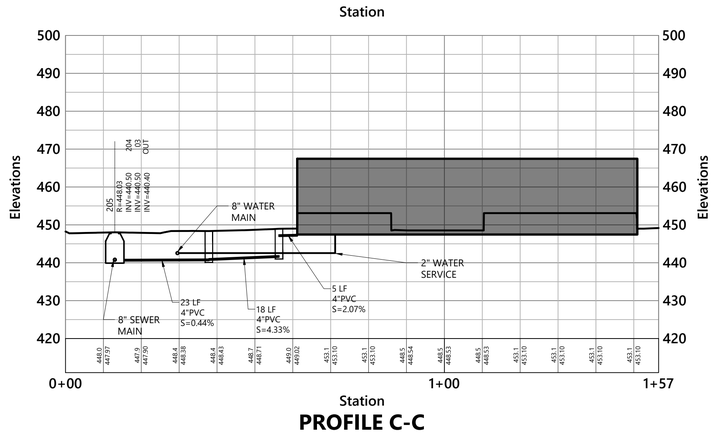




PROFILE A-A



PROFILE B-B



PROFILE C-C

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 10 20 40 Feet
Horiz. 0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: February 20, 2025

Not Approved for Construction

Drawing Title
Sanitary Plan and Profile Thornton Hill Avenue

Drawing Number
C4.14

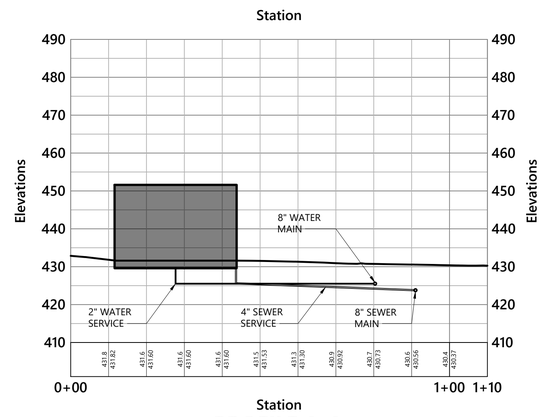
Sheet 50 of 111

Project Number 53140.00

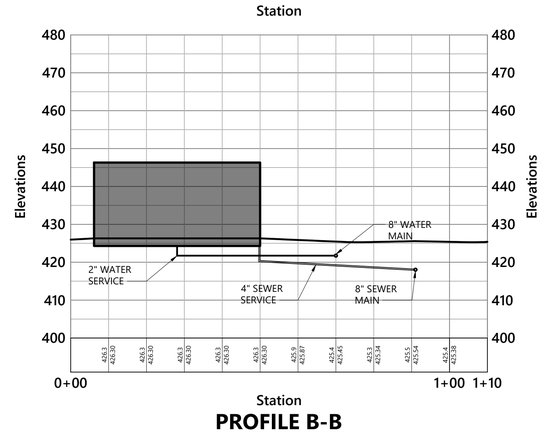
STATE OF NEW HAMPSHIRE - DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Tuesday, November 4, 2025 5:26:34 PM JHOWE Plotted Tuesday, November 11, 2025 3:53:57 PM Jason Howe

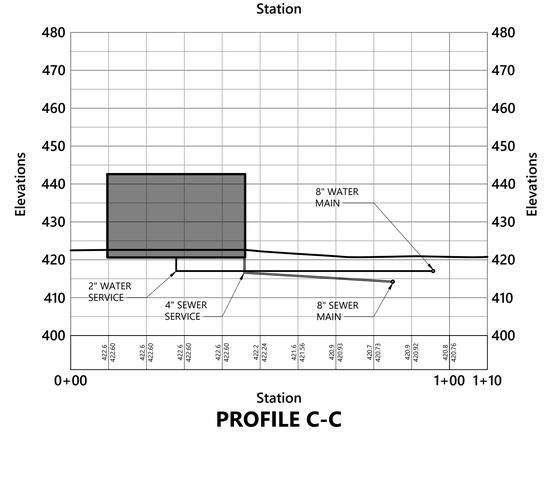




PROFILE A-A



PROFILE B-B



PROFILE C-C

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 10 20 40 Feet
Horiz. 0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ Checked by DHF

Issued for Permitting

Date February 20, 2025

Not Approved for Construction

Drawing Title
Sanitary Plan and Profile Porters Court

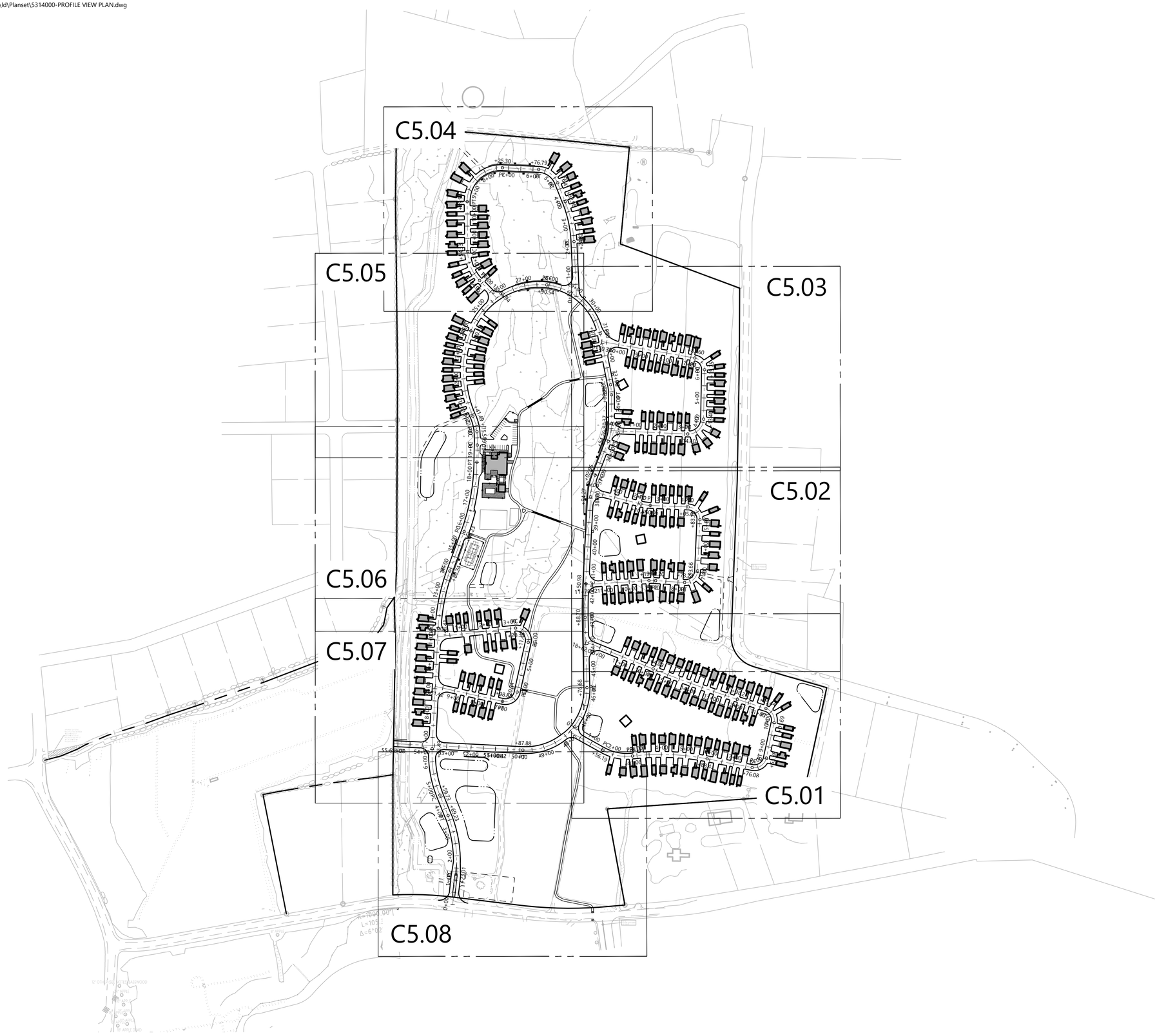
Drawing Number
C4.15

Sheet 51 of 111

Project Number 53140.00

STATE OF NEW HAMPSHIRE DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-PROFILE VIEW PLAN.dwg



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 100 200 400Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Overall Profile View Plan

Drawing Number
C5.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 52 of 111

Project Number
53140.00

Saved Wednesday, November 5, 2025 7:50:42 AM JHOWE Plotted Tuesday, November 11, 2025 7:00:29 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-PROFILE VIEW PLAN.dwg



vhb.com

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: Permitting | Date: February 20, 2025

Not Approved for Construction

Drawing Title
Profile View Plan

Drawing Number
C5.01

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 53 of 111

Project Number 53140.00

Saved Wednesday, November 5, 2025 7:50:42 AM JHOWE Plotted Tuesday, November 11, 2025 7:00:52 PM Jason Howe



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Profile View Plan

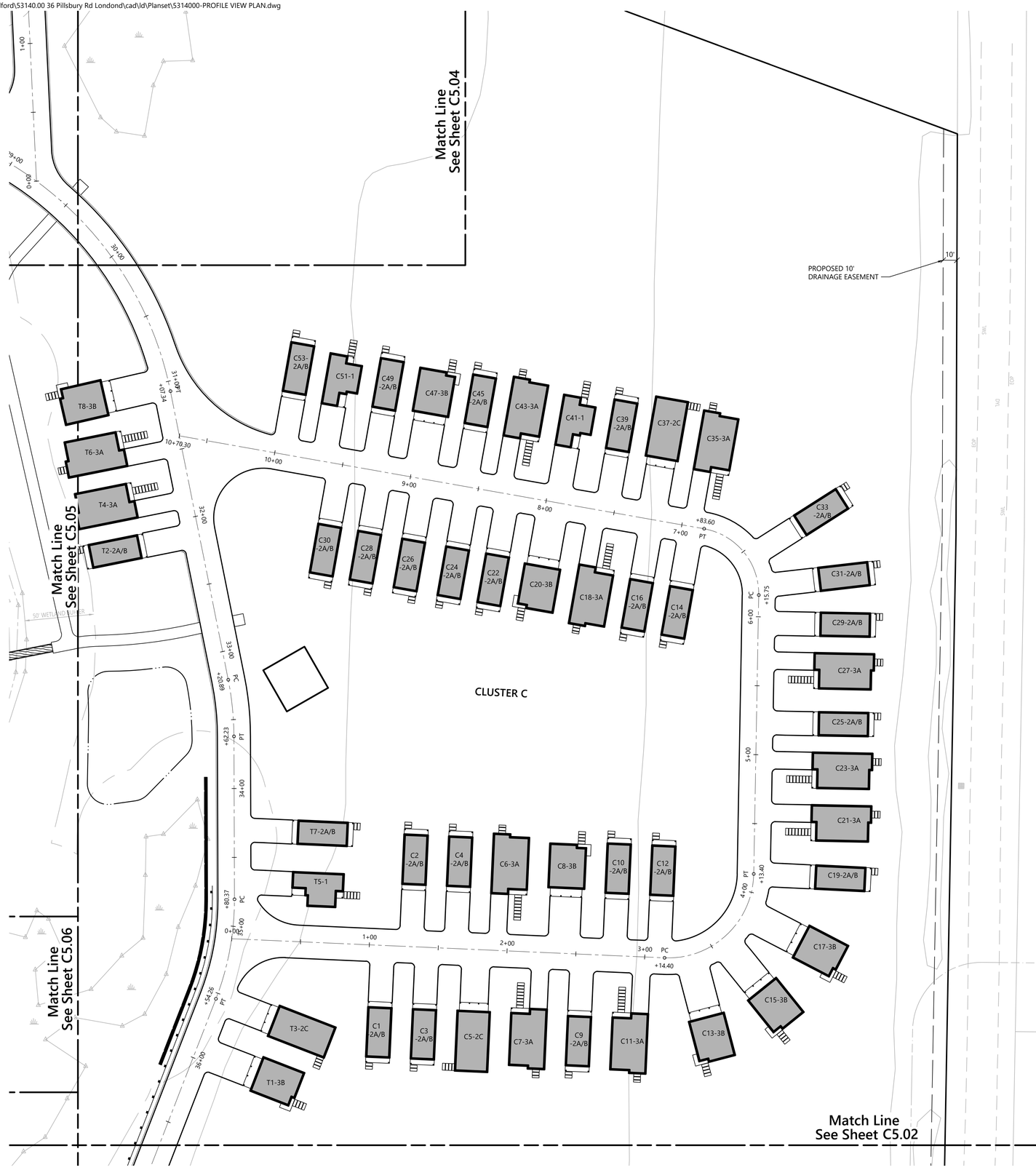
Drawing Number
C5.02

STATE OF NEW HAMPSHIRE
DAVID N. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 54 of 111

Project Number 53140.00

Saved Wednesday, November 5, 2025 7:50:42 AM JHOWE Plotted Tuesday, November 11, 2025 7:01:19 PM Jason Howe



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Profile View Plan

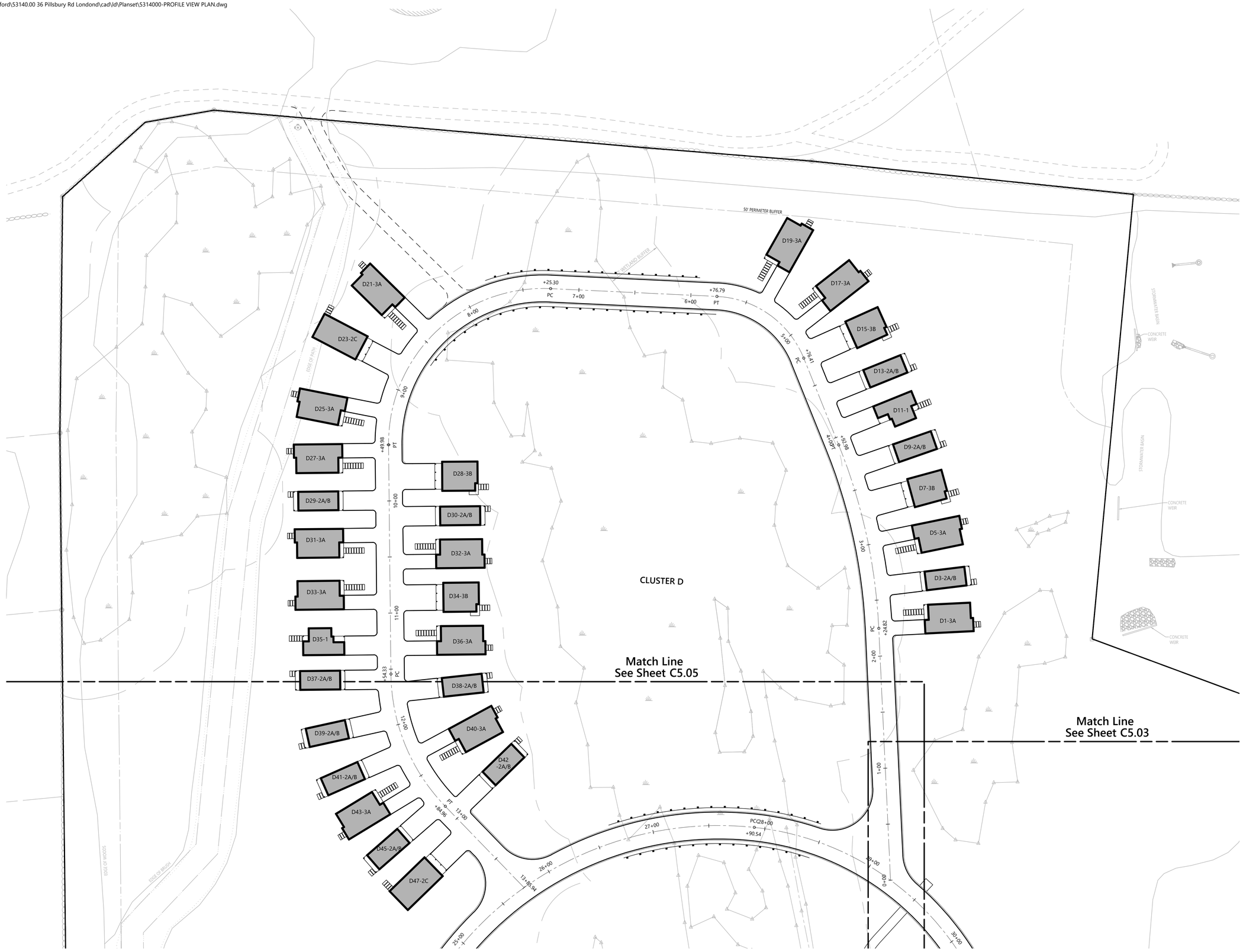
Drawing Number
C5.03

Sheet 55 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-PROFILE VIEW PLAN.dwg



vhb.com

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title: Profile View Plan

Drawing Number: C5.04

Sheet 56 of 111

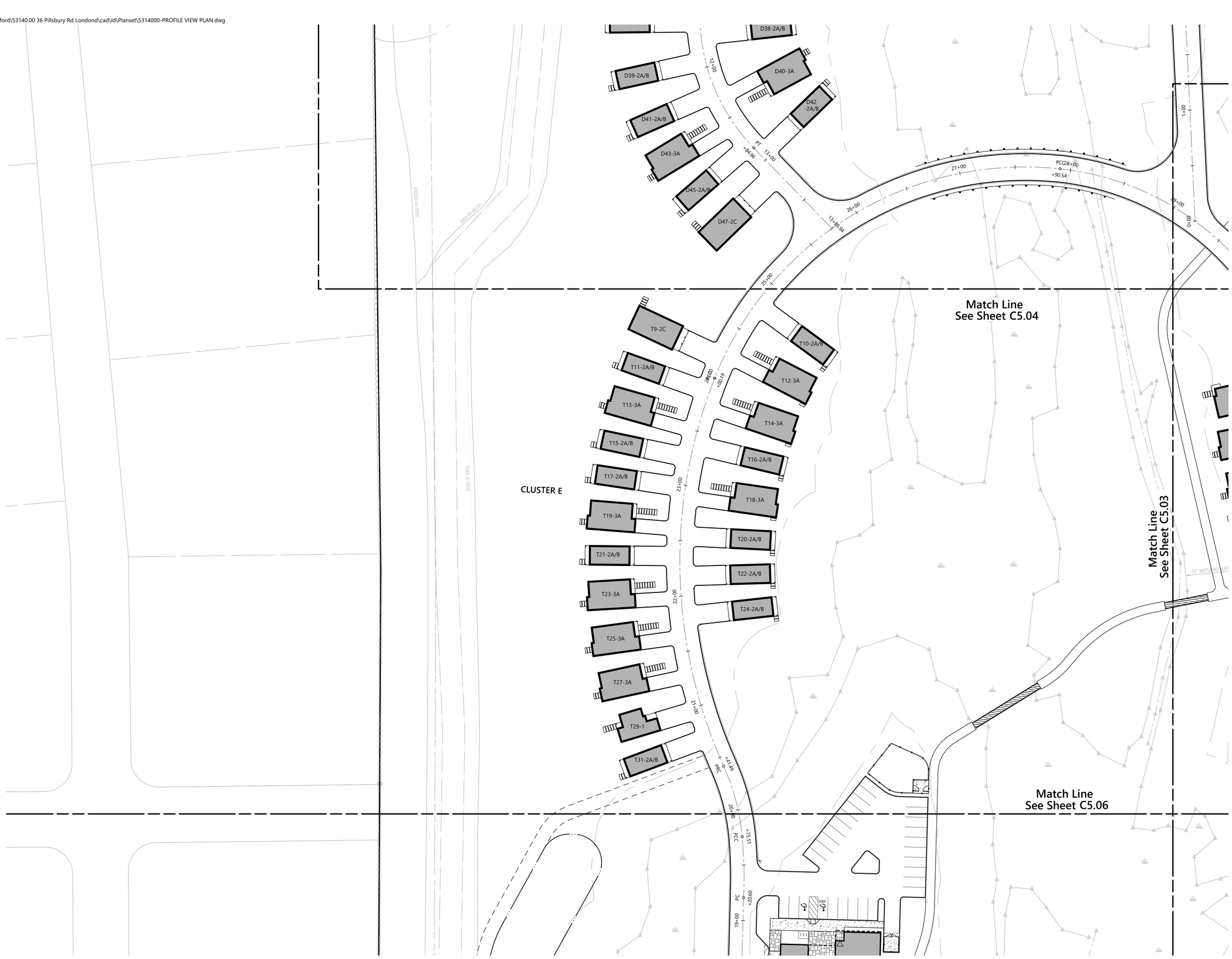
Project Number: 53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Wednesday, November 5, 2025 7:50:42 AM JHOWE Plotted Tuesday, November 11, 2025 7:02:19 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-PROFILE VIEW PLAN.dwg

Saved Wednesday, November 5, 2025 7:50:42 AM JHOWE Plotted Tuesday, November 11, 2025 7:02:50 PM Jason Howe



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: **Permitting**
Date: **February 20, 2025**

Not Approved for Construction

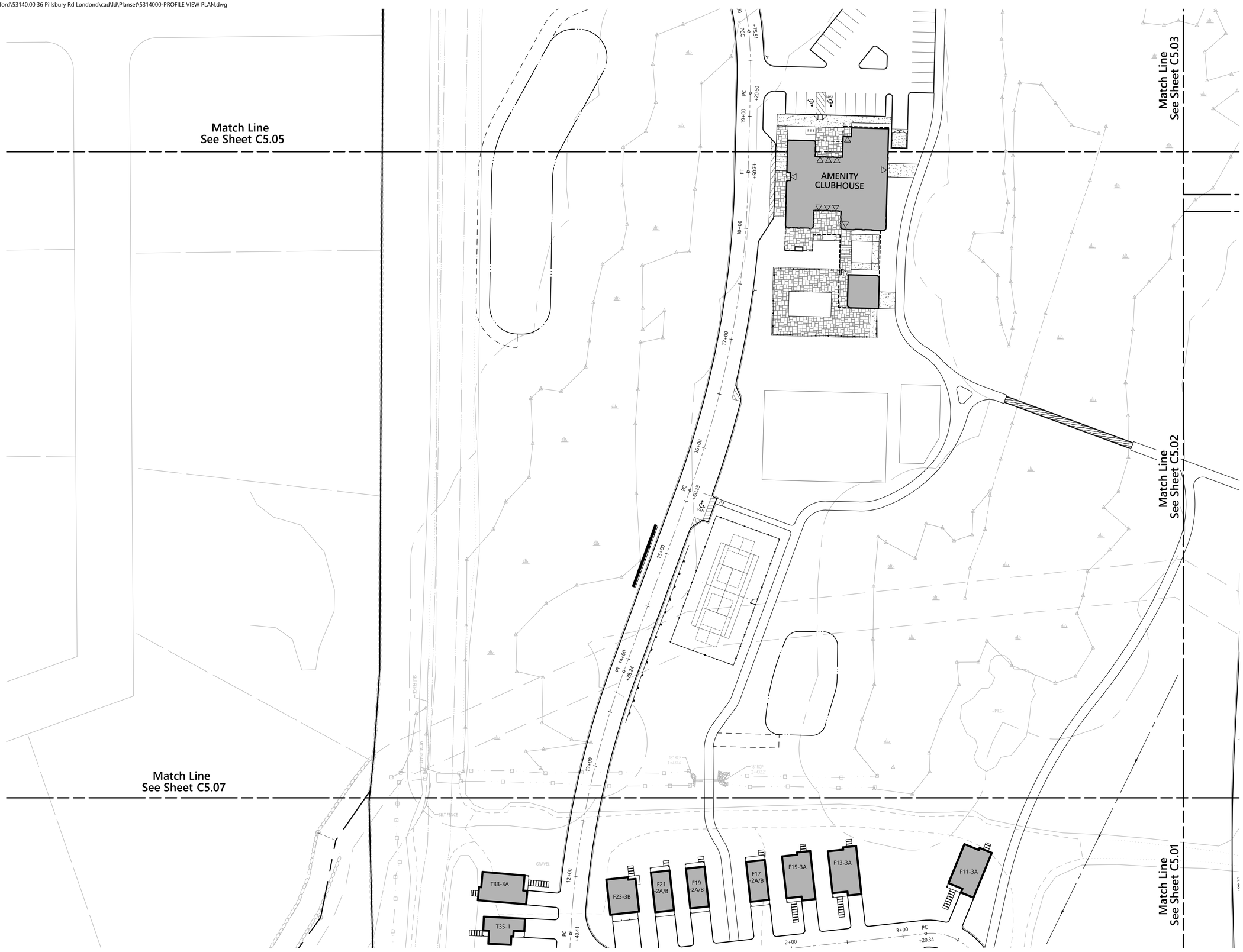
Drawing Title
Profile View Plan

Drawing Number
C5.05

Sheet 57 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title
Profile View Plan

Drawing Number
C5.06

Sheet 58 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Wednesday, November 5, 2025 7:50:42 AM JHOWE Plotted Tuesday, November 11, 2025 7:03:19 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-PROFILE VIEW PLAN.dwg



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Profile View Plan

Drawing Number
C5.07

Sheet 59 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13388
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Saved Wednesday, November 5, 2025 7:50:42 AM JHOWE Plotted Tuesday, November 11, 2025 7:03:49 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-PROFILE VIEW PLAN.dwg



Saved Wednesday, November 5, 2025 7:50:42 AM JHOWE Plotted Tuesday, November 11, 2025 7:04:15 PM Jason Howe

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: Permitting

Date: February 20, 2025

Not Approved for Construction

Drawing Title: Profile View Plan

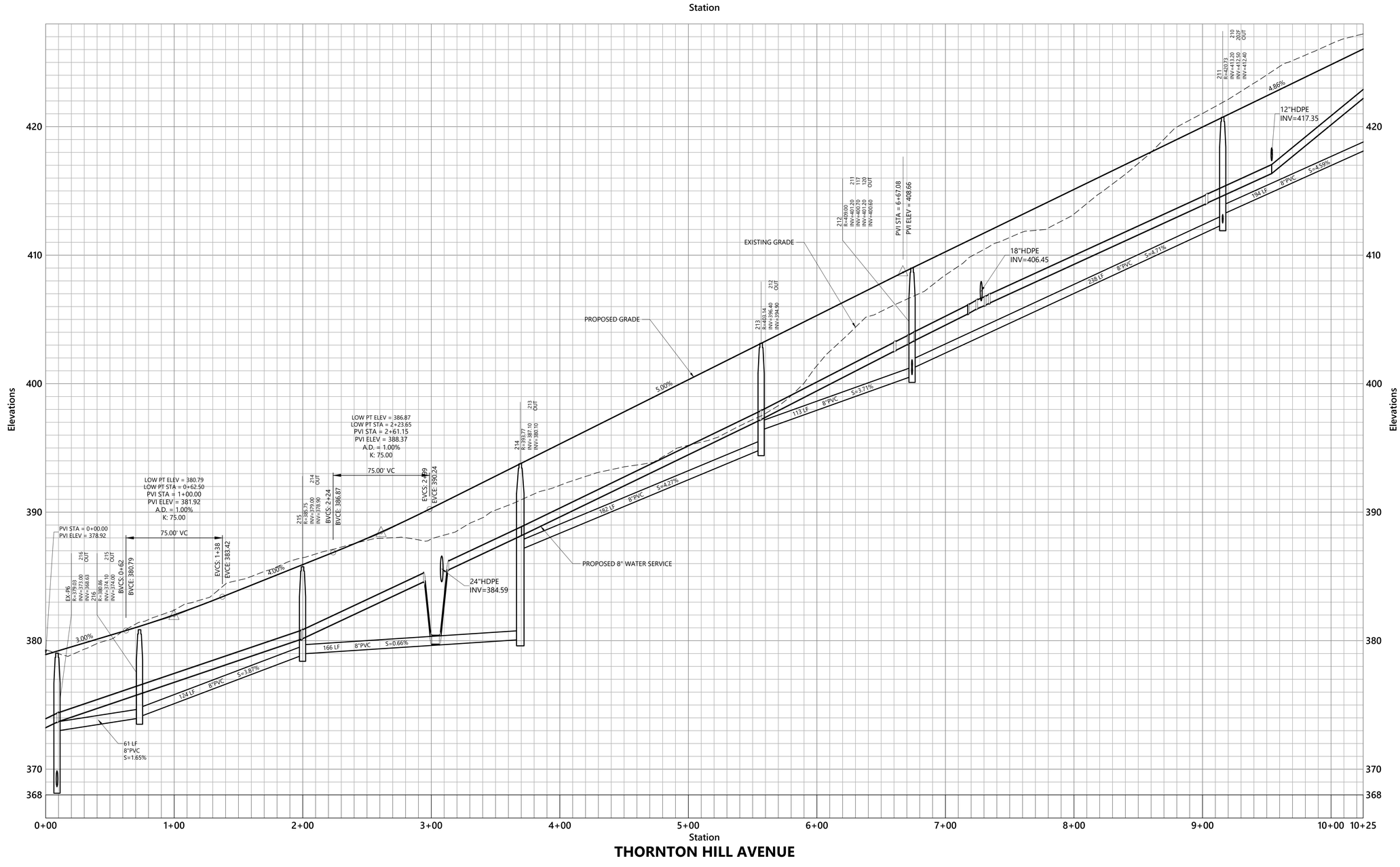
Drawing Number: C5.08

Sheet 60 of 111

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Project Number: 53140.00

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-PP_Main Drive.dwg



THORNTON HILL AVENUE

Saved Friday, November 7, 2025 5:48:35 PM JHOWE Plotted Tuesday, November 11, 2025 4:01:51 PM Jason Howe

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title

Thornton Hill Avenue Profile

Drawing Number

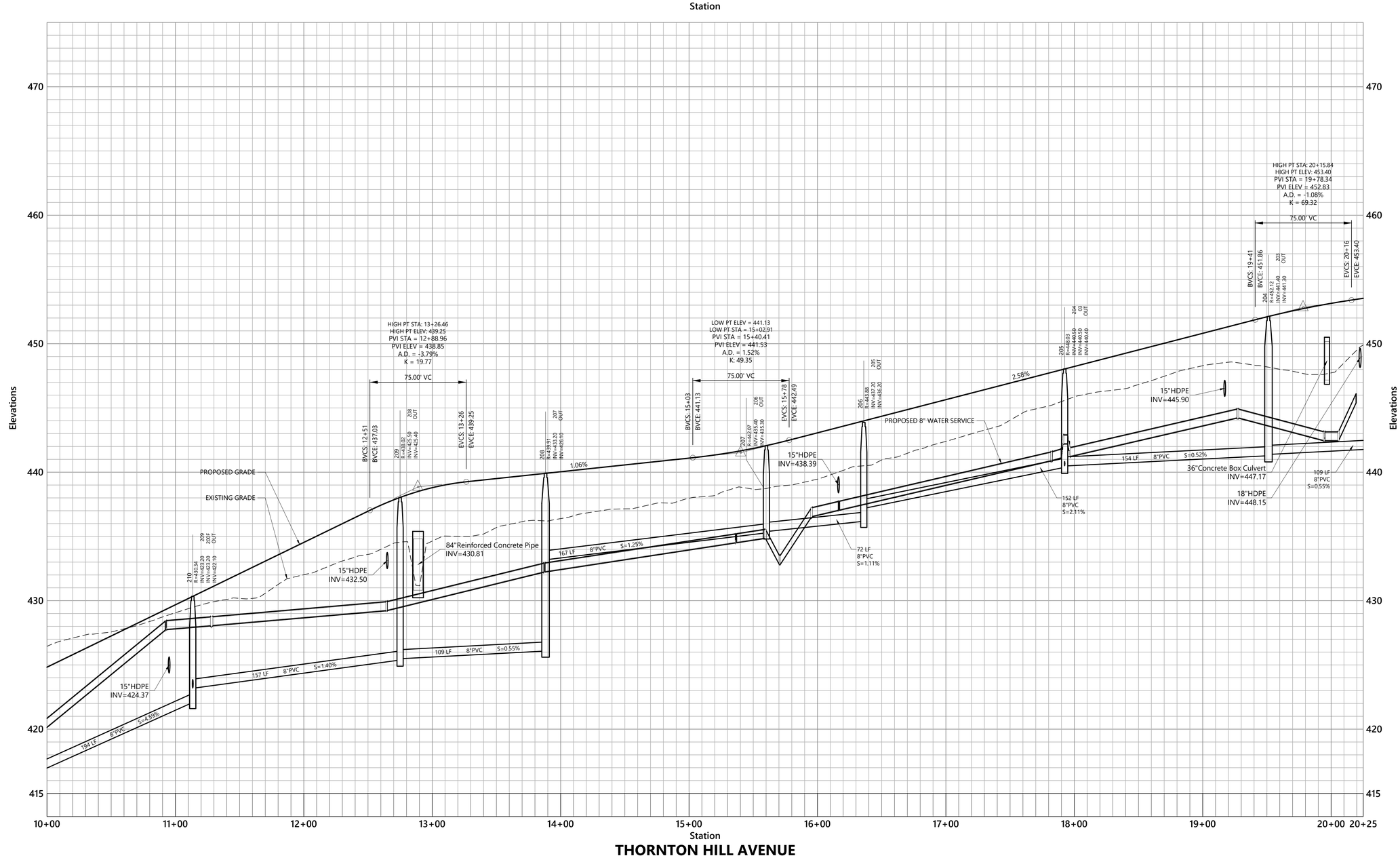
C5.09

Sheet ## of 111

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Project Number 53140.00

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-PP_Main Drive.dwg



vhb.com
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Thornton Hill Avenue Profile

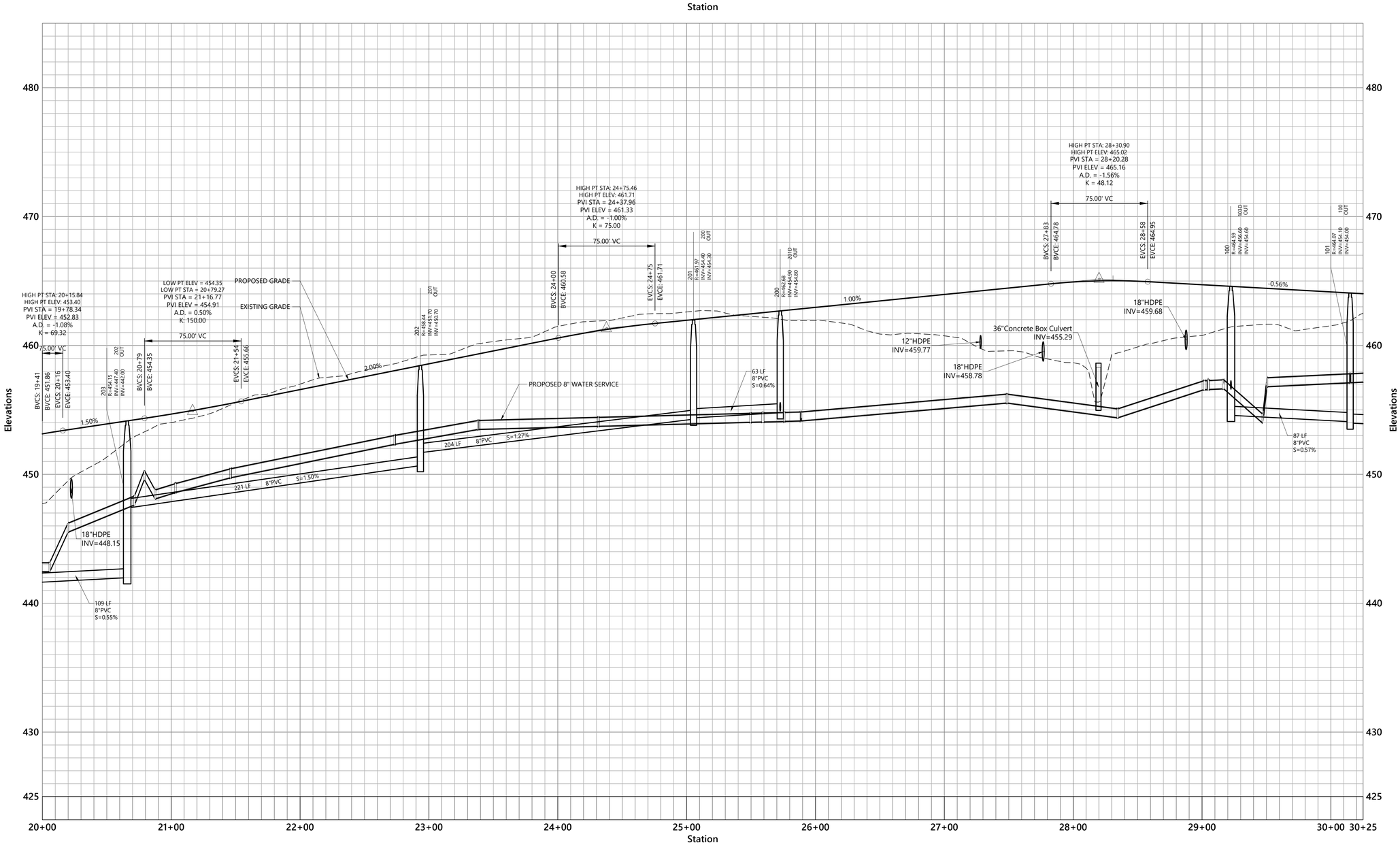
Drawing Number
C5.10

Sheet ## of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Friday, November 7, 2025 5:48:35 PM JHOWE Plotted Tuesday, November 11, 2025 4:02:10 PM Jason Howe



THORNTON HILL AVENUE

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Thornton Hill Avenue Profile

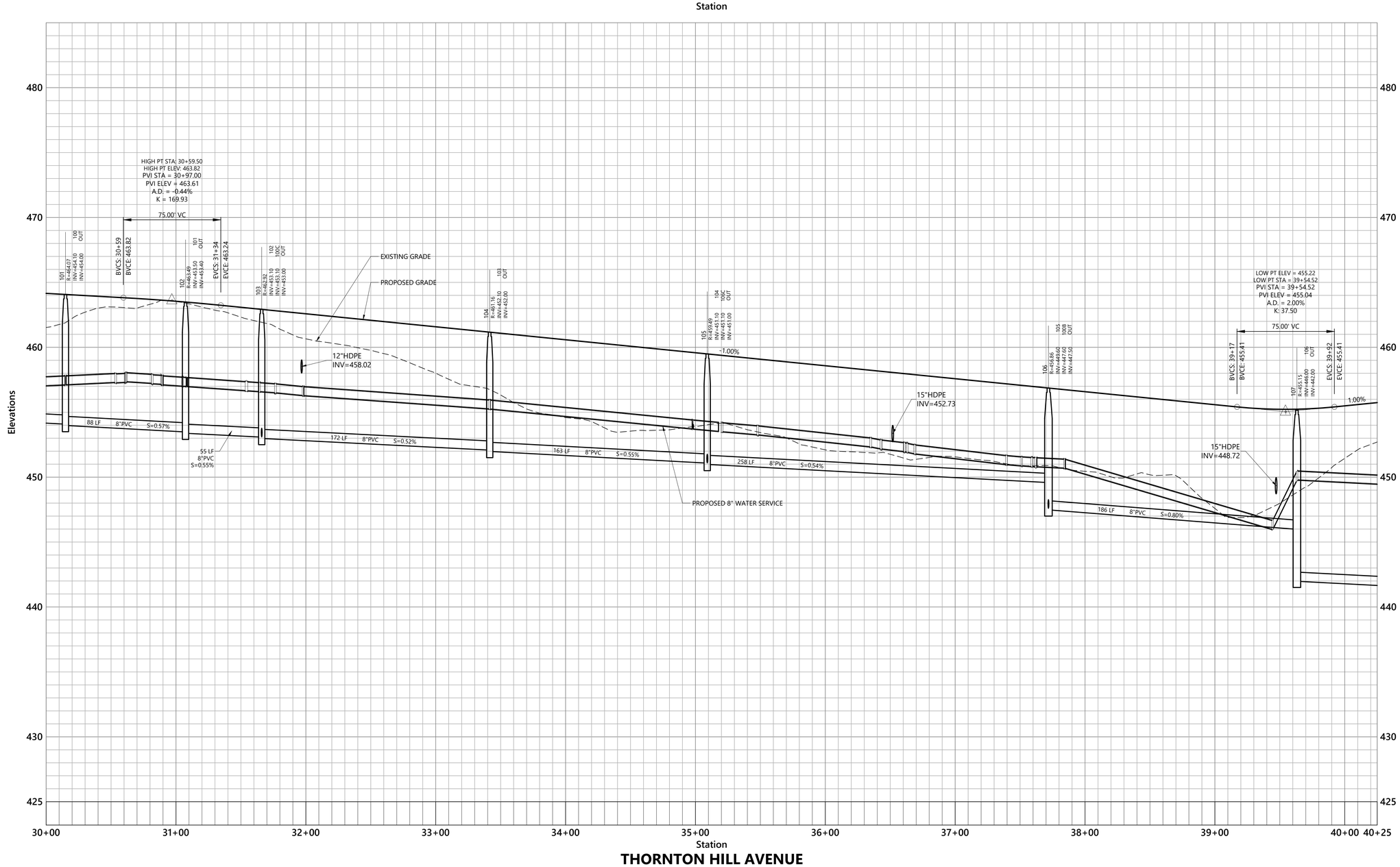
Drawing Number
C5.11

Sheet ## of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13332
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Friday, November 7, 2025 5:48:35 PM JHOWE Plotted Tuesday, November 11, 2025 4:02:25 PM Jason Howe



THORNTON HILL AVENUE

vhb.com

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: **Permitting**
Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Thornton Hill Avenue Profile

Drawing Number
C5.12

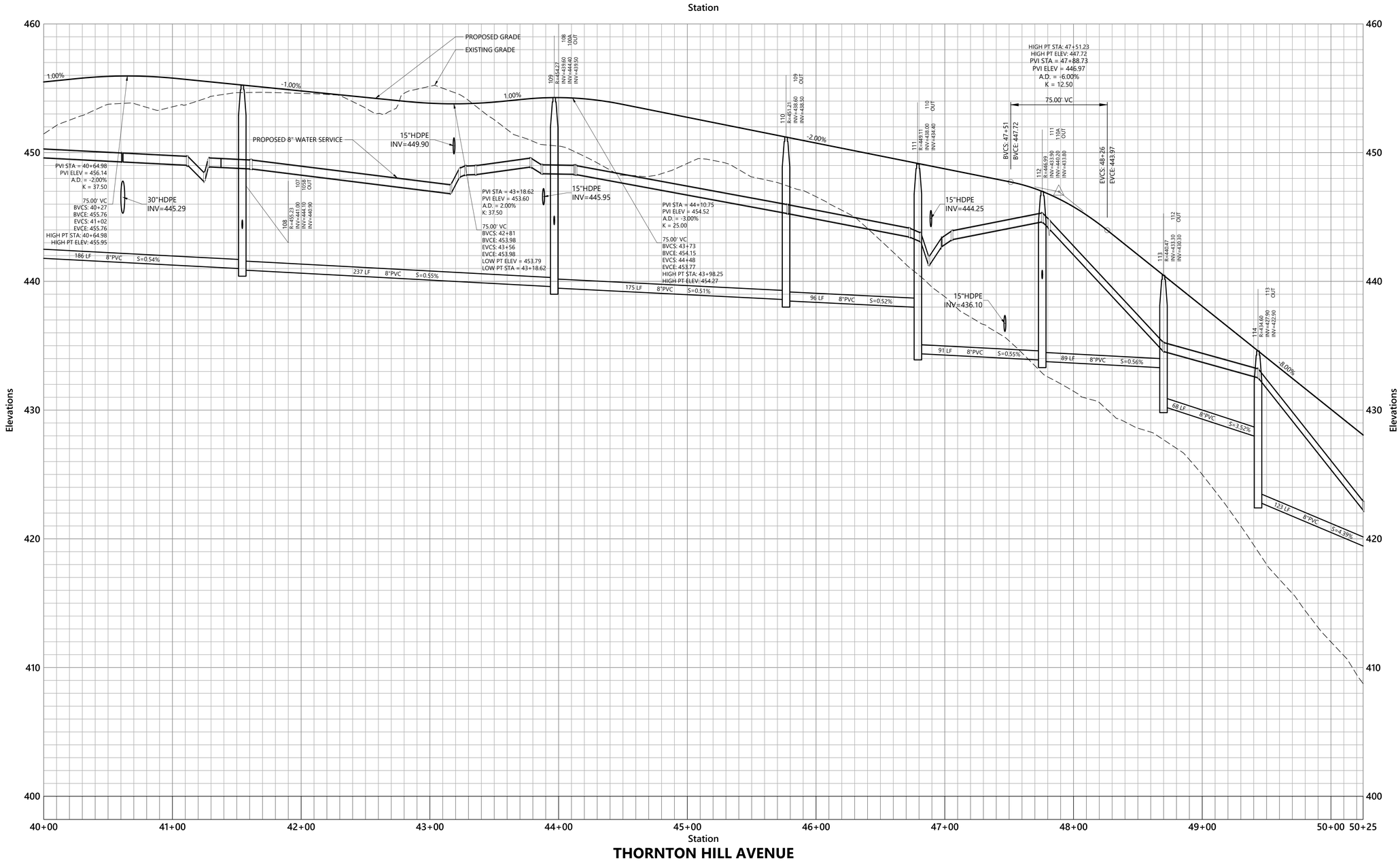
STATE OF NEW HAMPSHIRE
DAVID N. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet ## of 111

Project Number
53140.00

Saved Friday, November 7, 2025 5:48:35 PM JHOWE Plotted Tuesday, November 11, 2025 4:02:40 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-PP_Main Drive.dwg



THORNTON HILL AVENUE

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Thornton Hill Avenue Profile

Drawing Number
C5.13

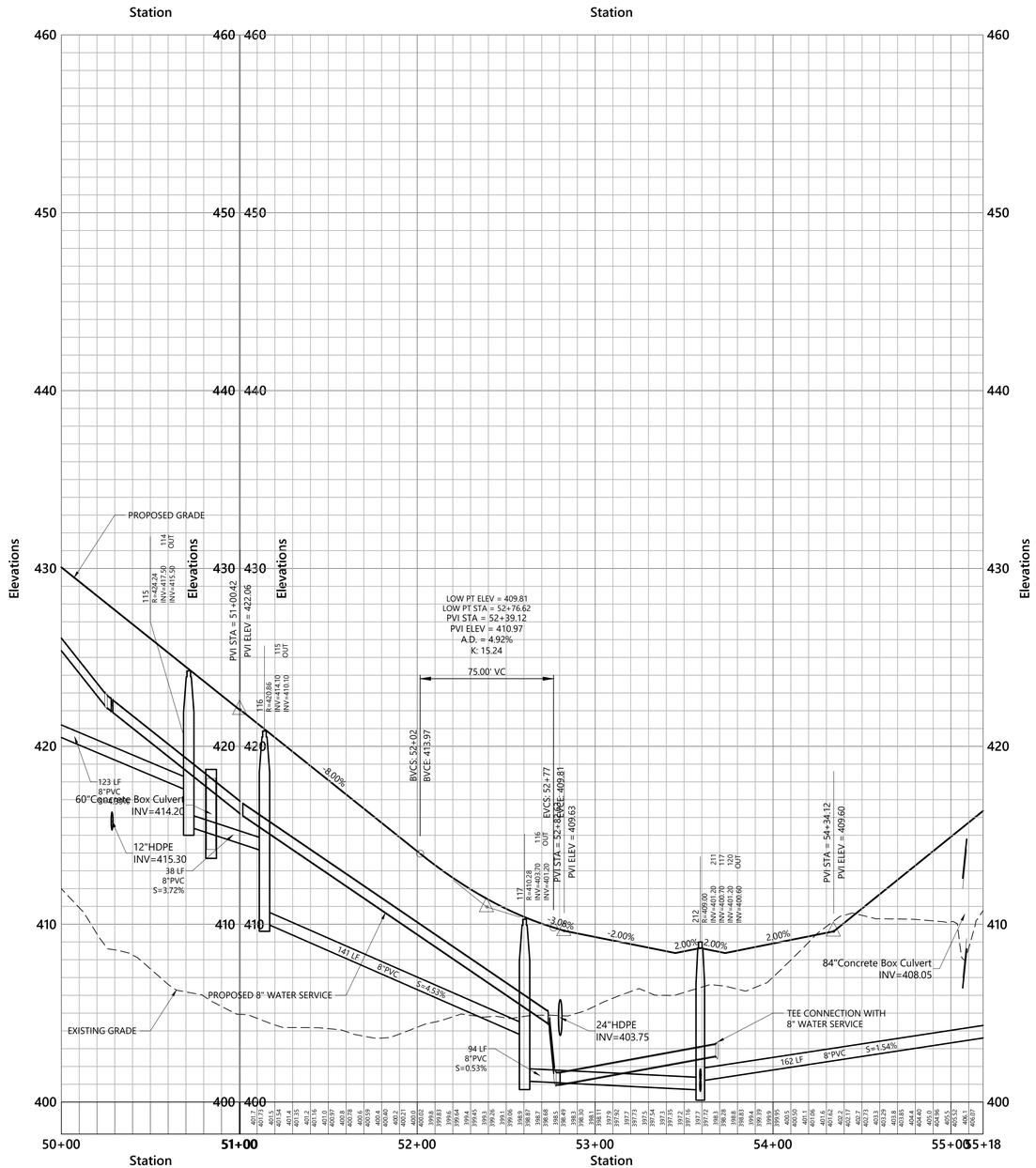
Sheet 65 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID N. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Friday, November 7, 2025 5:48:35 PM JHOWE Plotted Tuesday, November 11, 2025 4:03:00 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-PP_Main Drive.dwg



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Thronton Hill Avenue Profile

Drawing Number
C5.14

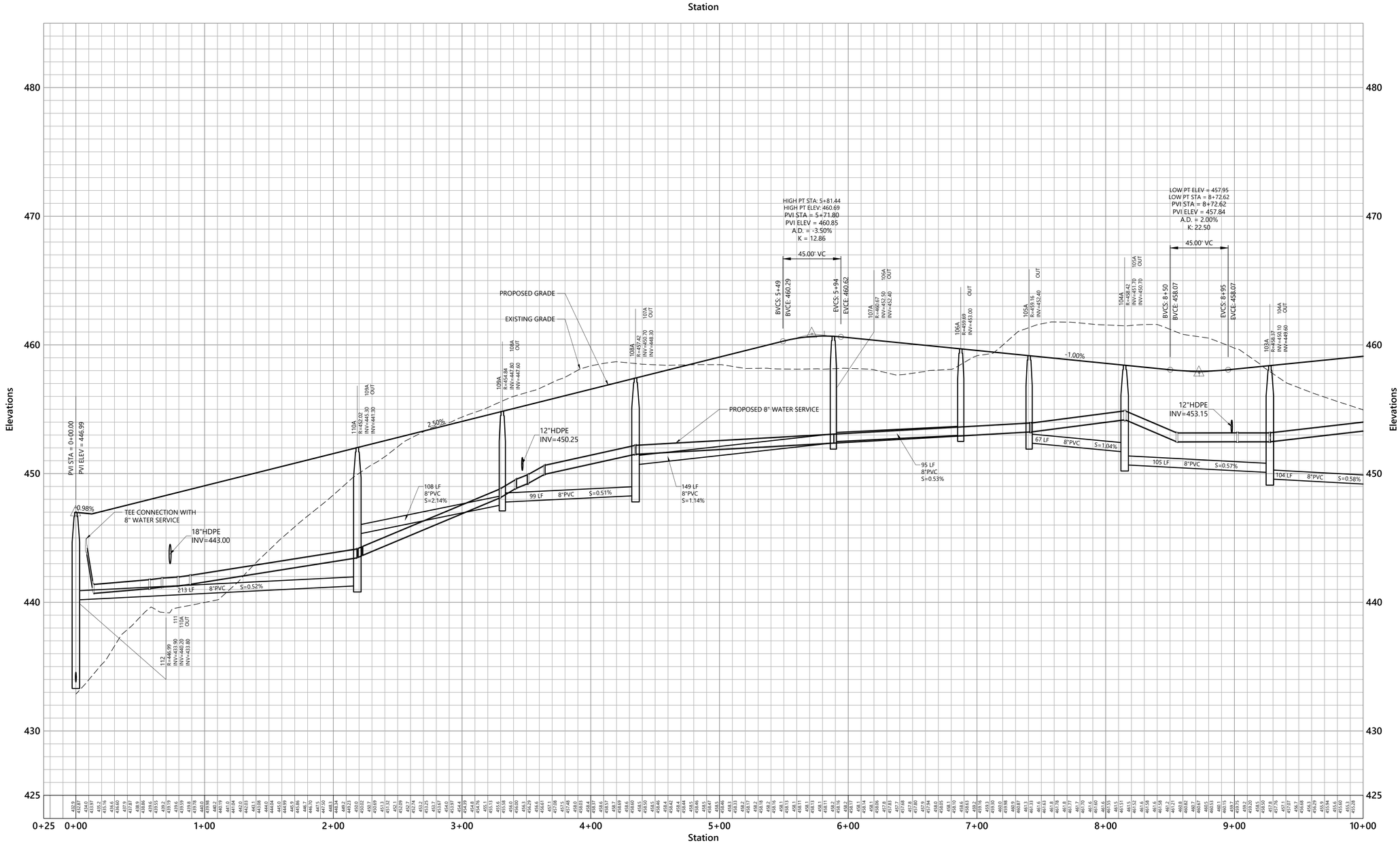
Sheet ## of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13938
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Friday, November 7, 2025 5:48:35 PM JHOWE Plotted Tuesday, November 11, 2025 4:03:20 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-PP_Cluster A.dwg



vhb.com
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: **Permitting**
Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Oxford Court Profile

Drawing Number
C5.15

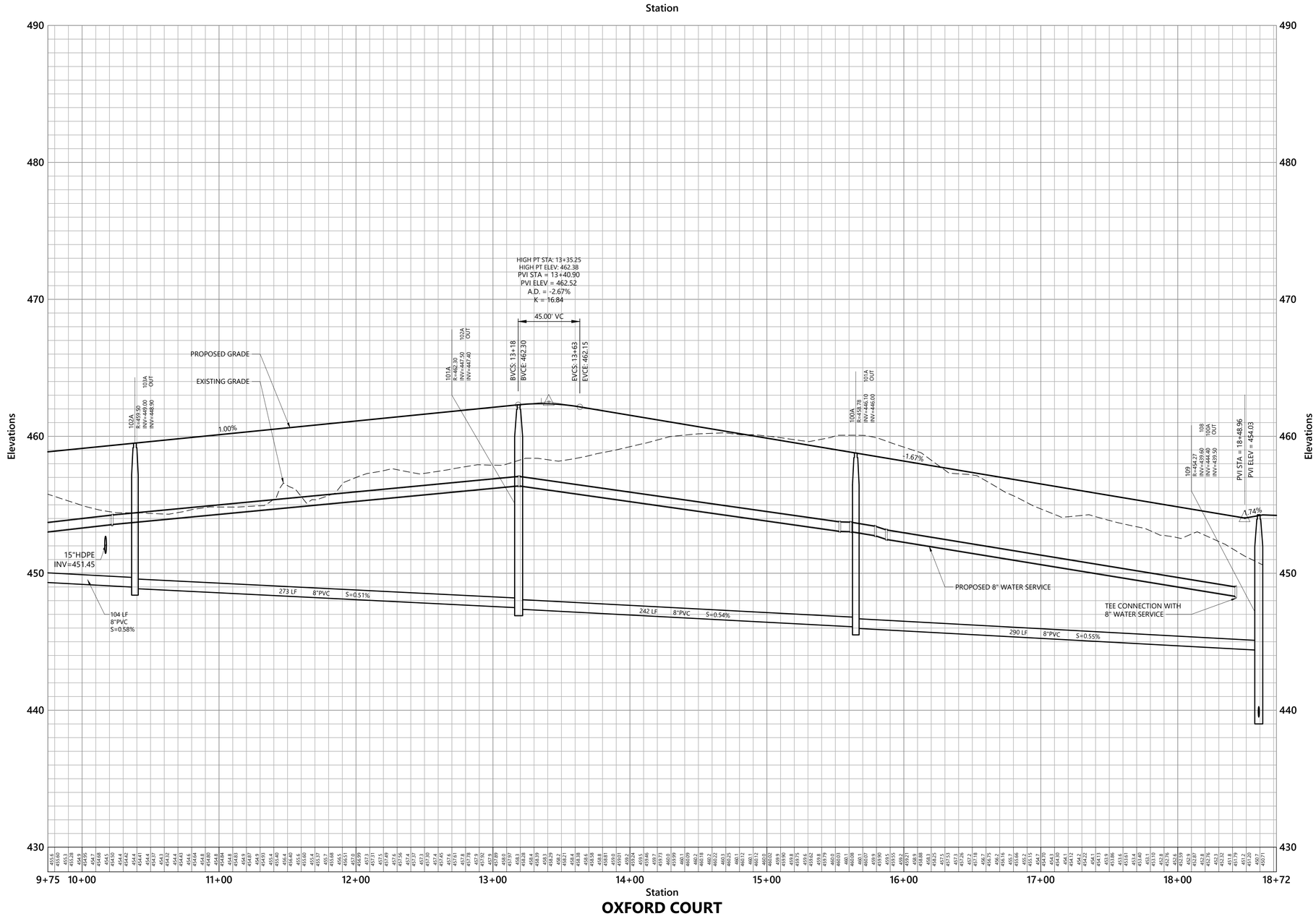
STATE OF NEW HAMPSHIRE – DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 67 of 111

Project Number
53140.00

Saved Wednesday, November 5, 2025 2:15:26 PM JHOWE Plotted Tuesday, November 11, 2025 4:04:42 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-PP_Cluster A.dwg



Saved Wednesday, November 5, 2025 2:15:26 PM JHOWE Plotted Tuesday, November 11, 2025 4:05:00 PM Jason Howe

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Oxford Court Profile

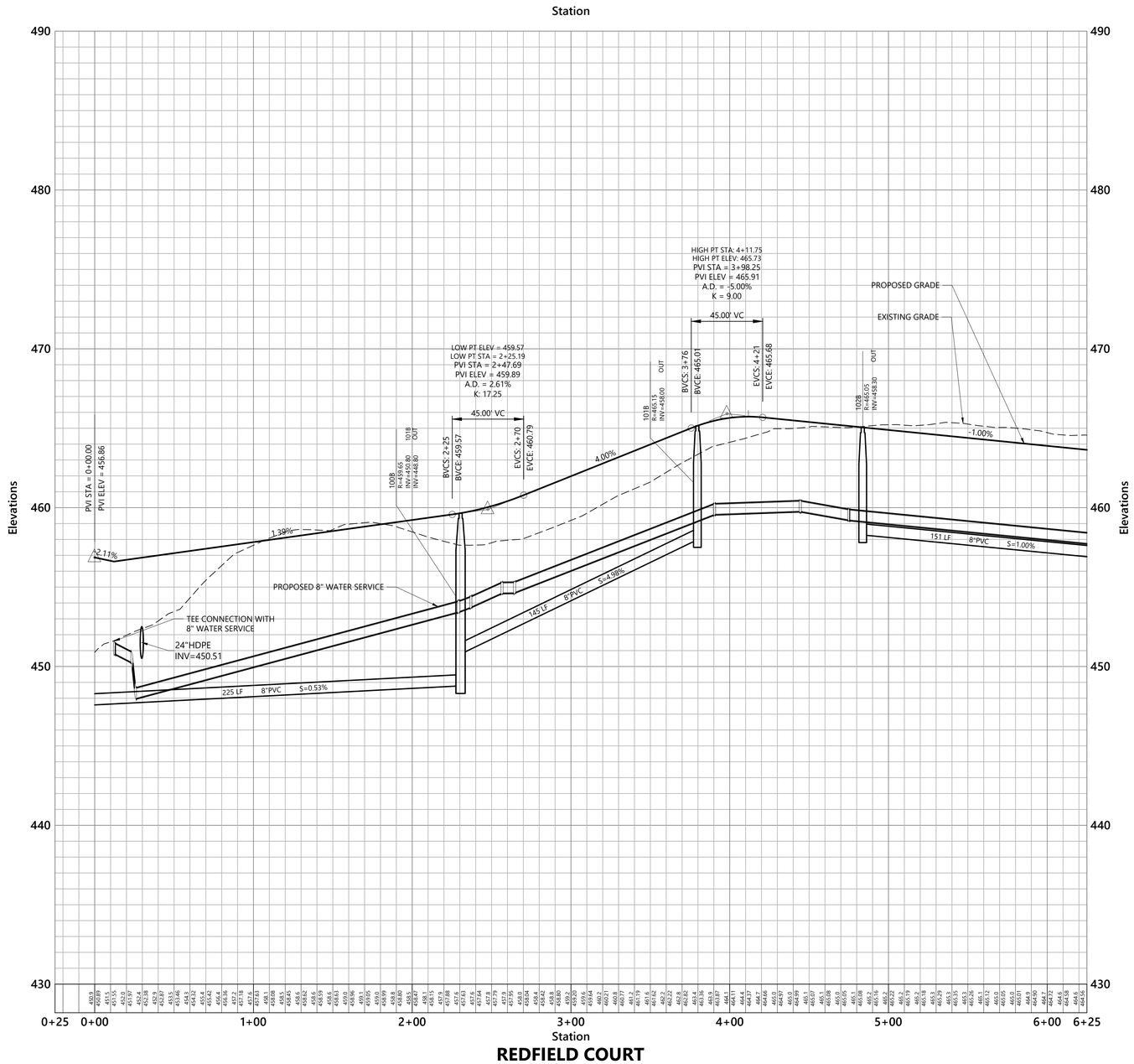
Drawing Number
C5.16

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Sheet 68 of 111

Project Number 53140.00

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-PP_Cluster B.dwg



Saved Tuesday, October 28, 2025 10:51:20 AM JHOWE Plotted Tuesday, November 11, 2025 4:06:30 PM Jason Howe

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ
Checked by DHF
Issued for **Permitting**
Date **February 20, 2025**

Not Approved for Construction

Drawing Title
Redfield Court Profile

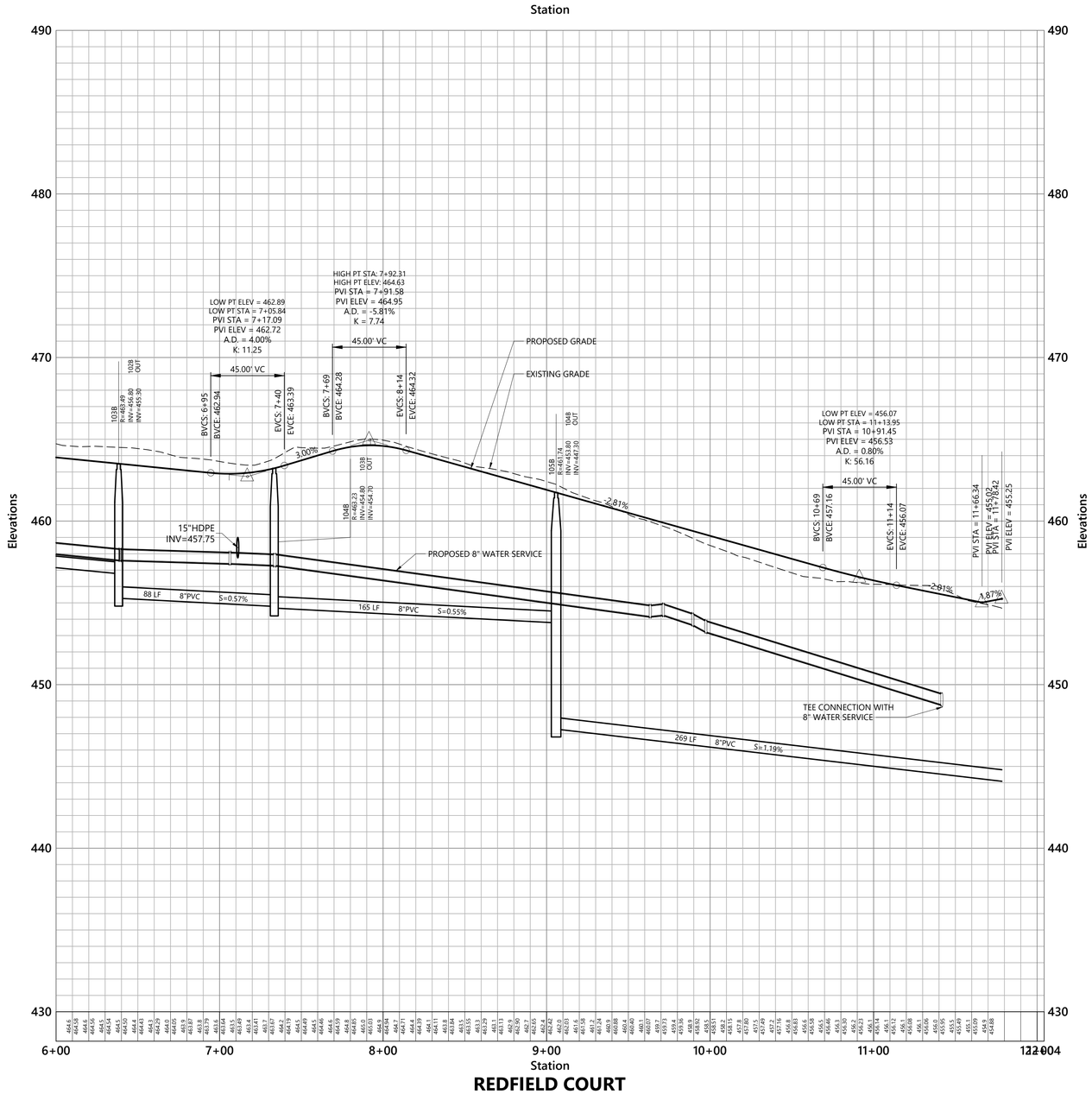
Drawing Number
C5.17

Sheet 69 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-PP_Cluster B.dwg



REDFIELD COURT

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Redfield Court Profile

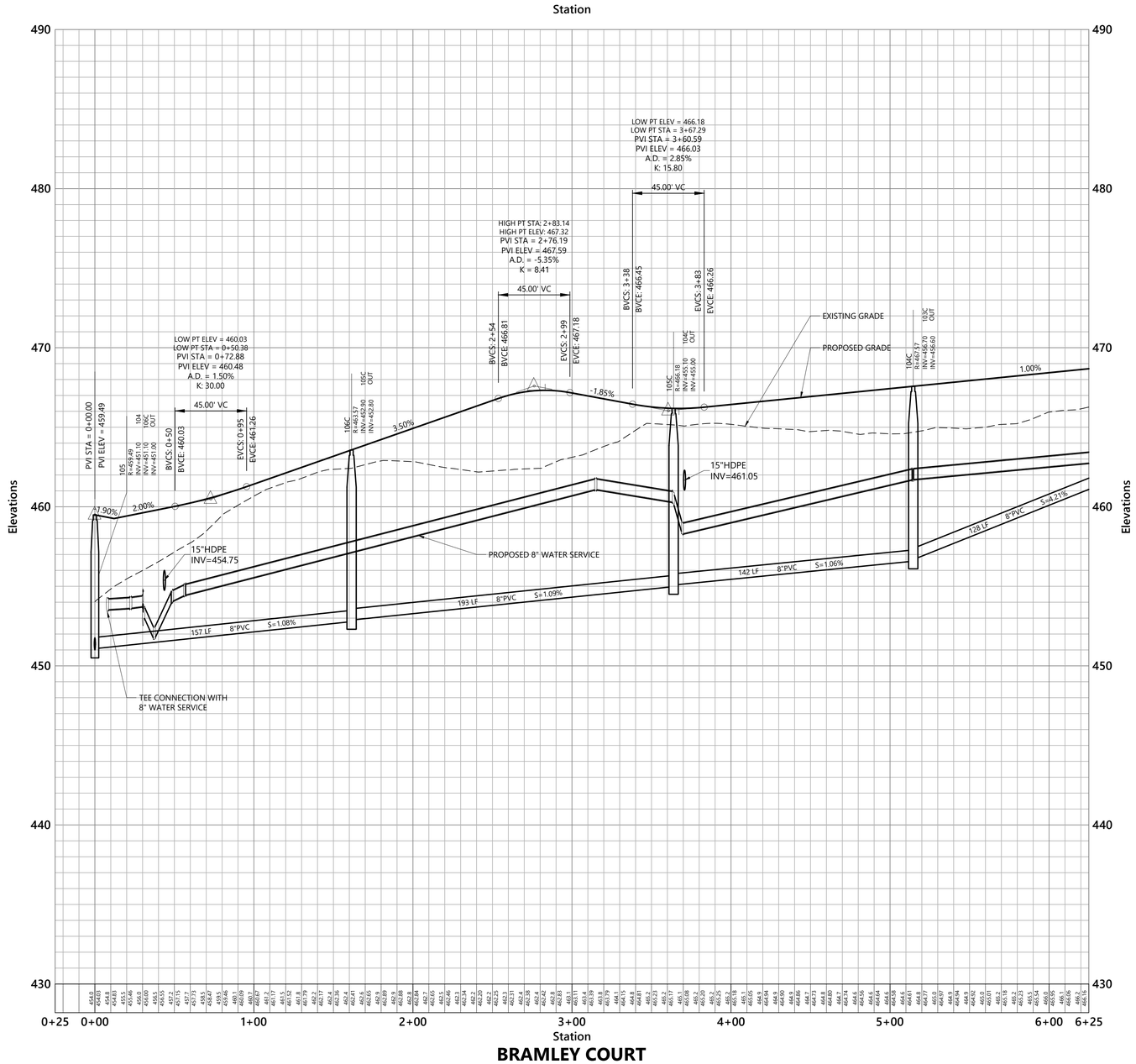
Drawing Number
C5.18

STATE OF NEW HAMPSHIRE
DAVID N FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Sheet 70 of 111

Project Number 53140.00

Saved Tuesday, October 28, 2025 10:51:20 AM JHOWE Plotted Tuesday, November 11, 2025 4:06:51 PM Jason Howe



vhb.com
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ
Checked by DHF
Issued for Permitting
Date February 20, 2025

Not Approved for Construction

Drawing Title
Bramley Court Profile

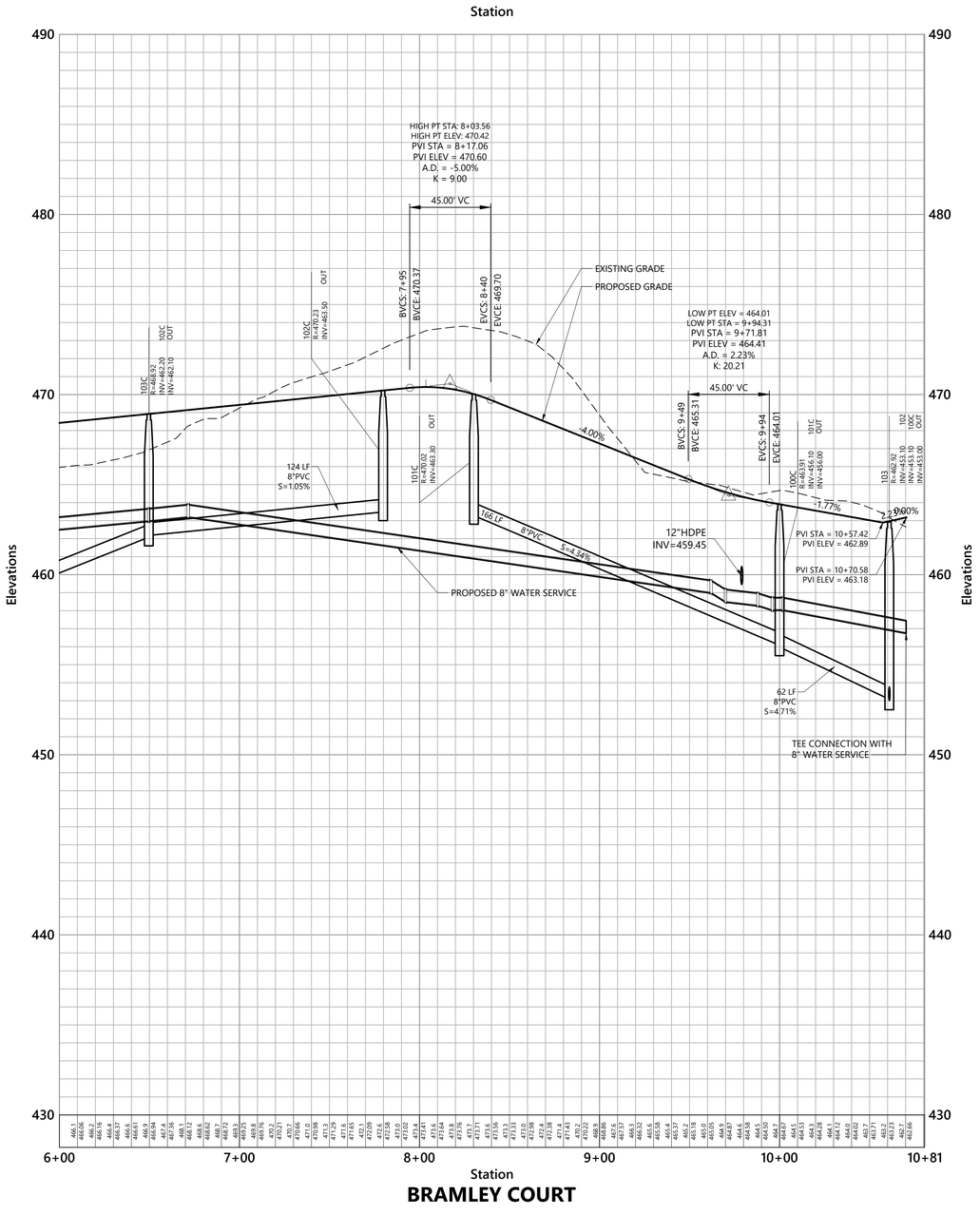
Drawing Number
C5.19

Sheet 71 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Tuesday, October 28, 2025 11:50:50 AM JHOWE Plotted Tuesday, November 11, 2025 4:08:22 PM Jason Howe



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Bramley Court Profile

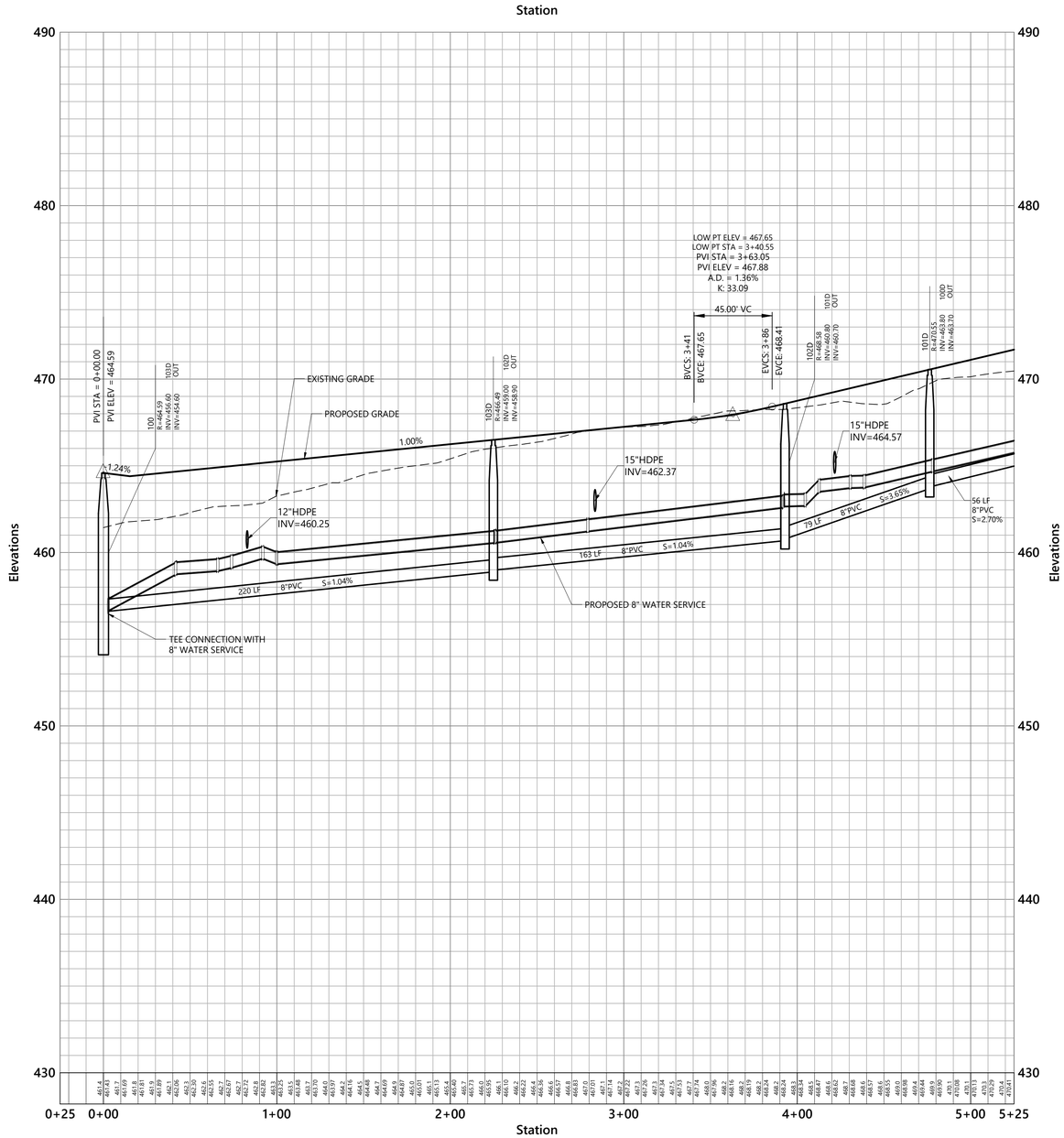
Drawing Number
C5.20

Sheet 72 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE - PROFESSIONAL ENGINEER - LICENSED
DAVID H. FENSTERMACHER No. 13382
11/13/2025

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-PP_Cluster D.dwg



Saved Tuesday, October 28, 2025 3:27:14 PM JHOWE Plotted Tuesday, November 11, 2025 4:09:56 PM Jason Howe

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ
Checked by DHF

Issued for
Permitting
Date
February 20, 2025

Not Approved for Construction

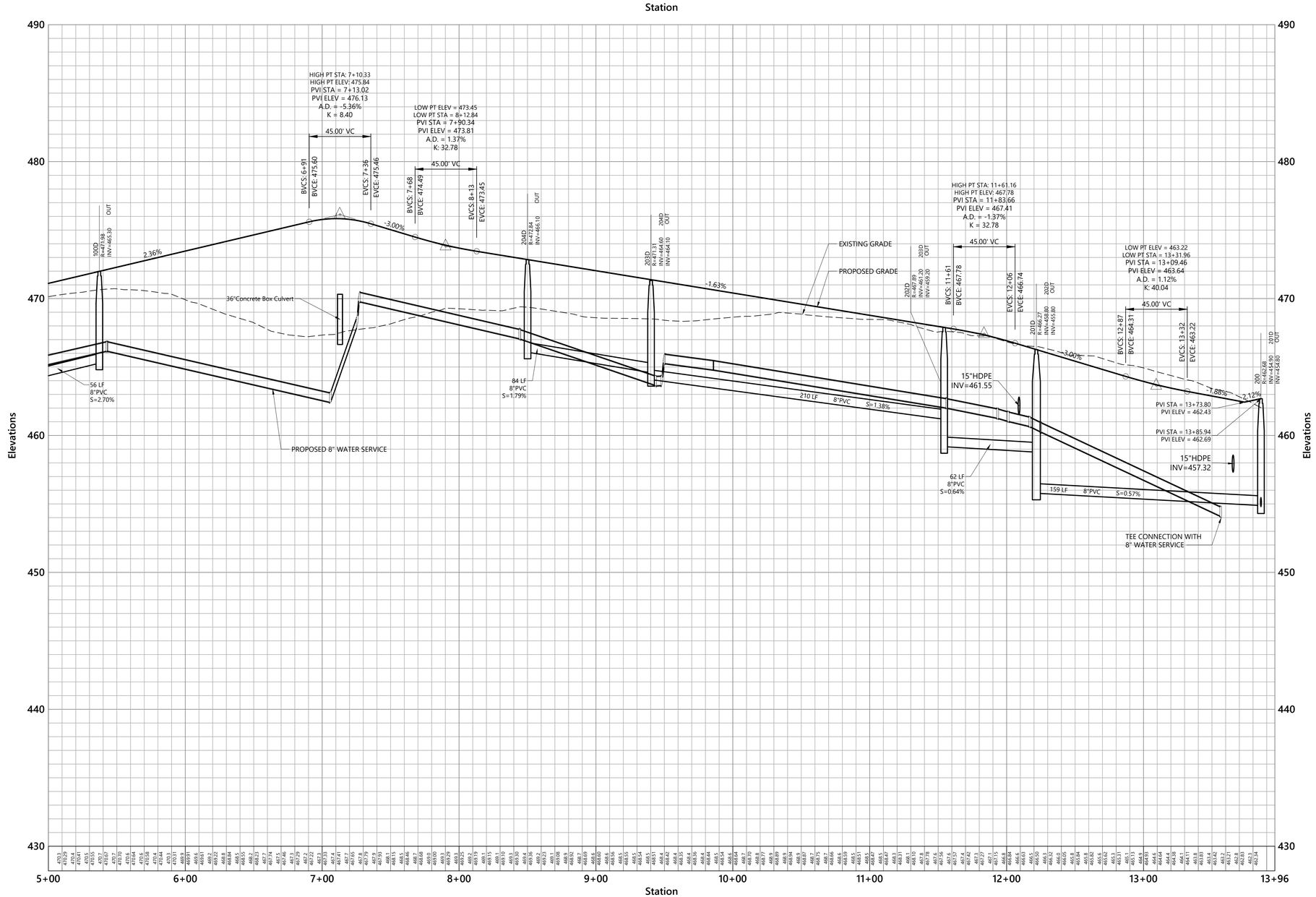
Drawing Title
Kingston Court Profile

Drawing Number
C5.21

Sheet 73 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025



vhb.com

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

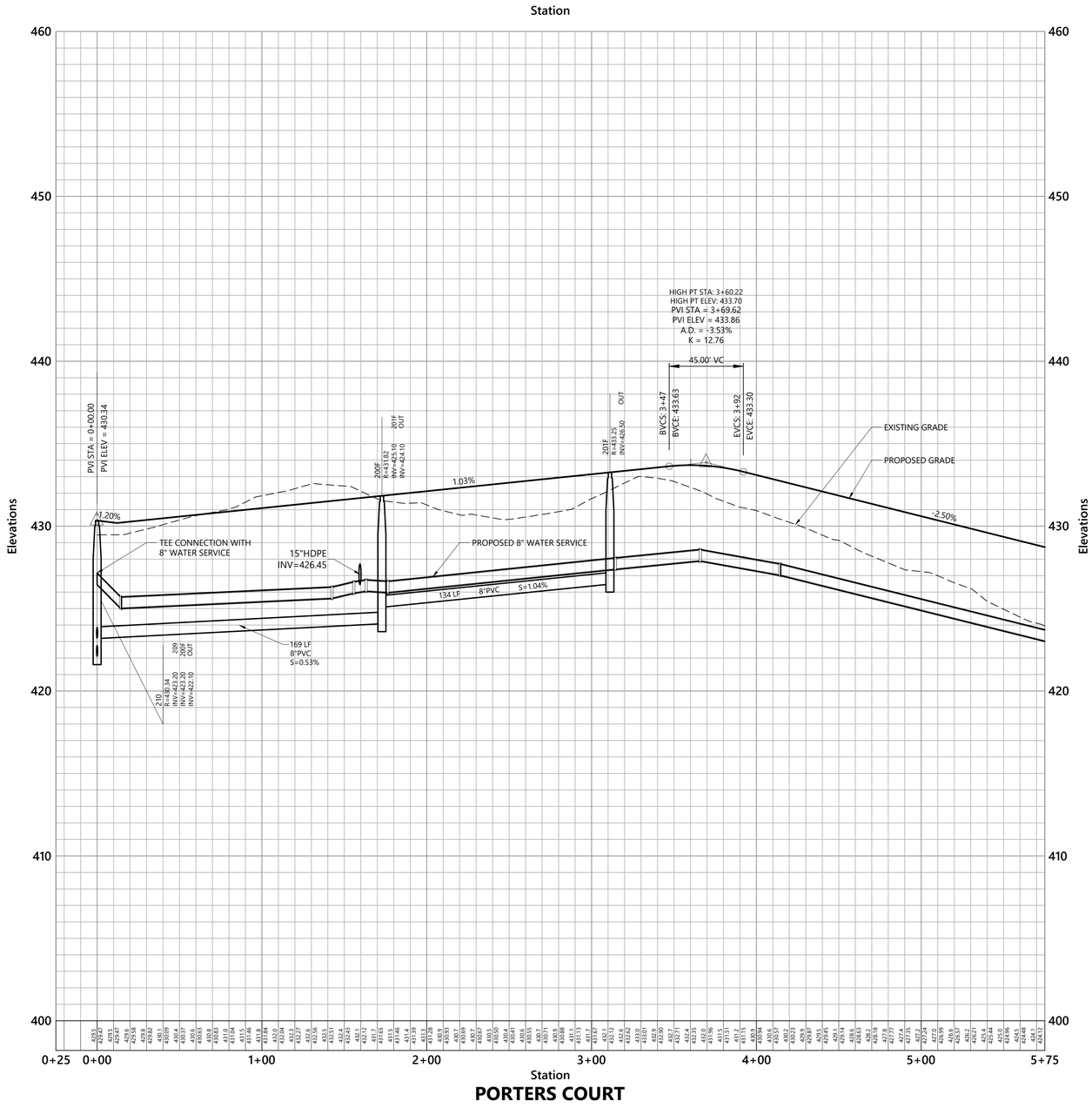
Drawing Title
Kingston Court Profile

Drawing Number
C5.22

Sheet 74 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE - DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Porters Court Profile

Drawing Number
C5.23

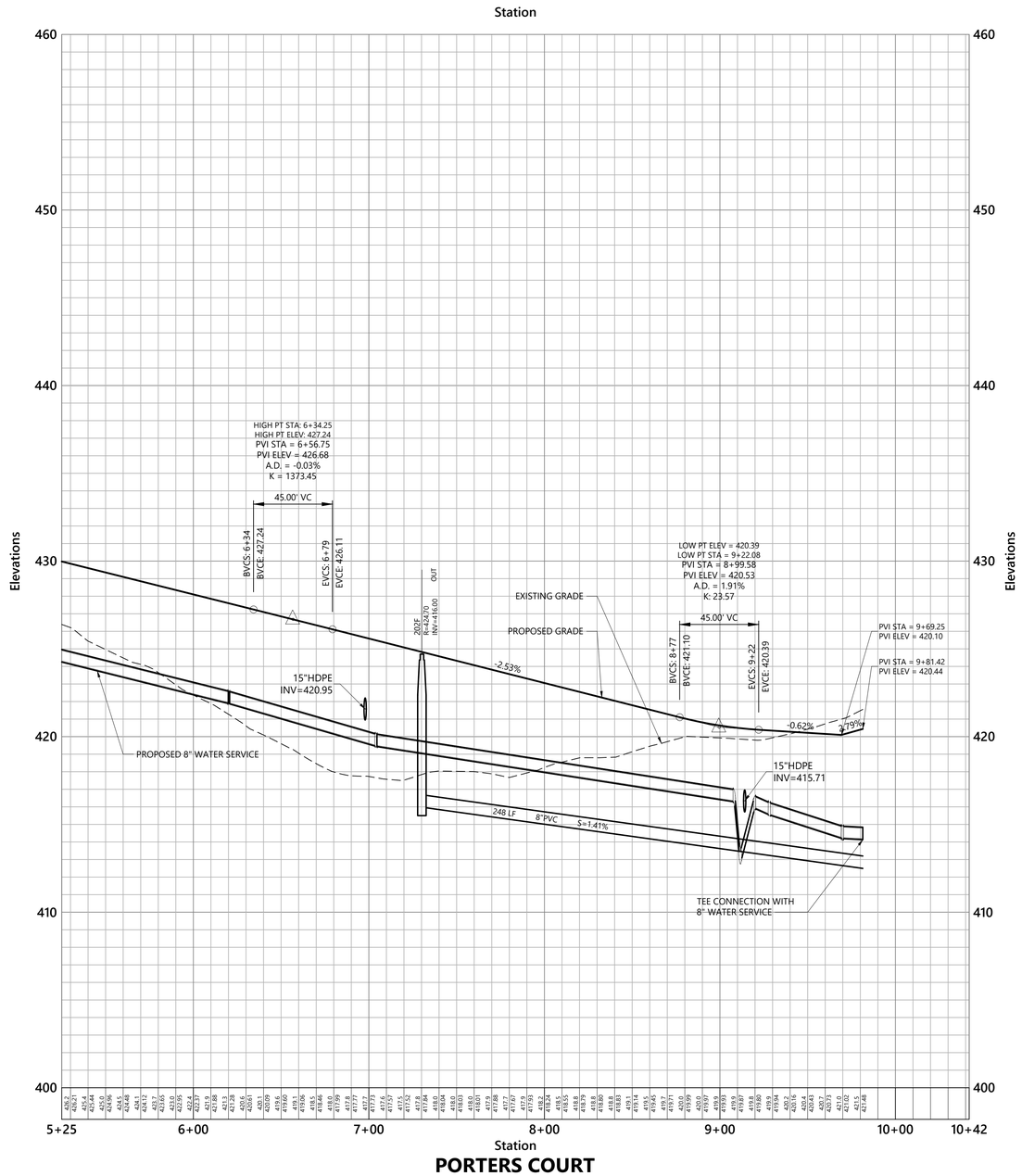
Sheet 75 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Tuesday, October 28, 2025 3:26:30 PM JHOWE Plotted Tuesday, November 11, 2025 4:11:51 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-PP_Cluster F.dwg



PORTERS COURT

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Vert. 0 2 4 8 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Porters Court Profile

Drawing Number
C5.24

STATE OF NEW HAMPSHIRE - DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 76 of 111

Project Number 53140.00

Saved Tuesday, October 28, 2025 3:26:30 PM JHOWE Plotted Tuesday, November 11, 2025 4:12:13 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-ER.dwg



Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT (0.5" OF RAINFALL OR GREATER) AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.
6. AREAS REMAINING UNSTABILIZED FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE TEMPORARILY SEEDED AND MULCHED. STRAW MULCH SHALL BE APPLIED AT A MINIMUM RATE OF 1-1/2 TONS/ACRE.
7. PERMANENT SEEDING SHALL OCCUR BETWEEN APRIL 1 AND JUNE 1, AND/OR BETWEEN AUGUST 15 AND OCTOBER 15. ALL SEEDING FROM SEPTEMBER 15 SHALL BE STRAW MULCHED.
8. DUST SHALL BE CONTROLLED THROUGH THE USE OF WATER.
9. SOILS TO BE STOCKPILED FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE TEMPORARILY SEEDED AND MULCHED. CONTRACTOR SHALL INSTALL SILT FENCING ALONG DOWNHILL SIDE OF STOCKPILES.
10. CONTRACTOR SHALL PROVIDE TEMPORARY SEDIMENTATION BASINS TO CONTROL SEDIMENTATION AND STORMWATER RUNOFF DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL SUBMIT PROPOSED BASIN LOCATIONS, DESIGNS, ETC. TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION. TEMPORARY SEDIMENTATION BASINS SHALL MEET NHDES REQUIREMENTS.
11. CONTRACTOR SHALL PROVIDE NECESSARY EROSION CONTROL MEASURES TO INSURE THAT SURFACE WATER RUN-OFF FROM UNSTABILIZED AREAS DOES NOT CARRY SILT, SEDIMENT, AND OTHER DEBRIS OUTSIDE OF THE LIMITS OF WORK.
12. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
    B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    C. A MINIMUM OF 3-IN OF NON-EROSIVE MATERIAL, SUCH AS STONE OR RIPRAP, HAS BEEN INSTALLED;
    D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
13. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT AT NO TIME SHALL THE TOTAL UNSTABILIZED DISTURBED AREA ON-SITE BE GREATER THAN (5) FIVE ACRES. [NHDES ALLOWS FOR MORE THAN 5 AC ON CERTAIN SITES IF CERTAIN PROVISIONS ARE PROVIDED]
14. ALL DITCHES, SWALES, AND DRAINAGE BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
15. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
16. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEEDED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
17. ALL PERMANENT AND TEMPORARY SEEDING SHALL BE AS FOLLOWS (UNLESS OTHERWISE NOTED):

PERMANENT SEEDING	PROPORTION	GERMINATION MINIMUM	PURITY MINIMUM
LAWNS:			
CREEPING RED FESCUE	50%	85%	95%
KENTUCKY BLUEGRASS	40%	85%	90%
MANHATTAN PERENNIAL RYE	10%	90%	95%

TEMPORARY SEEDING*	% WEIGHT	GERMINATION MINIMUM
WINTER RYE	80% MIN.	85%
RED FESCUE (CREEPING)	4% MIN.	80%
PERENNIAL RYE GRASS	3% MIN.	90%
RED CLOVER	3% MIN.	90%
OTHER CROP GRASS	0.5% MAX.	
NOXIOUS WEED SEED	0.5% MAX.	
INERT MATTER	1.0% MAX.	

* TEMPORARY SEED FOR LAWNS SHALL ONLY BE PLANTED WHEN PERMANENT GRASSES CANNOT BE PLANTED DUE TO THE GROWING SEASON.

18. NO-MOW PLANTING MIX (FOR AREAS INDICATED ON LANDSCAPE PLAN)

    THE NO-MOW PLANTING MIX" SHALL BE THE "NEW ENGLAND CONSERVATION WILDLIFE MIX' AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC.

19. DETENTION BASIN PLANTING MIX (FOR BOTTOM OF DETENTION BASIN)

    THE DETENTION BASIN PLANTING MIX SHALL BE THE "NEW ENGLAND EROSION-CONTROL / RESTORATION MIX (FOR DETENTION BASINS AND MOIST SITES) AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC., AMHERST, MA. (413) 256-1752

20. EROSION CONTROL BLANKETS SHALL BE INSTALLED ON ALL SLOPES THAT ARE STEEPER THAN 3-FT HORIZONTAL AND 1-FT VERTICAL (3:1). EROSION CONTROL BLANKETS SHALL BE NORTH AMERICAN GREEN SC150BN, OR APPROVED EQUAL.
21. THE PROJECT SHALL BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

Winter Construction

1. ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED. STABILIZATION METHODS SHALL INCLUDE SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE TEMPORARILY STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL (NHDOT 304.3).

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 100 200 400Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Overall Erosion and Sediment Control Plan

Drawing Number
C6.00

Sheet 77 of 111

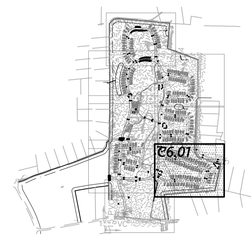
Project Number **53140.00**

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Friday, November 7, 2025 6:07:30 PM JHOWE Plotted Tuesday, November 11, 2025 4:17:43 PM Jason Howe

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\d\Planset\5314000-ER.dwg





0 20 40 80 Feet

vhb.com

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, Inc.
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title

Erosion and Sediment Control Plan

Drawing Number

C6.01

Sheet 78 of 111

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Project Number 53140.00

Saved Tuesday, November 11, 2025 7:54:12 PM JHOWE Plotted Wednesday, November 12, 2025 13:45:2 AM Ben Zoller

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\d\Planset\5314000-ER.dwg

SILT FENCE AND HAYBALE BARRIER (TYP)

POTENTIAL SOIL STORAGE AREA. SIZING TO BE DETERMINED BY CONSTRUCTION NEEDS

Match Line
See Sheet C6.03

Match Line
See Sheet C6.06

Match Line
See Sheet C6.01

Match Line
See Sheet C6.07

50' PERIMETER BUFFER

CLUSTER B

B53 -2A/B
B51-3B
B49 -2A/B
B47-3B
B45 -2A/B
B43-3A
B41 -2A/B
B39 -2A/B
B37-3A
B35 -2A/B
B33-2A/B
B31-3B
B29-2A/B
B27-2C
B25-3A
B23-3B
B21 -2A/B
B19-2C
B17-3B
B15 -2A/B
B13-3A
B11-3A
B9-3B
B7 -2A/B
B5-3A
B3 -2A/B
B1 -2A/B
B36 -2A/B
B34-1
B32 -2A/B
B30 -2A/B
B28 -2A/B
B26-3A
B24-3A
B22 -2A/B
B20-3B
B18-3B
B16-1
B14 -2A/B
B12-3A
B10-2C
B8-3A
B6 -2A/B
B4-1
B2 -2A/B

POTENTIAL SOIL STORAGE AREA. SIZING TO BE DETERMINED BY CONSTRUCTION NEEDS

SILT FENCE BARRIER (TYP)
R=123.68'
L=167.09'
Δ=76°10'26"

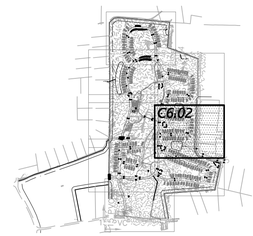
HAYBALE SEDIMENT TRAP WITH INLET FILTER BASKET (TYP)

A75 -2A/B
A73-3B
A71-3A
A69 -2A/B
A67-2C
A65-3B
A63-3B
A61 -2A/B
A59 -2A/B
A60-3B

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, Inc.
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Erosion and Sediment Control Plan

Drawing Number
C6.02

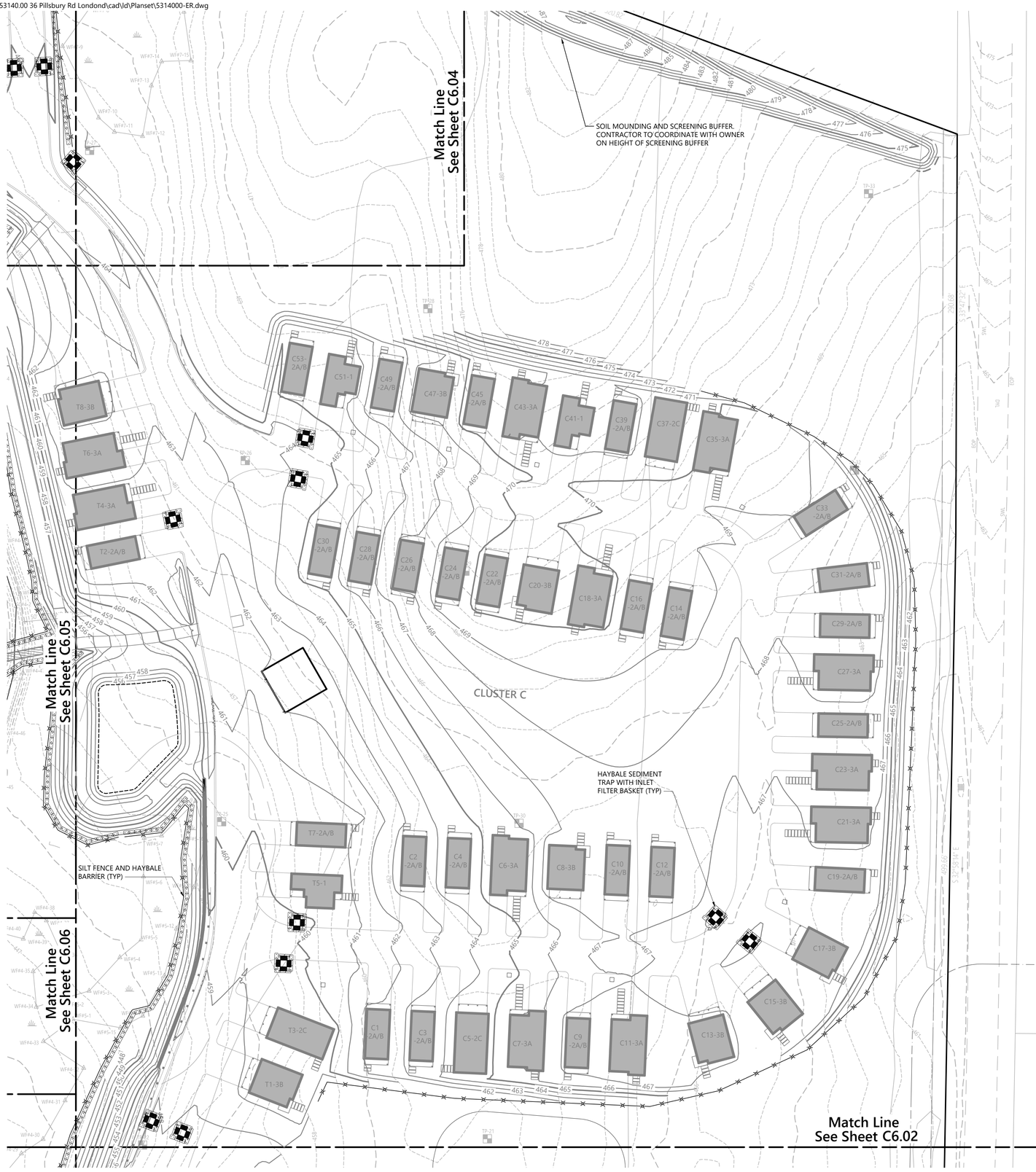
Sheet 79 of 111

STATE OF NEW HAMPSHIRE - DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025

Project Number
53140.00

Saved Tuesday, November 11, 2025 7:54:12 PM JHOWE Plotted Wednesday, November 12, 2025 1:35:13 AM Ben Zoller

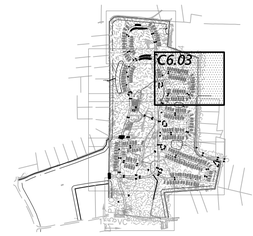
\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\d\Planset\5314000-ER.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, Inc.
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: February 20, 2025

Not Approved for Construction

Drawing Title
Erosion and Sediment Control Plan

Drawing Number
C6.03

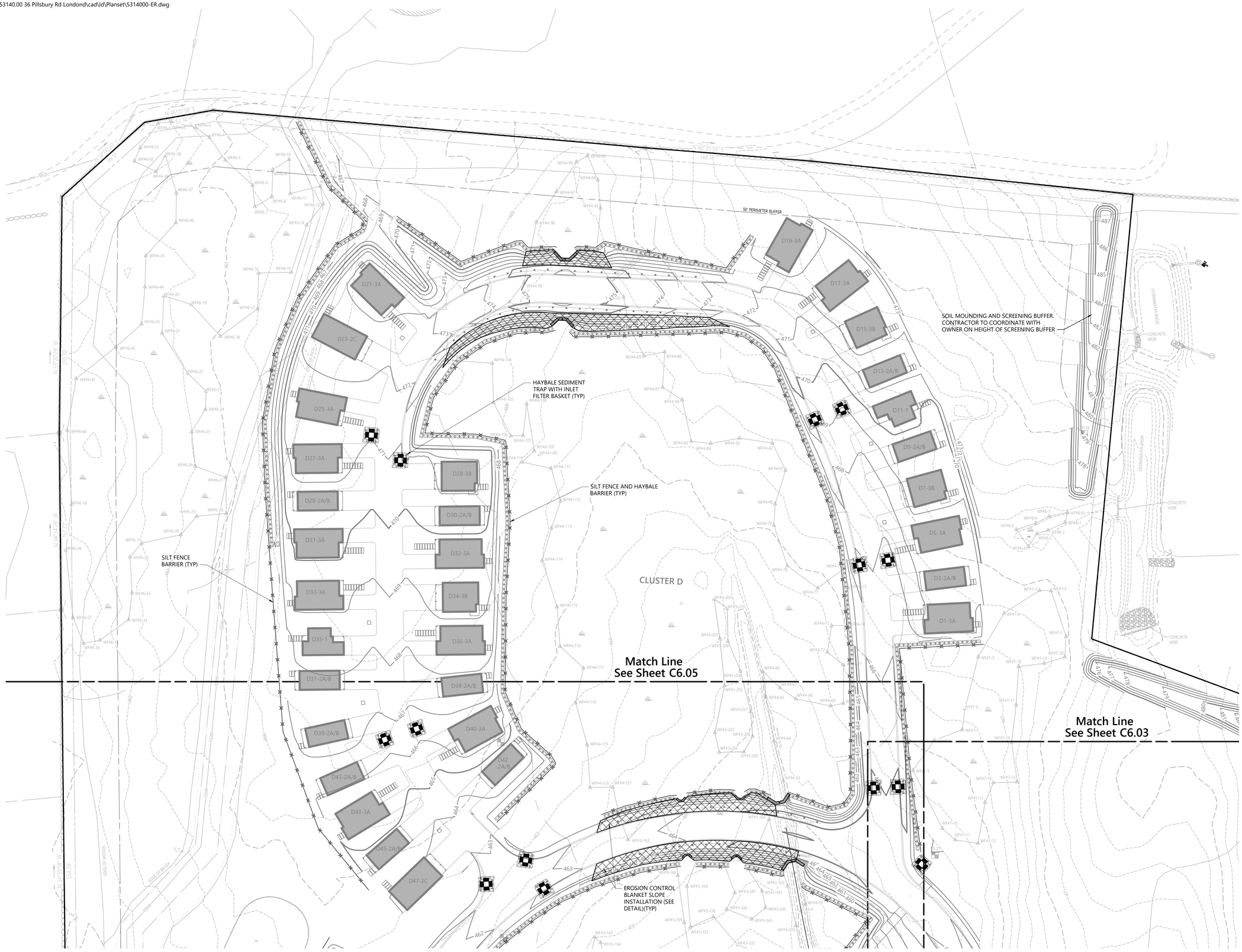
STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 80 of 111

Project Number 53140.00

Saved Tuesday, November 11, 2025 7:54:12 PM JHOWE Plotted Wednesday, November 12, 2025 1:35:31 AM Ben Zoller

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\d\Planset\5314000-ER.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, Inc.
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title
Erosion and Sediment Control Plan

Drawing Number
C6.04

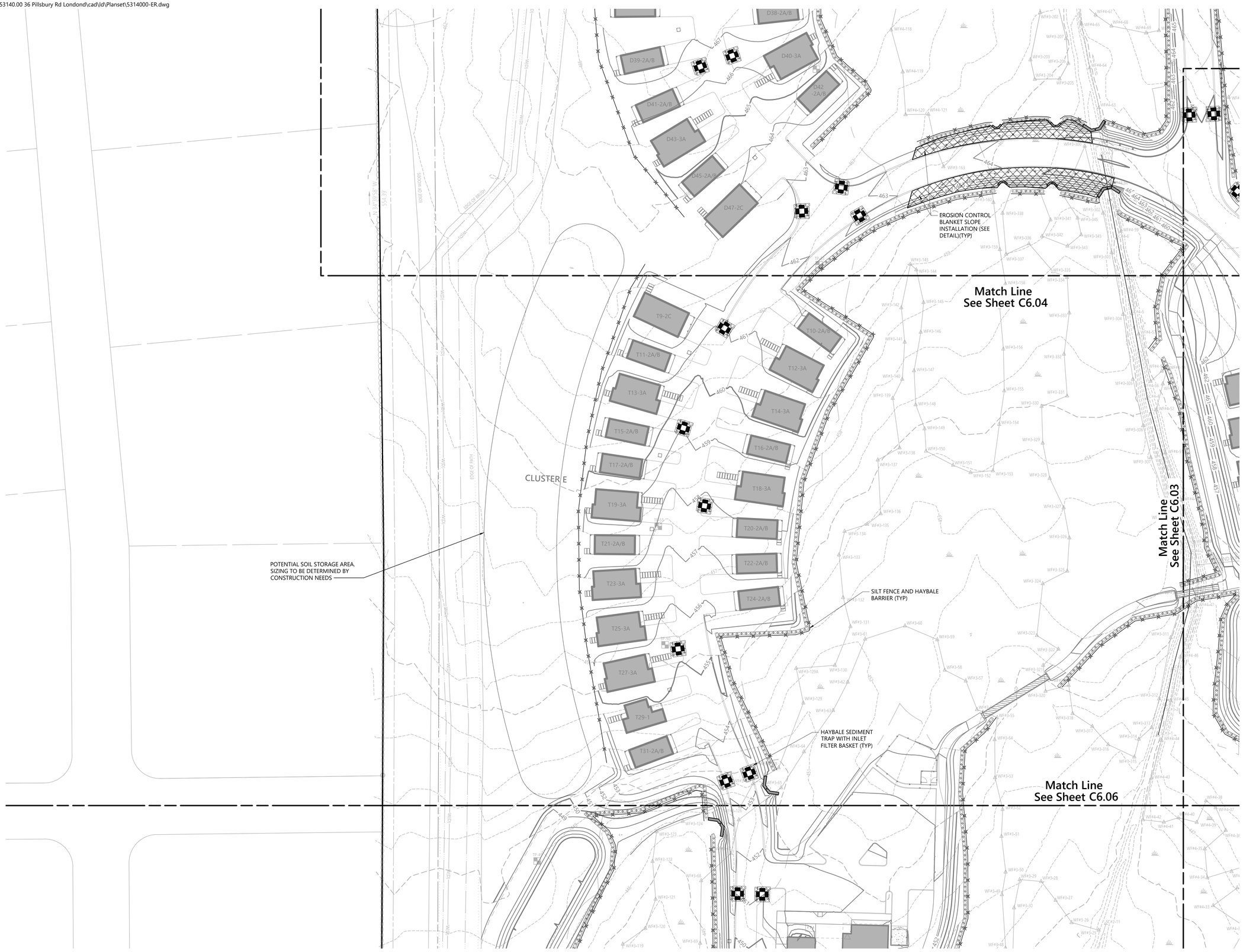
Sheet 81 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Tuesday, November 11, 2025 7:54:12 PM JHOWE Plotted Wednesday, November 12, 2025 1:35:49 AM Ben Zoller

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\d\Planset\5314000-ER.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, Inc.
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title

Erosion and Sediment Control Plan

Drawing Number

C6.05

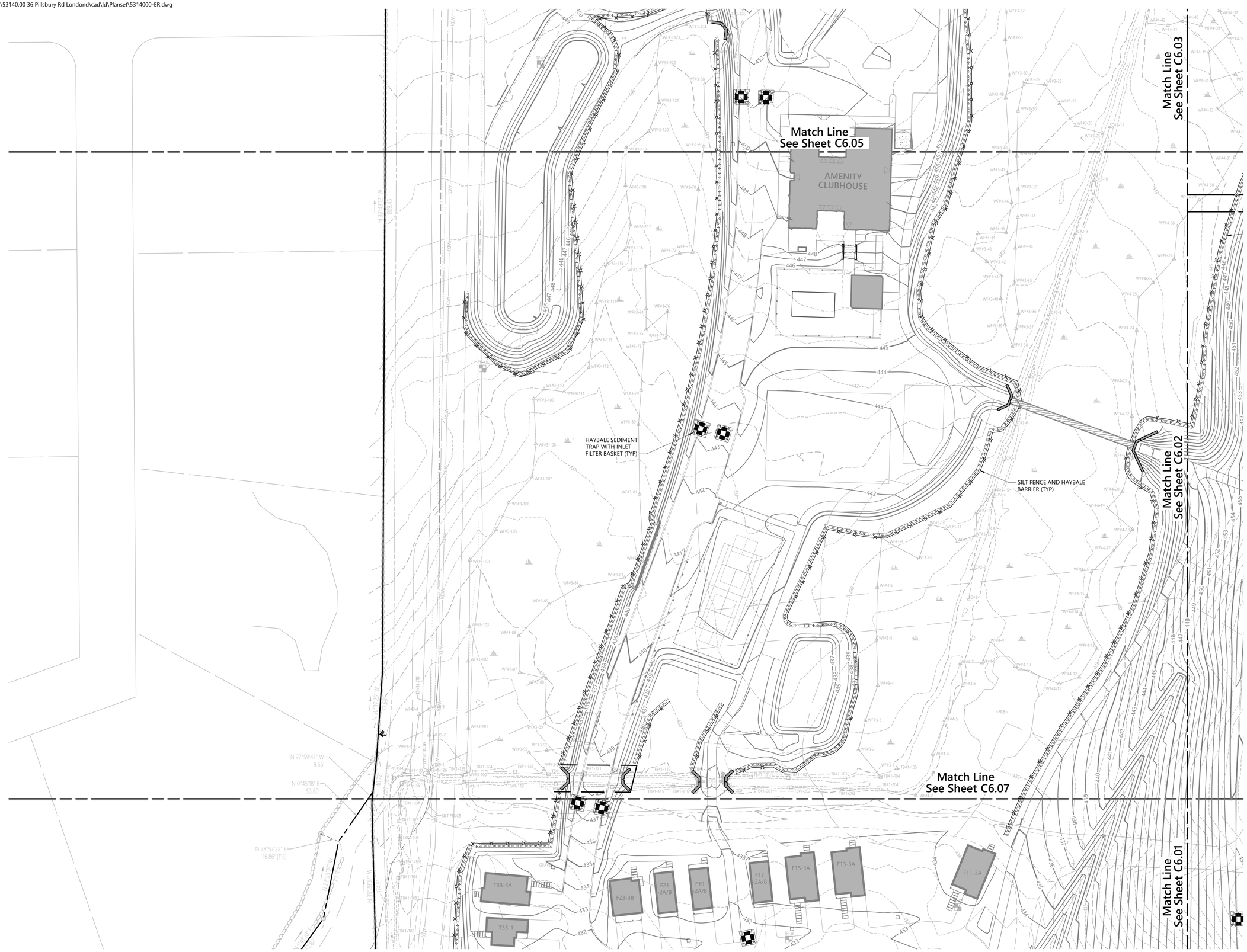
Sheet 82 of 111

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Project Number 53140.00

Saved Tuesday, November 11, 2025 7:54:12 PM JHOWE Plotted Wednesday, November 12, 2025 1:36:08 AM Ben Zoller

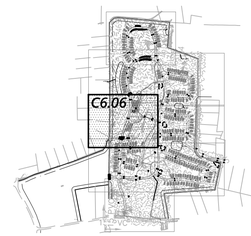
\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\d\Planset\5314000-ER.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, Inc.
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title

Erosion and Sediment Control Plan

Drawing Number

C6.06

Sheet 83 of 111

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED
PROFESSIONAL ENGINEER
11/13/2025

Project Number 53140.00

Saved Tuesday, November 11, 2025 7:54:12 PM JHOWE Plotted Wednesday, November 12, 2025 1:36:27 AM Ben Zoller

Match Line
See Sheet C6.06

Match Line
See Sheet C6.02

Match Line
See Sheet C6.01

Match Line
See Sheet C6.08

SILT FENCE AND HAYBALE BARRIER (TYP)

SILT FENCE BARRIER (TYP)

HAYBALE SEDIMENT TRAP WITH INLET FILTER BASKET (TYP)

CLUSTER 5

T33-3A
T35-1
T37-2A/B
T39-3A
T41-3A
T43-3A
T45-3B
T47-3A
T49-2C
T51-1
T53-3A
F23-3B
F21 -2A/B
F19 -2A/B
F17 -2A/B
F15-3A
F13-3A
F11-3A
F20-3B
F18 -2A/B
F16 -2A/B
F14-3B
F12 -2A/B
F2 -2A/B
F4-3A
F6-3A
F8 -2A/B
F10 -2A/B
F1 -2A/B
F3 -2A/B
F5-3A
F7-3A
F9 -2A/B

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

C6.07

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, Inc.
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title

Erosion and Sediment Control Plan

Drawing Number

C6.07

Sheet 84 of 111

STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER – DAVID H. FENSTERMACHER No. 13383 LICENSED
11/13/2025

Project Number 53140.00

Saved Tuesday, November 11, 2025 7:54:12 PM JHOWE Plotted Wednesday, November 12, 2025 13:6:45 AM Ben Zoller

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\d\Planset\5314000-ER.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, Inc.
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title

Erosion and Sediment Control Plan

Drawing Number

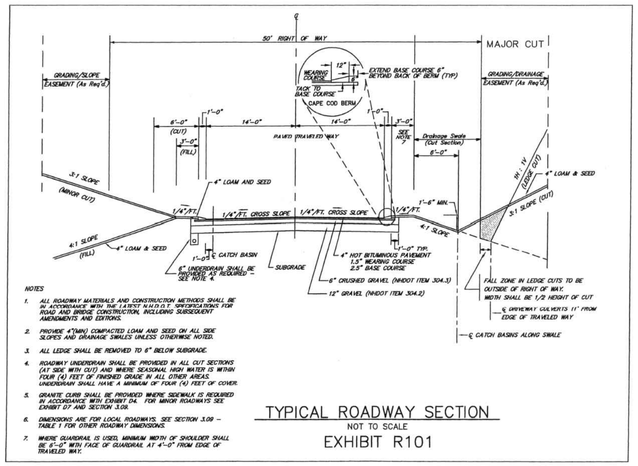
C6.08

Sheet 85 of 111

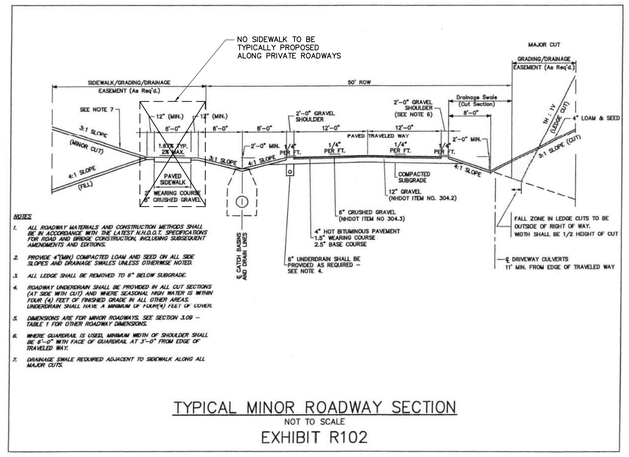
STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Project Number 53140.00

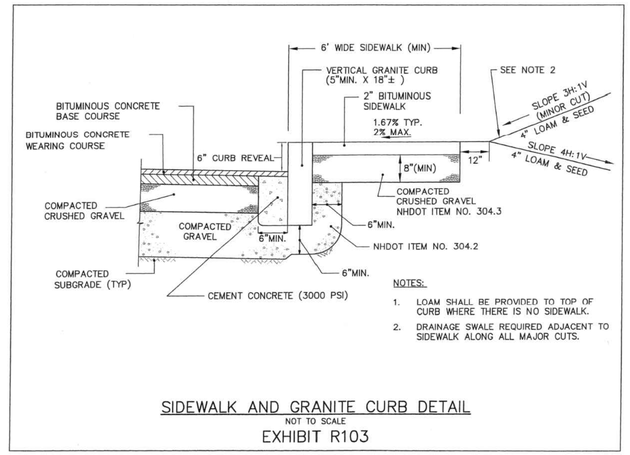
Saved Tuesday, November 11, 2025 7:54:12 PM JHOWE Plotted Wednesday, November 12, 2025 1:37:04 AM Ben Zoller



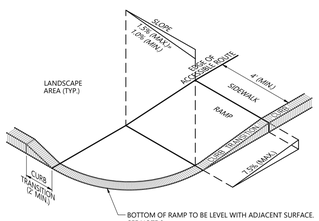
TYPICAL ROADWAY SECTION
NOT TO SCALE
EXHIBIT R101



TYPICAL MINOR ROADWAY SECTION
NOT TO SCALE
EXHIBIT R102



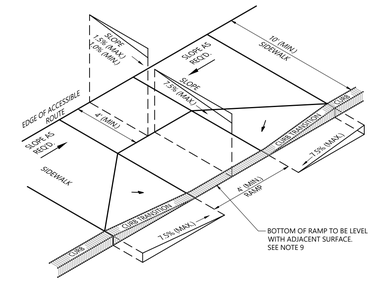
SIDEWALK AND GRANITE CURB DETAIL
NOT TO SCALE
EXHIBIT R103



NOTES

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE INSTALLED AND SET FLUSH.

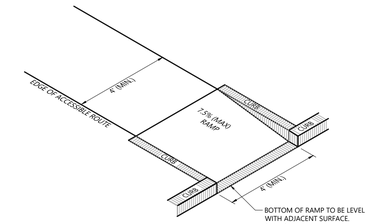
Accessible Curb Ramp (ACR) - Type 'B'
12/20
N.T.S. Source: VHB LD_501



NOTES

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE INSTALLED AND SET FLUSH.

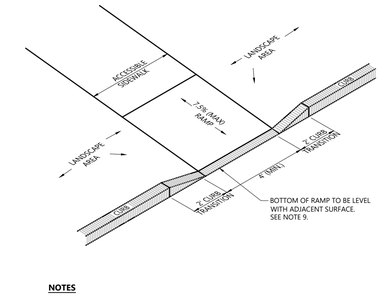
Accessible Curb Ramp (ACR) Type 'D'
12/20
N.T.S. Source: VHB LD_503



NOTES

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE INSTALLED AND SET FLUSH.

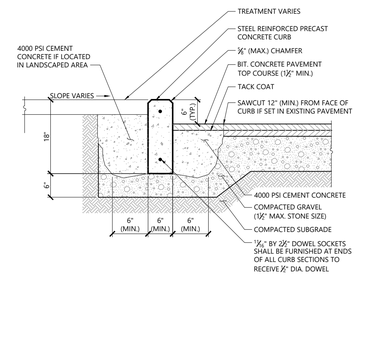
Accessible Curb Ramp (ACR) Type 'J'
12/20
N.T.S. Source: VHB LD_509



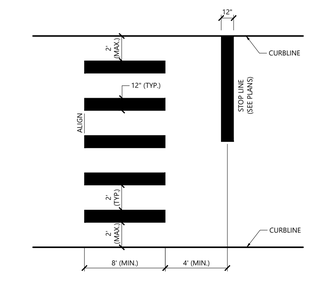
NOTES

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE CURBING (OTHER THAN VERTICAL CURBING, WHICH SHALL BE SET FLUSH) WHERE IT ABUTS ROADWAYS.

Accessible Curb Ramp (ACR) Type 'M'
12/20
N.T.S. Source: VHB LD_512



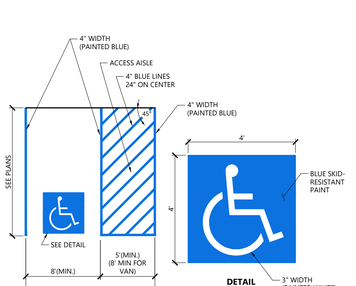
Precast Concrete Curb (PCC)
3/20
N.T.S. Source: VHB LD_404



NOTES

1. TWELVE INCH (12") LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6 INCH LINES) WILL BE ACCEPTED.
2. LONGITUDINAL CROSSWALK LINES TO BE PARALLEL TO CURBLINE.
3. ALL LONGITUDINAL CROSSWALK LINES SHALL BE THE SAME LENGTH AND PROPERLY ALIGNED.
4. CROSS WALK SIDESLOPE SHALL NOT EXCEED 1.5%.

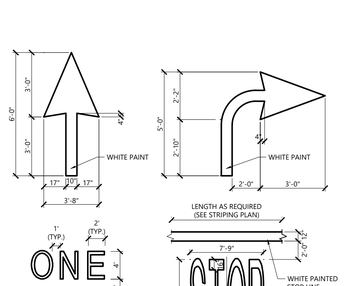
Crosswalk
12/19
N.T.S. Source: VHB LD_553A



NOTES

1. ALL DIMENSIONS TO EDGES OF 4" PAVEMENT STRIPING.
2. 8' STALL WIDTH REFERS TO 8' CLEAR BETWEEN INSIDE EDGES OF PAVEMENT MARKINGS.
3. ALL SLOPES THROUGHOUT THE ACCESSIBLE PARKING AND AISLE AREAS SHALL NOT EXCEED 1.5%.
4. ACCESS AISLE MEASURED BETWEEN OUTSIDE EDGES OF PAVEMENT MARKINGS.

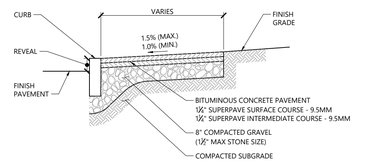
Accessible Parking Space
1/16
N.T.S. Source: VHB LD_552-NH



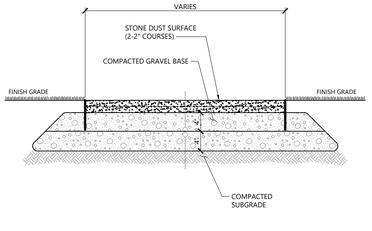
NOTES

1. PAVEMENT MARKINGS TO BE INSTALLED FOR ON SITE WORK IN LOCATIONS SHOWN.

Painted Pavement Markings - On Site
1/16
N.T.S. Source: VHB LD_554



Bituminous Concrete Sidewalk
3/20
N.T.S. Source: VHB REV LD_422



Stonedust Path
02/25
N.T.S. Source: VHB REV

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill
Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF
Issued for: Permitting | Date: February 20, 2025

Not Approved for Construction

Drawing Title: Site Details

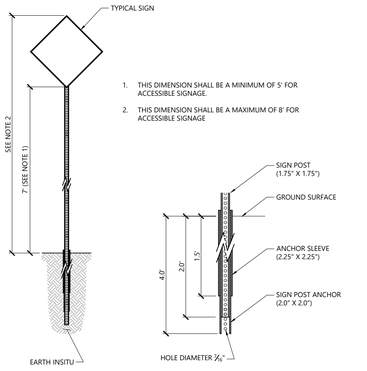
Drawing Number: C7.01

Sheet 86 of 111

STATE OF NEW HAMPSHIRE – DAVID H. FENSTERMACHER No. 13382 – LICENSED PROFESSIONAL ENGINEER
11/13/2025

Project Number: 53140.00

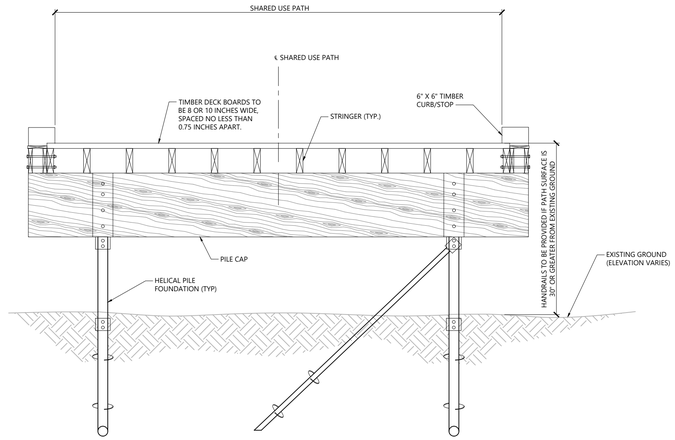
Saved Monday, November 10, 2025 5:30:23 PM SFLEUROCK Plotted Tuesday, November 11, 2025 4:21:52 PM Jason Howe



Sign Post - Type 'B'

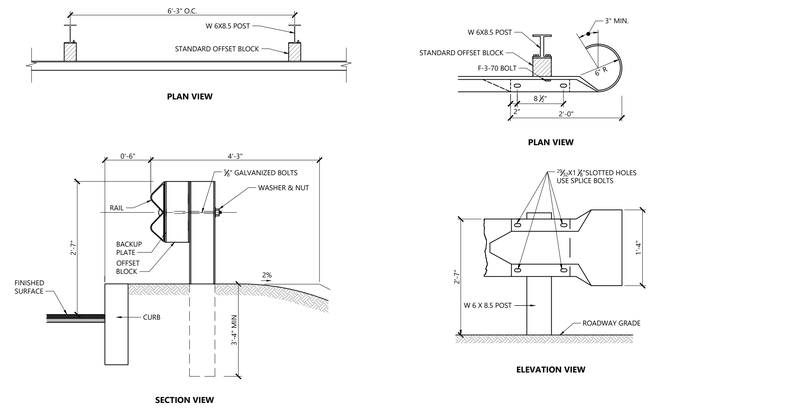
3/19

N.T.S. Source: VHB LD_702



Wetland Boardwalk Crossing (Designed by Others)

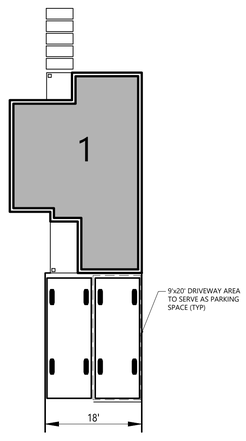
N.T.S.



Steel Beam Guardrail with Steel Post

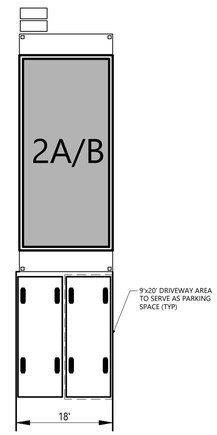
10/20

N.T.S. Source: VHB LD_456



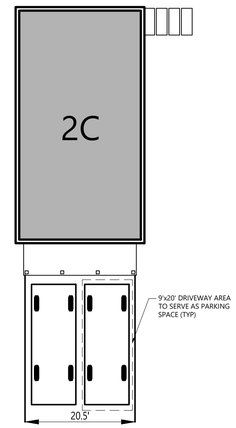
Dwelling Unit Type 1 Parking Arrangement

N.T.S. Source: VHB



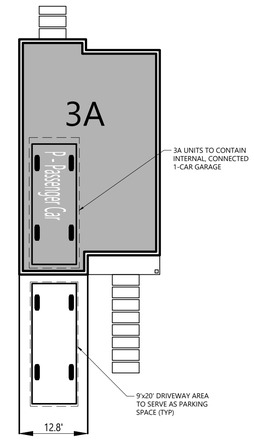
Dwelling Unit Type 2A/B Parking Arrangement

N.T.S. Source: VHB



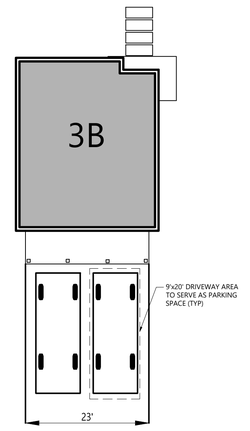
Dwelling Unit Type 2C Parking Arrangement

N.T.S. Source: VHB



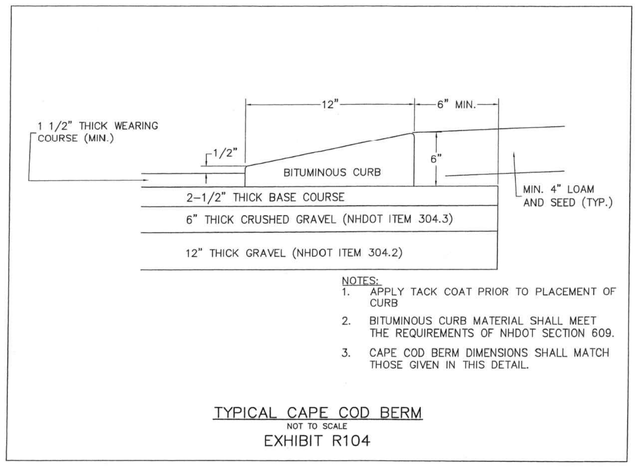
Dwelling Unit Type 3A Parking Arrangement

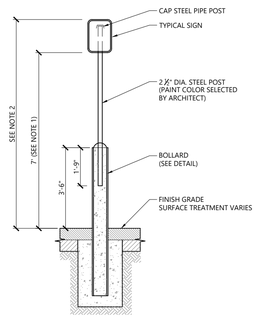
N.T.S. Source: VHB



Dwelling Unit Type 3B Parking Arrangement

N.T.S. Source: VHB



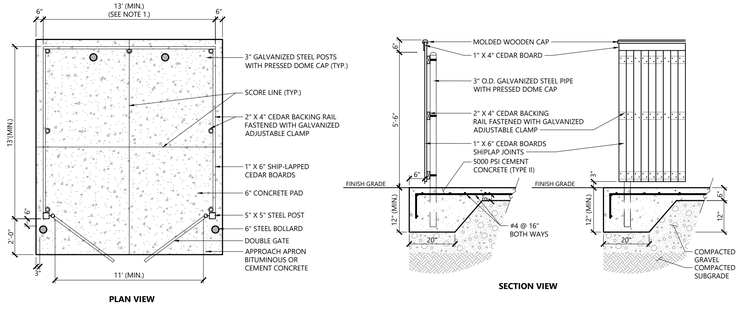


1. THIS DIMENSION SHALL BE A MINIMUM OF 5' FOR ACCESSIBLE SIGNAGE.
2. THIS DIMENSION SHALL BE A MAXIMUM OF 8' FOR ACCESSIBLE SIGNAGE

Bollard Mounted Sign

2/20

N.T.S. Source: VHB LD_703



NOTES

1. DUMPSTER PAD DIMENSIONS SHOWN AS MINIMUM. REFER TO PLAN FOR ACTUAL DIMENSION.
2. PAD DESIGNED FOR 6 YARD DUMPSTER.

Dumpster Pad w/ Enclosure

1/20

N.T.S. Source: VHB LD_713

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ Checked by DHF

Issued for Permitting

Date February 20, 2025

Not Approved for Construction

Drawing Title
Site Details

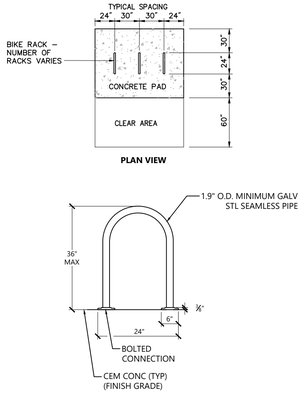
Drawing Number
C7.02

Sheet 87 of 111

Project Number 53140.00

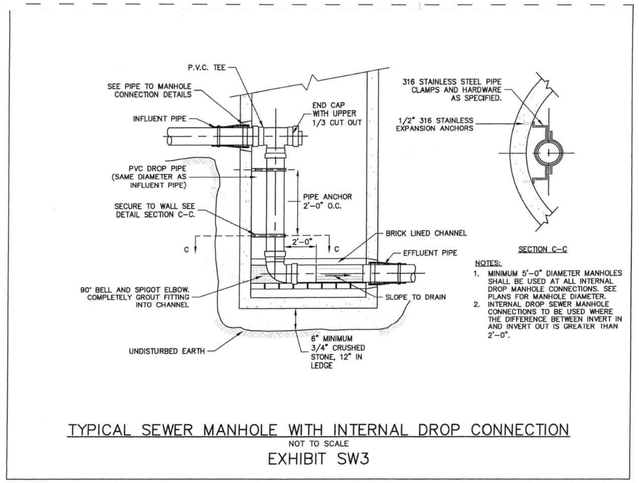
STATE OF NEW HAMPSHIRE DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Monday, November 10, 2025 5:30:23 PM SFLEUROCK Plotted Tuesday, November 11, 2025 4:22:02 PM Jason Howe



Bike Rack

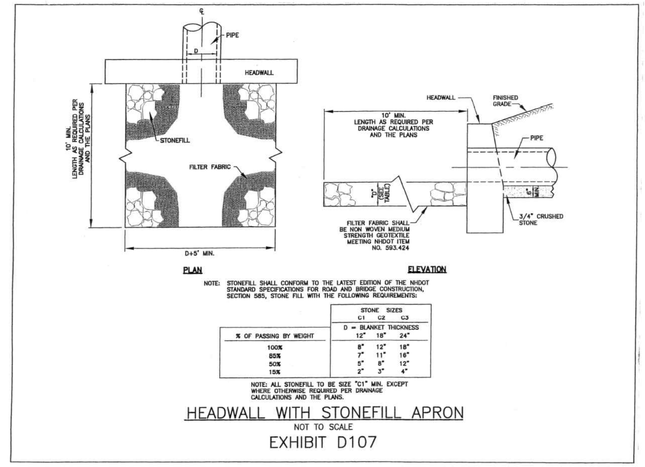
N.T.S.



TYPICAL SEWER MANHOLE WITH INTERNAL DROP CONNECTION

NOT TO SCALE

EXHIBIT SW3



NOTE: STONEFILL SHALL CONFORM TO THE LATEST EDITION OF THE NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 585, STONE FILL WITH THE FOLLOWING REQUIREMENTS:

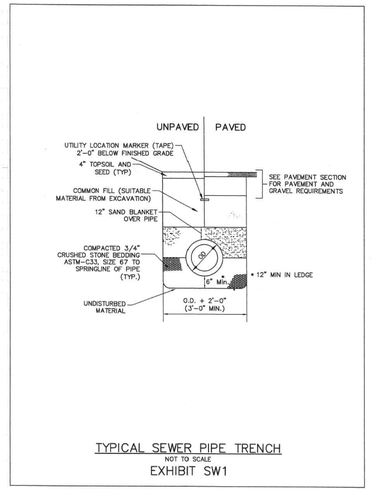
% OF PASSING BY WEIGHT	STONE SIZES C1 D = BLANKET THICKNESS 12"	C2 18"	C3 24"
100%	9"	12"	18"
85%	7"	11"	16"
50%	5"	8"	12"
15%	2"	3"	4"

NOTE: ALL STONEFILL TO BE SIZE "C1" MIN. EXCEPT WHERE OTHERWISE REQUIRED PER DRAINAGE CALCULATIONS AND THE PLANS.

HEADWALL WITH STONEFILL APRON

NOT TO SCALE

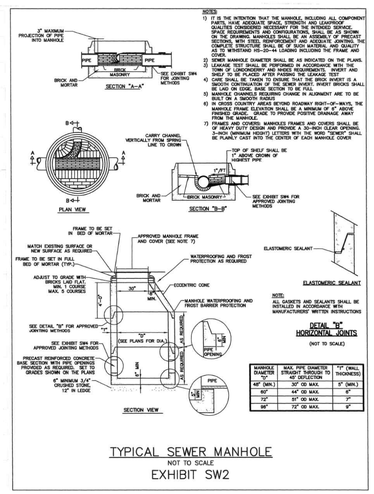
EXHIBIT D107



TYPICAL SEWER PIPE TRENCH

NOT TO SCALE

EXHIBIT SW1



MANHOLE DIAMETER	MAX. PIPE DIAMETER, STRAIGHT THROUGH	"T" (MIN.), WALL THICKNESS
	42" OUTSIDE DIA.	
48" (MIN.)	33" OD MAX.	5" (MIN.)
60"	44" OD MAX.	6"
72"	57" OD MAX.	7"
96"	72" OD MAX.	9"

TYPICAL SEWER MANHOLE

NOT TO SCALE

EXHIBIT SW2

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ | Checked by: DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title: **Site Details**

Drawing Number: **C7.03**

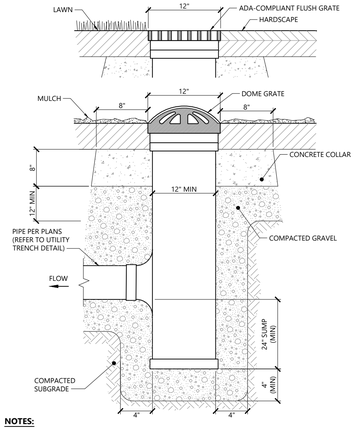
Sheet 88 of 111

Project Number: **53140.00**

STATE OF NEW HAMPSHIRE – DAVID H. FENSTERMACHER No. 13382 – LICENSED PROFESSIONAL ENGINEER

11/13/2025

Saved Monday, November 10, 2025 5:30:23 PM SFLEUROCK Plotted Tuesday, November 11, 2025 4:22:13 PM Jason Howe



NOTES:

1. AREA DRAINS SHALL BE NYLOPLAST 12" DIAMETER DRAIN BASIN, OR APPROVED EQUAL.
2. GRATES SHALL BE NYLOPLAST 12" PEDESTRIAN MODEL 1299CGP OR 12" DOME GRATE MODEL 1299CGD (OR APPROVED EQUAL).

Area Drain (AD) Type 1

12/19

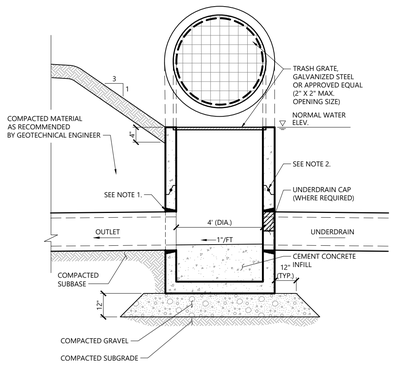
N.T.S. Source: VHB LD_193

OUTLET STRUCTURE CHART

DETENTION BASIN	STRUCTURE DIAMETER	RIM ELEVATION	UNDERDRAIN DIAMETER	UNDERDRAIN CAP DIAMETER
#3	12"	SEE GD PLAN	6.0"	6.0"
#4	24"	SEE GD PLAN	6.0"	6.0"
#5	48"	SEE GD PLAN	6.0"	6.0"
#6	48"	SEE GD PLAN	6.0"	6.0"
#7	15"	SEE GD PLAN	6.0"	2.5"
#8	24"	SEE GD PLAN	6.0"	6.0"
#9	48"	SEE GD PLAN	6.0"	2.0"
#10	36"	SEE GD PLAN	6.0"	6.0"
#11	24"	SEE GD PLAN	6.0"	2.5"

NOTES

1. WHERE STRUCTURE DIAMETER IS 24" OR SMALLER, A NYLOPLAST DRAIN WITH A DOMED GRATE CAN BE USED IN LIEU OF CONCRETE STRUCTURE. NYLOPLAST DRAIN SHALL BE BLACK IN COLOR



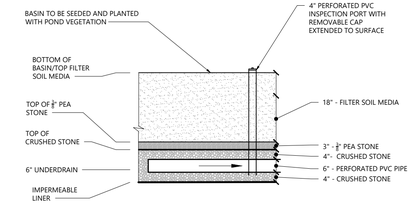
NOTES

1. PROVIDE OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
2. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.

Pond Outlet Control Detail (OCS)

3/20

N.T.S. Source: VHB REV LD_162A



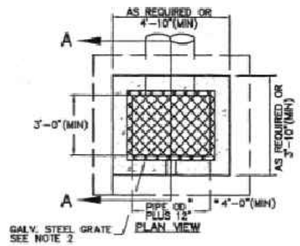
NOTES

1. FILTER SOIL MEDIA SHALL CONSIST (BY VOLUME) OF:
   - 60% TO 85% SAND (0.5 TO 2.0 MM) (SEE SPECS BELOW)
   - 15% TO 25% LOAM OR TOPSOIL
   - 3% TO 8% ORGANIC MATTER

   * ALTERNATIVELY, USE MEDIA SPECIFIED IN THE ALTERATION OF TERRAIN RULES, Env-Wq 1508.07(k)
2. ¾" PEASTONE SHALL CONFORM TO ASTM-33 #8 GRADATION, OR APPROVED EQUAL.

Basin Sand Filter

N.T.S. Source: VHB

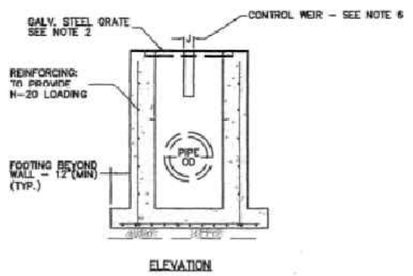


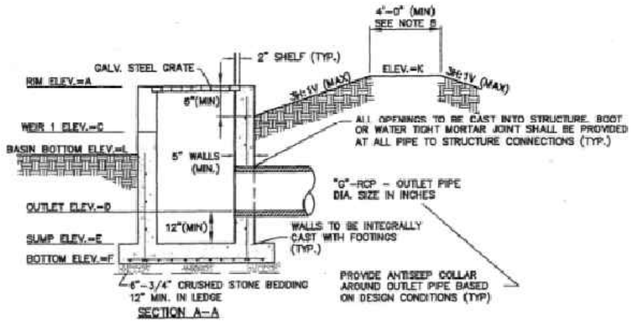
OUTLET STRUCTURE CHART

DETENTION BASIN	STRUCTURE NUMBER	A	B	C	D	E	F
1P	OS#1	SEE GD PLAN	388.5'	15"W x 29"H	387.0'	5"W x 18"H	387.0'	386.0'	-

Notes

1. THE SEWER CONNECTIONS SHALL BE INSPECTED BY AUTHORIZED TOWN OF LONDONDERRY PUBLIC WORKS AND ENGINEERING DEPARTMENT PERSONNEL BEFORE ANY BACKFILLING. INSPECTION HOURS ARE BETWEEN 9:00AM AND 4:30 PM, MONDAY - FRIDAY, WITH ATLEAST DAYS OF ADVANCE NOTICE
2. THE SEWER SERVICE MANHOLES SHALL BE VACUUM TESTED AND THE PVC PIPING PRESSURE TESTED WITH AUTHORIZED TOWN OF LONDONDERRY PUBLIC WORKS AND ENGINEERING DEPARTMENT PERSONNEL PRESENT ON SITE AS A WITNESS. SEWER MANHOLES SHALL BE VACUUM TESTED IN ACCORDANCE WITH ENV-WQ 704.17 AND GRAVITY SEWER PIPE SHALL BE TESTED IN ACCORDANCE WITH ENV-WQ 704.06 AND THE PROJECT SPECIFICATIONS.
3. ALL SEWER CONSTRUCTION AND USE SHALL CONFORM TO THE STATE OF NEW HAMPSHIRE STANDARD SEWER CONSTRUCTION SPECIFICATIONS AND THE TOWN OF LONDONDERRY SEWER USE ORDINANCE.
4. PRIOR TO CONSTRUCTION, CONTRACTOR TO FIELD VERIFY AS-BUILT CONDITIONS AT SMH 102 (BY OTHERS) AND THE STUB (BY OTHERS) BETWEEN SMH 101 AND 102 AND REPORT BACK DISCREPANCIES TO THE DESIGN ENGINEER.

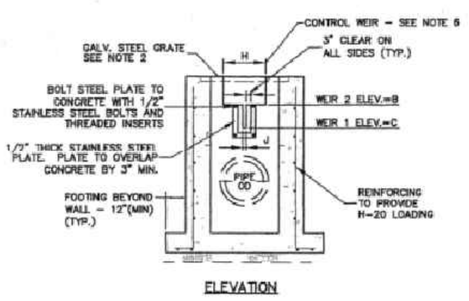


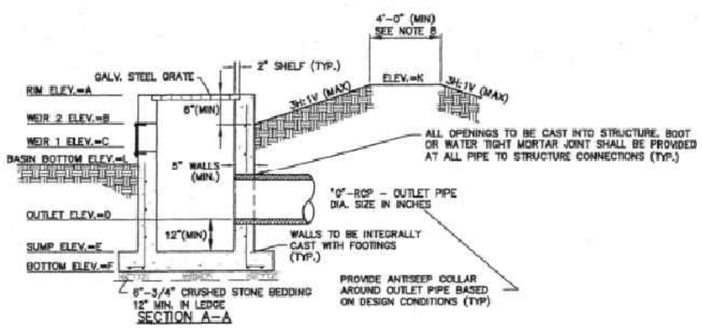


SINGLE WEIR OUTLET STRUCTURE

NOTES:

1. ALL CEMENT CONCRETE TO BE 4000 PSI(MIN).
2. GALVANIZED STEEL GRATE SHALL BE BOLTED TO TOP OF STRUCTURE WITH 1/2" STAINLESS STEEL BOLTS AND THREADED INSERTS.
3. OUTLET PIPE SHALL NOT BE LESS THAN 15" DIAMETER AND SHALL BE SIZED FOR A 50-YEAR STORM.
4. ALL OPENINGS SHALL BE CAST IN AS REQUIRED. MINIMUM CONCRETE WEIR WIDTH SHALL BE 2 INCHES.
5. PRECAST REINFORCED CONCRETE STRUCTURE TO MEET ASTM C-478 DESIGNATION AND H-20 LOADING.
6. CONTROL WEIR SHALL BE SIZED TO MITIGATE DESIGN STORM AS REQUIRED BY THE REGULATIONS AND IN ACCORDANCE WITH THE APPROVED DRAINAGE CALCULATIONS. STAINLESS STEEL PLATE SHALL BE USED FOR CONTROL WEIRS LESS THAN 2 INCHES WIDE.
7. ALL STAINLESS STEEL SHALL BE GRADE 316.
8. MINIMUM EMBANKMENT ELEVATION TO BE 12" ABOVE 50-YEAR STORM ELEVATION.





DOUBLE WEIR OUTLET STRUCTURE

TYPICAL OUTLET STRUCTURE AT DETENTION BASINS
(PRECAST CONCRETE CONTROL STRUCTURE)
NOT TO SCALE
EXHIBIT D108

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ Checked by DHF

Issued for Permitting Date February 20, 2025

Not Approved for Construction

Drawing Title
Site Details

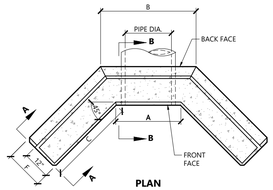
Drawing Number
C7.04

Sheet 89 of 111



Project Number 53140.00

Saved Monday, November 10, 2025 5:30:23 PM SFLEUROCK Plotted Tuesday, November 11, 2025 4:22:20 PM Jason Howe

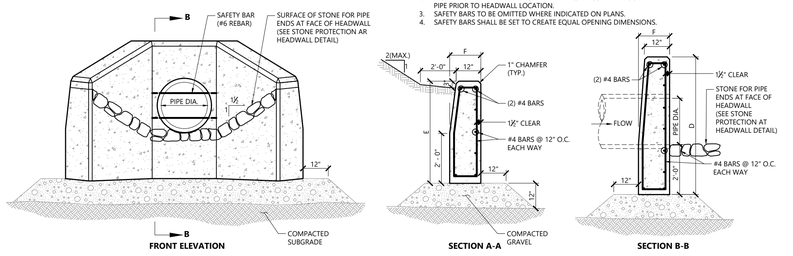


DIMENSIONAL TABLE

PIPE DIA.	A	B	C	D	E	F	#OF SAFETY BARS
12"	2'-6"	3'-8"	2'-11"	4'-0"	3'-3"	1'-6"	-
15"	2'-6"	3'-8"	2'-11"	4'-0"	3'-6"	1'-6"	1
18"	3'-0"	4'-2"	3'-3"	4'-6"	3'-6"	1'-6"	1
24"	3'-6"	4'-8"	3'-6"	5'-0"	3'-9"	1'-6"	1
30"	4'-0"	5'-3"	4'-3"	5'-10"	4'-0"	1'-6"	2
36"	4'-6"	5'-11"	5'-0"	6'-4"	4'-3"	1'-8"	2
42"	5'-0"	6'-6"	5'-9"	6'-11"	4'-6"	1'-10"	3
48"	5'-6"	7'-2"	6'-6"	7'-5"	4'-9"	2'-0"	3
60"	6'-6"	8'-5"	8'-0"	8'-6"	5'-3"	2'-4"	4
72"	7'-6"	9'-9"	9'-6"	9'-7"	5'-9"	2'-8"	5

NOTES

1. CONCRETE SHALL BE 6% ±1.5% AIR ENTRAINED TYPE II CEMENT WITH MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.
2. INSTALL IMPERMEABLE TRENCH DAM ANTI-SEEP COLLAR AROUND DRAIN PIPE PRIOR TO HEADWALL LOCATION.
3. SAFETY BARS TO BE OMITTED WHERE INDICATED ON PLANS.
4. SAFETY BARS SHALL BE SET TO CREATE EQUAL OPENING DIMENSIONS.



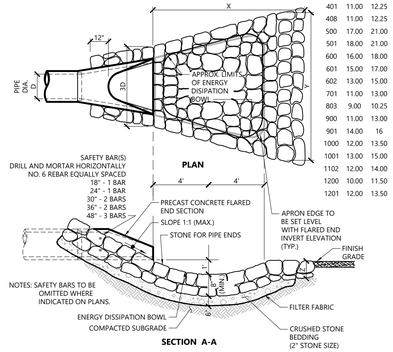
Concrete Headwall (HW) with Wing Walls

10/20

N.T.S. Source: VHB REV LD_132

RIPRAP STONE

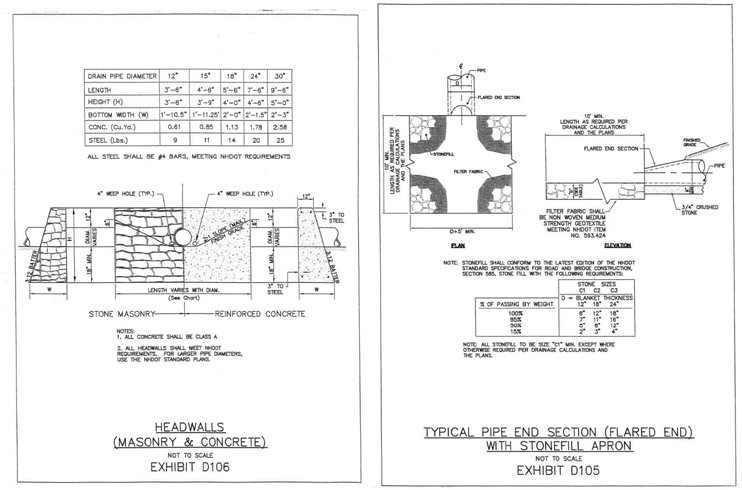
FES. NO.	X (FT)	Y (FT)	Z (IN)	STONE DIA. (Da)(IN)
300	9.00	21.00	13.50	6.00
301	11.00	12.50	13.50	6.00
305	11.00	12.50	13.50	6.00
400	13.00	21.00	13.50	6.00
401	11.00	12.25	13.50	6.00
408	11.00	12.25	13.50	6.00
500	17.00	21.00	13.50	6.00
501	18.00	21.00	13.50	6.00
600	16.00	18.00	13.50	6.00
601	15.00	17.00	13.50	6.00
602	13.00	15.00	13.50	6.00
701	11.00	13.00	13.50	6.00
803	9.00	10.25	13.50	6.00
900	11.00	13.00	13.50	6.00
901	14.00	16	13.50	6.00
1000	12.00	13.50	13.50	6.00
1001	13.00	15.00	13.50	6.00
1102	12.00	14.00	13.50	6.00
1200	10.00	11.50	13.50	6.00
1201	12.00	13.50	13.50	6.00



Flared End Section (FES) with Stone Protection

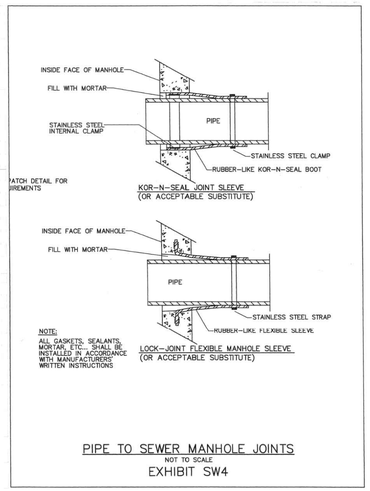
3/19

N.T.S. Source: VHB LD_134

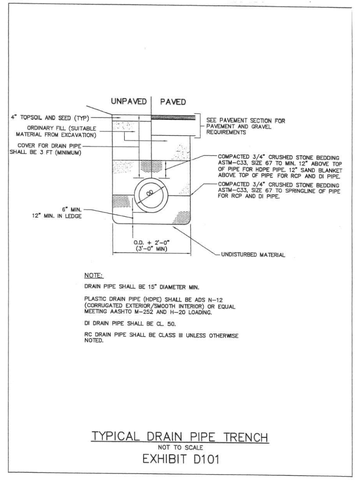


HEADWALLS
(MASONRY & CONCRETE)
NOT TO SCALE
EXHIBIT D106

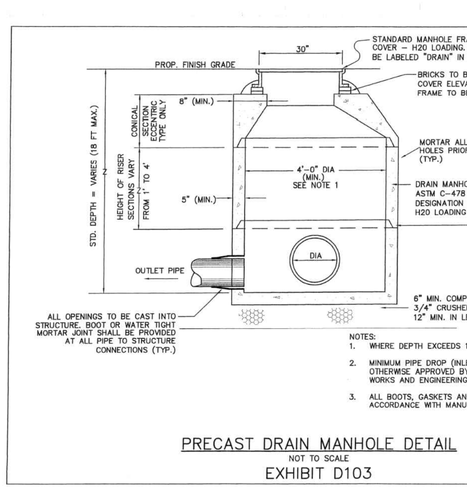
TYPICAL PIPE END SECTION (FLARED END) WITH STONEFILL APRON
NOT TO SCALE
EXHIBIT D105



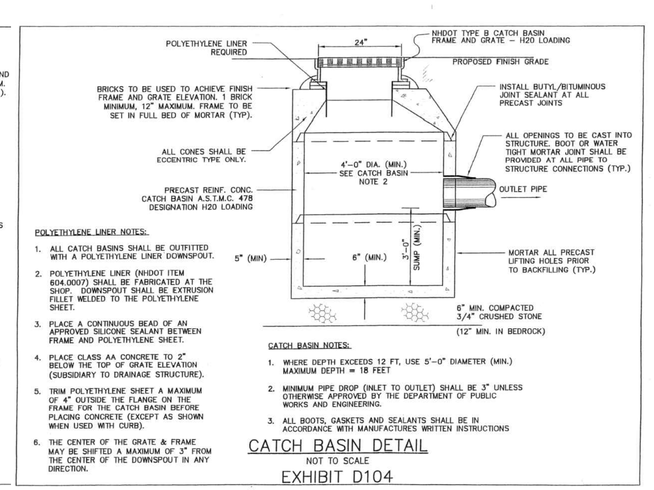
PIPE TO SEWER MANHOLE JOINTS
NOT TO SCALE
EXHIBIT SW4



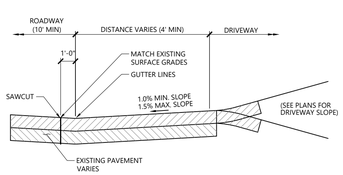
TYPICAL DRAIN PIPE TRENCH
NOT TO SCALE
EXHIBIT D101



PRECAST DRAIN MANHOLE DETAIL
NOT TO SCALE
EXHIBIT D103



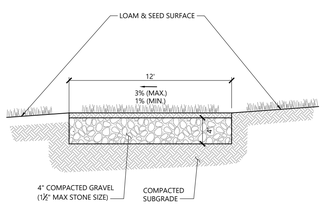
CATCH BASIN DETAIL
NOT TO SCALE
EXHIBIT D104



Driveway Entrance Section Detail

1/16

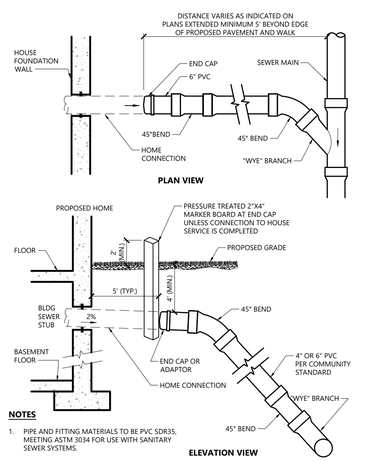
N.T.S. Source: VHB LD_423



12' Access Path

11/25

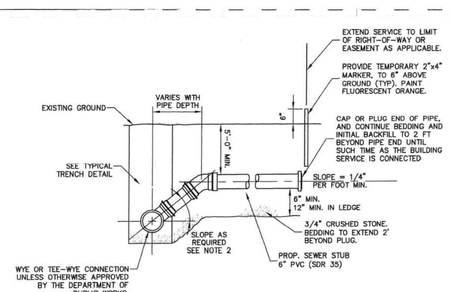
N.T.S. Source: VHB REV



Typical Wye and Chimney Detail (Residential)

1/16

N.T.S. Source: VHB LD_222



DETAIL FOR SEWER SERVICE CONNECTION
NOT TO SCALE
EXHIBIT SW5

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ Checked by DHF

Issued for **Permitting** Date **February 20, 2025**

Not Approved for Construction

Drawing Title
Site Details

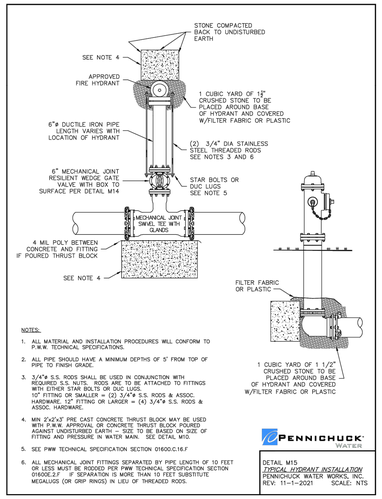
Drawing Number
C7.05

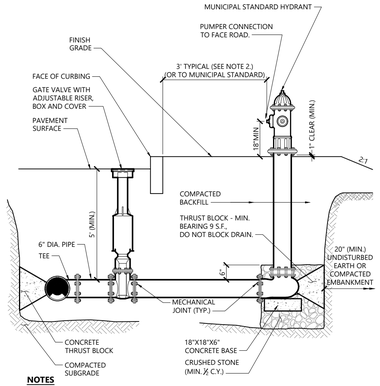
Sheet 90 of 111

Project Number
53140.00



Saved Monday, November 10, 2025 5:30:23 PM SFLEUROCK Plotted Tuesday, November 11, 2025 4:22:34 PM Jason Howe





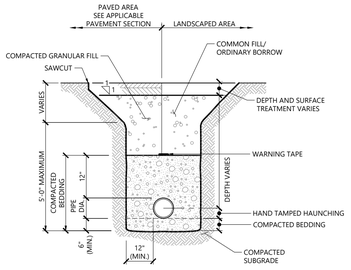
NOTES

1. CONCRETE THRUST BLOCKS TO BE USED ONLY WHERE THEY CAN BEAR ON UNDISTURBED EARTH AS SHOWN. USE CLAMPS AND TIE RODS OR OTHER ACCEPTABLE METHOD OF JOINT RESTRAINT WHERE SOIL CONDITIONS PROHIBIT THE USE OF THRUST BLOCKS.
2. HYDRANT IN SIDEWALK AREAS TO BE LOCATED TO PROVIDE MINIMUM CLEAR SIDEWALK PASSAGE WIDTH OF 3 FEET AT HYDRANT.
3. A 36-INCH CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF THE HYDRANT UNLESS OTHERWISE APPROVED BY AUTHORITY HAVING JURISDICTION.

Hydrant Construction

12/19

N.T.S. Source: VHB LD_250



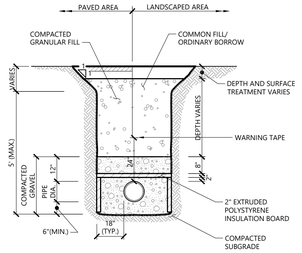
NOTES

1. WHERE UTILITY TRENCHES ARE CONSTRUCTED THROUGH DETENTION BASIN BERMS OR OTHER SUCH SPECIAL SECTIONS, PLACE TRENCH BACKFILL WITH MATERIALS SIMILAR TO THE SPECIAL SECTION REQUIREMENTS.
2. USE METALLIC TRACING/WARNING TAPE OVER ALL PIPES.
3. COMPACTED GRANULAR FILL MAY CONSIST OF GRAVEL, CRUSHED STONE, SAND, OR OTHER MATERIAL AS APPROVED BY ENGINEER.

Utility Trench

11/19

N.T.S. Source: VHB LD_300



NOTES

1. SEWER LINE SHALL BE INSULATED WHEN COVER IS LESS THAN FOUR (4) FEET AND WHERE SHOWN ON PLANS.
2. WATER LINE SHALL BE INSULATED WHEN COVER IS LESS THAN FIVE (5) FEET AND WHERE SHOWN ON PLANS.
3. BACKFILL PLACED IN UTILITY TRENCHES INCLUDING DISTURBED AREAS SURROUNDING UTILITY TRENCHES SHALL BE PLACED AND COMPACTED IN 12" (MAX.) VERTICAL LIFTS.

Utility - Pipe Insulation

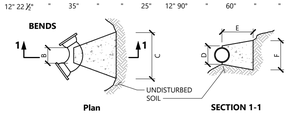
12/19

N.T.S. Source: VHB LD_305

TABLE OF DIMENSIONS

BENDS	B	C	D	E	F	BENDS	B	C	D	E	F
6" 11 ¼"	8"	15"	12"	24"	12"	6" 45°	8"	30"	12"	24"	14"
6" 22 ½"	"	19"	"	"	13"	6" 90°	"	30"	"	"	27"
8" 11 ¼"	"	20"	"	"	12"	8" 45°	"	30"	"	"	24"
8" 22 ½"	"	22"	"	"	17"	8" 90°	"	38"	"	"	36"
12" 11 ¼"	"	30"	"	"	15"	12" 45°	"	40"	"	"	40"
12" 22 ½"	"	35"	"	"	25"	12" 90°	"	60"	"	"	52"

BENDS

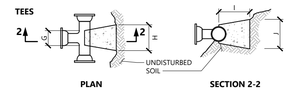


Plan SECTION 1-1

TABLE OF DIMENSIONS

TEES	G	H	I	J	TEES	G	H	I	J
6"X6"X6"	12"	24"	24"	18"	12"X12"X6"	12"	24"	24"	18"
8"X8"X6"	"	"	"	"	12"X12"X8"	"	"	"	24"
8"X8"X8"	"	"	"	24"	12"X12"X12"	"	36"	"	36"

TEES



PLAN SECTION 2-2

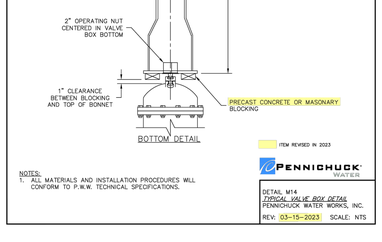
NOTES

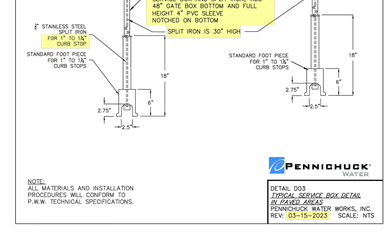
1. PROVIDE BLOCKS FOR TAPPING SLEEVES, DEAD ENDS, GATE VALVES, AND VERTICAL BENDS (SAME SIZE AS REQUIRED FOR TEES). PROVIDE ANCHOR RODS AT VERTICAL BENDS AND GATE VALVES.
2. CONCRETE SHALL NOT BE PLACED AGAINST PIPE BEYOND FITTING.
3. CONCRETE SHALL BE 3,000 PSI-TYPE I.

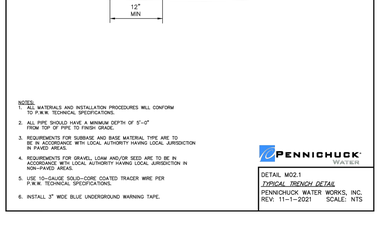
Concrete Thrust Block

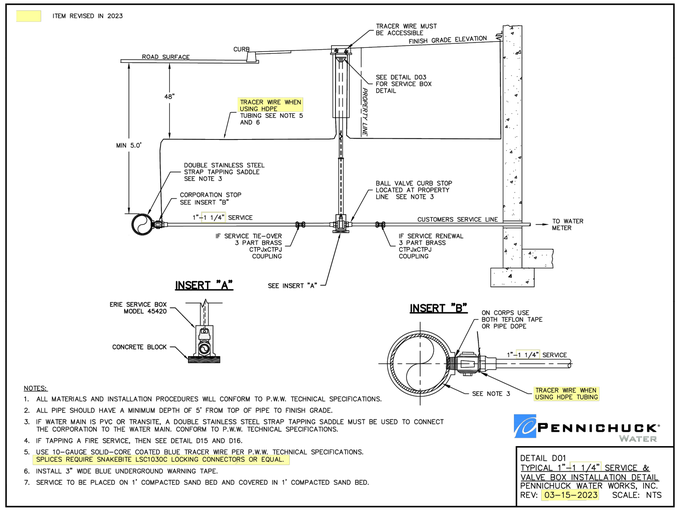
1/16

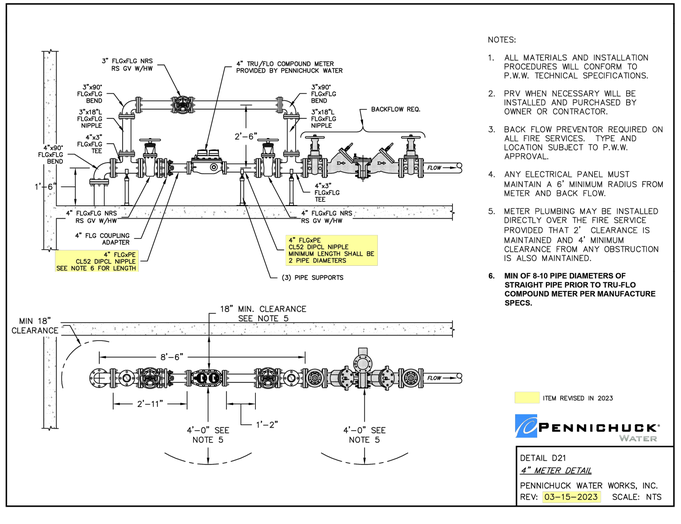
N.T.S. Source: VHB LD_260











vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

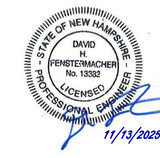
Designed by BJZ Checked by DHF

Issued for Permitting Date February 20, 2025

Not Approved for Construction

Drawing Title
Site Details

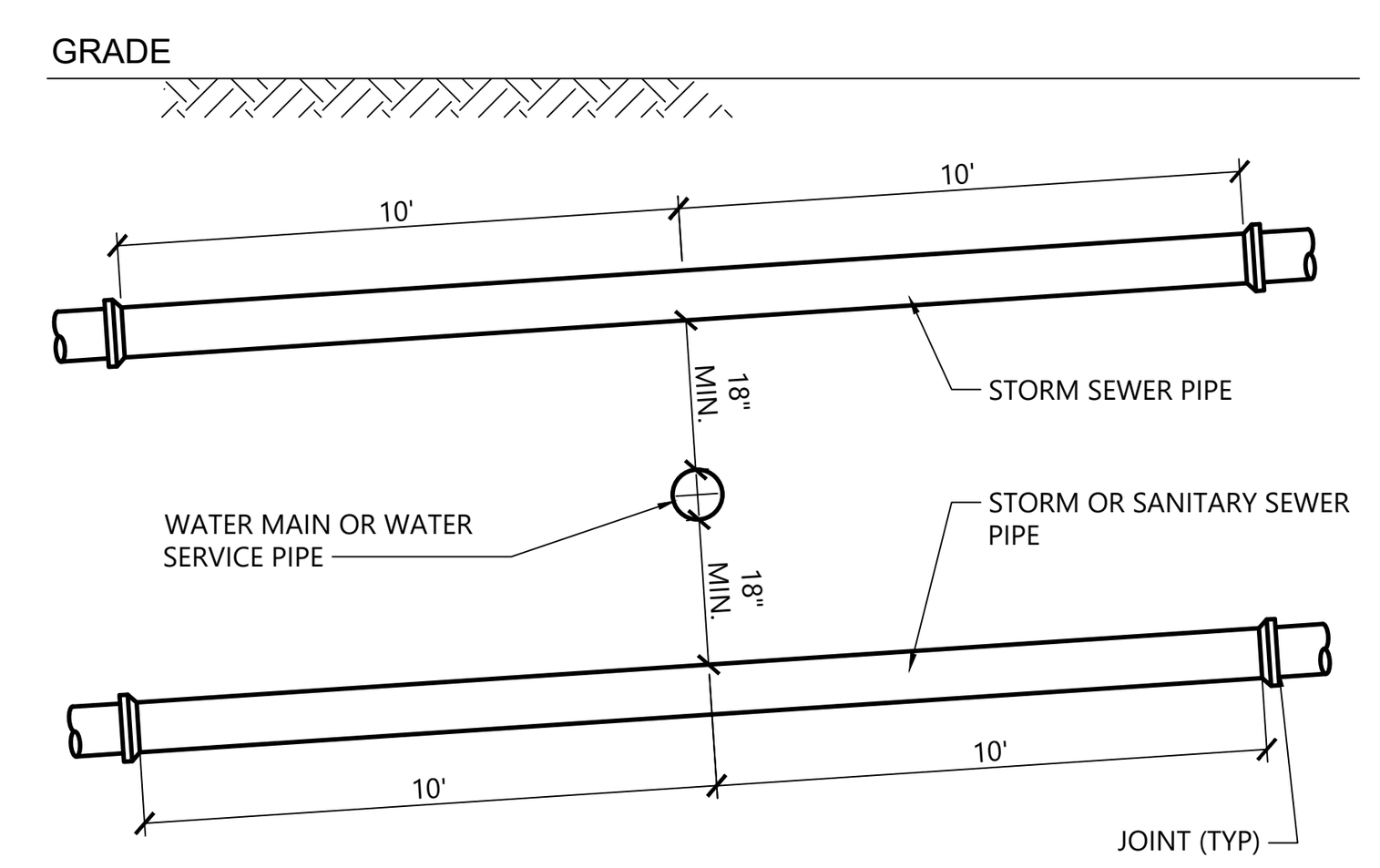
Drawing Number
C7.06



Sheet 91 of 111

Project Number 53140.00

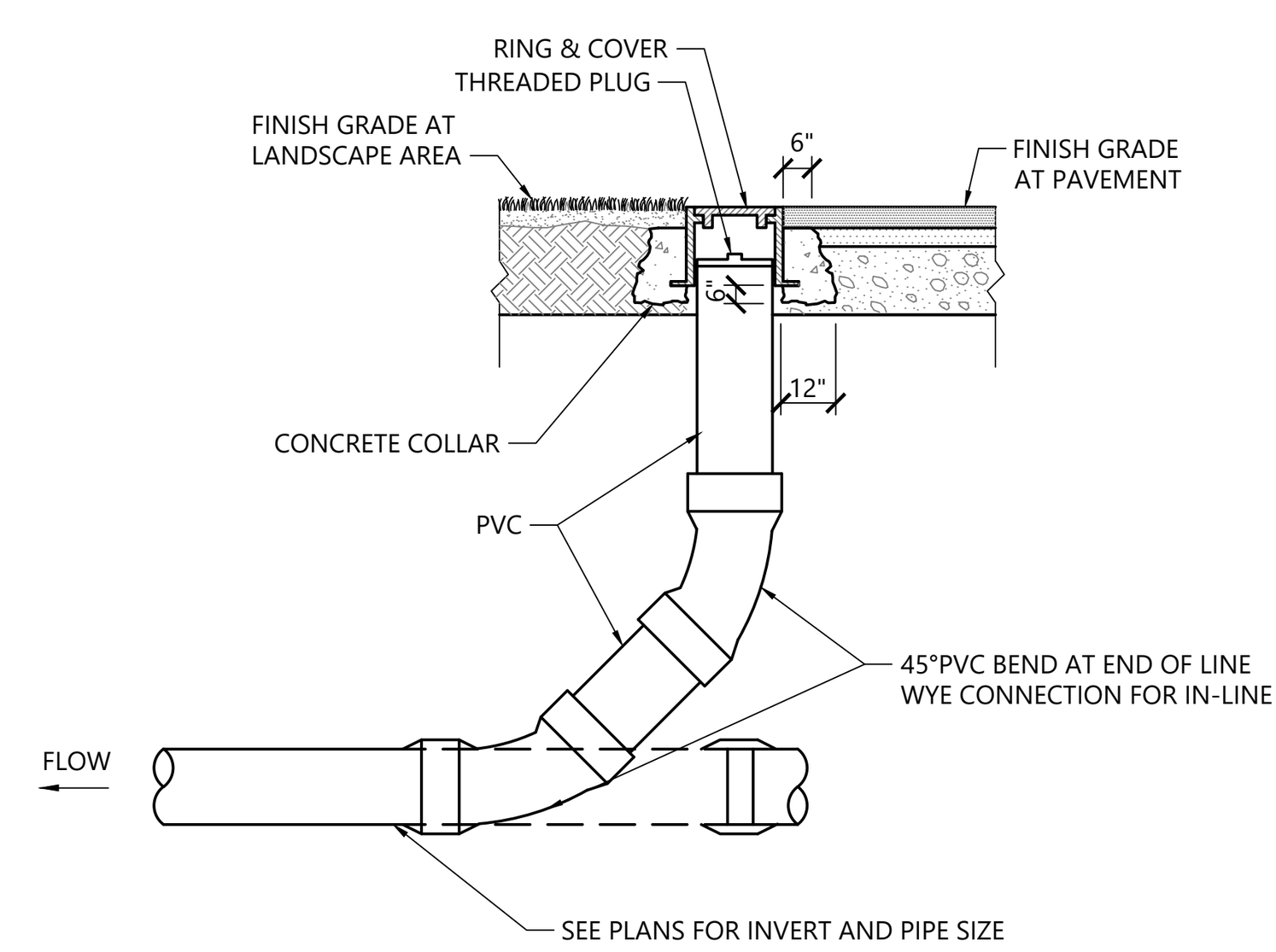
Saved Monday, November 10, 2025 5:30:23 PM SFLEUROCK Plotted Tuesday, November 11, 2025 4:22:48 PM Jason Howe



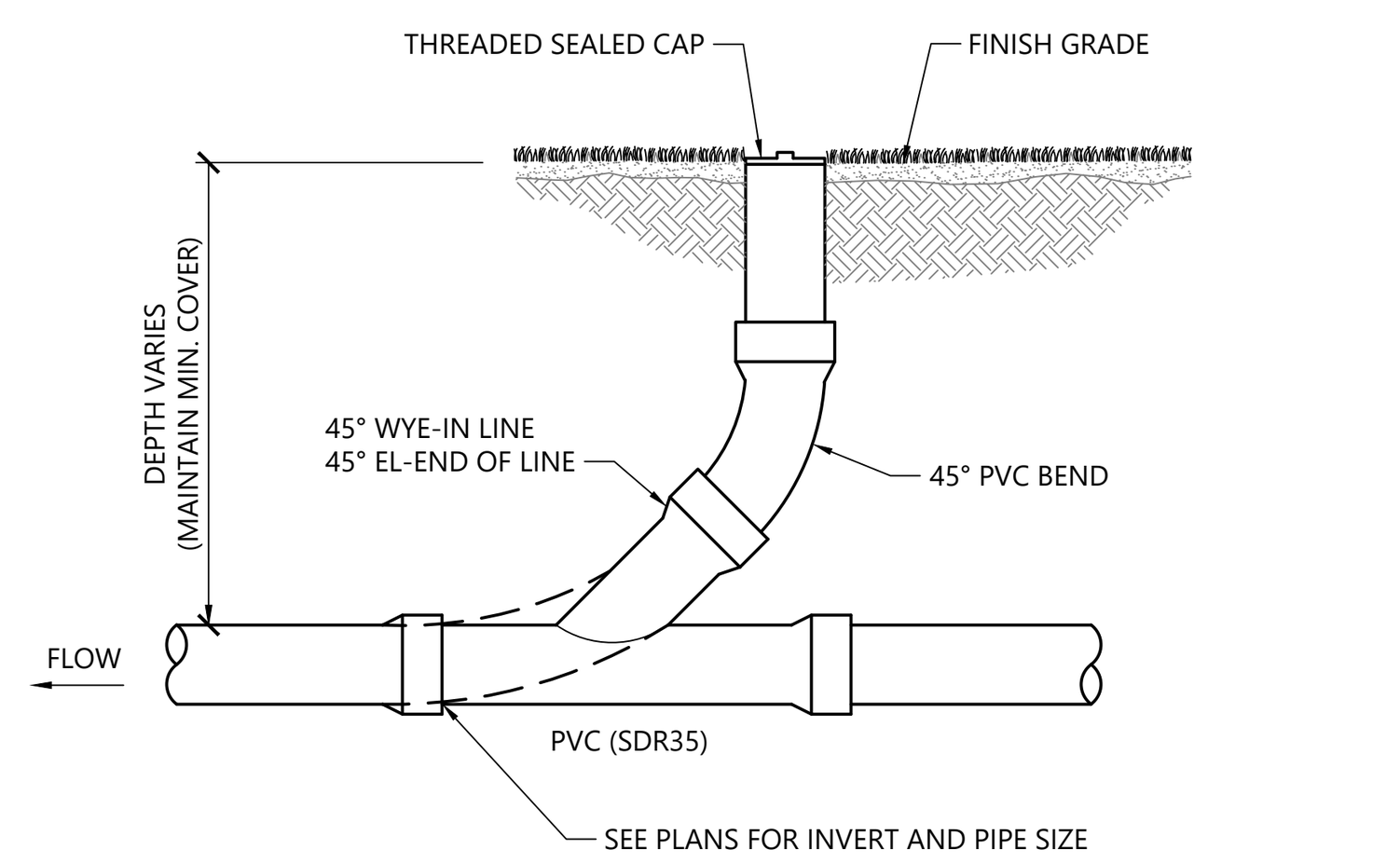
NOTES

1. WHERE SEWER LINE CROSSES OVER WATER LINE, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER AND WATER LINE. SEWER LINE JOINTS SHALL BE 10 FEET FROM THE POINT OF CROSSING WHERE SEWER LINES CROSS OVER WATER LINES.
2. WHERE WATER LINE CROSSES OVER SEWER LINE AND 18 INCH SEPARATION CANNOT BE MAINTAINED, BOTH WATER AND SEWER LINES SHALL BE CONSTRUCTED OF PRESSURE PIPE AND A MINIMUM SEPARATION BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE SEWER LINE OF 12 INCHES SHALL BE MAINTAINED.
3. IN THE EVENT THAT A STORM SEWER CROSSES OVER A SANITARY SEWER, THE SANITARY SEWER MUST BE CONSTRUCTED OF DIP UNLESS 18 INCH SEPARATION IS MAINTAINED.

Water/Sanitary/Drainage Pipe Crossing
11/25
N.T.S. Source: VHB REV

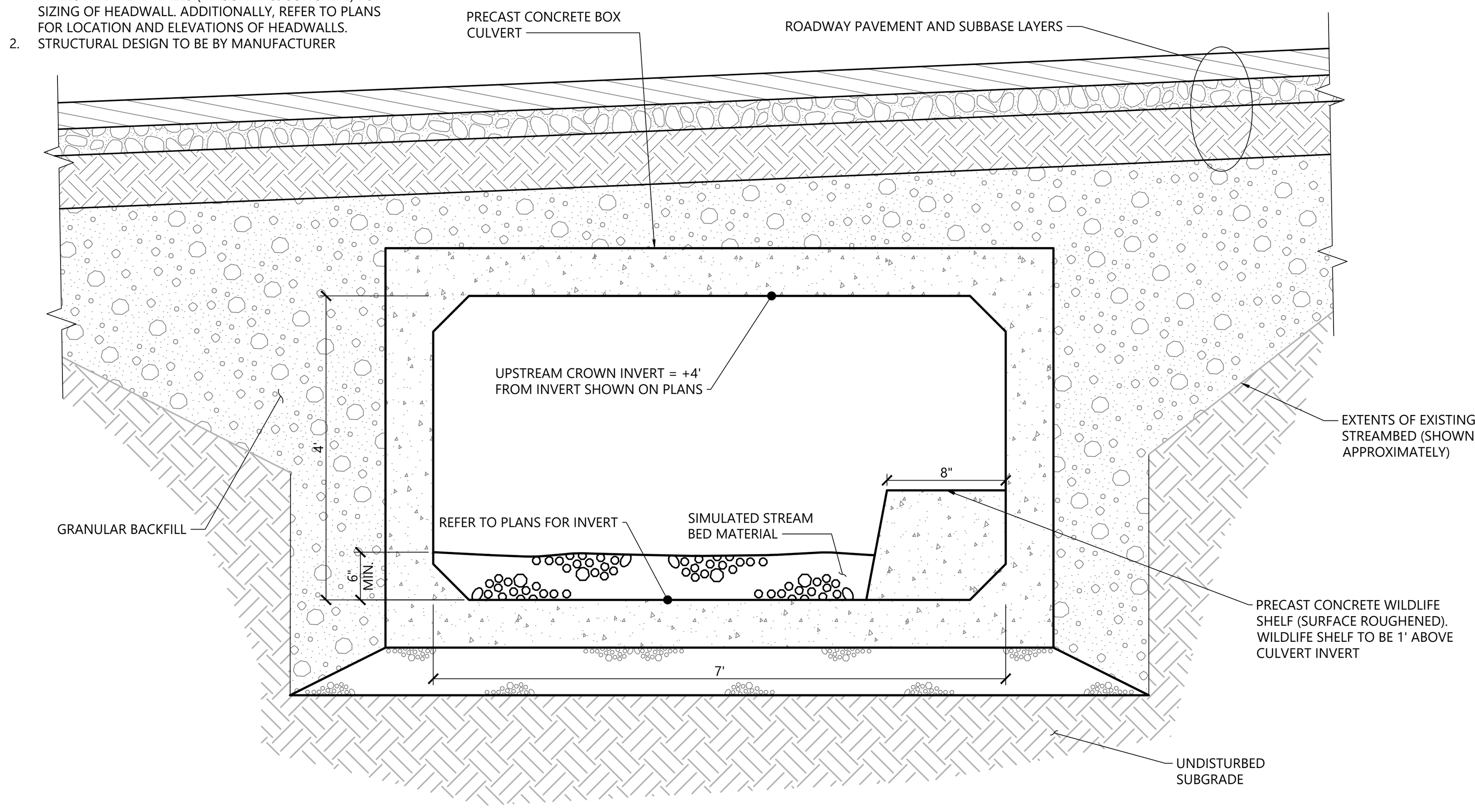


Cleanout (CO)
12/19
N.T.S. Source: VHB LD_303



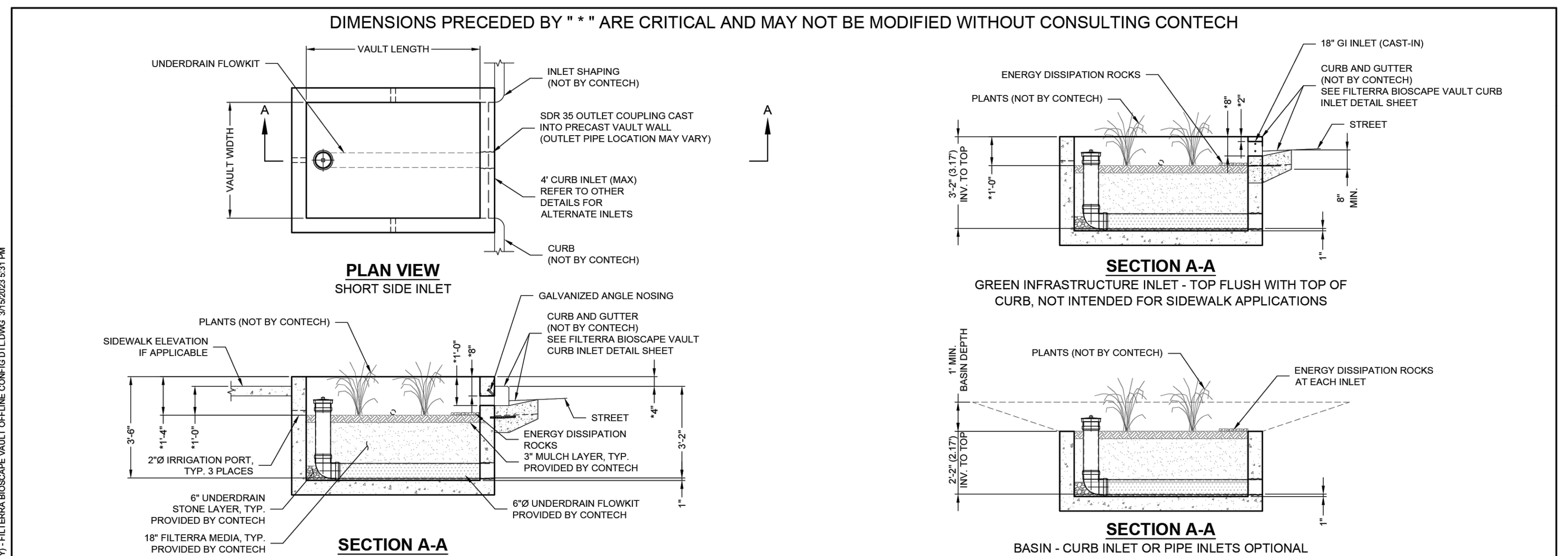
Cleanout (CO) - Landscape Area
11/19
N.T.S. Source: VHB LD_302

NOTES:
1. REFER TO CONCRETE HEADWALL (HW) WITH WING WALLS AND HEADWALLS (MASONRY & CONCRETE) FOR SIZING OF HEADWALL. ADDITIONALLY, REFER TO PLANS FOR LOCATION AND ELEVATIONS OF HEADWALLS.
2. STRUCTURAL DESIGN TO BE BY MANUFACTURER



4' by 7' - Box Culvert Section
11/25
N.T.S. Source: VHB

DIMENSIONS PRECEDED BY " * " ARE CRITICAL AND MAY NOT BE MODIFIED WITHOUT CONSULTING CONTECH



FTBSV-HC CONFIGURATION
(OPTIONS: BASIN "-B", GREEN INFRASTRUCTURE (GI) INLET "-I", PIPE INLET "-P", SLOTTED THROAT INLET "-T")

VAULT SIZE (L x W)	MEDIA AREA (SF)	LONG SIDE INLET DESIG. / PART NO.	SHORT SIDE INLET DESIG. / PART NO.	AVAILABILITY	OUTLET PIPE DIA	MIN. NO. OF INLET PIPES (-P ONLY)
4 x 4	16	FTBSV0404-HC	FTBSV0404-HC	ALL	6" SDR 35	1
6 x 4	24	FTBSV0604-HC	FTBSV0406-HC	ALL	6" SDR 35	1
8 x 4	32	FTBSV0804-HC	FTBSV0408-HC	ALL (EXCEPT DE,MD,NJ,PA,VA,WV)	6" SDR 35	1
7.83 x 4.5	35	FTBSV078045-HC	FTBSV045078-HC	DE,MD,NJ,PA,VA,WV ONLY	6" SDR 35	1
6 x 6	36	FTBSV0606-HC	FTBSV0606-HC	ALL (EXCEPT CA, TX)	6" SDR 35	1
8 x 6	48	FTBSV0806-HC	FTBSV0608-HC	ALL	6" SDR 35	1
10 x 6	60	FTBSV1006-HC	FTBSV0610-HC	ALL (EXCEPT CA, TX)	6" SDR 35	2
8 x 8	64	FTBSV0808-HC	FTBSV0808-HC	CA, TX ONLY	6" SDR 35	2
12 x 6	72	FTBSV1206-HC	FTBSV0612-HC	ALL (EXCEPT TX)	6" SDR 35	2
10 x 8	80	FTBSV1008-HC	FTBSV0810-HC	CA, TX ONLY	6" SDR 35	2
13 x 7	91	FTBSV1307-HC	FTBSV0713-HC	ALL (EXCEPT CA, TX)	6" SDR 35	2
12 x 8	96	FTBSV1208-HC	FTBSV0812-HC	CA, TX ONLY	6" SDR 35	2
14 x 8	112	FTBSV1408-HC†	N/A	ALL	6" SDR 35	3
16 x 8	128	FTBSV1608-HC†	N/A	ALL (EXCEPT OR,WA)	6" SDR 35	3
15 x 9	135	FTBSV1509-HC†	N/A	OR,WA ONLY	6" SDR 35	3
18 x 8	144	FTBSV1808-HC†	N/A	CALL CONTECH	6" SDR 35	3
20 x 8	160	FTBSV2008-HC†	N/A	CALL CONTECH	6" SDR 35	4
22 x 8	176	FTBSV2208-HC†	N/A	CALL CONTECH	6" SDR 35	4

†UTILIZES (2) CURB OPENINGS WITH MIN 1' SPACING
INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING ON VAULT SIZE

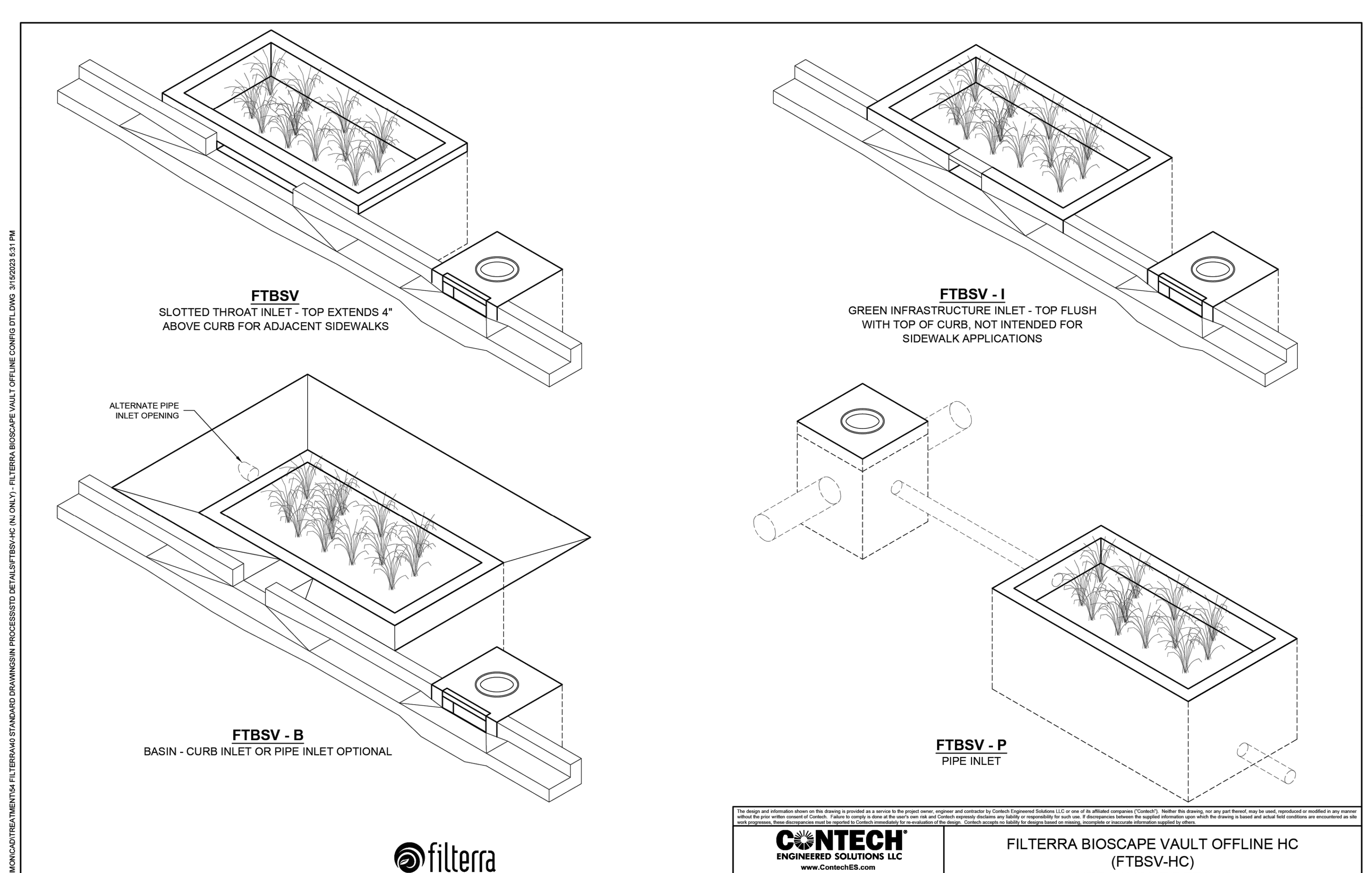
SIZE SHOWN ON PLAN

filterra

AS WITH ALL OPEN TOP BIORETENTION SYSTEMS, FILTERRA BIOSCAPE IS OPEN TO THE ATMOSPHERE WITH A MEDIA SURFACE RECESSED BELOW FINISHED GRADE. CONTRACTOR OR OWNER IS RESPONSIBLE FOR PROVIDING ANY REQUIRED SAFETY MEASURES AROUND SYSTEM PERIMETER. TO MAINTAIN AESTHETICS, REMOVAL OF HEAVY STORMWATER DEBRIS MAY BE NECESSARY BETWEEN REGULAR FILTERRA SYSTEM MAINTENANCE EVENTS.

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9100 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

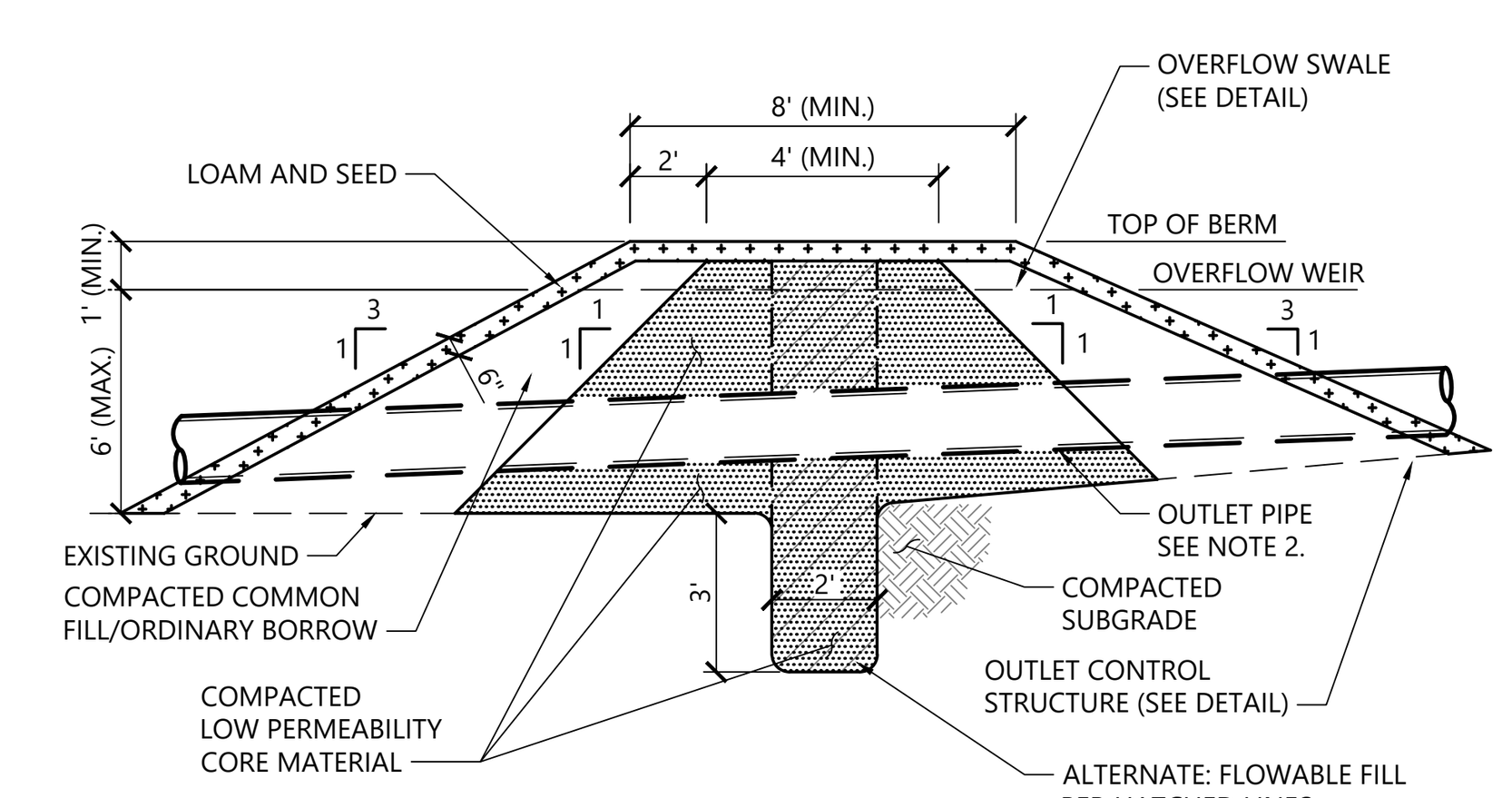
FILTERRA BIOSCAPE VAULT OFFLINE HC (FTBSV-HC)
CONFIGURATION DETAILS



filterra

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9100 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

FILTERRA BIOSCAPE VAULT OFFLINE HC (FTBSV-HC)
SITE LAYOUT DETAILS

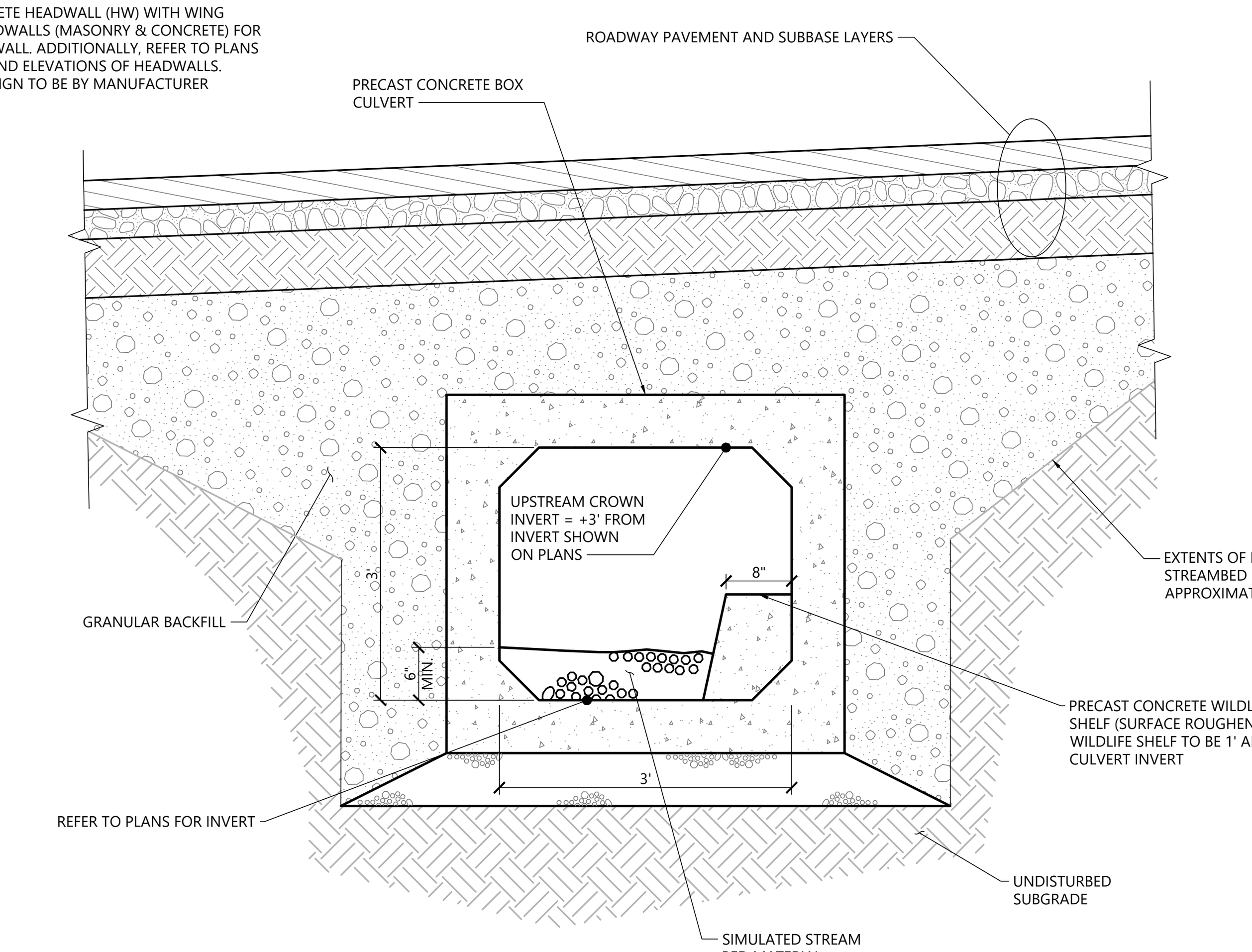


NOTES

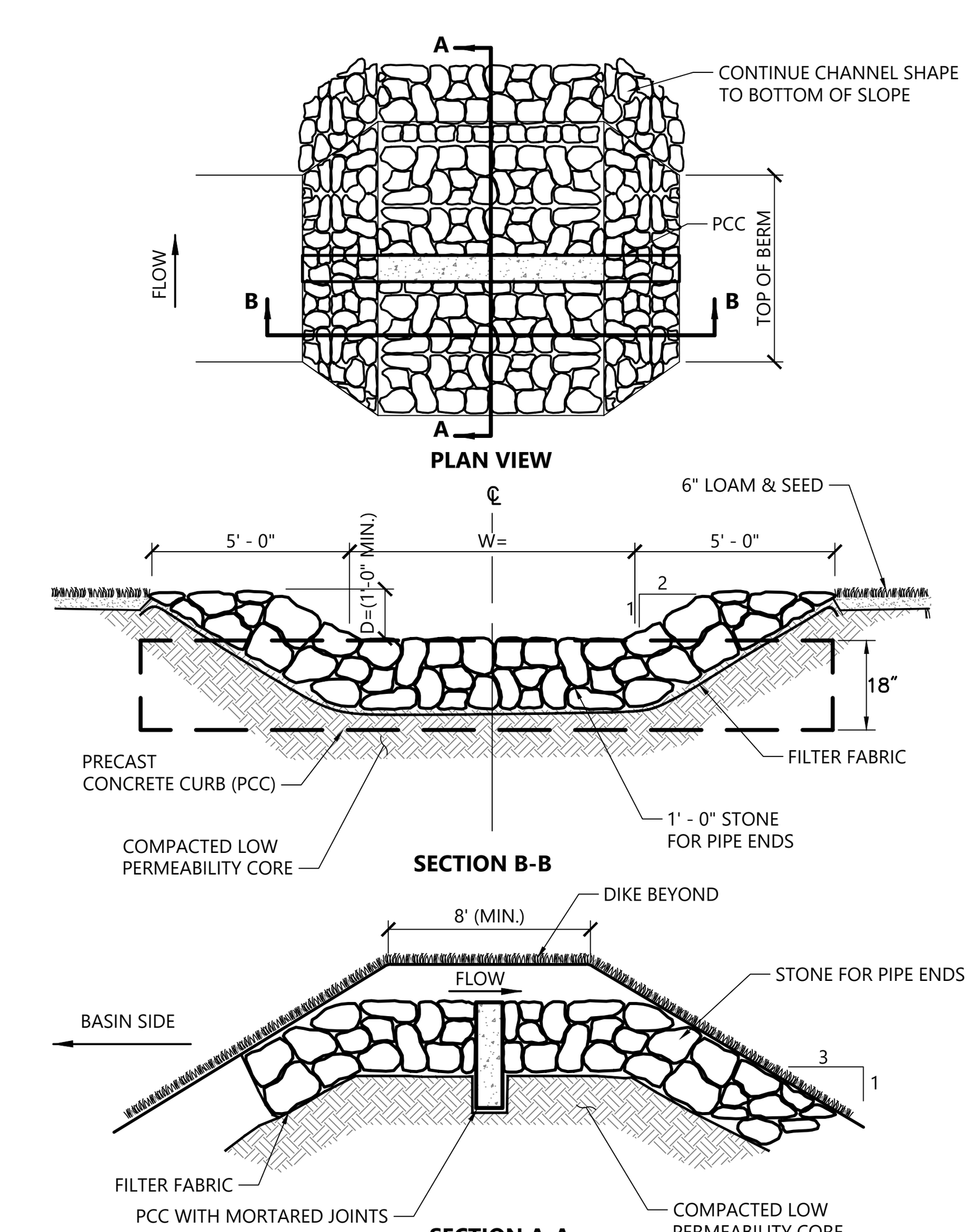
1. LOW PERMEABILITY CORE MATERIAL IS CONTINUOUS FOR THE FULL LENGTH OF THE EMBANKMENT.
2. WHERE PIPES PENETRATE THE LOW PERMEABILITY CORE, PIPE SHALL BE BEDDED IN THE LOW PERMEABILITY CORE MATERIAL.
3. THE BERM SECTION IS SUBJECT TO CHANGE AND WILL BE BASED ON THE RESULTS OF FURTHER GEOTECHNICAL INVESTIGATIONS.

Detention Basin Berm Section
12/20
N.T.S. Source: VHB LD_160

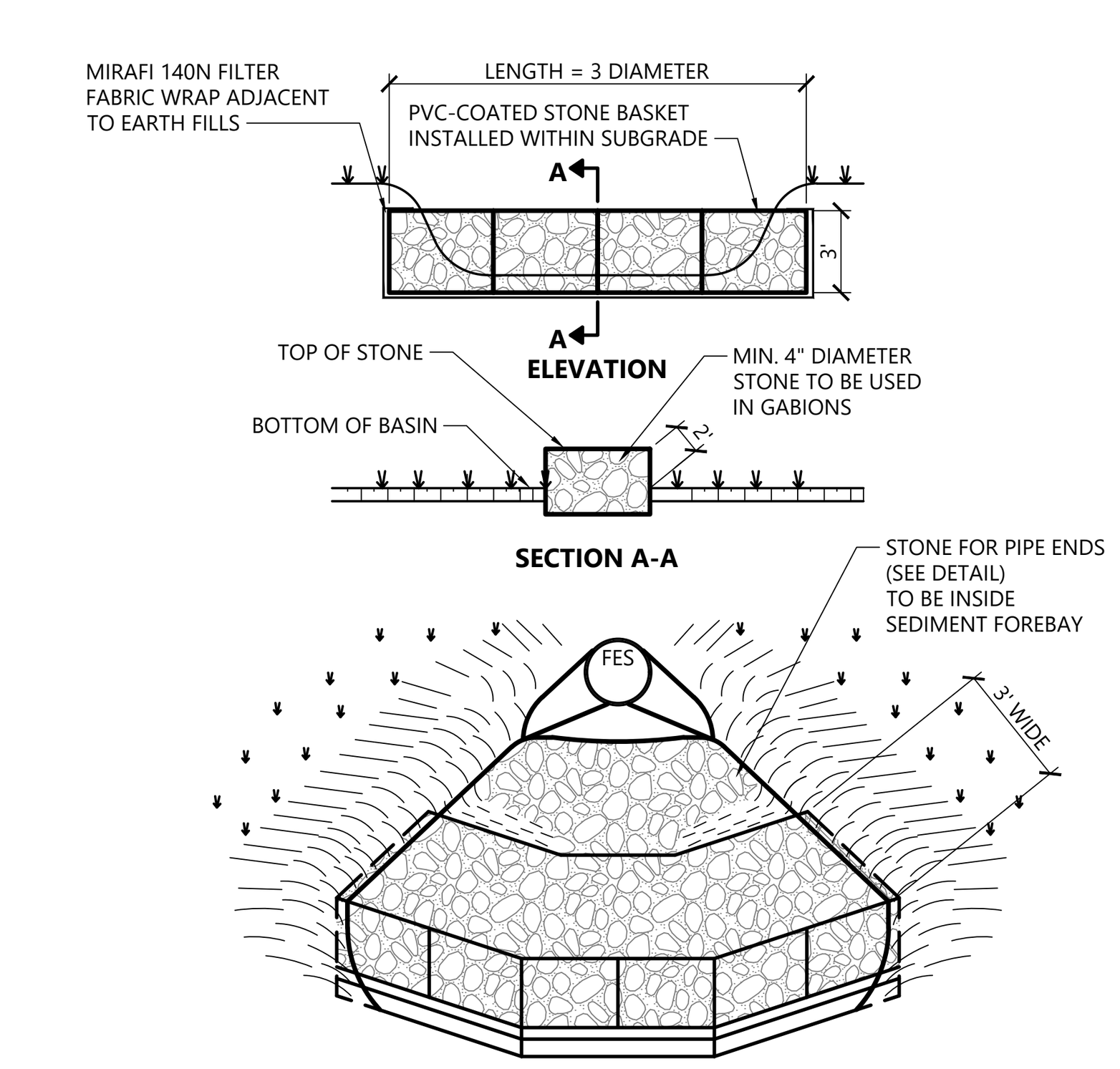
NOTES:
1. REFER TO CONCRETE HEADWALL (HW) WITH WING WALLS AND HEADWALLS (MASONRY & CONCRETE) FOR SIZING OF HEADWALL. ADDITIONALLY, REFER TO PLANS FOR LOCATION AND ELEVATIONS OF HEADWALLS.
2. STRUCTURAL DESIGN TO BE BY MANUFACTURER



3' by 3' - Box Culvert Section
11/25
N.T.S. Source: VHB



Overflow Stone Swale
1/16
N.T.S. Source: VHB LD_161



SEE GRADING AND DRAINAGE PLANS FOR VOLUME AND DEPTH INFORMATION

Sediment Forebay with Placed Stone
11/25
N.T.S. Source: VHB REV

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ
Checked by DHF
Issued for **Permitting**
Date **February 20, 2025**

Not Approved for Construction

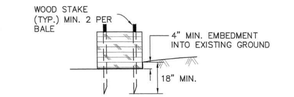
Drawing Title
Site Details

Drawing Number
C7.07

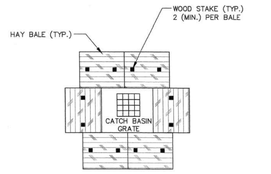
STATE OF NEW HAMPSHIRE - DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 92 of 111
Project Number 53140.00

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-DT.dwg



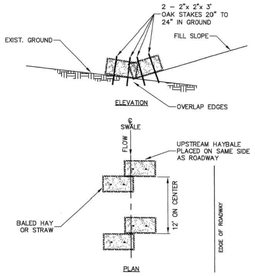
DETAILS FOR HAYBALE AND SILT FENCE INSTALLATION
NOT TO SCALE
EXHIBIT EC1



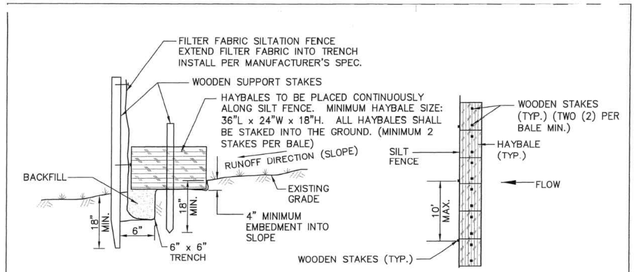
NOTES:

1. BALES TO REMAIN UNTIL SUBBASE PREPARATION IS COMPLETE AND ROADWAY PAVING IS TO BEGIN OR UNTIL ALL UPSTREAM AREAS ARE STABILIZED WITH VEGETATION.
2. HAYBALES AROUND CATCH BASINS TO BE USED IN NON-PAVED AREAS ONLY. FOR CATCH BASINS IN PAVED AREAS USE INLET FILTER BASKETS. SEE EXHIBIT EC6.
3. EACH CATCH BASIN LOCATION SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM ENTERING THE DRAINAGE PIPING SYSTEM AND/OR CAUSING SURFACE FLOODING.

DETAILS FOR SEDIMENT CONTROL AT CATCH BASINS
NOT TO SCALE
EXHIBIT EC2



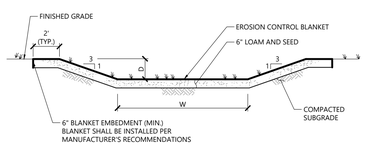
DETAILS FOR HAY BALE CHECK DAM
NOT TO SCALE
EXHIBIT EC3



DETAIL FOR SILT FENCE WITH HAY BALES
NOT TO SCALE
EXHIBIT EC4

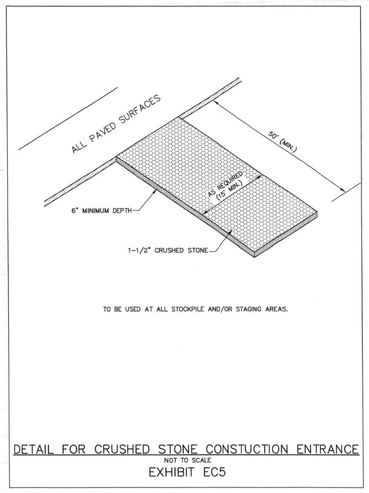
SWALE TABLE

SWALE DESIGNATION	W	D
TYP	3	3



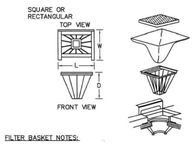
Grassed Swale 11/5

N.T.S. Source: VHB LD_171 REV



TO BE USED AT ALL STOCKPILE AND/OR STAGING AREAS.

DETAIL FOR CRUSHED STONE CONSTUCTION ENTRANCE
NOT TO SCALE
EXHIBIT EC5



FILTER BASKET NOTES:

1. INLET BASKETS SHALL BE USED ON ALL CATCH BASINS WITHIN THE PROJECT LIMITS WITHIN PAVED AREAS. INLET FILTER BASKETS SHALL BE "SILT SACK®" OR APPROVED EQUAL.
2. FILTER FABRIC SHALL BE PUSHED DOWN AND FORMED TO THE SHAPE OF THE BASKET. THE SHEET OF FABRIC SHALL BE LARGE ENOUGH TO BE SUPPORTED BY THE BASKET FRAME WHEN HOLDING SEDIMENT AND EXTEND AT LEAST 6 INCHES PAST THE FRAME. THE INLET GRATE SHALL BE PLACED OVER THE BASKET/FRAME AND WILL SERVE AS THE FABRIC ANCHOR.
3. THE FILTER FABRIC SHALL BE A GEO-TEXTILE FABRIC: POLYESTER, POLYPROPYLENE, STABILIZED NYLON, POLYETHYLENE OR POLYVINYLIDENE CHLORIDE MEETING THE FOLLOWING SPECIFICATIONS:
   GRAB STRENGTH: 300 lb. MINIMUM IN ANY PRINCIPAL DIRECTION (ASTM D-4632).
   MULLEN BURST STRENGTH: MINIMUM 800 psi (ASTM D-3786).

   THE FABRIC SHALL HAVE AN OPENING NO GREATER THAN A NUMBER 40 U.S.
4. STANDARD SIEVE AND MINIMUM PERMEABILITY OF 40 gpm/sq. ft.

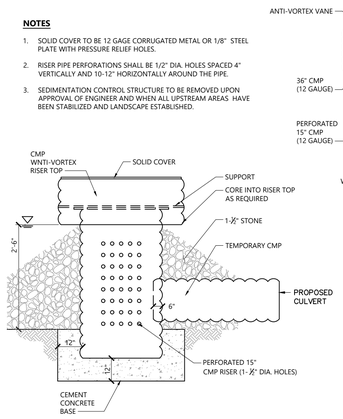
   THE INLET BASKET SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL
5. OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM ENTERING THE DRAINAGE PIPING SYSTEM AND/OR CAUSING SURFACE FLOODING.

   INLET BASKETS SHALL BE MAINTAINED IN PLACE UNTIL ALL PAVING IS COMPLETED
6. AND ALL UNPAVED AREAS HAVE BEEN STABILIZED WITH VEGETATION.

DETAIL FOR INLET FILTER BASKET
NOT TO SCALE
EXHIBIT EC6

NOTES

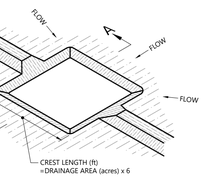
1. SOLID COVER TO BE 12 GAGE CORRUGATED METAL OR 1/8" STEEL PLATE WITH PRESSURE RELIEF HOLES.
2. RISER PIPE PERFORATIONS SHALL BE 1/2" DIA. HOLES SPACED 4" VERTICALLY AND 10-12" HORIZONTALLY AROUND THE PIPE.
3. SEDIMENTATION CONTROL STRUCTURE TO BE REMOVED UPON APPROVAL OF ENGINEER AND WHEN ALL UPSTREAM AREAS HAVE BEEN STABILIZED AND LANDSCAPE ESTABLISHED.



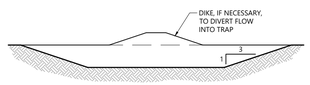
SECTION A-A

Temporary Sedimentation Control Structure 1/16

N.T.S. Source: VHB LD_692



ISOMETRIC VIEW



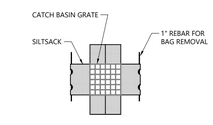
SECTION A-A

NOTES

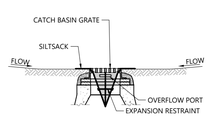
1. THE TRAP SHALL BE INSTALLED AS CLOSE TO THE DISTURBED AREA OR SOURCE OF SEDIMENT AS POSSIBLE .
2. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. THE SIDE SLOPES 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.

Temporary Sediment Trap

N.T.S. Source: NH Stormwater Manual



PLAN VIEW



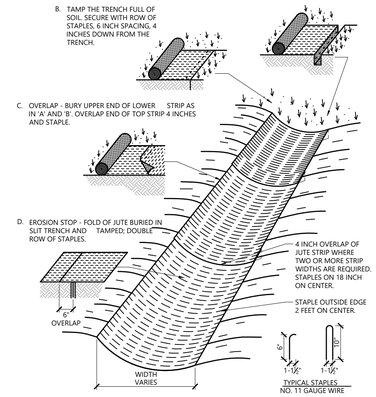
SECTION VIEW

NOTES

1. INSTALL SILTSACK IN ALL CATCH BASINS WHERE INDICATED ON THE PLAN BEFORE COMMENCING WORK OR IN PAVED AREAS AFTER BINDER COURSE IS PLACED AND STRAW BALES HAVE BEEN REMOVED.
2. GRATE TO BE PLACED OVER SILTSACK.
3. SILTSACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED. MAINTAIN UNTIL UPSTREAM AREAS HAVE BEEN PERMANENTLY STABILIZED

Siltsack Sediment Trap 1/20

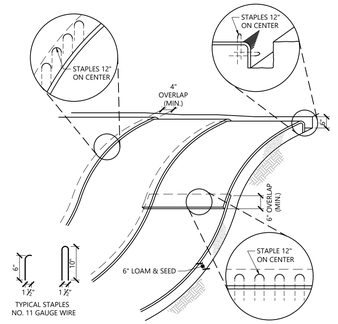
N.T.S. Source: VHB REV LD_674



* INSTALLATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS

Erosion Control Blanket Swale Installation 1/16

N.T.S. Source: VHB LD_681

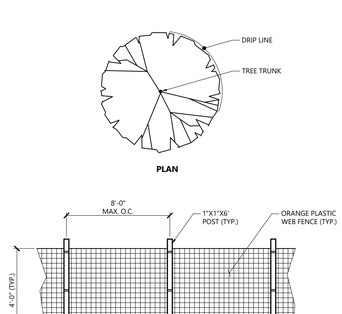


NOTES

1. BEGIN AT THE TOP OF BLANKET INSTALLATION AREA BY ANCHORING BLANKET IN A 6" DEEP TRENCH BACKFILL AND COMPACT TRENCH AFTER STAPLING.
2. ROLL THE BLANKET DOWN THE SWALE IN THE DIRECTION OF THE WATER FLOW.
3. THE EDGES OF BLANKETS MUST BE STAPLED WITH APPROX. 4 INCH OVERLAP WHERE 2 OR MORE STRIP WIDTHS ARE REQUIRED.
4. WHEN BLANKETS MUST BE SPLICED DOWN THE SWALE, PLACE UPPER BLANKET END OVER LOWER END WITH 6 INCH (MIN.) OVERLAP AND STAPLE BOTH TOGETHER.
5. METHOD OF INSTALLATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.
6. EROSION CONTROL BLANKETS SHALL BE USED IN ALL AREAS WHERE SLOPES EXCEED 3:1.
7. THERE SHALL BE NO PLASTIC OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN ⅛ INCHES MATERIAL UTILIZED.

Erosion Control Blanket Slope Installation 10/20

N.T.S. Source: VHB LD_680



NOTES

1. INSTALL TREE PROTECTION FENCE AT THE DRIP LINE OF EXISTING TREES TO REMAIN.

Tree Protection Fence 1/16

N.T.S. Source: VHB LD_610

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ Checked by DHF

Issued for **Permitting** Date **February 20, 2025**

Not Approved for Construction

Drawing Title
Site Details

Drawing Number
C7.08

Sheet 93 of 111

STATE OF NEW HAMPSHIRE DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER
11/13/2025

Project Number 53140.00

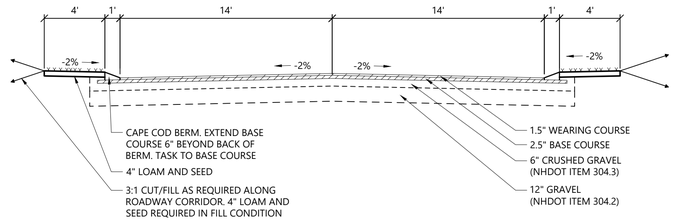
Saved Monday, November 10, 2025 5:30:23 PM STLEUROCK Plotted Tuesday, November 11, 2025 4:23:18 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-DT-XSECTION.dwg

TYPICAL 28' ROADWAY CROSS SECTION

APPLICABLE STATIONS:

THORNTON HILL AVENUE:
FROM STATION 0+00.00' TO STATION 8+02.01'
FROM STATION 47+11.95 ' TO STATION 55+05.87'



TYPICAL 24' ROADWAY CROSS SECTION

APPLICABLE STATIONS:

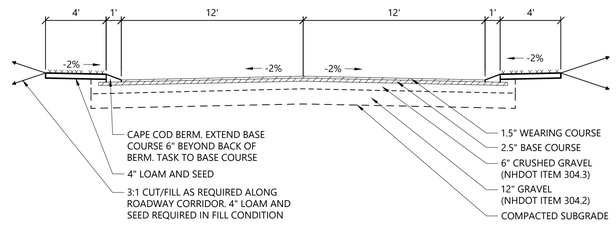
THORNTON HILL AVENUE:
FROM STATION 8+02.01' TO STATION 47+11.95'

OXFORD COURT:
FROM STATION 0+00.00' TO STATION 2+81.06'
FROM STATION 17+18.29' TO STATION 18+62.02'

BRAMLEY COURT:
FROM STATION 10+05.55' TO STATION 10+70.30'

KINGSTON COURT:
FROM STATION 0+00.00' TO STATION 9+63.95'
FROM STATION 13+06.07' TO STATION 13+85.94'

PORTERS COURT:
FROM STATION 0+00.00' TO STATION 0+40.09'
FROM STATION 8+92.76' TO STATION 9+81.42'



TYPICAL 24' ROADWAY CROSS SECTION

APPLICABLE STATIONS:

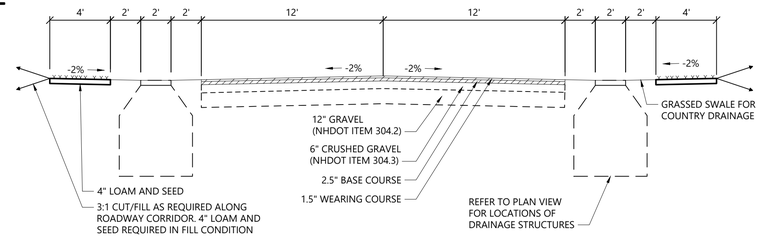
THORNTON HILL AVENUE:
FROM STATION 8+02.01' TO STATION 47+11.95'

OXFORD COURT:
FROM STATION 2+81.06' TO STATION 17+18.29'

BRAMLEY COURT:
FROM STATION 0+00.00' TO STATION 10+05.55'

KINGSTON COURT:
FROM STATION 0+00.00' TO STATION 9+63.95'
FROM STATION 13+06.07' TO STATION 13+85.94'

PORTERS COURT:
FROM STATION 0+00.00' TO STATION 0+40.09'
FROM STATION 8+92.76' TO STATION 9+81.42'



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF
Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title: Site Details

Drawing Number: C7.09

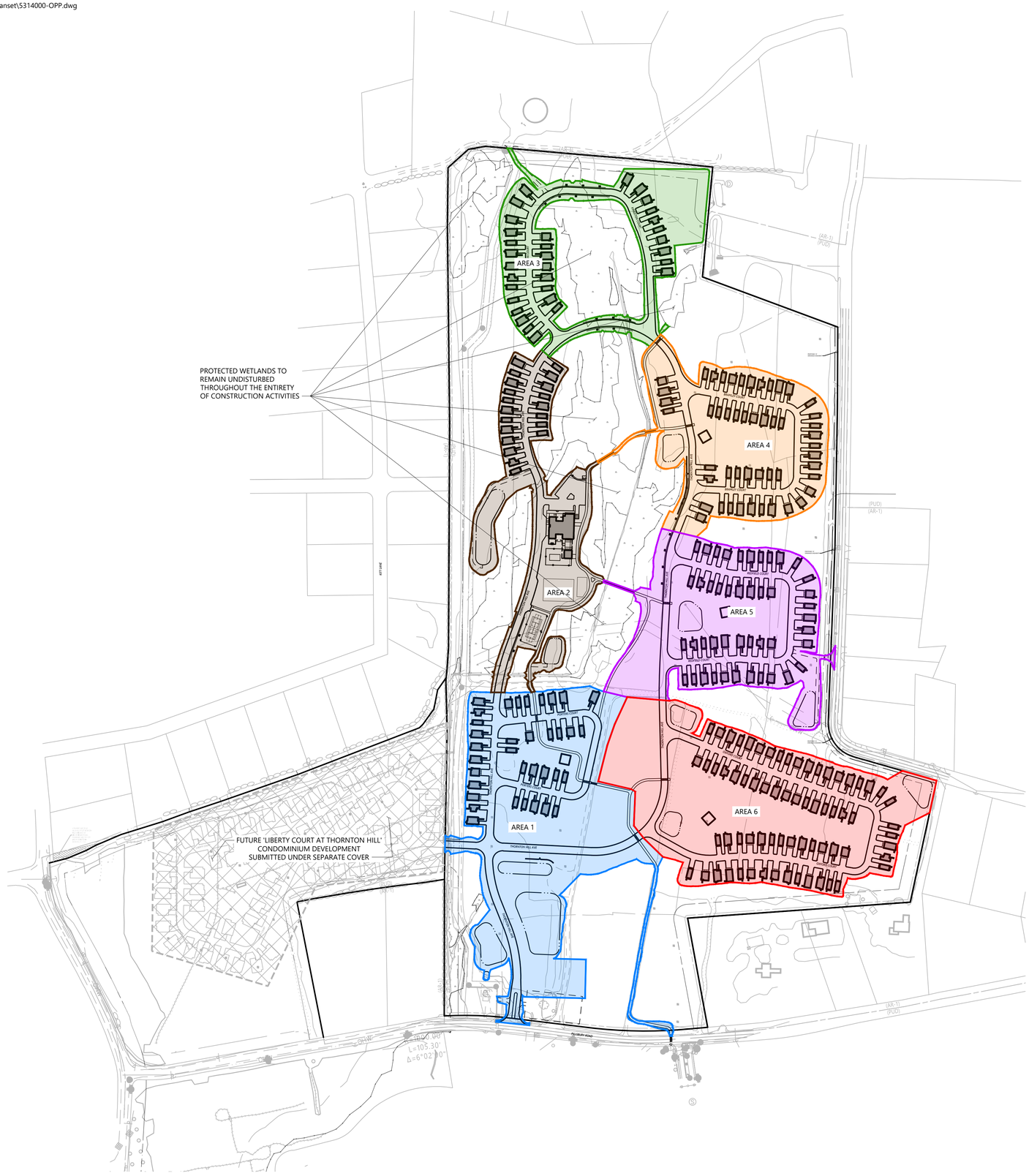
STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Sheet 94 of 111

Project Number: 53140.00

Saved Monday, November 10, 2025 3:57:04 PM JHOWE Plotted Tuesday, November 11, 2025 4:23:44 PM Jason Howe

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\d\Planset\5314000-OPP.dwg



Sequencing Notes

1. PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT TO NHDES, AND THE ENGINEER, A DETAILED PHASING AND CONSTRUCTION SEQUENCING PLAN THAT SHOWS THE PHASED AREAS OF CONSTRUCTION AND TEMPORARY EROSION CONTROL MEASURES TO BE IMPLEMENTED.
2. TEMPORARY ROAD CLOSURE BARRICADES TO BE PLACED AT THE LIMITS OF EACH PHASE, AND WILL BE MOVED TO THE END OF THE SUCCESSIVE PHASE WHEN THAT PHASE IS COMPLETED.

NHDES Env-Wq 1500: AoT Notes

(a) ALL AREAS OF UNSTABILIZED SOIL SHALL BE:
(1) TEMPORARILY STABILIZED AS SOON AS PRACTICABLE BUT IN ALL CASES WITHIN 45 DAYS OF INITIAL DISTURBANCE, UNLESS A SHORTER TIME IS SPECIFIED BY LOCAL AUTHORITIES, THE CONSTRUCTION SEQUENCE APPROVED AS PART OF THE ISSUED PERMIT, OR AN INDEPENDENT MONITOR; AND
(2) PERMANENTLY STABILIZED AS SOON AS PRACTICABLE BUT IN ALL CASES WITHIN 3 DAYS OF FINAL GRADING.

(b) SUBJECT TO (C) AND (F), BELOW, THE AREA OF UNSTABILIZED SOIL SHALL NOT EXCEED 5 ACRES AT ANY TIME.

(c) THE DEPARTMENT SHALL AUTHORIZE AN APPLICANT TO DISTURB MORE THAN 5 ACRES AT ONE TIME IF THE APPLICANT:
(1) SUBMITS DOCUMENTATION THAT THE REQUIRED AREAS OF EARTH CUTS AND FILLS ARE SUCH THAT AN AREA OF DISTURBANCE OF 5 ACRES OR LESS WOULD UNREASONABLY LIMIT THE CONSTRUCTION SCHEDULE;
(2) SUBMITS A CONSTRUCTION SEQUENCE PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST; AND
(3) EMPLOYS AN ENVIRONMENTAL MONITOR DURING CONSTRUCTION.

(d) SUBJECT TO (E), BELOW, THE ENVIRONMENTAL MONITOR SHALL:
(1) INSPECT THE PROJECT SITE AT LEAST ONCE EACH WEEK FROM THE START OF TERRAIN ALTERATION ACTIVITIES UNTIL ALL TERRAIN ALTERATION ACTIVITIES ARE COMPLETED AND THE SITE IS STABILIZED;
(2) IN ADDITION TO REGULAR WEEKLY INSPECTIONS, INSPECT THE PROJECT SITE DURING ANY RAIN EVENT IN WHICH 0.5 INCH OF PRECIPITATION OR MORE FALLS WITHIN A 24 HOUR PERIOD, PROVIDED THAT IF THE ENVIRONMENTAL MONITOR IS UNABLE TO BE PRESENT DURING SUCH A STORM, THE MONITOR SHALL INSPECT THE SITE WITHIN 24 HOURS OF THE RAIN EVENT;
(3) SUBMIT A WRITTEN REPORT, STAMPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, TO THE DEPARTMENT WITHIN 24 HOURS OF EACH INSPECTION THAT:
a. DESCRIBES THE PROGRESS OF THE PROJECT, INCLUDING WHETHER ALL CONDITIONS OF THE PERMIT ARE BEING MET AND, IF NOT, WHICH REQUIREMENTS ARE NOT BEING MET;
b. IF ANY REQUIREMENTS ARE NOT BEING MET, AN EXPLANATION OF THE CORRECTIVE ACTION(S) THAT WILL BE OR ARE BEING TAKEN TO BRING THE PROJECT INTO COMPLIANCE WITH APPLICABLE REQUIREMENTS AND THE DEADLINE BY WHICH SUCH ACTIONS WILL BE COMPLETED; AND
c. INCLUDES PHOTOGRAPHS OF THE SITE THAT ARE REPRESENTATIVE OF THE PROJECT; AND
(1) RETAIN A COPY OF THE REPORT PREPARED PURSUANT TO (3), ABOVE, ON-SITE FOR REVIEW DURING SITE INSPECTIONS BY FEDERAL, STATE, AND LOCAL OFFICIALS.

(a) ROUTINE INSPECTION FREQUENCY MAY BE REDUCED FROM ONCE EACH WEEK TO AT LEAST ONCE EACH MONTH IF EITHER OF THE FOLLOWING CONDITIONS IS MET:
(1) WORK HAS BEEN SUSPENDED AND THE ENTIRE SITE IS STABILIZED IN ACCORDANCE WITH ENV-WQ 1505.04; OR
(2) RUNOFF IS UNLIKELY BECAUSE:
a. THE GROUND IS FROZEN OR THE SITE IS COVERED WITH SNOW OR ICE; AND
b. THE PROJECT IS IN AN AREA WHERE FROZEN CONDITIONS ARE ANTICIPATED TO CONTINUE FOR MORE THAN ONE MONTH.

(f) IF THE SITE IS WITHIN 50 FEET OF A SURFACE WATER OF THE STATE, OR WETLANDS AS DEFINED IN RSA 482-A, HAS A GRADE OF 25% OR GREATER, OR CONTAINS SOILS HAVING AN ERODIBILITY FACTOR OF 0.4 OR GREATER, OR ANY COMBINATION OF THESE, THE OWNER SHALL, REGARDLESS OF THE SIZE OF THE OPEN AREA:
(1) SUBMIT A CONSTRUCTION SEQUENCE PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST;
(2) EMPLOY AN ENVIRONMENTAL MONITOR; AND
(3) COMPLY WITH (D) AND (E), ABOVE.

SOURCE. (SEE REVISION NOTE #1 AT CHAPTER HEADING FOR ENV-WQ 1500) #9343, EFF 1-1-09; SS BY #12342, EFF 8-15-17
(FORMERLY ENV-WQ 1505.02) (SEE REVISION NOTE #3 AT CHAPTER HEADING FOR ENV-WQ 1500); SS BY #13758, EFF 9-28-23 (SEE REVISION NOTE #4 AT CHAPTER HEADING FOR ENV-WQ 1500)

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 100 200 400 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, Inc.
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: Permitting

Date: February 20, 2025

Not Approved for Construction

Drawing Title: Overall Sequencing Plan

Drawing Number: C8.00

Sheet 95 of 111

Project Number: 53140.00

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Tuesday, November 11, 2025 9:35:32 AM JHOWE Plotted Wednesday, November 12, 2025 2:33:55 PM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-I&M.dwg

Notes

INTRODUCTION

VHB HAS PREPARED THE FOLLOWING STORMWATER MANAGEMENT SYSTEM INSPECTION & MAINTENANCE MANUAL FOR THE REDISENTIAL PROJECT LOCATED AT 36 PILLSBURY ROAD, LONDONDERRY, NEW HAMPSHIRE. THE INTENT OF THIS PLAN IS TO PROVIDE THE APPLICANT/OWNER WITH A LIST OF PROCEDURES THAT DOCUMENT THE INSPECTION AND MAINTENANCE REQUIREMENTS OF THE STORMWATER MANAGEMENT SYSTEM FOR THIS DEVELOPMENT.

THE FOLLOWING INSPECTION AND MAINTENANCE PROGRAM IS NECESSARY IN ORDER TO KEEP THE STORMWATER MANAGEMENT SYSTEM FUNCTIONING PROPERLY. BY FOLLOWING THE ENCLOSED PROCEDURES, THE APPLICANT WILL BE ABLE TO MAINTAIN THE FUNCTIONAL DESIGN OF THE STORMWATER MANAGEMENT SYSTEM AND MAXIMIZE ITS ABILITY TO REMOVE SEDIMENT AND OTHER CONTAMINANTS FROM SITE GENERATED STORMWATER RUNOFF.

RESPONSIBLE PARTY

THE OVERSIGHT OF THE INSPECTION AND MAINTENANCE PROGRAM WILL BE PROVIDED BY:

PROCOPIO ENTERPRISE, LLC
35 VILLAGE ROAD,. 7TH FLOOR (702)
MIDDLETON, MA 01949

STORMWATER MANAGEMENT SYSTEM COMPONENTS

THE STORMWATER MANAGEMENT SYSTEM IS DESIGNED TO MITIGATE BOTH THE QUANTITY AND QUALITY OF SITE-GENERATED STORMWATER RUNOFF. AS A RESULT, ITS DESIGN INCLUDES THE FOLLOWING ELEMENTS:

A. NON-STRUCTURAL BMP'S

A.1. NON-STRUCTURAL BEST MANAGEMENT PRACTICES (BMP'S) ARE DESIGNED TO MINIMIZE AND/OR REMOVE CONTAMINANTS BEFORE THEY ENTER THE STORMWATER COLLECTION SYSTEM. SEVERAL OF THESE BMP'S HAVE BEEN INCORPORATED INTO THE STORMWATER MANAGEMENT SYSTEM INCLUDING REDUCED USED OF ROAD DEICING AGENTS, AND LITTER/TRASH REMOVAL. THESE TYPES OF BMP'S ARE A HIGHLY EFFECTIVE INITIAL TREATMENT MEASURE FOR REDUCING STORMWATER POLLUTANT LOADING.

B. STRUCTURAL BMP'S

B.1. STRUCTURAL BMP'S HAVE BEEN INCORPORATED INTO THE OVERALL STORMWATER MANAGEMENT PLAN. STRUCTURAL BMP'S INCLUDE DEEP SUMP CATCH BASINS, SUBSURFACE SAND FILTERS, AND SUBSURFACE DETENTION BASINS.

INSPECTION & MAINTENANCE PLAN

BY IMPLEMENTING THE FOLLOWING PROCEDURES, THE APPLICANT WILL BE ABLE TO MAINTAIN THE FUNCTIONAL DESIGN OF THE STORMWATER MANAGEMENT SYSTEM AND MAXIMIZE THE SYSTEM'S ABILITY TO REMOVE SEDIMENT AND OTHER CONTAMINANTS FROM SITE GENERATED STORMWATER RUNOFF.

A. SOURCE CONTROL

A.1. ROUTINELY EMPTY ALL OUTSIDE WASTE RECEPTACLES PROVIDED FOR PUBLIC USE.

A.2. CLEARING LITTER FROM THE PARKING AREA, ISLANDS AND PERIMETER LANDSCAPE AREAS.

B. VEGETATED AREAS MAINTENANCE

ALTHOUGH NOT A SPECIFIC COMPONENT OF THE DRAINAGE SYSTEM, THE MAINTENANCE OF VEGETATED AREAS MAY AFFECT THE FUNCTIONING OF STORMWATER MANAGEMENT PRACTICES. THIS INCLUDES THE HEALTH/DENSITY OF VEGETATIVE COVER AND ACTIVITIES SUCH AS THE APPLICATION AND DISPOSAL OF LAWN AND GARDEN CARE PRODUCTS, DISPOSAL OF LEAVES AND YARD TRIMMINGS.

B.1. INSPECT PLANTED AREAS ON A SEMI-ANNUAL BASIS AND REMOVE ANY LITTER.

B.2. MAINTAIN PLANTED AREAS ADJACENT TO PAVEMENT TO PREVENT SOIL WASHOUT.

B.3. IMMEDIATELY CLEAN ANY SOIL DEPOSITED ON PAVEMENT.

B.4. RE-SEED BARE AREAS; INSTALL APPROPRIATE EROSION CONTROL MEASURES WHEN NATIVE SOIL IS EXPOSED OR EROSION CHANNELS ARE FORMING.

B.5. PLANT ALTERNATIVE MIXTURE OF GRASS SPECIES IN THE EVENT OF UNSUCCESSFUL ESTABLISHMENT.

B.6. THE GRASS VEGETATION SHOULD BE CUT TO A HEIGHT BETWEEN THREE AND FOUR INCHES.

B.7. PESTICIDE/HERBICIDE USAGE - NO PESTICIDES ARE TO BE USED UNLESS A SINGLE SPOT TREATMENT IS REQUIRED FOR A SPECIFIC CONTROL APPLICATION.

B.8. FERTILIZER USAGE SHOULD BE AVOIDED. IF DEEMED NECESSARY, SLOW-RELEASE FERTILIZER SHOULD BE USED. FERTILIZER MAY BE USED TO BEGIN THE ESTABLISHMENT OF VEGETATION IN BARE OR DAMAGED AREAS BUT SHOULD NOT BE APPLIED ON A REGULAR BASIS UNLESS NECESSARY.

C. DEICING AGENTS

DEICING AGENTS SHOULD BE USED IN ACCORDANCE WITH THE FOLLOWING:

C.1. USE SAND AS THE PRIMARY AGENT FOR PARKING LOT SAFETY DURING ICE AND SNOW CONDITIONS.

C.2. USE DE-ICING OR ANTI-CAKING AGENTS, ADDED TO ENHANCE PERFORMANCE AND APPLICATION CHARACTERISTICS OF SAND MIXTURES, ONLY AS NECESSARY AND AT MINIMUM APPLICATION RATES.

C.3. MAINTAIN A DEICING LOG TO TRACK THE AMOUNT AND TYPE OF DEICING MATERIALS APPLIED TO THE SITE.

D. SNOW MANAGEMENT

SNOW STORAGE AREAS SHALL BE MAINTAINED AS FOLLOWS:

D.1. SNOW STORAGE AREAS WILL BE MANAGED TO PREVENT BLOCKAGE OF STORM DRAIN CATCH BASINS. SNOW COMBINED WITH SAND AND DEBRIS MAY BLOCK A STORM DRAINAGE SYSTEM, DIMINISHING THE INFILTRATION CAPACITY OF THE SYSTEM AND CAUSING LOCALIZED FLOODING.

D.2. SAND AND DEBRIS DEPOSITED ON VEGETATED OR PAVED AREAS SHALL BE CLEARED FROM THE SITE AND PROPERLY DISPOSED OF AT THE END OF THE SNOW SEASON, NO LATER THAN MAY 15.

D.3. SNOW SHALL NOT BE DUMPED INTO ANY WATER BODY, POND, WETLAND RESOURCE AREA OR STORMWATER DETENTION BASIN.

E. WINTER OPERATOR CERTIFICATION REQUIREMENTS

PER THE LONDONDERRY STORMWATER REGULATIONS, ALL EMPLOYED OR CONTRACTED WINTER MAINTENANCE OPERATORS SHALL BE NEW HAMPSHIRE CERTIFIED GREEN SNOWPRO OR EQUIVALENT. GREEN SNOWPRO TRAINING IS PROVIDED BY THE UNIVERSITY OF NEW HAMPSHIRE. IT IS PREFERRED THAT OPERATORS ALSO HAVE NHDES SALT APPLICATOR CERTIFICATION. INFORMATION ON THESE CERTIFICATIONS CAN BE FOUND AT THE LINKS BELOW:

https://www.des.nh.gov/land/roads/road-salt-reduction
https://www.des.nh.gov/land/roads/road-salt-reduction/green-snowpro-certification

F. CATCH BASINS

THE PROPOSED CATCH BASINS ARE CONSTRUCTED WITH SUMPS (MINIMUM 3 FEET) TO TRAP DEBRIS, SEDIMENTS, AND FLOATING CONTAMINANTS. DISPOSAL OF ALL SEDIMENTS MUST BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL GUIDELINES.

F.1. INSPECT CATCH BASINS AT LEAST TWO TIMES PER YEAR AND CLEAN A MINIMUM OF ONCE PER YEAR.

F.2. SEDIMENT GREATER THAN HALF THE SUMP DEPTH AND/OR FLOATABLE POLLUTANTS SHALL BE PUMPED FROM THE BASIN AND DISPOSED OF AT AN APPROVED OFFSITE FACILITY IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

F.3. ANY STRUCTURAL DAMAGE OR OTHER INDICATION OF MALFUNCTION WILL BE REPORTED TO THE SITE MANAGER AND REPAIRED AS NECESSARY.

F.4. DURING COLDER PERIODS, THE CATCH BASIN GRATES MUST BE KEPT FREE FROM SNOW AND ICE.

F.5. DURING WARMER PERIODS, THE CATCH BASIN GRATES MUST BE KEPT FREE OF LEAVES, LITTER, SAND AND DEBRIS.

G. STORMWATER OUTFALLS

INSPECT OUTFALL LOCATIONS MONTHLY FOR THE FIRST THREE MONTHS AFTER CONSTRUCTION TO ENSURE PROPER FUNCTIONING AND CORRECT ANY AREAS THAT HAVE SETTLED OR EXPERIENCED WASHOUTS.

G.1. INSPECT OUTFALLS ANNUALLY AFTER INITIAL THREE-MONTH PERIOD.

G.2. ANNUAL INSPECTIONS SHOULD BE SUPPLEMENTED AFTER LARGE STORMS, WHEN WASHOUTS MAY OCCUR.

G.3. MAINTAIN/CUT VEGETATION AROUND OUTFALLS TO PREVENT BLOCKAGES AT THE OUTFALL.

G.4. MAINTAIN RIP-RAP PAD BELOW EACH OUTFALL AND REPAIR ANY WASHOUTS OR OTHER DAMAGE IMMEDIATELY.

G.5. REMOVE AND DISPOSE OF ANY TRASH OR DEBRIS AT THE OUTFALL.

H. STRUCTURAL WATER QUALITY DEVICES (SAND FILTER)

H.1. REFER TO MANUFACTURERS RECOMMENDATIONS FOR SPECIFIC O&M REQUIREMENTS.

H.2. INSPECT DEVICES MONTHLY FOR THE FIRST THREE MONTHS AFTER CONSTRUCTION.

H.3. AFTER INITIAL THREE-MONTH PERIOD, ALL WATER QUALITY UNITS ARE TO BE INSPECTED AT LEAST TWICE A YEAR AND CLEANED A MINIMUM OF AT LEAST ONCE PER YEAR OR WHEN SEDIMENT REACHES 8" IN DEPTH.

H.4. FOLLOW MANUFACTURER INSTRUCTIONS FOR INSPECTION AND CLEANING AND CONTACT MANUFACTURER IF SYSTEM IS MALFUNCTIONING.

H.5. REFER TO THE NEW HAMPSHIRE STORMWATER MANUAL VOLUME 2 CHAPTER 4 DESIGNING BEST MANAGEMENT PRACTICES, 4-3 TREATMENT PRACTICE, 4 FILTERING PRACTICES, SECTION 4B UNDERGROUND SAND FILTER FOR ADDITIONAL MAINTENANCE REQUIREMENTS.

H.5.1. 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.

H.5.2. PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.

H.5.3. TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.

H.5.4. MANUFACTURED FILTER MEDIA SHOULD BE REPLACED PERIODICALLY PER MANUFACTURER'S SPECIFICATIONS.

H.5.5. AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF A FILTRATION 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, INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER

I. STORM DRAIN MANHOLES

I.1. INSPECT AT LEAST ONCE ANNUALLY FOR CLOGGING OR SEDIMENT ACCUMULATION AND CLEAN AS NEEDED TO ENSURE PROPER STORMWATER CONVEYANCE.

J. SUBSURFACE DETENTION SYSTEM

J.1. THE SUBSURFACE DETENTION SYSTEMS WILL BE INSPECTED AT LEAST TWICE EACH YEAR BY REMOVING THE MANHOLE/ACCESS PORT COVERS AND DETERMINING THE THICKNESS, IF ANY, OF SEDIMENT THAT HAS ACCUMULATED.

J.2. IF SEDIMENT IS MORE THAN SIX INCHES DEEP, IT MUST BE SUSPENDED VIA FLUSHING WITH CLEAN WATER AND REMOVED USING A VACTOR TRUCK.

J.3. REFER TO MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS FOR CLEANING THE SYSTEM.

J.4. OUTLET CONTROL MANHOLES WILL BE EXAMINED AT EACH INSPECTION TO VERIFY THAT NO BLOCKAGE HAS OCCURRED.

J.5. SYSTEM WILL BE OBSERVED AFTER RAINFALLS TO SEE IF IT IS PROPERLY DRAINING.

L. ABOVEGROUND STORMWATER BASINS (MODIFIED EXISTING BASINS)

L.1. 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.

L.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.

L.3. TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.

L.4. AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF A FILTRATION 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, INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER.

L.5. REMOVE DEBRIS FROM ANY INLET AND OUTLET STRUCTURES.

L.6. REMOVE ACCUMULATED SEDIMENT

L.7. INSPECTED AND REPAIR (IF NEEDED) OUTLET STRUCTURES AND APPURTENANCES.

L.8. REMOVE WOODY VEGETATION FROM EMBANKMENTS. INSPECT AND REPAIR EMBANKMENTS AS NEEDED.

M. GRASS CONVEYANCE SWALE

M.1. GRASSED CHANNELS SHOULD BE INSPECTED PERIODICALLY (AT LEAST ANNUALLY) FOR SEDIMENT ACCUMULATION, EROSION AND CONDITION OF SURFACE LINING (VEGETATION OR RIPRAP). REPAIRS, INCLUDING STONE OR VEGETATION REPLACEMENT, SHOULD BE MADE BASED ON THIS INSPECTION.

M.2. REMOVE SEDIMENT AND DEBRIS ANNUALLY, OR MORE FREQUENTLY AS WARRANTED BY INSPECTION.

M.3. MOW VEGETATED CHANNELS AS NEEDED TO MAINTAIN GRASS ESTABLISHMENT AND REMOVE WOODY VEGETATION. GRASS TO BE CUT NO SHORTER THAN 4 INCHES.

N. INVASIVE PLANT SPECIES CONTROL

INVASIVE PLANT SPECIES ARE 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; OR ARRIVE AS "HITCHHIKERS" AMONG SHIPMENTS OF OTHER PLANTS, SEEDS, PACKING MATERIALS, OR FRESH PRODUCE. SOME OF THESE EXOTIC PLANTS BECOME INVASIVE AND CAUSE HARM BY:

N.1. BECOMING WEEDY AND OVERGROWN;

N.2. KILLING ESTABLISHED SHADE TREES;

N.3. OBSTRUCTING PIPES AND DRAINAGE SYSTEMS;
N.4. FORMING DENSE BEDS IN WATER;

N.5. LOWERING WATER LEVELS IN LAKES, STREAMS AND WETLANDS;

N.6. DESTROYING NATURAL COMMUNITIES;

N.7. PROMOTING EROSION ON STREAM BANKS AND HILLSIDES; AND

N.8. RESISTING CONTROL EXCEPT BY HAZARDOUS CHEMICAL.

AS PART OF THE ROUTINE INSPECTIONS OF THE DRAINAGE SYSTEM AND STORMWATER OUTFALLS, THE SITE SHOULD BE CHECKED FOR THE PRESENCE OF INVASIVE PLANT SPECIES AS DEFINED BY THE NEW HAMPSHIRE DEPARTMENT OF AGRICULTURE, MARKETS & FOOD (A LIST IS PROVIDED AT THE END OF THIS MANUAL).

IF INVASIVE PLANT SPECIES ARE FOUND TO BE PRESENT, THEY SHOULD BE CONTROLLED AS DESCRIBED IN THE "CONTROL OF INVASIVE PLANTS" DOCUMENT PREPARED BY THE NH DEPARTMENT OF AGRICULTURE, MARKETS

O. RECORD KEEPING

O.1. INSPECTIONS OF THE STORMWATER MANAGEMENT SYSTEM SHALL BE CONDUCTED IN ACCORDANCE WITH THE INSPECTION & MAINTENANCE CHECKLIST PROVIDED IN THIS MANUAL.

O.2. AN INSPECTION & MAINTENANCE LOG SHALL BE COMPLETED FOR EACH INSPECTION AND MAINTENANCE ACTIVITY.

O.3. ALL RECORD KEEPING REQUIRED BY THE I&M MANUAL SHALL BE MAINTAINED BY THE RESPONSIBLE PARTY.

O.4. A DEICING LOG SHALL BE MAINTAINED THAT TRACKS THE AMOUNT AND TYPE OF DEICING MATERIALS APPLIED TO THE SITE.

O.5. ANY TRANSFER OF RESPONSIBILITY FOR THE I&M ACTIVITIES OR TRANSFER OF OWNERSHIP SHALL BE DOCUMENTED TO THE NHDES WATER DIVISION IN WRITING.

O.6. INSPECTION REPORTS SHALL BE FILED WITH THE TOWN OF LONDONDERRY DEPARTMENT OF ENGINEERING AND ENVIRONMENTAL SERVICES ON AN ANNUAL BASIS.

P. INSPECTION & MAINTENANCE CHECKLIST/LOG

P.1. THE FOLLOWING PAGES CONTAIN AN INSPECTION & MAINTENANCE CHECKLIST, A BLANK COPY OF THE STORMWATER MANAGEMENT SYSTEM'S INSPECTION & MAINTENANCE LOG, AND A REDUCED COPY OF THE GRADING AND UTILITY PLANS. THESE FORMS/PLANS ARE PROVIDED TO ASSIST THE APPLICANT WITH THE INSPECTION AND MAINTENANCE OF THE STORMWATER MANAGEMENT SYSTEM.

Q. INVASIVE SPECIES INFORMATION

Q.1. A COPY OF THE NEW HAMPSHIRE DEPARTMENT OF AGRICULTURE, MARKETS & FOOD'S DOCUMENT "CONTROL OF INVASIVE PLANTS" IS PROVIDED AT THE END OF THIS MANUAL.

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ | Checked by: DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Inspection and Maintenance Notes

Drawing Number
C9.01

Sheet 96 of 111

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Project Number
53140.00

Saved Tuesday, November 11, 2025 3:17:03 PM JHOWE Plotted Tuesday, November 11, 2025 4:25:27 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-I&M.dwg

Stormwater Management System
Deicing Log

Date	Type	Location/Amount	Name(s) of Maintenance Personnel

Stormwater Management System
Inspection & Maintenance Checklist

BMP/System Component	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance/Cleanout Threshold
Source Control	Routinely	Inspect outdoor waste receptacles areas for spillage. Inspect and clear litter from parking area, islands and perimeter landscape areas.	Clean as required.
Deicing Agents	N/A	N/A	Use sand as primary agent for site roadway and parking safety during winter.

Stormwater Management System
Inspection & Maintenance Checklist

Stormwater Management System
Inspection & Maintenance Checklist

Closed Drainage System			
Catch Basins	2 times per year	Check for sediment accumulation. Check for floatable contaminants.	≥ 2 ft. sediment depth. ≥ 3 in. floatable depth.
Storm Drain Manholes	1 time per 2 years	Check for sediment accumulation.	≥ 3 in. sediment depth.
Drainage Pipes	1 time per 2 years	Check for sediment accumulation/clogging.	≥ 2 in. sediment depth.
Aboveground Stormwater Basin	2 times per year	Check for sediment accumulation, trash and debris.	Clean/repair as needed.
Subsurface Detention Basin	2 times per year	Check for sediment accumulation.	Refer to Manufacturers Requirements
Subsurface Sand Filter	2 times per year	Check for sediment accumulation/clogging	Refer to Manufacturers Requirements
Outlet Control Structure	2 times per year	Check for sediment accumulation/clogging	Clean/repair as needed.
Outfalls	Monthly for first 3 months and 1 time per year thereafter	-Check for sediment, trash and debris accumulation. -Check for vegetation blocking outfall. Inspect rip rap for washout.	Clean/repair as needed.
Grass Conveyance Swale	1 time per year	Check for sediment, trash and debris accumulation	Clean/repair as needed

Stormwater Management System Inspection & Maintenance Log

BMP/System Component	Date Inspected	Inspector	Cleaning/Repair Needed (List Items/Comments)	Date Of Cleaning/Repair	Performed By
HW 300					
FES 301					
CB 302					
CB 303					
FES 304					
CB 305					
CB 306					
CB 307					
CB 308					
HW 400					
FES 401					
CB 402					
CB 403					
CB 404					
CB 405					
CB 406					
CB 407					
FES 408					
CB 409					
CB 410					
CB 411					
FES 500					
FES 501					
CB 502					
CB 503					
CB 504					
CB 505					
CB 506					
CB 507					
CB 508					
CB 509					
CB 510					
CB 511					
CB 512					
FES 600					
FES 601					
FES 602					
CB 603					
CB 604					
CB 605					
CB 606					
CB 607					
CB 608					
MH 609					
CB 610					
CB 611					
CB 612					
CB 613					
CB 614					
CB 615					
CB 616					
CB 617					
CB 618					
CB 619					
CB 620					
FES 701					
CB 702					
CB 703					
CB 704					
CB 705					
CB 800					
CB 801					
MH 802					
FES 803					

Stormwater Management System Inspection & Maintenance Log

BMP/System Component	Date Inspected	Inspector	Cleaning/Repair Needed (List Items/Comments)	Date Of Cleaning/Repair	Performed By
FES 900					
FES 901					
CB 902					
CB 903					
CB 904					
MH 905					
CB 906					
CB 907					
CB 908					
CB 909					
CB 910					
CB 911					
CB 912					
CB 913					
CB 914					
CB 915					
FES 1000					
FES 1001					
CB 1002					
CB 1003					
CB 1004					
MH 1005					
MH 1006					
CB 1007					
CB 1008					
CB 1009					
CB 1010					
CB 1011					
CB 1012					
CB 1101					
FES 1102					
FES 1200					
FES 1201					
CB 1202					
CB 1203					
MH 1204					
CB 1205					
CB 1206					
OS #1					
OS #2					
OS #3					
OS #4					
OS #5					
OS #6					
OS #7					
OS #8					
OS #9					
OS #10					
OS #11					

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: **Permitting**
Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Inspection and Maintenance Checklists and Logs

Drawing Number
C9.02

Sheet 97 of 111

Project Number
53140.00

STATE OF NEW HAMPSHIRE
DAVID N. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
11/13/2025

Saved Tuesday, November 11, 2025 3:17:03 PM JHOWE Plotted Tuesday, November 11, 2025 4:25:37 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-LA.dwg

PLANT SCHEDULE

SYMBOL	QTY	COMMON NAME	SIZE
DECIDUOUS TREES			
	198	REPRESENTATIVE SPECIES INCLUDE: SUGAR MAPLE RED MAPLE TUPELO RED OAK BASSWOOD RIVER BIRCH YELLOW BIRCH SHAGBARK HICKORY	2 1/2 - 3" CAL.
EVERGREEN TREES			
	28	REPRESENTATIVE SPECIES INCLUDE: AMERICAN LARCH DARK AMERICAN ARBORVITAE PITCH PINE WHITE SPRUCE WHITE PINE	6 - 7` HT.
FLOWERING TREES			
	58	REPRESENTATIVE SPECIES INCLUDE: SERVICEBERRY-ROBIN HILL SERVICEBERRY-SPRING FLURRY PAGODA DOGWOOD REDBUD THORNLESS HAWTHORNE	2 - 2 1/2" CAL / B&B

SHRUBS

SHRUBS SHALL BE A SELECTION OF:

- ARROWOOD VIBURNUM
- BAYBERRY
- HIGHBUSH BLUEBERRY
- ELDERBERRY
- WINTERBERRY
- WITCH HAZEL
- MISS KIM LILAC
- GEM BOX INKBERRY
- LEMON CANDY NINEBARK
- CLETHERA HUMMINGBIRD
- HYDRANGEA ARB - SMOOTH BAIFUL

PERENNIALS AND GRASSES SHALL BE A SELECTION OF:

- ROSES - DRIFT APRICOT
- KNOCK OUT ROSES - MAGENTA
- KNOCK OUT ROSES - PINK
- NEPETA - WALKERS LOW CATMINT
- NEW ENGLAND ASTER
- ECHINACEA - POW WOW
- ECHINACEA - POW WOW WHITE
- SEDUM AUTUMN JOY
- FEATHER REED GRASS - KARL FOERSTER
- SWITCH GRASS - CHEYENNE SKY
- SWITCH GRASS - SHENANDOAH

SOD/SEED

- Conservation Seed Mix
- Detention Basin Seed Mix
- Loam and Seed

Planting Notes

1. AS SHOWN, APPROX. 1050 EXISTING TREES WILL REMAIN.
2. ALL PROPOSED PLANTING LOCATIONS SHALL BE STAKED AS SHOWN ON THE PLANS FOR FIELD REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
3. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL BELOW GRADE AND ABOVE GROUND UTILITIES AND NOTIFY OWNERS REPRESENTATIVE OF CONFLICTS.
4. NO PLANT MATERIALS SHALL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICT.
5. ALL TREES SHALL BE BALLED AND BURLAPPED, UNLESS OTHERWISE NOTED IN THE DRAWINGS OR SPECIFICATION, OR APPROVED BY THE OWNER'S REPRESENTATIVE.
6. FINAL QUANTITY FOR EACH PLANT TYPE SHALL BE AS GRAPHICALLY SHOWN ON THE PLAN. THIS NUMBER SHALL TAKE PRECEDENCE IN CASE OF ANY DISCREPANCY BETWEEN QUANTITIES SHOWN ON THE PLANT LIST AND ON THE PLAN. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES BETWEEN THE NUMBER OF PLANTS SHOWN ON THE PLANT LIST AND PLANT LABELS PRIOR TO BIDDING.
7. ANY PROPOSED PLANT SUBSTITUTIONS MUST BE REVIEWED BY LANDSCAPE ARCHITECT AND APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.
8. ALL PLANT MATERIALS INSTALLED SHALL MEET THE SPECIFICATIONS OF THE "AMERICAN STANDARDS FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN AND CONTRACT DOCUMENTS.
9. ALL PLANT MATERIALS SHALL BE GUARANTEED FOR ONE YEAR FOLLOWING DATE OF FINAL ACCEPTANCE.
10. AREAS DESIGNATED "LOAM & SEED" SHALL RECEIVE MINIMUM 6" OF LOAM AND SPECIFIED SEED MIX. LAWNS OVER 2:1 SLOPE SHALL BE PROTECTED WITH EROSION CONTROL FABRIC.
11. ALL DISTURBED AREAS NOT OTHERWISE NOTED ON CONTRACT DOCUMENTS SHALL BE LOAM AND SEEDED WITH CONSERVATION SEED MAX.
12. THIS PLAN IS INTENDED FOR PLANTING PURPOSES. REFER TO SITE / CIVIL DRAWINGS FOR ALL OTHER SITE CONSTRUCTION INFORMATION.



Seed Mixtures:

1. AREAS INDICATED AS "DETENTION BASIN" ARE TO BE SEEDED WITH NEW ENGLAND EROSION CONTROL / RESTORATION MIX FOR DETENTION PONDS AND MOIST AREAS, AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. AMHERST, MA (413) 548-8000, www.NEWP.com,OR AN APPROVED EQUAL. APPLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
2. AREAS INDICATED AS "EROSION CONTROL SEED MIX" ARE TO BE SEEDED WITH NEW ENGLAND CONSERVATION EROSION CONTROL/RESTORATION MIX FOR DRY SITES, AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. AMHERST, MA (413) 548-8000, www.NEWP.com,OR AN APPROVED EQUAL. APPLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
3. AREAS INDICATED AS "MEADOW MIX" ARE TO BE SEEDED WITH NEW ENGLAND CONSERVATION / WILDLIFE SEED MIX, AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. AMHERST, MA (413) 548-8000, www.NEWP.com,OR AN APPROVED EQUAL. APPLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
4. AREAS INDICATED AS "WET MEADOW MIX" ARE TO BE SEEDED WITH NEW ENGLAND ROADSIDE MATRIX WET MEADOW SEED MIX, AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. AMHERST, MA (413) 548-8000, www.NEWP.com, OR AN APPROVED EQUAL. APPLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
5. AREAS INDICATED AS "WILDFLOWER MIX" ARE TO BE SEEDED WITH NEW ENGLAND WILDFLOWER MIX, AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. AMHERST, MA (413) 548-8000, www.NEWP.com, OR AN APPROVED EQUAL. APPLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
6. AREAS INDICATED AS "UPLAND SEED MIX" ARE TO BE SEEDED WITH NEW ENGLAND ROADSIDE MATRIX UPLAND SEED MIX, AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. AMHERST, MA (413) 548-8000, www.NEWP.com, OR AN APPROVED EQUAL. APPLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
7. AREAS INDICATED AS "NO MOW SEED MIX" SHALL BE SEEDED WITH A PROPORTIONAL MIX OF: JAMESTOWN CHEWING FESCUE (20%), QUATTRO SHEEP CREEPING FESCUE (20%) SEA LINK SLENDER CREEPING FESCUE (20%), SWORD CREEPING FESCUE (10%), AURORA CREEPING FESCUE (10%), KENT CREEPING FESCUE (10%) AND CHARLOT OR HERON HARD FESCUE (10%).

Tree Protection

1. CERTIFIED ARBORIST SHALL ASSESS EXISTING APPLE ORCHARD IDENTIFIED TO BE PRESERVED. WHERE POSSIBLE, ORCHARD SHALL BE PRESERVED AND REJUVENATED PER ARBORIST RECOMMENDATIONS. WHERE TREES ARE DEAD OR IN POOR CONDITION, ARBORIST SHALL NOTIFY THE OWNER/LANDSCAPE ARCHITECT FOR LANDSCAPE.
2. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY CONSTRUCTION FENCE. ERECT FENCE AT EDGE OF THE TREE DRIPLINE PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR SHALL NOT OPERATE VEHICLES WITHIN THE TREE PROTECTION AREA. CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS, OR DISPOSE OF ANY WASTE MATERIALS, WITHIN THE TREE PROTECTION AREA.
4. DAMAGE TO EXISTING TREES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED BY A CERTIFIED ARBORIST AT THE CONTRACTOR'S EXPENSE.

OWNER'S SIGNATURE

Signed by: Kevin Smith
E746E121820...

OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

Certified By: _____

_____

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

LICENSED LANDSCAPE ARCHITECT · ERIK N. BEDNAREK · 00175 · STATE OF NEW HAMPSHIRE
11/12/2025

0 100 200 400Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title: **Overall Landscape Plan**

Drawing Number: **L1.00**

Sheet 98 of 111

Project Number: 53140.00

Saved Tuesday, November 11, 2025 3:56:21 PM JHOWE Plotted Tuesday, November 11, 2025 4:11:39 PM Jason Howe

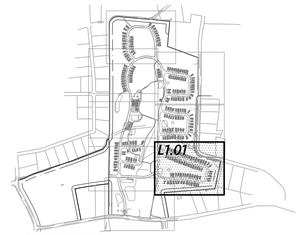
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-LA.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



LICENSED LANDSCAPE ARCHITECT
ERIK J. BEDNAREK
00175
STATE OF NEW HAMPSHIRE
11/12/2025

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ
Checked by DHF

Issued for Permitting
Date February 20, 2025

Not Approved for Construction

Drawing Title
Landscape Plan 1

OWNER'S SIGNATURE
Signed by:
Kevin Smith
E746E121820E
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board
on Date:
Certified By:

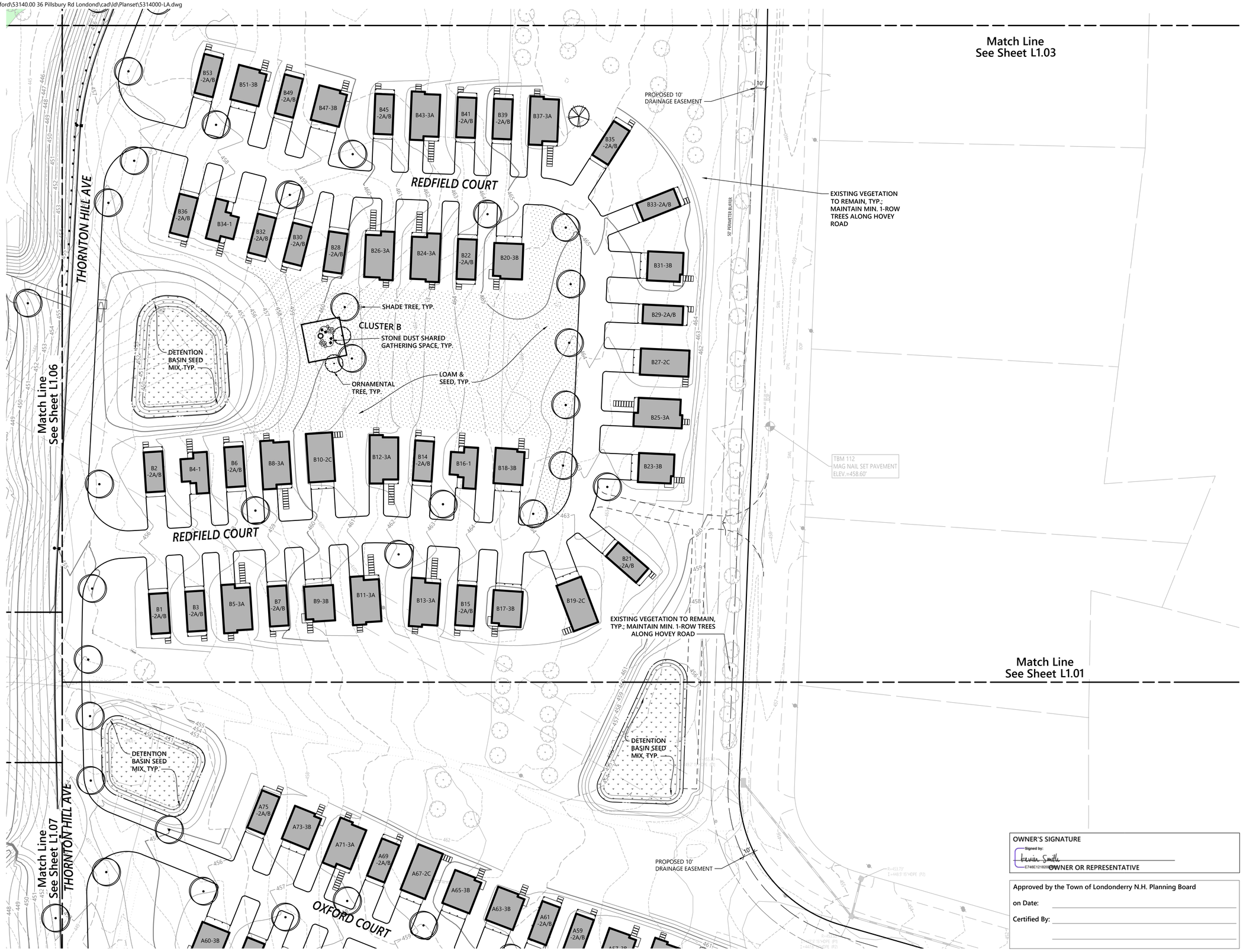
Drawing Number
L1.01

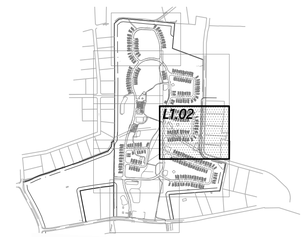
Sheet 99 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 3:56:21 PM JHOWE Plotted Tuesday, November 11, 2025 4:12:49 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-LA.dwg







11/12/2025

0 20 40 80 Feet

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title
Landscape Plan 2

OWNER'S SIGNATURE
Signed by:
Kevin Smith
E746E121820E
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

Certified By: _____

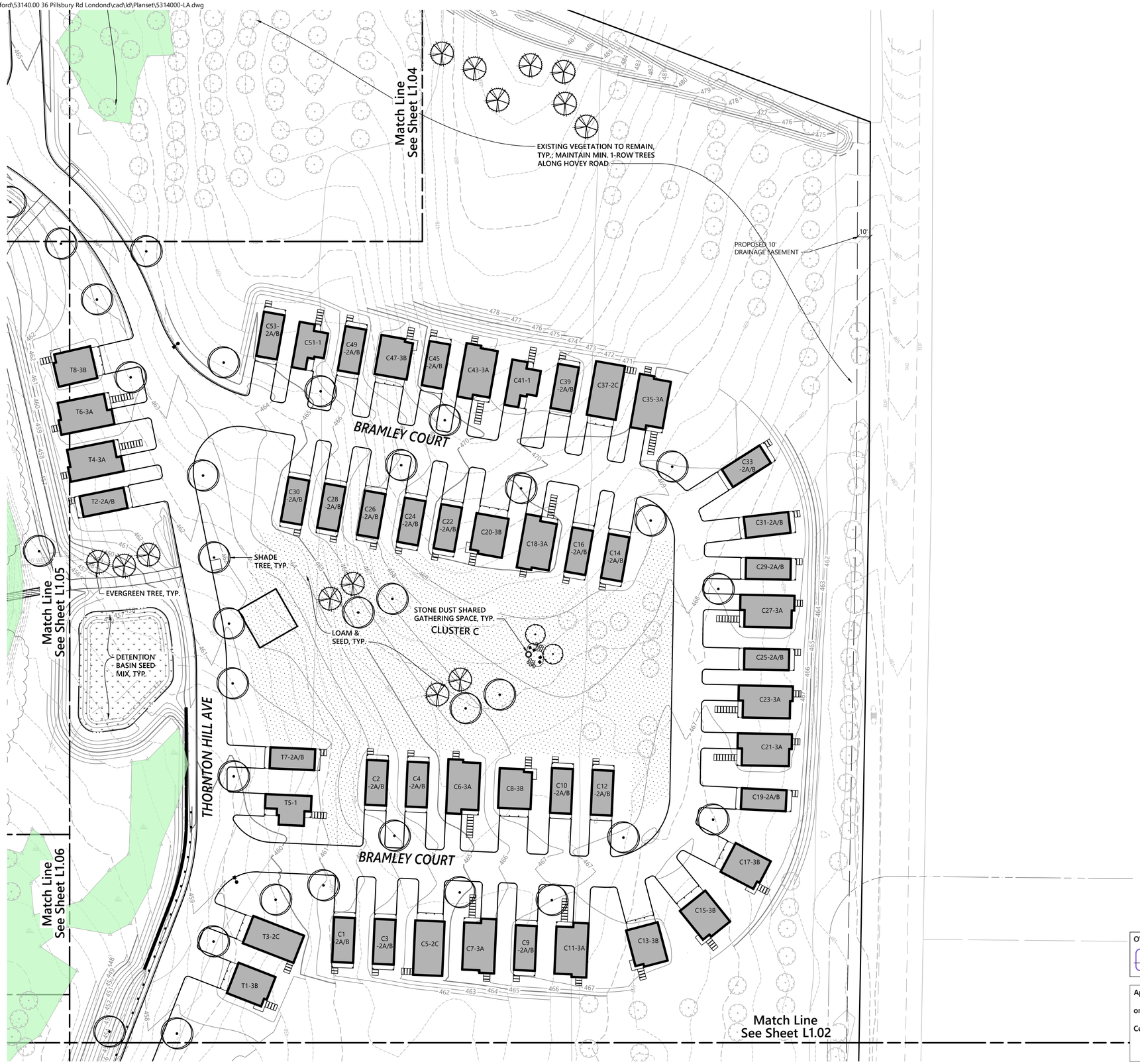
Drawing Number
L1.02

Sheet 100 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 11:23:18 AM ALOUW Plotted Tuesday, November 11, 2025 3:00:16 PM Jason Howe

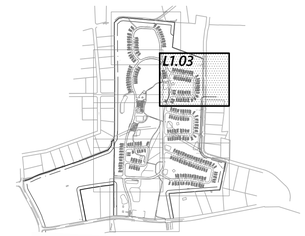
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-LA.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



LICENSED LANDSCAPE ARCHITECT
ERIK J. BEDNAREK
00175
STATE OF NEW HAMPSHIRE
11/12/2025

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title
Landscape Plan 3

OWNER'S SIGNATURE
Signed by:
Kevin Smith
E746E121820
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board
on Date:
Certified By:

Drawing Number
L1.03

Sheet 101 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 11:23:18 AM ALOUW Plotted Tuesday, November 11, 2025 3:00:36 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-LA.dwg



OWNER'S SIGNATURE

Signed by: Erwin Smith
E746E121820...

OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

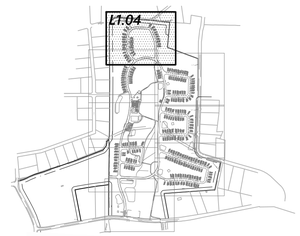
Certified By: _____

_____

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900





0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title: Landscape Plan 4

Drawing Number: L1.04

Sheet 102 of 111

Project Number: 53140.00

Saved Tuesday, November 11, 2025 11:23:18 AM ALOUW Plotted Tuesday, November 11, 2025 3:00:58 PM Jason Howe

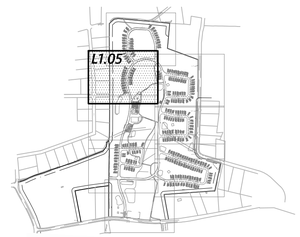
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-LA.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900





0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Landscape Plan 5

Drawing Number
L1.05

Sheet 103 of 111

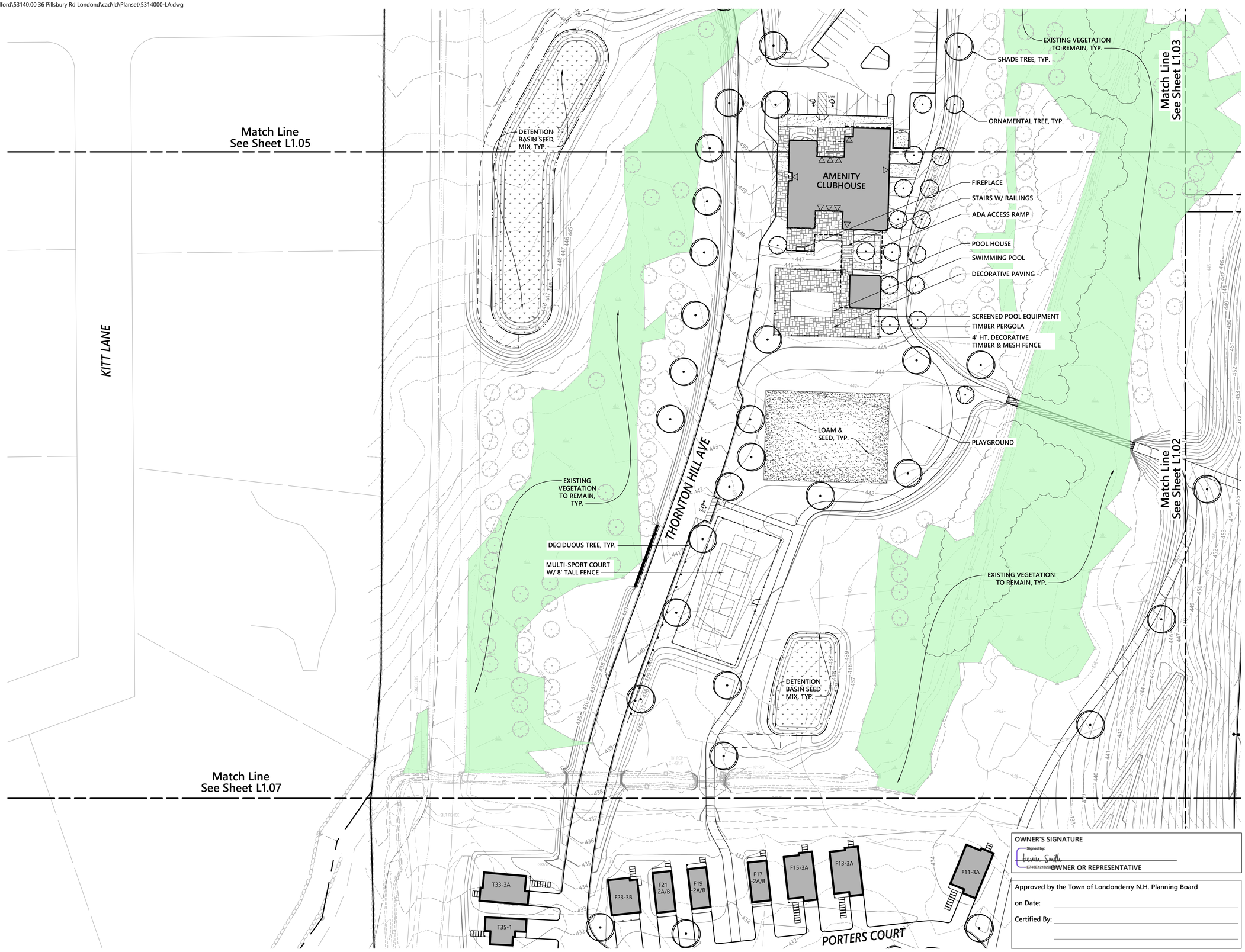
Project Number
53140.00

OWNER'S SIGNATURE
Signed by: Kevin Smith
E746E121820...
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board
on Date: _____
Certified By: _____
_____

Saved Tuesday, November 11, 2025 11:23:18 AM ALOUW Plotted Tuesday, November 11, 2025 3:01:22 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-LA.dwg



OWNER'S SIGNATURE

Signed by: Kevin Smith
E746E1218204...

OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

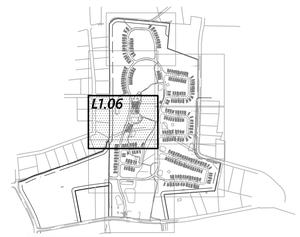
Certified By: _____

_____

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



LICENSED LANDSCAPE ARCHITECT
ERIK
V.
BEDNAREK
00175
STATE OF NEW HAMPSHIRE
11/12/2025

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: Permitting

Date: February 20, 2025

Not Approved for Construction

Drawing Title
Landscape Plan 6

Drawing Number
L1.06

Sheet 104 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 11:23:18 AM ALOUW Plotted Tuesday, November 11, 2025 3:01:43 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-LA.dwg



OWNER'S SIGNATURE

Signed by: Kevin Smith
E746E1218206...

OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

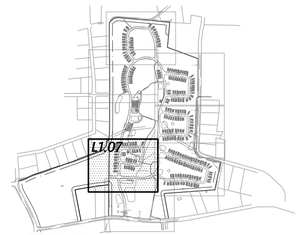
Certified By: _____

_____

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



LICENSED LANDSCAPE ARCHITECT
ERIK
BEDNAREK
00175
STATE OF NEW HAMPSHIRE
11/12/2025

0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: **Permitting**
Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Landscape Plan 7

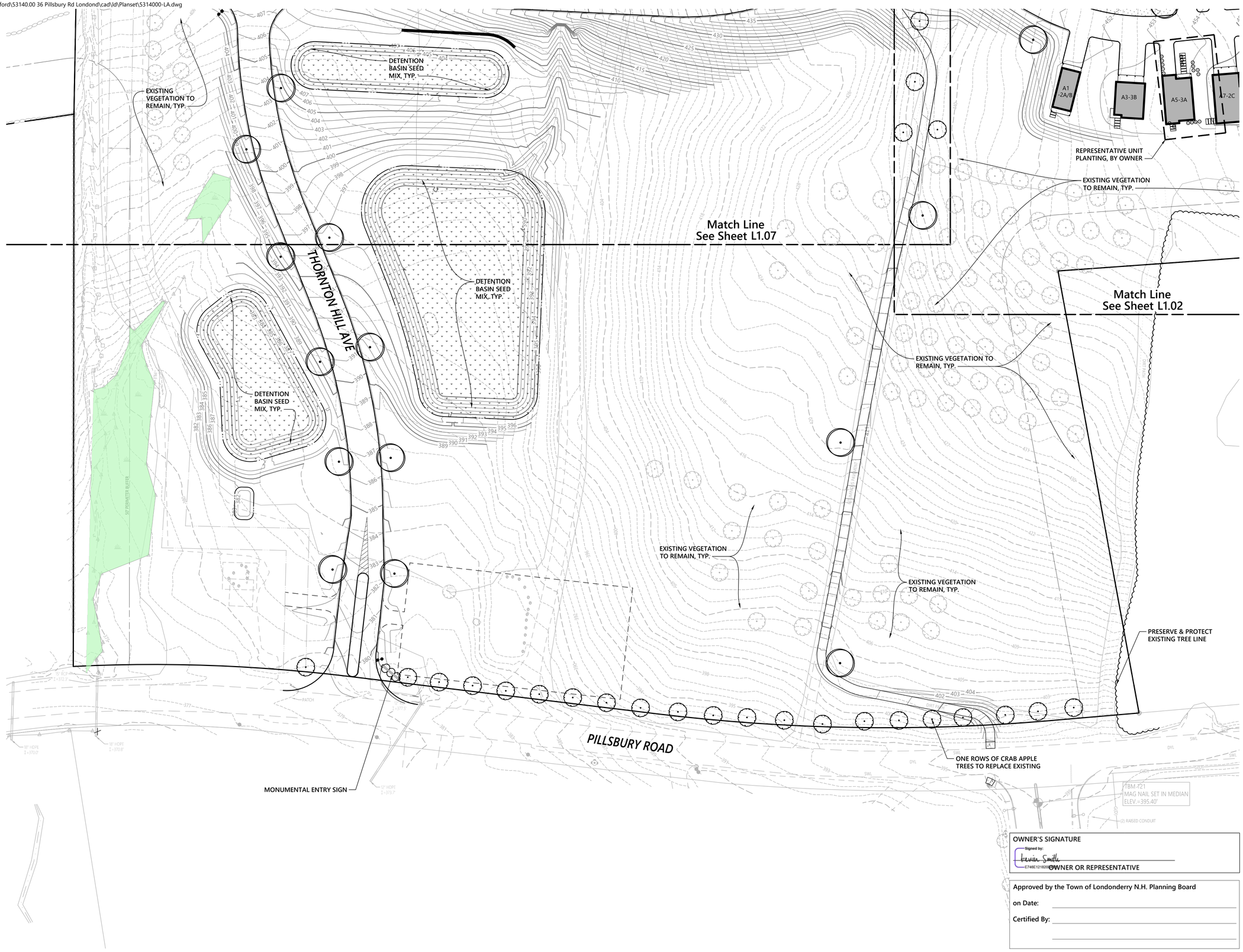
Drawing Number
L1.07

Sheet 105 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 11:23:18 AM ALOUW Plotted Tuesday, November 11, 2025 3:02:06 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-LA.dwg



OWNER'S SIGNATURE

Signed by: Kevin Smith
E746E1218204...

OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

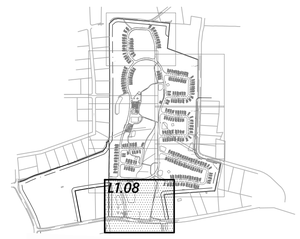
Certified By: _____

_____

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900





0 20 40 80 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: **Permitting**
Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Landscape Plan 8

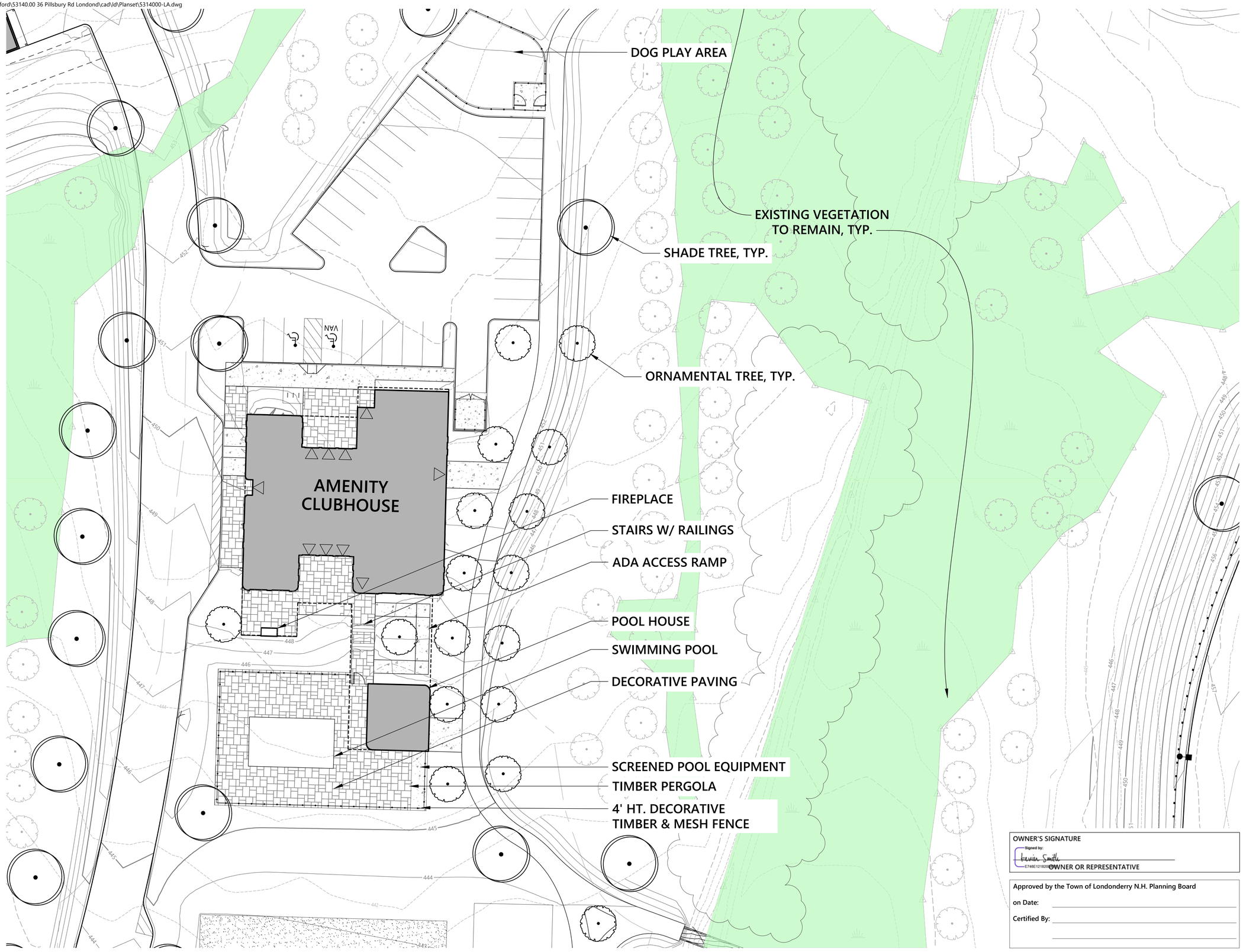
Drawing Number
L1.08

Sheet 106 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 11:23:18 AM ALOUW Plotted Tuesday, November 11, 2025 3:02:27 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-LA.dwg



OWNER'S SIGNATURE

Signed by: Kevin Smith

E746E1218208 OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

Certified By: _____

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



LICENSED LANDSCAPE ARCHITECT
ERIK J. BEDNAREK
00175
STATE OF NEW HAMPSHIRE
11/12/2025

0 10 20 40 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: February 20, 2025

Not Approved for Construction

Drawing Title
Landscape Plan 9

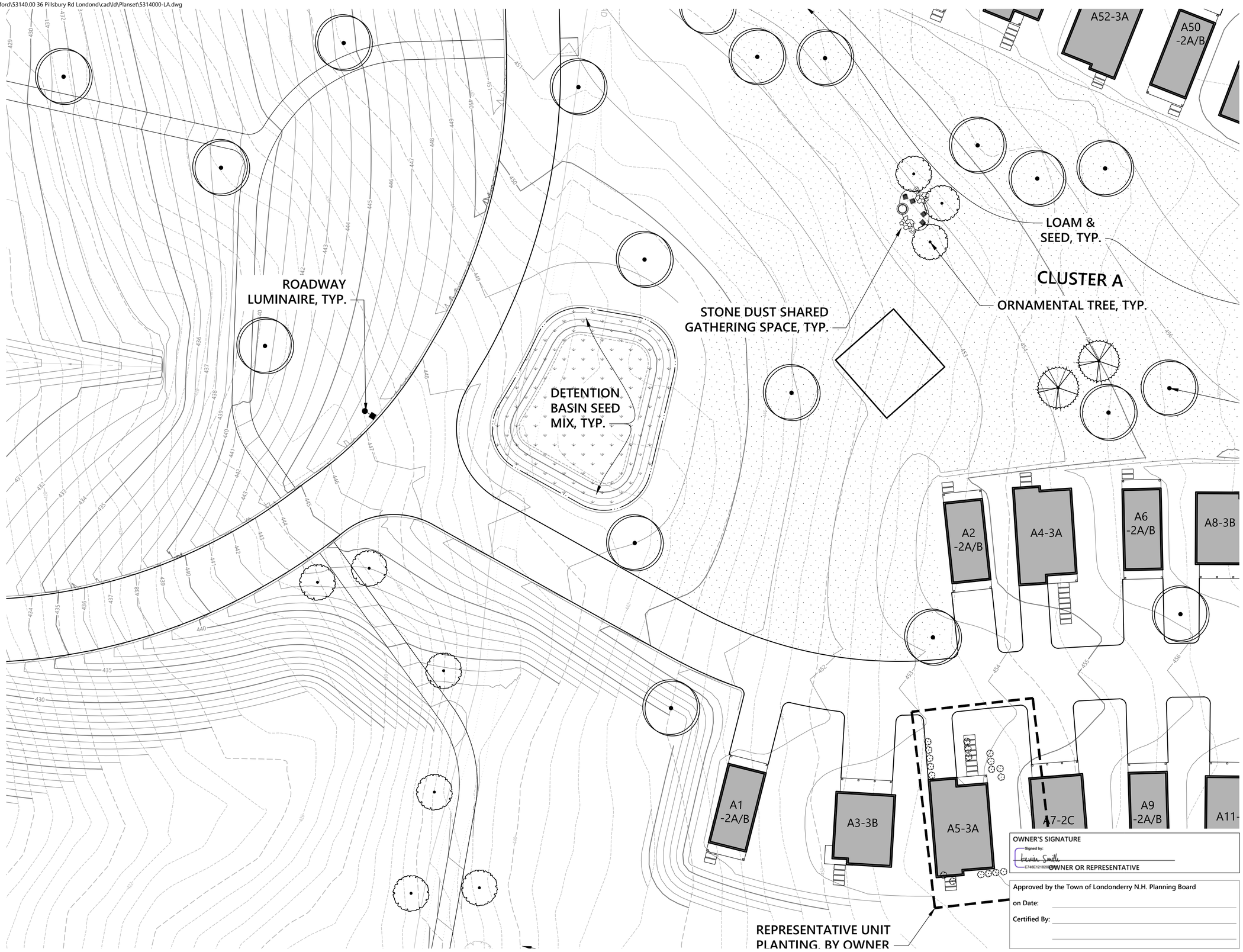
Drawing Number
L1.09

Sheet 107 of 111

Project Number
53140.00

Saved Tuesday, November 11, 2025 11:23:18 AM ALOUW Plotted Tuesday, November 11, 2025 3:02:53 PM Jason Howe

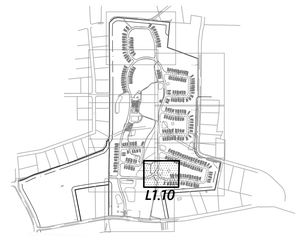
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Planset\5314000-LA.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900





11/12/2025

0 10 20 40 Feet

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by BJZ | Checked by DHF

Issued for: Permitting

Date: February 20, 2025

Not Approved for Construction

Drawing Title
Landscape
Plan 10

Drawing Number
L1.10

Sheet 108 of 111

Project Number
53140.00

OWNER'S SIGNATURE

Signed by: Kevin Smith
E746E1218206...

OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

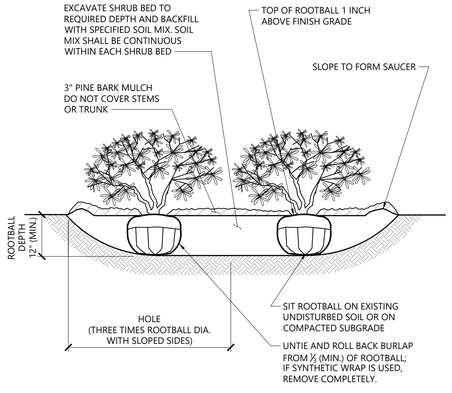
on Date: _____

Certified By: _____

_____

Saved Tuesday, November 11, 2025 3:56:21 PM JHOWE Plotted Tuesday, November 11, 2025 4:14:34 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Planset\5314000-LA-DT.dwg



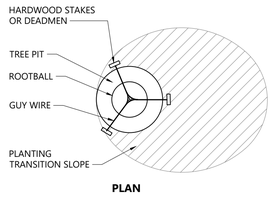
NOTES

1. LOOSEN ROOTS AT THE OUTER EDGE OF ROOTBALL OF CONTAINER GROWN SHRUBS.

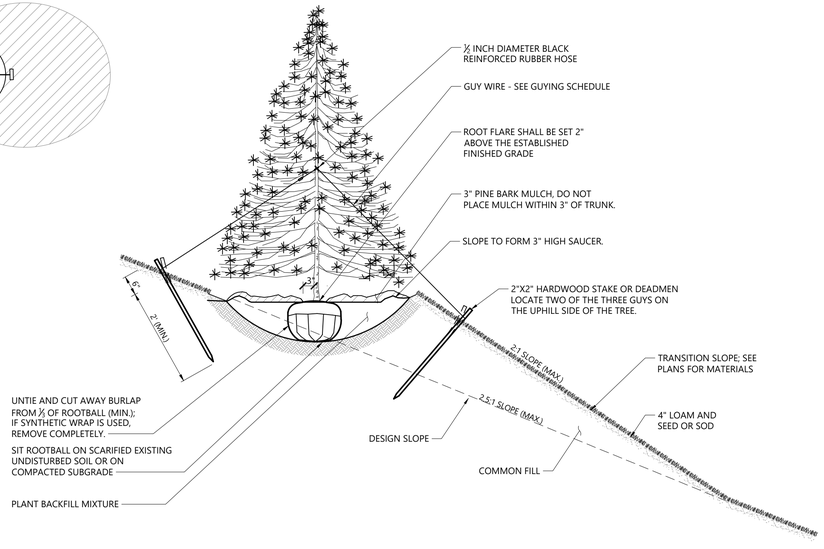
Shrub Bed Planting

1/16

N.T.S. Source: VHB LD_601



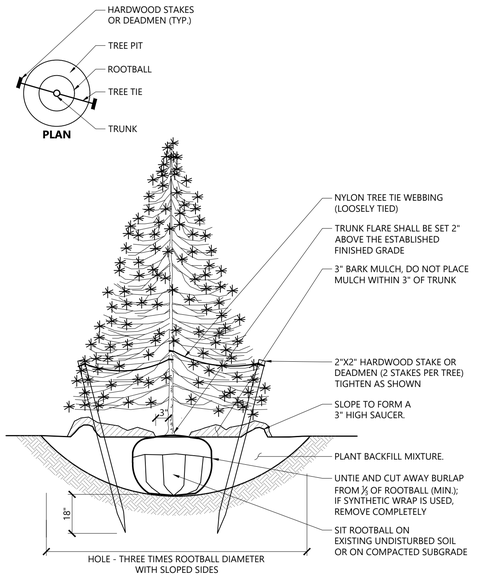
PLAN



Tree Planting on Slope

1/16

N.T.S. Source: VHB LD_605



PLAN

Evergreen Tree Planting

9/21

N.T.S. Source: VHB LD_604

vhb.com

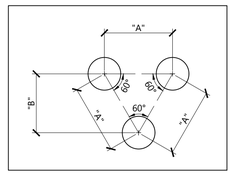
vhb

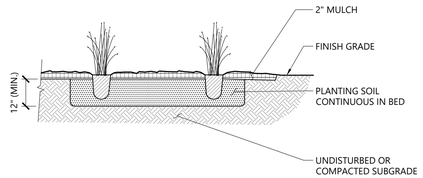
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

LICENSED LANDSCAPE ARCHITECT · ERIK N. BEDNAREK · 00175 · STATE OF NEW HAMPSHIRE

11/12/2025

PLANT SPACING	
PLANT SPACING("A")	ROW SPACING ("B")
6 IN. O.C.	5 IN. O.C.
8 IN. O.C.	7 IN. O.C.
10 IN. O.C.	8 ⅔ IN. O.C.
12 IN. O.C.	10 ⅓ IN. O.C.
15 IN. O.C.	13 IN. O.C.
18 IN. O.C.	16 IN. O.C.
24 IN. O.C.	21 IN. O.C.
30 IN. O.C.	26 IN. O.C.
36 IN. O.C.	30 IN. O.C.
48 IN. O.C.	42 IN. O.C.
54 IN. O.C.	48 IN. O.C.
60 IN. O.C.	54 IN. O.C.

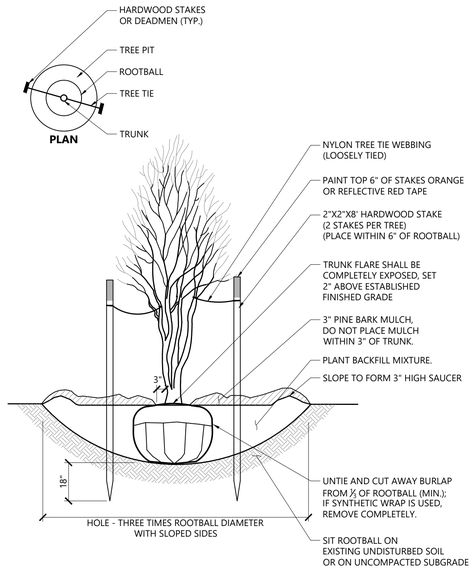




Perennial and Ornamental Grass Planting

1/16

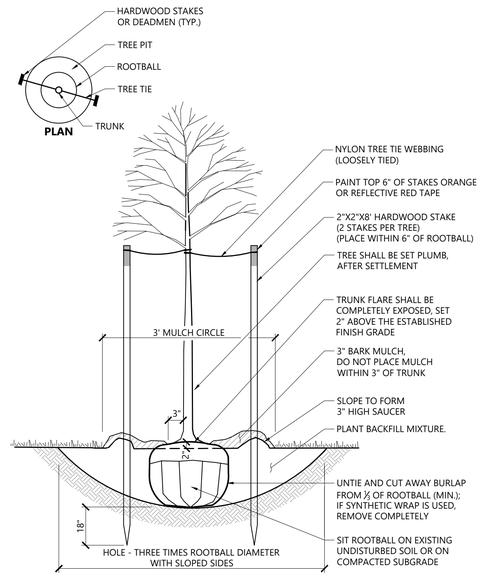
N.T.S. Source: VHB LD_618



Multistem Tree Planting

9/21

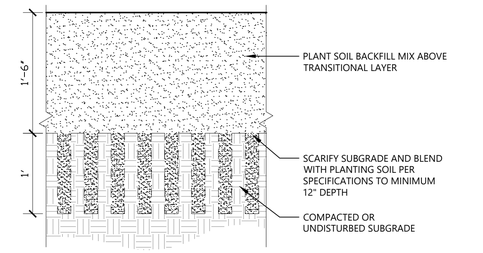
N.T.S. Source: VHB LD_606



Tree Planting (For Trees Under 4" Caliper)

9/21

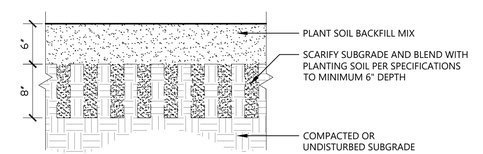
N.T.S. Source: VHB LD_602



Soil Preparation Groundcover and Shrubs

11/15

N.T.S. Source: VHB LD_



Soil Preparation at Lawn

11/15

N.T.S. Source: VHB LD_

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by | Checked by

Issued for | Date

Permitting February 20, 2025

Not Approved for Construction

Drawing Title

Landscape Details

Drawing Number

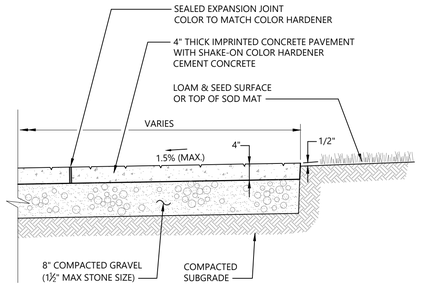
L2.01

Sheet 109 of 111

Project Number

53140.00

Saved Tuesday, June 17, 2025 9:27:19 AM ALOUW Plotted Tuesday, November 11, 2025 3:05:14 PM Jason Howe



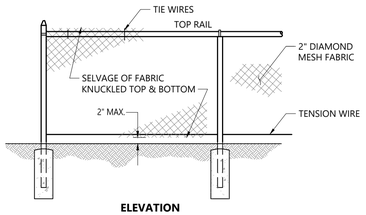
SECTION

NOTES

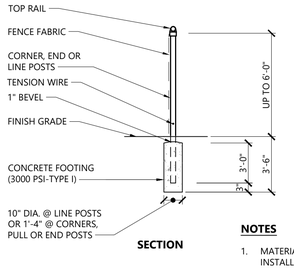
1. PROVIDE SEALED EXPANSION JOINTS WITH PREFORMED JOINT FILLER AT 30 FEET OR CLOSER O.C. WHERE NOT OTHERWISE INDICATED ON THE PLANS.

Stamped Concrete

N.T.S. Source: VHB



ELEVATION



SECTION

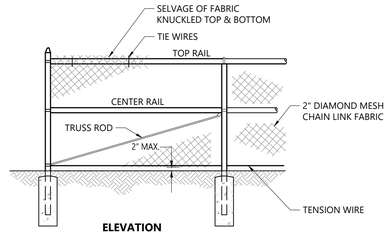
NOTES

1. MATERIALS TO BE SUPPLIED AND INSTALLED IN CONFORMANCE WITH "CHAIN LINK MANUFACTURER'S INSTITUTE" PRODUCT MANUAL.

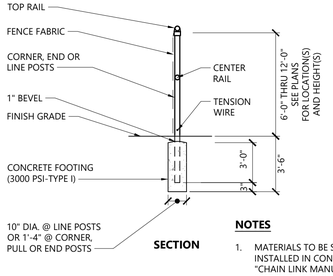
Chain Link Fence up to 6'

10/20

N.T.S. Source: VHB LD_481



ELEVATION



SECTION

NOTES

1. MATERIALS TO BE SUPPLIED AND INSTALLED IN CONFORMANCE WITH "CHAIN LINK MANUFACTURER'S INSTITUTE" PRODUCT MANUAL.

6' to 12' Chain Link Fence

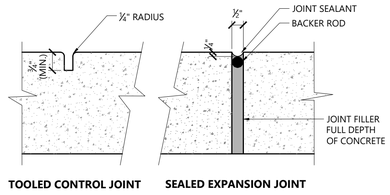
10/20

N.T.S. Source: VHB LD_480

..\Planmisc\LA Details\Fencing\Cedar wood with corten mesh.jpg

Ornamental Timber Fence with Mesh Panels

N.T.S. Source: VHB

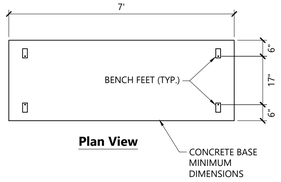


TOOLED CONTROL JOINT **SEALED EXPANSION JOINT**

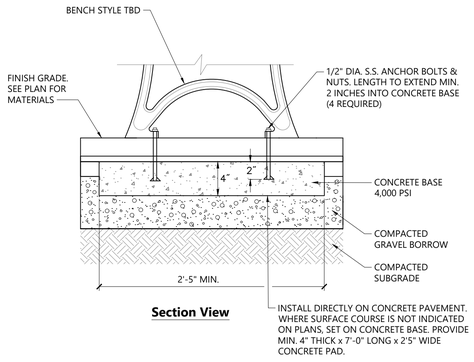
Concrete Joints

1/16

N.T.S. Source: VHB LD_840



Plan View

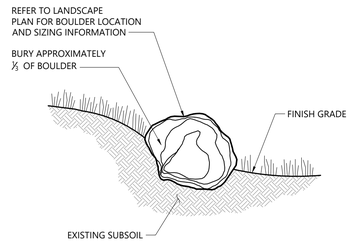


Section View

Bench Installation on Concrete

11/15

N.T.S. Source: VHB LD_



NOTES

1. GRANITE BOULDERS TO BE PLACED BY STRAPS OR CABLES WITH CARPET TO PREVENT SCARRING.
2. BOULDERS WITH EXCESSIVE SCARRING WILL BE REJECTED.
3. BOULDERS SHALL BE WEATHERED FIELD STONE.

Boulder Installation

1/16

N.T.S. Source: VHB LD_607

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

ERIK N. BEDNARek
LICENSED LANDSCAPE ARCHITECT
00175
STATE OF NEW HAMPSHIRE
11/12/2025

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by | Checked by

Issued for | Date

Permitting February 20, 2025

Not Approved for Construction

Drawing Title

Landscape Details

Drawing Number

L2.02

Sheet 110 of 111

Project Number
53140.00

Saved Tuesday, June 17, 2025 9:27:19 AM ALOUW Plotted Tuesday, November 11, 2025 3:05:28 PM Jason Howe



Amenity and Sales Building "Fin" Sign



Street Name Signs



Walking Path Sign



Amenity Building Sign

Representative Wayfinding Signage Concepts

11/15

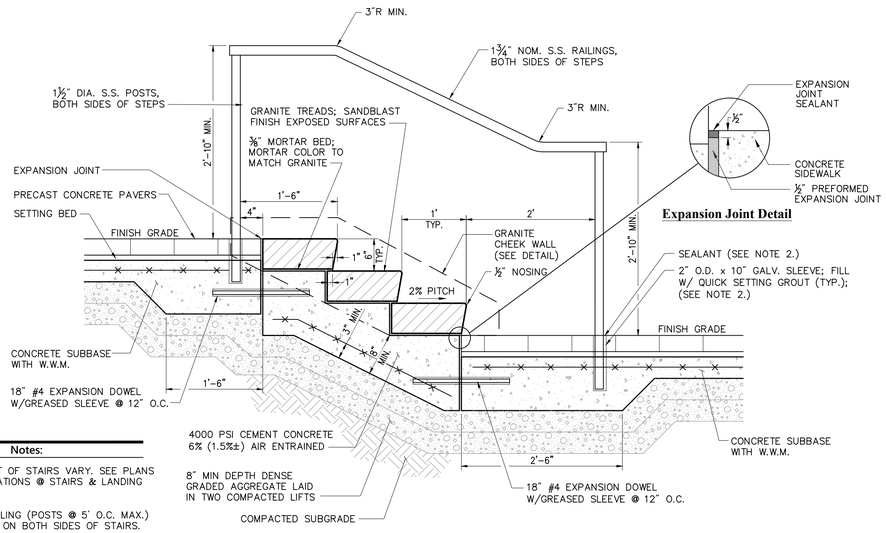
N.T.S. Source: VHB LD_



Representative Monumental Entry Sign

11/15

N.T.S. Source: VHB LD_



Expansion Joint Detail

Notes:

1. SPACE & HEIGHT OF STAIRS VARY. SEE PLANS FOR SPOT ELEVATIONS @ STAIRS & LANDING LENGTHS.
2. CONTINUOUS RAILING (POSTS @ 5' O.C. MAX.) SHALL BE USED ON BOTH SIDES OF STAIRS.
3. WIDTH OF STEPS SHALL BE AS INDICATED ON THE PLANS AS MEASURED BETWEEN INSIDE FACE OF CHEEK WALLS.

Granite Steps - 3 Risers

3/17

1" = 1'-0" Source: VHB

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

LICENSED LANDSCAPE ARCHITECT
ERIK N. BEDNAREK
00175
STATE OF NEW HAMPSHIRE
11/12/2025

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Response to Town Comments	06-13-2025	DHF
2	Planning Board Submission	11-13-2025	EKG

Designed by | Checked by

Issued for: **Permitting** Date: **February 20, 2025**

Not Approved for Construction

Drawing Title
Landscape Details

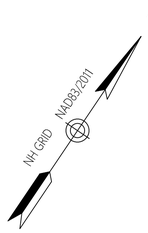
Drawing Number
L2.03

Sheet 111 of 111

Project Number
53140.00

Saved Tuesday, June 17, 2025 9:27:19 AM ALOUW Plotted Tuesday, November 11, 2025 3:05:39 PM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\sr\planset\53140.00-EX-PLAN.dwg



Wetland Notes

1) THE WETLANDS DEPICTED WERE DELINEATED BY JAKE TINUS CERTIFIED WETLAND SCIENTIST (NH CWS #228) ON OCTOBER 9 THRU 11, 2024, AND REFERENCE JURISDICTIONAL WETLANDS AND SURFACE WATERS WITHIN THE PROJECT SITE. THE WETLAND DELINEATION WAS PERFORMED IN ACCORDANCE WITH THE PROCEDURES AND STANDARDS OUTLINED IN THE *1987 CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND THE REGIONAL SUPPLEMENT TO THE U.S. ARMY CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0 (JANUARY 2012),* SUPPLIMENTED WITH *FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN THE UNITED STATES, VERSION 8.2,* PUBLISHED BY THE NATURAL RESOURCE CONSERVATION SERVICE AND THE *FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4.0,* PUBLISHED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION. DOMINANT WETLAND VEGETATION WAS ASSESSED USING THE *NORTHCENTRAL AND NORTHEAST REGIONAL WETLAND PLANT LIST* PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. WETLANDS AND SURFACE WATERS WERE CLASSIFIED USING THE USFWS METHODOLOGY *CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES (COWARDIN ET AL. 1979, REVISED 1985).*

Plan References

1) PLAN ENTITLED "TAX MAP 10 LOTS 42 & 154 OVERALL LOT LINE ADJUSTMENT PLAN PILLSBURY CEMETERY 36 PILLSBURY & 49 HOVEY ROADS, LONDONDERRY, NH" DATED: SEPTEMBER 24, 2014, REVISED THRU 6/19/15. RECORDED AT RCRD AS PLAN D-39205.

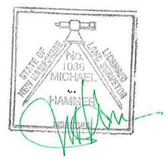
2) PLAN ENTITLED "PROPOSED EASEMENT PLAN PREPARED FOR: PENNICHUCK EAST UTILITY, INC. AND TOWN OF LONDONDERRY, NH LANDS OF: PILLSBURY REALTY DEVELOPMENT, LLC TAX MAP 10 LOTS 41 & 42 LONDONDERRY, NH" DATED: JULY 6, 2023. RECORDED AT RCRD AS PLAN D-44426.

3) PLAN ENTITLED "ANNEXATION AND SUBDIVISION PLAN ROBERT & STEPHEN LIEVENS TAX MAP 10 LOT 42 AND THE PINKERTON CEMETERY TAX MAP 10 LOT 154 HOVEY AND PILLSBURY ROADS LONDONDERRY, NH" DATED: JULY 17, 2002. RECORDED AT RCRD AS PLAN D-30457.

4) PLAN ENTITLED "SUBDIVISION PLAN OF LAND HOVEY VIEW ESTATES TAX MAP 10 LOT 42-1 PILLSBURY & HOVEY ROADS LONDONDERRY, NH" DATED: NOVEMBER 8, 2006 REVISED THRU 9/10/07. RECORDED AT RCRD AS PLAN D-35065.

Certification

I HEREBY REPORT THAT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF: THIS PLAN WAS PREPARED FROM A FIELD SURVEY SUPERVISED BY ME AND MADE IN CONFORMANCE WITH THE STANDARDS PROMULGATED IN NH LAN 500 FOR A STANDARD PROPERTY SURVEY AND MEETS THE ACCURACY STANDARD FOR AN URBAN CLASS REAL PROPERTY SURVEY.



Benchmarks

1. TBM 112 - MAG NAIL SET IN PAVEMENT ON HOVEY ROAD, ELEV.=458.60'
2. TBM 121 - MAG NAIL SET IN MEDIAN ON MICHELS WAY, ELEV.=395.40'

200 0 200 400
SCALE IN FEET

No.	Revision	Date	Appvd.
1	RESPONSE TO TOWN COMMENTS	6/13/2025	MJH
2	PLANNING BOARD SUBMISSION	11/13/2025	MJH

General Notes

1) THE PURPOSE OF THE PLAN IS TO DEPICT THE PARCEL BOUNDARIES AND EXISTING SURFACE SITE CONDITIONS AND TOPOGRAPHY OBSERVED IN SEPTEMBER AND OCTOBER 2024.

2) THE PROPERTY LINES SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY VHB, INC. IN JULY AND SEPTEMBER 2024, AND FROM DEEDS AND PLANS OF RECORD.

3) THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON A COMBINATION OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB, INC. IN JULY AND SEPTEMBER 2024, AND DERIVED FROM DIGITAL ORTHOGRAPHIC IMAGERY AND LIDAR CAPTURED BY VHB, INC. WITH LEAF ON CONDITIONS DURING SEPTEMBER 2024 USING UAV TECHNOLOGIES. VERTICAL INFORMATION DEPICTED AS AN 1-FOOT CONTOUR INTERVAL OR SPOT ELEVATION SHOWN HEREON WERE DERIVED FROM THE SAME AND CONFORM WITH THE CURRENT NATIONAL MAP ACCURACY STANDARDS.

4) THIS SURVEY MEETS THE MINIMUM ACCURACY REQUIREMENTS OF AN URBAN CLASS SURVEY PROMULGATED UNDER LAN 503.04.

5) THE LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THIS PLAN WERE MAPPED PER AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD 38-22, QUALITY LEVEL(S) 'X' AS SPECIFIED IN THE CONTRACT BETWEEN "THE CLIENT" AND VHB. PLEASE NOTE THAT WHILE BEST PRACTICES WERE FOLLOWED, NOT ALL UTILITIES MAY BE SHOWN AND THE ACCURACY OF UTILITY LOCATIONS CANNOT BE GUARANTEED.

6) HORIZONTAL DATUM IS BASED ON NH. GRID SYSTEM, NAD 1983/2011. ELEVATIONS SHOWN ON THIS PLAN REFER TO NAVD OF 1988/2018 ESTABLISHED FROM STATIC GPS OBSERVATIONS MADE ON JULY 31, 2024, POSTPROCESSED USLING TRIMBLE RTX-PP.

7) THE LOT LIES ENTIRELY WITHIN ZONE X (UNSHADED) (AREAS TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR ROCKINGHAM COUNTY, NEW HAMPSHIRE, MAP NUMBER 33015C0338E, EFFECTIVE DATE MAY 17, 2005.

8) THE LOT LIES ENTIRELY WITHIN THE WOODMONT COMMONS PUD DISTRICT (PUD-1) AS SHOWN ON THE "TOWN OF LONDONDERRY, NEW HAMPSHIRE ZONING MAP", DATED APRIL 24, 2023. DIMENSIONAL REQUIREMENTS FOR A (PUD-1) AT THE TIME OF THIS SURVEY ARE:

REQUIRED	
MINIMUM LOT AREA	N/A
MINIMUM FRONTAGE	50 FEET
MINIMUM FRONT YARD SETBACK	10 FEET
MINIMUM SIDE YARD SETBACK	10 FEET
MINIMUM REAR YARD SETBACK	5 FEET
MAXIMUM BUILDING HEIGHT	50 FEET
MINIMUM FRONT YARD PARKING SETBACK	6 FEET
MINIMUM SIDE/REAR PARKING SETBACK	0 FT

9) THE TREE SYMBOL OUTLINE SHOWN ON THIS PLAN DOES NOT REPRESENT THE ACTUAL TREE CANOPY.

10) MONUMENTS TO BE SET NOTED WILL BE INSTALLED IN ACCORDANCE WITH SECTION 3.02 OF THE LONDONDERRY SITE PLAN REGULATIONS

NRCS Soils Legend

29B WOODBRIDGE FINE SANDY LOAM
3 TO 8 PERCENT SLOPES

43D CANTON FINE SANDY LOAM
15 TO 25 PERCENT SLOPES, VERY STONY

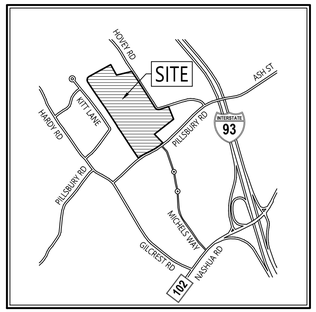
140B CHATFIELD-HOLLIS-CANTON COMPLEX
0 TO 8 PERCENT SLOPES, ROCKY

140C CHATFIELD-HOLLIS-CANTON COMPLEX
8 TO 15 PERCENT SLOPES, ROCKY

447A SCITUATE-NEWFIELDS COMPLEX
0 TO 3 PERCENT SLOPES, VERY STONY

447B SCITUATE-NEWFIELDS COMPLEX
3 TO 8 PERCENT SLOPES, VERY STONY

657A RIDGEBURY FINE SANDY LOAM
0 TO 3 PERCENT SLOPES, VERY STONY



Locus Map
(SCALE: 1"=2,500')

Legend

- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- MANHOLE
- HH HAND HOLE
- WATER GATE
- FIRE HYDRANT
- GAS GATE
- BOLLARD w/LIGHT
- STREET SIGN
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MONITORING WELL
- FLOOD LIGHT
- W WELL
- MARSH
- F.F.E.=45.27' FINISHED FLOOR ELEVATION
- CNO COULD NOT OPEN
- NPV NO PIPES VISIBLE
- DYL DOUBLE YELLOW LINE
- DWL DASHED WHITE LINE
- SYL SINGLE YELLOW LINE
- 8"TREE DECIDUOUS TREE WITH SIZE
- 6"TREE CONIFEROUS TREE WITH SIZE
- EOP EDGE OF PAVEMENT
- VGC VERTICAL GRANITE CURB
- GUARDRAIL
- CHAIN LINK FENCE
- (PS1) (C) DRAINAGE LINE w/PIPE NUMBER & ASCE SUE LEVEL CLASSIFICATION
- (P41) (C) SEWER LINE w/PIPE NUMBER & ASCE SUE LEVEL CLASSIFICATION
- OHW OVERHEAD WIRE
- E UNDERGROUND ELECTRIC
- T TELEPHONE LINE
- G GAS LINE
- W WATER LINE
- STONE WALL
- TREE LINE
- BF1-100 LIMIT OF BANK
- WF1-100 VEGETATED WETLAND BOUNDARY
- SOILS LINE

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by	Checked by

Issued for	Date
Permitting	**February 20, 2025**

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street Hudson, NH 03051

Prepared For: Procopio Companies
35 Village Road, Suite 702
Middleton, MA 01949

Scale: 1"=150'

Drawing Title
Existing Conditions Master Plan

Drawing Number
Sv-1.0

Sheet 1 of 9

Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

Project Number
53140.00

Saved Monday, November 10, 2025 6:13:46 PM PGUERTIN Plotted Wednesday, November 12, 2025 1:30:47 PM Mike Hammer

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\sr\planset\53140.00-EX-PLAN.dwg

SEE SHEET 1.2

SEE SHEET 1.7



Certification

I HEREBY REPORT THAT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE. INFORMATION, AND BELIEF: THIS PLAN WAS PREPARED FROM A FIELD SURVEY SUPERVISED BY ME AND MADE IN CONFORMANCE WITH THE STANDARDS PROMULGATED IN NH LAN 500 FOR A STANDARD PROPERTY SURVEY AND MEETS THE ACCURACY STANDARD FOR AN URBAN CLASS REAL PROPERTY SURVEY.

STATE OF NEW HAMPSHIRE — LICENSED LAND SURVEYOR — NO. 1036 — MICHAEL L. HAMMER

Benchmarks

1. TBM 112 - MAG NAIL SET IN PAVEMENT ON HOVEY ROAD, ELEV.=458.60'
2. TBM 121 - MAG NAIL SET IN MEDIAN ON MICHELS WAY, ELEV.=395.40'

No.	Revision	Date	Appvd.
1	RESPONSE TO TOWN COMMENTS	6/13/2025	MJH
2	PLANNING BOARD SUBMISSION	11/13/2025	MJH

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by | Checked by

Issued for | Date

Permitting | **February 20, 2025**

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street Hudson, NH 03051

Prepared For: Procopio Companies
35 Village Road, Suite 702
Middleton, MA 01949

Scale: 1"=40'

Drawing Title

Existing Conditions Plan of Land

Drawing Number

Sv-1.1

Sheet 2 of 9

Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

Project Number **53140.00**

Saved Monday, November 10, 2025 10:57:08 AM PQUERTIN Plotted Monday, November 10, 2025 11:09:15 AM Paul Guertin



40 0 40 80
SCALE IN FEET

Certification

I HEREBY REPORT THAT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF: THIS PLAN WAS PREPARED FROM A FIELD SURVEY SUPERVISED BY ME AND MADE IN CONFORMANCE WITH THE STANDARDS PROMULGATED IN NH LAN 500 FOR A STANDARD PROPERTY SURVEY AND MEETS THE ACCURACY STANDARD FOR AN URBAN CLASS REAL PROPERTY SURVEY.

STATE OF NEW HAMPSHIRE — LICENSED LAND SURVEYOR — NO. 1036 — MICHAEL J. HAMMER — SEAL

Benchmarks

1. TBM 112 - MAG NAIL SET IN PAVEMENT ON HOVEY ROAD, ELEV.=458.60'
2. TBM 121 - MAG NAIL SET IN MEDIAN ON MICHELS WAY, ELEV.=395.40'

No.	Revision	Date	Appvd.
1	RESPONSE TO TOWN COMMENTS	6/13/2025	MJH
2	PLANNING BOARD SUBMISSION	11/13/2025	MJH

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by | Checked by

Issued for | Date

Permitting | **February 20, 2025**

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street Hudson, NH 03051

Prepared For: Procopio Companies
35 Village Road, Suite 702
Middleton, MA 01949

Scale: 1"=40'

Drawing Title

Existing Conditions Plan of Land

Drawing Number

Sv-1.2

Sheet 3 of 9

Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

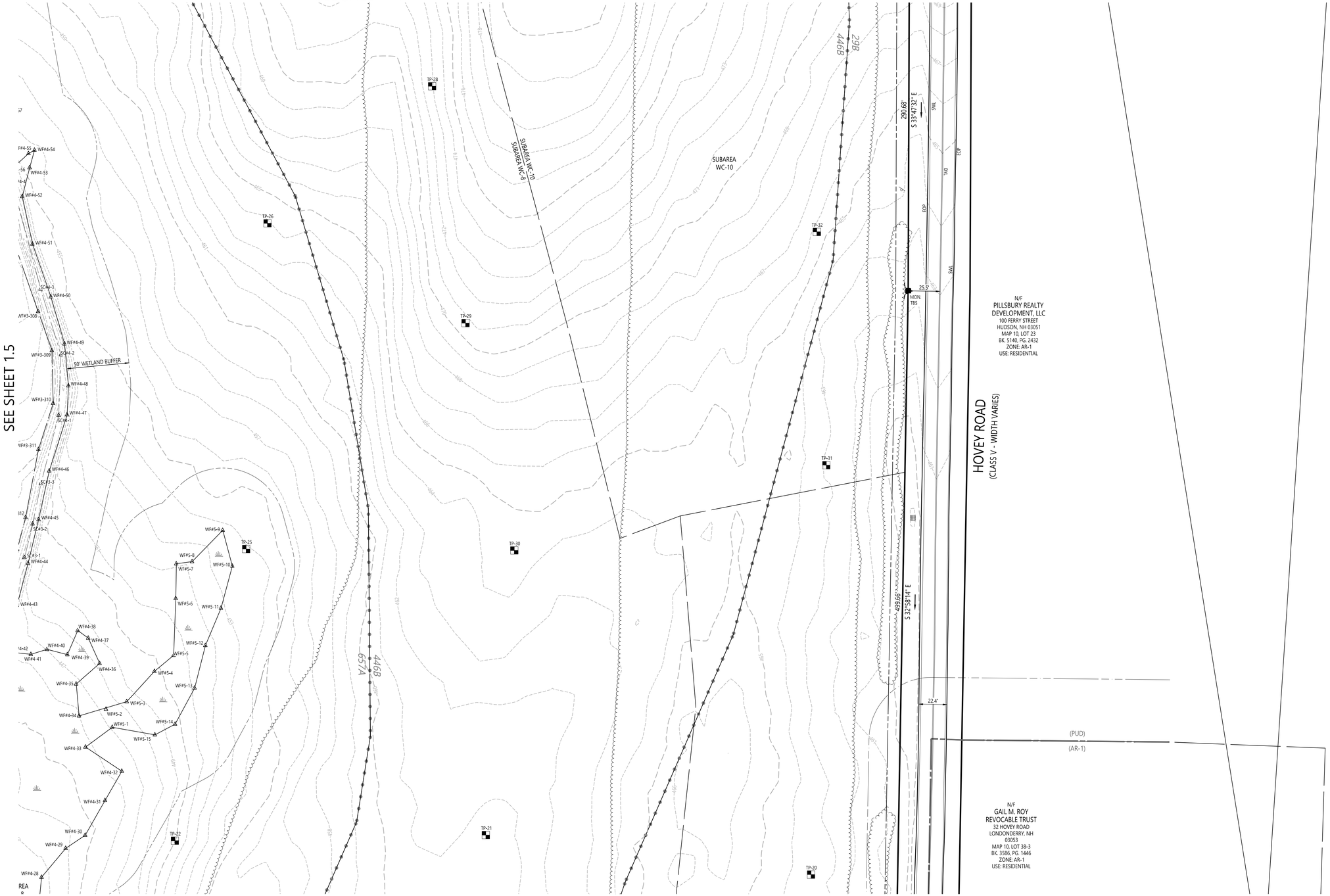
Project Number **53140.00**

Saved Monday, November 10, 2025 10:57:08 AM PGUERTIN Plotted Monday, November 10, 2025 11:09:28 AM Paul Guertin

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\sr\planset\53140.00-EX-PLAN.dwg

SEE SHEET 1.4

SEE SHEET 1.5



SEE SHEET 1.2

40 0 40 80
SCALE IN FEET

Certification

I HEREBY REPORT THAT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE. INFORMATION, AND BELIEF: THIS PLAN WAS PREPARED FROM A FIELD SURVEY SUPERVISED BY ME AND MADE IN CONFORMANCE WITH THE STANDARDS PROMULGATED IN NH LAN 500 FOR A STANDARD PROPERTY SURVEY AND MEETS THE ACCURACY STANDARD FOR AN URBAN CLASS REAL PROPERTY SURVEY.

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 1036 MICHAEL J. HAMMER SIGNATURE

Benchmarks

1. TBM 112 - MAG NAIL SET IN PAVEMENT ON HOVEY ROAD, ELEV.=458.60'
2. TBM 121 - MAG NAIL SET IN MEDIAN ON MICHELS WAY, ELEV.=395.40'

No.	Revision	Date	Appvd.
1	RESPONSE TO TOWN COMMENTS	6/13/2025	MJH
2	PLANNING BOARD SUBMISSION	11/13/2025	MJH

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by | Checked by

Issued for | Date

Permitting **February 20, 2025**

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street Hudson, NH 03051

Prepared For: Procopio Companies
35 Village Road, Suite 702
Middleton, MA 01949

Scale: **1"=40'**

Drawing Title
Existing Conditions Plan of Land

Drawing Number
Sv-1.3

Sheet 4 of 9

Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

Project Number **53140.00**

Saved Monday, November 10, 2025 10:57:08 AM PGUERTIN Plotted Monday, November 10, 2025 11:09:43 AM Paul Guertin

SPRING ROAD
(CLASS VI)

MONUMENT TO BE SET (TYP.)

N 46°01'58" E 62.14'

N 60°57'55" E 386.50'

N 60°35'59" E 148.78'

N 61°53'45" E 288.35'

DRILL HOLE (FOUND)

N/F
PENNICHUCK EAST UTILITY, INC.
25 WALNUT ST.,
P.O. BOX 428
NASHUA, NH 03060
MAP 10, LOT 142
BK. 5214, PG. 246
ZONE: AR-1
USE: COMMERCIAL

N/F
IWG II, LLC
1199 N. FAIRFAX ST. SUITE 700
ALEXANDRIA, VA 22314
MAP 10, LOT 18
BK. 5869, PG. 2469
ZONE: AR-1
USE: COMMERCIAL

(AR-1)
(PUD)

50' PERIMETER BUFFER

50' WETLAND BUFFER

IRON ROD UP NO CAP (FOUND)

N/F
DAVID COSCIA
34 KITT LANE
LONDONDERRY, NH 03053
MAP 10, LOT 16-25
BK. 6160, PG. 1344
ZONE: AR-1
USE: RESIDENTIAL

N 18°00'20" E 99.17'

N 33°20'20" W 210.70'

20 FT. WIDE UTILITY EASEMENT BK. 6539, PG. 2559

IRON PIPE LEANING (FOUND)

N/F
ANDREA J. BALDWIN REVOCABLE TRUST
32 KITT LANE
LONDONDERRY, NH 03053
MAP 10, LOT 16-24
BK. 6237, PG. 1734
ZONE: AR-1
USE: RESIDENTIAL

N 34°34'28" W 157.72'

IRON PIPE LEANING (FOUND)

N/F
PETER F. GALLO
30 KITT LANE
LONDONDERRY, NH 03053
MAP 10, LOT 16-23
BK. 4369, PG. 181
ZONE: AR-1
USE: RESIDENTIAL

N/F
JAKE ANTHONY PELLETIER
28 KITT LANE
LONDONDERRY, NH 03053
MAP 10, LOT 16-22
BK. 6186, PG. 2584
ZONE: AR-1
USE: RESIDENTIAL

EDGE OF WOODS

EDGE OF BRUSH

446B 447A

446B 657A

657A 447A

SUBAREA WC-7

SUBAREA WC-8

TP-52

TP-27

TP-34

STORMWATER BASIN

CONCRETE WEIR

N/F
TOWN OF LONDONDERRY
2688 MAMMOTH ROAD
LONDONDERRY, NH 03053
MAP 10, LOT 154
BK. 4294, PG. 2802
ZONE: AR-1 / PUD-1
USE: CEMETERY

S 28°41'38" E 398.10'

GRAN. BOUND W/D.H. FIRM (FOUND)

10' BUILDING SETBACK

NH GRID NAD83/2011

N

SEE SHEET 1.2

SCALE IN FEET
40 0 40 80

Certification

I HEREBY REPORT THAT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF: THIS PLAN WAS PREPARED FROM A FIELD SURVEY SUPERVISED BY ME AND MADE IN CONFORMANCE WITH THE STANDARDS PROMULGATED IN NH LAN 500 FOR A STANDARD PROPERTY SURVEY AND MEETS THE ACCURACY STANDARD FOR AN URBAN CLASS REAL PROPERTY SURVEY.

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR NO. 1036 MICHAEL HAMMER

Benchmarks

1. TBM 112 - MAG NAIL SET IN PAVEMENT ON HOVEY ROAD, ELEV.=458.60'
2. TBM 121 - MAG NAIL SET IN MEDIAN ON MICHELS WAY, ELEV.=395.40'

No.	Revision	Date	Appvd.
1	RESPONSE TO TOWN COMMENTS	6/13/2025	MJH
2	PLANNING BOARD SUBMISSION	11/13/2025	MJH

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by | Checked by

Issued for | Date

Permitting **February 20, 2025**

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street Hudson, NH 03051

Prepared For: Procopio Companies
35 Village Road, Suite 702
Middleton, MA 01949

Scale: 1"=40'

Drawing Title
Existing Conditions Plan of Land

Drawing Number
Sv-1.4

Sheet 5 of 9

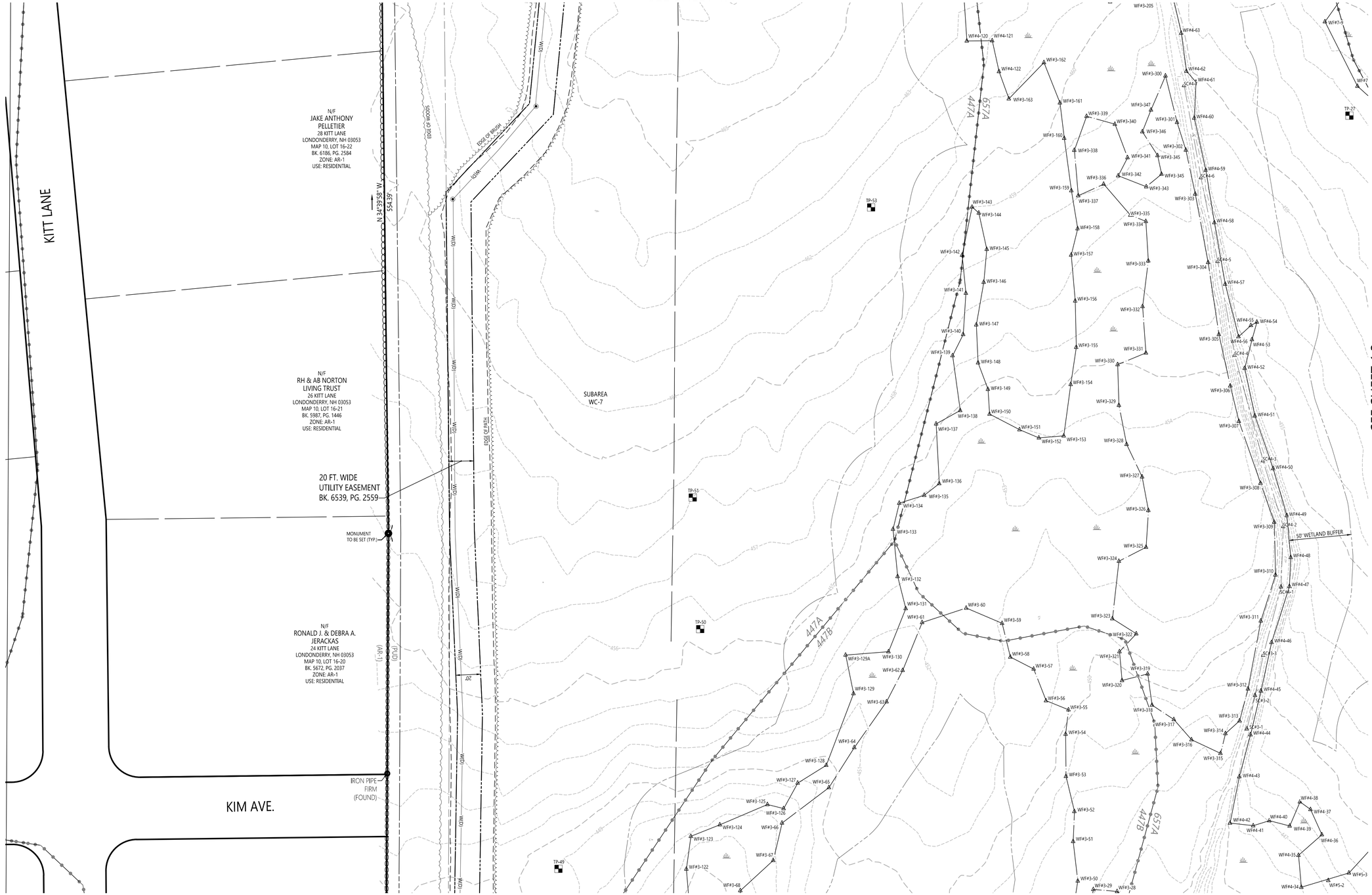
Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

Project Number **53140.00**

Saved Monday, November 10, 2025 10:57:08 AM PQUERTIN Plotted Monday, November 10, 2025 11:09:59 AM Paul Guertin

SEE SHEET 1.4

SEE SHEET 1.3

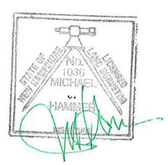


40 0 40 80
SCALE IN FEET

SEE SHEET 1.6

Certification

I HEREBY REPORT THAT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF: THIS PLAN WAS PREPARED FROM A FIELD SURVEY SUPERVISED BY ME AND MADE IN CONFORMANCE WITH THE STANDARDS PROMULGATED IN NH LAN 500 FOR A STANDARD PROPERTY SURVEY AND MEETS THE ACCURACY STANDARD FOR AN URBAN CLASS REAL PROPERTY SURVEY.



Benchmarks

1. TBM 112 - MAG NAIL SET IN PAVEMENT ON HOVEY ROAD, ELEV.=458.60'
2. TBM 121 - MAG NAIL SET IN MEDIAN ON MICHELS WAY, ELEV.=395.40'

No.	Revision	Date	Appvd.
1	RESPONSE TO TOWN COMMENTS	6/13/2025	MJH
2	PLANNING BOARD SUBMISSION	11/13/2025	MJH

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by | Checked by

Issued for | Date

Permitting **February 20, 2025**

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street Hudson, NH 03051

Prepared For: Procopio Companies
35 Village Road, Suite 702
Middleton, MA 01949

Scale: 1"=40'

Drawing Title

Existing Conditions Plan of Land

Drawing Number

Sv-1.5

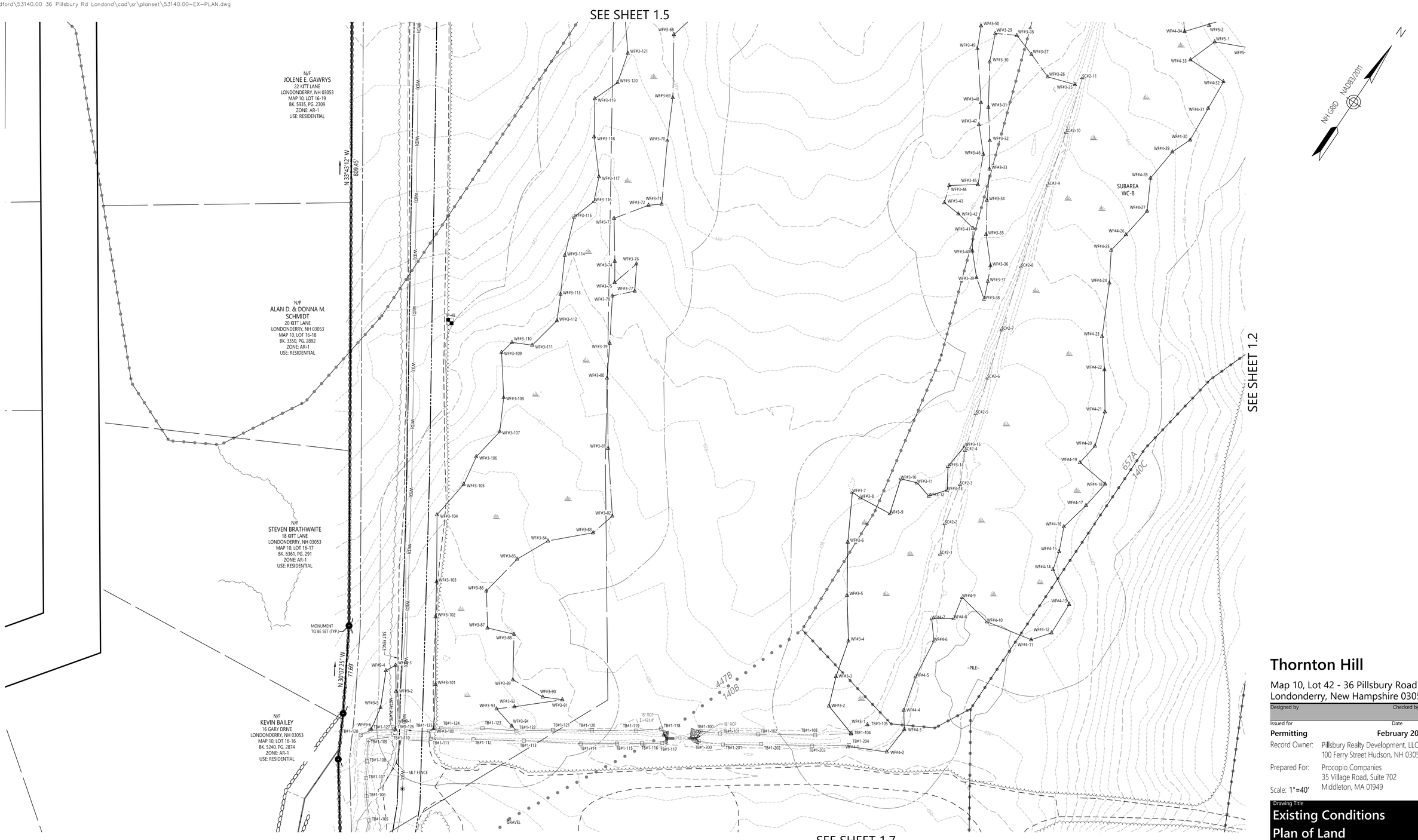
Sheet 6 of 9

Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

Project Number **53140.00**

Saved Monday, November 10, 2025 10:57:08 AM PQUERTIN Plotted Monday, November 10, 2025 11:10:13 AM Paul Guertin

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\sr\planset\53140.00-EX-PLAN.dwg



Certification

I HEREBY REPORT THAT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF: THIS PLAN WAS PREPARED FROM A FIELD SURVEY SUPERVISED BY ME AND MADE IN CONFORMANCE WITH THE STANDARDS PROMULGATED IN NH LAN 500 FOR A STANDARD PROPERTY SURVEY AND MEETS THE ACCURACY STANDARD FOR AN URBAN CLASS REAL PROPERTY SURVEY.

STATE OF NEW HAMPSHIRE
No. 1036
MICHAEL J. HAMMER
LICENSED LAND SURVEYOR
DEMARTINE

Benchmarks

1. TBM 112 - MAG NAIL SET IN PAVEMENT ON HOVEY ROAD, ELEV.=458.60'
2. TBM 121 - MAG NAIL SET IN MEDIAN ON MICHELS WAY, ELEV.=395.40'

No.	Revision	Date	Appvd.
1	RESPONSE TO TOWN COMMENTS	6/13/2025	MJH
2	PLANNING BOARD SUBMISSION	11/13/2025	MJH

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by | Checked by

Issued for | Date

Permitting | **February 20, 2025**

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street Hudson, NH 03051

Prepared For: Procopio Companies
35 Village Road, Suite 702
Middleton, MA 01949

Scale: 1"=40'

Drawing Title

Existing Conditions Plan of Land

Drawing Number

Sv-1.6

Sheet 7 of 9

Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

Project Number **53140.00**

Saved Monday, November 10, 2025 10:57:08 AM PGUERTIN Plotted Monday, November 10, 2025 11:10:29 AM Paul Guertin

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\sr\planset\53140.00-EX-PLAN.dwg

SEE SHEET 1.6



SEE SHEET 1.1

SEE SHEET 1.8

40 0 40 80
SCALE IN FEET

N
NH GRID NAD83/2011

Certification

I HEREBY REPORT THAT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE. INFORMATION, AND BELIEF: THIS PLAN WAS PREPARED FROM A FIELD SURVEY SUPERVISED BY ME AND MADE IN CONFORMANCE WITH THE STANDARDS PROMULGATED IN NH LAN 500 FOR A STANDARD PROPERTY SURVEY AND MEETS THE ACCURACY STANDARD FOR AN URBAN CLASS REAL PROPERTY SURVEY.

STATE OF NEW HAMPSHIRE — LICENSED LAND SURVEYOR — NO. 1036 — MICHAEL W. HAMMER

Benchmarks

1. TBM 112 - MAG NAIL SET IN PAVEMENT ON HOVEY ROAD, ELEV.=458.60'
2. TBM 121 - MAG NAIL SET IN MEDIAN ON MICHELS WAY, ELEV.=395.40'

No.	Revision	Date	Appvd.
1	RESPONSE TO TOWN COMMENTS	6/13/2025	MJH
2	PLANNING BOARD SUBMISSION	11/13/2025	MJH

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by | Checked by

Issued for: **Permitting** | Date: **February 20, 2025**

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street Hudson, NH 03051

Prepared For: Procopio Companies
35 Village Road, Suite 702
Middleton, MA 01949

Scale: **1"=40'**

Drawing Title
Existing Conditions Plan of Land

Drawing Number
Sv-1.7

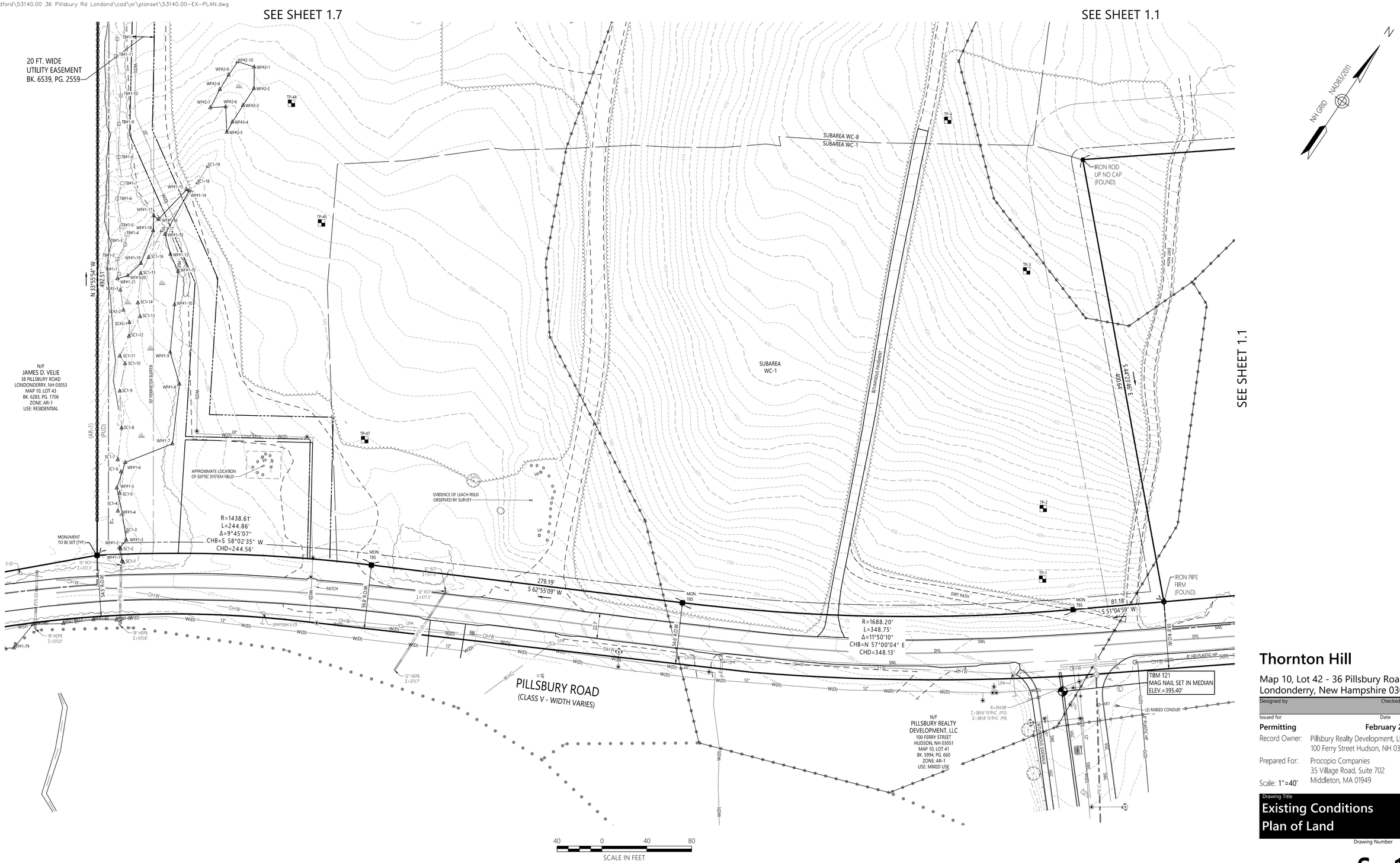
Sheet 8 of 9

Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

Project Number **53140.00**

Saved Monday, November 10, 2025 10:57:08 AM PGUERTIN Plotted Monday, November 10, 2025 11:10:44 AM Paul Guertin

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\sr\planset\53140.00-EX-PLAN.dwg



Certification

I HEREBY REPORT THAT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF: THIS PLAN WAS PREPARED FROM A FIELD SURVEY SUPERVISED BY ME AND MADE IN CONFORMANCE WITH THE STANDARDS PROMULGATED IN NH LAN 500 FOR A STANDARD PROPERTY SURVEY AND MEETS THE ACCURACY STANDARD FOR AN URBAN CLASS REAL PROPERTY SURVEY.



Benchmarks

1. TBM 112 - MAG NAIL SET IN PAVEMENT ON HOVEY ROAD, ELEV.=458.60'
2. TBM 121 - MAG NAIL SET IN MEDIAN ON MICHELS WAY, ELEV.=395.40'

No.	Revision	Date	Appvd.
1	RESPONSE TO TOWN COMMENTS	6/13/2025	MJH
2	PLANNING BOARD SUBMISSION	11/13/2025	MJH

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by | Checked by

Issued for | Date

Permitting | **February 20, 2025**

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street Hudson, NH 03051

Prepared For: Procopio Companies
35 Village Road, Suite 702
Middleton, MA 01949

Scale: 1"=40'

Drawing Title

Existing Conditions Plan of Land

Drawing Number

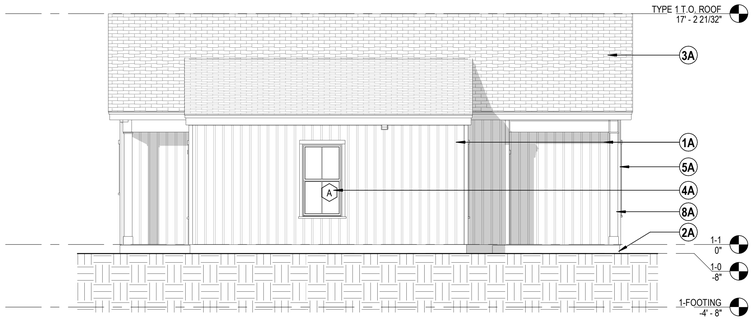
Sv-1.8

Sheet 9 of 9

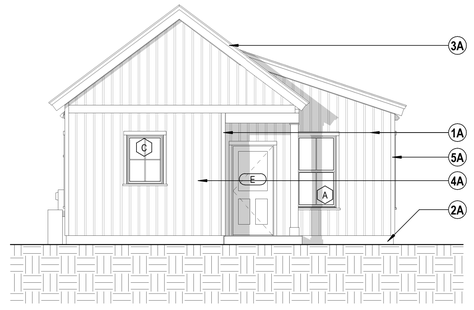
Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

Project Number **53140.00**

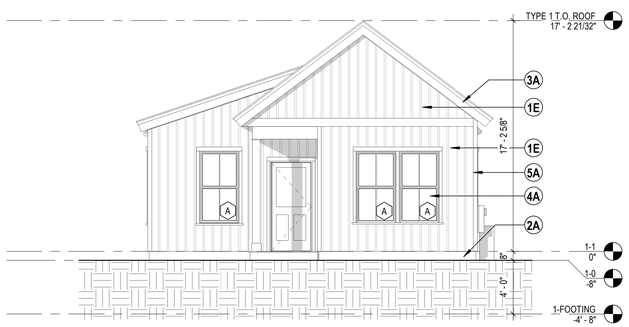
Saved Monday, November 10, 2025 10:57:08 AM PGUERTIN Plotted Monday, November 10, 2025 11:10:59 AM Paul Guertin



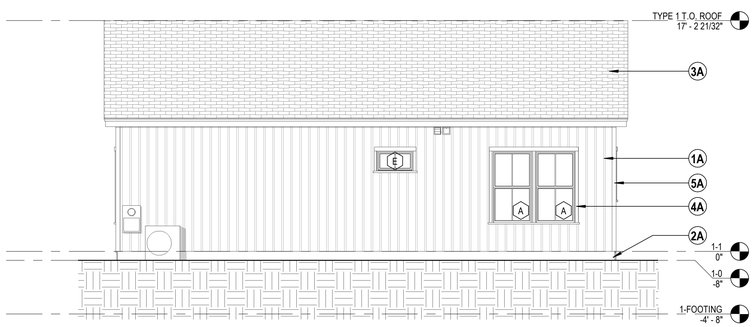
4 UNIT TYPE 1 EAST EXTERIOR ELEVATION
3/16" = 1'-0"



3 UNIT TYPE 1 NORTH EXTERIOR ELEVATION
3/16" = 1'-0"



2 UNIT TYPE 1 SOUTH EXTERIOR ELEVATION
3/16" = 1'-0"



1 UNIT TYPE 1 WEST EXTERIOR ELEVATION
3/16" = 1'-0"

#A ELEVATION KEY NOTE SCHEDULE	
Number	Description
1A	VINYL CLAPBOARD SIDING, 4" EXPOSURE, BASIS OF DESIGN CERTAINTEED MONOGRAM
1B	VINYL TRANSITION TRIM
1C	EXPOSED RAFTER TAILS; PAINTED WOOD OR PVC CLAD
1D	VINYL CORNER BOARD
1E	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
2A	EXPOSED CONCRETE FROST WALL
3A	ARCHITECTURAL GRADE ASPHALT SHINGLE, BASIS OF DESIGN CERTAINTEED LANDMARK
4A	VINYL DOUBLE HUNG WINDOWS WITH DIVIDED LIGHT, BASIS OF DESIGN ANDERSEN 100 SERIES
5A	PVC TRIM BOARD, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
6A	SECTIONAL OVERHEAD DOOR, BASIS OF DESIGN OVERHEAD DOOR CORP. THERMACORE
7A	EXPOSED RAFTER TAILS; PAINTED WOOD OR PVC CLAD
8A	PREMADE COLUMN COVER WITH TRIM, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
9A	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
10A	GABLE BRACKET; BOD FYPON ASHER
10B	PVC KNEE BRACE; BASIS OF DESIGN FYPON BKT8X29X4
10C	GABLE BRACKET; BASIS OF DESIGN FYPON MEIER
10D	PVC KNEE BRACE; BASIS OF DESIGN FYPON BKTS18X24X6S

THORNTON HILL

MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION
02/20/2025	PERMITTING
04/11/2025	DD PRICING
05/08/2025	CD PRICING

ISSUE DATE	REVISIONS ON SHEET

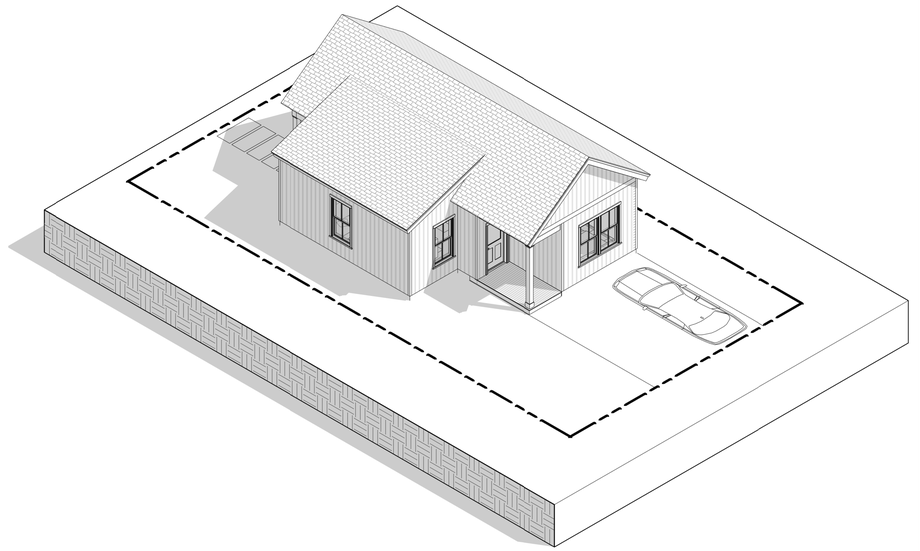
NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **3/16" = 1'-0"**
UTILE PROJECT NUMBER **2417**

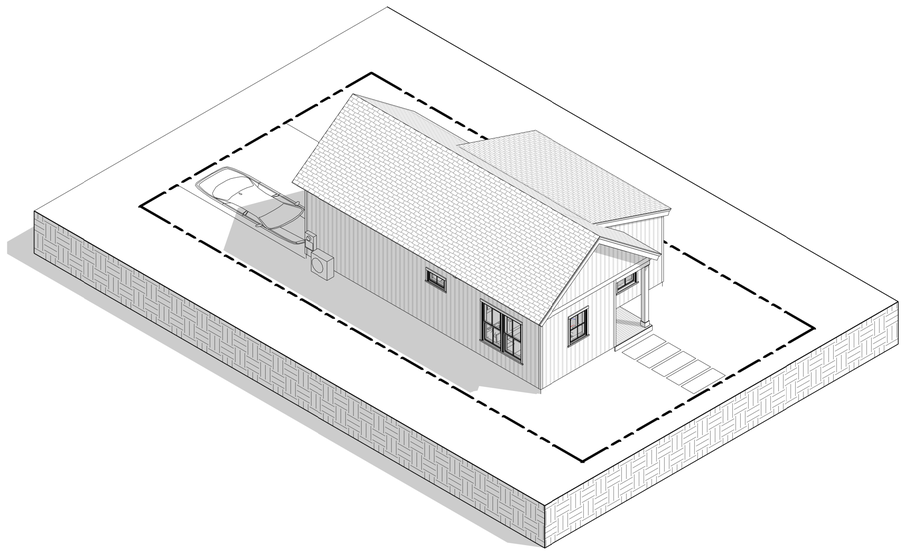
UNIT TYPE 1 - EXTERIOR ELEVATIONS

A-1-3.01

11/10/2023 3:02:21 PM



2 UNIT TYPE 1 - AXONOMETRIC 2



1 UNIT TYPE 1 - AXONOMETRIC 1

THORNTON HILL

MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION
02/20/2025	PERMITTING
04/11/2025	DD PRICING
05/08/2025	CD PRICING

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE.

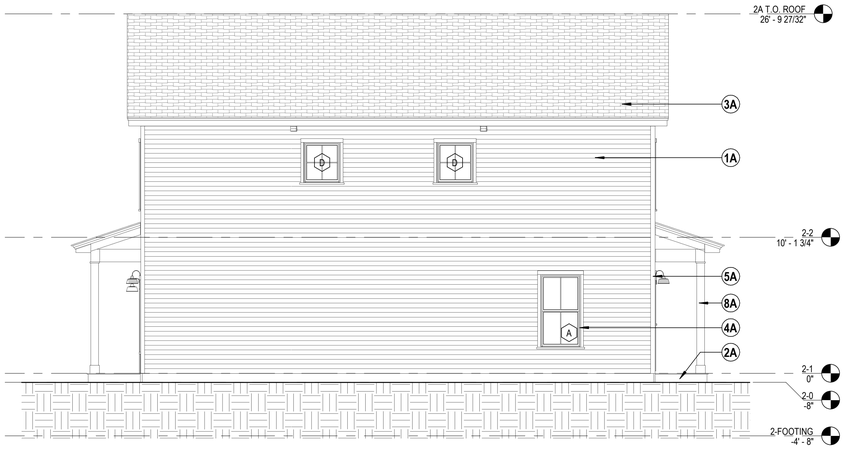
SCALE

UTILE PROJECT NUMBER
2417

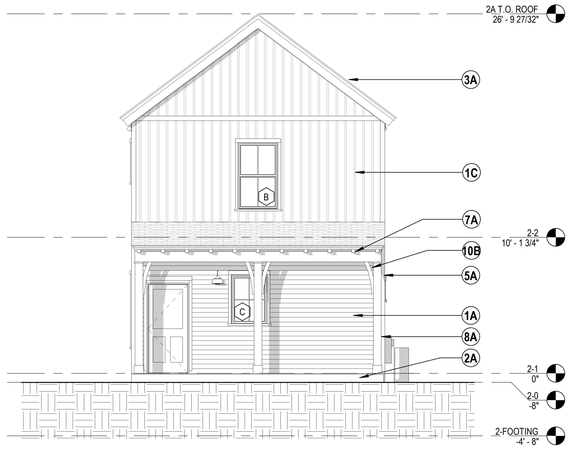
UNIT TYPE 1 - AXONOMETRICS

A-1-3.11

11/10/2025 2:56:47 PM

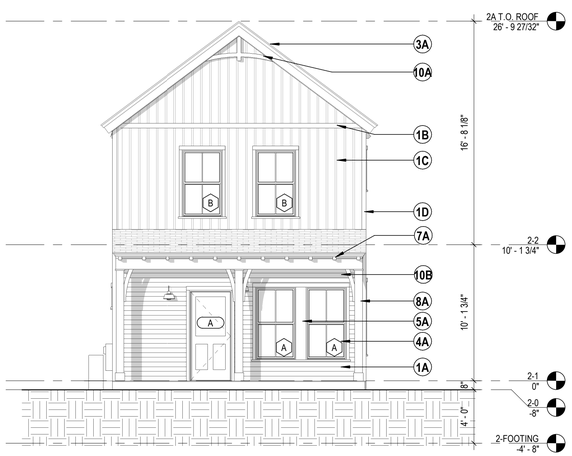


4 UNIT TYPE 2A EAST EXTERIOR ELEVATION
3/16" = 1'-0"

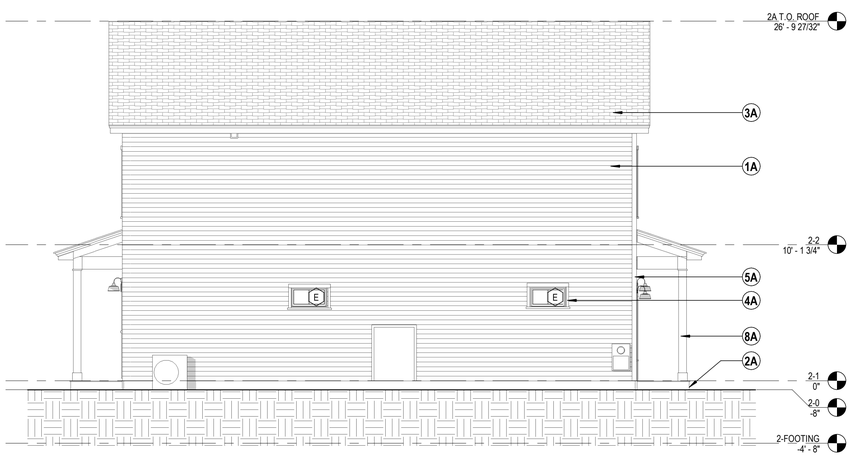


3 UNIT TYPE 2A NORTH EXTERIOR ELEVATION
3/16" = 1'-0"

#A ELEVATION KEY NOTE SCHEDULE	
Number	Description
1A	VINYL CLAPBOARD SIDING, 4" EXPOSURE, BASIS OF DESIGN CERTAINTEED MONOGRAM
1B	VINYL TRANSITION TRIM
1C	EXPOSED RAFTER TAILS; PAINTED WOOD OR PVC CLAD
1D	VINYL CORNER BOARD
1E	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
2A	EXPOSED CONCRETE FROST WALL
3A	ARCHITECTURAL GRADE ASPHALT SHINGLE, BASIS OF DESIGN CERTAINTEED LANDMARK
4A	VINYL DOUBLE HUNG WINDOWS WITH DIVIDED LIGHT, BASIS OF DESIGN ANDERSEN 100 SERIES
5A	PVC TRIM BOARD, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
6A	SECTIONAL OVERHEAD DOOR, BASIS OF DESIGN OVERHEAD DOOR CORP. THERMACORE
7A	EXPOSED RAFTER TAILS; PAINTED WOOD OR PVC CLAD
8A	PREMADE COLUMN COVER WITH TRIM, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
9A	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
10A	GABLE BRACKET; BOD FYPON ASHER
10B	PVC KNEE BRACE; BASIS OF DESIGN FYPON BKT8X29X4
10C	GABLE BRACKET; BASIS OF DESIGN FYPON MEIER
10D	PVC KNEE BRACE; BASIS OF DESIGN FYPON BKTS18X24X6S



2 UNIT TYPE 2A SOUTH EXTERIOR ELEVATION
3/16" = 1'-0"



1 UNIT TYPE 2A WEST EXTERIOR ELEVATION
3/16" = 1'-0"

THORNTON HILL
MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053
PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION
02/20/2025	PERMITTING
04/11/2025	DD PRICING
05/08/2025	CD PRICING

ISSUE DATE	REVISIONS ON SHEET

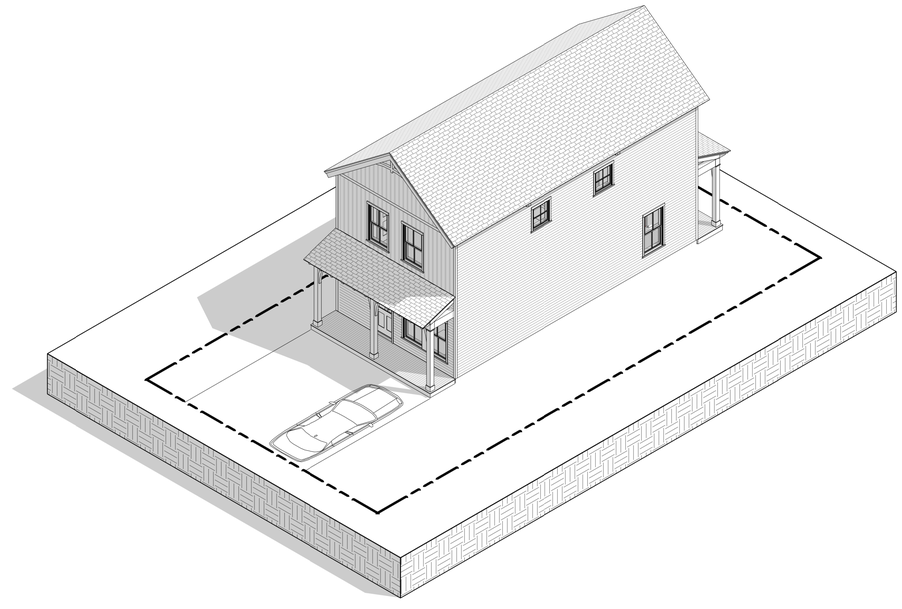
NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **3/16" = 1'-0"**
UTILE PROJECT NUMBER **2417**

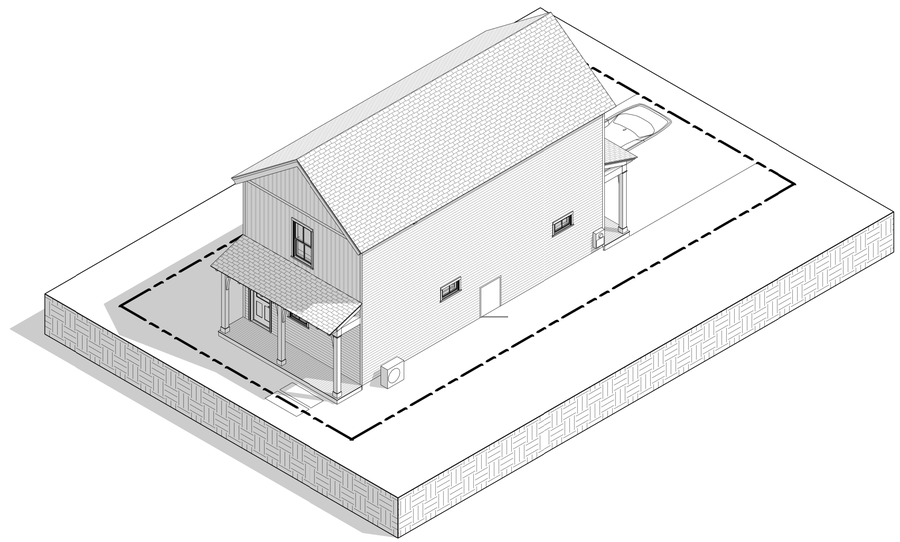
UNIT TYPE 2A - EXTERIOR ELEVATIONS

A-2A-3.01

11/10/2025 2:56:52 PM



2 UNIT TYPE 2A - AXONOMETRIC 1



1 UNIT TYPE 2A - AXONOMETRIC 2

THORNTON HILL

MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION
02/20/2025	PERMITTING
04/11/2025	DD PRICING
05/08/2025	CD PRICING

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

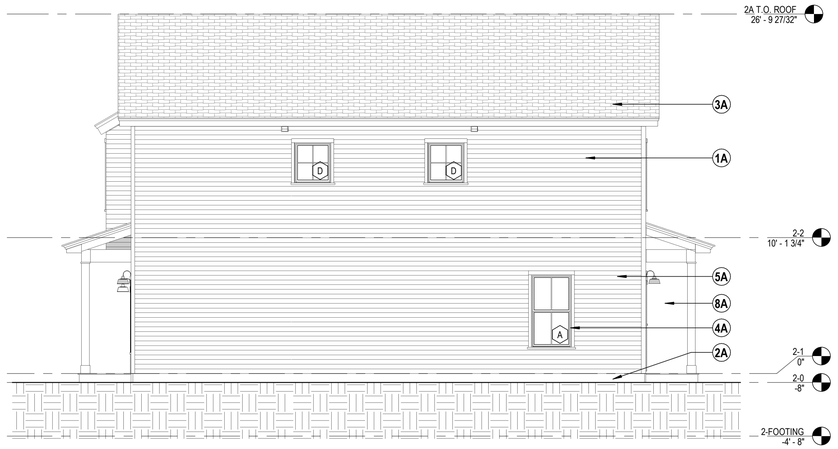
SCALE

UTILE PROJECT NUMBER
2417

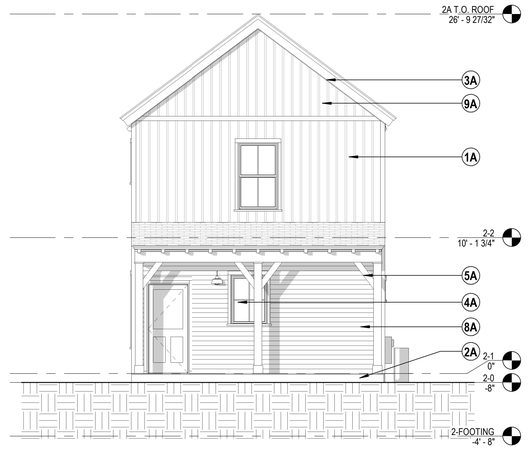
UNIT TYPE 2A - AXONOMETRICS

A-2A-3.11

11/10/2025 2:56:55 PM



4 UNIT TYPE 2B EAST EXTERIOR ELEVATION
3/16" = 1'-0"



3 UNIT TYPE 2B NORTH EXTERIOR ELEVATION
3/16" = 1'-0"

#A	ELEVATION KEY NOTE SCHEDULE
Number	Description
1A	VINYL CLAPBOARD SIDING, 4" EXPOSURE, BASIS OF DESIGN CERTAINTEED MONOGRAM
1B	VINYL TRANSITION TRIM
1C	EXPOSED RAFTER TAILS; PAINTED WOOD OR PVC CLAD
1D	VINYL CORNER BOARD
1E	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
2A	EXPOSED CONCRETE FROST WALL
3A	ARCHITECTURAL GRADE ASPHALT SHINGLE, BASIS OF DESIGN CERTAINTEED LANDMARK
4A	VINYL DOUBLE HUNG WINDOWS WITH DIVIDED LIGHT, BASIS OF DESIGN ANDERSEN 100 SERIES
5A	PVC TRIM BOARD, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
6A	SECTIONAL OVERHEAD DOOR, BASIS OF DESIGN OVERHEAD DOOR CORP. THERMACORE
7A	EXPOSED RAFTER TAILS; PAINTED WOOD OR PVC CLAD
8A	PREMADE COLUMN COVER WITH TRIM, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
9A	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
10A	GABLE BRACKET; BOD FYPON ASHER
10B	PVC KNEE BRACE; BASIS OF DESIGN FYPON BKT8X29X4
10C	GABLE BRACKET; BASIS OF DESIGN FYPON MEIER
10D	PVC KNEE BRACE; BASIS OF DESIGN FYPON BKTS18X24X6S

2 UNIT TYPE 2B SOUTH EXTERIOR ELEVATION
3/16" = 1'-0"

1 UNIT TYPE 2B WEST EXTERIOR ELEVATION
3/16" = 1'-0"

THORNTON HILL

MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION
02/20/2025	PERMITTING
04/11/2025	DD PRICING
05/08/2025	CD PRICING

ISSUE DATE	REVISIONS ON SHEET

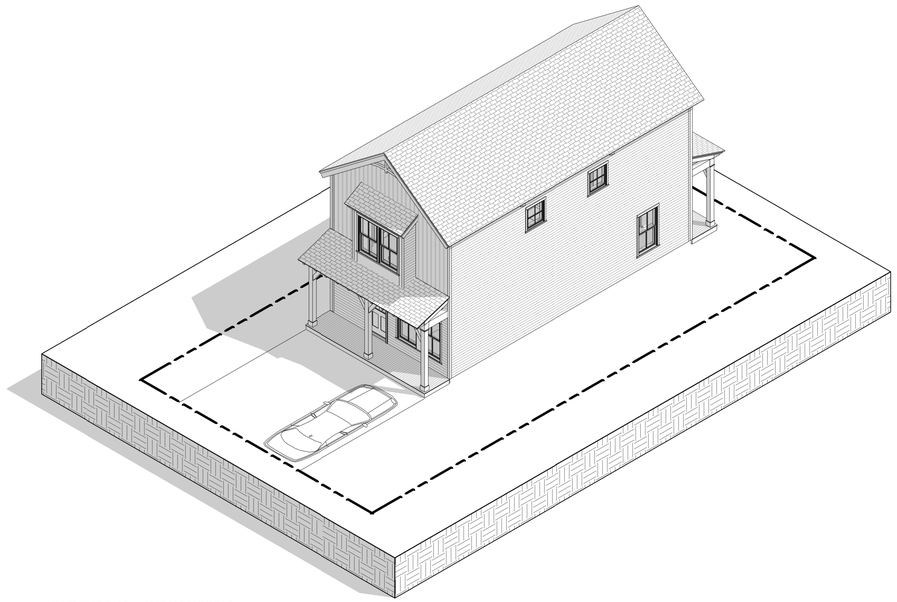
NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **3/16" = 1'-0"**
UTILE PROJECT NUMBER **2417**

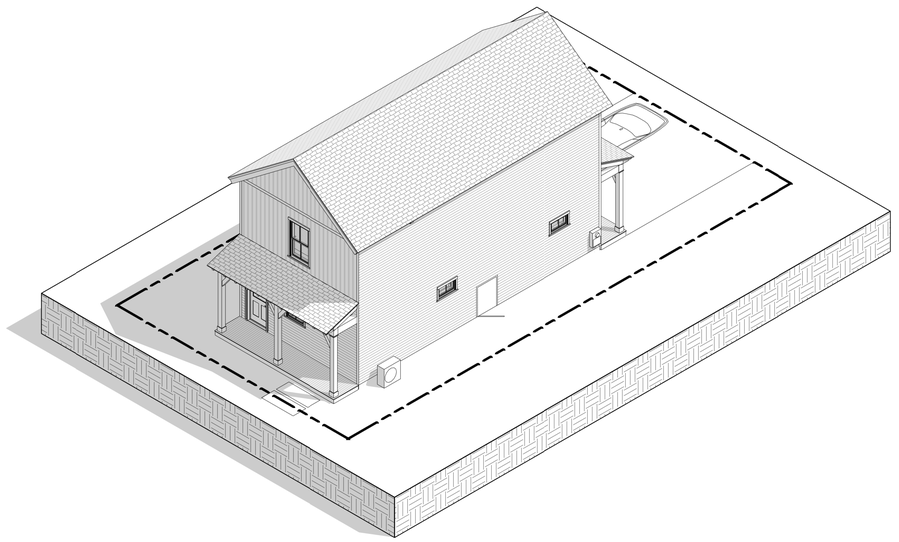
UNIT TYPE 2B - EXTERIOR ELEVATIONS

A-2B-3.01

11/10/2025 3:59:45 PM



2 UNIT TYPE 2B - AXONOMETRIC 1



1 UNIT TYPE 2B - AXONOMETRIC 2

THORNTON HILL

MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION
02/20/2025	PERMITTING
04/11/2025	DD PRICING
05/08/2025	CD PRICING

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE.

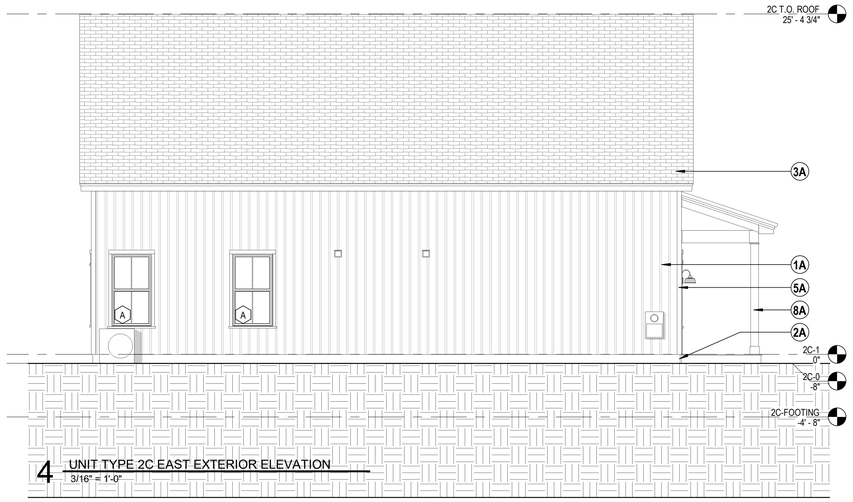
SCALE

UTILE PROJECT NUMBER
2417

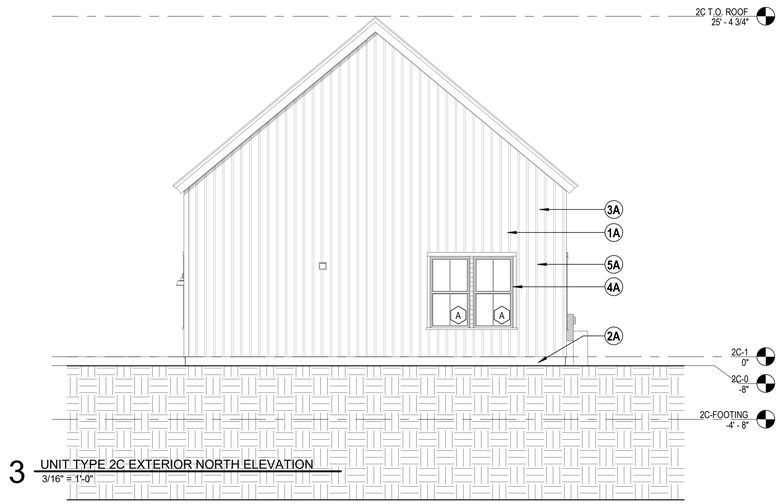
UNIT TYPE 2B - AXONOMETRICS

A-2B-3.11

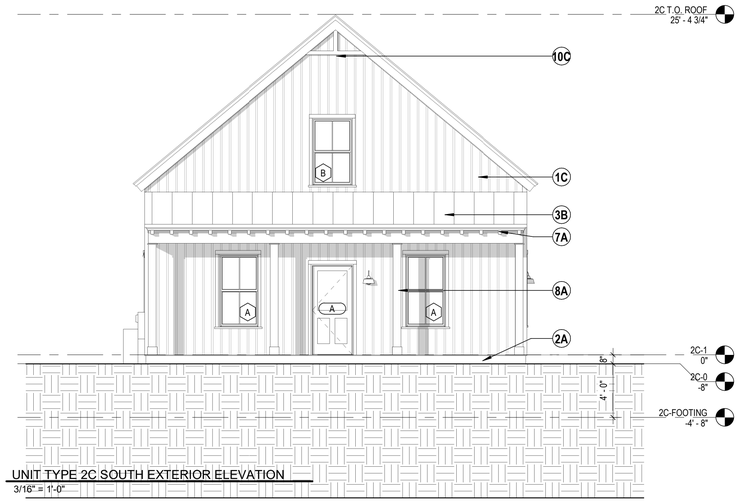
11/10/2025 2:57:04 PM



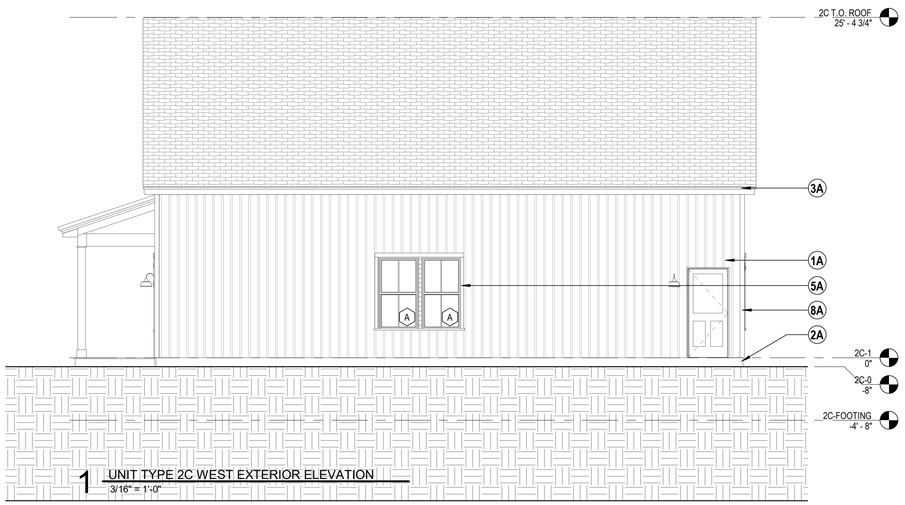
4 UNIT TYPE 2C EAST EXTERIOR ELEVATION
3/16" = 1'-0"



3 UNIT TYPE 2C EXTERIOR NORTH ELEVATION
3/16" = 1'-0"



2 UNIT TYPE 2C SOUTH EXTERIOR ELEVATION
3/16" = 1'-0"



1 UNIT TYPE 2C WEST EXTERIOR ELEVATION
3/16" = 1'-0"

#A	ELEVATION KEY NOTE SCHEDULE
Number	Description
1A	VINYL CLAPBOARD SIDING, 4" EXPOSURE, BASIS OF DESIGN CERTAINTEED MONOGRAM
1B	VINYL TRANSITION TRIM
1C	EXPOSED RAFTER TAILS; PAINTED WOOD OR PVC CLAD
1D	VINYL CORNER BOARD
1E	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
2A	EXPOSED CONCRETE FROST WALL
3A	ARCHITECTURAL GRADE ASPHALT SHINGLE, BASIS OF DESIGN CERTAINTEED LANDMARK
4A	VINYL DOUBLE HUNG WINDOWS WITH DIVIDED LIGHT, BASIS OF DESIGN ANDERSEN 100 SERIES
5A	PVC TRIM BOARD, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
6A	SECTIONAL OVERHEAD DOOR, BASIS OF DESIGN OVERHEAD DOOR CORP. THERMACORE
7A	EXPOSED RAFTER TAILS; PAINTED WOOD OR PVC CLAD
8A	PREMADE COLUMN COVER WITH TRIM, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
9A	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
10A	GABLE BRACKET; BOD FYPON ASHER
10B	PVC KNEE BRACE; BASIS OF DESIGN FYPON BKT8X29X4
10C	GABLE BRACKET; BASIS OF DESIGN FYPON MEIER
10D	PVC KNEE BRACE; BASIS OF DESIGN FYPON BKTS18X24X6S

THORNTON HILL

MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION
02/20/2025	PERMITTING
04/11/2025	DD PRICING
05/08/2025	CD PRICING

ISSUE DATE	REVISIONS ON SHEET

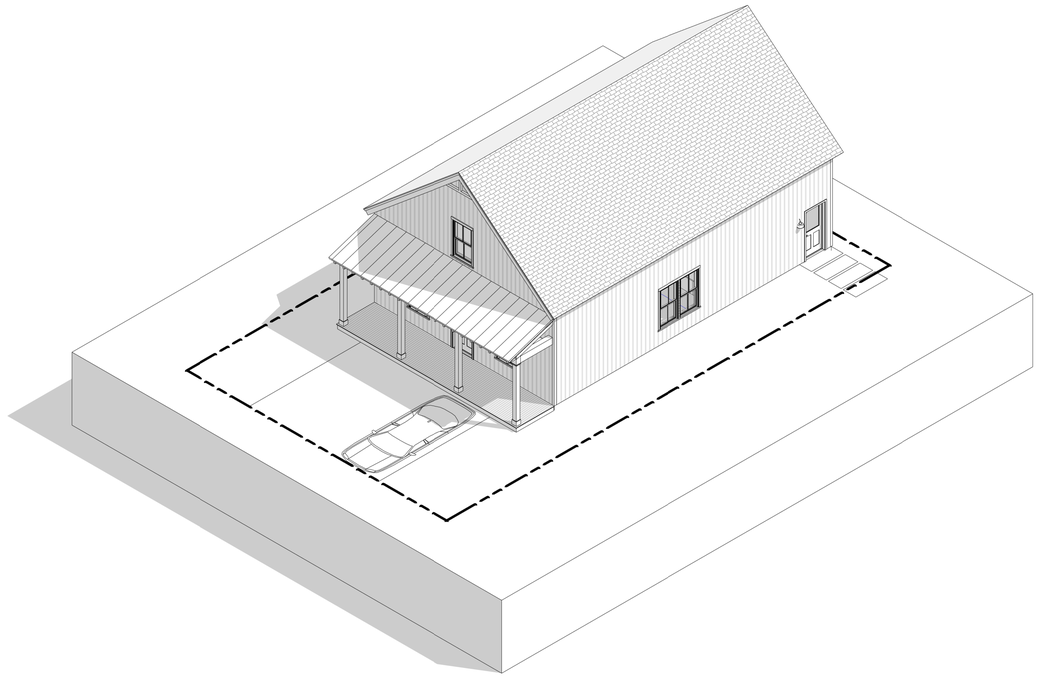
NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **3/16" = 1'-0"**
UTILE PROJECT NUMBER **2417**

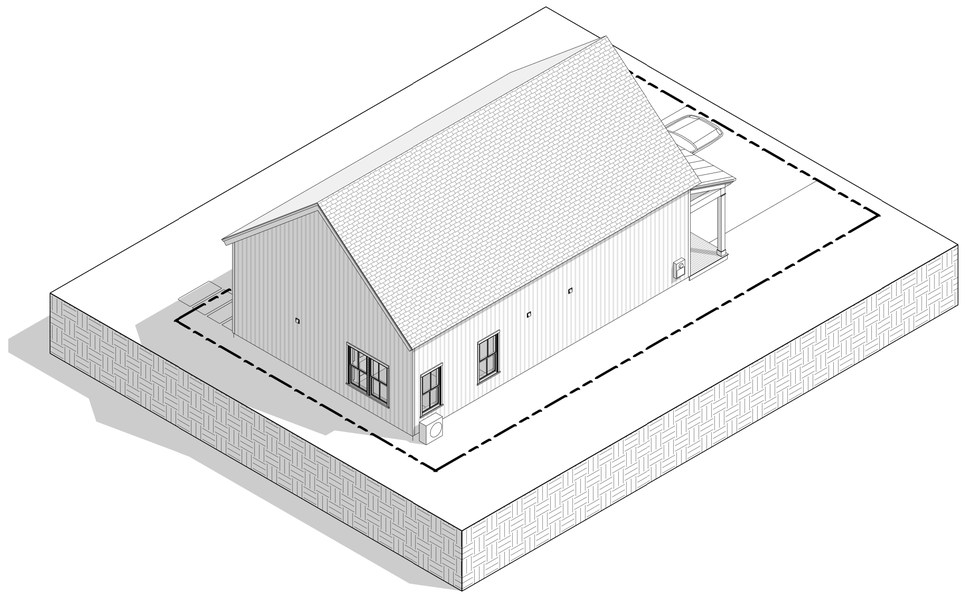
UNIT TYPE 2C - EXTERIOR ELEVATIONS

A-2C-3.01

11/10/2025 2:37:08 PM



2 UNIT TYPE 2C - AXONOMETRIC 1



1 UNIT TYPE 2C - AXONOMETRIC 2

THORNTON HILL

MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION
02/20/2025	PERMITTING
04/11/2025	DD PRICING
05/08/2025	CD PRICING

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

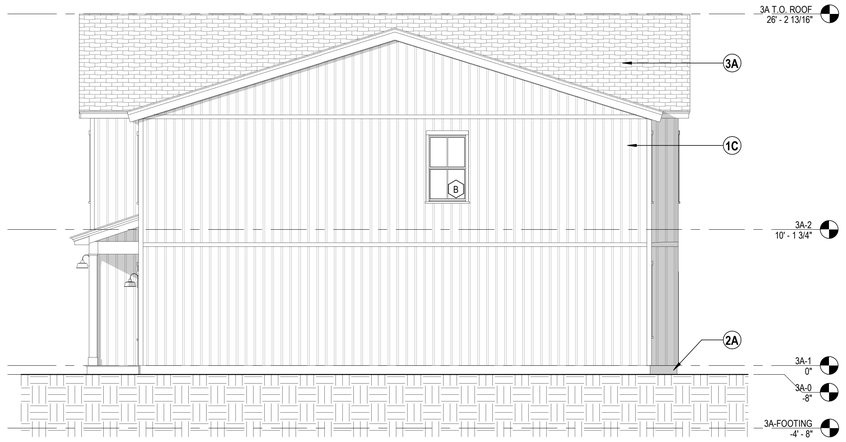
SCALE

UTILE PROJECT NUMBER
2417

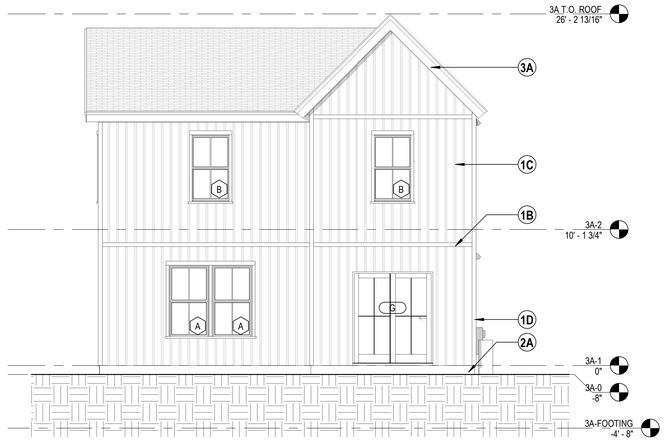
UNIT TYPE 2C - AXONOMETRICS

A-2C-3.11

11/10/2025 2:57:11 PM



4 UNIT TYPE 3A EAST EXTERIOR ELEVATION
3/16" = 1'-0"

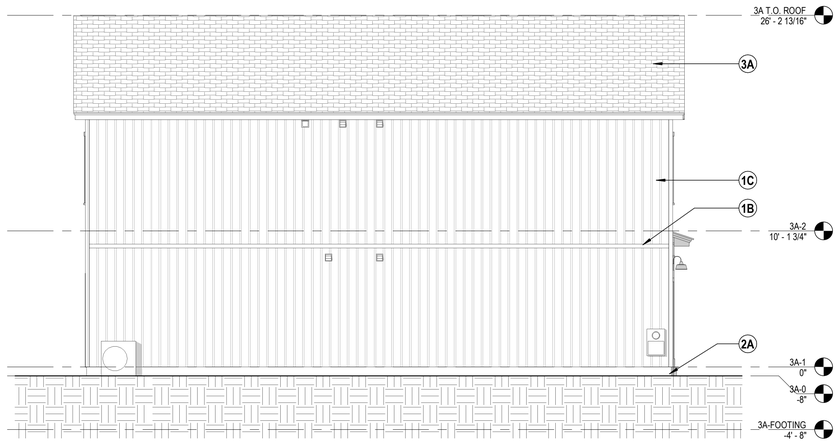


3 UNIT TYPE 3A NORTH EXTERIOR ELEVATION
3/16" = 1'-0"

#A ELEVATION KEY NOTE SCHEDULE	
Number	Description
1A	VINYL CLAPBOARD SIDING, 4" EXPOSURE, BASIS OF DESIGN CERTAINTEED MONOGRAM
1B	VINYL TRANSITION TRIM
1C	EXPOSED RAFTER TAILS; PAINTED WOOD OR PVC CLAD
1D	VINYL CORNER BOARD
1E	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
2A	EXPOSED CONCRETE FROST WALL
3A	ARCHITECTURAL GRADE ASPHALT SHINGLE, BASIS OF DESIGN CERTAINTEED LANDMARK
4A	VINYL DOUBLE HUNG WINDOWS WITH DIVIDED LIGHT, BASIS OF DESIGN ANDERSEN 100 SERIES
5A	PVC TRIM BOARD, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
6A	SECTIONAL OVERHEAD DOOR, BASIS OF DESIGN OVERHEAD DOOR CORP. THERMACORE
7A	EXPOSED RAFTER TAILS; PAINTED WOOD OR PVC CLAD
8A	PREMADE COLUMN COVER WITH TRIM, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
9A	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
10A	GABLE BRACKET; BOD FYPON ASHER
10B	PVC KNEE BRACE; BASIS OF DESIGN FYPON BKT8X29X4
10C	GABLE BRACKET; BASIS OF DESIGN FYPON MEIER
10D	PVC KNEE BRACE; BASIS OF DESIGN FYPON BKTS18X24X6S



2 UNIT TYPE 3A SOUTH EXTERIOR ELEVATION
3/16" = 1'-0"



1 UNIT TYPE 3A WEST EXTERIOR ELEVATION
3/16" = 1'-0"

THORNTON HILL
MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053
PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION
02/20/2025	PERMITTING
04/11/2025	DD PRICING
05/08/2025	CD PRICING

ISSUE DATE	REVISIONS ON SHEET

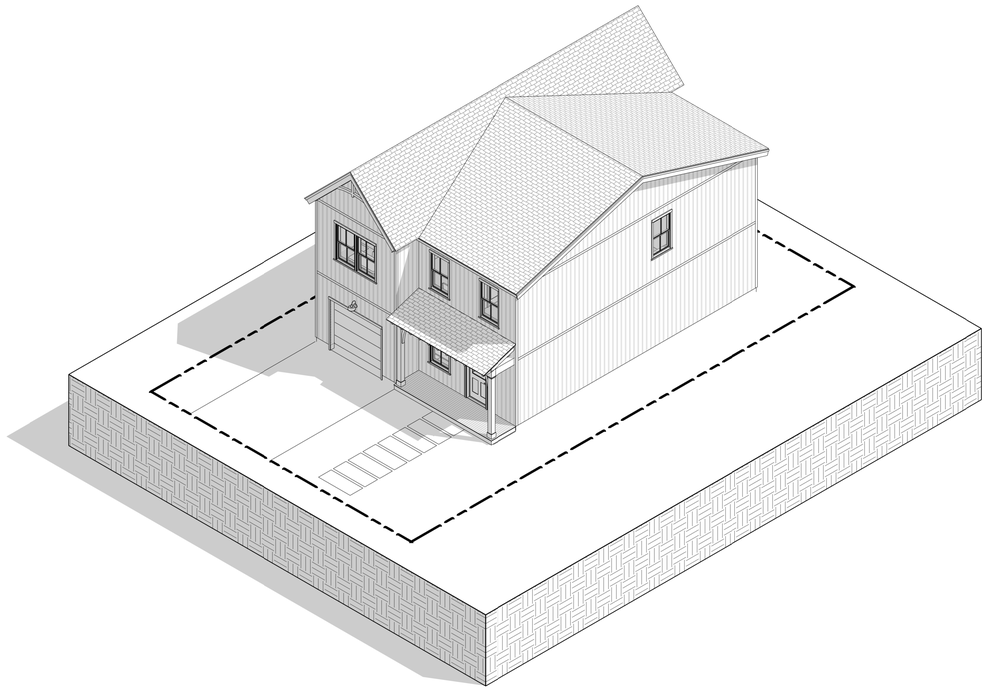
NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE.

SCALE **3/16" = 1'-0"**
UTILE PROJECT NUMBER **2417**

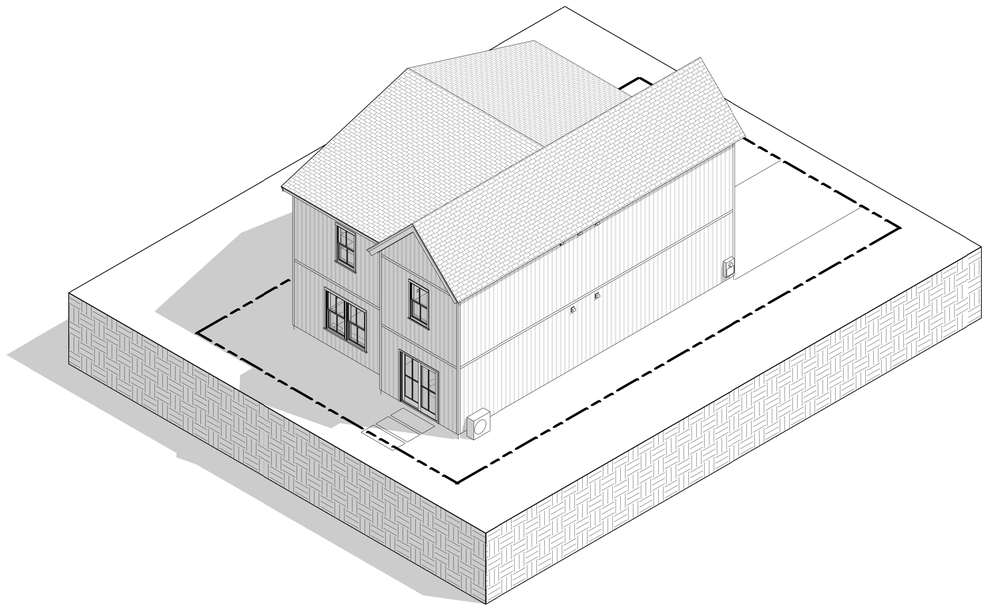
UNIT TYPE 3A - EXTERIOR ELEVATIONS

A-3A-3.01

11/10/2025 2:57:16 PM



2 UNIT TYPE 3A - AXONOMETRIC 1



1 UNIT TYPE 3A - AXONOMETRIC 2

THORNTON HILL

MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION
02/20/2025	PERMITTING
04/11/2025	DD PRICING
05/08/2025	CD PRICING

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

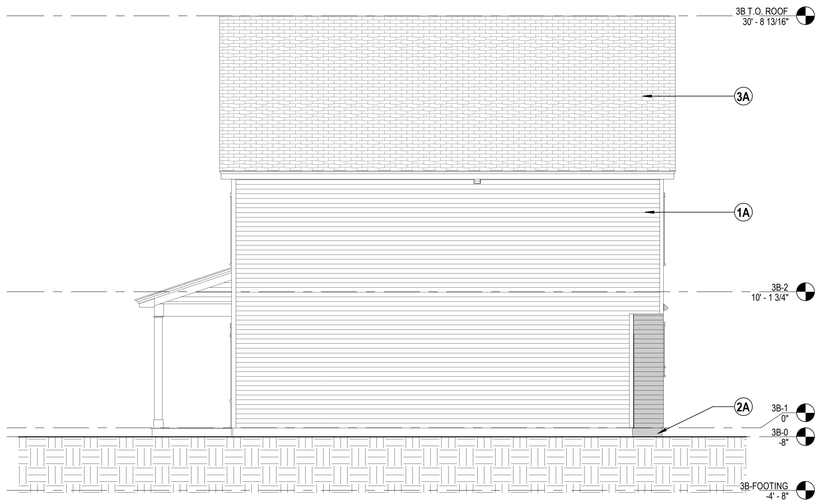
SCALE

UTILE PROJECT NUMBER
2417

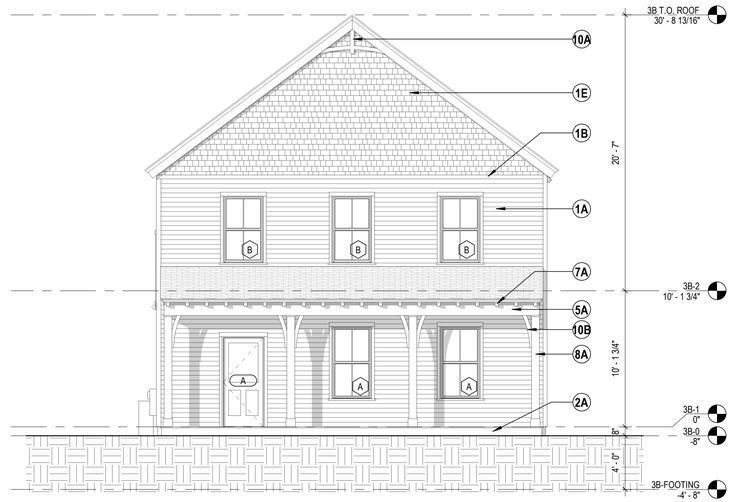
UNIT TYPE 3A - AXONOMETRICS

A-3A-3.11

11/10/2025 2:57:23 PM

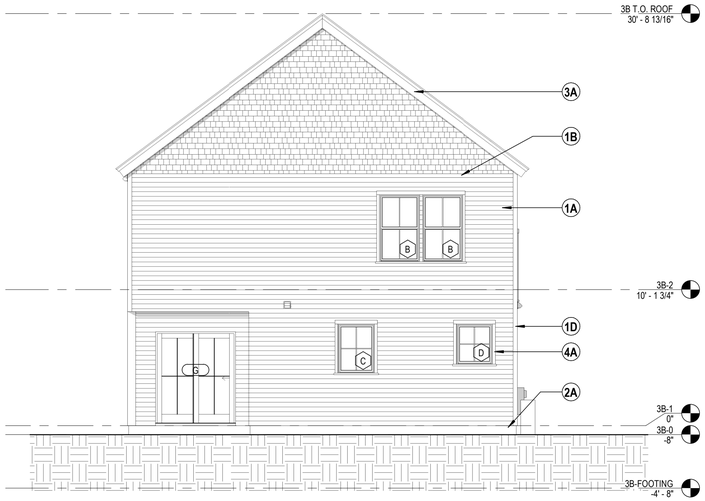


4 UNIT TYPE 3B EAST EXTERIOR ELEVATION
3/16" = 1'-0"

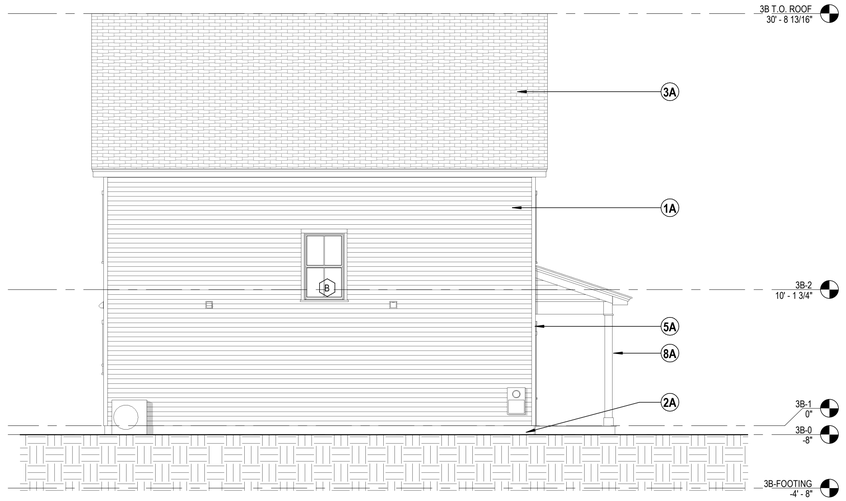


3 UNIT TYPE 3B NORTH EXTERIOR ELEVATION
3/16" = 1'-0"

#A	ELEVATION KEY NOTE SCHEDULE
Number	Description
1A	VINYL CLAPBOARD SIDING, 4" EXPOSURE, BASIS OF DESIGN CERTAINTEED MONOGRAM
1B	VINYL TRANSITION TRIM
1C	EXPOSED RAFTER TAILS; PAINTED WOOD OR PVC CLAD
1D	VINYL CORNER BOARD
1E	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
2A	EXPOSED CONCRETE FROST WALL
3A	ARCHITECTURAL GRADE ASPHALT SHINGLE, BASIS OF DESIGN CERTAINTEED LANDMARK
4A	VINYL DOUBLE HUNG WINDOWS WITH DIVIDED LIGHT, BASIS OF DESIGN ANDERSEN 100 SERIES
5A	PVC TRIM BOARD, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
6A	SECTIONAL OVERHEAD DOOR, BASIS OF DESIGN OVERHEAD DOOR CORP. THERMACORE
7A	EXPOSED RAFTER TAILS; PAINTED WOOD OR PVC CLAD
8A	PREMADE COLUMN COVER WITH TRIM, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
9A	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
10A	GABLE BRACKET; BOD FYPON ASHER
10B	PVC KNEE BRACE; BASIS OF DESIGN FYPON BKT8X29X4
10C	GABLE BRACKET; BASIS OF DESIGN FYPON MEIER
10D	PVC KNEE BRACE; BASIS OF DESIGN FYPON BKTS18X24X6S



2 UNIT TYPE 3B SOUTH EXTERIOR ELEVATION
3/16" = 1'-0"



1 UNIT TYPE 3B WEST EXTERIOR ELEVATION
3/16" = 1'-0"

THORNTON HILL
MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053
PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION
02/20/2025	PERMITTING
04/11/2025	DD PRICING
05/08/2025	CD PRICING

ISSUE DATE	REVISIONS ON SHEET

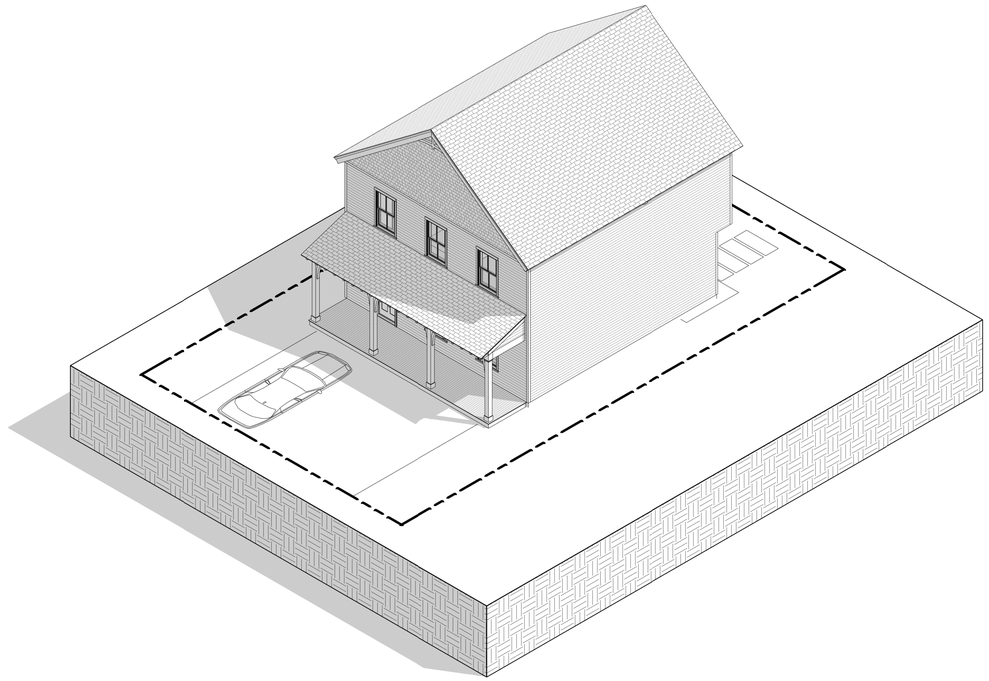
NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **3/16" = 1'-0"**
UTILE PROJECT NUMBER **2417**

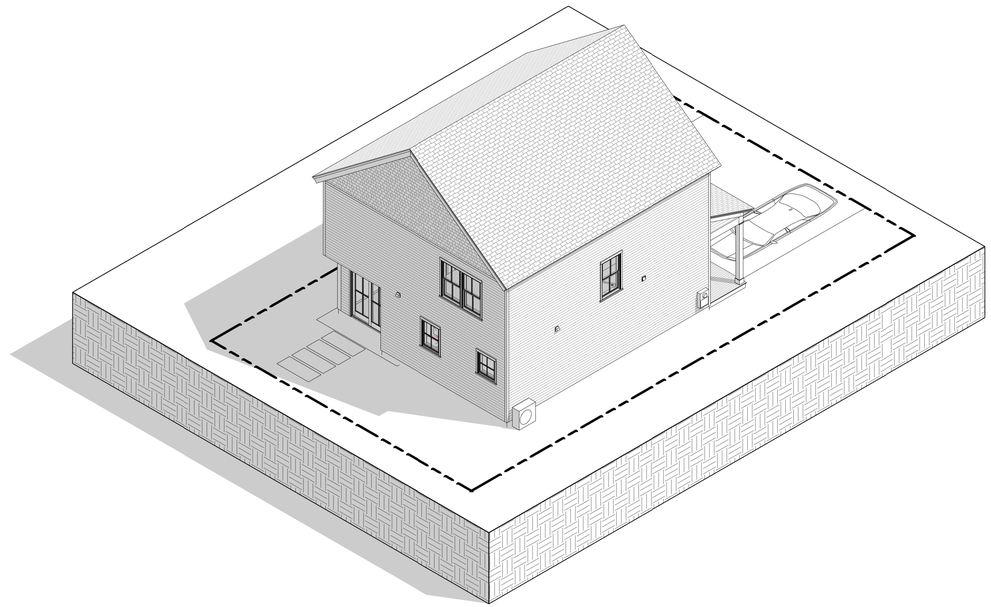
UNIT TYPE 3B - EXTERIOR ELEVATIONS

A-3B-3.01

11/10/2025 2:57:30 PM



2 UNIT TYPE 3B - AXONOMETRIC 1



1 UNIT TYPE 3B - AXONOMETRIC 2

THORNTON HILL

MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION
02/20/2025	PERMITTING
04/11/2025	DD PRICING
05/08/2025	CD PRICING

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE.

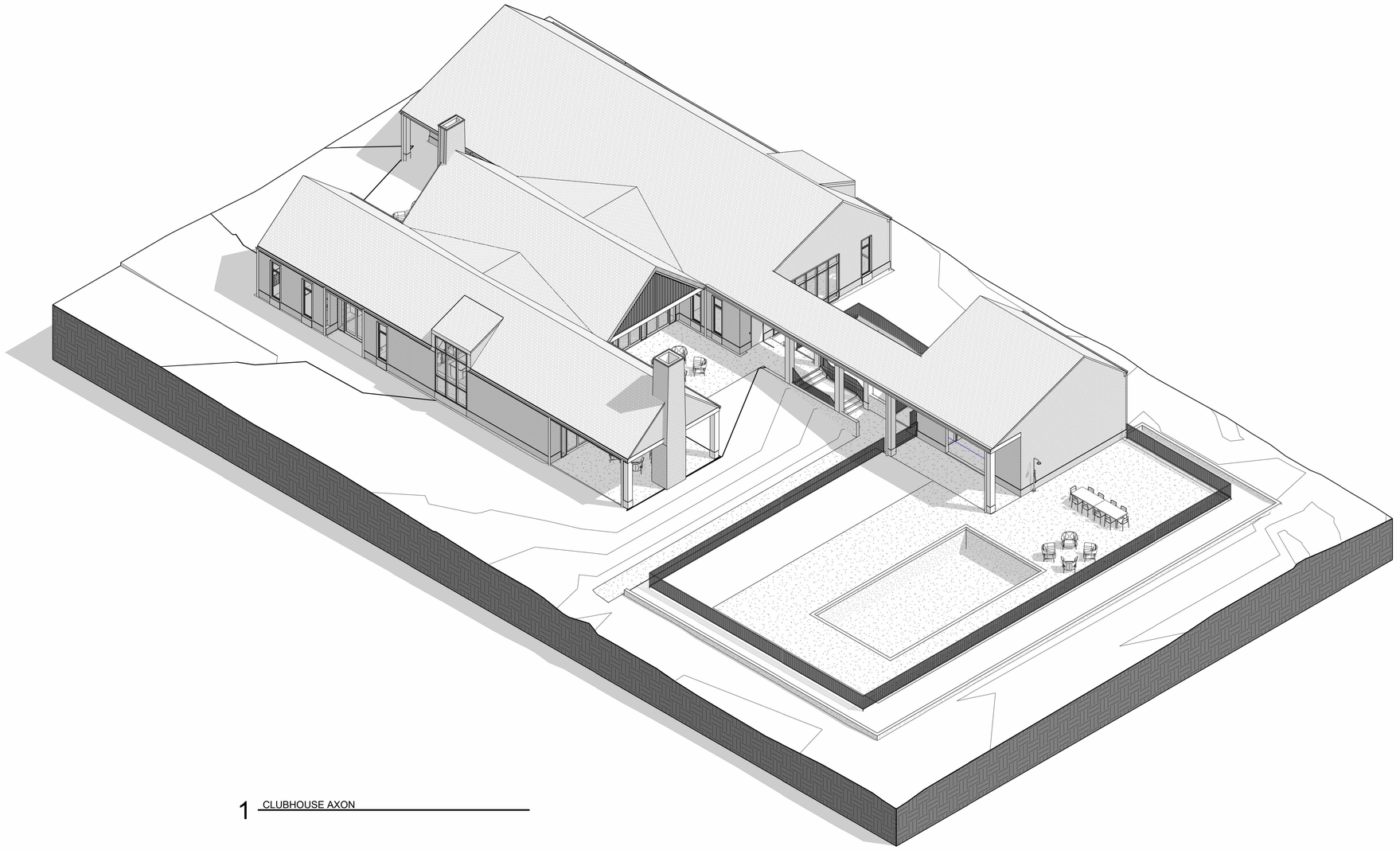
SCALE

UTILE PROJECT NUMBER
2417

UNIT TYPE 3B - AXONOMETRICS

A-3B-3.11

11/10/2025 2:57:34 PM



1 CLUBHOUSE AXON

THORNTON HILL

MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE **DOCUMENT SUBMISSION**

ISSUE DATE **REVISIONS ON SHEET**

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE

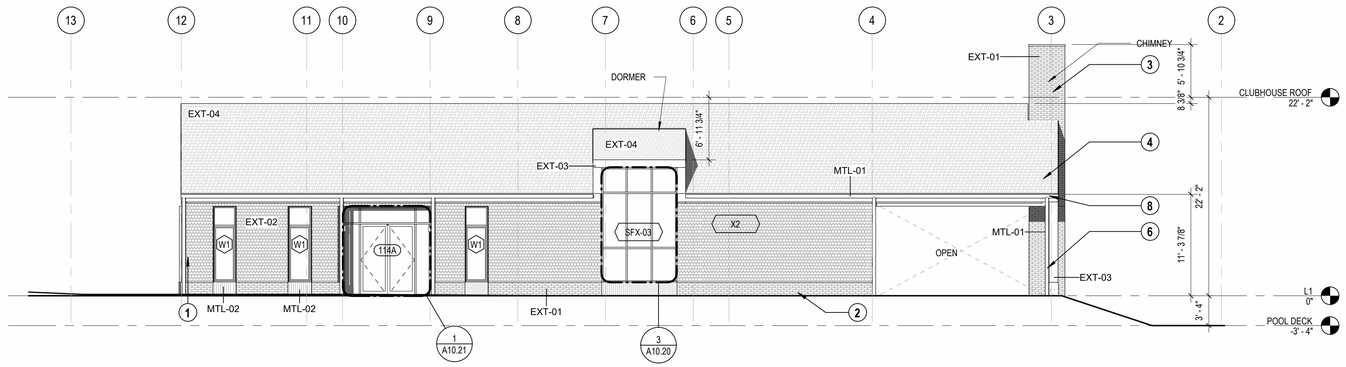
UTILE PROJECT NUMBER
2417

CLUBHOUSE AXON

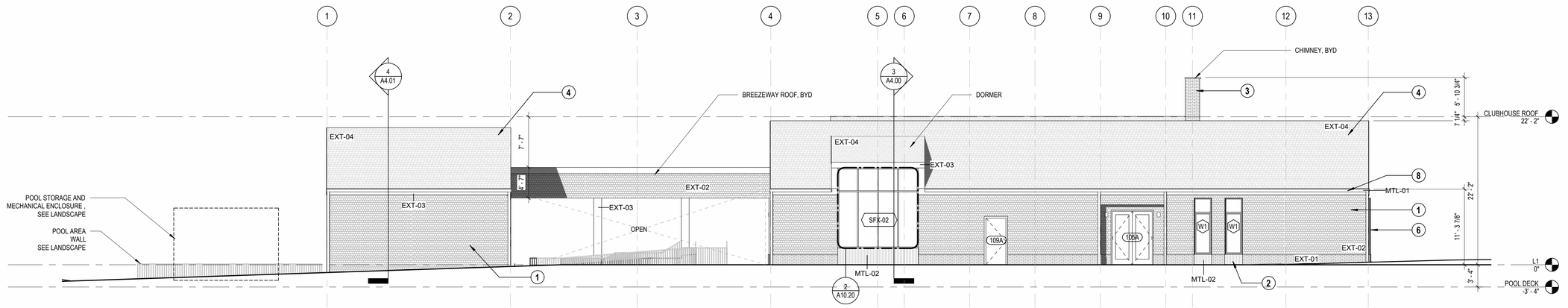
A0.00

11/10/2023 12:27:15 PM

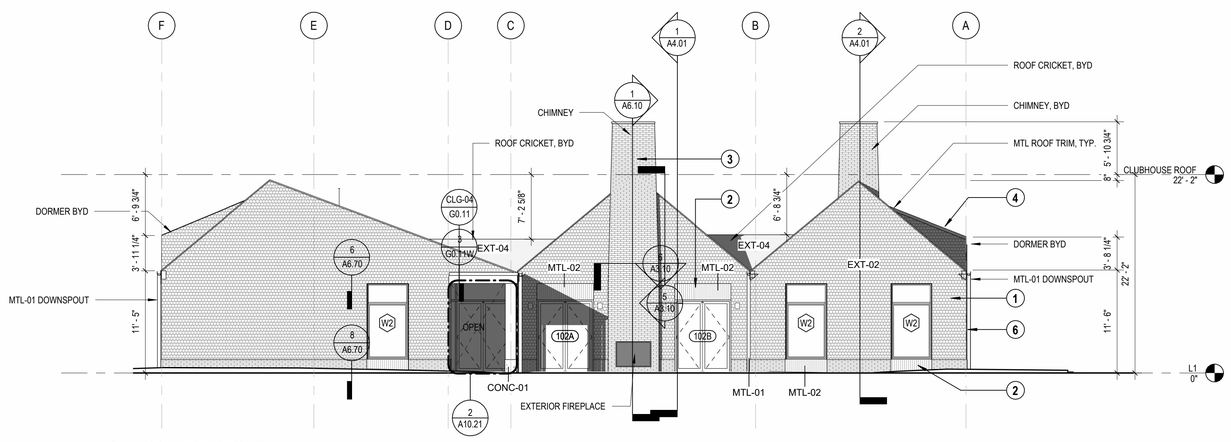
#A ELEVATION KEY NOTE SCHEDULE	
Number	Description
1	VINYL 5" SHINGLE, DRIFTWOOD BLEND MEDIUM, BASIS OF DESIGN CERTAINTEED SAWMILL INDIVIDUAL SHINGLE
2	PTD MTL PANEL
2A	BRICK WATER TABLE
3	BRICK A, RUNNING BOND
4	ASPHALT SHINGLES
6	DOWNSPOUT
7	GLAZED STOREFRONT W/ANODIZED ALUM FRAMES
8	GALVANIZED HALF-ROUND GUTTER



3 WEST ELEVATION - 01
1/8" = 1'-0"



2 EAST ELEVATION 01
1/8" = 1'-0"



1 NORTH ELEVATION 01
1/8" = 1'-0"

THORNTON HILL
MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053
PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

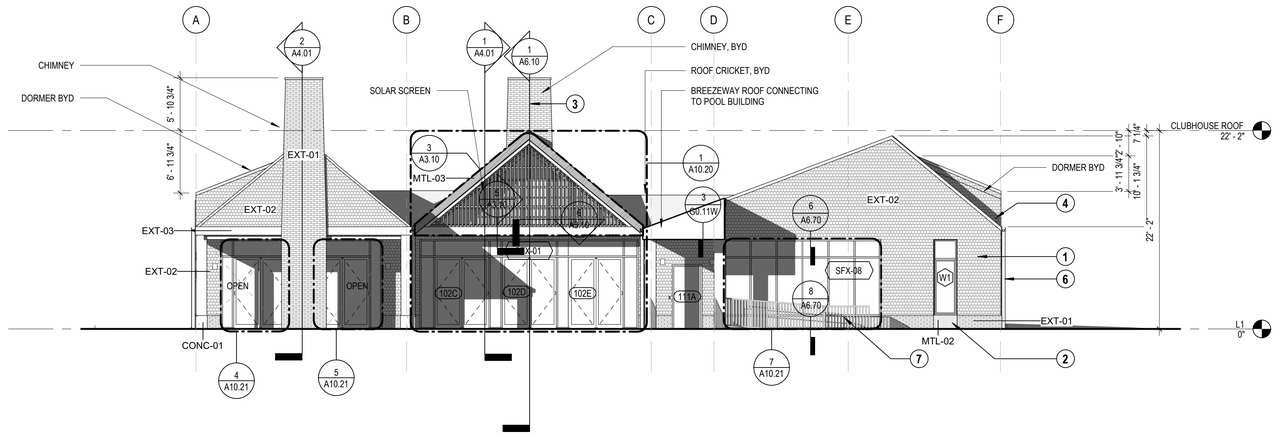
SCALE **1/8" = 1'-0"**
UTILE PROJECT NUMBER **2417**

EXTERIOR ELEVATIONS - CLUBHOUSE

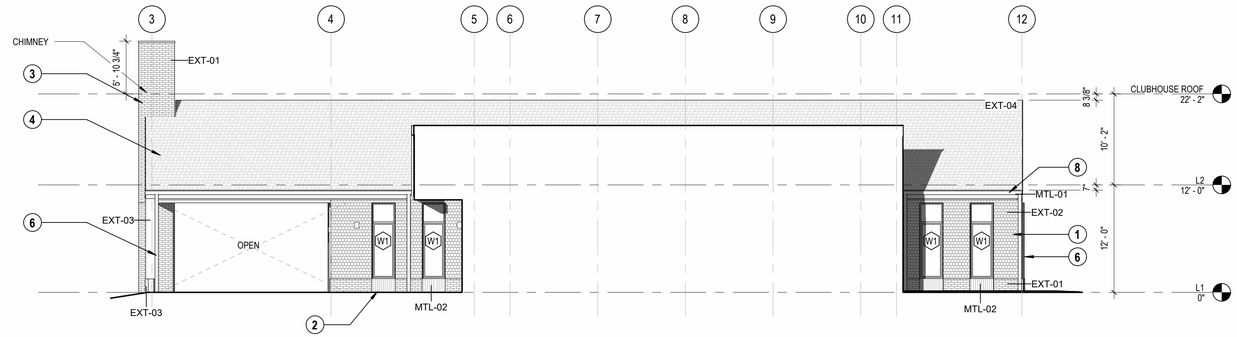
A3.08

11/10/2025 12:27:19 PM

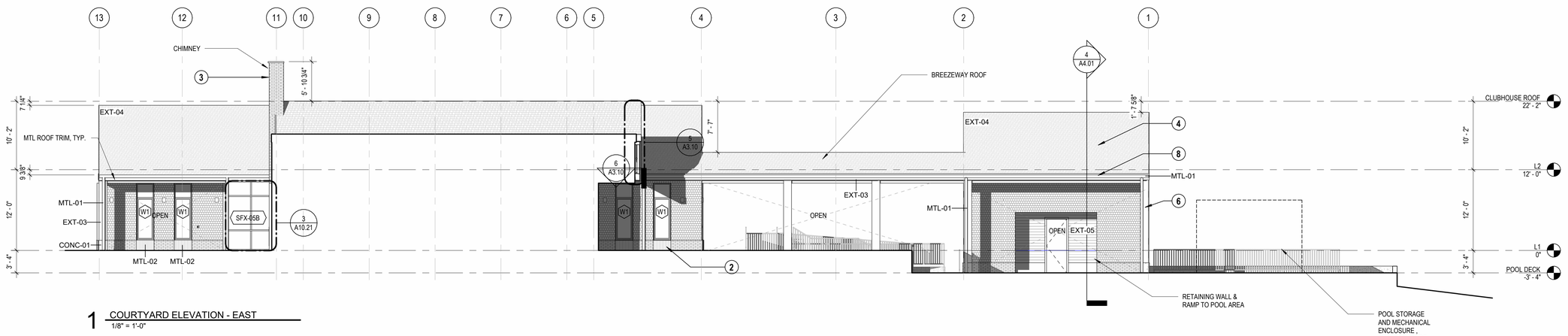
#A	ELEVATION KEY NOTE SCHEDULE
Number	Description
1	VINYL 5" SHINGLE, DRIFTWOOD BLEND MEDIUM, BASIS OF DESIGN CERTAINTEED SAWMILL INDIVIDUAL SHINGLE
2	PTD MTL PANEL
2A	BRICK WATER TABLE
3	BRICK A, RUNNING BOND
4	ASPHALT SHINGLES
6	DOWNSPOUT
7	GLAZED STOREFRONT W/ANODIZED ALUM FRAMES
8	GALVANIZED HALF-ROUND GUTTER



5 COURTYARD ELEVATION - NORTH
1/8" = 1'-0"



4 COURTYARD ELEVATION - WEST
1/8" = 1'-0"



1 COURTYARD ELEVATION - EAST
1/8" = 1'-0"

THORNTON HILL

MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE **DOCUMENT SUBMISSION**

ISSUE DATE **REVISIONS ON SHEET**

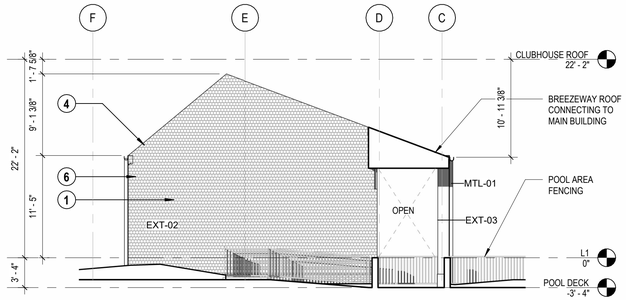
NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **1/8" = 1'-0"**
UTILE PROJECT NUMBER **2417**

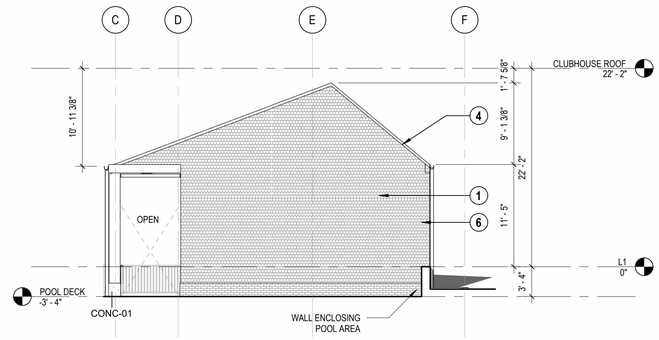
EXTERIOR ELEVATIONS - CLUBHOUSE

A3.09

11/10/2025 12:27:24 PM

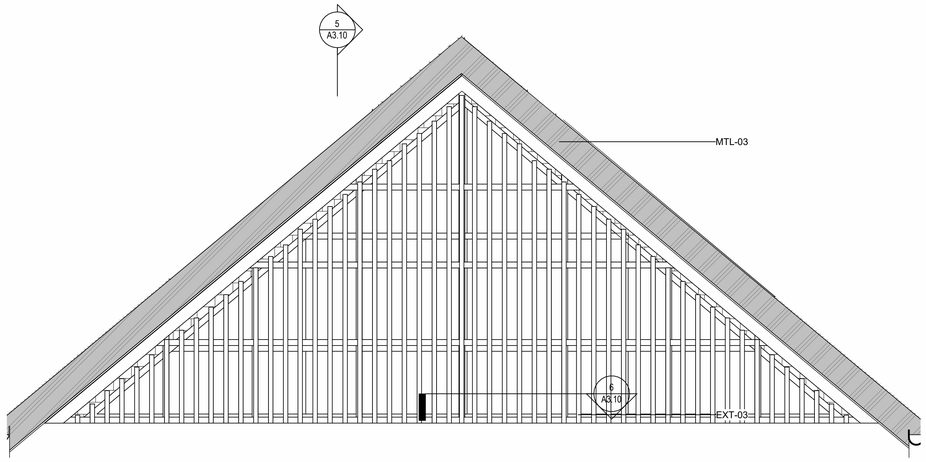


1 PATIO ELEVATION - SOUTH
1/8" = 1'-0"

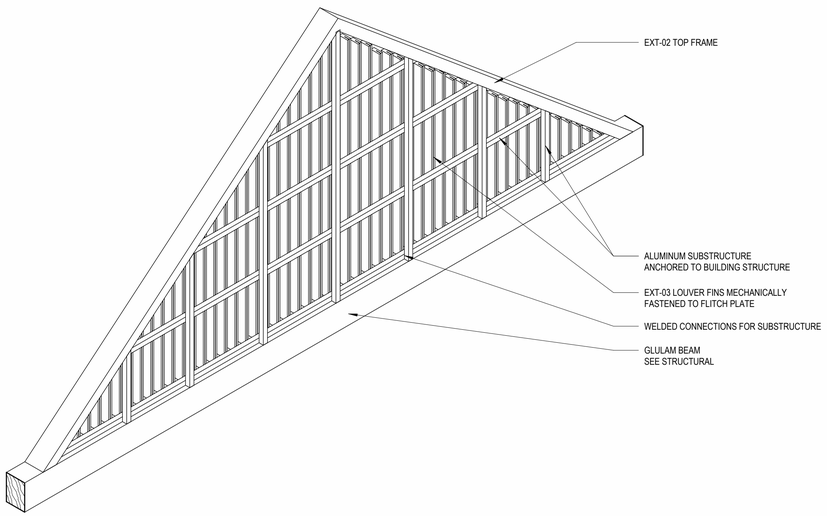


2 POOL BUILDING SOUTH ELEVATION
1/8" = 1'-0"

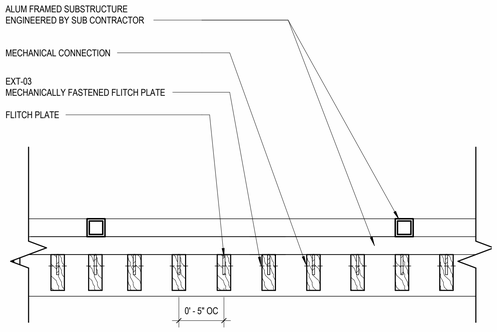
#A	ELEVATION KEY NOTE SCHEDULE
Number	Description
1	VINYL 5" SHINGLE, DRIFTWOOD BLEND MEDIUM, BASIS OF DESIGN CERTAINTEED SAWMILL INDIVIDUAL SHINGLE
2	PTD MTL PANEL
2A	BRICK WATER TABLE
3	BRICK A, RUNNING BOND
4	ASPHALT SHINGLES
6	DOWNSPOUT
7	GLAZED STOREFRONT W/ANODIZED ALUM FRAMES
8	GALVANIZED HALF-ROUND GUTTER



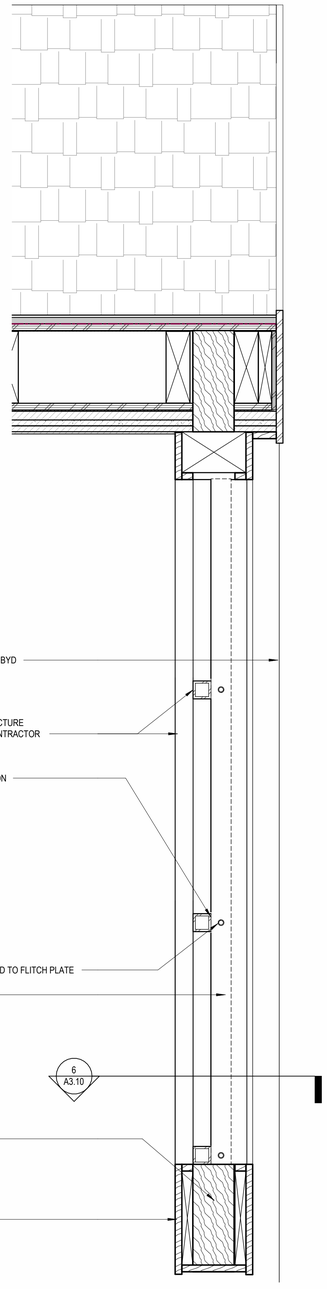
3 EXTERIOR ELEVATION SOUTH - SOLAR SCREEN
1/2" = 1'-0"



4 CLUBHOUSE SOLAR SCREEN - REAR AXONOMETRIC



6 CLUBHOUSE SOLAR SCREEN PLAN DETAIL
1 1/2" = 1'-0"



5 CLUBHOUSE SOLAR SCREEN SECTION DETAIL
1 1/2" = 1'-0"

THORNTON HILL
MAP 10, LOT 42 - 36
PILLSBURY ROAD,
LONDONDERRY NH 03053
PROJECT #2417

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN

115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

STAMP

ISSUE DATE	DOCUMENT SUBMISSION

ISSUE DATE	REVISIONS ON SHEET

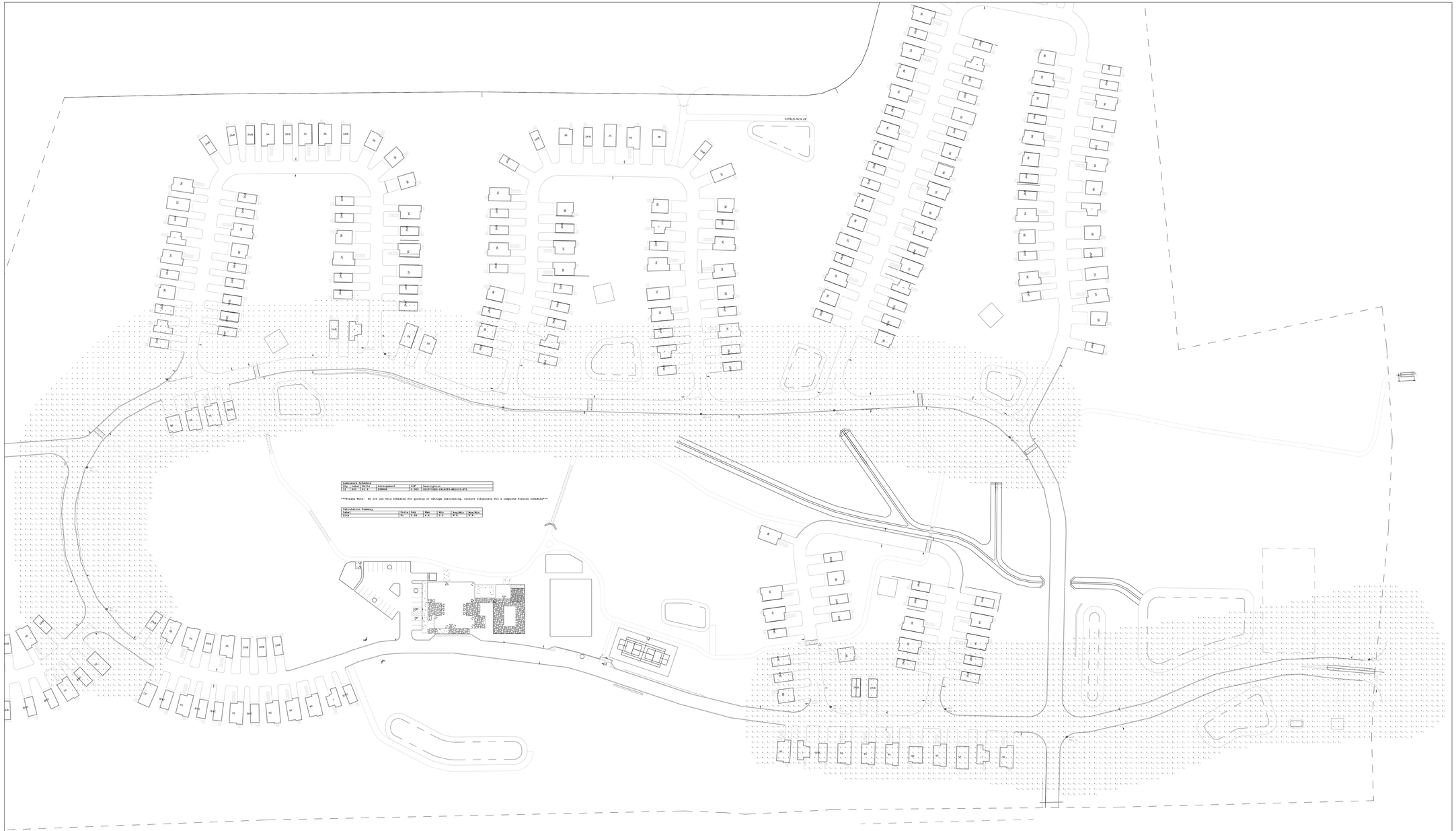
NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **As indicated**
UTILE PROJECT NUMBER **2417**

EXTERIOR ELEVATIONS - CLUBHOUSE

A3.10

11/10/2025 12:27:28 PM



Luminaire Schedule			
Qty	Label	Mounting	Arrangement	LLF	Description
1	2AB	4A	2AB0A	1.000	0LLF7(LBC-2414FE-WB2C1-2F)

Please Note: Do not use this schedule for quoting or voltage calculating, contact Illuminate for a complete fixture schedule

Calculation Summary						
Label	Qty	Avg	Max	Min	Avg/Min	Max/Min
Site	Pr	1.38	4.4	0.1	8.8	8.8

Project:
Pillsbury NH Housing Project - Site

Contact:
Sean Goulding
Specification Sales
(781) 272-2300 X211
sgoulding@omnilite.com

Detail: Photometric Calculation
Date: 11/12/2025
Revision: 1
Scale: 1" = 60'-0"
Drawn By: SHJ

Generated For:
VHB

illuminate
263 Winn Street
Burlington, MA 01803
(781) 272-2300

Drawing Number:

L-1

Sheet 1 of 1

Thornton Hill

36 Pillsbury Road, Londonderry, NH

PREPARED FOR

PROCOPIO

The Procopio Companies
35 Village Road, 7th Floor (702)
Middleton, MA 01949
781.233.3190

PREPARED BY

vhb

2 Bedford Farms Drive; Suite 200
Bedford, NH 03110
603.391.3900

November 13th, 2025



Table of Contents

1 Introduction 1

2 Existing Conditions 3

2.1 Description of Contributing Areas 3
2.2 Soil Conditions 4
2.3 Existing Hydrologic Flow Patterns 6
2.4 Hovey Road Drainage Analysis 7

3 Proposed Conditions 9

3.1 Description of Contributing Areas 9
3.2 Proposed Hydrologic Flow Patterns 11

4 Methodology & Design Criteria 13

4.1 Hydrologic Model Description 13
4.1.1 Design Storms 13
4.1.2 Curve Number 13
4.1.3 Travel Times & Time of Concentration 14
4.2 Hydraulic Calculations (Storm Drain Piping System) 14
4.3 Stormwater Detention 14
4.3.1 Outlet Control Structures 18
4.4 Riprap Outlet Protection 18
4.5 Base Calculations (WQV & WQF) 18

5 Stormwater Management Impacts / Conclusion 19

5.1 Stormwater Quantity Mitigation 19
5.2 Stormwater Quality Mitigation – Best Management Practices (BMPs) 20
5.2.1 Catch Basins with Sumps 20
5.2.2 Extended Detention Basins 20
5.2.3 Contech Filterra Manufactured Treatment Devices 21
5.2.4 Energy Dissipators 21
5.3 Erosion Control Measures 21
5.3.1 Temporary Erosion Control 21
5.3.2 Permanent Erosion Control 21
5.4 Conclusion 22

6 Figures 23

Figure 1: Site Location Map 23
Figure 2: Existing Conditions Color Coded Soil Plan 23
Figure 3: Proposed Conditions Color Coded Soil Plan 23
Figure 4: Existing Conditions Drainage Area Plan 23
Figure 5: Hovey Road Existing Conditions Drainage Area Plan 23
Figure 6: Proposed Conditions Drainge Area Plan 23

Appendices

Appendix A: Support Data
- USGS Map
- Web GIS Printouts
- Aerial Photograph of the Site
- BMP Worksheets
- Rainfall Data
- Geotechnical Test Pits & Location Plan
- Contech Filterra Information
- Hovey Road Drainage Worksheet

Appendix B: Hydrologic Calculations
- Existing Conditions: Project Site
- Existing Conditions: Hovey Road
- Proposed Conditions: Project Site

Appendix C: Hydraulic Calculations
- Storm Drain Piping Calculations: Project Site
- Storm Drain Piping Calcualtions: Hovey Road
- Riprap Apron/Energy Dissipation Calculations

Appendix D: Soil Investigations
- 36 Pillsbury Site Specific Soil Survey
- Hovey Road NRCS Web Soil Survey

Appendix E: Snow Storage Plan and Calculations
Appendix F: Inspection & Maintenance Manual
Appendix G: Salt Minimization Plan

List of Tables

Table No.	Description	Page
Table 1	Drainage Area Characteristics Summary (Existing Conditions)	4
Table 2	Soil Types	5
Table 3	Hovey Road Drainage Area Characteristics Summary (Existing Conditions)	8
Table 4	Hovey Road Soil Types	8
Table 5	Drainage Area Characteristics Summary (Proposed Conditions)	10
Table 6	Detention Basin Characteristics Summaries	15
Table 7	Peak Stormwater Runoff Rate Summary	20

1

Introduction

This report has been prepared by VHB to provide a brief description of existing and proposed drainage areas, design methodology, soil characteristics, and a summary of peak discharge rates for the project area.

The 94.15–acre Site is located along Pillsbury Road in Londonderry, New Hampshire (see Figure 1: Site Location Map). The Site is bounded by an unimproved section of Spring Road, and the Pinkerton Cemetery to the north, Pillsbury Road and abutting properties to the south, Hovey Road and abutting properties to the east, and abutting properties to the west. The Site is located within the surface watershed of the Merrimack River. Wetland Resources on the Site include roughly 8.5 acres of protected wetlands, as well as an intermittent stream, approximately 3,200 feet in length. Both the intermittent stream and wetlands present on site are not wet year-round, and periodically contain water after large storm events. The intermittent stream is an excavated drainage ditch, not a naturally occurring topographical feature.

The Site is presently vacant and was previously occupied by an apple orchard. Under existing conditions, stormwater runoff flows across orchard tree rows, wooded areas, and open grass pastures, mostly in a southerly direction, towards Pillsbury Road. Several gently sloped areas throughout the site have developed into wetland networks, which are not perpetually wet but do show signs of a frequent water presence. Some runoff is collected and routed via a manmade ditch, (which is now classified as an intermittent stream), that stretches roughly 3,200 feet from the interior of the site to the northern edge of Pillsbury Road. Stormwater runoff continues south under Pillsbury Road, mostly through two existing drainage culverts. These culverts eventually outfall into a large pond, named the 'Duck Swamp', which was identified to be a wetland over 10 acres by the Londonderry Wetlands Study Committee in 1991. A ridge line also exists along the eastern third of the subject property, and some stormwater flows east towards Hovey Road as well.

The proposed development of the site includes the construction of 250 freestanding residential dwelling units, arranged in 'clusters' around communal open spaces. In addition to these residential units, an accessory amenity and management building is to be constructed to serve the proposed development. Various outdoor amenities are proposed as well, such as recreational fields and an interconnecting network or walking trails. Under proposed conditions, stormwater runoff will be conveyed to stormwater detention and treatment measures, via drainage structures, closed drainage infrastructure and open channel drainage swales. Once stormwater runoff is appropriately treated and detained, it will be released through various outfall structures and routed towards either the wetland network, existing drainage culverts, or into existing public

drainage structures. Two stormwater detention basins are proposed to connect to the existing Londonderry drainage network in Hovey Road, via existing inlet structures. Because of this, the Town of Londonderry's Engineering Director has requested an additional analysis be carried out of the existing public storm drain network in Hovey Road. This analysis is further detailed in the appendices, and Section 2.4. Wherever possible existing drainage and grading patterns were maintained in the proposed design. Additionally, water quality and quantity control measures such as rain gardens, vegetated swales, surface sand filters, detention basins and manufactured treatment devices have been designed to protect the surrounding natural resources from potential stormwater runoff impacts.

A hydrologic model was developed to evaluate the existing and proposed drainage conditions on the Site. The results of the analyses indicate that there is no increase in peak discharge rates between the pre- and post-development conditions for the 2, 10, 25 and 50-year storm events. The pre- and post-development peak discharge rates are presented in the Stormwater Management Impacts Section of this report.

2

Existing Conditions

2.1 Description of Contributing Areas

The study area for the development is located within the Beaver Brook watershed. Most runoff from the study site flows into Duck Pond, which is a surface water body that outfalls into Beaver Brook. The existing drainage area is approximately 100-acres in size and is mostly sloped from north to south, with elevations ranging from 372' up to 482'. The area is currently undeveloped and ground cover consists of orchard, open grass and brush, dense woodland, and gravel-to-dirt roads.

The study area has been divided into 11 drainage areas that discharge into one of 6 design points. 3 of these existing drainage areas are offsite and discharge drainage into the project site. 2 of these 3 offsite drainage areas are existing detention basins from the Pinkerton & Pillsbury Cemeteries, which have outfalls directly entering the project site. The Town of Londonderry has provided stormwater runoff information for both discharge points, in the form of drainage design manuals from the original design of these detention basins.

The design points include two existing culverts at Pillsbury Road, two along the properties' edge adjacent to Hovey Road, one on the southeastern portion of the site's property edge, and one in a woodland near an adjacent residential neighborhood, in the vicinity of Kitt Lane.

Table 1 on the following page summarizes the study area and its characteristics.

Table 1 Drainage Area Characteristics Summary (Existing Conditions)

Design Point		Sub-Area(s)		Area (Acres)	Tc (Min.)	CN
DP-1	Existing 18" Culvert	EX-1	Existing Subcatchment 1	22.27	24.9	61
		EX-4	Existing Subcatchment 4	33.50	22.1	72
		EX-8	Existing Subcatchment 8	12.48	32.5	70
		OS-1	Offsite Subcatchment 1	6.35	19.2	58
		OS-2	Offsite Subcatchment 2	N/A[1]		
		OS-3	Offsite Subcatchment 3	N/A[1]		
DP-2	Existing 12" Culvert	EX-2	Existing Subcatchment 2	6.37	10.4	60
DP-3	Hovey Road[2]	EX-3	Existing Subcatchment 3	9.09	21.1	64
DP-4	Spring Road	EX-5	Existing Subcatchment 5	5.25	12.2	72
DP-5	Offsite	EX-7	Existing Subcatchment 7	1.67	8.9	71
DP-6	North Hovey Road[2]	EX-6	Existing Subcatchment 6	3.53	7.9	72
Total				100.51	n/a	67*

* Weighted CN Value

[1] Drainage design manuals were provided by the Town of Londonderry for the Pinkerton and Pillsbury Cemeteries. Two stormwater detention basins outfall into the project site, so hydrograph data was manually entered to represent these Sub-Areas for every respective storm event in this report's analysis.

[2] Drainage analysis was conducted separately for Hovey Road's subsurface public storm drain network. Subcatchments that drain towards DP-3 & DP-6 are analyzed to determine existing condition peak-runoff rates only.

2.2 Soil Conditions

The study area is comprised of several different soil types as defined by the Natural Resources Conservation Service (NRCS). As part of the required site investigations before development on the project site can occur, a Site Specific Soil Investigation was performed onsite, in October of 2024. The findings of that report are listed in Table 2, below, and is included in this Report's Appendices. Table 2, Soil Types, lists the designations, names, and hydrologic soil groups of the soils located within the study area. The Appendices contain a copy of the NRCS Web Soil Survey mapping and soil types found within the study area.

Table 2 Soil Types

Soil Designation	Soil Name	Hydrologic Soil Group
89A	Chatfield	B
89B	Chatfield	B
89C	Chatfield	B
89D	Chatfield	B
62A	Charlton	B
62B	Charlton	B
62C	Charlton	B
62D	Charlton	B
199C/ccabb	Dump of Organic Material	B
199D/ccabb	Dump of Organic Material	B
86A	Hollis	C
86B	Hollis	C
86C	Hollis	C
200A/hahde	Udorthents	E (undetermined)
200D/hahde	Udorthents	C
514B/P	Leicester	C
656A/P	Ridgebury	C
656B/P	Ridgebury	C
500A/ccacc	Udorthents	C
500B/ccacc, ccecc, ccccc	Udorthents	C
500C/ccecc	Udorthents	C
500D/ccebb, cccbc	Udorthents	C
550E/ccebb	Udorthents	C
500E/cccbc	Udorthents	C
600A/fcccd, fcecd, fcccd	Endoaquents	D
600D/fcccd, fcecd, fcccd	Endoaquents	D
600E/fcccd	Endoaquents	D
600B/fcecd	Endoaquents	D
600C/fcecd	Endoaquents	D
600B/fcccd	Endoaquents	D
44A	Montauk	C
44B	Montauk	C
44C	Montauk	C
199A/haade	Dumps, bark chips, organics	E (undetermined)

Source: Site Specific Soils Mapping Report 36 Pillsbury Road – VHB, 2024

2.3 Existing Hydrologic Flow Patterns

Stormwater runoff from the existing study area flows mostly in a southerly direction, towards Pillsbury Road. Some stormwater also flows towards Hovey Road, and a small portion of stormwater runoff flows north towards an undeveloped stretch of Spring Road, in the vicinity of Kitt Lane. An existing, man-made intermittent stream is located entirely within the project site, and helps to convey drainage south towards existing culverts underneath Pillsbury Road.

The following describes the existing stormwater flow patterns for each of the sub areas.

- Sub Area EX-1 flows in a southerly direction, towards Design Point 1, which is an existing 18" culvert underneath Pillsbury Road.
- Sub Area EX-2 flows in a southerly direction, towards Design Point 2, which is an existing 12" culvert underneath Pillsbury Road.
- Sub Area EX-3 flows to the east, towards Design Point 3, Hovey Road. Some of this stormwater runoff enters the Town of Londonderry's existing storm sewer network.
- Sub Area EX-4 flows in a southerly direction, via the existing intermittent stream, towards Design Point 1 (previously described). This intermittent stream is constricted by an existing 18" RCP culvert, which forms the delineation between EX-4 and EX-8.
- Sub Area EX-5 flows to the northwest, towards Design Point 4, an undeveloped section of Spring Road, in the vicinity of Kitt Lane.
- Sub Area EX-6 flows to the east, toward Design Point 6, the northern section of Hovey Road, adjacent to the project site.
- Sub Area EX-7 flows south, toward Design Point 5, the project site's property line near an adjacent residential lot.
- Sub Area EX-8 flows south, toward the existing intermittent stream, which conveys drainage further south to Design Point 1, an existing 18" culvert under Pillsbury Road.
- Sub Area OS-1 flows in an easterly direction, into the existing intermittent stream, and eventually to Design Point 1. This sub area encompasses offsite stormwater runoff that enters the project site.
- Sub Area OS-2 & OS-3 are the nearby Pillsbury and Pinkerton Cemeteries, which discharge stormwater runoff by way of two detention basins. Stormwater runoff from these basins eventually enters the intermittent stream, and leaves the site as Design Point 1

2.4 Hovey Road Drainage Analysis

As requested by the Town of Londonderry's Director of Engineering, a separate drainage analysis has been completed for a section of Hovey Road. The drainage area analyzed is immediately adjacent to the project, as well as further south towards Hovey Road's intersection with Pillsbury Road. The purpose of this analysis is to evaluate areas that contribute stormwater runoff to existing catch basins within Town ROW, as well as to perform a pipe capacity analysis to understand whether the existing system is at capacity and ensure that proposed outlet connections from 36 Pillsbury BMPs are not overwhelming the network.

Additional survey work was conducted to collect catch basin grate, structure invert, and drain pipe size & slope information. Impervious and pervious land coverages were determined, and a hydrologic model was developed to evaluate existing drainage conditions in this area. See Figure 5-1 for delineations of drainage sub areas that were analyzed.

The following describes the existing stormwater flow patterns for each of the sub areas.

- Sub Area Ex-1 flows in a southerly direction, into an existing catch basin, located on the western edge of Hovey Road, where runoff enters the Londonderry public storm drain network.
- Sub Area EX-2 flows in a southeasterly direction, towards two existing catch basins, located on either side of Hovey Road, where runoff enters the Londonderry public storm drain network.
- Sub Area EX-3 flows in a northerly direction, towards two existing catch basins, located on either side of Hovey Road, where runoff enters the Londonderry public storm drain network.
- Sub Area EX-4 flows in a northerly direction, towards two existing catch basins, located on either side of Hovey Road, where runoff enters the Londonderry public storm drain network.
- Sub Area EX-5 flows in a northerly direction, towards three existing catch basins, located on the northern and southern edges of Hovey Road. Runoff enters these catch basins, and is conveyed by the Londonderry public storm drain network.
- Sub Area EX-6 flows in an easterly direction, towards three catch basins, located on the northerly and southerly edges of Hovey Road. Runoff enters these catch basins, and is conveyed by the Londonderry public storm drain network.
- Sub Area EX-7 flows in an easterly direction, towards a catch basin on the southern edge of Hovey Road, where runoff enters the Londonderry public storm drain network.
- Sub Area EX-8 flows in an easterly direction, towards three catch basins, located on the northerly and southerly edges of Hovey Road. Runoff enters these catch basins, and is conveyed by the Londonderry public storm drain network.
- Sub Area EX-9 flows in an easterly direction, towards a catch basin on the southerly edge of Hovey Road, where runoff enters the Londonderry public storm drain network.
- Sub Area EX-10 flows in an easterly direction, towards two catch basins, located on either side of Hovey Road, where runoff enters the Londonderry public storm drain network.
- Sub Area EX-11 flows in a southerly direction, where it enters one of two catch basins, located on either side of Hovey Road. Runoff from this sub area, along with all other sub areas in this analysis, is discharged from the network into a flared end structure, via an 18" RCP pipe. This outfall is Design Point 1.

› Sub Area Ex-12 flows in a southerly direction, towards a catch basin on the western edge of Hovey Road, where runoff enters the Londonderry public storm drain network. This catch basin is Design Point 2.

Table 3 below summarizes the studies area and it's characteristics.

Table 3 Hovey Road Drainage Area Characteristics Summary (Existing Conditions)

Design Point	Sub-Area(s)		Area (Acres)	Tc (Min.)	CN
DP-1 Network Outfall (FES)	EX-1	Existing Subcatchment 1	2.60	6.2	76
	EX-2	Existing Subcatchment 2	1.93	15.1	73
	EX-3	Existing Subcatchment 3	3.88	24.9	69
	EX-4	Existing Subcatchment 4	2.35	21.1	66
	EX-5	Existing Subcatchment 5	1.36	10.2	65
	EX-6	Existing Subcatchment 6	1.37	12.4	65
	EX-7	Existing Subcatchment 7	0.12	6.2	79
	EX-8	Existing Subcatchment 8	0.451	9.0	65
	EX-9	Existing Subcatchment 9	0.74	8.8	62
	EX-10	Existing Subcatchment 10	0.36	5.0	64
	EX-11	Existing Subcatchment 11	0.16	7.0	73
DP-2 Existing Catch Basin	EX-12	Existing Subcatchment 12	5.78	15.4	76
Total			21.09	n/a	71*

* Weighted CN Value

Because the project's Site Specific Soil Survey was already completed for the project site, the NRCS Web Soil Survey was utilized to determine soil types and hydrologic characteristics for drainage sub areas in this existing Hovey Road drainage analysis. The Soil Survey is a product of the Natural Resources Conservation Service (NRCS), and can be found in Appendix D. Table 4 below summarizes the soil designations, with their respective names and hydrologic soil groups, that were found onsite.

Table 4 Hovey Road Soil Types

Soil Designation	Soil Name	Hydrologic Soil Group
29B	Woodbridge Loam	C
43D	Canton Loam	B
140B	Chatfield-Holis-Canton Complex	B
140C	Chatsfield-Holis-Canton Complex	B
446A	Scituate-Newfields Complex	C
446B	Scituate-Newfields Complex	C
547A	Wapole Loam	A

Source: Soil Resource Report for Rockingham County, New Hampshire – NRCS, 2025

Once drainage areas were analyzed, the existing flows within the subsurface storm drain system could be estimated. The Rational Method and Bentley StormCAD were utilized for pipe capacity calculations, producing information on various pipes' full flow capacity, flow during the 25-year storm event, etc.

The storm drain capacity calculations for existing runoff flows in the Hovey Road public storm drain network are included in the appendices.

3

Proposed Conditions

3.1 Description of Contributing Areas

The proposed development for the study area includes the construction of 250 residential dwelling units, as well as an accessory amenity and management building. The residential units will be freestanding buildings arranged in 'Clusters' around communal open spaces. Landscaping, drainage improvements, indoor and outdoor amenity space, a recreational walkway network, and erosion control measures are also proposed (see Figure 6: Proposed Conditions Drainage Area Plan).

The proposed conditions sub-areas are comprised of the same 100.51 acre study area represented in the existing conditions drainage analysis. The proposed development will add approximately 16 acres of impervious area to the site with the remaining areas of the development covered with landscaping, grass, and/or existing vegetation.

Table 3 summarizes the proposed sub areas and their characteristics.

Table 5 Drainage Area Characteristics Summary (Proposed Conditions)

Design Point		Sub-Area(s)		Area (Acres)	Tc (Min.)	CN
DP-1	Existing 18" Culvert	PR-12	Proposed Subcatchment 12	0.67	6.1	72
		PR-14	Proposed Subcatchment 14	10.64	21.2	73
		PR-15	Proposed Subcatchment 15	3.14	12.4	72
		PR-16	Proposed Subcatchment 16	0.68	7.1	71
		PR-17	Proposed Subcatchment 17	1.75	11.4	71
		PR-18	Proposed Subcatchment 18	2.25	6.0	85
		PR-19	Proposed Subcatchment 19	5.06	6.0	84
		PR-20	Proposed Subcatchment 20	5.20	9.1	79
		PR-21	Proposed Subcatchment 21	6.46	30.1	69
		PR-23	Proposed Subcatchment 23	2.76	7.3	65
		PR-24	Proposed Subcatchment 24	0.41	6.0	61
		OS-1	Offsite Subcatchment 1	6.35	19.2	58
		OS-2	Offsite Subcatchment 2	N/A[1]		
		OS-3	Offsite Subcatchment 3	N/A[1]		
DP-2	Existing 12" Culvert	PR-1	Proposed Subcatchment 1	5.91	9.4	60
		PR-2	Proposed Subcatchment 2	4.31	7.8	61
		PR-4	Proposed Subcatchment 4	3.76	6.0	63
		PR-5	Proposed Subcatchment 5	4.77	6.0	70
		PR-6	Proposed Subcatchment 6	4.22	6.0	75
		PR-7	Proposed Subcatchment 7	9.26	6.0	81
		PR-8	Proposed Subcatchment 8	6.49	10.1	77
DP-3	Hovey Road[2]	PR-3	Proposed Subcatchment 3	1.14	6.0	72
		PR-10	Proposed Subcatchment 10	4.35	6.0	73
		PR-11	Proposed Subcatchment 11	4.27	6.0	80
DP-4	Spring Road	PR-22	Proposed Subcatchment 22	4.76	10.1	72
DP-5	Offsite	PR-9	Proposed Subcatchment 9	1.41	6.0	69
DP-6	North Hovey Road[2]	PR-13	Proposed Subcatchment 13	2.69	7.4	71
Total				100.51	n/a	72*

* Weighted CN Value

1 Drainage design manuals were provided by the Town of Londonderry for the Pinkerton and Pillsbury Cemeteries. Two stormwater detention basins outfall into the project site, so hydrograph data was manually entered to represent these Sub-Areas for every respective storm event in this report's analysis.

2 Drainage analysis was conducted separately for Hovey Road's subsurface public storm drain network. Subcatchments that drain towards DP-3 & DP-6 are analyzed to determine existing condition peak-runoff rates only.

3.2 Proposed Hydrologic Flow Patterns

The proposed development has been designed to direct the stormwater runoff from the site's impervious areas into an a network of detention basins and rain gardens. Runoff from the remaining areas within the study area will generally maintain their existing flow patterns.

The following describes the proposed stormwater flow patterns for each of the sub areas.

- Sub Area PR-1 flows in a southerly direction, towards Design Point 2.
- Sub Area PR-2 flows in a southerly direction, towards Design Point 2. Runoff is routed through Basin 1P.
- Sub Area PR-3 flows in a southeasterly direction, towards Design Point 3. Runoff is undetained, and flows offsite onto Hovey Road's ROW.
- Sub Area PR-4 flows in a southerly direction, towards Design Point 2, via a proposed drainage swale (R-3) and Basins 1P & 2P.
- Sub Area PR-5 flows in a southwesterly direction, towards Design Point 1. Runoff is collected into Basin 3P, routed through Swale 4R, then Basins 1P & 2P, and finally into Design Point-1.
- Sub Area PR-6 flows in a southwesterly direction, and is routed to Basin 4P. Runoff is then routed to Swale 6R, which outfalls into Basins 1P & 2P, then to Design Point-1.
- Sub Area PR-7 flows in a southwesterly direction, and is routed to Basin 5P. Runoff is then routed to Swale 7R, which outfalls into Basins 1P & 2P, then to Design Point-1.
- Sub Area PR-8 flows in a southerly direction, and is routed to Basin 6P, which outfalls into Basins 1P & 2P, then to Design Point-1.
- Sub Area PR-9 flows in an easterly direction, and eventually exits the project site towards Design Point 5, the project site's edge, shared with an abutting residential lot.
- Sub Area PR-10 flows in an easterly direction, and is routed to Basin 7P. Runoff then outfalls into an existing drainage structure, within the Town of Londonderry's storm drain network, towards Design Point 3.
- Sub Area PR-11 flows in an easterly direction, and is routed through Basin 11P before eventually exist the project site at an existing drainage structure, within the Town of Londonderry's storm drain network, towards Design Point 3.
- Sub Area PR-12 flows in a southerly direction, and is routed through a proposed wetland crossing, then outfalling directly into Sub Area PR-21. Runoff then flows into the existing drainage Swale 13R. Swale 13R flows through a proposed stream crossing, then is enevtually discharged offsite at Design Point 1, via Swale 15R.
- Sub Area PR-13 flows in an easterly direction, discharging towards Hovey Road, at a drainage structure in Londonderry's storm drain network, taken to be Design Point 6.
- Sub Area PR-14 is a large centrally located area that encompasses large portions of the wetland network. It flows in a southerly direction, outfalling into the existing stream. After passing under a proposed stream crossing, runoff flows through Swale 13R, though another stream crossing, into Swale 15R, and is finally discharged offsite at Design Point 1.
- Sub Area PR-15 flows in a southerly direction, outfalling into the existing stream, R-1. The stream carries runoff towards it's discharge offsite at DP-1.

- Sub Area PR-16 flows in a southerly direction, towards 3 wetland crossings. Runoff flows into Swale 16R, which is located within Sub Area PR-14. Runoff then flows through various stream crossings, Swales 13R & 15R, and then is finally discharged offsite at Design Point 1.
- Sub Area PR-17 flows in a southwesterly direction, and collecting into a proposed drainage structure. Stormwater outfall from the adjacent cemetery basins (represented as OS-2 & OS-3), also flows through PR-17 and into the same proposed drainage structure. Runoff then proceeds into Swale 16R, (through Sub Area PR-14), through various stream crossings, through Swales 13R & 15R, and is finally discharged offsite at Design Point 1.
- Sub Area PR-18 flows in a southerly direction, and is routed to Basin 8P. Runoff then flows through various stream crossings. Runoff is then carried through Swales 13R & 15R, and is finally discharged offsite at Design Point 1.
- Sub Area PR-19 flows in a southerly direction, and is routed to and detained at Basin 9P. Basin 9P outfalls into Swale 21R, which is within Sub Area PR-21. Runoff then enters the existing stream and crosses under a proposed stream crossing, then through Swale 15R, and finally discharging offsite at Design Point 1.
- Sub Area PR-20 flows in a southerly direction, and is routed to Basin 10P. Drainage then outfalls into the existing drainage ditch, represented by Swale 22R. This swale is within Sub Area PR-14. Runoff then flows through various wetland & stream crossings, then Swales 13R & 15R, before finally being discharged offsite at Design Point 1.
- Sub Area PR-21 is an undetained area on the western edge of the project site. It flows in a southerly direction, and into Swale 13R. Runoff then flows through a stream crossing, into Swale 15R, and is discharged offsite at Design Point 1.
- Sub Area PR-22 flows in a northerly direction, and eventually exits the project site at Design Point 4, an unimproved section of Spring Road.
- Sub Area PR-23 is an undetained area on the western edge of the project site, near Pillsbury Road. It flows in a southerly direction and is discharged offsite at Design Point 1.
- Sub Area PR-24 is the footprint of Stormwater BMP 2P, along with a limited area of pervious ground. Runoff in this sub area eventually outfalls at Design Point-1.
- Sub Area OS-1 flows in an easterly direction, into the existing intermittent stream, and eventually to Design Point 1. This sub area encompasses offsite stormwater runoff that enters the project site.
- Sub Area OS-2 & OS-3 are the nearby Pillsbury and Pinkerton Cemeteries, which discharge stormwater runoff by way of two detention basins. Stormwater runoff from these basins eventually enters the intermittent stream and leaves the site through Design Point 1.

The proposed development will add approximately 15.8 acres of impervious area to the project site. As a result, the peak stormwater runoff rates increase from pre- to post-development conditions. These increases in peak runoff rates will be mitigated by use of a network of rain gardens, detention basins and swales. These stormwater rain gardens and basins will mitigate the increased runoff rates by restricting stormwater outflow from the storage areas through the use of outlet control structures. The purpose and functions of the outlet control structures will be discussed in more detail later in this report. In addition to the detention basins and rain gardens being proposed, runoff swales will provide a limited reduction in peak stormwater runoff rates as well.

4

Methodology & Design Criteria

VHB used two separate methodologies to evaluate the hydrologic and hydraulic impacts for proposed development's stormwater runoff. VHB analyzed the proposed development's hydrologic impacts using the Soil Conservation Service (SCS) Technical Release 20 (TR-55) methodology and analyzed the development's hydraulic characteristics using the Rational Method to determine the flow rates used in the storm drain piping calculations. The following section summarizes the design parameters/constraints that were used during the drainage design for this development under the SCS and Rational Methodologies. Additionally, this section summarizes the methodology used for the development's proposed erosion control and stormwater treatment methods.

4.1 Hydrologic Model Description

VHB analyzed the proposed developments stormwater runoff impacts using the SCS TR-20 methodology. The hydrologic program HydroCAD, as developed by HydroCAD Software Solutions, LLC., was utilized to compute and develop the stormwater runoff model. HydroCAD's SCS TR-20 program is designed to model complex watersheds, such as the watershed analyzed in this report. The complexity of the watershed has been based on multiple land uses (surface conditions) with varying soil conditions and inter-connected sub-watersheds reflecting complex hydrologic flow patterns.

4.1.1 Design Storms

VHB analyzed the proposed stormwater impacts for the 2, 10, 25, and 50-year design storms. These rainfall events are based on a 24-hour storm duration using a Type III distribution curve. The appendices contain copies of the rainfall data charts used in the calculations.

4.1.2 Curve Number

VHB developed weighted curve numbers for each sub-area based on the different ground covers and hydrologic soil group types found within each area. The curve numbers were based on the SCS TR-55 methodology and are included in hydrologic calculations.

4.1.3 Travel Times & Time of Concentration

VHB calculated the Travel Times (Tt) and the Time of Concentrations (Tc) for each of the individual sub-areas using the hydraulically most distant point within each area. A minimum time of 6 minutes was used in the calculations. The Tt's and Tc's were based on SCS TR-55 methodology and are included in hydrologic calculations.

4.2 Hydraulic Calculations (Storm Drain Piping System)

VHB used the rational method to develop the flows used in the design the development's subsurface storm drain piping system. The drainage system was sized based on a 25 year design storm under pressurized flow conditions. VHB used the following design parameters and criteria to design the system:

- Minimum Pipe Size: 18 inches
- Pipe Flow Velocity Range: 2-10 feet per second (fps)
- HDPE Pipe Coefficient of Friction: 0.013
- Minimum Time of Concentration (Tc): 6 minutes
- Runoff Coefficients: 0.61 or 0.74 for open space (soil groups B or C, respectively)
- Runoff Coefficients: 0.58 or 0.71 for meadowlands (soil groups B or C, respectively)
- Runoff Coefficients: 0.56 or 0.70 for undisturbed wetlands (soil groups B or C, respectively)
- Runoff coefficients: 0.85 or 0.89 for gravel walking paths (soil groups B or C, respectively)
- Runoff Coefficient: 0.98 for pavement and roofs
- Design Software: StormCAD (Bentley)

The storm drain piping calculations are included in the appendices.

4.3 Stormwater Detention

The proposed development increases the amount of impervious area from that of the existing conditions; as a result, the runoff curve numbers will increase for the proposed conditions. The higher curve numbers will increase the calculated stormwater runoff rate from that of the existing site, therefore, stormwater detention has been proposed for this project. The various detention areas will mitigate the increased stormwater runoff rates by using outlet control structures to reduce the proposed stormwater discharge rates from the site. The proposed drainage swales will provide limited peak runoff reductions as well. Additionally, most detention areas have been designed as an extended detention basins that will provide stormwater treatment for the majority of the proposed development's stormwater runoff by retaining the runoff from the 2-year, 24 hour storm event and slowly discharging it over a 24- to 40-hour period. Where extended basins were impractical for treating runoff from impervious surfaces, Manufactured Treatment Devices (MTDs) are proposed. These will be described in in further detail in Section 5.1

VHB used the following design parameters and criteria to design the detention areas:

- Side Slopes: 3:1 (maximum)
- Design Storms: 1, 2, 10, 25, 50-year, 24-hour storm events

- Extended Detention Time: 24 to 40 hours
- Infiltration Rates: 2.5 inches per hour through extended detention sand filters. (Note, the Town of Londonderry does not allow infiltration to groundwater, and extended detention basins will be lined with geotextile fabric to prevent infiltration to groundwater.

Refer to the appendices for further information and design calculations.

Table 6 Detention Basin Characteristics Summaries

Basin 1P Characteristics		Proposed
Storage Volume		109,259 cf
Maximum Storage Height		396.0 ft
Peak Water Elevation	2 Year	391.6
	10 Year	393.0
	25 Year	394.3
	50 Year	394.8

Basin 2P Characteristics		Proposed
Storage Volume		28,961 cf
Maximum Storage Height		388.0 ft
Peak Water Elevation	2 Year	383.7
	10 Year	384.4
	25 Year	385.3
	50 Year	386.9

Basin 3P Characteristics		Proposed
Storage Volume		16,710 cf
Maximum Storage Height		448.60 ft
Peak Water Elevation	2 Year	444.2
	10 Year	445.7
	25 Year	446.6
	50 Year	447.6
Extended Detention Time (2-year storm)		24.1 hrs

Basin 4P Characteristics		Proposed
Storage Volume		10,317 cf
Maximum Storage Height		452.2 ft
Peak Water Elevation	2 Year	449.7
	10 Year	450.6
	25 Year	450.9
	50 Year	451.2
Extended Detention Time (2-year storm)		24.1 hrs

Basin 5P Characteristics		Proposed
Storage Volume		18,711 cf
Maximum Storage Height		453.2 ft
Peak Water Elevation	2 Year	451.3
	10 Year	451.8
	25 Year	452.0
	50 Year	452.2
Extended Detention Time (2-year storm)		25.8 hrs

Basin 6P Characteristics		Proposed
Storage Volume		15,230 cf
Maximum Storage Height		407.1 ft
Peak Water Elevation	2 Year	405.0
	10 Year	405.7
	25 Year	405.9
	50 Year	406.0
Extended Detention Time (2-year storm)		26.9 hrs

Basin 7P Characteristics		Proposed
Storage Volume		15,583 cf
Maximum Storage Height		450.0 ft
Peak Water Elevation	2 Year	447.3
	10 Year	447.8
	25 Year	448.4
	50 Year	449.0
Extended Detention Time (2-year storm)		24.2 hrs

Basin 8P Characteristics		Proposed
Storage Volume		6,508 cf
Maximum Storage Height		439.5 ft
Peak Water Elevation	2 Year	437.8
	10 Year	438.1
	25 Year	438.3
	50 Year	438.5
Extended Detention Time (2-year storm)		29.7 hrs

Basin 9P Characteristics		Proposed
Storage Volume		29,341 cf
Maximum Storage Height		457.2 ft
Peak Water Elevation	2 Year	446.6
	10 Year	446.9
	25 Year	447.1
	50 Year	447.4
Extended Detention Time (2-year storm)		60.6 hrs

Basin 10P Characteristics		Proposed
Storage Volume		11,693 cf
Maximum Storage Height		458.4 ft
Peak Water Elevation	2 Year	456.3
	10 Year	456.6
	25 Year	456.9
	50 Year	457.3
Extended Detention Time (2-year storm)		24.2 hrs

Basin 11P Characteristics		Proposed
Storage Volume		7,845 cf
Maximum Storage Height		456.0 ft
Peak Water Elevation	2 Year	454.2
	10 Year	454.7
	25 Year	454.9
	50 Year	455.0
Extended Detention Time (2-year storm)		27.0 hrs

4.3.1 Outlet Control Structures

The stormwater that discharges from the detention areas will be controlled through outlet control structures. The outlet control structure has been designed to reduce the peak outflow rates from the detention area for the design storm events.

The detention area has also been designed with an overflow outlet to handle emergency overflow conditions (i.e., malfunctioning or clogging of inlets) and consists of an emergency riprap stone-protected overflow spillway set below the top of the proposed berm.

Details of the Outlet Structure and Overflow Spillway are shown on the Detail Sheets of the project's Site Plans. The Town of Londonderry specifies how outlet structures should be configured, and the design of the outlet control structures is compliant with these specifications to the maximum extent practical.

4.4 Riprap Outlet Protection

VHB sized the riprap outlet protection using Chapter 4, Section 4-6.6, Outlet Protection of the New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices Selection& Design, December 2008, NHDES. The following design parameters represent the minimum acceptable riprap apron dimensions used for design (refer to the appendices for design computations):

- Apron Width: 10 feet
- Apron Length: 10 feet
- Median Stone Diameter: 0.5 feet
- Depth of Stone: 12 inches (minimum)

4.5 Base Calculations (WQV & WQF)

Water Quality Volume (WQV), and Water Quality Flow (WQF) calculations were performed in accordance with the New Hampshire DES Chapter Env-Wq 1500 – Alteration of Terrain. See Appendix A for specific BMP worksheets, as they pertain to subsurface sand filters and the use of Contech Filterra Manufactured Treatment Devices.

5

Stormwater Management Impacts / Conclusion

5.1 Stormwater Quantity Mitigation

Under the proposed conditions, the peak flow rates were calculated for the 2, 10, 25 and 50 year storm events. The peak runoff rates for the proposed conditions, in the absence of mitigation, are anticipated to increase over the existing condition rates. These peak flow increases are to be reduced to near current or under current peak runoff rates at Design Points 1, 2, & 3 by routing the runoff through the proposed detention areas. Due to the proposed site grading, the area contributing runoff to Design Point 4 will be smaller than the contributing area in the existing condition, so peak runoff rates are anticipated to be less at that point. The proposed development will incorporate a stormwater collection system that will capture runoff from impervious areas by means of deep sump (3' deep) catch basins, as well as overland flow in open channel swales and sheet flow across open spaces, and will then direct runoff to the proposed detention area.

The detention area is designed to attenuate site runoff by utilizing restrictive outlet control structure that will cause excess runoff to be temporarily detained within the detention area. The outlet control structure for the detention area includes restrictive outlet control devices and an emergency overflow spillway. The outlet structure will meter outflow rates from the detention area, such that the outflow will be equal to or below the existing flow rates for the design storm events. Table 7 provides a summary of the peak stormwater runoff rates from the proposed development.

Table 7 Peak Stormwater Runoff Rate Summary

Design Point		Condition	Peak Flow for Given Storm (cfs) 1-yr	2-yr	10-yr	25-yr	50-yr
1	Existing 18" Culvert	Existing	12.9	22.6	71.9	119.5	167.4
		Proposed	7.8	12.9	53.0	103.4	163.1
2	Existing 12" Culvert	Existing	0.4	1.0	5.4	10.1	15.1
		Proposed	0.3	0.9	5.2	9.7	14.5
3	Hovey Road	Existing	1.0	2.2	7.9	13.6	19.5
		Proposed	1.0	1.4	7.1	13.0	18.4
4	Spring Road	Existing	2.1	3.5	8.8	13.5	18.2
		Proposed	2.0	3.4	8.5	13.1	17.6
5	Offsite	Existing	0.7	1.1	3.0	4.6	6.2
		Proposed	0.5	0.9	2.5	4.0	5.5
6	North Hovey Road	Existing	1.6	2.7	6.8	10.5	14.1
		Proposed	1.1	1.9	5.0	7.8	10.8

5.2 Stormwater Quality Mitigation – Best Management Practices (BMPs)

The proposed Stormwater Management System contains several Best Management Practices (BMPs) that will provide treatment of site generated stormwater runoff.

The proposed BMPs are described below:

5.2.1 Catch Basins with Sumps

Stormwater from the paved surfaces on-site will be collected in deep sump (3-foot) catch basins. Catch basin sumps are effective pollution control devices for removal of large particulate and adsorbed pollutants. Catch basins with sumps are designed to collect sediment particles that are the largest constituents of the pollutant load in urban runoff. Regular maintenance and cleaning of catch basins is required to assure adequate performance of these structures.

5.2.2 Extended Detention Basins

Extended detention basins are designed to temporarily hold stormwater runoff from up to a 2-year storm event for 24 to 40 hours. This extended detention time allows for particulates to settle out of the runoff prior to discharge. By detaining stormwater for at least 24 hours, up to 90% TSS removal is possible. The appendices contain the back-up design information and extended detention time calculation for the proposed basin(s).

5.2.3 Contech Filterra Manufactured Treatment Devices

Contech Filterra Manufactured Treatment Devices (MTDs) are prefabricated structures that are placed alongside impervious surfaces (typically paved roadways), and collect stormwater runoff from these impervious surfaces. Runoff then infiltrates through various layers within the structure, such as organic material, soils with strong porosity characteristics, sand, and gravel. 4' x 8' units are capable of handling up to 0.245-cfs and providing up to an 80% total suspended solids (TSS) removal rate for the design storm.

5.2.4 Energy Dissipators

Energy dissipators (i.e., riprap stone protection) will be constructed below outlets of all pipes in the stormwater management system. The energy dissipators will allow the concentrated runoff from the drainage system to be discharged at non-erosive velocities to protect the receiving water resources. The appendices contain design information and calculations for the energy dissipators.

5.3 Erosion Control Measures

5.3.1 Temporary Erosion Control

During construction of the proposed development, the contractor shall be responsible for installation and maintenance of temporary sedimentation and erosion control measures to prevent off-site tracking and waterborne loss of earth sediment and debris. The specific measures proposed as a part of the project plan are shown in the Site Plan Package on the Sedimentation and Erosion Control Plan and the Erosion Control Details.

Removal of temporary erosion control measures will be prohibited until paving has been installed and vegetation (grass) is well established.

5.3.2 Permanent Erosion Control

At the completion of construction, all soils will be permanently stabilized by one or more of the following measures:

- **Parking/Access:** Driveways, parking areas and access roads will be stabilized with bituminous concrete pavement.
- **Landscaped Areas:** All disturbed areas, not permanently stabilized by pavement or buildings, will be covered with bark mulch, stone, sod or a minimum of [six (6)] inches of topsoil and seeded.
- **Pipe Outlets:** Scour protection (riprap) shall be constructed at the headwall outlet to prevent scouring.

Additionally, all catch basins will be constructed with deep sumps to collect sediment from parking areas and access roads.

5.4 Conclusion

By implementing standard stormwater management techniques, the proposed development can successfully mitigate its impacts on peak stormwater runoff rates. Furthermore, stormwater quality issues can be addressed through the proposed implementation of standard practices (i.e., extended detention basins, deep sump catch basins, manufactured treatment devices, etc.) that are accepted by the NH Department of Environmental Services Alteration of Terrain Bureau.

6

Figures

Figure 1: Site Location Map

Figure 2: Existing Conditions Color Coded Soil Plan

Figure 3: Proposed Conditions Color Coded Soil Plan

Figure 4: Existing Conditions Drainage Area Plan

Figure 5: Hovey Road Existing Conditions Drainage Area Plan

Figure 6: Proposed Conditions Drainge Area Plan

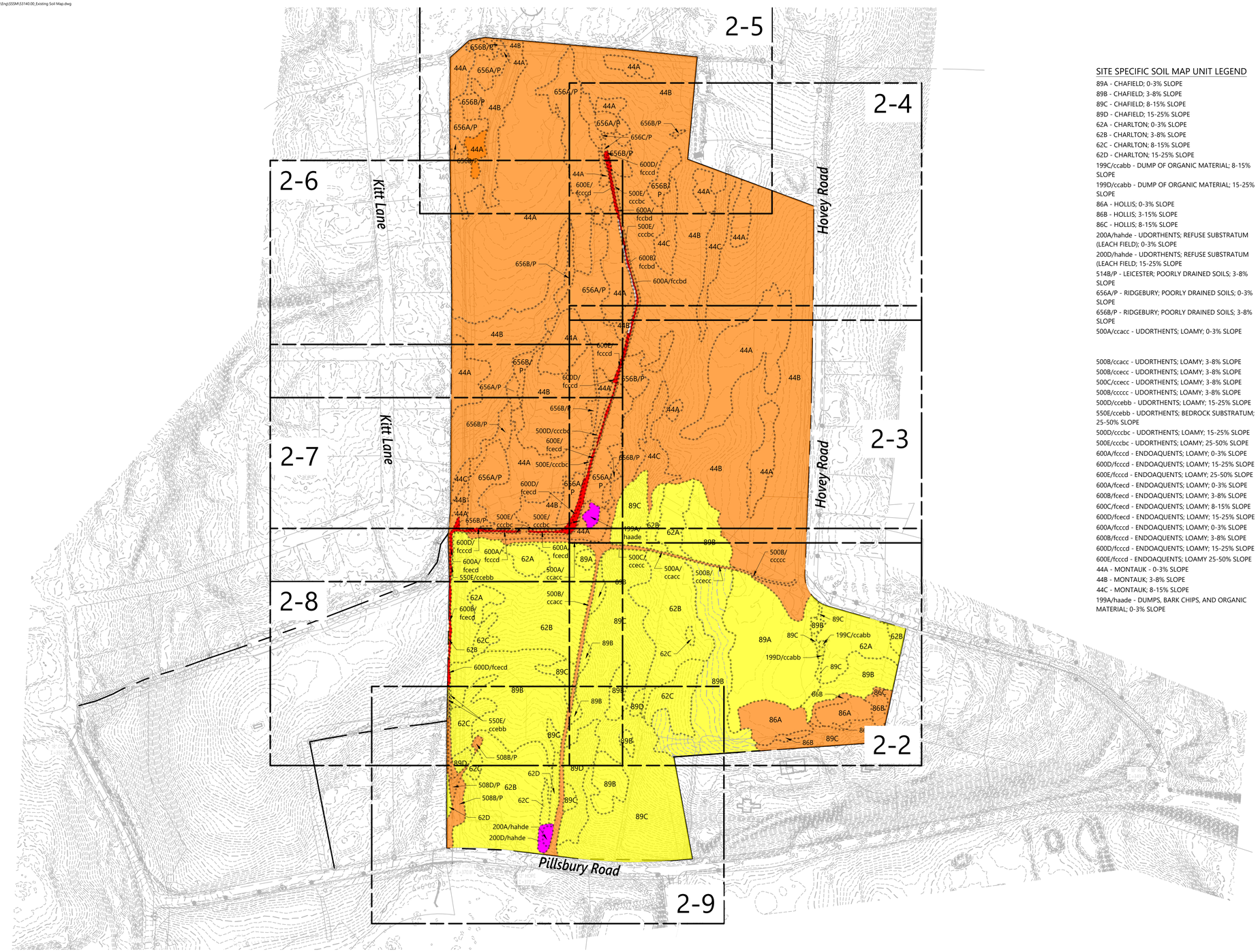


0 1000 2000 Feet

Site Location Map
36 Pillsbury Road
Londonderry, NH

Figure 1

February 2025



SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE

500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/ccccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/ccccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

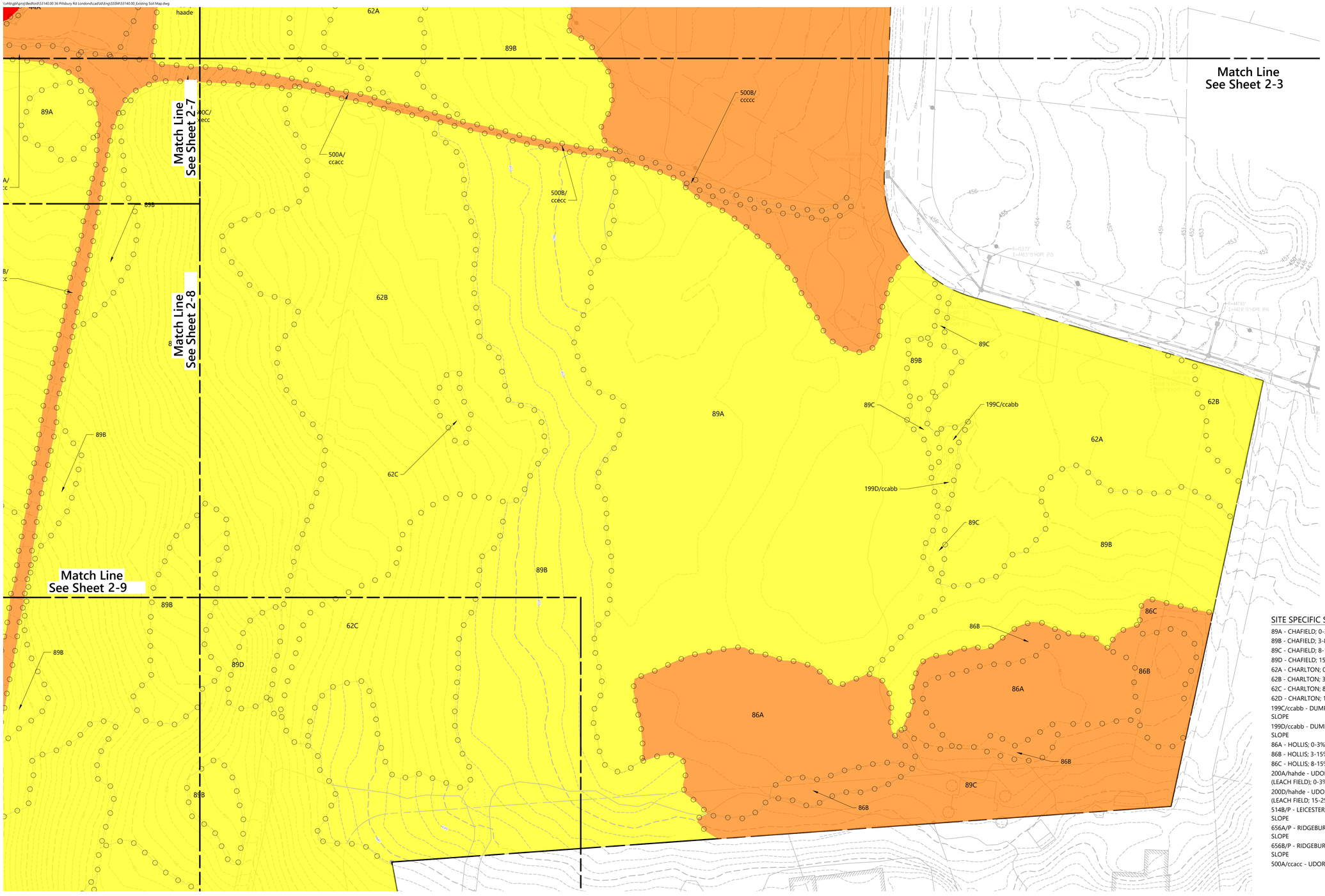
Figure 2-1: Overall Existing Color Coded Soil Map

36 Pillsbury Road
Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

0 100 200 400 Feet

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\SSSM\53140.00_Existing Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

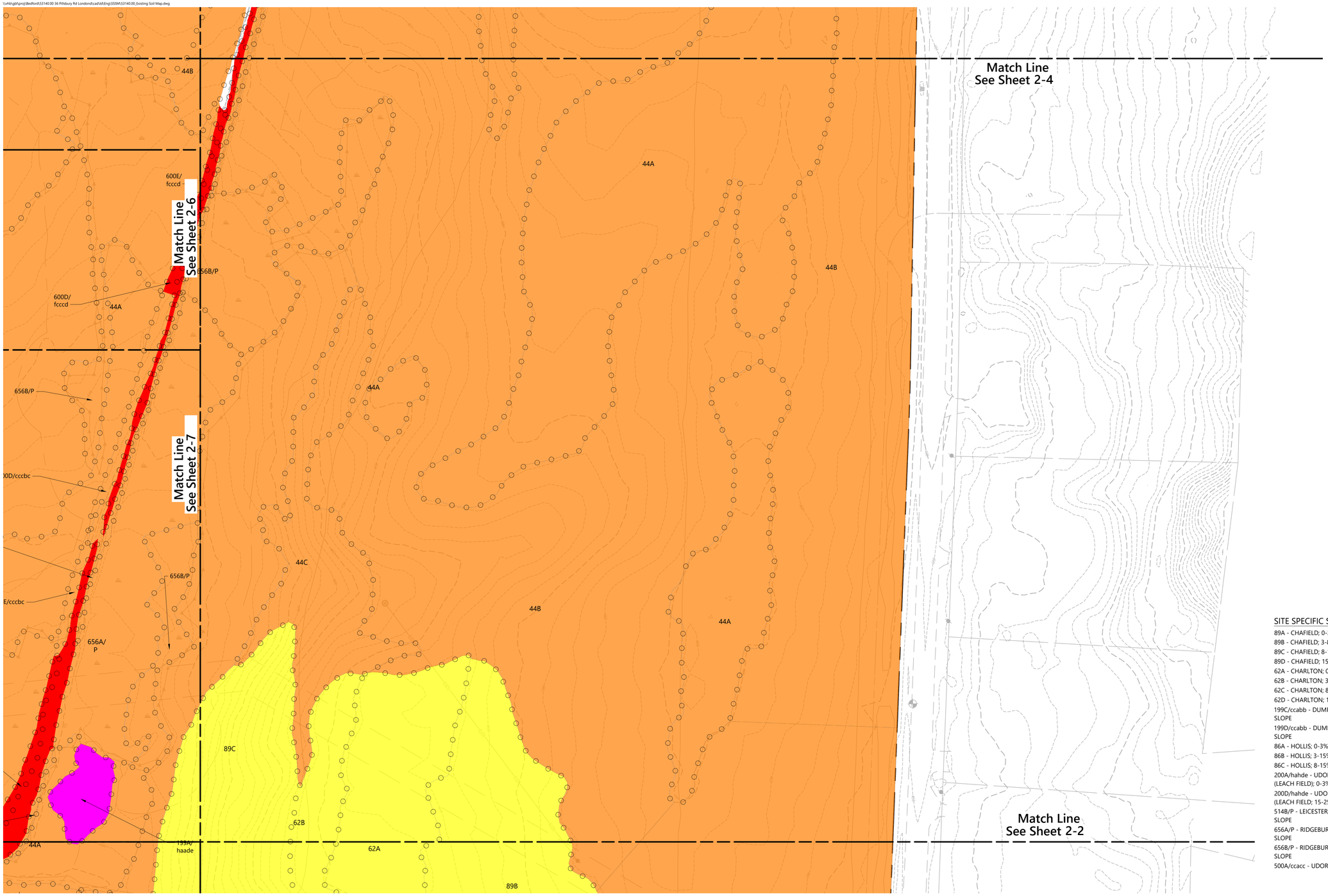
Figure 2-2: Existing Color Coded Soil Map

36 Pillsbury Road
Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

0 25 50 100 Feet

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\SSSM\53140.00_Existing Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

0 25 50 100 Feet

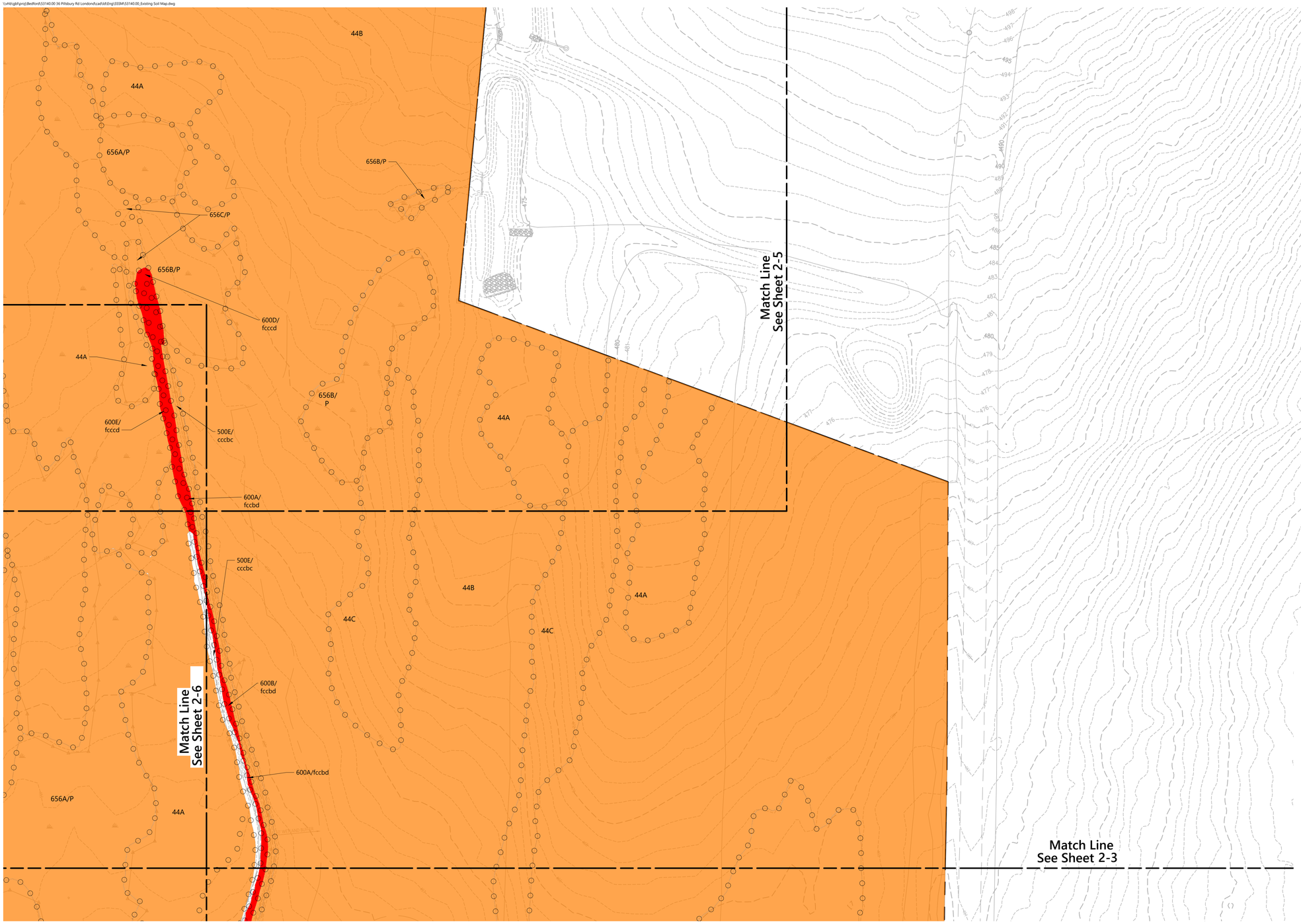
Figure 2-3: Existing Color Coded Soil Map

36 Pillsbury Road

Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\SSSM\53140.00_Existing Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

Figure 2-4: Existing Color Coded Soil Map

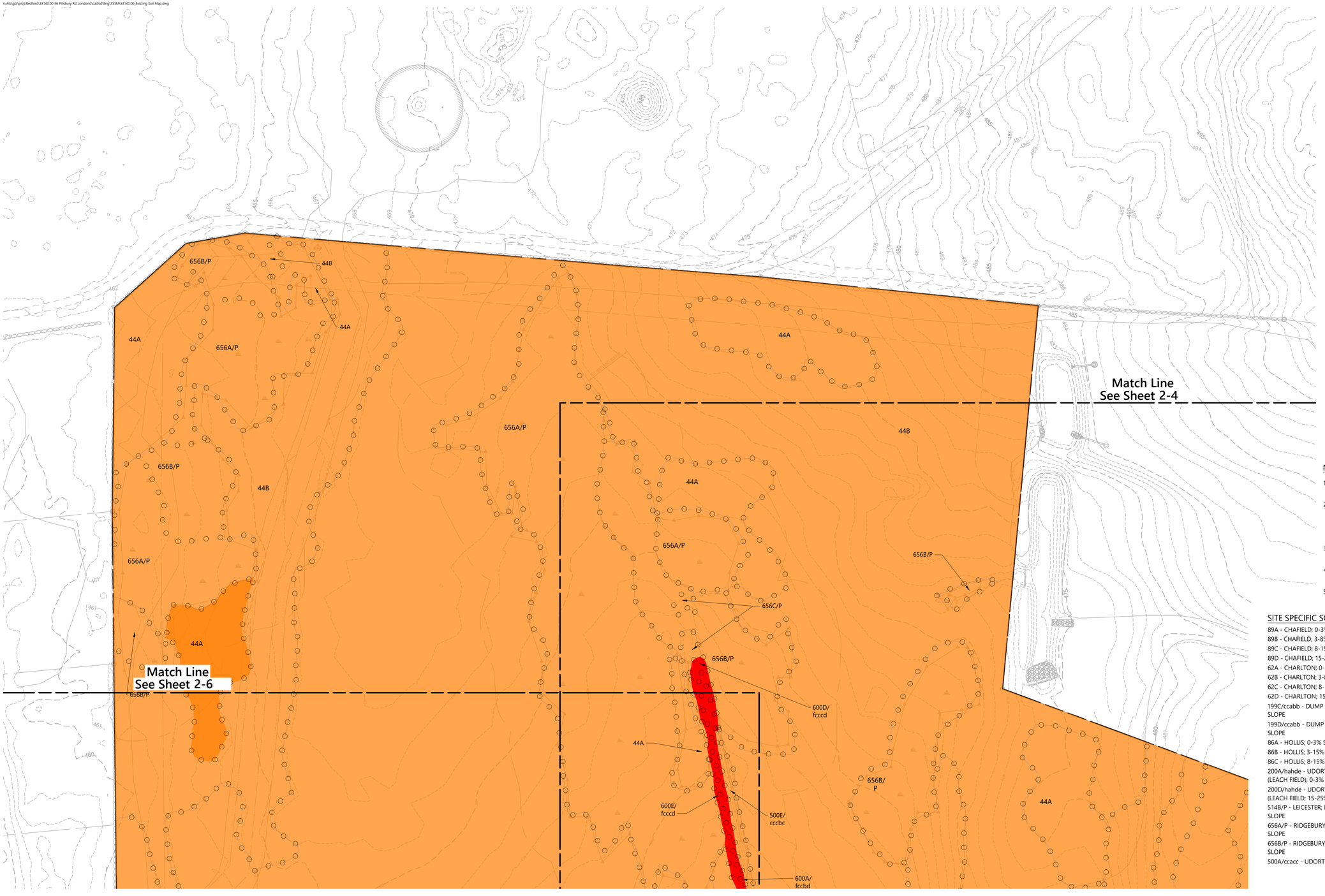
36 Pillsbury Road

Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Eng\SSSM\53140.00_Existing Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

0 25 50 100 Feet

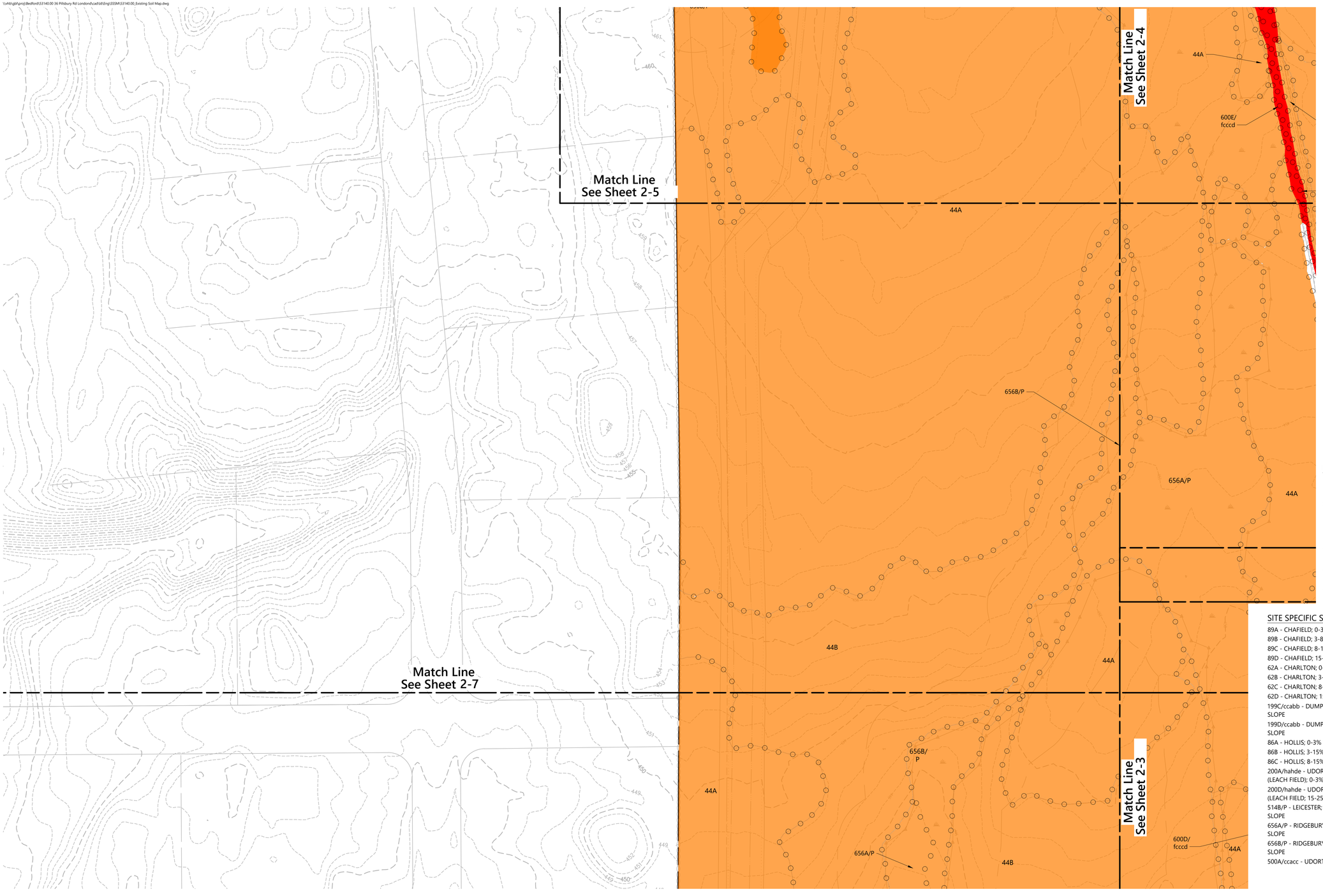
Figure 2-5: Existing Color Coded Soil Map

36 Pillsbury Road

Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\SSSM\53140.00_Existing Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

Figure 2-6: Existing Color Coded Soil Map

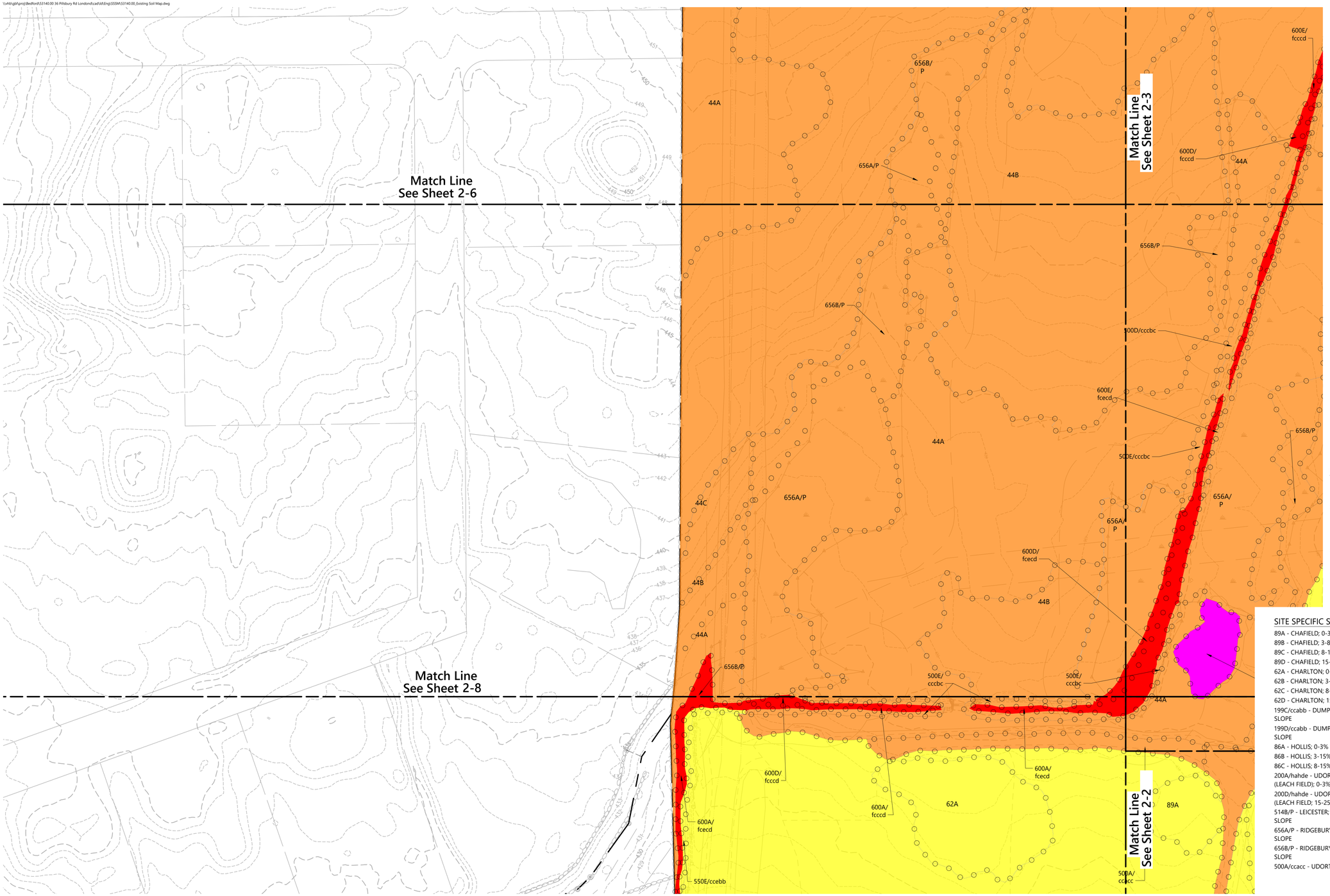
36 Pillsbury Road

Londonderry, NH

Source: 9 + %
Prepared for: 1 + ' (6 $ R 7 $ S S O L F D W L R Q
Date: 1 R Y H P E H U

0 25 50 100 Feet

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\SSSM\53140.00_Existing Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

Figure 2-7Existing Color Coded Soil Map

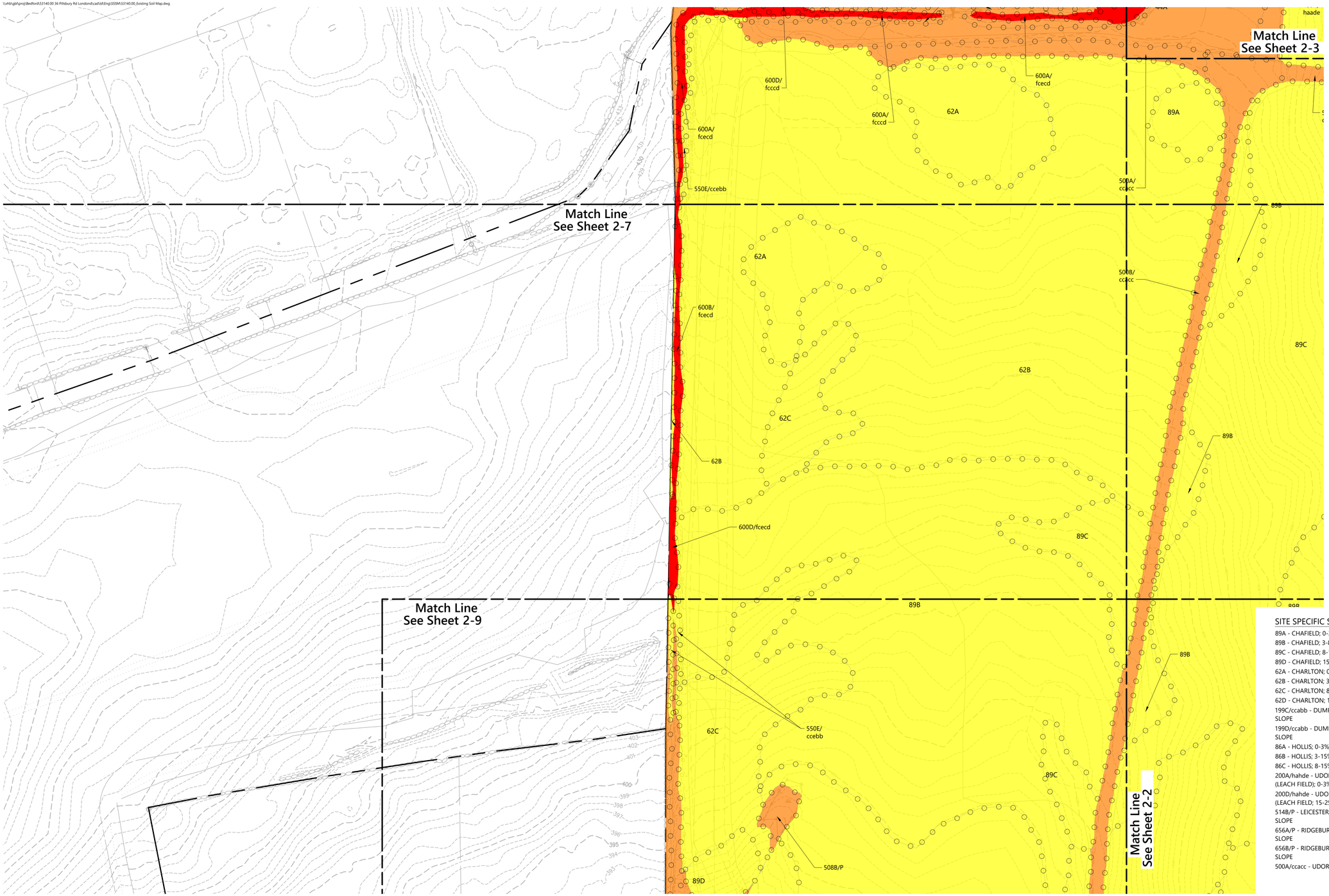
36 Pillsbury Road

Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

0 25 50 100 Feet

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Eng\SSSM\53140.00_Existing Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

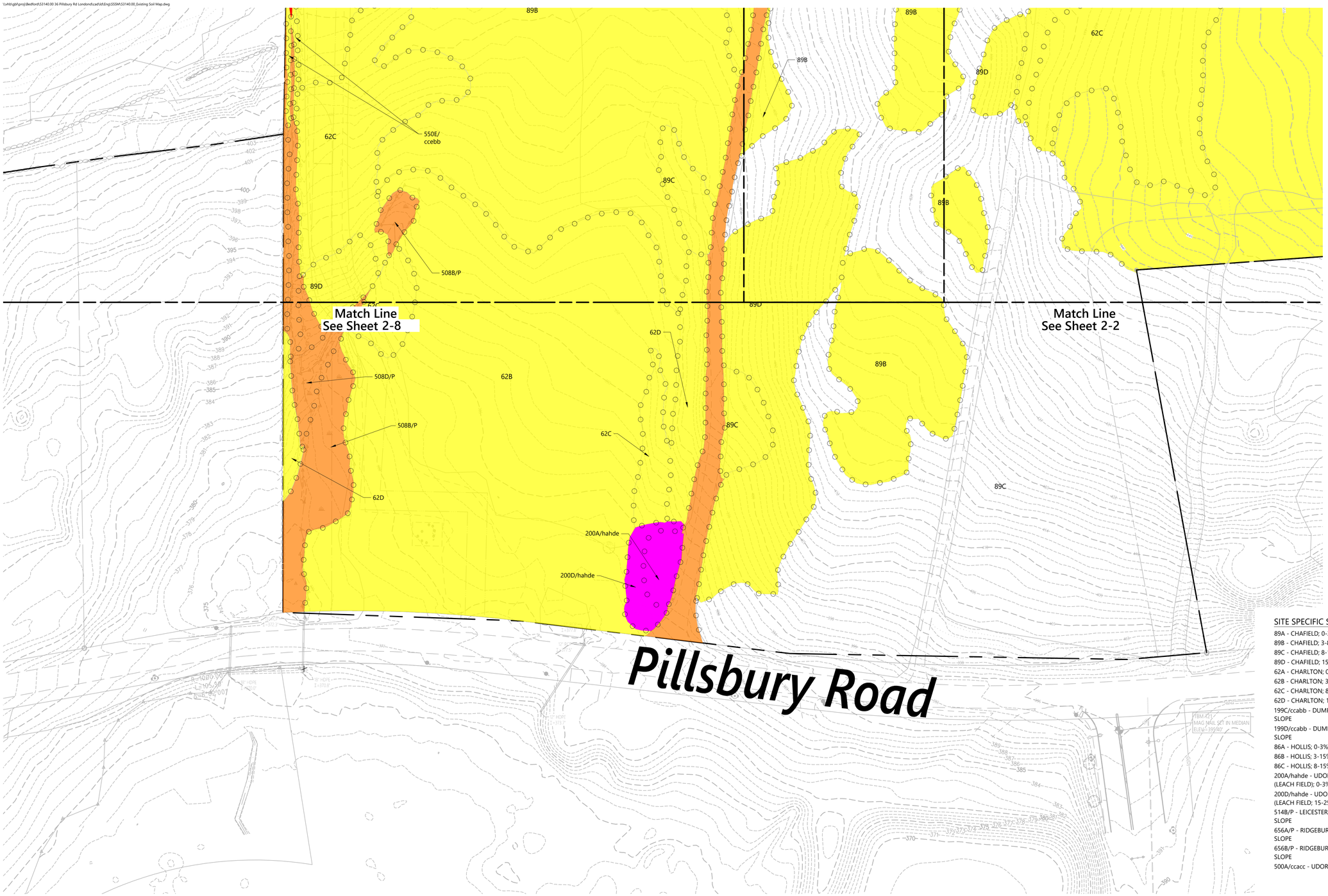
Figure 2-8: Existing Color Coded Soil Map

36 Pillsbury Road

Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

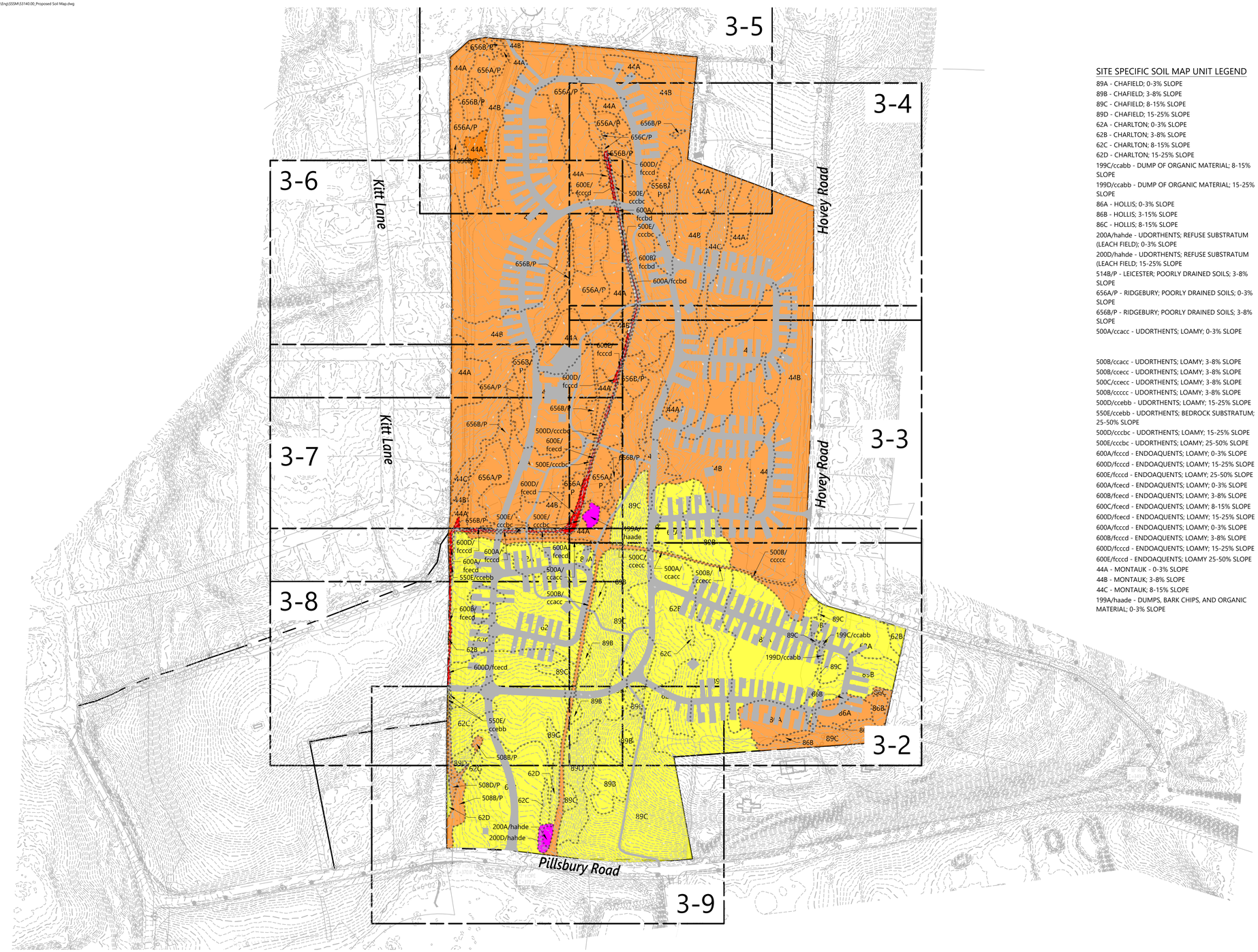
0 25 50 100 Feet

Figure 2-9: Existing Color Coded Soil Map

36 Pillsbury Road
Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\SSSM\53140.00_Proposed Soil Map.dwg



SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE

500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/ccccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/ccccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

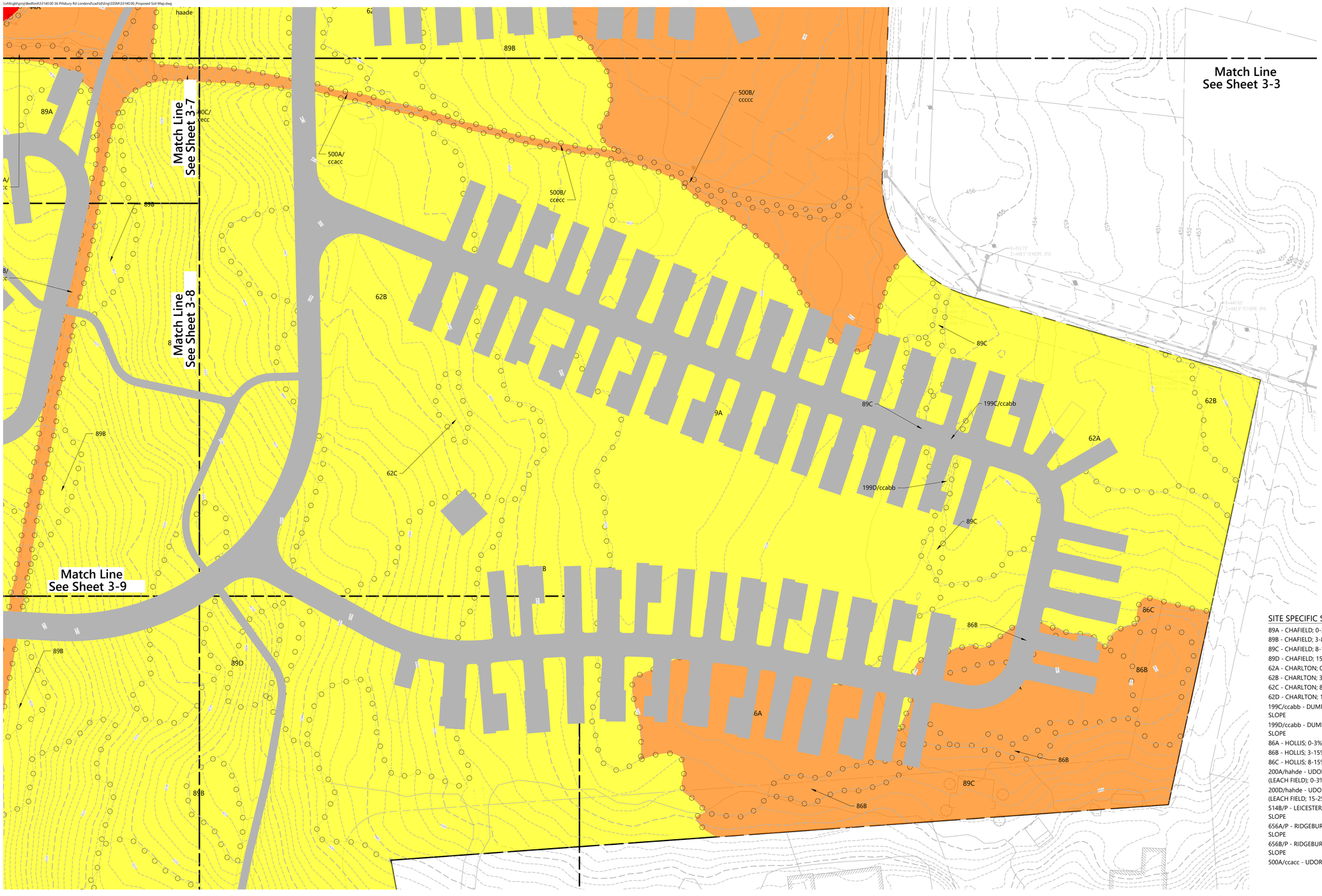
1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

Figure 3-1: Overall Proposed Color Coded Soil Map

36 Pillsbury Road
Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

0 100 200 400 Feet



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/cceec - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/cceec - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

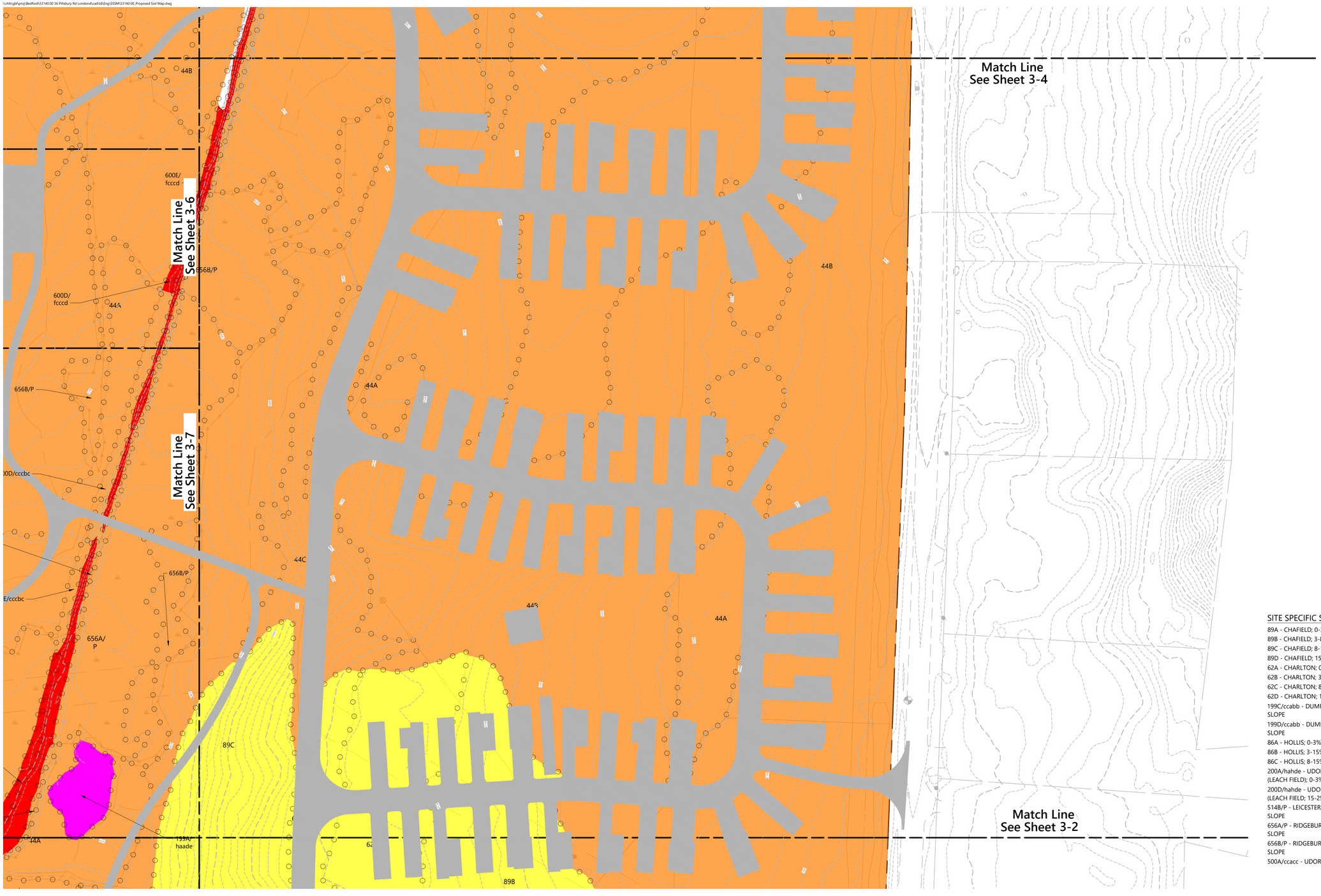
Figure 3-2: Proposed Color Coded Soil Map

36 Pillsbury Road
Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\SSSM\53140.00_Proposed Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

0 25 50 100 Feet

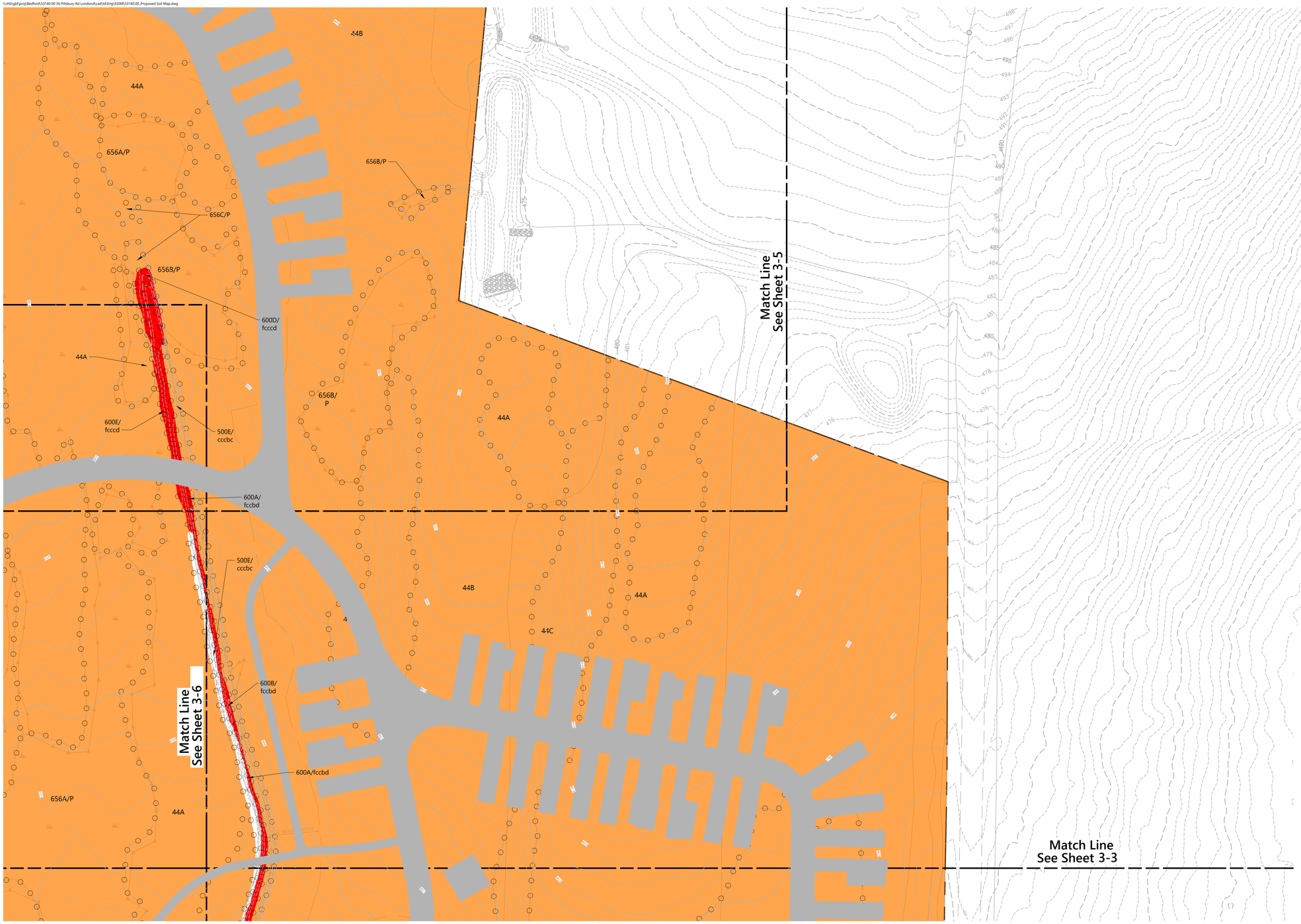
Figure 3-3: Proposed Color Coded Soil Map

36 Pillsbury Road

Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\SSSM\53140.00_Proposed Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

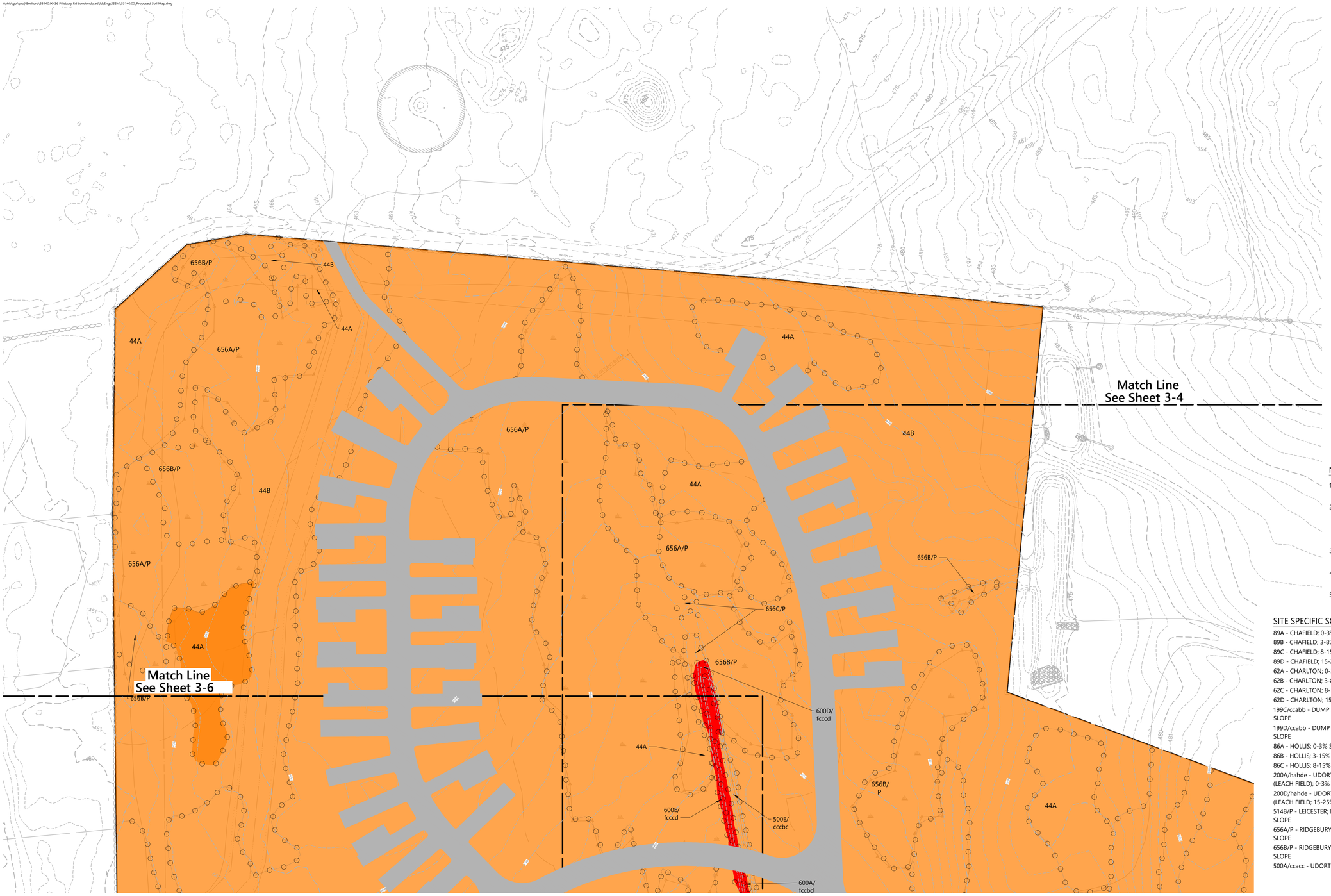
Figure 3-4: Proposed Color Coded Soil Map

36 Pillsbury Road
Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\SSSM\53140.00_Proposed Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

Figure 3-5: Proposed Color Coded Soil Map

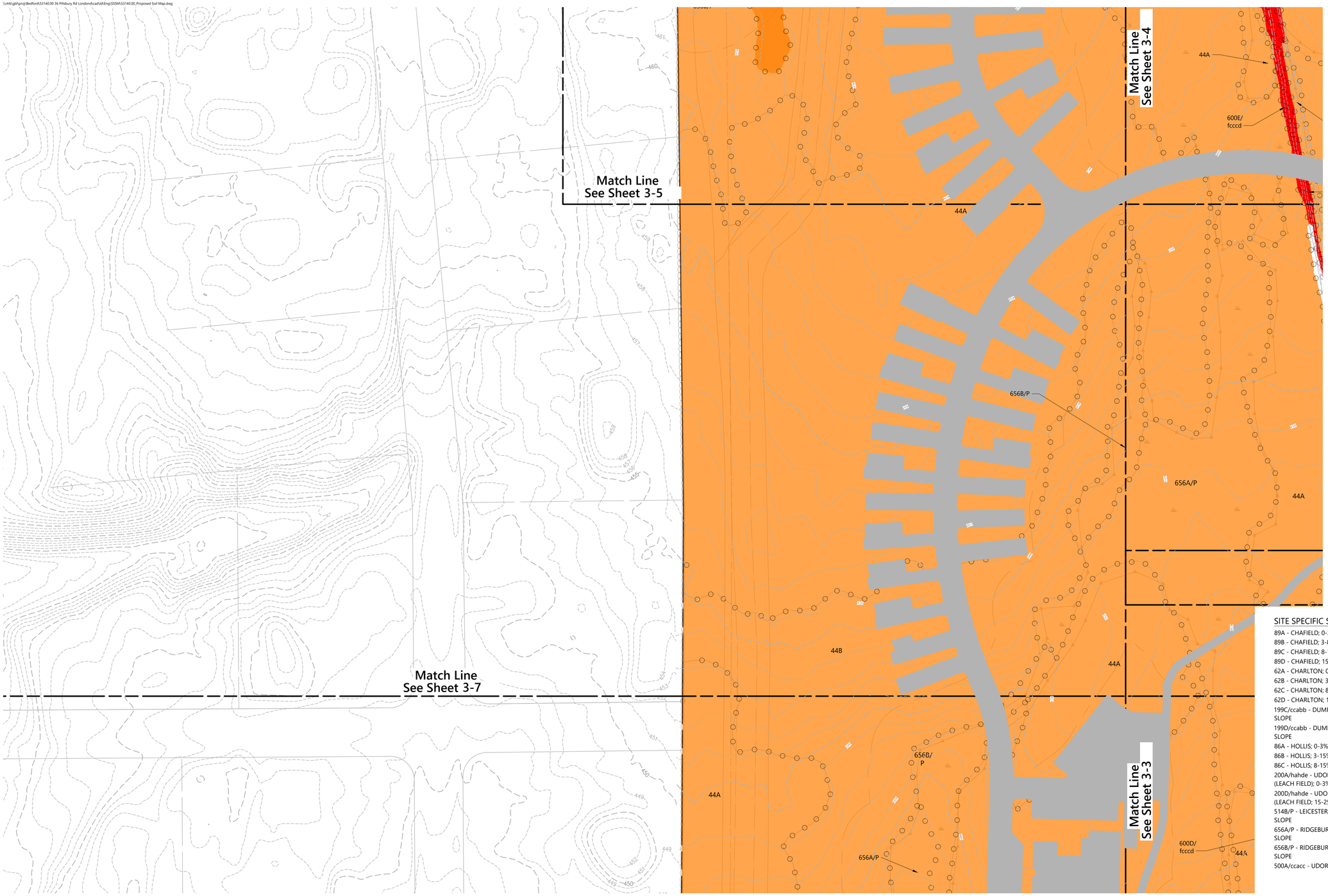
36 Pillsbury Road

Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Eng\SSSM\53140.00_Proposed Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

Figure 3-6: Proposed Color Coded Soil Map

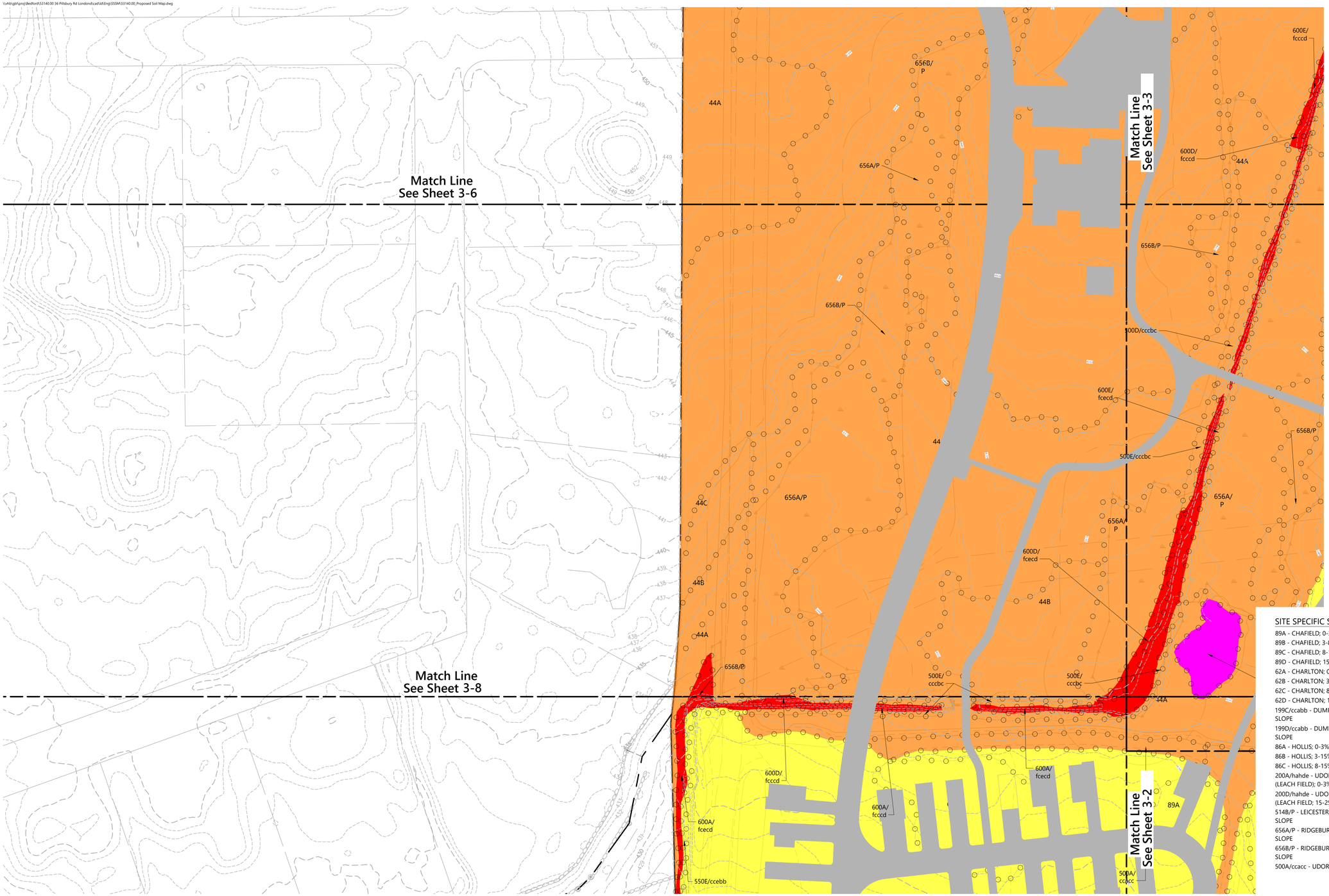
36 Pillsbury Road

Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

0 25 50 100 Feet

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\sit\Eng\SSSM\53140.00_Proposed Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

0 25 50 100 Feet

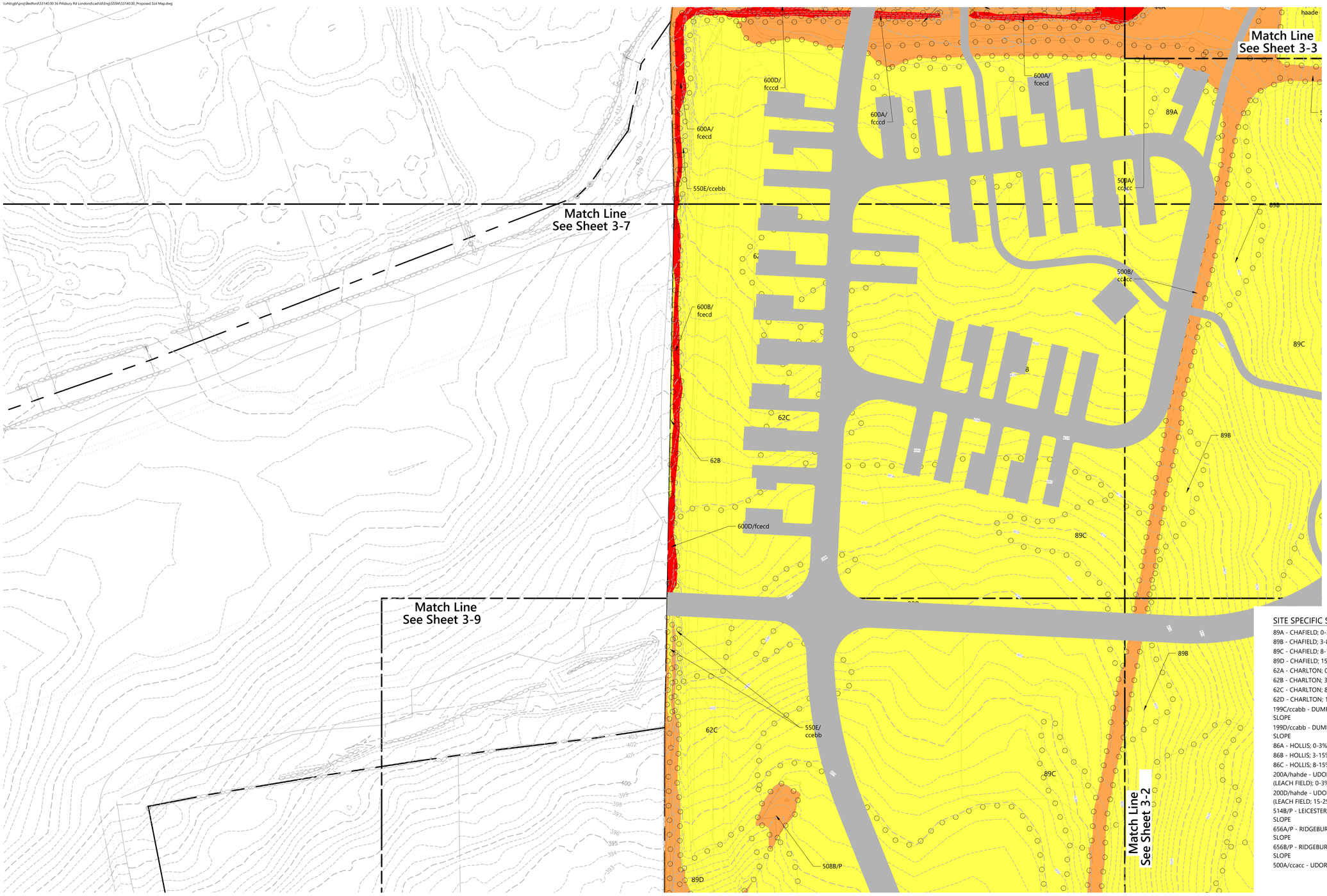
Figure 3-7Proposed Color Coded Soil Map

36 Pillsbury Road

Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Eng\SSSM\53140.00_Proposed Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/cceec - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/cceec - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

0 25 50 100 Feet

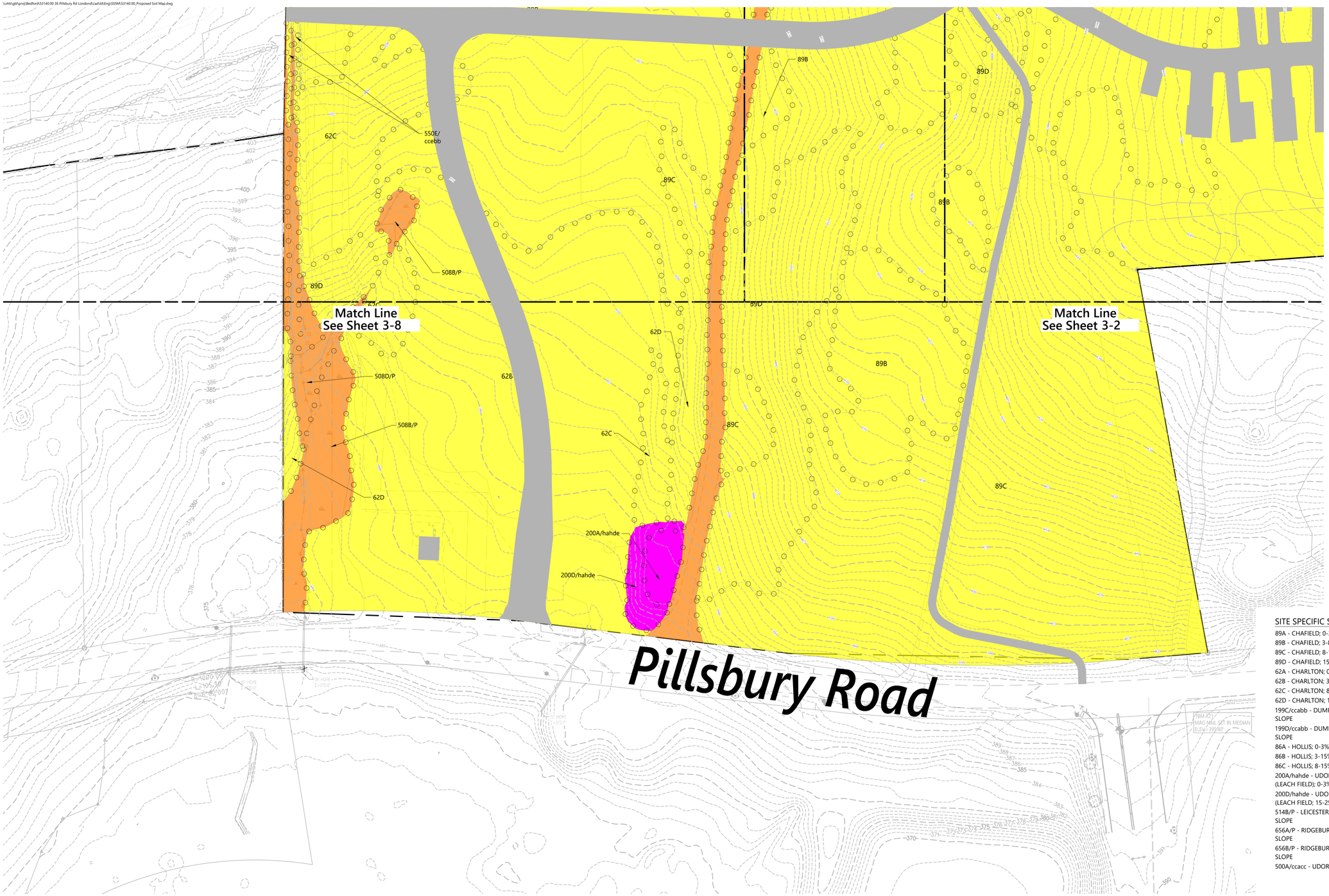
Figure 3-8: Proposed Color Coded Soil Map

36 Pillsbury Road

Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Eng\SSSM\53140.00_Proposed Soil Map.dwg



Legend

- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NOTES:

1. THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
3. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

Figure 3-9: Proposed Color Coded Soil Map

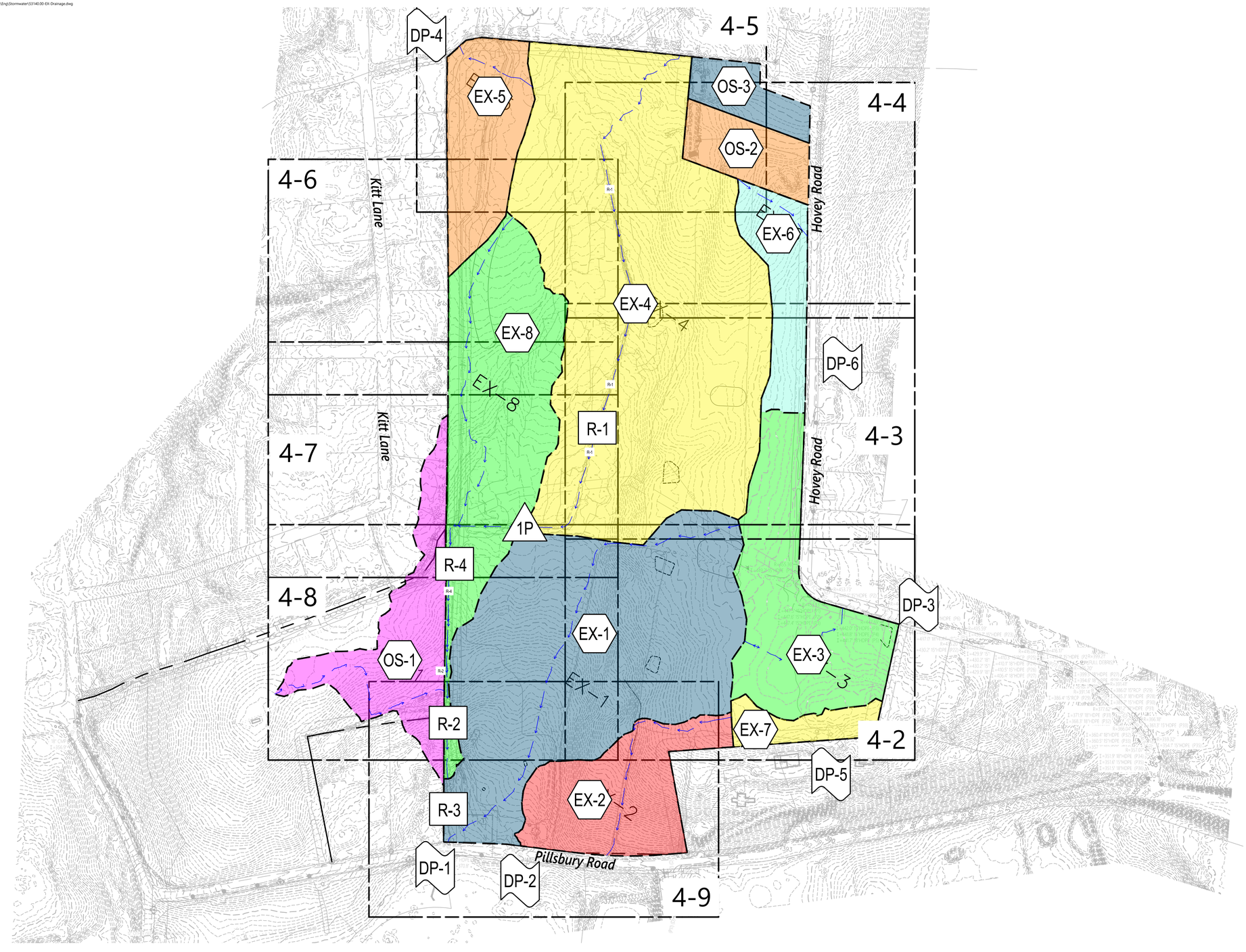
36 Pillsbury Road

Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Eng\Stormwater\53140.00-EX-Drainage.dwg



Legend

SYMBOLS

- X — DESIGN POINT
- X — DRAINAGE AREA DESIGNATION
- X — POND
- X — REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE

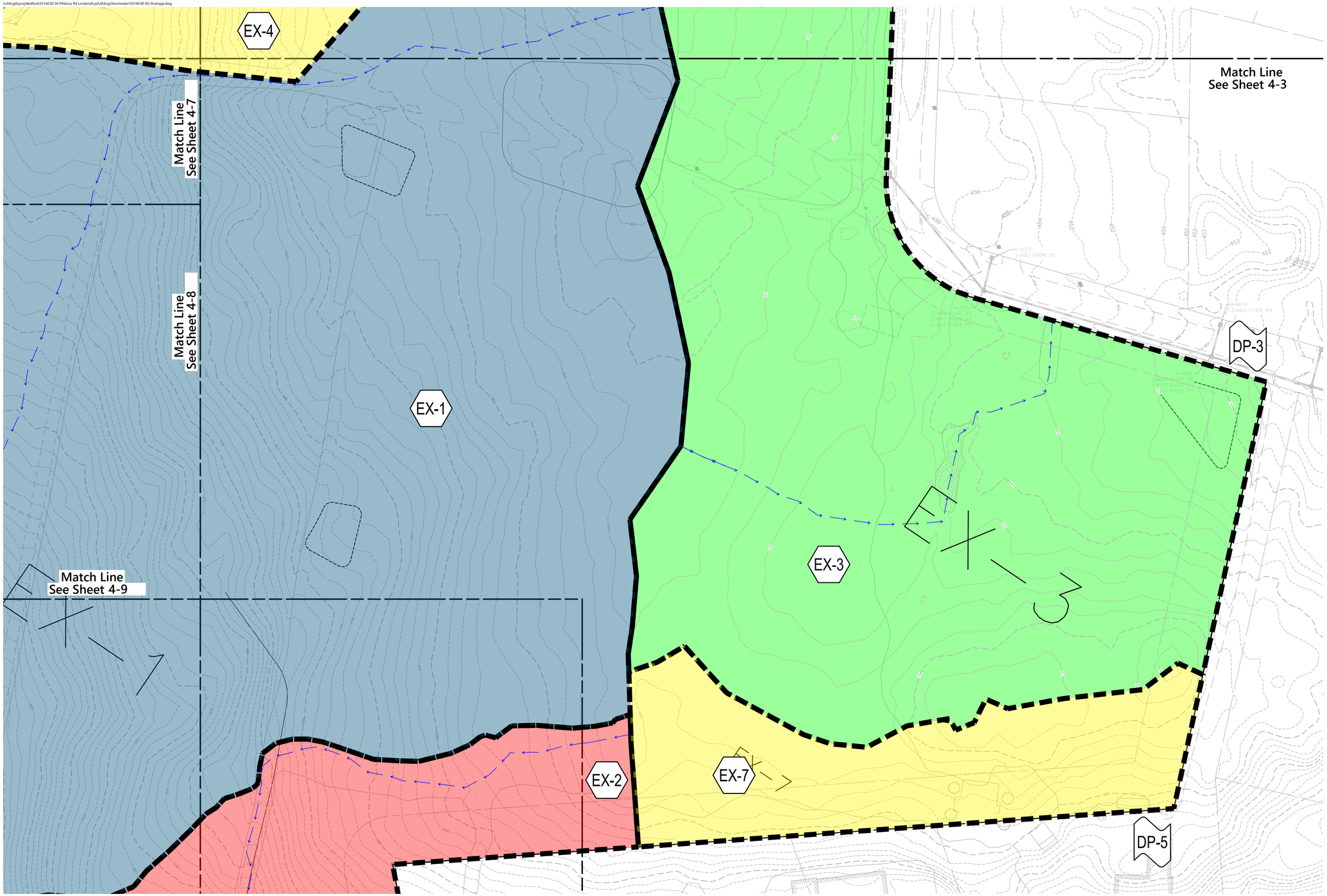
Figure 4-1: Overall Existing Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

0 100 200 400 Feet

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Engl\Stormwater\53140.00-EX-Drainage.dwg



Legend

SYMBOLS

- X — DESIGN POINT
- X — DRAINAGE AREA DESIGNATION
- X — POND
- X — REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE

0 25 50 100 Feet

Figure 4-2: Existing Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Eng\Stormwater\53140.00-EX-Drainage.dwg

Match Line
See Sheet 4-4

Match Line
See Sheet 4-6

Match Line
See Sheet 4-7

Match Line
See Sheet 4-2

R-1

R-1

DP-6

EX-6

EX-4

EX-3

EX-1

EX-4

Legend

SYMBOLS

X — DESIGN POINT

X — DRAINAGE AREA DESIGNATION

X — POND

X — REACH

LINETYPES

DRAINAGE AREA BOUNDARY

TIME OF CONCENTRATION FLOW LINE

0 25 50 100 Feet

Figure 4-3: Existing Conditions Drainage Plan

36 Pillsbury Road

Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\Stormwater\53140.00-EX-Drainage.dwg

OS-3

OS-2

EX-4

R-1

EX-6

EX-4

Match Line
See Sheet 4-5

Match Line
See Sheet 4-6

Match Line
See Sheet 4-3

Legend

SYMBOLS

- X — DESIGN POINT
- X — DRAINAGE AREA DESIGNATION
- X — POND
- X — REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE

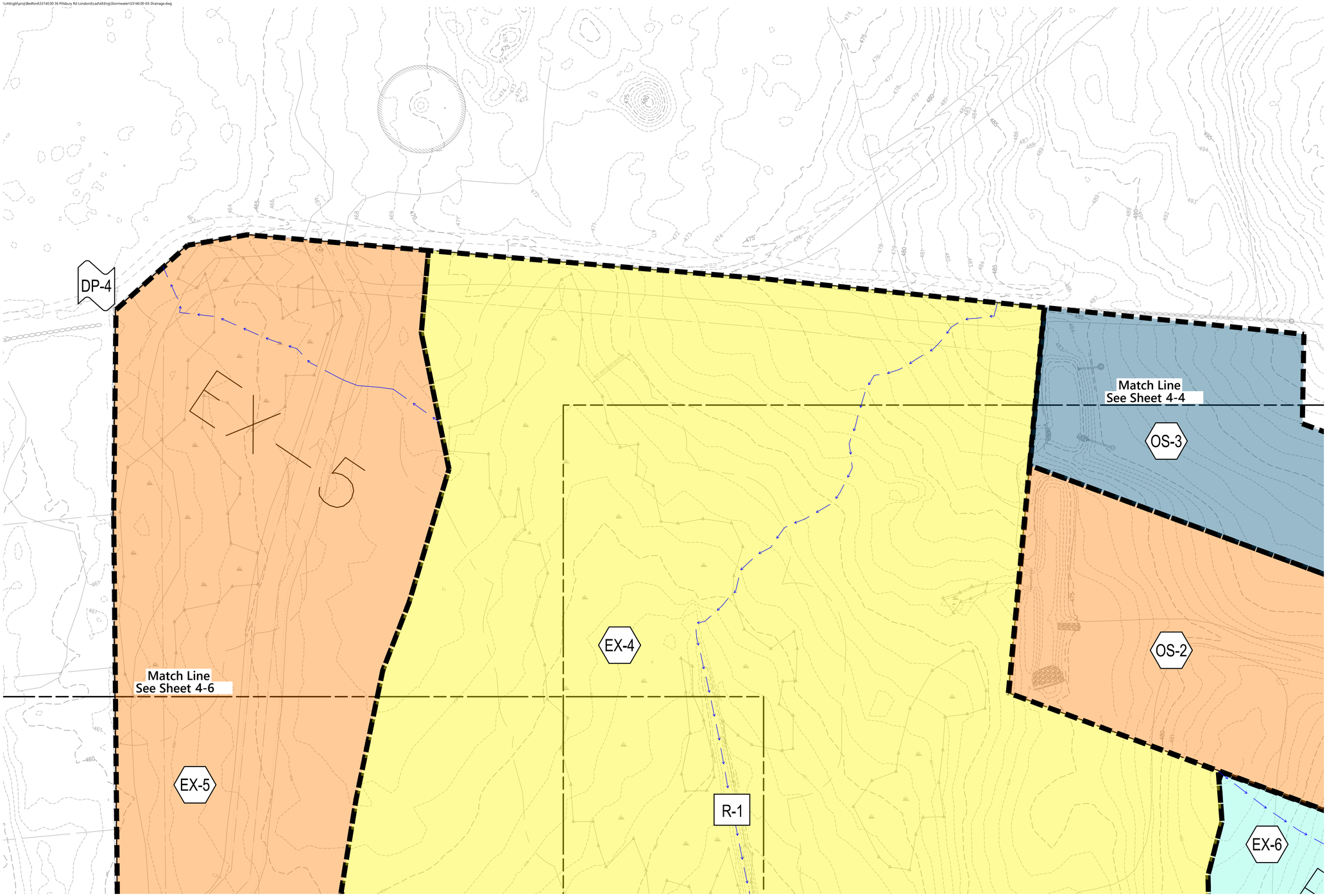
0 25 50 100 Feet

Figure 4-4: Existing Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Eng\Stormwater\53140.00-EX-Drainage.dwg



Legend

SYMBOLS

- X — DESIGN POINT
- X — DRAINAGE AREA DESIGNATION
- X — POND
- X — REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE

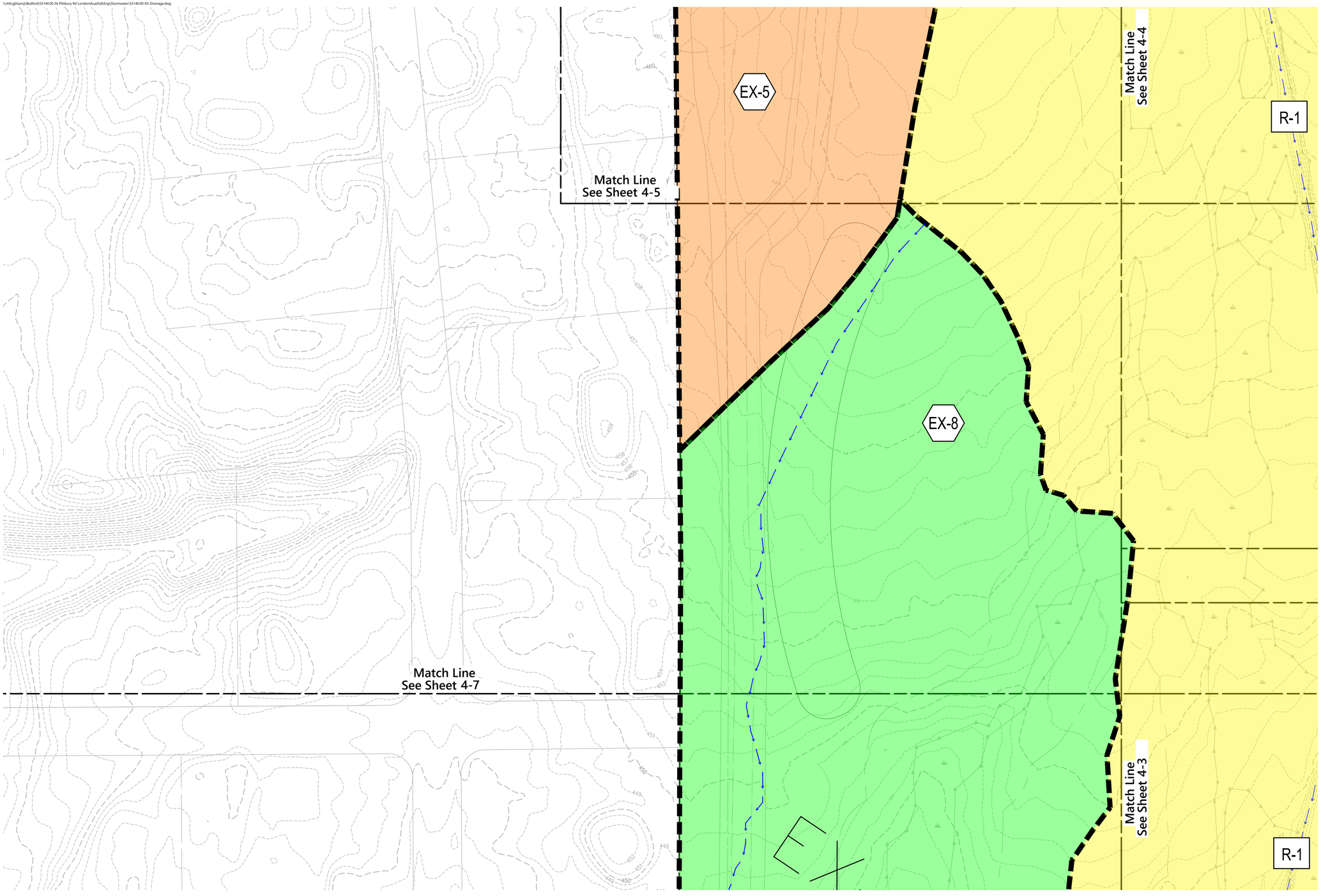
Figure 4-5: Existing Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\Stormwater\53140.00-EX-Drainage.dwg



Legend

SYMBOLS

- X — DESIGN POINT
- X — DRAINAGE AREA DESIGNATION
- X — POND
- X — REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE

Figure 4-6: Existing Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

0 25 50 100 Feet

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Eng\Stormwater\53140.00-EX-Drainage.dwg

Match Line
See Sheet 4-6

Match Line
See Sheet 4-3

Match Line
See Sheet 4-8

Match Line
See Sheet 4-2

EX-8

EX-8

R-1

R-1

OS-1

1P

EX-1

Legend

SYMBOLS

- DESIGN POINT
- DRAINAGE AREA DESIGNATION
- POND
- REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE

Figure 4-7Existing Conditions Drainage Plan

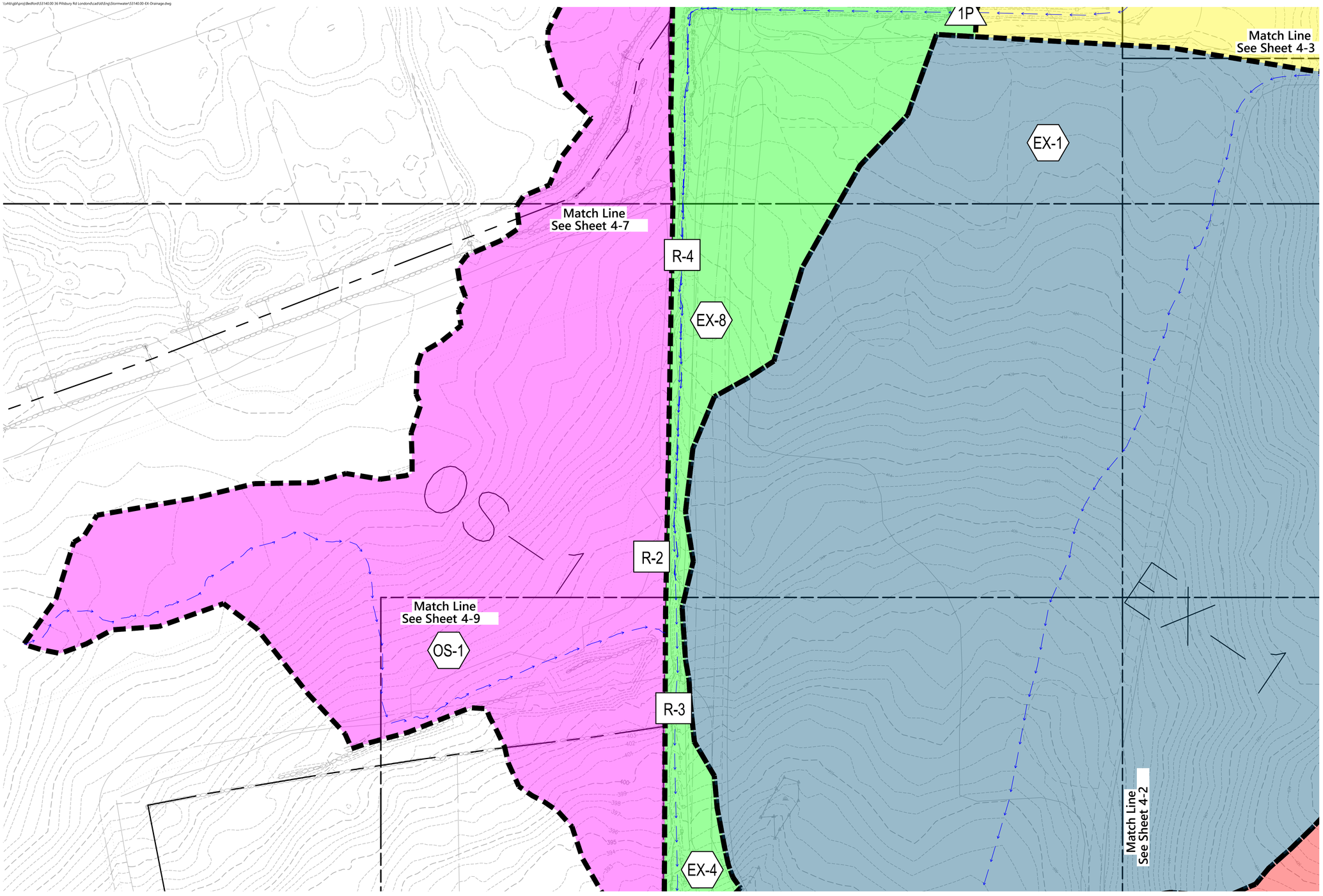
36 Pillsbury Road

Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\Stormwater\53140.00-EX-Drainage.dwg



Legend

SYMBOLS

- X — DESIGN POINT
- X — DRAINAGE AREA DESIGNATION
- X — POND
- X — REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE

Figure 4-8: Existing Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Eng\Stormwater\53140.00-EX-Drainage.dwg

OS-1
R-3
EX-4
Match Line
See Sheet 4-8
EX-1
EX-2
Match Line
See Sheet 4-2
DP-1
DP-2
Pillsbury Road

Legend

SYMBOLS

- X — DESIGN POINT
- X — DRAINAGE AREA DESIGNATION
- X — POND
- X — REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE

Figure 4-9: Existing Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **NHDES - AoT Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd London\tech\Stormwater\Hovey Rd Analysis\53140044-EX-Drainage Hovey.dwg



Legend

SYMBOLS

- X — DESIGN POINT
- X — DRAINAGE AREA DESIGNATION
- X — POND
- X — REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- CATCH BASIN

Figure 5: Hovey Road Existing Conditions Drainage Plan

Hovey Road
Londonderry, NH

0 100 200 Feet

Source: **VHB**
Prepared for: **RTC**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd London\cad\civil\Eng\Stormwater\53140.00-PR-Drainage.dwg



Legend

SYMBOLS

- DESIGN POINT
- DRAINAGE AREA DESIGNATION
- POND
- REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- SITE SPECIFIC SOIL BOUNDARY

Figure 6-1: Overall Proposed Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

0 200 400 Feet

Source: **VHB**
Prepared for: **Site Plan Application**
Date: **November 2025**

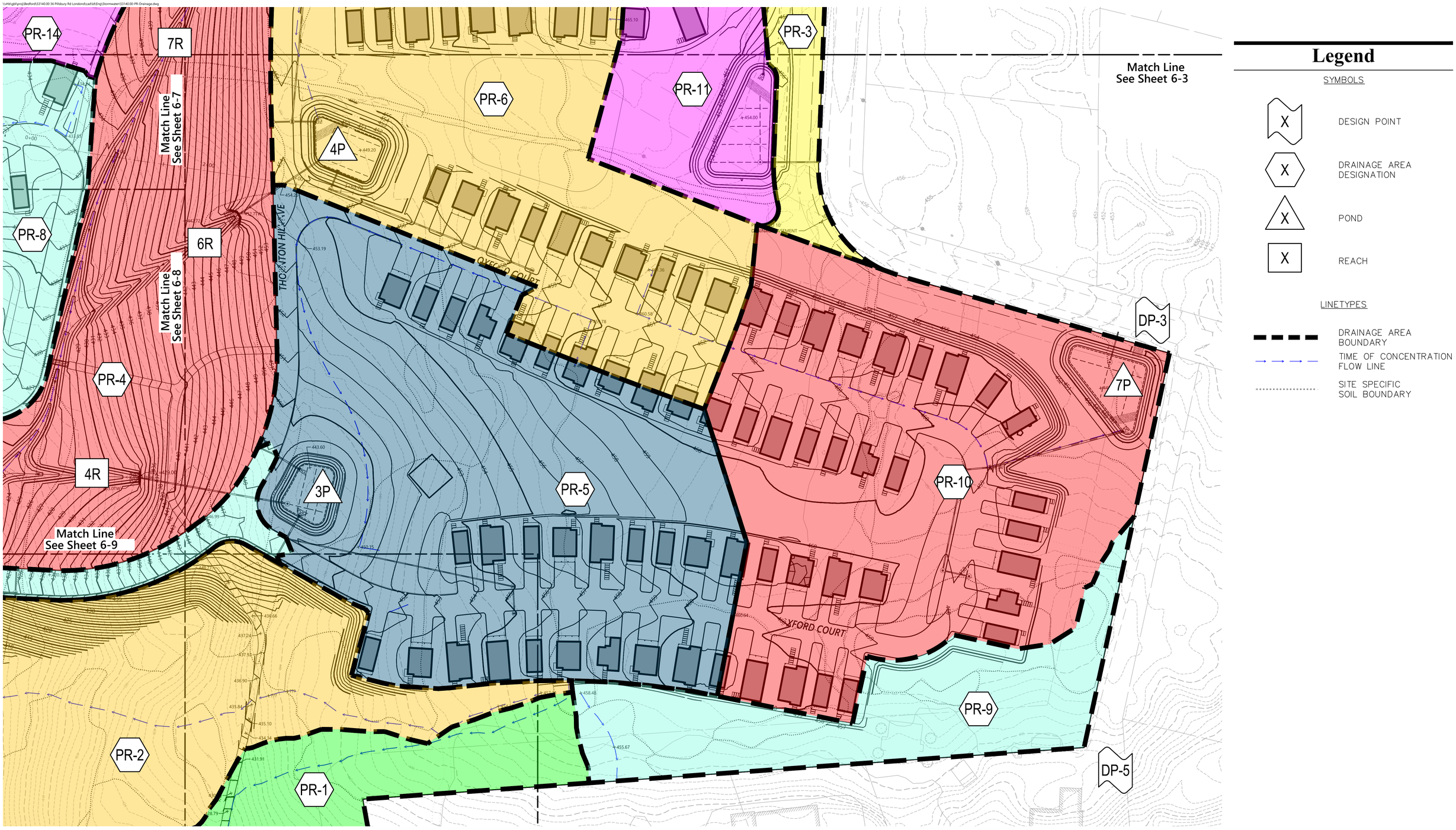


Figure 6-2: Overall Proposed Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

Source: VHB
Prepared for: Site Plan Application
Date: November 2025

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\Stormwater\53140.00-PR-Drainage.dwg

PR-20
10P
16R
PR-14
PR-18
PR-7
PR-13
PR-11
PR-3
PR-6
PR-4
7R
5P
DP-6
Match Line
See Sheet 6-4
Match Line
See Sheet 6-6
Match Line
See Sheet 6-7
Match Line
See Sheet 6-2

Legend

SYMBOLS

- DESIGN POINT
- DRAINAGE AREA DESIGNATION
- POND
- REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- SITE SPECIFIC SOIL BOUNDARY

Figure 6-3: Overall Proposed Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **Site Plan Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Eng\Stormwater\53140.00-PR-Drainage.dwg

OS-6
OS-5
2R
PR-15
PR-17
PR-20
PR-19
PR-14
PR-13
PR-7
16R
10P

Match Line
See Sheet 6-5

Match Line
See Sheet 6-6

Match Line
See Sheet 6-3

Legend

SYMBOLS

- DESIGN POINT
- DRAINAGE AREA DESIGNATION
- POND
- REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- SITE SPECIFIC SOIL BOUNDARY

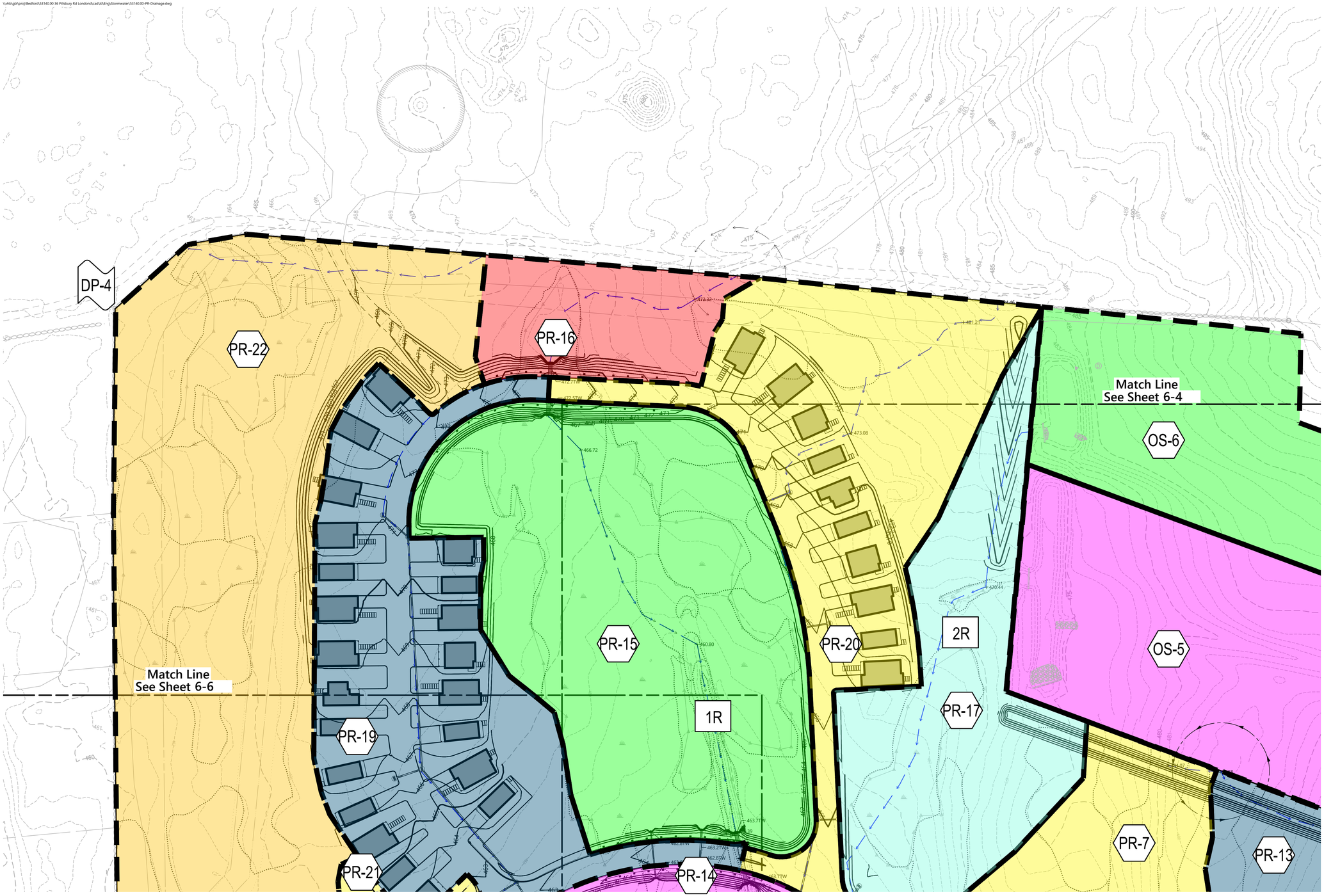
Figure 6-4: Overall Proposed Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **Site Plan Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\Stormwater\53140.00-PR-Drainage.dwg



Legend

SYMBOLS

- X — DESIGN POINT
- X — DRAINAGE AREA DESIGNATION
- X — POND
- X — REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- SITE SPECIFIC SOIL BOUNDARY

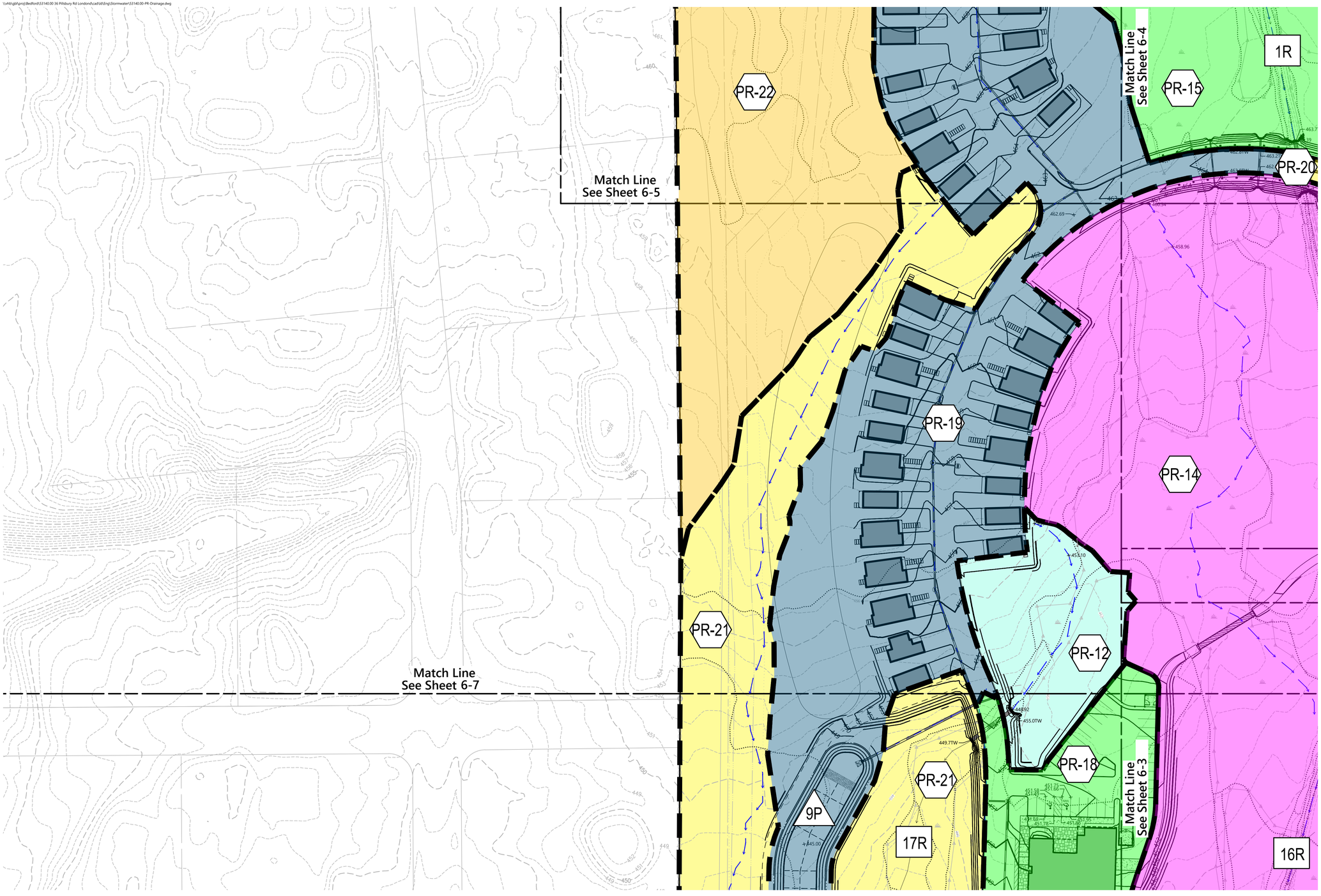
Figure 6-5: Overall Proposed Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **Site Plan Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\Stormwater\53140.00-PR-Drainage.dwg



Legend

SYMBOLS

- X — DESIGN POINT
- X — DRAINAGE AREA DESIGNATION
- X — POND
- X — REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- SITE SPECIFIC SOIL BOUNDARY

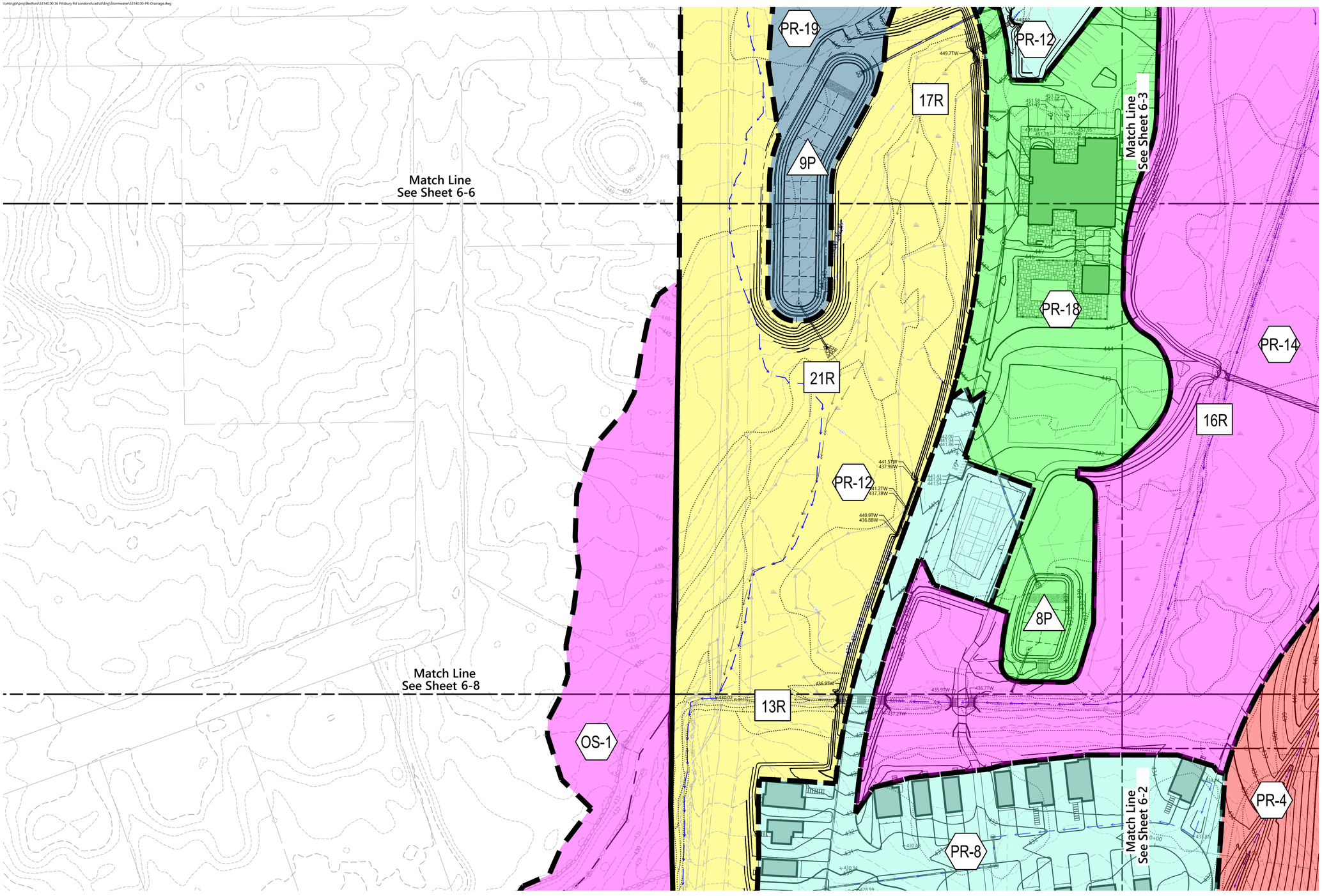
Figure 6-6: Overall Proposed Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **Site Plan Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Eng\Stormwater\53140.00-PR-Drainage.dwg



Legend

SYMBOLS

- X — DESIGN POINT
- X — DRAINAGE AREA DESIGNATION
- X — POND
- X — REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- SITE SPECIFIC SOIL BOUNDARY

Figure 6-7: Overall Proposed Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

0 25 50 100 Feet

Source: **VHB**
Prepared for: **Site Plan Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\Stormwater\53140.00-PR-Drainage.dwg

Match Line
See Sheet 6-7

Match Line
See Sheet 6-3

Match Line
See Sheet 6-9

Match Line
See Sheet 6-2

OS-1
PR-21
PR-8
PR-14
PR-4
PR-1
PR-23
PR-24
PR-2
16R
13R
7R
6R
4R
5R
15R
6P
1P

Legend

SYMBOLS

- DESIGN POINT
- DRAINAGE AREA DESIGNATION
- POND
- REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- SITE SPECIFIC SOIL BOUNDARY

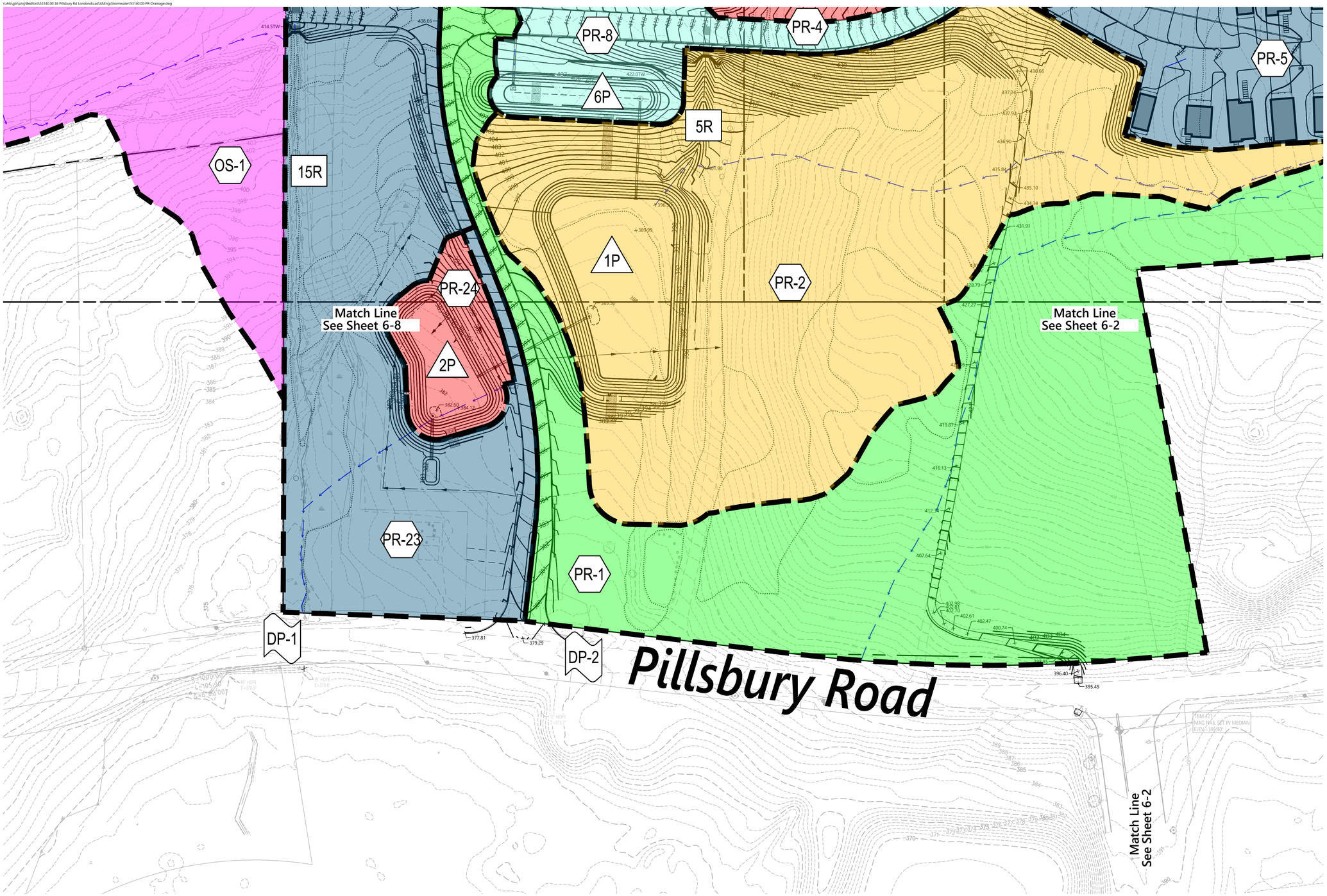
0 25 50 100 Feet

Figure 6-8: Overall Proposed Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

Source: **VHB**
Prepared for: **Site Plan Application**
Date: **November 2025**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\civil\Eng\Stormwater\53140.00-PR-Drainage.dwg



Legend

SYMBOLS

- X — DESIGN POINT
- X — DRAINAGE AREA DESIGNATION
- X — POND
- X — REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- SITE SPECIFIC SOIL BOUNDARY

Figure 6-9: Overall Proposed Conditions Drainage Plan

36 Pillsbury Road
Londonderry, NH

0 25 50 100 Feet

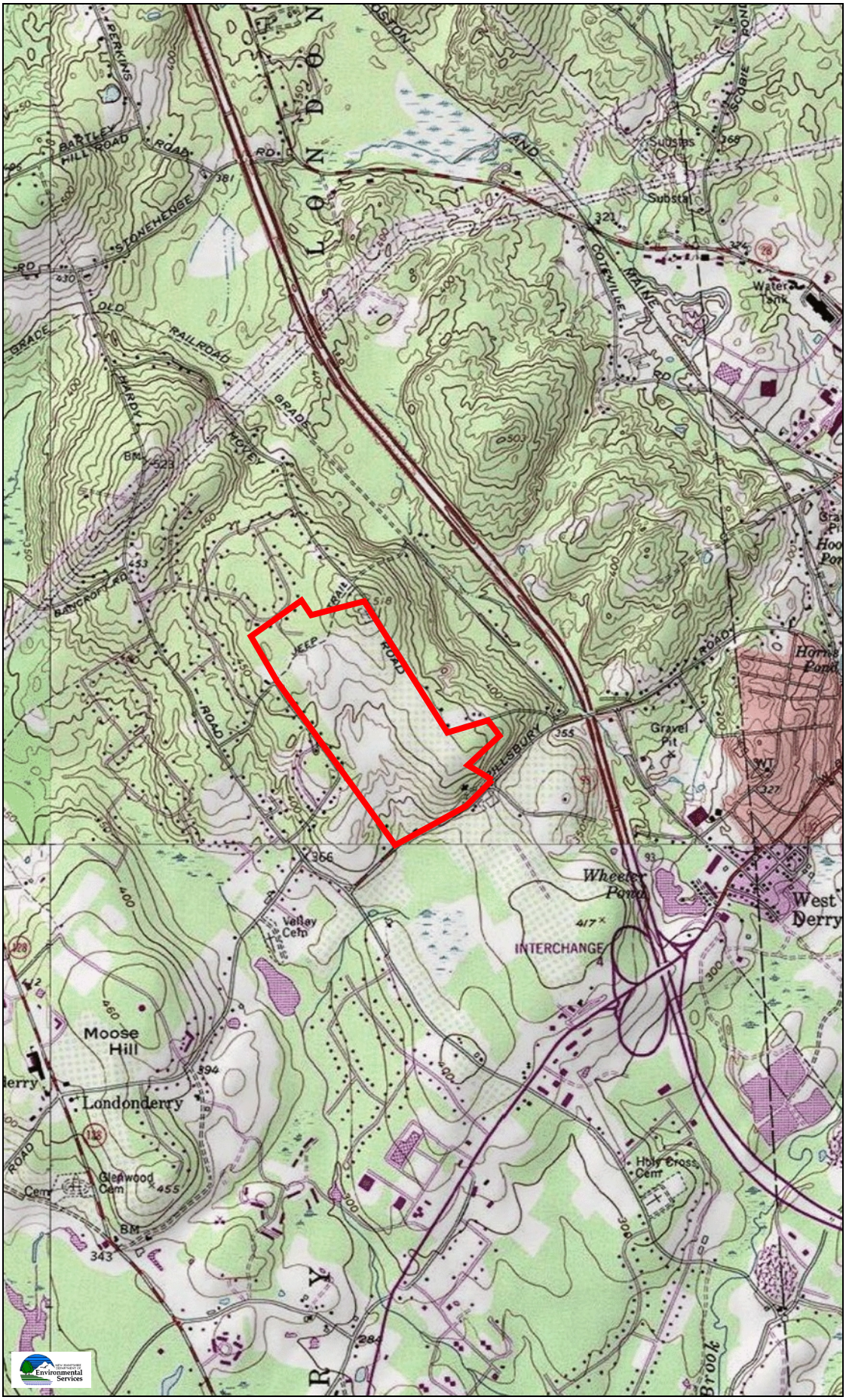
Source: **VHB**
Prepared for: **Site Plan Application**
Date: **November 2025**

Appendix A: Support Data

- USGS Map
- Web GIS Printouts
- Aerial Photograph of the Site
- BMP Worksheets
- Rainfall Data
- Geotechnical Test Pits & Location Plan
- Contech Filterra Information
- Hovey Road Drainage Worksheet

USGS Map

USGS Map



Legend

Map Scale

1: 25,000

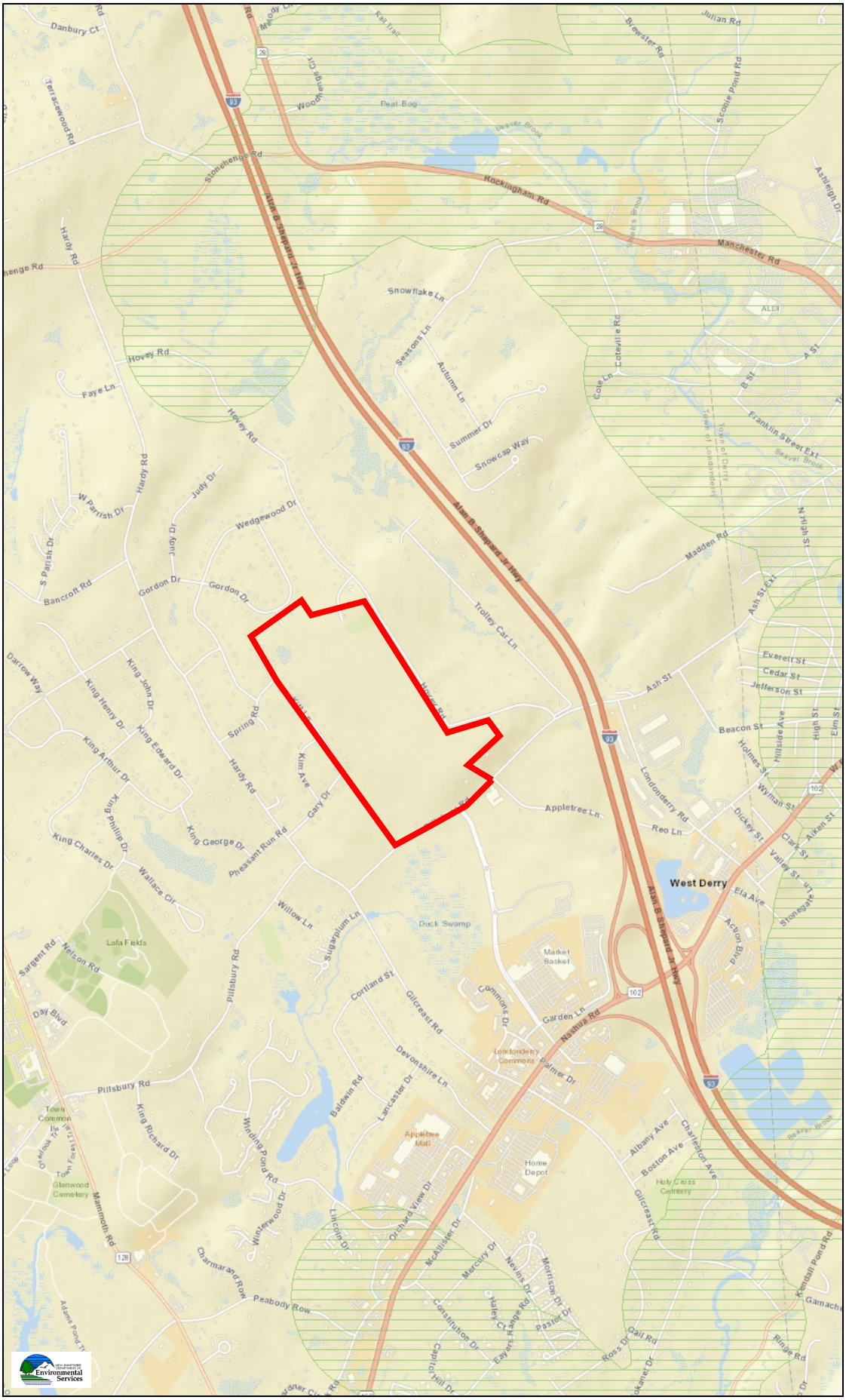
© NH DES, http://des.nh.gov

Map Generated: 10/30/2024

Notes

Web GIS Printouts

AoT Surface Water Impairments



Legend

Surface Waters with Impairn with Quarter Mile Buffer

Map Scale

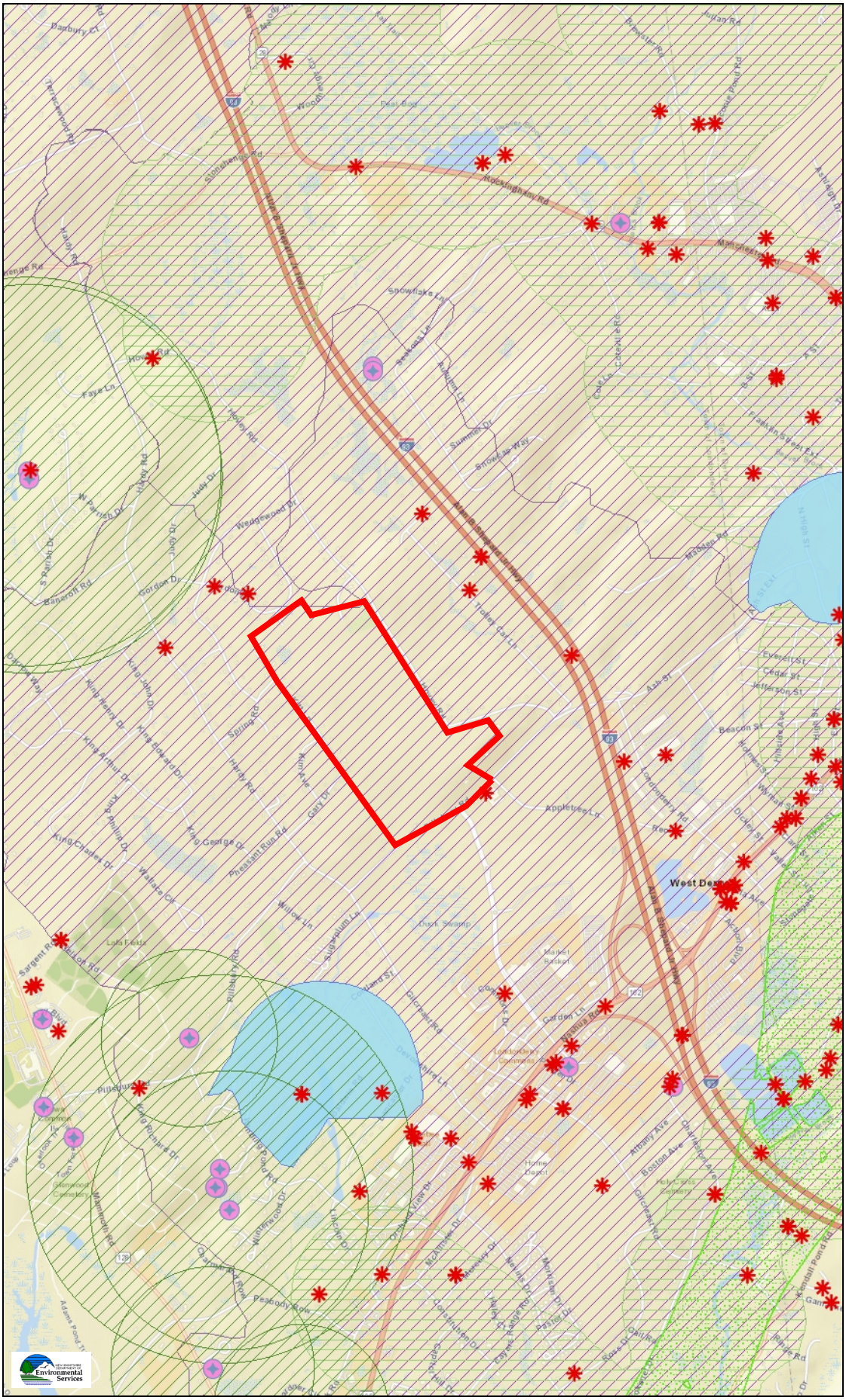
1: 25,000

© NH DES, http://des.nh.gov

Map Generated: 10/30/2024

Notes

AoT Screening Layers



Legend

- Remediation Sites
- Coastal and Great Bay Regi Communities
- Designated Rivers Quarterm Buffer
- Public Water Supply Wells
- Groundwater Classification A GA1
- Groundwater Classification A GA2
- Water Supply Intake Protect Areas
- Wellhead Protection Areas
- Class A Lakes with a Quarte Buffer
- Class A - All Features
- All Lakes, with a Quarter Mil Buffer
- Outstanding Resource Wate Watersheds
- Surface Waters with Impairm with Quarter Mile Buffer
- Watersheds with Chloride Impairments

Map Scale

1: 25,000

© NH DES, http://des.nh.gov

Map Generated: 10/30/2024

Notes

Aerial Photograph of the Site

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Eng\Stormwater\53140.00-Site Location Map.dwg



0 500 1000 2000 Feet

Site Aerial Map
36 Pillsbury Road
Londonderry, NH

December 2024

BMP Worksheets

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Type/Node Name: **Pond 3P - Surface Sandfilter**

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

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
4.77	ac	A = Area draining to the practice	
1.37	ac	A_I = Impervious area draining to the practice	
0.29	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.31	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.47	ac-in	WQV= 1" x Rv x A	
5,342	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,335	cf	25% x WQV (check calc for sediment forebay volume)	
4,006	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = 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)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
445.00	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.20	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
14.84	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
440.00	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
440.00	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
444.80	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
444.80	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
(4.80)	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
(4.80)	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
447.60	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
448.60	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
16,710	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
24.0	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	Yes/No	Access grate provided?	← yes

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

Stage-Area-Storage for Pond 3P: Sand Filter #3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
442.10	**2,579**	0
442.20	2,579	77
442.30	2,579	155
442.40	2,579	232
442.50	2,579	309
442.60	2,579	387
442.70	2,579	464
442.80	2,579	542
442.90	2,579	619
443.00	2,579	696
443.10	2,579	774
443.20	2,579	851
443.30	2,579	928
443.40	2,579	1,006
443.50	2,579	1,083
443.60	2,579	1,161
443.70	2,579	1,421
443.80	2,579	1,688
443.90	2,579	1,960
444.00	2,579	2,238
444.10	2,579	2,522
444.20	2,579	2,812
444.30	2,579	3,108
444.40	2,579	3,410
444.50	2,579	3,718
444.60	2,579	4,033
444.70	2,579	4,354
444.80	2,579	4,681
444.90	2,579	5,015
445.00	2,579	5,355
445.10	2,579	5,702
445.20	2,579	6,055
445.30	2,579	6,415
445.40	2,579	6,782
445.50	2,579	7,155
445.60	2,579	7,536
445.70	2,579	7,923
445.80	2,579	8,318
445.90	2,579	8,719
446.00	2,579	9,128
446.10	2,579	9,543
446.20	2,579	9,966
446.30	2,579	10,397
446.40	2,579	10,834
446.50	2,579	11,279
446.60	2,579	11,732
446.70	2,579	12,192
446.80	2,579	12,660
446.90	2,579	13,135
447.00	2,579	13,619
447.10	2,579	14,110
447.20	2,579	14,608
447.30	2,579	15,115
447.40	2,579	15,630
447.50	2,579	16,153
447.60	2,579	16,684
447.70	2,579	17,223
447.80	2,579	17,770
447.90	2,579	18,326
448.00	2,579	18,890
448.10	2,579	19,463
448.20	2,579	20,044
448.30	2,579	20,633
448.40	2,579	21,231
448.50	2,579	21,838
448.60	2,579	**22,454**

WQV = 5,342 CF

Stage-Discharge for Pond 3P: Sand Filter #3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
442.10	0.0	0.0	0.0
442.20	0.6	0.6	0.0
442.30	0.6	0.6	0.0
442.40	0.6	0.6	0.0
442.50	0.6	0.6	0.0
442.60	0.6	0.6	0.0
442.70	0.6	0.6	0.0
442.80	0.6	0.6	0.0
442.90	0.6	0.6	0.0
443.00	0.6	0.6	0.0
443.10	0.6	0.6	0.0
443.20	0.6	0.6	0.0
443.30	0.6	0.6	0.0
443.40	0.6	0.6	0.0
443.50	0.6	0.6	0.0
443.60	0.6	0.6	0.0
443.70	0.6	0.6	0.0
443.80	0.6	0.6	0.0
443.90	0.6	0.6	0.0
444.00	0.6	0.6	0.0
444.10	0.6	0.6	0.0
444.20	0.6	0.6	0.0
444.30	0.6	0.6	0.0
444.40	0.6	0.6	0.0
444.50	0.6	0.6	0.0
444.60	0.6	0.6	0.0
444.70	0.6	0.6	0.0
444.80	0.6	0.6	0.0
444.90	0.6	0.6	0.0
445.00	0.6	0.6	0.0
445.10	0.6	0.6	0.0
445.20	0.6	0.6	0.0
445.30	0.6	0.6	0.0
445.40	1.8	1.8	0.0
445.50	2.3	2.3	0.0
445.60	2.7	2.7	0.0
445.70	3.0	3.0	0.0
445.80	3.3	3.3	0.0
445.90	3.5	3.5	0.0
446.00	3.8	3.8	0.0
446.10	4.0	4.0	0.0
446.20	4.2	4.2	0.0
446.30	4.4	4.4	0.0
446.40	4.6	4.6	0.0
446.50	4.7	4.7	0.0
446.60	4.9	4.9	0.0
446.70	5.1	5.1	0.0
446.80	5.2	5.2	0.0
446.90	5.4	5.4	0.0
447.00	5.5	5.5	0.0
447.10	5.7	5.7	0.0
447.20	5.8	5.8	0.0
447.30	5.9	5.9	0.0
447.40	6.1	6.1	0.0
447.50	6.2	6.2	0.0
447.60	6.3	6.3	0.0
447.70	7.2	6.5	0.8
447.80	8.8	6.6	2.2
447.90	10.8	6.7	4.1
448.00	13.3	6.8	6.5
448.10	16.2	6.9	9.3
448.20	19.6	7.0	12.5
448.30	22.9	7.1	15.8
448.40	26.5	7.3	19.2
448.50	30.3	7.4	22.9
448.60	**34.3**	**7.5**	**26.8**

WQV = 0.6 CFS

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Pond 4P - Surface Sandfilter**

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

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
4.22	ac	A = Area draining to the practice	
1.51	ac	A_I = Impervious area draining to the practice	
0.36	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.37	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.57	ac-in	WQV= 1" x Rv x A	
5,699	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,425	cf	25% x WQV (check calc for sediment forebay volume)	
4,274	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = 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)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
450.30	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.20	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
15.83	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
446.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
446.50	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
445.80	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
445.80	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
0.70	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
0.70	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
451.10	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
452.10	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**
10,317	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
24.0	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	Yes/No	Access grate provided?	**← yes**

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

Stage-Area-Storage for Pond 4P: Sand Filter #4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
447.70	3,604	0
447.75	3,604	54
447.80	3,604	108
447.85	3,604	162
447.90	3,604	216
447.95	3,604	270
448.00	3,604	324
448.05	3,604	378
448.10	3,604	432
448.15	3,604	487
448.20	3,604	541
448.25	3,604	595
448.30	3,604	649
448.35	3,604	703
448.40	3,604	757
448.45	3,604	811
448.50	3,604	865
448.55	3,604	919
448.60	3,604	973
448.65	3,604	1,027
448.70	3,604	1,081
448.75	3,604	1,135
448.80	3,604	1,189
448.85	3,604	1,243
448.90	3,604	1,297
448.95	3,604	1,352
449.00	3,604	1,406
449.05	3,604	1,460
449.10	3,604	1,514
449.15	3,604	1,568
449.20	**3,604**	1,622
449.25	3,604	1,803
449.30	3,604	1,986
449.35	3,604	2,170
449.40	3,604	2,357
449.45	3,604	2,545
449.50	3,604	2,736
449.55	3,604	2,928
449.60	3,604	3,121
449.65	3,604	3,317
449.70	3,604	3,515
449.75	3,604	3,714
449.80	3,604	3,916
449.85	3,604	4,119
449.90	3,604	4,324
449.95	3,604	4,531
450.00	3,604	4,740
450.05	3,604	4,951
450.10	3,604	5,164
450.15	3,604	5,379
450.20	3,604	5,595
450.25	3,604	5,814
450.30	3,604	6,035
450.35	3,604	6,258
450.40	3,604	6,482
450.45	3,604	6,709
450.50	3,604	6,938
450.55	3,604	7,168
450.60	3,604	7,401
450.65	3,604	7,636
450.70	3,604	7,873
450.75	3,604	8,112
450.80	3,604	8,353
450.85	3,604	8,596
450.90	3,604	8,841
450.95	3,604	9,088
451.00	3,604	9,337
451.05	3,604	9,589
451.10	3,604	9,842
451.15	3,604	10,098
451.20	3,604	10,356
451.25	3,604	10,616
451.30	3,604	10,878
451.35	3,604	11,142
451.40	3,604	11,408
451.45	3,604	11,677
451.50	3,604	11,948
451.55	3,604	12,221
451.60	3,604	12,496
451.65	3,604	12,773
451.70	3,604	13,053
451.75	3,604	13,335
451.80	3,604	13,619
451.85	3,604	13,905
451.90	3,604	14,194
451.95	3,604	14,485
452.00	3,604	14,778
452.05	3,604	15,074
452.10	3,604	**15,371**

WQV = 5,699 CF

Stage-Discharge for Pond 4P: Sand Filter #4

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
447.70	0.0	0.0	0.0
447.75	0.6	0.6	0.0
447.80	0.6	0.6	0.0
447.85	0.6	0.6	0.0
447.90	0.6	0.6	0.0
447.95	0.6	0.6	0.0
448.00	0.7	0.7	0.0
448.05	0.7	0.7	0.0
448.10	0.7	0.7	0.0
448.15	0.7	0.7	0.0
448.20	0.7	0.7	0.0
448.25	0.7	0.7	0.0
448.30	0.8	0.8	0.0
448.35	0.8	0.8	0.0
448.40	0.8	0.8	0.0
448.45	0.8	0.8	0.0
448.50	0.8	0.8	0.0
448.55	0.8	0.8	0.0
448.60	0.8	0.8	0.0
448.65	0.8	0.8	0.0
448.70	0.8	0.8	0.0
448.75	0.8	0.8	0.0
448.80	0.8	0.8	0.0
448.85	0.8	0.8	0.0
448.90	0.8	0.8	0.0
448.95	0.8	0.8	0.0
449.00	0.8	0.8	0.0
449.05	0.8	0.8	0.0
449.10	0.8	0.8	0.0
449.15	0.8	0.8	0.0
449.20	0.8	0.8	0.0
449.25	0.8	0.8	0.0
449.30	0.8	0.8	0.0
449.35	0.8	0.8	0.0
449.40	0.8	0.8	0.0
449.45	0.8	0.8	0.0
449.50	0.8	0.8	0.0
449.55	0.8	0.8	0.0
449.60	0.8	0.8	0.0
449.65	0.8	0.8	0.0
449.70	0.8	0.8	0.0
449.75	0.8	0.8	0.0
449.80	0.8	0.8	0.0
449.85	0.8	0.8	0.0
449.90	0.8	0.8	0.0
449.95	0.8	0.8	0.0
450.00	0.8	0.8	0.0
450.05	0.8	0.8	0.0
450.10	0.8	0.8	0.0
450.15	0.8	0.8	0.0
450.20	0.8	0.8	0.0
450.25	0.8	0.8	0.0
450.30	0.8	0.8	0.0
450.35	1.1	1.1	0.0
450.40	1.5	1.5	0.0
450.45	2.0	2.0	0.0
450.50	2.7	2.7	0.0
450.55	3.4	3.4	0.0
450.60	4.2	4.2	0.0
450.65	5.1	5.1	0.0
450.70	6.0	6.0	0.0
450.75	7.0	7.0	0.0
450.80	8.1	8.1	0.0
450.85	9.2	9.2	0.0
450.90	10.4	10.4	0.0
450.95	11.6	11.6	0.0
451.00	12.9	12.9	0.0
451.05	13.9	13.9	0.0
451.10	14.4	14.4	0.0
451.15	14.8	14.8	0.0
451.20	15.2	15.2	0.0
451.25	15.9	15.6	0.3
451.30	16.7	16.0	0.8
451.35	17.8	16.3	1.4
451.40	18.7	16.5	2.2
451.45	19.7	16.5	3.1
451.50	20.7	16.6	4.1
451.55	21.9	16.6	5.3
451.60	23.2	16.7	6.5
451.65	24.6	16.7	7.8
451.70	26.1	16.8	9.3
451.75	27.7	16.8	10.9
451.80	29.4	16.9	12.5
451.85	31.1	16.9	14.1
451.90	32.8	17.0	15.8
451.95	34.5	17.0	17.5
452.00	36.3	17.1	19.2
452.05	38.2	17.2	21.1
452.10	**40.1**	**17.2**	**22.9**

WQV = 0.8 CFS

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Pond 5P - Surface Sandfilter**

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

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
9.26	ac	A = Area draining to the practice	
2.99	ac	A_I = Impervious area draining to the practice	
0.32	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.34	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
3.15	ac-in	WQV= 1" x Rv x A	
11,449	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
2,862	cf	25% x WQV (check calc for sediment forebay volume)	
8,587	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = 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)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
451.15	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
1.50	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
4.24	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
446.60	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
446.60	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
447.25	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
444.59	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
2.01	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
(0.65)	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
452.17	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
453.20	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
11,449	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
24.0	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	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
NO	ac	Drainage Area no larger than 5 ac?	**← yes**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
	:1	Pond side slopes	**≥ 3:1**
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		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:

Stage-Area-Storage for Pond 5P: Sand Filter #5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
447.75	**4,500**	0
447.85	4,500	135
447.95	4,500	270
448.05	4,500	405
448.15	4,500	540
448.25	4,500	675
448.35	4,500	810
448.45	4,500	945
448.55	4,500	1,080
448.65	4,500	1,215
448.75	4,500	1,350
448.85	4,500	1,485
448.95	4,500	1,620
449.05	4,500	1,755
449.15	4,500	1,890
449.25	4,500	2,025
449.35	4,500	2,479
449.45	4,500	2,941
449.55	4,500	3,410
449.65	4,500	3,887
449.75	4,500	4,373
449.85	4,500	4,866
449.95	4,500	5,368
450.05	4,500	5,878
450.15	4,500	6,396
450.25	4,500	6,922
450.35	4,500	7,457
450.45	4,500	8,000
450.55	4,500	8,551
450.65	4,500	9,111
450.75	4,500	9,680
450.85	4,500	10,258
450.95	4,500	10,844
451.05	4,500	11,439
451.15	4,500	12,043
451.25	4,500	12,656
451.35	4,500	13,279
451.45	4,500	13,910
451.55	4,500	14,550
451.65	4,500	15,200
451.75	4,500	15,859
451.85	4,500	16,527
451.95	4,500	17,205
452.05	4,500	17,892
452.15	4,500	18,589
452.25	4,500	19,295
452.35	4,500	20,011
452.45	4,500	20,737
452.55	4,500	21,473
452.65	4,500	22,218
452.75	4,500	22,974
452.85	4,500	23,740
452.95	4,500	24,515
453.05	4,500	25,301
453.15	4,500	**26,097**

WQV = 11,449 CF

Stage-Discharge for Pond 5P: Sand Filter #5

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
447.75	0.0	0.0	0.0
447.85	0.5	0.5	0.0
447.95	0.5	0.5	0.0
448.05	0.6	0.6	0.0
448.15	0.6	0.6	0.0
448.25	0.6	0.6	0.0
448.35	0.6	0.6	0.0
448.45	0.7	0.7	0.0
448.55	0.7	0.7	0.0
448.65	0.7	0.7	0.0
448.75	0.7	0.7	0.0
448.85	0.8	0.8	0.0
448.95	0.8	0.8	0.0
449.05	0.8	0.8	0.0
449.15	0.8	0.8	0.0
449.25	0.8	0.8	0.0
449.35	0.9	0.9	0.0
449.45	0.9	0.9	0.0
449.55	0.9	0.9	0.0
449.65	0.9	0.9	0.0
449.75	0.9	0.9	0.0
449.85	0.9	0.9	0.0
449.95	1.0	1.0	0.0
450.05	1.0	1.0	0.0
450.15	1.0	1.0	0.0
450.25	1.0	1.0	0.0
450.35	1.0	1.0	0.0
450.45	1.0	1.0	0.0
450.55	1.0	1.0	0.0
450.65	1.0	1.0	0.0
450.75	1.0	1.0	0.0
450.85	1.0	1.0	0.0
450.95	1.0	1.0	0.0
451.05	1.0	1.0	0.0
451.15	1.5	1.5	0.0
451.25	3.4	3.4	0.0
451.35	6.2	6.2	0.0
451.45	9.6	9.6	0.0
451.55	13.4	13.4	0.0
451.65	17.8	17.8	0.0
451.75	22.6	22.6	0.0
451.85	27.7	27.7	0.0
451.95	33.2	33.2	0.0
452.05	39.1	39.1	0.0
452.15	45.3	45.3	0.0
452.25	48.3	48.0	0.3
452.35	50.0	48.6	1.4
452.45	52.3	49.1	3.1
452.55	55.0	49.7	5.3
452.65	58.1	50.2	7.8
452.75	61.6	50.8	10.9
452.85	65.4	51.3	14.1
452.95	69.3	51.8	17.5
453.05	73.4	52.3	21.1
453.15	**77.7**	**52.9**	**24.8**

WQV = 1.5 CFS

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Pond 6P - Surface Sandfilter**

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

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
6.49	ac	A = Area draining to the practice	
2.78	ac	A_I = Impervious area draining to the practice	
0.43	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.44	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
2.83	ac-in	WQV= 1" x Rv x A	
10,260	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
2,565	cf	25% x WQV (check calc for sediment forebay volume)	
7,695	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = 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)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
405.20	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.70	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
8.14	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
401.00	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
401.00	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
401.54	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
401.54	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
(0.54)	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
(0.54)	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
406.03	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
407.10	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**
15,230	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
24.0	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	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
NO	ac	Drainage Area no larger than 5 ac?	**← yes**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
	:1	Pond side slopes	**≥ 3:1**
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		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:

Stage-Area-Storage for Pond 6P: Sand Filter #6

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
401.50	**2,990**	0
401.60	2,990	90
401.70	2,990	179
401.80	2,990	269
401.90	2,990	359
402.00	2,990	449
402.10	2,990	538
402.20	2,990	628
402.30	2,990	718
402.40	2,990	807
402.50	2,990	897
402.60	2,990	987
402.70	2,990	1,076
402.80	2,990	1,166
402.90	2,990	1,256
403.00	2,990	1,346
403.10	2,990	1,649
403.20	2,990	1,963
403.30	2,990	2,285
403.40	2,990	2,617
403.50	2,990	2,959
403.60	2,990	3,311
403.70	2,990	3,672
403.80	2,990	4,044
403.90	2,990	4,426
404.00	2,990	4,818
404.10	2,990	5,221
404.20	2,990	5,635
404.30	2,990	6,059
404.40	2,990	6,494
404.50	2,990	6,941
404.60	2,990	7,398
404.70	2,990	7,867
404.80	2,990	8,347
404.90	2,990	8,839
405.00	2,990	9,343
405.10	2,990	9,859
405.20	2,990	10,387
405.30	2,990	10,927
405.40	2,990	11,479
405.50	2,990	12,044
405.60	2,990	12,621
405.70	2,990	13,211
405.80	2,990	13,815
405.90	2,990	14,431
406.00	2,990	15,060
406.10	2,990	15,702
406.20	2,990	16,358
406.30	2,990	17,028
406.40	2,990	17,711
406.50	2,990	18,409
406.60	2,990	19,120
406.70	2,990	19,845
406.80	2,990	20,585
406.90	2,990	21,339
407.00	2,990	22,107
407.10	2,990	**22,891**

WQV = 10,260 CF

Stage-Discharge for Pond 6P: Sand Filter #6

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
401.50	0.0	0.0	0.0
401.60	0.3	0.3	0.0
401.70	0.3	0.3	0.0
401.80	0.4	0.4	0.0
401.90	0.4	0.4	0.0
402.00	0.5	0.5	0.0
402.10	0.5	0.5	0.0
402.20	0.6	0.6	0.0
402.30	0.6	0.6	0.0
402.40	0.6	0.6	0.0
402.50	0.7	0.7	0.0
402.60	0.7	0.7	0.0
402.70	0.7	0.7	0.0
402.80	0.7	0.7	0.0
402.90	0.7	0.7	0.0
403.00	0.7	0.7	0.0
403.10	0.7	0.7	0.0
403.20	0.7	0.7	0.0
403.30	0.7	0.7	0.0
403.40	0.7	0.7	0.0
403.50	0.7	0.7	0.0
403.60	0.7	0.7	0.0
403.70	0.7	0.7	0.0
403.80	0.7	0.7	0.0
403.90	0.7	0.7	0.0
404.00	0.7	0.7	0.0
404.10	0.7	0.7	0.0
404.20	0.7	0.7	0.0
404.30	0.7	0.7	0.0
404.40	0.7	0.7	0.0
404.50	0.7	0.7	0.0
404.60	0.7	0.7	0.0
404.70	0.7	0.7	0.0
404.80	0.7	0.7	0.0
404.90	0.7	0.7	0.0
405.00	0.7	0.7	0.0
405.10	0.7	0.7	0.0
405.20	0.7	0.7	0.0
405.30	0.7	0.7	0.0
405.40	2.0	2.0	0.0
405.50	4.4	4.4	0.0
405.60	7.4	7.4	0.0
405.70	11.1	11.1	0.0
405.80	15.2	15.2	0.0
405.90	19.8	19.8	0.0
406.00	24.8	24.8	0.0
406.10	30.1	30.1	0.0
406.20	36.6	35.8	0.8
406.30	39.3	37.1	2.2
406.40	41.5	37.4	4.1
406.50	44.1	37.7	6.5
406.60	47.3	38.0	9.3
406.70	50.8	38.3	12.5
406.80	54.3	38.6	15.8
406.90	58.1	38.9	19.2
407.00	62.1	39.2	22.9
407.10	**66.2**	**39.4**	**26.8**

WQV = 0.7 CFS

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Pond 7P - Surface Sandfilter**

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

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
4.35	ac	A = Area draining to the practice	
1.35	ac	A_I = Impervious area draining to the practice	
0.31	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.33	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.43	ac-in	WQV= 1" x Rv x A	
5,200	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,300	cf	25% x WQV (check calc for sediment forebay volume)	
3,900	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = 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)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
447.25	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.30	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
9.63	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
443.83	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
443.83	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
446.35	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
446.35	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
(2.52)	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
(2.52)	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
449.00	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
450.00	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
15,583	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
24.0	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	Yes/No	Access grate provided?	← yes

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

Stage-Area-Storage for Pond 7P: Sand Filter #7

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
445.00	3,992	0
445.05	3,992	60
445.10	3,992	120
445.15	3,992	180
445.20	3,992	240
445.25	3,992	299
445.30	3,992	359
445.35	3,992	419
445.40	3,992	479
445.45	3,992	539
445.50	3,992	599
445.55	3,992	659
445.60	3,992	719
445.65	3,992	778
445.70	3,992	838
445.75	3,992	898
445.80	3,992	958
445.85	3,992	1,018
445.90	3,992	1,078
445.95	3,992	1,138
446.00	3,992	1,198
446.05	3,992	1,257
446.10	3,992	1,317
446.15	3,992	1,377
446.20	3,992	1,437
446.25	3,992	1,497
446.30	3,992	1,557
446.35	3,992	1,617
446.40	3,992	1,677
446.45	3,992	1,737
446.50	8,401	1,796
446.55	8,442	2,018
446.60	8,483	2,241
446.65	8,524	2,467
446.70	8,566	2,695
446.75	8,607	2,924
446.80	8,649	3,156
446.85	8,691	3,390
446.90	8,733	3,626
446.95	8,776	3,864
447.00	8,818	4,104
447.05	8,861	4,347
447.10	8,904	4,591
447.15	8,947	4,838
447.20	8,990	5,087
447.25	9,034	5,338
447.30	9,078	5,591
447.35	9,122	5,846
447.40	9,166	6,104
447.45	9,210	6,364
447.50	9,254	6,626
447.55	9,299	6,890
447.60	9,344	7,157
447.65	9,389	7,425
447.70	9,434	7,696
447.75	9,480	7,969
447.80	9,525	8,245
447.85	9,571	8,523
447.90	9,617	8,803
447.95	9,663	9,085
448.00	9,709	9,370
448.05	9,756	9,657
448.10	9,803	9,946
448.15	9,850	10,238
448.20	9,897	10,532
448.25	9,944	10,829
448.30	9,991	11,127
448.35	10,039	11,428
448.40	10,087	11,732
448.45	10,135	12,038
448.50	10,183	12,346
448.55	10,232	12,657
448.60	10,280	12,970
448.65	10,329	13,286
448.70	10,378	13,604
448.75	10,427	13,925
448.80	10,477	14,248
448.85	10,526	14,573
448.90	10,576	14,901
448.95	10,626	15,231
449.00	10,676	15,564
449.05	10,726	15,900
449.10	10,777	16,238
449.15	10,827	16,578
449.20	10,878	16,921
449.25	10,929	17,267
449.30	10,981	17,615
449.35	11,032	17,966
449.40	11,084	18,319
449.45	11,136	18,675
449.50	11,188	19,033
449.55	11,240	19,395
449.60	11,292	19,758
449.65	11,345	20,125
449.70	11,397	20,494

WQV = 5,200 CF

Stage-Discharge for Pond 7P: Sand Filter #7

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
445.00	0.0	0.0	0.0
445.05	0.2	0.2	0.0
445.10	0.2	0.2	0.0
445.15	0.2	0.2	0.0
445.20	0.2	0.2	0.0
445.25	0.2	0.2	0.0
445.30	0.2	0.2	0.0
445.35	0.2	0.2	0.0
445.40	0.2	0.2	0.0
445.45	0.2	0.2	0.0
445.50	0.2	0.2	0.0
445.55	0.2	0.2	0.0
445.60	0.2	0.2	0.0
445.65	0.2	0.2	0.0
445.70	0.2	0.2	0.0
445.75	0.2	0.2	0.0
445.80	0.2	0.2	0.0
445.85	0.2	0.2	0.0
445.90	0.2	0.2	0.0
445.95	0.2	0.2	0.0
446.00	0.2	0.2	0.0
446.05	0.2	0.2	0.0
446.10	0.2	0.2	0.0
446.15	0.2	0.2	0.0
446.20	0.2	0.2	0.0
446.25	0.2	0.2	0.0
446.30	0.3	0.3	0.0
446.35	0.3	0.3	0.0
446.40	0.3	0.3	0.0
446.45	0.3	0.3	0.0
446.50	0.3	0.3	0.0
446.55	0.3	0.3	0.0
446.60	0.3	0.3	0.0
446.65	0.3	0.3	0.0
446.70	0.3	0.3	0.0
446.75	0.3	0.3	0.0
446.80	0.3	0.3	0.0
446.85	0.3	0.3	0.0
446.90	0.3	0.3	0.0
446.95	0.3	0.3	0.0
447.00	0.3	0.3	0.0
447.05	0.3	0.3	0.0
447.10	0.3	0.3	0.0
447.15	0.3	0.3	0.0
447.20	0.3	0.3	0.0
447.25	0.3	0.3	0.0
447.30	0.3	0.3	0.0
447.35	0.4	0.4	0.0
447.40	0.7	0.7	0.0
447.45	1.1	1.1	0.0
447.50	1.5	1.5	0.0
447.55	1.9	1.9	0.0
447.60	2.4	2.4	0.0
447.65	3.0	3.0	0.0
447.70	3.6	3.6	0.0
447.75	4.2	4.2	0.0
447.80	4.5	4.5	0.0
447.85	4.7	4.7	0.0
447.90	4.9	4.9	0.0
447.95	5.1	5.1	0.0
448.00	5.3	5.3	0.0
448.05	5.5	5.5	0.0
448.10	5.6	5.6	0.0
448.15	5.8	5.8	0.0
448.20	5.9	5.9	0.0
448.25	6.1	6.1	0.0
448.30	6.3	6.3	0.0
448.35	6.4	6.4	0.0
448.40	6.5	6.5	0.0
448.45	6.7	6.7	0.0
448.50	6.8	6.8	0.0
448.55	7.0	7.0	0.0
448.60	7.1	7.1	0.0
448.65	7.2	7.2	0.0
448.70	7.3	7.3	0.0
448.75	7.5	7.5	0.0
448.80	7.6	7.6	0.0
448.85	7.7	7.7	0.0
448.90	7.8	7.8	0.0
448.95	8.0	8.0	0.0
449.00	8.1	8.1	0.0
449.05	8.5	8.2	0.3
449.10	9.1	8.3	0.8
449.15	9.8	8.3	1.4
449.20	10.6	8.4	2.2
449.25	11.5	8.4	3.1
449.30	12.6	8.5	4.1
449.35	13.8	8.5	5.3
449.40	15.0	8.5	6.5
449.45	16.4	8.6	7.8
449.50	17.9	8.6	9.3
449.55	19.5	8.7	10.9
449.60	21.3	8.7	12.5
449.65	22.9	8.7	14.1
449.70	24.6	8.8	15.8

WQV = 0.3 CFS

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Pond 8P - Surface Sandfilter**

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

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
2.25	ac	A = Area draining to the practice	
1.00	ac	A_I = Impervious area draining to the practice	
0.44	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.45	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.01	ac-in	WQV= 1" x Rv x A	
3,675	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
919	cf	25% x WQV (check calc for sediment forebay volume)	
2,757	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = 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)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
437.45	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.70	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
2.92	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
435.00	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
435.00	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
432.70	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
432.70	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
2.30	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
2.30	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
438.45	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
439.50	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**
6,508	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
24.0	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	Yes/No	Access grate provided?	**← yes**

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

Stage-Area-Storage for Pond 8P: Amenity Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
435.50	3,048	0
435.55	3,048	46
435.60	3,048	91
435.65	3,048	137
435.70	3,048	183
435.75	3,048	229
435.80	3,048	274
435.85	3,048	320
435.90	3,048	366
435.95	3,048	411
436.00	3,048	457
436.05	3,048	503
436.10	3,048	549
436.15	3,048	594
436.20	3,048	640
436.25	3,048	686
436.30	3,048	732
436.35	3,048	777
436.40	3,048	823
436.45	3,048	869
436.50	3,048	914
436.55	3,048	960
436.60	3,048	1,006
436.65	3,048	1,052
436.70	3,048	1,097
436.75	3,048	1,143
436.80	3,048	1,189
436.85	3,048	1,234
436.90	3,048	1,280
436.95	3,048	1,326
437.00	**3,048**	1,372
437.05	3,048	1,525
437.10	3,048	1,680
437.15	3,048	1,836
437.20	3,048	1,994
437.25	3,048	2,154
437.30	3,048	2,315
437.35	3,048	2,479
437.40	3,048	2,643
437.45	3,048	2,810
437.50	3,048	2,978
437.55	3,048	3,148
437.60	3,048	3,319
437.65	3,048	3,493
437.70	3,048	3,668
437.75	3,048	3,845
437.80	3,048	4,023
437.85	3,048	4,203
437.90	3,048	4,385
437.95	3,048	4,569
438.00	3,048	4,755
438.05	3,048	4,942
438.10	3,048	5,131
438.15	3,048	5,322
438.20	3,048	5,515
438.25	3,048	5,710
438.30	3,048	5,906
438.35	3,048	6,105
438.40	3,048	6,305
438.45	3,048	6,507
438.50	3,048	6,711
438.55	3,048	6,917
438.60	3,048	7,124
438.65	3,048	7,334
438.70	3,048	7,545
438.75	3,048	7,759
438.80	3,048	7,974
438.85	3,048	8,191
438.90	3,048	8,410
438.95	3,048	8,631
439.00	3,048	8,855
439.05	3,048	9,080
439.10	3,048	9,307
439.15	3,048	9,536
439.20	3,048	9,766
439.25	3,048	9,999
439.30	3,048	10,234
439.35	3,048	10,471
439.40	3,048	10,710
439.45	3,048	10,951
439.50	3,048	**11,195**

WQV = 2,757 CF

Stage-Discharge for Pond 8P: Amenity Basin

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
435.50	0.0	0.0	0.0
435.55	0.2	0.2	0.0
435.60	0.3	0.3	0.0
435.65	0.3	0.3	0.0
435.70	0.3	0.3	0.0
435.75	0.3	0.3	0.0
435.80	0.4	0.4	0.0
435.85	0.4	0.4	0.0
435.90	0.4	0.4	0.0
435.95	0.5	0.5	0.0
436.00	0.5	0.5	0.0
436.05	0.5	0.5	0.0
436.10	0.5	0.5	0.0
436.15	0.5	0.5	0.0
436.20	0.6	0.6	0.0
436.25	0.6	0.6	0.0
436.30	0.6	0.6	0.0
436.35	0.6	0.6	0.0
436.40	0.6	0.6	0.0
436.45	0.7	0.7	0.0
436.50	0.7	0.7	0.0
436.55	0.7	0.7	0.0
436.60	0.7	0.7	0.0
436.65	0.7	0.7	0.0
436.70	0.7	0.7	0.0
436.75	0.7	0.7	0.0
436.80	0.7	0.7	0.0
436.85	0.7	0.7	0.0
436.90	0.7	0.7	0.0
436.95	0.7	0.7	0.0
437.00	0.7	0.7	0.0
437.05	0.7	0.7	0.0
437.10	0.7	0.7	0.0
437.15	0.7	0.7	0.0
437.20	0.7	0.7	0.0
437.25	0.7	0.7	0.0
437.30	0.7	0.7	0.0
437.35	0.7	0.7	0.0
437.40	0.7	0.7	0.0
437.45	0.7	0.7	0.0
437.50	0.7	0.7	0.0
437.55	0.7	0.7	0.0
437.60	0.7	0.7	0.0
437.65	0.7	0.7	0.0
437.70	0.7	0.7	0.0
437.75	0.7	0.7	0.0
437.80	0.7	0.7	0.0
437.85	0.9	0.9	0.0
437.90	1.4	1.4	0.0
437.95	1.9	1.9	0.0
438.00	2.5	2.5	0.0
438.05	3.3	3.3	0.0
438.10	4.1	4.1	0.0
438.15	5.0	5.0	0.0
438.20	5.9	5.9	0.0
438.25	6.9	6.9	0.0
438.30	8.0	8.0	0.0
438.35	9.1	9.1	0.0
438.40	10.3	10.3	0.0
438.45	11.5	11.5	0.0
438.50	12.7	12.7	0.0
438.55	14.1	13.8	0.3
438.60	15.0	14.2	0.8
438.65	16.1	14.7	1.4
438.70	17.3	15.1	2.2
438.75	18.6	15.4	3.1
438.80	20.0	15.8	4.1
438.85	21.5	16.2	5.3
438.90	23.0	16.6	6.5
438.95	24.6	16.8	7.8
439.00	26.2	16.9	9.3
439.05	27.9	17.0	10.9
439.10	29.7	17.1	12.5
439.15	31.4	17.2	14.1
439.20	33.1	17.3	15.8
439.25	34.9	17.4	17.5
439.30	36.8	17.5	19.2
439.35	38.7	17.6	21.1
439.40	40.7	17.7	22.9
439.45	42.7	17.8	24.8
439.50	**44.7**	**17.9**	**26.8**

WQV = 0.7 CFS

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Pond 9P - Surface Sandfilter**

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

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
5.06	ac	A = Area draining to the practice	
2.13	ac	A_I = Impervious area draining to the practice	
0.42	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.43	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
2.17	ac-in	WQV= 1" x Rv x A	
7,877	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,969	cf	25% x WQV (check calc for sediment forebay volume)	
5,908	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = 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)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
445.45	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.20	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
21.88	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
443.00	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
443.00	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
439.90	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
439.90	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
3.10	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
3.10	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
447.34	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
448.40	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
29,094	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
24.0	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	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
NO	ac	Drainage Area no larger than 5 ac?	**← yes**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
	:1	Pond side slopes	**≥ 3:1**
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		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:

Stage-Area-Storage for Pond 9P: Cluster E Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
443.50	8,762	0
443.55	8,762	131
443.60	8,762	263
443.65	8,762	394
443.70	8,762	526
443.75	8,762	657
443.80	8,762	789
443.85	8,762	920
443.90	8,762	1,051
443.95	8,762	1,183
444.00	8,762	1,314
444.05	8,762	1,446
444.10	8,762	1,577
444.15	8,762	1,709
444.20	8,762	1,840
444.25	8,762	1,971
444.30	8,762	2,103
444.35	8,762	2,234
444.40	8,762	2,366
444.45	8,762	2,497
444.50	8,762	2,629
444.55	8,762	2,760
444.60	8,762	2,891
444.65	8,762	3,023
444.70	8,762	3,154
444.75	8,762	3,286
444.80	8,762	3,417
444.85	8,762	3,549
444.90	8,762	3,680
444.95	8,762	3,811
445.00	17,524	3,943
445.05	17,602	4,383
445.10	17,681	4,827
445.15	17,760	5,275
445.20	17,840	5,727
445.25	17,920	6,183
445.30	18,000	6,643
445.35	18,080	7,106
445.40	18,161	7,574
445.45	18,243	8,046
445.50	18,324	8,522
445.55	18,406	9,003
445.60	18,488	9,487
445.65	18,571	9,975
445.70	18,654	10,468
445.75	18,737	10,965
445.80	18,821	11,465
445.85	18,905	11,970
445.90	18,990	12,480
445.95	19,074	12,993
446.00	19,159	13,511
446.05	19,245	14,033
446.10	19,331	14,559
446.15	19,417	15,090
446.20	19,503	15,625
446.25	19,590	16,164
446.30	19,677	16,708
446.35	19,765	17,255
446.40	19,853	17,808
446.45	19,941	18,365
446.50	20,030	18,926
446.55	20,119	19,491
446.60	20,208	20,061
446.65	20,297	20,636
446.70	20,387	21,215
446.75	20,478	21,798
446.80	20,568	22,387
446.85	20,659	22,979
446.90	20,751	23,576
446.95	20,843	24,178
447.00	20,935	24,784
447.05	21,027	25,395
447.10	21,120	26,011
447.15	21,213	26,631
447.20	21,307	27,256
447.25	21,400	27,886
447.30	21,495	28,520
447.35	21,589	29,159
447.40	21,684	29,803
447.45	21,779	30,451
447.50	21,875	31,104
447.55	21,971	31,762
447.60	22,067	32,425
447.65	22,164	33,093
447.70	22,261	33,765
447.75	22,358	34,443
447.80	22,456	35,125
447.85	22,554	35,812
448.20	23,250	40,760
448.25	23,350	41,487
448.30	23,452	42,219
448.35	23,553	42,956
448.40	**23,655**	**43,698**

WQV = 7,877 CF

Stage-Discharge for Pond 9P: Cluster E Basin

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
443.50	0.0	0.0	0.0
443.55	0.1	0.1	0.0
443.60	0.1	0.1	0.0
443.65	0.1	0.1	0.0
443.70	0.1	0.1	0.0
443.75	0.1	0.1	0.0
443.80	0.1	0.1	0.0
443.85	0.1	0.1	0.0
443.90	0.1	0.1	0.0
443.95	0.1	0.1	0.0
444.00	0.1	0.1	0.0
444.05	0.1	0.1	0.0
444.10	0.1	0.1	0.0
444.15	0.1	0.1	0.0
444.20	0.1	0.1	0.0
444.25	0.1	0.1	0.0
444.30	0.1	0.1	0.0
444.35	0.1	0.1	0.0
444.40	0.1	0.1	0.0
444.45	0.1	0.1	0.0
444.50	0.1	0.1	0.0
444.55	0.1	0.1	0.0
444.60	0.1	0.1	0.0
444.65	0.1	0.1	0.0
444.70	0.1	0.1	0.0
444.75	0.1	0.1	0.0
444.80	0.1	0.1	0.0
444.85	0.1	0.1	0.0
444.90	0.1	0.1	0.0
444.95	0.1	0.1	0.0
445.00	0.1	0.1	0.0
445.05	0.1	0.1	0.0
445.10	0.1	0.1	0.0
445.15	0.2	0.2	0.0
445.20	0.2	0.2	0.0
445.25	0.2	0.2	0.0
445.30	0.2	0.2	0.0
445.35	0.2	0.2	0.0
445.40	0.2	0.2	0.0
445.45	0.2	0.2	0.0
445.50	0.2	0.2	0.0
445.55	0.2	0.2	0.0
445.60	0.2	0.2	0.0
445.65	0.2	0.2	0.0
445.70	0.2	0.2	0.0
445.75	0.2	0.2	0.0
445.80	0.2	0.2	0.0
445.85	0.2	0.2	0.0
445.90	0.2	0.2	0.0
445.95	0.2	0.2	0.0
446.00	0.2	0.2	0.0
446.05	0.2	0.2	0.0
446.10	0.2	0.2	0.0
446.15	0.2	0.2	0.0
446.20	0.2	0.2	0.0
446.25	0.2	0.2	0.0
446.30	0.2	0.2	0.0
446.35	0.2	0.2	0.0
446.40	0.2	0.2	0.0
446.45	0.2	0.2	0.0
446.50	0.2	0.2	0.0
446.55	0.2	0.2	0.0
446.60	0.2	0.2	0.0
446.65	0.7	0.7	0.0
446.70	1.5	1.5	0.0
446.75	2.6	2.6	0.0
446.80	3.9	3.9	0.0
446.85	5.3	5.3	0.0
446.90	7.0	7.0	0.0
446.95	8.7	8.7	0.0
447.00	10.6	10.6	0.0
447.05	12.6	12.6	0.0
447.10	14.7	14.7	0.0
447.15	17.0	17.0	0.0
447.20	17.3	17.3	0.0
447.25	17.4	17.4	0.0
447.30	17.5	17.5	0.0
447.35	17.6	17.6	0.0
447.40	17.7	17.7	0.0
447.45	18.1	17.8	0.3
447.50	18.7	17.9	0.8
447.55	19.5	18.0	1.4
447.60	20.4	18.1	2.2
447.65	21.4	18.2	3.1
447.70	22.5	18.3	4.1
447.75	23.7	18.4	5.3
447.80	25.0	18.5	6.5
447.85	26.5	18.6	7.8
448.20	38.6	19.3	19.2
448.25	40.5	19.4	21.1
448.30	42.4	19.5	22.9
448.35	44.4	19.6	24.8
448.40	**46.5**	**19.7**	**26.8**

WQV = 0.2 CFS

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Pond 10P - Surface Sandfilter**

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

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
5.20	ac	A = Area draining to the practice	
1.54	ac	A_I = Impervious area draining to the practice	
0.30	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.32	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.65	ac-in	WQV= 1" x Rv x A	
5,975	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,494	cf	25% x WQV (check calc for sediment forebay volume)	
4,481	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = 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)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
456.20	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.90	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
3.69	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
452.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
452.50	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
444.55	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
444.55	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
7.95	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
7.95	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
457.32	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
458.40	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
11,693	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
24.0	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.	
W	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
NO	ac	Drainage Area no larger than 5 ac?	**← yes**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
	:1	Pond side slopes	**≥ 3:1**
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		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:

Stage-Area-Storage for Pond 10P: Cluster D Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
453.70	3,889	0
453.75	3,889	58
453.80	3,889	117
453.85	3,889	175
453.90	3,889	233
453.95	3,889	292
454.00	3,889	350
454.05	3,889	408
454.10	3,889	467
454.15	3,889	525
454.20	3,889	583
454.25	3,889	642
454.30	3,889	700
454.35	3,889	758
454.40	3,889	817
454.45	3,889	875
454.50	3,889	933
454.55	3,889	992
454.60	3,889	1,050
454.65	3,889	1,108
454.70	3,889	1,167
454.75	3,889	1,225
454.80	3,889	1,283
454.85	3,889	1,342
454.90	3,889	1,400
454.95	3,889	1,458
455.00	3,889	1,517
455.05	3,889	1,575
455.10	3,889	1,633
455.15	3,889	1,692
455.20	**3,889**	1,750
455.25	3,889	1,945
455.30	3,889	2,143
455.35	3,889	2,341
455.40	3,889	2,542
455.45	3,889	2,745
455.50	3,889	2,949
455.55	3,889	3,155
455.60	3,889	3,364
455.65	3,889	3,574
455.70	3,889	3,785
455.75	3,889	3,999
455.80	3,889	4,215
455.85	3,889	4,432
455.90	3,889	4,651
455.95	3,889	4,873
456.00	3,889	5,096
456.05	3,889	5,321
456.10	3,889	5,548
456.15	3,889	5,777
456.20	3,889	6,008
456.25	3,889	6,240
456.30	3,889	6,475
456.35	3,889	6,712
456.40	3,889	6,951
456.45	3,889	7,191
456.50	3,889	7,434
456.55	3,889	7,679
456.60	3,889	7,926
456.65	3,889	8,174
456.70	3,889	8,425
456.75	3,889	8,678
456.80	3,889	8,933
456.85	3,889	9,190
456.90	3,889	9,449
456.95	3,889	9,710
457.00	3,889	9,973
457.05	3,889	10,238
457.10	3,889	10,505
457.15	3,889	10,774
457.20	3,889	11,046
457.25	3,889	11,320
457.30	3,889	11,595
457.35	3,889	11,873
457.40	3,889	12,153
457.45	3,889	12,435
457.50	3,889	12,720
457.55	3,889	13,006
457.60	3,889	13,295
457.65	3,889	13,585
457.70	3,889	13,879
457.75	3,889	14,174
457.80	3,889	14,471
457.85	3,889	14,771
457.90	3,889	15,073
457.95	3,889	15,377
458.00	3,889	15,683
458.05	3,889	15,992
458.10	3,889	16,302
458.15	3,889	16,616
458.20	3,889	16,931
458.25	3,889	17,249
458.30	3,889	17,569
458.35	3,889	17,891
458.40	3,889	**18,215**

WQV = 5,975 CF

Stage-Discharge for Pond 10P: Cluster D Basin

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
453.70	0.0	0.0	0.0
453.75	0.6	0.6	0.0
453.80	0.6	0.6	0.0
453.85	0.6	0.6	0.0
453.90	0.6	0.6	0.0
453.95	0.6	0.6	0.0
454.00	0.7	0.7	0.0
454.05	0.7	0.7	0.0
454.10	0.7	0.7	0.0
454.15	0.7	0.7	0.0
454.20	0.7	0.7	0.0
454.25	0.7	0.7	0.0
454.30	0.8	0.8	0.0
454.35	0.8	0.8	0.0
454.40	0.8	0.8	0.0
454.45	0.8	0.8	0.0
454.50	0.8	0.8	0.0
454.55	0.8	0.8	0.0
454.60	0.8	0.8	0.0
454.65	0.9	0.9	0.0
454.70	0.9	0.9	0.0
454.75	0.9	0.9	0.0
454.80	0.9	0.9	0.0
454.85	0.9	0.9	0.0
454.90	0.9	0.9	0.0
454.95	0.9	0.9	0.0
455.00	0.9	0.9	0.0
455.05	0.9	0.9	0.0
455.10	0.9	0.9	0.0
455.15	0.9	0.9	0.0
455.20	0.9	0.9	0.0
455.25	0.9	0.9	0.0
455.30	0.9	0.9	0.0
455.35	0.9	0.9	0.0
455.40	0.9	0.9	0.0
455.45	0.9	0.9	0.0
455.50	0.9	0.9	0.0
455.55	0.9	0.9	0.0
455.60	0.9	0.9	0.0
455.65	0.9	0.9	0.0
455.70	0.9	0.9	0.0
455.75	0.9	0.9	0.0
455.80	0.9	0.9	0.0
455.85	0.9	0.9	0.0
455.90	0.9	0.9	0.0
455.95	0.9	0.9	0.0
456.00	0.9	0.9	0.0
456.05	0.9	0.9	0.0
456.10	0.9	0.9	0.0
456.15	0.9	0.9	0.0
456.20	0.9	0.9	0.0
456.25	1.2	1.2	0.0
456.30	1.9	1.9	0.0
456.35	2.7	2.7	0.0
456.40	3.7	3.7	0.0
456.45	4.8	4.8	0.0
456.50	6.0	6.0	0.0
456.55	7.3	7.3	0.0
456.60	8.7	8.7	0.0
456.65	10.2	10.2	0.0
456.70	11.8	11.8	0.0
456.75	13.5	13.5	0.0
456.80	15.2	15.2	0.0
456.85	16.1	16.1	0.0
456.90	16.3	16.3	0.0
456.95	16.4	16.4	0.0
457.00	16.5	16.5	0.0
457.05	16.6	16.6	0.0
457.10	16.7	16.7	0.0
457.15	16.8	16.8	0.0
457.20	16.9	16.9	0.0
457.25	17.0	17.0	0.0
457.30	17.1	17.1	0.0
457.35	17.2	17.2	0.0
457.40	17.3	17.3	0.0
457.45	17.7	17.4	0.3
457.50	18.3	17.5	0.8
457.55	19.1	17.6	1.4
457.60	20.0	17.7	2.2
457.65	21.0	17.8	3.1
457.70	22.1	17.9	4.1
457.75	23.3	18.0	5.3
457.80	24.6	18.1	6.5
457.85	26.1	18.2	7.8
457.90	27.6	18.3	9.3
457.95	29.3	18.4	10.9
458.00	31.1	18.5	12.5
458.05	32.8	18.6	14.1
458.10	34.5	18.7	15.8
458.15	36.3	18.8	17.5
458.20	38.2	18.9	19.2
458.25	40.1	19.0	21.1
458.30	42.0	19.1	22.9
458.35	44.1	19.2	24.8
458.40	**46.1**	**19.3**	**26.8**

WQV = 0.9 CFS

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Pond 11P - Surface Sandfilter**

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

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
2.10	ac	A = Area draining to the practice	
0.57	ac	A_I = Impervious area draining to the practice	
0.27	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.29	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.62	ac-in	WQV= 1" x Rv x A	
2,243	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
561	cf	25% x WQV (check calc for sediment forebay volume)	
1,683	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = 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)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
454.00	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.30	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
4.15	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
451.33	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
451.33	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
444.55	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
444.55	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
6.78	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
6.78	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
455.00	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
456.00	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**
7,845	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
24.0	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.	
W	Yes/No	Access grate provided?	**← yes**

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

Stage-Area-Storage for Pond 11P: Sand Filter #11

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
452.50	5,087	0
452.55	5,087	76
452.60	5,087	153
452.65	5,087	229
452.70	5,087	305
452.75	5,087	382
452.80	5,087	458
452.85	5,087	534
452.90	5,087	610
452.95	5,087	687
453.00	5,087	763
453.05	5,087	839
453.10	5,087	916
453.15	5,087	992
453.20	5,087	1,068
453.25	5,087	1,145
453.30	5,087	1,221
453.35	5,087	1,297
453.40	5,087	1,373
453.45	5,087	1,450
453.50	5,087	1,526
453.55	5,087	1,602
453.60	5,087	1,679
453.65	5,087	1,755
453.70	5,087	1,831
453.75	5,087	1,908
453.80	5,087	1,984
453.85	5,087	2,060
453.90	5,087	2,137
453.95	5,087	2,213
454.00	10,174	2,289
454.05	10,220	2,545
454.10	10,266	2,802
454.15	10,312	3,063
454.20	10,359	3,325
454.25	10,405	3,590
454.30	10,452	3,857
454.35	10,499	4,126
454.40	10,546	4,398
454.45	10,594	4,672
454.50	10,642	4,949
454.55	10,690	5,228
454.60	10,738	5,509
454.65	10,786	5,793
454.70	10,834	6,079
454.75	10,883	6,367
454.80	10,932	6,658
454.85	10,981	6,952
454.90	11,031	7,248
454.95	11,080	7,546
455.00	11,130	7,847
455.05	11,180	8,151
455.10	11,230	8,457
455.15	11,280	8,765
455.20	11,331	9,076
455.25	11,382	9,389
455.30	11,433	9,705
455.35	11,484	10,024
455.40	11,535	10,345
455.45	11,587	10,669
455.50	11,639	10,995
455.55	11,691	11,324
455.60	11,743	11,655
455.65	11,795	11,989
455.70	11,848	12,326
455.75	11,901	12,666
455.80	11,954	13,008
455.85	12,007	13,352
455.90	12,060	13,700
455.95	12,114	14,050
456.00	**12,168**	**14,402**

WQV = 2,243 CF

Stage-Discharge for Pond 11P: Sand Filter #11

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
452.50	0.0	0.0	0.0
452.55	0.2	0.2	0.0
452.60	0.2	0.2	0.0
452.65	0.2	0.2	0.0
452.70	0.2	0.2	0.0
452.75	0.2	0.2	0.0
452.80	0.2	0.2	0.0
452.85	0.2	0.2	0.0
452.90	0.2	0.2	0.0
452.95	0.2	0.2	0.0
453.00	0.2	0.2	0.0
453.05	0.2	0.2	0.0
453.10	0.2	0.2	0.0
453.15	0.2	0.2	0.0
453.20	0.2	0.2	0.0
453.25	0.2	0.2	0.0
453.30	0.2	0.2	0.0
453.35	0.2	0.2	0.0
453.40	0.2	0.2	0.0
453.45	0.2	0.2	0.0
453.50	0.2	0.2	0.0
453.55	0.2	0.2	0.0
453.60	0.2	0.2	0.0
453.65	0.2	0.2	0.0
453.70	0.2	0.2	0.0
453.75	0.2	0.2	0.0
453.80	0.3	0.3	0.0
453.85	0.3	0.3	0.0
453.90	0.3	0.3	0.0
453.95	0.3	0.3	0.0
454.00	0.3	0.3	0.0
454.05	0.3	0.3	0.0
454.10	0.3	0.3	0.0
454.15	0.3	0.3	0.0
454.20	0.3	0.3	0.0
454.25	0.3	0.3	0.0
454.30	0.3	0.3	0.0
454.35	0.3	0.3	0.0
454.40	0.3	0.3	0.0
454.45	0.3	0.3	0.0
454.50	0.3	0.3	0.0
454.55	0.5	0.5	0.0
454.60	0.9	0.9	0.0
454.65	1.5	1.5	0.0
454.70	2.1	2.1	0.0
454.75	2.9	2.9	0.0
454.80	3.7	3.7	0.0
454.85	4.6	4.6	0.0
454.90	5.5	5.5	0.0
454.95	6.5	6.5	0.0
455.00	7.6	7.6	0.0
455.05	9.0	8.7	0.3
455.10	10.7	9.9	0.8
455.15	12.1	10.6	1.4
455.20	12.9	10.7	2.2
455.25	13.9	10.8	3.1
455.30	15.0	10.9	4.1
455.35	16.2	10.9	5.3
455.40	17.5	11.0	6.5
455.45	18.9	11.1	7.8
455.50	20.5	11.2	9.3
455.55	22.1	11.3	10.9
455.60	23.9	11.3	12.5
455.65	25.5	11.4	14.1
455.70	27.3	11.5	15.8
455.75	29.0	11.6	17.5
455.80	30.9	11.6	19.2
455.85	32.8	11.7	21.1
455.90	34.7	11.8	22.9
455.95	36.7	11.9	24.8
456.00	**38.7**	**11.9**	**26.8**

WQV = 0.3 CFS

Rainfall Data

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	42.880 degrees North
Longitude	71.356 degrees West
Elevation	130 feet
Date/Time	Thu Jan 16 2025 15:15:11 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	0.27	0.41	0.51	0.67	0.84	1.05	**1yr**	0.72	1.00	1.22	1.54	1.94	2.47	2.69	**1yr**	2.18	2.58	3.00	3.67	4.28	**1yr**
2yr	0.33	0.50	0.63	0.83	1.04	1.30	**2yr**	0.89	1.19	1.51	1.89	2.36	2.95	3.27	**2yr**	2.61	3.14	3.64	4.34	4.95	**2yr**
5yr	0.39	0.60	0.75	1.01	1.29	1.64	**5yr**	1.11	1.49	1.91	2.39	2.99	3.73	4.17	**5yr**	3.30	4.01	4.63	5.47	6.18	**5yr**
10yr	0.43	0.68	0.86	1.17	1.53	1.96	**10yr**	1.32	1.77	2.28	2.87	3.58	4.46	5.01	**10yr**	3.95	4.82	5.55	6.51	7.32	**10yr**
25yr	0.51	0.82	1.04	1.43	1.90	2.47	**25yr**	1.64	2.21	2.88	3.64	4.56	5.65	6.41	**25yr**	5.00	6.16	7.07	8.20	9.16	**25yr**
50yr	0.58	0.93	1.19	1.67	2.25	2.95	**50yr**	1.95	2.62	3.46	4.38	5.47	6.76	7.71	**50yr**	5.99	7.42	8.48	9.77	10.86	**50yr**
100yr	0.66	1.07	1.38	1.96	2.67	3.52	**100yr**	2.30	3.10	4.14	5.24	6.55	8.10	9.30	**100yr**	7.17	8.94	10.19	11.65	12.88	**100yr**
200yr	0.75	1.23	1.59	2.29	3.17	4.20	**200yr**	2.73	3.68	4.96	6.29	7.86	9.70	11.21	**200yr**	8.59	10.78	12.24	13.89	15.29	**200yr**
500yr	0.91	1.50	1.96	2.84	3.97	5.30	**500yr**	3.42	4.62	6.27	7.97	9.97	12.32	14.36	**500yr**	10.91	13.81	15.62	17.55	19.18	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.35	0.42	0.57	0.70	0.86	**1yr**	0.61	0.84	1.08	1.35	1.65	2.20	2.54	**1yr**	1.94	2.44	2.71	3.15	3.82	**1yr**
2yr	0.31	0.48	0.59	0.80	0.99	1.18	**2yr**	0.85	1.15	1.35	1.77	2.26	2.81	3.13	**2yr**	2.49	3.01	3.50	4.19	4.76	**2yr**
5yr	0.36	0.55	0.68	0.94	1.19	1.41	**5yr**	1.03	1.38	1.59	2.07	2.64	3.46	3.72	**5yr**	3.06	3.57	4.18	4.99	5.64	**5yr**
10yr	0.39	0.61	0.75	1.05	1.36	1.60	**10yr**	1.17	1.56	1.81	2.33	2.96	3.98	4.21	**10yr**	3.53	4.05	4.77	5.71	6.37	**10yr**
25yr	0.45	0.69	0.86	1.22	1.61	1.87	**25yr**	1.39	1.83	2.13	2.72	3.44	4.79	4.96	**25yr**	4.24	4.77	5.68	6.84	7.42	**25yr**
50yr	0.50	0.76	0.94	1.35	1.82	2.11	**50yr**	1.57	2.07	2.42	3.07	3.87	5.50	5.64	**50yr**	4.87	5.42	6.52	7.85	8.27	**50yr**
100yr	0.55	0.84	1.05	1.51	2.08	2.39	**100yr**	1.79	2.34	2.75	3.47	4.34	5.46	6.39	**100yr**	4.84	6.14	7.48	9.02	9.24	**100yr**
200yr	0.61	0.92	1.17	1.69	2.36	2.69	**200yr**	2.04	2.63	3.11	3.92	4.90	6.09	7.29	**200yr**	5.39	7.01	8.60	10.40	10.27	**200yr**
500yr	0.71	1.06	1.36	1.97	2.81	3.17	**500yr**	2.42	3.10	3.68	4.62	5.74	6.99	8.67	**500yr**	6.19	8.33	10.38	12.58	11.83	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.57	0.76	0.94	1.09	**1yr**	0.81	1.07	1.23	1.63	2.07	2.72	2.84	**1yr**	2.41	2.74	3.37	4.13	4.78	**1yr**
2yr	0.34	0.53	0.65	0.88	1.08	1.28	**2yr**	0.93	1.25	1.45	1.89	2.42	3.12	3.48	**2yr**	2.76	3.35	3.83	4.56	5.24	**2yr**
5yr	0.42	0.65	0.81	1.11	1.41	1.63	**5yr**	1.22	1.60	1.87	2.40	3.03	4.04	4.66	**5yr**	3.57	4.48	5.09	6.01	6.77	**5yr**
10yr	0.51	0.78	0.97	1.35	1.75	1.99	**10yr**	1.51	1.94	2.26	2.87	3.62	5.00	5.87	**10yr**	4.43	5.64	6.34	7.43	8.33	**10yr**
25yr	0.66	1.00	1.24	1.77	2.33	2.58	**25yr**	2.01	2.52	2.93	3.65	4.56	6.67	7.97	**25yr**	5.90	7.67	8.48	9.82	11.00	**25yr**
50yr	0.79	1.20	1.49	2.15	2.89	3.15	**50yr**	2.49	3.08	3.56	4.39	5.43	8.28	10.08	**50yr**	7.33	9.69	10.55	12.10	13.58	**50yr**
100yr	0.96	1.45	1.82	2.63	3.60	3.85	**100yr**	3.11	3.76	4.33	5.27	6.48	11.47	12.71	**100yr**	10.15	12.22	13.10	14.95	16.81	**100yr**

Test Pits & Location Plan

LEGEND

APPROXIMATE LOCATION OF TEST PITS PERFORMED BY MC SERVICES, LLC, UNDER THE DIRECTION OF GEOTECHNICAL CONSULTANTS, INC. ON 8 AND 9 AUGUST 2024.

BASE PLAN TAKEN FROM AN ELECTRONIC COPY OF A DRAWING ENTITLED "LONDONDERRY SITE PLAN" PREPARED BY OTHERS, DATED 22 APRIL 2024.

GCI Project No. 2245561

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, MA 01752
(508)229-0900 FAX (508)229-2279

LOCATION PLAN

(feet) 0 150 300

August 2024

36 Pillsbury Road
Londonderry, New Hampshire

FIGURE 3.

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's
		Designation:	**TP 1**
STRATUM (ft.)	**Description**	**GCI Job #:**	2245561
From: To:		**Surface El.**	
0 – 1.0'	TOPSOIL: Dark brown, sandy loam containing roots.		
1.0' – 1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.		
1.5' – 2.5'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little to trace silt.		
	End of test pit at ~2.5 feet bgs. Refusal on Bedrock.		
Water Level:	No groundwater was observed within the excavation.		
Remarks:	EQUIPMENT: CAT 314		

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's
		Designation:	**TP 2**
STRATUM (ft.)	**Description**	**GCI Job #:**	2245561
From: To:		**Surface El.**	

From:	To:	Description
0	1.5'	TOPSOIL: Dark brown, sandy loam containing roots.
1.5'	4.5'	NATURAL SAND: Light brown, medium to ine sad, some coarse to fine gravel, littleilt, trace roots.
4.5	8.0'	NATURAL SAND: Dark brown, coarse to fine sand and gravel, little silt, trace roots, cobbles and boulders.
		End of test pit at ~8.0 feet bgs. Refusal on Bedrock.

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's
		Designation:	**TP 3**
STRATUM (ft.)	**Description**	**GCI Job #:**	2245561
From: / To:		**Surface El.**	
0 – 1.0'	TOPSOIL: Dark brown, sandy loam containing roots.		
1.0' – 1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.		
1.5' – 3.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little to trace silt.		
	End of test pit at ~3.0 feet bgs. Refusal on Bedrock.		
Water Level:	No groundwater was observed within the excavation.		
Remarks:	EQUIPMENT: CAT 314		

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's
		Designation:	**TP 4**
STRATUM (ft.)	**Description**	**GCI Job #:**	2245561
From: To:		**Surface El.**	

From:	To:	
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.
1.0'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.
1.5'	3.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt, cobbles (weathered rock).
		End of test pit at ~3.0 feet bgs. Refusal on Bedrock.

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's
		Designation:	**TP 5**
STRATUM (ft.)	**Description**	**GCI Job #:**	2245561
From: To:		**Surface El.**	

From:	To:	
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.
1.0'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.
1.5'	2.5'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little to trace silt.
		End of test pit at ~2.5 feet bgs. Refusal on Bedrock.

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 6** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.5'	3.5'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt, cobbles (weathered rock).	
		End of test pit at ~3.5 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's
		Designation:	**TP 7**
STRATUM (ft.)	**Description**	**GCI Job #:**	2245561
From: / To:		**Surface El.**	
0 – 1.0'	TOPSOIL: Dark brown, sandy loam containing roots.		
1.0' – 2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, trace silt, traces of roots, cobbles (weathered bedrock).		
	End of test pit at ~2.0 feet bgs. Refusal on Bedrock.		
Water Level:	No groundwater was observed within the excavation.		
Remarks:	EQUIPMENT: CAT 314		

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 8** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.5'	5.5'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little to trace silt.	
		End of test pit at ~5.5 feet bgs. Refusal on Bedrock.	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 9** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.5'	7.5'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little to trace silt.	
		End of test pit at ~7.5 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 10** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.5'	3.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little to trace silt, trace roots, cobbles (weathered rock).	
		End of test pit at ~3.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 11** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.5'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little to trace silt, trace roots, cobbles (weathered rock).	
		End of test pit at ~2.5 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 12** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.5'	5.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt, cobbles (weathered rock).	
		End of test pit at ~5.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's
		Designation:	**TP 13**
STRATUM (ft.)	**Description**	**GCI Job #:**	2245561
From: / To:		**Surface El.**	
0 – 1.0'	TOPSOIL: Dark brown, sandy loam containing roots.		
1.0' – 1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.		
1.5' – 5.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt, cobbles (weathered rock).		
	End of test pit at ~5.0 feet bgs. Refusal on Bedrock.		
Water Level:	No groundwater was observed within the excavation.		
Remarks:	EQUIPMENT: CAT 314		

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 14** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	0.5'	TOPSOIL: Dark brown, sandy loam containing roots.	
0.5'	1.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.0'	9.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt.	
		End of test pit at ~9.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 15** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	0.5'	TOPSOIL: Dark brown, sandy loam containing roots.	
0.5'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.5'	5.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt.	
		End of test pit at ~5.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 16** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, trace silt, traces of roots.	
2.0'	8.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt.	
		End of test pit at ~8.0 feet bgs. Refusal on Bedrock.	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 17** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, trace silt, traces of roots.	
2.0'	9.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt.	
		End of test pit at ~9.0 feet bgs. Refusal on Bedrock.	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 18** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, trace silt, traces of roots.	
2.0'	11.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt.	
		End of test pit at ~11.0 feet bgs. (Could not penetrate dense sand with bucket)	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 19** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, trace silt, traces of roots.	
2.0'	11.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt.	
		End of test pit at ~11.0 feet bgs. (Could not penetrate dense sand with bucket)	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 20** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, trace silt, traces of roots.	
2.0'	11.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt.	
		End of test pit at ~11.0 feet bgs. (Could not penetrate dense sand with bucket)	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 21** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	0.5'	TOPSOIL: Dark brown, sandy loam containing roots.	
0.5'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.5'	10.5'	NATURAL SAND: Light brown to orange, coarse to fine sand and gravel, trace silt.	
		End of test pit at ~10.5 feet bgs. (Could not penetrate dense sand with bucket)	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 22** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	2.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
2.0'	4.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, trace silt, traces of roots.	
4.0'	11.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt.	
		End of test pit at ~11.0 feet bgs. (Could not penetrate dense sand with bucket)	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 23** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	0.5'	TOPSOIL: Dark brown, sandy loam containing roots.	
0.5'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.5'	11.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little silt, cobbles.	
		End of test pit at ~11.0 feet bgs. (Could not penetrate dense sand with bucket)	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 24** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.5'	9.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt, cobbles.	
		End of test pit at ~9.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 25** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	2.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
2.0'	3.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots, cobbles.	
3.5'	8.0'	NATURAL SAND: Light brown, coarse to fine sand and gravel, trace silt, cobbles.	
8.0'	11.0'	NATURAL SAND: Gray, coarse to fine sand, some coarse to fine gravel, some silt.	
		End of test pit at ~11.0 feet bgs. (Could not penetrate dense sand with bucket)	
Water Level:		Groundwater was observed seeping into the excavation at depth of approximately 8 feet bgs.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 26** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	0.5'	TOPSOIL: Dark brown, sandy loam containing roots.	
0.5'	1.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.0'	7.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt.	
7.0'	9.0'	SILT: Light brown, silt, some clay, little coarse to fine gravel, little fine sand.	
		End of test pit at ~9.0 feet bgs. Refusal on Bedrock.	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 27** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	3.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
3.0'	5.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little silt.	
5.0'	10.0'	SILT: Light brown, silt, some clay, little coarse to fine gravel, little fine sand.	
		End of test pit at ~10.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 28** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
	9.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt.	
		End of test pit at ~9.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.) From:	To:	Description	Designation: TP 29 GCI Job #: 2245561 Surface El.
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.5'	9.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt, cobbles.	
		End of test pit at ~9.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	8-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 30** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.0'	9.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little silt.	
		End of test pit at ~9.0 feet bgs. Refusal on Bedrock.	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 31** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.5'	6.0'	NATURAL SAND: Light brown, coarse to fine sand and gravel, little silt.	
6.0'	8.0'	SILT: Light gray silt and medium to fine sand.	
		End of test pit at ~8.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 32** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	2.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
2.0'	3.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
3.0'	5.0'	FILL: Light brown to brown, coarse to fine sand, some coarse to fine gravel, little silt, roots. Fill layer encountered abandoned pvc pipe.	
5.0'	7.0'	NATURAL SAND: Light brown, coarse to fine sand and gravel, little silt.	
7.0'	9.5'	SILT AND SAND: Light brown to gray, silt and fine sand, littche coarse to fine gravel.	
		End of test pit at ~9.5 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 33** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.5'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.5'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.0'	8.0'	NATURAL SAND: Light brown, fine sand, some silt, little coarse to medium sand, little coarse fine gravel.	
		End of test pit at ~8.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's
		Designation:	**TP 34**
STRATUM (ft.)	**Description**	**GCI Job #:**	2245561
From: / To:		**Surface El.**	

From:	To:	
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.
2.0'	11.0'	NATURAL SAND: Light brown to white, fine sand, some silt, little coarse to medium sand, little coarse to fine gravel.
		End of test pit at ~11.0 feet bgs. (Could not penetrate dense sand with bucket)

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 35** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.5'	2.5'	NATURAL SAND: Light brown, coarse to fine sand and gravel, trace silt, cobbles.	
		End of test pit at ~2.5 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 36** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.0'	5.5'	NATURAL SAND: Brown to orange, coarse to fine sand and gravel, trace silt.	
		End of test pit at ~5.5 feet bgs. Refusal on Bedrock.	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 37** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.0'	4.3'	NATURAL SAND: Brown to orange, coarse to fine sand and gravel, trace silt.	
		End of test pit at ~4.3 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 38** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	3.5'	NATURAL SAND: Brown to orange, coarse to fine sand and gravel, trace silt.	
		End of test pit at ~3.5 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 39** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.0'	4.5'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, trace silt.	
		End of test pit at ~4.5 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 40** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	2.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
2.0'	3.5'	NATURAL SAND: Brown to orange, coarse to fine sand and gravel, trace silt, cobbles (weathered bedrock).	
		End of test pit at ~3.5 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 41** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.5'	3.0'	NATURAL SAND: Brown to orange, coarse to fine sand and gravel, some silt.	
		End of test pit at ~3.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 42** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
		End of test pit at ~1.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 43** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	7.0'	FILL: Dark brown, medium to fine sand, some silt, some coarse to fine gravel, contains roots, tree stumps and loam.	
7.0'	9.0'	NATURAL SAND: Light brown, coarse to fine sand and gravel, some silt.	
		End of test pit at ~9.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 44** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.0'	6.5'	NATURAL SAND: Brown, coarse to fine sand, some coarse to fine gravel, little silt.	
		End of test pit at ~6.5 feet bgs. Refusal on Bedrock.	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 45** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.0'	5.0'	NATURAL SAND: Light brown to orange, coarse to fine sand, some coarse to fine gravel, some silt.	
		End of test pit at ~5.0 feet bgs. Refusal on Bedrock.	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 46** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	4.0'	FILL: Brown, coarse to fine sand and gravel, trace loam, contains concrete, metal, cobbles and boulders. A concrete slab was encountered in the fill layer with a thickness of approximately 6" from 3.5' to 4.0'.	
4.0'	9.0'	NATURAL SAND: Brown, coarse to fine sand and gravel, some silt.	
		End of test pit at ~9.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 47** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	1.5'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
1.5'	6.0'	NATURAL SAND: Light brown, coarse to fine sand, little coarse to fine gravel, little silt.	
		End of test pit at ~6.0 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 48** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.0'	5.0'	NATURAL SAND: Light brown to orange, coarse to fine sand, some coarse to fine gravel, little silt.	
5.0'	7.5'	NATURAL SAND: Light brown to gray, medium to fine sand, some silt, little coarse to fine gravel, cobbles.	
		End of test pit at ~7.5 feet bgs. Refusal on Bedrock.	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 49** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.5'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.5'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.0'	7.5'	NATURAL SAND: Light brown to gray, medium to fine sand, some silt, little coarse to fine gravel.	
		End of test pit at ~7.5 feet bgs. Refusal on Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 50** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.0'	7.5'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little silt.	
		End of test pit at ~7.5 feet bgs. Refusal on probable Bedrock.	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 51** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.0'	9.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little silt.	
		End of test pit at ~9.0 feet bgs. Refusal on probable Bedrock.	
Water Level:		No groundwater was observed within the excavation.	
Remarks:		EQUIPMENT: CAT 314	

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 52** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.0'	8.0'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little silt, cobbles.	
		End of test pit at ~8.0 feet bgs. Refusal on probable Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

LOG OF TEST PITS

Project:	36 Pillsbury Rd	**Date:**	9-Aug-24
Location:	Londonderry, New Hampshire	**Weather:**	Sunny, 80's

STRATUM (ft.)		**Description**	**Designation:** **TP 53** **GCI Job #:** 2245561
From:	To:		**Surface El.**
0	1.0'	TOPSOIL: Dark brown, sandy loam containing roots.	
1.0'	2.0'	SUBSOIL: Orange to brown, medium to fine sand, some coarse to fine gravel, little silt, traces of roots.	
2.0'	8.5'	NATURAL SAND: Light brown, coarse to fine sand, some coarse to fine gravel, little silt, cobbles.	
		End of test pit at ~8.5 feet bgs. Refusal on probable Bedrock.	

Water Level: No groundwater was observed within the excavation.

Remarks:

EQUIPMENT: CAT 314

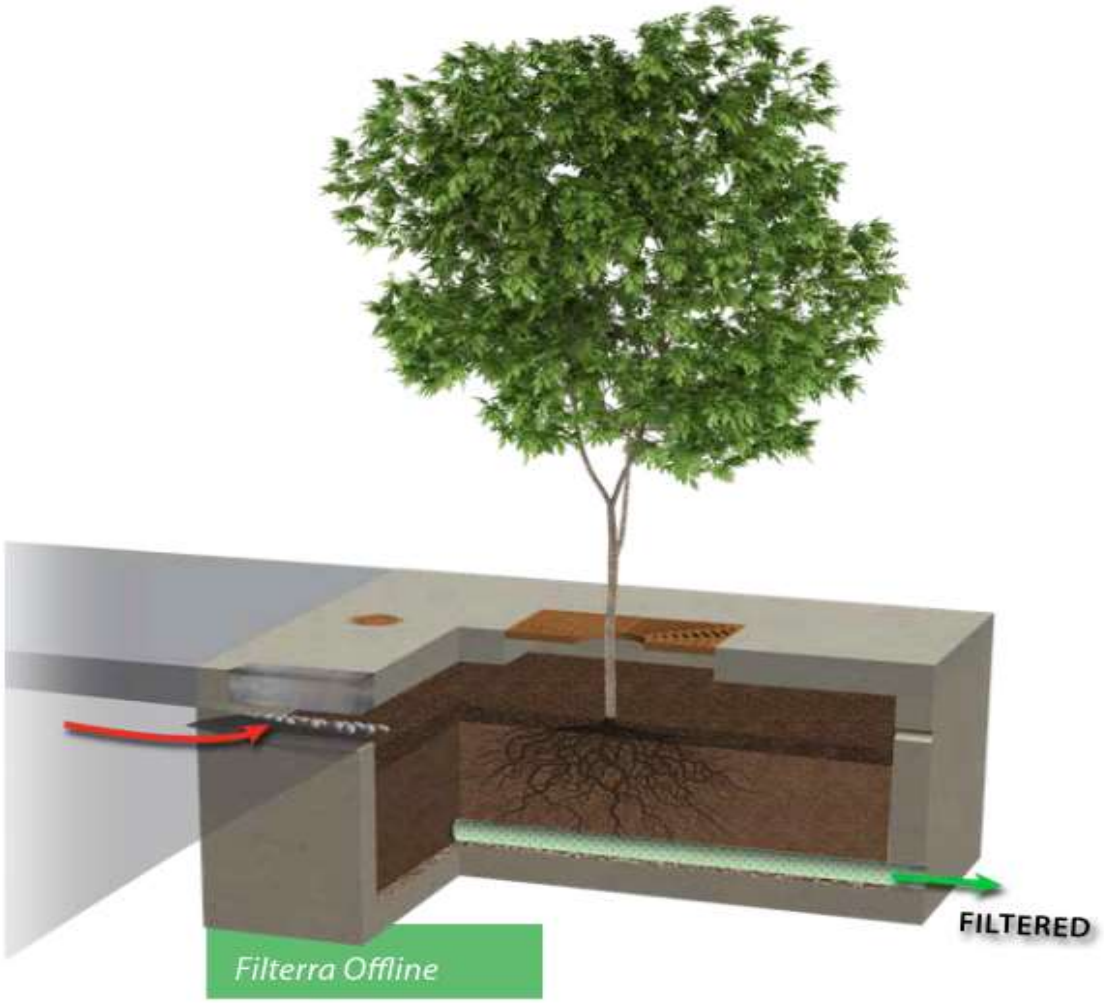
Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, Massachusetts 01752
Tel: (508)229-0900 FAX: (508)229-0900
www.geotechnical.us

Contech Filterra Information

Contech Filterra
New Hampshire Sizing Quick Reference Table

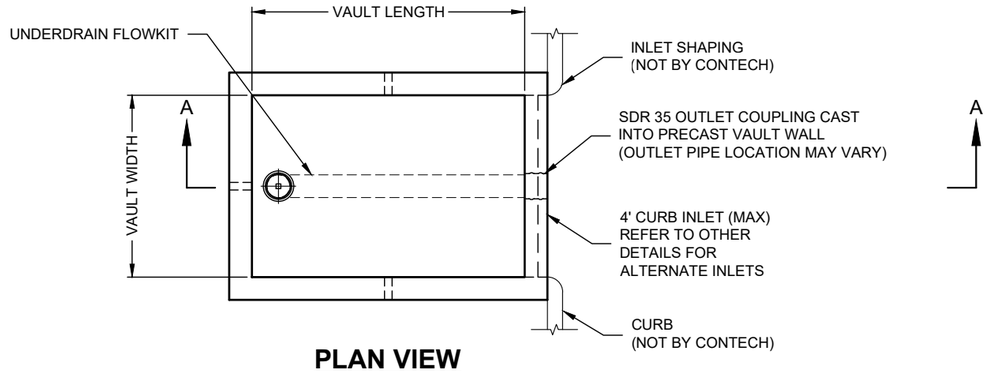
	Size	Max Area (ac)	Max Area (sf)	CN	Tc (min)	WQ Inflow (cfs)	Outflow (cfs)
1.0" Rainfall (Type II)	4x4	0.065	2,853	98	6	0.08	0.05
	4x6	0.098	4,280	98	6	0.12	0.08
	4x8	0.131	5,706	98	6	0.17	0.10
	6x6	0.147	6,420	98	6	0.19	0.12
	6x8	0.197	8,560	98	6	0.25	0.16
	6x10	0.246	10,700	98	6	0.31	0.19
	6x12	0.295	12,840	98	6	0.37	0.23
	7x13	0.373	16,228	98	6	0.47	0.29

	Size	Max Area (ac)	Max Area (sf)	CN	Tc (min)	WQ Inflow (cfs)	Outflow (cfs)
1.0" Rainfall (Type III)	4x4	0.095	4,140	98	6	0.08	0.05
	4x6	0.143	6,210	98	6	0.12	0.08
	4x8	0.190	8,280	98	6	0.17	0.10
	6x6	0.214	9,315	98	6	0.19	0.12
	6x8	0.285	12,421	98	6	0.25	0.16
	6x10	0.356	15,526	98	6	0.31	0.19
	6x12	0.428	18,631	98	6	0.37	0.23
	7x13	0.541	23,548	98	6	0.47	0.29

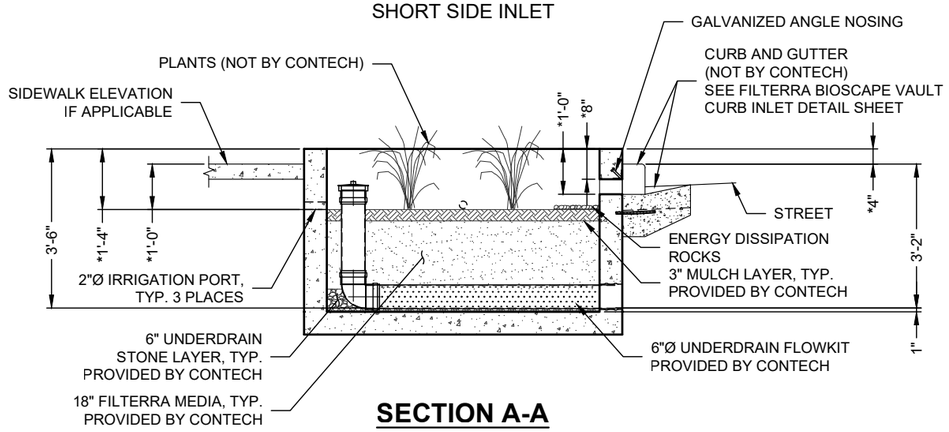


Bypass via downstream catch basin.

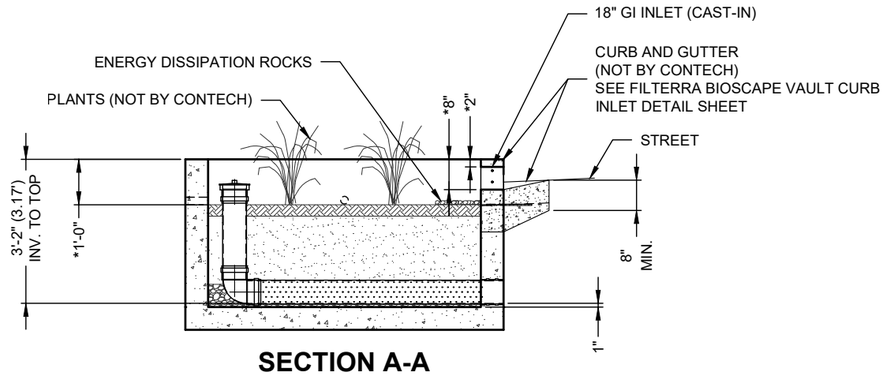
DIMENSIONS PRECEDED BY " * " ARE CRITICAL AND MAY NOT BE MODIFIED WITHOUT CONSULTING CONTECH



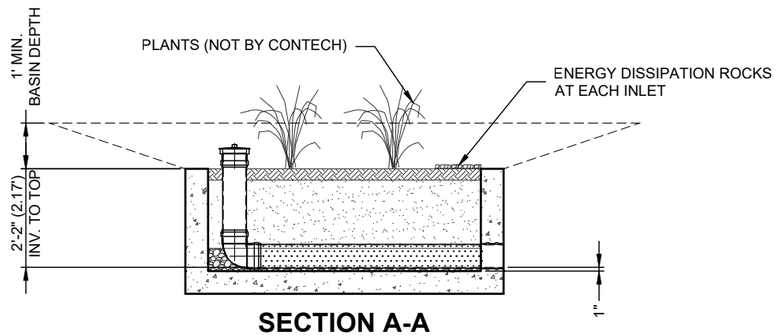
PLAN VIEW
SHORT SIDE INLET



SECTION A-A
SLOTTED THROAT INLET



SECTION A-A
GREEN INFRASTRUCTURE INLET - TOP FLUSH WITH TOP OF CURB, NOT INTENDED FOR SIDEWALK APPLICATIONS



SECTION A-A
BASIN - CURB INLET OR PIPE INLETS OPTIONAL

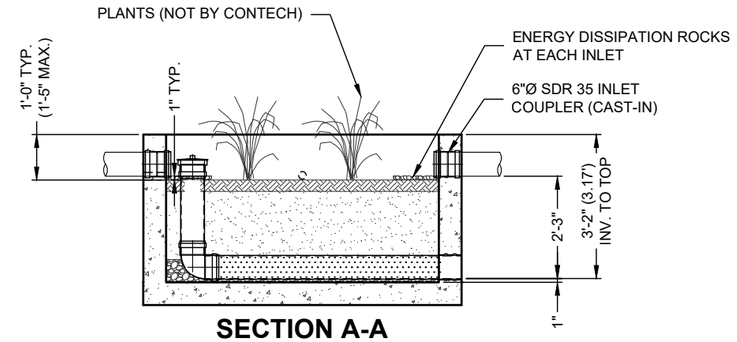
FTBSV-HC CONFIGURATION

(OPTIONS: BASIN "-B", GREEN INFRASTRUCTURE (GI) INLET "-I", PIPE INLET "-P", SLOTTED THROAT INLET "-T")

VAULT SIZE (L x W)	MEDIA AREA (SF)	LONG SIDE INLET DESIG. / PART NO.	SHORT SIDE INLET DESIG. / PART NO.	AVAILABILITY	OUTLET PIPE DIA	MIN. NO. OF INLET PIPES (-P ONLY)
4 x 4	16	FTBSV0404-HC	FTBSV0404-HC	ALL	6" SDR 35	1
6 x 4	24	FTBSV0604-HC	FTBSV0406-HC	ALL	6" SDR 35	1
8 x 4	32	FTBSV0804-HC	FTBSV0408-HC	ALL (EXCEPT DE,MD,NJ,PA,VA,WV)	6" SDR 35	1
7.83 x 4.5	35	FTBSV078045-HC	FTBSV045078-HC	DE,MD,NJ,PA,VA.WV ONLY	6" SDR 35	1
6 x 6	36	FTBSV0606-HC	FTBSV0606-HC	ALL (EXCEPT CA, TX)	6" SDR 35	1
8 x 6	48	FTBSV0806-HC	FTBSV0608-HC	ALL	6" SDR 35	1
10 x 6	60	FTBSV1006-HC	FTBSV0610-HC	ALL (EXCEPT CA, TX)	6" SDR 35	2
8 x 8	64	FTBSV0808-HC	FTBSV0808-HC	CA, TX ONLY	6" SDR 35	2
12 x 6	72	FTBSV1206-HC	FTBSV0612-HC	ALL (EXCEPT TX)	6" SDR 35	2
10 x 8	80	FTBSV1008-HC	FTBSV0810-HC	CA, TX ONLY	6" SDR 35	2
13 x 7	91	FTBSV1307-HC	FTBSV0713-HC	ALL (EXCEPT CA, TX)	6" SDR 35	2
12 x 8	96	FTBSV1208-HC	FTBSV0812-HC	CA, TX ONLY	6" SDR 35	2
14 x 8	112	FTBSV1408-HC†	N/A	ALL	6" SDR 35	3
16 x 8	128	FTBSV1608-HC†	N/A	ALL (EXCEPT OR,WA)	6" SDR 35	3
15 x 9	135	FTBSV1509-HC†	N/A	OR,WA ONLY	6" SDR 35	3
18 x 8	144	FTBSV1808-HC†	N/A	CALL CONTECH	6" SDR 35	3
20 x 8	160	FTBSV2008-HC†	N/A	CALL CONTECH	6" SDR 35	4
22 x 8	176	FTBSV2208-HC†	N/A	CALL CONTECH	6" SDR 35	4

†UTILIZES (2) CURB OPENINGS WITH MIN 1' SPACING

INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING ON VAULT SIZE



SECTION A-A
PIPE INLET

filterra
FOR PATENT INFORMATION, GO TO www.ContechES.com/IP

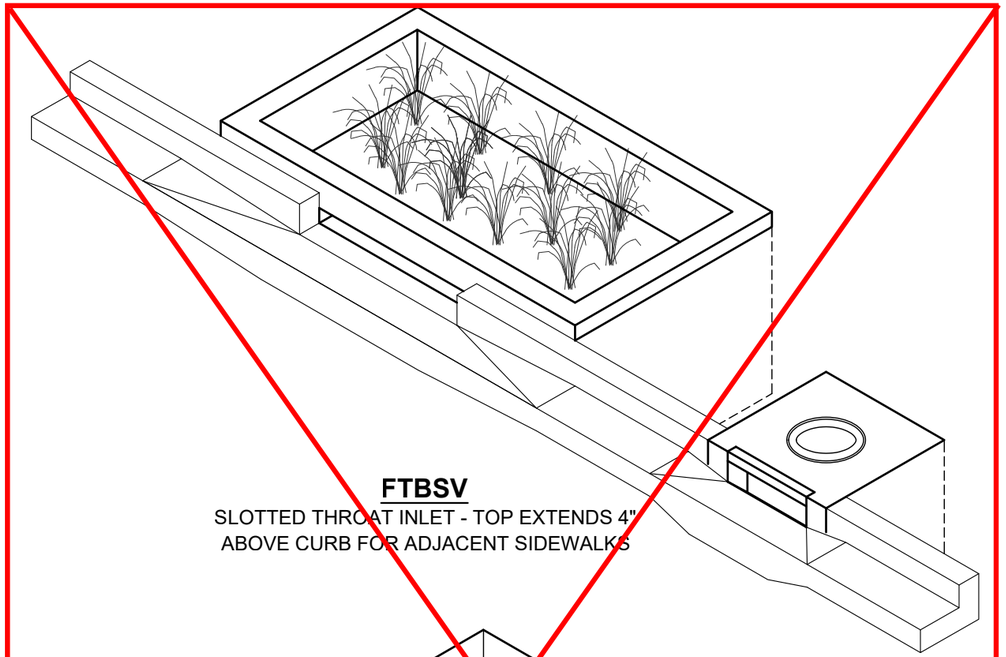
AS WITH ALL OPEN TOP BIORETENTION SYSTEMS, FILTERRA BIOSCAPE IS OPEN TO THE ATMOSPHERE WITH A MEDIA SURFACE RECESSED BELOW FINISHED GRADE. CONTRACTOR OR OWNER IS RESPONSIBLE FOR PROVIDING ANY REQUIRED SAFETY MEASURES AROUND SYSTEM PERIMETER. TO MAINTAIN AESTHETICS, REMOVAL OF HEAVY STORMWATER DEBRIS MAY BE NECESSARY BETWEEN REGULAR FILTERRA SYSTEM MAINTENANCE EVENTS.

The design and information shown on this drawing is provided as a service to the project owner, engineer and contractor by Contech Engineered Solutions LLC or one of its affiliated companies ("Contech"). Neither this drawing, nor any part thereof, may be used, reproduced or modified in any manner without the prior written consent of Contech. Failure to comply is done at the user's own risk and Contech expressly disclaims any liability or responsibility for such use. If discrepancies between the supplied information upon which the drawing is based and actual field conditions are encountered as site work progresses, these discrepancies must be reported to Contech immediately for re-evaluation of the design. Contech accepts no liability for designs based on missing, incomplete or inaccurate information supplied by others.

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9100 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

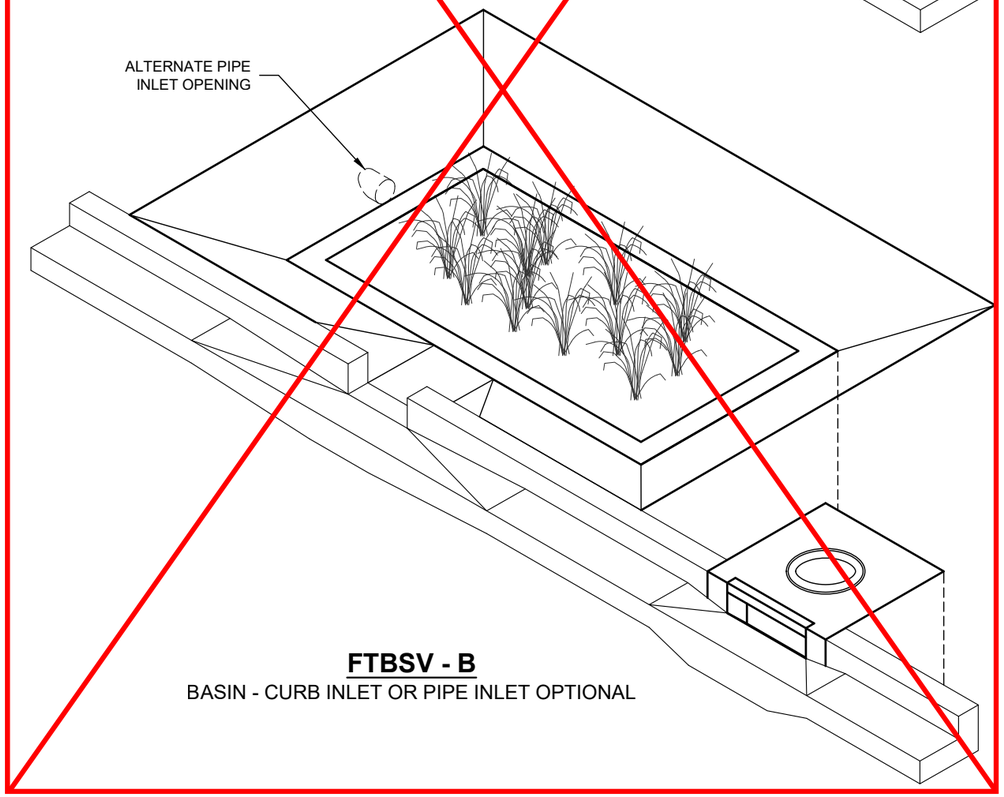
FILTERRA BIOSCAPE VAULT OFFLINE HC (FTBSV-HC) CONFIGURATION DETAILS

I:\COMMON\CAD\TREATMENT\54 FILTERRA\40 STANDARD DRAWINGS\IN PROCESS\STD DETAILS\FTBSV-HC (NJ ONLY) - FILTERRA BIOSCAPE VAULT OFFLINE CONFIG DTL.DWG 3/15/2023 5:31 PM



FTBSV

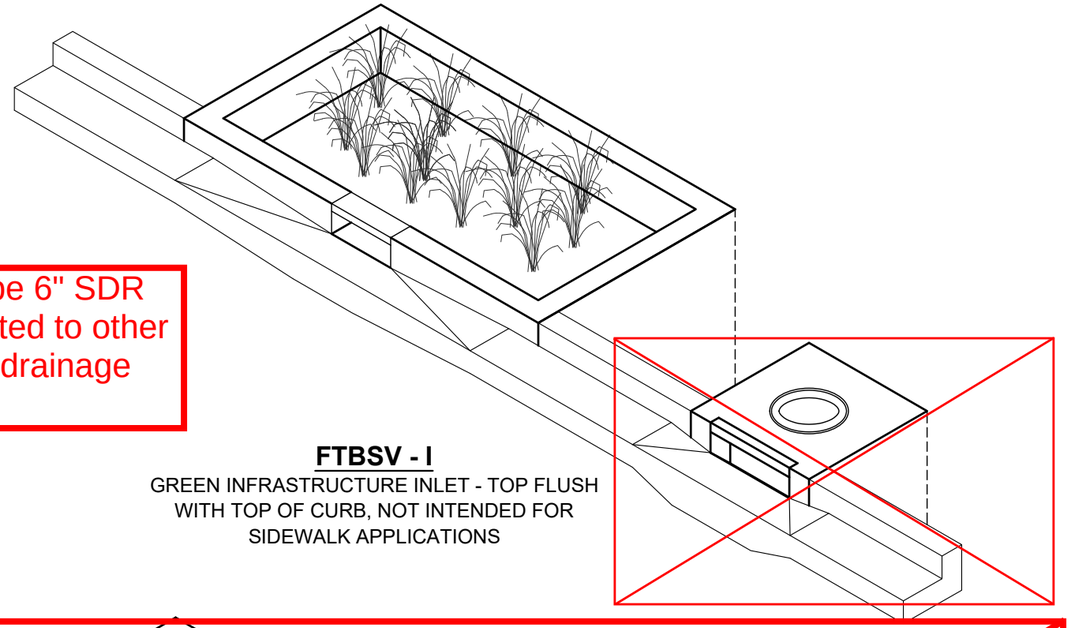
SLOTTED THROAT INLET - TOP EXTENDS 4" ABOVE CURB FOR ADJACENT SIDEWALKS



FTBSV - B

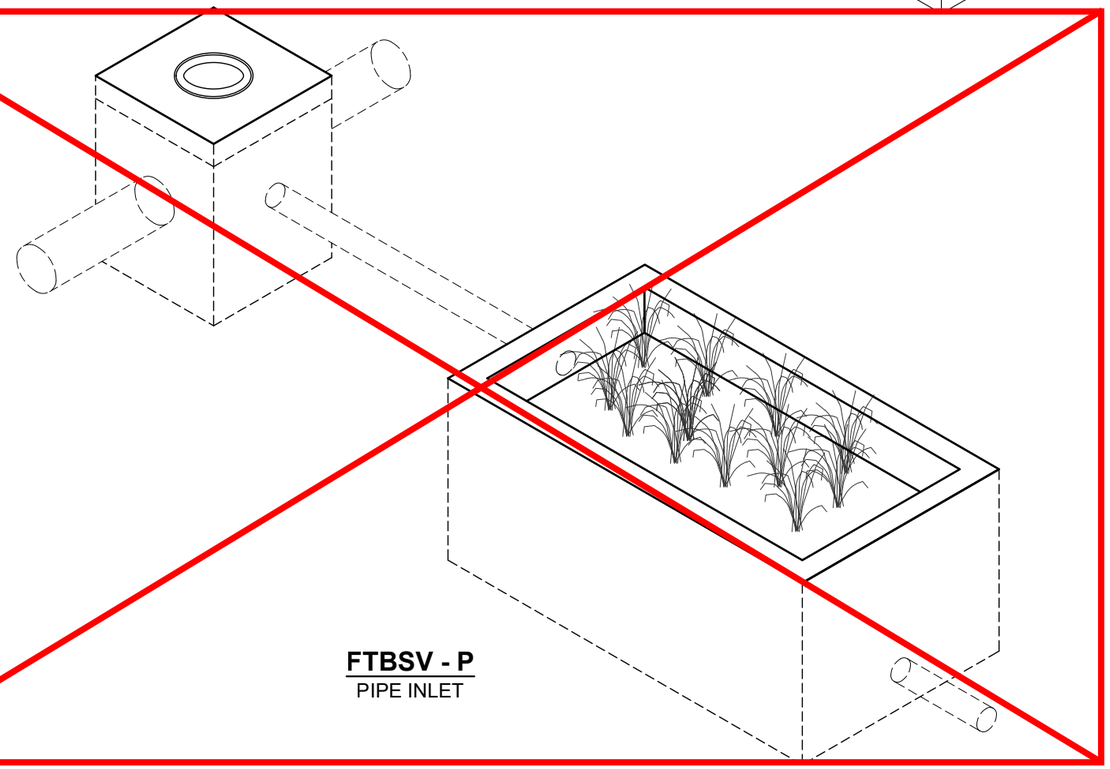
BASIN - CURB INLET OR PIPE INLET OPTIONAL

Vault outfall to be 6" SDR 35 pipe, not routed to other catch basins or drainage structures.



FTBSV - I

GREEN INFRASTRUCTURE INLET - TOP FLUSH WITH TOP OF CURB, NOT INTENDED FOR SIDEWALK APPLICATIONS



FTBSV - P

PIPE INLET

filterra

FOR PATENT INFORMATION, GO TO www.ContechES.com/IP

The design and information shown on this drawing is provided as a service to the project owner, engineer and contractor by Contech Engineered Solutions LLC or one of its affiliated companies ("Contech"). Neither this drawing, nor any part thereof, may be used, reproduced or modified in any manner without the prior written consent of Contech. Failure to comply is done at the user's own risk and Contech expressly disclaims any liability or responsibility for such use. If discrepancies between the supplied information upon which the drawing is based and actual field conditions are encountered as site work progresses, these discrepancies must be reported to Contech immediately for re-evaluation of the design. Contech accepts no liability for designs based on missing, incomplete or inaccurate information supplied by others.

CONTECH
ENGINEERED SOLUTIONS LLC
www.ContechES.com
9100 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

FILTERRA BIOSCAPE VAULT OFFLINE HC (FTBSV-HC) SITE LAYOUT DETAILS

I:\COMMON\CAD\TREATMENT\54 FILTERRA\40 STANDARD DRAWINGS\IN PROCESS\STD DETAILS\FTBSV-HC (NJ ONLY) - FILTERRA BIOSCAPE VAULT OFFLINE CONFIG DTL.DWG 3/15/2023 5:31 PM

The sizing table corresponding to the available system models is noted below:

Table 1. Filterra® HC MTFRs and Maximum Allowable Drainage Areas

	Available Filterra® Media Bay Sizes (feet)	Effective Filtration Treatment Area (ft^2)	Treatment Flow Rate (cfs)	Maximum Allowable Drainage Area (ac)
Standard Configuration Filterra and Filterra Biosape Vaults	4x4	16	0.111	0.40
	4x6 or 6x4	24	0.167	0.60
	4.5x7.83 or 7.83x4.5 (Nominal 4x8/8x4)	35.24	0.245	0.89
	6x6	36	0.250	0.91
	6x8 or 8x6	48	0.333	1.21
	6x10 or 10x6	60	0.417	1.51
	6x12 or 12x6	72	0.500	1.81
	7x13 or 13x7	91	0.632	2.29
	14x8	112	0.778	2.82
	16x8	128	0.889	3.22
	18x8	144	1.000	3.62
	20x8	160	1.111	4.03
	22x8	176	1.222	4.43
Peak Diversion Filterra Vaults	4x4	16	0.111	0.40
	4.5x5.83 (Nominal 4x6)	26.24	0.182	0.66
	6x4	24	0.167	0.60
	6x6	36	0.250	0.91
	6x8	48	0.333	1.21
	6x10 or 10x6	60	0.417	1.51
	7x10	70	0.486	1.76
	8x10.5	84	0.583	2.11
	8x12.5	100	0.694	2.52
	Custom and/or Filterra Bioscape	Media Area in ft^2	0.00694 * (Media Area in ft^2)	0.0252 * (Media Area in ft^2)

Filterra Bioscape Owner's Manual

(No Precast Vault Provided)

filterra®

Bioscape®

CONTECH®
ENGINEERED SOLUTIONS

This Owner's Manual applies to Filterra Bioscape ONLY (Filterra installed directly into an excavated basin or other customer provided container, such as a large cast-in-place vault).







filterra® Bioscape®

Table of Contents

Introduction 4

Activation Overview 4

Filterra Plant Selection Overview 5

Warranty Overview 5

Routine Maintenance Guidelines 5

Plant Care 7

Maintenance Visit Procedure 8

Maintenance Checklist 10

Appendix 1 – Activation Package 11

CONTECH® ENGINEERED SOLUTIONS

Introduction

Thank you for your purchase of the Filterra® Bioscape® System. Filterra® is a specially engineered stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff. The system's biota (vegetation and soil microorganisms) then further breakdown and absorb captured pollutants. All components of the system work together to provide a sustainable long-term solution for treating stormwater runoff.

Included with your purchase is a Supervised Activation service as well as a 1-year warranty from delivery of the system. In some cases, a Final Site Assessment (assessment of unit condition, mulch replacement, debris removal and pruning) may also be included for systems smaller than 1000 sf in size. Check your order documentation for further information.

Filterra® Bioscape® systems should not be activated until the site is stabilized to prevent construction related runoff from entering and contaminating the system. For Filterra® Bioscape® systems installed within an excavated basin, Contech provides an erosion control sock around the perimeter to provide an extra layer of protection. However, these protection devices are intended as a best practice and cannot fully prevent contamination. It is the purchaser's responsibility to provide adequate measures to prevent construction related runoff from entering the Filterra® Bioscape® system.

Design and Installation

Each project presents different scopes for the use of Filterra® Bioscape® systems. Information and help may be provided to the design engineer during the planning process. Correct Filterra® Bioscape® sizing (by rainfall region) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra® Bioscape® systems as shown in approved plans. A comprehensive installation manual is available from Contech.

Activation Overview

Activation of the Filterra® Bioscape® system is a procedure completed by the contractor to place the system into working condition. This involves the following items:

- Installation of the Filterra® Bioscape® underdrain system
- Installation of the Filterra® media layer
- Planting of the system's vegetation
- Placement of pretreatment mulch layer using mulch certified for use in Filterra® systems



Minimum Requirements

The minimum requirements for Filterra® Bioscape®Activation are as follows:

1. The purchaser must have sourced vegetation meeting the requirements outlined in the Filterra® Bioscape® Activation Package
2. A pre-construction meeting is required to discuss site requirements, logistics planning and activation FAQ and red flags.
3. The site landscaping must be fully stabilized, i.e. full landscaping installed and some grass cover (not just straw and seed) is required to reduce sediment transport. Construction debris and materials should be removed from surrounding area.
4. Final paving must be completed. Final paving ensures that paving materials will not enter and contaminate the Filterra® system during the paving process, and that the plant will receive runoff from the drainage area, assisting with plant survival for the Filterra® system.
5. All immediate upstream and downstream structures should be placed with piping into the system already installed for connection during activation.

An Activation Checklist is included in the Filterra® Bioscape® Activation Package to ensure proper conditions are met for Activation. A charge of $1500.00 will be invoiced for each Supervised Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation.

Filterra Plant Selection Overview

A Plant List is available on the Contech website highlighting recommended plants for Filterra® Bioscape® systems in your area. Keep in mind that plants are subject to availability due to seasonality. Plants installed in the Filterra® Bioscape® system shall be container-grown plants (max 15 gallon) from nursery stock and will be immature in height and spread at Activation. It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra® Bioscape® system. The "Filterra® Bioscape® Activation Package" document is included as an appendix and discusses proper selection of the plants within Filterra® Bioscape® systems.

Warranty Overview

Refer to the Contech® Engineered Solutions LLC Stormwater Treatment System LIMITED WARRANTY for further information. The following conditions may void the Filterra® Bioscape® system's warranty and waive the manufacturer provided Final Site Assessment (if applicable):

- Unauthorized activation or performance of any of the items listed in the activation overview without Contech supervision or input
- Removal of any Filterra® system components
- Failure to prevent construction related runoff from entering the Filterra® system
- Failure to properly store and protect any Filterra® components (including media and underdrain stone) that are shipped separately to the site

Routine Maintenance Guidelines

With proper routine maintenance, the biofiltration media within the Filterra® Bioscape® system should last as long as traditional bioretention media. Routine maintenance can be provided by certified maintenance providers listed on the Contech website. Training can also be provided to other stormwater maintenance or landscape providers.

Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons to maintain are:

- Avoiding legal challenges from your jurisdiction's maintenance enforcement program.
- Prolonging the expected lifespan of your Filterra® media.
- Avoiding more costly media replacement.
- Helping reduce pollutant loads leaving your property.

Simple maintenance of the Filterra® Bioscape® is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The unit will recycle and accumulate pollutants within the biomass, but is also subjected to other materials entering the inlet. This may include trash, silt and leaves etc. which will be contained above the mulch layer. Too much silt may inhibit the Filterra's flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.

When to Maintain?

Maintenance visits are typically scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally recommended; In regions with less rainfall often only (1) one visit per annum is sufficient. Varying land uses can affect maintenance frequency; e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented may require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Manufacturer and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the maintenance provider of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology.

Exclusion of Services

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not included as part of the Final Site Assessment (if applicable). Should a major contamination event occur the Owner must block off the outlet pipe of the Filterra® (where the cleaned runoff drains to, such as drop inlet) and block off the throat of the Filterra®. The Supplier should be informed immediately.

Maintainenance Visit Summary

Maintenance visits are typically scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

1. Inspection of Filterra® Bioscape® and surrounding area
2. Removal of erosion control stones
3. Removal of debris, trash and mulch
4. Removal and disposal of erosion control sock from system perimeter (should be completed at 6 month or 12 month maintenance depending upon site characteristics). A new erosion control sock is no longer needed after the first year.
5. Mulch replacement
6. Plant health evaluation and pruning or replacement as necessary
7. Clean area around Filterra®
8. Complete paperwork

Plant Care for Filterra® Systems

After Activation, the Contractor is responsible for proper care of the vegetation until the site is handed over to the Owner. After that, it is the Site Owner's responsibility to care for the vegetation. Contech recommends the following care for the plants:

1. To prevent transplant shock (especially if planting takes place in the hot season), it may be necessary to prune some of the foliage to compensate for reduced root uptake capacity. This is accomplished by pruning away some of the smaller secondary branches or a main scaffold branch if there are too many. Too much foliage relative to the root ball can dehydrate and damage the plant.
2. Plant staking may be required.
3. With all trees/shrubs, remove dead, diseased, crossed/rubbing, sharply crotched branches or branches growing excessively long or in wrong direction compared to majority of branches.
4. Contech recommends irrigation of the Filterra® Vegetation. The following guidance will help to ensure the vegetation is properly irrigated.

Irrigation Recommendations:

- Each Filterra® system must receive adequate irrigation to ensure survival of the living system during periods of drier weather.
- Irrigation sources include rainfall runoff from downspouts and/or gutter flow, applied water through the tree grate or in some cases from an irrigation system with emitters installed during construction.
- At Activation: Apply about one (cool climates) to two (warm climates) gallons of water per inch of trunk diameter over the root ball.
- During Establishment: In common with all plants, each Filterra® plant will require more frequent watering during the establishment period. One inch of applied water per week for the first three months is recommended for cooler climates (2 to 3 inches for warmer climates). If the system is receiving rainfall runoff from the drainage area, then irrigation may not be needed. Inspection of the soil moisture content can be evaluated by gently brushing aside the mulch layer and feeling the soil. Be sure to replace the mulch when the assessment is complete. Irrigate as needed**.
- Established Plants: Established plants have fully developed root systems and can access the entire water column in the media. Therefore irrigation is less frequent but requires more applied water when performed. For a mature system assume 3.5 inches of available water within the media matrix. Irrigation demand can be estimated as 1" of irrigation demand per week. Therefore if dry periods exceed 3 weeks, irrigation may be required.

*** Five gallons per square yard approximates 1 inch of water. Therefore for a 6' x 6 foot Filterra® approximately 20-60 gallons of applied water is needed. To ensure even distribution of water it needs to be evenly sprinkled over the entire surface of the filter bed, with special attention to make sure the root ball is completely wetted. NOTE: if needed, measure the time it takes to fill a five gallon bucket to estimate the applied water flow rate. Then calculate the time needed to irrigate the Filterra®, For example is the flow rate of the sprinkler is 5 gallons/minute then it would take 12 minutes to irrigate a 6'x6' filter.*

Plant Replacement:

In some cases, plants will require replacement. Please follow the procedures below to ensure a properly functioning Filterra® system.

1. Remove the existing plant, and leave as much of the Filterra® media in place as possible.
2. Select a replacement per the Filterra® Bioscape® Activation Package.
3. Prior to removing the plant from the container, ensure the soil moisture is sufficient to maintain the integrity of the root ball. If needed, pre-wet the container plant.
4. Cut away any roots which are growing out of the container drain holes.
5. Plant(s) should be carefully removed from the pot by gently pounding on the sides of the container with the fist to loosen root ball. Then carefully slide out. Do not lift plant(s) by trunk as this can break roots and cause soil to fall off. Extract the root ball in a horizontal position and support it to prevent it from breaking apart. Alternatively, the pot can be cut away to minimize root ball disturbance.
6. Excavate a hole with a diameter 4" greater than the root ball, gently place the plant(s).
7. Plant the tree/shrub/grass with the top of the root ball 1" above surrounding media to allow for settling.
8. All plants should have the main stem centered in the tree grate (where applicable) upon completion of installation.
9. Reinstall or add mulch to a depth of 3" per Contech's mulch specifications for Filterra® systems.

Maintenance Visit Procedure

Keep sufficient documentation of maintenance actions to predict location specific maintenance frequencies and needs. An example Maintenance Report is included in this manual.

1. Inspection of Filterra and surrounding area

- Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes | no
Is Bypass Clear	yes | no

If yes answered to any of these observations, record with close-up photograph (numbered).

2. Removal of erosion control stones

- Set aside erosion control stones for reuse after mulch has been replaced.
- Dig out silt (if any) and mulch and remove trash & foreign items.

Record on Maintenance Report the following:

Is scour present around the inlet areas? yes | no

If answering yes, consider adding additional erosion control stone.

3. Removal of debris, trash and mulch

- After removal of mulch and debris, measure distance from the top of the Filterra engineered media soil to the top of the top slab. Compare the measured distance to the distance shown on the approved Contract Drawings for the system. Add Filterra media (not top soil or other) to bring media up as needed to distance indicated on drawings.

Record on Maintenance Report the following:

Silt/Clay	yes | no
Bypass Clear	yes | no
Leaves	yes | no
# of Buckets Removed	_____

4. Removal and Disposal of Erosion Control Sock

- Remove and dispose of erosion control sock if site conditions allow (site should be fully stabilized). Erosion control sock is no longer needed after 1-year post activation.

5. Mulch Replacement

- Add mulch evenly across entire system to a depth of three inches.

6. Vegetation health evaluation and pruning

- Examine the vegetation health and replace if necessary. Prune vegetation to encourage growth in the correct directions. Since Filterra® Bioscape® systems can contain many plants, only notation of individual damaged or unhealthy plants is necessary.
  - » Record on Maintenance Report the following:
  - » Vegetation Health
  - » Vegetation Damage

Document damaged or unhealthy plants with photographs.

7. Clean side slopes and area around the Filterra Bioscape system

- Remove all trash and debris to be disposed of appropriately.

8. Complete paperwork

- Complete Maintenance Report. Some jurisdictions require submission of maintenance reports in accordance with approvals. It is the responsibility of the owner to comply with local regulations.



Maintenance Tools, Safety Equipment and Supplies

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing, barricades when working in close proximity to traffic and safety hats, glasses, and shoes.

Most visits require minor trash removal and a full replacement of mulch. Mulch should be a double shredded, hardwood variety.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check	Condition that Should Exist	Actions
Inlet	Excessive sediment or trash accumulation.	Accumulated sediments or trash impair free flow of water into Filterra.	Inlet should be free of obstructions allowing free distributed flow of water into Filterra.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation.	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive.	Plants should be appropriate to the species and location of Filterra.		Trim/prune plants in accordance with typical landscaping and safety needs.
Maintenance is ideally to be performed twice annually.				

Filterra Inspection & Maintenance Log

Filterra System Size/Model:_____ **Location:** _____

Date	Mulch & Debris Removed	Depth of Mulch Added	Mulch Brand	Vegetation Species	Issues with System	Comments
1/1/17	*5 – 5 gal Buckets*	*3"*	*Lowe's Premium Brown Mulch*	*Galaxy Magnolia*	*- Standing water in downstream structure*	*- Removed blockage in downstream structure*

Appendix 1 – Filterra® Bioscape® Activation Package

FILTERRA® BIOSCAPE® ACTIVATION PACKAGE

(No Precast Vaults Provided)

CONTECH® ENGINEERED SOLUTIONS

It is the purchaser's responsibility to Activate the Filterra Bioscape System and provide adequate measures to prevent construction related runoff from entering the Filterra Bioscape system.

Included with your purchase is Supervised Activation of the Filterra system by the manufacturer as well as a 1-year warranty from delivery of the system. The purchaser must ensure that the site is acceptable for Filterra Bioscape Activation. A checklist (included as page 2 of this document must be completed and submitted to the Contech Activation Coordinator. The minimum requirements for Filterra Bioscape Activation are as follows:

1. The purchaser must have sourced vegetation meeting the requirements outlined in "Plant Selection for Filterra Systems" below.
2. A pre-construction meeting is required to discuss site requirements, logistics planning and activation FAQ and red flags.
3. The site landscaping must be fully stabilized, i.e. full landscaping installed and some grass cover (not just straw and seed) is required to reduce sediment transport. Construction debris and materials should be removed from surrounding area.
4. Final paving must be completed. Final paving ensures that paving materials will not enter and contaminate the Filterra system during the paving process, and that the plant will receive runoff from the drainage area, assisting with plant survival for the Filterra system.
5. All immediate upstream and downstream structures should be placed with piping into the system already installed for connection during activation.



Plant Selection for Filterra® Bioscape® Systems

All Filterra systems require vegetation for proper long-term performance. As indicated in the Filterra Bioscape Activation Package, the Contractor is responsible for sourcing the proper vegetation prior to Supervised Activation. Contech or a Contech representative will supervise installation the vegetation during the Activation process.

Contractors must ensure the vegetation meets the following 3 requirements:

1. Select plant(s) as specified in the engineering plans and specifications AND that are listed on Contech's Configuration Specific Plant Lists.
2. All plants MUST be container-grown in nursery containers no larger than 15 gallons. Crated and/or Ball/Burlap plants are NOT permitted.
3. Quantities should be selected based on plant palette options found starting on page 3 of this document.

If Contech or Contech's representative shows up for Supervised Activation and any of the 3 requirements above are not met, Activation cannot be performed and the Contractor will be billed a $1,500 Unprepared Site fee*.

* *UNPREPARED SITE FEE NOTE: A charge of $1500.00 will be invoiced for each activation visit requested by customer where Contech determines that the site does not meet the conditions required for Activation AND/OR acceptable plants are not provided by the contractor.*

Filterra® Contractor Activation Checklist

Requested Activation Date: _____ System Designation: _____

Project Name: _____

Site Contact Name: _____ Site Contact Phone/Email: _____

Site Owner/End User Name: _____ Site Owner/End User Phone/Email: _____

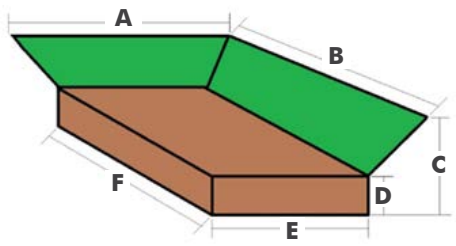
Please complete the following checklist, sign, date, and submit with your activation request to your Contech Project Consultant. Along with the checklist, fill out the as-built dimensions of the Filterra Bioscape system excavation(s), and attach photos of the Filterra Bioscape excavation(s). This information is essential to ensure the proper amount of material is provided.

Checklist:

- ☐ Upstream drainage area to Filterra Bioscape system is stabilized.
- ☐ Filterra Bioscape excavated per plan dimensions to bottom of Filterra underdrain stone depth. Surface area of media area must match order quantities.
- ☐ If additional depth of drain rock is required per site plans, additional drain rock is installed to the Filterra Bioscape underdrain pipe elevation.
- ☐ Excavation sides vertical from bottom of excavation to top of mulch (Approximately 34" when 6" underdrain is utilized).
- ☐ Excavation sides maximum slope 3:1 from top of mulch to finished grade.
- ☐ Side slopes above top of mulch elevation stabilized with sod or other slope stabilization.
- ☐ Bioscape Inlet (BSI) structure or other inlet/bypass structure installed and properly backfilled with maximum 3:1 slopes to top of mulch elevation.
- ☐ Inflow pipe(s) connected from BSI or other inlet structure to edge of Filterra Bioscape system excavation.
- ☐ Outflow pipe(s) connected from edge of Filterra Bioscape system excavation to downstream structure.
- ☐ Outflow pipe(s) are SDR35, properly sized per site plan underdrain pipe size(s).
- ☐ Excavation is dry and free from construction related sediment and debris.
- ☐ Bottom of excavation is properly scarified.
- ☐ Excavation is accessible by standard construction equipment.
- ☐ Plants have been purchased in accordance with the guidance in "Plant Selection for Filterra Bioscape Systems"
- ☐ Photos attached.

NOTE: Please ensure that all of the above conditions have been met prior to activation request. A mobilization fee (minimum $1000.00) applies for each activation visit requested by Customer where Contech determines that the site does not meet the above conditions suitable for activation.

As-Built Dimensions



A.	OVERALL EXCAVATION WIDTH:	_____FT
B.	OVERALL EXCAVATION LENGTH:	_____FT
C.	OVERALL EXCAVATION HEIGHT:	_____FT
D.	FILTERRA BED HEIGHT:	_____FT
E.	FILTERRA MEDIA BED WIDTH:	_____FT
F.	FILTERRA MEDIA BED LENGTH:	_____FT

Signature _____ Date _____

* *UNPREPARED SITE FEE NOTE: A charge of $1500.00 will be invoiced for each activation visit requested by customer where Contech determines that the site does not meet the conditions required for Activation AND/OR acceptable plants are not provided by the contractor.*

Filterra® Bioscape Plant Palettes

KEY: (refer to plant lists for species sizing)



A. EXTRA SMALL GRASS
- Up to 2′ mature spread
- 1-2 gallon typical (1 gal. minimum)

B. SMALL GRASS/SHRUB
- 2′-4′ mature spread
- 1-7 gallon typical

C. MEDIUM SHRUB
- 4′-6′ mature spread
- 1-7 gallon typical

D. LARGE SHRUB OR EXTRA LARGE SHRUB OR TREE
- 6′ mature spread and greater, 30′ max. mature height
- Up to 15 gallon maximum

NOTE: *For larger vaults and in-ground Filterra Bioscape systems, palettes can be scaled (i.e. Qty 6 of the 175 SF Palette can be used for a 1056 SF Filterra Bioscape).*

MIX & MATCH SUBSTITUTION OPTIONS:

1 Large Shrub or Extra Large Shrub or Tree
- 2 Medium Shrubs
- 4 Small Grass/SHrubs
- 12 Extra Small Grasses

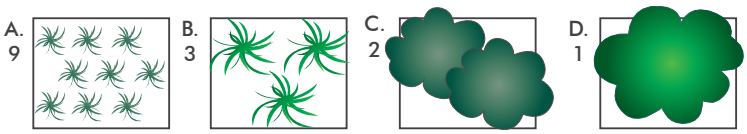
1 Medium Shrub
- 2 Small Grass/Shrubs
- 6 Extra Small Grasses

1 Small Grass/Shrub
- 3 Extra Small Grasses

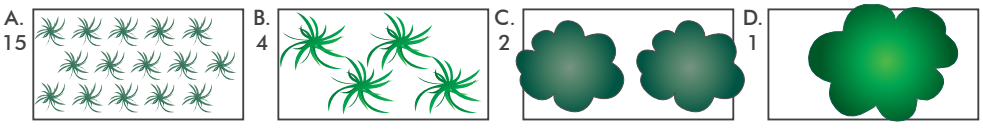
25 SF example



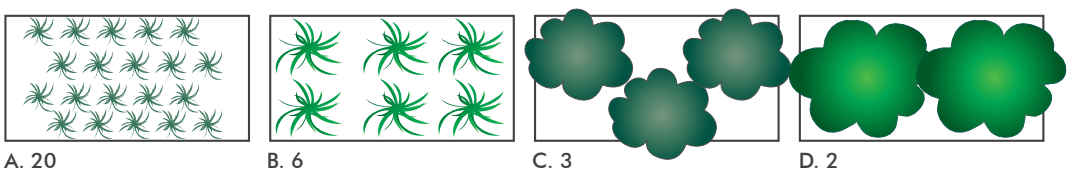
50 SF example



75 SF example

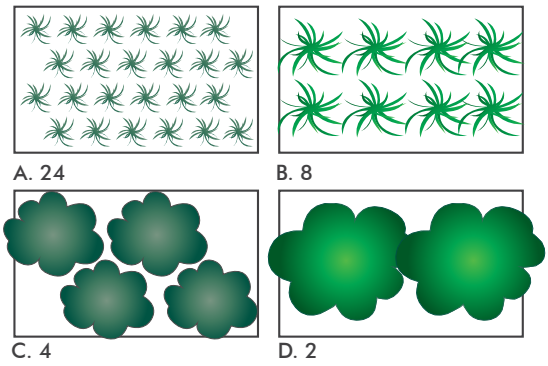


100 SF example



* *UNPREPARED SITE FEE NOTE: A charge of $1500.00 will be invoiced for each activation visit requested by customer where Contech determines that the site does not meet the conditions required for Activation AND/OR acceptable plants are not provided by the contractor.*

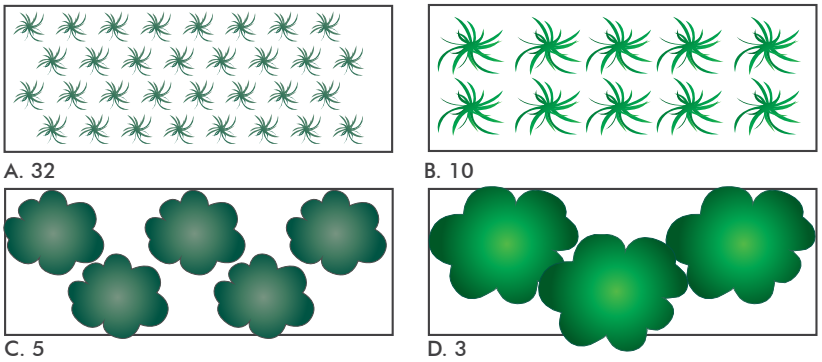
125 SF example



A. 24 B. 8

C. 4 D. 2

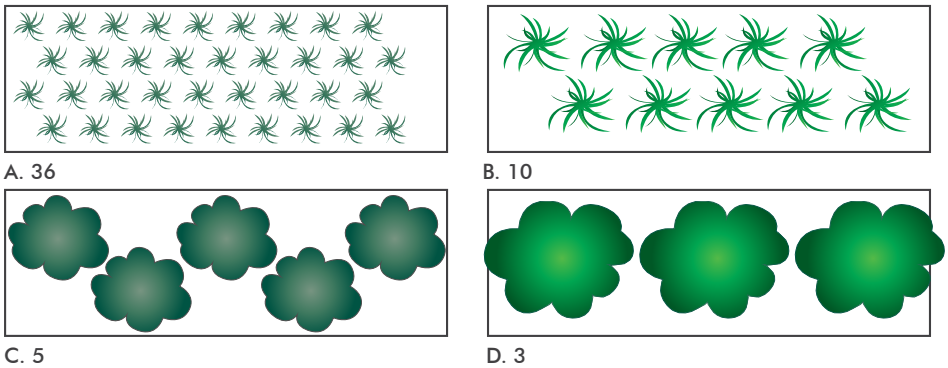
150 SF example



A. 32 B. 10

C. 5 D. 3

175 SF example



A. 36 B. 10

C. 5 D. 3

In some cases, Contech may consider alternate plant species as approved by the Product Manager. Please list the plant name in the space below and submit this sheet to your Contech Activation Coordinator. If the plant species is approved, either the Product Manager or the Activation Coordinator will sign the form and return to you for inclusion with your Activation Checklist.

Requested Plant Species: _____ Approved: _____

Date: _____

* *UNPREPARED SITE FEE NOTE: A charge of $1500.00 will be invoiced for each activation visit requested by customer where Contech determines that the site does not meet the conditions required for Activation AND/OR acceptable plants are not provided by the contractor.*

PDF 1/23

© 2023 Contech Engineered Solutions LLC, a QUIKRETE Company





9100 Centre Pointe Drive, Suite 400
West Chester, OH 45069
info@conteches.com | 800-338-1122
www.ContechES.com

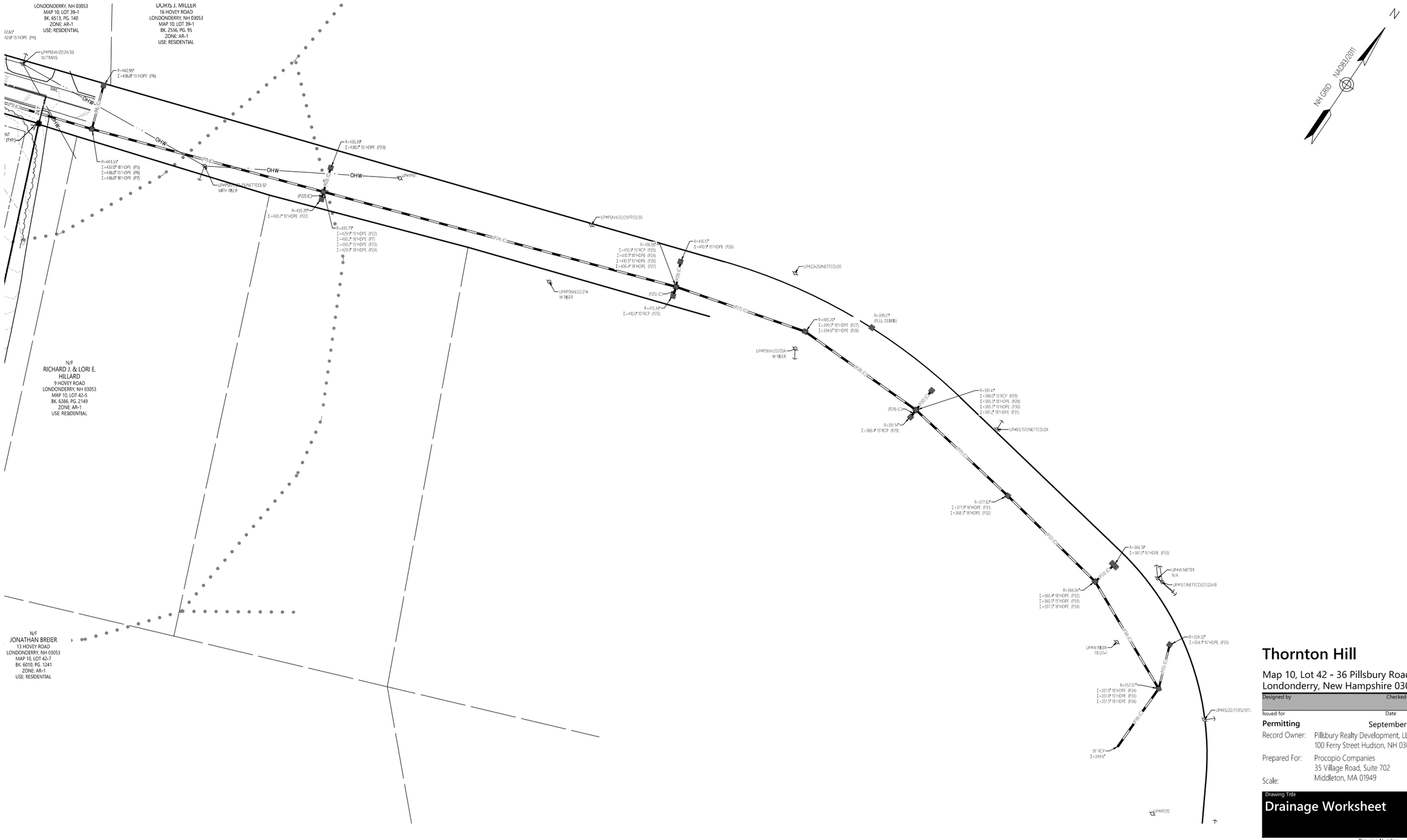
© 2023 Contech Engineered Solutions LLC, a QUIKRETE Company

ALL RIGHTS RESERVED. PRINTED IN THE USA.

NOTHING IN THIS CATALOG SHOULD BE CONSTRUED AS A WARRANTY. APPLICATIONS SUGGESTED HEREIN ARE DESCRIBED ONLY TO HELP READERS MAKE THEIR OWN EVALUATIONS AND DECISIONS, AND ARE NEITHER GUARANTEES NOR WARRANTIES OF SUITABILITY FOR ANY APPLICATION. CONTECH MAKES NO WARRANTY WHATSOEVER, EXPRESS OR IMPLIED, RELATED TO THE APPLICATIONS, MATERIALS, COATINGS, OR PRODUCTS DISCUSSED HEREIN. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR ANY PARTICULAR PURPOSE ARE DISCLAIMED BY CONTECH. SEE CONTECH'S CONDITIONS OF SALE (AVAILABLE AT WWW.CONTECHES.COM/COS) FOR MORE INFORMATION.

PDF 1/23

Hovey Road Drainage Worksheet



Certification

I HEREBY REPORT THAT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE. INFORMATION, AND BELIEF: THIS PLAN WAS PREPARED FROM A FIELD SURVEY SUPERVISED BY ME AND MADE IN CONFORMANCE WITH THE STANDARDS PROMULGATED IN NH LAN 500 FOR A STANDARD PROPERTY SURVEY AND MEETS THE ACCURACY STANDARD FOR AN URBAN CLASS REAL PROPERTY SURVEY.

Benchmarks

1. TBM 112 - MAG NAIL SET IN PAVEMENT ON HOVEY ROAD, ELEV.=458.60'
2. TBM 121 - MAG NAIL SET IN MEDIAN ON MICHELS WAY, ELEV.=395.40'

No.	Revision	Date	Appvd.
1	RESPONSE TO TOWN COMMENTS	6/13/2025	MJH

Thornton Hill

Map 10, Lot 42 - 36 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by	Checked by
Issued for	**Date**
Permitting	September 9, 2025

Record Owner: Pillsbury Realty Development, LLC
100 Ferry Street Hudson, NH 03051

Prepared For: Procopio Companies
35 Village Road, Suite 702
Middleton, MA 01949

Scale:

Drawing Title
Drainage Worksheet

Drawing Number

Sheet of

Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

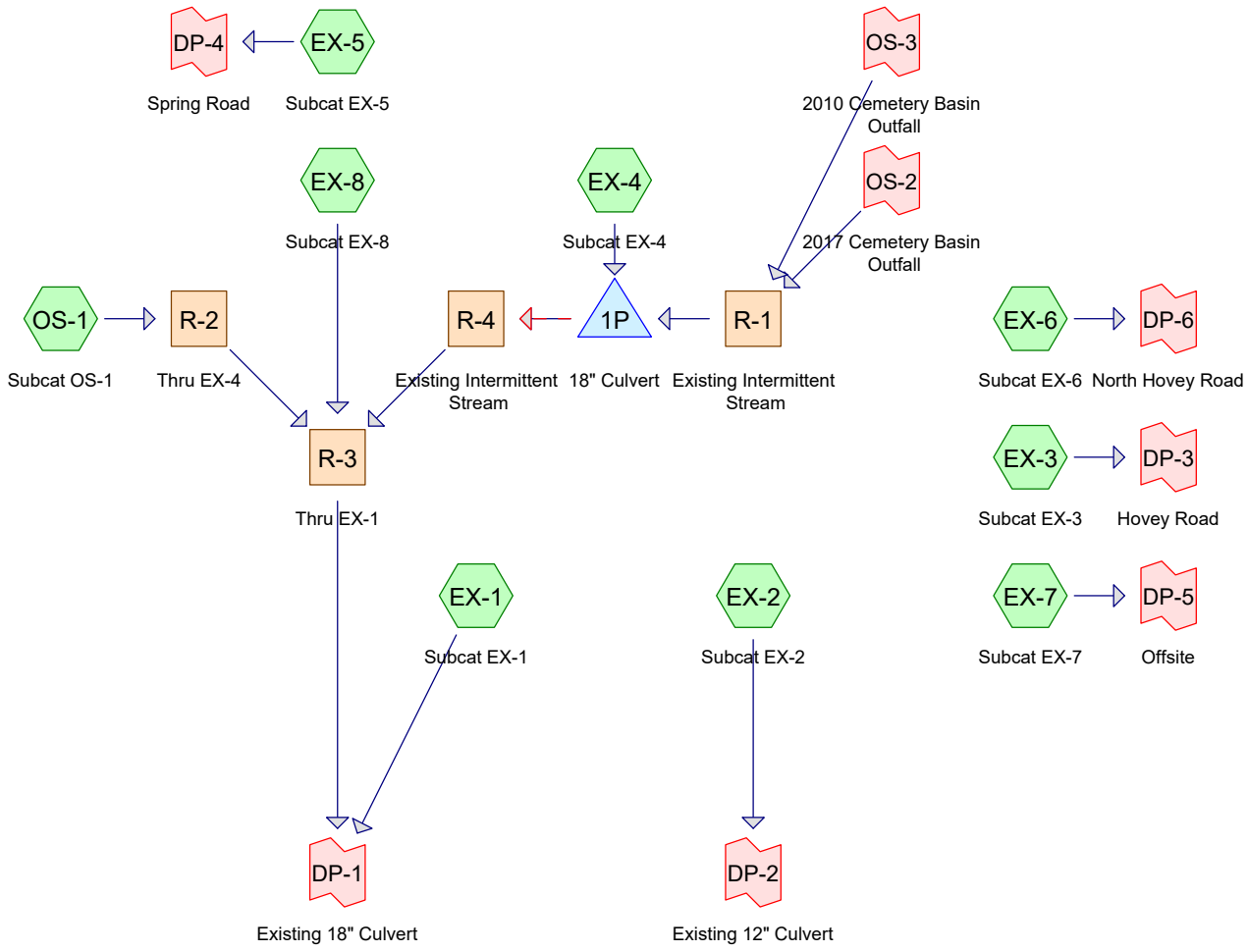
Project Number **53140.00**

Saved Monday, June 9, 2025 5:04:20 PM PQUERTIN Plotted Tuesday, September 9, 2025 2:29:06 PM Paul Guertin

Appendix B: Hydrologic Calculations

- Existing Conditions: Project Site
- Existing Conditions: Hovey Road
- Proposed Conditions: Project Site

Existing Conditions: Project Site



Subcat Reach Pond Link

Routing Diagram for 53140.00-EX
Prepared by VHB, Inc, Printed 11/7/2025
HydroCAD® 10.20-5c s/n 01038 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-YR	Type III 24-hr		Default	24.00	1	2.47	2
2	2-YR	Type III 24-hr		Default	24.00	1	2.95	2
3	10-YR	Type III 24-hr		Default	24.00	1	4.46	2
4	25-YR	Type III 24-hr		Default	24.00	1	5.65	2
5	50-YR	Type III 24-hr		Default	24.00	1	6.76	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
18.95	61	>75% Grass cover, Good, HSG B (EX-1, EX-2, EX-3, EX-4, EX-5, EX-6, EX-7, EX-8, OS-1)
11.15	74	>75% Grass cover, Good, HSG C (EX-1, EX-2, EX-3, EX-4, EX-5, EX-6, EX-7, EX-8)
0.23	80	>75% Grass cover, Good, HSG D (EX-2, EX-4, EX-8)
0.38	96	Gravel surface, HSG B (EX-1, EX-2, EX-3, EX-4)
0.47	96	Gravel surface, HSG C (EX-1, EX-2, EX-3, EX-4)
0.00	96	Gravel surface, HSG D (EX-2)
5.95	55	Woods, Good, HSG B (EX-1, EX-2, EX-3, EX-5, EX-7, EX-8, OS-1)
3.49	70	Woods, Good, HSG C (EX-1, EX-3, EX-4, EX-5, EX-7, EX-8, OS-1)
0.10	77	Woods, Good, HSG D (EX-8)
16.63	58	Woods/grass comb., Good, HSG B (EX-1, EX-2, EX-4, EX-8, OS-1)
42.74	72	Woods/grass comb., Good, HSG C (EX-1, EX-2, EX-3, EX-4, EX-5, EX-6, EX-8)
0.41	79	Woods/grass comb., Good, HSG D (EX-2, EX-4, EX-8)
100.51	**67**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.00	HSG A	
41.91	HSG B	EX-1, EX-2, EX-3, EX-4, EX-5, EX-6, EX-7, EX-8, OS-1
57.86	HSG C	EX-1, EX-2, EX-3, EX-4, EX-5, EX-6, EX-7, EX-8, OS-1
0.74	HSG D	EX-2, EX-4, EX-8
0.00	Other	
100.51		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 EX-1: Subcat EX-1 Runoff Area=22.27 ac 0.00% Impervious Runoff Depth=0.19"
Flow Length=1,922' Tc=24.9 min CN=61 Runoff=1.3 cfs 0.35 af

Subcatchment EX-2: Subcat EX-2 Runoff Area=6.37 ac 0.00% Impervious Runoff Depth=0.17"
Flow Length=934' Tc=10.4 min CN=60 Runoff=0.4 cfs 0.09 af

Subcatchment EX-3: Subcat EX-3 Runoff Area=9.09 ac 0.00% Impervious Runoff Depth=0.26"
Flow Length=560' Tc=21.1 min CN=64 Runoff=1.0 cfs 0.20 af

Subcatchment EX-4: Subcat EX-4 Runoff Area=33.50 ac 0.00% Impervious Runoff Depth=0.51"
Flow Length=2,209' Tc=22.1 min CN=72 Runoff=10.7 cfs 1.43 af

Subcatchment EX-5: Subcat EX-5 Runoff Area=5.25 ac 0.00% Impervious Runoff Depth=0.51"
Flow Length=348' Tc=12.2 min CN=72 Runoff=2.1 cfs 0.22 af

Subcatchment EX-6: Subcat EX-6 Runoff Area=3.53 ac 0.00% Impervious Runoff Depth=0.51"
Flow Length=359' Tc=7.9 min CN=72 Runoff=1.6 cfs 0.15 af

Subcatchment EX-7: Subcat EX-7 Runoff Area=1.67 ac 0.00% Impervious Runoff Depth=0.48"
Flow Length=199' Tc=8.9 min CN=71 Runoff=0.7 cfs 0.07 af

Subcatchment EX-8: Subcat EX-8 Runoff Area=12.48 ac 0.00% Impervious Runoff Depth=0.44"
Flow Length=2,527' Tc=32.5 min CN=70 Runoff=2.7 cfs 0.46 af

Subcatchment OS-1: Subcat OS-1 Runoff Area=6.35 ac 0.00% Impervious Runoff Depth=0.13"
Flow Length=904' Tc=19.2 min CN=58 Runoff=0.2 cfs 0.07 af

Reach R-1: Existing Intermittent Stream Avg. Flow Depth=0.13' Max Vel=0.60 fps Inflow=0.8 cfs 0.27 af
n=0.080 L=1,720.0' S=0.0170 '/' Capacity=255.8 cfs Outflow=0.5 cfs 0.27 af

Reach R-2: Thru EX-4 Avg. Flow Depth=0.05' Max Vel=0.76 fps Inflow=0.2 cfs 0.07 af
n=0.080 L=344.0' S=0.0812 '/' Capacity=378.8 cfs Outflow=0.2 cfs 0.07 af

Reach R-3: Thru EX-1 Avg. Flow Depth=0.67' Max Vel=2.12 fps Inflow=11.6 cfs 2.23 af
n=0.080 L=254.0' S=0.0311 '/' Capacity=314.0 cfs Outflow=11.6 cfs 2.23 af

Reach R-4: Existing Intermittent Stream Avg. Flow Depth=0.56' Max Vel=2.23 fps Inflow=9.2 cfs 1.70 af
n=0.080 L=1,252.1' S=0.0409 '/' Capacity=297.4 cfs Outflow=8.8 cfs 1.70 af

Pond 1P: 18" Culvert Peak Elev=434.13' Storage=2,989 cf Inflow=10.7 cfs 1.70 af
Primary=9.2 cfs 1.70 af Secondary=0.0 cfs 0.00 af Outflow=9.2 cfs 1.70 af

Link DP-1: Existing 18" Culvert Inflow=12.9 cfs 2.58 af
Primary=12.9 cfs 2.58 af

Link DP-2: Existing 12" Culvert Inflow=0.4 cfs 0.09 af
Primary=0.4 cfs 0.09 af

Link DP-3: Hovey Road Inflow=1.0 cfs 0.20 af
Primary=1.0 cfs 0.20 af

Link DP-4: Spring Road Inflow=2.1 cfs 0.22 af
Primary=2.1 cfs 0.22 af

Link DP-5: Offsite Inflow=0.7 cfs 0.07 af
Primary=0.7 cfs 0.07 af

Link DP-6: North Hovey Road Inflow=1.6 cfs 0.15 af
Primary=1.6 cfs 0.15 af

Link OS-2: 2017 Cemetery Basin Outfall Manual Hydrograph Inflow=0.2 cfs 0.12 af
Area= 2.53 ac 31.91% Imperv. Primary=0.2 cfs 0.12 af

Link OS-3: 2010 Cemetery Basin Outfall Manual Hydrograph Inflow=0.6 cfs 0.15 af
Area= 1.67 ac 29.54% Imperv. Primary=0.6 cfs 0.15 af

Total Runoff Area = 100.51 ac Runoff Volume = 3.03 af Average Runoff Depth = 0.36"
100.00% Pervious = 100.51 ac 0.00% Impervious = 0.00 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 EX-1: Subcat EX-1 Runoff Area=22.27 ac 0.00% Impervious Runoff Depth=0.35"
Flow Length=1,922' Tc=24.9 min CN=61 Runoff=3.4 cfs 0.64 af

Subcatchment EX-2: Subcat EX-2 Runoff Area=6.37 ac 0.00% Impervious Runoff Depth=0.32"
Flow Length=934' Tc=10.4 min CN=60 Runoff=1.0 cfs 0.17 af

Subcatchment EX-3: Subcat EX-3 Runoff Area=9.09 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=560' Tc=21.1 min CN=64 Runoff=2.2 cfs 0.34 af

Subcatchment EX-4: Subcat EX-4 Runoff Area=33.50 ac 0.00% Impervious Runoff Depth=0.78"
Flow Length=2,209' Tc=22.1 min CN=72 Runoff=17.7 cfs 2.17 af

Subcatchment EX-5: Subcat EX-5 Runoff Area=5.25 ac 0.00% Impervious Runoff Depth=0.78"
Flow Length=348' Tc=12.2 min CN=72 Runoff=3.5 cfs 0.34 af

Subcatchment EX-6: Subcat EX-6 Runoff Area=3.53 ac 0.00% Impervious Runoff Depth=0.78"
Flow Length=359' Tc=7.9 min CN=72 Runoff=2.7 cfs 0.23 af

Subcatchment EX-7: Subcat EX-7 Runoff Area=1.67 ac 0.00% Impervious Runoff Depth=0.73"
Flow Length=199' Tc=8.9 min CN=71 Runoff=1.1 cfs 0.10 af

Subcatchment EX-8: Subcat EX-8 Runoff Area=12.48 ac 0.00% Impervious Runoff Depth=0.69"
Flow Length=2,527' Tc=32.5 min CN=70 Runoff=4.8 cfs 0.71 af

Subcatchment OS-1: Subcat OS-1 Runoff Area=6.35 ac 0.00% Impervious Runoff Depth=0.26"
Flow Length=904' Tc=19.2 min CN=58 Runoff=0.6 cfs 0.14 af

Reach R-1: Existing Intermittent Stream Avg. Flow Depth=0.14' Max Vel=0.63 fps Inflow=0.8 cfs 0.30 af
n=0.080 L=1,720.0' S=0.0170 '/' Capacity=255.8 cfs Outflow=0.5 cfs 0.30 af

Reach R-2: Thru EX-4 Avg. Flow Depth=0.12' Max Vel=1.22 fps Inflow=0.6 cfs 0.14 af
n=0.080 L=344.0' S=0.0812 '/' Capacity=378.8 cfs Outflow=0.6 cfs 0.14 af

Reach R-3: Thru EX-1 Avg. Flow Depth=0.89' Max Vel=2.48 fps Inflow=19.4 cfs 3.32 af
n=0.080 L=254.0' S=0.0311 '/' Capacity=314.0 cfs Outflow=19.3 cfs 3.32 af

Reach R-4: Existing Intermittent Stream Avg. Flow Depth=0.73' Max Vel=2.60 fps Inflow=15.4 cfs 2.47 af
n=0.080 L=1,252.1' S=0.0409 '/' Capacity=297.4 cfs Outflow=14.1 cfs 2.47 af

Pond 1P: 18" Culvert Peak Elev=435.04' Storage=7,067 cf Inflow=17.7 cfs 2.47 af
Primary=12.3 cfs 2.42 af Secondary=3.1 cfs 0.05 af Outflow=15.4 cfs 2.47 af

Link DP-1: Existing 18" Culvert Inflow=22.6 cfs 3.96 af
Primary=22.6 cfs 3.96 af

Link DP-2: Existing 12" Culvert Inflow=1.0 cfs 0.17 af
Primary=1.0 cfs 0.17 af

Link DP-3: Hovey Road Inflow=2.2 cfs 0.34 af
Primary=2.2 cfs 0.34 af

Link DP-4: Spring Road Inflow=3.5 cfs 0.34 af
Primary=3.5 cfs 0.34 af

Link DP-5: Offsite Inflow=1.1 cfs 0.10 af
Primary=1.1 cfs 0.10 af

Link DP-6: North Hovey Road Inflow=2.7 cfs 0.23 af
Primary=2.7 cfs 0.23 af

Link OS-2: 2017 Cemetery Basin Outfall Manual Hydrograph Inflow=0.3 cfs 0.14 af
Area= 2.53 ac 31.91% Imperv. Primary=0.3 cfs 0.14 af

Link OS-3: 2010 Cemetery Basin Outfall Manual Hydrograph Inflow=0.6 cfs 0.15 af
Area= 1.67 ac 29.54% Imperv. Primary=0.6 cfs 0.15 af

Total Runoff Area = 100.51 ac Runoff Volume = 4.84 af Average Runoff Depth = 0.58"
100.00% Pervious = 100.51 ac 0.00% Impervious = 0.00 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 EX-1: Subcat EX-1 Runoff Area=22.27 ac 0.00% Impervious Runoff Depth=1.06"
Flow Length=1,922' Tc=24.9 min CN=61 Runoff=14.7 cfs 1.96 af

Subcatchment EX-2: Subcat EX-2 Runoff Area=6.37 ac 0.00% Impervious Runoff Depth=1.00"
Flow Length=934' Tc=10.4 min CN=60 Runoff=5.4 cfs 0.53 af

Subcatchment EX-3: Subcat EX-3 Runoff Area=9.09 ac 0.00% Impervious Runoff Depth=1.24"
Flow Length=560' Tc=21.1 min CN=64 Runoff=7.9 cfs 0.94 af

Subcatchment EX-4: Subcat EX-4 Runoff Area=33.50 ac 0.00% Impervious Runoff Depth=1.79"
Flow Length=2,209' Tc=22.1 min CN=72 Runoff=44.4 cfs 5.00 af

Subcatchment EX-5: Subcat EX-5 Runoff Area=5.25 ac 0.00% Impervious Runoff Depth=1.79"
Flow Length=348' Tc=12.2 min CN=72 Runoff=8.8 cfs 0.78 af

Subcatchment EX-6: Subcat EX-6 Runoff Area=3.53 ac 0.00% Impervious Runoff Depth=1.79"
Flow Length=359' Tc=7.9 min CN=72 Runoff=6.8 cfs 0.53 af

Subcatchment EX-7: Subcat EX-7 Runoff Area=1.67 ac 0.00% Impervious Runoff Depth=1.72"
Flow Length=199' Tc=8.9 min CN=71 Runoff=3.0 cfs 0.24 af

Subcatchment EX-8: Subcat EX-8 Runoff Area=12.48 ac 0.00% Impervious Runoff Depth=1.65"
Flow Length=2,527' Tc=32.5 min CN=70 Runoff=12.7 cfs 1.71 af

Subcatchment OS-1: Subcat OS-1 Runoff Area=6.35 ac 0.00% Impervious Runoff Depth=0.88"
Flow Length=904' Tc=19.2 min CN=58 Runoff=3.6 cfs 0.47 af

Reach R-1: Existing Intermittent Stream Avg. Flow Depth=0.30' Max Vel=1.00 fps Inflow=2.6 cfs 0.68 af
n=0.080 L=1,720.0' S=0.0170 '/' Capacity=255.8 cfs Outflow=1.9 cfs 0.68 af

Reach R-2: Thru EX-4 Avg. Flow Depth=0.33' Max Vel=2.23 fps Inflow=3.6 cfs 0.47 af
n=0.080 L=344.0' S=0.0812 '/' Capacity=378.8 cfs Outflow=3.6 cfs 0.47 af

Reach R-3: Thru EX-1 Avg. Flow Depth=1.56' Max Vel=3.37 fps Inflow=57.6 cfs 7.86 af
n=0.080 L=254.0' S=0.0311 '/' Capacity=314.0 cfs Outflow=57.5 cfs 7.86 af

Reach R-4: Existing Intermittent Stream Avg. Flow Depth=1.31' Max Vel=3.59 fps Inflow=44.4 cfs 5.68 af
n=0.080 L=1,252.1' S=0.0409 '/' Capacity=297.4 cfs Outflow=41.7 cfs 5.68 af

Pond 1P: 18" Culvert Peak Elev=435.48' Storage=10,630 cf Inflow=44.7 cfs 5.68 af
Primary=13.5 cfs 4.47 af Secondary=30.9 cfs 1.20 af Outflow=44.4 cfs 5.68 af

Link DP-1: Existing 18" Culvert Inflow=71.9 cfs 9.82 af
Primary=71.9 cfs 9.82 af

Link DP-2: Existing 12" Culvert Inflow=5.4 cfs 0.53 af
Primary=5.4 cfs 0.53 af

Link DP-3: Hovey Road Inflow=7.9 cfs 0.94 af
Primary=7.9 cfs 0.94 af

Link DP-4: Spring Road Inflow=8.8 cfs 0.78 af
Primary=8.8 cfs 0.78 af

Link DP-5: Offsite Inflow=3.0 cfs 0.24 af
Primary=3.0 cfs 0.24 af

Link DP-6: North Hovey Road Inflow=6.8 cfs 0.53 af
Primary=6.8 cfs 0.53 af

Link OS-2: 2017 Cemetery Basin Outfall Manual Hydrograph Inflow=1.9 cfs 0.48 af
Area= 2.53 ac 31.91% Imperv. Primary=1.9 cfs 0.48 af

Link OS-3: 2010 Cemetery Basin Outfall Manual Hydrograph Inflow=0.9 cfs 0.20 af
Area= 1.67 ac 29.54% Imperv. Primary=0.9 cfs 0.20 af

Total Runoff Area = 100.51 ac Runoff Volume = 12.16 af Average Runoff Depth = 1.45"
100.00% Pervious = 100.51 ac 0.00% Impervious = 0.00 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 EX-1: Subcat EX-1 Runoff Area=22.27 ac 0.00% Impervious Runoff Depth=1.78"
Flow Length=1,922' Tc=24.9 min CN=61 Runoff=26.7 cfs 3.29 af

Subcatchment EX-2: Subcat EX-2 Runoff Area=6.37 ac 0.00% Impervious Runoff Depth=1.70"
Flow Length=934' Tc=10.4 min CN=60 Runoff=10.1 cfs 0.90 af

Subcatchment EX-3: Subcat EX-3 Runoff Area=9.09 ac 0.00% Impervious Runoff Depth=2.02"
Flow Length=560' Tc=21.1 min CN=64 Runoff=13.6 cfs 1.53 af

Subcatchment EX-4: Subcat EX-4 Runoff Area=33.50 ac 0.00% Impervious Runoff Depth=2.71"
Flow Length=2,209' Tc=22.1 min CN=72 Runoff=68.4 cfs 7.56 af

Subcatchment EX-5: Subcat EX-5 Runoff Area=5.25 ac 0.00% Impervious Runoff Depth=2.71"
Flow Length=348' Tc=12.2 min CN=72 Runoff=13.5 cfs 1.19 af

Subcatchment EX-6: Subcat EX-6 Runoff Area=3.53 ac 0.00% Impervious Runoff Depth=2.71"
Flow Length=359' Tc=7.9 min CN=72 Runoff=10.5 cfs 0.80 af

Subcatchment EX-7: Subcat EX-7 Runoff Area=1.67 ac 0.00% Impervious Runoff Depth=2.62"
Flow Length=199' Tc=8.9 min CN=71 Runoff=4.6 cfs 0.36 af

Subcatchment EX-8: Subcat EX-8 Runoff Area=12.48 ac 0.00% Impervious Runoff Depth=2.53"
Flow Length=2,527' Tc=32.5 min CN=70 Runoff=20.0 cfs 2.63 af

Subcatchment OS-1: Subcat OS-1 Runoff Area=6.35 ac 0.00% Impervious Runoff Depth=1.54"
Flow Length=904' Tc=19.2 min CN=58 Runoff=7.1 cfs 0.82 af

Reach R-1: Existing Intermittent Stream Avg. Flow Depth=0.44' Max Vel=1.27 fps Inflow=5.0 cfs 0.89 af
n=0.080 L=1,720.0' S=0.0170 '/' Capacity=255.8 cfs Outflow=3.9 cfs 0.89 af

Reach R-2: Thru EX-4 Avg. Flow Depth=0.48' Max Vel=2.77 fps Inflow=7.1 cfs 0.82 af
n=0.080 L=344.0' S=0.0812 '/' Capacity=378.8 cfs Outflow=7.0 cfs 0.82 af

Reach R-3: Thru EX-1 Avg. Flow Depth=1.98' Max Vel=3.84 fps Inflow=93.4 cfs 11.90 af
n=0.080 L=254.0' S=0.0311 '/' Capacity=314.0 cfs Outflow=93.2 cfs 11.90 af

Reach R-4: Existing Intermittent Stream Avg. Flow Depth=1.68' Max Vel=4.11 fps Inflow=70.2 cfs 8.45 af
n=0.080 L=1,252.1' S=0.0409 '/' Capacity=297.4 cfs Outflow=67.3 cfs 8.45 af

Pond 1P: 18" Culvert Peak Elev=435.77' Storage=13,176 cf Inflow=70.8 cfs 8.45 af
Primary=14.2 cfs 5.78 af Secondary=56.1 cfs 2.67 af Outflow=70.2 cfs 8.45 af

Link DP-1: Existing 18" Culvert Inflow=119.5 cfs 15.19 af
Primary=119.5 cfs 15.19 af

Link DP-2: Existing 12" Culvert Inflow=10.1 cfs 0.90 af
Primary=10.1 cfs 0.90 af

Link DP-3: Hovey Road Inflow=13.6 cfs 1.53 af
Primary=13.6 cfs 1.53 af

Link DP-4: Spring Road Inflow=13.5 cfs 1.19 af
Primary=13.5 cfs 1.19 af

Link DP-5: Offsite Inflow=4.6 cfs 0.36 af
Primary=4.6 cfs 0.36 af

Link DP-6: North Hovey Road Inflow=10.5 cfs 0.80 af
Primary=10.5 cfs 0.80 af

Link OS-2: 2017 Cemetery Basin Outfall Manual Hydrograph Inflow=3.2 cfs 0.64 af
Area= 2.53 ac 31.91% Imperv. Primary=3.2 cfs 0.64 af

Link OS-3: 2010 Cemetery Basin Outfall Manual Hydrograph Inflow=1.9 cfs 0.24 af
Area= 1.67 ac 29.54% Imperv. Primary=1.9 cfs 0.24 af

Total Runoff Area = 100.51 ac Runoff Volume = 19.08 af Average Runoff Depth = 2.28"
100.00% Pervious = 100.51 ac 0.00% Impervious = 0.00 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 EX-1: Subcat EX-1 Runoff Area=22.27 ac 0.00% Impervious Runoff Depth=2.53"
Flow Length=1,922' Tc=24.9 min CN=61 Runoff=39.3 cfs 4.70 af

Subcatchment EX-2: Subcat EX-2 Runoff Area=6.37 ac 0.00% Impervious Runoff Depth=2.44"
Flow Length=934' Tc=10.4 min CN=60 Runoff=15.1 cfs 1.29 af

Subcatchment EX-3: Subcat EX-3 Runoff Area=9.09 ac 0.00% Impervious Runoff Depth=2.82"
Flow Length=560' Tc=21.1 min CN=64 Runoff=19.5 cfs 2.14 af

Subcatchment EX-4: Subcat EX-4 Runoff Area=33.50 ac 0.00% Impervious Runoff Depth=3.63"
Flow Length=2,209' Tc=22.1 min CN=72 Runoff=92.1 cfs 10.12 af

Subcatchment EX-5: Subcat EX-5 Runoff Area=5.25 ac 0.00% Impervious Runoff Depth=3.63"
Flow Length=348' Tc=12.2 min CN=72 Runoff=18.2 cfs 1.59 af

Subcatchment EX-6: Subcat EX-6 Runoff Area=3.53 ac 0.00% Impervious Runoff Depth=3.63"
Flow Length=359' Tc=7.9 min CN=72 Runoff=14.1 cfs 1.07 af

Subcatchment EX-7: Subcat EX-7 Runoff Area=1.67 ac 0.00% Impervious Runoff Depth=3.52"
Flow Length=199' Tc=8.9 min CN=71 Runoff=6.2 cfs 0.49 af

Subcatchment EX-8: Subcat EX-8 Runoff Area=12.48 ac 0.00% Impervious Runoff Depth=3.42"
Flow Length=2,527' Tc=32.5 min CN=70 Runoff=27.3 cfs 3.56 af

Subcatchment OS-1: Subcat OS-1 Runoff Area=6.35 ac 0.00% Impervious Runoff Depth=2.25"
Flow Length=904' Tc=19.2 min CN=58 Runoff=10.8 cfs 1.19 af

Reach R-1: Existing Intermittent Stream Avg. Flow Depth=0.58' Max Vel=1.48 fps Inflow=8.0 cfs 1.09 af
n=0.080 L=1,720.0' S=0.0170 '/' Capacity=255.8 cfs Outflow=6.2 cfs 1.09 af

Reach R-2: Thru EX-4 Avg. Flow Depth=0.61' Max Vel=3.16 fps Inflow=10.8 cfs 1.19 af
n=0.080 L=344.0' S=0.0812 '/' Capacity=378.8 cfs Outflow=10.8 cfs 1.19 af

Reach R-3: Thru EX-1 Avg. Flow Depth=2.32' Max Vel=4.18 fps Inflow=129.0 cfs 15.96 af
n=0.080 L=254.0' S=0.0311 '/' Capacity=314.0 cfs Outflow=128.8 cfs 15.96 af

Reach R-4: Existing Intermittent Stream Avg. Flow Depth=1.98' Max Vel=4.49 fps Inflow=95.8 cfs 11.21 af
n=0.080 L=1,252.1' S=0.0409 '/' Capacity=297.4 cfs Outflow=92.5 cfs 11.21 af

Pond 1P: 18" Culvert Peak Elev=436.02' Storage=15,605 cf Inflow=96.7 cfs 11.21 af
Primary=14.5 cfs 6.89 af Secondary=81.9 cfs 4.32 af Outflow=95.8 cfs 11.21 af

Link DP-1: Existing 18" Culvert Inflow=167.4 cfs 20.65 af
Primary=167.4 cfs 20.65 af

Link DP-2: Existing 12" Culvert Inflow=15.1 cfs 1.29 af
Primary=15.1 cfs 1.29 af

Link DP-3: Hovey Road Inflow=19.5 cfs 2.14 af
Primary=19.5 cfs 2.14 af

Link DP-4: Spring Road Inflow=18.2 cfs 1.59 af
Primary=18.2 cfs 1.59 af

Link DP-5: Offsite Inflow=6.2 cfs 0.49 af
Primary=6.2 cfs 0.49 af

Link DP-6: North Hovey Road Inflow=14.1 cfs 1.07 af
Primary=14.1 cfs 1.07 af

Link OS-2: 2017 Cemetery Basin Outfall Manual Hydrograph Inflow=5.1 cfs 0.80 af
Area= 2.53 ac 31.91% Imperv. Primary=5.1 cfs 0.80 af

Link OS-3: 2010 Cemetery Basin Outfall Manual Hydrograph Inflow=2.8 cfs 0.29 af
Area= 1.67 ac 29.54% Imperv. Primary=2.8 cfs 0.29 af

Total Runoff Area = 100.51 ac Runoff Volume = 26.13 af Average Runoff Depth = 3.12"
100.00% Pervious = 100.51 ac 0.00% Impervious = 0.00 ac

Summary for Subcatchment EX-1: Subcat EX-1

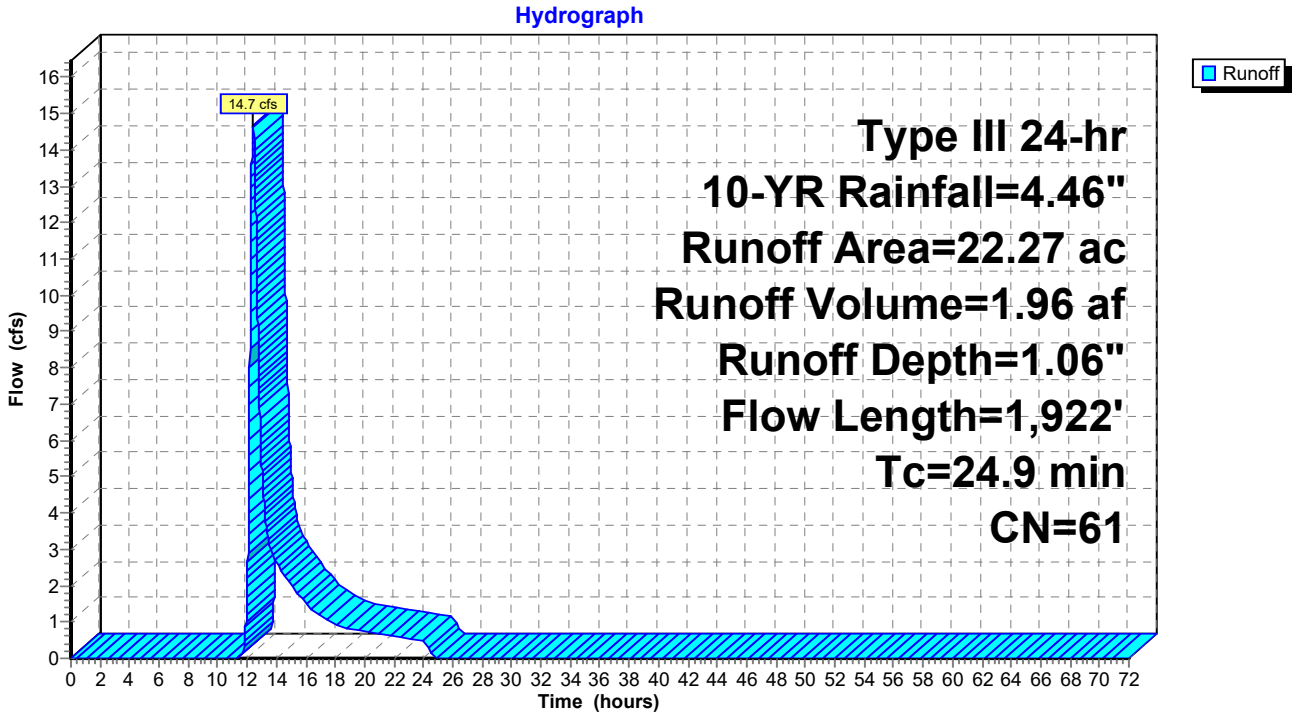
Runoff = 14.7 cfs @ 12.40 hrs, Volume= 1.96 af, Depth= 1.06"
Routed to Link DP-1 : Existing 18" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
11.72	61	>75% Grass cover, Good, HSG B
0.59	74	>75% Grass cover, Good, HSG C
0.19	96	Gravel surface, HSG B
0.29	96	Gravel surface, HSG C
0.10	55	Woods, Good, HSG B
0.00	70	Woods, Good, HSG C
9.10	58	Woods/grass comb., Good, HSG B
0.28	72	Woods/grass comb., Good, HSG C
22.27	61	Weighted Average
22.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0344	0.18		**Sheet Flow, Grass Good Sheet Flow** Grass: Short n= 0.150 P2= 2.90"
4.4	312	0.0285	1.18		**Shallow Concentrated Flow, Shallow Concentrated Grass** Short Grass Pasture Kv= 7.0 fps
1.2	306	0.0733	4.36		**Shallow Concentrated Flow, Shallow Concentrated Gravel** Unpaved Kv= 16.1 fps
7.1	684	0.0531	1.61		**Shallow Concentrated Flow, Shallow Concentrated Grass** Short Grass Pasture Kv= 7.0 fps
5.0	383	0.0338	1.29		**Shallow Concentrated Flow, Shallow Concentrated Woods/Gras** Short Grass Pasture Kv= 7.0 fps
1.3	109	0.0418	1.43		**Shallow Concentrated Flow, Shallow Concentrated Grass** Short Grass Pasture Kv= 7.0 fps
1.1	78	0.0535	1.16		**Shallow Concentrated Flow, Shallow Concentrated Woods** Woodland Kv= 5.0 fps
24.9	1,922	Total			

Subcatchment EX-1: Subcat EX-1



Summary for Subcatchment EX-2: Subcat EX-2

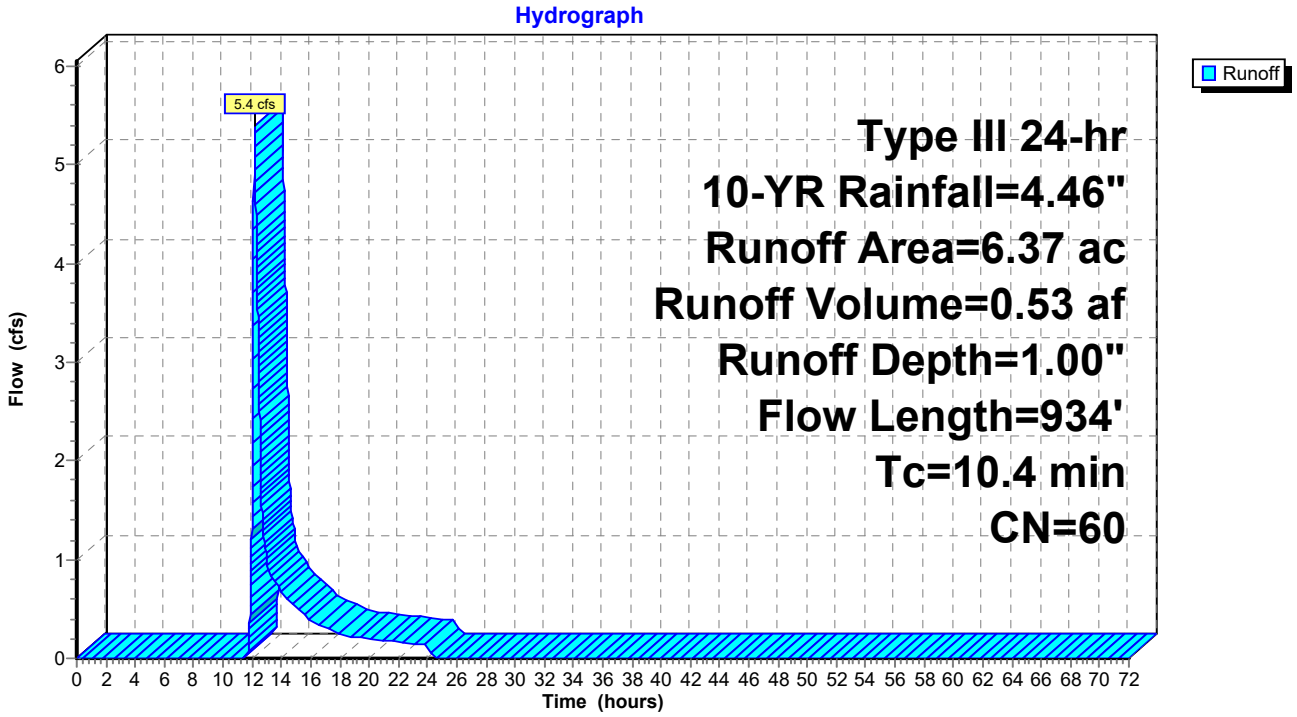
Runoff = 5.4 cfs @ 12.17 hrs, Volume= 0.53 af, Depth= 1.00"
Routed to Link DP-2 : Existing 12" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.69	61	>75% Grass cover, Good, HSG B
0.06	74	>75% Grass cover, Good, HSG C
0.11	80	>75% Grass cover, Good, HSG D
0.17	96	Gravel surface, HSG B
0.11	96	Gravel surface, HSG C
0.00	96	Gravel surface, HSG D
0.37	55	Woods, Good, HSG B
4.84	58	Woods/grass comb., Good, HSG B
0.01	72	Woods/grass comb., Good, HSG C
0.01	79	Woods/grass comb., Good, HSG D
6.37	60	Weighted Average
6.37		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	50	0.0290	0.16		**Sheet Flow, Grass Good Sheet Flow** Grass: Short n= 0.150 P2= 2.90"
3.2	341	0.0631	1.76		**Shallow Concentrated Flow, Shallow Concentrated Grass** Short Grass Pasture Kv= 7.0 fps
2.1	543	0.0744	4.39		**Shallow Concentrated Flow, Shallow Concentrated Gravel** Unpaved Kv= 16.1 fps
10.4	934	Total			

Subcatchment EX-2: Subcat EX-2



Summary for Subcatchment EX-3: Subcat EX-3

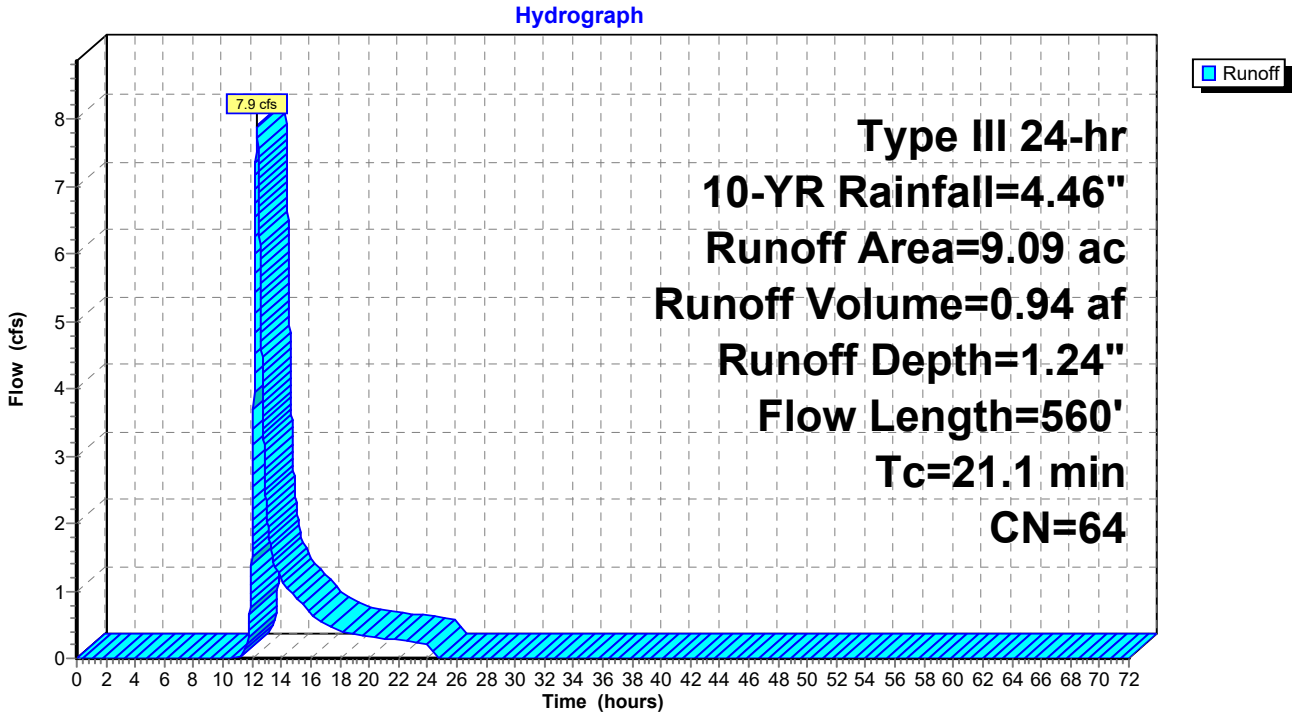
Runoff = 7.9 cfs @ 12.32 hrs, Volume= 0.94 af, Depth= 1.24"
Routed to Link DP-3 : Hovey Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
2.24	61	>75% Grass cover, Good, HSG B
0.99	74	>75% Grass cover, Good, HSG C
0.01	96	Gravel surface, HSG B
0.06	96	Gravel surface, HSG C
2.72	55	Woods, Good, HSG B
0.61	70	Woods, Good, HSG C
2.46	72	Woods/grass comb., Good, HSG C
9.09	64	Weighted Average
9.09		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0106	0.11		**Sheet Flow, Sheet Grass Flow** Grass: Short n= 0.150 P2= 2.90"
3.1	169	0.0170	0.91		**Shallow Concentrated Flow, Shallow Concentrated Grass** Short Grass Pasture Kv= 7.0 fps
9.7	285	0.0095	0.49		**Shallow Concentrated Flow, Shallow Concentrated Woods** Woodland Kv= 5.0 fps
0.7	56	0.0063	1.28		**Shallow Concentrated Flow, Shallow Concentrated Gravel** Unpaved Kv= 16.1 fps
21.1	560	Total			

Subcatchment EX-3: Subcat EX-3



Summary for Subcatchment EX-4: Subcat EX-4

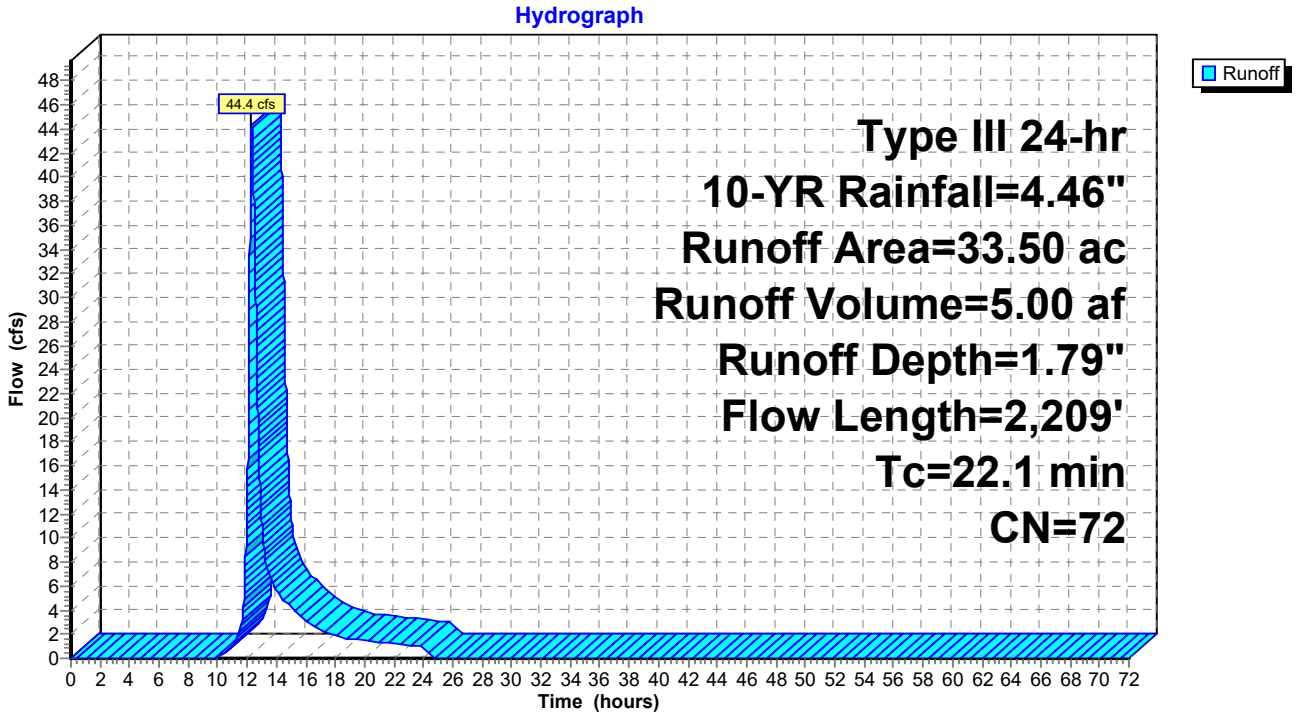
Runoff = 44.4 cfs @ 12.32 hrs, Volume= 5.00 af, Depth= 1.79"
Routed to Pond 1P : 18" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
1.53	61	>75% Grass cover, Good, HSG B
7.71	74	>75% Grass cover, Good, HSG C
0.11	80	>75% Grass cover, Good, HSG D
0.01	96	Gravel surface, HSG B
0.02	96	Gravel surface, HSG C
0.39	70	Woods, Good, HSG C
0.01	58	Woods/grass comb., Good, HSG B
23.38	72	Woods/grass comb., Good, HSG C
0.36	79	Woods/grass comb., Good, HSG D
33.50	72	Weighted Average
33.50		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0838	0.11		**Sheet Flow, Woods Sheet Flow** Woods: Light underbrush n= 0.400 P2= 2.90"
5.0	388	0.0342	1.29		**Shallow Concentrated Flow, Shallow Concentrated Wood/Grass** Short Grass Pasture Kv= 7.0 fps
0.4	50	0.0762	1.93		**Shallow Concentrated Flow, Shallow Concentrated Wetland** Short Grass Pasture Kv= 7.0 fps
9.4	1,721	0.0170	3.04	66.54	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=3.00' D=2.50' Z= 2.3 '/' Top.W=14.50' n= 0.080 Earth, long dense weeds
22.1	2,209	Total			

Subcatchment EX-4: Subcat EX-4



Summary for Subcatchment EX-5: Subcat EX-5

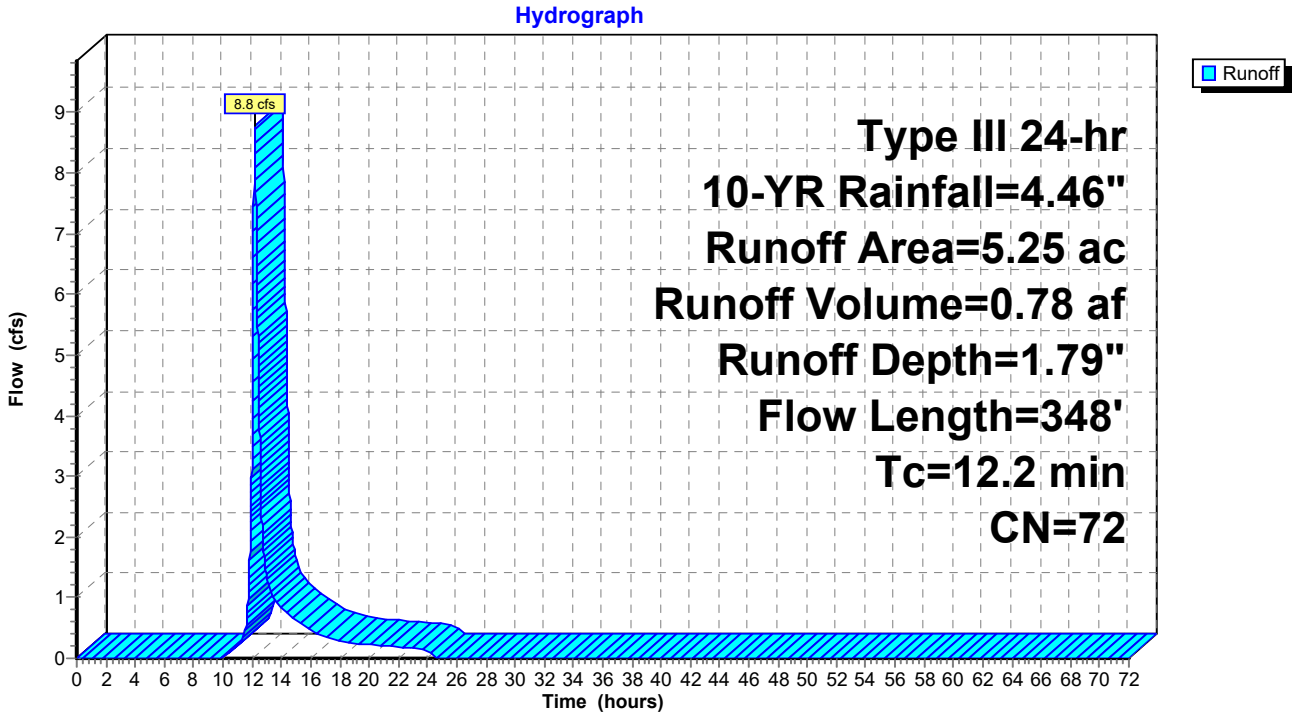
Runoff = 8.8 cfs @ 12.18 hrs, Volume= 0.78 af, Depth= 1.79"
Routed to Link DP-4 : Spring Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.00	61	>75% Grass cover, Good, HSG B
0.00	74	>75% Grass cover, Good, HSG C
0.00	55	Woods, Good, HSG B
0.69	70	Woods, Good, HSG C
4.56	72	Woods/grass comb., Good, HSG C
5.25	72	Weighted Average
5.25		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0134	0.12		**Sheet Flow, Grass Sheet Flow** Grass: Short n= 0.150 P2= 2.90"
0.6	51	0.0372	1.35		**Shallow Concentrated Flow, Shallow Concentrated Wood/Grass** Short Grass Pasture Kv= 7.0 fps
0.6	31	0.0177	0.93		**Shallow Concentrated Flow, Shallow Concentrated Wood/Grass** Short Grass Pasture Kv= 7.0 fps
0.3	10	0.0090	0.66		**Shallow Concentrated Flow, Shallow Concentrated Wood/Grass** Short Grass Pasture Kv= 7.0 fps
2.1	119	0.0181	0.94		**Shallow Concentrated Flow, Shallow Concentrated Wetlands** Short Grass Pasture Kv= 7.0 fps
0.8	48	0.0221	1.04		**Shallow Concentrated Flow, Shallow Concentrated Wood/Grass** Short Grass Pasture Kv= 7.0 fps
0.9	39	0.0190	0.69		**Shallow Concentrated Flow, Shallow Concentrated Woods** Woodland Kv= 5.0 fps
12.2	348	Total			

Subcatchment EX-5: Subcat EX-5



Summary for Subcatchment EX-6: Subcat EX-6

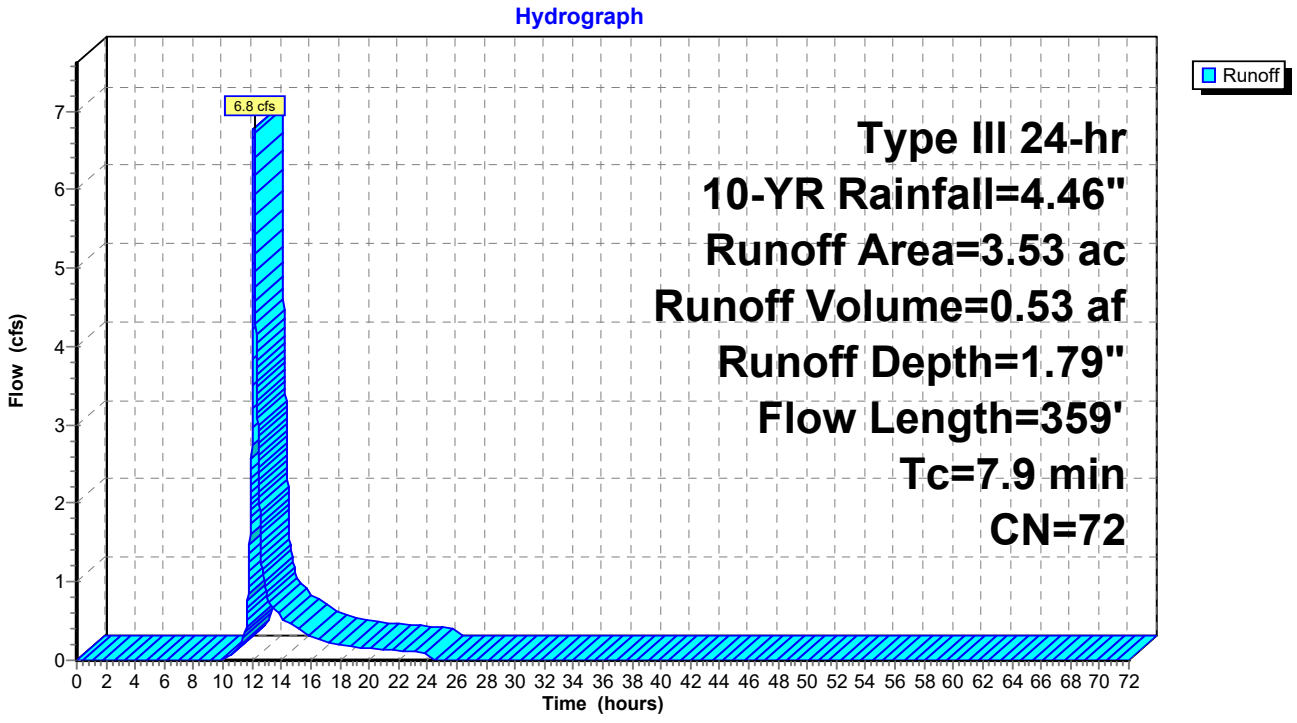
Runoff = 6.8 cfs @ 12.12 hrs, Volume= 0.53 af, Depth= 1.79"
Routed to Link DP-6 : North Hovey Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.00	61	>75% Grass cover, Good, HSG B
0.84	74	>75% Grass cover, Good, HSG C
2.69	72	Woods/grass comb., Good, HSG C
3.53	72	Weighted Average
3.53		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0346	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.90"
3.2	309	0.0544	1.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	359	Total			

Subcatchment EX-6: Subcat EX-6



Summary for Subcatchment EX-7: Subcat EX-7

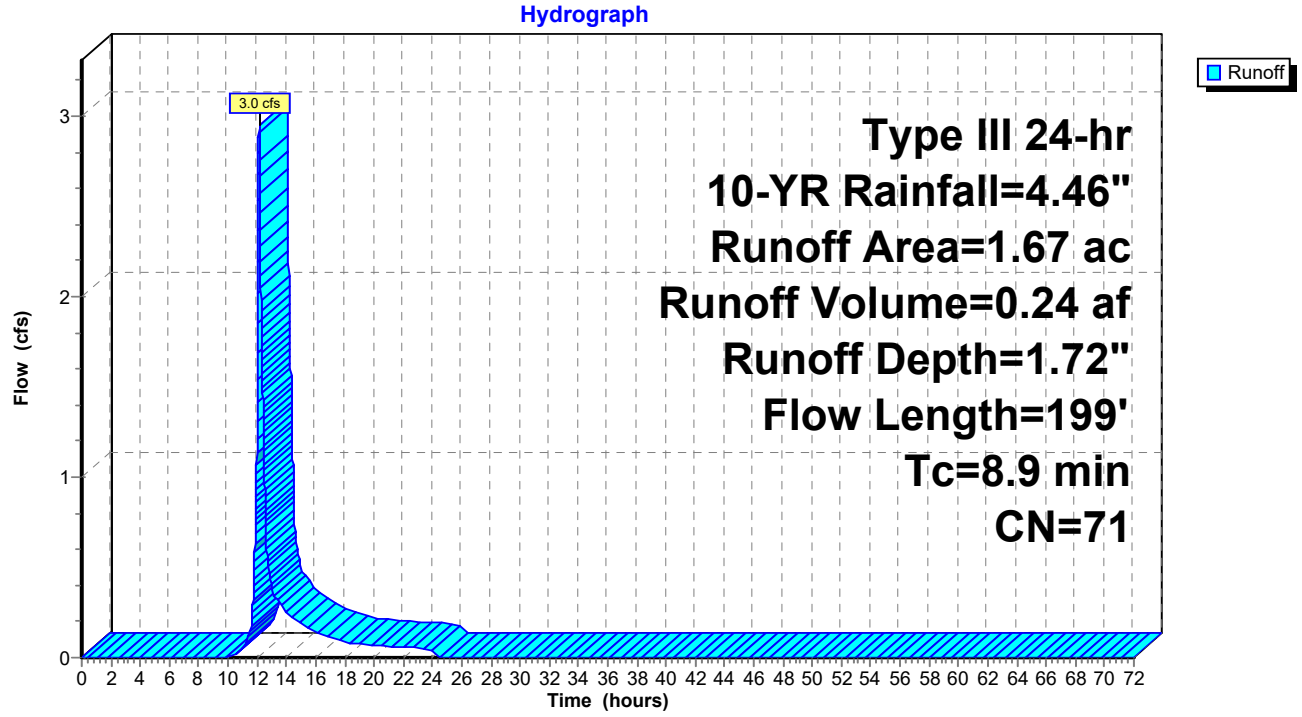
Runoff = 3.0 cfs @ 12.13 hrs, Volume= 0.24 af, Depth= 1.72"
Routed to Link DP-5 : Offsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.11	61	>75% Grass cover, Good, HSG B
0.78	74	>75% Grass cover, Good, HSG C
0.06	55	Woods, Good, HSG B
0.72	70	Woods, Good, HSG C
1.67	71	Weighted Average
1.67		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.0166	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.90"
1.9	116	0.0214	1.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	33	0.0382	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.9	199	Total			

Subcatchment EX-7: Subcat EX-7



Summary for Subcatchment EX-8: Subcat EX-8

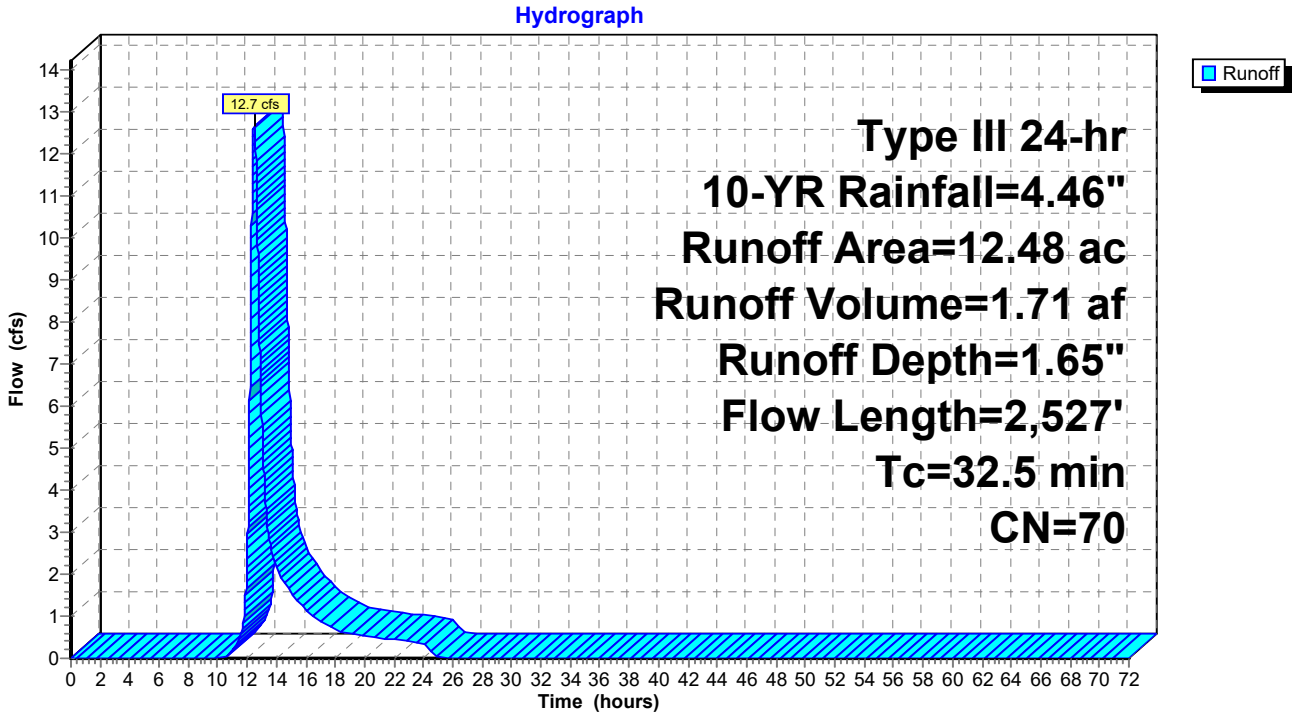
Runoff = 12.7 cfs @ 12.47 hrs, Volume= 1.71 af, Depth= 1.65"
Routed to Reach R-3 : Thru EX-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.69	61	>75% Grass cover, Good, HSG B
0.17	74	>75% Grass cover, Good, HSG C
0.02	80	>75% Grass cover, Good, HSG D
0.36	55	Woods, Good, HSG B
1.07	70	Woods, Good, HSG C
0.10	77	Woods, Good, HSG D
0.67	58	Woods/grass comb., Good, HSG B
9.37	72	Woods/grass comb., Good, HSG C
0.04	79	Woods/grass comb., Good, HSG D
12.48	70	Weighted Average
12.48		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.0264	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.90"
23.2	1,461	0.0224	1.05		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.0	1,016	0.0331	4.24	92.85	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.50' Z= 2.3 '/' Top.W=14.50' n= 0.080
32.5	2,527	Total			

Subcatchment EX-8: Subcat EX-8



Summary for Subcatchment OS-1: Subcat OS-1

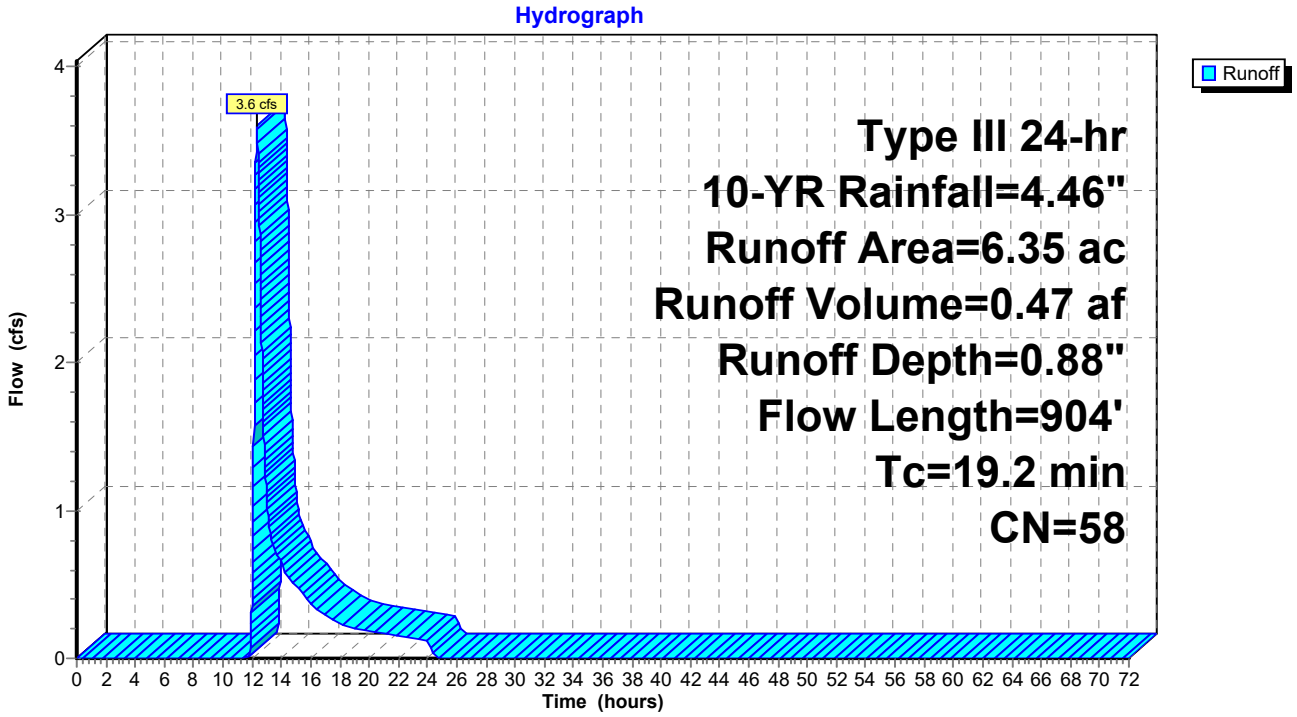
Runoff = 3.6 cfs @ 12.32 hrs, Volume= 0.47 af, Depth= 0.88"
Routed to Reach R-2 : Thru EX-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
1.98	61	>75% Grass cover, Good, HSG B
2.34	55	Woods, Good, HSG B
0.01	70	Woods, Good, HSG C
2.01	58	Woods/grass comb., Good, HSG B
6.35	58	Weighted Average
6.35		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	50	0.0511	0.21		**Sheet Flow, Sheet Wood/Grass** Grass: Short n= 0.150 P2= 2.90"
6.3	357	0.0183	0.95		**Shallow Concentrated Flow, Shallow Concentrated Wood/Grass** Short Grass Pasture Kv= 7.0 fps
1.4	162	0.0719	1.88		**Shallow Concentrated Flow, Shallow Concentrated Grass** Short Grass Pasture Kv= 7.0 fps
7.4	335	0.0229	0.76		**Shallow Concentrated Flow, Shallow Concentrated Woods** Woodland Kv= 5.0 fps
19.2	904	Total			

Subcatchment OS-1: Subcat OS-1



Summary for Reach R-1: Existing Intermittent Stream

Inflow Area = 4.20 ac, 30.97% Impervious, Inflow Depth = 1.94" for 10-YR event
Inflow = 2.6 cfs @ 12.50 hrs, Volume= 0.68 af
Outflow = 1.9 cfs @ 12.97 hrs, Volume= 0.68 af, Atten= 26%, Lag= 28.1 min
Routed to Pond 1P : 18" Culvert

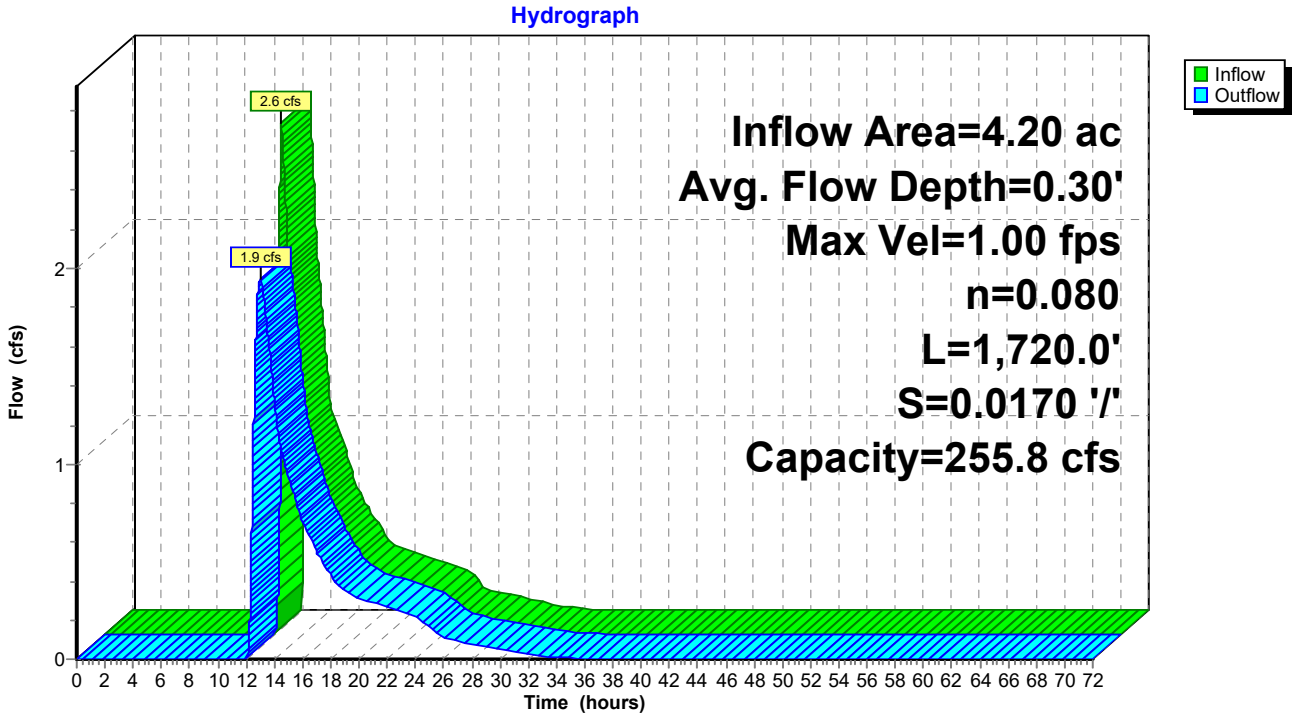
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.00 fps, Min. Travel Time= 28.6 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 68.0 min

Peak Storage= 3,344 cf @ 12.97 hrs
Average Depth at Peak Storage= 0.30' , Surface Width= 7.21'
Bank-Full Depth= 4.00' Flow Area= 60.2 sf, Capacity= 255.8 cfs

5.84' x 4.00' deep channel, n= 0.080
Side Slope Z-value= 2.3 '/' Top Width= 24.24'
Length= 1,720.0' Slope= 0.0170 '/'
Inlet Invert= 461.50', Outlet Invert= 432.20'



Reach R-1: Existing Intermittent Stream



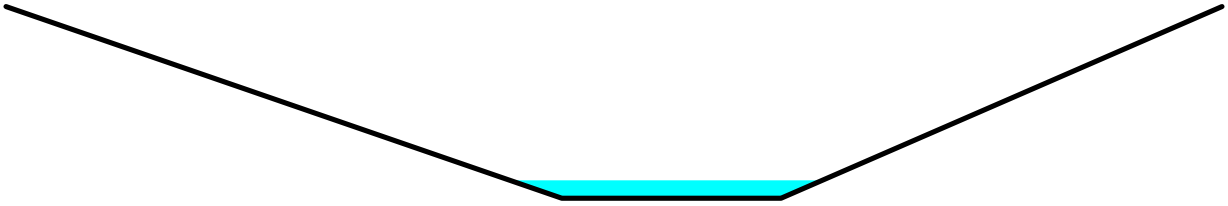
Summary for Reach R-2: Thru EX-4

Inflow Area = 6.35 ac, 0.00% Impervious, Inflow Depth = 0.88" for 10-YR event
Inflow = 3.6 cfs @ 12.32 hrs, Volume= 0.47 af
Outflow = 3.6 cfs @ 12.36 hrs, Volume= 0.47 af, Atten= 1%, Lag= 2.3 min
Routed to Reach R-3 : Thru EX-1

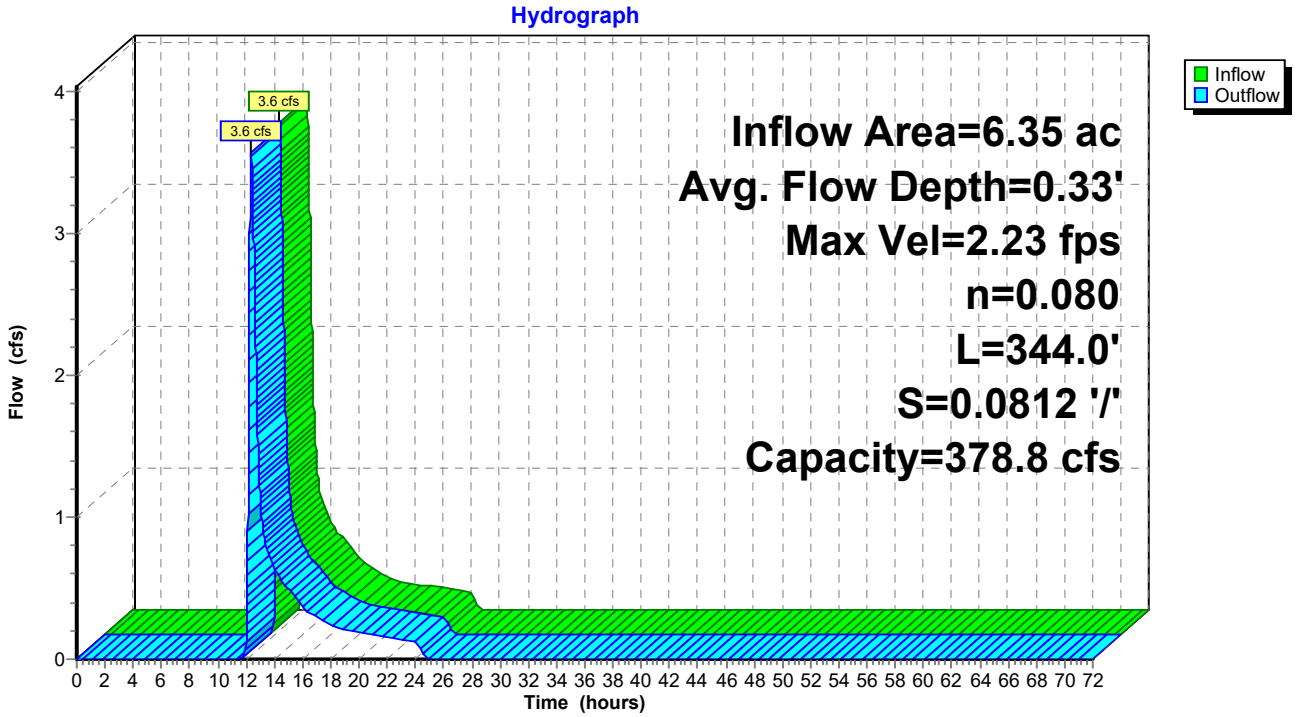
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.23 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 0.93 fps, Avg. Travel Time= 6.1 min

Peak Storage= 550 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 5.71'
Bank-Full Depth= 3.50' Flow Area= 45.9 sf, Capacity= 378.8 cfs

4.00' x 3.50' deep channel, n= 0.080
Side Slope Z-value= 2.9 2.3 '/' Top Width= 22.20'
Length= 344.0' Slope= 0.0812 '/'
Inlet Invert= 407.96', Outlet Invert= 380.02'



Reach R-2: Thru EX-4



Summary for Reach R-3: Thru EX-1

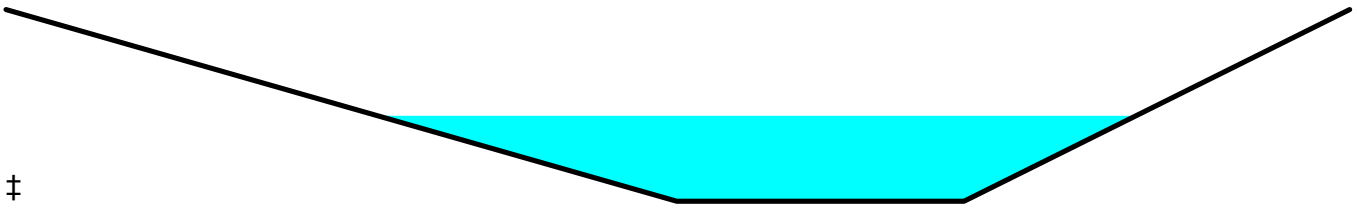
[62] Hint: Exceeded Reach R-2 OUTLET depth by 1.43' @ 12.47 hrs
[62] Hint: Exceeded Reach R-4 OUTLET depth by 0.27' @ 12.57 hrs

Inflow Area = 56.53 ac, 2.30% Impervious, Inflow Depth = 1.67" for 10-YR event
Inflow = 57.6 cfs @ 12.44 hrs, Volume= 7.86 af
Outflow = 57.5 cfs @ 12.46 hrs, Volume= 7.86 af, Atten= 0%, Lag= 0.9 min
Routed to Link DP-1 : Existing 18" Culvert

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.37 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.77 fps, Avg. Travel Time= 5.5 min

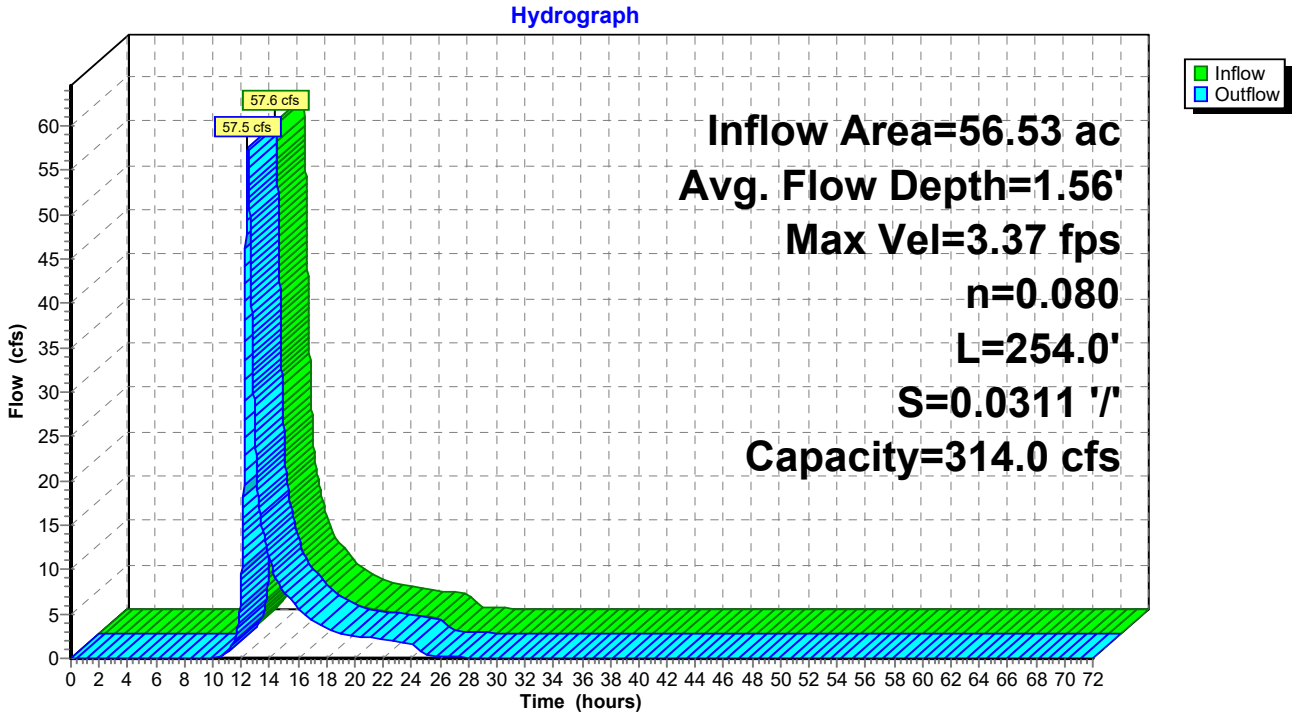
Peak Storage= 4,336 cf @ 12.46 hrs
Average Depth at Peak Storage= 1.56' , Surface Width= 15.85'
Bank-Full Depth= 3.50' Flow Area= 59.6 sf, Capacity= 314.0 cfs

6.00' x 3.50' deep channel, n= 0.080
Side Slope Z-value= 4.0 2.3 '/' Top Width= 28.05'
Length= 254.0' Slope= 0.0311 '/'
Inlet Invert= 380.20', Outlet Invert= 372.30'



‡

Reach R-3: Thru EX-1



Summary for Reach R-4: Existing Intermittent Stream

Inflow Area = 37.70 ac, 3.45% Impervious, Inflow Depth = 1.81" for 10-YR event
Inflow = 44.4 cfs @ 12.35 hrs, Volume= 5.68 af
Outflow = 41.7 cfs @ 12.44 hrs, Volume= 5.68 af, Atten= 6%, Lag= 5.0 min
Routed to Reach R-3 : Thru EX-1

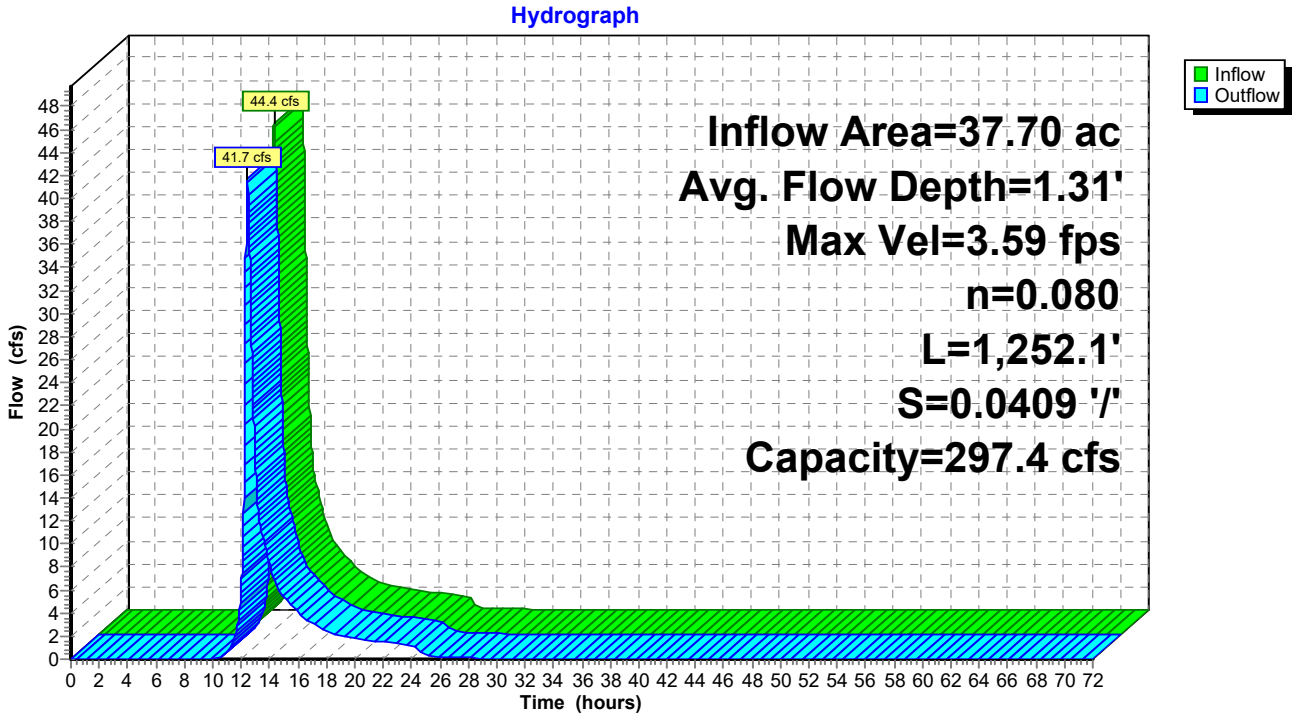
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.59 fps, Min. Travel Time= 5.8 min
Avg. Velocity = 0.82 fps, Avg. Travel Time= 25.4 min

Peak Storage= 14,540 cf @ 12.44 hrs
Average Depth at Peak Storage= 1.31' , Surface Width= 11.87'
Bank-Full Depth= 3.50' Flow Area= 48.6 sf, Capacity= 297.4 cfs

5.84' x 3.50' deep channel, n= 0.080
Side Slope Z-value= 2.3 '/' Top Width= 21.94'
Length= 1,252.1' Slope= 0.0409 '/'
Inlet Invert= 431.40', Outlet Invert= 380.20'



Reach R-4: Existing Intermittent Stream



Summary for Pond 1P: 18" Culvert

[62] Hint: Exceeded Reach R-1 OUTLET depth by 3.16' @ 12.31 hrs

Inflow Area = 37.70 ac, 3.45% Impervious, Inflow Depth = 1.81" for 10-YR event
Inflow = 44.7 cfs @ 12.32 hrs, Volume= 5.68 af
Outflow = 44.4 cfs @ 12.35 hrs, Volume= 5.68 af, Atten= 1%, Lag= 1.9 min
Primary = 13.5 cfs @ 12.35 hrs, Volume= 4.47 af
Routed to Reach R-4 : Existing Intermittent Stream
Secondary = 30.9 cfs @ 12.35 hrs, Volume= 1.20 af
Routed to Reach R-4 : Existing Intermittent Stream

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 435.48' @ 12.35 hrs Surf.Area= 8,582 sf Storage= 10,630 cf

Plug-Flow detention time= 4.8 min calculated for 5.68 af (100% of inflow)
Center-of-Mass det. time= 4.7 min (886.8 - 882.1)

Volume	Invert	Avail.Storage	Storage Description
#1	432.20'	16,449 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

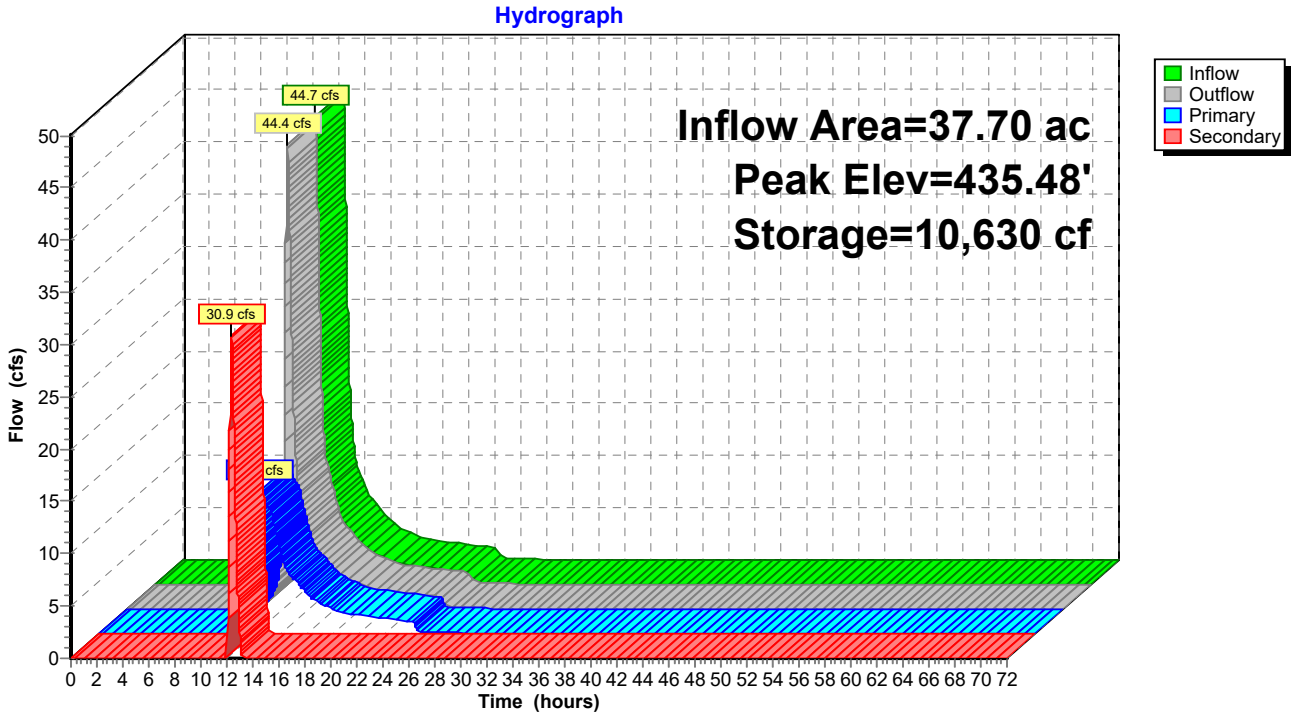
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
432.20	582	257.0	0	0	582
433.00	711	261.1	516	516	849
434.00	3,666	579.0	1,997	2,513	22,106
434.90	4,543	589.7	3,687	6,201	23,232
435.00	7,392	902.1	591	6,792	60,318
436.10	10,244	999.1	9,657	16,449	75,031

Device	Routing	Invert	Outlet Devices
#1	Primary	432.20'	**18.0" Round Culvert** L= 27.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 432.20' / 431.40' S= 0.0296 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Secondary	434.90'	**26.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=13.5 cfs @ 12.35 hrs HW=435.48' TW=432.65' (Dynamic Tailwater)
1=Culvert (Inlet Controls 13.5 cfs @ 7.66 fps)

Secondary OutFlow Max=30.9 cfs @ 12.35 hrs HW=435.48' TW=432.65' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 30.9 cfs @ 2.04 fps)

Pond 1P: 18" Culvert

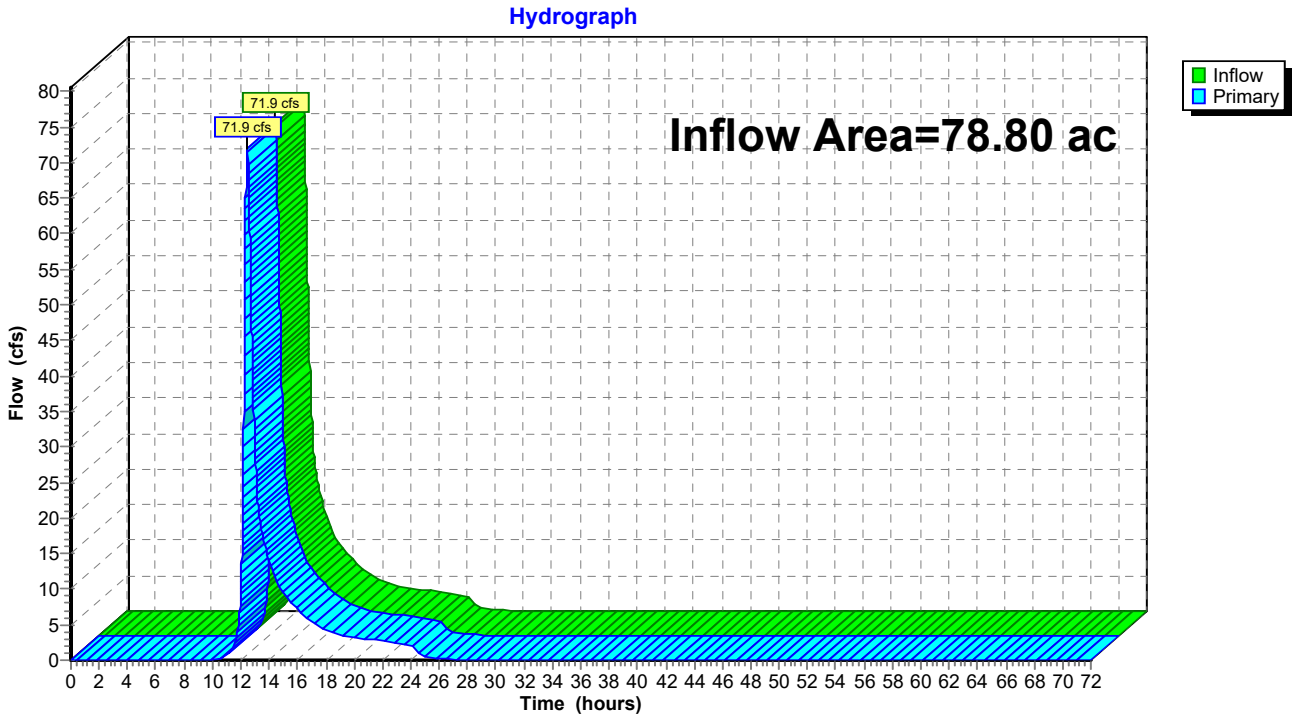


Summary for Link DP-1: Existing 18" Culvert

Inflow Area = 78.80 ac, 1.65% Impervious, Inflow Depth = 1.50" for 10-YR event
Inflow = 71.9 cfs @ 12.45 hrs, Volume= 9.82 af
Primary = 71.9 cfs @ 12.45 hrs, Volume= 9.82 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-1: Existing 18" Culvert

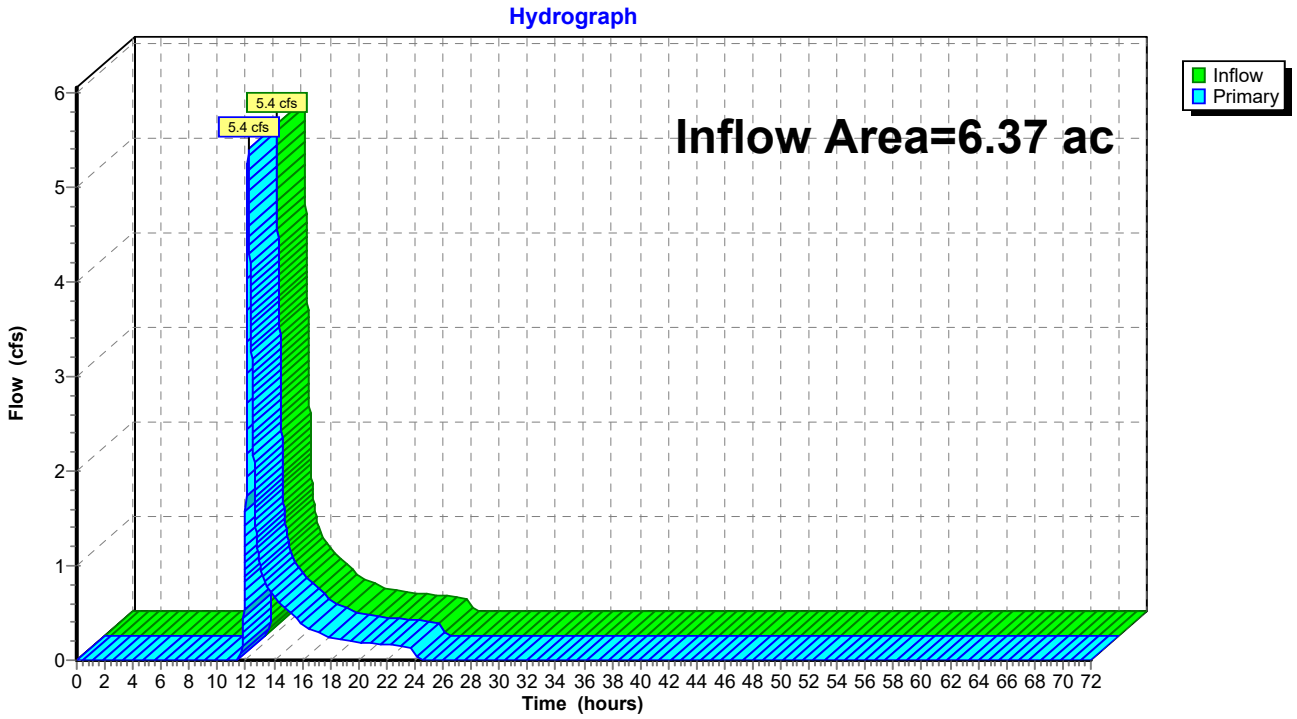


Summary for Link DP-2: Existing 12" Culvert

Inflow Area = 6.37 ac, 0.00% Impervious, Inflow Depth = 1.00" for 10-YR event
Inflow = 5.4 cfs @ 12.17 hrs, Volume= 0.53 af
Primary = 5.4 cfs @ 12.17 hrs, Volume= 0.53 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-2: Existing 12" Culvert

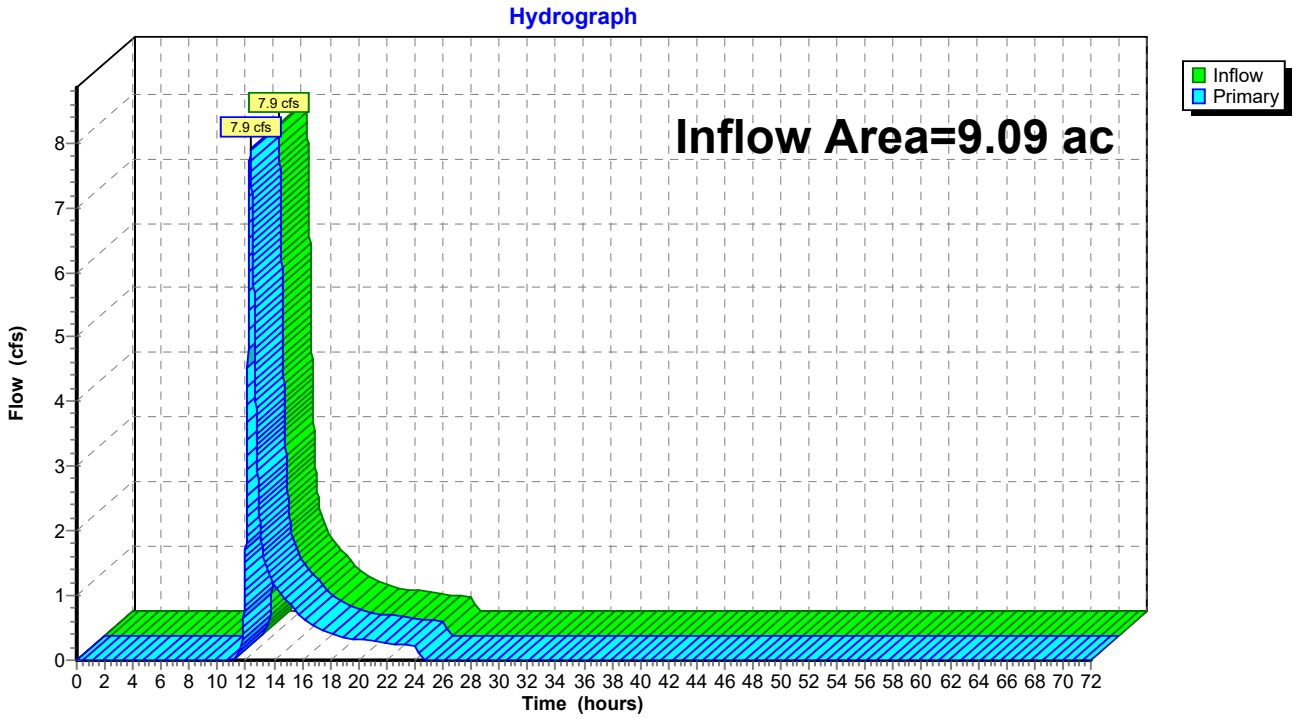


Summary for Link DP-3: Hovey Road

Inflow Area = 9.09 ac, 0.00% Impervious, Inflow Depth = 1.24" for 10-YR event
Inflow = 7.9 cfs @ 12.32 hrs, Volume= 0.94 af
Primary = 7.9 cfs @ 12.32 hrs, Volume= 0.94 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-3: Hovey Road

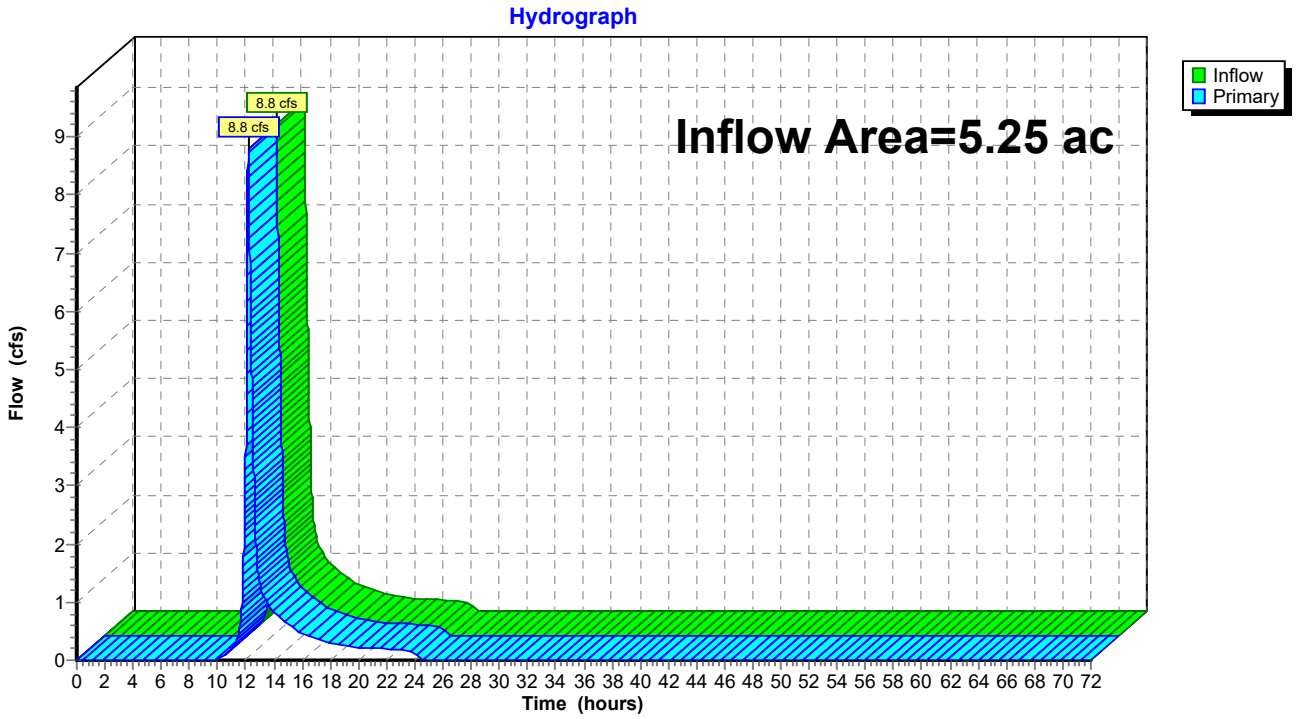


Summary for Link DP-4: Spring Road

Inflow Area = 5.25 ac, 0.00% Impervious, Inflow Depth = 1.79" for 10-YR event
Inflow = 8.8 cfs @ 12.18 hrs, Volume= 0.78 af
Primary = 8.8 cfs @ 12.18 hrs, Volume= 0.78 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-4: Spring Road

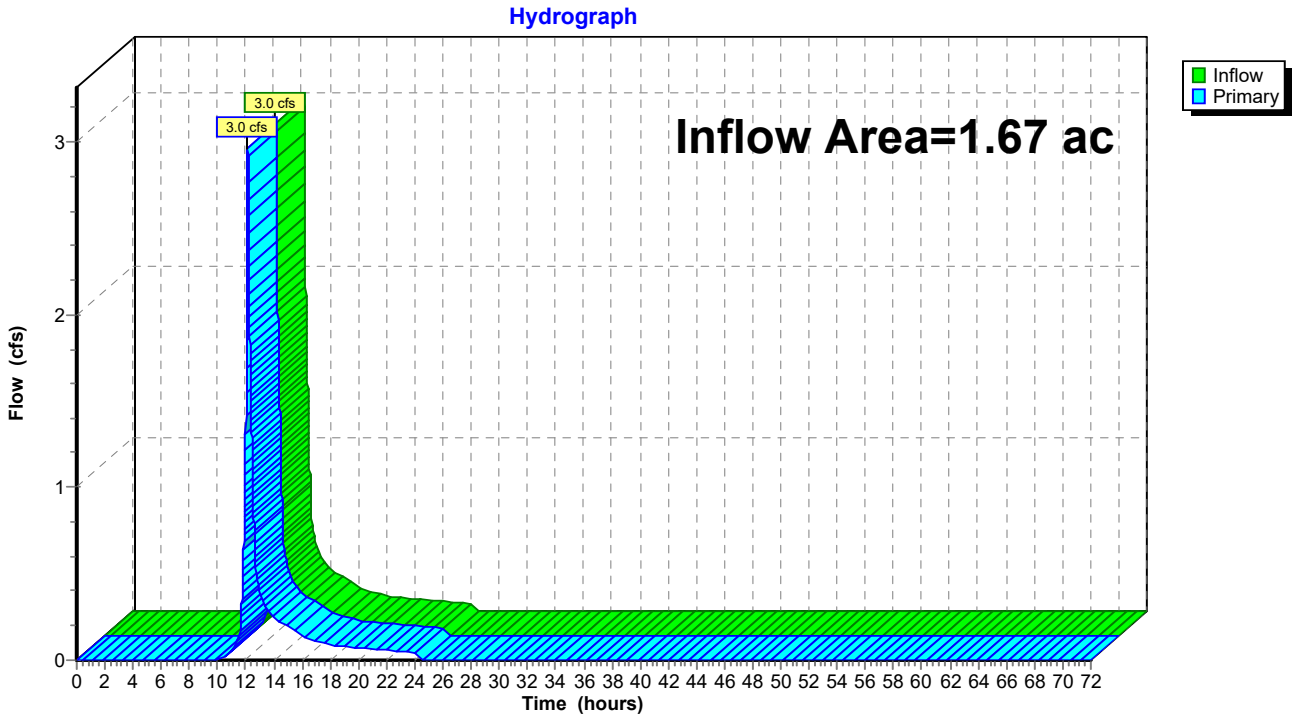


Summary for Link DP-5: Offsite

Inflow Area = 1.67 ac, 0.00% Impervious, Inflow Depth = 1.72" for 10-YR event
Inflow = 3.0 cfs @ 12.13 hrs, Volume= 0.24 af
Primary = 3.0 cfs @ 12.13 hrs, Volume= 0.24 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-5: Offsite

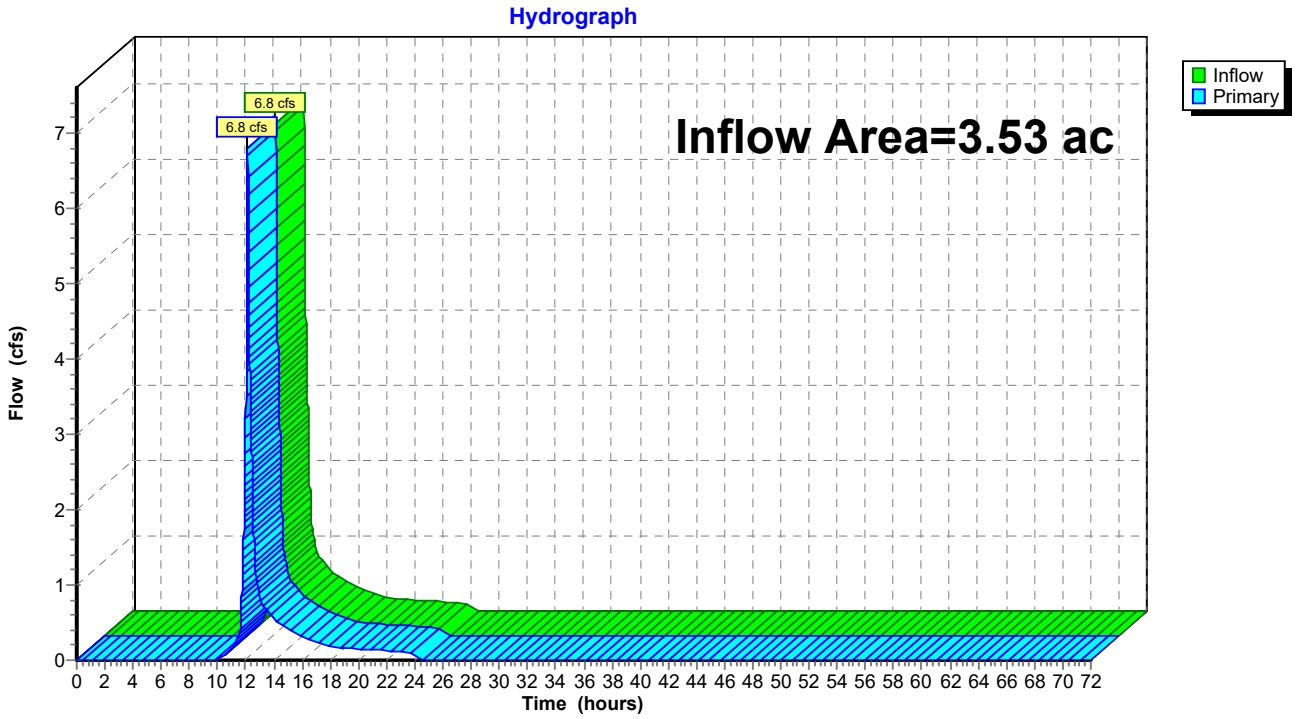


Summary for Link DP-6: North Hovey Road

Inflow Area = 3.53 ac, 0.00% Impervious, Inflow Depth = 1.79" for 10-YR event
Inflow = 6.8 cfs @ 12.12 hrs, Volume= 0.53 af
Primary = 6.8 cfs @ 12.12 hrs, Volume= 0.53 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-6: North Hovey Road



Summary for Link OS-2: 2017 Cemetery Basin Outfall

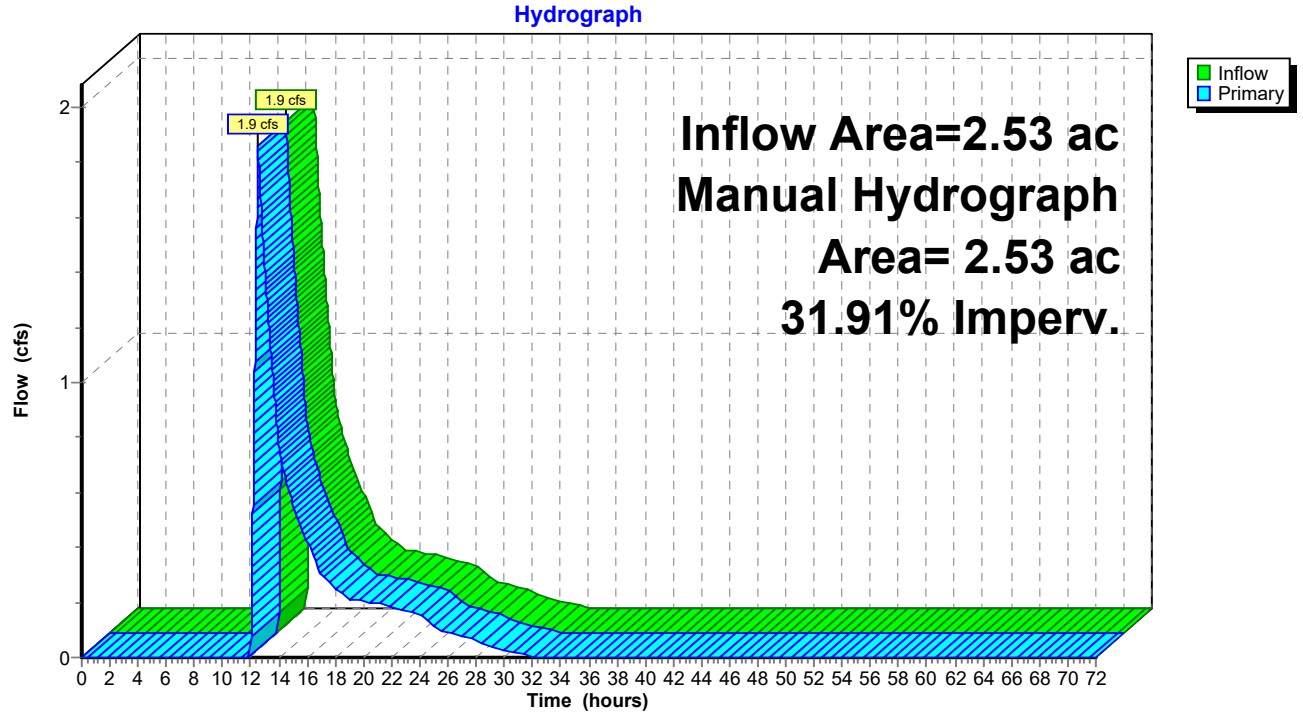
Inflow Area = 2.53 ac, 31.91% Impervious, Inflow Depth = 2.27" for 10-YR event
Inflow = 1.9 cfs @ 12.50 hrs, Volume= 0.48 af
Primary = 1.9 cfs @ 12.50 hrs, Volume= 0.48 af, Atten= 0%, Lag= 0.0 min
Routed to Reach R-1 : Existing Intermittent Stream

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

10-YR 129 Point manual hydrograph, To= 0.00 hrs, dt= 0.25 hrs, Area= 2.53 ac, 31.91% Imp., cfs =

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93
1.86	1.63	1.40	1.23	1.07	0.91	0.75	0.70	0.65	0.60
0.55	0.51	0.47	0.44	0.42	0.40	0.37	0.34	0.30	0.29
0.28	0.27	0.25	0.24	0.23	0.22	0.21	0.21	0.21	0.21
0.21	0.20	0.20	0.20	0.20	0.20	0.19	0.19	0.18	0.18
0.18	0.17	0.17	0.17	0.16	0.16	0.15	0.15	0.14	0.12
0.11	0.10	0.10	0.09	0.09	0.09	0.08	0.08	0.08	0.07
0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.03	0.03
0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.00	

Link OS-2: 2017 Cemetery Basin Outfall



Summary for Link OS-3: 2010 Cemetery Basin Outfall

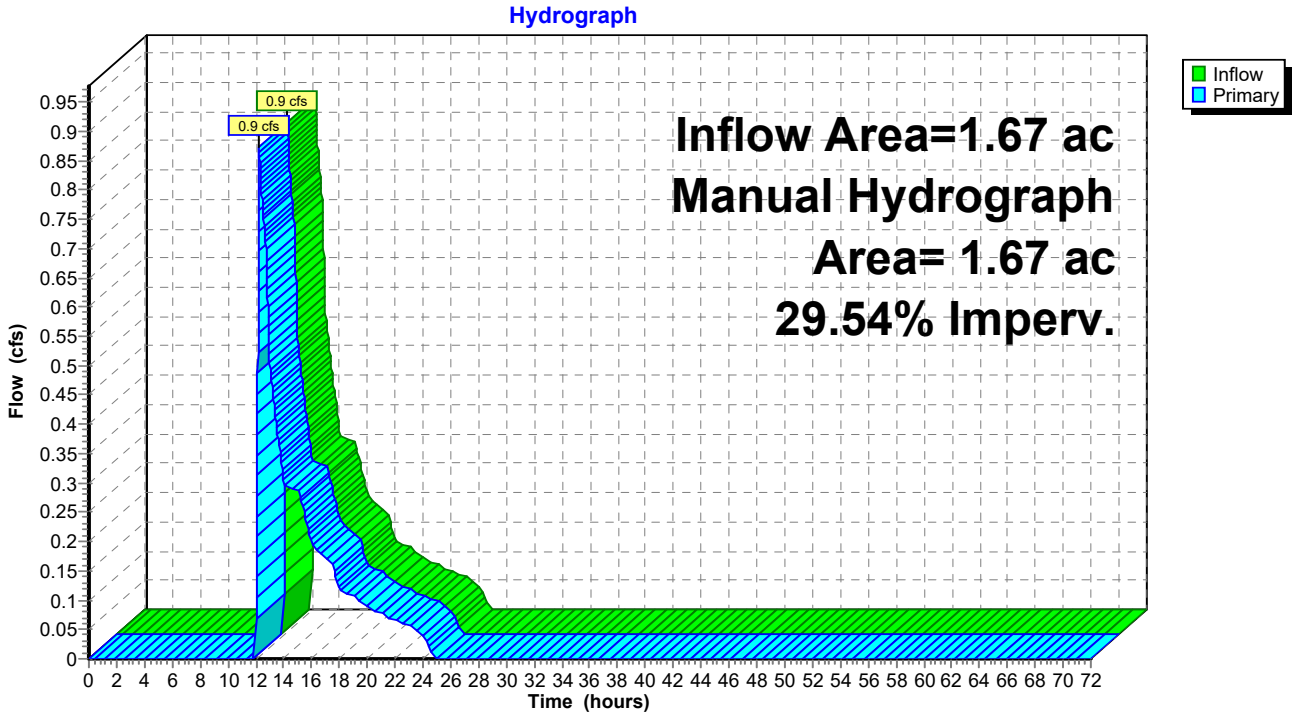
Inflow Area = 1.67 ac, 29.54% Impervious, Inflow Depth = 1.43" for 10-YR event
Inflow = 0.9 cfs @ 12.25 hrs, Volume= 0.20 af
Primary = 0.9 cfs @ 12.25 hrs, Volume= 0.20 af, Atten= 0%, Lag= 0.0 min
Routed to Reach R-1 : Existing Intermittent Stream

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

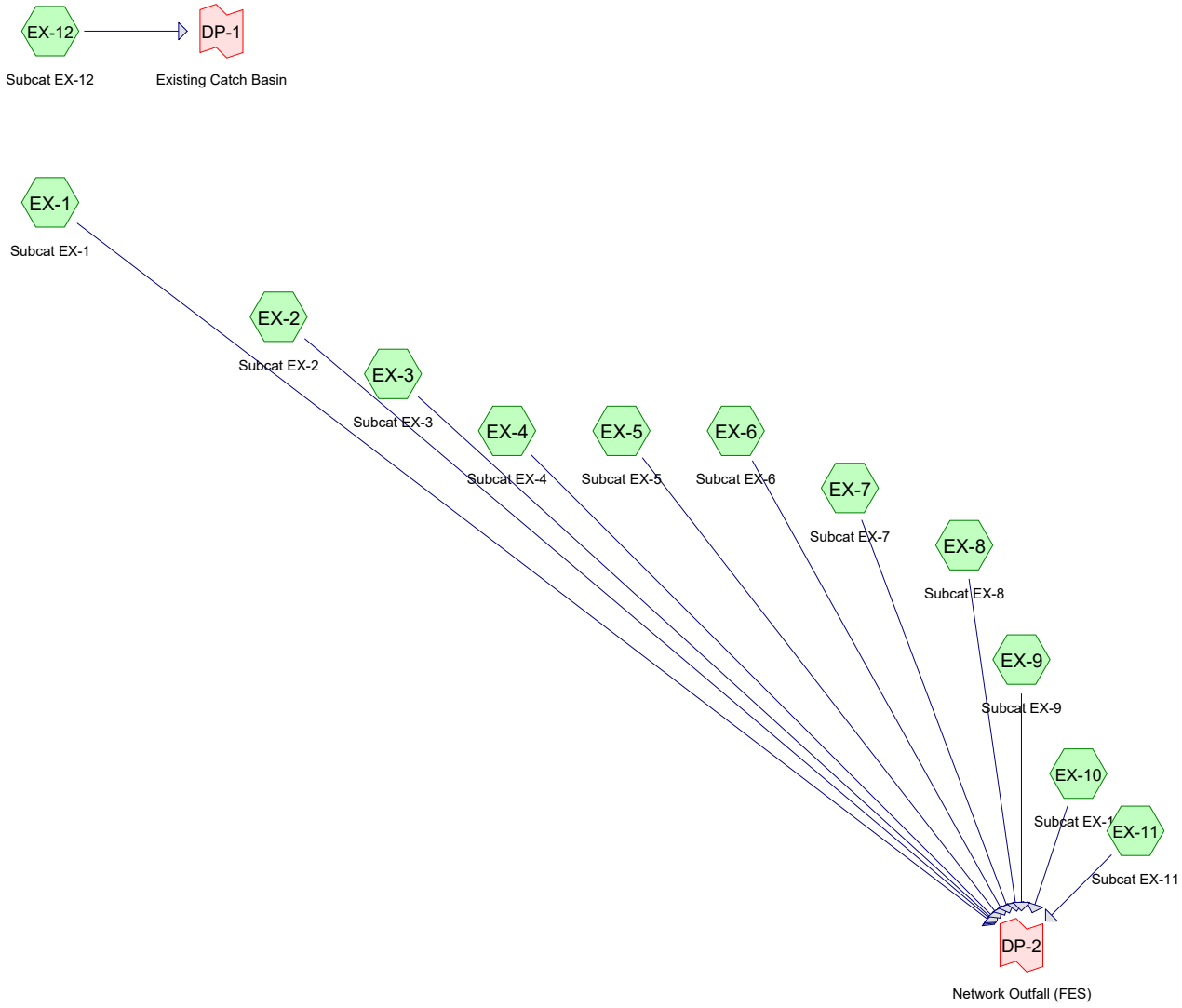
10-YR 102 Point manual hydrograph, To= 0.00 hrs, dt= 0.25 hrs, Area= 1.67 ac, 29.54% Imp., cfs =

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87
0.76	0.70	0.50	0.45	0.40	0.35	0.30	0.29	0.29	0.29
0.29	0.27	0.25	0.22	0.20	0.19	0.18	0.18	0.17	0.17
0.16	0.14	0.12	0.11	0.11	0.11	0.11	0.10	0.10	0.09
0.09	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.06
0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.03	0.02	0.00
0.00	0.00								

Link OS-3: 2010 Cemetery Basin Outfall



Existing Conditions: Hovey Road



Subcat Reach Pond Link

Routing Diagram for 5314044-EX-Hovey-CBs
Prepared by VHB, Inc, Printed 11/7/2025
HydroCAD® 10.20-5c s/n 01038 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-YR	Type III 24-hr		Default	24.00	1	2.47	2
2	2-YR	Type III 24-hr		Default	24.00	1	2.95	2
3	10-YR	Type III 24-hr		Default	24.00	1	4.46	2
4	25-YR	Type III 24-hr		Default	24.00	1	5.65	2
5	50-YR	Type III 24-hr		Default	24.00	1	6.76	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.699	65	2 acre lots, 12% imp, HSG B (EX-10, EX-11, EX-5, EX-6, EX-7, EX-8, EX-9)
0.682	77	2 acre lots, 12% imp, HSG C (EX-1, EX-2, EX-3, EX-4, EX-5)
1.615	61	>75% Grass cover, Good, HSG B (EX-10, EX-11, EX-12, EX-2, EX-3, EX-4, EX-9)
4.293	74	>75% Grass cover, Good, HSG C (EX-1, EX-12, EX-2, EX-3, EX-4)
0.004	85	Gravel roads, HSG B (EX-2)
0.063	89	Gravel roads, HSG C (EX-2, EX-3)
0.006	98	Paved roads w/curbs & sewers, HSG A (EX-11)
0.948	98	Paved roads w/curbs & sewers, HSG B (EX-10, EX-11, EX-12, EX-4, EX-5, EX-6, EX-7, EX-8, EX-9)
1.175	98	Paved roads w/curbs & sewers, HSG C (EX-1, EX-12, EX-2, EX-3, EX-4, EX-5)
0.000	30	Woods, Good, HSG A (EX-11)
3.356	55	Woods, Good, HSG B (EX-10, EX-11, EX-3, EX-4, EX-5, EX-6, EX-7, EX-8, EX-9)
2.095	70	Woods, Good, HSG C (EX-1, EX-2, EX-3, EX-4, EX-5)
0.001	58	Woods/grass comb., Good, HSG B (EX-2)
5.153	72	Woods/grass comb., Good, HSG C (EX-1, EX-12, EX-2)
21.090	**71**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.006	HSG A	EX-11
7.623	HSG B	EX-10, EX-11, EX-12, EX-2, EX-3, EX-4, EX-5, EX-6, EX-7, EX-8, EX-9
13.461	HSG C	EX-1, EX-12, EX-2, EX-3, EX-4, EX-5
0.000	HSG D	
0.000	Other	
21.090		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 EX-1: Subcat EX-1 Runoff Area=2.598 ac 12.26% Impervious Runoff Depth=0.68"
Flow Length=1,206' Tc=6.2 min CN=76 Runoff=1.86 cfs 0.146 af

Subcatchment EX-10: Subcat EX-10 Runoff Area=0.356 ac 19.03% Impervious Runoff Depth=0.26"
Flow Length=312' Tc=5.0 min CN=64 Runoff=0.05 cfs 0.008 af

Subcatchment EX-11: Subcat EX-11 Runoff Area=0.158 ac 40.64% Impervious Runoff Depth=0.55"
Flow Length=296' Tc=7.0 min CN=73 Runoff=0.08 cfs 0.007 af

Subcatchment EX-12: Subcat EX-12 Runoff Area=5.777 ac 14.82% Impervious Runoff Depth=0.68"
Flow Length=774' Tc=15.4 min CN=76 Runoff=3.09 cfs 0.326 af

Subcatchment EX-2: Subcat EX-2 Runoff Area=1.931 ac 5.15% Impervious Runoff Depth=0.55"
Flow Length=617' Tc=15.1 min CN=73 Runoff=0.79 cfs 0.089 af

Subcatchment EX-3: Subcat EX-3 Runoff Area=3.879 ac 3.90% Impervious Runoff Depth=0.41"
Flow Length=824' Tc=24.9 min CN=69 Runoff=0.84 cfs 0.132 af

Subcatchment EX-4: Subcat EX-4 Runoff Area=2.352 ac 7.44% Impervious Runoff Depth=0.31"
Flow Length=551' Tc=21.1 min CN=66 Runoff=0.36 cfs 0.062 af

Subcatchment EX-5: Subcat EX-5 Runoff Area=1.359 ac 14.53% Impervious Runoff Depth=0.29"
Flow Length=502' Tc=10.2 min CN=65 Runoff=0.20 cfs 0.032 af

Subcatchment EX-6: Subcat EX-6 Runoff Area=1.369 ac 17.92% Impervious Runoff Depth=0.29"
Flow Length=505' Tc=12.4 min CN=65 Runoff=0.20 cfs 0.033 af

Subcatchment EX-7: Subcat EX-7 Runoff Area=0.121 ac 54.36% Impervious Runoff Depth=0.82"
Flow Length=160' Tc=6.2 min CN=79 Runoff=0.11 cfs 0.008 af

Subcatchment EX-8: Subcat EX-8 Runoff Area=0.451 ac 18.73% Impervious Runoff Depth=0.29"
Flow Length=286' Tc=9.0 min CN=65 Runoff=0.07 cfs 0.011 af

Subcatchment EX-9: Subcat EX-9 Runoff Area=0.738 ac 12.02% Impervious Runoff Depth=0.21"
Flow Length=394' Tc=8.8 min CN=62 Runoff=0.07 cfs 0.013 af

Link DP-1: Existing Catch Basin Inflow=3.09 cfs 0.326 af
Primary=3.09 cfs 0.326 af

Link DP-2: Network Outfall (FES) Inflow=3.40 cfs 0.540 af
Primary=3.40 cfs 0.540 af

Total Runoff Area = 21.090 ac Runoff Volume = 0.866 af Average Runoff Depth = 0.49"
88.55% Pervious = 18.676 ac 11.45% Impervious = 2.414 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 EX-1: Subcat EX-1 Runoff Area=2.598 ac 12.26% Impervious Runoff Depth=0.98"
Flow Length=1,206' Tc=6.2 min CN=76 Runoff=2.83 cfs 0.213 af

Subcatchment EX-10: Subcat EX-10 Runoff Area=0.356 ac 19.03% Impervious Runoff Depth=0.45"
Flow Length=312' Tc=5.0 min CN=64 Runoff=0.13 cfs 0.013 af

Subcatchment EX-11: Subcat EX-11 Runoff Area=0.158 ac 40.64% Impervious Runoff Depth=0.83"
Flow Length=296' Tc=7.0 min CN=73 Runoff=0.13 cfs 0.011 af

Subcatchment EX-12: Subcat EX-12 Runoff Area=5.777 ac 14.82% Impervious Runoff Depth=0.98"
Flow Length=774' Tc=15.4 min CN=76 Runoff=4.70 cfs 0.473 af

Subcatchment EX-2: Subcat EX-2 Runoff Area=1.931 ac 5.15% Impervious Runoff Depth=0.83"
Flow Length=617' Tc=15.1 min CN=73 Runoff=1.28 cfs 0.133 af

Subcatchment EX-3: Subcat EX-3 Runoff Area=3.879 ac 3.90% Impervious Runoff Depth=0.64"
Flow Length=824' Tc=24.9 min CN=69 Runoff=1.51 cfs 0.208 af

Subcatchment EX-4: Subcat EX-4 Runoff Area=2.352 ac 7.44% Impervious Runoff Depth=0.52"
Flow Length=551' Tc=21.1 min CN=66 Runoff=0.72 cfs 0.102 af

Subcatchment EX-5: Subcat EX-5 Runoff Area=1.359 ac 14.53% Impervious Runoff Depth=0.48"
Flow Length=502' Tc=10.2 min CN=65 Runoff=0.47 cfs 0.055 af

Subcatchment EX-6: Subcat EX-6 Runoff Area=1.369 ac 17.92% Impervious Runoff Depth=0.48"
Flow Length=505' Tc=12.4 min CN=65 Runoff=0.45 cfs 0.055 af

Subcatchment EX-7: Subcat EX-7 Runoff Area=0.121 ac 54.36% Impervious Runoff Depth=1.15"
Flow Length=160' Tc=6.2 min CN=79 Runoff=0.16 cfs 0.012 af

Subcatchment EX-8: Subcat EX-8 Runoff Area=0.451 ac 18.73% Impervious Runoff Depth=0.48"
Flow Length=286' Tc=9.0 min CN=65 Runoff=0.16 cfs 0.018 af

Subcatchment EX-9: Subcat EX-9 Runoff Area=0.738 ac 12.02% Impervious Runoff Depth=0.38"
Flow Length=394' Tc=8.8 min CN=62 Runoff=0.17 cfs 0.023 af

Link DP-1: Existing Catch Basin Inflow=4.70 cfs 0.473 af
Primary=4.70 cfs 0.473 af

Link DP-2: Network Outfall (FES) Inflow=6.02 cfs 0.843 af
Primary=6.02 cfs 0.843 af

Total Runoff Area = 21.090 ac Runoff Volume = 1.315 af Average Runoff Depth = 0.75"
88.55% Pervious = 18.676 ac 11.45% Impervious = 2.414 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 EX-1: Subcat EX-1 Runoff Area=2.598 ac 12.26% Impervious Runoff Depth=2.10"
Flow Length=1,206' Tc=6.2 min CN=76 Runoff=6.32 cfs 0.454 af

Subcatchment EX-10: Subcat EX-10 Runoff Area=0.356 ac 19.03% Impervious Runoff Depth=1.24"
Flow Length=312' Tc=5.0 min CN=64 Runoff=0.49 cfs 0.037 af

Subcatchment EX-11: Subcat EX-11 Runoff Area=0.158 ac 40.64% Impervious Runoff Depth=1.87"
Flow Length=296' Tc=7.0 min CN=73 Runoff=0.33 cfs 0.024 af

Subcatchment EX-12: Subcat EX-12 Runoff Area=5.777 ac 14.82% Impervious Runoff Depth=2.10"
Flow Length=774' Tc=15.4 min CN=76 Runoff=10.55 cfs 1.010 af

Subcatchment EX-2: Subcat EX-2 Runoff Area=1.931 ac 5.15% Impervious Runoff Depth=1.87"
Flow Length=617' Tc=15.1 min CN=73 Runoff=3.12 cfs 0.300 af

Subcatchment EX-3: Subcat EX-3 Runoff Area=3.879 ac 3.90% Impervious Runoff Depth=1.57"
Flow Length=824' Tc=24.9 min CN=69 Runoff=4.22 cfs 0.509 af

Subcatchment EX-4: Subcat EX-4 Runoff Area=2.352 ac 7.44% Impervious Runoff Depth=1.37"
Flow Length=551' Tc=21.1 min CN=66 Runoff=2.32 cfs 0.269 af

Subcatchment EX-5: Subcat EX-5 Runoff Area=1.359 ac 14.53% Impervious Runoff Depth=1.31"
Flow Length=502' Tc=10.2 min CN=65 Runoff=1.66 cfs 0.148 af

Subcatchment EX-6: Subcat EX-6 Runoff Area=1.369 ac 17.92% Impervious Runoff Depth=1.31"
Flow Length=505' Tc=12.4 min CN=65 Runoff=1.56 cfs 0.149 af

Subcatchment EX-7: Subcat EX-7 Runoff Area=0.121 ac 54.36% Impervious Runoff Depth=2.34"
Flow Length=160' Tc=6.2 min CN=79 Runoff=0.33 cfs 0.024 af

Subcatchment EX-8: Subcat EX-8 Runoff Area=0.451 ac 18.73% Impervious Runoff Depth=1.31"
Flow Length=286' Tc=9.0 min CN=65 Runoff=0.57 cfs 0.049 af

Subcatchment EX-9: Subcat EX-9 Runoff Area=0.738 ac 12.02% Impervious Runoff Depth=1.12"
Flow Length=394' Tc=8.8 min CN=62 Runoff=0.77 cfs 0.069 af

Link DP-1: Existing Catch Basin Inflow=10.55 cfs 1.010 af
Primary=10.55 cfs 1.010 af

Link DP-2: Network Outfall (FES) Inflow=17.21 cfs 2.032 af
Primary=17.21 cfs 2.032 af

Total Runoff Area = 21.090 ac Runoff Volume = 3.042 af Average Runoff Depth = 1.73"
88.55% Pervious = 18.676 ac 11.45% Impervious = 2.414 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 EX-1: Subcat EX-1 Runoff Area=2.598 ac 12.26% Impervious Runoff Depth=3.08"
Flow Length=1,206' Tc=6.2 min CN=76 Runoff=9.33 cfs 0.667 af

Subcatchment EX-10: Subcat EX-10 Runoff Area=0.356 ac 19.03% Impervious Runoff Depth=2.02"
Flow Length=312' Tc=5.0 min CN=64 Runoff=0.84 cfs 0.060 af

Subcatchment EX-11: Subcat EX-11 Runoff Area=0.158 ac 40.64% Impervious Runoff Depth=2.80"
Flow Length=296' Tc=7.0 min CN=73 Runoff=0.50 cfs 0.037 af

Subcatchment EX-12: Subcat EX-12 Runoff Area=5.777 ac 14.82% Impervious Runoff Depth=3.08"
Flow Length=774' Tc=15.4 min CN=76 Runoff=15.61 cfs 1.483 af

Subcatchment EX-2: Subcat EX-2 Runoff Area=1.931 ac 5.15% Impervious Runoff Depth=2.80"
Flow Length=617' Tc=15.1 min CN=73 Runoff=4.76 cfs 0.451 af

Subcatchment EX-3: Subcat EX-3 Runoff Area=3.879 ac 3.90% Impervious Runoff Depth=2.44"
Flow Length=824' Tc=24.9 min CN=69 Runoff=6.72 cfs 0.790 af

Subcatchment EX-4: Subcat EX-4 Runoff Area=2.352 ac 7.44% Impervious Runoff Depth=2.18"
Flow Length=551' Tc=21.1 min CN=66 Runoff=3.86 cfs 0.428 af

Subcatchment EX-5: Subcat EX-5 Runoff Area=1.359 ac 14.53% Impervious Runoff Depth=2.10"
Flow Length=502' Tc=10.2 min CN=65 Runoff=2.81 cfs 0.238 af

Subcatchment EX-6: Subcat EX-6 Runoff Area=1.369 ac 17.92% Impervious Runoff Depth=2.10"
Flow Length=505' Tc=12.4 min CN=65 Runoff=2.64 cfs 0.240 af

Subcatchment EX-7: Subcat EX-7 Runoff Area=0.121 ac 54.36% Impervious Runoff Depth=3.37"
Flow Length=160' Tc=6.2 min CN=79 Runoff=0.48 cfs 0.034 af

Subcatchment EX-8: Subcat EX-8 Runoff Area=0.451 ac 18.73% Impervious Runoff Depth=2.10"
Flow Length=286' Tc=9.0 min CN=65 Runoff=0.97 cfs 0.079 af

Subcatchment EX-9: Subcat EX-9 Runoff Area=0.738 ac 12.02% Impervious Runoff Depth=1.85"
Flow Length=394' Tc=8.8 min CN=62 Runoff=1.38 cfs 0.114 af

Link DP-1: Existing Catch Basin Inflow=15.61 cfs 1.483 af
Primary=15.61 cfs 1.483 af

Link DP-2: Network Outfall (FES) Inflow=27.62 cfs 3.136 af
Primary=27.62 cfs 3.136 af

Total Runoff Area = 21.090 ac Runoff Volume = 4.619 af Average Runoff Depth = 2.63"
88.55% Pervious = 18.676 ac 11.45% Impervious = 2.414 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 EX-1: Subcat EX-1 Runoff Area=2.598 ac 12.26% Impervious Runoff Depth=4.04"
Flow Length=1,206' Tc=6.2 min CN=76 Runoff=12.23 cfs 0.876 af

Subcatchment EX-10: Subcat EX-10 Runoff Area=0.356 ac 19.03% Impervious Runoff Depth=2.82"
Flow Length=312' Tc=5.0 min CN=64 Runoff=1.20 cfs 0.084 af

Subcatchment EX-11: Subcat EX-11 Runoff Area=0.158 ac 40.64% Impervious Runoff Depth=3.73"
Flow Length=296' Tc=7.0 min CN=73 Runoff=0.67 cfs 0.049 af

Subcatchment EX-12: Subcat EX-12 Runoff Area=5.777 ac 14.82% Impervious Runoff Depth=4.04"
Flow Length=774' Tc=15.4 min CN=76 Runoff=20.51 cfs 1.947 af

Subcatchment EX-2: Subcat EX-2 Runoff Area=1.931 ac 5.15% Impervious Runoff Depth=3.73"
Flow Length=617' Tc=15.1 min CN=73 Runoff=6.38 cfs 0.600 af

Subcatchment EX-3: Subcat EX-3 Runoff Area=3.879 ac 3.90% Impervious Runoff Depth=3.32"
Flow Length=824' Tc=24.9 min CN=69 Runoff=9.22 cfs 1.073 af

Subcatchment EX-4: Subcat EX-4 Runoff Area=2.352 ac 7.44% Impervious Runoff Depth=3.02"
Flow Length=551' Tc=21.1 min CN=66 Runoff=5.42 cfs 0.591 af

Subcatchment EX-5: Subcat EX-5 Runoff Area=1.359 ac 14.53% Impervious Runoff Depth=2.92"
Flow Length=502' Tc=10.2 min CN=65 Runoff=3.98 cfs 0.330 af

Subcatchment EX-6: Subcat EX-6 Runoff Area=1.369 ac 17.92% Impervious Runoff Depth=2.92"
Flow Length=505' Tc=12.4 min CN=65 Runoff=3.75 cfs 0.333 af

Subcatchment EX-7: Subcat EX-7 Runoff Area=0.121 ac 54.36% Impervious Runoff Depth=4.37"
Flow Length=160' Tc=6.2 min CN=79 Runoff=0.61 cfs 0.044 af

Subcatchment EX-8: Subcat EX-8 Runoff Area=0.451 ac 18.73% Impervious Runoff Depth=2.92"
Flow Length=286' Tc=9.0 min CN=65 Runoff=1.37 cfs 0.110 af

Subcatchment EX-9: Subcat EX-9 Runoff Area=0.738 ac 12.02% Impervious Runoff Depth=2.63"
Flow Length=394' Tc=8.8 min CN=62 Runoff=2.01 cfs 0.161 af

Link DP-1: Existing Catch Basin Inflow=20.51 cfs 1.947 af
Primary=20.51 cfs 1.947 af

Link DP-2: Network Outfall (FES) Inflow=38.06 cfs 4.251 af
Primary=38.06 cfs 4.251 af

Total Runoff Area = 21.090 ac Runoff Volume = 6.198 af Average Runoff Depth = 3.53"
88.55% Pervious = 18.676 ac 11.45% Impervious = 2.414 ac

Summary for Subcatchment EX-1: Subcat EX-1

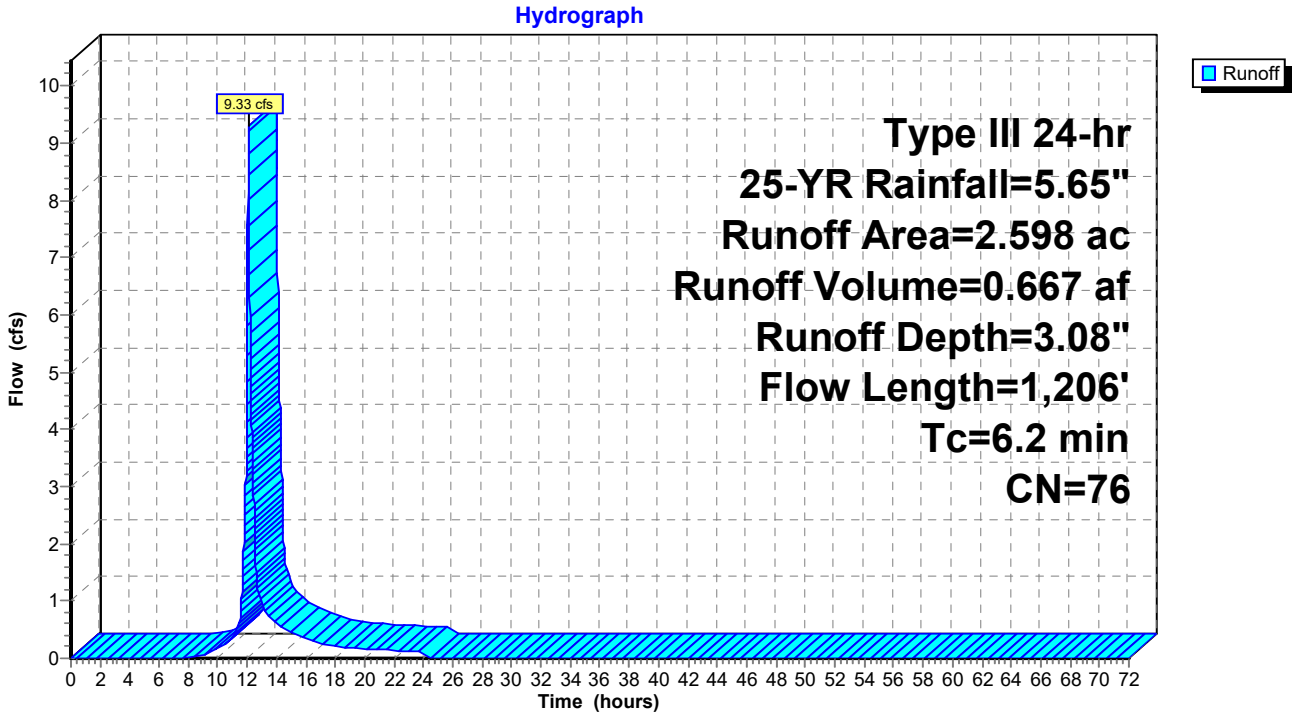
Runoff = 9.33 cfs @ 12.09 hrs, Volume= 0.667 af, Depth= 3.08"
Routed to Link DP-2 : Network Outfall (FES)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.65"

Area (ac)	CN	Description
0.639	74	>75% Grass cover, Good, HSG C
0.319	98	Paved roads w/curbs & sewers, HSG C
0.000	77	2 acre lots, 12% imp, HSG C
1.501	72	Woods/grass comb., Good, HSG C
0.073	72	Woods/grass comb., Good, HSG C
0.057	72	Woods/grass comb., Good, HSG C
0.009	70	Woods, Good, HSG C
2.598	76	Weighted Average
2.280		87.74% Pervious Area
0.319		12.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	50	0.0700	1.88		**Sheet Flow, Sheet Paved** Smooth surfaces n= 0.011 P2= 2.90"
3.4	820	0.0700	3.97		**Shallow Concentrated Flow, Shallow Concentrated Grass Gutter** Grassed Waterway Kv= 15.0 fps
1.7	258	0.0272	2.47		**Shallow Concentrated Flow, Shallow Concentrated Grass Gutter** Grassed Waterway Kv= 15.0 fps
0.7	78	0.0150	1.84		**Shallow Concentrated Flow, Shallow Concentrated Grass Gutter** Grassed Waterway Kv= 15.0 fps
6.2	1,206	Total			

Subcatchment EX-1: Subcat EX-1



Summary for Subcatchment EX-10: Subcat EX-10

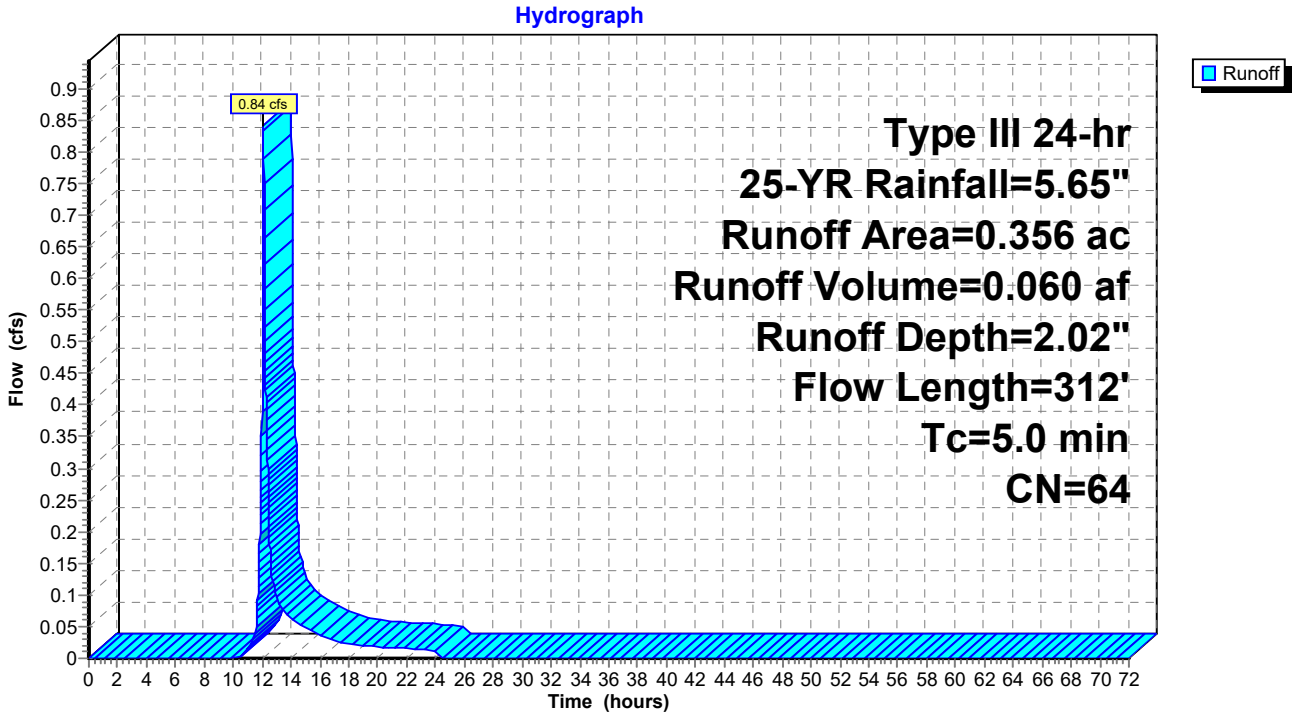
Runoff = 0.84 cfs @ 12.08 hrs, Volume= 0.060 af, Depth= 2.02"
Routed to Link DP-2 : Network Outfall (FES)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.65"

Area (ac)	CN	Description
0.034	61	>75% Grass cover, Good, HSG B
0.065	98	Paved roads w/curbs & sewers, HSG B
0.024	65	2 acre lots, 12% imp, HSG B
0.001	65	2 acre lots, 12% imp, HSG B
0.233	55	Woods, Good, HSG B
0.356	64	Weighted Average
0.288		80.97% Pervious Area
0.068		19.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0827	0.25		**Sheet Flow, Sheet Grass** Grass: Short n= 0.150 P2= 2.90"
0.2	24	0.0827	2.01		**Shallow Concentrated Flow, Shallow Conc Grass** Short Grass Pasture Kv= 7.0 fps
1.1	147	0.1824	2.14		**Shallow Concentrated Flow, Shallow Conc Woods** Woodland Kv= 5.0 fps
0.3	91	0.1093	4.96		**Shallow Concentrated Flow, Gutter** Grassed Waterway Kv= 15.0 fps
5.0	312	Total			

Subcatchment EX-10: Subcat EX-10



Summary for Subcatchment EX-11: Subcat EX-11

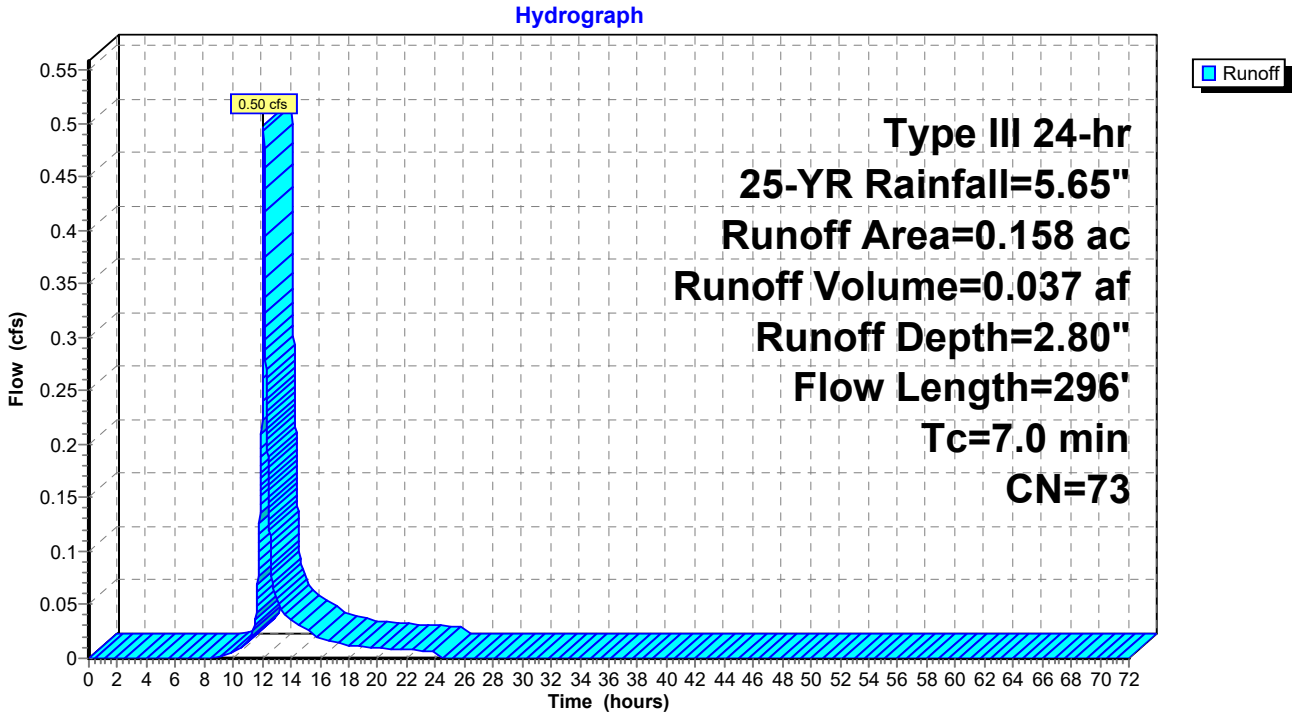
Runoff = 0.50 cfs @ 12.10 hrs, Volume= 0.037 af, Depth= 2.80"
Routed to Link DP-2 : Network Outfall (FES)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.65"

Area (ac)	CN	Description
0.000	30	Woods, Good, HSG A
0.006	98	Paved roads w/curbs & sewers, HSG A
0.000	55	Woods, Good, HSG B
0.005	55	Woods, Good, HSG B
0.035	98	Paved roads w/curbs & sewers, HSG B
0.001	61	>75% Grass cover, Good, HSG B
0.000	65	2 acre lots, 12% imp, HSG B
0.001	65	2 acre lots, 12% imp, HSG B
0.023	55	Woods, Good, HSG B
0.039	55	Woods, Good, HSG B
0.020	98	Paved roads w/curbs & sewers, HSG B
0.027	65	2 acre lots, 12% imp, HSG B
0.000	61	>75% Grass cover, Good, HSG B
0.000	61	>75% Grass cover, Good, HSG B
0.158	73	Weighted Average
0.094		59.36% Pervious Area
0.064		40.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	50	0.1821	0.16		**Sheet Flow, Sheet Woods** Woods: Light underbrush n= 0.400 P2= 2.90"
0.3	39	0.1821	2.13		**Shallow Concentrated Flow, Shallow Conc Woods** Woodland Kv= 5.0 fps
0.3	24	0.0447	1.48		**Shallow Concentrated Flow, Shallow Conc Grass** Short Grass Pasture Kv= 7.0 fps
0.2	40	0.1958	3.10		**Shallow Concentrated Flow, Shallow Conc Grass** Short Grass Pasture Kv= 7.0 fps
0.5	57	0.1211	1.74		**Shallow Concentrated Flow, Shallow Conc Woods** Woodland Kv= 5.0 fps
0.3	86	0.0779	4.19		**Shallow Concentrated Flow, Gutter** Grassed Waterway Kv= 15.0 fps
7.0	296	Total			

Subcatchment EX-11: Subcat EX-11



Summary for Subcatchment EX-12: Subcat EX-12

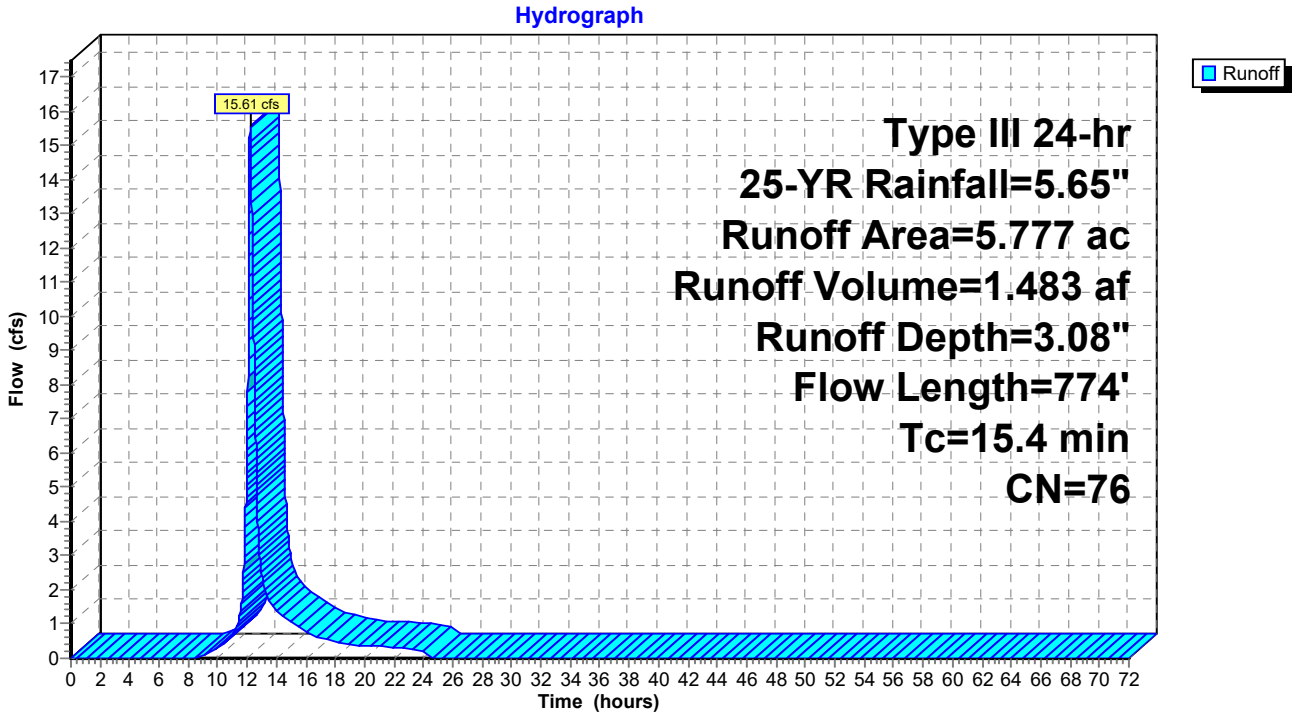
Runoff = 15.61 cfs @ 12.21 hrs, Volume= 1.483 af, Depth= 3.08"
Routed to Link DP-1 : Existing Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.65"

Area (ac)	CN	Description
0.506	98	Paved roads w/curbs & sewers, HSG C
1.196	72	Woods/grass comb., Good, HSG C
0.085	72	Woods/grass comb., Good, HSG C
0.029	72	Woods/grass comb., Good, HSG C
1.118	74	>75% Grass cover, Good, HSG C
0.000	74	>75% Grass cover, Good, HSG C
0.000	74	>75% Grass cover, Good, HSG C
0.000	74	>75% Grass cover, Good, HSG C
0.000	74	>75% Grass cover, Good, HSG C
0.350	98	Paved roads w/curbs & sewers, HSG B
0.023	61	>75% Grass cover, Good, HSG B
0.139	61	>75% Grass cover, Good, HSG B
0.005	61	>75% Grass cover, Good, HSG B
0.093	61	>75% Grass cover, Good, HSG B
1.381	72	Woods/grass comb., Good, HSG C
0.852	74	>75% Grass cover, Good, HSG C
5.777	76	Weighted Average
4.921		85.18% Pervious Area
0.856		14.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.0206	0.14		**Sheet Flow, Grass Sheet** Grass: Short n= 0.150 P2= 2.90"
1.0	65	0.0232	1.07		**Shallow Concentrated Flow, Shallow Conc Grass** Short Grass Pasture Kv= 7.0 fps
0.7	67	0.0473	1.52		**Shallow Concentrated Flow, Shallow Conc Grass** Short Grass Pasture Kv= 7.0 fps
7.9	592	0.0070	1.25		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.4	774	Total			

Subcatchment EX-12: Subcat EX-12



Summary for Subcatchment EX-2: Subcat EX-2

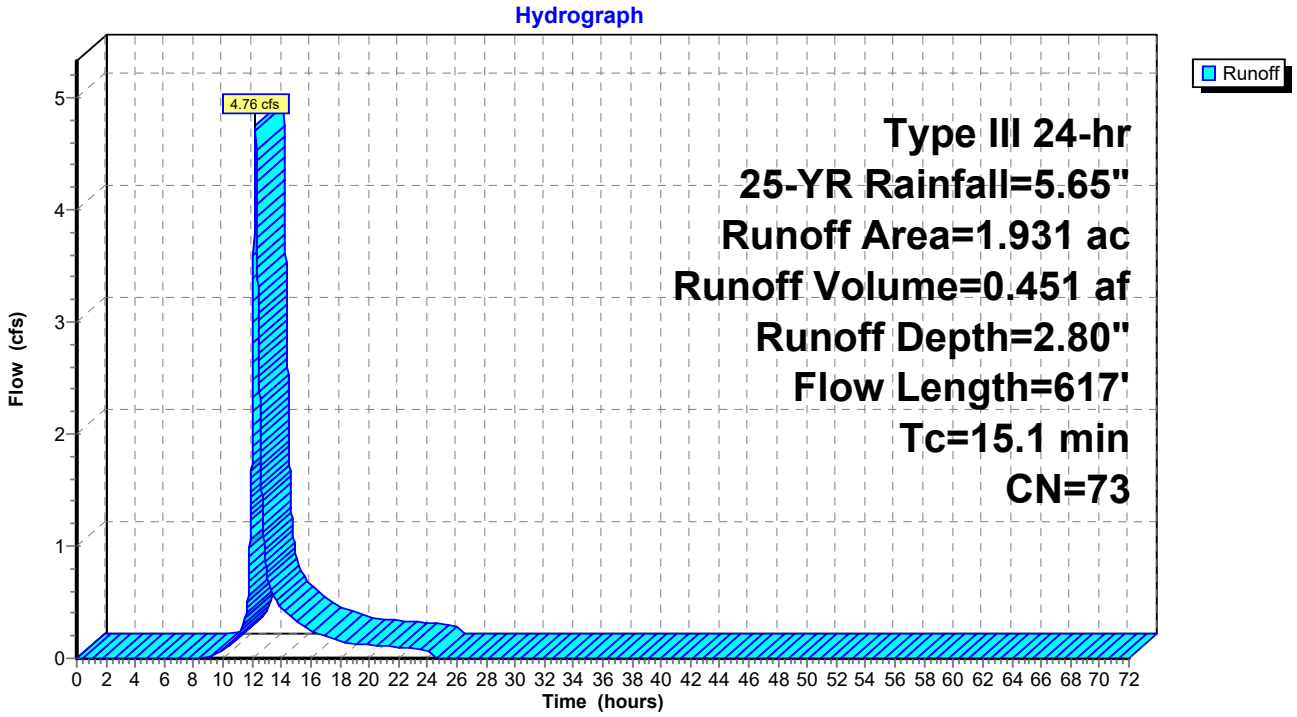
Runoff = 4.76 cfs @ 12.21 hrs, Volume= 0.451 af, Depth= 2.80"
Routed to Link DP-2 : Network Outfall (FES)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.65"

Area (ac)	CN	Description
0.087	98	Paved roads w/curbs & sewers, HSG C
0.053	89	Gravel roads, HSG C
0.106	77	2 acre lots, 12% imp, HSG C
0.830	72	Woods/grass comb., Good, HSG C
0.081	70	Woods, Good, HSG C
0.082	70	Woods, Good, HSG C
0.015	70	Woods, Good, HSG C
0.352	74	>75% Grass cover, Good, HSG C
0.098	74	>75% Grass cover, Good, HSG C
0.031	74	>75% Grass cover, Good, HSG C
0.007	74	>75% Grass cover, Good, HSG C
0.026	74	>75% Grass cover, Good, HSG C
0.004	85	Gravel roads, HSG B
0.001	58	Woods/grass comb., Good, HSG B
0.147	61	>75% Grass cover, Good, HSG B
0.010	61	>75% Grass cover, Good, HSG B
1.931	73	Weighted Average
1.832		94.85% Pervious Area
0.099		5.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.0160	0.13		**Sheet Flow, Grass Sheet Flow** Grass: Short n= 0.150 P2= 2.90"
4.6	248	0.0167	0.90		**Shallow Concentrated Flow, Grass Conc Flow** Short Grass Pasture Kv= 7.0 fps
3.4	248	0.0300	1.21		**Shallow Concentrated Flow, Grass Conc Flow** Short Grass Pasture Kv= 7.0 fps
0.6	71	0.0162	1.91		**Shallow Concentrated Flow, Road Gutter Flow** Grassed Waterway Kv= 15.0 fps
15.1	617	Total			

Subcatchment EX-2: Subcat EX-2



Summary for Subcatchment EX-3: Subcat EX-3

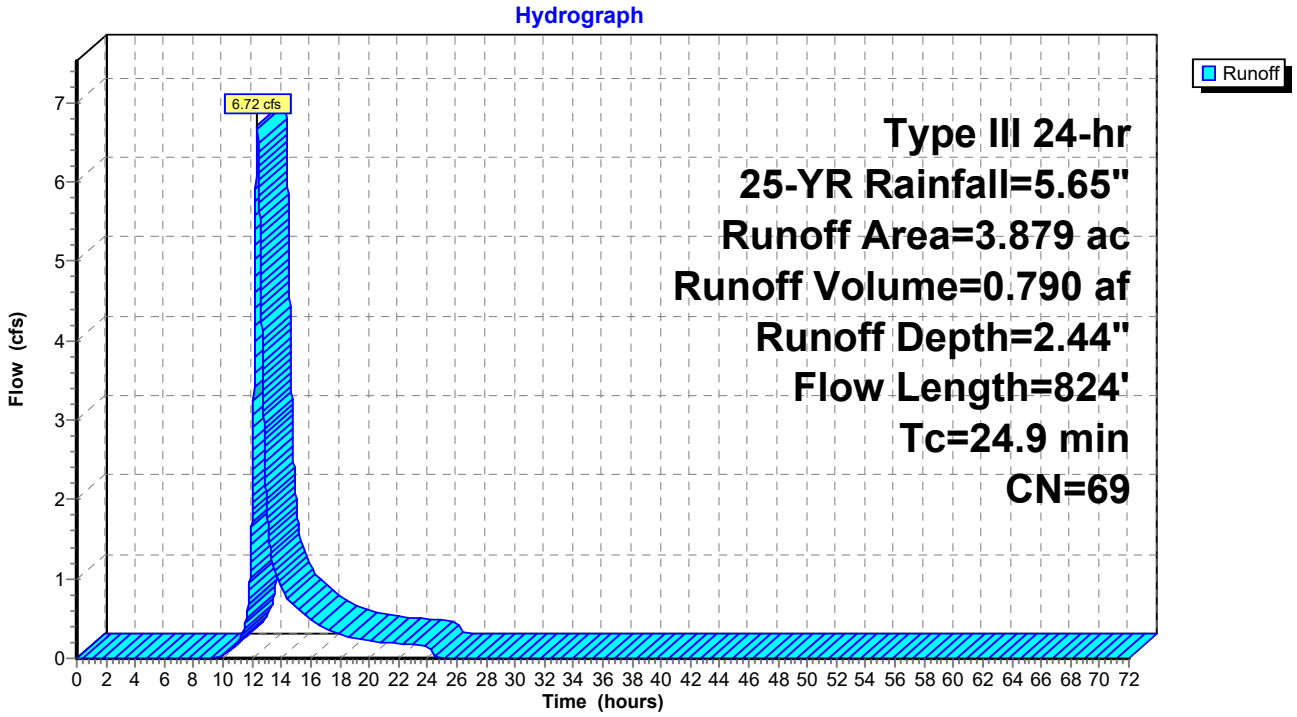
Runoff = 6.72 cfs @ 12.36 hrs, Volume= 0.790 af, Depth= 2.44"
Routed to Link DP-2 : Network Outfall (FES)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.65"

Area (ac)	CN	Description
0.128	98	Paved roads w/curbs & sewers, HSG C
0.009	89	Gravel roads, HSG C
0.191	77	2 acre lots, 12% imp, HSG C
0.032	70	Woods, Good, HSG C
1.029	74	>75% Grass cover, Good, HSG C
0.093	74	>75% Grass cover, Good, HSG C
0.866	70	Woods, Good, HSG C
0.092	70	Woods, Good, HSG C
0.368	55	Woods, Good, HSG B
1.072	61	>75% Grass cover, Good, HSG B
3.879	69	Weighted Average
3.728		96.10% Pervious Area
0.151		3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	50	0.0100	0.11		**Sheet Flow, Sheet Grass** Grass: Short n= 0.150 P2= 2.90"
8.3	347	0.0100	0.70		**Shallow Concentrated Flow, Shallow Concentrated Grass** Short Grass Pasture Kv= 7.0 fps
2.3	69	0.0100	0.50		**Shallow Concentrated Flow, Shallow Concentrated Woods** Woodland Kv= 5.0 fps
0.3	31	0.0890	1.49		**Shallow Concentrated Flow, Shallow Concentrated Woods** Woodland Kv= 5.0 fps
3.5	106	0.0100	0.50		**Shallow Concentrated Flow, Shallow Concentrated Woods** Woodland Kv= 5.0 fps
1.7	70	0.0100	0.70		**Shallow Concentrated Flow, Shallow Concentrated Grass** Short Grass Pasture Kv= 7.0 fps
1.0	151	0.0300	2.60		**Shallow Concentrated Flow, Road Gutter Flow** Grassed Waterway Kv= 15.0 fps
24.9	824	Total			

Subcatchment EX-3: Subcat EX-3



Summary for Subcatchment EX-4: Subcat EX-4

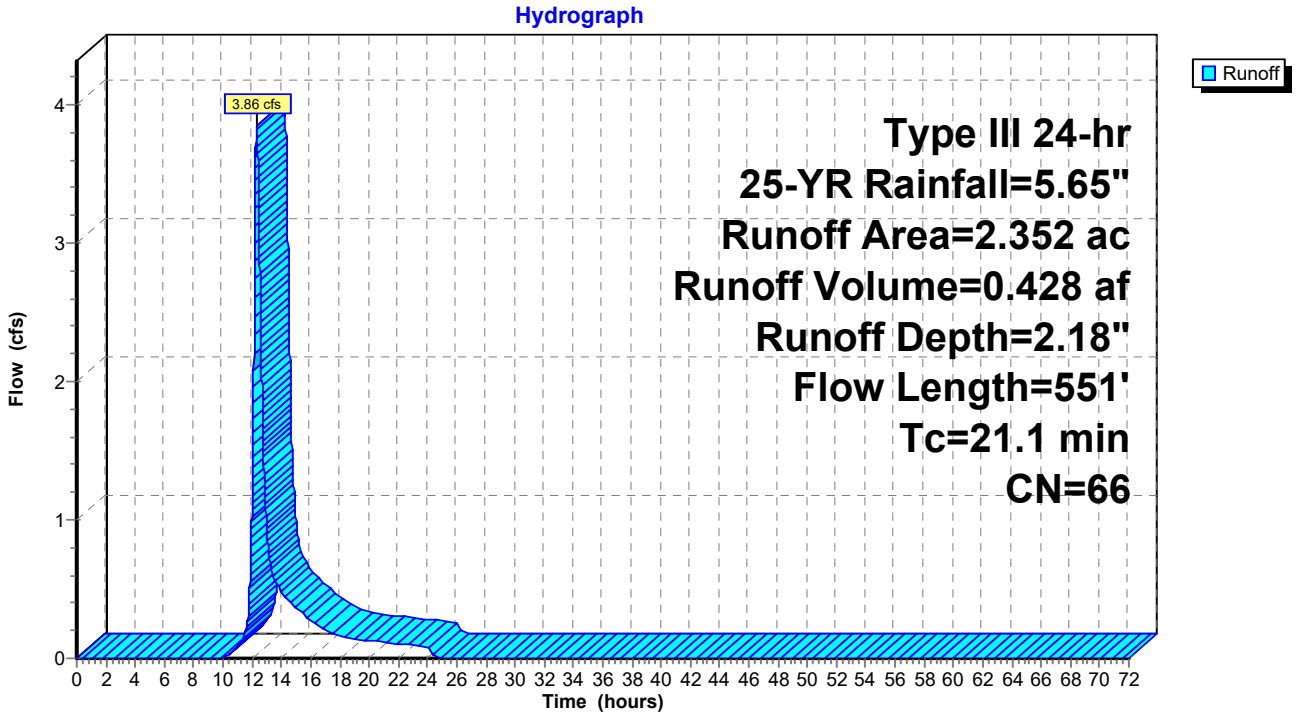
Runoff = 3.86 cfs @ 12.31 hrs, Volume= 0.428 af, Depth= 2.18"
Routed to Link DP-2 : Network Outfall (FES)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.65"

Area (ac)	CN	Description
0.048	74	>75% Grass cover, Good, HSG C
0.087	98	Paved roads w/curbs & sewers, HSG C
0.288	77	2 acre lots, 12% imp, HSG C
0.819	70	Woods, Good, HSG C
0.022	70	Woods, Good, HSG C
0.066	61	>75% Grass cover, Good, HSG B
0.054	98	Paved roads w/curbs & sewers, HSG B
0.969	55	Woods, Good, HSG B
2.352	66	Weighted Average
2.177		92.56% Pervious Area
0.175		7.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	50	0.0214	0.07		**Sheet Flow, Sheet Woods** Woods: Light underbrush n= 0.400 P2= 2.90"
2.1	129	0.0407	1.01		**Shallow Concentrated Flow, Shallow Conc Woods** Woodland Kv= 5.0 fps
6.1	287	0.0250	0.79		**Shallow Concentrated Flow, Shallow Conc Woods** Woodland Kv= 5.0 fps
0.3	85	0.0500	4.54		**Shallow Concentrated Flow, Shallow Conc Paved** Paved Kv= 20.3 fps
21.1	551	Total			

Subcatchment EX-4: Subcat EX-4



Summary for Subcatchment EX-5: Subcat EX-5

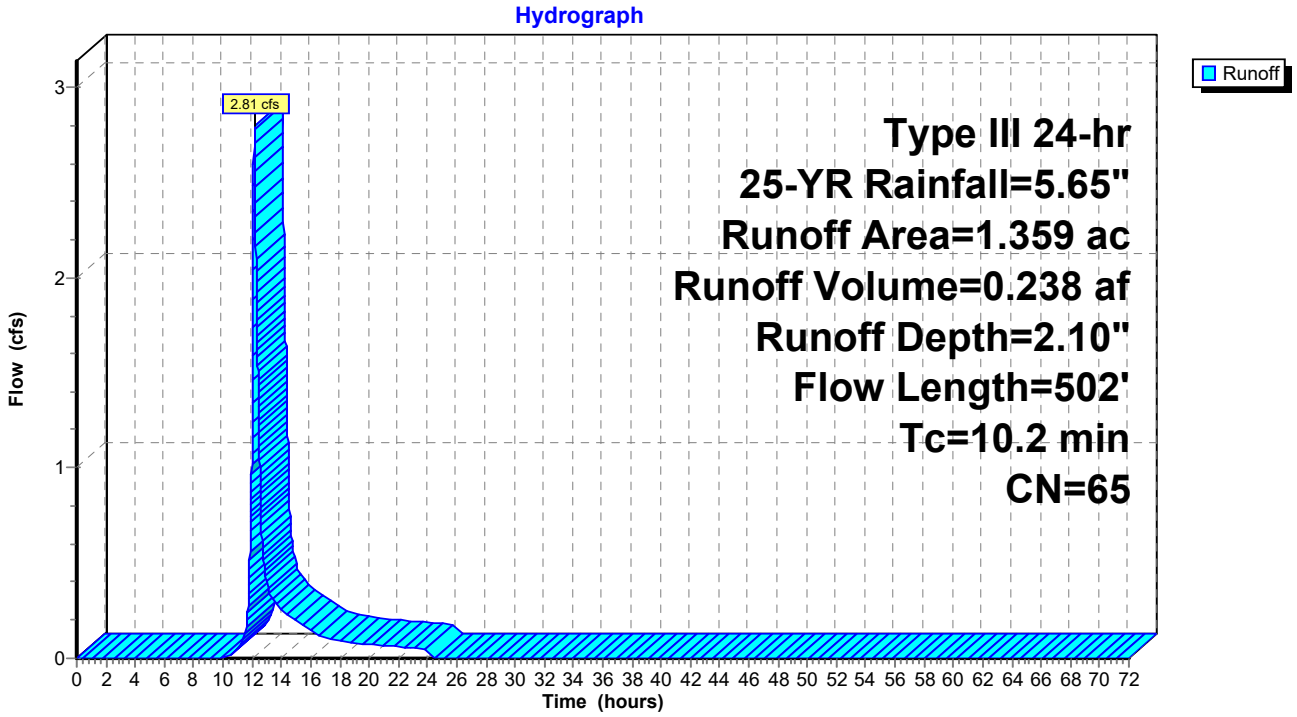
Runoff = 2.81 cfs @ 12.15 hrs, Volume= 0.238 af, Depth= 2.10"
Routed to Link DP-2 : Network Outfall (FES)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.65"

Area (ac)	CN	Description
0.060	77	2 acre lots, 12% imp, HSG C
0.055	70	Woods, Good, HSG C
0.037	77	2 acre lots, 12% imp, HSG C
0.022	70	Woods, Good, HSG C
0.001	98	Paved roads w/curbs & sewers, HSG C
0.048	98	Paved roads w/curbs & sewers, HSG C
0.000	65	2 acre lots, 12% imp, HSG B
0.000	55	Woods, Good, HSG B
0.006	98	Paved roads w/curbs & sewers, HSG B
0.014	65	2 acre lots, 12% imp, HSG B
0.065	98	Paved roads w/curbs & sewers, HSG B
0.407	55	Woods, Good, HSG B
0.006	65	2 acre lots, 12% imp, HSG B
0.528	65	2 acre lots, 12% imp, HSG B
0.109	55	Woods, Good, HSG B
1.359	65	Weighted Average
1.161		85.47% Pervious Area
0.197		14.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0224	0.15		**Sheet Flow, Sheet Grass** Grass: Short n= 0.150 P2= 2.90"
0.3	21	0.0224	1.05		**Shallow Concentrated Flow, Shallow Conc Grass** Short Grass Pasture Kv= 7.0 fps
3.1	205	0.0476	1.09		**Shallow Concentrated Flow, Shallow Conc Woods** Woodland Kv= 5.0 fps
0.2	48	0.0423	4.18		**Shallow Concentrated Flow, Shallow Conc Paved** Paved Kv= 20.3 fps
1.0	178	0.0416	3.06		**Shallow Concentrated Flow, Road Gutter Flow** Grassed Waterway Kv= 15.0 fps
10.2	502	Total			

Subcatchment EX-5: Subcat EX-5



Summary for Subcatchment EX-6: Subcat EX-6

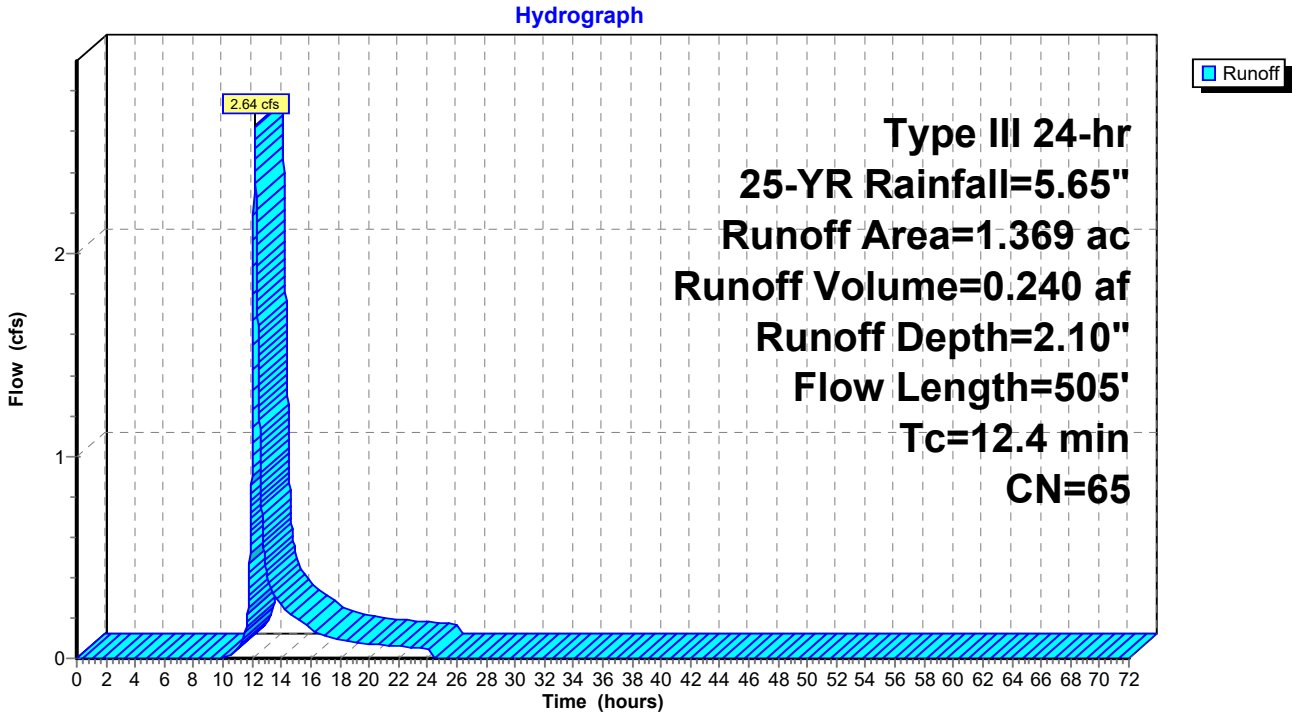
Runoff = 2.64 cfs @ 12.18 hrs, Volume= 0.240 af, Depth= 2.10"
Routed to Link DP-2 : Network Outfall (FES)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.65"

Area (ac)	CN	Description
0.000	55	Woods, Good, HSG B
0.130	55	Woods, Good, HSG B
0.167	98	Paved roads w/curbs & sewers, HSG B
0.000	98	Paved roads w/curbs & sewers, HSG B
0.209	65	2 acre lots, 12% imp, HSG B
0.231	65	2 acre lots, 12% imp, HSG B
0.030	65	2 acre lots, 12% imp, HSG B
0.074	55	Woods, Good, HSG B
0.262	55	Woods, Good, HSG B
0.083	55	Woods, Good, HSG B
0.183	65	2 acre lots, 12% imp, HSG B
1.369	65	Weighted Average
1.124		82.08% Pervious Area
0.245		17.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	50	0.0447	0.09		**Sheet Flow, Sheet Woods** Woods: Light underbrush n= 0.400 P2= 2.90"
1.4	110	0.0375	1.36		**Shallow Concentrated Flow, Shallow Conc Grass** Short Grass Pasture Kv= 7.0 fps
0.5	82	0.1365	2.59		**Shallow Concentrated Flow, Shallow Conc Grass** Short Grass Pasture Kv= 7.0 fps
0.1	37	0.1365	7.50		**Shallow Concentrated Flow, Shallow Conc Paved** Paved Kv= 20.3 fps
1.0	226	0.0672	3.89		**Shallow Concentrated Flow, Road Gutter** Grassed Waterway Kv= 15.0 fps
12.4	505	Total			

Subcatchment EX-6: Subcat EX-6



Summary for Subcatchment EX-7: Subcat EX-7

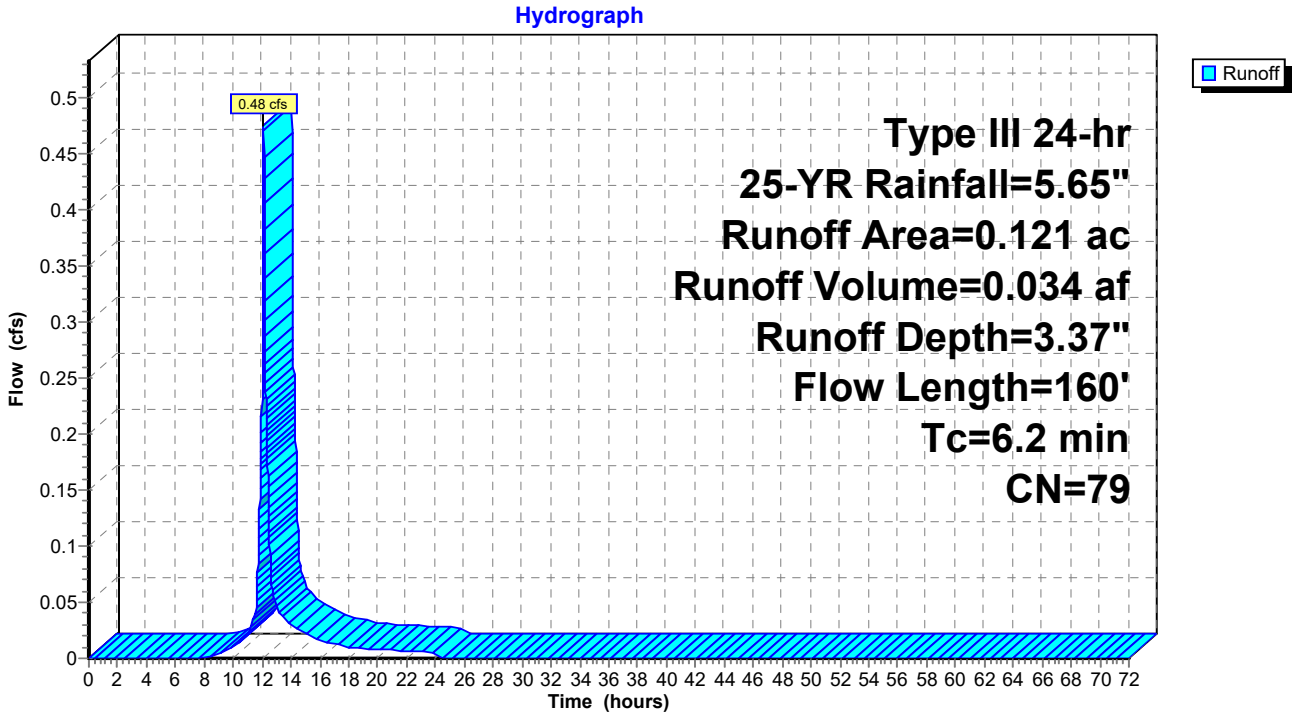
Runoff = 0.48 cfs @ 12.09 hrs, Volume= 0.034 af, Depth= 3.37"
Routed to Link DP-2 : Network Outfall (FES)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.65"

Area (ac)	CN	Description
0.064	98	Paved roads w/curbs & sewers, HSG B
0.018	55	Woods, Good, HSG B
0.021	55	Woods, Good, HSG B
0.019	65	2 acre lots, 12% imp, HSG B
0.121	79	Weighted Average
0.055		45.64% Pervious Area
0.066		54.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.1588	0.15		**Sheet Flow, Sheet Woods** Woods: Light underbrush n= 0.400 P2= 2.90"
0.2	26	0.1588	1.99		**Shallow Concentrated Flow, Shallow Conc Woods** Woodland Kv= 5.0 fps
0.1	23	0.0837	4.66		**Shallow Concentrated Flow, Shallow Conc Gravel Drive** Unpaved Kv= 16.1 fps
0.2	61	0.1009	4.76		**Shallow Concentrated Flow, Road Gutter Flow** Grassed Waterway Kv= 15.0 fps
6.2	160	Total			

Subcatchment EX-7: Subcat EX-7



Summary for Subcatchment EX-8: Subcat EX-8

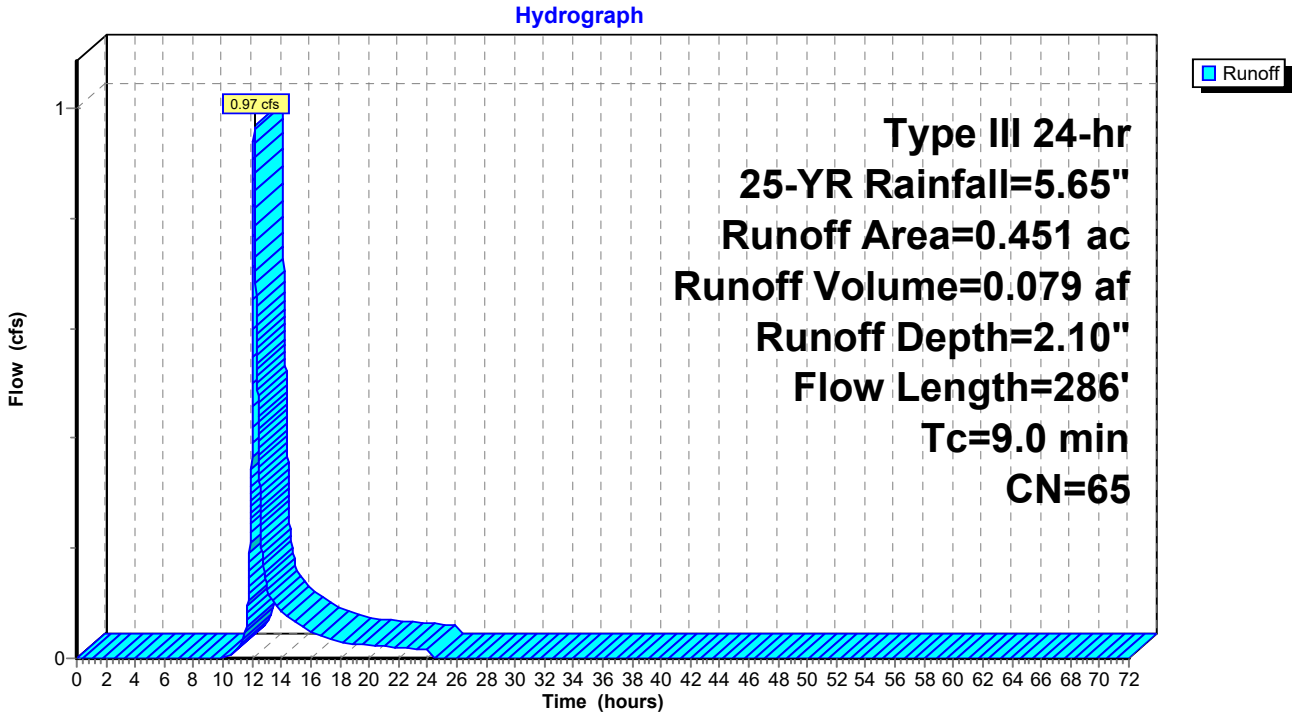
Runoff = 0.97 cfs @ 12.13 hrs, Volume= 0.079 af, Depth= 2.10"
Routed to Link DP-2 : Network Outfall (FES)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.65"

Area (ac)	CN	Description
0.066	98	Paved roads w/curbs & sewers, HSG B
0.034	65	2 acre lots, 12% imp, HSG B
0.044	55	Woods, Good, HSG B
0.188	55	Woods, Good, HSG B
0.001	65	2 acre lots, 12% imp, HSG B
0.119	65	2 acre lots, 12% imp, HSG B
0.451	65	Weighted Average
0.367		81.27% Pervious Area
0.084		18.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	30	0.1020	0.11		**Sheet Flow, Sheet Woods** Woods: Light underbrush n= 0.400 P2= 2.90"
2.5	20	0.1905	0.13		**Sheet Flow, Sheet Woods** Woods: Light underbrush n= 0.400 P2= 2.90"
0.3	40	0.1905	2.18		**Shallow Concentrated Flow, Shallow Conc Woods** Woodland Kv= 5.0 fps
0.0	15	0.1905	7.03		**Shallow Concentrated Flow, Shallow Conc Driveway** Unpaved Kv= 16.1 fps
0.9	31	0.0146	0.60		**Shallow Concentrated Flow, Shallow Conc Woods** Woodland Kv= 5.0 fps
0.5	60	0.1831	2.14		**Shallow Concentrated Flow, Shallow Conc Woods** Woodland Kv= 5.0 fps
0.3	90	0.1238	5.28		**Shallow Concentrated Flow, Road Gutter** Grassed Waterway Kv= 15.0 fps
9.0	286	Total			

Subcatchment EX-8: Subcat EX-8



Summary for Subcatchment EX-9: Subcat EX-9

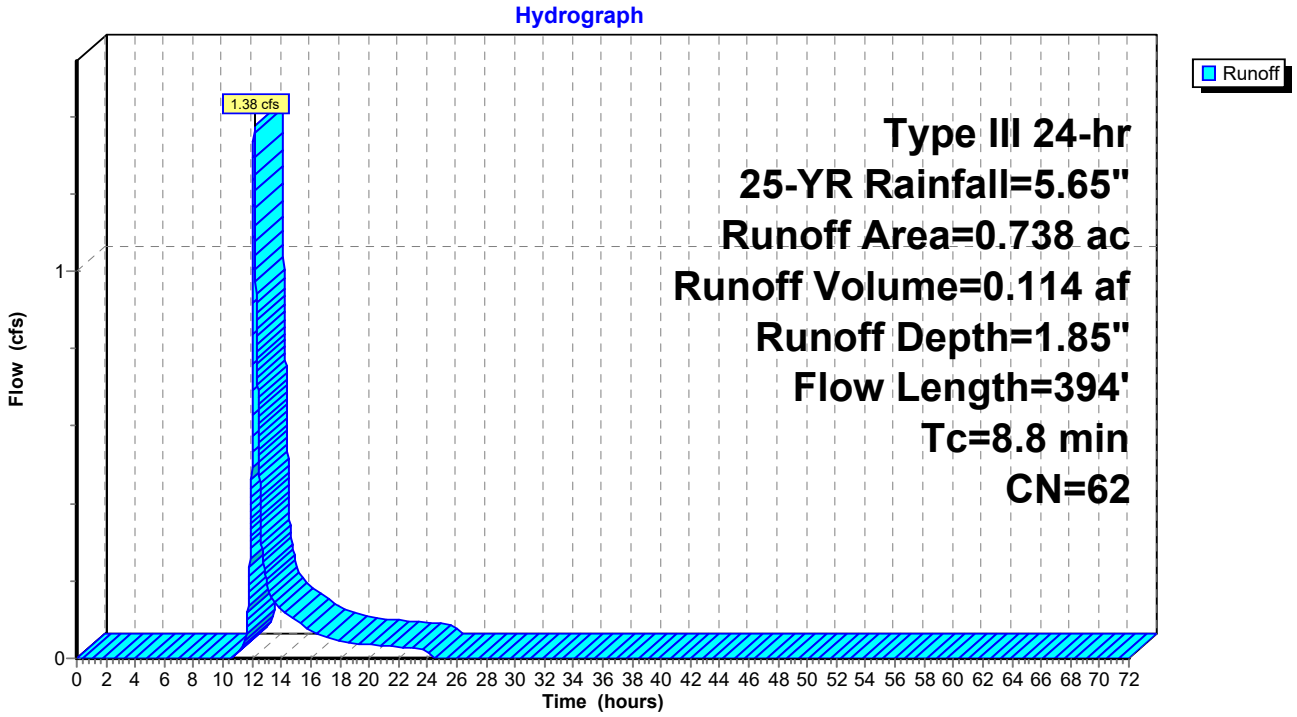
Runoff = 1.38 cfs @ 12.13 hrs, Volume= 0.114 af, Depth= 1.85"
Routed to Link DP-2 : Network Outfall (FES)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.65"

Area (ac)	CN	Description
0.026	61	>75% Grass cover, Good, HSG B
0.131	55	Woods, Good, HSG B
0.254	55	Woods, Good, HSG B
0.056	98	Paved roads w/curbs & sewers, HSG B
0.179	65	2 acre lots, 12% imp, HSG B
0.091	65	2 acre lots, 12% imp, HSG B
0.000	65	2 acre lots, 12% imp, HSG B
0.738	62	Weighted Average
0.649		87.98% Pervious Area
0.089		12.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	38	0.1710	0.14		**Sheet Flow, Sheet Woods** Woods: Light underbrush n= 0.400 P2= 2.90"
1.9	12	0.1343	0.10		**Sheet Flow, Sheet Woods** Woods: Light underbrush n= 0.400 P2= 2.90"
0.4	46	0.1343	1.83		**Shallow Concentrated Flow, Shallwow Conc Woods** Woodland Kv= 5.0 fps
0.4	91	0.0632	4.05		**Shallow Concentrated Flow, Shallow Conc Driveway** Unpaved Kv= 16.1 fps
1.6	177	0.1402	1.87		**Shallow Concentrated Flow, Shallow Conc Driveway** Woodland Kv= 5.0 fps
0.1	30	0.1234	5.27		**Shallow Concentrated Flow, Road Gutter** Grassed Waterway Kv= 15.0 fps
8.8	394	Total			

Subcatchment EX-9: Subcat EX-9

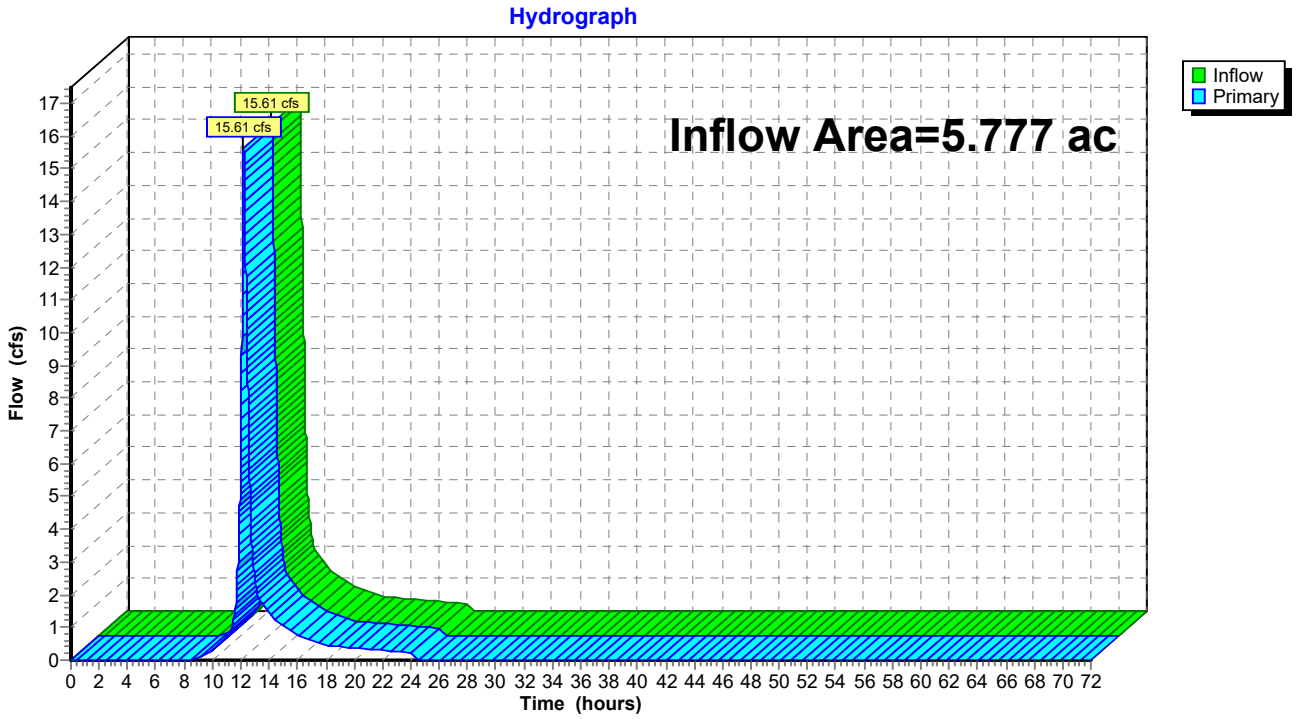


Summary for Link DP-1: Existing Catch Basin

Inflow Area = 5.777 ac, 14.82% Impervious, Inflow Depth = 3.08" for 25-YR event
Inflow = 15.61 cfs @ 12.21 hrs, Volume= 1.483 af
Primary = 15.61 cfs @ 12.21 hrs, Volume= 1.483 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-1: Existing Catch Basin

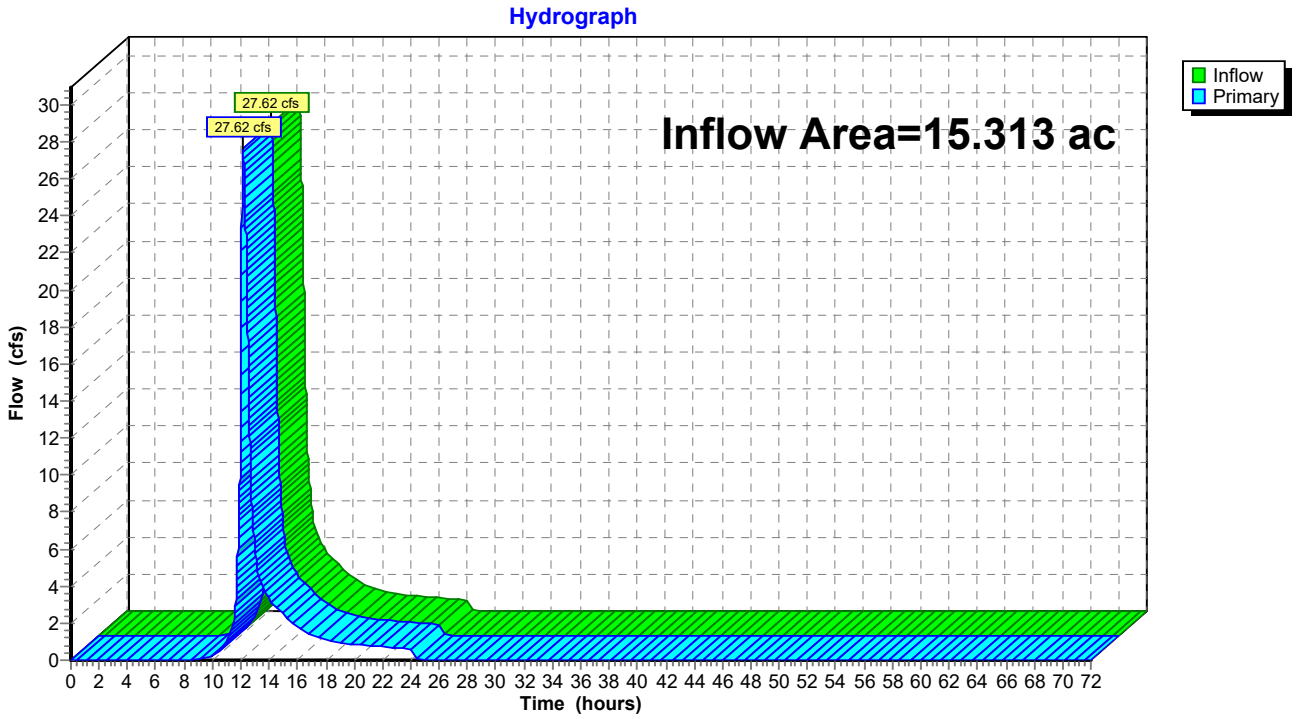


Summary for Link DP-2: Network Outfall (FES)

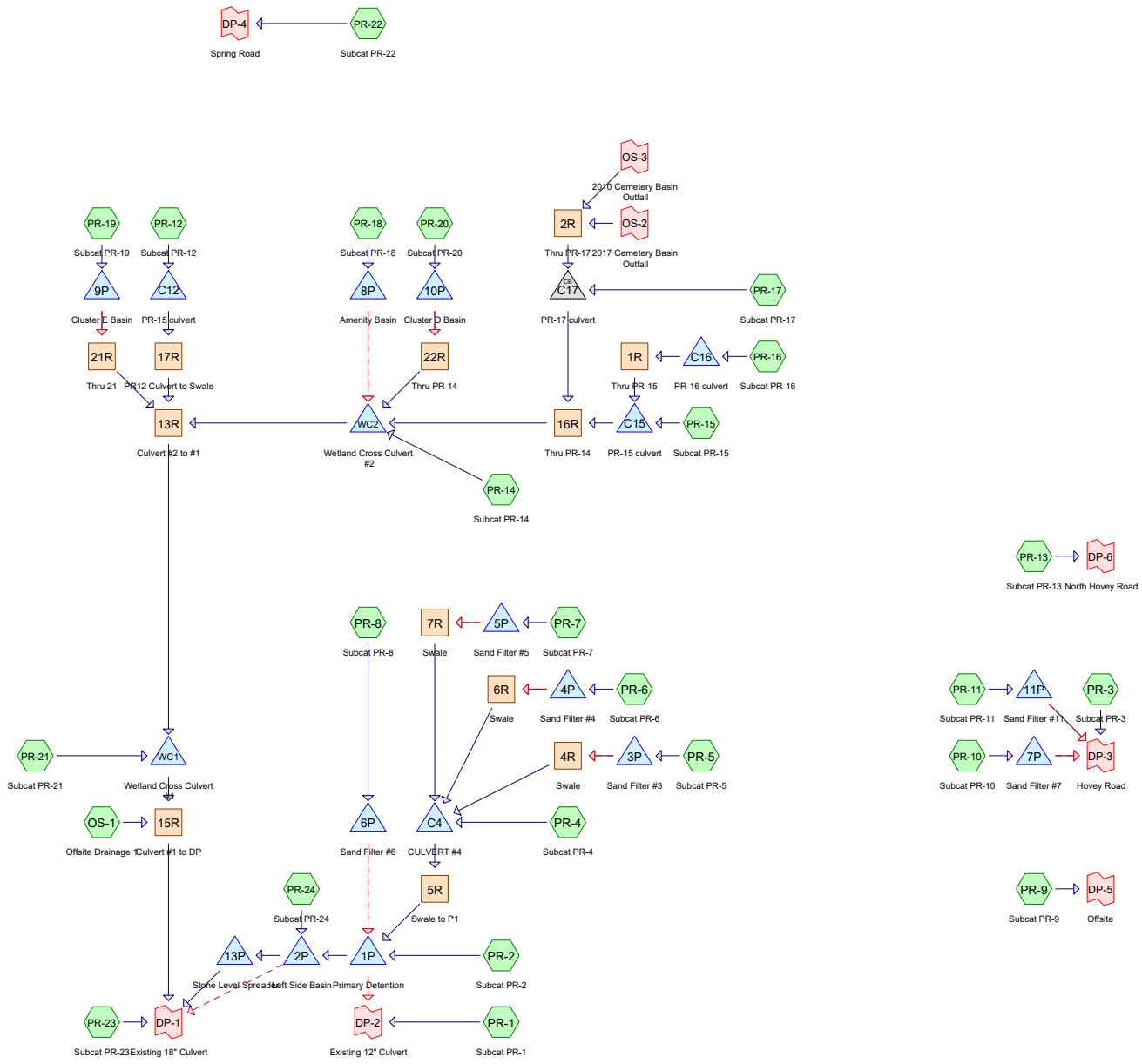
Inflow Area = 15.313 ac, 10.17% Impervious, Inflow Depth = 2.46" for 25-YR event
Inflow = 27.62 cfs @ 12.15 hrs, Volume= 3.136 af
Primary = 27.62 cfs @ 12.15 hrs, Volume= 3.136 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-2: Network Outfall (FES)



Proposed Conditions: Project Site



Routing Diagram for 53140.00-PR
Prepared by VHB, Inc, Printed 11/7/2025
HydroCAD® 10.20-5c s/n 01038 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-YR	Type III 24-hr		Default	24.00	1	2.47	2
2	2-YR	Type III 24-hr		Default	24.00	1	2.95	2
3	10-YR	Type III 24-hr		Default	24.00	1	4.46	2
4	25-YR	Type III 24-hr		Default	24.00	1	5.65	2
5	50-YR	Type III 24-hr		Default	24.00	1	6.76	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
18.19	61	>75% Grass cover, Good, HSG B (OS-1, PR-1, PR-10, PR-14, PR-2, PR-21, PR-23, PR-24, PR-4, PR-5, PR-6, PR-7, PR-8, PR-9)
15.06	74	>75% Grass cover, Good, HSG C (OS-1, PR-10, PR-11, PR-12, PR-13, PR-14, PR-15, PR-16, PR-17, PR-18, PR-19, PR-2, PR-20, PR-21, PR-22, PR-23, PR-3, PR-4, PR-5, PR-6, PR-7, PR-8, PR-9)
0.01	80	>75% Grass cover, Good, HSG D (PR-14, PR-15, PR-19, PR-21)
0.34	96	Gravel surface, HSG B (PR-1, PR-14, PR-2, PR-3, PR-4, PR-6, PR-8)
0.54	96	Gravel surface, HSG C (PR-11, PR-14, PR-18, PR-22, PR-3, PR-4, PR-6, PR-7, PR-8)
0.00	96	Gravel surface, HSG D (PR-14)
10.64	58	Meadow, non-grazed, HSG B (OS-1, PR-1, PR-10, PR-11, PR-13, PR-14, PR-16, PR-17, PR-2, PR-21, PR-22, PR-23, PR-3, PR-5, PR-6, PR-7, PR-8, PR-9)
18.58	71	Meadow, non-grazed, HSG C (PR-1, PR-10, PR-11, PR-12, PR-13, PR-14, PR-15, PR-16, PR-17, PR-18, PR-19, PR-2, PR-21, PR-22, PR-23, PR-3, PR-6, PR-7, PR-8, PR-9)
2.26	72	Meadow, non-grazed, HSG C (PR-20)
0.29	78	Meadow, non-grazed, HSG D (PR-1, PR-14, PR-15, PR-21, PR-23)
4.57	98	Paved parking, HSG B (PR-1, PR-10, PR-2, PR-21, PR-23, PR-4, PR-5, PR-6, PR-7, PR-8)
5.85	98	Paved parking, HSG C (PR-10, PR-11, PR-12, PR-14, PR-15, PR-18, PR-19, PR-20, PR-21, PR-22, PR-23, PR-5, PR-6, PR-7, PR-8, PR-9)
0.01	98	Paved parking, HSG D (PR-19, PR-23, PR-8)
0.46	98	Unconnected pavement, HSG C (PR-14, PR-18, PR-8)
1.99	98	Unconnected roofs, HSG B (PR-10, PR-23, PR-5, PR-6, PR-7, PR-8)
3.00	98	Unconnected roofs, HSG C (PR-10, PR-11, PR-13, PR-14, PR-18, PR-19, PR-20, PR-21, PR-22, PR-5, PR-6, PR-7, PR-8)
4.08	55	Woods, Good, HSG B (OS-1, PR-1, PR-10, PR-2, PR-21, PR-22, PR-23, PR-3, PR-9)
2.93	70	Woods, Good, HSG C (OS-1, PR-10, PR-16, PR-17, PR-20, PR-21, PR-22, PR-23, PR-9)
0.10	77	Woods, Good, HSG D (PR-21)
2.09	58	Woods/grass comb., Good, HSG B (OS-1, PR-14, PR-15, PR-21, PR-23)
9.19	72	Woods/grass comb., Good, HSG C (PR-12, PR-14, PR-15, PR-16, PR-17, PR-19, PR-21, PR-22, PR-23)
0.32	79	Woods/grass comb., Good, HSG D (PR-14, PR-15, PR-21)
100.51	**72**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.00	HSG A	
41.91	HSG B	OS-1, PR-1, PR-10, PR-11, PR-13, PR-14, PR-15, PR-16, PR-17, PR-2, PR-21, PR-22, PR-23, PR-24, PR-3, PR-4, PR-5, PR-6, PR-7, PR-8, PR-9
57.86	HSG C	OS-1, PR-1, PR-10, PR-11, PR-12, PR-13, PR-14, PR-15, PR-16, PR-17, PR-18, PR-19, PR-2, PR-20, PR-21, PR-22, PR-23, PR-3, PR-4, PR-5, PR-6, PR-7, PR-8, PR-9
0.74	HSG D	PR-1, PR-14, PR-15, PR-19, PR-21, PR-23, PR-8
0.00	Other	
100.51		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 OS-1: Offsite Drainage 1 Runoff Area=6.35 ac 0.00% Impervious Runoff Depth=0.13"
Flow Length=904' Tc=19.2 min CN=58 Runoff=0.2 cfs 0.07 af

Subcatchment PR-1: Subcat PR-1 Runoff Area=5.91 ac 2.69% Impervious Runoff Depth=0.17"
Flow Length=835' Tc=9.4 min CN=60 Runoff=0.3 cfs 0.08 af

Subcatchment PR-10: Subcat PR-10 Runoff Area=4.35 ac 30.94% Impervious Runoff Depth=0.55"
Tc=6.0 min CN=73 Runoff=2.4 cfs 0.20 af

Subcatchment PR-11: Subcat PR-11 Runoff Area=2.10 ac 27.07% Impervious Runoff Depth=0.82"
Flow Length=507' Tc=8.8 min UI Adjusted CN=79 Runoff=1.7 cfs 0.14 af

Subcatchment PR-12: Subcat PR-12 Runoff Area=0.67 ac 0.00% Impervious Runoff Depth=0.51"
Flow Length=231' Tc=6.1 min CN=72 Runoff=0.3 cfs 0.03 af

Subcatchment PR-13: Subcat PR-13 Runoff Area=2.69 ac 0.01% Impervious Runoff Depth=0.48"
Flow Length=359' Tc=7.4 min CN=71 Runoff=1.1 cfs 0.11 af

Subcatchment PR-14: Subcat PR-14 Runoff Area=10.64 ac 0.00% Impervious Runoff Depth=0.55"
Flow Length=1,659' Tc=21.2 min CN=73 Runoff=3.8 cfs 0.49 af

Subcatchment PR-15: Subcat PR-15 Runoff Area=3.14 ac 0.00% Impervious Runoff Depth=0.51"
Flow Length=493' Tc=12.4 min CN=72 Runoff=1.2 cfs 0.13 af

Subcatchment PR-16: Subcat PR-16 Runoff Area=0.68 ac 0.00% Impervious Runoff Depth=0.48"
Flow Length=250' Tc=7.1 min CN=71 Runoff=0.3 cfs 0.03 af

Subcatchment PR-17: Subcat PR-17 Runoff Area=1.75 ac 0.00% Impervious Runoff Depth=0.48"
Flow Length=523' Tc=11.4 min CN=71 Runoff=0.6 cfs 0.07 af

Subcatchment PR-18: Subcat PR-18 Runoff Area=2.25 ac 44.53% Impervious Runoff Depth=1.15"
Tc=6.0 min CN=85 Runoff=3.0 cfs 0.22 af

Subcatchment PR-19: Subcat PR-19 Runoff Area=5.06 ac 42.09% Impervious Runoff Depth=1.09"
Flow Length=1,393' Tc=6.0 min CN=84 Runoff=6.4 cfs 0.46 af

Subcatchment PR-2: Subcat PR-2 Runoff Area=4.31 ac 3.27% Impervious Runoff Depth=0.19"
Flow Length=782' Tc=7.8 min CN=61 Runoff=0.3 cfs 0.07 af

Subcatchment PR-20: Subcat PR-20 Runoff Area=5.20 ac 29.62% Impervious Runoff Depth=0.82"
Flow Length=1,180' Tc=9.1 min UI Adjusted CN=79 Runoff=4.2 cfs 0.35 af

Subcatchment PR-21: Subcat PR-21 Runoff Area=6.46 ac 0.01% Impervious Runoff Depth=0.41"
Flow Length=2,124' Tc=30.1 min CN=69 Runoff=1.3 cfs 0.22 af

Subcatchment PR-22: Subcat PR-22 Runoff Area=4.76 ac 0.05% Impervious Runoff Depth=0.51"
Flow Length=321' Tc=10.1 min CN=72 Runoff=2.0 cfs 0.20 af

Subcatchment PR-23: Subcat PR-23 Runoff Area=2.76 ac 12.60% Impervious Runoff Depth=0.29"
Flow Length=348' Tc=7.3 min CN=65 Runoff=0.5 cfs 0.07 af

Subcatchment PR-24: Subcat PR-24 Runoff Area=0.41 ac 0.00% Impervious Runoff Depth=0.19"
Tc=6.0 min CN=61 Runoff=0.0 cfs 0.01 af

Subcatchment PR-3: Subcat PR-3 Runoff Area=1.14 ac 0.00% Impervious Runoff Depth=0.51"
Flow Length=150' Tc=6.0 min CN=72 Runoff=0.6 cfs 0.05 af

Subcatchment PR-4: Subcat PR-4 Runoff Area=3.76 ac 0.00% Impervious Runoff Depth=0.23"
Flow Length=766' Tc=6.0 min CN=63 Runoff=0.4 cfs 0.07 af

Subcatchment PR-5: Subcat PR-5 Runoff Area=4.77 ac 28.74% Impervious Runoff Depth=0.44"
Tc=6.0 min UI Adjusted CN=70 Runoff=1.9 cfs 0.18 af

Subcatchment PR-6: Subcat PR-6 Runoff Area=4.22 ac 35.70% Impervious Runoff Depth=0.63"
Tc=6.0 min CN=75 Runoff=2.8 cfs 0.22 af

Subcatchment PR-7: Subcat PR-7 Runoff Area=9.26 ac 32.30% Impervious Runoff Depth=0.92"
Flow Length=1,294' Tc=6.0 min CN=81 Runoff=9.7 cfs 0.71 af

Subcatchment PR-8: Subcat PR-8 Runoff Area=6.49 ac 42.77% Impervious Runoff Depth=0.72"
Flow Length=1,020' Tc=10.1 min CN=77 Runoff=4.4 cfs 0.39 af

Subcatchment PR-9: Subcat PR-9 Runoff Area=1.41 ac 0.00% Impervious Runoff Depth=0.41"
Flow Length=88' Tc=6.0 min CN=69 Runoff=0.5 cfs 0.05 af

Reach 1R: Thru PR-15 Avg. Flow Depth=0.09' Max Vel=0.51 fps Inflow=0.2 cfs 0.03 af
n=0.080 L=492.7' S=0.0218 '/' Capacity=75.3 cfs Outflow=0.1 cfs 0.03 af

Reach 2R: Thru PR-17 Avg. Flow Depth=0.10' Max Vel=1.20 fps Inflow=0.8 cfs 0.27 af
n=0.035 L=365.0' S=0.0218 '/' Capacity=66.7 cfs Outflow=0.7 cfs 0.27 af

Reach 4R: Swale Avg. Flow Depth=0.07' Max Vel=2.67 fps Inflow=0.6 cfs 0.18 af
n=0.025 L=253.0' S=0.0751 '/' Capacity=948.3 cfs Outflow=0.6 cfs 0.18 af

Reach 5R: Swale to P1 Avg. Flow Depth=0.16' Max Vel=5.08 fps Inflow=2.9 cfs 1.18 af
n=0.022 L=139.0' S=0.0770 '/' Capacity=937.6 cfs Outflow=2.9 cfs 1.18 af

Reach 6R: Swale Avg. Flow Depth=0.09' Max Vel=2.87 fps Inflow=0.8 cfs 0.22 af
n=0.025 L=413.0' S=0.0642 '/' Capacity=876.6 cfs Outflow=0.8 cfs 0.22 af

Reach 7R: Swale Avg. Flow Depth=0.11' Max Vel=2.75 fps Inflow=1.0 cfs 0.71 af
n=0.025 L=766.0' S=0.0444 '/' Capacity=729.1 cfs Outflow=1.0 cfs 0.71 af

Reach 13R: Culvert #2 to #1 Avg. Flow Depth=0.69' Max Vel=1.97 fps Inflow=6.4 cfs 2.05 af
n=0.080 L=739.9' S=0.0289 '/' Capacity=186.3 cfs Outflow=6.2 cfs 2.05 af

Reach 15R: Culvert #1 to DP Avg. Flow Depth=0.54' Max Vel=2.45 fps Inflow=7.7 cfs 2.34 af
n=0.080 L=601.3' S=0.0576 '/' Capacity=363.8 cfs Outflow=7.6 cfs 2.34 af

Reach 16R: Thru PR-14 Avg. Flow Depth=0.33' Max Vel=0.96 fps Inflow=1.9 cfs 0.50 af
n=0.080 L=1,536.2' S=0.0155 '/' Capacity=136.1 cfs Outflow=1.2 cfs 0.50 af

Reach 17R: PR12 Culvert to Swale Avg. Flow Depth=0.03' Max Vel=0.48 fps Inflow=0.3 cfs 0.03 af
n=0.050 L=741.0' S=0.0219 '/' Capacity=1,023.2 cfs Outflow=0.1 cfs 0.03 af

Reach 21R: Thru 21 Avg. Flow Depth=0.03' Max Vel=0.51 fps Inflow=0.2 cfs 0.46 af
n=0.050 L=398.0' S=0.0251 '/' Capacity=1,094.4 cfs Outflow=0.2 cfs 0.46 af

Reach 22R: Thru PR-14 Avg. Flow Depth=0.27' Max Vel=0.94 fps Inflow=0.9 cfs 0.35 af
n=0.080 L=1,077.9' S=0.0190 '/' Capacity=151.0 cfs Outflow=0.9 cfs 0.35 af

Pond 1P: Primary Detention Peak Elev=391.28' Storage=24,814 cf Inflow=3.9 cfs 1.64 af
Primary=2.0 cfs 1.63 af Secondary=0.0 cfs 0.00 af Outflow=2.0 cfs 1.63 af

Pond 2P: Left Side Basin Peak Elev=383.56' Storage=3,279 cf Inflow=2.0 cfs 1.64 af
Primary=2.0 cfs 1.63 af Secondary=0.0 cfs 0.00 af Outflow=2.0 cfs 1.63 af

Pond 3P: Sand Filter #3 Peak Elev=443.60' Storage=1,165 cf Inflow=1.9 cfs 0.18 af
Primary=0.6 cfs 0.18 af Secondary=0.0 cfs 0.00 af Outflow=0.6 cfs 0.18 af

Pond 4P: Sand Filter #4 Peak Elev=449.24' Storage=1,778 cf Inflow=2.8 cfs 0.22 af
Primary=0.8 cfs 0.22 af Secondary=0.0 cfs 0.00 af Outflow=0.8 cfs 0.22 af

Pond 5P: Sand Filter #5 Peak Elev=451.05' Storage=11,437 cf Inflow=9.7 cfs 0.71 af
Primary=1.0 cfs 0.71 af Secondary=0.0 cfs 0.00 af Outflow=1.0 cfs 0.71 af

Pond 6P: Sand Filter #6 Peak Elev=404.14' Storage=5,389 cf Inflow=4.4 cfs 0.39 af
Primary=0.7 cfs 0.39 af Secondary=0.0 cfs 0.00 af Outflow=0.7 cfs 0.39 af

Pond 7P: Sand Filter #7 Peak Elev=446.75' Storage=2,918 cf Inflow=2.4 cfs 0.20 af
Primary=0.3 cfs 0.20 af Secondary=0.0 cfs 0.00 af Outflow=0.3 cfs 0.20 af

Pond 8P: Amenity Basin Peak Elev=437.35' Storage=2,465 cf Inflow=3.0 cfs 0.22 af
Primary=0.7 cfs 0.22 af Secondary=0.0 cfs 0.00 af Outflow=0.7 cfs 0.22 af

Pond 9P: Cluster E Basin Peak Elev=445.97' Storage=13,189 cf Inflow=6.4 cfs 0.46 af
Primary=0.2 cfs 0.46 af Secondary=0.0 cfs 0.00 af Outflow=0.2 cfs 0.46 af

Pond 10P: Cluster D Basin Peak Elev=455.77' Storage=4,071 cf Inflow=4.2 cfs 0.35 af
Primary=0.9 cfs 0.35 af Secondary=0.0 cfs 0.00 af Outflow=0.9 cfs 0.35 af

Pond 11P: Sand Filter #11 Peak Elev=453.85' Storage=2,053 cf Inflow=1.7 cfs 0.14 af
Primary=0.3 cfs 0.14 af Secondary=0.0 cfs 0.00 af Outflow=0.3 cfs 0.14 af

Pond 13P: Stone Level Spreader Peak Elev=383.10' Storage=59 cf Inflow=2.0 cfs 1.63 af
Outflow=2.0 cfs 1.63 af

Pond C12: PR-15 culvert Peak Elev=448.90' Storage=0 cf Inflow=0.3 cfs 0.03 af
36.0" x 36.0" Box Culvert w/ 0.5" inside fill n=0.013 L=53.0' S=0.0498 '/' Outflow=0.3 cfs 0.03 af

Pond C15: PR-15 culvert Peak Elev=456.64' Storage=27 cf Inflow=1.3 cfs 0.16 af
36.0" x 36.0" Box Culvert w/ 6.0" inside fill n=0.013 L=54.0' S=0.0211 '/' Outflow=1.3 cfs 0.16 af

Pond C16: PR-16 culvert Peak Elev=467.91' Storage=143 cf Inflow=0.3 cfs 0.03 af
36.0" x 36.0" Box Culvert w/ 6.0" inside fill n=0.013 L=54.0' S=0.0135 '/' Outflow=0.2 cfs 0.03 af

Pond C17: PR-17 culvert Peak Elev=458.38' Inflow=0.9 cfs 0.34 af
24.0" Round Culvert n=0.013 L=138.0' S=0.0217 '/' Outflow=0.9 cfs 0.34 af

Pond C4: CULVERT #4 Peak Elev=410.32' Storage=22 cf Inflow=2.9 cfs 1.18 af
60.0" x 42.0" Box Culvert n=0.013 L=50.0' S=0.0600 '/' Outflow=2.9 cfs 1.18 af

Pond WC1: Wetland Cross Culvert #1 Peak Elev=410.30' Storage=5 cf Inflow=7.5 cfs 2.27 af
60.0" x 48.0" Box Culvert w/ 6.0" inside fill n=0.030 L=46.0' S=0.0600 '/' Outflow=7.5 cfs 2.27 af

Pond WC2: Wetland Cross Culvert #2 Peak Elev=432.22' Storage=204 cf Inflow=6.2 cfs 1.56 af
60.0" x 48.0" Box Culvert w/ 6.0" inside fill n=0.030 L=50.0' S=0.0076 '/' Outflow=6.1 cfs 1.56 af

Link DP-1: Existing 18" Culvert Inflow=7.8 cfs 4.03 af
Primary=7.8 cfs 4.03 af

Link DP-2: Existing 12" Culvert Inflow=0.3 cfs 0.08 af
Primary=0.3 cfs 0.08 af

Link DP-3: Hovey Road Inflow=1.0 cfs 0.39 af
Primary=1.0 cfs 0.39 af

Link DP-4: Spring Road Inflow=2.0 cfs 0.20 af
Primary=2.0 cfs 0.20 af

Link DP-5: Offsite Inflow=0.5 cfs 0.05 af
Primary=0.5 cfs 0.05 af

Link DP-6: North Hovey Road Inflow=1.1 cfs 0.11 af
Primary=1.1 cfs 0.11 af

Link OS-2: 2017 Cemetery Basin Outfall Manual Hydrograph Inflow=0.2 cfs 0.12 af
Area= 2.53 ac 31.91% Imperv. Primary=0.2 cfs 0.12 af

Link OS-3: 2010 Cemetery Basin Outfall Manual Hydrograph Inflow=0.6 cfs 0.15 af
Area= 1.67 ac 29.54% Imperv. Primary=0.6 cfs 0.15 af

Total Runoff Area = 100.51 ac Runoff Volume = 4.61 af Average Runoff Depth = 0.55"
84.20% Pervious = 84.63 ac 15.80% Impervious = 15.88 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 OS-1: Offsite Drainage 1 Runoff Area=6.35 ac 0.00% Impervious Runoff Depth=0.26"
Flow Length=904' Tc=19.2 min CN=58 Runoff=0.6 cfs 0.14 af

Subcatchment PR-1: Subcat PR-1 Runoff Area=5.91 ac 2.69% Impervious Runoff Depth=0.32"
Flow Length=835' Tc=9.4 min CN=60 Runoff=0.9 cfs 0.16 af

Subcatchment PR-10: Subcat PR-10 Runoff Area=4.35 ac 30.94% Impervious Runoff Depth=0.83"
Tc=6.0 min CN=73 Runoff=3.9 cfs 0.30 af

Subcatchment PR-11: Subcat PR-11 Runoff Area=2.10 ac 27.07% Impervious Runoff Depth=1.15"
Flow Length=507' Tc=8.8 min UI Adjusted CN=79 Runoff=2.5 cfs 0.20 af

Subcatchment PR-12: Subcat PR-12 Runoff Area=0.67 ac 0.00% Impervious Runoff Depth=0.78"
Flow Length=231' Tc=6.1 min CN=72 Runoff=0.5 cfs 0.04 af

Subcatchment PR-13: Subcat PR-13 Runoff Area=2.69 ac 0.01% Impervious Runoff Depth=0.73"
Flow Length=359' Tc=7.4 min CN=71 Runoff=1.9 cfs 0.16 af

Subcatchment PR-14: Subcat PR-14 Runoff Area=10.64 ac 0.00% Impervious Runoff Depth=0.83"
Flow Length=1,659' Tc=21.2 min CN=73 Runoff=6.2 cfs 0.73 af

Subcatchment PR-15: Subcat PR-15 Runoff Area=3.14 ac 0.00% Impervious Runoff Depth=0.78"
Flow Length=493' Tc=12.4 min CN=72 Runoff=2.1 cfs 0.20 af

Subcatchment PR-16: Subcat PR-16 Runoff Area=0.68 ac 0.00% Impervious Runoff Depth=0.73"
Flow Length=250' Tc=7.1 min CN=71 Runoff=0.5 cfs 0.04 af

Subcatchment PR-17: Subcat PR-17 Runoff Area=1.75 ac 0.00% Impervious Runoff Depth=0.73"
Flow Length=523' Tc=11.4 min CN=71 Runoff=1.1 cfs 0.11 af

Subcatchment PR-18: Subcat PR-18 Runoff Area=2.25 ac 44.53% Impervious Runoff Depth=1.55"
Tc=6.0 min CN=85 Runoff=4.1 cfs 0.29 af

Subcatchment PR-19: Subcat PR-19 Runoff Area=5.06 ac 42.09% Impervious Runoff Depth=1.48"
Flow Length=1,393' Tc=6.0 min CN=84 Runoff=8.7 cfs 0.62 af

Subcatchment PR-2: Subcat PR-2 Runoff Area=4.31 ac 3.27% Impervious Runoff Depth=0.35"
Flow Length=782' Tc=7.8 min CN=61 Runoff=0.8 cfs 0.12 af

Subcatchment PR-20: Subcat PR-20 Runoff Area=5.20 ac 29.62% Impervious Runoff Depth=1.15"
Flow Length=1,180' Tc=9.1 min UI Adjusted CN=79 Runoff=6.2 cfs 0.50 af

Subcatchment PR-21: Subcat PR-21 Runoff Area=6.46 ac 0.01% Impervious Runoff Depth=0.64"
Flow Length=2,124' Tc=30.1 min CN=69 Runoff=2.3 cfs 0.35 af

Subcatchment PR-22: Subcat PR-22 Runoff Area=4.76 ac 0.05% Impervious Runoff Depth=0.78"
Flow Length=321' Tc=10.1 min CN=72 Runoff=3.4 cfs 0.31 af

Subcatchment PR-23: Subcat PR-23 Runoff Area=2.76 ac 12.60% Impervious Runoff Depth=0.48"
Flow Length=348' Tc=7.3 min CN=65 Runoff=1.1 cfs 0.11 af

Subcatchment PR-24: Subcat PR-24 Runoff Area=0.41 ac 0.00% Impervious Runoff Depth=0.35"
Tc=6.0 min CN=61 Runoff=0.1 cfs 0.01 af

Subcatchment PR-3: Subcat PR-3 Runoff Area=1.14 ac 0.00% Impervious Runoff Depth=0.78"
Flow Length=150' Tc=6.0 min CN=72 Runoff=0.9 cfs 0.07 af

Subcatchment PR-4: Subcat PR-4 Runoff Area=3.76 ac 0.00% Impervious Runoff Depth=0.41"
Flow Length=766' Tc=6.0 min CN=63 Runoff=1.1 cfs 0.13 af

Subcatchment PR-5: Subcat PR-5 Runoff Area=4.77 ac 28.74% Impervious Runoff Depth=0.69"
Tc=6.0 min UI Adjusted CN=70 Runoff=3.3 cfs 0.27 af

Subcatchment PR-6: Subcat PR-6 Runoff Area=4.22 ac 35.70% Impervious Runoff Depth=0.93"
Tc=6.0 min CN=75 Runoff=4.3 cfs 0.33 af

Subcatchment PR-7: Subcat PR-7 Runoff Area=9.26 ac 32.30% Impervious Runoff Depth=1.28"
Flow Length=1,294' Tc=6.0 min CN=81 Runoff=13.7 cfs 0.98 af

Subcatchment PR-8: Subcat PR-8 Runoff Area=6.49 ac 42.77% Impervious Runoff Depth=1.04"
Flow Length=1,020' Tc=10.1 min CN=77 Runoff=6.6 cfs 0.56 af

Subcatchment PR-9: Subcat PR-9 Runoff Area=1.41 ac 0.00% Impervious Runoff Depth=0.64"
Flow Length=88' Tc=6.0 min CN=69 Runoff=0.9 cfs 0.08 af

Reach 1R: Thru PR-15 Avg. Flow Depth=0.13' Max Vel=0.65 fps Inflow=0.3 cfs 0.04 af
n=0.080 L=492.7' S=0.0218 '/' Capacity=75.3 cfs Outflow=0.3 cfs 0.04 af

Reach 2R: Thru PR-17 Avg. Flow Depth=0.10' Max Vel=1.23 fps Inflow=0.8 cfs 0.30 af
n=0.035 L=365.0' S=0.0218 '/' Capacity=66.7 cfs Outflow=0.7 cfs 0.30 af

Reach 4R: Swale Avg. Flow Depth=0.07' Max Vel=2.67 fps Inflow=0.6 cfs 0.27 af
n=0.025 L=253.0' S=0.0751 '/' Capacity=948.3 cfs Outflow=0.6 cfs 0.27 af

Reach 5R: Swale to P1 Avg. Flow Depth=0.28' Max Vel=6.89 fps Inflow=7.3 cfs 1.71 af
n=0.022 L=139.0' S=0.0770 '/' Capacity=937.6 cfs Outflow=7.3 cfs 1.71 af

Reach 6R: Swale Avg. Flow Depth=0.09' Max Vel=2.87 fps Inflow=0.8 cfs 0.33 af
n=0.025 L=413.0' S=0.0642 '/' Capacity=876.6 cfs Outflow=0.8 cfs 0.33 af

Reach 7R: Swale Avg. Flow Depth=0.29' Max Vel=4.69 fps Inflow=5.3 cfs 0.98 af
n=0.025 L=766.0' S=0.0444 '/' Capacity=729.1 cfs Outflow=5.2 cfs 0.98 af

Reach 13R: Culvert #2 to #1 Avg. Flow Depth=0.86' Max Vel=2.21 fps Inflow=9.8 cfs 2.84 af
n=0.080 L=739.9' S=0.0289 '/' Capacity=186.3 cfs Outflow=9.5 cfs 2.84 af

Reach 15R: Culvert #1 to DP Avg. Flow Depth=0.70' Max Vel=2.82 fps Inflow=12.4 cfs 3.32 af
n=0.080 L=601.3' S=0.0576 '/' Capacity=363.8 cfs Outflow=12.3 cfs 3.32 af

Reach 16R: Thru PR-14 Avg. Flow Depth=0.45' Max Vel=1.13 fps Inflow=3.3 cfs 0.65 af
n=0.080 L=1,536.2' S=0.0155 '/' Capacity=136.1 cfs Outflow=2.0 cfs 0.65 af

Reach 17R: PR12 Culvert to Swale Avg. Flow Depth=0.04' Max Vel=0.57 fps Inflow=0.5 cfs 0.04 af
n=0.050 L=741.0' S=0.0219 '/' Capacity=1,023.2 cfs Outflow=0.3 cfs 0.04 af

Reach 21R: Thru 21 Avg. Flow Depth=0.04' Max Vel=0.51 fps Inflow=0.2 cfs 0.62 af
n=0.050 L=398.0' S=0.0251 '/' Capacity=1,094.4 cfs Outflow=0.2 cfs 0.62 af

Reach 22R: Thru PR-14 Avg. Flow Depth=0.35' Max Vel=1.09 fps Inflow=1.8 cfs 0.50 af
n=0.080 L=1,077.9' S=0.0190 '/' Capacity=151.0 cfs Outflow=1.4 cfs 0.50 af

Pond 1P: Primary Detention Peak Elev=391.61' Storage=31,742 cf Inflow=8.7 cfs 2.40 af
Primary=2.9 cfs 2.39 af Secondary=0.0 cfs 0.00 af Outflow=2.9 cfs 2.39 af

Pond 2P: Left Side Basin Peak Elev=383.67' Storage=3,944 cf Inflow=2.9 cfs 2.40 af
Primary=2.9 cfs 2.40 af Secondary=0.0 cfs 0.00 af Outflow=2.9 cfs 2.40 af

Pond 3P: Sand Filter #3 Peak Elev=444.24' Storage=2,921 cf Inflow=3.3 cfs 0.27 af
Primary=0.6 cfs 0.27 af Secondary=0.0 cfs 0.00 af Outflow=0.6 cfs 0.27 af

Pond 4P: Sand Filter #4 Peak Elev=449.74' Storage=3,679 cf Inflow=4.3 cfs 0.33 af
Primary=0.8 cfs 0.33 af Secondary=0.0 cfs 0.00 af Outflow=0.8 cfs 0.33 af

Pond 5P: Sand Filter #5 Peak Elev=451.32' Storage=13,101 cf Inflow=13.7 cfs 0.98 af
Primary=5.3 cfs 0.98 af Secondary=0.0 cfs 0.00 af Outflow=5.3 cfs 0.98 af

Pond 6P: Sand Filter #6 Peak Elev=405.04' Storage=9,526 cf Inflow=6.6 cfs 0.56 af
Primary=0.7 cfs 0.56 af Secondary=0.0 cfs 0.00 af Outflow=0.7 cfs 0.56 af

Pond 7P: Sand Filter #7 Peak Elev=447.29' Storage=5,552 cf Inflow=3.9 cfs 0.30 af
Primary=0.3 cfs 0.30 af Secondary=0.0 cfs 0.00 af Outflow=0.3 cfs 0.30 af

Pond 8P: Amenity Basin Peak Elev=437.76' Storage=3,870 cf Inflow=4.1 cfs 0.29 af
Primary=0.7 cfs 0.29 af Secondary=0.0 cfs 0.00 af Outflow=0.7 cfs 0.29 af

Pond 9P: Cluster E Basin Peak Elev=446.50' Storage=18,957 cf Inflow=8.7 cfs 0.62 af
Primary=0.2 cfs 0.62 af Secondary=0.0 cfs 0.00 af Outflow=0.2 cfs 0.62 af

Pond 10P: Cluster D Basin Peak Elev=456.30' Storage=6,459 cf Inflow=6.2 cfs 0.50 af
Primary=1.8 cfs 0.50 af Secondary=0.0 cfs 0.00 af Outflow=1.8 cfs 0.50 af

Pond 11P: Sand Filter #11 Peak Elev=454.21' Storage=3,370 cf Inflow=2.5 cfs 0.20 af
Primary=0.3 cfs 0.20 af Secondary=0.0 cfs 0.00 af Outflow=0.3 cfs 0.20 af

Pond 13P: Stone Level Spreader Peak Elev=383.13' Storage=61 cf Inflow=2.9 cfs 2.40 af
Outflow=2.9 cfs 2.39 af

Pond C12: PR-15 culvert Peak Elev=448.90' Storage=0 cf Inflow=0.5 cfs 0.04 af
36.0" x 36.0" Box Culvert w/ 0.5" inside fill n=0.013 L=53.0' S=0.0498 '/' Outflow=0.5 cfs 0.04 af

Pond C15: PR-15 culvert Peak Elev=456.75' Storage=42 cf Inflow=2.2 cfs 0.25 af
36.0" x 36.0" Box Culvert w/ 6.0" inside fill n=0.013 L=54.0' S=0.0211 '/' Outflow=2.2 cfs 0.25 af

Pond C16: PR-16 culvert Peak Elev=467.95' Storage=219 cf Inflow=0.5 cfs 0.04 af
36.0" x 36.0" Box Culvert w/ 6.0" inside fill n=0.013 L=54.0' S=0.0135 '/' Outflow=0.3 cfs 0.04 af

Pond C17: PR-17 culvert Peak Elev=458.43' Inflow=1.1 cfs 0.40 af
24.0" Round Culvert n=0.013 L=138.0' S=0.0217 '/' Outflow=1.1 cfs 0.40 af

Pond C4: CULVERT #4 Peak Elev=410.59' Storage=50 cf Inflow=7.3 cfs 1.71 af
60.0" x 42.0" Box Culvert n=0.013 L=50.0' S=0.0600 '/' Outflow=7.3 cfs 1.71 af

Pond WC1: Wetland Cross Culvert #1 Peak Elev=410.52' Storage=9 cf Inflow=11.8 cfs 3.18 af
60.0" x 48.0" Box Culvert w/ 6.0" inside fill n=0.030 L=46.0' S=0.0600 '/' Outflow=11.8 cfs 3.18 af

Pond WC2: Wetland Cross Culvert #2 Peak Elev=432.45' Storage=330 cf Inflow=9.5 cfs 2.17 af
60.0" x 48.0" Box Culvert w/ 6.0" inside fill n=0.030 L=50.0' S=0.0076 '/' Outflow=9.4 cfs 2.17 af

Link DP-1: Existing 18" Culvert Inflow=12.9 cfs 5.82 af
Primary=12.9 cfs 5.82 af

Link DP-2: Existing 12" Culvert Inflow=0.9 cfs 0.16 af
Primary=0.9 cfs 0.16 af

Link DP-3: Hovey Road Inflow=1.4 cfs 0.58 af
Primary=1.4 cfs 0.58 af

Link DP-4: Spring Road Inflow=3.4 cfs 0.31 af
Primary=3.4 cfs 0.31 af

Link DP-5: Offsite Inflow=0.9 cfs 0.08 af
Primary=0.9 cfs 0.08 af

Link DP-6: North Hovey Road Inflow=1.9 cfs 0.16 af
Primary=1.9 cfs 0.16 af

Link OS-2: 2017 Cemetery Basin Outfall Manual Hydrograph Inflow=0.3 cfs 0.14 af
Area= 2.53 ac 31.91% Imperv. Primary=0.3 cfs 0.14 af

Link OS-3: 2010 Cemetery Basin Outfall Manual Hydrograph Inflow=0.6 cfs 0.15 af
Area= 1.67 ac 29.54% Imperv. Primary=0.6 cfs 0.15 af

Total Runoff Area = 100.51 ac Runoff Volume = 6.82 af Average Runoff Depth = 0.81"
84.20% Pervious = 84.63 ac 15.80% Impervious = 15.88 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 OS-1: Offsite Drainage 1 Runoff Area=6.35 ac 0.00% Impervious Runoff Depth=0.88"
Flow Length=904' Tc=19.2 min CN=58 Runoff=3.6 cfs 0.47 af

Subcatchment PR-1: Subcat PR-1 Runoff Area=5.91 ac 2.69% Impervious Runoff Depth=1.00"
Flow Length=835' Tc=9.4 min CN=60 Runoff=5.2 cfs 0.49 af

Subcatchment PR-10: Subcat PR-10 Runoff Area=4.35 ac 30.94% Impervious Runoff Depth=1.87"
Tc=6.0 min CN=73 Runoff=9.4 cfs 0.68 af

Subcatchment PR-11: Subcat PR-11 Runoff Area=2.10 ac 27.07% Impervious Runoff Depth=2.34"
Flow Length=507' Tc=8.8 min UI Adjusted CN=79 Runoff=5.2 cfs 0.41 af

Subcatchment PR-12: Subcat PR-12 Runoff Area=0.67 ac 0.00% Impervious Runoff Depth=1.79"
Flow Length=231' Tc=6.1 min CN=72 Runoff=1.4 cfs 0.10 af

Subcatchment PR-13: Subcat PR-13 Runoff Area=2.69 ac 0.01% Impervious Runoff Depth=1.72"
Flow Length=359' Tc=7.4 min CN=71 Runoff=5.0 cfs 0.38 af

Subcatchment PR-14: Subcat PR-14 Runoff Area=10.64 ac 0.00% Impervious Runoff Depth=1.87"
Flow Length=1,659' Tc=21.2 min CN=73 Runoff=15.0 cfs 1.65 af

Subcatchment PR-15: Subcat PR-15 Runoff Area=3.14 ac 0.00% Impervious Runoff Depth=1.79"
Flow Length=493' Tc=12.4 min CN=72 Runoff=5.2 cfs 0.47 af

Subcatchment PR-16: Subcat PR-16 Runoff Area=0.68 ac 0.00% Impervious Runoff Depth=1.72"
Flow Length=250' Tc=7.1 min CN=71 Runoff=1.3 cfs 0.10 af

Subcatchment PR-17: Subcat PR-17 Runoff Area=1.75 ac 0.00% Impervious Runoff Depth=1.72"
Flow Length=523' Tc=11.4 min CN=71 Runoff=2.9 cfs 0.25 af

Subcatchment PR-18: Subcat PR-18 Runoff Area=2.25 ac 44.53% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=85 Runoff=7.5 cfs 0.54 af

Subcatchment PR-19: Subcat PR-19 Runoff Area=5.06 ac 42.09% Impervious Runoff Depth=2.78"
Flow Length=1,393' Tc=6.0 min CN=84 Runoff=16.4 cfs 1.17 af

Subcatchment PR-2: Subcat PR-2 Runoff Area=4.31 ac 3.27% Impervious Runoff Depth=1.06"
Flow Length=782' Tc=7.8 min CN=61 Runoff=4.3 cfs 0.38 af

Subcatchment PR-20: Subcat PR-20 Runoff Area=5.20 ac 29.62% Impervious Runoff Depth=2.34"
Flow Length=1,180' Tc=9.1 min UI Adjusted CN=79 Runoff=12.8 cfs 1.02 af

Subcatchment PR-21: Subcat PR-21 Runoff Area=6.46 ac 0.01% Impervious Runoff Depth=1.57"
Flow Length=2,124' Tc=30.1 min CN=69 Runoff=6.5 cfs 0.85 af

Subcatchment PR-22: Subcat PR-22 Runoff Area=4.76 ac 0.05% Impervious Runoff Depth=1.79"
Flow Length=321' Tc=10.1 min CN=72 Runoff=8.5 cfs 0.71 af

Subcatchment PR-23: Subcat PR-23 Runoff Area=2.76 ac 12.60% Impervious Runoff Depth=1.31"
Flow Length=348' Tc=7.3 min CN=65 Runoff=3.7 cfs 0.30 af

Subcatchment PR-24: Subcat PR-24 Runoff Area=0.41 ac 0.00% Impervious Runoff Depth=1.06"
Tc=6.0 min CN=61 Runoff=0.4 cfs 0.04 af

Subcatchment PR-3: Subcat PR-3 Runoff Area=1.14 ac 0.00% Impervious Runoff Depth=1.79"
Flow Length=150' Tc=6.0 min CN=72 Runoff=2.3 cfs 0.17 af

Subcatchment PR-4: Subcat PR-4 Runoff Area=3.76 ac 0.00% Impervious Runoff Depth=1.18"
Flow Length=766' Tc=6.0 min CN=63 Runoff=4.7 cfs 0.37 af

Subcatchment PR-5: Subcat PR-5 Runoff Area=4.77 ac 28.74% Impervious Runoff Depth=1.65"
Tc=6.0 min UI Adjusted CN=70 Runoff=8.9 cfs 0.65 af

Subcatchment PR-6: Subcat PR-6 Runoff Area=4.22 ac 35.70% Impervious Runoff Depth=2.02"
Tc=6.0 min CN=75 Runoff=9.9 cfs 0.71 af

Subcatchment PR-7: Subcat PR-7 Runoff Area=9.26 ac 32.30% Impervious Runoff Depth=2.51"
Flow Length=1,294' Tc=6.0 min CN=81 Runoff=27.3 cfs 1.94 af

Subcatchment PR-8: Subcat PR-8 Runoff Area=6.49 ac 42.77% Impervious Runoff Depth=2.18"
Flow Length=1,020' Tc=10.1 min CN=77 Runoff=14.4 cfs 1.18 af

Subcatchment PR-9: Subcat PR-9 Runoff Area=1.41 ac 0.00% Impervious Runoff Depth=1.57"
Flow Length=88' Tc=6.0 min CN=69 Runoff=2.5 cfs 0.19 af

Reach 1R: Thru PR-15 Avg. Flow Depth=0.24' Max Vel=0.96 fps Inflow=1.0 cfs 0.10 af
n=0.080 L=492.7' S=0.0218 '/' Capacity=75.3 cfs Outflow=0.8 cfs 0.10 af

Reach 2R: Thru PR-17 Avg. Flow Depth=0.20' Max Vel=1.82 fps Inflow=2.6 cfs 0.68 af
n=0.035 L=365.0' S=0.0218 '/' Capacity=66.7 cfs Outflow=2.6 cfs 0.68 af

Reach 4R: Swale Avg. Flow Depth=0.18' Max Vel=4.70 fps Inflow=3.0 cfs 0.65 af
n=0.025 L=253.0' S=0.0751 '/' Capacity=948.3 cfs Outflow=3.0 cfs 0.65 af

Reach 5R: Swale to P1 Avg. Flow Depth=0.58' Max Vel=10.42 fps Inflow=28.9 cfs 3.67 af
n=0.022 L=139.0' S=0.0770 '/' Capacity=937.6 cfs Outflow=28.9 cfs 3.67 af

Reach 6R: Swale Avg. Flow Depth=0.24' Max Vel=5.15 fps Inflow=4.7 cfs 0.71 af
n=0.025 L=413.0' S=0.0642 '/' Capacity=876.6 cfs Outflow=4.7 cfs 0.71 af

Reach 7R: Swale Avg. Flow Depth=0.64' Max Vel=7.34 fps Inflow=24.2 cfs 1.94 af
n=0.025 L=766.0' S=0.0444 '/' Capacity=729.1 cfs Outflow=23.3 cfs 1.94 af

Reach 13R: Culvert #2 to #1 Avg. Flow Depth=1.66' Max Vel=3.16 fps Inflow=36.3 cfs 5.97 af
n=0.080 L=739.9' S=0.0289 '/' Capacity=186.3 cfs Outflow=35.6 cfs 5.97 af

Reach 15R: Culvert #1 to DP Avg. Flow Depth=1.35' Max Vel=4.03 fps Inflow=45.3 cfs 7.29 af
n=0.080 L=601.3' S=0.0576 '/' Capacity=363.8 cfs Outflow=45.0 cfs 7.29 af

Reach 16R: Thru PR-14 Avg. Flow Depth=0.88' Max Vel=1.64 fps Inflow=9.6 cfs 1.49 af
n=0.080 L=1,536.2' S=0.0155 '/' Capacity=136.1 cfs Outflow=7.2 cfs 1.49 af

Reach 17R: PR12 Culvert to Swale Avg. Flow Depth=0.09' Max Vel=0.86 fps Inflow=1.4 cfs 0.10 af
n=0.050 L=741.0' S=0.0219 '/' Capacity=1,023.2 cfs Outflow=0.8 cfs 0.10 af

Reach 21R: Thru 21 Avg. Flow Depth=0.24' Max Vel=1.63 fps Inflow=5.2 cfs 1.17 af
n=0.050 L=398.0' S=0.0251 '/' Capacity=1,094.4 cfs Outflow=5.0 cfs 1.17 af

Reach 22R: Thru PR-14 Avg. Flow Depth=0.83' Max Vel=1.76 fps Inflow=10.3 cfs 1.02 af
n=0.080 L=1,077.9' S=0.0190 '/' Capacity=151.0 cfs Outflow=7.3 cfs 1.02 af

Pond 1P: Primary Detention Peak Elev=393.01' Storage=63,098 cf Inflow=39.2 cfs 5.23 af
Primary=12.3 cfs 5.22 af Secondary=0.0 cfs 0.00 af Outflow=12.3 cfs 5.22 af

Pond 2P: Left Side Basin Peak Elev=384.35' Storage=8,327 cf Inflow=12.3 cfs 5.26 af
Primary=12.1 cfs 5.25 af Secondary=0.0 cfs 0.00 af Outflow=12.1 cfs 5.25 af

Pond 3P: Sand Filter #3 Peak Elev=445.71' Storage=7,945 cf Inflow=8.9 cfs 0.65 af
Primary=3.0 cfs 0.65 af Secondary=0.0 cfs 0.00 af Outflow=3.0 cfs 0.65 af

Pond 4P: Sand Filter #4 Peak Elev=450.63' Storage=7,531 cf Inflow=9.9 cfs 0.71 af
Primary=4.7 cfs 0.71 af Secondary=0.0 cfs 0.00 af Outflow=4.7 cfs 0.71 af

Pond 5P: Sand Filter #5 Peak Elev=451.78' Storage=16,072 cf Inflow=27.3 cfs 1.94 af
Primary=24.2 cfs 1.94 af Secondary=0.0 cfs 0.00 af Outflow=24.2 cfs 1.94 af

Pond 6P: Sand Filter #6 Peak Elev=405.66' Storage=12,974 cf Inflow=14.4 cfs 1.18 af
Primary=9.6 cfs 1.18 af Secondary=0.0 cfs 0.00 af Outflow=9.6 cfs 1.18 af

Pond 7P: Sand Filter #7 Peak Elev=447.77' Storage=8,059 cf Inflow=9.4 cfs 0.68 af
Primary=4.4 cfs 0.68 af Secondary=0.0 cfs 0.00 af Outflow=4.4 cfs 0.68 af

Pond 8P: Amenity Basin Peak Elev=438.14' Storage=5,270 cf Inflow=7.5 cfs 0.54 af
Primary=4.7 cfs 0.54 af Secondary=0.0 cfs 0.00 af Outflow=4.7 cfs 0.54 af

Pond 9P: Cluster E Basin Peak Elev=446.85' Storage=22,921 cf Inflow=16.4 cfs 1.17 af
Primary=5.2 cfs 1.17 af Secondary=0.0 cfs 0.00 af Outflow=5.2 cfs 1.17 af

Pond 10P: Cluster D Basin Peak Elev=456.65' Storage=8,197 cf Inflow=12.8 cfs 1.02 af
Primary=10.3 cfs 1.02 af Secondary=0.0 cfs 0.00 af Outflow=10.3 cfs 1.02 af

Pond 11P: Sand Filter #11 Peak Elev=454.69' Storage=6,036 cf Inflow=5.2 cfs 0.41 af
Primary=2.0 cfs 0.41 af Secondary=0.0 cfs 0.00 af Outflow=2.0 cfs 0.41 af

Pond 13P: Stone Level Spreader Peak Elev=383.32' Storage=71 cf Inflow=12.1 cfs 5.25 af
Outflow=12.1 cfs 5.25 af

Pond C12: PR-15 culvert Peak Elev=448.90' Storage=0 cf Inflow=1.4 cfs 0.10 af
36.0" x 36.0" Box Culvert w/ 0.5" inside fill n=0.013 L=53.0' S=0.0498 '/' Outflow=1.4 cfs 0.10 af

Pond C15: PR-15 culvert Peak Elev=457.10' Storage=96 cf Inflow=5.9 cfs 0.57 af
36.0" x 36.0" Box Culvert w/ 6.0" inside fill n=0.013 L=54.0' S=0.0211 '/' Outflow=5.9 cfs 0.57 af

Pond C16: PR-16 culvert Peak Elev=468.06' Storage=472 cf Inflow=1.3 cfs 0.10 af
36.0" x 36.0" Box Culvert w/ 6.0" inside fill n=0.013 L=54.0' S=0.0135 '/' Outflow=1.0 cfs 0.10 af

Pond C17: PR-17 culvert Peak Elev=458.83' Inflow=3.8 cfs 0.93 af
24.0" Round Culvert n=0.013 L=138.0' S=0.0217 '/' Outflow=3.8 cfs 0.93 af

Pond C4: CULVERT #4 Peak Elev=411.48' Storage=220 cf Inflow=28.9 cfs 3.67 af
60.0" x 42.0" Box Culvert n=0.013 L=50.0' S=0.0600 '/' Outflow=28.9 cfs 3.67 af

Pond WC1: Wetland Cross Culvert #1 Peak Elev=411.60' Storage=84 cf Inflow=42.0 cfs 6.82 af
60.0" x 48.0" Box Culvert w/ 6.0" inside fill n=0.030 L=46.0' S=0.0600 '/' Outflow=42.0 cfs 6.82 af

Pond WC2: Wetland Cross Culvert #2 Peak Elev=433.52' Storage=1,924 cf Inflow=32.4 cfs 4.70 af
60.0" x 48.0" Box Culvert w/ 6.0" inside fill n=0.030 L=50.0' S=0.0076 '/' Outflow=31.6 cfs 4.70 af

Link DP-1: Existing 18" Culvert Inflow=53.0 cfs 12.84 af
Primary=53.0 cfs 12.84 af

Link DP-2: Existing 12" Culvert Inflow=5.2 cfs 0.49 af
Primary=5.2 cfs 0.49 af

Link DP-3: Hovey Road Inflow=7.1 cfs 1.26 af
Primary=7.1 cfs 1.26 af

Link DP-4: Spring Road Inflow=8.5 cfs 0.71 af
Primary=8.5 cfs 0.71 af

Link DP-5: Offsite Inflow=2.5 cfs 0.19 af
Primary=2.5 cfs 0.19 af

Link DP-6: North Hovey Road Inflow=5.0 cfs 0.38 af
Primary=5.0 cfs 0.38 af

Link OS-2: 2017 Cemetery Basin Outfall Manual Hydrograph Inflow=1.9 cfs 0.48 af
Area= 2.53 ac 31.91% Imperv. Primary=1.9 cfs 0.48 af

Link OS-3: 2010 Cemetery Basin Outfall Manual Hydrograph Inflow=0.9 cfs 0.20 af
Area= 1.67 ac 29.54% Imperv. Primary=0.9 cfs 0.20 af

Total Runoff Area = 100.51 ac Runoff Volume = 15.20 af Average Runoff Depth = 1.82"
84.20% Pervious = 84.63 ac 15.80% Impervious = 15.88 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 OS-1: Offsite Drainage 1 Runoff Area=6.35 ac 0.00% Impervious Runoff Depth=1.54"
Flow Length=904' Tc=19.2 min CN=58 Runoff=7.1 cfs 0.82 af

Subcatchment PR-1: Subcat PR-1 Runoff Area=5.91 ac 2.69% Impervious Runoff Depth=1.70"
Flow Length=835' Tc=9.4 min CN=60 Runoff=9.7 cfs 0.84 af

Subcatchment PR-10: Subcat PR-10 Runoff Area=4.35 ac 30.94% Impervious Runoff Depth=2.80"
Tc=6.0 min CN=73 Runoff=14.3 cfs 1.02 af

Subcatchment PR-11: Subcat PR-11 Runoff Area=2.10 ac 27.07% Impervious Runoff Depth=3.37"
Flow Length=507' Tc=8.8 min UI Adjusted CN=79 Runoff=7.5 cfs 0.59 af

Subcatchment PR-12: Subcat PR-12 Runoff Area=0.67 ac 0.00% Impervious Runoff Depth=2.71"
Flow Length=231' Tc=6.1 min CN=72 Runoff=2.1 cfs 0.15 af

Subcatchment PR-13: Subcat PR-13 Runoff Area=2.69 ac 0.01% Impervious Runoff Depth=2.62"
Flow Length=359' Tc=7.4 min CN=71 Runoff=7.8 cfs 0.59 af

Subcatchment PR-14: Subcat PR-14 Runoff Area=10.64 ac 0.00% Impervious Runoff Depth=2.80"
Flow Length=1,659' Tc=21.2 min CN=73 Runoff=22.9 cfs 2.48 af

Subcatchment PR-15: Subcat PR-15 Runoff Area=3.14 ac 0.00% Impervious Runoff Depth=2.71"
Flow Length=493' Tc=12.4 min CN=72 Runoff=8.1 cfs 0.71 af

Subcatchment PR-16: Subcat PR-16 Runoff Area=0.68 ac 0.00% Impervious Runoff Depth=2.62"
Flow Length=250' Tc=7.1 min CN=71 Runoff=2.0 cfs 0.15 af

Subcatchment PR-17: Subcat PR-17 Runoff Area=1.75 ac 0.00% Impervious Runoff Depth=2.62"
Flow Length=523' Tc=11.4 min CN=71 Runoff=4.4 cfs 0.38 af

Subcatchment PR-18: Subcat PR-18 Runoff Area=2.25 ac 44.53% Impervious Runoff Depth=3.97"
Tc=6.0 min CN=85 Runoff=10.3 cfs 0.74 af

Subcatchment PR-19: Subcat PR-19 Runoff Area=5.06 ac 42.09% Impervious Runoff Depth=3.87"
Flow Length=1,393' Tc=6.0 min CN=84 Runoff=22.7 cfs 1.63 af

Subcatchment PR-2: Subcat PR-2 Runoff Area=4.31 ac 3.27% Impervious Runoff Depth=1.78"
Flow Length=782' Tc=7.8 min CN=61 Runoff=7.9 cfs 0.64 af

Subcatchment PR-20: Subcat PR-20 Runoff Area=5.20 ac 29.62% Impervious Runoff Depth=3.37"
Flow Length=1,180' Tc=9.1 min UI Adjusted CN=79 Runoff=18.5 cfs 1.46 af

Subcatchment PR-21: Subcat PR-21 Runoff Area=6.46 ac 0.01% Impervious Runoff Depth=2.44"
Flow Length=2,124' Tc=30.1 min CN=69 Runoff=10.3 cfs 1.31 af

Subcatchment PR-22: Subcat PR-22 Runoff Area=4.76 ac 0.05% Impervious Runoff Depth=2.71"
Flow Length=321' Tc=10.1 min CN=72 Runoff=13.1 cfs 1.07 af

Subcatchment PR-23: Subcat PR-23 Runoff Area=2.76 ac 12.60% Impervious Runoff Depth=2.10"
Flow Length=348' Tc=7.3 min CN=65 Runoff=6.3 cfs 0.48 af

Subcatchment PR-24: Subcat PR-24 Runoff Area=0.41 ac 0.00% Impervious Runoff Depth=1.78"
Tc=6.0 min CN=61 Runoff=0.8 cfs 0.06 af

Subcatchment PR-3: Subcat PR-3 Runoff Area=1.14 ac 0.00% Impervious Runoff Depth=2.71"
Flow Length=150' Tc=6.0 min CN=72 Runoff=3.6 cfs 0.26 af

Subcatchment PR-4: Subcat PR-4 Runoff Area=3.76 ac 0.00% Impervious Runoff Depth=1.94"
Flow Length=766' Tc=6.0 min CN=63 Runoff=8.2 cfs 0.61 af

Subcatchment PR-5: Subcat PR-5 Runoff Area=4.77 ac 28.74% Impervious Runoff Depth=2.53"
Tc=6.0 min UI Adjusted CN=70 Runoff=14.0 cfs 1.01 af

Subcatchment PR-6: Subcat PR-6 Runoff Area=4.22 ac 35.70% Impervious Runoff Depth=2.99"
Tc=6.0 min CN=75 Runoff=14.8 cfs 1.05 af

Subcatchment PR-7: Subcat PR-7 Runoff Area=9.26 ac 32.30% Impervious Runoff Depth=3.57"
Flow Length=1,294' Tc=6.0 min CN=81 Runoff=38.6 cfs 2.75 af

Subcatchment PR-8: Subcat PR-8 Runoff Area=6.49 ac 42.77% Impervious Runoff Depth=3.18"
Flow Length=1,020' Tc=10.1 min CN=77 Runoff=21.0 cfs 1.72 af

Subcatchment PR-9: Subcat PR-9 Runoff Area=1.41 ac 0.00% Impervious Runoff Depth=2.44"
Flow Length=88' Tc=6.0 min CN=69 Runoff=4.0 cfs 0.29 af

Reach 1R: Thru PR-15 Avg. Flow Depth=0.32' Max Vel=1.12 fps Inflow=1.6 cfs 0.15 af
n=0.080 L=492.7' S=0.0218 '/' Capacity=75.3 cfs Outflow=1.4 cfs 0.15 af

Reach 2R: Thru PR-17 Avg. Flow Depth=0.28' Max Vel=2.19 fps Inflow=5.0 cfs 0.89 af
n=0.035 L=365.0' S=0.0218 '/' Capacity=66.7 cfs Outflow=4.9 cfs 0.89 af

Reach 4R: Swale Avg. Flow Depth=0.24' Max Vel=5.54 fps Inflow=4.9 cfs 1.01 af
n=0.025 L=253.0' S=0.0751 '/' Capacity=948.3 cfs Outflow=4.9 cfs 1.01 af

Reach 5R: Swale to P1 Avg. Flow Depth=0.82' Max Vel=12.52 fps Inflow=55.9 cfs 5.41 af
n=0.022 L=139.0' S=0.0770 '/' Capacity=937.6 cfs Outflow=55.9 cfs 5.41 af

Reach 6R: Swale Avg. Flow Depth=0.39' Max Vel=6.69 fps Inflow=10.9 cfs 1.05 af
n=0.025 L=413.0' S=0.0642 '/' Capacity=876.6 cfs Outflow=10.8 cfs 1.05 af

Reach 7R: Swale Avg. Flow Depth=0.80' Max Vel=8.24 fps Inflow=36.1 cfs 2.75 af
n=0.025 L=766.0' S=0.0444 '/' Capacity=729.1 cfs Outflow=35.3 cfs 2.75 af

Reach 13R: Culvert #2 to #1 Avg. Flow Depth=2.17' Max Vel=3.67 fps Inflow=64.8 cfs 8.59 af
n=0.080 L=739.9' S=0.0289 '/' Capacity=186.3 cfs Outflow=63.7 cfs 8.59 af

Reach 15R: Culvert #1 to DP Avg. Flow Depth=1.77' Max Vel=4.69 fps Inflow=80.3 cfs 10.72 af
n=0.080 L=601.3' S=0.0576 '/' Capacity=363.8 cfs Outflow=79.9 cfs 10.72 af

Reach 16R: Thru PR-14 Avg. Flow Depth=1.21' Max Vel=1.94 fps Inflow=17.3 cfs 2.12 af
n=0.080 L=1,536.2' S=0.0155 '/' Capacity=136.1 cfs Outflow=13.6 cfs 2.12 af

Reach 17R: PR12 Culvert to Swale Avg. Flow Depth=0.12' Max Vel=1.03 fps Inflow=2.1 cfs 0.15 af
n=0.050 L=741.0' S=0.0219 '/' Capacity=1,023.2 cfs Outflow=1.4 cfs 0.15 af

Reach 21R: Thru 21 Avg. Flow Depth=0.41' Max Vel=2.19 fps Inflow=13.5 cfs 1.63 af
n=0.050 L=398.0' S=0.0251 '/' Capacity=1,094.4 cfs Outflow=12.7 cfs 1.63 af

Reach 22R: Thru PR-14 Avg. Flow Depth=1.12' Max Vel=2.07 fps Inflow=16.2 cfs 1.46 af
n=0.080 L=1,077.9' S=0.0190 '/' Capacity=151.0 cfs Outflow=12.9 cfs 1.46 af

Pond 1P: Primary Detention Peak Elev=394.26' Storage=94,010 cf Inflow=81.0 cfs 7.77 af
Primary=32.3 cfs 7.76 af Secondary=0.0 cfs 0.00 af Outflow=32.3 cfs 7.76 af

Pond 2P: Left Side Basin Peak Elev=385.29' Storage=15,274 cf Inflow=32.5 cfs 7.82 af
Primary=29.8 cfs 7.81 af Secondary=0.0 cfs 0.00 af Outflow=29.8 cfs 7.81 af

Pond 3P: Sand Filter #3 Peak Elev=446.62' Storage=11,825 cf Inflow=14.0 cfs 1.01 af
Primary=4.9 cfs 1.01 af Secondary=0.0 cfs 0.00 af Outflow=4.9 cfs 1.01 af

Pond 4P: Sand Filter #4 Peak Elev=450.92' Storage=8,944 cf Inflow=14.8 cfs 1.05 af
Primary=10.9 cfs 1.05 af Secondary=0.0 cfs 0.00 af Outflow=10.9 cfs 1.05 af

Pond 5P: Sand Filter #5 Peak Elev=452.00' Storage=17,539 cf Inflow=38.6 cfs 2.75 af
Primary=36.1 cfs 2.75 af Secondary=0.0 cfs 0.00 af Outflow=36.1 cfs 2.75 af

Pond 6P: Sand Filter #6 Peak Elev=405.89' Storage=14,342 cf Inflow=21.0 cfs 1.72 af
Primary=19.1 cfs 1.72 af Secondary=0.0 cfs 0.00 af Outflow=19.1 cfs 1.72 af

Pond 7P: Sand Filter #7 Peak Elev=448.38' Storage=11,624 cf Inflow=14.3 cfs 1.02 af
Primary=6.5 cfs 1.02 af Secondary=0.0 cfs 0.00 af Outflow=6.5 cfs 1.02 af

Pond 8P: Amenity Basin Peak Elev=438.33' Storage=6,015 cf Inflow=10.3 cfs 0.74 af
Primary=8.6 cfs 0.74 af Secondary=0.0 cfs 0.00 af Outflow=8.6 cfs 0.74 af

Pond 9P: Cluster E Basin Peak Elev=447.07' Storage=25,651 cf Inflow=22.7 cfs 1.63 af
Primary=13.5 cfs 1.63 af Secondary=0.0 cfs 0.00 af Outflow=13.5 cfs 1.63 af

Pond 10P: Cluster D Basin Peak Elev=456.87' Storage=9,309 cf Inflow=18.5 cfs 1.46 af
Primary=16.2 cfs 1.46 af Secondary=0.0 cfs 0.00 af Outflow=16.2 cfs 1.46 af

Pond 11P: Sand Filter #11 Peak Elev=454.86' Storage=6,995 cf Inflow=7.5 cfs 0.59 af
Primary=4.7 cfs 0.59 af Secondary=0.0 cfs 0.00 af Outflow=4.7 cfs 0.59 af

Pond 13P: Stone Level Spreader Peak Elev=383.56' Storage=84 cf Inflow=29.8 cfs 7.81 af
Outflow=29.8 cfs 7.81 af

Pond C12: PR-15 culvert Peak Elev=448.90' Storage=0 cf Inflow=2.1 cfs 0.15 af
36.0" x 36.0" Box Culvert w/ 0.5" inside fill n=0.013 L=53.0' S=0.0498 '/' Outflow=2.1 cfs 0.15 af

Pond C15: PR-15 culvert Peak Elev=457.35' Storage=162 cf Inflow=9.2 cfs 0.86 af
36.0" x 36.0" Box Culvert w/ 6.0" inside fill n=0.013 L=54.0' S=0.0211 '/' Outflow=9.2 cfs 0.86 af

Pond C16: PR-16 culvert Peak Elev=468.14' Storage=677 cf Inflow=2.0 cfs 0.15 af
36.0" x 36.0" Box Culvert w/ 6.0" inside fill n=0.013 L=54.0' S=0.0135 '/' Outflow=1.6 cfs 0.15 af

Pond C17: PR-17 culvert Peak Elev=459.28' Inflow=8.2 cfs 1.27 af
24.0" Round Culvert n=0.013 L=138.0' S=0.0217 '/' Outflow=8.2 cfs 1.27 af

Pond C4: CULVERT #4 Peak Elev=412.30' Storage=503 cf Inflow=55.9 cfs 5.41 af
60.0" x 42.0" Box Culvert n=0.013 L=50.0' S=0.0600 '/' Outflow=55.9 cfs 5.41 af

Pond WC1: Wetland Cross Culvert #1 Peak Elev=412.46' Storage=301 cf Inflow=73.7 cfs 9.91 af
60.0" x 48.0" Box Culvert w/ 6.0" inside fill n=0.030 L=46.0' S=0.0600 '/' Outflow=73.7 cfs 9.91 af

Pond WC2: Wetland Cross Culvert #2 Peak Elev=434.29' Storage=5,163 cf Inflow=54.0 cfs 6.81 af
60.0" x 48.0" Box Culvert w/ 6.0" inside fill n=0.030 L=50.0' S=0.0076 '/' Outflow=52.1 cfs 6.81 af

Link DP-1: Existing 18" Culvert Inflow=103.4 cfs 19.02 af
Primary=103.4 cfs 19.02 af

Link DP-2: Existing 12" Culvert Inflow=9.7 cfs 0.84 af
Primary=9.7 cfs 0.84 af

Link DP-3: Hovey Road Inflow=13.0 cfs 1.86 af
Primary=13.0 cfs 1.86 af

Link DP-4: Spring Road Inflow=13.1 cfs 1.07 af
Primary=13.1 cfs 1.07 af

Link DP-5: Offsite Inflow=4.0 cfs 0.29 af
Primary=4.0 cfs 0.29 af

Link DP-6: North Hovey Road Inflow=7.8 cfs 0.59 af
Primary=7.8 cfs 0.59 af

Link OS-2: 2017 Cemetery Basin Outfall Manual Hydrograph Inflow=3.2 cfs 0.64 af
Area= 2.53 ac 31.91% Imperv. Primary=3.2 cfs 0.64 af

Link OS-3: 2010 Cemetery Basin Outfall Manual Hydrograph Inflow=1.9 cfs 0.24 af
Area= 1.67 ac 29.54% Imperv. Primary=1.9 cfs 0.24 af

Total Runoff Area = 100.51 ac Runoff Volume = 22.80 af Average Runoff Depth = 2.72"
84.20% Pervious = 84.63 ac 15.80% Impervious = 15.88 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 OS-1: Offsite Drainage 1 Runoff Area=6.35 ac 0.00% Impervious Runoff Depth=2.25"
Flow Length=904' Tc=19.2 min CN=58 Runoff=10.8 cfs 1.19 af

Subcatchment PR-1: Subcat PR-1 Runoff Area=5.91 ac 2.69% Impervious Runoff Depth=2.44"
Flow Length=835' Tc=9.4 min CN=60 Runoff=14.5 cfs 1.20 af

Subcatchment PR-10: Subcat PR-10 Runoff Area=4.35 ac 30.94% Impervious Runoff Depth=3.73"
Tc=6.0 min CN=73 Runoff=19.0 cfs 1.35 af

Subcatchment PR-11: Subcat PR-11 Runoff Area=2.10 ac 27.07% Impervious Runoff Depth=4.37"
Flow Length=507' Tc=8.8 min UI Adjusted CN=79 Runoff=9.7 cfs 0.77 af

Subcatchment PR-12: Subcat PR-12 Runoff Area=0.67 ac 0.00% Impervious Runoff Depth=3.63"
Flow Length=231' Tc=6.1 min CN=72 Runoff=2.8 cfs 0.20 af

Subcatchment PR-13: Subcat PR-13 Runoff Area=2.69 ac 0.01% Impervious Runoff Depth=3.52"
Flow Length=359' Tc=7.4 min CN=71 Runoff=10.6 cfs 0.79 af

Subcatchment PR-14: Subcat PR-14 Runoff Area=10.64 ac 0.00% Impervious Runoff Depth=3.73"
Flow Length=1,659' Tc=21.2 min CN=73 Runoff=30.6 cfs 3.31 af

Subcatchment PR-15: Subcat PR-15 Runoff Area=3.14 ac 0.00% Impervious Runoff Depth=3.63"
Flow Length=493' Tc=12.4 min CN=72 Runoff=10.9 cfs 0.95 af

Subcatchment PR-16: Subcat PR-16 Runoff Area=0.68 ac 0.00% Impervious Runoff Depth=3.52"
Flow Length=250' Tc=7.1 min CN=71 Runoff=2.7 cfs 0.20 af

Subcatchment PR-17: Subcat PR-17 Runoff Area=1.75 ac 0.00% Impervious Runoff Depth=3.52"
Flow Length=523' Tc=11.4 min CN=71 Runoff=6.0 cfs 0.51 af

Subcatchment PR-18: Subcat PR-18 Runoff Area=2.25 ac 44.53% Impervious Runoff Depth=5.02"
Tc=6.0 min CN=85 Runoff=12.9 cfs 0.94 af

Subcatchment PR-19: Subcat PR-19 Runoff Area=5.06 ac 42.09% Impervious Runoff Depth=4.91"
Flow Length=1,393' Tc=6.0 min CN=84 Runoff=28.5 cfs 2.07 af

Subcatchment PR-2: Subcat PR-2 Runoff Area=4.31 ac 3.27% Impervious Runoff Depth=2.53"
Flow Length=782' Tc=7.8 min CN=61 Runoff=11.7 cfs 0.91 af

Subcatchment PR-20: Subcat PR-20 Runoff Area=5.20 ac 29.62% Impervious Runoff Depth=4.37"
Flow Length=1,180' Tc=9.1 min UI Adjusted CN=79 Runoff=23.8 cfs 1.89 af

Subcatchment PR-21: Subcat PR-21 Runoff Area=6.46 ac 0.01% Impervious Runoff Depth=3.32"
Flow Length=2,124' Tc=30.1 min CN=69 Runoff=14.1 cfs 1.79 af

Subcatchment PR-22: Subcat PR-22 Runoff Area=4.76 ac 0.05% Impervious Runoff Depth=3.63"
Flow Length=321' Tc=10.1 min CN=72 Runoff=17.6 cfs 1.44 af

Subcatchment PR-23: Subcat PR-23 Runoff Area=2.76 ac 12.60% Impervious Runoff Depth=2.92"
Flow Length=348' Tc=7.3 min CN=65 Runoff=8.9 cfs 0.67 af

Subcatchment PR-24: Subcat PR-24 Runoff Area=0.41 ac 0.00% Impervious Runoff Depth=2.53"
Tc=6.0 min CN=61 Runoff=1.2 cfs 0.09 af

Subcatchment PR-3: Subcat PR-3 Runoff Area=1.14 ac 0.00% Impervious Runoff Depth=3.63"
Flow Length=150' Tc=6.0 min CN=72 Runoff=4.8 cfs 0.34 af

Subcatchment PR-4: Subcat PR-4 Runoff Area=3.76 ac 0.00% Impervious Runoff Depth=2.72"
Flow Length=766' Tc=6.0 min CN=63 Runoff=11.8 cfs 0.85 af

Subcatchment PR-5: Subcat PR-5 Runoff Area=4.77 ac 28.74% Impervious Runoff Depth=3.42"
Tc=6.0 min UI Adjusted CN=70 Runoff=19.1 cfs 1.36 af

Subcatchment PR-6: Subcat PR-6 Runoff Area=4.22 ac 35.70% Impervious Runoff Depth=3.94"
Tc=6.0 min CN=75 Runoff=19.5 cfs 1.39 af

Subcatchment PR-7: Subcat PR-7 Runoff Area=9.26 ac 32.30% Impervious Runoff Depth=4.58"
Flow Length=1,294' Tc=6.0 min CN=81 Runoff=49.2 cfs 3.54 af

Subcatchment PR-8: Subcat PR-8 Runoff Area=6.49 ac 42.77% Impervious Runoff Depth=4.15"
Flow Length=1,020' Tc=10.1 min CN=77 Runoff=27.4 cfs 2.24 af

Subcatchment PR-9: Subcat PR-9 Runoff Area=1.41 ac 0.00% Impervious Runoff Depth=3.32"
Flow Length=88' Tc=6.0 min CN=69 Runoff=5.5 cfs 0.39 af

Reach 1R: Thru PR-15 Avg. Flow Depth=0.39' Max Vel=1.25 fps Inflow=2.1 cfs 0.20 af
n=0.080 L=492.7' S=0.0218 '/' Capacity=75.3 cfs Outflow=1.9 cfs 0.20 af

Reach 2R: Thru PR-17 Avg. Flow Depth=0.36' Max Vel=2.50 fps Inflow=8.0 cfs 1.09 af
n=0.035 L=365.0' S=0.0218 '/' Capacity=66.7 cfs Outflow=7.7 cfs 1.09 af

Reach 4R: Swale Avg. Flow Depth=0.28' Max Vel=6.00 fps Inflow=6.3 cfs 1.36 af
n=0.025 L=253.0' S=0.0751 '/' Capacity=948.3 cfs Outflow=6.3 cfs 1.36 af

Reach 5R: Swale to P1 Avg. Flow Depth=0.95' Max Vel=13.60 fps Inflow=76.0 cfs 7.13 af
n=0.022 L=139.0' S=0.0770 '/' Capacity=937.6 cfs Outflow=76.0 cfs 7.13 af

Reach 6R: Swale Avg. Flow Depth=0.46' Max Vel=7.39 fps Inflow=15.1 cfs 1.39 af
n=0.025 L=413.0' S=0.0642 '/' Capacity=876.6 cfs Outflow=15.1 cfs 1.39 af

Reach 7R: Swale Avg. Flow Depth=0.90' Max Vel=8.82 fps Inflow=46.4 cfs 3.54 af
n=0.025 L=766.0' S=0.0444 '/' Capacity=729.1 cfs Outflow=45.5 cfs 3.54 af

Reach 13R: Culvert #2 to #1 Avg. Flow Depth=2.51' Max Vel=3.98 fps Inflow=88.8 cfs 11.16 af
n=0.080 L=739.9' S=0.0289 '/' Capacity=186.3 cfs Outflow=87.6 cfs 11.16 af

Reach 15R: Culvert #1 to DP Avg. Flow Depth=2.06' Max Vel=5.11 fps Inflow=111.3 cfs 14.14 af
n=0.080 L=601.3' S=0.0576 '/' Capacity=363.8 cfs Outflow=110.8 cfs 14.14 af

Reach 16R: Thru PR-14 Avg. Flow Depth=1.46' Max Vel=2.15 fps Inflow=24.6 cfs 2.75 af
n=0.080 L=1,536.2' S=0.0155 '/' Capacity=136.1 cfs Outflow=19.9 cfs 2.75 af

Reach 17R: PR12 Culvert to Swale Avg. Flow Depth=0.15' Max Vel=1.15 fps Inflow=2.8 cfs 0.20 af
n=0.050 L=741.0' S=0.0219 '/' Capacity=1,023.2 cfs Outflow=2.0 cfs 0.20 af

Reach 21R: Thru 21 Avg. Flow Depth=0.49' Max Vel=2.41 fps Inflow=17.6 cfs 2.07 af
n=0.050 L=398.0' S=0.0251 '/' Capacity=1,094.4 cfs Outflow=17.5 cfs 2.07 af

Reach 22R: Thru PR-14 Avg. Flow Depth=1.26' Max Vel=2.20 fps Inflow=17.2 cfs 1.89 af
n=0.080 L=1,077.9' S=0.0190 '/' Capacity=151.0 cfs Outflow=16.3 cfs 1.89 af

Pond 1P: Primary Detention Peak Elev=394.84' Storage=109,259 cf Inflow=112.2 cfs 10.28 af
Primary=63.1 cfs 10.28 af Secondary=0.0 cfs 0.00 af Outflow=63.1 cfs 10.28 af

Pond 2P: Left Side Basin Peak Elev=386.85' Storage=28,961 cf Inflow=63.6 cfs 10.36 af
Primary=52.2 cfs 10.36 af Secondary=0.0 cfs 0.00 af Outflow=52.2 cfs 10.36 af

Pond 3P: Sand Filter #3 Peak Elev=447.60' Storage=16,710 cf Inflow=19.1 cfs 1.36 af
Primary=6.3 cfs 1.36 af Secondary=0.0 cfs 0.00 af Outflow=6.3 cfs 1.36 af

Pond 4P: Sand Filter #4 Peak Elev=451.19' Storage=10,317 cf Inflow=19.5 cfs 1.39 af
Primary=15.1 cfs 1.39 af Secondary=0.0 cfs 0.00 af Outflow=15.1 cfs 1.39 af

Pond 5P: Sand Filter #5 Peak Elev=452.17' Storage=18,711 cf Inflow=49.2 cfs 3.54 af
Primary=46.4 cfs 3.54 af Secondary=0.0 cfs 0.00 af Outflow=46.4 cfs 3.54 af

Pond 6P: Sand Filter #6 Peak Elev=406.03' Storage=15,230 cf Inflow=27.4 cfs 2.24 af
Primary=26.2 cfs 2.24 af Secondary=0.0 cfs 0.00 af Outflow=26.2 cfs 2.24 af

Pond 7P: Sand Filter #7 Peak Elev=449.00' Storage=15,583 cf Inflow=19.0 cfs 1.35 af
Primary=8.1 cfs 1.35 af Secondary=0.0 cfs 0.00 af Outflow=8.1 cfs 1.35 af

Pond 8P: Amenity Basin Peak Elev=438.45' Storage=6,508 cf Inflow=12.9 cfs 0.94 af
Primary=11.5 cfs 0.94 af Secondary=0.0 cfs 0.00 af Outflow=11.5 cfs 0.94 af

Pond 9P: Cluster E Basin Peak Elev=447.34' Storage=29,094 cf Inflow=28.5 cfs 2.07 af
Primary=17.6 cfs 2.07 af Secondary=0.0 cfs 0.00 af Outflow=17.6 cfs 2.07 af

Pond 10P: Cluster D Basin Peak Elev=457.32' Storage=11,693 cf Inflow=23.8 cfs 1.89 af
Primary=17.2 cfs 1.89 af Secondary=0.0 cfs 0.00 af Outflow=17.2 cfs 1.89 af

Pond 11P: Sand Filter #11 Peak Elev=455.00' Storage=7,845 cf Inflow=9.7 cfs 0.77 af
Primary=7.6 cfs 0.77 af Secondary=0.0 cfs 0.00 af Outflow=7.6 cfs 0.77 af

Pond 13P: Stone Level Spreader Peak Elev=383.80' Storage=97 cf Inflow=52.2 cfs 10.36 af
Outflow=52.2 cfs 10.35 af

Pond C12: PR-15 culvert Peak Elev=448.90' Storage=0 cf Inflow=2.8 cfs 0.20 af
36.0" x 36.0" Box Culvert w/ 0.5" inside fill n=0.013 L=53.0' S=0.0498 '/' Outflow=2.8 cfs 0.20 af

Pond C15: PR-15 culvert Peak Elev=457.57' Storage=251 cf Inflow=12.5 cfs 1.15 af
36.0" x 36.0" Box Culvert w/ 6.0" inside fill n=0.013 L=54.0' S=0.0211 '/' Outflow=12.5 cfs 1.15 af

Pond C16: PR-16 culvert Peak Elev=468.21' Storage=875 cf Inflow=2.7 cfs 0.20 af
36.0" x 36.0" Box Culvert w/ 6.0" inside fill n=0.013 L=54.0' S=0.0135 '/' Outflow=2.1 cfs 0.20 af

Pond C17: PR-17 culvert Peak Elev=459.66' Inflow=12.3 cfs 1.60 af
24.0" Round Culvert n=0.013 L=138.0' S=0.0217 '/' Outflow=12.3 cfs 1.60 af

Pond C4: CULVERT #4 Peak Elev=412.82' Storage=765 cf Inflow=76.0 cfs 7.13 af
60.0" x 42.0" Box Culvert n=0.013 L=50.0' S=0.0600 '/' Outflow=76.0 cfs 7.13 af

Pond WC1: Wetland Cross Culvert #1 Peak Elev=413.12' Storage=631 cf Inflow=101.5 cfs 12.95 af
60.0" x 48.0" Box Culvert w/ 6.0" inside fill n=0.030 L=46.0' S=0.0600 '/' Outflow=101.5 cfs 12.95 af

Pond WC2: Wetland Cross Culvert #2 Peak Elev=434.83' Storage=8,814 cf Inflow=72.3 cfs 8.89 af
60.0" x 48.0" Box Culvert w/ 6.0" inside fill n=0.030 L=50.0' S=0.0076 '/' Outflow=70.0 cfs 8.89 af

Link DP-1: Existing 18" Culvert Inflow=163.1 cfs 25.16 af
Primary=163.1 cfs 25.16 af

Link DP-2: Existing 12" Culvert Inflow=14.5 cfs 1.20 af
Primary=14.5 cfs 1.20 af

Link DP-3: Hovey Road Inflow=18.4 cfs 2.46 af
Primary=18.4 cfs 2.46 af

Link DP-4: Spring Road Inflow=17.6 cfs 1.44 af
Primary=17.6 cfs 1.44 af

Link DP-5: Offsite Inflow=5.5 cfs 0.39 af
Primary=5.5 cfs 0.39 af

Link DP-6: North Hovey Road Inflow=10.6 cfs 0.79 af
Primary=10.6 cfs 0.79 af

Link OS-2: 2017 Cemetery Basin Outfall Manual Hydrograph Inflow=5.1 cfs 0.80 af
Area= 2.53 ac 31.91% Imperv. Primary=5.1 cfs 0.80 af

Link OS-3: 2010 Cemetery Basin Outfall Manual Hydrograph Inflow=2.8 cfs 0.29 af
Area= 1.67 ac 29.54% Imperv. Primary=2.8 cfs 0.29 af

Total Runoff Area = 100.51 ac Runoff Volume = 30.37 af Average Runoff Depth = 3.63"
84.20% Pervious = 84.63 ac 15.80% Impervious = 15.88 ac

Summary for Subcatchment OS-1: Offsite Drainage 1

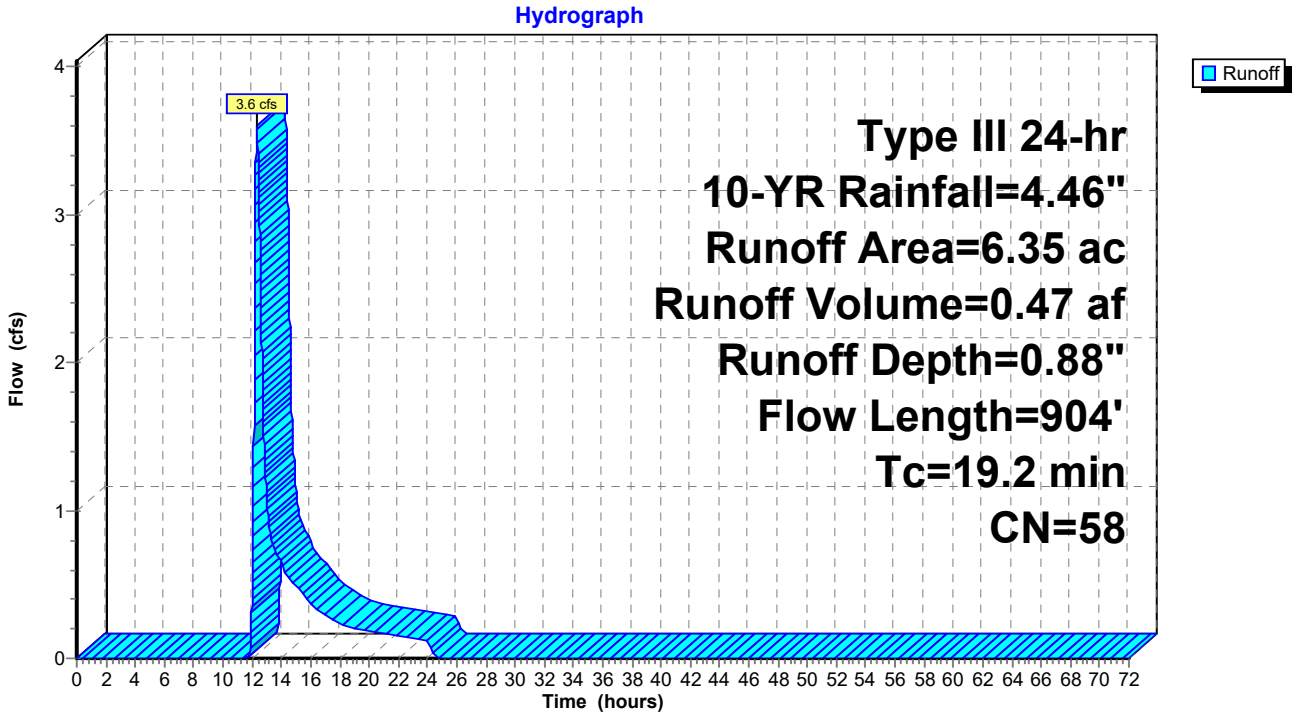
Runoff = 3.6 cfs @ 12.32 hrs, Volume= 0.47 af, Depth= 0.88"
Routed to Reach 15R : Culvert #1 to DP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
1.98	61	>75% Grass cover, Good, HSG B
0.00	74	>75% Grass cover, Good, HSG C
0.00	58	Meadow, non-grazed, HSG B
2.34	55	Woods, Good, HSG B
0.01	70	Woods, Good, HSG C
2.01	58	Woods/grass comb., Good, HSG B
6.35	58	Weighted Average
6.35		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	50	0.0511	0.21		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 2.90"
6.3	357	0.0183	0.95		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
1.4	162	0.0719	1.88		**Shallow Concentrated Flow, Shallow Concentrated Grass** Short Grass Pasture Kv= 7.0 fps
7.4	335	0.0229	0.76		**Shallow Concentrated Flow, Shallow Concentrated Woods** Woodland Kv= 5.0 fps
19.2	904	Total			

Subcatchment OS-1: Offsite Drainage 1



Summary for Subcatchment PR-1: Subcat PR-1

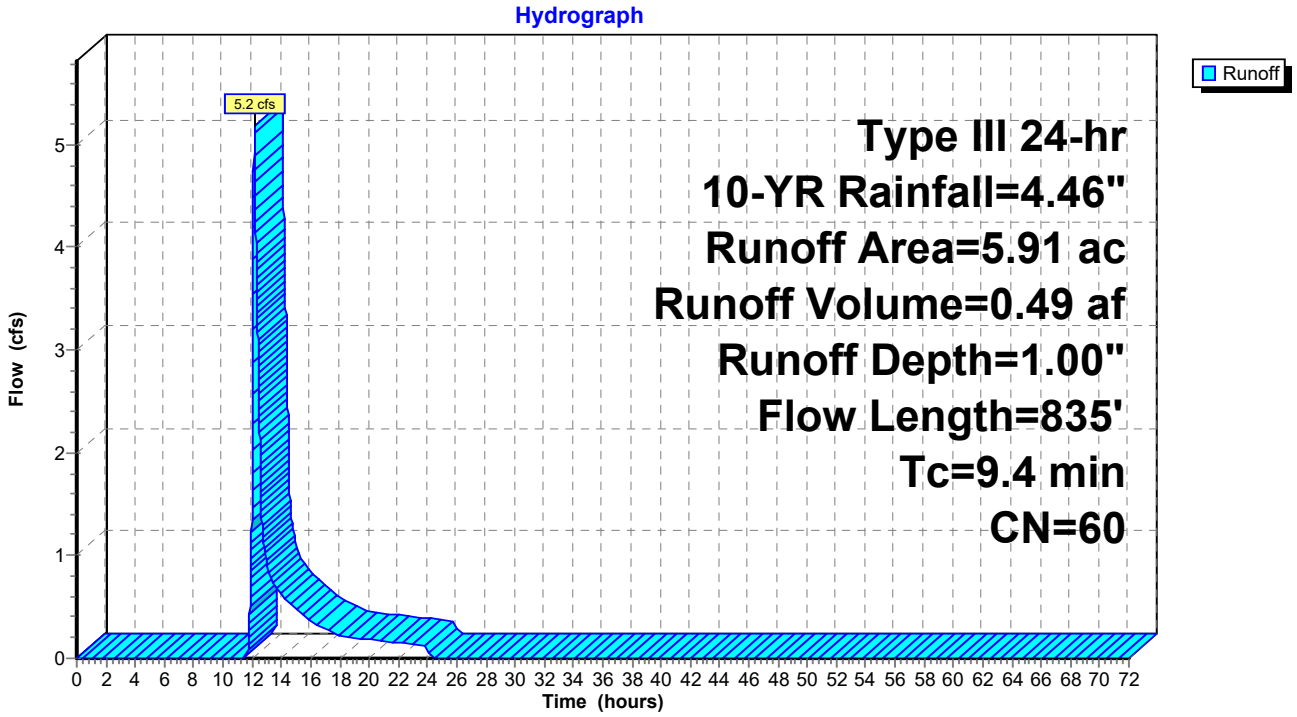
Runoff = 5.2 cfs @ 12.15 hrs, Volume= 0.49 af, Depth= 1.00"
Routed to Link DP-2 : Existing 12" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.22	61	>75% Grass cover, Good, HSG B
0.11	96	Gravel surface, HSG B
4.86	58	Meadow, non-grazed, HSG B
0.15	71	Meadow, non-grazed, HSG C
0.12	78	Meadow, non-grazed, HSG D
0.16	98	Paved parking, HSG B
0.29	55	Woods, Good, HSG B
5.91	60	Weighted Average
5.75		97.31% Pervious Area
0.16		2.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	50	0.0446	0.22		**Sheet Flow, Sheet Meadow** Range n= 0.130 P2= 2.90"
3.1	352	0.0736	1.90		**Shallow Concentrated Flow, Shallow Concentrated Meadow** Short Grass Pasture Kv= 7.0 fps
0.9	220	0.0670	4.17		**Shallow Concentrated Flow, Shallow Concentrated Gravel** Unpaved Kv= 16.1 fps
1.6	213	0.1070	2.29		**Shallow Concentrated Flow, Shallow Concentrated Meadow** Short Grass Pasture Kv= 7.0 fps
9.4	835	Total			

Subcatchment PR-1: Subcat PR-1



Summary for Subcatchment PR-10: Subcat PR-10

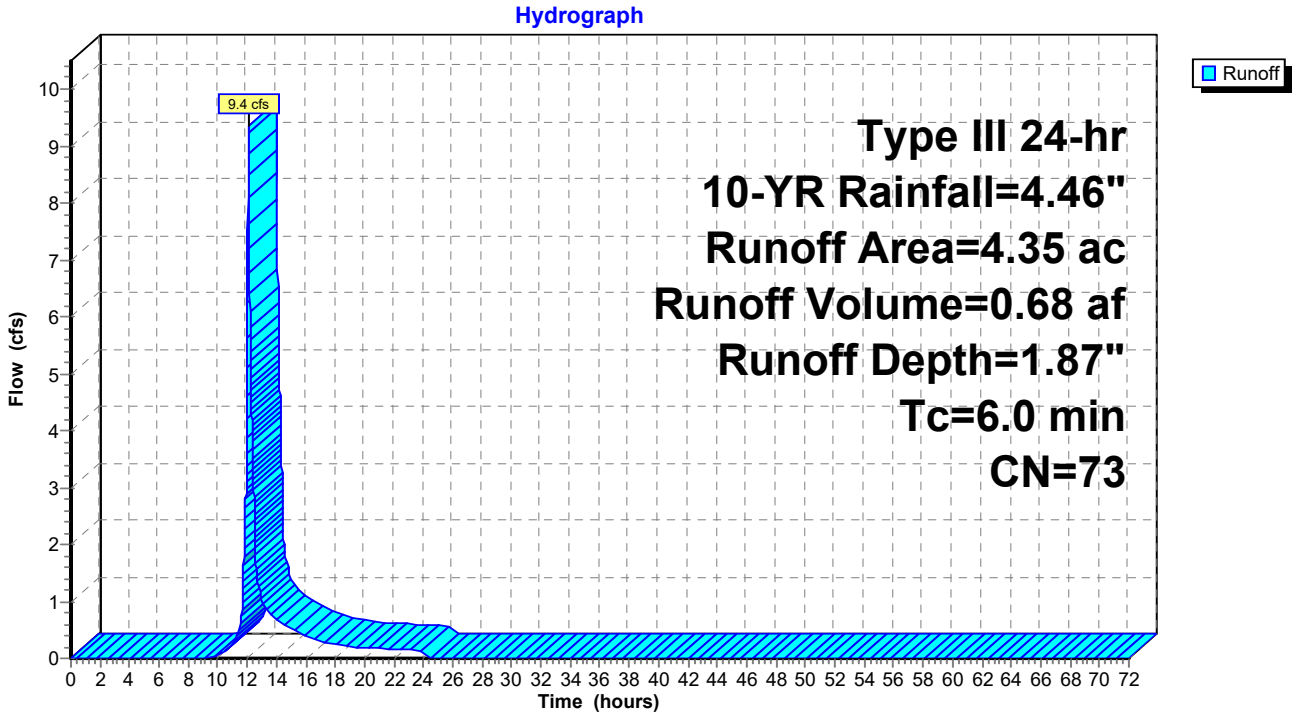
Runoff = 9.4 cfs @ 12.09 hrs, Volume= 0.68 af, Depth= 1.87"
Routed to Pond 7P : Sand Filter #7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
1.54	61	>75% Grass cover, Good, HSG B
0.32	74	>75% Grass cover, Good, HSG C
0.03	58	Meadow, non-grazed, HSG B
0.09	71	Meadow, non-grazed, HSG C
0.60	98	Paved parking, HSG B
0.21	98	Paved parking, HSG C
0.41	98	Unconnected roofs, HSG B
0.13	98	Unconnected roofs, HSG C
0.92	55	Woods, Good, HSG B
0.10	70	Woods, Good, HSG C
4.35	73	Weighted Average
3.00		69.06% Pervious Area
1.35		30.94% Impervious Area
0.54		40.15% Unconnected

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

Subcatchment PR-10: Subcat PR-10



Summary for Subcatchment PR-11: Subcat PR-11

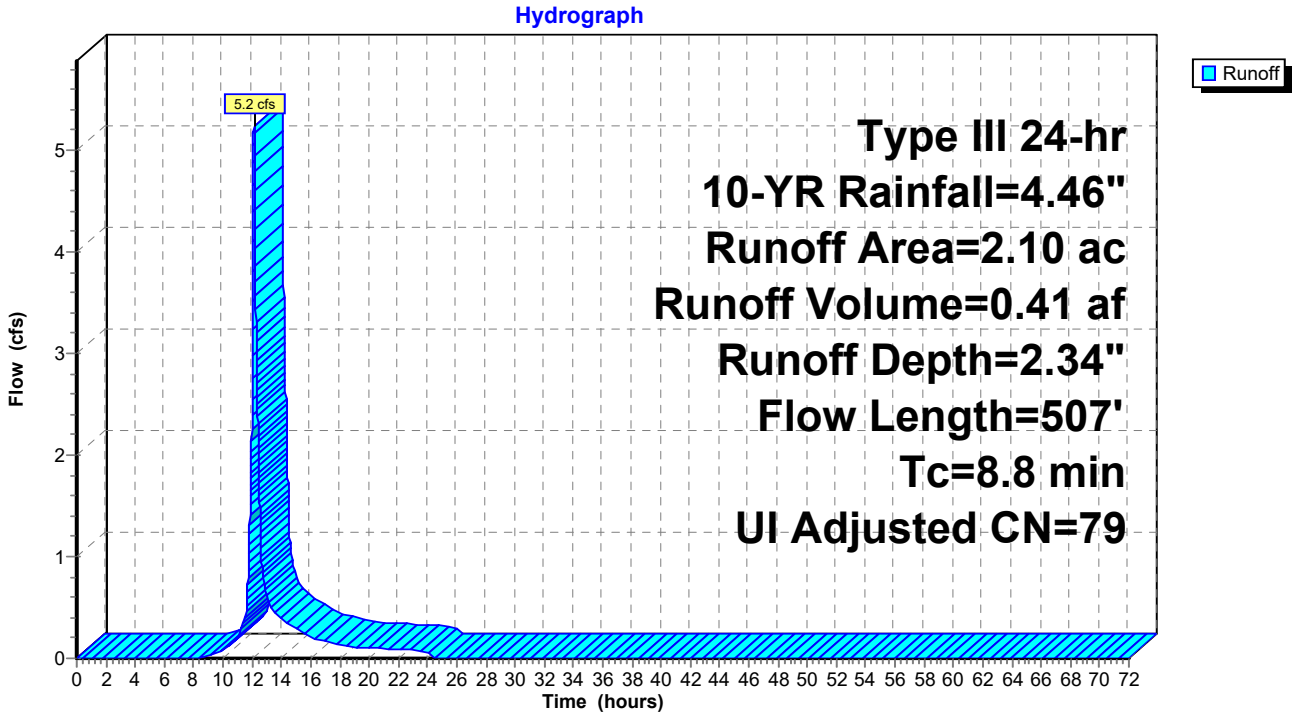
Runoff = 5.2 cfs @ 12.13 hrs, Volume= 0.41 af, Depth= 2.34"
Routed to Pond 11P : Sand Filter #11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Adj	Description
1.07	74		>75% Grass cover, Good, HSG C
0.01	96		Gravel surface, HSG C
0.01	58		Meadow, non-grazed, HSG B
0.44	71		Meadow, non-grazed, HSG C
0.37	98		Paved parking, HSG C
0.20	98		Unconnected roofs, HSG C
2.10	80	79	Weighted Average, UI Adjusted
1.53			72.93% Pervious Area
0.57			27.07% Impervious Area
0.20			34.80% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.0194	0.14		**Sheet Flow, Grass Sheet Flow** Grass: Short n= 0.150 P2= 2.90"
2.5	279	0.0084	1.86		**Shallow Concentrated Flow, Shallow Concentrated Pavement** Paved Kv= 20.3 fps
0.3	178	0.0263	8.54	10.48	**Pipe Channel, Pipe Flow** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
8.8	507	Total			

Subcatchment PR-11: Subcat PR-11



Summary for Subcatchment PR-12: Subcat PR-12

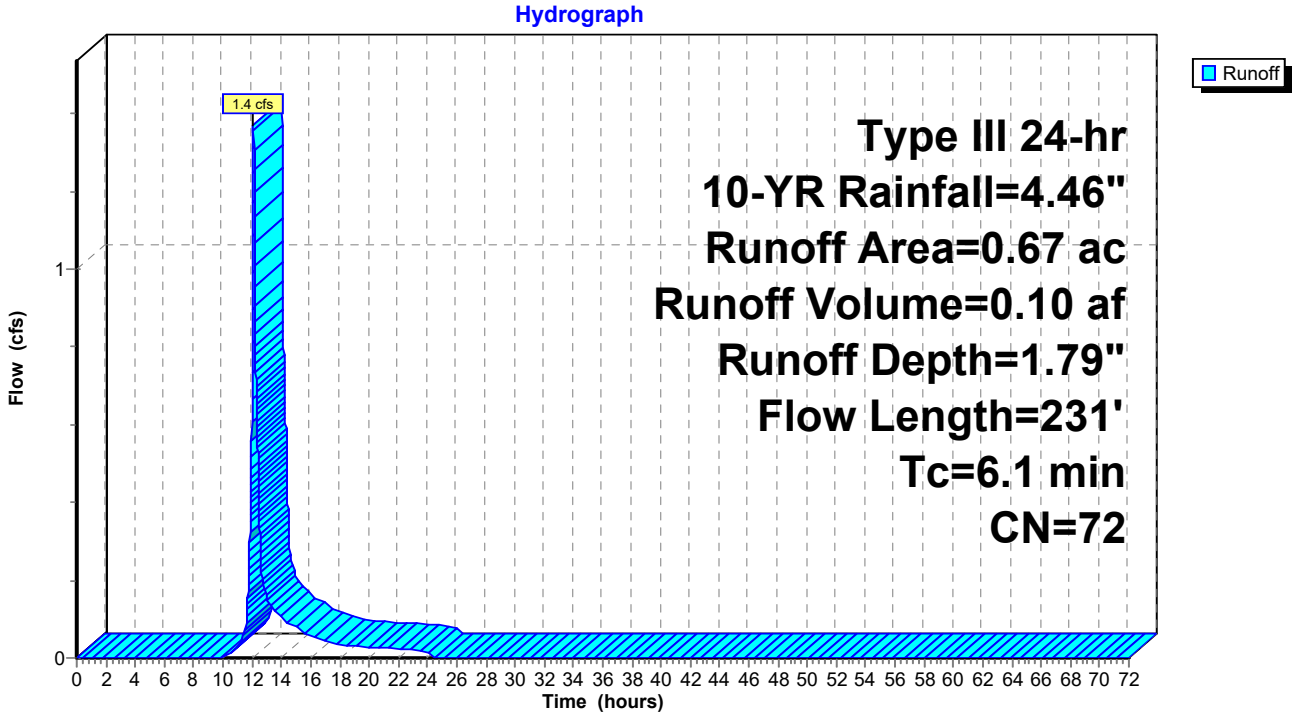
Runoff = 1.4 cfs @ 12.09 hrs, Volume= 0.10 af, Depth= 1.79"
Routed to Pond C12 : PR-15 culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.13	74	>75% Grass cover, Good, HSG C
0.45	71	Meadow, non-grazed, HSG C
0.00	98	Paved parking, HSG C
0.09	72	Woods/grass comb., Good, HSG C
0.67	72	Weighted Average
0.67		100.00% Pervious Area
0.00		0.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0578	0.24		**Sheet Flow,** Range n= 0.130 P2= 2.90"
2.7	181	0.0254	1.12		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	231	Total			

Subcatchment PR-12: Subcat PR-12



Summary for Subcatchment PR-13: Subcat PR-13

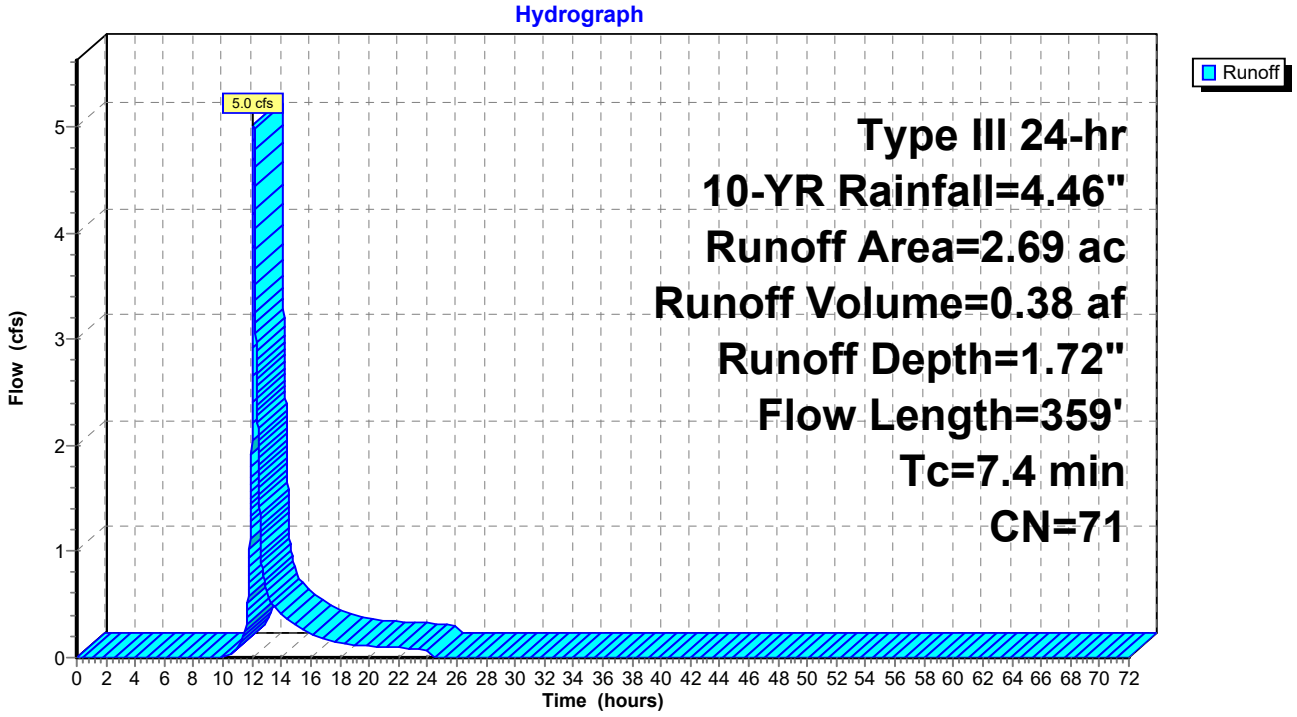
Runoff = 5.0 cfs @ 12.11 hrs, Volume= 0.38 af, Depth= 1.72"
Routed to Link DP-6 : North Hovey Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.24	74	>75% Grass cover, Good, HSG C
0.00	58	Meadow, non-grazed, HSG B
2.44	71	Meadow, non-grazed, HSG C
0.00	98	Unconnected roofs, HSG C
2.69	71	Weighted Average
2.69		99.99% Pervious Area
0.00		0.01% Impervious Area
0.00		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.0346	0.20		**Sheet Flow, Meadow Sheet Flow** Range n= 0.130 P2= 2.90"
3.2	309	0.0544	1.63		**Shallow Concentrated Flow, Shallow Concentrated Meadow** Short Grass Pasture Kv= 7.0 fps
7.4	359	Total			

Subcatchment PR-13: Subcat PR-13



Summary for Subcatchment PR-14: Subcat PR-14

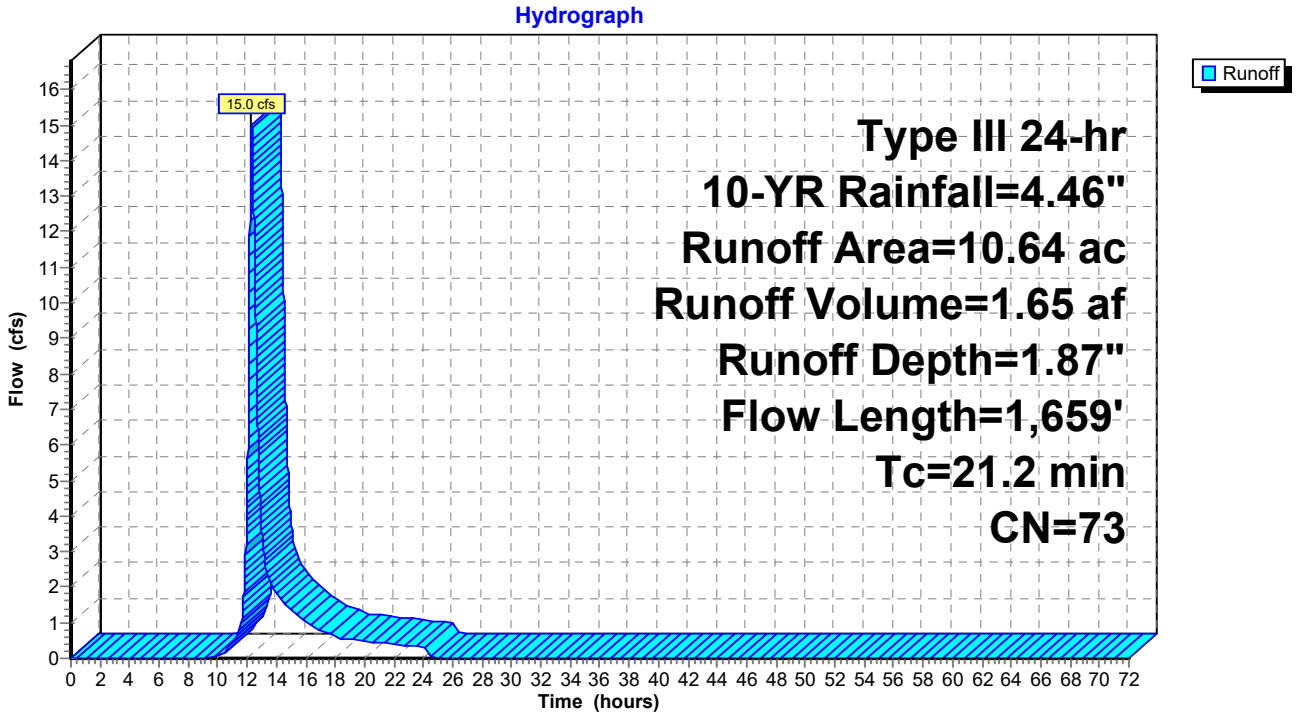
Runoff = 15.0 cfs @ 12.31 hrs, Volume= 1.65 af, Depth= 1.87"
Routed to Pond WC2 : Wetland Cross Culvert #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.22	61	>75% Grass cover, Good, HSG B
1.58	74	>75% Grass cover, Good, HSG C
0.01	80	>75% Grass cover, Good, HSG D
0.03	96	Gravel surface, HSG B
0.36	96	Gravel surface, HSG C
0.00	96	Gravel surface, HSG D
0.08	58	Meadow, non-grazed, HSG B
3.58	71	Meadow, non-grazed, HSG C
0.15	78	Meadow, non-grazed, HSG D
0.00	98	Paved parking, HSG C
0.00	98	Unconnected pavement, HSG C
0.00	98	Unconnected roofs, HSG C
0.00	58	Woods/grass comb., Good, HSG B
4.37	72	Woods/grass comb., Good, HSG C
0.25	79	Woods/grass comb., Good, HSG D
10.64	73	Weighted Average
10.64		100.00% Pervious Area
0.00		0.00% Impervious Area
0.00		97.49% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.0276	0.16		**Sheet Flow, Meadow Sheet Flow** Grass: Short n= 0.150 P2= 2.90"
9.8	637	0.0241	1.09		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
6.2	972	0.0125	2.61	57.06	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.50' Z= 2.3 '/' Top.W=14.50' n= 0.080 Earth, long dense weeds
21.2	1,659	Total			

Subcatchment PR-14: Subcat PR-14



Summary for Subcatchment PR-15: Subcat PR-15

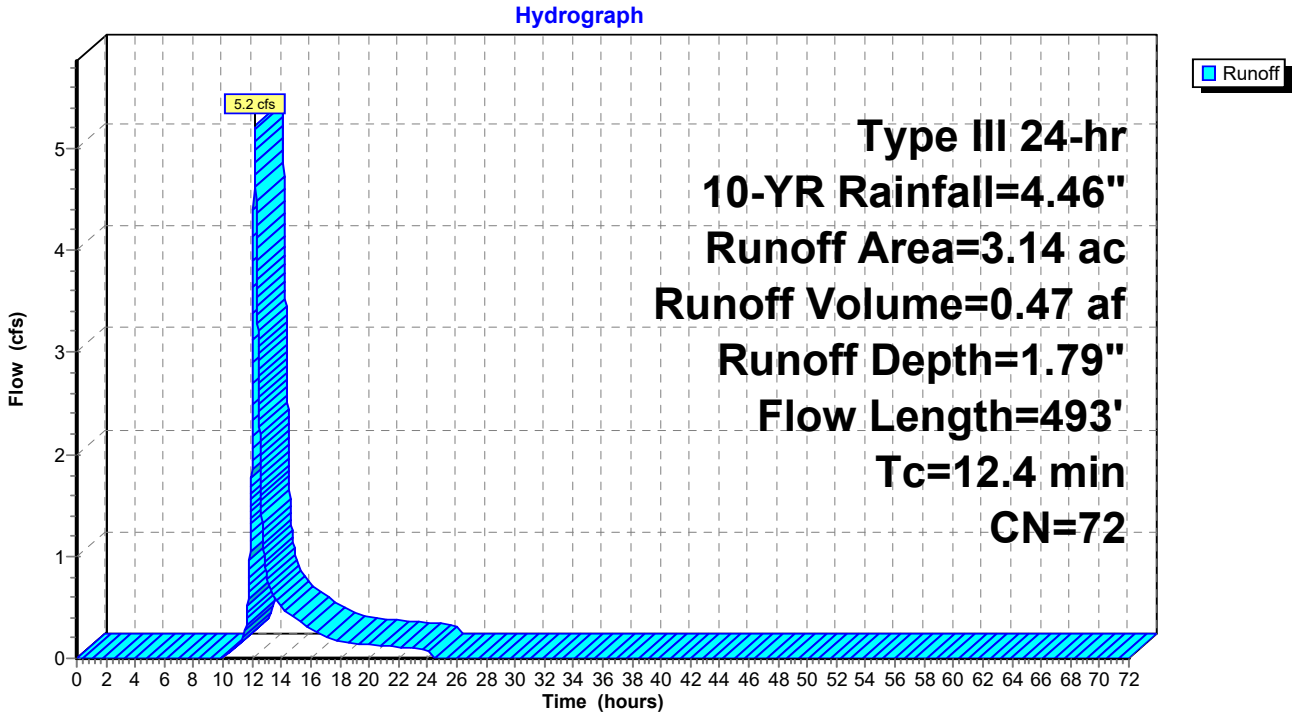
Runoff = 5.2 cfs @ 12.18 hrs, Volume= 0.47 af, Depth= 1.79"
Routed to Pond C15 : PR-15 culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.38	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.88	71	Meadow, non-grazed, HSG C
0.00	78	Meadow, non-grazed, HSG D
0.00	98	Paved parking, HSG C
0.00	58	Woods/grass comb., Good, HSG B
1.83	72	Woods/grass comb., Good, HSG C
0.05	79	Woods/grass comb., Good, HSG D
3.14	72	Weighted Average
3.14		100.00% Pervious Area
0.00		0.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0078	0.11		**Sheet Flow, Meadow Sheet Flow** Range n= 0.130 P2= 2.90"
3.8	246	0.0240	1.08		**Shallow Concentrated Flow, Shallow Concentrated Meadow** Short Grass Pasture Kv= 7.0 fps
0.9	197	0.0224	3.49	76.38	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.50' Z= 2.3 '/' Top.W=14.50' n= 0.080
12.4	493	Total			

Subcatchment PR-15: Subcat PR-15



Summary for Subcatchment PR-16: Subcat PR-16

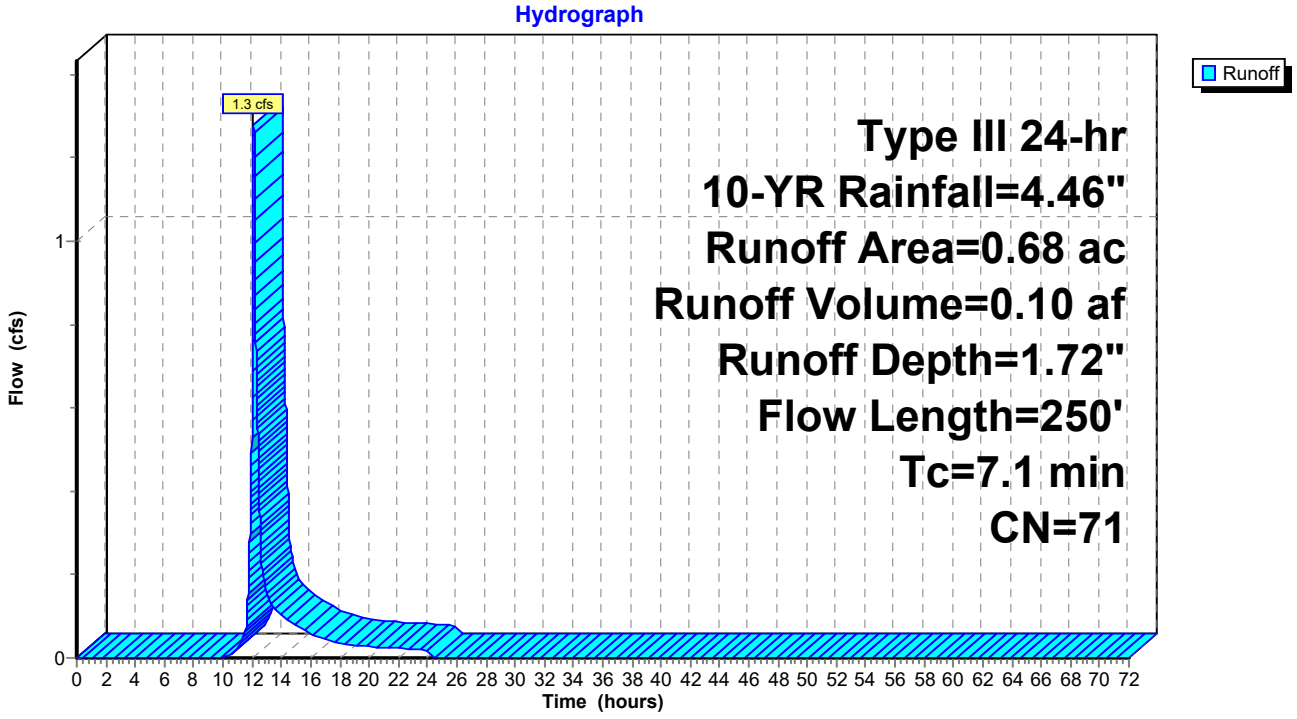
Runoff = 1.3 cfs @ 12.11 hrs, Volume= 0.10 af, Depth= 1.72"
Routed to Pond C16 : PR-16 culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.11	74	>75% Grass cover, Good, HSG C
0.00	58	Meadow, non-grazed, HSG B
0.33	71	Meadow, non-grazed, HSG C
0.16	70	Woods, Good, HSG C
0.08	72	Woods/grass comb., Good, HSG C
0.68	71	Weighted Average
0.68		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.0354	0.20		**Sheet Flow, Meadow Sheet Flow** Range n= 0.130 P2= 2.90"
2.9	200	0.0274	1.16		**Shallow Concentrated Flow, Shallow Concentrated Meadow** Short Grass Pasture Kv= 7.0 fps
7.1	250	Total			

Subcatchment PR-16: Subcat PR-16



Summary for Subcatchment PR-17: Subcat PR-17

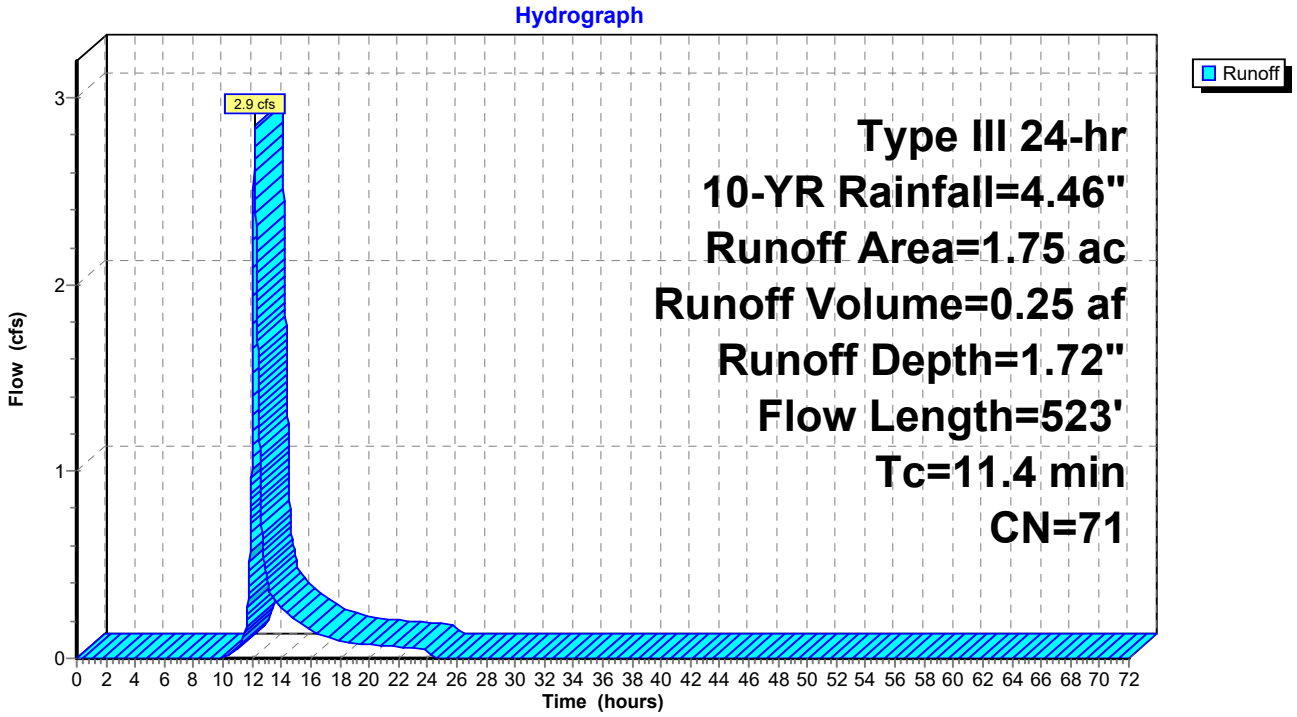
Runoff = 2.9 cfs @ 12.17 hrs, Volume= 0.25 af, Depth= 1.72"
Routed to Pond C17 : PR-17 culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.07	74	>75% Grass cover, Good, HSG C
0.01	58	Meadow, non-grazed, HSG B
1.38	71	Meadow, non-grazed, HSG C
0.00	70	Woods, Good, HSG C
0.29	72	Woods/grass comb., Good, HSG C
1.75	71	Weighted Average
1.75		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	50	0.0280	0.18		**Sheet Flow, Meadow Sheet Flow** Range n= 0.130 P2= 2.90"
1.3	121	0.0525	1.60		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
0.8	44	0.0159	0.88		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
1.2	62	0.0162	0.89		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
2.8	190	0.0267	1.14		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
0.7	56	0.0339	1.29		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
11.4	523	Total			

Subcatchment PR-17: Subcat PR-17



Summary for Subcatchment PR-18: Subcat PR-18

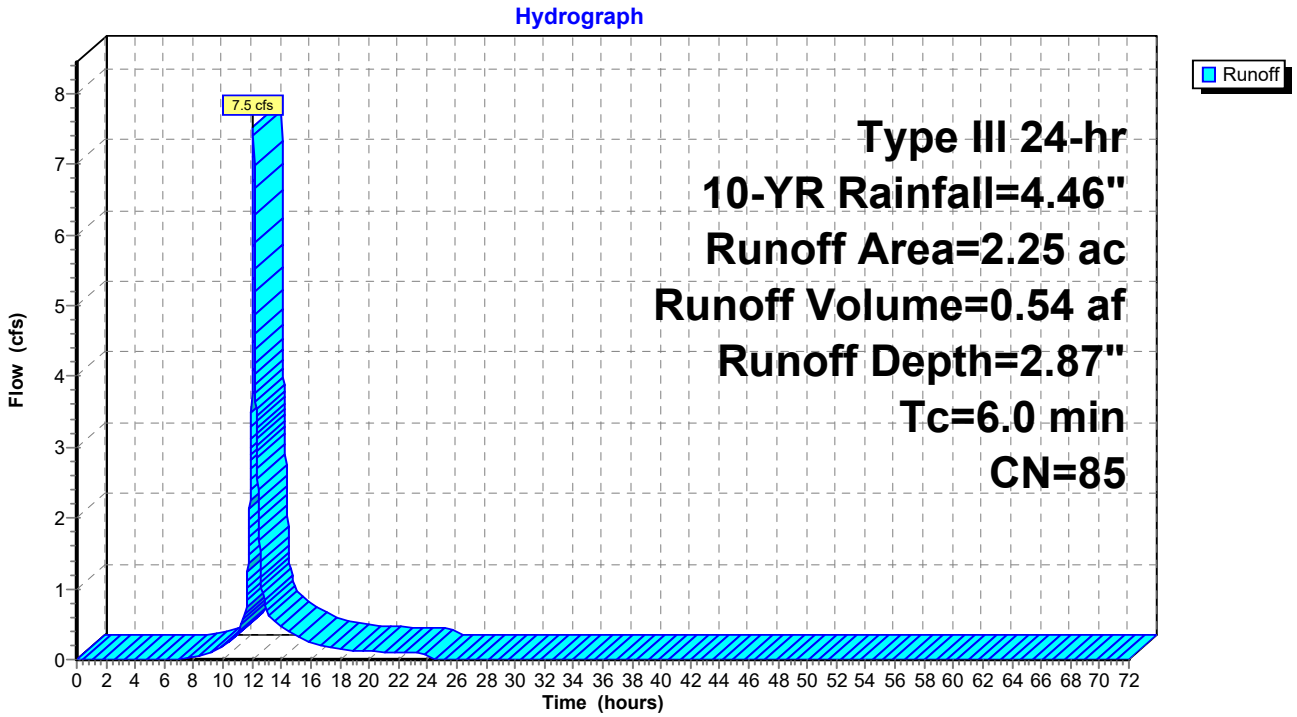
Runoff = 7.5 cfs @ 12.09 hrs, Volume= 0.54 af, Depth= 2.87"
Routed to Pond 8P : Amenity Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
1.03	74	>75% Grass cover, Good, HSG C
0.05	96	Gravel surface, HSG C
0.17	71	Meadow, non-grazed, HSG C
0.54	98	Paved parking, HSG C
0.29	98	Unconnected pavement, HSG C
0.17	98	Unconnected roofs, HSG C
2.25	85	Weighted Average
1.25		55.47% Pervious Area
1.00		44.53% Impervious Area
0.46		46.20% Unconnected

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

Subcatchment PR-18: Subcat PR-18



Summary for Subcatchment PR-19: Subcat PR-19

[47] Hint: Peak is 113% of capacity of segment #3

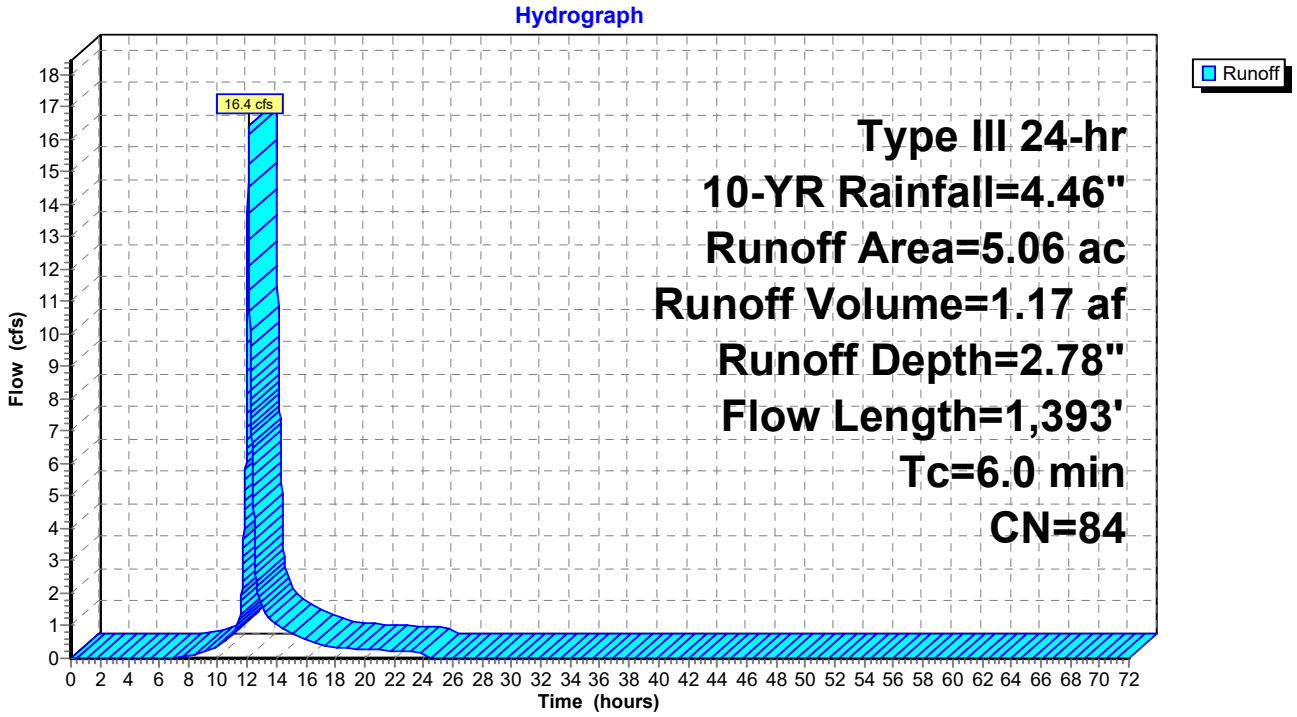
Runoff = 16.4 cfs @ 12.09 hrs, Volume= 1.17 af, Depth= 2.78"
Routed to Pond 9P : Cluster E Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
1.97	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.96	71	Meadow, non-grazed, HSG C
1.30	98	Paved parking, HSG C
0.01	98	Paved parking, HSG D
0.82	98	Unconnected roofs, HSG C
0.00	72	Woods/grass comb., Good, HSG C
5.06	84	Weighted Average
2.93		57.91% Pervious Area
2.13		42.09% Impervious Area
0.82		38.60% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.14		**Sheet Flow, Pavement Sheet Flow** Smooth surfaces n= 0.011 P2= 2.90"
1.3	198	0.0168	2.63		**Shallow Concentrated Flow, Shallow Concentrated Pavement** Paved Kv= 20.3 fps
2.3	1,145	0.0190	8.19	14.48	**Pipe Channel, Pipe Flow** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
1.7					**Direct Entry,**
6.0	1,393	Total			

Subcatchment PR-19: Subcat PR-19



Summary for Subcatchment PR-2: Subcat PR-2

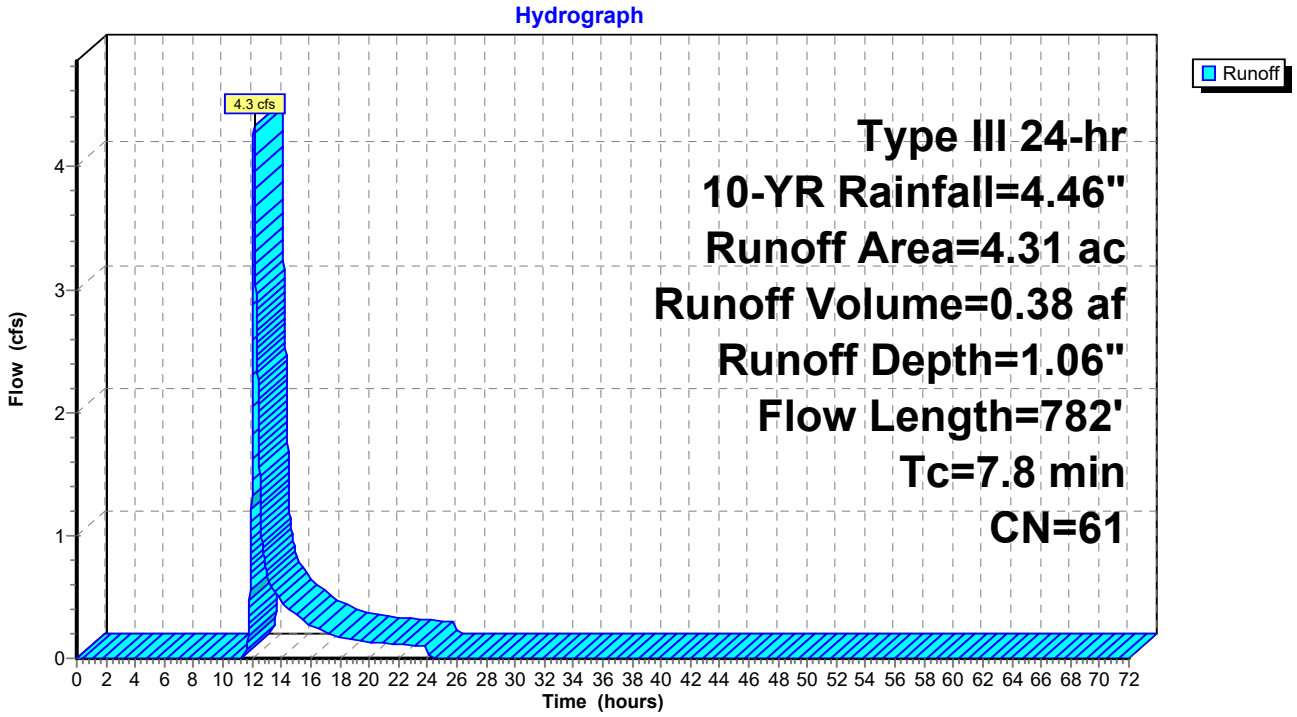
Runoff = 4.3 cfs @ 12.13 hrs, Volume= 0.38 af, Depth= 1.06"
Routed to Pond 1P : Primary Detention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
1.96	61	>75% Grass cover, Good, HSG B
0.03	74	>75% Grass cover, Good, HSG C
0.04	96	Gravel surface, HSG B
2.04	58	Meadow, non-grazed, HSG B
0.09	71	Meadow, non-grazed, HSG C
0.14	98	Paved parking, HSG B
0.00	55	Woods, Good, HSG B
4.31	61	Weighted Average
4.17		96.73% Pervious Area
0.14		3.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	41	0.3400	0.29		**Sheet Flow, Sheet Meadow Flow** Grass: Dense n= 0.240 P2= 2.90"
2.6	253	0.0530	1.61		**Shallow Concentrated Flow, Shallow Concentrated Meadow** Short Grass Pasture Kv= 7.0 fps
0.1	22	0.0759	4.44		**Shallow Concentrated Flow, Gravel Walk** Unpaved Kv= 16.1 fps
2.6	355	0.1040	2.26		**Shallow Concentrated Flow, Shallow Concentrated Meadow** Short Grass Pasture Kv= 7.0 fps
0.1	111	0.1370	17.04	190.85	**Channel Flow, Channel Flow** Area= 11.2 sf Perim= 12.5' r= 0.90' n= 0.030 Earth, grassed & winding
7.8	782	Total			

Subcatchment PR-2: Subcat PR-2



Summary for Subcatchment PR-20: Subcat PR-20

[47] Hint: Peak is 127% of capacity of segment #4

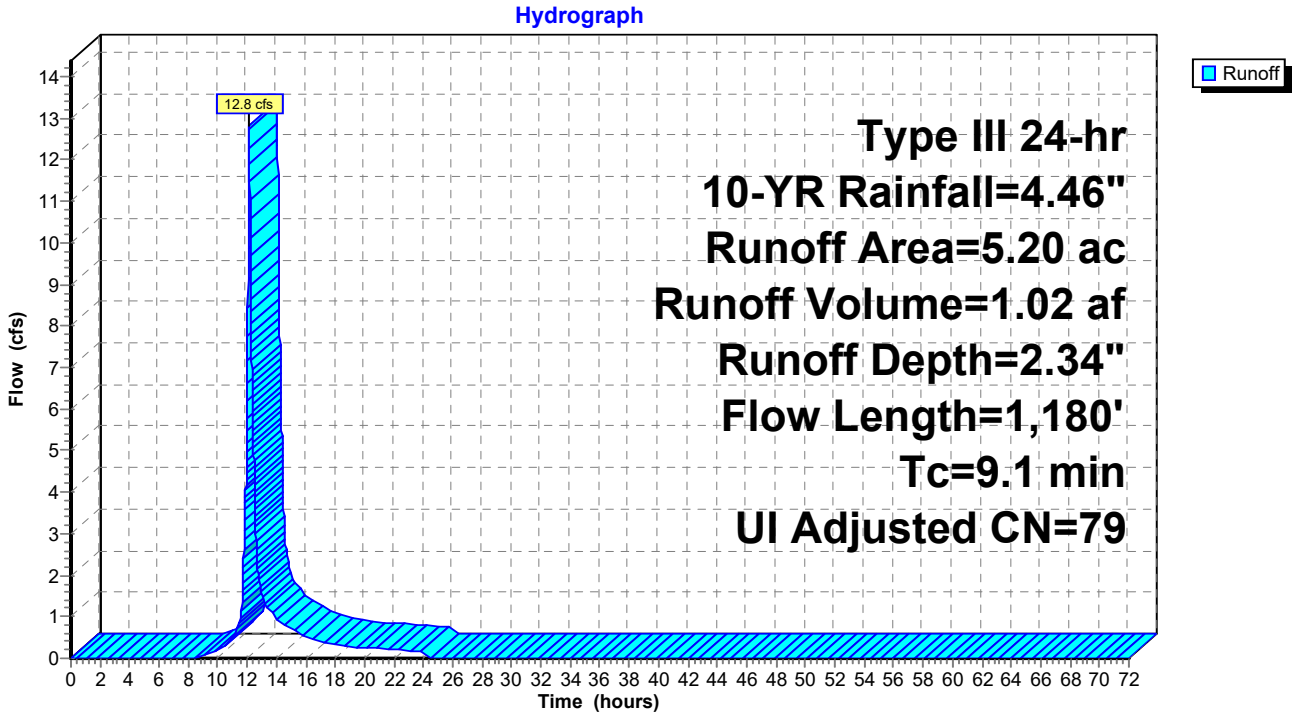
Runoff = 12.8 cfs @ 12.13 hrs, Volume= 1.02 af, Depth= 2.34"
Routed to Pond 10P : Cluster D Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

	Area (ac)	CN	Adj	Description
	1.22	74		>75% Grass cover, Good, HSG C
	0.00	96		Gravel surface, HSG C
	0.00	58		Meadow, non-grazed, HSG B
*	2.26	72		Meadow, non-grazed, HSG C
	1.12	98		Paved parking, HSG C
	0.00	98		Paved parking, HSG D
	0.42	98		Unconnected roofs, HSG C
	0.18	70		Woods, Good, HSG C
	0.00	72		Woods/grass comb., Good, HSG C
	5.20	80	79	Weighted Average, UI Adjusted
	3.66			70.38% Pervious Area
	1.54			29.62% Impervious Area
	0.42			27.27% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0650	0.25		**Sheet Flow, Pavement Sheet Flow** Range n= 0.130 P2= 2.90"
2.0	178	0.0457	1.50		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
1.3	103	0.0378	1.36		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
2.5	849	0.0093	5.73	10.13	**Pipe Channel, Pipe Flow** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
9.1	1,180	Total			

Subcatchment PR-20: Subcat PR-20



Summary for Subcatchment PR-21: Subcat PR-21

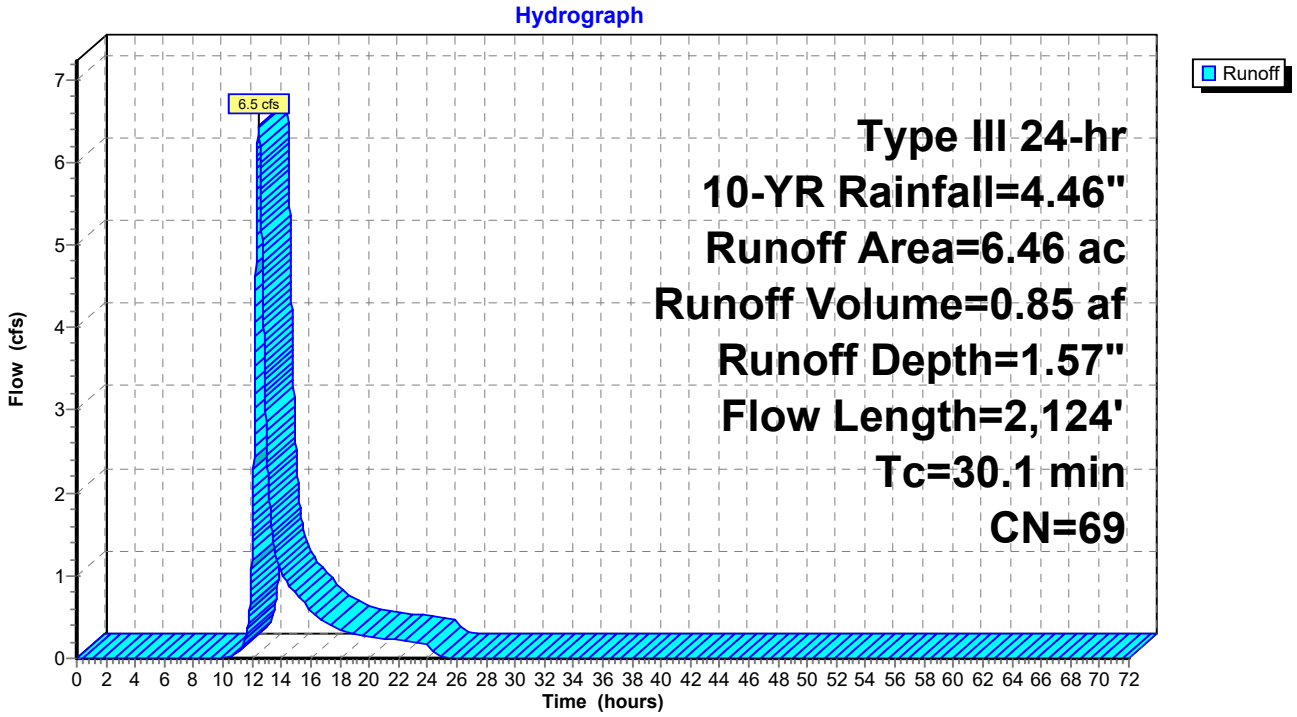
Runoff = 6.5 cfs @ 12.45 hrs, Volume= 0.85 af, Depth= 1.57"
Routed to Pond WC1 : Wetland Cross Culvert #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.18	61	>75% Grass cover, Good, HSG B
0.51	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.79	58	Meadow, non-grazed, HSG B
2.43	71	Meadow, non-grazed, HSG C
0.01	78	Meadow, non-grazed, HSG D
0.00	98	Paved parking, HSG B
0.00	98	Paved parking, HSG C
0.00	98	Unconnected roofs, HSG C
0.26	55	Woods, Good, HSG B
0.86	70	Woods, Good, HSG C
0.10	77	Woods, Good, HSG D
0.00	58	Woods/grass comb., Good, HSG B
1.30	72	Woods/grass comb., Good, HSG C
0.02	79	Woods/grass comb., Good, HSG D
6.46	69	Weighted Average
6.46		99.99% Pervious Area
0.00		0.01% Impervious Area
0.00		85.18% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0264	0.18		**Sheet Flow, Meadow Sheet Flow** Range n= 0.130 P2= 2.90"
23.2	1,461	0.0224	1.05		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
2.2	613	0.0331	4.71	139.90	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=3.00' Z= 2.3 '/' Top.W=16.80' n= 0.080
30.1	2,124	Total			

Subcatchment PR-21: Subcat PR-21



Summary for Subcatchment PR-22: Subcat PR-22

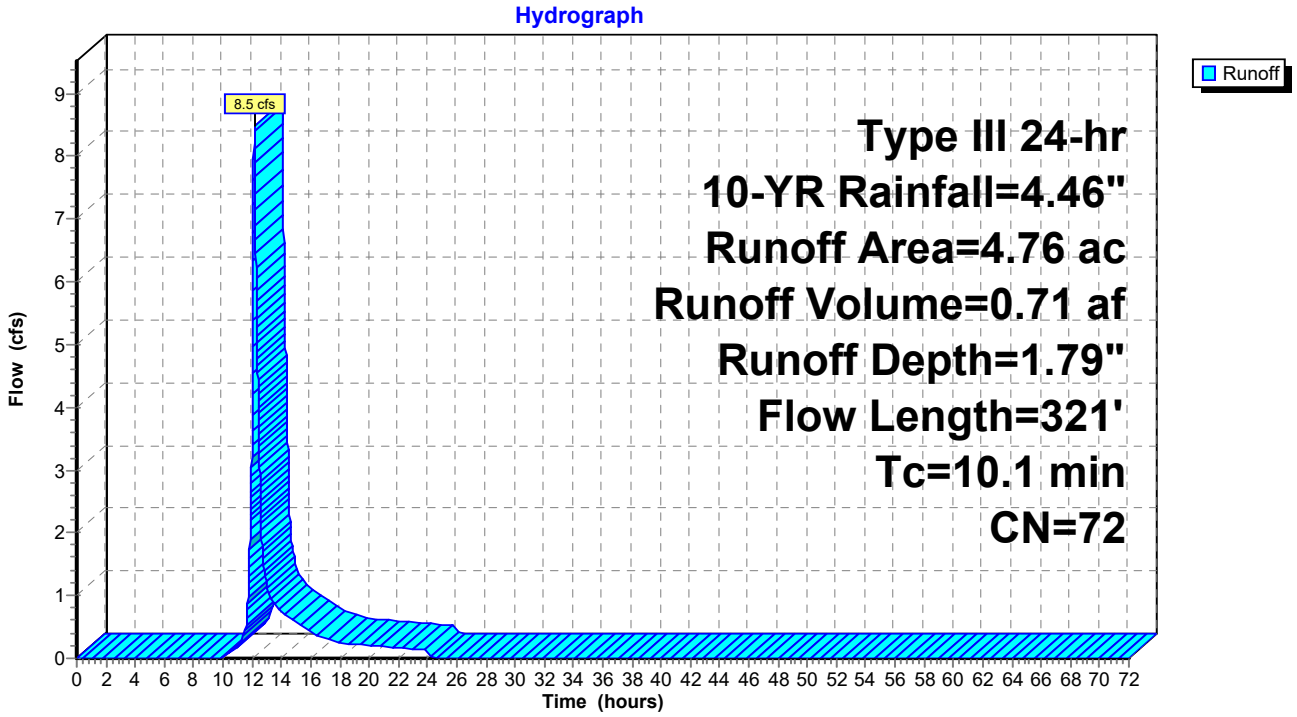
Runoff = 8.5 cfs @ 12.15 hrs, Volume= 0.71 af, Depth= 1.79"
Routed to Link DP-4 : Spring Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.25	74	>75% Grass cover, Good, HSG C
0.06	96	Gravel surface, HSG C
0.00	58	Meadow, non-grazed, HSG B
2.67	71	Meadow, non-grazed, HSG C
0.00	98	Paved parking, HSG C
0.00	98	Unconnected roofs, HSG C
0.00	55	Woods, Good, HSG B
0.81	70	Woods, Good, HSG C
0.96	72	Woods/grass comb., Good, HSG C
4.76	72	Weighted Average
4.75		99.95% Pervious Area
0.00		0.05% Impervious Area
0.00		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0134	0.13		**Sheet Flow, Meadow Sheet** Range n= 0.130 P2= 2.90"
3.0	205	0.0267	1.14		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
0.7	54	0.0350	1.31		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
0.2	12	0.0200	0.99		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
10.1	321	Total			

Subcatchment PR-22: Subcat PR-22



Summary for Subcatchment PR-23: Subcat PR-23

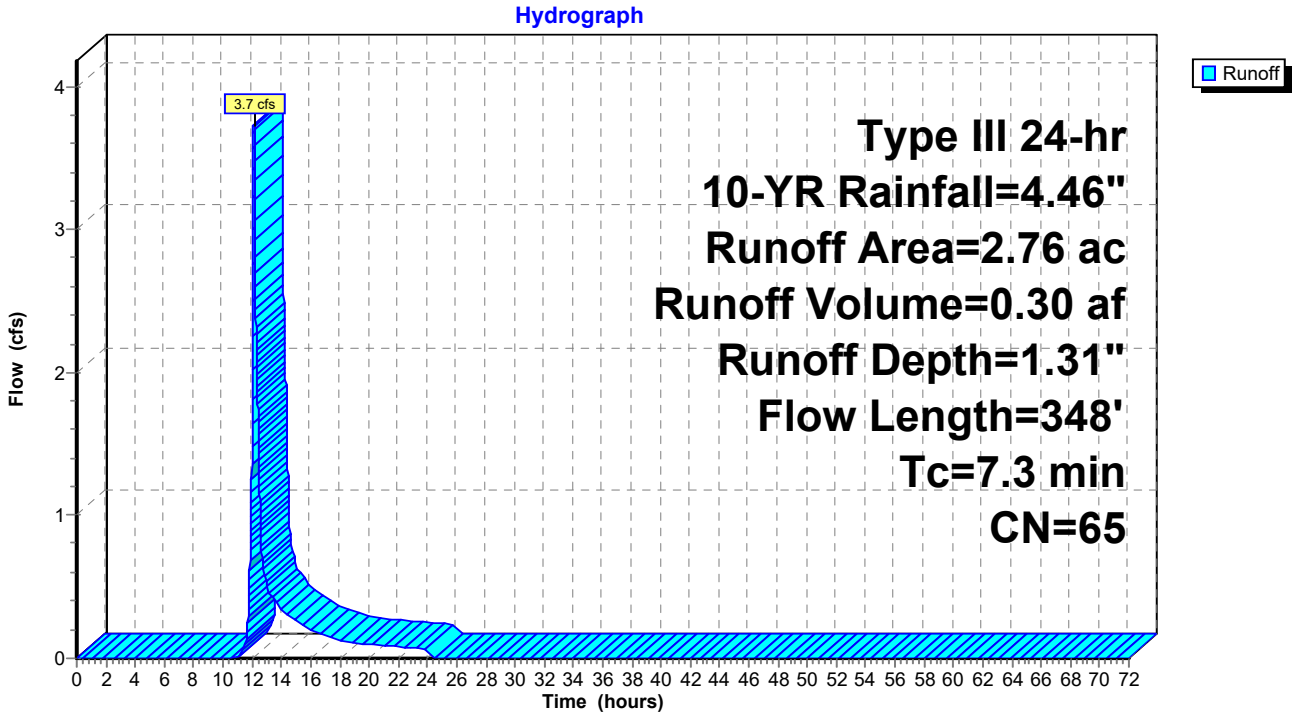
Runoff = 3.7 cfs @ 12.11 hrs, Volume= 0.30 af, Depth= 1.31"
Routed to Link DP-1 : Existing 18" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.19	61	>75% Grass cover, Good, HSG B
0.00	74	>75% Grass cover, Good, HSG C
1.56	58	Meadow, non-grazed, HSG B
0.00	71	Meadow, non-grazed, HSG C
0.00	78	Meadow, non-grazed, HSG D
0.34	98	Paved parking, HSG B
0.00	98	Paved parking, HSG C
0.00	98	Paved parking, HSG D
0.01	98	Unconnected roofs, HSG B
0.18	55	Woods, Good, HSG B
0.13	70	Woods, Good, HSG C
0.08	58	Woods/grass comb., Good, HSG B
0.27	72	Woods/grass comb., Good, HSG C
2.76	65	Weighted Average
2.41		87.40% Pervious Area
0.35		12.60% Impervious Area
0.01		3.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	50	0.0470	0.22		**Sheet Flow,** Range n= 0.130 P2= 2.90"
3.6	298	0.0397	1.39		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.3	348	Total			

Subcatchment PR-23: Subcat PR-23



Summary for Subcatchment PR-24: Subcat PR-24

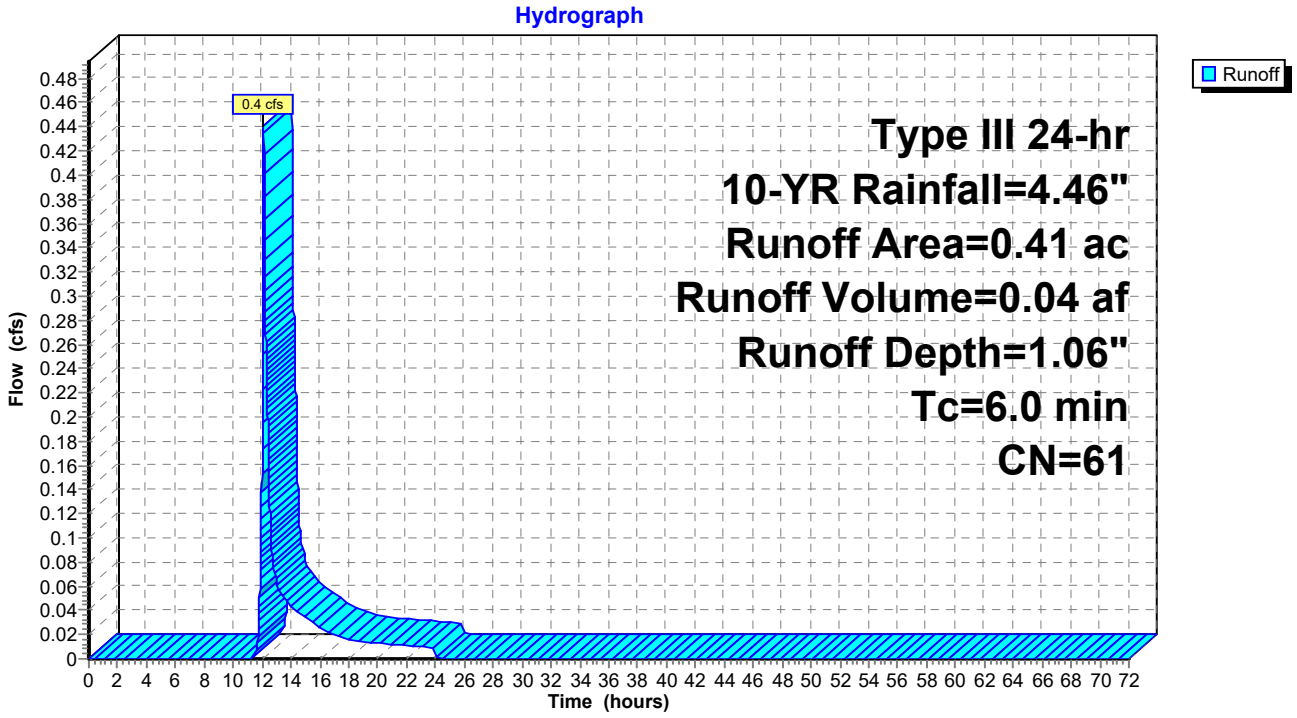
Runoff = 0.4 cfs @ 12.10 hrs, Volume= 0.04 af, Depth= 1.06"
Routed to Pond 2P : Left Side Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.41	61	>75% Grass cover, Good, HSG B
0.41		100.00% Pervious Area

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

Subcatchment PR-24: Subcat PR-24



Summary for Subcatchment PR-3: Subcat PR-3

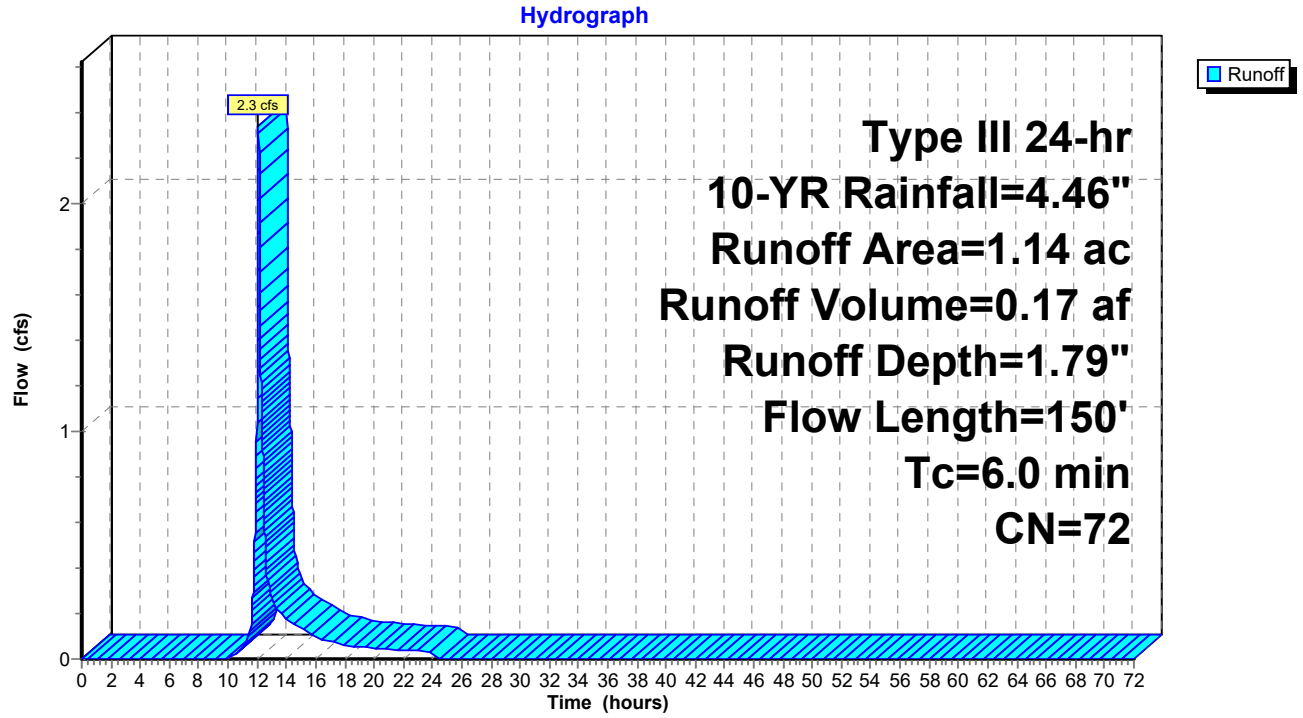
Runoff = 2.3 cfs @ 12.09 hrs, Volume= 0.17 af, Depth= 1.79"
Routed to Link DP-3 : Hovey Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.21	74	>75% Grass cover, Good, HSG C
0.00	96	Gravel surface, HSG B
0.03	96	Gravel surface, HSG C
0.01	58	Meadow, non-grazed, HSG B
0.88	71	Meadow, non-grazed, HSG C
0.00	55	Woods, Good, HSG B
1.14	72	Weighted Average
1.14		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0334	0.19		**Sheet Flow,** Range n= 0.130 P2= 2.90"
1.3	100	0.0332	1.28		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4					**Direct Entry,**
6.0	150	Total			

Subcatchment PR-3: Subcat PR-3



Summary for Subcatchment PR-4: Subcat PR-4

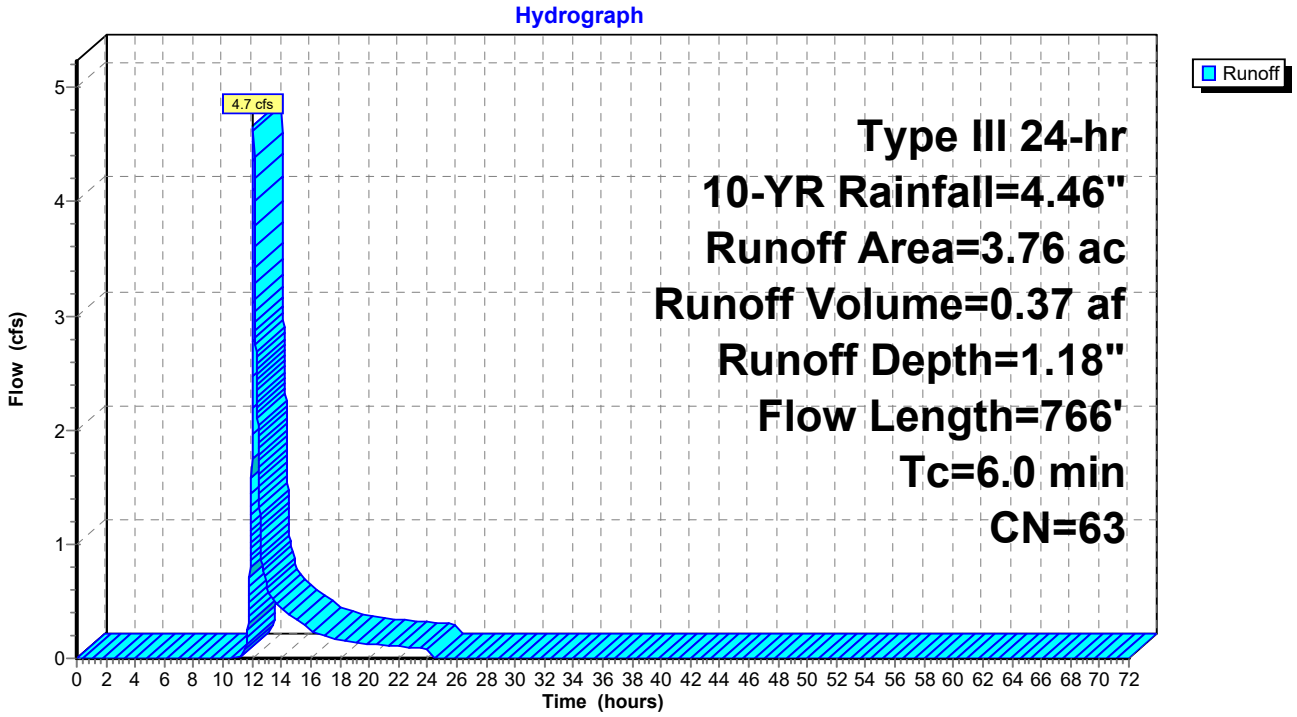
Runoff = 4.7 cfs @ 12.10 hrs, Volume= 0.37 af, Depth= 1.18"
Routed to Pond C4 : CULVERT #4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
3.39	61	>75% Grass cover, Good, HSG B
0.28	74	>75% Grass cover, Good, HSG C
0.08	96	Gravel surface, HSG B
0.00	96	Gravel surface, HSG C
0.00	98	Paved parking, HSG B
3.76	63	Weighted Average
3.76		100.00% Pervious Area
0.00		0.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	50	0.0440	9.66	108.16	**Channel Flow, Swale Flow** Area= 11.2 sf Perim= 12.5' r= 0.90' n= 0.030 Earth, grassed & winding
3.8	716	0.0443	3.16		**Shallow Concentrated Flow, Channel** Grassed Waterway Kv= 15.0 fps
2.1					**Direct Entry, Entry to attain minimum TC**
6.0	766	Total			

Subcatchment PR-4: Subcat PR-4



Summary for Subcatchment PR-5: Subcat PR-5

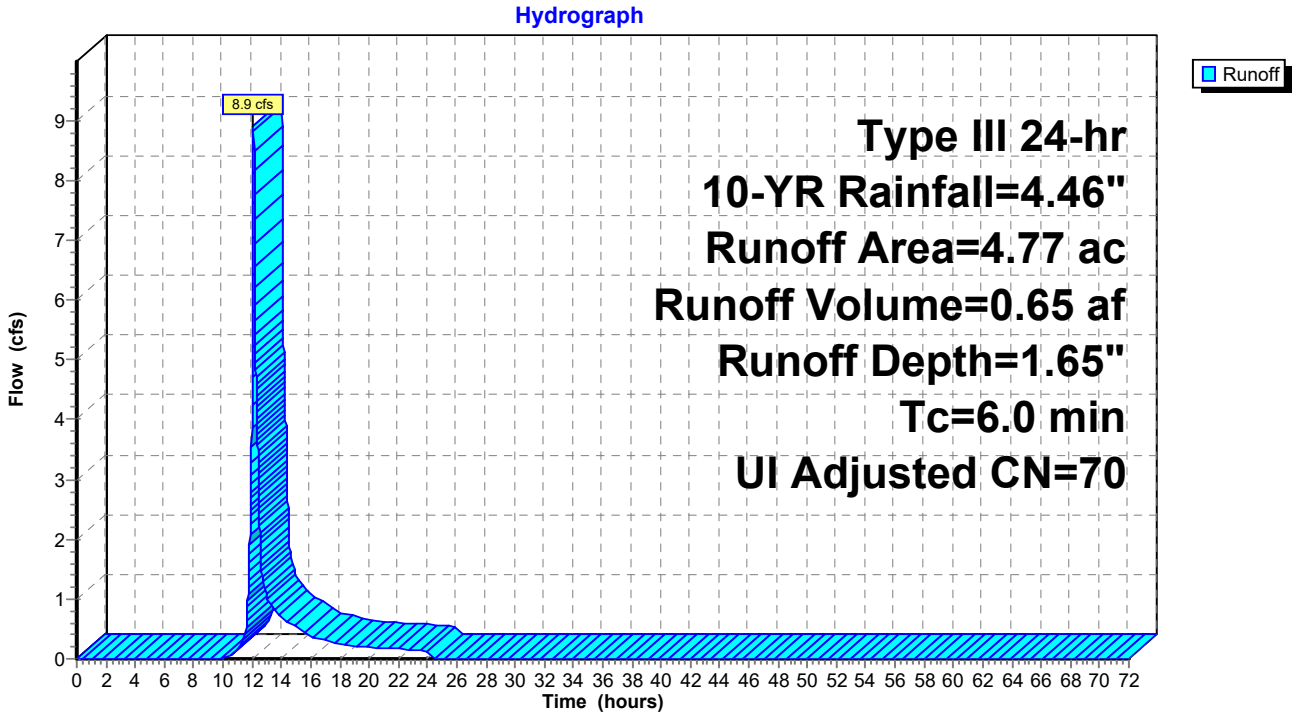
Runoff = 8.9 cfs @ 12.09 hrs, Volume= 0.65 af, Depth= 1.65"
Routed to Pond 3P : Sand Filter #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Adj	Description
3.25	61		>75% Grass cover, Good, HSG B
0.15	74		>75% Grass cover, Good, HSG C
0.00	58		Meadow, non-grazed, HSG B
0.77	98		Paved parking, HSG B
0.08	98		Paved parking, HSG C
0.45	98		Unconnected roofs, HSG B
0.07	98		Unconnected roofs, HSG C
4.77	72	70	Weighted Average, UI Adjusted
3.40			71.26% Pervious Area
1.37			28.74% Impervious Area
0.52			37.75% Unconnected

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

Subcatchment PR-5: Subcat PR-5



Summary for Subcatchment PR-6: Subcat PR-6

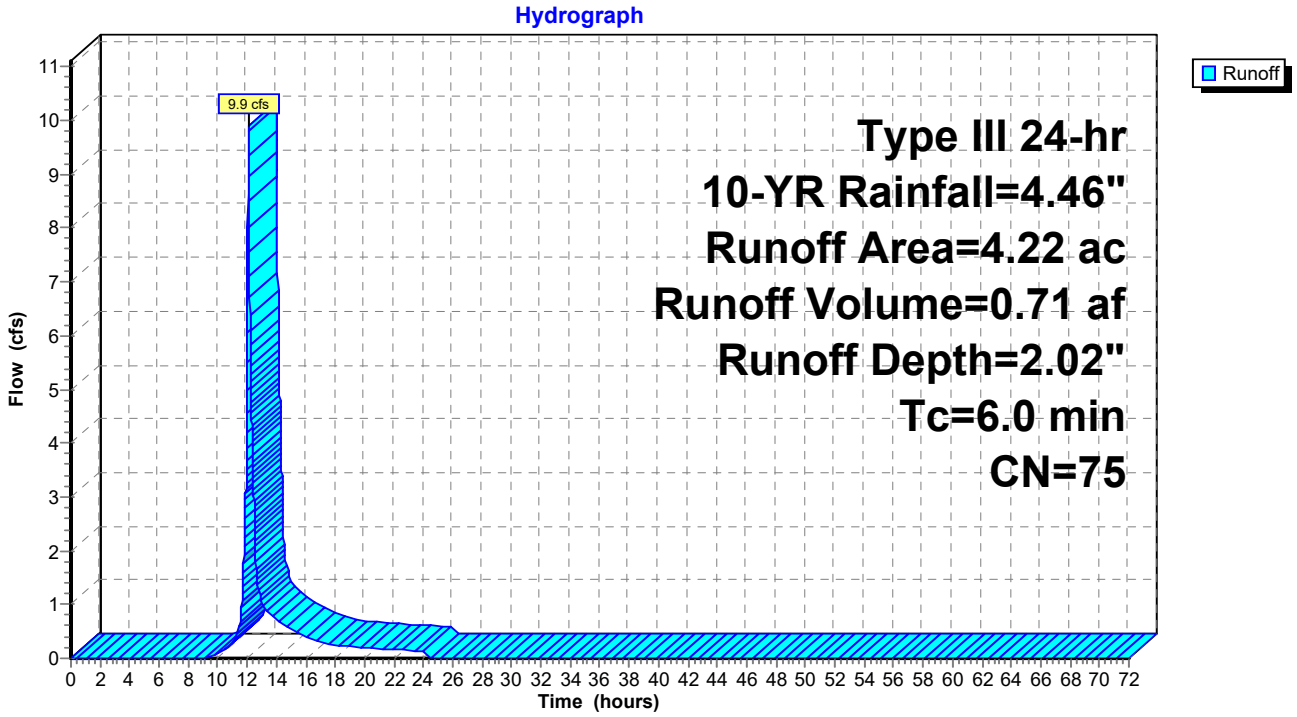
Runoff = 9.9 cfs @ 12.09 hrs, Volume= 0.71 af, Depth= 2.02"
Routed to Pond 4P : Sand Filter #4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
1.17	61	>75% Grass cover, Good, HSG B
0.23	74	>75% Grass cover, Good, HSG C
0.00	96	Gravel surface, HSG B
0.01	96	Gravel surface, HSG C
1.07	58	Meadow, non-grazed, HSG B
0.24	71	Meadow, non-grazed, HSG C
0.89	98	Paved parking, HSG B
0.15	98	Paved parking, HSG C
0.40	98	Unconnected roofs, HSG B
0.08	98	Unconnected roofs, HSG C
4.22	75	Weighted Average
2.71		64.30% Pervious Area
1.51		35.70% Impervious Area
0.47		31.49% Unconnected

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

Subcatchment PR-6: Subcat PR-6



Summary for Subcatchment PR-7: Subcat PR-7

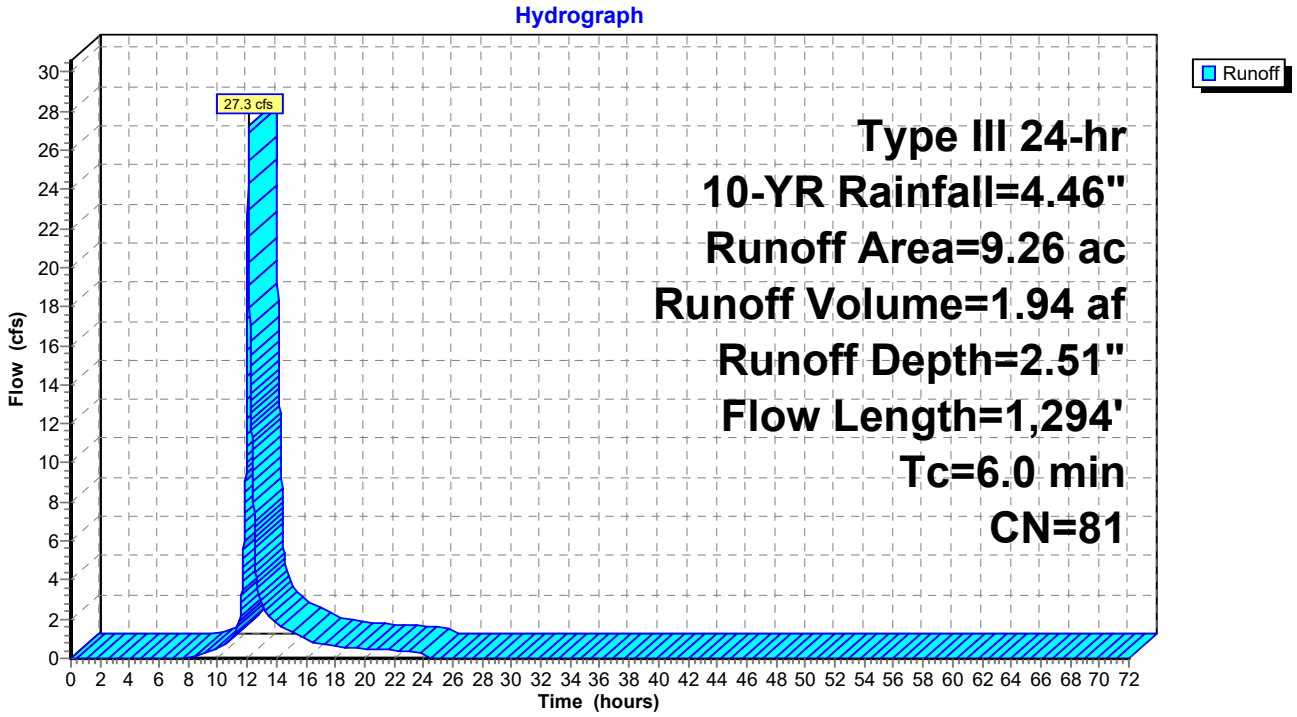
Runoff = 27.3 cfs @ 12.09 hrs, Volume= 1.94 af, Depth= 2.51"
Routed to Pond 5P : Sand Filter #5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.28	61	>75% Grass cover, Good, HSG B
5.04	74	>75% Grass cover, Good, HSG C
0.01	96	Gravel surface, HSG C
0.00	58	Meadow, non-grazed, HSG B
0.94	71	Meadow, non-grazed, HSG C
0.01	98	Paved parking, HSG B
1.84	98	Paved parking, HSG C
0.03	98	Unconnected roofs, HSG B
1.10	98	Unconnected roofs, HSG C
9.26	81	Weighted Average
6.27		67.70% Pervious Area
2.99		32.30% Impervious Area
1.14		38.04% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	50	0.0100	0.86		**Sheet Flow, Meadow Sheet Flow** Smooth surfaces n= 0.011 P2= 2.90"
3.3	402	0.0100	2.03		**Shallow Concentrated Flow, Shallow Concentrated Meadow** Paved Kv= 20.3 fps
1.3	842	0.0135	10.96	77.50	**Pipe Channel, Pipe Flow** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
0.4					**Direct Entry,**
6.0	1,294	Total			

Subcatchment PR-7: Subcat PR-7



Summary for Subcatchment PR-8: Subcat PR-8

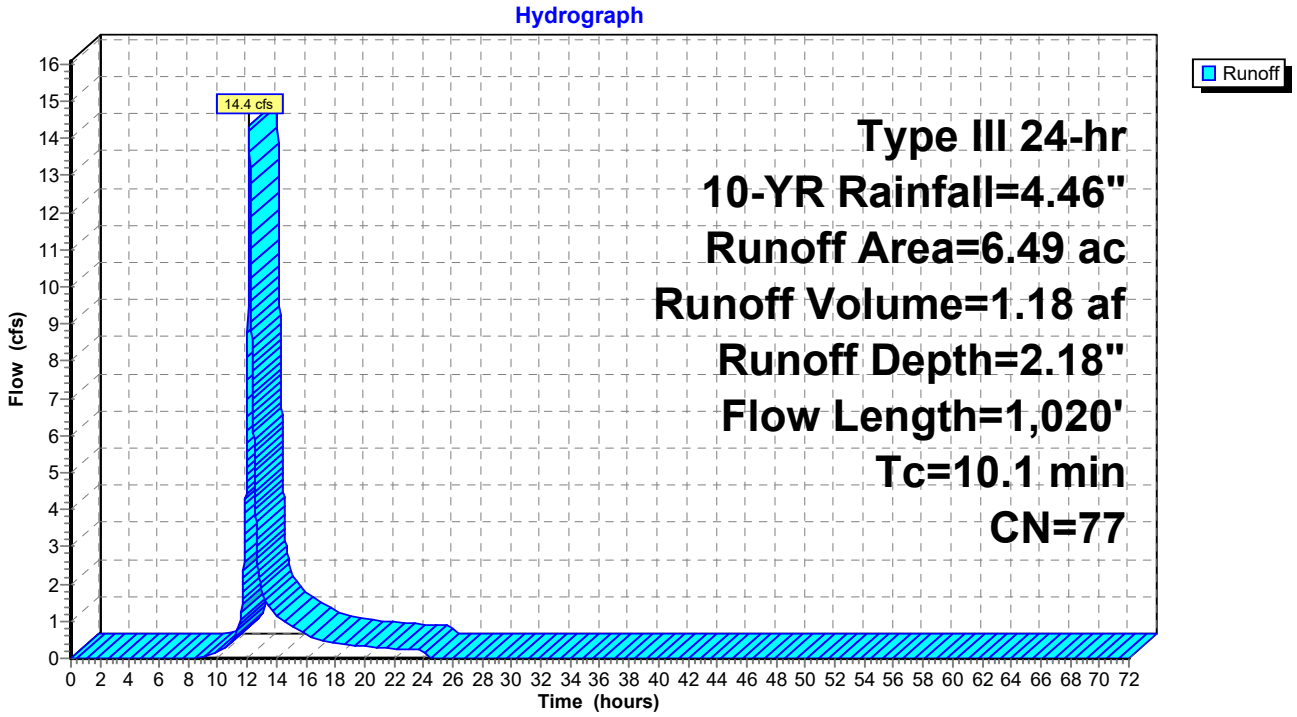
Runoff = 14.4 cfs @ 12.14 hrs, Volume= 1.18 af, Depth= 2.18"
Routed to Pond 6P : Sand Filter #6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
3.42	61	>75% Grass cover, Good, HSG B
0.12	74	>75% Grass cover, Good, HSG C
0.08	96	Gravel surface, HSG B
0.00	96	Gravel surface, HSG C
0.09	58	Meadow, non-grazed, HSG B
0.00	71	Meadow, non-grazed, HSG C
1.67	98	Paved parking, HSG B
0.24	98	Paved parking, HSG C
0.00	98	Paved parking, HSG D
0.16	98	Unconnected pavement, HSG C
0.70	98	Unconnected roofs, HSG B
0.00	98	Unconnected roofs, HSG C
6.49	77	Weighted Average
3.71		57.23% Pervious Area
2.78		42.77% Impervious Area
0.86		31.16% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	50	0.0100	0.11		**Sheet Flow, Grass Sheet Flow** Grass: Short n= 0.150 P2= 2.90"
1.1	211	0.0267	3.32		**Shallow Concentrated Flow, Shallow Concentrated Pavement** Paved Kv= 20.3 fps
1.2	759	0.0316	10.57	18.67	**Pipe Channel, Pipe Flow** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
10.1	1,020	Total			

Subcatchment PR-8: Subcat PR-8



Summary for Subcatchment PR-9: Subcat PR-9

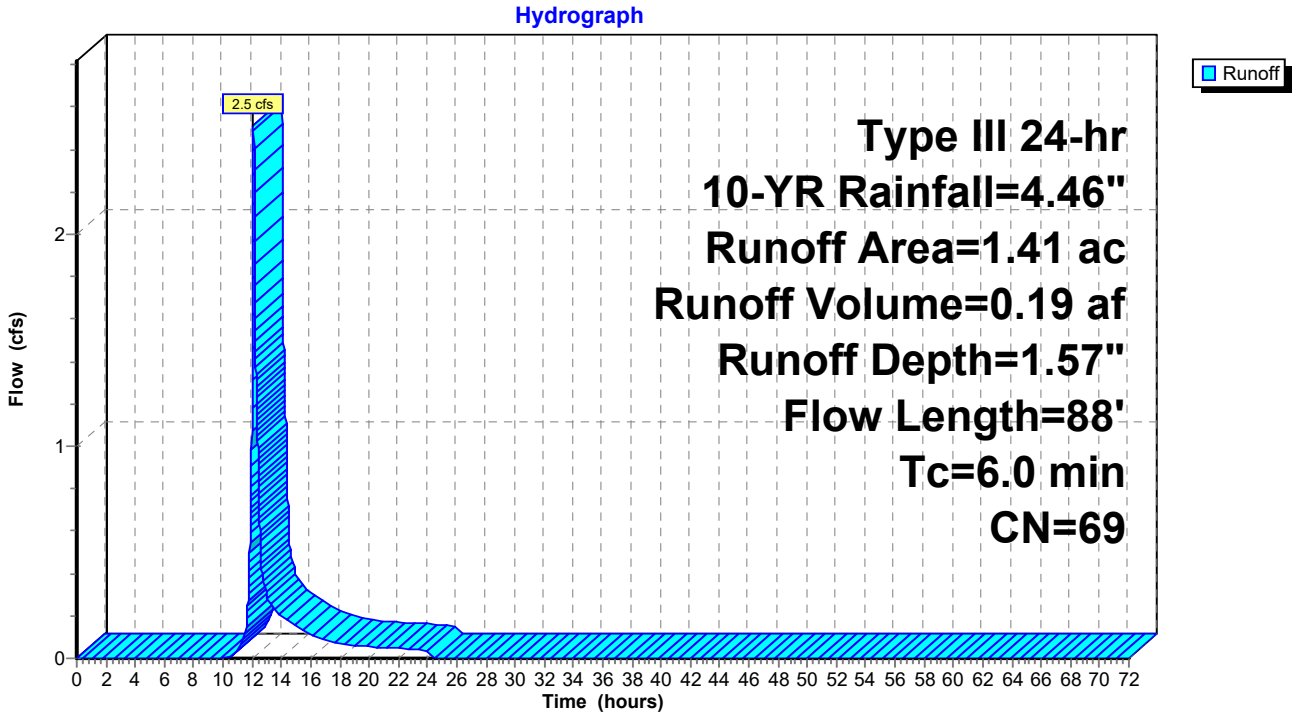
Runoff = 2.5 cfs @ 12.09 hrs, Volume= 0.19 af, Depth= 1.57"
Routed to Link DP-5 : Offsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.46"

Area (ac)	CN	Description
0.00	61	>75% Grass cover, Good, HSG B
0.12	74	>75% Grass cover, Good, HSG C
0.09	58	Meadow, non-grazed, HSG B
0.44	71	Meadow, non-grazed, HSG C
0.00	98	Paved parking, HSG C
0.08	55	Woods, Good, HSG B
0.68	70	Woods, Good, HSG C
1.41	69	Weighted Average
1.41		100.00% Pervious Area
0.00		0.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	50	0.0222	0.16		**Sheet Flow, Sheet Meadow Flow** Range n= 0.130 P2= 2.90"
0.6	38	0.0526	1.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3					**Direct Entry,**
6.0	88	Total			

Subcatchment PR-9: Subcat PR-9



Summary for Reach 1R: Thru PR-15

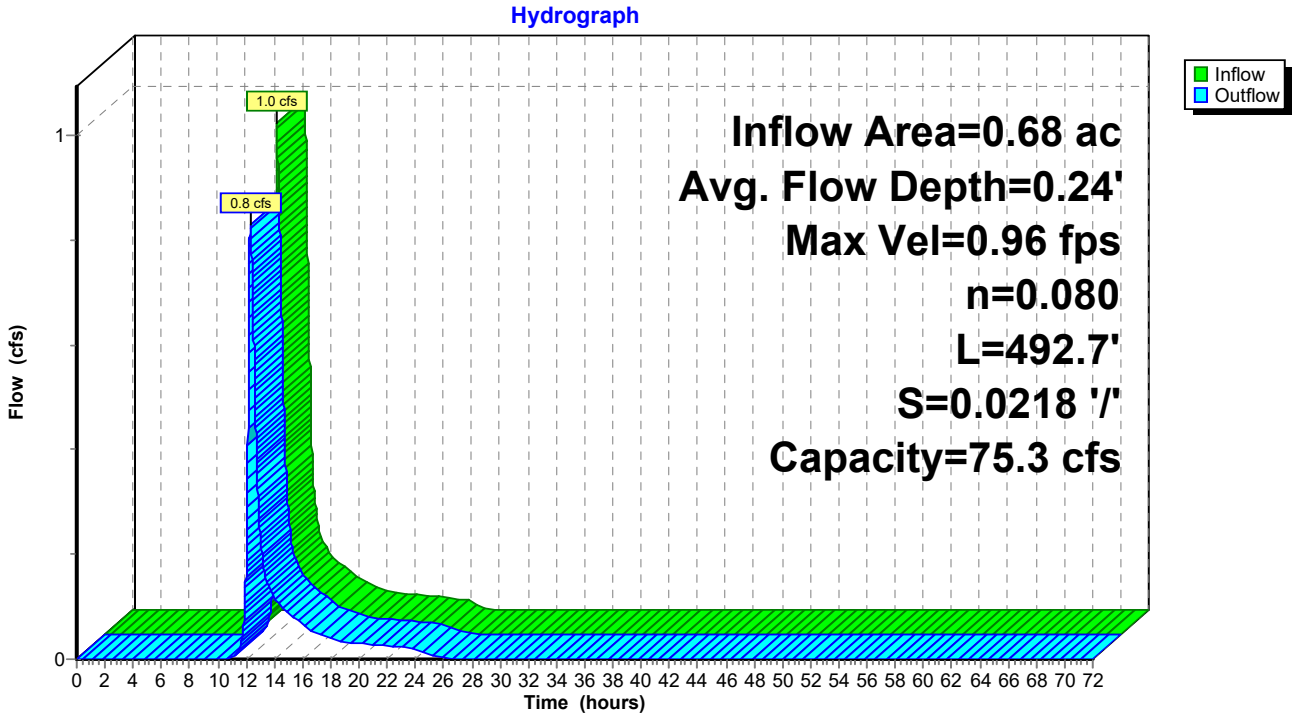
Inflow Area = 0.68 ac, 0.00% Impervious, Inflow Depth = 1.72" for 10-YR event
Inflow = 1.0 cfs @ 12.18 hrs, Volume= 0.10 af
Outflow = 0.8 cfs @ 12.30 hrs, Volume= 0.10 af, Atten= 15%, Lag= 7.0 min
Routed to Pond C15 : PR-15 culvert

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.96 fps, Min. Travel Time= 8.6 min
Avg. Velocity = 0.31 fps, Avg. Travel Time= 26.2 min

Peak Storage= 427 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 4.12'
Bank-Full Depth= 2.50' Flow Area= 21.9 sf, Capacity= 75.3 cfs

3.00' x 2.50' deep channel, n= 0.080
Side Slope Z-value= 2.3 '/' Top Width= 14.50'
Length= 492.7' Slope= 0.0218 '/'
Inlet Invert= 467.11', Outlet Invert= 456.38'





Summary for Reach 2R: Thru PR-17

Inflow Area = 4.20 ac, 30.97% Impervious, Inflow Depth = 1.94" for 10-YR event
Inflow = 2.6 cfs @ 12.50 hrs, Volume= 0.68 af
Outflow = 2.6 cfs @ 12.55 hrs, Volume= 0.68 af, Atten= 2%, Lag= 3.1 min
Routed to Pond C17 : PR-17 culvert

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.82 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 0.80 fps, Avg. Travel Time= 7.6 min

Peak Storage= 514 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 9.02'
Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 66.7 cfs

Custom cross-section, Length= 365.0' Slope= 0.0218 '/'
Constant n= 0.035 High grass
Inlet Invert= 470.44', Outlet Invert= 462.49'

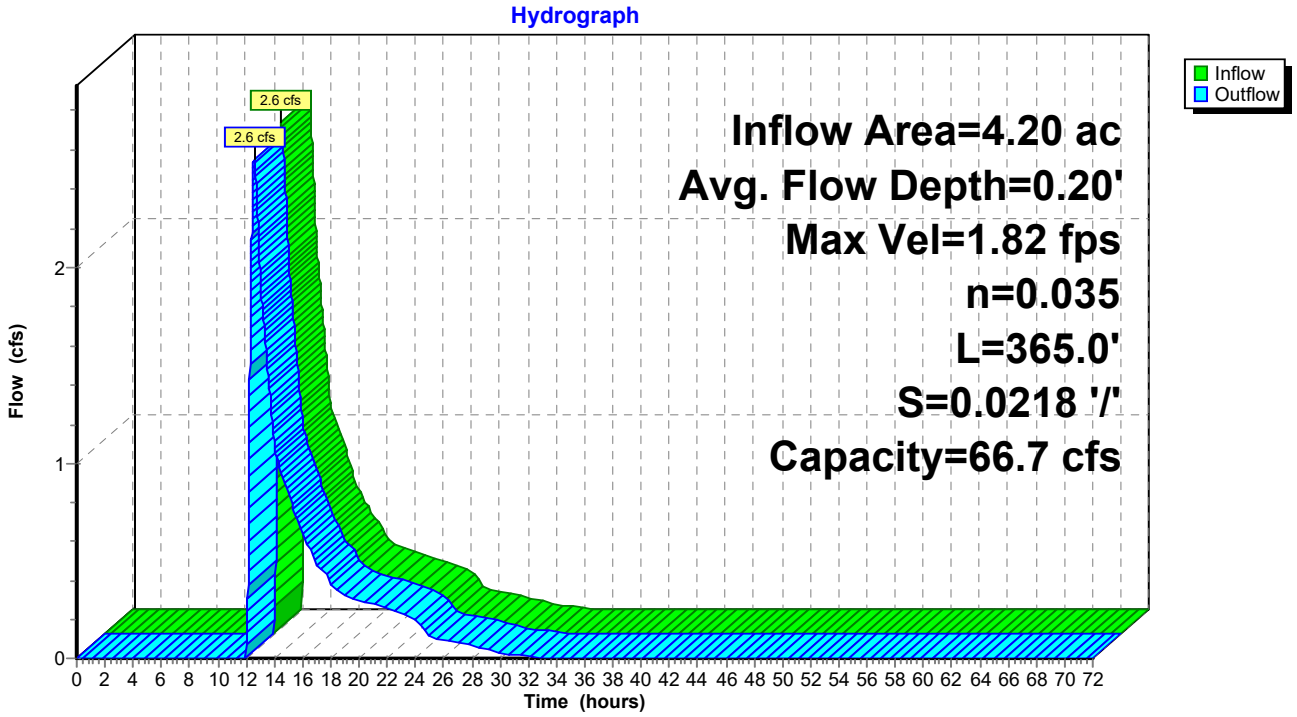


‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	1.00	0.00
10.00	0.00	1.00
15.00	0.00	1.00
25.00	1.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	5.0	0.0	0	0.0
1.00	15.0	25.1	25.0	5,475	66.7

Reach 2R: Thru PR-17



Summary for Reach 4R: Swale

Inflow Area = 4.77 ac, 28.74% Impervious, Inflow Depth = 1.65" for 10-YR event
Inflow = 3.0 cfs @ 12.44 hrs, Volume= 0.65 af
Outflow = 3.0 cfs @ 12.45 hrs, Volume= 0.65 af, Atten= 0%, Lag= 0.6 min
Routed to Pond C4 : CULVERT #4

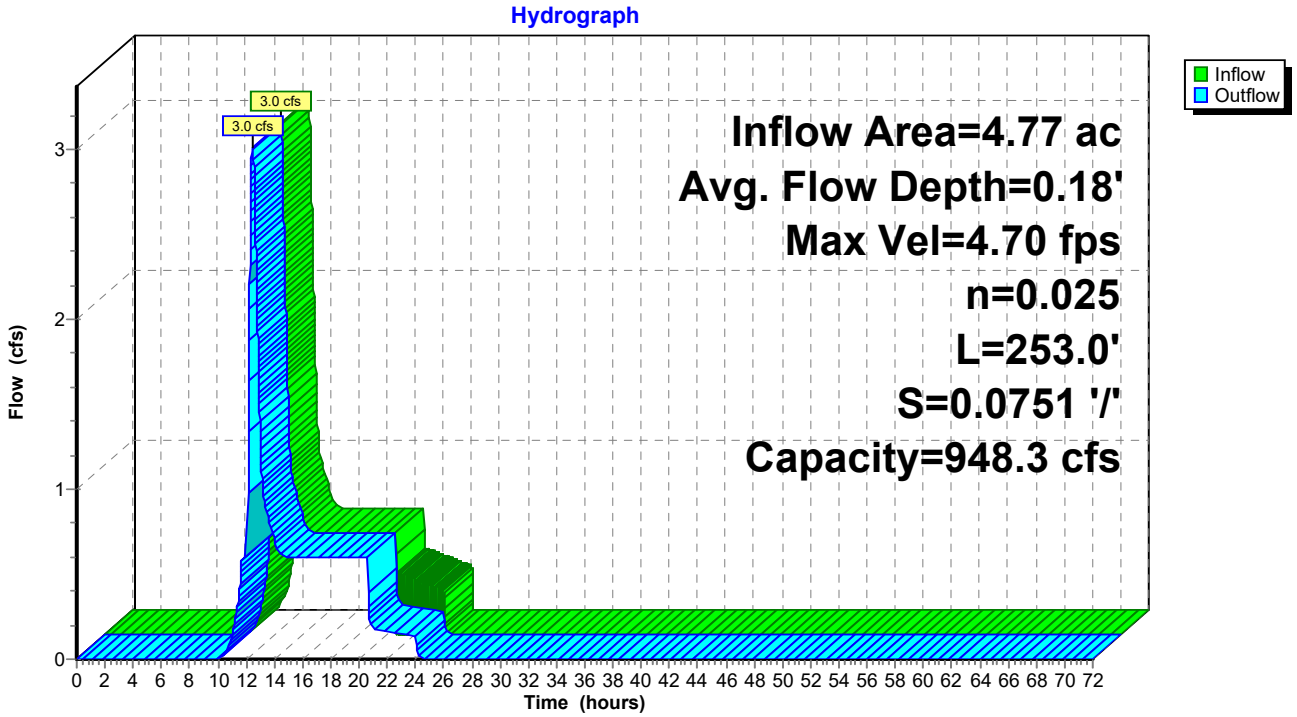
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.70 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.43 fps, Avg. Travel Time= 1.7 min

Peak Storage= 162 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 4.08'
Bank-Full Depth= 3.20' Flow Area= 40.3 sf, Capacity= 948.3 cfs

3.00' x 3.20' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 22.20'
Length= 253.0' Slope= 0.0751 '/'
Inlet Invert= 429.00', Outlet Invert= 410.00'



Reach 4R: Swale



Summary for Reach 5R: Swale to P1

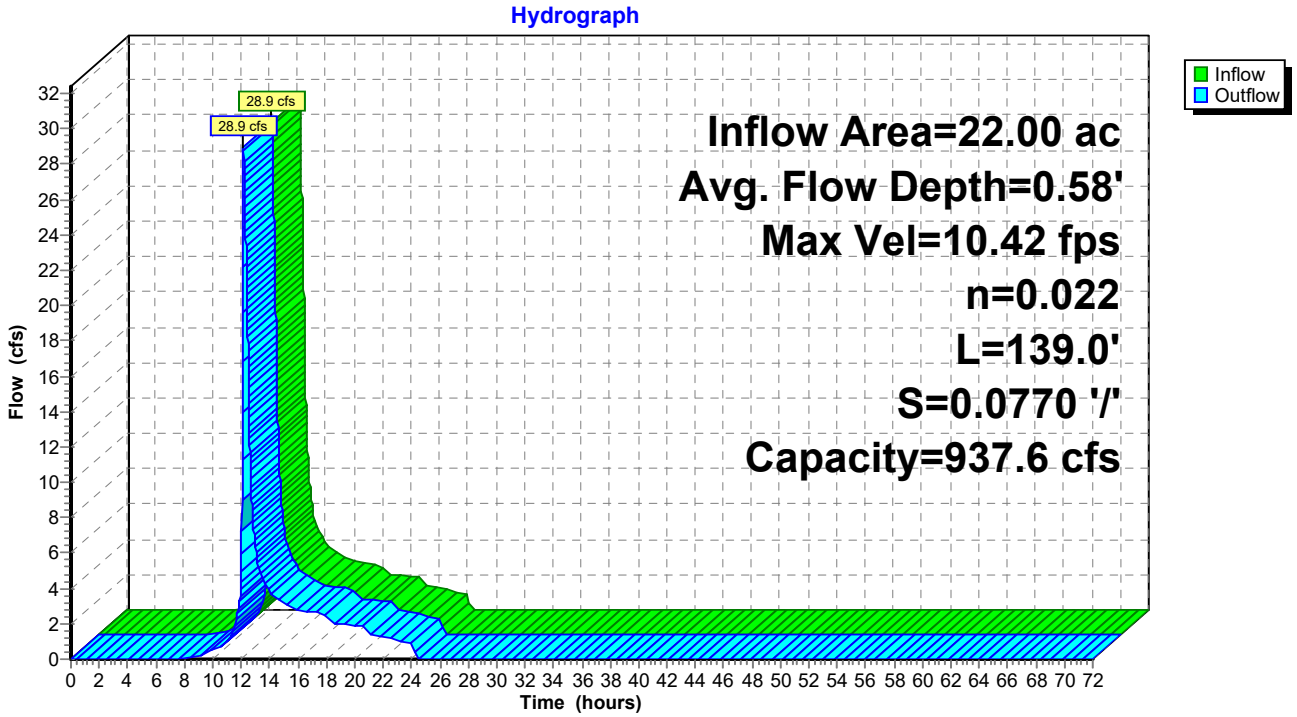
Inflow Area = 22.00 ac, 26.67% Impervious, Inflow Depth = 2.00" for 10-YR event
Inflow = 28.9 cfs @ 12.16 hrs, Volume= 3.67 af
Outflow = 28.9 cfs @ 12.16 hrs, Volume= 3.67 af, Atten= 0%, Lag= 0.2 min
Routed to Pond 1P : Primary Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 10.42 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.20 fps, Avg. Travel Time= 0.6 min

Peak Storage= 386 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.58' , Surface Width= 6.50'
Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 937.6 cfs

3.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 21.00'
Length= 139.0' Slope= 0.0770 '/'
Inlet Invert= 407.00', Outlet Invert= 396.30'





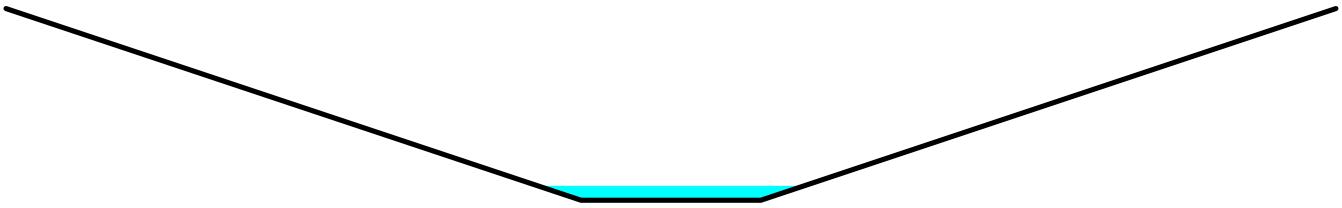
Summary for Reach 6R: Swale

Inflow Area = 4.22 ac, 35.70% Impervious, Inflow Depth = 2.02" for 10-YR event
Inflow = 4.7 cfs @ 12.29 hrs, Volume= 0.71 af
Outflow = 4.7 cfs @ 12.31 hrs, Volume= 0.71 af, Atten= 0%, Lag= 1.1 min
Routed to Pond C4 : CULVERT #4

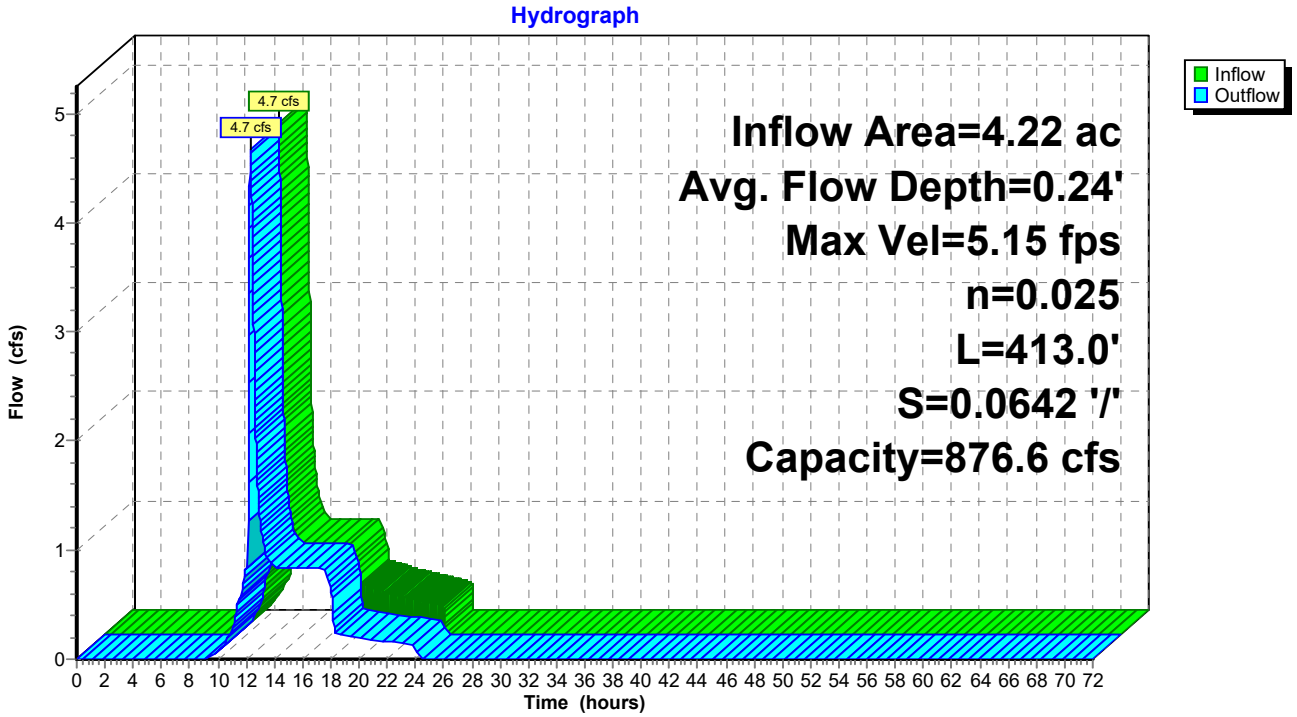
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.15 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 2.24 fps, Avg. Travel Time= 3.1 min

Peak Storage= 374 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 4.46'
Bank-Full Depth= 3.20' Flow Area= 40.3 sf, Capacity= 876.6 cfs

3.00' x 3.20' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 22.20'
Length= 413.0' Slope= 0.0642 '/'
Inlet Invert= 436.50', Outlet Invert= 410.00'



Reach 6R: Swale



Summary for Reach 7R: Swale

Inflow Area = 9.26 ac, 32.30% Impervious, Inflow Depth = 2.51" for 10-YR event
Inflow = 24.2 cfs @ 12.13 hrs, Volume= 1.94 af
Outflow = 23.3 cfs @ 12.16 hrs, Volume= 1.94 af, Atten= 4%, Lag= 1.5 min
Routed to Pond C4 : CULVERT #4

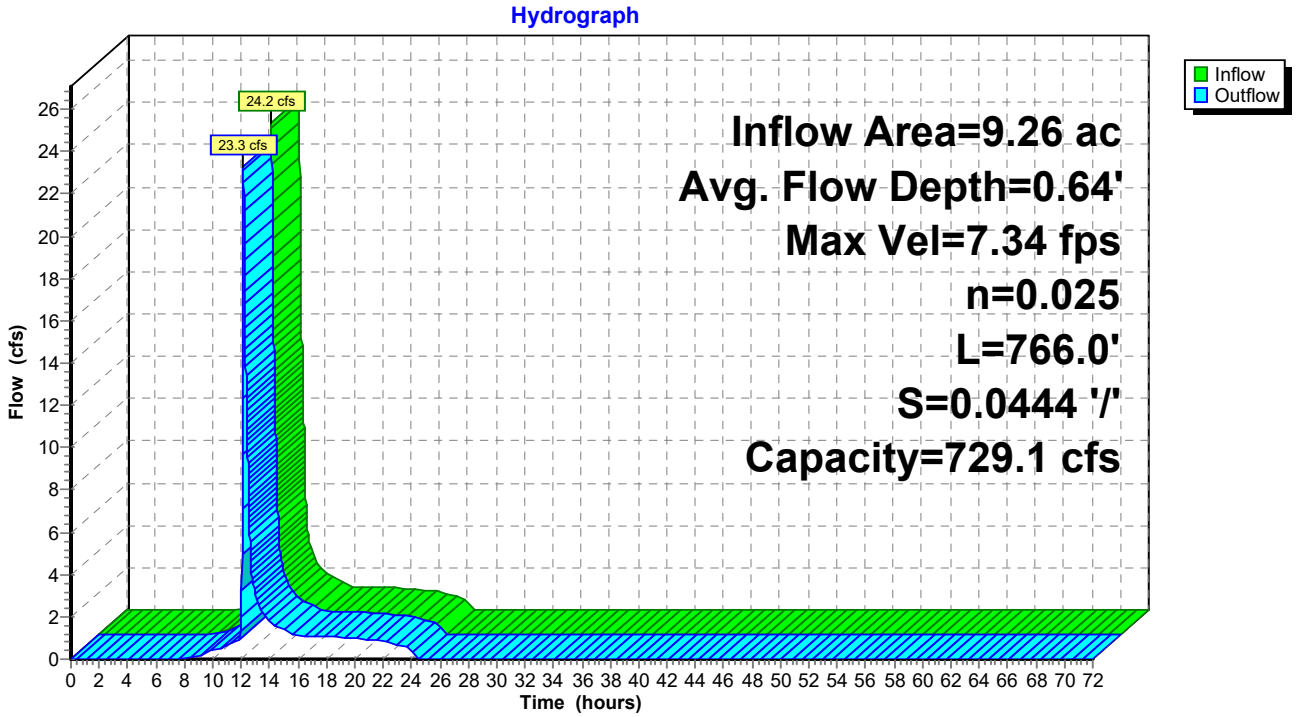
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.34 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 2.60 fps, Avg. Travel Time= 4.9 min

Peak Storage= 2,432 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.64' , Surface Width= 6.86'
Bank-Full Depth= 3.20' Flow Area= 40.3 sf, Capacity= 729.1 cfs

3.00' x 3.20' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 22.20'
Length= 766.0' Slope= 0.0444 '/'
Inlet Invert= 444.00', Outlet Invert= 410.00'



Reach 7R: Swale



Summary for Reach 13R: Culvert #2 to #1

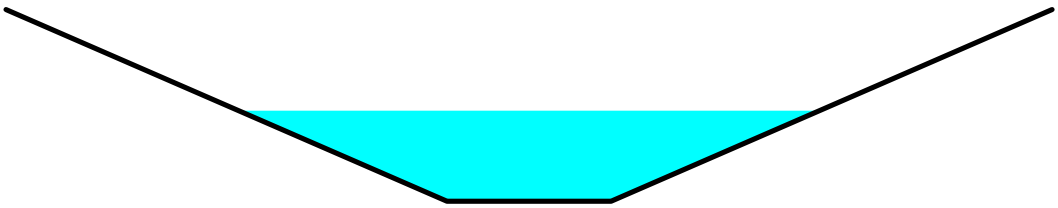
[62] Hint: Exceeded Reach 17R OUTLET depth by 2.68' @ 12.45 hrs
[62] Hint: Exceeded Reach 21R OUTLET depth by 2.51' @ 12.42 hrs

Inflow Area = 33.58 ac, 17.78% Impervious, Inflow Depth = 2.13" for 10-YR event
Inflow = 36.3 cfs @ 12.39 hrs, Volume= 5.97 af
Outflow = 35.6 cfs @ 12.44 hrs, Volume= 5.97 af, Atten= 2%, Lag= 3.2 min
Routed to Pond WC1 : Wetland Cross Culvert #1

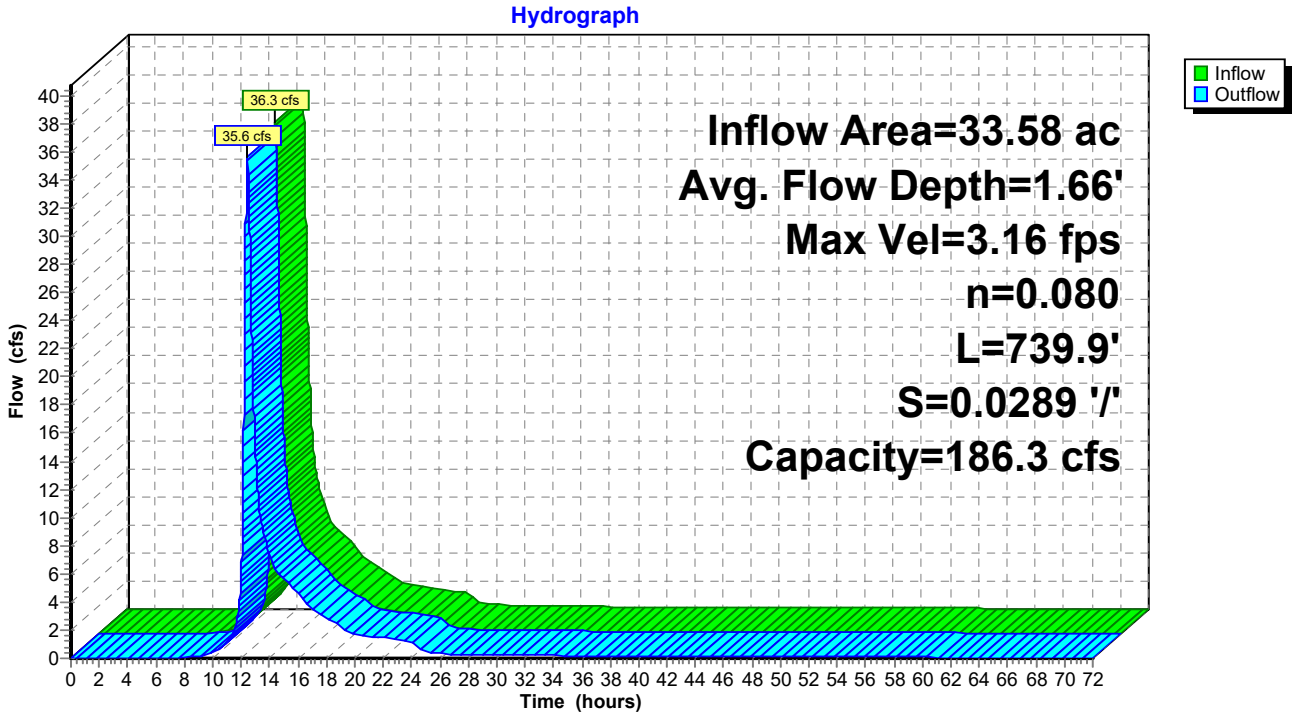
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.16 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.82 fps, Avg. Travel Time= 15.1 min

Peak Storage= 8,345 cf @ 12.44 hrs
Average Depth at Peak Storage= 1.66' , Surface Width= 10.62'
Bank-Full Depth= 3.50' Flow Area= 38.7 sf, Capacity= 186.3 cfs

3.00' x 3.50' deep channel, n= 0.080
Side Slope Z-value= 2.3 '/' Top Width= 19.10'
Length= 739.9' Slope= 0.0289 '/'
Inlet Invert= 431.12', Outlet Invert= 409.70'



Reach 13R: Culvert #2 to #1



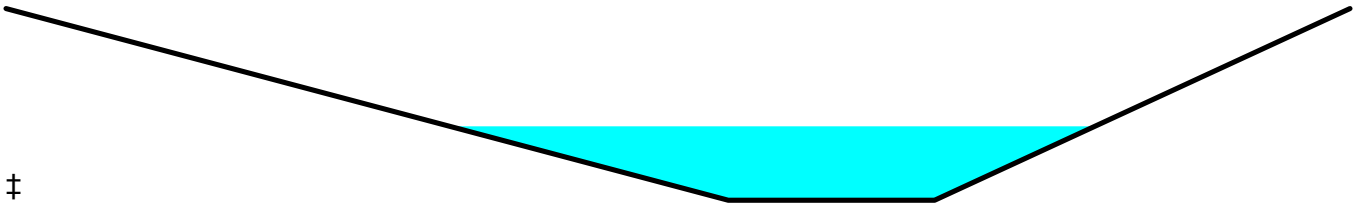
Summary for Reach 15R: Culvert #1 to DP

Inflow Area = 46.38 ac, 12.87% Impervious, Inflow Depth = 1.89" for 10-YR event
Inflow = 45.3 cfs @ 12.44 hrs, Volume= 7.29 af
Outflow = 45.0 cfs @ 12.47 hrs, Volume= 7.29 af, Atten= 1%, Lag= 2.0 min
Routed to Link DP-1 : Existing 18" Culvert

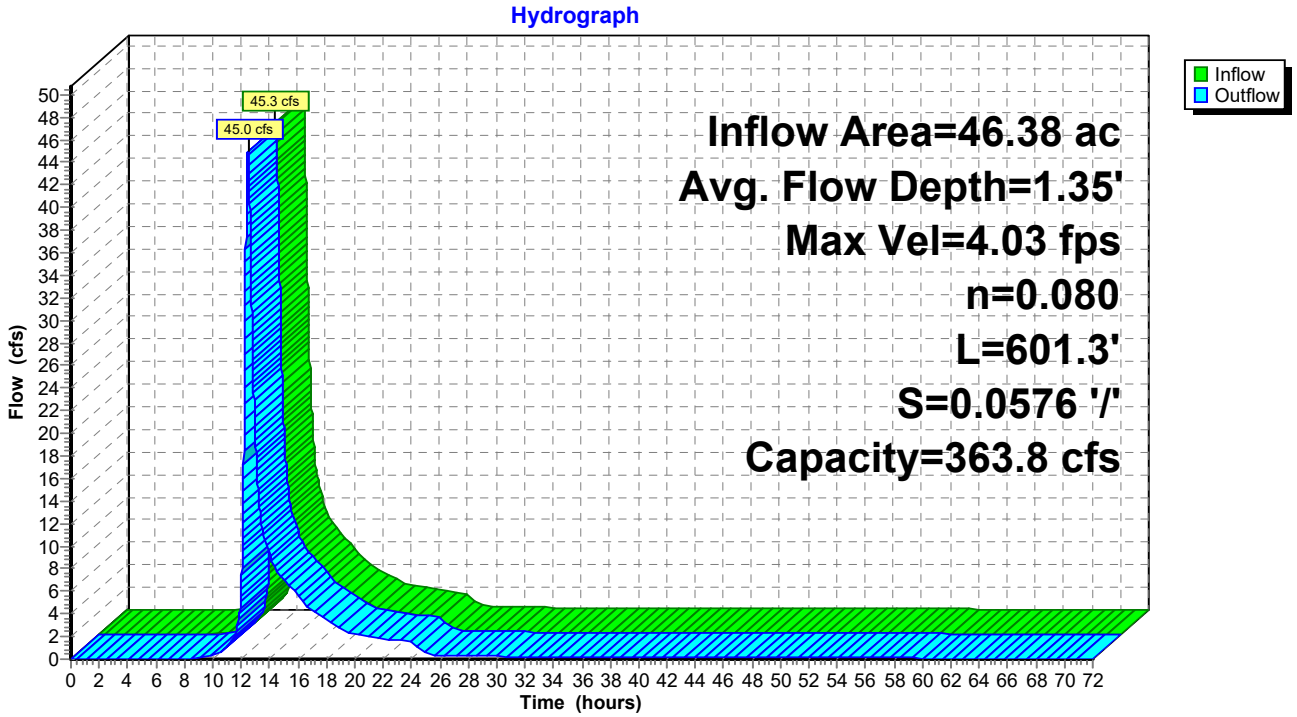
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.03 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 0.98 fps, Avg. Travel Time= 10.3 min

Peak Storage= 6,705 cf @ 12.47 hrs
Average Depth at Peak Storage= 1.35' , Surface Width= 12.51'
Bank-Full Depth= 3.50' Flow Area= 52.6 sf, Capacity= 363.8 cfs

4.00' x 3.50' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 4.0 2.3 '/' Top Width= 26.05'
Length= 601.3' Slope= 0.0576 '/'
Inlet Invert= 406.94', Outlet Invert= 372.30'



‡



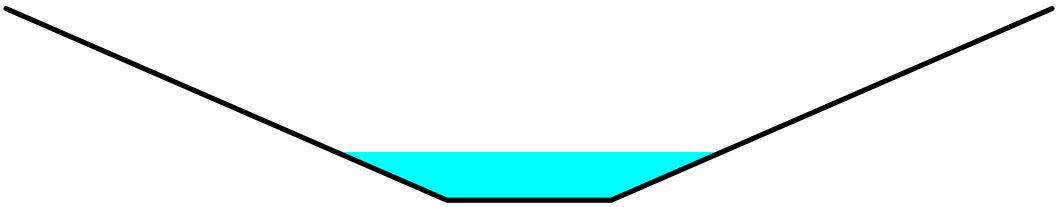
Summary for Reach 16R: Thru PR-14

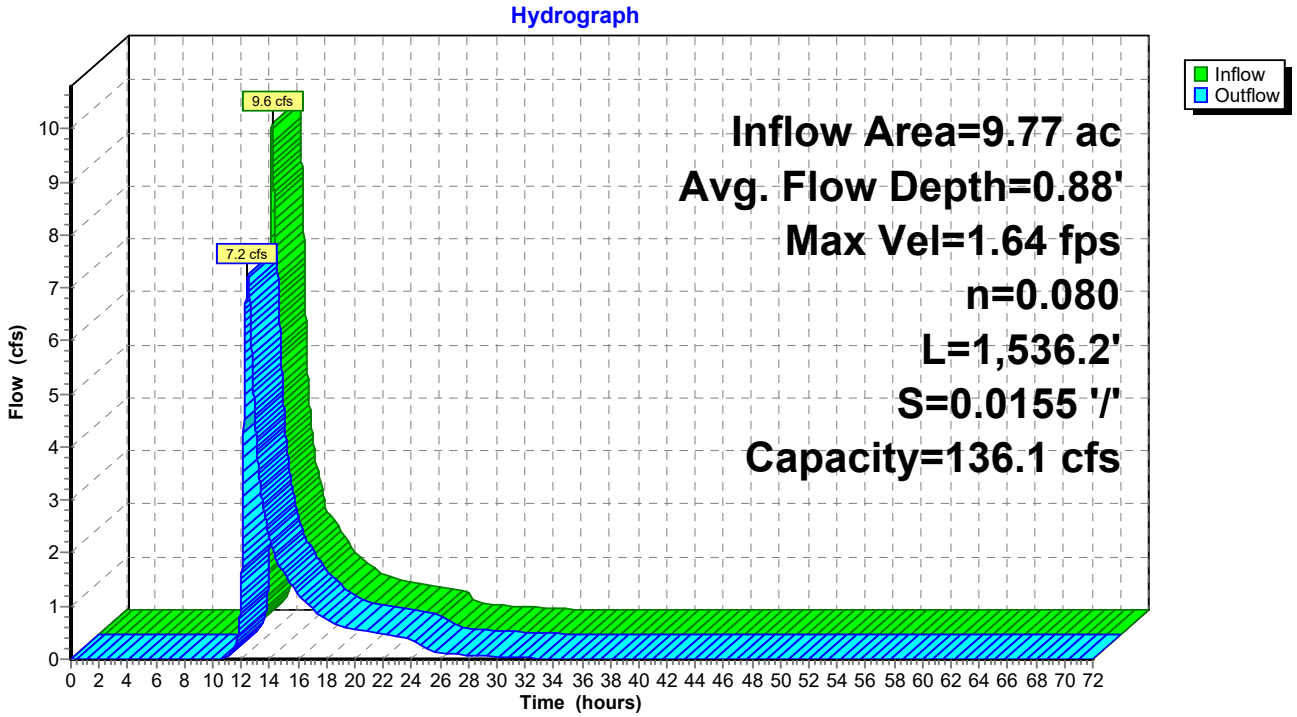
Inflow Area = 9.77 ac, 13.32% Impervious, Inflow Depth = 1.84" for 10-YR event
Inflow = 9.6 cfs @ 12.20 hrs, Volume= 1.49 af
Outflow = 7.2 cfs @ 12.45 hrs, Volume= 1.49 af, Atten= 25%, Lag= 15.2 min
Routed to Pond WC2 : Wetland Cross Culvert #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.64 fps, Min. Travel Time= 15.6 min
Avg. Velocity = 0.52 fps, Avg. Travel Time= 49.3 min

Peak Storage= 6,796 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.88' , Surface Width= 7.05'
Bank-Full Depth= 3.50' Flow Area= 38.7 sf, Capacity= 136.1 cfs

3.00' x 3.50' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 2.3 '/' Top Width= 19.10'
Length= 1,536.2' Slope= 0.0155 '/'
Inlet Invert= 455.24', Outlet Invert= 431.50'





Summary for Reach 17R: PR12 Culvert to Swale

Inflow Area = 0.67 ac, 0.00% Impervious, Inflow Depth = 1.79" for 10-YR event
Inflow = 1.4 cfs @ 12.09 hrs, Volume= 0.10 af
Outflow = 0.8 cfs @ 12.21 hrs, Volume= 0.10 af, Atten= 38%, Lag= 6.7 min
Routed to Reach 13R : Culvert #2 to #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.86 fps, Min. Travel Time= 14.4 min
Avg. Velocity = 0.49 fps, Avg. Travel Time= 25.2 min

Peak Storage= 731 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.09' , Surface Width= 11.80'
Bank-Full Depth= 3.70' Flow Area= 121.2 sf, Capacity= 1,023.2 cfs

Custom cross-section, Length= 741.0' Slope= 0.0219 '/' (101 Elevation Intervals)
Constant n= 0.050 Scattered brush, heavy weeds
Inlet Invert= 446.26', Outlet Invert= 430.02'

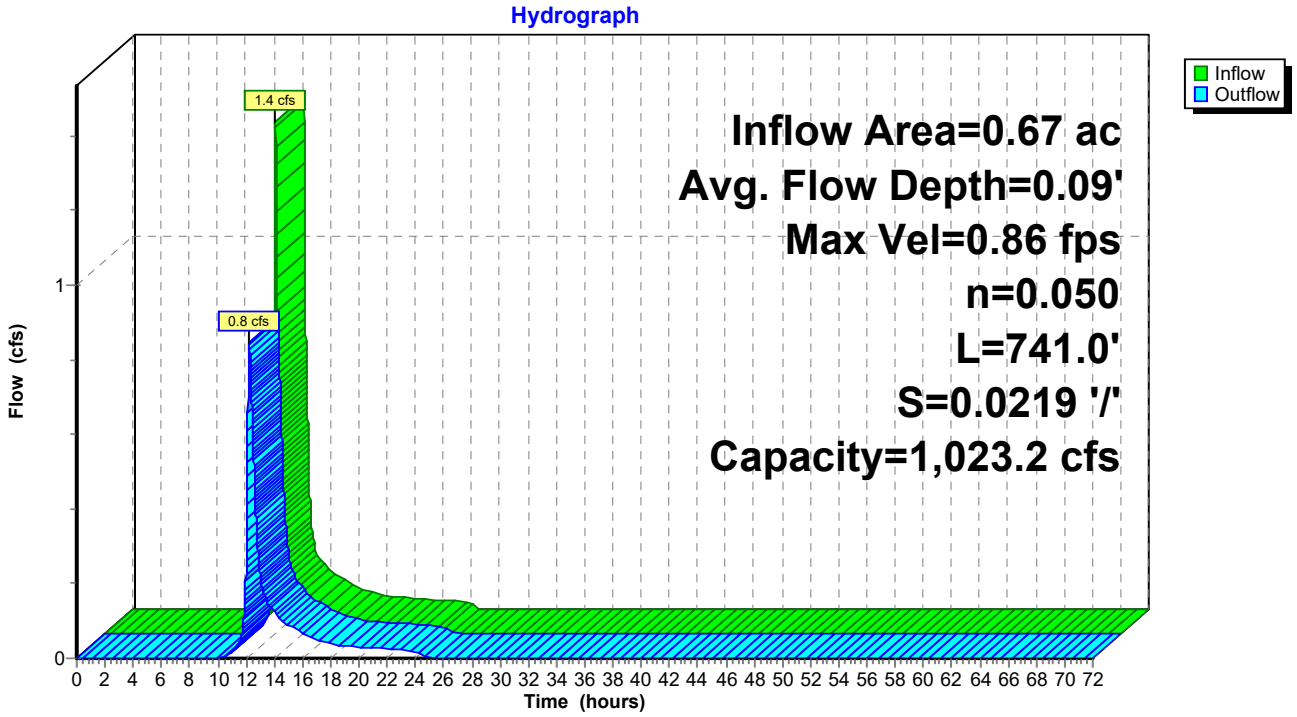


‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	3.70	0.00
3.00	2.50	1.20
7.50	1.00	2.70
17.50	0.00	3.70
27.50	0.00	3.70
37.50	1.00	2.70
41.50	2.50	1.20
44.50	3.70	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
1.00	20.0	30.1	30.0	14,820	67.0
2.50	71.4	39.1	38.5	52,889	468.9
3.70	121.2	45.6	44.5	89,791	1,023.2

Reach 17R: PR12 Culvert to Swale



Summary for Reach 21R: Thru 21

Inflow Area = 5.06 ac, 42.09% Impervious, Inflow Depth = 2.78" for 10-YR event
Inflow = 5.2 cfs @ 12.41 hrs, Volume= 1.17 af
Outflow = 5.0 cfs @ 12.47 hrs, Volume= 1.17 af, Atten= 4%, Lag= 3.6 min
Routed to Reach 13R : Culvert #2 to #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.63 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 11.8 min

Peak Storage= 1,211 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 14.89'
Bank-Full Depth= 3.70' Flow Area= 121.2 sf, Capacity= 1,094.4 cfs

Custom cross-section, Length= 398.0' Slope= 0.0251 '/' (101 Elevation Intervals)
Constant n= 0.050 Scattered brush, heavy weeds
Inlet Invert= 440.00', Outlet Invert= 430.02'

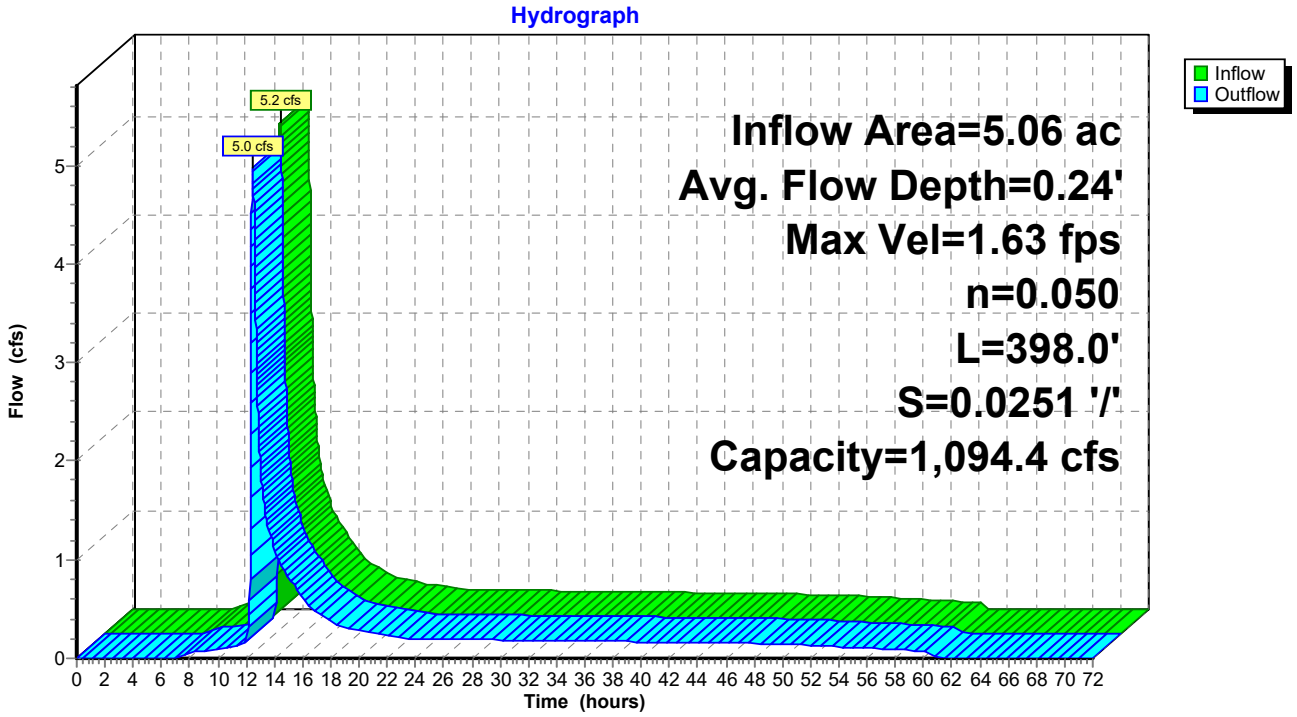


‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	3.70	0.00
3.00	2.50	1.20
7.50	1.00	2.70
17.50	0.00	3.70
27.50	0.00	3.70
37.50	1.00	2.70
41.50	2.50	1.20
44.50	3.70	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
1.00	20.0	30.1	30.0	7,960	71.7
2.50	71.4	39.1	38.5	28,407	501.6
3.70	121.2	45.6	44.5	48,228	1,094.4

Reach 21R: Thru 21



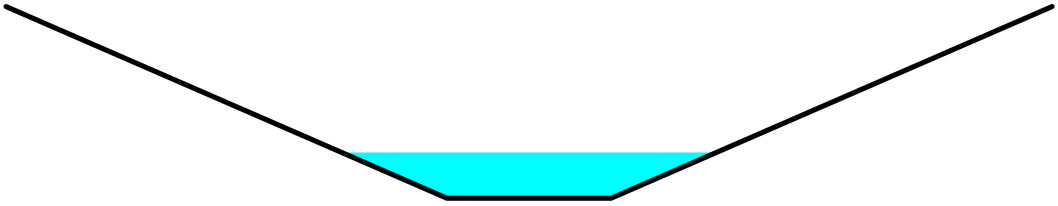
Summary for Reach 22R: Thru PR-14

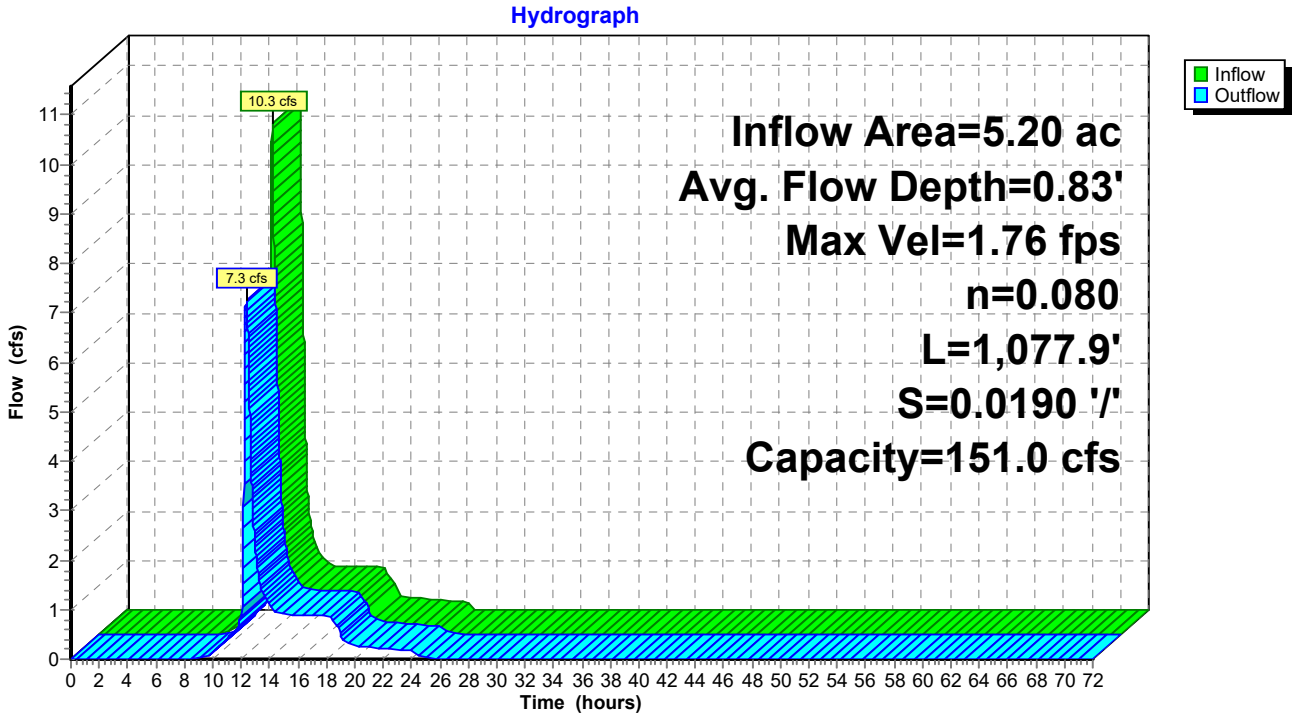
Inflow Area = 5.20 ac, 29.62% Impervious, Inflow Depth = 2.34" for 10-YR event
Inflow = 10.3 cfs @ 12.21 hrs, Volume= 1.02 af
Outflow = 7.3 cfs @ 12.36 hrs, Volume= 1.02 af, Atten= 30%, Lag= 9.2 min
Routed to Pond WC2 : Wetland Cross Culvert #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.76 fps, Min. Travel Time= 10.2 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 30.1 min

Peak Storage= 4,429 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.83' , Surface Width= 6.84'
Bank-Full Depth= 3.50' Flow Area= 38.7 sf, Capacity= 151.0 cfs

3.00' x 3.50' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 2.3 '/' Top Width= 19.10'
Length= 1,077.9' Slope= 0.0190 '/'
Inlet Invert= 452.00', Outlet Invert= 431.50'





Summary for Pond 1P: Primary Detention

Inflow Area = 32.80 ac, 26.78% Impervious, Inflow Depth = 1.91" for 10-YR event
Inflow = 39.2 cfs @ 12.24 hrs, Volume= 5.23 af
Outflow = 12.3 cfs @ 12.76 hrs, Volume= 5.22 af, Atten= 69%, Lag= 31.1 min
Primary = 12.3 cfs @ 12.76 hrs, Volume= 5.22 af
Routed to Pond 2P : Left Side Basin
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af
Routed to Link DP-2 : Existing 12" Culvert

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 393.01' @ 12.76 hrs Surf.Area= 23,611 sf Storage= 63,098 cf
Flood Elev= 395.00' Surf.Area= 27,420 sf Storage= 113,741 cf

Plug-Flow detention time= 158.3 min calculated for 5.22 af (100% of inflow)
Center-of-Mass det. time= 157.8 min (1,072.3 - 914.5)

Volume	Invert	Avail.Storage	Storage Description
#1	390.00'	142,168 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

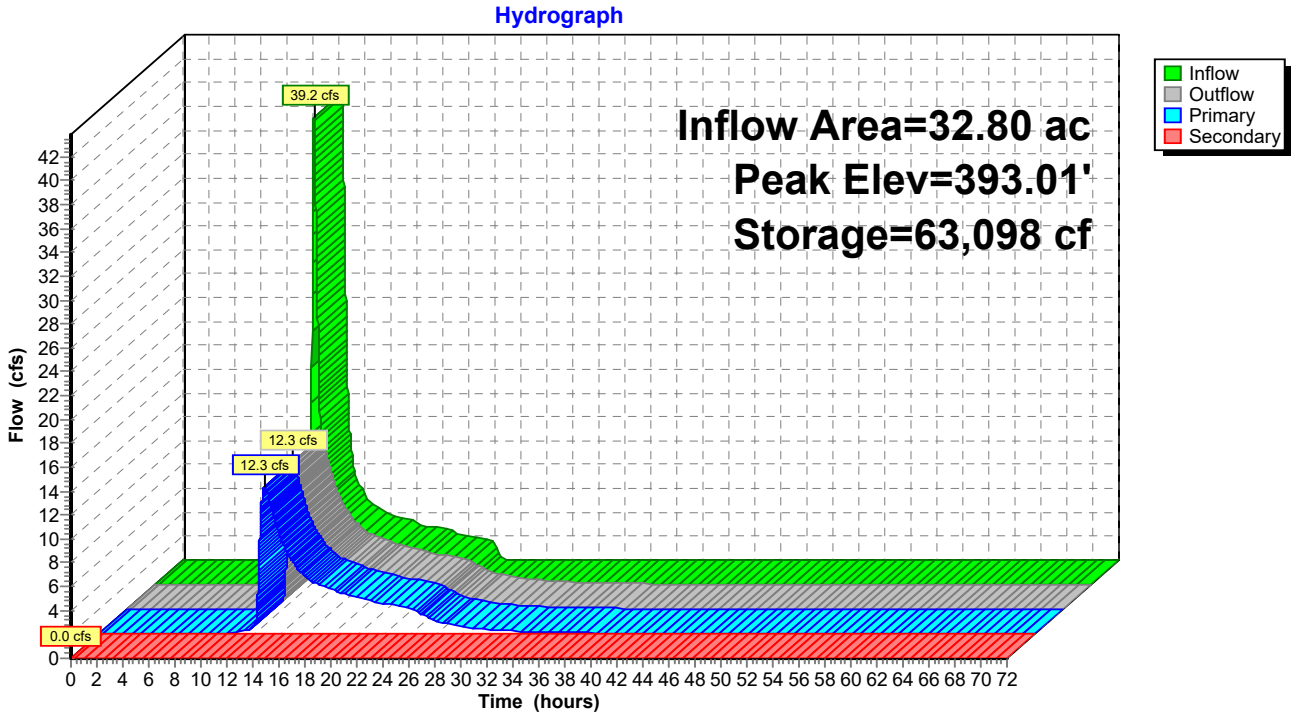
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
390.00	18,377	558.0	0	0	18,377
396.00	29,445	671.0	142,168	142,168	30,027

Device	Routing	Invert	Outlet Devices
#1	Primary	387.00'	**24.0" Round Culvert X 2.00** L= 131.0' Ke= 0.500 Inlet / Outlet Invert= 387.00' / 383.00' S= 0.0305 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	390.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.00 1.50 1.50 3.92 3.92 6.00 Width (feet) 0.00 0.42 0.42 1.25 1.25 0.00 0.00
#3	Device 1	393.90'	**36.0" x 36.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	395.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=12.3 cfs @ 12.76 hrs HW=393.01' TW=384.32' (Dynamic Tailwater)
└**1=Culvert** (Passes 12.3 cfs of 67.7 cfs potential flow)
├**2=Custom Weir/Orifice** (Weir Controls 12.3 cfs @ 4.86 fps)
└**3=Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=390.00' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1P: Primary Detention



Summary for Pond 2P: Left Side Basin

Inflow Area = 33.21 ac, 26.45% Impervious, Inflow Depth > 1.90" for 10-YR event
Inflow = 12.3 cfs @ 12.76 hrs, Volume= 5.26 af
Outflow = 12.1 cfs @ 12.93 hrs, Volume= 5.25 af, Atten= 2%, Lag= 10.1 min
Primary = 12.1 cfs @ 12.93 hrs, Volume= 5.25 af
Routed to Pond 13P : Stone Level Spreader
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af
Routed to Link DP-1 : Existing 18" Culvert

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 384.35' @ 12.93 hrs Surf.Area= 6,859 sf Storage= 8,327 cf
Flood Elev= 387.00' Surf.Area= 9,878 sf Storage= 30,417 cf

Plug-Flow detention time= 24.9 min calculated for 5.25 af (100% of inflow)
Center-of-Mass det. time= 21.6 min (1,092.6 - 1,071.0)

Volume	Invert	Avail.Storage	Storage Description
#1	383.00'	40,928 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

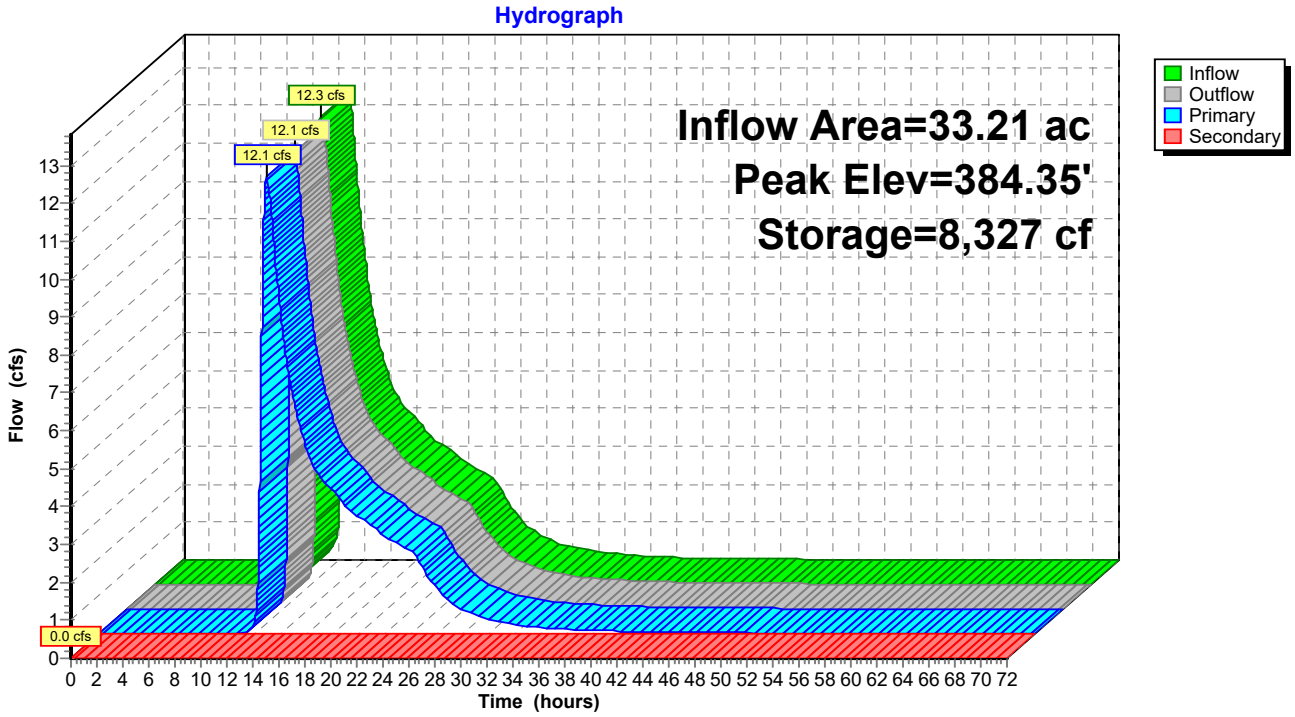
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
383.00	5,538	328.0	0	0	5,538
388.00	11,158	421.7	40,928	40,928	11,434

Device	Routing	Invert	Outlet Devices
#1	Primary	383.00'	**36.0" Round Culvert** L= 45.0' Ke= 0.500 Inlet / Outlet Invert= 383.00' / 382.00' S= 0.0222 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Secondary	387.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=12.1 cfs @ 12.93 hrs HW=384.35' TW=383.32' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 12.1 cfs @ 5.77 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=383.00' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 2P: Left Side Basin



Summary for Pond 3P: Sand Filter #3

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=170)

Inflow Area = 4.77 ac, 28.74% Impervious, Inflow Depth = 1.65" for 10-YR event
Inflow = 8.9 cfs @ 12.09 hrs, Volume= 0.65 af
Outflow = 3.0 cfs @ 12.44 hrs, Volume= 0.65 af, Atten= 66%, Lag= 20.8 min
Primary = 3.0 cfs @ 12.44 hrs, Volume= 0.65 af
Routed to Reach 4R : Swale
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af
Routed to Reach 4R : Swale

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 445.71' @ 12.44 hrs Surf.Area= 2,579 sf Storage= 7,945 cf
Flood Elev= 447.60' Surf.Area= 2,579 sf Storage= 16,684 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 86.5 min (940.5 - 854.0)

Volume	Invert	Avail.Storage	Storage Description
#1	442.10'	1,161 cf	**Sand Filter (Irregular)**Listed below (Recalc) 3,869 cf Overall x 30.0% Voids
#2	443.60'	21,293 cf	**Storage (Irregular)**Listed below (Recalc) -Impervious
		22,454 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
442.10	2,579	194.0	0	0	2,579
443.60	2,579	194.0	3,869	3,869	2,870

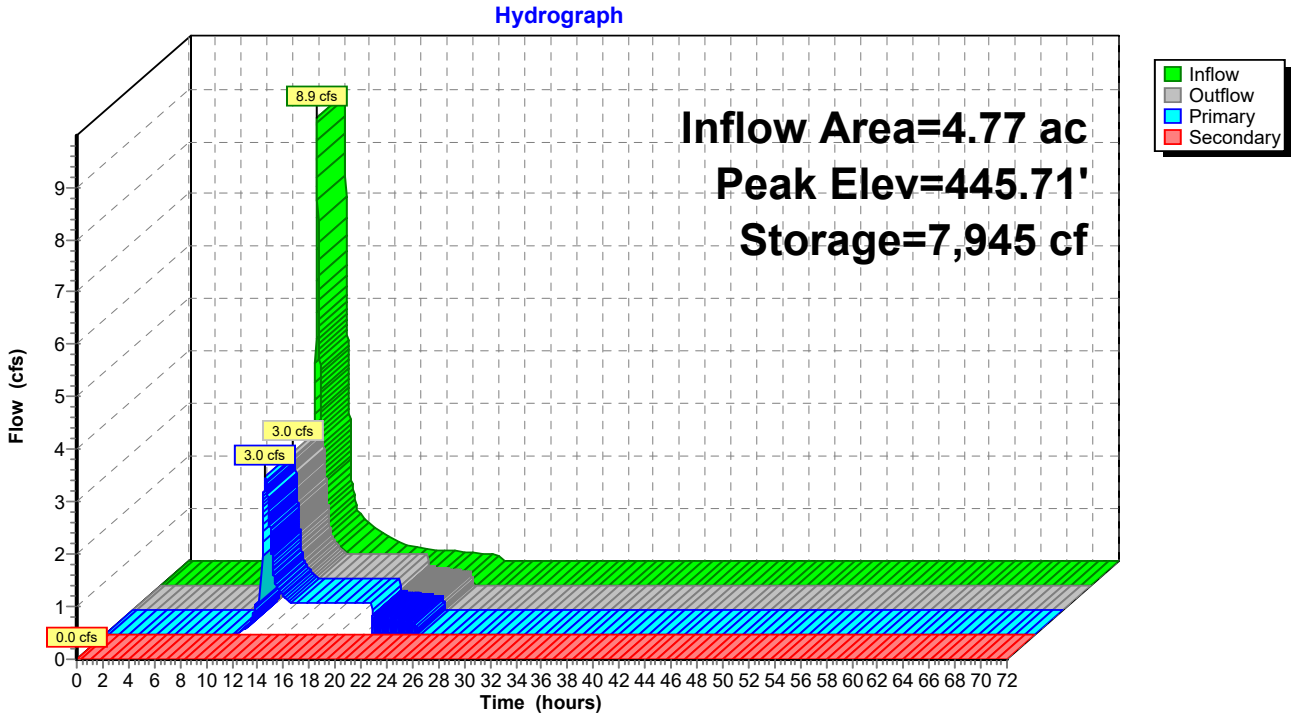
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
443.60	2,578	194.3	0	0	2,578
448.60	6,200	288.5	21,293	21,293	6,393

Device	Routing	Invert	Outlet Devices
#1	Primary	439.30'	**15.0" Round Culvert** L= 168.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 439.30' / 429.00' S= 0.0613 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	440.93'	**6.0" Vert. Undrdrain Cap/Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 2	440.93'	**6.0" Round Underdrain** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 440.93' / 440.93' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#4	Device 3	442.10'	**10.000 in/hr Exfiltration over Surface area**
#5	Device 1	445.30'	**12.0" Horiz. Grate** C= 0.600
#6	Secondary	447.60'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.0 cfs @ 12.44 hrs HW=445.71' TW=429.18' (Dynamic Tailwater)
- **1=Culvert** (Passes 3.0 cfs of 14.2 cfs potential flow)
  - **2=Undrdrain Cap/Orifice** (Passes 0.6 cfs of 2.0 cfs potential flow)
    - **3=Underdrain** (Passes 0.6 cfs of 1.4 cfs potential flow)
      - **4=Exfiltration** (Exfiltration Controls 0.6 cfs)
  - **5=Grate** (Orifice Controls 2.4 cfs @ 3.07 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=442.10' TW=429.00' (Dynamic Tailwater)
- **6=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 3P: Sand Filter #3



Summary for Pond 4P: Sand Filter #4

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=297)

Inflow Area = 4.22 ac, 35.70% Impervious, Inflow Depth = 2.02" for 10-YR event
Inflow = 9.9 cfs @ 12.09 hrs, Volume= 0.71 af
Outflow = 4.7 cfs @ 12.29 hrs, Volume= 0.71 af, Atten= 53%, Lag= 11.8 min
Primary = 4.7 cfs @ 12.29 hrs, Volume= 0.71 af
Routed to Reach 6R : Swale
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af
Routed to Reach 6R : Swale

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 450.63' @ 12.29 hrs Surf.Area= 3,604 sf Storage= 7,531 cf
Flood Elev= 451.20' Surf.Area= 3,604 sf Storage= 10,356 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 53.0 min (893.5 - 840.5)

Volume	Invert	Avail.Storage	Storage Description
#1	447.70'	1,622 cf	**Sand Filter (Irregular)**Listed below (Recalc) 5,406 cf Overall x 30.0% Voids
#2	449.20'	13,750 cf	**Storage (Irregular)**Listed below (Recalc) -Impervious
		15,371 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
447.70	3,604	233.6	0	0	3,604
449.20	3,604	233.6	5,406	5,406	3,954

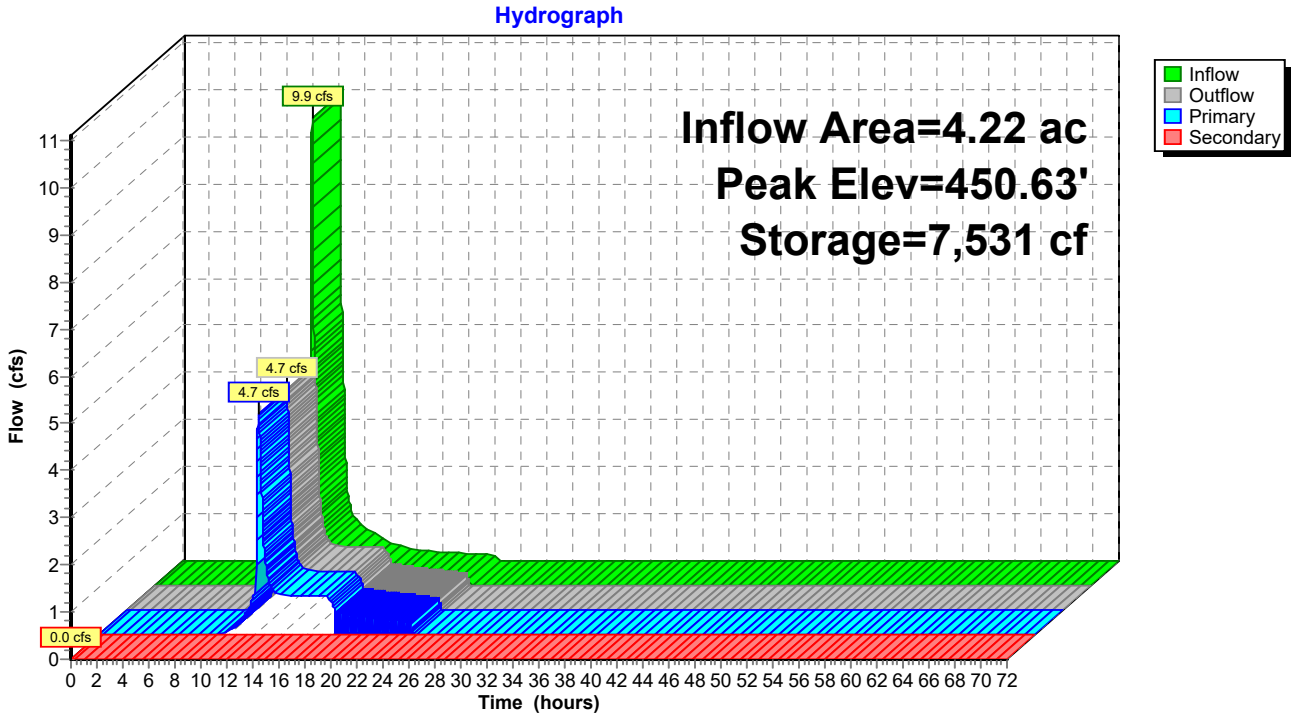
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
449.20	3,604	233.6	0	0	3,604
452.10	5,978	293.0	13,750	13,750	6,208

Device	Routing	Invert	Outlet Devices
#1	Primary	443.00'	**15.0" Round Culvert** L= 88.7' Ke= 0.500 Inlet / Outlet Invert= 443.00' / 436.50' S= 0.0733 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	446.53'	**6.0" Vert. Underdrain Cap/Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 2	446.53'	**6.0" Round Underdrain** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 446.53' / 446.53' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#4	Device 3	447.70'	**10.000 in/hr Exfiltration - Sand Filter over Surface area**
#5	Device 1	450.30'	**24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	451.20'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.7 cfs @ 12.29 hrs HW=450.63' TW=436.74' (Dynamic Tailwater)
- **1=Culvert** (Passes 4.7 cfs of 15.6 cfs potential flow)
  - **2=Underdrain Cap/Orifice** (Passes 0.8 cfs of 1.9 cfs potential flow)
    - **3=Underdrain** (Passes 0.8 cfs of 1.3 cfs potential flow)
      - **4=Exfiltration - Sand Filter** (Exfiltration Controls 0.8 cfs)
  - **5=Grate** (Weir Controls 3.9 cfs @ 1.87 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=447.70' TW=436.50' (Dynamic Tailwater)
- **6=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 4P: Sand Filter #4



Summary for Pond 5P: Sand Filter #5

Inflow Area = 9.26 ac, 32.30% Impervious, Inflow Depth = 2.51" for 10-YR event
Inflow = 27.3 cfs @ 12.09 hrs, Volume= 1.94 af
Outflow = 24.2 cfs @ 12.13 hrs, Volume= 1.94 af, Atten= 11%, Lag= 2.6 min
Primary = 24.2 cfs @ 12.13 hrs, Volume= 1.94 af
Routed to Reach 7R : Swale
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af
Routed to Reach 7R : Swale

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 451.78' @ 12.13 hrs Surf.Area= 4,500 sf Storage= 16,072 cf
Flood Elev= 452.20' Surf.Area= 4,500 sf Storage= 18,941 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 72.3 min (896.3 - 824.0)

Volume	Invert	Avail.Storage	Storage Description
#1	447.75'	2,025 cf	**Sand (Irregular)** Listed below (Recalc) 6,750 cf Overall x 30.0% Voids
#2	449.25'	24,474 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) -Impervious
		26,499 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
447.75	4,500	260.0	0	0	4,500
449.25	4,500	260.0	6,750	6,750	4,890

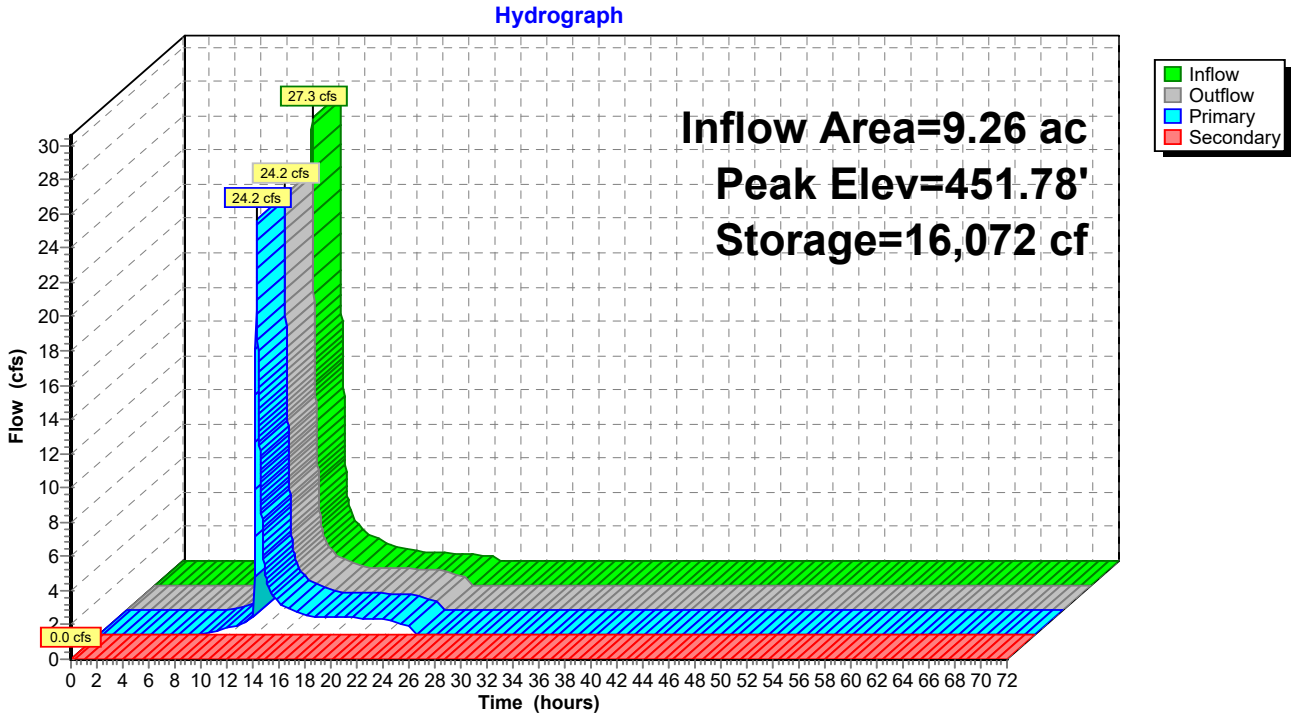
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
449.25	4,500	260.0	0	0	4,500
453.20	8,064	334.8	24,474	24,474	8,230

Device	Routing	Invert	Outlet Devices
#1	Primary	446.50'	**30.0" Round Culvert** L= 146.9' Ke= 0.500 Inlet / Outlet Invert= 446.50' / 445.50' S= 0.0068 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf
#2	Device 1	446.58'	**6.0" Vert. Underdrain Cap/Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 2	446.58'	**6.0" Round Underdrain** L= 78.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 446.58' / 446.58' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#4	Device 3	447.75'	**10.000 in/hr Exfiltration over Surface area**
#5	Device 1	451.10'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	452.20'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=24.2 cfs @ 12.13 hrs HW=451.78' TW=444.63' (Dynamic Tailwater)
- **1=Culvert** (Passes 24.2 cfs of 45.3 cfs potential flow)
  - **2=Underdrain Cap/Orifice** (Passes 1.0 cfs of 2.1 cfs potential flow)
    - **3=Underdrain** (Passes 1.0 cfs of 1.2 cfs potential flow)
      - **4=Exfiltration** (Exfiltration Controls 1.0 cfs)
  - **5=Grate** (Weir Controls 23.1 cfs @ 2.70 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=447.75' TW=444.00' (Dynamic Tailwater)
- **6=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 5P: Sand Filter #5



Summary for Pond 6P: Sand Filter #6

Inflow Area = 6.49 ac, 42.77% Impervious, Inflow Depth = 2.18" for 10-YR event
Inflow = 14.4 cfs @ 12.14 hrs, Volume= 1.18 af
Outflow = 9.6 cfs @ 12.28 hrs, Volume= 1.18 af, Atten= 33%, Lag= 8.3 min
Primary = 9.6 cfs @ 12.28 hrs, Volume= 1.18 af
Routed to Pond 1P : Primary Detention
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af
Routed to Pond 1P : Primary Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 405.66' @ 12.28 hrs Surf.Area= 2,990 sf Storage= 12,974 cf
Flood Elev= 406.10' Surf.Area= 2,990 sf Storage= 15,702 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 116.6 min (955.5 - 838.9)

Volume	Invert	Avail.Storage	Storage Description
#1	401.50'	1,346 cf	**Sand Filter (Irregular)**Listed below (Recalc) 4,485 cf Overall x 30.0% Voids
#2	403.00'	21,545 cf	**Storage (Irregular)**Listed below (Recalc) -Impervious
		22,891 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
401.50	2,990	360.5	0	0	2,990
403.00	2,990	360.5	4,485	4,485	3,531

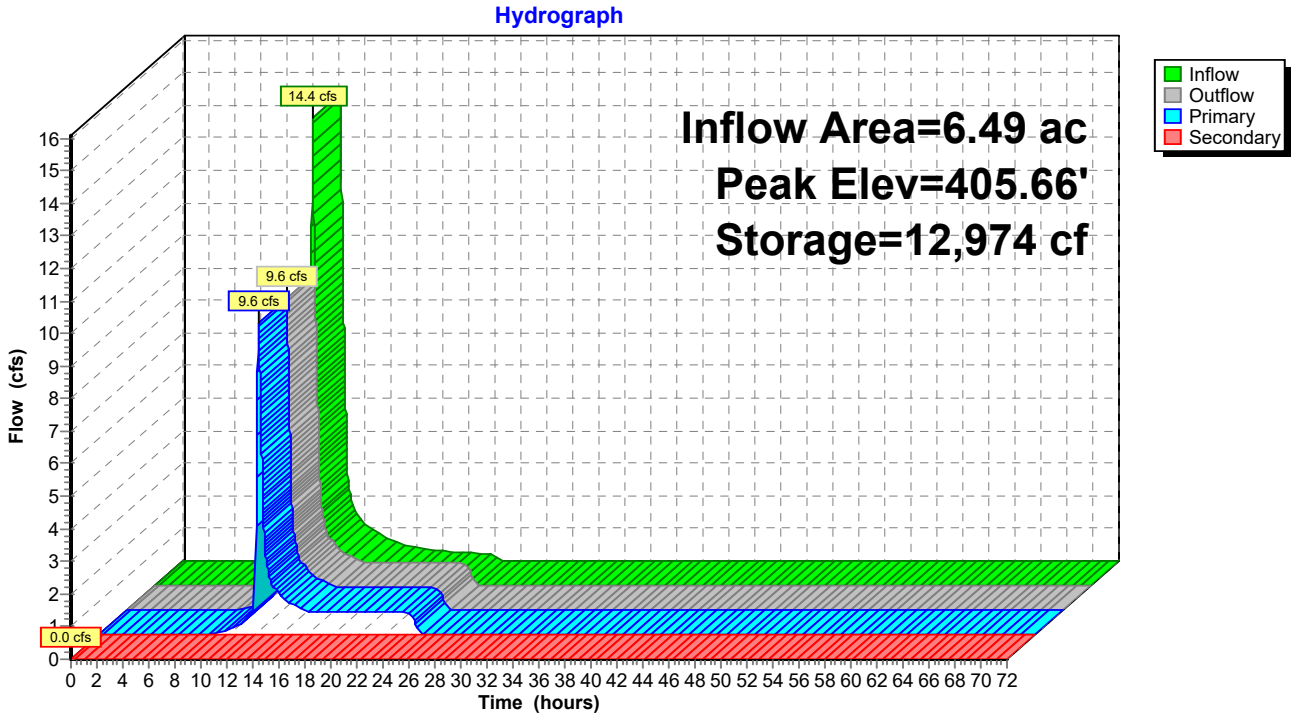
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
403.00	2,993	360.5	0	0	2,993
407.10	7,907	438.0	21,545	21,545	8,182

Device	Routing	Invert	Outlet Devices
#1	Primary	399.30'	**24.0" Round Culvert** L= 86.0' Ke= 0.500 Inlet / Outlet Invert= 399.30' / 393.00' S= 0.0733 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	401.00'	**6.0" Vert. Underdrain Cap/Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 2	401.00'	**6.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 401.00' / 401.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#4	Device 3	401.50'	**10.000 in/hr Exfiltration over Surface area**
#5	Device 1	405.30'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	406.10'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=9.6 cfs @ 12.28 hrs HW=405.66' TW=391.99' (Dynamic Tailwater)
- **1=Culvert** (Passes 9.6 cfs of 35.0 cfs potential flow)
  - **2=Underdrain Cap/Orifice** (Passes 0.7 cfs of 2.0 cfs potential flow)
    - **3=Culvert** (Passes 0.7 cfs of 1.4 cfs potential flow)
      - **4=Exfiltration** (Exfiltration Controls 0.7 cfs)
  - **5=Grate** (Weir Controls 8.9 cfs @ 1.96 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=401.50' TW=390.00' (Dynamic Tailwater)
- **6=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 6P: Sand Filter #6



Summary for Pond 7P: Sand Filter #7

Inflow Area = 4.35 ac, 30.94% Impervious, Inflow Depth = 1.87" for 10-YR event
Inflow = 9.4 cfs @ 12.09 hrs, Volume= 0.68 af
Outflow = 4.4 cfs @ 12.30 hrs, Volume= 0.68 af, Atten= 54%, Lag= 12.6 min
Primary = 4.4 cfs @ 12.30 hrs, Volume= 0.68 af
Routed to Link DP-3 : Hovey Road
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af
Routed to Link DP-3 : Hovey Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 447.77' @ 12.30 hrs Surf.Area= 9,494 sf Storage= 8,059 cf
Flood Elev= 449.00' Surf.Area= 10,676 sf Storage= 15,564 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 140.6 min (986.5 - 845.9)

Volume	Invert	Avail.Storage	Storage Description
#1	445.00'	1,796 cf	**Sand Filter (Irregular)**Listed below (Recalc) 5,988 cf Overall x 30.0% Voids
#2	446.50'	20,967 cf	**Storage (Irregular)**Listed below (Recalc)
		22,763 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
445.00	3,992	273.5	0	0	3,992
446.50	3,992	273.5	5,988	5,988	4,402

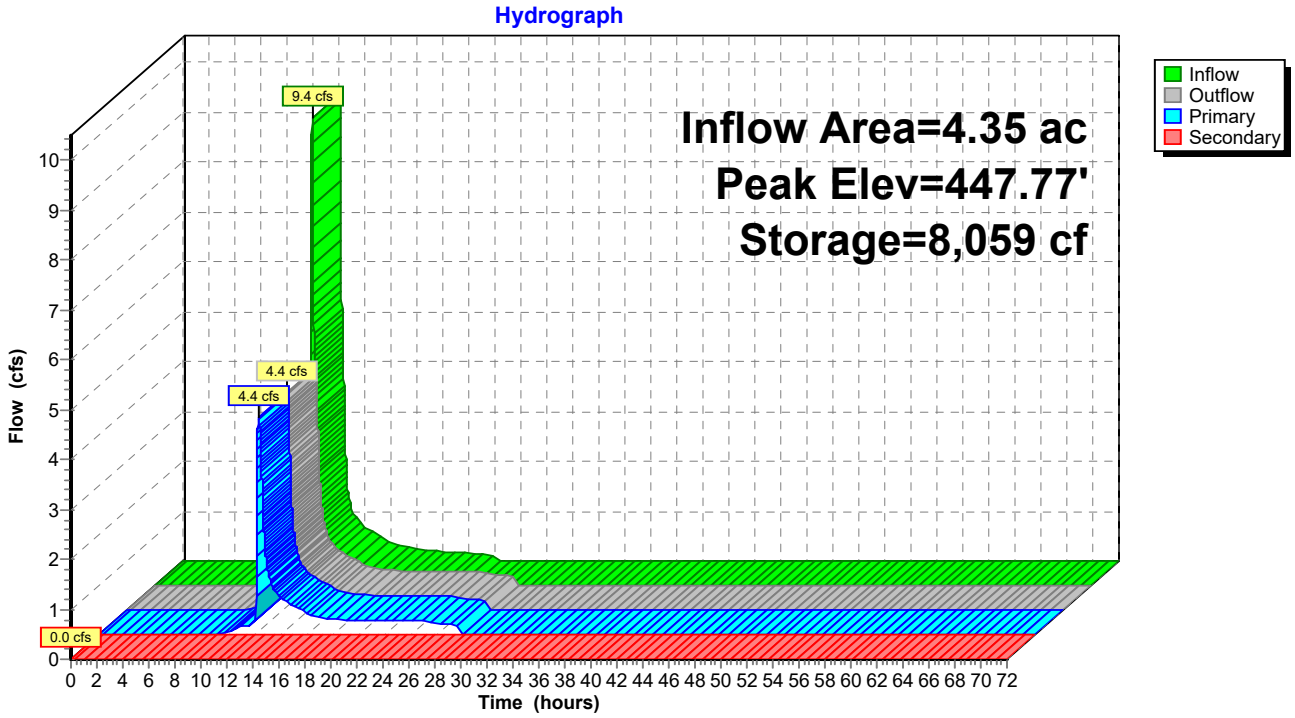
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
446.50	4,409	282.9	0	0	4,409
450.00	7,726	348.9	20,967	20,967	7,907

Device	Routing	Invert	Outlet Devices
#1	Primary	443.80'	**12.0" Round Culvert** L= 25.0' Ke= 0.500 Inlet / Outlet Invert= 443.80' / 443.00' S= 0.0320 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	443.83'	**2.5" Vert. Underdrain Cap/Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 2	443.83'	**6.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 443.83' / 443.83' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#4	Device 3	445.00'	**10.000 in/hr Exfiltration over Surface area**
#5	Device 1	447.30'	**15.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	449.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.4 cfs @ 12.30 hrs HW=447.77' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 4.4 cfs of 7.0 cfs potential flow)
  - **2=Underdrain Cap/Orifice** (Orifice Controls 0.3 cfs @ 9.43 fps)
    - **3=Culvert** (Passes 0.3 cfs of 1.3 cfs potential flow)
      - **4=Exfiltration** (Passes 0.3 cfs of 2.2 cfs potential flow)
  - **5=Grate** (Orifice Controls 4.0 cfs @ 3.29 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=445.00' TW=0.00' (Dynamic Tailwater)
- **6=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 7P: Sand Filter #7



Summary for Pond 8P: Amenity Basin

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=321)

Inflow Area = 2.25 ac, 44.53% Impervious, Inflow Depth = 2.87" for 10-YR event
Inflow = 7.5 cfs @ 12.09 hrs, Volume= 0.54 af
Outflow = 4.7 cfs @ 12.19 hrs, Volume= 0.54 af, Atten= 37%, Lag= 6.0 min
Primary = 4.7 cfs @ 12.19 hrs, Volume= 0.54 af
Routed to Pond WC2 : Wetland Cross Culvert #2
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af
Routed to Pond WC2 : Wetland Cross Culvert #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 438.14' @ 12.19 hrs Surf.Area= 3,048 sf Storage= 5,270 cf
Flood Elev= 438.50' Surf.Area= 3,048 sf Storage= 6,711 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 36.6 min (848.7 - 812.0)

Volume	Invert	Avail.Storage	Storage Description
#1	435.50'	1,372 cf	**Sand Filter (Irregular)**Listed below (Recalc) 4,572 cf Overall x 30.0% Voids
#2	437.00'	9,823 cf	**Storage (Irregular)**Listed below (Recalc) -Impervious
		11,195 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
435.50	3,048	221.0	0	0	3,048
437.00	3,048	221.0	4,572	4,572	3,380

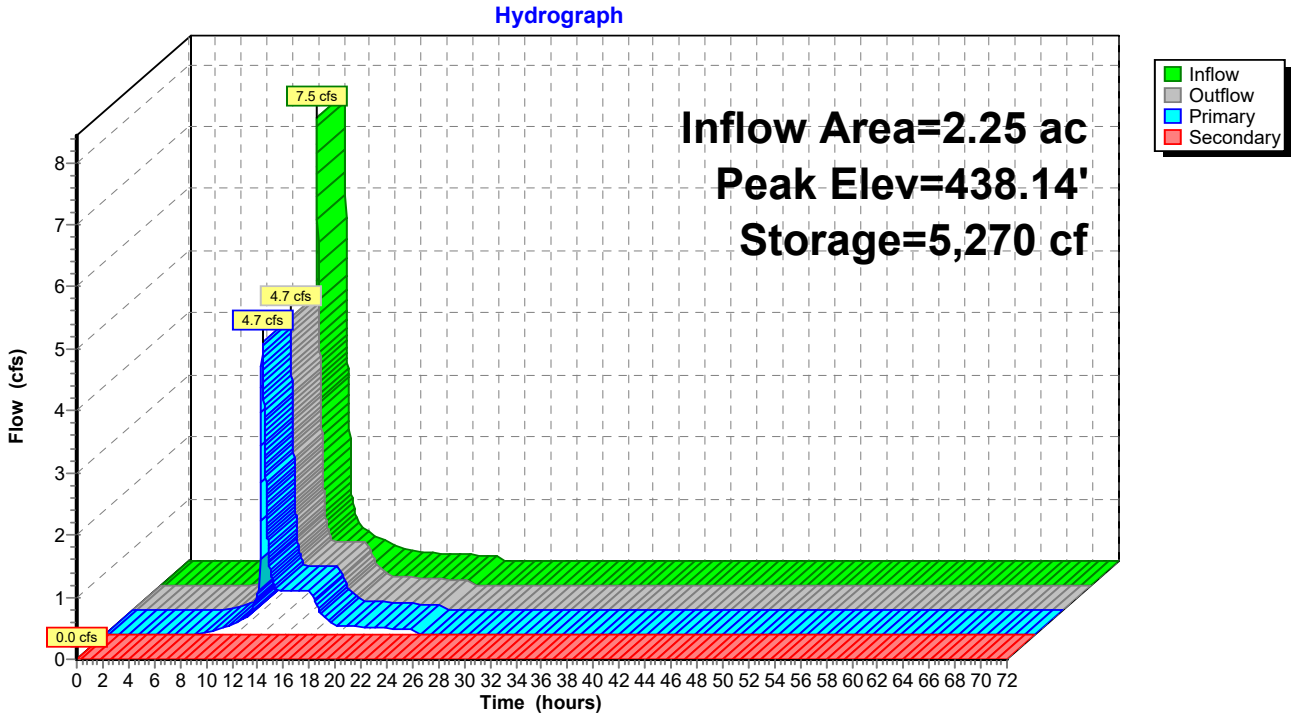
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
437.00	3,048	221.0	0	0	3,048
439.50	4,882	268.0	9,823	9,823	4,976

Device	Routing	Invert	Outlet Devices
#1	Primary	434.30'	**18.0" Round Culvert** L= 38.3' Ke= 0.500 Inlet / Outlet Invert= 434.30' / 434.00' S= 0.0078 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	435.00'	**6.0" Vert. Underdrain Cap/Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 2	435.00'	**6.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 435.00' / 435.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#4	Device 3	435.50'	**10.000 in/hr Exfiltration over Surface area**
#5	Device 1	437.80'	**24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	438.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.7 cfs @ 12.19 hrs HW=438.14' TW=433.05' (Dynamic Tailwater)
- **1=Culvert** (Passes 4.7 cfs of 14.9 cfs potential flow)
  - **2=Underdrain Cap/Orifice** (Passes 0.7 cfs of 1.6 cfs potential flow)
    - **3=Culvert** (Passes 0.7 cfs of 1.1 cfs potential flow)
      - **4=Exfiltration** (Exfiltration Controls 0.7 cfs)
  - **5=Grate** (Weir Controls 4.0 cfs @ 1.90 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=435.50' TW=431.50' (Dynamic Tailwater)
- **6=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 8P: Amenity Basin



Summary for Pond 9P: Cluster E Basin

Inflow Area = 5.06 ac, 42.09% Impervious, Inflow Depth = 2.78" for 10-YR event
Inflow = 16.4 cfs @ 12.09 hrs, Volume= 1.17 af
Outflow = 5.2 cfs @ 12.41 hrs, Volume= 1.17 af, Atten= 68%, Lag= 19.4 min
Primary = 5.2 cfs @ 12.41 hrs, Volume= 1.17 af
Routed to Reach 21R : Thru 21
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af
Routed to Reach 21R : Thru 21

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 446.85' @ 12.41 hrs Surf.Area= 20,651 sf Storage= 22,921 cf
Flood Elev= 447.40' Surf.Area= 21,684 sf Storage= 29,803 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 673.8 min (1,489.0 - 815.1)

Volume	Invert	Avail.Storage	Storage Description
#1	443.50'	3,943 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) 13,143 cf Overall x 30.0% Voids
#2	445.00'	39,755 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)
		43,698 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
443.50	8,762	569.1	0	0	8,762
445.00	8,762	569.1	13,143	13,143	9,616

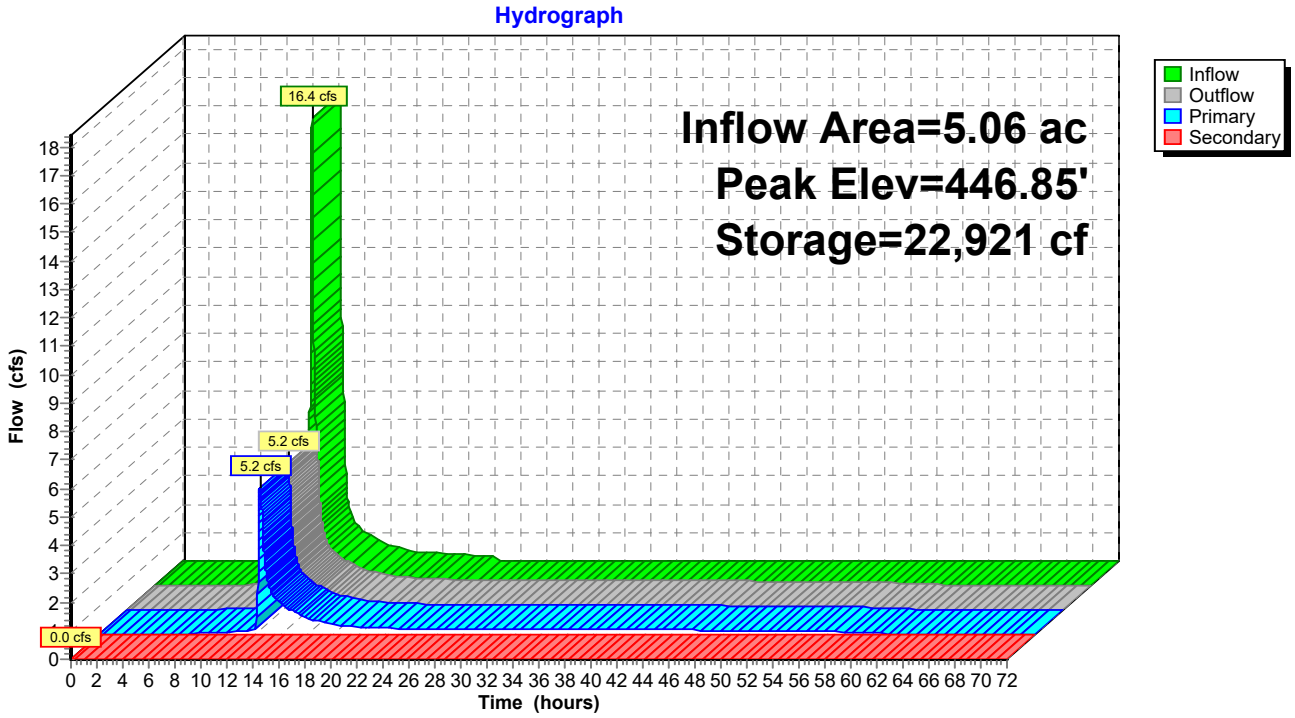
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
445.00	8,762	569.1	0	0	8,762
448.40	14,893	633.2	39,755	39,755	15,226

Device	Routing	Invert	Outlet Devices
#1	Primary	442.30'	**18.0" Round Culvert** L= 32.3' Ke= 0.500 Inlet / Outlet Invert= 442.30' / 440.00' S= 0.0712 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	443.00'	**2.0" Vert. Underdrain Cap/Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 2	443.00'	**6.0" Round Culvert** L= 224.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 443.00' / 443.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#4	Device 3	443.50'	**10.000 in/hr Exfiltration over Surface area**
#5	Device 1	446.60'	**48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	447.40'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=5.2 cfs @ 12.41 hrs HW=446.85' TW=440.24' (Dynamic Tailwater)
- **1=Culvert** (Passes 5.2 cfs of 16.6 cfs potential flow)
  - **2=Underdrain Cap/Orifice** (Orifice Controls 0.2 cfs @ 9.34 fps)
    - **3=Culvert** (Passes 0.2 cfs of 0.7 cfs potential flow)
      - **4=Exfiltration** (Passes 0.2 cfs of 4.8 cfs potential flow)
  - **5=Grate** (Weir Controls 5.0 cfs @ 1.62 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=443.50' TW=440.00' (Dynamic Tailwater)
- **6=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 9P: Cluster E Basin



Summary for Pond 10P: Cluster D Basin

Inflow Area = 5.20 ac, 29.62% Impervious, Inflow Depth = 2.34" for 10-YR event
Inflow = 12.8 cfs @ 12.13 hrs, Volume= 1.02 af
Outflow = 10.3 cfs @ 12.21 hrs, Volume= 1.02 af, Atten= 19%, Lag= 4.6 min
Primary = 10.3 cfs @ 12.21 hrs, Volume= 1.02 af
Routed to Reach 22R : Thru PR-14
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af
Routed to Reach 22R : Thru PR-14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 456.65' @ 12.21 hrs Surf.Area= 3,889 sf Storage= 8,197 cf
Flood Elev= 457.40' Surf.Area= 3,889 sf Storage= 12,153 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 43.3 min (875.8 - 832.5)

Volume	Invert	Avail.Storage	Storage Description
#1	453.70'	1,750 cf	**Sand Filter (Irregular)**Listed below (Recalc) 5,834 cf Overall x 30.0% Voids
#2	455.20'	16,465 cf	**Storage (Irregular)**Listed below (Recalc) -Impervious
		18,215 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
453.70	3,889	243.0	0	0	3,889
455.20	3,889	243.0	5,834	5,834	4,254

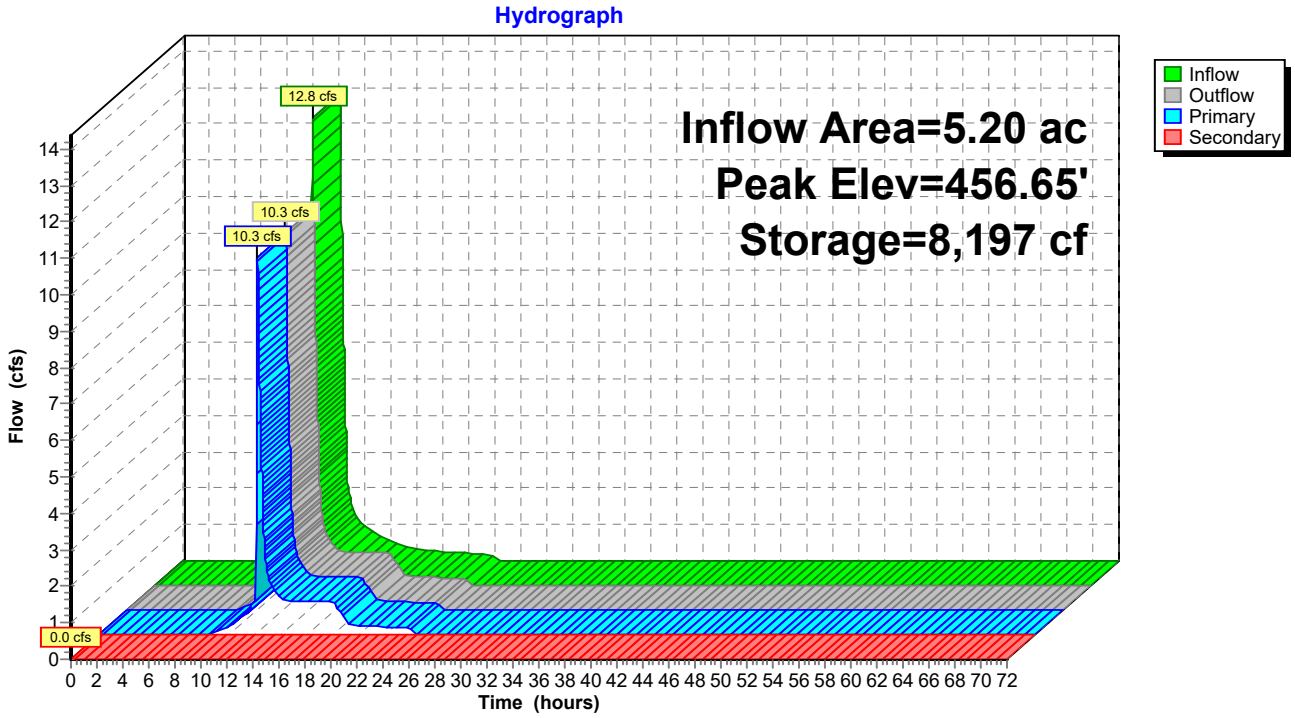
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
455.20	3,889	243.0	0	0	3,889
458.40	6,514	303.6	16,465	16,465	6,666

Device	Routing	Invert	Outlet Devices
#1	Primary	452.50'	**18.0" Round Culvert** L= 27.2' Ke= 0.500 Inlet / Outlet Invert= 452.50' / 452.00' S= 0.0184 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	452.53'	**6.0" Vert. Underdrain Cap/Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 2	452.53'	**6.0" Round Underdrain** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 452.53' / 452.53' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#4	Device 3	453.70'	**10.000 in/hr Exfiltration over Surface area**
#5	Device 1	456.20'	**36.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	457.40'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=10.3 cfs @ 12.21 hrs HW=456.65' TW=452.63' (Dynamic Tailwater)
- **1=Culvert** (Passes 10.3 cfs of 15.7 cfs potential flow)
- **2=Underdrain Cap/Orifice** (Passes 0.9 cfs of 1.9 cfs potential flow)
- **3=Underdrain** (Passes 0.9 cfs of 1.3 cfs potential flow)
- **4=Exfiltration** (Exfiltration Controls 0.9 cfs)
- **5=Grate** (Weir Controls 9.4 cfs @ 2.20 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=453.70' TW=452.00' (Dynamic Tailwater)
- **6=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 10P: Cluster D Basin



Summary for Pond 11P: Sand Filter #11

Inflow Area = 2.10 ac, 27.07% Impervious, Inflow Depth = 2.34" for 10-YR event
Inflow = 5.2 cfs @ 12.13 hrs, Volume= 0.41 af
Outflow = 2.0 cfs @ 12.44 hrs, Volume= 0.41 af, Atten= 61%, Lag= 18.7 min
Primary = 2.0 cfs @ 12.44 hrs, Volume= 0.41 af
Routed to Link DP-3 : Hovey Road
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.00 af
Routed to Link DP-3 : Hovey Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 454.69' @ 12.44 hrs Surf.Area= 10,827 sf Storage= 6,036 cf
Flood Elev= 455.00' Surf.Area= 11,130 sf Storage= 7,847 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 147.6 min (979.8 - 832.2)

Volume	Invert	Avail.Storage	Storage Description
#1	452.50'	2,289 cf	**Sand Filter (Irregular)**Listed below (Recalc) 7,631 cf Overall x 30.0% Voids
#2	454.00'	12,113 cf	**Storage Basin (Irregular)**Listed below (Recalc)
		14,402 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
452.50	5,087	313.0	0	0	5,087
454.00	5,087	313.0	7,631	7,631	5,557

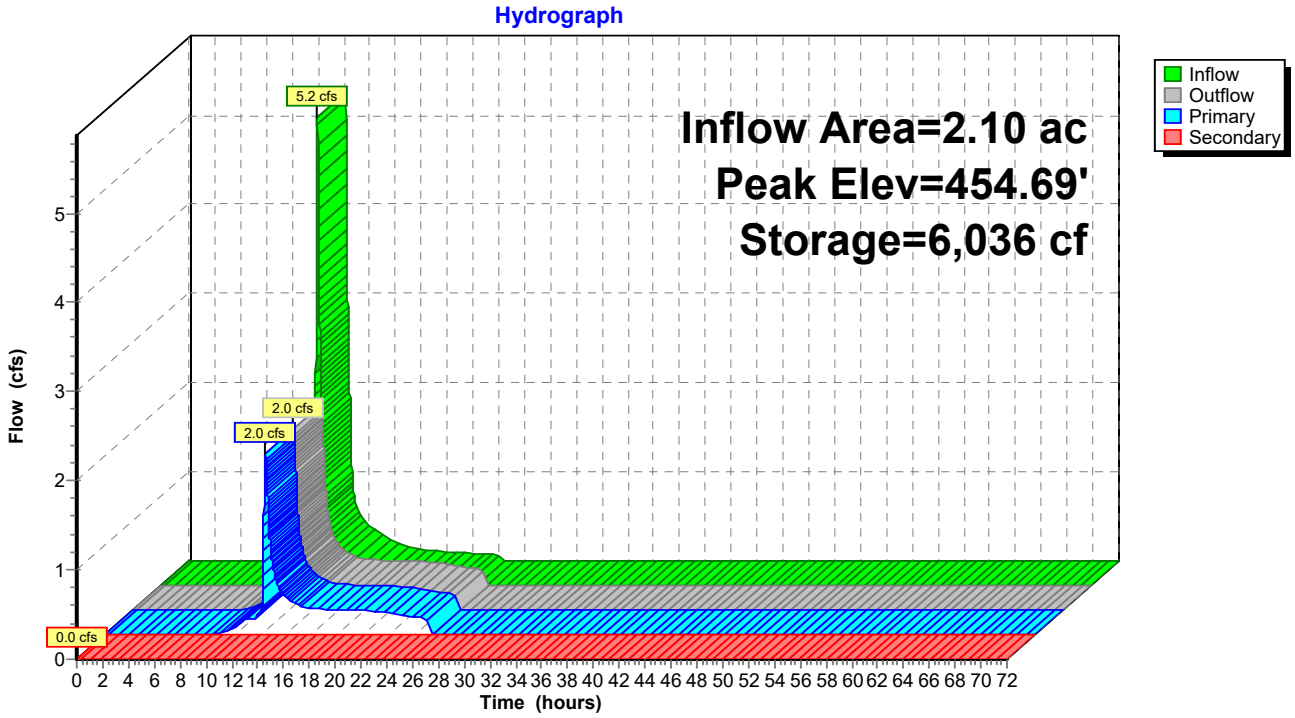
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
454.00	5,087	313.4	0	0	5,087
456.00	7,081	351.0	12,113	12,113	7,183

Device	Routing	Invert	Outlet Devices
#1	Primary	451.30'	**15.0" Round Culvert** L= 64.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 451.30' / 449.30' S= 0.0313 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	451.33'	**2.5" Vert. Underdrain Cap/Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 2	451.33'	**6.0" Round Underdrain** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 451.33' / 451.33' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#4	Device 3	452.50'	**10.000 in/hr Exfiltration - Sand Filter over Surface area**
#5	Device 1	454.50'	**24.0" Horiz. Overflow Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	455.00'	**10.0' long x 10.0' breadth Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.0 cfs @ 12.44 hrs HW=454.69' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.0 cfs of 9.8 cfs potential flow)
  └─**2=Underdrain Cap/Orifice** (Orifice Controls 0.3 cfs @ 8.69 fps)
    └─**3=Underdrain** (Passes 0.3 cfs of 1.1 cfs potential flow)
      └─**4=Exfiltration - Sand Filter** (Passes 0.3 cfs of 2.5 cfs potential flow)
  └─**5=Overflow Grate** (Weir Controls 1.7 cfs @ 1.43 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=452.50' TW=0.00' (Dynamic Tailwater)
└─**6=Emergency Spillway** (Controls 0.0 cfs)

Pond 11P: Sand Filter #11



Summary for Pond 13P: Stone Level Spreader

Inflow Area = 33.21 ac, 26.45% Impervious, Inflow Depth > 1.90" for 10-YR event
Inflow = 12.1 cfs @ 12.93 hrs, Volume= 5.25 af
Outflow = 12.1 cfs @ 12.93 hrs, Volume= 5.25 af, Atten= 0%, Lag= 0.0 min
Primary = 12.1 cfs @ 12.93 hrs, Volume= 5.25 af
Routed to Link DP-1 : Existing 18" Culvert

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 383.32' @ 12.93 hrs Surf.Area= 135 sf Storage= 71 cf

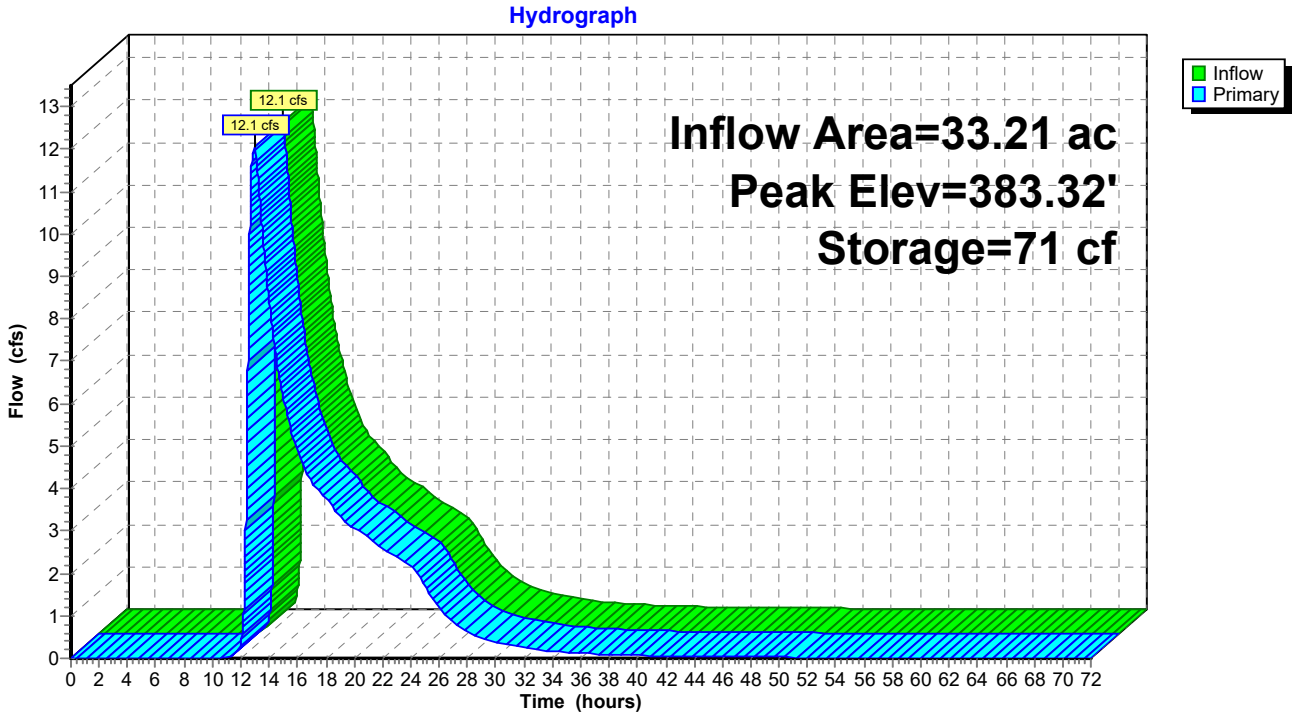
Plug-Flow detention time= 0.9 min calculated for 5.25 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (1,092.8 - 1,092.6)

Volume	Invert	Avail.Storage	Storage Description
#1	382.00'	108 cf	**5.00'W x 27.00'L x 2.00'H Prismatoid** 270 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	383.00'	**27.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=12.1 cfs @ 12.93 hrs HW=383.32' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 12.1 cfs @ 1.38 fps)

Pond 13P: Stone Level Spreader



Summary for Pond C12: PR-15 culvert

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 0.67 ac, 0.00% Impervious, Inflow Depth = 1.79" for 10-YR event
Inflow = 1.4 cfs @ 12.09 hrs, Volume= 0.10 af
Outflow = 1.4 cfs @ 12.09 hrs, Volume= 0.10 af, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.09 hrs, Volume= 0.10 af
Routed to Reach 17R : PR12 Culvert to Swale

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 448.90' @ 12.10 hrs Surf.Area= 2 sf Storage= 0 cf
Flood Elev= 450.40' Surf.Area= 1,522 sf Storage= 590 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (848.7 - 848.7)

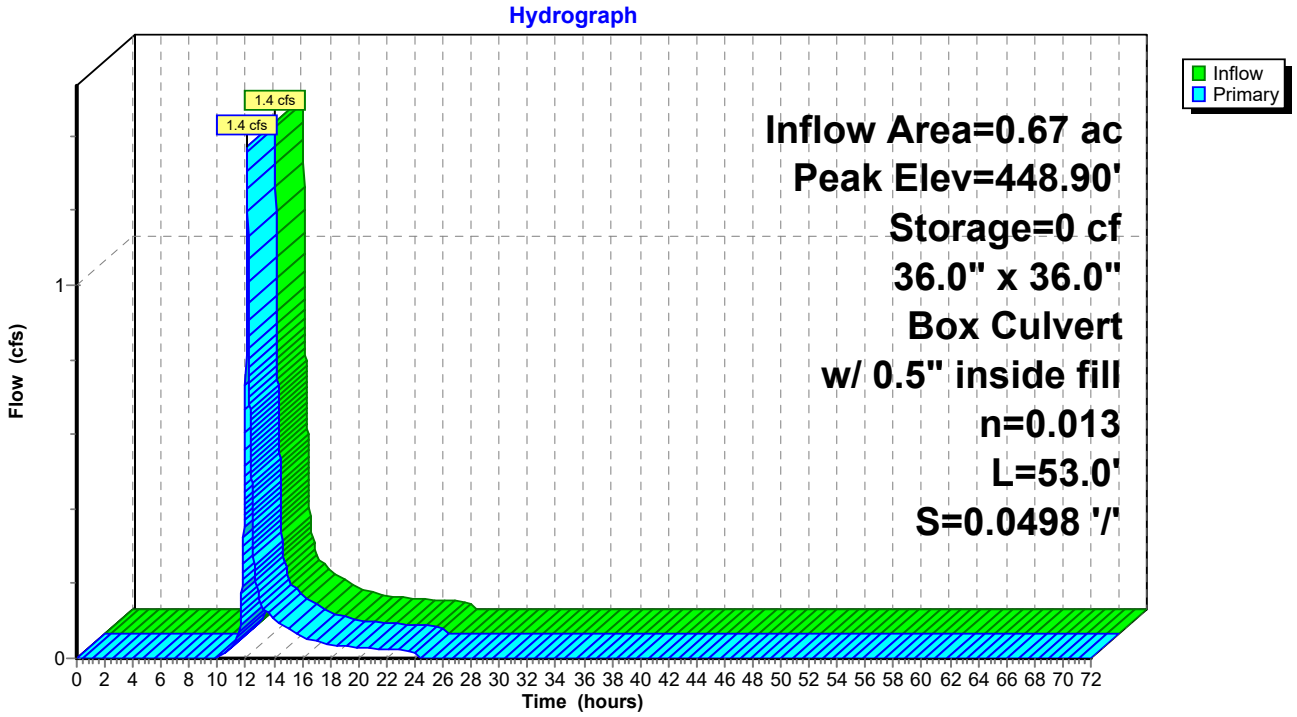
Volume	Invert	Avail.Storage	Storage Description
#1	448.90'	2,191 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
448.90	2	2.0	0	0	2
449.00	9	15.0	1	1	20
450.00	519	123.0	199	199	1,208
451.00	4,013	325.0	1,992	2,191	8,413

Device	Routing	Invert	Outlet Devices
#1	Primary	448.44'	**36.0" W x 36.0" H Box Culvert w/ 0.5" inside fill** L= 53.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 448.40' / 445.76' S= 0.0498 '/' Cc= 0.900 n= 0.013, Flow Area= 8.88 sf

Primary OutFlow Max=3.0 cfs @ 12.09 hrs HW=448.90' TW=446.33' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.0 cfs @ 2.17 fps)

Pond C12: PR-15 culvert



Summary for Pond C15: PR-15 culvert

[62] Hint: Exceeded Reach 1R OUTLET depth by 0.51' @ 12.17 hrs

Inflow Area = 3.82 ac, 0.00% Impervious, Inflow Depth = 1.78" for 10-YR event
Inflow = 5.9 cfs @ 12.19 hrs, Volume= 0.57 af
Outflow = 5.9 cfs @ 12.19 hrs, Volume= 0.57 af, Atten= 0%, Lag= 0.2 min
Primary = 5.9 cfs @ 12.19 hrs, Volume= 0.57 af
Routed to Reach 16R : Thru PR-14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 457.10' @ 12.19 hrs Surf.Area= 203 sf Storage= 96 cf

Plug-Flow detention time= 0.4 min calculated for 0.57 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (860.0 - 859.6)

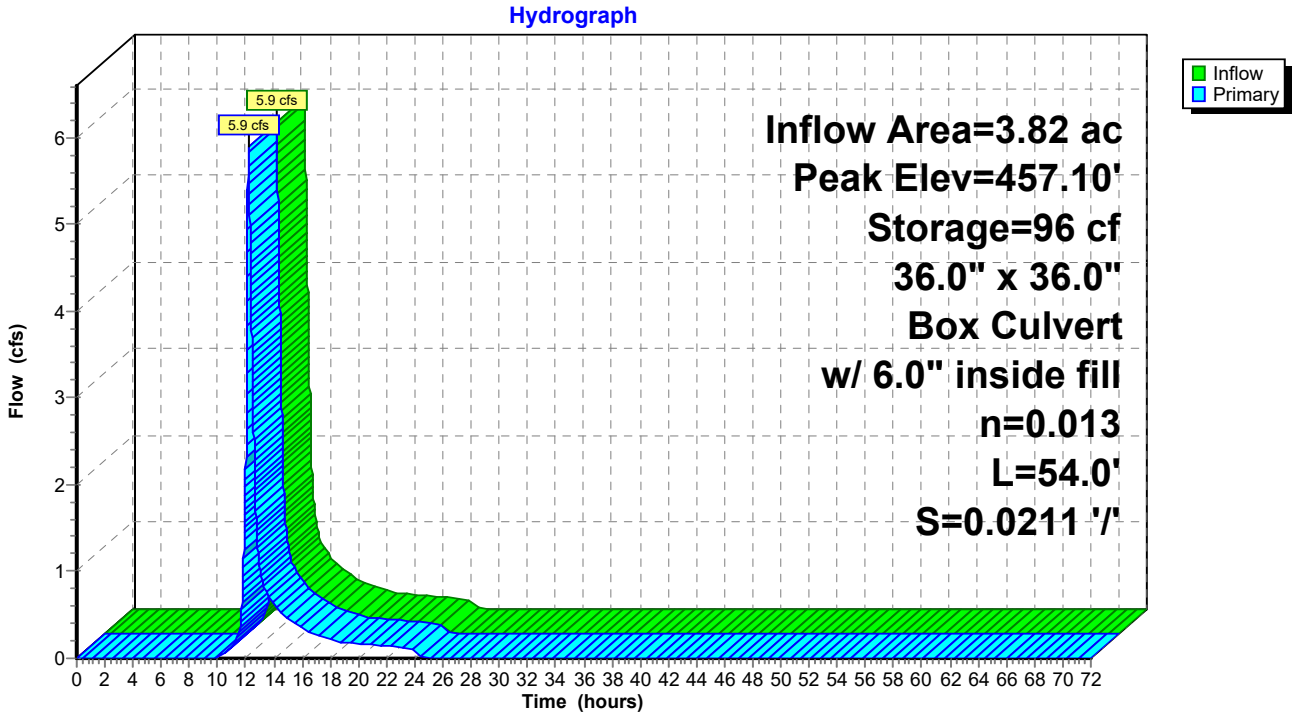
Volume	Invert	Avail.Storage	Storage Description
#1	456.38'	1,345 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
456.38	93	60.2	0	0	93
457.00	160	74.0	77	77	246
458.00	823	216.8	449	526	3,554
458.88	1,042	221.9	819	1,345	3,816

Device	Routing	Invert	Outlet Devices
#1	Primary	456.38'	**36.0" W x 36.0" H Box Culvert w/ 6.0" inside fill** L= 54.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 455.88' / 454.74' S= 0.0211 '/' Cc= 0.900 n= 0.013, Flow Area= 7.50 sf

Primary OutFlow Max=5.9 cfs @ 12.19 hrs HW=457.10' TW=455.93' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.9 cfs @ 2.72 fps)

Pond C15: PR-15 culvert



Summary for Pond C16: PR-16 culvert

Inflow Area = 0.68 ac, 0.00% Impervious, Inflow Depth = 1.72" for 10-YR event
Inflow = 1.3 cfs @ 12.11 hrs, Volume= 0.10 af
Outflow = 1.0 cfs @ 12.18 hrs, Volume= 0.10 af, Atten= 24%, Lag= 4.6 min
Primary = 1.0 cfs @ 12.18 hrs, Volume= 0.10 af
Routed to Reach 1R : Thru PR-15

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 468.06' @ 12.18 hrs Surf.Area= 2,442 sf Storage= 472 cf
Flood Elev= 470.84' Surf.Area= 7,154 sf Storage= 4,800 cf

Plug-Flow detention time= 14.9 min calculated for 0.10 af (100% of inflow)
Center-of-Mass det. time= 15.0 min (867.3 - 852.3)

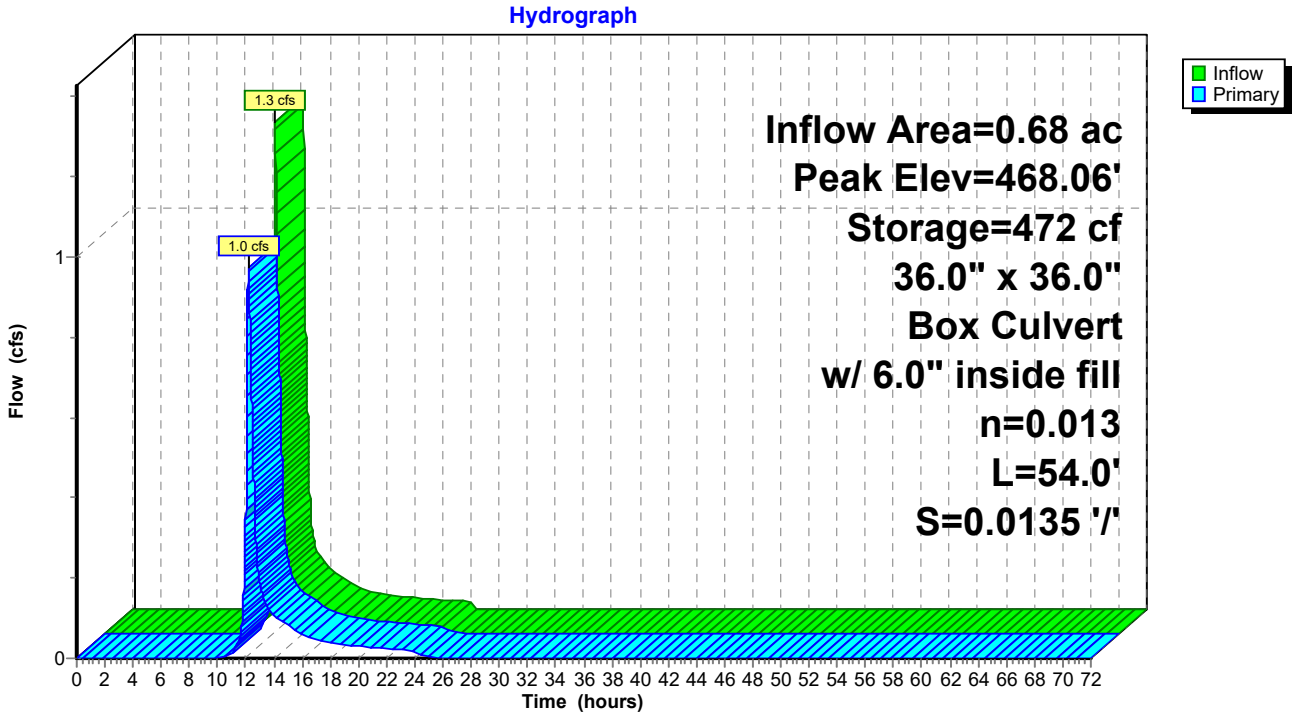
Volume	Invert	Avail.Storage	Storage Description
#1	467.84'	4,800 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
467.84	1,987	177.3	0	0	1,987
468.00	2,235	233.0	338	338	3,806
469.00	7,154	349.9	4,463	4,800	9,236

Device	Routing	Invert	Outlet Devices
#1	Primary	467.84'	**36.0" W x 36.0" H Box Culvert w/ 6.0" inside fill** L= 54.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 467.34' / 466.61' S= 0.0135 '/' Cc= 0.900 n= 0.013, Flow Area= 7.50 sf

Primary OutFlow Max=1.0 cfs @ 12.18 hrs HW=468.06' TW=467.32' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.0 cfs @ 1.50 fps)

Pond C16: PR-16 culvert



Summary for Pond C17: PR-17 culvert

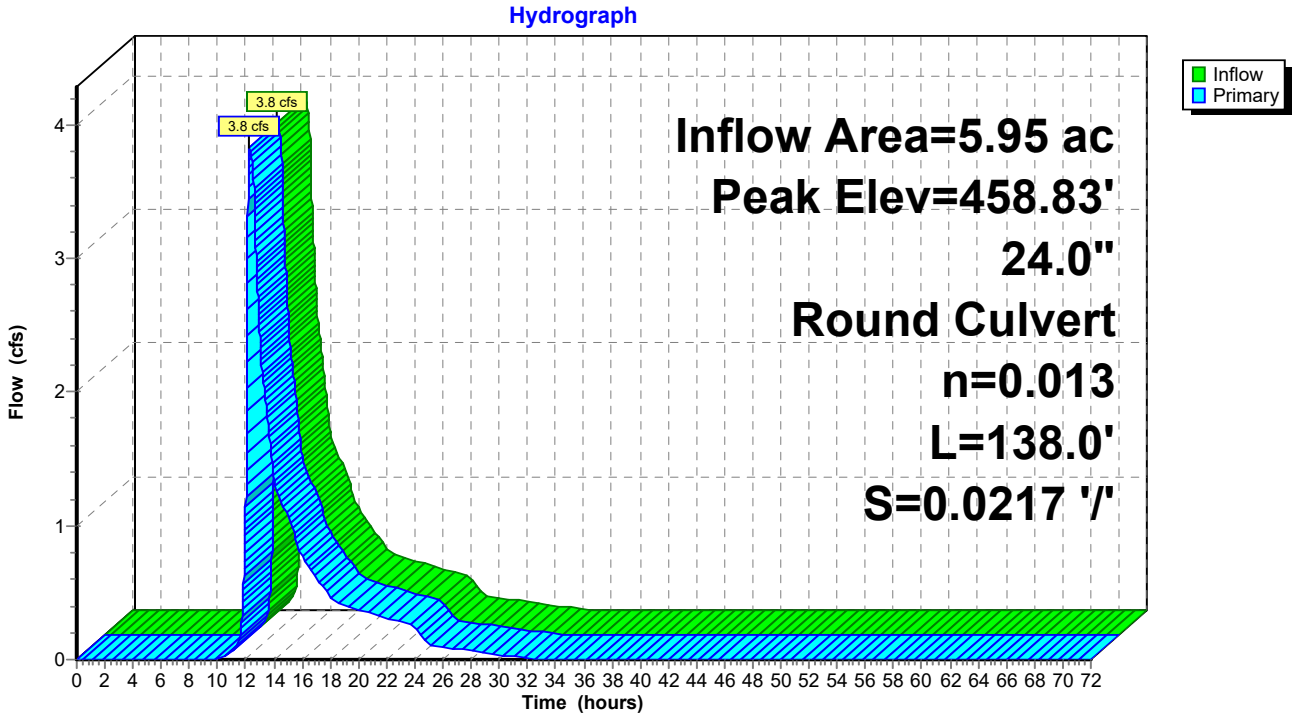
Inflow Area = 5.95 ac, 21.87% Impervious, Inflow Depth = 1.87" for 10-YR event
Inflow = 3.8 cfs @ 12.27 hrs, Volume= 0.93 af
Outflow = 3.8 cfs @ 12.27 hrs, Volume= 0.93 af, Atten= 0%, Lag= 0.0 min
Primary = 3.8 cfs @ 12.27 hrs, Volume= 0.93 af
Routed to Reach 16R : Thru PR-14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 458.83' @ 12.27 hrs
Flood Elev= 462.49'

Device	Routing	Invert	Outlet Devices
#1	Primary	458.00'	**24.0" Round Culvert** L= 138.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 458.00' / 455.00' S= 0.0217 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=3.8 cfs @ 12.27 hrs HW=458.83' TW=456.04' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.8 cfs @ 3.10 fps)

Pond C17: PR-17 culvert



Summary for Pond C4: CULVERT #4

[62] Hint: Exceeded Reach 4R OUTLET depth by 1.41' @ 12.16 hrs
[62] Hint: Exceeded Reach 6R OUTLET depth by 1.38' @ 12.15 hrs
[62] Hint: Exceeded Reach 7R OUTLET depth by 0.86' @ 12.23 hrs

Inflow Area = 22.00 ac, 26.67% Impervious, Inflow Depth = 2.00" for 10-YR event
Inflow = 28.9 cfs @ 12.16 hrs, Volume= 3.67 af
Outflow = 28.9 cfs @ 12.16 hrs, Volume= 3.67 af, Atten= 0%, Lag= 0.2 min
Primary = 28.9 cfs @ 12.16 hrs, Volume= 3.67 af
Routed to Reach 5R : Swale to P1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 411.48' @ 12.16 hrs Surf.Area= 265 sf Storage= 220 cf

Plug-Flow detention time= 0.3 min calculated for 3.67 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (904.2 - 904.1)

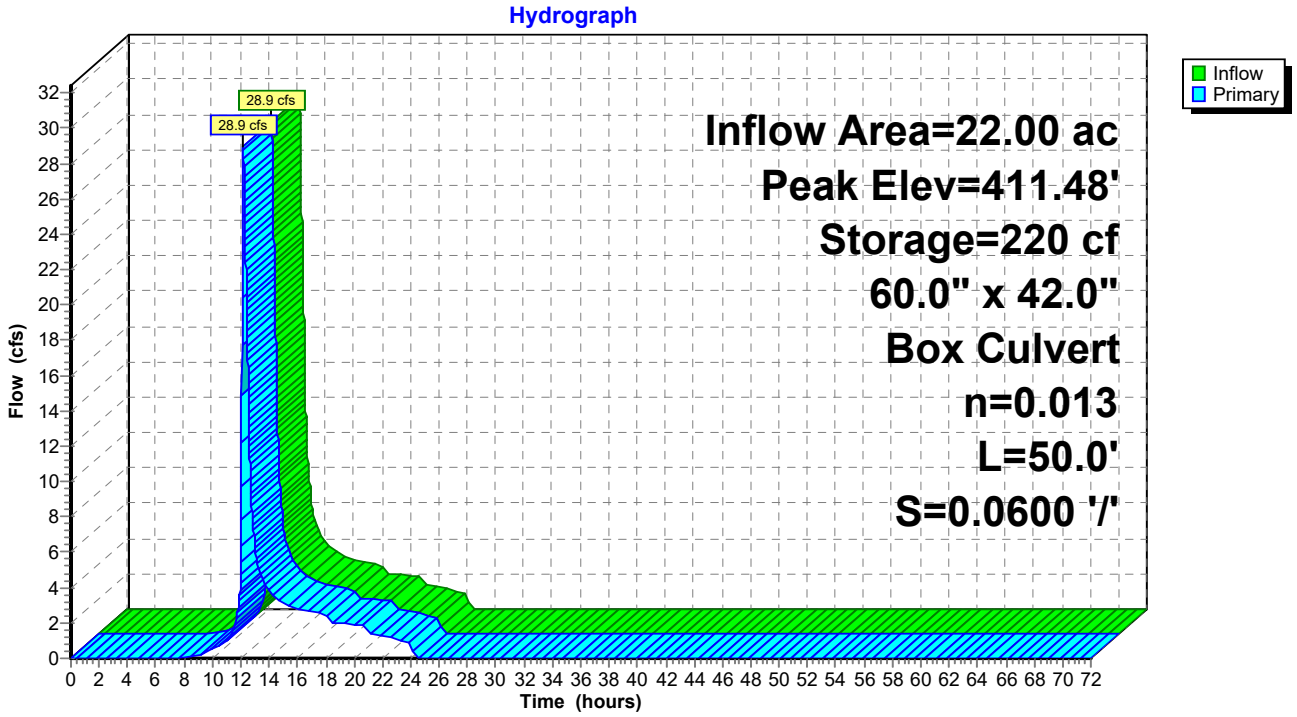
Volume	Invert	Avail.Storage	Storage Description
#1	410.00'	1,000 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
410.00	53	29.0	0	0	53
411.00	185	58.0	112	112	258
412.00	368	88.0	271	384	615
413.00	620	117.0	489	872	1,099
413.20	655	119.0	127	1,000	1,143

Device	Routing	Invert	Outlet Devices
#1	Primary	410.00'	**60.0" W x 42.0" H Box Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 410.00' / 407.00' S= 0.0600 '/' Cc= 0.900 n= 0.013, Flow Area= 17.50 sf

Primary OutFlow Max=28.9 cfs @ 12.16 hrs HW=411.48' TW=407.58' (Dynamic Tailwater)
1=Culvert (Inlet Controls 28.9 cfs @ 3.91 fps)

Pond C4: CULVERT #4



Summary for Pond WC1: Wetland Cross Culvert #1

[62] Hint: Exceeded Reach 13R OUTLET depth by 0.24' @ 12.45 hrs

Inflow Area = 40.04 ac, 14.91% Impervious, Inflow Depth = 2.04" for 10-YR event
Inflow = 42.0 cfs @ 12.44 hrs, Volume= 6.82 af
Outflow = 42.0 cfs @ 12.44 hrs, Volume= 6.82 af, Atten= 0%, Lag= 0.1 min
Primary = 42.0 cfs @ 12.44 hrs, Volume= 6.82 af
Routed to Reach 15R : Culvert #1 to DP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 411.60' @ 12.44 hrs Surf.Area= 145 sf Storage= 84 cf

Plug-Flow detention time= 0.0 min calculated for 6.82 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (1,000.9 - 1,000.9)

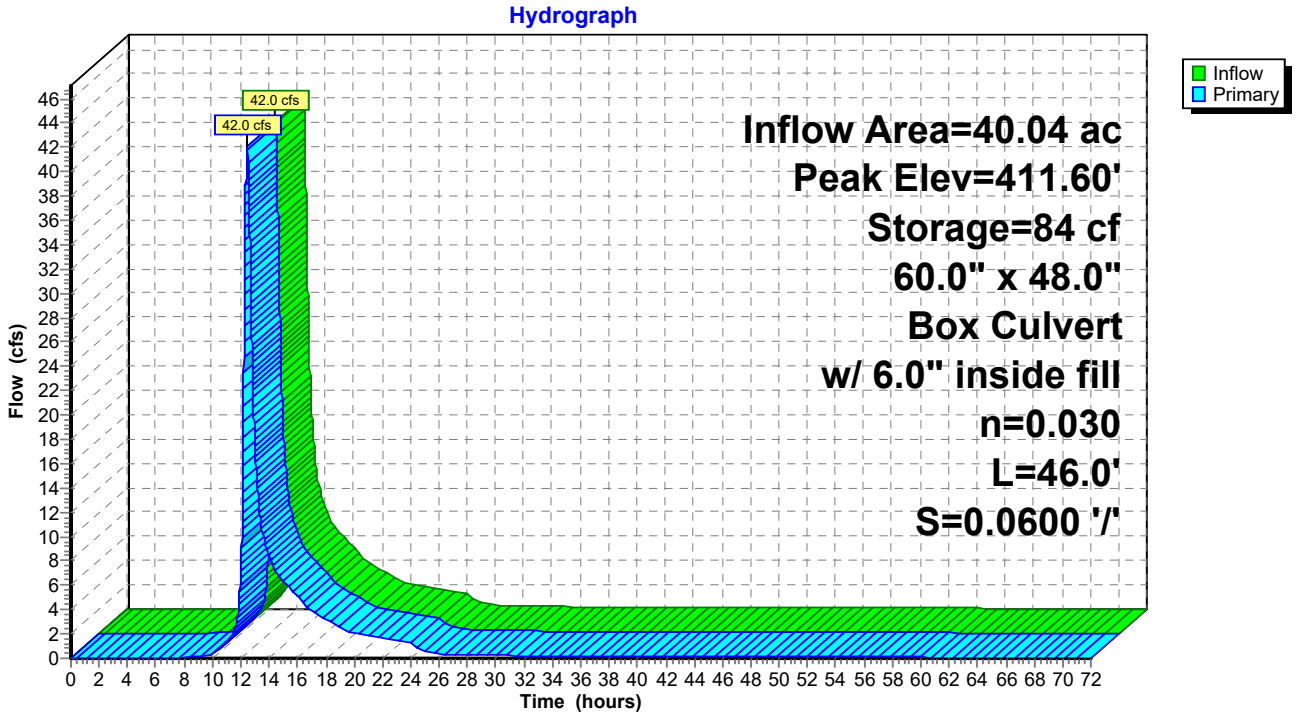
Volume	Invert	Avail.Storage	Storage Description
#1	409.70'	681 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
409.70	4	8.0	0	0	4
410.00	6	10.6	1	1	9
411.00	53	37.1	26	27	112
412.00	232	108.7	132	159	946
412.30	332	113.6	84	243	1,039
413.00	583	125.4	316	559	1,278
413.20	632	132.2	121	681	1,420

Device	Routing	Invert	Outlet Devices
#1	Primary	409.70'	**60.0" W x 48.0" H Box Culvert w/ 6.0" inside fill** L= 46.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 409.20' / 406.44' S= 0.0600 '/' Cc= 0.900 n= 0.030, Flow Area= 17.50 sf

Primary OutFlow Max=42.0 cfs @ 12.44 hrs HW=411.60' TW=408.29' (Dynamic Tailwater)
1=Culvert (Inlet Controls 42.0 cfs @ 4.42 fps)

Pond WC1: Wetland Cross Culvert #1



Summary for Pond WC2: Wetland Cross Culvert #2

[62] Hint: Exceeded Reach 16R OUTLET depth by 1.15' @ 12.38 hrs
[62] Hint: Exceeded Reach 22R OUTLET depth by 1.20' @ 12.42 hrs

Inflow Area = 27.85 ac, 13.80% Impervious, Inflow Depth = 2.03" for 10-YR event
Inflow = 32.4 cfs @ 12.32 hrs, Volume= 4.70 af
Outflow = 31.6 cfs @ 12.35 hrs, Volume= 4.70 af, Atten= 3%, Lag= 1.8 min
Primary = 31.6 cfs @ 12.35 hrs, Volume= 4.70 af
Routed to Reach 13R : Culvert #2 to #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 433.52' @ 12.39 hrs Surf.Area= 2,792 sf Storage= 1,924 cf
Flood Elev= 435.00' Surf.Area= 8,635 sf Storage= 10,195 cf

Plug-Flow detention time= 0.8 min calculated for 4.70 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (892.0 - 891.2)

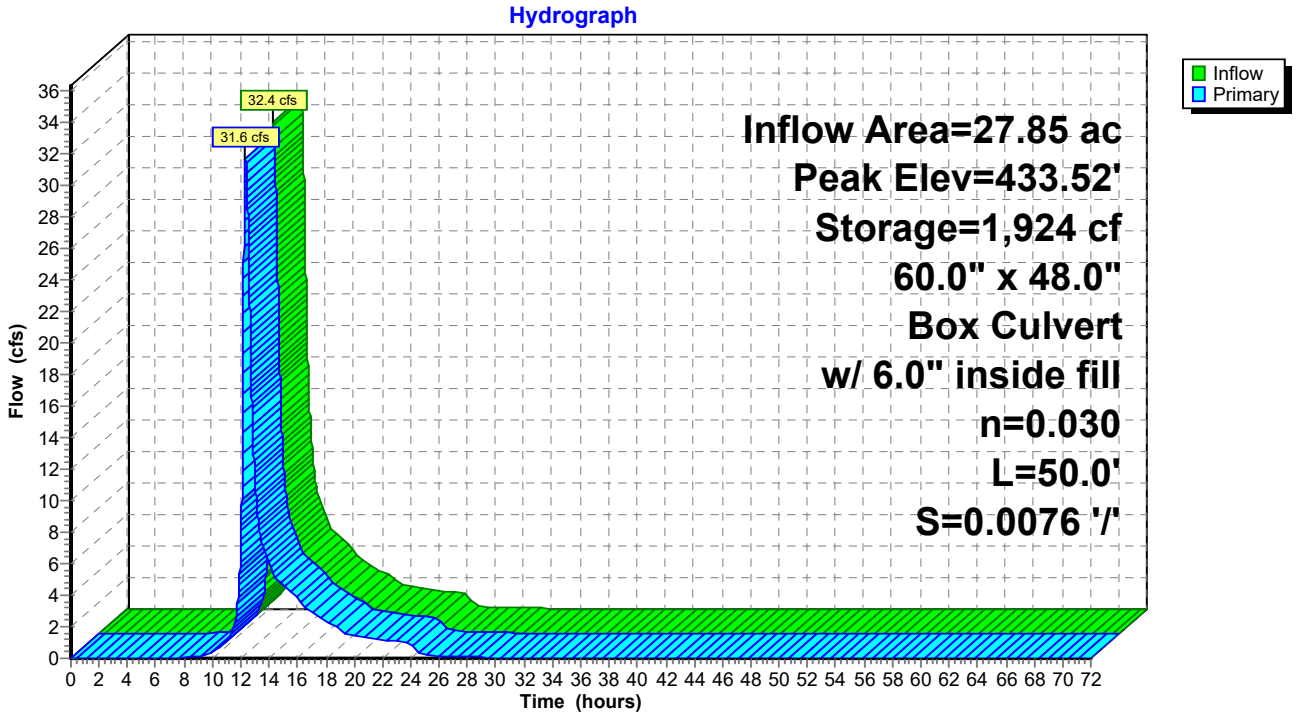
Volume	Invert	Avail.Storage	Storage Description
#1	431.50'	10,195 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
431.50	173	132.7	0	0	173
432.00	305	137.9	118	118	304
433.00	1,325	454.5	755	873	15,232
434.00	4,612	772.9	2,803	3,676	46,337
435.00	8,635	1,082.3	6,519	10,195	92,024

Device	Routing	Invert	Outlet Devices
#1	Primary	431.50'	**60.0" W x 48.0" H Box Culvert w/ 6.0" inside fill** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 431.00' / 430.62' S= 0.0076 '/' Cc= 0.900 n= 0.030, Flow Area= 17.50 sf

Primary OutFlow Max=31.3 cfs @ 12.35 hrs HW=433.51' TW=432.72' (Dynamic Tailwater)
1=Culvert (Outlet Controls 31.3 cfs @ 4.16 fps)

Pond WC2: Wetland Cross Culvert #2

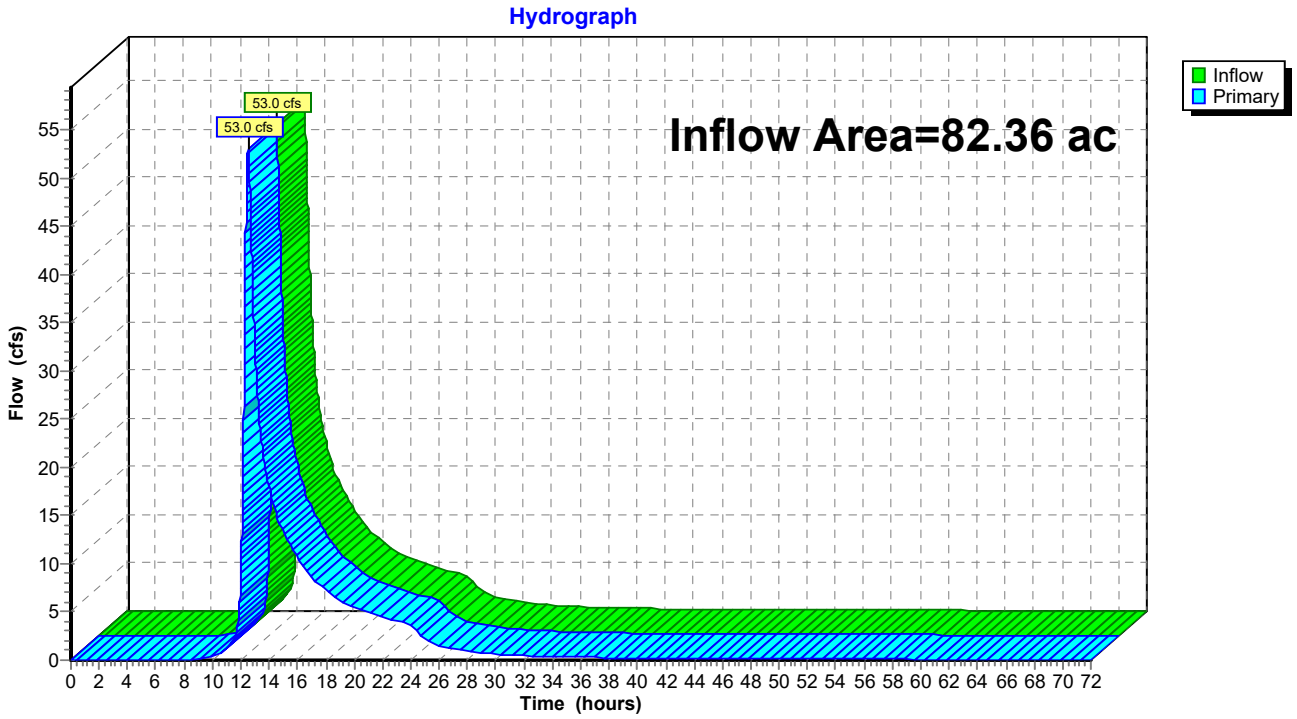


Summary for Link DP-1: Existing 18" Culvert

Inflow Area = 82.36 ac, 18.34% Impervious, Inflow Depth = 1.87" for 10-YR event
Inflow = 53.0 cfs @ 12.51 hrs, Volume= 12.84 af
Primary = 53.0 cfs @ 12.51 hrs, Volume= 12.84 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-1: Existing 18" Culvert

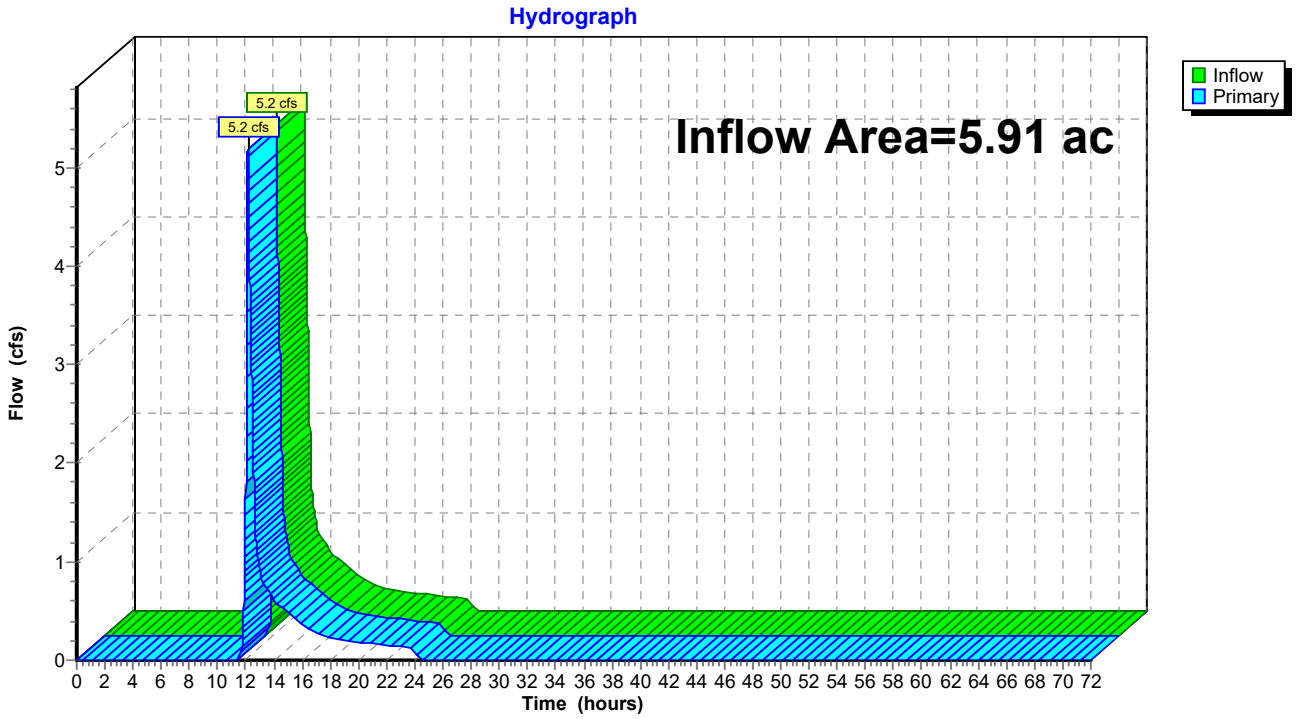


Summary for Link DP-2: Existing 12" Culvert

Inflow Area = 5.91 ac, 2.69% Impervious, Inflow Depth = 1.00" for 10-YR event
Inflow = 5.2 cfs @ 12.15 hrs, Volume= 0.49 af
Primary = 5.2 cfs @ 12.15 hrs, Volume= 0.49 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-2: Existing 12" Culvert

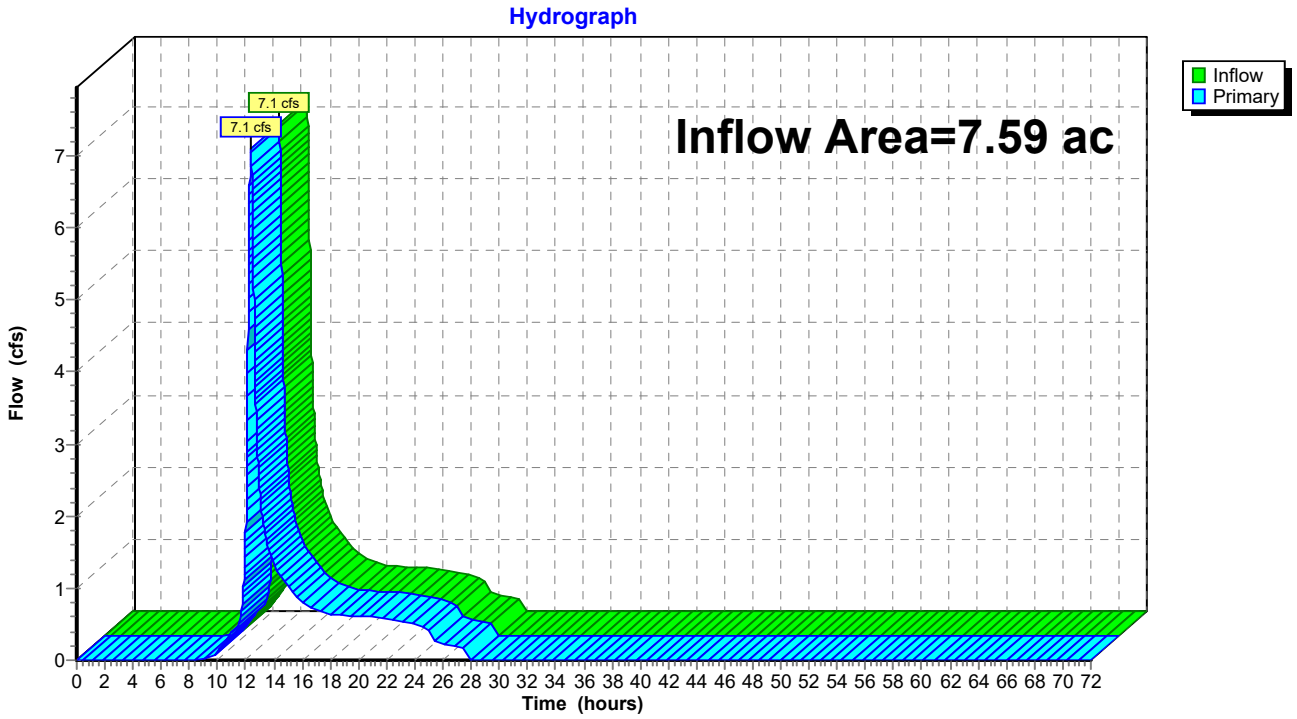


Summary for Link DP-3: Hovey Road

Inflow Area = 7.59 ac, 25.23% Impervious, Inflow Depth = 1.99" for 10-YR event
Inflow = 7.1 cfs @ 12.35 hrs, Volume= 1.26 af
Primary = 7.1 cfs @ 12.35 hrs, Volume= 1.26 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-3: Hovey Road

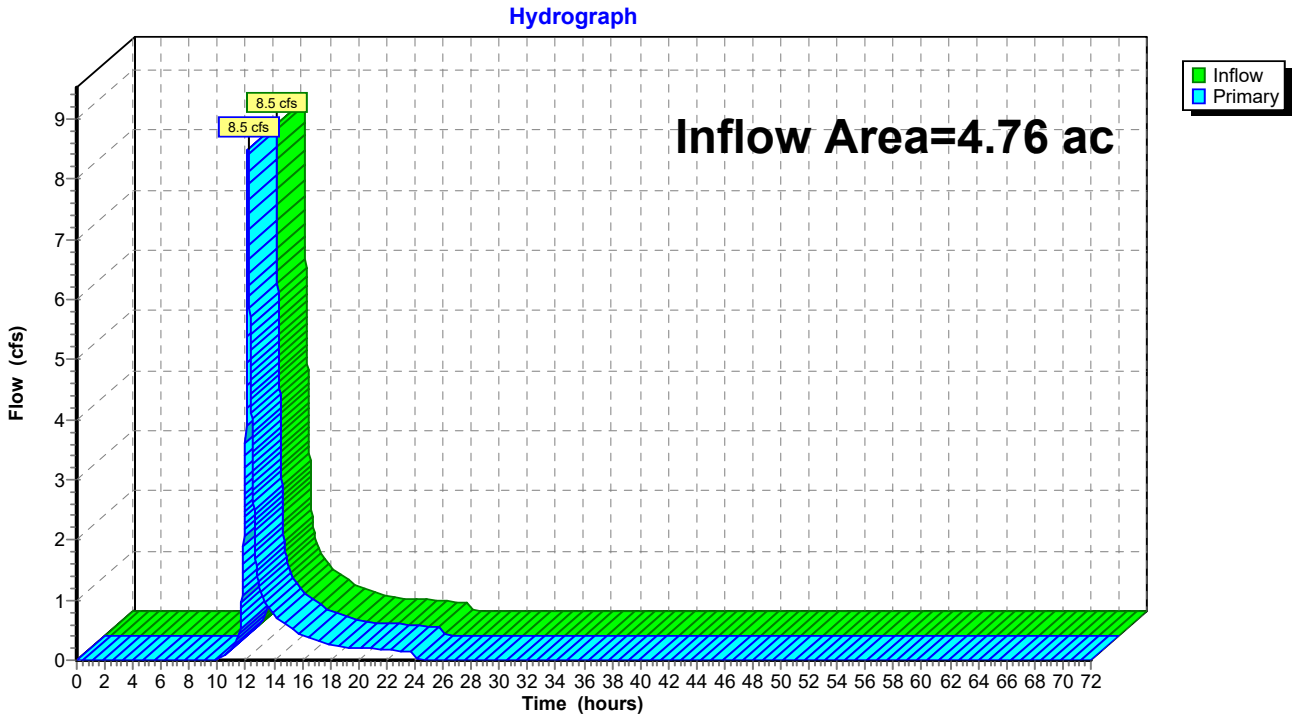


Summary for Link DP-4: Spring Road

Inflow Area = 4.76 ac, 0.05% Impervious, Inflow Depth = 1.79" for 10-YR event
Inflow = 8.5 cfs @ 12.15 hrs, Volume= 0.71 af
Primary = 8.5 cfs @ 12.15 hrs, Volume= 0.71 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-4: Spring Road

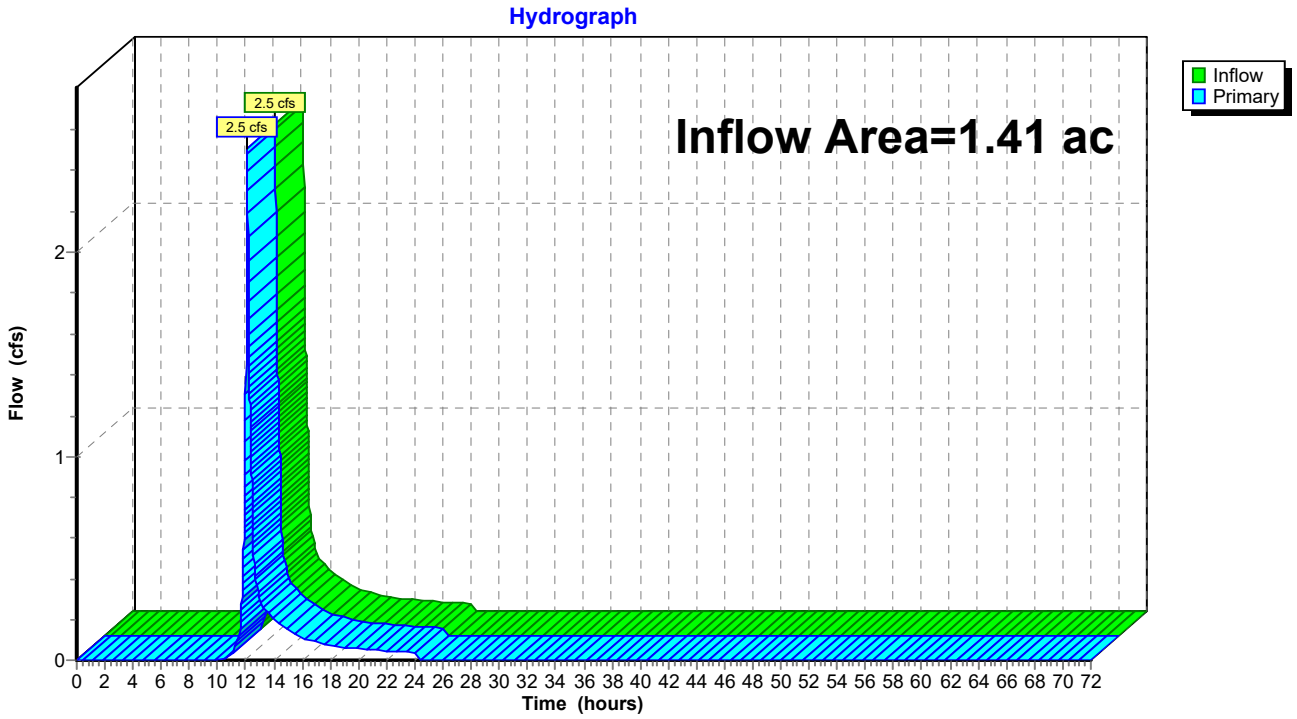


Summary for Link DP-5: Offsite

Inflow Area = 1.41 ac, 0.00% Impervious, Inflow Depth = 1.57" for 10-YR event
Inflow = 2.5 cfs @ 12.09 hrs, Volume= 0.19 af
Primary = 2.5 cfs @ 12.09 hrs, Volume= 0.19 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-5: Offsite

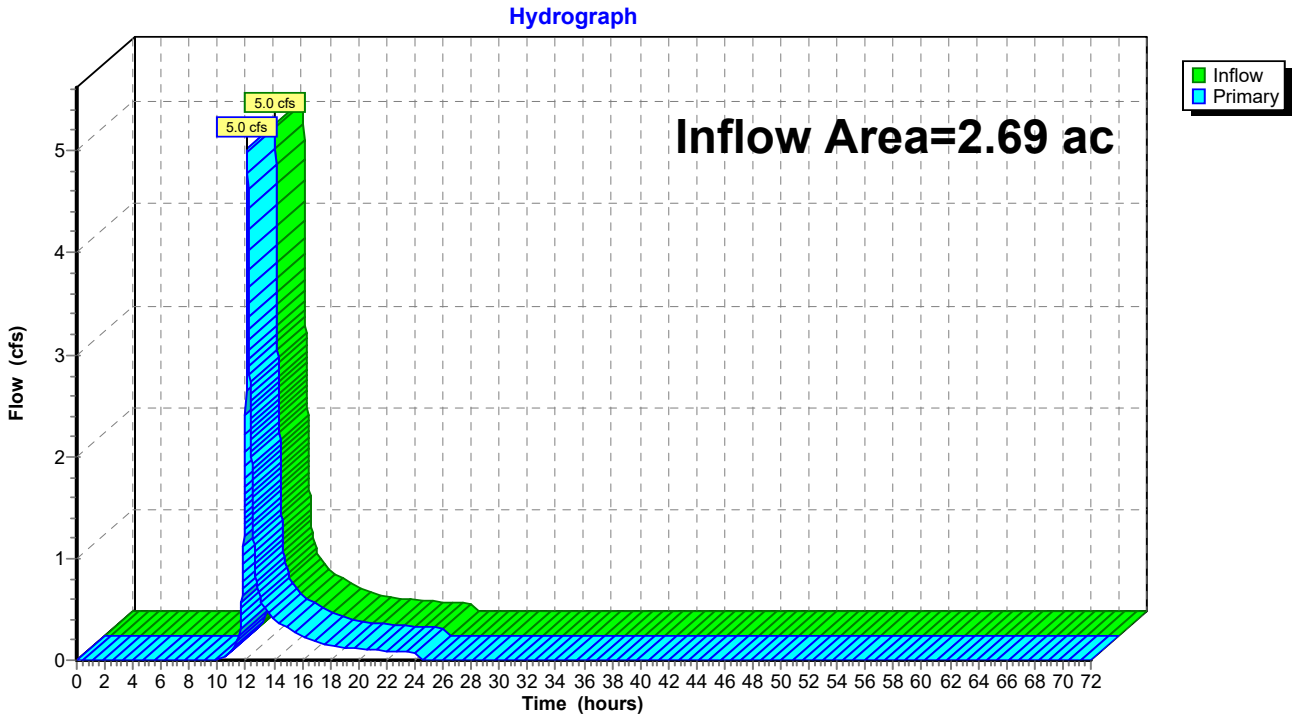


Summary for Link DP-6: North Hovey Road

Inflow Area = 2.69 ac, 0.01% Impervious, Inflow Depth = 1.72" for 10-YR event
Inflow = 5.0 cfs @ 12.11 hrs, Volume= 0.38 af
Primary = 5.0 cfs @ 12.11 hrs, Volume= 0.38 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-6: North Hovey Road



Summary for Link OS-2: 2017 Cemetery Basin Outfall

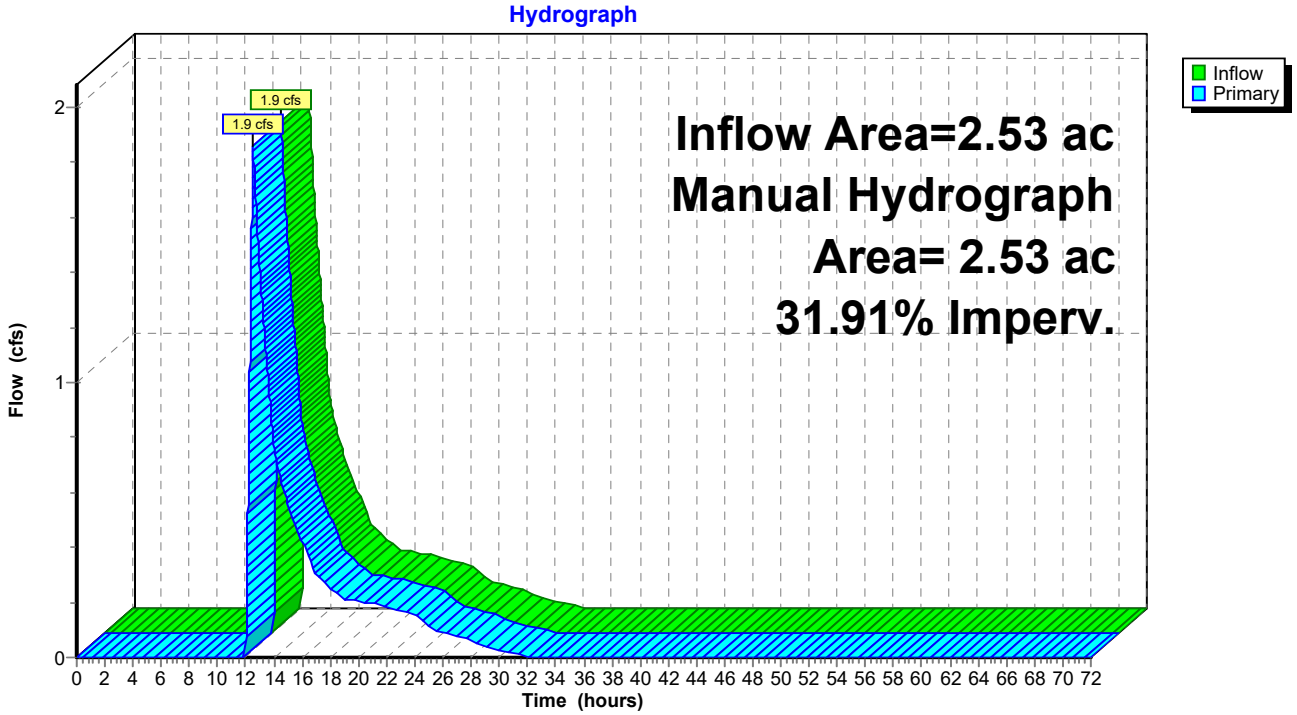
Inflow Area = 2.53 ac, 31.91% Impervious, Inflow Depth = 2.27" for 10-YR event
Inflow = 1.9 cfs @ 12.50 hrs, Volume= 0.48 af
Primary = 1.9 cfs @ 12.50 hrs, Volume= 0.48 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Thru PR-17

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

10-YR 129 Point manual hydrograph, To= 0.00 hrs, dt= 0.25 hrs, Area= 2.53 ac, 31.91% Imp., cfs =

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93
1.86	1.63	1.40	1.23	1.07	0.91	0.75	0.70	0.65	0.60
0.55	0.51	0.47	0.44	0.42	0.40	0.37	0.34	0.30	0.29
0.28	0.27	0.25	0.24	0.23	0.22	0.21	0.21	0.21	0.21
0.21	0.20	0.20	0.20	0.20	0.20	0.19	0.19	0.18	0.18
0.18	0.17	0.17	0.17	0.16	0.16	0.15	0.15	0.14	0.12
0.11	0.10	0.10	0.09	0.09	0.09	0.08	0.08	0.08	0.07
0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.03	0.03
0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.00	

Link OS-2: 2017 Cemetery Basin Outfall



Summary for Link OS-3: 2010 Cemetery Basin Outfall

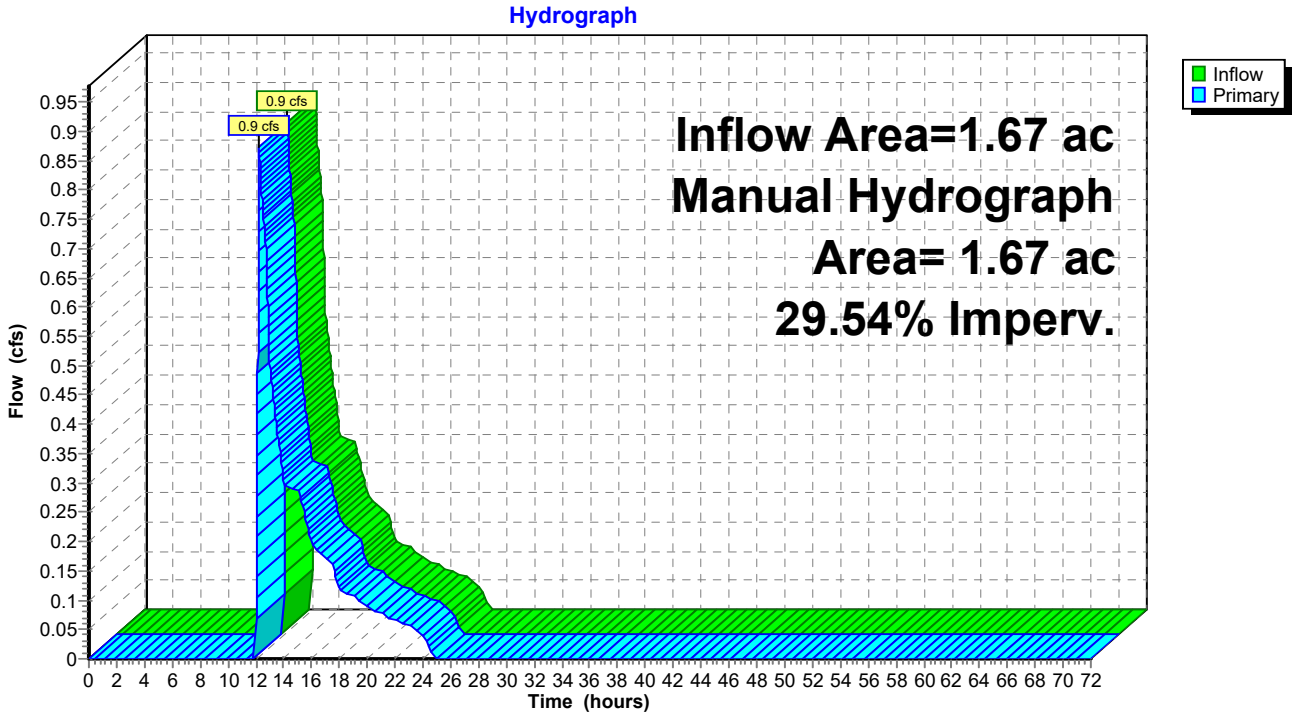
Inflow Area = 1.67 ac, 29.54% Impervious, Inflow Depth = 1.43" for 10-YR event
Inflow = 0.9 cfs @ 12.25 hrs, Volume= 0.20 af
Primary = 0.9 cfs @ 12.25 hrs, Volume= 0.20 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Thru PR-17

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

10-YR 102 Point manual hydrograph, To= 0.00 hrs, dt= 0.25 hrs, Area= 1.67 ac, 29.54% Imp., cfs =

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87
0.76	0.70	0.50	0.45	0.40	0.35	0.30	0.29	0.29	0.29
0.29	0.27	0.25	0.22	0.20	0.19	0.18	0.18	0.17	0.17
0.16	0.14	0.12	0.11	0.11	0.11	0.11	0.10	0.10	0.09
0.09	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.06
0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.03	0.02	0.00
0.00	0.00								

Link OS-3: 2010 Cemetery Basin Outfall



Appendix C: Hydraulic Calculations

- Storm Drain Piping Calculations: Project Site
- Storm Drain Piping Calculations: Hovey Road Existing Network
- Riprap Apron/Energy Dissipation Calculations

Storm Drain Piping Calculations: Project Site

FlexTable: Conduit Table

Start Node	Stop Node	Upstream Inlet Area (acres)	Upstream Inlet C	System CA (acres)	System Intensity (in/h)	Diameter (in)	Manning's n	Slope (Calculated) (ft/ft)	Length (Scaled) (ft)	Flow (cfs)	Capacity (Full Flow) (cfs)	Flow / Capacity (Design) (%)	Elevation Ground (Start) (ft)	Hydraulic Grade Line (In) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (Out) (ft)	Invert (Start) (ft)	Invert (Stop) (ft)
CB-618	CB-617	0.004	0.670	0.003	7.270	15.0	0.010	0.010	30.0	0.02	8.40	0.2	431.48	426.65	431.42	426.65	426.60	426.30
CB-615	CB-614	0.006	0.854	0.005	7.270	12.0	0.010	0.010	30.0	0.04	4.63	0.8	422.30	417.87	422.30	417.87	417.50	417.20
CB-1206	CB-1205	0.030	0.847	0.025	7.270	15.0	0.010	0.009	22.0	0.19	8.01	2.3	451.03	446.34	451.03	446.34	446.00	445.80
CB-910	CB-911	0.072	0.844	0.061	7.270	15.0	0.010	0.010	30.3	0.45	8.35	5.3	462.62	458.54	462.70	458.55	457.90	457.60
CB-303	CB-302	0.088	0.846	0.074	7.270	15.0	0.010	0.014	22.0	0.55	9.81	5.6	448.74	444.69	448.74	444.68	444.40	444.10
CB-612	CB-610	0.016	0.515	0.105	7.216	15.0	0.010	0.024	215.3	0.77	13.05	5.9	425.61	421.04	420.26	416.27	420.70	415.50
CB-1203	CB-1202	0.089	0.877	0.078	7.270	15.0	0.010	0.010	20.5	0.57	8.29	6.9	443.24	439.03	443.32	439.04	438.50	438.30
CB-508	CB-507	0.185	0.786	0.145	7.270	15.0	0.010	0.033	24.0	1.07	15.32	7.0	457.84	453.81	457.80	453.82	453.10	452.30
CB-903	CB-902	0.247	0.633	0.156	7.270	18.0	0.010	0.014	22.0	1.15	15.94	7.2	453.28	449.26	453.28	449.26	448.30	448.00
CB-503	CB-502	0.089	0.846	0.075	7.270	15.0	0.010	0.008	26.0	0.55	7.37	7.5	455.02	450.15	454.99	450.15	448.80	448.60
CB-619	CB-616	0.105	0.844	0.193	7.230	15.0	0.010	0.046	174.2	1.40	18.10	7.8	436.98	432.77	429.03	424.75	432.30	424.20
CB-1101	1102 (36 Pillsbury - STORM DRAINAGE)	1.677	0.200	0.335	7.270	24.0	0.010	0.010	153.5	2.46	30.02	8.2	462.60	457.15	458.09	455.39	456.60	455.00
CB-613	CB-612	0.181	0.537	0.097	7.270	15.0	0.010	0.010	30.1	0.71	8.39	8.5	425.40	421.43	425.61	421.05	421.10	420.80
CB-620	CB-619	0.123	0.846	0.104	7.270	15.0	0.010	0.009	22.0	0.76	8.01	9.5	437.42	432.94	436.98	432.77	432.60	432.40
CB-403	CB-402	0.132	0.846	0.112	7.270	15.0	0.010	0.009	22.0	0.82	8.01	10.2	453.61	450.78	453.57	450.78	450.00	449.80
1204 (36 Pillsbury - STORM DRAINAGE)	CB-1202	(N/A)	(N/A)	0.351	7.085	18.0	0.010	0.025	167.1	2.51	21.39	11.7	447.56	443.00	443.32	439.04	442.40	438.30
CB-605	CB-604	0.130	0.718	0.093	7.270	12.0	0.010	0.015	26.0	0.68	5.74	11.9	427.53	415.85	427.53	415.56	415.50	415.10
CB-915	CB-914	0.271	0.575	0.156	7.270	15.0	0.010	0.012	34.4	1.14	9.06	12.6	471.06	466.82	470.77	466.31	466.40	466.00
CB-306	CB-305	0.401	0.578	0.232	7.270	18.0	0.010	0.009	22.0	1.70	13.02	13.0	448.17	443.78	448.17	443.80	443.10	442.90
CB-914	CB-912	0.074	0.828	0.217	7.219	15.0	0.010	0.019	239.8	1.58	11.50	13.7	470.77	466.40	466.35	462.25	465.90	461.40
CB-800	CB-801	0.424	0.405	0.172	7.270	15.0	0.010	0.012	26.0	1.26	9.02	14.0	462.71	458.34	462.66	458.36	457.90	457.60
CB-617	CB-616	0.287	0.614	0.179	7.110	15.0	0.010	0.011	177.7	1.28	8.91	14.4	431.42	426.65	429.03	424.75	426.20	424.20
CB-616	CB-614	0.006	0.859	0.377	6.852	15.0	0.010	0.046	138.6	2.60	18.04	14.4	429.03	424.75	422.30	418.02	424.10	417.70
CB-604	CB-603	0.195	0.731	0.236	7.230	12.0	0.010	0.045	252.0	1.72	9.85	17.5	427.53	415.56	409.78	404.78	415.00	403.60
CB-1205	1204 (36 Pillsbury - STORM DRAINAGE)	0.371	0.877	0.351	7.209	15.0	0.010	0.024	135.3	2.55	12.91	19.7	451.03	446.34	447.56	442.88	445.70	442.50
CB-302	301 (36 Pillsbury - STORM DRAINAGE)	0.748	0.480	0.433	7.232	18.0	0.010	0.014	29.2	3.16	15.98	19.8	448.74	444.68	445.19	444.09	444.00	443.60
CB-614	609 (36 Pillsbury - STORM DRAINAGE)	0.271	0.556	0.533	6.752	15.0	0.010	0.041	63.0	3.62	17.06	21.2	422.30	417.87	419.25	415.53	417.10	414.50
CB-506	CB-505	0.437	0.569	0.249	7.270	15.0	0.010	0.010	30.0	1.82	8.40	21.7	459.77	455.44	459.75	455.22	454.90	454.60
CB-702	701 (36 Pillsbury - STORM DRAINAGE)	0.649	0.594	1.487	7.092	24.0	0.010	0.027	152.7	10.63	48.76	21.8	459.00	452.37	449.09	447.64	451.20	447.00
CB-1012	CB-1011	0.612	0.442	0.271	7.270	15.0	0.010	0.012	26.0	1.98	9.02	22.0	469.04	465.45	468.98	465.26	464.70	464.40
CB-1008	CB-1007	0.435	0.388	0.169	7.270	12.0	0.010	0.014	22.0	1.24	5.41	22.9	464.85	460.87	464.86	460.98	460.40	460.10
CB-607	CB-606	0.385	0.416	1.679	6.603	24.0	0.010	0.027	81.3	11.18	48.35	23.1	411.35	407.40	409.44	404.70	406.20	404.00
CB-1012	CB-1010	0.083	0.849	0.341	7.149	15.0	0.010	0.016	135.4	2.46	10.46	23.5	469.04	464.93	466.86	463.01	464.30	462.20
CB-505	CB-504	0.303	0.620	0.437	7.229	15.0	0.010	0.025	218.4	3.18	13.20	24.1	459.75	455.22	456.48	451.67	454.50	449.10
CB-411	CB-410	0.460	0.625	0.287	7.270	15.0	0.010	0.010	30.0	2.11	8.40	25.1	458.41	454.68	458.41	454.53	454.10	453.80
CB-1002	1001 (36 Pillsbury - STORM DRAINAGE)	0.276	0.709	1.709	6.329	24.0	0.010	0.021	117.5	10.90	42.89	25.4	462.32	458.88	457.29	455.91	457.70	455.20
CB-611	CB-610	1.226	0.337	0.413	7.270	15.0	0.010	0.019	26.0	3.03	11.64	26.0	420.26	416.70	420.26	416.27	416.00	415.50
CB-1010	CB-1009	1.036	0.325	0.337	7.270	15.0	0.010	0.012	26.0	2.47	9.02	27.4	466.86	463.34	466.80	463.13	462.50	462.20
1005 (36 Pillsbury - STORM DRAINAGE)	CB-1002	(N/A)	(N/A)	0.933	6.484	24.0	0.010	0.006	124.3	6.10	22.07	27.6	464.00	459.37	462.32	458.88	458.50	457.80
CB-913	CB-912	0.569	0.561	0.319	7.270	15.0	0.010	0.010	30.0	2.34	8.40	27.9	466.37	462.31	466.35	462.25	461.70	461.40
CB-906	905 (36 Pillsbury - STORM DRAINAGE)	0.391	0.628	0.246	7.270	12.0	0.010	0.019	26.0	1.80	6.42	28.0	457.75	453.87	457.83	453.98	453.30	452.80
1006 (36 Pillsbury - STORM DRAINAGE)	1005 (36 Pillsbury - STORM DRAINAGE)	(N/A)	(N/A)	0.933	6.687	24.0	0.010	0.006	162.9	6.29	21.86	28.8	465.09	460.39	464.00	459.34	459.50	458.60
609 (36 Pillsbury - STORM DRAINAGE)	CB-608	(N/A)	(N/A)	1.267	6.709	18.0	0.010	0.047	163.1	8.57	29.66	28.9	419.25	415.53	411.35	407.25	414.40	406.70
CB-305	304 (36 Pillsbury - STORM DRAINAGE)	0.256	0.575	0.948	7.036	18.0	0.010	0.028	29.0	6.72	22.68	29.7	448.17	443.80	443.59	442.66	442.80	442.00
802 (36 Pillsbury - STORM DRAINAGE)	803 (36 Pillsbury - STORM DRAINAGE)	(N/A)	(N/A)	0.622	7.149	15.0	0.010	0.032	81.5	4.48	15.00	29.9	460.50	456.46	1.42	453.48	455.60	453.00
CB-407	CB-406	0.332	0.583	0.194	7.270	12.0	0.010	0.010	30.0	1.42	4.63	30.6	459.37	455.41	459.37	455.23	454.90	454.60
CB-902	901 (36 Pillsbury - STORM DRAINAGE)	0.211	0.619	2.219	6.377	24.0	0.010	0.022	131.8	14.26	43.61	32.7	453.28	449.26	447.09	445.81	447.90	445.00
CB-610	609 (36 Pillsbury - STORM DRAINAGE)	0.352	0.614	0.735	6.938	18.0	0.010	0.011	79.0	5.14	14.57	35.3	420.26	416.27	419.25	415.53	415.40	414.50
CB-606	CB-603	0.011	0.796	1.688	6.555	24.0	0.010	0.012	26.0	11.15	31.59	35.3	409.44	405.10	409.78	404.54	403.90	403.60
CB-406	CB-405	0.359	0.563	0.396	7.227	12.0	0.010	0.026	169.1	2.88	7.49	38.5	459.37	455.23	455.54	451.64	454.50	450.08
CB-410	CB-409	0.458	0.628	0.575	7.230	15.0	0.010	0.016	241.7	4.19	10.67	39.3	458.41	454.53	454.37	450.65	453.70	449.80
CB-801	802 (36 Pillsbury - STORM DRAINAGE)	0.822	0.548	0.622	7.232	15.0	0.010	0.019	97.0	4.54	11.44	39.6	462.66	458.36	460.50	456.25	457.50	455.70
CB-912	CB-911	0.412	0.618	0.791	6.945	15.0	0.010	0.024	152.2	5.54	13.09	42.3	466.35	462.25	462.70	458.17	461.30	457.60
CB-308	CB-307	0.447	0.601	0.269	7.270	12.0	0.010	0.010	30.0	1.97	4.63	42.5	454.95	451.00	454.95	450.86	450.40	450.10

FlexTable: Conduit Table

Start Node	Stop Node	Upstream Inlet Area (acres)	Upstream Inlet C	System CA (acres)	System Intensity (in/h)	Diameter (in)	Manning's n	Slope (Calculated) (ft/ft)	Length (Scaled) (ft)	Flow (cfs)	Capacity (Full Flow) (cfs)	Flow / Capacity (Design) (%)	Elevation Ground (Start) (ft)	Hydraulic Grade Line (In) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (Out) (ft)	Invert (Start) (ft)	Invert (Stop) (ft)
CB-603	602 (36 Pillsbury - STORM DRAINAGE)	0.012	0.773	1.933	6.533	24.0	0.010	0.010	51.3	12.73	29.03	43.9	409.78	404.78	405.09	404.00	403.50	403.00
CB-1202	1201 (36 Pillsbury - STORM DRAINAGE)	0.344	0.740	0.683	6.930	18.0	0.010	0.006	197.5	4.77	10.64	44.9	443.32	439.04	438.59	437.70	438.20	437.00
CB-502	501 (36 Pillsbury - STORM DRAINAGE)	1.748	0.329	3.865	6.655	36.0	0.010	0.004	45.0	25.93	57.77	44.9	454.99	450.15	452.34	449.77	448.50	448.30
CB-908	CB-907	0.141	0.856	1.305	6.670	18.0	0.010	0.019	96.3	8.77	18.67	47.0	460.91	456.95	459.06	454.75	455.80	454.00
CB-507	CB-504	2.191	0.404	2.584	6.855	24.0	0.010	0.015	145.4	17.86	36.17	49.4	457.80	453.82	456.48	451.67	452.30	450.10
CB-307	CB-305	0.480	0.626	0.569	7.230	12.0	0.010	0.028	258.0	4.15	7.68	54.0	454.95	450.86	448.17	443.80	450.00	442.90
CB-907	905 (36 Pillsbury - STORM DRAINAGE)	0.219	0.600	1.436	6.601	18.0	0.010	0.017	66.3	9.55	17.58	54.3	459.06	455.09	457.83	453.64	453.90	452.80
905 (36 Pillsbury - STORM DRAINAGE)	CB-904	(N/A)	(N/A)	1.682	6.552	18.0	0.010	0.019	131.0	11.10	18.86	58.9	457.83	453.98	455.22	451.04	452.70	450.20
CB-1010	CB-1007	0.042	0.848	0.713	7.003	15.0	0.010	0.010	199.2	5.04	8.41	59.8	466.86	463.01	464.86	460.80	462.10	460.10
CB-514	CB-513	1.206	0.571	0.689	7.270	15.0	0.010	0.010	30.1	5.05	8.38	60.2	465.94	462.39	465.92	462.11	461.20	460.90
CB-405	CB-404	0.286	0.569	0.558	7.084	15.0	0.010	0.006	50.4	3.99	6.48	61.5	455.54	451.64	454.95	451.52	412.40	412.10
CB-402	401 (36 Pillsbury - STORM DRAINAGE)	0.497	0.451	1.071	6.781	15.0	0.010	0.019	26.0	7.32	11.64	62.9	453.57	450.78	450.54	450.02	449.70	449.20
CB-909	CB-908	0.339	0.592	1.184	6.792	18.0	0.010	0.009	125.0	8.11	12.81	63.3	462.43	458.10	460.91	456.77	457.00	455.90
CB-515	CB-507	0.404	0.604	1.554	6.961	18.0	0.010	0.015	143.0	10.90	16.94	64.4	459.53	455.77	457.80	453.82	454.50	452.30
CB-514	CB-516	0.811	0.433	1.040	7.215	15.0	0.010	0.019	303.2	7.56	11.61	65.1	465.94	461.89	459.70	455.74	460.80	455.00
CB-1004	CB-1003	1.332	0.312	0.416	7.270	12.0	0.010	0.010	30.0	3.05	4.63	65.8	464.07	460.35	464.09	460.07	459.60	459.30
CB-1007	1006 (36 Pillsbury - STORM DRAINAGE)	0.060	0.846	0.933	6.795	18.0	0.010	0.005	82.6	6.39	9.50	67.3	464.86	460.98	465.09	460.50	460.00	459.60
CB-705	CB-704	0.688	0.618	0.425	7.270	12.0	0.010	0.010	30.0	3.12	4.63	67.3	457.84	454.06	457.82	453.88	453.30	453.00
CB-704	CB-703	0.991	0.378	0.800	7.234	15.0	0.010	0.010	114.4	5.83	8.60	67.8	457.82	453.88	459.01	452.71	452.90	451.70
CB-409	408 (36 Pillsbury - STORM DRAINAGE)	0.331	0.609	0.777	7.008	15.0	0.010	0.009	22.0	5.49	8.01	68.5	454.37	450.65	450.84	450.31	449.70	449.50
CB-516	CB-515	0.622	0.434	1.310	6.989	18.0	0.010	0.010	31.1	9.23	13.40	68.8	459.70	456.08	459.53	455.58	454.90	454.60
CB-608	CB-607	0.426	0.591	1.519	6.625	18.0	0.010	0.012	26.0	10.14	14.68	69.1	411.35	407.83	411.35	407.32	406.60	406.30
CB-904	CB-902	0.424	0.590	1.932	6.463	18.0	0.010	0.017	125.3	12.58	17.68	71.2	455.22	451.44	453.28	448.96	450.10	448.00
CB-504	CB-502	0.327	0.594	3.215	6.760	24.0	0.010	0.010	143.0	21.91	29.09	75.3	456.48	451.67	454.99	449.92	450.00	448.60
CB-1003	CB-1002	0.248	0.665	0.581	7.234	12.0	0.010	0.015	95.2	4.23	5.62	75.4	464.09	460.07	462.32	458.88	459.20	457.80
CB-911	CB-909	0.234	0.562	0.983	6.833	15.0	0.010	0.010	41.3	6.77	8.26	81.9	462.70	458.55	462.43	457.99	457.50	457.10
CB-404	CB-402	0.300	0.588	0.735	6.968	15.0	0.010	0.006	142.5	5.16	6.29	82.0	454.95	451.52	453.57	450.78	450.60	449.80
CB-703	CB-702	0.484	0.624	1.102	7.120	15.0	0.010	0.010	30.0	7.91	8.40	94.2	459.01	452.71	459.00	452.30	451.60	451.30

Storm Drain Piping Calculations: Hovey Road Existing Network

FlexTable: Conduit Table

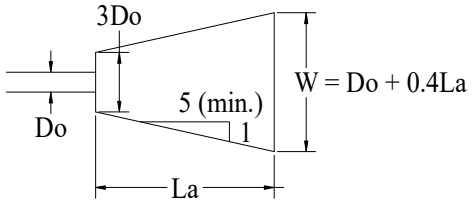
Start Node	Stop Node	Upstream Inlet Area (acres)	Upstream Inlet C	System CA (acres)	System Intensity (in/h)	Diameter (in)	Length (Scaled) (ft)	Slope (Calculated) (ft/ft)	Manning's n	Flow (cfs)	Capacity (Full Flow) (cfs)	Flow / Capacity (Design) (%)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
CB-11	O-1	0.158	0.480	4.175	3.164	18.0	62.0	0.030	0.010	13.32	23.84	55.8	13.87	351.47	349.58	352.83	350.47
CB-1	CB-2	2.598	0.290	0.753	6.049	15.0	153.2	0.011	0.010	4.59	8.66	53.0	7.16	449.16	447.53	450.03	448.18
CB-2	CB-3	1.931	0.240	1.217	4.050	15.0	244.2	0.022	0.010	4.97	12.53	39.6	9.62	447.43	441.99	448.33	442.54
CB-3	CB-4	3.879	0.230	2.109	3.261	18.0	107.2	0.043	0.010	6.93	28.39	24.4	13.27	441.69	437.05	442.71	437.56
CB-4	CB-5	2.352	0.250	2.697	3.251	18.0	209.5	0.028	0.010	8.84	22.83	38.7	12.09	436.05	430.19	437.20	430.84
CB-5	CB-6	1.358	0.300	3.104	3.228	18.0	318.6	0.062	0.010	10.10	34.03	29.7	16.79	429.89	410.06	431.12	410.62
CB-6	CB-7	1.369	0.330	3.556	3.204	18.0	119.2	0.057	0.010	11.48	32.73	35.1	16.89	406.36	399.50	407.65	400.13
CB-7	CB-8	0.121	0.580	3.626	3.195	18.0	118.5	0.078	0.010	11.68	38.08	30.7	18.96	394.55	385.31	395.85	385.89
CB-8	CB-9	0.451	0.330	3.775	3.187	18.0	109.7	0.084	0.010	12.13	39.67	30.6	19.73	381.21	371.92	382.53	372.50
CB-9	CB-10	0.738	0.280	3.982	3.180	18.0	106.9	0.073	0.010	12.76	37.00	34.5	19.01	368.31	360.44	369.65	361.07
CB-10	CB-11	0.356	0.330	4.099	3.172	18.0	108.6	0.050	0.010	13.11	30.62	42.8	16.65	357.34	351.87	358.70	352.59
CB-12	DP-2	5.777	0.300	1.733	4.018	15.0	38.5	0.052	0.010	7.02	19.14	36.7	14.40	454.00	452.00	455.06	452.60

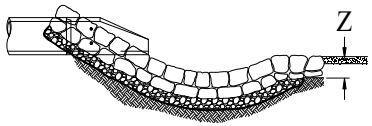
Riprap Apron/Energy Dissipation Calculations

Outfall Riprap Sizing and Velocity Calculations

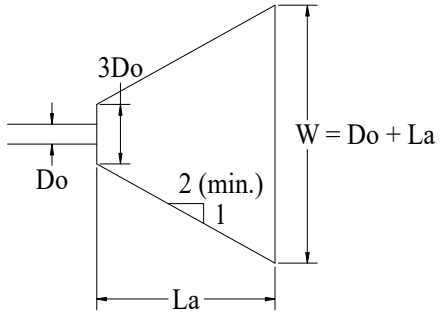
Project	Thornton Hill	Project #	53140.00
Calculated by	JRH	Date	11/10/2025
Checked by	EKG	Date	11/10/2025

Tw ≥ 0.5Do





Tw < 0.5Do



OUTLET STRUCTURE NUMBER:		300	301	305	400	401	408	500	501	600	601	602	701	803	900	901	1000	1001	1102	1200	1201
Design Storm	(yr)	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Flow / Discharge (Q)	(cfs)	4.9	7.0	7.0	10.9	7.4	7.4	36.1	38.6	32.3	19.1	21.0	14.3	4.7	13.5	22.7	16.2	18.5	8.2	8.6	10.3
Defined Channel ?	-	YES	NO	NO	YES	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Defined Channel Width	(ft)	21	0	0	21	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0
Outlet Pipe Diameter (D_O)	(in)	15	18	18	15	15	15	30	36	24	24	24	24	15	24	24	18	24	24	18	18
Tailwater Condition (T_W)	(ft)	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D	TW < 0.5D
Apron Length (L_A)	(ft)	9	11	11	13	11	11	17	18	16	15	13	11	9	11	14	12	13	12	10	12
Apron Width at Outlet ($3D_O$)	(ft)	21	4.5	4.5	21	3.75	3.75	21	9	6	6	6	6	3.75	6	6	4.5	6	6	4.5	4.5
Apron Width at End (W)	(ft)	21	12.5	12.5	21	12.25	12.25	21	21	18	17	15	13	10.25	13	16	13.5	15	14	11.5	13.5
Median Stone Diameter (d_{50})	(in)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Largest Stone Diameter	(in)	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Apron Depth (Z)	(in)	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5

Apron Length (L_A): *Length = From Virginia DCR Handbook - Plate 3.18-3* *if T_W < 0.5D*

Length = From Virginia DCR Handbook - Plate 3.18-4 *if T_W ≥ 0.5D*

Apron Width at Outlet ($3D_O$): *Width = 3 x pipe dia. (or width of channel)*

Apron Width at End (W): *Width = dia. + apron length* *if T_W < 0.5D*

Width = dia. + 0.4 x apron length *if T_W ≥ 0.5D*

or apron width = channel width if a well defined channel exists

Rock Riprap: *Median Diameter (d_{50}) = From Virginia DCR Handbook - Plate 3.18-3 or 4*

Largest stone dia = 1.5 x d_{50}

Apron Depth (Z): *6" or 1.5 x largest stone dia*

Appendix D: Soil Investigations

- 36 Pillsbury Road Site Specific Soil Survey
- Hovey Road NRCS Web Soil Survey

36 Pillsbury Road Site Specific Soil Survey

Memorandum

To: Dave Fenstermacher, PE
Date: October 28, 2024
Project #: 53140.00

From: Sherrie Trefry, CSS
Trent Delehanty

Re: Site-Specific Soil Mapping Report

Vanasse Hangen Brustlin, Inc. (VHB) has prepared this Site-Specific Soil Mapping Report to accompany the soils map that was prepared for Procopio Companies for the site located at 36 Pilsbury Road in Londonderry, NH (the site). Certified Soil Scientist, Sherrie Trefry, CSS #93, developed a soils map on October 17th and 18th of 2024 to classify the soils within the 94±–acre parcel of land (Map 10 Lot 42) located at 36 Pillsbury Road in Londonderry, NH. The property is being evaluated for a proposed residential development that would include approximately 200 units. This Site-Site Specific Soil Map (SSSM) and Report were developed in accordance with Site-Specific Soil Mapping Standards For New Hampshire and Vermont, Special Publication No. 3, Version 7.0 (July 2021). The soils map was prepared on an existing condition plan at a scale of 1" = 80' Attachment 1.

The site is bordered by Pillsbury Road to the southwest and Hovey Road to the northeast. There is a cemetery operated by the Town that forms part of the northeastern border. The site was historically an apple orchard, and cultivated rows of the apple trees remain in the northwest, northeast, and southern corners. In the center of the site, that are open fields that are likely converted portions of the orchard. Several organic piles and exposed bedrock were observed in various locations on the site. There are several gravel access roads that cross the site. Two access roads extend from Pillsbury Road that extend to another gravel access road that bisects the site almost in half that extends west from Hovey Road to the western property line. There is a small patch of forest on the eastern section of the site adjacent to Hovey Road and the eastern most field.

Recent disturbance on the site includes the installation of an underground waterline that runs parallel to the western property boundary to a water tank that is being constructed on an adjacent town property to the northeast. Trees have been cleared and an access easement has been constructed in the location of the waterline extending from the existing access road to the water tank. Portions of the site at the intersection of the existing access road and the waterline were recently disturbed during the construction.

There is a large wetland feature that includes a large portion of the northwestern orchard. The site has been artificially drained through the excavation of a ditch that runs parallel to the western property boundary and a ditch that runs from the western property boundary towards Hovey Road before it extends northwest in the middle of the site towards the northern boundary. The ditches pass through upland and wetland portions of the site but are considered jurisdictional because they are hydrologically connected to natural wetland systems upstream.

The area evaluated, as depicted on the SSSM, contains soils formed from glacial till (active ice). The southern portion of the site contains bedrock controlled soils while most of the northern portion of the site contains soils with a mineral restrictive layer. The dominant soil texture on the site is sandy loam. Where present, the hardpan consists of fine sandy loam and fine sand. The site topography ranges from fairly level to steeply sloping. Overburden soils have moderate to moderately high hydrologic saturated conductivity but have Hydrologic Soil Group C designations due to shallow restrictive layers. In soils that are deeper to bedrock, the Hydrologic Soil Group is B.

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

Memorandum

Soil classifications based on bedrock depth relied on the results of geotechnical test pit descriptions, direct observations made with hand tools, and topographic data. The bedrock is variable across the site and it likely that bedrock may be shallower or deeper than predicted by the classification. The Chatfield map unit may include up to 20% Charlton soils and 5% Hollis soils.

The Montauk soil unit may include up to 20% Newfields soils that do not contain a mineral restrictive layer (hard pan). These soil inclusion areas have a Hydrologic Soil Group B designation.

Test Pit Observations:

Hollis	Located just in a clearing on the eastern sub area on a 0-3% slope. Well drained and somewhat excessively drained soil formed in a thin mantle of till. These soils are shallow to bedrock. Soil classification: Hollis Ledge observed at 18" in the test and auger samples in adjacent areas ranged from to the surface to 20" Many stones were observed in the test and while using other excavation efforts throughout the mapping units. 

Depth	Horizon	Color	Texture	Structure	Consistence	Redox	Other observations
0-6"	Ap	10YR 3/2	Fine Sandy Loam	Granular	Friable	None	Many fine to medium roots
6-9"	Bw_1	5 YR 3/3	Fine Sandy Loam	Subangular Blocky	Friable	None	5-10% Stone inclusions
9-18"	Bw_2	10 YR 6/6 wet 7.5YR 4/6 dry	Very fine loamy sand	Subangular blocky	friable	None	5-10% Stone inclusions
18"	R						Ledge at 18"

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

Memorandum

Charlton	Located in the southern portion of the site within a mowed field. The pit was located on a 3-8% slope. These are very deep, well drained soils formed in till loamy melt out till. Soil classification: Charlton No observed seasonal high-water table, bedrock at 24” Stones and boulders within the profile	

Depth	Horizon	Color	Texture	Structure	Consistence	Redox	Other observations
0-7”	A	10YR 3/2	Loam	Granular	Very friable	None	Many fine roots
7-11”	Bw	2.5Y 4/4	Very fine sandy loam	Subangular blocky	Friable	None	Few fine roots, 5-10% gravel and stone
11-24”	1C	2.5Y 5/3	Very fine sandy loam	subangular blocky	friable	no redox	5-10% gravel and stone
24”	2R						Ledge at 24”

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

Memorandum

Montauk	Located in the northeastern portion of the site within the previously planted apple tree grove. The pit was located on a 0-3% slope. Pit was representative of the higher elevation well drained soils that have a densic contact. These soils formed in lodgment or flow till derived primarily from granitic materials with lesser amounts of gneiss and schist. Soil classification: Montauk No observed seasonal high-water table or bedrock Stones and gravel within the profile	

Depth	Horizon	Color	Texture	Structure	Consistence	Redox	Other observations
0-9″	Ap	10 YR 3/2	Loam	Granular	Friable	no redox	many fine roots down to 5″ and some fine roots down to 9″ 5% gravel and <5% cobble/channers
9-13″	Bw	2.5Y 5/6	Fine sandy loam	Subangular blocky	Friable	no redox	5% gravel and <5% cobble/channers
13-29″	Cd_1	2.5Y 6/4	Fine sandy loam	Platy	Very firm	no redox	Bands of lighter brown concentrations 10YR 5/8
29-40″	Cd_2	2.5Y 6/2	Loamy fine sand	Platy	Very firm	no redox	

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

Memorandum

Ridgebury	Located in the far northwestern corner of the site. Pit was located on a 3-8% slope. Poorly drained soils formed in lodgement till. These soils are commonly shallow to a densic contact. Soil classification: Ridgebury Seasonal high-water table at ~7 inches No observed bedrock	

Depth	Horizon	Color	Texture	Structure	Consistence	Redox	Other observations
0-2"	A	10 YR 3/2	Loam	Subangular blocky	Friable	No redox	
2-8"	Bw	2.5Y 5/3	Sandy loam	Granular	Friable	Concentrations: 10YR 5/6	Redox starts at 7
8-10"	C_1	2.5Y 6/2	Sandy loam	Massive	Firm	Reductions: 2.5Y 7/1	
10-16"	C_d	2.5Y 6/2	Sandy loam	Massive	Very firm		

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

Memorandum

Soil symbol	Soil series; Taxonomic class	Soil Unit Map Description
89A	Chatfield; Coarse-loamy, mixed, superactive, mesic Typic Dystrudepts	Well drained soils formed in loamy melt-out till that are moderately deep to bedrock (20-40 inches). Saturated hydraulic conductivity is moderately high or high in the mineral soil. This soil is on a 0-3% slope. Hydrologic Soil Group B.
89B	Chatfield; Coarse-loamy, mixed, superactive, mesic Typic Dystrudepts	Well drained soils formed in loamy melt-out till that are moderately deep to bedrock (20-40 inches). Saturated hydraulic conductivity is moderately high or high in the mineral soil. This soil is on a 3-8% slope. Hydrologic Soil Group B.
89C	Chatfield; Coarse-loamy, mixed, superactive, mesic Typic Dystrudepts	Well drained soils formed in loamy melt-out till that are moderately deep to bedrock (20-40 inches). Saturated hydraulic conductivity is moderately high or high in the mineral soil. This soil is on a 8-15% slope. Hydrologic Soil Group B.
89D	Chatfield; Coarse-loamy, mixed, superactive, mesic Typic Dystrudepts	Well drained soils formed in loamy melt-out till that are moderately deep to bedrock (20-40 inches). Saturated hydraulic conductivity is moderately high or high in the mineral soil. This soil is on a 15-25% slope. Hydrologic Soil Group B.
62A	Charlton; Coarse-loamy, mixed, superactive, mesic Typic Dystrudepts	Very deep, well drained soils formed in loamy melt-out till. These soils formed on bedrock controlled landscapes with bedrock deeper than 40 inches. Saturated hydraulic conductivity is moderately high or high. This soil is on a 0-3% slope. Hydrologic Soil Group B.

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

Memorandum

62B	Charlton; Coarse-loamy, mixed, superactive, mesic Typic Dystrudepts	Very deep, well drained soils formed in loamy melt-out till. These soils formed on bedrock controlled landscapes with bedrock deeper than 40 inches. Saturated hydraulic conductivity is moderately high or high. This soil is on a 3-8% slope. Hydrologic Soil Group B.
62C	Charlton; Coarse-loamy, mixed, superactive, mesic Typic Dystrudepts	Very deep, well drained soils formed in loamy melt-out till. These soils formed on bedrock controlled landscapes with bedrock deeper than 40 inches. Saturated hydraulic conductivity is moderately high or high. This soil is on a 8-15% slope. Hydrologic Soil Group B.
62D	Charlton; Coarse-loamy, mixed, superactive, mesic Typic Dystrudepts	Very deep, well drained soils formed in loamy melt-out till. These soils formed on bedrock controlled landscapes with bedrock deeper than 40 inches. Saturated hydraulic conductivity is moderately high or high. This soil is on a 15-25% slope. Hydrologic Soil Group B.
199C/ccabb	Dump of organic material	This unit represents an area of natural material fill located in the southeast corner of the site. Augering indicated loamy soil material and likely stumps had been stockpiled. The soil is well drained glacial till that has no restrictive features within 40 inches. The soil has moderate hydraulic saturated conductivity. Hydrologic Soil Group B. This soil is on a 8-15% slope.
199D/ccabb	Dump of organic material	This unit represents an area of natural material fill located in the southeast corner of the site. Augering indicated loamy soil material and likely stumps stockpiled. The soil is well drained glacial till that has no restrictive features within 40 inches. The soil has moderate hydraulic saturated conductivity. Hydrologic Soil Group B. This soil is on a 15-25% slope.
86A	Hollis; Loamy, mixed, superactive, mesic Lithic Dystrudepts	Well drained soils formed in a thin mantle of till. They are shallow to bedrock (<20 inches). They are nearly level located on the highest point of the site in a maintained field and adjacent forested area. Series has inclusion of up to 5% rock outcrops and 10% Charlton

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

Memorandum

		series. Saturated hydraulic conductivity is moderately high or high. This soil is on 0-3% slope. Hydrologic Soil Group C.
86B	Hollis; Loamy, mixed, superactive, mesic Lithic Dystrudepts	Well drained soils formed in a thin mantle of till. They are shallow to bedrock (<20 inches). They are nearly level located on the highest point of the site in a maintained field and adjacent forested area. Series has inclusion of up to 5% rock outcrops and 10% Charlton series. Saturated hydraulic conductivity is moderately high or high. This soil is on 3-8% slope. Hydrologic Soil Group C.
86C	Hollis; Loamy, mixed, superactive, mesic Lithic Dystrudepts	Well drained soils formed in a thin mantle of till. They are shallow to bedrock (<20 inches). They are nearly level located on the highest point of the site in forested area in the southeast corner of the site. Series has inclusion of up to 5% rock outcrops and 10% Charlton series. Saturated hydraulic conductivity is moderately high or high. This soil is on 8-15% slope. Hydrologic Soil Group C.
200A/hahde	Udorthents; refuse substratum (Leach field)	These soils are associated with an observed leach field on the site. The drainage class, parent material, hydrologic soil group and Ksat value are undetermined for this manmade structure. It is likely that sand and leaching chambers were installed during the construction of the leach field. Direct observation was not attempted. This soil is on a 0-3% slope and represents the top of the leach field.
200D/hahde	Udorthents; refuse substratum (Leach field)	These soils are associated with an observed leach field on the site. The drainage class, parent material, hydrologic soil group and Ksat value are undetermined for this manmade structure. It is likely that sand and leaching chambers were installed during the construction of the leach field. Direct observation was not attempted. This soil is on a 15-25% slope and represents the side slope of the leach field.
514B/P	Leicester; Coarse-loamy, mixed, superactive, acid mesic Aeric Endoaquepts	These soils are poorly drained soils formed in coarse-loamy till. They are found in the drainage way in the southern corner of the site. The slope range for these soils is 3-8% slope. Permeability is moderate or

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

Memorandum

		moderately rapid in the surface layer and subsoil and moderate to rapid in the substratum. Hydrologic Soil Group C.
656A/P	Ridgebury; Loamy, mixed, superactive, acid, mesic Aeric Endoaquepts	Very deep, poorly drained soils formed in lodgment till. Soils are nearly level and found within the drainage way of the uplands and low lying depressional areas on the site. Seasonal high water was observed at 7". This soil is on a 0-3% slopes. Hydrologic Soil Group C.
656B/P	Ridgebury; Loamy, mixed, superactive, acid, mesic Aeric Endoaquepts	Very deep, poorly drained soils formed in lodgment till. Soils are nearly level and found within the drainage way of the uplands and low lying depressional areas on the site. Seasonal high water was observed at 7". This soil is on a 3-8% slopes. Hydrologic Soil Group C.
500A/ccacc	Udorthents; loamy	This map unit is characterized by well drained sandy loam soil textures with bedrock below 40 inches. These glacial till soils are located along the graded gravel access road that bisects the site horizontally from Hovey Road to the southern property boundary. Saturated hydraulic conductivity (Ksat) is low. This soil is on a 0-3% slopes. Hydrologic Soil Group C.
500B/ccacc	Udorthents; loamy	This map unit is characterized by well drained sandy loam soil textures with bedrock below 40 inches. These glacial till soils are located along the graded gravel access road that bisects the site horizontally from Hovey Road to the southern property boundary. Saturated hydraulic conductivity (Ksat) is low. This soil is on a 3-8% slopes. Hydrologic Soil Group C.
500B/ccecc	Udorthents; loamy	This map unit is characterized by well drained sandy loam soil textures with bedrock between 20-40 inches. These glacial till soils are located along the graded gravel access road that bisects the site horizontally from Hovey Road to the southern property boundary. Saturated hydraulic conductivity (Ksat) is low. This soil is on a 3-8% slopes. Hydrologic Soil Group C.

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

Memorandum

500C/ccecc	Udorthents; loamy	This map unit is characterized by well drained sandy loam soil textures with bedrock between 20-40 inches. These glacial till soils are located along the graded gravel access road that bisects the site horizontally from Hovey Road to the southern property boundary. Saturated hydraulic conductivity (Ksat) is low. This soil is on a 8-15% slopes. Hydrologic Soil Group C.
500B/ccccc	Udorthents; loamy	This map unit is characterized by well drained sandy loam soil textures with a mineral restrictive layer. These glacial till soils are located along the graded gravel access road that bisects the site horizontally from Hovey Road to the southern property boundary. Saturated hydraulic conductivity (Ksat) is low. This soil is on a 3-8% slopes. Hydrologic Soil Group C.
500D/ccebb	Udorthents; loamy	This map unit is characterized by well drained sandy loam soil textures with bedrock within 40 inches of the soil surface. These glacial till soils are located along the excavated banks of the ditch that runs parallel to the gravel access road that bisects the site horizontally from Hovey Road to the southern property boundary. Saturated hydraulic conductivity (Ksat) is moderately high or high. This soil is on a 15-25% slopes. Hydrologic Soil Group B.
550E/ccebb	Udorthents; Bedrock substratum	This map unit is characterized by well drained sandy loam soil textures with a depth to bedrock that ranges between 10 to 24 inches. These glacial till soils are located along the excavated banks of the ditch that runs parallel to the southern property boundary. Saturated hydraulic conductivity (Ksat) is moderate. This soil is on a 25-50% slopes. Hydrologic Soil Group B.
500D/cccbc	Udorthents; loamy	This map unit is characterized by well drained sandy loam soil textures with a mineral restrictive layer. These glacial till soils are located along the excavated banks of the ditch that that bisects the property. Saturated hydraulic conductivity (Ksat) is moderate. This soil is on a 15-25% slopes. Hydrologic Soil Group C.

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

Memorandum

500E/cccbc	Udorthents; loamy	This map unit is characterized by well drained sandy loam soil textures with a mineral restrictive layer. These glacial till soils are located along the excavated banks of the ditch that that bisects the property. Saturated hydraulic conductivity (Ksat) is moderate. This soil is on a 25-50% slopes. Hydrologic Soil Group C.
600A/fcccd	Endoaquents; loamy	This map unit is characterized by excavated poorly drained sandy loam soil textures derived from glacial till parent material. This map unit represents areas where soil material was excavated down to, or near the water table in the ditch that runs parallel to the southern property boundary. A mineral restrictive layer is present. Saturated hydraulic conductivity (Ksat) is low. The Hydrologic Soil Group (HSG) is D. The soil is located on a 0-3% slope.
600D/fcccd	Endoaquents; loamy	This map unit is characterized by excavated poorly drained sandy loam soil textures derived from glacial till parent material. This map unit represents areas where soil material was excavated down to, or near the water table in the ditch that runs parallel to the southern property boundary. A mineral restrictive layer is present. Saturated hydraulic conductivity (Ksat) is low. The Hydrologic Soil Group (HSG) is D. The soil is located on a 15-25% slope.
600E/fcccd	Endoaquents; loamy	This map unit is characterized by excavated poorly drained sandy loam soil textures derived from glacial till parent material. This map unit represents areas where soil material was excavated down to, or near the water table in the ditch that runs parallel to the southern property boundary. A mineral restrictive layer is present. Saturated hydraulic conductivity (Ksat) is low. The Hydrologic Soil Group (HSG) is D. The soil is located on a 25-50% slope.
600A/fcecd	Endoaquents; loamy	This map unit is characterized by excavated poorly drained sandy loam soil textures derived from glacial till parent material. Bedrock is present within 40 inches. This map unit represents areas where soil material was excavated down to, or near the water table in the ditch

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

Memorandum

		that runs parallel to the southern property boundary. Saturated hydraulic conductivity (Ksat) is low. The Hydrologic Soil Group (HSG) is D. The soil is located on a 0-3% slope.
600B/fcecd	Endoaquents; loamy	This map unit is characterized by excavated poorly drained sandy loam soil textures derived from glacial till parent material. Bedrock is present within 40 inches. This map unit represents areas where soil material was excavated down to, or near the water table in the ditch that runs parallel to the southern property boundary. Saturated hydraulic conductivity (Ksat) is low. The Hydrologic Soil Group (HSG) is D. The soil is located on a 3-8% slope.
600C/fcecd	Endoaquents; loamy	This map unit is characterized by excavated poorly drained sandy loam soil textures derived from glacial till parent material. Bedrock is present within 40 inches. This map unit represents areas where soil material was excavated down to, or near the water table in the ditch that runs parallel to the southern property boundary. Saturated hydraulic conductivity (Ksat) is low. The Hydrologic Soil Group (HSG) is D. The soil is located on a 8-15% slope.
600D/fcecd	Endoaquents; loamy	This map unit is characterized by excavated poorly drained sandy loam soil textures derived from glacial till parent material. Bedrock is present within 40 inches. This map unit represents areas where soil material was excavated down to, or near the water table in the ditch that runs parallel to the southern property boundary. Saturated hydraulic conductivity (Ksat) is low. The Hydrologic Soil Group (HSG) is D. The soil is located on a 15-25% slope.
600A/fcccd	Endoaquents; loamy	This map unit is characterized by excavated poorly drained sandy loam soil textures derived from glacial till parent material. A mineral restrictive layer is present. This map unit represents areas where soil material was excavated down to, or near the water table in the ditch that bisects the property. Saturated hydraulic conductivity (Ksat) is

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

Memorandum

		low. The Hydrologic Soil Group (HSG) is D. The soil is located on a 0-3% slope.
600B/fcccd	Endoaquents; loamy	This map unit is characterized by excavated poorly drained sandy loam soil textures derived from glacial till parent material. A mineral restrictive layer is present. This map unit represents areas where soil material was excavated down to, or near the water table in the ditch that bisects the property. Saturated hydraulic conductivity (Ksat) is low. The Hydrologic Soil Group (HSG) is D. The soil is located on a 3-8% slope.
600D/fcccd	Endoaquents; loamy	This map unit is characterized by excavated poorly drained sandy loam soil textures derived from glacial till parent material. A mineral restrictive layer is present. This map unit represents areas where soil material was excavated down to the ditch that bisects the property. Saturated hydraulic conductivity (Ksat) is low. The Hydrologic Soil Group (HSG) is D. The soil is located on a 15-25% slope.
600E/fcccd	Endoaquents; loamy	This map unit is characterized by excavated poorly drained sandy loam soil textures derived from glacial till parent material. A mineral restrictive layer is present. This map unit represents areas where soil material was excavated down to the ditch that bisects the property. Saturated hydraulic conductivity (Ksat) is low. The Hydrologic Soil Group (HSG) is D. The soil is located on a 25-50% slope.
44A	Montauk; Coarse-loamy, mixed, active, mesic Oxyauic Dystrudepts	Very deep to bedrock and moderately deep to a densic contact and well drained soils formed in lodgment or flow till. These soils are found in the higher elevation throughout the northern portion of the site. The soil is on a 0-3% slope. Saturated hydraulic conductivity (Ksat) is moderately high or high. Hydrologic Soil Group C.
44B	Montauk; Coarse-loamy, mixed, active, mesic Oxyauic Dystrudepts	Very deep to bedrock and moderately deep to a densic contact and well drained soils formed in lodgment or flow till. These soils are found in the higher elevation throughout the northeast portion of

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

Memorandum

		the site. The soil is on a 3-8% slope. Saturated hydraulic conductivity (Ksat) is moderately high or high. Hydrologic Soil Group C.
44C	Montauk; Coarse-loamy, mixed, active, mesic Oxyauic Dystrudepts	Very deep to bedrock and moderately deep to a densic contact and well drained soils formed in lodgment or flow till. These soils are found in the higher elevation throughout the northeast portion of the site. The soil is on a 8-15% slope. Saturated hydraulic conductivity (Ksat) is moderately high or high. Hydrologic Soil Group C.
199A/haade	Dumps, bark chips, and organic material	This map unit represents the stump dump in the center of the property near the wetland with the excavated ditch in the middle of the site. There is no natural soil within 60 inches of the surface. The drainage class, hydrologic soil group and Ksat value are undetermined for this stump dump. However, it is likely underlain with Montauk soils. The dump is located on 0-3% slope.

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

LOCATION CHARLTON CT+MA NH NY RI

Established Series
Rev. SJM-DCP-SMF
05/2016

CHARLTON SERIES

The Charlton series consists of very deep, well drained soils formed in loamy melt-out till. They are nearly level to very steep soils on moraines, hills, and ridges. Slope ranges from 0 to 60 percent. Saturated hydraulic conductivity is moderately high or high. Mean annual temperature is about 9 degrees C and mean annual precipitation is about 1205 mm.

TAXONOMIC CLASS: Coarse-loamy, mixed, superactive, mesic Typic Dystrudepts

TYPICAL PEDON: Charlton fine sandy loam - forested, very stony, at an elevation of about 170 meters. (Colors are for moist soil unless otherwise noted.)

Oe -- 0 to 4 cm; black (10YR 2/1) moderately decomposed forest plant material. (0 to 5 cm thick.)

A -- 4 to 10 cm; dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; very friable; many fine roots; 5 percent gravel; very strongly acid; abrupt smooth boundary. (2 to 15 cm thick.)

Bw1 -- 10 to 18 cm; brown (7.5YR 4/4) fine sandy loam; weak coarse granular structure; very friable; many fine and medium roots; 5 percent gravel; very strongly acid; clear wavy boundary.

Bw2 -- 18 to 48 cm; yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; very friable; common fine and medium roots; 10 percent gravel and cobbles; very strongly acid; clear wavy boundary.

Bw3 -- 48 to 69 cm; light olive brown (2.5Y 5/4) gravelly fine sandy loam; massive; very friable; few medium roots; 15 percent gravel and cobbles; very strongly acid; abrupt wavy boundary. (Combined thickness of the Bw horizons is 35 to 91 cm.)

C -- 69 to 165 cm; grayish brown (2.5Y 5/2) gravelly fine sandy loam with thin lenses of loamy sand; massive; friable, some lenses firm; few medium roots; 25 percent gravel and cobbles; strongly acid.

TYPE LOCATION: New Haven County, Connecticut; town of Middlebury, 3800 feet along Long Meadow Road from the intersection with South Street, 450 feet southeast along a gravel road and 50 feet west of the gravel road, 400 feet northeast of Long Meadow Pond, in a wooded area. USGS Naugatuck topographic quadrangle, Latitude 41 degrees 29 minutes 48.40 seconds N., Longitude 73 degrees 7 minutes 04.59 seconds W., NAD 1983.

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 31 to 109 cm. Depth to bedrock is commonly more than 180 cm. Rock fragments range from 5 to 35 percent by volume to a depth of 100 cm and up to 50 percent below 100 cm. Except where the surface layer is stony, the fragments are mostly subrounded gravel and typically make up 60 percent or more of the total rock fragments. Unless limed, reaction ranges from extremely acid to moderately acid.

The O horizon, where present, ranges from slightly decomposed to highly decomposed plant material.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 to 3. Disturbed pedons have an Ap horizon with value of 3 or 4 and chroma of 2 to 4. The A or Ap horizon is sandy loam, fine sandy loam, or loam in the fine-earth fraction. It has weak or moderate granular structure and is friable or very friable.

Some pedons have a thin AE or E horizon below the O horizon or a thin E horizon below the A horizon. It has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 3. Texture, structure, and consistence are like the A horizon.

The upper part of the Bw horizon has commonly hue of 7.5YR or 10YR, and includes 7.5YR when a high ratio of ammonium oxalate extractable iron to dithionite-citrate extractable iron (greater than 0.15) exists, and value and chroma of 4 to 6. The lower part of the Bw horizon has hue of 10YR or 2.5Y and value and chroma of 4 to 6. Texture of the Bw horizon is loam, fine sandy loam, or sandy loam with less than 65 percent silt plus very fine sand in the fine earth fraction. It has weak granular or subangular blocky structure. Consistence is friable or very friable.

Some pedons have a BC horizon with value and chroma like the lower part of the Bw horizon, but includes hue of 5Y. The BC horizon commonly has texture, structure, and consistence like the Bw horizon but the range includes geologically derived structure appearing in the form of thin plates.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 6. Texture is loam, fine sandy loam, or sandy loam in the fine-earth fraction, with pockets or thin lenses of loamy sand. The horizon is massive or has plates of geogenic origin. Consistence commonly is very friable or friable but in some pedons includes firm.

COMPETING SERIES: These are Chadakoin, Chatfield, Maplecrest, Riverhead, Stinger and Valois. Chadakoin and Valois soils formed in till derived primary from sedimentary rock parent materials. Chatfield soils have a lithic contact at 50 to 100 cm below the mineral soil surface. Maplecrest soils formed in till derived from red sedimentary rock parent materials. Riverhead soils formed in glacial outwash deposits and have sandy textures in the substratum. Stinger soils are moderately deep to a paralithic contact and formed in colluvium on mountain side slopes in Oregon.

GEOGRAPHIC SETTING: Charlton soils are nearly level to very steep soils on moraines and glaciated upland hills and ridges. Slope ranges from 0 to 60 percent. The soils formed in acid melt-out till derived mainly from schist, gneiss, or granite. Mean annual temperature ranges from 7 to 11 degrees C and mean annual precipitation commonly ranges from 940 to 1245 cm, but the range includes as low as 660 cm in some places east of the Adirondack Mountains in the Champlain Valley of New York. The growing season ranges from 115 to 185 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Acton, Brookfield, Chatfield, Essex, Hollis, Leicester, Rainbow, Ridgebury, Sutton, Wapping, Whitman, and Woodbridge soils on nearby landscapes. The moderately well drained Sutton and the poorly drained Leicester soils are associated in a drainage sequence. Acton and Wapping soils are moderately well drained. Brookfield soils formed in iron sulfide bearing parent materials and have a ratio of ammonium oxalate extractable iron to dithionite-citrate extractable iron less than 0.15 and have pedogenic iron contents greater than 1 percent throughout the pedon. Chatfield soils have bedrock within a depth of 50 to 100 cm. Essex soils have a sandy particle-size control section and a dense substratum. Hollis soils have bedrock within a depth of 25 to 50 cm. Rainbow and Woodbridge soils are moderately well drained with a dense substratum. Ridgebury soils are poorly drained and have a dense substratum. Whitman soils are very poorly drained with a dense substratum.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Well drained. Runoff is negligible to medium. Saturated hydraulic conductivity is moderately high or high in the mineral soil.

USE AND VEGETATION: Areas cleared of stones are used for cultivated crops, specialty crops, hay, and pasture. Many scattered areas are used for community development. Stony areas are mostly wooded. Common

trees are northern red, white, and black oak, hickory, sugar maple, red maple, black and gray birch, white ash, beech, white pine, and hemlock.

DISTRIBUTION AND EXTENT: Glaciated uplands in Connecticut, Massachusetts, New Hampshire, New York, and Rhode Island. MLRAs 142,144A, and 145. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: Worcester County, Massachusetts, 1922.

REMARKS: Diagnostic horizons and features recognized in this pedon include:
1. Ochric epipedon - the zone from 0 to 10 cm (Oe and A horizons).
2. Cambic horizon - the zone from 10 to 69 cm (Bw1, Bw2, and Bw3 horizons).
3. Particle-size class - coarse-loamy in the control section from 29 to 109 cm.

ADDITIONAL DATA: M.S. Thesis work by Shawn McVey, University of Connecticut, 2006. Full characterization data for sample numbers S1999NY005001 and S1999CT013003. Pedons analyzed by the KSSL, Lincoln, NE.

National Cooperative Soil Survey
U.S.A.

LOCATION CHATFIELD NH+CT MA NJ NY

Established Series
Rev. LWK-ERS-JTI
04/2017

CHATFIELD SERIES

The Chatfield series consists of well drained soils formed in loamy melt-out till. They are moderately deep to bedrock. They are nearly level to very steep soils on bedrock-controlled hills and ridges. Slope ranges from 0 to 70 percent. Crystalline bedrock is at depths of 50 to 100 cm. Saturated hydraulic conductivity is moderately high or high in the mineral soil. Mean annual temperature is about 9 degrees C, and mean annual precipitation is about 1205 mm.

TAXONOMIC CLASS: Coarse-loamy, mixed, superactive, mesic Typic Dystrudepts

TYPICAL PEDON: Chatfield fine sandy loam, on a 13 percent slope in a wooded area. (Colors are for moist soil unless otherwise noted).

Oi -- 0 to 3 cm, slightly decomposed leaf, needle, and twig litter; extremely acid, pH 4.2. (0 to 15 cm thick.)

A -- 3 to 5 cm, very dark gray (10YR 3/1) fine sandy loam, gray (10YR 5/1), dry; weak fine subangular blocky structure; friable; many fine and medium roots throughout; 5 percent mixed gravel and cobbles; very strongly acid, pH 4.5; abrupt smooth boundary. (1 to 25 cm thick.)

Bw1-- 5 to 33 cm, strong brown (7.5YR 5/6) gravelly fine sandy loam; weak fine subangular blocky structure; friable; common fine roots throughout and common medium roots throughout; 15 percent mixed gravel and cobbles; very strongly acid, pH 4.5; abrupt wavy boundary.

Bw2 -- 33 to 76 cm, strong brown (7.5YR 5/6) gravelly fine sandy loam; moderate medium subangular blocky structure; friable; few fine roots throughout; 20 percent mixed rock fragments; very strongly acid, pH 4.5; abrupt irregular boundary. (Combined thickness of the Bw horizons is 10 to 80 cm.)

2R -- 76 cm; fractured slightly-weathered schist bedrock.

TYPE LOCATION: Merrimack County, New Hampshire; Town of Epsom, 450 feet north-northwest from point 3,550 feet southwest along Old Mountain Road from intersection of Mountain Road and Tarlton Road. USGS Gossville, NH topographic quadrangle; Latitude 43 degrees, 11 minutes, 55.79 seconds N. and Longitude 71 degrees, 19 minutes, 22.31 seconds W., WGS 1984.

RANGE IN CHARACTERISTICS: Solum thickness ranges from 40 to 97 cm. Depth to bedrock ranges from 50 to 100 cm from the mineral soil surface. Rock fragments range from 5 to 50 percent by volume in the A horizon and from 5 to 35 percent in the B and C horizons. Rock fragments are typically gravel or channers, but include cobbles, stones, boulders and flagstones, particularly just above the bedrock.

The O horizon has hue of 5YR to 2.5Y, value of 2 or 3, and chroma of 0 to 2. It is slightly, intermediately, and/or highly decomposed plant material. Reaction ranges from extremely acid to moderately acid.

The A, or Ap horizon where present, has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 4. Dry value is 6 or higher. Texture is sandy loam, fine sandy loam, very fine sandy loam, loam, or silt loam in the fine-earth

fraction. Structure is granular. Consistence is friable or very friable. Reaction ranges from extremely acid to moderately acid, unless limed.

The AB or BA horizon, where present, has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 to 4. Texture is similar to the A horizon.

The Bw horizon commonly has hue of 10YR or 2.5Y, and includes 7.5YR when a high ratio of ammonium oxalate extractable iron to dithionite-citrate extractable iron (greater than 0.15) exists, value of 3 to 6, and chroma of 4 to 6. Texture is similar to the A horizon. The Bw horizon has subangular blocky or granular structure and is friable or very friable. Reaction ranges from very strongly acid to moderately acid.

Some pedons have a BC horizon with color and texture similar to the C horizon.

The C horizon, where present, has hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 2 to 4, and the 7.5YR hue is limited to horizons having a high ratio of ammonium oxalate extractable iron to dithionite-citrate extractable iron (> 0.15). Texture is sandy loam, fine sandy loam, very fine sandy loam, loam, or silt loam in the fine-earth fraction and may have lenses or pockets of loamy sand. It is massive and may have plate-like divisions. It is friable or firm. Reaction ranges from very strongly through moderately acid.

The 2R horizon is dominantly schist, granite, or gneiss bedrock. In places it is massive, but it dominantly has vertical and horizontal fractures in the upper 30 to 76 cm.

COMPETING SERIES: These are the Chadakoin, Charlton, Maplecrest, Riverhead, Stinger, and Valois series. Chadakoin, Maplecrest, and Valois soils formed in till derived primary from sedimentary rock parent materials and are greater than 100 cm to bedrock. Charlton soils formed in similar parent material to that of Chatfield but are greater than 150 cm to bedrock. Riverhead soils formed in glacial outwash deposits and are greater than 100 cm to bedrock. Stinger soils are not from Region R and have a paralithic contact.

GEOGRAPHIC SETTING: Chatfield soils are nearly level through very steep, and are on bedrock-controlled glaciated upland landscapes. The soils formed in a moderately thick mantle of melt-out till overlying granite, gneiss, or schist bedrock. Slope ranges from 0 to 70 percent. Mean annual precipitation ranges from 660 to 1270 mm, mean annual temperature ranges from 7 to 13 degrees C, and the frost free season ranges from 130 to 180 days. Elevation ranges from 0 to 305 meters above sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Brimfield, Brookfield, Cardigan, Charlton, Hollis, Narragansett, Nipmuck, and Paxton soils and their wetter associates on nearby landscapes where the soil mantle is deeper than 100 cm. Brimfield, Brookfield and Nipmuck soils formed in sulfur bearing parent materials and have a ratio of ammonium oxalate extractable iron to dithionite-citrate extractable iron less than 0.15 and have pedogenic iron contents greater than 1 percent throughout the pedon. Brookfield, Charlton, Narragansett, and Paxton soils are very deep soils. Cardigan soils are moderately deep soils that formed in till derived from phyllite, slate, shale, and schist. Hollis soils are shallow to bedrock and are on nearby ridge crests and areas adjacent to rock outcrops.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Well drained. Potential for surface runoff ranges from low to high. Saturated hydraulic conductivity is moderately high or high in the mineral soil.

USE AND VEGETATION: Most areas of Chatfield soils are in woodland. Major tree species include white and northern red oaks, sugar maple, beech, eastern hemlock, eastern white pine, eastern red cedar, and shagbark hickory. Some small cleared areas are used for pasture, are idle, or are sites for residential and recreational development.

DISTRIBUTION AND EXTENT: Connecticut, eastern New York, Massachusetts, New Jersey, and New Hampshire. MLRAs 142, 143, 144A and 145. The soils are of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: Orange County, New York, 1940.

REMARKS: Diagnostic horizons and features recognized in this pedon are:
Ochric epipedon - the zone from 0 to 5 cm (Oi and A horizons).
Cambic horizon - the zone from 5 to 76 cm (Bw1 and Bw2 horizons).
Lithic contact - bedrock at 76 cm (2R horizon).
Particle-size control section - the zone from 28 to 76 cm (part of the Bw1 horizon and all of the Bw2 horizon).
Lithologic discontinuity - at a depth of 76 cm.

ADDITIONAL DATA: M.S. Thesis work by Shawn McVey, University of Connecticut, 2006. Full characterization data for pedons with User Pedon IDs of S1955NH015003, S1982CT007005, S1982CT007005, S1982NY061001, S1995NH013003, S1995NJ037003, S1998NY005001, S1999NY005004, S2000NY005002, S2000NY005004, S2000NY005008, S2000NY119002, S2000NY119003, S2002CT005007, and S2002CT005008. Pedons analyzed by the NSSL, Lincoln, NE. The laboratory characterization data for these pedons and similar soils is available through the National Cooperative Soil Survey Soil Characterization Database: http://ncsslabdatamart.sc.egov.usda.gov/

National Cooperative Soil Survey
U.S.A.

LOCATION HOLLIS CT+MA NH NJ NY

Established Series
Rev. MFF-SMF-SJM-DCP
05/2016

HOLLIS SERIES

The Hollis series consists of well drained and somewhat excessively drained soils formed in a thin mantle of till. They are shallow to bedrock. They are nearly level to very steep upland soils on bedrock-controlled hills and ridges. Slope ranges from 0 through 60 percent. Saturated hydraulic conductivity is moderately high or high. Depth to hard bedrock ranges from 25 to 50 cm. Mean annual temperature is about 9 degrees C, and mean annual precipitation is about 1205 mm.

TAXONOMIC CLASS: Loamy, mixed, superactive, mesic Lithic Dystrudepts

TYPICAL PEDON: Hollis gravelly fine sandy loam, 3 to 15 percent slopes, forested. (Colors are for moist soil.)

Oi--0 to 3 cm; slightly decomposed plant material.

Oa--3 to 5 cm; black (10YR 2/1) highly decomposed plant material; moderate fine granular structure; very friable; many fine and very fine roots; abrupt smooth boundary. (Combined thickness of the O horizons is 0 to 10 cm.)

A--5 to 18 cm; very dark grayish brown (10YR 3/2) gravelly fine sandy loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; common fine, very fine, medium, and coarse roots; 10 percent gravel, 5 percent channers; very strongly acid; clear smooth boundary. (3 to 15 cm thick)

Bw1--18 to 25 cm; dark yellowish brown (10YR 4/4) gravelly fine sandy loam; moderate medium subangular blocky structure; friable; few very fine and fine roots, common medium roots; 10 percent gravel, 10 percent channers; strongly acid; clear wavy boundary.

Bw2--25 to 41 cm; yellowish brown (10YR 5/6) gravelly fine sandy loam; moderate medium and coarse subangular blocky structure; friable; few fine and very fine roots, common medium roots; 10 percent gravel, 5 percent channers; strongly acid; abrupt smooth boundary. (Combined thickness of the Bw horizons is 18 to 48 cm.)

2R--41 cm; schist bedrock.

TYPE LOCATION: Middlesex County, Connecticut, town of East Hampton, 1000 feet due west of Connecticut Route 196 and 3200 feet due north of Connecticut Route 151; USGS Moodus, CT topographic quadrangle, Latitude 41 degrees 31, minutes 28, seconds N., Longitude 72 degrees, 29 minutes, 48 seconds W., NAD 27.

RANGE IN CHARACTERISTICS: Thickness of the solum and depth to bedrock range from 25 to 50 cm. Rock fragments commonly range from 5 through 35 percent by volume, but some pedons have less than 5 percent rock fragments. The fragments are mostly subrounded gravel, except where the surface is stony. The soil has 20 percent or more silt in the particle-size control section. Unless limed, reaction ranges from extremely acid through moderately acid in the organic horizons and very strongly acid through moderately acid in the mineral horizons.

The O horizon, where present, ranges from slightly decomposed to highly decomposed plant material.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 1 to 3. It is sandy loam, fine sandy loam, or loam in the fine-earth fraction. Consistence is friable or very friable.

Some pedons have a BA horizon with colors similar to the A horizon and other properties similar to the Bw horizon.

The Bw horizon commonly has hue of 10YR or 2.5Y, and includes 7.5YR when a high ratio of ammonium oxalate extractable iron to dithionite-citrate extractable iron (greater than 0.15) exists, value of 4 or 5, and chroma of 4 through 8. It is sandy loam, fine sandy loam, or loam in the fine-earth fraction. The Bw horizon has granular or subangular blocky structure. Consistence is friable or very friable.

Some pedons have a thin BC or C horizon with color like the Bw horizon, except it includes hue of 5Y. Texture, structure, and consistence are similar to the Bw horizon.

Some pedons have a thin 2Cr horizon that is typically weathered schist and moderately cemented.

COMPETING SERIES: This is the Holyoke series. Holyoke soils formed in a thin mantle of till derived mainly from basalt and red sandstone, conglomerate, and shale, and typically overly basalt, red sandstone, conglomerate, or shale bedrock.

The Cleveland, Kearsarge, and Brimfield series are in closely related families. Cleveland soils have less than 20 percent silt in the particle-size control section and lack a 2R horizon. Kearsarge soils lack a 2R horizon and have rock fragments of phyllite, slate, or schist. Brimfield soils formed in parent materials derived from sulfur bearing schist and have a ratio of ammonium oxalate extractable iron to dithionite-citrate extractable iron of less than 0.15. They have pedogenic iron contents of greater than 1 percent throughout the pedon.

GEOGRAPHIC SETTING: Hollis soils are nearly level to very steep soils on bedrock controlled hills, modified by glacial processes. Slope ranges from 0 to 60 percent. The soils formed in a thin mantle of till derived from local bedrock of schist, granite, and gneiss. Mean annual temperature ranges from 7 to 13 degrees C and mean annual precipitation ranges from 910 to 1295 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 115 through 185 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Brimfield, Acton, Broadbrook, Brookfield, Canton, Charlton, Chatfield, Essex, Gloucester, Hibernia, Leicester, Montauk, Narragansett, Paxton, Rainbow, Ridgebury, Rockaway, Scituate, Sutton, Wapping, Whitman, and Woodbridge soils on nearby landscapes. All are very deep upland soils formed in till except for the Brimfield and Chatfield soils. Acton, Rainbow, Rockaway, Scituate, Sutton, Wapping, and Woodbridge soils are moderately well drained. The Broadbrook, Brookfield, Canton, Charlton, Essex, Montauk, Narragansett, and Paxton soils are well drained. Chatfield soils have bedrock within a depth of 50 to 100 cm. Gloucester soils are somewhat excessively drained. Hibernia, Leicester, and Ridgebury soils are somewhat poorly drained or poorly drained soils in drainageways or low lying areas.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Well drained and somewhat excessively drained. Surface runoff is negligible to very high. Saturated hydraulic conductivity is moderately high or high.

USE AND VEGETATION: Mostly forested. Small areas with few rock outcrops are cleared of stones and used for cultivated crops, but most cleared areas are in hay or pasture. Scattered areas are used for community development. Common trees are northern red, white, black, and chestnut oak, hickory, eastern white pine, eastern hemlock, and gray and black birch.

DISTRIBUTION AND EXTENT: Glaciated uplands in Connecticut, Massachusetts, New Jersey, New

Hampshire, and eastern New York. MLRAs 101, 142, 144A, and 145. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts.

SERIES ESTABLISHED: Nashua Area, New Hampshire, 1909.

REMARKS: Diagnostic horizons and features recognized in this pedon include:
1. Ochric epipedon - the zone from 0 to 18 cm (O and A horizons).
2. Cambic horizon - the zone from 18 to 41 cm (Bw1 and Bw2 horizons).
3. Lithic contact - hard bedrock at 41 cm (2R horizon).
4. Particle-size control section - the zone from 30 to 41 cm.
5. Loamy (coarse-loamy) particle-size class - the control section from 30 to 41 cm averages less than 35 percent clay in fine-earth fraction and the soil is in a Lithic subgroup.
6. Lithologic discontinuity - till with rock fragments from mixed sources overlying single kind of hard bedrock at 41 cm.

ADDITIONAL DATA: M.S. Thesis work by Shawn McVey, University of Connecticut, 2006. Full characterization data for sample no.1999CT005001, 2000CT007004, S2002CT005001, S2002CT005004, S2002CT005005, S2002CT005006, S1998NY061001, S2000NY119001. Partial characterization data for sample no. S99NY061003 and S99NY061003A-3D. Analyzed by the NSSL, Lincoln, NE.

National Cooperative Soil Survey
U.S.A.

LOCATION LEICESTER CT+MA ME NH NY RI

Established Series
Rev. MFF-SMF-JTI
05/2016

LEICESTER SERIES

The Leicester series consists of very deep, poorly drained soils formed in coarse-loamy till. They are nearly level or gently sloping soils in drainageways and low-lying positions on hills. Slope ranges from 0 to 8 percent. Permeability is moderate or moderately rapid in the surface layer and subsoil and moderate to rapid in the substratum. Mean annual temperature is about 9 degrees C, and mean annual precipitation is about 1205 mm.

TAXONOMIC CLASS: Coarse-loamy, mixed, superactive, acid, mesic Aeric Endoaquepts

TYPICAL PEDON: Leicester fine sandy loam - forested, extremely stony. (Colors are for moist soil.)

Oe--0 to 3 cm; black (10YR 2/1) moderately decomposed plant material. (0 to 10 cm thick)

A--3 to 18 cm; black (10YR 2/1) fine sandy loam; moderate medium granular structure; friable; common fine and medium roots; 10 percent gravel and cobbles; strongly acid; clear wavy boundary. (10 to 15 cm thick)

Bg1--18 to 25 cm; grayish brown (2.5Y 5/2) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 10 percent gravel and cobbles; common medium prominent yellowish red (5YR 5/6) masses of iron accumulation; strongly acid; gradual wavy boundary.

Bg2--25 to 46 cm; light brownish gray (2.5Y 6/2) fine sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; 10 percent gravel and cobbles; common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid; gradual wavy boundary. (Combined thickness of the Bg horizons is 16 to 68 cm.)

BC--46 to 61 cm; pale brown (10YR 6/3) fine sandy loam; massive; friable; few fine roots; 10 percent gravel and cobbles; many medium distinct yellowish brown (10YR 5/6) and yellowish red (5YR 4/6) masses of iron accumulation; strongly acid; clear wavy boundary. (0 to 20 cm thick)

C1--61 to 84 cm; dark yellowish brown (10YR 4/4) gravelly fine sandy loam; massive; friable; 15 percent gravel and cobbles; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation and prominent pinkish gray (7.5YR 6/2) iron depletions; strongly acid; gradual wavy boundary.

C2--84 to 155 cm; dark yellowish brown (10YR 4/4) gravelly fine sandy loam; massive; friable; 15 percent gravel and cobbles; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid.

TYPE LOCATION: New Haven County, Connecticut; town of Prospect, 5,200 feet north of the Prospect-Bethany town line and 130 feet west of Route 69; USGS Mount Carmel topographic quadrangle; latitude 41 degrees 28 minutes 48.88 seconds N. and longitude 72 degrees 58 minutes 14.81 seconds W., WGS 84.

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 46 to 100 cm. Depth to bedrock is commonly more than 183 cm. Rock fragments range from 5 to 35 percent by volume to a depth of 100 cm and up to 50 percent below 100 cm. Except where the surface is stony, the fragments are mostly subrounded gravel and typically comprise 60 percent or more of the total rock fragments. Unless limed, reaction is very strongly

acid or strongly acid in the upper 100 cm and ranges from very strongly acid to moderately acid below.

The O horizon, where present, consists of slightly, intermediately, and/or highly decomposed organic material.

The A horizon has hue of 10YR, value of 2 or 3 and chroma of 1 or 2. Disturbed pedons have an Ap horizon that includes chroma of 3. The A or Ap horizon is fine sandy loam, very fine sandy loam, or loam in the fine-earth fraction. It has weak or moderate granular structure and is very friable or friable.

Some pedons have a thin Eg horizon below the A horizon. It has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2. Texture, structure, and consistence are like the underlying B horizon.

The B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 4. Chroma of 3 and 4 are limited to subhorizons. Chroma of 1 or 2 is in some subhorizons within a 50 cm depth. The horizon has distinct or prominent redoximorphic features. Texture is fine sandy loam, loam, or sandy loam in the fine-earth fraction. Structure is weak granular or subangular blocky, or the horizon is massive.

The BC horizon, where present, has hue of 10YR to 5Y, value of 4 to 6, and chroma of 3 or 4. The horizon has distinct or prominent redoximorphic features. Texture is fine sandy loam, loam, or sandy loam in the fine earth fraction. Structure is weak subangular blocky or massive.

The C horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 1 to 4. It has redoximorphic features that typically decrease in abundance with depth. Texture is fine sandy loam or sandy loam in the fine-earth fraction, but may range to loamy sand at depth. Some pedons have pockets or thin lenses of silt loam, loamy sand, or sand. The horizon is massive or it has weak plates. Consistence commonly is very friable or friable but some pedons have lenses or layers that are firm.

COMPETING SERIES: There are no other series currently in the same family.

The Fredon, Lamson, Lyme, Mansfield, Massena, Menlo, Neversink, Newstead, Raynham, Raypol, Red Hook, Ridgebury, Stissing, Sun, and Whitman series are similar soils in related families. Fredon, Lamson, Red Hook, and Raynham soils formed in water sorted materials and are nonacid. Lyme soils are in a frigid family. Mansfield, Menlo, and Whitman soils have a dense substratum and are very poorly drained. The Massena, Newstead, and Sun soils are nonacid. Raypol soils are coarse-loamy over sandy or sandy-skeletal. Ridgebury and Stissing soils are nonacid and have a dense substratum. Neversink soils have rock fragments dominated by sandstone, siltstone, and shale.

GEOGRAPHIC SETTING: Leicester soils are nearly level to gently sloping and are in low-lying depressional areas and drainageways of glaciated hills. Slope commonly is less than 3 percent but the range includes 0 to 8 percent. The soils formed in acid coarse-loamy till derived from granite, gneiss, and/or schist. Mean annual temperature ranges from 4 to 13 degrees C, and the mean annual precipitation ranges from 910 to 1800 mm. The frost-free period ranges from 140 to 240 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the competing Ridgebury and Whitman soils and the Acton, Broadbrook, Brookfield, Canton, Charlton, Chatfield, Essex, Georgia, Gloucester, Hollis, Montauk, Narragansett, Paxton, Rainbow, Scituate, Stockbridge, Sutton, Wapping, and Woodbridge soils. The well drained Charlton and the moderately well drained Sutton soils are associated in a drainage sequence. Acton soils are sandy and moderately well drained. Broadbrook, Essex, Montauk, and Paxton soils are well drained with a dense substratum. Brookfield, Canton, Narragansett, and Stockbridge soils are well drained. Chatfield and Hollis soils have bedrock at 50 to 100 cm and 25 to 50 cm depths, respectively. Georgia and Wapping soils are moderately well drained. Gloucester soils are sandy and excessively drained. Rainbow, Scituate, and Woodbridge soils are moderately well drained and have a dense substratum.

DRAINAGE AND PERMEABILITY: Poorly drained. Surface runoff is slow. Saturated hydraulic conductivity is moderately high or high. Leicester soils have a water table at or near the surface much of the year.

USE AND VEGETATION: Most areas are wooded. Some areas are in brushy unimproved pasture. Cleared areas are used for hay or pasture. Tree species include alder, gray birch, red maple, eastern hemlock, American elm, and spruce. Shrub species include northern spicebush, winterberry, and silky dogwood. Herb species include skunk cabbage, green false hellebore, sensitive fern, cinnamon fern, jewelweed, and water-tolerant sedges and rushes.

DISTRIBUTION AND EXTENT: Low-lying areas on glaciated uplands in Connecticut, Massachusetts, Maine, New Hampshire, eastern New York, and Rhode Island; MLRAs 144A and 145. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts.

SERIES ESTABLISHED: Windham County, Connecticut, 1947.

REMARKS: Diagnostic horizons and features recognized in this pedon are:
1. Ochric epipedon - the zone from 0 to 18 cm (Oe and A horizons)
2. Cambic horizon - the zone from 18 to 46 cm (Bg horizons).
3. Aquic moisture regime as indicated by 2 chroma matrix color with redox concentrations at 18 cm (Bg horizons).
4. Endosaturation - based on saturation to a depth of 200 cm from the mineral soil surface.
5. Aeric great group based on matrix color and chroma of 3 or more in one subhorizon between the Ap and 75 cm. (BC horizon).
6. Particle-size class in control section from 25 to 100 cm - coarse-loamy.
7. Acid reaction class and mesic temperature regime.

National Cooperative Soil Survey
U.S.A.

LOCATION MONTAUK NY+CT MA NH

Established Series
Rev. RLM-JWW-MCT
05/2015

MONTAUK SERIES

The Montauk series consists of well drained soils formed in lodgment or flow till derived primarily from granitic materials with lesser amounts of gneiss and schist. The soils are very deep to bedrock and moderately deep to a densic contact. These soils are on upland hills and moraines. Slope ranges from 0 to 35 percent. Saturated hydraulic conductivity is moderately high or high in the mineral solum and low to moderately high in the substratum. Mean annual temperature is about 9 degrees C., and mean annual precipitation is about 1143 mm.

TAXONOMIC CLASS: Coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts

TYPICAL PEDON: Montauk loam on a 14 percent slope in a wooded area with a discontinuous layer of undecomposed and slightly decomposed plant material less than 1 cm thick on the surface. (Colors are for moist soil unless otherwise noted.)

Ap-- 0 to 10 cm; very dark gray (10YR 3/1) loam; moderate fine granular structure; very friable; many very fine, fine, medium, and coarse roots; 2 percent gravel, 1 percent cobbles, and 1 percent stones; extremely acid (pH 4.1); clear smooth boundary. (5 to 25 cm thick)

BA-- 10 to 34 cm; brown (10YR 4/3) loam; moderate medium and coarse subangular blocky structure; friable; many fine, medium, and coarse roots; many fine and medium pores; 4 percent gravel, 1 percent cobbles, and 1 percent stones; extremely acid (pH 4.3); clear wavy boundary. (0 to 25 cm thick)

Bw1-- 34 to 65 cm; dark yellowish brown (10YR 4/6) loam; moderate coarse subangular blocky structure; friable; many fine, medium, and coarse roots; many fine and medium pores; 6 percent gravel, 1 percent cobbles, and 1 percent stones; extremely acid (pH 4.3); clear wavy boundary.

Bw2-- 65 to 87 cm; yellowish brown (10YR 5/6) sandy loam; moderate medium and coarse subangular blocky structure; friable; many very fine, fine, and coarse roots; many fine and medium pores; 5 percent gravel and 1 percent cobbles; extremely acid (pH 4.3); clear smooth boundary. (Combined thickness of the Bw horizons is 31 to 86 cm.)

2Cd1-- 87 to 101 cm; strong brown (7.5YR 5/6) gravelly loamy sand; moderate medium plates; firm; few fine roots; many fine pores; 10 percent gravel, 5 percent cobbles, and 1 percent stones; very strongly acid (pH 4.7); clear wavy boundary. (18 to 76 cm thick.)

2Cd2-- 101 to 184 cm; dark yellowish brown (10YR 4/6) gravelly loamy sand; moderate medium plates; firm; many fine pores; 10 percent gravel, 5 percent cobbles, and 1 percent stones; strongly acid (pH 5.1).

TYPE LOCATION: Queens County, New York; in Alley Pond Park near the Cross Island Parkway. USGS Flushing, NY topographic quadrangle; latitude 40 degrees, 45 minutes, 35 seconds N. and Longitude 73 degrees, 45 minutes, 20 seconds W. WGS 84.

RANGE IN CHARACTERISTICS: The thickness of the mineral solum and depth to the dense substratum from the mineral soil surface ranges from 50 to 100 cm. Rock fragments range from 3 to 35 percent in the solum

and 5 to 50 percent in the substratum. Reaction ranges from extremely acid to moderately acid.

Some pedons have Oi, Oe, and/or Oa horizons overlying the A horizon. Combined thickness of the O horizons is 0 to 10 cm thick.

The Ap horizon has hue of 7.5YR or 10YR, value of 2 to 5, and chroma of 1 to 4. Texture of the fine-earth fraction is silt loam, loam, fine sandy loam, or sandy loam. Structure is granular. Consistence is friable or very friable. Undisturbed pedons have an A horizon that has properties similar to the Ap horizon.

The BA horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. Texture of the fine-earth fraction is silt loam, loam, fine sandy loam, or sandy loam. Structure is subangular blocky or granular. Consistence is friable or very friable.

Some pedons have an E horizon up to 8 cm thick.

The upper part of the Bw horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 8. The lower part has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. Texture of the fine-earth fraction is silt loam, loam, fine sandy loam, or sandy loam. Structure is subangular blocky and may part to granular. Consistence is friable or very friable. Some pedons have an E, C, or BC horizon immediately above the Cd.

The Cd layer has hue of 5YR to 5Y, value of 4 to 6, and chroma of 1 to 6. Texture of the fine-earth fraction ranges from coarse sand to fine sandy loam, and at least one sublayer of the Cd is loamy fine sand or coarser. The horizon has plates of geogenic origin or is massive. Consistence is firm or very firm and is brittle. Some pedons have firm dark reddish brown bands up to 1 cm thick that are spaced 12 to 20 cm apart. Silt coatings on the upper side of stones and gravel are common.

COMPETING SERIES: These are the Amostown, Bernardston, Broadbrook, Horseneck, Nantucket, Paxton, Scituate, and Wethersfield series. Amostown and Scituate soils are moderately well drained and have redoximorphic features in the B horizon. The Bearnardston, Nantucket, Paxton, and Wethersfield soils do not have sandy substratums. Broadbrook soils have a silty mantle with more than 65 percent silt plus very fine sand. Horseneck soils formed in friable glacialfluvial deposits and do not have a dense substratum.

GEOGRAPHIC SETTING: Montauk soils are on undulating to hilly slopes of terminal and recessional moraines in MLRA 149B and on glaciated uplands, hills, and ground moraines in MLRAs 144A and 145. Slope ranges from 0 to 35 percent. The soils formed in loamy friable till underlain by firm sandy lodgment or flow till derived from granite with lesser amounts of gneiss and schist. The climate is humid and cool temperate. The mean annual precipitation is 889 to 1422 mm, and the mean annual temperature is 8 to 11 degrees C. The frost-free period ranges from 120 to 200 days. Elevation ranges from 3 to 122 m above sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the well drained Charlton, Chatfield, Riverhead, Canton, and Haven soils that do not have dense substratums, the excessively drained and sandy Carver and Plymouth soils, the moderately well drained Scituate, Sutton, and Woodbridge soils, the somewhat poorly and poorly drained Ridgebury soils, the poorly drained Leicester soils, the very poorly drained Whitman soils, and the shallow Hollis soils.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Well drained. Runoff is low to high. Saturated hydraulic conductivity is moderately high or high in the solum and low to moderately high in the substratum.

USE AND VEGETATION: Many of the nearly level and gently sloping areas are cleared and used for production of potatoes and vegetable crops, hay, silage corn, and pasture. Steeper and uneven areas are largely forested and contain northern red oak, white oak, and occasionally yellow poplar, eastern white pine, red pine, sugar maple, beech, and birch.

DISTRIBUTION AND EXTENT: New York, Connecticut, Massachusetts, New Hampshire and possibly New Jersey and Rhode Island, MLRAs 149B, 144A, and 145. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: Suffolk County, New York, 1970.

REMARKS: The typical pedon was updated from 1975NY103005 to the lab-sampled pedon S1998NY081002 that better represents the typical textures, horizonation, and location.

Diagnostic horizons and features recognized in this pedon include:
1. Ochric epipedon - the zone from 0 to 10 cm (Ap horizon).
2. Cambic horizon - the zone from 34 to 87 cm (Bw1 & Bw2 horizons).
3. Densic material - the zone from 87 to 184 cm (2Cd1 and 2Cd2 layers).
4. Oxyaquic subgroup - based on saturation in one or more layers within 100 cm of the mineral soil surface, for either or both 20 or more consecutive days or 30 or more cumulative days.
5. Lithologic discontinuity - at a depth of 87 cm.

ADDITIONAL DATA: Full characterization data for pedons with User Pedon IDs of S1973MA009003, S1987NY103002, S1993MA011001, S1998NY081002, and S02MA-011-002. Pedons analyzed by the KSSL, Lincoln, NE. Laboratory characterization data for these pedons and similar soils is available through the National Cooperative Soil Survey Soil Characterization Database: http://ncsslabdatamart.sc.egov.usda.gov/

National Cooperative Soil Survey
U.S.A.

LOCATION NEWFIELDS NH+MA

Established Series
HRM-RJK-DAS
01/2013

NEWFIELDS SERIES

The Newfields series consists of very deep, moderately well drained soils formed in a loamy mantle underlain by sandy till on upland hills, moraines, till plains, and mountain side slopes. Saturated hydraulic conductivity is moderately high to very high. Slope ranges from 0 through 25 percent. Mean annual precipitation is about 40 inches (1016 millimeters), and mean annual temperature is about 48 degrees F. (9 degrees C.).

TAXONOMIC CLASS: Coarse-loamy over sandy or sandy-skeletal, mixed, active, mesic Oxyaquic Dystrudepts

TYPICAL PEDON: Newfields fine sandy loam, on a nearly level slope in a wooded area. The surface is covered by a 1 inch (3 centimeter) layer of leaves and twigs. (Colors are for moist soil.)

Ap -- 0 to 9 inches (0 to 23 centimeters); very dark grayish brown (10YR 3/2) fine sandy loam; light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; many fine and medium, and common coarse roots; 5 percent gravel; moderately acid; abrupt smooth boundary. (4 to 10 inches (10 to 25 centimeters) thick.)

Bw1 -- 9 to 20 inches (23 to 51 centimeters); yellowish brown (10YR 5/6) fine sandy loam; weak medium granular structure; very friable; common medium and few coarse roots; 10 percent gravel; moderately acid; clear wavy boundary.

Bw2 -- 20 to 28 inches (51 to 71 centimeters); olive yellow (2.5Y 6/6) fine sandy loam; weak medium granular structure; very friable; common fine and few medium roots; 10 percent gravel; moderately acid; clear wavy boundary. (Combined thickness of the Bw horizon is 5 to 30 inches (13 to 76 centimeters).)

BC -- 28 to 35 inches (71 to 89 centimeters); light yellowish brown (2.5Y 6/4) fine sandy loam; massive; friable; few fine and medium roots; 5 percent gravel; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation and many medium distinct light gray (5Y 7/2) iron depletions; moderately acid; clear wavy boundary. (0 to 20 (0 to 51 centimeters) inches thick.)

2C1 -- 35 to 43 inches (89 to 109 centimeters); light yellowish brown (2.5Y 6/4) gravelly loamy sand; massive; friable; 25 percent gravel; many medium prominent strong brown (7.5YR 5/8) and common fine prominent yellowish red (5YR 5/8) masses of iron accumulation, and many medium distinct light gray (5Y 7/2) iron depletions; moderately acid; clear wavy boundary. (0 to 30 inches (0 to 76 centimeters) thick.)

2C2 -- 43 to 64 inches (109 to 163 centimeters); pale olive (5Y 6/3) gravelly loamy sand; massive; friable; 25 percent gravel; common fine prominent strong brown (7.5YR 5/8) masses of iron accumulation and many medium faint light gray (5Y 7/2) iron depletions; moderately acid.

TYPE LOCATION: Rockingham County, New Hampshire; Town of Atkinson, 300 feet south of Province Hill Road from a point on Province Hill Road .35 mile northeast of the intersection of Salem Road and Province Hill Road; USGS Haverhill, NH topographic quadrangle; Latitude 42 degrees, 49 minutes, 20 seconds North, longitude 71 degrees, 8 minutes, 50 seconds West, NAD 83.

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 15 through 36 inches (38 through 91 centimeters). Depth to bedrock is typically greater than 60 inches (1.5 meters). Rock fragments range from 0 through 30 percent in the solum and 5 through 60 percent in the substratum. Rock fragments are dominantly granite, gneiss, schist, and quartzite gravel, but can often include cobbles, stones and boulders. Reaction ranges from extremely acid through slightly acid.

The Ap horizon has hue of 7.5YR or 10YR, value of 2 through 4, and chroma of 2 through 4. Some pedons have an A horizon that has value of 2 through 3 and chroma of 1 through 3. Some pedons have an E horizon that has hue of 10YR or 2.5Y, value of 4 through 7, and chroma of 1 or 2. Texture of the Ap, A and E horizons is fine sandy loam, loam, sandy loam, or very fine sandy loam in the fine-earth fraction.

The Bw horizon has hue of 7.5YR through 2.5Y, value of 4 through 6, and chroma of 3 through 8. Texture is dominantly fine sandy loam in the fine-earth fraction, but includes thin subhorizons of sandy loam and very fine sandy loam in the upper part, with the weighted average of coarse-loamy material containing less than 50 percent fine or coarser sand. Some pedons have a Bs horizon.

The BC horizon has color and texture similar to the Bw horizon.

The 2C horizon has hue of 10YR through 5Y, value of 4 through 7, and chroma of 2 through 4. Texture is loamy sand, loamy fine sand, loamy coarse sand, fine sand, or sand in the fine-earth fraction. Some pedons have lenses of sand and gravel. Structure is weak thin platy or the horizon is massive. Consistence is very friable or friable, but may contain thin subhorizons with firm consistence.

COMPETING SERIES: There are currently no other series in the same family.

The Agawam, Branford, Canton, Deerfield, Haven, Narragansett, Scituate, and Sutton series are in related families. Agawam, Branford, and Haven soils have either stratified sand or sand and gravel in the series control section. The Canton and Narragansett soils do not have redoximorphic features. Deerfield soils have sandy textures in the solum. Scituate and Sutton soils have coarse-loamy particle-size control sections.

GEOGRAPHIC SETTING: Newfields soils are nearly level through moderately steep soils of glaciated uplands and morianes. Slope ranges from 0 through 25 percent. The soils formed in a loamy mantle over acid sandy melt out till of Wisconsin age derived mainly from granite, gneiss, or quartzite. The till generally contains cobbles and stones with some boulders. Mean annual precipitation ranges from 30 through 50 inches (889 through 1270 millimeters), and mean annual temperature ranges from 47 through 52 degrees F. (8 through 11 degrees C.).

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Canton, Leicester, Montauk and Scituate soils. Newfields soils are in a drainage sequence with the well drained Canton soils and the poorly drained Leicester soils. Montauk soils have a dense substratum and are in higher positions on the landscape. Scituate soils have a dense substratum and are in similar positions on the landscape.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Moderately well drained. Runoff ranges from slow to rapid. Saturated hydraulic conductivity is moderately high to very high.

USE AND VEGETATION: Most of these soils are presently forested although some areas were tilled at one time. Common species are northern red oak, eastern white pine, and red maple.

DISTRIBUTION AND EXTENT: Southeastern New Hampshire and southeastern Massachusetts. MLRA's 144A and 149B. The series is of moderate extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts.

SERIES ESTABLISHED: Rockingham County, New Hampshire, 1986.

REMARKS: The 2010 revision reflected changes to the range in characteristics as well as general updating to metric units. This series was classified to the 10th edition of Keys to Soil Taxonomy with that revision. The former classification was coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Dystrochrepts. Historical notes are maintained in the maintenance file, OSD Historical Notes.

There is some debate over the source of the loamy mantle, one theory places it as aeolian.

The diagnostic horizons and features recognized in this pedon are:
1. Ochric epipedon - the zone from 0 to 9 inches (0 to 23 centimeters) (Ap horizon).
2. Cambic horizon - the zone from 9 to 35 inches (23 to 89 centimeters) (Bw1, Bw2, BC horizons).
3. Contrasting particle-size class - both the coarse-loamy part and the sandy part of the particle-size control section are greater than 5 inches (12.5 cm) thick and the transition zone between the two parts is less than 5 inches (12.5 cm) thick.
4) Particle-size control section - the zone from 10 through 40 inches (25 through 100 centimeters) (part of the Bw1, Bw2, BC, 2C1 horizons).
5) Lithologic discontinuity - at a depth of 35 inches (89 centimeters).

National Cooperative Soil Survey
U.S.A.

LOCATION RIDGEBURY MA+CT NH NJ NY RI

Established Series
Rev. SMF-JTI-DHZ
03/2015

RIDGEBURY SERIES

The Ridgebury series consists of very deep, somewhat poorly and poorly drained soils formed in lodgment till derived mainly from granite, gneiss and/or schist. They are commonly shallow to a densic contact. They are nearly level to gently sloping soils in depressions in uplands. They also occur in drainageways in uplands, in toeslope positions of hills, drumlins, and ground moraines, and in till plains. Slope ranges from 0 to 15 percent. Saturated hydraulic conductivity is moderately high or high in the solum and very low to moderately low in the substratum. Mean annual temperature is about 9 degrees C. and the mean annual precipitation is about 1143 mm.

TAXONOMIC CLASS: Loamy, mixed, superactive, acid, mesic, shallow Aeric Endoaquepts

TYPICAL PEDON: Ridgebury sandy loam - on a 3 to 8 percent slope in an extremely stony wooded area at an elevation of about 334 m. (Colors are for moist soil.)

A--0 to 13 cm; black (N 2/0) fine sandy loam; weak medium and coarse granular structure; friable; many very fine, fine and medium tree roots; 5 percent gravel and 5 percent cobbles; very strongly acid; abrupt smooth boundary. (5 to 25 cm thick)

Bw--13 to 23 cm; brown (10YR 4/3) sandy loam; weak medium subangular blocky structure; friable; few fine tree roots; 5 percent gravel and 5 percent cobbles; very strongly acid; abrupt wavy boundary. (8 to 22 cm thick)

Bg--23 to 46 cm; dark gray (10YR 4/1) gravelly sandy loam; massive; friable; 10 percent gravel and 5 percent cobbles; common fine prominent yellowish brown (10YR 5/6) and common medium distinct reddish brown (5YR 4/4) masses of iron accumulation; very strongly acid; gradual wavy boundary. (10 to 43 cm thick)

Cd--46 to 165 cm; gray (5Y 5/1) gravelly sandy loam; massive; firm; 10 percent gravel and 5 percent cobbles; common fine prominent reddish yellow (7.5YR 6/8) masses of iron accumulation; very strongly acid.

TYPE LOCATION: Hampshire County, Massachusetts; Town of Pelham; 1,600 feet east of Route 202 at a point 3,950 feet south of its junction with Amherst Road; USGS Shutesbury quadrangle; latitude 42 degrees 22 minutes 53 seconds N. and longitude 72 degrees 23 minutes 45 second W., NAD 27.

RANGE IN CHARACTERISTICS: Depth to the dense till commonly is 36 to 49 cm. The A horizon has 5 to 25 percent gravel, 0 to 10 percent cobbles, and 0 to 25 percent stones by volume. The B and C horizons have 5 to 25 percent gravel, 0 to 5 percent cobbles and 0 to 5 percent stones. Rock fragments within the soil range from 5 to 35 percent by volume and are subangular fragments. The unlimed soil ranges from very strongly acid to slightly acid.

The O horizon, where present, has hue of 7.5YR to 2.5Y, value of 2, 2.5, or 3 and chroma of 0 to 2.

The A or Ap horizon is neutral or has hue of 10YR to 5Y, value of 2, 2.5, or 3 and chroma of 0 to 2. Texture is sandy loam, fine sandy loam or loam in the fine-earth fraction.

Some pedons have a thin E horizon with hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. Texture is the

same as the A horizon.

The B horizon is neutral or has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 0 to 3. The chroma is 4 in some places. Chroma of 3 or 4 is restricted to subhorizons. Redoximorphic features are few to many and are distinct or prominent. Texture is sandy loam, fine sandy loam, very fine sandy or loam in the fine earth fraction with fifteen percent or more fine sand or coarser and clay content less than 18 percent. The B horizon has subangular blocky structure, weak to moderate very thin to medium platy structure or is massive. It is very friable or friable.

The Cd horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 to 4. It commonly has distinct or prominent redoximorphic features which generally become less abundant with depth but the range includes faint. Texture is coarse sandy loam, sandy loam, fine sandy loam, very fine sandy or loam in the fine-earth fraction. Consistence is firm or very firm and brittle. It is massive or has plates. Any physical aggregation is considered to not be pedogenic.

Some pedons have a C horizon below the Cd that is firm but not brittle.

COMPETING SERIES: There are no series currently in the same family.

The Painesville, Punsit, and Sun series are in a closely related family. Painesville soils lack a densic contact. Punsit soils have more than 60 percent silt plus very fine sand in the particle size control section. Sun soils formed in till derived from limestone and sandstone.

GEOGRAPHIC SETTING: The nearly level to gently sloping Ridgebury soils are in depressions and drainageways of till uplands. They also occur in toeslope positions and concave microfeatures of hills, drumlins, and ground moraines, and in till plains. Slope ranges from 0 to 15 percent. The soils formed in loamy lodgment till derived mainly from granite, gneiss and schist. Mean annual air temperature ranges from 7 to 11 degrees C and mean annual precipitation ranges from 1016 to 1270 mm. Mean growing season ranges from 100 to 195 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These include the Charlton, Chatfield, Hollis, Leicester, Paxton and Sutton, Whitman and Woodbridge soils. Ridgebury is a member of a drainage sequence that includes the well drained Paxton, moderately well drained Woodbridge, and very poorly drained Whitman soils. Charlton and Sutton soils are better drained and have friable substrata. Chatfield and Hollis soils have bedrock within depths of 100 and 50 cm respectively. Leicester soils do not have a densic contact.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Commonly poorly drained but the range includes the wetter part of somewhat poorly drained. Runoff is negligible to medium. Saturated hydraulic conductivity is moderately high or high in the solum and very low to moderately low in the substratum. A perched, fluctuating water table above the dense till saturates the solum to or near the surface for 7 to 9 months of the year.

USE AND VEGETATION: Largely forested to gray birch, yellow birch, red maple, hemlock, elm, spruce and balsam fir. Cleared areas are used mainly for hay and pasture.

DISTRIBUTION AND EXTENT: Glaciated landforms in Connecticut, Massachusetts, New Hampshire, New Jersey, New York, and Rhode Island. (MLRAs 142, 144A, 145, and 149B) The series is extensive.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts.

SERIES ESTABLISHED: Franklin County, Vermont, 1948.

REMARKS: An analysis of Ridgebury soils in 2002 for 38 surveys showed that this series most commonly has a densic contact at 40 to 60 cm including 8 surveys with the depth to a densic contact at 50 cm. The average

depth to a densic contact was 50 cm - the data showed an almost even split between depth class occurrences. A review of characterization data for Ridgebury soils shows a very slight dominance in the acid reaction class. Any physical aggregation in the Cd is considered to not be pedogenic. The type location is currently within the officially designated mesic zone in Massachusetts. Previous revision of this series was 12/2005.

Diagnostic horizons and features in this pedon include:

1. Ochric epipedon - the zone from 0 to 13 cm (A horizon).
2. Aeric feature 100 percent of the zone from 13 to 23 cm has hue of 10YR and both color value moist of 4 and chroma moist of 3 (Bw1 horizon).
3. Cambic horizon - the zone from 13 to 46 cm (Bw and Bg horizons).
3. Densic contact root limiting material begins at 46 cm (Cd horizon).
4. Endosaturation the zone from 23 to 46 cm is saturated above the densic contact (Bw2 horizon). A seasonal high water table is perched above the densic materials.
5. Reaction - the pH in the zone from 25 to 46 cm (control section for reaction) is presumed less than 5.0 in 0.01 M CaCl2 (1:2) (see remarks).
6. Series control section - the zone from 0 to 71 cm.

ADDITIONAL DATA: Reference samples from pedons with User Pedon IDs of S2000CT013002, S1995NH013005, and S1996NH013002
from Connecticut and New Hampshire, samples by NSSL, Lincoln, NE, various years. The laboratory data for these pedons and similar soils is available through the National Cooperative Soil Survey Soil Characterization Database: http://ncsslabdatamart.sc.egov.usda.gov/

National Cooperative Soil Survey
U.S.A.

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 Map Units (continued)

Catena Key for Excavated & Bottom Land

Disturbed Map Units	Map Unit						
	Drainage Class						
Parent Material	Excessively Drained	Somewhat Excessively Drained	Well Drained	Moderately Well Drained	Somewhat Poorly Drained	Poorly Drained	Very Poorly Drained
I. Excavated Land							
Typically sands	**300** Udipsamments nearly level	**300** Udipsamments nearly level	**300** Udipsamment nearly level	**350** Udipsamments wet substratum	**350** Udipsamments wet substratum	**900** Endoaquents sandy or gravelly	**900** Endoaquents, sandy or gravelly
Typically gravels	**400** Udorthents, sandy or gravelly	**400** Udorthents, sandy or gravelly	**400** Udorthents, sandy or gravelly	**400** Udorthents, sandy or gravelly	**400** Udorthents, sandy or gravelly	**900** Endoaquents sandy or gravelly	**900** Endoaquent, sandy or gravelly
Typically loams			**500** Udorthents, loamy	**500** Udorthents, loamy	**500** Udorthents, loamy	**600** Endoaquents loamy	**600** Endoaquent, loamy
Bedrock controlled loams		**550** Udorthents, Bedrock substratum	**550** Udorthents, Bedrock substratum	**550** Udorthents, Bedrock substratum	**550** Udorthents, Bedrock substratum	**600** Endoaquents loamy	**600** Endoaquent, loamy
III. Bottom Land							
Typically silt loam to sands and gravels						**7** Fluvaquents	**7** Fluvaquents

NOTE: Filled soils in Section II page 21 are too variable to place into the above key.

Disturbed Map Unit (Anthropogenic Soils) 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 Soil 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

The purpose of the following map units is to provide Soil Scientists with additional soil mapping tools for disturbed sites (Anthropogenic soils). These map units are intended to enhance Site-Specific Soil Maps and interpretations, reflecting requirements under NHDES, Alteration of Terrain (AoT) regulations (Env-Wq 1500). This supplement allows for the creation of soil maps with mapping units that can be expanded beyond those listed in the USDA, NRCS NH State-Wide Numerical Legend and the standards of the National Cooperative Soil Survey.

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. This 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 soil, includes: areas where the natural soils have been partially removed and areas where human-transported soil material (HTM) has been placed on top of a native soil, other disturbed soil or bedrock, as defined by RSA 485-A: 6, VIII; RSA 485-A: 17, and NHDES Env-Wq 1500, etc.

Map Notation

Notation on the Site-Specific Soil Map completed to comply with the NH AoT rules should include the following disclaimer:

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.***

4. ***Use of the map symbol denominators for disturbed or altered soils, is at the discretion of the Certified Soil Scientist.***

Map Symbol Denominators for Disturbed or Altered Soil Map Units

The map symbols for Site-Specific Soil Mapping of disturbed or altered 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 or Altered Soil Supplement to the Site-Specific Soil Survey Standards, as detailed below. The disturbed map symbol is composed of 5 lower case letters.

A Site-Specific Map symbol for a map prepared for an AoT application would be formatted as follows: ***400A/aaaaa***

These New Hampshire 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

Supplemental symbols may be used at the discretion of the Certified Soil Scientist who creates the Site-Specific Soil Survey. 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 wetlands
i- Organic Materials-Tidal wetlands

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” 2 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

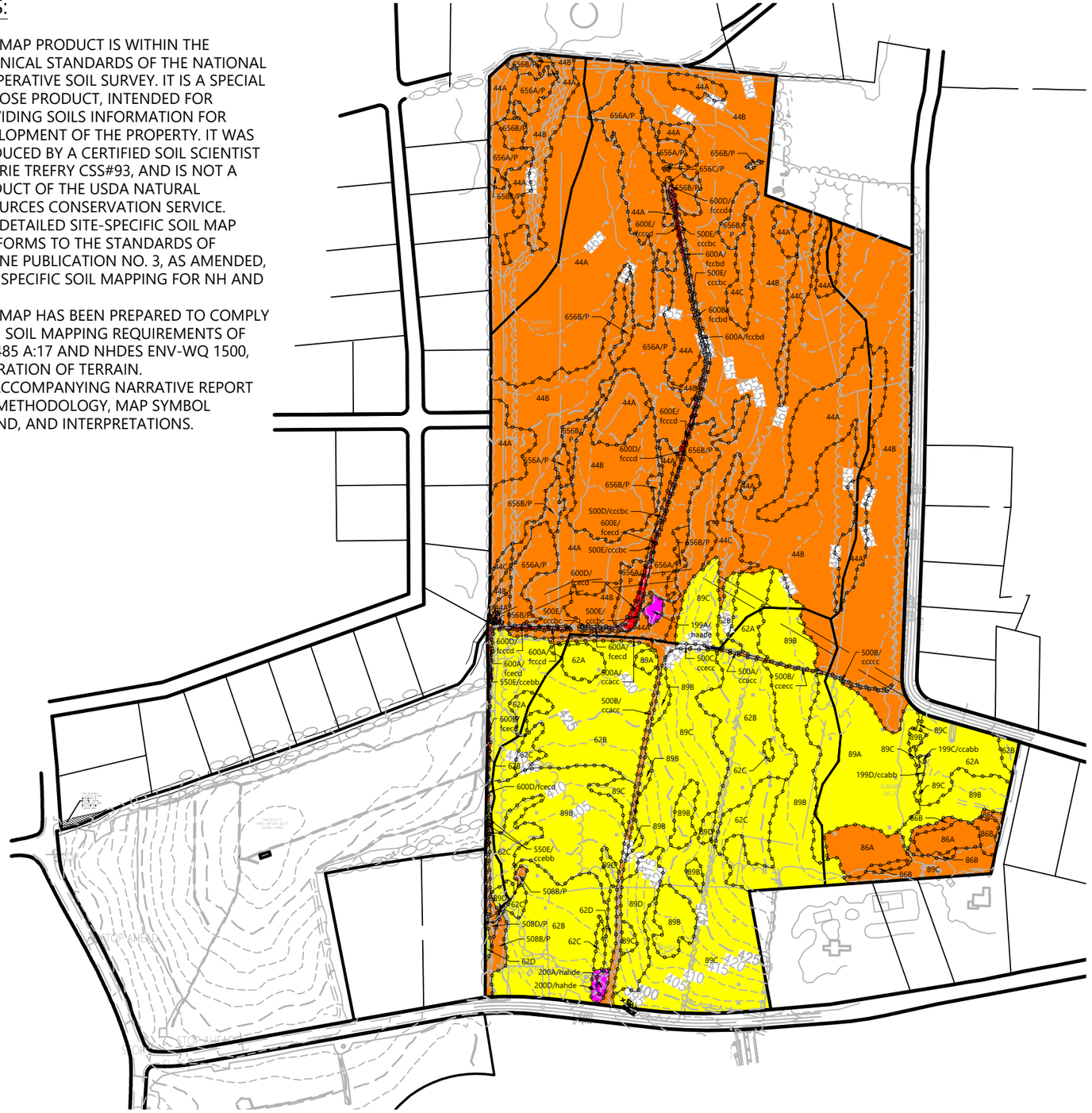
Symbol 5: Hydrologic Soil Group*

a-Group A
b-Group B
c-Group C
d-Group D
e-Not determined

*Excluding man-made surface impervious/restrictive layers

NOTES:

1. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR PROVIDING SOILS INFORMATION FOR DEVELOPMENT OF THE PROPERTY. IT WAS PRODUCED BY A CERTIFIED SOIL SCIENTIST SHERRIE TREFRY CSS#93, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.
2. THIS DETAILED SITE-SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, "SITE SPECIFIC SOIL MAPPING FOR NH AND VT."
3. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ 1500, ALTERATION OF TERRAIN.
4. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.



Legend

LINETYPES

- SUBCATCHMENT BOUNDARIES
- SITE SPECIFIC SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- HYDROLOGIC SOIL GROUP E
- IMPERVIOUS AREA
- LIMITS OF SITE SPECIFIC SOIL SURVEY

SITE SPECIFIC SOIL MAP UNIT LEGEND

89A - CHAFIELD; 0-3% SLOPE
89B - CHAFIELD; 3-8% SLOPE
89C - CHAFIELD; 8-15% SLOPE
89D - CHAFIELD; 15-25% SLOPE
62A - CHARLTON; 0-3% SLOPE
62B - CHARLTON; 3-8% SLOPE
62C - CHARLTON; 8-15% SLOPE
62D - CHARLTON; 15-25% SLOPE
199C/ccabb - DUMP OF ORGANIC MATERIAL; 8-15% SLOPE
199D/ccabb - DUMP OF ORGANIC MATERIAL; 15-25% SLOPE
86A - HOLLIS; 0-3% SLOPE
86B - HOLLIS; 3-15% SLOPE
86C - HOLLIS; 8-15% SLOPE
200A/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD); 0-3% SLOPE
200D/hahde - UDORTHENTS; REFUSE SUBSTRATUM (LEACH FIELD; 15-25% SLOPE
514B/P - LEICESTER; POORLY DRAINED SOILS; 3-8% SLOPE
656A/P - RIDGEBURY; POORLY DRAINED SOILS; 0-3% SLOPE
656B/P - RIDGEBURY; POORLY DRAINED SOILS; 3-8% SLOPE
500A/ccacc - UDORTHENTS; LOAMY; 0-3% SLOPE
500B/ccacc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500C/ccecc - UDORTHENTS; LOAMY; 3-8% SLOPE
500B/ccccc - UDORTHENTS; LOAMY; 3-8% SLOPE
500D/ccebb - UDORTHENTS; LOAMY; 15-25% SLOPE
550E/ccebb - UDORTHENTS; BEDROCK SUBSTRATUM; 25-50% SLOPE
500D/cccbc - UDORTHENTS; LOAMY; 15-25% SLOPE
500E/cccbc - UDORTHENTS; LOAMY; 25-50% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY; 25-50% SLOPE
600A/fcecd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcecd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600C/fcecd - ENDOAQUENTS; LOAMY; 8-15% SLOPE
600D/fcecd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600A/fcccd - ENDOAQUENTS; LOAMY; 0-3% SLOPE
600B/fcccd - ENDOAQUENTS; LOAMY; 3-8% SLOPE
600D/fcccd - ENDOAQUENTS; LOAMY; 15-25% SLOPE
600E/fcccd - ENDOAQUENTS; LOAMY 25-50% SLOPE
44A - MONTAUK - 0-3% SLOPE
44B - MONTAUK; 3-8% SLOPE
44C - MONTAUK; 8-15% SLOPE
199A/haade - DUMPS, BARK CHIPS, AND ORGANIC MATERIAL; 0-3% SLOPE

NOTE:

THE SITE SPECIFIC SOIL SURVEY FOR THIS STUDY AREA WAS CONDUCTED BY SHERRIE TREFRY (NH CERTIFIED SOIL SCIENTIST #0093) OF VHB ON OCTOBER 17-18, 2024.

Existing Color Coded Soil Map
36 Pillsbury Road
Londonderry, New Hampshire

Figure 2

February 2025

Hovey Road NRCS Web Soil Survey

United States Department of Agriculture

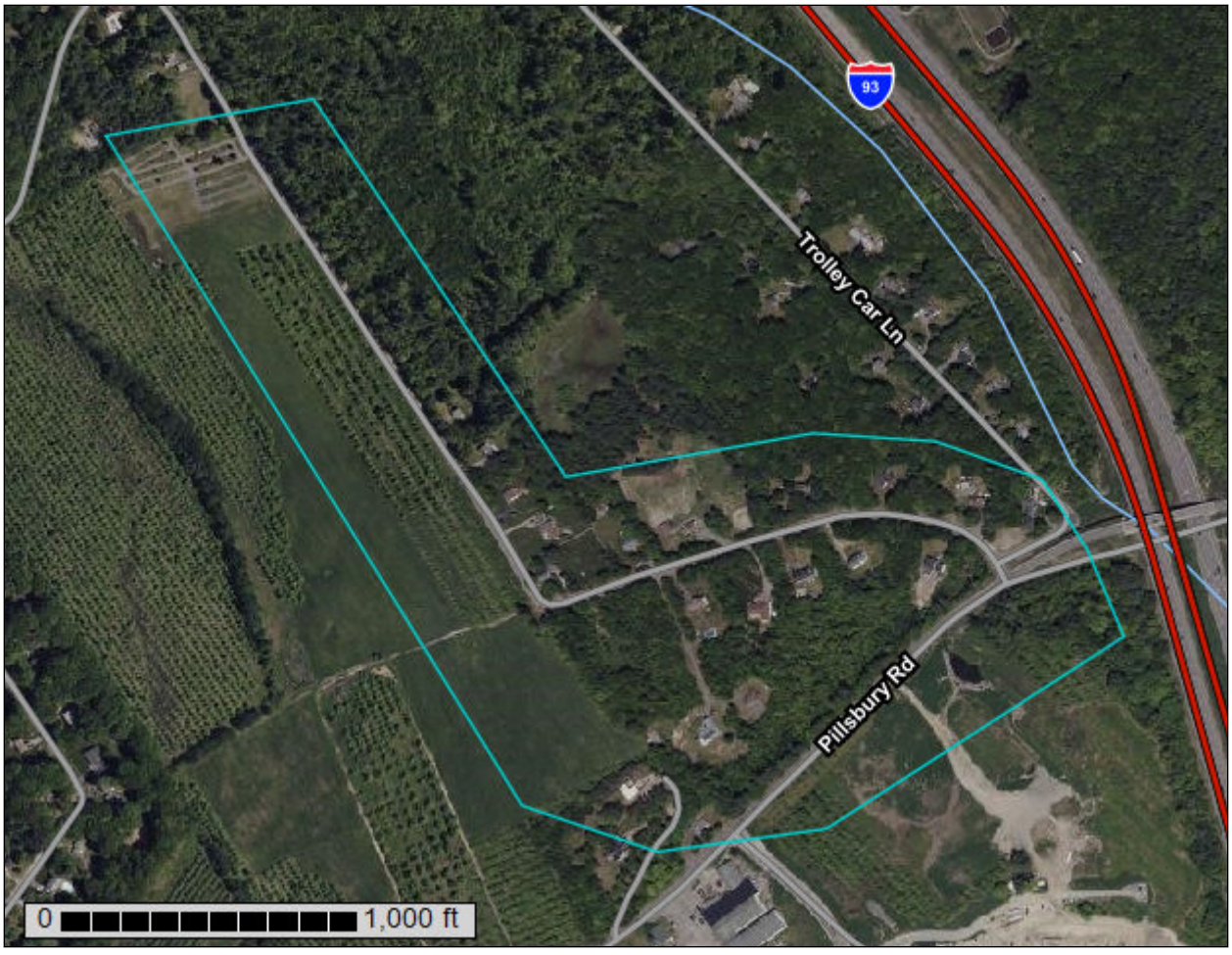
NRCS

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 Rockingham County, New Hampshire

Hovey Road Analysis



November 3, 2025

Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
Rockingham County, New Hampshire.....13
29B—Woodbridge fine sandy loam, 3 to 8 percent slopes.....13
43D—Canton fine sandy loam, 15 to 25 percent slopes, very stony.....14
140B—Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky.....16
140C—Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky.....19
446A—Scituate-Newfields complex, 0 to 3 percent slopes.....22
446B—Scituate-Newfields complex, 3 to 8 percent slopes.....24
547A—Walpole very fine sandy loam, 0 to 3 percent slopes, very stony....25
References.....27

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.

71° 21' 43" W
71° 20' 29" W
42° 53' 6" N
42° 52' 36" N



Map Scale: 1:4,530 if printed on B landscape (17" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: 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 1:24,000.

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: Rockingham County, New Hampshire
Survey Area Data: Version 28, Sep 9, 2025

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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
29B	Woodbridge fine sandy loam, 3 to 8 percent slopes	25.5	31.1%
43D	Canton fine sandy loam, 15 to 25 percent slopes, very stony	11.9	14.6%
140B	Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky	15.8	19.3%
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky	12.6	15.4%
446A	Scituate-Newfields complex, 0 to 3 percent slopes	4.8	5.8%
446B	Scituate-Newfields complex, 3 to 8 percent slopes	8.2	10.0%
547A	Walpole very fine sandy loam, 0 to 3 percent slopes, very stony	3.1	3.8%
Totals for Area of Interest		**81.8**	**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.

Rockingham County, New Hampshire

29B—Woodbridge fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2ql
Elevation: 0 to 1,470 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: Prime farmland if drained

Map Unit Composition

Woodbridge, fine sandy loam, and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Fine Sandy Loam

Setting

Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 30 inches: fine sandy loam
Cd - 30 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 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): 2w
Hydrologic Soil Group: C/D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Paxton

Percent of map unit: 10 percent
Landform: Drumlins, ground moraines, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury

Percent of map unit: 8 percent
Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Toeslope, backslope, footslope
Landform position (three-dimensional): Base slope, head slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

43D—Canton fine sandy loam, 15 to 25 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w81h
Elevation: 70 to 1,120 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

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

Description of Canton, Very Stony

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam

Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 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 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Chatfield, very stony

Percent of map unit: 6 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Montauk, very stony

Percent of map unit: 5 percent
Landform: Hills, drumlins, recessionial moraines, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Newfields, very stony

Percent of map unit: 4 percent
Landform: Ground moraines, hills, moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

140B—Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2w82m
Elevation: 380 to 1,070 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

Chatfield, very stony, and similar soils: 35 percent
Hollis, very stony, and similar soils: 25 percent
Canton, very stony, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 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 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 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 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam

Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 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 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Newfields, very stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills, moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Freetown

Percent of map unit: 5 percent
Landform: Marshes, depressions, bogs, kettles, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole, very stony

Percent of map unit: 3 percent
Landform: Deltas, depressions, outwash plains, depressions, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 2 percent
Landform: Ridges, hills
Hydric soil rating: Unranked

140C—Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2w82s
Elevation: 0 to 980 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

Chatfield, very stony, and similar soils: 35 percent
Hollis, very stony, and similar soils: 25 percent
Canton, very stony, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 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 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 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 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 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 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Newfields, very stony

Percent of map unit: 5 percent
Landform: Moraines, ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Freetown

Percent of map unit: 5 percent
Landform: Marshes, depressions, bogs, kettles, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro, very stony

Percent of map unit: 3 percent
Landform: Depressions, outwash terraces, drainageways, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 2 percent

Landform: Ridges, hills
Hydric soil rating: Unranked

446A—Scituate-Newfields complex, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9cnn
Elevation: 20 to 1,000 feet
Mean annual precipitation: 35 to 49 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Scituate and similar soils: 50 percent
Newfields and similar soils: 25 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scituate

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 32 inches: cobbly fine sandy loam
H3 - 32 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
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 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Description of Newfields

Setting

Parent material: Till

Typical profile

H1 - 0 to 9 inches: fine sandy loam
H2 - 9 to 35 inches: fine sandy loam
H3 - 35 to 64 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
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 24 to 48 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): 1
Hydrologic Soil Group: C
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Montauk

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

Walpole

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Ridgebury

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Paxton

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

Canton

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

446B—Scituate-Newfields complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9cnp
Elevation: 0 to 1,000 feet
Mean annual precipitation: 35 to 48 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Scituate and similar soils: 50 percent
Newfields and similar soils: 25 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scituate

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 32 inches: cobbly fine sandy loam
H3 - 32 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: 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 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Description of Newfields

Setting

Parent material: Till

Typical profile

H1 - 0 to 9 inches: fine sandy loam

H2 - 9 to 35 inches: fine sandy loam
H3 - 35 to 64 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
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 24 to 48 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): 2e
Hydrologic Soil Group: C
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Canton

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

Paxton

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

Walpole

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Ridgebury

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Montauk

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

547A—Walpole very fine sandy loam, 0 to 3 percent slopes, very stony

Map Unit Setting

National map unit symbol: 9cpc
Elevation: 0 to 2,100 feet

Mean annual precipitation: 28 to 49 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Walpole

Setting

Landform: Depressions

Typical profile

H1 - 0 to 7 inches: very fine sandy loam
H2 - 7 to 16 inches: sandy loam
H3 - 16 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 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: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A/D
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Minor Components

Scarboro

Percent of map unit: 10 percent
Landform: Depressions
Hydric soil rating: Yes

Newfields

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

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

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

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

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

Appendix E: Snow Storage Plan and Calculations

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\Snow Storage\53140000-Snow Storage.dwg


KITT LANE
PILLSBURY ROAD
(AR-1)
(PUD)
THORNTON HILL AVE
MARSH VIEW
SNOW STORAGE
SNOW STORAGE
SNOW STORAGE

Snow Storage Calculations

Project	Thornton Hill 36 Pillsbury Road	**Project #**	53140.00
Calculated by	SD	**Date**	2/5/2025
Checked by	BJZ	**Date**	2/18/2025

SNOW STORAGE VOLUME SUMMARY

Area to be Plowed:	1,805,375	s.f.	** Assumes 8" snowfall with 40% compaction factor*
Storage Volume Required:	722,150	c.f.	
Storage Volume Provided:	727,825	c.f.	

SNOW STORAGE VOLUME PROVIDED

ROAD SHOULDER:

Storage Height:	3	ft.	
Storage Width:	5	ft.	
Cross Sectional Area:	6	s.f.	** Assumes 1:1 side slope*
Storage Length:	11,998	ft.	
Storage Volume 1 Provided:	74,988	c.f.	

CLUSTER A #1:

Storage Height:	23	ft.	
Storage Width:	45	ft.	
Cross Sectional Area:	506	s.f.	** Assumes 1:1 side slope*
Storage Length:	330	ft.	
Storage Volume 2 Provided:	167,063	c.f.	

CLUSTER A #2:

Storage Height:	25	ft.	
Storage Width:	50	ft.	
Cross Sectional Area:	625	s.f.	** Assumes 1:1 side slope*
Storage Length:	115	ft.	

Snow Storage Calculations

Project	Thornton Hill 36 Pillsbury Road	**Project #**	53140.00
Calculated by	SD	**Date**	2/5/2025
Checked by	BJZ	**Date**	2/18/2025

Storage Volume 3 Provided:	**71,875**	c.f.	

CLUSTER A #3:

Storage Height:	10	ft.	
Storage Width:	20	ft.	
Cross Sectional Area:	**100**	s.f.	** Assumes 1:1 side slope*
Storage Length:	187	ft.	
Storage Volume 3 Provided:	**18,700**	c.f.	

CLUSTER B #1:

Storage Height:	15	ft.	
Storage Width:	30	ft.	
Cross Sectional Area:	**225**	s.f.	** Assumes 1:1 side slope*
Storage Length:	283	ft.	
Storage Volume 3 Provided:	**63,675**	c.f.	

CLUSTER C #1:

Storage Height:	13	ft.	
Storage Width:	25	ft.	
Cross Sectional Area:	**156**	s.f.	** Assumes 1:1 side slope*
Storage Length:	292	ft.	
Storage Volume 3 Provided:	**45,625**	c.f.	

CLUSTER F #1:

Snow Storage Calculations

Project	Thornton Hill 36 Pillsbury Road	**Project #**	53140.00
Calculated by	SD	**Date**	2/5/2025
Checked by	BJZ	**Date**	2/18/2025

Storage Height:	15	ft.	
Storage Width:	30	ft.	
Cross Sectional Area:	225	s.f.	** Assumes 1:1 side slope*
Storage Length:	104	ft.	
Storage Volume 3 Provided:	23,400	c.f.	

CLUSTER F #2:

Storage Height:	25	ft.	
Storage Width:	50	ft.	
Cross Sectional Area:	625	s.f.	** Assumes 1:1 side slope*
Storage Length:	420	ft.	
Storage Volume 3 Provided:	262,500	c.f.	

Appendix F: Inspection and Maintenance Manual

Thornton Hill

36 Pillsbury Road, Londonderry, NH

PREPARED FOR

The Procopio Companies
35 Village Road, 7th, Floor (702)
Middleton, MA 01949

PREPARED BY

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

February 20, 2025

Table of Contents

Introduction **1**

Responsible Party **1**

Stormwater Management System Components **1**

Inspection & Maintenance Plan **2**

Inspection & Maintenance Checklist/Log **6**

Inspection & Maintenance Checklist .....
Inspection & Maintenance Log .....
Deicing Log .....
Drainage Improvements Plan .....

Control of Invasive Plants Information **6**

Introduction

VHB has prepared the following Stormwater Management System Inspection & Maintenance Manual for the residential project located at 36 Pillsbury Road, Londonderry, New Hampshire. The intent of this plan is to provide the applicant/owner with a list of procedures that document the inspection and maintenance requirements of the Stormwater Management System for this development.

The following inspection and maintenance program is necessary in order to keep the Stormwater Management System functioning properly. By following the enclosed procedures, the applicant will be able to maintain the functional design of the Stormwater Management System and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

Responsible Party

The oversight of the inspection and maintenance program will be provided by:

Davide Roache
Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA 01949
(617) 594-5945
droache@procopiocompanies.com

Stormwater Management System Components

The Stormwater Management System is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, its design includes the following elements:

Non-Structural BMP's

Non-structural best management practices (BMP's) are designed to minimize and/or remove contaminants before they enter the stormwater collection system. Several of these BMP's have been incorporated into the Stormwater Management System

including reduced used of road deicing agents, and litter/trash removal. These types of BMP's are a highly effective initial treatment measure for reducing stormwater pollutant loading.

Structural BMP's

Structural BMP's have been incorporated into the overall stormwater management plan. Structural BMP's include deep sump catch basins, subsurface sand filter and subsurface detention basins.

Inspection & Maintenance Plan

By implementing the following procedures, the applicant will be able to maintain the functional design of the Stormwater Management System and maximize the system's ability to remove sediment and other contaminants from site generated stormwater runoff.

Source Control

- Routinely empty all outside waste receptacles provided for public use.
- Clearing litter from the parking area, islands, and perimeter landscape areas.

Vegetated Areas Maintenance

Although not a specific component of the drainage system, the maintenance of vegetated areas may affect the functioning of stormwater management practices. This includes the health/density of vegetative cover and activities such as the application and disposal of lawn and garden care products, disposal of leaves and yard trimmings.

- Inspect planted areas on a semi-annual basis and remove any litter.
- Maintain planted areas adjacent to pavement to prevent soil washout.
- Immediately clean any soil deposited on pavement.
- Re-seed bare areas; install appropriate erosion control measures when native soil is exposed or erosion channels are forming.
- Plant alternative mixture of grass species in the event of unsuccessful establishment.
- The grass vegetation should be cut to a height between three and four inches.

- Pesticide/Herbicide Usage – No pesticides are to be used unless a single spot treatment is required for a specific control application.
- Fertilizer usage should be avoided. If deemed necessary, slow-release fertilizer should be used. Fertilizer may be used to begin the establishment of vegetation in bare or damaged areas but should not be applied on a regular basis unless necessary.

Deicing Agents

Deicing agents should be used in accordance with the following:

- Use sand as the primary agent for parking lot safety during ice and snow conditions.
- Use de-icing or anti-caking agents, added to enhance performance and application characteristics of sand mixtures, only as necessary and at minimum application rates.
- Maintain a Deicing Log to track the amount and type of deicing materials applied to the site.
- Deicing operations should be conducted in accordance with the Salt Minimization Plan for the Project.

Snow Management

Snow storage areas shall be maintained as follows:

- Snow storage areas will be managed to prevent blockage of storm drain catch basins. Snow combined with sand and debris may block a storm drainage system, diminishing the infiltration capacity of the system and causing localized flooding.
- Sand and debris deposited on vegetated or paved areas shall be cleared from the site and properly disposed of at the end of the snow season, no later than May 15.
- Snow shall not be dumped into any water body, pond, wetland resource area or stormwater detention basin.
- Snow Management operations should be conducted in accordance with the Salt Minimization Plan for the Project.

Catch Basins

The proposed catch basins are constructed with sumps (minimum 3 feet) to trap debris, sediments, and floating contaminants. Disposal of all sediments must be in accordance with applicable local, state, and federal guidelines.

- Inspect catch basins at least two times per year and clean a minimum of once per year.
- Sediment greater than half the sump depth and/or floatable pollutants shall be pumped from the basin and disposed of at an approved offsite facility in accordance with all applicable regulations.
- Any structural damage or other indication of malfunction will be reported to the site manager and repaired as necessary.
- During colder periods, the catch basin grates must be kept free from snow and ice.
- During warmer periods, the catch basin grates must be kept free of leaves, litter, sand and debris.

Stormwater Outfalls

- Inspect outfall locations monthly for the first three months after construction to ensure proper functioning and correct any areas that have settled or experienced washouts.
- Inspect outfalls annually after initial three-month period.
- Annual inspections should be supplemented after large storms when washouts may occur.
- Maintain/cut vegetation around outfalls to prevent blockages at the outfall.
- Maintain rip-rap pad below each outfall and repair any washouts or other damage immediately.
- Remove and dispose of any trash or debris at the outfall.

Structural Water Quality Devices (Sand Filter)

- Refer to Manufacturers recommendations for specific O&M requirements.
- Inspect devices monthly for the first three months after construction.
- After initial three-month period, all water quality units are to be inspected at least twice a year and cleaned a minimum of at least once per year or when sediment reaches 8" in depth.

- Follow manufacturer instructions for inspection and cleaning and contact manufacturer if system is malfunctioning.
- Refer to the New Hampshire Stormwater Manual Volume 2 Chapter 4 Designing Best Management Practices, 4-3 Treatment Practice, 4 Filtering Practices, Section 4b Underground Sand Filter for additional Maintenance requirements.
    - 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.
    - Manufactured filter media should be replaced periodically per manufacturer's specifications.
    - At least once annually, system should be inspected for drawdown time. If a filtration 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, including but not limited to removal of accumulated sediments or reconstruction of the filter.

Storm Drain Manholes

- Inspect at least once annually for clogging or sediment accumulation and clean as needed to ensure proper stormwater conveyance.

Subsurface Detention System

- The subsurface detention systems will be inspected at least twice each year by removing the manhole/access port covers and determining the thickness, if any, of sediment that has accumulated.
- If sediment is more than six inches deep, it must be suspended via flushing with clean water and removed using a vactor truck.
- Refer to manufacturer's specifications and instructions for cleaning the system.
- Outlet control manholes will be examined at each inspection to verify that no blockage has occurred.
- System will be observed after rainfalls to see if it is properly draining.

Aboveground Stormwater Basins (Modified Existing Basin)

- 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 a filtration 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, including but not limited to removal of accumulated sediments or reconstruction of the filter.
- Remove debris from any inlet and outlet structures.
- Remove accumulated sediment.
- Inspected and repair (if needed) outlet structures and appurtenances.
- Remove woody vegetation from embankments. Inspect and repair embankments as needed.

Grass Conveyance Swale

- Grassed channels should be inspected periodically (at least annually) for sediment accumulation, erosion and condition of surface lining (vegetation or riprap). Repairs, including stone or vegetation replacement, should be made based on this inspection.
- Remove sediment and debris annually, or more frequently as warranted by inspection.
- Mow vegetated channels as needed to maintain grass establishment and remove woody vegetation. Grass to be cut no shorter than 4 inches.

Invasive Plant Species Control

- Invasive plant species are 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; or arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some of these 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.

- As part of the routine inspections of the drainage system and stormwater outfalls, the site should be checked for the presence of invasive plant species as defined by the New Hampshire Department of Agriculture, Markets & Food (a list is provide at the end of this manual).
- If invasive plant species are found to be present they should be controlled as described in the "Control of Invasive Plants" document prepared by the NH Department of Agriculture, Markets & Food. A copy is provided at the end of this manual.

Record Keeping

- Inspections of the stormwater management system shall be conducted in accordance with the Inspection & Maintenance Checklist provided in this Manual.
- An Inspection & Maintenance Log shall be completed for each inspection and maintenance activity.
- All record keeping required by the I&M manual shall be maintained by the Responsible Party.
- A deicing log shall be maintained that tracks the amount and type of deicing materials applied to the site.
- Any transfer of responsibility for the I&M activities or transfer of ownership shall be documented to the NHDES Water Division in writing.
- Inspection Reports shall be filed with the Town of Londonderry Department of Engineering and Environmental Services on an annual basis.

Inspection & Maintenance Checklist/Log

The following pages contain an Inspection & Maintenance Checklist, a blank copy of the Stormwater Management System's Inspection & Maintenance Log, and a reduced copy of the Grading and Utility Plans. These forms/plans are provided to assist the

applicant with the inspection and maintenance of the Stormwater Management System.

Invasive Species Information

A copy of the New Hampshire Department of Agriculture, Markets & Food's document "Control of Invasive Plants" is provided at the end of this manual.

Stormwater Management System

Inspection & Maintenance Checklist

BMP/System Component	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance/Cleanout Threshold
Source Control	Routinely	Inspect outdoor waste receptacles areas for spillage. Inspect and clear litter from parking area, islands and perimeter landscape areas.	Clean as required.
Deicing Agents	N/A	N/A	Use sand as primary agent for site roadway and parking safety during winter.

Stormwater Management System

Inspection & Maintenance Checklist

Closed Drainage System			
Catch Basins	2 times per year	Check for sediment accumulation. Check for floatable contaminants.	≥ 2 ft. sediment depth. ≥ 3 in. floatable depth.
Storm Drain Manholes	1 time per 2 years	Check for sediment accumulation.	≥ 3 in. sediment depth.
Drainage Pipes	1 time per 2 years	Check for sediment accumulation/clogging.	≥ 2 in. sediment depth.
Aboveground Stormwater Basin	2 times per year	Check for sediment accumulation, trash and debris.	Clean/repair as needed.
Subsurface Detention Basin	2 times per year	Check for sediment accumulation.	Refer to Manufacturers Requirements
Subsurface Sand Filter	2 times per year	Check for sediment accumulation/clogging	Refer to Manufacturers Requirements
Outlet Control Structure	2 times per year	Check for sediment accumulation/clogging	Clean/repair as needed.
Outfalls	Monthly for first 3 months and 1 time per year thereafter	-Check for sediment, trash and debris accumulation. -Check for vegetation blocking outfall. Inspect rip rap for washout.	Clean/repair as needed.
Grass Conveyance Swale	1 time per year	Check for sediment, trash and debris accumulation	Clean/repair as needed

Stormwater Management System

Inspection & Maintenance Log

BMP/System Component	Date Inspected	Inspector	Cleaning/Repair Needed *(List Items/Comments)*	Date of Cleaning/Repair	Performed By
OCS 101					
FES 102					
CB 201					
CB 202					
FES 203					
OCS 204					
FES 205					
CB 301					
FES 302					
CB 303					
CB 304					
OCS 305					
FES 306					

CB 401					
FES 402					
OCS 403					
FES 404					
CB 501					
CB 502					
CB 503					
CB 504					
FES 505					
OCS 506					
FES 507					
CB 601					
CB 602					
CB 603					

CB 604					
DMH 605					
FES 606					
OCS 607					
FES 608					
CB 701					
CB 702					
FES 703					
OCS 704					
CB 801					
CB 802					
FES 803					
OCS 804					
FES 805					

CB 901					
CB 902					
DMH 903					
FES 904					
CB 905					
CB 906					
FES 907					
CB 1001					
CB 1002					
DMH 1003					
DMH 1005					
FES 1006					
CB 1007					
FES 1008					

OCS 1009					
FES 1010					
CB 1101					
FES 1102					
Swale Near Welcome Building					
Swale Near Building					
Swale Near Pillsbury					
Notes:					

Stormwater Management System

Deicing Log

Date	Type	Location/Amount	Name(s) of Maintenance Personnel

Appendix G: Salt Minimization Plan

TECHNICAL MANUAL

Salt Minimization Plan

36 Pillsbury Road
Londonderry, NH

PREPARED FOR

PROCOPIO

The Procopio Companies
35 Village Road, 7th Floor (702)
Middleton, MA 01949
781.233.3190

PREPARED BY

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

February 20th, 2025

Table of Contents

Introduction and Background **1**

Project Area Description **2**

Responsibility **3**

Operational Guidelines **4**

4.1 Winter Operator Certification Requirements 4
4.2 Weather Monitoring 4
4.3 Equipment Calibration Requirements 4
4.4 Plowing 5
4.5 Deicer Storage and Application 5

Salt Usage Evaluation and Monitoring **6**

Analysis of Alternative De-icing Materials and Site Design Considerations **7**

Appendices

Snow Storage Plan

New Hampshire Salt Reduction Best Management Practices

Hydraulic-Run Spreader Calibration

Pony Motor-Run Spreader Calibration

How Salt Works

Anti-Icing

Pre-wetting

Brine Making

Material Storage and Housekeeping

Smart Salting Practices

1

Introduction and Background

The proposed development is within the surface watershed of the Merrimack River. This watershed has been identified by the New Hampshire Department of Environmental Services (NHDES) as being impaired by chlorides. The NHDES has identified the primary source of chlorides as salt used for winter snow and ice management. Nevertheless, snow and ice on roadways, parking lots, and sidewalks create a public safety hazard for users. Thus, the goal of this Salt Minimization Plan is to reduce the amount of chloride entering sensitive environmental areas while maintaining site safety. The best management practices (BMPs) described in this document can generate long-term cost savings via salt purchase decreases, vegetation health improvements, and infrastructure and vehicle corrosion reductions.

2

Project Area Description

The 94.15-acre Site is located along Pillsbury Road in Londonderry, New Hampshire. The Site is presently vacant and was previously occupied by an apple orchard. The proposed development of the site includes the construction of 250 freestanding residential dwelling units, arranged 'clusters' around communal open spaces. In total, approximately 20 acres of new pavement and other impervious surfaces will be added to the site.

3

Responsibility

All property managers of the site should implement and comply with the Salt Minimization Plan, review the success of the Plan, and update the Plan as new requirements, products, and practices are developed. A copy of this plan shall be provided to all personnel who handle snow and ice maintenance within the site.

4

Operational Guidelines

4.1 Winter Operator Certification Requirements

All employed or contracted winter maintenance operators shall be New Hampshire Certified Green SnowPro or equivalent. Green SnowPro training is provided by the University of New Hampshire. It is preferred that operators also have NHDES Salt Applicator Certification. Information on these certifications can be found at the links below:

https://www.des.nh.gov/land/roads/road-salt-reduction

https://www.des.nh.gov/land/roads/road-salt-reduction/green-snowpro-certification

4.2 Weather Monitoring

Operators providing winter maintenance to the site shall monitor winter storm events using the National Weather Service (www.weather.gov) or other sources that rely on National Weather Service data, like local TV and radio stations and other weather websites and apps. All vehicles that apply de-icing agents shall be equipped with air and ground surface temperature monitors. These temperature monitors shall be calibrated annually. Operators shall monitor air and ground temperatures before, during, and immediately after expected storm events to ensure that this information is taken into consideration when making decisions about deicing material placement and timing. Dry salt is ineffective below 15°F and most deicers are ineffective once the temperature drops below -10°F. Monitoring air and ground temperatures and acting accordingly will aid the effective use of these materials.

4.3 Equipment Calibration Requirements

Salt spreaders shall have ground speed control applications to regulate the amount of salt that is deposited. Winter maintenance operators shall calibrate equipment

each fall using an application rate chart. After each storm, equipment should be checked and recalibrated, if necessary. For more information, refer to the attached "Hydraulic-Run Spreader Calibration" and "Pony Motor-Run Spreader Calibration" NH Best Management Practices sheets from the Technology Transfer Center at University of New Hampshire.

4.4 Plowing

Snow shall be mechanically removed from roadways, driveways, parking lots, and sidewalks to the maximum extent practicable before deicers are applied to pavement. Snow shall be piled in designated snow storage areas on the attached Snow Storage Plan or other zones that do not interfere with occupant parking or navigation of the site and do not drain directly into wetlands. Snow storage areas shall not be situated on top of catch basins or within detention areas. It is preferred that snow storage zones do not drain back across cleared areas, where the meltwater can refreeze.

4.5 Deicer Storage and Application

Winter maintenance operators should be proactive and apply small amounts of pre-wetted de-icer, salt brine, or liquid de-icers to pavement prior to frost or snow accumulation to prevent ice from bonding with the pavement surface. This anti-icing method is most effective when applied 1-2 hours before precipitation. It can be applied up to 24 hours in advance if necessary. Salt shall be pre-wet or pre-treated with a brine solution to reduce salt loss from bounce and scatter and improve melting times. Pretreating paved areas has been shown to reduce the amount of salt needed in most winter storms. For more information, refer to the "How Salt Works", "Anti-Icing", "Pre-wetting" and "Brine Making" NH Best Management Practices sheets from the Technology Transfer Center at University of New Hampshire.

On roadways, deicers should be applied to the crown of the road or the high side of a curve. On sidewalks, salt should be deposited by drop spreaders. If using a rotary spreader, shields must be installed to restrict the spread to the sidewalk. Salt brine or liquid de-icers shall not be applied before a rainstorm, but can be applied before a light freezing drizzle. Salt shall not be used to "burn off" snow. If the pavement temperature is below 15°F, contractor shall wait until the temperature rises before applying salt, if possible. Otherwise, contractor shall use pre-wetted deicing materials. If the pavement temperature is below -10°F, operator shall use mechanical methods to clear snow and ice and wait until the temperature rises before applying deicers.

Salt and sand shall be applied separately since their purposes—melting and traction, respectively—are different. Salt shall be stored in a building or under secure cover, away from water flow or water bodies. For more information, refer to the "Material Storage and Housekeeping" NH Best Management Practices sheet from the Technology Transfer Center at University of New Hampshire.

5

Salt Usage Evaluation and Monitoring

Monitoring salt usage and winter maintenance activities are the keys to identifying what methods are successful in deicing the site, how much salt or other material was used, how much is needed for the next winter season, and the effectiveness of the salt minimization plan at reducing salt loads in the watershed. For each application, operators shall record the following:

- What activity is being performed and/or what equipment is being used
- Where the maintenance is occurring
- When activity is being performed (date, start and end time)
- Weather conditions
  - Event timing (Start and end time)
  - Snow fall or ice totals
  - Air and ground temperatures
- Application rates
- Results

Operators shall periodically compare salt usage between vehicles to confirm spreader calibrations. Operators are also encouraged to provide feedback on effectiveness of BMPs in practice and suggest others that should be considered for implementation. Shortly following the winter season, a report should be developed summarizing this data and analyzing the results. The report should also be provided to the local jurisdiction for the purposes of tracking chloride applications throughout the watershed. The Salt Minimization Plan should also be reviewed and updated each year, preferably when the report is complete. The attached checklist for snow and ice maintenance can be used as a guide for best management practices.

6

Analysis of Alternative De-icing Materials and Site Design Considerations

Alternative de-icing materials, such as potassium acetate and calcium magnesium acetate (CMA), and limited use of abrasives, like sand, sawdust, or cat litter, should also be considered to reduce chloride application in the watershed. Pavement should be kept free of potholes to minimize the ability of water to pond and freeze. Cracks should also be filled before the winter season since cracks can allow chlorides to leach into the ground and migrate into the groundwater. Pavement that is in good condition also aids the mechanical removal of snow and ice.

Snow Storage Plan

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\dt\Eng\Snow Storage\53140000-Snow Storage.dwg


KITT LANE
PILLSBURY ROAD
(AR-1)
(PUD)
THORNTON HILL AVE
MARSH VIEW
SNOW STORAGE
SNOW STORAGE
SNOW STORAGE

New Hampshire Salt Reduction Best Management Practices

Calibration Chart (Hydraulic Type)

Material: _____ Truck/Spreader ID: _____

Date: _____ Performed by: _____

Tarp/Canvas/Bucket Weight: _____

Conveyor or Auger Setting	W	A	Discharge Rate (lb/min.)			B	D					
	Spread Width (ft.)	5.28 × W	Run 1	Run 2	Run 3	Average Discharge Rate *((Run1 + Run2 + Run3)/3)*	Pounds of Material Discharged per 1000 square ft. *(D = B × C ÷ A)*					
							5 mph (C = 12)	10 mph (C = 6)	15 mph (C = 4)	20 mph (C = 3)	25 mph (C = 2.4)	30 mph (C = 2)
1												
2												
3												
4												
5												
EX	14	5.28 × 14= **73.92**	87	92	93	(87+92+93)÷3= **90.67**	12 × 90.67 ÷ 73.92= **14.72**	6 × 90.67 ÷ 73.92= **7.36**	4 × 90.67 ÷ 73.92= **4.91**	3 × 90.67 ÷ 73.92= **3.68**	2.4 × 90.67 ÷ 73.92= **2.94**	2 × 90.67 ÷ 73.92= **2.45**

Calculation Instructions: Multiply the spread width from column **W** by **5.28** and record the answer in column **A**. For each conveyor/auger setting, add **Run 1**, **Run 2**, and **Run 3** together. Divide the result by **3** and record in column **B** to get the average discharge rate. To find the pounds of material discharge per 1000 square feet, you must know the number of minutes it takes to travel one mile at every truck speed you intend to calibrate for. These numbers are designated as variable "**C**". The "**C**" value for each travel speed is shown in red under that given speed. Multiply column **B** by the "**C**" value for that speed and divide by the **A** column to find the number of pounds of material discharged per 1000 square feet for the given speed. Record these numbers in the **D** columns. The full equation is shown here:

$$D = \frac{B \times C}{A}$$

Pony Motor-Run Spreader Calibration

NH Best Management Practices

WHY CALIBRATE?

You can't reduce your salt use if you don't know how much salt you actually use! The goal of calibrating is to know how much material you are putting down on a roadway or parking lot for every setting on your truck that you use. This is why calibrating your equipment is the first step to reducing salt use and saving money!

REMEMBER:

Each truck must be independently calibrated for each material it will be used to spread (the salt calibration card *will* be different than the sand calibration card).

Calibrations should be preformed annually, or after a spreader is serviced.

CALCULATIONS:

There are a few simple calculations you must perform in order to complete the calibration. Once all of the necessary data is recorded, head back inside and warm up! Refer to the reverse side of this fact sheet for calculation instructions.



Step 1: Load the Truck

Partially load the truck. Half of a full load should be more than adequate for calibration purposes.



Step 2: Set Your Controls

Gate Height: Set the gate height to its lowest practical setting to start (approximately 1" to 1.5"). After the truck is calibrated for the lowest gate setting, calibrate for each 1/2" increment greater than the lowest setting. Continue until all gate settings you use are calibrated.

Engine Speed: Set the pony motor speed to the maximum setting, or to the setting you would normally use.



Step 3: Measure Spread Width

Measure the width that the material covers during spreading. Do this for each gate setting you are calibrating. Round your numbers to the nearest half foot and record them in column "**W**" of the calibration chart (see reverse side).



Step 4: Collect & Weigh Material

You will need either a sheet of canvas, a tarp, or a bucket to collect the material that is dispensed from the spreader, as well as a scale. Weight the object you are using to collect the material in, and record that value in the purple box above the discharge rate column. Collect material for 1 minute. Weigh the collected material and subtract the weight of the tarp/canvas/bucket. Record this value in the first purple column of the calibration chart. Do this 3 times for each gate opening that is typically used. Average these three values together and record in the orange column in the calibration chart.

Step 5: Perform Calculations

Go inside and calculate your discharge rate using the calibration chart for each truck speed and gate setting you normally use. Refer to the reverse side of this fact sheet for calculation instructions. The formula you will be using is shown below:

$$D = \frac{B \times C}{A}$$

Step 6: Distribute Completed Calibration Cards!

Put a copy of the calibration card in the truck you just calibrated. Also, leave a copy of the calibration card in the office so you have a copy incase the original is damaged.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH

Calibration Chart (Pony Motor Type)

Material: _____ Truck/Spreader ID: _____

Date: _____ Performed by: _____

Tarp/Canvas/Bucket Weight: _____

Gate Opening	W	A	Discharge Rate (lb/min.)			B	D					
	Spread Width (ft.)	5.28 × W	Run 1	Run 2	Run 3	Average Discharge Rate *((Run1 + Run2 + Run3)/3)*	Pounds of Material Discharged per 1000 square ft. *(D = B × C ÷ A)*					
							5 mph (C = 12)	10 mph (C = 6)	15 mph (C = 4)	20 mph (C = 3)	25 mph (C = 2.4)	30 mph (C = 2)
1”												
1.5”												
2”												
2.5”												
3”												
EX	14	5.28 × 14= **73.92**	87	92	93	(87+92+93)÷3= **90.67**	12 × 90.67 ÷ 73.92= **14.72**	6 × 90.67 ÷ 73.92= **7.36**	4 × 90.67 ÷ 73.92= **4.91**	3 × 90.67 ÷ 73.92= **3.68**	2.4 × 90.67 ÷ 73.92= **2.94**	2 × 90.67 ÷ 73.92= **2.45**

Calculation Instructions: Multiply the spread width from column **W** by **5.28** and record the answer in column **A**. For each gate setting, add **Run 1**, **Run 2**, and **Run 3** together. Divide the result by **3** and record in column **B** to get the average discharge rate. To find the pounds of material discharge per 1000 square feet, you must know the number of minutes it takes to travel one mile at every truck speed you intend to calibrate for. These numbers are designated as variable “**C**”. The “**C**” value for each travel speed is shown in red under that given speed. Multiply column **B** by the “**C**” value for that speed and divide by the **A** column to find the number of pounds of material discharged per 1000 square feet for the given speed. Record these numbers in the **D** columns. The full equation is shown here:

$$D = \frac{B \times C}{A}$$

How Salt Works

NH Best Management Practices

BE PROACTIVE - ANTI-ICE

Anti-icing is the proactive method of preventing snow and ice from bonding to pavement. It can be more than 50% more efficient than deicing. See the NH Anti-Icing Factsheet for more information.

PRE-WETTING FOR FASTER ACTING SALT

Adding brine to salt before you apply it to pavement jump starts the melting process which means your pavement will be clear sooner. See the Pre-wetting Fact Sheet for more information.

KNOW YOUR LIMITS

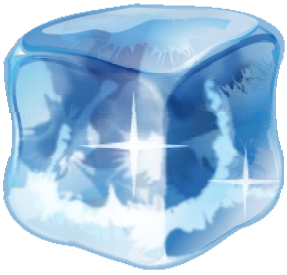
Dry salt becomes ineffective below 15°F if possible wait until the temperature rises before applying salt. At 30°F 1 lb of salt can melt 46.3 lb of ice in 5 minutes. At 15°F 1 lb of salt can melt 6.3 lb of ice in 1 hour.

PLOW FIRST

Always plow before applying any kind of chemical deicer to avoid pushing it away!

How Do We Melt Ice?

Ice can be melted by increasing the temperature, or lowering the freezing point of the water. It's not cost effective to use heat to melt ice on our roads so we use chemicals to reduce the freezing point—anything that will dissolve in water will work, including: salt, sugar, even alcohol!



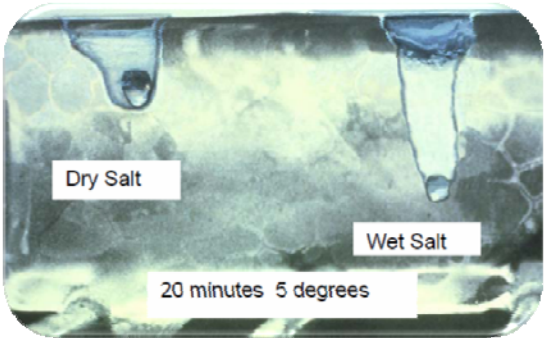


Why Use Salt?

Salt (Sodium Chloride) is the cheapest and most readily available chemical that efficiently melts ice and can be easily applied to our roadways and parking lots. However salt does corrode our cars and bridges, contaminates drinking water and pollutes our streams. Alternatives include potassium acetate, and calcium magnesium acetate (CMA), — all of which are considerably more expensive than calcium chloride, and have their own environmental concerns.

Brine Makes It Happen

The first step in melting ice is the formation of a brine. Salt crystals pull water molecules out of ice formation which creates a brine with a lower freeze point. Once the brine is formed melting is greatly accelerated. Save time and money by pre-wetting your salt with a brine before it hits the pavement to jump start melting! See the Pre-Wetting fact sheet for more information.



Source: Wisconsin DOT Transportation Bulletin #22



Save $$ and the Environment

In New Hampshire there are over 40 watersheds currently contaminated from road salt. As the pavement temperature drops more salt is required. As the pavement temperature rises less salt is required. Save money and the environment by using only what is needed to do the job. See NH application rate charts for recommended rates.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH

Anti-Icing

NH Best Management Practices

GET OUT EARLY

Typically anti-icing is most effective if applied 1-2 hours before the precipitation begins however it can be applied up to 24 hours in advance.

TRY IT FIRST

Trying anti-icing for the first time? Make a 23.3% brine solution and before a storm spray pavement on your own property using a masonry/ plant sprayer. Use this experiment to determine how best to use it with your clients.

LEAVE SOME PAVEMENT BARE

It's always best to use stream nozzles instead of fan tip to avoid creating a slippery condition. If the anti-icing liquid freezes the bare pavement will still provide a traction surface.

USE A FILTER

Having a filter in your liquid dispensing system will reduce clogs in your nozzle. Automotive in line fuel filters work quiet well. If your liquid dispenser is not functioning properly be sure to check the filter first.

A Proactive Treatment

Anti-Icing before a storm is very similar to using a non-stick spray on a pan before cooking. Just like a non-stick spray prevents food from bonding to the pan, anti-icing prevents snow and ice from bonding to the pavement so that it can be plowed away. Anti-icing can save you money as it costs 50% less than reactive deicing.





Make Your Own Salt Brine

When making brine it is important to add enough salt to produce a 23.3% solution which freezes around 0°F. Roughly 2.5lb per gallon of water will produce a 23.3% solution. You can verify using a salometer (~$20) a 23.3% solution will have a specific gravity of 1.176, or 85% salinity. Consult the Brine Making BMP sheet for more info.

How Much Should I Use and When?

You can apply brine up to 24 hours in advance of the storm. Typical application rates range from 0.5 to 0.75 gallon per 1000 sq.ft. (10' x 100' area). Other chemicals such as magnesium are also available—consult your supplier for application rates. Anti-icing is not advised prior to freezing rain events.





Getting Started

Try making your own salt brine by putting 13 lb of salt in 5 gallons of water to get a 23.3% salt brine solution. Mix the brine until all of the salt is dissolved. Using a masonry sprayer apply the liquid several hours before a storm. Start by applying about 0.25—0.5 gallons to a 10' x 50' area. Adjust the application rates based on your experience. Being careful not to over apply and cause a slippery condition.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH

Pre-wetting

NH Best Management Practices

PRE-WETTING?

Pre-wetting is the process of coating a solid de-icer with a liquid before it is spread on a roadway.

WHY PRE-WET?

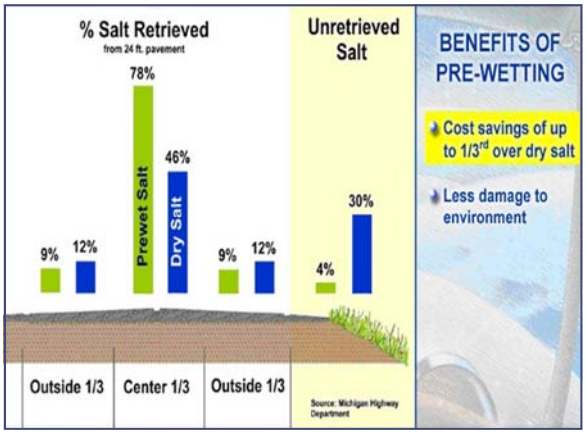
De-icing chemicals must form a brine before they can begin melting ice. Pre-wetting your chemicals accelerates the brine making process, which improves the melting action of the material. Pre-wetting also reduces bounce and scatter of material during spreading, and reduces the total amount of de-icer needed to obtain the desired results.

REDUCED RATES

If you are pre-wetting, don't forget to reduce your application rates accordingly. Reductions in the range of 15-20% are typical.

HOW MUCH LIQUID?

A good rule of thumb is to use 8-10 gallons of pre-wetting liquid for every ton of de-icer. For other chemicals, such as magnesium chloride, consult your supplier for application rates

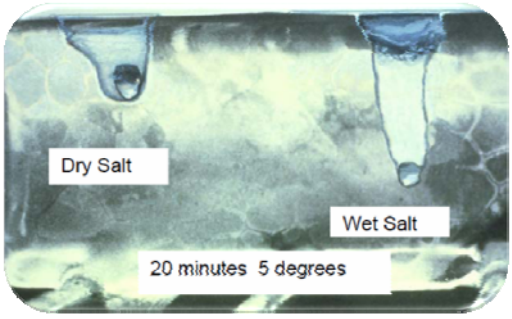


Pre-wetting Liquids

You have a few options for pre-wetting liquids. The most commonly used is a 23% sodium chloride brine solution. Calcium chloride at 32% solution is also used, as well as Magic Minus Zero™ and other patented products.

Getting Started

Wet the pile! There are two ways to pre-wet your de-icing chemicals. The easiest way to get started with pre-wetting is to spread your salt pile, spray it with pre-wetting liquid, mix it around, and re-pile it. More advanced truck mounted pre-wet systems can be installed on your trucks if you decide to make the investment.



Source: Wisconsin DOT Transportation Bulletin

Spraying the Pile

This is the easiest and most cost effective way to get started in pre-wetting. The first step is to spread your salt pile on a flat, impermeable surface. Next, spray the salt while it is spread out, and mix it around to ensure adequate and consistent liquid coverage. After the salt is sufficiently covered, re-stack the salt in your storage shed for later use.



Truck Mounted Systems

These systems are mounted in the truck bed and coat the de-icer with liquid as it comes off the conveyor/auger onto the spinner. These systems have the benefit of applying liquid only to the material you use as you use it. However, these systems must be installed on every truck that will be used to spread pre-wetted material.



Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH

Brine Making

NH Best Management Practices

GET THE LOWEST FREEZE POINT

When salt brine is 23% salt (measured with a hydrometer: 1.176, or with a salimeter: 85%) it has the lowest freeze point possible (about 0°F).

BRINE STORAGE

23% brine solution may be stored outside, however if temperatures get below 0°F the brine may freeze. A circulator pump will reduce the risk of freezing. If possible store brine indoors to eliminate risk of freezing.

COST OF BRINE

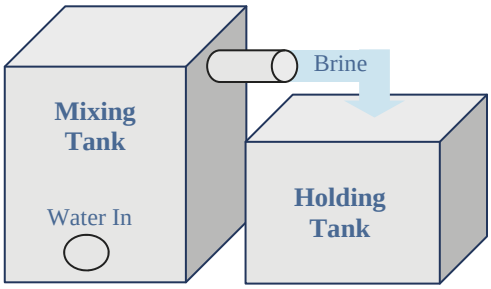
Calcium chloride brine costs about 7¢ / gallon (assuming $58/ton for salt) after you have your equipment setup.

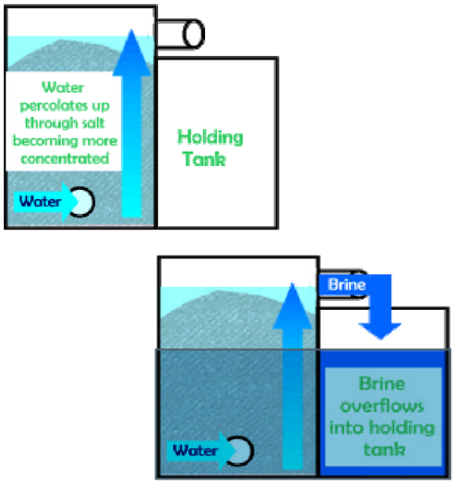
MULTIPLE USES

Brine can be used directly for anti-icing, for prewetting salt as it is dispensed from your truck, or to pretreat salt before it is loaded into your truck. Brine can be safely stored for up to a year, however, the concentration should be tested before use.

What Do You Need?

Brine making is a fairly simple process—the only ingredients are salt and water, and the only equipment you'll need is an open top mixing tank, a holding tank, a small pump, and a salimeter.





Images courtesy of Iowa DOT

Step 1: Fill Mixing Tank

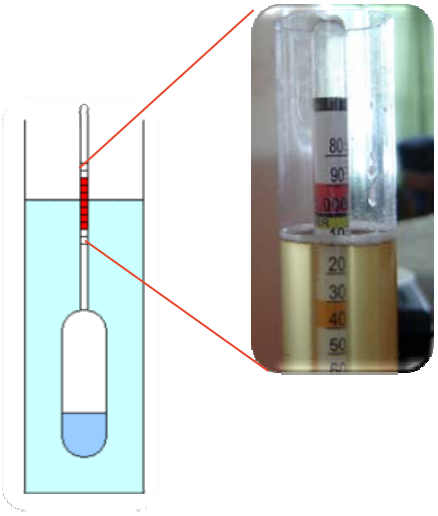
Add Salt: Add about 2.5 lb of salt per gallon of water you plan to add. Make sure your mixing tank has a large opening to make adding salt easy.

Add Water: Slowly add water from the bottom of your brine mixing tank. This will allow it to percolate up through the salt and overflow into the holding tank.

Step 2: Check Concentration

Float a hydrometer or salimeter directly in your holding tank and read the value at the surface of the water. The number should be either 85% or 1.176 depending on the units of your device.

If the values are too low, pump some brine from your holding tank back into the mixing tank and allow it to overflow. If values are too high simply add some fresh water





Quality Control & Documentation

Make sure that you record the date when you create each batch of brine and document who mixed it and checked the concentration. It is also a good idea to note the final concentration. These records should be kept for at least two years to protect your group in the event of litigation.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH

Material Storage and Housekeeping

NH Best Management Practices

IMPERMEABLE SURFACE STORAGE

Store salt and liquids on an impermeable surface to prevent groundwater contamination.

COVERED STORAGE AREAS

If possible, store your salt in a covered shed to prevent runoff. If there is not a shed available, cover your salt pile well with an impermeable membrane or tarp.

SECONDARY CONTAINMENT

Keep your liquids in an appropriate storage container. Secondary containment should be used incase a leak develops in the primary container.

PROPER DRAINAGE & COLLECTION

Protect your ground water supply! A drainage system should be in place to collect runoff from your salt pile, as well as to collect any liquids that may escape containment. Remember, the collected liquid can be used as a base for salt brine.

Proper Material Storage

Proper storage of materials (especially chemicals) is essential. If impermeable surfaces are NOT used in your storage facilities and brine infiltrates the ground or groundwater, you need to register with the DES under the Groundwater Discharge Permit and Registration Rules, Env-Wq 402. It is a free registration used for tracking potential contaminant sources.





Secondary Containment

Secondary containment for your liquid storage is a HIGHLY recommended technique to help reduce soil and groundwater contamination. If a tank Begins leak, the secondary containment prevents liquid from seeping into sensitive environments.

Liquid Storage

Brine stored using holding tanks must be managed so that there are no releases to drains, groundwater or surface water.




ENVIRONMENTAL
Fact Sheet
Environmental Services

Storage and Management of Deicing Materials

Need for Proper Management

NHDES Fact Sheet DWGB-22-30

This fact sheet outlines the basic required specifications for salt and chemical storage facilities. For additional information, please contact the Drinking Water and Groundwater Bureau at (603)271-2513 or dwgbinfo@des.nh.gov, or visit their website at: http://des.nh.gov/organization/divisions/water/dwgb/index.html. *The Salt Storage Handbook* contains more information and guidelines that should be referenced.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH

Smart Salting Practices

SMART SALTING PRACTICES

A checklist for snow and ice maintenance contractors.

Recommended practice	Check which response applies to current practices and anticipated site maintenance activities for job site.				
	Already do	Will do	Might do	Will not do	If "will not do"….why not?
Use an application rate chart.					
Calibrate equipment each year.					
Learn about the deicer ingredients and use the appropriate one for the condition.					
Look for reasons if and why materials are leaking or spilling from vehicles and fix them (e.g. gaps, overfilling, etc).					
Develop a comprehensive winter maintenance policy. Follow your policy.					
Measure and use pavement temperatures.					
Use anti-icing appropriately prior to the storm.					
Plow before applying deicers.					
Use wet materials (pre-wet or pre-treated).					
Don't apply sodium chloride (road salt) for pavement temperatures below 15ºF.					
Don't apply deicers for pavement temps under -10º F. It's too cold.					
Separate salt and sand. Use salt for melting. Use sand for traction.					
Apply deicers in the center of the road or on the high side of the curve.					
Store the salt in a building or under secure cover.					
Store salt away from water flow and direct the water away from storage area.					
Store snow away from lakes, ponds and wetlands.					
Sweep up sand, dispose of properly.					
For each event, document what you did and how well it worked. Use this information to make improvements.					

Checklist is adapted from worksheet created by Fortin Consulting as a part of the Minnesota Pollution Control Agency Smart Salting Voluntary Certification Program.

LONDONDERRY PLANNING BOARD
SITE PLAN APPLICATION & CHECKLIST

Planning Department Date Stamp

❑ **Design Review** ■ **Formal Application**

All information provided and submitted with this Application Checklist shall conform to the Londonderry Site Plan Regulations. ***Please note that the Planning Board may not accept and consider the application complete if the required items as outlined in the checklist are missing from the submittal.***

❑ Site Plan Amendment

I. General Information:

A. Project Name: Thornton Hill — 10 (Map) — 42 (Lot)

B. Project Location: 36 Pillsbury Road, Londonderry, NH — Zone: PUD-1

C. Primary Contact: Will Nuccio — Phone: 857-445-2012

■ Applicant ❑ Owner ❑ Engineer/Surveyor — E-Mail: [redacted]

D. Applicant's Name: Procopio Enterprises, Inc.

Address: [redacted] State: MA Zip: 01949

Phone: [redacted] Mail: [redacted]

Applicant Signature: Signed by: [redacted] 96198F84C7344FE... Date: 11/13/2025

E. Owner's Name: Pillsbury Realty Development, LLC

Address [redacted] City: Hudson State: NH Zip: 03051

Phone: _____ Fax: _____ E-Mail: [redacted]

Owner's Signature: Signed by: Kevin Smith E746E121820B463... Date: 11/13/2025

F. Engineer/Surveyor (Firm Name): Vanasse Hangen Brustlin, Inc. (VHB)

Address: [redacted] Zip: 03110

Phone: [redacted] Fax: _____ E-Mail: [redacted]

1) Name of Licensed Land Surveyor: Michael Hammer, LLS, PLS

Signature:

2) Name of Licensed Professional Engineer: Dave Fenstermacher, PE

Signature:

3) Name of Certified Soil Scientist: Sherrie Trefry, CCS

4) Name of Certified Wetland Scientist: Jake Tinus, CWS, CPESC

5) Name of Licensed Traffic Engineer: Jenn Conley, PE

G. Lot Area (SF) 4,101,435 Existing Building Footprint (SF): 0 Proposed Addition (SF) 219,107 (Cumulative)

☐ Change or ☐ Additional Use(s): _____

Site Plan Application Checklist

■ Additional Pavement (SF): 681,714 ■ Other Modification: See Compliance Alternative

II. General Requirements (All Applications):

		Provided	N/A	
1.	Executed Site Plan Application Form	■		
2.	Complete Abutters list, 3 sets mailing labels	■		
3.	Application Fees	q		Previously Paid, Feb. 2025
4.	Four (4) sets of plans and electronic "PDF" plans (See #11)	■		See #11
5.	Copies of proposed easement deeds, protective covenants or other legal documents	q	q	
6.	Waiver request(s) with justifications	q	q	1 Waiver Request, included
7.	Technical reports and supporting documents (Drainage report, Traffic Study, etc.)	■	q	
8.	Completed Site Plan Application Checklist	■		
9..	Escrow Agreement and Fees	q	q	
10..	Conditional Use Permit request(s) with justifications per Zoning	q	■	
11.	Response Letter to DRC Review and 2 highlighted plans (Plans may substitute for 2 sets required in #4 above)	■	q	

III. General Plan Information (All Plans):

		Provided	N/A
1.	Size and presentation of sheet(s) per requirements of the site plan regulations	q	
2.	Title block information:		
	a. Drawing title	■	
	b. Name of site plan	q	
	c. Location of site plan	q	
	d. Tax map & lot #s of subject parcel(s)	q	
	e. Name & address of owner(s)	q	
	f. Date of plan	q	
	g. Scale of plan	q	
	h. Sheet number	q	
	i. Name, address, & telephone number of design firm	■	
	j. Name and address of Applicant	■	
3.	Revision block	■	
4.	Planning Board approval block provided on appropriate sheets (Cover sheet, site plan, landscape plan only)	q	
5.	Certification block (for engineer, surveyor, soil scientist, or wetland scientist)	■	
6.	Match lines (if any)	■	q

Site Plan Application Checklist

IV. **Master Site Plan Sheet**: (Applicant may provide separate Title Sheet)

			Provided	N/A	
1.	The following notes shall be provided:				
	a.	Purpose of plan	■		
	b.	Tax map and lot #s of all subject parcels	■		
	c.	Area (existing & proposed) of subject parcel(s)	■		
	d.	Zoning designation of subject parcel(s)	■		
	e.	Min. lot area, frontages & setback dimensions	■		
	f.	Existing and proposed uses	■		
	g.	Parking calculations, as outlined in the Regulations	■		
	h.	% green area, as outlined in the Zoning Ordinance	■		
	i.	% building coverage, as outlined in the Zoning Ordinance	■		
	j.	Sanitary sewer source (name of provider company if offsite)	■		
	k.	Water supply source (name of provider company if offsite)	■		
	l.	Zoning variances/special exceptions with conditions	☐	☐	See compliance alternative
	m.	List FEMA sheet(s) used to identify 100-year flood elevation. (Note if no flood zone present as applicable)	■		
	n.	List of required permits and permit approval numbers	■	☐	
	o.	List of Planning Board waivers and Conditional Use Permits with Regulation or Ordinance section reference (if applicable)	■	☐	
	p.	Note identifying which plans are on file at the Town	■	☐	
	q.	Note the following: "If, during construction, it becomes apparent that deficiencies exist in the approved design drawings, the Owner shall be required to correct the deficiencies to meet the requirements of the regulations at no expense to the Town."	■	☐	
	r.	Note the following: "If, during construction, it becomes apparent that additional erosion control measures are required to stop any erosion on the construction site due to actual site conditions, the Owner shall be required to install the necessary erosion protection at no expense to the Town."	■	☐	
	s.	Note the following: "All materials and methods of construction shall conform to Town of Londonderry Site Plan Regulations and the latest edition of the New Hampshire Department of Transportation's Standard Specifications for Road & Bridge Construction."	■	☐	
	t.	Note the following: "In accordance with Section 6.01 of the Londonderry Site Plan Regulations and RSA § 676:13, all improvements specified on these site plans shall be constructed, completed, and inspected and approved by the Town of Londonderry prior to the issuance of a certificate of occupancy."	■	☐	

	u.	For sites requiring off-site improvements, note the following: "In accordance with Section 6.01 of the Londonderry Site Plan Regulations and RSA § 676:12, all off-site improvements specified on these site plans shall be constructed, completed, and inspected and approved by the Town of Londonderry (and/or the NHDOT, if applicable) prior to the issuance of a certificate of occupancy."	■	q
2.		Vicinity plan (at a scale of 1"=2500')	■	
3.		Plan index indicating all sheets	■	q

V. **Existing Conditions Plan:**

			Provided	**N/A**
1.		Surveyor's certification stamped and signed by LLS	■	
2.		Boundary of entire property by metes and bounds	■	q
3.		Boundary monuments:		
	a.	Monuments found	■	q
	b.	Monuments to be set	■	■
4.		Map # and Lot #, name addresses, and zoning of all abutting land owners	■	
5.		Existing streets:		
	a.	Name labeled	■	q
	b.	Status noted or labeled	■	q
	c.	Right-of-way dimensioned	■	q
	d.	Pavement width dimensioned	■	q
6.		Municipal boundaries (if any)	q	■
7.		Existing easements (identified by type)	■	q
8.		North arrow	■	
9.		Locus map (at a scale of 1" = 2,500)	■	
10.		Limits of wetlands & CO District Boundary	■	q
11.		Wetland delineation criteria & Certification	■	q
12.		SCS Soils (Boundary & Type)	■	
13.		Owner(s) signature(s)	■	
14.		All required setbacks (including any applicable buffers)	■	
15.		Existing physical features:		
		Buildings	■	q
		Wells	q	■
		Septic systems	■	q
		Stone walls	■	q
		Paved drives	■	q
		Gravel drives	■	q
16.		Location & name (if any) of any streams or waterbodies	■	q
17.		Location & elevation(s) of 100-year flood zone per FEMA Flood Insurance Study or as determined by drainage study	■	q
18.		Location of existing overhead utility lines, poles, towers, etc.	■	q
19.		Plan and deed references	■	q
20.		Zoning District boundary lines (if any)	■	q

Site Plan Application Checklist

VI. **Improvement Plans (Grading Plan, Utility Plan, etc. and Stamped by Engineer Licensed in NH):**

			Provided	N/A
1.	**Grading and Drainage Plan:**			
	a.	Existing topography (two-foot contour interval minimum)	☐	☐
	b.	Proposed contours	☐	☐
	c.	Existing spot elevations	☐	☐
	d.	Proposed spot elevations	☐	☐
	e.	Existing edge of pavement	☐	☐
	f.	Proposed edge of pavement	☐	☐
	g.	Existing curb line	☐	☐
	h.	Proposed curb line	☐	☐
	i.	Existing buildings and structures	☐	☐
	j.	Proposed buildings and structures	☐	☐
	k.	Existing retaining walls	☐	☐
	l.	Proposed retaining walls	☐	☐
	m.	Existing stone walls	☐	☐
	n.	Proposed and reconstructed stone walls	☐	☐
	o.	Wetland Mapping		
		1.) Wetland limits identified	☐	☐
		2.) Impact Area in square feet for each individual location	☐	☐
		3.) Mitigation areas (as may be required)	☐	☐
	p.	Existing treeline	☐	☐
	q.	Proposed treeline	☐	☐
	r.	Benchmarks	☐	☐
	s.	Existing drainage systems:		
		1) Pipes/culverts (each location):		
		i. Type	☐	☐
		ii. Size	☐	☐
		iii. Length and slope	☐	☐
		iv. Inverts	☐	☐
		v. End sections/Headwalls	☐	☐
		2) Structures (catch basins, drain manholes, special structures):		
		i. Location (station and off-set)	☐	☐
		ii. Type	☐	☐
		iii. Size	☐	☐
		iv. Rim Elevations	☐	☐
		v. Inverts	☐	☐
		3) Swales/Ditches/Waterways:		
		i. Flow arrows (direction of flow)	☐	☐
		ii. Topography	☐	☐
		iii. Spot elevations	☐	☐
	t.	Proposed Drainage Systems:		
		1) Pipes/culverts (each location):		
		i. Type	☐	☐
		ii. Size	☐	☐
		iii. Length and slope	☐	☐
		iv. Inverts	☐	☐
		v. End sections/headwalls	☐	☐
		vi. Identify minimum cover and location	☐	☐
		vii. Outlet erosion protection	☐	☐

Site Plan Application Checklist

			Provided	N/A
2)	Structures (catchbasins, drain manholes, special structures):			
	i.	Location (sta. and off-set)	■	q
	ii.	Type	■	q
	iii.	Size	■	q
	iv.	Rim elevations	■	q
	v.	Inverts	■	q
3)	Swales/ditches/waterways:			
	i.	Flow arrows (direction of flow)	■	q
	ii.	Grading	■	q
	iii.	Spot elevations	■	q
	iv.	Erosion protection (riprap, matting, etc.)	■	q
u.	Temporary erosion protection during construction:			
1)	Silt fence, haybales, etc.		■	q
2)	Matting, mulch, etc.		■	q
v.	Tree protection for existing areas and/or individual trees 15” in diameter or greater		■	q
w.	Plan note stating that the edge of the Conservation Overlay District and Non-Distubance Zones shall be appropriately delineated in the field prior to construction		■	q

2. Utilities Plan:

			Provided	N/A
a.	Existing sanitary sewer system:			
1)	Pipes:			
	i.	Type	q	■
	ii.	Size	q	■
	iii.	Length and slope	q	■
2)	Structures:			
	i.	Location (sta. and off-set)	q	■
	ii.	Type	q	■
	iii.	Size	q	■
	iv.	Rim elevations	q	■
	v.	Inverts	q	■
b.	Proposed sanitary sewer system:			
1)	Pipes (gravity):			
	i.	Type	■	q
	ii.	Size	■	q
	iii.	Length and slope	■	q
	iv.	Separation (18" below water)	■	q
	v.	Identify minimum cover and locations	■	q
2)	Force Main:			
	i.	Type	q	■
	ii.	Size	q	■
	iii.	Direction of flow (flow arrows)	q	■
	iv.	Bends and thrust blocking	q	■
	v.	Air relief valves and structures	q	■
	vi.	Clean-out structures	q	■
	vii.	Identify minimum cover and locations	q	■
3)	Structures:			
	i.	Location (sta. and off-set)	■	q
	ii.	Type	■	q
	iii.	Size	■	q
	iv.	Rim elevations	■	q
	v.	Inverts	■	q
4)	Service laterals to each individual lot:			
	i.	Type	■	q

			Provided	N/A
	ii.	Size	■	q
	iii.	Length and slope	■	q
	iv.	Separation (18" below water)	■	q
	v.	Minimum cover and locations identified	■	q
	vi.	Location of connection	■	q
c.	Existing Water System:			
1)	Pipes:			
	i.	Type	■	q
	ii.	Size	■	q
2)	Hydrants		■	q
3)	Valves		■	q
4)	Bends and thrust blocks		■	q
5)	Tees		■	q
d.	Proposed Water System:			
1)	Pipes:			
	i.	Type	■	q
	ii.	Size	■	q
2)	Hydrants			
	i.	Locations approved by Fire Department	■	q
3)	Valves		■	q
4)	Bends and thrust blocks		■	q
5)	Tees		■	q
e.	Existing Gas Lines:			
1)	Pipes:			
	i.	Type	■	q
	ii.	Size	■	q
2)	Valves		■	q
f.	Proposed Gas Lines:			
1)	Pipes:			
	i.	Type	q	■
	ii.	Size	q	q
2)	Valves		q	■
3)	Services to each lot		q	■
g.	Telephone/Electrical/Cable:			
1)	U-poles		■	q
2)	Pedestals/transformers		■	q
3)	Overhead lines		■	q
4)	Underground lines		q	q
5)	Services to each lot		■	q

} Project to be electric only, no gas proposed.

3. **Roadways:** If streets are to be built as part of a site plan (e.g., for a multi-family residential site plan), then the design of such streets shall comply with Section 3.09 of the Londonderry Subdivision Regulations, please see Subdivision Application Checklist.

VII. **Landscape Plan (Section 3.09):**

		Provided	N/A
1.	General Information		
a.	Native Plants as suggested by Appendix LS1	■	q
b.	No use of Invasive materials as listed in Appendix LS2	■	q
c.	Plant materials meet winter hardiness requirement	■	q

Site Plan Application Checklist

			Provided	N/A
	d.	Proposed materials are of proper caliper or height	■	q
	e.	Stone walls incorporated into Landscape Plan	■	q
	f.	Existing vegetation preservation (no-cut) areas described by metes and bounds and monumented	■	q
	g.	Landscaping Calculations	■	q
	h.	Plant Schedule	■	q
	I.	Landscaping Details	■	q
	j.	Tree Protection Detail	■	q
	k.	Note on Plan stating No Plant Conflicts with Snow Storage Areas, Light Fixtures, Underground Utilities	■	q
	l.	Note on Plan stating No Landscaping Conflicts with Sight Distance	■	q
	m.	Submit a Landscape Master Sheet for Review (Landscaping, site features, snow storage, light poles, detention basin edges, grading, utilities)	■	q
2.	Parking Lot Landscaping			
	a.	Interior landscaping percentage based on Section 3.11e	q	■
	b.	Interior shade trees @ 1 per 15 parking spaces	q	■
	c.	Perimeter shade trees @ 1 per 20 parking spaces OR 1 per 50 feet of perimeter with buffer required	q	■
	d.	Screening provides proper vertical opacity per Section 3.11e	q	■

VIII. Illumination Plan & Lighting Details (Section 3.13):

		Provided	N/A
1.	Full Cut-Off Fixtures with plan note stating all lights are full cut-off fixtures as required	■	q
2.	Shielded, downcast building/external signage lighting	■	q
3.	No direct light source at residential property lines	■	q
4.	Plan to scale with illumination levels shown in footcandles	q	q
5.	Specification (details) for all proposed lighting fixtures including photometric data, designation as IESNA “cut-off” fixtures, Color Rendering Index (CRI) of all lamps (bulbs), and other descriptive information about fixtures	q	q
6.	Proposed mounting height of all exterior lighting fixtures	■	q
7.	Illumination levels not to exceed 0.2 footcandles at any property line (Except at driveway intersections per Regulations)	q	q
8.	Gas Station Canopies to meet requirements of Appendix Light 2	q	■

IX. Building Design & Renderings (Section 3.12):

1.	Building Elevations/Renderings in compliance with Section 3.13	■	q
2.	Signage renderings/details	■	q
3.	Large Retail Establishments - Comply with Section 3.13H	q	■

Site Plan Application Checklist

X. Construction Detail Drawings:

Note: ***Construction details to conform with NHDOT Standards & Specifications for Roads & Bridges, Town of Londonderry Department of Public Works requirements, and Subdivision & Site Plan Regulations***

		Provided	N/A
1.	Typical cross-section of pavement	☐	☐
2.	Typical driveway apron detail	☐	☐
3.	Curbing detail	☐	☐
4.	Guardrail detail	☐	☐
5.	Sidewalk detail	☐	☐
6.	Traffic signs and pavement markings	☐	☐
7.	Typical underdrain trench detail	☐	☐
8.	Drainage structure(s):		
	a. Catchbasin (including frame and grate)	☐	☐
	b. Manhole (including frame and cover)	☐	☐
	c. Outlet structure (detention basins)	☐	☐
	d. Headwalls	☐	☐
	e. Flared end sections	☐	☐
9.	Outlet protection riprap apron	☐	☐
10.	Level spreader	☐	☐
11.	Treatment swale	☐	☐
12.	Typical section at detention basin	☐	☐
13.	Typical pipe trench:		
	a. Drainage	☐	☐
	b. Sewer	☐	☐
	c. Water	☐	☐
	d. Utilities	☐	☐
14.	Sewer structures:		
	a. Manholes (including frame and cover, inverts)	☐	☐
	b. Drop manholes	☐	☐
	c. Special structures (pump stations, blowoffs, etc.)	☐	☐
	d. Pipe manhole joint details	☐	☐
15.	Typical sewer lateral service connection detail	☐	☐
16.	Project specific sewer details (sleeves, etc.)	☐	☐
17.	Typical sewer notes (per NHDES & Sewer Div. requirements)	☐	☐
18.	Hydrant detail	☐	☐
19.	Thrust block details	☐	☐
20.	Valve box detail	☐	☐
21.	Typical water connection service detail	☐	☐
22.	Erosion control details:		
	a. Haybale barriers at waterways	☐	☐
	b. Silt fence	☐	☐
	c. Stone check dam	☐	☐
	d. Stone construction entrance	☐	☐
	e. Inlet filter basket	☐	☐
	f. Haybale barrier at catchbasin	☐	☐

24.	Notes:			
	a.	General notes as required by the Department of Public Works	■	q
	b.	Construction sequence	■	q
	c.	Erosion control notes	■	q
	d.	Turf establishment notes	■	q
	e.	Sewer construction notes (as required by Sewer Ordinance)	■	q
	f.	Water system construction notes (as required by local water company)	q	q
25.	Tree protection details		■	q

XI. Supporting Documentation:

			Provided	N/A	
1.	Traffic Impact Analysis:				Previously submitted, August 19, 2025
	a.	Traffic Impact analysis as required by Section 3.14	■	q	
2.	Stormwater management report including the following:				
	a.	Table of contents	■	q	
	b.	Narrative statement (including conclusions)	■	q	
	c.	Summary table comparing existing and post-development conditions	■	q	
	d.	Summary table of data for each pipe & piping system:			
		1.) Discharge	■	q	
		2.) Depth of flow	■	q	
		3.) Velocity	■	q	
	e.	Summary table of data for each swale & channel:			
		1.) Discharge	■	q	
		2.) Depth of flow	■	q	
		3.) Velocity	■	q	
	f.	Project location plan (on USGS quadrangle)	■	q	
	g.	Watershed area plan for existing condition	■	q	
	h.	Watershed area plan for post-development condition	■	q	
	i.	Runoff calculations for existing & post-development conditions	■	q	
	j.	Flood routing calculations for each detention basin	■	q	
	k.	Design for water quality treatment facilities (level spreaders, treatment swales, etc.)	■	q	
	l.	Riprap design calculations	■	q	
	m.	Report stamped by licensed professional engineer in NH	■	q	
3.	Fiscal impact study provided (if required)		q	■	
4.	Off-site improvements:				
	a.	Design plans included in the project drawings	■	q	
	b.	Arrangements and agreements	q	■	
	c.	Easements	q	■	
5.	Utility clearance letters (as applicable):				
	a.	Electric	q	q	
	b.	Telephone	q	q	
	c.	Cable television	q	q	
	d.	Gas	q	q	
	e.	Water	q	q	
	f.	Sewer	q	q	Pending Review, Londonderry Engineering Dept.
6.	Other project-specific information as required by the Design Review Committee (DRC)		q	■	

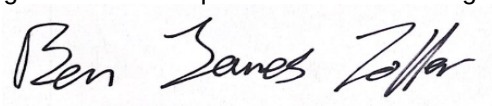
Site Plan Application Checklist

XII. Required Project Permits (as applicable to applications):

		Provided	N/A	App Submitted	
1.	NHDES site-specific approval	q	■	q	
2.	NHDES wetlands permit	q	q	q	
3.	NHDES sewer discharge permit	q	q	q	To be submitted
4.	NHDES water supply permit	q	q	q	To be submitted
5.	NHDES dam permit	q	■	q	
6.	NHDOT driveway permit	q	■	q	
7.	Londonderry ZBA variance(s)/special exception(s)	q	q	q	See compliance alternative
8.	Londonderry sewer discharge permit	q	q	q	To be submitted
9.	Army Corps of Engineers	q	■	q	
10.	Federal Aviation Administration	q	■	q	
11.	Other federal, state or local permits (if applicable) for project	q	q	q	Submitted: NHDES AoT To Be Submitted: NHDES Sewer Connection Permit

XIII. Acknowledgment and Signature:

The undersigned acknowledges he/she has read and understands all of the Town's current zoning, subdivision, site plan, and health regulations and requirements for obtaining all required local, state, and federal permits. .



(Signature of person preparing plans)

Benjamin J. Zoller, PE
(Name)

Site/Civil Engineer, VHB
(Title)

02/19/2025
(Date)

Site Plans

Issued for	**Permitting**
Date Issued	**October 14, 2025**
Latest Issue	**February 12, 2026**

Rosecrans Drive at Thornton Hill

44 Pillsbury Road
Londonderry, NH 03053



Sheet Index

No.	Drawing Title	Latest Issue
C1.00	Legend and General Notes	2/12/2026
C1.01	Condominium Plan	2/12/2026
C2.00	Overall Site Plan	2/12/2026
C2.01-C2.03	Layout and Materials Plans	2/12/2026
C2.04	Sight Distance Plan	2/12/2026
C2.05	Sight Distance Plan and Profile	2/12/2026
C2.06	Vehicle Access Plan	2/12/2026
C3.00-C3.03	Grading and Drainage Plans	2/12/2026
C4.00-C4.03	Utility Plans	2/12/2026
C5.01-C5.03	Roadway Plan and Profile Plans	2/12/2026
C6.00-C6.03	Erosion Control Plans	2/12/2026
C7.01-C7.08	Site Detail Plans	2/12/2026
C8.00	Overall Sequencing Plan	2/12/2026
C9.01	Inspection & Maintenance Notes	2/12/2026
C9.02	Inspection & Maintenance Logs	2/12/2026
L1.00	Overall Landscape Plan	2/12/2026
L1.01-L1.03	Landscape Plans	2/12/2026
L2.01	Landscape Details	2/12/2026

Reference Drawings

No.	Drawing Title	Latest Issue
Sv1.0	Existing Conditions Master Plan	February 12, 2026
Sv1.1-Sv1.3	Existing Conditions Plan of Land	February 12, 2026
A1.00-A3.00	Architectural Drawings	February 6, 2026
L-1	Site Photometric Plan	February 10, 2026

Owner

Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Applicant

Procopio Enterprises, LLC
35 Village Road
7th Floor (702)
Middleton, MA 01949

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Civil Engineer/Landscape Architect
VHB
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Architect
Utile
115 Kingston Street
Boston, MA 02111
617.423.7200

Surveyor
VHB
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Northern Black Racer

(New Hampshire state-threatened species)

NHFG Wildlife Biologist Contacts:
Melissa Winters 603-479-1129 and Brendan Clifford 603-944-0885

- **Emerge from hibernacula in April, Basking April - August**
- **Hatchlings emerge August - September, Return to hibernacula mid-September - mid-October**
- **Found in a variety of habitats but prefer early successional and sandy (sand pit) sites.**





- Solid black with a white thrat and chin
- Slender with glossy scales, 3-6 ft. long
- Hatchlings are very small and patterned





Northern black racers are protected by state laws. It is illegal to capture, harass or harm these species, including their nests. Handle ONLY if necessary to move out of harms way. Move to the nearest location in the direction they were moving and contact NHFG. Do not disturb nests. Fis 1401.03 (a) No person shall take or possess a black racer (Coluber constrictor)...or any egg or part thereof.

Report sightings in accordance with NHFG permit conditions. Contact NHFG Wildlife Biologist Melissa Winters 603-479-1129 (cell) and Brendan Clifford 603-944-0885 (group text preferred) if a turtle is observed nesting or a nest site is suspected within the project area. Please report promptly, noting specific location, project site and date – Photographs strongly encouraged to be included with report.

NEW HAMPSHIRE
SPECIES OF CONCERN

WOOD TURTLE

Report Sightings: Contact Wildlife Biologist Josh Megyesy at (603) 271 – 1125 or the Wildlife Division at (603) 271 – 2461. Observation reports can be sent to RAARP@wildlife.nh.gov. Photographs and exact locations are strongly encouraged.



Specific Information:
- Adults are 5 – 8 inches long.
- Neck and front limbs are orange.
- Associated with streams and rivers where they hibernate. Use surrounding fields, forests, and floodplains extensively during active period.
- Turtles are frequently concealed by leaves and undergrowth and may not be easily visible.
- Turtles are most active from April 15 – October 15.
- During nesting season (May 15 – July 15) turtles are attracted to disturbed ground.





This species is protected under Fis 1400. Thank you for reporting any observations.

PLEASE DO NOT DISTURB OR HANDLE WILDLIFE

Assessor's Map: 10
Lot: 15

OWNER'S SIGNATURE

Signed by: Kevin Smith
1B4EADDCA6B2434...

OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

Certified By: _____

_____

STATE OF NEW HAMPSHIRE
ERIC K. GERADE
No.13672
LICENSED
PROFESSIONAL ENGINEER
2/12/2026

\\VHB.COM\GBLPRO\BEDFORD\53140.00 36 PILLSBURY RD LONDOND\CAD\LDV\CONCEPTS\44 PILLSBURY RD\CAD\LDV\PLANSETS\53140 44-COV
12 February 2026

VHB Project : 53140.00 44 Pillsbury Road
Issued for : Permitting 2/12/2026

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-LG.dwg

Legend

Exist.	Prop.	
		PROPERTY LINE
		PROJECT LIMIT LINE
		RIGHT-OF-WAY/PROPERTY LINE
		EASEMENT
		BUILDING SETBACK
		PARKING SETBACK
10+00	10+00	BASELINE
		CONSTRUCTION LAYOUT
		ZONING LINE
		TOWN LINE
		LIMIT OF DISTURBANCE
WL	WL	WETLAND LINE WITH FLAG
		FLOODPLAIN
BLS	BLS	BORDERING LAND SUBJECT TO FLOODING
BZ	BZ	WETLAND BUFFER ZONE
NDZ	NDZ	NO DISTURB ZONE
200'RA	200'RA	200' RIVERFRONT AREA
		SWALE
		GRAVEL ROAD
EOP	EOP	EDGE OF PAVEMENT
BB	BB	BITUMINOUS BERM
BC	BC	BITUMINOUS CURB
CC	CC	CONCRETE CURB
CG	CG	CURB AND GUTTER
CC	ECC	EXTRUDED CONCRETE CURB
CC	MCC	MONOLITHIC CONCRETE CURB
CC	PCC	PRECAST CONC. CURB
SGE	SGE	SLOPED GRAN. EDGING
VGC	VGC	VERT. GRAN. CURB
		LIMIT OF CURB TYPE
		SAWCUT
		BUILDING
EN	EN	BUILDING ENTRANCE
LD	LD	LOADING DOCK
		BOLLARD
D	D	DUMPSTER PAD
		SIGN
		DOUBLE SIGN
		STEEL GUARDRAIL
		WOOD GUARDRAIL
		PATH
		TREE LINE
		WIRE FENCE
		FENCE
		STOCKADE FENCE
		STONE WALL
		RETAINING WALL
		STREAM / POND / WATER COURSE
		DETENTION BASIN
		HAY BALES
		SILT FENCE
		SILT SOCK / STRAW WATTLE
4	4	MINOR CONTOUR
20	20	MAJOR CONTOUR
10	10	PARKING COUNT
	C10	COMPACT PARKING STALLS
DYL	DYL	DOUBLE YELLOW LINE
SL	SL	STOP LINE
		CROSSWALK
		ACCESSIBLE CURB RAMP
		ACCESSIBLE PARKING
VAN	VAN	VAN-ACCESSIBLE PARKING

Exist.	Prop.	
		CONCRETE
		HEAVY DUTY PAVEMENT
		BUILDINGS
		RIPRAP
		CONSTRUCTION EXIT
27.35 TC×	27.35 TC×	TOP OF CURB ELEVATION
26.85 BC×	26.85 BC×	BOTTOM OF CURB ELEVATION
132.75 ×	132.75 ×	SPOT ELEVATION
45.0 TW 38.5 BW	45.0 TW× 38.5 BW	TOP & BOTTOM OF WALL ELEVATION
		BORING LOCATION
		TEST PIT LOCATION
MW	MW	MONITORING WELL
UD	UD	UNDERDRAIN
12"D	12"D	DRAIN
6"RD	6"RD	ROOF DRAIN
12"S	12"S	SEWER
FM	FM	FORCE MAIN
OHW	OHW	OVERHEAD WIRE
6"W	6"W	WATER
4"FP	4"FP	FIRE PROTECTION
	2"DW	DOMESTIC WATER
G	G	GAS
E	E	ELECTRIC
STM	STM	STEAM
T	T	TELEPHONE
FA	FA	FIRE ALARM
CATV	CATV	CABLE TV
		CATCH BASIN CONCENTRIC
		CATCH BASIN ECCENTRIC
		DOUBLE CATCH BASIN CONCENTRIC
		DOUBLE CATCH BASIN ECCENTRIC
		GUTTER INLET
		DRAIN MANHOLE CONCENTRIC
		DRAIN MANHOLE ECCENTRIC
		TRENCH DRAIN
		PLUG OR CAP
CO	CO	CLEANOUT
		FLARED END SECTION
		HEADWALL
S	S	SEWER MANHOLE CONCENTRIC
S	S	SEWER MANHOLE ECCENTRIC
CS	CS	CURB STOP & BOX
WV	WV	WATER VALVE & BOX
TSV	TSV	TAPPING SLEEVE, VALVE & BOX
	HYD	FIRE DEPARTMENT CONNECTION
HYD	HYD	FIRE HYDRANT
WM	WM	WATER METER
PIV	PIV	POST INDICATOR VALVE
W	W	WATER WELL
GG	GG	GAS GATE
GM	GM	GAS METER
EMH	EMH	ELECTRIC MANHOLE
EM	EM	ELECTRIC METER
		LIGHT POLE
TMH	TMH	TELEPHONE MANHOLE
T	T	TRANSFORMER PAD
		UTILITY POLE
		GUY POLE
		GUY WIRE & ANCHOR
HH	HH	HAND HOLE
PB	PB	PULL BOX
		MATCHLINE

Abbreviations

General

ABAN	ABANDON
ACR	ACCESSIBLE CURB RAMP
ADJ	ADJUST
APPROX	APPROXIMATE
BIT	BITUMINOUS
BS	BOTTOM OF SLOPE
BWLL	BROKEN WHITE LANE LINE
CONC	CONCRETE
DYCL	DOUBLE YELLOW CENTER LINE
EL	ELEVATION
ELEV	ELEVATION
EV	ELECTRIC VEHICLE CHARGING SPACE
EX	EXISTING
FDN	FOUNDATION
FFE	FIRST FLOOR ELEVATION
GRAN	GRANITE
GTD	GRADE TO DRAIN
LA	LANDSCAPE AREA
LOD	LIMIT OF DISTURBANCE
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PERF	PERFORATED
PROP	PROPOSED
REM	REMOVE
RET	RETAIN
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
SWEL	SOLID WHITE EDGE LINE
SWLL	SOLID WHITE LANE LINE
TS	TOP OF SLOPE
TYP	TYPICAL

Utility

CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
DCB	DOUBLE CATCH BASIN
DMH	DRAIN MANHOLE
CIP	CAST IRON PIPE
COND	CONDUIT
DIP	DUCTILE IRON PIPE
FES	FLARED END SECTION
FM	FORCE MAIN
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GI	GUTTER INLET
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
INV	INVERT ELEVATION
I=	INVERT ELEVATION
LP	LIGHT POLE
MES	METAL END SECTION
PIV	POST INDICATOR VALVE
PWW	PAVED WATER WAY
PVC	POLYVINYLCHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
R=	RIM ELEVATION
RIM=	RIM ELEVATION
SMH	SEWER MANHOLE
TSV	TAPPING SLEEVE, VALVE AND BOX
UG	UNDERGROUND
UP	UTILITY POLE

Notes

General

1. THE PURPOSE OF THESE PLANS IS TO DEPICT THE PROPOSED SITE DEVELOPMENT OF 60 SINGLE FAMILY CONDOMINIUM HOMES (3 BEDROOMS).
2. CONTRACTOR SHALL NOTIFY "DIG-SAFE" (811 OR 1-888-344-7233) AT LEAST 72 HOURS BEFORE EXCAVATING.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
4. ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
5. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE 6 INCHES LOAM AND SEED.
6. WITHIN THE LIMITS OF THE BUILDING FOOTPRINT, THE SITE CONTRACTOR SHALL PERFORM EARTHWORK OPERATIONS REQUIRED UP TO SUBGRADE ELEVATIONS.
7. WORK WITHIN THE LOCAL RIGHTS-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS. WORK WITHIN STATE RIGHTS-OF-WAY SHALL CONFORM TO THE LATEST EDITION OF THE STATE HIGHWAY DEPARTMENTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
8. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
9. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
10. 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.
11. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
12. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
13. DAMAGE RESULTING FROM CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
14. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
15. THIS PROJECT DISTURBS MORE THAN ONE ACRE OF LAND AND FALLS WITHIN THE NPDES CONSTRUCTION GENERAL PERMIT (CGP) PROGRAM AND EPA JURISDICTION. PRIOR TO THE START OF CONSTRUCTION CONTRACTOR IS TO FILE A CGP NOTICE OF INTENT WITH THE EPA AND PREPARE A STORMWATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH THE NPDES REGULATIONS. CONTRACTOR SHALL CONFIRM THE OWNER HAS ALSO FILED A NOTICE OF INTENT WITH THE EPA.

Utilities

1. THE UTILITY COMPANIES SERVICING THE PROJECT AREA ARE:

   A. WATER: PENNICHUCK WATER WORKS
   B. SEWER: LONDONDERRY DEPARTMENT OF PUBLIC WORKS
   C. ELECTRIC: EVERSOURCE
   D. TELEPHONE: CONSOLIDATED COMMUNICATIONS
   E. CABLE TV: COMCAST

2. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR IT'S REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND, SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY.
3. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT AND CONTRACTOR'S FAILURE TO NOTIFY PRIOR TO PERFORMING ADDITIONAL WORK RELEASES OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT.
4. SET CATCH BASIN RIMS, AND INVERTS OF SEWERS, DRAINS, AND DITCHES IN ACCORDANCE WITH ELEVATIONS ON THE GRADING AND UTILITY PLANS.
5. RIM ELEVATIONS FOR DRAIN AND SEWER MANHOLES, WATER VALVE COVERS, GAS GATES, ELECTRIC AND TELEPHONE PULL BOXES, AND MANHOLES, AND OTHER SUCH ITEMS, ARE APPROXIMATE AND SHALL BE SET/RESET AS FOLLOWS:

   A. PAVEMENTS AND CONCRETE SURFACES: FLUSH
   B. ALL SURFACES ALONG ACCESSIBLE ROUTES: FLUSH
   C. LANDSCAPE, LOAM AND SEED, AND OTHER EARTH SURFACE AREAS: ONE INCH ABOVE SURROUNDING AREA AND TAPER EARTH TO THE RIM ELEVATION.

5. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT.
6. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITIES COMPANY.

7. UTILITY PIPE MATERIALS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED ON THE PLAN:

   A. WATER PIPES SHALL BE CEMENT LINED DUCTILE IRON CLASS 52
   B. SANITARY SEWER PIPES SHALL BE POLYVINYL CHLORIDE SDR 35 MINIMUM (PVC) SEWER PIPE
   C. STORM DRAINAGE PIPES SHALL BE REINFORCED CONCRETE PIPE OR ADS N12 PIPE

8. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR AND SHALL FURNISH EXCAVATION, INSTALLATION, AND BACKFILL OF ELECTRICAL FURNISHED SITEWORK RELATED ITEMS SUCH AS PULL BOXES, CONDUITS, DUCT BANKS, LIGHT POLE BASES, AND CONCRETE PADS. SITE CONTRACTOR SHALL FURNISH CONCRETE ENCASEMENT OF DUCT BANKS IF REQUIRED BY THE UTILITY COMPANY AND AS INDICATED ON THE DRAWINGS.
9. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN.) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS AND LOCAL MUNICIPAL STANDARDS. FOR MANHOLES THAT ARE 20 FEET IN DEPTH AND GREATER, THE MINIMUM DIAMETER SHALL BE 5 FEET.

Layout and Materials

1. DIMENSIONS ARE FROM THE FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
2. CURB RADII ARE 3 FEET UNLESS OTHERWISE NOTED.
3. CURBING SHALL BE CAPE COD BERM (CCB) WITHIN THE SITE UNLESS OTHERWISE INDICATED ON THE PLANS.
4. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND DETAILS CONTIGUOUS TO THE BUILDING, INCLUDING SIDEWALKS, RAMPS, BUILDING ENTRANCES, STAIRWAYS, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
5. PROPOSED BOUNDS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A LICENSED LAND SURVEYOR (LLS).
6. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.

Document Use

1. THESE PLANS AND CORRESPONDING CADD DOCUMENTS ARE INSTRUMENTS OF PROFESSIONAL SERVICE, AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN FOR WHICH IT WAS CREATED WITHOUT THE EXPRESSED, WRITTEN CONSENT OF VHB. ANY UNAUTHORIZED USE, REUSE, MODIFICATION OR ALTERATION, INCLUDING AUTOMATED CONVERSION OF THIS DOCUMENT SHALL BE AT THE USER'S SOLE RISK WITHOUT LIABILITY OR LEGAL EXPOSURE TO VHB.
2. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.
3. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.
4. ALL APPROVED PROJECT PLANS WILL BE ON FILE AT THE TOWN OF LONDONDERRY DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT.

Construction Sequence

1. SURVEY AND STAKE LIMITS OF CLEARING AND GRUBBING.
2. INSTALL SILT FENCING, STRAW BALES, CONSTRUCTION EXITS, ETC. PRIOR TO START OF CONSTRUCTION, TO BE MAINTAINED UNTIL COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER.
3. CLEAR AND GRUB ALL AREAS TO BE DISTURBED BY CONSTRUCTION AND PERFORM DEMOLITION OPERATIONS.
4. REPAIR, CLEAN, AND REPLACE ANY SEDIMENT CONTROLS DAMAGED DURING AND/OR AFTER RAINFALL EVENTS.
5. STRIP LOAM AND PAVEMENT, OR RECLAIM EXISTING PAVEMENT WITHIN LIMITS OF WORK AND STOCKPILE EXCESS MATERIAL.
6. CONSTRUCT TEMPORARY SEDIMENTATION BASINS AS REQUIRED.
7. PONDS AND SWALES SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE.
8. PERFORM PRELIMINARY SITE GRADING AND CONSTRUCT TEMPORARY DIVERSION SWALES AS REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT THE PRELIMINARY GRADING ALLOWS SURFACE WATER RUN-OFF FROM UNSTABILIZED AREAS TO FLOW TOWARDS THE TEMPORARY SEDIMENTATION BASINS.
9. PREPARE BUILDING PAD TO ENABLE BUILDING CONSTRUCTION TO BEGIN.
10. INSTALL SEWER SYSTEM, DRAINAGE SYSTEM, AND OTHER UTILITIES IN ACCORDANCE WITH THE PLANS AND DETAILS.
11. INSTALL STRAW BALES AND INLET PROTECTION AT ALL CATCH BASINS AS THEY ARE CONSTRUCTED, IN ACCORDANCE WITH THE DETAILS.
12. PERFORM FINAL/FINE GRADING INCLUDING SLOPE STABILIZATION BLANKETS.
13. PERFORM ALL REMAINING SITE CONSTRUCTION. (I.E. BUILDING AND PAVEMENT AREAS).
14. LOAM AND SEED ALL DISTURBED AREAS.
15. REMOVE TEMPORARY EROSION CONTROL MEASURES, SILT FENCE, ETC. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER.
16. CLEAN ALL DRAINAGE BASINS, STRUCTURES, PIPES, AND SUMPS WITHIN THE PROJECT LIMITS OF ALL SILT AND DEBRIS.

Phasing

1. PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT TO NHDES, AND THE ENGINEER, A DETAILED PHASING AND CONSTRUCTION SEQUENCING PLAN THAT SHOWS THE PHASED AREAS OF CONSTRUCTION AND TEMPORARY EROSION CONTROL MEASURES TO BE IMPLEMENTED.
2. TEMPORARY ROAD CLOSURE BARRICADES TO BE PLACED AT THE LIMITS OF EACH PHASE, AND WILL BE MOVED TO THE END OF THE SUCCESSIVE PHASE WHEN THAT PHASE IS COMPLETED.

Demolition

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMIT OF WORK INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITY POLES, SIGNS, ETC. UNLESS INDICATED OTHERWISE ON THE DRAWINGS. REMOVE AND DISPOSE OF EXISTING UTILITIES, FOUNDATIONS AND UNSUITABLE MATERIAL BENEATH AND FOR A DISTANCE OF 10 FEET BEYOND THE PROPOSED BUILDING FOOTPRINT INCLUDING EXTERIOR COLUMNS.
2. EXISTING UTILITIES SHALL BE TERMINATED, UNLESS OTHERWISE NOTED, IN CONFORMANCE WITH LOCAL, STATE AND INDIVIDUAL UTILITY COMPANY STANDARD SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES.
3. CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.
4. THE DEMOLITION LIMITS DEPICTED IN THE PLANS IS INTENDED TO AID THE CONTRACTOR DURING THE BIDDING AND CONSTRUCTION PROCESS AND IS NOT INTENDED TO DEPICT EACH AND EVERY ELEMENT OF DEMOLITION. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THE DETAILED SCOPE OF DEMOLITION BEFORE SUBMITTING ITS BID/PROPOSAL TO PERFORM THE WORK AND SHALL MAKE NO CLAIMS AND SEEK NO ADDITIONAL COMPENSATION FOR CHANGED CONDITIONS OR UNFORESEEN OR LATENT SITE CONDITIONS RELATED TO ANY CONDITIONS DISCOVERED DURING EXECUTION OF THE WORK.
5. UNLESS OTHERWISE SPECIFICALLY PROVIDED ON THE PLANS OR IN THE SPECIFICATIONS, THE ENGINEER HAS NOT PREPARED DESIGNS FOR AND SHALL HAVE NO RESPONSIBILITY FOR THE PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF HAZARDOUS MATERIALS, TOXIC WASTES OR POLLUTANTS AT THE PROJECT SITE. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY CLAIMS OF LOSS, DAMAGE, EXPENSE, DELAY, INJURY OR DEATH ARISING FROM THE PRESENCE OF HAZARDOUS MATERIAL AND CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE ENGINEER FROM ANY CLAIMS MADE IN CONNECTION THEREWITH. MOREOVER, THE ENGINEER SHALL HAVE NO ADMINISTRATIVE OBLIGATIONS OF ANY TYPE WITH REGARD TO ANY CONTRACTOR AMENDMENT INVOLVING THE ISSUES OF PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF ASBESTOS OR OTHER HAZARDOUS MATERIALS.

Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE OCCURRENCE OF A STORM EVENT THAT PRODUCES 0.25 INCHES OR MORE OF RAIN WITHIN A 24-HOUR PERIOD, OR WITHIN 24 HOURS OF A SNOWMELT DISCHARGE FROM A STORM EVENT THAT PRODUCES 3.25 INCHES OR MORE OF SNOW IN A 24-HOUR PERIOD. THE CONTRACTOR SHALL ADDRESS DEFICIENCIES AND MAINTENANCE ITEMS WITHIN TWENTY-FOUR HOURS OF INSPECTION. CONTRACTOR SHALL PROPERLY DISPOSE OF SEDIMENT SUCH THAT IT DOES NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.

Existing Conditions Information

1. BASE PLAN: THE PROPERTY LINES SHOWN WITHIN THE "EXISTING CONDITIONS PLAN OF LAND" PLAN WERE DETERMINED BY AN ACTUAL FIELD SURVEY CONDUCTED BY VHB, INC., IN SEPTEMBER 2024. THE TOPOGRAPHY AND PHYSICAL FEATURES ARE BASED ON AN ACTUAL FIELD SURVEY PERFORMED ON THE GROUND BY VHB, INC., DURING SEPTEMBER 2024.

   A. DELINEATION OF THE WETLANDS AND PLACEMENT OF THE FLAGS WAS PERFORMED BY: VHB, INC. IN SEPTEMBER AND OCTOBER 2024.
   B. FLAGS MARKING THE WETLANDS WERE LOCATED BY: VHB, INC. IN SEPTEMBER AND OCTOBER 2024.
   C. NO WETLANDS WERE IDENTIFIED ON THE 44 PILLSBURY ROAD PARCEL (SUBJECT PROPERTY) AND SHOWN ON THE ADJACENT 36 PILLSBURY ROAD PARCEL FOR REFERENCE.

2. TOPOGRAPHY: ELEVATIONS ARE BASED ON NAVD OF 1988.
3. PARCEL USES: USES SHOWN BELOW ARE BASED ON AVAILABLE PROPERTY CARD INFORMATION.
   EXISTING USE: VACANT LAND
   PROPOSED USE: RESIDENTIAL DEVELOPMENT

Waivers/Variances

1. WAIVER REQUESTED FROM SECTION 3.09.R OF SUBDIVISION REGULATIONS - REQUESTING 8% ROAD SLOPES FOR 500 FT OR LESS
2. WAIVER REQUESTED FROM SECTION 3.04 OF SITE PLAN REGULATIONS - GOVERNING UTILITY SPACING FROM ROAD CENTERLINE

Required Permits

1. NHDES ALTERATION OF TERRAIN PERMIT TO BE SUBMITTED
2. NHDES SEWER CONNECTION PERMIT TO BE SUBMITTED
3. NH SUBDIVISION APPROVAL TO BE SUBMITTED
4. EPA CONSTRUCTION GENERAL PERMIT TO BE SUBMITTED
5. LONDONDERRY SEWER CONNECTION PERMIT TO BE SUBMITTED
6. LONDONDERRY STORMWATER PERMIT TO BE SUBMITTED

Rock Blasting (IF REQUIRED)

BEST MANAGEMENT PRACTICES FOR BLASTING: ALL ACTIVITIES RELATED TO BLASTING ADHERE TO THE FOLLOWING BEST MANAGEMENT PRACTICES (BMPS) TO PREVENT CONTAMINATION OF GROUNDWATER INCLUDING PREPARING, REVIEWING AND FOLLOWING AN APPROVED BLASTING PLAN; PROPER DRILLING, EXPLOSIVE HANDING AND LOADING PROCEDURES; OBSERVING THE ENTIRE BLASTING PROCEDURES; EVALUATING BLASTING PERFORMANCE; AND HANDLING AND STORAGE OF BLASTED ROCK.

1. LOADING PRACTICES: THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:

   A. DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS.
   B. EXPLOSIVE PRODUCTS SHALL BE MANAGED ON-SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF-SITE DISPOSAL.
   C. SPILLAGE AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF-SITE DISPOSAL.
   D. LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED.
   E. LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT.
   F. EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING AND COLUMN RISE NEED TO BE ATTENDED TO.

2. EXPLOSIVE SELECTION: THE FOLLOWING BMPS SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDWATER CONTAMINATION WHEN EXPLOSIVES ARE USED:

   A. EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION.
   B. EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT TO MINIMIZE THE POTENTIAL FOR HAZARDOUS EFFECT OF THE PRODUCT UPON GROUNDWATER.

3. PREVENTION OF MISFIRES: APPROPRIATE PRACTICES SHALL BE DEVELOPED AND IMPLEMENTED TO PREVENT MISFIRES.

4. MUCK PILE MANAG

Notes

A. THE PURPOSE OF THESE PLANS IS TO DEPICT THE PROPOSED SITE DEVELOPMENT OF 60 SINGLE FAMILY CONDOMINIUM HOMES (3 BEDROOMS).

B. THE PROJECT PARCEL IS TAX MAP 10 LOT 15.

C. THE PROJECT PARCEL IS A TOTAL 22.6 ACRES (EXISTING AND PROPOSED).

D. THE PROJECT PARCEL IS LOCATED IN THE AGRICULTURAL-RESIDENTIAL 1 (AR-1) ZONE. THE PROJECT PARCEL IS LOCATED IN THE WOODMONT COMMONS (WC-7, WC-8) OVERLAY DISTRICT.

E. THERE IS NO MINIMUM LOT AREA IN THE WOODMONT COMMONS OVERLAY DISTRICT. THE PROJECT PARCEL IS SUBJECT TO A 40 FOOT FRONT YARD SETBACK, 30 FOOT SIDE YARD SETBACKS, AND A 35 FOOT REAR YARD SETBACK.

F. THE EXISTING USE OF THE PROJECT PARCEL IS A FORMER APPLE ORCHARD. THE PROJECT PROPOSES SINGLE-FAMILY RESIDENTIAL USE.

G. THE PROJECT REQUIRES 120 PARKING SPACES AND PROVIDES 138 PARKING SPACES.

H. THERE IS NO MINIMUM GREEN AREA IN THE WOODMONT COMMONS OVERLAY DISTRICT. THE PROJECT PROVIDES 78.6% GREEN AREA.

I. THERE IS NO MAXIMUM BUILDING COVERAGE IN THE WOODMONT COMMONS DISTRICT. THE PROJECT PROVIDES 12.1% BUILDING COVERAGE.

J. THE SANITARY SEWER COMPANY SERVICING THE PROJECT AREA IS THE LONDONDERRY DEPARTMENT OF PUBLIC WORKS.

K. THE WATER SUPPLY SOURCE COMPANY SERVICING THE PROJECT AREA IS PENNICHUCK WATER WORKS.

L. A WAIVER HAS BEEN REQUESTED FROM SECTION 3.04 OF THE SITE PLAN REGULATIONS - GOVERNING UTILITY SPACING FROM ROAD CENTERLINE.

M. NO FEMA FLOOD ZONES ARE PRESENT ON THE SITE.

N. THE PROPOSED PROJECT REQUIRES THE FOLLOWING PERMITS:

- N.A. NHDES ALTERATION OF TERRAIN PERMIT
- N.B. NHDES SEWER CONNECTION PERMIT
- N.C. NH SUBDIVISION APPROVAL
- N.D. EPA CONSTRUCTION GENERAL PERMIT
- N.E. LONDONDERRY SEWER CONNECTION PERMIT
- N.F. LONDONDERRY STORMWATER PERMIT

O. NO PLANNING BOARD WAIVERS NOR CONDITIONAL USE PERMITS AT HAVE BEEN GRANTED AT THIS TIME.

P. THE CONSTRUCTION SEQUENCE IS TO OCCUR AS FOLLOWS:

- P.A. SURVEY AND STAKE LIMITS OF CLEARING AND GRUBBING.
- P.B. INSTALL SILT FENCING, STRAW BALES, CONSTRUCTION EXITS, ETC. PRIOR TO START OF CONSTRUCTION, TO BE MAINTAINED UNTIL COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER.
- P.C. CLEAR AND GRUB ALL AREAS TO BE DISTURBED BY CONSTRUCTION AND PERFORM DEMOLITION OPERATIONS.
- P.D. REPAIR, CLEAN, AND REPLACE ANY SEDIMENT CONTROLS DAMAGED DURING AND/OR AFTER RAINFALL EVENTS.
- P.E. STRIP LOAM AND PAVEMENT, OR RECLAIM EXISTING PAVEMENT WITHIN LIMITS OF WORK AND STOCKPILE EXCESS MATERIAL.
- P.F. CONSTRUCT TEMPORARY SEDIMENTATION BASINS AS REQUIRED.
- P.G. PONDS AND SWALES SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE.
- P.H. PERFORM PRELIMINARY SITE GRADING AND CONSTRUCT TEMPORARY DIVERSION SWALES AS REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT THE PRELIMINARY GRADING ALLOWS SURFACE WATER RUN-OFF FROM UNSTABILIZED AREAS TO FLOW TOWARDS THE TEMPORARY SEDIMENTATION BASINS.
- P.I. PREPARE BUILDING PAD TO ENABLE BUILDING CONSTRUCTION TO BEGIN.
- P.J. INSTALL SEWER SYSTEM, DRAINAGE SYSTEM, AND OTHER UTILITIES IN ACCORDANCE WITH THE PLANS AND DETAILS.
- P.K. INSTALL STRAW BALES AND INLET PROTECTION AT ALL CATCH BASINS AS THEY ARE CONSTRUCTED, IN ACCORDANCE WITH THE DETAILS.
- P.L. PERFORM FINAL/FINE GRADING INCLUDING SLOPE STABILIZATION BLANKETS.
- P.M. PERFORM ALL REMAINING SITE CONSTRUCTION. (I.E. BUILDING AND PAVEMENT AREAS).
- P.N. LOAM AND SEED ALL DISTURBED AREAS.
- P.O. REMOVE TEMPORARY EROSION CONTROL MEASURES, SILT FENCE, ETC. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER.
- P.P. CLEAN ALL DRAINAGE BASINS, STRUCTURES, PIPES, AND SUMPS WITHIN THE PROJECT LIMITS OF ALL SILT AND DEBRIS.

Q. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT DEFICIENCIES EXISTING IN THE APPROVED DESIGN DRAWINGS, THE OWNER SHALL BE REQUIRED TO CORRECT THE DEFICIENCIES TO MEET REQUIREMENTS OF THE REGULATIONS AT NO EXPENSE TO THE TOWN.

R. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION PROTECTION AT NO EXPENSE TO THE TOWN.

S. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO THE TOWN OF LONDONDERRY SUBDIVISION REGULATIONS AND THE LATEST EDITION OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

T. IN ACCORDANCE WITH SECTION 6.01 OF THE LONDONDERRY SITE PLAN REGULATIONS AND RSA § 676:13, ALL IMPROVEMENTS SPECIFIED ON THESE SITE PLANS SHALL BE CONSTRUCTED, COMPLETED, INSPECTED, AND APPROVED BY THE TOWN OF LONDONDERRY PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

U. IN ACCORDANCE WITH SECTION 6.01 OF THE LONDONDERRY SITE PLAN REGULATIONS AND RSA § 676:12, ALL OFF-SITE IMPROVEMENTS SPECIFIED ON THESE SITE PLANS SHALL BE CONSTRUCTED, COMPLETED, INSPECTED AND APPROVED BY THE TOWN OF LONDONDERRY PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.



Condominium Lot Information

House Number	Limited Common Area (LCA)	
2	4728 SF	0.109 AC
3	6076 SF	0.139 AC
4	4799 SF	0.110 AC
6	5557 SF	0.128 AC
8	5936 SF	0.136 AC
10	5715 SF	0.131 AC
12	5902 SF	0.135 AC
14	6000 SF	0.138 AC
15	4886 SF	0.112 AC
16	6000 SF	0.138 AC
17	5500 SF	0.126 AC
18	6000 SF	0.138 AC
19	5500 SF	0.126 AC
20	5850 SF	0.134 AC
21	5500 SF	0.126 AC
22	6000 SF	0.138 AC
23	5350 SF	0.123 AC
24	6068 SF	0.139 AC
25	5519 SF	0.127 AC

Condominium Lot Information

House Number	Limited Common Area (LCA)	
26	6209 SF	0.143 AC
27	5550 SF	0.127 AC
28	7301 SF	0.168 AC
29	5446 SF	0.125 AC
30	7375 SF	0.169 AC
31	5272 SF	0.121 AC
32	5925 SF	0.136 AC
33	5500 SF	0.126 AC
34	6000 SF	0.138 AC
35	5350 SF	0.123 AC
36	5987 SF	0.137 AC
37	5654 SF	0.130 AC
38	5915 SF	0.136 AC
40	5908 SF	0.136 AC
41	5620 SF	0.129 AC
42	6000 SF	0.138 AC
43	6000 SF	0.138 AC
44	6000 SF	0.138 AC
45	4904 SF	0.113 AC

Condominium Lot Information

House Number	Limited Common Area (LCA)	
46	6000 SF	0.138 AC
48	5891 SF	0.135 AC
50	5844 SF	0.134 AC
52	5754 SF	0.132 AC
53	5765 SF	0.132 AC
54	5350 SF	0.123 AC
55	5917 SF	0.136 AC
56	5500 SF	0.126 AC
58	5682 SF	0.130 AC
60	5991 SF	0.138 AC
62	4839 SF	0.111 AC
63	4839 SF	0.111 AC
64	5662 SF	0.130 AC
65	6000 SF	0.138 AC
67	6005 SF	0.138 AC
69	5990 SF	0.138 AC
71	5140 SF	0.118 AC
73	5472 SF	0.126 AC
75	5350 SF	0.123 AC

Condominium Lot Information

House Number	Limited Common Area (LCA)	
77	5500 SF	0.126 AC
79	5500 SF	0.126 AC
81	5602 SF	0.129 AC

* Existing Lot Area = 22.6 Acres, Proposed Common Area = 14.6 Acres

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 40 80 160Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: Permitting — Date: October 14, 2025

Not Approved for Construction

Drawing Title: Condominium Plan

Drawing Number: C1.01

Sheet 2 of 41

Project Number: 53140.44

STATE OF NEW HAMPSHIRE - ERIC K. GERADE No.13872 LICENSED PROFESSIONAL ENGINEER - 2/12/2026

Saved Wednesday, February 11, 2026 10:46:13 PM JHOWE Plotted Thursday, February 12, 2026 9:20:57 AM Jason Howe

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-OSP.dwg



Zoning Summary Chart

Zoning District:	Agricultural-Residential (AR-1)
Overlay District:	Woodmont Commons PUD (WC-7, WC-8)

Zoning Regulation Requirements	Required*	Provided
MINIMUM LOT AREA	-	22.6 Acres **
FRONTAGE	150 Feet	1,490 Feet
FRONT YARD SETBACK	40 Feet	272.1 Feet
SIDE YARD SETBACK	30 Feet	23.3 Feet
REAR YARD SETBACK	35 Feet	19.3 Feet
MAXIMUM BUILDING HEIGHT	50 Feet	<50 Feet
PERCENT BUILDING COVERAGE	-	12.1 %
PERCENT GREEN AREA	-	78.6%

* Zoning regulation requirements as specified in the Town of Londonderry, NH Zoning Ordinance as Amended Through 2012.
** Project specific lot area, sub area to Woodmont Commons PUD

Parking Summary Chart

Description	Size Required	Size Provided	Spaces Required	Spaces Provided
RESIDENTIAL DWELLING SPACES	9 x 20	9 x 20	120	120
VISITOR SPACES	9 x 20	9 x 20	0	18
TOTAL SPACES			120	138

Parking Requirements:

RESIDENTIAL DWELLING	60 UNITS	x	2 SPACES	/	1 UNIT	= 120 SPACES
			TOTAL PARKING REQUIRED			= 120 SPACES

Sign Summary

M.U.T.C.D. Number	Specification Width	Specification Height	Desc.
R1-1	30"	30"	STOP
R2-1-15	24"	30"	SPEED LIMIT 15
R8-31	12"	18"	NO PARKING FIRE LANE
R5-11	30"	24"	AUTHORIZED VEHICLES ONLY

Notes

1. THE SITE PLAN IS GOVERNED BY THE 2013 WOODMONT COMMONS MASTER PLAN AND THE TOWN OF LONDONDERRY'S LAND USE REGULATIONS IN EFFECT AT THAT TIME. THE APPLICANT WILL APPLY FOR A COMPLIANCE ALTERNATIVE REQUEST ALLOWING FOR A VARIATION TO THE LOT TYPE, EXISTING DIMENSIONAL SETBACK AND FRONTAGE REQUIREMENTS.
2. THE PURPOSE OF THIS PLAN IS TO DEPICT THE OVERALL PROPOSED SITE DEVELOPMENT, INCLUDING THE FULL SUBJECT PARCEL AND ABUTTING PARCEL INFORMATION. FOR GREATER DESIGN DETAIL RELATIVE TO THE PROPOSED DEVELOPMENT, REFER TO THE OTHER SHEETS PROVIDED HEREIN.
3. MAP 10, LOT 15 LIES ENTIRELY WITHIN ZONE X (UNSHADED) (AREAS TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR ROCKINGHAM COUNTRY, NEW HAMPSHIRE, MAP NUMBER 33015C0338E, EFFECTIVE DATE MAY 17, 2005.
4. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT DEFICIENCIES EXIST IN THE APPROVED DESIGN DRAWINGS, THE OWNER SHALL BE REQUIRED TO CORRECT THE DEFICIENCIES TO MEET THE REQUIREMENTS OF THE REGULATIONS AT NO EXPENSE TO THE TOWN.
5. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE TOWN.
6. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO TOWN OF LONDONDERRY SITE PLAN REGULATIONS AND THE LATEST EDITION OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
7. IN ACCORDANCE WITH SECTION 6.01 OF THE LONDONDERRY SITE PLAN REGULATIONS AND RSA § 676:13, ALL IMPROVEMENTS SPECIFIED ON THESE SITE PLANS SHALL BE CONSTRUCTED, COMPLETED, AND INSPECTED AND APPROVED BY THE TOWN OF LONDONDERRY PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
8. IN ACCORDANCE WITH SECTION 6.01 OF THE LONDONDERRY SITE PLAN REGULATIONS AND RSA § 676:12, ALL OFF-SITE IMPROVEMENTS SPECIFIED ON THESE PLANS SHALL BE CONSTRUCTED, COMPLETED, AND INSPECTED AND APPROVED BY THE TOWN OF LONDONDERRY (AND/OR NHDOT, IF APPLICABLE) PRIOR TO THE ISSUANCE OF OCCUPANCY.
9. PARCEL USES: USES SHOWN BELOW ARE BASED ON AVAILABLE PROPERTY CARD INFORMATION.
   EXISTING USE: VACANT LAND
   PROPOSED USE: RESIDENTIAL DEVELOPMENT
10. CONTRACTOR TO COORDINATE WITH THE TOWN OF LONDONDERRY FIRE DEPARTMENT FOR THEIR REQUIREMENTS FOR FIRE ACCESS AND MAINTENANCE THROUGHOUT THE CONSTRUCTION PHASE. FIRE DEPARTMENT ACCESS ROADS SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS AND BE PROVIDED WITH AN ALL WEATHER DRIVING SURFACE.
11. STONES FROM STONEWALLS TO BE DISTURBED SHALL BE SAVED AND STONEWALLS RECONSTRUCTED AS SHOWN.

NHB25-0249 New Hampshire Fish And Game Conservation Measures

1. NORTHERN BLACK RACER (STATE THREATENED) OCCURS WITHIN THE VICINITY OF THE PROJECT AREA. ALL OPERATORS AND PERSONNEL WORKING ON OR ENTERING THE SITE SHALL BE MADE AWARE OF THE POTENTIAL PRESENCE OF THESE SPECIES AND SHALL BE PROVIDED FLYERS THAT HELP TO IDENTIFY THESE SPECIES, ALONG WITH NHFG CONTACT INFORMATION. SEE COVER SHEET.
2. RARE SPECIES INFORMATION (E.G. IDENTIFICATION, OBSERVATION AND REPORTING OF OBSERVATIONS, WHEN TO CONTACT NHFG IMMEDIATELY AND NHFG CONTACT INFORMATION) SHALL BE COMMUNICATED DURING MORNING MEETINGS PRIOR TO WORK COMMENCEMENT DURING THE CONSTRUCTION PHASE OF THE PROJECT. SEE COVER SHEET.
3. OBSERVATIONS OF NORTHERN BLACK RACER IN THE MONTHS OF APRIL-MAY AND SEPTEMBER-OCTOBER MAY INDICATE THE POTENTIAL FOR A DEN SITE ON OR NEAR THE PROJECT SITE. ALL OBSERVATIONS OF THIS SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM. PLEASE CONTACT MELISSA WINTERS AND BRENDAN CLIFFORD - VIA GROUP TEXT PREFERRED. A PHOTOGRAPH WITH TEXT IS PREFERRED IF FEASIBLE. SEE SPECIES FLYERS, SEE COVER SHEET FOR NHFG CONTACT INFORMATION.
4. THE PROJECT SITE IN IT'S CURRENT CONDITION PROVIDES SUITABLE HABITAT FOR VARIOUS SNAKE SPECIES. NHFG ENCOURAGES REPORTS OF ALL OTHER SNAKE OBSERVATIONS FOUND ON THE PROJECT SITE TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM. PLEASE CONTACT MELISSA WINTERS AND BRENDAN CLIFFORD - VIA GROUP TEXT PREFERRED. A PHOTOGRAPH WITH TEXT IS PREFERRED IF FEASIBLE. SEE NORTHERN BLACK RACER SPECIES FLYERS, SEE COVER SHEET FOR NHFG CONTACT INFORMATION.
5. TURTLES AND SNAKES MAY BE ATTRACTED TO DISTURBED GROUND DURING THE NESTING SEASON (MAY 15TH - JULY 15TH). TURTLE AND SNAKE NESTS ARE PROTECTED BY NH LAWS. IF A NEST IS OBSERVED OR SUSPECTED, OPERATORS SHALL CONTACT MELISSA WINTERS AND BRENDAN CLIFFORD FOR SNAKES AND JOSH MEGYESY FOR TURTLES AT NHFG IMMEDIATELY FOR FURTHER CONSULTATION. SEE SPECIES FLYERS, SEE COVER SHEET FOR NHFG CONTACT INFORMATION.
   5.1. THE NEST OR SUSPECTED NEST SHALL BE MARKED (SURROUNDING ROPED OFF OR CONE BUFFER DEPLOYED) AND AVOIDED; THIS SHALL BE COMMUNICATED TO ALL PERSONNEL ONSITE.
   5.2. SITE ACTIVITIES SHALL NOT OCCUR IN THE AREA SURROUNDING THE NEST OR SUSPECTED NEST UNTIL FURTHER GUIDANCE IS PROVIDED BY NHFG.
6. NHFG WOULD PREFER THAT CATCH BASINS NOT CONTAIN SUMPS. CATCH BASINS AND OUTLET CONTROL STRUCTURES SHALL HAVE DOUBLE-TYPE 'A' GRATES WITH GRATE OPENINGS NO LARGER THAN 1-13/64" X 21".
7. OUTLET CONTROL STRUCTURES SHALL NOT CONTAIN SUMPS AND SHALL NOT BE PLACED ADJACENT TO THE SIDE SLOPES BUT RATHER AS FAR AWAY AS POSSIBLE TO DETER WILDLIFE FROM CRAWLING ONTO THEM AND FALLING THROUGH THE GRATE OPENINGS. THESE STRUCTURES SHALL BE A MINIMUM OF 12"-18" ABOVE GRADE.
8. RIP-RAP SHALL BE FILLED WITH FINER MATERIAL (I.E., NATIVE WETLAND MATERIAL, NATIVE WETLAND SEED MIX, 3/4" SMALLER SIZED STONE, OR CLEAN GRAVEL IN BETWEEN RIP-RAP) TO CREATE A RELATIVELY SMOOTH SURFACE FOR WILDLIFE TO TRAVERSE.
9. A NATIVE SEED MIXTURE SHALL BE APPLIED TO ALL AREAS AFFECTED BY CONSTRUCTION. THE SEED MIXTURE SHALL NOT CONTAIN INVASIVE SPECIES SUCH AS CROWN VETCH, BIRD'S-FOOT TREFOIL, ALSIKE CLOVER, OR FLAT PEA.
10. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, WITH THE EXCEPTION OF TURF REINFORCEMENT MATS, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN PLASTIC, OR MULTIFILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES.
11. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES ON THE PROJECT SITE SHALL BE REPORTED IMMEDIATELY TO THE NHFG NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV, WITH THE EMAIL SUBJECT LINE CONTAINING THE NHB DATACHECK TOOL RESULTS LETTER ASSIGNED NUMBER, THE PROJECT NAME, AND THE TERM WILDLIFE SPECIES OBSERVATION.
   11.1. PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHFG IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION, AS FEASIBLE.
12. 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 NHFG AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHFG.
   12.1. SITE OPERATORS SHALL BE ALLOWED TO RELOCATE WILDLIFE ENCOUNTERED IF DISCOVERED WITHIN THE ACTIVE WORK ZONE IF IN DIRECT HARM FROM PROJECT ACTIVITIES.
   12.2. WILDLIFE SHALL BE RELOCATED IN CLOSE PROXIMITY TO THE CAPTURE LOCATION BUT OUTSIDE OF THE WORK ZONE AND IN THE DIRECTION THE INDIVIDUAL WAS HEADING.
   12.3. NHFG SHALL BE CONTACTED IMMEDIATELY IF THIS ACTION OCCURS.
13. NHFG, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.
14. WOOD TURTLE (SPECIAL CONCERN, PROTECTED UNDER FIS 1400 RULES) OCCUR WITHIN THE VICINITY OF THE PROJECT AREA. ALL OPERATORS AND PERSONNEL WORKING ON OR ENTERING THE SITE SHOULD BE MADE AWARE OF THE POTENTIAL PRESENCE OF THIS SPECIES AND SHOULD BE PROVIDED NHFG CONTACT INFORMATION. SEE COVER SHEET.

OWNER'S SIGNATURE

Signed by: Kevin Smith 08AE4DDC6445240...

OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

Certified By: _____

_____

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 40 80 160Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: October 14, 2025

Not Approved for Construction

Drawing Title: Overall Site Plan

Drawing Number: C2.00

Sheet 3 of 41

Project Number: 53140.44

STATE OF NEW HAMPSHIRE - ERIC K. GERADE No.13072 LICENSED PROFESSIONAL ENGINEER
2/12/2026

Saved Wednesday, February 11, 2026 3:41:21 PM APERETZ Plotted Thursday, February 12, 2026 1:09:30 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-LM.dwg



0 15 30 60 Feet

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by: SJF
Checked by: DHF

Issued for: Permitting
Date: October 14, 2025

Not Approved for Construction

Drawing Title: Layout and Materials Plan 1

Drawing Number: C2.01

Sheet 4 of 41

Project Number: 53140.44

STATE OF NEW HAMPSHIRE - ERIC K. GERADE No.13872 LICENSED PROFESSIONAL ENGINEER
2/12/2026

Saved Wednesday, February 11, 2026 10:57:29 PM BZOLLER Plotted Thursday, February 12, 2026 12:55:48 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-LM.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF
Checked by DHF

Issued for
Permitting

Date
October 14, 2025

Not Approved for Construction

Drawing Title
Layout and Materials Plan 2

Drawing Number
C2.02

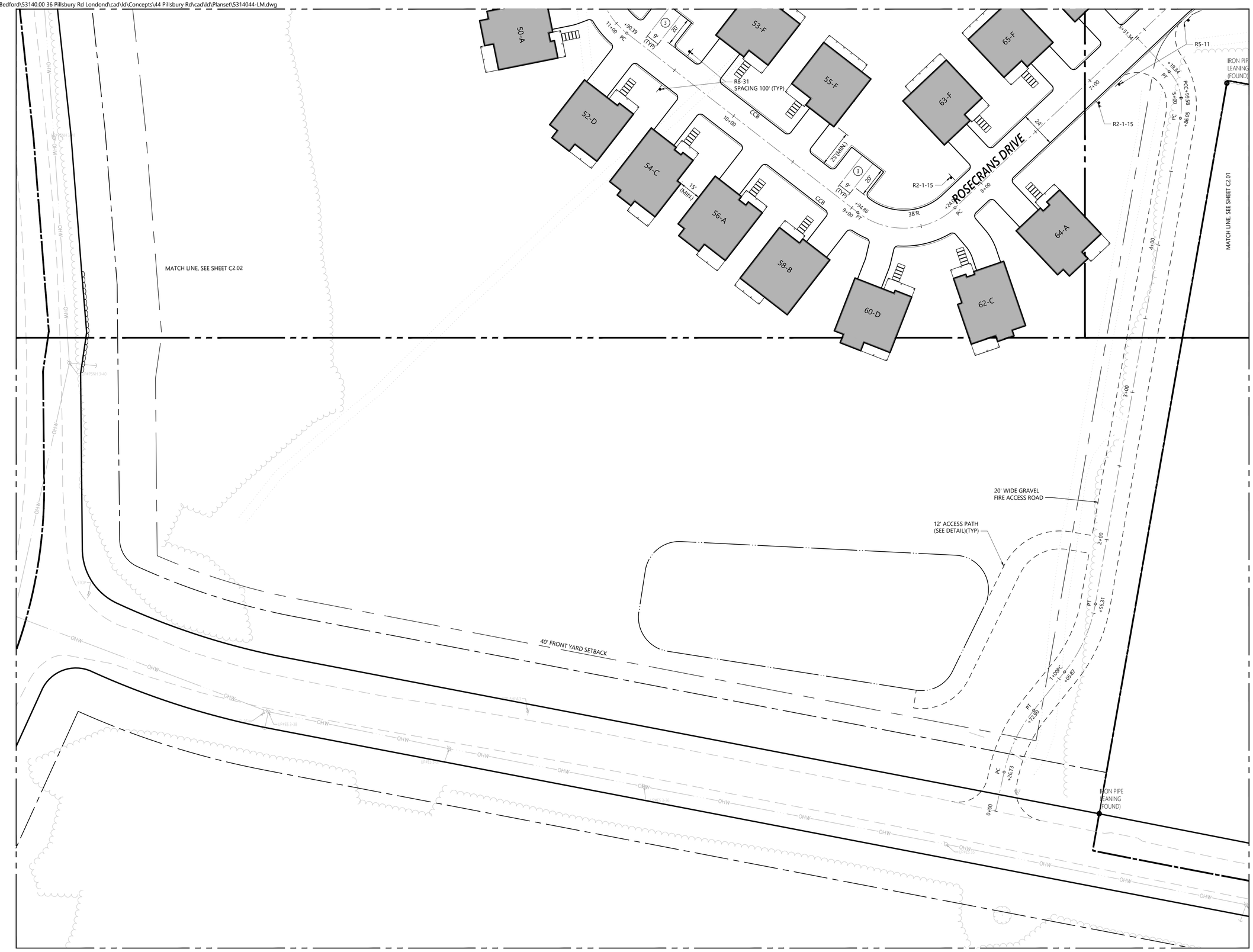
STATE OF NEW HAMPSHIRE
ERIC K. GERADE No.13672 LICENSED PROFESSIONAL ENGINEER
2/12/2026

Sheet 5 of 41

Project Number
53140.44

Saved Wednesday, February 11, 2026 10:57:29 PM BZOLLER Plotted Thursday, February 12, 2026 1:01:21 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-LM.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: Permitting

Date: October 14, 2025

Not Approved for Construction

Drawing Title
Layout and Materials Plan 3

Drawing Number
C2.03

STATE OF NEW HAMPSHIRE
ERIC K. GERADE
No.13872
LICENSED PROFESSIONAL ENGINEER
2/11/2026

Sheet 6 of 41

Project Number
53140.44

Saved Wednesday, February 11, 2026 10:57:29 PM BZOLLER Plotted Thursday, February 12, 2026 1:11:56 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-SD.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 30 60 120Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **October 14, 2025**

Not Approved for Construction

Drawing Title
Sight Distance Plan

Drawing Number
C2.04

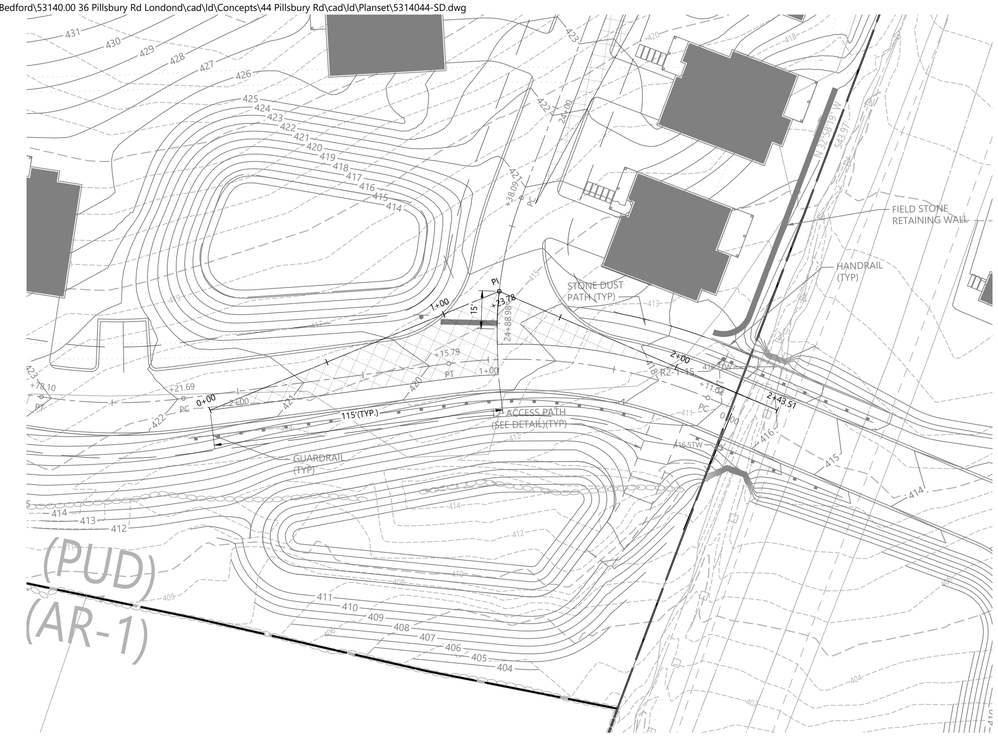
STATE OF NEW HAMPSHIRE
ERIC K. GERADE
No.13872
LICENSED PROFESSIONAL ENGINEER
2/11/2026

Sheet 7 of 41

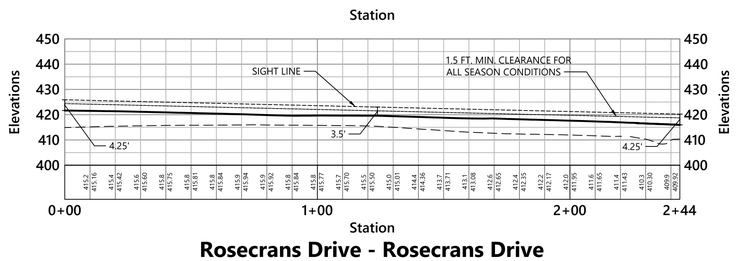
Project Number
53140.44

Saved Wednesday, February 11, 2026 10:44:44 PM BZOLLER Plotted Thursday, February 12, 2026 12:58:33 AM Ben Zoller

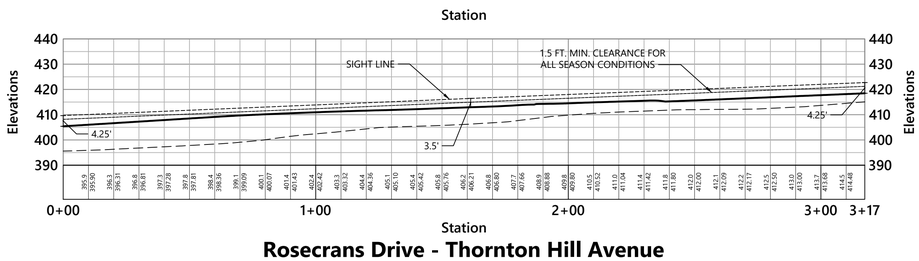
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-SD.dwg







Rosecrans Drive - Rosecrans Drive



Rosecrans Drive - Thornton Hill Avenue

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **October 14, 2025**

Not Approved for Construction

Drawing Title
Sight Distance Plan and Profile

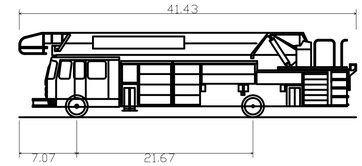
Drawing Number
C2.05

Sheet 8 of 41

Project Number
53140.44

STATE OF NEW HAMPSHIRE
ERIC K. GERADE No.13872
LICENSED PROFESSIONAL ENGINEER
2/12/2026

Saved Wednesday, February 11, 2026 10:44:44 PM BZOLLER Plotted Thursday, February 12, 2026 1:00:43 AM Ben Zoller



Londonderry Fire Truck V1	
Overall Length	41.430ft
Overall Width	7.702ft
Overall Body Height	10.380ft
Min Body Ground Clearance	0.810ft
Track Width	7.702ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	45.00°

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by BJZ
Checked by DHF
Issued for Permitting
Date October 14, 2025

Not Approved for Construction

Drawing Title
Vehicle Access Plan

Drawing Number
C2.06

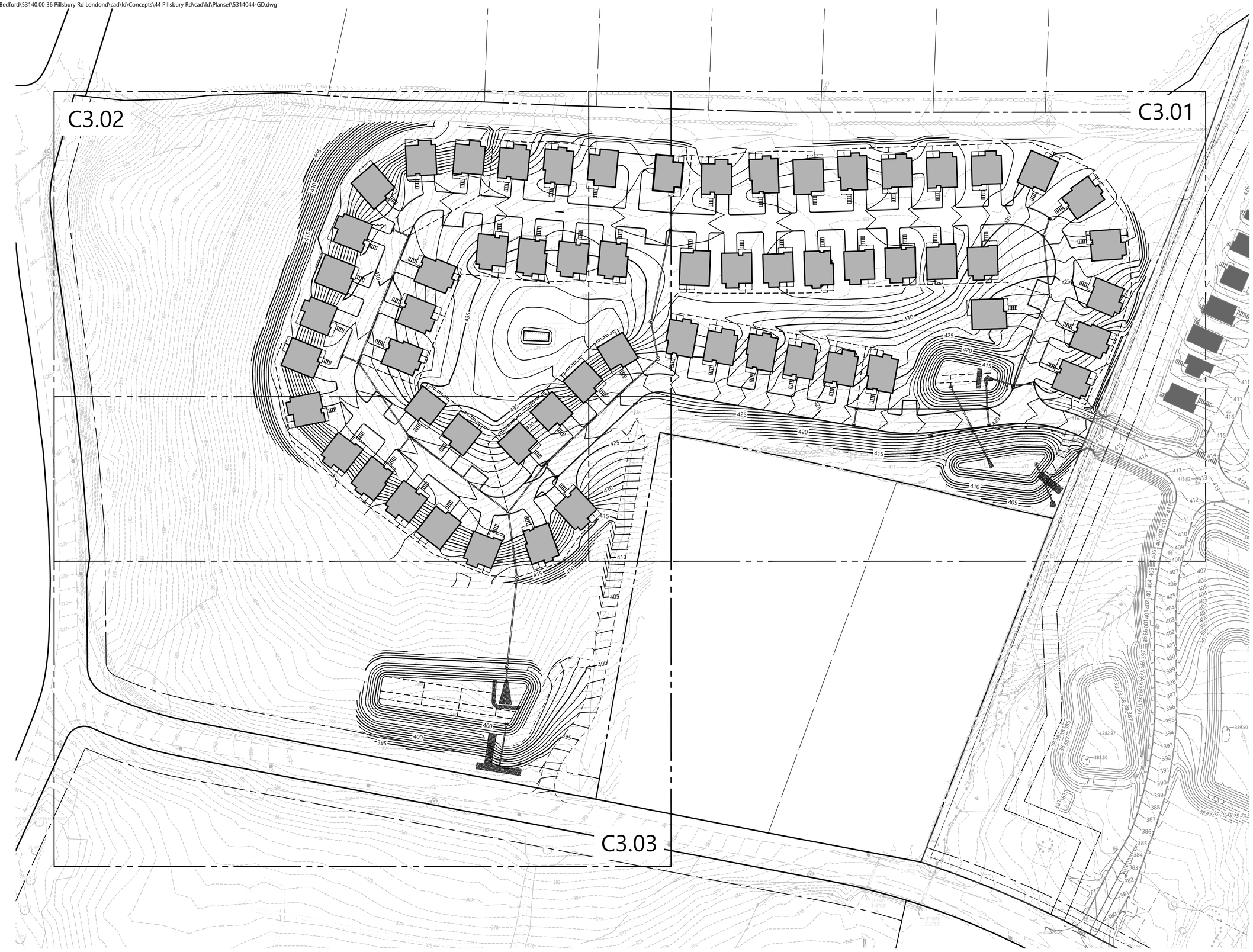
Sheet 9 of 41

Project Number
53140.44

STATE OF NEW HAMPSHIRE - ERIC K. GERADE No.13672 LICENSED PROFESSIONAL ENGINEER - 2/12/2026

Saved Tuesday, February 10, 2026 1:25:11 PM JHOWE Plotted Thursday, February 12, 2026 1:12:43 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-GD.dwg



Saved Wednesday, February 11, 2026 11:11:32 PM BZOLLER Plotted Thursday, February 12, 2026 1:14:35 AM Ben Zoller

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 30 60 120Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by: SJF
Checked by: DHF

Issued for: Permitting
Date: October 14, 2025

Not Approved for Construction

Drawing Title
Overall Grading and Drainage Plan

Drawing Number
C3.00

STATE OF NEW HAMPSHIRE - ERIC K. GERADE No.13672 LICENSED PROFESSIONAL ENGINEER - 2/12/2026

Sheet 10 of 41

Project Number
53140.44

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-GD.dwg

Saved Wednesday, February 11, 2026 11:11:32 PM BZOLLER Plotted Thursday, February 12, 2026 1:00:06 AM Ben Zoller



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: Permitting

Date: October 14, 2025

Not Approved for Construction

Drawing Title
Grading and Drainage Plan 1

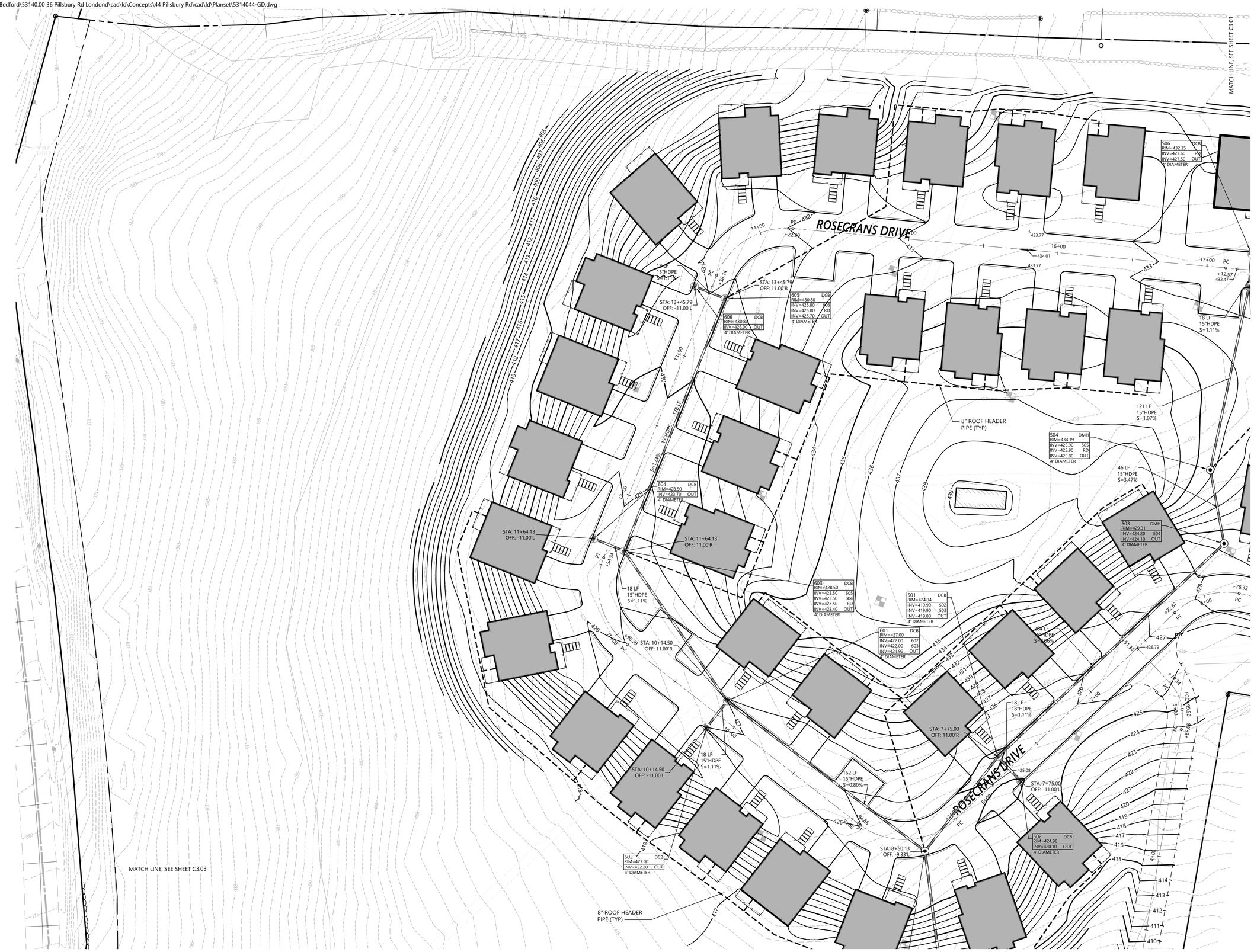
Drawing Number
C3.01

Sheet 11 of 41

Project Number
53140.44

STATE OF NEW HAMPSHIRE
ERIC K. GERADE
No.13972
LICENSED PROFESSIONAL ENGINEER
2/11/2026

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-GD.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: Permitting | Date: October 14, 2025

Not Approved for Construction

Drawing Title
Grading and Drainage Plan 2

Drawing Number
C3.02

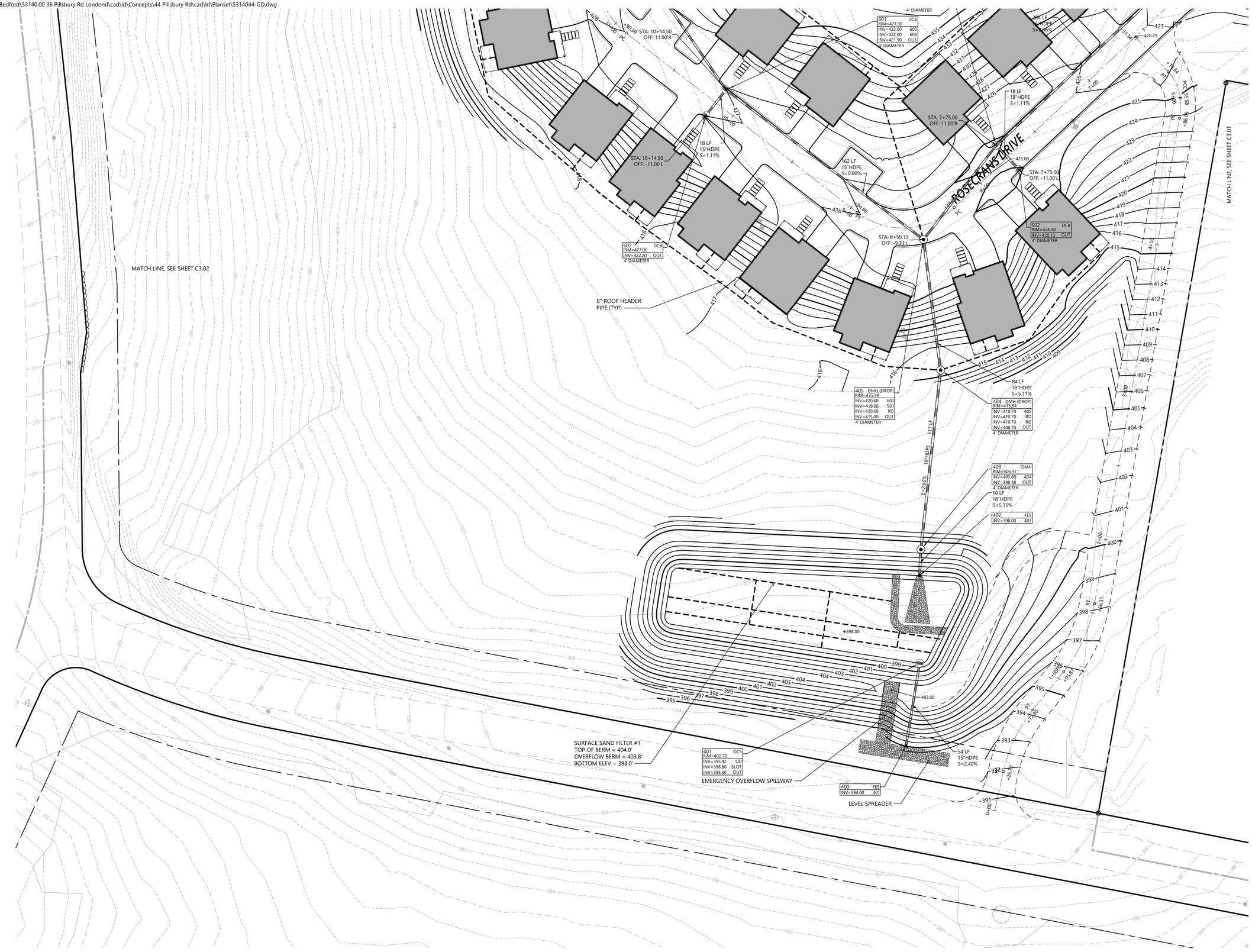
Sheet 12 of 41

Project Number
53140.44

STATE OF NEW HAMPSHIRE
ERIC K. GERADE
No.13872
LICENSED PROFESSIONAL ENGINEER
2/12/2026

Saved Wednesday, February 11, 2026 11:11:32 PM BZOLLER Plotted Thursday, February 12, 2026 12:59:40 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-GD.dwg



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: **Permitting** | Date: **October 14, 2025**

Not Approved for Construction

Drawing Title
Grading and Drainage Plan 3

Drawing Number
C3.03

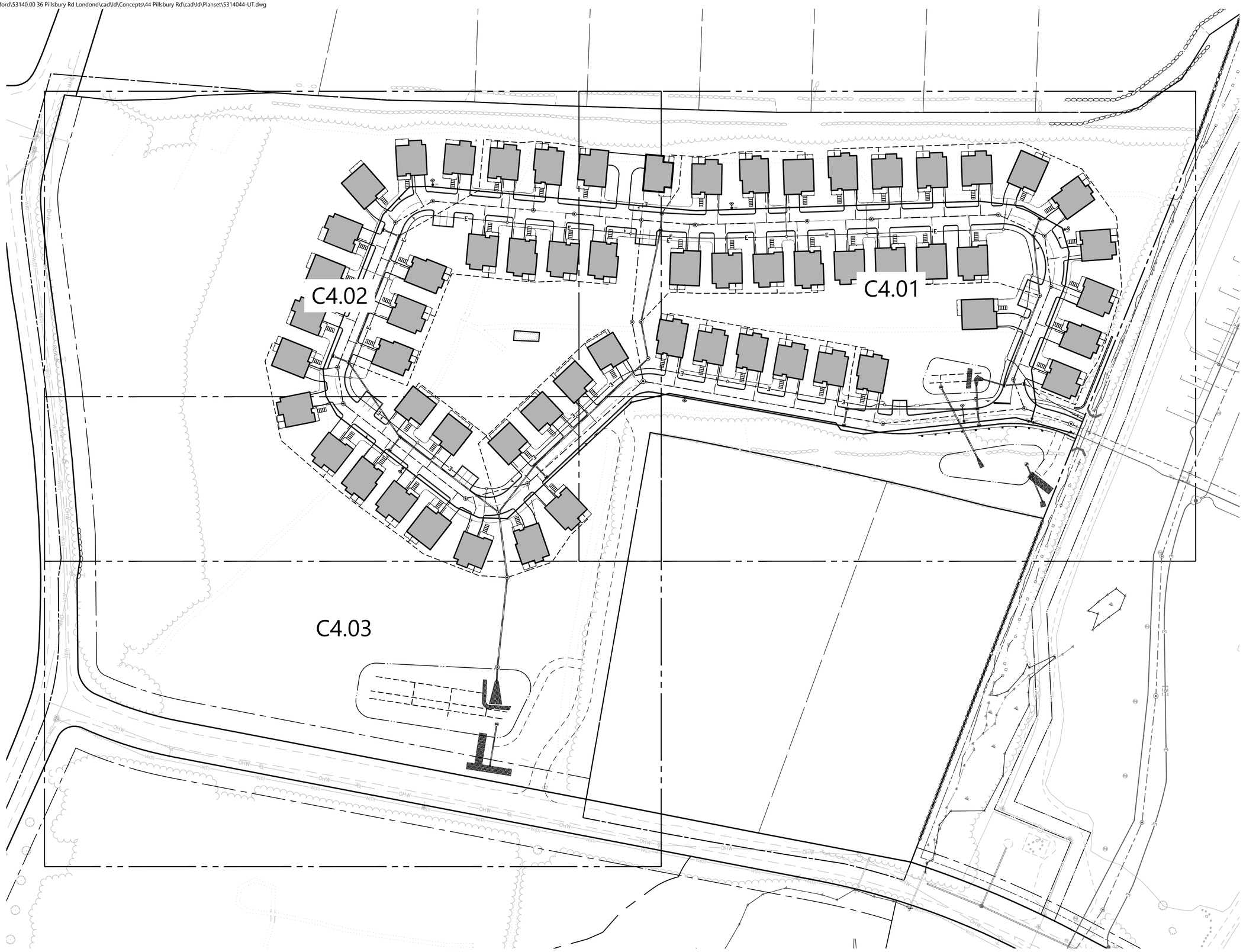
STATE OF NEW HAMPSHIRE
ERIC K. GERADE
No. 13072
LICENSED PROFESSIONAL ENGINEER
2/12/2026

Sheet 13 of 41

Project Number
53140.44

Saved Wednesday, February 11, 2026 11:11:32 PM BZOLLER Plotted Thursday, February 12, 2026 1:15:22 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-UT.dwg



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 30 60 120Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF
Checked by DHF

Issued for
Permitting

Date
October 14, 2025

Not Approved for Construction

Drawing Title
Overall Utility Plan

Drawing Number
C4.00

STATE OF NEW HAMPSHIRE - ERIC K. GERADE No.13672 LICENSED PROFESSIONAL ENGINEER
2/12/2026

Sheet 14 of 41

Project Number
53140.44

Saved Thursday, February 12, 2026 3:19:41 AM BZOLLER Plotted Thursday, February 12, 2026 8:50:09 AM Jason Howe



Saved Wednesday, February 11, 2026 4:39:22 PM JHOWE Plotted Thursday, February 12, 2026 1:17:21 AM Ben Zoller

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: Permitting | Date: October 14, 2025

Not Approved for Construction

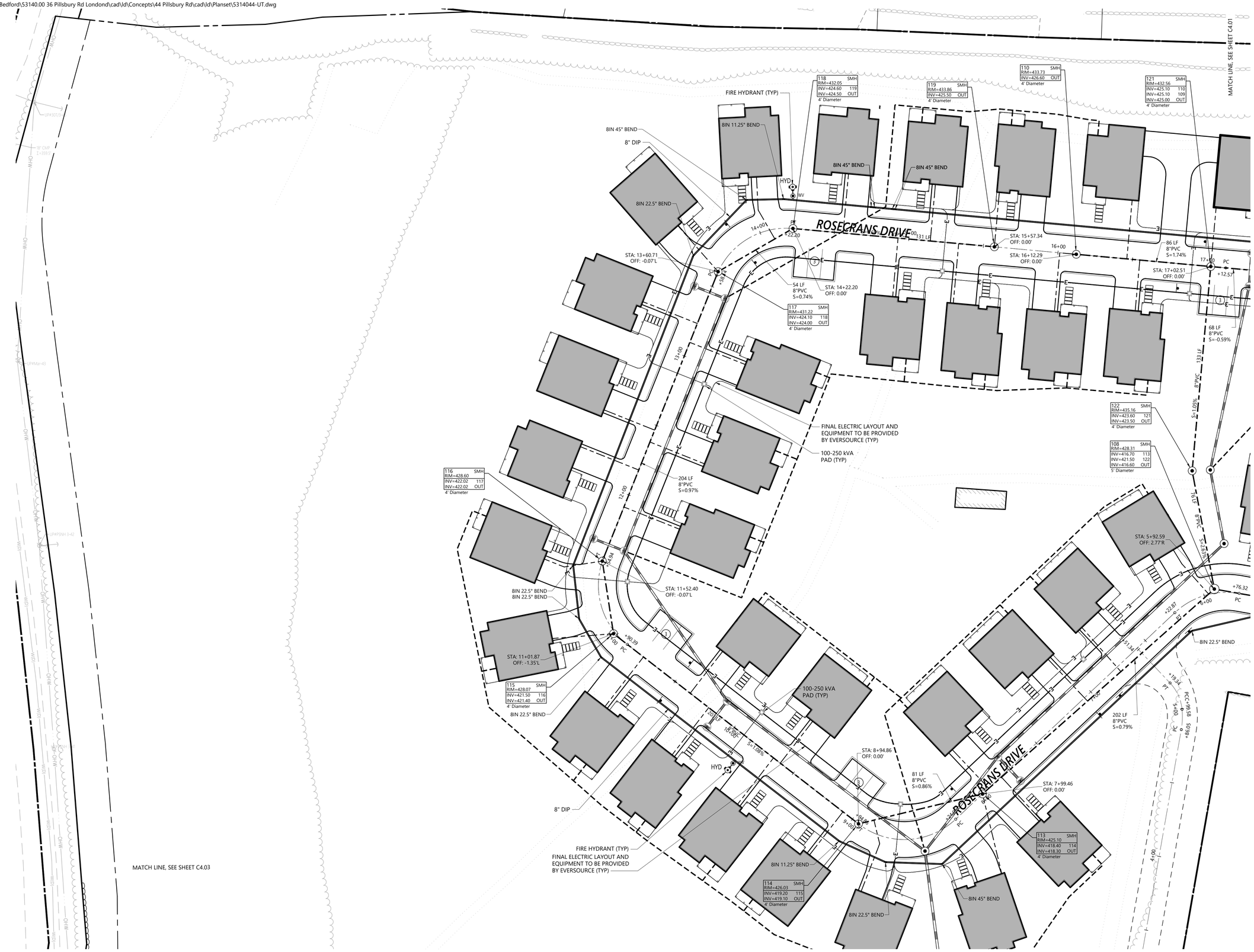
Drawing Title
Utility Plan 1

Drawing Number
C4.01

STATE OF NEW HAMPSHIRE
ERIC K. GERADE
No. 13672
LICENSED PROFESSIONAL ENGINEER
2/12/2026

Sheet 15 of 41

Project Number
53140.44



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF
Checked by DHF
Issued for Permitting
Date October 14, 2025

Not Approved for Construction

Drawing Title
Utility Plan 2

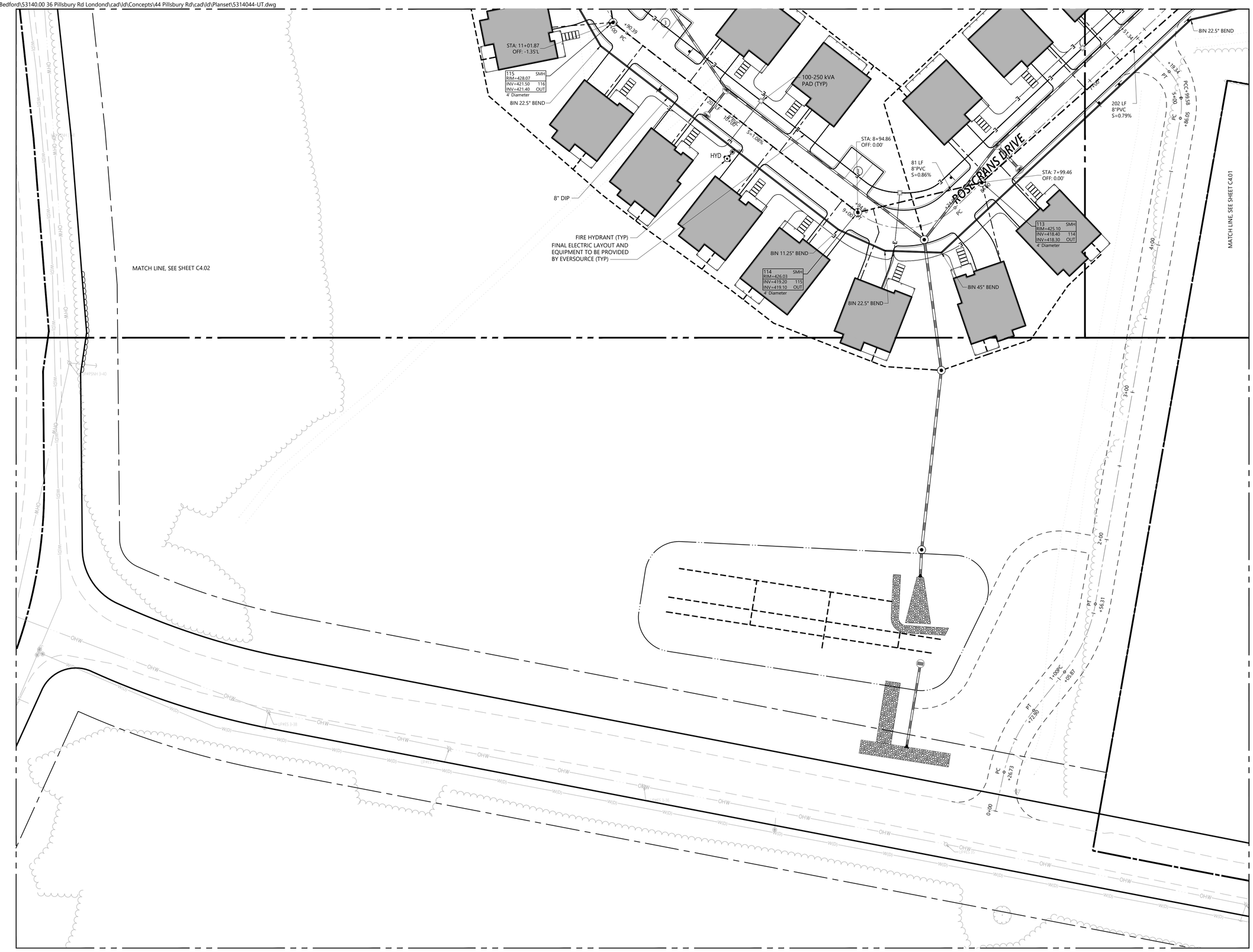
Drawing Number
C4.02

Sheet 16 of 41

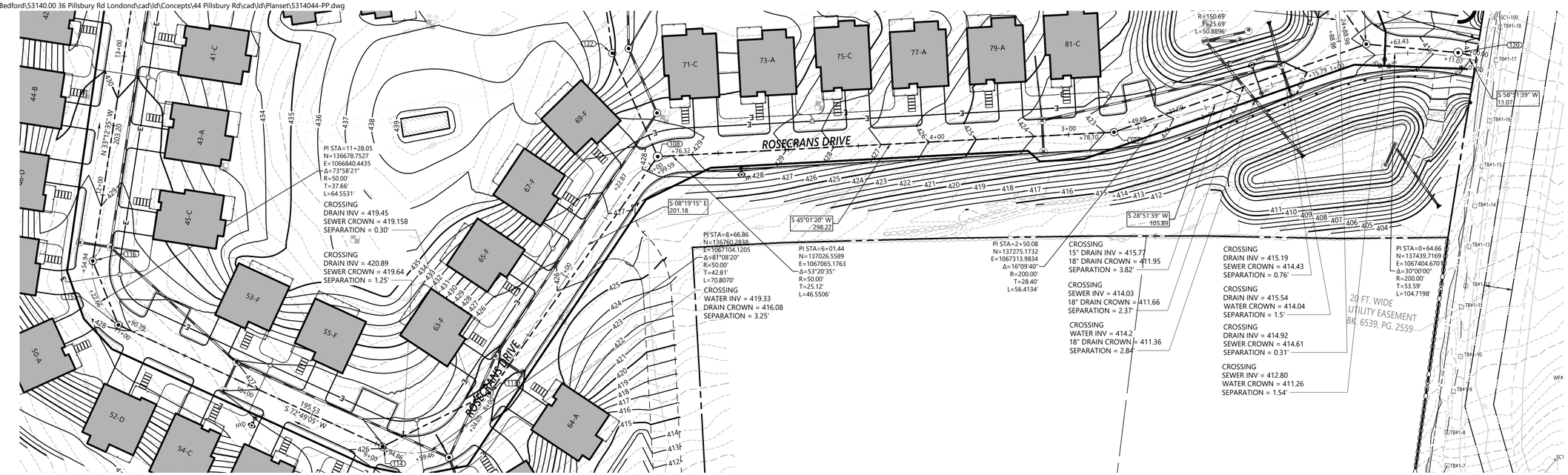
Project Number
53140.44

STATE OF NEW HAMPSHIRE - ERIC K. GERADE No.13872 LICENSED PROFESSIONAL ENGINEER
2/12/2026

Saved Wednesday, February 11, 2026 4:39:22 PM JHOWE Plotted Thursday, February 12, 2026 1:03:58 AM Ben Zoller


STA: 11+01.87
OFF: -1.35'L
115 SMH
RIM=428.07
INV=421.50 116
INV=421.40 OUT
4' Diameter
8IN 22.5° BEND
8" DIP
FIRE HYDRANT (TYP)
FINAL ELECTRIC LAYOUT AND EQUIPMENT TO BE PROVIDED BY EVERSOURCE (TYP)
MATCH LINE, SEE SHEET C4.02
100-250 kVA PAD (TYP)
HYD
202 LF 8"PVC S=1.00%
STA: 8+94.86
OFF: 0.00'
81 LF 8"PVC S=0.86%
ROSECRANS DRIVE
STA: 7+99.46
OFF: 0.00'
8IN 11.25" BEND
114 SMH
RIM=426.03
INV=419.20 115
INV=419.10 OUT
4' Diameter
8IN 22.5° BEND
8IN 45° BEND
113 SMH
RIM=425.10
INV=418.40 114
INV=418.30 OUT
4' Diameter
8IN 22.5° BEND
202 LF 8"PVC S=0.79%
MATCH LINE, SEE SHEET C4.01
OHW
W(D)
OHW
W(D)
OHW
W(D)

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-PP.dwg

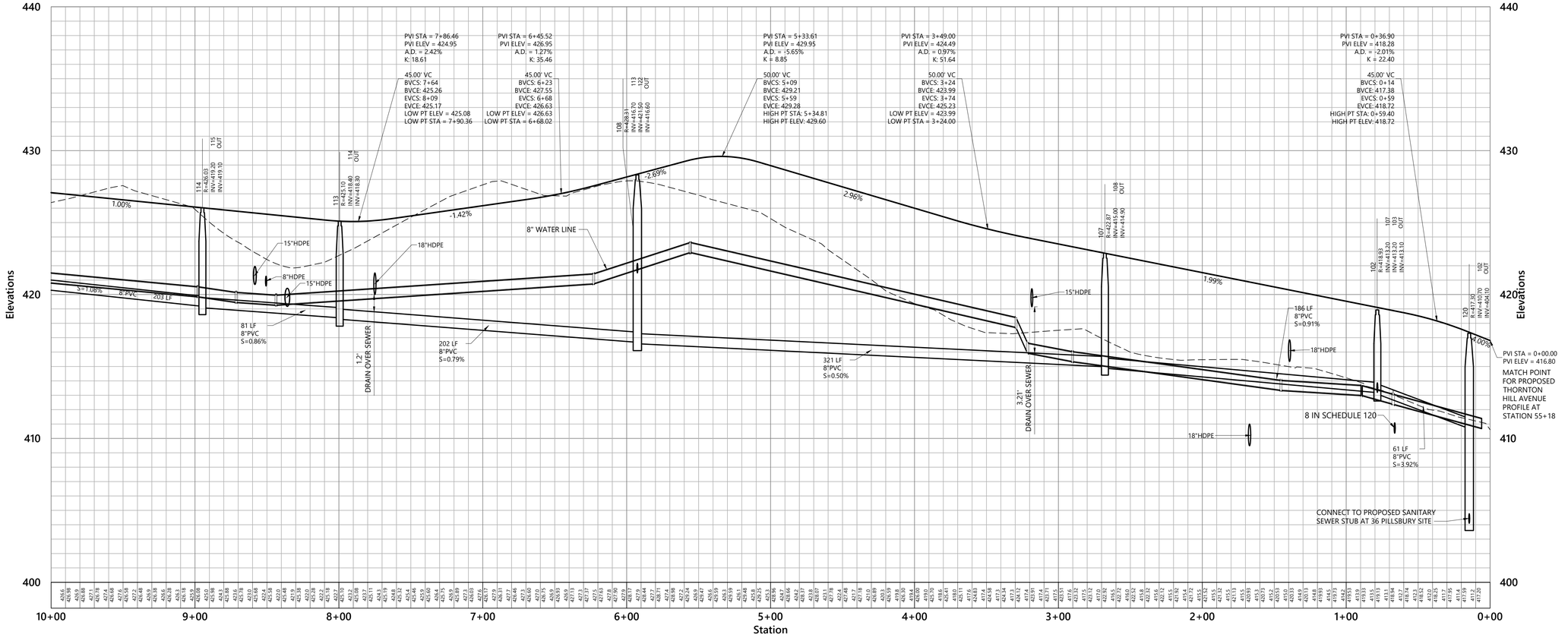


NOTE: ALL VERTICAL UTILITY CROSSINGS WHICH OCCUR AT THE ROADWAY CENTERLINE ARE DIMENSIONED IN THE ROADWAY PROFILES; CROSSINGS WHICH OCCUR OUTSIDE OF THE ROADWAY CENTERLINE ARE LABELED IN PLAN VIEW.

PLAN

Vert. 0 2 4 8 Feet
Horiz. 0 20 40 80 Feet

PROFILE



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: Permitting — Date: October 14, 2025

Not Approved for Construction

Drawing Title: Roadway Plan and Profile 1

Drawing Number: C5.01

Sheet 18 of 41

Project Number: 53140.44

STATE OF NEW HAMPSHIRE – ERIC K. GERADE No.13072 – LICENSED PROFESSIONAL ENGINEER – 2/12/2026

Saved Wednesday, February 11, 2026 11:28:45 PM BZOLLER Plotted Thursday, February 12, 2026 12:59:09 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-PP.dwg

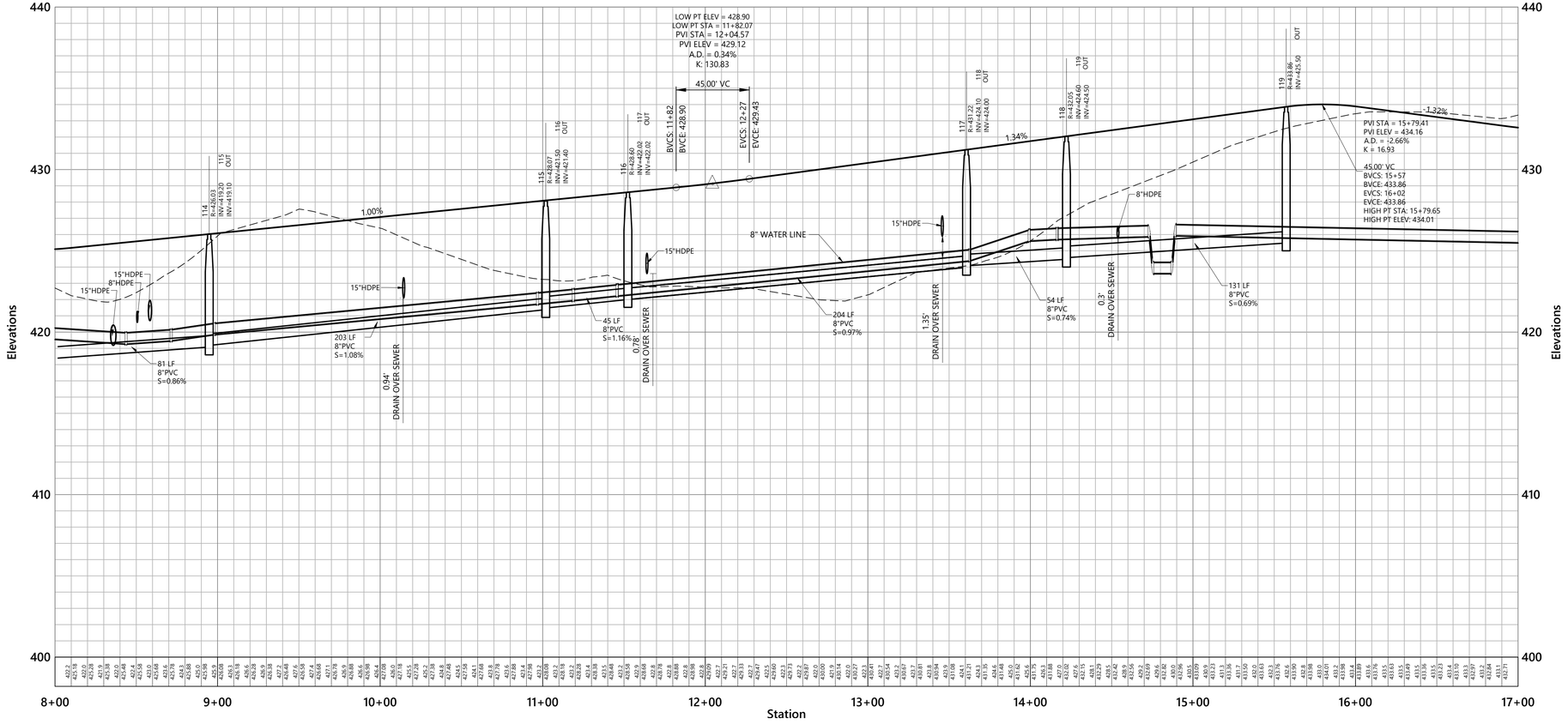


PLAN

Vert. 0 2 4 8 Feet
Horiz. 0 20 40 80 Feet

NOTE: ALL VERTICAL UTILITY CROSSINGS WHICH OCCUR AT THE ROADWAY CENTERLINE ARE DIMENSIONED IN THE ROADWAY PROFILES; CROSSINGS WHICH OCCUR OUTSIDE OF THE ROADWAY CENTERLINE ARE LABELED IN PLAN VIEW.

PROFILE



Saved Wednesday, February 11, 2026 11:28:45 PM BZOLLER Plotted Thursday, February 12, 2026 1:11:59 AM Ben Zoller

vhb.com
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: Permitting — Date: October 14, 2025

Not Approved for Construction

Drawing Title: Roadway Plan and Profile 2

Drawing Number: C5.02

Sheet 19 of 41

Project Number: 53140.44

STATE OF NEW HAMPSHIRE – ERIC K. GERADE No.13072 LICENSED PROFESSIONAL ENGINEER – 2/12/2026

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-PP.dwg

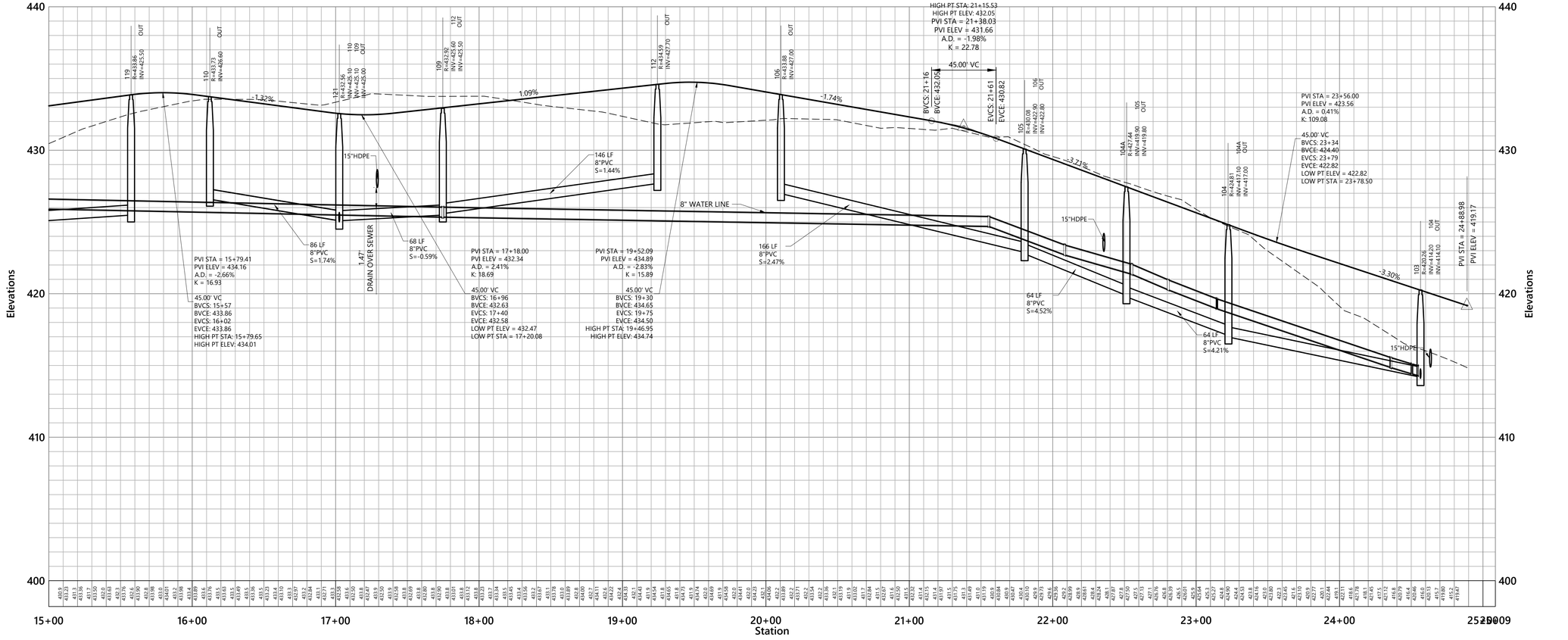


NOTE: ALL VERTICAL UTILITY CROSSINGS WHICH OCCUR AT THE ROADWAY CENTERLINE ARE DIMENSIONED IN THE ROADWAY PROFILES; CROSSINGS WHICH OCCUR OUTSIDE OF THE ROADWAY CENTERLINE ARE LABELED IN PLAN VIEW.

PLAN

Vert. 0 2 4 8 Feet
Horiz. 0 20 40 80 Feet

PROFILE



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF
Checked by DHF
Issued for Permitting
Date October 14, 2025

Not Approved for Construction

Drawing Title
Roadway Plan And Profile 3

Drawing Number
C5.03

Sheet 20 of 41

Project Number
53140.44



Saved Wednesday, February 11, 2026 11:28:45 PM BZOLLER Plotted Thursday, February 12, 2026 1:10:33 AM Ben Zoller

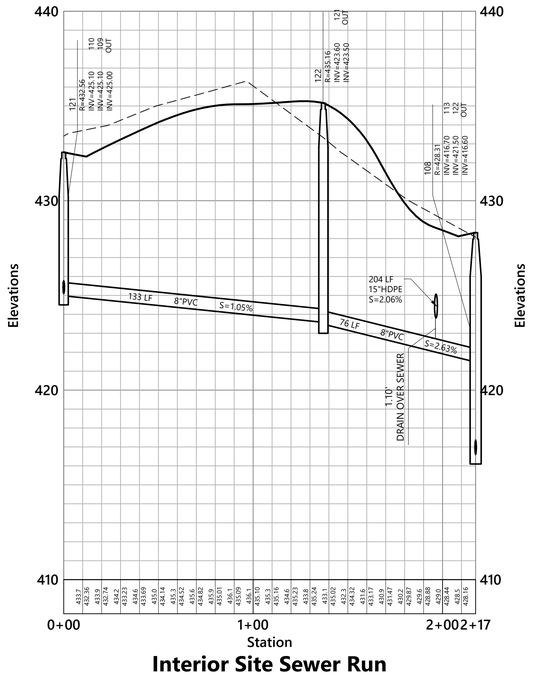
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-PP.dwg



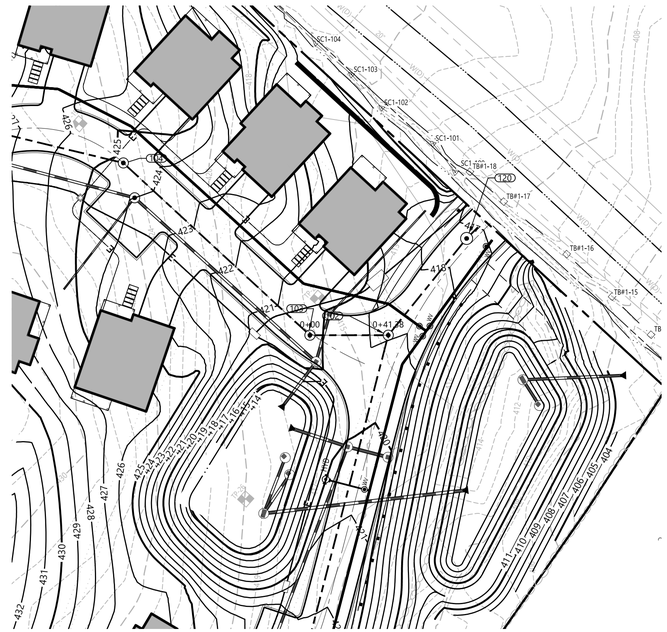
PLAN

Vert. 0 2 4 8 Feet
Horiz. 0 20 40 80 Feet

PROFILE



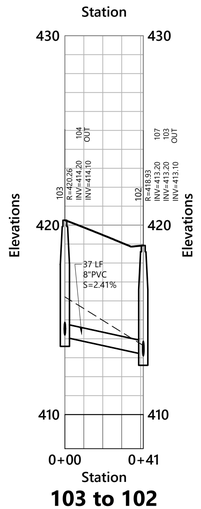
Interior Site Sewer Run



PLAN

Vert. 0 2 4 8 Feet
Horiz. 0 20 40 80 Feet

PROFILE



103 to 102

vhb.com

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: Permitting

Date: October 14, 2025

Not Approved for Construction

Drawing Title

Additional Sewer Plans And Profiles

Drawing Number

C5.04

Sheet 21 of 41

Project Number 53140.44

STATE OF NEW HAMPSHIRE - ERIC K. GERADE No.13672 LICENSED PROFESSIONAL ENGINEER - 2/12/2026

Saved Wednesday, February 11, 2026 11:28:45 PM BZOLLER Plotted Thursday, February 12, 2026 1:14:03 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-ER.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 30 60 120Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by: SJF
Checked by: DHF

Issued for: Permitting
Date: October 14, 2025

Not Approved for Construction

Drawing Title
Overall Erosion Control Plan

Drawing Number
C6.00

Sheet 22 of 41

Project Number
53140.44

STATE OF NEW HAMPSHIRE – ERIC K. GERADE No.13072 LICENSED PROFESSIONAL ENGINEER – 2/12/2026

Saved: Wednesday, February 11, 2026 11:28:04 AM JHOWE Plotted: Thursday, February 12, 2026 1:08:19 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-ER.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by: SJF
Checked by: DHF

Issued for: Permitting
Date: October 14, 2025

Not Approved for Construction

Drawing Title
Erosion Control Plan 1

Drawing Number
C6.01

Sheet 23 of 41

Project Number
53140.44

STATE OF NEW HAMPSHIRE
ERIC K. GERADE No.13672
LICENSED PROFESSIONAL ENGINEER
2/12/2026

Saved Wednesday, February 11, 2026 11:28:04 AM JHOWE Plotted Thursday, February 12, 2026 1:03:36 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-ER.dwg



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: Permitting

Date: October 14, 2025

Not Approved for Construction

Drawing Title
Erosion Control Plan 2

Drawing Number
C6.02

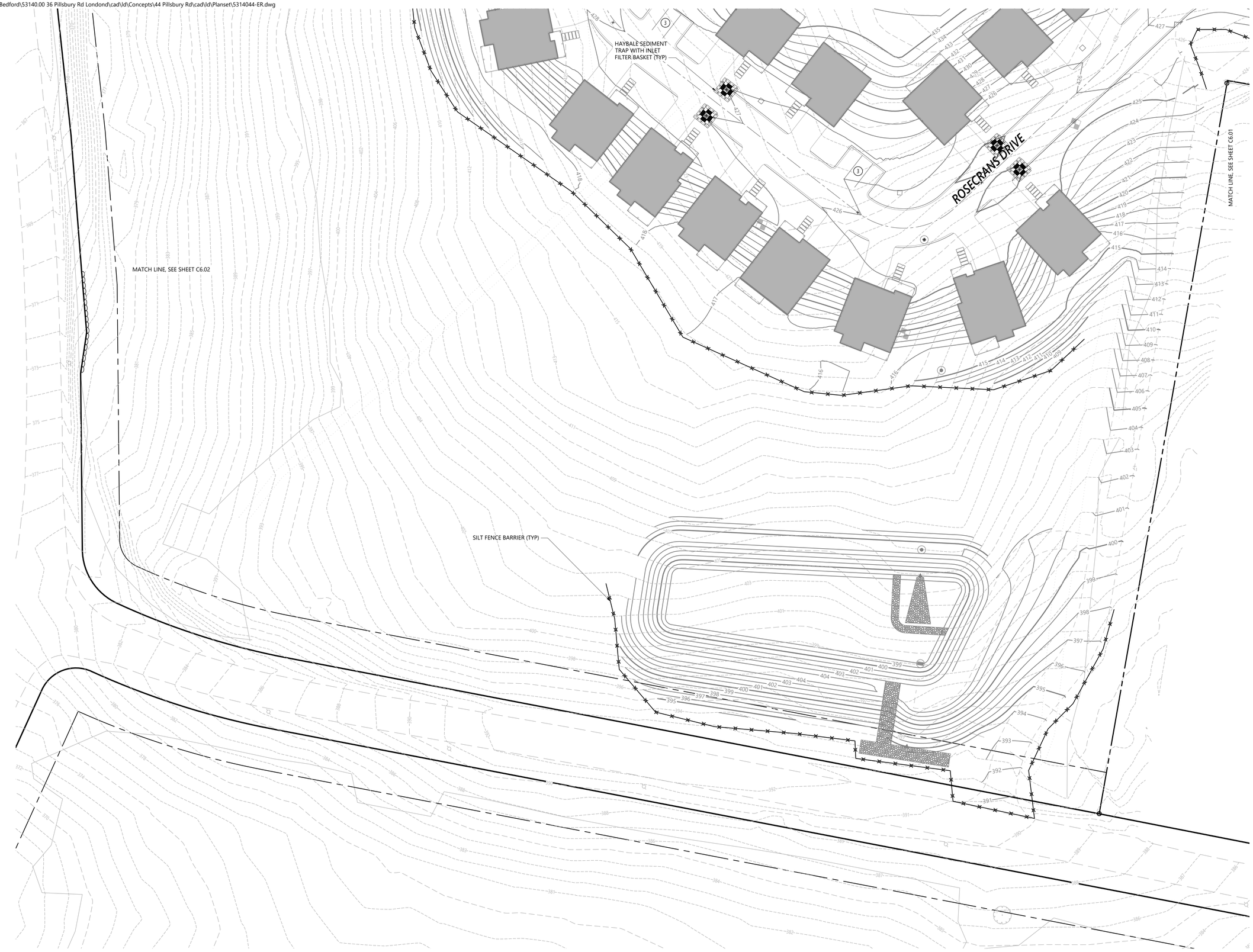
STATE OF NEW HAMPSHIRE - ERIC K. GERADE No.13672 LICENSED PROFESSIONAL ENGINEER
2/12/2026

Sheet 24 of 41

Project Number
53140.44

Saved Wednesday, February 11, 2026 11:28:04 AM JHOWE Plotted Thursday, February 12, 2026 1:06:07 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-ER.dwg



Saved Wednesday, February 11, 2026 11:28:04 AM JHOWE Plotted Thursday, February 12, 2026 12:57:28 AM Ben Zoller

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: Permitting

Date: October 14, 2025

Not Approved for Construction

Drawing Title
Erosion Control Plan 3

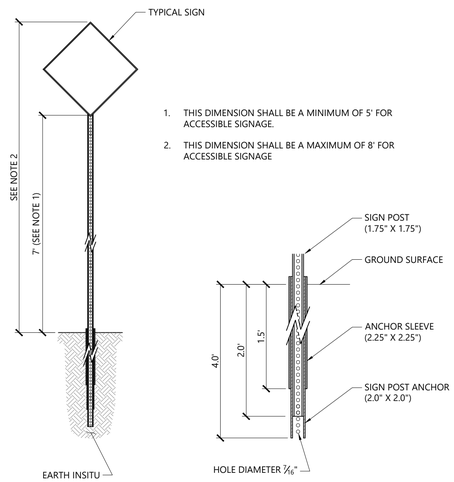
Drawing Number
C6.03

STATE OF NEW HAMPSHIRE – ERIC K. GERADE No.13672 LICENSED PROFESSIONAL ENGINEER – 2/12/2026

Sheet 25 of 41

Project Number
53140.44

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-DT.dwg

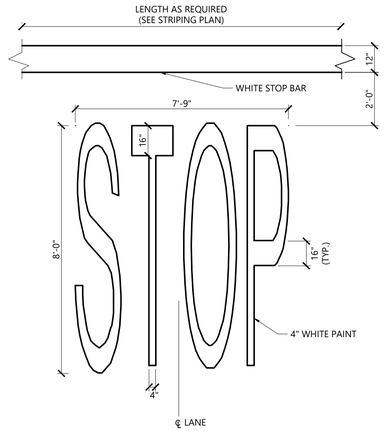


1. THIS DIMENSION SHALL BE A MINIMUM OF 5' FOR ACCESSIBLE SIGNAGE.
2. THIS DIMENSION SHALL BE A MAXIMUM OF 8' FOR ACCESSIBLE SIGNAGE

Sign Post - Type 'B'

3/19

N.T.S. | Source: VHB | LD_702



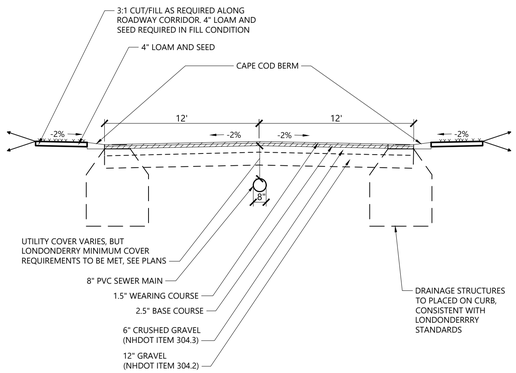
NOTES

1. PAVEMENT MARKINGS TO BE INSTALLED FOR ON SITE WORK IN LOCATIONS SHOWN.

Pavement Markings - Stop Marking & Bar

1/16

N.T.S. | Source: VHB | LD_554

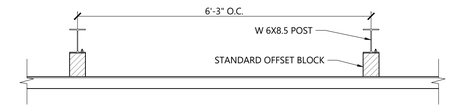


NOTES

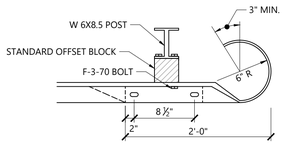
1. LOCATION OF WATER LINE VARIES. SEE PLAN FOR LOCATION.

24' Roadway Section Detail

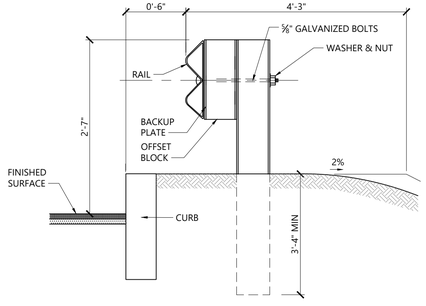
N.T.S. | Source: VHB



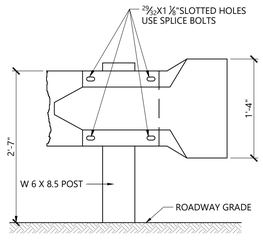
PLAN VIEW



PLAN VIEW



SECTION VIEW

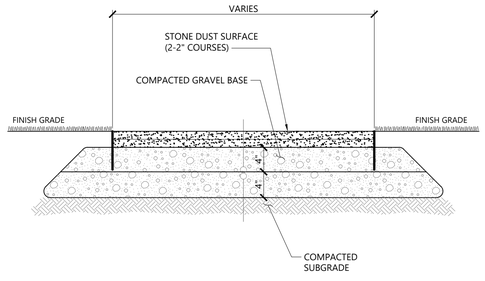


ELEVATION VIEW

Steel Beam Guardrail with Steel Post

10/20

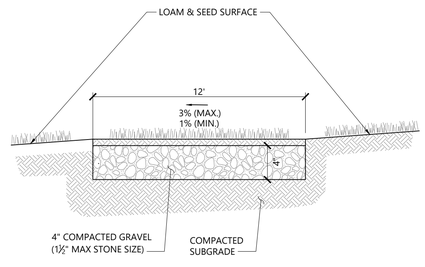
N.T.S. | Source: VHB | LD_456



Stonedust Path

02/25

N.T.S. | Source: VHB | REV



SECTION

12' Access Path

11/25

N.T.S. | Source: VHB | REV

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by: SJF | Checked by: DHF

Issued for: Permitting | Date: October 14, 2025

Not Approved for Construction

Drawing Title: Site Details 1

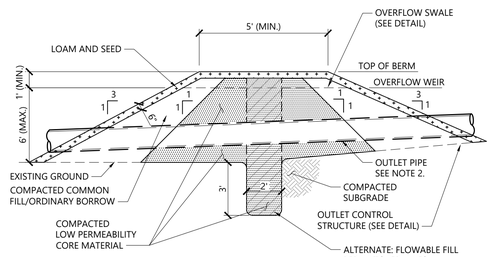
Drawing Number: C7.01



Sheet 26 of 41

Project Number: 53140.44

Saved Thursday, February 12, 2026 12:09:03 AM BZOLLER Plotted Thursday, February 12, 2026 1:10:03 AM Ben Zoller



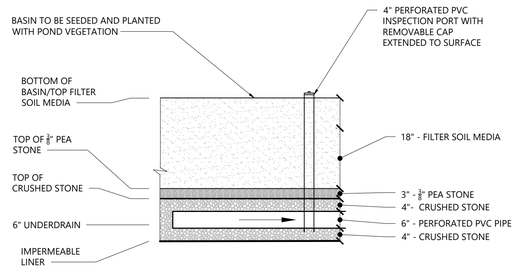
NOTES

1. LOW PERMEABILITY CORE MATERIAL IS CONTINUOUS FOR THE FULL LENGTH OF THE EMBANKMENT.
2. WHERE PIPES PENETRATE THE LOW PERMEABILITY CORE, PIPE SHALL BE BEDDED IN THE LOW PERMEABILITY CORE MATERIAL.
3. THE BERM SECTION IS SUBJECT TO CHANGE AND WILL BE BASED ON THE RESULTS OF FURTHER GEOTECHNICAL INVESTIGATIONS.

Detention Basin Berm Section

12/20

N.T.S. Source: VHB LD_160



NOTES

1. FILTER SOIL MEDIA SHALL CONSIST (BY VOLUME) OF:
   - 60% TO 85% SAND (0.5 TO 2.0 MM) (SEE SPECS BELOW)
   - 15% TO 25% LOAM OR TOPSOIL
   - 3% TO 8% ORGANIC MATTER

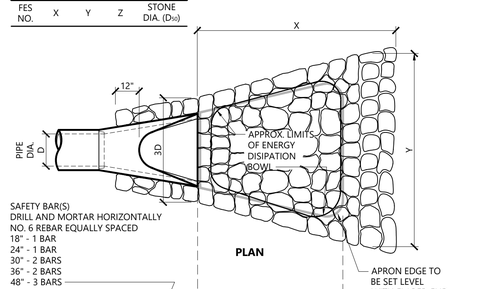
   * ALTERNATIVELY, USE MEDIA SPECIFIED IN THE ALTERATION OF TERRAIN RULES, Env-Wq 1508.07(k)
2. ⅜" PEASTONE SHALL CONFORM TO ASTM-33 #8 GRADATION, OR APPROVED EQUAL.

Basin Sand Filter

N.T.S. Source: VHB

RIPRAP STONE

FES NO.	X	Y	Z	STONE DIA. (D_{50})

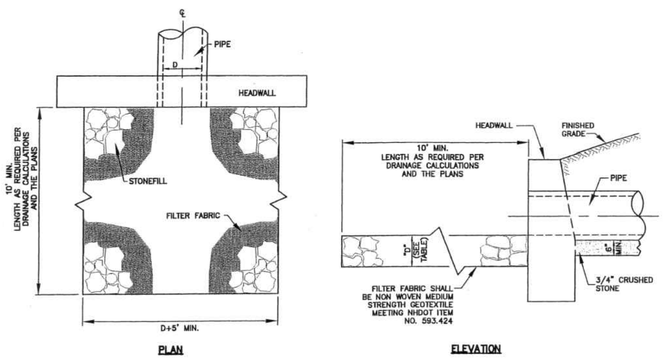


SECTION A-A

Flared End Section (FES) with Stone Protection

3/19

N.T.S. Source: VHB LD_134



PLAN ELEVATION

NOTE: STONEFILL SHALL CONFORM TO THE LATEST EDITION OF THE NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 585, STONE FILL WITH THE FOLLOWING REQUIREMENTS:

% OF PASSING BY WEIGHT	STONE SIZES C1	C2	C3
	D = BLANKET THICKNESS		
	12"	18"	24"
100%	8"	12"	18"
85%	7"	11"	16"
50%	5"	8"	12"
15%	2"	3"	4"

NOTE: ALL STONEFILL TO BE SIZE "C1" MIN. EXCEPT WHERE OTHERWISE REQUIRED PER DRAINAGE CALCULATIONS AND THE PLANS.

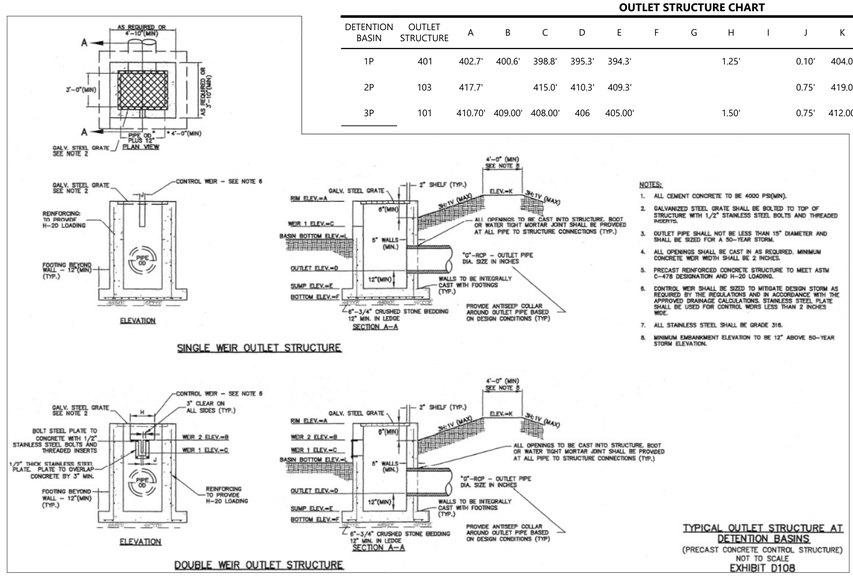
HEADWALL WITH STONEFILL APRON

NOT TO SCALE

EXHIBIT D107

OUTLET STRUCTURE CHART

DETENTION BASIN	OUTLET STRUCTURE	A	B	C	D	E	F	G	H	I	J	K	L	UNDERDRAIN DIAMETER	UNDERDRAIN CAP DIAMETER
1P	401	402.7'	400.6'	398.8'	395.3'	394.3'			1.25'		0.10'	404.0'	398.0'	6.0"	1.0"
2P	103	417.7'		415.0'	410.3'	409.3'					0.75'	419.0'	414.0'	6.0"	2.0"
3P	101	410.70'	409.00'	408.00'	406	405.00'			1.50'		0.75'	412.00'	408.00'	-	-



vhb.com

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF Checked by DHF

Issued for **Permitting** Date **October 14, 2025**

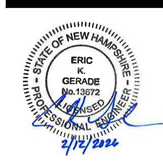
Not Approved for Construction

Drawing Title
Site Details 2

Drawing Number
C7.02

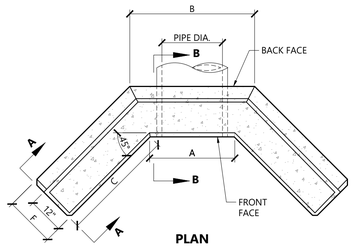
Sheet 27 of 41

Project Number
53140.44

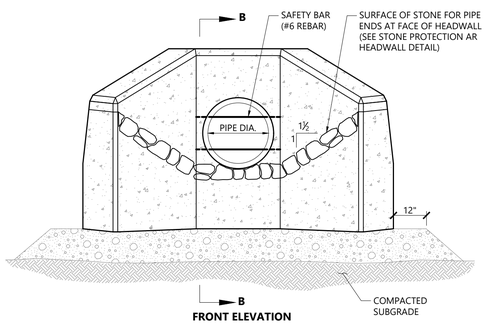


Saved Thursday, February 12, 2026 12:09:03 AM BZOLLER Plotted Thursday, February 12, 2026 1:08:57 AM Ben Zoller

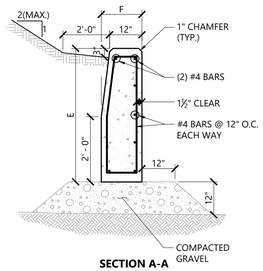
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-DT.dwg



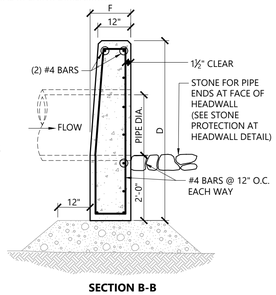
PLAN



FRONT ELEVATION



SECTION A-A



SECTION B-B

DIMENSIONAL TABLE

PIPE DIA.	A	B	C	D	E	F	#OF SAFETY BARS
12"	2'-6"	3'-8"	2'-11"	4'-0"	3'-3"	1'-6"	
15"	2'-6"	3'-8"	2'-11"	4'-0"	3'-6"	1'-6"	1
18"	3'-0"	4'-2"	3'-3"	4'-6"	3'-6"	1'-6"	1
24"	3'-6"	4'-8"	3'-6"	5'-0"	3'-9"	1'-6"	1
30"	4'-0"	5'-3"	4'-3"	5'-10"	4'-0"	1'-6"	2
36"	4'-6"	5'-11"	5'-0"	6'-4"	4'-3"	1'-8"	2
42"	5'-0"	6'-6"	5'-9"	6'-11"	4'-6"	1'-10"	3
48"	5'-6"	7'-2"	6'-6"	7'-5"	4'-9"	2'-0"	3
60"	6'-6"	8'-5"	8'-0"	8'-6"	5'-3"	2'-4"	4
72"	7'-6"	9'-9"	9'-6"	9'-7"	5'-9"	2'-8"	5

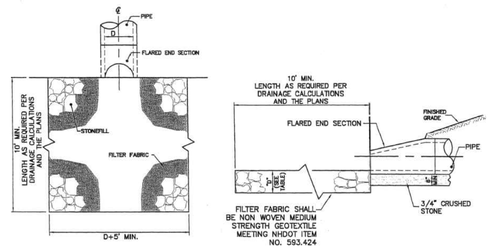
NOTES

1. CONCRETE SHALL BE 6% ±1.5% AIR ENTRAINED TYPE II CEMENT WITH MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.
2. INSTALL IMPERMEABLE TRENCH DAM ANTI-SEEP COLLAR AROUND DRAIN PIPE PRIOR TO HEADWALL LOCATION.
3. SAFETY BARS TO BE OMITTED WHERE INDICATED ON PLANS.
4. SAFETY BARS SHALL BE SET TO CREATE EQUAL OPENING DIMENSIONS.

Concrete Headwall (HW) with Wing Walls

10/20

N.T.S. Source: VHB REV LD_132



PLAN ELEVATION

NOTE: STONEFILL SHALL CONFORM TO THE LATEST EDITION OF THE NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 585, STONE FILL WITH THE FOLLOWING REQUIREMENTS:

% OF PASSING BY WEIGHT	STONE SIZES C1 C2 C3 D = BLANKET THICKNESS 12" 18" 24"
100%	6" 12" 18"
85%	7" 11" 16"
50%	5" 8" 12"
15%	2" 3" 4"

NOTE: ALL STONEFILL TO BE SIZE "C1" MIN. EXCEPT WHERE OTHERWISE REQUIRED PER DRAINAGE CALCULATIONS AND THE PLANS.

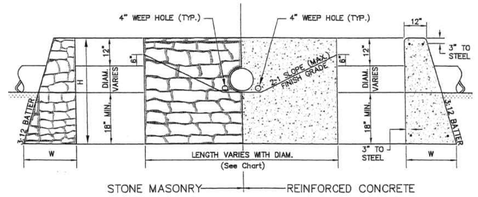
TYPICAL PIPE END SECTION (FLARED END) WITH STONEFILL APRON

NOT TO SCALE

EXHIBIT D105

DRAIN PIPE DIAMETER	12"	15"	18"	24"	30"
LENGTH	3'-6"	4'-6"	5'-6"	7'-6"	9'-6"
HEIGHT (H)	3'-6"	3'-9"	4'-0"	4'-6"	5'-0"
BOTTOM WIDTH (W)	1'-10.5"	1'-11.25"	2'-0"	2'-1.5"	2'-3"
CONC. (Cu.Yd.)	0.61	0.85	1.13	1.78	2.58
STEEL (Lbs.)	9	11	14	20	25

ALL STEEL SHALL BE #4 BARS, MEETING NHDOT REQUIREMENTS



NOTES:
1. ALL CONCRETE SHALL BE CLASS A
2. ALL HEADWALLS SHALL MEET NHDOT REQUIREMENTS. FOR LARGER PIPE DIAMETERS, USE THE NHDOT STANDARD PLANS.

HEADWALLS (MASONRY & CONCRETE)

NOT TO SCALE

EXHIBIT D106

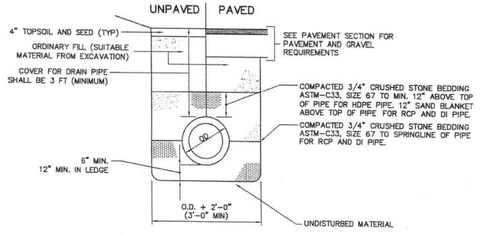
vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949



NOTE:

DRAIN PIPE SHALL BE 15" DIAMETER MIN.

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

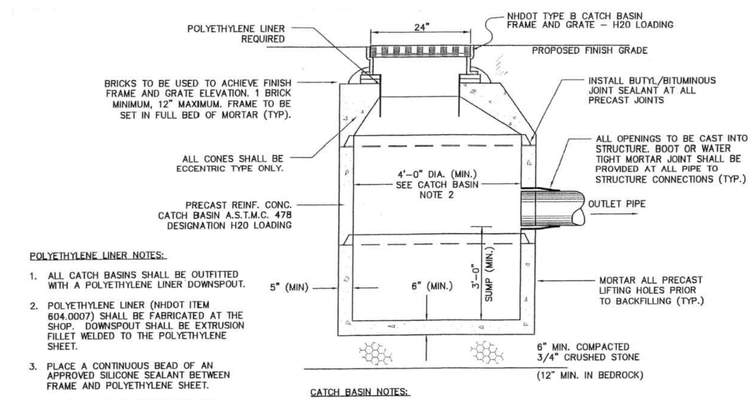
DI DRAIN PIPE SHALL BE CL. 50.

RC DRAIN PIPE SHALL BE CLASS III UNLESS OTHERWISE NOTED.

TYPICAL DRAIN PIPE TRENCH

NOT TO SCALE

EXHIBIT D101



POLYETHYLENE LINER NOTES:

1. ALL CATCH BASINS SHALL BE OUTFITTED WITH A POLYETHYLENE LINER DOWNSPOUT.
2. POLYETHYLENE LINER (NHDOT ITEM 604.0007) SHALL BE FABRICATED AT THE SHOP. DOWNSPOUT SHALL BE EXTRUSION FILLET WELDED TO THE POLYETHYLENE SHEET.
3. PLACE A CONTINUOUS BEAD OF AN APPROVED SILICONE SEALANT BETWEEN FRAME AND POLYETHYLENE SHEET.
4. PLACE CLASS AA CONCRETE TO 2" BELOW THE TOP OF GRATE ELEVATION (SUBSIDIARY TO DRAINAGE STRUCTURE).
5. TRIM POLYETHYLENE SHEET A MAXIMUM OF 4" OUTSIDE THE FLANGE ON THE FRAME FOR THE CATCH BASIN BEFORE PLACING CONCRETE (EXCEPT AS SHOWN WHEN USED WITH CURB).
6. THE CENTER OF THE GRATE & FRAME MAY BE SHIFTED A MAXIMUM OF 3" FROM THE CENTER OF THE DOWNSPOUT IN ANY DIRECTION.

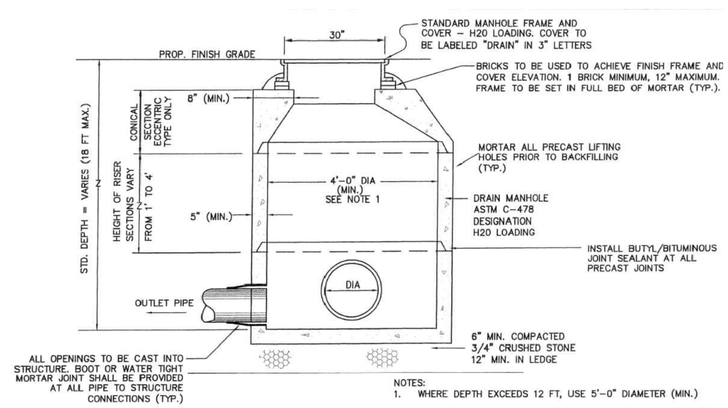
CATCH BASIN NOTES:

1. WHERE DEPTH EXCEEDS 12 FT, USE 5'-0" DIAMETER (MIN.) MAXIMUM DEPTH = 18 FEET
2. MINIMUM PIPE DROP (INLET TO OUTLET) SHALL BE 3" UNLESS OTHERWISE APPROVED BY THE DEPARTMENT OF PUBLIC WORKS AND ENGINEERING.
3. ALL BOOTS, GASKETS AND SEALANTS SHALL BE IN ACCORDANCE WITH MANUFACTURES WRITTEN INSTRUCTIONS

CATCH BASIN DETAIL

NOT TO SCALE

EXHIBIT D104



NOTES:
1. WHERE DEPTH EXCEEDS 12 FT, USE 5'-0" DIAMETER (MIN.)
2. MINIMUM PIPE DROP (INLET TO OUTLET) SHALL BE 3" UNLESS OTHERWISE APPROVED BY THE DEPARTMENT OF PUBLIC WORKS AND ENGINEERING.
3. ALL BOOTS, GASKETS AND SEALANTS SHALL BE IN ACCORDANCE WITH MANUFACTURES WRITTEN INSTRUCTIONS

PRECAST DRAIN MANHOLE DETAIL

NOT TO SCALE

EXHIBIT D103

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF Checked by DHF

Issued for Permitting Date October 14, 2025

Not Approved for Construction

Drawing Title: Site Details 3

Drawing Number: C7.03

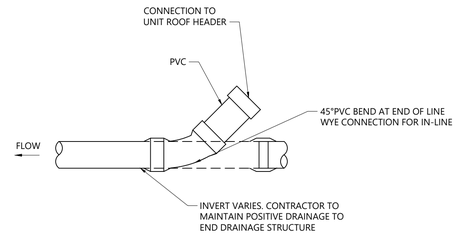
Sheet 28 of 41

Project Number: 53140.44



Saved Thursday, February 12, 2026 12:09:03 AM BZOLLER Plotted Thursday, February 12, 2026 1:14:33 AM Ben Zoller

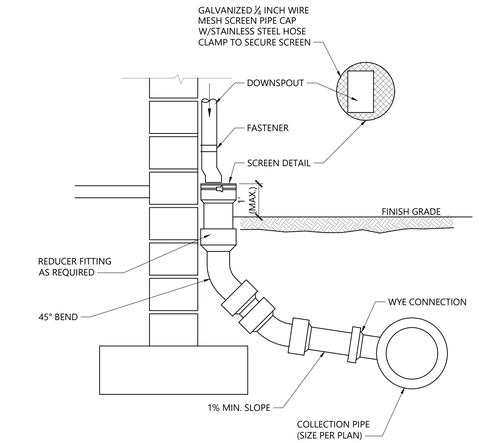
\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-DT.dwg



Roof Header Connection

2/26

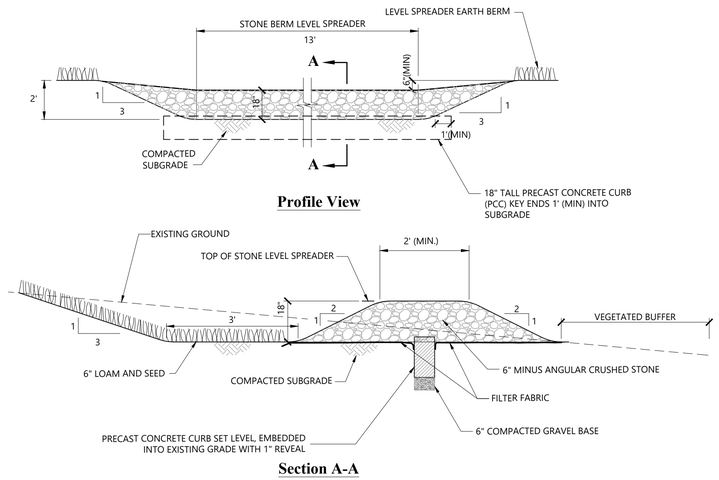
N.T.S. Source: VHB REV



Downspout Rain Leader

1/16

N.T.S. Source: VHB LD_195



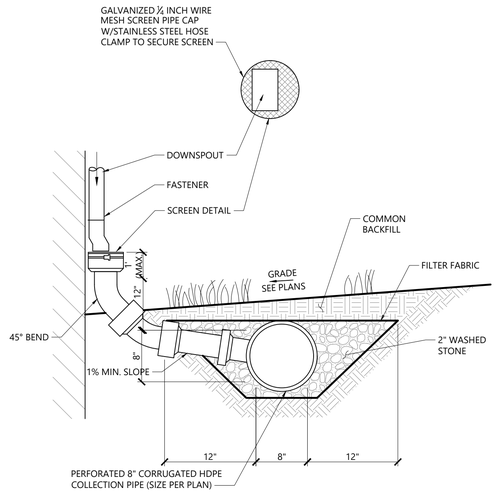
NOTES:

1. SEE GRADING AND DRAINAGE PLANS FOR ELEVATIONS.
2. ANY DISTURBED AREA DOWNSLOPE FROM THE LEVEL SPREADER SHALL BE STABILIZED WITH EROSION CONTROL BLANKETS AND REVEGETATED.

Stone Berm Level Spreader Detail

1/16

N.T.S. Source: VHB



NOTES

1. SEE PLAN VIEW FOR SLOPES OF HEADER DRAINAGE SYSTEM.
2. COMBINATION DOWNSPOUT AND FRENCH DRAIN TO BE UTILIZED WHERE FINISHED GRADE SLOPES ARE DIRECTED TOWARDS DWELLING UNITS. IN ALL OTHER INSTANCES WHERE FINISHED GRADE IS DIRECTED AWAY FROM DWELLING UNITS, THE DOWNSPOUT RAIN LEADER DETAIL SHALL BE REFERENCED, THIS SHEET.

Combination Downspout and French Drain

1/16

N.T.S. Source: VHB REV LD_184

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF Checked by DHF

Issued for Date

Permitting October 14, 2025

Not Approved for Construction

Drawing Title

Site Details 4

Drawing Number

C7.04

Sheet 29 of 41

Project Number

53140.44



Saved Thursday, February 12, 2026 12:09:03 AM BZOLLER Plotted Thursday, February 12, 2026 1:02:22 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-DT.dwg

Notes

1. THE SEWER CONNECTIONS SHALL BE INSPECTED BY AUTHORIZED TOWN OF LONDONDERRY PUBLIC WORKS AND ENGINEERING DEPARTMENT PERSONNEL BEFORE ANY BACKFILLING. INSPECTION HOURS ARE BETWEEN 9:00AM AND 4:30 PM, MONDAY - FRIDAY, WITH AT LEAST 2 DAYS OF ADVANCE NOTICE

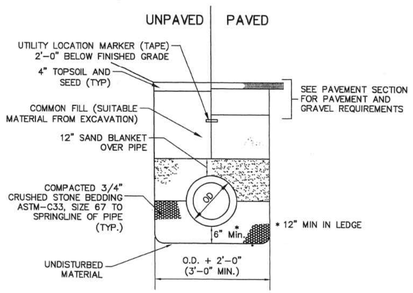
2. THE SEWER SERVICE MANHOLES SHALL BE VACUUM TESTED AND THE PVC PIPING PRESSURE TESTED WITH AUTHORIZED TOWN OF LONDONDERRY PUBLIC WORKS AND ENGINEERING DEPARTMENT PERSONNEL PRESENT ON SITE AS A WITNESS. SEWER MANHOLES SHALL BE VACUUM TESTED IN ACCORDANCE WITH ENV-WQ 704.17 AND GRAVITY SEWER PIPE SHALL BE TESTED IN ACCORDANCE WITH ENV-WQ 704.06 AND THE PROJECT SPECIFICATIONS.

3. ALL SEWER CONSTRUCTION AND USE SHALL CONFORM TO THE STATE OF NEW HAMPSHIRE STANDARD SEWER CONSTRUCTION SPECIFICATIONS AND THE TOWN OF LONDONDERRY SEWER USE ORDINANCE.

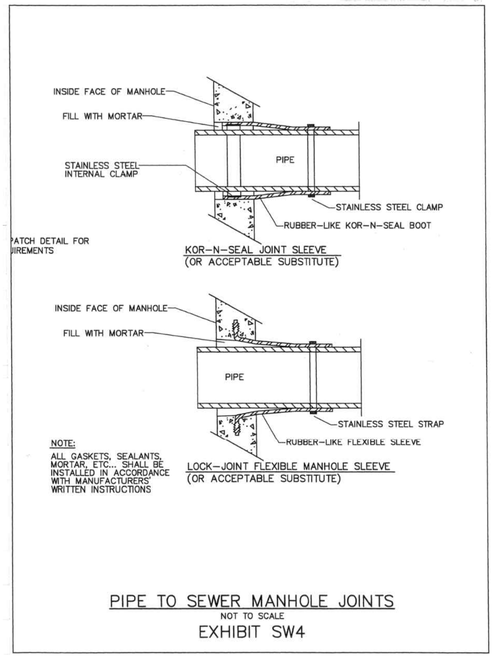
4. PRIOR TO CONSTRUCTION, CONTRACTOR TO FIELD VERIFY AS-BUILT CONDITIONS AT SMH 102 (BY OTHERS) AND THE STUB (BY OTHERS) BETWEEN SMH 101 AND 102 AND REPORT BACK DISCREPANCIES TO THE DESIGN ENGINEER.

Sewer Notes 6/10

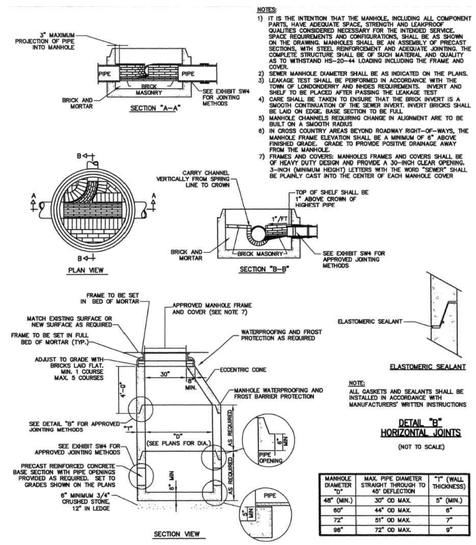
N.T.S. Source: VHB LD_



TYPICAL SEWER PIPE TRENCH
NOT TO SCALE
EXHIBIT SW1

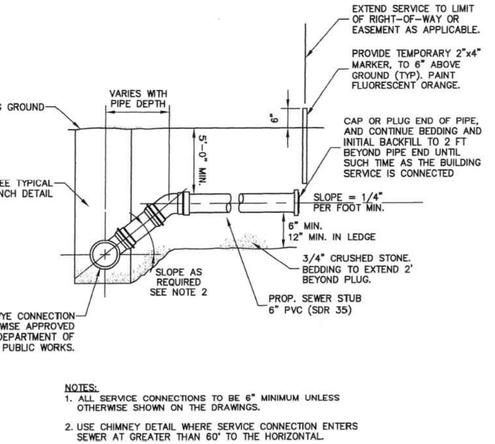


PIPE TO SEWER MANHOLE JOINTS
NOT TO SCALE
EXHIBIT SW4



MANHOLE DIAMETER "D"	MAX. PIPE DIAMETER STRAIGHT THROUGH TO 45° DEFLECTION	"T" (WALL THICKNESS)
48" (MIN.)	30" OD MAX.	5" (MIN.)
60"	44" OD MAX.	6"
72"	51" OD MAX.	7"
96"	72" OD MAX.	9"

TYPICAL SEWER MANHOLE
NOT TO SCALE
EXHIBIT SW2

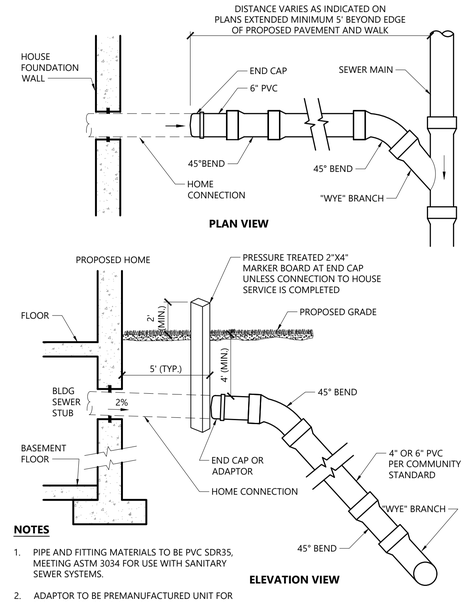


NOTES:
1. MINIMUM 5'-0" DIAMETER MANHOLES SHALL BE USED AT ALL INTERNAL DROP MANHOLE CONNECTIONS. SEE PLANS FOR MANHOLE DIAMETER.
2. INTERNAL DROP SEWER MANHOLE CONNECTIONS TO BE USED WHERE THE DIFFERENCE BETWEEN INVERT IN AND INVERT OUT IS GREATER THAN 2'-0".

TYPICAL SEWER MANHOLE WITH INTERNAL DROP CONNECTION
NOT TO SCALE
EXHIBIT SW3

NOTES:
1. ALL SERVICE CONNECTIONS TO BE 6" MINIMUM UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
2. USE CHIMNEY DETAIL WHERE SERVICE CONNECTION ENTERS SEWER AT GREATER THAN 60° TO THE HORIZONTAL.

DETAIL FOR SEWER SERVICE CONNECTION
NOT TO SCALE
EXHIBIT SW5



NOTES
1. PIPE AND FITTING MATERIALS TO BE PVC SDR35, MEETING ASTM 3034 FOR USE WITH SANITARY SEWER SYSTEMS.
2. ADAPTOR TO BE PREMANUFACTURED UNIT FOR CONNECTION OF PIPE TYPES

Typical Wye and Chimney Detail (Residential) 1/16

N.T.S. Source: VHB LD_222

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF Checked by DHF

Issued for Permitting Date October 14, 2025

Not Approved for Construction

Drawing Title
Site Details 5

Drawing Number
C7.05

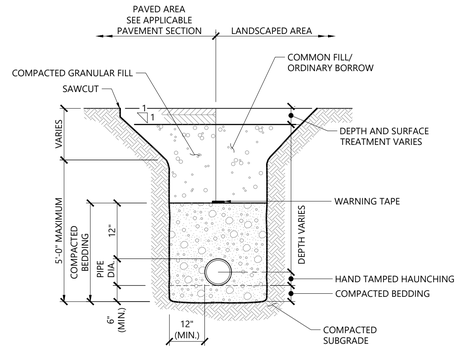
Sheet 30 of 41

Project Number
53140.44



Saved Thursday, February 12, 2026 12:09:03 AM BZOLLER Plotted Thursday, February 12, 2026 1:13:43 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-DT.dwg



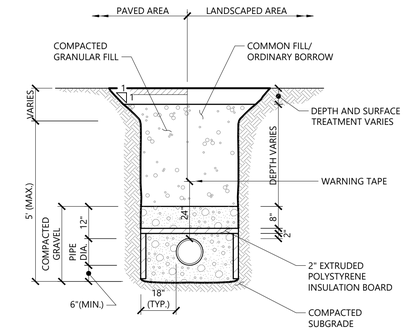
NOTES

1. WHERE UTILITY TRENCHES ARE CONSTRUCTED THROUGH DETENTION BASIN BERMS OR OTHER SUCH SPECIAL SECTIONS, PLACE TRENCH BACKFILL WITH MATERIALS SIMILAR TO THE SPECIAL SECTION REQUIREMENTS.
2. USE METALLIC TRACING/WARNING TAPE OVER ALL PIPES.
3. COMPACTED GRANULAR FILL MAY CONSIST OF GRAVEL, CRUSHED STONE, SAND, OR OTHER MATERIAL AS APPROVED BY ENGINEER.

Utility Trench

11/19

N.T.S. Source: VHB LD_300



NOTES

1. SEWER LINE SHALL BE INSULATED WHEN COVER IS LESS THAN FOUR (4) FEET AND WHERE SHOWN ON PLANS.
2. WATER LINE SHALL BE INSULATED WHEN COVER IS LESS THAN FIVE (5) FEET AND WHERE SHOWN ON PLANS.
3. BACKFILL PLACED IN UTILITY TRENCHES INCLUDING DISTURBED AREAS SURROUNDING UTILITY TRENCHES SHALL BE PLACED AND COMPACTED IN 12" (MAX.) VERTICAL LIFTS.

Utility - Pipe Insulation

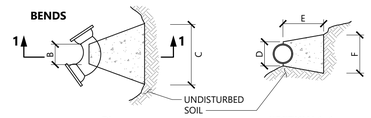
12/19

N.T.S. Source: VHB LD_305

TABLE OF DIMENSIONS

BENDS	B	C	D	E	F	BENDS	B	C	D	E	F
6" 11 ¼°	8"	15"	12"	24"	12"	6" 45°	8"	30"	12"	24"	14"
6" 22 ½°	"	19"	"	"	13"	6" 90°	"	30"	"	"	27"
8" 11 ¼°	"	20"	"	"	12"	8" 45°	"	30"	"	"	24"
8" 22 ½°	"	22"	"	"	17"	8" 90°	"	38"	"	"	36"
12" 11 ¼°	"	30"	"	"	15"	12" 45°	"	40"	"	"	40"
12" 22 ½°	"	35"	"	"	25"	12" 90°	"	60"	"	"	52"

BENDS

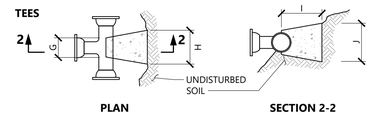


Plan **SECTION 1-1**

TABLE OF DIMENSIONS

TEES	G	H	I	J	TEES	G	H	I	J
6"X6"X6"	12"	24"	24"	18"	12"X12"X6"	12"	24"	24"	18"
8"X8"X6"	"	"	"	"	12"X12"X8"	"	"	"	24"
8"X8"X8"	"	"	"	24"	12"X12"X12"	"	36"	"	36"

TEES



PLAN **SECTION 2-2**

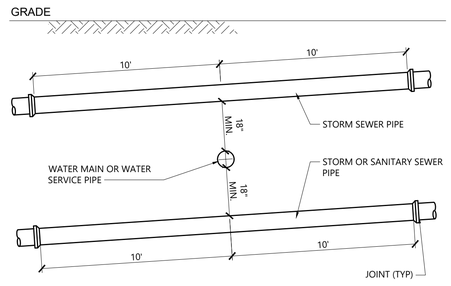
NOTES

1. PROVIDE BLOCKS FOR TAPPING SLEEVES, DEAD ENDS, GATE VALVES, AND VERTICAL BENDS (SAME SIZE AS REQUIRED FOR TEES). PROVIDE ANCHOR RODS AT VERTICAL BENDS AND GATE VALVES.
2. CONCRETE SHALL NOT BE PLACED AGAINST PIPE BEYOND FITTING.
3. CONCRETE SHALL BE 3,000 PSI-TYPE I.

Concrete Thrust Block

1/16

N.T.S. Source: VHB LD_260



NOTES

1. WHERE SEWER LINE CROSSES OVER WATER LINE, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER AND WATER LINE. SEWER LINE JOINTS SHALL BE 10 FEET FROM THE POINT OF CROSSING WHERE SEWER LINES CROSS OVER WATER LINES.
2. WHERE WATER LINE CROSSES OVER SEWER LINE AND 18 INCH SEPARATION CANNOT BE MAINTAINED, BOTH WATER AND SEWER LINES SHALL BE CONSTRUCTED OF PRESSURE PIPE AND A MINIMUM SEPARATION BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE SEWER LINE OF 12 INCHES SHALL BE MAINTAINED.
3. IN THE EVENT THAT A STORM SEWER CROSSES OVER A SANITARY SEWER, THE SANITARY SEWER MUST BE CONSTRUCTED OF DIP UNLESS 18 INCH SEPARATION IS MAINTAINED.

Water/Sanitary/Drainage Pipe Crossing

11/25

N.T.S. Source: VHB REV

vhb.com

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: Permitting | Date: October 14, 2025

Not Approved for Construction

Drawing Title: Site Details 6

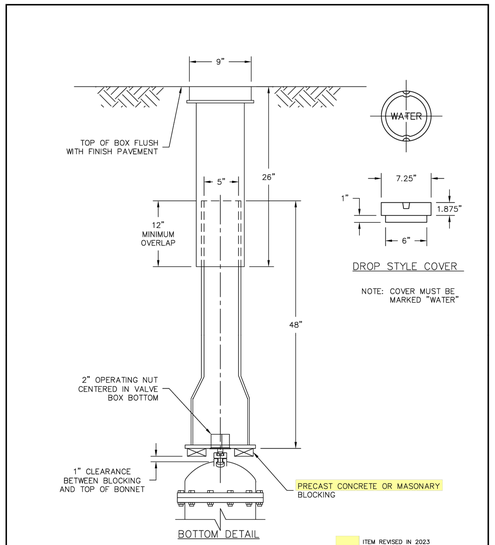
Drawing Number: C7.06

Sheet 31 of 41

Project Number: 53140.44



Saved Thursday, February 12, 2026 12:09:03 AM BZOLLER Plotted Thursday, February 12, 2026 1:06:42 AM Ben Zoller

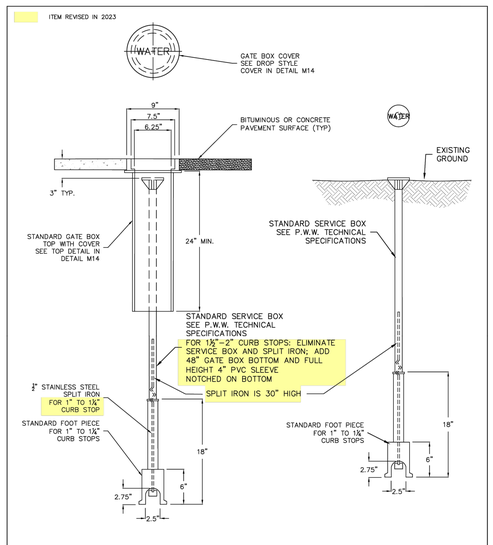


ITEM REVISED IN 2023

NOTES:
1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO P.W.W. TECHNICAL SPECIFICATIONS.

PENNICHUCK WATER

DETAIL M14
TYPICAL VALVE BOX DETAIL
PENNICHUCK WATER WORKS, INC.
REV: 03-15-2023 SCALE: NTS

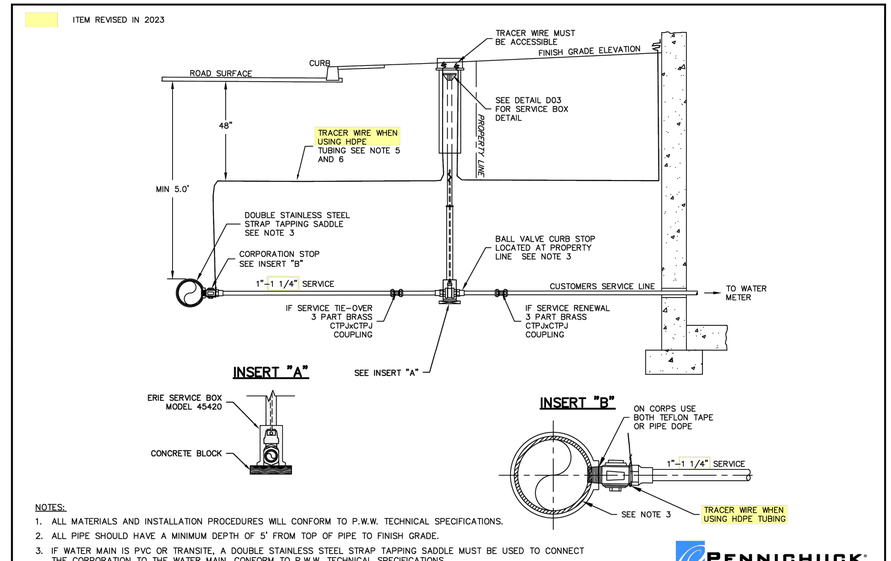


NOTE:
ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO P.W.W. TECHNICAL SPECIFICATIONS.

PENNICHUCK WATER

DETAIL D03
TYPICAL SERVICE BOX DETAIL IN PAVED AREAS
PENNICHUCK WATER WORKS, INC.
REV: 03-15-2023 SCALE: NTS

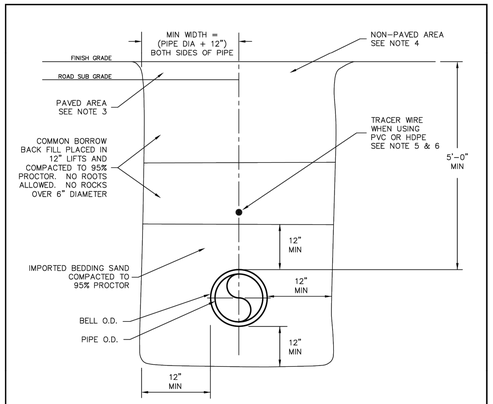
ITEM REVISED IN 2023



NOTES:
1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO P.W.W. TECHNICAL SPECIFICATIONS.
2. ALL PIPE SHOULD HAVE A MINIMUM DEPTH OF 5' FROM TOP OF PIPE TO FINISH GRADE.
3. IF WATER MAIN IS PVC OR TRANSITE, A DOUBLE STAINLESS STEEL STRAP TAPPING SADDLE MUST BE USED TO CONNECT THE CORPORATION TO THE WATER MAIN. CONFORM TO P.W.W. TECHNICAL SPECIFICATIONS.
4. IF TAPPING A FIRE SERVICE, THEN SEE DETAIL D15 AND D16.
5. USE 10-GAUGE SOLID-CORE COATED BLUE TRACER WIRE PER P.W.W. TECHNICAL SPECIFICATIONS. SPLICES REQUIRE SNAKEBITE LSC1030C LOCKING CONNECTORS OR EQUAL.
6. INSTALL 3" WIDE BLUE UNDERGROUND WARNING TAPE.
7. SERVICE TO BE PLACED ON 1' COMPACTED SAND BED AND COVERED IN 1' COMPACTED SAND BED.

PENNICHUCK WATER

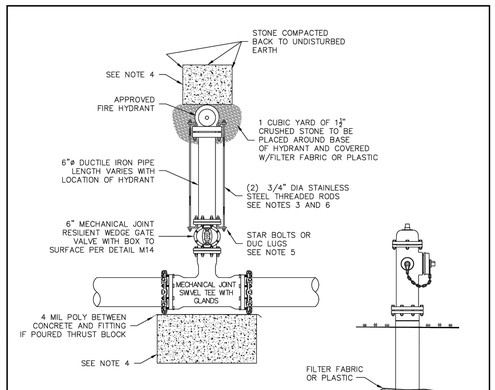
DETAIL D01
TYPICAL 1"-1 1/4" SERVICE & VALVE BOX INSTALLATION DETAIL
PENNICHUCK WATER WORKS, INC.
REV: 03-15-2023 SCALE: NTS



NOTES:
1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO P.W.W. TECHNICAL SPECIFICATIONS.
2. ALL PIPE SHOULD HAVE A MINIMUM DEPTH OF 5'-0" FROM TOP OF PIPE TO FINISH GRADE.
3. REQUIREMENTS FOR SUBBASE AND BASE MATERIAL TYPE ARE TO BE IN ACCORDANCE WITH LOCAL AUTHORITY HAVING LOCAL JURISDICTION IN PAVED AREAS.
4. REQUIREMENTS FOR GRAVEL, LOAM AND/OR SEED ARE TO BE IN ACCORDANCE WITH LOCAL AUTHORITY HAVING LOCAL JURISDICTION IN NON-PAVED AREAS.
5. USE 10-GAUGE SOLID-CORE COATED TRACER WIRE PER P.W.W. TECHNICAL SPECIFICATIONS.
6. INSTALL 3" WIDE BLUE UNDERGROUND WARNING TAPE.

PENNICHUCK WATER

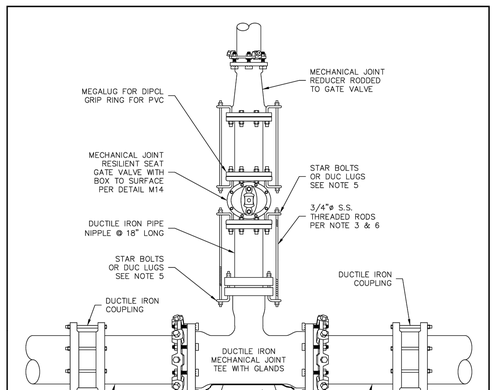
DETAIL M02.1
TYPICAL TRENCH DETAIL
PENNICHUCK WATER WORKS, INC.
REV: 11-1-2021 SCALE: NTS



NOTES:
1. ALL MATERIAL AND INSTALLATION PROCEDURES WILL CONFORM TO P.W.W. TECHNICAL SPECIFICATIONS.
2. ALL PIPE SHOULD HAVE A MINIMUM DEPTHS OF 5' FROM TOP OF PIPE TO FINISH GRADE.
3. 3/4"ø S.S. RODS SHALL BE USED IN CONJUNCTION WITH REQUIRED S.S. NUTS. RODS ARE TO BE ATTACHED TO FITTINGS WITH EITHER STAR BOLTS OR DUC LUGS. 10" FITTING OR SMALLER = (2) 3/4"ø S.S. RODS & ASSOC. HARDWARE. 12" FITTING OR LARGER = (4) 3/4"ø S.S. RODS & ASSOC. HARDWARE.
4. MIN 2'x2'x3' PRE CAST CONCRETE THRUST BLOCK MAY BE USED WITH P.W.W. APPROVAL OR CONCRETE THRUST BLOCK POURED AGAINST UNDISTURBED EARTH – SIZE TO BE BASED ON SIZE OF FITTING AND PRESSURE IN WATER MAIN. SEE DETAIL M10.
5. SEE PWW TECHNICAL SPECIFICATION SECTION 01600.C.16.F
6. ALL MECHANICAL JOINT FITTINGS SEPARATED BY PIPE LENGTH OF 10 FEET OR LESS MUST BE RODDED PER PWW TECHNICAL SPECIFICATION SECTION 01600E.2.F IF SEPARATION IS MORE THAN 10 FEET SUBSTITUTE MEGALUGS (OR GRIP RINGS) IN LIEU OF THREADED RODS.

PENNICHUCK WATER

DETAIL M15
TYPICAL HYDRANT INSTALLATION
PENNICHUCK WATER WORKS, INC.
REV: 11-1-2021 SCALE: NTS



NOTES:
1. ALL MATERIAL AND INSTALLATION PROCEDURES WILL CONFORM TO P.W.W. TECHNICAL SPECIFICATIONS.
2. ALL PIPE SHOULD HAVE A MINIMUM DEPTH OF 5' FROM TOP OF PIPE TO FINISH GRADE.
3. 3/4"ø S.S. RODS SHALL BE USED IN CONJUNCTION WITH REQUIRED S.S. NUTS. RODS ARE TO BE ATTACHED TO FITTINGS WITH EITHER STAR BOLTS OR DUC LUGS. 10" FITTING OR SMALLER = (2) 3/4"ø S.S. RODS & ASSOC. HARDWARE. 12" FITTING OR LARGER = (4) 3/4"ø S.S. RODS & ASSOC. HARDWARE.
4. MIN 2'x2'x3' PRE CAST CONCRETE THRUST BLOCK MAY BE USED WITH P.W.W. APPROVAL OR CONCRETE THRUST BLOCK POURED AGAINST UNDISTURBED EARTH – SIZE TO BE BASED ON SIZE OF FITTING AND PRESSURE IN WATER MAIN. SEE DETAIL M10.
5. SEE PWW TECHNICAL SPECIFICATION SECTION 01600.C.16.F
6. ALL MECHANICAL JOINT FITTINGS SEPARATED BY PIPE LENGTH OF 10 FEET OR LESS MUST BE RODDED PER PWW TECHNICAL SPECIFICATION SECTION 01600E.2.F IF SEPARATION IS MORE THAN 10 FEET SUBSTITUTE MEGALUGS (OR GRIP RINGS) IN LIEU OF THREADED RODS.

PENNICHUCK WATER

DETAIL M09
TYPICAL TEE INSTALLATION ON EXISTING MAIN
PENNICHUCK WATER WORKS, INC.
REV: 11-1-2021 SCALE: NTS

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF
Checked by DHF
Issued for Permitting
Date October 14, 2025

Not Approved for Construction

Drawing Title
Site Details 7

Drawing Number
C7.07

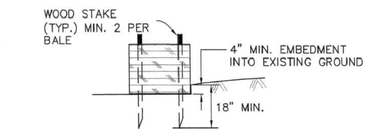


Sheet 32 of 41

Project Number
53140.44

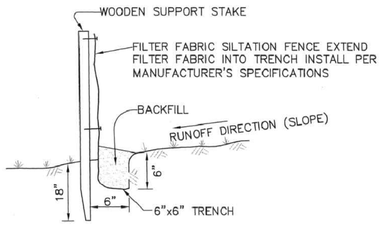
Saved Thursday, February 12, 2026 12:09:03 AM BZOLLER Plotted Thursday, February 12, 2026 1:15:12 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-DT.dwg



STAKED HAYBALE DETAIL

(NOT TO SCALE)



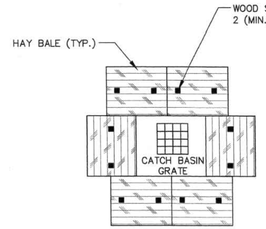
SILT FENCE DETAIL

(NOT TO SCALE)

DETAILS FOR HAYBALE AND SILT FENCE INSTALLATION

NOT TO SCALE

EXHIBIT EC1



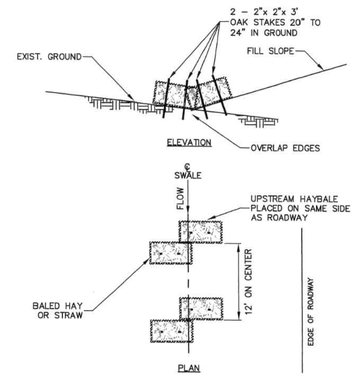
NOTES:

1. BALES TO REMAIN UNTIL SUBBASE PREPARATION IS COMPLETE AND ROADWAY PAVING IS TO BEGIN OR UNTIL ALL UPSTREAM AREAS ARE STABILIZED WITH VEGETATION.
2. HAYBALES AROUND CATCH BASINS TO BE USED IN NON-PAVED AREAS ONLY. FOR CATCH BASINS IN PAVED AREAS USE INLET FILTER BASKETS. SEE EXHIBIT EC6.
3. EACH CATCH BASIN LOCATION SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM ENTERING THE DRAINAGE PIPING SYSTEM AND/OR CAUSING SURFACE FLOODING.

DETAILS FOR SEDIMENT CONTROL AT CATCH BASINS

NOT TO SCALE

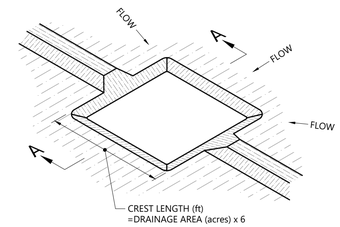
EXHIBIT EC2



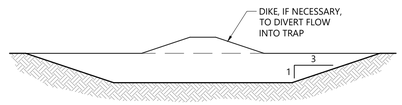
DETAILS FOR HAY BALE CHECK DAM

NOT TO SCALE

EXHIBIT EC3



ISOMETRIC VIEW



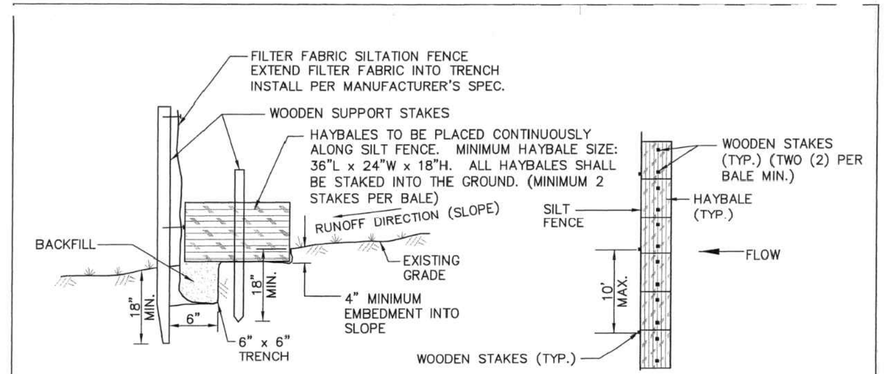
SECTION A-A

NOTES

1. THE TRAP SHALL 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.

Temporary Sediment Trap

N.T.S. Source: NH Stormwater Manual



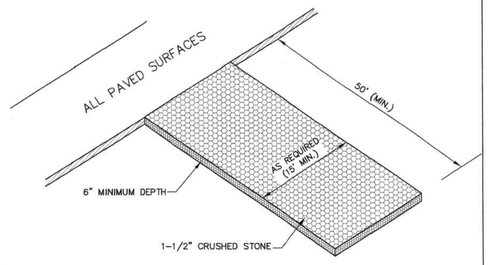
SECTION VIEW **PLAN VIEW**

NOTE: TO BE USED AT INLET END OF ALL CULVERTS AND DRAINAGE STRUCTURES.

DETAIL FOR SILT FENCE WITH HAY BALES

NOT TO SCALE

EXHIBIT EC4

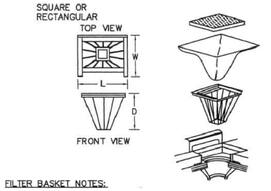


TO BE USED AT ALL STOCKPILE AND/OR STAGING AREAS.

DETAIL FOR CRUSHED STONE CONSTUCTION ENTRANCE

NOT TO SCALE

EXHIBIT EC5



FILTER BASKET NOTES:

1. INLET BASKETS SHALL BE USED ON ALL CATCH BASINS WITHIN THE PROJECT LIMITS WITHIN PAVED AREAS. INLET FILTER BASKETS SHALL BE "SILT SACK®" OR APPROVED EQUAL.
2. FILTER FABRIC SHALL BE PUSHED DOWN AND FORMED TO THE SHAPE OF THE BASKET. THE SHEET OF FABRIC SHALL BE LARGE ENOUGH TO BE SUPPORTED BY THE BASKET FRAME WHEN HOLDING SEDIMENT AND EXTEND AT LEAST 6 INCHES PAST THE FRAME. THE INLET GRATE SHALL BE PLACED OVER THE BASKET/FRAME AND WILL SERVE AS THE FABRIC ANCHOR.
3. THE FILTER FABRIC SHALL BE A GEO-TEXTILE FABRIC: POLYESTER, POLYPROPYLENE, STABILIZED NYLON, POLYETHYLENE OR POLYVINYLIDENE CHLORIDE MEETING THE FOLLOWING SPECIFICATIONS:
   GRAB STRENGTH: 300 lb. MINIMUM IN ANY PRINCIPAL DIRECTION (ASTM D-4632).
   MULLEN BURST STRENGTH: MINIMUM 800 psi (ASTM D-3786).
4. THE FABRIC SHALL HAVE AN OPENING NO GREATER THAN A NUMBER 40 U.S. STANDARD SIEVE AND MINIMUM PERMEABILITY OF 40 gpm/sq. ft.
5. THE INLET BASKET SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM ENTERING THE DRAINAGE PIPING SYSTEM AND/OR CAUSING SURFACE FLOODING.
6. INLET BASKETS SHALL BE MAINTAINED IN PLACE UNTIL ALL PAVING IS COMPLETED AND ALL UNPAVED AREAS HAVE BEEN STABILIZED WITH VEGETATION.

DETAIL FOR INLET FILTER BASKET

NOT TO SCALE

EXHIBIT EC6

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by: SJF
Checked by: DHF

Issued for: Permitting
Date: October 14, 2025

Not Approved for Construction

Drawing Title: Site Details 8

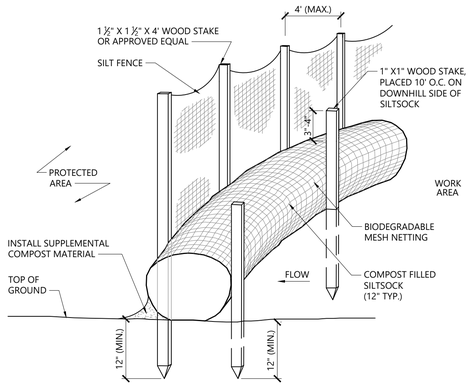
Drawing Number: C7.08



Sheet 33 of 41

Project Number: 53140.44

Saved Thursday, February 12, 2026 12:09:03 AM BZOLLER Plotted Thursday, February 12, 2026 1:01:54 AM Ben Zoller



NOTES

1. SILTSOCK SHALL BE FILTREXX SILTSOXX, OR APPROVED EQUAL.
2. SILTSOCKS SHALL OVERLAP A MINIMUM OF 12 INCHES.
3. SILTSOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.
4. UPON SITE STABILIZATION, COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.
5. IF NON BIODEGRADABLE NETTING IS USED THE NETTING SHALL BE COLLECTED AND DISPOSED OF OFFSITE.

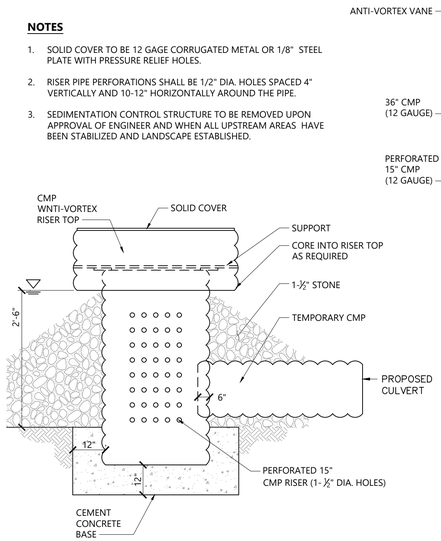
Siltsock / Silt Fence Barrier

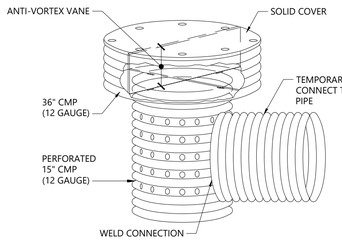
10/20

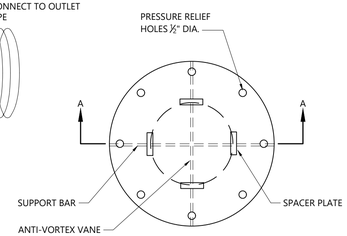
N.T.S. | Source: VHB | REV | LD_658-A

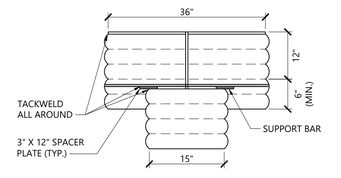
NOTES

1. SOLID COVER TO BE 12 GAGE CORRUGATED METAL OR 1/8" STEEL PLATE WITH PRESSURE RELIEF HOLES.
2. RISER PIPE PERFORATIONS SHALL BE 1/2" DIA. HOLES SPACED 4" VERTICALLY AND 10-12" HORIZONTALLY AROUND THE PIPE.
3. SEDIMENTATION CONTROL STRUCTURE TO BE REMOVED UPON APPROVAL OF ENGINEER AND WHEN ALL UPSTREAM AREAS HAVE BEEN STABILIZED AND LANDSCAPE ESTABLISHED.









SECTION A-A

Temporary Sedimentation Control Structure

1/

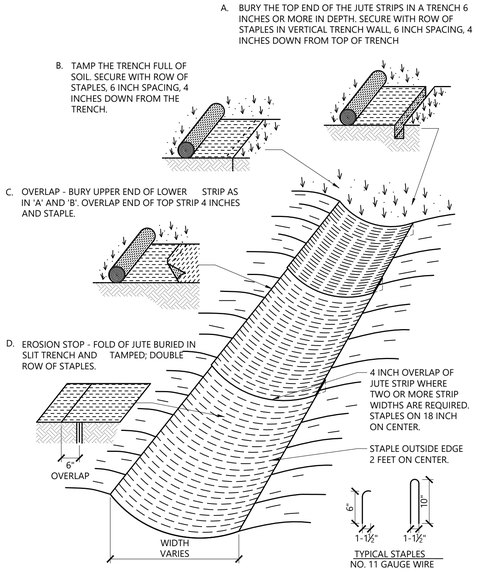
N.T.S. | Source: VHB | LD_6

A. BURY THE TOP END OF THE JUTE STRIPS IN A TRENCH 6 INCHES OR MORE IN DEPTH. SECURE WITH ROW OF STAPLES IN VERTICAL TRENCH WALL, 6 INCH SPACING, 4 INCHES DOWN FROM TOP OF TRENCH

B. TAMP THE TRENCH FULL OF SOIL. SECURE WITH ROW OF STAPLES, 6 INCH SPACING, 4 INCHES DOWN FROM THE TRENCH.

C. OVERLAP - BURY UPPER END OF LOWER STRIP AS IN 'A' AND 'B'. OVERLAP END OF TOP STRIP 4 INCHES AND STAPLE.

D. EROSION STOP - FOLD OF JUTE BURIED IN SLIT TRENCH AND TAMPED; DOUBLE ROW OF STAPLES.

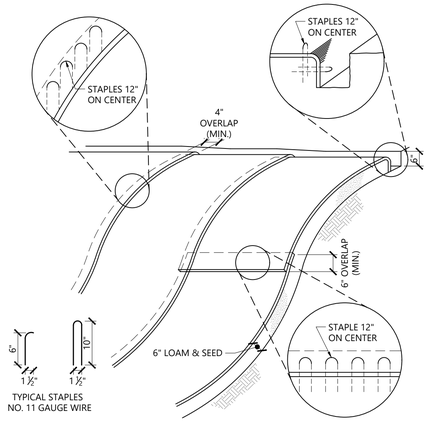


* INSTALLATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS

Erosion Control Blanket Swale Installation

1/16

N.T.S. | Source: VHB | LD_681



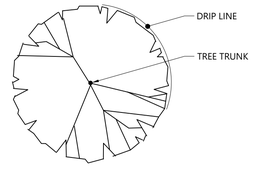
NOTES

1. BEGIN AT THE TOP OF BLANKET INSTALLATION AREA BY ANCHORING BLANKET IN A 6" DEEP TRENCH BACKFILL AND COMPACT TRENCH AFTER STAPLING.
2. ROLL THE BLANKET DOWN THE SWALE IN THE DIRECTION OF THE WATER FLOW.
3. THE EDGES OF BLANKETS MUST BE STAPLED WITH APPROX. 4 INCH OVERLAP WHERE 2 OR MORE STRIP WIDTHS ARE REQUIRED.
4. WHEN BLANKETS MUST BE SPLICED DOWN THE SWALE, PLACE UPPER BLANKET END OVER LOWER END WITH 6 INCH (MIN.) OVERLAP AND STAPLE BOTH TOGETHER.
5. METHOD OF INSTALLATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.
6. EROSION CONTROL BLANKETS SHALL BE USED IN ALL AREAS WHERE SLOPES EXCEED 3:1.
7. THERE SHALL BE NO PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN ½ INCHES MATERIAL UTILIZED.

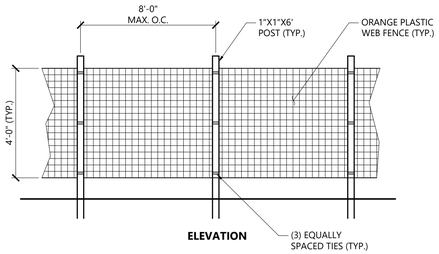
Erosion Control Blanket Slope Installation

10/20

N.T.S. | Source: VHB | LD_680



PLAN



ELEVATION

NOTES

1. INSTALL TREE PROTECTION FENCE AT THE DRIP LINE OF EXISTING TREES TO REMAIN.

Tree Protection Fence

1/16

N.T.S. | Source: VHB | LD_610

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by: SJF | Checked by: DHF

Issued for: Permitting | Date: October 14, 2025

Not Approved for Construction

Drawing Title: Site Details 9

Drawing Number: C7.09

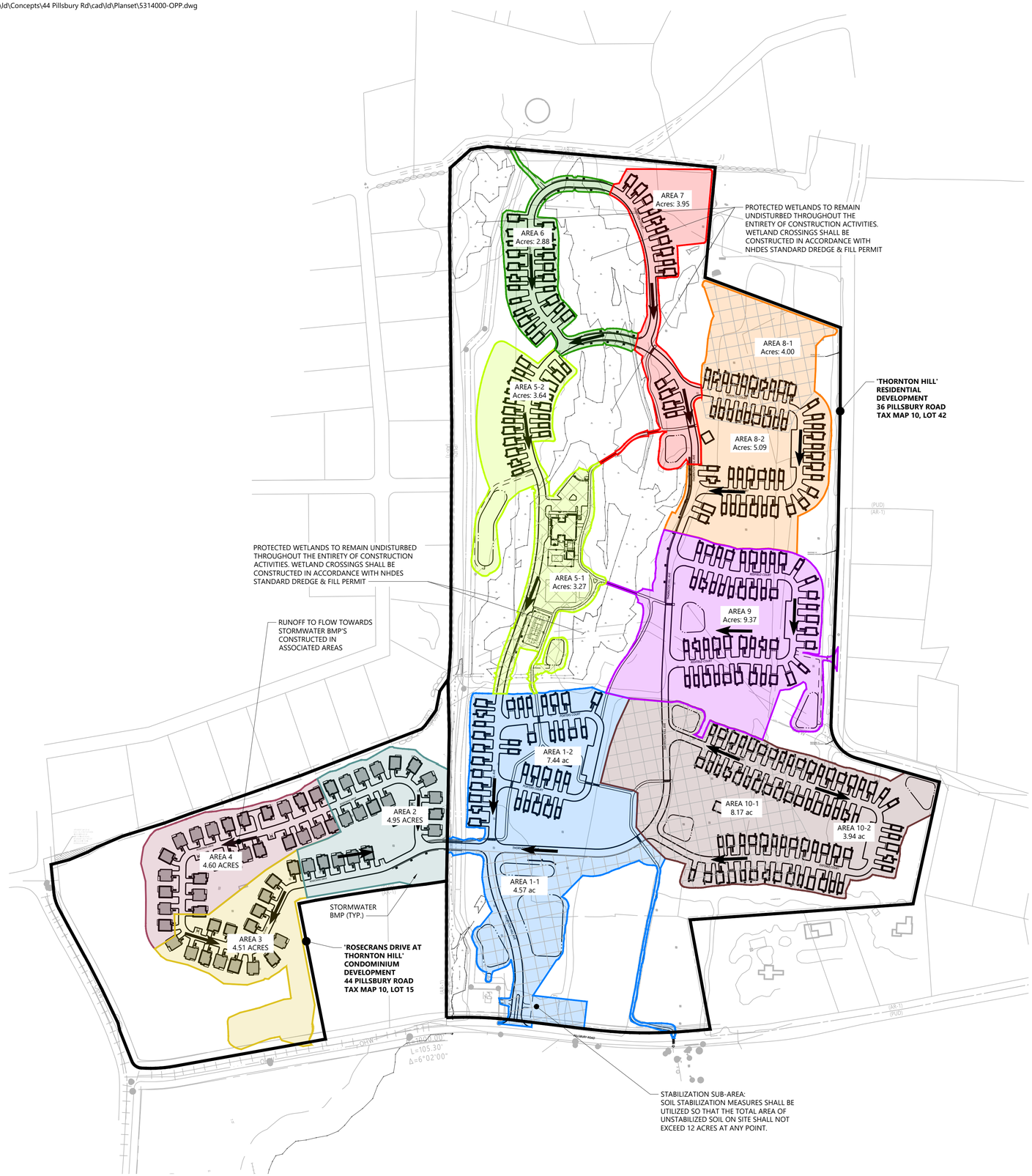
Sheet 34 of 41

Project Number: 53140.44



Saved Thursday, February 12, 2026 12:09:03 AM BZOLLER Plotted Thursday, February 12, 2026 1:06:05 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314000-OPP.dwg



Sequencing Notes

1. PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT TO NHDES, AND THE ENGINEER, A DETAILED PHASING AND CONSTRUCTION SEQUENCING PLAN THAT SHOWS THE PHASED AREAS OF CONSTRUCTION AND TEMPORARY EROSION CONTROL MEASURES TO BE IMPLEMENTED.
2. TEMPORARY ROAD CLOSURE BARRICADES TO BE PLACED AT THE LIMITS OF EACH PHASE, AND WILL BE MOVED TO THE END OF THE SUCCESSIVE PHASE WHEN THAT PHASE IS COMPLETED.

NHDES Env-Wq 1500: AoT Notes

(a) ALL AREAS OF UNSTABILIZED SOIL SHALL BE:
(1) TEMPORARILY STABILIZED AS SOON AS PRACTICABLE BUT IN ALL CASES WITHIN 45 DAYS OF INITIAL DISTURBANCE, UNLESS A SHORTER TIME IS SPECIFIED BY LOCAL AUTHORITIES, THE CONSTRUCTION SEQUENCE APPROVED AS PART OF THE ISSUED PERMIT, OR AN INDEPENDENT MONITOR; AND
(2) PERMANENTLY STABILIZED AS SOON AS PRACTICABLE BUT IN ALL CASES WITHIN 3 DAYS OF FINAL GRADING.

(b) SUBJECT TO (c) AND (f), BELOW, THE AREA OF UNSTABILIZED SOIL SHALL NOT EXCEED 5 ACRES AT ANY TIME.

(c) THE DEPARTMENT SHALL AUTHORIZE AN APPLICANT TO DISTURB MORE THAN 5 ACRES AT ONE TIME IF THE APPLICANT:
(1) SUBMITS DOCUMENTATION THAT THE REQUIRED AREAS OF EARTH CUTS AND FILLS ARE SUCH THAT AN AREA OF DISTURBANCE OF 5 ACRES OR LESS WOULD UNREASONABLY LIMIT THE CONSTRUCTION SCHEDULE;
(2) SUBMITS A CONSTRUCTION SEQUENCE PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST; AND
(3) EMPLOYS AN ENVIRONMENTAL MONITOR DURING CONSTRUCTION.

(d) SUBJECT TO (E), BELOW, THE ENVIRONMENTAL MONITOR SHALL:
(1) INSPECT THE PROJECT SITE AT LEAST ONCE EACH WEEK FROM THE START OF TERRAIN ALTERATION ACTIVITIES UNTIL ALL TERRAIN ALTERATION ACTIVITIES ARE COMPLETED AND THE SITE IS STABILIZED;
(2) IN ADDITION TO REGULAR WEEKLY INSPECTIONS, INSPECT THE PROJECT SITE DURING ANY RAIN EVENT IN WHICH 0.5 INCH OF PRECIPITATION OR MORE FALLS WITHIN A 24 HOUR PERIOD, PROVIDED THAT IF THE ENVIRONMENTAL MONITOR IS UNABLE TO BE PRESENT DURING SUCH A STORM, THE MONITOR SHALL INSPECT THE SITE WITHIN 24 HOURS OF THE RAIN EVENT;
(3) SUBMIT A WRITTEN REPORT, STAMPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, TO THE DEPARTMENT WITHIN 24 HOURS OF EACH INSPECTION THAT:
a. DESCRIBES THE PROGRESS OF THE PROJECT, INCLUDING WHETHER ALL CONDITIONS OF THE PERMIT ARE BEING MET AND, IF NOT, WHICH REQUIREMENTS ARE NOT BEING MET;
b. IF ANY REQUIREMENTS ARE NOT BEING MET, AN EXPLANATION OF THE CORRECTIVE ACTION(S) THAT WILL BE OR ARE BEING TAKEN TO BRING THE PROJECT INTO COMPLIANCE WITH APPLICABLE REQUIREMENTS AND THE DEADLINE BY WHICH SUCH ACTIONS WILL BE COMPLETED; AND
c. INCLUDES PHOTOGRAPHS OF THE SITE THAT ARE REPRESENTATIVE OF THE PROJECT; AND
(1) RETAIN A COPY OF THE REPORT PREPARED PURSUANT TO (3), ABOVE, ON-SITE FOR REVIEW DURING SITE INSPECTIONS BY FEDERAL, STATE, AND LOCAL OFFICIALS.

(e) ROUTINE INSPECTION FREQUENCY MAY BE REDUCED FROM ONCE EACH WEEK TO AT LEAST ONCE EACH MONTH IF EITHER OF THE FOLLOWING CONDITIONS IS MET:
(1) WORK HAS BEEN SUSPENDED AND THE ENTIRE SITE IS STABILIZED IN ACCORDANCE WITH ENV-WQ 1505.04; OR
(2) RUNOFF IS UNLIKELY BECAUSE:
a. THE GROUND IS FROZEN OR THE SITE IS COVERED WITH SNOW OR ICE; AND
b. THE PROJECT IS IN AN AREA WHERE FROZEN CONDITIONS ARE ANTICIPATED TO CONTINUE FOR MORE THAN ONE MONTH.

(f) IF THE SITE IS WITHIN 50 FEET OF A SURFACE WATER OF THE STATE, OR WETLANDS AS DEFINED IN RSA 482-A, HAS A GRADE OF 25% OR GREATER, OR CONTAINS SOILS HAVING AN ERODIBILITY FACTOR OF 0.4 OR GREATER, OR ANY COMBINATION OF THESE, THE OWNER SHALL, REGARDLESS OF THE SIZE OF THE OPEN AREA:
(1) SUBMIT A CONSTRUCTION SEQUENCE PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST;
(2) EMPLOY AN ENVIRONMENTAL MONITOR; AND
(3) COMPLY WITH (D) AND (E), ABOVE.

SOURCE. (SEE REVISION NOTE #1 AT CHAPTER HEADING FOR ENV-WQ 1500) #9343, EFF 1-1-09; SS BY #12342, EFF 8-15-17
(FORMERLY ENV-WQ 1505.02) (SEE REVISION NOTE #3 AT CHAPTER HEADING FOR ENV-WQ 1500); SS BY #13758, EFF 9-28-23 (SEE REVISION NOTE #4 AT CHAPTER HEADING FOR ENV-WQ 1500)

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 100 200 400 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by BJZ | Checked by DHF

Issued for: Permitting
Date: October 14, 2025

Not Approved for Construction

Drawing Title
Overall Sequencing Plan: Thornton Hill & Rosecrans Drive Developments

Drawing Number
C8.00

STATE OF NEW HAMPSHIRE · ERIC K. GERADE No.13672 LICENSED PROFESSIONAL ENGINEER · 2/12/2026

Sheet 35 of 41

Project Number
53140.44

Saved Wednesday, February 11, 2026 11:51:41 PM BZOLLER Plotted Thursday, February 12, 2026 12:57:00 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londonderry\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-I&M.dwg

Notes

INTRODUCTION

VHB HAS PREPARED THE FOLLOWING STORMWATER MANAGEMENT SYSTEM INSPECTION & MAINTENANCE MANUAL FOR THE RESIDENTIAL PROJECT LOCATED AT 44 PILLSBURY ROAD, LONDONDERRY, NEW HAMPSHIRE. THE INTENT OF THIS PLAN IS TO PROVIDE THE APPLICANT/OWNER WITH A LIST OF PROCEDURES THAT DOCUMENT THE INSPECTION AND MAINTENANCE REQUIREMENTS OF THE STORMWATER MANAGEMENT SYSTEM FOR THIS DEVELOPMENT.

THE FOLLOWING INSPECTION AND MAINTENANCE PROGRAM IS NECESSARY IN ORDER TO KEEP THE STORMWATER MANAGEMENT SYSTEM FUNCTIONING PROPERLY. BY FOLLOWING THE ENCLOSED PROCEDURES, THE APPLICANT WILL BE ABLE TO MAINTAIN THE FUNCTIONAL DESIGN OF THE STORMWATER MANAGEMENT SYSTEM AND MAXIMIZE ITS ABILITY TO REMOVE SEDIMENT AND OTHER CONTAMINANTS FROM SITE GENERATED STORMWATER RUNOFF.

RESPONSIBLE PARTY

THE OVERSIGHT OF THE INSPECTION AND MAINTENANCE PROGRAM WILL BE PROVIDED BY:

PROCOPIO ENTERPRISE, LLC
35 VILLAGE ROAD,. 7TH FLOOR (702)
MIDDLETON, MA 01949

STORMWATER MANAGEMENT SYSTEM COMPONENTS

THE STORMWATER MANAGEMENT SYSTEM IS DESIGNED TO MITIGATE BOTH THE QUANTITY AND QUALITY OF SITE-GENERATED STORMWATER RUNOFF. AS A RESULT, ITS DESIGN INCLUDES THE FOLLOWING ELEMENTS:

A. NON-STRUCTURAL BMP'S

A.1. NON-STRUCTURAL BEST MANAGEMENT PRACTICES (BMP'S) ARE DESIGNED TO MINIMIZE AND/OR REMOVE CONTAMINANTS BEFORE THEY ENTER THE STORMWATER COLLECTION SYSTEM. SEVERAL OF THESE BMP'S HAVE BEEN INCORPORATED INTO THE STORMWATER MANAGEMENT SYSTEM INCLUDING REDUCED USED OF ROAD DEICING AGENTS, AND LITTER/TRASH REMOVAL. THESE TYPES OF BMP'S ARE A HIGHLY EFFECTIVE INITIAL TREATMENT MEASURE FOR REDUCING STORMWATER POLLUTANT LOADING.

B. STRUCTURAL BMP'S

B.1. STRUCTURAL BMP'S HAVE BEEN INCORPORATED INTO THE OVERALL STORMWATER MANAGEMENT PLAN. STRUCTURAL BMP'S INCLUDE DEEP SUMP CATCH BASINS, SUBSURFACE SAND FILTERS, AND SUBSURFACE DETENTION BASINS.

INSPECTION & MAINTENANCE PLAN

BY IMPLEMENTING THE FOLLOWING PROCEDURES, THE APPLICANT WILL BE ABLE TO MAINTAIN THE FUNCTIONAL DESIGN OF THE STORMWATER MANAGEMENT SYSTEM AND MAXIMIZE THE SYSTEM'S ABILITY TO REMOVE SEDIMENT AND OTHER CONTAMINANTS FROM SITE GENERATED STORMWATER RUNOFF.

A. SOURCE CONTROL

A.1. ROUTINELY EMPTY ALL OUTSIDE WASTE RECEPTACLES PROVIDED FOR PUBLIC USE.

A.2. CLEARING LITTER FROM THE PARKING AREA, ISLANDS AND PERIMETER LANDSCAPE AREAS.

B. VEGETATED AREAS MAINTENANCE

ALTHOUGH NOT A SPECIFIC COMPONENT OF THE DRAINAGE SYSTEM, THE MAINTENANCE OF VEGETATED AREAS MAY AFFECT THE FUNCTIONING OF STORMWATER MANAGEMENT PRACTICES. THIS INCLUDES THE HEALTH/DENSITY OF VEGETATIVE COVER AND ACTIVITIES SUCH AS THE APPLICATION AND DISPOSAL OF LAWN AND GARDEN CARE PRODUCTS, DISPOSAL OF LEAVES AND YARD TRIMMINGS.

B.1. INSPECT PLANTED AREAS ON A SEMI-ANNUAL BASIS AND REMOVE ANY LITTER.

B.2. MAINTAIN PLANTED AREAS ADJACENT TO PAVEMENT TO PREVENT SOIL WASHOUT.

B.3. IMMEDIATELY CLEAN ANY SOIL DEPOSITED ON PAVEMENT.

B.4. RE-SEED BARE AREAS; INSTALL APPROPRIATE EROSION CONTROL MEASURES WHEN NATIVE SOIL IS EXPOSED OR EROSION CHANNELS ARE FORMING.

B.5. PLANT ALTERNATIVE MIXTURE OF GRASS SPECIES IN THE EVENT OF UNSUCCESSFUL ESTABLISHMENT.

B.6. THE GRASS VEGETATION SHOULD BE CUT TO A HEIGHT BETWEEN THREE AND FOUR INCHES.

B.7. PESTICIDE/HERBICIDE USAGE - NO PESTICIDES ARE TO BE USED UNLESS A SINGLE SPOT TREATMENT IS REQUIRED FOR A SPECIFIC CONTROL APPLICATION.

B.8. FERTILIZER USAGE SHOULD BE AVOIDED. IF DEEMED NECESSARY, SLOW-RELEASE FERTILIZER SHOULD BE USED. FERTILIZER MAY BE USED TO BEGIN THE ESTABLISHMENT OF VEGETATION IN BARE OR DAMAGED AREAS BUT SHOULD NOT BE APPLIED ON A REGULAR BASIS UNLESS NECESSARY.

C. DEICING AGENTS

DEICING AGENTS SHOULD BE USED IN ACCORDANCE WITH THE FOLLOWING:

C.1. USE SAND AS THE PRIMARY AGENT FOR PARKING LOT SAFETY DURING ICE AND SNOW CONDITIONS.

C.2. USE DE-ICING OR ANTI-CAKING AGENTS, ADDED TO ENHANCE PERFORMANCE AND APPLICATION CHARACTERISTICS OF SAND MIXTURES, ONLY AS NECESSARY AND AT MINIMUM APPLICATION RATES.

C.3. MAINTAIN A DEICING LOG TO TRACK THE AMOUNT AND TYPE OF DEICING MATERIALS APPLIED TO THE SITE.

D. SNOW MANAGEMENT

SNOW STORAGE AREAS SHALL BE MAINTAINED AS FOLLOWS:

D.1. SNOW STORAGE AREAS WILL BE MANAGED TO PREVENT BLOCKAGE OF STORM DRAIN CATCH BASINS. SNOW COMBINED WITH SAND AND DEBRIS MAY BLOCK A STORM DRAINAGE SYSTEM, DIMINISHING THE INFILTRATION CAPACITY OF THE SYSTEM AND CAUSING LOCALIZED FLOODING.

D.2. SAND AND DEBRIS DEPOSITED ON VEGETATED OR PAVED AREAS SHALL BE CLEARED FROM THE SITE AND PROPERLY DISPOSED OF AT THE END OF THE SNOW SEASON, NO LATER THAN MAY 15.

D.3. SNOW SHALL NOT BE DUMPED INTO ANY WATER BODY, POND, WETLAND RESOURCE AREA OR STORMWATER DETENTION BASIN.

E. WINTER OPERATOR CERTIFICATION REQUIREMENTS

PER THE LONDONDERRY STORMWATER REGULATIONS, ALL EMPLOYED OR CONTRACTED WINTER MAINTENANCE OPERATORS SHALL BE NEW HAMPSHIRE CERTIFIED GREEN SNOWPRO OR EQUIVALENT. GREEN SNOWPRO TRAINING IS PROVIDED BY THE UNIVERSITY OF NEW HAMPSHIRE. IT IS PREFERRED THAT OPERATORS ALSO HAVE NHDES SALT APPLICATOR CERTIFICATION. INFORMATION ON THESE CERTIFICATIONS CAN BE FOUND AT THE LINKS BELOW:

https://www.des.nh.gov/land/roads/road-salt-reduction
https://www.des.nh.gov/land/roads/road-salt-reduction/green-snowpro-certification

F. CATCH BASINS

THE PROPOSED CATCH BASINS ARE CONSTRUCTED WITH SUMPS (MINIMUM 3 FEET) TO TRAP DEBRIS, SEDIMENTS, AND FLOATING CONTAMINANTS. DISPOSAL OF ALL SEDIMENTS MUST BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL GUIDELINES.

F.1. INSPECT CATCH BASINS AT LEAST TWO TIMES PER YEAR AND CLEAN A MINIMUM OF ONCE PER YEAR.

F.2. SEDIMENT GREATER THAN HALF THE SUMP DEPTH AND/OR FLOATABLE POLLUTANTS SHALL BE PUMPED FROM THE BASIN AND DISPOSED OF AT AN APPROVED OFFSITE FACILITY IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

F.3. ANY STRUCTURAL DAMAGE OR OTHER INDICATION OF MALFUNCTION WILL BE REPORTED TO THE SITE MANAGER AND REPAIRED AS NECESSARY.

F.4. DURING COLDER PERIODS, THE CATCH BASIN GRATES MUST BE KEPT FREE FROM SNOW AND ICE.

F.5. DURING WARMER PERIODS, THE CATCH BASIN GRATES MUST BE KEPT FREE OF LEAVES, LITTER, SAND AND DEBRIS.

G. STORMWATER OUTFALLS

INSPECT OUTFALL LOCATIONS MONTHLY FOR THE FIRST THREE MONTHS AFTER CONSTRUCTION TO ENSURE PROPER FUNCTIONING AND CORRECT ANY AREAS THAT HAVE SETTLED OR EXPERIENCED WASHOUTS.

G.1. INSPECT OUTFALLS ANNUALLY AFTER INITIAL THREE-MONTH PERIOD.

G.2. ANNUAL INSPECTIONS SHOULD BE SUPPLEMENTED AFTER LARGE STORMS, WHEN WASHOUTS MAY OCCUR.

G.3. MAINTAIN/CUT VEGETATION AROUND OUTFALLS TO PREVENT BLOCKAGES AT THE OUTFALL.

G.4. MAINTAIN RIP-RAP PAD BELOW EACH OUTFALL AND REPAIR ANY WASHOUTS OR OTHER DAMAGE IMMEDIATELY.

G.5. REMOVE AND DISPOSE OF ANY TRASH OR DEBRIS AT THE OUTFALL.

H. STRUCTURAL WATER QUALITY DEVICES (SAND FILTER)

H.1. REFER TO MANUFACTURERS RECOMMENDATIONS FOR SPECIFIC O&M REQUIREMENTS.

H.2. INSPECT DEVICES MONTHLY FOR THE FIRST THREE MONTHS AFTER CONSTRUCTION.

H.3. AFTER INITIAL THREE-MONTH PERIOD, ALL WATER QUALITY UNITS ARE TO BE INSPECTED AT LEAST TWICE A YEAR AND CLEANED A MINIMUM OF AT LEAST ONCE PER YEAR OR WHEN SEDIMENT REACHES 8" IN DEPTH.

H.4. FOLLOW MANUFACTURER INSTRUCTIONS FOR INSPECTION AND CLEANING AND CONTACT MANUFACTURER IF SYSTEM IS MALFUNCTIONING.

H.5. REFER TO THE NEW HAMPSHIRE STORMWATER MANUAL VOLUME 2 CHAPTER 4 DESIGNING BEST MANAGEMENT PRACTICES, 4-3 TREATMENT PRACTICE, 4 FILTERING PRACTICES, SECTION 4B UNDERGROUND SAND FILTER FOR ADDITIONAL MAINTENANCE REQUIREMENTS.

H.5.1. 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.

H.5.2. PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.

H.5.3. TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.

H.5.4. MANUFACTURED FILTER MEDIA SHOULD BE REPLACED PERIODICALLY PER MANUFACTURER'S SPECIFICATIONS.

H.5.5. AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF A FILTRATION 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, INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER

I. STORM DRAIN MANHOLES

I.1. INSPECT AT LEAST ONCE ANNUALLY FOR CLOGGING OR SEDIMENT ACCUMULATION AND CLEAN AS NEEDED TO ENSURE PROPER STORMWATER CONVEYANCE.

L. ABOVEGROUND STORMWATER BASINS (MODIFIED EXISTING BASINS)

L.1. 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.

L.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.

L.3. TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.

L.4. AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF A FILTRATION 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, INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER.

L.5. REMOVE DEBRIS FROM ANY INLET AND OUTLET STRUCTURES.

L.6. REMOVE ACCUMULATED SEDIMENT

L.7. INSPECTED AND REPAIR (IF NEEDED) OUTLET STRUCTURES AND APPURTENANCES.

L.8. REMOVE WOODY VEGETATION FROM EMBANKMENTS. INSPECT AND REPAIR EMBANKMENTS AS NEEDED.

M. GRASS CONVEYANCE SWALE

M.1. GRASSED CHANNELS SHOULD BE INSPECTED PERIODICALLY (AT LEAST ANNUALLY) FOR SEDIMENT ACCUMULATION, EROSION AND CONDITION OF SURFACE LINING (VEGETATION OR RIPRAP). REPAIRS, INCLUDING STONE OR VEGETATION REPLACEMENT, SHOULD BE MADE BASED ON THIS INSPECTION.

M.2. REMOVE SEDIMENT AND DEBRIS ANNUALLY, OR MORE FREQUENTLY AS WARRANTED BY INSPECTION.

M.3. MOW VEGETATED CHANNELS AS NEEDED TO MAINTAIN GRASS ESTABLISHMENT AND REMOVE WOODY VEGETATION. GRASS TO BE CUT NO SHORTER THAN 4 INCHES.

N. INVASIVE PLANT SPECIES CONTROL

INVASIVE PLANT SPECIES ARE 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; OR ARRIVE AS "HITCHHIKERS" AMONG SHIPMENTS OF OTHER PLANTS, SEEDS, PACKING MATERIALS, OR FRESH PRODUCE. SOME OF THESE EXOTIC PLANTS BECOME INVASIVE AND CAUSE HARM BY:

N.1. BECOMING WEEDY AND OVERGROWN;

N.2. KILLING ESTABLISHED SHADE TREES;

N.3. OBSTRUCTING PIPES AND DRAINAGE SYSTEMS;
N.4. FORMING DENSE BEDS IN WATER;

N.5. LOWERING WATER LEVELS IN LAKES, STREAMS AND WETLANDS;

N.6. DESTROYING NATURAL COMMUNITIES;

N.7. PROMOTING EROSION ON STREAM BANKS AND HILLSIDES; AND

N.8. RESISTING CONTROL EXCEPT BY HAZARDOUS CHEMICAL.

AS PART OF THE ROUTINE INSPECTIONS OF THE DRAINAGE SYSTEM AND STORMWATER OUTFALLS, THE SITE SHOULD BE CHECKED FOR THE PRESENCE OF INVASIVE PLANT SPECIES AS DEFINED BY THE NEW HAMPSHIRE DEPARTMENT OF AGRICULTURE, MARKETS & FOOD (A LIST IS PROVIDED AT THE END OF THIS MANUAL).

IF INVASIVE PLANT SPECIES ARE FOUND TO BE PRESENT, THEY SHOULD BE CONTROLLED AS DESCRIBED IN THE "CONTROL OF INVASIVE PLANTS" DOCUMENT PREPARED BY THE NH DEPARTMENT OF AGRICULTURE, MARKETS & FOOD. A COPY IS PROVIDED AT THE END OF THIS MANUAL.

O. RECORD KEEPING

O.1. INSPECTIONS OF THE STORMWATER MANAGEMENT SYSTEM SHALL BE CONDUCTED IN ACCORDANCE WITH THE INSPECTION & MAINTENANCE CHECKLIST PROVIDED IN THIS MANUAL.

O.2. AN INSPECTION & MAINTENANCE LOG SHALL BE COMPLETED FOR EACH INSPECTION AND MAINTENANCE ACTIVITY.

O.3. ALL RECORD KEEPING REQUIRED BY THE I&M MANUAL SHALL BE MAINTAINED BY THE RESPONSIBLE PARTY.

O.4. A DEICING LOG SHALL BE MAINTAINED THAT TRACKS THE AMOUNT AND TYPE OF DEICING MATERIALS APPLIED TO THE SITE.

O.5. ANY TRANSFER OF RESPONSIBILITY FOR THE I&M ACTIVITIES OR TRANSFER OF OWNERSHIP SHALL BE DOCUMENTED TO THE NHDES WATER DIVISION IN WRITING.

O.6. INSPECTION REPORTS SHALL BE FILED WITH THE TOWN OF LONDONDERRY DEPARTMENT OF ENGINEERING AND ENVIRONMENTAL SERVICES ON AN ANNUAL BASIS.

P. INSPECTION & MAINTENANCE CHECKLIST/LOG

P.1. THE FOLLOWING PAGES CONTAIN AN INSPECTION & MAINTENANCE CHECKLIST, A BLANK COPY OF THE STORMWATER MANAGEMENT SYSTEM'S INSPECTION & MAINTENANCE LOG, AND A REDUCED COPY OF THE GRADING AND UTILITY PLANS. THESE FORMS/PLANS ARE PROVIDED TO ASSIST THE APPLICANT WITH THE INSPECTION AND MAINTENANCE OF THE STORMWATER MANAGEMENT SYSTEM.

Q. INVASIVE SPECIES INFORMATION

Q.1. A COPY OF THE NEW HAMPSHIRE DEPARTMENT OF AGRICULTURE, MARKETS & FOOD'S DOCUMENT "CONTROL OF INVASIVE PLANTS" IS PROVIDED AT THE END OF THIS MANUAL.

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by: BJZ
Checked by: DHF

Issued for: Permitting
Date: October 14, 2025

Not Approved for Construction

Drawing Title: Inspection and Maintenance Notes

Drawing Number: C9.01

Sheet 36 of 41

Project Number: 53140.44



Saved Wednesday, February 11, 2026 11:52:07 PM BZOLLER Plotted Thursday, February 12, 2026 12:55:47 AM Ben Zoller

\\vhb.com\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-I&M.dwg

Stormwater Management System
Inspection & Maintenance Log

BMP/System Component	Date Inspected	Inspector	Cleaning/Repair Needed (*List Items/Comments*)	Date of Cleaning/Repair	Performed By

Stormwater Management System
Inspection & Maintenance Log

BMP/System Component	Date Inspected	Inspector	Cleaning/Repair Needed (*List Items/Comments*)	Date of Cleaning/Repair	Performed By

Stormwater Management System
Inspection & Maintenance Log

Notes:

Stormwater Management System
Deicing Log

Date	Type	Location/Amount	Name(s) of Maintenance Personnel

Stormwater Management System
Inspection & Maintenance Checklist

BMP/System Component	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance/Cleanout Threshold
Source Control	Routinely	Inspect outdoor waste receptacles areas for spillage. Inspect and clear litter from parking area, islands and perimeter landscape areas.	Clean as required.
Deicing Agents	N/A	N/A	Use sand as primary agent for site roadway and parking safety during winter.

Stormwater Management System
Inspection & Maintenance Checklist

Closed Drainage System			
Catch Basins	2 times per year	Check for sediment accumulation. Check for floatable contaminants.	≥ 2 ft. sediment depth. ≥ 3 in. floatable depth.
Storm Drain Manholes	1 time per 2 years	Check for sediment accumulation.	≥ 3 in. sediment depth.
Drainage Pipes	1 time per 2 years	Check for sediment accumulation/clogging.	≥ 2 in. sediment depth.
Detention Basin/Surface Sand Filter	2 times per year	Check for sediment accumulation, clogging, trash and debris.	Clean/repair as needed.
Outlet Control Structure	2 times per year	Check for sediment accumulation/clogging	Clean/repair as needed.
Outfalls	Monthly for first 3 months and 1 time per year thereafter	-Check for sediment, trash and debris accumulation. -Check for vegetation blocking outfall. Inspect rip rap for washout.	Clean/repair as needed.

vhb.com

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051
Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by BJZ | Checked by DHF

Issued for: **Permitting** | Date: **October 14, 2025**

Not Approved for Construction

Drawing Title
Inspection and Maintenance Checklists and Logs

Drawing Number
C9.02

Sheet 37 of 41

Project Number
53140.44

STATE OF NEW HAMPSHIRE
ERIC K. GERADE
No. 13672
LICENSED
PROFESSIONAL ENGINEER
2/12/2026

Saved Wednesday, February 11, 2026 11:52:07 PM BZOLLER Plotted Thursday, February 12, 2026 1:13:11 AM Ben Zoller

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-LA.dwg



PLANT SCHEDULE

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE
DECIDUOUS TREES				
AR	7	Acer rubrum	Red Maple	2 1/2 - 3" CAL.
AS	4	Acer saccharum `Green Mountain`	Green Mountain Sugar Maple	2 1/2 - 3" CAL.
BN	3	Betula nigra `Heritage`	Heritage River Birch	10 - 12' HT./Multi-Stem
GB	3	Ginkgo biloba	Maidenhair Tree	2 1/2 - 3" CAL.
LSR	5	Liquidambar styraciflua `Rotundiloba`	Rotundiloba Seedless Sweetgum	2 1/2 - 3" CAL.
NS	4	Nyssa sylvatica	Black Tupelo	2 1/2 - 3" CAL.
PAB	3	Platanus acerifolia `Bloodgood`	London Planetree	2 1/2 - 3" CAL.
QA	4	Quercus alba	White Oak	2 1/2 - 3" CAL.
QC	6	Quercus coccinea	Scarlet Oak	2 1/2 - 3" CAL.
QP	7	Quercus palustris	Pin Oak	2 1/2 - 3" CAL.
UA	7	Ulmus americana `Valley Forge`	Valley Forge American Elm	2 1/2 - 3" CAL.
EVERGREEN TREES				
AC	22	Abies concolor	White Fir	6 - 7' HT.
PG	26	Picea glauca	White Spruce	6 - 7' HT.
PS	27	Pinus strobus	White Pine	6 - 7' HT.
FLOWERING TREES				
ACS	14	Amelanchier canadensis	Shadblow Serviceberry	8 - 10' HT./Multi-Stem
MS	18	Malus hybrid `Spring Snow`	Spring Snow Crab Apple	2 - 2 1/2" CAL.

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE
SOD/SEED				
DB	11,316 sf	Detention Basin Seed Mix	Detention Basin Seed Mix	seed

DETENTION BASIN SEED MIX

MEADOW MIX

OWNER'S SIGNATURE

Signed by:
Kevin Smith
0B4E4DCC4452434
OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date:

Certified By:

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF
Checked by DHF

Issued for Permitting
Date October 14, 2025

Not Approved for Construction

Drawing Title
Planting Plan

LICENSED LANDSCAPE ARCHITECT
ERIK J. BEDNAREK
00175
STATE OF NEW HAMPSHIRE
FEBRUARY 11, 2026

Drawing Number
L1.01

Sheet 38 of 41

Project Number
53140.44

Saved Wednesday, February 11, 2026 4:41:25 PM JOSHUALEMIEUX Plotted Wednesday, February 11, 2026 4:50:00 PM Joshua Lemieux

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-LA.dwg



OWNER'S SIGNATURE

Signed by: Kevin Smith
0B4E4DDC4452434...

OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date:

Certified By:

DETENTION BASIN SEED MIX

EROSION CONTROL SEED MIX

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for Permitting | Date October 14, 2025

Not Approved for Construction

Drawing Title

Planting Plan

LICENSED LANDSCAPE ARCHITECT ERIK J. BEDNAREK 00175 STATE OF NEW HAMPSHIRE

FEBRUARY 11, 2026

Drawing Number

L1.02

Sheet 39 of 41

Project Number 53140.44

Saved Wednesday, February 11, 2026 4:41:25 PM JOSHUALEMIEUX Plotted Wednesday, February 11, 2026 4:50:27 PM Joshua Lemieux

Planting Notes

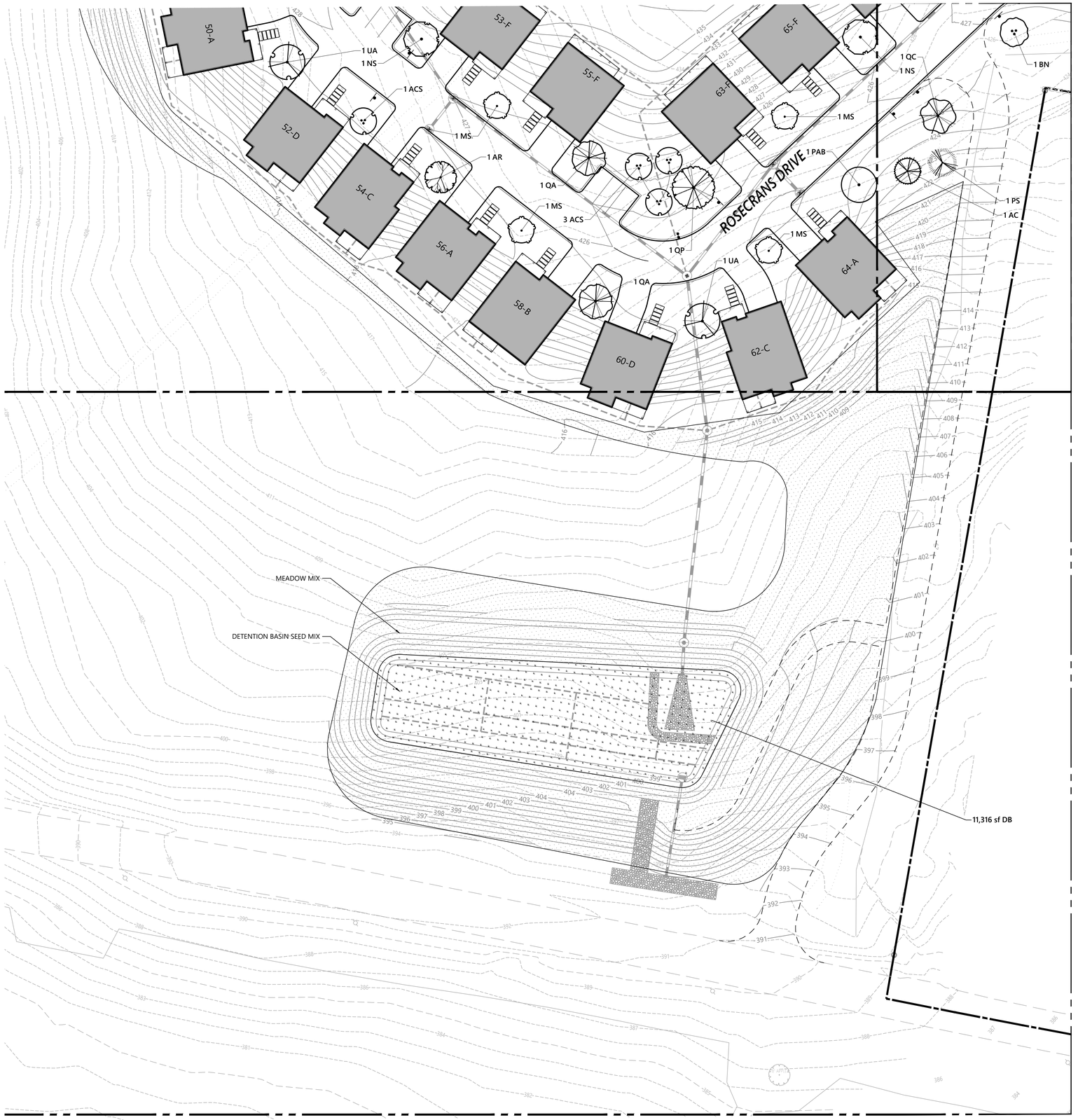
1. AS SHOWN, APPROX. 1050 EXISTING TREES WILL REMAIN.
2. ALL PROPOSED PLANTING LOCATIONS SHALL BE STAKED AS SHOWN ON THE PLANS FOR FIELD REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
3. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL BELOW GRADE AND ABOVE GROUND UTILITIES AND NOTIFY OWNERS REPRESENTATIVE OF CONFLICTS.
4. NO PLANT MATERIALS SHALL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICT.
5. ALL TREES SHALL BE BALLED AND BURLAPPED, UNLESS OTHERWISE NOTED IN THE DRAWINGS OR SPECIFICATION, OR APPROVED BY THE OWNER'S REPRESENTATIVE.
6. FINAL QUANTITY FOR EACH PLANT TYPE SHALL BE AS GRAPHICALLY SHOWN ON THE PLAN. THIS NUMBER SHALL TAKE PRECEDENCE IN CASE OF ANY DISCREPANCY BETWEEN QUANTITIES SHOWN ON THE PLANT LIST AND ON THE PLAN. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES BETWEEN THE NUMBER OF PLANTS SHOWN ON THE PLANT LIST AND PLANT LABELS PRIOR TO BIDDING.
7. ANY PROPOSED PLANT SUBSTITUTIONS MUST BE REVIEWED BY LANDSCAPE ARCHITECT AND APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.
8. ALL PLANT MATERIALS INSTALLED SHALL MEET THE SPECIFICATIONS OF THE "AMERICAN STANDARDS FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN AND CONTRACT DOCUMENTS.
9. ALL PLANT MATERIALS SHALL BE GUARANTEED FOR ONE YEAR FOLLOWING DATE OF FINAL ACCEPTANCE.
10. AREAS DESIGNATED "LOAM & SEED" SHALL RECEIVE MINIMUM 6" OF LOAM AND SPECIFIED SEED MIX. LAWNS OVER 2:1 SLOPE SHALL BE PROTECTED WITH EROSION CONTROL FABRIC.
11. ALL DISTURBED AREAS NOT OTHERWISE NOTED ON CONTRACT DOCUMENTS SHALL BE LOAM AND SEEDED WITH CONSERVATION SEED MAX.
12. THIS PLAN IS INTENDED FOR PLANTING PURPOSES. REFER TO SITE / CIVIL DRAWINGS FOR ALL OTHER SITE CONSTRUCTION INFORMATION.

Seed Mixtures:

1. AREAS INDICATED AS "DETENTION BASIN" ARE TO BE SEEDED WITH NEW ENGLAND EROSION CONTROL / RESTORATION MIX FOR DETENTION PONDS AND MOIST AREAS, AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. AMHERST, MA (413) 548-8000, www.NEWP.com,OR AN APPROVED EQUAL. APPLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
2. AREAS INDICATED AS "MEADOW MIX" ARE TO BE SEEDED WITH NEW ENGLAND CONSERVATION / WILDLIFE SEED MIX, AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. AMHERST, MA (413) 548-8000, www.NEWP.com,OR AN APPROVED EQUAL. APPLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

DETENTION BASIN SEED MIX

MEADOW MIX



OWNER'S SIGNATURE

Signed by: kevin Smith
0B4E4DCC4452416...

OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

Certified By: _____

_____

vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road Londonderry, New Hampshire 03053

No.	Revision	Date	Appvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: Permitting

Date: October 14, 2025

Not Approved for Construction

Drawing Title: Planting Plan

Drawing Number: L1.03

Sheet 40 of 41

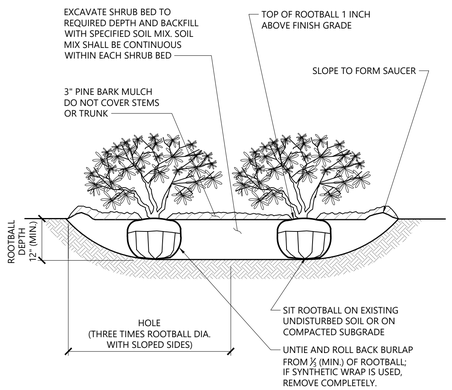
Project Number: 53140.44

LICENSED LANDSCAPE ARCHITECT ERIK J. BEDNAREK 00175 STATE OF NEW HAMPSHIRE

FEBRUARY 11, 2026

Saved Wednesday, February 11, 2026 4:41:25 PM JOSHUALEMIEUX Plotted Wednesday, February 11, 2026 4:50:52 PM Joshua Lemieux

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\ld\Concepts\44 Pillsbury Rd\cad\ld\Planset\5314044-DTLA.dwg



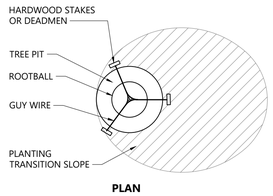
NOTES

1. LOOSEN ROOTS AT THE OUTER EDGE OF ROOTBALL OF CONTAINER GROWN SHRUBS.

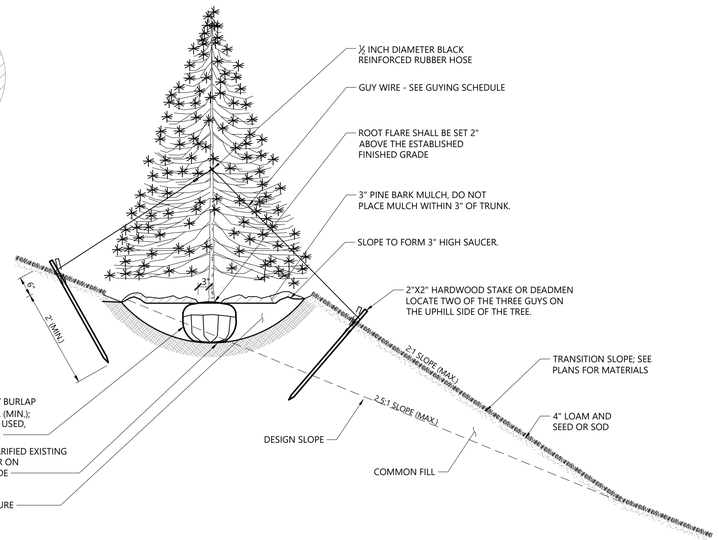
Shrub Bed Planting

1/16

N.T.S. Source: VHB LD_601



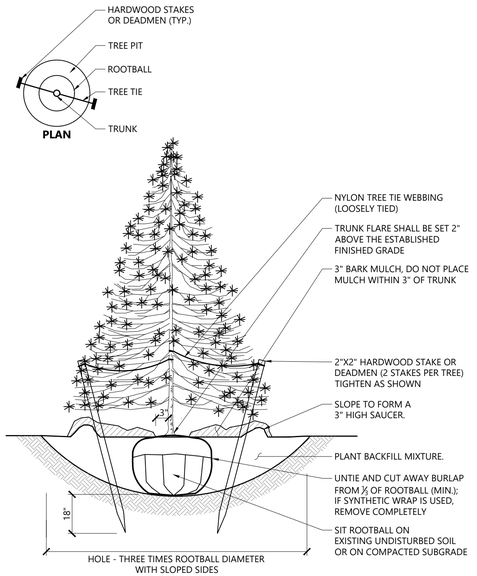
PLAN



Tree Planting on Slope

1/16

N.T.S. Source: VHB LD_605



PLAN

Evergreen Tree Planting

9/21

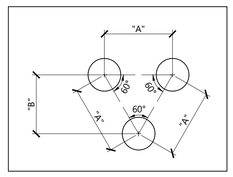
N.T.S. Source: VHB LD_604

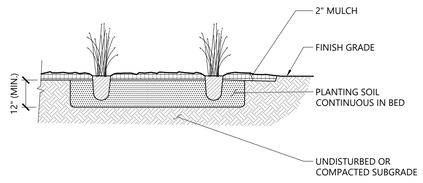
vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

PLANT SPACING	
PLANT SPACING("A")	ROW SPACING ("B")
6 IN. O.C.	5 IN. O.C.
8 IN. O.C.	7 IN. O.C.
10 IN. O.C.	8 ⅔ IN. O.C.
12 IN. O.C.	10 ⅔ IN. O.C.
15 IN. O.C.	13 IN. O.C.
18 IN. O.C.	16 IN. O.C.
24 IN. O.C.	21 IN. O.C.
30 IN. O.C.	26 IN. O.C.
36 IN. O.C.	30 IN. O.C.
48 IN. O.C.	42 IN. O.C.
54 IN. O.C.	48 IN. O.C.
60 IN. O.C.	54 IN. O.C.

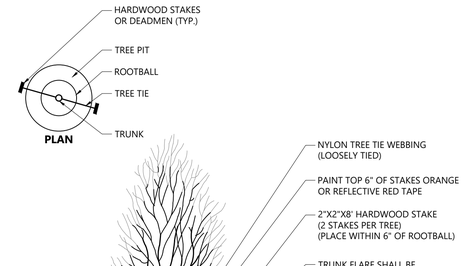




Perennial and Ornamental Grass Planting

1/16

N.T.S. Source: VHB LD_618

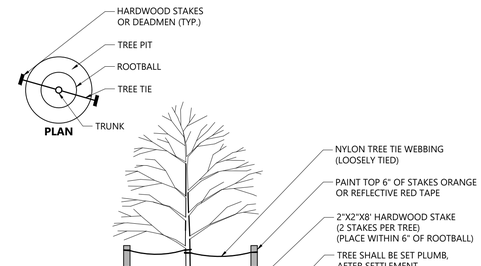


PLAN

Multistem Tree Planting

9/21

N.T.S. Source: VHB LD_606

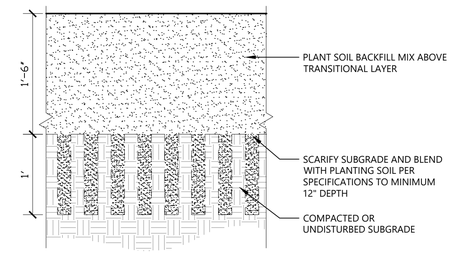


PLAN

Tree Planting (For Trees Under 4" Caliper)

9/21

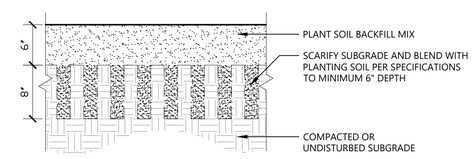
N.T.S. Source: VHB LD_602



Soil Preparation Groundcover and Shrubs

11/15

N.T.S. Source: VHB LD_



Soil Preparation at Lawn

11/15

N.T.S. Source: VHB LD_

Record Owner: Pillsbury Realty Develop LLC
100 Ferry Street
Hudson, NH 03051

Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA, 01949

Rosecrans Drive at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

No.	Revision	Date	Apprvd.
1	Site Plan Application Submission	02/12/2026	EKG

Designed by SJF | Checked by DHF

Issued for: Permitting

Date: October 14, 2025

Not Approved for Construction

Drawing Title: Landscape Details 1

Drawing Number: L2.01

Sheet 41 of 41

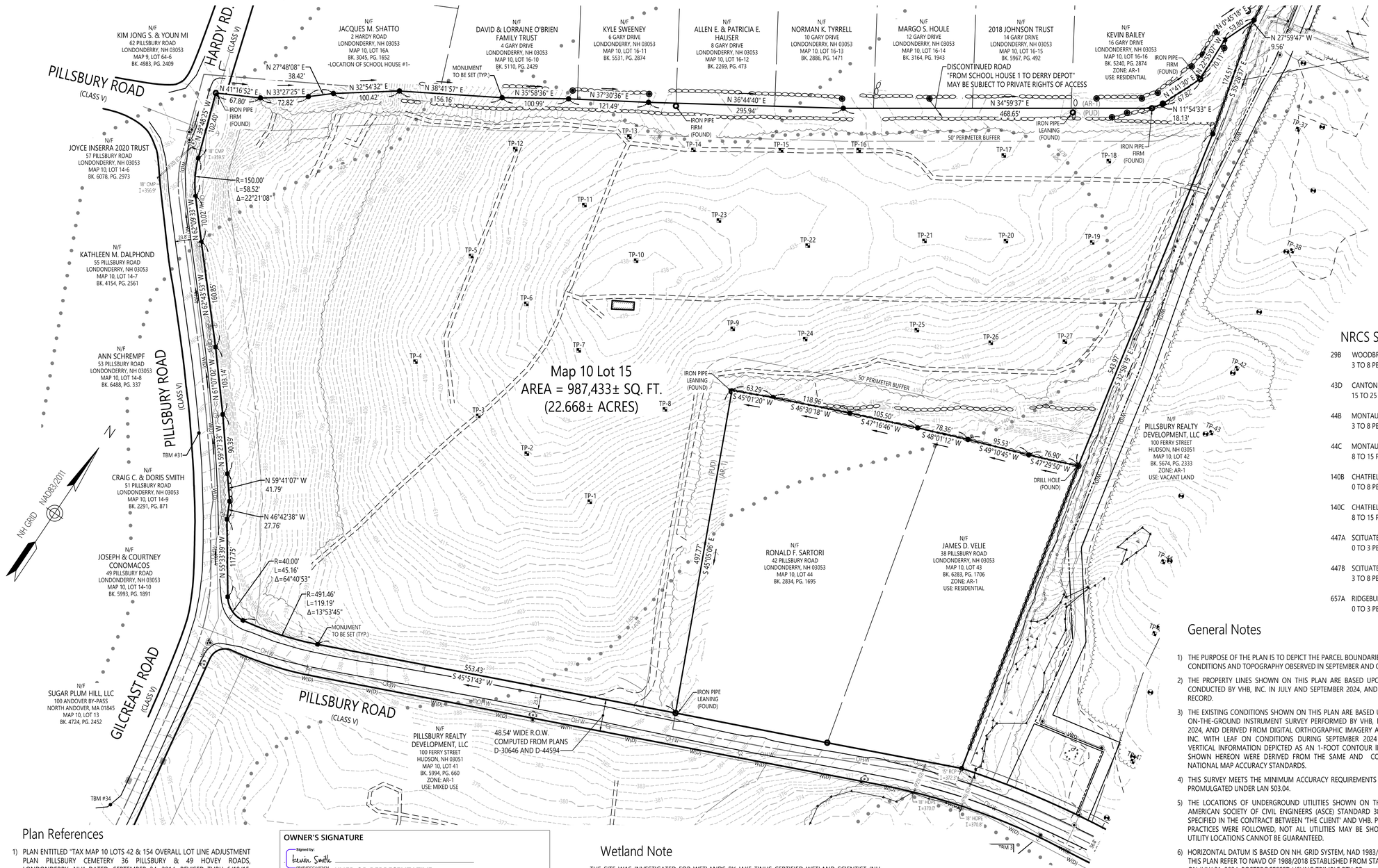
Project Number: 53140.44

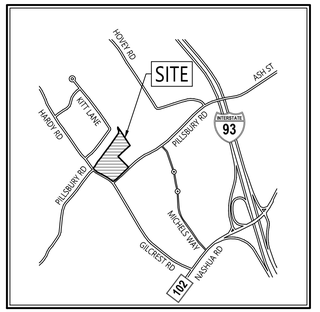


FEBRUARY 11, 2026

Saved Wednesday, February 11, 2026 7:09:46 AM JOSHUALEMIEUX Plotted Wednesday, February 11, 2026 4:51:46 PM Joshua Lemieux

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\sr\planset\53140.00-EX-PLAN44.dwg





Locus Map
(SCALE: 1"=2,500')

Legend

- DRILL HOLE FOUND
- MONUMENT TO BE SET
- MONUMENT TO BE SET
- DRAIN MANHOLE
- CATCH BASIN
- WATER MANHOLE
- TESTPIT
- WATER GATE
- FIRE HYDRANT
- STREET SIGN
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MARSH
- DECIDUOUS TREE WITH SIZE
- CONIFEROUS TREE WITH SIZE
- EDGE OF PAVEMENT
- DIRT/GRAVEL ROAD
- WOOD FENCE
- DRAINAGE LINE w/PIPE NUMBER & ASCE SUE LEVEL CLASSIFICATION
- OVERHEAD WIRE
- WATER LINE
- STONE WALL
- TREE LINE
- LIMIT OF BANK
- VEGETATED WETLAND BOUNDARY
- SOILS LINE

NRCS Soils Legend

29B	WOODBRIDGE FINE SANDY LOAM 3 TO 8 PERCENT SLOPES
43D	CANTON FINE SANDY LOAM 15 TO 25 PERCENT SLOPES, VERY STONY
44B	MONTAUK FINE SANDY LOAM 3 TO 8 PERCENT SLOPES
44C	MONTAUK FINE SANDY LOAM 8 TO 15 PERCENT SLOPES
140B	CHATFIELD-HOLLIS-CANTON COMPLEX 0 TO 8 PERCENT SLOPES, ROCKY
140C	CHATFIELD-HOLLIS-CANTON COMPLEX 8 TO 15 PERCENT SLOPES, ROCKY
447A	SCITUATE-NEWFIELDS COMPLEX 0 TO 3 PERCENT SLOPES, VERY STONY
447B	SCITUATE-NEWFIELDS COMPLEX 3 TO 8 PERCENT SLOPES, VERY STONY
657A	RIDGEBURY FINE SANDY LOAM 0 TO 3 PERCENT SLOPES, VERY STONY

General Notes

1) THE PURPOSE OF THE PLAN IS TO DEPICT THE PARCEL BOUNDARIES AND EXISTING SURFACE SITE CONDITIONS AND TOPOGRAPHY OBSERVED IN SEPTEMBER AND OCTOBER 2024.
2) THE PROPERTY LINES SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY VHB, INC. IN JULY AND SEPTEMBER 2024, AND FROM DEEDS AND PLANS OF RECORD.
3) THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON A COMBINATION OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB, INC. IN JULY AND SEPTEMBER 2024, AND DERIVED FROM DIGITAL ORTHOGRAPHIC IMAGERY AND LIDAR CAPTURED BY VHB, INC. WITH LEAF ON CONDITIONS DURING SEPTEMBER 2024 USING UAV TECHNOLOGIES. VERTICAL INFORMATION DEPICTED AS AN 1-FOOT CONTOUR INTERVAL OR SPOT ELEVATION SHOWN HEREON WERE DERIVED FROM THE SAME AND CONFORM WITH THE CURRENT NATIONAL MAP ACCURACY STANDARDS.
4) THIS SURVEY MEETS THE MINIMUM ACCURACY REQUIREMENTS OF AN URBAN CLASS SURVEY PROMULGATED UNDER LAN 503.04.
5) THE LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THIS PLAN WERE MAPPED PER AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD 38-22, QUALITY LEVEL(S) 'X' AS SPECIFIED IN THE CONTRACT BETWEEN 'THE CLIENT' AND VHB. PLEASE NOTE THAT WHILE BEST PRACTICES WERE FOLLOWED, NOT ALL UTILITIES MAY BE SHOWN AND THE ACCURACY OF UTILITY LOCATIONS CANNOT BE GUARANTEED.
6) HORIZONTAL DATUM IS BASED ON NH. GRID SYSTEM, NAD 1983/2011. ELEVATIONS SHOWN ON THIS PLAN REFER TO NAVD OF 1988/2018 ESTABLISHED FROM STATIC GPS OBSERVATIONS MADE ON JULY 31, 2024, POSTPROCESSED USLING TRIMBLE RTX-PP.
7) THE LOT LIES ENTIRELY WITHIN ZONE X (UNSHADED) (AREAS TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR ROCKINGHAM COUNTY, NEW HAMPSHIRE, MAP NUMBER 33015C0338E, EFFECTIVE DATE MAY 17, 2005.
8) NO WELLS WERE OBSERVED ON THE PROPERTY IN THE COURSE OF THIS SURVEY.
9) THE LOT LIES ENTIRELY WITHIN THE WOODMONT COMMONS PUD DISTRICT (PUD-1) AS SHOWN ON THE "TOWN OF LONDONDERRY, NEW HAMPSHIRE ZONING MAP", DATED APRIL 24, 2023. DIMENSIONAL REQUIREMENTS FOR A (PUD-1) AT THE TIME OF THIS SURVEY ARE:

	REQUIRED
MINIMUM LOT AREA	N/A
MINIMUM FRONTAGE	50 FEET
MINIMUM FRONT YARD SETBACK	10 FEET
MINIMUM SIDE YARD SETBACK	10 FEET
MINIMUM REAR YARD SETBACK	5 FEET
MAXIMUM BUILDING HEIGHT	50 FEET
MINIMUM FRONT YARD PARKING SETBACK	6 FEET
MINIMUM SIDE/REAR PARKING SETBACK	0 FT

10) THE TREE SYMBOL OUTLINE SHOWN ON THIS PLAN DOES NOT REPRESENT THE ACTUAL TREE CANOPY.

Plan References

1) PLAN ENTITLED "TAX MAP 10 LOTS 42 & 154 OVERALL LOT LINE ADJUSTMENT PLAN PILLSBURY CEMETERY 36 PILLSBURY & 49 HOVEY ROADS, LONDONDERRY, NH" DATED: SEPTEMBER 24, 2014, REVISED THRU 6/19/15. RECORDED AT RCRD AS PLAN D-39205.
2) PLAN ENTITLED "ANNEXATION AND SUBDIVISION PLAN ROBERT & STEPHEN LIEVENS TAX MAP 10 LOT 42 AND THE PINKERTON CEMETERY TAX MAP 10 LOT 154 HOVEY AND PILLSBURY ROADS LONDONDERRY, NH" DATED: JULY 17, 2002. RECORDED AT RCRD AS PLAN D-30457.
3) PLAN ENTITLED "PLAN OF LAND OF CHARLES E. & ROGER D. ANDERSON LONDONDERRY, NH" DATED: SEPTEMBER 1963. RECORDED AT THE RCRD AS PLAN 284 IN DRAWER III, SECTION H.
3) PLAN ENTITLED "SKETCH PLAN OF PART OF CHARLES E. & ROGER D. ANDERSON LAND LONDONDERRY, NH" DATED: JUNE 1964. RECORDED AT THE RCRD AS PLAN 285 IN DRAWER I, SECTION C.
4) PLAN ENTITLED "SUBDIVISION PLAN IN LONDONDERRY, NH 2ND ADDITION TO SUNDY LEE TERRACE"NDATED: DEC. 1970. RECORDED AT THE RCRD AS PLAN C-2103.
5) PLAN ENTITLED "PLAN OF LAND IN LONDONDERRY, NH TAX MAP 10 LOT 40 & 40-1" DATED: APRIL 2003, RECORDED AT THE RCRD AS PLAN D-30646.
6) PLAN ENTITLED "SUBDIVISION PLAN (MAP 10, LOT 41) WOODMONT COMMONS PLANNED UNIT DEVELOPMENT PILLSBURY ROAD, MICHELS WAY AND WOODMONT AVE LONDONDERRY, NEW HAMPSHIRE" DATED: 2 MAY 2023. RECORDED AT THE RCRD AS PLAN D-44594.
7) PLAN ENTITLED "SURVEY WORKSHEET OF MAP 10 LOT 15-0" PREPARED BY TFM UNDATED, NOT RECORDED.

OWNER'S SIGNATURE

Signed by: Kevin Smith
0B4E4ADCC4452E42...

OWNER OR REPRESENTATIVE

Approved by the Town of Londonderry N.H. Planning Board

on Date: _____

Certified By: _____

_____

Survey Endorsement

I CERTIFY THAT THIS PLAN WAS PREPARED FROM THE BOUNDARY INFORMATION SHOWN ON THE PLAN REFERENCED AND A FIELD SURVEY MADE ON THE GROUND IN JULY AND SEPTEMBER 2024, HAVING A MAXIMUM ERROR OF CLOSURE BETTER THAN 1 IN 10,000.

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR NO. 1036 MICHAEL HAMMER

DATE

MICHAEL J. HAMMER, LLS #1036

Wetland Note

THE SITE WAS INVESTIGATED FOR WETLANDS BY JAKE TINUS CERTIFIED WETLAND SCIENTIST (NH CWS #228) ON NOVEMBER 25, 2024 AND NO EVIDENCE OF WETLANDS WAS FOUND ON THE SUBJECT PROPERTY. WETLANDS ON THE ADJACENT PARCEL WERE MAPPED BY JAKE TINUS ON OCTOBER 9 THRU 11, 2024.

Benchmarks

1. TBM 31 - MAG NAIL SET IN PAVEMENT ON PILLSBURY ROAD, ELEV.=368.09'
2. TBM 34 - MAG NAIL SET IN PAVEMENT ON PILLSBURY ROAD, ELEV.=361.87'
3. TBM 2 - NAIL SET IN U.POLE (PSNH 3/27), ELEV.=384.09'
4. TBM 3 - MAG NAIL FOUND IN U.POLE (PSNH 3/29), ELEV.=377.81'
5. TBM 4 - NAIL SET IN U.POLE (EVERSOURCE 35), ELEV.=390.57'

80 0 80 160
SCALE IN FEET

No.	Revision	Date	Appvd.
1	SITE PLAN APPLICATION SUBMISSION	2/12/2026	MJH

Liberty Court at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by | Checked by

Issued for | Date

Permitting | **October 14, 2025**

Record Owner/ Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA 01949

Scale: 1"=80'

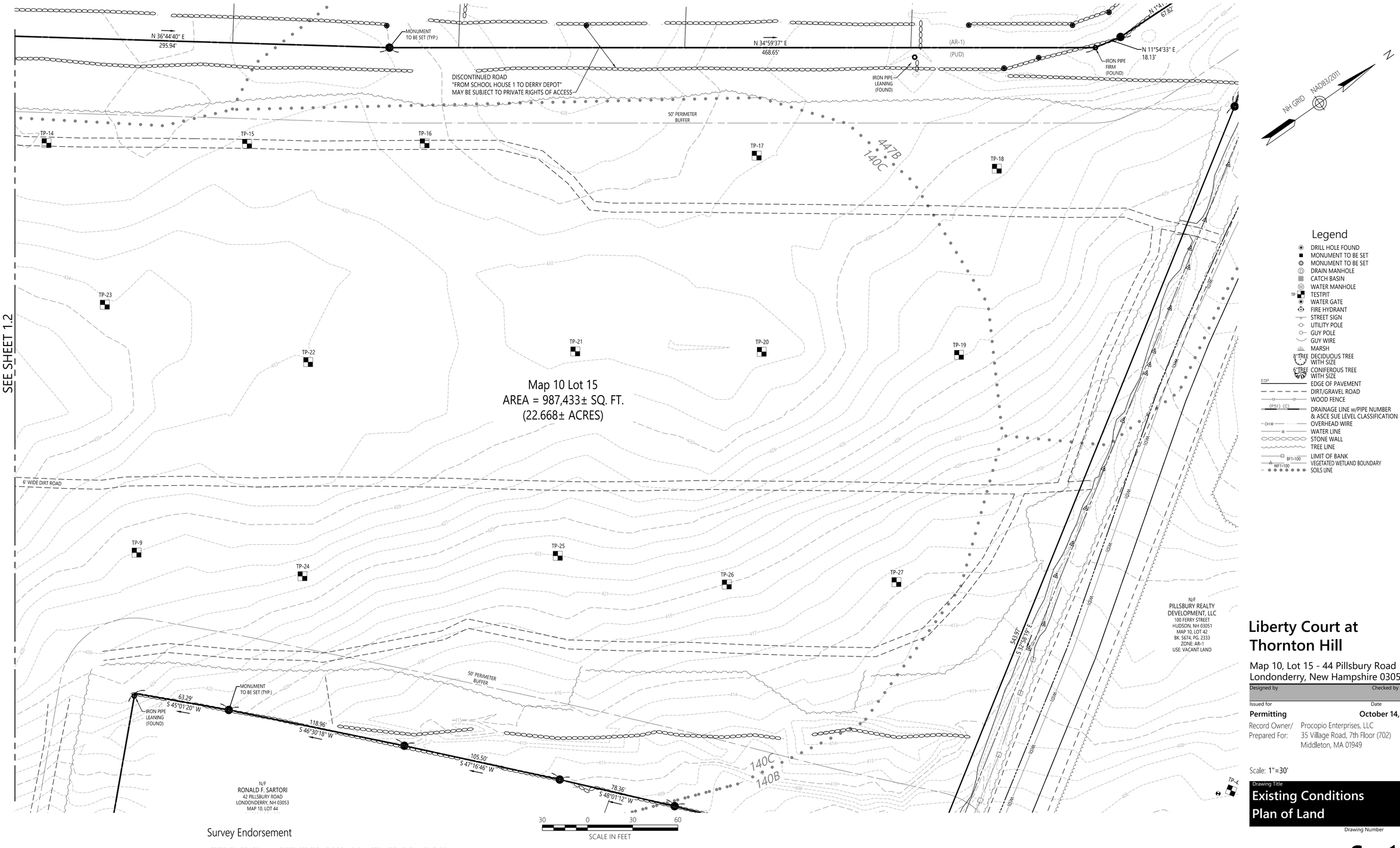
Drawing Title
Existing Conditions Master Plan

Drawing Number
Sv-1.0

Sheet 1 of 4

Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

Project Number **53140.00**



Legend

- DRILL HOLE FOUND
- MONUMENT TO BE SET
- MONUMENT TO BE SET
- DRAIN MANHOLE
- CATCH BASIN
- WATER MANHOLE
- TESTPIT
- WATER GATE
- FIRE HYDRANT
- STREET SIGN
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MARSH
- 8" TREE DECIDUOUS TREE WITH SIZE
- 6" TREE CONIFEROUS TREE WITH SIZE
- EDGE OF PAVEMENT
- DIRT/GRAVEL ROAD
- WOOD FENCE
- (PS1) (C) DRAINAGE LINE w/PIPE NUMBER & ASCE SUE LEVEL CLASSIFICATION
- OHW OVERHEAD WIRE
- W WATER LINE
- STONE WALL
- TREE LINE
- BF1-100 LIMIT OF BANK
- WF1-100 VEGETATED WETLAND BOUNDARY
- SOILS LINE

Survey Endorsement

I CERTIFY THAT THIS PLAN WAS PREPARED FROM THE BOUNDARY INFORMATION SHOWN ON THE PLAN REFERENCED AND A FIELD SURVEY MADE ON THE GROUND IN JULY AND SEPTEMBER 2024, HAVING A MAXIMUM ERROR OF CLOSURE BETTER THAN 1IN 10,000.



DATE MICHAEL J. HAMMER, LLS #1036

Benchmarks

1. TBM 31 - MAG NAIL SET IN PAVEMENT ON PILLSBURY ROAD, ELEV.=368.09'
2. TBM 34 - MAG NAIL SET IN PAVEMENT ON PILLSBURY ROAD, ELEV.=361.87'
3. TBM 2 - NAIL SET IN U.POLE (PSNH 3/27), ELEV.=384.09'
4. TBM 3 - MAG NAIL FOUND IN U.POLE (PSNH 3/29), ELEV.=377.81'
5. TBM 4 - NAIL SET IN U.POLE (EVERSOURCE 35), ELEV.=390.57'

No.	Revision	Date	Appvd.
1	SITE PLAN APPLICATION SUBMISSION	2/12/2026	MJH

Liberty Court at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by | Checked by

Issued for: **Permitting** | Date: **October 14, 2025**

Record Owner/ Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA 01949

Scale: 1"=30'

Drawing Title
Existing Conditions Plan of Land

Drawing Number
Sv-1.1

Sheet 2 of 4

Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

Project Number **53140.00**

PILLSBURY ROAD
(CLASS V)

N/F
JOYCE INSERRA 2020 TRUST
57 PILLSBURY ROAD
LONDONDERRY, NH 03053
MAP 10, LOT 14-6
BK. 6078, PG. 2973

N/F
KATHLEEN M. DALPHOND
55 PILLSBURY ROAD
LONDONDERRY, NH 03053
MAP 10, LOT 14-7
BK. 4154, PG. 2561

N/F
ANN SCHREMPF
53 PILLSBURY ROAD
LONDONDERRY, NH 03053
MAP 10, LOT 14-8
BK. 6488, PG. 337

N 41°16'52" E 67.80'
N 33°27'25" E 72.82'
N 32°54'32" E 100.42'
N 38°41'57" E 156.16'
N 35°58'36" E 100.99'
N 37°30'36" E 121.49'
N 19°38'25" W 102.40'
N 62°43'53" W 160.85'
N 62°09'53" W 102.02'
N 61°07'02" W 103.14'
R=150.00'
L=58.52'
Δ=22°21'08"

IRON PIPE FIRM (FOUND)
MONUMENT TO BE SET (TYP.)
50' PERIMETER BUFFER
MOWED PATH
BUILDING
18" CMP I=359.5'
18" CMP I=356.9'
UP#30T3
UP#SNH 3-43
UP#Mar-43
UP#SNH 3-42
UP#SNH 3-41
LOP AHEAD
TBM #31

TP-3
TP-4
TP-5
TP-6
TP-7
TP-8
TP-10
TP-11
TP-12
TP-13

44C
140C
44B
140C

MATCH LINE SEE SHEET 1.3
MATCH LINE SEE SHEET 1.1

Map 10 Lot 15
AREA = 987,433± SQ. FT.
(22.668± ACRES)

NH GRID NAD83/2011

30 0 30 60
SCALE IN FEET

Legend

- DRILL HOLE FOUND
- MONUMENT TO BE SET
- MONUMENT TO BE SET
- DRAIN MANHOLE
- CATCH BASIN
- WATER MANHOLE
- TP TESTPIT
- WATER GATE
- FIRE HYDRANT
- STREET SIGN
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MARSH
- 8" TREE DECIDUOUS TREE WITH SIZE
- 6" TREE CONIFEROUS TREE WITH SIZE
- EOP EDGE OF PAVEMENT
- DIRT/GRAVEL ROAD
- WOOD FENCE
- (PS1) (C) DRAINAGE LINE w/PIPE NUMBER & ASCE SUE LEVEL CLASSIFICATION
- OH-W OVERHEAD WIRE
- W WATER LINE
- STONE WALL
- TREE LINE
- BF1-100 LIMIT OF BANK
- WF1-100 VEGETATED WETLAND BOUNDARY
- SOILS LINE

Survey Endorsement

I CERTIFY THAT THIS PLAN WAS PREPARED FROM THE BOUNDARY INFORMATION SHOWN ON THE PLAN REFERENCED AND A FIELD SURVEY MADE ON THE GROUND IN JULY AND SEPTEMBER 2024, HAVING A MAXIMUM ERROR OF CLOSURE BETTER THAN 1 IN 10,000.

DATE

MICHAEL J. HAMMER, LLS #1036

Benchmarks

1. TBM 31 - MAG NAIL SET IN PAVEMENT ON PILLSBURY ROAD, ELEV.=368.09'
2. TBM 34 - MAG NAIL SET IN PAVEMENT ON PILLSBURY ROAD, ELEV.=361.87'
3. TBM 2 - NAIL SET IN U.POLE (PSNH 3/27), ELEV.=384.09'
4. TBM 3 - MAG NAIL FOUND IN U.POLE (PSNH 3/29), ELEV.=377.81'
5. TBM 4 - NAIL SET IN U.POLE (EVERSOURCE 35), ELEV.=390.57'

No.	Revision	Date	Appvd.
1	SITE PLAN APPLICATION SUBMISSION	2/12/2026	MJH

Liberty Court at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by | Checked by

Issued for: **Permitting** | Date: **October 14, 2025**

Record Owner/ Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA 01949

Scale: 1"=30'

Drawing Title
Existing Conditions Plan of Land

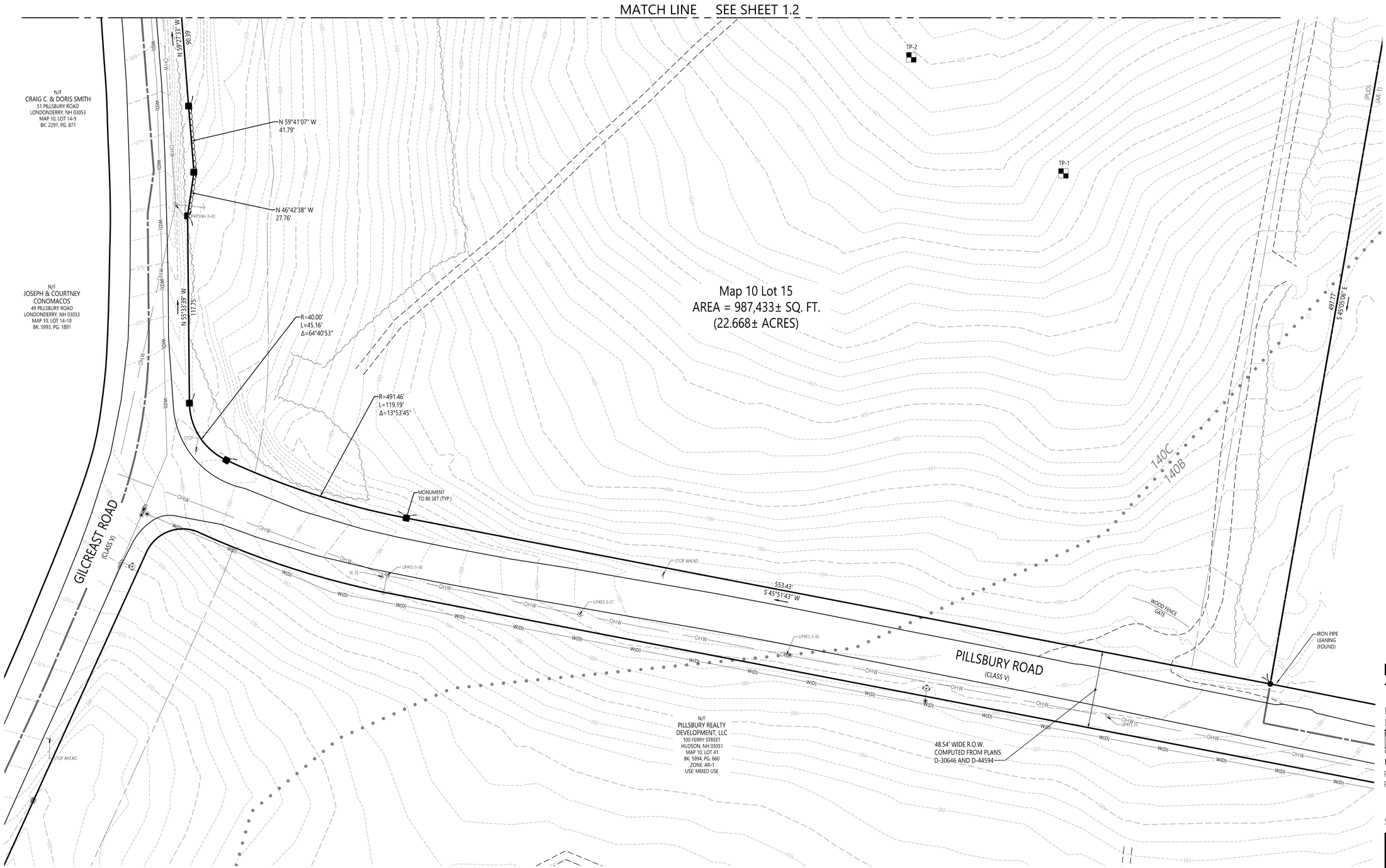
Drawing Number
Sv-1.2

Sheet 3 of 4

Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

Project Number **53140.00**

\\vhb\gbl\proj\Bedford\53140.00 36 Pillsbury Rd Londond\cad\sr\planset\53140.00-EX-PLAN44.dwg



Legend

- DRILL HOLE FOUND
- MONUMENT TO BE SET
- MONUMENT TO BE SET
- DRAIN MANHOLE
- CATCH BASIN
- WATER MANHOLE
- TESTPIT
- WATER GATE
- FIRE HYDRANT
- STREET SIGN
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MARSH
- DECIDUOUS TREE WITH SIZE
- CONIFEROUS TREE WITH SIZE
- EDGE OF PAVEMENT
- DIRT/GRAVEL ROAD
- WOOD FENCE
- DRAINAGE LINE w/PIPE NUMBER & ASCE SUE LEVEL CLASSIFICATION
- OVERHEAD WIRE
- WATER LINE
- STONE WALL
- TREE LINE
- LIMIT OF BANK
- VEGETATED WETLAND BOUNDARY
- SOILS LINE

Liberty Court at Thornton Hill

Map 10, Lot 15 - 44 Pillsbury Road
Londonderry, New Hampshire 03053

Designed by | Checked by

Issued for: **Permitting** | Date: **October 14, 2025**

Record Owner/ Prepared For: Procopio Enterprises, LLC
35 Village Road, 7th Floor (702)
Middleton, MA 01949

Scale: 1"=30'

Drawing Title
Existing Conditions Plan of Land

Drawing Number
Sv-1.3

Sheet 4 of 4

Vanasse Hangen Brustlin, Inc.
2 Bedford Farms Drive, Suite 200
Bedford, New Hampshire 03110
603.391.3900 • FAX 603.518.7495

Project Number **53140.00**

Survey Endorsement

I CERTIFY THAT THIS PLAN WAS PREPARED FROM THE BOUNDARY INFORMATION SHOWN ON THE PLAN REFERENCED AND A FIELD SURVEY MADE ON THE GROUND IN JULY AND SEPTEMBER 2024, HAVING A MAXIMUM ERROR OF CLOSURE BETTER THAN 1 IN 10,000.

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 1036 MICHAEL J. HAMMER

DATE MICHAEL J. HAMMER, LLS #1036

30 0 30 60
SCALE IN FEET

Benchmarks

1. TBM 31 - MAG NAIL SET IN PAVEMENT ON PILLSBURY ROAD, ELEV.=368.09'
2. TBM 34 - MAG NAIL SET IN PAVEMENT ON PILLSBURY ROAD, ELEV.=361.87'
3. TBM 2 - NAIL SET IN U.POLE (PSNH 3/27), ELEV.=384.09'
4. TBM 3 - MAG NAIL FOUND IN U.POLE (PSNH 3/29), ELEV.=377.81'
5. TBM 4 - NAIL SET IN U.POLE (EVERSOURCE 35), ELEV.=390.57'

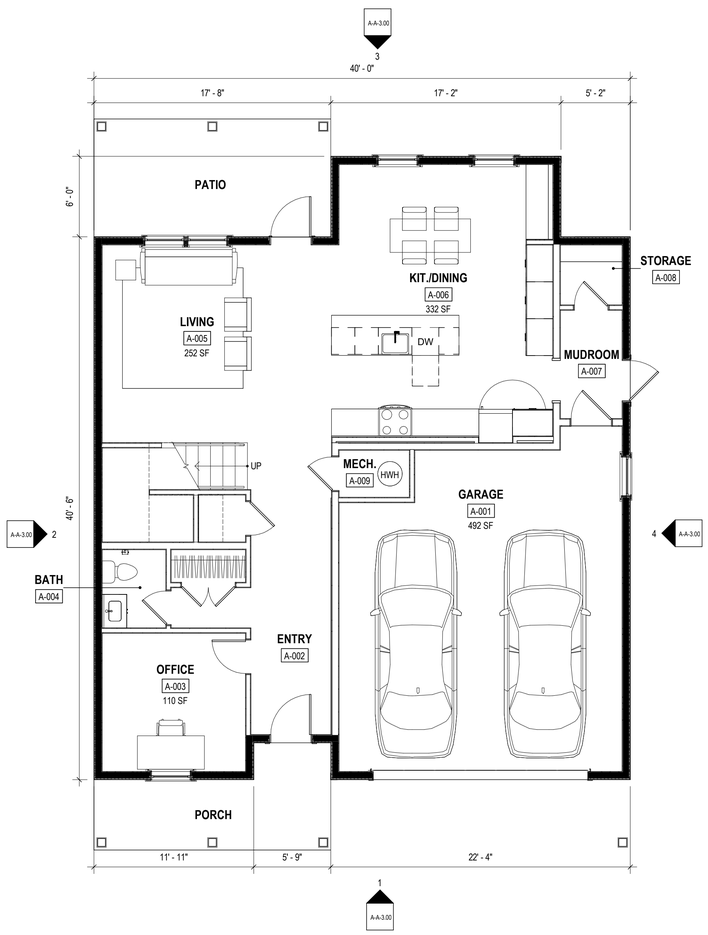
No.	Revision	Date	Appvd.
1	SITE PLAN APPLICATION SUBMISSION	2/12/2026	MJH

UNIT TYPE AREAS:

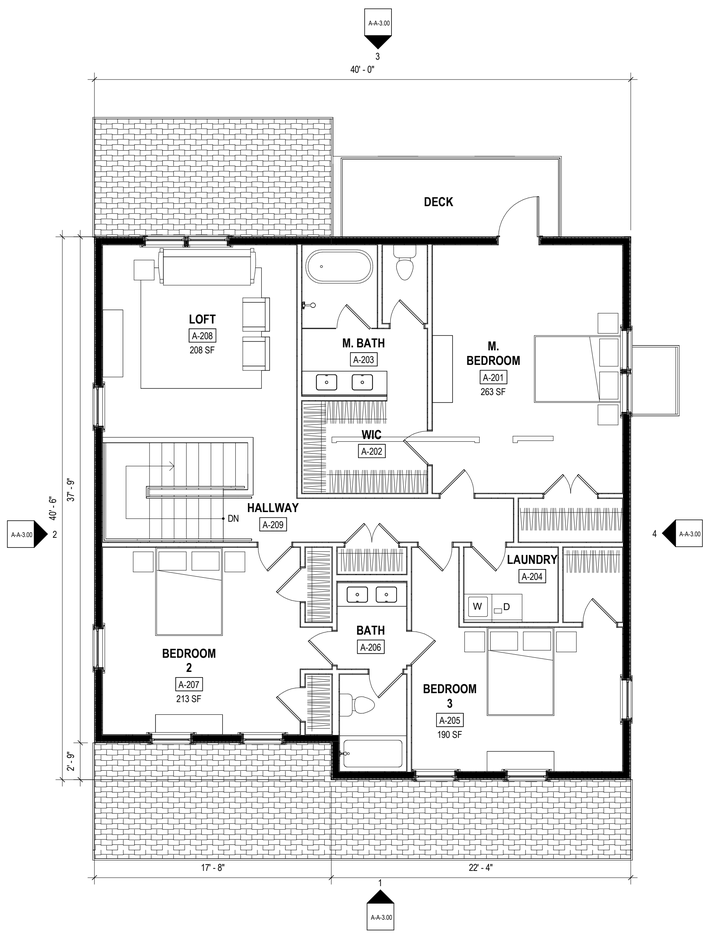
UNIT TYPE A:
GROUND FLOOR: 1,101 SF (GARAGE: 505 SF)
SECOND FLOOR: 1395 SF
TOTAL: 2,496 SF (WITH GARAGE: 3,001 SF)
UNIT TYPE B:
GROUND FLOOR: 1,177 SF (522 GARAGE)
SECOND FLOOR: 1,377 SF
TOTAL: 2,554 SF (WITH GARAGE: 3,076 SF)
UNIT TYPE C:
GROUND FLOOR: 1,033 SF (GARAGE: 595 SF)
SECOND FLOOR: 1,477 SF
TOTAL: 2,510 SF (WITH GARAGE: 3,105)
UNIT TYPE D:
GROUND FLOOR: 1,101 SF (GARAGE: 430 SF)
SECOND FLOOR: 1,176 SF
TOTAL: 2,277 SF (WITH GARAGE: 2,707 SF)
UNIT TYPE E:
GROUND FLOOR: 1,086 SF (GARAGE: 503 SF)
SECOND FLOOR: 1,492 SF
TOTAL: 2,578 SF (WITH GARAGE: 3,143)
UNIT TYPE F:
GROUND FLOOR: 246 SF (GARAGE: 479 SF)
SECOND FLOOR: 1,372 SF
THIRD FLOOR: 1,001 SF
TOTAL: 2,619 SF (WITH GARAGE: 3,098 SF)

GENERAL FLOOR PLAN NOTES:

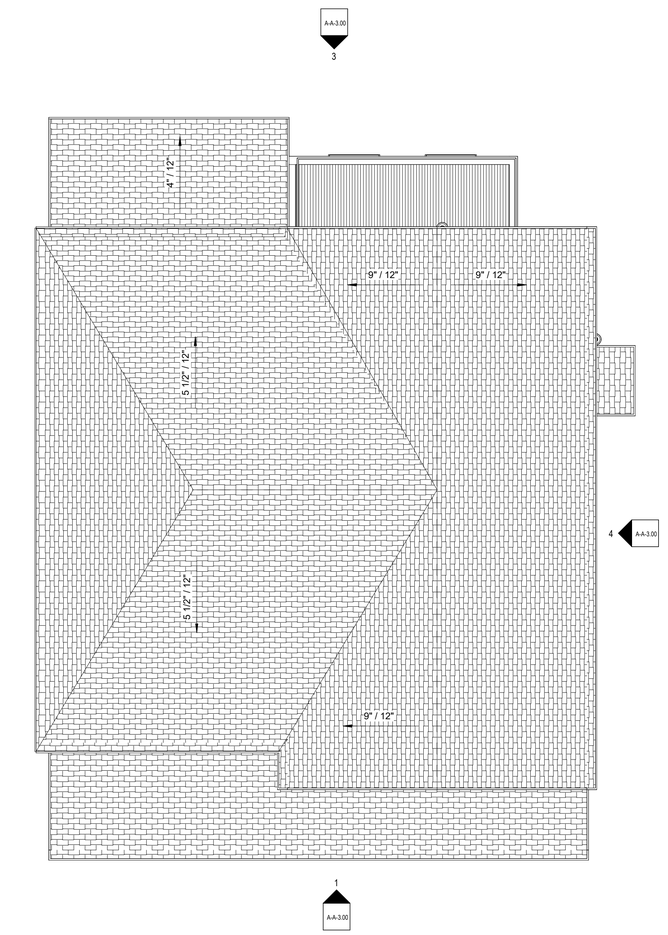
1. *OVERALL DIMENSIONS ARE TO GRIDLINES, F.O.STUD, U.N.O.*
2. *OPENING DIMENSIONS TO CENTER OF OPENING*
3. REFER TO LIFE SAFETY PLANS AND ASSEMBLY SHEETS TO DETERMINE ALL REQUIRED RATINGS.
4. COORDINATE ALL LOAD BEARING ELEMENTS WITH STRUCTURAL DWGS.
5. FIRE CAULK ALL PENETRATIONS AND JOINTS AT RATED ASSEMBLIES.
6. REFER TO ENLARGED PLANS FOR ADDITIONAL INFORMATION.
7. REFER TO FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
8. *ALL DOORS LOCATED 6" FROM ADJACENT WALL, U.N.O.*
9. PROVIDE WATER AND MOLD RESISTANT GWB IN ALL AREAS HAVING WATER SOURCE INCLUDING BUT NOT LIMITED TO BATHROOMS, KITCHENS, UTILITY CLOSETS, LAUNDRY ROOMS/CLOSETS AND CHASE WALLS.
10. CONFIRM ALL APPLIANCE / PLUMBING FIXTURE DIMENSIONS WITH FINAL EQUIPMENT SELECTIONS.
11. PROVIDE SEMI-RECESSED FIRE EXTINGUISHER CABINETS, LOCATE PER CODE REQ'S AND MAINTAIN RATING AS REQUIRED AT RATED WALLS. COORDINATE FINAL LOCATION IN FIELD WITH ARCHITECT.
12. REFER TO AIR SEALING DETAILS FOR ADDITIONAL REQUIREMENTS.
13. REFER TO PARTITION TYPE SHEET FOR PARTITION INFORMATION AND TAG TYPES.
14. REFER TO DOOR SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.



3 UNIT TYPE A - GROUND FLOOR
3/16" = 1'-0"



2 UNIT TYPE A - SECOND FLOOR
3/16" = 1'-0"



1 UNIT TYPE A - ROOF PLAN
3/16" = 1'-0"

THORNTON HILL

MAP 10, LOT 15, 44
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2527

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

NOT FOR CONSTRUCTION

STAMP

ISSUE DATE **DOCUMENT SUBMISSION**

ISSUE DATE **REVISIONS ON SHEET**

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **As indicated**
UTILE PROJECT NUMBER **2417**

UNIT TYPE A - FLOOR PLANS

A-A-1.00

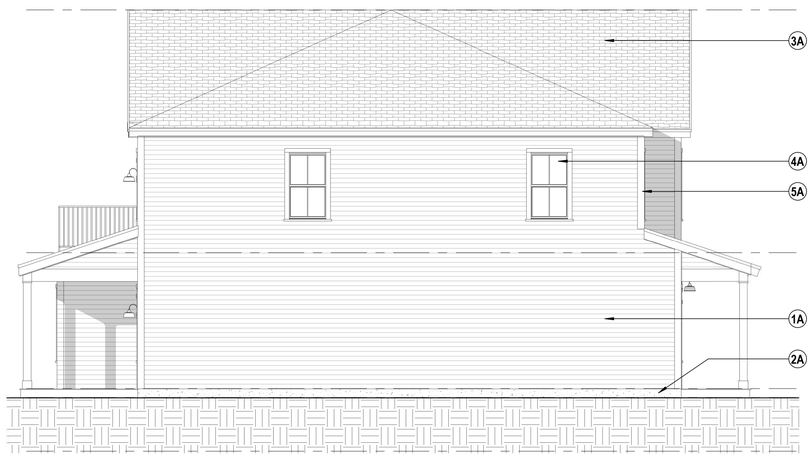
2/6/2026 3:39:08 PM



4 UNIT TYPE A - SIDE ELEVATION 2
3/16" = 1'-0"



3 UNIT TYPE A - REAR ELEVATON
3/16" = 1'-0"



2 UNIT TYPE A - SIDE ELEVATION 1
3/16" = 1'-0"



1 UNIT TYPE A - FRONT ELEVATION
3/16" = 1'-0"

#A ELEVATION KEY NOTE SCHEDULE

Number	Description
1A	VINYL CLAPBOARD SIDING, 4" EXPOSURE, BASIS OF DESIGN CERTAINTEED MONOGRAM
1B	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
1C	VINYL CLAPBOARD SIDING, BOARD AND BATTEN, BASIS OF DESIGN CERTAINTEED MONOGRAM
2A	EXPOSED CONCRETE FROST WALL
3A	ARCHITECTURAL GRADE ASPHALT SHINGLE, BASIS OF DESIGN CERTAINTEED LANDMARK
4A	VINYL DOUBLE HUNG WINDOWS WITH DIVIDED LIGHT, BASIS OF DESIGN ANDERSEN 100 SERIES
5A	PVC TRIM BOARD, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
6A	SECTIONAL OVERHEAD DOOR, BASIS OF DESIGN OVERHEAD DOOR CORP. THERMACORE
7A	PREMADE COLUMN COVER WITH TRIM, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
8A	BRICK; COLOR AND PATTERN TBD
8B	STONE; COLOR AND PATTERN TBD

FACADE ALTERNATES

1. SHUTTERS AT FRONT FACADE WINDOWS
2. SHAKE-STYLE SHINGLES IN LIEU OF BOARD AND BATTEN
3. TRELLIS IN LIEU OF GARAGE ROOF OVERHANG
4. STONE/BRICK CLADDING BELOW GARAGE ROOF OVERHANG
5. STANDING SEAM LOWER ROOF IN LIEU OF ASPHALT SHINGLE
6. GARAGE DOOR STYLE
7. NO CANOPY AT SIDE ENTRANCE

THORNTON HILL

MAP 10, LOT 15, 44
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2527

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

NOT FOR CONSTRUCTION

STAMP

ISSUE DATE	DOCUMENT SUBMISSION

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **As indicated**
UTILE PROJECT NUMBER **2417**

UNIT TYPE A - EXTERIOR ELEVATIONS

A-A-3.00

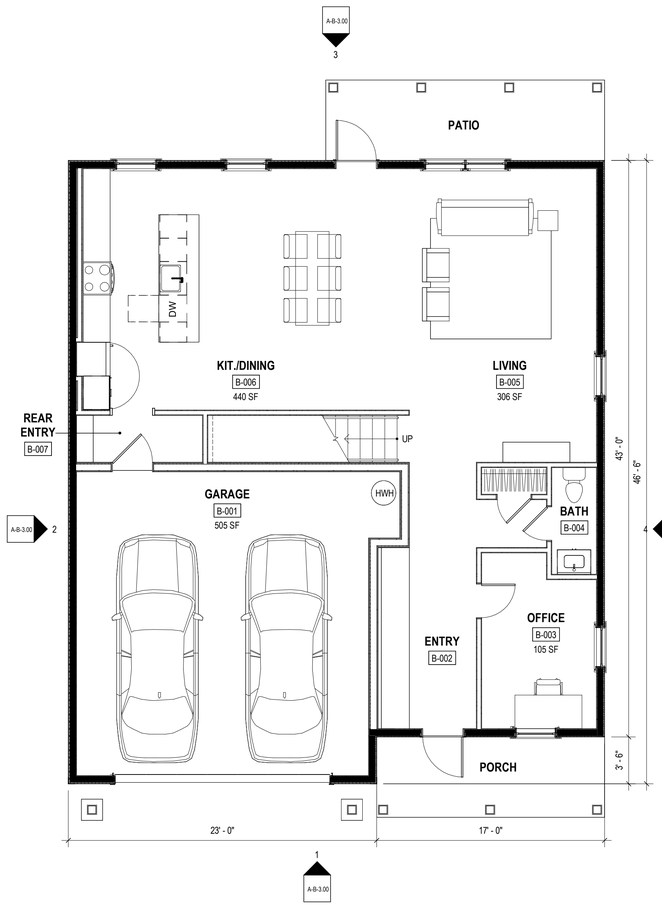
2/6/2026 3:39:11 PM

UNIT TYPE AREAS:

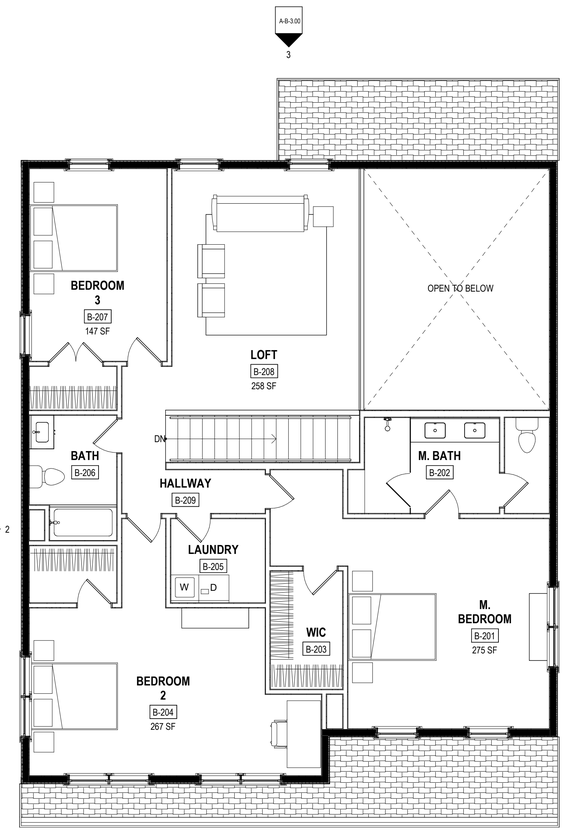
UNIT TYPE A:
GROUND FLOOR: 1,101 SF (GARAGE: 505 SF)
SECOND FLOOR: 1395 SF
TOTAL: 2,496 SF (WITH GARAGE: 3,001 SF)
UNIT TYPE B:
GROUND FLOOR: 1,177 SF (522 GARAGE)
SECOND FLOOR: 1,377 SF
TOTAL: 2,554 SF (WITH GARAGE: 3,076 SF)
UNIT TYPE C:
GROUND FLOOR: 1,033 SF (GARAGE: 595 SF)
SECOND FLOOR: 1,477 SF
TOTAL: 2,510 SF (WITH GARAGE: 3,105)
UNIT TYPE D:
GROUND FLOOR: 1,101 SF (GARAGE: 430 SF)
SECOND FLOOR: 1,176 SF
TOTAL: 2,277 SF (WITH GARAGE: 2,707 SF)
UNIT TYPE E:
GROUND FLOOR: 1,086 SF (GARAGE: 503 SF)
SECOND FLOOR: 1,492 SF
TOTAL: 2,578 SF (WITH GARAGE: 3,143)
UNIT TYPE F:
GROUND FLOOR: 246 SF (GARAGE: 479 SF)
SECOND FLOOR: 1,372 SF
THIRD FLOOR: 1,001 SF
TOTAL: 2,619 SF (WITH GARAGE: 3,098 SF)

GENERAL FLOOR PLAN NOTES:

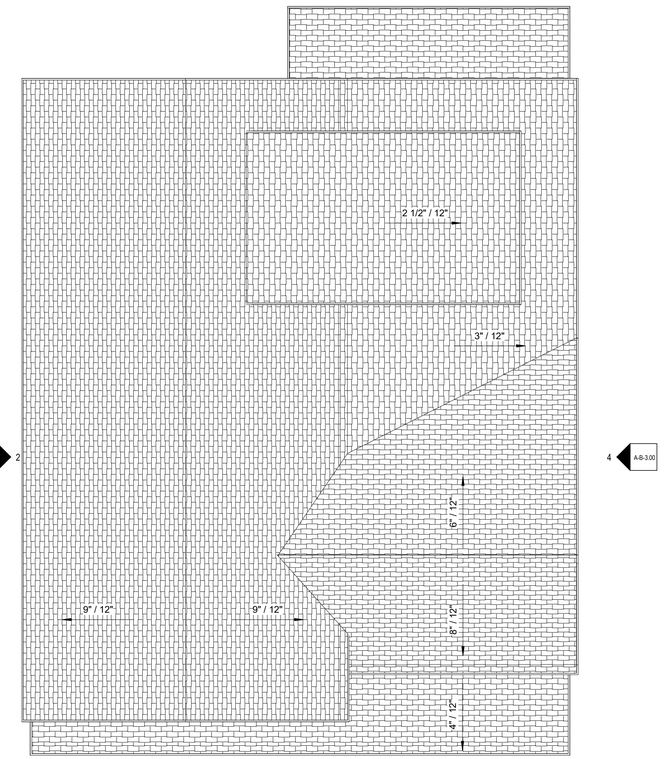
1. *OVERALL DIMENSIONS ARE TO GRIDLINES, F.O.STUD, U.N.O.*
2. *OPENING DIMENSIONS TO CENTER OF OPENING*
3. REFER TO LIFE SAFETY PLANS AND ASSEMBLY SHEETS TO DETERMINE ALL REQUIRED RATINGS.
4. COORDINATE ALL LOAD BEARING ELEMENTS WITH STRUCTURAL DWGS.
5. FIRE CAULK ALL PENETRATIONS AND JOINTS AT RATED ASSEMBLIES.
6. REFER TO ENLARGED PLANS FOR ADDITIONAL INFORMATION.
7. REFER TO FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
8. *ALL DOORS LOCATED 6" FROM ADJACENT WALL, U.N.O.*
9. PROVIDE WATER AND MOLD RESISTANT GWB IN ALL AREAS HAVING WATER SOURCE INCLUDING BUT NOT LIMITED TO BATHROOMS, KITCHENS, UTILITY CLOSETS, LAUNDRY ROOMS/CLOSETS AND CHASE WALLS.
10. CONFIRM ALL APPLIANCE / PLUMBING FIXTURE DIMENSIONS WITH FINAL EQUIPMENT SELECTIONS.
11. PROVIDE SEMI-RECESSED FIRE EXTINGUISHER CABINETS, LOCATE PER CODE REQ'S AND MAINTAIN RATING AS REQUIRED AT RATED WALLS. COORDINATE FINAL LOCATION IN FIELD WITH ARCHITECT.
12. REFER TO AIR SEALING DETAILS FOR ADDITIONAL REQUIREMENTS.
13. REFER TO PARTITION TYPE SHEET FOR PARTITION INFORMATION AND TAG TYPES.
14. REFER TO DOOR SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.



3 UNIT TYPE B - GROUND FLOOR
3/16" = 1'-0"



2 UNIT TYPE B - SECOND FLOOR
3/16" = 1'-0"



1 UNIT TYPE B - ROOF PLAN
3/16" = 1'-0"

THORNTON HILL

MAP 10, LOT 15, 44
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2527

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

NOT FOR CONSTRUCTION

STAMP

ISSUE DATE **DOCUMENT SUBMISSION**

ISSUE DATE **REVISIONS ON SHEET**

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **As indicated**
UTILE PROJECT NUMBER **2417**

UNIT TYPE B - FLOOR PLANS

A-B-1.00

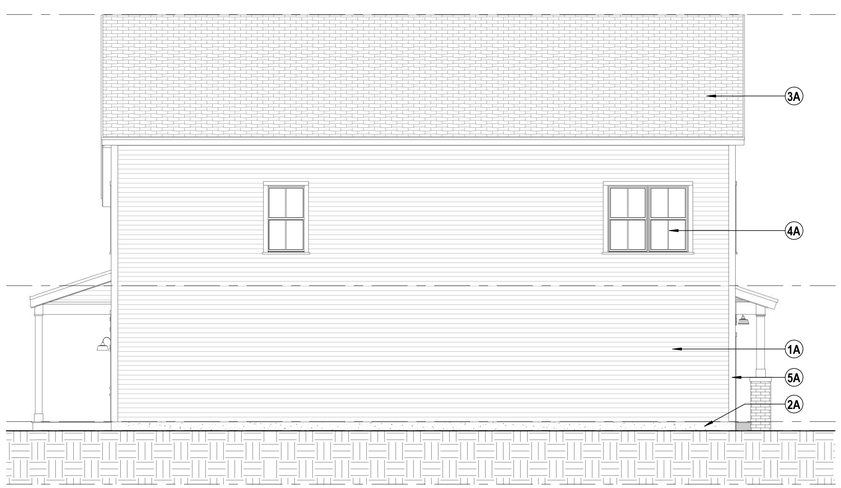
2/6/2026 3:39:13 PM



4 UNIT TYPE B - SIDE ELEVATION 2
3/16" = 1'-0"



3 UNIT TYPE B - REAR ELEVATION
3/16" = 1'-0"



2 UNIT TYPE B - SIDE ELEVATION 1
3/16" = 1'-0"



1 UNIT TYPE B - FRONT ELEVATION
3/16" = 1'-0"

#A ELEVATION KEY NOTE SCHEDULE	
Number	Description
1A	VINYL CLAPBOARD SIDING, 4" EXPOSURE, BASIS OF DESIGN CERTAINTEED MONOGRAM
1B	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
1C	VINYL CLAPBOARD SIDING, BOARD AND BATTEN, BASIS OF DESIGN CERTAINTEED MONOGRAM
2A	EXPOSED CONCRETE FROST WALL
3A	ARCHITECTURAL GRADE ASPHALT SHINGLE, BASIS OF DESIGN CERTAINTEED LANDMARK
4A	VINYL DOUBLE HUNG WINDOWS WITH DIVIDED LIGHT, BASIS OF DESIGN ANDERSEN 100 SERIES
5A	PVC TRIM BOARD, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
6A	SECTIONAL OVERHEAD DOOR, BASIS OF DESIGN OVERHEAD DOOR CORP. THERMACORE
7A	PREMADE COLUMN COVER WITH TRIM, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
8A	BRICK; COLOR AND PATTERN TBD
8B	STONE; COLOR AND PATTERN TBD

FACADE ALTERNATES

1. ROUND COLUMNS IN LIEU OF SQUARE COLUMNS
2. STONE PIERS IN LIEU OF BRICK PIERS
3. SHUTTERS AT FRONT FACADE WINDOWS
4. STONE UNDER PORCH
5. FYPON HEADERS AT WINDOWS
6. GARAGE DOOR STYLE

THORNTON HILL

MAP 10, LOT 15, 44
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2527

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

NOT FOR CONSTRUCTION

STAMP

ISSUE DATE	DOCUMENT SUBMISSION

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **As Indicated**
UTILE PROJECT NUMBER **2417**

UNIT TYPE B - EXTERIOR ELEVATIONS

A-B-3.00

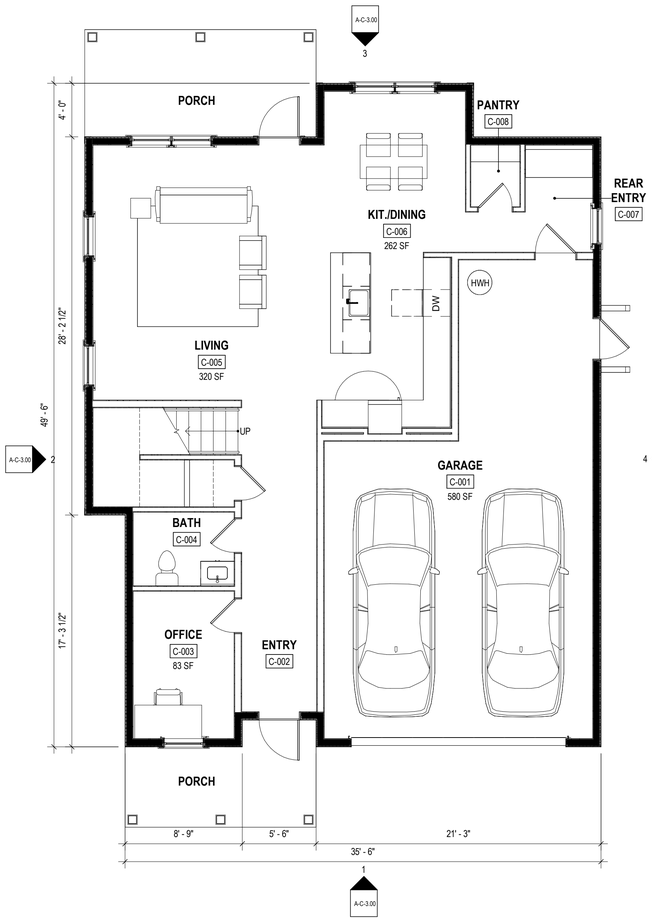
2/6/2026 3:39:16 PM

UNIT TYPE AREAS:

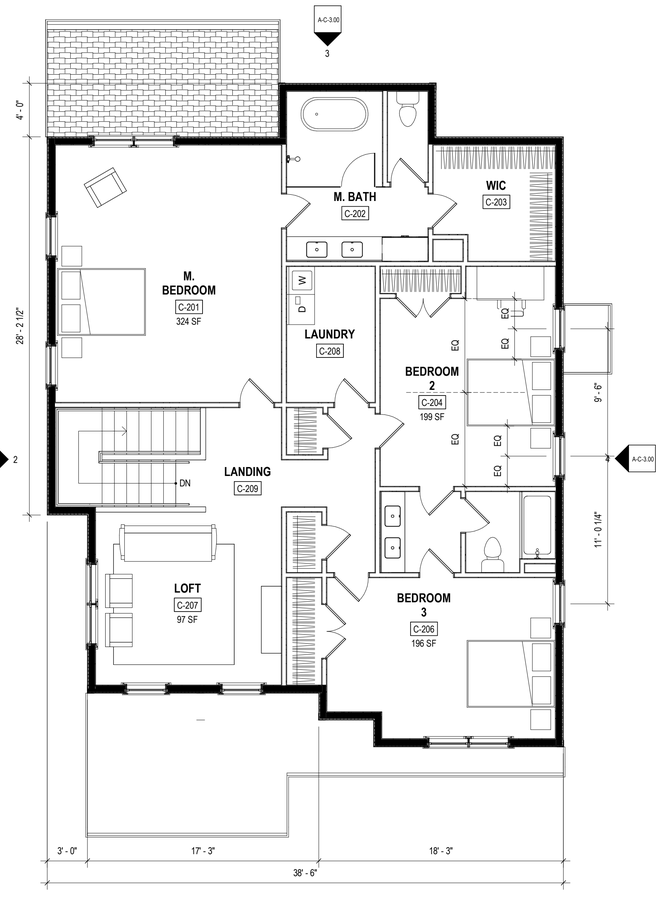
UNIT TYPE A:
GROUND FLOOR: 1,101 SF (GARAGE: 505 SF)
SECOND FLOOR: 1395 SF
TOTAL: 2,496 SF (WITH GARAGE: 3,001 SF)
UNIT TYPE B:
GROUND FLOOR: 1,177 SF (522 GARAGE)
SECOND FLOOR: 1,377 SF
TOTAL: 2,554 SF (WITH GARAGE: 3,076 SF)
UNIT TYPE C:
GROUND FLOOR: 1,033 SF (GARAGE: 595 SF)
SECOND FLOOR: 1,477 SF
TOTAL: 2,510 SF (WITH GARAGE: 3,105)
UNIT TYPE D:
GROUND FLOOR: 1,101 SF (GARAGE: 430 SF)
SECOND FLOOR: 1,176 SF
TOTAL: 2,277 SF (WITH GARAGE: 2,707 SF)
UNIT TYPE E:
GROUND FLOOR: 1,086 SF (GARAGE: 503 SF)
SECOND FLOOR: 1,492 SF
TOTAL: 2,578 SF (WITH GARAGE: 3,143)
UNIT TYPE F:
GROUND FLOOR: 246 SF (GARAGE: 479 SF)
SECOND FLOOR: 1,372 SF
THIRD FLOOR: 1,001 SF
TOTAL: 2,619 SF (WITH GARAGE: 3,098 SF)

GENERAL FLOOR PLAN NOTES:

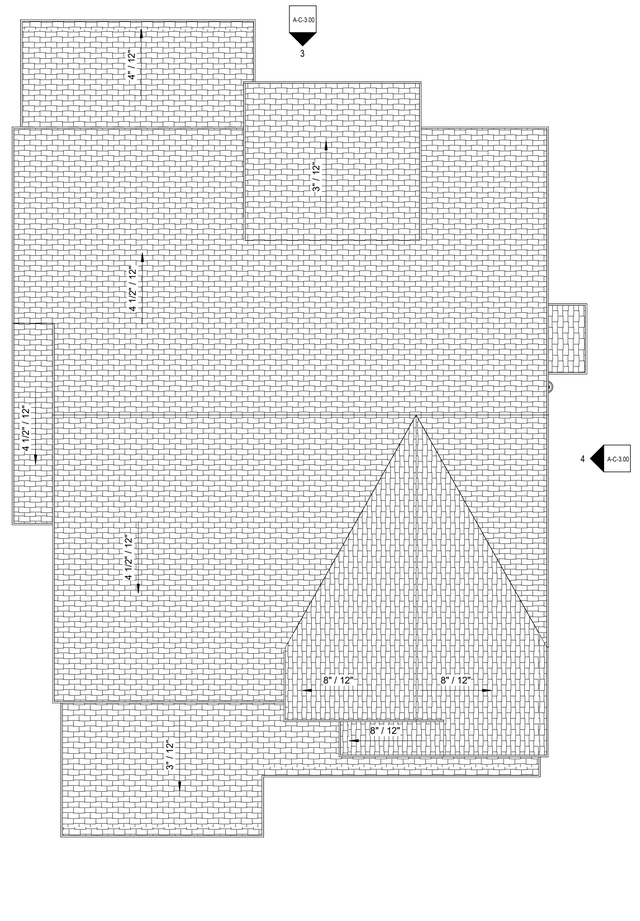
1. *OVERALL DIMENSIONS ARE TO GRIDLINES, F.O.STUD, U.N.O.*
2. *OPENING DIMENSIONS TO CENTER OF OPENING*
3. REFER TO LIFE SAFETY PLANS AND ASSEMBLY SHEETS TO DETERMINE ALL REQUIRED RATINGS.
4. COORDINATE ALL LOAD BEARING ELEMENTS WITH STRUCTURAL DWGS.
5. FIRE CAULK ALL PENETRATIONS AND JOINTS AT RATED ASSEMBLIES.
6. REFER TO ENLARGED PLANS FOR ADDITIONAL INFORMATION.
7. REFER TO FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
8. *ALL DOORS LOCATED 6" FROM ADJACENT WALL, U.N.O.*
9. PROVIDE WATER AND MOLD RESISTANT GWB IN ALL AREAS HAVING WATER SOURCE INCLUDING BUT NOT LIMITED TO BATHROOMS, KITCHENS, UTILITY CLOSETS, LAUNDRY ROOMS/CLOSETS AND CHASE WALLS.
10. CONFIRM ALL APPLIANCE / PLUMBING FIXTURE DIMENSIONS WITH FINAL EQUIPMENT SELECTIONS.
11. PROVIDE SEMI-RECESSED FIRE EXTINGUISHER CABINETS, LOCATE PER CODE REQ'S AND MAINTAIN RATING AS REQUIRED AT RATED WALLS. COORDINATE FINAL LOCATION IN FIELD WITH ARCHITECT.
12. REFER TO AIR SEALING DETAILS FOR ADDITIONAL REQUIREMENTS.
13. REFER TO PARTITION TYPE SHEET FOR PARTITION INFORMATION AND TAG TYPES.
14. REFER TO DOOR SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.



3 UNIT TYPE C - GROUND FLOOR
3/16" = 1'-0"



2 UNIT TYPE C - SECOND FLOOR
3/16" = 1'-0"



1 UNIT TYPE C - ROOF PLAN
3/16" = 1'-0"

THORNTON HILL

MAP 10, LOT 15, 44
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2527

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

NOT FOR CONSTRUCTION

STAMP

ISSUE DATE	DOCUMENT SUBMISSION

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE: **As indicated**
UTILE PROJECT NUMBER: **2417**

UNIT TYPE C - FLOOR PLANS

A-C-1.00

2/6/2026 3:39:19 PM



4 UNIT TYPE C - SIDE ELEVATION 2
3/16" = 1'-0"



3 UNIT TYPE C - REAR ELEVATION
3/16" = 1'-0"



2 UNIT TYPE C - SIDE ELEVATION 1
3/16" = 1'-0"



1 UNIT TYPE C - FRONT ELEVATION
3/16" = 1'-0"

#A ELEVATION KEY NOTE SCHEDULE

Number	Description
1A	VINYL CLAPBOARD SIDING, 4" EXPOSURE, BASIS OF DESIGN CERTAINTEED MONOGRAM
1B	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
1C	VINYL CLAPBOARD SIDING, BOARD AND BATTEN, BASIS OF DESIGN CERTAINTEED MONOGRAM
2A	EXPOSED CONCRETE FROST WALL
3A	ARCHITECTURAL GRADE ASPHALT SHINGLE, BASIS OF DESIGN CERTAINTEED LANDMARK
4A	VINYL DOUBLE HUNG WINDOWS WITH DIVIDED LIGHT, BASIS OF DESIGN ANDERSEN 100 SERIES
5A	PVC TRIM BOARD, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
6A	SECTIONAL OVERHEAD DOOR, BASIS OF DESIGN OVERHEAD DOOR CORP. THERMACORE
7A	PREMADE COLUMN COVER WITH TRIM, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
8A	BRICK; COLOR AND PATTERN TBD
8B	STONE; COLOR AND PATTERN TBD

FACADE ALTERNATES

1. SHUTTERS AT FRONT FACADE WINDOWS
2. ROUND COLUMNS IN LIEU OF SQUARE COLUMNS
3. GARAGE DOOR STYLE
4. NO CANOPY AT SIDE ENTRANCE

THORNTON HILL

MAP 10, LOT 15, 44
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2527

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

NOT FOR CONSTRUCTION

STAMP

ISSUE DATE	DOCUMENT SUBMISSION

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **As indicated**
UTILE PROJECT NUMBER **2417**

UNIT TYPE C - EXTERIOR ELEVATIONS

A-C-3.00

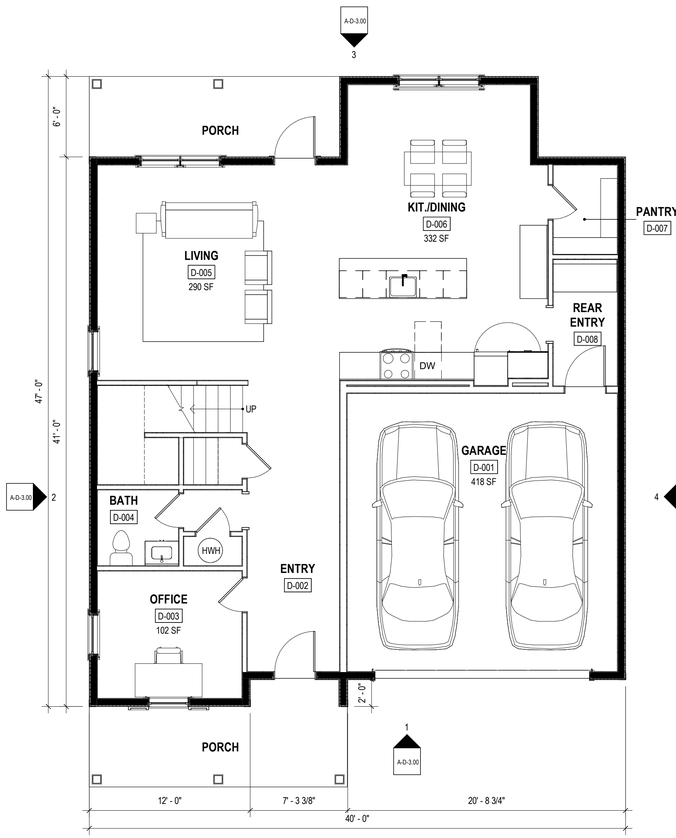
2/6/2026 3:39:22 PM

UNIT TYPE AREAS:

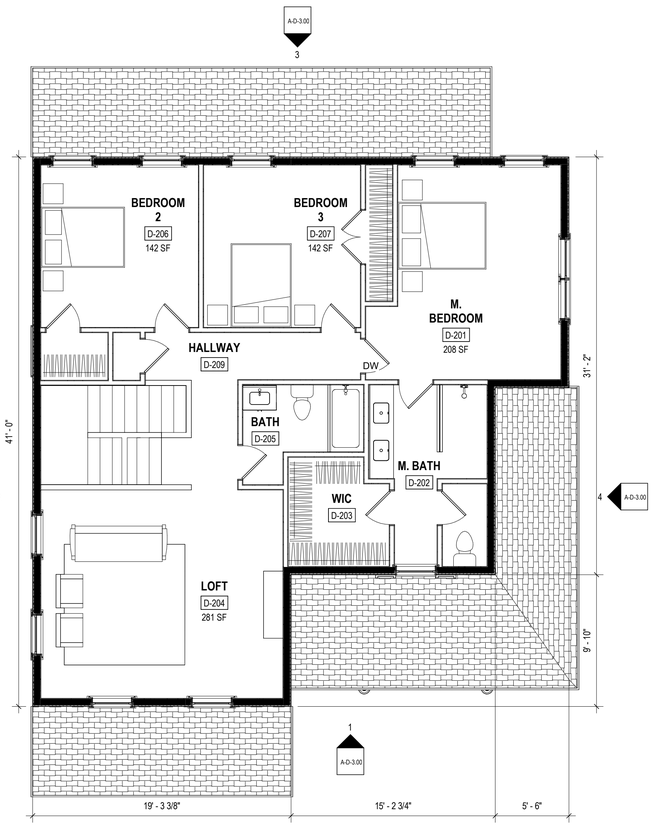
UNIT TYPE A:
GROUND FLOOR: 1,101 SF (GARAGE: 505 SF)
SECOND FLOOR: 1395 SF
TOTAL: 2,496 SF (WITH GARAGE: 3,001 SF)
UNIT TYPE B:
GROUND FLOOR: 1,177 SF (522 GARAGE)
SECOND FLOOR: 1,377 SF
TOTAL: 2,554 SF (WITH GARAGE: 3,076 SF)
UNIT TYPE C:
GROUND FLOOR: 1,033 SF (GARAGE: 595 SF)
SECOND FLOOR: 1,477 SF
TOTAL: 2,510 SF (WITH GARAGE: 3,105)
UNIT TYPE D:
GROUND FLOOR: 1,101 SF (GARAGE: 430 SF)
SECOND FLOOR: 1,176 SF
TOTAL: 2,277 SF (WITH GARAGE: 2,707 SF)
UNIT TYPE E:
GROUND FLOOR: 1,086 SF (GARAGE: 503 SF)
SECOND FLOOR: 1,492 SF
TOTAL: 2,578 SF (WITH GARAGE: 3,143)
UNIT TYPE F:
GROUND FLOOR: 246 SF (GARAGE: 479 SF)
SECOND FLOOR: 1,372 SF
THIRD FLOOR: 1,001 SF
TOTAL: 2,619 SF (WITH GARAGE: 3,098 SF)

GENERAL FLOOR PLAN NOTES:

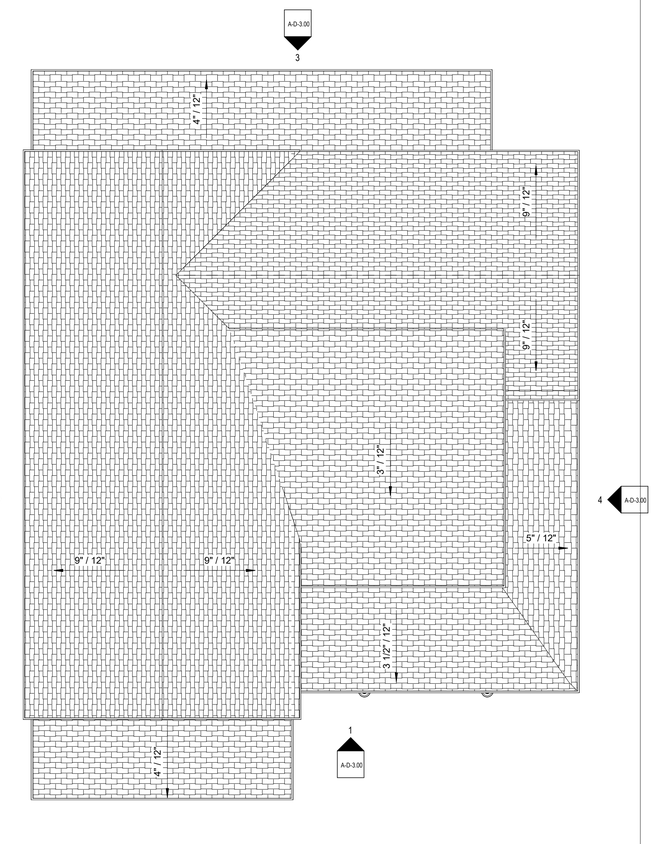
1. *OVERALL DIMENSIONS ARE TO GRIDLINES, F.O.STUD, U.N.O.*
2. *OPENING DIMENSIONS TO CENTER OF OPENING*
3. REFER TO LIFE SAFETY PLANS AND ASSEMBLY SHEETS TO DETERMINE ALL REQUIRED RATINGS.
4. COORDINATE ALL LOAD BEARING ELEMENTS WITH STRUCTURAL DWGS.
5. FIRE CAULK ALL PENETRATIONS AND JOINTS AT RATED ASSEMBLIES.
6. REFER TO ENLARGED PLANS FOR ADDITIONAL INFORMATION.
7. REFER TO FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
8. *ALL DOORS LOCATED 6" FROM ADJACENT WALL, U.N.O.*
9. PROVIDE WATER AND MOLD RESISTANT GWB IN ALL AREAS HAVING WATER SOURCE INCLUDING BUT NOT LIMITED TO BATHROOMS, KITCHENS, UTILITY CLOSETS, LAUNDRY ROOMS/CLOSETS AND CHASE WALLS.
10. CONFIRM ALL APPLIANCE / PLUMBING FIXTURE DIMENSIONS WITH FINAL EQUIPMENT SELECTIONS.
11. PROVIDE SEMI-RECESSED FIRE EXTINGUISHER CABINETS, LOCATE PER CODE REQ'S AND MAINTAIN RATING AS REQUIRED AT RATED WALLS. COORDINATE FINAL LOCATION IN FIELD WITH ARCHITECT.
12. REFER TO AIR SEALING DETAILS FOR ADDITIONAL REQUIREMENTS.
13. REFER TO PARTITION TYPE SHEET FOR PARTITION INFORMATION AND TAG TYPES.
14. REFER TO DOOR SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.



3 UNIT TYPE D - GROUND FLOOR
3/16" = 1'-0"



2 UNIT TYPE D - SECOND FLOOR
3/16" = 1'-0"



1 UNIT TYPE D - ROOF PLAN
3/16" = 1'-0"

THORNTON HILL

MAP 10, LOT 15, 44
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2527

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

NOT FOR CONSTRUCTION

STAMP

ISSUE DATE	DOCUMENT SUBMISSION

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **As indicated**
UTILE PROJECT NUMBER **2417**

UNIT TYPE D - FLOOR PLANS

A-D-1.00

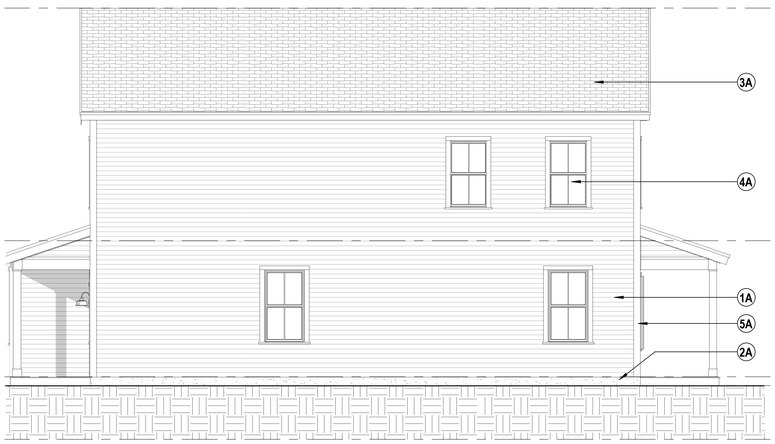
2/6/2026 3:39:24 PM



4 UNIT TYPE D - SIDE ELEVATION 2
3/16" = 1'-0"



3 UNIT TYPE D - REAR ELEVATION
3/16" = 1'-0"



2 UNIT TYPE D - SIDE ELEVATION 1
3/16" = 1'-0"



1 UNIT TYPE D - FRONT ELEVATION
3/16" = 1'-0"

#A ELEVATION KEY NOTE SCHEDULE

Number	Description
1A	VINYL CLAPBOARD SIDING, 4" EXPOSURE, BASIS OF DESIGN CERTAINTEED MONOGRAM
1B	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
1C	VINYL CLAPBOARD SIDING, BOARD AND BATTEN, BASIS OF DESIGN CERTAINTEED MONOGRAM
2A	EXPOSED CONCRETE FROST WALL
3A	ARCHITECTURAL GRADE ASPHALT SHINGLE, BASIS OF DESIGN CERTAINTEED LANDMARK
4A	VINYL DOUBLE HUNG WINDOWS WITH DIVIDED LIGHT, BASIS OF DESIGN ANDERSEN 100 SERIES
5A	PVC TRIM BOARD, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
6A	SECTIONAL OVERHEAD DOOR, BASIS OF DESIGN OVERHEAD DOOR CORP. THERMACORE
7A	PREMADE COLUMN COVER WITH TRIM, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
8A	BRICK; COLOR AND PATTERN TBD
8B	STONE; COLOR AND PATTERN TBD

FACADE ALTERNATES

1. SHUTTER STYLE
2. SHUTTERS AT FRONT FACADE WINDOWS
3. GARAGE DOOR STYLE

THORNTON HILL

MAP 10, LOT 15, 44
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2527

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

NOT FOR CONSTRUCTION

STAMP

ISSUE DATE **DOCUMENT SUBMISSION**

ISSUE DATE **REVISIONS ON SHEET**

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **As indicated**
UTILE PROJECT NUMBER **2417**

UNIT TYPE D - EXTERIOR ELEVATIONS

A-D-3.00

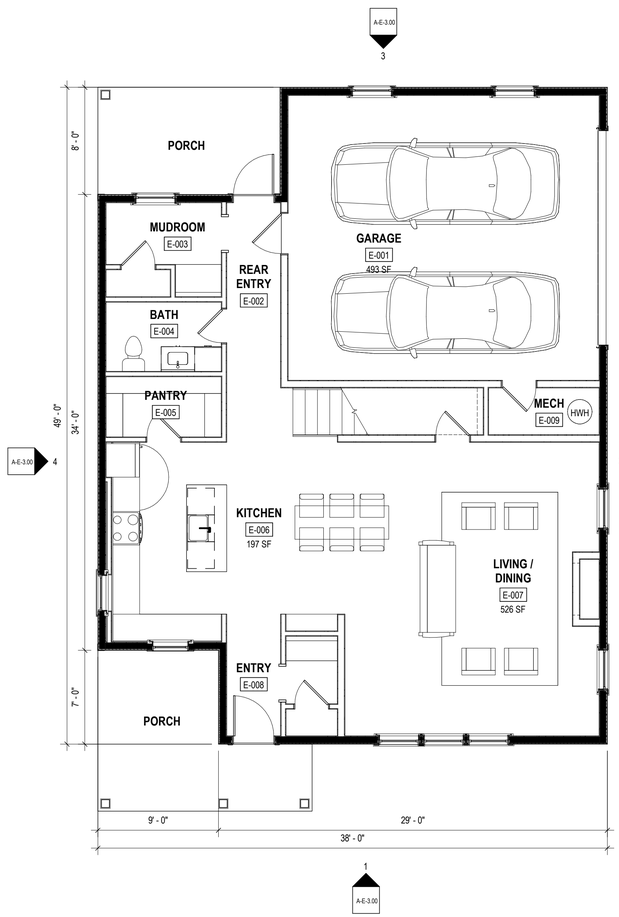
2/6/2026 3:39:27 PM

UNIT TYPE AREAS:

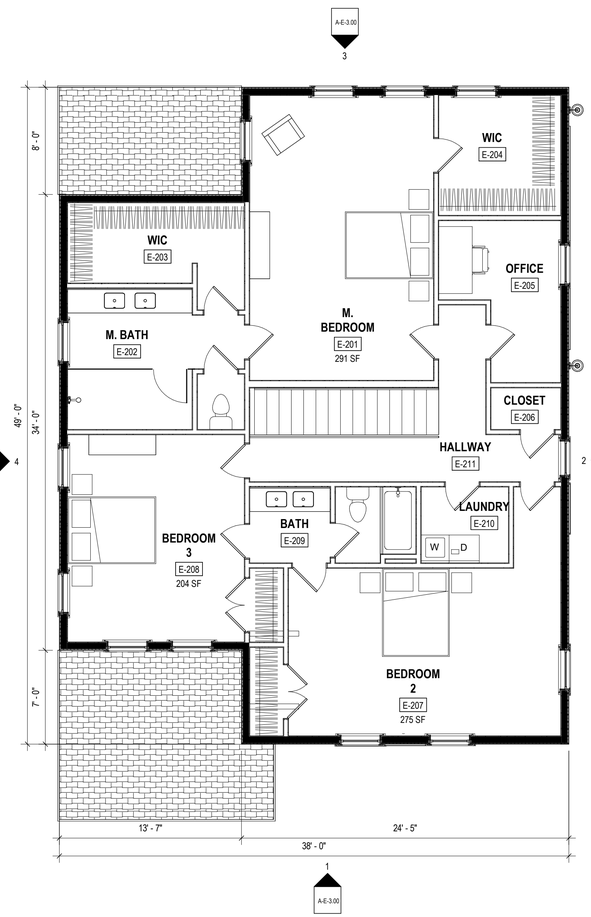
UNIT TYPE A:
GROUND FLOOR: 1,101 SF (GARAGE: 505 SF)
SECOND FLOOR: 1395 SF
TOTAL: 2,496 SF (WITH GARAGE: 3,001 SF)
UNIT TYPE B:
GROUND FLOOR: 1,177 SF (522 GARAGE)
SECOND FLOOR: 1,377 SF
TOTAL: 2,554 SF (WITH GARAGE: 3,076 SF)
UNIT TYPE C:
GROUND FLOOR: 1,033 SF (GARAGE: 595 SF)
SECOND FLOOR: 1,477 SF
TOTAL: 2,510 SF (WITH GARAGE: 3,105)
UNIT TYPE D:
GROUND FLOOR: 1,101 SF (GARAGE: 430 SF)
SECOND FLOOR: 1,176 SF
TOTAL: 2,277 SF (WITH GARAGE: 2,707 SF)
UNIT TYPE E:
GROUND FLOOR: 1,086 SF (GARAGE: 503 SF)
SECOND FLOOR: 1,492 SF
TOTAL: 2,578 SF (WITH GARAGE: 3,143)
UNIT TYPE F:
GROUND FLOOR: 246 SF (GARAGE: 479 SF)
SECOND FLOOR: 1,372 SF
THIRD FLOOR: 1,001 SF
TOTAL: 2,619 SF (WITH GARAGE: 3,098 SF)

GENERAL FLOOR PLAN NOTES:

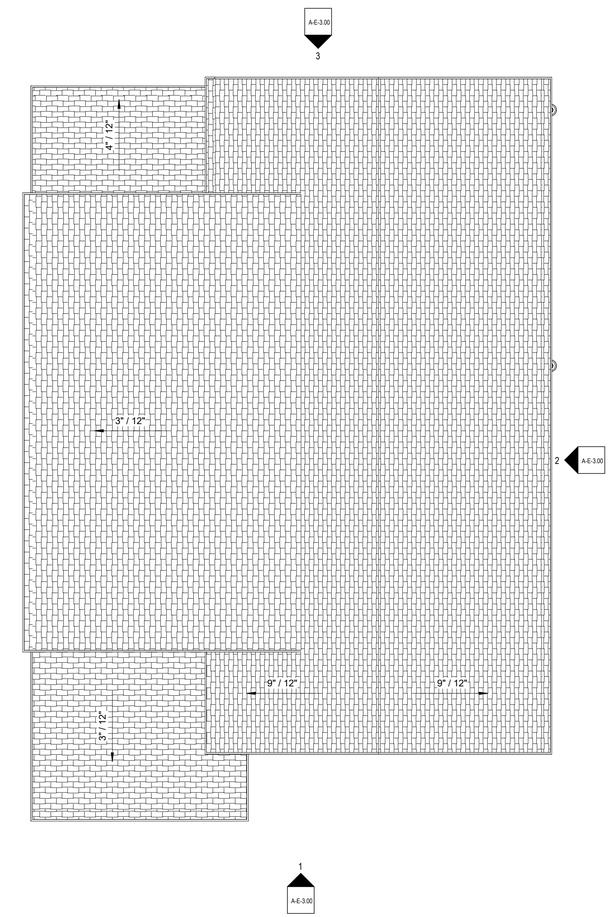
1. *OVERALL DIMENSIONS ARE TO GRIDLINES, F.O.STUD, U.N.O.*
2. *OPENING DIMENSIONS TO CENTER OF OPENING*
3. REFER TO LIFE SAFETY PLANS AND ASSEMBLY SHEETS TO DETERMINE ALL REQUIRED RATINGS.
4. COORDINATE ALL LOAD BEARING ELEMENTS WITH STRUCTURAL DWGS.
5. FIRE CAULK ALL PENETRATIONS AND JOINTS AT RATED ASSEMBLIES.
6. REFER TO ENLARGED PLANS FOR ADDITIONAL INFORMATION.
7. REFER TO FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
8. *ALL DOORS LOCATED 6" FROM ADJACENT WALL, U.N.O.*
9. PROVIDE WATER AND MOLD RESISTANT GWB IN ALL AREAS HAVING WATER SOURCE INCLUDING BUT NOT LIMITED TO BATHROOMS, KITCHENS, UTILITY CLOSETS, LAUNDRY ROOMS/CLOSETS AND CHASE WALLS.
10. CONFIRM ALL APPLIANCE / PLUMBING FIXTURE DIMENSIONS WITH FINAL EQUIPMENT SELECTIONS.
11. PROVIDE SEMI-RECESSED FIRE EXTINGUISHER CABINETS, LOCATE PER CODE REQ'S AND MAINTAIN RATING AS REQUIRED AT RATED WALLS. COORDINATE FINAL LOCATION IN FIELD WITH ARCHITECT.
12. REFER TO AIR SEALING DETAILS FOR ADDITIONAL REQUIREMENTS.
13. REFER TO PARTITION TYPE SHEET FOR PARTITION INFORMATION AND TAG TYPES.
14. REFER TO DOOR SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.



3 UNIT TYPE E - GROUND FLOOR
3/16" = 1'-0"



2 UNIT TYPE E - SECOND FLOOR
3/16" = 1'-0"



1 UNIT TYPE E - ROOF PLAN
3/16" = 1'-0"

THORNTON HILL

MAP 10, LOT 15, 44
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2527

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN

115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com

ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349

STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900

CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900

LANDSCAPE

NOT FOR CONSTRUCTION

STAMP

ISSUE DATE **DOCUMENT SUBMISSION**

ISSUE DATE **REVISIONS ON SHEET**

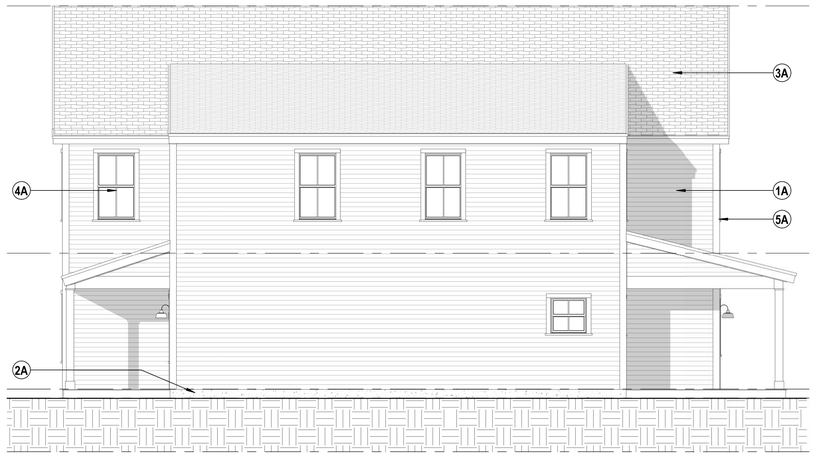
NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **As indicated**
UTILE PROJECT NUMBER **2417**

UNIT TYPE E - FLOOR PLANS

A-E-1.00

2/6/2026 3:30:30 PM



4 UNIT TYPE E - SIDE ELEVATION 2
3/16" = 1'-0"



3 UNIT TYPE E - REAR ELEVATION
3/16" = 1'-0"



2 UNIT TYPE E - SIDE ELEVATION 1
3/16" = 1'-0"



1 UNIT TYPE E - FRONT ELEVATION
3/16" = 1'-0"

#A ELEVATION KEY NOTE SCHEDULE	
Number	Description
1A	VINYL CLAPBOARD SIDING, 4" EXPOSURE, BASIS OF DESIGN CERTAINTEED MONOGRAM
1B	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
1C	VINYL CLAPBOARD SIDING, BOARD AND BATTEN, BASIS OF DESIGN CERTAINTEED MONOGRAM
2A	EXPOSED CONCRETE FROST WALL
3A	ARCHITECTURAL GRADE ASPHALT SHINGLE, BASIS OF DESIGN CERTAINTEED LANDMARK
4A	VINYL DOUBLE HUNG WINDOWS WITH DIVIDED LIGHT, BASIS OF DESIGN ANDERSEN 100 SERIES
5A	PVC TRIM BOARD, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
6A	SECTIONAL OVERHEAD DOOR, BASIS OF DESIGN OVERHEAD DOOR CORP. THERMACORE
7A	PREMADE COLUMN COVER WITH TRIM, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
8A	BRICK; COLOR AND PATTERN TBD
8B	STONE; COLOR AND PATTERN TBD

FACADE ALTERNATES

1. SHUTTERS AT FRONT FACADE WINDOWS
2. SHAKE-STYLE SHINGLES IN LIEU OF BOARD AND BATTEN
3. STONE UNDER PORCH
4. ROUND COLUMNS IN LIEU OF SQUARE COLUMNS

THORNTON HILL

MAP 10, LOT 15, 44
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2527

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

NOT FOR CONSTRUCTION

STAMP

ISSUE DATE **DOCUMENT SUBMISSION**

ISSUE DATE **REVISIONS ON SHEET**

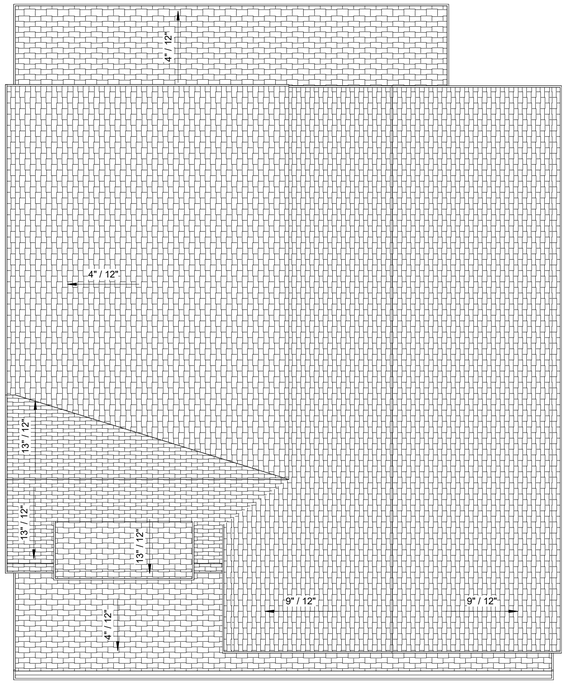
NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **As indicated**
UTILE PROJECT NUMBER **2417**

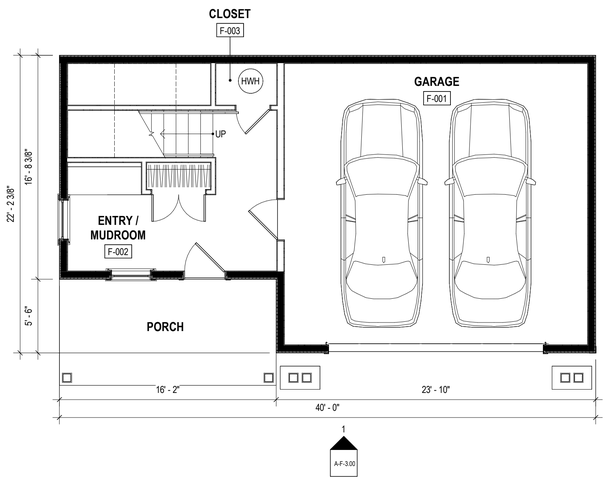
UNIT TYPE E - EXTERIOR ELEVATIONS

A-E-3.00

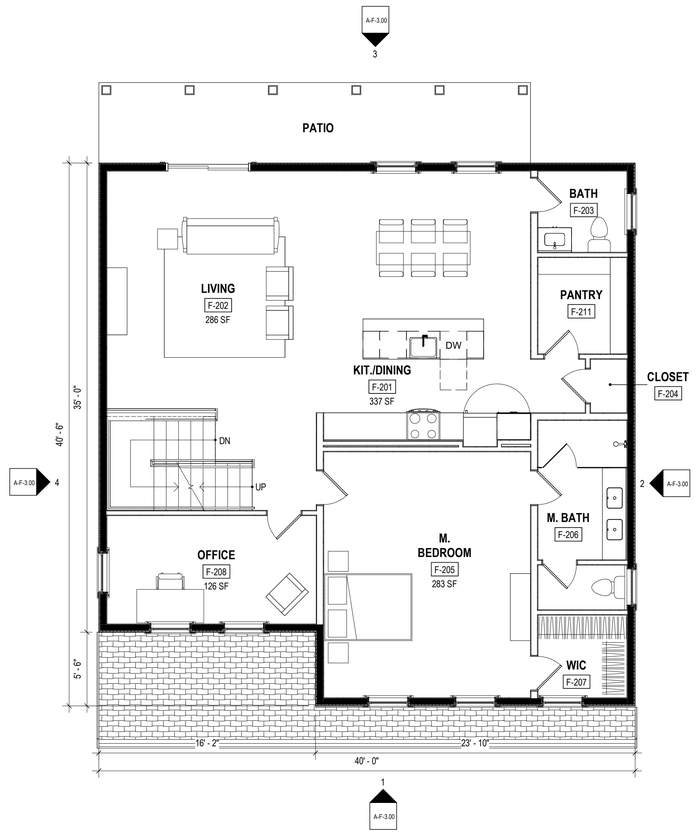
2/6/2026 3:39:33 PM



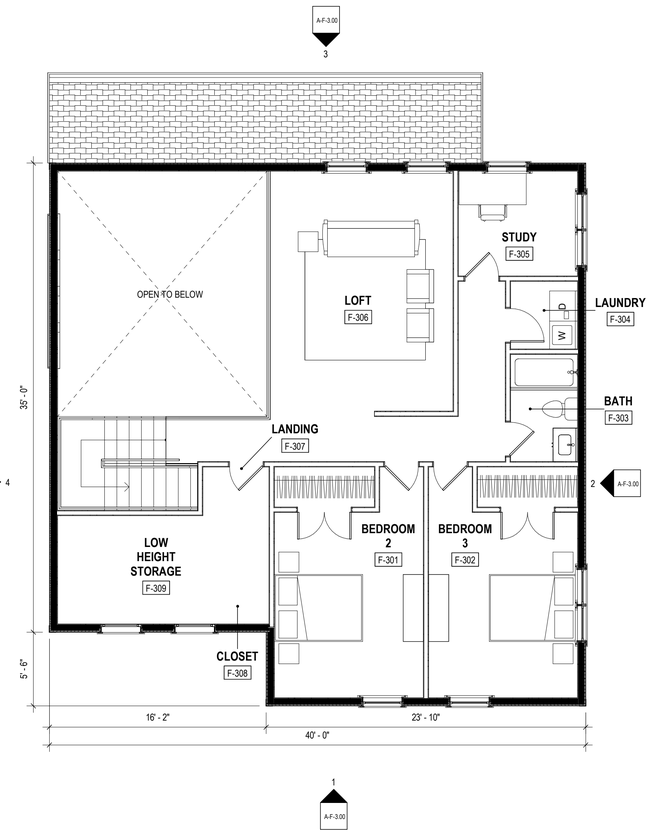
4 UNIT TYPE F - ROOF PLAN
3/16" = 1'-0"



3 UNIT TYPE F - GROUND FLOOR
3/16" = 1'-0"



2 UNIT TYPE F - SECOND FLOOR
3/16" = 1'-0"



1 UNIT TYPE F - THIRD FLOOR
3/16" = 1'-0"

UNIT TYPE AREAS:

UNIT TYPE A:
GROUND FLOOR: 1,101 SF (GARAGE: 505 SF)
SECOND FLOOR: 1395 SF
TOTAL: 2,496 SF (WITH GARAGE: 3,001 SF)
UNIT TYPE B:
GROUND FLOOR: 1,177 SF (522 GARAGE)
SECOND FLOOR: 1,377 SF
TOTAL: 2,554 SF (WITH GARAGE: 3,076 SF)
UNIT TYPE C:
GROUND FLOOR: 1,033 SF (GARAGE: 595 SF)
SECOND FLOOR: 1,477 SF
TOTAL: 2,510 SF (WITH GARAGE: 3,105)
UNIT TYPE D:
GROUND FLOOR: 1,101 SF (GARAGE: 430 SF)
SECOND FLOOR: 1,176 SF
TOTAL: 2,277 SF (WITH GARAGE: 2,707 SF)
UNIT TYPE E:
GROUND FLOOR: 1,086 SF (GARAGE: 503 SF)
SECOND FLOOR: 1,492 SF
TOTAL: 2,578 SF (WITH GARAGE: 3,143)
UNIT TYPE F:
GROUND FLOOR: 246 SF (GARAGE: 479 SF)
SECOND FLOOR: 1,372 SF
THIRD FLOOR: 1,001 SF
TOTAL: 2,619 SF (WITH GARAGE: 3,098 SF)

GENERAL FLOOR PLAN NOTES:

1. *OVERALL DIMENSIONS ARE TO GRIDLINES, F.O.STUD, U.N.O.*
2. *OPENING DIMENSIONS TO CENTER OF OPENING*
3. REFER TO LIFE SAFETY PLANS AND ASSEMBLY SHEETS TO DETERMINE ALL REQUIRED RATINGS.
4. COORDINATE ALL LOAD BEARING ELEMENTS WITH STRUCTURAL DWGS.
5. FIRE CAULK ALL PENETRATIONS AND JOINTS AT RATED ASSEMBLIES.
6. REFER TO ENLARGED PLANS FOR ADDITIONAL INFORMATION.
7. REFER TO FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
8. *ALL DOORS LOCATED 6" FROM ADJACENT WALL, U.N.O.*
9. PROVIDE WATER AND MOLD RESISTANT GWB IN ALL AREAS HAVING WATER SOURCE INCLUDING BUT NOT LIMITED TO BATHROOMS, KITCHENS, UTILITY CLOSETS, LAUNDRY ROOMS/CLOSETS AND CHASE WALLS.
10. CONFIRM ALL APPLIANCE / PLUMBING FIXTURE DIMENSIONS WITH FINAL EQUIPMENT SELECTIONS.
11. PROVIDE SEMI-RECESSED FIRE EXTINGUISHER CABINETS, LOCATE PER CODE REQ'S AND MAINTAIN RATING AS REQUIRED AT RATED WALLS. COORDINATE FINAL LOCATION IN FIELD WITH ARCHITECT.
12. REFER TO AIR SEALING DETAILS FOR ADDITIONAL REQUIREMENTS.
13. REFER TO PARTITION TYPE SHEET FOR PARTITION INFORMATION AND TAG TYPES.
14. REFER TO DOOR SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.

THORNTON HILL

MAP 10, LOT 15, 44
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2527

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN

115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

NOT FOR CONSTRUCTION

STAMP

ISSUE DATE	DOCUMENT SUBMISSION

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE: **As indicated**
UTILE PROJECT NUMBER: **2417**

UNIT TYPE F - FLOOR PLANS

A-F-1.00

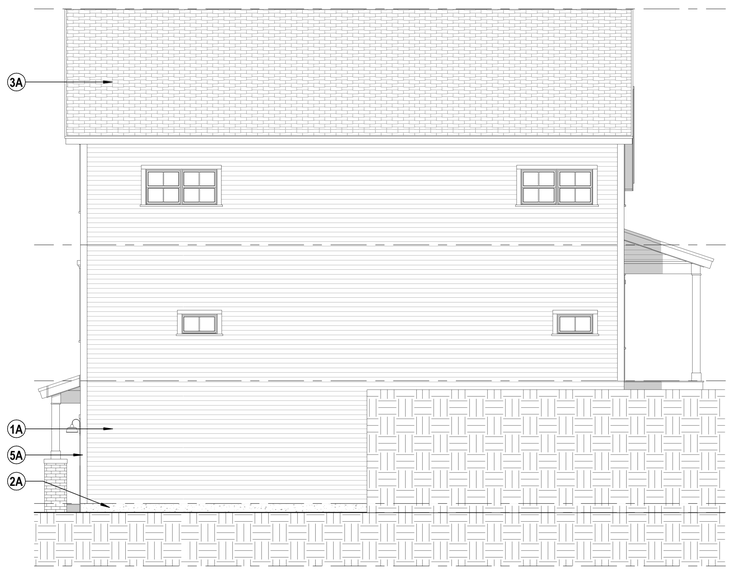
2/6/2026 3:39:36 PM



4 UNIT TYPE F - SIDE ELEVATION 2
3/16" = 1'-0"



3 UNIT TYPE F - REAR ELEVATION
3/16" = 1'-0"



2 UNIT TYPE F - SIDE ELEVATION 1
3/16" = 1'-0"



1 UNIT TYPE F - FRONT ELEVATION
3/16" = 1'-0"

#A ELEVATION KEY NOTE SCHEDULE

Number	Description
1A	VINYL CLAPBOARD SIDING, 4" EXPOSURE, BASIS OF DESIGN CERTAINTEED MONOGRAM
1B	VINYL SHAKE SHINGLE, BASIS OF DESIGN CERTAINTEED CEDAR IMPRESSIONS
1C	VINYL CLAPBOARD SIDING, BOARD AND BATTEN, BASIS OF DESIGN CERTAINTEED MONOGRAM
2A	EXPOSED CONCRETE FROST WALL
3A	ARCHITECTURAL GRADE ASPHALT SHINGLE, BASIS OF DESIGN CERTAINTEED LANDMARK
4A	VINYL DOUBLE HUNG WINDOWS WITH DIVIDED LIGHT, BASIS OF DESIGN ANDERSEN 100 SERIES
5A	PVC TRIM BOARD, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
6A	SECTIONAL OVERHEAD DOOR, BASIS OF DESIGN OVERHEAD DOOR CORP. THERMACORE
7A	PREMADE COLUMN COVER WITH TRIM, BASIS OF DESIGN CERTAINTEED RESTORATION MILLWORK
8A	BRICK; COLOR AND PATTERN TBD
8B	STONE; COLOR AND PATTERN TBD

FACADE ALTERNATES

1. DENTIL IN LIEU OF BRACKETS
2. BRICK IN LIEU OF STONE
3. HEADER STYLE
4. FLUTED IN LIEU OF SMOOTH CORNERS
5. GARAGE DOOR STYLE

THORNTON HILL

MAP 10, LOT 15, 44
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2527

PROCOPIO ENTERPRISES, LLC

35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN

115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com

ARCHITECT

H+O

100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349

STRUCTURAL

VHB

2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900

CIVIL

VHB

2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900

LANDSCAPE

NOT FOR CONSTRUCTION

STAMP

ISSUE DATE	DOCUMENT SUBMISSION

ISSUE DATE	REVISIONS ON SHEET

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE
As indicated

UTILE PROJECT NUMBER
2417

UNIT TYPE F - EXTERIOR ELEVATIONS

A-F-3.00

2/6/2026 3:39:39 PM



STREETSCAPE UNIT TYPE A



STREETSCAPE UNIT TYPE B



STREETSCAPE UNIT TYPE C



STREETSCAPE UNIT TYPE D



STREETSCAPE UNIT TYPE E



STREETSCAPE UNIT TYPE F

THORNTON HILL

MAP 10, LOT 15, 44
PILLSBURY ROAD,
LONDONDERRY NH 03053

PROJECT #2527

PROCOPIO ENTERPRISES, LLC
35 VILLAGE ROAD, 7TH FLOOR (702)
MIDDLETOWN, MA 01949
P (781) 233-3190

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200
utiledesign.com
ARCHITECT

H+O
100 SUMMER STREET
SUITE 1600
BOSTON, MA 02110
P 617 938 3349
STRUCTURAL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
CIVIL

VHB
2 BEDFORD FARMS DR
SUITE 200
BEDFORD, NH 03110
P 603 391 3900
LANDSCAPE

NOT FOR CONSTRUCTION

STAMP

ISSUE DATE **DOCUMENT SUBMISSION**

ISSUE DATE **REVISIONS ON SHEET**

NOTE: LEGIBILITY OF PERFORMANCE CRITERIA AND DETAILING SCOPE REQUIRES THAT DRAWINGS BE VIEWED OR PRINTED IN COLOR - COORDINATE AS REQUIRED TO DETERMINE FULL PROJECT SCOPE

SCALE **1/8" = 1'-0"**

UTILE PROJECT NUMBER **2417**

ELEVATIONS

A-3.00

2/6/2026 3:39:43 PM


38-A
Type A
36-D
Type D
34-A
Type A
32-C
Type C
30-E
Type E
28-E
Type E
26-A
Type A
24-C
Type C
22-B
Type B
20-C
Type C
18-D
Type D
16-A
Type A
14-D
Type D
12-B
Type B
10-C
Type C
8-A
Type A
6-D
Type D
4-C
Type C
2-A
Type A
40-B
Type B
42-A
Type A
41-2
Type C
44-B
Type B
43-A
Type A
46-D
Type D
45-C
Type C
48-B
Type B
50-A
Type A
53-F
Type F
55-F
Type F
52-D
Type D
54-C
Type C
56-A
Type A
58-B
Type B
60-D
Type D
62-C
Type C
64-A
Type A
63-F
Type F
65-F
Type F
67-F
Type F
69-F
Type F
71-C
Type C
73-A
Type A
75-C
Type C
77-A
Type A
79-A
Type A
81-C
Type C
37-A
Type A
35-C
Type C
33-A
Type A
31-C
Type C
29-B
Type B
27-A
Type A
25-D
Type D
23-C
Type C
21-D
Type D
19-A
Type A
17-B
Type B
15-D
Type D
3-B
Type B
1-A
Type A
41-1
CCB
CCB
CCB

Project Rosecrans Drive at Thornton Hill Project #53140.00
Location 44 Pillsbury Road, Londonderry, NH
Calculated by JRP Date 2/10/2026
Checked by BJZ Date 2/10/2026
Title Preliminary Sanitary Sewer & Water Flow Calculations

Computations

Sewer Generation Calculation

Proposed Sewer Generation			
Building/Use	**Units**	**Unit Flow**[1]	**Design Flow**
Dwellings, Per Bedroom	180 Bedrooms	150 GPD/Unit	27,000 GPD
		Total	**27,000 GPD**
Infiltration			
Length	**Diameter**	**Unit Flow**	**Design Flow**
2,444 Feet	4 Inch	300 GPD/IN DIA/MI	555 GPD
2,546 Feet	8 Inch	300 GPD/IN DIA/MI	1,157 GPD
		Total	**1,713 GPD**
Design Flow Total			**28,713 GPD**

Water Demand Calculations	
Water demand assumed to be 110% of Sewer Flow (not including infiltration)	
Proposed Water Demand	**29,700 GPD**

Reference:

1 - Per Table 1008-1 Unit Design Flow Figures, Town of Londonderry Chapter IX - Sewer User Charge Ordinance

Assumptions:

1. 60 Dwelling Units with 3 bedrooms in each (60 Units x 3 Bedrooms = 180 Bedrooms)



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Rosecrans Drive - Sewer Capacity Calculations

Project	Rosecrans Drive @ Thornton Hill	Project #	53140.44
	44 Pillsbury Road		
Calculated by	JRP	Date	2/10/2026
Checked by	BJZ	Date	2/10/2026

FLOWS:

1	Dwelling Units	Residential Buildings
3	Bedrooms Per Unit	Residential Bedrooms
150	gpd	Flow rate per bedroom
450	gpd	Total Flow Development: 150 gpd x Total Bedrooms
24	hours	System discharge in hours per day
0.0007	cfs	Peak Flow Rate per second
0.0042	cfs	Peak Flow Rate per second (Peaking Factor=6.0)



DESCRIPTION	Total DU	LOCATION		DESIGN					CAPACITY		
		FROM	TO	Q cfs	V fps	n	PIPE SIZE	SLOPE	Q full ft^3/s	Q full MGD	V full ft/s
8 Dwelling Units (#14D,15D,16A,17B,18D,19A ,20C,21D)	8	SMH 106	SMH 105	0.033	1.5	0.01	8	0.0241	2.44	1.58	7.0
1 Dwelling Units (#12B)	1	SMH 105	SMH 104A	0.038	2.0	0.01	8	0.0426	3.24	2.10	9.3
2 Dwelling Units (#8A,10C)	2	SMH 104A	SMH 104	0.046	2.0	0.01	8	0.0396	3.13	2.02	9.0
4 Dwelling Units (#2A,3B,4C,6D)	4	SMH 104	SMH 103	0.063	1.9	0.01	8	0.0205	2.25	1.45	6.4
Flow from 103 to 102	0	SMH 103	SMH 102	0.063	1.9	0.01	8	0.0214	2.30	1.49	6.6
6 Dwelling Units (#22B,23C,24C,25D,26A,27A)	6	SMH 112	SMH 109	0.025	1.2	0.01	8	0.0140	1.86	1.20	5.3
1 Dwelling Unit (#29B)	1	SMH 109	SMH 121	0.029	1.0	0.01	8	0.0059	1.21	0.78	3.5
3 Dwelling Units (#30E,31C,33A)	3	SMH 110	SMH 121	0.013	1.3	0.01	8	0.0166	2.02	1.31	5.8
Combination of flow w/in SMH 121 plus 1 dwelling unit (#28E)	1	SMH 121	SMH 122	0.046	1.3	0.01	8	0.0102	1.59	1.03	4.5
Flow from 122 to 108	0	SMH 122	SMH 108	0.046	1.8	0.01	8	0.0187	2.15	1.39	6.2
5 Dwelling Units (#32C,34A,35C,36D,37A)	5	SMH 119	SMH 118	0.021	0.8	0.01	8	0.0067	1.29	0.83	3.7
1 Dwelling Units (#38A)	1	SMH 118	SMH 117	0.025	0.8	0.01	8	0.0069	1.30	0.84	3.7
7 Dwelling Units (#40B,41C,42A,43A,44B,45C, 46D)	7	SMH 117	SMH 116	0.054	1.4	0.01	8	0.0095	1.53	0.99	4.4
1 Dwelling Units (#48B)	1	SMH 116	SMH 115	0.058	1.5	0.01	8	0.0106	1.62	1.05	4.6
7 Dwelling Units (#50A,52D,53F,54C,55F,56A, 58B)	7	SMH 115	SMH 114	0.088	1.9	0.01	8	0.0106	1.62	1.05	4.6
1 Dwelling Unit (#60D)	1	SMH 114	SMH 113	0.092	1.8	0.01	8	0.0082	1.42	0.92	4.1
5 Dwelling Units (#62C,63F,64A,65F, 67F,69F)	6	SMH 113	SMH 108	0.117	1.9	0.01	8	0.0077	1.38	0.89	3.9
Combination of flow w/in SMH 108 and 6 Dwelling Units (#71C,73A,75C, 77A,79A,81C)	6	SMH 108	SMH 107	0.188	1.9	0.01	8	0.0047	1.08	0.70	3.1
Flow from 107 to 102	0	SMH 107	SMH 102	0.188	2.4	0.01	8	0.0096	1.54	0.99	4.4
Combination of flow w/in SMH 102 to SMH 120	0	SMH 102	SMH 120	0.251	4.2	0.01	8	0.0387	3.09	2.00	8.9
Flow from SMH 120 to SMH 212 (36 Pillsbury)	0	SMH 120	SMH 212	0.251	3.3	0.01	8	0.0197	2.20	1.42	6.3

CHANGE OF USE PLAN

6 DICKEY STREET, LONDONDERRY, NH

GENERAL INFORMATION

OWNER/PREPARED FOR

MAP 10 LOT 109 (LONDONDERRY)
TAMARA & HARRY LAMPES
6 DICKEY STREET
DERRY, NH 03038
BK.6561 PG.2390

RESOURCE LIST (LONDONDERRY)

PLANNING & ECONOMIC DEVELOPMENT
268B MAMMOTH ROAD
LONDONDERRY, NH 03053
603-432-1100 EXT. 129
KELLIE CARON

BUILDING & ZONING ENFORCEMENT
268B MAMMOTH ROAD
LONDONDERRY, NH 03053
603-432-1100 EXT. 161
NICK CODNER

PUBLIC WORKS
268B MAMMOTH ROAD
LONDONDERRY, NH 03053
603-432-1100 EXT. 152
DAVE WHOLLEY

ENGINEERING & ENVIRONMENTAL SERVICES
268B MAMMOTH ROAD
LONDONDERRY, NH 03053
603-432-1100 EXT. 146
JOHN TROTTIER, PE

POLICE DEPARTMENT
268B MAMMOTH ROAD
LONDONDERRY, NH 03053
603-432-1118
KIM ALAN BERNARD; CHIEF

FIRE DEPARTMENT
280 MAMMOTH ROAD
LONDONDERRY, NH 03053
603-432-1124
BRIAN JOHNSON; CHIEF

RESOURCE LIST (DERRY)

PLANNING DEPARTMENT
14 MANNING ROAD
DERRY, NH 03038
603-432-6110
GEORGE SIORAS, AICP, PLANNING DIRECTOR

BUILDING & CODE ENFORCEMENT
14 MANNING ROAD
DERRY, NH 03038
603-432-6148
ROBERT MACKEY, CODE ENFORCEMENT DIR.

PUBLIC WORKS
14 MANNING ROAD
DERRY, NH 03038
603-432-6144
MIKE FOWLER, PE DIRECTOR

POLICE DEPARTMENT
1 MUNICIPAL DRIVE
DERRY, NH 03038
603-432-6119
GEORGE R FEOLE, CHIEF OF POLICE

FIRE DEPARTMENT
14 MANNING ROAD
DERRY, NH 03038
603-432-6121
JAMES RICHARDSON; CHIEF

DERRY WATER
14 MANNING STREET
DERRY, NH 03038
603-432-6147
TOM CARRIER

ABUTTERS

MAP 10 LOT 104
SYLVESTRE ERIC J. + JANEL HELEN
15 DICKEY ST
DERRY, NH 03038
BK.6011 PG.2553

MAP 10 LOT 105 (LONDONDERRY)
MAP 26 LOT 61 (DERRY)
WAYNE D. MACDONALD
11 DICKEY ST
DERRY, NH 03038
BK.4612 PG.2713

MAP 10 LOT 106 (LONDONDERRY)
MAP 26 LOT 60 (DERRY)
RICHARD W. & RICHARD E. BOULETTE
4 LINWOOD AVE
DERRY, NH 03038
BK.3061 PG.178

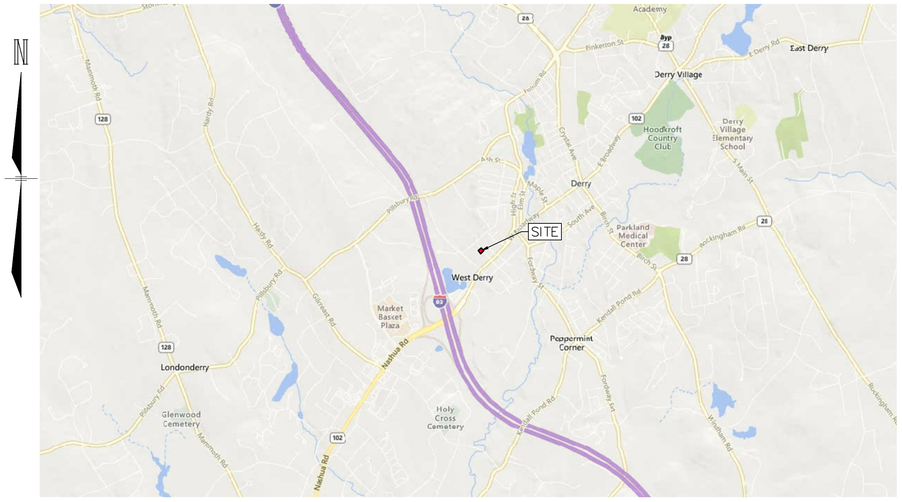
MAP 10 LOT 108
THOMPSON HOLDING LLC
3 MARMON DR
NASHUA, NH 03060
BK.6437 PG.524

MAP 10 LOT 110
CARRIE A. BROLLIER
14 DICKEY ST
DERRY, NH 03038
BK.6435 PG.840

MAP 10 LOT 115
TWELVE LONDONDERRY ROAD REALTY LLC
71 MAMMOTH RD
LONDONDERRY, NH 03053
BK. 5956 PG.882

MAP 10 LOT 121
WINDHAM REALTY LLC
8 ACTION BLVD
LONDONDERRY, NH 03053
BK.6474 PG.198

VICINITY PLAN



HORIZONTAL SCALE 1"=500'
2500 1250 0 2500

INDEX OF SHEETS

SHEET	SHEET TITLE
C-1	COVER
C-2	NOTES & LEGEND
EC-1	EXISTING CONDITIONS PLAN
C-3	SITE PREPARATION & DEMOLITION PLAN
C-4	SITE LAYOUT PLAN
C-5	GRADING & DRAINAGE PLAN
C-6	SIGHT DISTANCE PLAN AND PROFILE
C-7	TURNING MOVEMENTS PLAN
C-8	LANDSCAPE PLAN
C-9	STORM WATER MANAGEMENT PLAN
C-10 – C-11	INSPECTION AND MAINTENANCE PLANS
C-12 – C-14	DETAILS

PERMITS/APPROVALS

	NUMBER	APPROVED	EXPIRES
LONDONDERRY PLANNING SITE DESIGN REVIEW APPROVAL	–	–	–
TOWN OF LONDONDERRY STORMWATER PERMIT			
TOWN OF LONDONDERRY – PERMIT TO CONDUCT WORK IN THE TOWN'S RIGHT OF WAY			

VARIANCES/WAIVERS

THE FOLLOWING VARIANCES WERE REQUESTED OF THE TOWN OF LONDONDERRY ZONING BOARD OF ADJUSTMENT ON OCTOBER 21, 2025:

1. SECTION 4.3.2.A (MINIMUM LOT SIZE): TO ALLOW THE EXISTING LOT AREA OF 0.41 ACRES TO BE ACCEPTABLE WHERE A MINIMUM LOT SIZE OF ONE (1) ACRE IS REQUIRED.
2. SECTION 4.3.2.A (MINIMUM FRONTAGE): TO ALLOW THE EXISTING LOT FRONTAGE OF 125.56 FEET TO BE ACCEPTABLE WHERE A 150 FOOT MINIMUM FRONTAGE IS REQUIRED.
3. SECTION 4.3.3.A.1 (FRONT SETBACK): TO ALLOW THE EXISTING BUILDING TO BE WITHIN THE 60 FOOT FRONT SETBACK.
4. SECTION 4.3.3.A.2 (SIDE SETBACK): TO ALLOW THE EXISTING BUILDING AND PROPOSED/RELOCATED SHED TO BE WITHIN THE 30 FOOT SIDE SETBACK.
5. SECTION 4.3.3.A.3 (REAR SETBACK): TO ALLOW THE EXISTING GARAGE AND PROPOSED/RELOCATED SHED TO BE WITHIN THE 30 FOOT REAR SETBACK.
6. SECTION 4.3.3.B.1 (GREEN SPACE BUFFER): TO ALLOW THE EXISTING BUILDING AND GARAGE, AND PROPOSED/RELOCATED SHED TO BE WITHIN THE GREEN SPACE BUFFER.
7. SECTION 4.3.3.A.1 (RESIDENTIAL BUFFER): TO ALLOW A RESIDENTIAL BUFFER OF 26.1 FEET WHERE 50 FEET IS REQUIRED.

THE FOLLOWING WAIVERS FROM THE TOWN OF LONDONDERRY SITE REVIEW REGULATIONS AND CHECKLIST ARE BEING REVIEWED BY THE PLANNING BOARD:

1. LONDONDERRY SITE REVIEW REGULATIONS SECTION 3.10.G.1:
   TO ALLOW LESS THAN THE REQUIRED (8%) OVERALL INTERIOR AREA OF THE PROPOSED PARKING LOT TO BE DEDICATED TO LANDSCAPED AREAS. (0% PROVIDED).
2. LONDONDERRY SITE REVIEW REGULATIONS SECTION 3.10. G. 3:
   TO ALLOW LESS THAN THE REQUIRED AMOUNT OF INTERIOR SHADE TREES (1 TREE) FOR THE TOTAL PROPOSED PARKING SPACE COUNT (16 SPACES). (0 INTERIOR TREES PROVIDED).
3. LONDONDERRY SITE REVIEW REGULATIONS SECTION 3.10. G. 4:
   TO ALLOW NO CURBING ON THE EDGE OF PAVEMENT SO PATRONS CAN WALK AROUND THE DISPLAY VEHICLES WITHOUT OBSTRUCTION.
4. LONDONDERRY SITE REVIEW REGULATIONS SECTION 3.10. G. 5:
   TO ALLOW LESS THAN THE REQUIRED AMOUNT OF PERIMETER SHADE TREES (15 TREES) FOR THE TOTAL PARKING LOT PERIMETER (300 FEET). (5 PARKING PERIMETER TREES PROVIDED).
5. SITE LIGHTING PLAN PER SECTION 3.13:
   NO NEW EXTERIOR SITE LIGHTING IS PROPOSED. EXISTING SITE SECURITY LIGHTING TO REMAIN IN SERVICE.
6. SITE PLAN APPLICATION CHECKLIST ITEM XI.5(A) THRU XI. 5(F) SUPPORTING DOCUMENTATION: TO OMIT UTILITY CLEARANCE LETTERS AS NO PROPOSED UTILITY SERVICES ARE REQUIRED DUE TO THE CONSTRUCTION OF ONLY A VEHICLE STORAGE LOT.

TAX MAP 10 LOT 109

COVER SHEET

BROADWAY AUTO SALES
6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR
LEON & TAMARA LAMPES
6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

STATE OF NEW HAMPSHIRE
ROBERT E. DUVAL
No. 7105
LICENSED PROFESSIONAL ENGINEER
1/27/26

OWNER'S SIGNATURE

THE PROPERTY WILL BE DEVELOPED IN ACCORDANCE WITH THIS PLAN AND THE ORDINANCES OF THE TOWN OF LONDONDERRY, NEW HAMPSHIRE.

OWNER OR AUTHORIZED AGENT _____ DATE _____

APPROVED BY THE TOWN OF LONDONDERRY PLANNING BOARD

ON _____

BOARD MEMBER _____ AND

BOARD MEMBER _____

REV	DATE	DESCRIPTION	PWH	JSH
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

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

FILE 18301.00 | DR | CK | CADFILE – 18301-00 COVER-DETAILS | C-1

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

Feb 12, 2026 - 10:12am
F:\TFM Projects\18301 Dickey St- Londonderry, NH\18301-00 Lampes- 6 Dickey St - Londonderry, NH\18301-00_CSD\PRODUCTION\18301-00 COVER-DETAILS.dwg

LEGEND

PROPOSED

- PROPERTY LINE
- ZONING LINE
- EASEMENT
- BASELINE
- FLOODPLAIN
- EDGE OF WATERBODY
- EDGE OF WETLAND
- SETBACK (WETLAND)
- SETBACK (STRUCTURE)
- SETBACK (PARKING)
- SETBACK (LANDSCAPE)
- GRAVEL ROAD
- EOP — EDGE OF PAVEMENT
- VGC — VERTICAL GRANITE CURB
- SGC — SLOPED GRANITE CURB
- CC — CONCRETE CURB
- ICC — INTEGRATED CONCRETE CURB
- BIT — BITUMINOUS ASPHALT CURB
- CCB — CAPE COD BERM
- SAWCUT
- BUILDING
- BUILDING ROOF OVERHANG
- BUILDING FOUNDATION
- BUILDING ENTRANCE
- OVERHEAD DOOR
- TREE LINE
- FENCE (CHAIN LINK)
- FENCE (WIRE)
- FENCE (STOCKADE)
- GUARDRAIL
- STONE WALL
- RETAINING WALL
- SILT FENCE
- SILT SOCK
- SOIL BOUNDARY
- LIMIT OF GRADING
- 100 — CONTOUR
- TC100.50 BC100.00 OR 100.00 — SPOT GRADE
- ## — PARKING COUNT
- DSLY — YELLOW DOUBLE SOLID LINE
- SSLY — YELLOW SINGLE SOLID LINE
- SSLW — WHITE SINGLE SOLID LINE
- SBLW — WHITE SINGLE BROKEN LINE
- STOP BAR
- CROSSWALK
- ACCESSIBLE PARKING SYMBOL
- PAVEMENT ARROW
- TRAFFIC FLOW ARROW (NOT PAINTED)
- SIGN (SINGLE POST)
- SIGN (DOUBLE POST)
- SIGN (PYLON)
- SIGN (MONUMENT)
- BOLLARD
- D — DUMPSTER PAD

PROPOSED

- CONCRETE
- GRAVEL
- HEAVY DUTY PAVEMENT
- CONSTRUCTION ENTRANCE
- SNOW STORAGE
- RIPRAP
- INLET PROTECTION
- FLOW ARROW
- RIDGE — GRADE BREAK RIDGE
- DRAIN LINE
- DRAINAGE SWALE
- STORMWATER BMP
- S — SEWER LINE
- FM — SEWER FORCE MAIN LINE
- W — WATER LINE
- G — GAS LINE
- OHE — OVERHEAD UTILITY LINE
- UGE — UNDERGROUND UTILITY LINE
- CATCH BASIN
- DRAIN INLET
- OUTLET CONTROL STRUCTURE
- ROOF DRAIN
- DRAIN CLEANOUT
- DRAIN MANHOLE
- FARED END SECTION
- SEWER CLEAN OUT
- SEWER MANHOLE
- SEWER VENT
- DRAIN/SEWER/WATER PLUG OR CAP
- HYDRANT
- FIRE DEPARTMENT CONNECTION
- WATER GATE VALVE
- WATER SHUTOFF
- THRUST BLOCK
- W — WATER METER
- W — WATER MANHOLE
- WELL
- GAS GATE VALVE
- GAS SHUT OFF
- GAS METER
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- TRAFFIC CONTROL CABINET
- ELECTRIC HANDHOLE
- ELECTRIC PULL BOX
- ELECTRIC METER
- FLOOD LIGHT
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- T — TRANSFORMER PAD
- B-# — BORING LOCATION
- TP-# — TEST PIT LOCATION
- IT-# — INFILTRATION TEST LOCATION
- MW-# — MONITORING WELL

ABBREVIATIONS

GENERAL

ABAN	ABANDON
AC	ACRES
ADJ	ADJUST
APPROX	APPROXIMATE
BC	BOTTOM OF CURB
BIT	BITUMINOUS
BK/PG	BOOK & PAGE
BLDG	BUILDING
BMP	BEST MANAGEMENT PRACTICE
BS	BOTTOM OF SLOPE
BW	BOTTOM OF WALL
CONC	CONCRETE
COORD	COORDINATE
DIA	DIAMETER
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
EXIST	EXISTING
FFE	FINISHED FLOOR ELEVATION
FND	FOUNDATION
HP	HIGH POINT
INV	INVERT ELEVATION
IT	INFILTRATION TEST
L	LENGTH
LF	LINEAR FEET
LSA	LANDSCAPE AREA
MAX	MAXIMUM
MIN	MINIMUM
N/F	NOW OR FORMERLY
NHFG	NEW HAMPSHIRE FISH & GAME
NTS	NOT TO SCALE
OC	ON CENTER
PAVE	PAVEMENT
PERF	PERFORATED
PROP	PROPOSED
R	RADIUS
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
REM	REMOVE
RET	RETAIN
RIM	RIM ELEVATION
ROW	RIGHT OF WAY
S	SLOPE
SF	SQUARE FEET
SW	SIDEWALK
TBM	TEMPORARY BENCHMARK
TC	TOP OF CURB
TP	TEST PIT
TW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
WCR	ACCESSIBLE WHEELCHAIR RAMP
W/	WITH

UTILITIES

CB	CATCH BASIN
CIP	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
COND	CONDUIT
DCB	DOUBLE CATCH BASIN
DIP	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FES	FLARED END SECTION
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
LP	LIGHT POLE
OCS	OUTLET CONTROL STRUCTURE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
SMH	SEWER MANHOLE
SOS	SEDIMENT OIL SEPARATOR
TSV	TAPPING SLEEVE, VALVE, AND BOX
UP	UTILITY POLE

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

GENERAL NOTES

1. THESE PLANS ARE PERMIT DRAWINGS ONLY AND HAVE NOT BEEN DETAILED FOR CONSTRUCTION OR BIDDING.
2. THESE PLANS WERE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. TFMORAN, INC. ASSUMES NO LIABILITY AS A RESULT OF ANY CHANGES OR NON-CONFORMANCE WITH THESE PLANS EXCEPT UPON THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD.
3. ALL IMPROVEMENTS SHOWN ON THE SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE LONDONDERRY PLANNING BOARD.
4. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE TOWN OF LONDONDERRY, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. ALL WORK TO CONFORM TO TOWN OF LONDONDERRY DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS. ALL WORK WITHIN THE RIGHT-OF-WAY OF THE TOWN AND/OR STATE SHALL COMPLY WITH APPLICABLE STANDARDS. COORDINATE ALL WORK WITHIN THE RIGHT-OF-WAY WITH APPROPRIATE TOWN, COUNTY, AND/OR STATE AGENCY.
5. THE SITE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH APPLICABLE SECTIONS OF ENV-WQ 1500. THE SITE CONTRACTOR SHALL NOTIFY THE ENGINEER IN ADVANCE OF CONSTRUCTION OF EACH STORMWATER FACILITY TO COORDINATE REQUIRED INSPECTIONS. THE CONTRACTOR SHALL TAKE PROGRESS PHOTOS DURING CONSTRUCTION OF ALL STORMWATER DRAINAGE COMPONENTS AND SEND TO THE ENGINEER.
6. SEE EXISTING CONDITIONS PLAN FOR THE HORIZONTAL AND VERTICAL DATUM.
7. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION. VERIFY TBM ELEVATIONS PRIOR TO CONSTRUCTION.
8. CONTACT EASEMENT OWNERS PRIOR TO COMMENCING ANY WORK WITHIN THE EASEMENTS.
9. PRIOR TO COMMENCING ANY SITE WORK, ALL LIMITS OF WORK SHALL BE CLEARLY MARKED IN THE FIELD.
10. SITE WORK SHALL BE CONSTRUCTED FROM A COMPLETE SET OF PLANS, NOT ALL FEATURES ARE DETAILED ON EVERY PLAN. THE ENGINEER IS TO BE NOTIFIED OF ANY CONFLICT WITHIN THIS PLAN SET.
11. TFMORAN, INC. ASSUMES NO LIABILITY FOR WORK PERFORMED WITHOUT AN ACCEPTABLE PROGRAM OF TESTING AND INSPECTION AS APPROVED BY THE ENGINEER OF RECORD.
12. ALL DEMOLITION SHALL INSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKWAYS, AND ANY OTHER ADJACENT OPERATING FACILITIES. PRIOR WRITTEN PERMISSION FROM THE OWNER/DEVELOPER AND LOCAL PERMITTING AUTHORITY IS REQUIRED IF CLOSURE/OBSTRUCTIONS TO ROADS, STREET, WALKWAYS, AND OTHERS IS DEEMED NECESSARY. CONTRACTOR TO PROVIDE ALTERNATE ROUTES AROUND CLOSURES/OBSTRUCTIONS PER LOCAL/STATE/FEDERAL REGULATIONS.
13. IN THE EVENT OF A CONFLICT BETWEEN PLANS, SPECIFICATIONS, AND DETAILS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
14. IF CONDITIONS AT THE SITE ARE DIFFERENT THAN SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH THE AFFECTED WORK.
15. CONTRACTOR'S GENERAL RESPONSIBILITIES:
    - A. BID AND PERFORM THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES, SPECIFICATIONS, REGULATIONS, AND STANDARDS AND CONDITIONS OF ALL PROJECT-SPECIFIC PERMITS AND APPROVALS AS LISTED ON THE COVER SHEET TO THESE PLANS OR OTHERWISE REQUIRED.
    - B. NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES OF PROPOSED LAYOUT AND/OR EXISTING FEATURES.
    - C. EMPLOY A LICENSED SURVEYOR TO DETERMINE ALL LINES AND GRADES AND LAYOUT OF SITE ELEMENTS AND BUILDINGS.
    - D. THE CONTRACTOR SHALL BE RESPONSIBLE TO BECOME FAMILIAR WITH THE SITE AND ALL SURROUNDING CONDITIONS. THE CONTRACTOR SHALL ADVISE THE APPROPRIATE AUTHORITY OF INTENTIONS AT LEAST 48 HOURS IN ADVANCE.
    - E. TAKE APPROPRIATE MEASURES TO REDUCE, TO THE FULLEST EXTENT POSSIBLE, NOISE, DUST, AND UNSIGHTLY DEBRIS. CONSTRUCTION ACTIVITIES SHALL BE CARRIED OUT BETWEEN THE HOURS OF 7 AM AND 8 PM, MONDAY THROUGH FRIDAY, 8 AM AND 5 PM ON SATURDAY IN ACCORDANCE WITH THE APPLICABLE MUNICIPAL ORDINANCES AND REGULATIONS OF THE TOWN OF LONDONDERRY, NEW HAMPSHIRE.
    - F. MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
    - G. IN ACCORDANCE WITH RSA 430:53 AND AGR 3800, THE CONTRACTOR SHALL NOT TRANSPORT INVASIVE SPECIES OFF THE PROPERTY, AND SHALL DISPOSE OF INVASIVE SPECIES ON-SITE IN A LEGAL MANNER.
    - H. COORDINATE WITH ALL UTILITY COMPANIES AND CONTACT DIGSAFE (811 OR 888-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION.
    - I. PROTECT NEW AND EXISTING BURIED UTILITIES DURING INSTALLATION OF ALL SITE ELEMENTS. DAMAGED UTILITIES SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
    - J. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY TFMORAN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE US OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
    - K. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWING AND/OR SPECIFICATION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATIONS.
    - L. PROVIDE AN AS-BUILT PLAN AT THE COMPLETION OF THE PROJECT TO THE PLANNING DIRECTOR AND PER TOWN REGULATIONS.
    - M. IF ANY DEVIATIONS FROM THE APPROVED PLANS AND SPECIFICATIONS HAVE BEEN MADE, THE SITE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS STAMPED BY A LICENSED SURVEYOR OR QUALIFIED ENGINEER ALONG WITH A LETTER STAMPED BY A QUALIFIED ENGINEER DESCRIBING ALL SUCH DEVIATIONS, AND BEAR ALL COSTS FOR PREPARING AND FILING ANY NEW PERMITS OR PERMIT AMENDMENTS THAT MAY BE REQUIRED.
    - N. AT COMPLETION OF CONSTRUCTION, THE SITE CONTRACTOR SHALL PROVIDE A LETTER CERTIFYING THAT THE PROJECT WAS COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS, AND A LETTER STAMPED BY A QUALIFIED ENGINEER THAT THEY HAVE OBSERVED ALL UNDERGROUND DETENTION SYSTEMS, INFILTRATION SYSTEMS, OR FILTERING SYSTEMS PRIOR TO BACKFILL, AND THAT SUCH SYSTEMS CONFORM TO THE APPROVED PLANS AND SPECIFICATIONS.

GRADING & DRAINAGE NOTES

1. THE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF NHDES ENV-WQ 1500 AS APPLICABLE.
2. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER TO SUBMIT AN eNOI AT LEAST 14 DAYS IN ADVANCE OF ANY EARTHWORK ACTIVITIES AT THE SITE.
3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK THE ACCURACY OF THE TOPOGRAPHY AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO ANY EARTHWORK BEING PERFORMED ON THE SITE. NO CLAIM FOR EXTRA WORK WILL BE CONSIDERED FOR PAYMENT AFTER EARTHWORK HAS COMMENCED.
4. LIMITS OF WORK ARE SHOWN AS APPROXIMATE. THE CONTRACTOR SHALL COORDINATE ALL WORK TO PROVIDE SMOOTH TRANSITIONS. THIS INCLUDES GRADING, PAVEMENT, CURBING, SIDEWALKS, AND ALIGNMENTS.
5. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE, RAMPS, AND LOADING AREAS.
6. THE SITE SHALL BE GRADED SO ALL FINISHED PAVEMENT HAS POSITIVE DRAINAGE AND SHALL NOT POND WATER DEEPER THAN 1/4" FOR A PERIOD OF MORE THAN 15 MINUTES AFTER FLOODING.
7. ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.
8. ALL SIDEWALK AND OTHER CURB REVEALS SHALL BE 6" WITH A TOLERANCE OF PLUS OR MINUS 3/8". WHERE SIDEWALK IS TO BE FLUSH, THE PAVEMENT REVEAL SHALL BE 1/4" WITH A TOLERANCE OF 1/8".
9. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS AND SHALL MEET LOCAL STANDARDS AND THE REQUIREMENTS OF THE LATEST NHDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE CONSTRUCTION AND THE NHDOT STANDARD STRUCTURE DRAWINGS UNLESS OTHERWISE NOTED.
10. STORMWATER DRAINAGE SYSTEM SHALL BE CONSTRUCTED TO LINE AND GRADE AS SHOWN ON THE PLANS. CONSTRUCTION METHODS SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS, SECTION 603. CATCH BASINS AND DRAIN MANHOLES SHALL CONFORM TO SECTION 604. ALL CATCH BASIN GRATES SHALL BE TYPE B AND CONFORM TO NHDOT STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
11. NO FILL SHALL BE PLACED IN ANY WETLAND AREA.
12. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
13. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED, FERTILIZER, AND MULCH.
14. DENSITY REQUIREMENTS:

MINIMUM DENSITY*	LOCATION
95%	BELOW PAVED OR CONCRETE AREAS
95%	TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL
90%	BELOW LOAM AND SEED AREAS

*ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM D-6938.

UTILITY NOTES

1. ALL PROPOSED UTILITY WORK, INCLUDING MATERIAL, INSTALLATION, TERMINATION, EXCAVATION, BEDDING, BACKFILL, COMPACTION, TESTING, CONNECTIONS, AND CONSTRUCTION SHALL BE COORDINATED WITH AND COMPLETED IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS, CODES, AND STANDARDS OF ALL CORRESPONDING UTILITY ENTITIES AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIGSAFE" (811) AT LEAST 72 HOURS BEFORE DIGGING.
3. COORDINATE ALL WORK ADJACENT TO PROPOSED BUILDINGS WITH ARCHITECTURAL BUILDING DRAWINGS. CONFIRM UTILITY PENETRATIONS AND INVERT ELEVATIONS ARE COORDINATED PRIOR TO INSTALLATION.
4. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE AS NECESSARY WITH THE UTILITY COMPANIES OF SAID UTILITIES. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
5. THE EXACT LOCATION OF NEW UTILITY CONNECTIONS SHALL BE DETERMINED BY THE CONTRACTOR IN COORDINATION WITH UTILITY COMPANY, COUNTY AGENCY, AND/OR PRIVATE UTILITY COMPANY.
6. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER THE UTILITY INSTALLATION COMPLETE AND OPERATIONAL.
7. ALL UTILITY COMPANIES REQUIRE INDIVIDUAL CONDUITS. CONTRACTOR TO COORDINATE WITH TELEPHONE, CABLE, AND ELECTRIC COMPANIES REGARDING NUMBER, SIZE, AND TYPE OF CONDUITS REQUIRED PRIOR TO INSTALLATION OF ANY CONDUIT.
8. THE CONTRACTOR SHALL ARRANGE AND PAY FOR ALL INSPECTIONS, TESTING, AND RELATED SERVICES AND SUBMIT COPIES OF ACCEPTANCE TO THE OWNER, UNLESS OTHERWISE INDICATED.
9. PROVIDE PERMANENT PAVEMENT REPAIR FOR ALL UTILITY TRENCHES IN EXISTING ROAD OR PAVEMENT TO REMAIN. SAW CUT TRENCH, PAVEMENT, AND GRANULAR BASE THICKNESS TO MATCH EXISTING PAVEMENT. OBTAIN ALL PERMITS REQUIRED FOR TRENCHING.
10. UNLESS OTHERWISE SPECIFIED, ALL UNDERGROUND STRUCTURES, PIPES, CHAMBERS, ETC. SHALL BE COVERED WITH A MINIMUM OF 18" OF COMPACTED SOIL BEFORE EXPOSURE TO VEHICLE LOADS.
11. THE PROPERTY WILL BE SERVICED BY THE FOLLOWING:

DRAINAGE	PRIVATE
SEWER	PRIVATE SEPTIC
WATER	DERRY
GAS	LIBERTY UTILITIES
ELECTRIC	EVERSOURCE
TELEPHONE	CONSOLIDATED COMMUNICATION
CABLE	COMCAST XFINITY

STATE OF NEW HAMPSHIRE — ROBERT E. DUVAL No. 7105 LICENSED PROFESSIONAL ENGINEER — 1/24/26

TAX MAP 10 LOT 109

NOTES & LEGEND

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

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

FILE 18301.00 | DR | CK | CADFILE | 18301-00 COVER-DETAILS | C-2

Feb 12, 2026 - 10:12am
F:\TFM Projects\18301 Dickey St- Londonderry, NH\18301-00 Lampes- 6 Dickey St- Londonderry, NH\18301-00_CSD\PRODUCTION\18301-00 COVER-DETAILS.dwg

LEGEND

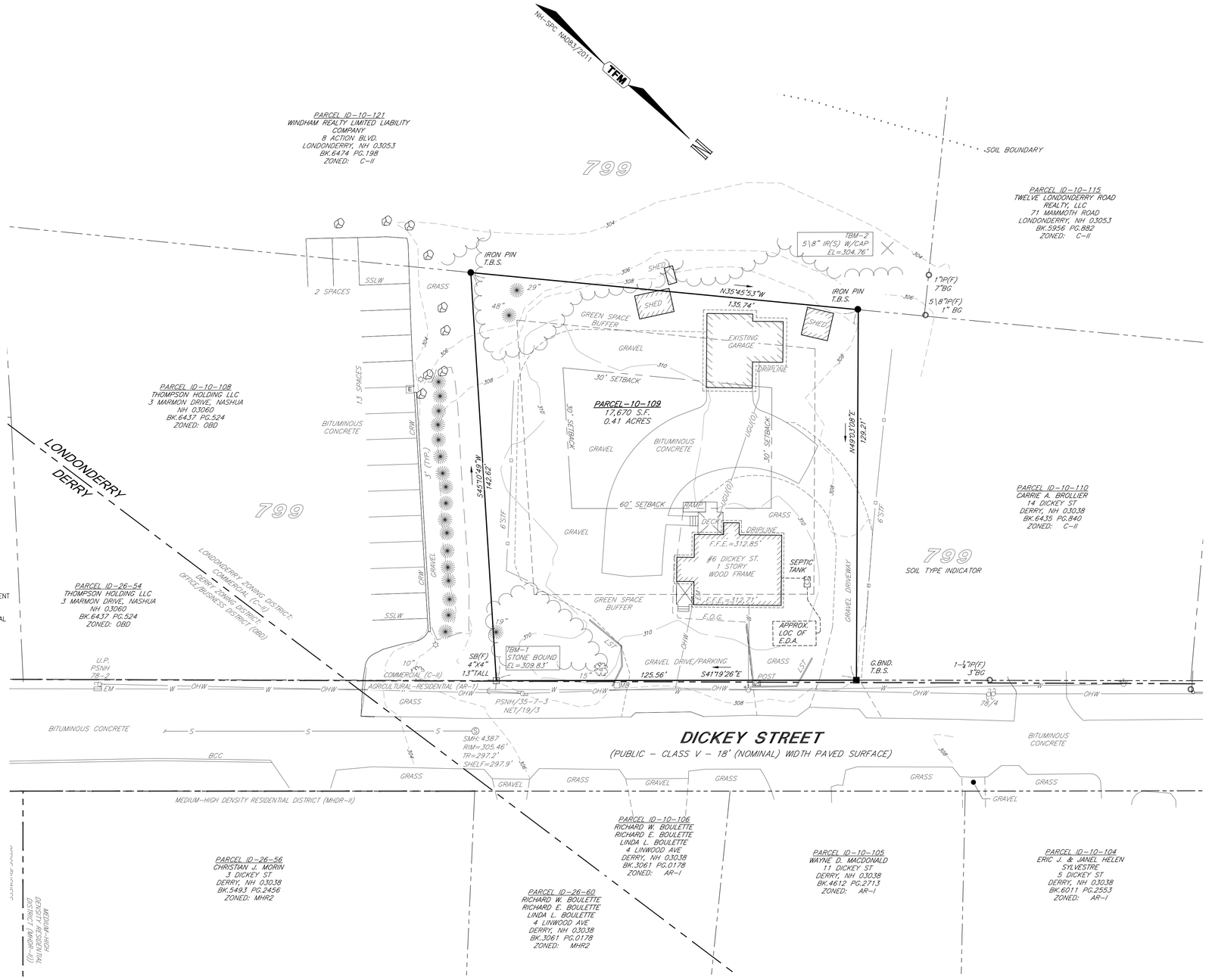
SEWER MANHOLE	S
WATER SHUT OFF	WSO
GAS SHUT OFF	GSO
GUY WIRE	
LIGHT POLE	
IRRIGATION CONTROL VALVE	ICV
UTILITY POLE	
MAIL BOX	MB
ELECTRIC METER	EM
TRANSFORMER PAD	
BOULDER	
DECIDUOUS TREE	
CONIFEROUS TREE	
IRON PIPE/ROD	
STONE/CONCRETE BOUND	
CLEAN OUT	CO
TEMPORARY BENCHMARK	
BELOW GRADE	BG
INVERT	INV=
IRON PIPE	IP
IRON ROD	IR
RIM ELEVATION	RIM=
SET	S
SQUARE FEET	SF
STONE BOUND	SB
STOCKADE FENCE	STF
TEMPORARY BENCHMARK	TBM
TROUGH	TR=
LANDSCAPE TIMBER	LST
TOP OF SEWER TROUGH	SHELF=
TYPICAL	TYP
SINGLE SOLID WHITE LINE	SSLW
ABOVE GRADE	TALL
BITUMINOUS CONCRETE CURB	BCC
CONCRETE RETAINING WALL	CRW
DRILL HOLE	DH
ELEVATION	EL=XXX.XX
FINISHED FLOOR ELEVATION	FFE
FOUND	F
SEWER LINE	S
WATER LINE	W
OVERHEAD UTILITIES	OHW
CONTINUES TO UNKNOWN TERMINUS	
WOOD FENCE	
TREELINE	
UNDERGROUND UTILITIES PER OWNER	UGU(O)

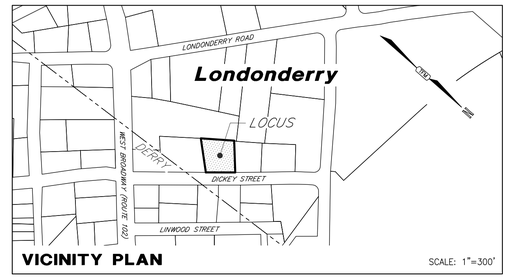
NRCS SOILS LEGEND

THE ENTIRE PROPERTY CONSISTS OF THE SAME SOIL TYPE

799 URBAN LAND – CANTON COMPLEX, 3 TO 15 PERCENT SLOPES

SOURCE: UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE (NRCS).





VICINITY PLAN SCALE: 1"=300'

NOTES

1. OWNER OF RECORD: LEON H. LAMPES, TAMARA A. LAMPES & HARRY L. LAMPES
   6 DICKEY STREET, DERRY, NEW HAMPSHIRE 03038
   DEED REFERENCE: BK. 6561, PG. 2390
   AREA: 17,670 S.F. OR 0.41 ACRES
2. 10-109 INDICATES TAX MAP AND LOT NUMBER.
3. THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS PRESENT AT TAX MAP 10, LOT 109, LOCATED AT THE SOUTHWESTERLY SIDE OF DICKEY STREET IN LONDONDERRY, NEW HAMPSHIRE AS SHOWN HEREON AND NO OTHER PURPOSE.
4. CURRENT ZONING IS COMMERCIAL-II "C-II"

MINIMUM LOT SIZE:	1	ACRE
MINIMUM LOT FRONTAGE:	150	FEET
MINIMUM WIDTH:	N/A	
MINIMUM FRONT BUILDING SETBACKS:	60	FEET
MINIMUM SIDE BUILDING SETBACKS:	30	FEET
MINIMUM REAR BUILDING SETBACKS:	30	FEET

5. EXAMINATION OF THE FLOOD INSURANCE RATE MAP FOR ROCKINGHAM COUNTY, NEW HAMPSHIRE (ALL JURISDICTIONS), MAP NUMBER 33015C0339E, EFFECTIVE DATE MAY 17, 2025, INDICATES THAT THE SUBJECT PARCELS ARE NOT LOCATED WITHIN A FLOOD HAZARD AREA.
6. HORIZONTAL DATUM: NH SPC NAD83\2011. VERTICAL DATUM: NAVD88. DATUMS WERE OBTAINED BY ON-SITE GPS OBSERVATIONS WITH SURVEY GRADE GPS UNITS.

   BENCHMARKS SET:
   TBM-1: 4"X4" STONE BOUND FOUND AT THE EASTERLY CORNER OF THE SUBJECT PARCEL, 13" TALL, AS SHOWN HEREON. ELEVATION: 309.83'
   TBM-2: 5/8" IRON ROD WITH CAP SET FLUSH TO GRADE, LOCATED AT THE WESTERLY CORNER OF THE SUBJECT PARCEL, AS SHOWN HEREON. ELEVATION: 304.76'
7. EASEMENTS, RIGHTS, AND RESTRICTIONS SHOWN OR IDENTIFIED ARE THOSE WHICH WERE FOUND DURING RESEARCH PERFORMED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER RIGHTS, EASEMENTS, OR RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF SUBJECT PARCEL MAY DETERMINE.
8. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. TFMORAN INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UNDERGROUND UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
9. THE INFORMATION SHOW HEREON IS FROM AN ACTUAL SURVEY PERFORMED BY THIS OFFICE ON MARCH 20, 2025, MARCH 21, 2025 AND AUGUST 18, 2025.
10. THE LOCATION OF THE EFFLUENT DISPOSAL AREA SHOWN IS PER THE OWNER.

REFERENCE PLANS

1. RCRD PLAN NO. 186 ENTITLED "PLAN OF SUNNYSIDE PARK DERRY, NH" DATED JUNE 1, 1908.
2. RCRD PLAN NO. C-3352 ENTITLED "PLAT OF LAND IN DERRY, NH FOR W. DEREMER, OAK STREET, DERRY, NH" DATED OCTOBER 6, 1972.
3. RCRD PLAN NO. D-20891 ENTITLED "PLAN OF LAND LOCATED IN DERRY & LONDONDERRY, NH" DATED JANUARY 13, 1991.

OWNER'S SIGNATURE

2/16/26

OWNER OR REPRESENTATIVE — DATE

Graphic Scale

20' 10' 0' 20' 40' 60' 80'

1" = 20'

TAX MAP 10 LOT 109

EXISTING CONDITIONS PLAN

LAMPES PROPERTY

6 DICKEY STREET
LONDONDERRY, NEW HAMPSHIRE

OWNED BY & PREPARED FOR:
LEON & TAMARA LAMPES

SCALE: 1" = 20' **SEPTEMBER 5, 2025**

CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION "IT'S THE LAW"
811 Dig Safe
MA•ME•NH•RI•VT

Copyright 2026 © TFMoran, Inc., 48 Constitution Drive
Bedford, N.H. 03110
All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.
This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

REV.	DATE	DESCRIPTION	DR.	CHK.
1	2-16-26	ADDRESS 3RD PARTY REVIEW COMMENTS	MRD	MRD

WETLAND SCIENTIST CERTIFICATION

ON AUGUST 27, 2025, I CONDUCTED AN ONSITE REVIEW OF THE PROPERTY LOCATED AT 6 DICKEY STREET IN LONDONDERRY, NH. THE PROPERTY, IDENTIFIED AS TAX MAP 10, LOT 109 IS APPROXIMATELY 0.41 ACRES AND IS CURRENTLY DEVELOPED AND USED AS AN AUTO SALES LOT. THE PURPOSE OF THE SITE VISIT WAS TO CONFIRM WHETHER JURISDICTIONAL WETLANDS, AS DEFINED IN THE US ARMY CORPS WETLANDS DELINEATION MANUEL (TECHNICAL REPORT Y-87-1) AND THE REGIONAL SUPPLEMENT, NORTH CENTRAL AND NORTHEAST REGION, VER 2.0). BASED ON THIS CRITERIA AND REFERENCES TO JURISDICTIONAL AREAS PROMULGATED IN THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES, WETLANDS BUREAU RULES (ENV-WT 406) IT WAS DETERMINED THAT THERE ARE NO JURISDICTIONAL AREAS WITHIN OR ADJACENT TO THIS PROPERTY. CHRISTOPHER K. DANFORTH, NH CWS #0077

STATE OF NEW HAMPSHIRE — CHRISTOPHER K. DANFORTH — 2/24/2026 — No. 077 — CERTIFIED WETLAND SCIENTIST

SURVEYOR'S CERTIFICATION

I HEREBY CERTIFY THAT THIS SURVEY AND PLAT WERE PREPARED BY ME OR THOSE UNDER MY DIRECT SUPERVISION AND IS THE RESULT OF AN ACTUAL FIELD SURVEY MADE ON THE GROUND AND HAS AN ERROR OF CLOSURE OF GREATER ACCURACY THAN ONE PART IN TEN THOUSAND (1:10,000).

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. (RSA 676:18-III)

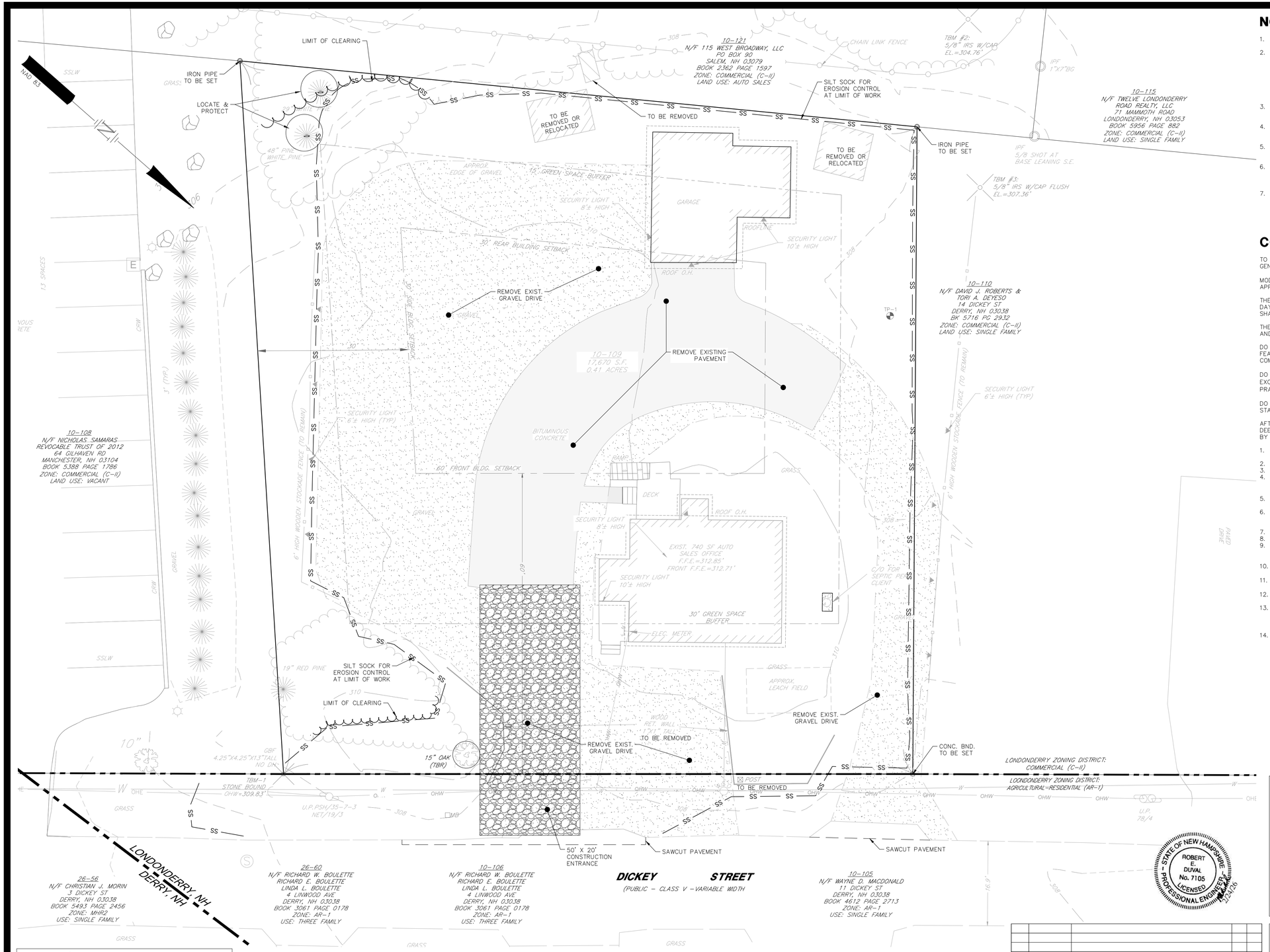
Michael R Dahlberg — 02-16-2026
LICENSED LAND SURVEYOR — DATE

STATE OF NEW HAMPSHIRE — No. 714 — MICHAEL R. DAHLBERG — LICENSED LAND SURVEYOR — SIGNATURE

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

FILE		DR	LR	FB	2047-54	
	18301.00	CK	MRD	CADFILE	18301-00 Survey	SHEET 1 OF 1

Feb 16, 2026 - 9:37am
F:\TFM Projects\18301 Dickey St- Londonderry, NH\Carlson Survey\Dwgs\18301-00 Survey.dwg



NOTES

1. SEE NOTES ON SHEET C–02.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATIONS, SIZE, AND ELEVATIONS OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS PRIOR TO THE START OF ANY DEMOLITION. THE LOCATIONS SHOWN ON THESE PLANS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED DEMOLITION TO DETERMINE APPROPRIATE ACTION TO BE TAKEN BEFORE PROCEEDING WITH THE WORK. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ANTICIPATE CONFLICTS AND REPAIR EXISTING UTILITIES AS NECESSARY TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
4. THE CONTRACTOR SHALL VERIFY ALL SURVEY INFORMATION IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO THE START OF CONSTRUCTION.
5. CONSTRUCTION DEBRIS AND INVASIVE SPECIES SHALL BE REMOVED FROM SITE AND DISPOSED OF IN A LEGAL MANNER.
6. PRIOR TO THE START OF WORK, THE CONTRACTOR SHALL PLACE ORANGE CONSTRUCTION FENCING AROUND EACH TREE TO BE RETAINED THROUGHOUT CONSTRUCTION. NO STOCKPILES OF MATERIAL ARE PERMITTED WITHIN THE DRIP LINE OF THE TREES TO BE SAVED.
7. CONTACT THE LANDSCAPE ARCHITECT IMMEDIATELY IF ANY TREES ARE DAMAGED DURING CONSTRUCTION.

CONSTRUCTION SEQUENCE NOTES

TO MINIMIZE EROSION AND SEDIMENTATION DUE TO CONSTRUCTION, CONSTRUCTION SHALL FOLLOW THIS GENERAL CONSTRUCTION SEQUENCE.

MODIFICATIONS TO THE SEQUENCE NECESSARY DUE TO THE CONTRACTOR'S SCHEDULE SHALL INCLUDE APPROPRIATE TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL MEASURES.

THE CONTRACTOR SHALL SCHEDULE WORK SUCH THAT ANY CONSTRUCTION AREA IS STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE EXCEPT AS NOTED BELOW. NO MORE THAN 5 ACRES OF DISTURBED LAND SHALL BE UNSTABILIZED AT ANY ONE TIME.

THE PROJECT SHALL BE MANAGED SO THAT IT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER ARG 3800 RELATIVE TO INVASIVE SPECIES.

DO NOT TRAFFIC EXPOSED SOIL SURFACE OF INFILTRATION SYSTEMS WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO STORMWATER BMP'S. STORMWATER RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMP'S ARE STABILIZED.

DO NOT PLACE STORMWATER BMP'S INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

AFTER THE INFILTRATION SYSTEM IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE THE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.

1. INSTALL ALL PERIMETER EROSION PROTECTION MEASURES AS INDICATED ON THE PLANS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
2. STORMWATER TREATMENT PONDS AND SWALES SHALL BE INSTALLED BEFORE ROUGH GRADING THE SITE.
3. DURING CONSTRUCTION EVERY EFFORT SHALL BE MADE TO MANAGE SURFACE RUNOFF QUALITY.
4. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT BARRIERS, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED. (TEMPORARY SEED MIXTURE OF WINTER RYE APPLIED AT A RATE OF 2.5 LBS/1000 SF SHALL BE USED).
5. CONDUCT MAJOR EARTHWORK, INCLUDING CLEARING AND GRUBBING, WITHIN THE LIMITS OF WORK. ALL CUT AND FILL SLOPES SHALL BE SEEDED WITHIN 72 HOURS AFTER GRADING.
6. ALL STRIPPED TOPSOIL AND OTHER EARTH MATERIALS SHALL BE STOCKPILED OUTSIDE THE IMMEDIATE WORK AND WETLAND AREAS. A SILT BARRIER SHALL BE CONSTRUCTED AROUND THESE PILES IN A MANNER TO PROVIDE ACCESS AND AVOID SEDIMENT OUTSIDE OF THE WORK AREA.
7. CONSTRUCT TEMPORARY CULVERTS AND DIVERSIONS AS REQUIRED.
8. BEGIN PERMANENT AND TEMPORARY INSTALLATION OF SEED AND MULCH.
9. PERFORM EARTHWORK NECESSARY TO ESTABLISH ROUGH GRADING AROUND PARKING FIELDS AND ACCESS DRIVES. MANAGE EXPOSED SOIL SURFACES TO AVOID TRANSPORTING SEDIMENTS. PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
10. INSTALL SUBSURFACE UTILITIES (WATER, SEWER, GAS, ELECTRIC, COMMUNICATIONS, DRAINAGE, DRAINAGE FACILITIES, ETC.).
11. COMPLETE SEEDING AND MULCHING. SEED TO BE APPLIED WITH BROADCAST SPREADER OR BY HYDRO–SEEDING, THEN ROLLED, RAKED, OR DRAGGED TO ASSURE SEED/SOIL CONTACT.
12. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDED AREAS HAVE BECOME FIRMLY ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE.
13. DURING THE COURSE OF THE WORK AND UPON COMPLETION, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT DEPOSITS, EITHER ON OR OFF SITE, INCLUDING CATCH BASINS, AND SUMPS, DRAIN PIPES AND DITCHES, CURB LINES, ALONG SILT BARRIERS, ETC. RESULTING FROM SOIL AND/OR CONSTRUCTION OPERATIONS.
14. SEE WINTER CONSTRUCTION SEQUENCE FOR WORK CONDUCTED AFTER OCTOBER 15TH.

TAX MAP 10 LOT 109

SITE PREPARATION AND DEMOLITION PLAN

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

STATE OF NEW HAMPSHIRE
ROBERT E. DUVAL
No. 7105
LICENSED
PROFESSIONAL ENGINEER
1/27/26

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

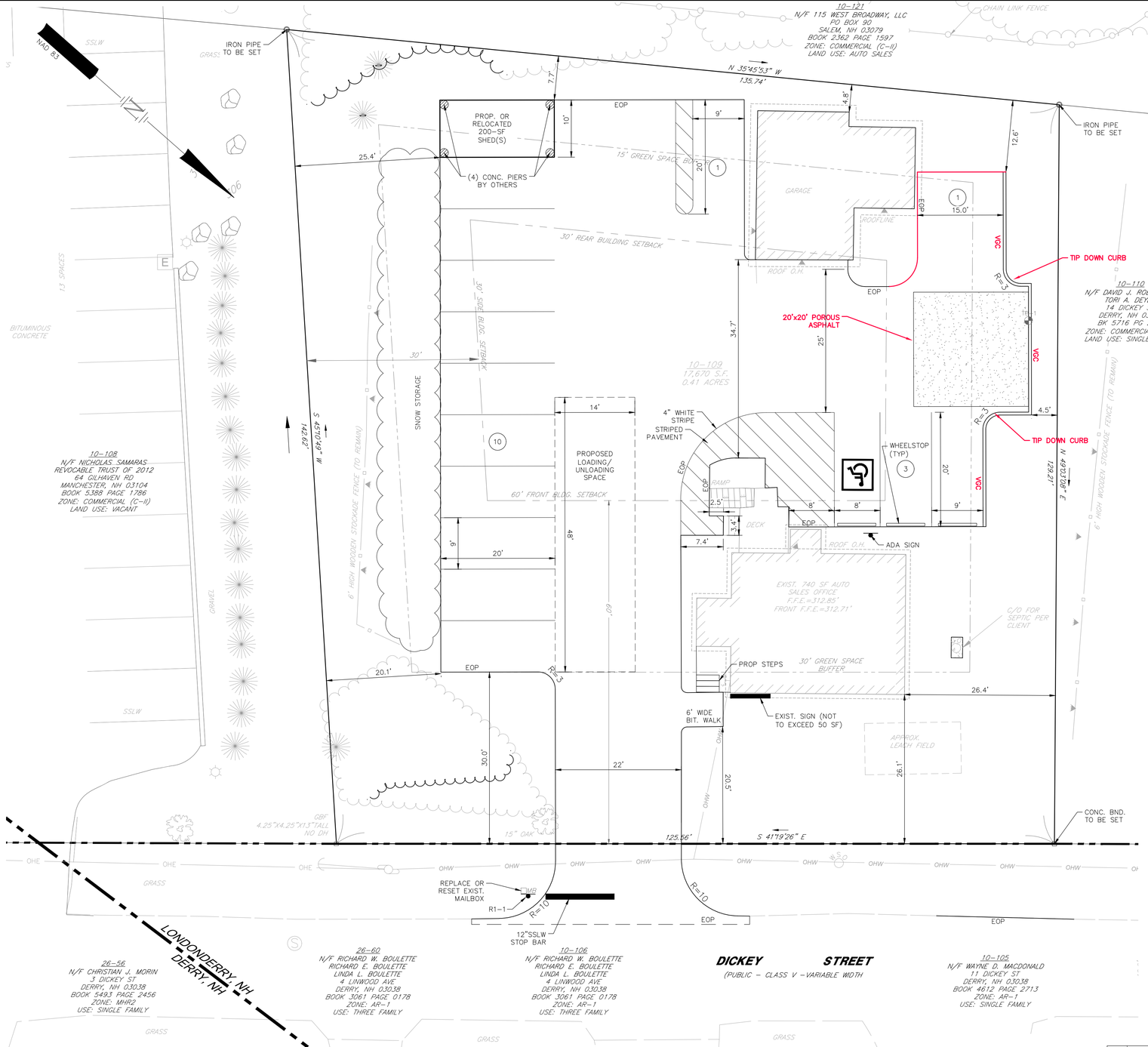
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472–4488
Fax (603) 472–9747
www.tfmoran.com

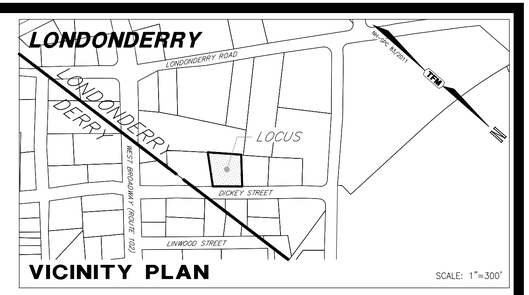
FILE: 18301.00 | DR | CK | CADFILE: 18301–00 DESIGN_LAYOUT | C–3

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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





NOTES

1. OWNER OF RECORD: LEON H. LAMPES & TAMARA A. LAMPES
   6 DICKEY ST, DERRY NH 03038
   DEED REFERENCE: BK. 6561 PG. 2392
   AREA: 17,670 S.F.± OR 0.406 ACRES±
2. 10-109 INDICATES TAX MAP AND LOT NUMBER.
3. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED SITE IMPROVEMENTS ON TAX MAP 10, LOT 109, LOCATED AT 6 DICKEY STREET, DERRY NH 03038 AS SHOWN HEREON AND FOR NO OTHER PURPOSE.
4. CURRENT ZONING IS COMMERCIAL II ZONING DISTRICT.

	REQUIRED	PROVIDED
MIN. LOT SIZE:	1 ACRE	0.406 ACRES
MIN. LOT FRONTAGE:	150'	125.56'
MIN. BUILDING SETBACKS:		
FRONT	60'	26.1'
SIDE	30'	26.4'
REAR	30'	4.8'
MIN. BUILDING HEIGHT:	50'	24'±
MAX. BUILDING COVERAGE (% OF LOT AREA):	25%	10%
MIN. LOT COVERAGE:	66%	52.5%
LANDSCAPE BUFFER ALONG R.O.W	30'	26.1'
LANDSCAPE BUFFER ALONG PROP. LINES	15'	4.5'
OVERALL GREEN/OPEN SPACE	33%	47.4% (8,376 SF LONDONDERRY)

2. THE EXISTING BUILDING IS UTILIZED FOR WHOLESALE AUTO SALES AND IS SERVICED BY ON-SITE SEPTIC AND MUNICIPAL WATER FROM DERRY.
3. NORMAL HOURS OF OPERATION WILL BE MONDAY THROUGH SATURDAY 9 AM – 5 PM BY APPOINTMENT ONLY.
4. EXAMINATION OF THE FLOOD INSURANCE RATE MAP FOR ROCKINGHAM COUNTY, NEW HAMPSHIRE (ALL JURISDICTIONS), MAP NUMBER 33015C0339E, EFFECTIVE DATE MAY 17, 2025, INDICATES THAT THE SUBJECT PARCELS ARE NOT LOCATED WITHIN A FLOOD HAZARD AREA.
5. HORIZONTAL DATUM: NH SPC 83/2011
   VERTICAL DATUM: NAV088
   BENCHMARKS SET: AS NOTED
   TBM #1: 5/8" IRON ROD WITH CAP SET FLUSH
   ELEVATION: 307.36'
   TBM #2: 5/8" IRON ROD WITH CAP
   ELEVATION: 304.76'
6. EASEMENTS, RIGHTS, AND RESTRICTIONS SHOWN OR IDENTIFIED ARE THOSE WHICH WERE FOUND DURING RESEARCH PERFORMED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER RIGHTS, EASEMENTS, OR RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF SUBJECT PARCEL MAY DETERMINE.
7. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. T.F. MORAN INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UNDERGROUND UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
8. THE BASE INFORMATION SHOW HEREON IS FROM AN ACTUAL SURVEY PREFORMED BY THIS OFFICE ON MARCH 21, 2025.
7. PARKING CALCULATIONS:
   OFFICE – 3 SP./1000 S.F. = 2 SPACES
   PROVIDED – 3 SP. (OFFICE INCL. 1 ACCESSIBLE) + 13 SP. (VEHICLE SALES) = 16 TOTAL SPACES
8. VARIANCES AND WAIVERS ARE REQUESTED. SEE COVER SHEET.
9. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT DEFICIENCIES EXIST IN THE APPROVED DESIGN DRAWINGS, THE OWNER SHALL BE REQUIRED TO CORRECT THE DEFICIENCIES TO MEET THE REQUIREMENTS OF THE REGULATIONS AT NO EXPENSE TO THE TOWN.
10. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE TOWN.
11. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO TOWN OF LONDONDERRY SITE PLAN REGULATIONS AND THE LATEST EDITION OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION.
12. IN ACCORDANCE WITH SECTION 6.01 OF THE LONDONDERRY SITE PLAN REGULATIONS AND RSA 676:13, ALL IMPROVEMENTS SPECIFIED ON THESE SITE PLANS SHALL BE CONSTRUCTED, COMPLETED, AND INSPECTED AND APPROVED BY THE TOWN OF LONDONDERRY PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
13. "IN ACCORDANCE WITH SECTION 6.01 OF THE LONDONDERRY SITE PLAN REGULATIONS AND RSA § 676:12, ALL OFF-SITE IMPROVEMENTS SPECIFIED ON THESE SITE PLANS SHALL BE CONSTRUCTED, COMPLETED, INSPECTED AND APPROVED BY THE TOWN OF LONDONDERRY (AND/OR THE NHDOT, IF APPLICABLE) PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY."
14. THIS PROJECT MEETS THE PERFORMANCE STANDARDS NOTED IN SECTION 5.16 OF THE ZONING ORDINANCE PER ITEM II.7 OF THE CHECKLIST.
15. PROPOSED BOUNDARY CORNER MONUMENTS SHALL BE SET BY A NH LICENSED SURVEYOR.

TAX MAP 10 LOT 109

SITE LAYOUT PLAN

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

STATE OF NEW HAMPSHIRE
ROBERT E. DUVAL
No. 7105
LICENSED
PROFESSIONAL ENGINEER
7/24/26

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

OWNER'S SIGNATURE

THE PROPERTY WILL BE DEVELOPED IN ACCORDANCE WITH THIS PLAN AND THE ORDINANCES OF THE TOWN OF LONDONDERRY, NEW HAMPSHIRE.

OWNER OR AUTHORIZED AGENT — DATE

APPROVED BY THE TOWN OF LONDONDERRY PLANNING BOARD

ON _____

BOARD MEMBER _____ AND

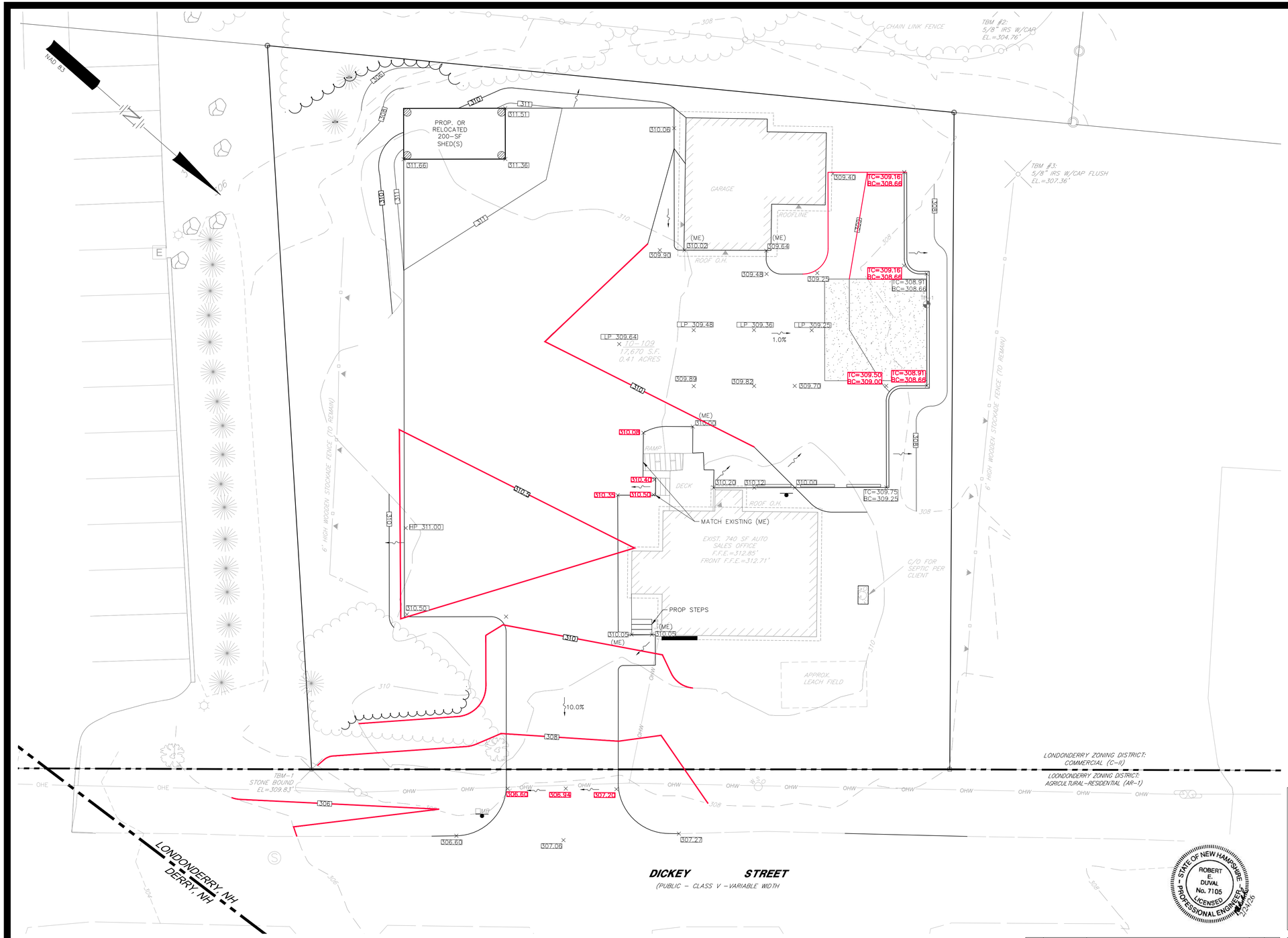
BOARD MEMBER _____

HORIZONTAL SCALE 1"=10'
10 5 0 10

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

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

FILE		DR				
	18301.00	CK		CADFILE	18301-00 DESIGN_LAYOUT	C-4



NOTES

1. SEE NOTES ON SHEET C-02.
2. PROPOSED SPOT GRADES ARE PROVIDED TO THE NEAREST 0.05. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE FINISHED GRADES MEET ADA STANDARDS FOR WHEEL CHAIR RAMPS, HANDICAP SPACES AND ACCESS AISLES, CROSSWALKS, SIDEWALKS, ETC.
3. ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.

NRCS SOILS LEGEND

799 URBAN LAND - CANTON COMPLEX, 3 TO 15 PERCENT SLOPES

SOURCE: UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE (NRCS).

TEST PIT DATA

TESTPIT #1

DATE 08/15/2025 BY M.R.R

0" ELEV.=307.36

Ap 10YR 3/3 , FINE SANDY LOAM, MASSIVE-WEAK, VERY FRIABLE

12"

B 10YR 5/4, FINE SANDY LOAM, MASSIVE-WEAK, VERY FRIABLE

28"

C 10YR 6/6, FINE SANDY LOAM BLOCKY-WEAK, FRIABLE, FRACT. LEDGE

66" ELEV.=301.86

ESHWT: 66"+
OWT: NOT OBSERVED
ROOTS: NOT OBSERVED
LEDGE: 66"
PERC. TEST: 3 MIN/IN @ 40" OR 20 INCHES/HOUR (SAFETY FACTOR OF 2 =10 INCHES/HOUR)

HORIZONTAL SCALE 1"=10'

10 5 0 10

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

TAX MAP 10 LOT 109

GRADING AND DRAINAGE PLAN

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

STATE OF NEW HAMPSHIRE ROBERT E. DUVAL No. 7105 LICENSED PROFESSIONAL ENGINEER 1/27/26

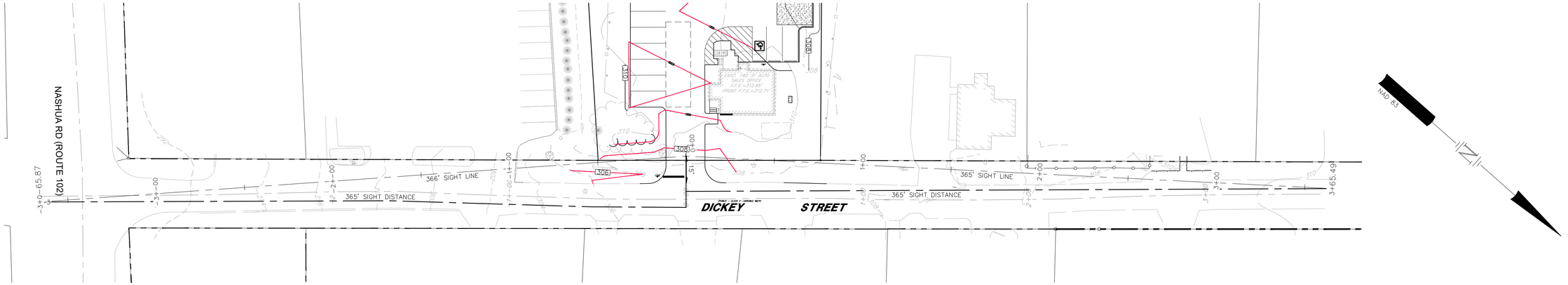
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

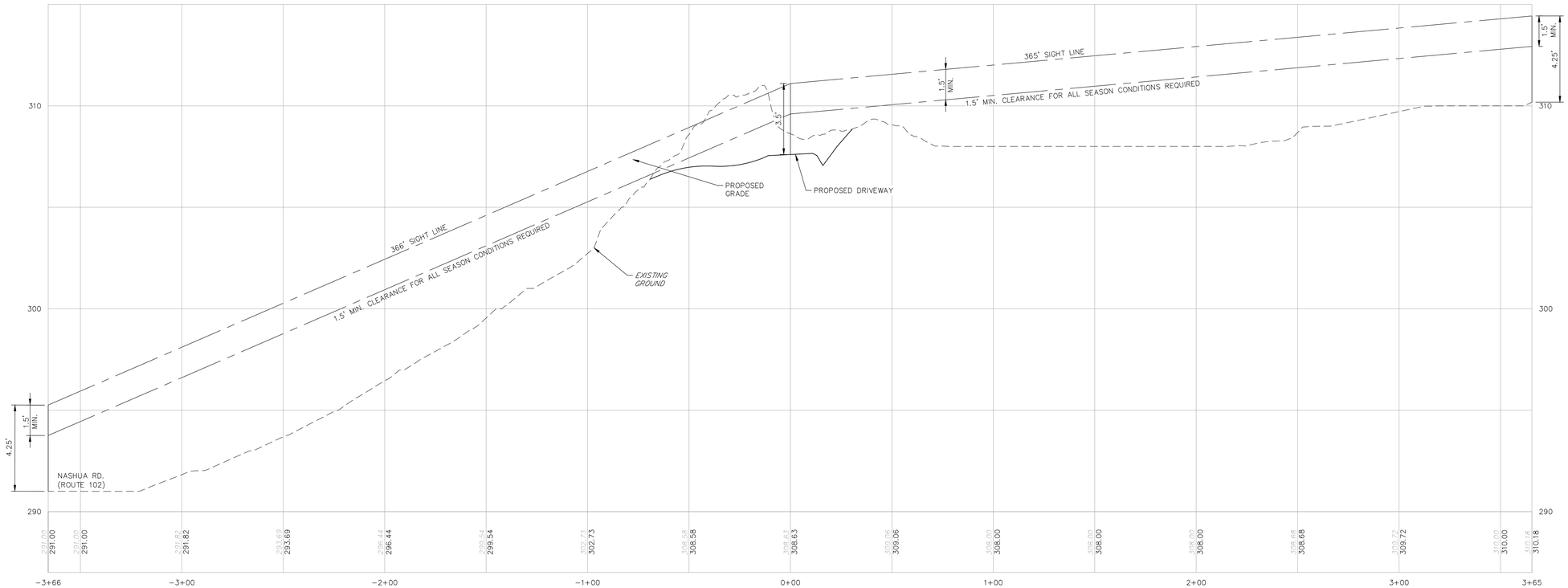
FILE	18301.00	DR	-	CADFILE	-	C-5
		CK	-		18301-00 DESIGN_LAYOUT	

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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





Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

NOTES

1. THE MINIMUM SIGHT DISTANCE SHALL BE 365 FEET IN ALL DIRECTIONS MEETING THE REQUIREMENTS FOR ROADWAY INTERSECTIONS AND EXHIBIT D.3 OF THE LONDONDERRY SUBDIVISION REGULATIONS UNLESS OTHERWISE REQUIRED BY THE NHDOT AS PART OF A STATE DRIVEWAY PERMIT. THE APPLICANT SHALL OBTAIN APPROPRIATE VISIBILITY EASEMENTS OVER THE PARCELS TO MEET THE SIGHT DISTANCE REQUIREMENTS IF REQUIRED.

HORIZONTAL SCALE 1"=30'
30 15 0 30
3 0 3
VERTICAL SCALE 1"=3'

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

STATE OF NEW HAMPSHIRE
ROBERT E. DUVAL
No. 7105
LICENSED
PROFESSIONAL ENGINEER
11/4/25

TAX MAP 10 LOT 109

SIGHT DISTANCE PLAN AND PROFILE

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

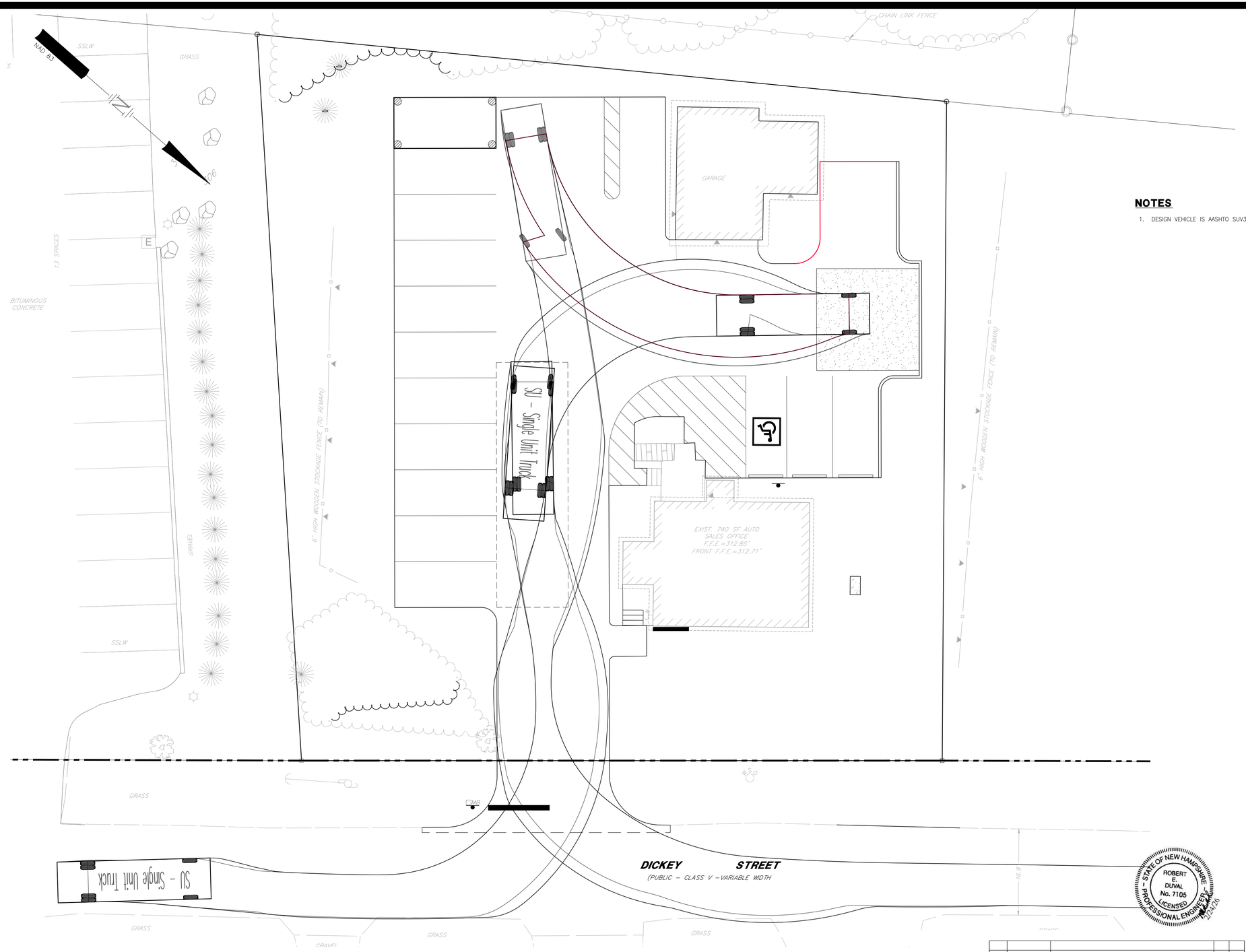
LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

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

FILE					
18301.00	DR		CADFILE	–	C–6
	CK			18301–00 DESIGN_LAYOUT	



NOTES

1. DESIGN VEHICLE IS AASHTO SUV30

HORIZONTAL SCALE 1"=10'
10 5 0 10

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

STATE OF NEW HAMPSHIRE
ROBERT E. DUVAL
No. 7105
LICENSED
PROFESSIONAL ENGINEER
12/24/25

TAX MAP 10 LOT 109

TURNING MOVEMENTS

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

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

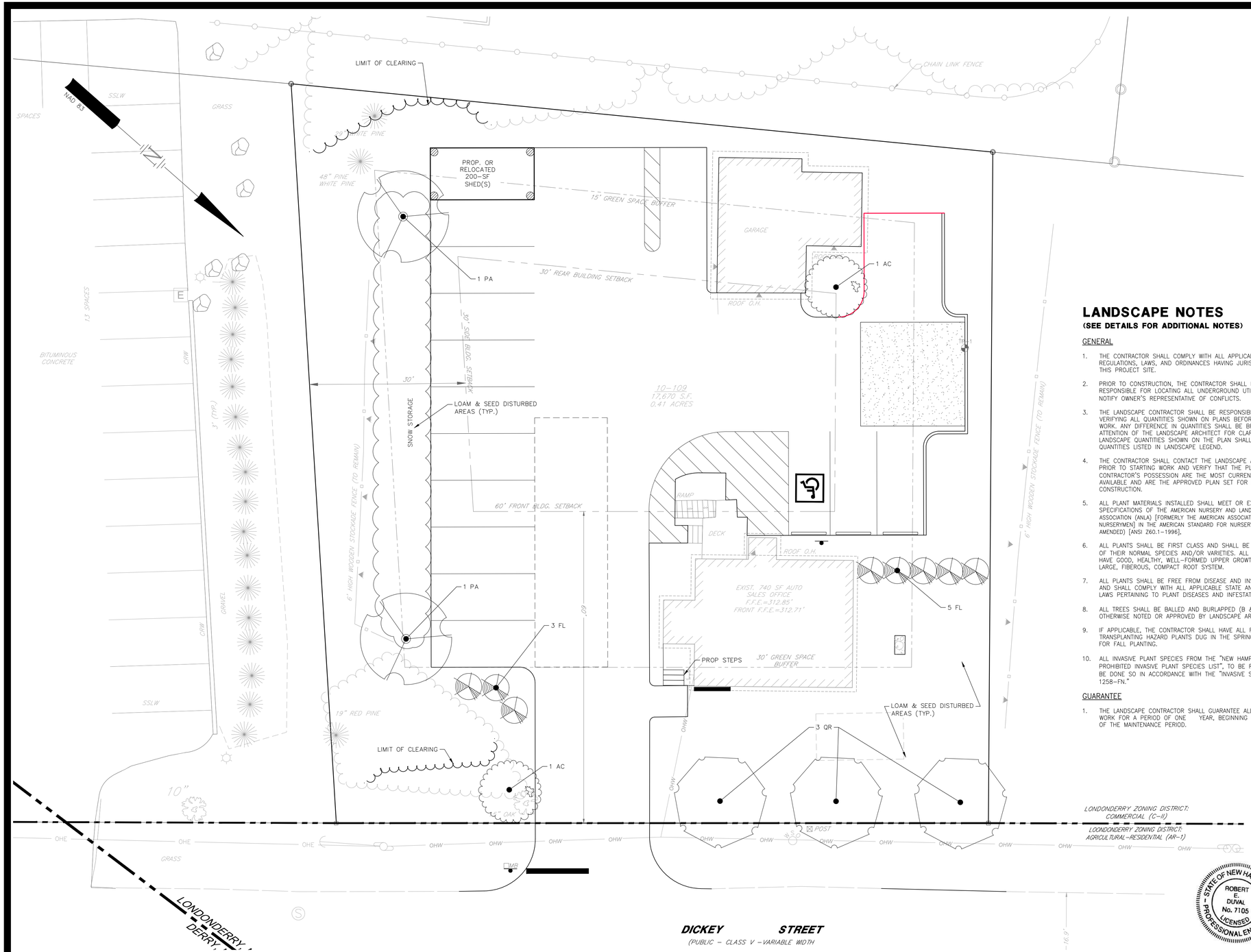
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE	18301.00	DR	-	CADFILE	-	C-7
		CK	-		18301-00 DESIGN_LAYOUT	

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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



HORIZONTAL SCALE 1"=10'

10 5 0 10

LANDSCAPE LEGEND

SYMBOL	QTY	BOTANICAL NAME COMMON NAME	SIZE	REMARKS
PA	2	PLATANUS X ACREIFOLIA 'BLOODGOOD' BLOODGOOD LONDON PLANETREE	2 1/2" TO 3" CAL.	B&B
QR	3	QUERCUS RUBRA RED OAK	2 1/2" TO 3" CAL.	B&B
AC	2	AMELANCHEIR CANADENSIS SHADBLOW SERVICEBERRY	2 1/2" TO 3" CAL.	B&B
FL	8	FORSYTHIA 'LYNWOOD GOLD' LYNWOOD GOLD FORSYTHIA	3' TO 4'	B&B

LANDSCAPE REQUIREMENTS

1. GREEN SPACE REQUIREMENT:
   30' GREEN SPACE AREA ALONG ROW.
   15' GREEN SPACE AREA ALONG SIDE AND REAR LOT LINES. WAIVER REQUIRED

2. INTERIOR PARKING LANDSCAPE AREA REQUIREMENTS:
   (3.10g1. OF SITE PLAN REG'S)
   FRONT EXISTING PARKING LOT: 10% LANDSCAPE AREA REQUIRED.
   REQUIRED: N/A

   SIDE EXISTING PARKING LOT (1,064 SF): 8% LANDSCAPE AREA
   REQUIRED: SIDE PARKING LOT: 85 SF
   PROVIDED: 0 SF (0.0%) WAIVER REQUIRED

   REAR PARKING LOT, (7,085 SF): 5% LANDSCAPE AREA
   REQUIRED. SIDE PARKING LOT: 354 SF
   PROVIDED: 491 SF (6.9%)

3. INTERNAL PARKING LOT LANDSCAPING:
   (3.10g3. OF SITE PLAN REG'S)
   EXISTING PARKING LOT, 1 TREE/15 PARKING SPACES (16 SPACES/15) = 1 TREE
   TOTAL TREES REQUIRED = 1
   TREES PROVIDED = 1 TREES

4. (3.10g4. OF SITE PLAN REG'S)
   ALL LANDSCAPED AREAS SHALL BE PROTECTED FROM ENCROACHMENT BY VEHICLES BY MEANS OF CURBING, LANDSCAPING TIMBERS, CURB STOPS, OR OTHER ACCEPTABLE MEANS. WAIVER REQUIRED

5. PARKING LOT PERIMETER LANDSCAPING:
   (3.10g5. OF SITE PLAN REG'S)
   PARKING LOT, 1 SHADE TREE/20' OF PARKING PERIMETER = 300' L.F./20' = 15 TREES
   TOTAL TREES REQUIRED = 15
   TREES PROVIDED = 0 TREES WAIVER REQUIRED

   SCREENING
   1 SHADE TREE/*50' OF PARKING PERIMETER=300' L.F. (42' FACING RIGHT OF WAY)/50'= 6 TREES
   *1 TREE PER 50' WHEN SCREENING IS REQUIRED.
   TOTAL TREES REQUIRED = 6
   TREES PROVIDED = 6 WAIVER REQUIRED

6. SCREENING FROM PUBLIC RIGHT-OF-WAY:
   (3.10g6. OF SITE PLAN REG'S)
   AT LEAST 50% VERTICAL OPACITY ON AVERAGE UP TO A HEIGHT OF 3-1/2 FEET ABOVE GRADE.
   PROVIDED: 8 FORSYTHIA SHRUBS (DICKEY STREET)

7. ACCORDING TO THE USDA PLANT HARDINESS ZONE MAP THE ANNUAL MINIMUM TEMPERATURE ZONES FOR SOUTHERN NH ARE BETWEEN ZONE 4 (-30 TO -20 DEGREES) AND ZONE 5 (-20 TO -10 DEGREES). THE PLANT MATERIALS SHOWN ON THIS PLAN HAVE A HARDINESS ZONE TO MEET THAT OF SOUTHERN NH.

8. AT TIME OF PLANTING:
   ALL TREES SHALL BE A MINIMUM OF 2.5" TO 3" CALIPER.
   ALL ORNAMENTAL TREES SHALL BE A MINIMUM OF 1.5" TO 2" CALIPER.
   ALL EVERGREEN TREES SHALL BE A MINIMUM OF 5' TO 6' HIGH.

9. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION AND MAINTENANCE THROUGHOUT CONSTRUCTION OF PROTECTIVE TREE FENCING LOCATED 1'? INCHES OFF THE THE DRIPLINE OF ALL TREES TO BE PROTECTED. PRIOR TO CONSTRUCTION THE CONTRACTOR IS REQUIRED TO HAVE ALL NO-CUT ZONES DELINEATED IN THE FIELD.

10. THE CONTRACTOR/APPLICANT IS RESPONSIBLE FOR REPLACEMENT OF "ANY TREES DESIGNATED TO REMAIN, WHICH HAVE BEEN DAMAGED, KILLED OR REMOVED AS A RESULT OF CONSTRUCTION ACTIVITIES". SEE TOWN OF LONDONDERRY "LANDSCAPE DESIGN STANDARDS" SECTION 3.10.D OF THE SITE PLAN REGULATIONS.

11. THE OWNER IS RESPONSIBLE FOR MAINTENANCE OF ALL LANDSCAPE AREAS ONCE CONSTRUCTION IS COMPLETED AS OUTLINED IN THE TOWN OF LONDONDERRY, "LANDSCAPE DESIGN STANDARDS" SECTION 3.10.F OF THE SITE PLAN REGULATIONS.

12. NO PLANT CONFLICTS WITH SNOW STORAGE AREAS, LIGHT FIXTURES & UNDERGROUND UTILITIES.

13. NO LANDSCAPING CONFLICTS WITH SIGHT DISTANCE

14. TREES SHALL BE PLANTED NO CLOSER THAN 5' FROM EDGE OF PAVEMENT/CURB LINE.

LANDSCAPE NOTES

(SEE DETAILS FOR ADDITIONAL NOTES)

GENERAL

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE RULES, REGULATIONS, LAWS, AND ORDINANCES HAVING JURISDICTION OVER THIS PROJECT SITE.

2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND NOTIFY OWNER'S REPRESENTATIVE OF CONFLICTS.

3. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON PLANS BEFORE PRICING THE WORK. ANY DIFFERENCE IN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION. LANDSCAPE QUANTITIES SHOWN ON THE PLAN SHALL SUPERCEDE QUANTITIES LISTED IN LANDSCAPE LEGEND.

4. THE CONTRACTOR SHALL CONTACT THE LANDSCAPE ARCHITECT PRIOR TO STARTING WORK AND VERIFY THAT THE PLANS IN THE CONTRACTOR'S POSSESSION ARE THE MOST CURRENT PLANS AVAILABLE AND ARE THE APPROVED PLAN SET FOR USE IN CONSTRUCTION.

5. ALL PLANT MATERIALS INSTALLED SHALL MEET OR EXCEED THE SPECIFICATIONS OF THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION (ANLA) (FORMERLY THE AMERICAN ASSOCIATION OF NURSERYMEN) IN THE AMERICAN STANDARD FOR NURSERY STOCK (AS AMENDED) [ANSI Z60.1-1996].

6. ALL PLANTS SHALL BE FIRST CLASS AND SHALL BE REPRESENTATIVE OF THEIR NORMAL SPECIES AND/OR VARIETIES. ALL PLANTS MUST HAVE GOOD, HEALTHY, WELL-FORMED UPPER GROWTH AND A LARGE, FIBEROUS, COMPACT ROOT SYSTEM.

7. ALL PLANTS SHALL BE FREE FROM DISEASE AND INSECT PESTS AND SHALL COMPLY WITH ALL APPLICABLE STATE AND FEDERAL LAWS PERTAINING TO PLANT DISEASES AND INFESTATIONS.

8. ALL TREES SHALL BE BALLED AND BURLAPPED (B & B) UNLESS OTHERWISE NOTED OR APPROVED BY LANDSCAPE ARCHITECT.

9. IF APPLICABLE, THE CONTRACTOR SHALL HAVE ALL FALL TRANSPLANTING HAZARD PLANTS DUG IN THE SPRING AND STORED FOR FALL PLANTING.

10. ALL INVASIVE PLANT SPECIES FROM THE "NEW HAMPSHIRE PROHIBITED INVASIVE PLANT SPECIES LIST", TO BE REMOVED SHALL BE DONE SO IN ACCORDANCE WITH THE "INVASIVE SPECIES ACT, HB 1258-FN."

GUARANTEE

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

STATE OF NEW HAMPSHIRE
ROBERT E. DUVAL
No. 7105
LICENSED
PROFESSIONAL ENGINEER
11-24-25

TAX MAP 10 LOT 109

LANDSCAPING PLAN

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

APPROVED BY THE TOWN OF LONDONDERRY PLANNING BOARD

ON _____

BOARD MEMBER _____ AND

BOARD MEMBER _____

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

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

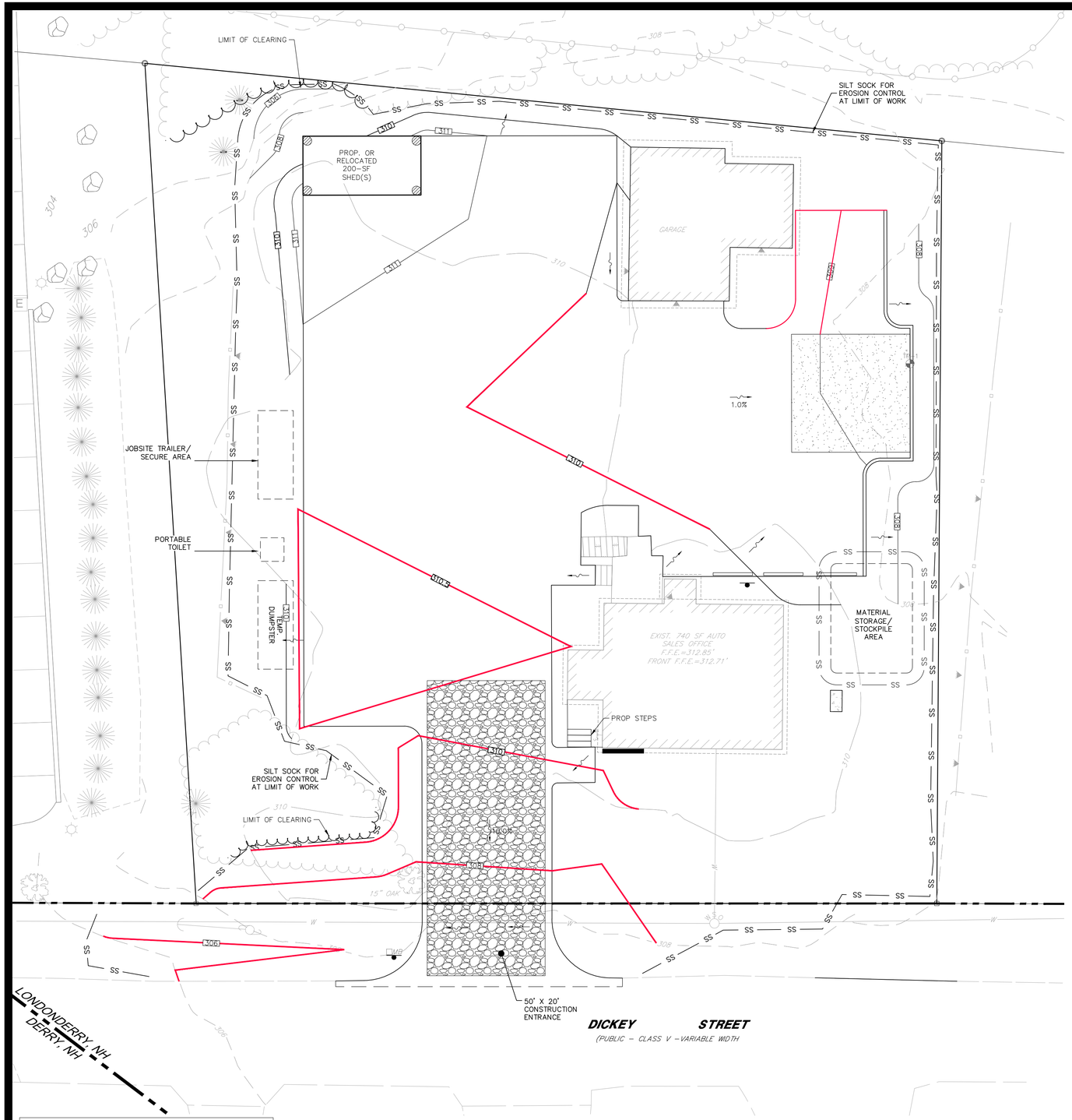
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE 18301.00 | DR | CK | CADFILE: 18301-00 DESIGN_LAYOUT | C-8

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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



NOTES

1. IT IS BEING PROPOSED TO CONSTRUCT A NEW PARKING LOT AND DRAINAGE IMPROVEMENTS AT 6 DICKEY STREET IN LONDONDERRY, NH AND TAX MAP 10, LOT 109, AS SHOWN HEREON.

2. TOTAL SITE AREA: 0.41 AC
   TOTAL AREA OF DISTURBANCE: 0.35 AC

3. SOILS SHOWN ARE FROM THE SOIL SURVEY OF ROCKINGHAM COUNTY, NH, EASTERN PART, PREPARED BY USDA–SOIL CONSERVATION SERVICES.
   799 – URBAN LAND – CANTON COMPLEX, 3 TO 15 PERCENT SLOPES

4. STORM WATER DRAINAGE SYSTEM IS SHOWN ON THE PLAN. SEE GRADING & DRAINAGE PLAN FOR RIM, INVERT, PIPE LENGTH, AND SLOPE INFORMATION.
   POST–CONSTRUCTION RUNOFF COEFFICIENT: C=0.83
   IMPERVIOUS SURFACE AREA: 0.208± AC

5. STABILIZATION PRACTICES FOR EROSION AND SEDIMENTATION CONTROLS:

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

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

6. STRUCTURAL PRACTICES FOR EROSION AND SEDIMENTATION CONTROL

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

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

7. STORM WATER MANAGEMENT

   STORM WATER DRAINAGE FOR DEVELOPED AREAS WILL BE SURFACE DRAINED TO A PERMEABLE PAVEMENT SECTION. APPROXIMATELY 0.035 ACRES OF THE 0.41 ACRE SITE WILL REMAIN UNTOUCHED AND IN ITS ORIGINAL STATE. WHEN CONSTRUCTION IS COMPLETE THE MAJORITY OF THE SITE WILL DRAIN TO THE PROPOSED INFILTRATION SYSTEM (PERMEABLE PAVEMENT.)

8. ALL CONSTRUCTION DEBRIS AND WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURE DUMPSTERS OR APPROVED ENCLOSURE AND REMOVED FROM THE SITE ON A WEEKLY BASIS. NO CONSTRUCTION WASTE SHALL BE BURIED ON SITE. PORTABLE TOILET SANITARY WASTE FACILITIES WILL BE PROVIDED DURING CONSTRUCTION AND MAINTAINED/DISPOSED OF ON A REGULAR BASIS IN ACCORDANCE WITH TOWN AND STATE REGULATIONS.

9. A LIST OF CONSTRUCTION ITEMS AND OTHER PRODUCTS USED ON THIS PROJECT SHALL BE KEPT ON RECORD WITH THIS PLAN ONSITE. ALL CHEMICALS, PETROLEUM PRODUCTS AND OTHER MATERIALS USED DURING CONSTRUCTION SHALL BE STORED IN A SECURE AREA, AND PRECAUTIONS USED TO PREVENT POTENTIAL SOURCES OF CONTAMINATION OR POLLUTION. ANY SPILL OF THESE TYPES OF SUBSTANCES SHALL BE CLEANED UP AND DISPOSED OF IN A LEGAL MANNER AS SPECIFIED BY STATE REGULATIONS AND THE MANUFACTURER. ANY SPILL IN AMOUNTS EQUAL TO OR EXCEEDING REPORTABLE QUANTITY AS DEFINED BY THE EPA SHALL TAKE THE FOLLOWING STEPS:
   - NOTIFY THE NATIONAL RESPONSE CENTER IMMEDIATELY AT (888) 424–8802; IN WASHINGTON, D.C., CALL (202) 426–2675.
   - WITHIN 14 DAYS, SUBMIT A WRITTEN DESCRIPTION OF THE RELEASE TO THE EPA REGIONAL OFFICE PROVIDING THE DATE AND CIRCUMSTANCES OF THE RELEASE AND THE STEPS TO BE TAKEN TO PREVENT ANOTHER RELEASE.
   - MODIFY THE POLLUTION PREVENTION PLAN TO INCLUDE THE INFORMATION LISTED ABOVE.

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

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

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

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

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

   SPILL CONTROL PRACTICES:
   IN ADDITION TO THE GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTIONS OF THIS PLAN, THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
   - MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.
   - MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ONSITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC AND METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.
   - ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
   - THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
   - SPILLS OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF SIZE.
   - THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM REOCCURRING AND HOW TO CLEAN UP THE SPILL IF THERE IS ANOTHER ONE. A DESCRIPTION OF THE SPILL, WHAT CAUSED IT, AND THE CLEANUP MEASURES WILL ALSO BE INCLUDED.
   - THE SITE SUPERINTENDENT RESPONSIBLE FOR THE DAY–TO–DAY SITE OPERATIONS, WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. THEY WILL DESIGNATE AT LEAST THREE OTHER SITE PERSONNEL WHO WILL EACH RECEIVE SPILL PREVENTION AND CLEANUP TRAINING. THESE INDIVIDUALS WILL EACH BECOME RESPONSIBLE FOR A PARTICULAR PHASE OF PREVENTION AND CLEANUP. THE NAMES OF RESPONSIBLE SPILL PERSONNEL WILL BE POSTED IN THE MATERIAL STORAGE AREA AND IN THE OFFICE TRAILER ONSITE.

11. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN RECORDS OF CONSTRUCTION ACTIVITIES, INCLUDING DATES OF MAJOR GRADING ACTIVITIES, DATES WHEN CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED ON A PORTION OF THE SITE, DATES WHEN WORK IS COMPLETED ON A PORTION OF THE SITE, AND DATES WHEN STABILIZATION MEASURES ARE INITIATED ONSITE.

12. THE CONTRACTOR SHALL PERFORM INSPECTIONS OR HAVE A CONSULTING ENGINEER PERFORM INSPECTIONS EVERY SEVEN (7) DAYS AND WITHIN 24 HOURS AFTER A STORM OF 0.5" OR GREATER. INSPECTIONS REPORTS ARE TO BE KEPT ON FILE AT THE SITE WITH THIS PLAN. MAINTENANCE OR MODIFICATION SHALL BE IMPLEMENTED AND ADDED TO THE PLAN AS RECOMMENDED BY THE QUALIFIED INSPECTOR.

NAD 83

HORIZONTAL SCALE 1"=10'
10 5 0 10

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

STATE OF NEW HAMPSHIRE
ROBERT E. DUVAL
No. 7105
LICENSED
PROFESSIONAL ENGINEER
1/27/26

TAX MAP 10 LOT 109

STORMWATER MANAGEMENT PLAN

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

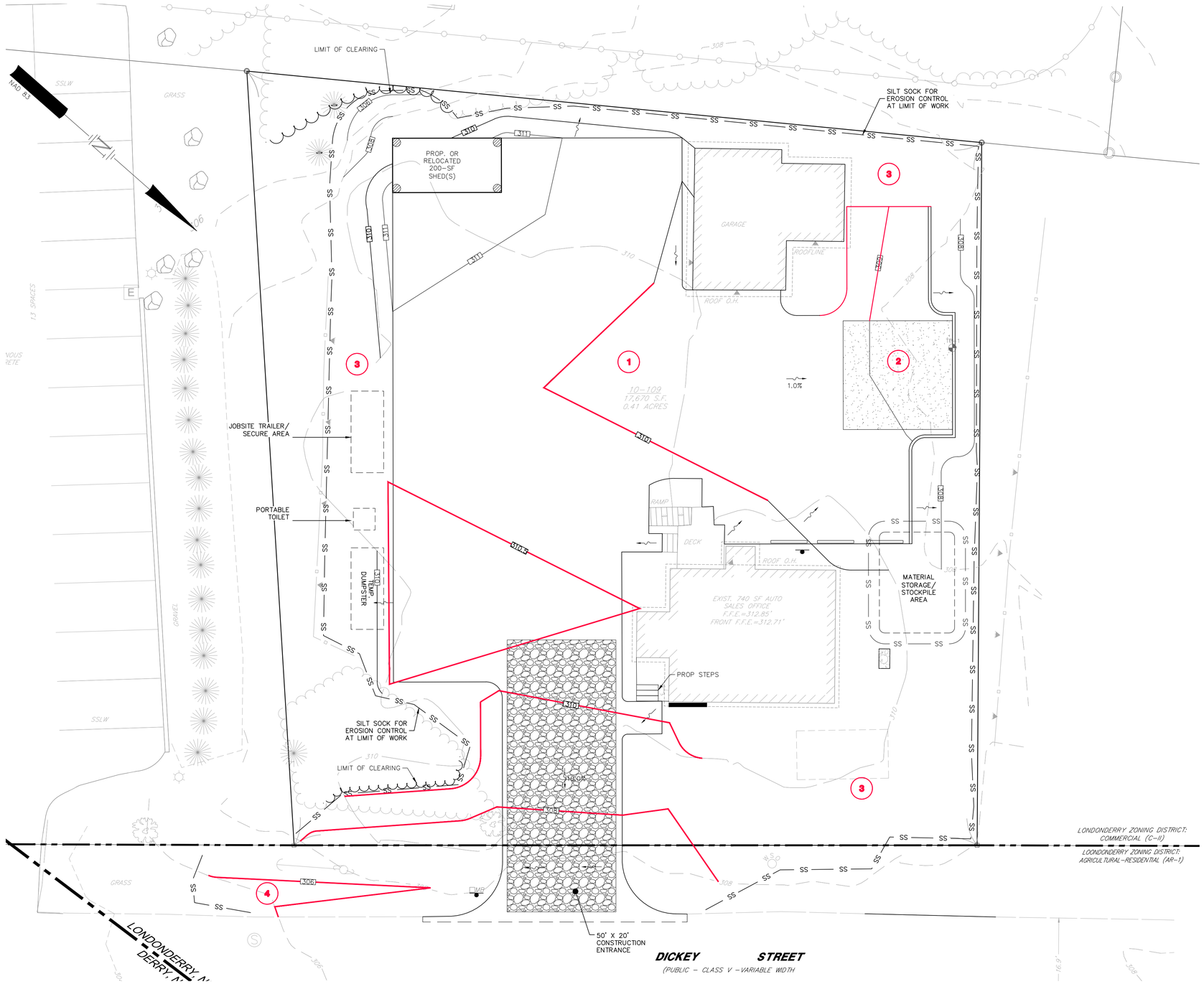
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472–4488
Fax (603) 472–9747
www.tfmoran.com

FILE 18301.00 | DR | CK | CADFILE – 18301–00 DESIGN_LAYOUT | C–9

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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



LEGEND

(2) INSPECTION CHECKLIST ITEM

SNOW REMOVAL & DE-ICING NOTES

1. IN THE EVENT THAT THE SNOW STORAGE AREAS PROVIDED ON THE SITE ARE COMPLETELY UTILIZED, EXCESS SNOW SHALL BE TRANSPORTED OFF SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
2. WINTER MAINTENANCE SHALL BE PERFORMED BY A GREEN SNO-PRO CERTIFIED (OR FUNCTIONAL EQUIVALENT CERTIFICATION) CONTRACTOR. ANNUAL REPORTING OF SALT USAGE SHALL BE TO NHDES STANDARDS.
3. SNOW MELT SEDIMENT WILL BE CAPTURED IN GRASS AREAS & CATCH BASIN SUMPS DURING SPRING SNOW MELT. PROPERTY OWNER SHALL INSPECT ONSITE SUMPS AND WATER QUALITY UNITS AND CONTRACT A VAC TRUCK SERVICE TO REMOVE ANY SEDIMENT. ALL SNOW MELT SEDIMENT IN LANDSCAPE AREAS SHALL BE SWEPT UP AND DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS FOR TRANSPORT AND DISPOSAL TO A PERMITTED LANDFILL.

STORMWATER SYSTEM ANNUAL REPORTING

THE LANDOWNER SHALL BE RESPONSIBLE FOR SUBMITTING AN ANNUAL REPORT TO THE DPW/EPD BY EACH YEAR THAT ALL STORMWATER MANAGEMENT AND EROSION CONTROL MEASURES ARE FUNCTIONING PER THE APPROVED STORMWATER MANAGEMENT PLAN AND I&M PLAN. THE INSPECTION AND MAINTENANCE LOG AND DEICING LOG SHALL BE INCLUDED WITH THE REPORT. THE ANNUAL REPORT SHALL NOTE IF ANY STORMWATER INFRASTRUCTURE HAS NEEDED ANY REPAIRS OTHER THAN ROUTINE MAINTENANCE AND THE RESULTS OF THOSE REPAIRS. IF THE STORMWATER INFRASTRUCTURE IS NOT FUNCTIONING PER THE APPROVED STORMWATER MANAGEMENT PLAN AND I&M PLAN, THE LANDOWNER SHALL MAKE ANY REPAIRS NECESSARY TO RESTORE THE FUNCTION AS DESIGNED WITHIN 90 DAYS OF DISCOVERING THE DEFICIENCY OR PROVIDE DOCUMENTATION TO DPW/EPD DESCRIBING WHY THE SYSTEM CANNOT BE REPAIRED WITHIN 90 DAYS AND A PROPOSED SCHEDULE FOR SUCH REPAIRS. THE LANDOWNER OF A SITE FOR WHICH A SOURCE CONTROL PLAN IS REQUIRED SHALL UPDATE THE SOURCE CONTROL PLAN AS NECESSARY TO REFLECT ANY CHANGES AND SUBMIT THE UPDATED SOURCE CONTROL PLAN TO DPW/EPD WITH ITS ANNUAL REPORT. IF NO CHANGES HAVE BEEN MADE, THE LANDOWNER SHALL DOCUMENT THIS IN THE ANNUAL REPORT. RECORDS MUST ALSO BE MADE AVAILABLE TO THE CITY OR DPW/EPD UPON REQUEST.

DESCRIPTION OF PROJECT

THE PROPOSED DEVELOPMENT IS THE CONSTRUCTION OF A PARKING LOT ON TAX MAP 10 LOT 109. IMPROVEMENTS WILL CONSIST OF GRADING, A STORMWATER MANAGEMENT SYSTEM AND LANDSCAPING. THE PROPOSED AREA OF WORK IS LOCATED PREDOMINANTLY ON TAX MAP 10 LOT 109. ACCESS TO THE SITE IS FROM DICKEY STREET.

THE SITE IS LOCATED DIRECTLY ADJACENT TO THE TOWN LINE SHARED WITH DERRY, NH. IN LONDONDERRY, THE SITE IS ABUTTED BY DEVELOPED COMMERCIAL II (C-II) PARCELS TO THE NORTH, EAST, SOUTH, AND WEST. IN DERRY, THE SITE IS ABUTTED BY DEVELOPED OBD-OFFICE BUSINESS DISTRICT PARCELS TO THE SOUTH AND SOUTHEAST.

AN OPEN DRAINAGE SYSTEM IS PROPOSED TO ATTENUATE, CONVEY, AND TREAT RUNOFF FROM THE PROPOSED DEVELOPMENT. A PERMEABLE CONCRETE/ASPHALT INFILTRATION BED IS STRATEGICALLY LOCATED TO PROVIDE PRETREATMENT/TREATMENT AND MANAGE RUNOFF.

RESPONSIBLE PARTY

BROADWAY AUTO SALES
6 DICKEY STREET
LONDONDERRY, NH 03053
CONTACT: LEO LAMPES
PHONE: (617) 549-1478
EMAIL: PEGASUS.I@COMCAST.NET

REFER TO C-11 FOR SCHEDULE OF MAINTENANCE

DEICING LOG

DATE	OPERATOR	LOCATION	EVENT BEGAN	EVENT END	EVENT TYPE	TOTAL PRECIP.	PAVEMENT TEMP	TEMP. TREND	MATERIAL USED	AMOUNT USED	APPLICATION RATE

TAX MAP 10 LOT 109

INSPECTION AND MAINTENANCE PLAN 1

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

STATE OF NEW HAMPSHIRE
ROBERT E. DUVAL No. 7105 LICENSED PROFESSIONAL ENGINEER
7/31/26

HORIZONTAL SCALE 1"=10'
10 5 0 10

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

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

FILE 18301.00 | DR | CK | CADFILE 18301-00 DESIGN_LAYOUT | C-10

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

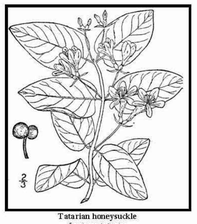
All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

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

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions.* Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions.* Vol. 1: 676.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

Woody Plants	Method of Reproducing	Methods of Disposal
Norway maple *(Acer platanoides)* European barberry *(Berberis vulgaris)* Japanese barberry *(Berberis thunbergii)* autumn olive *(Elaeagnus umbellata)* burning bush *(Euonymus alatus)* Morrow's honeysuckle *(Lonicera morrowii)* Tatarian honeysuckle *(Lonicera tatarica)* showy bush honeysuckle *(Lonicera x bella)* common buckthorn *(Rhamnus cathartica)* glossy buckthorn *(Frangula alnus)*	**Fruit and Seeds**	**Prior to fruit/seed ripening** Seedlings and small plants ▪ Pull or cut and leave on site with roots exposed. No special care needed. Larger plants ▪ Use as firewood. ▪ Make a brush pile. ▪ Chip. ▪ Burn. **After fruit/seed is ripe** Don't remove from site. ▪ Burn. ▪ Make a covered brush pile. ▪ Chip once all fruit has dropped from branches. ▪ Leave resulting chips on site and monitor.
oriental bittersweet *(Celastrus orbiculatus)* multiflora rose *(Rosa multiflora)*	**Fruits, Seeds, Plant Fragments**	**Prior to fruit/seed ripening** Seedlings and small plants ▪ Pull or cut and leave on site with roots exposed. No special care needed. Larger plants ▪ Make a brush pile. ▪ Burn. **After fruit/seed is ripe** Don't remove from site. ▪ Burn. ▪ Make a covered brush pile. ▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.

Non-Woody Plants	Method of Reproducing	Methods of Disposal
garlic mustard *(Alliaria petiolata)* spotted knapweed *(Centaurea maculosa)* ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort *(Cynanchum nigrum)* ▪ May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort *(Cynanchum rossicum)* giant hogweed *(Heracleum mantegazzianum)* ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket *(Hesperis matronalis)* perennial pepperweed *(Lepidium latifolium)* purple loosestrife *(Lythrum salicaria)* Japanese stilt grass *(Microstegium vimineum)* mile-a-minute weed *(Polygonum perfoliatum)*	**Fruits and Seeds**	**Prior to flowering** Depends on scale of infestation Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. **During and following flowering** Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
common reed (*Phragmites australis*) Japanese knotweed *(Polygonum cuspidatum)* Bohemian knotweed *(Polygonum x bohemicum)*	**Fruits, Seeds, Plant Fragments** Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	**Small infestation** ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. **Large infestation** ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

January 2010

UNH Cooperative Extension programs and policies are consistent with pertinent Federal and State laws and regulations, and prohibits discrimination in its programs, activities and employment on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sex, sexual orientation, or veteran's, marital or family status. College of Life Sciences and Agriculture, County Governments, NH Dept. of Resources and Economic Development, Division of Forests and Lands, NH Fish and Game ,and U.S. Dept. of Agriculture cooperating.

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

STORMWATER PRACTICES - MAINTENANCE GUIDELINES

(INSPECTED TWICE A YEAR)

PERMEABLE PAVEMENT/CONCRETE

MAINTENANCE REQUIREMENTS:

ROUTINE MAINTENANCE:

- SHOULD INCLUDE VISUAL INSPECTION OF THE PERVIOUS PAVEMENT TO ENSURE THAT IT IS CLEAN OF DEBRIS AND SEDIMENTS, AND THAT IT WILL DEWATER BETWEEN STORMS.
- ROUTINE MAINTENANCE CLEANING PROCEDURES WOULD INCLUDE BLOWING (WITH LEAF BLOWER OR SIMILAR EQUIPMENT), TRUCK-SWEEPING AND/OR DRY VACUUMING.
- MAINTENANCE SHOULD BE PERFORMED AS NEEDED TO KEEP THE ENTIRE PERVIOUS CONCRETE AREA CLEAN. VISUALLY INSPECT THE PAVEMENT PERIODICALLY DURING OR IMMEDIATELY FOLLOWING A RAIN EVENT. PONDING OR PUDDLES ARE SIGNS THAT IT IS TIME TO CLEAN THE PAVEMENT. IN SOME AREAS.
- MOSS GROWTH CAN BE AN ISSUE. MOSS CAN BE CONTROLLED BY SPRINKLING BAKING SODA ON THE SURFACE, FOLLOWED BY A DRY VACUUMING WITHIN A FEW WEEKS. MOSS GROWTH CAN BE RETARDED/ELIMINATED WITH LIME WATER APPLICATIONS.

PERIODIC MAINTENANCE:

- PERFORM PERIODIC MAINTENANCE JUST BEFORE WINTER TO INSURE THAT THE PERVIOUS CONCRETE VOIDS ARE CLEAN AND FREE OF NON COMPRESSIBLE MATERIALS THAT MAY INHIBIT DRAINING AND, THEREFORE, COULD CONTRIBUTE TO FREEZE-THAW DAMAGE.
- PERIODIC MAINTENANCE MAY BE REQUIRED FOLLOWING WINTER TO REMOVE ANY ANTI-SKID MATERIALS THAT MAY HAVE BEEN USED. PROPER CLEANING PROCEDURES WOULD INCLUDE PRESSURE WASHING AND/OR VACUUMING THE AREA WITH EITHER A DRY VACUUM OR A REGENERATIVE VACUUM SWEEPER. CARE SHOULD BE TAKEN TO AVOID EXTREMELY HIGH PRESSURES WITH A PRESSURE WASHER, AS THIS CAN DEGRADE THE BONDING CEMENT PASTE AND INCREASE RAVELING. CLEANING EQUIPMENT SHOULD ALLOW FOR THE DEBRIS TO BE BAGGED AND REMOVED FROM THE UNIT SO IT CAN BE WEIGHED

WINTER MAINTENANCE REQUIREMENTS:

- PERVIOUS CONCRETE SHOULD NEVER BE USED AS A STORAGE AREA TO PILE SNOW FROM OTHER AREAS.
- ANTI-ICING PRE-TREATMENTS SHOULD NEVER BE USED ON PERVIOUS CONCRETE PAVEMENTS. IF THESE PRODUCTS ARE USED ON ADJACENT PAVEMENTS, CARE SHOULD BE TAKEN TO PREVENT THE ADJACENT RUNOFF FROM INFILTRATING THE PERVIOUS CONCRETE.
- DEICERS CONTAINING MAGNESIUM CHLORIDE, CALCIUM MAGNESIUM ACETATE OR POTASSIUM ACETATE SHOULD NEVER BE USED ON PERVIOUS CONCRETE PAVEMENT.
- DEICING AGENTS THAT CONTAIN FERTILIZER INGREDIENTS SUCH AS AMMONIUM SULFATE AND AMMONIUM NITRATE CAUSE CHEMICAL DETERIORATION TO ANY PORTLAND CEMENT-BASED CONCRETE PAVEMENT AND SHOULD NEVER BE USED.
- CALCIUM CHLORIDE IMPREGNATED SAND CAN BE USED FOR DEICING PAVEMENTS AFTER THE FIRST YEAR.
- COARSE SAND (MINIMUM 1/8"), OR SMALL CRUSHED AGGREGATE (1/4 – 10, OR SIMILAR GRADATION) CAN BE USED AS AN ANTI-SKID MATERIAL WITH THE UNDERSTANDING THAT VACUUM CLEANING WILL BE PERFORMED AFTER THE WINTER SEASON. FINE SANDS SUCH AS MASONRY SAND OR PLAY SAND SHOULD NOT BE USED ON PERVIOUS CONCRETE PAVEMENTS!
- SNOW PLOWING CAN BE PERFORMED WITH TRUCKS MOUNTED WITH PLOWS, BUT THE PLOW SHOULD BE FITTED WITH A POLYURETHANE CUTTING EDGE. USE OF SNOW BLOWERS MAY BE A BETTER ALTERNATIVE TO PLOWING, IF AVAILABLE
- A SITE MAINTENANCE LOG WILL BE KEPT. THIS LOG WILL RECORD THE DATES WHEN MAINTENANCE TASKS WERE COMPLETED, THE PERSON WHO COMPLETED THE TASK, AND ANY OBSERVATIONS OF MALFUNCTIONS IN COMPONENTS OF THE STORMWATER MANAGEMENT SYSTEM AND INCLUDE A PHOTOGRAPH OF THE BASIN.

SYSTEM COMPONENTS

DRIVEWAY, SIDEWALK, AND PARKING AREAS:

MAINTENANCE REQUIREMENTS:

- SEDIMENTS AND DEBRIS SHOULD BE REMOVED AND DISPOSED FROM IMPERVIOUS AREAS BY POWER-BROOM SWEEPING.
- SWEEP AT LEAST TWO (2) TIMES PER YEAR AND ON A MORE FREQUENT BASIS DEPENDING ON SANDING OPERATIONS.
- ALL RESULTING SWEEPINGS SHALL BE COLLECTED AND PROPERLY DISPOSED OF OFFSITE IN ACCORDANCE WITH NHDES AND OTHER APPLICABLE REQUIREMENTS.

LAWNS AND LANDSCAPING AREAS:

MAINTENANCE REQUIREMENTS:

- INSPECT, MAINTAIN, AND REPAIR AS NECESSARY DEVELOPMENT AREA LAWNS AND LANDSCAPED AREAS TO ENSURE A STABILIZED SURFACE.
- MAINTAIN LAWN AREAS WITH HEALTHY TURF. TAKE STEPS TO NECESSARY TO RESTORE DISTRESSED TURF TO GOOD HEALTH.
- ENSURE THAT LANDSCAPE MULCH MATERIALS IS REFRESHED AS NECESSARY, AND DOES NOT WASH ONTO SIDEWALKS OR OTHER ADJACENT SURFACES.

GRASS CONVEYANCE SWALES:

MAINTENANCE REQUIREMENTS:

- GRASSED CHANNELS SHOULD BE INSPECTED ANNUALLY FOR SEDIMENT ACCUMULATION, EROSION AND CONDITION OF SURFACE LINING.
- REPAIRS, INCLUDING VEGETATION REPLACEMENT, SHOULD BE MADE BASED ON INSPECTION.
- REMOVE SEDIMENT AND DEBRIS ANNUALLY, OR MORE FREQUENTLY AS WARRANTED BY INSPECTION.
- MOW VEGETATED CHANNELS AT LEAST ONCE A YEAR TO CONTROL ESTABLISHMENT OF WOODY VEGETATION. IT IS RECOMMENDED TO CUT GRASS NO SHORTER THAN 4 INCHES.

CONTROL OF INVASIVE PLANTS

DURING MAINTENANCE ACTIVITIES, CHECK FOR THE PRESENCE OF INVASIVE PLANTS. IF INVASIVE PLANTS ARE FOUND, THEY SHALL BE CONTROLLED AND REMOVED IN A SAFE MANNER AS DESCRIBED ON THE FOLLOWING PAGES.

INVASIVE PLANTS ARE INTRODUCED, ALIEN, OR NON-NATIVE PLANTS, WHICH HAVE BEEN MOVED BY PEOPLE FROM THEIR NATIVE HABITAT TO A NEW AREA. SOME EXOTIC PLANTS ARE IMPORTED FOR HUMAN USE SUCH AS LANDSCAPING, EROSION CONTROL OR FOOD CROPS. THEY ALSO CAN ARRIVE AS "HITCHHIKERS" AMONG SHIPMENTS OF OTHER PLANTS, SEEDS, PACKING MATERIALS OR FRESH PRODUCE. INVASIVE PLANTS CAN 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
- RESISTING CONTROL EXCEPT BY HAZARDOUS CHEMICALS.

STORMWATER PRACTICES - SCHEDULE OF MAINTENANCE

THE FOLLOWING PRACTICES SHALL BE INSPECTED TWICE ANNUALLY, ONCE FOLLOWING SNOWMELT (SPRING) AND ONCE FOLLOWING LEAF-DROP (FALL):

- PERMEABLE PAVEMENT/CONCRETE
- PAVEMENT/WALKWAY

THE FOLLOWING PRACTICES SHALL BE INSPECTED ANNUALLY FOLLOWING SNOWMELT (SPRING):

- LAWNS/LANDSCAPE AREAS
- GRASS CONVEYANCE SWALE

INSPECTION CHECKLIST

Date:	**Project Name:**
Inspector's Name:	
Inspector's Contact Information:	
☐ **1st Yearly Inspecton**	**BMPs to be Inspected: All**
☐ **2nd Yearly Inspecton**	**BMPs to be Inspected: Treatmend and Pretreatment Practices**

BMP Refer to following Inspection & Maintenance Plan for BMP Location		Maintenance Required	Corrective Action Needed and Notes
1	PARKING LOT SWEEPING	YES/NO	
2	PERMEABLE PAVEMENT/CONCRETE	YES/NO	
3	LAWNS & LANDSCAPE AREA	YES/NO	
4	GRASS SWALE	YES/NO	

DE-ICING NOTE:

A DE-ICING LOG SHOULD BE IMPLEMENTED DURING WINTER MONTHS TO KEEP RECORDS OF THE SNOW/ICE MAINTENANCE NEEDED DURING STORM EVENTS. A NEW HAMPSHIRE CERTIFIED GREEN SNOPRO SALT APPLICATOR SHALL BE EMPLOYED TO MANAGE THE SNOW AND ICE REMOVAL FOR THE SITE. DEICING MATERIALS AND APPLICATION RATES SHALL BE REPORTED USING NHDES STANDARDS.

ADDITIONAL INFORMATION ON SALT REDUCTION INITIATIVES CAN BE OBTAINED AT: HTTP://WWW.DES.NH.GOV/ORGANIZATION/DIVISIONS/WATER/WMB/WAS/SALT-REDUCTION-INITIATIVE/DOCUMENTS/WMB-26.PDF

STATE OF NEW HAMPSHIRE
ROBERT E. DUVAL
No. 7105
LICENSED
PROFESSIONAL ENGINEER
7/24/20

TAX MAP 10 LOT 109

INSPECTION AND MAINTENANCE PLAN 2

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

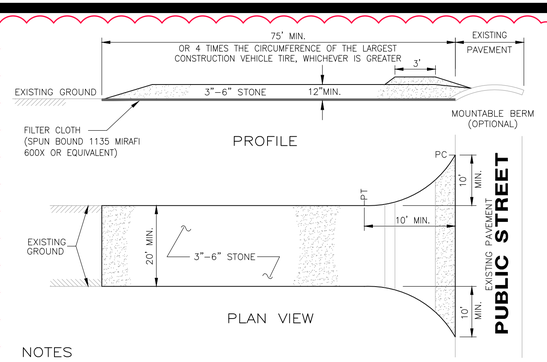
6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

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

FILE		DR		CADFILE		
	18301.00	CK			18301-00 DESIGN_LAYOUT	C-11



NOTES

1. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE SURFACE.
2. WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
3. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
4. WASHING – WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
5. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN STORM EVENT.

USDA - SCS STABILIZED CONSTRUCTION ENTRANCE

SEE PLAN FOR PROPOSED LOCATION — NOT TO SCALE

CONSTRUCTION SEQUENCE NOTES

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

   AN AREA SHALL BE CONSIDERED STABILIZED IF:
   A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   B) A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C) A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED, OR
   D) EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
6. CONSTRUCT PARKING BINDER COURSE AND FINISH GRADE SITE ACCORDING TO PLAN. ALL SLOPES SHALL BE STABILIZED IMMEDIATELY AFTER GRADING.
7. INSTALL PERMEABLE PAVER SECTIONS AND CONCRETE PAVEMENT.
8. INSTALL PAVEMENT WEARING COURSE.
9. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENTATION CONTROL MEASURES PERIODICALLY AND IMMEDIATELY AFTER STORM EVENTS.
10. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
11. REMOVE TEMPORARY EROSION CONTROL MEASURES ONCE ALL AREAS ARE STABILIZED WITH A SUITABLE STAND OF GRASS, PAVEMENT OR COMPACTED GRAVELS.

GENERAL NOTES

1. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE AS NECESSARY WITH THE UTILITY COMPANIES OF SAID UTILITIES. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
2. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY HIS WORK AT ALL TIMES.
3. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
4. EROSION CONTROL SYSTEMS SHALL BE INSTALLED AND MAINTAINED FOR THE DURATION OF THE PROJECT IN ACCORDANCE WITH APPLICABLE NHDES STANDARDS. THESE DETAILS SERVE AS A GUIDE ONLY.
5. REFER TO THE TOWN STANDARD DETAILS, LATEST REVISION, FOR ADDITIONAL INFORMATION AND CRITERIA.
6. THE CONTRACTOR SHALL STABILIZE DISTUIRBED AREAS PRIOR TO DIRECTING FLOW TO THEM.
7. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.

WINTER CONSTRUCTION

IN ADDITION TO THE OTHER NOTES CONTAINED ON THIS PLAN, THE FOLLOWING MUST BE IMPLEMENTED:

1. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED AS SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.
2. AN AREA WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE MUST BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIER.
3. TEMPORARY MULCH MUST BE APPLIED WITHIN 7 DAYS OF SOIL EXPOSURE OR PRIOR TO ANY STORM EVENT, BUT AFTER EVERY WORKDAY IN AREAS WITHIN 100 FEET FROM A PROTECTED NATURAL RESOURCE.
4. AREAS THAT HAVE BEEN BROUGHT TO FINAL GRADE MUST BE PERMANENTLY MULCHED THE SAME DAY.
5. IN THE EVENT OF A SNOWFALL GREATER THAN 1 INCH (FRESH OR CUMULATIVE), THE SNOW SHALL BE REMOVED FROM THE AREAS DUE TO BE SEEDED AND MULCHED.
6. LOAM SHALL BE FREE OF FROZEN CLUMPS BEFORE IT IS APPLIED.
7. A DITCH THAT WILL BE CONSTRUCTED DURING THE WINTER MUST BE STABILIZED WITH RIPRAP.

OVERWINTER STABILIZATION

1. PERMANENT STABILIZATION CONSISTS OF AT LEAST 85% VEGETATION, PAVEMENT/GRAVEL BASE OR RIPRAP.
2. ALL PROPOSED VEGETATED AREAS THAT DO NO EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
3. ALL DISTURBED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
4. DO NOT EXPOSE SLOPES OR LEAVE SLOPES EXPOSED OVER THE WINTER OR FOR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS FULLY PROTECTED WITH MULCH.
5. APPLY HAY MULCH AT TWICE THE STANDARD RATE (150 LBS. PER 1,000 SF). THE MULCH MUST BE THICK ENOUGH SUCH THAT THE GROUND SURFACE WILL NOT BE VISIBLE AND MUST BE ANCHORED.
6. USE MULCH AND MULCH NETTING OR AN EROSION CONTROL MULCH BLANKET OR MIX FOR ALL SLOPES GREATER THAN 8% OR OTHER AREAS EXPOSED TO DIRECT WIND.
7. INSTALL AN EROSION CONTROL BLANKET IN ALL DRAINAGE WAYS (BOTTOM AND SIDES) WITH A SLOPE GREATER THAN 3%.
8. SEE THE VEGETATION MEASURES FOR MORE INFORMATION ON SEEDING DATES AND TYPES.

EROSION CONTROL NOTES

DURING CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED:

1. INSTALLATION OF SILTATION FENCES AND OTHER EROSION CONTROL MEASURES SHALL BE COMPLETED PRIOR TO THE START OF SITE WORK IN ANY GIVEN AREA. PREFABRICATED SILTATION FENCES SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
2. SILTATION FENCES AND OTHER EROSION CONTROL MEASURES SHALL BE KEPT CLEAN DURING CONSTRUCTION AND REMOVED WHEN ALL SLOPES HAVE A VEGETATIVE COVER OF GREATER THAN 85%. EROSION CONTROL MEASURES SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EVERY RAINFALL.
3. EXISTING VEGETATION IS TO REMAIN UNDISTURBED WHEREVER POSSIBLE.
4. THE AREA OF LAND EXPOSED AND THE TIME OF EXPOSURE SHALL BE MINIMIZED. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 72 HOURS AFTER FINAL GRADING.

EROSION CONTROL NOTES (CONT.)

5. ALL DISTURBED AREAS SHALL HAVE A MINIMUM OF 4" OF LOAM. ACCEPTABLE SEED MIXES ARE AS FOLLOWS:

   TYPICAL LAWN MIX (MIN. 200 LBS/ACRE):
   33% CREEPING RED FESCUE (MIN. 66 LBS/ACRE)
   42% PERENNIAL RYEGRASS (MIN. 84 LBS/ACRE)
   21% KENTUCKY BLUEGRASS (MIN. 42 LBS/ACRE)
   4% REDTOP (MIN. 8 LBS/ACRE)

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

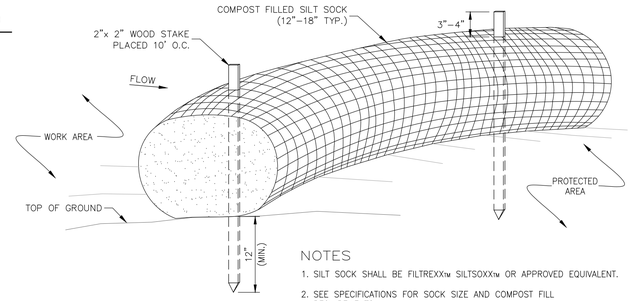
   A. PLACING LOAM ON SITE
      a. ALL SUBGRADE ELEVATIONS SHOULD BE UNIFORMLY GRADED TO RECEIVE LOAM AND SHALL BE INSPECTED AND APPROVED BY THE GENERAL CONTRACTOR PRIOR TO PLACEMENT OF LOAM.
   a. PLACE LOAM TO FORM A MINIMUM DEPTH OF 4" WHEN ROLLED, UNLESS OTHERWISE INDICATED.
   b. ALL DEPRESSIONS EXPOSED DURING THE ROLLING SHALL BE FILLED WITH ADDITIONAL LOAM.

   B. SEED BED PREPARATION
      AFTER FINISH GRADING AND JUST BEFORE SEEDING, THE AREAS TO BE SEEDED SHALL BE LOOSENED TO PROVIDE A ROUGH, FIRM BUT FINELY PULVERIZED SEEDBED. THE INTENT IS A TEXTURE CAPABLE OF RETAINING WATER, SEED AND FERTILIZER WHILE REMAINING STABLE AND ALLOWING SEED TIME TO GERMINATE. SEED SHALL BE APPLIED TO THE CONDITIONED SEEDBED NOT MORE THAN 48 HOURS AFTER THE SEEDBED HAS BEEN PREPARED.
6. LIME AND FERTILIZER SHALL BE INCORPORATED INTO THE SOIL PRIOR TO OR AT THE TIME OF AT THE TIME OF SEEDING. A MINIMUM OF 2 TONS PER ACRE OF AGRICULTURAL LIMESTONE AND 500 LBS. PER ACRE OF 10–20–20 FERTILIZER SHALL BE APPLIED. SEEDING PRACTICES SHALL COMPLY WITH LOCAL USDA SOIL CONSERVATION SERVICES RECOMMENDATIONS.
7. HAY MULCH OR JUTE MATTING SHALL BE USED WHERE INDICATED ON THE PLANS. A MINIMUM OF 1.5 TONS OF MULCH PER ACRE SHALL BE APPLIED. MULCH SHALL BE ANCHORED IN PLACE WHERE NECESSARY. JUTE MATTING SHALL BE LAID IN THE DIRECTION OF RUNOFF FLOW AND APPLIED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
8. PERMANENT OR TEMPORARY COVER MUST BE IN PLACE BEFORE THE GROWING SEASON ENDS. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS AREA NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 15 TO SEPTEMBER 15. NO DISTURBED AREA SHALL BE LEFT EXPOSED DURING WINTER MONTHS.
9. WATER SHALL BE USED FOR DUST CONTROL IN APPROPRIATE AREAS.

STOCKPILE NOTES

1. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CONCENTRATED FLOWS OF STORMWATER, DRAINAGE COURSES AND INLETS.
2. PROTECT ALL STOCKPILES FROM STORMWATER RUN–ON USING TEMPORARY PERIMETER MEASURES SUCH AS DIVERSIONS, BERMS, SANDBAGS OR OTHER APPROVED PRACTICES.
3. STOCKPILES SHOULD BE SURROUNDED BY SEDIMENT BARRIERS, SUCH AS SILT FENCE OR SILT SOCK, TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.
4. IMPLEMENT WIND EROSION CONTROL PRACTICES AS APPROPRIATE ON ALL STOCKPILED MATERIAL.
5. PLACE BAGGED MATERIALS ON PALLETS AND UNDER COVER.
6. INACTIVE STOCKPILES
   a. INACTIVE SOIL STOCKPILES sHOULD BE COVERED WITH ANCHORED TARPS OR PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY SEED AND MULCH OR OTHER TEMPORARY PRACTICE) AND TEMPORARY PERIMETER SEDIMENT BARRIERS AT ALL TIMES.
   b. INACTIVE STOCKPILES OF CONCRETE RUBBLE, ASPHALT CONCRETE RUBBLE, AGGREGATE MATERIALS AND OTHER SIMILAR MATERIALS SHOULD BE PROTECTED WITH TEMPORARY SEDIMENT PERIMETER BARRIERS AT ALL TIMES. IF THE MATERIALS ARE A SOURCE OF DUST, THEY SHOULD ALSO BE COVERED.

   ACTIVE STOCKPILES
7. a. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY LINEAR SEDIMENT BARRIERS PRIOR TO THE ONSET OF PRECIPITATION. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.
   b. WHEN A STORM EVENT IS PREDICTED, STOCKPILES SHOULD BE PROTECTED WITH AN ANCHORED PROTECTIVE COVERING.



NOTES

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

SILT SOCK

NOT TO SCALE

STATE OF NEW HAMPSHIRE — ROBERT E. DUVAL No. 7105 LICENSED PROFESSIONAL ENGINEER — 12/24/25

TAX MAP 10 LOT 109

SITE PREPARATION DETAILS

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

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

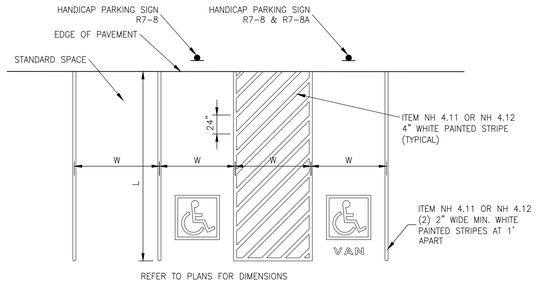
FILE 18301.00 | DR | CK | CADFILE | – | 18301–00 COVER–DETAILS | C–12

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

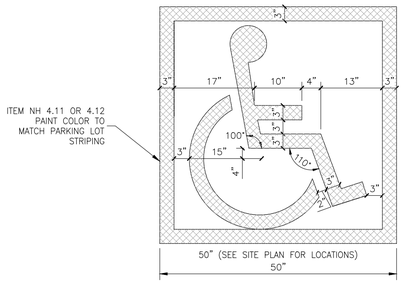
This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

Feb 12, 2026 - 10:13am
F:\TFM Projects\18301 Dickey St - Londonderry, NH\18301-00 Lampes- 6 Dickey St - Londonderry, NH\18301-00_C3D\PRODUCTION\18301-00 COVER-DETAILS.dwg



PARKING STRIPING DETAIL

NOT TO SCALE



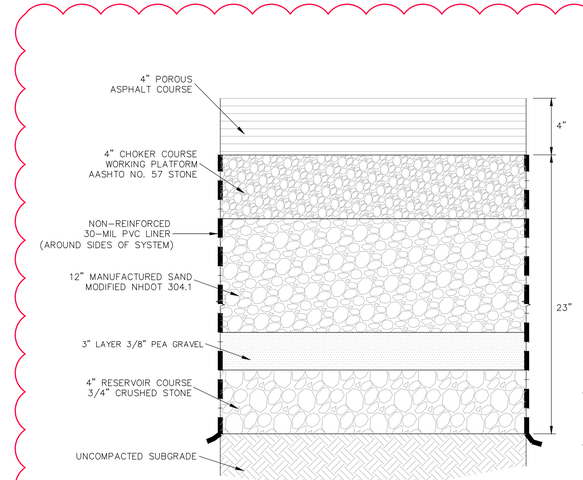
PAINTED HANDICAP SYMBOL

NOT TO SCALE

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

VERTICAL GRANITE CURB

NOT TO SCALE



TYPICAL SECTION

NOTE:
PROPOSED MIN. BED BOTTOM
SIZE IS 20'X'20' = 400 SF.

NOTES

1. SCARIFY SUBBASE.
2. BED AGGREGATE SHALL BE PLACED IMMEDIATELY AFTER APPROVAL OF SUBGRADE.
3. AGGREGATE IN BED TO BE PLACED IN MAXIMUM 8" LIFTS.
4. BASE MATERIALS SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
5. POROUS ASPHALT SHALL BE LAID IN MAXIMUM 2" LIFTS (AFTER ROLLED/COMPACTED).
6. BITUMINOUS SURFACE COURSE FOR POROUS PAVING SHALL HAVE A BITUMINOUS MIX OF 5.75% TO 6% BY WEIGHT DRY AGGREGATE AND AIR VOIDS OF 18-22% IN ACCORDANCE WITH ASTM D6390, DRAIN DOWN OF THE BINDER SHALL BE NO GREATER THAN 0.3% IF MORE ABSORPTIVE AGGREGATES, SUCH AS LIMESTONE, ARE USED IN THE MIX, THEN THE AMOUNT OF BITUMEN IS TO BE BASED ON THE TESTING PROCEDURES OUTLINED IN THE NATIONAL ASPHALT PAVEMENT ASSOCIATION'S INFORMATION SERIES 131 – "POROUS ASPHALT PAVEMENTS" (2003) OR NHDOT EQUIVALENT.
7. USE NEAT ASPHALT BINDER MODIFIED WITH PLASTIC FIBERS OR AN ELASTOMERIC POLYMER TO PRODUCE A BINDER MEETING THE REQUIREMENTS AS SPECIFIED IN AASHTO MP-1. THE ELASTOMER POLYMER SHALL BE STYRENE-BUTADIENE-STYRENE (SBS), OR APPROVED EQUAL, APPLIED AT A RATE OF 3% BY WEIGHT OF THE TOTAL BINDER. THE COMPOSITE MATERIALS SHALL BE THOROUGHLY BLENDED AT THE ASPHALT REFINERY OR TERMINAL PRIOR TO BEING LOADED INTO THE TRANSPORT VEHICLE. THE POLYMER MODIFIED ASPHALT BINDER SHALL BE HEAT AND STORAGE STABLE.
8. THE BOND BETWEEN ASPHALT BINDER AND AGGREGATE SHALL ACHIEVE A REQUIRED TENSILE STRENGTH RATIO (TSR) OF AT LEAST 80% ON THE ASPHALT MIX WHEN TESTED IN ACCORDANCE WITH AASHTO T 283. THE ASPHALTIC MIX SHALL BE TESTED FOR ITS RESISTANCE TO STRIPPING BY WATER IN ACCORDANCE WITH ASTM D-1664. IF THE ESTIMATED COATING AREA IS NOT ABOVE 95%, ANTI-STRIPPING AGENTS SHALL BE ADDED TO THE ASPHALT.
9. PAVEMENT AGGREGATE SHALL BE MINIMUM 90% CRUSHED MATERIAL AND CONFORM TO THE ATTACHED GRADATION.
10. THE TEMPERATURE OF THE BITUMINOUS MIX SHALL BE BETWEEN 300 DEGREES FAHRENHEIT AND 350 DEGREES FAHRENHEIT.
11. POROUS ASPHALT SHALL NOT BE INSTALLED ON WET SURFACES OR WHEN AMBIENT TEMPERATURE IS 50 DEGREES FAHRENHEIT OR LOWER.
12. COMPACTION OF SURFACE COURSE SHALL TAKE PLACE WHEN THE SURFACE IS COOL ENOUGH TO WITHSTAND A 10-TON ROLLER (ONE OR TWO PASSES IS ALL THAT IS REQUIRED FOR PROPER COMPACTION – MORE ROLLING COULD CAUSE A REDUCTION IN THE SURFACE COURSE POROSITY).
13. PRIOR TO INSTALLATION, THE POROUS ASPHALT MIX SHALL NOT BE STORED IN EXCESS OF 90 MINUTES.
14. TRANSPORTING OF THE MIX SHALL BE IN VEHICLES WITH SMOOTH, CLEAN DUMP BEDS THAT HAVE BEEN SPRAYED WITH A NON-PETROLEUM RELEASE AGENT. THE MIX SHALL BE COVERED DURING TRANSPORT TO CONTROL COOLING.
15. AFTER FINAL ROLLING, NO VEHICULAR TRAFFIC OF ANY KIND SHALL BE PERMITTED ON THE SURFACE UNTIL COOLING AND HARDENING HAS TAKEN PLACE (IN NO CASE LESS THAN 48 HOURS).
16. PERMEABILITY OF THE PAVEMENT SURFACE SHALL BE TESTED BY APPLICATION OF CLEAN WATER AT A RATE OF 5 GPM (USING A HOSE OR OTHER DISTRIBUTION DEVICE). ALL WATER SHOULD INFILTRATE DIRECTLY WITHOUT PUDDLE FORMATION OR SURFACE RUNOFF.
17. THE DESIGN INFILTRATION RATE OF THE BANK RUN GRAVEL IS 10 IN./HR.
16. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL SUBMIT TO THE TOWN AND ENGINEER DOCUMENTATION TO ENSURE THE BANK RUN GRAVEL IN THE DESIGN MEETS THE CRITERIA ABOVE. A PERMEABILITY TEST IS ALSO REQUIRED.

POROUS ASPHALT

WITH INFILTRATION

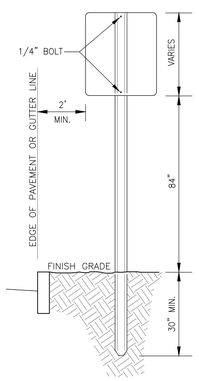
NOT TO SCALE



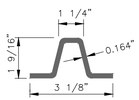
R7-8
12" x 18"



R7-8a
6" x 12"



POST SECTION



LENGTH: P-12, 12'-0"; P-14, 14'-0"; P-16, 16'-0".

WEIGHT PER LINEAR FOOT: 2.50 LBS. (MIN.)

HOLES: 3/8" DIA. 1' C-C FULL LENGTH

STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070-1080).

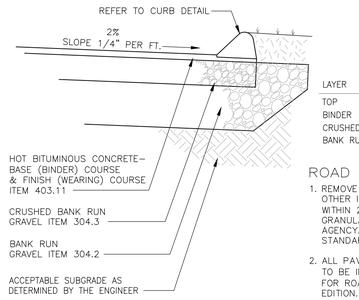
FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN, BAKED ON OR AIR DRIED, PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

NOTES

1. POSTS SHALL BE PLUMB; ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND PROPERLY REPLACED. POSTS MAY BE SET OR DRIVEN.
2. WHEN POSTS ARE SET, HOLES SHALL BE DUG TO THE PROPER DEPTH, AFTER INSERTING POSTS, THE HOLES SHALL BE BACKFILLED WITH SUITABLE MATERIAL IN LAYERS NO TO EXCEED 6" DEEP THOROUGHLY COMPACTED, CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST.
3. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED AND AFTER DRIVING THE TOP OF THE POST SHALL HAVE SUBSTANTIALLY THE SAME CROSS-SECTIONAL DIMENSION AS THE BODY OF THE POST; BATTERED HEADS WILL NOT BE ACCEPTED.
4. POSTS SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.
5. SIGNS SHALL BE ERECTED IN CONFORMANCE WITH THE REQUIEMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
6. WHEN SIGN IS IN PLACE NO PART OF POST SHALL EXTEND ABOVE THE SIGN.
7. DIMENSIONS SHOWN ARE NOMINAL.
8. ALTERNATE SECTIONS MUST BE APPROVED PRIOR TO USE.

TRAFFIC SIGN POST IN GRADE

NOT TO SCALE



LAYER	
TOP	1-1/2"
BINDER	2-1/2"
CRUSHED GRAVEL	6"
BANK RUN GRAVEL	12"

ROAD CONSTRUCTION NOTES

1. REMOVE ALL LOAM, CLAY, MUCK, STUMPS, AND OTHER IMPROPER PAVEMENT FOUNDATION MATERIAL WITHIN 2' OF SUBGRADE. REPLACE WITH COMPACTED GRANULAR FILL MATERIAL ACCEPTABLE TO APPROVING AGENCY. COMPACTION TO BE AT LEAST 95% OF STANDARD PROCTOR.
2. ALL PAVEMENT, BASE MATERIALS AND WORKMANSHIP TO BE IN COMPLIANCE WITH N.H.D.O.T. "STANDARDS FOR ROAD AND BRIDGE CONSTRUCTION" LATEST EDITION.
3. ALL PAVEMENT TO MEET AASHTO H-20 LOADING.

PARKING LOT SECTION

NOT TO SCALE

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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



TAX MAP 10 LOT 109

SITE DETAILS

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

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

FILE	DR	CK	CADFILE		
18301.00			–	18301-00 COVER-DETAILS	C-13

Feb 12, 2026 - 10:13am
F:\TFM Projects\18301 Dickey St- Londonderry, NH\18301-00 Lampes- 6 Dickey St - Londonderry, NH\18301-00_C3D\PRODUCTION\18301-00 COVER-DETAILS.dwg

LANDSCAPE NOTES

(SEE DETAILS FOR ADDITIONAL NOTES)

SITE AND SOIL PREPARATION

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

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

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

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

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

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

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

SEEDING

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

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

ACCEPTABLE SEED MIXES ARE AS FOLLOWS:

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

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

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

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

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

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

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

PLANTING

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

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

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

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

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

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

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

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

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

LANDSCAPE MAINTENANCE

LAWN

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

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

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

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

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

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

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

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

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

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

   A. USE FERTILIZER THAT WILL PROVIDE ACTUAL NITROGEN OF AT LEAST 1 lb/1,000 SF (0.45 kg/92.9 SM) TO LAWN AREA.

MEADOW

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

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

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

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

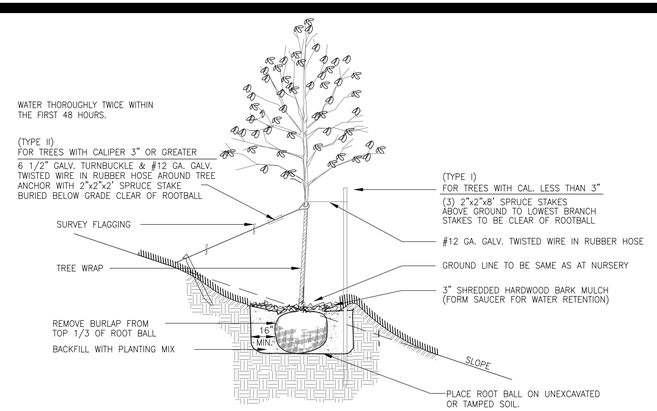
TREES AND SHRUBS:

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

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

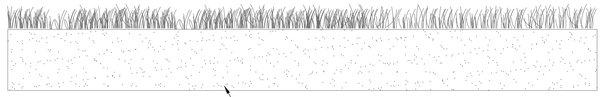
3. THE USE OF ROAD SALT AROUND TREES AND SHRUBS SHOULD BE AVOIDED OR MINIMIZED.

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



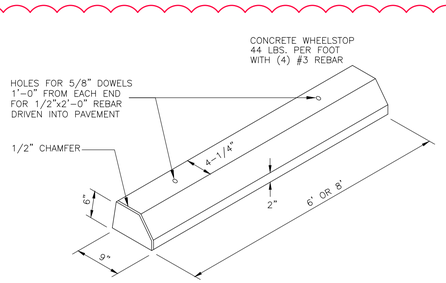
TREE PLANTING ON SLOPE DETAIL

NOT TO SCALE



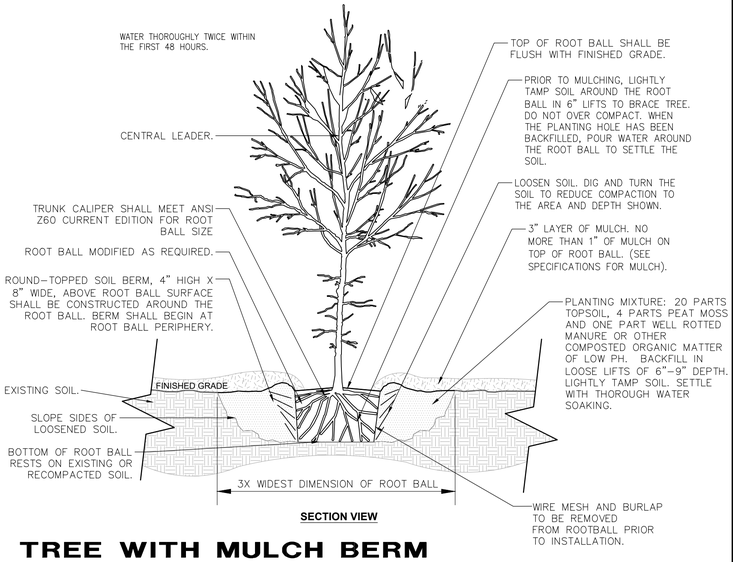
LOAM & SEED

NOT TO SCALE



CONCRETE WHEELSTOP

NOT TO SCALE



SECTION VIEW

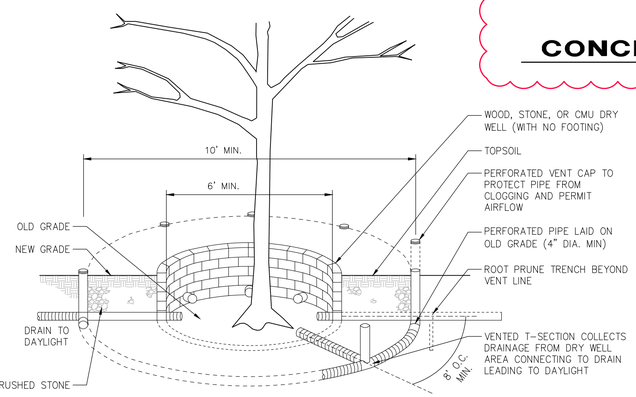
TREE WITH MULCH BERM

NOT TO SCALE

SECTION VIEW

SHRUB PLANTING

NOT TO SCALE



TREE WELL FOR AFFECTED TREES

NOT TO SCALE

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

STATE OF NEW HAMPSHIRE
ROBERT E. DUVAL
No. 7105
LICENSED PROFESSIONAL ENGINEER
12/24/25

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

TAX MAP 10 LOT 109

LANDSCAPE DETAILS

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

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

48 Constitution Drive
Bedford, NH 10110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE 18301.00 | DR | CK | CADFILE | – 18301-00 COVER-DETAILS | C-14

Feb 12, 2026 - 10:13am
F:\TFM Projects\18301 Dickey St- Londonderry, NH\18301-00 Lampes- 6 Dickey St - Londonderry, NH\18301-00_C3D\PRODUCTION\18301-00 COVER-DETAILS.dwg

Stormwater Management Report

Broadway Auto Sales

Tax Map 10 Lot 109
6 Dickey Street
Londonderry, NH 03038

Date:

August 29, 2025
Revision 1 : February 9, 2026

Prepared for:

Leon & Tamara Lampes
6 Dickey Street
Londonderry, NH 03038

TFM #: 18301.00



Prepared by:

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

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

Broadway Auto Sales
6 Dickey Street, Londonderry NH 03038

Table of Contents

Part 1: **Project Narrative** [Updated]
- Executive Summary
- Project Description
- Stormwater Methodology
- Erosion Control Measures
- Conclusion

Part 2: Site Information
- USGS Map
- Aerial Photograph
- Site Photographs
- NRCS Web Soil Survey Map
- NRCC Extreme Precipitation Table

Part 3: **Worksheets & Tables**
- BMP Worksheets [Updated]

Part 4: Drainage Analysis
- Pre-Development Drainage Calculations (Full Summary) (2, 10, 25, 50, & 100-year storms) [Updated]
- Post-Development Drainage Calculations (Full Summary) (2, 10, 25, 50, & 100-year storms) [Updated]
- 50-year -Frozen Ground Conditions – no infiltration)

Part 5: **Plans**
- Stormwater Inspection & Maintenance Plan [Updated]
- Pre-Development Drainage Area Plan [Updated]
- Post-Development Drainage Area Plan [Updated]

Executive Summary

Broadway Auto Sales is proposing to rehabilitate the existing vehicle storage area with associated site improvements such as expanded paved parking and a stormwater management area. The subject parcel is identified as Tax Map 10 Lot 109 and is located at 6 Dickey Street in Londonderry, NH.

The existing lot is a total of 0.41± acres of which approximately 0.32± acres will be disturbed as part of the proposed development. Existing topography in the proposed area of work reflects a minimal to moderate elevational change from an approximate elevation of 310 in the center of the property to an approximate elevation of 306 in the southern corner of the property (4-feet of grade change over 5 lineal feet). No wetlands were identified on the subject property.

Existing drainage flow paths will be maintained throughout the site. An open drainage system is proposed to attenuate, convey, and treat runoff from the proposed development. Porous pavement will provide treatment and manage runoff generated from the site.

The systems have been designed to maintain peak flows and volumes during all storm conditions up to and including the 100-year storm event.

- Best Management Practices are proposed to manage stormwater from the development and provide treatment, groundwater recharge and maintain existing flow rates leaving the site.
    - Twenty (20) 5'x4'x6" porous pavement sections will collect and recharge stormwater from proposed impervious surfaces on the site. The proposed filter beds installed underneath the porous pavement sections remove pollutants, reduce the peak rates of flow, and flow volume by capturing and infiltrating stormwater. The stormwater receives treatment as it percolates through the filter beds before the stormwater infiltrates into the native soils below the filter beds. Groundwater recharge is achieved through infiltration into the native soils below the filter beds.
- The Water Quality Volume (WQV) has been met by providing the required storage below the surface elevation at the top of the porous pavement sections.

Description of Project

The proposed development is the rehabilitation of an existing vehicle storage area with associated site improvements such as repaved driveway entrance, site grading, and stormwater management area. The site subject parcel is identified on the Town of Londonderry's Tax Cards as Tax Map 10 Lot 109 (approximately 0.41 acres) and is within the Commercial II (C-II) zoning district. The site is abutted by Dickey Street to the northeast, developed C-II lots to the northwest and southeast, and an undeveloped C-II lot to the southwest.

The existing lot is a total of 0.41± acres of which approximately 0.32± acres will be disturbed as part of the proposed development.

The existing conditions of Tax Map 10 Lot 109 consist of the existing Broadway Auto Sales car wholesale dealership. Existing topography in the proposed area of work reflects a minimal to moderate elevational change from an approximate elevation of 310 in the center of the property to an approximate elevation of 306 in the southern corner of the property (4-feet of grade change over 5 lineal feet). No wetlands were identified on the subject property.

Existing drainage flow paths will be maintained throughout the site. An open drainage system is proposed to attenuate, convey, and treat runoff from the proposed development. Porous pavement will provide treatment and manage runoff generated from the site.

Town Site Plan Approval will be required for the proposed site development.

The objectives for the post-development drainage design are to use best management practices to attenuate flows, provide treatment of stormwater runoff and maintain groundwater recharge. Recharge of stormwater will take place on the northwestern portion of the property utilizing porous pavement area.

The intent of this report is: 1) to analyze the rate of runoff from the site for the pre- and post-development conditions. The drainage system will be designed to maintain the current peak rate of runoff from the site, and 2) to provide stormwater treatment and recharge for the runoff from the development prior to discharging runoff from the site in accordance with the requirements of NHDES Alteration of Terrain and the Town of Londonderry.

Storm Water Methodology

Pre-Development Conditions

Based on the existing topography, four (4) subcatchments and four (4) points of interest have been identified. The points of interest (POI) were defined by abutting parcels and Right-of-Ways (ROW). POI-A represents the runoff exiting the site towards Dickey Street. POI-B represents the runoff exiting the site towards Tax Map 10 Lot 108. POI-C represents the runoff exiting the site towards Tax Map 10 Lot 121. POI-D represents the runoff exiting the site towards Tax Map 10 Lot 110.

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) was used to determine on-site soil types. This mapping resulted in hydrologic soil group (HSG) type A soils.

To model the site drainage, the HydroCAD Version 10.20-5c program has been used. The software is based on the SCS TR-20 technique used for modeling the hydrology and hydraulics of storm water runoff. The 2-year, 10-year, 25-year, 50-year, and 100-year storm-events are included per the requirements of the NHDES AoT and Town of Londonderry.

Rainfall amounts were obtained from the Northeast Regional Climate Center and NRCS Storm Type-III was utilized for the HydroCAD Analysis. An Extreme Precipitation Table has been provided in Section 2 of this Report.

Post-Development Conditions

Based on the proposed topography, five (5) subcatchments have been identified. All pre-development points of interest have been analyzed in the post-development conditions. After design of the site, POI-A, POI-B, POI-C, POI-D. and abutters at POI 10-105 and POI 10 -106 remain unaffected from the proposed development.

All stormwater runoff generated internal of the site will be directed towards the porous pavement area which has been strategically located in an existing low-point of the property. Stormwater runoff directed to the porous pavement area will receive treatment prior to infiltration. Twenty (20) 5’x4’x6” porous pavement sections will be located in the northwestern portion of the property in an area that was formerly a gravel driveway into the site. The proposed location of the drainage practice will accommodate vehicle storage for cars and trucks to be sold at an appointment-only basis. Stormwater runoff generated in areas outside of the vehicle storage area will maintain the existing flowpaths prior to development.

The objectives for the post-development drainage design are to use best management practices to attenuate the flow, provide treatment to collected stormwater and maintain groundwater recharge.

There is no proposed increase in discharge from the site up to and including the 100-year storm event.

Groundwater Recharge

The required GRV for the HSG A soils which have been replaced by impervious cover per AoT regulations has been provided within the porous pavement area. Supporting calculations have been provided on the GRV and Best Management Practices (BMP) Worksheet, Section 3 of this Report.

Stormwater Treatment

Best Management Practices are proposed to manage the stormwater from the development and provide treatment, groundwater recharge and maintain existing flow rates leaving the site.

The proposed porous pavement sections are designed to maintain existing recharge rates and to preserve groundwater levels. Pollutant removal is achieved as stormwater percolates through the filter bed installed underneath the porous pavement sections.

The Water Quality Volume (WQV) is fully detained within the proposed porous pavement area providing the storm water treatment.

Test pits and infiltration testing were performed as part of the project design to identify Estimated Seasonal High-Water Table (ESHWT) and subgrade infiltration rates. The infiltration rate within the proposed location of the porous pavement area measured to be 20 inches per hour. After applying a factor of safety of 2, the infiltration rates used in these calculations are 10in/hr.

Frozen Conditions

The below table illustrates that the peak rates of runoff will be mitigated at locations where stormwater leaves the property in post-development condition to not create an adverse impact on abutters or downstream interests in frozen conditions (no infiltration).

Table 1: POI – D
50-Year -Pre- to Post-development Frozen Conditions Peak Rate Flows (CFS)

Storm Event	Pre (cfs)	Post (cfs)
50-Year	0.51	0.26

Erosion Control Measures

Erosion Control Measures are found on the Site Preparation and Demolition Plan within the plan set. The erosion control and construction sequence notes on the “Site Preparation Details” sheet contains specifications for stabilizing disturbed areas and limiting the length of time these areas are exposed.

Temporary Erosion Control Measures

Silt sock and/or mulch berms are proposed along the edges and downslope of site work to prevent sediment from discharging from the project area. A stabilized construction entrance is proposed to prevent sediment from being tracked onto the Dickey Street during construction.

Permanent Erosion Control Measures

An open drainage system is proposed on the site to capture and infiltrate stormwater runoff from the project. Areas disturbed during construction which will not be impervious in post-development conditions will be loamed and seeded to restore the areas upon completion of construction.

Flood Protection

Examination of the Flood Insurance Rate Map for Rockingham County New Hampshire (All Jurisdictions), Map Numbered 33015C0339E, Effective Date: May 17, 2005, indicates no portion of the project is located within the floodplain.

Conclusion

Peak Rate Flows

There is no increase in the peak rate of runoff or in stormwater volumes at the discharge points from this project site.

Flow (cfs):

POI	2-YR		10-YR		25-YR		50-YR		100-YR	
	PRE	POST	PRE	POST	PRE	POST	PRE	POST	PRE	POST
A	0.04	0.02	0.13	0.13	0.21	0.20	0.29	0.28	0.39	0.38
B	0.03	0.00	0. 096	0.00	0.16	0.00	0.323	0.01	0.31	0.02
C	0.03	0.00	0.13	0.01	0.14	0.02	0.35	0.06	0.49	0.11
D	0.00	0.00	0.13	0.00	0.37	0.01	0.51	0.08	0.68	0.13
10-105	0	0	0	0	0	0	0	0	0	0
10-106	0	0	0	0	0	0	0	0	0	0

Volume (cf):

POI	2-YR		10-YR		25-YR		50-YR		100-YR	
	PRE	POST	PRE	POST	PRE	POST	PRE	POST	PRE	POST
A	170	162	425	301	665	495	909	696	1,220	958
B	132	0	356	7	573	32	796	72	1,084	135
C	155	3	473	59	794	144	1,153	248	1,573	399
D	0	0	760	15	1,179	51	1,603	323	2,142	750
10-105	0	0	0	0	0	0	0	0	0	0
10-106	0	0	0	0	0	0	0	0	0	0

Treatment

The proposed porous pavement sections have been designed to provide adequate treatment via porous pavement with subsurface infiltration of stormwater runoff associated with the proposed development.

USGS Map



Legend

- State
- County
- City/Town
- World_Street_Map

Map Scale

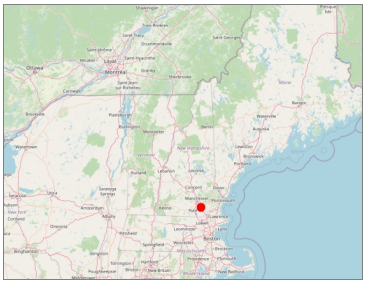
1: 5,000

© NH GRANIT, www.granit.unh.edu

Map Generated: 8/22/2025

Notes

Prepared by: TFMoran, Inc.



Aerial Map



Legend

- State
- County
- City/Town
- World Imagery
- Low Resolution 15m Imager
- High Resolution 60cm Image
- High Resolution 30cm Image
- Citations
- 2.4m Resolution Metadata

Map Scale

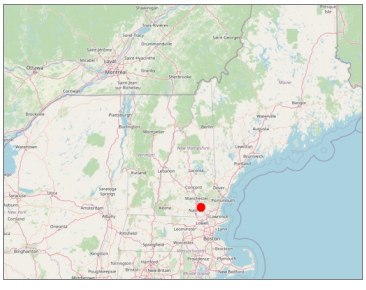
1: 5,000

© NH GRANIT, www.granit.unh.edu

Map Generated: 8/22/2025

Notes

Prepared by: TFMoran, Inc.



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Name and Number and/or Project Title: Broadway Auto Sales 6 Dickey Street, Londonderry, NH 03053	
PHOTO LOG	
Photo #	Photo Location and description
1	Dickey Street. Looking west towards the southern site entrance and existing building. (8/6/2025)
2	Dickey Street. Looking west towards the northern site entrance and Tax Map 10 Lot 110. (8/6/2025)
3	Dickey Street. Looking southwest down the northern site entrance. (8/6/2025)
4	Northern site entrance. Looking south towards the vehicle storage area. (8/6/2025)
5	Vehicle storage area. Looking southeast within the vehicle storage area. (8/6/2025)
6	Vehicle storage area. Looking southeast within the vehicle storage area. (8/6/2025)
7	Vehicle storage area. Looking east towards the existing house and southern site entrance. (8/6/2025)
8	Southern site entrance. Looking northeast towards Dickey Street. (8/6/2025)
9	GIS Aerial Imagery of Tax Map 10, Lot 109 (shown in blue).

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Photo 1



Dickey Street. Looking west towards the southern site entrance and existing building. (8/6/2025)

Photo 2



Dickey Street. Looking west towards the northern site entrance and Tax Map 10 Lot 110. (8/6/2025)

Photo 3



Dickey Street. Looking southwest down the northern site entrance. (8/6/2025)

Photo 4



Northern site entrance. Looking south towards the vehicle storage area. (8/6/2025)

Photo 5



Vehicle storage area. Looking southeast within the vehicle storage area. (8/6/2025)

Photo 6



Vehicle storage area. Looking southeast within the vehicle storage area. (8/6/2025)

Photo 7



Vehicle storage area. Looking east towards the existing house and southern site entrance. (8/6/2025)

Photo 8



Southern site entrance. Looking northeast towards Dickey Street. (8/6/2025)

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Photo 11



GIS Aerial Imagery of Tax Map 10, Lot 109 (shown in blue).

Custom Soil Resource Report
Soil Map



Map Scale: 1:590 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 25 50 100 150

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

United States Department of Agriculture

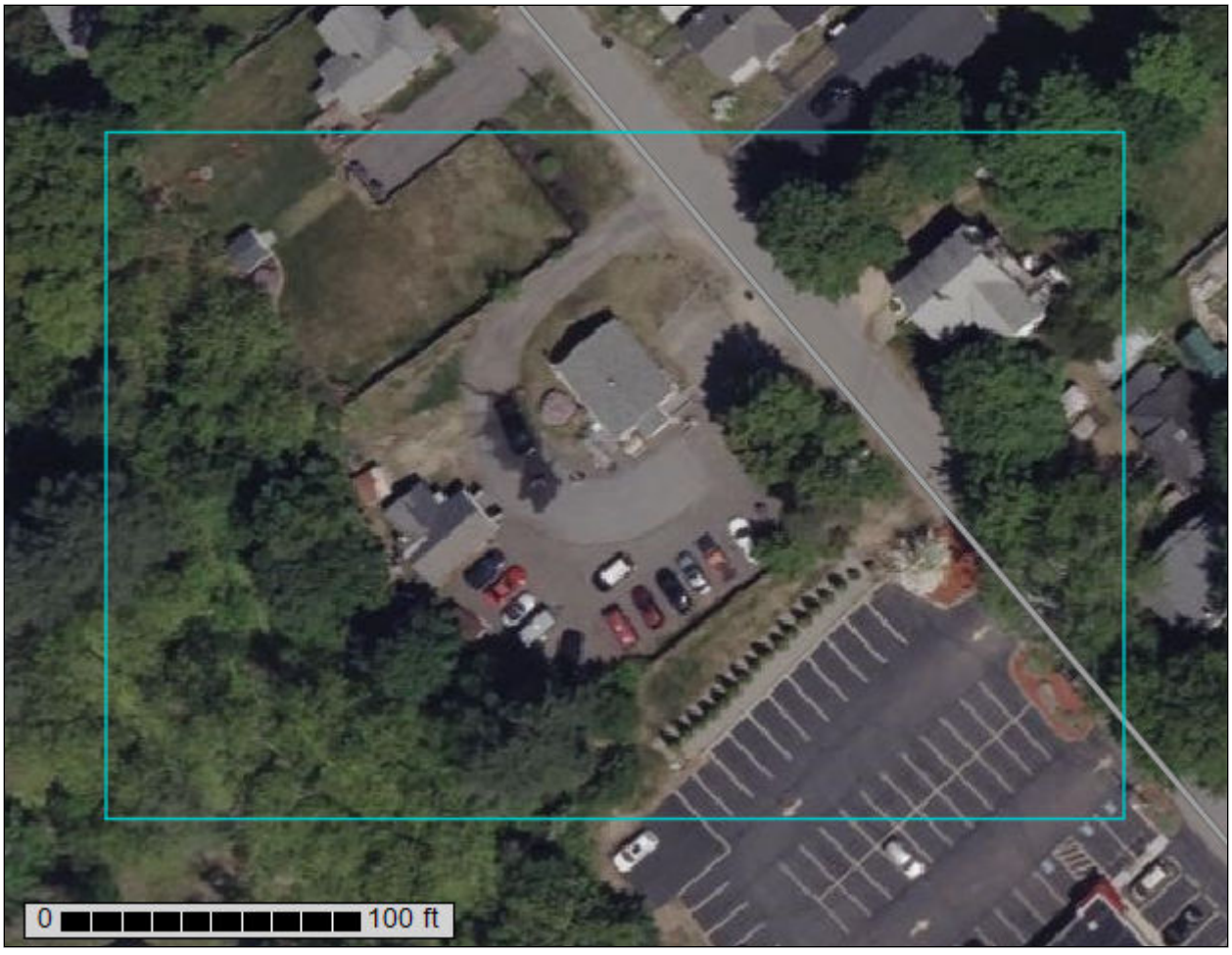
NRCS

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 Rockingham County, New Hampshire

18301-00 Lampes - NRCS Soils Report



February 10, 2025

Preface

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

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

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

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

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

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

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
Rockingham County, New Hampshire.....13
699—Urban land.....13
799—Urban land-Canton complex, 3 to 15 percent slopes.....13
References.....15

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: 1:590 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 25 50 100 150

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 1:24,000.

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: Rockingham County, New Hampshire
Survey Area Data: Version 27, Sep 3, 2024

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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
699	Urban land	0.1	2.8%
799	Urban land-Canton complex, 3 to 15 percent slopes	1.7	97.2%
Totals for Area of Interest		**1.8**	**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.

Rockingham County, New Hampshire

699—Urban land

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Canton and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam
H2 - 5 to 21 inches: gravelly fine sandy loam
H3 - 21 to 60 inches: 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 5.3 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

Udorthents

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

Boxford and eldridge

Percent of map unit: 4 percent
Hydric soil rating: No

Squamscott and scitico

Percent of map unit: 4 percent
Landform: Marine terraces
Hydric soil rating: Yes

Scituate and newfields

Percent of map unit: 4 percent
Hydric soil rating: No

Chatfield

Percent of map unit: 4 percent
Hydric soil rating: No

Walpole

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

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

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

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

Extreme Precipitation in New York & New England

An Interactive Web Tool for Extreme Precipitation Analysis

About this Project | Data & Products | Daily Monitoring | Documentation

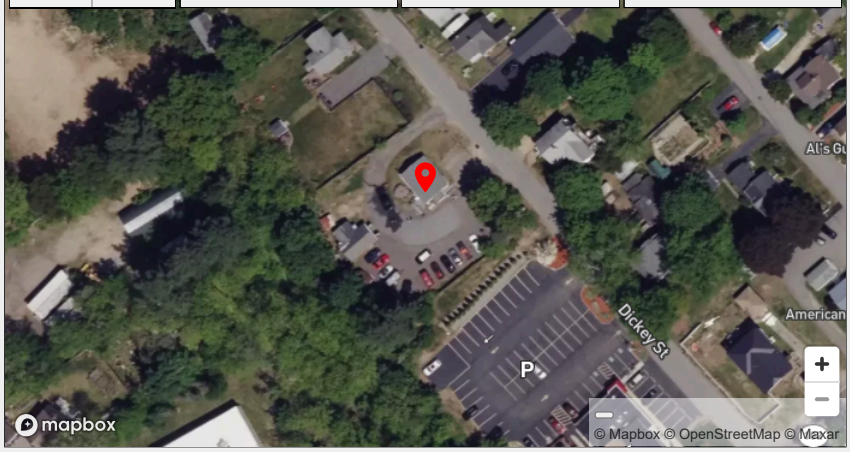
Select Product

- Extreme Precipitation Tables - HTML
- Extreme Precipitation Tables - Text/CSV
- Partial Duration Series - by Point
- Partial Duration Series - by Station
- Distribution Curves - Graphical
- Distribution Curves - Text/TBL
- Intensity Frequency Duration Graphs
- Precipitation Frequency Duration Graphs
- GIS Data Files
- Regional/State Maps

Select Location *Double-click map to place a marker, or enter address or latitude/longitude.*

Hybrid | Map | Satellite | Terrain

Locate by Address | Locate by Lat/Lon (42.87° N, -71.33° W) | Locate by State/County



Select Options

Smoothing: Yes

Delivery: Popup

Submit

Version 2.0 Copyright 2010-2022
This project is a joint collaboration between:
Northeast Regional Climate Center (NRCC) | Natural Resources Conservation Service (NRCS)
Cornell University
Contact: precip@cornell.edu

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	New Hampshire
Location	New Hampshire, United States
Latitude	42.876 degrees North
Longitude	71.336 degrees West
Elevation	90 feet
Date/Time	Mon Feb 10 2025 16:00:08 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	0.27	0.41	0.51	0.67	0.84	1.05	**1yr**	0.72	1.00	1.22	1.54	1.95	2.47	2.69	**1yr**	2.19	2.59	3.01	3.68	4.28	**1yr**
2yr	0.33	0.50	0.63	0.83	1.04	1.31	**2yr**	0.89	1.19	1.51	1.89	2.36	2.96	3.28	**2yr**	2.62	3.15	3.66	4.36	4.96	**2yr**
5yr	0.39	0.60	0.75	1.01	1.29	1.64	**5yr**	1.11	1.49	1.91	2.39	3.00	3.75	4.19	**5yr**	3.32	4.03	4.65	5.50	6.21	**5yr**
10yr	0.43	0.68	0.86	1.17	1.52	1.96	**10yr**	1.32	1.77	2.28	2.87	3.60	4.48	5.04	**10yr**	3.97	4.85	5.58	6.54	7.36	**10yr**
25yr	0.51	0.82	1.04	1.43	1.90	2.46	**25yr**	1.64	2.21	2.88	3.64	4.57	5.68	6.44	**25yr**	5.03	6.19	7.10	8.25	9.22	**25yr**
50yr	0.57	0.92	1.19	1.66	2.25	2.95	**50yr**	1.94	2.62	3.46	4.39	5.49	6.80	7.76	**50yr**	6.02	7.46	8.52	9.84	10.94	**50yr**
100yr	0.66	1.07	1.38	1.96	2.67	3.51	**100yr**	2.30	3.11	4.14	5.25	6.57	8.15	9.35	**100yr**	7.21	8.99	10.24	11.74	12.98	**100yr**
200yr	0.75	1.23	1.59	2.29	3.16	4.20	**200yr**	2.73	3.69	4.96	6.30	7.89	9.76	11.28	**200yr**	8.64	10.85	12.30	14.01	15.41	**200yr**
500yr	0.91	1.50	1.95	2.83	3.96	5.29	**500yr**	3.42	4.63	6.27	7.99	10.02	12.41	14.46	**500yr**	10.98	13.90	15.70	17.71	19.36	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.35	0.43	0.57	0.71	0.86	**1yr**	0.61	0.84	1.09	1.36	1.64	2.18	2.54	**1yr**	1.93	2.44	2.71	3.15	3.84	**1yr**
2yr	0.31	0.48	0.59	0.80	0.99	1.18	**2yr**	0.86	1.15	1.35	1.78	2.26	2.82	3.14	**2yr**	2.49	3.02	3.52	4.20	4.77	**2yr**
5yr	0.36	0.55	0.69	0.94	1.20	1.41	**5yr**	1.03	1.38	1.59	2.07	2.64	3.48	3.73	**5yr**	3.08	3.59	4.18	5.03	5.66	**5yr**
10yr	0.40	0.61	0.75	1.05	1.36	1.60	**10yr**	1.18	1.56	1.81	2.33	2.96	4.00	4.22	**10yr**	3.54	4.06	4.77	5.76	6.38	**10yr**
25yr	0.45	0.69	0.86	1.23	1.62	1.87	**25yr**	1.39	1.83	2.14	2.72	3.44	4.82	4.96	**25yr**	4.26	4.77	5.69	6.91	7.53	**25yr**
50yr	0.50	0.76	0.95	1.36	1.83	2.12	**50yr**	1.58	2.07	2.42	3.07	3.86	5.53	5.63	**50yr**	4.90	5.41	6.52	7.95	8.44	**50yr**
100yr	0.56	0.84	1.06	1.53	2.10	2.39	**100yr**	1.81	2.34	2.75	3.46	4.35	5.45	6.37	**100yr**	4.83	6.12	7.49	9.15	9.46	**100yr**
200yr	0.62	0.93	1.18	1.71	2.39	2.70	**200yr**	2.06	2.64	3.11	3.90	4.90	6.06	7.50	**200yr**	5.37	7.22	8.61	10.55	10.57	**200yr**
500yr	0.72	1.07	1.38	2.00	2.85	3.16	**500yr**	2.46	3.09	3.68	4.58	5.74	6.95	8.96	**500yr**	6.15	8.61	10.40	12.78	12.24	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.57	0.76	0.94	1.09	**1yr**	0.81	1.07	1.23	1.63	2.07	2.74	2.85	**1yr**	2.43	2.74	3.38	4.12	4.79	**1yr**
2yr	0.34	0.52	0.64	0.87	1.08	1.28	**2yr**	0.93	1.25	1.45	1.89	2.42	3.13	3.50	**2yr**	2.77	3.36	3.85	4.58	5.27	**2yr**
5yr	0.42	0.65	0.80	1.10	1.40	1.63	**5yr**	1.21	1.60	1.87	2.40	3.04	4.05	4.69	**5yr**	3.59	4.51	5.12	6.01	6.81	**5yr**
10yr	0.51	0.78	0.97	1.35	1.74	1.99	**10yr**	1.50	1.94	2.27	2.88	3.64	5.02	5.91	**10yr**	4.44	5.68	6.39	7.43	8.40	**10yr**
25yr	0.65	0.99	1.23	1.76	2.32	2.58	**25yr**	2.00	2.53	2.94	3.67	4.59	6.69	8.05	**25yr**	5.92	7.74	8.55	9.82	11.00	**25yr**
50yr	0.78	1.19	1.48	2.13	2.87	3.16	**50yr**	2.48	3.09	3.58	4.41	5.49	8.31	10.18	**50yr**	7.35	9.79	10.64	12.12	13.57	**50yr**
100yr	0.95	1.44	1.80	2.61	3.57	3.86	**100yr**	3.08	3.77	4.36	5.30	6.55	11.55	12.86	**100yr**	10.22	12.36	13.23	14.97	16.77	**100yr**
200yr	1.15	1.73	2.20	3.18	4.43	4.72	**200yr**	3.83	4.61	5.32	6.37	7.83	14.61	15.90	**200yr**	12.93	15.29	16.45	18.49	20.75	**200yr**
500yr	1.49	2.22	2.86	4.15	5.90	6.17	**500yr**	5.09	6.03	6.92	8.14	9.93	19.99	21.61	**500yr**	17.69	20.78	21.94	24.45	27.52	**500yr**

Powered by ACIS Northeast Regional Climate Center

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Porous Pavement_ Rev 1 (Node 1P)**

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

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.19	ac	A = Area draining to the practice	
0.18	ac	A_I = Impervious area draining to the practice	
0.93	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.88	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.17	ac-in	WQV= 1" x Rv x A	
625	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
156	cf	25% x WQV (check calc for sediment forebay volume)	
469	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
400	sf	A_{SA} = Surface area of the practice	
10.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
n/a	Yes/No	(Use the calculations below)	
1.9	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**
306.66	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
302.50	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
302.50	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
306.66	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
4.16	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
4.16	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
308.92	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
308.66	ft	Elevation of the top of the practice	
NO		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
	:1	Pond side slopes	**≥ 3:1**
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
Concrete		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
0.0	acres	A_{SA} = Surface area of the pervious pavement	
19.5	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
12.0	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet	C-13	Note what sheet in the plan set contains the filter course spec.	

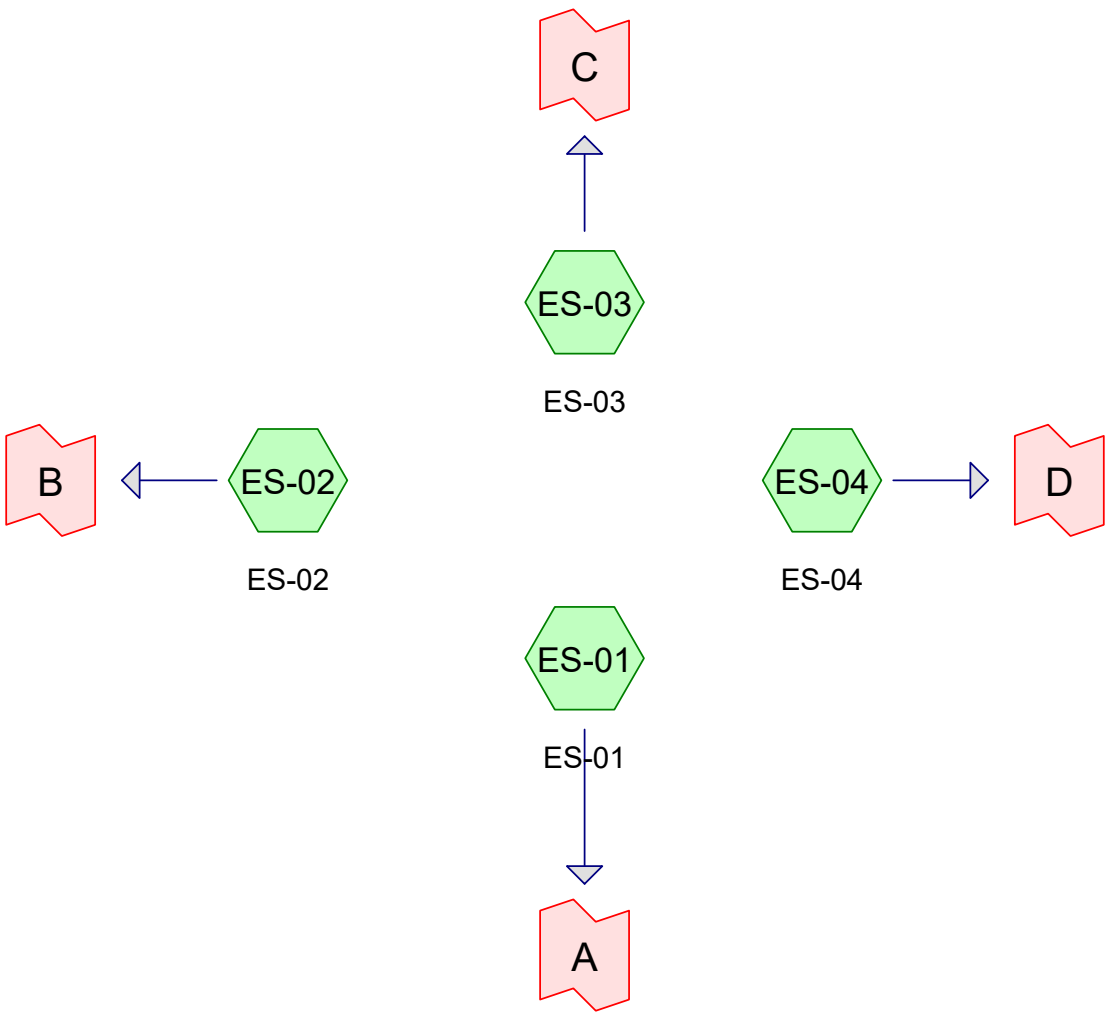
1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

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:

To accommodate a higher tributary area ratio, the design incorporates elevated (3")curbing, which acts as a containment measure for increased run-on volumes.



Subcat Reach Pond Link

Routing Diagram for 18301-00 Lampes - Pre _r1
Prepared by T F Moran Inc, Printed 2/16/2026
HydroCAD® 10.20-8a s/n 00866 © 2025 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
5,579	39	>75% Grass cover, Good, HSG A (ES-01, ES-02, ES-03, ES-04)
6,801	76	Gravel roads, HSG A (ES-01, ES-02, ES-03, ES-04)
2,075	98	Paved parking, HSG A (ES-01, ES-02, ES-04)
1,747	98	Roofs, HSG A (ES-01, ES-03, ES-04)
158	98	Unconnected pavement, HSG A (decks) (ES-01, ES-04)
1,310	30	Woods, Good, HSG A (ES-01, ES-02, ES-03)
17,670	**66**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
17,670	HSG A	ES-01, ES-02, ES-03, ES-04
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
17,670		**TOTAL AREA**

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

Subcatchment ES-01: ES-01 Runoff Area=3,361 sf 21.84% Impervious Runoff Depth>0.61"
Tc=6.0 min CN=68 Runoff=0.04 cfs 170 cf

Subcatchment ES-02: ES-02 Runoff Area=3,245 sf 11.40% Impervious Runoff Depth>0.49"
Flow Length=91' Tc=8.9 min CN=65 Runoff=0.03 cfs 132 cf

Subcatchment ES-03: ES-03 Runoff Area=5,318 sf 10.91% Impervious Runoff Depth>0.35"
Flow Length=92' Tc=6.4 min CN=61 Runoff=0.03 cfs 155 cf

Subcatchment ES-04: ES-04 Runoff Area=5,746 sf 39.96% Impervious Runoff Depth>0.65"
Tc=6.0 min CN=69 Runoff=0.08 cfs 310 cf

Link A: Inflow=0.04 cfs 170 cf
Primary=0.04 cfs 170 cf

Link B: Inflow=0.03 cfs 132 cf
Primary=0.03 cfs 132 cf

Link C: Inflow=0.03 cfs 155 cf
Primary=0.03 cfs 155 cf

Link D: Inflow=0.08 cfs 310 cf
Primary=0.08 cfs 310 cf

Total Runoff Area = 17,670 sf Runoff Volume = 766 cf Average Runoff Depth = 0.52"
77.48% Pervious = 13,690 sf 22.52% Impervious = 3,980 sf

Summary for Subcatchment ES-01: ES-01

Runoff = 0.04 cfs @ 12.11 hrs, Volume= 170 cf, Depth> 0.61"
Routed to Link A :

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 2-YR Rainfall=2.96"

	Area (sf)	CN	Description
	980	39	>75% Grass cover, Good, HSG A
	115	30	Woods, Good, HSG A
	462	98	Roofs, HSG A
	1,532	76	Gravel roads, HSG A
*	57	98	Unconnected pavement, HSG A (decks)
	215	98	Paved parking, HSG A
	3,361	68	Weighted Average
	2,627		78.16% Pervious Area
	734		21.84% Impervious Area
	57		7.77% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment ES-02: ES-02

Runoff = 0.03 cfs @ 12.16 hrs, Volume= 132 cf, Depth> 0.49"
Routed to Link B :

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 2-YR Rainfall=2.96"

	Area (sf)	CN	Description
	549	39	>75% Grass cover, Good, HSG A
	504	30	Woods, Good, HSG A
	1,822	76	Gravel roads, HSG A
	370	98	Paved parking, HSG A
	3,245	65	Weighted Average
	2,875		88.60% Pervious Area
	370		11.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	62	0.0100	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.96"
0.4	4	0.1100	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.96"
7.4	25	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.96"
8.9	91	Total			

Summary for Subcatchment ES-03: ES-03

Runoff = 0.03 cfs @ 12.16 hrs, Volume= 155 cf, Depth> 0.35"
Routed to Link C :

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 2-YR Rainfall=2.96"

Area (sf)	CN	Description
1,589	39	>75% Grass cover, Good, HSG A
691	30	Woods, Good, HSG A
580	98	Roofs, HSG A
2,458	76	Gravel roads, HSG A
5,318	61	Weighted Average
4,738		89.09% Pervious Area
580		10.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	44	0.0400	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.96"
1.5	19	0.0900	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.96"
4.4	29	0.1000	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.96"
6.4	92	Total			

Summary for Subcatchment ES-04: ES-04

Runoff = 0.08 cfs @ 12.11 hrs, Volume= 310 cf, Depth> 0.65"
Routed to Link D :

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 2-YR Rainfall=2.96"

	Area (sf)	CN	Description
	2,461	39	>75% Grass cover, Good, HSG A
	705	98	Roofs, HSG A
	989	76	Gravel roads, HSG A
*	101	98	Unconnected pavement, HSG A (decks)
	1,490	98	Paved parking, HSG A
	5,746	69	Weighted Average
	3,450		60.04% Pervious Area
	2,296		39.96% Impervious Area
	101		4.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Link A:

Inflow Area = 3,361 sf, 21.84% Impervious, Inflow Depth > 0.61" for 2-YR event
Inflow = 0.04 cfs @ 12.11 hrs, Volume= 170 cf
Primary = 0.04 cfs @ 12.11 hrs, Volume= 170 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link B:

Inflow Area = 3,245 sf, 11.40% Impervious, Inflow Depth > 0.49" for 2-YR event
Inflow = 0.03 cfs @ 12.16 hrs, Volume= 132 cf
Primary = 0.03 cfs @ 12.16 hrs, Volume= 132 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link C:

Inflow Area = 5,318 sf, 10.91% Impervious, Inflow Depth > 0.35" for 2-YR event
Inflow = 0.03 cfs @ 12.16 hrs, Volume= 155 cf
Primary = 0.03 cfs @ 12.16 hrs, Volume= 155 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link D:

Inflow Area = 5,746 sf, 39.96% Impervious, Inflow Depth > 0.65" for 2-YR event
Inflow = 0.08 cfs @ 12.11 hrs, Volume= 310 cf
Primary = 0.08 cfs @ 12.11 hrs, Volume= 310 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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 ES-01: ES-01 Runoff Area=3,361 sf 21.84% Impervious Runoff Depth>1.52"
Tc=6.0 min CN=68 Runoff=0.13 cfs 425 cf

Subcatchment ES-02: ES-02 Runoff Area=3,245 sf 11.40% Impervious Runoff Depth>1.32"
Flow Length=91' Tc=8.9 min CN=65 Runoff=0.09 cfs 356 cf

Subcatchment ES-03: ES-03 Runoff Area=5,318 sf 10.91% Impervious Runoff Depth>1.07"
Flow Length=92' Tc=6.4 min CN=61 Runoff=0.13 cfs 473 cf

Subcatchment ES-04: ES-04 Runoff Area=5,746 sf 39.96% Impervious Runoff Depth>1.59"
Tc=6.0 min CN=69 Runoff=0.23 cfs 760 cf

Link A: Inflow=0.13 cfs 425 cf
Primary=0.13 cfs 425 cf

Link B: Inflow=0.09 cfs 356 cf
Primary=0.09 cfs 356 cf

Link C: Inflow=0.13 cfs 473 cf
Primary=0.13 cfs 473 cf

Link D: Inflow=0.23 cfs 760 cf
Primary=0.23 cfs 760 cf

Total Runoff Area = 17,670 sf Runoff Volume = 2,013 cf Average Runoff Depth = 1.37"
77.48% Pervious = 13,690 sf 22.52% Impervious = 3,980 sf

Summary for Subcatchment ES-01: ES-01

Runoff = 0.13 cfs @ 12.10 hrs, Volume= 425 cf, Depth> 1.52"
Routed to Link A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.48"

	Area (sf)	CN	Description
	980	39	>75% Grass cover, Good, HSG A
	115	30	Woods, Good, HSG A
	462	98	Roofs, HSG A
	1,532	76	Gravel roads, HSG A
*	57	98	Unconnected pavement, HSG A (decks)
	215	98	Paved parking, HSG A
	3,361	68	Weighted Average
	2,627		78.16% Pervious Area
	734		21.84% Impervious Area
	57		7.77% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment ES-02: ES-02

Runoff = 0.09 cfs @ 12.14 hrs, Volume= 356 cf, Depth> 1.32"
Routed to Link B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.48"

Area (sf)	CN	Description
549	39	>75% Grass cover, Good, HSG A
504	30	Woods, Good, HSG A
1,822	76	Gravel roads, HSG A
370	98	Paved parking, HSG A
3,245	65	Weighted Average
2,875		88.60% Pervious Area
370		11.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	62	0.0100	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.96"
0.4	4	0.1100	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.96"
7.4	25	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.96"
8.9	91	Total			

Summary for Subcatchment ES-03: ES-03

Runoff = 0.13 cfs @ 12.11 hrs, Volume= 473 cf, Depth> 1.07"
Routed to Link C :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.48"

Area (sf)	CN	Description
1,589	39	>75% Grass cover, Good, HSG A
691	30	Woods, Good, HSG A
580	98	Roofs, HSG A
2,458	76	Gravel roads, HSG A
5,318	61	Weighted Average
4,738		89.09% Pervious Area
580		10.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	44	0.0400	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.96"
1.5	19	0.0900	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.96"
4.4	29	0.1000	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.96"
6.4	92	Total			

Summary for Subcatchment ES-04: ES-04

Runoff = 0.23 cfs @ 12.10 hrs, Volume= 760 cf, Depth> 1.59"
Routed to Link D :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.48"

	Area (sf)	CN	Description
	2,461	39	>75% Grass cover, Good, HSG A
	705	98	Roofs, HSG A
	989	76	Gravel roads, HSG A
*	101	98	Unconnected pavement, HSG A (decks)
	1,490	98	Paved parking, HSG A
	5,746	69	Weighted Average
	3,450		60.04% Pervious Area
	2,296		39.96% Impervious Area
	101		4.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Link A:

Inflow Area = 3,361 sf, 21.84% Impervious, Inflow Depth > 1.52" for 10-YR event
Inflow = 0.13 cfs @ 12.10 hrs, Volume= 425 cf
Primary = 0.13 cfs @ 12.10 hrs, Volume= 425 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link B:

Inflow Area = 3,245 sf, 11.40% Impervious, Inflow Depth > 1.32" for 10-YR event
Inflow = 0.09 cfs @ 12.14 hrs, Volume= 356 cf
Primary = 0.09 cfs @ 12.14 hrs, Volume= 356 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link C:

Inflow Area = 5,318 sf, 10.91% Impervious, Inflow Depth > 1.07" for 10-YR event
Inflow = 0.13 cfs @ 12.11 hrs, Volume= 473 cf
Primary = 0.13 cfs @ 12.11 hrs, Volume= 473 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link D:

Inflow Area = 5,746 sf, 39.96% Impervious, Inflow Depth > 1.59" for 10-YR event
Inflow = 0.23 cfs @ 12.10 hrs, Volume= 760 cf
Primary = 0.23 cfs @ 12.10 hrs, Volume= 760 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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 ES-01: ES-01 Runoff Area=3,361 sf 21.84% Impervious Runoff Depth>2.38"
Tc=6.0 min CN=68 Runoff=0.21 cfs 665 cf

Subcatchment ES-02: ES-02 Runoff Area=3,245 sf 11.40% Impervious Runoff Depth>2.12"
Flow Length=91' Tc=8.9 min CN=65 Runoff=0.16 cfs 573 cf

Subcatchment ES-03: ES-03 Runoff Area=5,318 sf 10.91% Impervious Runoff Depth>1.79"
Flow Length=92' Tc=6.4 min CN=61 Runoff=0.24 cfs 794 cf

Subcatchment ES-04: ES-04 Runoff Area=5,746 sf 39.96% Impervious Runoff Depth>2.46"
Tc=6.0 min CN=69 Runoff=0.37 cfs 1,179 cf

Link A: Inflow=0.21 cfs 665 cf
Primary=0.21 cfs 665 cf

Link B: Inflow=0.16 cfs 573 cf
Primary=0.16 cfs 573 cf

Link C: Inflow=0.24 cfs 794 cf
Primary=0.24 cfs 794 cf

Link D: Inflow=0.37 cfs 1,179 cf
Primary=0.37 cfs 1,179 cf

Total Runoff Area = 17,670 sf Runoff Volume = 3,211 cf Average Runoff Depth = 2.18"
77.48% Pervious = 13,690 sf 22.52% Impervious = 3,980 sf

Summary for Subcatchment ES-01: ES-01

Runoff = 0.21 cfs @ 12.10 hrs, Volume= 665 cf, Depth> 2.38"
Routed to Link A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.68"

	Area (sf)	CN	Description
	980	39	>75% Grass cover, Good, HSG A
	115	30	Woods, Good, HSG A
	462	98	Roofs, HSG A
	1,532	76	Gravel roads, HSG A
*	57	98	Unconnected pavement, HSG A (decks)
	215	98	Paved parking, HSG A
	3,361	68	Weighted Average
	2,627		78.16% Pervious Area
	734		21.84% Impervious Area
	57		7.77% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment ES-02: ES-02

Runoff = 0.16 cfs @ 12.14 hrs, Volume= 573 cf, Depth> 2.12"
Routed to Link B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.68"

Area (sf)	CN	Description
549	39	>75% Grass cover, Good, HSG A
504	30	Woods, Good, HSG A
1,822	76	Gravel roads, HSG A
370	98	Paved parking, HSG A
3,245	65	Weighted Average
2,875		88.60% Pervious Area
370		11.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	62	0.0100	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.96"
0.4	4	0.1100	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.96"
7.4	25	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.96"
8.9	91	Total			

Summary for Subcatchment ES-03: ES-03

Runoff = 0.24 cfs @ 12.11 hrs, Volume= 794 cf, Depth> 1.79"
Routed to Link C :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.68"

Area (sf)	CN	Description
1,589	39	>75% Grass cover, Good, HSG A
691	30	Woods, Good, HSG A
580	98	Roofs, HSG A
2,458	76	Gravel roads, HSG A
5,318	61	Weighted Average
4,738		89.09% Pervious Area
580		10.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	44	0.0400	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.96"
1.5	19	0.0900	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.96"
4.4	29	0.1000	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.96"
6.4	92	Total			

Summary for Subcatchment ES-04: ES-04

Runoff = 0.37 cfs @ 12.10 hrs, Volume= 1,179 cf, Depth> 2.46"
Routed to Link D :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.68"

	Area (sf)	CN	Description
	2,461	39	>75% Grass cover, Good, HSG A
	705	98	Roofs, HSG A
	989	76	Gravel roads, HSG A
*	101	98	Unconnected pavement, HSG A (decks)
	1,490	98	Paved parking, HSG A
	5,746	69	Weighted Average
	3,450		60.04% Pervious Area
	2,296		39.96% Impervious Area
	101		4.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Link A:

Inflow Area = 3,361 sf, 21.84% Impervious, Inflow Depth > 2.38" for 25-YR event
Inflow = 0.21 cfs @ 12.10 hrs, Volume= 665 cf
Primary = 0.21 cfs @ 12.10 hrs, Volume= 665 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link B:

Inflow Area = 3,245 sf, 11.40% Impervious, Inflow Depth > 2.12" for 25-YR event
Inflow = 0.16 cfs @ 12.14 hrs, Volume= 573 cf
Primary = 0.16 cfs @ 12.14 hrs, Volume= 573 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link C:

Inflow Area = 5,318 sf, 10.91% Impervious, Inflow Depth > 1.79" for 25-YR event
Inflow = 0.24 cfs @ 12.11 hrs, Volume= 794 cf
Primary = 0.24 cfs @ 12.11 hrs, Volume= 794 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link D:

Inflow Area = 5,746 sf, 39.96% Impervious, Inflow Depth > 2.46" for 25-YR event
Inflow = 0.37 cfs @ 12.10 hrs, Volume= 1,179 cf
Primary = 0.37 cfs @ 12.10 hrs, Volume= 1,179 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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 ES-01: ES-01 Runoff Area=3,361 sf 21.84% Impervious Runoff Depth>3.25"
Tc=6.0 min CN=68 Runoff=0.29 cfs 909 cf

Subcatchment ES-02: ES-02 Runoff Area=3,245 sf 11.40% Impervious Runoff Depth>2.94"
Flow Length=91' Tc=8.9 min CN=65 Runoff=0.23 cfs 796 cf

Subcatchment ES-03: ES-03 Runoff Area=5,318 sf 10.91% Impervious Runoff Depth>2.56"
Flow Length=92' Tc=6.4 min CN=61 Runoff=0.35 cfs 1,133 cf

Subcatchment ES-04: ES-04 Runoff Area=5,746 sf 39.96% Impervious Runoff Depth>3.35"
Tc=6.0 min CN=69 Runoff=0.51 cfs 1,603 cf

Link A: Inflow=0.29 cfs 909 cf
Primary=0.29 cfs 909 cf

Link B: Inflow=0.23 cfs 796 cf
Primary=0.23 cfs 796 cf

Link C: Inflow=0.35 cfs 1,133 cf
Primary=0.35 cfs 1,133 cf

Link D: Inflow=0.51 cfs 1,603 cf
Primary=0.51 cfs 1,603 cf

Total Runoff Area = 17,670 sf Runoff Volume = 4,441 cf Average Runoff Depth = 3.02"
77.48% Pervious = 13,690 sf 22.52% Impervious = 3,980 sf

Summary for Subcatchment ES-01: ES-01

Runoff = 0.29 cfs @ 12.09 hrs, Volume= 909 cf, Depth> 3.25"
Routed to Link A :

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 50-YR Rainfall=6.80"

	Area (sf)	CN	Description
	980	39	>75% Grass cover, Good, HSG A
	115	30	Woods, Good, HSG A
	462	98	Roofs, HSG A
	1,532	76	Gravel roads, HSG A
*	57	98	Unconnected pavement, HSG A (decks)
	215	98	Paved parking, HSG A
	3,361	68	Weighted Average
	2,627		78.16% Pervious Area
	734		21.84% Impervious Area
	57		7.77% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment ES-02: ES-02

Runoff = 0.23 cfs @ 12.13 hrs, Volume= 796 cf, Depth> 2.94"
Routed to Link B :

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 50-YR Rainfall=6.80"

Area (sf)	CN	Description
549	39	>75% Grass cover, Good, HSG A
504	30	Woods, Good, HSG A
1,822	76	Gravel roads, HSG A
370	98	Paved parking, HSG A
3,245	65	Weighted Average
2,875		88.60% Pervious Area
370		11.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	62	0.0100	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.96"
0.4	4	0.1100	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.96"
7.4	25	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.96"
8.9	91	Total			

Summary for Subcatchment ES-03: ES-03

Runoff = 0.35 cfs @ 12.10 hrs, Volume= 1,133 cf, Depth> 2.56"
Routed to Link C :

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 50-YR Rainfall=6.80"

Area (sf)	CN	Description
1,589	39	>75% Grass cover, Good, HSG A
691	30	Woods, Good, HSG A
580	98	Roofs, HSG A
2,458	76	Gravel roads, HSG A
5,318	61	Weighted Average
4,738		89.09% Pervious Area
580		10.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	44	0.0400	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.96"
1.5	19	0.0900	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.96"
4.4	29	0.1000	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.96"
6.4	92	Total			

Summary for Subcatchment ES-04: ES-04

Runoff = 0.51 cfs @ 12.09 hrs, Volume= 1,603 cf, Depth> 3.35"
Routed to Link D :

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 50-YR Rainfall=6.80"

	Area (sf)	CN	Description
	2,461	39	>75% Grass cover, Good, HSG A
	705	98	Roofs, HSG A
	989	76	Gravel roads, HSG A
*	101	98	Unconnected pavement, HSG A (decks)
	1,490	98	Paved parking, HSG A
	5,746	69	Weighted Average
	3,450		60.04% Pervious Area
	2,296		39.96% Impervious Area
	101		4.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Link A:

Inflow Area = 3,361 sf, 21.84% Impervious, Inflow Depth > 3.25" for 50-YR event
Inflow = 0.29 cfs @ 12.09 hrs, Volume= 909 cf
Primary = 0.29 cfs @ 12.09 hrs, Volume= 909 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link B:

Inflow Area = 3,245 sf, 11.40% Impervious, Inflow Depth > 2.94" for 50-YR event
Inflow = 0.23 cfs @ 12.13 hrs, Volume= 796 cf
Primary = 0.23 cfs @ 12.13 hrs, Volume= 796 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link C:

Inflow Area = 5,318 sf, 10.91% Impervious, Inflow Depth > 2.56" for 50-YR event
Inflow = 0.35 cfs @ 12.10 hrs, Volume= 1,133 cf
Primary = 0.35 cfs @ 12.10 hrs, Volume= 1,133 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link D:

Inflow Area = 5,746 sf, 39.96% Impervious, Inflow Depth > 3.35" for 50-YR event
Inflow = 0.51 cfs @ 12.09 hrs, Volume= 1,603 cf
Primary = 0.51 cfs @ 12.09 hrs, Volume= 1,603 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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 ES-01: ES-01 Runoff Area=3,361 sf 21.84% Impervious Runoff Depth>4.36"
Tc=6.0 min CN=68 Runoff=0.39 cfs 1,220 cf

Subcatchment ES-02: ES-02 Runoff Area=3,245 sf 11.40% Impervious Runoff Depth>4.01"
Flow Length=91' Tc=8.9 min CN=65 Runoff=0.31 cfs 1,084 cf

Subcatchment ES-03: ES-03 Runoff Area=5,318 sf 10.91% Impervious Runoff Depth>3.56"
Flow Length=92' Tc=6.4 min CN=61 Runoff=0.49 cfs 1,576 cf

Subcatchment ES-04: ES-04 Runoff Area=5,746 sf 39.96% Impervious Runoff Depth>4.47"
Tc=6.0 min CN=69 Runoff=0.68 cfs 2,142 cf

Link A: Inflow=0.39 cfs 1,220 cf
Primary=0.39 cfs 1,220 cf

Link B: Inflow=0.31 cfs 1,084 cf
Primary=0.31 cfs 1,084 cf

Link C: Inflow=0.49 cfs 1,576 cf
Primary=0.49 cfs 1,576 cf

Link D: Inflow=0.68 cfs 2,142 cf
Primary=0.68 cfs 2,142 cf

Total Runoff Area = 17,670 sf Runoff Volume = 6,022 cf Average Runoff Depth = 4.09"
77.48% Pervious = 13,690 sf 22.52% Impervious = 3,980 sf

Summary for Subcatchment ES-01: ES-01

Runoff = 0.39 cfs @ 12.09 hrs, Volume= 1,220 cf, Depth> 4.36"
Routed to Link A :

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 100-YR Rainfall=8.15"

	Area (sf)	CN	Description
	980	39	>75% Grass cover, Good, HSG A
	115	30	Woods, Good, HSG A
	462	98	Roofs, HSG A
	1,532	76	Gravel roads, HSG A
*	57	98	Unconnected pavement, HSG A (decks)
	215	98	Paved parking, HSG A
	3,361	68	Weighted Average
	2,627		78.16% Pervious Area
	734		21.84% Impervious Area
	57		7.77% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment ES-02: ES-02

Runoff = 0.31 cfs @ 12.13 hrs, Volume= 1,084 cf, Depth> 4.01"
Routed to Link B :

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 100-YR Rainfall=8.15"

	Area (sf)	CN	Description
	549	39	>75% Grass cover, Good, HSG A
	504	30	Woods, Good, HSG A
	1,822	76	Gravel roads, HSG A
	370	98	Paved parking, HSG A
	3,245	65	Weighted Average
	2,875		88.60% Pervious Area
	370		11.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	62	0.0100	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.96"
0.4	4	0.1100	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.96"
7.4	25	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.96"
8.9	91	Total			

Summary for Subcatchment ES-03: ES-03

Runoff = 0.49 cfs @ 12.10 hrs, Volume= 1,576 cf, Depth> 3.56"
Routed to Link C :

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 100-YR Rainfall=8.15"

Area (sf)	CN	Description
1,589	39	>75% Grass cover, Good, HSG A
691	30	Woods, Good, HSG A
580	98	Roofs, HSG A
2,458	76	Gravel roads, HSG A
5,318	61	Weighted Average
4,738		89.09% Pervious Area
580		10.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	44	0.0400	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.96"
1.5	19	0.0900	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.96"
4.4	29	0.1000	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.96"
6.4	92	Total			

Summary for Subcatchment ES-04: ES-04

Runoff = 0.68 cfs @ 12.09 hrs, Volume= 2,142 cf, Depth> 4.47"
Routed to Link D :

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 100-YR Rainfall=8.15"

	Area (sf)	CN	Description
	2,461	39	>75% Grass cover, Good, HSG A
	705	98	Roofs, HSG A
	989	76	Gravel roads, HSG A
*	101	98	Unconnected pavement, HSG A (decks)
	1,490	98	Paved parking, HSG A
	5,746	69	Weighted Average
	3,450		60.04% Pervious Area
	2,296		39.96% Impervious Area
	101		4.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Link A:

Inflow Area = 3,361 sf, 21.84% Impervious, Inflow Depth > 4.36" for 100-YR event
Inflow = 0.39 cfs @ 12.09 hrs, Volume= 1,220 cf
Primary = 0.39 cfs @ 12.09 hrs, Volume= 1,220 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link B:

Inflow Area = 3,245 sf, 11.40% Impervious, Inflow Depth > 4.01" for 100-YR event
Inflow = 0.31 cfs @ 12.13 hrs, Volume= 1,084 cf
Primary = 0.31 cfs @ 12.13 hrs, Volume= 1,084 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link C:

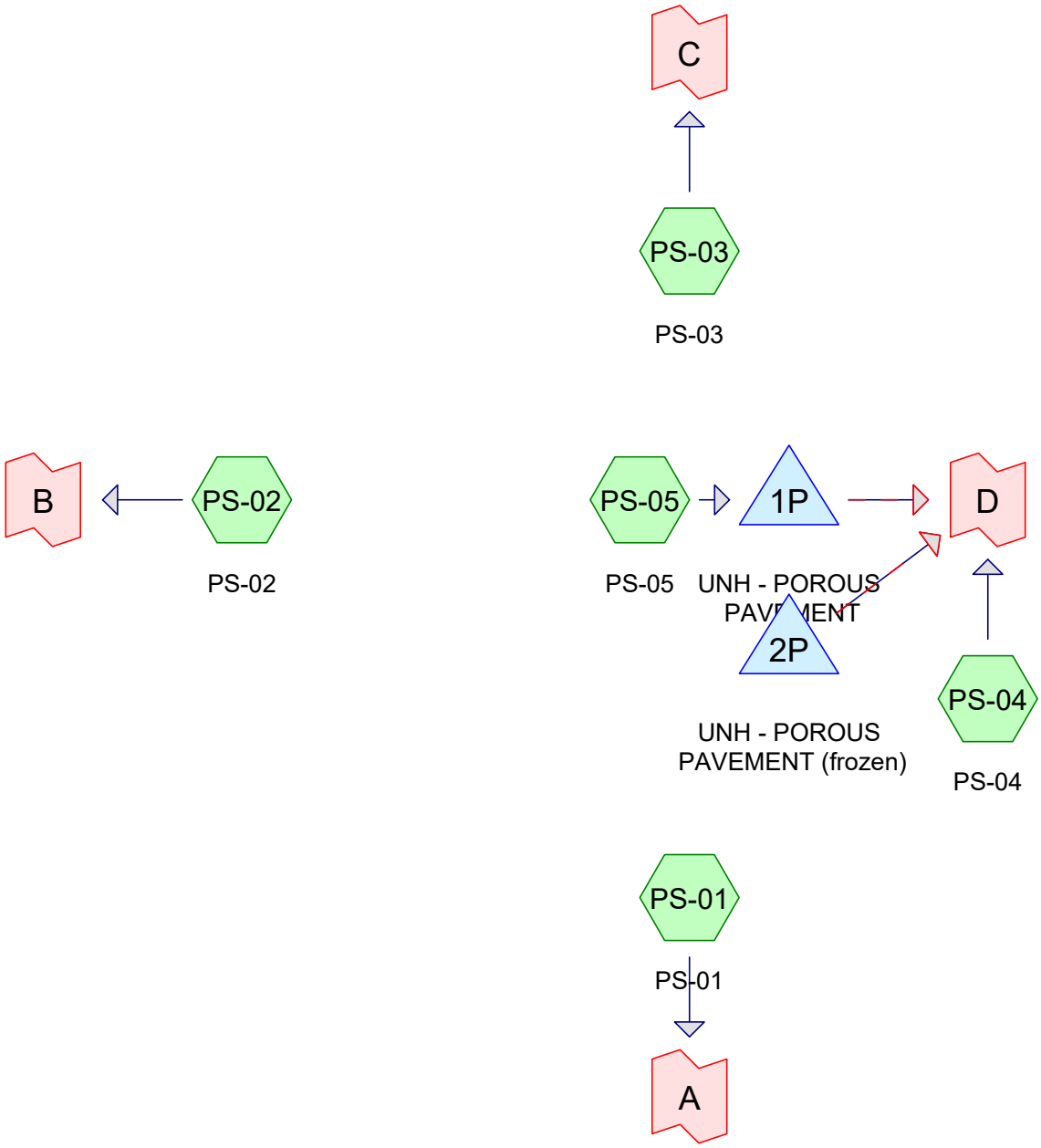
Inflow Area = 5,318 sf, 10.91% Impervious, Inflow Depth > 3.56" for 100-YR event
Inflow = 0.49 cfs @ 12.10 hrs, Volume= 1,576 cf
Primary = 0.49 cfs @ 12.10 hrs, Volume= 1,576 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link D:

Inflow Area = 5,746 sf, 39.96% Impervious, Inflow Depth > 4.47" for 100-YR event
Inflow = 0.68 cfs @ 12.09 hrs, Volume= 2,142 cf
Primary = 0.68 cfs @ 12.09 hrs, Volume= 2,142 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs



Subcat Reach Pond Link

Routing Diagram for 18301-00 Lampes - Post_r1
Prepared by T F Moran Inc, Printed 2/24/2026
HydroCAD® 10.20-5c s/n 00866 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type III 24-hr		Default	24.00	1	2.96	2
2	10-YR	Type III 24-hr		Default	24.00	1	4.48	2
3	25-YR	Type III 24-hr		Default	24.00	1	5.68	2
4	50-YR	Type III 24-hr		Default	24.00	1	6.80	2
5	100-YR	Type III 24-hr		Default	24.00	1	8.15	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
7,317	39	>75% Grass cover, Good, HSG A (PS-01, PS-02, PS-03, PS-04, PS-05)
7,897	98	Paved parking, HSG A (PS-01, PS-05)
1,514	98	Roofs, HSG A (PS-01, PS-03, PS-05)
942	30	Woods, Good, HSG A (PS-01, PS-02, PS-03)
17,670	**70**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
17,670	HSG A	PS-01, PS-02, PS-03, PS-04, PS-05
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
17,670		**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 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 PS-01: PS-01 Runoff Area=3,435 sf 47.92% Impervious Runoff Depth=0.57"
Tc=6.0 min CN=67 Runoff=0.04 cfs 162 cf

Subcatchment PS-02: PS-02 Runoff Area=1,716 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=36 Runoff=0.00 cfs 0 cf

Subcatchment PS-03: PS-03 Runoff Area=2,797 sf 10.73% Impervious Runoff Depth=0.01"
Tc=6.0 min CN=44 Runoff=0.00 cfs 3 cf

Subcatchment PS-04: PS-04 Runoff Area=1,636 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=39 Runoff=0.00 cfs 0 cf

Subcatchment PS-05: PS-05 Runoff Area=8,086 sf 92.32% Impervious Runoff Depth=2.22"
Tc=160.0 min CN=93 Runoff=0.10 cfs 1,493 cf

Pond 1P: UNH - POROUS PAVEMENT Peak Elev=306.48' Storage=9 cf Inflow=0.10 cfs 1,493 cf
Discarded=0.09 cfs 1,493 cf Secondary=0.00 cfs 0 cf Outflow=0.09 cfs 1,493 cf

Pond 2P: UNH - POROUS PAVEMENT (frozen) Peak Elev=0.00' Storage=0 cf
Secondary=0.00 cfs 0 cf

Link A: Inflow=0.04 cfs 162 cf
Primary=0.04 cfs 162 cf

Link B: Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link C: Inflow=0.00 cfs 3 cf
Primary=0.00 cfs 3 cf

Link D: Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 17,670 sf Runoff Volume = 1,658 cf Average Runoff Depth = 1.13"
46.74% Pervious = 8,259 sf 53.26% Impervious = 9,411 sf

Summary for Subcatchment PS-01: PS-01

Runoff = 0.04 cfs @ 12.11 hrs, Volume= 162 cf, Depth= 0.57"
Routed to Link A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-YR Rainfall=2.96"

Area (sf)	CN	Description
1,679	39	>75% Grass cover, Good, HSG A
110	30	Woods, Good, HSG A
435	98	Roofs, HSG A
0	96	Gravel surface, HSG A
0	98	Unconnected pavement, HSG A
811	98	Paved parking, HSG A
400	98	Paved parking, HSG A
3,435	67	Weighted Average
1,789		52.08% Pervious Area
1,646		47.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-02: PS-02

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-YR Rainfall=2.96"

Area (sf)	CN	Description
1,212	39	>75% Grass cover, Good, HSG A
504	30	Woods, Good, HSG A
0	96	Gravel surface, HSG A
0	98	Paved parking, HSG A
1,716	36	Weighted Average
1,716		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-03: PS-03

Runoff = 0.00 cfs @ 21.42 hrs, Volume= 3 cf, Depth= 0.01"
Routed to Link C :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-YR Rainfall=2.96"

Area (sf)	CN	Description
2,169	39	>75% Grass cover, Good, HSG A
328	30	Woods, Good, HSG A
300	98	Roofs, HSG A
0	96	Gravel surface, HSG A
2,797	44	Weighted Average
2,497		89.27% Pervious Area
300		10.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-04: PS-04

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link D :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-YR Rainfall=2.96"

Area (sf)	CN	Description
1,636	39	>75% Grass cover, Good, HSG A
0	98	Roofs, HSG A
0	96	Gravel surface, HSG A
0	98	Unconnected pavement, HSG A
0	98	Paved parking, HSG A
1,636	39	Weighted Average
1,636		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-05: PS-05

Runoff = 0.10 cfs @ 14.04 hrs, Volume= 1,493 cf, Depth= 2.22"
Routed to Pond 1P : UNH - POROUS PAVEMENT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-YR Rainfall=2.96"

Area (sf)	CN	Description
621	39	>75% Grass cover, Good, HSG A
0	30	Woods, Good, HSG A
0	96	Gravel surface, HSG A
6,686	98	Paved parking, HSG A
779	98	Roofs, HSG A
8,086	93	Weighted Average
621		7.68% Pervious Area
7,465		92.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
160.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Pond 1P: UNH - POROUS PAVEMENT

Inflow Area = 8,086 sf, 92.32% Impervious, Inflow Depth = 2.22" for 2-YR event
Inflow = 0.10 cfs @ 14.04 hrs, Volume= 1,493 cf
Outflow = 0.09 cfs @ 14.04 hrs, Volume= 1,493 cf, Atten= 6%, Lag= 0.0 min
Discarded = 0.09 cfs @ 14.04 hrs, Volume= 1,493 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 306.48' @ 14.43 hrs Surf.Area= 400 sf Storage= 9 cf
Flood Elev= 308.66' Surf.Area= 800 sf Storage= 73 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.4 min (938.2 - 937.7)

Volume	Invert	Avail.Storage	Storage Description
#1	306.42'	53 cf	**20.00'W x 20.00'L x 0.33'H POROUS PAVEMENT BASE STONE** 132 cf Overall x 40.0% Voids
#2	307.00'	20 cf	**20.00'W x 20.00'L x 1.00'H POROUS PAVEMENT FILTER** 400 cf Overall x 5.0% Voids
#3	308.66'	135 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) -Impervious
		208 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.66	25	0	0
308.83	185	18	18
308.91	375	22	40
309.10	620	95	135

Device	Routing	Invert	Outlet Devices
#1	Discarded	306.42'	**10.000 in/hr Exfiltration over Horizontal area**
#2	Secondary	308.91'	**40.0' long + 1.0 '/' SideZ x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66

2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.09 cfs @ 14.04 hrs HW=306.45' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=306.42' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: UNH - POROUS PAVEMENT (frozen)

Volume	Invert	Avail.Storage	Storage Description
#1	306.42'	53 cf	**20.00'W x 20.00'L x 0.33'H POROUS PAVEMENT BASE STONE** 132 cf Overall x 40.0% Voids
#2	307.00'	20 cf	**20.00'W x 20.00'L x 1.00'H POROUS PAVEMENT FILTER** 400 cf Overall x 5.0% Voids
#3	308.66'	135 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) -Impervious
		208 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.66	25	0	0
308.83	185	18	18
308.91	375	22	40
309.10	620	95	135

Device	Routing	Invert	Outlet Devices
#1	Secondary	308.91'	**40.0' long + 1.0 '/' SideZ x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link A:

Inflow Area = 3,435 sf, 47.92% Impervious, Inflow Depth = 0.57" for 2-YR event
Inflow = 0.04 cfs @ 12.11 hrs, Volume= 162 cf
Primary = 0.04 cfs @ 12.11 hrs, Volume= 162 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link B:

Inflow Area = 1,716 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2-YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link C:

Inflow Area = 2,797 sf, 10.73% Impervious, Inflow Depth = 0.01" for 2-YR event
Inflow = 0.00 cfs @ 21.42 hrs, Volume= 3 cf
Primary = 0.00 cfs @ 21.42 hrs, Volume= 3 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link D:

Inflow Area = 9,722 sf, 76.78% Impervious, Inflow Depth = 0.00" for 2-YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 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 PS-01: PS-01 Runoff Area=3,435 sf 47.92% Impervious Runoff Depth=1.45"
Tc=6.0 min CN=67 Runoff=0.13 cfs 415 cf

Subcatchment PS-02: PS-02 Runoff Area=1,716 sf 0.00% Impervious Runoff Depth=0.05"
Tc=6.0 min CN=36 Runoff=0.00 cfs 7 cf

Subcatchment PS-03: PS-03 Runoff Area=2,797 sf 10.73% Impervious Runoff Depth=0.26"
Tc=6.0 min CN=44 Runoff=0.01 cfs 59 cf

Subcatchment PS-04: PS-04 Runoff Area=1,636 sf 0.00% Impervious Runoff Depth=0.11"
Tc=6.0 min CN=39 Runoff=0.00 cfs 15 cf

Subcatchment PS-05: PS-05 Runoff Area=8,086 sf 92.32% Impervious Runoff Depth=3.69"
Tc=160.0 min CN=93 Runoff=0.16 cfs 2,485 cf

Pond 1P: UNH - POROUS PAVEMENT Peak Elev=307.00' Storage=53 cf Inflow=0.16 cfs 2,485 cf
Discarded=0.16 cfs 2,486 cf Secondary=0.00 cfs 0 cf Outflow=0.16 cfs 2,486 cf

Pond 2P: UNH - POROUS PAVEMENT (frozen) Peak Elev=0.00' Storage=0 cf
Secondary=0.00 cfs 0 cf

Link A: Inflow=0.13 cfs 415 cf
Primary=0.13 cfs 415 cf

Link B: Inflow=0.00 cfs 7 cf
Primary=0.00 cfs 7 cf

Link C: Inflow=0.01 cfs 59 cf
Primary=0.01 cfs 59 cf

Link D: Inflow=0.00 cfs 15 cf
Primary=0.00 cfs 15 cf

Total Runoff Area = 17,670 sf Runoff Volume = 2,981 cf Average Runoff Depth = 2.02"
46.74% Pervious = 8,259 sf 53.26% Impervious = 9,411 sf

Summary for Subcatchment PS-01: PS-01

Runoff = 0.13 cfs @ 12.10 hrs, Volume= 415 cf, Depth= 1.45"
Routed to Link A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-YR Rainfall=4.48"

Area (sf)	CN	Description
1,679	39	>75% Grass cover, Good, HSG A
110	30	Woods, Good, HSG A
435	98	Roofs, HSG A
0	96	Gravel surface, HSG A
0	98	Unconnected pavement, HSG A
811	98	Paved parking, HSG A
400	98	Paved parking, HSG A
3,435	67	Weighted Average
1,789		52.08% Pervious Area
1,646		47.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-02: PS-02

Runoff = 0.00 cfs @ 15.67 hrs, Volume= 7 cf, Depth= 0.05"
Routed to Link B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-YR Rainfall=4.48"

Area (sf)	CN	Description
1,212	39	>75% Grass cover, Good, HSG A
504	30	Woods, Good, HSG A
0	96	Gravel surface, HSG A
0	98	Paved parking, HSG A
1,716	36	Weighted Average
1,716		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-03: PS-03

Runoff = 0.01 cfs @ 12.40 hrs, Volume= 59 cf, Depth= 0.26"
Routed to Link C :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-YR Rainfall=4.48"

Area (sf)	CN	Description
2,169	39	>75% Grass cover, Good, HSG A
328	30	Woods, Good, HSG A
300	98	Roofs, HSG A
0	96	Gravel surface, HSG A
2,797	44	Weighted Average
2,497		89.27% Pervious Area
300		10.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-04: PS-04

Runoff = 0.00 cfs @ 14.74 hrs, Volume= 15 cf, Depth= 0.11"
Routed to Link D :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-YR Rainfall=4.48"

Area (sf)	CN	Description
1,636	39	>75% Grass cover, Good, HSG A
0	98	Roofs, HSG A
0	96	Gravel surface, HSG A
0	98	Unconnected pavement, HSG A
0	98	Paved parking, HSG A
1,636	39	Weighted Average
1,636		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-05: PS-05

Runoff = 0.16 cfs @ 14.04 hrs, Volume= 2,485 cf, Depth= 3.69"
Routed to Pond 1P : UNH - POROUS PAVEMENT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-YR Rainfall=4.48"

Area (sf)	CN	Description
621	39	>75% Grass cover, Good, HSG A
0	30	Woods, Good, HSG A
0	96	Gravel surface, HSG A
6,686	98	Paved parking, HSG A
779	98	Roofs, HSG A
8,086	93	Weighted Average
621		7.68% Pervious Area
7,465		92.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
160.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Pond 1P: UNH - POROUS PAVEMENT

Inflow Area = 8,086 sf, 92.32% Impervious, Inflow Depth = 3.69" for 10-YR event
Inflow = 0.16 cfs @ 14.04 hrs, Volume= 2,485 cf
Outflow = 0.16 cfs @ 14.00 hrs, Volume= 2,486 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.16 cfs @ 14.00 hrs, Volume= 2,486 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 307.00' @ 13.60 hrs Surf.Area= 800 sf Storage= 53 cf
Flood Elev= 308.66' Surf.Area= 800 sf Storage= 73 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 3.5 min (927.5 - 924.0)

Volume	Invert	Avail.Storage	Storage Description
#1	306.42'	53 cf	**20.00'W x 20.00'L x 0.33'H POROUS PAVEMENT BASE STONE** 132 cf Overall x 40.0% Voids
#2	307.00'	20 cf	**20.00'W x 20.00'L x 1.00'H POROUS PAVEMENT FILTER** 400 cf Overall x 5.0% Voids
#3	308.66'	135 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) -Impervious
		208 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.66	25	0	0
308.83	185	18	18
308.91	375	22	40
309.10	620	95	135

Device	Routing	Invert	Outlet Devices
#1	Discarded	306.42'	**10.000 in/hr Exfiltration over Horizontal area**
#2	Secondary	308.91'	**40.0' long + 1.0 '/' SideZ x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66

2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.19 cfs @ 14.00 hrs HW=307.00' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.19 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=306.42' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: UNH - POROUS PAVEMENT (frozen)

Volume	Invert	Avail.Storage	Storage Description
#1	306.42'	53 cf	**20.00'W x 20.00'L x 0.33'H POROUS PAVEMENT BASE STONE** 132 cf Overall x 40.0% Voids
#2	307.00'	20 cf	**20.00'W x 20.00'L x 1.00'H POROUS PAVEMENT FILTER** 400 cf Overall x 5.0% Voids
#3	308.66'	135 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) -Impervious
		208 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.66	25	0	0
308.83	185	18	18
308.91	375	22	40
309.10	620	95	135

Device	Routing	Invert	Outlet Devices
#1	Secondary	308.91'	**40.0' long + 1.0 '/' SideZ x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

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

Summary for Link A:

Inflow Area = 3,435 sf, 47.92% Impervious, Inflow Depth = 1.45" for 10-YR event
Inflow = 0.13 cfs @ 12.10 hrs, Volume= 415 cf
Primary = 0.13 cfs @ 12.10 hrs, Volume= 415 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link B:

Inflow Area = 1,716 sf, 0.00% Impervious, Inflow Depth = 0.05" for 10-YR event
Inflow = 0.00 cfs @ 15.67 hrs, Volume= 7 cf
Primary = 0.00 cfs @ 15.67 hrs, Volume= 7 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link C:

Inflow Area = 2,797 sf, 10.73% Impervious, Inflow Depth = 0.26" for 10-YR event
Inflow = 0.01 cfs @ 12.40 hrs, Volume= 59 cf
Primary = 0.01 cfs @ 12.40 hrs, Volume= 59 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link D:

Inflow Area = 9,722 sf, 76.78% Impervious, Inflow Depth = 0.02" for 10-YR event
Inflow = 0.00 cfs @ 14.74 hrs, Volume= 15 cf
Primary = 0.00 cfs @ 14.74 hrs, Volume= 15 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 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 PS-01: PS-01 Runoff Area=3,435 sf 47.92% Impervious Runoff Depth=2.29"
Tc=6.0 min CN=67 Runoff=0.21 cfs 656 cf

Subcatchment PS-02: PS-02 Runoff Area=1,716 sf 0.00% Impervious Runoff Depth=0.23"
Tc=6.0 min CN=36 Runoff=0.00 cfs 32 cf

Subcatchment PS-03: PS-03 Runoff Area=2,797 sf 10.73% Impervious Runoff Depth=0.62"
Tc=6.0 min CN=44 Runoff=0.02 cfs 144 cf

Subcatchment PS-04: PS-04 Runoff Area=1,636 sf 0.00% Impervious Runoff Depth=0.36"
Tc=6.0 min CN=39 Runoff=0.00 cfs 49 cf

Subcatchment PS-05: PS-05 Runoff Area=8,086 sf 92.32% Impervious Runoff Depth=4.87"
Tc=160.0 min CN=93 Runoff=0.21 cfs 3,280 cf

Pond 1P: UNH - POROUS PAVEMENT Peak Elev=308.91' Storage=114 cf Inflow=0.21 cfs 3,280 cf
Discarded=0.19 cfs 3,277 cf Secondary=0.01 cfs 2 cf Outflow=0.19 cfs 3,280 cf

Pond 2P: UNH - POROUS PAVEMENT (frozen) Peak Elev=0.00' Storage=0 cf
Secondary=0.00 cfs 0 cf

Link A: Inflow=0.21 cfs 656 cf
Primary=0.21 cfs 656 cf

Link B: Inflow=0.00 cfs 32 cf
Primary=0.00 cfs 32 cf

Link C: Inflow=0.02 cfs 144 cf
Primary=0.02 cfs 144 cf

Link D: Inflow=0.01 cfs 51 cf
Primary=0.01 cfs 51 cf

Total Runoff Area = 17,670 sf Runoff Volume = 4,161 cf Average Runoff Depth = 2.83"
46.74% Pervious = 8,259 sf 53.26% Impervious = 9,411 sf

Summary for Subcatchment PS-01: PS-01

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 656 cf, Depth= 2.29"
Routed to Link A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-YR Rainfall=5.68"

Area (sf)	CN	Description
1,679	39	>75% Grass cover, Good, HSG A
110	30	Woods, Good, HSG A
435	98	Roofs, HSG A
0	96	Gravel surface, HSG A
0	98	Unconnected pavement, HSG A
811	98	Paved parking, HSG A
400	98	Paved parking, HSG A
3,435	67	Weighted Average
1,789		52.08% Pervious Area
1,646		47.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-02: PS-02

Runoff = 0.00 cfs @ 12.48 hrs, Volume= 32 cf, Depth= 0.23"
Routed to Link B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-YR Rainfall=5.68"

Area (sf)	CN	Description
1,212	39	>75% Grass cover, Good, HSG A
504	30	Woods, Good, HSG A
0	96	Gravel surface, HSG A
0	98	Paved parking, HSG A
1,716	36	Weighted Average
1,716		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-03: PS-03

Runoff = 0.02 cfs @ 12.16 hrs, Volume= 144 cf, Depth= 0.62"
Routed to Link C :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-YR Rainfall=5.68"

Area (sf)	CN	Description
2,169	39	>75% Grass cover, Good, HSG A
328	30	Woods, Good, HSG A
300	98	Roofs, HSG A
0	96	Gravel surface, HSG A
2,797	44	Weighted Average
2,497		89.27% Pervious Area
300		10.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-04: PS-04

Runoff = 0.00 cfs @ 12.38 hrs, Volume= 49 cf, Depth= 0.36"
Routed to Link D :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-YR Rainfall=5.68"

Area (sf)	CN	Description
1,636	39	>75% Grass cover, Good, HSG A
0	98	Roofs, HSG A
0	96	Gravel surface, HSG A
0	98	Unconnected pavement, HSG A
0	98	Paved parking, HSG A
1,636	39	Weighted Average
1,636		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-05: PS-05

Runoff = 0.21 cfs @ 14.04 hrs, Volume= 3,280 cf, Depth= 4.87"
Routed to Pond 1P : UNH - POROUS PAVEMENT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-YR Rainfall=5.68"

Area (sf)	CN	Description
621	39	>75% Grass cover, Good, HSG A
0	30	Woods, Good, HSG A
0	96	Gravel surface, HSG A
6,686	98	Paved parking, HSG A
779	98	Roofs, HSG A
8,086	93	Weighted Average
621		7.68% Pervious Area
7,465		92.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
160.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Pond 1P: UNH - POROUS PAVEMENT

Inflow Area = 8,086 sf, 92.32% Impervious, Inflow Depth = 4.87" for 25-YR event
Inflow = 0.21 cfs @ 14.04 hrs, Volume= 3,280 cf
Outflow = 0.19 cfs @ 14.52 hrs, Volume= 3,280 cf, Atten= 8%, Lag= 29.3 min
Discarded = 0.19 cfs @ 13.28 hrs, Volume= 3,277 cf
Secondary = 0.01 cfs @ 14.52 hrs, Volume= 2 cf
Routed to Link D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 308.91' @ 14.53 hrs Surf.Area= 800 sf Storage= 114 cf
Flood Elev= 308.66' Surf.Area= 800 sf Storage= 73 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.5 min (921.4 - 916.9)

Volume	Invert	Avail.Storage	Storage Description
#1	306.42'	53 cf	**20.00'W x 20.00'L x 0.33'H POROUS PAVEMENT BASE STONE** 132 cf Overall x 40.0% Voids
#2	307.00'	20 cf	**20.00'W x 20.00'L x 1.00'H POROUS PAVEMENT FILTER** 400 cf Overall x 5.0% Voids
#3	308.66'	135 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) -Impervious
		208 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.66	25	0	0
308.83	185	18	18
308.91	375	22	40
309.10	620	95	135

Device	Routing	Invert	Outlet Devices
#1	Discarded	306.42'	**10.000 in/hr Exfiltration over Horizontal area**
#2	Secondary	308.91'	**40.0' long + 1.0 '/' SideZ x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66

2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.19 cfs @ 13.28 hrs HW=307.03' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.19 cfs)

Secondary OutFlow Max=0.01 cfs @ 14.52 hrs HW=308.91' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 0.01 cfs @ 0.10 fps)

Summary for Pond 2P: UNH - POROUS PAVEMENT (frozen)

Volume	Invert	Avail.Storage	Storage Description
#1	306.42'	53 cf	**20.00'W x 20.00'L x 0.33'H POROUS PAVEMENT BASE STONE** 132 cf Overall x 40.0% Voids
#2	307.00'	20 cf	**20.00'W x 20.00'L x 1.00'H POROUS PAVEMENT FILTER** 400 cf Overall x 5.0% Voids
#3	308.66'	135 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) -Impervious
		208 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.66	25	0	0
308.83	185	18	18
308.91	375	22	40
309.10	620	95	135

Device	Routing	Invert	Outlet Devices
#1	Secondary	308.91'	**40.0' long + 1.0 '/' SideZ x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

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

Summary for Link A:

Inflow Area = 3,435 sf, 47.92% Impervious, Inflow Depth = 2.29" for 25-YR event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 656 cf
Primary = 0.21 cfs @ 12.09 hrs, Volume= 656 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link B:

Inflow Area = 1,716 sf, 0.00% Impervious, Inflow Depth = 0.23" for 25-YR event
Inflow = 0.00 cfs @ 12.48 hrs, Volume= 32 cf
Primary = 0.00 cfs @ 12.48 hrs, Volume= 32 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link C:

Inflow Area = 2,797 sf, 10.73% Impervious, Inflow Depth = 0.62" for 25-YR event
Inflow = 0.02 cfs @ 12.16 hrs, Volume= 144 cf
Primary = 0.02 cfs @ 12.16 hrs, Volume= 144 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link D:

Inflow Area = 9,722 sf, 76.78% Impervious, Inflow Depth = 0.06" for 25-YR event
Inflow = 0.01 cfs @ 14.52 hrs, Volume= 51 cf
Primary = 0.01 cfs @ 14.52 hrs, Volume= 51 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 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 PS-01: PS-01 Runoff Area=3,435 sf 47.92% Impervious Runoff Depth=3.15"
Tc=6.0 min CN=67 Runoff=0.29 cfs 901 cf

Subcatchment PS-02: PS-02 Runoff Area=1,716 sf 0.00% Impervious Runoff Depth=0.50"
Tc=6.0 min CN=36 Runoff=0.01 cfs 72 cf

Subcatchment PS-03: PS-03 Runoff Area=2,797 sf 10.73% Impervious Runoff Depth=1.07"
Tc=6.0 min CN=44 Runoff=0.06 cfs 248 cf

Subcatchment PS-04: PS-04 Runoff Area=1,636 sf 0.00% Impervious Runoff Depth=0.70"
Tc=6.0 min CN=39 Runoff=0.01 cfs 95 cf

Subcatchment PS-05: PS-05 Runoff Area=8,086 sf 92.32% Impervious Runoff Depth=5.97"
Tc=160.0 min CN=93 Runoff=0.26 cfs 4,025 cf

Pond 1P: UNH - POROUS PAVEMENT Peak Elev=308.92' Storage=116 cf Inflow=0.26 cfs 4,025 cf
Discarded=0.19 cfs 3,798 cf Secondary=0.08 cfs 228 cf Outflow=0.26 cfs 4,026 cf

Pond 2P: UNH - POROUS PAVEMENT (frozen) Peak Elev=0.00' Storage=0 cf
Secondary=0.00 cfs 0 cf

Link A: Inflow=0.29 cfs 901 cf
Primary=0.29 cfs 901 cf

Link B: Inflow=0.01 cfs 72 cf
Primary=0.01 cfs 72 cf

Link C: Inflow=0.06 cfs 248 cf
Primary=0.06 cfs 248 cf

Link D: Inflow=0.08 cfs 323 cf
Primary=0.08 cfs 323 cf

Total Runoff Area = 17,670 sf Runoff Volume = 5,341 cf Average Runoff Depth = 3.63"
46.74% Pervious = 8,259 sf 53.26% Impervious = 9,411 sf

Summary for Subcatchment PS-01: PS-01

Runoff = 0.29 cfs @ 12.09 hrs, Volume= 901 cf, Depth= 3.15"
Routed to Link A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 50-YR Rainfall=6.80"

Area (sf)	CN	Description
1,679	39	>75% Grass cover, Good, HSG A
110	30	Woods, Good, HSG A
435	98	Roofs, HSG A
0	96	Gravel surface, HSG A
0	98	Unconnected pavement, HSG A
811	98	Paved parking, HSG A
400	98	Paved parking, HSG A
3,435	67	Weighted Average
1,789		52.08% Pervious Area
1,646		47.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-02: PS-02

Runoff = 0.01 cfs @ 12.35 hrs, Volume= 72 cf, Depth= 0.50"
Routed to Link B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 50-YR Rainfall=6.80"

Area (sf)	CN	Description
1,212	39	>75% Grass cover, Good, HSG A
504	30	Woods, Good, HSG A
0	96	Gravel surface, HSG A
0	98	Paved parking, HSG A
1,716	36	Weighted Average
1,716		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-03: PS-03

Runoff = 0.06 cfs @ 12.12 hrs, Volume= 248 cf, Depth= 1.07"
Routed to Link C :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 50-YR Rainfall=6.80"

Area (sf)	CN	Description
2,169	39	>75% Grass cover, Good, HSG A
328	30	Woods, Good, HSG A
300	98	Roofs, HSG A
0	96	Gravel surface, HSG A
2,797	44	Weighted Average
2,497		89.27% Pervious Area
300		10.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-04: PS-04

Runoff = 0.01 cfs @ 12.17 hrs, Volume= 95 cf, Depth= 0.70"
Routed to Link D :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 50-YR Rainfall=6.80"

Area (sf)	CN	Description
1,636	39	>75% Grass cover, Good, HSG A
0	98	Roofs, HSG A
0	96	Gravel surface, HSG A
0	98	Unconnected pavement, HSG A
0	98	Paved parking, HSG A
1,636	39	Weighted Average
1,636		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-05: PS-05

Runoff = 0.26 cfs @ 14.03 hrs, Volume= 4,025 cf, Depth= 5.97"
Routed to Pond 1P : UNH - POROUS PAVEMENT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 50-YR Rainfall=6.80"

Area (sf)	CN	Description
621	39	>75% Grass cover, Good, HSG A
0	30	Woods, Good, HSG A
0	96	Gravel surface, HSG A
6,686	98	Paved parking, HSG A
779	98	Roofs, HSG A
8,086	93	Weighted Average
621		7.68% Pervious Area
7,465		92.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
160.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Pond 1P: UNH - POROUS PAVEMENT

Inflow Area = 8,086 sf, 92.32% Impervious, Inflow Depth = 5.97" for 50-YR event
Inflow = 0.26 cfs @ 14.03 hrs, Volume= 4,025 cf
Outflow = 0.26 cfs @ 13.77 hrs, Volume= 4,026 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.19 cfs @ 13.12 hrs, Volume= 3,798 cf
Secondary = 0.08 cfs @ 13.77 hrs, Volume= 228 cf
Routed to Link D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 308.92' @ 13.76 hrs Surf.Area= 800 sf Storage= 116 cf
Flood Elev= 308.66' Surf.Area= 800 sf Storage= 73 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 5.0 min (917.0 - 911.9)

Volume	Invert	Avail.Storage	Storage Description
#1	306.42'	53 cf	**20.00'W x 20.00'L x 0.33'H POROUS PAVEMENT BASE STONE** 132 cf Overall x 40.0% Voids
#2	307.00'	20 cf	**20.00'W x 20.00'L x 1.00'H POROUS PAVEMENT FILTER** 400 cf Overall x 5.0% Voids
#3	308.66'	135 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) -Impervious
		208 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.66	25	0	0
308.83	185	18	18
308.91	375	22	40
309.10	620	95	135

Device	Routing	Invert	Outlet Devices
#1	Discarded	306.42'	**10.000 in/hr Exfiltration over Horizontal area**
#2	Secondary	308.91'	**40.0' long + 1.0 '/' SideZ x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66

2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.19 cfs @ 13.12 hrs HW=307.04' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.19 cfs)

Secondary OutFlow Max=0.07 cfs @ 13.77 hrs HW=308.92' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 0.07 cfs @ 0.22 fps)

Summary for Pond 2P: UNH - POROUS PAVEMENT (frozen)

Volume	Invert	Avail.Storage	Storage Description
#1	306.42'	53 cf	**20.00'W x 20.00'L x 0.33'H POROUS PAVEMENT BASE STONE** 132 cf Overall x 40.0% Voids
#2	307.00'	20 cf	**20.00'W x 20.00'L x 1.00'H POROUS PAVEMENT FILTER** 400 cf Overall x 5.0% Voids
#3	308.66'	135 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) -Impervious
		208 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.66	25	0	0
308.83	185	18	18
308.91	375	22	40
309.10	620	95	135

Device	Routing	Invert	Outlet Devices
#1	Secondary	308.91'	**40.0' long + 1.0 '/' SideZ x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

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

Summary for Link A:

Inflow Area = 3,435 sf, 47.92% Impervious, Inflow Depth = 3.15" for 50-YR event
Inflow = 0.29 cfs @ 12.09 hrs, Volume= 901 cf
Primary = 0.29 cfs @ 12.09 hrs, Volume= 901 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link B:

Inflow Area = 1,716 sf, 0.00% Impervious, Inflow Depth = 0.50" for 50-YR event
Inflow = 0.01 cfs @ 12.35 hrs, Volume= 72 cf
Primary = 0.01 cfs @ 12.35 hrs, Volume= 72 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link C:

Inflow Area = 2,797 sf, 10.73% Impervious, Inflow Depth = 1.07" for 50-YR event
Inflow = 0.06 cfs @ 12.12 hrs, Volume= 248 cf
Primary = 0.06 cfs @ 12.12 hrs, Volume= 248 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link D:

Inflow Area = 9,722 sf, 76.78% Impervious, Inflow Depth = 0.40" for 50-YR event
Inflow = 0.08 cfs @ 13.77 hrs, Volume= 323 cf
Primary = 0.08 cfs @ 13.77 hrs, Volume= 323 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 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 PS-01: PS-01 Runoff Area=3,435 sf 47.92% Impervious Runoff Depth=4.25"
Tc=6.0 min CN=67 Runoff=0.39 cfs 1,215 cf

Subcatchment PS-02: PS-02 Runoff Area=1,716 sf 0.00% Impervious Runoff Depth=0.94"
Tc=6.0 min CN=36 Runoff=0.02 cfs 135 cf

Subcatchment PS-03: PS-03 Runoff Area=2,797 sf 10.73% Impervious Runoff Depth=1.71"
Tc=6.0 min CN=44 Runoff=0.10 cfs 399 cf

Subcatchment PS-04: PS-04 Runoff Area=1,636 sf 0.00% Impervious Runoff Depth=1.22"
Tc=6.0 min CN=39 Runoff=0.04 cfs 166 cf

Subcatchment PS-05: PS-05 Runoff Area=8,086 sf 92.32% Impervious Runoff Depth=7.31"
Tc=160.0 min CN=93 Runoff=0.31 cfs 4,927 cf

Pond 1P: UNH - POROUS PAVEMENT Peak Elev=308.92' Storage=118 cf Inflow=0.31 cfs 4,927 cf
Discarded=0.19 cfs 4,344 cf Secondary=0.12 cfs 584 cf Outflow=0.31 cfs 4,928 cf

Pond 2P: UNH - POROUS PAVEMENT (frozen) Peak Elev=0.00' Storage=0 cf
Secondary=0.00 cfs 0 cf

Link A: Inflow=0.39 cfs 1,215 cf
Primary=0.39 cfs 1,215 cf

Link B: Inflow=0.02 cfs 135 cf
Primary=0.02 cfs 135 cf

Link C: Inflow=0.10 cfs 399 cf
Primary=0.10 cfs 399 cf

Link D: Inflow=0.13 cfs 750 cf
Primary=0.13 cfs 750 cf

Total Runoff Area = 17,670 sf Runoff Volume = 6,843 cf Average Runoff Depth = 4.65"
46.74% Pervious = 8,259 sf 53.26% Impervious = 9,411 sf

Summary for Subcatchment PS-01: PS-01

Runoff = 0.39 cfs @ 12.09 hrs, Volume= 1,215 cf, Depth= 4.25"
Routed to Link A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-YR Rainfall=8.15"

Area (sf)	CN	Description
1,679	39	>75% Grass cover, Good, HSG A
110	30	Woods, Good, HSG A
435	98	Roofs, HSG A
0	96	Gravel surface, HSG A
0	98	Unconnected pavement, HSG A
811	98	Paved parking, HSG A
400	98	Paved parking, HSG A
3,435	67	Weighted Average
1,789		52.08% Pervious Area
1,646		47.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-02: PS-02

Runoff = 0.02 cfs @ 12.14 hrs, Volume= 135 cf, Depth= 0.94"
Routed to Link B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-YR Rainfall=8.15"

Area (sf)	CN	Description
1,212	39	>75% Grass cover, Good, HSG A
504	30	Woods, Good, HSG A
0	96	Gravel surface, HSG A
0	98	Paved parking, HSG A
1,716	36	Weighted Average
1,716		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-03: PS-03

Runoff = 0.10 cfs @ 12.11 hrs, Volume= 399 cf, Depth= 1.71"
Routed to Link C :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-YR Rainfall=8.15"

Area (sf)	CN	Description
2,169	39	>75% Grass cover, Good, HSG A
328	30	Woods, Good, HSG A
300	98	Roofs, HSG A
0	96	Gravel surface, HSG A
2,797	44	Weighted Average
2,497		89.27% Pervious Area
300		10.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-04: PS-04

Runoff = 0.04 cfs @ 12.12 hrs, Volume= 166 cf, Depth= 1.22"
Routed to Link D :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-YR Rainfall=8.15"

Area (sf)	CN	Description
1,636	39	>75% Grass cover, Good, HSG A
0	98	Roofs, HSG A
0	96	Gravel surface, HSG A
0	98	Unconnected pavement, HSG A
0	98	Paved parking, HSG A
1,636	39	Weighted Average
1,636		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-05: PS-05

Runoff = 0.31 cfs @ 14.03 hrs, Volume= 4,927 cf, Depth= 7.31"
Routed to Pond 1P : UNH - POROUS PAVEMENT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-YR Rainfall=8.15"

Area (sf)	CN	Description
621	39	>75% Grass cover, Good, HSG A
0	30	Woods, Good, HSG A
0	96	Gravel surface, HSG A
6,686	98	Paved parking, HSG A
779	98	Roofs, HSG A
8,086	93	Weighted Average
621		7.68% Pervious Area
7,465		92.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
160.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Pond 1P: UNH - POROUS PAVEMENT

Inflow Area = 8,086 sf, 92.32% Impervious, Inflow Depth = 7.31" for 100-YR event
Inflow = 0.31 cfs @ 14.03 hrs, Volume= 4,927 cf
Outflow = 0.31 cfs @ 14.04 hrs, Volume= 4,928 cf, Atten= 0%, Lag= 0.3 min
Discarded = 0.19 cfs @ 12.92 hrs, Volume= 4,344 cf
Secondary = 0.12 cfs @ 14.04 hrs, Volume= 584 cf
Routed to Link D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 308.92' @ 14.04 hrs Surf.Area= 800 sf Storage= 118 cf
Flood Elev= 308.66' Surf.Area= 800 sf Storage= 73 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 5.0 min (912.3 - 907.3)

Volume	Invert	Avail.Storage	Storage Description
#1	306.42'	53 cf	**20.00'W x 20.00'L x 0.33'H POROUS PAVEMENT BASE STONE** 132 cf Overall x 40.0% Voids
#2	307.00'	20 cf	**20.00'W x 20.00'L x 1.00'H POROUS PAVEMENT FILTER** 400 cf Overall x 5.0% Voids
#3	308.66'	135 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) -Impervious
		208 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.66	25	0	0
308.83	185	18	18
308.91	375	22	40
309.10	620	95	135

Device	Routing	Invert	Outlet Devices
#1	Discarded	306.42'	**10.000 in/hr Exfiltration over Horizontal area**
#2	Secondary	308.91'	**40.0' long + 1.0 '/' SideZ x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66

2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.19 cfs @ 12.92 hrs HW=307.00' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.19 cfs)

Secondary OutFlow Max=0.12 cfs @ 14.04 hrs HW=308.92' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 0.12 cfs @ 0.26 fps)

Summary for Pond 2P: UNH - POROUS PAVEMENT (frozen)

Volume	Invert	Avail.Storage	Storage Description
#1	306.42'	53 cf	**20.00'W x 20.00'L x 0.33'H POROUS PAVEMENT BASE STONE** 132 cf Overall x 40.0% Voids
#2	307.00'	20 cf	**20.00'W x 20.00'L x 1.00'H POROUS PAVEMENT FILTER** 400 cf Overall x 5.0% Voids
#3	308.66'	135 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) -Impervious
		208 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.66	25	0	0
308.83	185	18	18
308.91	375	22	40
309.10	620	95	135

Device	Routing	Invert	Outlet Devices
#1	Secondary	308.91'	**40.0' long + 1.0 '/' SideZ x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

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

Summary for Link A:

Inflow Area = 3,435 sf, 47.92% Impervious, Inflow Depth = 4.25" for 100-YR event
Inflow = 0.39 cfs @ 12.09 hrs, Volume= 1,215 cf
Primary = 0.39 cfs @ 12.09 hrs, Volume= 1,215 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link B:

Inflow Area = 1,716 sf, 0.00% Impervious, Inflow Depth = 0.94" for 100-YR event
Inflow = 0.02 cfs @ 12.14 hrs, Volume= 135 cf
Primary = 0.02 cfs @ 12.14 hrs, Volume= 135 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link C:

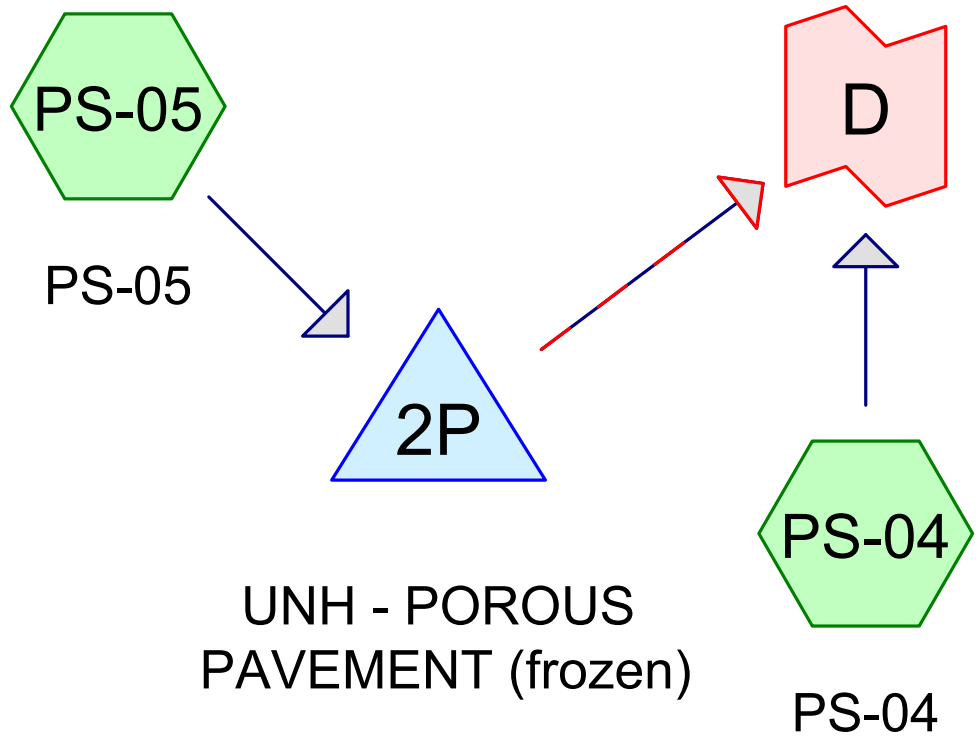
Inflow Area = 2,797 sf, 10.73% Impervious, Inflow Depth = 1.71" for 100-YR event
Inflow = 0.10 cfs @ 12.11 hrs, Volume= 399 cf
Primary = 0.10 cfs @ 12.11 hrs, Volume= 399 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Summary for Link D:

Inflow Area = 9,722 sf, 76.78% Impervious, Inflow Depth = 0.93" for 100-YR event
Inflow = 0.13 cfs @ 14.04 hrs, Volume= 750 cf
Primary = 0.13 cfs @ 14.04 hrs, Volume= 750 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs



Subcat Reach Pond Link

Routing Diagram for 18301-00 Lampes - Post_r1
Prepared by T F Moran Inc, Printed 2/24/2026
HydroCAD® 10.20-5c s/n 00866 © 2023 HydroCAD Software Solutions LLC

Summary for Subcatchment PS-04: PS-04

Runoff = 0.01 cfs @ 12.17 hrs, Volume= 95 cf, Depth= 0.70"
Routed to Link D :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 50-YR Rainfall=6.80"

Area (sf)	CN	Description
1,636	39	>75% Grass cover, Good, HSG A
0	98	Roofs, HSG A
0	96	Gravel surface, HSG A
0	98	Unconnected pavement, HSG A
0	98	Paved parking, HSG A
1,636	39	Weighted Average
1,636		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Subcatchment PS-05: PS-05

Runoff = 0.26 cfs @ 14.03 hrs, Volume= 4,025 cf, Depth= 5.97"
Routed to Pond 2P : UNH - POROUS PAVEMENT (frozen)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 50-YR Rainfall=6.80"

Area (sf)	CN	Description
621	39	>75% Grass cover, Good, HSG A
0	30	Woods, Good, HSG A
0	96	Gravel surface, HSG A
6,686	98	Paved parking, HSG A
779	98	Roofs, HSG A
8,086	93	Weighted Average
621		7.68% Pervious Area
7,465		92.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
160.0					**Direct Entry, Calc'd T'c < 6 mins**

Summary for Pond 2P: UNH - POROUS PAVEMENT (frozen)

Inflow Area = 8,086 sf, 92.32% Impervious, Inflow Depth = 5.97" for 50-YR event
Inflow = 0.26 cfs @ 14.03 hrs, Volume= 4,025 cf
Outflow = 0.26 cfs @ 14.04 hrs, Volume= 3,912 cf, Atten= 0%, Lag= 0.2 min
Secondary = 0.26 cfs @ 14.04 hrs, Volume= 3,912 cf
Routed to Link D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 308.93' @ 14.04 hrs Surf.Area= 800 sf Storage= 121 cf
Flood Elev= 308.66' Surf.Area= 800 sf Storage= 73 cf

Plug-Flow detention time= 31.7 min calculated for 3,912 cf (97% of inflow)
Center-of-Mass det. time= 13.9 min (925.8 - 911.9)

Volume	Invert	Avail.Storage	Storage Description
#1	306.42'	53 cf	**20.00'W x 20.00'L x 0.33'H POROUS PAVEMENT BASE STONE** 132 cf Overall x 40.0% Voids
#2	307.00'	20 cf	**20.00'W x 20.00'L x 1.00'H POROUS PAVEMENT FILTER** 400 cf Overall x 5.0% Voids
#3	308.66'	135 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) -Impervious
		208 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.66	25	0	0
308.83	185	18	18
308.91	375	22	40
309.10	620	95	135

Device	Routing	Invert	Outlet Devices
#1	Secondary	308.91'	**40.0' long + 1.0 '/' SideZ x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Secondary OutFlow Max=0.26 cfs @ 14.04 hrs HW=308.93' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.26 cfs @ 0.33 fps)

Summary for Link D:

Inflow Area = 9,722 sf, 76.78% Impervious, Inflow Depth = 4.95" for 50-YR event
Inflow = 0.26 cfs @ 14.04 hrs, Volume= 4,007 cf
Primary = 0.26 cfs @ 14.04 hrs, Volume= 4,007 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs

Inspection & Maintenance Manual

Broadway Auto Sales
6 Dickey Sreet, Londonderry, NH
February 9, 2026

Table of Contents

Description of Project

Responsible Party

Stormwater Practices – Schedule of Maintenance

Stormwater Practices – Maintenance Guidelines
- Treatment Practices
  - Permeable Pavement/Concrete
- Conveyance Practices
  - Grass Conveyance Swale
  - Grassed & Landscaped Sheet Flow Areas
- Other Maintenance
  - Paved Parking Area/Sidewalk Sweeping

Inspection & Maintenance Log

Inspection Checklist and Inspection & Maintenance Plan

Description of Project

Broadway Auto Sales is proposing to rehabilitate the existing vehicle storage area with associated site improvements such as expanded paved parking and a stormwater management area. The subject parcel is identified as Tax Map 10 Lot 109 and is located at 6 Dickey Street in Londonderry, NH.

The existing lot is a total of 0.41± acres of which approximately 0.32± acres will be disturbed as part of the proposed development. Existing topography in the proposed area of work reflects a minimal to moderate elevational change from an approximate elevation of 310 in the center of the property to an approximate elevation of 306 in the southern corner of the property (4-feet of grade change over 5 lineal feet). No wetlands were identified on the subject property.

Existing drainage flow paths will be maintained throughout the site. An open drainage system is proposed to attenuate, convey, and treat runoff from the proposed development. Porous pavement will provide treatment and manage runoff generated from the site.

The systems have been designed to maintain peak flows and volumes during all storm conditions up to and including the 100-year storm event.

- Best Management Practices are proposed to manage stormwater from the development and provide treatment, groundwater recharge and maintain existing flow rates leaving the site.
    - Twenty (20) 5'x4'x6" porous pavement sections will collect and recharge stormwater from proposed impervious surfaces on the site. The proposed filter beds installed underneath the porous pavement sections remove pollutants, reduce the peak rates of flow, and flow volume by capturing and infiltrating stormwater. The stormwater receives treatment as it percolates through the filter beds before the stormwater infiltrates into the native soils below the filter beds. Groundwater recharge is achieved through infiltration into the native soils below the filter beds.
- The Water Quality Volume (WQV) has been met by providing the required storage below the surface elevation at the top of the porous pavement sections.

Responsible Party

Owner/Applicant: Leon & Tamara Lampes

Address: 6 Dickey Street
Derry, NH 03038

Contact: Leo Lampes
Phone: (617) 549-1478
Email: pegasus.i@comcast.net

Stormwater Practices – Schedule of Maintenance

The following practices shall be inspected twice annually; once following snow-melt (spring) and once following leaf-drop (fall):

- Permeable Pavement/Concrete

The following practices shall be inspected annually following snow-melt (spring):

- Grass Swale
- Grassed & Landscaped Sheet Flow Areas

Other Maintenance:

- Paved Parking Area/Sidewalk Sweeping

An Inspection Checklist is provided on the following pages which outlines the critical components of the Facility Stormwater Management System. The Inspection Checklist shall be submitted to the Town of Londonderry for record annually.

Stormwater Practices – Maintenance Guidelines

Treatment Practices
(Inspected twice a year)

Permeable Pavement/Concrete
Maintenance Requirements:

Routine maintenance:

- Should include visual inspection of the pervious pavement to ensure that it is clean of debris and sediments, and that it will dewater between storms.
- Routine maintenance cleaning procedures would include blowing (with leaf blower or similar equipment), truck-sweeping and/or dry vacuuming.
- Maintenance should be performed as needed to keep the entire pervious concrete area clean. visually inspect the pavement periodically during or immediately following a rain event. ponding or puddles are signs that it is time to clean the pavement. in some areas.
- Moss growth can be an issue. moss can be controlled by sprinkling baking soda on the surface, followed by a dry vacuuming within a few weeks. moss growth can be retarded/eliminated with lime water applications.

Periodic maintenance:

- Perform periodic maintenance just before winter to ensure that the pervious concrete voids are clean and free of non-compressible materials that may inhibit draining and, therefore, could contribute to freeze-thaw damage.
- Periodic maintenance may be required following winter to remove any anti-skid materials that may have been used. proper cleaning procedures would include pressure washing and/or vacuuming the area with either a dry vacuum or a regenerative vacuum sweeper. care should be taken to avoid extremely high pressures with a pressure washer, as this can degrade the bonding cement paste and increase raveling. cleaning equipment should allow for the debris to be bagged and removed from the unit so it can be weighed.

Winter maintenance requirements:

- Pervious concrete should never be used as a storage area to pile snow from other areas.
- Anti-icing pre-treatments should never be used on pervious concrete pavements. if these products are used on adjacent pavements, care should be taken to prevent the adjacent runoff from infiltrating the pervious concrete.
- Deicers containing magnesium chloride, calcium magnesium acetate or potassium acetate should never be used on pervious concrete pavement.
- Deicing agents that contain fertilizer ingredients such as ammonium sulfate and ammonium nitrate cause chemical deterioration to any portland cement-based concrete pavement and should never be used.
- Calcium chloride impregnated sand can be used for deicing pavements after the first year.
- Coarse sand (minimum 1/8”), or small crushed aggregate (1/4 – 10, or similar gradation) can be used as an anti-skid material with the understanding that vacuum cleaning will be performed after the winter season. fine sands such as masonry sand or play sand should not be used on pervious concrete pavements!

- Snow plowing can be performed with trucks mounted with plows, but the plow should be fitted with a polyurethane cutting edge. use of snow blowers may be a better alternative to plowing, if available
- A site maintenance log will be kept. This log will record the dates when maintenance tasks were completed, the person who completed the task, and any observations of malfunctions in components of the stormwater management system and include a photograph of the basin.

Conveyance Practices
(Inspected once a year)

Grass Conveyance Swale
Maintenance Requirements:

- Grassed channels should be inspected annually for sediment accumulation, erosion and condition of surface lining.
- Repairs, including vegetation replacement, should be made based on inspection.
- Remove sediment and debris annually, or more frequently as warranted by inspection.
- Mow vegetated channels at least once a year to control establishment of woody vegetation. It is recommended to cut grass no shorter than 4 inches.

Grassed & Landscaped Sheet Flow Areas
Maintenance Requirements:

- Inspect at least once annually for damage, erosion and deterioration.
- Repair damages immediately and refresh with new material if needed.
- Maintain at least 85% vegetation for lawn area to ensure stabilization.
- Landscaped areas mulch depth shall be 3” minimum.

Other Maintenance

Paved Parking Area/Sidewalk Sweeping

- Sweeping efforts shall be conducted at least once per month outside of winter months. This includes the driveway, sidewalks/walks, and parking areas.

Inspection & Maintenance Log

Date	Inspector	BMPs checked	Maintenance Required

Inspection Checklist

Date:	**Project Name:** **Broadway Auto Sales**
Inspector's Name/Title:	
Inspector's Contact Information:	
☐ 1st Yearly Inspection ☐ 2nd Yearly Inspection	BMP's to be inspected: ALL BMP's to be inspected: Treatment Practices & Pretreatment Practices

BMP* **Refer to following Inspection & Maintenance Plan for BMP location**		Maintenance Required	Corrective Action Needed and Notes
#	BMP	Yes/No	Comments
1	Paved Parking Area/Sidewalk Sweeping		
2	Permeable Pavement/Concrete		
3	Grassed & Landscaped Sheet Flow Areas		
4	Grass Conveyance Swale		

Deicing Log

Date	Operator	Location	Event Began	Event End	Event Type	Total Precip	Pave ment Temp	Temp Trend	Material Used	Amount Used	Applicati on Rate

Invasive Species Management

Actions shall be taken if any invasive species begin to grow in the stormwater management practices in accordance with Env-Wq 1507.08. An Invasive Species Management Plan (ISMP) will be required

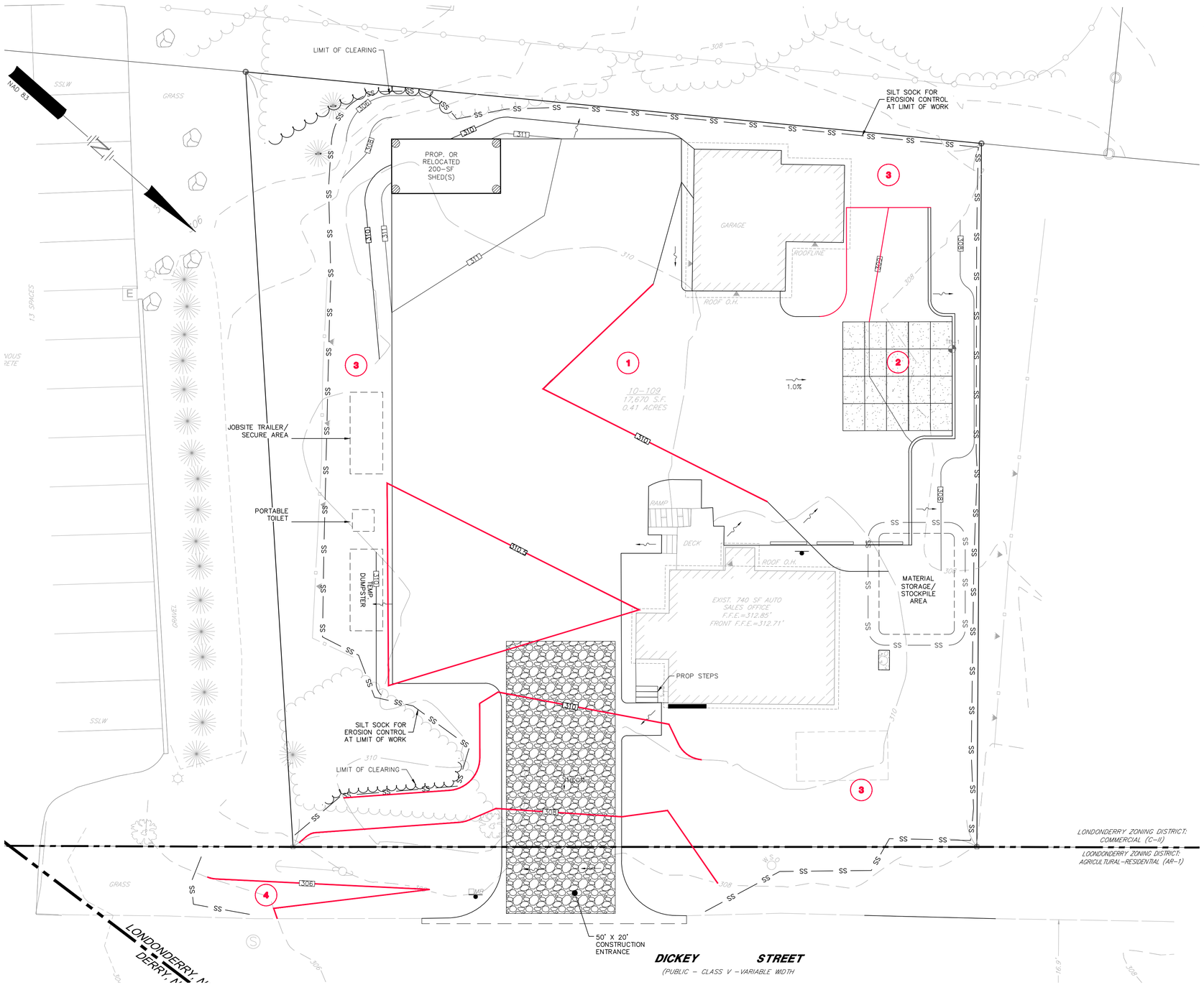
If the presence of invasive species is noted, a management plan will be prepared to address the problem and will likely require the use of several techniques. Action will be taken immediately when an invasive species is noted. Delay will only make the problem more difficult to address properly. Monitoring for invasive species will be conducted throughout the construction period as part of the regular construction environmental monitoring and will continue after completion of construction

Monitoring and management measures for invasive species will also be part of the regular ongoing operations and management activities for the components of the stormwater management system.

Invasive plant species most likely to be a problem in the constructed in stormwater facilities may include Japanese barberry, purple loosestrife, common reed and European buckthorn. Each species will be addressed according to methods most likely to be effective in control of the species. Invasive species are broadly grouped as herbaceous and woody. Each will be address in accordance with the most effective methods.

Deicing Plans

A Deicing Log should be implemented during winter months to keep records of the snow/ice maintenance needed during storm events. It is recommended that a New Hampshire Certified Green SnoPro Salt Applicator be employed to manage the snow and ice removal for the site. Additional information on salt reduction initiatives can be obtained at: http://www.des.nh.gov/organization/divisions/water/wmb/was/salt-reduction-initiative/documents/wmb-26.pdf



LEGEND

(2) INSPECTION CHECKLIST ITEM

SNOW REMOVAL & DE-ICING NOTES

1. IN THE EVENT THAT THE SNOW STORAGE AREAS PROVIDED ON THE SITE ARE COMPLETELY UTILIZED, EXCESS SNOW SHALL BE TRANSPORTED OFF SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
2. WINTER MAINTENANCE SHALL BE PERFORMED BY A GREEN SNO-PRO CERTIFIED (OR FUNCTIONAL EQUIVALENT CERTIFICATION) CONTRACTOR. ANNUAL REPORTING OF SALT USAGE SHALL BE TO NHDES STANDARDS.
3. SNOW MELT SEDIMENT WILL BE CAPTURED IN GRASS AREAS & CATCH BASIN SUMPS DURING SPRING SNOW MELT. PROPERTY OWNER SHALL INSPECT ONSITE SUMPS AND WATER QUALITY UNITS AND CONTRACT A VAC TRUCK SERVICE TO REMOVE ANY SEDIMENT. ALL SNOW MELT SEDIMENT IN LANDSCAPE AREAS SHALL BE SWEPT UP AND DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS FOR TRANSPORT AND DISPOSAL TO A PERMITTED LANDFILL.

STORMWATER SYSTEM ANNUAL REPORTING

THE LANDOWNER SHALL BE RESPONSIBLE FOR SUBMITTING AN ANNUAL REPORT TO THE DPW/EPD BY EACH YEAR THAT ALL STORMWATER MANAGEMENT AND EROSION CONTROL MEASURES ARE FUNCTIONING PER THE APPROVED STORMWATER MANAGEMENT PLAN AND I&M PLAN. THE INSPECTION AND MAINTENANCE LOG AND DEICING LOG SHALL BE INCLUDED WITH THE REPORT. THE ANNUAL REPORT SHALL NOTE IF ANY STORMWATER INFRASTRUCTURE HAS NEEDED ANY REPAIRS OTHER THAN ROUTINE MAINTENANCE AND THE RESULTS OF THOSE REPAIRS. IF THE STORMWATER INFRASTRUCTURE IS NOT FUNCTIONING PER THE APPROVED STORMWATER MANAGEMENT PLAN AND I&M PLAN, THE LANDOWNER SHALL MAKE ANY REPAIRS NECESSARY TO RESTORE THE FUNCTION AS DESIGNED WITHIN 90 DAYS OF DISCOVERING THE DEFICIENCY OR PROVIDE DOCUMENTATION TO DPW/EPD DESCRIBING WHY THE SYSTEM CANNOT BE REPAIRED WITHIN 90 DAYS AND A PROPOSED SCHEDULE FOR SUCH REPAIRS. THE LANDOWNER OF A SITE FOR WHICH A SOURCE CONTROL PLAN IS REQUIRED SHALL UPDATE THE SOURCE CONTROL PLAN AS NECESSARY TO REFLECT ANY CHANGES AND SUBMIT THE UPDATED SOURCE CONTROL PLAN TO DPW/EPD WITH ITS ANNUAL REPORT. IF NO CHANGES HAVE BEEN MADE, THE LANDOWNER SHALL DOCUMENT THIS IN THE ANNUAL REPORT. RECORDS MUST ALSO BE MADE AVAILABLE TO THE CITY OR DPW/EPD UPON REQUEST.

DESCRIPTION OF PROJECT

THE PROPOSED DEVELOPMENT IS THE CONSTRUCTION OF A PARKING LOT ON TAX MAP 10 LOT 109. IMPROVEMENTS WILL CONSIST OF GRADING, A STORMWATER MANAGEMENT SYSTEM AND LANDSCAPING. THE PROPOSED AREA OF WORK IS LOCATED PREDOMINANTLY ON TAX MAP 10 LOT 109. ACCESS TO THE SITE IS FROM DICKEY STREET.

THE SITE IS LOCATED DIRECTLY ADJACENT TO THE TOWN LINE SHARED WITH DERRY, NH. IN LONDONDERRY, THE SITE IS ABUTTED BY DEVELOPED COMMERCIAL II (C-II) PARCELS TO THE NORTH, EAST, SOUTH, AND WEST. IN DERRY, THE SITE IS ABUTTED BY DEVELOPED OBD-OFFICE BUSINESS DISTRICT PARCELS TO THE SOUTH AND SOUTHEAST.

AN OPEN DRAINAGE SYSTEM IS PROPOSED TO ATTENUATE, CONVEY, AND TREAT RUNOFF FROM THE PROPOSED DEVELOPMENT. A PERMEABLE CONCRETE/ASPHALT INFILTRATION BED IS STRATEGICALLY LOCATED TO PROVIDE PRETREATMENT/TREATMENT AND MANAGE RUNOFF.

RESPONSIBLE PARTY

BROADWAY AUTO SALES
6 DICKEY STREET
LONDONDERRY, NH 03053
CONTACT: LEO LAMPES
PHONE: (617) 549-1478
EMAIL: PEGASUS.I@COMCAST.NET

REFER TO C-11 FOR SCHEDULE OF MAINTENANCE

DEICING LOG

DATE	OPERATOR	LOCATION	EVENT BEGAN	EVENT END	EVENT TYPE	TOTAL PRECIP.	PAVEMENT TEMP	TEMP. TREND	MATERIAL USED	AMOUNT USED	APPLICATION RATE

TAX MAP 10 LOT 109

INSPECTION AND MAINTENANCE PLAN 1

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

HORIZONTAL SCALE 1"=10'
10 5 0 10

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

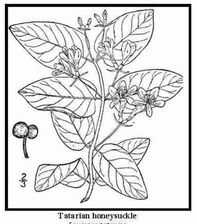
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE 18301.00 | DR | CK | CADFILE: 18301-00 DESIGN_LAYOUT | C-10

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions.* Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions.* Vol. 1: 676.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

Woody Plants	Method of Reproducing	Methods of Disposal
Norway maple *(Acer platanoides)* European barberry *(Berberis vulgaris)* Japanese barberry *(Berberis thunbergii)* autumn olive *(Elaeagnus umbellata)* burning bush *(Euonymus alatus)* Morrow's honeysuckle *(Lonicera morrowii)* Tatarian honeysuckle *(Lonicera tatarica)* showy bush honeysuckle *(Lonicera x bella)* common buckthorn *(Rhamnus cathartica)* glossy buckthorn *(Frangula alnus)*	**Fruit and Seeds**	**Prior to fruit/seed ripening** Seedlings and small plants ▪ Pull or cut and leave on site with roots exposed. No special care needed. Larger plants ▪ Use as firewood. ▪ Make a brush pile. ▪ Chip. ▪ Burn. **After fruit/seed is ripe** Don't remove from site. ▪ Burn. ▪ Make a covered brush pile. ▪ Chip once all fruit has dropped from branches. ▪ Leave resulting chips on site and monitor.
oriental bittersweet *(Celastrus orbiculatus)* multiflora rose *(Rosa multiflora)*	**Fruits, Seeds, Plant Fragments**	**Prior to fruit/seed ripening** Seedlings and small plants ▪ Pull or cut and leave on site with roots exposed. No special care needed. Larger plants ▪ Make a brush pile. ▪ Burn. **After fruit/seed is ripe** Don't remove from site. ▪ Burn. ▪ Make a covered brush pile. ▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.

Non-Woody Plants	Method of Reproducing	Methods of Disposal
garlic mustard *(Alliaria petiolata)* spotted knapweed *(Centaurea maculosa)* ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort *(Cynanchum nigrum)* ▪ May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort *(Cynanchum rossicum)* giant hogweed *(Heracleum mantegazzianum)* ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket *(Hesperis matronalis)* perennial pepperweed *(Lepidium latifolium)* purple loosestrife *(Lythrum salicaria)* Japanese stilt grass *(Microstegium vimineum)* mile-a-minute weed *(Polygonum perfoliatum)*	**Fruits and Seeds**	**Prior to flowering** Depends on scale of infestation Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. **During and following flowering** Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
common reed (*Phragmites australis*) Japanese knotweed *(Polygonum cuspidatum)* Bohemian knotweed *(Polygonum x bohemicum)*	**Fruits, Seeds, Plant Fragments** Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	**Small infestation** ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. **Large infestation** ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

January 2010

UNH Cooperative Extension programs and policies are consistent with pertinent Federal and State laws and regulations, and prohibits discrimination in its programs, activities and employment on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sex, sexual orientation, or veteran's, marital or family status. College of Life Sciences and Agriculture, County Governments, NH Dept. of Resources and Economic Development, Division of Forests and Lands, NH Fish and Game ,and U.S. Dept. of Agriculture cooperating.

STORMWATER PRACTICES - MAINTENANCE GUIDELINES

(INSPECTED TWICE A YEAR)

PERMEABLE PAVEMENT/CONCRETE
MAINTENANCE REQUIREMENTS:
ROUTINE MAINTENANCE:

- SHOULD INCLUDE VISUAL INSPECTION OF THE PERVIOUS PAVEMENT TO ENSURE THAT IT IS CLEAN OF DEBRIS AND SEDIMENTS, AND THAT IT WILL DEWATER BETWEEN STORMS.
- ROUTINE MAINTENANCE CLEANING PROCEDURES WOULD INCLUDE BLOWING (WITH LEAF BLOWER OR SIMILAR EQUIPMENT), TRUCK-SWEEPING AND/OR DRY VACUUMING.
- MAINTENANCE SHOULD BE PERFORMED AS NEEDED TO KEEP THE ENTIRE PERVIOUS CONCRETE AREA CLEAN. VISUALLY INSPECT THE PAVEMENT PERIODICALLY DURING OR IMMEDIATELY FOLLOWING A RAIN EVENT. PONDING OR PUDDLES ARE SIGNS THAT IT IS TIME TO CLEAN THE PAVEMENT. IN SOME AREAS.
- MOSS GROWTH CAN BE AN ISSUE. MOSS CAN BE CONTROLLED BY SPRINKLING BAKING SODA ON THE SURFACE, FOLLOWED BY A DRY VACUUMING WITHIN A FEW WEEKS. MOSS GROWTH CAN BE RETARDED/ELIMINATED WITH LIME WATER APPLICATIONS.

PERIODIC MAINTENANCE:

- PERFORM PERIODIC MAINTENANCE JUST BEFORE WINTER TO INSURE THAT THE PERVIOUS CONCRETE VOIDS ARE CLEAN AND FREE OF NON COMPRESSIBLE MATERIALS THAT MAY INHIBIT DRAINING AND, THEREFORE, COULD CONTRIBUTE TO FREEZE-THAW DAMAGE.
- PERIODIC MAINTENANCE MAY BE REQUIRED FOLLOWING WINTER TO REMOVE ANY ANTI-SKID MATERIALS THAT MAY HAVE BEEN USED. PROPER CLEANING PROCEDURES WOULD INCLUDE PRESSURE WASHING AND/OR VACUUMING THE AREA WITH EITHER A DRY VACUUM OR A REGENERATIVE VACUUM SWEEPER. CARE SHOULD BE TAKEN TO AVOID EXTREMELY HIGH PRESSURES WITH A PRESSURE WASHER, AS THIS CAN DEGRADE THE BONDING CEMENT PASTE AND INCREASE RAVELING. CLEANING EQUIPMENT SHOULD ALLOW FOR THE DEBRIS TO BE BAGGED AND REMOVED FROM THE UNIT SO IT CAN BE WEIGHED

WINTER MAINTENANCE REQUIREMENTS:

- PERVIOUS CONCRETE SHOULD NEVER BE USED AS A STORAGE AREA TO PILE SNOW FROM OTHER AREAS.
- ANTI-ICING PRE-TREATMENTS SHOULD NEVER BE USED ON PERVIOUS CONCRETE PAVEMENTS. IF THESE PRODUCTS ARE USED ON ADJACENT PAVEMENTS, CARE SHOULD BE TAKEN TO PREVENT THE ADJACENT RUNOFF FROM INFILTRATING THE PERVIOUS CONCRETE.
- DEICERS CONTAINING MAGNESIUM CHLORIDE, CALCIUM MAGNESIUM ACETATE OR POTASSIUM ACETATE SHOULD NEVER BE USED ON PERVIOUS CONCRETE PAVEMENT.
- DEICING AGENTS THAT CONTAIN FERTILIZER INGREDIENTS SUCH AS AMMONIUM SULFATE AND AMMONIUM NITRATE CAUSE CHEMICAL DETERIORATION TO ANY PORTLAND CEMENT-BASED CONCRETE PAVEMENT AND SHOULD NEVER BE USED.
- CALCIUM CHLORIDE IMPREGNATED SAND CAN BE USED FOR DEICING PAVEMENTS AFTER THE FIRST YEAR.
- COARSE SAND (MINIMUM 1/8"), OR SMALL CRUSHED AGGREGATE (1/4 – 10, OR SIMILAR GRADATION) CAN BE USED AS AN ANTI-SKID MATERIAL WITH THE UNDERSTANDING THAT VACUUM CLEANING WILL BE PERFORMED AFTER THE WINTER SEASON. FINE SANDS SUCH AS MASONRY SAND OR PLAY SAND SHOULD NOT BE USED ON PERVIOUS CONCRETE PAVEMENTS!
- SNOW PLOWING CAN BE PERFORMED WITH TRUCKS MOUNTED WITH PLOWS, BUT THE PLOW SHOULD BE FITTED WITH A POLYURETHANE CUTTING EDGE. USE OF SNOW BLOWERS MAY BE A BETTER ALTERNATIVE TO PLOWING, IF AVAILABLE
- A SITE MAINTENANCE LOG WILL BE KEPT. THIS LOG WILL RECORD THE DATES WHEN MAINTENANCE TASKS WERE COMPLETED, THE PERSON WHO COMPLETED THE TASK, AND ANY OBSERVATIONS OF MALFUNCTIONS IN COMPONENTS OF THE STORMWATER MANAGEMENT SYSTEM AND INCLUDE A PHOTOGRAPH OF THE BASIN.

SYSTEM COMPONENTS

DRIVEWAY, SIDEWALK, AND PARKING AREAS:
MAINTENANCE REQUIREMENTS:

- SEDIMENTS AND DEBRIS SHOULD BE REMOVED AND DISPOSED FROM IMPERVIOUS AREAS BY POWER-BROOM SWEEPING.
- SWEEP AT LEAST TWO (2) TIMES PER YEAR AND ON A MORE FREQUENT BASIS DEPENDING ON SANDING OPERATIONS.
- ALL RESULTING SWEEPINGS SHALL BE COLLECTED AND PROPERLY DISPOSED OF OFFSITE IN ACCORDANCE WITH NHDES AND OTHER APPLICABLE REQUIREMENTS.

LAWNS AND LANDSCAPING AREAS:
MAINTENANCE REQUIREMENTS:

- INSPECT, MAINTAIN, AND REPAIR AS NECESSARY DEVELOPMENT AREA LAWNS AND LANDSCAPED AREAS TO ENSURE A STABILIZED SURFACE.
- MAINTAIN LAWN AREAS WITH HEALTHY TURF. TAKE STEPS TO NECESSARY TO RESTORE DISTRESSED TURF TO GOOD HEALTH.
- ENSURE THAT LANDSCAPE MULCH MATERIALS IS REFRESHED AS NECESSARY, AND DOES NOT WASH ONTO SIDEWALKS OR OTHER ADJACENT SURFACES.

GRASS CONVEYANCE SWALES:
MAINTENANCE REQUIREMENTS:

- GRASSED CHANNELS SHOULD BE INSPECTED ANNUALLY FOR SEDIMENT ACCUMULATION, EROSION AND CONDITION OF SURFACE LINING.
- REPAIRS, INCLUDING VEGETATION REPLACEMENT, SHOULD BE MADE BASED ON INSPECTION.
- REMOVE SEDIMENT AND DEBRIS ANNUALLY, OR MORE FREQUENTLY AS WARRANTED BY INSPECTION.
- MOW VEGETATED CHANNELS AT LEAST ONCE A YEAR TO CONTROL ESTABLISHMENT OF WOODY VEGETATION. IT IS RECOMMENDED TO CUT GRASS NO SHORTER THAN 4 INCHES.

CONTROL OF INVASIVE PLANTS

DURING MAINTENANCE ACTIVITIES, CHECK FOR THE PRESENCE OF INVASIVE PLANTS. IF INVASIVE PLANTS ARE FOUND, THEY SHALL BE CONTROLLED AND REMOVED IN A SAFE MANNER AS DESCRIBED ON THE FOLLOWING PAGES.

INVASIVE PLANTS ARE INTRODUCED, ALIEN, OR NON-NATIVE PLANTS, WHICH HAVE BEEN MOVED BY PEOPLE FROM THEIR NATIVE HABITAT TO A NEW AREA. SOME EXOTIC PLANTS ARE IMPORTED FOR HUMAN USE SUCH AS LANDSCAPING, EROSION CONTROL OR FOOD CROPS. THEY ALSO CAN ARRIVE AS "HITCHHIKERS" AMONG SHIPMENTS OF OTHER PLANTS, SEEDS, PACKING MATERIALS OR FRESH PRODUCE. INVASIVE PLANTS CAN 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
- RESISTING CONTROL EXCEPT BY HAZARDOUS CHEMICALS.

STORMWATER PRACTICES - SCHEDULE OF MAINTENANCE

THE FOLLOWING PRACTICES SHALL BE INSPECTED TWICE ANNUALLY, ONCE FOLLOWING SNOWMELT (SPRING) AND ONCE FOLLOWING LEAF-DROP (FALL):

- PERMEABLE PAVEMENT/CONCRETE
- PAVEMENT/WALKWAY

THE FOLLOWING PRACTICES SHALL BE INSPECTED ANNUALLY FOLLOWING SNOWMELT (SPRING):

- LAWNS/LANDSCAPE AREAS
- GRASS CONVEYANCE SWALE

INSPECTION CHECKLIST

Date:	**Project Name:**
Inspector's Name:	
Inspector's Contact Information:	
☐ **1st Yearly Inspecton**	**BMPs to be Inspected: All**
☐ **2nd Yearly Inspecton**	**BMPs to be Inspected: Treatmend and Pretreatment Practices**

	BMP Refer to following Inspection & Maintenance Plan for BMP Location	Maintenance Required	Corrective Action Needed and Notes
1	PARKING LOT SWEEPING	YES/NO	
2	PERMEABLE PAVEMENT/CONCRETE	YES/NO	
3	LAWNS & LANDSCAPE AREA	YES/NO	
4	GRASS SWALE	YES/NO	

DE-ICING NOTE:

A DE-ICING LOG SHOULD BE IMPLEMENTED DURING WINTER MONTHS TO KEEP RECORDS OF THE SNOW/ICE MAINTENANCE NEEDED DURING STORM EVENTS. A NEW HAMPSHIRE CERTIFIED GREEN SNOPRO SALT APPLICATOR SHALL BE EMPLOYED TO MANAGE THE SNOW AND ICE REMOVAL FOR THE SITE. DEICING MATERIALS AND APPLICATION RATES SHALL BE REPORTED USING NHDES STANDARDS.

ADDITIONAL INFORMATION ON SALT REDUCTION INITIATIVES CAN BE OBTAINED AT: HTTP://WWW.DES.NH.GOV/ORGANIZATION/DIVISIONS/WATER/WMB/WAS/SALT-REDUCTION-INITIATIVE/DOCUMENTS/WMB-26.PDF

TAX MAP 10 LOT 109

INSPECTION AND MAINTENANCE PLAN 2

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

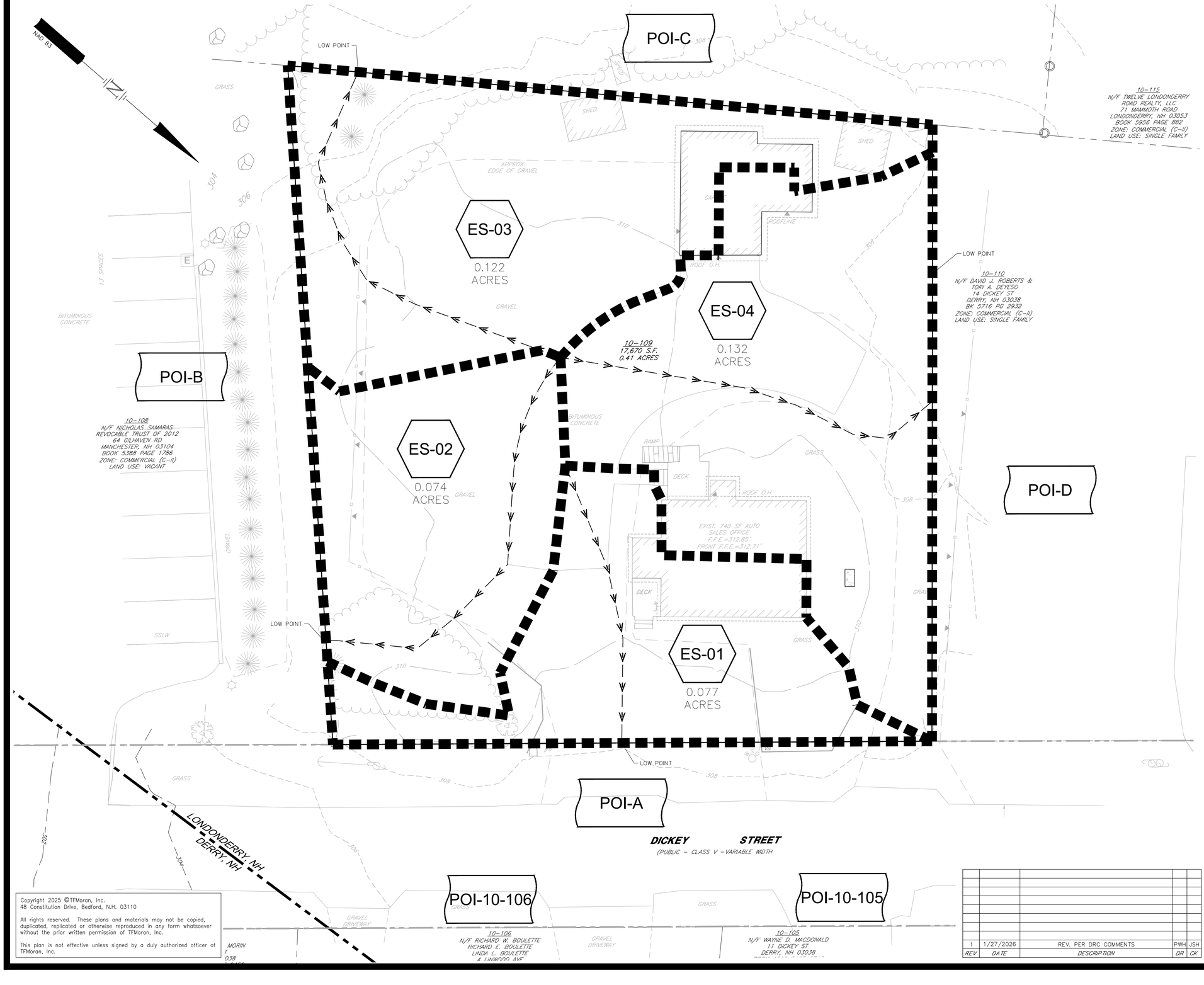
NOVEMBER 6, 2025

REV	DATE	DESCRIPTION	PWH / DR	JSH / CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

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

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

FILE 18301.00 | DR - | CK - | CADFILE 18301-00 DESIGN_LAYOUT | C-11



LEGEND

- PROPERTY LINE
- LIMITS OF DRAINAGE SUBCATCHMENT
- SOIL GROUP BREAKLINE
- FLOW PATH (Tc LINE)
- REACH
- POI-1 — POINT OF INTEREST
- ES-1 — SUBCATCHMENT AREA
- EP-1 — POND, CULVERT, OR CATCH BASIN
- ER-1 — REACH

NOTES

1. THE SITE SOIL INFORMATION WAS ACQUIRED ON FEBRUARY 10, 2025, USING UNITED STATES DEPARTMENT OF AGRICULTURE (USDA) NATURAL RESOURCES CONSERVATION SERVICE (NRCS).

SOIL PHASE LEGEND (PERCENT)					
A	B	C	D	E	F
0-3	3-8	8-15	15-25	25-50	50+

SOIL LEGEND (PER USDA NRCS WEB SOIL SURVEY)			
SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP	DRAINAGE CLASS
799	URBAN LAND-CANTON COMPLEX, 3 TO 15 PERCENT SLOPES	A	EXCESSIVELY WELL DRAINED

HORIZONTAL SCALE 1"=10'
10 5 0 10

TAX MAP 10 LOT 109

PRE-DEVELOPMENT DRAINAGE PLAN

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

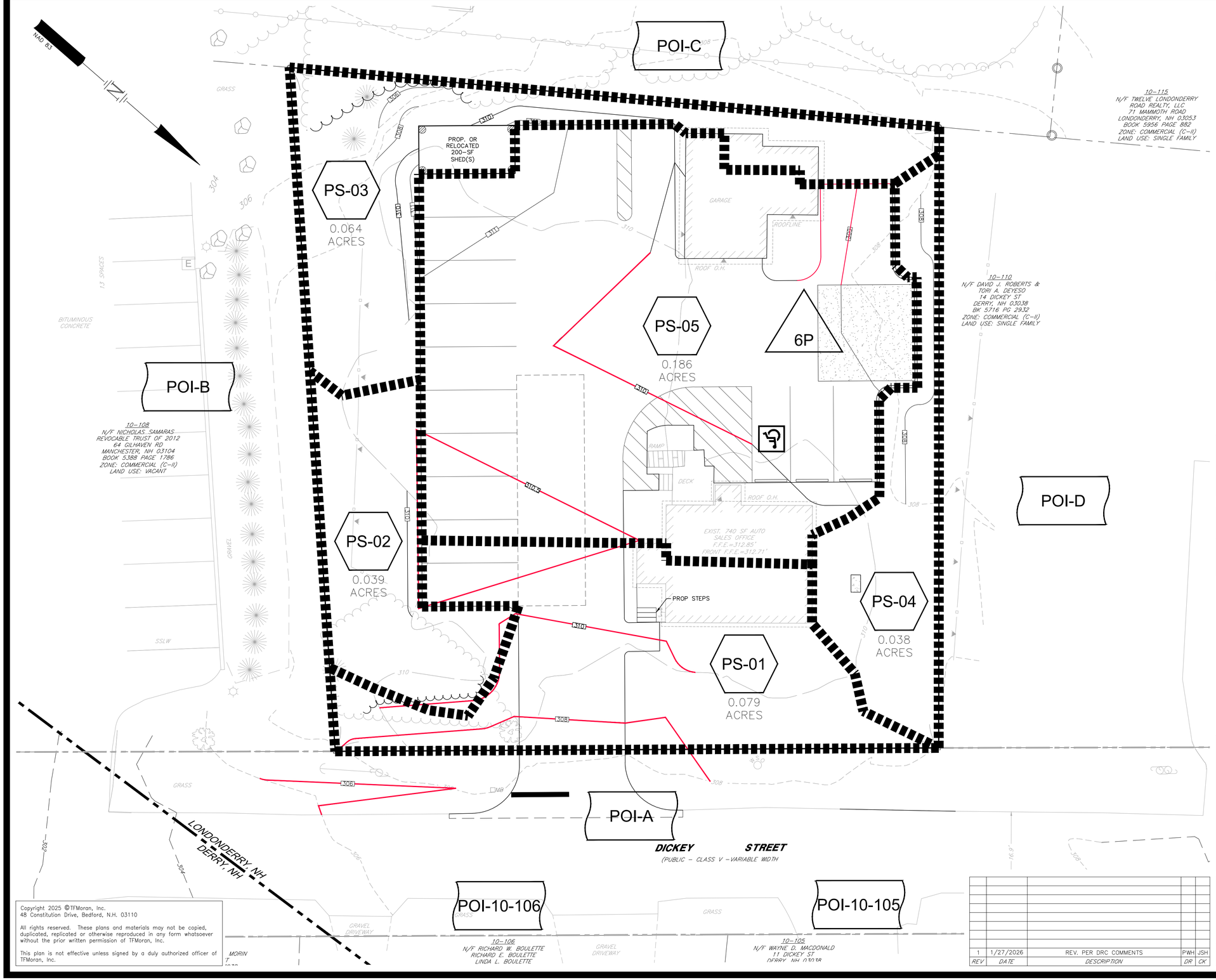
All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

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

REV	DATE	DESCRIPTION	DR	CK
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

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

FILE	DR	CK	CADFILE		
18301.00				18301-00 DRAINAGE	DRN-01



LEGEND

- PROPERTY LINE
- LIMITS OF DRAINAGE SUBCATCHMENT
- SOIL GROUP BREAKLINE
- FLOW PATH (Tc LINE)
- REACH
- POI-1 — POINT OF INTEREST
- PS-1 — SUBCATCHMENT AREA
- PP-1 — POND, CULVERT, OR CATCH BASIN
- PR-1 — REACH

NOTES

1. THE SITE SOIL INFORMATION WAS ACQUIRED ON FEBRUARY 10, 2025, USING UNITED STATES DEPARTMENT OF AGRICULTURE (USDA) NATURAL RESOURCES CONSERVATION SERVICE (NRCS).

SOIL PHASE LEGEND (PERCENT)

A	B	C	D	E	F
0-3	3-8	8-15	15-25	25-50	50+

SOIL LEGEND (PER USDA NRCS WEB SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP	DRAINAGE CLASS
799	URBAN LAND-CANTON COMPLEX, 3 TO 15 PERCENT SLOPES	A	EXCESSIVELY WELL DRAINED

HORIZONTAL SCALE 1"=10'
10 5 0 10

TAX MAP 10 LOT 109

POST DEVELOPMENT DRAINAGE PLAN

BROADWAY AUTO SALES

6 DICKEY STREET, LONDONDERRY, NH

OWNED BY/PREPARED FOR

LEON & TAMARA LAMPES

6 DICKEY STREET, DERRY, NH 03038

NOVEMBER 6, 2025

Copyright 2025 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

REV	DATE	DESCRIPTION		
1	1/27/2026	REV. PER DRC COMMENTS	PWH	JSH

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

FILE	18301.00	DR		CADFILE	18301-00 DRAINAGE	DRN-02
		CK				

Town of Londonderry, New Hampshire

Planning & Economic Development Department 603-432-1100
268B Mammoth Road 603-432-1128
Town Hall – 2nd Floor www.londonderrynh.org

Planning – Zoning – Economic Development – Conservation

MEMORANDUM

TO: Planning Board

FROM: Kristan Farr, Town Planner

DATE: April 1, 2026

RE: Public hearing of an application for a formal review of a site plan for a retail car dealership and associated site improvements in the Commercial II (C-II) Zoning District. 6 Dickey Street, Tax Map 10, Lot 109, Leon & Tamara Lampes (Owner/Applicant).

The application before the Board is a proposal for site improvements to the existing retail auto sales facility at 6 Dickey Street with no building expansions or façade changes to the existing 847 square foot building. Proposed work includes resurfacing and reconfiguring the paved vehicle display and storage area, adding porous asphalt stormwater infiltration with associated grading, landscaping, and striping for customer parking while maintaining the existing driveway access points on Dickey Street. This property is located off Route 102, near the Derry line.

This site has recently received several variances from the Zoning Board of Adjustment. A summary of these variances has been included as a separate document for your reference. Attached as ZBA comments 6 Dickey Street and dated April 1, 2026 ZBA comments 6 Dickey Street 4.1.2026

The Board will need to consider completeness of the application, seven waiver requests and the Site Plan Application.

Completeness: There are two outstanding checklist items**.** If the Board decides to accept the application as complete, these items should be waived for ***acceptance only***.

After staff review of the submission, the following checklist items remain outstanding. If the Board finds the application otherwise complete, staff recommends these items be waived for acceptance only:

1. Checklist item XI.5a–f and SPR §4.18.B: Utility Clearance Letters
   The applicant requests omission of the utility clearance letters because no new or modified utility services are proposed. The site improvements are limited to vehicle storage/lot surfacing. *The Applicant has submitted a written waiver request for these requirements for Planning Board consideration*.

2. Checklist item IX and SPR §3.12: Architectural Elevations

The Applicant requests omission of the architectural elevations as no changes to the building façade or elevations are proposed. *The Applicant has submitted a written waiver* request for these requirements for Planning Board consideration.

3. Checklist and item VIII and SPR section 3.13: Lighting Plan
   The Applicant has not provided a lighting plan to demonstrate the existing lighting complies. *The Applicant has submitted a written waiver request for these requirements for Planning Board Consideration.*

4. Checklist item II.5 and SPR section 4.18.i and j: Other Legal Documents/Abutter Acknowledgement
   The existing conditions plan indicates existing encroachments on the property of the westerly abutter. The site preparation plan by the Applicant indicates the removal of the sheds and restoration of the impacted site area but the submission does not include any appropriate documentation indicating acceptance by the abutter for the work on the abutting property. *The Applicant should provide documentation indicating the abutter has acknowledged the proposed work on the abutting property.*

Waivers: The applicant has submitted seven (7) waiver requests:

1. LSPR §3.10.G.1 relating to the requirement that at least % of the interior parking lot be dedicated to landscaped areas. The Applicant's site design does not provide the minimum internal landscaping per Section 3.10.G.1 of the Site Plan Regulations and Checklist item VII. *The Applicant has submitted a written waiver request for these requirements for Planning Board consideration*.

2. LSPR §3.10.G.3 relating to the requirement to provide interior shade trees at a rate of one per 15 interior parking spaces. The Applicant's site design does not provide the minimum interior shade tree requirement per Section 3.10.G.3 of the Site Plan Regulations and Checklist item VII. *The Applicant has submitted a written waiver request for these requirements for Planning Board consideration*.

3. LSPR §3.10.G.4 relating to the requirement for curbing along the edge of pavement surrounding parking areas. The Applicant's site design does not provide the minimum curbing along edges of pavement per Section 3.10.G.4 of the Site Plan Regulations and Checklist item VII. *The Applicant has submitted a written waiver request for these requirements for Planning Board consideration*.

4. LSPR §3.10.G.5 relating to the requirement to provide perimeter shade trees at a rate of one per 20 parking spaces or one per 50 feet of perimeter length where buffering is required. The Applicant's site design does not provide the minimum perimeter shade trees per Section 3.10.G.5 of the Site Plan Regulations and Checklist item VII. *The Applicant has submitted a written waiver request for these requirements for Planning Board consideration*.

5. LSPR §3.12 relating to the requirement to submit architectural elevations or renderings of buildings. The Applicant's site design does not provide the minimum architectural elevations or building renderings per Section 3.12 of the Site Plan Regulations and Checklist item IX. *The Applicant has submitted a written waiver request for these requirements for Planning Board consideration*.

6. LSPR §3.13 relating to the requirement to provide a site lighting plan, photometric details, fixture specifications, and lighting design compliance. The Applicant's site design does not provide the minimum lighting plan, photometric information and fixture specification per Section 3.13 of the Site Plan Regulations and Checklist item VIII. *The Applicant has submitted a written waiver request for these requirements for Planning Board consideration*.

7. Site Plan Checklist XI.5.a–f relating to the requirement to provide utility clearance letters for electric, telephone, cable, gas, water, and sewer services. The Applicant's site design does not provide the required utility clearance letters per Section 4.18.B of the Site Plan Regulations and Checklist item XI.5.a-f. *The Applicant has submitted a written waiver request for these requirements for Planning Board consideration*.

Staff recommends that that the Board vote with respect to any requested waivers utilizing the criteria from RSA 674:36 and Londonderry Subdivision and Site Plan Regulations Section 6.04 and 7.04 as noted below:

In a case when the strict application of these regulations would:

a. Result in peculiar and exceptional practical difficulties or exceptional and undue hardship upon the owner of the affected property; or
b. An alternative site planning and building design approach meets the design objectives as stated in the regulations, equally well or better than would compliance with the regulations; and
c. In either of the foregoing circumstances, the waiver may be granted without substantial detriment to the public good;

SITE PLAN APPLICATION Recommendation: Conditional approval is appropriate when the project reaches the point at which Board involvement is no longer required, and outstanding items can be resolved with staff. Once the Board has made these decisions, there is no reason to require the Applicant to return to the Board next month.

Based on the information available to date, Staff recommends that the Planning Board **CONDITIONALLY APPROVE** this application.

If the Board CONTINUES the application, it should be continued to April 8, 2026 or May 13, 2026.

If the Board CONDITIONALLY APPROVES this application, the Notice of Decision should read substantially as follows:

Board Action Required: Motion to grant conditional approval of the application for a site plan for site improvements associated with a retail automobile sales operation at 6 Dickey Street, Map 10, Lot 109, Leon and Tamara Lampes (Owner/Applicant), located in the Commercial II (C-II) Zoning District, with the precedent conditions to be fulfilled within 120 days of approval and prior to plan signature and general and subsequent conditions of approval to be fulfilled as noted in the Engineering Memo.

Should the planning board decide to conditionally approve the application, the following conditions should be included:

"Applicant", herein, refers to the property owner, business owner, or organization submitting this application and to his/its agents, successors, and assigns.

PRECEDENT CONDITIONS

All of the precedent conditions below must be met by the Applicant, at the expense of the Applicant, prior to certification of the plans by the Planning Board. Certification of the plans is required prior to commencement of any site work, any construction on the site or issuance of a building permit.

1. The Applicant shall address all appropriate items from the Planning & Economic Development Department/Department of Engineering & Environmental Services/Stantec Review Memo and Traffic Impact Assessment dated April 1, 2026.

2. The Applicant shall obtain and note any and all applicable state, local, or other permitting on the plans.

3. Owner's signature shall be provided on the plans.

4. The Applicant shall provide a digital copy of the complete final plan to the Town prior to plan signature by the Planning Board in accordance with the Site Plan Regulations.

5. Third-party review fees shall be paid within 30 days of conditional site plan approval.

6. Financial guarantees be provided to the satisfaction of the Department of Public Works and Engineering.

7. Final engineering review.

PLEASE NOTE – If these conditions are not met within 120 days of the meeting at which the Planning Board grants approval, the Board's approval will be considered to have lapsed and re-submission of the application will be required.

GENERAL AND SUBSEQUENT CONDITIONS

All of the conditions below are attached to this approval.

1. **No construction or site work may be undertaken until a pre-construction meeting with Town staff has taken place, filing of an NPDES – EPA Permit (if required), and posting of the site-restoration financial guaranty with the Town.** Contact the Department of Public Works to arrange the pre-construction meeting.

2. The project must be built and executed as specified in the approved application package unless modifications are approved by the Planning Department & Department of Public Works, or, if Staff deems applicable, the Planning Board.

3. All of the documentation submitted in the application package by the applicant and any requirements imposed by other agencies are part of this approval unless otherwise updated, revised, clarified in some manner, or superseded in full or in part. In the case of conflicting information between documents, the most recent documentation and this notice herein shall generally be determining.

4. Fire department access roads shall be provided at the start of the project and maintained throughout construction. Fire department access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be provided with an all-weather driving surface.

5. It is the responsibility of the applicant to obtain all other local, state, and federal permits, licenses, and approvals which may be required as part of this project (that were not received prior to certification of the plans). Contact the Building Division at extension 115 regarding building permits.

6. Prior to issuance of a certificate of occupancy, all site improvements and off-site improvements shall be completed in accordance with the plan approved by the Planning Board. In accordance with Section 6.01.d of the Site Plan Regulations, in circumstances that prevent landscaping to be completed (due to weather conditions or other unique circumstance), the Building Division may issue a certificate of occupancy prior to the completion of landscaping improvements, if agreed upon by the Planning Division & Public Works Department, when a financial guaranty (see forms available from the Public Works Department) and agreement to complete improvements are placed with the Town. The landscaping shall be completed within 6 months from the issuance of the certificate of occupancy, or the Town shall utilize the financial guaranty to contract out the work to complete the improvements as stipulated in the agreement to complete landscaping improvements. ***No other improvements shall be permitted to use a financial guaranty for their completion for purposes of receiving a certificate of occupancy***.

7. As built site plans must to be submitted to the Public Works Department prior to the release of the applicant's financial guaranty.

MEMORANDUM

To: Planning Board

Date: April 1, 2026

From: Planning and Economic Development
Department of Public Works & Engineering
Stantec Consulting Services, Inc.

Re: Broadway Auto Sales Site Plan
Map 10 Lot 109
6 Dickey Street

Applicant: Leon & Tamara Lampas
Owner: Leon & Tamara Lampas

TF Moran, Inc. submitted plans and supporting information for the above-referenced project. DRC and the Town's engineering consultant, Stantec Consulting Services Inc. reviewed the submitted plans and information, and review comments were forwarded to the Applicant's engineer. The Applicant submitted revised plans and information and we offer the following comments:

Checklist Items:

1. The Applicant has not provided a lighting plan to demonstrate the existing lighting complies with section 3.13 of the of the Site Plan Regulations and item VIII of the checklist. The Applicant has submitted a written **waiver request** for these requirements for Planning Board Consideration.

2. The existing conditions plan indicates existing encroachments on the property of the westerly abutter. The site preparation plan by the Applicant indicates the removal of the sheds and restoration of the impacted site area but the submission does not include any appropriate documentation indicating acceptance by the abutter for the work on the abutting property per section 4.18.i and j of the regulations and item II.5 of the checklist.

Design Review Items:

1. The Applicant's proposed site design does not provide the minimum 8% overall interior area of proposed parking lot located on the side of the principal building dedicated to landscaping per section 3.10.g.1.ii of the regulations. The Applicant has submitted a written **waiver request** for this requirement for Planning Board consideration.

2. The Applicant's proposed site design does not provide the minimum number of interior shade trees for the total parking space count per section 3.10.g.3 of the regulations. The Applicant has submitted a written **waiver request** for this requirement for Planning Board consideration.

3. The Applicant's proposed site design does not provide the minimum number of perimeter shade trees for the total parking space count per section 3.10.g.5 of the regulations. The Applicant has submitted a written **waiver request** for this requirement for Planning Board consideration.

4. The Applicant's proposed site design does not provide curbing or other acceptable means of landscape protection from encroachments per section 3.10.g.4 of the regulations. The Applicant has submitted a written **waiver request** for this requirement for Planning Board consideration.

5. The Applicant's revised stormwater design does not address the impacts within Dickey Street for the proposed development and the paved driveway. At this time, the Applicant's revised design has not demonstrated compliance with section 3.07 of the Site Plan Regulations of no increase in runoff. We recommend the Applicant revise the design analysis to include the

impacts to Dickey Street (pre and post development) and demonstrate compliance with the regulations has been achieved.

6. As referenced in the prior project review, the NRCS information notes the project soil type as Urban-Canton soil series which is a hydrologic group "B" soil (versus "A" soil). However, the Applicant has not revised the calculations to indicate the proper values associated with the hydrologic group "B" soil. The runoff values presented in the current report are incorrectly associated with group "A" soil. It is anticipated that the runoff values associated with group "B" soil will be higher than those presented in the report. At this time, the Applicant has not provided proper stormwater calculations to demonstrate the project has met compliance with section 3.07.A – no increase in runoff. We recommend the Applicant revise the calculations and analysis to properly represent the existing and proposed soil conditions (with hydrologic soil group "B") and the associated runoff values to each abutter and demonstrate the design complies with the regulations.

7. The Applicant's design intent appears to create a surface detention ponding area on the pavement of the parking lot. This surface ponding area acts as a detention pond to mitigate 25-year peak runoff, but does not provide the 12-inches of freeboard above the 50-year elevation per section 3.07.B.10 of the regulations. It appears this dual use design is intended to function as a parking area and as a detention basin. This unusual design is not addressed in the regulations and the Town will need to decide if it is allowed and the requirements of the regulations that would apply to the design.

8. The project requires a Town of Londonderry Stormwater Permit for the proposed development. The Applicant should submit for and obtain all project permits, indicate the permit approval numbers on sheet 1 and provide copies of all permits for the Planning Department files per sections 4.13 and 4.18.e of the Site Plan Regulations and Item XII of the Site Plan Application & Checklist.

9. We recommend the Applicant clarify/address the following on the **Cover Sheet and Existing Conditions Plan:**
   a. Please update the plan to dimension the right-of-way width of the existing roadway per sections 4.12.c.6.iii of the Site Plan Regulations and item V.5.c of the Site Plan Application Checklist.
   b. Please update the title blocks for the existing conditions plans to indicate the Owner's address per section 4.02.e of the Site Plan Regulations and item III.2.e of the checklist.
   c. Please update the cover sheet, site plan, and landscape plan to provide the Owner's signature on the plan per section 4.03 and 4.12.c.16 of the regulations and item V.13 of the checklist.

10. We recommend the Applicant clarify/address the following on the **Site Plan, Grading and Drainage Plan, Utility Plan, and Erosion Control Plan:**
    a. The revised site plan does not provide a proper vertical curb design height (6") consistent with detail provided on sheet C-13 and consistent with exhibit R103 of the Town's regulations near the proposed pervious pavement. We note the revised design has labeled tip down sections that reduce the curb to 3 inches to create discharge spillway which will create a point source discharge to the abutting property. This design was not recommended at a discussion meeting with the Applicant and other stormwater design concepts were recommended to the Applicant. However, the Applicant's revised design has not changed the design intent (infiltration) to use porous pavement and still creates a

spillway and point source discharge for the 25-year storm event to the abutting property. We recommend the Applicant revise the curb design to provide a complete level lip along the curb that would contain the site runoff to remain entirely upon the site to the extent practical.

b. The revised design indicates the proposed wide parking space on the west side of the garage will be adjacent to the building. We recommend a curb or other substantial bumper (bollard?) be provided to reduce potential impacts to the building.
c. We recommend the Applicant provide a note on the site plan for the type of anticipated delivery vehicle for the project.
d. Please update the site plan notes to include a note identifying which plans are on file at the Town per item IV.1.p of the checklist.
e. Please update the driveway sight distance plan to provide the proper certification per section 3.08.B.8 of the Site Plan Regulations and exbibit D3 of the Subdivision Regulations.

11. We recommend the Applicant clarify/address the following on the **Construction Details**:
    a. The inspection and maintenance plan 1 includes erosion control measures such as stock piles, construction entrance, etc. that would not exist upon completion of the project. Please update the plan to remove these temporary construction items accordingly.
    b. Note 3 in the snow removal & de-icing notes of the inspection and maintenance plan 1 identify catch basins for the project that are not part of the site design. Please review and revise the notes to be representative of the project site. In addition, please update the plan to indicate and label the location of snow storage areas.
    c. Please provide details for the stop sign and stop bar in the plan set for proper construction.
    d. Please provide a detail for the proposed sidewalk in the plan set for proper construction.
    e. The cross section of the proposed porous pavement detail on sheet C-13 does not include specifications for the porous pavement material to demonstrate the design will infiltrate. Please provide complete porous pavement design information for proper construction. In addition, we recommend the project plans provide detailed construction sequencing and testing to ensure this specially designed pavement and cross section will be porous and will provide the required infiltration rate consistent with the stormwater design analysis.

12. We recommend the Applicant address the following relative to the **Project Drainage Analysis**:
    a. The Applicant's stormwater design indicates a "percolation test" was conducted and used in the analysis that is improper and inconsistent with the NHDES AoT requirements for infiltration testing per Env-Wq 1504.14.e. We note the project has assumed the site has Hydrologic group "A" soil that is incorrect with the associated assumption of an infiltration rate of 20 inches per hour. We note the Canton soil type (group "B" soil) has a general Ksat range of 2 to 6 inches per hour that is significantly less than the 20 inches claimed in the report description and the 10 inches used in the design of the site. We recommend the Applicant conduct the appropriate infiltration testing for this stormwater facility in accordance with NHDES AoT requirements Env-Wq 1504.14.e as required by the Town's regulations. Please update the stormwater analysis as necessary based upon the results of the proper infiltration testing, and review and revise the design accordingly.
    b. The Applicant's executive summary and post development conditions in the revised report indicates proposed porous concrete pavement panels and is inconsistent with the revised plan and detail indicating porous asphalt pavement. Please revise the narrative to be consistent with the revised stormwater design.
    c. The infiltration practice criteria worksheet is incomplete and has not addressed the question in line 15 of the document. In addition, line 50 notes an incorrect concrete surface and is inconsistent with the latest design. Please revise accordingly.

d. The amount of roof area in the post subcatchment PS-01 calculation is less than the same roof area in the existing conditions subcatchment ES-01. Please revise the post development area to match the existing conditions and demonstrate compliance is achieved – no increase in runoff.
e. Please clarify how the entirety of the proposed shed roof in post subcatchment PS-03 would drain to the south as half would be anticipated with a peaked roof. Please update the calculations, as necessary.
f. The amount of roof area in the calculations for post subcatchments PS-03 and PS-05 appears to be less than the roof area shown on the post development plan. In addition, the amount of grass area in the PS-05 calculation appears to be more than shown on the plan. Please review and revise the post development area to match the proposed conditions and demonstrate compliance is achieved – no increase in runoff.
g. The Applicant's proposed site design directs most of the site runoff to the proposed ponding area associated with curbed porous pavement area – Pond P1. The calculations indicate the design intent is to create a ponding area in the driveway with a 40-foot wide curb discharge spillway which will create a point source discharge flow to the abutting property during the 25-year event. Under the existing conditions there is sheet flow along the entire property and not a point discharge to the abutting property. The point source discharge will likely create a localize wet area or ponding on the abutting property that is not recommended.
h. It is unknown where the porous pavement ponding area #3 in the pond 1P calculations was determined or where this ponding area is located. It appears to be a surface condition, but the surface area in the vicinity of the porous pavement is sloped and the limits of the ponding implied in the calculations are unclear. Please provide additional supporting information with a plan with spot elevation that outlines where the ponding in the driveway occurs for the porous pavement on the site. In addition, please label the floor elevation of the garage.
i. The porous pavement area – Pond P1 calculations indicate the 40-foot discharge weir has a breath of 4 feet, but the revised grading plan does not appear to clarify the location and design of this ponding outlet device. Please provide additional spot elevations and information on the plan to clarify the location accordingly consistent with the calculations for pond P1.
j. The Applicant's revised analysis includes an unconnected frozen conditions node for the pervious pavement ponding, but the submission does not include runoff flow (zero flow) to the node to document the design flow and impact to the abutting property, as well as demonstrate compliance with the regulations. Please update the analysis accordingly.
k. The updated report includes a stormwater Inspection and Maintenance Manual (I&M Manual) for the stormwater management system as required by the stormwater regulations. We recommend the Applicant update the I&M Manual to include and address the following:
    1. The project description and stormwater practices in the document do not properly identify the proposed porous asphalt pavement area consistent with the revised design. Please revise the document consistent with the project design.
    2. The maintenance guidelines do not properly include the quarterly routine vacuum sweeping consistent with the UNH Stormwater Center fact sheet for porous pavement. Please update the maintenance requirements accordingly.
    3. The document includes a grass conveyance swale, but the design does not indicate or label this stormwater feature. Please review, explain, and update the document, as necessary.

4. The document does not address winter maintenance, as necessary. Please update the document accordingly.
5. Please update the document to state that the inspection and maintenance logs shall be provided to the Town of Londonderry on an annual basis.
6. Please update the document text to note that the amount of salt usage shall be reported to NHDES on an annual basis prior to June 1.
7. Please update the Inspection and maintenance plans in the document and the plan set to address the above comments.

13. The Applicant has provided a SWPPP with this latest submission. We recommend the Applicant address the following relative to the submitted SWPPP;
    a. The submission does not identify a contractor (operator) who will be responsible for the proposed implementation of the SWPPP per section 1.2 of the document. Please update the document accordingly.
    b. Copies of the stormwater team certifications per section 6 of the document and 6.1 and 7.2.2 of the 2022 Construction General Permit (CGP) are absent. Please update Appendix I accordingly to demonstrate the stormwater team conducting inspections is properly trained.
    c. Please indicate and label the location of the washout for applicators and containers used for stucco, paint, concrete, form release, oils, cutting compounds, etc on the plans per section 5.6 of the document and as required per CGP 2.3.4.
    d. The certification and notification statement in section 8 is not endorsed. Please review and update.
    e. A condition of the Londonderry Stormwater Permit will be the SWPPP reports shall be provided via e-mail to the Town at the same time they are provided to the Contractor and Owner.

14. The Applicant's submitted traffic memo is unchanged and has not addressed the previous traffic review comments dated January 20, 2026 – copy attached. We recommend the Applicant provide an updated traffic memo that addresses the comments for inclusion in the Planning Board's project file.

15. We recommend the Applicant verify the DRC comments of Planning Department have been adequately addressed with the Planning Department.

Board Action Items:

1. The Applicant has submitted seven (7) separate waiver requests relative to several separate requirements of the Site Plan Regulations as noted in the letter dated February 25, 2026. The Board should carefully review each waiver request and consider each waiver request as part of the project review.

Stantec

Memo

To:	Ms. Kellie Caron & Ms. Kristan Farr Community Development Department Londonderry, NH	From:	Evan Drew PE PTOE RSP1 Michael Leach
CC:	Mr. John Trottier, PE Director of Engineering and Environmental Services Londonderry, NH		Stantec 5 Dartmouth Drive Suite 200 Auburn, NH 03032-3984
Project/File:	179451186	Date:	January 20, 2026

Reference: Proposed Change of Use – Retail Car Sales – 6 Dickey Street – Traffic Peer Review

Stantec Consulting Services, Inc. ("Stantec") has reviewed the traffic memorandum, dated November 6th, 2025, by T.F. Moran, Inc. ("TFM") regarding the change of use of an existing wholesale car dealership to a retail car dealership located on Dickey Street in Londonderry. Stantec reviewed this memorandum following Section 3.14 of the most current Town of Londonderry's Site Plan Regulations (Revised June 11th, 2025), the 12th Edition Trip Generation Manual by the Institute of Transportation Engineers (ITE), and industry best practices. Without evidence of a scoping meeting between TFM and the Town, Stantec assumed this memorandum covers a "short" analysis level of assessment per the Town's Site Plan Regulations (Section 3.14.c.

The traffic impact and access study was stamped by a New Hampshire licensed professional engineer as required for Site Plan Regulations Section 3.14.c.6.

Description of Site and Roadways

Per Site Plan Regulations Section 3.14.c.1 and c.2, TFM provided description of roadways and intersections adjacent to the proposed development, including detailed description of the development itself. Specifically the development parcel, Dickey Street, and its location north of the intersection with West Broadway in Derry.

Aside from some editorial (spelling and punctuation) mistakes, Stantec finds TFM's descriptions of the site, roadway, and relation to nearby intersections satisfactory.

Trip Generation and Distribution

Per Site Plan Regulations Section 3.14.c.4 and c.5, TFM has provided estimated vehicle trips expected via the ITE Trip Generation Manual, 12th Edition (most current), for Used Automobile Sales (Land Use Code 841) and the square footage of the building (847 square feet or 0.847 thousands square feet (ksf)).

While there is one error in the "Total Trip Generation" table (Weekday AM Out should be 1 not 2), Stantec finds the estimated trip generation procedure and results satisfactory. TFM did not include

Reference: Proposed Change of Use – Retail Car Sales – 6 Dickey Street – Traffic Peer Review

a trip distribution assessment, but as the change in use for a Planning sense is not a change in use in a Trip Generation sense, Stantec would concur with TFM if their assumption is that distribution would be the same as the existing use.

Sight Distance

Per Site Plan Regulations Section 3.14.c.3 and Subdivision Regulations Section 3.09.f.2, TFM identified sight distances for the driveway in Sheet C-6 of the Site Plan set.

Stantec finds TFM's sight distance evaluation at the proposed site driveway and nearby impacted intersections satisfactory.

Conclusion

TFM's conclusions summarized the change in use has minimal impact to trip generation for the site and the traffic associated with this new use can be accommodated by the adjacent roadway network.

Stantec concurs with TFM's conclusion that the change in use is not likely to generate enough vehicle trips, or change the types of vehicle trips, to notably depreciate the operations of the adjacent roadway. Stantec recommends an updated (corrected) stamped traffic memorandum be provided to the Town for inclusion in the project file.

Stantec appreciates the opportunity to review this study on behalf of the Town of Londonderry. Please reach out for any additional questions or comments.

Respectfully,

STANTEC CONSULTING SERVICES INC.



Evan Drew PE, PTOE, RSP$_1$
Associate - Senior Traffic Engineer
Phone: 603-263-4656
evan.drew@stantec.com

Design Review Committee

Assessing Department Comment Sheet

Project: 6 Dickey Street Broadway Auto Sales
Location: Tax Map 10 Lot 109
Date:11/25/2025

Please return comments by December 9, 2025

Please Return Comments to Alecia LaFlamme alaflamme@londonderrynh.gov Thank you.

Is any of the subject property in Current Use: ☐ Yes ☒ No

Are there any particular concerns regarding the following items?
(Check item of concern, explain below)

☐ Street Numbering ☐ Street Naming
☐ Lot Numbers ☐ Fiscal Impact

Please fill out the following for all subdivision applications creating new lots:

Existing Map and Lot/Street Address: 010 109 0/6 Dickey St.

Proposed Map and Lot/Street Address: Same

Comments:

No concerns

Submitted by: Laura Keeley Date: 12-1-2025

Design Review Committee

Conservation Commission Comment Sheet

Project: Broadway Auto Sales
Location: 6 Dickey St Map 10 - lot 109
Date: Feb 13 - 2026

Please return comments by .

Please return comments to Michael Bazegian mbazegian@londonderrynh.org **Thank You.**

	Yes	No	N/A
Are there wetlands on the site?	☐	☒	☐
Are they high quality wetlands?	☐	☐	☐
Will they be impacted?	☐	☐	☐
Could the impacts be mitigated?	☐	☐	☐
Are there other important natural resources?	☐	☐	☐
Will they be impacted?	☐	☐	☐
Could the impacts be mitigated?	☐	☐	☐

Comments:

- Recommend sheds to be demolished be checked for hazardous material
- Have Applicant document Rationale for waivers regarding landscaping

Submitted by: MBades Date: 2/13/26

Design Review Committee

Fire Department
Comment Sheet

Project: 6 Dickey Street Broadway Auto Sales
Location: Tax Map 10 Lot 109
Date:11/25/2025

Please return comments by December 9, 2025

Please Return Comments to Alecia LaFlamme alaflamme@londonderrynh.gov Thank you.

Are there any particular concerns regarding the following items? (Check item of concern, explain below)

- ☐ Access into the site
- ☐ Circulation within the site
- ☐ Road/Driveway design
- ☐ Availability of water
- ☐ Other issues (explain below)
- ☐ Water lines
- ☐ Fire Hydrants
- ☐ Lighting of site
- ☐ Access to sides/rear of building

Comments:

-The Fire Department has no concerns with the site plan at this time.

Submitted by: Brian Johnson, Division Chief Date: 12/02/2025

Design Review Committee

Police Department Comment Sheet

Project: 6 Dickey Street Broadway Auto Sales
Location: Tax Map 10 Lot 109
Date:11/25/2025

Please return comments by December 9, 2025

Please Return Comments to Alecia LaFlamme alaflamme@londonderrynh.gov Thank you.

Are there any particular concerns regarding the following items? (Check item of concern, explain below)

- ☐ Adequacy of Police Service to site
- ☐ Access into the site
- ☐ Circulation within site
- ☐ Access to sides/rear of buildings
- ☐ Entrances into buildings
- ☐ Security at site
- ☐ Traffic Generation
- ☐ Potential disturbance to neighbors
- ☐ Lighting/visibility of building/site
- ☐ Other issues (explain below)

Comments: LPD has no comments regarding this site.

Submitted by: Deputy Chief Jason Breen Date: 12/01/25

Design Review Committee

Tax Collector
Comment Sheet

Project: 6 Dickey Street Broadway Auto Sales
Location: Tax Map 10 Lot 109
Date:11/25/2025

Please return comments by December 9, 2025

Please Return Comments to Alecia LaFlamme alaflamme@londonderrynh.gov Thank you.

Are Taxes Paid to Date? ☒ Yes ☐ No

Comments:

Submitted by: _____ Date: _____

Town of Londonderry, New Hampshire

Planning & Economic Development Department 603-432-1100
268B Mammoth Road 603-432-1128
Town Hall – 2nd Floor www.londonderrynh.org

Planning – Zoning – Economic Development – Conservation

MEMORANDUM

TO: Planning Board

FROM: Kristan Farr, Town Planner

DATE: April 1, 2026

RE: ZBA Comments for 6 Dickey Street Site Plan Review

The property at 6 Dickey Street (Map 10, Lot 109) has a long history related to the use of the site for automobile sales. Historically, the parcel operated as Madden's Auto Body/Wall Street Auto Repairs and Sales, with used car sales conducted without site plan approval, and enforcement actions dating back to 2001–2002 when operations were ordered to cease for lack of compliance.

Between 2015 and 2024, Town staff held multiple meetings with the current owners regarding the need for full Planning Board site plan approval to re-establish any wholesale or retail automobile sales use. During this period, Town staff repeatedly advised that automobile sales, while permitted in the C-II District, require compliance with site plan requirements including paving, striping, drainage improvements, and dimensional compliance. Several conceptual submissions (2017, 2021) were found incomplete or non-compliant, and in 2021–2022, Code Enforcement issued notices of violation due to unpermitted auto sales activity.

In 2025, the Applicant renewed efforts to formalize the use. Seven variances were required due to the lot's longstanding dimensional and buffer deficiencies. These variances were heard on December 17, 2025 and January 21, 2026, and the Zoning Board of Adjustment granted all seven requests, thereby establishing zoning compliance for the retail automobile sales operation as proposed. These approvals resolve all zoning nonconformities associated with the proposed retail automobile sales use.

The granted variances include:

1. Lot Size & Frontage – Case 12-17-2025-4
Variance from LZO §4.3.2.A to allow retail auto sales on a 0.41-acre lot with 125.56 ft of frontage. Conditions include:

1. Hours of operation: Mon–Fri 10–5; Sat 10–2; No Sunday
2. Vehicle inventory cap: Determined by Planning Board or defaults to 15 vehicles (≤1-ton)

2. Front Setback – Case 12-17-2025-5
Variance from LZO §4.3.3.A.1 to allow the existing building within the 60-ft front setback.

Town of Londonderry, New Hampshire

Planning & Economic Development Department 603-432-1100
268B Mammoth Road 603-432-1128
Town Hall – 2nd Floor www.londonderrynh.org

Planning – Zoning – Economic Development – Conservation

3. Side Setback – Case 12-17-2025-6
Variance from LZO §4.3.3.A.2 to allow structures within the 30-ft side setback, with a condition that no expansion of the garage or structures in the setback may occur.

4. Rear Setback – Case 12-17-2025-7
Variance from LZO §4.3.3.A.3 to allow the garage and 8'×8' and 8'×10' sheds within the 30-ft rear setback, with a condition prohibiting expansion of those structures.

5. Encroachments Into Green Areas – Case 12-17-2025-8
Variance from LZO §4.3.3.B.1 to allow buildings, pavement, and parking within required front, side, and rear green areas.

6. 50-ft AR-1 Buffer (Distance) – Case 12-17-2025-9
Variance from LZO §4.3.3.B.2.A to allow the use without the required 50-ft buffer to the adjacent Agricultural-Residential (AR-1) zoning district.

7. 50-ft AR-1 Buffer (Planted) – Case 12-17-2025-10
Variance from LZO §4.3.3.B.2.B to allow the use without a planted and maintained 50-ft buffer to the AR-1 district.

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

December 29, 2025

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, December 17, 2025:

Case No.: 12-17-2025-4

Applicant: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Owner: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Location of Property: 6 Dickey Street, Map 010, Lot 109, Zoned Commercial 2 (C-II)

Request: Request for variance from LZO 4.3.2.A to allow a retail automobile sales operation on a lot under one acre and with less than the required frontage on a Class V road or better. The parcel is located at 6 Dickey Street in the Commercial 2 (C-II) Zoning District. Tax Map 010, Lot 109, Leon and Tamara Lampes (Owner/Applicant).

Result: J. Benard moved in Case No. 12-17-2025-4, a request for a variance from LZO 4.3.2.A to allow a retail automobile sales operation on a lot under one acre and with less than the required frontage on a Class V road or better to be granted, subject to the following conditions: hours of operation shall be Monday through Friday 10 a.m. to 5 p.m., Saturday 10:00 a.m. to 2:00 p.m., no Sunday operation, and a reasonable number of vehicles to be determined by the Planning Board, or if not determined by the Planning Board, then no more than 15 vehicles no greater than one ton. K. Perez seconded the motion. The motion carried 4-0-0. The applicant's request for a variance was GRANTED.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

December 29, 2025

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, December 17, 2025:

Case No.: 12-17-2025-5

Applicant: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Owner: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Location of Property: 6 Dickey Street, Map 010, Lot 109, Zoned Commercial 2 (C-II)

Request: Request for variance from LZO 4.3.3.A.1 to allow a retail automobile sales operation with a building within the 60 foot front setback. The parcel is located at 6 Dickey Street in the Commercial 2 (C-II) Zoning District. Tax Map 010, Lot 109, Leon and Tamara Lampes (Owner/Applicant).

Result: L. Sussman moved in Case No. 12-17-2025-5 to grant the request for a variance. M. Feig seconded the motion. The motion carried 4-0-0. The applicant's request for a variance was GRANTED.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

December 29, 2025

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, December 17, 2025:

Case No.: 12-17-2025-6

Applicant: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Owner: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Location of Property: 6 Dickey Street, Map 010, Lot 109, Zoned Commercial 2 (C-II)

Request: Case No. 12-17-2025-6 Request for variance from LZO 4.3.3.A.2 to allow a retail automobile sales operation with buildings within the 30-foot side setback. The parcel is located at 6 Dickey Street in the Commercial 2 (C-II) Zoning District. Tax Map 010, Lot 109, Leon and Tamara Lampes (Owner), TF Moran (Applicant).

Result: L. Sussman moved in Case No. 12-17-2025-6 to grant the request for a variance. K. Perez seconded the motion. The motion carried 4-0-0. The applicant's request for a variance was GRANTED.

J. Bernard moved to reopen Case No. 12-17-2025-6, request for a variance from LZO 4.3.3.A.2 to allow a retail automobile sales operation with buildings within the 30-foot side setback to declare the conditions that were not written. M. Feig seconded the motion. The motion carried 4-0-0.

J. Bernard moved in Case No. 12-17-2025-6, request for a variance from LZO 4.3.3.A.2 to allow a retail automobile sales operation with buildings within the 30-foot side setback, to add the following conditions: the garage shall not be expanded upon as presented and existing structures in the side setback shall not be expanded upon. L. Sussman seconded the motion. The motion carried 4-0-0.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

December 29, 2025

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, December 17, 2025:

Case No.: 12-17-2025-7

Applicant: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Owner: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Location of Property: 6 Dickey Street, Map 010, Lot 109, Zoned Commercial 2 (C-II)

Request: Request for variance from LZO 4.3.3.A.3 to allow a retail automobile sales operation with a building within the 30-foot rear setback with the condition that the garage as presented shall not be expanded upon and sheds as presented (8'x8' and 8'x10') shall not be expanded upon. The parcel is located at 6 Dickey Street in the Commercial 2 (C-II) Zoning District. Tax Map 010, Lot 109, Leon and Tamara Lampes (Owner/Applicant).

Result: L. Sussman moved in Case No. 12-17-2025-7 to grant the request for a variance, subject to the conditions that the garage as presented shall not be expanded upon and the sheds as presented, 8' x 8' and 8' x 10', shall not be expanded upon. K. Perez seconded the motion. The motion carried 4-0-0. The applicant's request for a variance was GRANTED.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

January 28, 2026

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, January 21, 2026:

Case No.: 12-17-2025-8

Applicant: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Owner: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Location of Property: 6 Dickey Street, Map 010, Lot 109, Zoned Commercial 2 (C-II)

Request: Request For Variance from LZO 4.3.3.B.1 to allow a retail automobile sales operation with buildings and parking areas within the front, side and rear green areas. The parcel is located at 6 Dickey Street in the Commercial 2 (C-II) Zoning District. Tax Map 010, Lot 109, Leon and Tamara Lampes (Owner/Applicant).

Result: M. Feig moved in Case No. 12-17-2025-8, the request for variance from LZO 4.3.3.B.1 to allow a retail automobile sales operation with buildings and parking areas within the front, side and rear green areas at 6 Dickey Street be granted. G. Carson seconded the motion. The motion carried 4-0-0. The applicant's request for a variance was GRANTED.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

January 28, 2026

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, January 21, 2026:

Case No.: 12-17-2025-9

Applicant: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Owner: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Location of Property: 6 Dickey Street, Map 010, Lot 109, Zoned Commercial 2 (C-II)

Request: Request For variance from LZO 4.3.3.B.2.A to allow a retail automobile sales operation without the 50-foot buffer to the Agricultural Residential (AR-1) Zoning District. The parcel is located at 6 Dickey Street in the Commercial 2 (C-II) Zoning District. Tax Map 010, Lot 109, Leon and Tamara Lampes (Owner/Applicant).

Result: M. Feig moved in Case No. 12-17-2025-9, the request for variance from LZO 4.3.3.B.2.A to allow a retail automobile sales operation without the 50-foot buffer to the Agricultural Residential (AR-1) Zoning District at 6 Dickey Street be granted. A. Hansen seconded the motion. The motion carried 4-0-0. The applicant's request for a variance was GRANTED.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

January 28, 2026

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, January 21, 2026:

Case No.: 12-17-2025-10

Applicant: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Owner: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Location of Property: 6 Dickey Street, Map 010, Lot 109, Zoned Commercial 2 (C-II)

Request: Request For variance from LZO 4.3.3.B.2.B to allow a retail automobile sales operation without a planted and maintained 50-foot buffer to the Agricultural Residential (AR-1) Zoning District. The parcel is located at 6 Dickey Street in the Commercial 2 (C-II) Zoning District. Tax Map 010, Lot 109, Leon and Tamara Lampes (Owner/Applicant).

Result: M. Feig moved in Case No. 12-17-2025-9, the request for variance from LZO 4.3.3.B.2.B to allow a retail automobile sales operation without a planted and maintained 50-ft buffer to the Agricultural Residential (AR-1) Zoning District at 6 Dickey Street be granted. A. Hansen seconded the motion. The motion carried 4-0-0. The applicant's request for a variance was GRANTED.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

January 28, 2026

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, January 21, 2026:

Case No.: 12-17-2025-8

Applicant: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Owner: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Location of Property: 6 Dickey Street, Map 010, Lot 109, Zoned Commercial 2 (C-II)

Request: Request For Variance from LZO 4.3.3.B.1 to allow a retail automobile sales operation with buildings and parking areas within the front, side and rear green areas. The parcel is located at 6 Dickey Street in the Commercial 2 (C-II) Zoning District. Tax Map 010, Lot 109, Leon and Tamara Lampes (Owner/Applicant).

Result: M. Feig moved in Case No. 12-17-2025-8, the request for variance from LZO 4.3.3.B.1 to allow a retail automobile sales operation with buildings and parking areas within the front, side and rear green areas at 6 Dickey Street be granted. G. Carson seconded the motion. The motion carried 4-0-0. The applicant's request for a variance was GRANTED.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

January 28, 2026

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, January 21, 2026:

Case No.: 12-17-2025-9

Applicant: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Owner: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Location of Property: 6 Dickey Street, Map 010, Lot 109, Zoned Commercial 2 (C-II)

Request: Request For variance from LZO 4.3.3.B.2.A to allow a retail automobile sales operation without the 50-foot buffer to the Agricultural Residential (AR-1) Zoning District. The parcel is located at 6 Dickey Street in the Commercial 2 (C-II) Zoning District. Tax Map 010, Lot 109, Leon and Tamara Lampes (Owner/Applicant).

Result: M. Feig moved in Case No. 12-17-2025-9, the request for variance from LZO 4.3.3.B.2.A to allow a retail automobile sales operation without the 50-foot buffer to the Agricultural Residential (AR-1) Zoning District at 6 Dickey Street be granted. A. Hansen seconded the motion. The motion carried 4-0-0. The applicant's request for a variance was GRANTED.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

January 28, 2026

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, January 21, 2026:

Case No.: 12-17-2025-10

Applicant: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Owner: Leon and Tamara Lampes
6 Dickey Street
Londonderry NH 03053

Location of Property: 6 Dickey Street, Map 010, Lot 109, Zoned Commercial 2 (C-II)

Request: Request For variance from LZO 4.3.3.B.2.B to allow a retail automobile sales operation without a planted and maintained 50-foot buffer to the Agricultural Residential (AR-1) Zoning District. The parcel is located at 6 Dickey Street in the Commercial 2 (C-II) Zoning District. Tax Map 010, Lot 109, Leon and Tamara Lampes (Owner/Applicant).

Result: M. Feig moved in Case No. 12-17-2025-9, the request for variance from LZO 4.3.3.B.2.B to allow a retail automobile sales operation without a planted and maintained 50-ft buffer to the Agricultural Residential (AR-1) Zoning District at 6 Dickey Street be granted. A. Hansen seconded the motion. The motion carried 4-0-0. The applicant's request for a variance was GRANTED.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

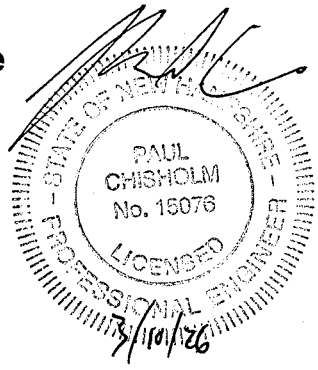
TRAFFIC IMPACT ANALYSIS

SHORT TRIP GENERATION MEMO

For

PAGE ROCK TOWNHOMES

Map 15; Lots 235 & 236
3 Page Road
Londonderry, New Hampshire



March 20, 2025
Last Revised: March 10, 2026

KNA Project No. 21-0113-1

Prepared For: Page Rock, LLC
5 Hutchings Drive, Suite 5D
Hollis, New Hampshire 03049

Prepared By: Keach-Nordstrom Associates, Inc.
10 Commerce Park North, Suite 3
Bedford, New Hampshire 03110
(603) 627-2881
(603) 627-2915 (fax)

KNA KEACH-NORDSTROM ASSOCIATES, INC.

Table of Contents

PROJECT NARRATIVE

- DESCRIPTION OF SITE
- DESCRIPTION OF ROADWAYS
- SIGHT DISTANCE
- TRIP GENERATION
- SUMMARY

APPENDIX

- USGS LOCATION AND TAX MAP AERIAL EXHIBITS
- DRIVEWAY SIGHT DISTANCE PLAN & PROFILE
- ITE TRIP GENERATION LAND USE CODE 215
- SNHPC TRAFFIC COUNTS

KEACH-NORDSTROM ASSOCIATES, INC.

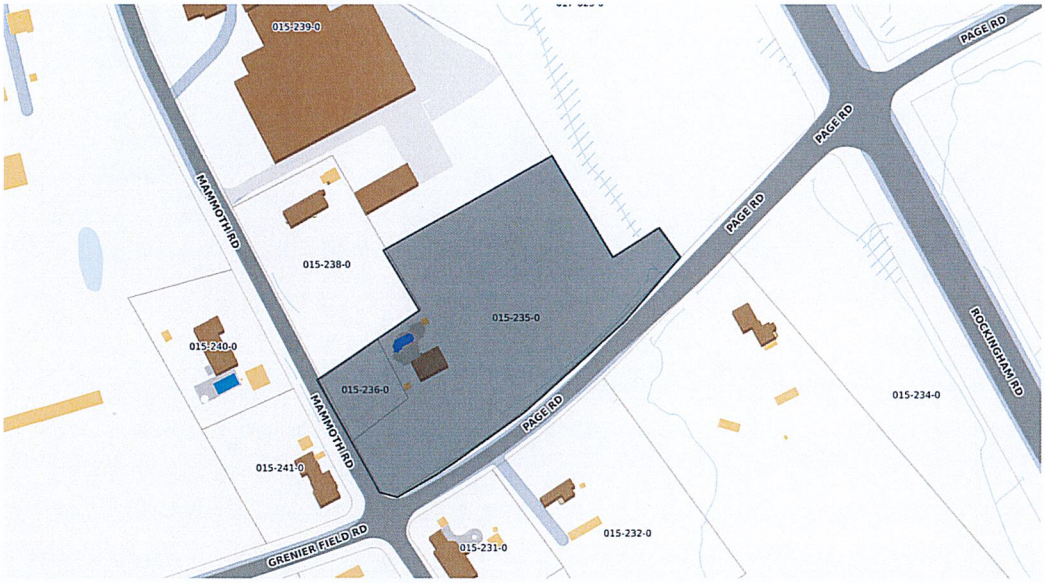
November 5, 2025

Town of Londonderry
Planning Department
268B Mammoth Road
Londonderry, NH 03054

Subject: **Page Rock Townhomes**
Short Form Traffic Impact Assessment
Map 15; Lot 235
3 Page Road, Londonderry, New Hampshire
KNA Job No. 21-0113-1

On behalf of Page Rock, LLC (Owner & Applicant), Keach-Nordstrom Associates, Inc. respectfully submits the following short Traffic Impact Analysis (TIA), in accordance with the Town of Londonderry Site Plan Regulations Section 3.14.

The project proposes to develop the site to accommodate a 12-unit townhouse development consisting of two (2) buildings of six (6) units each. Site work will include the erection of the two townhouse buildings, installation of a new driveway, and construction of the appropriate utilities and required stormwater management provisions.



The resulting traffic density falls under the "short" TIA criteria, since the project is anticipated to generate substantially less than 1,000 ADT and 100 PHT. As such, this TIA will include a description of the site, roadways, proposed driveway sight distance, and ITE trip generation with reasonable localized distribution analysis.

The project location map to the left was prepared using Town of Londonderry GIS mapping.

(Please also refer to additional USGS and Tax Map exhibits contained in the TIA appendix)

DESCRIPTION OF SITE:

The lot is located at 3 Page Road and is approximately 3-acres in total area. The property has frontage along Page Road and Mammoth Road. It is currently developed with an existing 2-story single-family house, two sheds, and a driveway, which provides site access from Page Road.

DESCRIPTION OF ROADWAYS:

According to the New Hampshire Department of Transportation (NHDOT), Page Road is classified as a major collector while Mammoth Road is classified as a local road. The proposed townhouse development will be accessed by a driveway off Mammoth Road. Page Road directs traffic to Rockingham Road (NH Route 28) and Grenier Field Road while Mammoth Road primarily directs traffic to Rockingham Road. Rockingham Road and Page Road will be the primary focus of this report. Please refer to Table 1.0: Roadway Summary below for more information regarding each roadway.

Table 1.0: Roadway Summary

Road Name	Classification	Proximity to Site	SNHPC AADT
Rockingham Road (NH Route 28)	Minor Arterial	Northeast	12,700 (2021)
Page Road	Major Collector	Southwest	4,600 (2023)
Mammoth Road	Local	Northwest	2,100 (2021)

*AADT is based on Southern New Hampshire Planning Commission (SNHPC) traffic counts

ROCKINGHAM ROAD:

Rockingham Road is an existing, paved, two (2) lane public minor arteiral road, which runs through Londonderry, New Hampshire. It connects to severeal surrounding towns inlcuding Manchester and Derry and provides access to South Willow Street in Manchetser and the Interstate 93 interchange in Lononderry.

The SNHPC data collection point is located approximately 0.5 miles south of the Page Road intersection adjacent to the project site. This collection point provides an Average Annual Daily Traffic (AADT) count of 12,700 vehicles per day (VPD), which was collected in 2021.

PAGE ROAD:

Page Road, which begins at the intersection of Grenier Field Road and Mammoth Road, is an existing, paved, two (2) lane public major collector road, which runs through Londonderry, New Hampshire. It connects to Rockingham Road and the city of Manchester via Grenier Field Road and Harvey Road.

There is an SNHPC data collection point located on Page Road directly in front of the project site. The AADT for this point indicates a traffic volume of 4,600 VPD in study year 2023.

MAMMOTH ROAD:

Mammoth Road, which begins and ends on Rockingham Road, to the north and south, is an existing, paved, two (2) lane public local road, exclusively located in Londonderry.

There is an NHDOT data collection point located on Mammoth Road south of the project site, between Weymouth Road and Foxglove Street. The AADT for this segment indicates a traffic volume of 2,100 VPD in study year 2021.

SIGHT DISTANCE:

Safe sight distance at the proposed driveway location was evaluated in accordance with the current Town of Londonderry Site Plan Regulations. The driveway location was evaluated to meet or exceed the required all season safe sight distance requirements. Please refer to the sight distance plan & profile drawings included in this TIA report appendix.

TRIP GENERATION:

This TIA relies on empirical data provided by the Institute of Transportation Engineers (ITE) in their publication entitled Trip Generation Manual (12th edition) under Land Use Code 215: Single-Family Attached Housing in order to derive estimates of site generated traffic volumes (ITE Land Use Code 215 references data contained in TIA Appendix).

Trip Generation Calculation:	6.57 vehicles per day (vpd) x 12 units = 78.84 VPD (weekday rate with 50% entering & 50% exiting)
AM Peak (Weekday)	0.57 vehicles per hour (vph) x 12 units = 6.84 VPH (weekday rate with 23% entering & 77% exiting)
PM Peak (Weekday)	0.52 vehicles per hour (vph) x 12 units = 6.24 VPH (weekday rate with 62% entering & 38% exiting)
Peak Hour (Saturday)	0.47 vehicles per hour (vph) x 12 units = 5.64VPH (Saturday rate with 48% entering & 52% exiting)

Based on the above calculations, the proposed development is anticipated to generate the following traffic volumes at full build-out and occupancy:

A weekday average of 79 vpd with 40 vpd entering and 40 vpd exiting;
A weekday AM peak average of 7 vph with 2 vph entering and 5 vph exiting;
A weekday PM peak average of 6 vph with 4 vph entering and 2 vph exiting; and
A Saturday peak hour average of 6 vph.

TRIP DISTRIBUTION:

The proposed development will utilize existing roads and will not create any new road(s). This TIA assumes that the worst-case scenario of 79 vpd (Saturday average daily traffic) will be added to the surrounding roadways. The results are as follows:

Rockingham Road:

$$\frac{79 \text{ vpd}}{(12{,}700 \text{ vpd})} \times 100 = \mathbf{0.62\%}$$

Page Road:

$$\frac{79 \text{ vpd}}{(4{,}600 \text{ vpd})} \times 100 = \mathbf{1.72\ \%}$$

Mammoth Road:

$$\frac{79 \text{ vpd}}{(2{,}100 \text{ vpd})} \times 100 = \mathbf{3.76\%}$$

Overall, the additional daily traffic increase to adjacent roadways will be less than one (1) percent to Rockingham Road and approximately two (4) percent to Mammoth Road. These minor increases are anticipated to be negligible. Additionally, the proposed development will generate substantially less than 1,000 average daily trips and 100 peak hour trips. Therefore, due to the minor nature of this project and negligible traffic increases, specific onsite traffic counts and peak hour distribution analysis were not performed as part of this "Short Form" TIA.

SUMMARY:

Although the proposed development will slightly increase local traffic, this minor quantitative increase is unlikely to adversely impact existing local traffic operations.

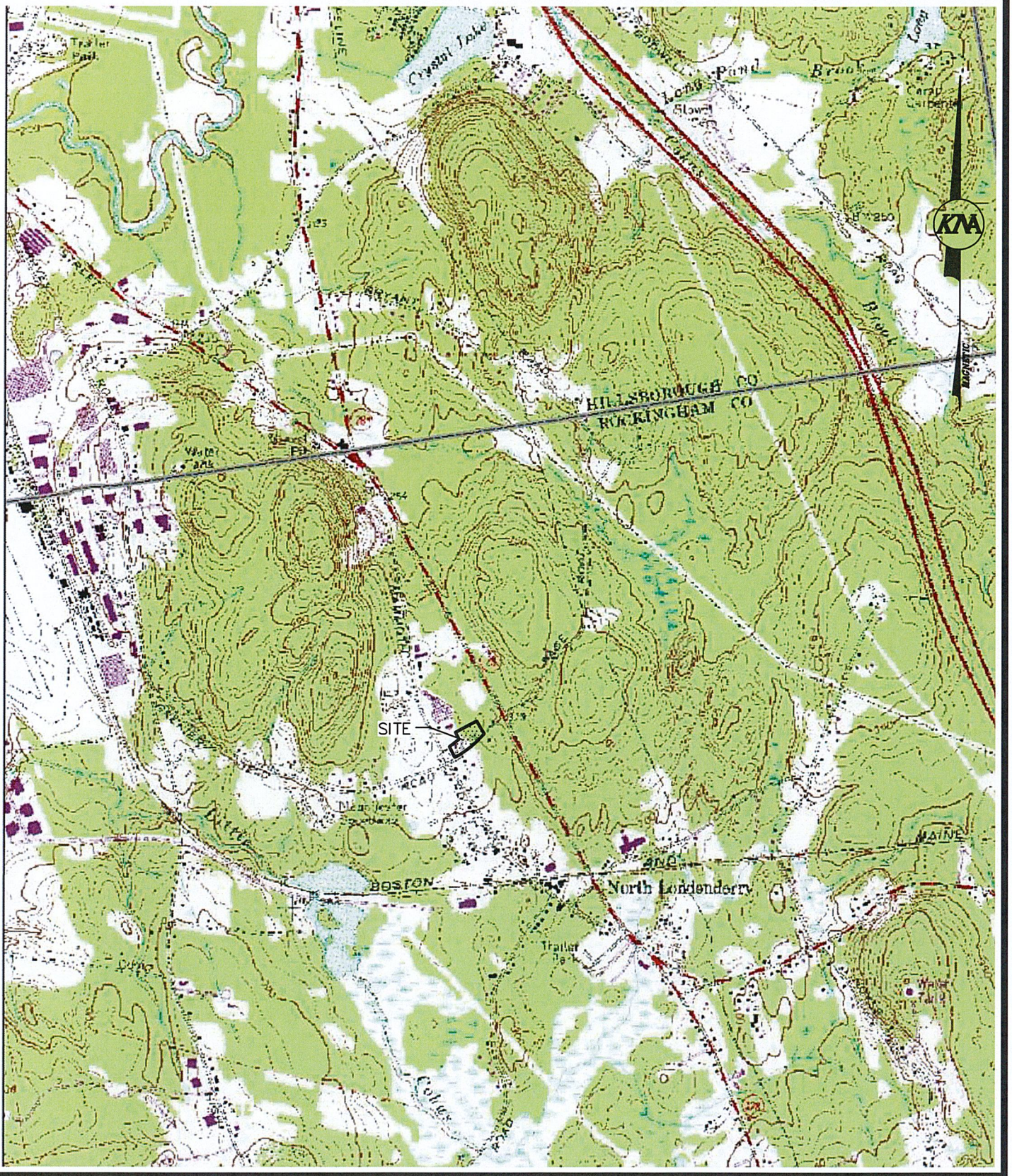
APPENDIX

USGS Location and Tax Map Aerial Exhibits

Driveway Sight Distance Plan & Profile

ITE Trip Generation Land Use Code 215

SNHPC Traffic Counts



KEACH-NORDSTROM ASSOCIATES, INC.

Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110
Phone (603) 627-2881

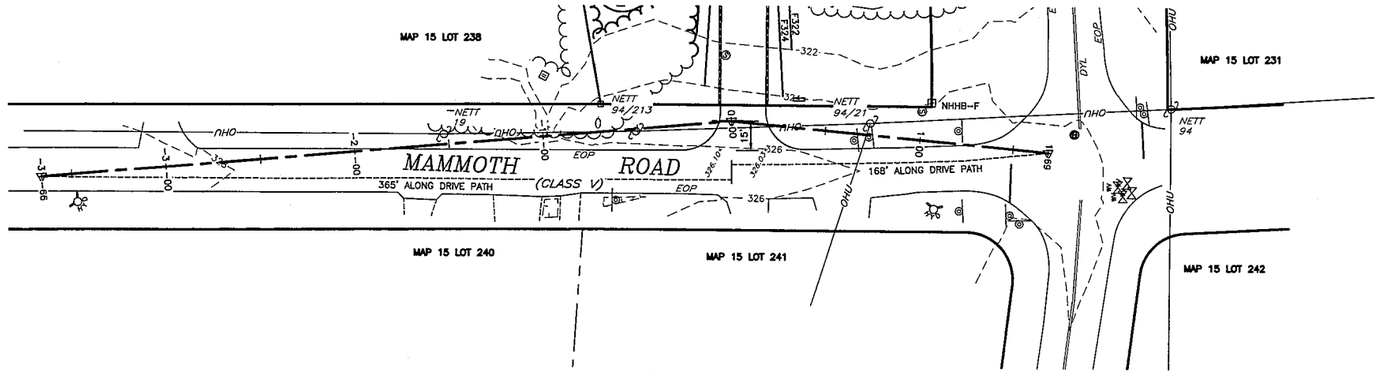
TITLE: USGS

PAGE ROCK TOWNHOMES

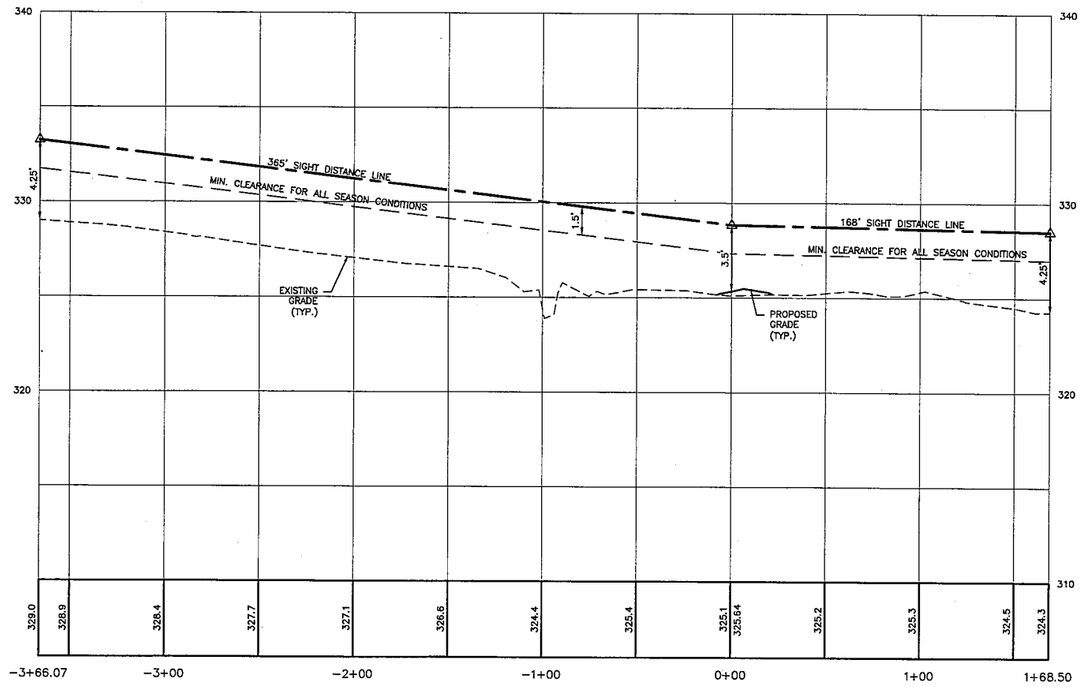
MAP 15; LOT 235 - 3 PAGE ROAD - LONDONDERRY, NH

DATE: NOVEMBER 5, 2025	JOB. NO. 21-0113-1
SCALE: 1" = 2000'	SHEET 1 OF 1

J:_project\21\0113\1\dwg\Production Drawings\1ownhouses\21\0113\1-AERIAL.dwg, 11/5/2025 4:25:30 PM, Bluebeam PDF



SIGHT DISTANCE PLAN
SCALE: 1" = 40'



SIGHT DISTANCE PROFILE
SCALE: 1" = 40' (HORIZ.)
1" = 4' (VERT.)

SIGHT DISTANCE NOTES:

1. THE PURPOSE OF THIS PLAN IS TO ILLUSTRATE THE AVAILABLE SIGHT DISTANCE AT THE PROPOSED DRIVEWAY AND HARVEY ROAD.
2. THE CONTRACTOR SHALL REMOVE ALL OBSTRUCTIONS BETWEEN THE DRIVEWAY AND THE SIGHT LINES TO ACHIEVE VISIBILITY.
3. THE OWNER SHALL MAINTAIN SIGHT LINES VISIBILITY AND REMOVE ALL OBSTRUCTIONS BETWEEN THE DRIVEWAY AND THE SIGHT LINES TO ACHIEVE VISIBILITY.

DIG SAFE
811 CALL BEFORE YOU DIG
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

LEGEND

NHHB-F	NH HWY BOUND FOUND		PROPERTY LINE
GB-F	GRANITE BOUND FOUND		R.O.W. LINE
IP-F	IRON PIPE FOUND	OHU	OVERHEAD UTILITIES
IR-S	IRON ROD SET		EDGE OF PAVEMENT
	BENCHMARK		10' CONTOUR
	SIGN		2' CONTOUR
D	DRAINAGE MANHOLE		STONEWALL
CB	CATCH BASIN		BUILDING SETBACK
WV	WATER VALVE		WETLAND BUFFER
	HYDRANT		LANDSCAPE BUFFER
S	SEWER MANHOLE		PROPOSED TREELINE
	FLARED END SECTION		PROPOSED EOP
	UTILITY POLE		PROPOSED BIT. CURB
W	WELL		PROPOSED RET. WALL
			PROPOSED 2' CONTOUR
			PROPOSED SWALE

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET
N:154187.05, E:1053618.44	ELEV.=325.59 (NAVD88)	BENCHMARK #3 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

KEACH-NORDSTROM ASSOCIATES, INC. HEREBY CERTIFIES THAT THE ALL SEASON SAFE SIGHT DISTANCE, AS REQUIRED BY THE TOWN OF LONDONDERRY, IS ACHIEVED UPON COMPLETION OF THE IMPROVEMENTS SHOWN ON THIS PLAN

PROFESSIONAL ENGINEER — DATE 3/4/26

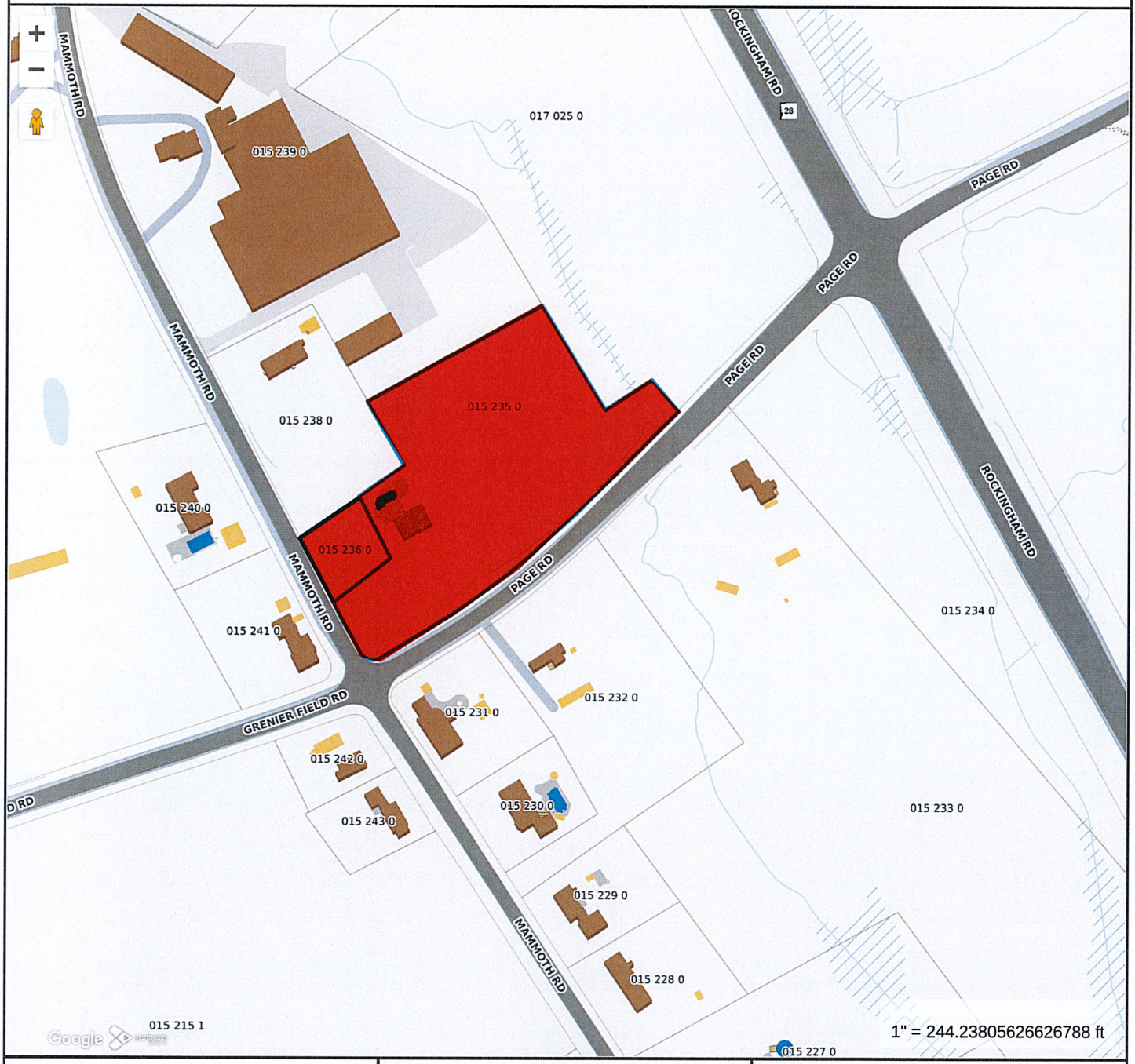
LOT 235 OWNER/APPLICANT:	LOT 236 OWNER
PAGE ROCK, LLC 5 HUTCHINGS DRIVE, SUITE 5D HOLLIS, N.H. 03049	PAGE ROCK, LLC PO BOX 1675 HOLLIS, N.H. 03049

SIGHT DISTANCE PLAN & PROFILE
PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 40'
FILE NO.:
SHEET NO. 11 OF 22



Property Information

Property ID	015-235-0
Location	3 PAGE RD
Owner	PAGE ROCK LLC

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

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

Geometry updated 08/08/2024
Data updated 03/31/2023

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

Single-Family Attached Housing (215)

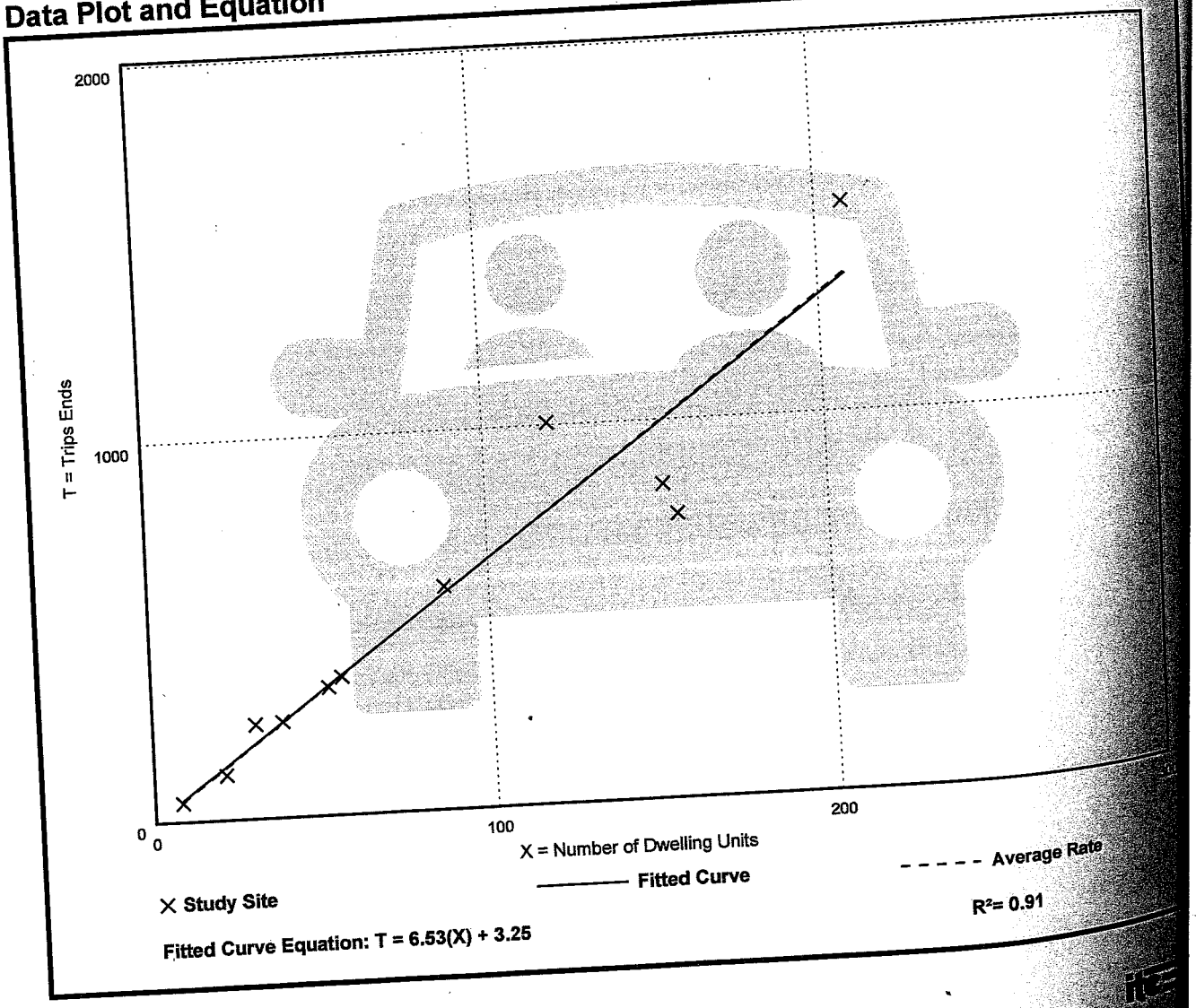
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 11
Avg. Num. of Dwelling Units: 84
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.57	4.80 - 8.45	1.28

Data Plot and Equation



Single-Family Attached Housing (215)

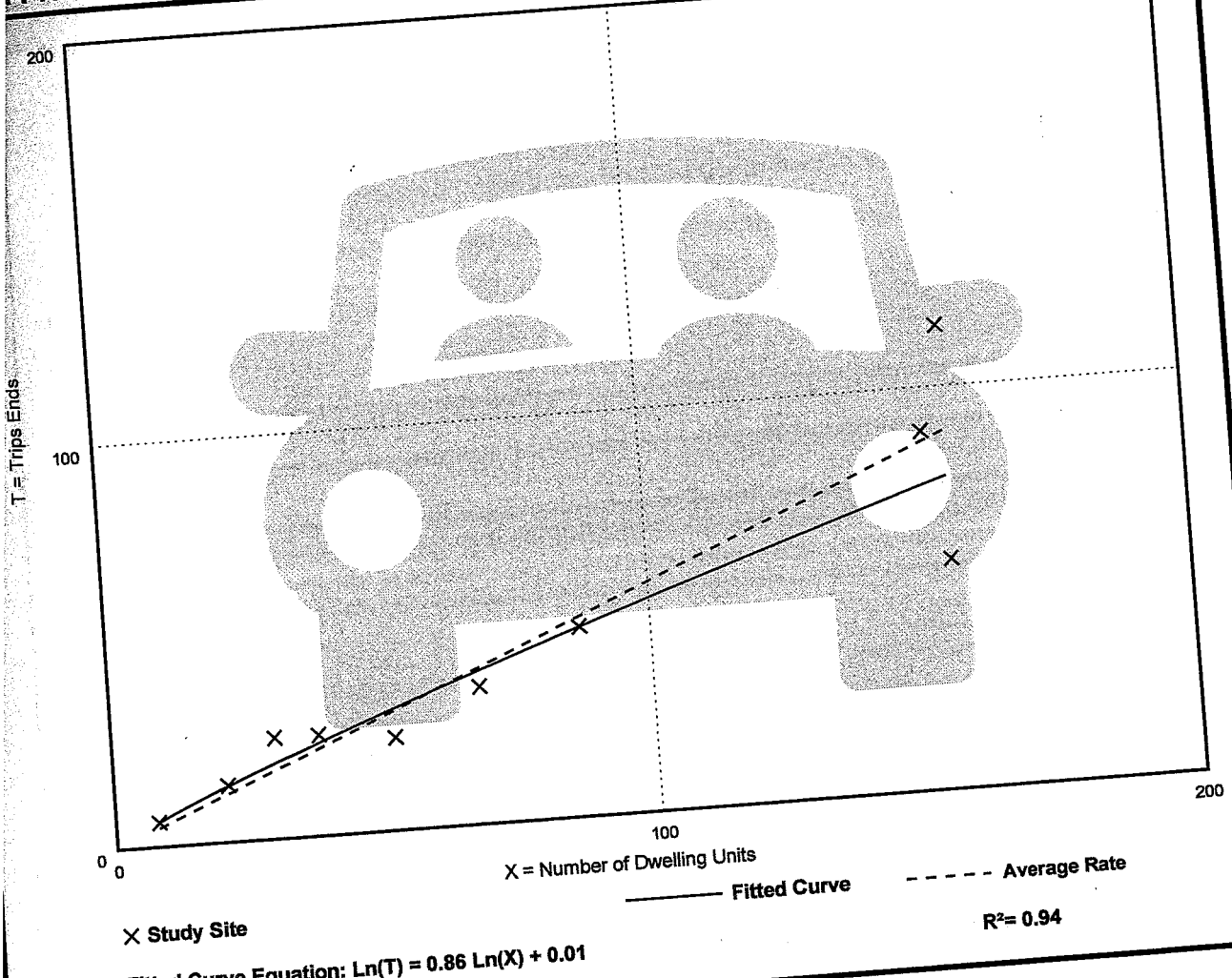
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 10
Avg. Num. of Dwelling Units: 77
Directional Distribution: 23% entering, 77% exiting

cle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.37 - 0.83	0.15

Plot and Equation



Fitted Curve Equation: Ln(T) = 0.86 Ln(X) + 0.01

Single-Family Attached Housing
(215)

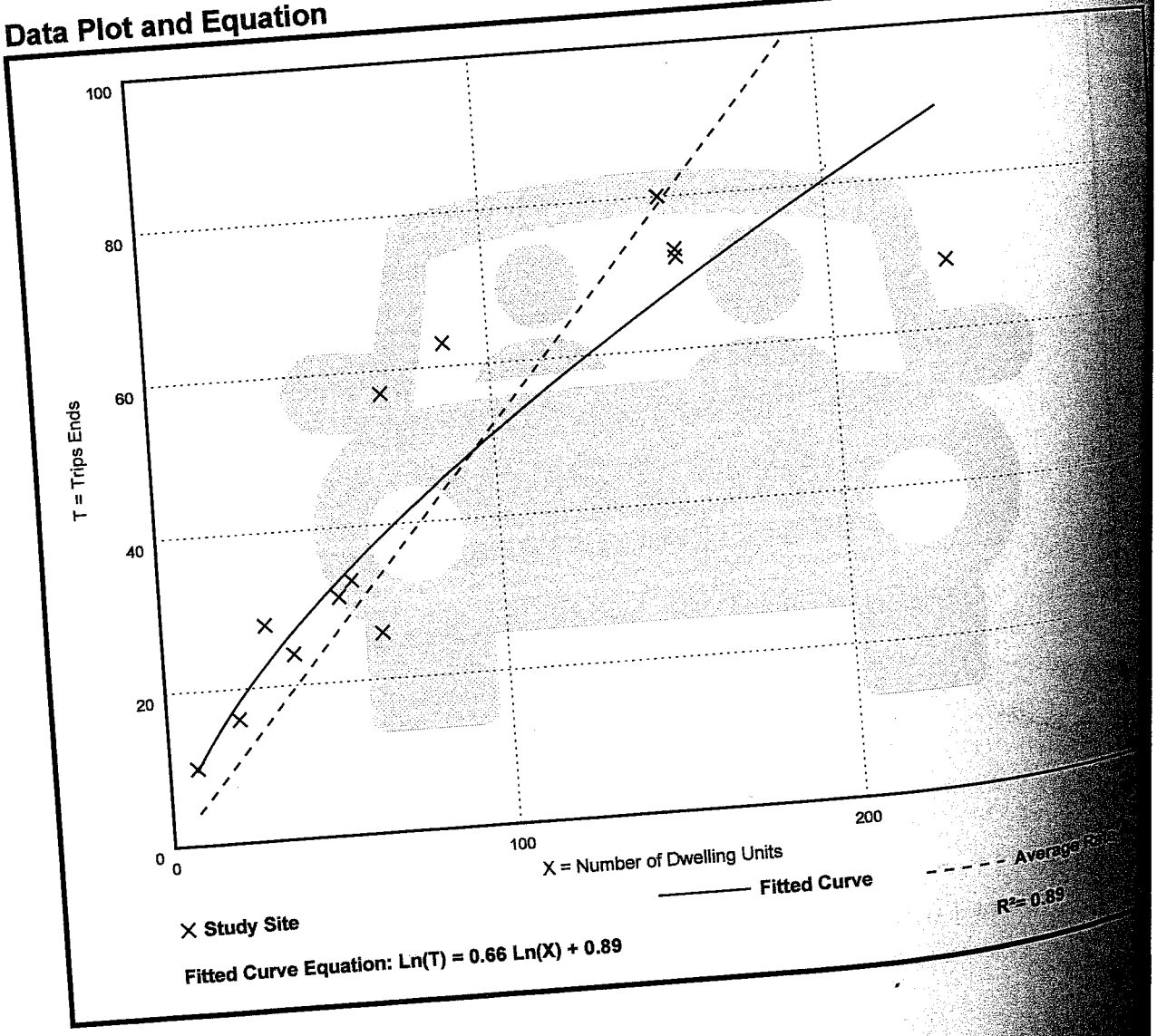
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 13
Avg. Num. of Dwelling Units: 86
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.52	0.29 - 1.25	0.19

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.66 Ln(X) + 0.89

Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units
On a: Saturday, Peak Hour of Generator

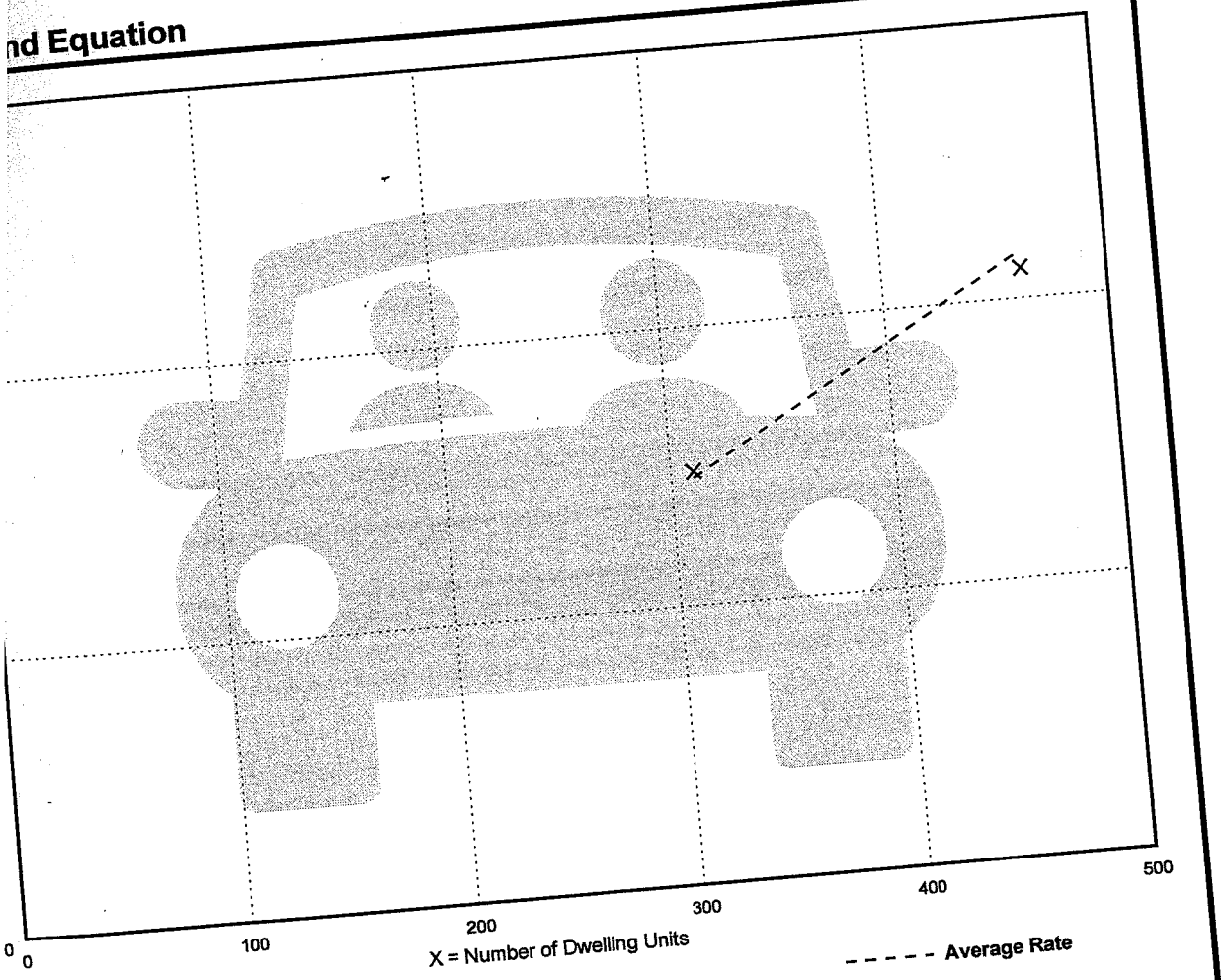
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 386
Directional Distribution: 48% entering, 52% exiting

Generation per Dwelling Unit

e Rate	Range of Rates	Standard Deviation
47	0.46 - 0.48	***

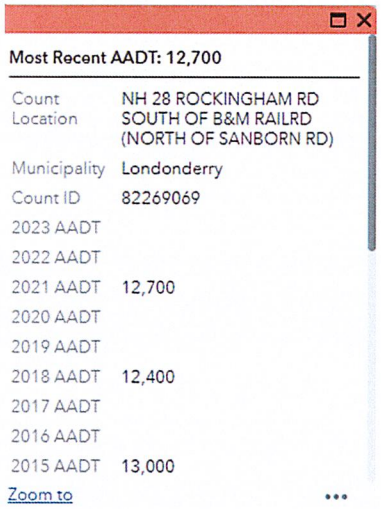
Caution – Small Sample Size

nd Equation



Fitted Curve Equation: Not Given

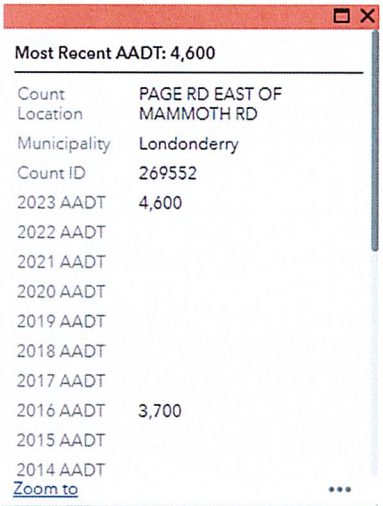
SNHPC TRAFFIC COUNTS:



Most Recent AADT: 12,700

Count Location	NH 28 ROCKINGHAM RD SOUTH OF B&M RAILRD (NORTH OF SANBORN RD)
Municipality	Londonderry
Count ID	82269069
2023 AADT	
2022 AADT	
2021 AADT	12,700
2020 AADT	
2019 AADT	
2018 AADT	12,400
2017 AADT	
2016 AADT	
2015 AADT	13,000

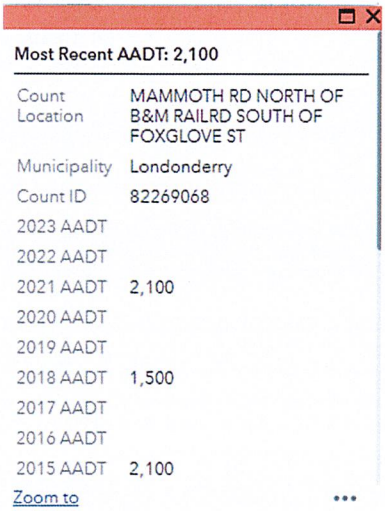
Zoom to •••



Most Recent AADT: 4,600

Count Location	PAGE RD EAST OF MAMMOTH RD
Municipality	Londonderry
Count ID	269552
2023 AADT	4,600
2022 AADT	
2021 AADT	
2020 AADT	
2019 AADT	
2018 AADT	
2017 AADT	
2016 AADT	3,700
2015 AADT	
2014 AADT	

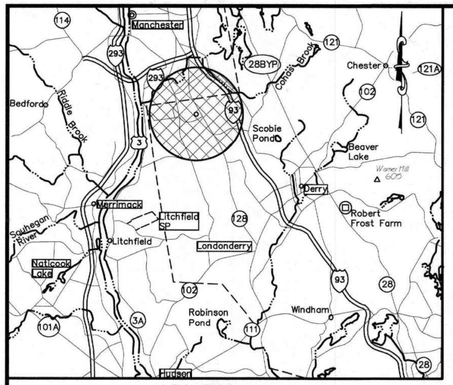
Zoom to •••



Most Recent AADT: 2,100

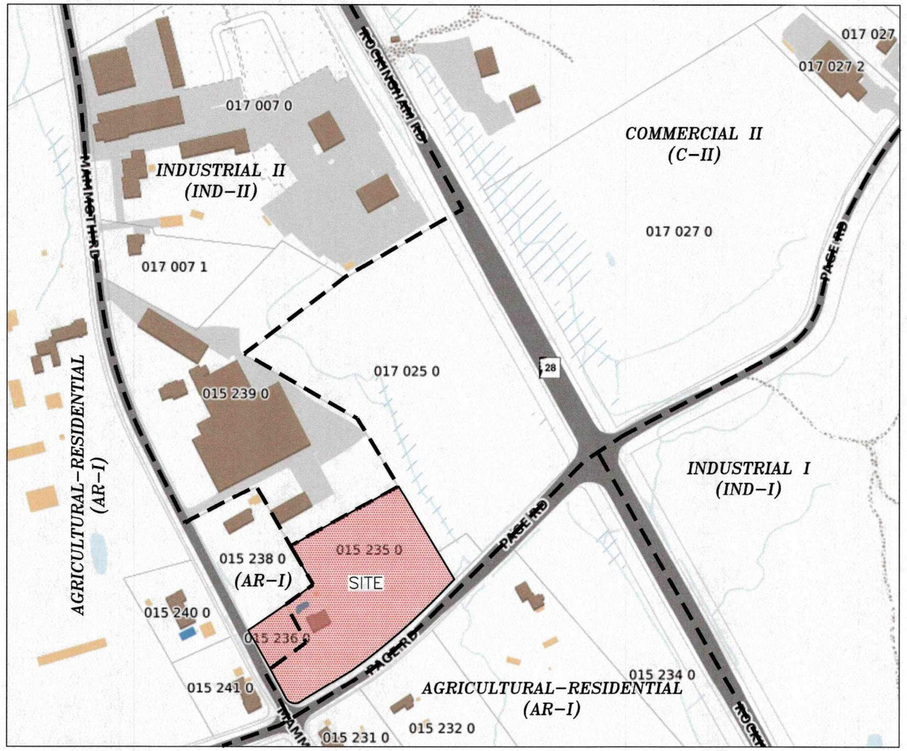
Count Location	MAMMOTH RD NORTH OF B&M RAILRD SOUTH OF FOXGLOVE ST
Municipality	Londonderry
Count ID	82269068
2023 AADT	
2022 AADT	
2021 AADT	2,100
2020 AADT	
2019 AADT	
2018 AADT	1,500
2017 AADT	
2016 AADT	
2015 AADT	2,100

Zoom to •••

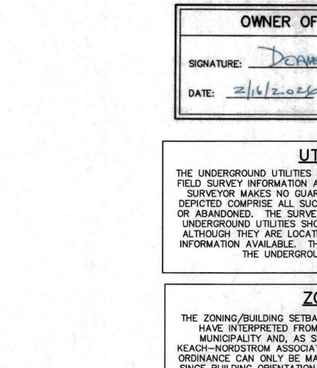


LOCATION MAP
NOT TO SCALE

RESIDENTIAL SITE PLAN
PAGE ROCK TOWNHOMES
TAX MAP 15 LOTS 235 & 236 ~ 3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE



TAX MAP PLAN
SCALE: 1" = 200'±



VICINITY MAP
SCALE: 1" = 2,500'±

INDEX OF SHEETS

TITLE	SHEET No.
PROJECT NOTES	1
EXISTING CONDITIONS PLAN	2
REMOVALS/DEMOLITION PLAN	3
RESIDENTIAL SITE PLAN	4
GRADING & DRAINAGE PLAN	5
EROSION CONTROL PLAN	6
UTILITY PLAN	7
LANDSCAPE PLAN	8
LIGHTING PLAN	9
DRIVEWAY PROFILE	10
SIGHT DISTANCE PLAN & PROFILE	11
SEWER PROFILE	12
TRUCK TURNING PLAN	13
CONSTRUCTION DETAILS	14–22
CONDOMINIUM SITE PLAN	CS1
CONDOMINIUM FLOOR PLAN	CF1–CF2
LOT CONSOLIDATION PLAN	S1
FLOOR PLANS & EXTERIOR ELEVATIONS	A1–A8

DIG SAFE
811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

OWNER OF MAP 15 LOT 235
SIGNATURE: _____ PAGE ROCK LLC
DATE: 2/16/2026

OWNER OF MAP 15 LOT 236
SIGNATURE: _____ PAGE ROCK LLC
DATE: 2/16/2026

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND PLOTTED FROM EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED 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 THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

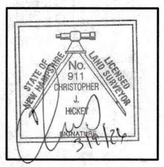
ZONING NOTE

THE ZONING/BUILDING SETBACKS DEPICTED ON THIS PLAN ARE THOSE WE HAVE INTERPRETED FROM THE LATEST ZONING ORDINANCE OF THE MUNICIPALITY AND, AS SUCH, ARE ONLY OPINIONS EXPRESSED BY KEACH–NORDSTROM ASSOCIATES, INC. THE FINAL INTERPRETATION OF THE ORDINANCE CAN ONLY BE MADE BY THE APPROPRIATE ZONING AUTHORITY. SINCE BUILDING ORIENTATION, PROPOSED USES, AND OTHER FACTORS CAN AFFECT THE SETBACKS, PRIOR TO ANY DEVELOPMENT OF THIS PROPERTY. THE BUILDER/OWNER MUST CONSULT WITH THE TOWN/CITY TO INSURE THE CORRECT APPLICATION OF THE ZONING ORDINANCE.

ENGINEER & SURVEYOR:
KEACH–NORDSTROM ASSOCIATES, INC.
10 COMMERCE PARK NORTH, SUITE 3
BEDFORD, NEW HAMPSHIRE 03110
(603) 627–2881

WETLAND SCIENTIST:
CHRISTOPHER K. DANFORTH, CWS #077
DANFORTH ENVIRONMENTAL CONSULTING, LLC
654 NEW BOSTON ROAD
FRANCESTOWN, NH 03043
(603) 547–7100

SOIL SCIENTIST:
LUKE HURLEY, CSS
HURLEY ENVIRONMENTAL AND LAND PLANNING, LLC
PO BOX 356
EPSOM, NH 03234
(603) 583–1745





LOT 235 OWNER/APPLICANT:	LOT 236 OWNER
PAGE ROCK, LLC 5 HUTCHINGS DRIVE, SUITE 5D HOLLIS, N.H. 03049	PAGE ROCK, LLC PO BOX 1675 HOLLIS, N.H. 03049

COVER SHEET
PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

LEGEND

EXISTING PROPERTY LINE
DISTRICT BOUNDARY

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD FOR PHASE _____
ON DATE: _____
CERTIFIED BY: _____

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

PROJ. NO: 21–0113–1
DATE: MARCH 20, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. COVER

CHECKLIST NOTES:

1. THE PURPOSE OF THE PLAN IS TO CONSOLIDATE MAP 15 LOTS 235 AND 236 AND SHOW A PROPOSED 12–UNIT TOWNHOUSE DEVELOPMENT ALONG WITH THE ASSOCIATED SITE IMPROVEMENTS.
2. OWNER OF RECORD: PAGE ROCK, LLC, 295 ROCKINGHAM ROAD, LONDONDERRY, N.H. 03053.
3. MAP AND LOT NUMBERS REFERENCE THE TOWN OF LONDONDERRY TAX ASSESSORS MAP AND LOT NUMBER.
4. THE SUBJECT PROPERTIES, MAP 15 LOTS 235 AND 236, ARE LOCATED IN THE TOWN OF LONDONDERRY'S COMMERCIAL II (C–II) AND AGRICULTURAL–RESIDENTIAL (AR–I) ZONING DISTRICTS, RESPECTIVELY. IN THE COMMERCIAL II DISTRICT, MULTI–FAMILY USES ARE PERMITTED BY OBTAINING A CONDITIONAL USE PERMIT. THE PROPOSED PROJECT INCLUDES THE CONSTRUCTION OF TWO (2), SIX (6) UNIT TOWNHOUSE BUILDINGS CONSISTING OF TWO BEDROOMS PER UNIT.
5. AREA OF THE SUBJECT PARCEL AFTER CONSOLIDATION: 130,615 SF OR 2.999 ACRES.
6. THE SUBJECT PARCEL IS LOCATED WITHIN THE COMMERCIAL II ZONING DISTRICT (C–II).
7. DIMENSIONAL REQUIREMENTS FOR PROPERTIES IN THE C–II DISTRICT ARE AS FOLLOWS:

	REQUIRED	PROVIDED
– MINIMUM LOT AREA	1 ACRE	2.999 ACRES (CONSOLIDATED)
– MINIMUM LOT FRONTAGE	150 FT	734.30 FT
MINIMUM BUILDING SETBACKS:		
– FRONT (BUILDING FOOTPRINT 0–75,000 SF)	60 FT	61.6 FT
– SIDE	30 FT	50.6 FT
– REAR	30 FT	30.7 FT
BUILDING HEIGHT	50 FT	30 FT
MAXIMUM BUILDING COVERAGE	25%	11.8%

8. LANDSCAPE DIMENSIONAL REQUIREMENTS FOR PROPERTIES IN THE C–II DISTRICT:

	REQUIRED	PROVIDED
– MINIMUM LANDSCAPE AREA LOT COVERAGE	35%	64.6%
– MINIMUM GREEN AREA WIDTH ALONG FRONTAGE	30 FT	56.4 FT
– MINIMUM GREEN AREA WIDTH		
– SIDE	15 FT	50.6 FT
– REAR	15 FT	30.7 FT

9. MAP 15 LOT 235 IS CURRENTLY DEVELOPED WITH A SINGLE FAMILY HOUSE. MAP 15 LOT 236 IS CURRENTLY UNDEVELOPED. THE PROPOSED USE IS MULTI–FAMILY HOUSING.
10. THE PROJECT WILL BE SERVED BY MUNICIPAL SEWER.
11. THE PROJECT WILL BE SERVED BY MUNICIPAL WATER DELIVERED BY MANCHESTER WATER WORKS.
12. THE PROPOSED PROJECT IS NOT SUBJECT TO PREVIOUS ZONING VARIANCE REQUESTS, DECISIONS AND RESTRICTION OF CONDITIONS.
13. EXAMINATION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAPS (FIRM) FOR THE TOWN OF LONDONDERRY, NEW HAMPSHIRE, ROCKINGHAM COUNTY, COMMUNITY PANEL NUMBER 33015C0317E PANEL NUMBER 317 OF 681. EFFECTIVE DATE: MAY 17, 2005, INDICATES THAT NO PORTION OF THE SUBJECT PREMISES IS LOCATED WITHIN A DESIGNATED FLOOD ZONE.
14. THE FOLLOWING STATE AND LOCAL PERMITS ARE REQUIRED FOR THIS PROJECT:

PERMIT TYPE	PERMIT #	APPROVAL DATE	EXPIRATION DATE
LONDONDERRY – DRIVEWAY PERMIT			
LONDONDERRY – STORMWATER PERMIT			
LONDONDERRY – SEWER PERMIT			
LONDONDERRY – CONDITIONAL USE PERMIT FOR MULTIFAMILY RESIDENTIAL USE IN C–II ZONE			
LONDONDERRY – CONDITIONAL USE PERMIT FOR DISTURBANCE IN CO DISTRICT			
NHDES – SEWER CONNECTION PERMIT			
NPDES – CONSTRUCTION GENERAL PERMIT	REQUIRED PRIOR TO CONSTRUCTION		

15. ALL SHEETS IN THIS PLAN SET ARE ON FILE WITH THE TOWN OF LONDONDERRY.
16. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT DEFICIENCIES EXIST IN THE APPROVED DESIGN DRAWINGS, THE OWNER SHALL BE REQUIRED TO CORRECT THE DEFICIENCIES TO MEET THE REQUIREMENTS OF THE REGULATIONS AT NO EXPENSE TO THE TOWN.
17. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE TOWN.
18. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO TOWN OF LONDONDERRY SITE PLAN REGULATIONS AND THE LATEST EDITION OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION".
19. PARKING CALCULATIONS
    REQUIRED PARKING:
    MULTIFAMILY (3 OR MORE UNITS)
    2 SPACES PER DWELLING UNIT X 12 DWELLING UNITS = 24 SPACES
    PROPOSED PARKING:
    12 GARAGE SPACES + 12 DRIVEWAY SPACES + 10 GUEST SPACES = 34 SPACES
20. DENSITY FOR LOT 235 IS CALCULATED AS FOLLOWS PER LZO 4.2.2.3(B):
    UNUSABLE LAND = 0 SF STEEP SLOPES + 2,209 SF WETLANDS + 12,325 SF UTILITY EASEMENTS
    USABLE LAND AREA = TOTAL LOT AREA – UNUSABLE LAND AREA = 130,615 SF – 14,534 SF = 116,081 SF
    DENSITY = (0.8 X 116,081 SF OF 'USABLE LAND')/7,000–SF PER UNIT = 13.27 OR 13 UNITS

GENERAL NOTES:

21. HORIZONTAL DATUM IS NAD83, VERTICAL DATUM IS NAVD88 OBTAINED FROM GPS SURVEY METHODS POST PROCESSED THROUGH NOAA–OPUS. NORTH ORIENTATION IS NAD83.
22. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON A FIELD SURVEY PERFORMED BY THIS OFFICE IN JANUARY OF 2022.
23. EASEMENTS, RIGHTS AND RESTRICTIONS SHOWN OR IDENTIFIED HEREON ARE THOSE FOUND DURING RESEARCH AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER EASEMENTS, RIGHTS, AND RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF THE SUBJECT PREMISES MAY DETERMINE.
24. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN HEREON IS APPROXIMATE. KEACH–NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF THE UTILITIES SHOWN. UTILITIES SHOWN HEREON ARE ONLY THOSE FOUND WITHIN THE AREA OF KNA FIELD SURVEY AND ARE SOLELY BASED UPON VISIBLE SURFACE EVIDENCE. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG–SAFE AT 811.
25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK.
26. THE SITE SPECIFIC SOIL SURVEY (SSSS) WAS PRODUCED JULY 8, 2022, AND WAS PREPARED BY LUKE HURLEY, CSS #095. THE SURVEY AREA IS LOCATED AT 295 ROCKINGHAM ROAD, LONDONDERRY, NH. SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE–WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.
27. WETLANDS WERE DELINEATED BY CHRISTOPHER DANFORTH, CWS. #077, USING THE TECHNICAL CRITERIA IN THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL (TECHNICAL REPORT Y–87–1, JANUARY 1987).
28. 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.
29. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.2. UNITED STATES DEPARTMENT OF AGRICULTURE (2018).
30. NEW ENGLAND HYDRIC SOILS TECHNICAL COMMITTEE. 2020 VERSION 4, FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND. NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION, LOWELL, MA.
31. U.S. ARMY CORPS OF ENGINEERS NATIONAL WETLAND PLANT LIST, VERSION 3.5. (2020).
32. CONSERVATION OVERLAY SIGNS TO BE INSTALLED ALONG THE CONSERVATION OVERLAY DISTRICT BOUNDARY, AS SHOWN ON THE PLAN.
33. THIS PROJECT DISTURBS IN EXCESS OF 1–ACRE OF LAND. THEREFORE IT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE OWNER/DEVELOPER AND "OPERATOR" (GENERAL CONTRACTOR) SHALL EACH BE REQUIRED TO PREPARE AND SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA PRIOR TO THE START OF CONSTRUCTION AND SHALL BE RESPONSIBLE FOR THE PREPARATION AND IMPLEMENTATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MEETING THE REQUIREMENTS OF THE CURRENT CONSTRUCTION GENERAL PERMIT.
34. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER AND/OR OWNER IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, FEES AND BONDS.
35. PRECONSTRUCTION MEETING SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION AND SHALL BE ARRANGED WITH THE DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES.
36. THE PROJECT MUST BE BUILT AND EXECUTED AS SPECIFIED IN THE APPROVED APPLICATION PACKAGE UNLESS MODIFICATIONS ARE APPROVED BY THE PLANNING DEPARTMENT & DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES, OR, IF STAFF DEEMS APPLICABLE, THE PLANNING BOARD.
37. ALL OF THE DOCUMENTATION SUBMITTED IN THE APPLICATION PACKAGE BY THE APPLICANT AND ANY REQUIREMENTS IMPOSED BY OTHER AGENCIES ARE PART OF THIS APPROVAL UNLESS OTHERWISE UPDATED, REVISED, CLARIFIED IN SOME MANNER, OR SUPERSEDED IN FULL OR IN PART. IN THE CASE OF CONFLICTING INFORMATION BETWEEN DOCUMENTS, THE MOST RECENT DOCUMENTATION AND THIS NOTICE HEREIN SHALL GENERALLY BE DETERMINING.
38. IN ACCORDANCE WITH SECTION 6.01 OF THE LONDONDERRY SITE PLAN REGULATIONS AND RSA §676:13, ALL IMPROVEMENTS SPECIFIED ON THESE SITE PLANS SHALL BE CONSTRUCTED, COMPLETED, AND INSPECTED AND APPROVED BY THE TOWN OF LONDONDERRY PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
39. IT IS THE RESPONSIBILITY OF THE APPLICANT TO OBTAIN ALL OTHER LOCAL, STATE, AND FEDERAL PERMITS, LICENSES, AND APPROVALS WHICH MAY BE REQUIRED AS PART OF THIS PROJECT (THAT WERE NOT RECEIVED PRIOR TO CERTIFICATION OF THE PLANS). CONTACT THE BUILDING DIVISION AT EXTENSION 115 REGARDING BUILDING PERMITS.
40. THE OWNER SHALL INSPECT THE ONSITE STORMWATER MANAGEMENT FACILITIES IN ACCORDANCE WITH THE OPERATION AND MAINTENANCE PLAN AND MAINTENANCE REQUIREMENTS LISTED ON THIS PLAN. A COPY OF ALL INSPECTION REPORTS SHALL BE MADE AVAILABLE TO THE TOWN OF LONDONDERRY DEPARTMENT OF ENGINEERING.
41. IN ACCORDANCE WITH SECTION 6.01 OF THE LONDONDERRY SITE PLAN REGULATIONS AND RSA §676:12, ALL OFF–SITE IMPROVEMENTS SPECIFIED ON THESE SITE PLANS SHALL BE CONSTRUCTED, COMPLETED, AND INSPECTED AND APPROVED BY THE TOWN OF LONDONDERRY (AND/OR THE NHDOT, IF APPLICABLE) PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
42. THE ANTICIPATED DELIVERY VEHICLES FOR THE PROJECT SITE ARE A TYPICAL POSTAL DELIVERY VEHICLE AND AN OCCASIONAL MOVING VAN.
43. THE PROPOSED DUMPSTER ENCLOSURE SHALL BE THE ONLY OUTDOOR STORAGE AREA ON SITE.
44. THE PROJECT HAS BEEN APPROVED WITH NO CONNECTION TO THE LONDONDERRY SEWER DIVISION.

EROSION CONTROL NOTES:

29. TEMPORARY CONSTRUCTION EROSION CONTROL MEASURES AS WELL AS THE PERMANENT EROSION CONTROL MEASURES SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUEL TITLED "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION," DATED DECEMBER 2008, AS AMENDED FROM TIME TO TIME.
30. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
31. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
32. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR, MAY WARRANT. ALL TEMPORARY EROSION CONTROL MEASURES USED SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER 0.5" OF RAINFALL OR MORE. THEY SHALL BE CLEANED AND MAINTAINED AND OTHERWISE KEPT IN AN EFFECTIVE OPERATING MANNER THROUGHOUT THE CONSTRUCTION PERIOD.
33. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES. WETLAND AREAS AND SURFACE WATERS SHALL BE PROTECTED FROM SEDIMENT.
34. OFFSITE SURFACE WATER AND RUNOFF FROM UNDISTURBED AREAS SHALL BE DIVERTED AWAY FROM DISTURBED AREAS WHERE FEASIBLE OR CARRIED NON–EROSIVELY THROUGH THE PROJECT AREA. INTEGRITY OF DOWNSTREAM DRAINAGE SYSTEMS SHALL BE MAINTAINED.
35. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4 INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
36. ALL SWALES AND DITCHLINES SHALL BE PERIODICALLY CLEANED OF DEPOSITED SEDIMENT SO AS TO MAINTAIN AN EFFECTIVE GRADE AND CROSS SECTION. ALL SWALES AND DITCHLINES SHALL BE FULLY STABILIZED PRIOR TO HAVING STORMWATER DIRECTED TOWARDS THEM.
37. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
38. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
    B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    C. A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
    D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
50. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH ENV–A 1000.
51. IN NO WAY ARE THOSE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.
52. THE TOWN OF LONDONDERRY SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.
53. AREAS HAVING FINISH GRADE SLOPES OF 3 : 1 OR STEEPER, SHALL BE STABILIZED WITH JUTE MATTING WHEN AND IF FIELD CONDITIONS WARRANT, OR IF SO ORDERED. JUTE MATTING INSTALLED TO CONFORM WITH THE RECOMMENDED BEST MANAGEMENT PRACTICE OUTLINED IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION."
54. THE OWNER IS RESPONSIBLE FOR FINAL STABILIZATION OF ALL SLOPES GREATER THAN 3:1 TO THE SATISFACTION OF LONDONDERRY DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES.
55. ALL DETENTION PONDS AND TREATMENT SWALES SHALL BE CONSTRUCTED PRIOR TO ANY EARTH MOVING ACTIVITIES THAT WILL INFLUENCE STORMWATER RUNOFF.
56. LIMIT THE EXPOSURE OF UNSTABILIZED SOILS TO 45 DAYS OR LESS.
57. ALL ROADWAY AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
58. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
59. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
60. 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 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
61. EXPOSED ASH–WOODS SHALL BE CONFINED TO A LIMITED AN AREA AS IS PRACTICAL AT ANY GIVEN TIME THROUGHOUT THE CONSTRUCTION SEQUENCE. AT NO TIME SHALL MORE THAN FIVE (5) ACRES OF SITE AREA BE IN AN UNSTABLE CONDITION. NO GIVEN AREA OF THE SITE SHALL BE LEFT IN AN UNSTABILIZED CONDITION FOR A PERIOD OF TIME EXCEEDING THIRTY (30) CALENDAR DAYS. SHOULD THE CONTRACTOR REQUEST MORE THAN FIVE (5) AREAS BE DISTURBED AT ONE TIME THEN THE CONTRACTOR SHALL:
    (1) SUBMIT DOCUMENTATION TO NHDES–AOT AND THE DESIGN ENGINEER, THAT THE REQUIRED AREAS OF EARTH CUTS AND FILLS ARE SUCH THAT AN AREA OF DISTURBANCE OF 5 ACRES OR LESS WOULD UNREASONABLY LIMIT THE CONSTRUCTION SCHEDULE;
    (2) SUBMIT A CONSTRUCTION SEQUENCE PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST; AND
    (3) EMPLOYS AN ENVIRONMENTAL MONITOR DURING CONSTRUCTION.

WINTER CONSTRUCTION NOTES:

62. ALL PROPOSED POST–DEVELOPMENT VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
63. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
64. AFTER OCTOBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3 OR, IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON, BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT.
65. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
    B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    C. A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
    D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

CONSTRUCTION NOTES:

69. ALL CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN. THE DOCUMENT SHALL BE KEPT ON–SITE AND UPDATED AS NEEDED.
70. CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND PROPER DISPOSAL OF ONSITE STUMPS.
71. ALL DRAINAGE PIPE SHALL MEET H–20 LOADING REQUIREMENTS AND SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
72. DRAINAGE STRUCTURE RIM ELEVATIONS ARE APPROXIMATE, ALL RIMS SHALL BE SET FLUSH WITH THE FINAL GRADE.
73. PROVIDE 6" PERFORATED UNDERDRAIN AS REQUIRED BY THE TOWN ENGINEER.
74. ALL HEADWALLS/RETAINING WALLS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW HAMPSHIRE.
75. ALL UTILITIES SHALL BE UNDERGROUND.
76. PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR SHALL COORDINATE WITH THE RESPECTIVE UTILITY COMPANIES FOR THE EXACT LOCATION, LAYOUT, CONDUIT SIZE ASSOCIATED WITH THE MAIN LINES AND CONNECTION LOCATIONS AT EACH LOT. THE UTILITY LAYOUT PLAN SHALL BE PROVIDED TO THE DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES FOR REVIEW AND APPROVAL.
77. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS, AND SHALL MEET THE REQUIREMENTS AND SPECIFICATIONS FOR TYPICAL DETAILS FOR SITE AND ROADWAY INFRASTRUCTURE, LONDONDERRY, NEW HAMPSHIRE.
78. COMPACTION TESTING SERVICES ARE TO BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER RETAINED BY THE CONTRACTOR. TESTING REQUIREMENTS TO BE ESTABLISHED AT THE PRECONSTRUCTION MEETING.

CONSTRUCTION SEQUENCE:

THE FOLLOWING CONSTRUCTION SEQUENCE IS A GENERAL GUIDELINE FOR THE CONTRACTOR TO FOLLOW. ADJUSTMENTS SHALL BE MADE DUE TO WEATHER CONDITIONS, PERMIT CONDITIONS AND/OR MARKET CONDITIONS. THE CONSTRUCTION SEQUENCE SHALL ALSO BE ADJUSTED ACCORDING TO THE REQUIREMENTS OF EACH PHASE.

79. CONTRACTOR TO NOTIFY DIG–SAFE 72–HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
80. CUT AND CLEAR TREES AND BRUSH FROM CONSTRUCTION AREAS TO THE EXTENT NECESSARY. ALL BRANCHES, TOPS AND BRUSH TO BE PROPERLY DISPOSED OF BY CONTRACTOR. THIS PROJECT SHALL BE MANAGED TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.
81. PRIOR TO GRUBBING OF CLEARED AREAS, ALL SITUATION BARRIERS DESIGNED FOR USE AS TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED AS CALLED FOR ON PROJECT PLANS. INSTALL STABILIZED CONSTRUCTION EXIT AT LOCATION OF CONSTRUCTION ACCESS AT LOCATION OF INTERSECTION WITH EXISTING PAVEMENT.
82. COMPLETE GRUBBING OPERATIONS UNDER THE ROADWAY AND SLOPE SECTIONS. ALL STUMPS AND SIMILAR DEBRIS SHALL BE PROPERLY DISPOSED OF BY CONTRACTOR. ORGANIC MATERIAL SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED IN UPLAND AREAS. ALL STOCKPILES SHALL BE SEEDED WITH WINTER RYE AND, IF NECESSARY, SURROUNDED WITH HAY BALES IN ORDER TO PREVENT LOSS DUE TO EROSION.
83. BEGIN ANY BLASTING OPERATIONS, IF REQUIRED, IN ACCORDANCE WITH PERMIT REQUIREMENTS.
84. CONSTRUCT AND STABILIZE ALL DITCHLINES AND POND(S) PRIOR TO DIRECTING FLOW INTO THEM.
85. CONSTRUCT THE DRAINAGE SYSTEM, SEWER SYSTEM AND OTHER SUBSURFACE UTILITIES AS ROUGH GRADES ARE ESTABLISHED.
86. COMMENCE CONSTRUCTION OF DRIVEWAY AND PARKING LOT, PERFORM EXCAVATION ACTIVITIES REQUIRED TO ACHIEVE SUBGRADE ELEVATION. ALL EXCAVATED EMBANKMENTS, DITCHES, AND SWALES SHALL BE INSTALLED AND STABILIZED. ALL SWALES AND DITCHLINES SHALL BE PROTECTED FROM EROSION BY IMPLEMENTATION OF TEMPORARY EROSION CONTROL MEASURES AS SHOWN ON PROJECT PLANS. DIVERT STORMWATER RUNOFF THROUGH THE USE OF TEMPORARY CULVERTS, OR OTHER MEANS NECESSARY PRIOR TO THE COMPLETIONS OF A FUNCTIONAL STORM DRAINAGE SYSTEM. SLOPES AND EMBANKMENTS SHALL BE STABILIZED BY TRACKING AND TEMPORARY SEEDING WITH WINTER RYE PRIOR TO TURF ESTABLISHMENT. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO HAVING RUNOFF DIRECTED TO THEM.
87. COMPLETE CONSTRUCTION OF DRIVEWAY AND PARKING LOT EMBANKMENTS BY ADDING APPROPRIATE BASE MATERIALS GRADED TO PROPER ELEVATION.
88. APPLY TOPSOIL TO DRIVEWAY AND PARKING LOT SLOPES AND OTHER AREAS DISTURBED BY CONSTRUCTION. TOPSOIL USED MAY BE NATIVE ORGANIC MATERIAL SCREENED SO AS TO BE FREE OF ROOTS, BRANCHES, STONES AND OTHER DELETERIOUS MATERIALS. TOPSOIL SHALL BE APPLIED SO AS TO PROVIDE A MINIMUM OF A 4–INCH COMPACTED THICKNESS. UPON COMPLETION OF TOPSOILING, FINISHED SECTIONS ARE TO BE LIMED, SEEDED AND MULCHED. CONSTRUCTION PERSONNEL SHALL INSPECT COMPLETED SECTIONS OF WORK ON A REGULAR BASIS AND REMEDY ANY PROBLEM AREAS UNTIL A HEALTHY STAND OF GRASS HAS BECOME ESTABLISHED.
89. PERFORM FINE GRADING OF DRIVEWAY AND PARKING LOT BASE MATERIALS.
90. PAVE DRIVEWAY AND PARKING LOT BINDER COURSE AND PLACE BITUMINOUS CURBING. TEMPORARY PAVEMENT MARKINGS AND SIGNAGE SHALL BE INSTALLED.
91. UPON APPROVAL FROM THE TOWN OF LONDONDERRY DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES, ALL RIMS CAN BE ADJUSTED AND THE WEARING COURSE OF PAVEMENT PLACED.
92. MAINTAIN, REPAIR AND REPLACE AS NECESSARY TEMPORARY EROSION CONTROL MEASURES UNTIL SUCH TIME AS THE ENTIRE CONSTRUCTION AREA HAS BEEN STABILIZED (A MINIMUM OF ONE WINTER SHALL HAVE PASSED).
93. AFTER STABILIZATION, REMOVE AND SUITABLY DISPOSE OF TEMPORARY EROSION CONTROL MEASURES.
94. MONITOR CONSTRUCTION ACTIVITIES FOR TO ENSURE CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN SUCH A WAY AS NOT TO ENDANGER THE INTEGRITY OF THE DRIVEWAY OR EMBANKMENTS, STORMWATER SYSTEMS AND UTILITIES.

INSPECTIONS:

95. THE APPLICANT'S CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY REPORTS AND OBTAINING THE NECESSARY INSPECTIONS BY THE DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES FOR REQUIRED IMPROVEMENTS DURING CONSTRUCTION. THE NECESSARY INSPECTIONS AND REPORTS ARE AS FOLLOWS:
    - INSPECTION OF DRIVEWAY AND PARKING LOT SUBGRADE AND RELATED IMPROVEMENTS AFTER CLEARING GRUBBING AND EXCAVATION BUT PRIOR TO ANY FILLING; AND
    - INSPECTION OF THE INSTALLATION OF ALL DRAINAGE STRUCTURES, SWALES, AND OTHER DRAINAGE IMPROVEMENTS.
    - DRIVEWAY AND PARKING LOT SUBGRADE INSPECTION PRIOR TO IMPORT OF GRAVELS. A COMPACTION TEST REPORT FOR REVIEW AND APPROVAL INDICATING THE SUBGRADE IS COMPACTED IN COMPLIANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION REQUIREMENTS SHALL BE PROVIDED;
    - SIEVE ANALYSIS REPORTS OF GRAVELS TO BE USED IN SUBBASE IN COMPLIANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION REQUIREMENTS SHALL BE PROVIDED FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT;
    - INSPECTION DURING PLACEMENT OF BANKRUN GRAVEL AND CRUSHED GRAVEL AND FINE GRADING PRIOR TO PLACEMENT OF PAVEMENT. COMPACTION TESTS INDICATING THE GRAVELS WERE COMPACTED IN COMPLIANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION REQUIREMENTS SHALL BE PROVIDED;
    - INSPECTION OF BASE COURSE AND WEARING COURSE PAVEMENT INSTALLATION;
    - INSPECTION OF REMOVAL OF EROSION CONTROL MEASURES;
    - FINAL INSPECTION;
    - ADDITIONAL INSPECTIONS AS NECESSARY TO VERIFY PROPER CONSTRUCTION METHODS; AND
    - CERTIFICATION STATEMENT(S) ON THE AS–BUILT PLANS VERIFYING THAT EACH ROAD INTERSEC

SITE SPECIFIC SOIL MAP UNIT KEY

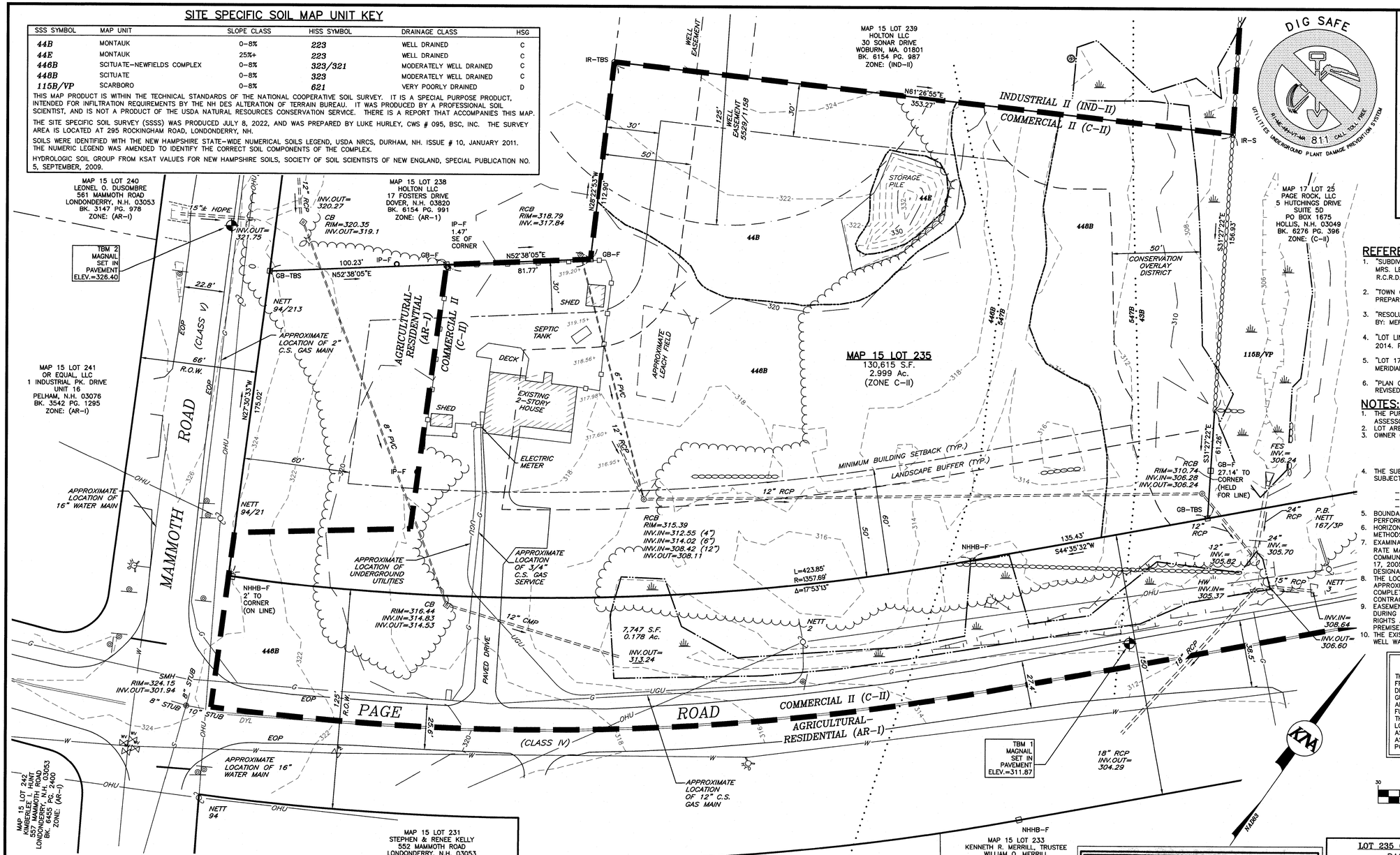
SSS SYMBOL	MAP UNIT	SLOPE CLASS	HISS SYMBOL	DRAINAGE CLASS	HSG
44B	MONTAUK	0–8%	*223*	WELL DRAINED	C
44E	MONTAUK	25%+	*223*	WELL DRAINED	C
446B	SCITUATE–NEWFIELDS COMPLEX	0–8%	*323/321*	MODERATELY WELL DRAINED	C
448B	SCITUATE	0–8%	*323*	MODERATELY WELL DRAINED	C
115B/VP	SCARBORO	0–8%	*621*	VERY POORLY DRAINED	D

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION OF TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.

THE SITE SPECIFIC SOIL SURVEY (SSSS) WAS PRODUCED JULY 8, 2022, AND WAS PREPARED BY LUKE HURLEY, CWS # 095, BSC, INC. THE SURVEY AREA IS LOCATED AT 295 ROCKINGHAM ROAD, LONDONDERRY, NH.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE–WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.

HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTISTS OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009.



VICINITY MAP

SCALE: 1" = 2,500'±

REFERENCE PLANS:

1. "SUBDIVISION PLAN OF LAND OF A.J. & G.Y. HUARD; SUBDIVISION PLAN OF LAND OF MR. & MRS. LEO DUBOIS." SCALE: 1"=50'. DATED: JUNE, 1969. PREPARED BY: P. BRUSQUINI P.E. R.C.R.D. PLAN #1438
2. "TOWN OF LONDONDERRY, N.H. MAP 17 PARCEL 25." SCALE: 1"=50'. DATED: JANUARY, 1982. PREPARED BY: EDWARD N. HERBERT ASSOC. INC. R.C.R.D. PLAN #D–12463
3. "RESOLUTION PLAN, OLD PAGE ROAD." SCALE: 1"=40'. DATED: JANUARY 29, 2008. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #D–36063
4. "LOT LINE ADJUSTMENT–MAP 15 LOTS 235 & 239." SCALE: 1"=100'. DATED: JANUARY 15, 2014. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #D–38211
5. "LOT 17–7 SUBDIVISION PLAN." SCALE: 1"=60'. DATED: DECEMBER 19, 2014. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #D–40123
6. "PLAN OF PROPOSED FEDERAL AID PROJECT" ROCKINGHAM ROAD. SCALE: 1"=50'. LAST REVISED: DECEMBER 22, 1954 N.H. PROJECT NO. P–2979

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE EXISTING CONDITIONS FOR CONSOLIDATED ASSESSOR'S MAP 15 LOT 235 IN LONDONDERRY, NEW HAMPSHIRE.
2. LOT AREA: 130,615 S.F. OR 2.999 ACRES
3. OWNER OF RECORD:
   PAGE ROCK, LLC
   5 HUTCHINGS DRIVE
   HOLLIS, N.H. 03049
   BK. 6276 PG. 399 & 402
4. THE SUBJECT PARCEL LIES WITHIN THE COMMERCIAL II (C–II) ZONING DISTRICT AND IS SUBJECT TO THE FOLLOWING DIMENSIONAL REQUIREMENTS.
   MINIMUM BUILDING SETBACKS:
   – FRONT 60 FT
   – SIDE 30 FT
   – REAR 30 FT
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON A FIELD SURVEY PERFORMED BY THIS OFFICE IN JANUARY OF 2022.
6. HORIZONTAL DATUM IS NAD83, VERTICAL DATUM IS NAVD88 OBTAINED FROM GPS SURVEY METHODS POST PROCESSED THROUGH NOAA–OPUS. NORTH ORIENTATION IS NAD83.
7. EXAMINATION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAPS (FIRM) FOR THE TOWN OF LONDONDERRY, NEW HAMPSHIRE, ROCKINGHAM COUNTY, COMMUNITY PANEL NUMBER 33015C0317E PANEL NUMBER 317 OF 681. EFFECTIVE DATE: MAY 17, 2005, INDICATES THAT NO PORTION OF THE SUBJECT PREMISES IS LOCATED WITHIN A DESIGNATED FLOOD ZONE.
8. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. KEACH–NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE, THE OWNER OR CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
9. EASEMENTS, RIGHTS AND RESTRICTIONS SHOWN OR IDENTIFIED HEREON ARE THOSE FOUND DURING RESEARCH AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER EASEMENTS, RIGHTS AND RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF THE SUBJECT PREMISES MAY DETERMINE.
10. THE EXISTING HOUSE IS SERVICED BY AN INDIVIDUAL SEPTIC SYSTEM AND WELL. THE EXISTING WELL WAS NOT DISCOVERED DURING THE COURSE OF THE SURVEY.

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN DRAWN FROM FIELD SURVEY INFORMATION AND OR PLOTTED FROM EXISTING DRAWINGS. KEACH–NORDSTROM ASSOCIATES, INC. MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHER, KEACH–NORDSTROM ASSOCIATES, INC. DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. KEACH–NORDSTROM ASSOCIATES, INC. HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

1 inch = 30 ft.

LEGEND

NHHB–F	NH HWY BOUND FOUND		PROPERTY LINE
GB–F	GRANITE BOUND FOUND		R.O.W. LINE
IP–F	IRON PIPE FOUND		ZONE LINE
IR–S	IRON ROD SET		TREELINE
GB–TBS	GRANITE BOUND TO BE SET		STOCKADE FENCE
IR–TBS	IRON ROD TO BE SET	OHU	OVERHEAD UTILITIES
	BENCHMARK	G	GAS LINE
	SIGN	W	WATER LINE
	DRAINAGE MANHOLE	S	SEWER LINE
	CATCH BASIN		DRAINAGE LINE
	WATER VALVE		EDGE OF PAVEMENT
	HYDRANT		10' CONTOUR
	SEWER MANHOLE		2' CONTOUR
	FLARED END SECTION		STONEWALL
	UTILITY POLE		SCS SOIL LINE
W	WELL		SSS SOIL LINE
			BUILDING SETBACK
			EASEMENT
			WETLAND BUFFER
			LANDSCAPE BUFFER

SCS SOILS LEGEND

43B

446B SCITUATE–NEWFIELDS COMPLEX 3 TO 8 PERCENT SLOPES

547B

SOURCE: USDA–SCS WEB SOIL SURVEY ROCKINGHAM COUNTY

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

STATE OF NEW HAMPSHIRE
CHRISTOPHER K. DANFORTH
11/25/2025
No. 077
CERTIFIED WETLAND SCIENTIST

WETLAND CERTIFICATION:

JURISDICTIONAL WETLANDS SHOWN ON THIS PLAN WERE DELINEATED IN JANUARY OF 2022 BY CHRISTOPHER K. DANFORTH CWS #077. THE WETLANDS WERE DELINEATED ACCORDING TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL (1987) AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2, JANUARY 2012. DOMINANT HYDRIC SOILS WITHIN THE WETLAND(S) WERE IDENTIFIED USING "FIELD INDICATORS OF HYDRIC SOILS OF THE UNITED STATES" A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, NRCS, VERSION 8.1, 2017. DOMINANCE OF HYDROPHYTIC VEGETATION WAS DETERMINED USING THE USACE 2020 NATIONAL WETLAND PLANT LIST, NWPL 2020 VERSION 3.5 HTTP://WETLAND–PLANTS.USACE.ARMY.MIL.

STATE OF NEW HAMPSHIRE
No. 911
CHRISTOPHER J. HICKEY
LICENSED LAND SURVEYOR
SIGNATURE

SURVEYOR'S CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR THOSE UNDER MY DIRECT SUPERVISION. FURTHER, THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY MADE BY THIS OFFICE DURING JANUARY OF 2022. SAID SURVEY HAS A RELATIVE ERROR OF CLOSURE OF ONE PART IN TEN THOUSAND (1:10,000) OR BETTER.

LICENSED LAND SURVEYOR — 3/9/26 DATE

OWNER OF MAP 15 LOT 235

SIGNATURE: DEANE PAGE ROCK LLC

DATE: 2/16/2026

OWNER OF MAP 15 LOT 236

SIGNATURE: DEANE PAGE ROCK LLC

DATE: 2/16/2026

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

EXISTING CONDITIONS PLAN
PAGE ROCK TOWNHOMES

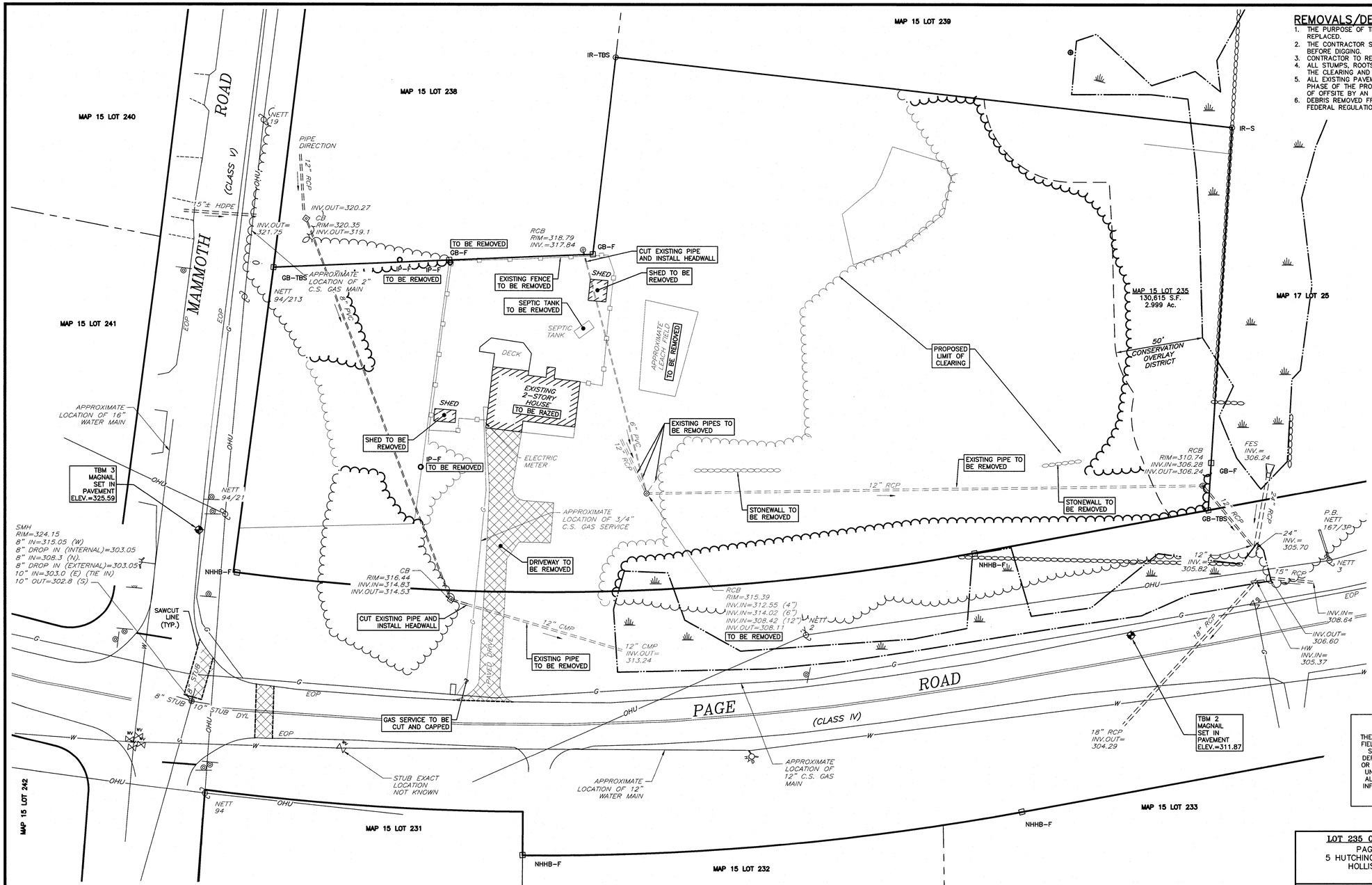
MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

PROJ. NO: 21–0113–1
DATE: MARCH 20, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. 2 OF 22

REMOVALS/DEMOLITION NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW EXISTING FEATURES ON SITE TO BE REMOVED, SALVAGED OR REPLACED.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
3. CONTRACTOR TO REMOVE AND SALVAGE ITEMS SHOWN.
4. ALL STUMPS, ROOTS, BRANCHES, BRUSH, WOODS AND OTHER PERISHABLE MATERIAL RESULTING FROM THE CLEARING AND GRUBBING OPERATIONS SHALL BE DISPOSED OF BY AN APPROVED METHOD.
5. ALL EXISTING PAVEMENT WITHIN THE CROSS HATCHED AREA IS TO BE REMOVED DURING THE DEMOLITION PHASE OF THE PROJECT. EXCESS MATERIAL FROM THESE AREAS SHALL BE APPROPRIATELY DISPOSED OF OFFSITE BY AN APPROVED METHOD.
6. DEBRIS REMOVED FROM THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.



SEE COVER FOR NOTES AND REFERENCE PLANS

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND PLOTTED FROM EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED 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 THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

LEGEND

⊡ NHHB-F	NH HWY BOUND FOUND	———	PROPERTY LINE
⊡ GB-F	GRANITE BOUND FOUND	———	R.O.W. LINE
○ IP-F	IRON PIPE FOUND	~~~~~	TREELINE
⊙ IR-S	IRON ROD SET	——OHU——	OVERHEAD UTILITIES
⊡ GB-TBS	GRANITE BOUND TO BE SET	———	EDGE OF PAVEMENT
⊙ IR-TBS	IRON ROD TO BE SET	ooooooo	STONEWALL
	BENCHMARK	—·—·—	BUILDING SETBACK
	SIGN	— — —	EASEMENT
	DRAINAGE MANHOLE	— — —	WETLAND BUFFER
	CATCH BASIN	— — —	LANDSCAPE BUFFER
	WATER VALVE	~~~~~	PROPOSED TREELINE
	HYDRANT	———	SAWCUT LINE
	SEWER MANHOLE		PAVEMENT TO BE REMOVED
	FLARED END SECTION		
	UTILITY POLE		
	WELL		

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

BENCHMARK DATA		
LOCATION	DATUM	DESCRIPTION
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET
N:154187.05, E:1053618.44	ELEV.=325.59 (NAVD88)	BENCHMARK #3 – MAGNAIL SET

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

DIG SAFE
811
CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

CHRISTOPHER M. CLEMENSON
CIVIL
No. 16176
3/9/26

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

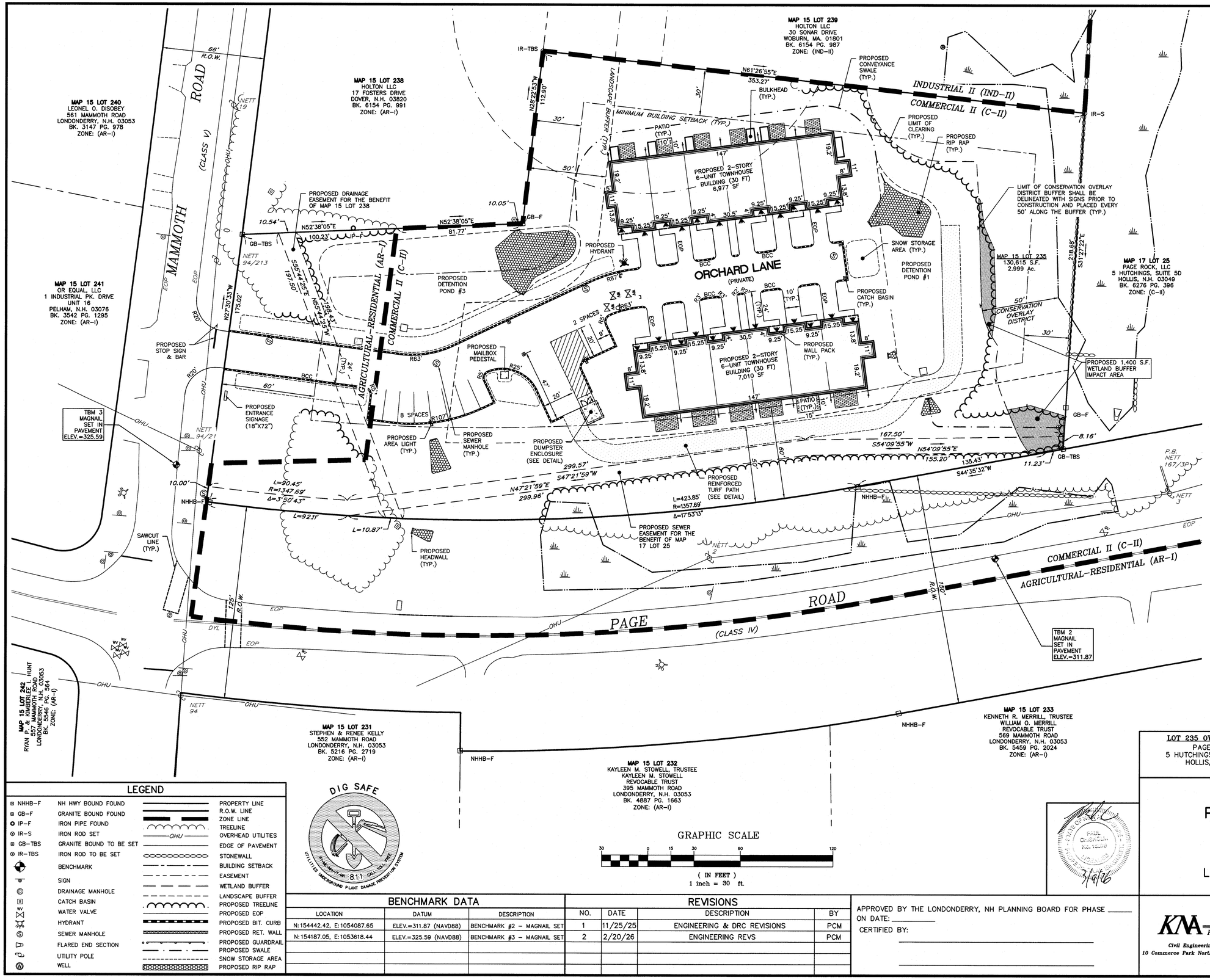
REMOVALS/DEMOLITION PLAN

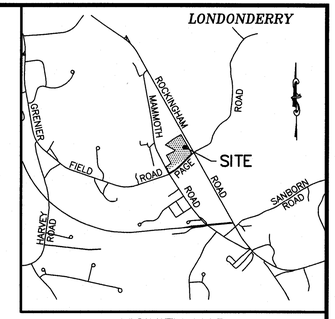
PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. 3 OF 22





VICINITY MAP
SCALE: 1" = 2,500'±

KM
MAGNETIC

OWNER OF MAP 15 LOT 235	
SIGNATURE:	PAGE ROCK LLC
DATE:	2/16/2026

OWNER OF MAP 15 LOT 236	
SIGNATURE:	PAGE ROCK LLC
DATE:	2/16/2026

SEE COVER FOR NOTES AND REFERENCE PLANS

ZONING NOTE

THE ZONING/BUILDING SETBACKS DEPICTED ON THIS PLAN ARE THOSE WE HAVE INTERPRETED FROM THE LATEST ZONING ORDINANCE OF THE MUNICIPALITY AND, AS SUCH, ARE ONLY OPINIONS EXPRESSED BY KEACH-NORDSTROM ASSOCIATES, INC. THE FINAL INTERPRETATION OF THE ORDINANCE CAN ONLY BE MADE BY THE APPROPRIATE ZONING AUTHORITY. SINCE BUILDING ORIENTATION, PROPOSED USES, AND OTHER FACTORS CAN AFFECT THE SETBACKS, PRIOR TO ANY DEVELOPMENT OF THIS PROPERTY. THE BUILDER/OWNER MUST CONSULT WITH THE TOWN/CITY TO INSURE THE CORRECT APPLICATION OF THE ZONING ORDINANCE.

LEGEND

NHHB-F	NH HWY BOUND FOUND		PROPERTY LINE
GB-F	GRANITE BOUND FOUND		R.O.W. LINE
IP-F	IRON PIPE FOUND		ZONE LINE
IR-S	IRON ROD SET		TREELINE
GB-TBS	GRANITE BOUND TO BE SET	OHU	OVERHEAD UTILITIES
IR-TBS	IRON ROD TO BE SET		EDGE OF PAVEMENT
	BENCHMARK		STONEWALL
	SIGN		BUILDING SETBACK
	DRAINAGE MANHOLE		EASEMENT
	CATCH BASIN		WETLAND BUFFER
	WATER VALVE		LANDSCAPE BUFFER
	HYDRANT		PROPOSED TREELINE
	SEWER MANHOLE		PROPOSED EOP
	FLARED END SECTION		PROPOSED BIT. CURB
	UTILITY POLE		PROPOSED RET. WALL
	WELL		PROPOSED GUARDRAIL
			PROPOSED SWALE
			SNOW STORAGE AREA
			PROPOSED RIP RAP

DIG SAFE
811
CALL TOLL FREE
AT LEAST THREE FULL WORKING DAYS BEFORE YOU DIG
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 - MAGNAIL SET
N:154187.05, E:1053618.44	ELEV.=325.59 (NAVD88)	BENCHMARK #3 - MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD FOR PHASE _____
ON DATE: _____
CERTIFIED BY:

_____

_____

PAUL CHADWICK No. 16978 STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR
2/16/26

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

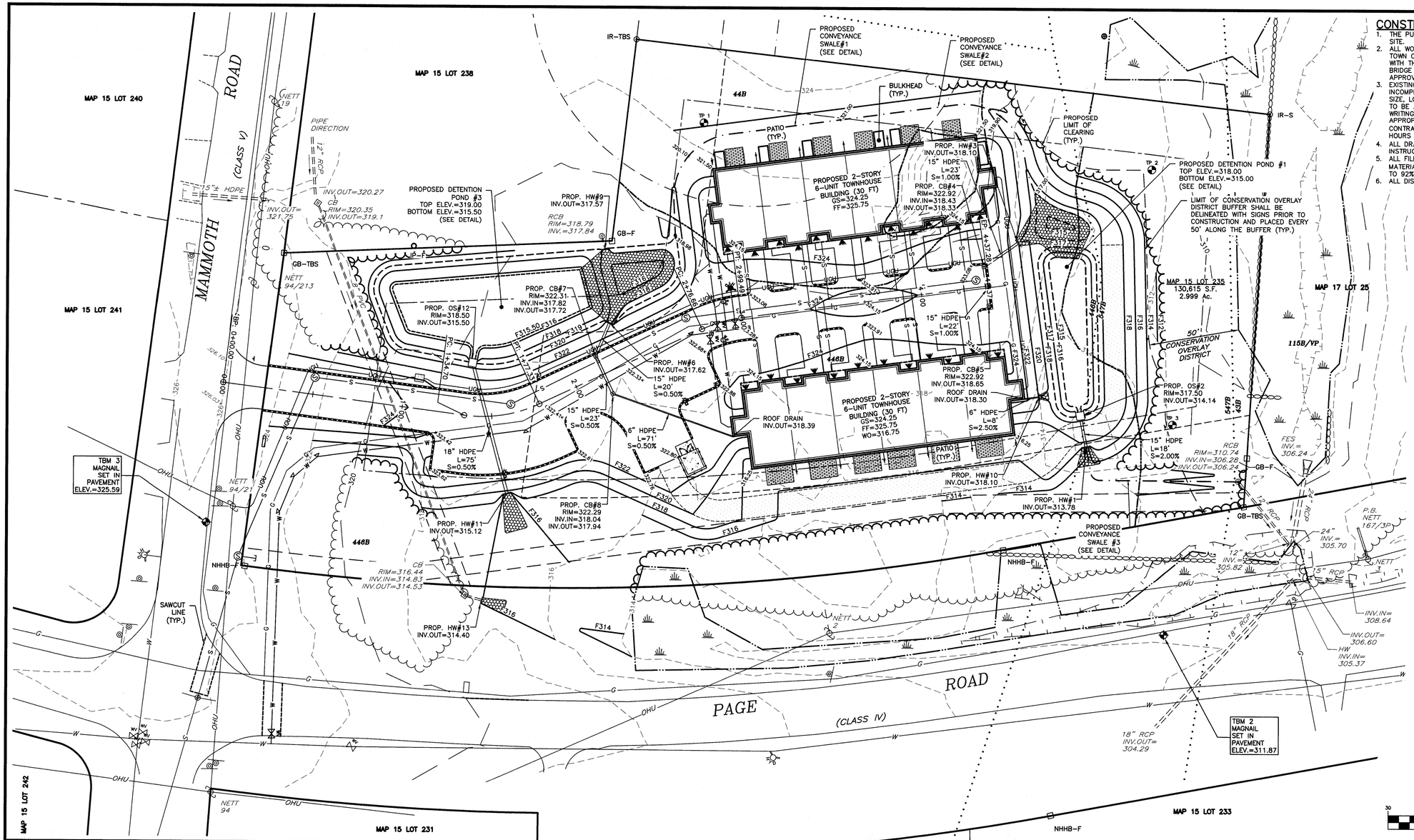
RESIDENTIAL SITE PLAN

PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. 4 OF 22



CONSTRUCTION NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED GRADING AND DRAINAGE FOR THIS SITE.
2. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE TOWN OF LONDONDERRY, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2010 ARE HEREBY INCORPORATED BY REFERENCE.
3. EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE IN LOCATION AND POSSIBLY INCOMPLETE. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE EXACT SIZE, LOCATION, DEPTH AND EXISTENCE OF ALL EXISTING UNDERGROUND UTILITIES THAT ARE TO BE ACCESSED OR CROSSED DURING CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
4. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWNG MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. ALL FILL EMBANKMENT SLOPES SHALL BE PROPERLY PREPARED AND CONSTRUCTED WITH FILL MATERIAL CONFORMING TO NHDOT ITEM NO. 203.6 (EMBANKMENT IN PLACE) AND COMPACTED TO 92% OF MAX.
6. ALL DISTURBED AREAS ARE TO BE LOAMED AND SEEDED.

SCS SOILS LEGEND

43B	CANTON FINE SANDY LOAM 0 TO 8 PERCENT SLOPES, VERY STONY
446B	SCITUATE–NEWFIELDS COMPLEX 3 TO 8 PERCENT SLOPES
547B	WALPOLE VERY FINE SANDY LOAM 3 TO 8 PERCENT SLOPES, VERY STONY

SOURCE: USDA–SCS WEB SOIL SURVEY ROCKINGHAM COUNTY

LOAM & SEED ALL DISTURBED AREAS UNLESS OTHERWISE SPECIFIED (TYP.)

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

LEGEND

⊡	NHHB–F	NH HWY BOUND FOUND	DRAINAGE LINE
⊡	GB–F	GRANITE BOUND FOUND	EDGE OF PAVEMENT
○	IP–F	IRON PIPE FOUND	TREELINE
⊙	IR–S	IRON ROD SET	10' CONTOUR
⊡	GB–TBS	GRANITE BOUND TO BE SET	2' CONTOUR
⊙	IR–TBS	IRON ROD TO BE SET	STONEWALL
		BENCHMARK	SCS SOIL LINE
		SIGN	SSS SOIL LINE
Ⓓ		DRAINAGE MANHOLE	BUILDING SETBACK
▣		CATCH BASIN	EASEMENT
WV		WATER VALVE	WETLAND BUFFER
		HYDRANT	LANDSCAPE BUFFER
Ⓢ		SEWER MANHOLE	PROPOSED UG UTILITIES
		FLARED END SECTION	PROPOSED GAS LINE
		UTILITY POLE	PROPOSED WATER LINE
Ⓦ		WELL	PROPOSED SEWER LINE
			PROPOSED DRAINAGE LINE
			PROPOSED TREELINE
		PROPERTY LINE	PROPOSED EOP
		R.O.W. LINE	PROPOSED BIT. CURB
OHU		OVERHEAD UTILITIES	PROPOSED 2' CONTOUR
G		GAS LINE	PROPOSED SWALE
W		WATER LINE	PROPOSED RET. WALL
S		SEWER LINE	PROPOSED GUARDRAIL
			PROPOSED RIP RAP

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
44B	MONTAUK	0–8%	WELL DRAINED	C
446B	SCITUATE–NEWFIELDS COMPLEX	0–8%	MODERATELY WELL DRAINED	C
115B/VP	SCARBORO VERY POORLY DRAINED	0–8%	VERY POORLY DRAINED	D

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION OF TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.

THE SITE SPECIFIC SOIL SURVEY (SSSS) WAS PRODUCED JULY 8, 2022, AND WAS PREPARED BY LUKE HURLEY, CWS # 095, BSC, INC. THE SURVEY AREA IS LOCATED AT 295 ROCKINGHAM ROAD, LONDONDERRY, NH.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE–WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH, ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.

HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTISTS OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009.

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET
N:154187.05, E:1053618.44	ELEV.=325.59 (NAVD88)	BENCHMARK #3 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND PLOTTED FROM EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED 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 THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

DIG SAFE
811 CALL 72 HRS. BEFORE YOU DIG
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

3/9/26

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

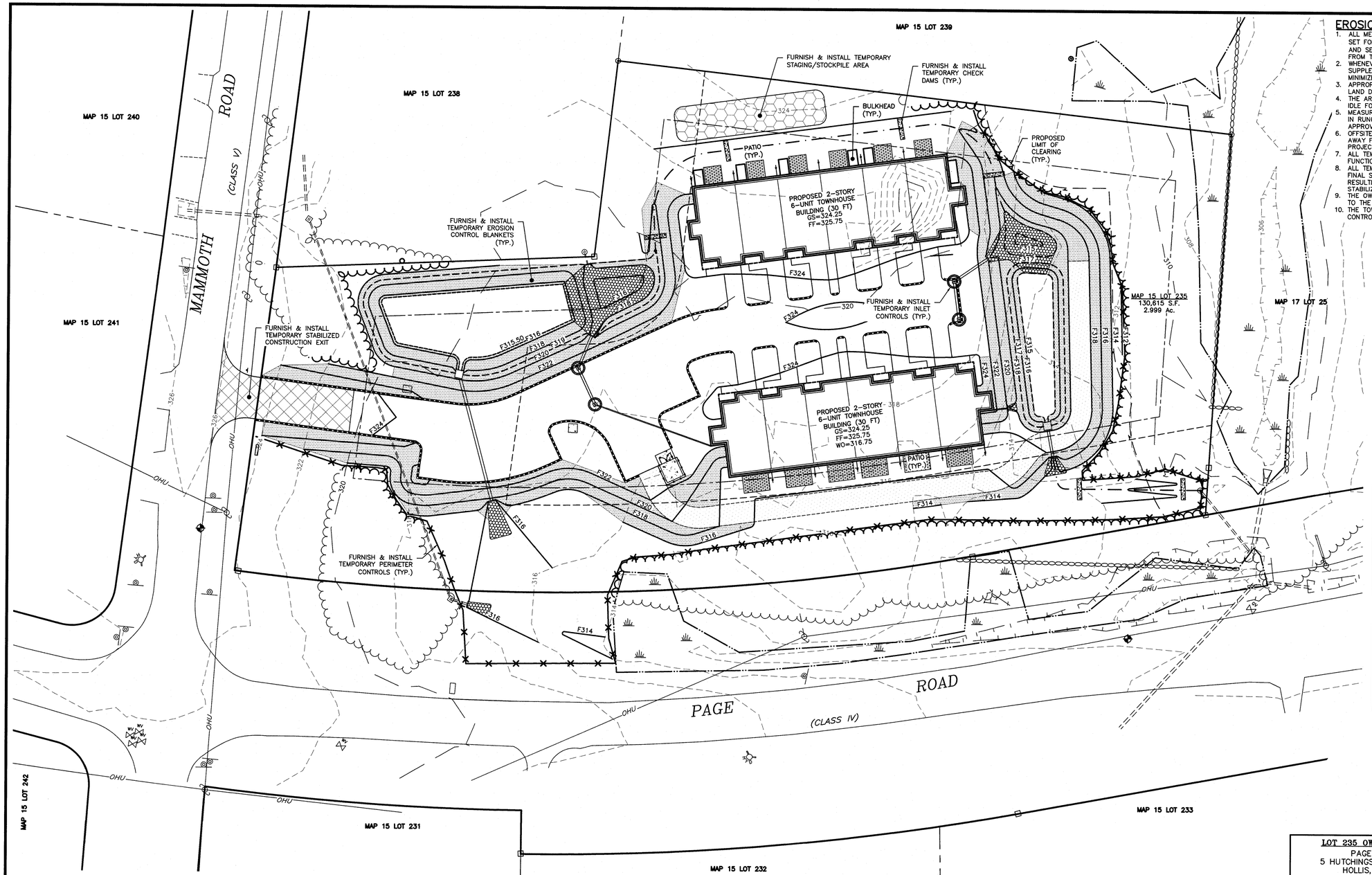
GRADING & DRAINAGE PLAN

PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

PROJ. NO: 21–0113–1
DATE: MARCH 20, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. 5 OF 22



EROSION CONTROL NOTES:

1. ALL MEASURES IN THE PLAN SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUEL TITLED "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION," DATED DECEMBER 2008, AS AMENDED FROM TIME TO TIME.
2. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
3. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
4. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
5. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES.
6. OFFSITE SURFACE WATER AND RUNOFF FROM UNDISTURBED AREAS SHALL BE DIVERTED AWAY FROM DISTURBED AREAS WHERE FEASIBLE OR CARRIED NON-EROSIVELY THROUGH THE PROJECT AREA. INTEGRITY OF DOWNSTREAM DRAINAGE SYSTEMS SHALL BE MAINTAINED.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
8. 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 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
9. THE OWNER IS RESPONSIBLE FOR FINAL STABILIZATION OF ALL SLOPES GREATER THAN 3:1 TO THE SATISFACTION OF LONDONDERRY DPW.
10. THE TOWN OF LONDONDERRY SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.

EROSION & SEDIMENT CONTROL LEGEND

- PERMANENT OUTLET PROTECTION APRON (RIP RAP)
- TEMPORARY PERIMETER CONTROLS
- LIMITS OF CLEARING
- TEMPORARY STONE CHECK DAM
- TEMPORARY INLET PROTECTION
- STAGING AND STOCKPILE AREA
- EROSION CONTROL BLANKETS
- STABILIZED CONSTRUCTION EXIT

LEGEND

⊡ NHHB–F	NH HWY BOUND FOUND		PROPERTY LINE
⊡ GB–F	GRANITE BOUND FOUND		R.O.W. LINE
○ IP–F	IRON PIPE FOUND		DRAINAGE LINE
⊙ IR–S	IRON ROD SET	OHU	OVERHEAD UTILITIES
	BENCHMARK		EDGE OF PAVEMENT
	SIGN		10' CONTOUR
Ⓓ	DRAINAGE MANHOLE		2' CONTOUR
	CATCH BASIN		STONEWALL
	WATER VALVE		TREELINE
	HYDRANT		BUILDING SETBACK
Ⓢ	SEWER MANHOLE		WETLAND BUFFER
	FLARED END SECTION		LANDSCAPE BUFFER
	UTILITY POLE		PROPOSED TREELINE
Ⓦ	WELL		PROPOSED EOP
			PROPOSED BIT. CURB
			PROPOSED RET. WALL
			PROPOSED 2' CONTOUR
			PROPOSED SWALE
			PROPOSED GUARDRAIL

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET
N:154187.05, E:1053618.44	ELEV.=325.59 (NAVD88)	BENCHMARK #3 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

DIG SAFE
811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

PAUL C. MCNAMARA NO. 15773 LICENSED PROFESSIONAL ENGINEER
2/6/26

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

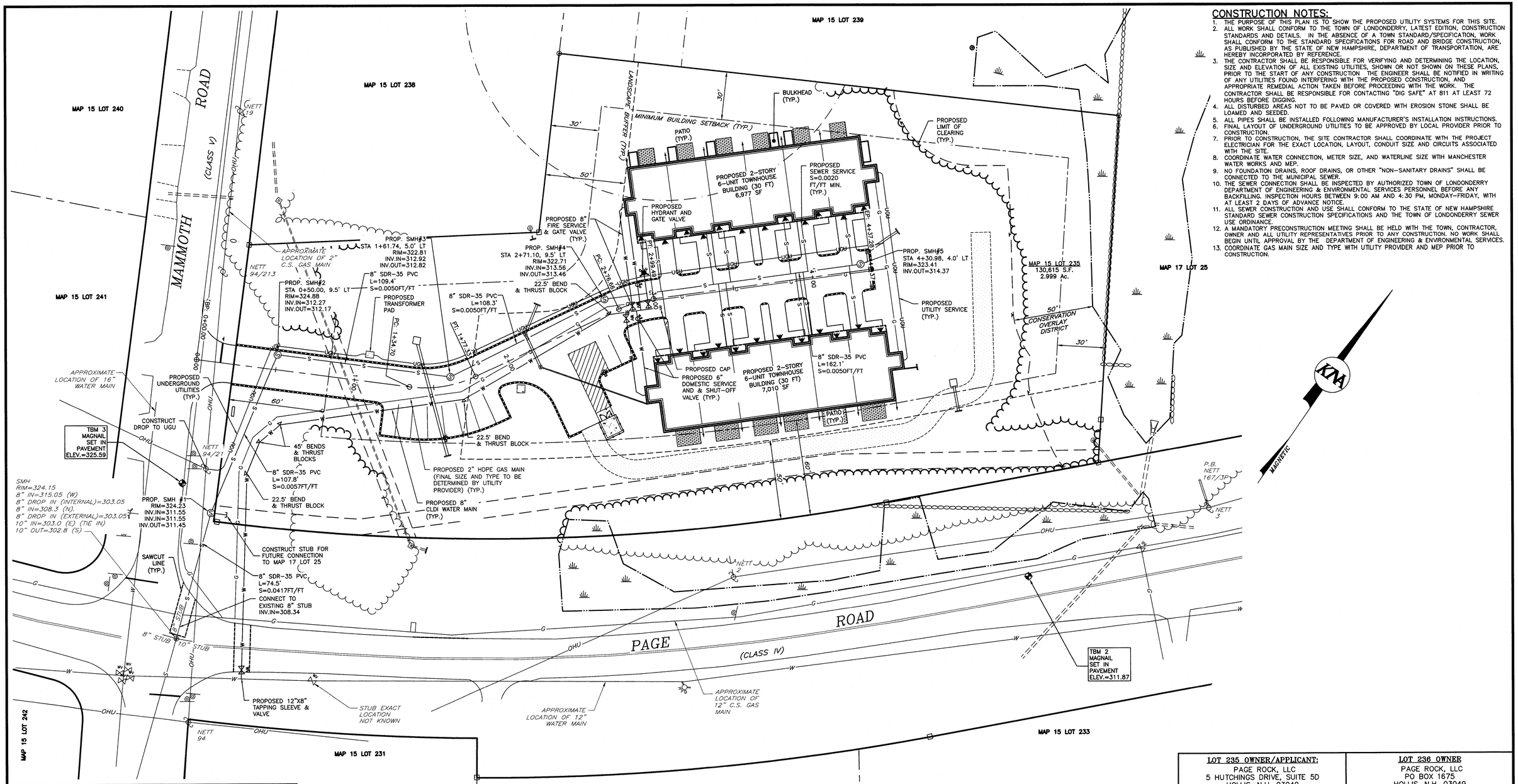
EROSION CONTROL PLAN

PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. 6 OF 22



CONSTRUCTION NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED UTILITY SYSTEMS FOR THIS SITE.
2. ALL WORK SHALL CONFORM TO THE TOWN OF LONDONDERRY, LATEST EDITION, CONSTRUCTION STANDARDS AND DETAILS. IN THE ABSENCE OF A TOWN STANDARD/SPECIFICATION, WORK SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AS PUBLISHED BY THE STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, ARE HEREBY INCORPORATED BY REFERENCE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
4. ALL DISTURBED AREAS NOT TO BE PAVED OR COVERED WITH EROSION STONE SHALL BE LOAMED AND SEEDED.
5. ALL PIPES SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6. FINAL LAYOUT OF UNDERGROUND UTILITIES TO BE APPROVED BY LOCAL PROVIDER PRIOR TO CONSTRUCTION.
7. PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ELECTRICIAN FOR THE EXACT LOCATION, LAYOUT, CONDUIT SIZE AND CIRCUITS ASSOCIATED WITH THE SITE.
8. COORDINATE WATER CONNECTION, METER SIZE, AND WATERLINE SIZE WITH MANCHESTER WATER WORKS AND MEP.
9. NO FOUNDATION DRAINS, ROOF DRAINS, OR OTHER "NON-SANITARY DRAINS" SHALL BE CONNECTED TO THE MUNICIPAL SEWER.
10. THE SEWER CONNECTION SHALL BE INSPECTED BY AUTHORIZED TOWN OF LONDONDERRY DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES PERSONNEL BEFORE ANY BACKFILLING. INSPECTION HOURS BETWEEN 9:00 AM AND 4:30 PM, MONDAY-FRIDAY, WITH AT LEAST 2 DAYS OF ADVANCE NOTICE.
11. ALL SEWER CONSTRUCTION AND USE SHALL CONFORM TO THE STATE OF NEW HAMPSHIRE STANDARD SEWER CONSTRUCTION SPECIFICATIONS AND THE TOWN OF LONDONDERRY SEWER USE ORDINANCE.
12. A MANDATORY PRECONSTRUCTION MEETING SHALL BE HELD WITH THE TOWN, CONTRACTOR, OWNER AND ALL UTILITY REPRESENTATIVES PRIOR TO ANY CONSTRUCTION. NO WORK SHALL BEGIN UNTIL APPROVAL BY THE DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES.
13. COORDINATE GAS MAIN SIZE AND TYPE WITH UTILITY PROVIDER AND MEP PRIOR TO CONSTRUCTION.

LEGEND

NHHB-F	NH HWY BOUND FOUND	S	SEWER LINE
GB-F	GRANITE BOUND FOUND		DRAINAGE LINE
IP-F	IRON PIPE FOUND		EDGE OF PAVEMENT
IR-S	IRON ROD SET		STONEWALL
	BENCHMARK		TREELINE
	SIGN		BUILDING SETBACK
D	DRAINAGE MANHOLE		EASEMENT
C	CATCH BASIN		WETLAND BUFFER
WV	WATER VALVE		LANDSCAPE BUFFER
	HYDRANT	UGU	PROPOSED UG UTILITIES
S	SEWER MANHOLE	G	PROPOSED GAS LINE
	FLARED END SECTION	W	PROPOSED WATER LINE
	UTILITY POLE	S	PROPOSED SEWER LINE
W	WELL		PROPOSED DRAINAGE LINE
	PROPERTY LINE		PROPOSED TREELINE
	R.O.W. LINE		PROPOSED EOP
OHU	OVERHEAD UTILITIES		PROPOSED BIT. CURB
G	GAS LINE		PROPOSED RET. WALL
W	WATER LINE		PROPOSED GUARDRAIL
			PROPOSED RIP RAP

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND PLOTTED FROM EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED 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 THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET
N:154187.05, E:1053618.44	ELEV.=325.59 (NAVD88)	BENCHMARK #3 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

DIG SAFE — IT'S FREE — IT'S THE LAW — 811 CALL TOLL FREE — UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

PAUL CHISHOLM No. 16013 REGISTERED PROFESSIONAL ENGINEER
3/9/26

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

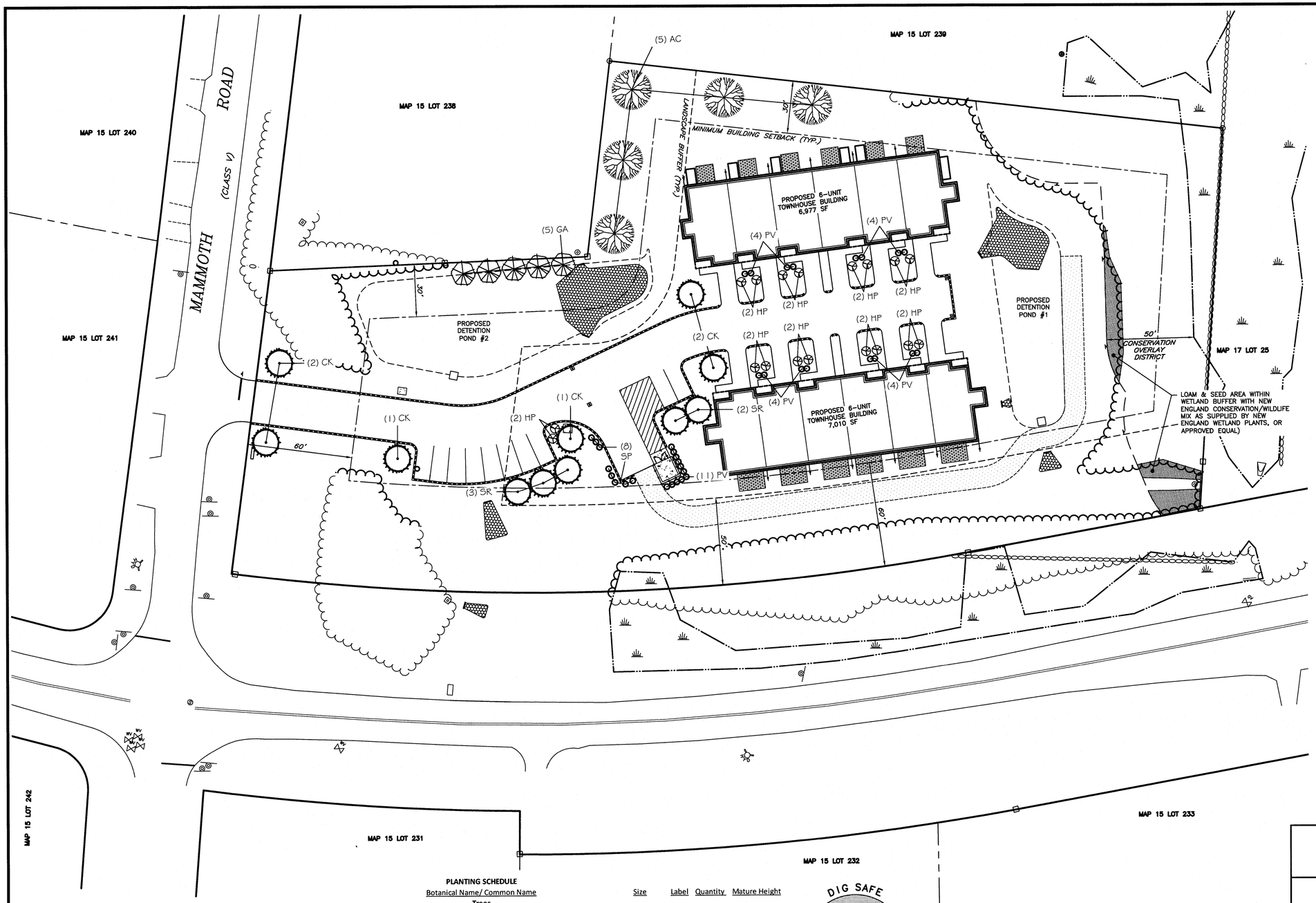
UTILITY PLAN

PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. 7 OF 22



LANDSCAPE NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED SITE LANDSCAPE WHICH PROVIDES CLIMATIC RELIEF AND AESTHETIC APPEAL.
2. ALL PLANT MATERIALS USED SHALL BE NURSERY STOCK AND SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF INSTALLATION. ANY MATERIAL WHICH DIES OR DOES NOT SHOWN HEALTHY APPEARANCE WITHIN THIS TIME SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE; WITH SAME WARRANTY REQUIREMENTS AS THE ORIGINAL. WARRANTIES TYPICALLY DO NOT COVER LOSS DUE TO INSECT INFESTATION OR MECHANICAL DAMAGE (I.E. SNOW STORAGE).
3. IF THE SOIL CONDITIONS ARE EXTREMELY SANDY, ALL TREES SHALL HAVE A 6" LAYER OF COMPACTED TOPSOIL PLACED IN THE BASE OF THE PLANT PIT AS A MOISTURE RETENTION LAYER. THE PLANT PIT SIDEWALLS SHALL BE OVER EXCAVATED BY AN ADDITIONAL 12" BEYOND THE NORMAL OUTSIDE RADIUS OF THE HOLE. A TOPSOIL MIXTURE SHALL BE USED TO BACKFILL THE HOLE AS FOLLOWED: ORGANIC TOPSOIL, AMENDED WITH 10% WOOD ASH, 10% MANURE, 30% COMPOST AND A GRANULAR HYDROGEL TO ABSORB AND RETAIN WATER.
4. PLANTING BEDS AND SAUCERS SHALL RECEIVE A 4" MINIMUM THICKNESS OF PINE/HEMLOCK BARK MULCH OVER A 5oz. POLYPROPYLENE WEED CONTROL FABRIC.
5. PAVEMENT AND ROAD BASE MATERIAL ENCOUNTERED IN ANY LAWN OR PLANTING BED SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AND SUITABLE AMENDED SOIL INSTALLED AS SPECIFIED IN THE TURF ESTABLISHMENT SCHEDULE.
6. NO PLANTINGS SHALL CONFLICT WITH SNOW STORAGE AREAS, LIGHT FIXTURES, UNDERGROUND UTILITIES, OR SIGHT DISTANCE.

LANDSCAPE CALCULATIONS

1. INTERIOR GREEN SPACE:
   REQUIRED:
   SIDE (8%) = 760 SF PARKING = 61 SF REQUIRED
   PROVIDED = 780 SF PROPOSED
2. INTERNAL PARKING:
   REQUIRED = 1 DECIDUOUS SHADE TREE/15 SPACES
   = 4 SPACES/15 = 0.27 OR 1 DECIDUOUS SHADE TREE REQUIRED
3. PERIMETER:
   REQUIRED = 1 SHADE TREE/20' PARKING LOT PERIMETER
   = 155'/20' = 8 SHADE TREES REQUIRED
4. TOTAL:
   REQUIRED = 1 SHADE TREE + 8 SHADE TREES = 10 SHADE TREES
   PROVIDED = 16 SHADE TREES

MAGNETIC

OWNER OF MAP 15 LOT 235
SIGNATURE: _____ PAGE ROCK LLC
DATE: 2/16/2026

OWNER OF MAP 15 LOT 236
SIGNATURE: _____ PAGE ROCK LLC
DATE: 2/16/2026

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

PLANTING SCHEDULE

Botanical Name/ Common Name	Size	Label	Quantity	Mature Height
Trees				
Abies concolor / White Fir	6-7' B&B	AC	5	30-40'
Cornus kousa / Kousa Dogwood	2.5-3" CAL.	CK	6	20-30'
Syringa reticulata / Japanese Lilac Tree	2.5-3" CAL.	SR	5	20-30'
Shrubs				
Hydrangea paniculata 'Little Quick Fire' / Little Quick Fire Panicle Hydrangea	2-2.5'	HP	18	2-3'
Thuja occidentalis 'Elegantissma' / Gold-tipped Arborvitae	5-6' B&B	GA	5	15-20'
Syringa Patula 'Miss Kim' / Miss Kim Lilac	#7	SP	11	6'-8'
Grasses				
Panicum virgatum 'Shenandoah' / Shenandoah Switch Grass	#2 Gal.	PV	24	3-4'

DIG SAFE — UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM — 811 — CALL BEFORE YOU DIG

LEGEND

NHHB–F	NH HWY BOUND FOUND		PROPERTY LINE
GB–F	GRANITE BOUND FOUND		R.O.W. LINE
IP–F	IRON PIPE FOUND	OHU	OVERHEAD UTILITIES
IR–S	IRON ROD SET		EDGE OF PAVEMENT
	BENCHMARK		STONEWALL
	SIGN		BUILDING SETBACK
	DRAINAGE MANHOLE		EASEMENT
	CATCH BASIN		WETLAND BUFFER
	WATER VALVE		LANDSCAPE BUFFER
	HYDRANT		PROPOSED TREELINE
	SEWER MANHOLE		PROPOSED EOP
	FLARED END SECTION		PROPOSED BIT. CURB
	UTILITY POLE		PROPOSED RIP RAP
	WELL		

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N: 155165.31, E: 1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N: 154442.42, E: 1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD FOR PHASE _____
ON DATE: _____
CERTIFIED BY:

2/19/26

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

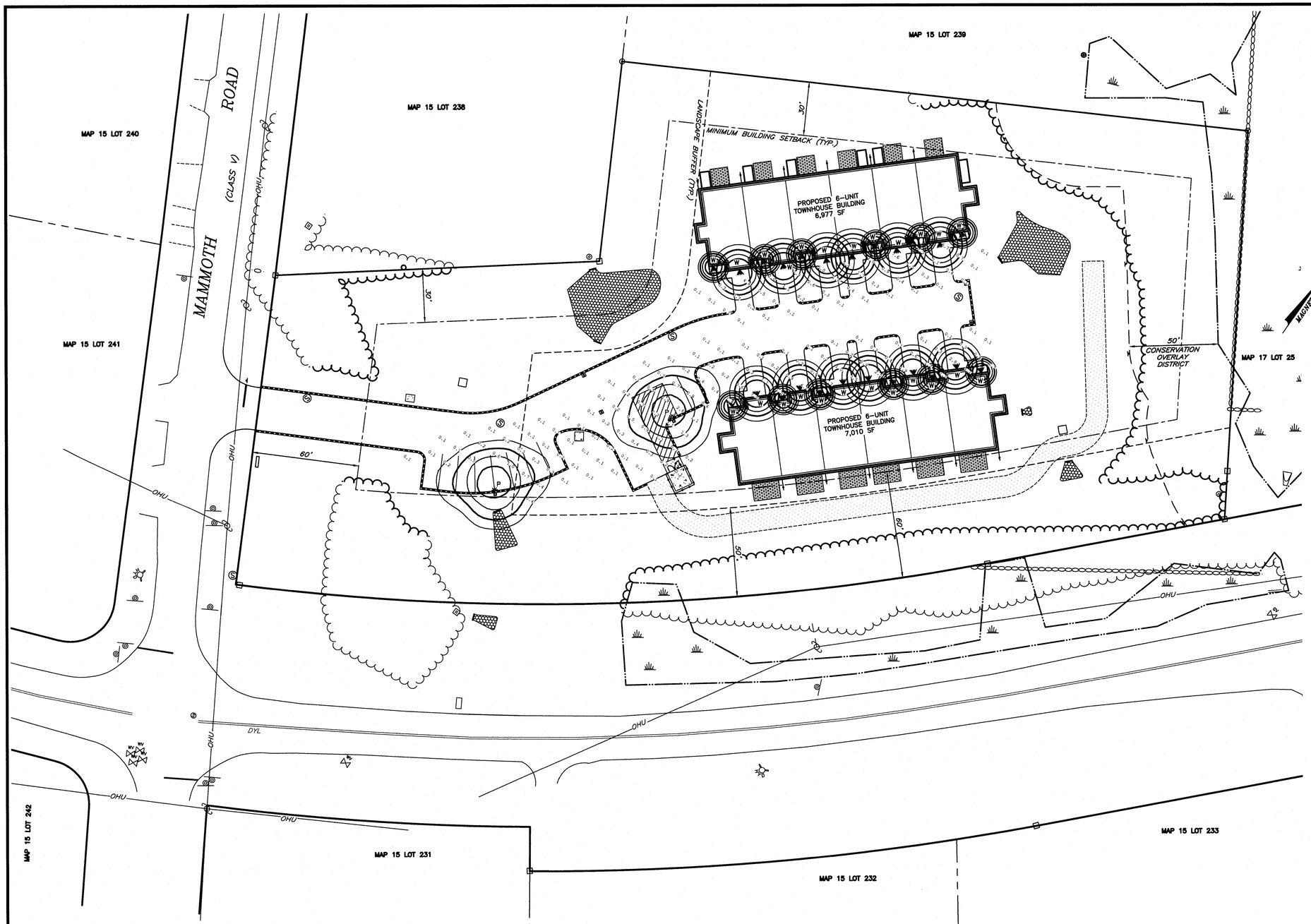
LANDSCAPE PLAN

PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

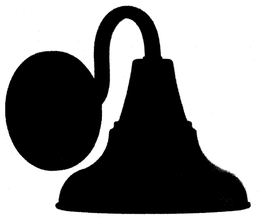
PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. 8 OF 22



LIGHTING NOTES:

1. ALL LIGHTS/FIXTURES SHALL BE AS SPECIFIED BY EXPOSURE LIGHTING.
2. ALL PROPOSED FIXTURES ARE TO BE FULL CUTOFF.
3. POLE MOUNTED FIXTURES SHALL BE MOUNTED AT HEIGHTS SPECIFIED IN TABLE.
4. ALL FINAL SITE LIGHTING AND CONDUIT LAYOUT SHALL BE COORDINATED WITH LOCAL UTILITY PROVIDER.
5. PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ELECTRICIAN FOR THE EXACT LOCATION, LAYOUT, CONDUIT SIZE AND CIRCUITS ASSOCIATED WITH THE SITE LIGHTING.
6. SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION REGARDING LIGHT INSTALLATION AND WIRING REQUIREMENTS.
7. ALL LIGHTING MUST COMPLY WITH THE TOWN OF LONDONDERRY DEVELOPMENT REGULATIONS.

LSI ROUND POLES



DISTRICT LED (P5622-2030K9)



LIFESTYLE SMALL (XDLS)

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

LEGEND

⊡ NHHB-F	NH HWY BOUND FOUND		PROPERTY LINE
⊡ GB-F	GRANITE BOUND FOUND		R.O.W. LINE
○ IP-F	IRON PIPE FOUND	OHU	OVERHEAD UTILITIES
⊙ IR-S	IRON ROD SET		EDGE OF PAVEMENT
	BENCHMARK		STONEWALL
			BUILDING SETBACK
	SIGN		EASEMENT
Ⓓ	DRAINAGE MANHOLE		WETLAND BUFFER
Ⓒ	CATCH BASIN		LANDSCAPE BUFFER
	WATER VALVE		PROPOSED TREELINE
	HYDRANT		PROPOSED EOP
Ⓢ	SEWER MANHOLE		PROPOSED BIT. CURB
	FLARED END SECTION		PROPOSED RIP RAP
	UTILITY POLE		
Ⓦ	WELL		

LUMINAIRE SCHEDULE

SYMBOL	QTY.	LABEL	ARRANGEMENT	DESCRIPTION	MANUFAC	MOUNTING HEIGHT
⊡*	2	P	SINGLE	XDLSB-3L-3W-UNV-30K8-BLK-CH / 4RP-I-S10G-14-BLK / 4 GBC (70 CRI CW, 80 CRI NW AND WW)	LSI INDUSTRIES, INC.	14' POLE
▶	24	W	SINGLE	945622-2030K9 (90 CRI)	PROGRESS	WALL MOUNTED 6' AFG AT DOORS & 8' AFG AT GARAGES

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 - MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 - MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

DIG SAFE
811
CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

IN ASSOCIATION WITH:

EXPOSURE ESS
LIGHTING - CONTROLS - ELECTRICAL
KENNETH SWEENEY | APPLICATIONS ENGINEER
Cell: 603.759.1043
6 SCOTT RD | HAMPTON, NH 03842 | 603.601.8080
EXPOSURE2LIGHTING.COM & ESS-LLC.US

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

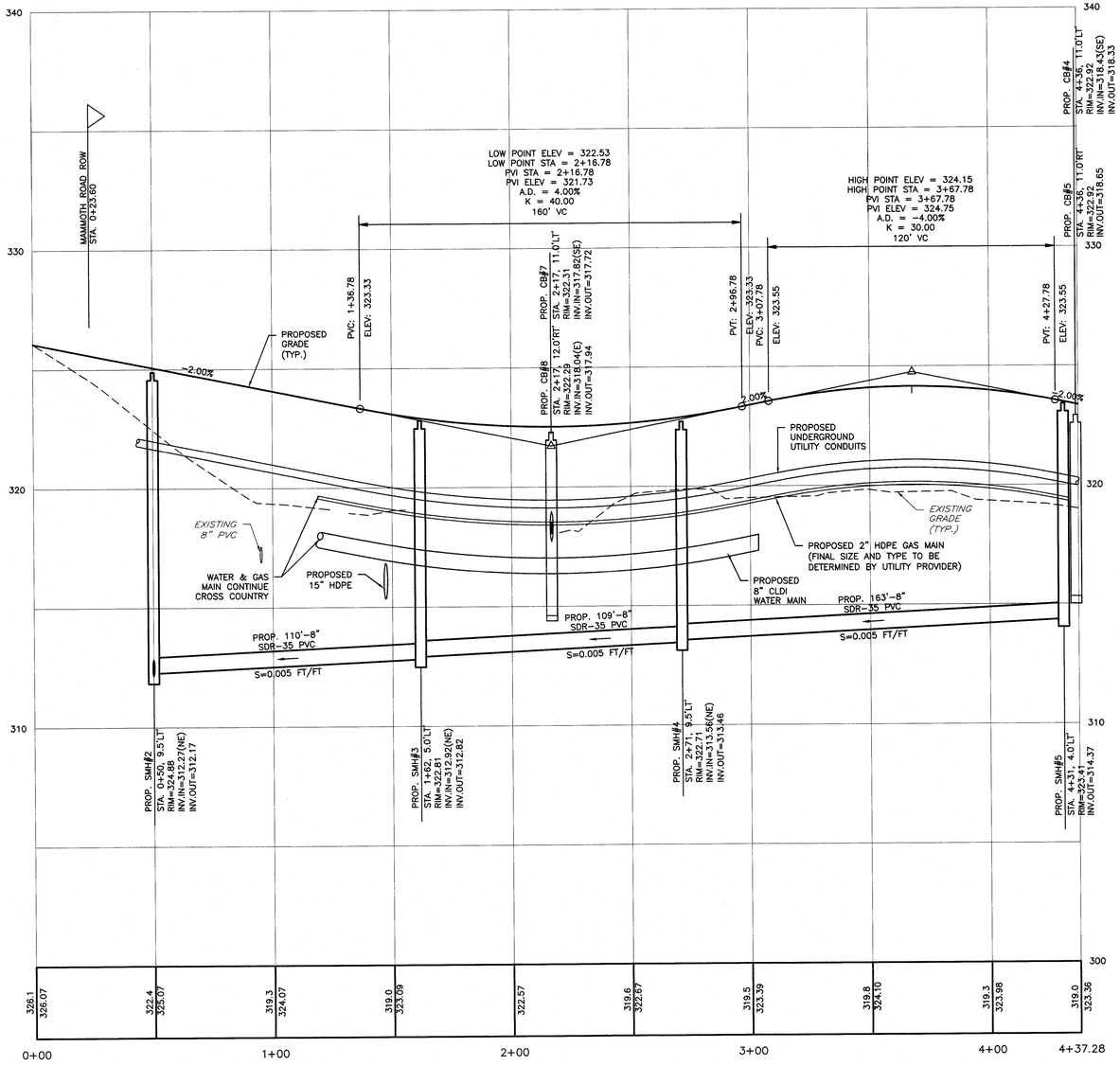
LIGHTING PLAN

PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. 9 OF 22



DRIVEWAY PROFILE

SCALE: 1" = 30' (HORIZ.)
1" = 3' (VERT.)

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

DIG SAFE
811
CALL DIG SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

PAUL C. MCNAMARA
NO. 10373
CERTIFIED
PROFESSIONAL ENGINEER
3/9/26

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

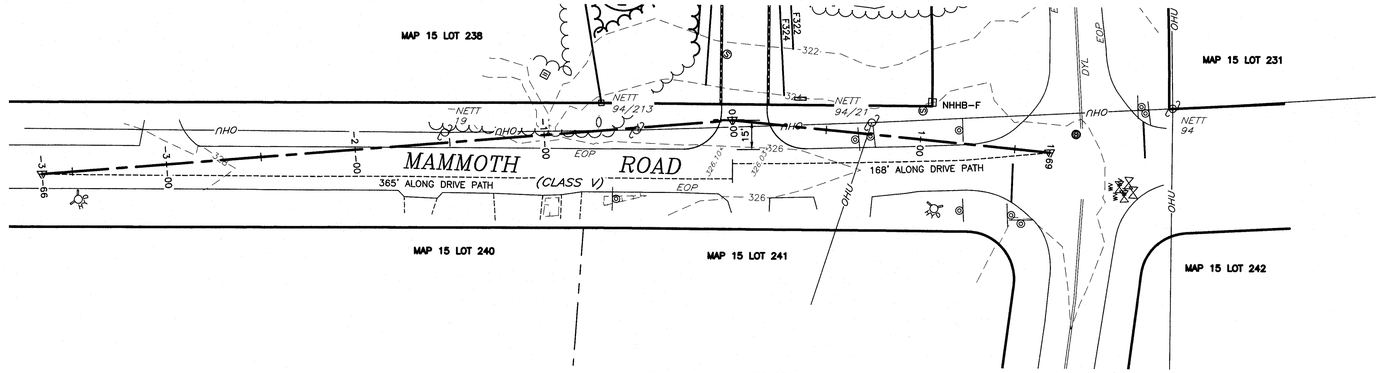
LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

DRIVEWAY PROFILE
PAGE ROCK TOWNHOMES

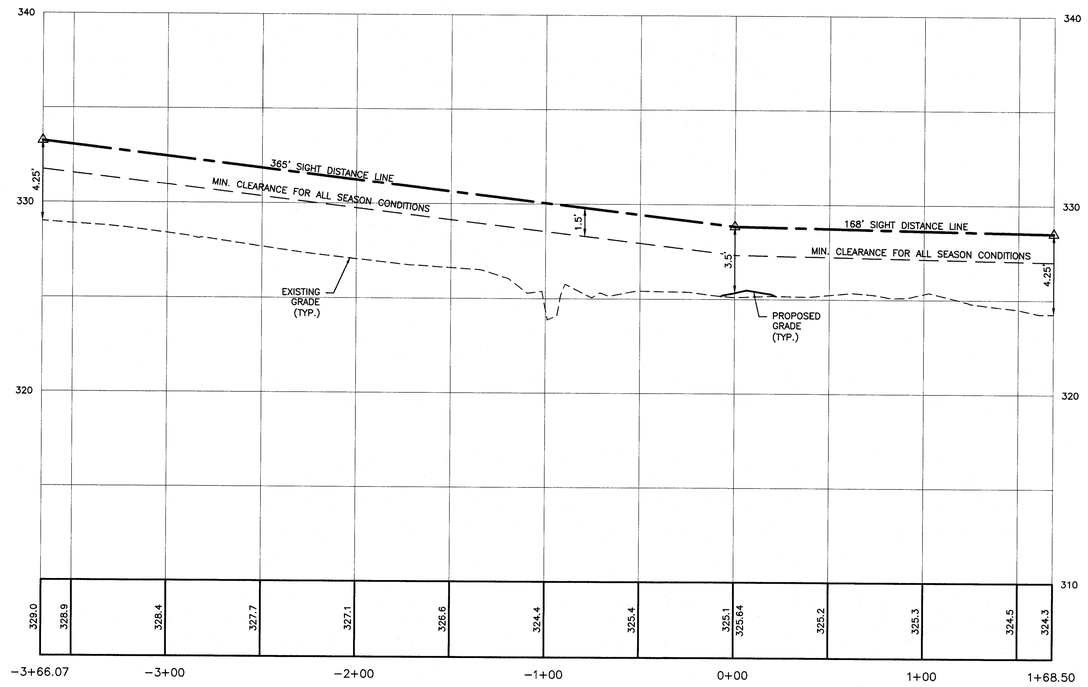
MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. 10 OF 22



SIGHT DISTANCE PLAN
SCALE: 1" = 40'



SIGHT DISTANCE PROFILE
SCALE: 1" = 40' (HORIZ.)
1" = 4' (VERT.)

SIGHT DISTANCE NOTES:

1. THE PURPOSE OF THIS PLAN IS TO ILLUSTRATE THE AVAILABLE SIGHT DISTANCE AT THE PROPOSED DRIVEWAY AND HARVEY ROAD.
2. THE CONTRACTOR SHALL REMOVE ALL OBSTRUCTIONS BETWEEN THE DRIVEWAY AND THE SIGHT LINES TO ACHIEVE VISIBILITY.
3. THE OWNER SHALL MAINTAIN SIGHT LINES VISIBILITY AND REMOVE ALL OBSTRUCTIONS BETWEEN THE DRIVEWAY AND THE SIGHT LINES TO ACHIEVE VISIBILITY.

DIG SAFE
811 CALL SAFE-LINE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

LEGEND

NHHB-F	NH HWY BOUND FOUND		PROPERTY LINE
GB-F	GRANITE BOUND FOUND		R.O.W. LINE
IP-F	IRON PIPE FOUND	OHU	OVERHEAD UTILITIES
IR-S	IRON ROD SET		EDGE OF PAVEMENT
	BENCHMARK		10' CONTOUR
			2' CONTOUR
	SIGN		STONEWALL
D	DRAINAGE MANHOLE		BUILDING SETBACK
	CATCH BASIN		WETLAND BUFFER
W	WATER VALVE		LANDSCAPE BUFFER
	HYDRANT		PROPOSED TREELINE
S	SEWER MANHOLE		PROPOSED EOP
	FLARED END SECTION		PROPOSED BIT. CURB
	UTILITY POLE		PROPOSED RET. WALL
W	WELL		PROPOSED 2' CONTOUR
			PROPOSED SWALE

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 - MAGNAIL SET
N:154187.05, E:1053618.44	ELEV.=325.59 (NAVD88)	BENCHMARK #3 - MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

KEACH-NORDSTROM ASSOCIATES, INC. HEREBY CERTIFIES THAT THE ALL SEASON SAFE SIGHT DISTANCE, AS REQUIRED BY THE TOWN OF LONDONDERRY, IS ACHIEVED UPON COMPLETION OF THE IMPROVEMENTS SHOWN ON THIS PLAN.

PROFESSIONAL ENGINEER — DATE 3/9/26

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

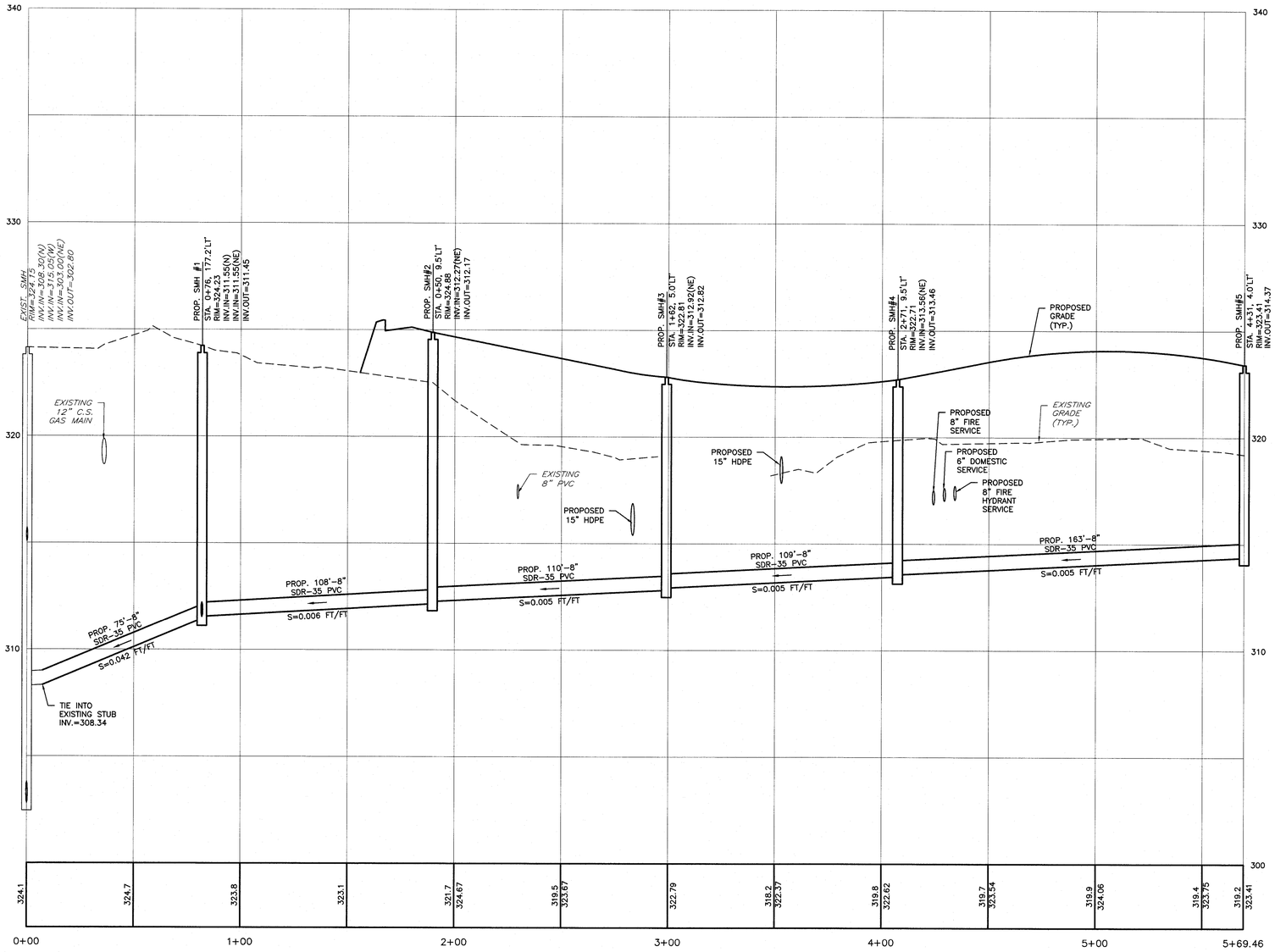
LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

SIGHT DISTANCE PLAN & PROFILE
PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 40'
FILE NO.:
SHEET NO. 11 OF 22



SEWER PROFILE

SCALE: 1" = 30' (HORIZ.)
1" = 3' (VERT.)

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

DIG SAFE
811
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

3/4/26

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

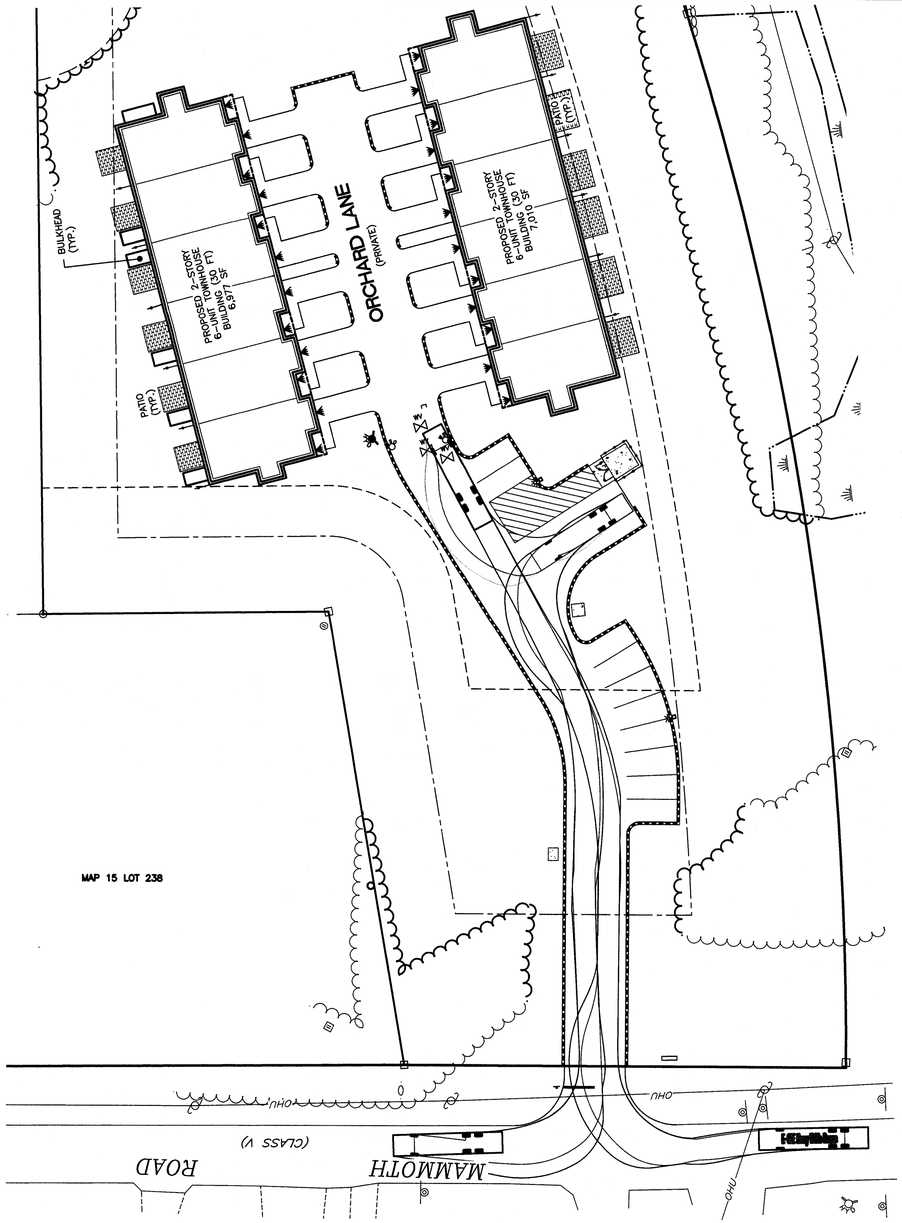
SEWER PROFILE

PAGE ROCK TOWNHOMES

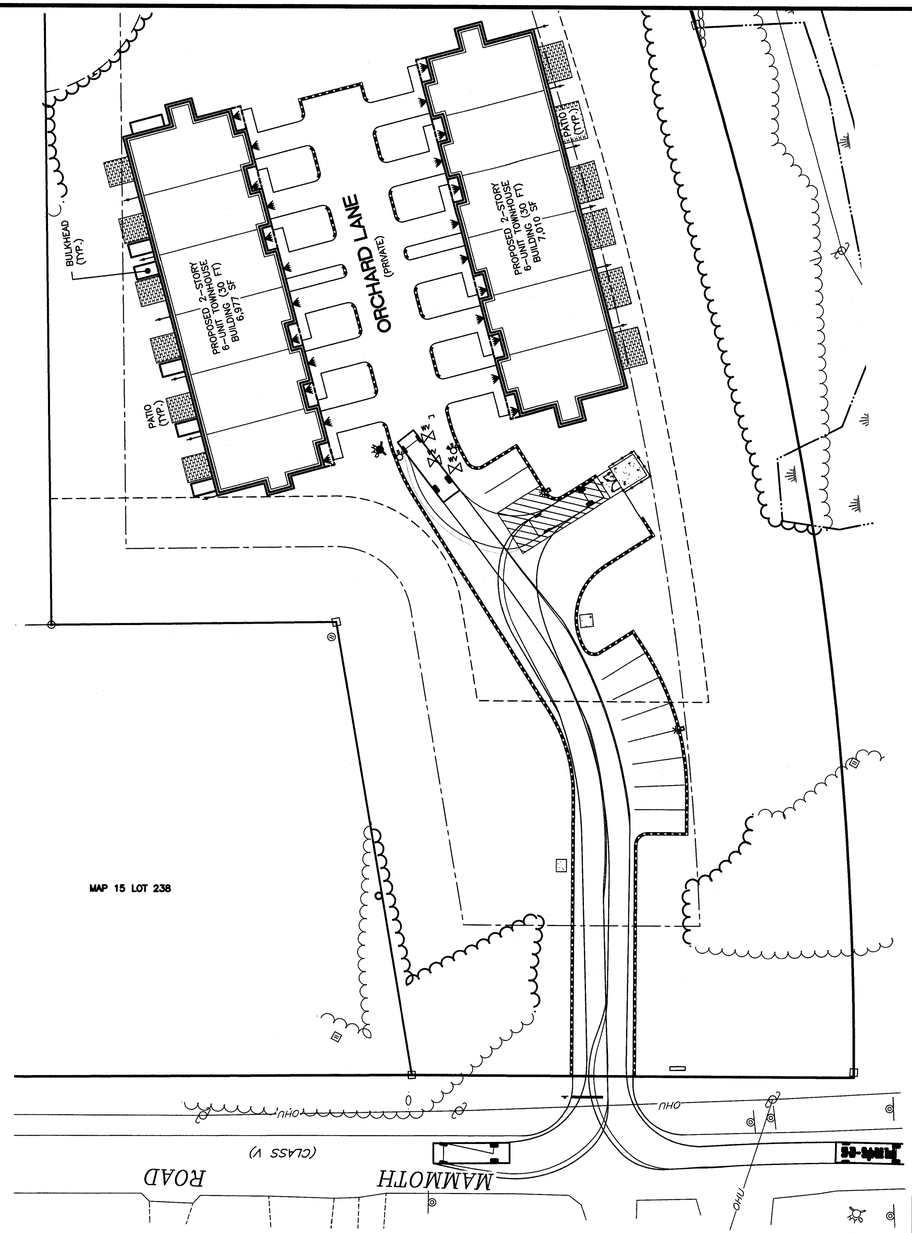
MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

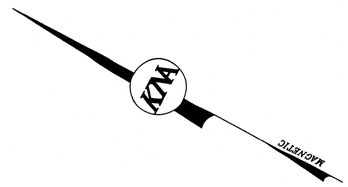
PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. 12 OF 22

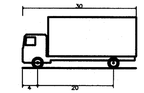


43' FIRE TRUCK TURNING PLAN



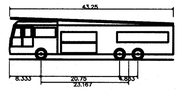
MOVING/DELIVERY TRUCK TURNING PLAN





SU-30 – Single Unit Truck

Overall Length	30.000ft
Overall Width	8.000ft
Overall Body Height	13.500ft
Min Body Ground Clearance	1.367ft
Track Width	8.000ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	31.80°



E-ONE Heavy Walkin Rescue

Overall Length	43.250ft
Overall Width	8.333ft
Overall Body Height	11.000ft
Min Body Ground Clearance	1.433ft
Track Width	8.333ft
Lock-to-lock time	6.00s
Max Wheel Angle	45.00°

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

LEGEND

NHHB–F	NH HWY BOUND FOUND		UTILITY POLE
GB–F	GRANITE BOUND FOUND	W	WELL
IP–F	IRON PIPE FOUND		PROPERTY LINE
IR–S	IRON ROD SET		R.O.W. LINE
GB–TBS	GRANITE BOUND TO BE SET		TREELINE
IR–TBS	IRON ROD TO BE SET	OHU	OVERHEAD UTILITIES
	BENCHMARK		EDGE OF PAVEMENT
	SIGN		STONEWALL
D	DRAINAGE MANHOLE		BUILDING SETBACK
CB	CATCH BASIN		EASEMENT
W	WATER VALVE		WETLAND BUFFER
	HYDRANT		LANDSCAPE BUFFER
S	SEWER MANHOLE		PROPOSED TREELINE
	FLARED END SECTION		PROPOSED EOP
			PROPOSED BIT. CURB
			PROPOSED RET. WALL
			PROPOSED GUARDRAIL

BENCHMARK DATA		
LOCATION	DATUM	DESCRIPTION
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET
N:154187.05, E:1053618.44	ELEV.=325.59 (NAVD88)	BENCHMARK #3 – MAGNAIL SET

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

DIG SAFE
811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

3/9/26

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

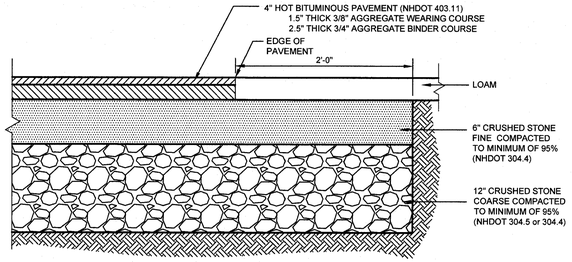
TRUCK TURNING PLAN

PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

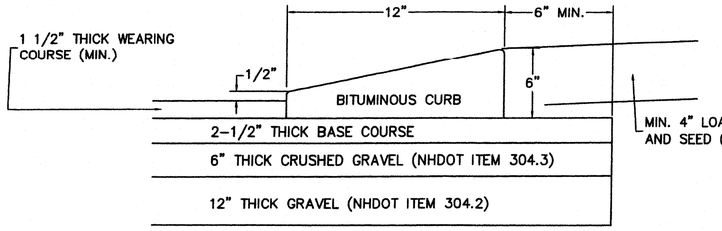
KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. 13 OF 22



DRIVEWAY AND PARKING LOT SECTION

NOT TO SCALE



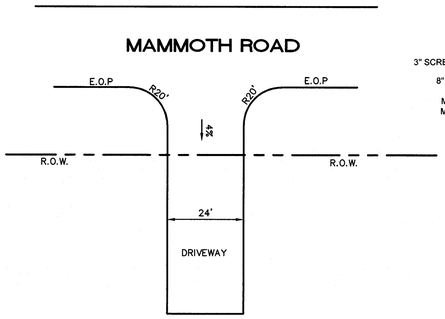
NOTES:

1. APPLY TACK COAT PRIOR TO PLACEMENT OF CURB
2. BITUMINOUS CURB MATERIAL SHALL MEET THE REQUIREMENTS OF NHDOT SECTION 609.
3. CAPE COD BERM DIMENSIONS SHALL MATCH THOSE GIVEN IN THIS DETAIL.

TYPICAL CAPE COD BERM

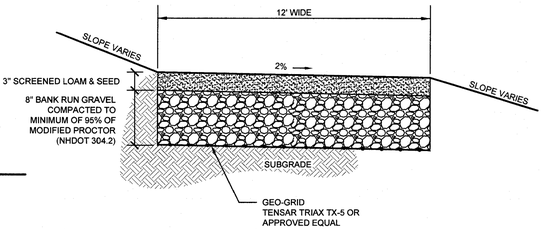
NOT TO SCALE

EXHIBIT R104



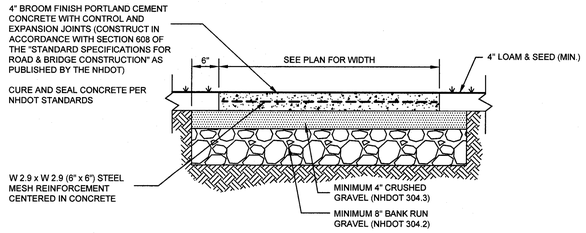
DRIVEWAY APRON DETAIL

NOT TO SCALE



REINFORCED TURF PATH

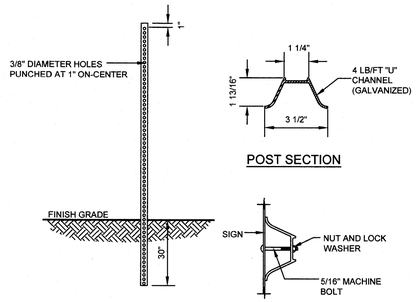
NOT TO SCALE



CONCRETE PAD DETAIL

NOT TO SCALE

(MARCH 2008)



POST

POST SECTION

MOUNTING

NOTE:

POST SHALL CONFORM TO NHDOT 615.2.5.3

STEEL SIGN POST DETAIL

NOT TO SCALE

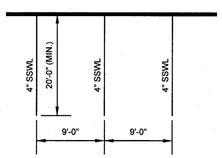
(MARCH 2008)



VAN ACCESSIBLE HANDICAP PARKING SIGN DETAIL

NOT TO SCALE

(NOVEMBER 2016)



STANDARD STRIPING DETAIL

NOT TO SCALE

ON SITE STRIPING NOTES:

1. ALL PAVEMENT MARKINGS SHALL BE IN CONFORMANCE WITH THESE STANDARDS AND THE CURRENT EDITION OF MUTCD.
2. WIDTH OF LINES SHALL VARY NO MORE THAN = 1/4 INCH FROM THAT SPECIFIED.
3. THE WET FILM THICKNESS OF A PAINTED LINE SHALL BE A MINIMUM OF 15 MILS THROUGHOUT THE ENTIRE WIDTH AND LENGTH OF LINE SPECIFIED.
4. OVERSPRAY SHALL BE KEPT TO AN ABSOLUTE MINIMUM.
5. BROKEN LINES SHALL BEGIN AND END WITH THE NEAREST FULL CYCLE OF BROKEN LINE.
6. SOLID LONGITUDINAL LINES SHALL BEGIN AND END WITHIN + 2 INCHES OF A LAYOUT SYMBOL INDICATING THE END OF THE LINE, OR WITH A FULL CYCLE OF BROKEN LINE (IF APPROPRIATE).



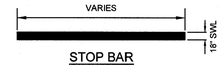
STOP SIGN DETAIL

NOT TO SCALE

(MARCH 2008)

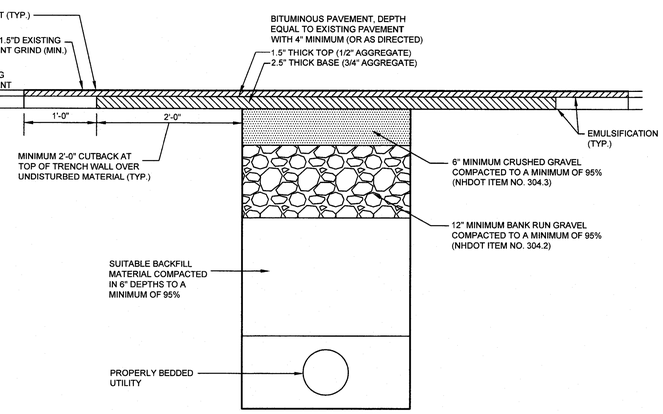
TRAFFIC SIGN NOTES:

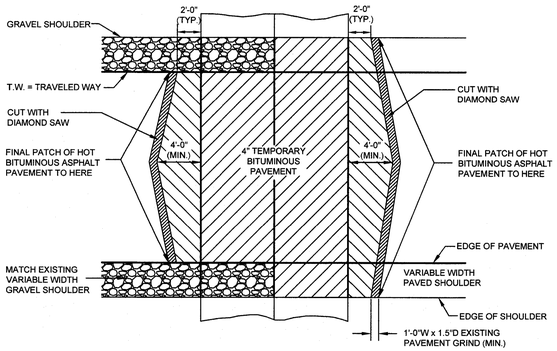
1. ALL TRAFFIC SIGN FACES AND SHAPES SHALL CONFORM WITH THE MUTCD.
2. ALL SIGN POST MOUNTS SHALL CONFORM WITH THE AASHTO AND NHDOT SPECIFICATIONS.



STOP BAR



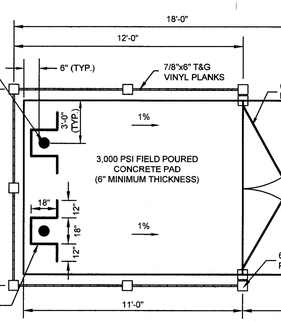




PERMANENT PAVEMENT REPAIR

NOT TO SCALE

(MARCH 2008)



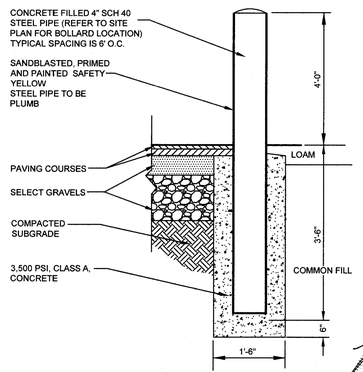
NOTE:

THIS DUMPSTER ENCLOSURE WILL ACCOMMODATE MOST 2, 4, 6 AND 8 CY DUMPSTERS.

VINYL TRASH ENCLOSURE DETAIL

NOT TO SCALE

(MARCH 2008)



BOLLARD DETAIL

NOT TO SCALE

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

CONSTRUCTION DETAILS

PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 14 OF 22

TURF ESTABLISHMENT SCHEDULE

PURPOSE:
TO ESTABLISH AND MAINTAIN PERMANENT AND TEMPORARY TURF AREAS, RESTORE GROWTH TO EXISTING TURF AREAS DISTURBED DURING CONSTRUCTION AND CONTROL SOIL EROSION.

PREPARATION AND EXECUTION:
1. RAKE THE SUBGRADE OF ALL AREAS TO BE LOAMED AND SEEDED TO REMOVE RUBBISH, STICKS, ROOTS AND STONES LARGER THAN 1 INCH.
2. PLACE LOAM OVER AREAS TO BE SEEDED AND SPREAD.
3. FINE GRADE SURFACE AND SUPPLEMENT WITH SUITABLE LOAM WHERE NEEDED TO CREATE A UNIFORM SURFACE ACCORDING TO THE FINISH GRADES INDICATED; TOP AND BOTTOM OF SLOPES SHALL BE ROUNDED. NO LOAM SHALL BE SPREAD IF THE SUBGRADE IS EXCESSIVELY WET OR FROZEN.
4. IF THE pH OF THE SOIL NEEDS TO BE RAISED, APPLY LIME EVENLY OVER LOAM SURFACE AND THOROUGHLY INCORPORATE LIME INTO THE LOAM BY HEAVY RAKING TO AT LEAST ONE-HALF THE DEPTH OF THE LOAM.
5. APPLY FERTILIZER AND MIX WITH THE UPPER 2 INCHES OF LOAM.
6. DETERMINE APPROPRIATE MIXTURE FOR AREA TO BE SEEDED BASED ON EXAMINATION OF PROJECT PLANS. UNIFORMLY SPREAD THE SEED BY BROADCASTING OR HYDROSEEDING. IF BROADCASTING, LIGHTLY RAKE INTO THE PREPARED SURFACE AND ROLL. IF HYDROSEEDING, USE 4 TIMES THE RECOMMENDED RATE OF INOCULANT. AFTER SEED IS SPREAD, WATER THOROUGHLY WITH A FINE SPRAY.
7. SEEDING AND INITIAL FERTILIZING SHALL BE DONE BETWEEN APRIL 1 AND JUNE 1 OR BETWEEN AUGUST 15 AND OCTOBER 14, OR AS PERMITTED. SEEDING SHALL NOT BE DONE DURING WINDY WEATHER OR WHEN THE GROUND IS FROZEN, EXCESSIVELY WET OR OTHERWISE UNTILLABLE.
8. WITHIN 24 HOURS AFTER SEEDING OPERATION, UNIFORMLY MULCH THE AREA WITH STRAW. ANCHOR MULCH ON ALL SLOPES EXCEEDING 3 : 1 USING MULCH NETTING INSTALLED IN ACCORDANCE WITH THE MANUFACTURER.
9. PROTECT AND PREVENT AGAINST WASHOUTS, ANY WASHOUTS WHICH OCCUR SHALL BE PROMPTLY REGRADED AND RESEEDED.
10. WHEN IT IS IMPRACTICAL TO ESTABLISH PERMANENT GROWTH ON DISTURBED EARTH BY OCTOBER 14, A TEMPORARY SEED MIXTURE SHALL BE USED. WHEN TEMPORARY SEEDING CANNOT ESTABLISH VISIBLE GROWTH, THE DISTURBED AREA SHALL BE COVERED WITH SIX INCHES OF MULCH FOR THE WINTER.

MAINTENANCE:
ALL SEEDED AREAS SHALL BE KEPT WATERED AND IN GOOD CONDITION. RESEED AS NECESSARY TO ESTABLISH HEALTHY UNIFORM GROWTH OVER THE ENTIRE SEEDED AREA. MAINTAIN SEEDED AREAS IN AN APPROVED CONDITION UNTIL FINAL ACCEPTANCE. MAINTENANCE SHALL INCLUDE REPAIRS FOR DAMAGE CAUSED BY EROSION.

APPLICATION RATES:
1. LOAM SHALL BE APPLIED AT A MINIMUM COMPACTED THICKNESS OF 4 INCHES.
2. LIME SHALL BE USED WHEN NECESSARY TO RAISE THE pH OF THE SOIL AND APPLIED AT ONE OF THE FOLLOWING RATES:

EXISTING SOIL Ph	TONS/ACRE	POUNDS/CUBIC YARD
4.0 - 4.4	3	12
4.5 - 4.9	2	8
5.0 - 5.4	1	4

3. FERTILIZER SHALL BE APPLIED AT THE FOLLOWING RATE:

INITIAL APPLICATION	POUNDS/1,000 SF	MEASUREMENT FACTOR
10-10-10	20.0	1.0
15-15-15	13.4	1.5
19-19-19	10.5	1.9

REFERTILIZATION	POUNDS/1,000 SF	MEASUREMENT FACTOR
10-3-6	20.0	1.0
12-2-8	16.7	1.2
12-4-8	16.7	1.2

4. MULCH SHALL BE APPLIED AT A RATE OF 13 CUBIC YARDS PER 1,000 S.F. OF LANDSCAPE BED.

MATERIALS:
1. LOAM SHALL CONSIST OF LOOSE, FRIABLE TOPSOIL WITH NO ADMIXTURE OF REFUSE OR MATERIAL TOXIC TO PLANT GROWTH. LOAM SHALL BE FREE OF VIABLE PARTS OF PROHIBITED INVASIVE PLANTS AND BE GENERALLY FREE OF STONES, LUMPS, STUMPS AND SIMILAR OBJECTS LARGER THAN 2 INCHES IN GREATEST DIAMETER, SUBSOIL, ROOTS AND WEEDS. THE MINIMUM AND MAXIMUM pH VALUE SHALL BE FROM 5.5 TO 7.6.
2. LIME SHALL BE A CALCIC OR DOLOMITIC GROUND AGRICULTURAL LIMESTONE CONTAINING NOT LESS THAN 95% OF EITHER CALCIUM OR MAGNESIUM CARBONATE, OR BOTH. IT SHALL CONFORM TO THE STANDARDS OF THE ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS AND SHALL COMPLY WITH ALL STATE AND FEDERAL RULES AND REGULATIONS.
3. FERTILIZER SHALL BE STANDARD COMMERCIAL GRADE FERTILIZER CONFORMING TO ALL STATE AND FEDERAL RULES AND REGULATIONS AND TO THE STANDARDS OF THE ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS. EXCEPT AS PERMITTED, THE ANALYSIS RATIO SHALL BE 1:1:1 FOR INITIAL APPLICATION AND 3:1:2 FOR REFERTILIZATION APPLICATION.
4. GRASS SEED SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE AGRICULTURAL AND VEGETABLE SEED LAWS AND SHALL INCLUDE NO "PRIMARY NOXIOUS WEED SEEDS."
5. SEED MIXTURE FOR LAWN AREAS SHALL CONSIST OF THE FOLLOWING:

KIND OF SEED	MINIMUM PURITY (%)	MINIMUM GERMANATION (%)	POUNDS/ACRE (TOTAL 120 POUNDS)
CREEPING RED FESCUE	96	85	40
PERENNIAL RYEGRASS	98	90	50
KENTUCKY BLUEGRASS	97	85	25
REDTOP	95	80	5

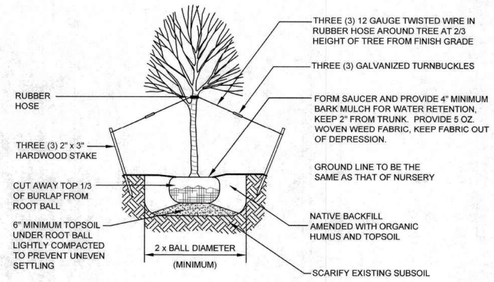
6. SEED MIXTURE FOR SLOPE AREAS SHALL CONSIST OF THE FOLLOWING:

KIND OF SEED	MINIMUM PURITY (%)	MINIMUM GERMANATION (%)	POUNDS/ACRE (TOTAL 95 POUNDS)
CREEPING RED FESCUE	96	85	35
PERENNIAL RYEGRASS	98	90	30
REDTOP	95	80	5
ALSIKE CLOVER	97	90	5
BIRDSFOOT TREFOIL	98	80	5
LANCE-LEAVED COREOPSIS	95	80	4
OXEYE DAISY	95	80	3
BLACKEYED SUSAN	95	80	4
WILD LUPINE	95	80	4

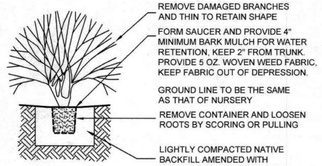
7. TEMPORARY SEEDING MIXTURE SHALL BE APPLIED AT A RATE OF 2 POUNDS PER 1,000 SF AND SHALL BE AN APPROVED CONSERVATION MIX OR CONSIST OF THE FOLLOWING:
   - 15% BLACKWELL OR SHELTER SWITCHGRASS
   - 30% NIAGRA OR KAW BIG BLUESTEM
   - 30% CAMPER OR BLAZE LITTLESTEM
   - 15% NE-27 OR BLAZE SAND LOVEGRASS
   - 10% VIKING BIRDSFOOT TREFOIL

   INOCULUM SPECIFIC TO BIRDSFOOT TREFOIL MUST BE USED WITH THIS MIXTURE. IF SEEDING BY HAND, A STICKING AGENT SHALL BE USED. IF SEEDING WITH A HYDROSEEDER, USE FOUR TIMES THE RECOMMENDED AMOUNT OF INOCULUM.
8. SEED MIXTURE FOR STORMWATER MANAGEMENT AREAS, INCLUDING DETENTION BASINS AND VEGETATED TREATMENT SWALES, SHALL BE APPLIED AT A RATE OF 70 POUNDS PER ACRE OR 1.6 POUNDS PER 1,000 SF, AND SHALL CONSIST OF THE FOLLOWING:
   - 25% CREEPING RED FESCUE
   - 15% SWITCH GRASS
   - 15% FOX SEDGE
   - 15% CREEPING BENTGRASS
   - 10% FLATPEA
   - 20% WILDFLOWER VARIETY
9. STRAW USED FOR MULCH SHALL CONSIST OF MOWED AND PROPERLY CURED GRASS OR LEGUME MOWINGS, FREE FROM WEEDS, TWIGS, DEBRIS, INVASIVE SPECIES OR OTHER DELETERIOUS MATERIAL AND ROT OR MOLD.

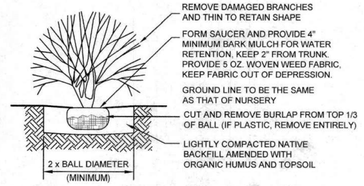
SOD SPECIFICATIONS:
1. SOD SHALL BE PROVIDED WITH A STRONG ROOT SYSTEM, NOT LESS THAN TWO YEARS OLD AND SHALL BE FREE OF ANY UNDESIRABLE NATIVE GRASSES OR WEEDS.
2. SOD SHALL BE MACHINE CUT TO A THICKNESS NOT LESS THAN 3/4", EXCLUDING THATCH, AND SHALL BE CAPABLE OF VIGOROUS GROWTH WHEN PLANTED.
3. SOD PADS SHALL BE OF UNIFORM SIZE AND COMPOSED OF AT LEAST TWO LOCAL GRASS VARIETIES.
4. LAY SOD TO FORM A SOLID MASS WITH TIGHTLY FITTED JOINTS. DO NOT OVERLAP. STAGGER STRIPS TO OFFSET JOINTS IN ADJACENT COURSES. TAMP SOD TO ENSURE CONTACT WITH WITH SOIL.
5. WATER WITHIN ONE HOUR OF PLANTING WITH A FINE SPRAY.



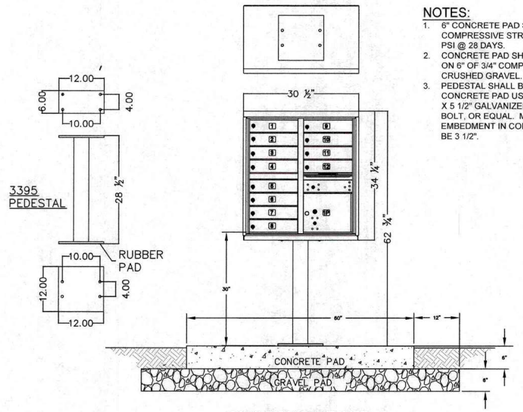
DECIDUOUS TREE PLANTING DETAIL
NOT TO SCALE



CONTAINER SHRUB PLANTING DETAIL
NOT TO SCALE
(MARCH 2008)

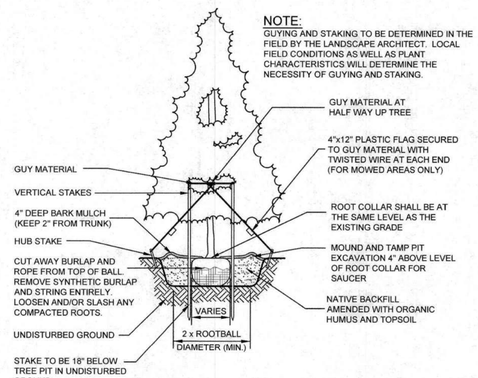


BALLED & BURLAP SHRUB PLANTING DETAIL
NOT TO SCALE
(MARCH 2008)

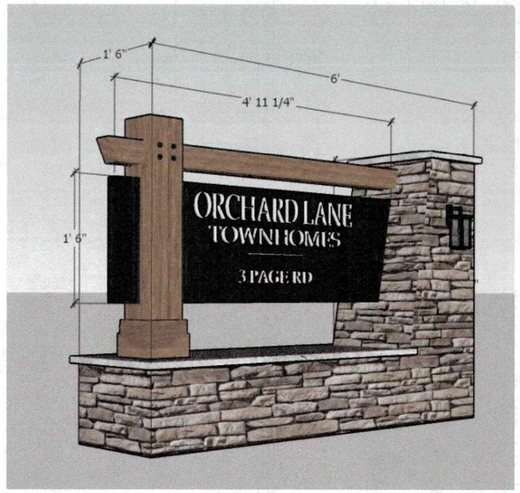


NOTES:
1. 6" CONCRETE PAD SHALL HAVE COMPRESSIVE STRENGTH OF 3,000 PSI @ 28 DAYS.
2. CONCRETE PAD SHALL BE POURED ON 6" OF 3/4" COMPACTED CRUSHED GRAVEL.
3. PEDESTAL SHALL BE MOUNTED TO CONCRETE PAD USING A 1/2" DIA. X 5 1/2" GALVANIZED HILTI KWIK BOLT OR EQUAL. MINIMUM EMBEDMENT IN CONCRETE SHALL BE 3 1/2".

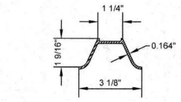
MAILBOX UNIT AND MOUNTING PAD DETAIL
NOT TO SCALE



EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE
(JANUARY 2012)



SITE ENTRY SIGNAGE
NOT TO SCALE



POST SECTION

LENGTH: P-12, 12'-0"; P-14, 14'-0"; P-16, 16'-0"

WEIGHT PER LINEAR FOOT: 2.50 LBS. (MIN.)

HOLES: 3/8" DIA. 1' C-C FULL LENGTH

STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070-1080)

FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN, BAKED ON OR AIR DRIED. PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

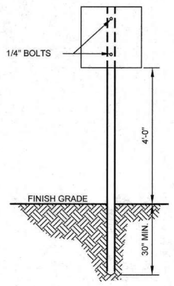
PROTECTED CONSERVATION AREA

DO NOT DISTURB SOILS OR VEGETATION

VIOLATORS WILL BE PROSECUTED

FOR INFORMATION OR TO REPORT A VIOLATION CALL THE CODE ENFORCEMENT OFFICER AT 432-1100, EXT. 125

SIGN DETAIL

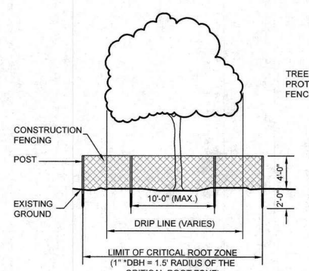


SIGN POST DETAIL

POST NOTES:
1. POSTS SHALL BE PLUMB; ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND PROPERLY REPLACED. POSTS MAY BE SET OR DRIVEN.
2. WHEN POSTS ARE SET, HOLES SHALL BE DUG TO THE PROPER DEPTH, AFTER INSERTING POSTS, THE HOLES SHALL BE BACKFILLED WITH SUITABLE MATERIAL IN LAYERS NOT TO EXCEED 6" DEEP THOROUGHLY COMPACTED, CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST.
3. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED AND, AFTER DRIVING, THE TOP OF THE POST SHALL HAVE SUBSTANTIALLY THE SAME CROSS-SECTIONAL DIMENSION AS THE BODY OF THE POST; BATTERED HEADS WILL NOT BE ACCEPTED.
4. POSTS SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.
5. SIGNS SHALL BE ERECTED IN CONFORMANCE WITH THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
6. WHEN SIGN IS IN PLACE, NO PART OF POST SHALL EXTEND ABOVE THE SIGN.
7. DIMENSIONS SHOWN ARE NOMINAL.
8. ALTERNATE SECTIONS MUST BE APPROVED PRIOR TO USE.

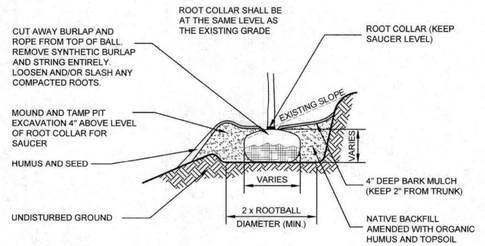
SIGN NOTE:
TAGS SHALL BE PLACED IN NEAREST TREE ALONG 50 FOOT WETLANDS BUFFER AS SHOWN, IN AREAS WHERE THERE ARE NO TREES, SIGN POSTS SHALL BE USED AND INSTALLED.

CONSERVATION OVERLAY SIGNAGE DETAIL
NOT TO SCALE



NOTE:
ONLY USE PLASTIC CHAINLOCK (LANDSCAPE QUALITY AND SUITABLE FOR GUYING TREES) OR EQUIVALENT GUYING MATERIAL.

DECIDUOUS TREE - GUYING & STAKING
NOT TO SCALE
(AUGUST 2011)



TYPICAL PLANTING PIT ON SLOPE 4:1 OR GREATER
NOT TO SCALE
(JANUARY 2012)

*DBH = DIAMETER AT BREAST HEIGHT

TREE PROTECTION DETAIL
NOT TO SCALE

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

PAUL CHISHOLM No. 15076 LICENSED PROFESSIONAL ENGINEER 3/4/26

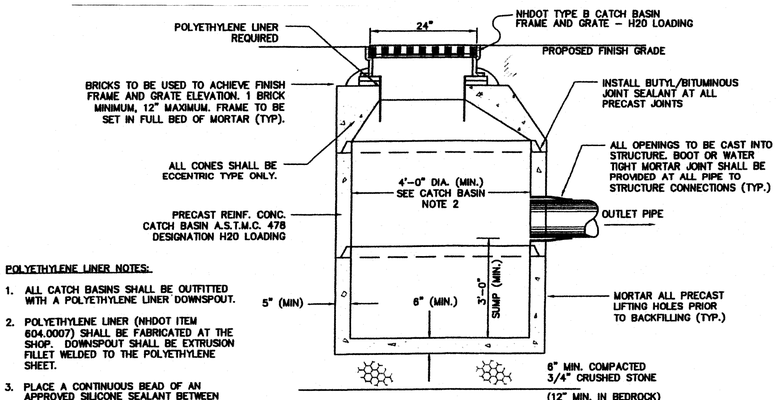
LOT 235 OWNER/APPLICANT:	LOT 236 OWNER
PAGE ROCK, LLC 5 HUTCHINGS DRIVE, SUITE 5D HOLLIS, N.H. 03049	PAGE ROCK, LLC PO BOX 1675 HOLLIS, N.H. 03049

CONSTRUCTION DETAILS
PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 15 OF 22



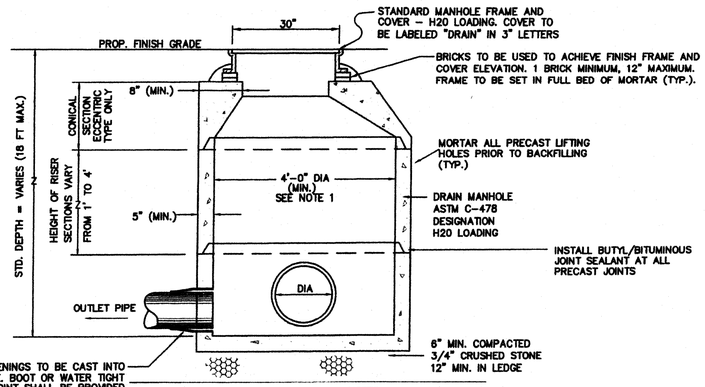
POLYETHYLENE LINER NOTES:

1. ALL CATCH BASINS SHALL BE OUTFITTED WITH A POLYETHYLENE LINER DOWNSPOUT.
2. POLYETHYLENE LINER (NHDOT ITEM 604.0007) SHALL BE FABRICATED AT THE SHOP. DOWNSPOUT SHALL BE EXTRUSION FILLET WELDED TO THE POLYETHYLENE SHEET.
3. PLACE A CONTINUOUS BEAD OF AN APPROVED SILICONE SEALANT BETWEEN FRAME AND POLYETHYLENE SHEET.
4. PLACE CLASS AA CONCRETE TO 2" BELOW THE TOP OF GRATE ELEVATION (SUBSIDIARY TO DRAINAGE STRUCTURE).
5. TRIM POLYETHYLENE SHEET A MAXIMUM OF 4" OUTSIDE THE FLANGE ON THE FRAME FOR THE CATCH BASIN BEFORE PLACING CONCRETE (EXCEPT AS SHOWN WHEN USED WITH CURB).
6. THE CENTER OF THE GRATE & FRAME MAY BE SHIFTED A MAXIMUM OF 3" FROM THE CENTER OF THE DOWNSPOUT IN ANY DIRECTION.

CATCH BASIN NOTES:

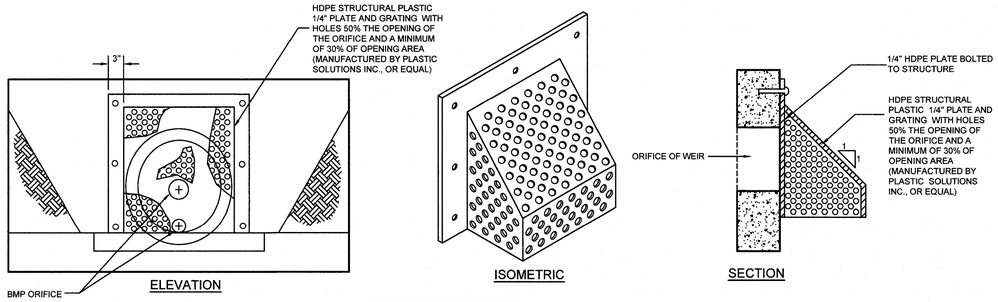
1. WHERE DEPTH EXCEEDS 12 FT, USE 5'–0" DIAMETER (MIN.) MAXIMUM DEPTH = 18 FEET
2. MINIMUM PIPE DROP (INLET TO OUTLET) SHALL BE 3" UNLESS OTHERWISE APPROVED BY THE DEPARTMENT OF PUBLIC WORKS AND ENGINEERING.
3. ALL BOOTS, GASKETS AND SEALANTS SHALL BE IN ACCORDANCE WITH MANUFACTURES WRITTEN INSTRUCTIONS

CATCH BASIN DETAIL
NOT TO SCALE
EXHIBIT D104

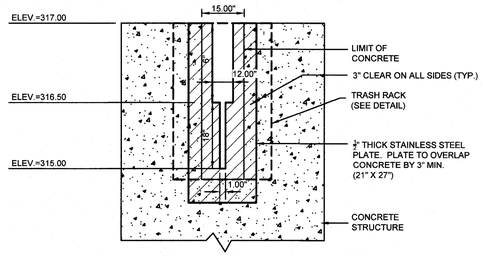


NOTES:
1. WHERE DEPTH EXCEEDS 12 FT, USE 5'–0" DIAMETER (MIN.)
2. MINIMUM PIPE DROP (INLET TO OUTLET) SHALL BE 3" UNLESS OTHERWISE APPROVED BY THE DEPARTMENT OF PUBLIC WORKS AND ENGINEERING.
3. ALL BOOTS, GASKETS AND SEALANTS SHALL BE IN ACCORDANCE WITH MANUFACTURES WRITTEN INSTRUCTIONS

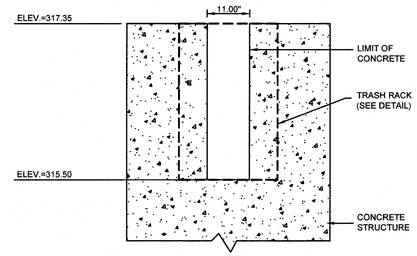
PRECAST DRAIN MANHOLE DETAIL
NOT TO SCALE
EXHIBIT D103



TRASH RACK DETAIL
NOT TO SCALE

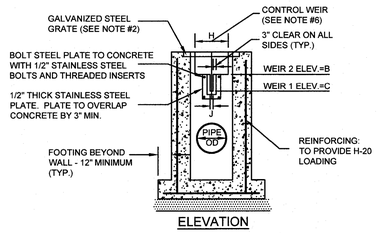


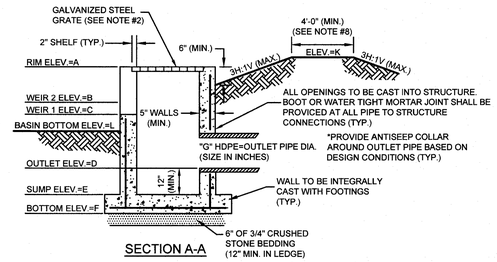
OS#2 WEIR PLATE DETAIL
NOT TO SCALE



OS#12 WEIR DETAIL
NOT TO SCALE

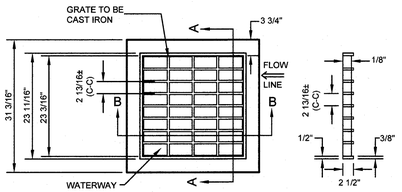
POND	OUTLET STRUCTURE	ELEVATION/DIMENSIONS											
		A	B	C	D	E	F	G	H	J	K	L	GRATE SIZE
DETENTION POND #1	OS#2	317.50	316.50	315.00	314.14	313.00	312.50	15"	12.00"	1.00"	318.00	315.00	4'x4'
DETENTION POND #2	OS#12	318.50	N/A	315.50	315.50	314.50	314.00	15"	11.00"	11.00"	319.00	315.50	4'x4'

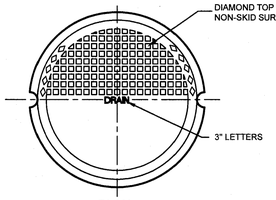


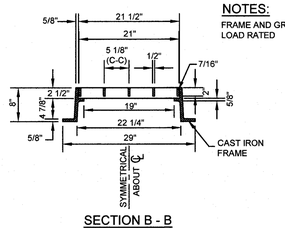


DOUBLE WEIR OUTLET STRUCTURE
NOT TO SCALE

NOTES
1. ALL CEMENT CONCRETE TO BE 4,000 PSI MINIMUM.
2. GALVANIZED STEEL GRATE SHALL BE BOLTED TO TOP OF STRUCTURE WITH 1/2" STAINLESS STEEL BOLTS AND THREADED INSERTS.
3. OUTLET PIPE SHALL NOT BE LESS THAN 15" DIAMETER AND SHALL BE SIZED FOR A 50-YEAR STORM.
4. ALL OPENINGS SHALL BE CAST IN AS REQUIRED. MINIMUM CONCRETE WEIR WIDTH SHALL BE 2 INCHES.
5. PRECAST REINFORCED CONCRETE STRUCTURE TO MEET ASTM C-478 DESIGNATION AND H-20 LOADING.
6. CONTROL WEIR SHALL BE SIZED TO MITIGATE DESIGN STORM AS REQUIRED BY THE REGULATIONS AND IN ACCORDANCE WITH THE APPROVED DRAINAGE CALCULATIONS. STAINLESS STEEL PLATE SHALL BE USED FOR CONTROL WEIRS LESS THAN 2 INCHES WIDE.
7. ALL STAINLESS STEEL SHALL BE GRADE 316.
8. MINIMUM EMBANKMENT ELEVATION TO BE 12" ABOVE 50-YEAR STORM ELEVATION.
9. PROVIDE TRASH RACK ON ALL WEIRS SMALLER THAN 6" IN DIAMETER.

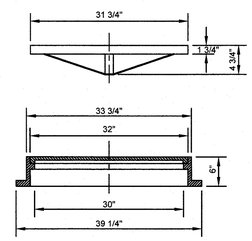






NOTES:
FRAME AND GRATE TO BE H-20 LOAD RATED

TYPE B FRAME & GRATE DETAIL
NOT TO SCALE
(MARCH 2008)

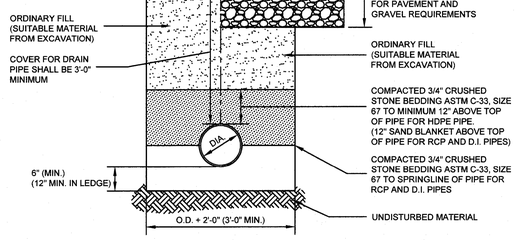


NOTES:
NEW HAMPSHIRE MAINTAINS A CLEAR OPENING DESIGNATION OF 30" FOR ITS MANHOLE CASTINGS.

FEATURES:
- 3" LETTERING
- COVERS MARKED DRAIN
- NONROCKING COVER
- DIAMOND SURFACE DESIGN

SPECIFICATIONS:
- FULLY MACHINED FRAME AND COVER
- H-20 LOAD RATED
- GRAY CAST IRON MEETS ASTM A48 CLASS 30

DRAIN MANHOLE FRAME AND COVER DETAIL
NOT TO SCALE
(JANUARY 2012)



NOTES
1. DRAIN PIPE SHALL BE 15" DIAMETER MINIMUM.
2. PLASTIC DRAIN PIPE (HDPE) SHALL BE ADS N-12 (CORRUGATED EXTERIOR, SMOOTH INTERIOR) OR EQUAL, MEETING AASHTO M-252 AND H20 LOADING.

TYPICAL DRAIN PIPE TRENCH
NOT TO SCALE

3/4/26

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

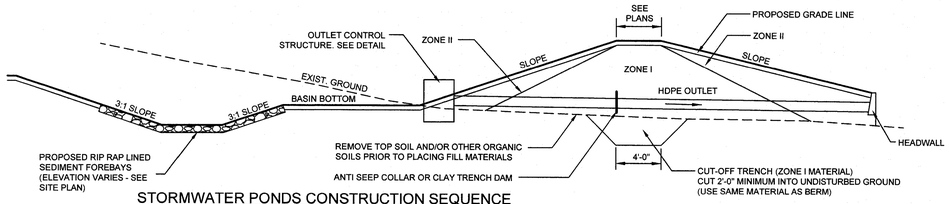
CONSTRUCTION DETAILS
PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21–0113–1
DATE: MARCH 20, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 16 OF 22



STORMWATER PONDS CONSTRUCTION SEQUENCE

1. CONTRACTOR TO NOTIFY DIG-SAFE 72 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. CUT AND CLEAR TREES AND BRUSH FROM CONSTRUCTION AREAS TO THE EXTENT NECESSARY. ALL BRANCHES, TOPS AND BRUSH TO BE PROPERLY DISPOSED OF BY CONTRACTOR.
3. PRIOR TO GRUBBING OF CLEARED AREAS, ALL SILTATION BARRIERS DESIGNED FOR USE AS TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED AS CALLED FOR ON PROJECT PLANS.
4. COMPLETE GRUBBING OPERATIONS. ALL STUMPS AND SIMILAR DEBRIS SHALL BE PROPERLY DISPOSED OF BY CONTRACTOR. ORGANIC MATERIAL SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED IN UPLAND AREAS. ALL STOCKPILES SHALL BE SEEDED WITH WINTER RYE AND, IF NECESSARY, SURROUNDED WITH HAY BALES IN ORDER TO PREVENT LOSS DUE TO EROSION.
5. CONSTRUCT TEMPORARY CULVERTS AS NECESSARY TO FACILITATE CONSTRUCTION ACTIVITIES. ALL SUCH CROSSINGS SHALL BE PROTECTED WITH HAY BALE BARRIERS TO LIMIT EROSION.
6. CONSTRUCT CUT-OFF TRENCH (PART OF ZONE I).
7. CONSTRUCT OUTLET AND OVERFLOW STRUCTURE, CULVERT, ANTI SEEP COLLARS, HEADWALL, AND RIP RAP OUTLET PROTECTION AS SHOWN ON PLANS.
8. CONSTRUCT ZONE I PORTION OF EARTH EMBANKMENT.
9. CONSTRUCT ZONE II PORTION OF EARTH EMBANKMENT.
10. APPLY TOPSOIL TO SLOPES AND OTHER AREAS DISTURBED BY CONSTRUCTION. TOPSOIL USED MAY BE NATIVE ORGANIC MATERIAL SCREENED SO AS TO BE FREE OF ROOTS, BRANCHES, STONES, AND OTHER DELETERIOUS MATERIALS. TOPSOIL SHALL BE APPLIED SO AS TO PROVIDE A MINIMUM OF A 4-INCH COMPACTED THICKNESS. UPON COMPLETION OF TOPSOILING, FINISHED SECTIONS ARE TO BE LIMED, SEEDED AND MULCHED. CONSTRUCTION PERSONNEL SHALL INSPECT COMPLETED SECTIONS OF WORK ON A REGULAR BASIS AND REMEDY ANY PROBLEM AREAS UNTIL A HEALTHY STAND OF GRASS HAS BECOME ESTABLISHED.
11. MAINTAIN, REPAIR, AND REPLACE AS NECESSARY TEMPORARY EROSION CONTROL MEASURES UNTIL SUCH TIME AS THE ENTIRE CONSTRUCTION AREA HAS BEEN STABILIZED (A MINIMUM OF ONE WINTER SHALL HAVE PASSED).
12. AFTER STABILIZATION, REMOVE AND SUITABLY DISPOSE OF TEMPORARY EROSION CONTROL MEASURES.
13. MONITOR CONSTRUCTION ACTIVITIES TO INSURE CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN SUCH A WAY AS NOT TO ENDANGER THE INTEGRITY OF EARTH EMBANKMENTS, STORMWATER CONTROL STRUCTURE, CULVERT AND RIP RAP OUTLET PROTECTION.

MATERIAL TYPE/SPECIFICATIONS

ZONE I

WELL GRADED MIXTURE OF GRAVEL, SAND, SILT OR CLAY WITH MAX. 6-INCH
SIZE STONE AND GEADATION AS INDICATED BELOW. PLACE IN MAX. 12-INCH
THICK LIFTS TO 95% OF MAX. DRY DENSITY IN ACCORDANCE WITH ASTM D1557.
SCARIFY SURFACE PRIOR TO PLACING SUBSEQUENT LIFT. IN ADDITION, REMOVE ORGANIC SOILS.

SIEVE SIZE	PERCENT BY WEIGHT PASSING
6-INCH	100
NO. 4	50 TO 100
NO. 40	30 TO 70
NO. 200	20 TO 40

ZONE II

DRAINAGE LAYER: PLACE IN MAX. 12-INCH THICK LIFTS TO 95% OF MAX. DRY
DENSITY IN ACCORDANCE WITH ASTM D1557.

SIEVE SIZE	PERCENT BY WEIGHT PASSING
1-INCH	100
NO. 4	70-100
NO. 200	0-12 (IN SAND PORTION ONLY)

DETENTION POND EMBANKMENT DETAIL

TP #1

LOGGED BY CKD
DATE: 6-1-2022
E.S.H.W.T @ 55"
ROOTS @ 33"
SEEPS NONE @ 72"
REFUSAL NONE @ 72"

0"	
	10YR 5/4 LOAMY SANDY, GRANULAR, VERY FRIABLE
12"	
	2.5Y 6/4 SANDY LOAM, GRANULAR, FRIABLE
30"	
	2.5Y 6/3 SANDY LOAM, FRIABLE, SUB ANGULAR BLOCKY, PLATY
55"	
	5Y 5/3 SANDY LOAM, PLATY, VERY FIRM, HARD PAN
72" BOTTOM OF HOLE	

TP #2

LOGGED BY CKD
DATE: 6-1-2022
E.S.H.W.T @ 20"
ROOTS @ 36"
SEEPS @ 40"
REFUSAL NONE @ 70"

0"	
	10YR 2/2 SANDY LOAM, GRANULAR, FRIABLE, COURSE ROOTS
8"	
	10YR 5/4 SANDY LOAM, MASSIVE, FRIABLE
17"	
	2.5Y 5/2 SANDY LOAM, SUB ANGULAR BLOCKY, FIRM, RESTRICTIVE REDOX @ 20 CONCENTRATE 7.5YR 5/6 DEPLETION 2.5Y 7/2
37"	
	2.5Y 5/6 SANDY LOAM, SUB ANGULAR BLOCKY, FIRM, RESTRICTIVE
70" BOTTOM OF HOLE	

TP #3

LOGGED BY CKD
DATE: 6-1-2022
E.S.H.W.T @ 34"
ROOTS @ 38"
SEEPS NONE @ 72"
REFUSAL NONE @ 72"

0"	
	10YR 2/2 SANDY LOAM, GRANULAR, FRIABLE
13"	
	10YR 5/4 LOAMY COURSE SAND, MASSIVE, 5% GRAVELS
34"	
	2.5Y 5/4 LOAMY SAND, SUB ANGULAR BLOCKY, FIRM, RESTRICTIVE REDOX CONCENTRATE @ 34 7.5Y 5/4 DISTINCT, MANY
72" BOTTOM OF HOLE	

POST CONSTRUCTION STORMWATER MAINTENANCE REQUIREMENTS:

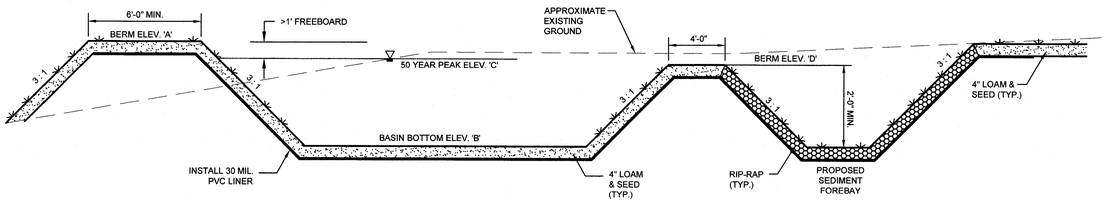
THE FOLLOWING STANDARDS WILL BE MET AFTER CONSTRUCTION IS COMPLETE:

DOCUMENTATION:
A MAINTENANCE LOG WILL BE KEPT SUMMARIZING INSPECTIONS, MAINTENANCE, AND ANY CORRECTIVE ACTIONS TAKEN. THE LOG WILL INCLUDE THE DATE ON WHICH EACH INSPECTION OR MAINTENANCE TASK WAS PERFORMED, A DESCRIPTION OF THE INSPECTION FINDINGS OR MAINTENANCE COMPLETED, AND THE NAME OF THE INSPECTOR OR MAINTENANCE PERSONNEL PERFORMING THE TASK. IF A MAINTENANCE TASK REQUIRES THE CLEAN OUT OF ANY SEDIMENTS OR DEBRIS, THE LOCATION WHERE THE SEDIMENT AND DEBRIS WAS DISPOSED AFTER REMOVAL WILL BE INDICATED. THE MAINTENANCE LOG SHALL BE SENT TO THE TOWN OF LONDONDERRY DEPARTMENT OF PUBLIC WORKS ON A YEARLY BASIS AND SHALL BE MADE AVAILABLE TO NHDES UPON REQUEST.

MAINTENANCE REQUIREMENTS:
INFILTRATION POND:
- 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.
- TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.
- 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.

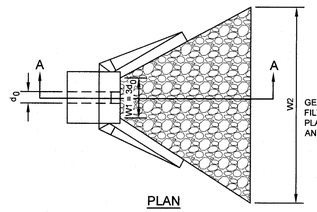
OUTLET PROTECTION:
- INSPECT THE OUTLET PROTECTION ANNUALLY FOR DAMAGE AND DETERIORATION. REPAIR DAMAGES IMMEDIATELY.

GENERAL:
- IF ANY INVASIVE SPECIES BEGIN TO GROW IN THE STORMWATER MANAGEMENT PRACTICES THE SPECIE SHALL BE DISPOSED OF IN AN APPROPRIATE MANNER THAT WILL NOT ALLOW THE PEST TO SURVIVE OR SPREAD. THE DISPOSAL OF SUCH SPECIES SHALL BE WITNESSED OR APPROVED BY A STATE INSPECTOR. METHODS FOR DISPOSAL MAY INCLUDE, BUT NOT BE LIMITED TO:
- ENCAPSULATING THE PLANT(S) IN PLASTIC BAGS AND DISPOSING OF THE PLANT MATERIAL IN ONE OF THE FOLLOWING WAYS:
  - TRASH PICKUP;
  - DISCARDING;
  - OPEN BURNING;
  - INCINERATION; OR
  - BURIAL OF INFESTED NURSERY.



LOCATION	ELEV. 'A'	ELEV. 'B'	ELEV. 'C'	ELEV. 'D'
DETENTION POND #1	318.00	315.00	316.89	317.00
DETENTION POND #2	319.00	315.50	317.67	318.00

PROPOSED DETENTION POND CROSS-SECTION
NOT TO SCALE



GEOTEXTILE FABRIC OR FILTER MATERIAL TO BE PLACED BETWEEN SOIL AND RIP RAP (TYP.)

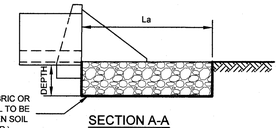


TABLE 7-24 -- RECOMMENDED RIP RAP GRADATION RANGES

PERCENT OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE
100%	1.5 TO 2.0 d50
85%	1.3 TO 1.8 d50
50%	1.0 TO 1.5 d50
15%	0.3 TO 0.5 d50

LOCATION	La	W1	W2	d50	DEPTH
HW #1	10'	4'	14'	3"	8"
HW #3	10'	4'	14'	3"	8"
HW #6	15'	4'	10'	3"	8"
HW #9	14'	2'	7"	3"	8"
HW #10	5'	2'	6'	3"	8"
HW #11	21'	5'	13'	3"	8"
HW #13	13'	3'	8'	3"	8"

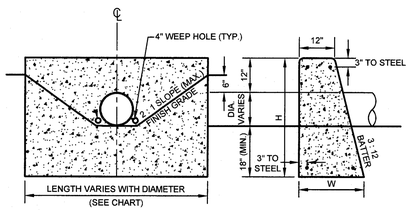
PIPE OUTLET PROTECTION
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS:

1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK OR GRAVEL USED FOR FILTER OR RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
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.

MAINTENANCE:

THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR RAIN EVENT. IF THE RIP RAP HAS BEEN DISPLACED, UNDERMINED, OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.



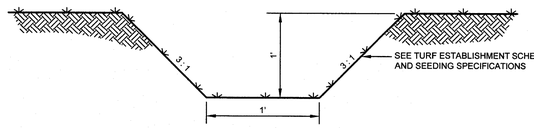
REINFORCED CONCRETE

DRAIN PIPE DIAMETER	15"	18"	24"
LENGTH	4'-6"	5'-6"	7'-6"
HEIGHT (H)	3'-9"	4'-0"	4'-6"
BOTTOM WIDTH (W)	1'-11.25"	2'-0"	2'-1.5"
CONCRETE (CU.YD.)	0.85	1.13	1.78
STEEL (LBS.)	11	14	20

ALL STEEL SHALL BE #4 BARS, MEETING NHDOT REQUIREMENTS

NOTES:
1. ALL CONCRETE SHALL BE CLASS A.
2. ALL HEADWALLS SHALL MEET NHDOT REQUIREMENTS. FOR LARGER PIPE DIAMETERS, USE THE NHDOT STANDARD PLANS.

CONCRETE HEADWALL
NOT TO SCALE



MAINTENANCE

1. TIMELY MAINTENANCE IS IMPORTANT TO KEEP THE VEGETATION IN THE SWALE IN GOOD CONDITION. MOWING SHOULD BE DONE FREQUENTLY ENOUGH TO KEEP THE VEGETATION IN VIGOROUS CONDITION AND TO CONTROL ENCROACHMENT OF WEEDS AND WOODY VEGETATION, HOWEVER IT SHOULD NOT BE MOWED TOO CLOSELY SO AS TO REDUCE THE FILTERING EFFECT. FERTILIZE ON AN "AS NEEDED" BASIS TO KEEP THE GRASS HEALTHY. OVER FERTILIZATION CAN RESULT IN THE SWALE BECOMING A SOURCE OF POLLUTION.
2. THE SWALE SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE THE CONDITION OF THE SWALE. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND RE-VEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

LOCATION	SWALE LENGTH	SWALE SLOPE
SWALE #1	135'	0.0150 FT/FT
SWALE #2	140'	0.0285 FT/FT
SWALE #3	100'	0.0300 FT/FT

CONVEYANCE SWALE DETAIL
NOT TO SCALE



LOT 235 OWNER/APPLICANT:	LOT 236 OWNER
PAGE ROCK, LLC 5 HUTCHINGS DRIVE, SUITE 5D HOLLIS, N.H. 03049	PAGE ROCK, LLC PO BOX 1675 HOLLIS, N.H. 03049

CONSTRUCTION DETAILS

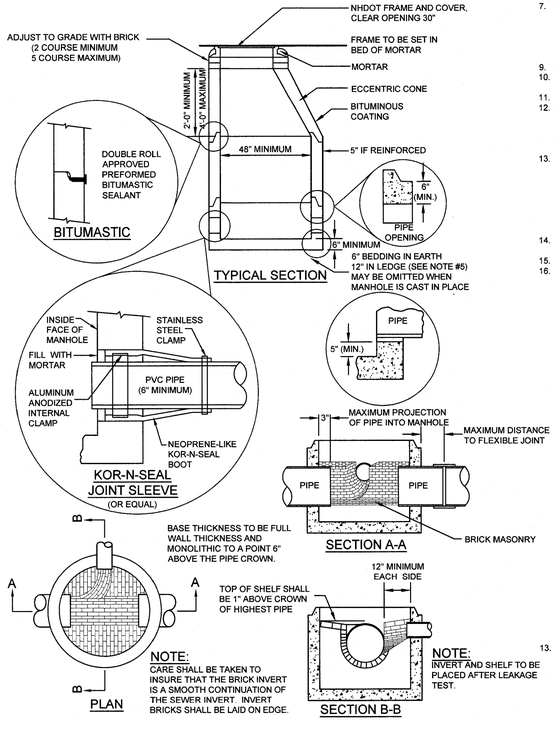
PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

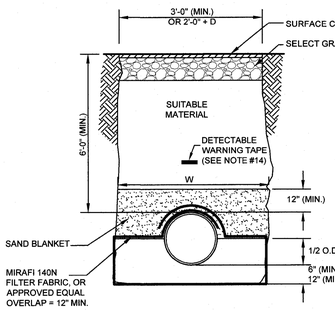
PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 17 OF 22



SANITARY SEWER MANHOLE
NOT TO SCALE
(MARCH 2011)

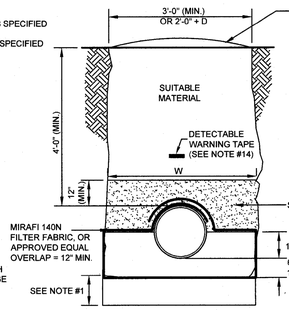
NOTES: (NHDES ENV WQ700 - 2008)

1. ALL COMPONENT PARTS OF MANHOLE STRUCTURES SHALL HAVE THE STRENGTH, LEAK RESISTANCE AND SPACE NECESSARY FOR THE INTENDED SERVICE.
2. MANHOLE STRUCTURES SHALL HAVE A LIFE EXPECTANCY OF AT LEAST 25 YEARS.
3. MANHOLE STRUCTURES SHALL BE DESIGNED TO WITHSTAND HS-20 LOADING AND SHALL NOT LEAK IN EXCESS OF ONE GPD PER VERTICAL FOOT OF MANHOLE FOR THE LIFE OF THE STRUCTURE.
4. BARRELS, CONE SECTIONS, AND CONCRETE GRADE RINGS SHALL BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE.
5. BASE SECTIONS SHALL BE OF MONOLITHIC CONSTRUCTION TO A POINT AT LEAST 6 INCHES ABOVE THE CROWN OF THE INCOMING PIPE.
6. HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE, SEALED FOR WATER-TIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC-LIKE SEALANT.
7. PIPE TO MANHOLE JOINTS SHALL BE AS FOLLOWS:
   A. ELASTOMERIC, RUBBER SLEEVE WITH WATERTIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES;
   B. CAST INTO THE WALL OR SECURED WITH STAINLESS STEEL CLAMPS;
   C. ELASTOMERIC SEALING RING CAST IN THE MANHOLE OPENING WITH SEAL FORMED ON THE SURFACE OF THE PIPE BY COMPRESSION OF THE RING; AND
   D. NON-SHRINK GROUTED JOINTS WHERE WATERTIGHT BONDING TO THE MANHOLE AND PIPE CAN BE OBTAINED.
9. MANHOLE CONE SECTIONS SHALL BE ECCENTRIC IN SHAPE.
10. ALL PRECAST SECTIONS AND BASES SHALL HAVE THE DATE OF MANUFACTURE AND THE NAME OR TRADEMARK OF THE MANUFACTURER IMPRESSED OR INDELIBLY MARKED ON THE INSIDE WALL.
11. ALL PRECAST SECTIONS AND BASES SHALL BE COATED ON THE EXTERIOR WITH A BITUMINOUS DAMP-PROOFING COATING.
12. MANHOLES THAT ARE NOT REPLACING EXISTING MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY. INVERTS AND SHELVES SHALL BE PLACED AFTER TESTING.
13. REPLACEMENT MANHOLES WHERE THERE IS AN ESTABLISHED LINE AND GRADE THROUGH WHICH THE SEWER ENTERS AND EXITS THE MANHOLE SHALL HAVE:
   A. A BRICK PAVED SHELF AND INVERT CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AS REQUIRED IN (12) ABOVE
   B. A PRECAST CONCRETE SHELF AND INVERT WITH THE SHELF CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL; OR
   C. A FIBERGLASS INSERT WITH THE SHELF CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL.
14. WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED IN LIEU OF A CONE SECTION, PROVIDED THE SLAB HAS AN ECCENTRIC ENTRANCE OPENING AND BE CAPABLE OF SUPPORTING HS-20 LOADS.
15. THE MINIMUM INTERNAL DIAMETER OF MANHOLES SHALL BE 48 INCHES
16. MATERIALS OF CONSTRUCTION FOR MANHOLES SHALL BE AS FOLLOWS.
   A. CONCRETE FOR CAST-IN-PLACE BASES OR COMPLETE MANHOLES SHALL CONFORM TO THE REQUIREMENTS FOR CLASS AA CONCRETE IN THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
   B. REINFORCING FOR CAST-IN-PLACE CONCRETE SHALL BE STEEL OR STRUCTURAL FIBERS THAT CONFORM TO THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
   C. PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478-06;
   D. THE MANHOLE FRAME AND COVER SHALL PROVIDE A 30-INCH DIAMETER CLEAR OPENING;
   E. THE MANHOLE COVER SHALL HAVE THE WORD "SEWER" IN 2-INCH LETTERS CAST INTO THE TOP SURFACE;
   F. THE CASTINGS SHALL BE OF EVEN-GRAINED CAST IRON, SMOOTH AND FREE FROM SCALE, LUMPS, BLISTERS, SAND HOLES AND DEFECTS;
   G. CONTACT SURFACES OF COVERS AND FRAMES SHALL BE MACHINED AT THE FOUNDRY TO PREVENT ROCKING OF COVER IN ANY ORIENTATION;
   H. CASTINGS SHALL BE EQUAL TO CLASS 30, CONFORMING TO ASTM A48/A48M-03;
   I. BRICK MASONRY FOR SHELF, INVERT AND GRADE ADJUSTMENT SHALL COMPLY WITH ASTM C32-05, CLAY OR SHALE, FOR GRADE SS HARD BRICK;
   J. MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;
   K. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
      1. 4.5 PARTS SAND AND 1.5 PARTS CEMENT, OR
      2. 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PARTS HYDRATED LIME;
   L. CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150-05;
   M. HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207-06 "STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES";
   N. SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO THE ASTM C33-03 "STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES";
   O. CONCRETE FOR DROP SUPPORTS SHALL CONFORM TO THE REQUIREMENT FOR CLASS AAA CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
   P. SUBJECT TO (Q) BELOW, A FLEXIBLE PIPE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES FROM ANY MANHOLE CONNECTION:
      1. WITHIN 48-INCHES FOR REINFORCED CONCRETE (RC) PIPE; AND
      2. WITHIN 60-INCHES FOR PVC PIPE LARGER THAN 15-INCH DIAMETER;
   Q. NO FLEXIBLE JOINT SHALL BE REQUIRED FOR DI PIPE OR FOR PVC PIPE UP THROUGH 15-INCH DIAMETER; AND
   R. WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED IN LIEU OF A CONE SECTION, PROVIDED THE SLAB HAS AN ECCENTRIC ENTRANCE OPENING AND IS CAPABLE OF SUPPORTING H-20 LOADS.
13. MANHOLE STEPS SHALL:
   A. BE PERMITTED ONLY AT THE REQUEST OF THE SYSTEM OWNER;
   B. BE MANUFACTURED OF STAINLESS, PLASTIC-COVERED STEEL OR PLASTIC;
   C. BE SHAPED SO THAT THEY CANNOT BE PULLED OUT OF THE CONCRETE WALL INTO WHICH THEY ARE SECURED;
   D. MEET THE REQUIREMENTS OF ASTM C478-08 FOR LOAD CARRYING CAPACITY AND PULL-OUT RESISTANCE;
   E. NOT BE SECURED WITH MORTAR;
   F. BE APPROXIMATELY 14-INCHES BY 10-INCHES IN DIMENSION;
   G. HAVE A DROP SECTION OR RAISED ABUTMENTS TO PREVENT SIDEWAYS SLIPPAGE OFF THE STEP; AND
   H. HAVE NON-SKID SAFETY SERRATIONS ON THE FOOT CONTACT SURFACES.
14. MANHOLE TESTING:
   A. MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST.
   B. THE MANHOLE VACUUM TEST SHALL CONFORM TO THE FOLLOWING:
      1. THE INITIAL VACUUM GAUGE TEST PRESSURE SHALL BE 10 INCHES Hg: AND
      2. THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR A 1-INCH Hg PRESSURE DROP TO 9 INCH Hg SHALL BE:
         a. NOT LESS THAN 2 MINUTES FOR MANHOLES LESS THAN 10 FEET DEEP IN DEPTH;
         b. NOT LESS THAN 2.5 MINUTES FOR MANHOLES 10 TO 15 FEET DEEP; AND
         c. NOT LESS THAN 3 MINUTES FOR MANHOLES MORE THAN 15 FEET DEEP.
   C. THE MANHOLE SHALL BE REPAIRED AND RETESTED IF THE TEST HOLD TIMES FAIL TO ACHIEVE THE ACCEPTANCE LIMITS SPECIFIED IN (B) ABOVE.
   D. FOLLOWING COMPLETION OF THE LEAKAGE TEST, THE FRAME AND COVER SHALL BE PLACED ON THE TOP OF THE MANHOLE OR SOME OTHER MEANS USED TO PREVENT ACCIDENTAL ENTRY BY UNAUTHORIZED PERSONS, CHILDREN OR ANIMALS UNTIL THE CONTRACTOR IS READY TO MAKE FINAL ADJUSTMENTS TO GRADE.

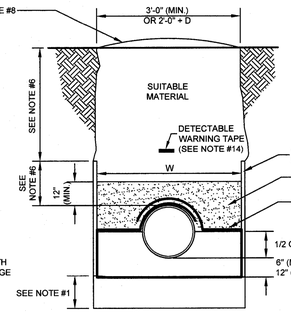


FOR CONSTRUCTION IN ROADS, ROAD SHOULDER AND WALKWAYS

NOTE:
MINIMUM BEDDING DEPTH AND MAXIMUM PAYMENT DEPTH FOR LEDGE EXCAVATION: 1/4 O.D. (6" MIN.)



CROSS COUNTRY EARTH CONSTRUCTION

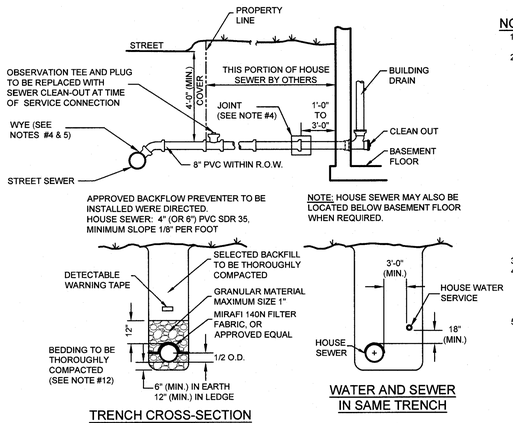


CROSS COUNTRY EARTH CONSTRUCTION WITH SHEETING

SANITARY SEWER TRENCH DETAIL
NOT TO SCALE
(NOVEMBER 2016)

NOTES:

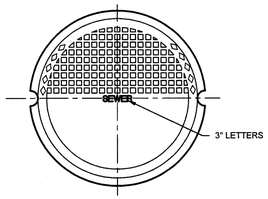
1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE. REFILL WITH BEDDING MATERIAL, ALSO SEE NOTE #7.
   BEDDING: CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33/C33M STONE SIZE NO. 67.
   100% PASSING 1 INCH SCREEN
   90 - 100% PASSING 3/4 INCH SCREEN
   20 - 55% PASSING 3/8 INCH SCREEN
   0 - 10% PASSING # 4 SIEVE
   0 - 5% PASSING # 8 SIEVE
   WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, GRADED CRUSHED STONE 1/2 INCH TO 1-1/2 INCHES SHALL BE USED.
2. SAND BLANKET: GRADED CLEAN SAND FREE FROM ORGANIC MATTER, SO THAT 100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A # 200 SIEVE. BLANKET MAY BE OMITTED FOR CAST IRON, DUCTILE IRON AND REINFORCED CONCRETE PIPE PROVIDED, HOWEVER, THAT NO STONE LARGER THAN 2 INCHES IS IN CONTACT WITH THE PIPE.
3. MIRAFI 140 N FILTER FABRIC, OR APPROVED EQUAL, SHALL BE INSTALLED ABOVE PIPE.
4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL AND ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION, OR ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.
   IN CROSS COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT IF HE/SHE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER WILL BE PRESERVED FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WHEN NECESSARY.
5. BASE COURSE, IF ORDERED BY THE ENGINEER, SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE LATEST EDITION OF THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS."
6. WOOD SHEETING, IF REQUIRED, WHERE PLACED ALONGSIDE THE PIPE AND EXTENDING BELOW MID-DIAMETER, SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.
7. W = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D. W SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
8. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
9. NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES DESIGN STANDARDS REQUIRE 10 FEET OF SEPARATION BETWEEN WATER AND SEWER. HOWEVER, SHOULD CONSTRUCTION REVEAL OR EXPOSE A WATERLINE (MAIN OR SERVICE) RUNNING APPROXIMATELY PARALLEL AND LESS THAN 10 FEET HORIZONTALLY FROM THE PROPOSED SEWER INSTALLATION AND WHERE IT IS NOT PRACTICAL TO RELOCATE THE SEWER, A DEVIATION MAY BE GRANTED PROVIDED THAT THE SEWER IS CONSTRUCTED IN ACCORDANCE WITH THE FORCE MAIN CONSTRUCTION REQUIREMENT SPECIFIED BELOW:
   A. FORCE MAINS SHALL BE CONSTRUCTED FROM DUCTILE IRON, HIGH DENSITY POLYETHYLENE, OR PVC PER ENV-WQ 704.06(a).
      PVC SHALL CONFORM TO ASTM D2241-05 OR ASTM D1785-05
      HDPE SHALL CONFORM TO ASTM D3035-03a
      D.I. SHALL BE CORROSION PROTECTED IN CORROSIVE ENVIRONMENTS
10. WHERE WATER LINES AND SEWER LINES CROSS, THEY SHOULD CROSS AS PERPENDICULAR AS POSSIBLE AND THE WATER MAIN SHALL CROSS AT LEAST 18" INCHES ABOVE THE SEWER. FURTHER, THE SEWER JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATER MAIN.
11. ALL SEWERS AT 8 PERCENT SLOPE, OR GREATER, SHALL HAVE IMPERVIOUS TRENCH DAMS CONSTRUCTED EVERY 300 FEET.
12. UNLESS OTHERWISE NOTED, ALL GRANULAR MATERIAL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO 95% OF THE MODIFIED PROCTOR TEST.
13. WHERE WATER MAINS CROSS UNDER SEWER MAINS, BOTH THE SEWER AND WATER MAINS SHALL BE PRESSURE RATED PIPE PER ENV-WQ 704.06 AND TESTED PER AWWA C600-05 AT 1.5 TIMES DESIGN PRESSURE OR 100 PSI, WHICHEVER IS GREATER, WITH NO JOINTS WITHIN 9 FEET OF THE CROSSING POINT AND 18" MINIMUM VERTICAL SEPARATION.
14. ALL SEWERS SHALL BE MARKED USING METAL IMPREGNATED MARKING TAPE OR TRACER WIRE THAT CAN BE LOCATED USING METAL DETECTION EQUIPMENT.
15. GRAVITY PIPE SEWER TESTING:
   A. ALL NEW GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY THE USE OF LOW-PRESSURE AIR TESTS.
   B. LOW-PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH:
      1. ASTM F1417-92(2005) "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW-PRESSURE AIR." OR
      2. UNI-BELL PVC PIPE ASSOCIATION UNI-B-6, "LOW-PRESSURE AIR TESTING OF INSTALLED SEWER PIPE" (1998).
   C. ALL NEW GRAVITY SEWERS SHALL BE CLEANED AND VISUALLY INSPECTED USING A LAMP TEST AND BY INTRODUCING WATER TO DETERMINE THAT THERE IS NO STANDING WATER IN THE SEWER AND SHALL BE TRUE TO LINE AND GRADE FOLLOWING INSTALLATION AND PRIOR TO USE.
   D. ALL PLASTIC SEWER PIPE SHALL BE DEFLECTION TESTED NOT LESS THAN 30 DAYS NOR MORE THAN 90 DAYS FOLLOWING INSTALLATION.
   E. THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5 PERCENT OF AVERAGE INSIDE DIAMETER. A RIGID BALL OR MANDREL WITH A DIAMETER OF AT LEAST 95 PERCENT OF THE AVERAGE INSIDE PIPE DIAMETER SHALL BE USED FOR TESTING PIPE DEFLECTION. THE DEFLECTION TEST SHALL BE CONDUCTED WITHOUT MECHANICAL PULLING DEVICES.



SANITARY SEWER SERVICE DETAIL
NOT TO SCALE
(JUNE 2015)

NOTES:

1. MINIMUM SIZE PIPE FOR HOUSE SERVICE SHALL BE 4 INCHES. MINIMUM SIZE FOR STREET SEWER LINES SHALL BE 6 INCHES.
2. PIPE AND JOINT MATERIALS:
   A. DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION (AWWA):
      1. AWWA C151/A21.51-02 - FOR DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL OR SAND-LINED MOLDS, FOR WATER OR OTHER LIQUIDS;
      2. AWWA C150/A21.50-02 - FOR THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A536-84 (2004) DUCTILE IRON CASTINGS;
      3. JOINTS SHALL BE MECHANICAL, PUSH-ON OR BALL-AND-SOCKET TYPE.
   B. PLASTIC GRAVITY SEWER PIPE AND FITTINGS SHALL COMPLY WITH THE FOLLOWING STANDARDS:
      1. ASTM D3034-04A - PVC, SOLID WALL;
      2. AT LEAST 46 PSI AT 5% PIPE DIAMETER DEFLECTION, AS MEASURED IN ACCORDANCE WITH ASTM D2414-02 DURING MANUFACTURING; AND
      3. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D3212-96A(2003)E1 AND SHALL BE PUSH-ON OR BELL-AND-SPIGOT TYPE.
3. DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.
4. JOINTS SHALL BE DEPENDENT UPON PROPER MATERIALS (SEE NOTE #2) FOR WATER TIGHTNESS, AND ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.
5. SERVICE CONNECTIONS SHALL USE SANITARY TEE OR WYE FITTINGS FOR ALL NEW CONSTRUCTION. THE CENTERLINE OF ALL BUILDING CONNECTIONS SHALL ENTER THE TOP HALF OF THE SEWER. ANY SERVICE CONNECTION WITH A VERTICAL RISE UP TO 4 FEET MAY HAVE THE SEWER FITTING SET VERTICALLY. ANY SERVICE CONNECTION WITH A VERTICAL RISE UP TO 12 FEET SHALL EMPLOY NON-ENCASED RISERS THAT PROTECT AGAINST PIPE PENETRATION OR FAILURE AT THE FITTING BY THE USE OF BELL-ON-BELL CONNECTIONS. FOR EXISTING SEWER WHERE FITTINGS CANNOT BE INSTALLED, SADDLE CONNECTIONS SHALL BE USED. PRESSURE SEWERAGE SHALL HAVE AN ISOLATION VALVE OR CURB STOP VALVE INSTALLED AT THE PROPERTY LINE. IF A CHECK VALVE IS USED AT THE PROPERTY LINE, THE VALVE SHALL BE INSTALLED WITHIN A VAULT TO FACILITATE MAINTENANCE. ROOF DOWNSPOUTS, EXTERIOR OR INTERIOR FOUNDATION DRAINS, SUMP PUMPS OR OTHER SOURCE OF SURFACE WATER RUN-OFF OR GROUND WATER SHALL NOT BE DIRECTLY OR INDIRECTLY CONNECTED TO A PUBLIC SEWER.
6. PIPE INSTALLATION:
   A. THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER.
   B. PIPES SHALL BE CAREFULLY BEDDED ON A 4 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL.
   C. BEDDING AND RE-FILL, FOR A DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE, SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH THE APPROPRIATE MECHANICAL DEVICES.
   D. THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE HOUSE FOUNDATION AT A GRADE OF NOT LESS THAN 1/8 INCH PER FOOT.
   E. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.
7. TESTING: THE COMPLETED HOUSE SEWER SHALL BE SUBJECTED TO A LEAKAGE TEST IN ANY OF THE FOLLOWING MANNERS: (PRIOR TO BACKFILLING)
   A. AN OBSERVATION TEE SHALL BE INSTALLED AS SHOWN AND WHEN READY FOR TESTING, AN INFLATABLE BLADDER OR PLUG SHALL BE INSERTED JUST UPSTREAM FROM THE OPENING IN THE TEE. AFTER INFLATION, WATER SHALL BE INTRODUCED INTO THE SYSTEM ABOVE THE PLUG TO A HEIGHT OF 5 FEET ABOVE THE LEVEL OF THE PLUG.
   B. THE PIPE SHALL BE LEFT EXPOSED AND LIBERALLY HOSED WITH WATER TO SIMULATE, AS NEARLY AS POSSIBLE, WET TRENCH CONDITIONS OR, IF THE TRENCH IS WET, THE GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. INSPECTIONS FOR LEAKS SHALL BE MADE THROUGH THE CLEAN OUT WITH A FLASHLIGHT.
   C. DRY FLUORESCENCE DYE SHALL BE SPRINKLED INTO THE TRENCH OVER THE PIPE. IF THE TRENCH IS DRY, THE PIPE SHALL BE LIBERALLY HOSED WITH WATER, OR IF THE TRENCH IS WET, GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. OBSERVATION FOR LEAKS SHALL BE MADE IN THE FIRST DOWNSTREAM MANHOLE.
   D. LEAKAGE OBSERVED IN ANY OF THE ABOVE TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE AND THE PIPE SHALL BE DUG-UP, IF NECESSARY, AND RE-LAID SO AS TO ASSURE WATER-TIGHTNESS.
8. ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM TOILETS, SINKS, LAUNDRY, ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR ANY OTHER SIMILAR CONNECTION CARRYING RAIN WATER, DRAINAGE OR GROUND WATER, SHALL NOT BE PERMITTED.
9. WATER SERVICE SHALL NOT BE LAID IN THE SAME TRENCH AS THE SEWER SERVICE, UNLESS NECESSARY AND APPROVED BY THE AHJ. WHEN NECESSARY, THE WATER SERVICE SHALL BE PLACED ABOVE AND TO ONE SIDE OF THE SEWER SERVICE, AS SHOWN.
10. LOCATION: THE LOCATION OF THE WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS MATERIAL ROD OR PIPE SHALL BE PLACED OVER THE WYE TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPE FINDER.
11. CHIMNEY CONNECTIONS ARE ONLY PERMITTED IF ALLOWED BY THE AHJ. ANY VERTICAL RISE GREATER THAN 4 FEET SHALL BE PROVIDED WITH ADDED SUPPORT BY ENCASING THE FITTING AND RISER IN A PRECAST CONCRETE CHIMNEY. UP TO 12 FEET OF VERTICAL RISE CAN ALSO BE SECURED BY PROPER MEANS AS LONG AS IT CONSISTS OF A BELL-ON-BELL CONNECTION PROPERLY PROTECTED AGAINST PIPE PENETRATION AND IF IT IS ALLOWED BY THE AHJ.
12. UNLESS OTHERWISE NOTED, ALL GRANULAR MATERIAL SHALL BE PLACED IN 12" MAXIMUM LIFTS AND COMPACTED TO 95% OF THE MODIFIED PROCTOR TEST DENSITY.



SEWER MANHOLE FRAME AND COVER DETAIL
NOT TO SCALE
(MARCH 2008)

NOTES:

NEW HAMPSHIRE MAINTAINS A CLEAR OPENING DESIGNATION OF 30" FOR ITS MANHOLE CASTINGS.

FEATURES:
- 3" LETTERING
- COVERS MARKED SEWER
- NONROCKING COVER
- DIAMOND SURFACE DESIGN

SPECIFICATIONS:
- FULLY MACHINED FRAME AND COVER
- H-20 LOAD RATED
- GRAY CAST IRON MEETS ASTM A48 CLASS 30

3/17/26

LOT 235 OWNER/APPLICANT:	LOT 236 OWNER
PAGE ROCK, LLC 5 HUTCHINGS DRIVE, SUITE 5D HOLLIS, N.H. 03049	PAGE ROCK, LLC PO BOX 1675 HOLLIS, N.H. 03049

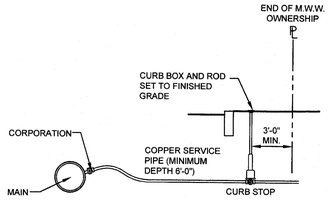
CONSTRUCTION DETAILS
PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

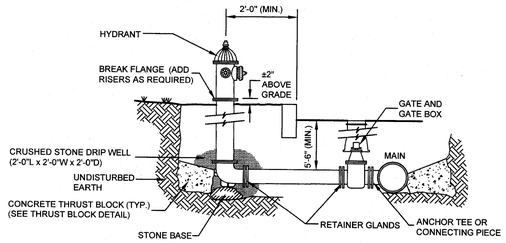
KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 18 OF 22

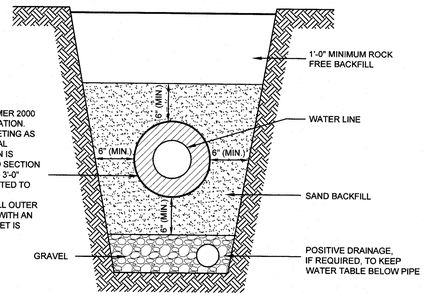


- CORPORATIONS SHALL BE TAPPED DIRECTLY TO THE MAIN IN SIZES UP TO 1" DIAMETER (INCLUSIVE).
- CORPORATIONS 1 1/2" DIAMETER AND GREATER SHALL BE INSTALLED USING A TAPPING SADDLE AND SHELL CUTTER.

SERVICE CONNECTION
NOT TO SCALE
(MARCH 2008)



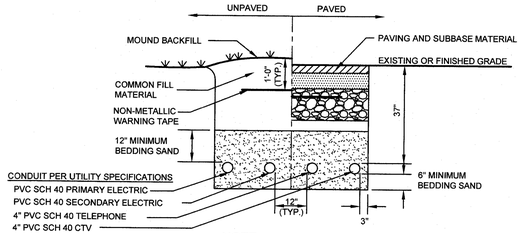
HYDRANT INSTALLATION
NOT TO SCALE
(MARCH 2008)



3" MINIMUM THICKNESS DOW TRYMER 2000 POLYISOCYANURATE FOAM INSULATION. MATERIAL AND INSUL-WRAP JACKETING AS MANUFACTURED BY DOW CHEMICAL COMPANY, OR EQUAL. INSULATION IS APPLIED IN A FULL ROUND HINGED SECTION CONSISTING OF TWO HALF ROUND 3'-0" LONG SECTIONS FACTORY LAMINATED TO AN INSUL-WRAP JACKETING. THE JACKETING IS APPLIED TO THE FULL OUTER CIRCUMFERENCE OF INSULATION WITH AN EXTENDED 2" OVERLAP. THE JACKET IS SEALED BY SELF-SEALING LAP.

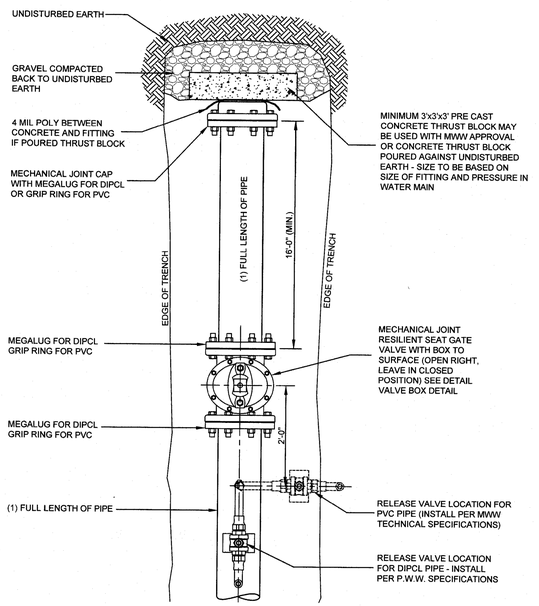
WATERLINE CONSTRUCTION NOTES:
1. ALL WATER PIPE WITH LESS THAN 5.5' OF COVER SHALL BE INSULATED.
2. PIPE INSULATION TO BE INSTALLED IN ALL LOCATIONS WHERE MINIMUM COVER REQUIREMENT CANNOT BE ACHIEVED.

WATER LINE INSULATION DETAIL
NOT TO SCALE
(MARCH 2008)



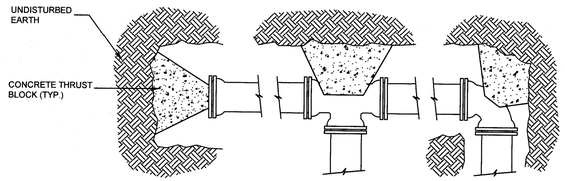
NOTE:
INSTALLATION AND MATERIALS OF UNDERGROUND UTILITIES SHALL CONFORM TO LOCAL UTILITY COMPANY SPECIFICATIONS.

UTILITY TRENCH DETAIL
NOT TO SCALE
(MARCH 2008)

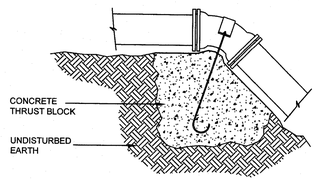


NOTES:
1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO MANCHESTER WATER WORKS TECHNICAL SPECIFICATIONS.
2. ALL PIPE SHOULD HAVE A MINIMUM DEPTH OF 5'-6" FROM TOP OF PIPE TO FINISH GRADE.

END OF MAIN INSTALLATION
NOT TO SCALE
(MARCH 2008)



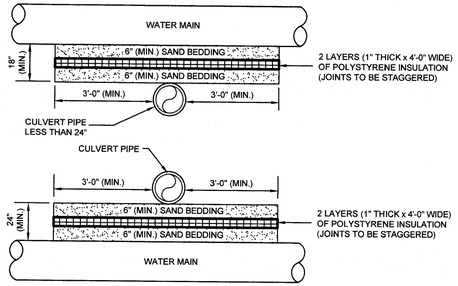
PLAN - HORIZONTAL BENDS, TEES AND PLUGS



ELEVATION - VERTICAL BENDS

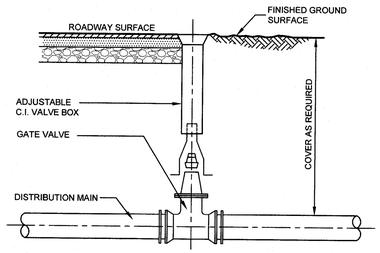
NOTES
1. THRUST BLOCK DIMENSIONS TO BE DETERMINED IN FIELD BY ENGINEER BASED ON PIPE SIZE, WATER PRESSURE AND SOIL TYPE.
2. STONE BACKING MAY BE SUBSTITUTED FOR CONCRETE THRUST BLOCKS PROVIDED THE STONE(S) ARE OF EQUAL SIZE AND BEAR ON UNDISTURBED EARTH.
3. USE OF JOINT RESTRAINT SYSTEMS SHALL NOT ELIMINATE THRUST BLOCK REQUIREMENTS (WHERE POSSIBLE).

THRUST BLOCKS
NOT TO SCALE
(MARCH 2008)

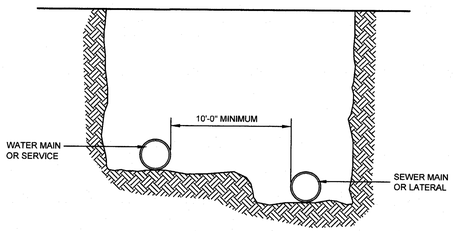


NOTES:
1. INSULATION TO BE USED WHERE PIPE SEPARATION IS 24" OR LESS.

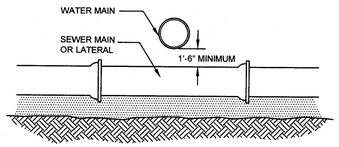
WATER PIPE CROSSING INSULATION DETAIL
NOT TO SCALE
(JUNE 2012)



WATER AND GAS GATE VALVE
NOT TO SCALE
(MARCH 2008)



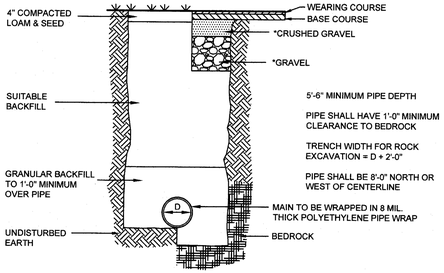
PARALLEL INSTALLATION



MAIN CROSSINGS

WATER MAIN/SEWER MAIN SEPARATION
NOT TO SCALE
(AUGUST 2011)

* PER APPLICABLE STATE, CITY OR TOWN SPECIFICATION.



TYPICAL WATER LINE TRENCH DETAIL
NOT TO SCALE
(AUGUST 2011)

PAGE ROCK REVISIONS
3/9/26

LOT 235 OWNER/APPLICANT:	LOT 236 OWNER
PAGE ROCK, LLC 5 HUTCHINGS DRIVE, SUITE 5D HOLLIS, N.H. 03049	PAGE ROCK, LLC PO BOX 1675 HOLLIS, N.H. 03049

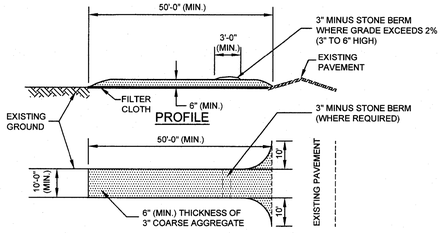
CONSTRUCTION DETAILS
PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 19 OF 22



PLAN VIEW

MAINTENANCE:

MUD AND SOIL PARTICLES WILL EVENTUALLY CLOG THE VOIDS IN THE CRUSHED STONE AND THE EFFECTIVENESS OF THE CRUSHED STONE PAD WILL NOT BE SATISFACTORY. WHEN THIS OCCURS, THE PAD SHOULD BE TOPDRESSED WITH NEW CRUSHED STONE OR COMPLETE REPLACEMENT OF THE PAD MAY BE NECESSARY WHEN THE PAD BECOMES COMPLETELY CLOGGED.

IF WASHING FACILITIES ARE USED, THE SEDIMENT TRAPS SHOULD BE CLEANED OUT AS OFTEN AS NECESSARY TO ASSURE THAT ADEQUATE TRAPPING EFFICIENCY AND STORAGE VOLUME IS AVAILABLE. VEGETATIVE FILTER STRIPS SHOULD BE MAINTAINED TO INSURE A VIGOROUS STAND OF VEGETATION AT ALL TIMES.

CONSTRUCTION SPECIFICATIONS:

1. STONE FOR A STABILIZED CONSTRUCTION EXIT SHALL BE 3 INCH STONE, RECLAIMED STONE OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED EXIT SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED EXIT SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE EXIT SHALL NOT BE LESS THAN THE FULL WIDTH OF THE AREA WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION EXIT SHALL BE PIPED BENEATH THE EXIT. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

STABILIZED CONSTRUCTION EXIT DETAIL

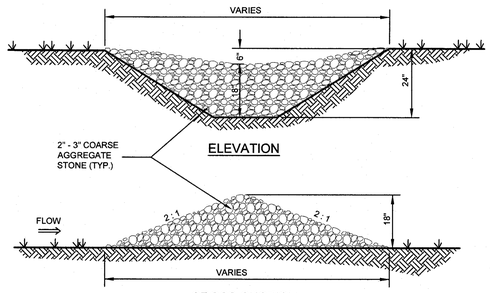
NOT TO SCALE



L = THE DISTANCE SUCH THAT POINTS A AND B ARE EQUAL ELEVATION, OR FOR FLAT SLOPES L = 75' MAXIMUM

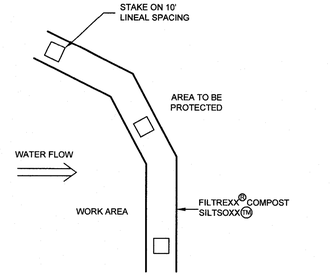
STONE CHECK DAM SPACING DETAIL

NOT TO SCALE

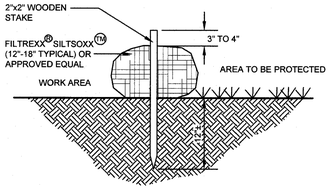


STONE CHECK DAM DETAIL

NOT TO SCALE



PLAN VIEW



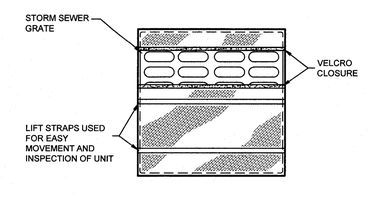
SECTION VIEW

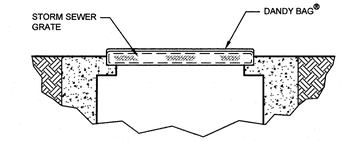
NOTES:

1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. SILTSOXX™ COMPOST/SOIL/ROCK/SEED FILL TO MEET APPLICATION REQUIREMENTS.
3. SILTSOXX™ DEPICTED IS FOR MINIMUM SLOPES. GREAT SLOPES MAY REQUIRE LARGER SOCKS PER THE ENGINEER.
4. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.
5. MAY BE USED IN PLACE OF SILT FENCE OR IN COMBINATION WITH SILT FENCE

FILTREXX® SILTSOXX™ DETAIL

NOT TO SCALE





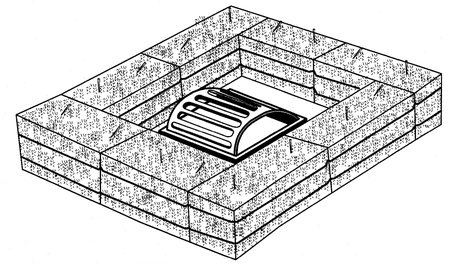
HI-FLOW DANDY BAG® (SAFETY ORANGE)

MECHANICAL PROPERTIES	TEST METHOD	UNITS	MARV
GRAB TENSILE STRENGTH	ASTM D 4632	kN (lbs)	1.62 (365) x 0.89 (200)
GRAB TENSILE ELONGATION	ASTM D 4632	%	24 x 10
PUNCTURE STRENGTH	ASTM D 4833	kN (lbs)	0.40 (90)
MULLEN BURST STRENGTH	ASTM D 3786	kPa (psi)	3097 (450)
TRAPEZOID TEAR STRENGTH	ASTM D 4533	kN (lbs)	0.51 (115) x 0.33 (75)
UV RESISTANCE	ASTM D 4355	%	90
APPARENT OPENING SIZE	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
FLOW RATE	ASTM D 4491	1/min/m² (gal/min/ft²)	5907 (145)
PERMITTIVITY	ASTM D 4491	Sec^{-1}	2.1

DANDY BAG®

NOT TO SCALE

(APRIL 2010)

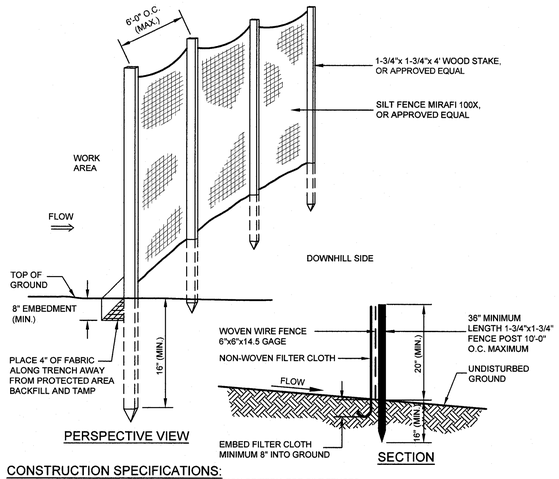


NOTES:

1. BARRIER TO REMAIN UNTIL GRASS IS GROWING IN ALL SEEDED AREA.
2. PROVIDE HAY BALES ON ALL SIDES OF CATCH BASIN FROM WHICH FLOW APPROACHES.

HAY BALE BARRIER AT DITCH GRATE CATCH BASIN

NOT TO SCALE



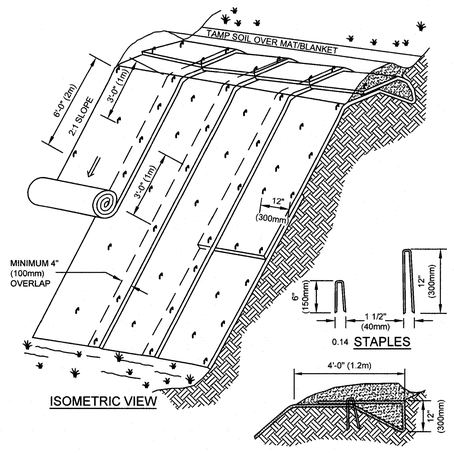
CONSTRUCTION SPECIFICATIONS:

1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIE OR STAPLES WHERE NOTED OR AS DIRECTED BY DESIGN ENGINEER.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MIDSECTION AND BOTTOM.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED AND STAPLED.
6. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE 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 INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
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

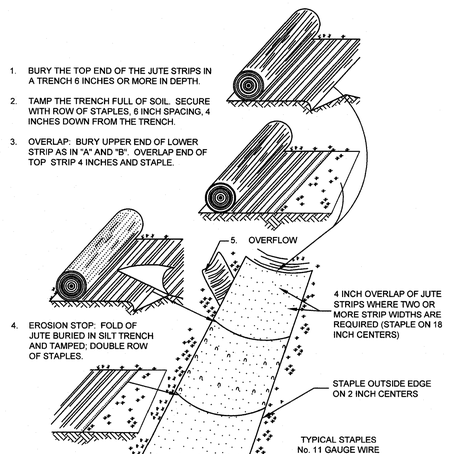


NOTES:

1. MATS/BLANKETS SHALL BE DOUBLE NET BIODEGRADABLE EROSION CONTROL BLANKETS BY NORTH AMERICAN GREEN OR EQUAL.
2. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/ BLANKETS SHALL HAVE GOOD SOIL CONTACT.
3. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
4. MATS/BLANKETS SHOULD BE INSTALLED VERTICALLY DOWNSLOPE.
5. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
6. THERE SHALL BE NO PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN ½ INCHES MATERIAL UTILIZED (NOT APPLICABLE TO TURF REINFORCEMENT MATS)
7. TURF REINFORCEMENT MATS SHALL BE COVERED WITH SOIL TO PREVENT EXPOSURE OF THE MATS TO THE SURFACE.

EROSION CONTROL BLANKETS - SLOPE INSTALLATION

NOT TO SCALE



NOTES:

1. THERE SHALL BE NO PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN ½ INCHES MATERIAL UTILIZED (NOT APPLICABLE TO TURF REINFORCEMENT MATS)
2. TURF REINFORCEMENT MATS SHALL BE COVERED WITH SOIL TO PREVENT EXPOSURE OF THE MATS TO THE SURFACE.

EROSION CONTROL BLANKETS - SWALE INSTALLATION

NOT TO SCALE

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

CONSTRUCTION DETAILS

PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 20 OF 22

STORMWATER
OPERATION & MAINTENANCE PLAN

Page Rock Townhomes

Map 15; Lot 235
3 Page Road
Londonderry, New Hampshire

October 21, 2025

KNA Project No. 21-0113-1

KNA KEACH-NORDSTROM ASSOCIATES, INC.

TABLE OF CONTENTS:

I. **General**
- Introduction
- General Maintenance Requirements

II. **Supporting Documents**
- Annual Inspection & Maintenance Reporting Form
- Long-Term Inspection & Maintenance Plan Checklist
- Long-Term Inspection & Maintenance Log
- Anti-Icing Route Data Form

III. **Control of Invasive Plants**
- Invasive Plant Guide

IV. **Stormwater Practice Location Plan**
- 11"x17" "Grading and Drainage Plan"

I. General

Introduction

The project owner or their assigned heirs will maintain the stormwater treatment facilities during construction. The owner of the project is Page Rock, LLC, 5 Hutchings Drive, Suite 5D, Hollis, NH 03049. Upon completion of construction, the Condominium Association will assume ownership of long-term maintenance.

The subject property is referenced on Londonderry's Tax Map 15 as Lot 235. Any transfer of responsibility for inspection and maintenance activities or transfer of ownership shall be documented to the Town of Londonderry in writing. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction. Long-term operation and maintenance for the stormwater management facilities are presented below.

Maintenance will be performed as described unless and until the system is formally accepted by a municipality or quasi-municipal district or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system.

Post Construction:

The following standards will be met after construction is complete:

Documentation:

A maintenance log will be kept summarizing inspections, maintenance, and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean out of any sediments or debris, the location where the sediment and debris was disposed after removal will be indicated. The following forms shall be submitted to the Londonderry Department of Engineering on an annual basis.

Maintenance Requirements

Stormwater Ponds:
- 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.
- System embankments should be mowed periodically to maintain grass cover and any other vegetation found on the embankment should be removed at each inspection.
- Trash and debris found within the pond or in the outlet structure should be removed at each inspection.
- Removal of accumulated sediment
- Inspection and repair of embankments, inlet and outlet structures, and appurtenances

Sediment Forebays:
- Forebays help reduce the sediment load to downstream BMP's and will therefore require more frequent cleaning.
- Systems should be inspected at least annually.
- Conduct periodic mowing of embankments (generally two times per year) to control growth of woody vegetation.
- Trash and debris should be removed at each inspection.
- Accumulated sediment should be removed as warranted by such inspection.
- Install and maintain a staff gage or other measuring device, to indicate depth of sediment accumulation and level at which clean-out is required.

Conveyance Swales:
- Grassed channels should be inspected periodically (at least annually) for sediment accumulation, erosion, and condition of surface lining (vegetation or riprap). Repairs, including stone or vegetation replacement, as warranted by such inspection.
- Remove sediment and debris annually, or more frequently as warranted by such inspection.
- Mow vegetated channels based on frequency specified by design. Mowing at least once per year is required to control establishment of woody vegetation. It is recommended to cut grass no shorter than 4 inches.

Catch Basins and Closed Drainage Network:
- Catch basins may require frequent maintenance. 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.
- Sediment should be removed when it approaches half of the sump depth.
- If floating hydrocarbons are observed during an inspection, the material should be removed immediately by skimming, absorbent materials, or other methods and disposed in conformance with the applicable state and federal regulations.

Outlet Protection:
- Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.

General:
- Sweeping will be checked quarterly and completed as needed.
- If any invasive species begin to grow in the stormwater management practices the species shall be disposed of in an appropriate manner that will not allow the pest to survive or spread. The disposal of such species shall be witnessed or approved by a state inspector. Methods for disposal may include, but not be limited to:
  - Encapsulating the plant(s) in plastic bags and disposing of the plant material in one of the following ways:
    - Discarding in trash pickup;
    - Open burning;
    - Incineration; or
    - Burial of infested nursery.

Landscape Management:
Objective: To maintain lawns and plantings to ensure survival, vigorous growth with proper nutrients, pest management and the avoidance of environmental stress such as drought.

1. Lawns & grass areas:
   a. The turfgrass mix selected for lawn areas will be varieties that are qualified, A-L.I.S.T. (Alliance for Low Input Sustainable Turf) or TWCA (Turfgrass Water Conservation Alliance). These organizations have high testing standards to insure lower fertilizer and pesticide inputs, lower water requirements, heat and drought tolerance.
   b. The lawn maintenance will be done by an experienced contractor.
   c. Nutrients will be applied to achieve a successful stand of turf following NH RSA 431.
   d. Soil samples will be taken annually to help identify direct nutrient deficiencies and or excesses which will dictate annual nutrient program. Soil test will include, Organic matter, Phosphorus levels, pH, pH buffer, cation exchange capacity, cation base saturations and soil texture.
   e. Integrated pest management (IPM) practices will be followed to determine tolerable pest population levels. Treatments will be made as necessary based on pest thresholds.
   f. Grass varieties will need less watering by nature but the option of natural occurring moisture management product treatments to conserve water are available during periods of severe drought to ensure survival of the turf.
   g. Grass will be mowed as needed to a 2.5" – 3 "height depending on seasonal conditions.
   h. Grass will be watered as needed.
2. Trees & Shrubs:
   a. Initial plant installation will be a key factor to long-term survival and success
   b. Tree & shrub installation shall be performed in accordance with the growers' requirements.
   c. The tree & shrub maintenance will be done by an experienced contractor.
   d. As with the grass area, integrated pest management (IPM) practices will be followed to determine tolerable pest population levels. Treatments will be made as necessary based on pest thresholds.
   e. Trees & shrubs will be fertilized in the fall utilizing deep root feeding with a high percentage of organically derived nutrient sources.
   f. Watering will be done as needed throughout the season, especially during very dry periods to ensure plant survival.
3. Planting beds:
   a. Planting bed maintenance will be done by an experienced contractor.
   b. Planting beds will be mulched in the spring for reduced weed encroachment and water holding capacity to aid in plant survival and success.
   c. Beds will be weeded periodically as needed.
   d. Flowering annuals will be planted in the spring to add natural color.
   e. Annuals will be removed once the season is completed.

Snow and Ice Management:
Objective: To maintain all paved areas to be free of snow, in a timely manner after every snow event. Ensure bare pavement with no residual ice to ensure occupant safety. Utilize best management practices and products to comply with NHDES Green SnowPro under RSA 489-C. The snow and ice removal contractor shall document the management process in accordance with the requirements of RSA 489-C and the certification guidelines.

1. Snow plowing:
   a. Snow plowing will be done by a Certified NHDES Green SnowPro contractor.
   b. The driveway & parking lot will be plowed as needed during and after every snow event.
   c. Snow will be stockpiled in locations identified on the approve landscape plan.
   d. Walkways and entrances will be shoveled, or snow blown depending on snow volume.
   e. In the event of a higher than usual snow fall, snow will be trucked off-site to an approved snow stockpile facility.
   f. The property owner shall be responsible for reporting the annual salt usage to NHDES.
2. Ice control:
   a. Ice control will be done by a Certified NHDES Green SnowPro contractor.
   b. The objective is to obtain bare and dry pavements at the earliest practical time following cessation of a storm.
   c. Ice melting products will be used as necessary to prevent "slip & fall" incidents as well and maintain motor vehicle control.
   d. Snow and Ice Management will follow NHDES Green SnowPro guidelines under RSA 489-C.
   e. Magic Salt ® by ProMelt, or equal, will be the primary ice melting product. Can melt ice to temperatures as low as - 25°F. Manufactured with a combination feed grade molasses and magnesium chloride. Long lasting performance reduces re-application frequency.
   f. ProMelt Mag liquid, or equal, will also be used in low volumes as a pre-treat per manufactures recommendations. This practice is a similar practice used by NH DOT. ProMelt Mag is a high-performance magnesium chloride liquid that delivers a strong residual effect on road surfaces, improves melting and results in long lasting performance.

Annual Inspection and Maintenance Reporting Form
for
Page Rock Townhomes
Londonderry, New Hampshire

Date: _____

To: **Page Rock LLC**

Re: **Certification of Inspection and Maintenance; Submittal of Forms**

Property Name: Page Rock Townhomes

Property Address: 3 Page Road, Londonderry, NH

Contact Name: _____

Contact Phone #: _____

Contact Email Address: _____

I verify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Operation & Maintenance Plan associated with the above referenced property.

The required Long-Term Inspection & Maintenance Plan Checklist is attached to this form.

_____ _____
Name of Party Responsible for Inspection & Maintenance Date

_____
Authorized Signature

Long-Term Inspection & Maintenance Plan Checklist
Page Rock Townhomes – Londonderry, NH

Current Owner Name:	Date:
Business Address:	Inspector:
Weather:	
Date of Last Rainfall:	Amount: Inches:

Best Management Practice

Detention Pond #1	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	Spring ☐
Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Sideslopes & berms need repair? Yes ☐ No ☐ Clean inlet & outlet structures? Yes ☐ No ☐			
Attach Photos			

Detention Pond #2	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	Spring ☐
Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Sideslopes & berms need repair? Yes ☐ No ☐ Clean inlet & outlet structures? Yes ☐ No ☐			
Attach Photos			

Sediment Forebays	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Attach Photos			

Conveyance Swales	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Sideslopes & berms need repair? Yes ☐ No ☐			
Attach Photos			

Catch Basins & Closed Drainage Network	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
CB#4 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
CB#5 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
CB#7 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
CB#8 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Roof Drain #1 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Roof Drain #2 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Attach Photos			

Outlet Protection	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
HW#1 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
HW#3 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
HW#6 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
HW#9 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
HW#11 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
HW#13 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Attach Photos			

Lawn Areas and Landscaping	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Attach Photos			

General	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Sweeping Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Invasive Plant Removal Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Attach Photos			

Long-Term Inspection & Maintenance Log
Page Rock Townhomes – Londonderry, NH

Date	Inspection (Yes or No)	Maintenance (Yes or No)	List BMPs Inspected and/or Provide Comments	Inspected By:

Anti-icing Route Data Form
Page Rock Townhomes – Londonderry, NH

Truck Station:				
Date:				
Temperature:	Pavement Temperature:	Relative Humidity:	Dew Point:	Sky:
Reason For Applying:				
Route:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day):				
Observation (after event):				
Observation (before next application):				
Name:				





PAUL CHISHOLM No. 15078 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
3/4/26

LOT 235 OWNER/APPLICANT:	LOT 236 OWNER
PAGE ROCK, LLC 5 HUTCHINGS DRIVE, SUITE 5D HOLLIS, N.H. 03049	PAGE ROCK, LLC PO BOX 1675 HOLLIS, N.H. 03049

CONSTRUCTION DETAILS
PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21–0113–1
DATE: MARCH 20, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 21 **OF** 22

Pre-wetting

NH Best Management Practices

PRE-WETTING?

Pre-wetting is the process of coating a solid de-icer with a liquid before it is spread on a roadway.

WHY PRE-WET?

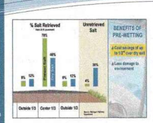
De-icing chemicals must form a brine before they can begin melting ice. Pre-wetting your chemicals accelerates the brine making process, which improves the melting action of the material. Pre-wetting also reduces bounce and scatter of material during spreading, and reduces the total amount of de-icer needed to obtain the desired results.

REDUCED RATES

If you are pre-wetting, don't forget to reduce your application rates accordingly. Reductions in the range of 15-20% are typical.

HOW MUCH LIQUID?

A good rule of thumb is to use 8-10 gallons of pre-wetting liquid for every ton of de-icer. For other chemicals, such as magnesium chloride, consult your supplier for application rates.



Getting Started

Wet the pile! There are two ways to pre-wet your de-icing chemicals. The easiest way to get started with pre-wetting is to spread your salt pile, spray it with pre-wetting liquid, mix it around, and re-pile it. More advanced truck mounted pre-wet systems can be installed on your trucks if you decide to make the investment.

Pre-wetting Liquids

You have a few options for pre-wetting liquids. The most commonly used is a 23% sodium chloride brine solution. Calcium chloride at 32% solution is also used, as well as Magic Minus Zero™ and other patented products.

Spraying the Pile

This is the easiest and most cost effective way to get started in pre-wetting. The first step is to spread your salt pile on a flat, impermeable surface. Next, spray the salt while it is spread out, and mix it around to ensure adequate and consistent liquid coverage. After the salt is sufficiently covered, re-stack the salt in your storage shed for later use.



Truck Mounted Systems

These systems are mounted in the truck bed and coat the de-icer with liquid as it comes off the conveyor/auger onto the spinner. These systems have the benefit of applying liquid only to the material you use as you use it. However, these systems must be installed on every truck that will be used to spread pre-wetted material.



Produced in partnership with:



Brine Making

NH Best Management Practices

GET THE LOWEST FREEZE POINT

When salt brine is 23% salt, measured with a hydrometer, 1.178, or with a salinometer, 85%, it has the lowest freeze point possible (about 0°F).

BRINE STORAGE

23% brine solution may be stored outdoor, however if temperatures get below 0°F the brine may freeze. A circulator pump will reduce the risk of freezing. If possible store brine indoors to eliminate risk of freezing.

COST OF BRINE

Calcium chloride brine costs about 7¢ / gallon (assuming 55/lbs for salt) after you have your equipment setup.

MULTIPLE USES

Brine can be used directly for anti-icing, for presetting salt as it is dispensed from your truck, or to pretreat salt before it is loaded into your truck. Brine can be safely stored for up to a year, however, the concentration should be tested before use.

What Do You Need?

Brine making is a fairly simple process—the only ingredients are salt and water, and the only equipment you'll need is an open top mixing tank, a holding tank, a small pump, and a salinometer.





Images courtesy of Iowa DOT

Step 1: Fill Mixing Tank

Add Salt: Add about 2.5 lb of salt per gallon of water you plan to add. Make sure your mixing tank has a large opening to make adding salt easy.

Add Water: Slowly add water from the bottom of your brine mixing tank. This will allow it to percolate up through the salt and overflow into the holding tank.

Step 2: Check Concentration

Float: a hydrometer or salimeter directly in your holding tank and read the value at the surface of the water. The number should be either 85% or 1.176 depending on the units of your device.

If the values are too low, pump some brine from your holding tank back into the mixing tank and allow it to overflow. If values are too high simply add some fresh water.



Produced in partnership with:

Quality Control & Documentation

Make sure that you record the date when you create each batch of brine and document who mixed it and checked the concentration. It is also a good idea to note the final concentration. These records should be kept for at least two years to protect your group in the event of litigation.

Hydraulic-Run Spreader Calibration

NH Best Management Practices

WHY CALIBRATE?

You can't reduce your salt use if you don't know how much salt you actually use! The goal of calibrating is to know how much material you are putting down on a roadway or parking lot for every setting on your truck that you use. This is why calibrating your equipment is the first step to reducing salt use and saving money!

REMEMBER:

Each truck must be independently calibrated for each material it will be used to spread (the salt calibration chart will be different than the sand calibration chart).

Calibrations should be performed annually, or after a spreader is serviced.

CALCULATIONS:

There are a few simple calculations you must perform in order to complete the calibration. Once all of the necessary data is recorded, head back inside and warm up! Refer to the reverse side of this fact sheet for calculation instructions.



Step 1: Load the Truck

Partially load the truck. Half of a full load should be more than adequate for calibration purposes.



Step 2: Set Your Controls

Gate Height: Set the gate height to its lowest practical setting (~2"). This should be kept constant throughout the calibration process. If you find that not enough material is dispensed when this setting, try 2.5" to 3".

Engine Speed: Warm the truck up and run the engine at its typical rate seen during spreading (approximately 2000 rpm).



Step 3: Measure Spread Width

Measure the width that the material covers during spreading. Do this for each conveyor/auger setting you are calibrating. Round your numbers to the nearest half foot and record them in column "W" of the calibration chart (see reverse side).

Step 4: Collect & Weigh Material

You will need either a sheet of canvas, a tarp, or a bucket to collect the material that is dispensed from the spreader, as well as a scale. Weight the object you are using to collect the material in, and record that value in the purple box above the discharge rate column. Collect material for 1 minute. Weigh the collected material and subtract the weight of the tarp/canvas/bucket. Record this value in the first purple column of the calibration chart. Do this 3 times for each conveyor/auger setting that is typically used. Average these three values together and record in the orange column in the calibration chart.



Step 5: Perform Calculations

Go inside and calculate your discharge rate using the calibration chart for each truck speed and conveyor/auger setting you normally use. Refer to the reverse side of this fact sheet for calculation instructions.

The formula you will be using is shown below:

$$D = \frac{B \times C}{A}$$

Step 6: Distribute Completed Calibration Cards!

Put a copy of the calibration chart in the truck you just calibrated. Also, leave a copy of the calibration chart in the office so you have a copy incase the original is damaged.

Produced in partnership with:





Calibration Chart (Hydraulic Type)

Material: _____ Truck/Spreader ID: _____

Date: _____ Performed by: _____

Tarp/Canvas/Bucket Weight		A	B	C	D											
			Discharge Rate (lbs/min)			Pounds of Material Discharged per 1000 square ft. for a C of C-(A)										
	W	A	Run 1	Run 2	Run 3	Discharge Rate (lbs/min) (Run 1+Run 2+Run3)/3	5 mph (~ 1:1)	10 mph (~ 1:1)	15 mph (~ 1:1)	20 mph (~ 1:1)	25 mph (~ 1:1)	30 mph (~ 1:1)				
Conveyor/ Auger Setting	Spread Width (ft.)	3.24 x W					3.24 ÷ A	6.48 ÷ A	9.72 ÷ A	12.96 ÷ A	16.20 ÷ A	19.44 ÷ A				
1																
2																
3																
4																
5																
EX	14	45.36	87	82	93		2 x 90.72 ÷ 45.36 = 4	4 x 90.72 ÷ 45.36 = 8	6 x 90.72 ÷ 45.36 = 12	8 x 90.72 ÷ 45.36 = 16	10 x 90.72 ÷ 45.36 = 20	12 x 90.72 ÷ 45.36 = 24				

(87+82+93)÷3= 84.67

Calculation Instructions: Multiply the spread width from column **W** by **3.24** and record the answer in column **A**. For each conveyor/auger setting, add **Run 1**, **Run 2**, and **Run 3** together. Divide the result by **3** and record in column **B** to get the average discharge rate. To find the pounds of material discharged per 1000 square feet, divide the number in the top half by the number in the bottom half of each column designated as variable "C". The "C" value for each travel speed is shown in red under that given speed. Multiply column **B** by the "C" value for that column and record the number of pounds of material discharged per 1000 square feet for the given speed. Record these numbers in the **D** columns. The full equation is shown here:

$$D = \frac{B \times C}{A}$$

Pony Motor-Run Spreader Calibration

NH Best Management Practices

WHY CALIBRATE?

You can't reduce your salt use if you don't know how much salt you actually use! The goal of calibrating is to know how much material you are putting down on a roadway or parking lot for every setting on your truck that you use. This is why calibrating your equipment is the first step to reducing salt use and saving money!

REMEMBER:

Each truck must be independently calibrated for each material it will be used to spread (the salt calibration card will be different than the sand calibration card).

Calibrations should be performed annually, or after a spreader is serviced.

CALCULATIONS:

There are a few simple calculations you must perform in order to complete the calibration. Once all of the necessary data is recorded, head back inside and warm up! Refer to the reverse side of this fact sheet for calculation instructions.



Step 1: Load the Truck

Partially load the truck. Half of a full load should be more than adequate for calibration purposes.



Step 2: Set Your Controls

Gate Height: Set the gate height to its lowest practical setting to start (approximately 1" to 1.5"). After the truck is calibrated for the lowest gate setting, calibrate for each 1/2" increment greater than the lowest setting. Continue until all gate settings you use are calibrated.

Engine Speed: Set the pony motor speed to the maximum setting, or to the setting you would normally use.



Step 3: Measure Spread Width

Measure the width that the material covers during spreading. Do this for each gate setting you are calibrating. Round your numbers to the nearest half foot and record them in column "W" of the calibration chart (see reverse side).

Step 4: Collect & Weigh Material

You will need either a sheet of canvas, a tarp, or a bucket to collect the material that is dispensed from the spreader, as well as a scale. Weight the object you are using to collect the material in, and record that value in the purple box above the discharge rate column. Collect material for 1 minute. Weigh the collected material and subtract the weight of the tarp/canvas/bucket. Record this value in the first purple column of the calibration chart. Do this 3 times for each gate opening that is typically used. Average these three values together and record in the orange column in the calibration chart.



Step 5: Perform Calculations

Go inside and calculate your discharge rate using the calibration chart for each truck speed and gate setting you normally use. Refer to the reverse side of this fact sheet for calculation instructions. The formula you will be using is shown below:

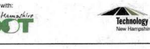
$$D = \frac{B \times C}{A}$$

Step 6: Distribute Completed Calibration Cards!

Put a copy of the calibration card in the truck you just calibrated. Also, leave a copy of the calibration card in the office so you have a copy incase the original is damaged.

Produced in partnership with:





Calibration Chart (Pony Motor Type)

Material: _____ Truck/Spreader ID: _____

Date: _____ Performed by: _____

Tarp/Canvas/Bucket Weight		A	B	C	D											
			Discharge Rate (lbs/min)			Pounds of Material Discharged per 1000 square ft. for a C of C-(A)										
	W	A	Run 1	Run 2	Run 3	Discharge Rate (lbs/min) (Run 1+Run 2+Run3)/3	5 mph (~ 1:1)	10 mph (~ 1:1)	15 mph (~ 1:1)	20 mph (~ 1:1)	25 mph (~ 1:1)	30 mph (~ 1:1)				
Gate Opening	Spread Width (ft.)	3.24 x W					3.24 ÷ A	6.48 ÷ A	9.72 ÷ A	12.96 ÷ A	16.20 ÷ A	19.44 ÷ A				
1"																
1.5"																
2"																
2.5"																
3"																
EX	14	45.36	87	82	93		2 x 90.72 ÷ 45.36 = 4	4 x 90.72 ÷ 45.36 = 8	6 x 90.72 ÷ 45.36 = 12	8 x 90.72 ÷ 45.36 = 16	10 x 90.72 ÷ 45.36 = 20	12 x 90.72 ÷ 45.36 = 24				

(87+82+93)÷3= 84.67

Calculation Instructions: Multiply the spread width from column **W** by **3.24** and record the answer in column **A**. For each gate setting, add **Run 1**, **Run 2**, and **Run 3** together. Divide the result by **3** and record in column **B** to get the average discharge rate. To find the pounds of material discharged per 1000 square feet, divide the number in the top half by the number in the bottom half of each column designated as variable "C". The "C" value for each travel speed is shown in red under that given speed. Multiply column **B** by the "C" value for that column and record the number of pounds of material discharged per 1000 square feet for the given speed. Record these numbers in the **D** columns. The full equation is shown here:

$$D = \frac{B \times C}{A}$$

Example: Step #1, blank calibration form

See the References and Resources section for a full size form to copy for calibration. This is how the empty form looks.(Keep a stack of these on a clipboard when ready to begin the calibration.)

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE_____ SPREADER # _____ MATERIAL_____

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1					
2					
3					

Figure 10: Blank calibration form

Example: Step #2, calibration form filled out during calibration

Fill in the header information and column 2, the discharge weight per setting.

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE 8-Aug-15 SPREADER # A4219 MATERIAL Rock Salt

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1	10				
2	22				
3	34				

Figure 11: Example calibration form with discharge and header information filled out

Example: Step #3, calibration form ready to put in truck for road application

Back in the shop, do the calculations to fill in the rest of the blanks. Multiply the weight in column 2 with the multiplier in the top row. This provides the pounds per mile that needed to fill in the table.

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE 8-Aug-15 SPREADER # A4219 MATERIAL Rock Salt

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1	10	120*	60	40	30
		1.9**	1.0	0.6	0.5
2	22	264	132	88	66
		4.2	2.1	1.4	1.0
3	34	408	204	136	102
		6.5	3.2	2.2	1.6

* top half of each row = lbs/lane mile. To get this number, multiply lbs/min by the factor shown for each speed.

** bottom half of each row = lbs/1000 sq.ft. To find this, divide the number in the top half by 63.

Figure 12: Example calibration form with pounds per lane mile filled out

Some fish species are affected by concentrations of less than 1000 ppm NaCl, about 1 to 1.5 tablespoons of salt in 5 gallons of water.

Example: Step #4, calibration form ready to zip tie to hand spreader or put in truck for parking lot application.

Divide by 63 to convert pounds per lane mile to pounds per 1,000 square feet. This is very useful for parking lot and sidewalk applications.

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE 8-Aug-15 SPREADER # A4219 MATERIAL Rock Salt

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1	10	*120	60	40	30
		**1.9	1.0	0.6	0.5
2	22	264	132	88	66
		4.2	2.1	1.4	1.0
3	34	408	204	136	102
		6.5	3.2	2.2	1.6

* top half of each row = lbs/lane mile. To get this number, multiply lbs/min by the factor shown for each speed.

** bottom half of each row = lbs/1000 sq.ft. To find this, divide the number in the top half by 63.

Figure 13: Example calibration form with pounds per 1000 sq. ft. filled out

Gravity Flow Equipment

This is applicable for equipment that does not have a motorized delivery system such as an auger. This type of equipment might be a pickup mounted spreader, gator mounted spreader or a hand push spreader. Gravity flow equipment is typically controlled by gate opening and speed of application.

Step 1: Calculate discharge rate

- Mark out a 10-foot stretch of pavement. (By increasing the size of the test area i.e., the longer the test area, the more accurate the results will be).
- Sweep it clean of sand or any other material.
- Using a constant speed, apply one pass of material to the test area.
- Measure the width the material is spread or bounces, in feet.
- Sweep up and weigh the material that is within the marked 10-foot stretch.
- Record the lever position/setting for the gate/chute. If there are no numbers for the positions, make permanent marks on the equipment to identify the positions.
- To improve accuracy, repeat this two more times and calculate the average weight of material applied.
- Record results in columns A, B, C, and D (Figure 14).

Step 2: Repeat step #1 for various settings.

Step 3: Fill out chart.

- Fill out columns E, F, and G (Figure 14).
- If using more than one type of material, repeat the test for each material.
- Place the completed calibration chart with the equipment.

Shortcuts:

- Put down a tarp over the application area; this makes it quicker to recover and weigh material.
- After the first pass, put a bag around spreader to catch discharge material. The first pass is needed to determine the spread width.

Calculate application rate:

Equipment: _____ Material: _____ Date: _____

A	B	C	D	E	F	G
Speed	Lever position or gate setting	Pounds spread in 10 feet*	Spread width in feet	Coverage area in sq. ft. (D x 10)*	Application rate in lbs./1000 ft² (1000/E x C)	Application rate in lbs./lane mile (12' width) (F x 63.4)
		EXAMPLE				
20 MPH	*Half-closed*	*0.4 lbs.*	*13 feet*	*130 sq. ft.*	*3.1 lbs. per 1000 sq. ft.*	*196 lbs./mile*

* If changing the test strip length, adjust the title in column C and the multiplier in column E.

Figure 14: Example calibration chart for gravity flow equipment

What if calibration is not a practice?

Even without calibrating the equipment, the amount of material to use can be determined but will take more time to calculate. Know the material, the size of the area to be treated, and the pavement temperature, then consult the application rate chart (application rate section) and do the math. Without calibration, the way to evenly distribute the recommended amount across the maintenance area must be determined by the professional. This approach may work well for treating sidewalks using the "chicken feed" method. For example:

- 20°F degrees pavement temperature and rising
- Using dry salt
- Sidewalk is 2,000 square feet
- Table recommends 2.25 lbs. per 1,000 square feet (for this situation)
- Measure about 4.5 lbs. of salt
- Figure out a way to spread it evenly over the 2,000 sq. ft. surface

Sand fills in lake bottoms, accelerating the aging process of lakes. Lakes get shallower as they age, some eventually becoming wetlands.

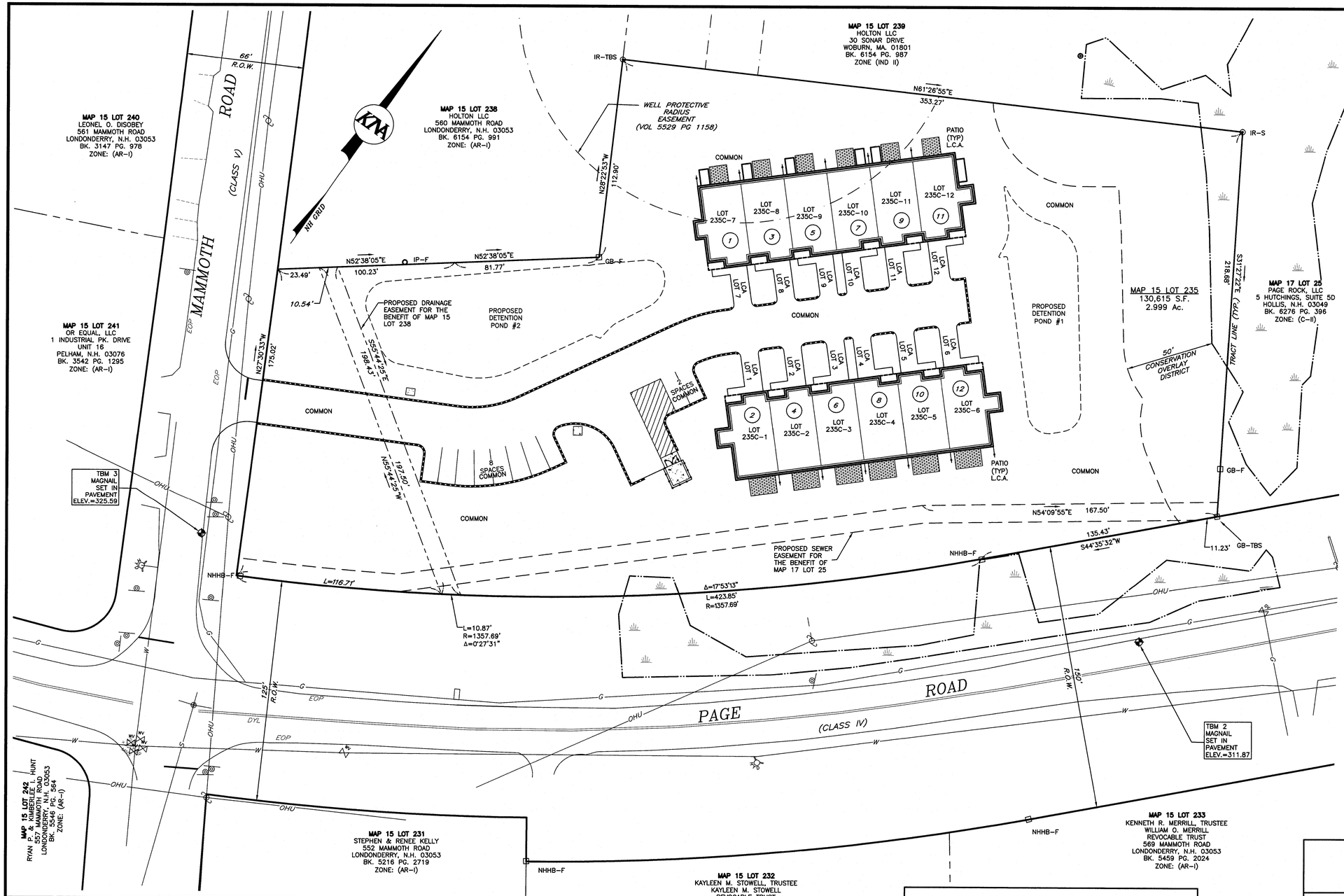
Calibration Charts

Calibration Chart for Gravity Flow Equipment

Vehicle or spreader number: _____ Date: _____

Material Type: _____ Calibrated by: _____

	A	B	C	D	E
Speed	Lever position or gate setting	Lbs. Material recovered in 10 feet	Spread width in feet	Square feet covered with material (B x 10)	Application rate in lbs./1000 ft² (1000/C x A)	Application rate in lbs./lane mile (12' width) (D x 63.4)



NOTES:

1. THE PURPOSE OF THIS PLAN IS TO CONVERT THE EXISTING MULTI-FAMILY RESIDENTIAL SITE PLAN FOR TAX MAP 15 LOT 235, 3 PAGE ROAD INTO A CONDOMINIUM CONSISTING OF 12 UNITS WITH 2 BEDROOMS EACH.
2. EXISTING AREA OF PARCEL = 130,615 S.F. OR 2.999 ACRES.
3. THE SUBJECT PARCEL IS LOCATED ENTIRELY WITHIN COMMERCIAL II (C-II) ZONING DISTRICT. DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS:
   - FRONT 60 FT
   - SIDE 30 FT
   - REAR 30 FT
   - LANDSCAPE BUFFER 50 FT
   - CONSERVATION OVERLAY DISTRICT
     50 FT FROM DELINEATED WETLANDS
     100 FT FROM NAMED STREAMS
4. BOUNDARY INFORMATION SHOWN HEREON IS BASED ON AN ACTUAL FIELD SURVEY MADE BY THIS OFFICE IN JANUARY OF 2022.
5. HORIZONTAL DATUM IS NAD83, VERTICAL DATUM IS NAVD88 OBTAINED FROM GPS SURVEY METHODS POST PROCESSED THROUGH NOAA-OPUS. NORTH ORIENTATION IS NAD83.
6. EXAMINATION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) FOR THE TOWN OF LONDONDERRY N.H., ROCKINGHAM COUNTY, MAP NUMBER 33015C0317E, PANEL 317 OF 681, EFFECTIVE DATE: MAY 17, 2005 INDICATES THAT NO PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN A DESIGNATED FLOOD HAZARD ZONE.
7. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN HEREON IS APPROXIMATE. KEACH-NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF THE UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR OR OWNER SHALL CONTACT DIG-SAFE AT 811.
8. EASEMENTS, RIGHTS AND RESTRICTIONS SHOWN OR IDENTIFIED HEREON ARE THOSE FOUND DURING RESEARCH AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER EASEMENTS, RIGHTS AND RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF THE SUBJECT PREMISES MAY DETERMINE.
9. THIS SITE WILL BE SERVICED BY MUNICIPAL SEWER AND MANCHESTER WATER WORKS WATER.
10. THERE ARE NO STATE PERMITS REQUIRED FOR THE CONDOMINIUM CONVERSION.
11. THIS PLAN SET CONTAINS A TOTAL OF 2 SHEETS, ALL SHEETS ARE RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AND ARE ON FILE AT THE TOWN OF LONDONDERRY PLANNING DEPARTMENT.

REFERENCE PLANS:

1. "SUBDIVISION PLAN OF LAND OF A.J. & G.Y. HUARD; SUBDIVISION PLAN OF LAND OF MR. & MRS. LEO DUBOIS." SCALE: 1"=50'. DATED: JUNE, 1969. PREPARED BY: P. BRUSQUINI P.E. R.C.R.D. PLAN #1438
2. "TOWN OF LONDONDERRY, N.H. MAP 17 PARCEL 25." SCALE: 1"=50'. DATED: JANUARY, 1982. PREPARED BY: EDWARD N. HERBERT ASSOC. INC. R.C.R.D. PLAN #D-12463.
3. "RESOLUTION PLAN, OLD PAGE ROAD." SCALE: 1"=40'. DATED: JANUARY 29, 2008. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #D-36063.
4. "LOT LINE ADJUSTMENT-MAP 15 LOTS 235 & 239." SCALE: 1"=100'. DATED: JANUARY 15, 2014. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #D-38211.
5. "LOT 17-7 SUBDIVISION PLAN." SCALE: 1"=60'. DATED: DECEMBER 19, 2014. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #D-40123.
6. "PLAN OF PROPOSED FEDERAL AID PROJECT ROCKINGHAM ROAD." SCALE: 1"=50'. LAST REVISED: DECEMBER 22, 1954 N.H. PROJECT NO. P-2979.
7. "RESIDENTIAL SITE PLAN, PAGE ROCK TOWNHOMES, TAX MAP 15 LOTS 235 & 236, 3 PAGE ROAD, LONDONDERRY, NEW HAMPSHIRE." SCALE: 1"= 30'. DATED: MARCH 20, 2025. PREPARED BY: THIS OFFICE.

OWNER OF MAP 15 LOT 235
SIGNATURE: _____ PAGE ROCK LLC
DATE: 2/16/2026

OWNER OF MAP 15 LOT 236
SIGNATURE: _____ PAGE ROCK LLC
DATE: 2/16/2026

LEGEND

⊡ NHHB-F	NH HWY BOUND FOUND	———	EDGE OF PAVEMENT
⊡ GB-F	GRANITE BOUND FOUND	○○○○○○○○○○	STONEWALL
○ IP-F	IRON PIPE FOUND	— - — - —	BUILDING SETBACK
⊙ IR-S	IRON ROD SET	- - - - -	EASEMENT
⊡ GB-TBS	GRANITE BOUND TO BE SET	— — — —	WETLAND BUFFER
⊙ IR-TBS	IRON ROD TO BE SET	- - - - -	LANDSCAPE BUFFER
◆	BENCHMARK	———	PROPOSED EOP
		▬▬▬▬	PROPOSED BIT. CURB
⊣	SIGN	———	PROPOSED RET. WALL
◎	DRAINAGE MANHOLE		
▤	CATCH BASIN		
⋈	WATER VALVE		
⊛	HYDRANT		
ⓢ	SEWER MANHOLE		
⊐	FLARED END SECTION		
⌀	UTILITY POLE		
Ⓦ	WELL		

DIG SAFE
811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N: 154442.42, E: 1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET
N: 154187.05, E: 1053618.44	ELEV.=325.59 (NAVD88)	BENCHMARK #3 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

CERTIFICATIONS

I HEREBY CERTIFY THAT THIS PLAN IS ACCURATE; THAT IT COMPLIES WITH THE PROVISIONS OF NEW HAMPSHIRE RSA 356-B: 20, I & V, AND ALL UNITS SHOWN ARE "NOT YET BEGUN."

THIS PLAN WAS PREPARED BY ME OR THOSE UNDER MY DIRECT SUPERVISION, FURTHER, THE BOUNDARY INFORMATION IS THE RESULT OF AN ACTUAL FIELD SURVEY MADE BY THIS OFFICE IN JANUARY OF 2022.

_____ 3/9/26
LICENSED LAND SURVEYOR — DATE

STATE OF NEW HAMPSHIRE — LICENSED LAND SURVEYOR — NO. 911 — CHRISTOPHER A. HICKEY — SIGNATURE

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD FOR PHASE _____
ON DATE: _____
CERTIFIED BY:

_____

_____

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D HOLLIS, N.H. 03049
R.C.R.D. BOOK 6276 PAGE 399
R.C.R.D. BOOK 6276 PAGE 402

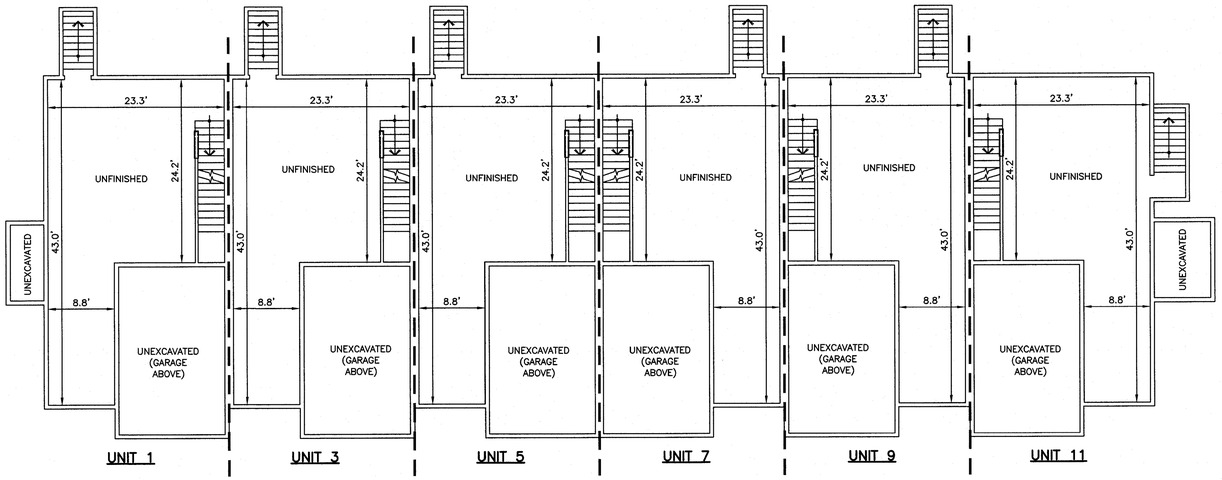
CONDOMINIUM SITE PLAN

PAGE ROCK TOWNHOMES, A CONDOMINIUM

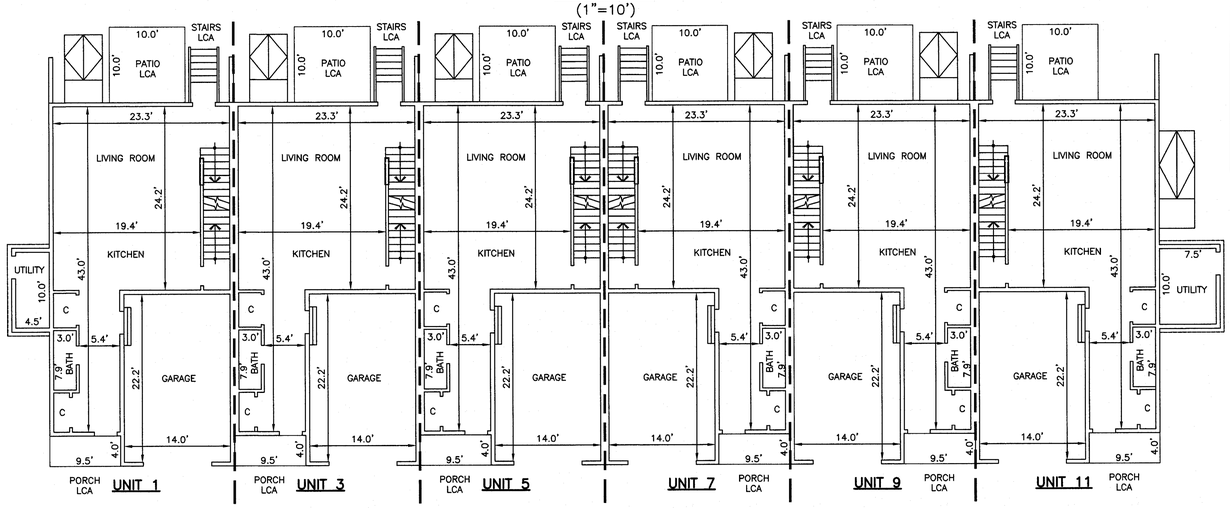
MAP 15 LOT 235
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
5 Commerce Park North, Suite 201, Bedford, NH 03110 Phone (603) 627-2881

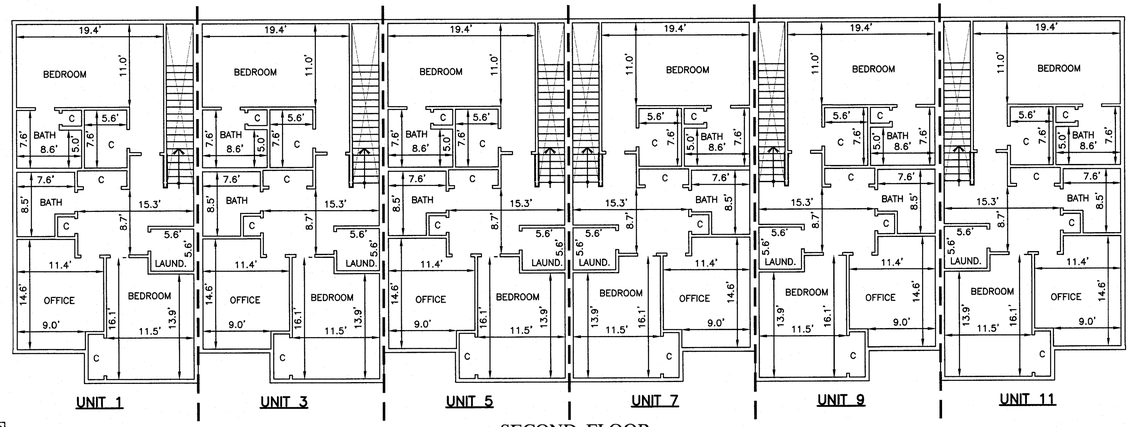
PROJ. NO: 21-0113-1
DATE: APRIL 2, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. CS1



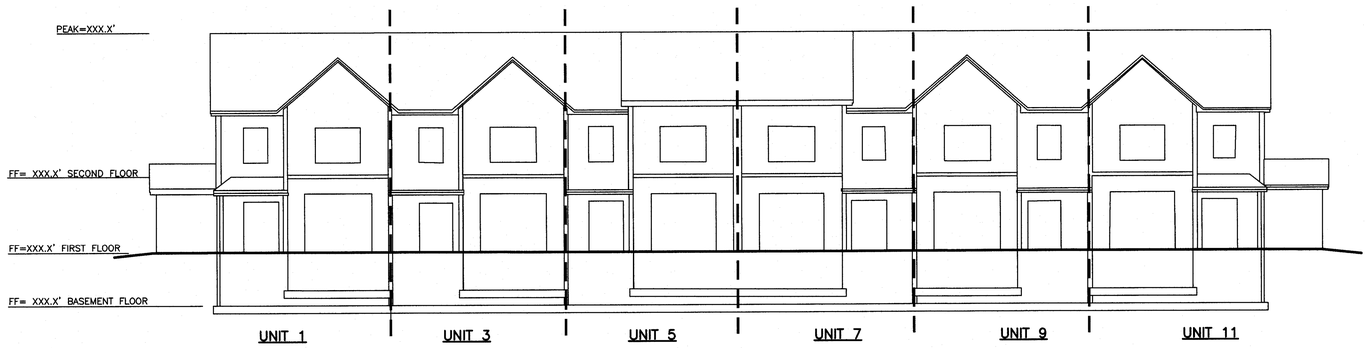
BASEMENT
(1"=10')



FIRST FLOOR
(1"=10')



SECOND FLOOR
(1"=10')



ELEVATION VIEW
(NOT TO SCALE)

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD FOR PHASE _____
ON DATE: _____
CERTIFIED BY:

_____

_____

CERTIFICATIONS
I HEREBY CERTIFY THAT THIS PLAN IS ACCURATE; THAT IT COMPLIES WITH THE PROVISIONS OF NEW HAMPSHIRE RSA 356-B:20, II AND ALL UNITS SHOWN ARE "NOT YET BEGUN."

LICENSED LAND SURVEYOR — DATE: 3/9/26

STATE OF NEW HAMPSHIRE — No. 911 — CHRISTOPHER J. HICKEY — LICENSED LAND SURVEYOR — SIGNATURE

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

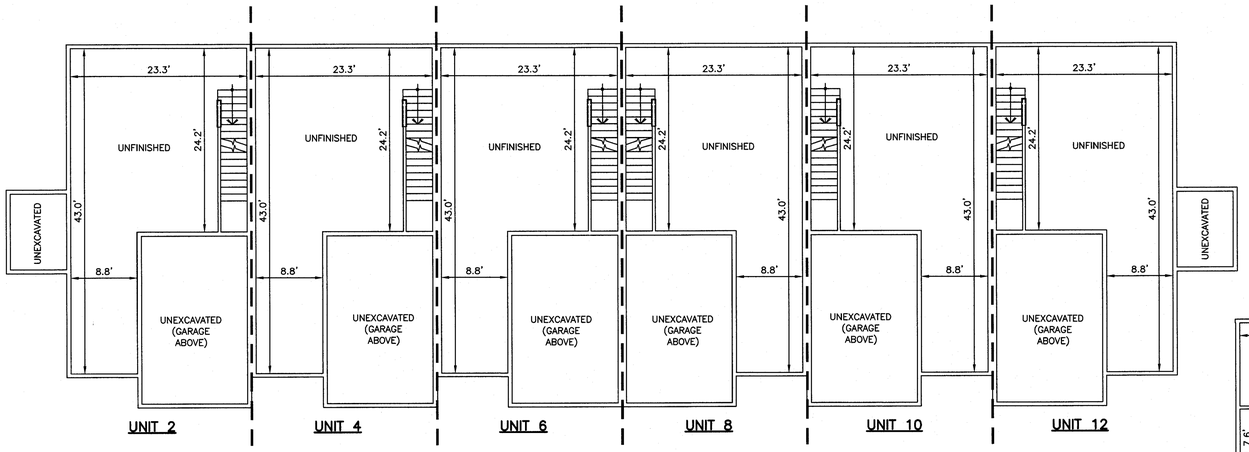
CONDOMINIUM FLOOR PLAN

PAGE ROCK TOWNHOMES, A CONDOMINIUM

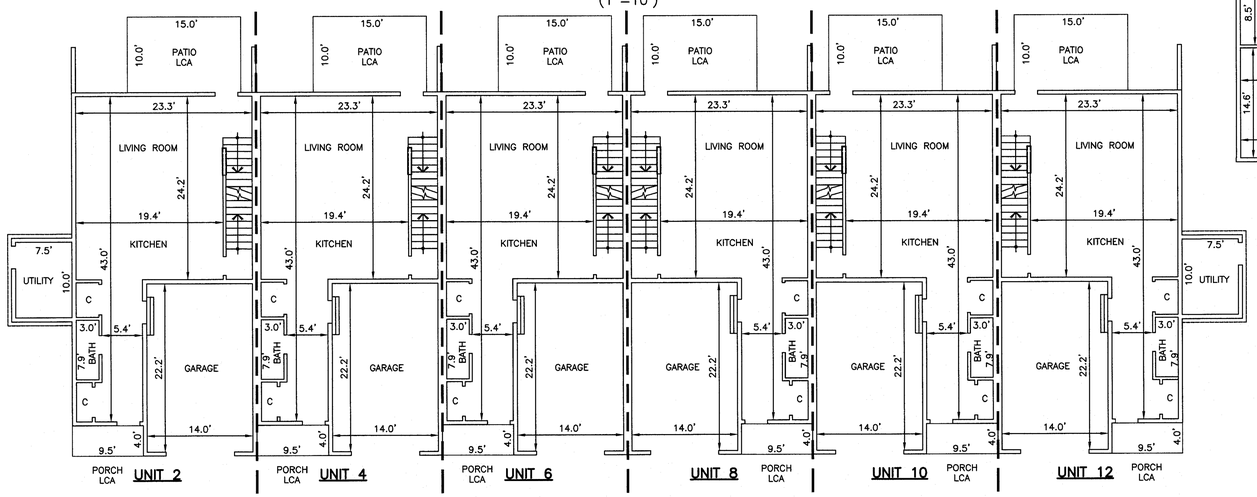
MAP 15 LOT 235
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
5 Commerce Park North, Suite 201, Bedford, NH 03110 Phone (603) 627-2881

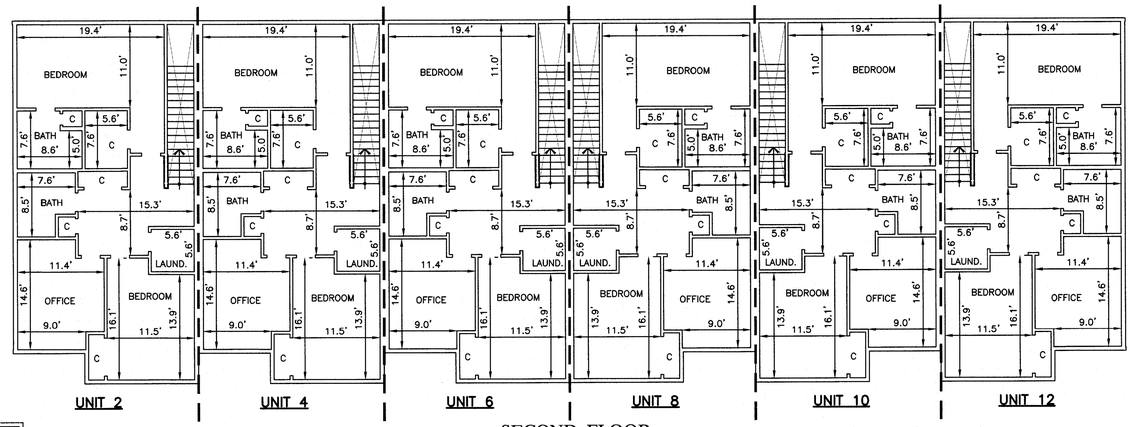
PROJ. NO: 21-0113-1
DATE: APRIL 2, 2025
SCALE: AS-SHOWN
FILE NO.:
SHEET NO. CF1



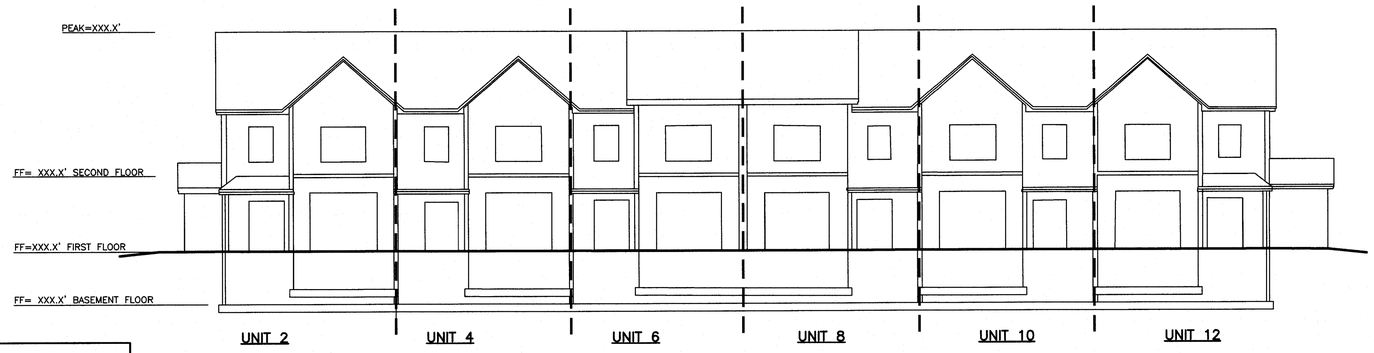
BASEMENT
(1"=10')



FIRST FLOOR
(1"=10')



SECOND FLOOR
(1"=10')



ELEVATION VIEW
(NOT TO SCALE)

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD FOR PHASE _____
ON DATE: _____
CERTIFIED BY:

_____

_____

CERTIFICATIONS

I HEREBY CERTIFY THAT THIS PLAN IS ACCURATE; THAT IT COMPLIES WITH THE PROVISIONS OF NEW HAMPSHIRE RSA 356-B: 20, II AND ALL UNITS SHOWN ARE "NOT YET BEGUN."

LICENSED LAND SURVEYOR — DATE: 3/9/26

STATE OF NEW HAMPSHIRE — No. 919 CHRISTOPHER J. HICKEY — LICENSED LAND SURVEYOR — SIGNATURE

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

CONDOMINIUM FLOOR PLAN

PAGE ROCK TOWNHOMES, A CONDOMINIUM

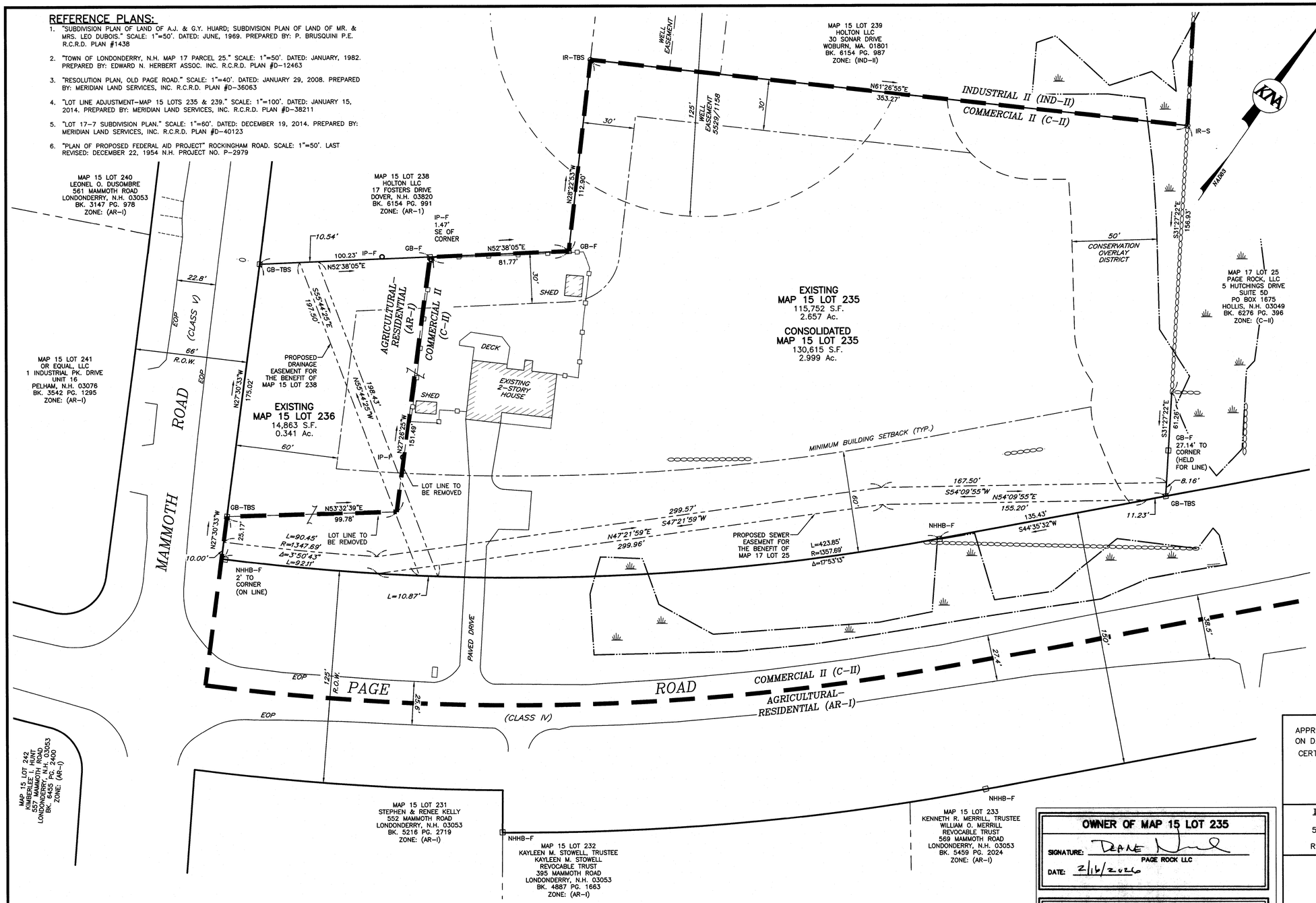
MAP 15 LOT 235
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

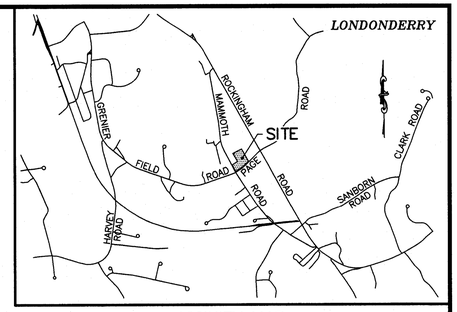
KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
5 Commerce Park North, Suite 201, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: APRIL 2, 2025
SCALE: AS-SHOWN
FILE NO.:
SHEET NO. CF2

REFERENCE PLANS:

1. "SUBDIVISION PLAN OF LAND OF A.J. & G.Y. HUARD; SUBDIVISION PLAN OF LAND OF MR. & MRS. LEO DUBOIS." SCALE: 1"=50'. DATED: JUNE, 1969. PREPARED BY: P. BRUSQUINI P.E. R.C.R.D. PLAN #1438
2. "TOWN OF LONDONDERRY, N.H. MAP 17 PARCEL 25." SCALE: 1"=50'. DATED: JANUARY, 1982. PREPARED BY: EDWARD N. HERBERT ASSOC. INC. R.C.R.D. PLAN #D-12463
3. "RESOLUTION PLAN, OLD PAGE ROAD." SCALE: 1"=40'. DATED: JANUARY 29, 2008. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #D-36063
4. "LOT LINE ADJUSTMENT-MAP 15 LOTS 235 & 239." SCALE: 1"=100'. DATED: JANUARY 15, 2014. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #D-38211
5. "LOT 17-7 SUBDIVISION PLAN." SCALE: 1"=60'. DATED: DECEMBER 19, 2014. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #D-40123
6. "PLAN OF PROPOSED FEDERAL AID PROJECT" ROCKINGHAM ROAD. SCALE: 1"=50'. LAST REVISED: DECEMBER 22, 1954 N.H. PROJECT NO. P-2979





VICINITY MAP
SCALE: 1" = 2,500'±

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO CONSOLIDATE LONDONDERRY TAX MAP 15 LOTS 235 & 236 INTO ONE LOT TO BE KNOWN AS LOT 235 WITH 130,615 SF OR 2.999 ACRES.
2. EXISTING LOT AREAS
   LOT 235: 115,752 S.F. OR 2.657 ACRES
   LOT 236: 14,863 S.F. OR 0.341 ACRES
3. THE SUBJECT PARCEL LIES WITHIN THE COMMERCIAL II (C-II) ZONING DISTRICT AND IS SUBJECT TO THE FOLLOWING DIMENSIONAL REQUIREMENTS.
   MINIMUM BUILDING SETBACKS:
   - FRONT 60 FT
   - SIDE 30 FT
   - REAR 30 FT
4. BOUNDARY INFORMATION SHOWN HEREON IS BASED ON A FIELD SURVEY PERFORMED BY THIS OFFICE IN JANUARY OF 2022.
5. HORIZONTAL DATUM IS NAD83, VERTICAL DATUM IS NAVD88 OBTAINED FROM GPS SURVEY METHODS POST PROCESSED THROUGH NOAA-OPUS. NORTH ORIENTATION IS NAD83.
6. EXAMINATION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAPS (FIRM) FOR THE TOWN OF LONDONDERRY, NEW HAMPSHIRE, ROCKINGHAM COUNTY, COMMUNITY PANEL NUMBER 33015C0317E PANEL NUMBER 317 OF 681. EFFECTIVE DATE: MAY 17, 2005, INDICATES THAT NO PORTION OF THE SUBJECT PREMISES IS LOCATED WITHIN A DESIGNATED FLOOD ZONE.
7. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. KEACH-NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE, THE OWNER OR CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
8. EASEMENTS, RIGHTS AND RESTRICTIONS SHOWN OR IDENTIFIED HEREON ARE THOSE FOUND DURING RESEARCH AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER EASEMENTS, RIGHTS AND RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF THE SUBJECT PREMISES MAY DETERMINE.

DIG SAFE
811
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD FOR PHASE _____
ON DATE: _____
CERTIFIED BY:

LOT 235 OWNER/APPLICANT:	LOT 236 OWNER
PAGE ROCK, LLC 5 HUTCHINGS DRIVE, SUITE 5D HOLLIS, N.H. 03049 R.C.R.D. BOOK 6276 PAGE 399	PAGE ROCK, LLC PO BOX 1675 HOLLIS, N.H. 03049 BOOK 6276 PAGE 402

OWNER OF MAP 15 LOT 235
SIGNATURE: _____ PAGE ROCK LLC
DATE: 2/16/2026

OWNER OF MAP 15 LOT 236
SIGNATURE: _____ PAGE ROCK LLC
DATE: 2/16/2026

LOT CONSOLIDATION PLAN
PAGE ROCK TOWNHOMES
MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

LEGEND

NHHB-F	NH HWY BOUND FOUND		HYDRANT
GB-F	GRANITE BOUND FOUND	S	SEWER MANHOLE
IP-F	IRON PIPE FOUND		FLARED END SECTION
IR-S	IRON ROD SET		UTILITY POLE
GB-TBS	GRANITE BOUND TO BE SET	W	WELL
IR-TBS	IRON ROD TO BE SET		EDGE OF PAVEMENT
	BENCHMARK		STONEWALL
	SIGN		BUILDING SETBACK
D	DRAINAGE MANHOLE		EASEMENT
	CATCH BASIN		WETLAND BUFFER
	WATER VALVE		LANDSCAPE BUFFER
			ZONE LINE

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN DRAWN FROM FIELD SURVEY INFORMATION AND OR PLOTTED FROM EXISTING DRAWINGS. KEACH-NORDSTROM ASSOCIATES, INC. MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHER, KEACH-NORDSTROM ASSOCIATES, INC. DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. KEACH-NORDSTROM ASSOCIATES, INC. HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

STATE OF NEW HAMPSHIRE No. 911 CHRISTOPHER J. HICKEY LICENSED LAND SURVEYOR SIGNATURE

SURVEYOR'S CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR THOSE UNDER MY DIRECT SUPERVISION. FURTHER, THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY MADE BY THIS OFFICE DURING JANUARY OF 2022 AND SURVEY HAS A RELATIVE ERROR OF CLOSURE OF ONE PART IN TEN THOUSAND (1:10,000) OR BETTER.

LICENSED LAND SURVEYOR — DATE: 3/9/26

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. S1

Stormwater Management Report

Page Rock Townhomes

Map 15; Lots 235 & 236
3 Page Road
Londonderry, New Hampshire



February 20, 2026

KNA Project No. 21-0113-1

Prepared For: Page Rock, LLC
5 Hutchings Drive, Suite 5D
Hollis, NH 03049

Prepared By: Keach-Nordstrom Associates, Inc.
10 Commerce Park North, Suite 3
Bedford, New Hampshire 03110
(603) 627-2881
(603) 627-2915 (fax)

KNA KEACH-NORDSTROM ASSOCIATES, INC.

Table of Contents

1. PROJECT NARRATIVE

I. INTRODUCTION
- A. PROJECT DESCRIPTION
- B. EXISTING SITE CONDITIONS

II. STORM DRAIN ANALYSIS & DESIGN
- A. METHODOLOGY
- B. PRE-DEVELOPMENT DRAINAGE CONDITIONS
- C. POST-DEVELOPMENT DRAINAGE CONDITIONS
- D. SUMMARY

III. EROSION & SEDIMENTATION CONTROL PROVISIONS
- A. TEMPORARY EROSION CONTROL MEASURES
- B. CONSTRUCTION SEQUENCE
- C. PERMANENT EROSION CONTROL MEASURES

2. FIGURES & SPREADSHEETS

FIGURE NO. 1 – AERIAL IMAGE
FIGURE NO. 2 – USGS IMAGE
FIGURE NO. 3 – SCS SOILS MAP
FIGURE NO. 4 – EXTREME PRECIPITATION TABLES
FIGURE NO. 5 – RIP RAP OUTLET PROTECTION APRON CALCULATIONS

3. HYDROCAD DRAINAGE ANALYSIS

I. 25-YR, PRE-DEVELOPMENT
II. 25-YR, POST-DEVELOPMENT
III. 50-YR POND SUMMARIES

APPENDIX

PRE-DEVELOPMENT DRAINAGE AREAS PLAN
POST-DEVELOPMENT DRAINAGE AREAS PLAN
STORMWATER OPERATION & MAINTENANCE PLAN

I. INTRODUCTION

A. Project Description

The project proposes to consolidate Lots 235 & 236 and develop the site to accommodate a proposed townhouse development, consisting of two six-unit buildings with an associated paved driveway and parking lot. Site work will include construction of the proposed buildings, driveway, parking lot, utilities, and the necessary stormwater management provisions. The proposed stormwater management system includes a closed drainage system and two detention ponds.

B. Existing Site Conditions

The subject property, after consolidation, is approximately 2.999 acres in total area, and is located at 3 Page Road in Londonderry's Commercial II (C-II) Zoning District. The lot is currently developed with an existing 2-story house, a driveway, two sheds, and a septic system. The remainder of the lot is wooded and undeveloped. There are two wetland areas on the site which drain to an existing 18" RCP that crosses under Page Road. The lot is bordered by an industrial use to the north, an undeveloped lot to the east, Page Road to the south, and Mammoth Road to the west.

According to a High Intensity Soil Survey, completed on July 8, 2022, by Luke Hurley, CSS #095, the predominant soil types onsite are Montauk soils, Scituate-Newfields Complex soils, and 115/VP Scarboro soils all with slopes ranging from 0-8%. Montauk and Scituate-Newfields soils are classified as Hydrologic Soil Group (HSG) 'C", whereas Scarboro soils are classified as HSG 'D'.

II. STORM DRAINAGE ANALYSIS & DESIGN

A. Methodology

In accordance with the provisions of the Town of Londonderry, and generally accepted engineering practices, the 25-year and 50-year frequency storms have each been used in the various aspects of analysis and design of stormwater management considerations for the subject site. All proposed stormwater measures have been designed for the 25-year frequency storm while the proposed detention pond has been designed to provide one foot of freeboard in the 50-year frequency storm.

KNA utilizes HydroCAD version 10.0 to analyze both pre and post-development watershed characteristics. This computer software system is based largely on hydrology techniques (TR-20) developed by the Soil Conservation Service (now the Natural Resources Conservation Service). In addition, the software derives Time of Concentration values using the methodology contained within USDA-S.C.S. publication Urban Hydrology for Small Watersheds Technical Release No. 55 (TR 55).

All design and analysis calculations performed using the referenced methodologies are attached to this report. The minimum time of concentrations used for the analysis is 6 minutes. These calculations document each catchment area, a breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, Manning's "n" value, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the "Pre/Post Development Drainage Area Plans" graphically define and illustrate the extent of each watershed or catchment area investigated.

B. Pre-Development Drainage Conditions

In the pre-development scenario, eleven (11) points of analysis (POA) have been identified as the appropriate points to compare pre vs. post development rates of stormwater discharge. These points of analysis reflect the main discharge points of the site and were analyzed to show the impact of the proposed improvements.

The pre-development drainage model's POA's are further described as follows:

- Link A — Map 15 Lot 233
- Link B — Map 17 Lot 25
- Link C — Page Road
- Link D — Mammoth Road
- Link E — Map 17 Lot 7
- Link F — Map 15 Lot 239
- Link G — Map 15 Lot 238
- Link H — Map 15 Lot 240
- Link I — Map 15 Lot 241
- Link J — Map 15 Lot 231
- Link K — Map 15 Lot 232

In general, the site slopes from east to west and runoff ultimately drains to an existing 18" RCP underneath Page Road (Link A). Runoff from the majority of Lots 25 and 235 and the abutting lots to the north flows through a wetland channel, located adjacent to the eastern property line, or to a roadside swale along Page Road, which both ultimately drain to Link A as well. Additional points of analysis include the property line between Lots 235 and 25 (Link B) and the Page Road right-of-way (Link C). All other points of analysis represent the abutting properties, which are either located upstream or across the road from the proposed development. For a more visual description of the information presented in this section, please refer to the attached "Pre-Development Drainage Areas Plan" attached in the appendix of this report.

C. Post-Development Drainage Conditions:

The same POA's that were identified in the pre-development scenario have been analyzed in the post-development scenario. The proposed stormwater management system utilizes both closed and open practices for the collection, storage, and detention of runoff.

Stormwater runoff generated from the eastern half of the proposed buildings and driveway will be collected by a closed drainage network and directed towards proposed Detention Pond #1, located at the end of the proposed driveway. Runoff generated from the western half of the proposed buildings and driveway will be collected by a separate closed drainage network and directed towards proposed Detention Pond #2, located west of the proposed driveway. Both ponds are designed to decrease peak rates in all design storms while providing greater than one foot of freeboard in the 50-year storm event. Runoff leaving Detention Pond #1 will be directed to an existing drainage structure at the eastern property corner via a 15" HDPE outlet pipe and conveyance swale, while runoff leaving Detention Pond #2 will be directed to the existing roadside wetland along Page Road via another 15" HDPE. All detention ponds ultimately discharge to Link A via the existing culvert beneath Page Road.

The peak stormwater runoff rate for the specific storm frequencies are presented and analyzed in the subsequent summary section of this report (Table 1). For a more visual description of the information presented in this section, please refer to the attached "Post-Development Drainage Areas Plan" attached in the appendix of this report.

D. Summary:

The subject site complies with the Town of Londonderry regulations regarding stormwater mitigation. As reported below, there is no increase in peak rates in all storm events. The results are reported below in Table 1. Table 2 summarizes all swales in the drainage analysis, Table 3 summarizes all ponds in the drainage analysis, and Table 4 summarizes all pipes in the drainage analysis.

Table 1: Peak Flow Discharge Rate

Site Pre-Development vs. Post-Development (cfs)		
Description	**25-Year**	
24-hr Rainfall	4.42 in/hr	
	Pre	**Post**
A	13.14	13.02
B	2.19	1.79
C	1.74	1.55
D	0.00	0.00
E	0.00	0.00
F	0.00	0.00
G	0.00	0.00
H	0.00	0.00
I	0.00	0.00
J	0.00	0.00
K	0.00	0.00

Table 2: Swale Summary Table (25-Year Design Storm)

Location	Conveyance Swale #1 (4R)	Conveyance Swale #2 (5R)	Conveyance Swale #3 (6R)
Length (ft)	135.0	140.0	100.0
Slope ('/')	0.0150	0.0285	0.0300
Channel Width (ft)	1.00	1.00	1.00
Manning's 'n'	0.030	0.030	0.030
Side Slope (H:V)	3:1	3:1	3:1
Peak Discharge 25-Year Storm (cfs)	2.05	1.36	0.88
Flow Depth (ft)	0.39	0.28	0.22
Peak Vel. (FPS)	2.38	2.70	2.45
HGL (ft)	319.37	317.28	310.96

Table 3: Detention Pond Analysis

Location	Detention Pond #1 (13P)		Detention Pond #2 (12P)	
Pond Bottom	315.00		315.50	
Pond Top	318.00		319.00	
Outlet Invert	314.14		315.50	
Storm Event	**25-Yr**	**50-Yr**	**25-Yr**	**50-Yr**
Q-in (CFS)	2.57	3.21	11.77	15.64
Q-out (CFS)	0.88	1.41	6.81	8.57
Peak Elevation	316.71	316.89	317.22	317.67

Table 4: Pipe Summary Table (25-Year Design Storm)

Location	Size (in)	Type	Length (ft)	Slope ('/')	Manning's 'N'	Peak Discharge (cfs)	Flow Depth (ft)	Peak Vel. (FPS)	HGL (ft)
RD#1 (1P)	6"	HDPE	70.6	0.0050	0.013	0.20	0.25	2.02	318.29
RD#2 (2P)	6"	HDPE	8.0	0.0050	0.013	0.20	0.16	3.65	318.26
EX CB (3P)	8"	PVC	228.7	0.0187	0.010	1.22	0.36	6.35	315.19
15" RCP (4P)	15"	RCP	24.6	0.0829	0.011	0.48	0.13	7.28	316.73
18" RCP (5P)	18"	RCP	112.5	0.0096	0.011	12.50	1.27	7.85	305.56
24" RCP (6P)	24"	RCP	43.9	0.0123	0.011	14.50	0.99	9.39	306.69
RCB (7P)	12"	RCP	44.4	0.0095	0.011	0.88	0.32	4.16	306.14
RCB (9P)	6"	PVC	10.0	0.0271	0.010	1.19	0.41	6.96	317.98
EX CB (10P)	12"	CMP	10.0	0.0130	0.025	2.11	1.00	3.05	315.40
15" HDPE (11P)	15"	HDPE	41.0	0.0707	0.013	3.14	0.33	11.99	322.08
DP#1 (13P)	15"	HDPE	18.0	0.0200	0.013	0.88	0.26	4.71	313.92
DP#2 (14P)	24"	HDPE	75.0	0.0050	0.013	6.61	0.89	4.87	316.01
CB#5 (15P)	15"	HDPE	22.0	0.0100	0.013	0.52	0.24	3.16	318.67
CB#4 (16P)	15"	HDPE	23.0	0.0100	0.013	1.02	0.34	3.84	318.44
CB#7 (18P)	15"	HDPE	23.0	0.0050	0.013	2.85	0.71	3.98	318.53
CB#8 (19P)	15"	HDPE	20.0	0.0050	0.013	1.78	0.54	3.49	318.16

III. EROSION & SEDIMENTATION CONTROL PROVISIONS

A. Temporary Erosion Control Measures

As an integral part of the engineering design of this site, an erosion and sedimentation control plan has been developed with the intent of limiting the potential for soil loss and associated receiving water quality degradation, both during and after the construction period. As the project plans indicate, traditional temporary erosion and sedimentation control devices and practices, such as siltation fencing and temporary block and sediment barriers at. In preparation of these provisions, reference was made to the New Hampshire Stormwater Manual; Volume 3: Erosion and Sediment Temporary Controls During Construction. Construction details for each temporary erosion control measure and practice specified have been added to the project plans. These plans also contain a number of erosion control notes, which are offered to the selected contractor in order to supplement the specified measures and practices to the extent practical.

B. Construction Sequence

A site-specific construction sequence sensitive to limiting soil loss due to erosion and associated water quality degradation was prepared specifically for this project and is shown on the project plans. As pointed out in the erosion control notes, it is important for the contractor to recognize that proper judgment in the implementation of work will be essential if erosion is to be limited and protection of completed work is to be realized. Moreover, any specific changes in sequence and/or field conditions affecting the ability of specific erosion control measures to adequately serve their intended purpose should be reported to this office by the contractor. Further, the contractor is encouraged to supplement specified erosion control measures during the construction period where and when in his/ her best judgment additional protection is warranted.

C. Permanent Erosion Control Measures

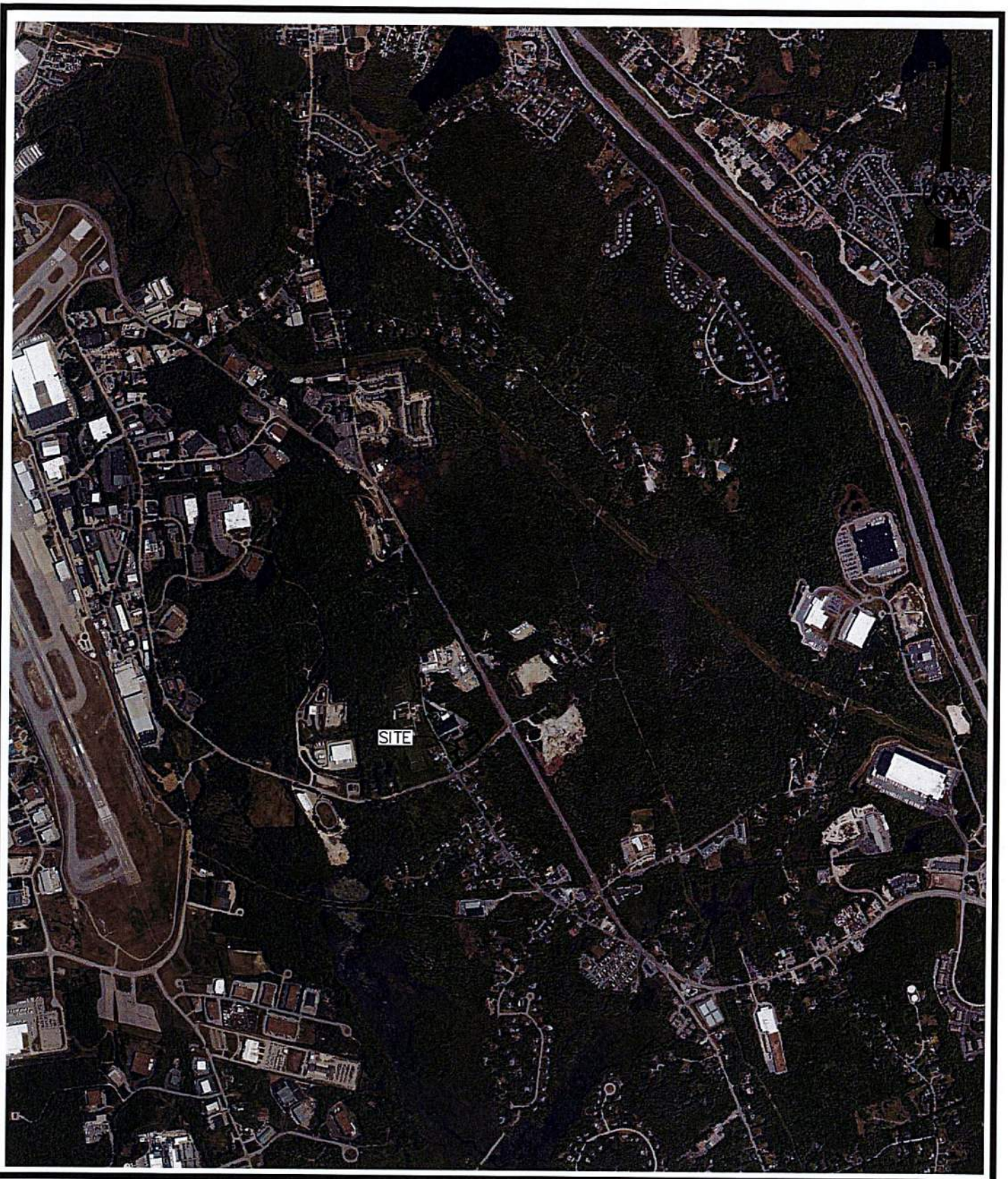
In the design of this site, consideration was given to limiting the potential for long-term erosion of completed improvements. As a result, several permanent erosion control measures were incorporated into the site design. These provisions include:

1) Specification of a turf establishment schedule and seed mixture, utilizing materials and workmanship recognized as appropriate for the site conditions at hand; and

2) Detention ponds were designed to reduce runoff.

FIGURES AND SPREADSHEETS

FIGURE NO. 1 – AERIAL IMAGE
FIGURE NO. 2 – USGS IMAGE
FIGURE NO. 3 – SCS SOILS MAP
FIGURE NO. 4 – EXTREME PRECIPITATION TABLES
FIGURE NO. 5 – RIP RAP OUTLET PROTECTION APRON CALCULATIONS



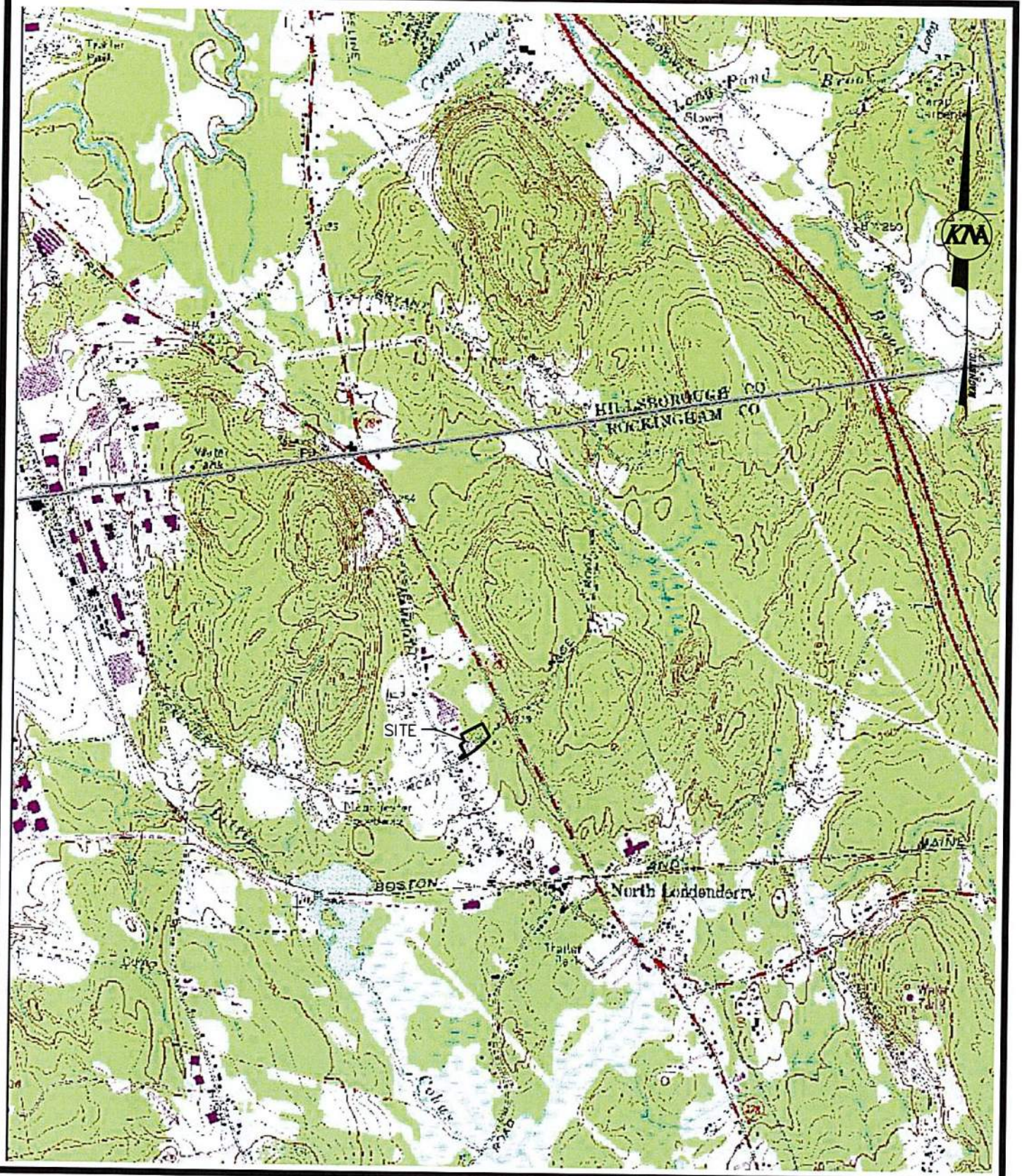
KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110
Phone (603) 627-2881

TITLE: AERIAL

PAGE ROCK TOWNHOMES

MAP 15; LOT 235 - 3 PAGE ROAD - LONDONDERRY, NH

DATE: JANUARY 7, 2025	JOB. NO. 21-0113-1
SCALE: 1" = 2000'	SHEET 1 OF 1

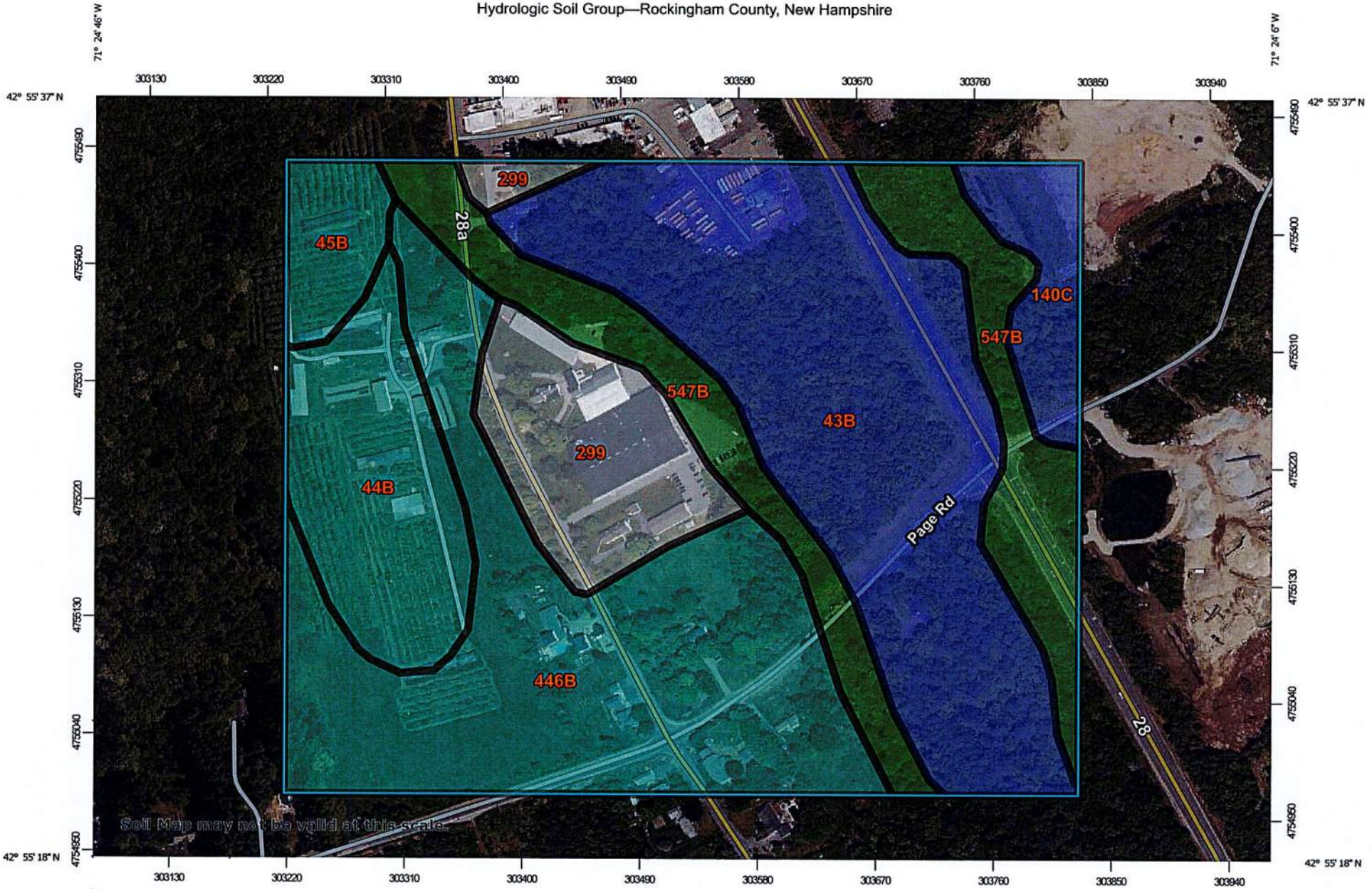


KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110
Phone (603) 627-2881

TITLE: USGS
PAGE ROCK TOWNHOMES
MAP 15; LOT 235 - 3 PAGE ROAD - LONDONDERRY, NH

DATE: JANUARY 7, 2025	JOB. NO. 21-0113-1
SCALE: 1" = 2000'	SHEET 1 OF 1

Hydrologic Soil Group—Rockingham County, New Hampshire



Map Scale: 1:4,110 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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 Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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 1:24,000.

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: Rockingham County, New Hampshire
Survey Area Data: Version 24, Aug 31, 2021

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
43B	Canton fine sandy loam, 0 to 8 percent slopes, very stony	B	21.9	29.9%
44B	Montauk fine sandy loam, 3 to 8 percent slopes	C	7.5	10.3%
45B	Montauk fine sandy loam, 0 to 8 percent slopes, very stony	C	2.4	3.2%
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky	B	3.0	4.0%
299	Udorthents, smoothed		7.0	9.5%
446B	Scituate-Newfields complex, 3 to 8 percent slopes	C	20.3	27.8%
547B	Walpole very fine sandy loam, 3 to 8 percent slopes, very stony	A/D	11.1	15.2%
Totals for Area of Interest			**73.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New Hampshire
Location	
Longitude	71.406 degrees West
Latitude	42.925 degrees North
Elevation	0 feet
Date/Time	Thu, 01 Sep 2022 15:46:37 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.27	0.41	0.51	0.67	0.83	1.05	**1yr**	0.72	1.00	1.21	1.53	1.93	2.44	2.66	**1yr**	2.16	2.56	2.97	3.64	4.23	**1yr**
2yr	0.32	0.50	0.62	0.82	1.03	1.29	**2yr**	0.89	1.19	1.49	1.87	2.33	2.90	3.22	**2yr**	2.57	3.10	3.59	4.29	4.88	**2yr**
5yr	0.38	0.60	0.75	1.00	1.28	1.63	**5yr**	1.11	1.48	1.89	2.37	2.95	3.67	4.11	**5yr**	3.25	3.95	4.57	5.39	6.08	**5yr**
10yr	0.43	0.68	0.86	1.17	1.52	1.94	**10yr**	1.31	1.75	2.26	2.84	3.53	4.38	4.94	**10yr**	3.88	4.75	5.48	6.40	7.18	**10yr**
25yr	0.51	0.81	1.03	1.43	1.89	2.45	**25yr**	1.63	2.19	2.86	3.60	4.48	5.54	6.31	**25yr**	4.90	6.07	6.98	8.05	8.95	**25yr**
50yr	0.58	0.93	1.19	1.67	2.24	2.92	**50yr**	1.94	2.60	3.42	4.31	5.37	6.62	7.60	**50yr**	5.85	7.30	8.38	9.57	10.59	**50yr**
100yr	0.66	1.07	1.38	1.95	2.66	3.49	**100yr**	2.29	3.08	4.10	5.17	6.43	7.91	9.15	**100yr**	7.00	8.80	10.07	11.39	12.52	**100yr**
200yr	0.75	1.22	1.59	2.28	3.15	4.17	**200yr**	2.72	3.65	4.91	6.20	7.71	9.46	11.03	**200yr**	8.37	10.60	12.11	13.56	14.81	**200yr**
500yr	0.91	1.49	1.95	2.82	3.95	5.26	**500yr**	3.41	4.58	6.21	7.86	9.77	11.99	14.12	**500yr**	10.61	13.57	15.45	17.09	18.52	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.22	0.34	0.42	0.56	0.69	0.84	**1yr**	0.60	0.83	1.07	1.34	1.64	2.26	2.53	**1yr**	2.00	2.43	2.73	3.27	3.74	**1yr**
2yr	0.31	0.48	0.59	0.80	0.98	1.17	**2yr**	0.85	1.15	1.34	1.76	2.25	2.81	3.12	**2yr**	2.49	3.00	3.48	4.16	4.75	**2yr**
5yr	0.35	0.54	0.68	0.93	1.18	1.40	**5yr**	1.02	1.37	1.58	2.06	2.62	3.39	3.76	**5yr**	3.00	3.62	4.20	4.99	5.65	**5yr**
10yr	0.39	0.60	0.74	1.04	1.34	1.58	**10yr**	1.15	1.55	1.80	2.32	2.95	3.89	4.34	**10yr**	3.45	4.17	4.84	5.74	6.42	**10yr**
25yr	0.44	0.68	0.84	1.20	1.58	1.85	**25yr**	1.36	1.81	2.11	2.71	3.42	4.66	5.20	**25yr**	4.12	5.00	5.82	6.89	7.56	**25yr**
50yr	0.49	0.74	0.92	1.33	1.78	2.09	**50yr**	1.54	2.05	2.40	3.06	3.84	5.33	5.98	**50yr**	4.72	5.75	6.69	7.91	8.54	**50yr**
100yr	0.54	0.82	1.02	1.48	2.02	2.36	**100yr**	1.75	2.31	2.73	3.46	4.31	5.95	6.86	**100yr**	5.26	6.60	7.67	9.08	9.63	**100yr**
200yr	0.60	0.90	1.14	1.65	2.30	2.66	**200yr**	1.98	2.61	3.08	3.92	4.87	6.76	7.87	**200yr**	5.98	7.57	8.80	10.43	10.83	**200yr**
500yr	0.69	1.02	1.31	1.91	2.71	3.14	**500yr**	2.34	3.07	3.64	4.62	5.71	7.98	9.43	**500yr**	7.06	9.06	10.52	12.54	12.63	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.57	0.76	0.94	1.10	**1yr**	0.81	1.07	1.22	1.62	2.05	2.61	2.81	**1yr**	2.31	2.71	3.30	4.11	4.63	**1yr**
2yr	0.34	0.52	0.64	0.87	1.08	1.28	**2yr**	0.93	1.25	1.44	1.88	2.40	3.02	3.36	**2yr**	2.68	3.23	3.74	4.43	5.08	**2yr**
5yr	0.42	0.65	0.81	1.11	1.41	1.62	**5yr**	1.22	1.58	1.85	2.37	2.99	3.99	4.49	**5yr**	3.53	4.32	4.93	5.81	6.55	**5yr**
10yr	0.51	0.78	0.97	1.35	1.75	1.97	**10yr**	1.51	1.93	2.23	2.83	3.56	4.96	5.61	**10yr**	4.39	5.40	6.12	7.14	7.97	**10yr**
25yr	0.65	1.00	1.24	1.77	2.33	2.55	**25yr**	2.01	2.49	2.87	3.58	4.46	6.62	7.55	**25yr**	5.86	7.26	8.16	9.37	10.40	**25yr**
50yr	0.79	1.20	1.49	2.15	2.89	3.11	**50yr**	2.49	3.04	3.48	4.29	5.29	8.24	9.47	**50yr**	7.29	9.11	10.15	11.51	12.71	**50yr**
100yr	0.96	1.45	1.82	2.63	3.60	3.79	**100yr**	3.11	3.71	4.22	5.13	6.28	10.34	11.86	**100yr**	9.15	11.41	12.61	14.16	15.58	**100yr**
200yr	1.16	1.75	2.22	3.21	4.48	4.62	**200yr**	3.87	4.52	5.11	6.13	7.46	12.91	14.91	**200yr**	11.42	14.34	15.71	17.44	19.12	**200yr**
500yr	1.51	2.25	2.90	4.21	5.98	6.01	**500yr**	5.16	5.88	6.60	7.77	9.38	17.33	20.17	**500yr**	15.33	19.39	20.99	22.97	25.10	**500yr**

Powered by ACIS
Northeast Regional Climate Center

KEACH-NORDSTROM ASSOCIATES, INC.

RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project: **Page Rock Townhomes** Date: **2/20/2026**
KNA #: 21-0113-1

The purpose of this spreadsheet is to calculate the dimensions of Inlet/Outlet Protection apron (riprap) required during the SCS/NRCS 25-year type III 24-hr storm event. The spillway weir(s) inlet/outlet apror protection will be sized for the SCS/NRCS 25-year **type III 24-hr storm event.**

Required Input:

Q	peak flow in CFS
Do	diameter in feet of outlet or width of channel
Tw	tail water at end of apron

Depending on the tail water conditions, either **column 1** or **column 2** is used for calculations

	Column One where Tw<1/2Do	Column Two where Tw>1/2Do
Length of Apron	**La = (1.8Q/Do^3/2)+7Do**	**La = 3*Q/Do^3/2+7Do**
Width of Apron at outfall	W1 = 3*Do W2 = 3*Do + La	W1 = 3*Do W2 = 3*Do+0.4*La

If defined channel, then use channel width for W1 and W2

Rock Rip Rap Size:
d50 = (0.02*Q^4/3)/(Tw*Do)

RIRAP GRADATION ENVELOPE

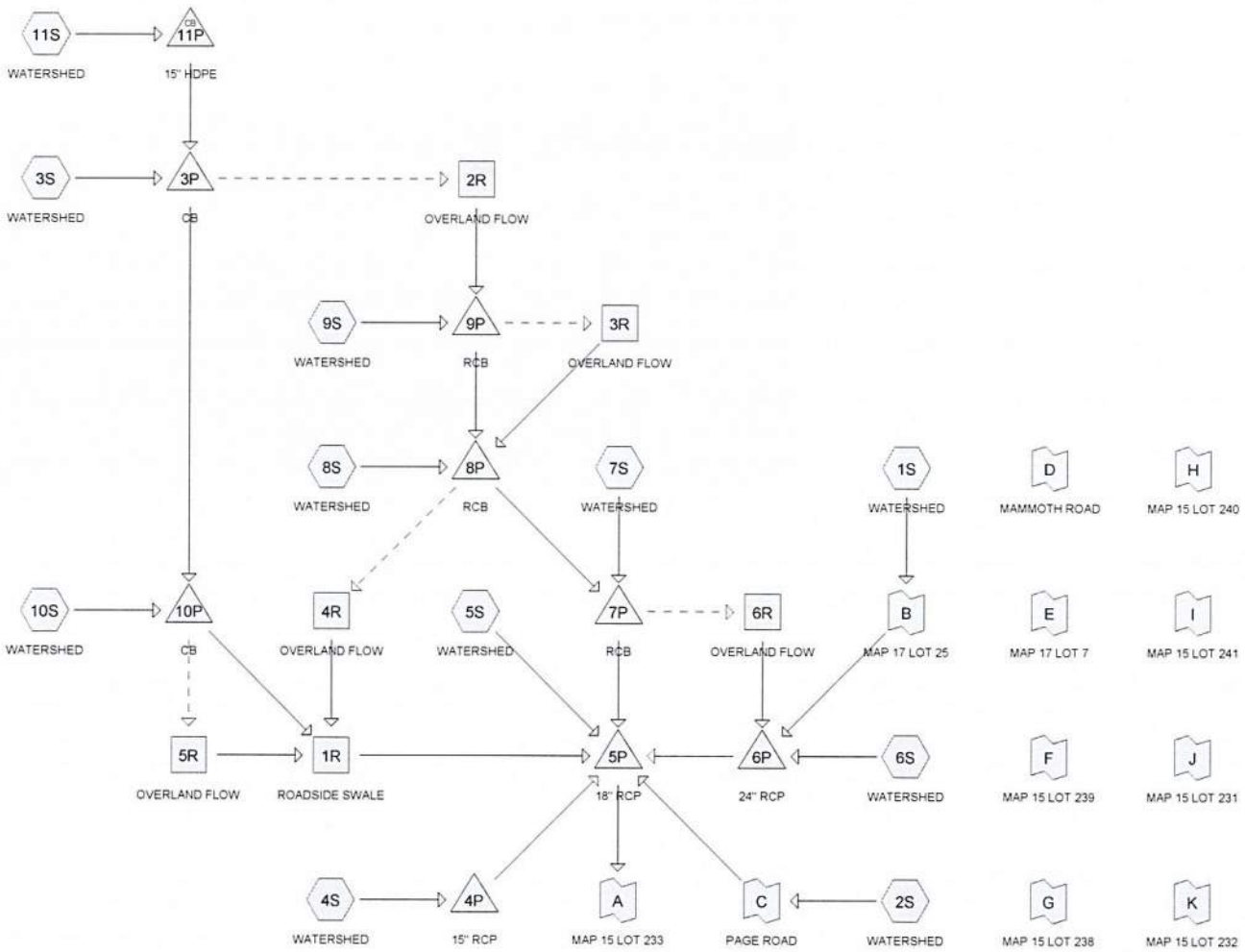
Calculation Summary Table:

Input to Chart Description (Optional)		Q-25 (cfs)	Do (ft)	Tw (ft)	Calculated Output La	W1	W2 no channel	d50, ft	d50 in	USE d50 in.	d100 FROM in	d100 TO in	d85 FROM in	d85 TO in	d50 FROM in	d50 TO in	d15 FROM in	d15 TO in	depth in	USE Depth in.	USE Length ft.	USE W1 ft.	USE W2 ft.
HW#1	Detention Pond #1 Outlet (13P)	0.88	1.25	0.26	10	4	14	0.1	0.62	3	5	6	4	5	3	5	1	2	7.5	8	10	4	14
HW#3	Detention Pond #1 Inlet (16P)	1.02	1.25	0.34	10	4	14	0.0	0.58	3	5	6	4	5	3	5	1	2	7.5	8	10	4	14
HW#6	Detention Pond #2 Inlet (18P)	2.85	1.25	0.71	15	4	10	0.1	1.09	3	5	6	4	5	3	5	1	2	7.5	8	15	4	10
HW#9	Offsite Flow to Detention Pond #2 (9P)	1.19	0.50	0.41	14	2	7	0.1	1.48	3	5	6	4	5	3	5	1	2	7.5	8	14	2	7
HW#10	Roof Drain Flow to Detention Pond #1 (2P)	0.20	0.50	0.16	5	2	6	0.0	0.35	3	5	6	4	5	3	5	1	2	7.5	8	5	2	6
HW#11	Detention Pond #2 Outlet (14P)	6.61	1.50	0.89	21	5	13	0.2	2.23	3	5	6	4	5	3	5	1	2	7.5	8	21	5	13
HW#13	Existing Drainage Outlet (10P)	2.11	1.00	1.00	13	3	8	0.1	0.65	3	5	6	4	5	3	5	1	2	7.5	8	13	3	8

* Center Apron with Headwall and Outlet Pipe (All Cases)
* Line Apron with 6.0 oz. Geotextile Fabric (All Cases)

HYDROCAD DRAINAGE ANALYSIS

I. 25-YR, PRE-DEVELOPMENT
II. 25-YR, POST-DEVELOPMENT
III. 50-YR POND SUMMARIES



Subcat Reach Pond Link

Routing Diagram for 2101131-PRE-DEVELOPMENT_REV2, Revised January 19, 2026

Prepared by Keach-Nordstrom Associates, Inc, Printed 2/19/2026

HydroCAD® 10.20-6a s/n 01045 © 2024 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.83	61	>75% Grass cover, Good, HSG B (4S, 5S, 6S)
5.51	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 6S, 7S, 8S, 9S, 10S, 11S)
0.40	80	>75% Grass cover, Good, HSG D (6S)
2.80	98	Paved parking (2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S)
2.14	98	Roofs (2S, 3S, 6S, 8S, 9S, 11S)
2.06	55	Woods, Good, HSG B (4S, 5S, 6S)
6.35	70	Woods, Good, HSG C (1S, 2S, 3S, 4S, 6S, 7S, 8S, 9S, 10S)
2.09	77	Woods, Good, HSG D (1S, 2S, 5S, 6S)
22.17	**76**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.00	HSG A	
2.89	HSG B	4S, 5S, 6S
11.86	HSG C	1S, 2S, 3S, 4S, 6S, 7S, 8S, 9S, 10S, 11S
2.49	HSG D	1S, 2S, 5S, 6S
4.94	Other	2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S
22.17		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: WATERSHED Runoff Area=37,990 sf 0.00% Impervious Runoff Depth>2.53"
Flow Length=238' Tc=10.5 min CN=71 Runoff=2.19 cfs 0.184 af

Subcatchment2S: WATERSHED Runoff Area=30,122 sf 8.90% Impervious Runoff Depth>2.79"
Flow Length=200' Tc=14.2 min CN=74 Runoff=1.74 cfs 0.161 af

Subcatchment3S: WATERSHED Runoff Area=36,571 sf 28.26% Impervious Runoff Depth>3.36"
Flow Length=317' Tc=11.9 min CN=80 Runoff=2.71 cfs 0.235 af

Subcatchment4S: WATERSHED Runoff Area=11,669 sf 34.32% Impervious Runoff Depth>2.80"
Tc=6.0 min CN=74 Runoff=0.86 cfs 0.062 af

Subcatchment5S: WATERSHED Runoff Area=43,638 sf 26.04% Impervious Runoff Depth>2.44"
Flow Length=150' Tc=9.7 min CN=70 Runoff=2.47 cfs 0.204 af

Subcatchment6S: WATERSHED Runoff Area=639,175 sf 25.40% Impervious Runoff Depth>3.05"
Flow Length=1,316' Tc=48.0 min CN=77 Runoff=23.71 cfs 3.730 af

Subcatchment7S: WATERSHED Runoff Area=18,012 sf 7.36% Impervious Runoff Depth>2.71"
Flow Length=447' Tc=10.7 min CN=73 Runoff=1.11 cfs 0.093 af

Subcatchment8S: WATERSHED Runoff Area=30,349 sf 3.67% Impervious Runoff Depth>2.89"
Flow Length=322' Tc=8.0 min CN=75 Runoff=2.18 cfs 0.168 af

Subcatchment9S: WATERSHED Runoff Area=47,516 sf 12.13% Impervious Runoff Depth>3.08"
Flow Length=275' Tc=8.4 min CN=77 Runoff=3.58 cfs 0.280 af

Subcatchment10S: WATERSHED Runoff Area=36,443 sf 15.15% Impervious Runoff Depth>2.98"
Flow Length=233' Tc=12.0 min CN=76 Runoff=2.39 cfs 0.208 af

Subcatchment11S: WATERSHED Runoff Area=34,434 sf 30.64% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=81 Runoff=3.14 cfs 0.228 af

Reach 1R: ROADSIDE SWALE Avg. Flow Depth=0.24' Max Vel=2.88 fps Inflow=7.80 cfs 0.645 af
n=0.025 L=363.0' S=0.0183 '/' Capacity=89.79 cfs Outflow=7.41 cfs 0.644 af

Reach 2R: OVERLAND FLOW Avg. Flow Depth=0.17' Max Vel=1.95 fps Inflow=3.82 cfs 0.082 af
n=0.025 L=160.0' S=0.0122 '/' Capacity=73.48 cfs Outflow=3.54 cfs 0.082 af

Reach 3R: OVERLAND FLOW Avg. Flow Depth=0.28' Max Vel=3.68 fps Inflow=6.02 cfs 0.132 af
n=0.025 L=150.0' S=0.0257 '/' Capacity=60.51 cfs Outflow=6.01 cfs 0.132 af

Reach 4R: OVERLAND FLOW Avg. Flow Depth=0.16' Max Vel=2.80 fps Inflow=4.69 cfs 0.058 af
n=0.025 L=90.0' S=0.0270 '/' Capacity=109.09 cfs Outflow=4.75 cfs 0.058 af

Reach 5R: OVERLAND FLOW Avg. Flow Depth=0.04' Max Vel=1.43 fps Inflow=0.64 cfs 0.009 af
n=0.025 L=100.0' S=0.0416 '/' Capacity=135.41 cfs Outflow=0.60 cfs 0.009 af

Reach 6R: OVERLAND FLOW Avg. Flow Depth=0.13' Max Vel=3.01 fps Inflow=2.02 cfs 0.176 af
n=0.025 L=100.0' S=0.0450 '/' Capacity=80.01 cfs Outflow=2.04 cfs 0.176 af

Pond 3P: CB Peak Elev=321.11' Storage=167 cf Inflow=5.49 cfs 0.463 af
Primary=1.92 cfs 0.380 af Secondary=3.82 cfs 0.082 af Outflow=5.68 cfs 0.462 af

Pond 4P: 15" RCP Peak Elev=309.08' Storage=6 cf Inflow=0.86 cfs 0.062 af
Primary=0.86 cfs 0.062 af Secondary=0.00 cfs 0.000 af Outflow=0.86 cfs 0.062 af

Pond 5P: 18" RCP Peak Elev=308.51' Storage=2,360 cf Inflow=15.91 cfs 5.514 af
18.0" Round Culvert n=0.011 L=112.5' S=0.0096 '/' Outflow=13.14 cfs 5.514 af

Pond 6P: 24" RCP Peak Elev=308.74' Storage=65,210 cf Inflow=24.71 cfs 4.089 af
Primary=10.62 cfs 4.056 af Secondary=0.00 cfs 0.000 af Outflow=10.62 cfs 4.028 af

Pond 7P: RCB Peak Elev=311.06' Storage=123 cf Inflow=5.82 cfs 0.565 af
Primary=3.79 cfs 0.387 af Secondary=2.02 cfs 0.176 af Outflow=5.81 cfs 0.563 af

Pond 8P: RCB Peak Elev=315.86' Storage=204 cf Inflow=9.23 cfs 0.529 af
Primary=4.71 cfs 0.471 af Secondary=4.69 cfs 0.058 af Outflow=9.40 cfs 0.528 af

Pond 9P: RCB Peak Elev=319.89' Storage=123 cf Inflow=7.07 cfs 0.362 af
Primary=1.14 cfs 0.230 af Secondary=6.02 cfs 0.132 af Outflow=7.13 cfs 0.361 af

Pond 10P: CB Peak Elev=317.50' Storage=671 cf Inflow=4.20 cfs 0.588 af
Primary=3.12 cfs 0.579 af Secondary=0.64 cfs 0.009 af Outflow=3.75 cfs 0.588 af

Pond 11P: 15" HDPE Peak Elev=325.57' Inflow=3.14 cfs 0.228 af
15.0" Round Culvert n=0.011 L=41.0' S=0.0707 '/' Outflow=3.14 cfs 0.228 af

Link A: MAP 15 LOT 233 Inflow=13.14 cfs 5.514 af
Primary=13.14 cfs 5.514 af

Link B: MAP 17 LOT 25 Inflow=2.19 cfs 0.184 af
Primary=2.19 cfs 0.184 af

Link C: PAGE ROAD Inflow=1.74 cfs 0.161 af
Primary=1.74 cfs 0.161 af

Link D: MAMMOTH ROAD
Primary=0.00 cfs 0.000 af

Link E: MAP 17 LOT 7
Primary=0.00 cfs 0.000 af

Link F: MAP 15 LOT 239
Primary=0.00 cfs 0.000 af

Link G: MAP 15 LOT 238
Primary=0.00 cfs 0.000 af

Link H: MAP 15 LOT 240

Primary=0.00 cfs 0.000 af

Link I: MAP 15 LOT 241

Primary=0.00 cfs 0.000 af

Link J: MAP 15 LOT 231

Primary=0.00 cfs 0.000 af

Link K: MAP 15 LOT 232

Primary=0.00 cfs 0.000 af

Total Runoff Area = 22.17 ac Runoff Volume = 5.553 af Average Runoff Depth = 3.00"
77.74% Pervious = 17.24 ac 22.26% Impervious = 4.94 ac

Summary for Subcatchment 1S: WATERSHED

Runoff = 2.19 cfs @ 12.15 hrs, Volume= 0.184 af, Depth> 2.53"
Routed to Link B : MAP 17 LOT 25

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

Area (sf)	CN	Description
33,555	70	Woods, Good, HSG C
2,152	77	Woods, Good, HSG D
2,283	74	>75% Grass cover, Good, HSG C
37,990	71	Weighted Average
37,990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
2.1	188	0.0850	1.46		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	238	Total			

Summary for Subcatchment 2S: WATERSHED

Runoff = 1.74 cfs @ 12.20 hrs, Volume= 0.161 af, Depth> 2.79"
Routed to Link C : PAGE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	16,741	70	Woods, Good, HSG C
	290	77	Woods, Good, HSG D
	10,410	74	>75% Grass cover, Good, HSG C
*	1,878	98	Paved parking
*	803	98	Roofs
	30,122	74	Weighted Average
	27,441		91.10% Pervious Area
	2,681		8.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	50	0.0250	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
2.3	150	0.0490	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.2	200	Total			

Summary for Subcatchment 3S: WATERSHED

Runoff = 2.71 cfs @ 12.17 hrs, Volume= 0.235 af, Depth> 3.36"
Routed to Pond 3P : CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	8,219	70	Woods, Good, HSG C
	18,018	74	>75% Grass cover, Good, HSG C
*	9,019	98	Paved parking
*	1,315	98	Roofs
	36,571	80	Weighted Average
	26,237		71.74% Pervious Area
	10,334		28.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
1.2	50	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	37	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	160	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.9	317	Total			

Summary for Subcatchment 4S: WATERSHED

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.062 af, Depth> 2.80"
Routed to Pond 4P : 15" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	569	55	Woods, Good, HSG B
	195	70	Woods, Good, HSG C
	6,900	61	>75% Grass cover, Good, HSG B
*	4,005	98	Paved parking
	11,669	74	Weighted Average
	7,664		65.68% Pervious Area
	4,005		34.32% Impervious Area

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

Summary for Subcatchment 5S: WATERSHED

Runoff = 2.47 cfs @ 12.14 hrs, Volume= 0.204 af, Depth> 2.44"
Routed to Pond 5P : 18" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	9,648	55	Woods, Good, HSG B
	851	77	Woods, Good, HSG D
	21,775	61	>75% Grass cover, Good, HSG B
*	11,364	98	Paved parking
	43,638	70	Weighted Average
	32,274		73.96% Pervious Area
	11,364		26.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
1.3	100	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.7	150	Total			

Summary for Subcatchment 6S: WATERSHED

Runoff = 23.71 cfs @ 12.66 hrs, Volume= 3.730 af, Depth> 3.05"
Routed to Pond 6P : 24" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	79,545	55	Woods, Good, HSG B
	189,214	70	Woods, Good, HSG C
	87,572	77	Woods, Good, HSG D
	7,600	61	>75% Grass cover, Good, HSG B
	95,398	74	>75% Grass cover, Good, HSG C
	17,469	80	>75% Grass cover, Good, HSG D
*	78,900	98	Paved parking
*	83,477	98	Roofs
	639,175	77	Weighted Average
	476,798		74.60% Pervious Area
	162,377		25.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
37.0	1,266	0.0130	0.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
48.0	1,316	Total			

Summary for Subcatchment 7S: WATERSHED

Runoff = 1.11 cfs @ 12.16 hrs, Volume= 0.093 af, Depth> 2.71"
Routed to Pond 7P : RCB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	12,181	70	Woods, Good, HSG C
	4,506	74	>75% Grass cover, Good, HSG C
*	1,325	98	Paved parking
	18,012	73	Weighted Average
	16,687		92.64% Pervious Area
	1,325		7.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0400	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
1.8	130	0.0310	1.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.4	267	0.0410	1.01		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.7	447	Total			

Summary for Subcatchment 8S: WATERSHED

Runoff = 2.18 cfs @ 12.12 hrs, Volume= 0.168 af, Depth> 2.89"
Routed to Pond 8P : RCB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	684	70	Woods, Good, HSG C
	28,552	74	>75% Grass cover, Good, HSG C
*	187	98	Paved parking
*	926	98	Roofs
	30,349	75	Weighted Average
	29,236		96.33% Pervious Area
	1,113		3.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0400	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
3.5	272	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	322	Total			

Summary for Subcatchment 9S: WATERSHED

Runoff = 3.58 cfs @ 12.12 hrs, Volume= 0.280 af, Depth> 3.08"
Routed to Pond 9P : RCB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	2,126	70	Woods, Good, HSG C
	39,624	74	>75% Grass cover, Good, HSG C
*	1,971	98	Paved parking
*	3,795	98	Roofs
	47,516	77	Weighted Average
	41,750		87.87% Pervious Area
	5,766		12.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	50	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	205	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	275	Total			

Summary for Subcatchment 10S: WATERSHED

Runoff = 2.39 cfs @ 12.17 hrs, Volume= 0.208 af, Depth> 2.98"
Routed to Pond 10P : CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	13,784	70	Woods, Good, HSG C
	17,139	74	>75% Grass cover, Good, HSG C
*	5,520	98	Paved parking
	36,443	76	Weighted Average
	30,923		84.85% Pervious Area
	5,520		15.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0630	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
3.8	183	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.0	233	Total			

Summary for Subcatchment 11S: WATERSHED

Runoff = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af, Depth> 3.46"
Routed to Pond 11P : 15" HDPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	23,883	74	>75% Grass cover, Good, HSG C
*	7,832	98	Paved parking
*	2,719	98	Roofs
	34,434	81	Weighted Average
	23,883		69.36% Pervious Area
	10,551		30.64% Impervious Area

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

Summary for Reach 1R: ROADSIDE SWALE

Inflow Area = 2.47 ac, 24.57% Impervious, Inflow Depth > 3.14" for 25-yr event
Inflow = 7.80 cfs @ 12.15 hrs, Volume= 0.645 af
Outflow = 7.41 cfs @ 12.17 hrs, Volume= 0.644 af, Atten= 5%, Lag= 1.4 min
Routed to Pond 5P : 18" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 2.88 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 6.9 min

Peak Storage= 920 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 11.42'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 89.79 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 363.0' Slope= 0.0183 '/'
Inlet Invert= 313.24', Outlet Invert= 306.60'



‡

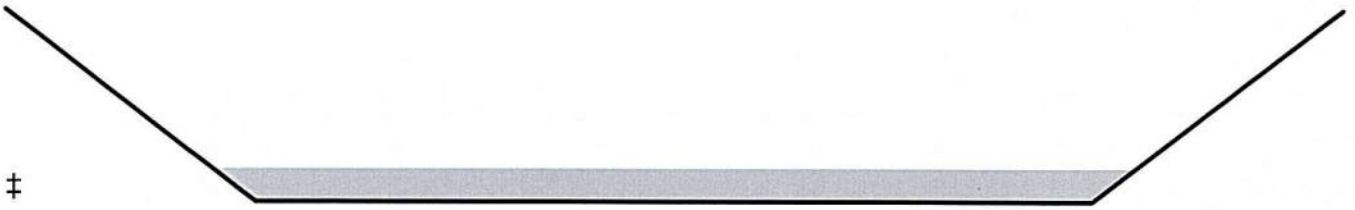
Summary for Reach 2R: OVERLAND FLOW

Inflow = 3.82 cfs @ 12.11 hrs, Volume= 0.082 af
Outflow = 3.54 cfs @ 12.13 hrs, Volume= 0.082 af, Atten= 7%, Lag= 1.4 min
Routed to Pond 9P : RCB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.95 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.68 fps, Avg. Travel Time= 3.9 min

Peak Storage= 289 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 11.03'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 73.48 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 160.0' Slope= 0.0122 '/'
Inlet Invert= 320.75', Outlet Invert= 318.79'



‡

Summary for Reach 3R: OVERLAND FLOW

Inflow = 6.02 cfs @ 12.13 hrs, Volume= 0.132 af
Outflow = 6.01 cfs @ 12.14 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.5 min
Routed to Pond 8P : RCB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.68 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 1.7 min

Peak Storage= 244 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.28' , Surface Width= 6.67'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 60.51 cfs

5.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 150.0' Slope= 0.0257 '/'
Inlet Invert= 319.25', Outlet Invert= 315.39'



‡

Summary for Reach 4R: OVERLAND FLOW

Inflow = 4.69 cfs @ 12.12 hrs, Volume= 0.058 af
Outflow = 4.75 cfs @ 12.15 hrs, Volume= 0.058 af, Atten= 0%, Lag= 1.5 min
Routed to Reach 1R : ROADSIDE SWALE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 2.80 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 1.3 min

Peak Storage= 153 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.16' , Surface Width= 10.97'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 109.09 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 90.0' Slope= 0.0270 '/'
Inlet Invert= 315.67', Outlet Invert= 313.24'



‡

Summary for Reach 5R: OVERLAND FLOW

Inflow = 0.64 cfs @ 12.27 hrs, Volume= 0.009 af
Outflow = 0.60 cfs @ 12.29 hrs, Volume= 0.009 af, Atten= 5%, Lag= 1.2 min
Routed to Reach 1R : ROADSIDE SWALE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.43 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 2.0 min

Peak Storage= 42 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 10.25'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 135.41 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 100.0' Slope= 0.0416 '/'
Inlet Invert= 317.40', Outlet Invert= 313.24'



‡

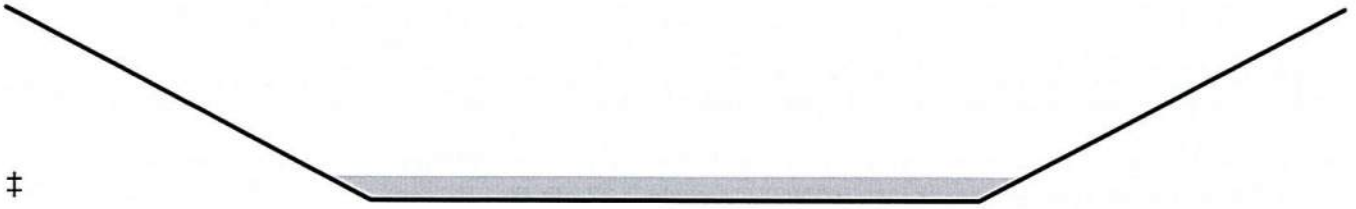
Summary for Reach 6R: OVERLAND FLOW

Inflow = 2.02 cfs @ 12.18 hrs, Volume= 0.176 af
Outflow = 2.04 cfs @ 12.10 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 6P : 24" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.01 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.89 fps, Avg. Travel Time= 1.9 min

Peak Storage= 68 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 5.75'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 80.01 cfs

5.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 100.0' Slope= 0.0450 '/'
Inlet Invert= 310.74', Outlet Invert= 306.24'



‡

Summary for Pond 3P: CB

Inflow Area = 1.63 ac, 29.41% Impervious, Inflow Depth > 3.41" for 25-yr event
Inflow = 5.49 cfs @ 12.11 hrs, Volume= 0.463 af
Outflow = 5.68 cfs @ 12.11 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
Primary = 1.92 cfs @ 11.97 hrs, Volume= 0.380 af
Routed to Pond 10P : CB
Secondary = 3.82 cfs @ 12.11 hrs, Volume= 0.082 af
Routed to Reach 2R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 321.11' @ 12.11 hrs Surf.Area= 356 sf Storage= 167 cf
Flood Elev= 321.00' Surf.Area= 356 sf Storage= 167 cf

Plug-Flow detention time= 2.6 min calculated for 0.461 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (819.1 - 818.0)

Volume	Invert	Avail.Storage	Storage Description
#1	319.10'	16 cf	**4.00'D x 1.25'H Vertical Cone/Cylinder**
#2	319.10'	151 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		167 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
319.10	5	0	0
320.50	65	49	49
321.00	343	102	151

Device	Routing	Invert	Outlet Devices
#1	Primary	319.10'	**8.0" Round Culvert** L= 228.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 319.10' / 314.83' S= 0.0187 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Device 1	320.27'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	320.75'	**8.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.91 cfs @ 11.97 hrs HW=320.85' TW=316.76' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.91 cfs @ 5.47 fps)
↑—**2=Grate** (Passes 1.91 cfs of 11.56 cfs potential flow)

Secondary OutFlow Max=3.67 cfs @ 12.11 hrs HW=321.10' TW=320.92' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Weir Controls 3.67 cfs @ 1.30 fps)

Summary for Pond 4P: 15" RCP

Inflow Area = 0.27 ac, 34.32% Impervious, Inflow Depth > 2.80" for 25-yr event
Inflow = 0.86 cfs @ 12.09 hrs, Volume= 0.062 af
Outflow = 0.86 cfs @ 12.10 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.1 min
Primary = 0.86 cfs @ 12.10 hrs, Volume= 0.062 af
Routed to Pond 5P : 18" RCP
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 5P : 18" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 309.08' @ 12.10 hrs Surf.Area= 31 sf Storage= 6 cf
Flood Elev= 311.00' Surf.Area= 730 sf Storage= 593 cf

Plug-Flow detention time= 0.2 min calculated for 0.062 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (832.1 - 831.9)

Volume	Invert	Avail.Storage	Storage Description
#1	308.62'	593 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.62	5	0	0
309.00	16	4	4
310.00	216	116	120
311.00	730	473	593

Device	Routing	Invert	Outlet Devices
#1	Primary	308.64'	**15.0" Round Culvert** L= 24.6' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 308.64' / 306.60' S= 0.0829 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf
#2	Secondary	310.96'	**2.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.85 cfs @ 12.10 hrs HW=309.07' TW=307.61' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.85 cfs @ 2.25 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=308.62' TW=305.37' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: 18" RCP

Inflow Area = 22.17 ac, 22.26% Impervious, Inflow Depth > 2.98" for 25-yr event
Inflow = 15.91 cfs @ 12.17 hrs, Volume= 5.514 af
Outflow = 13.14 cfs @ 12.26 hrs, Volume= 5.514 af, Atten= 17%, Lag= 5.6 min
Primary = 13.14 cfs @ 12.26 hrs, Volume= 5.514 af
Routed to Link A : MAP 15 LOT 233

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 308.51' @ 12.26 hrs Surf.Area= 2,081 sf Storage= 2,360 cf
Flood Elev= 310.88' Surf.Area= 7,537 sf Storage= 12,203 cf

Plug-Flow detention time= 1.4 min calculated for 5.514 af (100% of inflow)
Center-of-Mass det. time= 1.4 min (899.7 - 898.3)

Volume	Invert	Avail.Storage	Storage Description
#1	305.37'	13,134 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
305.37	10	0	0
306.00	92	32	32
307.00	641	367	399
308.00	1,481	1,061	1,460
309.00	2,668	2,075	3,534
310.00	4,275	3,472	7,006
311.00	7,982	6,129	13,134

Device	Routing	Invert	Outlet Devices
#1	Primary	305.37'	**18.0" Round Culvert** L= 112.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 305.37' / 304.29' S= 0.0096 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=13.10 cfs @ 12.26 hrs HW=308.49' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 13.10 cfs @ 7.41 fps)

Summary for Pond 6P: 24" RCP

Inflow Area = 15.55 ac, 23.98% Impervious, Inflow Depth > 3.16" for 25-yr event
Inflow = 24.71 cfs @ 12.64 hrs, Volume= 4.089 af
Outflow = 10.62 cfs @ 13.39 hrs, Volume= 4.028 af, Atten= 57%, Lag= 45.1 min
Primary = 10.62 cfs @ 13.39 hrs, Volume= 4.056 af
Routed to Pond 5P : 18" RCP
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 5P : 18" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 308.74' @ 13.34 hrs Surf.Area= 44,481 sf Storage= 65,210 cf
Flood Elev= 311.00' Surf.Area= 73,507 sf Storage= 196,526 cf

Plug-Flow detention time= 75.5 min calculated for 4.020 af (98% of inflow)
Center-of-Mass det. time= 67.1 min (922.4 - 855.3)

Volume	Invert	Avail.Storage	Storage Description
#1	306.24'	196,526 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
306.24	4,300	0	0
308.00	35,858	35,339	35,339
310.00	59,050	94,908	130,247
311.00	73,507	66,279	196,526

Device	Routing	Invert	Outlet Devices
#1	Primary	306.24'	**24.0" Round Culvert** L= 43.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 306.24' / 305.70' S= 0.0123 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	310.88'	**6.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.63 cfs @ 13.39 hrs HW=308.74' TW=308.25' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 10.63 cfs @ 3.38 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=306.24' TW=305.37' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 7P: RCB

Inflow Area = 2.20 ac, 8.56% Impervious, Inflow Depth > 3.08" for 25-yr event
Inflow = 5.82 cfs @ 12.15 hrs, Volume= 0.565 af
Outflow = 5.81 cfs @ 12.18 hrs, Volume= 0.563 af, Atten= 0%, Lag= 1.4 min
Primary = 3.79 cfs @ 12.18 hrs, Volume= 0.387 af
Routed to Pond 5P : 18" RCP
Secondary = 2.02 cfs @ 12.18 hrs, Volume= 0.176 af
Routed to Reach 6R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 311.06' @ 12.18 hrs Surf.Area= 521 sf Storage= 123 cf
Flood Elev= 311.00' Surf.Area= 521 sf Storage= 123 cf

Plug-Flow detention time= 2.2 min calculated for 0.562 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (827.6 - 826.7)

Volume	Invert	Avail.Storage	Storage Description
#1	306.24'	57 cf	**4.00'D x 4.50'H Vertical Cone/Cylinder**
#2	310.74'	67 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		123 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
310.74	5	0	0
311.00	508	67	67

Device	Routing	Invert	Outlet Devices
#1	Primary	306.24'	**12.0" Round Culvert**
			L= 44.4' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 306.24' / 305.82' S= 0.0095 '/' Cc= 0.900
			n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	310.74'	**24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	310.75'	**5.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.76 cfs @ 12.18 hrs HW=311.06' TW=308.23' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 3.76 cfs of 6.37 cfs potential flow)
↑—**2=Grate** (Weir Controls 3.76 cfs @ 1.86 fps)

Secondary OutFlow Max=2.01 cfs @ 12.18 hrs HW=311.06' TW=310.86' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Weir Controls 2.01 cfs @ 1.28 fps)

Summary for Pond 8P: RCB

Inflow Area = 1.79 ac, 8.83% Impervious, Inflow Depth > 3.55" for 25-yr event
Inflow = 9.23 cfs @ 12.14 hrs, Volume= 0.529 af
Outflow = 9.40 cfs @ 12.12 hrs, Volume= 0.528 af, Atten= 0%, Lag= 0.0 min
Primary = 4.71 cfs @ 12.14 hrs, Volume= 0.471 af
Routed to Pond 7P : RCB
Secondary = 4.69 cfs @ 12.12 hrs, Volume= 0.058 af
Routed to Reach 4R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 315.86' @ 12.14 hrs Surf.Area= 480 sf Storage= 204 cf
Flood Elev= 316.00' Surf.Area= 614 sf Storage= 278 cf

Plug-Flow detention time= 1.4 min calculated for 0.527 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (814.5 - 813.9)

Volume	Invert	Avail.Storage	Storage Description
#1	315.39'	186 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	308.11'	91 cf	**4.00'D x 7.28'H Vertical Cone/Cylinder**
		278 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
315.39	10	0	0
316.00	601	186	186

Device	Routing	Invert	Outlet Devices
#1	Primary	308.11'	**12.0" Round Culvert**
			L= 315.8' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 308.11' / 306.28' S= 0.0058 '/' Cc= 0.900
			n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Secondary	315.67'	**35.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.71 cfs @ 12.14 hrs HW=315.86' TW=311.06' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 4.71 cfs @ 5.99 fps)

Secondary OutFlow Max=4.22 cfs @ 12.12 hrs HW=315.85' TW=315.81' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Weir Controls 4.22 cfs @ 0.66 fps)

Summary for Pond 9P: RCB

Inflow Area = 1.09 ac, 12.13% Impervious, Inflow Depth > 3.98" for 25-yr event
Inflow = 7.07 cfs @ 12.13 hrs, Volume= 0.362 af
Outflow = 7.13 cfs @ 12.13 hrs, Volume= 0.361 af, Atten= 0%, Lag= 0.3 min
Primary = 1.14 cfs @ 12.36 hrs, Volume= 0.230 af
Routed to Pond 8P : RCB
Secondary = 6.02 cfs @ 12.13 hrs, Volume= 0.132 af
Routed to Reach 3R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 319.89' @ 12.13 hrs Surf.Area= 213 sf Storage= 123 cf
Flood Elev= 319.50' Surf.Area= 213 sf Storage= 123 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.5 min (805.7 - 805.1)

Volume	Invert	Avail.Storage	Storage Description
#1	318.78'	111 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
#2	317.84'	12 cf	**4.00'D x 0.95'H Vertical Cone/Cylinder**
		123 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.78	5	0	0
319.00	168	19	19
319.50	200	92	111

Device	Routing	Invert	Outlet Devices
#1	Primary	317.84'	**6.0" Round Culvert** L= 141.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 317.84' / 314.02' S= 0.0271 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Device 1	318.79'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	319.25'	**5.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.14 cfs @ 12.36 hrs HW=319.55' TW=314.96' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.14 cfs @ 5.82 fps)
↑—**2=Orifice/Grate** (Passes 1.14 cfs of 13.22 cfs potential flow)

Secondary OutFlow Max=5.83 cfs @ 12.13 hrs HW=319.87' TW=319.52' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir**(Weir Controls 5.83 cfs @ 1.87 fps)

Summary for Pond 10P: CB

Inflow Area = 2.47 ac, 24.57% Impervious, Inflow Depth > 2.86" for 25-yr event
Inflow = 4.20 cfs @ 12.16 hrs, Volume= 0.588 af
Outflow = 3.75 cfs @ 12.27 hrs, Volume= 0.588 af, Atten= 11%, Lag= 6.1 min
Primary = 3.12 cfs @ 12.27 hrs, Volume= 0.579 af
Routed to Reach 1R : ROADSIDE SWALE
Secondary = 0.64 cfs @ 12.27 hrs, Volume= 0.009 af
Routed to Reach 5R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 317.50' @ 12.27 hrs Surf.Area= 1,955 sf Storage= 671 cf
Flood Elev= 317.50' Surf.Area= 1,972 sf Storage= 681 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.0 min (836.9 - 836.0)

Volume	Invert	Avail.Storage	Storage Description
#1	314.53'	24 cf	**4.00'D x 1.91'H Vertical Cone/Cylinder**
#2	316.44'	657 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		681 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
316.44	5	0	0
317.00	312	89	89
317.50	1,959	568	657

Device	Routing	Invert	Outlet Devices
#1	Primary	314.53'	**12.0" Round Culvert** L= 101.8' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 314.53' / 313.24' S= 0.0127 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf
#2	Device 1	316.44'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	317.40'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.11 cfs @ 12.27 hrs HW=317.49' TW=313.44' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 3.11 cfs @ 3.96 fps)
↑—**2=Grate** (Passes 3.11 cfs of 19.74 cfs potential flow)

Secondary OutFlow Max=0.60 cfs @ 12.27 hrs HW=317.49' TW=317.44' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir**(Weir Controls 0.60 cfs @ 0.66 fps)

Summary for Pond 11P: 15" HDPE

Inflow Area = 0.79 ac, 30.64% Impervious, Inflow Depth > 3.46" for 25-yr event
Inflow = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af
Outflow = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min
Primary = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af
Routed to Pond 3P : CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 325.57' @ 12.09 hrs
Flood Elev= 326.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	324.65'	**15.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 324.65' / 321.75' S= 0.0707 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=3.07 cfs @ 12.09 hrs HW=325.55' TW=321.09' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.07 cfs @ 3.24 fps)

Summary for Link A: MAP 15 LOT 233

Inflow Area = 22.17 ac, 22.26% Impervious, Inflow Depth > 2.98" for 25-yr event
Inflow = 13.14 cfs @ 12.26 hrs, Volume= 5.514 af
Primary = 13.14 cfs @ 12.26 hrs, Volume= 5.514 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link B: MAP 17 LOT 25

Inflow Area = 0.87 ac, 0.00% Impervious, Inflow Depth > 2.53" for 25-yr event
Inflow = 2.19 cfs @ 12.15 hrs, Volume= 0.184 af
Primary = 2.19 cfs @ 12.15 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 6P : 24" RCP

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link C: PAGE ROAD

Inflow Area = 0.69 ac, 8.90% Impervious, Inflow Depth > 2.79" for 25-yr event
Inflow = 1.74 cfs @ 12.20 hrs, Volume= 0.161 af
Primary = 1.74 cfs @ 12.20 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : 18" RCP

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link D: MAMMOTH ROAD

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link E: MAP 17 LOT 7

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link F: MAP 15 LOT 239

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link G: MAP 15 LOT 238

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link H: MAP 15 LOT 240

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link I: MAP 15 LOT 241

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link J: MAP 15 LOT 231

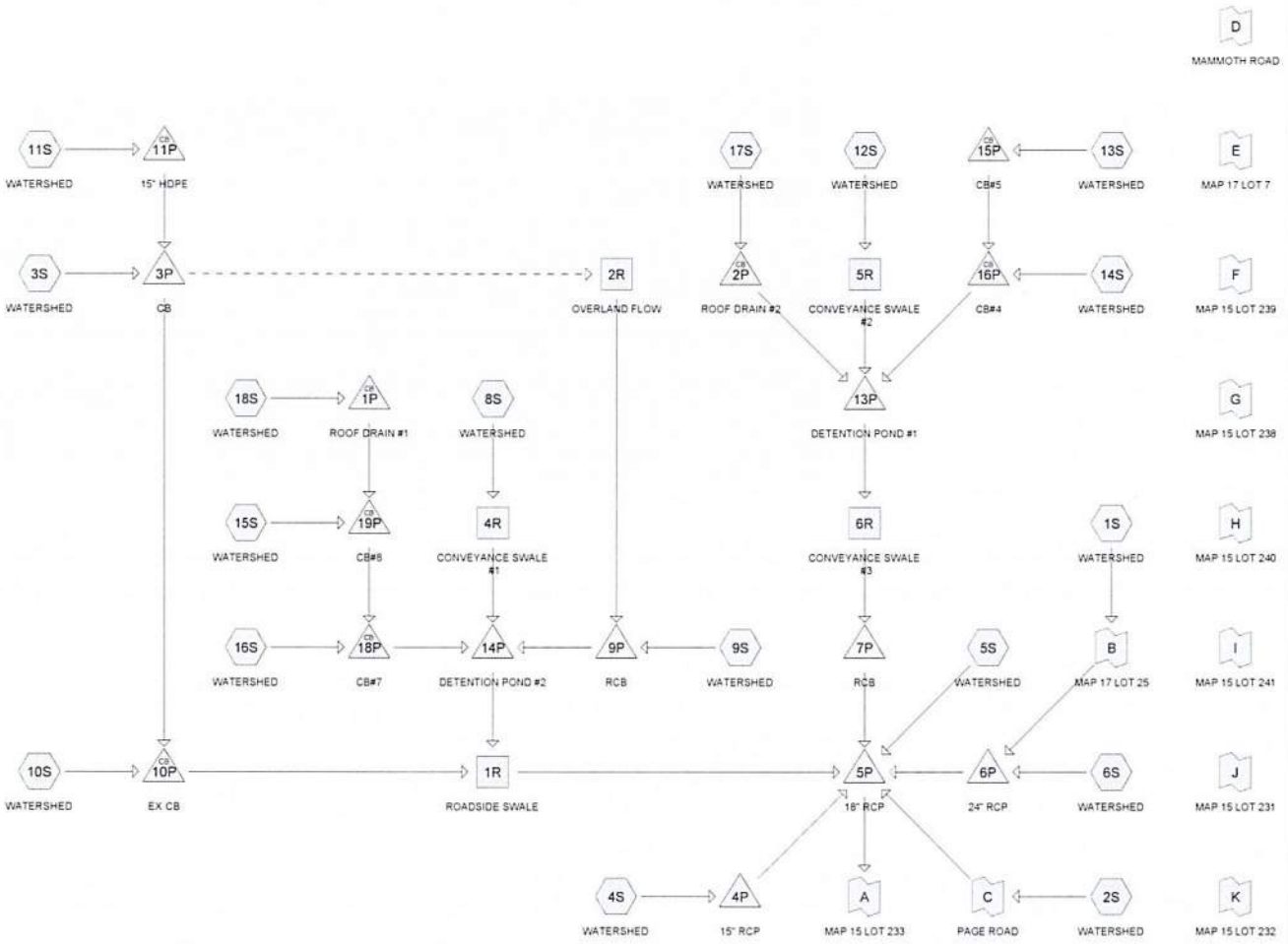
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link K: MAP 15 LOT 232

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs



Routing Diagram for 2101131-POST-DEVELOPMENT_REV3, Revised February 20, 2026

Prepared by Keach-Nordstrom Associates, Inc, Printed 2/19/2026

HydroCAD® 10.20-6a s/n 01045 © 2024 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.83	61	>75% Grass cover, Good, HSG B (4S, 5S, 6S)
5.78	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 6S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S)
0.40	80	>75% Grass cover, Good, HSG D (6S)
0.11	100	Open water (8S, 12S)
3.19	98	Paved parking (2S, 3S, 4S, 5S, 6S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S)
2.43	98	Roofs (3S, 6S, 8S, 9S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S)
2.06	55	Woods, Good, HSG B (4S, 5S, 6S)
5.29	70	Woods, Good, HSG C (1S, 2S, 3S, 4S, 6S, 8S, 9S, 10S, 12S)
2.09	77	Woods, Good, HSG D (1S, 2S, 5S, 6S)
22.17	**77**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.00	HSG A	
2.89	HSG B	4S, 5S, 6S
11.07	HSG C	1S, 2S, 3S, 4S, 6S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S
2.49	HSG D	1S, 2S, 5S, 6S
5.73	Other	2S, 3S, 4S, 5S, 6S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S
22.17		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: WATERSHED Runoff Area=29,996 sf 0.00% Impervious Runoff Depth>2.62"
Flow Length=238' Tc=10.5 min CN=72 Runoff=1.79 cfs 0.150 af

Subcatchment2S: WATERSHED Runoff Area=24,165 sf 3.72% Impervious Runoff Depth>2.80"
Flow Length=270' Tc=10.5 min CN=74 Runoff=1.55 cfs 0.129 af

Subcatchment3S: WATERSHED Runoff Area=36,571 sf 28.26% Impervious Runoff Depth>3.36"
Flow Length=317' Tc=11.9 min CN=80 Runoff=2.71 cfs 0.235 af

Subcatchment4S: WATERSHED Runoff Area=11,668 sf 34.32% Impervious Runoff Depth>2.80"
Tc=6.0 min CN=74 Runoff=0.86 cfs 0.062 af

Subcatchment5S: WATERSHED Runoff Area=43,638 sf 26.04% Impervious Runoff Depth>2.44"
Flow Length=150' Tc=9.7 min CN=70 Runoff=2.47 cfs 0.204 af

Subcatchment6S: WATERSHED Runoff Area=639,175 sf 25.40% Impervious Runoff Depth>3.05"
Flow Length=1,316' Tc=48.0 min CN=77 Runoff=23.71 cfs 3.730 af

Subcatchment8S: WATERSHED Runoff Area=23,465 sf 24.34% Impervious Runoff Depth>3.37"
Flow Length=292' Tc=6.3 min CN=80 Runoff=2.07 cfs 0.151 af

Subcatchment9S: WATERSHED Runoff Area=47,516 sf 12.13% Impervious Runoff Depth>3.08"
Flow Length=275' Tc=8.4 min CN=77 Runoff=3.58 cfs 0.280 af

Subcatchment10S: WATERSHED Runoff Area=25,541 sf 17.94% Impervious Runoff Depth>3.08"
Tc=6.0 min CN=77 Runoff=2.08 cfs 0.150 af

Subcatchment11S: WATERSHED Runoff Area=34,434 sf 30.64% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=81 Runoff=3.14 cfs 0.228 af

Subcatchment12S: WATERSHED Runoff Area=15,344 sf 24.24% Impervious Runoff Depth>3.37"
Tc=6.0 min CN=80 Runoff=1.36 cfs 0.099 af

Subcatchment13S: WATERSHED Runoff Area=4,487 sf 81.12% Impervious Runoff Depth>4.73"
Tc=6.0 min CN=93 Runoff=0.52 cfs 0.041 af

Subcatchment14S: WATERSHED Runoff Area=4,333 sf 80.61% Impervious Runoff Depth>4.73"
Tc=6.0 min CN=93 Runoff=0.50 cfs 0.039 af

Subcatchment15S: WATERSHED Runoff Area=13,307 sf 89.24% Impervious Runoff Depth>4.95"
Tc=6.0 min CN=95 Runoff=1.58 cfs 0.126 af

Subcatchment16S: WATERSHED Runoff Area=8,965 sf 86.63% Impervious Runoff Depth>4.95"
Tc=6.0 min CN=95 Runoff=1.07 cfs 0.085 af

Subcatchment17S: WATERSHED Runoff Area=1,661 sf 100.00% Impervious Runoff Depth>5.30"
Tc=6.0 min CN=98 Runoff=0.20 cfs 0.017 af

Subcatchment18S: WATERSHED Runoff Area=1,661 sf 100.00% Impervious Runoff Depth>5.30"
Tc=6.0 min CN=98 Runoff=0.20 cfs 0.017 af

Reach 1R: ROADSIDE SWALE Avg. Flow Depth=0.28' Max Vel=3.18 fps Inflow=9.85 cfs 1.258 af
n=0.025 L=457.0' S=0.0171 '/' Capacity=86.73 cfs Outflow=9.82 cfs 1.255 af

Reach 2R: OVERLAND FLOW Avg. Flow Depth=0.17' Max Vel=1.93 fps Inflow=3.72 cfs 0.075 af
n=0.025 L=160.0' S=0.0122 '/' Capacity=73.48 cfs Outflow=3.42 cfs 0.075 af

Reach 4R: CONVEYANCE SWALE #1 Avg. Flow Depth=0.39' Max Vel=2.38 fps Inflow=2.07 cfs 0.151 af
n=0.030 L=135.0' S=0.0150 '/' Capacity=16.19 cfs Outflow=2.05 cfs 0.151 af

Reach 5R: CONVEYANCE SWALE #2 Avg. Flow Depth=0.28' Max Vel=2.70 fps Inflow=1.36 cfs 0.099 af
n=0.030 L=140.0' S=0.0286 '/' Capacity=22.38 cfs Outflow=1.36 cfs 0.099 af

Reach 6R: CONVEYANCE SWALE #3 Avg. Flow Depth=0.22' Max Vel=2.45 fps Inflow=0.88 cfs 0.187 af
n=0.030 L=100.0' S=0.0304 '/' Capacity=23.08 cfs Outflow=0.88 cfs 0.187 af

Pond 1P: ROOF DRAIN #1 Peak Elev=319.04' Inflow=0.20 cfs 0.017 af
6.0" Round Culvert n=0.013 L=70.6' S=0.0050 '/' Outflow=0.20 cfs 0.017 af

Pond 2P: ROOF DRAIN #2 Peak Elev=318.58' Inflow=0.20 cfs 0.017 af
6.0" Round Culvert n=0.013 L=8.0' S=0.0250 '/' Outflow=0.20 cfs 0.017 af

Pond 3P: CB Peak Elev=321.11' Storage=167 cf Inflow=5.49 cfs 0.463 af
Primary=1.98 cfs 0.387 af Secondary=3.72 cfs 0.075 af Outflow=5.70 cfs 0.462 af

Pond 4P: 15" RCP Peak Elev=309.08' Storage=6 cf Inflow=0.86 cfs 0.062 af
Primary=0.86 cfs 0.062 af Secondary=0.00 cfs 0.000 af Outflow=0.86 cfs 0.062 af

Pond 5P: 18" RCP Peak Elev=308.46' Storage=2,269 cf Inflow=15.19 cfs 5.680 af
18.0" Round Culvert n=0.011 L=112.5' S=0.0096 '/' Outflow=13.02 cfs 5.679 af

Pond 6P: 24" RCP Peak Elev=308.75' Storage=65,518 cf Inflow=24.09 cfs 3.880 af
Primary=10.07 cfs 3.843 af Secondary=0.00 cfs 0.000 af Outflow=10.07 cfs 3.820 af

Pond 7P: RCB Peak Elev=310.86' Storage=72 cf Inflow=0.88 cfs 0.187 af
Outflow=0.88 cfs 0.186 af

Pond 9P: RCB Peak Elev=319.82' Storage=123 cf Inflow=6.95 cfs 0.355 af
Primary=1.24 cfs 0.232 af Secondary=5.73 cfs 0.123 af Outflow=6.97 cfs 0.355 af

Pond 10P: EX CB Peak Elev=316.73' Inflow=4.05 cfs 0.537 af
Outflow=4.05 cfs 0.537 af

Pond 11P: 15" HDPE Peak Elev=325.57' Inflow=3.14 cfs 0.228 af
15.0" Round Culvert n=0.011 L=41.0' S=0.0707 '/' Outflow=3.14 cfs 0.228 af

Pond 13P: DETENTION POND #1 Peak Elev=316.71' Storage=3,142 cf Inflow=2.57 cfs 0.195 af
Outflow=0.88 cfs 0.187 af

Pond 14P: DETENTION POND #2 Peak Elev=317.22' Storage=6,828 cf Inflow=11.77 cfs 0.733 af
Outflow=6.81 cfs 0.721 af

Pond 15P: CB#5 Peak Elev=319.05' Inflow=0.52 cfs 0.041 af
15.0" Round Culvert n=0.013 L=22.0' S=0.0100 '/' Outflow=0.52 cfs 0.041 af

Pond 16P: CB#4 Peak Elev=318.85' Inflow=1.02 cfs 0.080 af
15.0" Round Culvert n=0.013 L=23.0' S=0.0100 '/' Outflow=1.02 cfs 0.080 af

Pond 18P: CB#7 Peak Elev=318.77' Inflow=2.85 cfs 0.228 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=2.85 cfs 0.228 af

Pond 19P: CB#8 Peak Elev=318.93' Inflow=1.78 cfs 0.143 af
15.0" Round Culvert n=0.013 L=23.0' S=0.0052 '/' Outflow=1.78 cfs 0.143 af

Link A: MAP 15 LOT 233 Inflow=13.02 cfs 5.679 af
Primary=13.02 cfs 5.679 af

Link B: MAP 17 LOT 25 Inflow=1.79 cfs 0.150 af
Primary=1.79 cfs 0.150 af

Link C: PAGE ROAD Inflow=1.55 cfs 0.129 af
Primary=1.55 cfs 0.129 af

Link D: MAMMOTH ROAD Primary=0.00 cfs 0.000 af

Link E: MAP 17 LOT 7 Primary=0.00 cfs 0.000 af

Link F: MAP 15 LOT 239 Primary=0.00 cfs 0.000 af

Link G: MAP 15 LOT 238 Primary=0.00 cfs 0.000 af

Link H: MAP 15 LOT 240 Primary=0.00 cfs 0.000 af

Link I: MAP 15 LOT 241 Primary=0.00 cfs 0.000 af

Link J: MAP 15 LOT 231 Primary=0.00 cfs 0.000 af

Link K: MAP 15 LOT 232 Primary=0.00 cfs 0.000 af

Total Runoff Area = 22.17 ac Runoff Volume = 5.743 af Average Runoff Depth = 3.11"
74.18% Pervious = 16.45 ac 25.82% Impervious = 5.73 ac

Summary for Subcatchment 1S: WATERSHED

Runoff = 1.79 cfs @ 12.15 hrs, Volume= 0.150 af, Depth> 2.62"
Routed to Link B : MAP 17 LOT 25

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

Area (sf)	CN	Description
19,036	70	Woods, Good, HSG C
2,150	77	Woods, Good, HSG D
8,810	74	>75% Grass cover, Good, HSG C
29,996	72	Weighted Average
29,996		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
2.1	188	0.0850	1.46		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	238	Total			

Summary for Subcatchment 2S: WATERSHED

Runoff = 1.55 cfs @ 12.15 hrs, Volume= 0.129 af, Depth> 2.80"
Routed to Link C : PAGE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	4,752	70	Woods, Good, HSG C
	290	77	Woods, Good, HSG D
	18,223	74	>75% Grass cover, Good, HSG C
*	900	98	Paved parking
	24,165	74	Weighted Average
	23,265		96.28% Pervious Area
	900		3.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	50	0.0500	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
1.2	80	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	140	0.0290	8.70	113.05	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=1.00' Z= 3.0 '/' Top.W=16.00' n= 0.025
10.5	270	Total			

Summary for Subcatchment 3S: WATERSHED

Runoff = 2.71 cfs @ 12.17 hrs, Volume= 0.235 af, Depth> 3.36"
Routed to Pond 3P : CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	8,219	70	Woods, Good, HSG C
	18,018	74	>75% Grass cover, Good, HSG C
*	9,019	98	Paved parking
*	1,315	98	Roofs
	36,571	80	Weighted Average
	26,237		71.74% Pervious Area
	10,334		28.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
1.2	50	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	37	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	160	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.9	317	Total			

Summary for Subcatchment 4S: WATERSHED

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.062 af, Depth> 2.80"
Routed to Pond 4P : 15" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	569	55	Woods, Good, HSG B
	194	70	Woods, Good, HSG C
	6,900	61	>75% Grass cover, Good, HSG B
*	4,005	98	Paved parking
	11,668	74	Weighted Average
	7,663		65.68% Pervious Area
	4,005		34.32% Impervious Area

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

Summary for Subcatchment 5S: WATERSHED

Runoff = 2.47 cfs @ 12.14 hrs, Volume= 0.204 af, Depth> 2.44"
Routed to Pond 5P : 18" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	9,648	55	Woods, Good, HSG B
	851	77	Woods, Good, HSG D
	21,775	61	>75% Grass cover, Good, HSG B
*	11,364	98	Paved parking
	43,638	70	Weighted Average
	32,274		73.96% Pervious Area
	11,364		26.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
1.3	100	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.7	150	Total			

Summary for Subcatchment 6S: WATERSHED

Runoff = 23.71 cfs @ 12.66 hrs, Volume= 3.730 af, Depth> 3.05"
Routed to Pond 6P : 24" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	79,545	55	Woods, Good, HSG B
	189,214	70	Woods, Good, HSG C
	87,572	77	Woods, Good, HSG D
	7,600	61	>75% Grass cover, Good, HSG B
	95,398	74	>75% Grass cover, Good, HSG C
	17,469	80	>75% Grass cover, Good, HSG D
*	78,900	98	Paved parking
*	83,477	98	Roofs
	639,175	77	Weighted Average
	476,798		74.60% Pervious Area
	162,377		25.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
37.0	1,266	0.0130	0.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
48.0	1,316	Total			

Summary for Subcatchment 8S: WATERSHED

Runoff = 2.07 cfs @ 12.10 hrs, Volume= 0.151 af, Depth> 3.37"
Routed to Reach 4R : CONVEYANCE SWALE #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	1,424	70	Woods, Good, HSG C
	16,329	74	>75% Grass cover, Good, HSG C
*	3,265	100	Open water
*	630	98	Paved parking
*	1,817	98	Roofs
	23,465	80	Weighted Average
	17,753		75.66% Pervious Area
	5,712		24.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0400	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
0.6	45	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	197	0.0100	2.67	3.33	**Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=0.50' Z= 3.0 '/' Top.W=4.00' n= 0.025
6.3	292	Total			

Summary for Subcatchment 9S: WATERSHED

Runoff = 3.58 cfs @ 12.12 hrs, Volume= 0.280 af, Depth> 3.08"
Routed to Pond 9P : RCB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	2,126	70	Woods, Good, HSG C
	39,624	74	>75% Grass cover, Good, HSG C
*	1,971	98	Paved parking
*	3,795	98	Roofs
	47,516	77	Weighted Average
	41,750		87.87% Pervious Area
	5,766		12.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	50	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	205	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	275	Total			

Summary for Subcatchment 10S: WATERSHED

Runoff = 2.08 cfs @ 12.09 hrs, Volume= 0.150 af, Depth> 3.08"
Routed to Pond 10P : EX CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	5,523	70	Woods, Good, HSG C
	15,436	74	>75% Grass cover, Good, HSG C
*	4,582	98	Paved parking
	25,541	77	Weighted Average
	20,959		82.06% Pervious Area
	4,582		17.94% Impervious Area

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

Summary for Subcatchment 11S: WATERSHED

Runoff = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af, Depth> 3.46"
Routed to Pond 11P : 15" HDPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	23,883	74	>75% Grass cover, Good, HSG C
*	7,832	98	Paved parking
*	2,719	98	Roofs
	34,434	81	Weighted Average
	23,883		69.36% Pervious Area
	10,551		30.64% Impervious Area

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

Summary for Subcatchment 12S: WATERSHED

Runoff = 1.36 cfs @ 12.09 hrs, Volume= 0.099 af, Depth> 3.37"
Routed to Reach 5R : CONVEYANCE SWALE #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	97	70	Woods, Good, HSG C
	11,528	74	>75% Grass cover, Good, HSG C
*	1,323	100	Open water
*	454	98	Paved parking
*	1,942	98	Roofs
	15,344	80	Weighted Average
	11,625		75.76% Pervious Area
	3,719		24.24% Impervious Area

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

Summary for Subcatchment 13S: WATERSHED

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.041 af, Depth> 4.73"
Routed to Pond 15P : CB#5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	847	74	>75% Grass cover, Good, HSG C
*	1,727	98	Paved parking
*	1,913	98	Roofs
	4,487	93	Weighted Average
	847		18.88% Pervious Area
	3,640		81.12% Impervious Area

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

Summary for Subcatchment 14S: WATERSHED

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.039 af, Depth> 4.73"
Routed to Pond 16P : CB#4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	840	74	>75% Grass cover, Good, HSG C
*	1,732	98	Paved parking
*	1,761	98	Roofs
	4,333	93	Weighted Average
	840		19.39% Pervious Area
	3,493		80.61% Impervious Area

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

Summary for Subcatchment 15S: WATERSHED

Runoff = 1.58 cfs @ 12.09 hrs, Volume= 0.126 af, Depth> 4.95"
Routed to Pond 19P : CB#8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	1,432	74	>75% Grass cover, Good, HSG C
*	9,966	98	Paved parking
*	1,909	98	Roofs
	13,307	95	Weighted Average
	1,432		10.76% Pervious Area
	11,875		89.24% Impervious Area

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

Summary for Subcatchment 16S: WATERSHED

Runoff = 1.07 cfs @ 12.09 hrs, Volume= 0.085 af, Depth> 4.95"
Routed to Pond 18P : CB#7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	1,199	74	>75% Grass cover, Good, HSG C
*	6,002	98	Paved parking
*	1,764	98	Roofs
	8,965	95	Weighted Average
	1,199		13.37% Pervious Area
	7,766		86.63% Impervious Area

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

Summary for Subcatchment 17S: WATERSHED

Runoff = 0.20 cfs @ 12.09 hrs, Volume= 0.017 af, Depth> 5.30"
Routed to Pond 2P : ROOF DRAIN #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
*	1,661	98	Roofs
	1,661		100.00% Impervious Area

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

Summary for Subcatchment 18S: WATERSHED

Runoff = 0.20 cfs @ 12.09 hrs, Volume= 0.017 af, Depth> 5.30"
Routed to Pond 1P : ROOF DRAIN #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
*	1,661	98	Roofs
	1,661		100.00% Impervious Area

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

Summary for Reach 1R: ROADSIDE SWALE

Inflow Area = 4.40 ac, 30.42% Impervious, Inflow Depth > 3.44" for 25-yr event
Inflow = 9.85 cfs @ 12.23 hrs, Volume= 1.258 af
Outflow = 9.82 cfs @ 12.26 hrs, Volume= 1.255 af, Atten= 0%, Lag= 1.8 min
Routed to Pond 5P : 18" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.18 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 8.2 min

Peak Storage= 1,412 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.28' , Surface Width= 11.71'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 86.73 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 457.0' Slope= 0.0171 '/'
Inlet Invert= 314.40', Outlet Invert= 306.60'



‡

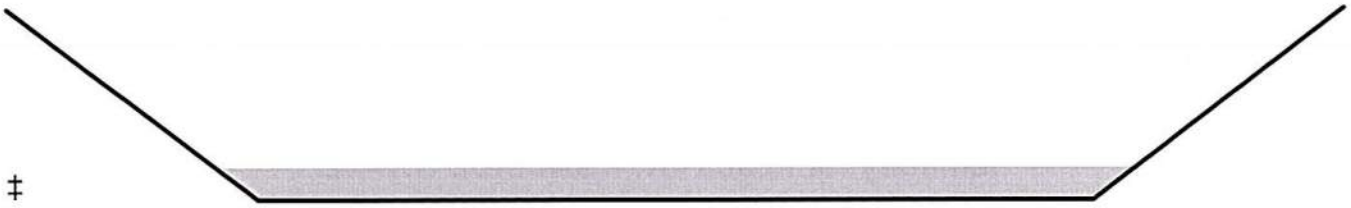
Summary for Reach 2R: OVERLAND FLOW

Inflow = 3.72 cfs @ 12.11 hrs, Volume= 0.075 af
Outflow = 3.42 cfs @ 12.13 hrs, Volume= 0.075 af, Atten= 8%, Lag= 1.4 min
Routed to Pond 9P : RCB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.93 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.66 fps, Avg. Travel Time= 4.0 min

Peak Storage= 283 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 11.01'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 73.48 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 160.0' Slope= 0.0122 '/'
Inlet Invert= 320.75', Outlet Invert= 318.79'



‡

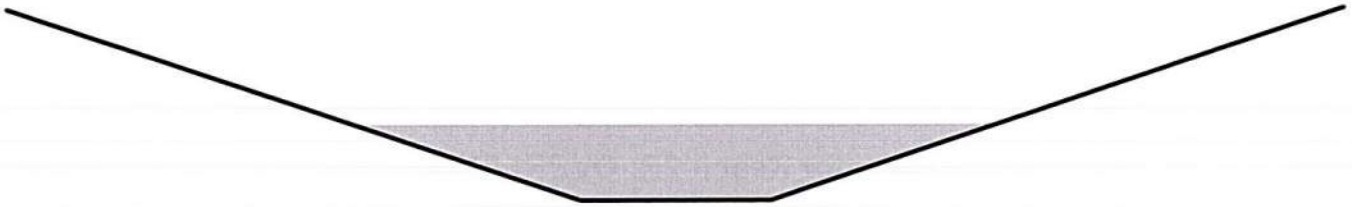
Summary for Reach 4R: CONVEYANCE SWALE #1

Inflow Area = 0.54 ac, 24.34% Impervious, Inflow Depth > 3.37" for 25-yr event
Inflow = 2.07 cfs @ 12.10 hrs, Volume= 0.151 af
Outflow = 2.05 cfs @ 12.11 hrs, Volume= 0.151 af, Atten= 1%, Lag= 0.7 min
Routed to Pond 14P : DETENTION POND #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 2.38 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 2.7 min

Peak Storage= 116 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.39' , Surface Width= 3.37'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 16.19 cfs

1.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 7.00'
Length= 135.0' Slope= 0.0150 '/'
Inlet Invert= 321.00', Outlet Invert= 318.98'



Summary for Reach 5R: CONVEYANCE SWALE #2

Inflow Area = 0.35 ac, 24.24% Impervious, Inflow Depth > 3.37" for 25-yr event
Inflow = 1.36 cfs @ 12.09 hrs, Volume= 0.099 af
Outflow = 1.36 cfs @ 12.10 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.7 min
Routed to Pond 13P : DETENTION POND #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 2.70 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 2.6 min

Peak Storage= 70 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.28' , Surface Width= 2.65'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 22.38 cfs

1.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 7.00'
Length= 140.0' Slope= 0.0286 '/'
Inlet Invert= 321.00', Outlet Invert= 317.00'



Summary for Reach 6R: CONVEYANCE SWALE #3

Inflow Area = 0.59 ac, 48.45% Impervious, Inflow Depth > 3.79" for 25-yr event
Inflow = 0.88 cfs @ 12.39 hrs, Volume= 0.187 af
Outflow = 0.88 cfs @ 12.40 hrs, Volume= 0.187 af, Atten= 0%, Lag= 0.5 min
Routed to Pond 7P : RCB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 2.45 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.03 fps, Avg. Travel Time= 1.6 min

Peak Storage= 36 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.22' , Surface Width= 2.30'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 23.08 cfs

1.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 7.00'
Length= 100.0' Slope= 0.0304 '/'
Inlet Invert= 313.78', Outlet Invert= 310.74'



Summary for Pond 1P: ROOF DRAIN #1

Inflow Area = 0.04 ac,100.00% Impervious, Inflow Depth > 5.30" for 25-yr event
Inflow = 0.20 cfs @ 12.09 hrs, Volume= 0.017 af
Outflow = 0.20 cfs @ 12.09 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 12.09 hrs, Volume= 0.017 af
Routed to Pond 19P : CB#8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 319.04' @ 12.09 hrs
Flood Elev= 322.29'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.39'	**6.0" Round Culvert** L= 70.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.39' / 318.04' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.20 cfs @ 12.09 hrs HW=319.02' TW=318.92' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.20 cfs @ 1.03 fps)

Summary for Pond 2P: ROOF DRAIN #2

Inflow Area = 0.04 ac,100.00% Impervious, Inflow Depth > 5.30" for 25-yr event
Inflow = 0.20 cfs @ 12.09 hrs, Volume= 0.017 af
Outflow = 0.20 cfs @ 12.09 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 12.09 hrs, Volume= 0.017 af
Routed to Pond 13P : DETENTION POND #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 318.58' @ 12.09 hrs
Flood Elev= 322.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.30'	**6.0" Round Culvert** L= 8.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.30' / 318.10' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.20 cfs @ 12.09 hrs HW=318.57' TW=316.30' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.20 cfs @ 1.78 fps)

Summary for Pond 3P: CB

Inflow Area = 1.63 ac, 29.41% Impervious, Inflow Depth > 3.41" for 25-yr event
Inflow = 5.49 cfs @ 12.11 hrs, Volume= 0.463 af
Outflow = 5.70 cfs @ 12.11 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
Primary = 1.98 cfs @ 12.12 hrs, Volume= 0.387 af
Routed to Pond 10P : EX CB
Secondary = 3.72 cfs @ 12.11 hrs, Volume= 0.075 af
Routed to Reach 2R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 321.11' @ 12.11 hrs Surf.Area= 356 sf Storage= 167 cf
Flood Elev= 321.00' Surf.Area= 356 sf Storage= 167 cf

Plug-Flow detention time= 2.6 min calculated for 0.462 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (819.1 - 818.0)

Volume	Invert	Avail.Storage	Storage Description
#1	319.10'	16 cf	**4.00'D x 1.25'H Vertical Cone/Cylinder**
#2	319.10'	151 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		167 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
319.10	5	0	0
320.50	65	49	49
321.00	343	102	151

Device	Routing	Invert	Outlet Devices
#1	Primary	319.10'	**8.0" Round Culvert** L= 228.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 319.10' / 314.83' S= 0.0187 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Device 1	320.27'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	320.75'	**8.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.97 cfs @ 12.12 hrs HW=321.09' TW=316.72' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.97 cfs @ 5.66 fps)
↑—**2=Grate** (Passes 1.97 cfs of 17.46 cfs potential flow)

Secondary OutFlow Max=3.58 cfs @ 12.11 hrs HW=321.10' TW=320.91' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Weir Controls 3.58 cfs @ 1.29 fps)

Summary for Pond 4P: 15" RCP

Inflow Area = 0.27 ac, 34.32% Impervious, Inflow Depth > 2.80" for 25-yr event
Inflow = 0.86 cfs @ 12.09 hrs, Volume= 0.062 af
Outflow = 0.86 cfs @ 12.10 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.1 min
Primary = 0.86 cfs @ 12.10 hrs, Volume= 0.062 af
Routed to Pond 5P : 18" RCP
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 5P : 18" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 309.08' @ 12.10 hrs Surf.Area= 31 sf Storage= 6 cf
Flood Elev= 311.00' Surf.Area= 730 sf Storage= 593 cf

Plug-Flow detention time= 0.2 min calculated for 0.062 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (832.1 - 831.9)

Volume	Invert	Avail.Storage	Storage Description
#1	308.62'	593 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.62	5	0	0
309.00	16	4	4
310.00	216	116	120
311.00	730	473	593

Device	Routing	Invert	Outlet Devices
#1	Primary	308.64'	**15.0" Round Culvert** L= 24.6' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 308.64' / 306.60' S= 0.0829 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf
#2	Secondary	310.96'	**2.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.85 cfs @ 12.10 hrs HW=309.07' TW=307.55' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.85 cfs @ 2.25 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=308.62' TW=305.37' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 5P: 18" RCP

Inflow Area = 22.17 ac, 25.82% Impervious, Inflow Depth > 3.07" for 25-yr event
Inflow = 15.19 cfs @ 12.68 hrs, Volume= 5.680 af
Outflow = 13.02 cfs @ 12.34 hrs, Volume= 5.679 af, Atten= 14%, Lag= 0.0 min
Primary = 13.02 cfs @ 12.34 hrs, Volume= 5.679 af
Routed to Link A : MAP 15 LOT 233

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 308.46' @ 12.34 hrs Surf.Area= 2,028 sf Storage= 2,269 cf
Flood Elev= 310.88' Surf.Area= 7,537 sf Storage= 12,203 cf

Plug-Flow detention time= 1.5 min calculated for 5.668 af (100% of inflow)
Center-of-Mass det. time= 1.5 min (899.3 - 897.9)

Volume	Invert	Avail.Storage	Storage Description
#1	305.37'	13,134 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
305.37	10	0	0
306.00	92	32	32
307.00	641	367	399
308.00	1,481	1,061	1,460
309.00	2,668	2,075	3,534
310.00	4,275	3,472	7,006
311.00	7,982	6,129	13,134

Device	Routing	Invert	Outlet Devices
#1	Primary	305.37'	**18.0" Round Culvert** L= 112.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 305.37' / 304.29' S= 0.0096 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=13.00 cfs @ 12.34 hrs HW=308.46' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 13.00 cfs @ 7.36 fps)

Summary for Pond 6P: 24" RCP

Inflow Area = 15.36 ac, 24.27% Impervious, Inflow Depth > 3.03" for 25-yr event
Inflow = 24.09 cfs @ 12.65 hrs, Volume= 3.880 af
Outflow = 10.07 cfs @ 13.70 hrs, Volume= 3.820 af, Atten= 58%, Lag= 62.7 min
Primary = 10.07 cfs @ 13.70 hrs, Volume= 3.843 af
Routed to Pond 5P : 18" RCP
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 5P : 18" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 308.75' @ 13.37 hrs Surf.Area= 44,561 sf Storage= 65,518 cf
Flood Elev= 311.00' Surf.Area= 73,507 sf Storage= 196,526 cf

Plug-Flow detention time= 79.7 min calculated for 3.812 af (98% of inflow)
Center-of-Mass det. time= 71.1 min (928.4 - 857.3)

Volume	Invert	Avail.Storage	Storage Description
#1	306.24'	196,526 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
306.24	4,300	0	0
308.00	35,858	35,339	35,339
310.00	59,050	94,908	130,247
311.00	73,507	66,279	196,526

Device	Routing	Invert	Outlet Devices
#1	Primary	306.24'	**24.0" Round Culvert** L= 43.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 306.24' / 305.70' S= 0.0123 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	310.88'	**6.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.12 cfs @ 13.70 hrs HW=308.70' TW=308.25' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 10.12 cfs @ 3.22 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=306.24' TW=305.37' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7P: RCB

Inflow Area = 0.59 ac, 48.45% Impervious, Inflow Depth > 3.78" for 25-yr event
Inflow = 0.88 cfs @ 12.40 hrs, Volume= 0.187 af
Outflow = 0.88 cfs @ 12.41 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.4 min
Primary = 0.88 cfs @ 12.41 hrs, Volume= 0.186 af
Routed to Pond 5P : 18" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 310.86' @ 12.41 hrs Surf.Area= 255 sf Storage= 72 cf
Flood Elev= 311.00' Surf.Area= 521 sf Storage= 123 cf

Plug-Flow detention time= 7.0 min calculated for 0.186 af (99% of inflow)
Center-of-Mass det. time= 3.4 min (878.2 - 874.9)

Volume	Invert	Avail.Storage	Storage Description
#1	306.24'	57 cf	**4.00'D x 4.50'H Vertical Cone/Cylinder**
#2	310.74'	67 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		123 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
310.74	5	0	0
311.00	508	67	67

Device	Routing	Invert	Outlet Devices
#1	Primary	306.24'	**12.0" Round Culvert** L= 44.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 306.24' / 305.82' S= 0.0095 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	310.74'	**24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.88 cfs @ 12.41 hrs HW=310.86' TW=308.40' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.88 cfs of 5.93 cfs potential flow)
↑—**2=Grate** (Weir Controls 0.88 cfs @ 1.14 fps)

Summary for Pond 9P: RCB

Inflow Area = 1.09 ac, 12.13% Impervious, Inflow Depth > 3.90" for 25-yr event
Inflow = 6.95 cfs @ 12.13 hrs, Volume= 0.355 af
Outflow = 6.97 cfs @ 12.13 hrs, Volume= 0.355 af, Atten= 0%, Lag= 0.1 min
Primary = 1.24 cfs @ 12.13 hrs, Volume= 0.232 af
Routed to Pond 14P : DETENTION POND #2
Secondary = 5.73 cfs @ 12.13 hrs, Volume= 0.123 af
Routed to Pond 14P : DETENTION POND #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 319.82' @ 12.13 hrs Surf.Area= 213 sf Storage= 123 cf
Flood Elev= 319.50' Surf.Area= 213 sf Storage= 123 cf

Plug-Flow detention time= 1.0 min calculated for 0.355 af (100% of inflow)

Center-of-Mass det. time= 0.5 min (806.9 - 806.4)

Volume	Invert	Avail.Storage	Storage Description
#1	318.78'	111 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	317.84'	12 cf	**4.00'D x 0.95'H Vertical Cone/Cylinder**
		123 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.78	5	0	0
319.00	168	19	19
319.50	200	92	111

Device	Routing	Invert	Outlet Devices
#1	Primary	317.84'	**6.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 317.84' / 317.57' S= 0.0270 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	318.79'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	319.25'	**5.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.24 cfs @ 12.13 hrs HW=319.81' TW=316.93' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.24 cfs @ 6.31 fps)
↑—**2=Orifice/Grate** (Passes 1.24 cfs of 15.26 cfs potential flow)

Secondary OutFlow Max=5.56 cfs @ 12.13 hrs HW=319.81' TW=316.93' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Weir Controls 5.56 cfs @ 1.99 fps)

Summary for Pond 10P: EX CB

Inflow Area = 2.22 ac, 26.38% Impervious, Inflow Depth > 2.91" for 25-yr event
Inflow = 4.05 cfs @ 12.09 hrs, Volume= 0.537 af
Outflow = 4.05 cfs @ 12.09 hrs, Volume= 0.537 af, Atten= 0%, Lag= 0.0 min
Primary = 4.05 cfs @ 12.09 hrs, Volume= 0.537 af
Routed to Reach 1R : ROADSIDE SWALE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 316.73' @ 12.09 hrs
Flood Elev= 317.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	314.53'	**12.0" Round Culvert** L= 10.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 314.53' / 314.40' S= 0.0130 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf
#2	Device 1	316.44'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.02 cfs @ 12.09 hrs HW=316.73' TW=314.64' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 4.02 cfs of 4.45 cfs potential flow)
↑—**2=Grate** (Weir Controls 4.02 cfs @ 1.75 fps)

Summary for Pond 11P: 15" HDPE

Inflow Area = 0.79 ac, 30.64% Impervious, Inflow Depth > 3.46" for 25-yr event
Inflow = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af
Outflow = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min
Primary = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af
Routed to Pond 3P : CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 325.57' @ 12.09 hrs
Flood Elev= 326.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	324.65'	**15.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 324.65' / 321.75' S= 0.0707 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=3.07 cfs @ 12.09 hrs HW=325.55' TW=321.09' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.07 cfs @ 3.24 fps)

Summary for Pond 13P: DETENTION POND #1

Inflow Area = 0.59 ac, 48.45% Impervious, Inflow Depth > 3.95" for 25-yr event
Inflow = 2.57 cfs @ 12.10 hrs, Volume= 0.195 af
Outflow = 0.88 cfs @ 12.39 hrs, Volume= 0.187 af, Atten= 66%, Lag= 17.7 min
Primary = 0.88 cfs @ 12.39 hrs, Volume= 0.187 af
Routed to Reach 6R : CONVEYANCE SWALE #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 316.71' @ 12.39 hrs Surf.Area= 2,802 sf Storage= 3,142 cf
Flood Elev= 318.00' Surf.Area= 4,723 sf Storage= 7,259 cf

Plug-Flow detention time= 103.9 min calculated for 0.187 af (96% of inflow)
Center-of-Mass det. time= 79.8 min (874.1 - 794.3)

Volume	Invert	Avail.Storage	Storage Description
#1	315.00'	7,259 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	315.00'	0 cf	**Sediment Forebay (No Storage) (Prismatic)** Listed below (Recalc) 548 cf Overall x 0.0% Voids
		7,259 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
315.00	1,314	0	0
316.00	1,913	1,614	1,614
317.00	2,568	2,241	3,854
318.00	4,241	3,405	7,259

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
315.00	66	0	0
317.00	482	548	548

Device	Routing	Invert	Outlet Devices
#1	Primary	314.14'	**15.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 314.14' / 313.78' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	315.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 315.00 316.50 316.50 317.00 Width (feet) 0.08 0.08 1.00 1.00
#3	Device 1	317.50'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.88 cfs @ 12.39 hrs HW=316.71' TW=314.00' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.88 cfs of 8.24 cfs potential flow)
↑—**2=Custom Weir/Orifice** (Weir Controls 0.88 cfs @ 2.65 fps)
—**3=Grate** (Controls 0.00 cfs)

Summary for Pond 14P: DETENTION POND #2

Inflow Area = 2.18 ac, 34.54% Impervious, Inflow Depth > 4.04" for 25-yr event
Inflow = 11.77 cfs @ 12.11 hrs, Volume= 0.733 af
Outflow = 6.81 cfs @ 12.26 hrs, Volume= 0.721 af, Atten= 42%, Lag= 8.6 min
Primary = 6.81 cfs @ 12.26 hrs, Volume= 0.721 af
Routed to Reach 1R : ROADSIDE SWALE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 317.22' @ 12.26 hrs Surf.Area= 5,427 sf Storage= 6,828 cf
Flood Elev= 319.00' Surf.Area= 8,520 sf Storage= 17,295 cf

Plug-Flow detention time= 34.2 min calculated for 0.721 af (98% of inflow)
Center-of-Mass det. time= 23.9 min (819.8 - 795.9)

Volume	Invert	Avail.Storage	Storage Description
#1	315.50'	17,295 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	316.00'	0 cf	**Sediment Forebay (No Storage) (Prismatic)** Listed below (Recalc) 1,262 cf Overall x 0.0% Voids
		17,295 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
315.50	3,239	0	0
316.00	3,631	1,718	1,718
318.00	5,432	9,063	10,781
319.00	7,597	6,515	17,295

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
316.00	339	0	0
318.00	923	1,262	1,262

Device	Routing	Invert	Outlet Devices
#1	Primary	315.50'	**18.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 315.50' / 315.12' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	315.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 315.50 317.35 Width (feet) 0.92 0.92
#3	Device 1	318.50'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.79 cfs @ 12.26 hrs HW=317.22' TW=314.68' (Dynamic Tailwater)
↑**1=Culvert** (Passes 6.79 cfs of 7.29 cfs potential flow)
↑**2=Custom Weir/Orifice** (Weir Controls 6.79 cfs @ 4.29 fps)
3=Grate (Controls 0.00 cfs)

Summary for Pond 15P: CB#5

Inflow Area = 0.10 ac, 81.12% Impervious, Inflow Depth > 4.73" for 25-yr event
Inflow = 0.52 cfs @ 12.09 hrs, Volume= 0.041 af
Outflow = 0.52 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.09 hrs, Volume= 0.041 af
Routed to Pond 16P : CB#4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 319.05' @ 12.09 hrs
Flood Elev= 322.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.65'	**15.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.65' / 318.43' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.51 cfs @ 12.09 hrs HW=319.05' TW=318.84' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.51 cfs @ 2.26 fps)

Summary for Pond 16P: CB#4

Inflow Area = 0.20 ac, 80.87% Impervious, Inflow Depth > 4.73" for 25-yr event
Inflow = 1.02 cfs @ 12.09 hrs, Volume= 0.080 af
Outflow = 1.02 cfs @ 12.09 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min
Primary = 1.02 cfs @ 12.09 hrs, Volume= 0.080 af
Routed to Pond 13P : DETENTION POND #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 318.85' @ 12.09 hrs
Flood Elev= 322.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	318.33'	**15.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 318.33' / 318.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.00 cfs @ 12.09 hrs HW=318.84' TW=316.30' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 1.00 cfs @ 3.12 fps)

Summary for Pond 18P: CB#7

Inflow Area = 0.55 ac, 89.01% Impervious, Inflow Depth > 4.98" for 25-yr event
Inflow = 2.85 cfs @ 12.09 hrs, Volume= 0.228 af
Outflow = 2.85 cfs @ 12.09 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min
Primary = 2.85 cfs @ 12.09 hrs, Volume= 0.228 af
Routed to Pond 14P : DETENTION POND #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 318.77' @ 12.09 hrs
Flood Elev= 322.31'

Device	Routing	Invert	Outlet Devices
#1	Primary	317.72'	**15.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 317.72' / 317.62' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.77 cfs @ 12.09 hrs HW=318.75' TW=316.72' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.77 cfs @ 3.48 fps)

Summary for Pond 19P: CB#8

Inflow Area = 0.34 ac, 90.43% Impervious, Inflow Depth > 4.99" for 25-yr event
Inflow = 1.78 cfs @ 12.09 hrs, Volume= 0.143 af
Outflow = 1.78 cfs @ 12.09 hrs, Volume= 0.143 af, Atten= 0%, Lag= 0.0 min
Primary = 1.78 cfs @ 12.09 hrs, Volume= 0.143 af
Routed to Pond 18P : CB#7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 318.93' @ 12.09 hrs
Flood Elev= 322.29'

Device	Routing	Invert	Outlet Devices
#1	Primary	317.94'	**15.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 317.94' / 317.82' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.74 cfs @ 12.09 hrs HW=318.92' TW=318.75' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.74 cfs @ 2.33 fps)

Summary for Link A: MAP 15 LOT 233

Inflow Area = 22.17 ac, 25.82% Impervious, Inflow Depth > 3.07" for 25-yr event
Inflow = 13.02 cfs @ 12.34 hrs, Volume= 5.679 af
Primary = 13.02 cfs @ 12.34 hrs, Volume= 5.679 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link B: MAP 17 LOT 25

Inflow Area = 0.69 ac, 0.00% Impervious, Inflow Depth > 2.62" for 25-yr event
Inflow = 1.79 cfs @ 12.15 hrs, Volume= 0.150 af
Primary = 1.79 cfs @ 12.15 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 6P : 24" RCP

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link C: PAGE ROAD

Inflow Area = 0.55 ac, 3.72% Impervious, Inflow Depth > 2.80" for 25-yr event
Inflow = 1.55 cfs @ 12.15 hrs, Volume= 0.129 af
Primary = 1.55 cfs @ 12.15 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : 18" RCP

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link D: MAMMOTH ROAD

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link E: MAP 17 LOT 7

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link F: MAP 15 LOT 239

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link G: MAP 15 LOT 238

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link H: MAP 15 LOT 240

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link I: MAP 15 LOT 241

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link J: MAP 15 LOT 231

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link K: MAP 15 LOT 232

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Pond 13P: DETENTION POND #1

Inflow Area = 0.59 ac, 48.45% Impervious, Inflow Depth > 4.97" for 50-yr event
Inflow = 3.21 cfs @ 12.10 hrs, Volume= 0.245 af
Outflow = 1.41 cfs @ 12.30 hrs, Volume= 0.236 af, Atten= 56%, Lag= 12.1 min
Primary = 1.41 cfs @ 12.30 hrs, Volume= 0.236 af
Routed to Reach 6R : CONVEYANCE SWALE #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 316.89' @ 12.30 hrs Surf.Area= 2,954 sf Storage= 3,574 cf
Flood Elev= 318.00' Surf.Area= 4,723 sf Storage= 7,259 cf

Plug-Flow detention time= 94.2 min calculated for 0.236 af (96% of inflow)
Center-of-Mass det. time= 72.1 min (861.1 - 789.0)

Volume	Invert	Avail.Storage	Storage Description
#1	315.00'	7,259 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	315.00'	0 cf	**Sediment Forebay (No Storage) (Prismatic)** Listed below (Recalc) 548 cf Overall x 0.0% Voids
		7,259 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
315.00	1,314	0	0
316.00	1,913	1,614	1,614
317.00	2,568	2,241	3,854
318.00	4,241	3,405	7,259

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
315.00	66	0	0
317.00	482	548	548

Device	Routing	Invert	Outlet Devices
#1	Primary	314.14'	**15.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 314.14' / 313.78' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	315.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 315.00 316.50 316.50 317.00 Width (feet) 0.08 0.08 1.00 1.00
#3	Device 1	317.50'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.41 cfs @ 12.30 hrs HW=316.89' TW=314.06' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 1.41 cfs of 8.61 cfs potential flow)
↑—**2=Custom Weir/Orifice** (Weir Controls 1.41 cfs @ 2.77 fps)
—**3=Grate** (Controls 0.00 cfs)

Summary for Pond 14P: DETENTION POND #2

[95] Warning: Outlet Device #2 rise exceeded

Inflow Area = 2.18 ac, 34.54% Impervious, Inflow Depth > 5.30" for 50-yr event
Inflow = 15.64 cfs @ 12.11 hrs, Volume= 0.963 af
Outflow = 8.57 cfs @ 12.27 hrs, Volume= 0.949 af, Atten= 45%, Lag= 9.5 min
Primary = 8.57 cfs @ 12.27 hrs, Volume= 0.949 af
Routed to Reach 1R : ROADSIDE SWALE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 317.67' @ 12.27 hrs Surf.Area= 5,959 sf Storage= 9,028 cf
Flood Elev= 319.00' Surf.Area= 8,520 sf Storage= 17,295 cf

Plug-Flow detention time= 31.0 min calculated for 0.949 af (99% of inflow)
Center-of-Mass det. time= 22.3 min (811.3 - 789.1)

Volume	Invert	Avail.Storage	Storage Description
#1	315.50'	17,295 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	316.00'	0 cf	**Sediment Forebay (No Storage) (Prismatic)** Listed below (Recalc) 1,262 cf Overall x 0.0% Voids
		17,295 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
315.50	3,239	0	0
316.00	3,631	1,718	1,718
318.00	5,432	9,063	10,781
319.00	7,597	6,515	17,295

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
316.00	339	0	0
318.00	923	1,262	1,262

Device	Routing	Invert	Outlet Devices
#1	Primary	315.50'	**18.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 315.50' / 315.12' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	315.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 315.50 317.35 Width (feet) 0.92 0.92
#3	Device 1	318.50'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.53 cfs @ 12.27 hrs HW=317.66' TW=314.72' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 8.53 cfs @ 4.83 fps)
↑—**2=Custom Weir/Orifice** (Passes 8.53 cfs of 9.04 cfs potential flow)
—**3=Grate** (Controls 0.00 cfs)

APPENDIX

PRE-DEVELOPMENT DRAINAGE AREA PLAN
POST-DEVELOPMENT DRAINAGE AREA PLAN
STORMWATER OPERATION & MAINTENANCE PLAN

STORMWATER

OPERATION & MAINTENANCE PLAN

Page Rock Townhomes

Map 15; Lots 235 & 236
3 Page Road
Londonderry, New Hampshire

October 21, 2025

KNA Project No. 21-0113-1

KNA KEACH-NORDSTROM ASSOCIATES, INC.

TABLE OF CONTENTS:

I. **General**

Introduction

General Maintenance Requirements

II. **Supporting Documents**

Annual Inspection & Maintenance Reporting Form

Long-Term Inspection & Maintenance Plan Checklist

Long-Term Inspection & Maintenance Log

Anti-Icing Route Data Form

III. **Control of Invasive Plants**

Invasive Plant Guide

IV. **Stormwater Practice Location Plan**

11"x17" "Grading and Drainage Plan"

I. General

Introduction

The project owner or their assigned heirs will maintain the stormwater treatment facilities during construction. The owner of the project is Page Rock, LLC, 5 Hutchings Drive, Suite 5D, Hollis, NH 03049. Upon completion of construction, the Condominium Association will assume ownership of long-term maintenance.

The subject properties are referenced on Londonderry's Tax Map 15 as Lots 235 & 236. Any transfer of responsibility for inspection and maintenance activities or transfer of ownership shall be documented to the Town of Londonderry in writing. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction. Long-term operation and maintenance for the stormwater management facilities are presented below.

Maintenance will be performed as described unless and until the system is formally accepted by a municipality or quasi-municipal district or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system.

Post Construction:

The following standards will be met after construction is complete:

Documentation:

A maintenance log will be kept summarizing inspections, maintenance, and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean out of any sediments or debris, the location where the sediment and debris was disposed after removal will be indicated. The following forms shall be submitted to the Londonderry Department of Engineering on an annual basis.

Maintenance Requirements

Stormwater Ponds:

- 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.
- System embankments should be mowed periodically to maintain grass cover and any other vegetation found on the embankment should be removed at each inspection.
- Trash and debris found within the pond or in the outlet structure should be removed at each inspection.
- Removal of accumulated sediment
- Inspection and repair of embankments, inlet and outlet structures, and appurtenances

Sediment Forebays:

- Forebays help reduce the sediment load to downstream BMP's and will therefore require more frequent cleaning.
- Systems should be inspected at least annually.
- Conduct periodic mowing of embankments (generally two times per year) to control growth of woody vegetation.
- Trash and debris should be removed at each inspection.
- Accumulated sediment should be removed as warranted by such inspection.
- Install and maintain a staff gage or other measuring device, to indicate depth of sediment accumulation and level at which clean-out is required.

Conveyance Swales:

- Grassed channels should be inspected periodically (at least annually) for sediment accumulation, erosion, and condition of surface lining (vegetation or riprap). Repairs, including stone or vegetation replacement, as warranted by such inspection.
- Remove sediment and debris annually, or more frequently as warranted by such inspection.
- Mow vegetated channels based on frequency specified by design. Mowing at least once per year is required to control establishment of woody vegetation. It is recommended to cut grass no shorter than 4 inches.

Catch Basins and Closed Drainage Network:

- Catch basins may require frequent maintenance. 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.
- Sediment should be removed when it approaches half of the sump depth.
- If floating hydrocarbons are observed during an inspection, the material should be removed immediately by skimming, absorbent materials, or other methods and disposed in conformance with the applicable state and federal regulations.

Outlet Protection:

- Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.

General:

- Sweeping will be checked quarterly and completed as needed.
- If any invasive species begin to grow in the stormwater management practices the species shall be disposed of in an appropriate manner that will not allow the pest to survive or spread. The disposal of such species shall be witnessed or approved by a state inspector. Methods for disposal may include, but not be limited to:
    - Encapsulating the plant(s) in plastic bags and disposing of the plant material in one of the following ways:
        - Discarding in trash pickup;
        - Open burning;
        - Incineration; or
        - Burial of infested nursery.

Landscape Management:

Objective: To maintain lawns and plantings to ensure survival, vigorous growth with proper nutrients, pest management and the avoidance of environmental stress such as drought.

1. Lawns & grass areas:
    a. The turfgrass mix selected for lawn areas will be varieties that are qualified, A-L.I.S.T. (Alliance for Low Input Sustainable Turf) or TWCA (Turfgrass Water Conservation Alliance). These organizations have high testing standards to insure lower fertilizer and pesticide inputs, lower water requirements, heat and drought tolerance.
    b. The lawn maintenance will be done by an experienced contractor.
    c. Nutrients will be applied to achieve a successful stand of turf following NH RSA 431
    d. Soil samples will be taken annually to help identify direct nutrient deficiencies and or excesses which will dictate annual nutrient program. Soil test will include, Organic matter, Phosphorus levels, pH, pH buffer, cation exchange capacity, cation base saturations and soil texture.
    e. Integrated pest management (IPM) practices will be followed to determine tolerable pest population levels. Treatments will be made as necessary based on pest thresholds.
    f. Grass varieties will need less watering by nature but the option of natural occurring moisture management product treatments to conserve water are available during periods of severe drought to ensure survival of the turf.

g. Grass will be mowed as needed to a 2.5" – 3 "height depending on seasonal conditions.
h. Grass will be watered as needed.

2. Trees & Shrubs:
    a. Initial plant installation will be a key factor to long-term survival and success
    b. Tree & shrub installation shall be performed in accordance with the growers' requirements.
    c. The tree & shrub maintenance will be done by an experienced contractor.
    d. As with the grass area, integrated pest management (IPM) practices will be followed to determine tolerable pest population levels. Treatments will be made as necessary based on pest thresholds.
    e. Trees & shrubs will be fertilized in the fall utilizing deep root feeding with a high percentage of organically derived nutrient sources.
    f. Watering will be done as needed throughout the season, especially during very dry periods to ensure plant survival.
3. Planting beds:
    a. Planting bed maintenance will be done by an experienced contractor.
    b. Planting beds will be mulched in the spring for reduced weed encroachment and water holding capacity to aid in plant survival and success.
    c. Beds will be weeded periodically as needed.
    d. Flowering annuals will be planted in the spring to add natural color.
    e. Annuals will be removed once the season is completed.

Snow and Ice Management:

Objective: To maintain all paved areas to be free of snow, in a timely manner after every snow event. Ensure bare pavement with no residual ice to ensure occupant safety. Utilize best management practices and products to comply with NHDES Green SnowPro under RSA 489-C. The snow and ice removal contractor shall document the management process in accordance with the requirements of RSA 489-C and the certification guidelines.

1. Snow plowing:
    a. Snow plowing will be done by a Certified NHDES Green SnowPro contractor.
    b. The driveway & parking lot will be plowed as needed during and after every snow event.
    c. Snow will be stockpiled in locations identified on the approve landscape plan.
    d. Walkways and entrances will be shoveled, or snow blown depending on snow volume.

e. In the event of a higher than usual snow fall, snow will be trucked off-site to an approved snow stockpile facility.
f. The property owner shall be responsible for reporting the annual salt usage to NHDES.

2. Ice control:
    a. Ice control will be done by a Certified NHDES Green SnowPro contractor.
    b. The objective is to obtain bare and dry pavements at the earliest practical time following cessation of a storm.
    c. Ice melting products will be used as necessary to prevent "slip & fall" incidents as well and maintain motor vehicle control.
    d. Snow and Ice Management will follow NHDES Green SnowPro guidelines under RSA 489-C.
    e. Magic Salt ® by ProMelt, or equal, will be the primary ice melting product. Can melt ice to temperatures as low as - 25°F. Manufactured with a combination feed grade molasses and magnesium chloride. Long lasting performance reduces re-application frequency.
    f. ProMelt Mag liquid, or equal, will also be used in low volumes as a pre-treat per manufactures recommendations. This practice is a similar practice used by NH DOT. ProMelt Mag is a high-performance magnesium chloride liquid that delivers a strong residual effect on road surfaces, improves melting and results in long lasting performance.

II. Supporting Documents

Annual Inspection and Maintenance Reporting Form
for
Page Rock Townhomes
Londonderry, New Hampshire

Date: _____

To: Page Rock LLC

Re: Certification of Inspection and Maintenance; Submittal of Forms

Property Name: Page Rock Townhomes

Property Address: 3 Page Road, Londonderry, NH

Contact Name: _____

Contact Phone #: _____

Contact Email Address: _____

I verify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Operation & Maintenance Plan associated with the above referenced property.

The required Long-Term Inspection & Maintenance Plan Checklist is attached to this form.

_____ _____
Name of Party Responsible for Inspection & Maintenance Date

_____
Authorized Signature

Long-Term Inspection & Maintenance Plan Checklist
Page Rock Townhomes – Londonderry, NH

Current Owner Name:	Date:
Business Address:	Inspector:
Weather:	
Date of Last Rainfall:	Amount: Inches:

Best Management Practice

Detention Pond #1

Reason for Inspection		
Spring ☐	Fall/Yearly ☐	Spring ☐

Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Sideslopes & berms need repair? Yes ☐ No ☐
Clean inlet & outlet structures? Yes ☐ No ☐

Attach Photos

Detention Pond #2

Reason for Inspection		
Spring ☐	Fall/Yearly ☐	Spring ☐

Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Sideslopes & berms need repair? Yes ☐ No ☐
Clean inlet & outlet structures? Yes ☐ No ☐

Attach Photos

Sediment Forebays

Reason for Inspection		
Spring ☐	Fall/Yearly ☐	After Major Storm ☐

Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Attach Photos

Conveyance Swales	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Sideslopes & berms need repair? Yes ☐ No ☐			
Attach Photos			

Catch Basins & Closed Drainage Network	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
CB#4 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
CB#5 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
CB#7 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
CB#8 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Roof Drain #1 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Roof Drain #2 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Attach Photos			

Outlet Protection	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
HW#1 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			

HW#3
Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

HW#6
Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

HW#9
Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

HW#11
Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

HW#13
Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Attach Photos

Lawn Areas and Landscaping	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐

Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Attach Photos

General	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐

Sweeping Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Invasive Plant Removal Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Attach Photos

Long-Term Inspection & Maintenance Log
Page Rock Townhomes – Londonderry, NH

Date	Inspection (Yes or No)	Maintenance (Yes or No)	List BMPs Inspected and/or Provide Comments	Inspected By:

Anti-icing Route Data Form
Page Rock Townhomes – Londonderry, NH

Truck Station:				
Date:				
Temperature:	Pavement Temperature:	Relative Humidity:	Dew Point:	Sky:
Reason For Applying:				
Route:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day):				
Observation (after event):				
Observation (before next application):				
Name:				



How Salt Works

NH Best Management Practices

BE PROACTIVE - ANTI-ICE

Anti-icing is the proactive method of preventing snow and ice from bonding to pavement. It can be more than 50% more efficient than deicing. See the NH Anti-Icing Factsheet for more information.

PRE-WETTING FOR FASTER ACTING SALT

Adding brine to salt before you apply it to pavement jump starts the melting process which means your pavement will be clear sooner. See the Pre-wetting Fact Sheet for more information.

KNOW YOUR LIMITS

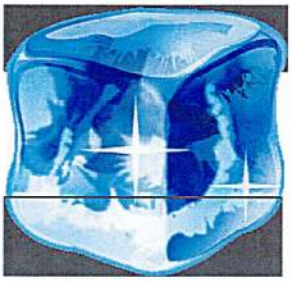
Dry salt becomes ineffective below 15°F if possible wait until the temperature rises before applying salt. At 30°F 1 lb of salt can melt 46.3 lb of ice in 5 minutes. At 15°F 1 lb of salt can melt 6.3 lb of ice in 1 hour.

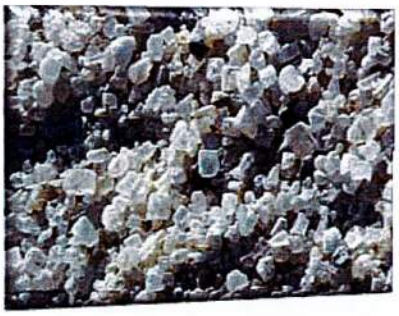
PLOW FIRST

Always plow before applying any kind of chemical deicer to avoid pushing it away!

How Do We Melt Ice?

Ice can be melted by increasing the temperature, or lowering the freezing point of the water. It's not cost effective to use heat to melt ice on our roads so we use chemicals to reduce the freezing point—anything that will dissolve in water will work, including: salt, sugar, even alcohol!



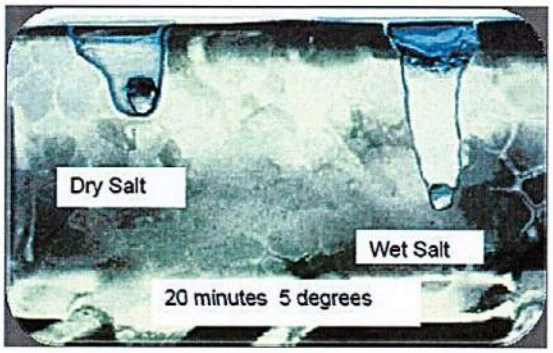


Why Use Salt?

Salt (Sodium Chloride) is the cheapest and most readily available chemical that efficiently melts ice and can be easily applied to our roadways and parking lots. However salt does corrode our cars and bridges, contaminates drinking water and pollutes our streams. Alternatives include potassium acetate, and calcium magnesium acetate (CMA), — all of which are considerably more expensive than calcium chloride, and have their own environmental concerns.

Brine Makes It Happen

The first step in melting ice is the formation of a brine. Salt crystals pull water molecules out of ice formation which creates a brine with a lower freeze point. Once the brine is formed melting is greatly accelerated. Save time and money by pre-wetting your salt with a brine before it hits the pavement to jump start melting! See the Pre-Wetting fact sheet for more information.



Source: Wisconsin DOT Transportation Bulletin #22



Save $$ and the Environment

In New Hampshire there are over 40 watersheds currently contaminated from road salt. As the pavement temperature drops more salt is required. As the pavement temperature rises less salt is required. Save money and the environment by using only what is needed to do the job. See NH application rate charts for recommended rates.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH



Anti-Icing

NH Best Management Practices

GET OUT EARLY

Typically anti-icing is most effective if applied 1-2 hours before the precipitation begins however it can be applied up to 24 hours in advance.

TRY IT FIRST

Trying anti-icing for the first time? Make a 23.3% brine solution and before a storm spray pavement on your own property using a masonry/ plant sprayer. Use this experiment to determine how best to use it with your clients.

LEAVE SOME PAVEMENT BARE

It's always best to use stream nozzles instead of fan tip to avoid creating a slippery condition. If the anti-icing liquid freezes the bare pavement will still provide a traction surface.

USE A FILTER

Having a filter in your liquid dispensing system will reduce clogs in your nozzle. Automotive in line fuel filters work quiet well. If your liquid dispenser is not functioning properly be sure to check the filter first.

A Proactive Treatment

Anti-icing before a storm is very similar to using a non-stick spray on a pan before cooking. Just like a non-stick spray prevents food from bonding to the pan, anti-icing prevents snow and ice from bonding to the pavement so that it can be plowed away. Anti-icing can save you money as it costs 50% less than reactive deicing.





Make Your Own Salt Brine

When making brine it is important to add enough salt to produce a 23.3% solution which freezes around 0°F. Roughly 2.5lb per gallon of water will produce a 23.3% solution. You can verify using a salometer (~$20) a 23.3% solution will have a specific gravity of 1.176, or 85% salinity. Consult the Brine Making BMP sheet for more info.

How Much Should I Use and When?

You can apply brine up to 24 hours in advance of the storm. Typical application rates range from 0.5 to 0.75 gallon per 1000 sq.ft. (10' x 100' area). Other chemicals such as magnesium are also available—consult your supplier for application rates. Anti-icing is not advised prior to freezing rain events.





Getting Started

Try making your own salt brine by putting 13 lb of salt in 5 gallons of water to get a 23.3% salt brine solution. Mix the brine until all of the salt is dissolved. Using a masonry sprayer apply the liquid several hours before a storm. Start by applying about 0.25—0.5 gallons to a 10' x 50' area. Adjust the application rates based on your experience. Being careful not to over apply and cause a slippery condition.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH



Pre-wetting

NH Best Management Practices

PRE-WETTING?

Pre-wetting is the process of coating a solid de-icer with a liquid before it is spread on a roadway.

WHY PRE-WET?

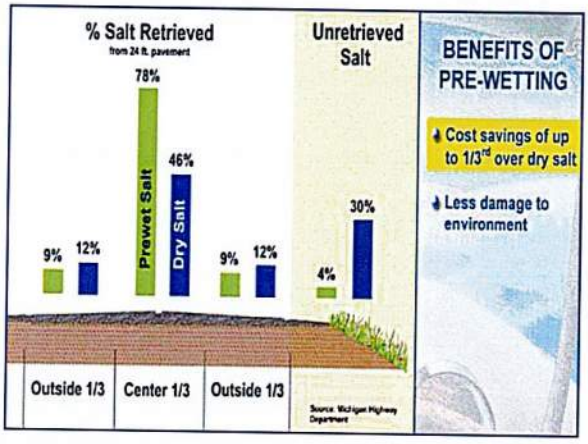
De-icing chemicals must form a brine before they can begin melting ice. Pre-wetting your chemicals accelerates the brine making process, which improves the melting action of the material. Pre-wetting also reduces bounce and scatter of material during spreading, and reduces the total amount of de-icer needed to obtain the desired results.

REDUCED RATES

If you are pre-wetting, don't forget to reduce your application rates accordingly. Reductions in the range of 15-20% are typical.

HOW MUCH LIQUID?

A good rule of thumb is to use 8-10 gallons of pre-wetting liquid for every ton of de-icer. For other chemicals, such as magnesium chloride, consult your supplier for application rates

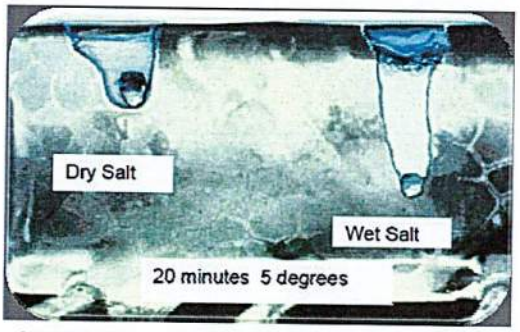


Pre-wetting Liquids

You have a few options for pre-wetting liquids. The most commonly used is a 23% sodium chloride brine solution. Calcium chloride at 32% solution is also used, as well as Magic Minus Zero™ and other patented products.

Getting Started

Wet the pile! There are two ways to pre-wet your de-icing chemicals. The easiest way to get started with pre-wetting is to spread your salt pile, spray it with pre-wetting liquid, mix it around, and re-pile it. More advanced truck mounted pre-wet systems can be installed on your trucks if you decide to make the investment.



Source: Wisconsin DOT Transportation Bulletin

Spraying the Pile

This is the easiest and most cost effective way to get started in pre-wetting. The first step is to spread your salt pile on a flat, impermeable surface. Next, spray the salt while it is spread out, and mix it around to ensure adequate and consistent liquid coverage. After the salt is sufficiently covered, re-stack the salt in your storage shed for later use.



Truck Mounted Systems

These systems are mounted in the truck bed and coat the de-icer with liquid as it comes off the conveyor/auger onto the spinner. These systems have the benefit of applying liquid only to the material you use as you use it. However, these systems must be installed on every truck that will be used to spread pre-wetted material.



Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH

Brine Making

NH Best Management Practices

GET THE LOWEST FREEZE POINT

When salt brine is 23% salt (measured with a hydrometer: 1.176, or with a salimeter: 85%) it has the lowest freeze point possible (about 0°F).

BRINE STORAGE

23% brine solution may be stored outside, however if temperatures get below 0°F the brine may freeze. A circulator pump will reduce the risk of freezing. If possible store brine indoors to eliminate risk of freezing.

COST OF BRINE

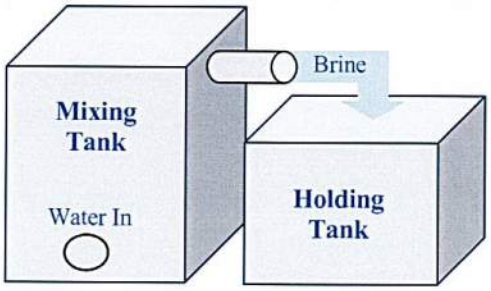
Calcium chloride brine costs about 7¢ / gallon (assuming $58/ton for salt) after you have your equipment setup.

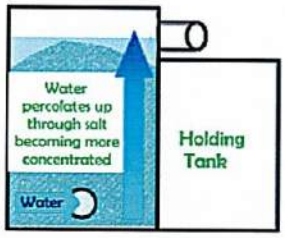
MULTIPLE USES

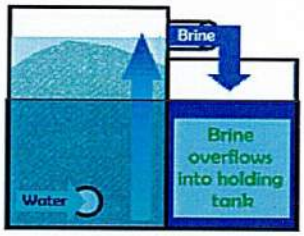
Brine can be used directly for anti-icing, for prewetting salt as it is dispensed from your truck, or to pretreat salt before it is loaded into your truck. Brine can be safely stored for up to a year, however, the concentration should be tested before use.

What Do You Need?

Brine making is a fairly simple process—the only ingredients are salt and water, and the only equipment you'll need is an open top mixing tank, a holding tank, a small pump, and a salimeter.





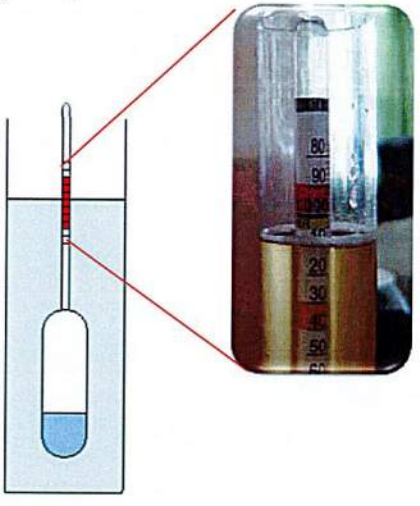


Images courtesy of Iowa DOT

Step 1: Fill Mixing Tank

Add Salt: Add about 2.5 lb of salt per gallon of water you plan to add. Make sure your mixing tank has a large opening to make adding salt easy.

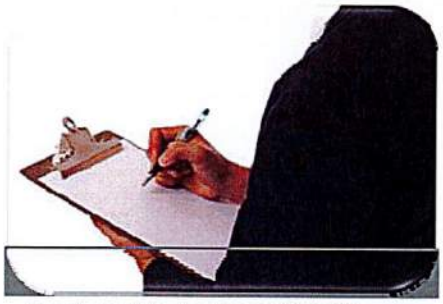
Add Water: Slowly add water from the bottom of your brine mixing tank. This will allow it to percolate up through the salt and overflow into the holding tank.



Step 2: Check Concentration

Float a hydrometer or salimeter directly in your holding tank and read the value at the surface of the water. The number should be either 85% or 1.176 depending on the units of your device.

If the values are too low, pump some brine from your holding tank back into the mixing tank and allow it to overflow. If values are too high simply add some fresh water



Quality Control & Documentation

Make sure that you record the date when you create each batch of brine and document who mixed it and checked the concentration. It is also a good idea to note the final concentration. These records should be kept for at least two years to protect your group in the event of litigation.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH



Hydraulic-Run Spreader Calibration

NH Best Management Practices

WHY CALIBRATE?

You can't reduce your salt use if you don't know how much salt you actually use! The goal of calibrating is to know how much material you are putting down on a roadway or parking lot for every setting on your truck that you use. This is why calibrating your equipment is the first step to reducing salt use and saving money!

REMEMBER:

Each truck must be independently calibrated for each material it will be used to spread (the salt calibration chart *will* be different than the sand calibration chart).

Calibrations should be preformed annually, or after a spreader is serviced.

CALCULATIONS:

There are a few simple calculations you must perform in order to complete the calibration. Once all of the necessary data is recorded, head back inside and warm up! Refer to the reverse side of this fact sheet for calculation instructions.



Step 1: Load the Truck

Partially load the truck. Half of a full load should be more than adequate for calibration purposes.



Step 2: Set Your Controls

Gate Height: Set the gate height to its lowest practical setting (~ 2"). This should be kept constant throughout the calibration process. If you find that not enough material is dispensed with this setting, try 2.5" to 3".

Engine Speed: Warm the truck up and run the engine at the typical rate seen during spreading (approximately 2000 rpm).



Step 3: Measure Spread Width

Measure the width that the material covers during spreading. Do this for each conveyor/auger setting you are calibrating. Round your numbers to the nearest half foot and record them in column "**W**" of the calibration chart (see reverse side).

Step 4: Collect & Weigh Material

You will need either a sheet of canvas, a tarp, or a bucket to collect the material that is dispensed from the spreader, as well as a scale. Weight the object you are using to collect the material in, and record that value in the purple box above the discharge rate column. Collect material for 1 minute. Weigh the collected material and subtract the weight of the tarp/canvas/bucket. Record this value in the first purple column of the calibration chart. Do this 3 times for each conveyor/auger setting that is typically used. Average these three values together and record in the orange column in the calibration chart.



Step 5: Perform Calculations

Go inside and calculate your discharge rate using the calibration chart for each truck speed and conveyor/auger setting you normally use. Refer to the reverse side of this fact sheet for calculation instructions. The formula you will be using is shown below:

$$D = \frac{B \times C}{A}$$

Step 6: Distribute Completed Calibration Cards!

Put a copy of the calibration chart in the truck you just calibrated. Also, leave a copy of the calibration chart in the office so you have a copy incase the original is damaged.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH

Calibration Chart (Hydraulic Type)

Material: _____ Truck/Spreader ID: _____

Date: _____ Performed by: _____

Tarp/Canvas/Bucket Weight: _____

Conveyor or Auger Setting	W	A	Discharge Rate (lb/min.)			B	D					
	Spread Width (ft.)	5.28 × W	Run 1	Run 2	Run 3	Average Discharge Rate *((Run1 + Run2 + Run3)/3)*	Pounds of Material Discharged per 1000 square ft. *(D = B × C ÷ A)*					
							5 mph (C = 12)	10 mph (C = 6)	15 mph (C = 4)	20 mph (C = 3)	25 mph (C = 2.4)	30 mph (C = 2)
1												
2												
3												
4												
5												
EX	14	5.28 × 14= **73.92**	87	92	93	(87+92+93)÷3= **90.67**	12 × 90.67 ÷ 73.92= **14.72**	6 × 90.67 ÷ 73.92= **7.36**	4 × 90.67 ÷ 73.92= **4.91**	3 × 90.67 ÷ 73.92= **3.68**	2.4 × 90.67 ÷ 73.92= **2.94**	2 × 90.67 ÷ 73.92= **2.45**

Calculation Instructions: Multiply the spread width from column **W** by **5.28** and record the answer in column **A**. For each conveyor/auger setting, add **Run 1**, **Run 2**, and **Run 3** together. Divide the result by **3** and record in column **B** to get the average discharge rate. To find the pounds of material discharge per 1000 square feet, you must know the number of minutes it takes to travel one mile at every truck speed you intend to calibrate for. These numbers are designated as variable "**C**". The "**C**" value for each travel speed is shown in red under that given speed. Multiply column **B** by the "**C**" value for that speed and divide by the **A** column to find the number of pounds of material discharged per 1000 square feet for the given speed. Record these numbers in the **D** columns. The full equation is shown here:

$$D = \frac{B \times C}{A}$$

Pony Motor-Run Spreader Calibration

NH Best Management Practices

WHY CALIBRATE?

You can't reduce your salt use if you don't know how much salt you actually use! The goal of calibrating is to know how much material you are putting down on a roadway or parking lot for every setting on your truck that you use. This is why calibrating your equipment is the first step to reducing salt use and saving money!

REMEMBER:

Each truck must be independently calibrated for each material it will be used to spread (the salt calibration card *will* be different than the sand calibration card).

Calibrations should be preformed annually, or after a spreader is serviced.

CALCULATIONS:

There are a few simple calculations you must perform in order to complete the calibration. Once all of the necessary data is recorded, head back inside and warm up! Refer to the reverse side of this fact sheet for calculation instructions.



Step 1: Load the Truck

Partially load the truck. Half of a full load should be more than adequate for calibration purposes.

Step 2: Set Your Controls



Gate Height: Set the gate height to its lowest practical setting to start (approximately 1" to 1.5"). After the truck is calibrated for the lowest gate setting, calibrate for each 1/2" increment greater than the lowest setting. Continue until all gate settings you use are calibrated.

Engine Speed: Set the pony motor speed to the maximum setting, or to the setting you would normally use.



Step 3: Measure Spread Width

Measure the width that the material covers during spreading. Do this for each gate setting you are calibrating. Round your numbers to the nearest half foot and record them in column "**W**" of the calibration chart (see reverse side).

Step 4: Collect & Weigh Material



You will need either a sheet of canvas, a tarp, or a bucket to collect the material that is dispensed from the spreader, as well as a scale. Weight the object you are using to collect the material in, and record that value in the purple box above the discharge rate column. Collect material for 1 minute. Weigh the collected material and subtract the weight of the tarp/canvas/bucket. Record this value in the first purple column of the calibration chart. Do this 3 times for each gate opening that is typically used. Average these three values together and record in the orange column in the calibration chart.

Step 5: Perform Calculations

Go inside and calculate your discharge rate using the calibration chart for each truck speed and gate setting you normally use. Refer to the reverse side of this fact sheet for calculation instructions. The formula you will be using is shown below:

$$D = \frac{B \times C}{A}$$

Step 6: Distribute Completed Calibration Cards!

Put a copy of the calibration card in the truck you just calibrated. Also, leave a copy of the calibration card in the office so you have a copy incase the original is damaged.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH

Calibration Chart (Pony Motor Type)

Material: _____ Truck/Spreader ID: _____

Date: _____ Performed by: _____

Tarp/Canvas/Bucket Weight:	

Gate Opening	W	A	Discharge Rate (lb/min.)			B	D					
	Spread Width (ft.)	5.28 × W	Run 1	Run 2	Run 3	Average Discharge Rate *((Run1 + Run2 + Run3)/3)*	Pounds of Material Discharged per 1000 square ft. *(D = B × C ÷ A)*					
							5 mph (C = 12)	10 mph (C = 6)	15 mph (C = 4)	20 mph (C = 3)	25 mph (C = 2.4)	30 mph (C = 2)
1"												
1.5"												
2"												
2.5"												
3"												
EX	14	5.28 × 14= **73.92**	87	92	93	(87+92+93)÷3= **90.67**	12 × 90.67 ÷ 73.92= **14.72**	6 × 90.67 ÷ 73.92= **7.36**	4 × 90.67 ÷ 73.92= **4.91**	3 × 90.67 ÷ 73.92= **3.68**	2.4 × 90.67 ÷ 73.92= **2.94**	2 × 90.67 ÷ 73.92= **2.45**

Calculation Instructions: Multiply the spread width from column **W** by **5.28** and record the answer in column **A**. For each gate setting, add **Run 1**, **Run 2**, and **Run 3** together. Divide the result by **3** and record in column **B** to get the average discharge rate. To find the pounds of material discharge per 1000 square feet, you must know the number of minutes it takes to travel one mile at every truck speed you intend to calibrate for. These numbers are designated as variable "**C**". The "**C**" value for each travel speed is shown in red under that given speed. Multiply column **B** by the "**C**" value for that speed and divide by the **A** column to find the number of pounds of material discharged per 1000 square feet for the given speed. Record these numbers in the **D** columns. The full equation is shown here:

$$D = \frac{B \times C}{A}$$

Example: Step #1, blank calibration form

See the References and Resources section for a full size form to copy for calibration. This is how the empty form looks.(Keep a stack of these on a clipboard when ready to begin the calibration.)

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE_____ **SPREADER #** _____ **MATERIAL**_____

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1					
2					
3					

Figure 10: Blank calibration form

Example: Step #2, calibration form filled out during calibration

Fill in the header information and column 2, the discharge weight per setting.

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE 8-Aug-15 **SPREADER #** A4219 **MATERIAL** Rock Salt

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1	10				
2	22				
3	34				

Figure 11: Example calibration form with discharge and header information filled out

Example: Step #3, calibration form ready to put in truck for road application

Back in the shop, do the calculations to fill in the rest of the blanks. Multiply the weight in column 2 with the multiplier in the top row. This provides the pounds per mile that needed to fill in the table.

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE 8-Aug-15 SPREADER # A4219 MATERIAL Rock Salt

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1	10	* 120	60	40	30
		**			
2	22	264	132	88	66
3	34	408	204	136	102

* top half of each row = lbs/lane mile. To get this number, multiply lbs/min by the factor shown for each speed.

** bottom half of each row = lbs/1000 sq.ft. To find this, divide the number in the top half by 63.

Figure 12: Example calibration form with pounds per lane mile filled out



Some fish species are affected by concentrations of less than 1000 ppm NaCl, about 1 to 1.5 tablespoons of salt in 5 gallons of water.

Example: Step #4, calibration form ready to zip tie to hand spreader or put in truck for parking lot application.

Divide by 63 to convert pounds per lane mile to pounds per 1,000 square feet. This is very useful for parking lot and sidewalk applications.

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE 8-Aug-15 SPREADER # A4219 MATERIAL Rock Salt

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1	10	*120	60	40	30
		**1.9	1.0	0.6	0.5
2	22	264	132	88	66
		4.2	2.1	1.4	1.0
3	34	408	204	136	102
		6.5	3.2	2.2	1.6

* top half of each row = lbs/lane mile. To get this number, multiply lbs/min by the factor shown for each speed.

** bottom half of each row = lbs/1000 sq.ft. To find this, divide the number in the top half by 63.

Figure 13: Example calibration form with pounds per 1000 sq. ft. filled out

Gravity Flow Equipment

This is applicable for equipment that does not have a motorized delivery system such as an auger. This type of equipment might be a pickup mounted spreader, gator mounted spreader or a hand push spreader. Gravity flow equipment is typically controlled by gate opening and speed of application.

Step 1: Calculate discharge rate

- Mark out a 10-foot stretch of pavement. (By increasing the size of the test area i.e., the longer the test area, the more accurate the results will be).
- Sweep it clean of sand or any other material.
- Using a constant speed, apply one pass of material to the test area.
- Measure the width the material is spread or bounces, in feet.
- Sweep up and weigh the material that is within the marked 10-foot stretch.
- Record the lever position/setting for the gate/chute. If there are no numbers for the positions, make permanent marks on the equipment to identify the positions.
- To improve accuracy, repeat this two more times and calculate the average weight of material applied.
- Record results in columns A, B, C, and D (Figure 14).

Step 2: Repeat step #1 for various settings.

Step 3: Fill out chart.

- Fill out columns E, F, and G (Figure 14).
- If using more than one type of material, repeat the test for each material.
- Place the completed calibration chart with the equipment.

Shortcuts:

- Put down a tarp over the application area; this makes it quicker to recover and weigh material.
- After the first pass, put a bag around spreader to catch discharge material. The first pass is needed to determine the spread width.

Calculate application rate:

Equipment: _____ Material: _____ Date: _____

A	B	C	D	E	F	G
Speed	Lever position or gate setting	Pounds spread in 10 feet*	Spread width in feet	Coverage area in sq. ft. **(D x 10)***	Application rate in lbs./1000 ft^2 **(1000/E x C)**	Application rate in lbs./lane mile (12' width) **(F x 63.4)**
.....EXAMPLE.....						
20 MPH	*Half-closed*	*0.4 lbs.*	*13 feet*	*130 sq. ft.*	*3.1 lbs. per 1000 sq. ft.*	*196 lbs./mile*

* If changing the test strip length, adjust the title in column C and the multiplier in column E.

Figure 14: Example calibration chart for gravity flow equipment

What if calibration is not a practice?

Even without calibrating the equipment, the amount of material to use can be determined but will take more time to calculate. Know the material, the size of the area to be treated, and the pavement temperature, then consult the application rate chart (application rate section) and do the math. Without calibration, the way to evenly distribute the recommended amount across the maintenance area must be determined by the professional. This approach may work well for treating sidewalks using the "chicken feed" method. For example:

- 20°F degrees pavement temperature and rising
- Using dry salt
- Sidewalk is 2,000 square feet
- Table recommends 2.25 lbs. per 1,000 square feet (for this situation)
- Measure about 4.5 lbs. of salt
- Figure out a way to spread it evenly over the 2,000 sq. ft. surface



Sand fills in lake bottoms, accelerating the aging process of lakes. Lakes get shallower as they age, some eventually becoming wetlands.

Calibration Charts

Calibration Chart for Gravity Flow Equipment						
Vehicle or spreader number:					Date:	
Material Type:				Calibrated by:		
		A	**B**	**C**	**D**	**E**
Speed	Lever position or gate setting	Lbs. Material recovered in 10 feet	Spread width in feet	Square feet covered with material **(B x 10)**	Application rate in lbs./1000 ft^2 **(1000/C x A)**	Application rate in lbs./lane mile (12' width) **(D x 63.4)**

Figure 15: Blank calibration chart for gravity flow equipment

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

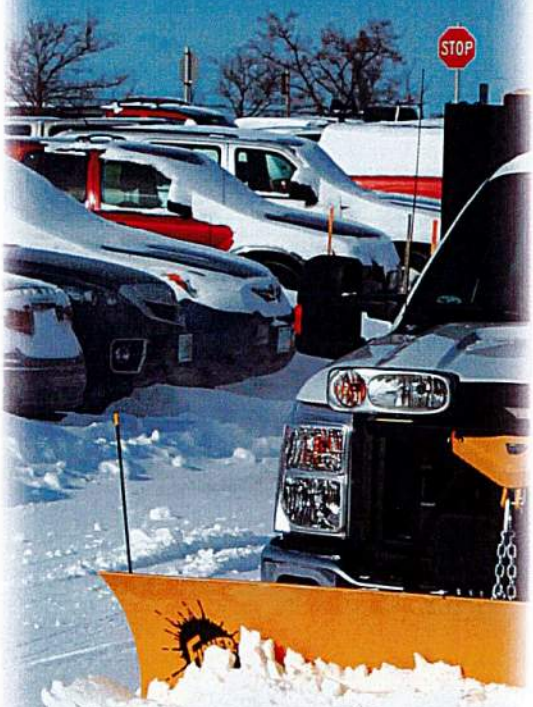
DATE _____ SPREADER # _____ MATERIAL _____

SETTING	POUNDS PER MINUTE	Quantity / Area	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1		lbs/lane mile				
		lbs/1000 sq.ft.				
2		lbs/lane mile				
		lbs/1000 sq.ft.				
3		lbs/lane mile				
		lbs/1000 sq.ft.				
4		lbs/lane mile				
		lbs/1000 sq.ft.				
5		lbs/lane mile				
		lbs/1000 sq.ft.				
6		lbs/lane mile				
		lbs/1000 sq.ft.				

Figure 16: Blank calibration chart for augured or conveyed manual controlled spreaders

NEW HAMPSHIRE CERTIFIED

GREEN SnowPro



NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Hiring a NH Certified Green SnowPro as your snow removal contractor will help protect you and your company from slip and fall claims arising from snow and ice conditions.

What can you do?

Look for a certified salt applicator at http://des.nh.gov/organization/divisions/water/wmb/was/salt-reduction-initiative/salt-applicator-certification.htm or ask your current contractor to take the Green SnowPro course and become certified.

How can your organization benefit from the certification?

Reduce Your Liability

Under RSA 508:22, certified applicators and those who hire them are granted liability protection from claims arising from snow and ice conditions (slip and fall claims).

Certified Green SnowPros

NH Certified Green SnowPros are leaders in the snow removal industrywho are trained in the most up to date technologies and snow management practices to ensure a high level of service and safety to their customers.

Reduce Impacts to Local Waterbodies

Once in our water supplies, there is no practical way to remove salt. Certified Green SnowPros are trained in salt reduction practices to help ensure clean water for future generations.

Why is salt reduction important?

As of 2014, 46 water bodies in New Hampshire are polluted with chloride due to road salt application. In several watersheds analyzed in the southern I-93 corridor, more than 50% of the salt load comes from private roads and parking lots. The other major sources are state and local roads and highways.

Training

For upcoming Green SnowPro Training dates go to http://t2.unh.edu/greensnowpro-training-and-certification

For more information:

Visit http://www.des.nh.gov and see "Road Salt Reduction"under the A-Z list.

Contact: *Patrick Woodbrey*
Patrick.Woodbrey@des.nh.gov
(603) 271-5329

ATTACHMENT B – SMART SALTING PRACTICES

A checklist for snow and ice maintenance contractors.

Recommended practice	Check which response applies to current practices and anticipated site maintenance activities for job site.				
	Already do	Will do	Might do	Will not do	If "will not do"....why not?
Use an application rate chart.					
Calibrate equipment each year.					
Learn about the deicer ingredients and use the appropriate one for the condition.					
Look for reasons if and why materials are leaking or spilling from vehicles and fix them (e.g. gaps, overfilling, etc).					
Develop a comprehensive winter maintenance policy. Follow your policy.					
Measure and use pavement temperatures.					
Use anti-icing appropriately prior to the storm.					
Plow before applying deicers.					
Use wet materials (pre-wet or pre-treated).					
Don't apply sodium chloride (road salt) for pavement temperatures below 15ºF.					
Don't apply deicers for pavement temps under -10º F. It's too cold.					
Separate salt and sand. Use salt for melting. Use sand for traction.					
Apply deicers in the center of the road or on the high side of the curve.					
Store the salt in a building or under secure cover.					
Store salt away from water flow and direct the water away from storage area.					
Store snow away from lakes, ponds and wetlands.					
Sweep up sand, dispose of properly.					
For each event, document what you did and how well it worked. Use this information to make improvements.					

Checklist is adapted from worksheet created by Fortin Consulting as a part of the Minnesota Pollution Control Agency Smart Salting Voluntary Certification Program.

III. Control of Invasive Plants

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.

During maintenance activities, check for the presence of invasive plants and suitably remove according to the methods provided in the table below. The following table, based on the "Control of Invasive Plants" published by the New Hampshire Department of Agriculture, describes the most common invasive plants in this region and proper methods of disposal.

Name	Description	Invasive Qualities	Control Methods
Invasive Trees			
Norway Maple	- Large leaves - Will exude milky white sap when leaves are broken - Leaves turn color in Late October (fall foliage is yellow)	- Suppresses growth of grass, garden plants, and forest understory -Wind-borne seeds can germinate and grow in deep shade	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out plants, including the root systems. Use a forked spade or weed wrench. - Cut down the tree. Grind out the stump, or clip off re-growth. - Girdle[1] - Frill[2] - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray with glyphosate [3]* (mid-October to early November).
Tree of Heaven	- Long compound leaves with 11-25 lance shaped leaflets - Smell like peanut butter or burnt coffee when crushed	- Tough, can grow in poor conditions - Produces large quantities of wind-borne seeds - Grows rapidly - Secretes a toxin that kills other plants - Cannot be removed by mechanical means alone	- Pull seedlings when soil is moist. - Frill[2] (no more than 1" gap between cuts). Use Garlon 3a herbicide. - Cut stem/ cut stump with Garlon 3a. Follow label directions for cut stump application. Clip off sucker sprouts or paint with Garlon 3a.* - Foliar spray[3]* (on regrowth) - Paint bottom 12" of bark with Garlon 4 Ultra (February/March). Use maximum strength specified on label for all herbicide applications.
Invasive Shrubs			
Autumn Olive	- Formerly recommended for erosion control and wildlife value	- Highly invasive, diminishes the overall quality of wildlife habitat	- 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 (up to 4" diameter trunks). - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Bury stump - Do not mow

Invasive Shrubs (continued)			
Multiflora Rose	- Formerly recommended for erosion control, hedges, and wildlife habitat - Covered in white flowers in June - Very hard, curved thorns - Fringed edge to leaf stalk	- Huge shrub that chokes out all other vegetation - Too dense for most birds to nest in - Grows up trees like a vine in Shade	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems (at least 6" from the crown and 6" down). Use a forked spade or weed wrench for trees or shrubs. - Controlled burning[4] (on extensive infestations) - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* (mix Rodeo with extra sticker-spreader, or use Roundup Sure Shot Foam on small plants) - Herbicide may be applied in winter when other plants are dormant.
Bush Honeysuckles	- Includes Belle, Amur, Morrow's, and Tatarian Honeysuckle	- Creates dense shade reducing plant diversity and eliminating nest sites in forest interior spaces	- Deadhead to prevent spread of seeds (on ornamentals). Cut off seeds or fruits before they ripen. Bag and burn, or send to a landfill. - 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. - 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 (on shady sites only, brush cut in early spring and fall). - Controlled burning[4] (during growing season) - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate (late in the growing season). Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.*

Invasive Shrubs (continued)			
Blunt-Leaved Privet	- Medium sized shrub - Simple, oblong, dark green leaves 1-2" in length - Fragrant white flowers (spring) - Blackish-purple fruit (late summer)	- Toxic to mammals - Loss of valuable habitat	- 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. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers - Do not cut back or mow
Burning Bush, Winged Euonymus	- Wide, corky wings on the Branches - Brilliant red autumn leaves - Fruit	- High seed production	- 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. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers
Japanese Barberry	- Spiny deciduous shrub - Small leaves	- Very dense, displaces native plants - Can change chemistry of soil	- 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. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers

Invasive Woody Vines			
Japanese Honeysuckle	- Gold and White flowers - Heavy scent and sweet nectar in June	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Rampant grower - Spirals around trees, often strangling them	- 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. - 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. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* (fall or early spring when native vegetation is dormant) Plan to re-treat repeatedly
Oriental Bittersweet	- Bright orange seed capsules in clusters all along the stem - Flowers	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle	- 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. - Keep ornamental plants cut back, remove all fruits as soon as they open, and bag or burn fruits. - Cut stem/ cut stump with Garlon 3a. Follow label directions for cut stump application. Clip off sucker sprouts or paint with Garlon 3a.*
Japanese Knotweed, Mexican Bamboo	- The stems have knotty joints, similar to bamboo - Grows 6-10' tall - Large, pointed oval or triangular leaves	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Can grow in shade	- Cut stem/ cut stump with Glyphosate (at least 3 times each during growing season). Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* - Treat with Rodeo - In gardens, heavy mulch or dense shade may kill it.

Invasive Herbaceous Plants			
Garlic Mustard	- White-flowered biennial - Rough scalloped leaves (kidney, heart, or arrow shaped) - Garlic smell, mustard taste when its leaves are crushed	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Rampant grower - Spirals around trees, often strangling them	- Pull seedlings and small or shallow-rooted plants when soil is moist (before it flowers in spring). Dig out larger plants, including the crown and root systems. Use a forked spade or weed wrench for trees or shrubs. Tamp down soil afterwards. - Deadhead to prevent spread of seeds. Cut off seeds or fruits before they ripen. Bag and burn or send to a landfill. - Foliar spray[3]* (may be appropriate in some settings)
Japanese Stilt Grass	- Lime green color - Line of silvery hairs down the middle of the 2-3" long blade	- Tolerates sun or dense shade -Quickly invades areas left bare or disturbed by tilling or flooding - Builds a large seed bank in the soil	- Pull seedlings and small or shallow-rooted plants when soil is moist (pulled easily in early to mid-summer).Dig out larger plants, including root systems. Use a forked spade or weed wrench for trees or shrubs. Be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to a landfill. - 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. Mowing weekly or when it has just begun to flower may prevent it from setting seed. - Foliar spray[3]* (use glyphosate or herbicidal soap on large infestations. - Use a corn-based pre-emergence herbicide on annual weeds (spring). 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.

Invasive Herbaceous Plants (continued)			
Mile-A-Minute Vine, Devil's Tail Tearthumb	- Triangular leaves - Barbed stems - Turquoise berries	- Rapid growth - Quickly covers and shades out herbaceous plants	- Pull seedlings and small or shallow-rooted plants when soil is moist (pulled easily in early to mid-summer).Dig out larger plants, including root systems. Use a forked spade or weed wrench for trees or shrubs. Be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to a landfill. - 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. Mowing weekly or when it has just begun to flower may prevent it from setting seed. - Foliar spray[3]* (use glyphosate or herbicidal soap on large infestations. - Use a corn-based pre-emergence herbicide on annual weeds (spring). 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.
Spotted Knapweed	- Thistle-like flowers	- Dense, crowds out native species	- Do not pull unless the plant is young and the ground is very soft. The root will break and produce several new plants. - Wear sturdy gloves - Deadhead to prevent spread of seeds. Cut off seeds or fruits before they ripen. Bag and burn, or send to a landfill. - In lawns, spot treat with broad-leaf weed killer. 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. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]*

[1]Girdle: Cut through the bark and growing layer all around the trunk, about 6" above the ground. Girdling is most effective in spring (when the sap is rising) & middle-late summer (when the tree is sending food to the roots). Clip off sucker sprouts.

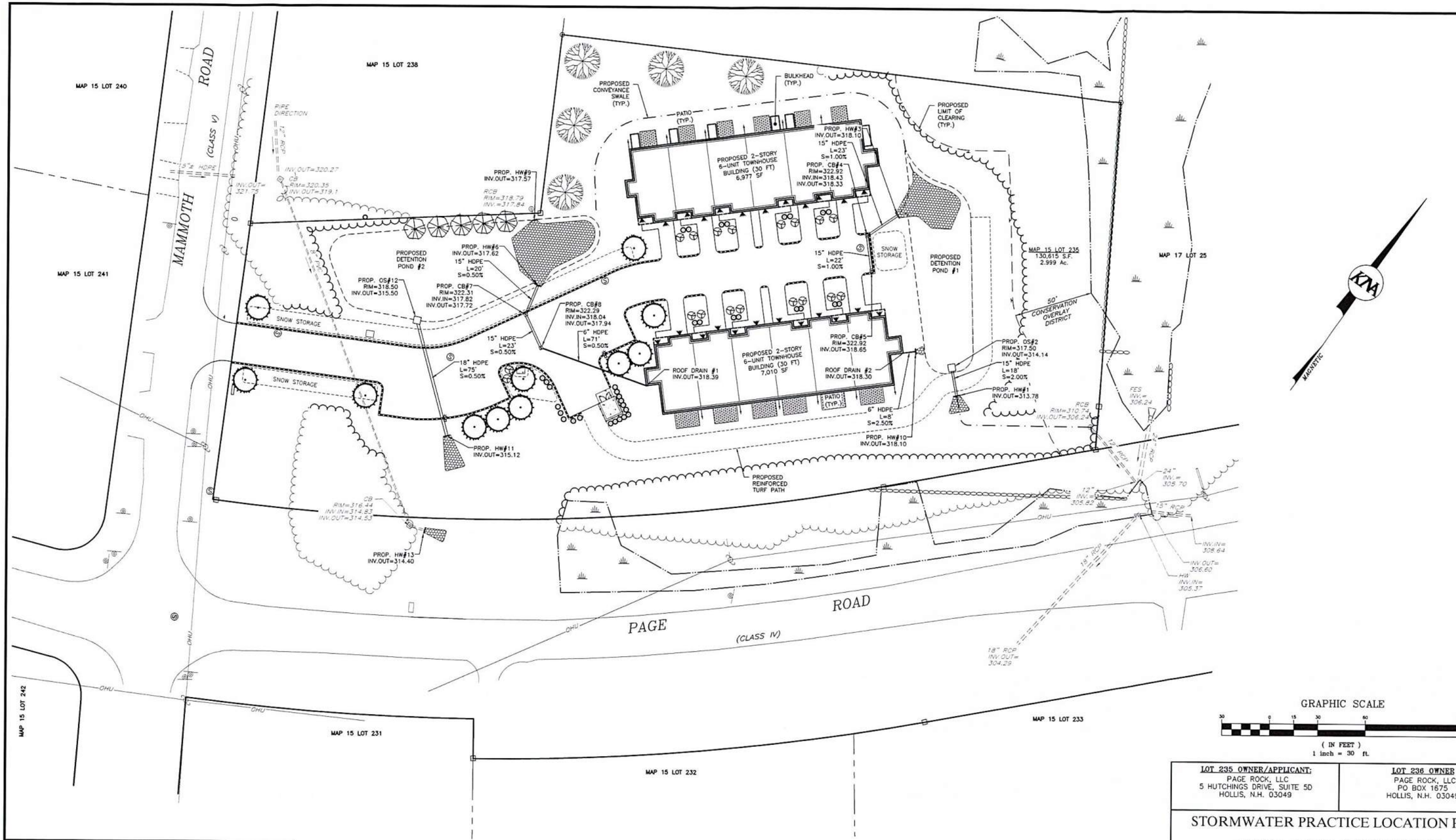
[2]Frill: Using a machete, hatchet, or similar device, hack scars (several holes in larger trees) downward into the growing layer, and squirt in glyphosate (or triclopyr if specified in table). Follow label directions for injection and frill applications. This is most effective from middle to late summer. Clip off any sucker sprouts or treat with glyphosate.

[3]Foliar Spray: 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.

[4]Controlled Burning: Burning during the spring (repeated over several years) will allow 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

*Herbicides: It is highly recommended that small populations try to be controlled using non-chemical methods where feasible. However, for large infestations, and for a few plants 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 or Garlon 3a 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.

IV. Stormwater Practice Location Plan



GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

LEGEND

▣ NHHB-F	NH HWY BOUND FOUND		
▣ GB-F	GRANITE BOUND FOUND	———	PROPERTY LINE
○ IP-F	IRON PIPE FOUND	———	R.O.W. LINE
⊙ IR-S	IRON ROD SET	——OHU——	OVERHEAD UTILITIES
▣ GB-TBS	GRANITE BOUND TO BE SET	= = = = =	DRAINAGE LINE
⊙ IR-TBS	IRON ROD TO BE SET	———	EDGE OF PAVEMENT
◆	BENCHMARK	∩∩∩	TREELINE
		○○○○○	STONEWALL
▭	SIGN	— — —	WETLAND BUFFER
Ⓓ	DRAINAGE MANHOLE	═══	PROPOSED DRAINAGE LINE
▣	CATCH BASIN	∩∩∩	PROPOSED TREELINE
Ⓢ	SEWER MANHOLE	———	PROPOSED EOP
▭	FLARED END SECTION	▬▬▬	PROPOSED BIT. CURB
⊕	UTILITY POLE	— · — · —	PROPOSED SWALE

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET
N:154187.05, E:1053618.44	ELEV.=325.59 (NAVD88)	BENCHMARK #3 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY

DIG SAFE
811 CALL TOLL FREE
UTILITY LOCATION AND PLANT DAMAGE PREVENTION SYSTEM

LOT 235 OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

LOT 236 OWNER
PAGE ROCK, LLC
PO BOX 1675
HOLLIS, N.H. 03049

STORMWATER PRACTICE LOCATION PLAN

PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: OCT. 21, 2025
SCALE: 1" = 30'
FILE NO.:
SHEET NO. 1 OF 1

N:_project\210131\dwg\Production Drawings\Townhouses\2101131-STORMWATER BMP LOCATION PLAN.dwg, 2/19/2026 9:24:35 AM, \\KNA-DC01\TOSHIBA 7525AC



NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE SUBJECT PARCEL PRIOR TO DEVELOPMENT.
2. EXISTING FEATURES DEPICTED ON THIS PLAN WERE TAKEN FROM A COMBINATION OF "EXISTING CONDITIONS PLAN, PAGE ROCK TOWNHOMES, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. DATED JANUARY 7, 2025", "EXISTING CONDITIONS PLAN, ROCK ROCK TOWNHOMES, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. DATED MAY 6, 2025", AND TOWN GIS INFORMATION.
3. THE AREA OF EACH SUBCATCHMENT IS AS FOLLOWS:
   - SUBCATCHMENT 1S = 0.872 ACRES
   - SUBCATCHMENT 2S = 0.692 ACRES
   - SUBCATCHMENT 3S = 0.840 ACRES
   - SUBCATCHMENT 4S = 0.268 ACRES
   - SUBCATCHMENT 5S = 1.002 ACRES
   - SUBCATCHMENT 6S = 14.673 ACRES
   - SUBCATCHMENT 7S = 0.413 ACRES
   - SUBCATCHMENT 8S = 0.697 ACRES
   - SUBCATCHMENT 9S = 1.091 ACRES
   - SUBCATCHMENT 10S = 0.837 ACRES
   - SUBCATCHMENT 11S = 0.790 ACRES
   - SUBCATCHMENT 12S = 2.487 ACRES

DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

- SCS SOIL LINES
- SITE SPECIFIC SOIL LINES
- 44B — DENOTES SOIL TYPE
- P — DENOTES POND
- S — DENOTES SUBCATCHMENT AREA
- L — DENOTES POINT OF INTEREST
- R — DENOTES REACH
- LIMIT OF SUBCATCHMENT AREA
- TIME OF CONCENTRATION
- REACH

DIG SAFE
811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
44B	MONTAUK	0–8%	WELL DRAINED	C
42D	CANTON	15–25%	WELL DRAINED	B
42E	CANTON	25+%	WELL DRAINED	B
446B	SCITUATE–NEWFIELDS COMPLEX	0–8%	MODERATELY WELL DRAINED	C
446C	SCITUATE–NEWFIELDS COMPLEX	8–15%	MODERATELY WELL DRAINED	C
448B	SCITUATE	0–8%	MODERATELY WELL DRAINED	C
448C	SCITUATE	8–15%	MODERATELY WELL DRAINED	C
448D	SCITUATE	15–25%	MODERATELY WELL DRAINED	C
444D	NEWFIELDS	15–25%	MODERATELY WELL DRAINED	C
546B/P	WALPOLE	0–8%	POORLY DRAINED	C
115B/VP	SCITUATE–NEWFIELDS COMPLEX	0–8%	VERY POORLY DRAINED	D

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION OF TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.

THE SITE SPECIFIC SOIL SURVEY (SSSS) WAS PRODUCED JULY 8, 2022, AND WAS PREPARED BY LUKE HURLEY, CWS # 095, BSC, INC. THE SURVEY AREA IS LOCATED AT 295 ROCKINGHAM ROAD, LONDONDERRY, NH.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE–WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.

HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTISTS OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009.

SCS SOILS LEGEND

- *43B* — CANTON FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES, VERY STONY
- *446B* — SCITUATE–NEWFIELDS COMPLEX, 3 TO 8 PERCENT SLOPES
- *547B* — WALPOLE VERY FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES, VERY STONY
- *44B* — MONTAUK FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
- *299* — UDORTHENTS, SMOOTHED

SOURCE: USDA–SCS WEB SOIL SURVEY ROCKINGHAM COUNTY

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

PRE-DEVELOPMENT DRAINAGE AREA PLAN
PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21–0113–1
DATE: MARCH 20, 2025
SCALE: 1" = 80'
FILE NO.:
SHEET NO. 1 OF 2



NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE SUBJECT PARCEL AFTER DEVELOPMENT.
2. EXISTING FEATURES DEPICTED ON THIS PLAN WERE TAKEN FROM A COMBINATION OF "EXISTING CONDITIONS PLAN, PAGE ROCK TOWNHOMES, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. DATED JANUARY 7, 2025", "EXISTING CONDITIONS PLAN, ROCK ROCK TOWNHOMES, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. DATED MAY 6, 2025", AND TOWN GIS INFORMATION.
3. PROPOSED FEATURES DEPICTED ON THIS PLAN WERE TAKEN FROM "GRADING & DRAINAGE PLAN, PAGE ROCK TOWNHOMES, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. DATED MARCH 20, 2025".
4. THE AREA OF EACH SUBCATCHMENT IS AS FOLLOWS:
   - SUBCATCHMENT 1S = 0.689 ACRES
   - SUBCATCHMENT 2S = 0.555 ACRES
   - SUBCATCHMENT 3S = 0.840 ACRES
   - SUBCATCHMENT 4S = 0.268 ACRES
   - SUBCATCHMENT 5S = 1.001 ACRES
   - SUBCATCHMENT 6S = 14.673 ACRES
   - SUBCATCHMENT 8S = 0.539 ACRES
   - SUBCATCHMENT 9S = 1.091 ACRES
   - SUBCATCHMENT 10S = 0.586 ACRES
   - SUBCATCHMENT 11S = 0.790 ACRES
   - SUBCATCHMENT 12S = 0.352 ACRES
   - SUBCATCHMENT 13S = 0.103 ACRES
   - SUBCATCHMENT 14S = 0.099 ACRES
   - SUBCATCHMENT 15S = 0.305 ACRES
   - SUBCATCHMENT 16S = 0.206 ACRES
   - SUBCATCHMENT 17S = 0.038 ACRES
   - SUBCATCHMENT 18S = 0.038 ACRES

DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

- SCS SOIL LINES
- SITE SPECIFIC SOIL LINES
- 44B — DENOTES SOIL TYPE
- P — DENOTES POND
- S — DENOTES SUBCATCHMENT AREA
- L — DENOTES POINT OF INTEREST
- R — DENOTES REACH
- LIMIT OF SUBCATCHMENT AREA
- TIME OF CONCENTRATION
- REACH

DIG SAFE
811 DIG SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
44B	MONTAUK	0–8%	WELL DRAINED	C
42D	CANTON	15–25%	WELL DRAINED	B
42E	CANTON	25+%	WELL DRAINED	B
446B	SCITUATE–NEWFIELDS COMPLEX	0–8%	MODERATELY WELL DRAINED	C
446C	SCITUATE–NEWFIELDS COMPLEX	8–15%	MODERATELY WELL DRAINED	C
448B	SCITUATE	0–8%	MODERATELY WELL DRAINED	C
448C	SCITUATE	8–15%	MODERATELY WELL DRAINED	C
448D	SCITUATE	15–25%	MODERATELY WELL DRAINED	C
444D	NEWFIELDS	15–25%	MODERATELY WELL DRAINED	C
546B/P	WALPOLE	0–8%	POORLY DRAINED	C
115B/VP	SCITUATE–NEWFIELDS COMPLEX	0–8%	VERY POORLY DRAINED	D

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION OF TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.

THE SITE SPECIFIC SOIL SURVEY (SSSS) WAS PRODUCED JULY 8, 2022, AND WAS PREPARED BY LUKE HURLEY, CWS # 095, BSC, INC. THE SURVEY AREA IS LOCATED AT 295 ROCKINGHAM ROAD, LONDONDERRY, NH.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE–WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.

HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTISTS OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009.

SCS SOILS LEGEND

43B	CANTON FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES, VERY STONY
446B	SCITUATE–NEWFIELDS COMPLEX, 3 TO 8 PERCENT SLOPES
547B	WALPOLE VERY FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES, VERY STONY
44B	MONTAUK FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
299	UDORTHENTS, SMOOTHED

SOURCE: USDA–SCS WEB SOIL SURVEY ROCKINGHAM COUNTY

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

POST-DEVELOPMENT DRAINAGE AREA PLAN
PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/26	ENGINEERING REVS	PCM

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 80'
FILE NO.:
SHEET NO. 2 OF 2

Town of Londonderry, New Hampshire

Planning & Economic Development Department 603-432-1100
268B Mammoth Road 603-432-1128
Town Hall – 2nd Floor www.londonderrynh.org

Planning – Zoning – Economic Development – Conservation

MEMORANDUM

TO: Planning Board

FROM: Kristan Farr, Town Planner

DATE: April 1, 2026

RE: Public hearing of an application for a formal review of a site plan and conditional use permit for a 12-unit townhome development and associated site improvements, and a condominium conversion permit, lot consolidation and a conditional use permit for 1,400 square feet of wetland buffer impact in the Commercial II (C-II) District. 3 Page Road and 556 Mammoth Road, Tax Map 15, Lots 235 and 236, Page Rock, LLC (Owner/Applicant).

The application before the Board is a proposal to consolidate two parcels, 3 Page Road and 556 Mammoth Road (Map 15, Lots 235 & 236) into a 2.999-acre site and develop a 12-unit townhouse project consisting of two 6-unit buildings, internal driveway, associated parking, utilities, and related site improvements. The site is split-zoned Commercial II (C-II) and Agricultural-Residential I (AR-I). Multifamily housing is permitted in C-II only with a Conditional Use Permit (CUP). Portions of the site lie within the Conservation Overlay District (COD), requiring a second CUP. The proposal includes building demolition, driveway relocation, tree clearing, retaining walls, drainage infrastructure, two detention ponds, and new landscaping. The project is located between Rockingham Road and Mammoth Road in the north end of town.

The applicant recently received variances from the Zoning Board of Adjustment for driveway and parking to be located within the 50-foot landscape buffer and allow a driveway and parking to be located within the 50-foot landscape buffer without permanently planting and maintaining the buffer (Case 03-18-2026-06 and Case 03-18-2026-7).

The Board will need to consider action on completeness, one waiver request, two conditional use permits, condominium conversion and the site plan application.

Completeness: There are three (3) outstanding checklist items**.** If the Board decides to accept the application as complete, these items should be waived for ***acceptance only***.

1. Site Plan Regulation 4.12.c.19.viii and Checklist item VI.1.v-Identification of Trees ≥ 15" Diameter. The applicant seeks to waive the requirement to identify all trees greater than 15 inches in diameter (DBH) and their species on the site. *The Applicant has submitted a written waiver request for these requirements for Planning Board consideration.*

2. *Site Plan Regulation 2.05.a.9 & 4.18 and Checklist Item II.5 – Required Legal Documents (easements, rights, declarations) -The submission does not include the required legal documents, including proposed easement deeds, rights documents, protective covenants, and condominium legal documents. These documents must accompany applications involving site design features and condominium conversions.*

   Site Plan Regulation 3.06 & 4.18.B and Checklist Item XI.5.f – Sewer Utility Clearance Letter-The Applicant has not provided the required sewer utility clearance letter confirming acceptance and capacity for sewer service. Please provide this clearance documentation in accordance with the regulations.

Waivers:

1. Waiver from Site Plan Regulation 4.12.c.19.viii – Identification of Trees ≥ 15" Diameter. The applicant seeks to waive the requirement to identify all trees greater than 15 inches in diameter (DBH) and their species on the site.

Staff recommends that that the Board vote with respect to any requested waivers utilizing the criteria from RSA 674:36 and Londonderry Subdivision and Site Plan Regulations Section 6.04 and 7.04 as noted below:

In a case when the strict application of these regulations would:
a. Result in peculiar and exceptional practical difficulties or exceptional and undue hardship upon the owner of the affected property; or
b. An alternative site planning and building design approach meets the design objectives as stated in the regulations, equally well or better than would compliance with the regulations; and
c. In either of the foregoing circumstances, the waiver may be granted without substantial detriment to the public good;

Conditional Use Permit (Conservation Overlay District): The applicant is requesting a Conditional Use Permit (CUP) per Londonderry Zoning Ordinance Section 4.6.1.4.A Conservation Overlay District.

4.3.1.4.A. Uses permitted by conditional use permit

1. *The following uses may be permitted by conditional use permit: roads and other access ways; drainage ways; pipelines, power lines and other transmission lines; docks, boat launches, and piers; domestic water wells (and associated ancillary pipes and equipment); replacement septic tanks and leach fields where evidence is submitted that no alternative location is available on the property; provided that all of the following conditions are found to exist:*

   a. The proposed construction is essential to the productive use of land not within the CO District.
   b. Design and construction methods will be such as to minimize impact upon the wetlands and will include restoration of the site consistent with the permitted use.
   c. There is no feasible alternative route on land controlled by the applicant that does not cross the CO District nor has less detrimental impact on the wetlands. Nothing in this Section shall limit the applicant from exploring alternatives with abutting property owners.

d. Economic advantage is not the sole reason for the proposed location of the construction.

1. The Applicant has requested a Conditional Use Permit to allow 1,400 square feet of permanent wetland buffer impacts in the Conservation Overlay District to construct stormwater management improvements. ***The Conservation Commission reviewed and had no objection to the CUP as presented at their March 10, 2026 meeting.***

CUP COD Recommendation: Based on the information available to date, Staff recommends that the Planning Board APPROVE the CUP with the Notice of Decision to read substantially as follows:

> ***Board Action Required***: Motion to *APPROVE* a Conditional Use Permit (CUP) per LZO Section 4.6.1 to allow *approximately 1,400 square feet of permanent wetlands buffer impact for the construction of stormwater management improvements, consistent with the Conservation Commission's March 10, 2026 recommendation and as shown on the plan set.*

Conditional Use Permit (Multifamily Residential Use in Commercial II Zoning District): The applicant is requesting a Conditional Use Permit (CUP) per Londonderry Zoning Ordinance Section 4.1.2 Use Table by Zoning District to allow a Multifamily Residential Use on a parcel in the underlying in the Commercial II (C-II) Zoning District.

> *6.2 General Criteria for CUP*
> *The following criteria must be satisfied in order for the Planning Board to grant a conditional use permit:*
> *A. Granting of the application would meet some public need or convenience.*
> *B. Granting of the application is in the public interest.*
> *C. The property in question is reasonably suited for the use requested.*
> *D. The use requested would not have a substantial adverse effect on the rights of the owners of surrounding properties.*
> *E. The traffic generated by the proposed use is consistent with the identified function, capacity, and level of service of transportation facilities serving the community.*
> *F. There must be appropriate provision for access facilities adequate for the estimated traffic from public streets and sidewalks, so as to assure public safety and to avoid traffic congestion.*
>
> *6.3.4.B Multifamily Housing Criteria for CUP*
> *In addition to the General Criteria of Section 6.2, the following specific criteria must be met in order to increase the maximum number of units in a multi-family building in the R-III District from 16 to not more than 20.*
>
> *1. The proposed use is consistent with the Objectives and Characteristics of the R-III district, Section 4.2.2.1;*
> *2. Granting of the application is in the public interest;*
> *3. The property in question is reasonably suited for the larger buildings requested, and the design of the site represents to the extent practicable preservation of natural resources, open space, and does not create a hazard to surface or underground water resources.*
> *4. The application demonstrates that the 20-unit buildings for which the Conditional Use Permit is sought does not impact the general health, safety, and general welfare of the Town, and is*

otherwise in compliance will all requirements of the Zoning Ordinance, Site Plan Regulations, and Subdivision Regulations, as applicable to the proposed project.
5. There exist on the property limitations (steep slopes, wetlands, CO District areas, flood hazard areas, or other natural constraints on the subject parcel) that reduce the buildable area of the parcel such that the parcel is limited to less than 60% of the permitted density allowed by Section 4.2.2.3(B)(1) utilizing 16 units per building. Such calculation must be demonstrated to the Planning Board by a NH licensed professional engineer (and other related professionals as applicable, such as certified wetland scientists or soil scientists).

CUP (Multifamily Residential Use in Commercial II Zoning District) Recommendation: Based on the information available to date, Staff recommends that the Planning Board APPROVE the CUP with the Notice of Decision to read substantially as follows:

> ***Board Action Required*:** Motion to APPROVE a Conditional Use Permit (CUP) per LZO Section 4.1.2 to allow multifamily residential use on a parcel in the Commercial II Zoning District.

SITE PLAN APPLICATION Recommendation: Conditional approval is appropriate when the project reaches the point at which Board involvement is no longer required, and outstanding items can be resolved with staff. Once the Board has made these decisions, there is no reason to require the Applicant to return to the Board next month.

Based on the information available to date, Staff recommends that the Planning Board **CONDITIONALLY APPROVE** this application.

If the Board CONTINUES the application, it should be continued to April 8, 2026.

If the Board CONDITIONALLY APPROVES this application, the Notice of Decision should read substantially as follows:

> ***Board Action Required: Motion to grant conditional approval of the application for a formal review of a site plan and conditional use permit for a 12-unit multifamily residential townhome development and associated site improvements, and a condominium conversion permit, lot consolidation and a conditional use permit for 1,400 square feet of wetland buffer impact in the Commercial II (C-II) District. 3 Page Road and 556 Mammoth Road, Tax Map 15, Lots 235 and 236, Page Rock, LLC (Owner/Applicant), with the precedent conditions to be fulfilled within 120 days of approval and prior to plan signature and general and subsequent conditions of approval to be fulfilled as noted in the Engineering Memo.***

CONDOMINIUM CONVERSION

CONDOMINIUM CONVERSION APPLICATION Recommendation: Based on the information available to date, Staff recommends that the Planning Board CONDITIONALLY APPROVE this application with the Notice of Decision to read substantially as follows:

> ***Board Action Required:*** **Motion to grant conditional approval of a condominium conversion. 3 Page Road and 556 Mammoth Road, Map 15, Lots 235 and 236, zoned Agricultural Residential (AR-1) and Commercial II (C-II), Page Rock LLC (Owner & Applicant). In accordance with plans prepared by Keach-Nordstrom Associates, Inc., dated March 20, 2025, last revised February**

20, 2026 with the precedent conditions to be fulfilled within two years and prior to plan signature and general and subsequent conditions of approval to be fulfilled as noted in the Staff Recommendation Memorandum, dated April 1, 2026.

Should the planning board decide to conditionally approve the application, the following conditions should be included:

"Applicant", herein, refers to the property owner, business owner, or organization submitting this application and to his/its agents, successors, and assigns.

PRECEDENT CONDITIONS

All of the precedent conditions below must be met by the Applicant, at the expense of the Applicant, prior to certification of the plans by the Planning Board. Certification of the plans is required prior to commencement of any site work, any construction on the site or issuance of a building permit.

1. The Applicant shall address all appropriate items from the Planning & Economic Development Department/Department of Engineering and Environmental Services/Stantec Review Memo and Traffic Impact Assessment dated April 1, 2026.

2. The Applicant shall obtain and note any and all applicable state, local, or other permitting on the plans.

3. Owner's signature shall be provided on the plans.

4. The Applicant shall execute a voluntary lot merger for Map 15, Lots 235 and 236. The executed voluntary lot merger document shall be recorded, and the recording information including book and page numbers shall be added to the notes on the lot consolidation prior to plan signature.

5. The Applicant shall provide a digital copy of the complete final plan to the Town prior to plan signature by the Planning Board in accordance with the Site Plan Regulations.

6. Third-party review fees shall be paid within 30 days of conditional site plan approval.

7. Financial guarantees be provided to the satisfaction of the Department of Public Works and Engineering.

8. Final engineering review.

PLEASE NOTE – If these conditions are not met within 120 days of the meeting at which the Planning Board grants approval, the Board's approval will be considered to have lapsed and re-submission of the application will be required.

GENERAL AND SUBSEQUENT CONDITIONS

All of the conditions below are attached to this approval.

1. **No construction or site work may be undertaken until a pre-construction meeting with Town staff has taken place, filing of an NPDES – EPA Permit (if required), and posting of the site-restoration financial guaranty with the Town.** Contact the Department of Public Works to arrange the pre-construction meeting.

2. The project must be built and executed as specified in the approved application package unless modifications are approved by the Planning Department & Department of Public Works, or, if Staff deems applicable, the Planning Board.

3. All of the documentation submitted in the application package by the applicant and any requirements imposed by other agencies are part of this approval unless otherwise updated, revised, clarified in some manner, or superseded in full or in part. In the case of conflicting information between documents, the most recent documentation and this notice herein shall generally be determining.

4. Fire department access roads shall be provided at the start of the project and maintained throughout construction. Fire department access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be provided with an all-weather driving surface.

5. It is the responsibility of the applicant to obtain all other local, state, and federal permits, licenses, and approvals which may be required as part of this project (that were not received prior to certification of the plans). Contact the Building Division at extension 115 regarding building permits.

6. Prior to issuance of a certificate of occupancy, all site improvements and off-site improvements shall be completed in accordance with the plan approved by the Planning Board. In accordance with Section 6.01.d of the Site Plan Regulations, in circumstances that prevent landscaping to be completed (due to weather conditions or other unique circumstance), the Building Division may issue a certificate of occupancy prior to the completion of landscaping improvements, if agreed upon by the Planning Division & Public Works Department, when a financial guaranty (see forms available from the Public Works Department) and agreement to complete improvements are placed with the Town. The landscaping shall be completed within 6 months from the issuance of the certificate of occupancy, or the Town shall utilize the financial guaranty to contract out the work to complete the improvements as stipulated in the agreement to complete landscaping improvements. ***No other improvements shall be permitted to use a financial guaranty for their completion for purposes of receiving a certificate of occupancy***.

7. As built site plans must to be submitted to the Public Works Department prior to the release of the applicant's financial guaranty.

MEMORANDUM

To: Planning Board

Date: April 1, 2026

From: Planning and Economic Development
Department of Public Works & Engineering
Stantec Consulting Services, Inc.

Re: Page Rock Townhomes Site Plan
Map 15 Lots 235 & 236
3 Page Road

Owner/Applicant: Page Rock, LLC

Keach-Nordstrom Associates, Inc. submitted plans and supporting information for the above-referenced project. DRC and the Town's engineering consultant, Stantec Consulting Services Inc. reviewed the submitted plans and information, and review comments were forwarded to the Applicant's engineer. The Applicant submitted revised plans and information and we offer the following comments:

Checklist Items:

1. The Applicant's existing conditions plans do not indicate the trees greater than 15" in diameter and species per section 4.12.c.19.viii of the Site Plan Regulations and item VI.1.v of the Site Plan Application & Checklist. The Applicant has submitted a written **waiver request** for these requirements for Planning Board Consideration.

2. The Applicant's site design includes proposed easements and a condominium conversion but the submission did not include copies of the proposed rights, easement deeds, protective covenants, or other legal documents per section 2.05.a.9 and 4.18 of the Site Plan Regulations and item II.5 of the Site Plan Application & Checklist.

3. The Applicant has not provided a utility clearance letter for the project sewer services under this application per sections 3.06 and 4.18.B of the Site Plan Regulation and items XI.5. f of the checklist. We recommend the Applicant provide a utility clearance letter in accordance with the regulations.

Design Review Items:

1. The Applicant indicates the NHDES Sewer Discharge Permit, and Londonderry Sewer Discharge Permit are submitted on the checklist. In addition, a Town of Londonderry Stormwater Permit is needed for the proposed development. The Applicant should submit for and obtain all project permits, indicate the permit approval numbers in the permit table in note 14 on sheet 1 and provide copies of all permits for the Planning Department files per sections 4.13 and 4.18.e of the Site Plan Regulations and Item XII of the Site Plan Application & Checklist.

2. The project design has been revised to include lot 236 and consolidates the lot with the subject lot 235. With this new property site configuration, the site driveway has been relocated to Mammoth Road and now the development does not access Page Road as implied by the project title and application. We note the address for lot 236 was 556 Mammoth Road and note the site entrance sign detail on sheet 15 states the address as 3 Page Road. We recommend the plans and information be corrected to represent the project access address. Our understanding is this revision would affect the address of the proposed condominiums relative to the Assessing Department and for emergency purposes under 911. We recommend the Applicant update the plans and project information to an appropriate address as acceptable to the Town.

3. We recommend the Applicant address the following relative to the **Project Drainage Analysis**:
   a. The post development analysis diagram indicates subcatchment 8S (which includes detention basin 2) flowing through Reach 4R to the detention basin, but the swale is located wholly within the subcatchment and the analysis and diagram are incorrect. In addition, the post development analysis diagram indicates subcatchment 12S (which includes detention basin 1) flowing through Reach 5R to the detention basin, but the swale is located wholly within the subcatchment and the analysis and diagram are incorrect. Please review and revise the analysis accordingly and verify compliance is achieved – no increase in runoff.
   b. The post development calculations for subcatchment 2S, 8S and 12S do not include the riprap areas. In addition, the post development calculations for subcatchment 2S does not appear to include the dumpster shown within the subcatchment delineation on the post development drainage plan. Please review and update accordingly.
   c. Please revise the subcatchment areas listed on the revised predevelopment and post development drainage area plans to indicate square feet consistent with the calculations.

4. The Applicant has submitted a voluntary merger form. We recommend the document be recorded and the recording number be listed in the notes on the lot consolidation plan prior to Planning Board signature.

5. The Applicant provided updated traffic report information as noted in Stantec's letter dated April 1, 2026.

6. We recommend the Applicant provide documentation to support/verify the DRC comments for the project are adequately addressed as applicable:
   a. Please provide documentation to support the comments of Planning Department have been adequately addressed with the Planning Department.
   b. Please provide documentation to support the comments of Assessing Department have been adequately addressed with the Assessing Department.
   c. Please provide documentation to support the comments of Building Department have been adequately addressed with the Building Department
   d. Please provide documentation to support the comments of Fire Department have been adequately addressed with the Fire Department.
   e. Please provide documentation to support the comments of Conservation Commission have been adequately addressed with the Conservation Commission.
   f. Please provide documentation to support the comments of Sewer Division have been adequately addressed with the Sewer Division.

Board Action Items:

1. The Applicant has submitted one (1) waiver request letters relative to the requirements of the Site Plan Regulations as noted in the letter dated November 11, 2025. The Board should carefully review and consider the waiver request as part of the project review.

2. The Applicant is proposing impacts within the buffer areas of the Conservation Overlay District (COD) for the proposed site development that will require a Conditional Use Permit (CUP) approval by the Planning Board. The Board will need to consider the Conditional Use Permit request as part of the review.

3. The Applicant requires a Conditional Use Permit for the proposed residential use in a Commercial Zone per section 4.1.1 and Table 4-1 of the Londonderry Zoning Ordinance. The Planning Board will need to consider the CUP application as part of the project review.

Stantec

Memo

To:	Ms. Kellie Caron & Ms. Kristan Farr Community Development Department Londonderry, NH	From:	Evan Drew PE PTOE RSP$_1$ Michael Leach
CC:	Mr. John Trottier, PE Director of Engineering and Environmental Services Londonderry, NH		Stantec 5 Dartmouth Drive Suite 200 Auburn, NH 03032-3984
Project/File:	179451067	Date:	April 1, 2026

Reference: Proposed Multi-Family Development - 3 Page Road - Page Rock Townhomes – Traffic Resubmittal – Peer Review

Stantec Consulting Services, Inc. (“Stantec”) had previously reviewed the Traffic Impact Analysis - Trip Generation Memo for the Page Rock Townhomes relative to the proposed multi-family development on Page Road dated March 20, 2025 prepared by Keach-Nordstrom Associates, Inc. (“KNA”) and submitted to the Town of Londonderry. The proposed development is served by a single 24-foot wide driveway access from Mammoth Road for two multifamily buildings with six (6) townhouse units in each building with associated parking, underground utilities, and stormwater facilities to be constructed upon the subject lot. Stantec reviewed this memorandum following a “Short” analysis per the Town’s Site Plan Regulations Section 3.14 with minor comments and general acceptance of findings.

KNA has subsequently submitted a revised traffic memorandum, with a revised date of November 5, 2025, as a response to these comments.

Stantec reviewed this memorandum following Section 3.14 of the most current Town of Londonderry’s Site Plan Regulations (Revised June 11th, 2025), the 12th Edition Trip Generation Manual by the Institute of Transportation Engineers (ITE), and industry best practices. As noted in the initial traffic memorandum review. It is our understanding that a scoping meeting between KNA and the Town did not occur. The memorandum provided covers a “short” analysis level of assessment per the Town’s Site Plan Regulations (Section 3.14.c.)

Stantec has confirmed the revised traffic memorandum has been stamped by a New Hampshire licensed professional engineer as required for Site Plan Regulations Section 3.14.c.6.

The outstanding comment Stantec had in the initial review was questioning KNA’s use of Land Use Code (LUC) 220, representing multi-family housing (low-rise) developments, and not LUC 215 single-family attached housing, as proposed. Stantec had noted that the trip estimated between the two was nominal and did not result in questioning the final results and conclusion by KNA that the project was of low traffic impact.

Stantec has confirmed that the LUC has been revised from LUC 220 to LUC 215 and Stantec has confirmed the estimated trip volumes and their impact of background volumes are relatively nominal (less than four percent increase) to background volumes along Page Road, Mammoth Road, and Rockingham Road. Stantec finds the resubmittal complete and acceptable for this development proposed.

KNA KEACH-NORDSTROM ASSOCIATES, INC.

November 11, 2025

Town of Londonderry
Planning & Economic Development
268B Mammoth Road
Londonderry, New Hampshire 03053

Subject: **Page Rock Townhomes**
Tax Map 15; Lot 235
3 Page Road - Londonderry, New Hampshire 03053
KNA Project No. 21-0113-1

CONDITIONAL USE PERMIT NARRATIVE

The proposed project is seeking a Conditional Use Permit (CUP) for both the use and wetland buffer impacts. The Applicant is proposing a Townhome development (multi-family) in the C-II Zoning District, which requires a CUP per Section 4.1.2 of the Londonderry Zoning Ordinance. Additionally, the project proposal is expected to impact approximately 683 square feet of wetland buffer for the necessary stormwater management provisions. The proposal meets the following conditions as noted below:

1. Granting the application would meet some public need or convenience.

   The project is proposing a housing development during a statewide housing shortage. The public needs more housing, especially potentially lower cost options such as townhomes. Additionally, the location of the parcel in relation to both Mammoth Road and Rockingham Road (RT 28), would provide a convenient commuter location for its residents.

2. Granting the application is in the public interest.

   Developing properties with suitable uses is in the public's best interest. This is an appropriate location for the proposed project and provides necessary housing during a housing crisis.

3. The property in question is reasonably suited for the use requested.

   The parcel is located at the corner of Page Road and Mammoth Road. It is surrounded by a variety of uses including industrial and residential as it abuts both the Industrial I and Agricultural-Residential Zoning Districts. A multi-family townhouse development

would be appropriate for this area as it is consistent with the mixed-use character of the surrounding neighborhood.

4. The use requested would not have a substantial adverse effect on the rights of the owners of surrounding properties.

   The proposal is not expected to adversely affect the rights of the owners of the surrounding properties. The project was designed with consideration given to the health, safety, and welfare of the community.

5. The traffic generated by the proposed use is consistent with the identified function, capacity, and level of service of transportation facilities serving the community.

   The proposed project is not expected to adversely impact local traffic operations. The Applicant has provided a Traffic Impact Analysis: Short Trip Generation Memo for the proposed project. Refer to this report for more detail regarding traffic.

6. There must be appropriate provisions for access facilities adequate for the estimated traffic from public streets and sidewalks, so as to assure public safety and to avoid traffic congestion.

   The project was designed with consideration given to traffic and public safety. The Applicant has provided a Traffic Impact Analysis: Short Trip Generation Memo for the proposed project. In summation of the report, it was determined that the minor increase in traffic from the proposed development is not expected to adversely impact local traffic operations. Additionally, the proposed driveway meets the required all season safe sight distance provisions.

Design Review Committee

Assessing Department Comment Sheet

Project: Page Rock Townhouses
Location: 3 Page Road, Tax Map 15, Lot 235
Date: 4/22/2025

Please return comments by 5/6/2025

Please Return Comments to Alecia LaFlamme alaflamme@londonderrynh.org Thank you.

Is any of the subject property in Current Use: ☐ Yes ☒ No

Are there any particular concerns regarding the following items?
(Check item of concern, explain below)

☐ Street Numbering ☒ Street Naming
☐ Lot Numbers ☐ Fiscal Impact

Please fill out the following for all subdivision applications creating new lots:

Existing Map and Lot/Street Address: 015-235-0, 3 Page Rd.

Proposed Map and Lot/Street Address: 015-235C-1 = 2
015-235C-2 = 4
015-235C-3 = 6, cont.

Comments: 015-235C-4 = 8, 015-235C-5=10, 015-235C-6=12, 015-235C-7=1, 015-235C-8=3, 015-235C-9=5, 015-235C-10=7, 015-235C-11=9, 015-235C-12=11

Need name of Road

Submitted by: Laura Keeley Date: 5-2-25

Design Review Committee

Building Department Comment Sheet

Project: Page Rock Townhouses
Location: 3 Page Road, Tax Map 15, Lot 235
Date: 4/22/2025

Please return comments by 5/6/2025

Please Return Comments to Alecia LaFlamme alaflamme@londonderrynh.org Thank you.

Does the proposed development conform with zoning requirements for the following (please explain any "no" or n/a" answers below or on an additional sheet):

	Yes	No	N/A
Use of Property	☑	☐	☐
Lot Size	☑	☐	☐
Building Coverage	☑	☐	☐
Lighting	☐	☐	☐
Any special requirements?			
Flood Zone	☑	☐	☐
Signage	☐	☐	☐

	Yes	No	N/A
Building Setbacks	☐	☑	☐
Lot Dimensions	☑	☐	☐
Parking	☑	☐	☐
Landscaping	☑	☐	☐
Zoning/Code Violations	☐	☐	☐

Comments:

Slight encroachment by utility room into landscape buffer, left side of north building

Platforms/steps and bulkheads on South building and end unit of North building will encroach into building setbacks

Submitted by: Mark Cowden Date: 4/25/25

Design Review Committee

Conservation Commission Comment Sheet

Project: Page Rock townhouses
Location: 3 Page Rd Map 15 lot 235
Date: 3/10/26

Please return comments by _____.

Please return comments to Michael Bazegian mbazegian@londonderrynh.org **Thank You.**

	Yes	No	N/A
Are there wetlands on the site?	☑	☐	☐
Are they high quality wetlands?	☐	☐	☐
Will they be impacted?	☐	☐	☐
Could the impacts be mitigated?	☐	☐	☐
Are there other important natural resources?	☐	☐	☐
Will they be impacted?	☐	☐	☐
Could the impacts be mitigated?	☐	☐	☐

Comments:

No Objections

Submitted by: MBadgian Date: 3/10/26

Design Review Committee

Fire Department
Comment Sheet

Project: Page Rock Townhouses
Location: 3 Page Road, Tax Map 15, Lot 235
Date: 4/22/2025

Please return comments by 5/6/2025

Please Return Comments to Alecia LaFlamme alaflamme@londonderrynh.org Thank you.

Are there any particular concerns regarding the following items? (Check item of concern, explain below)

- ☐ Access into the site
- ■ Circulation within the site
- ☐ Road/Driveway design
- ☐ Availability of water
- ☐ Other issues (explain below)
- ☐ Water lines
- ■ Fire Hydrants
- ☐ Lighting of site
- ☐ Access to sides/rear of building

Comments:

Submitted by: Brian Johnson, Division Chief Date: 04/28/2025

Outlook

RE: 3 Page Road - Townhouse Application

From Chabot, Guy <GCHABOT@manchesternh.gov>
Date Tue 4/29/2025 2:12 PM
To Alecia LaFlamme <alaflamme@londonderrynh.gov>; Paul Chisholm <pchisholm@keachnordstrom.com>
Cc John Trottier <jrtrottier@londonderrynh.gov>; Kristan Farr <kfarr@londonderrynh.gov>; Kellie Caron <kcaron@londonderrynh.gov>

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good Afternoon,

I have reviewed the plans for the above referenced project and I offer the following comments:

Sheet 7: a. The water main feeding the development is shown as 6” diameter yet the fire services are shown as 8” diameter. It is very unusual to have a smaller main (6”) feeding a larger main (8”).

b. Delineate the bends, tees, plugs etc. on the plan sheet.

c. Each building is allowed only one domestic water service line and **not** one service line per unit. Delineate the size of the domestic service line. Be aware that a service line that is less than 4” diameter shall be Type K copper tubing.

d. Is a hydrant proposed on site?

Sheet 16: “Typical Water Line Trench Detail” shall show that the water main is to be wrapped in 8 mil thick polyethylene pipe wrap.

Please forward revised plans when they become available.

Regards,

Guy R. Chabot, P.E.
Deputy Director
Water Distribution

Manchester Water Works
281 Lincoln Street
Manchester, NH 03103

Direct Phone – (603) 792-2801

From: Alecia LaFlamme <alaflamme@londonderrynh.gov>
Sent: Wednesday, April 23, 2025 10:18 AM
To: Paul Chisholm <pchisholm@keachnordstrom.com>
Cc: John Trottier <jrtrottier@londonderrynh.gov>; Kristan Farr <kfarr@londonderrynh.gov>; Kellie Caron <kcaron@londonderrynh.gov>
Subject: [External Email] 3 Page Road - Townhouse Application

Good Morning Paul,

Guy Chabot from Manchester Water Works would like a paper copy of the plan set for review.

Could you send him a paper copy of the 3 Page Road plan set?

I have included his contact information and address below.

Guy R. Chabot, P.E.
Deputy Director
Water Distribution

Manchester Water Works
281 Lincoln Street
Manchester, NH 03103

Direct Phone – (603) 792-2801

Thank you

Alecia LaFlamme
Land Use Assistant
Town of Londonderry, New Hampshire
Office: (603) 432-1100, ext. 122

The Right-To-Know Law (RSA 91-A) provides that most e-mail communications, to or from City employees and City volunteers regarding the business of the City of Manchester, are government records available to the public upon request. Therefore, this email communication may be subject to public disclosure.

The Right-To-Know Law (RSA 91-A) provides that most e-mail communications, to or from City employees and City volunteers regarding the business of the City of Manchester, are government records available to the public upon request. Therefore, this email communication may be subject to public disclosure

Design Review Committee

Tax Collector
Comment Sheet

Project:Page Rock Townhouses
Location:3 Page Road, Tax Map 15, Lot 235
Date:4/22/2025

Please return comments by 5/6/2025

Please Return Comments to Alecia LaFlamme alaflamme@londonderrynh.org Thank you.

Are Taxes Paid to Date? ☒ Yes ☐ No

Comments: All taxes are paid to date.

Submitted by: Allison Parsons Date:05/07/2025

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

March 25, 2026

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, March 18, 2026:

Case No.: 03-18-2026-6

Applicant: Page Rock LLC
5 Hutchins Drive, Suite 5D
Hollis NH 03049

Owner: Page Rock LLC
5 Hutchins Drive, Suite 5D
P.O. Box 1675
Hollis NH 03049

Location of Property: 3 Page Road and 556 Mammoth Road, Map 015, Lots 235-0 and 236-0, Zoned Commercial II (C-II) and Agricultural Residential (AR-I)

Request: Request For Variance from LZO 4.3.3.B.2.A to allow a driveway and parking to be located within the 50-Foot landscape buffer. The parcel is located at 3 Page Road and 556 Mammoth Road in the Commercial II (C-II) Zoning District and Agricultural Residential (AR-1) Zoning District. Tax Map 015, Lots 235-0 and 236-0, Page Rock LLC (Owner/Applicant).

Result: B. O'Brien moved in Case No. 03-18-2026-6 to grant the request for a variance from LZO 4.3.3.B.2.A to allow a driveway and parking to be located within the 50-foot landscape buffer. M. Feig seconded the motion. The motion carried 5-0-0.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

March 25, 2026

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, March 18, 2026:

Case No.: 03-18-2026-7

Applicant: Page Rock LLC
5 Hutchins Drive, Suite 5D
Hollis NH 03049

Owner: Page Rock LLC
5 Hutchins Drive, Suite 5D
P.O. Box 1675
Hollis NH 03049

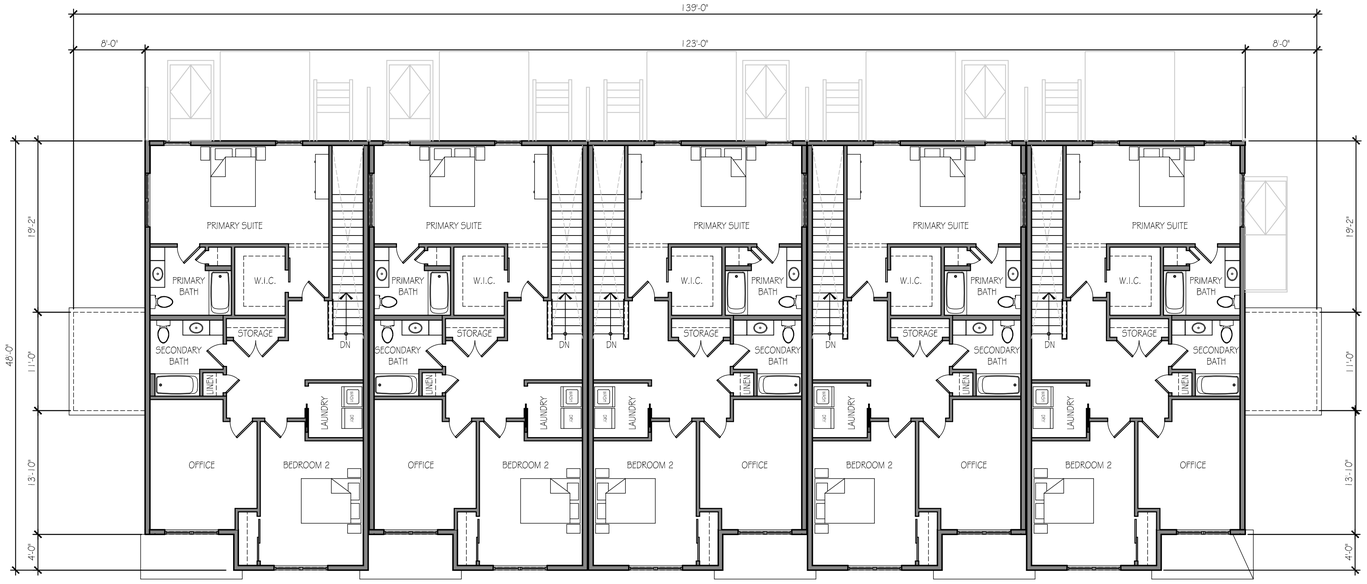
Location of Property: 3 Page Road and 556 Mammoth Road, Map 015, Lots 235-0 and 236-0, Zoned Commercial II (C-II) and Agricultural Residential (AR-I)

Request: Request for variance from LZO 4.3.3.B.2.B to allow a driveway and parking to be located within the 50-Foot landscape buffer without permanently planting and maintaining the buffer. The parcel is located At 3 Page Road And 556 Mammoth Road in the Commercial II (C-II) Zoning District and Agricultural Residential (AR-1) Zoning District. Tax Map 015, Lots 235-0 And 236-0, Page Rock LLC (Owner/Applicant).

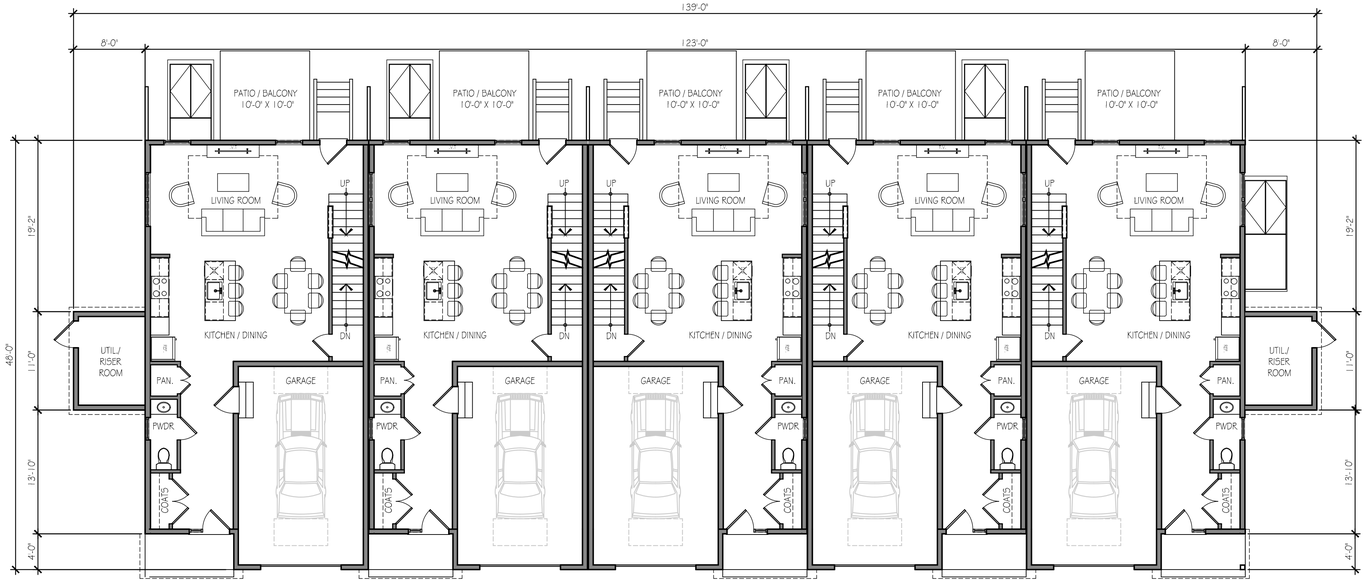
Result: B. O'Brien moved in Case No. 03-18-2026-07 to grant the request for a variance from LZO 4.3.3.B.2.B to allow a driveway and parking to be located within the 50-foot landscape buffer. M. Feig seconded the motion. The motion carried 4-1-0.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

SECOND FLOOR



FIRST FLOOR



5-UNIT CONFIGURATION

SECOND FLOOR SF (PER UNIT)

LIVING SPACE
975 SF

FIRST FLOOR SF (PER UNIT)

LIVING SPACE
635 SF

GARAGE
310 SF

BASEMENT
975 SF

TOTAL TOWNHOME SF (PER UNIT)

TOTAL SF
2,895 SF

TOTAL FINISHED SF (LESS GARAGE / BASEMENT)
1,610 SF

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/5/26	ENGINEERING REVS	PCM

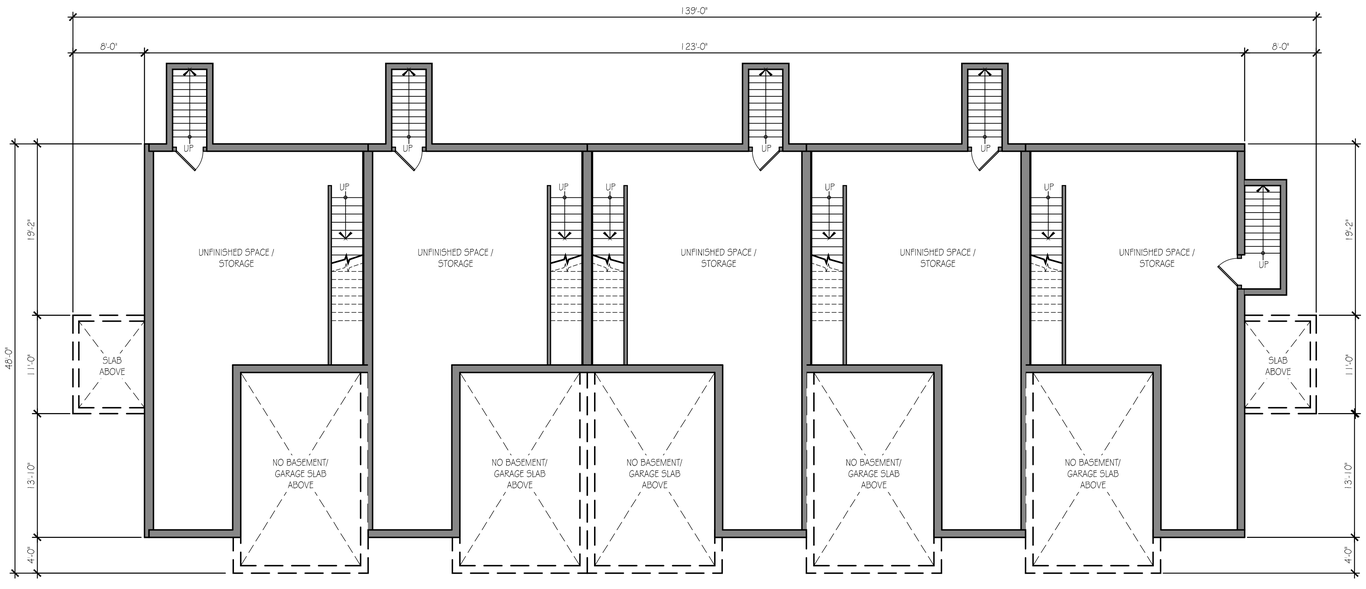
KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PLANS & EXTERIOR RENDERINGS BY:
NORTHPOINT® CONSTRUCTION MANAGEMENT

A1

DATE: 02/17/2026
SCALE: 1/8" = 1'-0"

BASEMENT



5-UNIT CONFIGURATION

SECOND FLOOR SF (PER UNIT)

LIVING SPACE
975 SF

FIRST FLOOR SF (PER UNIT)

LIVING SPACE
635 SF

GARAGE
310 SF

BASEMENT
975 SF

TOTAL TOWNHOME SF (PER UNIT)

TOTAL SF
2,895 SF

TOTAL FINISHED SF (LESS GARAGE / BASEMENT)
1,610 SF

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

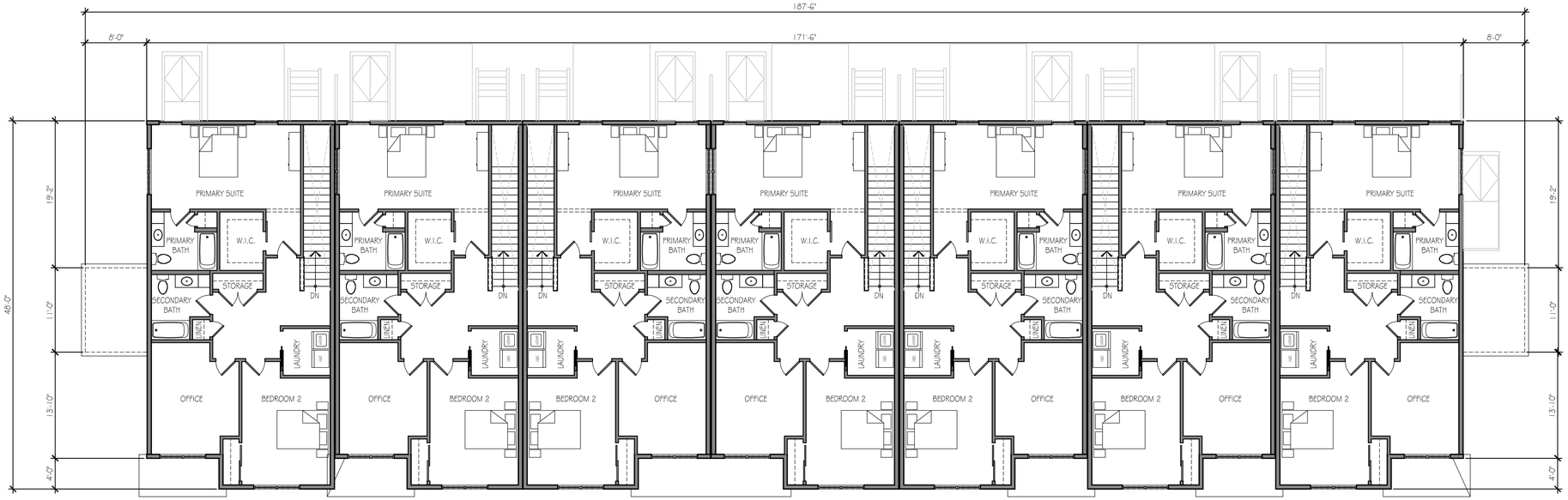
REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/5/26	ENGINEERING REVS	PCM

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

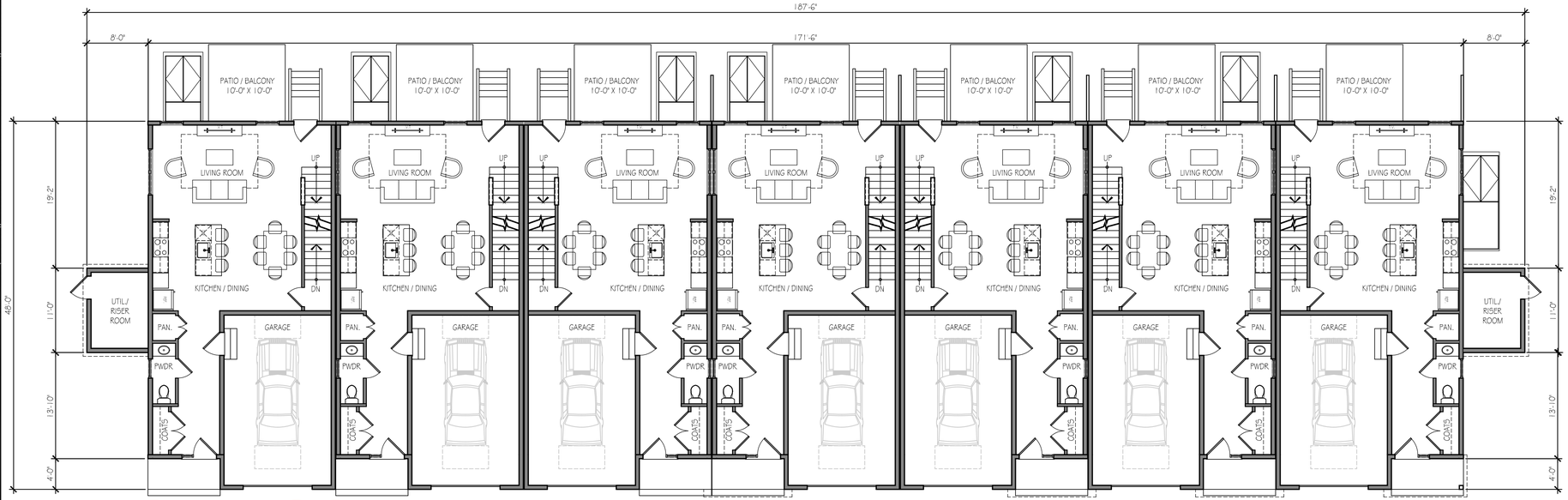
PLANS & EXTERIOR RENDERINGS BY:
NORTHPOINT® CONSTRUCTION MANAGEMENT

A2

DATE: 02/17/2026
SCALE: 1/8" = 1'-0"



SECOND FLOOR



FIRST FLOOR

7-UNIT CONFIGURATION

SECOND FLOOR SF (PER UNIT)

LIVING SPACE
975 SF

FIRST FLOOR SF (PER UNIT)

LIVING SPACE
635 SF

GARAGE
310 SF

BASEMENT
975 SF

TOTAL TOWNHOME SF (PER UNIT)

TOTAL SF
2,895 SF

TOTAL FINISHED SF (LESS GARAGE / BASEMENT)
1,610 SF

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

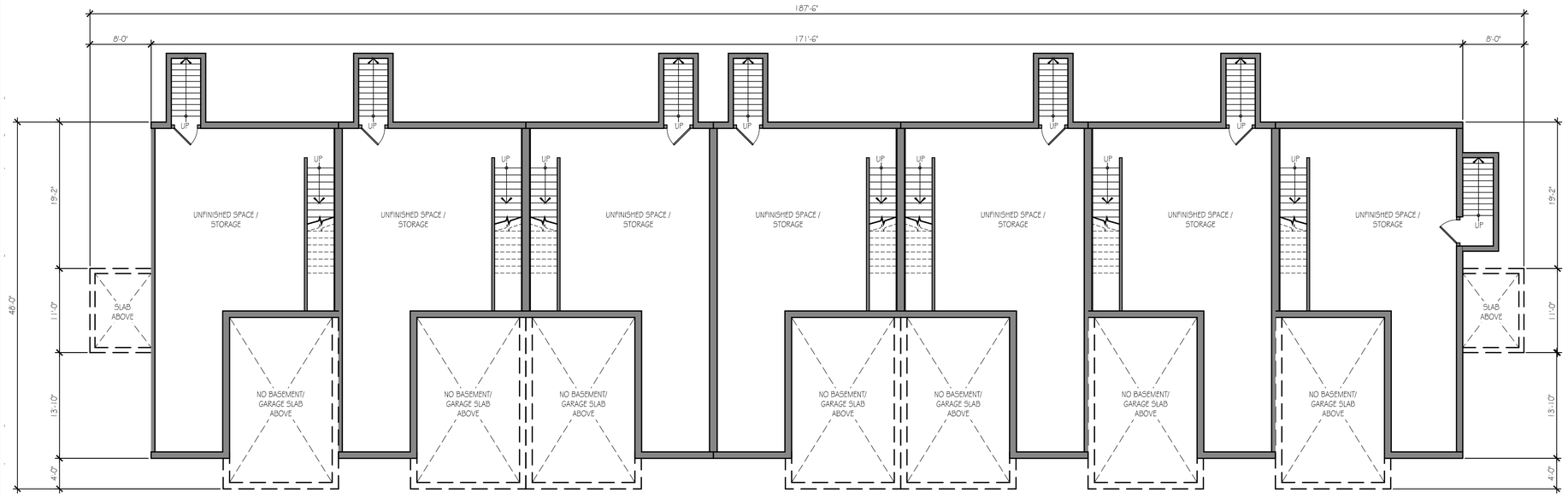
REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/5/26	ENGINEERING REVS	PCM

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PLANS & EXTERIOR RENDERINGS BY:
NORTHPOINT® CONSTRUCTION MANAGEMENT

A3

DATE: 02/17/2026
SCALE: 1/8" = 1'-0"



BASEMENT

7-UNIT CONFIGURATION

SECOND FLOOR SF (PER UNIT)

LIVING SPACE
975 SF

FIRST FLOOR SF (PER UNIT)

LIVING SPACE
635 SF

GARAGE
310 SF

BASEMENT
975 SF

TOTAL TOWNHOME SF (PER UNIT)

TOTAL SF
2,895 SF

TOTAL FINISHED SF (LESS GARAGE / BASEMENT)
1,610 SF

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

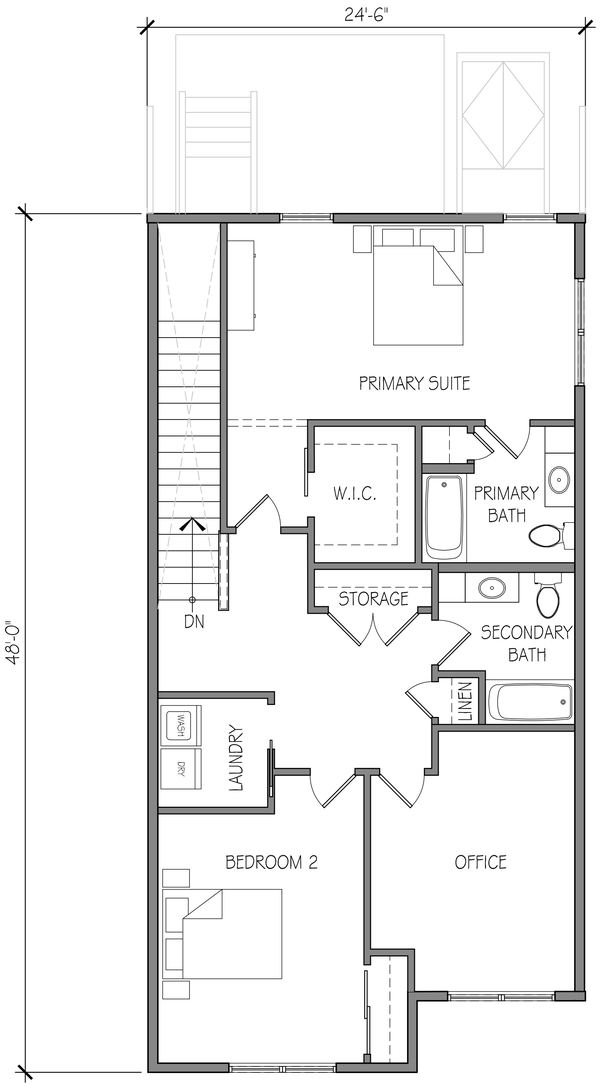
REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/5/26	ENGINEERING REVS	PCM

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

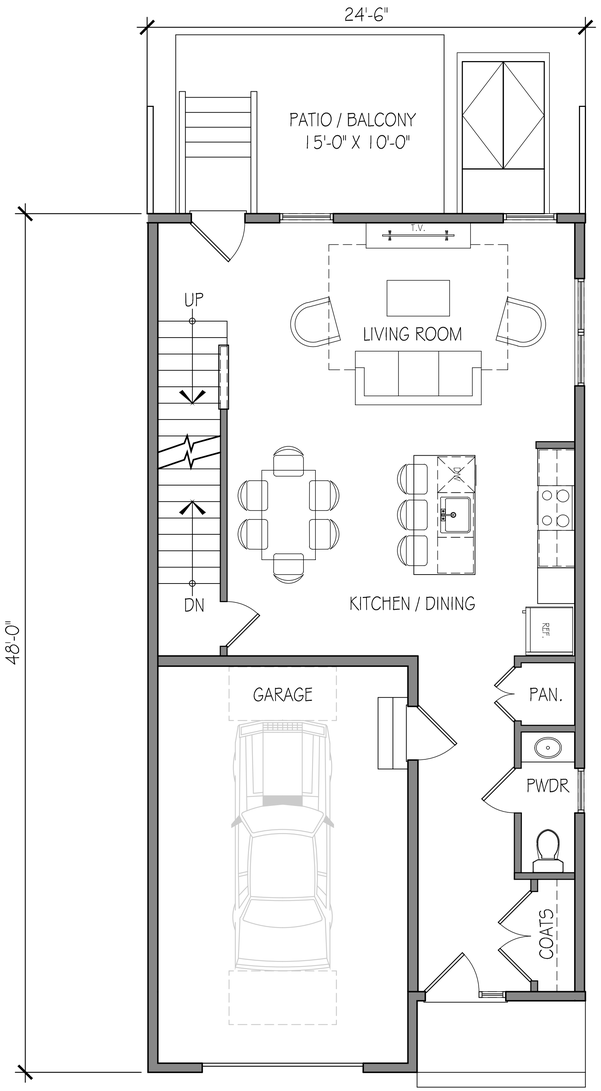
PLANS & EXTERIOR RENDERINGS BY:
NORTHPOINT® CONSTRUCTION MANAGEMENT

A4

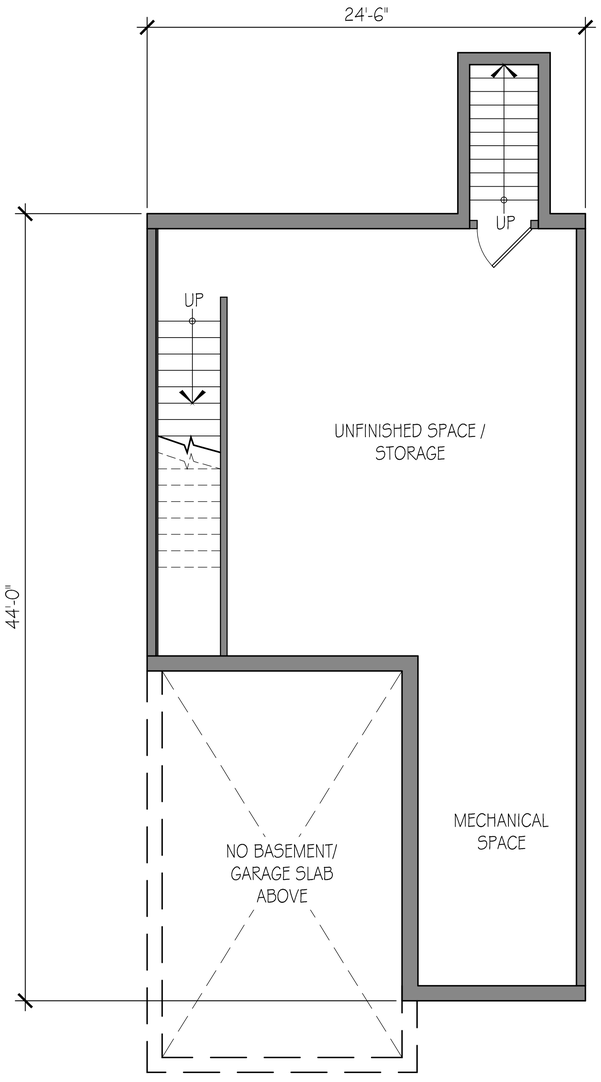
DATE: 02/17/2026
SCALE: 1/8" = 1'-0"



SECOND FLOOR PLAN



FIRST FLOOR PLAN



BASEMENT FLOOR PLAN

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/5/26	ENGINEERING REVS	PCM

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PLANS & EXTERIOR RENDERINGS BY:
NORTHPOINT® CONSTRUCTION MANAGEMENT

A5

DATE: 02/17/2026
SCALE: 1/4" = 1'-0"





** REFER TO A1.7 (EXTERIOR ELEVATIONS) FOR BUILDING HEIGHTS AND PROPOSED EXTERIOR MATERIALS

5-UNIT CONFIGURATION

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/5/26	ENGINEERING REVS	PCM

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PLANS & EXTERIOR RENDERINGS BY:
NORTHPOINT® CONSTRUCTION MANAGEMENT

A6

DATE: 02/17/2026
SCALE: NTS

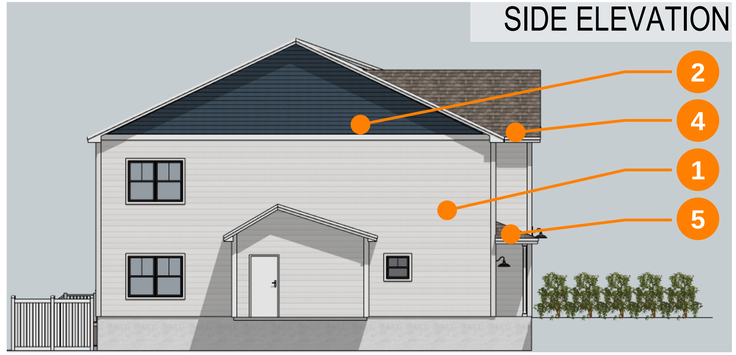
FRONT ELEVATION



REAR ELEVATION



SIDE ELEVATION



EXTERIOR MATERIALS

1. VINYL CLAPBOARD SIDING (SHOWN IN WHITE)
2. VINYL SHAKE SIDING (SHOWN IN BLUE)
3. VINYL WINDOWS (SHOWN IN DARK BRONZE)
4. ARCHITECTURAL ASPHALT ROOF SHINGLES (SHOWN IN BEIGE)
5. VINYL CORNERBOARDS & TRIM TO MATCH FIELD SIDING

5-UNIT CONFIGURATION

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/5/26	ENGINEERING REVS	PCM

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PLANS & EXTERIOR RENDERINGS BY:
NORTHPOINT® CONSTRUCTION MANAGEMENT

A7

DATE: 02/17/2026
SCALE: NTS

FRONT PERSPECTIVE



REAR PERSPECTIVE



** REFER TO A1.9 (EXTERIOR ELEVATIONS) FOR BUILDING HEIGHTS AND PROPOSED EXTERIOR MATERIALS

7-UNIT CONFIGURATION

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/5/26	ENGINEERING REVS	PCM

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PLANS & EXTERIOR RENDERINGS BY:
NORTHPOINT CONSTRUCTION MANAGEMENT

A8

DATE: 02/17/2026
SCALE: NTS

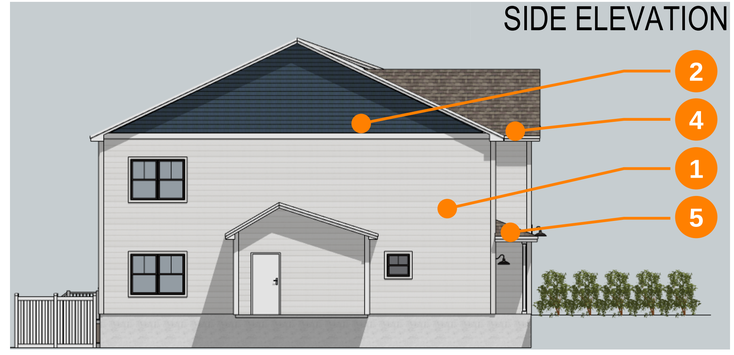
FRONT ELEVATION



REAR ELEVATION



SIDE ELEVATION



EXTERIOR MATERIALS

1. VINYL CLAPBOARD SIDING (SHOWN IN WHITE)
2. VINYL SHAKE SIDING (SHOWN IN BLUE)
3. VINYL WINDOWS (SHOWN IN DARK BRONZE)
4. ARCHITECTURAL ASPHALT ROOF SHINGLES (SHOWN IN BEIGE)
5. VINYL CORNERBOARDS & TRIM TO MATCH FIELD SIDING

7-UNIT CONFIGURATION

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

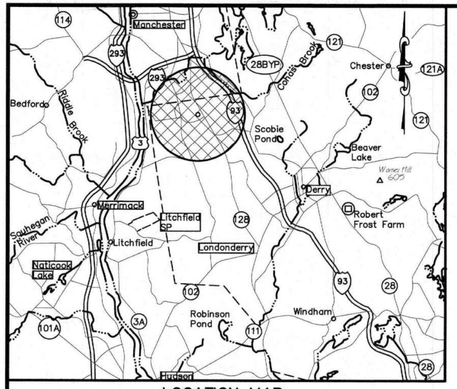
REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/5/26	ENGINEERING REVS	PCM

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PLANS & EXTERIOR RENDERINGS BY:
NORTHPOINT CONSTRUCTION MANAGEMENT

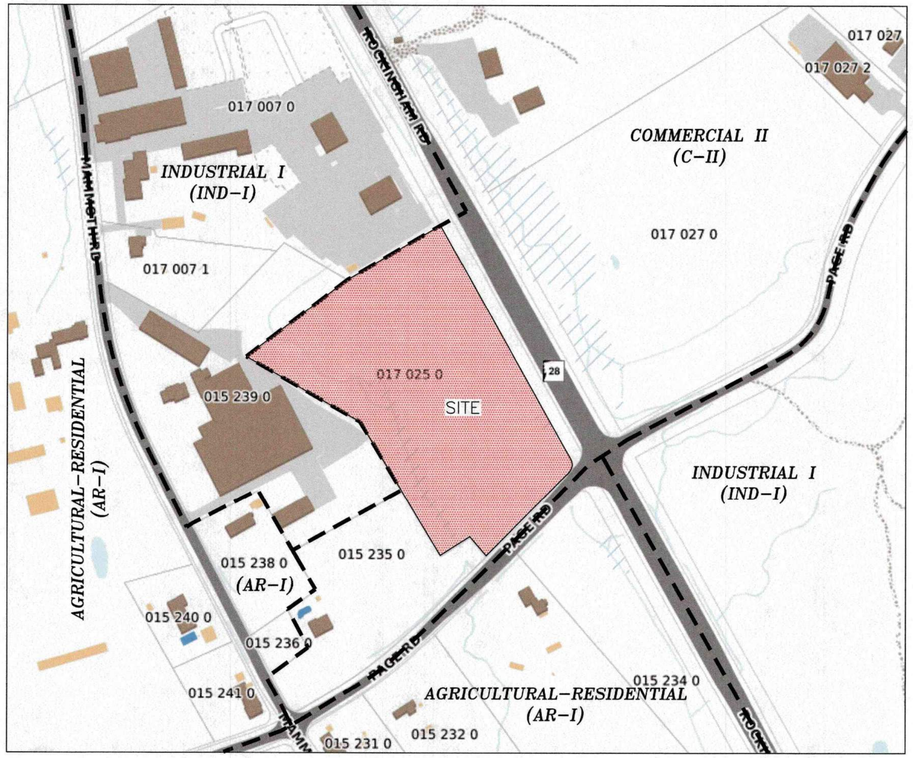
A9

DATE: 02/17/2026
SCALE: NTS

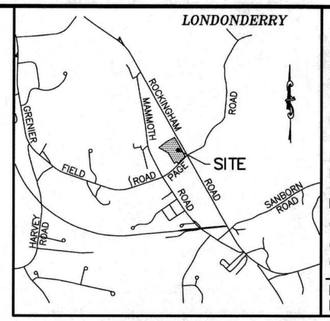


LOCATION MAP
NOT TO SCALE

RESIDENTIAL SITE PLAN
ROCK ROAD TOWNHOMES
TAX MAP 17 LOT 25 ~ 295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE



TAX MAP PLAN
SCALE: 1" = 200'±



VICINITY MAP
SCALE: 1" = 2,500'±

TITLE	SHEET No.
PROJECT NOTES	1
EXISTING CONDITIONS PLAN	2
RESIDENTIAL SITE PLAN	3
GRADING & DRAINAGE PLAN	4
EROSION CONTROL PLAN	5
UTILITY PLAN	6–7
UTILITY PROFILES	8
LANDSCAPE PLAN	9
LIGHTING PLAN	10
SIGHT DISTANCE & DRIVEWAY PLAN & PROFILE	11
CONSTRUCTION DETAILS	12–20
CONDOMINIUM SITE PLAN	CS1
CONDOMINIUM FLOOR PLAN	CF1–CF3
FLOOR PLANS & EXTERIOR ELEVATIONS	A1–A9

INDEX OF SHEETS

OWNER OF MAP 17 LOT 25
SIGNATURE: Duane Nadeau
DATE: 3/16/2026

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND PLOTTED FROM EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED 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 THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

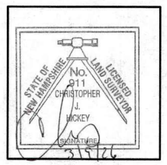
ZONING NOTE

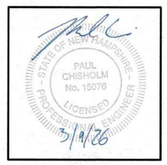
THE ZONING/BUILDING SETBACKS DEPICTED ON THIS PLAN ARE THOSE WE HAVE INTERPRETED FROM THE LATEST ZONING ORDINANCE OF THE MUNICIPALITY AND, AS SUCH, ARE ONLY OPINIONS EXPRESSED BY KEACH–NORDSTROM ASSOCIATES, INC. THE FINAL INTERPRETATION OF THE ORDINANCE CAN ONLY BE MADE BY THE APPROPRIATE ZONING AUTHORITY. SINCE BUILDING ORIENTATION, PROPOSED USES, AND OTHER FACTORS CAN AFFECT THE SETBACKS, PRIOR TO ANY DEVELOPMENT OF THIS PROPERTY, THE BUILDER/OWNER MUST CONSULT WITH THE TOWN/CITY TO INSURE THE CORRECT APPLICATION OF THE ZONING ORDINANCE.

ENGINEER & SURVEYOR:
KEACH–NORDSTROM ASSOCIATES, INC.
10 COMMERCE PARK NORTH, SUITE 3
BEDFORD, NEW HAMPSHIRE 03110
(603) 627–2881

WETLAND CONSULTANT:
CHRISTOPHER K. DANFORTH, CWS #077
TFMORAN, INC.
48 CONSTITUTION DR
BEDFORD, NH 03110
(603) 472–4488

SOIL SCIENTIST:
LUKE HURLEY, CSS
HURLEY ENVIRONMENTAL & LAND PLANNING, LLC
PO BOX 356
EPSOM, NH
(603)583–1745





DIG SAFE
811
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

COVER SHEET
ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

LEGEND	
———	EXISTING PROPERTY LINE
— — — —	DISTRICT BOUNDARY

BENCHMARK DATA		
LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD
DATE: _____
CERTIFIED BY: _____

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

PROJ. NO: 21–0113–1
DATE: MAY 6, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. COVER

CHECKLIST NOTES:

1. THE PURPOSE OF THE PLAN IS TO SHOW A PROPOSED TOWNHOUSE DEVELOPMENT, CONSISTING OF TWELVE (12) 2-BEDROOM UNITS, AND THE ASSOCIATED SITE IMPROVEMENTS.
2. OWNER OF RECORD: PAGE ROCK, LLC, 5 HUTCHINGS DRIVE, SUITE 5D, HOLLIS, N.H. 03049
3. MAP AND LOT NUMBERS REFERENCE THE TOWN OF LONDONDERRY TAX ASSESSORS MAP AND LOT NUMBER.
4. THE SUBJECT PROPERTY, MAP 17 LOT 25, IS LOCATED IN THE TOWN OF LONDONDERRY'S COMMERCIAL II (C–II) ZONING DISTRICT.
5. AREA OF THE SUBJECT PARCEL: 344,183 SF OR 7.901 ACRES.
6. THE SUBJECT PARCEL IS LOCATED WITHIN THE COMMERCIAL II (C–II) ZONING DISTRICT AND IS SUBJECT TO THE FOLLOWING DIMENSIONAL REQUIREMENTS:

	REQUIRED	PROVIDED
– MINIMUM LOT AREA	1 ACRE	7.901 ACRES
– MINIMUM LOT FRONTAGE	150 FT	1,098 FT
MINIMUM BUILDING SETBACKS:		
– FRONT	60 FT	62 FT
– SIDE	30 FT	106 FT
– REAR	30 FT	488 FT
BUILDING HEIGHT	50 FT	30 FT
MAXIMUM BUILDING COVERAGE	25%	4%

7. LANDSCAPE DIMENSIONAL REQUIREMENTS FOR PROPERTIES IN THE C–II DISTRICT:

	REQUIRED	PROVIDED
– MINIMUM GREEN AREA LOT COVERAGE	33%	91.6%
– MINIMUM GREEN AREA WIDTH ALONG FRONTAGE	40 FT	125 FT±
– MINIMUM GREEN AREA WIDTH		
– GREEN PERIMETER	15 FT	406 FT
– GREEN PERIMETER (ABUTTING PUBLIC R.O.W.)	30 FT	77 FT
– GREEN PERIMETER (RESIDENTIAL WITHIN 200 FT)	50 FT	102 FT

8. THE EXISTING PROPERTY IS CURRENTLY UNDEVELOPED. THE PROPOSED USE IS MULTI–FAMILY HOUSING.
9. THE PROJECT WILL BE SERVED BY ON MUNICIPAL SEWER.
10. THE PROJECT WILL BE SERVED BY MUNICIPAL WATER DELIVERED BY MANCHESTER WATER WORKS.
11. THE PROPOSED PROJECT IS NOT SUBJECT TO PREVIOUS ZONING VARIANCE REQUESTS, DECISIONS AND RESTRICTION OF CONDITIONS.
12. EXAMINATION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAPS (FIRM) FOR THE TOWN OF LONDONDERRY, NEW HAMPSHIRE, ROCKINGHAM COUNTY, COMMUNITY PANEL NUMBER 33015C0317E PANEL NUMBER 317 OF 681. EFFECTIVE DATE: MAY 17, 2005, INDICATES THAT NO PORTION OF THE SUBJECT PREMISES IS LOCATED WITHIN A DESIGNATED FLOOD ZONE.
13. THE FOLLOWING STATE AND LOCAL PERMITS ARE REQUIRED FOR THIS PROJECT:

PERMIT TYPE	PERMIT #	APPROVAL DATE	EXPIRATION DATE
LONDONDERRY – DRIVEWAY PERMIT			
LONDONDERRY – STORMWATER PERMIT			
LONDONDERRY – SEWER PERMIT			
LONDONDERRY – CONDITIONAL USE PERMIT FOR MULTIFAMILY RESIDENTIAL USE IN C–II ZONE			
LONDONDERRY – CONDITIONAL USE PERMIT FOR DISTURBANCE IN CO DISTRICT			
NHDES – SEWER CONNECTION PERMIT			
NPDES – CONSTRUCTION GENERAL PERMIT	REQUIRED PRIOR TO CONSTRUCTION		

14. ALL SHEETS IN THIS PLAN SET ARE ON FILE WITH THE TOWN OF LONDONDERRY.
15. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT DEFICIENCIES EXIST IN THE APPROVED DESIGN DRAWINGS, THE OWNER SHALL BE REQUIRED TO CORRECT THE DEFICIENCIES TO MEET THE REQUIREMENTS OF THE REGULATIONS AT NO EXPENSE TO THE TOWN.
16. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE TOWN.
17. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO TOWN OF LONDONDERRY SITE PLAN REGULATIONS AND THE LATEST EDITION OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION".
18. PARKING CALCULATIONS
    REQUIRED PARKING:
    MULTIFAMILY (3 OR MORE UNITS)
    2 SPACES PER DWELLING UNIT X 12 DWELLING UNITS = 24 SPACES
    PROPOSED PARKING:
    12 GARAGE SPACES + 12 DRIVEWAY SPACES + 10 GUEST SPACES = 34 SPACES
19. IN ACCORDANCE WITH SECTION 6.01 RSA 676:13, ALL IMPROVEMENTS SPECIFIED ON THESE SITE PLANS SHALL BE CONSTRUCTED, COMPLETED, AND INSPECTED, PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
20. IN ACCORDANCE WITH SECTION 6.01 OF THE LONDONDERRY SITE PLAN REGULATIONS AND RSA 676:12, ALL OFF–SITE IMPROVEMENTS SPECIFIED ON THESE SITE PLANS SHALL BE CONSTRUCTED, COMPLETED, AND INSPECTED AND APPROVED BY THE TOWN OF LONDONDERRY PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
21. DENSITY FOR LOT 25 IS CALCULATED AS FOLLOWS PER LZO 4.2.2.3(B):
    UNUSABLE LAND = 17,722 SF STEEP SLOPES + 77,619 SF WETLANDS + 0 SF UTILITY EASEMENTS
    USABLE LAND AREA = TOTAL LOT AREA – UNUSABLE LAND AREA = 344,183 SF – 95,341 SF = 248,842 SF
    DENSITY = (0.8 X 116,081 SF OF 'USABLE LAND')/7,000–SF PER UNIT = 28.44 OR 28 UNITS
22. THE ANTICIPATED DELIVERY VEHICLES FOR THE PROJECT SITE ARE A TYPICAL POSTAL DELIVERY VEHICLE AND AN OCCASIONAL MOVING VAN.

GENERAL NOTES:

23. HORIZONTAL DATUM IS NAD83, VERTICAL DATUM IS NAV088 OBTAINED FROM GPS SURVEY METHODS POST PROCESSED THROUGH NOAA–OPUS. NORTH ORIENTATION IS NAD83.
24. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON A FIELD SURVEY PERFORMED BY THIS OFFICE IN JANUARY OF 2022.
25. EASEMENTS, RIGHTS AND RESTRICTIONS SHOWN OR IDENTIFIED HEREON ARE THOSE FOUND DURING RESEARCH AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER EASEMENTS, RIGHTS, AND RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF THE SUBJECT PREMISES MAY DETERMINE.
26. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN HEREON IS APPROXIMATE. KEACH–NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF THE UTILITIES SHOWN. UTILITIES SHOWN HEREON ARE ONLY THOSE FOUND WITHIN THE AREA OF KNA FIELD SURVEY AND ARE SOLELY BASED UPON VISIBLE SURFACE EVIDENCE. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG–SAFE AT 811.
27. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK.
28. THE SITE SPECIFIC SOIL SURVEY (SSSS) WAS PRODUCED JULY 8, 2022, AND WAS PREPARED BY LUKE HURLEY, CSS #095. THE SURVEY AREA IS LOCATED AT 295 ROCKINGHAM ROAD, LONDONDERRY, NH. SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE–WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.
29. WETLANDS WERE DELINEATED IN JANUARY OF 2022 BY CHRIS LANFORTH, CWS, #77 OF TF MORAN, INC. USING THE TECHNICAL CRITERIA IN THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL (TECHNICAL REPORT Y–87–1, JANUARY 1987).
30. 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.
31. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, VERSION 8.2. UNITED STATES DEPARTMENT OF AGRICULTURE (2018).
32. NEW ENGLAND HYDRIC SOILS TECHNICAL COMMITTEE. 2020 VERSION 4, FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND. NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION, LOWELL, MA.
33. U.S. ARMY CORPS OF ENGINEERS NATIONAL WETLAND PLANT LIST, VERSION 3.5. (2020).
34. CONSERVATION OVERLAY SIGNS TO BE INSTALLED ALONG THE CONSERVATION OVERLAY DISTRICT BOUNDARY, AS SHOWN ON THE PLAN.
35. THIS PROJECT DISTURBS IN EXCESS OF 1–ACRE OF LAND. THEREFORE IT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE OWNER/DEVELOPER AND "OPERATOR" (GENERAL CONTRACTOR) SHALL EACH BE REQUIRED TO PREPARE AND SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA PRIOR TO THE START OF CONSTRUCTION AND SHALL BE RESPONSIBLE FOR THE PREPARATION AND IMPLEMENTATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MEETING THE REQUIREMENTS OF THE CURRENT CONSTRUCTION GENERAL PERMIT.
36. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER AND/OR OWNER IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, FEES AND BONDS.
37. PRECONSTRUCTION MEETING SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION AND SHALL BE ARRANGED WITH THE DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES.
38. THE PROJECT MUST BE BUILT AND EXECUTED AS SPECIFIED IN THE APPROVED APPLICATION PACKAGE UNLESS MODIFICATIONS ARE APPROVED BY THE PLANNING DEPARTMENT & DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES, OR, IF STAFF DEEMS APPLICABLE, THE PLANNING BOARD.
39. ALL OF THE DOCUMENTATION SUBMITTED IN THE APPLICATION PACKAGE BY THE APPLICANT AND ANY REQUIREMENTS IMPOSED BY OTHER AGENCIES ARE PART OF THIS APPROVAL UNLESS OTHERWISE UPDATED, REVISED, CLARIFIED IN SOME MANNER, OR SUPERSEDED IN FULL OR IN PART. IN THE CASE OF CONFLICTING INFORMATION BETWEEN DOCUMENTS, THE MOST RECENT DOCUMENTATION AND THIS NOTICE HEREIN SHALL GENERALLY BE DETERMINING.
40. PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY, ALL SITE IMPROVEMENTS AND OFF–SITE IMPROVEMENTS SHALL BE COMPLETED.
41. IT IS THE RESPONSIBILITY OF THE APPLICANT TO OBTAIN ALL OTHER LOCAL, STATE, AND FEDERAL PERMITS, LICENSES, AND APPROVALS WHICH MAY BE REQUIRED AS PART OF THIS PROJECT (THAT WERE NOT RECEIVED PRIOR TO CERTIFICATION OF THE PLANS). CONTACT THE BUILDING DIVISION AT EXTENSION 115 REGARDING BUILDING PERMITS.
42. THE OWNER SHALL INSPECT THE ONSITE STORMWATER MANAGEMENT FACILITIES IN ACCORDANCE WITH THE OPERATION AND MAINTENANCE PLAN AND MAINTENANCE REQUIREMENTS LISTED ON THIS PLAN. A COPY OF ALL INSPECTION REPORTS SHALL BE MADE AVAILABLE TO THE TOWN OF LONDONDERRY DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES.
43. THE PROPOSED DUMPSTER ENCLOSURE SHALL BE THE ONLY OUTDOOR STORAGE AREA ON SITE.
44. THE PROJECT HAS BEEN APPROVED WITH NO CONNECTION TO THE LONDONDERRY SEWER DIVISION.

EROSION CONTROL NOTES:

45. TEMPORARY CONSTRUCTION EROSION CONTROL MEASURES AS WELL AS THE PERMANENT EROSION CONTROL MEASURES SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN THE NEW HAMPSHIRE STORMWATER MANUAL DATED FEBRUARY 2025, AS AMENDED FROM TIME TO TIME.
46. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
47. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
48. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR, MAY WARRANT. ALL TEMPORARY EROSION CONTROL MEASURES USED SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER 0.5" OF RAINFALL OR MORE. THEY SHALL BE CLEANED AND MAINTAINED AND OTHERWISE KEPT IN AN EFFECTIVE OPERATING MANNER THROUGHOUT THE CONSTRUCTION PERIOD.
49. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES. WETLAND AREAS AND SURFACE WATERS SHALL BE PROTECTED FROM SEDIMENT.
50. OFFSITE SURFACE WATER AND RUNOFF FROM UNDISTURBED AREAS SHALL BE DIVERTED AWAY FROM DISTURBED AREAS WHERE FEASIBLE OR CARRIED NON–EROSIVELY THROUGH THE PROJECT AREA. INTEGRITY OF DOWNSTREAM DRAINAGE SYSTEMS SHALL BE MAINTAINED.
51. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4 INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
52. ALL SWALES AND DITCHLINES SHALL BE PERIODICALLY CLEANED OF DEPOSITED SEDIMENT SO AS TO MAINTAIN AN EFFECTIVE GRADE AND CROSS SECTION. ALL SWALES AND DITCHLINES SHALL BE FULLY STABILIZED PRIOR TO HAVING STORMWATER DIRECTED TOWARDS THEM.
53. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW across FROZEN SURFACES.
54. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
    B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    C. A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
    D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
50. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH ENV–A 1000.
51. IN NO WAY ARE THOSE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.
52. THE TOWN OF LONDONDERRY SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.
53. AREAS HAVING FINISH GRADE SLOPES OF 3 : 1 OR STEEPER, SHALL BE STABILIZED WITH JUTE MATTING WHEN AND IF FIELD CONDITIONS WARRANT, OR IF SO ORDERED. JUTE MATTING INSTALLED TO CONFORM WITH THE RECOMMENDED BEST MANAGEMENT PRACTICE OUTLINED IN THE NEW HAMPSHIRE STORMWATER MANUAL DATED FEBRUARY 2025.
54. THE OWNER IS RESPONSIBLE FOR THE STABILIZATION OF ALL SLOPES GREATER THAN 3:1 TO THE SATISFACTION OF LONDONDERRY DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES.
55. ALL DETENTION PONDS AND TREATMENT SWALES SHALL BE CONSTRUCTED PRIOR TO ANY EARTH MOVING ACTIVITIES THAT WILL INFLUENCE STORMWATER RUNOFF.
56. LIMIT THE EXPOSURE OF UNSTABILIZED SOILS TO 45 DAYS OR LESS.
57. ALL ROADWAY AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
58. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
59. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
60. 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 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
61. EXPOSED EARTHWORK SHALL BE CONFINED TO AS LIMITED AN AREA AS IS PRACTICAL AT ANY GIVEN TIME THROUGHOUT THE CONSTRUCTION SEQUENCE. AT NO TIME SHALL MORE THAN FIVE (5) ACRES OF SITE AREA BE IN AN UNSTABLE CONDITION. NO GIVEN AREA OF THE SITE SHALL BE LEFT IN AN UNSTABILIZED CONDITION FOR A PERIOD OF TIME EXCEEDING THIRTY (30) CALENDAR DAYS. SHOULD THE CONTRACTOR REQUEST MORE THAN FIVE (5) AREAS BE DISTURBED AT ONE TIME THEN THE CONTRACTOR SHALL:
    (1) SUBMIT DOCUMENTATION TO NHDES–AOT AND THE DESIGN ENGINEER, THAT THE REQUIRED AREAS OF EARTH CUTS AND FILLS ARE SUCH THAT AN AREA OF DISTURBANCE OF 5 ACRES OR LESS WOULD UNREASONABLY LIMIT THE CONSTRUCTION SCHEDULE;
    (2) SUBMIT A CONSTRUCTION SEQUENCE PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST; AND
    (3) EMPLOYS AN ENVIRONMENTAL MONITOR DURING CONSTRUCTION.

WINTER CONSTRUCTION NOTES:

62. ALL PROPOSED POST–DEVELOPMENT VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 4:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
63. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
64. AFTER OCTOBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3 OR, IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON, BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT.
65. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
    B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    C. A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
    D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

CONSTRUCTION NOTES:

69. ALL CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN. THE DOCUMENT SHALL BE KEPT ON–SITE AND UPDATED AS NEEDED.
70. CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND PROPER DISPOSAL OF ONSITE STUMPS.
71. ALL DRAINAGE PIPE SHALL MEET H–20 LOADING REQUIREMENTS AND SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
72. DRAINAGE STRUCTURE RIM ELEVATIONS ARE APPROXIMATE, ALL RIMS SHALL BE SET FLUSH WITH THE FINAL GRADE.
73. PROVIDE 6" PERFORATED UNDERDRAIN AS REQUIRED BY THE TOWN ENGINEER.
74. ALL HEADWALLS/RETAINING WALLS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW HAMPSHIRE.
75. ALL UTILITIES SHALL BE UNDERGROUND.
76. PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR SHALL COORDINATE WITH THE RESPECTIVE UTILITY COMPANIES FOR THE EXACT LOCATION, LAYOUT, CONDUIT SIZE ASSOCIATED WITH THE MAIN LINES AND CONNECTION LOCATIONS AT EACH LOT. THE UTILITY LAYOUT PLAN SHALL BE PROVIDED TO THE DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES FOR REVIEW AND APPROVAL.
77. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS, AND SHALL MEET THE REQUIREMENTS AND SPECIFICATIONS FOR TYPICAL DETAILS FOR SITE AND ROADWAY INFRASTRUCTURE, LONDONDERRY, NEW HAMPSHIRE.
78. COMPACTION TESTING SHALL TO BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER RETAINED BY THE CONTRACTOR. TESTING REQUIREMENTS TO BE ESTABLISHED AT THE PRECONSTRUCTION MEETING.

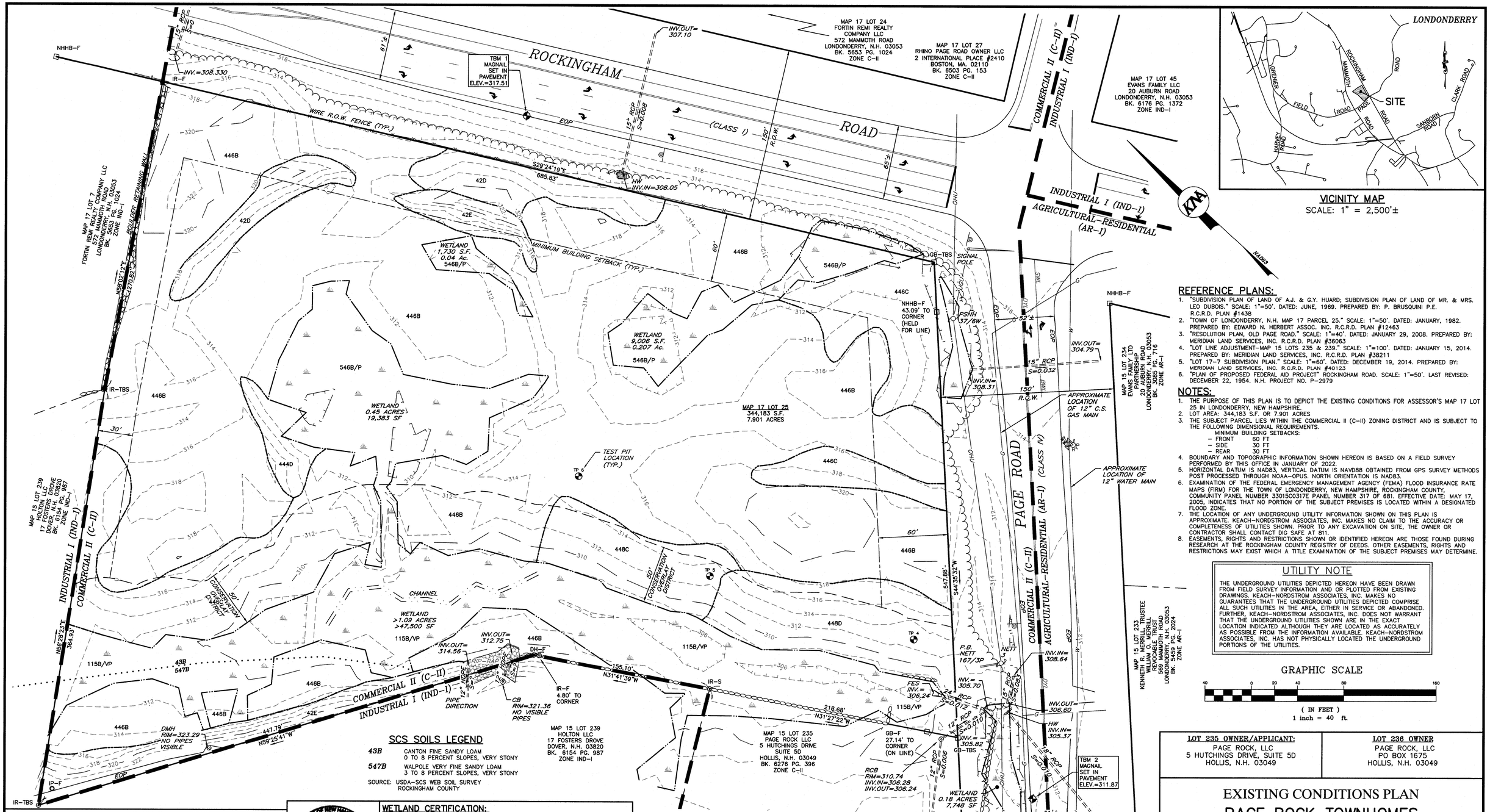
CONSTRUCTION SEQUENCE:

THE FOLLOWING CONSTRUCTION SEQUENCE IS A GENERAL GUIDELINE FOR THE CONTRACTOR TO FOLLOW. ADJUSTMENTS SHALL BE MADE DUE TO WEATHER CONDITIONS, PERMIT CONDITIONS AND/OR MARKET CONDITIONS. THE CONSTRUCTION SEQUENCE SHALL ALSO BE ADJUSTED ACCORDING TO THE REQUIREMENTS OF EACH PHASE.

79. CONTRACTOR TO NOTIFY DIG–SAFE 72–HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
80. CUT AND CLEAR TREES AND BRUSH FROM CONSTRUCTION AREAS TO THE EXTENT NECESSARY. ALL BRANCHES, TOPS AND BRUSH TO BE PROPERLY DISPOSED OF BY CONTRACTOR. THIS PROJECT SHALL BE MANAGED TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.
81. PRIOR TO GRUBBING OF CLEARED AREAS, ALL SILTATION BARRIERS DESIGNED FOR USE AS TEMPORARY EROSION CONTROL MEASURES SHALL BE CONSTRUCTED AS CALLED FOR ON PROJECT PLANS. INSTALL STABILIZED CONSTRUCTION EXIT AT LOCATION OF CONSTRUCTION ACCESS AT LOCATION OF INTERSECTION WITH EXISTING PAVEMENT.
82. COMPLETE GRUBBING OPERATIONS UNDER THE ROADWAY AND SLOPE SECTIONS. ALL STUMPS AND SIMILAR DEBRIS SHALL BE PROPERLY DISPOSED OF BY CONTRACTOR. ORGANIC MATERIAL SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED IN UPLAND AREAS. ALL STOCKPILES SHALL BE SEEDED WITH WINTER RYE AND, IF NECESSARY, SURROUNDED WITH HAY BALES IN ORDER TO PREVENT LOSS DUE TO EROSION.
83. BEGIN ANY BLASTING OPERATIONS, IF REQUIRED, IN ACCORDANCE WITH PERMIT REQUIREMENTS.
84. CONSTRUCT AND STABILIZE DITCHLINES AND POND(S) PRIOR TO DIRECTING FLOW INTO THEM.
85. CONSTRUCT THE DRAINAGE SYSTEM, SEWER SYSTEM AND OTHER SUBSURFACE UTILITIES AS ROUGH GRADES ARE ESTABLISHED.
86. BEGIN EARTHMOVING OPERATIONS, COMMENCING WITH WORK NEEDED TO BALANCE SITE AND FACILITATE BUILDING FOUNDATION AND CONSTRUCTION. PERMANENT DOWNSLOPE WORK SHALL BE PROTECTED FROM UPGRADIENT STORMWATER FLOW BY THE CONSTRUCTION OF TEMPORARY EARTHEN DIKES OR EXCAVATED SWALES.
87. ONCE BUILDING FOUNDATION WORK IS UNDERWAY, CONTINUE EARTHMOVING OPERATIONS UNTIL DESIGN SUBGRADE IS ACHIEVED.
88. COMMENCE CONSTRUCTION OF DRIVEWAY AND PARKING LOT, PERFORM EXCAVATION ACTIVITIES REQUIRED TO ACHIEVE SUBGRADE ELEVATION. ALL EXCAVATED EMBANKMENTS, DITCHES, AND SWALES SHALL BE INSTALLED AND STABILIZED. ALL SWALES AND DITCHLINES SHALL BE PROTECTED FROM EROSION BY IMPLEMENTATION OF TEMPORARY EROSION CONTROL MEASURES AS SHOWN ON PROJECT PLANS. DIVERT STORMWATER RUNOFF THROUGH THE USE OF TEMPORARY CULVERTS, OR OTHER MEANS NECESSARY PRIOR TO THE COMPLETIONS OF A FUNCTIONAL STORM DRAINAGE SYSTEM. SLOPES AND EMBANKMENTS SHALL BE STABILIZED BY TRACKING AND TEMPORARY SEEDING WITH WINTER RYE PRIOR TO TURF ESTABLISHMENT. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO HAVING RUNOFF DIRECTED TO THEM.
89. COMPLETE CONSTRUCTION OF DRIVEWAY AND PARKING LOT EMBANKMENTS BY ADDING APPROPRIATE BASE MATERIALS GRADED TO PROPER ELEVATION.
90. APPLY TOPSOIL TO DRIVEWAY AND PARKING LOT SLOPES AND OTHER AREAS DISTURBED BY CONSTRUCTION. TOPSOIL USED MAY BE NATIVE ORGANIC MATERIAL SCREENED SO AS TO BE FREE OF ROOTS, BRANCHES, STONES AND OTHER DELETERIOUS MATERIALS. TOPSOIL SHALL BE APPLIED SO AS TO PROVIDE A MINIMUM OF A 4–INCH COMPACTED THICKNESS. UPON COMPLETION OF TOPSOILING, FINISHED SECTIONS ARE TO BE LIMED, SEEDED AND MULCHED. CONSTRUCTION PERSONNEL SHALL INSPECT COMPLETED SECTIONS OF WORK ON A REGULAR BASIS AND REMEDY ANY PROBLEM AREAS UNTIL A HEALTHY STAND OF GRASS HAS BECOME ESTABLISHED.
91. PERFORM FINE GRADING OF DRIVEWAY AND PARKING LOT BASE MATERIALS.
92. PAVE DRIVEWAY AND PARKING LOT BINDER COURSE AND PLACE BITUMINOUS CURBING. TEMPORARY PAVEMENT MARKINGS AND SIGNAGE SHALL BE INSTALLED.
93. UPON APPROVAL FROM THE TOWN OF LONDONDERRY DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES, ALL RIMS CAN BE ADJUSTED AND THE WEARING COURSE OF PAVEMENT PLACED.
94. MAINTAIN, REPAIR AND REPLACE AS NECESSARY TEMPORARY EROSION CONTROL MEASURES UNTIL SUCH TIME AS THE ENTIRE CONSTRUCTION AREA HAS BEEN STABILIZED (A MINIMUM OF ONE WINTER SHALL HAVE PASSED).
95. AFTER STABILIZATION, REMOVE AND SUITABLY DISPOSE OF TEMPORARY EROSION CONTROL MEASURES.
96. MONITOR CONSTRUCTION ACTIVITIES FOR TO ENSURE CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN SUCH A WAY AS NOT TO ENDANGER THE INTEGRITY OF THE DRIVEWAY OR EMBANKMENTS, STORMWATER SYSTEMS AND UTILITIES.

INSPECTIONS:

97. THE APPLICANT'S CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY REPORTS AND OBTAINING THE NECESSARY INSPECTIONS BY THE DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES FOR REQUIRED IMPROVEMENTS DURING CONSTRUCTION. THE NECESSARY INSPECTIONS AND REPORTS ARE AS FOLLOWS:
    - INSPECTION OF DRIVEWAY AND PARKING LOT SUBGRADE AND RELATED IMPROVEMENTS AFTER CLEARING GRUBBING AND EXCAVATION BUT PRIOR TO ANY FILLING; AND
    - INSPECTION OF THE INSTALLATION OF ALL DRAINAGE STRUCTURES, SWALES, AND OTHER DRAINAGE IMPROVEMENTS.
    - DRIVEWAY AND PARKING LOT SUBGRADE INSPECTION PRIOR TO IMPORT OF GRAVELS. A COMPACTION TEST REPORT FOR REVIEW AND APPROVAL INDICATING THE SUBGRADE IS COMPACTED IN COMPLIANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION REQUIREMENTS SHALL BE PROVIDED;
    - SIEVE ANALYSIS REPORTS OF GRAVELS TO BE USED IN SUBBASE IN COMPLIANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION REQUIREMENTS SHALL BE PROVIDED FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT;
    - INSPECTION DURING PLACEMENT OF BANKRUN GRAVEL AND CRUSHED GRAVEL AND FINE GRADING PRIOR TO PLACEMENT OF PAVEMENT. COMPACTION TESTS INDICATING THE GRAVELS WERE COMPACTED IN COMPLIANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION REQUIREMENTS SHALL BE PROVIDED;
    - INSPECTION OF BASE COURSE AND WEARING COURSE PAVEMENT INSTALLATION;
    - INSPECTION OF REMOVAL OF EROSION CONTROL MEASURES;
    - FINAL INSPECTION;
    - ADDITIONAL INSPECTIONS AS NECESSARY TO VERIFY PROPER CONSTRUCTION METHODS; AND
    - CERTIFICATION STATEMENT(S) ON THE AS–BUILT PLANS VERIFYING THAT EACH ROAD INTERSECTION WAS PROPERLY CONSTRUCTED TO PROVIDE TH



VICINITY MAP
SCALE: 1" = 2,500'±

REFERENCE PLANS:

1. "SUBDIVISION PLAN OF LAND OF A.J. & G.Y. HUARD; SUBDIVISION PLAN OF LAND OF MR. & MRS. LEO DUBOIS." SCALE: 1"=50'. DATED: JUNE, 1969. PREPARED BY: P. BRUSQUINI P.E. R.C.R.D. PLAN #1438
2. "TOWN OF LONDONDERRY, N.H. MAP 17 PARCEL 25." SCALE: 1"=50'. DATED: JANUARY, 1982. PREPARED BY: EDWARD N. HERBERT ASSOC. INC. R.C.R.D. PLAN #12463
3. "RESOLUTION PLAN, OLD PAGE ROAD." SCALE: 1"=40'. DATED: JANUARY 29, 2008. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #36063
4. "LOT LINE ADJUSTMENT-MAP 15 LOTS 235 & 239." SCALE: 1"=100'. DATED: JANUARY 15, 2014. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #38211
5. "LOT 17-7 SUBDIVISION PLAN." SCALE: 1"=60'. DATED: DECEMBER 19, 2014. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #40123
6. "PLAN OF PROPOSED FEDERAL AID PROJECT" ROCKINGHAM ROAD. SCALE: 1"=50'. LAST REVISED: DECEMBER 22, 1954. N.H. PROJECT NO. P-2979

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE EXISTING CONDITIONS FOR ASSESSOR'S MAP 17 LOT 25 IN LONDONDERRY, NEW HAMPSHIRE.
2. LOT AREA: 344,183 S.F. OR 7.901 ACRES
3. THE SUBJECT PARCEL LIES WITHIN THE COMMERCIAL II (C-II) ZONING DISTRICT AND IS SUBJECT TO THE FOLLOWING DIMENSIONAL REQUIREMENTS.
   MINIMUM BUILDING SETBACKS:
   - FRONT 60 FT
   - SIDE 30 FT
   - REAR 30 FT
4. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON A FIELD SURVEY PERFORMED BY THIS OFFICE IN JANUARY OF 2022.
5. HORIZONTAL DATUM IS NAD83, VERTICAL DATUM IS NAVD88 OBTAINED FROM GPS SURVEY METHODS POST PROCESSED THROUGH NOAA-OPUS. NORTH ORIENTATION IS NAD83.
6. EXAMINATION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAPS (FIRM) FOR THE TOWN OF LONDONDERRY, NEW HAMPSHIRE, ROCKINGHAM COUNTY, COMMUNITY PANEL NUMBER 33015C0317E PANEL NUMBER 317 OF 681. EFFECTIVE DATE: MAY 17, 2005, INDICATES THAT NO PORTION OF THE SUBJECT PREMISES IS LOCATED WITHIN A DESIGNATED FLOOD ZONE.
7. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. KEACH-NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE, THE OWNER OR CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
8. EASEMENTS, RIGHTS AND RESTRICTIONS SHOWN OR IDENTIFIED HEREON ARE THOSE FOUND DURING RESEARCH AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER EASEMENTS, RIGHTS AND RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF THE SUBJECT PREMISES MAY DETERMINE.

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN DRAWN FROM FIELD SURVEY INFORMATION AND OR PLOTTED FROM EXISTING DRAWINGS. KEACH-NORDSTROM ASSOCIATES, INC. MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHER, KEACH-NORDSTROM ASSOCIATES, INC. DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. KEACH-NORDSTROM ASSOCIATES, INC. HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

LEGEND

NHHB-F	NH HWY BOUND FOUND		PROPERTY LINE
GB-F	GRANITE BOUND FOUND		R.O.W. LINE
IP-F	IRON PIPE FOUND		ZONE LINE
IR-S	IRON ROD SET		TREELINE
GB-TBS	GRANITE BOUND TO BE SET	OHU	OVERHEAD UTILITIES
IR-TBS	IRON ROD TO BE SET	G	GAS LINE
	BENCHMARK	W	WATER LINE
	SIGN		DRAINAGE LINE
	CATCH BASIN		EDGE OF PAVEMENT
	WATER VALVE		10' CONTOUR
	HYDRANT		2' CONTOUR
	FLARED END SECTION		STONEWALL
	UTILITY POLE		SCS SOIL LINE
			SSS SOIL LINE
			BUILDING SETBACK
			WETLAND BUFFER
			LANDSCAPE BUFFER

STATE OF NEW HAMPSHIRE CHRISTOPHER K. DANFORTH 11/25/2025 No. 077 CERTIFIED WETLAND SCIENTIST

WETLAND CERTIFICATION:

JURISDICTIONAL WETLANDS SHOWN ON THIS PLAN WERE DELINEATED IN JANUARY OF 2022 BY CHRISTOPHER K. DANFORTH CWS #077.
THE WETLANDS WERE DELINEATED ACCORDING TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL (1987) AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2, JANUARY 2012. DOMINANT HYDRIC SOILS WITHIN THE WETLAND(S) WERE IDENTIFIED USING "FIELD INDICATORS OF HYDRIC SOILS OF THE UNITED STATES" A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, NRCS, VERSION 8.1, 2017. DOMINANCE OF HYDROPHYTIC VEGETATION WAS DETERMINED USING THE USACE 2020 NATIONAL WETLAND PLANT LIST, NWPL 2020 VERSION 3.5 HTTP://WETLAND-PLANTS.USACE.ARMY.MIL.

OWNER OF MAP 17 LOT 25
SIGNATURE: DANE N...
DATE: 2/16/2026

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 - MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 - MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

STATE OF NEW HAMPSHIRE No. 911 CHRISTOPHER J. HICKEY LICENSED LAND SURVEYOR SIGNATURE

SURVEYOR'S CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR THOSE UNDER MY DIRECT SUPERVISION. FURTHER, THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY MADE BY THIS OFFICE DURING JANUARY OF 2022. SAID SURVEY HAS A RELATIVE ERROR OF CLOSURE OF ONE PART IN TEN THOUSAND (1:10,000) OR BETTER.

LICENSED LAND SURVEYOR — DATE: 3/9/26

LOT 235 OWNER/APPLICANT:	LOT 236 OWNER
PAGE ROCK, LLC 5 HUTCHINGS DRIVE, SUITE 5D HOLLIS, N.H. 03049	PAGE ROCK, LLC PO BOX 1675 HOLLIS, N.H. 03049

EXISTING CONDITIONS PLAN
PAGE ROCK TOWNHOMES

MAP 15 LOTS 235 & 236
3 PAGE ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MARCH 20, 2025
SCALE: 1" = 40'
FILE NO.:
SHEET NO. 2 OF 22

PROPOSED LIMIT OF CLEARING (TYP.)
PROPOSED SNOW STORAGE AREA
PROPOSED RIPRAP (TYP.)
PROPOSED AREA LIGHT (TYP.)
WETLAND 0.21 ACRES 9,006 SF
PROPOSED "NO PARKING FIRE LANE" SIGN (R7-18)
PROPOSED HYDRANT
PROPOSED 2-STORY 5-UNIT TOWNHOUSE BUILDING (30 FT) 5,890 SF
PATIO (TYP.)
BULKHEAD (TYP.)
APPLEBROOK LANE (PRIVATE)
PROPOSED STORMWATER TREATMENT AREA
PROPOSED "NO PARKING FIRE LANE" SIGNS (R7-18)
PROPOSED OUTLET STRUCTURE (TYP.)
488' TO REAR PROPERTY LINE
PROPOSED 672 S.F. WETLAND BUFFER IMPACT AREA
PROPOSED DUMPSTER ENCLOSURE (SEE DETAIL)
LIMIT OF CONSERVATION OVERLAY DISTRICT BUFFER SHALL BE DELINEATED WITH SIGNS PRIOR TO CONSTRUCTION AND PLACED EVERY 50' ALONG THE BUFFER (TYP.)
PROPOSED 2-STORY 7-UNIT TOWNHOUSE BUILDING (30 FT) 8,144 SF
PROPOSED MAILBOX PEDESTAL
PROPOSED DRAINAGE EASEMENT FOR THE BENEFIT OF MAP 15 LOT 239
WETLAND >1.09 ACRES >47,500 SF
108' TO SIDE PROPERTY LINE
MINIMUM BUILDING SETBACK (TYP.)
LANDSCAPE BUFFER (TYP.)
PROPOSED 850 S.F. WETLAND BUFFER IMPACT AREA
PROPOSED DRAINAGE EASEMENT FOR THE BENEFIT OF MAP 15 LOT 238
PROPOSED SAWCUT AND PERMANENT PAVEMENT PATCH FOR WATER CONNECTION
PROPOSED GAS VALVE (TYP.)
PROPOSED GATE VALVE
PROPOSED ENTRANCE SIGNAGE (18"X72")
PROPOSED STOP SIGN (MUTCD R1-1) & STOP BAR
PAGE ROAD (CLASS IV)
COMMERCIAL II (C-II)
AGRICULTURAL-RESIDENTIAL (AR-I)
PSNH 37/6W
P.B. NETT 167/3P
NETT 3

VICINITY MAP
SCALE: 1" = 2,500'±
LONDONDERRY, ROCKINGHAM, MAMMOTH ROAD, GREENER FIELD ROAD, PAGE ROAD, SAWBORN ROAD, HARDY POND ROAD, SITE

SEE SHEET 1 FOR NOTES AND REFERENCE PLANS

DIG SAFE — DIAL 811 — CALL TOLL FREE — UTILITIES' UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

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

LEGEND

REBAR FOUND	PROPERTY LINE
IRON PIPE FOUND	ABUTTER LINE
UTILITY POLE	TREELINE
SIGN	EDGE OF PAVEMENT
GAS VALVE	BUILDING SETBACK
WATER VALVE	BUFFER LINE
HYDRANT	STONEWALL
WATER SHUT OFF	ZONE LINE
CATCH BASIN	BITUMINOUS CONCRETE CURB
SEWER MANHOLE	WETLAND
RIPRAP	
CONCRETE	

ZONING NOTE

THE ZONING/BUILDING SETBACKS DEPICTED ON THIS PLAN ARE THOSE WE HAVE INTERPRETED FROM THE LATEST ZONING ORDINANCE OF THE MUNICIPALITY AND, AS SUCH, ARE ONLY OPINIONS EXPRESSED BY KEACH-NORDSTROM ASSOCIATES, INC. THE FINAL INTERPRETATION OF THE ORDINANCE CAN ONLY BE MADE BY THE APPROPRIATE ZONING AUTHORITY. SINCE BUILDING ORIENTATION, PROPOSED USES, AND OTHER FACTORS CAN AFFECT THE SETBACKS, PRIOR TO ANY DEVELOPMENT OF THIS PROPERTY, THE BUILDER/OWNER MUST CONSULT WITH THE TOWN/CITY TO INSURE THE CORRECT APPLICATION OF THE ZONING ORDINANCE.

OWNER OF MAP 17 LOT 25
SIGNATURE: DANE Null
DATE: 3/16/2026

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD FOR PHASE _____
ON DATE: _____
CERTIFIED BY:

STATE OF NEW HAMPSHIRE — DANIEL C. HOEPPNER — No. 15078 — LICENSED LAND SURVEYOR — 3/19/26

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

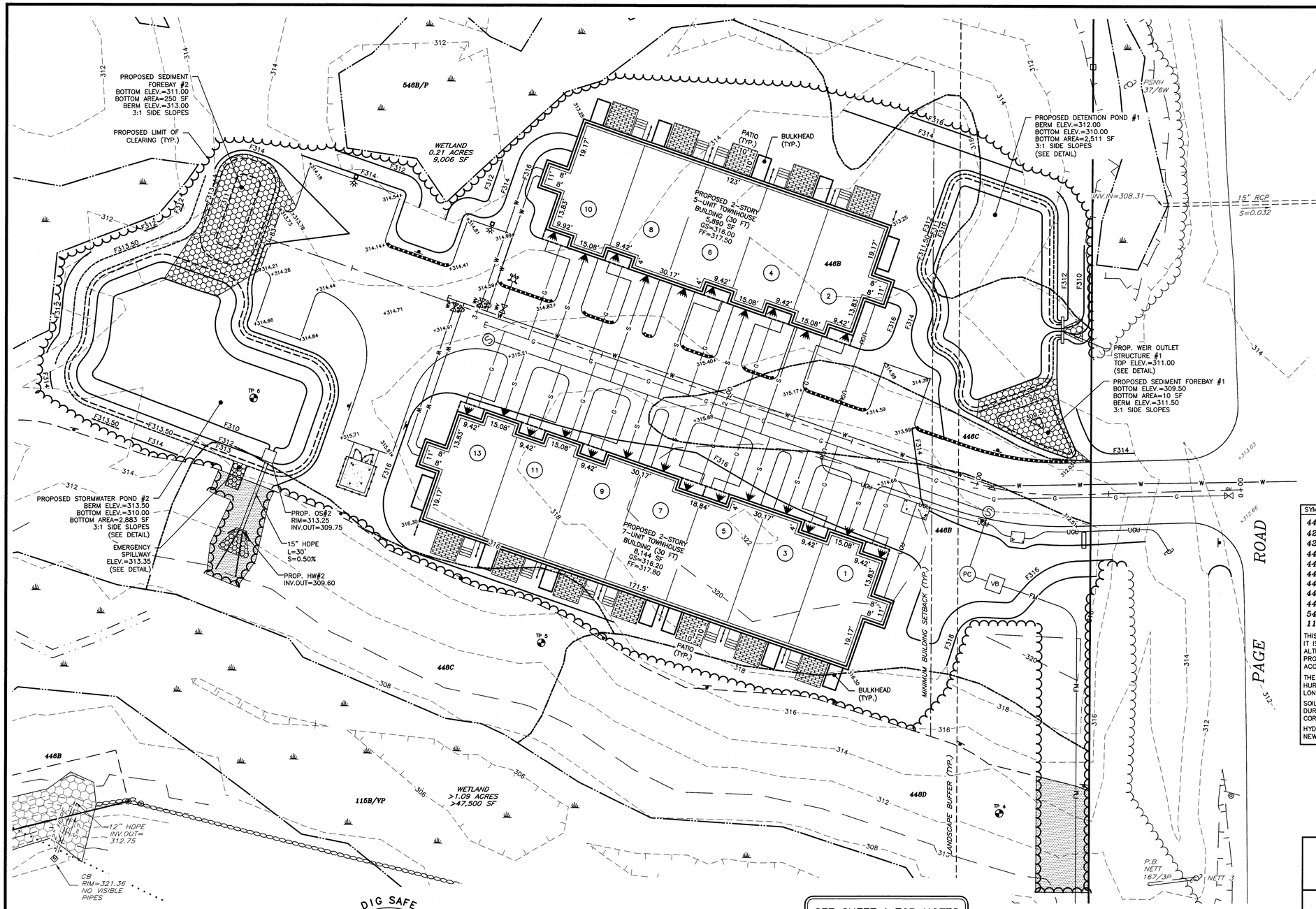
RESIDENTIAL SITE PLAN

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: 1" = 20'
FILE NO.:
SHEET NO. 3 OF 20



CONSTRUCTION NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED GRADING AND DRAINAGE FOR THIS SITE.
2. THE EDGE OF THE CONSERVATION OVERLAY DISTRICT AND NON-DISTURBANCE ZONES SHALL BE DELINEATED APPROPRIATELY PRIOR TO CONSTRUCTION.
3. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE TOWN OF LONDONDERRY, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2010 ARE HEREBY INCORPORATED BY REFERENCE.
4. EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE IN LOCATION AND POSSIBLY INCOMPLETE. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE EXACT SIZE, LOCATION, DEPTH AND EXISTENCE OF ALL EXISTING UNDERGROUND UTILITIES THAT ARE TO BE ACCESSED OR CROSSED DURING CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
5. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6. ALL FILL EMBANKMENT SLOPES SHALL BE PROPERLY PREPARED AND CONSTRUCTED WITH FILL MATERIAL CONFORMING TO NHDOT ITEM NO. 203.6 (EMBANKMENT IN PLACE) AND COMPACTED TO 92% OF MAX.
7. ALL DISTURBED AREAS ARE TO BE LOAMED AND SEEDED.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
44B	MONTAUK	0–8%	WELL DRAINED	C
42D	CANTON	15–25%	WELL DRAINED	B
42E	CANTON	25+%	WELL DRAINED	B
446B	SCITUATE–NEWFIELDS COMPLEX	0–8%	MODERATELY WELL DRAINED	C
446C	SCITUATE–NEWFIELDS COMPLEX	8–15%	MODERATELY WELL DRAINED	C
448B	SCITUATE	0–8%	MODERATELY WELL DRAINED	C
448C	SCITUATE	8–15%	MODERATELY WELL DRAINED	C
448D	SCITUATE	15–25%	MODERATELY WELL DRAINED	C
444D	NEWFIELDS	15–25%	MODERATELY WELL DRAINED	C
546B/P	WALPOLE	0–8%	POORLY DRAINED	C
115B/VP	SCITUATE–NEWFIELDS COMPLEX	0–8%	VERY POORLY DRAINED	D

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION OF TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.

THE SITE SPECIFIC SOIL SURVEY (SSSS) WAS PRODUCED JULY 8, 2022, AND WAS PREPARED BY LUKE HURLEY, CWS # 095, BSC, INC. THE SURVEY AREA IS LOCATED AT 295 ROCKINGHAM ROAD, LONDONDERRY, NH.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE-WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.

HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTISTS OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

LEGEND

REBAR FOUND	PROPERTY LINE
IRON PIPE FOUND	ABUTTER LINE
UTILITY POLE	TREELINE
SIGN	EDGE OF PAVEMENT
GAS VALVE	BUILDING SETBACK
WATER VALVE	BUFFER LINE
HYDRANT	10' CONTOUR
WATER SHUT OFF	2' CONTOUR
CATCH BASIN	DRAINAGE LINE
TW TOP OF WALL	STONEWALL
BW BOTTOM OF WALL	WETLAND
TC TOP OF CURB	
BC BOTTOM OF CURB	
SEWER MANHOLE	
RIPRAP	
CONCRETE	

DIG SAFE
811
CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND PLOTTED FROM EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED 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 THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

SEE SHEET 1 FOR NOTES AND REFERENCE PLANS

LOAM & SEED ALL DISTURBED AREAS UNLESS OTHERWISE SPECIFIED (TYP.)

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

3/9/26

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

GRADING & DRAINAGE PLAN

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: 1" = 20'
FILE NO.:
SHEET NO. 4 OF 20

EROSION CONTROL NOTES:

1. ALL MEASURES IN THE PLAN SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN THE NEW HAMPSHIRE STORMWATER MANUAL DATED FEBRUARY 2025, AS AMENDED FROM TIME TO TIME.
2. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
3. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
4. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
5. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES.
6. OFFSITE SURFACE WATER AND RUNOFF FROM UNDISTURBED AREAS SHALL BE DIVERTED AWAY FROM DISTURBED AREAS WHERE FEASIBLE OR CARRIED NON-EROSIVELY THROUGH THE PROJECT AREA. INTEGRITY OF DOWNSTREAM DRAINAGE SYSTEMS SHALL BE MAINTAINED.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
8. 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 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
9. THE OWNER IS RESPONSIBLE FOR FINAL STABILIZATION OF ALL SLOPES GREATER THAN 3:1 TO THE SATISFACTION OF LONDONDERRY DPW.
10. THE TOWN OF LONDONDERRY SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.



EROSION & SEDIMENT CONTROL LEGEND

- PERMANENT OUTLET PROTECTION APRON (RIP RAP)
- PERIMETER CONTROLS
- LIMITS OF CLEARING
- STAGING AND STOCKPILE AREA
- EROSION CONTROL BLANKETS
- STABILIZED CONSTRUCTION EXIT

LOAM & SEED ALL DISTURBED AREAS (TYP.)

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

LEGEND

REBAR FOUND	PROPERTY LINE
IRON PIPE FOUND	ABUTTER LINE
UTILITY POLE	TREELINE
SIGN	EDGE OF PAVEMENT
GAS VALVE	BUILDING SETBACK
WATER VALVE	BUFFER LINE
HYDRANT	10' CONTOUR
WATER SHUT OFF	2' CONTOUR
CATCH BASIN	DRAINAGE LINE
	STONEWALL
	WETLAND

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

DIG SAFE — UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM — 811 CALL TOLL FREE

3/9/26

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

EROSION CONTROL PLAN

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: 1" = 20'
FILE NO.:
SHEET NO. 5 OF 20

CONSTRUCTION NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED UTILITY SYSTEMS FOR THIS SITE.
2. ALL WORK SHALL CONFORM TO THE TOWN OF LONDONDERRY, LATEST EDITION, CONSTRUCTION STANDARDS AND DETAILS. IN THE ABSENCE OF A TOWN STANDARD/SPECIFICATION, WORK SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AS PUBLISHED BY THE STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, ARE HEREBY INCORPORATED BY REFERENCE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
4. ALL DISTURBED AREAS NOT TO BE PAVED OR COVERED WITH EROSION STONE SHALL BE LOAMED AND SEEDED.
5. ALL PIPES SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6. FINAL LAYOUT OF UNDERGROUND UTILITIES TO BE APPROVED BY LOCAL PROVIDER PRIOR TO CONSTRUCTION.
7. PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ELECTRICIAN FOR THE EXACT LOCATION, LAYOUT, CONDUIT SIZE AND CIRCUITS ASSOCIATED WITH THE SITE.
8. COORDINATE WATER CONNECTION, METER SIZE, AND WATERLINE SIZE WITH MANCHESTER WATER WORKS AND MEP.
9. NO FOUNDATION DRAINS, ROOF DRAINS, OR OTHER "NON-SANITARY DRAINS" SHALL BE CONNECTED TO THE MUNICIPAL SEWER.
10. THE SEWER CONNECTION SHALL BE INSPECTED BY AUTHORIZED TOWN OF LONDONDERRY DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES PERSONNEL BEFORE ANY BACKFILLING. INSPECTION HOURS BETWEEN 9:00 AM AND 4:30 PM, MONDAY–FRIDAY, WITH AT LEAST 2 DAYS OF ADVANCE NOTICE.
11. ALL SEWER CONSTRUCTION AND USE SHALL CONFORM TO THE STATE OF NEW HAMPSHIRE STANDARD SEWER CONSTRUCTION SPECIFICATIONS AND THE TOWN OF LONDONDERRY SEWER USE ORDINANCE.
12. A MANDATORY PRECONSTRUCTION MEETING SHALL BE HELD WITH THE TOWN, CONTRACTOR, OWNER AND ALL UTILITY REPRESENTATIVES PRIOR TO ANY CONSTRUCTION. NO WORK SHALL BEGIN UNTIL APPROVAL BY THE DEPARTMENT OF ENGINEERING & ENVIRONMENTAL SERVICES.
13. COORDINATE GAS MAIN SIZE AND TYPE WITH UTILITY PROVIDER AND MEP PRIOR TO CONSTRUCTION.

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND PLOTTED FROM EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED 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 THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

PROPOSED FDC
WETLAND 0.21 ACRES 9,006 SF
PROPOSED SEWER SERVICE S=0.0020 FT/FT MIN. (TYP.)
PROPOSED HYDRANT & GATE VALVE
PROPOSED 8" FIRE SERVICE & GATE VALVE (TYP.)
PROPOSED CAP
PROPOSED 6" DOMESTIC SERVICE AND & SHUT-OFF VALVE (TYP.)
PROP. SMH#3 RIM=315.04 INV.OUT=306.95
PROPOSED GAS SERVICE (TYP.)
PROPOSED FDC
PATIO (TYP.)
BULKHEAD (TYP.)
PROPOSED 2-STORY 5-UNIT TOWNHOUSE BUILDING (30 FT) 5,890 SF
PROPOSED 2-STORY 7-UNIT TOWNHOUSE BUILDING (30 FT) 8,144 SF
PROPOSED UNDERGROUND UTILITIES (TYP.)
PROPOSED 2" HDPE GAS MAIN (FINAL SIZE AND TYPE TO BE DETERMINED BY UTILITY PROVIDER) (TYP.)
PROPOSED 8" CLDI WATER MAIN (TYP.)
8" SDR-35 PVC L=200.0' S=0.0050FT/FT
PROPOSED SAWCUT AND PERMANENT PAVEMENT PATCH FOR WATER CONNECTION
22.5° BEND WITH THRUST BLOCK
PROPOSED 12"X8" MJ TAPPING SLEVE, 8" GATE VALVE, AND THRUST BLOCK
PROPOSED GAS GATE VALVE
PROPOSED TRANSFORMER PAD
PROP. SMH#2 RIM=312.94 INV.IN=305.95 INV.OUT=305.85
8" SDR-35 PVC L=20.7' S=0.0050FT/FT
PROPOSED DROP POLE
PROPOSED PUMP CHAMBER & VALVE BOX (SEE DETAILS)
PROPOSED CONTROL PANEL (FINAL LOCATION TO BE DETERMINED BY OTHERS)
BULKHEAD (TYP.)
PROPOSED 2" FUSION JOINTED DR-17 HDPE FORCE MAIN (TYP.)
PROPOSED FLASH MANHOLE #1 RIM=311.79 INV.=304.43 (SEE DETAIL)
DIRECTIONALLY DRILLED NO DISTURBANCE TO WETLAND
WETLAND >1.09 ACRES >47,500 SF
APPROXIMATE LOCATION OF 12" C.S. GAS MAIN
APPROXIMATE LOCATION OF 12" WATER MAIN
PAGE ROCK ROAD (CLASS IV)
PSNH 37/6W
P.B. NETT 162/3P
NETT 3
MATCHLINE SHEET 7
MANCHESTER

DIG SAFE — NH811 — CALL TOLL FREE — UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

SEE SHEET 1 FOR NOTES AND REFERENCE PLANS

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

LEGEND

NHHB–F	NH HWY BOUND FOUND	S	SEWER LINE
GB–F	GRANITE BOUND FOUND		DRAINAGE LINE
IP–F	IRON PIPE FOUND		EDGE OF PAVEMENT
IR–S	IRON ROD SET		STONEWALL
	BENCHMARK		TREELINE
	SIGN		BUILDING SETBACK
D	DRAINAGE MANHOLE		EASEMENT
	CATCH BASIN		WETLAND BUFFER
WV	WATER VALVE		LANDSCAPE BUFFER
	HYDRANT	UGU	PROPOSED UG UTILITIES
S	SEWER MANHOLE	G	PROPOSED GAS LINE
	FLARED END SECTION	W	PROPOSED WATER LINE
	UTILITY POLE	S	PROPOSED SEWER LINE
W	WELL		PROPOSED DRAINAGE LINE
	PROPERTY LINE		PROPOSED TREELINE
	R.O.W. LINE		PROPOSED BIT. CURB
OHU	OVERHEAD UTILITIES		PROPOSED RET. WALL
G	GAS LINE		PROPOSED GUARDRAIL
W	WATER LINE		PROPOSED RIP RAP

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

PAUL CRISHOLM No. 16076 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
7/9/26

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

UTILITY PLAN

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: 1" = 20'
FILE NO.:
SHEET NO. 6 OF 20

MATCHLINE SHEET 6

TBM 2
MAGNAIL SET
IN PAVEMENT
ELEV.=311.87

PROPOSED 2"
FUSION JOINTED
DR-17 HDPE
FORCE MAIN
(TYP.)

PROPOSED AIR
RELIEF MANHOLE
RIM=316.35
INV.=310.79
(SEE DETAIL)

NETT 2

APPROXIMATE
LOCATION OF
12" C.S. GAS
MAIN

MAP 15 LOT 232
KAYLEEN M. STOWELL, TRUSTEE
KAYLEEN M. STOWELL
REVOCABLE TRUST
395 MAMMOTH ROAD
LONDONDERRY, N.H. 03053
BK. 4887 PG. 1663

MATCHLINE SHEET 7

MATCHLINE SHEET 7

PROPOSED 2"
FUSION JOINTED
DR-17 HDPE
FORCE MAIN
(TYP.)

PROPOSED FLASH
MANHOLE #2
RIM=314.83
INV.=309.72
(SEE DETAIL)

TRANSITION TO PRESSURE
RATED GRAVITY PIPE 10'
PRIOR TO ENTERING MANHOLE
INV.=312.09
(SEE DETAIL)

PROP. SMH#1
RIM=321.38
INV.IN=312.04
INV.OUT=311.94

8" SDR-35 PVC
L=10.0'
S=0.0050FT/FT

8" SDR-35 PVC
L=28.9'
S=0.0100FT/FT

CONNECT TO
PROPOSED 8" STUB
INV.IN=311.65

NETT
94/21

SMH
RIM=324.15
8" IN=315.05 (W)
8" DROP IN (INTERNAL)=303.05
8" IN=308.3 (N)
8" DROP IN (EXTERNAL)=303.05
10" IN=303.0 (E) (TIE IN)
10" OUT=302.8 (S)

PAGE ROAD (CLASS IV)

NORTH
MAGNETIC

SEE SHEET 1 FOR NOTES
AND REFERENCE PLANS

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

LEGEND

⊠ NHHB-F	NH HWY BOUND FOUND	—S—	SEWER LINE
⊠ GB-F	GRANITE BOUND FOUND		DRAINAGE LINE
○ IP-F	IRON PIPE FOUND		EDGE OF PAVEMENT
⊙ IR-S	IRON ROD SET		STONEWALL
	BENCHMARK		TREELINE
	SIGN		BUILDING SETBACK
D	DRAINAGE MANHOLE		EASEMENT
	CATCH BASIN		WETLAND BUFFER
WV	WATER VALVE		LANDSCAPE BUFFER
	HYDRANT	—UGU—	PROPOSED UG UTILITIES
S	SEWER MANHOLE	—G—	PROPOSED GAS LINE
	FLARED END SECTION	—W—	PROPOSED WATER LINE
	UTILITY POLE	—S—	PROPOSED SEWER LINE
W	WELL		PROPOSED DRAINAGE LINE
	PROPERTY LINE		PROPOSED TREELINE
	R.O.W. LINE		PROPOSED EOP
—OHU—	OVERHEAD UTILITIES		PROPOSED BIT. CURB
—G—	GAS LINE		PROPOSED RET. WALL
—W—	WATER LINE		PROPOSED GUARDRAIL
			PROPOSED RIP RAP

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND PLOTTED FROM EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED 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 THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

DIG SAFE
811
CALL TWO FULL WORKING DAYS BEFORE YOU DIG
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

PAUL CHISHOLM No. 15079 LICENSED LAND SURVEYOR
3/14/26

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

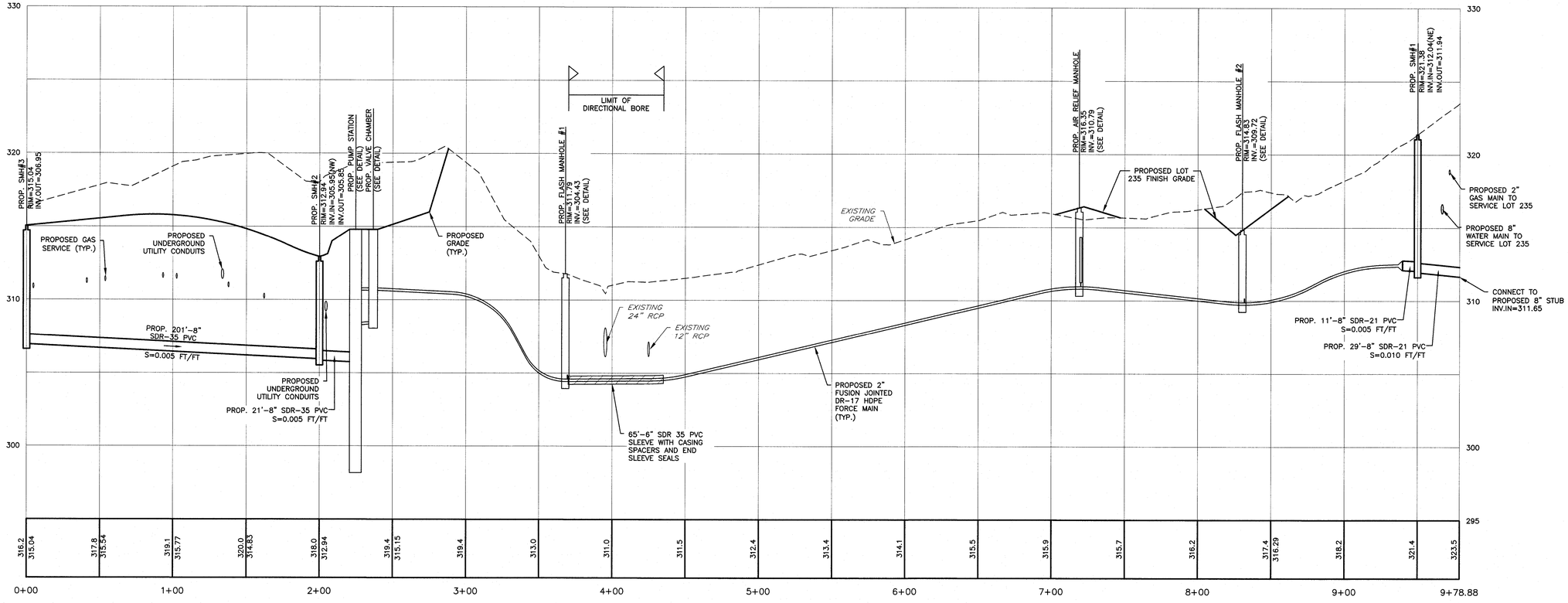
UTILITY PLAN

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

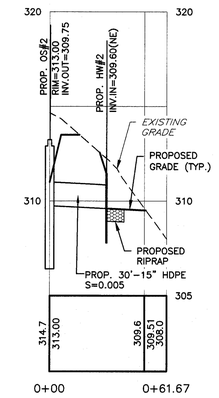
KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: 1" = 20'
FILE NO.:
SHEET NO. 7 OF 20



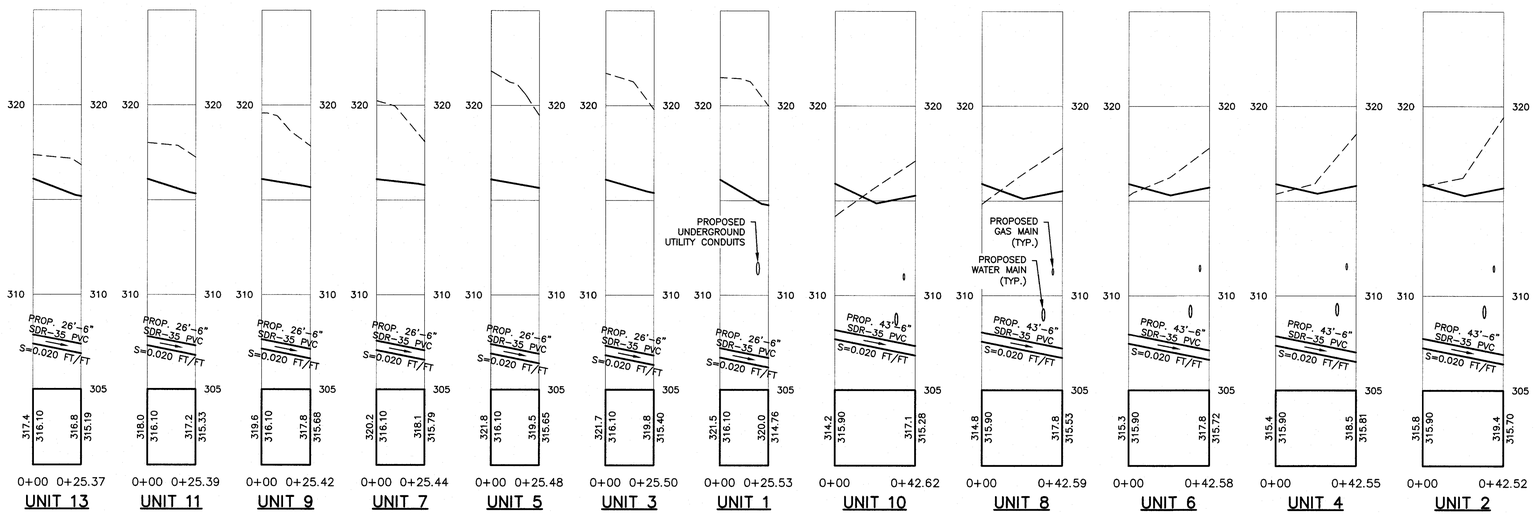
GRAVITY SEWER AND FORCE MAIN PROFILE

SCALE: 1" = 40' (HORIZ.)
1" = 4' (VERT.)



PROPOSED DRAINAGE PROFILE OS#1 OUTLET PIPE

SCALE: 1" = 40' (HORIZ.)
1" = 4' (VERT.)



SEWER SERVICE PROFILES

SCALE: 1" = 40' (HORIZ.)
1" = 4' (VERT.)

DIG SAFE
811
CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

UTILITY PROFILES
ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

LEGEND	
PROPERTY LINE	PROPOSED BIT. CURB
R.O.W. LINE	PROPOSED RET. WALL
OHU OVERHEAD UTILITIES	PROPOSED GUARDRAIL
G GAS LINE	PROPOSED RIP RAP
W WATER LINE	

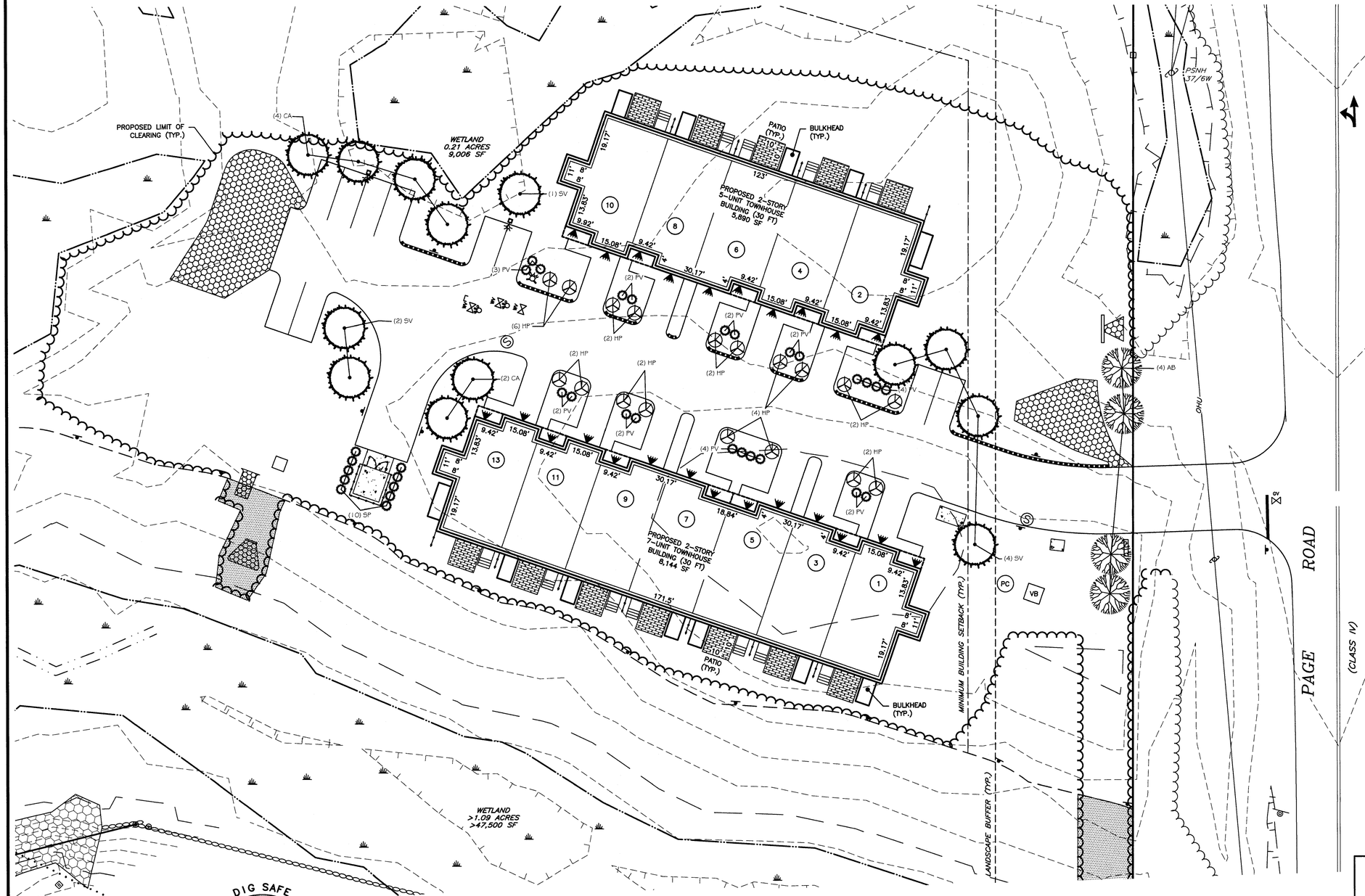
BENCHMARK DATA		
LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

PAUL CHRISTIAN No. 15078 LICENSED PROFESSIONAL ENGINEER
4/16/26

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: 1" = 40'
FILE NO.:
SHEET NO. 8 OF 20



LANDSCAPE NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED SITE LANDSCAPE WHICH PROVIDES CLIMATIC RELIEF AND AESTHETIC APPEAL.
2. ALL PLANT MATERIALS USED SHALL BE NURSERY STOCK AND SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF INSTALLATION. ANY MATERIAL WHICH DIES OR DOES NOT SHOWN HEALTHY APPEARANCE WITHIN THIS TIME SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE; WITH SAME WARRANTY REQUIREMENTS AS THE ORIGINAL. WARRANTIES TYPICALLY DO NOT COVER LOSS DUE TO INSECT INFESTATION OR MECHANICAL DAMAGE (I.E. SNOW STORAGE).
3. IF THE SOIL CONDITIONS ARE EXTREMELY SANDY, ALL TREES SHALL HAVE A 6" LAYER OF COMPACTED TOPSOIL PLACED IN THE BASE OF THE PLANT PIT AS A MOISTURE RETENTION LAYER. THE PLANT PIT SIDEWALLS SHALL BE OVER EXCAVATED BY AN ADDITIONAL 12" BEYOND THE NORMAL OUTSIDE RADIUS OF THE HOLE. A TOPSOIL MIXTURE SHALL BE USED TO BACKFILL THE HOLE AS FOLLOWED; ORGANIC TOPSOIL, AMENDED WITH 10% WOOD ASH, 10% MANURE, 30% COMPOST AND A GRANULAR HYDROGEL TO ABSORB AND RETAIN WATER.
4. PLANTING BEDS AND SAUCERS SHALL RECEIVE A 4" MINIMUM THICKNESS OF PINE/HEMLOCK BARK MULCH OVER A 5oz. POLYPROPYLENE WEED CONTROL FABRIC.
5. PAVEMENT AND ROAD BASE MATERIAL ENCOUNTERED IN ANY LAWN OR PLANTING BED SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AND SUITABLE AMENDED SOIL INSTALLED AS SPECIFIED IN THE TURF ESTABLISHMENT SCHEDULE.
6. NO PLANTINGS SHALL CONFLICT WITH SNOW STORAGE AREAS, LIGHT FIXTURES AND UNDERGROUND UTILITIES.

MONADNOCK

LANDSCAPE CALCULATIONS

1. FRONT BUFFER:
   - REQUIRED FRONT BUFFER = 1 NEW TREE/30 FT OF BUILDING FACING R.O.W. OR = 1 EXISTING ≥ 4 INCH CALIPER TREE = 1 NEW TREE OR = 1 EXISTING ≥ 6 INCH CALIPER TREE= 2 NEW TREES
   - = 100 FEET/30 FT = 3.33 OR 4 TREES
   - PROVIDED = 4 TREES PROPOSED
2. SIDE AND REAR BUFFER:
   - REQUIRED SIDE AND REAR BUFFER = 20 FT MIN BUFFER WITH 6FT TALL SCREENING
   - PROVIDED = >75 FT OF EXISTING TREE LINE ON SIDES AND REAR THAT MEET SCREENING REQUIREMENT
3. INTERIOR GREEN SPACE:
   - REQUIRED REAR (5%)
   - = 4,440 SF PARKING = 222 SF REQUIRED
   - PROVIDED = 250 SF PROPOSED
4. INTERNAL PARKING:
   - REQUIRED = 1 DECIDUOUS SHADE TREE/15 SPACES
   - = 10 SPACES/15 = 0.6 OR 1 DECIDUOUS SHADE TREES REQUIRED
   - PROVIDED = 4 DECIDUOUS SHADE TREES PROPOSED
5. PERIMETER:
   - REQUIRED = 1 SHADE TREE/20' PARKING LOT PERIMETER
   - = 250'/20' = 12.5 OR 13 SHADE TREES REQUIRED
   - PROVIDED = 13 SHADE TREES PROPOSED

SEE SHEET 1 FOR NOTES AND REFERENCE PLANS

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND PLOTTED FROM EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED 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 THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

DIG SAFE
811 CALL BEFORE YOU DIG
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

OWNER OF MAP 17 LOT 25
SIGNATURE: DANE Null
DATE: 2/16/2026

PLANTING SCHEDULE

Botanical Name/ Common Name	Size	Label	Quantity	Mature Height	USDA Hardiness Zone
Trees					
Abies balsamea / Balsam Fir	6-7' B&B	AB	4	30-40'	3-6
Cornus alternifolia / Pagoda Dogwood	2.5-3" CAL.	CA	6	20-30'	3-7
Syringa vulgaris / Common Lilac	2.5-3" CAL.	SV	7	20-30'	3-7
Shrubs					
Hydrangea paniculata 'Little Quick Fire' / Little Quick Fire Panicle Hydrangea	2-2.5'	HP	18	2-3'	3-8
Syringa Patula 'Miss Kim' / Miss Kim Lilac	#7	SP	10	6'-8'	3-8
Grasses					
Panicum virgatum 'Shenandoah' / Shenandoah Switch Grass	#2 Gal.	PV	19	3-4'	4-9

3/9/26

LANDSCAPE PLAN

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

LEGEND

- REBAR FOUND
- IRON PIPE FOUND
- UTILITY POLE
- SIGN
- GAS VALVE
- WATER VALVE
- HYDRANT
- WATER SHUT OFF
- CATCH BASIN
- PROPERTY LINE
- ABUTTER LINE
- TREELINE
- EDGE OF PAVEMENT
- BUILDING SETBACK
- BUFFER LINE
- STONEWALL
- WETLAND

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

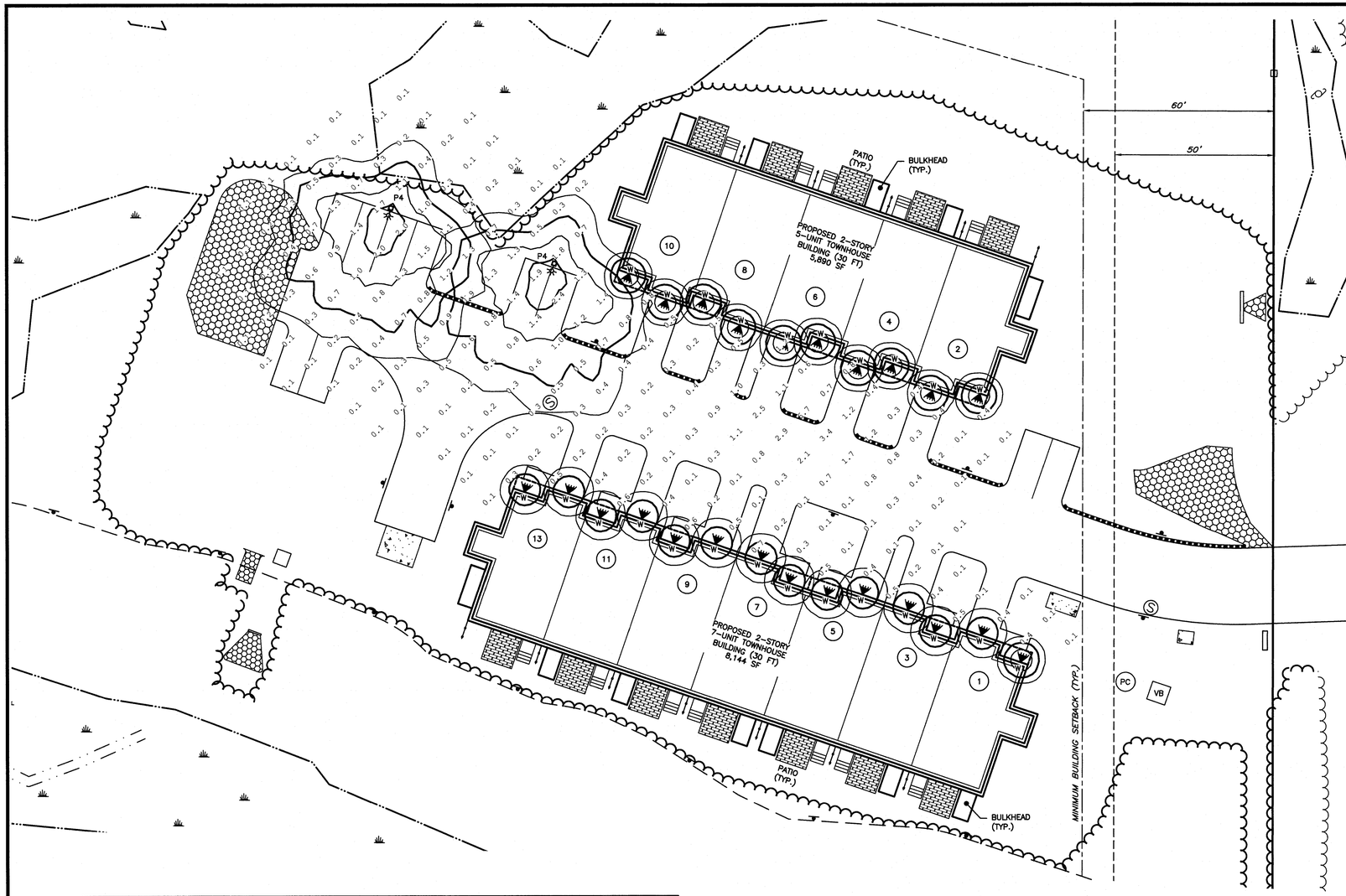
REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD FOR PHASE _____
ON DATE: _____
CERTIFIED BY:

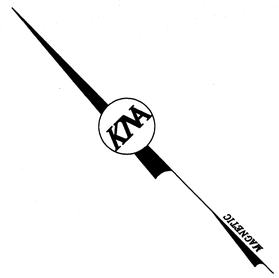
KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: 1" = 20'
FILE NO.:
SHEET NO. 9 OF 20



LIGHTING NOTES:

1. ALL LIGHTS/FIXTURES SHALL BE AS SPECIFIED BY EXPOSURE LIGHTING.
2. ALL PROPOSED FIXTURES ARE TO BE FULL CUTOFF.
3. POLE MOUNTED FIXTURES SHALL BE MOUNTED AT HEIGHTS SPECIFIED IN TABLE.
4. ALL FINAL SITE LIGHTING AND CONDUIT LAYOUT SHALL BE COORDINATED WITH LOCAL UTILITY PROVIDER.
5. PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ELECTRICIAN FOR THE EXACT LOCATION, LAYOUT, CONDUIT SIZE AND CIRCUITS ASSOCIATED WITH THE SITE LIGHTING.
6. SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION REGARDING LIGHT INSTALLATION AND WIRING REQUIREMENTS.
7. ALL LIGHTING MUST COMPLY WITH THE TOWN OF LONDONDERRY DEVELOPMENT REGULATIONS.

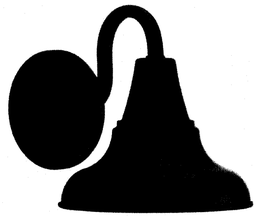


GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

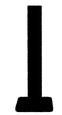
LUMINAIRE SCHEDULE						
SYMBOL	QTY.	LABEL	ARRANGEMENT	DESCRIPTION	MANUFAC	MOUNTING HEIGHT
✻	2	P	SINGLE	XDLSB–3L–3W–UNV–30K8–BLK–CH / 4RP–I–S10G–14–BLK / 4 GBC (70 CRI CW, 80 CRI NW AND WW)	LSI INDUSTRIES, INC.	14' POLE
➤	24	W	SINGLE	945622–2030K9 (90 CRI)	PROGRESS	WALL MOUNTED 6' AFG AT DOORS & 8' AFG AT GARAGES



DISTRICT LED (P5622–2030K9)



LIFESTYLE SMALL (XDLS)



LSI ROUND POLES

DIG SAFE
811
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

LEGEND

REBAR FOUND	PROPERTY LINE
IRON PIPE FOUND	ABUTTER LINE
UTILITY POLE	TREELINE
SIGN	EDGE OF PAVEMENT
GAS VALVE	BUILDING SETBACK
WATER VALVE	BUFFER LINE
HYDRANT	STONEWALL
WATER SHUT OFF	WETLAND
CATCH BASIN	ZONE LINE
	BITUMINOUS CONCRETE CURB

BENCHMARK DATA		
LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

OWNER SIGNATURE: _____

DATE: _____

3/9/26

IN ASSOCIATION WITH:

EXPOSURE ESS

KEN SWEENEY | APPLICATIONS ENGINEER
CELL: 603.759.1043
501 ISLINGTON ST | UNIT 1A | PORTSMOUTH, NH 03801 | 603.501.8080
EXPOSURELIGHTING.COM | ESS-LLC.US
NEW ENGLAND'S PREMIER LIGHTING, CONTROLS & ELECTRICAL REP AGENCY

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

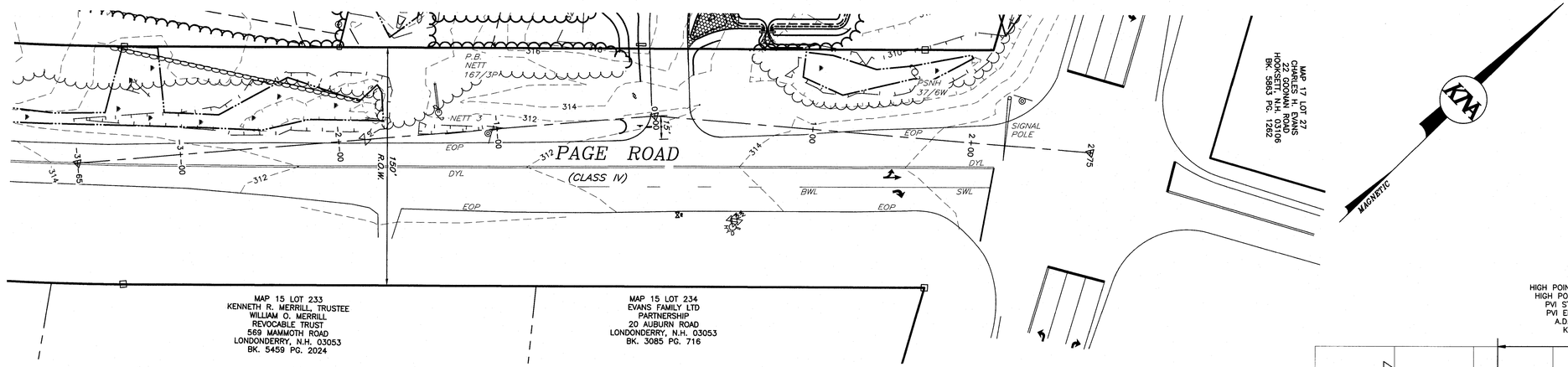
LIGHTING PLAN

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

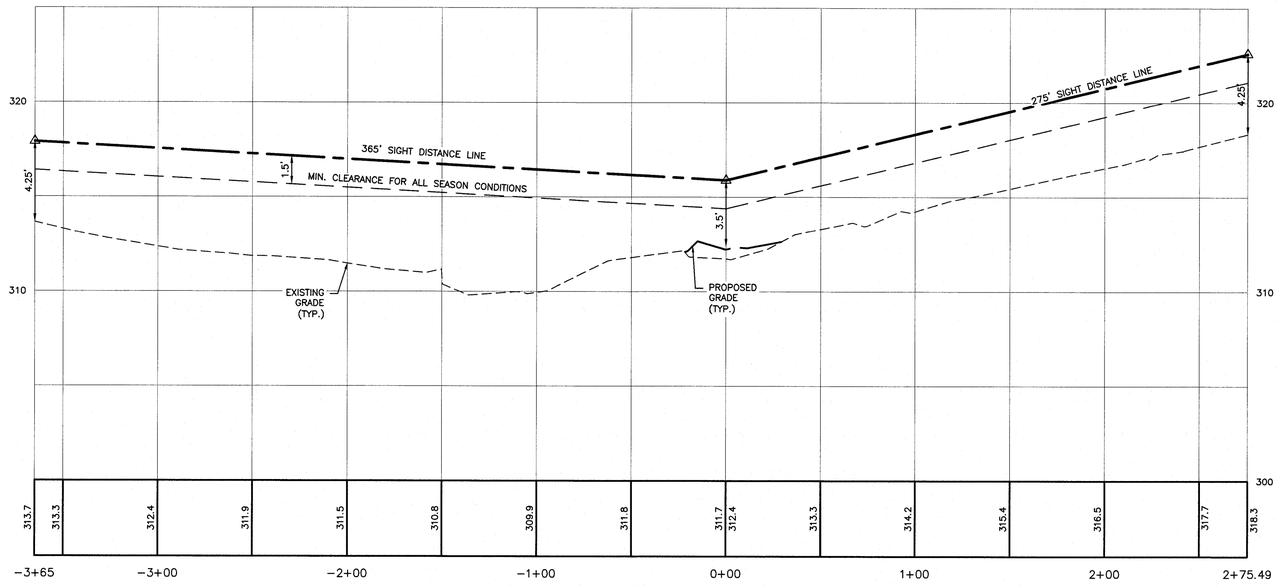
KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

PROJ. NO: 21–0113–1
DATE: MAY 6, 2025
SCALE: 1" = 20'
FILE NO.:
SHEET NO. 10 OF 20



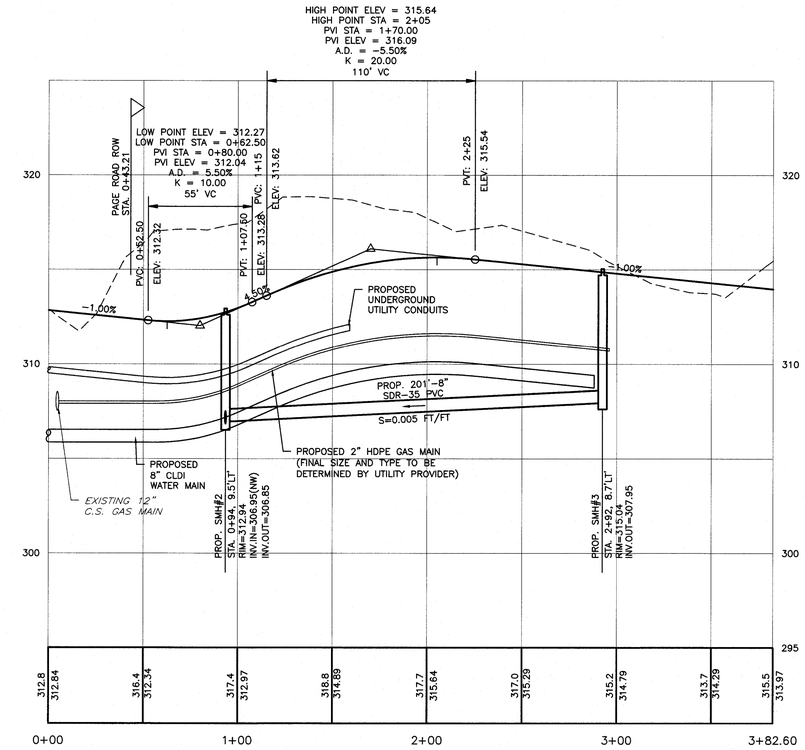
SIGHT DISTANCE PLAN

SCALE: 1" = 40'



SIGHT DISTANCE PROFILE

SCALE: 1" = 40' (HORIZ.)
1" = 4' (VERT.)



DRIVEWAY PROFILE

SCALE: 1" = 40' (HORIZ.)
1" = 4' (VERT.)

DIG SAFE
811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

SIGHT DISTANCE NOTES:

1. THE PURPOSE OF THIS PLAN IS TO ILLUSTRATE THE AVAILABLE SIGHT DISTANCE AT THE PROPOSED DRIVEWAY AND PAGE ROAD.
2. THE CONTRACTOR SHALL REMOVE ALL OBSTRUCTIONS BETWEEN THE DRIVEWAY AND THE SIGHT LINES TO ACHIEVE VISIBILITY.
3. THE OWNER SHALL MAINTAIN SIGHT LINES VISIBILITY AND REMOVE ALL OBSTRUCTIONS BETWEEN THE DRIVEWAY AND THE SIGHT LINES TO ACHIEVE VISIBILITY.

LEGEND

REBAR FOUND	PROPERTY LINE
IRON PIPE FOUND	ABUTTER LINE
UTILITY POLE	TREELINE
SIGN	EDGE OF PAVEMENT
GAS VALVE	BUILDING SETBACK
WATER VALVE	BUFFER LINE
HYDRANT	STONEWALL
WATER SHUT OFF	PROP. EDGE OF PAVEMENT
CATCH BASIN	

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

KEACH–NORDSTROM ASSOCIATES, INC. HEREBY CERTIFIES THAT THE ALL SEASON SAFE SIGHT DISTANCE, AS REQUIRED BY THE TOWN OF LONDONDERRY, IS ACHIEVED UPON COMPLETION OF THE IMPROVEMENTS SHOWN ON THIS PLAN

PROFESSIONAL ENGINEER — 3/9/26 DATE

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

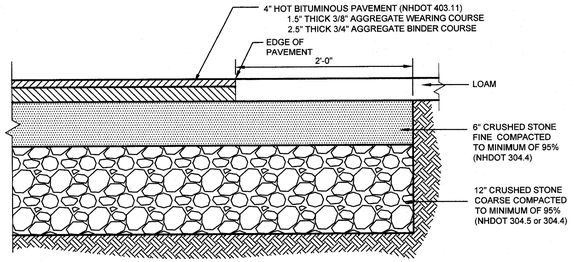
SIGHT DISTANCE & DRIVEWAY PLAN & PROFILE

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

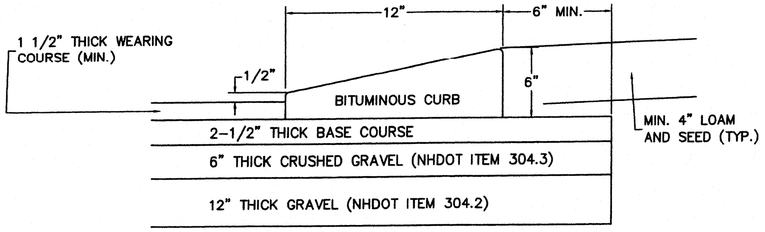
KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: 1" = 40'
FILE NO.:
SHEET NO. 11 OF 20



DRIVEWAY AND PARKING LOT SECTION

NOT TO SCALE



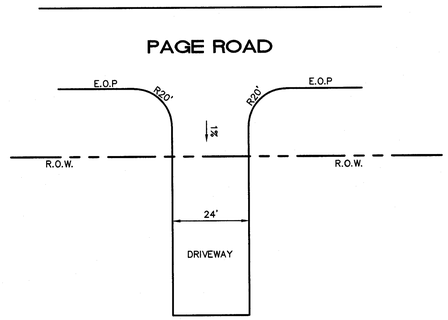
NOTES:

1. APPLY TACK COAT PRIOR TO PLACEMENT OF CURB
2. BITUMINOUS CURB MATERIAL SHALL MEET THE REQUIREMENTS OF NHDOT SECTION 609.
3. CAPE COD BERM DIMENSIONS SHALL MATCH THOSE GIVEN IN THIS DETAIL.

TYPICAL CAPE COD BERM

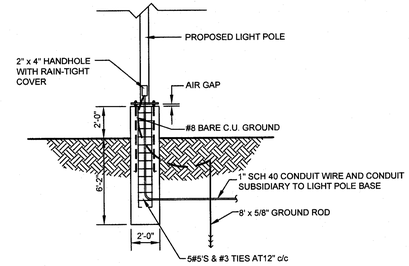
NOT TO SCALE

EXHIBIT R104



DRIVEWAY APRON DETAIL

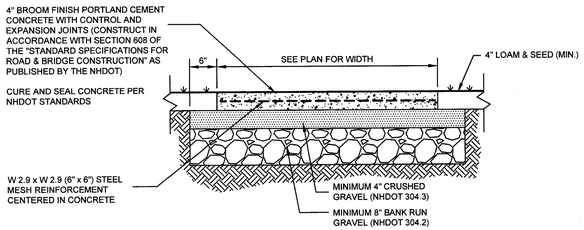
NOT TO SCALE



CONCRETE LIGHT POLE BASE DETAIL

NOT TO SCALE

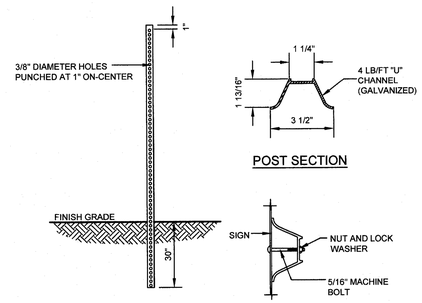
(MARCH 2008)



CONCRETE PAD DETAIL

NOT TO SCALE

(MARCH 2008)



POST

POST SECTION

MOUNTING

NOTE:

POST SHALL CONFORM TO NHDOT 615.2.5.3

STEEL SIGN POST DETAIL

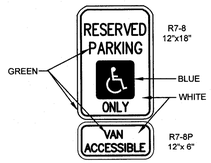
NOT TO SCALE

(MARCH 2008)



R7-18

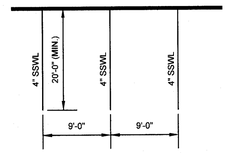
18" x 24"



VAN ACCESSIBLE HANDICAP PARKING SIGN DETAIL

NOT TO SCALE

(NOVEMBER 2016)



STANDARD STRIPING DETAIL

NOT TO SCALE

ON SITE STRIPING NOTES:

1. ALL PAVEMENT MARKINGS SHALL BE IN CONFORMANCE WITH THESE STANDARDS AND THE CURRENT EDITION OF MUTCD.
2. WIDTH OF LINES SHALL VARY NO MORE THAN = 1/4 INCH FROM THAT SPECIFIED.
3. THE WET FILM THICKNESS OF A PAINTED LINE SHALL BE A MINIMUM OF 15 MILS THROUGHOUT THE ENTIRE WIDTH AND LENGTH OF LINE SPECIFIED.
4. OVERSPRAY SHALL BE KEPT TO AN ABSOLUTE MINIMUM.
5. BROKEN LINES SHALL BEGIN AND END WITH THE NEAREST FULL CYCLE OF BROKEN LINE.
6. SOLID LONGITUDINAL LINES SHALL BEGIN AND END WITHIN + 2 INCHES OF A LAYOUT SYMBOL INDICATING THE END OF THE LINE, OR WITH A FULL CYCLE OF BROKEN LINE (IF APPROPRIATE).



R1-1

30" x 30"

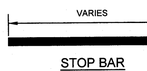
STOP SIGN DETAIL

NOT TO SCALE

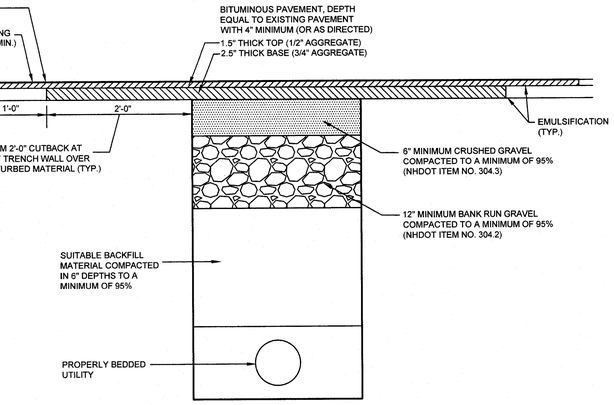
(MARCH 2008)

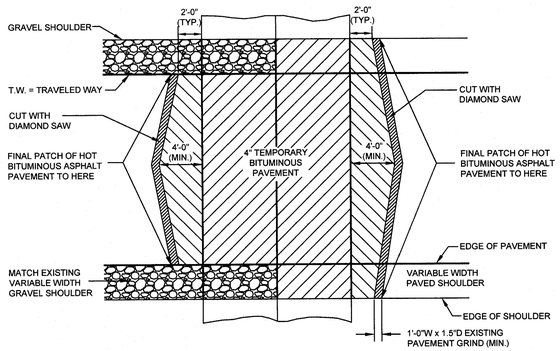
TRAFFIC SIGN NOTES:

1. ALL TRAFFIC SIGN FACES AND SHAPES SHALL CONFORM WITH THE MUTCD.
2. ALL SIGN POST MOUNTS SHALL CONFORM WITH THE AASHTO AND NHDOT SPECIFICATIONS.



STOP BAR

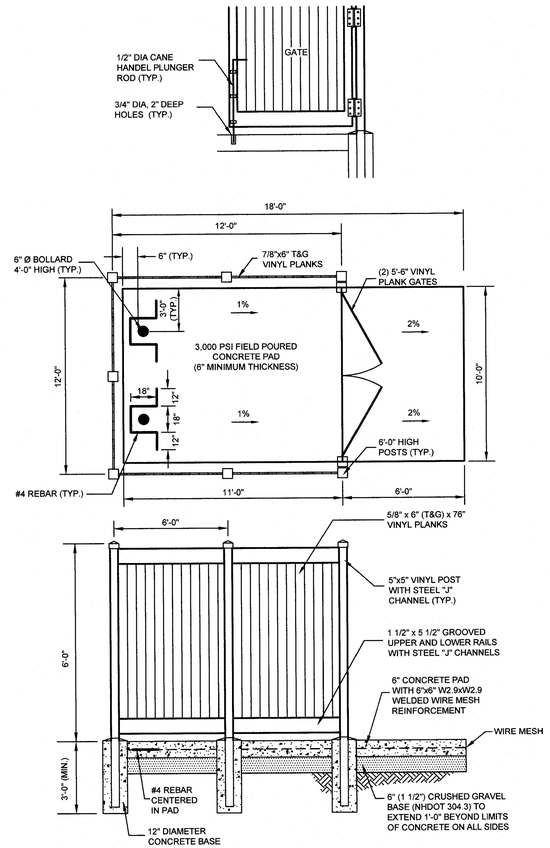




PERMANENT PAVEMENT REPAIR

NOT TO SCALE

(MARCH 2008)



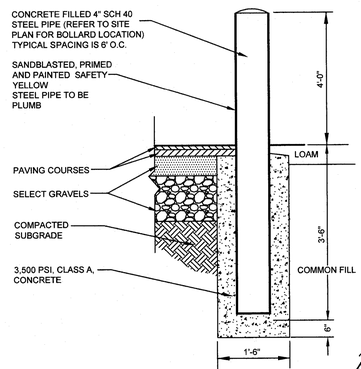
NOTE:

THIS DUMPSTER ENCLOSURE WILL ACCOMMODATE MOST 2, 4, 6 AND 8 CY DUMPSTERS.

VINYL TRASH ENCLOSURE DETAIL

NOT TO SCALE

(MARCH 2008)



BOLLARD DETAIL

NOT TO SCALE



2/6/26

OWNER/APPLICANT:

PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

CONSTRUCTION DETAILS

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1

DATE: MAY 6, 2025

SCALE: AS SHOWN

FILE NO.:

SHEET NO. 12 OF 20

TURF ESTABLISHMENT SCHEDULE

PURPOSE:

TO ESTABLISH AND MAINTAIN PERMANENT AND TEMPORARY TURF AREAS, RESTORE GROWTH TO EXISTING TURF AREAS DISTURBED DURING CONSTRUCTION AND CONTROL SOIL EROSION.

PREPARATION AND EXECUTION:

1. RAKE THE SUBGRADE OF ALL AREAS TO BE LOAMED AND SEEDED TO REMOVE RUBBISH, STICKS, ROOTS AND STONES LARGER THAN 1 INCH.
2. PLACE LOAM OVER AREAS TO BE SEEDED AND SPREAD.
3. FINE GRADE SURFACE AND SUPPLEMENT WITH SUITABLE LOAM WHERE NEEDED TO CREATE A UNIFORM SURFACE ACCORDING TO THE FINISH GRADES INDICATED. TOP AND BOTTOM OF SLOPES SHALL BE ROUNDED. NO LOAM SHALL BE SPREAD IF THE SUBGRADE IS EXCESSIVELY WET OR FROZEN.
4. IF THE pH OF THE SOIL NEEDS TO BE RAISED, APPLY LIME EVENLY OVER LOAM SURFACE AND THOROUGHLY INCORPORATE LIME INTO THE LOAM BY HEAVY RAKING TO AT LEAST ONE-HALF THE DEPTH OF THE LOAM.
5. APPLY FERTILIZER AND MIX WITH THE UPPER 2 INCHES OF LOAM.
6. DETERMINE APPROPRIATE MIXTURE FOR AREA TO BE SEEDED BASED ON EXAMINATION OF PROJECT PLANS. UNIFORMLY SPREAD THE SEED BY BROADCASTING OR HYDROSEEDING. IF BROADCASTING, LIGHTLY RAKE INTO THE PREPARED SURFACE AND ROLL. IF HYDROSEEDING, USE 4 TIMES THE RECOMMENDED RATE OF INOCULANT. AFTER SEED IS SPREAD, WATER THOROUGHLY WITH A FINE SPRAY.
7. SEEDING AND INITIAL FERTILIZING SHALL BE DONE BETWEEN APRIL 1 AND JUNE 1 OR BETWEEN AUGUST 15 AND OCTOBER 14, OR AS PERMITTED. SEEDING SHALL NOT BE DONE DURING WINDY WEATHER OR WHEN THE GROUND IS FROZEN, EXCESSIVELY WET OR OTHERWISE UNTILLABLE.
8. WITHIN 24 HOURS AFTER SEEDING OPERATION, UNIFORMLY MULCH THE AREA WITH STRAW. ANCHOR MULCH ON ALL SLOPES EXCEEDING 3 : 1 USING MULCH NETTING INSTALLED IN ACCORDANCE WITH THE MANUFACTURER.
9. PROTECT AND PREVENT AGAINST WASHOUTS, ANY WASHOUTS WHICH OCCUR SHALL BE PROMPTLY REGRADED AND RESEEDED.
10. WHEN IT IS IMPRACTICAL TO ESTABLISH PERMANENT GROWTH ON DISTURBED EARTH BY OCTOBER 14, A TEMPORARY SEED MIXTURE SHALL BE USED. WHEN TEMPORARY SEEDING CANNOT ESTABLISH VISIBLE GROWTH, THE DISTURBED AREA SHALL BE COVERED WITH SIX INCHES OF MULCH FOR THE WINTER.

MAINTENANCE:

ALL SEEDED AREAS SHALL BE KEPT WATERED AND IN GOOD CONDITION. RESEED AS NECESSARY TO ESTABLISH HEALTHY UNIFORM GROWTH OVER THE ENTIRE SEEDED AREA. MAINTAIN SEEDED AREAS IN AN APPROVED CONDITION UNTIL FINAL ACCEPTANCE. MAINTENANCE SHALL INCLUDE REPAIRS FOR DAMAGE CAUSED BY EROSION.

APPLICATION RATES:

1. LOAM SHALL BE APPLIED AT A MINIMUM COMPACTED THICKNESS OF 4 INCHES.
2. LIME SHALL BE USED WHEN NECESSARY TO RAISE THE pH OF THE SOIL AND APPLIED AT ONE OF THE FOLLOWING RATES:

EXISTING SOIL Ph	TONS/ACRE	POUNDS/CUBIC YARD
4.0 - 4.4	3	12
4.5 - 4.9	2	8
5.0 - 5.4	1	4

3. FERTILIZER SHALL BE APPLIED AT THE FOLLOWING RATE:

INITIAL APPLICATION	POUNDS/1,000 SF	MEASUREMENT FACTOR
10-10-10	20.0	1.0
15-15-15	13.4	1.5
19-19-19	10.5	1.9

REFERTILIZATION	POUNDS/1,000 SF	MEASUREMENT FACTOR
10-3-6	20.0	1.0
12-2-8	16.7	1.2
12-4-8	16.7	1.2

4. MULCH SHALL BE APPLIED AT A RATE OF 13 CUBIC YARDS PER 1,000 S.F. OF LANDSCAPE BED.

MATERIALS:

1. LOAM SHALL CONSIST OF LOOSE, FRIABLE TOPSOIL WITH NO ADMIXTURE OF REFUSE OR MATERIAL TOXIC TO PLANT GROWTH. LOAM SHALL BE FREE OF VIABLE PARTS OF PROHIBITED INVASIVE PLANTS AND BE GENERALLY FREE OF STONES, LUMPS, STUMPS AND SIMILAR OBJECTS LARGER THAN 2 INCHES IN GREATEST DIAMETER, SUBSOIL, ROOTS AND WEEDS. THE MINIMUM AND MAXIMUM pH VALUE SHALL BE FROM 5.5 TO 7.6.
2. LIME SHALL BE A CALCIC OR DOLOMITIC GROUND AGRICULTURAL LIMESTONE CONTAINING NOT LESS THAN 95% OF EITHER CALCIUM OR MAGNESIUM CARBONATE, OR BOTH. IT SHALL CONFORM TO THE STANDARDS OF THE ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS AND SHALL COMPLY WITH ALL STATE AND FEDERAL RULES AND REGULATIONS.
3. FERTILIZER SHALL BE STANDARD COMMERCIAL GRADE FERTILIZER CONFORMING TO ALL STATE AND FEDERAL RULES AND REGULATIONS AND TO THE STANDARDS OF THE ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS. EXCEPT AS PERMITTED, THE ANALYSIS RATIO SHALL BE 1:1:1 FOR INITIAL APPLICATION AND 3:1:2 FOR REFERTILIZATION APPLICATION.
4. GRASS SEED SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE AGRICULTURAL AND VEGETABLE SEED LAWS AND SHALL INCLUDE NO "PRIMARY NOXIOUS WEED SEEDS."
5. SEED MIXTURE FOR LAWN AREAS SHALL CONSIST OF THE FOLLOWING:

KIND OF SEED	MINIMUM PURITY (%)	MINIMUM GERMANATION (%)	POUNDS/ACRE (TOTAL 120 POUNDS)
CREEPING RED FESCUE	96	85	40
PERENNIAL RYEGRASS	98	90	50
KENTUCKY BLUEGRASS	97	85	25
REDTOP	95	80	5

6. SEED MIXTURE FOR SLOPE AREAS SHALL CONSIST OF THE FOLLOWING:

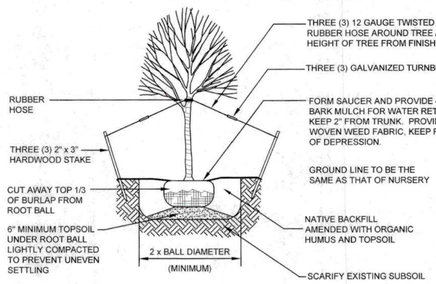
KIND OF SEED	MINIMUM PURITY (%)	MINIMUM GERMANATION (%)	POUNDS/ACRE (TOTAL 95 POUNDS)
CREEPING RED FESCUE	96	85	35
PERENNIAL RYEGRASS	98	90	30
REDTOP	95	80	5
ALSIKE CLOVER	97	90	5
BIRDSFOOT TREFOIL	98	80	5
LANCE-LEAVED COREOPSIS	95	80	4
OXEYE DAISY	95	80	3
BLACKEYED SUSAN	95	80	4
WILD LUPINE	95	80	4

7. TEMPORARY SEEDING MIXTURE SHALL BE APPLIED AT A RATE OF 2 POUNDS PER 1,000 SF AND SHALL BE AN APPROVED CONSERVATION MIX OR CONSIST OF THE FOLLOWING:
   - 15% BLACKWELL OR SHELTER SWITCHGRASS
   - 30% NIAGRA OR KAW BIG BLUESTEM
   - 30% CAMPER OR BLAZE LITTLESTEM
   - 15% NE-27 OR BLAZE SAND LOVEGRASS
   - 10% VIKING BIRDSFOOT TREFOIL

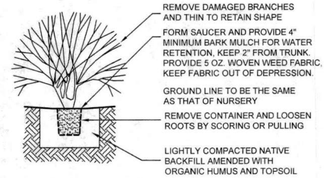
   INOCULUM SPECIFIC TO BIRDSFOOT TREFOIL MUST BE USED WITH THIS MIXTURE. IF SEEDING BY HAND, A STICKING AGENT SHALL BE USED. IF SEEDING WITH A HYDROSEEDER, USE FOUR TIMES THE RECOMMENDED AMOUNT OF INOCULUM.
8. SEED MIXTURE FOR STORMWATER MANAGEMENT AREAS, INCLUDING DETENTION BASINS AND VEGETATED TREATMENT SWALES, SHALL BE APPLIED AT A RATE OF 70 POUNDS PER ACRE OR 1.6 POUNDS PER 1,000 SF, AND SHALL CONSIST OF THE FOLLOWING:
   - 25% CREEPING RED FESCUE
   - 15% SWITCH GRASS
   - 15% FOX SEDGE
   - 15% CREEPING BENTGRASS
   - 10% FLATPEA
   - 20% WILDFLOWER VARIETY
9. STRAW USED FOR MULCH SHALL CONSIST OF MOWED AND PROPERLY CURED GRASS OR LEGUME MOWINGS, FREE FROM WEEDS, TWIGS, DEBRIS, INVASIVE SPECIES OR OTHER DELETERIOUS MATERIAL AND ROT OR MOLD.

SOD SPECIFICATIONS:

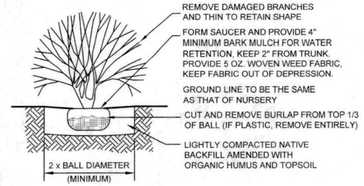
1. SOD SHALL BE PROVIDED WITH A STRONG ROOT SYSTEM, NOT LESS THAN TWO YEARS OLD AND SHALL BE FREE OF ANY UNDESIRABLE NATIVE GRASSES OR WEEDS.
2. SOD SHALL BE MACHINE CUT TO A THICKNESS NOT LESS THAN 3/4", EXCLUDING THATCH, AND SHALL BE CAPABLE OF VIGOROUS GROWTH WHEN PLANTED.
3. SOD PADS SHALL BE OF UNIFORM SIZE AND COMPOSED OF AT LEAST TWO LOCAL GRASS VARIETIES.
4. LAY SOD TO FORM A SOLID MASS WITH TIGHTLY FITTED JOINTS, DO NOT OVERLAP. STAGGER STRIPS TO OFFSET JOINTS IN ADJACENT COURSES. TAMP SOD TO ENSURE CONTACT WITH WITH SOIL.
5. WATER WITHIN ONE HOUR OF PLANTING WITH A FINE SPRAY.



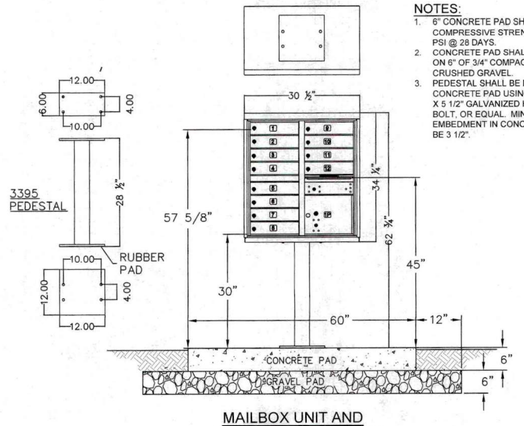
DECIDUOUS TREE PLANTING DETAIL
NOT TO SCALE



CONTAINER SHRUB PLANTING DETAIL
NOT TO SCALE
(MARCH 2008)

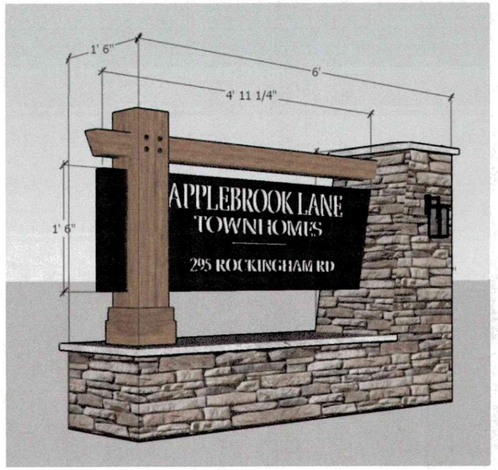


BALLED & BURLAP SHRUB PLANTING DETAIL
NOT TO SCALE
(MARCH 2008)

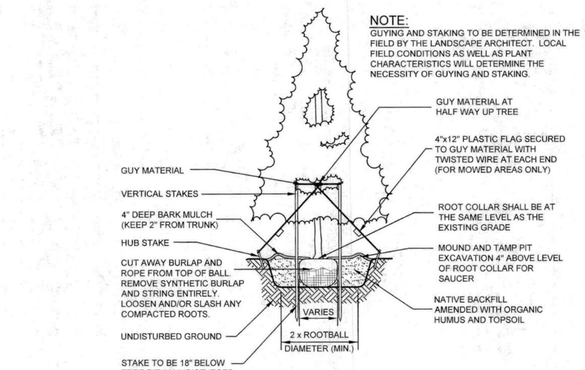


NOTES:
1. 6" CONCRETE PAD SHALL HAVE COMPRESSIVE STRENGTH OF 3,000 PSI @ 28 DAYS.
2. CONCRETE PAD SHALL BE POURED ON 6" OF 3/4" COMPACTED CRUSHED GRAVEL.
3. PEDESTAL SHALL BE MOUNTED TO CONCRETE PAD USING A 1/2" DIA. X 5 1/2" GALVANIZED HILTI KWIK BOLT, OR EQUAL. MINIMUM EMBEDMENT IN CONCRETE SHALL BE 3 1/2".

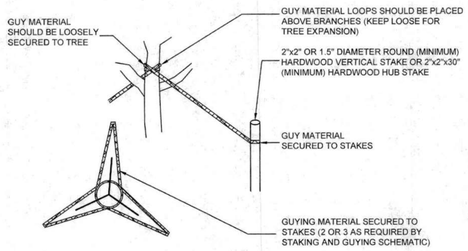
MAILBOX UNIT AND MOUNTING PAD DETAIL
NOT TO SCALE



SITE ENTRY SIGNAGE
NOT TO SCALE

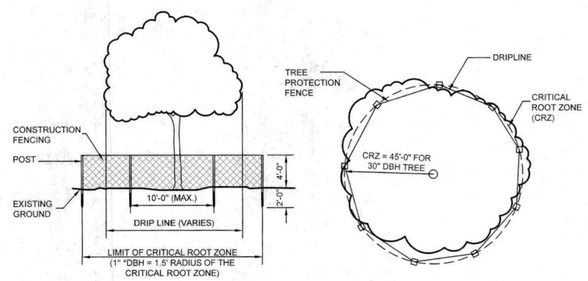


EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE
(JANUARY 2012)

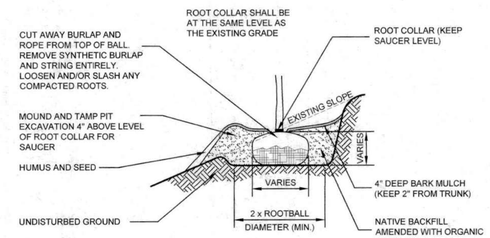


NOTE:
ONLY USE PLASTIC CHAINLOCK (LANDSCAPE QUALITY AND SUITABLE FOR GUYING TREES) OR EQUIVALENT GUYING MATERIAL.

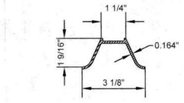
DECIDUOUS TREE - GUYING & STAKING
NOT TO SCALE
(AUGUST 2011)



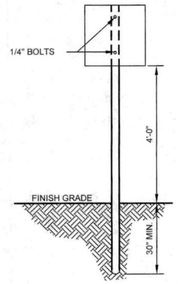
TREE PROTECTION DETAIL
NOT TO SCALE



TYPICAL PLANTING PIT ON SLOPE 4:1 OR GREATER
NOT TO SCALE
(JANUARY 2012)



POST SECTION



SIGN POST DETAIL

LENGTH: P-12, 12'-0"; P-14, 14'-0"; P-16, 16'-0"

WEIGHT PER LINEAR FOOT: 2.50 LBS. (MIN.)

HOLES: 3/8" DIA. 1' C-C FULL LENGTH

STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070-1080)

FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN, BAKED ON OR AIR DRIED. PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

PROTECTED CONSERVATION AREA

DO NOT DISTURB SOILS OR VEGETATION

VIOLATORS WILL BE PROSECUTED

FOR INFORMATION OR TO REPORT A VIOLATION CALL THE CODE ENFORCEMENT OFFICER AT 432-1100, EXT. 125

SIGN DETAIL

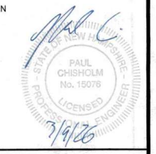
POST NOTES:

1. POSTS SHALL BE PLUMB; ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND PROPERLY REPLACED. POSTS MAY BE SET OR DRIVEN.
2. WHEN POSTS ARE SET, HOLES SHALL BE DUG TO THE PROPER DEPTH, AFTER INSERTING POSTS, THE HOLES SHALL BE BACKFILLED WITH SUITABLE MATERIAL IN LAYERS NOT TO EXCEED 6" DEEP THOROUGHLY COMPACTED, CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST.
3. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED AND, AFTER DRIVING, THE TOP OF THE POST SHALL HAVE SUBSTANTIALLY THE SAME CROSS-SECTIONAL DIMENSION AS THE BODY OF THE POST; BATTERED HEADS WILL NOT BE ACCEPTED.
4. POSTS SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.
5. SIGNS SHALL BE ERECTED IN CONFORMANCE WITH THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
6. WHEN SIGN IS IN PLACE, NO PART OF POST SHALL EXTEND ABOVE THE SIGN.
7. DIMENSIONS SHOWN ARE NOMINAL.
8. ALTERNATE SECTIONS MUST BE APPROVED PRIOR TO USE.

SIGN NOTE:

TAGS SHALL BE PLACED IN NEAREST TREE ALONG 50 FOOT WETLANDS BUFFER AS SHOWN, IN AREAS WHERE THERE ARE NO TREES, SIGN POSTS SHALL BE USED AND INSTALLED.

CONSERVATION OVERLAY SIGNAGE DETAIL
NOT TO SCALE



OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

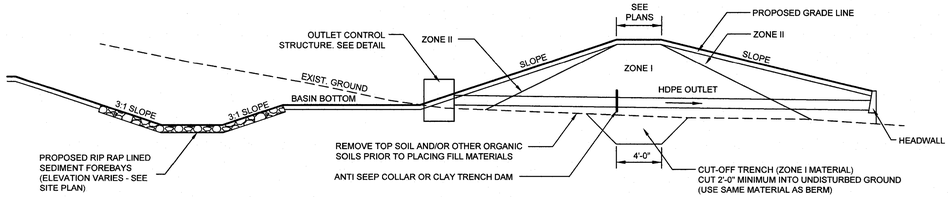
CONSTRUCTION DETAILS
ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 13 OF 20



STORMWATER PONDS CONSTRUCTION SEQUENCE

1. CONTRACTOR TO NOTIFY DIG-SAFE 72 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. CUT AND CLEAR TREES AND BRUSH FROM CONSTRUCTION AREAS TO THE EXTENT NECESSARY. ALL BRANCHES, TOPS AND BRUSH TO BE PROPERLY DISPOSED OF BY CONTRACTOR.
3. PRIOR TO GRUBBING OF CLEARED AREAS, ALL SILTATION BARRIERS DESIGNED FOR USE AS TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED AS CALLED FOR ON PROJECT PLANS.
4. COMPLETE GRUBBING OPERATIONS. ALL STUMPS AND SIMILAR DEBRIS SHALL BE PROPERLY DISPOSED OF BY CONTRACTOR. ORGANIC MATERIAL SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED IN UPLAND AREAS. ALL STOCKPILES SHALL BE SEEDED WITH WINTER RYE AND, IF NECESSARY, SURROUNDED WITH HAY BALES IN ORDER TO PREVENT LOSS DUE TO EROSION.
5. CONSTRUCT TEMPORARY CULVERTS AS NECESSARY TO FACILITATE CONSTRUCTION ACTIVITIES. ALL SUCH CROSSINGS SHALL BE PROTECTED WITH HAY BALE BARRIERS TO LIMIT EROSION.
6. CONSTRUCT CUT-OFF TRENCH (PART OF ZONE I).
7. CONSTRUCT OUTLET AND OVERFLOW STRUCTURE, CULVERT, ANTI SEEP COLLARS, HEADWALL, AND RIP RAP OUTLET PROTECTION AS SHOWN ON PLANS.
8. CONSTRUCT ZONE I PORTION OF EARTH EMBANKMENT.
9. CONSTRUCT ZONE II PORTION OF EARTH EMBANKMENT.
10. APPLY TOPSOIL TO SLOPES AND OTHER AREAS DISTURBED BY CONSTRUCTION. TOPSOIL USED MAY BE NATIVE ORGANIC MATERIAL SCREENED SO AS TO BE FREE OF ROOTS, BRANCHES, STONES, AND OTHER DELETERIOUS MATERIALS. TOPSOIL SHALL BE APPLIED SO AS TO PROVIDE A MINIMUM OF A 4-INCH COMPACTED THICKNESS. UPON COMPLETION OF TOPSOILING, FINISHED SECTIONS ARE TO BE LIMED, SEEDED AND MULCHED. CONSTRUCTION PERSONNEL SHALL INSPECT COMPLETED SECTIONS OF WORK ON A REGULAR BASIS AND REMEDY ANY PROBLEM AREAS UNTIL A HEALTHY STAND OF GRASS HAS BECOME ESTABLISHED.
11. MAINTAIN, REPAIR, AND REPLACE AS NECESSARY TEMPORARY EROSION CONTROL MEASURES UNTIL SUCH TIME AS THE ENTIRE CONSTRUCTION AREA HAS BEEN STABILIZED (A MINIMUM OF ONE WINTER SHALL HAVE PASSED).
12. AFTER STABILIZATION, REMOVE AND SUITABLY DISPOSE OF TEMPORARY EROSION CONTROL MEASURES.
13. MONITOR CONSTRUCTION ACTIVITIES TO INSURE CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN SUCH A WAY AS NOT TO ENDANGER THE INTEGRITY OF EARTH EMBANKMENTS, STORMWATER CONTROL STRUCTURE, CULVERT AND RIP RAP OUTLET PROTECTION.

MATERIAL TYPE/SPECIFICATIONS

ZONE I

WELL GRADED MIXTURE OF GRAVEL, SAND, SILT OR CLAY WITH MAX. 6-INCH
SIZE STONE AND GEADATION AS INDICATED BELOW. PLACE IN MAX. 12-INCH
THICK LIFTS TO 95% OF MAX. DRY DENSITY IN ACCORDANCE WITH ASTM D1557.
SCARIFY SURFACE PRIOR TO PLACING SUBSEQUENT LIFT. IN ADDITION, REMOVE ORGANIC SOILS.

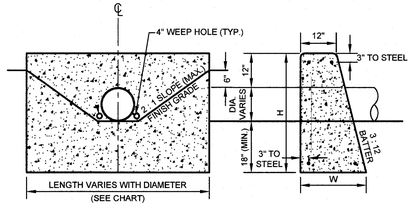
SIEVE SIZE	PERCENT BY WEIGHT PASSING
6-INCH	100
NO. 4	50 TO 100
NO. 40	30 TO 70
NO. 200	20 TO 40

ZONE II

DRAINAGE LAYER: PLACE IN MAX. 12-INCH THICK LIFTS TO 95% OF MAX. DRY
DENSITY IN ACCORDANCE WITH ASTM D1557.

SIEVE SIZE	PERCENT BY WEIGHT PASSING
1-INCH	100
NO. 4	70-100
NO. 200	0-12 (IN SAND PORTION ONLY)

DETENTION POND EMBANKMENT DETAIL



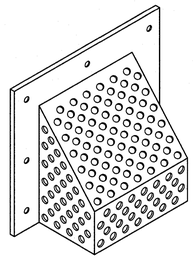
REINFORCED CONCRETE

DRAIN PIPE DIAMETER	15"	18"	24"
LENGTH	4'-6"	5'-6"	7'-6"
HEIGHT (H)	3'-9"	4'-0"	4'-6"
BOTTOM WIDTH (W)	1'-11.25"	2'-0"	2'-1.5"
CONCRETE (CU.YD.)	0.85	1.13	1.78
STEEL (LBS.)	11	14	20

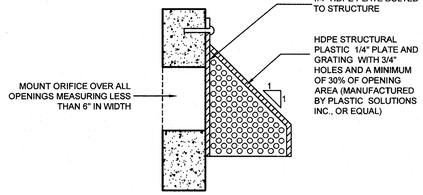
ALL STEEL SHALL BE #4 BARS, MEETING NHDOT REQUIREMENTS

NOTES:
1. ALL CONCRETE SHALL BE CLASS A.
2. ALL HEADWALLS SHALL MEET NHDOT REQUIREMENTS. FOR LARGER PIPE DIAMETERS, USE THE NHDOT STANDARD PLANS.

CONCRETE HEADWALL
NOT TO SCALE

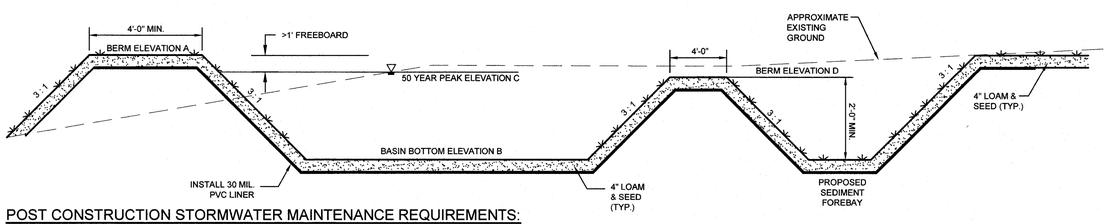


ISOMETRIC



SECTION

TRASH RACK DETAIL
NOT TO SCALE



POST CONSTRUCTION STORMWATER MAINTENANCE REQUIREMENTS:

THE FOLLOWING STANDARDS WILL BE MET AFTER CONSTRUCTION IS COMPLETE:

DOCUMENTATION:
A MAINTENANCE LOG WILL BE KEPT SUMMARIZING INSPECTIONS, MAINTENANCE, AND ANY CORRECTIVE ACTIONS TAKEN. THE LOG WILL INCLUDE THE DATE ON WHICH EACH INSPECTION OR MAINTENANCE TASK WAS PERFORMED, A DESCRIPTION OF THE INSPECTION FINDINGS OR MAINTENANCE COMPLETED, AND THE NAME OF THE INSPECTOR OR MAINTENANCE PERSONNEL PERFORMING THE TASK. IF A MAINTENANCE TASK REQUIRES THE CLEAN OUT OF ANY SEDIMENTS OR DEBRIS, THE LOCATION WHERE THE SEDIMENT AND DEBRIS WAS DISPOSED AFTER REMOVAL WILL BE INDICATED. THE MAINTENANCE LOG SHALL BE SENT TO THE TOWN OF LONDONDERRY DEPARTMENT OF PUBLIC WORKS ON A YEARLY BASIS AND SHALL BE MADE AVAILABLE TO NHDES UPON REQUEST.

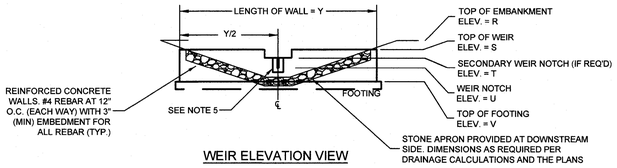
MAINTENANCE REQUIREMENTS:
STORMWATER POND:
- SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EVENT EXCEEDING 2.5 INCHES IN A 24-HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS WARRANTED BY SUCH INSPECTION.
- TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.
- 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.

OUTLET PROTECTION:
- INSPECT THE OUTLET PROTECTION ANNUALLY FOR DAMAGE AND DETERIORATION. REPAIR DAMAGES IMMEDIATELY.

GENERAL:
- IF ANY INVASIVE SPECIES BEGIN TO GROW IN THE STORMWATER MANAGEMENT PRACTICES THE SPECIE SHALL BE DISPOSED OF IN AN APPROPRIATE MANNER THAT WILL NOT ALLOW THE PEST TO SURVIVE OR SPREAD. THE DISPOSAL OF SUCH SPECIES SHALL BE WITNESSED OR APPROVED BY A STATE INSPECTOR. METHODS FOR DISPOSAL MAY INCLUDE, BUT NOT BE LIMITED TO:
- ENCAPSULATING THE PLANT(S) IN PLASTIC BAGS AND DISPOSING OF THE PLANT MATERIAL IN ONE OF THE FOLLOWING WAYS:
  - TRASH PICKUP;
  - DISCARDING;
  - OPEN BURNING;
  - INCINERATION; OR
  - BURIAL OF INFESTED NURSERY.

POND NUMBER	ELEV. A	ELEV. B	ELEV. C	ELEV. D
DETENTION POND #1	312.00	310.00	311.00	311.50
DETENTION POND #2	313.50	311.00	312.17	313.00

PROPOSED DETENTION POND CROSS-SECTION
NOT TO SCALE

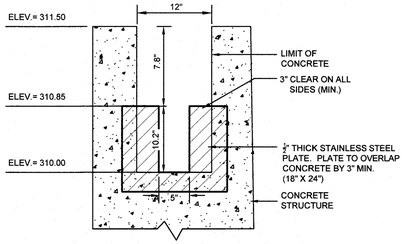


WEIR ELEVATION VIEW

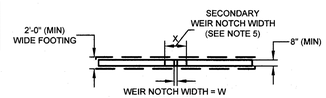
POND	ELEVATION/DIMENSIONS							
	R	S	T	U	V	W	X	Y
DETENTION POND #1	312.00	311.50	310.85	310.00	309.00	5"	12"	10'

NOTES:
1. ALL CEMENT CONCRETE TO BE 4000 PSI (MIN).
2. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS INDICATION DESIGN DETAILS AND STEEL REINFORCING PREPARED BY NEW HAMPSHIRE LICENSED PROFESSIONAL ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
3. LOW FLOW STRUCTURE CAN BE USED AT DETENTION BASINS WITH INFLOW OF LESS THAN 3 CFS.
4. CONTROL WEIR SHALL BE CAST IN AS REQUIRED. MINIMUM CONCRETE WEIR WIDTH SHALL BE 2 INCHES.
5. CONTROL WEIR(S) SHALL BE SIZED TO MITIGATE DESIGN STORM AS REQUIRED BY THE REGULATIONS AND IN ACCORDANCE WITH THE APPROVED DRAINAGE CALCULATIONS. STAINLESS STEEL PLATE SHALL BE USED FOR CONTROL WEIR LESS THAN 2 INCHES ATTACHED PER EXHIBIT D107. STAINLESS STEEL SHALL BE GRADE 316.
6. MINIMUM EMBANKMENT ELEVATION TO BE 12" ABOVE 50-YEAR STORM ELEVATION.

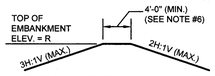
TYPICAL LOW FLOW OUTLET STRUCTURE AT DETENTION BASINS
NOT TO SCALE



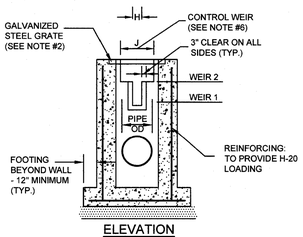
POND #1 WEIR WALL DETAIL
NOT TO SCALE



WEIR PLAN VIEW

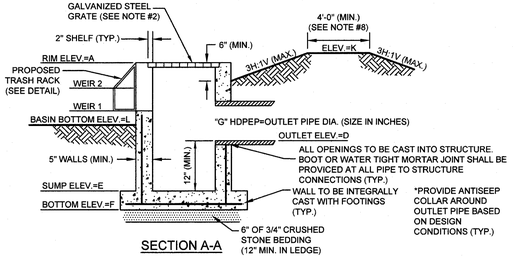


EMBANKMENT SECTION VIEW



ELEVATION

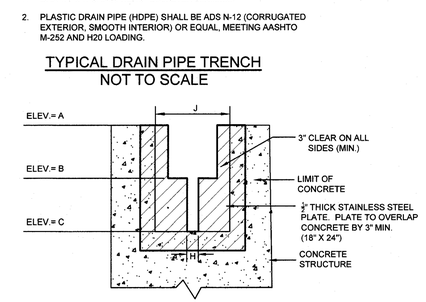
NOTES
1. ALL CEMENT CONCRETE TO BE 4,000 PSI MINIMUM.
2. GALVANIZED STEEL GRATE SHALL BE BOLTED TO TOP OF STRUCTURE WITH 1/2" STAINLESS STEEL BOLTS AND THREADED INSERTS.
3. OUTLET PIPE SHALL NOT BE LESS THAN 15" DIAMETER AND SHALL BE SIZED FOR A 50-YEAR STORM.
4. ALL OPENINGS SHALL BE CAST IN AS REQUIRED. MINIMUM CONCRETE WEIR WIDTH SHALL BE 2 INCHES.
5. PRECAST REINFORCED CONCRETE STRUCTURE TO MEET ASTM C-478 DESIGNATION AND H-20 LOADING.
6. CONTROL WEIR SHALL BE SIZED TO MITIGATE DESIGN STORM AS REQUIRED BY THE REGULATIONS AND IN ACCORDANCE WITH THE APPROVED DRAINAGE CALCULATIONS. STAINLESS STEEL PLATE SHALL BE USED FOR CONTROL WEIRS LESS THAN 2 INCHES WIDE.
7. ALL STAINLESS STEEL SHALL BE GRADE 316.
8. MINIMUM EMBANKMENT ELEVATION TO BE 12" ABOVE 50-YEAR STORM ELEVATION.
9. PROVIDE TRASH RACK ON ALL WEIRS SMALLER THAN 6" IN WIDTH.



SECTION A-A

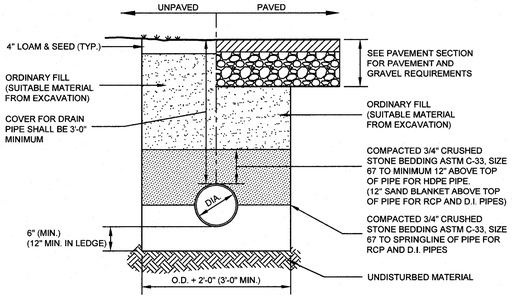
DOUBLE WEIR OUTLET STRUCTURE DETAIL
NOT TO SCALE

POND	OUTLET STRUCTURE	ELEVATION/DIMENSIONS											
		A	B	C	D	E	F	G	H	J	K	L	M	GRATE SIZE
DETENTION POND #2	OS#2	313.00	311.50	310.00	309.75	308.75	308.00	15"	1"	6"	313.50	310.00	311.00	4'x4'

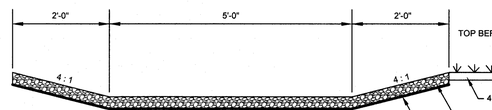


CLOSE UP OF POND #2 WEIR

TYPICAL DRAIN PIPE TRENCH
NOT TO SCALE



NOTES
1. DRAIN PIPE SHALL BE 15" DIAMETER MINIMUM.
2. PLASTIC DRAIN PIPE (HDPE) SHALL BE ADS N-12 (CORRUGATED EXTERIOR, SMOOTH INTERIOR) OR EQUAL, MEETING AASHTO M-252 AND H20 LOADING.



EMERGENCY SPILLWAY DETAIL
NOT TO SCALE
(MARCH 2008)

3/9/26

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

CONSTRUCTION DETAILS
ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

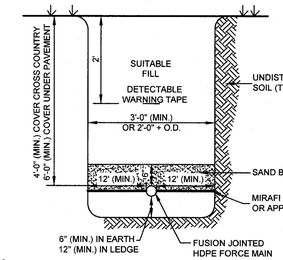
PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 14 OF 20

SEWER FORCE MAIN CONSTRUCTION:

1. PER ENV-WQ 704.04(j) ALL FORCE MAINS SHALL BE RATED TO WITHSTAND 2.5 TIMES DESIGN DYNAMIC HEAD.
2. PER ENV-WQ 704.07(a) FORCE MAINS SHALL FLOW AT 3FPS OR GREATER FOR CONSTANT SPEED PUMPS AND PER ENV-WQ 704.07(b) FLOW AT 2FPS OR GREATER AT AVERAGE DAILY DESIGN FLOW FOR VARIABLE SPEED PUMPS.
3. FORCE MAINS SHALL BE 4 INCHES OR LARGER IN NOMINAL DIAMETER. PRESSURE SEWERS SHALL BE 1.5 INCHES OR LARGER IN NOMINAL DIAMETER.
4. MINIMUM ALLOWABLE PRESSURE SEWER PIPE SIZES AND CORRESPONDING FLOW RATE SHALL BE AS SET FORTH BELOW:

# OF CONNECTIONS SERVED	ESTIMATED PEAK FLOW (GPM)	MINIMUM PIPE SIZE (INCHES)
1 TO 3	15	1.5
4 TO 10	20	2
11 TO 30	30	3
31 TO 150	90	4

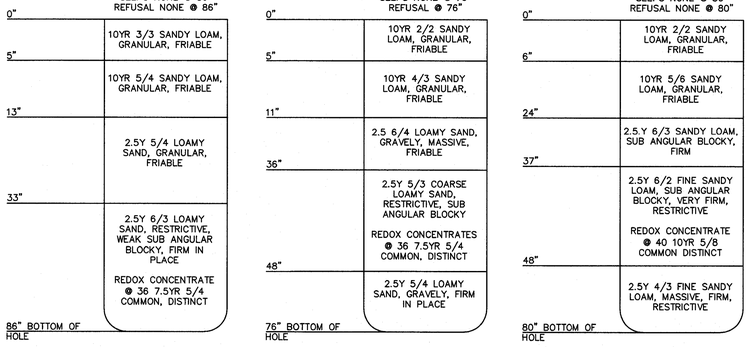
5. FORCE MAINS SHALL ENTER THE GRAVITY SEWER SYSTEM AT THE FLOW LINE OF THE RECEIVING MANHOLE.
6. FORCE MAINS SHALL BE PROVIDED WITH A DRAINAGE BLOW-OFF AT EACH LOW POINT THAT:
   A. HAS A PROPERLY VALVED CONNECTION FOR A VACUUM TRUCK OR OTHER SUITABLE CONTAINMENT DEVICE; AND
   B. IS INSTALLED WITHIN A MANHOLE STRUCTURE THAT MEETS THE DESIGN REQUIREMENTS OF ENV-WQ 704.12 THROUGH ENV-WQ 704.17, WITH SUFFICIENT SPACE FOR HANDLING THE DISPLACED WASTE WITHOUT DANGER OF POLLUTION OR HEALTH HAZARD.
7. FORCE MAINS SHALL BE DESIGNED IN ACCORDANCE WITH ENV-WQ 704.07, CONSTRUCTED WITH MATERIALS AS SPECIFIED IN ENV-WQ 704.08, AND TESTED AS SPECIFIED IN ENV-WQ 704.09.
8. PRESSURE SEWERS SHALL BE DESIGNED IN ACCORDANCE WITH ENV-WQ 704.07 AND ENV-WQ 704.20, CONSTRUCTED WITH MATERIALS AS SPECIFIED IN ENV-WQ 704.08, AND TESTED AS SPECIFIED IN ENV-WQ 704.09.
9. THRUST BLOCKS MADE FROM INORGANIC, CORROSION-RESISTANT MATERIAL SHALL BE PLACED AT ALL BENDS, ELBOW, TEES AND JUNCTIONS.
10. FORCE MAINS SHALL MEET TRENCH AND BEDDING REQUIREMENTS OF GRAVITY SEWERS.
11. FORCE MAINS SHALL BE CONSTRUCTED FROM DUCTILE IRON, HIGH DENSITY POLYETHYLENE, OR PVC PER ENV-WQ 704.08(a).
    PVC SHALL BE CERTIFIED BY ITS MANUFACTURER AS CONFORMING TO ASTM D2241 OR ASTM D1785.
    HDPE SHALL BE CERTIFIED BY ITS MANUFACTURER AS CONFORMING TO ASTM D3035.
    D.I. SHALL BE CORROSION PROTECTED IN CORROSIVE ENVIRONMENTS.
12. FORCE MAIN TESTING:
    A. FORCE MAIN AND PRESSURE SEWER TESTING. FORCE MAINS AND PRESSURE SEWERS SHALL BE TESTED IN ACCORDANCE WITH SECTION 5 OF THE AWWA C600, "INSTALLATION OF CAST IRON WATER MAINS AND THEIR APPURTENANCES" STANDARD IN EFFECT WHEN THE TEST IS CONDUCTED. AVAILABLE AS NOTED IN APPENDIX D, AT A PRESSURE EQUAL TO THE GREATER OF 150 PERCENT OF THE DESIGN OPERATING TOTAL DYNAMIC HEAD OR AT LEAST 100 PSI.



NOTES:

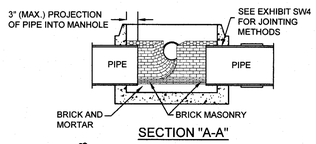
1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE. REFILL WITH BEDDING MATERIAL, ALSO SEE NOTE #7.
   BEDDING: CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33/C33M STONE SIZE NO. 67.
   100% PASSING 1 INCH SCREEN
   90 - 100% PASSING 3/4 INCH SCREEN
   20 - 55% PASSING 3/8 INCH SCREEN
   0 - 10% PASSING # 4 SIEVE
   0 - 5% PASSING # 8 SIEVE
   WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, GRADED CRUSHED STONE 1/2 INCH TO 1-1/2 INCHES SHALL BE USED.
2. SAND BLANKET: GRADED CLEAN SAND FREE FROM ORGANIC MATTER, SO THAT 100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A # 200 SIEVE. BLANKET MAY BE OMITTED FOR CAST IRON, DUCTILE IRON AND REINFORCED CONCRETE PIPE PROVIDED, HOWEVER, THAT NO STONE LARGER THAN 2 INCHES IS IN CONTACT WITH THE PIPE.
3. MIRAFI 140 N FILTER FABRIC, OR APPROVED EQUAL, SHALL BE INSTALLED ABOVE PIPE.
4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL AND ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION, OR ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.
   IN CROSS COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT IF HE/SHE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER WILL BE PRESERVED FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WHEN NECESSARY.

SEWER FORCE MAIN TRENCH DETAIL
NOT TO SCALE

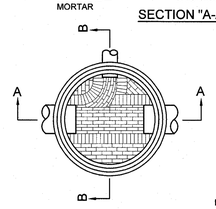


NOTES:

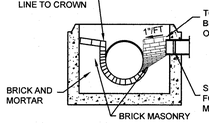
1. IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT AND ADEQUATE JOINTING. THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND HS-20-44 LOADING, INCLUDING THE FRAME AND COVER.
2. SEWER MANHOLE DIAMETER SHALL BE AS INDICATED ON THE PLANS.
3. LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE WITH THE TOWN OF LONDONDERRY AND NHDES REQUIREMENTS. INVERT AND SHELF TO BE PLACED AFTER PASSING THE LEAKAGE TEST.
4. CARE SHALL BE TAKEN TO ENSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. BASE SECTION TO BE FULL.
5. MANHOLE CHANNELS REQUIRING CHANGE IN ALIGNMENT ARE TO BE BUILT ON A SMOOTH RADIUS.
6. IN CROSS COUNTRY AREAS BEYOND ROADWAY RIGHT-OF-WAYS, THE MANHOLE FRAME ELEVATION SHALL BE A MINIMUM OF 6" ABOVE FINISHED GRADE. GRADE TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE MANHOLE.
7. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30" CLEAR OPENING. 3" (MINIMUM HEIGHT) LETTERS WITH THE WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH MANHOLE COVER.



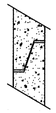
SECTION "A-A"



PLAN VIEW

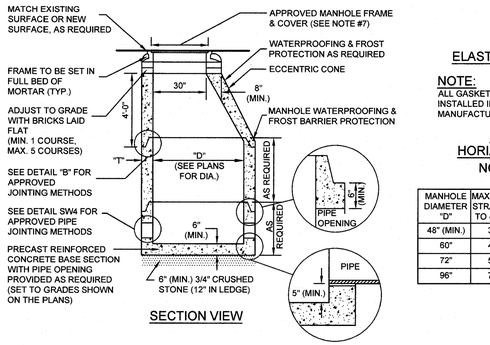


SECTION "B-B"



ELASTOMERIC SEALANT

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

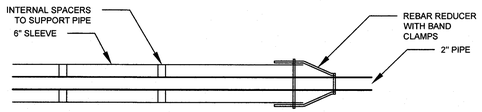


SECTION VIEW

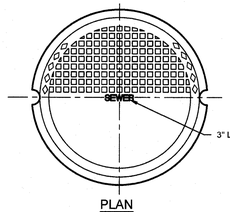
DETAIL "B" HORIZONTAL JOINTS
NOT TO SCALE

MANHOLE DIAMETER "D"	MAX. PIPE DIAMETER STRAIGHT THROUGH TO 45° DEFLECTION	WALL THICKNESS "T"
48" (MIN.)	30" OD (MAX.)	5" (MIN.)
60"	44" OD (MAX.)	6"
72"	51" OD (MAX.)	7"
96"	72" OD (MAX.)	9"

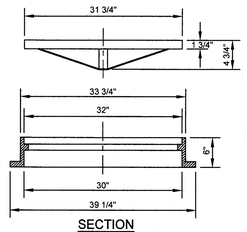
TYPICAL SEWER MANHOLE
NOT TO SCALE
EXHIBIT SW2



PIPE SLEEVE
NOT TO SCALE



PLAN



SECTION

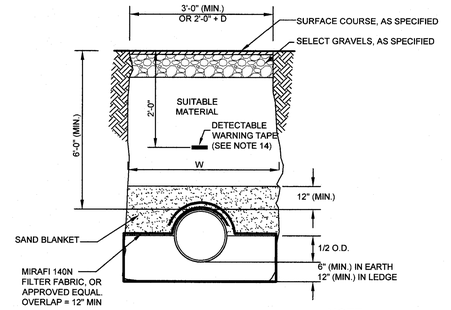
SEWER MANHOLE FRAME AND COVER DETAIL
NOT TO SCALE
(MARCH 2008)

NOTES:

NEW HAMPSHIRE MAINTAINS A CLEAR OPENING DESIGNATION OF 30" FOR ITS MANHOLE CASTINGS.

FEATURES:
- 3" LETTERING
- COVERS MARKED SEWER
- NONROCKING COVER
- DIAMOND SURFACE DESIGN

SPECIFICATIONS:
- FULLY MACHINED FRAME AND COVER
- H-20 LOAD RATED
- GRAY CAST IRON MEETS ASTM A48 CLASS 30



FOR CONSTRUCTION IN ROADS, ROAD SHOULDER AND WALKWAYS

NOTE:
MINIMUM BEDDING DEPTH AND MAXIMUM PAYMENT DEPTH FOR LEDGE EXCAVATION: 1/4 O.D. (6" MIN.)

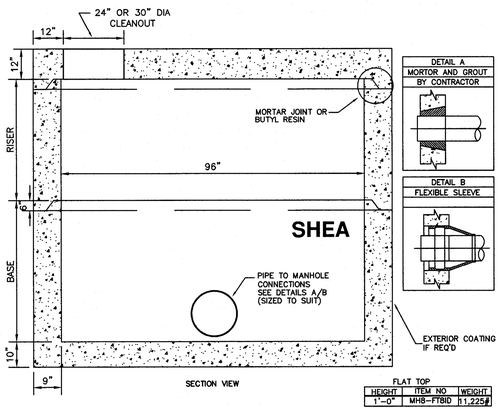
SANITARY SEWER TRENCH DETAIL
NOT TO SCALE

SANITARY SEWER TRENCH NOTES:

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE. REFILL WITH BEDDING MATERIAL, ALSO SEE NOTE #7.
   BEDDING: CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33-03 STONE SIZE NO. 67.
   100% PASSING 1 INCH SCREEN
   90 - 100% PASSING 3/4 INCH SCREEN
   20 - 55% PASSING 3/8 INCH SCREEN
   0 - 10% PASSING # 4 SIEVE
   0 - 5% PASSING # 8 SIEVE
   WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, GRADED CRUSHED STONE 1/2 INCH TO 1-1/2 INCHES SHALL BE USED.
2. SAND BLANKET: GRADED CLEAN SAND FREE FROM ORGANIC MATTER, SO THAT 100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A # 200 SIEVE. BLANKET MAY BE OMITTED FOR CAST IRON, DUCTILE IRON AND REINFORCED CONCRETE PIPE PROVIDED, HOWEVER, THAT NO STONE LARGER THAN 2 INCHES IS IN CONTACT WITH THE PIPE.
3. MIRAFI 140 N FILTER FABRIC, OR APPROVED EQUAL, SHALL BE INSTALLED ABOVE PIPE.
4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL AND ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION, OR AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.
5. UNLESS OTHERWISE NOTED, ALL GRANULAR MATERIAL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO 95% OF THE MODIFIED PROCTOR TEST.
6. BASE COURSE, IF ORDERED BY THE ENGINEER, SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE LATEST EDITION OF THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS."
7. W = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D. W SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
8. NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES DESIGN STANDARDS REQUIRE 10 FEET OF SEPARATION BETWEEN WATER AND SEWER. HOWEVER, SHOULD CONSTRUCTION REVEAL OR EXPOSE A WATERLINE (MAIN OR SERVICE) RUNNING APPROXIMATELY PARALLEL AND LESS THAN 10 FEET HORIZONTALLY FROM THE PROPOSED SEWER INSTALLATION AND WHERE IT IS NOT PRACTICAL TO RELOCATE THE SEWER, A DEVIATION MAY BE GRANTED PROVIDED THAT THE SEWER IS CONSTRUCTED IN ACCORDANCE WITH THE FORCE MAIN CONSTRUCTION REQUIREMENT SPECIFIED BELOW.
   A. FORCEMAINS SHALL BE CONSTRUCTED FROM DUCTILE IRON, HIGH DENSITY POLYETHYLENE, OR PVC PER ENV-WQ 704.08(A).
      PVC SHALL CONFORM TO ASTM D2241-05 OR ASTM D1785-05
      HDPE SHALL CONFORM TO ASTM D3035-03A
      DI SHALL BE CORROSION PROTECTED IN CORROSIVE ENVIRONMENTS
9. WHERE WATER LINES AND SEWER LINES CROSS, THEY SHOULD CROSS AS PERPENDICULAR AS POSSIBLE AND THE WATER MAIN SHALL CROSS AT LEAST 18" INCHES ABOVE THE SEWER. FURTHER, THE SEWER JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATER MAIN.
10. WHERE WATER MAINS CROSS UNDER SEWER MAINS, BOTH THE SEWER AND WATER MAINS SHALL BE PRESSURE RATED PIPE PER ENV-WQ 704.06 AND TESTED PER AWWA C600-05 AT 1.5 TIMES DESIGN PRESSURE OR 150 PSI, WHICHEVER IS GREATER, WITH NO JOINTS WITHIN 9 FEET OF THE CROSSING POINT AND 18" MINIMUM VERTICAL SEPARATION.
11. ALL SEWERS AT 8 PERCENT SLOPE, OR GREATER, SHALL HAVE IMPERVIOUS TRENCH DAMS CONSTRUCTED EVERY 300 FEET.
12. GRAVITY PIPE SEWER TESTING:
    A. ALL GRAVITY PIPE SEWER TESTING SHALL BE PERFORMED BY A CERTIFIED THIRD PARTY TESTING COMPANY.
    B. ALL NEW GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY THE USE OF LOW-PRESSURE AIR TESTS.
    C. LOW-PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH:
       C.1. ASTM F1417-92(2005) "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW-PRESSURE AIR." OR
       C.2. UNI-BELL PVC PIPE ASSOCIATION UNI-B-6, "LOW-PRESSURE AIR TESTING OF INSTALLED SEWER PIPE" (1998).
    D. ALL NEW GRAVITY SEWERS SHALL BE CLEANED AND VISUALLY INSPECTED AND SHALL BE TRUE TO LINE AND GRADE FOLLOWING INSTALLATION AND PRIOR TO USE.
    E. ALL PLASTIC SEWER PIPE SHALL BE DEFLECTION TESTED NOT LESS THAN 30 DAYS FOLLOWING INSTALLATION.
    F. THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5 PERCENT OF AVERAGE INSIDE DIAMETER.
13. PIPE AND JOINT MATERIALS:
    A. PLASTIC GRAVITY SEWER PIPE AND FITTINGS SHALL COMPLY WITH THE FOLLOWING STANDARDS:
       A.1. ASTM D3034-04A - PVC, SOLID WALL;
       A.2. AT LEAST 46 PSI AT 5% PIPE DIAMETER DEFLECTION, AS MEASURED IN ACCORDANCE WITH ASTM D2414-02 DURING MANUFACTURING; AND
       A.3. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D3212-96A(2003)E1 AND SHALL BE PUSH-ON OR BELL-AND-SPIGOT TYPE.
14. DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.
15. JOINTS SHALL BE DEPENDENT UPON PROPER MATERIALS (SEE NOTE #2) FOR WATER TIGHTNESS, AND ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.
16. PIPE INSTALLATION:
    A. THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER.
    B. PIPES SHALL BE CAREFULLY BEDDED ON A 6 INCH LAYER OF CRUSHED STONE.
    C. BEDDING AND RE-FILL, FOR A DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE, SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH THE APPROPRIATE MECHANICAL DEVICES.
    D. THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE HOUSE FOUNDATION AT A GRADE OF NOT LESS THAN 1/8 INCH PER FOOT.
    E. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.
18. ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM TOILETS, SINKS, LAUNDRY, ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR ANY OTHER SIMILAR CONNECTION CARRYING RAIN WATER, DRAINAGE OR GROUND WATER, SHALL NOT BE PERMITTED.

SANITARY SEWER MANHOLE NOTES: (NHDES ENV WQ700)

1. ALL COMPONENT PARTS OF MANHOLE STRUCTURES SHALL HAVE THE STRENGTH, LEAK RESISTANCE AND SPACE NECESSARY FOR THE INTENDED SERVICE.
2. MANHOLE STRUCTURES SHALL HAVE A LIFE EXPECTANCY IN EXCESS OF 25 YEARS.
3. MANHOLE STRUCTURES SHALL BE DESIGNED TO WITHSTAND H-20 LOADING AND SHALL NOT LEAK IN EXCESS OF ONE GPD PER VERTICAL FOOT OF MANHOLE FOR THE LIFE OF THE STRUCTURE.
4. BARRELS, CONCRETE GRADE RINGS AND CONE SECTIONS SHALL BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE AND SHALL CONFORM TO ASTM C478.
5. BEDDING: CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33
   100% PASSING 1 INCH SCREEN
   90% PASSING 3/4 INCH SCREEN
   20-55% PASSING 3/8 INCH SCREEN
   0-10% PASSING #4 SIEVE
   0-5% PASSING #8 SIEVE
   WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, CRUSHED STONE 1/2 INCH TO 1-1/2 INCH SHALL BE USED.
6. BASE SECTIONS SHALL BE OF MONOLITHIC CONSTRUCTION TO A POINT AT LEAST 6 INCHES ABOVE THE CROWN OF THE INCOMING PIPE.
7. HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE, SEALED FOR WATER-TIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC-LIKE SEALANT.
8. PIPE TO MANHOLE JOINTS SHALL BE AS FOLLOWS:
   A. ELASTOMERIC, RUBBER SLEEVE WITH WATERTIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES;
   B. CAST INTO THE WALL OR SECURED WITH STAINLESS STEEL CLAMPS;
   C. ELASTOMERIC SEALING RING CAST IN THE MANHOLE OPENING WITH SEAL FORMED ON THE SURFACE OF THE PIPE BY COMPRESSION OF THE RING; AND
   D. NON-SHRINK GROUTED JOINTS WHERE WATERTIGHT BONDING TO THE MANHOLE AND PIPE CAN BE OBTAINED.
9. MANHOLE CONE SECTIONS SHALL BE ECCENTRIC IN SHAPE.
10. ALL PRECAST SECTIONS AND BASES SHALL HAVE THE DATE OF MANUFACTURE AND THE NAME OR TRADEMARK OF THE MANUFACTURER IMPRESSED OR INDELIBLY MARKED ON THE INSIDE WALL.
11. ALL PRECAST SECTIONS AND BASES SHALL BE COATED ON THE EXTERIOR WITH A BITUMINOUS DAMP-PROOFING COATING.
12. MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY. INVERTS AND SHELVES SHALL BE PLACED AFTER TESTING.
13. MATERIALS OF CONSTRUCTION FOR MANHOLES SHALL BE AS FOLLOWS.
   A. CONCRETE FOR PRECAST BASES OR GRADE RINGS SHALL CONFORM TO THE REQUIREMENTS FOR CLASS AA CONCRETE IN THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION".
   B. REINFORCING FOR PRECAST CONCRETE SHALL BE STEEL OR STRUCTURAL FIBERS THAT CONFORM TO THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
   C. PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL BE CERTIFIED BY THEIR MANUFACTURE(S) AS CONFORM TO ASTM C478;
   D. THE MANHOLE FRAME AND COVER SHALL PROVIDE A 30-INCH DIAMETER CLEAR OPENING;
   E. THE MANHOLE COVER SHALL HAVE THE WORD "SEWER" IN 3-INCH LETTERS CAST INTO THE TOP SURFACE;
   F. THE CASTINGS SHALL BE OF EVEN-GRAINED CAST IRON, SMOOTH AND FREE FROM SCALE, LUMPS, BLISTERS, SAND HOLES AND DEFECTS;
   G. CONTACT SURFACES OF COVERS AND FRAMES SHALL BE MACHINED AT THE FOUNDRY TO PREVENT ROCKING OF COVERS IN ANY ORIENTATION;
   H. CASTINGS SHALL BE EQUAL TO CLASS 30, BE CERTIFIED BY THEIR MANUFACTURE(S) AS CONFORMING TO ASTM A48/48M;
   I. BRICK MASONRY FOR SHELF, INVERT AND GRADE ADJUSTMENT SHALL BE CERTIFIED BY THEIR MANUFACTURE(S) AS CONFORMING TO ASTM C32, CLAY OR SHALE, FOR GRADE SS HARD BRICK;
   J. MORTAR SHALL BE COMPOSED OF TYPE II PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;
   K. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
      1. 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
      2. 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PARTS HYDRATED LIME;
   L. CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150/C150M;
   M. HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207 "STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES";
   N. SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO THE ASTM C33 "STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES";
   O. CONCRETE FOR DROP SUPPORTS SHALL CONFORM TO THE REQUIREMENT FOR CLASS AAA CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
   P. SUBJECT TO (Q) BELOW, A FLEXIBLE PIPE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES FROM ANY MANHOLE CONNECTION:
      1. WITHIN 48-INCHES FOR REINFORCED CONCRETE (RC) PIPE; AND
      2. WITHIN 60-INCHES FOR PVC PIPE LARGER THAN 15-INCH DIAMETER;
   Q. NO FLEXIBLE JOINT SHALL BE REQUIRED FOR D.I. PIPE OR FOR PVC PIPE UP THROUGH 15-INCH DIAMETER; AND
   R. WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED IN LIEU OF A CONE SECTION, PROVIDED THE SLAB HAS AN ECCENTRIC ENTRANCE OPENING AND IS CAPABLE OF SUPPORTING H-20 LOADS.
14. MANHOLE TESTING:
   A. MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST BY A THIRD PARTY TESTING COMPANY.
   B. THE MANHOLE VACUUM TEST SHALL CONFORM TO THE FOLLOWING:
      1. THE INITIAL VACUUM GAUGE TEST PRESSURE SHALL BE 10 INCHES Hg; AND
      2. THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR A 1-INCH Hg PRESSURE DROP TO 9 INCH Hg SHALL BE:
         a. NOT LESS THAN 2 MINUTES FOR MANHOLES LESS THAN 10 FEET DEEP IN DEPTH;
         b. NOT LESS THAN 2.5 MINUTES FOR MANHOLES 10 TO 15 FEET DEEP; AND
         c. NOT LESS THAN 3 MINUTES FOR MANHOLES MORE THAN 15 FEET DEEP.
   C. THE MANHOLE SHALL BE REPAIRED AND RETESTED IF THE TEST HOLD TIMES FAIL TO ACHIEVE THE ACCEPTANCE LIMITS SPECIFIED IN (B) ABOVE.
   D. INVERTS AND SHELVES SHALL NOT BE INSTALLED UNTIL AFTER SUCCESSFUL TESTING IS COMPLETED.
   E. FOLLOWING COMPLETION OF THE LEAKAGE TEST, THE FRAME AND COVER SHALL BE PLACED ON THE TOP OF THE MANHOLE OR SOME OTHER MEANS USED TO PREVENT ACCIDENTAL ENTRY BY UNAUTHORIZED PERSONS, CHILDREN OR ANIMALS UNTIL THE CONT



SECTION VIEW

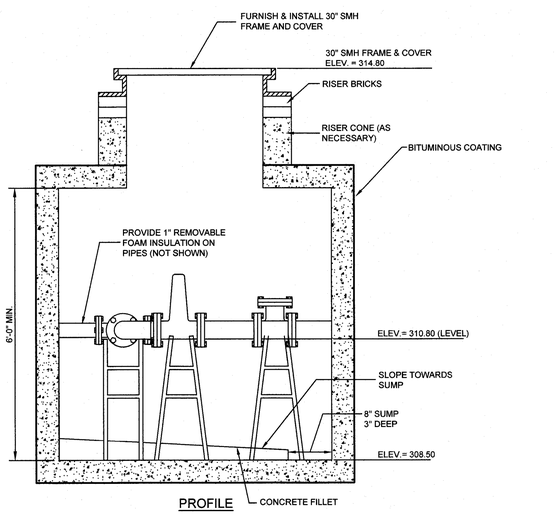
FLAT TOP		
HEIGHT	ITEM NO	WEIGHT
1'-0"	MH8-FTBID	11,225#

RISER SECTION		
HEIGHT	ITEM NO	WEIGHT
2'-0"	MH8-24CSBID	6,102#
3'-0"	MH8-36CSBID	9,153#
4'-0"	MH8-48CSBID	12,204#
5'-0"	MH8-60CSBID	15,255#
6'-0"	MH8-72CSBID	18,306#

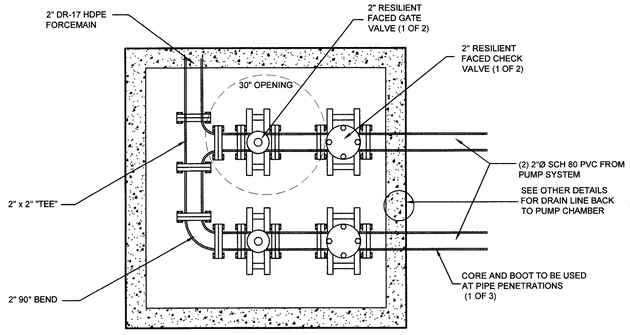
BASE SECTION		
HEIGHT	ITEM NO	WEIGHT
3'-6"	MH8-42SBID	18,690#
4'-6"	MH8-54SBID	21,740#
5'-6"	MH8-66SBID	24,790#

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. REINFORCED STEEL CONFORMS TO ASTM A185 SPEC. 0.18 SQ. IN./LINEAL FT. AND 0.18 SQ. IN. (BOTH WAYS) BASE BOTTOM.
3. DESIGN LOADING PER AASHTO HS-20, 1 TO 5 FEET COVER.
4. MANHOLE DESIGN SPECS CONFORM TO ASTM C478 SPEC FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."
5. BUTYL RESIN SECTION JOINT CONFORMS TO ASTM C990 SPECIFICATION.

96" INSIDE DIAMETER MANHOLE PUMP CHAMBER
NOT TO SCALE

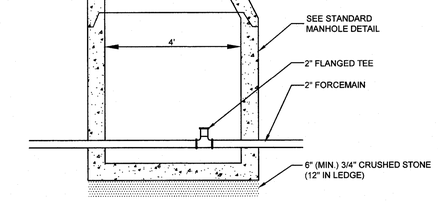


PROFILE

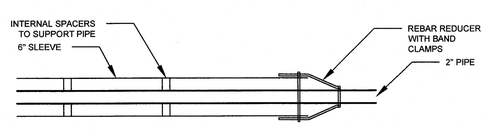


PLAN

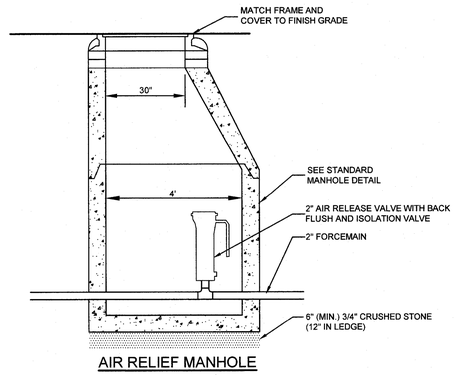
4" NOMINAL DIAMETER PIPE VALVE CHAMBER
NOT TO SCALE



FLASH MANHOLE

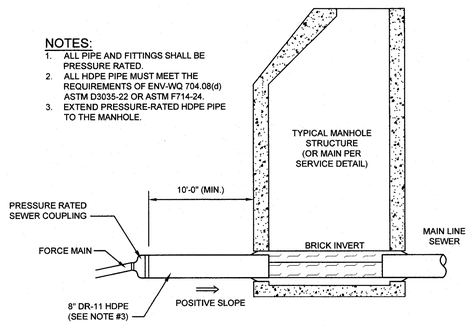


PIPE SLEEVE
NOT TO SCALE



AIR RELIEF MANHOLE

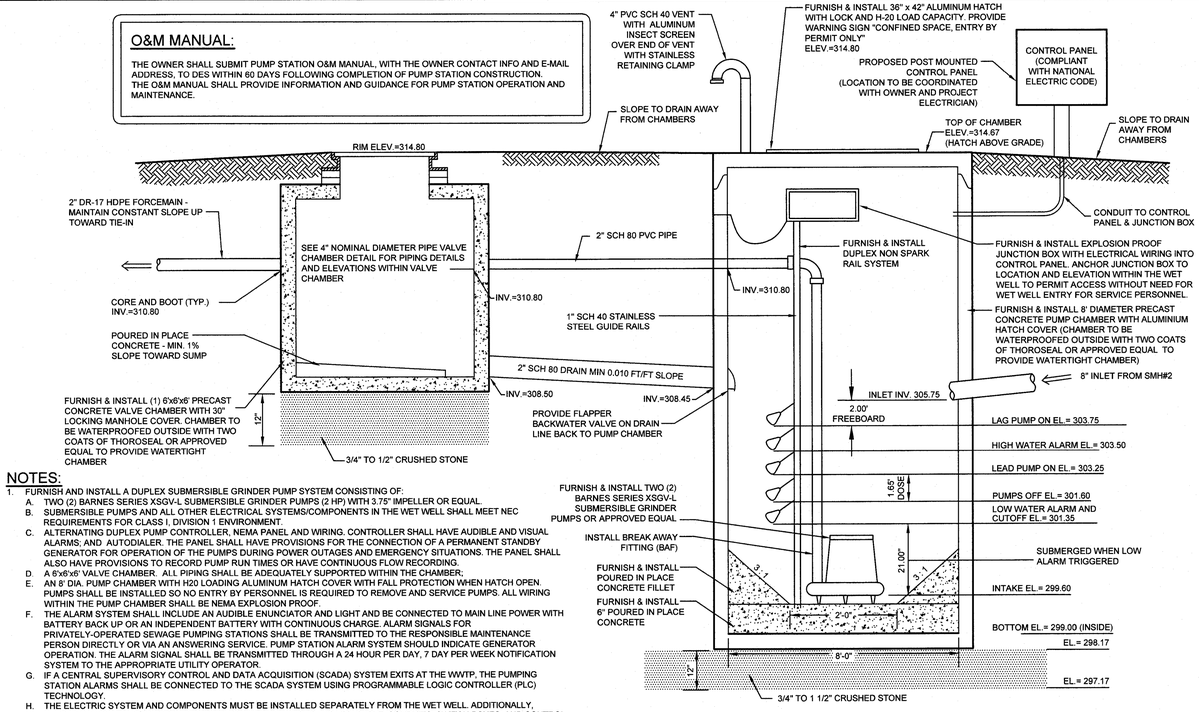
NOTES:
1. ALL PIPE AND FITTINGS SHALL BE PRESSURE RATED.
2. ALL HDPE PIPE MUST MEET THE REQUIREMENTS OF ENV-WQ 704.08(d) ASTM D3035-22 OR ASTM F714-24.
3. EXTEND PRESSURE-RATED HDPE PIPE TO THE MANHOLE.



FORCE MAIN CONNECTION TO GRAVITY SERVICE DETAIL
NOT TO SCALE

O&M MANUAL:

THE OWNER SHALL SUBMIT PUMP STATION O&M MANUAL, WITH THE OWNER CONTACT INFO AND E-MAIL ADDRESS, TO DES WITHIN 60 DAYS FOLLOWING COMPLETION OF PUMP STATION CONSTRUCTION. THE O&M MANUAL SHALL PROVIDE INFORMATION AND GUIDANCE FOR PUMP STATION OPERATION AND MAINTENANCE.



VALVE CHAMBER AND PUMP CHAMBER SECTION DETAIL
NOT TO SCALE

NOTES:
1. FURNISH AND INSTALL A DUPLEX SUBMERSIBLE GRINDER PUMP SYSTEM CONSISTING OF:
   A. TWO (2) BARNES SERIES XSGV-L SUBMERSIBLE GRINDER PUMPS (2 HP) WITH 3.75" IMPELLER OR EQUAL.
   B. SUBMERSIBLE PUMPS AND ALL OTHER ELECTRICAL SYSTEMS/COMPONENTS IN THE WET WELL SHALL MEET NEC REQUIREMENTS FOR CLASS I, DIVISION 1 ENVIRONMENT.
   C. ALTERNATING DUPLEX PUMP CONTROLLER, NEMA PANEL AND WIRING. CONTROLLER SHALL HAVE AUDIBLE AND VISUAL ALARMS; AND AUTODIALER. THE PANEL SHALL HAVE PROVISIONS FOR THE CONNECTION OF A PERMANENT STANDBY GENERATOR FOR OPERATION OF THE PUMPS DURING POWER OUTAGES AND EMERGENCY SITUATIONS. THE PANEL SHALL ALSO HAVE PROVISIONS TO RECORD PUMP RUN TIMES OR HAVE CONTINUOUS FLOW RECORDING.
   D. A 6'x6'x6' VALVE CHAMBER. ALL PIPING SHALL BE ADEQUATELY SUPPORTED WITHIN THE CHAMBER.
   E. AN 8' DIA. PUMP CHAMBER WITH H20 LOADING ALUMINUM HATCH COVER WITH FALL PROTECTION WHEN HATCH OPEN. PUMPS SHALL BE INSTALLED SO NO ENTRY BY PERSONNEL IS REQUIRED TO REMOVE AND SERVICE PUMPS. ALL WIRING WITHIN THE PUMP CHAMBER SHALL BE NEMA EXPLOSION PROOF.
   F. THE ALARM SYSTEM SHALL INCLUDE AN AUDIBLE ENUNCIATOR AND LIGHT AND BE CONNECTED TO MAIN LINE POWER WITH BATTERY BACK UP OR AN INDEPENDENT BATTERY WITH CONTINUOUS CHARGE. ALARM SIGNALS FOR PRIVATELY-OPERATED SEWAGE PUMPING STATIONS SHALL BE TRANSMITTED TO THE RESPONSIBLE MAINTENANCE PERSON DIRECTLY OR VIA AN ANSWERING SERVICE. PUMP STATION ALARM SYSTEM SHOULD INDICATE GENERATOR OPERATION. THE ALARM SIGNAL SHALL BE TRANSMITTED THROUGH A 24 HOUR PER DAY, 7 DAY PER WEEK NOTIFICATION SYSTEM TO THE APPROPRIATE UTILITY OPERATOR.
   G. IF A CENTRAL SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEM EXITS AT THE WWTP, THE PUMPING STATION ALARMS SHALL BE CONNECTED TO THE SCADA SYSTEM USING PROGRAMMABLE LOGIC CONTROLLER (PLC) TECHNOLOGY.
   H. THE ELECTRIC SYSTEM AND COMPONENTS MUST BE INSTALLED SEPARATELY FROM THE WET WELL. ADDITIONALLY, ELECTRICAL SYSTEMS AND COMPONENTS, INCLUDING MOTORS, LIGHTS, CABLE, CONDUITS, SWITCH BOXES, AND CONTROL CIRCUITS SHALL BE PROTECTED FROM FLOODING IN ACCORDANCE WITH ENV-WQ 705.01.
2. ALL CHAMBERS SHALL BE H-20 LOAD RATED.
3. THE WET WELL SHALL BE LEAK TESTED USING METHOD ACI 350.1 METHOD HST-NML.
4. ALL PIPING SHALL BE ADEQUATELY SUPPORTED SO VALVES CAN BE REMOVED WITHOUT REMOVING ALL PIPING.
5. ALL CORED OR CAST OPENINGS SHALL HAVE APPROVED KOR-N-SEAL OR EQUAL BOOTS.
6. ALL PIPING WITHIN PUMP AND VALVE CHAMBERS SHALL BE SCH 80 PVC PIPE.
7. PUMP, CONTROLLER, AND CHAMBER PIPING SHALL BE INSTALLED BY A COMPANY WITH EXPERIENCE IN INSTALLING BOTH WIRING AND PLUMBING FOR SUBMERSIBLE PUMPS.
8. IN THE EVENT THAT MAINTENANCE WHICH REQUIRES DIRECT ENTRY TO THE PUMP STATION IS NECESSARY, A BLOWER WILL BE USED TO EXCHANGE THE AIR IN THE STRUCTURE PRIOR TO ENTRY.
9. PUMP CHAMBER TO COMPLY WITH THE REQUIREMENTS LISTED IN ENV-WQ 704.10(C-9) AND 705.11.
10. A SUITABLE RECEPTACLE SHALL BE INCLUDED IN THE ELECTRICAL SUPPLY PANEL FOR CONNECTION TO A PORTABLE GENERATOR WITH MANUAL TRANSFER.

FLOW CALCULATIONS:

PROPOSED TOWNHOUSES ((1) 5-UNIT, 2 BEDROOM TOWNHOUSE AND (1) 7-UNIT, 2 BEDROOM TOWNHOUSE):
150 GPD/BEDROOM 8 24 BEDROOMS = 3,600 GPD

INFILTRATION:
300 GAL/ID/DAY/MILE X 222 FT X 8 IN/5,280 FT/MILE = 100 GPD
TOTAL FLOW = 3,700 GPD (2.57 GPM)

PUMP CHAMBER VOLUME CALCULATIONS:

PROPOSED TOTAL DAILY FLOW = 3,700 GPD (2.57 GPM)
DOSING VOLUME = 617 GAL (6 DOSES/DAY)
VOLUME OF 8' DIA. CHAMBER
4²x 3.14 x 1 FT = 50.27 CF/VF
50.27 CF/VF x 7.48 GAL/CF = 376 GAL/VF

PUMP CALCULATIONS:

PUMP DESIGN FLOW IS 35 GPM
TOTAL STATIC HEAD IS 12.5 FEET
TOTAL DYNAMIC HEAD IS 20.1 FEET
TOTAL EQUIVALENT LENGTH IS:
TOTAL FORCEMAIN LENGTH = 700 FT
TOTAL FRICTION LOSS = 43.80
TOTAL PIPE EQUIVALENT = 743.80

PUMP CHAMBER ANTI-FLOATATION CALCULATIONS:

WEIGHT OF PUMP CHAMBER
FLAT TOP = 11,225 #
(1) - 4' RISER = 12,204 #
(1) - 6' RISER = 18,306 #
(1) - 5'-6" BASE = 24,790 #
(1) - FILLET = 3,534 #
(1) - 6' SLAB = 3,770 #
TOTAL = 73,829 #

WEIGHT OF DISPLACED WATER 70.9 SF x 16.50 VF x 62.4 #/CF = 72,999 #

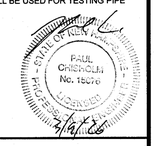
73,829 # > 72,999 # THEREFORE OK

SEWER FORCE MAIN CONSTRUCTION:
1. PER ENV-WQ 704.04(j) ALL FORCE MAINS SHALL BE RATED TO WITHSTAND 2.5 TIMES DESIGN DYNAMIC HEAD.
2. PER ENV-WQ 704.07(a) FORCE MAINS SHALL FLOW AT 3FPS OR GREATER FOR CONSTANT SPEED PUMPS AND PER ENV-WQ 704.07(b) FLOW AT 2FPS OR GREATER AT AVERAGE DAILY DESIGN FLOW FOR VARIABLE SPEED PUMPS.
3. FORCE MAINS SHALL BE 4 INCHES OR LARGER IN NOMINAL DIAMETER. PRESSURE SEWERS SHALL BE 1.5 INCHES OR LARGER IN NOMINAL DIAMETER.
4. MINIMUM ALLOWABLE PRESSURE SEWER PIPE SIZES AND CORRESPONDING FLOW RATE SHALL BE AS SET FORTH BELOW:

# OF CONNECTIONS SERVED	ESTIMATED PEAK FLOW (GPM)	MINIMUM PIPE SIZE (INCHES)
1 TO 3	15	1.5
4 TO 10	20	2
11 TO 30	30	3
31 TO 150	90	4

5. FORCE MAINS SHALL ENTER THE GRAVITY SEWER SYSTEM AT THE FLOW LINE OF THE RECEIVING MANHOLE.
6. FORCE MAINS SHALL BE PROVIDED WITH A DRAINAGE BLOW-OFF AT EACH LOW POINT THAT:
   A. HAS A PROPERLY VALVED CONNECTION FOR A VACUUM TRUCK OR OTHER SUITABLE CONTAINMENT DEVICE; AND
   B. IS INSTALLED WITHIN A MANHOLE STRUCTURE THAT MEETS THE DESIGN REQUIREMENTS OF ENV-WQ 704.12 THROUGH ENV-WQ 704.17, WITH SUFFICIENT SPACE FOR HANDLING THE DISPLACED WASTE WITHOUT DANGER OF POLLUTION OR HEALTH HAZARD.
7. FORCE MAINS SHALL BE DESIGNED IN ACCORDANCE WITH ENV-WQ 704.07, CONSTRUCTED WITH MATERIALS AS SPECIFIED IN ENV-WQ 704.08, AND TESTED AS SPECIFIED IN ENV-WQ 704.09.
8. PRESSURE SEWERS SHALL BE DESIGNED IN ACCORDANCE WITH ENV-WQ 704.07 AND ENV-WQ 704.20, CONSTRUCTED WITH MATERIALS AS SPECIFIED IN ENV-WQ 704.08, AND TESTED AS SPECIFIED IN ENV-WQ 704.09.
9. THRUST BLOCKS MADE FROM INORGANIC, CORROSION-RESISTANT MATERIAL SHALL BE PLACED AT ALL BENDS, ELBOW, TEES AND JUNCTIONS.
10. FORCE MAINS SHALL MEET TRENCH AND BEDDING REQUIREMENTS OF GRAVITY SEWERS.
11. FORCE MAINS SHALL BE CONSTRUCTED FROM DUCTILE IRON, HIGH DENSITY POLYETHYLENE, OR PVC PER ENV-WQ 704.08(a).
    PVC SHALL BE CERTIFIED BY ITS MANUFACTURER AS CONFORMING TO ASTM D2241 OR ASTM D1785.
    HDPE SHALL BE CERTIFIED BY ITS MANUFACTURER AS CONFORMING TO ASTM D3035.
    D.I. SHALL BE CORROSION PROTECTED IN CORROSIVE ENVIRONMENTS.
12. FORCE MAINS SHALL BE TESTED IN ACCORDANCE WITH SECTION 5 OF AWWA C600 AT 1.5 DESIGN DYNAMIC PRESSURE OR 100 PSI, WHICHEVER IS GREATER, PER ENV-WQ 704.09.

SEWER TESTING NOTES:
1. ALL NEW SEWERS, MANHOLES AND FORCE MAINS SHALL PASS NHDES ENV-WQ 704.06, 704.09 OR 704.17 TESTING.
2. LOW PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH THE FOLLOWING TESTING STANDARDS IN EFFECT AT THE TIME THE TEST IS CONDUCTED:
   A. ASTM F1417 "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW-PRESSURE AIR." AVAILABLE AS NOTED IN APPENDIX D, OR
   B. UNI-BELL PVC PIPE ASSOCIATION UNI-B-6, "LOW-PRESSURE AIR TESTING OF INSTALLED SEWER PIPE," AVAILABLE AS NOTED IN APPENDIX D.
3. ALL NEW GRAVITY SEWERS SHALL BE:
   A. CLEANED AND VISUALLY INSPECTED USING A LAMP TEST AND BY INTRODUCING WATER TO DETERMINE THAT THERE IS NO STANDING WATER IN THE SEWER; AND
   B. TRUE TO LINE AND GRADE FOLLOWING INSTALLATION AND PRIOR TO USE.
4. FORCE MAINS SHALL BE TESTED IN ACCORDANCE WITH SECTION 5 OF AWWA C600 "INSTALLATION OF CAST IRON WATER MAINS AND THEIR APPURTENANCES." AT A PRESSURE EQUAL TO 150% OF THE DESIGN OPERATING TOTAL DYNAMIC HEAD OR AT LEAST 100 PSI.
5. MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST IN ACCORDANCE WITH ASTM C1244.
6. THE MANHOLE VACUUM TEST SHALL CONFORM TO THE FOLLOWING:
   A. THE INITIAL VACUUM GAUGE TEST PRESSURE SHALL BE 10" HG; AND
   B. THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR A 1" HG PRESSURE DROP TO 9" HG SHALL BE:
      1. NOT LESS THAN 2 MINUTES FOR MANHOLES LESS THAN 10 FEET IN DEPTH;
      2. NOT LESS THAN 2 1/2 MINUTES FOR MANHOLES 10 -15 FEET DEEP; AND
      3. NOT LESS THAN 3 MINUTES FOR MANHOLES MORE THAN 15 FEET DEEP.
7. THE MANHOLE SHALL BE REPAIRED AND RE-TESTED IF THE TEST HOLD TIMES FAIL TO ACHIEVE THE ACCEPTANCE LIMITS SPECIFIED IN NOTE #6 ABOVE.
8. ALL PLASTIC SEWER PIPE SHALL BE DEFLECTION TESTED NOT LESS THAN 30 DAYS NOR MORE THAN 90 DAYS FOLLOWING INSTALLATION.
9. THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 7-1/2% OF AVERAGE INSIDE DIAMETER.
10. THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5 PERCENT OF AVERAGE INSIDE DIAMETER. A RIGID BALL OR MANDREL WITH A DIAMETER OF AT LEAST 95 PERCENT OF THE AVERAGE INSIDE PIPE DIAMETER SHALL BE USED FOR TESTING PIPE DEFLECTION. THE DEFLECTION TEST SHALL BE CONDUCTED WITHOUT MECHANICAL PULLING DEVICES.



OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

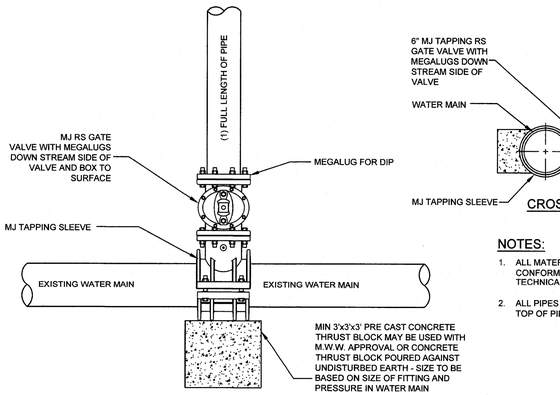
CONSTRUCTION DETAILS
ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 16 OF 20



LARGE SERVICE AND/OR TAPPING SLEEVE DETAIL

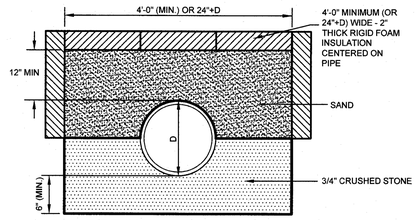
NOT TO SCALE

(MARCH 2008)

CROSS-SECTION

NOTES:

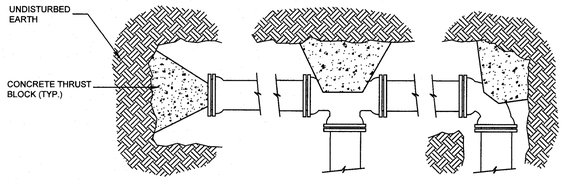
1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO MANCHESTER WATER WORKS, INC. TECHNICAL SPECIFICATIONS.
2. ALL PIPES SHOULD HAVE A MINIMUM DEPTH OF 5'-6" FROM TOP OF PIPE TO FINISH GRADE.



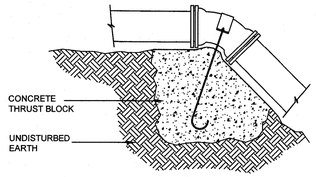
PIPE INSULATION DETAIL

(REDUCTION IN COVER)

NOT TO SCALE



PLAN - HORIZONTAL BENDS, TEES AND PLUGS



ELEVATION - VERTICAL BENDS

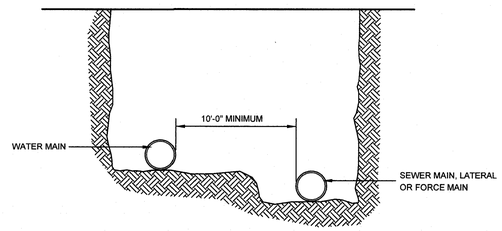
NOTES

1. THRUST BLOCK DIMENSIONS TO BE DETERMINED IN FIELD BY ENGINEER BASED ON PIPE SIZE, WATER PRESSURE AND SOIL TYPE.
2. STONE BACKING MAY BE SUBSTITUTED FOR CONCRETE THRUST BLOCKS PROVIDED THE STONE(S) ARE OF EQUAL SIZE AND BEAR ON UNDISTURBED EARTH.
3. USE OF JOINT RESTRAINT SYSTEMS SHALL NOT ELIMINATE THRUST BLOCK REQUIREMENTS (WHERE POSSIBLE).

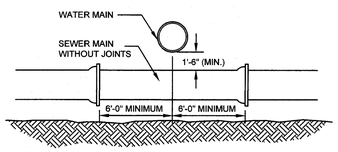
THRUST BLOCKS

NOT TO SCALE

(MARCH 2008)



PARALLEL INSTALLATION

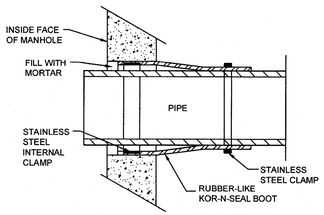


MAIN CROSSINGS

WATER PIPE/SEWER PIPE SEPARATION

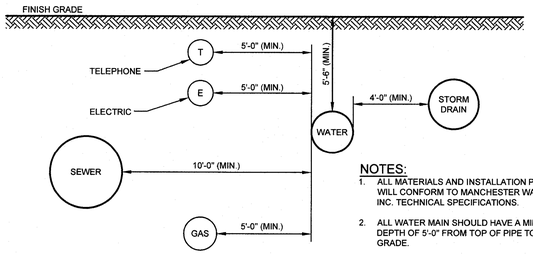
NOT TO SCALE

(MARCH 2008)



KOR-N-SEAL JOINT SLEEVE

(OR ACCEPTABLE SUBSTITUTE)

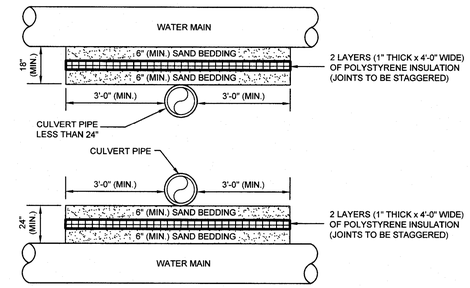


NOTES:

1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO MANCHESTER WATER WORKS, INC. TECHNICAL SPECIFICATIONS.
2. ALL WATER MAIN SHOULD HAVE A MINIMUM DEPTH OF 5'-0" FROM TOP OF PIPE TO FINISH GRADE.
3. SEE DETAIL FOR TRENCH SPECIFICATIONS.
4. SEE DETAIL FOR OUTSIDE SERVICE ENTRANCE SPECIFICATIONS.

UTILITY SEPARATION (MAIN) DETAIL

NOT TO SCALE



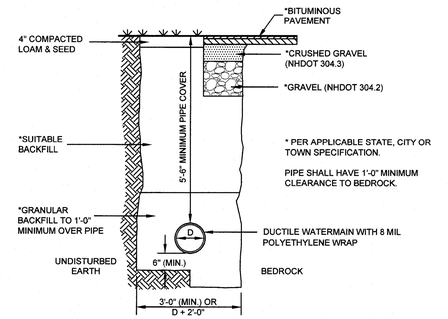
NOTES:

1. INSULATION TO BE USED WHERE PIPE SEPARATION IS 24" OR LESS.

WATER PIPE CROSSING INSULATION DETAIL

NOT TO SCALE

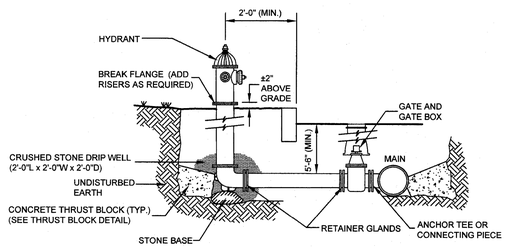
(JUNE 2012)



WATER LINE TRENCH DETAIL

NOT TO SCALE

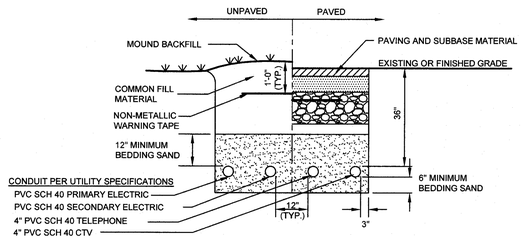
(MARCH 2008)



HYDRANT INSTALLATION

NOT TO SCALE

(MARCH 2008)

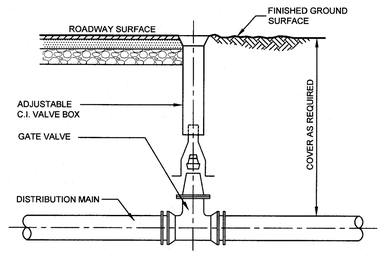


NOTE:

1. INSTALLATION AND MATERIALS OF UNDERGROUND UTILITIES SHALL CONFORM TO LOCAL UTILITY COMPANY SPECIFICATIONS.
2. BACKFILL MAY BE MADE WITH EXCAVATED MATERIAL OR COMPARABLE; UNLESS MATERIAL IS DEEMED UNSUITABLE BY THE COMPANY. BACKFILL SHALL BE FREE OF FROZEN LUMPS, ROCKS OR STONES 2" MAXIMUM IN DIMENSION, DEBRIS, AND RUBBISH. ORGANIC MATERIAL SHALL NOT BE USED AS BACKFILL. BACKFILL SHALL BE THOROUGHLY COMPACTED IN SIX-INCH LAYERS. BACKFILL SHALL BE COMPACTED AND SHALL BE COMPLETED BEFORE THE COMPANY SCHEDULES CABLE INSTALLATION.
3. THE TRENCH SHALL BE IN AS DIRECT A LINE AS POSSIBLE WITHOUT REVERSE BENDS FROM THE DISTRIBUTION FACILITY TO THE CUSTOMER SERVICE ENTRANCE. TO MINIMIZE CABLE PULLING FORCES, NO MORE THAN TWO BENDS (NOT INCLUDING RISER AT HOUSE OR POLE) EXCEEDING A TOTAL COMBINED CHANGE OF 45 DEGREES SHALL BE PERMITTED.
   - 3.1. TRENCH SHALL BE OF SUCH DEPTH TO ACCOMMODATE 30" MINIMUM COVER FOR SERVICE CABLES IN CONDUIT.
   - 3.2. TO PREVENT THE CONDUIT FROM BEING PULLED OUT OF THE METER BOX, CONDUIT SHALL BE INSTALLED ON VIRGIN OR WELL TAMPED SOIL. TRENCH BOTTOM SHALL BE UNDISTURBED OR RELATIVELY SMOOTH EARTH, WELL TAMPED, AND FREE OF ANY DEBRIS THAT MAY BE DETRIMENTAL TO THE CONDUIT.

UTILITY TRENCH DETAIL

NOT TO SCALE



WATER AND GAS GATE VALVE

NOT TO SCALE

(MARCH 2008)

3/9/26

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

CONSTRUCTION DETAILS

ROCK ROAD TOWNHOMES

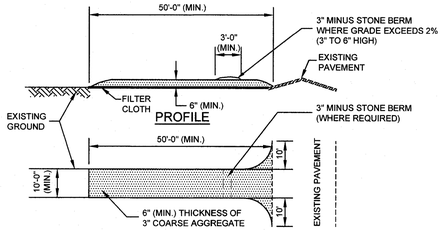
MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 17 OF 20



PLAN VIEW

MAINTENANCE:

MUD AND SOIL PARTICLES WILL EVENTUALLY CLOG THE VOIDS IN THE CRUSHED STONE AND THE EFFECTIVENESS OF THE CRUSHED STONE PAD WILL NOT BE SATISFACTORY. WHEN THIS OCCURS, THE PAD SHOULD BE TOPDRESSED WITH NEW CRUSHED STONE OR COMPLETE REPLACEMENT OF THE PAD MAY BE NECESSARY WHEN THE PAD BECOMES COMPLETELY CLOGGED.

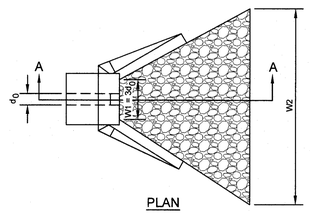
IF WASHING FACILITIES ARE USED, THE SEDIMENT TRAPS SHOULD BE CLEANED OUT AS OFTEN AS NECESSARY TO ASSURE THAT ADEQUATE TRAPPING EFFICIENCY AND STORAGE VOLUME IS AVAILABLE. VEGETATIVE FILTER STRIPS SHOULD BE MAINTAINED TO INSURE A VIGOROUS STAND OF VEGETATION AT ALL TIMES.

CONSTRUCTION SPECIFICATIONS:

1. STONE FOR A STABILIZED CONSTRUCTION EXIT SHALL BE 3 INCH STONE, RECLAIMED STONE OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED EXIT SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED EXIT SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE EXIT SHALL NOT BE LESS THAN THE FULL WIDTH OF THE AREA WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION EXIT SHALL BE PIPED BENEATH THE EXIT. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY . WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

STABILIZED CONSTRUCTION EXIT DETAIL

NOT TO SCALE



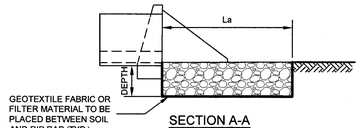


TABLE 7-24 -- RECOMMENDED RIP RAP GRADATION RANGES

PERCENT OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE
100%	1.5 TO 2.0 d50
85%	1.3 TO 1.8 d50
50%	1.0 TO 1.5 d50
15%	0.3 TO 0.5 d50

LOCATION	La	W1	W2	d50	DEPTH
HW#2	9'	4'	13'	3"	8"

PIPE OUTLET PROTECTION

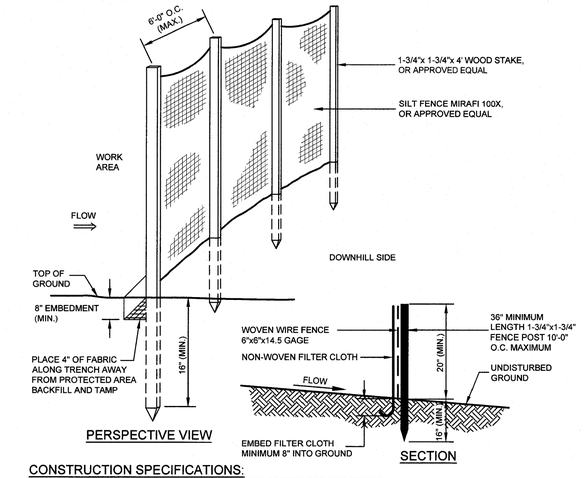
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS:

1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK OR GRAVEL USED FOR FILTER OR RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
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.

MAINTENANCE:

THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR RAIN EVENT. IF THE RIP RAP HAS BEEN DISPLACED, UNDERMINED, OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.



CONSTRUCTION SPECIFICATIONS:

1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIE OR STAPLES WHERE NOTED OR AS DIRECTED BY DESIGN ENGINEER.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MIDSECTION AND BOTTOM.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED AND STAPLED.
6. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE 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 INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
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

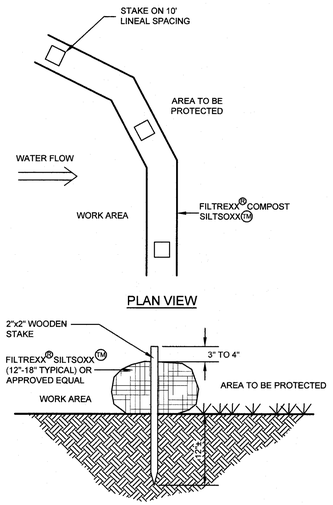
NOTES:

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 (#5) 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, COMPOSTED BARK OR EQUIVALENT MANUFACTURED PRODUCTS.
5. **WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS SHALL NOT BE USED AS THE ORGANIC MATERIAL.**
6. THE MIX SHALL NOT CONTAIN SILTS, CLAYS OR FINE SANDS.
7. THE MIX SHALL HAVE A PARTICLE SIZE BY WEIGHT OF 70 TO 85% PASSING A 6" SCREEN AND A MAXIMUM OF 85% PASSING THE 0.75" 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.

EROSION CONTROL MIX BERM DETAIL

NOT TO SCALE



PLAN VIEW

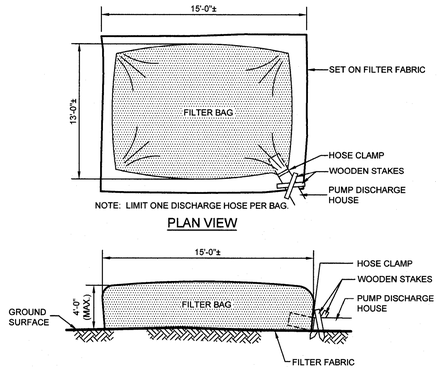
SECTION VIEW

NOTES:

1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. SILTSOXX™ COMPOST/SOIL/ROCK/SEED FILL TO MEET APPLICATION REQUIREMENTS.
3. SILTSOXX™ DEPICTED IS FOR MINIMUM SLOPES. GREAT SLOPES MAY REQUIRE LARGER SOCKS PER THE ENGINEER.
4. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.
5. MAY BE USED IN PLACE OF SILT FENCE OR IN COMBINATION WITH SILT FENCE

FILTREXX® SILTSOXX™ DETAIL

NOT TO SCALE



NOTES:

FILTER BAGS SHALL MEET THE FOLLOWING SPECIFICATIONS AND ADHERE TO THE FOLLOWING GUIDELINES:

- THEY ARE CONSTRUCTED OF A NON-WOVEN GEOTEXTILE FABRIC.
- ONLY ONE SIX-INCH DISCHARGE HOSE WILL BE ALLOWED PER FILTER BAG.
- BAG CAPACITY WILL BE EXCEEDED BEYOND 2,000 GALLONS PER MINUTE.
- TYPICAL, RECOMMENDED BAG DIMENSIONS ARE 15 FEET BY 13.25 FEET.
- TO HELP PREVENT PUNCTURES, GEOTEXTILE FABRICS SHALL BE PLACE BENEATH THE FILTER BAG WHEN USED IN WOODED LOCATIONS.
- HOSE CLAMPS SHALL BE USED TO SECURE THE DISCHARGE HOSE TO THE FILTER BAG.

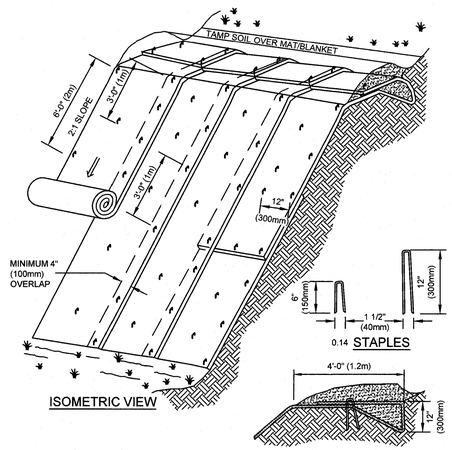
WHEN MAINTAINING FILTER BAGS TO ENSURE PROPER FUNCTION, THE FOLLOWING CONDITIONS SHALL APPLY:

- PRIOR TO REMOVING THE BAG FROM THE HOSE, THE BAG WILL BE TIED OFF BELOW THE END OF THE HOSE, ALLOWING THE BAG TO DRAIN.
- TO AVOID RUPTURE, THE BAGS WILL BE ATTENDED AND PUMPING RATES MONITORED.
- ONCE THE BAG IS INFLATED TO A HEIGHT OF FOUR (4) FEET, PUMPING SHALL STOP TO AVOID RUPTURE.
- FILTER BAGS USED DURING CONSTRUCTION SHALL BE BUNDLED AND REMOVED FOR PROPER DISPOSAL.

FILTER BAGS FOR DEWATERING DISCHARGE

NOT TO SCALE

(AUGUST 2013)



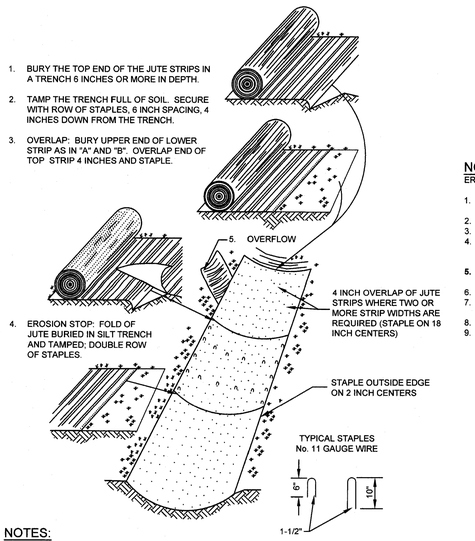
NOTES:

1. MATS/BLANKETS SHALL BE DOUBLE NET BIODEGRADABLE EROSION CONTROL BLANKETS BY NORTH AMERICAN GREEN OR EQUAL.
2. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/ BLANKETS SHALL HAVE GOOD SOIL CONTACT.
3. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
4. MATS/BLANKETS SHOULD BE INSTALLED VERTICALLY DOWNSLOPE.
5. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
6. THERE SHALL BE NO PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN ¼ INCHES MATERIAL UTILIZED (NOT APPLICABLE TO TURF REINFORCEMENT MATS)
7. TURF REINFORCEMENT MATS SHALL BE COVERED WITH SOIL TO PREVENT EXPOSURE OF THE MATS TO THE SURFACE.

EROSION CONTROL BLANKETS - SLOPE INSTALLATION

NOT TO SCALE

1. BURY THE TOP END OF THE JUTE STRIPS IN A TRENCH 6 INCHES OR MORE IN DEPTH.
2. TAMP THE TRENCH FULL OF SOIL. SECURE WITH ROW OF STAPLES, 6 INCH SPACING, 4 INCHES DOWN FROM THE TRENCH.
3. OVERLAP: BURY UPPER END OF LOWER STRIP AS IN "A" AND "B". OVERLAP END OF TOP STRIP 4 INCHES AND STAPLE.
4. EROSION STOP: FOLD OF JUTE BURIED IN SILT TRENCH AND TAMPED; DOUBLE ROW OF STAPLES.



NOTES:

1. THERE SHALL BE NO PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN ¼ INCHES MATERIAL UTILIZED (NOT APPLICABLE TO TURF REINFORCEMENT MATS)
2. TURF REINFORCEMENT MATS SHALL BE COVERED WITH SOIL TO PREVENT EXPOSURE OF THE MATS TO THE SURFACE.

EROSION CONTROL BLANKETS - SWALE INSTALLATION

NOT TO SCALE

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

CONSTRUCTION DETAILS

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 18 OF 20

STORMWATER
OPERATION & MAINTENANCE PLAN

Rock Road Townhomes

Map 17; Lot 25
295 Rockingham Road
Londonderry, New Hampshire

February 20, 2026

KNA Project No. 21-0113-1

KEACH-NORDSTROM ASSOCIATES, INC.

TABLE OF CONTENTS:

I. General
- Introduction
- General Maintenance Requirements

II. Supporting Documents
- Annual Inspection & Maintenance Reporting Form
- Long-Term Inspection & Maintenance Plan Checklist
- Long-Term Inspection & Maintenance Log
- Anti-Icing Route Data Form

III. Control of Invasive Plants
- Invasive Plant Guide

IV. Stormwater Practice Location Plan
- 11"x17" "Grading and Drainage Plan"

I. General

Introduction

The project owner or their assigned heirs will maintain the stormwater treatment facilities during construction. The owner of the project is Page Rock, LLC, 5 Hutchings Drive, Suite 5D, Hollis, NH 03049. Upon completion of construction, the Condominium Association will assume ownership of long-term maintenance.

The subject property is referenced on Londonderry's Tax Map 17 as Lot 25. Any transfer of responsibility for inspection and maintenance activities or transfer of ownership shall be documented to the Town of Londonderry in writing. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction. Long-term operation and maintenance for the stormwater management facilities are presented below.

Maintenance will be performed as described unless and until the system is formally accepted by a municipality or quasi-municipal district or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system.

Post Construction:

The following standards will be met after construction is complete:

Documentation:

A maintenance log will be kept summarizing inspections, maintenance, and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean out of any sediments or debris, the location where the sediment and debris was disposed after removal will be indicated. The following forms shall be submitted to the Londonderry Department of Engineering on an annual basis.

Maintenance Requirements

Stormwater Ponds:
- 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.
- System embankments should be mowed periodically to maintain grass cover and any other vegetation found on the embankment should be removed at each inspection.
- Trash and debris found within the pond or in the outlet structure should be removed at each inspection.
- Removal of accumulated sediment
- Inspection and repair of embankments, inlet and outlet structures, and appurtenances

Sediment Forebays:
- Forebays help reduce the sediment load to downstream BMP's and will therefore require more frequent cleaning.
- Systems should be inspected at least annually.
- Conduct periodic mowing of embankments (generally two times per year) to control growth of woody vegetation.
- Trash and debris should be removed at each inspection.
- Accumulated sediment should be removed as warranted by such inspection.
- Install and maintain a staff gage or other measuring device, to indicate depth of sediment accumulation and level at which clean-out is required.

Outlet Protection:
- Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.

General:
- Sweeping will be checked quarterly and completed as needed.
- If any invasive species begin to grow in the stormwater management practices the species shall be disposed of in an appropriate manner that will not allow the pest to survive or spread. The disposal of such species shall be witnessed or approved by a state inspector. Methods for disposal may include, but not be limited to:
  - Encapsulating the plant(s) in plastic bags and disposing of the plant material in one of the following ways:
    - Discarding in trash pickup;
    - Open burning;
    - Incineration; or
    - Burial of infested nursery.

Landscape Management:
Objective: To maintain lawns and plantings to ensure survival, vigorous growth with proper nutrients, pest management and the avoidance of environmental stress such as drought.

1. Lawns & grass areas:
   a. The turfgrass mix selected for lawn areas will be varieties that are qualified, A.-L.I.S.T. (Alliance for Low Input Sustainable Turf) or TWCA (Turfgrass Water Conservation Alliance). These organizations have high testing standards to insure lower fertilizer and pesticide inputs, lower water requirements, heat and drought tolerance.
   b. The lawn maintenance will be done by an experienced contractor.
   c. Nutrients will be applied to achieve a successful stand of turf following NH RSA 431
   d. Soil samples will be taken annually to help identify direct nutrient deficiencies and or excesses which will dictate annual nutrient program. Soil test will include, Organic matter, Phosphorus levels, pH, pH buffer, cation exchange capacity, cation base saturations and soil texture.
   e. Integrated pest management (IPM) practices will be followed to determine tolerable pest population levels. Treatments will be made as necessary based on pest thresholds.
   f. Grass varieties will need less watering by nature but the option of natural occurring moisture management product treatments to conserve water are available during periods of severe drought to ensure survival of the turf.
   g. Grass will be mowed as needed to a 2.5" – 3 "height depending on seasonal conditions.
   h. Grass will be watered as needed.
2. Trees & Shrubs:
   a. Initial plant installation will be a key factor to long-term survival and success
   b. Tree & shrub installation shall be performed in accordance with the growers' requirements.
   c. The tree & shrub maintenance will be done by an experienced contractor.
   d. As with the grass area, integrated pest management (IPM) practices will be followed to determine tolerable pest population levels. Treatments will be made as necessary based on pest thresholds.
   e. Trees & shrubs will be fertilized in the fall utilizing deep root feeding with a high percentage of organically derived nutrient sources.
   f. Watering will be done as needed throughout the season, especially during very dry periods to ensure plant survival.
3. Planting beds:
   a. Planting bed maintenance will be done by an experienced contractor.
   b. Planting beds will be mulched in the spring for reduced weed encroachment and water holding capacity to aid in plant survival and success.
   c. Beds will be weeded periodically as needed.
   d. Flowering annuals will be planted in the spring to add natural color.
   e. Annuals will be removed once the season is completed.

Snow and Ice Management:
Objective: To maintain all paved areas to be free of snow, in a timely manner after every snow event. Ensure bare pavement with no residual ice to ensure occupant safety. Utilize best management practices and products to comply with NHDES Green SnowPro under RSA 489-C. The snow and ice removal contractor shall document the management process in accordance with the requirements of RSA 489-C and the certification guidelines.

1. Snow plowing:
   a. Snow plowing will be done by a Certified NHDES Green SnowPro contractor.
   b. The driveway & parking lot will be plowed as needed during and after every snow event.
   c. Snow will be stockpiled in locations identified on the approve landscape plan.
   d. Walkways and entrances will be shoveled, or snow blown depending on snow volume.
   e. In the event of a higher than usual snow fall, snow will be trucked off-site to an approved snow stockpile facility.
   f. The property owner shall be responsible for reporting the annual salt usage to NHDES.
2. Ice control:
   a. Ice control will be done by a Certified NHDES Green SnowPro contractor.
   b. The objective is to obtain bare and dry pavements at the earliest practical time following cessation of a storm.
   c. Ice melting products will be used as necessary to prevent "slip & fall" incidents as well and maintain motor vehicle control.
   d. Snow and Ice Management will follow NHDES Green SnowPro guidelines under RSA 489-C.
   e. Magic Salt ® by ProMelt, or equal, will be the primary ice melting product. Can melt ice to temperatures as low as - 25°F. Manufactured with a combination feed grade molasses and magnesium chloride. Long lasting performance reduces re-application frequency.
   f. ProMelt Mag liquid, or equal, will also be used in low volumes as a pre-treat per manufactures recommendations. This practice is a similar practice used by NH DOT. ProMelt Mag is a high-performance magnesium chloride liquid that delivers a strong residual effect on road surfaces, improves melting and results in long lasting performance.

Annual Inspection and Maintenance Reporting Form
for
Rock Road Townhomes
Londonderry, New Hampshire

Date: _____

To: Page Rock LLC

Re: Certification of Inspection and Maintenance; Submittal of Forms

Property Name: Rock Road Townhomes

Property Address: 295 Rockingham Road, Londonderry, NH

Contact Name: _____

Contact Phone #: _____

Contact Email Address: _____

I verify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Operation & Maintenance Plan associated with the above referenced property.

The required Long-Term Inspection & Maintenance Plan Checklist is attached to this form.

_____ _____
Name of Party Responsible for Inspection & Maintenance Date

_____
Authorized Signature

Long-Term Inspection & Maintenance Plan Checklist
Rock Road Townhomes – Londonderry, NH

Current Owner Name:	Date:	
Business Address:	Inspector:	
Weather:		
Date of Last Rainfall:	Amount:	Inches:

Best Management Practice

Detention Pond #1 — Reason for Inspection: Spring ☐ Fall/Yearly ☐ Spring ☐

Maintenance Required? Corrective Action Needed & Notes:	Yes ☐ No ☐
Sideslopes & berms need repair?	Yes ☐ No ☐
Clean inlet & outlet structures?	Yes ☐ No ☐

Attach Photos

Detention Pond #2 — Reason for Inspection: Spring ☐ Fall/Yearly ☐ Spring ☐

Maintenance Required? Corrective Action Needed & Notes:	Yes ☐ No ☐
Sideslopes & berms need repair?	Yes ☐ No ☐
Clean inlet & outlet structures?	Yes ☐ No ☐

Attach Photos

Sediment Forebays — Reason for Inspection: Spring ☐ Fall/Yearly ☐ After Major Storm ☐

Maintenance Required? Corrective Action Needed & Notes:	Yes ☐ No ☐

Attach Photos

Outlet Protection	Reason for Inspection: Spring ☐ Fall/Yearly ☐ After Major Storm ☐
HW#2 Maintenance Required? Corrective Action Needed & Notes:	Yes ☐ No ☐
Detention Pond #1 Weir Outlet Maintenance Required? Corrective Action Needed & Notes:	Yes ☐ No ☐

Attach Photos

Lawn Areas and Landscaping	Reason for Inspection: Spring ☐ Fall/Yearly ☐ After Major Storm ☐
Maintenance Required? Corrective Action Needed & Notes:	Yes ☐ No ☐

Attach Photos

General	Reason for Inspection: Spring ☐ Fall/Yearly ☐ After Major Storm ☐
Sweeping Maintenance Required? Corrective Action Needed & Notes:	Yes ☐ No ☐
Invasive Plant Removal Required? Corrective Action Needed & Notes:	Yes ☐ No ☐

Attach Photos

Long-Term Inspection & Maintenance Log
Rock Road Townhomes – Londonderry, NH

Date	Inspection (Yes or No)	Maintenance (Yes or No)	List BMPs Inspected and/or Provide Comments	Inspected By:

Anti-icing Route Data Form
Rock Road Townhomes – Londonderry, NH

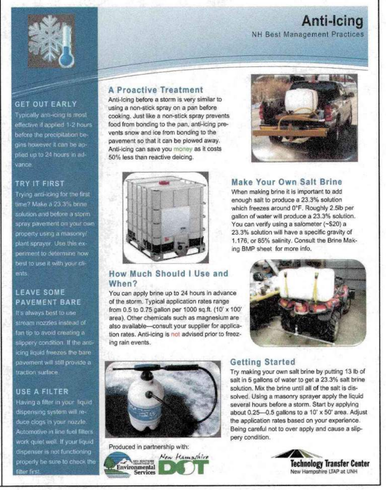
Truck Station:				
Date:				
Temperature:	Pavement Temperature:	Relative Humidity:	Dew Point:	Sky:
Reason For Applying:				
Route:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day):				
Observation (after event):				
Observation (before next application):				
Name:				

Snow & Ice Management Plan
Page Rock Storage – Londonderry, NH

Objective: To maintain all paved areas to be free of snow, in a timely manner after every snow event. Ensure bare pavement with no residual ice to ensure resident safety. Utilize best management practices and products to comply with NHDES Green SnowPro under RSA 489-C.

1. Snow plowing:
   a. Snow plowing will be done by an experienced contractor.
   b. The driveway & parking lot will be plowed as needed during and after every snow event.
   c. Snow will be stockpiled in locations identified on the approve landscape plan.
   d. Walkways and entrances will be shoveled, or snow blown depending on snow volume.
   e. In the event of a higher than usual snow fall, snow will be trucked off-site to an approved snow stockpile facility.
2. Ice control:
   a. Ice control will be done by an experienced contractor.
   b. The objective is to obtain bare and dry pavements at the earliest practical time following cessation of a storm.
   c. Ice melting products will be used as necessary to prevent "slip & fall" incidents as well and maintain motor vehicle control.
   d. Snow and Ice Management will follow NHDES Green SnowPro guidelines under RSA 489-C.
   e. Magic Salt ® by ProMelt, or equal, will be the primary ice melting product. Can melt ice to temperatures as low as - 25°F. Manufactured with a combination feed grade molasses and magnesium chloride. Long lasting performance reduces re-application frequency.
   f. ProMelt Mag liquid, or equal, will also be used in low volumes as a pre-treat per manufactures recommendations. This practice is a similar practice used by NH DOT. ProMelt Mag is a high-performance magnesium chloride liquid that delivers a strong residual effect on road surfaces, improves melting and results in long lasting performance.





PAUL CHISHOLM No. 15078 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
2/9/26

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

CONSTRUCTION DETAILS
ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: AS SHOWN
FILE NO.:
SHEET NO. 19 **OF** 20

Pre-wetting

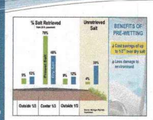
NH Best Management Practices

PRE-WETTING?
Pre-wetting is the process of coating a solid de-icer with a liquid before it is spread on a roadway.

WHY PRE-WET?
De-icing chemicals must form a brine before they can begin melting ice. Pre-wetting your chemicals accelerates the brine making process, which improves the melting action of the material. Pre-wetting also reduces bounce and scatter of material during spreading, and reduces the total amount of de-icer needed to obtain the desired results.

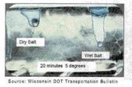
REDUCED RATES
If you are pre-wetting, don't forget to reduce your application rates accordingly. Reductions in the range of 15-20% are typical.

HOW MUCH LIQUID?
A good rule of thumb is to use 8-10 gallons of pre-wetting liquid for every ton of de-icer. For other chemicals, such as magnesium chloride, consult your supplier for application rates.



Getting Started

Wet the pile! There are two ways to pre-wet your de-icing chemicals. The easiest way to get started with pre-wetting is to spread your salt pile, spray it with pre-wetting liquid, mix it around, and re-pile it. More advanced truck mounted pre-wet systems can be installed on your trucks if you decide to make the investment.



Source: Wisconsin DOT Transportation Bulletin

Pre-wetting Liquids

You have a few options for pre-wetting liquids. The most commonly used is a 23% sodium chloride brine solution. Calcium chloride at 32% solution is also used, as well as Magic Minus Zero™ and other patented products.

Spraying the Pile

This is the easiest and most cost effective way to get started in pre-wetting. The first step is to spread your salt pile on a flat, impermeable surface. Next, spray the salt while it is spread out, and mix it around to ensure adequate and consistent liquid coverage. After the salt is sufficiently covered, re-stack the salt in your storage shed for later use.





Truck Mounted Systems

These systems are mounted in the truck bed and coat the de-icer with liquid as it comes off the conveyor/auger onto the spinner. These systems have the benefit of applying liquid only to the material you use as you use it. However, these systems must be installed on every truck that will be used to spread pre-wetted material.

Produced in partnership with:

Brine Making

NH Best Management Practices

GET THE LOWEST FREEZE POINT
When salt brine is 23% salt (measured with a hydrometer, 1.176, or with a salinometer, 86%) it has the lowest freeze point possible (about 0°F).

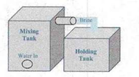
BRINE STORAGE
23% brine solution may be stored outside, however if temperatures get below 0°F the brine may freeze. A circulator pump will reduce the risk of freezing. If possible store brine indoors to eliminate risk of freezing.

COST OF BRINE
Calcium chloride brine costs about 7¢ / gallon (assuming $500/ton for salt) after you have your equipment setup.

MULTIPLE USES
Brine can be used directly for anti-icing, for pre-wetting salt as it is dispensed from your truck, or to pre-coat salt before it is loaded into your truck. Brine can be safely stored for up to a year, however, the concentration should be tested before use.

What Do You Need?

Brine making is a fairly simple process—the only ingredients are salt and water, and the only equipment you'll need is an open top mixing tank, a holding tank, a small pump, and a salimeter.





Images courtesy of Iowa DOT

Step 1: Fill Mixing Tank

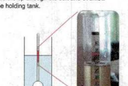
Add Salt: Add about 2.5 lb of salt per gallon of water you plan to add. Make sure your mixing tank has a large opening to make adding salt easy.

Add Water: Slowly add water from the bottom of your brine mixing tank. This will allow it to percolate up through the salt and overflow into the holding tank.

Step 2: Check Concentration

Float a hydrometer or salimeter directly in your holding tank and read the value at the surface of the water. The number should be either 85% or 1.176 depending on the units of your device.

If the values are too low, pump some brine from your holding tank back into the mixing tank and allow it to overflow. If values are too high simply add some fresh water.



Quality Control & Documentation

Make sure that you record the date when you create each batch of brine and document who mixed it and checked the concentration. It is also a good idea to note the final concentration. These records should be kept for at least two years to protect your group in the event of litigation.

Produced in partnership with:

Hydraulic-Run Spreader Calibration

NH Best Management Practices

WHY CALIBRATE?
You can't reduce your salt use if you don't know how much salt you actually use! The goal of calibrating is to know how much material you are putting down on a roadway or parking lot for every setting on your truck that you use. This is why calibrating your equipment is the first step to reducing salt use and saving money!

REMEMBER:
Each truck must be independently calibrated for each material it will be used to spread (the salt calibration chart will be different than the sand calibration chart).

Calibrations should be performed annually, or after a spreader is serviced.

CALCULATIONS:
There are a few simple calculations you must perform in order to complete the calibration. Once all of the necessary data is recorded, head back inside and warm up! Refer to the reverse side of this fact sheet for calculation instructions.



Step 1: Load the Truck

Partially load the truck. Half of a full load should be more than adequate for calibration purposes.



Step 2: Set Your Controls

Gate Height: Set the gate height to its lowest practical setting (~ 2").
This should be kept constant throughout the calibration process. If you find that not enough material is dispensed with this setting, try 2.5" to 3".
Engine Speed: Warm the truck up and run the engine at the typical rate seen during spreading (approximately 2000 rpm).



Step 3: Measure Spread Width

Measure the width that the material covers during spreading. Do this for each conveyor/auger setting you are calibrating. Round your numbers to the nearest half foot and record them in column "W" of the calibration chart (see reverse side).

Step 4: Collect & Weigh Material

You will need either a sheet of canvas, a tarp, or a bucket to collect the material that is discharged by the spreader, as well as a scale. Weight the object you are using to collect the material, and record that value in the purple box above the discharge rate column. Collect material for 1 minute. Weigh the collected material and subtract the weight of the tarp/canvas/bucket. Record this value in the first purple column of the calibration chart. Do this 3 times for each conveyor/auger setting that is typically used. Average these three values together and record in the orange column in the calibration chart.



Step 5: Perform Calculations

Go inside and calculate your discharge rate using the calibration chart for each truck speed and conveyor/auger setting you normally use. Refer to the reverse side of this fact sheet for calculation instructions. The formula you will be using is shown below:

$$D = \frac{B \times C}{A}$$

Step 6: Distribute Completed Calibration Cards!

Put a copy of the calibration chart in the truck you just calibrated. Also, leave a copy of the calibration card in the office so you have a copy incase the original is damaged.

Produced in partnership with:

Calibration Chart (Hydraulic Type)

Truck/Spreader ID.: _____ Performed by: _____

Material: _____ Date: _____

Tarp/Canvas/Bucket Weight:		A	B	C	D					
					Discharge Rate (Pounds)					
					Run 1	Run 2	Run 3	Average		
Gate Opening	W Spread Width (ft.)	5.28 x W	B Pounds of Material Discharged per 1000 square ft. (5.28 x C / A)	C Pounds of Material Discharged per 1000 square ft. (B x 8.1 / 4.4)					D 20 mph (C x 1.8)	30 mph (C x 2.7)
1"	1	5.28 x 1=	5.28	9.7					17.4	26.2
1.5"	2	5.28 x 2=	10.56	19.4					34.9	52.3
2"	3	5.28 x 3=	15.84	29.1					52.3	78.5
2.5"	4	5.28 x 4=	21.12	38.8					69.8	104.7
3"	5	5.28 x 5=	26.4	48.5					87.2	130.9
EX	14	5.28 x 14=	73.92	135.8					244.4	366.6

Calculation Instructions: Multiply the spread width from column **W** by **5.28** and record the answer in column **A**. For each conveyor/auger setting, add **Run 1**, **Run 2**, and **Run 3** together. Divide the result by **3** and record in column **B** to get the average discharge rate. To find the pounds of material discharge per 1000 square ft. (column **C**), multiply column **B** by the "C" value for each travel speed to shown in red under that given speed. Multiply column **C** by the "D" value for that speed to find the number of pounds of material discharged per 1000 square feet for the given speed. Record these numbers in the **D** columns. The full equation is shown here:

$$D = \frac{B \times C}{A}$$

Pony Motor-Run Spreader Calibration

NH Best Management Practices

WHY CALIBRATE?
You can't reduce your salt use if you don't know how much salt you actually use! The goal of calibrating is to know how much material you are putting down on a roadway or parking lot for every setting on your truck that you use. This is why calibrating your equipment is the first step to reducing salt use and saving money!

REMEMBER:
Each truck must be independently calibrated for each material it will be used to spread (the salt calibration card will be different than the sand calibration card).

Calibrations should be performed annually, or after a spreader is serviced.

CALCULATIONS:
There are a few simple calculations you must perform in order to complete the calibration. Once all of the necessary data is recorded, head back inside and warm up! Refer to the reverse side of this fact sheet for calculation instructions.



Step 1: Load the Truck

Partially load the truck. Half of a full load should be more than adequate for calibration purposes.



Step 2: Set Your Controls

Gate Height: Set the gate height to its lowest practical setting to start (approximately 1" to 1.5"). After the truck is calibrated for the lowest gate setting, calibrate for each 1/2" increment greater than the lowest setting. Continue until all gate settings you use are calibrated.
Engine Speed: Set the pony motor speed to the maximum setting, or to the setting you would normally use.



Step 3: Measure Spread Width

Measure the width that the material covers during spreading. Do this for each gate setting you are calibrating. Round your numbers to the nearest half foot and record them in column "W" of the calibration chart (see reverse side).

Step 4: Collect & Weigh Material

You will need either a sheet of canvas, a tarp, or a bucket to collect the material that is discharged by the spreader, as well as a scale. Weight the object you are using to collect the material, and record that value in the purple box above the discharge rate column. Collect material for 1 minute. Weigh the collected material and subtract the weight of the tarp/canvas/bucket. Record this value in the first purple column of the calibration chart. Do this 3 times for each gate opening that is typically used. Average these three values together and record in the orange column in the calibration chart.



Step 5: Perform Calculations

Go inside and calculate your discharge rate using the calibration chart for each truck speed and gate setting you normally use. Refer to the reverse side of this fact sheet for calculation instructions. The formula you will be using is shown below:

$$D = \frac{B \times C}{A}$$

Step 6: Distribute Completed Calibration Cards!

Put a copy of the calibration card in the truck you just calibrated. Also, leave a copy of the calibration card in the office so you have a copy incase the original is damaged.

Produced in partnership with:

Calibration Chart (Pony Motor Type)

Truck/Spreader ID.: _____ Performed by: _____

Material: _____ Date: _____

Tarp/Canvas/Bucket Weight:		A	B	C	D					
					Discharge Rate (Pounds)					
					Run 1	Run 2	Run 3	Average		
Gate Opening	W Spread Width (ft.)	5.28 x W	B Pounds of Material Discharged per 1000 square ft. (5.28 x C / A)	C Pounds of Material Discharged per 1000 square ft. (B x 8.1 / 4.4)					D 20 mph (C x 1.8)	30 mph (C x 2.7)
1"	1	5.28 x 1=	5.28	9.7					17.4	26.2
1.5"	2	5.28 x 2=	10.56	19.4					34.9	52.3
2"	3	5.28 x 3=	15.84	29.1					52.3	78.5
2.5"	4	5.28 x 4=	21.12	38.8					69.8	104.7
3"	5	5.28 x 5=	26.4	48.5					87.2	130.9
EX	14	5.28 x 14=	73.92	135.8					244.4	366.6

Calculation Instructions: Multiply the spread width from column **W** by **5.28** and record the answer in column **A**. For each gate setting, add **Run 1**, **Run 2**, and **Run 3** together. Divide the result by **3** and record in column **B** to get the average discharge rate. To find the pounds of material discharge per 1000 square ft. (column **C**), multiply column **B** by the "C" value for each travel speed to shown in red under that given speed. Multiply column **C** by the "D" value for that speed to find the number of pounds of material discharged per 1000 square feet for the given speed. Record these numbers in the **D** columns. The full equation is shown here:

$$D = \frac{B \times C}{A}$$

Example: Step #1, blank calibration form

See the References and Resources section for a full size form to copy for calibration. This is how the empty form looks. (Keep a stack of these on a clipboard when ready to begin the calibration.)

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE _____ SPREADER # _____ MATERIAL _____

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1					
2					
3					

Figure 10: Blank calibration form

Example: Step #2, calibration form filled out during calibration

Fill in the header information and column 2, the discharge weight per setting.

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE 8-Aug-15 SPREADER # A4219 MATERIAL Rock Salt

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1	10				
2	22				
3	34				

Figure 11: Example calibration form with discharge and header information filled out

Example: Step #3, calibration form ready to put in truck for road application

Back in the shop, do the calculations to fill in the rest of the blanks. Multiply the weight in column 2 with the multiplier in the top row. This provides the pounds per mile that needed to fill in the table.

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE 8-Aug-15 SPREADER # A4219 MATERIAL Rock Salt

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1	10	* 120	60	40	30
2	22	* 264	132	88	66
3	34	* 408	204	136	102

* top half of each row = lbs/lane mile. To get this number, multiply lbs/min by the factor shown for each speed.

** bottom half of each row = lbs/1000 sq ft. To find this, divide the number in the top half by 63.

Figure 12: Example calibration form with pounds per lane mile filled out

Some fish species are affected by concentrations of less than 1000 ppm NaCl, about 1 to 1.5 tablespoons of salt in 5 gallons of water.

Example: Step #4, calibration form ready to zip tie to hand spreader or put in truck for parking lot application.

Divide by 63 to convert pounds per lane mile to pounds per 1,000 square feet. This is very useful for parking lot and sidewalk applications.

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE 8-Aug-15 SPREADER # A4219 MATERIAL Rock Salt

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1	10	*120	60	40	30
		**1.9	1.0	0.6	0.5
2	22	264	132	88	66
		4.2	2.1	1.4	1.0
3	34	408	204	136	102
		6.5	3.2	2.2	1.6

* top half of each row = lbs/lane mile. To get this number, multiply lbs/min by the factor shown for each speed.

** bottom half of each row = lbs/1000 sq ft. To find this, divide the number in the top half by 63.

Figure 13: Example calibration form with pounds per 1000 sq. ft. filled out

Gravity Flow Equipment

This is applicable for equipment that does not have a motorized delivery system such as an auger. This type of equipment might be a pickup mounted spreader, gator mounted spreader or a hand push spreader. Gravity flow equipment is typically controlled by gate opening and speed of application.

Step 1: Calculate discharge rate

- Mark out a 10-foot stretch of pavement. (By increasing the size of the test area i.e., the longer the test area, the more accurate the results will be).
- Sweep it clean of sand or any other material.
- Using a constant speed, apply one pass of material to the test area.
- Measure the width the material is spread or bounces, in feet.
- Sweep up and weigh the material that is within the marked 10-foot stretch.
- Record the lever position/setting for the gate/chute. If there are no numbers for the positions, make permanent marks on the equipment to identify the positions.
- To improve accuracy, repeat this two more times and calculate the average weight of material applied.
- Record results in columns A, B, C, and D (Figure 14).

Step 2: Repeat step #1 for various settings.

Step 3: Fill out chart.

- Fill out columns E, F, and G (Figure 14).
- If using more than one type of material, repeat the test for each material.
- Place the completed calibration chart with the equipment.

Shortcuts:

- Put down a tarp over the application area; this makes it quicker to recover and weigh material.
- After the first pass, put a bag around spreader to catch discharge material. The first pass is needed to determine the spread width.

Calculate application rate:

Equipment: _____ Material: _____ Date: _____

A	B	C	D	E	F	G
Speed	Lever position or gate setting	Pounds spread in 10 feet*	Spread width in feet	Coverage area in sq. ft. (D x 10)*	Application rate in lbs./1000 ft² (1000/E x C)	Application rate in lbs./lane mile (12' width) (F x 63.4)
			EXAMPLE			
20 MPH	*Half-closed*	*0.4 lbs.*	*13 feet*	*130 sq. ft.*	*3.1 lbs. per 1000 sq. ft.*	*196 lbs./mile*

* If changing the test strip length, adjust the title in column C and the multiplier in column E.

Figure 14: Example calibration chart for gravity flow equipment

What if calibration is not a practice?

Even without calibrating the equipment, the amount of material to use can be determined but will take more time to calculate. Know the material, the size of the area to be treated, and the pavement temperature, then consult the application rate chart (application rate section) and do the math. Without calibration, the way to evenly distribute the recommended amount across the maintenance area must be determined by the professional. This approach may work well for treating sidewalks using the "chicken feed" method. For example:

- 20°F degrees pavement temperature and rising
- Using dry salt
- Sidewalk is 2,000 square feet
- Table recommends 2.25 lbs. per 1,000 square feet (for this situation)
- Measure about 4.5 lbs. of salt
- Figure out a way to spread it evenly over the 2,000 sq. ft. surface

Sand fills in lake bottoms, accelerating the aging process of lakes. Lakes get shallower as they age, some eventually becoming wetlands.

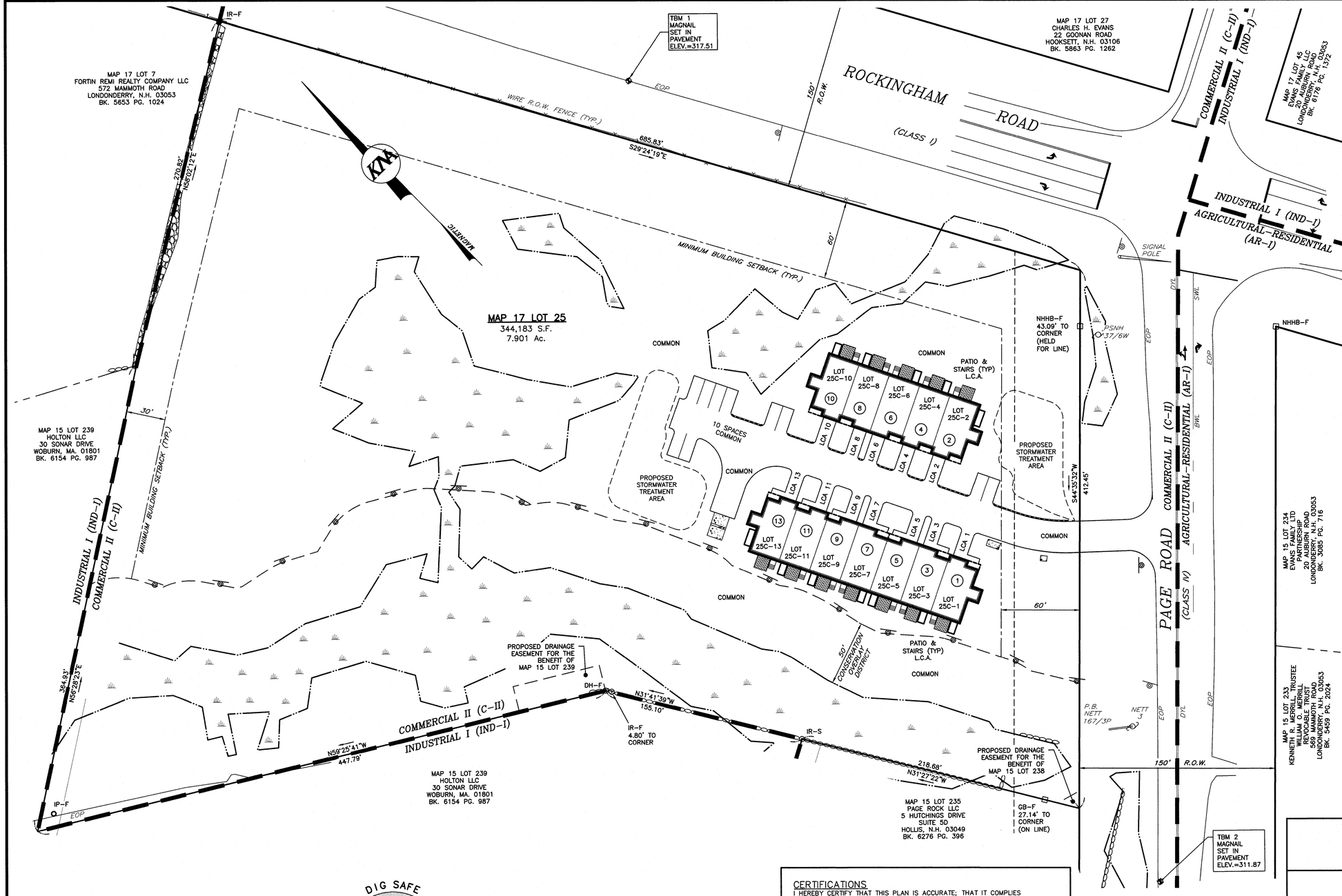
Calibration Charts

Calibration Chart for Gravity Flow Equipment

Vehicle or spreader number: _____ Date: _____

Material Type: _____ Calibrated by: _____

	A	B	C	D	E
Speed	Lever position or gate setting	Lbs. Material recovered in 10 feet	Spread width in feet	Square feet covered with material (B x 10)	Application rate in lbs./1000 ft² (1000/C x A)	Application rate in lbs./lane mile (12' width) (D x 63.4)



NOTES:

1. THE PURPOSE OF THIS PLAN IS TO CONVERT THE EXISTING MULTI-FAMILY RESIDENTIAL SITE PLAN FOR TAX MAP 17 LOT 25, 295 ROCKINGHAM ROAD INTO A CONDOMINIUM CONSISTING OF 12 UNITS WITH 3 BEDROOMS EACH.
2. EXISTING AREA OF PARCEL = 334,813 S.F. OR 7.901 ACRES.
3. THE SUBJECT PARCEL IS LOCATED ENTIRELY WITHIN COMMERCIAL III (C-III) ZONING DISTRICT. DIMENSIONAL REQUIREMENTS ARE AS FOLLOWS:
   - FRONT 60 FT
   - SIDE 30 FT
   - REAR 30 FT
   - LANDSCAPE BUFFER 50 FT
   - CONSERVATION OVERLAY DISTRICT 50 FT FROM DELINEATED WETLANDS, 100 FT FROM NAMED STREAMS
4. BOUNDARY INFORMATION SHOWN HEREON IS BASED ON AN ACTUAL FIELD SURVEY MADE BY THIS OFFICE IN JANUARY OF 2022.
5. HORIZONTAL DATUM IS NAD83, VERTICAL DATUM IS NAVD88 OBTAINED FROM GPS SURVEY METHODS POST PROCESSED THROUGH NOAA-OPUS. NORTH ORIENTATION IS NAD83.
6. EXAMINATION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) FOR THE TOWN OF LONDONDERRY N.H., ROCKINGHAM COUNTY, MAP NUMBER 33015C0317E, PANEL 317 OF 681, EFFECTIVE DATE: MAY 17, 2005 INDICATES THAT NO PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN A DESIGNATED FLOOD HAZARD ZONE.
7. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN HEREON IS APPROXIMATE. KEACH-NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF THE UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR OR OWNER SHALL CONTACT DIG-SAFE AT 811.
8. EASEMENTS, RIGHTS AND RESTRICTIONS SHOWN OR IDENTIFIED HEREON ARE THOSE FOUND DURING RESEARCH AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER EASEMENTS, RIGHTS AND RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF THE SUBJECT PREMISES MAY DETERMINE.
9. THIS SITE WILL BE SERVICED BY MUNICIPAL SEWER AND WATER.
10. THERE ARE NO STATE PERMITS REQUIRED FOR THE CONDOMINIUM CONVERSION.
11. THIS PLAN SET CONTAINS A TOTAL OF 2 SHEETS, ALL SHEETS ARE RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AND ARE ON FILE AT THE TOWN OF LONDONDERRY PLANNING DEPARTMENT.

REFERENCE PLANS:

1. "SUBDIVISION PLAN OF LAND OF A.J. & G.Y. HUARD; SUBDIVISION PLAN OF LAND OF MR. & MRS. LEO DUBOIS." SCALE: 1"=50'. DATED: JUNE, 1969. PREPARED BY: P. BRUSQUINI P.E. R.C.R.D. PLAN #1438
2. "TOWN OF LONDONDERRY, N.H. MAP 17 PARCEL 25." SCALE: 1"=50'. DATED: JANUARY, 1982. PREPARED BY: EDWARD N. HERBERT ASSOC. INC. R.C.R.D. PLAN #12463.
3. "RESOLUTION PLAN, OLD PAGE ROAD." SCALE: 1"=40'. DATED: JANUARY 29, 2008. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #36063.
4. "LOT LINE ADJUSTMENT-MAP 15 LOTS 235 & 239." SCALE: 1"=100'. DATED: JANUARY 15, 2014. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #38211.
5. "LOT 17-7 SUBDIVISION PLAN." SCALE: 1"=60'. DATED: DECEMBER 19, 2014. PREPARED BY: MERIDIAN LAND SERVICES, INC. R.C.R.D. PLAN #40123.
6. "PLAN OF PROPOSED FEDERAL AID PROJECT" ROCKINGHAM ROAD. SCALE: 1"=50' LAST REVISED: DECEMBER 22, 1954 N.H. PROJECT NO. P-2979.
7. "RESIDENTIAL SITE PLAN ROCK ROAD TOWNHOMES, TAX MAP 17 LOT 25, 295 ROCKINGHAM ROAD, LONDONDERRY, NEW HAMPSHIRE." DATED: MAY 6, 2025 PREPARED BY: THIS OFFICE AND CURRENTLY UNDER REVIEW BY THE LONDONDERRY PLANNING DEPARTMENT.

OWNER OF MAP 17 LOT 25

SIGNATURE: DANE N

DATE: 2/16/2026

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

LEGEND

NHHB-F	NH HIGHWAY BOUND FOUND		PROPERTY LINE
IR-S	IRON ROD SET		ABUTTER LINE
DH-F	DRILL HOLE FOUND		
GB-F	GRANITE BOUND FOUND		EDGE OF PAVEMENT
IR-F	IRON ROD FOUND		BUILDING SETBACK
IP-F	IRON PIPE FOUND		BUFFER LINE
	BENCHMARK		STONEWALL
	UTILITY POLE		ZONE LINE
	SIGN		
	WETLAND		
	BITUMINOUS CONCRETE CURB		

DIG SAFE — DIAL 811 OR 1-888-DIG-SAFE — CALL TOLL FREE — UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

CERTIFICATIONS

I HEREBY CERTIFY THAT THIS PLAN IS ACCURATE; THAT IT COMPLIES WITH THE PROVISIONS OF NEW HAMPSHIRE RSA 356-B:20, I & V, AND ALL UNITS SHOWN ARE "NOT YET BEGUN."

THIS PLAN WAS PREPARED BY ME OR THOSE UNDER MY DIRECT SUPERVISION, FURTHER, THE BOUNDARY INFORMATION IS THE RESULT OF AN ACTUAL FIELD SURVEY MADE BY THIS OFFICE IN JANUARY OF 2022. WETLAND DELINEATION, TOPOGRAPHIC INFORMATION AND PROPOSED IMPROVEMENTS ARE PER REFERENCE PLAN #7.

LICENSED LAND SURVEYOR — DATE: 3/9/26

STATE OF NEW HAMPSHIRE — No. 811 — CHRISTOPHER J. HICKEY — LICENSED LAND SURVEYOR — SIGNATURE

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 - MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 - MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD FOR PHASE _____
ON DATE: _____
CERTIFIED BY:

_____

_____

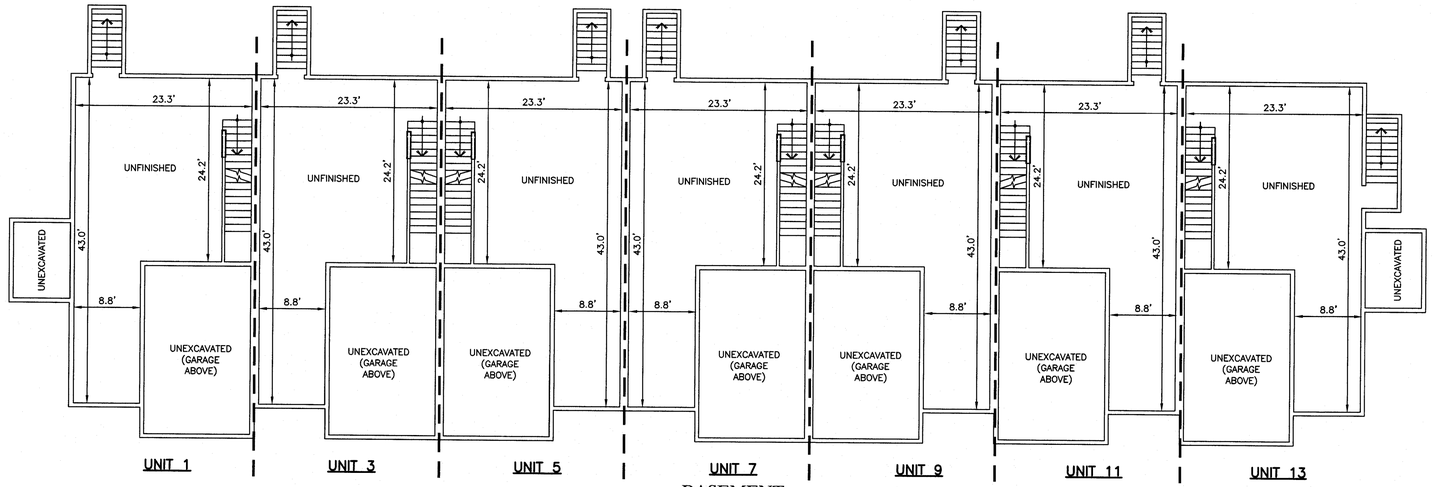
CONDOMINIUM SITE PLAN

ROCK ROAD TOWNHOMES, A CONDOMINIUM

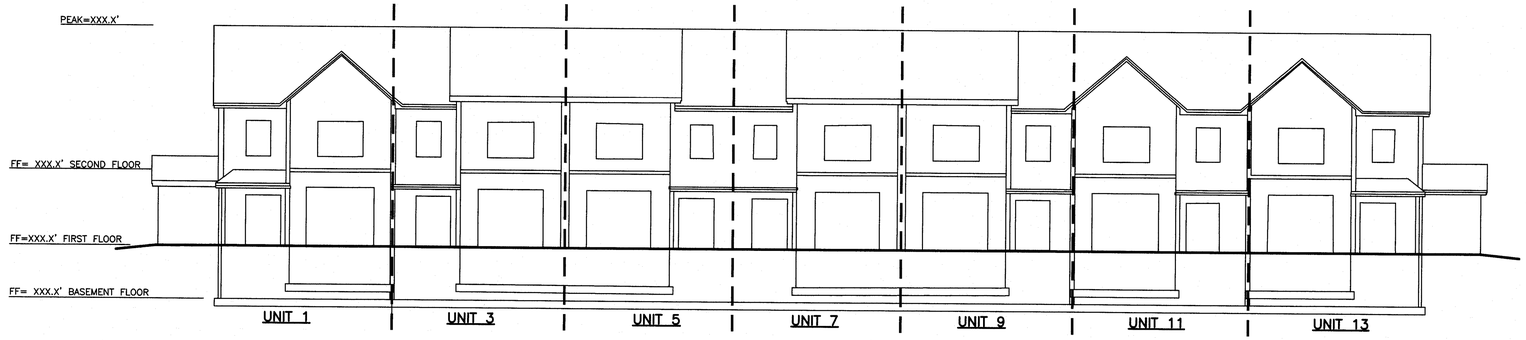
MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: 1" = 40'
FILE NO.:
SHEET NO. CS1



BASEMENT
(1"=10')



ELEVATION VIEW
(NOT TO SCALE)

DIG SAFE
811 CALL TOLL FREE
RI-THE-MA-VT-NH
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD FOR PHASE _____
ON DATE: _____
CERTIFIED BY:

_____

_____

CERTIFICATIONS
I HEREBY CERTIFY THAT THIS PLAN IS ACCURATE; THAT IT COMPLIES WITH THE PROVISIONS OF NEW HAMPSHIRE RSA 356-B:20, II AND ALL UNITS SHOWN ARE "NOT YET BEGUN."

_____ 2/9/26
LICENSED LAND SURVEYOR — DATE

STATE OF NEW HAMPSHIRE — LICENSED LAND SURVEYOR — NO. 911 — CHRISTOPHER J. MCKEY — SIGNATURE

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

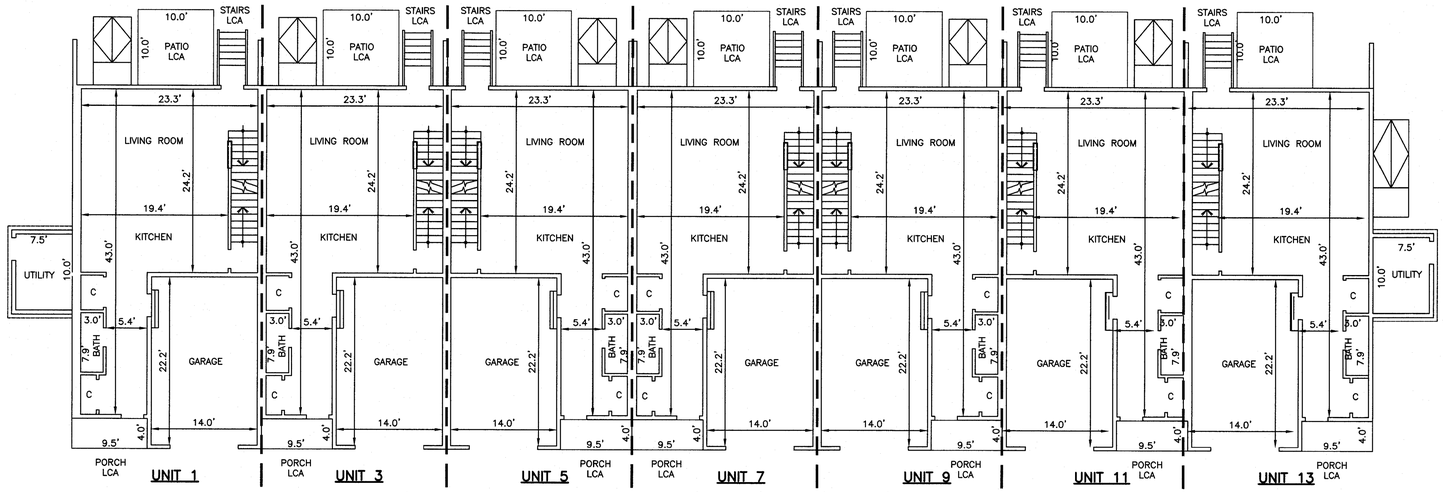
CONDOMINIUM FLOOR PLAN

ROCK ROAD TOWNHOMES, A CONDOMINIUM

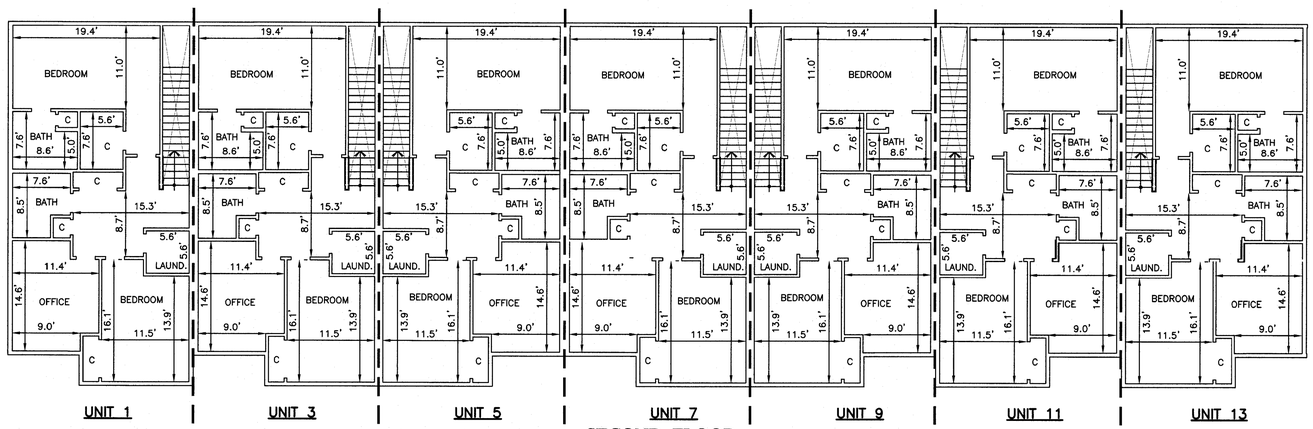
MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
5 Commerce Park North, Suite 201, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: AS-SHOWN
FILE NO.:
SHEET NO. CF1



FIRST FLOOR
(1"=10')



SECOND FLOOR
(1"=10')

DIG SAFE
811 CALL TOLL FREE
RI-ME-NH-VT-MA
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD FOR PHASE _____
ON DATE: _____
CERTIFIED BY:

_____

_____

CERTIFICATIONS

I HEREBY CERTIFY THAT THIS PLAN IS ACCURATE; THAT IT COMPLIES WITH THE PROVISIONS OF NEW HAMPSHIRE RSA 356-B:20, II AND ALL UNITS SHOWN ARE "NOT YET BEGUN."

_____ 3/9/26
LICENSED LAND SURVEYOR — DATE

STATE OF NEW HAMPSHIRE — No. 911 CHRISTOPHER J. HICKEY — LICENSED LAND SURVEYOR — SIGNATURE

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

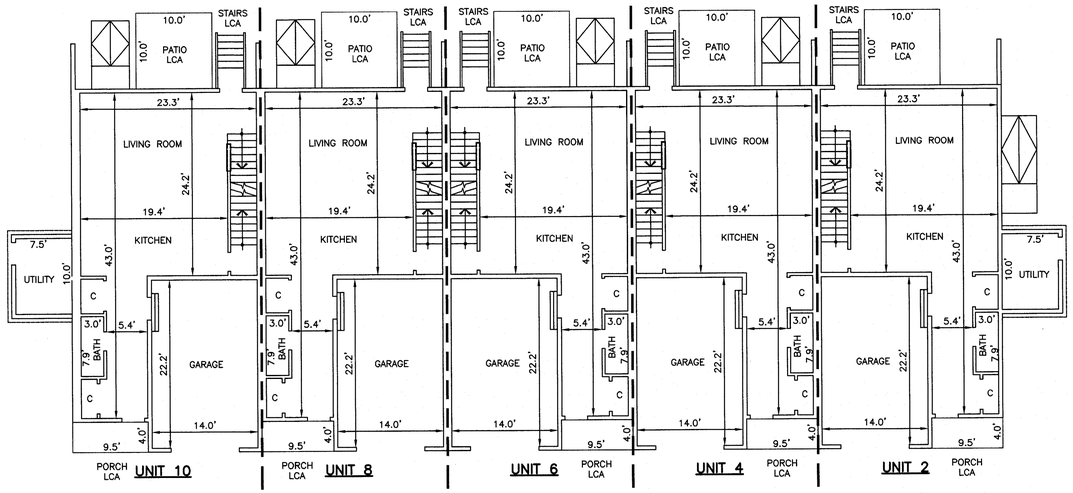
CONDOMINIUM FLOOR PLAN

ROCK ROAD TOWNHOMES, A CONDOMINIUM

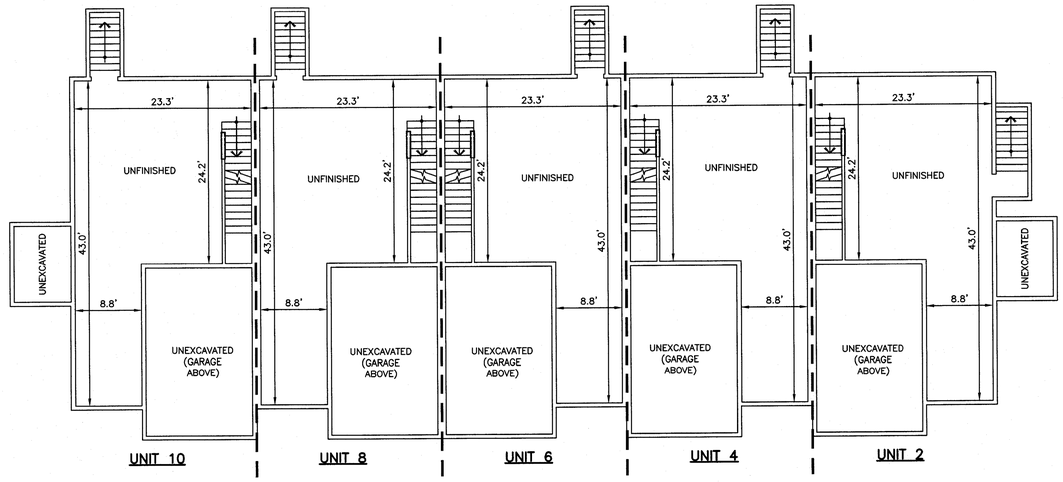
MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
5 Commerce Park North, Suite 201, Bedford, NH 03110 Phone (603) 627-2881

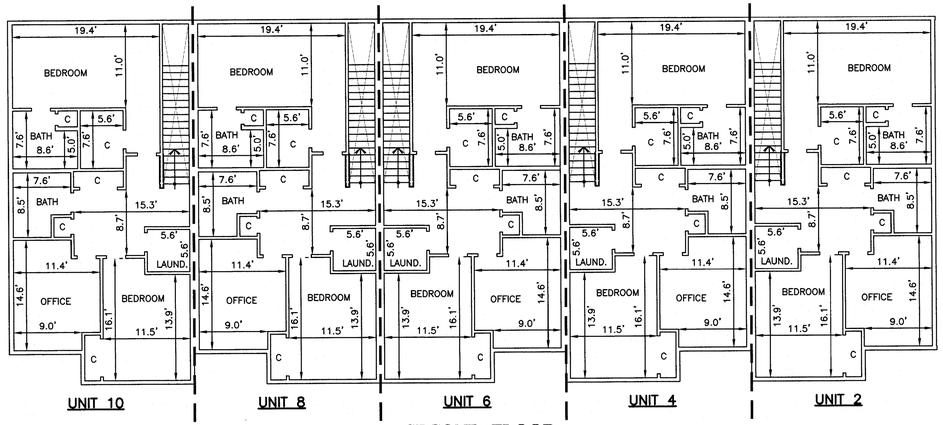
PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: AS-SHOWN
FILE NO.:
SHEET NO. CF2



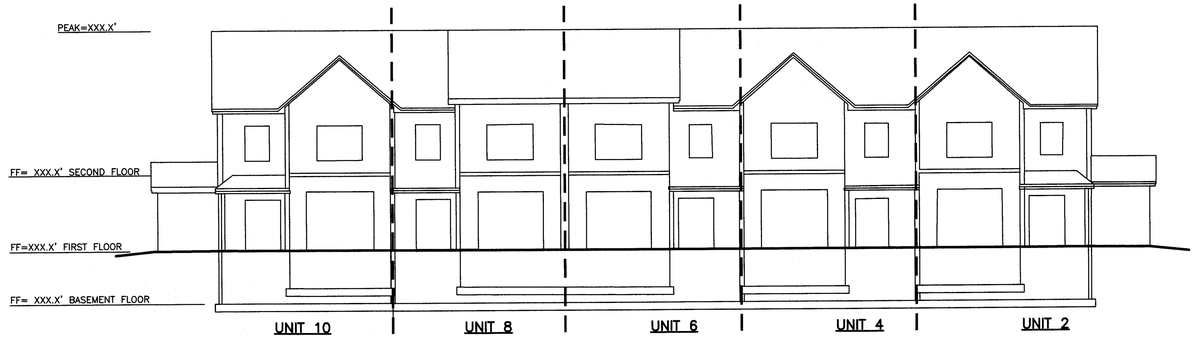
FIRST FLOOR
(1"=10')



BASEMENT
(1"=10')



SECOND FLOOR
(1"=10')



ELEVATION VIEW
(NOT TO SCALE)

DIG SAFE
RI-ME-NH-VT-MA 811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

APPROVED BY THE LONDONDERRY, NH PLANNING BOARD FOR PHASE _____
ON DATE: _____
CERTIFIED BY:

CERTIFICATIONS
I HEREBY CERTIFY THAT THIS PLAN IS ACCURATE; THAT IT COMPLIES WITH THE PROVISIONS OF NEW HAMPSHIRE RSA 356-B:20, II AND ALL UNITS SHOWN ARE "NOT YET BEGUN."

LICENSED LAND SURVEYOR — DATE 3/9/26

STATE OF NEW HAMPSHIRE — NO. 911 — CHRISTOPHER J. MCKEY — LICENSED LAND SURVEYOR — SIGNATURE

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

CONDOMINIUM FLOOR PLAN

ROCK ROAD TOWNHOMES, A CONDOMINIUM

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
5 Commerce Park North, Suite 201, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: AS-SHOWN
FILE NO.:
SHEET NO. CF3

Stormwater Management Report

Rock Road Townhomes

Map 17; Lot 25
295 Rockingham Road
Londonderry, New Hampshire



February 20, 2026

KNA Project No. 21-0113-1

Prepared For: Page Rock, LLC
5 Hutchings Drive, Suite 5D
Hollis, NH 03049

Prepared By: Keach-Nordstrom Associates, Inc.
10 Commerce Park North, Suite 3
Bedford, New Hampshire 03110
(603) 627-2881
(603) 627-2915 (fax)

KNA KEACH-NORDSTROM ASSOCIATES, INC.

Table of Contents

1. PROJECT NARRATIVE

I. INTRODUCTION
- A. PROJECT DESCRIPTION
- B. EXISTING SITE CONDITIONS

II. STORM DRAIN ANALYSIS & DESIGN
- A. METHODOLOGY
- B. PRE-DEVELOPMENT DRAINAGE CONDITIONS
- C. POST-DEVELOPMENT DRAINAGE CONDITIONS
- D. SUMMARY

III. EROSION & SEDIMENTATION CONTROL PROVISIONS
- A. TEMPORARY EROSION CONTROL MEASURES
- B. CONSTRUCTION SEQUENCE
- C. PERMANENT EROSION CONTROL MEASURES

2. FIGURES & SPREADSHEETS

FIGURE NO. 1 – AERIAL IMAGE
FIGURE NO. 2 – USGS IMAGE
FIGURE NO. 3 – SCS SOILS MAP
FIGURE NO. 4 – EXTREME PRECIPITATION TABLES
FIGURE NO. 5 – RIP RAP OUTLET PROTECTION APRON CALCULATIONS

3. HYDROCAD DRAINAGE ANALYSIS

I. 25-YR, PRE-DEVELOPMENT
II. 25-YR, POST-DEVELOPMENT
III. 50-YR POND SUMMARIES

APPENDIX

PRE-DEVELOPMENT DRAINAGE AREAS PLAN
POST-DEVELOPMENT DRAINAGE AREAS PLAN
STORMWATER OPERATION & MAINTENANCE PLAN

I. INTRODUCTION

A. Project Description

The project proposes to develop the site to accommodate a proposed townhouse development, consisting of one 7-unit building and one 5-unit building with an associated paved driveway and parking areas. Site work will include construction of the proposed buildings, driveway, parking lot, utilities, and the necessary stormwater management provisions. The proposed stormwater management system includes two detention ponds.

B. Existing Site Conditions

The subject property consists of one lot, approximately 7.901 acres in total area, which is located at 295 Rockingham Road in Londonderry's Commercial II (C-II) Zoning District. The lot is currently wooded and undeveloped. There are two wetland areas on the site which drain to an existing 18" RCP that crosses under Page Road. The lot is bordered by commercial use to the north, Rockingham Road to the east, Page Road to the south, and an undeveloped lot under review for proposed multi-family residential use to the west.

According to a High Intensity Soil Survey, completed on July 8, 2022, by Luke Hurley, CSS #095, the predominant soil types onsite are Montauk soils, Scituate-Newfields Complex soils, and 115/VP Scarboro soils all with slopes ranging from 0-8%. Montauk and Scituate-Newfields soils are classified as Hydrologic Soil Group (HSG) 'C", whereas Scarboro soils are classified as HSG 'D'.

II. STORM DRAINAGE ANALYSIS & DESIGN

A. Methodology

In accordance with the provisions of the Town of Londonderry, and generally accepted engineering practices, the 25-year and 50-year frequency storms have each been used in the various aspects of analysis and design of stormwater management considerations for the subject site. All proposed stormwater measures have been designed for the 25-year frequency storm while the proposed detention pond has been designed to provide one foot of freeboard in the 50-year frequency storm.

KNA utilizes HydroCAD version 10.0 to analyze both pre and post-development watershed characteristics. This computer software system is based largely on hydrology techniques (TR-20) developed by the Soil Conservation Service (now the Natural Resources Conservation Service). In addition, the software derives Time of Concentration values using the methodology contained within USDA-S.C.S. publication Urban Hydrology for Small Watersheds Technical Release No. 55 (TR 55).

All design and analysis calculations performed using the referenced methodologies are attached to this report. The minimum time of concentrations used for the analysis is 6 minutes. These calculations document each catchment area, a breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, Manning's "n" value, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the "Pre/Post Development Drainage Area Plans" graphically define and illustrate the extent of each watershed or catchment area investigated.

B. Pre-Development Drainage Conditions

In the pre-development scenario, thirteen (13) points of analysis (POA) have been identified as the appropriate points to compare pre vs. post development rates of stormwater discharge. These points of analysis reflect the main discharge points of the site and were analyzed to show the impact of the proposed improvements.

The pre-development drainage model's POA's are further described as follows:

- Link A — Map 15 Lot 233
- Link B — Map 17 Lot 235
- Link C — Page Road
- Link D — Mammoth Road
- Link E — Map 17 Lot 7
- Link F — Map 15 Lot 239
- Link G — Map 15 Lot 238
- Link H — Map 15 Lot 240
- Link I — Map 15 Lot 241
- Link J — Map 15 Lot 231
- Link K — Map 15 Lot 232
- Link L — Map 15 Lot 234
- Link M — Rockingham Road

In general, the site slopes from east to west and runoff ultimately drains to an existing 18" RCP underneath Page Road (Link A). Runoff from the majority of Lots 25 and 235 and the abutting lots to the north flows through a wetland channel, located along the western property line, or to a roadside swale along Page Road, which both ultimately drain to Link A as well. Runoff from a small portion of the northern corner of the lot drains to Rockingham Road (Link M) while runoff from the southeastern corner of the lot drains to an existing 15" RCP underneath Page Road (Link L). All other points of analysis represent the abutting properties, which are either located upstream or across the road from the proposed development. For a more visual description of the information presented in this section, please refer to the attached "Pre-Development Drainage Areas Plan" attached in the appendix of this report.

C. Post-Development Drainage Conditions:

The same POA's that were identified in the pre-development scenario have been analyzed in the post-development scenario. The proposed stormwater management system utilizes both closed and open practices for the collection, storage, and detention of runoff.

Stormwater runoff generated from the southeastern portion of the proposed buildings and driveway will be directed by bituminous asphalt curbing towards proposed Detention Pond #1, located directly north of the proposed driveway. Runoff generated from the rest of the development will be directed by bituminous asphalt curbing towards proposed Detention Pond #2, located west of the proposed fire turnaround. Both ponds are designed to decrease peak rates in all design storms while providing greater than one foot of freeboard in the 50-year storm event. Runoff leaving Detention Pond #1 will be directed to the adjacent wetland via a custom concrete weir outlet structure, while runoff leaving Detention Pond #2 will be directed to the existing wetland channel to the west via a 15" HDPE.

The peak stormwater runoff rate for the specific storm frequencies are presented and analyzed in the subsequent summary section of this report (Table 1). For a more visual description of the information presented in this section, please refer to the attached "Post-Development Drainage Areas Plan" attached in the appendix of this report.

D. Summary:

The subject site complies with the Town of Londonderry regulations regarding stormwater mitigation. As reported below, there is no increase in peak rates in all storm events. The results are reported below in Table 1. Table 2 summarizes all ponds in the drainage analysis, and Table 3 summarizes all pipes in the drainage analysis.

Table 1: Peak Flow Discharge Rate

Site Pre-Development vs. Post-Development (cfs)		
Description	**25-Year**	
24-hr Rainfall	4.42 in/hr	
	Pre	**Post**
A	13.14	12.99
B	2.19	2.19
C	1.74	1.74
D	0.00	0.00
E	0.00	0.00
F	0.00	0.00
G	0.00	0.00
H	0.00	0.00
I	0.00	0.00
J	0.00	0.00
K	0.00	0.00
L	4.80	4.79
M	1.14	1.14

Table 2: Detention Pond Analysis

Location	**Detention Pond #1 (17P)**		**Detention Pond #2 (20P)**	
Pond Bottom	310.00		310.00	
Pond Top	312.00		313.50	
Outlet Invert	310.00		309.75	
Storm Event	**25-Yr**	**50-Yr**	**25-Yr**	**50-Yr**
Q-in (CFS)	2.44	3.03	3.04	3.71
Q-out (CFS)	1.01	1.37	0.50	0.79
Peak Elevation	310.83	310.97	311.52	311.76

Table 3: Pipe Summary Table (25-Year Design Storm)

Location	Size (in)	Type	Length (ft)	Slope ('/')	Manning's 'N'	Peak Discharge (cfs)	Flow Depth (ft)	Peak Vel. (FPS)	HGL (ft)
15" RCP (1P)	15"	PVC	111.0	0.0317	0.011	4.79	0.51	10.10	305.30
EX CB (3P)	8"	PVC	228.7	0.0187	0.010	1.22	0.36	6.35	315.19
15" RCP (4P)	15"	RCP	24.6	0.0829	0.011	0.48	0.13	7.28	316.73
18" RCP (5P)	18"	RCP	112.5	0.0096	0.011	12.09	1.22	7.85	305.51
24" RCP (6P)	24"	RCP	43.9	0.0123	0.011	15.15	1.01	9.49	306.71
RCB (7P)	12"	RCP	44.4	0.0095	0.011	3.79	0.76	5.92	306.58
RCB (8P)	12"	RCP	315.8	0.0058	0.011	3.21	1.00	4.58	307.28
RCB (9P)	6"	PVC	141.2	0.0271	0.010	0.74	0.28	6.43	314.30
EX CB (10P)	12"	CMP	101.8	0.0127	0.025	2.48	1.00	3.03	314.24
15" HDPE (11P)	15"	HDPE	41.0	0.0707	0.013	3.14	0.33	11.99	322.08
DP#2 (20P)	15"	HDPE	30.0	0.0050	0.013	0.50	0.28	2.44	309.88

III. EROSION & SEDIMENTATION CONTROL PROVISIONS

A. Temporary Erosion Control Measures

As an integral part of the engineering design of this site, an erosion and sedimentation control plan has been developed with the intent of limiting the potential for soil loss and associated receiving water quality degradation, both during and after the construction period. As the project plans indicate, traditional temporary erosion and sedimentation control devices and practices, such as siltation fencing and temporary block and sediment barriers at. In preparation of these provisions, reference was made to the New Hampshire Stormwater Manual; Volume 3: Erosion and Sediment Temporary Controls During Construction. Construction details for each temporary erosion control measure and practice specified have been added to the project plans. These plans also contain a number of erosion control notes, which are offered to the selected contractor in order to supplement the specified measures and practices to the extent practical.

B. Construction Sequence

A site-specific construction sequence sensitive to limiting soil loss due to erosion and associated water quality degradation was prepared specifically for this project and is shown on the project plans. As pointed out in the erosion control notes, it is important for the contractor to recognize that proper judgment in the implementation of work will be essential if erosion is to be limited and protection of completed work is to be realized. Moreover, any specific changes in sequence and/or field conditions affecting the ability of specific erosion control measures to adequately serve their intended purpose should be reported to this office by the contractor. Further, the contractor is encouraged to supplement specified erosion control measures during the construction period where and when in his/ her best judgment additional protection is warranted.

C. Permanent Erosion Control Measures

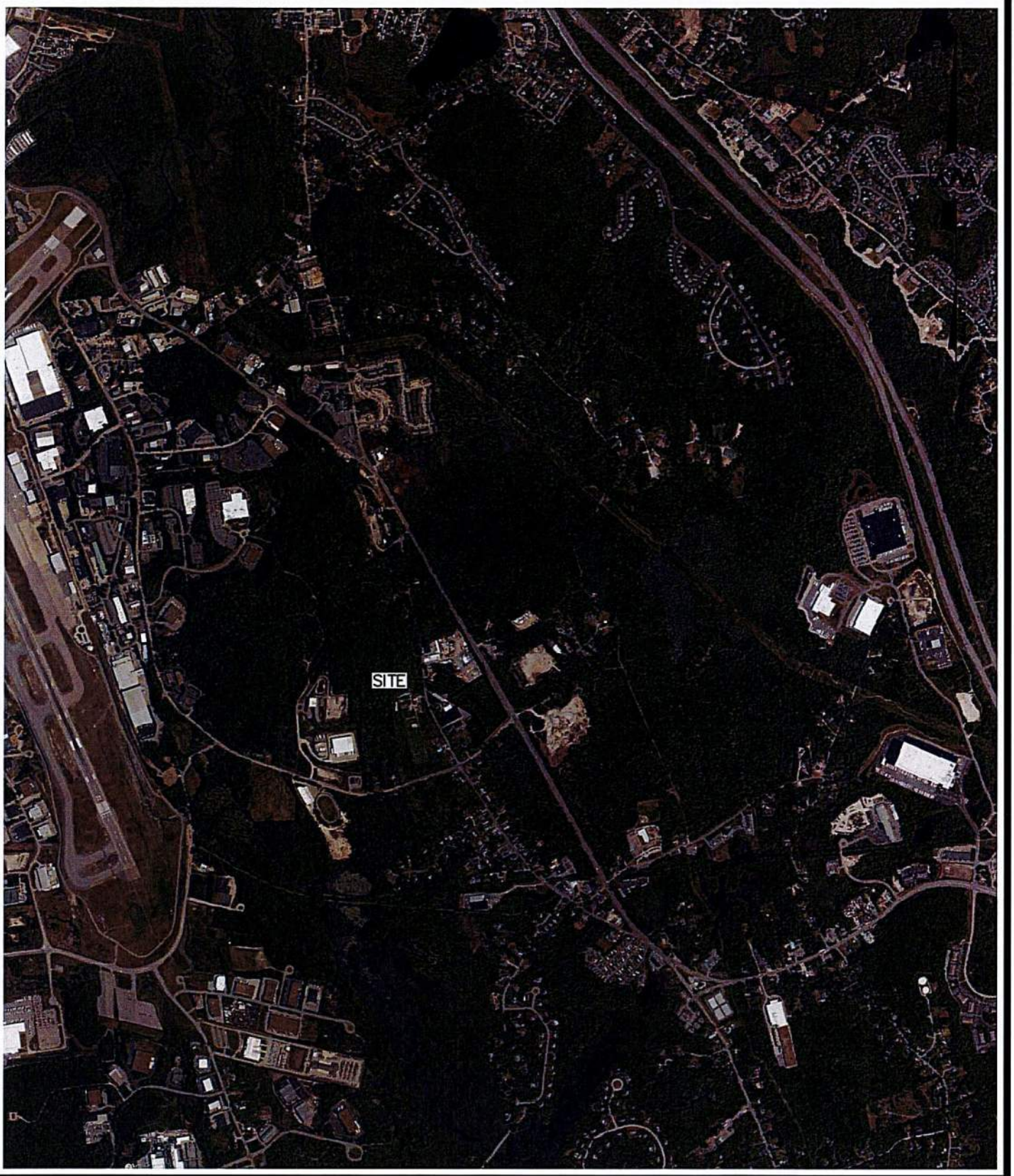
In the design of this site, consideration was given to limiting the potential for long-term erosion of completed improvements. As a result, several permanent erosion control measures were incorporated into the site design. These provisions include:

1) Specification of a turf establishment schedule and seed mixture, utilizing materials and workmanship recognized as appropriate for the site conditions at hand; and

2) Detention ponds were designed to reduce runoff.

FIGURES AND SPREADSHEETS

FIGURE NO. 1 – AERIAL IMAGE
FIGURE NO. 2 – USGS IMAGE
FIGURE NO. 3 – SCS SOILS MAP
FIGURE NO. 4 – EXTREME PRECIPITATION TABLES
FIGURE NO. 5 – RIP RAP OUTLET PROTECTION APRON CALCULATIONS



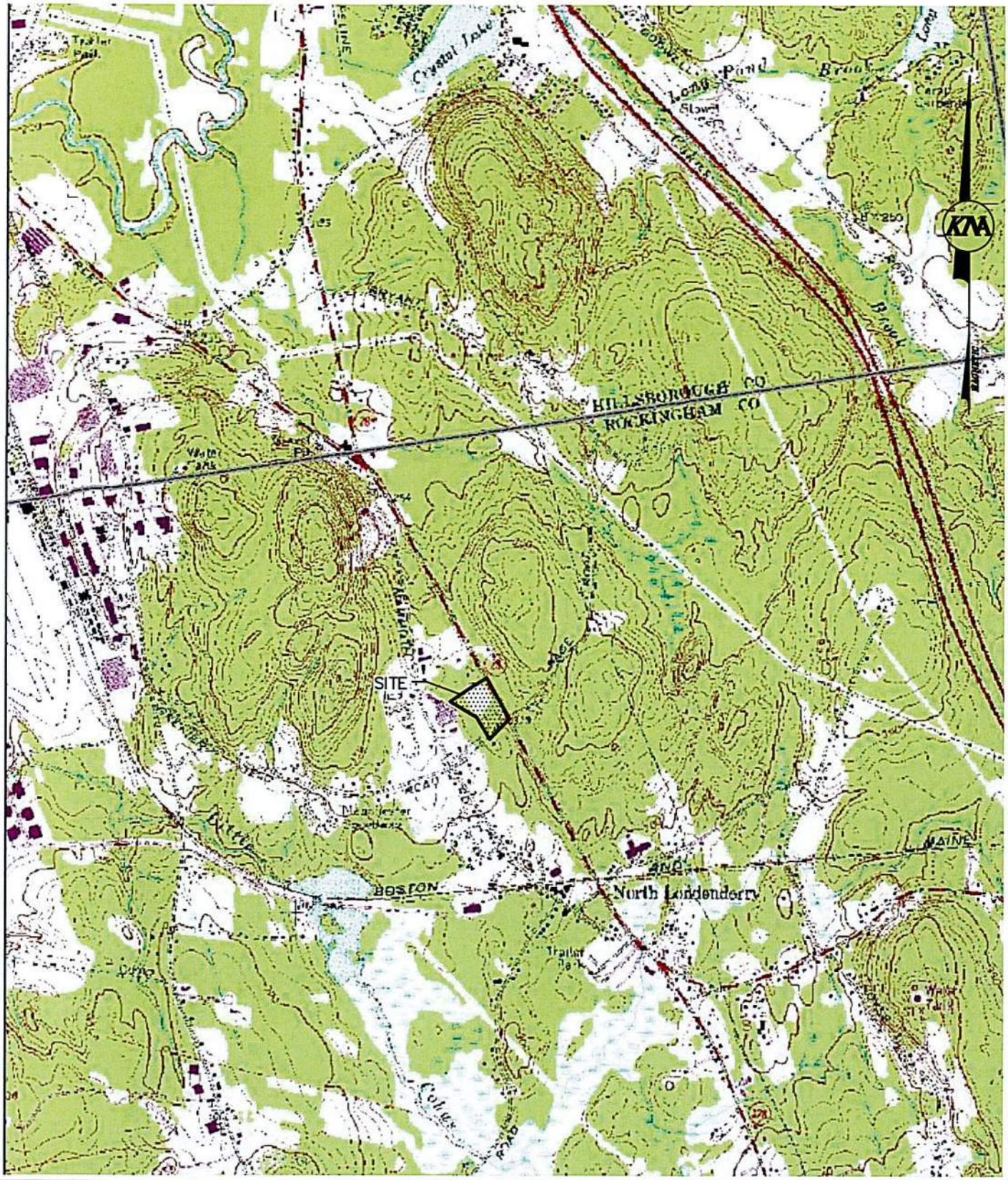
KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110
Phone (603) 627-2881

TITLE: AERIAL

295 ROCKINGHAM ROAD

MAP 17; LOT 25 - 295 ROCKINGHAM ROAD - LONDONDERRY, NH

DATE: JUNE 26, 2024	JOB. NO. 21-0113-1
SCALE: 1" = 2000'	SHEET 1 OF 1



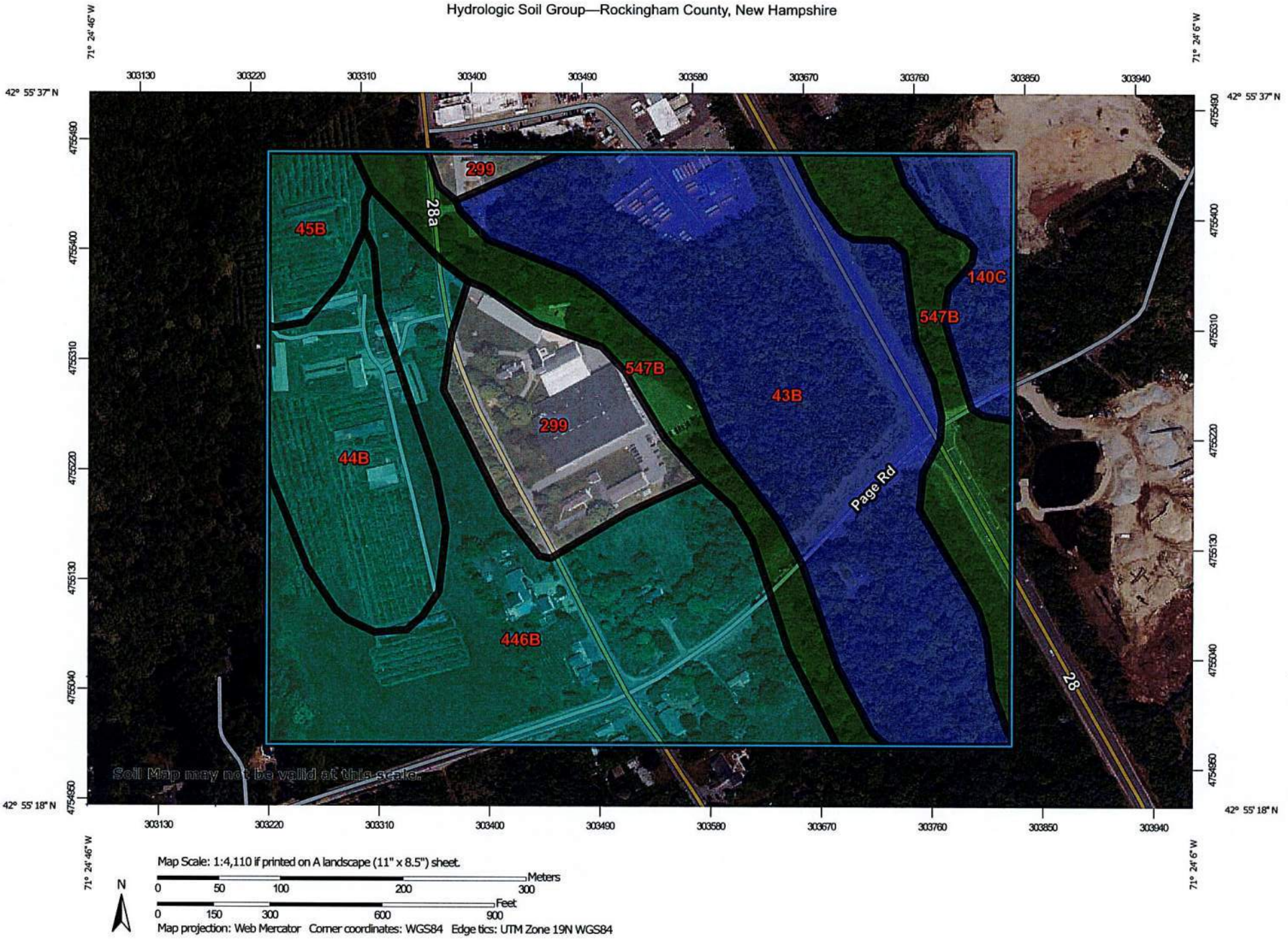
KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110
Phone (603) 627-2881

TITLE: USGS

295 ROCKINGHAM ROAD

MAP 17; LOT 25 - 295 ROCKINGHAM ROAD - LONDONDERRY, NH

DATE: JUNE 26, 2024	JOB. NO. 21-0113-1
SCALE: 1" = 2000'	SHEET 1 OF 1



Map Scale: 1:4,110 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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 Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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 1:24,000.

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: Rockingham County, New Hampshire
Survey Area Data: Version 24, Aug 31, 2021

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
43B	Canton fine sandy loam, 0 to 8 percent slopes, very stony	B	21.9	29.9%
44B	Montauk fine sandy loam, 3 to 8 percent slopes	C	7.5	10.3%
45B	Montauk fine sandy loam, 0 to 8 percent slopes, very stony	C	2.4	3.2%
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky	B	3.0	4.0%
299	Udorthents, smoothed		7.0	9.5%
446B	Scituate-Newfields complex, 3 to 8 percent slopes	C	20.3	27.8%
547B	Walpole very fine sandy loam, 3 to 8 percent slopes, very stony	A/D	11.1	15.2%
Totals for Area of Interest			**73.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New Hampshire
Location	
Longitude	71.406 degrees West
Latitude	42.925 degrees North
Elevation	0 feet
Date/Time	Thu, 01 Sep 2022 15:46:37 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.27	0.41	0.51	0.67	0.83	1.05	**1yr**	0.72	1.00	1.21	1.53	1.93	2.44	2.66	**1yr**	2.16	2.56	2.97	3.64	4.23	**1yr**
2yr	0.32	0.50	0.62	0.82	1.03	1.29	**2yr**	0.89	1.19	1.49	1.87	2.33	2.90	3.22	**2yr**	2.57	3.10	3.59	4.29	4.88	**2yr**
5yr	0.38	0.60	0.75	1.00	1.28	1.63	**5yr**	1.11	1.48	1.89	2.37	2.95	3.67	4.11	**5yr**	3.25	3.95	4.57	5.39	6.08	**5yr**
10yr	0.43	0.68	0.86	1.17	1.52	1.94	**10yr**	1.31	1.75	2.26	2.84	3.53	4.38	4.94	**10yr**	3.88	4.75	5.48	6.40	7.18	**10yr**
25yr	0.51	0.81	1.03	1.43	1.89	2.45	**25yr**	1.63	2.19	2.86	3.60	4.48	5.54	6.31	**25yr**	4.90	6.07	6.98	8.05	8.95	**25yr**
50yr	0.58	0.93	1.19	1.67	2.24	2.92	**50yr**	1.94	2.60	3.42	4.31	5.37	6.62	7.60	**50yr**	5.85	7.30	8.38	9.57	10.59	**50yr**
100yr	0.66	1.07	1.38	1.95	2.66	3.49	**100yr**	2.29	3.08	4.10	5.17	6.43	7.91	9.15	**100yr**	7.00	8.80	10.07	11.39	12.52	**100yr**
200yr	0.75	1.22	1.59	2.28	3.15	4.17	**200yr**	2.72	3.65	4.91	6.20	7.71	9.46	11.03	**200yr**	8.37	10.60	12.11	13.56	14.81	**200yr**
500yr	0.91	1.49	1.95	2.82	3.95	5.26	**500yr**	3.41	4.58	6.21	7.86	9.77	11.99	14.12	**500yr**	10.61	13.57	15.45	17.09	18.52	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.22	0.34	0.42	0.56	0.69	0.84	1yr	0.60	0.83	1.07	1.34	1.64	2.26	2.53	1yr	2.00	2.43	2.73	3.27	3.74	1yr
2yr	0.31	0.48	0.59	0.80	0.98	1.17	2yr	0.85	1.15	1.34	1.76	2.25	2.81	3.12	2yr	2.49	3.00	3.48	4.16	4.75	2yr
5yr	0.35	0.54	0.68	0.93	1.18	1.40	5yr	1.02	1.37	1.58	2.06	2.62	3.39	3.76	5yr	3.00	3.62	4.20	4.99	5.65	5yr
10yr	0.39	0.60	0.74	1.04	1.34	1.58	10yr	1.15	1.55	1.80	2.32	2.95	3.89	4.34	10yr	3.45	4.17	4.84	5.74	6.42	10yr
25yr	0.44	0.68	0.84	1.20	1.58	1.85	25yr	1.36	1.81	2.11	2.71	3.42	4.66	5.20	25yr	4.12	5.00	5.82	6.89	7.56	25yr
50yr	0.49	0.74	0.92	1.33	1.78	2.09	50yr	1.54	2.05	2.40	3.06	3.84	5.33	5.98	50yr	4.72	5.75	6.69	7.91	8.54	50yr
100yr	0.54	0.82	1.02	1.48	2.02	2.36	100yr	1.75	2.31	2.73	3.46	4.31	5.95	6.86	100yr	5.26	6.60	7.67	9.08	9.63	100yr
200yr	0.60	0.90	1.14	1.65	2.30	2.66	200yr	1.98	2.61	3.08	3.92	4.87	6.76	7.87	200yr	5.98	7.57	8.80	10.43	10.83	200yr
500yr	0.69	1.02	1.31	1.91	2.71	3.14	500yr	2.34	3.07	3.64	4.62	5.71	7.98	9.43	500yr	7.06	9.06	10.52	12.54	12.63	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.57	0.76	0.94	1.10	1yr	0.81	1.07	1.22	1.62	2.05	2.61	2.81	1yr	2.31	2.71	3.30	4.11	4.63	1yr
2yr	0.34	0.52	0.64	0.87	1.08	1.28	2yr	0.93	1.25	1.44	1.88	2.40	3.02	3.36	2yr	2.68	3.23	3.74	4.43	5.08	2yr
5yr	0.42	0.65	0.81	1.11	1.41	1.62	5yr	1.22	1.58	1.85	2.37	2.99	3.99	4.49	5yr	3.53	4.32	4.93	5.81	6.55	5yr
10yr	0.51	0.78	0.97	1.35	1.75	1.97	10yr	1.51	1.93	2.23	2.83	3.56	4.96	5.61	10yr	4.39	5.40	6.12	7.14	7.97	10yr
25yr	0.65	1.00	1.24	1.77	2.33	2.55	25yr	2.01	2.49	2.87	3.58	4.46	6.62	7.55	25yr	5.86	7.26	8.16	9.37	10.40	25yr
50yr	0.79	1.20	1.49	2.15	2.89	3.11	50yr	2.49	3.04	3.48	4.29	5.29	8.24	9.47	50yr	7.29	9.11	10.15	11.51	12.71	50yr
100yr	0.96	1.45	1.82	2.63	3.60	3.79	100yr	3.11	3.71	4.22	5.13	6.28	10.34	11.86	100yr	9.15	11.41	12.61	14.16	15.58	100yr
200yr	1.16	1.75	2.22	3.21	4.48	4.62	200yr	3.87	4.52	5.11	6.13	7.46	12.91	14.91	200yr	11.42	14.34	15.71	17.44	19.12	200yr
500yr	1.51	2.25	2.90	4.21	5.98	6.01	500yr	5.16	5.88	6.60	7.77	9.38	17.33	20.17	500yr	15.33	19.39	20.99	22.97	25.10	500yr

Powered by ACIS
Northeast Regional Climate Center

KNA KEACH-NORDSTROM ASSOCIATES, INC.

RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project:	**295 Rockingham Road**	Date:	**2/20/2026**
KNA #:	21-0113-1		

The purpose of this spreadsheet is to calculate the dimensions of Inlet/Outlet Protection apron (riprap) required during the SCS/NRCS 25-year type III 24-hr storm event. The spillway weir(s) inlet/outlet apron protection will be sized for the SCS/NRCS **25-year type III 24-hr storm event.**

Required Input:

Q	peak flow in CFS
Do	diameter in feet of outlet or width of channel
Tw	tail water at end of apron

Depending on the tail water conditions, either **column 1** or **column 2** is used for calculations

	Column One where Tw<1/2Do	Column Two where Tw>1/2Do
Length of Apron	**La = (1.8Q/Do^3/2)+7Do**	**La = 3*Q/Do^3/2+7Do**
Width of Apron at outfall	W1 = 3*Do W2 = 3*Do + La	W1 = 3*Do W2 = 3*Do+0.4*La

If defined channel, then use channel width for W1 and W2

Rock Rip Rap Size:

d50 = (0.02*Q^4/3)/(Tw*Do)

RIRAP GRADATION ENVELOPE

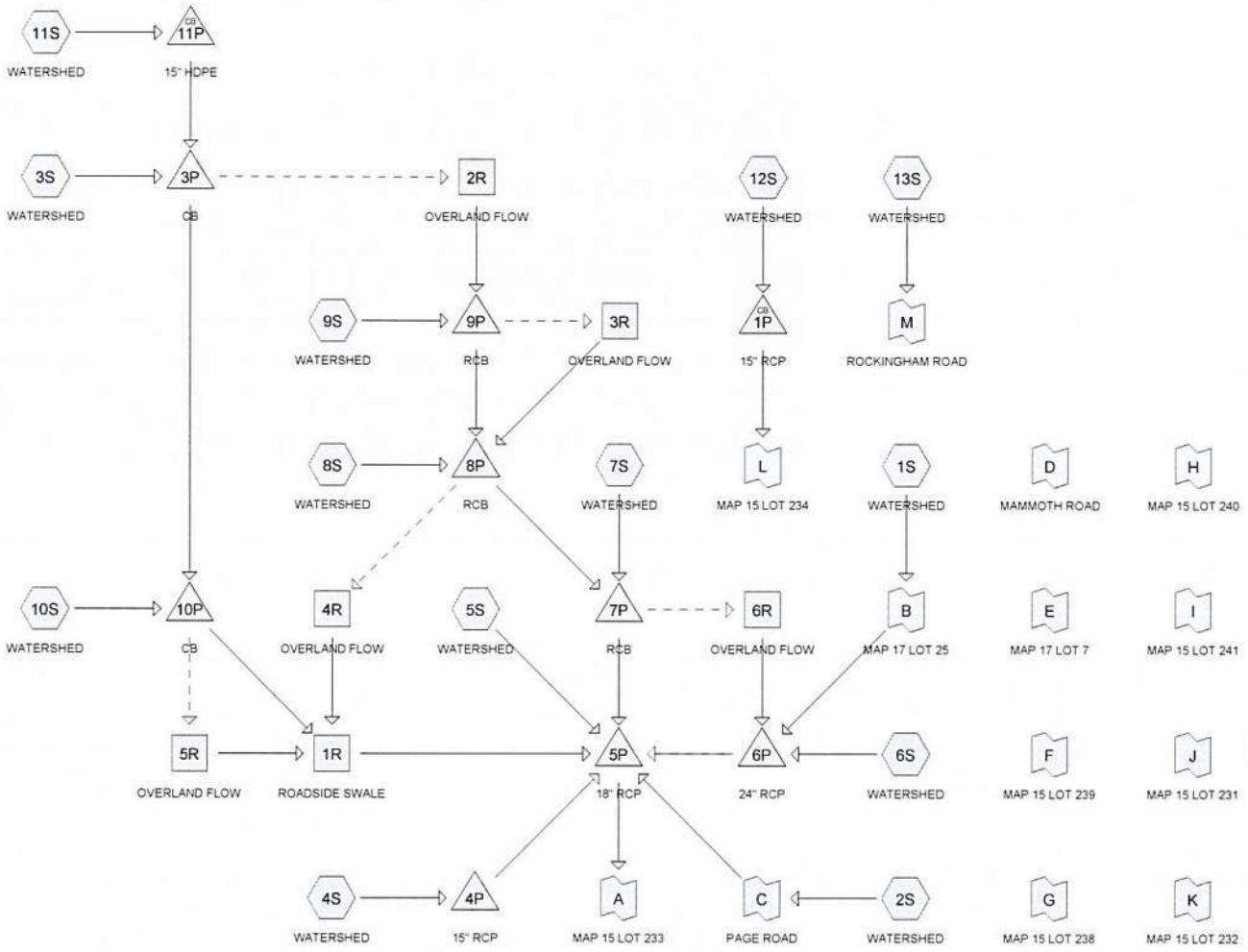
Calculation Summary Table:

Input to Chart Description (Optional)		Q-25** (cfs)	Do (ft)	Tw (ft)	Calculated Output La	W1	W2 no channel	d50, ft	d50 in	USE d50 in.	d100 FROM in	d100 TO in	d85 FROM in	d85 TO in	d50 FROM in	d50 TO in	d15 FROM in	d15 TO in	depth in	USE Depth in.	USE Length ft.	USE W1 ft.	USE W2 ft.
HW#2	Detention Pond #2 Outlet	0.50	1.25	0.28	9	4	13	0.0	0.27	3	5	6	4	5	3	5	1	2	7.5	8	9	4	13

* Center Apron with Headwall and Outlet Pipe (All Cases)
* Line Apron with 6.0 oz. Geotextile Fabric (All Cases)

HYDROCAD DRAINAGE ANALYSIS

I. 25-YR, PRE-DEVELOPMENT
II. 25-YR, POST-DEVELOPMENT
III. 50-YR POND SUMMARIES



Subcat Reach Pond Link

Routing Diagram for 2101131-PRE-DEVELOPMENT_REV2, Revised November 25, 2025

Prepared by Keach-Nordstrom Associates, Inc, Printed 2/18/2026

HydroCAD® 10.20-6a s/n 01045 © 2024 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.13	61	>75% Grass cover, Good, HSG B (4S, 5S, 6S, 12S, 13S)
5.51	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 6S, 7S, 8S, 9S, 10S, 11S)
0.40	80	>75% Grass cover, Good, HSG D (6S)
2.81	98	Paved parking (2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 13S)
0.31	98	Paved parking, HSG C (12S)
2.14	98	Roofs (2S, 3S, 6S, 8S, 9S, 11S)
2.38	55	Woods, Good, HSG B (4S, 5S, 6S, 12S, 13S)
8.47	70	Woods, Good, HSG C (1S, 2S, 3S, 4S, 6S, 7S, 8S, 9S, 10S, 12S, 13S)
2.09	77	Woods, Good, HSG D (1S, 2S, 5S, 6S)
25.23	**76**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.00	HSG A	
3.51	HSG B	4S, 5S, 6S, 12S, 13S
14.29	HSG C	1S, 2S, 3S, 4S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S
2.49	HSG D	1S, 2S, 5S, 6S
4.94	Other	2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 13S
25.23		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: WATERSHED Runoff Area=37,990 sf 0.00% Impervious Runoff Depth>2.53"
Flow Length=238' Tc=10.5 min CN=71 Runoff=2.19 cfs 0.184 af

Subcatchment2S: WATERSHED Runoff Area=30,122 sf 8.90% Impervious Runoff Depth>2.79"
Flow Length=200' Tc=14.2 min CN=74 Runoff=1.74 cfs 0.161 af

Subcatchment3S: WATERSHED Runoff Area=36,571 sf 28.26% Impervious Runoff Depth>3.36"
Flow Length=317' Tc=11.9 min CN=80 Runoff=2.71 cfs 0.235 af

Subcatchment4S: WATERSHED Runoff Area=11,669 sf 34.32% Impervious Runoff Depth>2.80"
Tc=6.0 min CN=74 Runoff=0.86 cfs 0.062 af

Subcatchment5S: WATERSHED Runoff Area=43,638 sf 26.04% Impervious Runoff Depth>2.44"
Flow Length=150' Tc=9.7 min CN=70 Runoff=2.47 cfs 0.204 af

Subcatchment6S: WATERSHED Runoff Area=639,175 sf 25.40% Impervious Runoff Depth>3.05"
Flow Length=1,316' Tc=48.0 min CN=77 Runoff=23.71 cfs 3.730 af

Subcatchment7S: WATERSHED Runoff Area=18,012 sf 7.36% Impervious Runoff Depth>2.71"
Flow Length=447' Tc=10.7 min CN=73 Runoff=1.11 cfs 0.093 af

Subcatchment8S: WATERSHED Runoff Area=30,349 sf 3.67% Impervious Runoff Depth>2.89"
Flow Length=322' Tc=8.0 min CN=75 Runoff=2.18 cfs 0.168 af

Subcatchment9S: WATERSHED Runoff Area=47,516 sf 12.13% Impervious Runoff Depth>3.08"
Flow Length=275' Tc=8.4 min CN=77 Runoff=3.58 cfs 0.280 af

Subcatchment10S: WATERSHED Runoff Area=36,443 sf 15.15% Impervious Runoff Depth>2.98"
Flow Length=233' Tc=12.0 min CN=76 Runoff=2.39 cfs 0.208 af

Subcatchment11S: WATERSHED Runoff Area=34,434 sf 30.64% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=81 Runoff=3.14 cfs 0.228 af

Subcatchment12S: WATERSHED Runoff Area=108,318 sf 12.62% Impervious Runoff Depth>2.61"
Flow Length=505' Tc=23.1 min CN=72 Runoff=4.80 cfs 0.541 af

Subcatchment13S: WATERSHED Runoff Area=24,832 sf 1.08% Impervious Runoff Depth>2.02"
Flow Length=150' Tc=9.7 min CN=65 Runoff=1.14 cfs 0.096 af

Reach 1R: ROADSIDESWALE Avg. Flow Depth=0.24' Max Vel=2.88 fps Inflow=7.80 cfs 0.645 af
n=0.025 L=363.0' S=0.0183 '/' Capacity=89.79 cfs Outflow=7.41 cfs 0.644 af

Reach 2R: OVERLANDFLOW Avg. Flow Depth=0.17' Max Vel=1.95 fps Inflow=3.82 cfs 0.082 af
n=0.025 L=160.0' S=0.0122 '/' Capacity=73.48 cfs Outflow=3.54 cfs 0.082 af

Reach 3R: OVERLANDFLOW Avg. Flow Depth=0.28' Max Vel=3.68 fps Inflow=6.02 cfs 0.132 af
n=0.025 L=150.0' S=0.0257 '/' Capacity=60.51 cfs Outflow=6.01 cfs 0.132 af

Reach 4R: OVERLAND FLOW Avg. Flow Depth=0.16' Max Vel=2.80 fps Inflow=4.69 cfs 0.058 af
n=0.025 L=90.0' S=0.0270 '/' Capacity=109.09 cfs Outflow=4.75 cfs 0.058 af

Reach 5R: OVERLAND FLOW Avg. Flow Depth=0.04' Max Vel=1.43 fps Inflow=0.64 cfs 0.009 af
n=0.025 L=100.0' S=0.0416 '/' Capacity=135.41 cfs Outflow=0.60 cfs 0.009 af

Reach 6R: OVERLAND FLOW Avg. Flow Depth=0.13' Max Vel=3.01 fps Inflow=2.02 cfs 0.176 af
n=0.025 L=100.0' S=0.0450 '/' Capacity=80.01 cfs Outflow=2.04 cfs 0.176 af

Pond 1P: 15" RCP Peak Elev=309.60' Inflow=4.80 cfs 0.541 af
15.0" Round Culvert n=0.011 L=111.0' S=0.0317 '/' Outflow=4.80 cfs 0.541 af

Pond 3P: CB Peak Elev=321.11' Storage=167 cf Inflow=5.49 cfs 0.463 af
Primary=1.92 cfs 0.380 af Secondary=3.82 cfs 0.082 af Outflow=5.68 cfs 0.462 af

Pond 4P: 15" RCP Peak Elev=309.08' Storage=6 cf Inflow=0.86 cfs 0.062 af
Primary=0.86 cfs 0.062 af Secondary=0.00 cfs 0.000 af Outflow=0.86 cfs 0.062 af

Pond 5P: 18" RCP Peak Elev=308.51' Storage=2,360 cf Inflow=15.91 cfs 5.514 af
18.0" Round Culvert n=0.011 L=112.5' S=0.0096 '/' Outflow=13.14 cfs 5.514 af

Pond 6P: 24" RCP Peak Elev=308.74' Storage=65,210 cf Inflow=24.71 cfs 4.089 af
Primary=10.62 cfs 4.056 af Secondary=0.00 cfs 0.000 af Outflow=10.62 cfs 4.028 af

Pond 7P: RCB Peak Elev=311.06' Storage=123 cf Inflow=5.82 cfs 0.565 af
Primary=3.79 cfs 0.387 af Secondary=2.02 cfs 0.176 af Outflow=5.81 cfs 0.563 af

Pond 8P: RCB Peak Elev=315.86' Storage=204 cf Inflow=9.23 cfs 0.529 af
Primary=4.71 cfs 0.471 af Secondary=4.69 cfs 0.058 af Outflow=9.40 cfs 0.528 af

Pond 9P: RCB Peak Elev=319.89' Storage=123 cf Inflow=7.07 cfs 0.362 af
Primary=1.14 cfs 0.230 af Secondary=6.02 cfs 0.132 af Outflow=7.13 cfs 0.361 af

Pond 10P: CB Peak Elev=317.50' Storage=671 cf Inflow=4.20 cfs 0.588 af
Primary=3.12 cfs 0.579 af Secondary=0.64 cfs 0.009 af Outflow=3.75 cfs 0.588 af

Pond 11P: 15" HDPE Peak Elev=325.57' Inflow=3.14 cfs 0.228 af
15.0" Round Culvert n=0.011 L=41.0' S=0.0707 '/' Outflow=3.14 cfs 0.228 af

Link A: MAP 15 LOT 233 Inflow=13.14 cfs 5.514 af
Primary=13.14 cfs 5.514 af

Link B: MAP 17 LOT 25 Inflow=2.19 cfs 0.184 af
Primary=2.19 cfs 0.184 af

Link C: PAGE ROAD Inflow=1.74 cfs 0.161 af
Primary=1.74 cfs 0.161 af

Link D: MAMMOTH ROAD
Primary=0.00 cfs 0.000 af

Link E: MAP 17 LOT 7
Primary=0.00 cfs 0.000 af

Link F: MAP 15 LOT 239
Primary=0.00 cfs 0.000 af

Link G: MAP 15 LOT 238
Primary=0.00 cfs 0.000 af

Link H: MAP 15 LOT 240
Primary=0.00 cfs 0.000 af

Link I: MAP 15 LOT 241
Primary=0.00 cfs 0.000 af

Link J: MAP 15 LOT 231
Primary=0.00 cfs 0.000 af

Link K: MAP 15 LOT 232
Primary=0.00 cfs 0.000 af

Link L: MAP 15 LOT 234
Inflow=4.80 cfs 0.541 af
Primary=4.80 cfs 0.541 af

Link M: ROCKINGHAMROAD
Inflow=1.14 cfs 0.096 af
Primary=1.14 cfs 0.096 af

Total Runoff Area = 25.23 ac Runoff Volume = 6.189 af Average Runoff Depth = 2.94"
79.17% Pervious = 19.97 ac 20.83% Impervious = 5.26 ac

Summary for Subcatchment 1S: WATERSHED

Runoff = 2.19 cfs @ 12.15 hrs, Volume= 0.184 af, Depth> 2.53"
Routed to Link B : MAP 17 LOT 25

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

Area (sf)	CN	Description
33,555	70	Woods, Good, HSG C
2,152	77	Woods, Good, HSG D
2,283	74	>75% Grass cover, Good, HSG C
37,990	71	Weighted Average
37,990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
2.1	188	0.0850	1.46		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	238	Total			

Summary for Subcatchment 2S: WATERSHED

Runoff = 1.74 cfs @ 12.20 hrs, Volume= 0.161 af, Depth> 2.79"
Routed to Link C : PAGE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	16,741	70	Woods, Good, HSG C
	290	77	Woods, Good, HSG D
	10,410	74	>75% Grass cover, Good, HSG C
*	1,878	98	Paved parking
*	803	98	Roofs
	30,122	74	Weighted Average
	27,441		91.10% Pervious Area
	2,681		8.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	50	0.0250	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
2.3	150	0.0490	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.2	200	Total			

Summary for Subcatchment 3S: WATERSHED

Runoff = 2.71 cfs @ 12.17 hrs, Volume= 0.235 af, Depth> 3.36"
Routed to Pond 3P : CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	8,219	70	Woods, Good, HSG C
	18,018	74	>75% Grass cover, Good, HSG C
*	9,019	98	Paved parking
*	1,315	98	Roofs
	36,571	80	Weighted Average
	26,237		71.74% Pervious Area
	10,334		28.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
1.2	50	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	37	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	160	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.9	317	Total			

Summary for Subcatchment 4S: WATERSHED

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.062 af, Depth> 2.80"
Routed to Pond 4P : 15" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	569	55	Woods, Good, HSG B
	195	70	Woods, Good, HSG C
	6,900	61	>75% Grass cover, Good, HSG B
*	4,005	98	Paved parking
	11,669	74	Weighted Average
	7,664		65.68% Pervious Area
	4,005		34.32% Impervious Area

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

Summary for Subcatchment 5S: WATERSHED

Runoff = 2.47 cfs @ 12.14 hrs, Volume= 0.204 af, Depth> 2.44"
Routed to Pond 5P : 18" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	9,648	55	Woods, Good, HSG B
	851	77	Woods, Good, HSG D
	21,775	61	>75% Grass cover, Good, HSG B
*	11,364	98	Paved parking
	43,638	70	Weighted Average
	32,274		73.96% Pervious Area
	11,364		26.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
1.3	100	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.7	150	Total			

Summary for Subcatchment 6S: WATERSHED

Runoff = 23.71 cfs @ 12.66 hrs, Volume= 3.730 af, Depth> 3.05"
Routed to Pond 6P : 24" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	79,545	55	Woods, Good, HSG B
	189,214	70	Woods, Good, HSG C
	87,572	77	Woods, Good, HSG D
	7,600	61	>75% Grass cover, Good, HSG B
	95,398	74	>75% Grass cover, Good, HSG C
	17,469	80	>75% Grass cover, Good, HSG D
*	78,900	98	Paved parking
*	83,477	98	Roofs
	639,175	77	Weighted Average
	476,798		74.60% Pervious Area
	162,377		25.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
37.0	1,266	0.0130	0.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
48.0	1,316	Total			

Summary for Subcatchment 7S: WATERSHED

Runoff = 1.11 cfs @ 12.16 hrs, Volume= 0.093 af, Depth> 2.71"
Routed to Pond 7P : RCB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	12,181	70	Woods, Good, HSG C
	4,506	74	>75% Grass cover, Good, HSG C
*	1,325	98	Paved parking
	18,012	73	Weighted Average
	16,687		92.64% Pervious Area
	1,325		7.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0400	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
1.8	130	0.0310	1.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.4	267	0.0410	1.01		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.7	447	Total			

Summary for Subcatchment 8S: WATERSHED

Runoff = 2.18 cfs @ 12.12 hrs, Volume= 0.168 af, Depth> 2.89"
Routed to Pond 8P : RCB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	684	70	Woods, Good, HSG C
	28,552	74	>75% Grass cover, Good, HSG C
*	187	98	Paved parking
*	926	98	Roofs
	30,349	75	Weighted Average
	29,236		96.33% Pervious Area
	1,113		3.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0400	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
3.5	272	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	322	Total			

Summary for Subcatchment 9S: WATERSHED

Runoff = 3.58 cfs @ 12.12 hrs, Volume= 0.280 af, Depth> 3.08"
Routed to Pond 9P : RCB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	2,126	70	Woods, Good, HSG C
	39,624	74	>75% Grass cover, Good, HSG C
*	1,971	98	Paved parking
*	3,795	98	Roofs
	47,516	77	Weighted Average
	41,750		87.87% Pervious Area
	5,766		12.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	50	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	205	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	275	Total			

Summary for Subcatchment 10S: WATERSHED

Runoff = 2.39 cfs @ 12.17 hrs, Volume= 0.208 af, Depth> 2.98"
Routed to Pond 10P : CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	13,784	70	Woods, Good, HSG C
	17,139	74	>75% Grass cover, Good, HSG C
*	5,520	98	Paved parking
	36,443	76	Weighted Average
	30,923		84.85% Pervious Area
	5,520		15.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0630	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
3.8	183	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.0	233	Total			

Summary for Subcatchment 11S: WATERSHED

Runoff = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af, Depth> 3.46"
Routed to Pond 11P : 15" HDPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	23,883	74	>75% Grass cover, Good, HSG C
*	7,832	98	Paved parking
*	2,719	98	Roofs
	34,434	81	Weighted Average
	23,883		69.36% Pervious Area
	10,551		30.64% Impervious Area

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

Summary for Subcatchment 12S: WATERSHED

Runoff = 4.80 cfs @ 12.33 hrs, Volume= 0.541 af, Depth> 2.61"
Routed to Pond 1P : 15" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

Area (sf)	CN	Description
5,672	55	Woods, Good, HSG B
76,778	70	Woods, Good, HSG C
12,194	61	>75% Grass cover, Good, HSG B
13,674	98	Paved parking, HSG C
108,318	72	Weighted Average
94,644		87.38% Pervious Area
13,674		12.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0400	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
13.3	455	0.0130	0.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.1	505	Total			

Summary for Subcatchment 13S: WATERSHED

Runoff = 1.14 cfs @ 12.15 hrs, Volume= 0.096 af, Depth> 2.02"
Routed to Link M : ROCKINGHAM ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	8,416	55	Woods, Good, HSG B
	15,374	70	Woods, Good, HSG C
	774	61	>75% Grass cover, Good, HSG B
*	268	98	Paved parking
	24,832	65	Weighted Average
	24,564		98.92% Pervious Area
	268		1.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
1.3	100	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.7	150	Total			

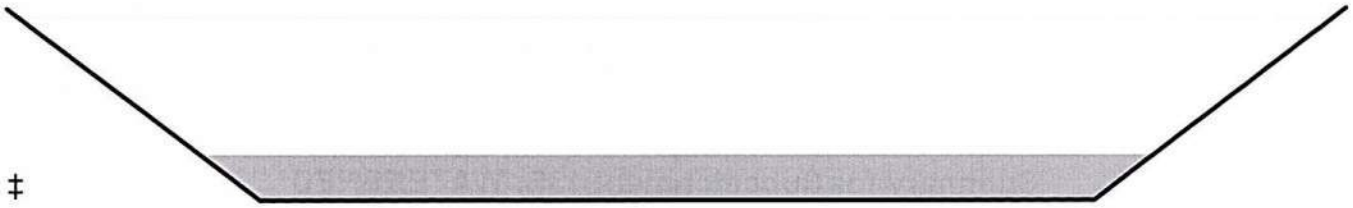
Summary for Reach 1R: ROADSIDE SWALE

Inflow Area = 2.47 ac, 24.57% Impervious, Inflow Depth > 3.14" for 25-yr event
Inflow = 7.80 cfs @ 12.15 hrs, Volume= 0.645 af
Outflow = 7.41 cfs @ 12.17 hrs, Volume= 0.644 af, Atten= 5%, Lag= 1.4 min
Routed to Pond 5P : 18" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 2.88 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 6.9 min

Peak Storage= 920 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 11.42'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 89.79 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 363.0' Slope= 0.0183 '/'
Inlet Invert= 313.24', Outlet Invert= 306.60'



‡

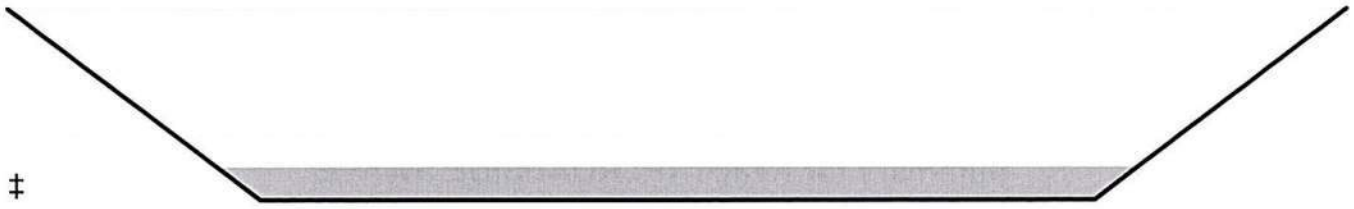
Summary for Reach 2R: OVERLAND FLOW

Inflow = 3.82 cfs @ 12.11 hrs, Volume= 0.082 af
Outflow = 3.54 cfs @ 12.13 hrs, Volume= 0.082 af, Atten= 7%, Lag= 1.4 min
Routed to Pond 9P : RCB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.95 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.68 fps, Avg. Travel Time= 3.9 min

Peak Storage= 289 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 11.03'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 73.48 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 160.0' Slope= 0.0122 '/'
Inlet Invert= 320.75', Outlet Invert= 318.79'



‡

Summary for Reach 3R: OVERLAND FLOW

Inflow = 6.02 cfs @ 12.13 hrs, Volume= 0.132 af
Outflow = 6.01 cfs @ 12.14 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.5 min
Routed to Pond 8P : RCB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.68 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 1.7 min

Peak Storage= 244 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.28' , Surface Width= 6.67'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 60.51 cfs

5.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 150.0' Slope= 0.0257 '/'
Inlet Invert= 319.25', Outlet Invert= 315.39'



‡

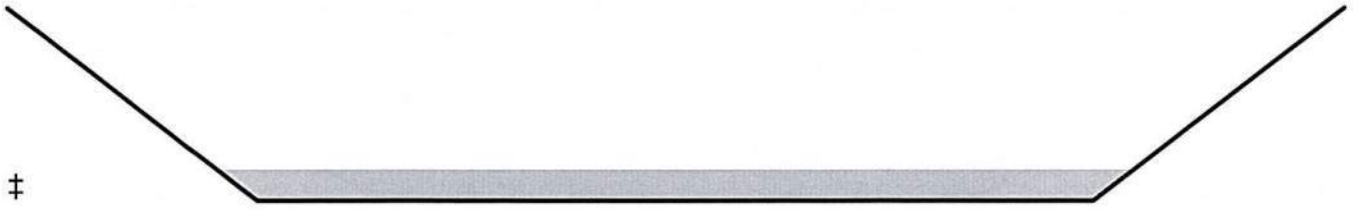
Summary for Reach 4R: OVERLAND FLOW

Inflow = 4.69 cfs @ 12.12 hrs, Volume= 0.058 af
Outflow = 4.75 cfs @ 12.15 hrs, Volume= 0.058 af, Atten= 0%, Lag= 1.5 min
Routed to Reach 1R : ROADSIDE SWALE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 2.80 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 1.3 min

Peak Storage= 153 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.16' , Surface Width= 10.97'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 109.09 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 90.0' Slope= 0.0270 '/'
Inlet Invert= 315.67', Outlet Invert= 313.24'



‡

Summary for Reach 5R: OVERLAND FLOW

Inflow = 0.64 cfs @ 12.27 hrs, Volume= 0.009 af
Outflow = 0.60 cfs @ 12.29 hrs, Volume= 0.009 af, Atten= 5%, Lag= 1.2 min
Routed to Reach 1R : ROADSIDE SWALE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.43 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 2.0 min

Peak Storage= 42 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 10.25'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 135.41 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 100.0' Slope= 0.0416 '/'
Inlet Invert= 317.40', Outlet Invert= 313.24'



‡

Summary for Reach 6R: OVERLAND FLOW

Inflow = 2.02 cfs @ 12.18 hrs, Volume= 0.176 af
Outflow = 2.04 cfs @ 12.10 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 6P : 24" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.01 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.89 fps, Avg. Travel Time= 1.9 min

Peak Storage= 68 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 5.75'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 80.01 cfs

5.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 100.0' Slope= 0.0450 '/'
Inlet Invert= 310.74', Outlet Invert= 306.24'



‡

Summary for Pond 1P: 15" RCP

Inflow Area = 2.49 ac, 12.62% Impervious, Inflow Depth > 2.61" for 25-yr event
Inflow = 4.80 cfs @ 12.33 hrs, Volume= 0.541 af
Outflow = 4.80 cfs @ 12.33 hrs, Volume= 0.541 af, Atten= 0%, Lag= 0.0 min
Primary = 4.80 cfs @ 12.33 hrs, Volume= 0.541 af
Routed to Link L : MAP 15 LOT 234

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 309.60' @ 12.33 hrs
Flood Elev= 312.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	308.31'	**15.0" Round Culvert** L= 111.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 308.31' / 304.79' S= 0.0317 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=4.77 cfs @ 12.33 hrs HW=309.59' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.77 cfs @ 3.89 fps)

Summary for Pond 3P: CB

Inflow Area = 1.63 ac, 29.41% Impervious, Inflow Depth > 3.41" for 25-yr event
Inflow = 5.49 cfs @ 12.11 hrs, Volume= 0.463 af
Outflow = 5.68 cfs @ 12.11 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
Primary = 1.92 cfs @ 11.97 hrs, Volume= 0.380 af
Routed to Pond 10P : CB
Secondary = 3.82 cfs @ 12.11 hrs, Volume= 0.082 af
Routed to Reach 2R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 321.11' @ 12.11 hrs Surf.Area= 356 sf Storage= 167 cf
Flood Elev= 321.00' Surf.Area= 356 sf Storage= 167 cf

Plug-Flow detention time= 2.6 min calculated for 0.461 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (819.1 - 818.0)

Volume	Invert	Avail.Storage	Storage Description
#1	319.10'	16 cf	**4.00'D x 1.25'H Vertical Cone/Cylinder**
#2	319.10'	151 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		167 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
319.10	5	0	0
320.50	65	49	49
321.00	343	102	151

Device	Routing	Invert	Outlet Devices
#1	Primary	319.10'	**8.0" Round Culvert** L= 228.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 319.10' / 314.83' S= 0.0187 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Device 1	320.27'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	320.75'	**8.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.91 cfs @ 11.97 hrs HW=320.85' TW=316.76' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.91 cfs @ 5.47 fps)
↑—**2=Grate** (Passes 1.91 cfs of 11.56 cfs potential flow)

Secondary OutFlow Max=3.67 cfs @ 12.11 hrs HW=321.10' TW=320.92' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Weir Controls 3.67 cfs @ 1.30 fps)

Summary for Pond 4P: 15" RCP

Inflow Area = 0.27 ac, 34.32% Impervious, Inflow Depth > 2.80" for 25-yr event
Inflow = 0.86 cfs @ 12.09 hrs, Volume= 0.062 af
Outflow = 0.86 cfs @ 12.10 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.1 min
Primary = 0.86 cfs @ 12.10 hrs, Volume= 0.062 af
Routed to Pond 5P : 18" RCP
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 5P : 18" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 309.08' @ 12.10 hrs Surf.Area= 31 sf Storage= 6 cf
Flood Elev= 311.00' Surf.Area= 730 sf Storage= 593 cf

Plug-Flow detention time= 0.2 min calculated for 0.062 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (832.1 - 831.9)

Volume	Invert	Avail.Storage	Storage Description
#1	308.62'	593 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.62	5	0	0
309.00	16	4	4
310.00	216	116	120
311.00	730	473	593

Device	Routing	Invert	Outlet Devices
#1	Primary	308.64'	**15.0" Round Culvert** L= 24.6' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 308.64' / 306.60' S= 0.0829 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf
#2	Secondary	310.96'	**2.0' long x 25.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.85 cfs @ 12.10 hrs HW=309.07' TW=307.61' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.85 cfs @ 2.25 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=308.62' TW=305.37' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 5P: 18" RCP

Inflow Area = 22.17 ac, 22.26% Impervious, Inflow Depth > 2.98" for 25-yr event
Inflow = 15.91 cfs @ 12.17 hrs, Volume= 5.514 af
Outflow = 13.14 cfs @ 12.26 hrs, Volume= 5.514 af, Atten= 17%, Lag= 5.6 min
Primary = 13.14 cfs @ 12.26 hrs, Volume= 5.514 af
Routed to Link A : MAP 15 LOT 233

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 308.51' @ 12.26 hrs Surf.Area= 2,081 sf Storage= 2,360 cf
Flood Elev= 310.88' Surf.Area= 7,537 sf Storage= 12,203 cf

Plug-Flow detention time= 1.4 min calculated for 5.514 af (100% of inflow)
Center-of-Mass det. time= 1.4 min (899.7 - 898.3)

Volume	Invert	Avail.Storage	Storage Description
#1	305.37'	13,134 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
305.37	10	0	0
306.00	92	32	32
307.00	641	367	399
308.00	1,481	1,061	1,460
309.00	2,668	2,075	3,534
310.00	4,275	3,472	7,006
311.00	7,982	6,129	13,134

Device	Routing	Invert	Outlet Devices
#1	Primary	305.37'	**18.0" Round Culvert** L= 112.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 305.37' / 304.29' S= 0.0096 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=13.10 cfs @ 12.26 hrs HW=308.49' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 13.10 cfs @ 7.41 fps)

Summary for Pond 6P: 24" RCP

Inflow Area = 15.55 ac, 23.98% Impervious, Inflow Depth > 3.16" for 25-yr event
Inflow = 24.71 cfs @ 12.64 hrs, Volume= 4.089 af
Outflow = 10.62 cfs @ 13.39 hrs, Volume= 4.028 af, Atten= 57%, Lag= 45.1 min
Primary = 10.62 cfs @ 13.39 hrs, Volume= 4.056 af
Routed to Pond 5P : 18" RCP
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 5P : 18" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 308.74' @ 13.34 hrs Surf.Area= 44,481 sf Storage= 65,210 cf
Flood Elev= 311.00' Surf.Area= 73,507 sf Storage= 196,526 cf

Plug-Flow detention time= 75.5 min calculated for 4.020 af (98% of inflow)
Center-of-Mass det. time= 67.1 min (922.4 - 855.3)

Volume	Invert	Avail.Storage	Storage Description
#1	306.24'	196,526 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
306.24	4,300	0	0
308.00	35,858	35,339	35,339
310.00	59,050	94,908	130,247
311.00	73,507	66,279	196,526

Device	Routing	Invert	Outlet Devices
#1	Primary	306.24'	**24.0" Round Culvert** L= 43.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 306.24' / 305.70' S= 0.0123 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	310.88'	**6.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.63 cfs @ 13.39 hrs HW=308.74' TW=308.25' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 10.63 cfs @ 3.38 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=306.24' TW=305.37' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 7P: RCB

Inflow Area = 2.20 ac, 8.56% Impervious, Inflow Depth > 3.08" for 25-yr event
Inflow = 5.82 cfs @ 12.15 hrs, Volume= 0.565 af
Outflow = 5.81 cfs @ 12.18 hrs, Volume= 0.563 af, Atten= 0%, Lag= 1.4 min
Primary = 3.79 cfs @ 12.18 hrs, Volume= 0.387 af
Routed to Pond 5P : 18" RCP
Secondary = 2.02 cfs @ 12.18 hrs, Volume= 0.176 af
Routed to Reach 6R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 311.06' @ 12.18 hrs Surf.Area= 521 sf Storage= 123 cf
Flood Elev= 311.00' Surf.Area= 521 sf Storage= 123 cf

Plug-Flow detention time= 2.2 min calculated for 0.562 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (827.6 - 826.7)

Volume	Invert	Avail.Storage	Storage Description
#1	306.24'	57 cf	**4.00'D x 4.50'H Vertical Cone/Cylinder**
#2	310.74'	67 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		123 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
310.74	5	0	0
311.00	508	67	67

Device	Routing	Invert	Outlet Devices
#1	Primary	306.24'	**12.0" Round Culvert** L= 44.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 306.24' / 305.82' S= 0.0095 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	310.74'	**24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	310.75'	**5.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.76 cfs @ 12.18 hrs HW=311.06' TW=308.23' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 3.76 cfs of 6.37 cfs potential flow)
↑—**2=Grate** (Weir Controls 3.76 cfs @ 1.86 fps)

Secondary OutFlow Max=2.01 cfs @ 12.18 hrs HW=311.06' TW=310.86' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Weir Controls 2.01 cfs @ 1.28 fps)

Summary for Pond 8P: RCB

Inflow Area = 1.79 ac, 8.83% Impervious, Inflow Depth > 3.55" for 25-yr event
Inflow = 9.23 cfs @ 12.14 hrs, Volume= 0.529 af
Outflow = 9.40 cfs @ 12.12 hrs, Volume= 0.528 af, Atten= 0%, Lag= 0.0 min
Primary = 4.71 cfs @ 12.14 hrs, Volume= 0.471 af
Routed to Pond 7P : RCB
Secondary = 4.69 cfs @ 12.12 hrs, Volume= 0.058 af
Routed to Reach 4R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 315.86' @ 12.14 hrs Surf.Area= 480 sf Storage= 204 cf
Flood Elev= 316.00' Surf.Area= 614 sf Storage= 278 cf

Plug-Flow detention time= 1.4 min calculated for 0.527 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (814.5 - 813.9)

Volume	Invert	Avail.Storage	Storage Description
#1	315.39'	186 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	308.11'	91 cf	**4.00'D x 7.28'H Vertical Cone/Cylinder**
		278 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
315.39	10	0	0
316.00	601	186	186

Device	Routing	Invert	Outlet Devices
#1	Primary	308.11'	**12.0" Round Culvert** L= 315.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 308.11' / 306.28' S= 0.0058 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Secondary	315.67'	**35.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.71 cfs @ 12.14 hrs HW=315.86' TW=311.06' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 4.71 cfs @ 5.99 fps)

Secondary OutFlow Max=4.22 cfs @ 12.12 hrs HW=315.85' TW=315.81' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 4.22 cfs @ 0.66 fps)

Summary for Pond 9P: RCB

Inflow Area = 1.09 ac, 12.13% Impervious, Inflow Depth > 3.98" for 25-yr event
Inflow = 7.07 cfs @ 12.13 hrs, Volume= 0.362 af
Outflow = 7.13 cfs @ 12.13 hrs, Volume= 0.361 af, Atten= 0%, Lag= 0.3 min
Primary = 1.14 cfs @ 12.36 hrs, Volume= 0.230 af
Routed to Pond 8P : RCB
Secondary = 6.02 cfs @ 12.13 hrs, Volume= 0.132 af
Routed to Reach 3R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 319.89' @ 12.13 hrs Surf.Area= 213 sf Storage= 123 cf
Flood Elev= 319.50' Surf.Area= 213 sf Storage= 123 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.5 min (805.7 - 805.1)

Volume	Invert	Avail.Storage	Storage Description
#1	318.78'	111 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	317.84'	12 cf	**4.00'D x 0.95'H Vertical Cone/Cylinder**
		123 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.78	5	0	0
319.00	168	19	19
319.50	200	92	111

Device	Routing	Invert	Outlet Devices
#1	Primary	317.84'	**6.0" Round Culvert** L= 141.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 317.84' / 314.02' S= 0.0271 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Device 1	318.79'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	319.25'	**5.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.14 cfs @ 12.36 hrs HW=319.55' TW=314.96' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.14 cfs @ 5.82 fps)
↑—**2=Orifice/Grate** (Passes 1.14 cfs of 13.22 cfs potential flow)

Secondary OutFlow Max=5.83 cfs @ 12.13 hrs HW=319.87' TW=319.52' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir**(Weir Controls 5.83 cfs @ 1.87 fps)

Summary for Pond 10P: CB

Inflow Area = 2.47 ac, 24.57% Impervious, Inflow Depth > 2.86" for 25-yr event
Inflow = 4.20 cfs @ 12.16 hrs, Volume= 0.588 af
Outflow = 3.75 cfs @ 12.27 hrs, Volume= 0.588 af, Atten= 11%, Lag= 6.1 min
Primary = 3.12 cfs @ 12.27 hrs, Volume= 0.579 af
Routed to Reach 1R : ROADSIDE SWALE
Secondary = 0.64 cfs @ 12.27 hrs, Volume= 0.009 af
Routed to Reach 5R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 317.50' @ 12.27 hrs Surf.Area= 1,955 sf Storage= 671 cf
Flood Elev= 317.50' Surf.Area= 1,972 sf Storage= 681 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.0 min (836.9 - 836.0)

Volume	Invert	Avail.Storage	Storage Description
#1	314.53'	24 cf	**4.00'D x 1.91'H Vertical Cone/Cylinder**
#2	316.44'	657 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		681 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
316.44	5	0	0
317.00	312	89	89
317.50	1,959	568	657

Device	Routing	Invert	Outlet Devices
#1	Primary	314.53'	**12.0" Round Culvert** L= 101.8' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 314.53' / 313.24' S= 0.0127 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf
#2	Device 1	316.44'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	317.40'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.11 cfs @ 12.27 hrs HW=317.49' TW=313.44' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 3.11 cfs @ 3.96 fps)
↑**2=Grate** (Passes 3.11 cfs of 19.74 cfs potential flow)

Secondary OutFlow Max=0.60 cfs @ 12.27 hrs HW=317.49' TW=317.44' (Dynamic Tailwater)
↑**3=Broad-Crested Rectangular Weir**(Weir Controls 0.60 cfs @ 0.66 fps)

Summary for Pond 11P: 15" HDPE

Inflow Area = 0.79 ac, 30.64% Impervious, Inflow Depth > 3.46" for 25-yr event
Inflow = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af
Outflow = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min
Primary = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af
Routed to Pond 3P : CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 325.57' @ 12.09 hrs
Flood Elev= 326.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	324.65'	**15.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 324.65' / 321.75' S= 0.0707 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=3.07 cfs @ 12.09 hrs HW=325.55' TW=321.09' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 3.07 cfs @ 3.24 fps)

Summary for Link A: MAP 15 LOT 233

Inflow Area = 22.17 ac, 22.26% Impervious, Inflow Depth > 2.98" for 25-yr event
Inflow = 13.14 cfs @ 12.26 hrs, Volume= 5.514 af
Primary = 13.14 cfs @ 12.26 hrs, Volume= 5.514 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link B: MAP 17 LOT 25

Inflow Area = 0.87 ac, 0.00% Impervious, Inflow Depth > 2.53" for 25-yr event
Inflow = 2.19 cfs @ 12.15 hrs, Volume= 0.184 af
Primary = 2.19 cfs @ 12.15 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 6P : 24" RCP

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link C: PAGE ROAD

Inflow Area = 0.69 ac, 8.90% Impervious, Inflow Depth > 2.79" for 25-yr event
Inflow = 1.74 cfs @ 12.20 hrs, Volume= 0.161 af
Primary = 1.74 cfs @ 12.20 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : 18" RCP

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link D: MAMMOTH ROAD

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link E: MAP 17 LOT 7

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link F: MAP 15 LOT 239

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link G: MAP 15 LOT 238

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link H: MAP 15 LOT 240

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link I: MAP 15 LOT 241

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link J: MAP 15 LOT 231

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link K: MAP 15 LOT 232

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link L: MAP 15 LOT 234

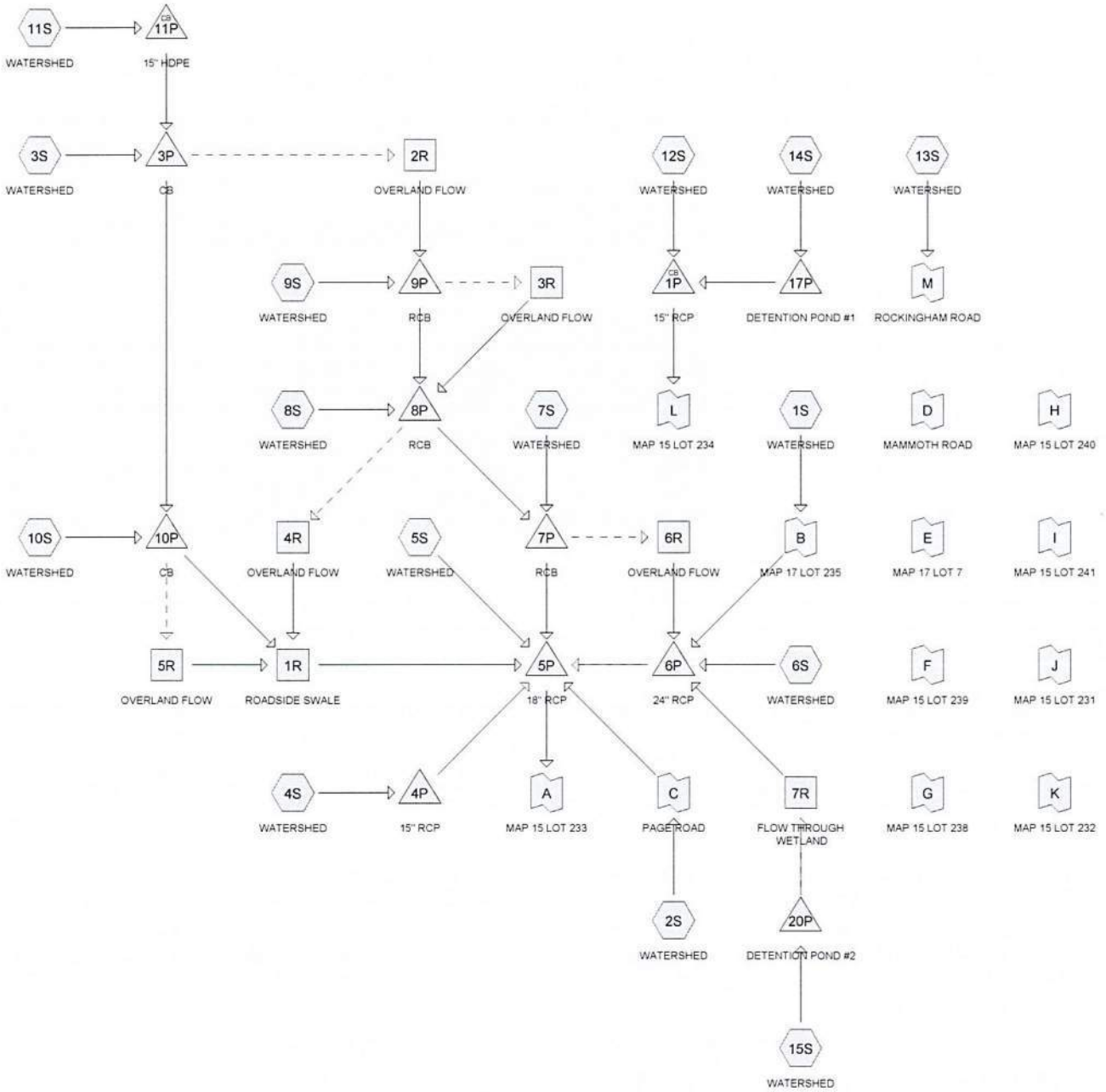
Inflow Area = 2.49 ac, 12.62% Impervious, Inflow Depth > 2.61" for 25-yr event
Inflow = 4.80 cfs @ 12.33 hrs, Volume= 0.541 af
Primary = 4.80 cfs @ 12.33 hrs, Volume= 0.541 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link M: ROCKINGHAM ROAD

Inflow Area = 0.57 ac, 1.08% Impervious, Inflow Depth > 2.02" for 25-yr event
Inflow = 1.14 cfs @ 12.15 hrs, Volume= 0.096 af
Primary = 1.14 cfs @ 12.15 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs



Routing Diagram for 2101131-POST-DEVELOPMENT_REV2, Revised November 25, 2025

Prepared by Keach-Nordstrom Associates, Inc, Printed 2/18/2026

HydroCAD® 10.20-6a s/n 01045 © 2024 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.113	61	>75% Grass cover, Good, HSG B (4S, 5S, 6S, 12S, 13S, 14S)
6.169	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 14S, 15S)
0.401	80	>75% Grass cover, Good, HSG D (6S)
0.119	100	Open water (14S, 15S)
3.520	98	Paved parking (2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S)
0.033	98	Rip rap (14S)
0.033	98	Riprap (15S)
2.478	98	Roofs (2S, 3S, 6S, 8S, 9S, 11S, 12S, 14S, 15S)
2.332	55	Woods, Good, HSG B (4S, 5S, 6S, 12S, 13S, 14S)
6.950	70	Woods, Good, HSG C (1S, 2S, 3S, 6S, 7S, 8S, 9S, 10S, 12S, 13S, 14S)
2.086	77	Woods, Good, HSG D (1S, 2S, 5S, 6S)
25.232	**77**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
3.445	HSG B	4S, 5S, 6S, 12S, 13S, 14S
13.119	HSG C	1S, 2S, 3S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S
2.487	HSG D	1S, 2S, 5S, 6S
6.182	Other	2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S
25.232		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: WATERSHED Runoff Area=37,990 sf 0.00% Impervious Runoff Depth>2.53"
Flow Length=238' Tc=10.5 min CN=71 Runoff=2.19 cfs 0.184 af

Subcatchment2S: WATERSHED Runoff Area=30,122 sf 8.90% Impervious Runoff Depth>2.79"
Flow Length=200' Tc=14.2 min CN=74 Runoff=1.74 cfs 0.161 af

Subcatchment3S: WATERSHED Runoff Area=36,571 sf 28.26% Impervious Runoff Depth>3.36"
Flow Length=317' Tc=11.9 min CN=80 Runoff=2.71 cfs 0.235 af

Subcatchment4S: WATERSHED Runoff Area=6,682 sf 33.73% Impervious Runoff Depth>2.71"
Tc=6.0 min CN=73 Runoff=0.48 cfs 0.035 af

Subcatchment5S: WATERSHED Runoff Area=43,638 sf 26.04% Impervious Runoff Depth>2.44"
Flow Length=150' Tc=9.7 min CN=70 Runoff=2.47 cfs 0.204 af

Subcatchment6S: WATERSHED Runoff Area=625,621 sf 26.82% Impervious Runoff Depth>3.05"
Flow Length=1,316' Tc=48.0 min CN=77 Runoff=23.20 cfs 3.651 af

Subcatchment7S: WATERSHED Runoff Area=18,012 sf 7.36% Impervious Runoff Depth>2.71"
Flow Length=447' Tc=10.7 min CN=73 Runoff=1.11 cfs 0.093 af

Subcatchment8S: WATERSHED Runoff Area=30,349 sf 3.67% Impervious Runoff Depth>2.89"
Flow Length=322' Tc=8.0 min CN=75 Runoff=2.18 cfs 0.168 af

Subcatchment9S: WATERSHED Runoff Area=47,516 sf 12.13% Impervious Runoff Depth>3.08"
Flow Length=275' Tc=8.4 min CN=77 Runoff=3.58 cfs 0.280 af

Subcatchment10S: WATERSHED Runoff Area=36,443 sf 15.15% Impervious Runoff Depth>2.98"
Flow Length=233' Tc=12.0 min CN=76 Runoff=2.39 cfs 0.208 af

Subcatchment11S: WATERSHED Runoff Area=34,434 sf 30.64% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=81 Runoff=3.14 cfs 0.228 af

Subcatchment12S: WATERSHED Runoff Area=76,641 sf 22.72% Impervious Runoff Depth>2.88"
Flow Length=505' Tc=23.1 min CN=75 Runoff=3.78 cfs 0.422 af

Subcatchment13S: WATERSHED Runoff Area=24,832 sf 1.08% Impervious Runoff Depth>2.02"
Flow Length=150' Tc=9.7 min CN=65 Runoff=1.14 cfs 0.096 af

Subcatchment14S: WATERSHED Runoff Area=23,299 sf 59.41% Impervious Runoff Depth>4.08"
Tc=6.0 min CN=87 Runoff=2.44 cfs 0.182 af

Subcatchment15S: WATERSHED Runoff Area=26,967 sf 70.56% Impervious Runoff Depth>4.50"
Tc=6.0 min CN=91 Runoff=3.04 cfs 0.232 af

Reach 1R: ROADSIDESWALE Avg. Flow Depth=0.24' Max Vel=2.88 fps Inflow=7.80 cfs 0.645 af
n=0.025 L=363.0' S=0.0183 '/' Capacity=89.79 cfs Outflow=7.41 cfs 0.644 af

Reach 2R: OVERLAND FLOW Avg. Flow Depth=0.17' Max Vel=1.95 fps Inflow=3.82 cfs 0.082 af
n=0.025 L=160.0' S=0.0122 '/' Capacity=73.48 cfs Outflow=3.54 cfs 0.082 af

Reach 3R: OVERLAND FLOW Avg. Flow Depth=0.28' Max Vel=3.68 fps Inflow=6.02 cfs 0.132 af
n=0.025 L=150.0' S=0.0257 '/' Capacity=60.51 cfs Outflow=6.01 cfs 0.132 af

Reach 4R: OVERLAND FLOW Avg. Flow Depth=0.16' Max Vel=2.80 fps Inflow=4.69 cfs 0.058 af
n=0.025 L=90.0' S=0.0270 '/' Capacity=109.09 cfs Outflow=4.75 cfs 0.058 af

Reach 5R: OVERLAND FLOW Avg. Flow Depth=0.04' Max Vel=1.43 fps Inflow=0.64 cfs 0.009 af
n=0.025 L=100.0' S=0.0416 '/' Capacity=135.41 cfs Outflow=0.60 cfs 0.009 af

Reach 6R: OVERLAND FLOW Avg. Flow Depth=0.13' Max Vel=3.01 fps Inflow=2.02 cfs 0.176 af
n=0.025 L=100.0' S=0.0450 '/' Capacity=80.01 cfs Outflow=2.04 cfs 0.176 af

Reach 7R: FLOW THROUGH WETLAND Avg. Flow Depth=0.06' Max Vel=0.83 fps Inflow=0.50 cfs 0.210 af
n=0.025 L=382.0' S=0.0088 '/' Capacity=62.45 cfs Outflow=0.49 cfs 0.209 af

Pond 1P: 15" RCP Peak Elev=309.59' Inflow=4.79 cfs 0.600 af
15.0" Round Culvert n=0.011 L=111.0' S=0.0317 '/' Outflow=4.79 cfs 0.600 af

Pond 3P: CB Peak Elev=321.11' Storage=167 cf Inflow=5.49 cfs 0.463 af
Primary=1.92 cfs 0.380 af Secondary=3.82 cfs 0.082 af Outflow=5.68 cfs 0.462 af

Pond 4P: 15" RCP Peak Elev=308.96' Storage=3 cf Inflow=0.48 cfs 0.035 af
Primary=0.48 cfs 0.035 af Secondary=0.00 cfs 0.000 af Outflow=0.48 cfs 0.035 af

Pond 5P: 18" RCP Peak Elev=308.45' Storage=2,244 cf Inflow=15.62 cfs 5.618 af
18.0" Round Culvert n=0.011 L=112.5' S=0.0096 '/' Outflow=12.99 cfs 5.618 af

Pond 6P: 24" RCP Peak Elev=308.75' Storage=65,566 cf Inflow=24.70 cfs 4.219 af
Primary=10.67 cfs 4.188 af Secondary=0.00 cfs 0.000 af Outflow=10.67 cfs 4.155 af

Pond 7P: RCB Peak Elev=311.06' Storage=123 cf Inflow=5.82 cfs 0.565 af
Primary=3.79 cfs 0.387 af Secondary=2.02 cfs 0.176 af Outflow=5.81 cfs 0.563 af

Pond 8P: RCB Peak Elev=315.86' Storage=204 cf Inflow=9.23 cfs 0.529 af
Primary=4.71 cfs 0.471 af Secondary=4.69 cfs 0.058 af Outflow=9.40 cfs 0.528 af

Pond 9P: RCB Peak Elev=319.89' Storage=123 cf Inflow=7.07 cfs 0.362 af
Primary=1.14 cfs 0.230 af Secondary=6.02 cfs 0.132 af Outflow=7.13 cfs 0.361 af

Pond 10P: CB Peak Elev=317.50' Storage=671 cf Inflow=4.20 cfs 0.588 af
Primary=3.12 cfs 0.579 af Secondary=0.64 cfs 0.009 af Outflow=3.75 cfs 0.588 af

Pond 11P: 15" HDPE Peak Elev=325.57' Inflow=3.14 cfs 0.228 af
15.0" Round Culvert n=0.011 L=41.0' S=0.0707 '/' Outflow=3.14 cfs 0.228 af

Pond 17P: DETENTION POND #1 Peak Elev=310.83' Storage=2,284 cf Inflow=2.44 cfs 0.182 af
Outflow=1.01 cfs 0.177 af

Pond 20P: DETENTION POND #2 Peak Elev=311.52' Storage=4,975 cf Inflow=3.04 cfs 0.232 af
Primary=0.50 cfs 0.210 af Secondary=0.00 cfs 0.000 af Outflow=0.50 cfs 0.210 af

Link A: MAP 15 LOT 233 Inflow=12.99 cfs 5.618 af
Primary=12.99 cfs 5.618 af

Link B: MAP 17 LOT 235 Inflow=2.19 cfs 0.184 af
Primary=2.19 cfs 0.184 af

Link C: PAGE ROAD Inflow=1.74 cfs 0.161 af
Primary=1.74 cfs 0.161 af

Link D: MAMMOTH ROAD Primary=0.00 cfs 0.000 af

Link E: MAP 17 LOT 7 Primary=0.00 cfs 0.000 af

Link F: MAP 15 LOT 239 Primary=0.00 cfs 0.000 af

Link G: MAP 15 LOT 238 Primary=0.00 cfs 0.000 af

Link H: MAP 15 LOT 240 Primary=0.00 cfs 0.000 af

Link I: MAP 15 LOT 241 Primary=0.00 cfs 0.000 af

Link J: MAP 15 LOT 231 Primary=0.00 cfs 0.000 af

Link K: MAP 15 LOT 232 Primary=0.00 cfs 0.000 af

Link L: MAP 15 LOT 234 Inflow=4.79 cfs 0.600 af
Primary=4.79 cfs 0.600 af

Link M: ROCKINGHAM ROAD Inflow=1.14 cfs 0.096 af
Primary=1.14 cfs 0.096 af

Total Runoff Area = 25.232 ac Runoff Volume = 6.378 af Average Runoff Depth = 3.03"
75.50% Pervious = 19.050 ac 24.50% Impervious = 6.182 ac

Summary for Subcatchment 1S: WATERSHED

Runoff = 2.19 cfs @ 12.15 hrs, Volume= 0.184 af, Depth> 2.53"
Routed to Link B : MAP 17 LOT 235

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

Area (sf)	CN	Description
33,555	70	Woods, Good, HSG C
2,152	77	Woods, Good, HSG D
2,283	74	>75% Grass cover, Good, HSG C
37,990	71	Weighted Average
37,990		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
2.1	188	0.0850	1.46		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	238	Total			

Summary for Subcatchment 2S: WATERSHED

Runoff = 1.74 cfs @ 12.20 hrs, Volume= 0.161 af, Depth> 2.79"
Routed to Link C : PAGE ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	16,741	70	Woods, Good, HSG C
	290	77	Woods, Good, HSG D
	10,410	74	>75% Grass cover, Good, HSG C
*	1,878	98	Paved parking
*	803	98	Roofs
	30,122	74	Weighted Average
	27,441		91.10% Pervious Area
	2,681		8.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	50	0.0250	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
2.3	150	0.0490	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.2	200	Total			

Summary for Subcatchment 3S: WATERSHED

Runoff = 2.71 cfs @ 12.17 hrs, Volume= 0.235 af, Depth> 3.36"
Routed to Pond 3P : CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	8,219	70	Woods, Good, HSG C
	18,018	74	>75% Grass cover, Good, HSG C
*	9,019	98	Paved parking
*	1,315	98	Roofs
	36,571	80	Weighted Average
	26,237		71.74% Pervious Area
	10,334		28.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
1.2	50	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	37	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	160	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.9	317	Total			

Summary for Subcatchment 4S: WATERSHED

Runoff = 0.48 cfs @ 12.09 hrs, Volume= 0.035 af, Depth> 2.71"
Routed to Pond 4P : 15" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	102	55	Woods, Good, HSG B
	4,326	61	>75% Grass cover, Good, HSG B
*	2,254	98	Paved parking
	6,682	73	Weighted Average
	4,428		66.27% Pervious Area
	2,254		33.73% Impervious Area

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

Summary for Subcatchment 5S: WATERSHED

Runoff = 2.47 cfs @ 12.14 hrs, Volume= 0.204 af, Depth> 2.44"
Routed to Pond 5P : 18" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	9,648	55	Woods, Good, HSG B
	851	77	Woods, Good, HSG D
	21,775	61	>75% Grass cover, Good, HSG B
*	11,364	98	Paved parking
	43,638	70	Weighted Average
	32,274		73.96% Pervious Area
	11,364		26.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
1.3	100	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.7	150	Total			

Summary for Subcatchment 6S: WATERSHED

Runoff = 23.20 cfs @ 12.66 hrs, Volume= 3.651 af, Depth> 3.05"
Routed to Pond 6P : 24" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	79,545	55	Woods, Good, HSG B
	163,615	70	Woods, Good, HSG C
	87,572	77	Woods, Good, HSG D
	7,600	61	>75% Grass cover, Good, HSG B
	102,000	74	>75% Grass cover, Good, HSG C
	17,469	80	>75% Grass cover, Good, HSG D
*	79,810	98	Paved parking
*	88,010	98	Roofs
	625,621	77	Weighted Average
	457,801		73.18% Pervious Area
	167,820		26.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
37.0	1,266	0.0130	0.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
48.0	1,316	Total			

Summary for Subcatchment 7S: WATERSHED

Runoff = 1.11 cfs @ 12.16 hrs, Volume= 0.093 af, Depth> 2.71"
Routed to Pond 7P : RCB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	12,181	70	Woods, Good, HSG C
	4,506	74	>75% Grass cover, Good, HSG C
*	1,325	98	Paved parking
	18,012	73	Weighted Average
	16,687		92.64% Pervious Area
	1,325		7.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0400	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
1.8	130	0.0310	1.23		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.4	267	0.0410	1.01		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.7	447	Total			

Summary for Subcatchment 8S: WATERSHED

Runoff = 2.18 cfs @ 12.12 hrs, Volume= 0.168 af, Depth> 2.89"
Routed to Pond 8P : RCB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	684	70	Woods, Good, HSG C
	28,552	74	>75% Grass cover, Good, HSG C
*	187	98	Paved parking
*	926	98	Roofs
	30,349	75	Weighted Average
	29,236		96.33% Pervious Area
	1,113		3.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0400	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
3.5	272	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	322	Total			

Summary for Subcatchment 9S: WATERSHED

Runoff = 3.58 cfs @ 12.12 hrs, Volume= 0.280 af, Depth> 3.08"
Routed to Pond 9P : RCB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	2,126	70	Woods, Good, HSG C
	39,624	74	>75% Grass cover, Good, HSG C
*	1,971	98	Paved parking
*	3,795	98	Roofs
	47,516	77	Weighted Average
	41,750		87.87% Pervious Area
	5,766		12.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	50	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.89"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	205	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	275	Total			

Summary for Subcatchment 10S: WATERSHED

Runoff = 2.39 cfs @ 12.17 hrs, Volume= 0.208 af, Depth> 2.98"
Routed to Pond 10P : CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	13,784	70	Woods, Good, HSG C
	17,139	74	>75% Grass cover, Good, HSG C
*	5,520	98	Paved parking
	36,443	76	Weighted Average
	30,923		84.85% Pervious Area
	5,520		15.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0630	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
3.8	183	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.0	233	Total			

Summary for Subcatchment 11S: WATERSHED

Runoff = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af, Depth> 3.46"
Routed to Pond 11P : 15" HDPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	23,883	74	>75% Grass cover, Good, HSG C
*	7,832	98	Paved parking
*	2,719	98	Roofs
	34,434	81	Weighted Average
	23,883		69.36% Pervious Area
	10,551		30.64% Impervious Area

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

Summary for Subcatchment 12S: WATERSHED

Runoff = 3.78 cfs @ 12.32 hrs, Volume= 0.422 af, Depth> 2.88"
Routed to Pond 1P : 15" RCP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	3,850	55	Woods, Good, HSG B
	36,093	70	Woods, Good, HSG C
	12,375	61	>75% Grass cover, Good, HSG B
	6,910	74	>75% Grass cover, Good, HSG C
*	14,324	98	Paved parking
*	3,089	98	Roofs
	76,641	75	Weighted Average
	59,228		77.28% Pervious Area
	17,413		22.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0400	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
13.3	455	0.0130	0.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.1	505	Total			

Summary for Subcatchment 13S: WATERSHED

Runoff = 1.14 cfs @ 12.15 hrs, Volume= 0.096 af, Depth> 2.02"
Routed to Link M : ROCKINGHAM ROAD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	8,416	55	Woods, Good, HSG B
	15,374	70	Woods, Good, HSG C
	774	61	>75% Grass cover, Good, HSG B
*	268	98	Paved parking
	24,832	65	Weighted Average
	24,564		98.92% Pervious Area
	268		1.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.89"
1.3	100	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.7	150	Total			

Summary for Subcatchment 14S: WATERSHED

Runoff = 2.44 cfs @ 12.09 hrs, Volume= 0.182 af, Depth> 4.08"
Routed to Pond 17P : DETENTION POND #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	17	55	Woods, Good, HSG B
	373	70	Woods, Good, HSG C
	1,629	61	>75% Grass cover, Good, HSG B
	7,438	74	>75% Grass cover, Good, HSG C
*	7,818	98	Paved parking
*	1,425	98	Rip rap
*	2,112	98	Roofs
*	2,487	100	Open water
	23,299	87	Weighted Average
	9,457		40.59% Pervious Area
	13,842		59.41% Impervious Area

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

Summary for Subcatchment 15S: WATERSHED

Runoff = 3.04 cfs @ 12.09 hrs, Volume= 0.232 af, Depth> 4.50"
Routed to Pond 20P : DETENTION POND #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.54"

	Area (sf)	CN	Description
	7,940	74	>75% Grass cover, Good, HSG C
*	9,755	98	Paved parking
*	1,423	98	Riprap
*	5,154	98	Roofs
*	2,695	100	Open water
	26,967	91	Weighted Average
	7,940		29.44% Pervious Area
	19,027		70.56% Impervious Area

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

Summary for Reach 1R: ROADSIDE SWALE

Inflow Area = 2.467 ac, 24.57% Impervious, Inflow Depth > 3.14" for 25-yr event
Inflow = 7.80 cfs @ 12.15 hrs, Volume= 0.645 af
Outflow = 7.41 cfs @ 12.17 hrs, Volume= 0.644 af, Atten= 5%, Lag= 1.4 min
Routed to Pond 5P : 18" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 2.88 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 6.9 min

Peak Storage= 920 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 11.42'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 89.79 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 363.0' Slope= 0.0183 '/'
Inlet Invert= 313.24', Outlet Invert= 306.60'



‡

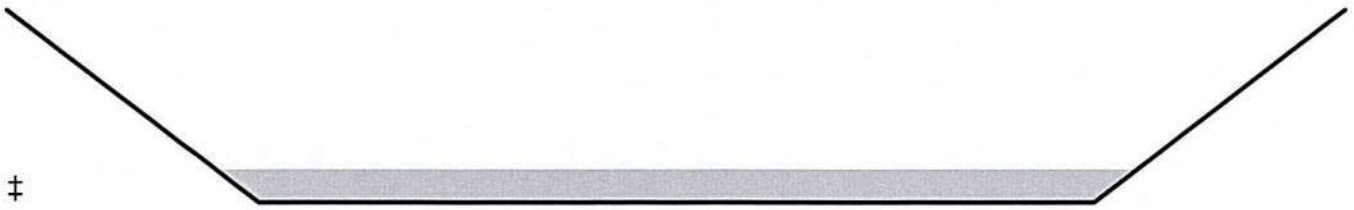
Summary for Reach 2R: OVERLAND FLOW

Inflow = 3.82 cfs @ 12.11 hrs, Volume= 0.082 af
Outflow = 3.54 cfs @ 12.13 hrs, Volume= 0.082 af, Atten= 7%, Lag= 1.4 min
Routed to Pond 9P : RCB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.95 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.68 fps, Avg. Travel Time= 3.9 min

Peak Storage= 289 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 11.03'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 73.48 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 160.0' Slope= 0.0122 '/'
Inlet Invert= 320.75', Outlet Invert= 318.79'



‡

Summary for Reach 3R: OVERLAND FLOW

Inflow = 6.02 cfs @ 12.13 hrs, Volume= 0.132 af
Outflow = 6.01 cfs @ 12.14 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.5 min
Routed to Pond 8P : RCB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.68 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 1.7 min

Peak Storage= 244 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.28' , Surface Width= 6.67'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 60.51 cfs

5.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 150.0' Slope= 0.0257 '/'
Inlet Invert= 319.25', Outlet Invert= 315.39'



‡

Summary for Reach 4R: OVERLAND FLOW

Inflow = 4.69 cfs @ 12.12 hrs, Volume= 0.058 af
Outflow = 4.75 cfs @ 12.15 hrs, Volume= 0.058 af, Atten= 0%, Lag= 1.5 min
Routed to Reach 1R : ROADSIDE SWALE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 2.80 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 1.3 min

Peak Storage= 153 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.16' , Surface Width= 10.97'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 109.09 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 90.0' Slope= 0.0270 '/'
Inlet Invert= 315.67', Outlet Invert= 313.24'



‡

Summary for Reach 5R: OVERLAND FLOW

Inflow = 0.64 cfs @ 12.27 hrs, Volume= 0.009 af
Outflow = 0.60 cfs @ 12.29 hrs, Volume= 0.009 af, Atten= 5%, Lag= 1.2 min
Routed to Reach 1R : ROADSIDE SWALE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.43 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 2.0 min

Peak Storage= 42 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 10.25'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 135.41 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 100.0' Slope= 0.0416 '/'
Inlet Invert= 317.40', Outlet Invert= 313.24'



‡

Summary for Reach 6R: OVERLAND FLOW

Inflow = 2.02 cfs @ 12.18 hrs, Volume= 0.176 af
Outflow = 2.04 cfs @ 12.10 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 6P : 24" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.01 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.89 fps, Avg. Travel Time= 1.9 min

Peak Storage= 68 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 5.75'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 80.01 cfs

5.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 100.0' Slope= 0.0450 '/'
Inlet Invert= 310.74', Outlet Invert= 306.24'



‡

Summary for Reach 7R: FLOW THROUGH WETLAND

Inflow Area = 0.619 ac, 70.56% Impervious, Inflow Depth > 4.07" for 25-yr event
Inflow = 0.50 cfs @ 12.57 hrs, Volume= 0.210 af
Outflow = 0.49 cfs @ 12.66 hrs, Volume= 0.209 af, Atten= 1%, Lag= 5.9 min
Routed to Pond 6P : 24" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.83 fps, Min. Travel Time= 7.7 min
Avg. Velocity = 0.45 fps, Avg. Travel Time= 14.1 min

Peak Storage= 226 cf @ 12.66 hrs
Average Depth at Peak Storage= 0.06' , Surface Width= 10.35'
Bank-Full Depth= 1.00' Flow Area= 13.0 sf, Capacity= 62.45 cfs

10.00' x 1.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 16.00'
Length= 382.0' Slope= 0.0088 '/'
Inlet Invert= 309.62', Outlet Invert= 306.24'



‡

Summary for Pond 1P: 15" RCP

Inflow Area = 2.294 ac, 31.27% Impervious, Inflow Depth > 3.14" for 25-yr event
Inflow = 4.79 cfs @ 12.32 hrs, Volume= 0.600 af
Outflow = 4.79 cfs @ 12.32 hrs, Volume= 0.600 af, Atten= 0%, Lag= 0.0 min
Primary = 4.79 cfs @ 12.32 hrs, Volume= 0.600 af
Routed to Link L : MAP 15 LOT 234

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 309.59' @ 12.32 hrs
Flood Elev= 312.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	308.31'	**15.0" Round Culvert** L= 111.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 308.31' / 304.79' S= 0.0317 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=4.76 cfs @ 12.32 hrs HW=309.58' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.76 cfs @ 3.88 fps)

Summary for Pond 3P: CB

Inflow Area = 1.630 ac, 29.41% Impervious, Inflow Depth > 3.41" for 25-yr event
Inflow = 5.49 cfs @ 12.11 hrs, Volume= 0.463 af
Outflow = 5.68 cfs @ 12.11 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
Primary = 1.92 cfs @ 11.97 hrs, Volume= 0.380 af
Routed to Pond 10P : CB
Secondary = 3.82 cfs @ 12.11 hrs, Volume= 0.082 af
Routed to Reach 2R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 321.11' @ 12.11 hrs Surf.Area= 356 sf Storage= 167 cf
Flood Elev= 321.00' Surf.Area= 356 sf Storage= 167 cf

Plug-Flow detention time= 2.6 min calculated for 0.461 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (819.1 - 818.0)

Volume	Invert	Avail.Storage	Storage Description
#1	319.10'	16 cf	**4.00'D x 1.25'H Vertical Cone/Cylinder**
#2	319.10'	151 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		167 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
319.10	5	0	0
320.50	65	49	49
321.00	343	102	151

Device	Routing	Invert	Outlet Devices
#1	Primary	319.10'	**8.0" Round Culvert** L= 228.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 319.10' / 314.83' S= 0.0187 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Device 1	320.27'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	320.75'	**8.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.91 cfs @ 11.97 hrs HW=320.85' TW=316.76' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.91 cfs @ 5.47 fps)
↑—**2=Grate** (Passes 1.91 cfs of 11.56 cfs potential flow)

Secondary OutFlow Max=3.67 cfs @ 12.11 hrs HW=321.10' TW=320.92' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Weir Controls 3.67 cfs @ 1.30 fps)

Summary for Pond 4P: 15" RCP

Inflow Area = 0.153 ac, 33.73% Impervious, Inflow Depth > 2.71" for 25-yr event
Inflow = 0.48 cfs @ 12.09 hrs, Volume= 0.035 af
Outflow = 0.48 cfs @ 12.10 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.1 min
Primary = 0.48 cfs @ 12.10 hrs, Volume= 0.035 af
Routed to Pond 5P : 18" RCP
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 5P : 18" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 308.96' @ 12.10 hrs Surf.Area= 15 sf Storage= 3 cf
Flood Elev= 311.00' Surf.Area= 730 sf Storage= 593 cf

Plug-Flow detention time= 0.3 min calculated for 0.035 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (834.6 - 834.4)

Volume	Invert	Avail.Storage	Storage Description
#1	308.62'	593 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.62	5	0	0
309.00	16	4	4
310.00	216	116	120
311.00	730	473	593

Device	Routing	Invert	Outlet Devices
#1	Primary	308.64'	**15.0" Round Culvert** L= 24.6' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 308.64' / 306.60' S= 0.0829 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf
#2	Secondary	310.96'	**2.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.47 cfs @ 12.10 hrs HW=308.96' TW=307.57' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.47 cfs @ 1.92 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=308.62' TW=305.37' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: 18" RCP

Inflow Area = 22.368 ac, 24.40% Impervious, Inflow Depth > 3.01" for 25-yr event
Inflow = 15.62 cfs @ 12.17 hrs, Volume= 5.618 af
Outflow = 12.99 cfs @ 12.26 hrs, Volume= 5.618 af, Atten= 17%, Lag= 5.4 min
Primary = 12.99 cfs @ 12.26 hrs, Volume= 5.618 af
Routed to Link A : MAP 15 LOT 233

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 308.45' @ 12.26 hrs Surf.Area= 2,014 sf Storage= 2,244 cf
Flood Elev= 310.88' Surf.Area= 7,537 sf Storage= 12,203 cf

Plug-Flow detention time= 1.4 min calculated for 5.618 af (100% of inflow)
Center-of-Mass det. time= 1.4 min (903.0 - 901.6)

Volume	Invert	Avail.Storage	Storage Description
#1	305.37'	13,134 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
305.37	10	0	0
306.00	92	32	32
307.00	641	367	399
308.00	1,481	1,061	1,460
309.00	2,668	2,075	3,534
310.00	4,275	3,472	7,006
311.00	7,982	6,129	13,134

Device	Routing	Invert	Outlet Devices
#1	Primary	305.37'	**18.0" Round Culvert** L= 112.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 305.37' / 304.29' S= 0.0096 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=12.94 cfs @ 12.26 hrs HW=308.43' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 12.94 cfs @ 7.32 fps)

Summary for Pond 6P: 24" RCP

Inflow Area = 15.853 ac, 27.06% Impervious, Inflow Depth > 3.19" for 25-yr event
Inflow = 24.70 cfs @ 12.64 hrs, Volume= 4.219 af
Outflow = 10.67 cfs @ 13.40 hrs, Volume= 4.155 af, Atten= 57%, Lag= 45.8 min
Primary = 10.67 cfs @ 13.40 hrs, Volume= 4.188 af
Routed to Pond 5P : 18" RCP
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 5P : 18" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 308.75' @ 13.35 hrs Surf.Area= 44,574 sf Storage= 65,566 cf
Flood Elev= 311.00' Surf.Area= 73,507 sf Storage= 196,526 cf

Plug-Flow detention time= 75.2 min calculated for 4.155 af (98% of inflow)
Center-of-Mass det. time= 66.8 min (925.8 - 859.1)

Volume	Invert	Avail.Storage	Storage Description
#1	306.24'	196,526 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
306.24	4,300	0	0
308.00	35,858	35,339	35,339
310.00	59,050	94,908	130,247
311.00	73,507	66,279	196,526

Device	Routing	Invert	Outlet Devices
#1	Primary	306.24'	**24.0" Round Culvert** L= 43.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 306.24' / 305.70' S= 0.0123 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	310.88'	**6.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.68 cfs @ 13.40 hrs HW=308.75' TW=308.25' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 10.68 cfs @ 3.40 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=306.24' TW=305.37' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 7P: RCB

Inflow Area = 2.201 ac, 8.56% Impervious, Inflow Depth > 3.08" for 25-yr event
Inflow = 5.82 cfs @ 12.15 hrs, Volume= 0.565 af
Outflow = 5.81 cfs @ 12.18 hrs, Volume= 0.563 af, Atten= 0%, Lag= 1.4 min
Primary = 3.79 cfs @ 12.18 hrs, Volume= 0.387 af
Routed to Pond 5P : 18" RCP
Secondary = 2.02 cfs @ 12.18 hrs, Volume= 0.176 af
Routed to Reach 6R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 311.06' @ 12.18 hrs Surf.Area= 521 sf Storage= 123 cf
Flood Elev= 311.00' Surf.Area= 521 sf Storage= 123 cf

Plug-Flow detention time= 2.2 min calculated for 0.562 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (827.6 - 826.7)

Volume	Invert	Avail.Storage	Storage Description
#1	306.24'	57 cf	**4.00'D x 4.50'H Vertical Cone/Cylinder**
#2	310.74'	67 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		123 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
310.74	5	0	0
311.00	508	67	67

Device	Routing	Invert	Outlet Devices
#1	Primary	306.24'	**12.0" Round Culvert**
			L= 44.4' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 306.24' / 305.82' S= 0.0095 '/' Cc= 0.900
			n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	310.74'	**24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	310.75'	**5.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.76 cfs @ 12.18 hrs HW=311.06' TW=308.17' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 3.76 cfs of 6.43 cfs potential flow)
↑—**2=Grate** (Weir Controls 3.76 cfs @ 1.86 fps)

Secondary OutFlow Max=2.01 cfs @ 12.18 hrs HW=311.06' TW=310.86' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir**(Weir Controls 2.01 cfs @ 1.28 fps)

Summary for Pond 8P: RCB

Inflow Area = 1.788 ac, 8.83% Impervious, Inflow Depth > 3.55" for 25-yr event
Inflow = 9.23 cfs @ 12.14 hrs, Volume= 0.529 af
Outflow = 9.40 cfs @ 12.12 hrs, Volume= 0.528 af, Atten= 0%, Lag= 0.0 min
Primary = 4.71 cfs @ 12.14 hrs, Volume= 0.471 af
Routed to Pond 7P : RCB
Secondary = 4.69 cfs @ 12.12 hrs, Volume= 0.058 af
Routed to Reach 4R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 315.86' @ 12.14 hrs Surf.Area= 480 sf Storage= 204 cf
Flood Elev= 316.00' Surf.Area= 614 sf Storage= 278 cf

Plug-Flow detention time= 1.4 min calculated for 0.527 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (814.5 - 813.9)

Volume	Invert	Avail.Storage	Storage Description
#1	315.39'	186 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	308.11'	91 cf	**4.00'D x 7.28'H Vertical Cone/Cylinder**
		278 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
315.39	10	0	0
316.00	601	186	186

Device	Routing	Invert	Outlet Devices
#1	Primary	308.11'	**12.0" Round Culvert**
			L= 315.8' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 308.11' / 306.28' S= 0.0058 '/' Cc= 0.900
			n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Secondary	315.67'	**35.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.71 cfs @ 12.14 hrs HW=315.86' TW=311.06' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 4.71 cfs @ 5.99 fps)

Secondary OutFlow Max=4.22 cfs @ 12.12 hrs HW=315.85' TW=315.81' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 4.22 cfs @ 0.66 fps)

Summary for Pond 9P: RCB

Inflow Area = 1.091 ac, 12.13% Impervious, Inflow Depth > 3.98" for 25-yr event
Inflow = 7.07 cfs @ 12.13 hrs, Volume= 0.362 af
Outflow = 7.13 cfs @ 12.13 hrs, Volume= 0.361 af, Atten= 0%, Lag= 0.3 min
Primary = 1.14 cfs @ 12.36 hrs, Volume= 0.230 af
Routed to Pond 8P : RCB
Secondary = 6.02 cfs @ 12.13 hrs, Volume= 0.132 af
Routed to Reach 3R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 319.89' @ 12.13 hrs Surf.Area= 213 sf Storage= 123 cf
Flood Elev= 319.50' Surf.Area= 213 sf Storage= 123 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.5 min (805.7 - 805.1)

Volume	Invert	Avail.Storage	Storage Description
#1	318.78'	111 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	317.84'	12 cf	**4.00'D x 0.95'H Vertical Cone/Cylinder**
		123 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
318.78	5	0	0
319.00	168	19	19
319.50	200	92	111

Device	Routing	Invert	Outlet Devices
#1	Primary	317.84'	**6.0" Round Culvert** L= 141.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 317.84' / 314.02' S= 0.0271 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Device 1	318.79'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	319.25'	**5.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.14 cfs @ 12.36 hrs HW=319.55' TW=314.96' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.14 cfs @ 5.82 fps)
↑—**2=Orifice/Grate** (Passes 1.14 cfs of 13.22 cfs potential flow)

Secondary OutFlow Max=5.83 cfs @ 12.13 hrs HW=319.87' TW=319.52' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir**(Weir Controls 5.83 cfs @ 1.87 fps)

Summary for Pond 10P: CB

Inflow Area = 2.467 ac, 24.57% Impervious, Inflow Depth > 2.86" for 25-yr event
Inflow = 4.20 cfs @ 12.16 hrs, Volume= 0.588 af
Outflow = 3.75 cfs @ 12.27 hrs, Volume= 0.588 af, Atten= 11%, Lag= 6.1 min
Primary = 3.12 cfs @ 12.27 hrs, Volume= 0.579 af
Routed to Reach 1R : ROADSIDE SWALE
Secondary = 0.64 cfs @ 12.27 hrs, Volume= 0.009 af
Routed to Reach 5R : OVERLAND FLOW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 317.50' @ 12.27 hrs Surf.Area= 1,955 sf Storage= 671 cf
Flood Elev= 317.50' Surf.Area= 1,972 sf Storage= 681 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.0 min (836.9 - 836.0)

Volume	Invert	Avail.Storage	Storage Description
#1	314.53'	24 cf	**4.00'D x 1.91'H Vertical Cone/Cylinder**
#2	316.44'	657 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		681 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
316.44	5	0	0
317.00	312	89	89
317.50	1,959	568	657

Device	Routing	Invert	Outlet Devices
#1	Primary	314.53'	**12.0" Round Culvert** L= 101.8' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 314.53' / 313.24' S= 0.0127 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf
#2	Device 1	316.44'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	317.40'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.11 cfs @ 12.27 hrs HW=317.49' TW=313.44' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 3.11 cfs @ 3.96 fps)
↑—**2=Grate** (Passes 3.11 cfs of 19.74 cfs potential flow)

Secondary OutFlow Max=0.60 cfs @ 12.27 hrs HW=317.49' TW=317.44' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir**(Weir Controls 0.60 cfs @ 0.66 fps)

Summary for Pond 11P: 15" HDPE

Inflow Area = 0.790 ac, 30.64% Impervious, Inflow Depth > 3.46" for 25-yr event
Inflow = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af
Outflow = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min
Primary = 3.14 cfs @ 12.09 hrs, Volume= 0.228 af
Routed to Pond 3P : CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 325.57' @ 12.09 hrs
Flood Elev= 326.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	324.65'	**15.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 324.65' / 321.75' S= 0.0707 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=3.07 cfs @ 12.09 hrs HW=325.55' TW=321.09' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.07 cfs @ 3.24 fps)

Summary for Pond 17P: DETENTION POND #1

Inflow Area = 0.535 ac, 59.41% Impervious, Inflow Depth > 4.08" for 25-yr event
Inflow = 2.44 cfs @ 12.09 hrs, Volume= 0.182 af
Outflow = 1.01 cfs @ 12.31 hrs, Volume= 0.177 af, Atten= 59%, Lag= 13.2 min
Primary = 1.01 cfs @ 12.31 hrs, Volume= 0.177 af
Routed to Pond 1P : 15" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 310.83' @ 12.31 hrs Surf.Area= 3,234 sf Storage= 2,284 cf
Flood Elev= 312.00' Surf.Area= 4,647 sf Storage= 6,431 cf

Plug-Flow detention time= 59.0 min calculated for 0.177 af (98% of inflow)
Center-of-Mass det. time= 44.6 min (841.6 - 797.0)

Volume	Invert	Avail.Storage	Storage Description
#1	310.00'	6,431 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
#2	309.50'	0 cf	**Sediment Forebay (No Storage) (Prismatic)**Listed below (Recalc) 313 cf Overall x 0.0% Voids
		6,431 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
310.00	2,487	0	0
311.00	3,142	2,815	2,815
311.50	3,490	1,658	4,473
312.00	4,344	1,959	6,431

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
309.50	10	0	0
311.50	303	313	313

Device	Routing	Invert	Outlet Devices
#1	Primary	310.00'	**Weir, Cv= 2.62 (C= 3.28)** Elev. (feet) 310.00 310.85 310.85 311.50 Width (feet) 0.41 0.41 1.00 1.00

Primary OutFlow Max=1.01 cfs @ 12.31 hrs HW=310.83' TW=309.58' (Dynamic Tailwater)
↑—**1=Weir** (Weir Controls 1.01 cfs @ 2.98 fps)

Summary for Pond 20P: DETENTION POND #2

Inflow Area = 0.619 ac, 70.56% Impervious, Inflow Depth > 4.50" for 25-yr event
Inflow = 3.04 cfs @ 12.09 hrs, Volume= 0.232 af
Outflow = 0.50 cfs @ 12.57 hrs, Volume= 0.210 af, Atten= 84%, Lag= 28.7 min
Primary = 0.50 cfs @ 12.57 hrs, Volume= 0.210 af
Routed to Reach 7R : FLOW THROUGH WETLAND
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 7R : FLOW THROUGH WETLAND

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 311.52' @ 12.57 hrs Surf.Area= 4,229 sf Storage= 4,975 cf
Flood Elev= 313.50' Surf.Area= 7,410 sf Storage= 14,430 cf

Plug-Flow detention time= 188.5 min calculated for 0.209 af (90% of inflow)
Center-of-Mass det. time= 141.6 min (924.7 - 783.1)

Volume	Invert	Avail.Storage	Storage Description
#1	310.00'	14,430 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	311.00'	0 cf	**Sediment Forebay (No Storage) (Prismatic)** Listed below (Recalc) 1,031 cf Overall x 0.0% Voids
		14,430 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
310.00	2,696	0	0
312.00	4,200	6,896	6,896
313.00	5,036	4,618	11,514
313.50	6,629	2,916	14,430

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
311.00	250	0	0
313.00	781	1,031	1,031

Device	Routing	Invert	Outlet Devices
#1	Primary	309.75'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 309.75' / 309.60' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	310.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 310.00 311.50 311.50 313.00 Width (feet) 0.08 0.08 0.50 0.50
#3	Device 1	313.25'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	313.35'	**5.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.50 cfs @ 12.57 hrs HW=311.52' TW=309.68' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.50 cfs of 5.44 cfs potential flow)
  ├─**2=Custom Weir/Orifice** (Weir Controls 0.50 cfs @ 3.79 fps)
  └─**3=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=310.00' TW=309.62' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Link A: MAP 15 LOT 233

Inflow Area = 22.368 ac, 24.40% Impervious, Inflow Depth > 3.01" for 25-yr event
Inflow = 12.99 cfs @ 12.26 hrs, Volume= 5.618 af
Primary = 12.99 cfs @ 12.26 hrs, Volume= 5.618 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link B: MAP 17 LOT 235

Inflow Area = 0.872 ac, 0.00% Impervious, Inflow Depth > 2.53" for 25-yr event
Inflow = 2.19 cfs @ 12.15 hrs, Volume= 0.184 af
Primary = 2.19 cfs @ 12.15 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 6P : 24" RCP

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link C: PAGE ROAD

Inflow Area = 0.692 ac, 8.90% Impervious, Inflow Depth > 2.79" for 25-yr event
Inflow = 1.74 cfs @ 12.20 hrs, Volume= 0.161 af
Primary = 1.74 cfs @ 12.20 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : 18" RCP

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link D: MAMMOTH ROAD

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link E: MAP 17 LOT 7

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link F: MAP 15 LOT 239

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link G: MAP 15 LOT 238

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link H: MAP 15 LOT 240

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link I: MAP 15 LOT 241

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link J: MAP 15 LOT 231

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link K: MAP 15 LOT 232

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link L: MAP 15 LOT 234

Inflow Area = 2.294 ac, 31.27% Impervious, Inflow Depth > 3.14" for 25-yr event
Inflow = 4.79 cfs @ 12.32 hrs, Volume= 0.600 af
Primary = 4.79 cfs @ 12.32 hrs, Volume= 0.600 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link M: ROCKINGHAM ROAD

Inflow Area = 0.570 ac, 1.08% Impervious, Inflow Depth > 2.02" for 25-yr event
Inflow = 1.14 cfs @ 12.15 hrs, Volume= 0.096 af
Primary = 1.14 cfs @ 12.15 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Pond 17P: DETENTION POND #1

Inflow Area = 0.535 ac, 59.41% Impervious, Inflow Depth > 5.11" for 50-yr event
Inflow = 3.03 cfs @ 12.09 hrs, Volume= 0.228 af
Outflow = 1.37 cfs @ 12.27 hrs, Volume= 0.223 af, Atten= 55%, Lag= 11.0 min
Primary = 1.37 cfs @ 12.27 hrs, Volume= 0.223 af
Routed to Pond 1P : 15" RCP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 310.97' @ 12.27 hrs Surf.Area= 3,349 sf Storage= 2,725 cf
Flood Elev= 312.00' Surf.Area= 4,647 sf Storage= 6,431 cf

Plug-Flow detention time= 55.4 min calculated for 0.223 af (98% of inflow)
Center-of-Mass det. time= 42.2 min (832.9 - 790.8)

Volume	Invert	Avail.Storage	Storage Description
#1	310.00'	6,431 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	309.50'	0 cf	**Sediment Forebay (No Storage) (Prismatic)** Listed below (Recalc) 313 cf Overall x 0.0% Voids
		6,431 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
310.00	2,487	0	0
311.00	3,142	2,815	2,815
311.50	3,490	1,658	4,473
312.00	4,344	1,959	6,431

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
309.50	10	0	0
311.50	303	313	313

Device	Routing	Invert	Outlet Devices
#1	Primary	310.00'	**Weir, Cv= 2.62 (C= 3.28)** Elev. (feet) 310.00 310.85 310.85 311.50 Width (feet) 0.41 0.41 1.00 1.00

Primary OutFlow Max=1.36 cfs @ 12.27 hrs HW=310.97' TW=310.03' (Dynamic Tailwater)
↑—**1=Weir** (Weir Controls 1.36 cfs @ 2.91 fps)

Summary for Pond 20P: DETENTION POND #2

Inflow Area = 0.619 ac, 70.56% Impervious, Inflow Depth > 5.56" for 50-yr event
Inflow = 3.71 cfs @ 12.09 hrs, Volume= 0.287 af
Outflow = 0.79 cfs @ 12.50 hrs, Volume= 0.262 af, Atten= 79%, Lag= 25.0 min
Primary = 0.79 cfs @ 12.50 hrs, Volume= 0.262 af
Routed to Reach 7R : FLOW THROUGH WETLAND
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 7R : FLOW THROUGH WETLAND

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 311.76' @ 12.50 hrs Surf.Area= 4,469 sf Storage= 5,899 cf
Flood Elev= 313.50' Surf.Area= 7,410 sf Storage= 14,430 cf

Plug-Flow detention time= 176.4 min calculated for 0.261 af (91% of inflow)
Center-of-Mass det. time= 133.0 min (910.6 - 777.6)

Volume	Invert	Avail.Storage	Storage Description
#1	310.00'	14,430 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	311.00'	0 cf	**Sediment Forebay (No Storage) (Prismatic)** Listed below (Recalc) 1,031 cf Overall x 0.0% Voids
		14,430 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
310.00	2,696	0	0
312.00	4,200	6,896	6,896
313.00	5,036	4,618	11,514
313.50	6,629	2,916	14,430

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
311.00	250	0	0
313.00	781	1,031	1,031

Device	Routing	Invert	Outlet Devices
#1	Primary	309.75'	**15.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 309.75' / 309.60' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	310.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 310.00 311.50 311.50 313.00 Width (feet) 0.08 0.08 0.50 0.50
#3	Device 1	313.25'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	313.35'	**5.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.79 cfs @ 12.50 hrs HW=311.76' TW=309.70' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.79 cfs of 6.32 cfs potential flow)
  ├─**2=Custom Weir/Orifice** (Weir Controls 0.79 cfs @ 3.18 fps)
  └─**3=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=310.00' TW=309.62' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

APPENDIX

PRE-DEVELOPMENT DRAINAGE AREA PLAN
POST-DEVELOPMENT DRAINAGE AREA PLAN
STORMWATER OPERATION & MAINTENANCE PLAN

STORMWATER

OPERATION & MAINTENANCE PLAN

Rock Road Townhomes

Map 17; Lot 25
295 Rockingham Road
Londonderry, New Hampshire

February 20, 2026

KNA Project No. 21-0113-1

KNA KEACH-NORDSTROM ASSOCIATES, INC.

TABLE OF CONTENTS:

I. **General**

Introduction

General Maintenance Requirements

II. **Supporting Documents**

Annual Inspection & Maintenance Reporting Form

Long-Term Inspection & Maintenance Plan Checklist

Long-Term Inspection & Maintenance Log

Anti-Icing Route Data Form

III. **Control of Invasive Plants**

Invasive Plant Guide

IV. **Stormwater Practice Location Plan**

11"x17" "Grading and Drainage Plan"

I. General

Introduction

The project owner or their assigned heirs will maintain the stormwater treatment facilities during construction. The owner of the project is Page Rock, LLC, 5 Hutchings Drive, Suite 5D, Hollis, NH 03049. Upon completion of construction, the Condominium Association will assume ownership of long-term maintenance.

The subject property is referenced on Londonderry's Tax Map 17 as Lot 25. Any transfer of responsibility for inspection and maintenance activities or transfer of ownership shall be documented to the Town of Londonderry in writing. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction. Long-term operation and maintenance for the stormwater management facilities are presented below.

Maintenance will be performed as described unless and until the system is formally accepted by a municipality or quasi-municipal district or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system.

Post Construction:

The following standards will be met after construction is complete:

Documentation:

A maintenance log will be kept summarizing inspections, maintenance, and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean out of any sediments or debris, the location where the sediment and debris was disposed after removal will be indicated. The following forms shall be submitted to the Londonderry Department of Engineering on an annual basis.

Maintenance Requirements

Stormwater Ponds:

- 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.
- System embankments should be mowed periodically to maintain grass cover and any other vegetation found on the embankment should be removed at each inspection.
- Trash and debris found within the pond or in the outlet structure should be removed at each inspection.
- Removal of accumulated sediment
- Inspection and repair of embankments, inlet and outlet structures, and appurtenances

Sediment Forebays:

- Forebays help reduce the sediment load to downstream BMP's and will therefore require more frequent cleaning.
- Systems should be inspected at least annually.
- Conduct periodic mowing of embankments (generally two times per year) to control growth of woody vegetation.
- Trash and debris should be removed at each inspection.
- Accumulated sediment should be removed as warranted by such inspection.
- Install and maintain a staff gage or other measuring device, to indicate depth of sediment accumulation and level at which clean-out is required.

Outlet Protection:

- Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.

General:

- Sweeping will be checked quarterly and completed as needed.
- If any invasive species begin to grow in the stormwater management practices the species shall be disposed of in an appropriate manner that will not allow the pest to survive or spread. The disposal of such species shall be witnessed or approved by a state inspector. Methods for disposal may include, but not be limited to:
    - Encapsulating the plant(s) in plastic bags and disposing of the plant material in one of the following ways:
        - Discarding in trash pickup;
        - Open burning;
        - Incineration; or
        - Burial of infested nursery.

Landscape Management:

Objective: To maintain lawns and plantings to ensure survival, vigorous growth with proper nutrients, pest management and the avoidance of environmental stress such as drought.

1. Lawns & grass areas:
    a. The turfgrass mix selected for lawn areas will be varieties that are qualified, A-L.I.S.T. (Alliance for Low Input Sustainable Turf) or TWCA (Turfgrass Water Conservation Alliance). These organizations have high testing standards to insure lower fertilizer and pesticide inputs, lower water requirements, heat and drought tolerance.
    b. The lawn maintenance will be done by an experienced contractor.
    c. Nutrients will be applied to achieve a successful stand of turf following NH RSA 431
    d. Soil samples will be taken annually to help identify direct nutrient deficiencies and or excesses which will dictate annual nutrient program. Soil test will include, Organic matter, Phosphorus levels, pH, pH buffer, cation exchange capacity, cation base saturations and soil texture.
    e. Integrated pest management (IPM) practices will be followed to determine tolerable pest population levels. Treatments will be made as necessary based on pest thresholds.
    f. Grass varieties will need less watering by nature but the option of natural occurring moisture management product treatments to conserve water are available during periods of severe drought to ensure survival of the turf.
    g. Grass will be mowed as needed to a 2.5" – 3 "height depending on seasonal conditions.
    h. Grass will be watered as needed.
2. Trees & Shrubs:
    a. Initial plant installation will be a key factor to long-term survival and success
    b. Tree & shrub installation shall be performed in accordance with the growers' requirements.
    c. The tree & shrub maintenance will be done by an experienced contractor.
    d. As with the grass area, integrated pest management (IPM) practices will be followed to determine tolerable pest population levels. Treatments will be made as necessary based on pest thresholds.
    e. Trees & shrubs will be fertilized in the fall utilizing deep root feeding with a high percentage of organically derived nutrient sources.
    f. Watering will be done as needed throughout the season, especially during very dry periods to ensure plant survival.

3. Planting beds:
    a. Planting bed maintenance will be done by an experienced contractor.
    b. Planting beds will be mulched in the spring for reduced weed encroachment and water holding capacity to aid in plant survival and success.
    c. Beds will be weeded periodically as needed.
    d. Flowering annuals will be planted in the spring to add natural color.
    e. Annuals will be removed once the season is completed.

Snow and Ice Management:

Objective: To maintain all paved areas to be free of snow, in a timely manner after every snow event. Ensure bare pavement with no residual ice to ensure occupant safety. Utilize best management practices and products to comply with NHDES Green SnowPro under RSA 489-C. The snow and ice removal contractor shall document the management process in accordance with the requirements of RSA 489-C and the certification guidelines.

1. Snow plowing:
    a. Snow plowing will be done by a Certified NHDES Green SnowPro contractor.
    b. The driveway & parking lot will be plowed as needed during and after every snow event.
    c. Snow will be stockpiled in locations identified on the approve landscape plan.
    d. Walkways and entrances will be shoveled, or snow blown depending on snow volume.
    e. In the event of a higher than usual snow fall, snow will be trucked off-site to an approved snow stockpile facility.
    f. The property owner shall be responsible for reporting the annual salt usage to NHDES.

2. Ice control:
    a. Ice control will be done by a Certified NHDES Green SnowPro contractor.
    b. The objective is to obtain bare and dry pavements at the earliest practical time following cessation of a storm.
    c. Ice melting products will be used as necessary to prevent "slip & fall" incidents as well and maintain motor vehicle control.
    d. Snow and Ice Management will follow NHDES Green SnowPro guidelines under RSA 489-C.
    e. Magic Salt ® by ProMelt, or equal, will be the primary ice melting product. Can melt ice to temperatures as low as - 25°F. Manufactured with a combination feed grade molasses and

magnesium chloride. Long lasting performance reduces re-application frequency.

f. ProMelt Mag liquid, or equal, will also be used in low volumes as a pre-treat per manufactures recommendations. This practice is a similar practice used by NH DOT. ProMelt Mag is a high-performance magnesium chloride liquid that delivers a strong residual effect on road surfaces, improves melting and results in long lasting performance.

II. Supporting Documents

Annual Inspection and Maintenance Reporting Form
for
Rock Road Townhomes
Londonderry, New Hampshire

Date: _____

To: Page Rock LLC

Re: Certification of Inspection and Maintenance; Submittal of Forms

Property Name: Rock Road Townhomes

Property Address: 295 Rockingham Road, Londonderry, NH

Contact Name: _____

Contact Phone #: _____

Contact Email Address: _____

I verify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Operation & Maintenance Plan associated with the above referenced property.

The required Long-Term Inspection & Maintenance Plan Checklist is attached to this form.

_____ _____
Name of Party Responsible for Inspection & Maintenance Date

_____
Authorized Signature

Long-Term Inspection & Maintenance Plan Checklist
Rock Road Townhomes – Londonderry, NH

Current Owner Name:	Date:
Business Address:	Inspector:
Weather:	
Date of Last Rainfall:	Amount: Inches:

Best Management Practice

Detention Pond #1

Reason for Inspection		
Spring ☐	Fall/Yearly ☐	Spring ☐

Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Sideslopes & berms need repair? Yes ☐ No ☐
Clean inlet & outlet structures? Yes ☐ No ☐

Attach Photos

Detention Pond #2

Reason for Inspection		
Spring ☐	Fall/Yearly ☐	Spring ☐

Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Sideslopes & berms need repair? Yes ☐ No ☐
Clean inlet & outlet structures? Yes ☐ No ☐

Attach Photos

Sediment Forebays

Reason for Inspection		
Spring ☐	Fall/Yearly ☐	After Major Storm ☐

Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Attach Photos

Outlet Protection	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
HW#2 Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes: Detention Pond #1 Weir Outlet Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes: Attach Photos			

Lawn Areas and Landscaping	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes: Attach Photos			

General	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Sweeping Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes: Invasive Plant Removal Required? Yes ☐ No ☐ Corrective Action Needed & Notes: Attach Photos			

Long-Term Inspection & Maintenance Log
Rock Road Townhomes – Londonderry, NH

Date	Inspection (Yes or No)	Maintenance (Yes or No)	List BMPs Inspected and/or Provide Comments	Inspected By:

Anti-icing Route Data Form
Rock Road Townhomes – Londonderry, NH

Truck Station:				
Date:				
Temperature:	Pavement Temperature:	Relative Humidity:	Dew Point:	Sky:
Reason For Applying:				
Route:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day):				
Observation (after event):				
Observation (before next application):				
Name:				



How Salt Works

NH Best Management Practices

BE PROACTIVE - ANTI-ICE

Anti-icing is the proactive method of preventing snow and ice from bonding to pavement. It can be more than 50% more efficient than deicing. See the NH Anti-Icing Factsheet for more information.

PRE-WETTING FOR FASTER ACTING SALT

Adding brine to salt before you apply it to pavement jump starts the melting process which means your pavement will be clear sooner. See the Pre-wetting Fact Sheet for more information.

KNOW YOUR LIMITS

Dry salt becomes ineffective below 15°F if possible wait until the temperature rises before applying salt. At 30°F 1 lb of salt can melt 46.3 lb of ice in 5 minutes. At 15°F 1 lb of salt can melt 6.3 lb of ice in 1 hour.

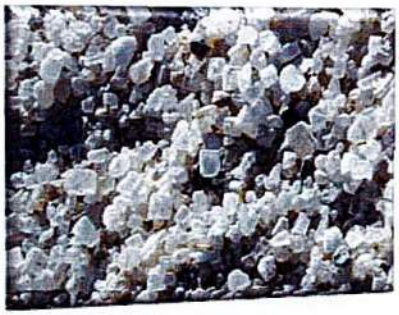
PLOW FIRST

Always plow before applying any kind of chemical deicer to avoid pushing it away!

How Do We Melt Ice?

Ice can be melted by increasing the temperature, or lowering the freezing point of the water. It's not cost effective to use heat to melt ice on our roads so we use chemicals to reduce the freezing point—anything that will dissolve in water will work, including: salt, sugar, even alcohol!



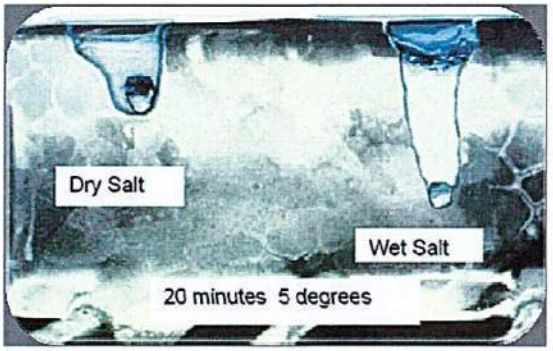


Why Use Salt?

Salt (Sodium Chloride) is the cheapest and most readily available chemical that efficiently melts ice and can be easily applied to our roadways and parking lots. However salt does corrode our cars and bridges, contaminates drinking water and pollutes our streams. Alternatives include potassium acetate, and calcium magnesium acetate (CMA), — all of which are considerably more expensive than calcium chloride, and have their own environmental concerns.

Brine Makes It Happen

The first step in melting ice is the formation of a brine. Salt crystals pull water molecules out of ice formation which creates a brine with a lower freeze point. Once the brine is formed melting is greatly accelerated. Save time and money by pre-wetting your salt with a brine before it hits the pavement to jump start melting! See the Pre-Wetting fact sheet for more information.



Source: Wisconsin DOT Transportation Bulletin #22



Save $$ and the Environment

In New Hampshire there are over 40 watersheds currently contaminated from road salt. As the pavement temperature drops more salt is required. As the pavement temperature rises less salt is required. Save money and the environment by using only what is needed to do the job. See NH application rate charts for recommended rates.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH



Anti-Icing

NH Best Management Practices

GET OUT EARLY

Typically anti-icing is most effective if applied 1-2 hours before the precipitation begins however it can be applied up to 24 hours in advance.

TRY IT FIRST

Trying anti-icing for the first time? Make a 23.3% brine solution and before a storm spray pavement on your own property using a masonry/ plant sprayer. Use this experiment to determine how best to use it with your clients.

LEAVE SOME PAVEMENT BARE

It's always best to use stream nozzles instead of fan tip to avoid creating a slippery condition. If the anti-icing liquid freezes the bare pavement will still provide a traction surface.

USE A FILTER

Having a filter in your liquid dispensing system will reduce clogs in your nozzle. Automotive in line fuel filters work quiet well. If your liquid dispenser is not functioning properly be sure to check the filter first.

A Proactive Treatment

Anti-icing before a storm is very similar to using a non-stick spray on a pan before cooking. Just like a non-stick spray prevents food from bonding to the pan, anti-icing prevents snow and ice from bonding to the pavement so that it can be plowed away. Anti-icing can save you money as it costs 50% less than reactive deicing.





Make Your Own Salt Brine

When making brine it is important to add enough salt to produce a 23.3% solution which freezes around 0°F. Roughly 2.5lb per gallon of water will produce a 23.3% solution. You can verify using a salometer (~$20) a 23.3% solution will have a specific gravity of 1.176, or 85% salinity. Consult the Brine Making BMP sheet for more info.

How Much Should I Use and When?

You can apply brine up to 24 hours in advance of the storm. Typical application rates range from 0.5 to 0.75 gallon per 1000 sq.ft. (10' x 100' area). Other chemicals such as magnesium are also available—consult your supplier for application rates. Anti-icing is not advised prior to freezing rain events.





Getting Started

Try making your own salt brine by putting 13 lb of salt in 5 gallons of water to get a 23.3% salt brine solution. Mix the brine until all of the salt is dissolved. Using a masonry sprayer apply the liquid several hours before a storm. Start by applying about 0.25—0.5 gallons to a 10' x 50' area. Adjust the application rates based on your experience. Being careful not to over apply and cause a slippery condition.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH



Pre-wetting

NH Best Management Practices

PRE-WETTING?

Pre-wetting is the process of coating a solid de-icer with a liquid before it is spread on a roadway.

WHY PRE-WET?

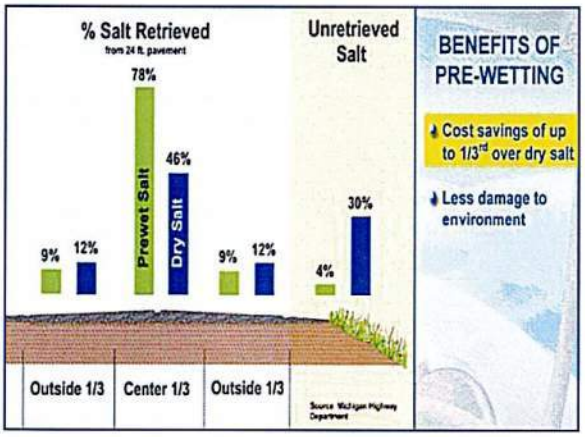
De-icing chemicals must form a brine before they can begin melting ice. Pre-wetting your chemicals accelerates the brine making process, which improves the melting action of the material. Pre-wetting also reduces bounce and scatter of material during spreading, and reduces the total amount of de-icer needed to obtain the desired results.

REDUCED RATES

If you are pre-wetting, don't forget to reduce your application rates accordingly. Reductions in the range of 15-20% are typical.

HOW MUCH LIQUID?

A good rule of thumb is to use 8-10 gallons of pre-wetting liquid for every ton of de-icer. For other chemicals, such as magnesium chloride, consult your supplier for application rates

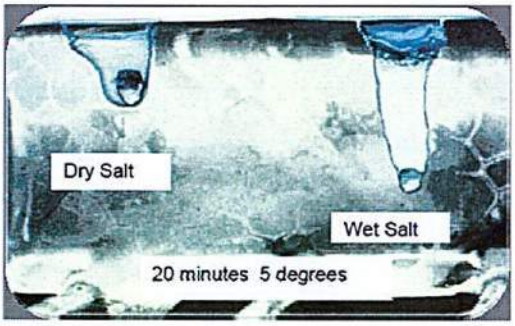


Pre-wetting Liquids

You have a few options for pre-wetting liquids. The most commonly used is a 23% sodium chloride brine solution. Calcium chloride at 32% solution is also used, as well as Magic Minus Zero™ and other patented products.

Getting Started

Wet the pile! There are two ways to pre-wet your de-icing chemicals. The easiest way to get started with pre-wetting is to spread your salt pile, spray it with pre-wetting liquid, mix it around, and re-pile it. More advanced truck mounted pre-wet systems can be installed on your trucks if you decide to make the investment.



Source: Wisconsin DOT Transportation Bulletin

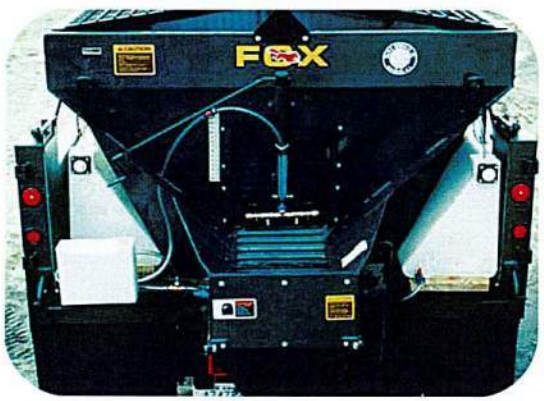
Spraying the Pile

This is the easiest and most cost effective way to get started in pre-wetting. The first step is to spread your salt pile on a flat, impermeable surface. Next, spray the salt while it is spread out, and mix it around to ensure adequate and consistent liquid coverage. After the salt is sufficiently covered, re-stack the salt in your storage shed for later use.

Truck Mounted Systems

These systems are mounted in the truck bed and coat the de-icer with liquid as it comes off the conveyor/auger onto the spinner. These systems have the benefit of applying liquid only to the material you use as you use it. However, these systems must be installed on every truck that will be used to spread pre-wetted material.





Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH



Brine Making

NH Best Management Practices

GET THE LOWEST FREEZE POINT

When salt brine is 23% salt (measured with a hydrometer: 1.176, or with a salimeter: 85%) it has the lowest freeze point possible (about 0°F).

BRINE STORAGE

23% brine solution may be stored outside, however if temperatures get below 0°F the brine may freeze. A circulator pump will reduce the risk of freezing. If possible store brine indoors to eliminate risk of freezing.

COST OF BRINE

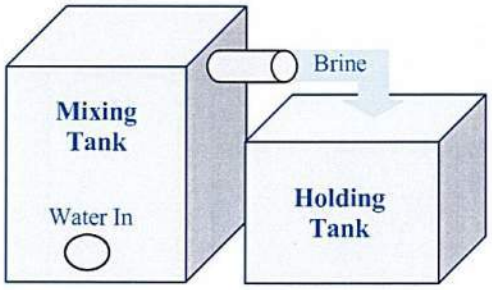
Calcium chloride brine costs about 7¢ / gallon (assuming $58/ton for salt) after you have your equipment setup.

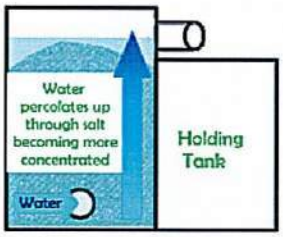
MULTIPLE USES

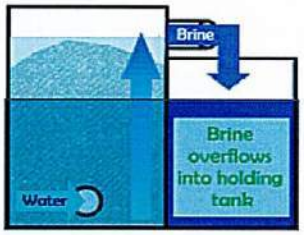
Brine can be used directly for anti-icing, for prewetting salt as it is dispensed from your truck, or to pretreat salt before it is loaded into your truck. Brine can be safely stored for up to a year, however, the concentration should be tested before use.

What Do You Need?

Brine making is a fairly simple process—the only ingredients are salt and water, and the only equipment you'll need is an open top mixing tank, a holding tank, a small pump, and a salimeter.







Images courtesy of Iowa DOT

Step 1: Fill Mixing Tank

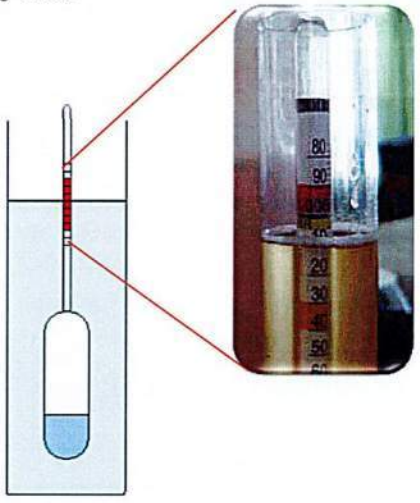
Add Salt: Add about 2.5 lb of salt per gallon of water you plan to add. Make sure your mixing tank has a large opening to make adding salt easy.

Add Water: Slowly add water from the bottom of your brine mixing tank. This will allow it to percolate up through the salt and overflow into the holding tank.

Step 2: Check Concentration

Float a hydrometer or salimeter directly in your holding tank and read the value at the surface of the water. The number should be either 85% or 1.176 depending on the units of your device.

If the values are too low, pump some brine from your holding tank back into the mixing tank and allow it to overflow. If values are too high simply add some fresh water





Quality Control & Documentation

Make sure that you record the date when you create each batch of brine and document who mixed it and checked the concentration. It is also a good idea to note the final concentration. These records should be kept for at least two years to protect your group in the event of litigation.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH



Hydraulic-Run Spreader Calibration

NH Best Management Practices

WHY CALIBRATE?

You can't reduce your salt use if you don't know how much salt you actually use! The goal of calibrating is to know how much material you are putting down on a roadway or parking lot for every setting on your truck that you use. This is why calibrating your equipment is the first step to reducing salt use and saving money!

REMEMBER:

Each truck must be independently calibrated for each material it will be used to spread (the salt calibration chart *will* be different than the sand calibration chart).

Calibrations should be preformed annually, or after a spreader is serviced.

CALCULATIONS:

There are a few simple calculations you must perform in order to complete the calibration. Once all of the necessary data is recorded, head back inside and warm up! Refer to the reverse side of this fact sheet for calculation instructions.



Step 1: Load the Truck

Partially load the truck. Half of a full load should be more than adequate for calibration purposes.



Step 2: Set Your Controls

Gate Height: Set the gate height to its lowest practical setting (~ 2"). This should be kept constant throughout the calibration process. If you find that not enough material is dispensed with this setting, try 2.5" to 3".

Engine Speed: Warm the truck up and run the engine at the typical rate seen during spreading (approximately 2000 rpm).



Step 3: Measure Spread Width

Measure the width that the material covers during spreading. Do this for each conveyor/auger setting you are calibrating. Round your numbers to the nearest half foot and record them in column "**W**" of the calibration chart (see reverse side).

Step 4: Collect & Weigh Material

You will need either a sheet of canvas, a tarp, or a bucket to collect the material that is dispensed from the spreader, as well as a scale. Weight the object you are using to collect the material in, and record that value in the purple box above the discharge rate column. Collect material for 1 minute. Weigh the collected material and subtract the weight of the tarp/canvas/bucket. Record this value in the first purple column of the calibration chart. Do this 3 times for each conveyor/auger setting that is typically used. Average these three values together and record in the orange column in the calibration chart.



Step 5: Perform Calculations

Go inside and calculate your discharge rate using the calibration chart for each truck speed and conveyor/auger setting you normally use. Refer to the reverse side of this fact sheet for calculation instructions. The formula you will be using is shown below:

$$D = \frac{B \times C}{A}$$

Step 6: Distribute Completed Calibration Cards!

Put a copy of the calibration chart in the truck you just calibrated. Also, leave a copy of the calibration chart in the office so you have a copy incase the original is damaged.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH

Calibration Chart (Hydraulic Type)

Material: _____ Truck/Spreader ID: _____

Date: _____ Performed by: _____

Tarp/Canvas/Bucket Weight: _____

Conveyor or Auger Setting	W	A	Discharge Rate (lb/min.)			B	D					
	Spread Width (ft.)	5.28 × W	Run 1	Run 2	Run 3	Average Discharge Rate *((Run1 + Run2 + Run3)/3)*	Pounds of Material Discharged per 1000 square ft. *(D = B × C ÷ A)*					
							5 mph (C = 12)	10 mph (C = 6)	15 mph (C = 4)	20 mph (C = 3)	25 mph (C = 2.4)	30 mph (C = 2)
1												
2												
3												
4												
5												
EX	14	5.28 × 14= **73.92**	87	92	93	(87+92+93)÷3= **90.67**	12 × 90.67 ÷ 73.92= **14.72**	6 × 90.67 ÷ 73.92= **7.36**	4 × 90.67 ÷ 73.92= **4.91**	3 × 90.67 ÷ 73.92= **3.68**	2.4 × 90.67 ÷ 73.92= **2.94**	2 × 90.67 ÷ 73.92= **2.45**

Calculation Instructions: Multiply the spread width from column **W** by **5.28** and record the answer in column **A**. For each conveyor/auger setting, add **Run 1**, **Run 2**, and **Run 3** together. Divide the result by **3** and record in column **B** to get the average discharge rate. To find the pounds of material discharge per 1000 square feet, you must know the number of minutes it takes to travel one mile at every truck speed you intend to calibrate for. These numbers are designated as variable "**C**". The "**C**" value for each travel speed is shown in red under that given speed. Multiply column **B** by the "**C**" value for that speed and divide by the **A** column to find the number of pounds of material discharged per 1000 square feet for the given speed. Record these numbers in the **D** columns. The full equation is shown here:

$$D = \frac{B \times C}{A}$$

Pony Motor-Run Spreader Calibration

NH Best Management Practices

WHY CALIBRATE?

You can't reduce your salt use if you don't know how much salt you actually use! The goal of calibrating is to know how much material you are putting down on a roadway or parking lot for every setting on your truck that you use. This is why calibrating your equipment is the first step to reducing salt use and saving money!

REMEMBER:

Each truck must be independently calibrated for each material it will be used to spread (the salt calibration card *will* be different than the sand calibration card).

Calibrations should be preformed annually, or after a spreader is serviced.

CALCULATIONS:

There are a few simple calculations you must perform in order to complete the calibration. Once all of the necessary data is recorded, head back inside and warm up! Refer to the reverse side of this fact sheet for calculation instructions.



Step 1: Load the Truck

Partially load the truck. Half of a full load should be more than adequate for calibration purposes.



Step 2: Set Your Controls

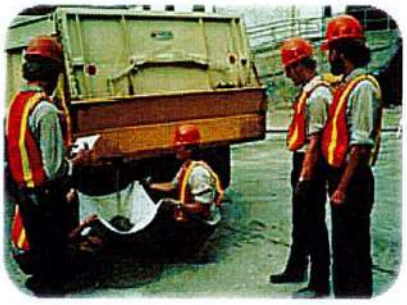
Gate Height: Set the gate height to its lowest practical setting to start (approximately 1" to 1.5"). After the truck is calibrated for the lowest gate setting, calibrate for each 1/2" increment greater than the lowest setting. Continue until all gate settings you use are calibrated.

Engine Speed: Set the pony motor speed to the maximum setting, or to the setting you would normally use.



Step 3: Measure Spread Width

Measure the width that the material covers during spreading. Do this for each gate setting you are calibrating. Round your numbers to the nearest half foot and record them in column "**W**" of the calibration chart (see reverse side).



Step 4: Collect & Weigh Material

You will need either a sheet of canvas, a tarp, or a bucket to collect the material that is dispensed from the spreader, as well as a scale. Weight the object you are using to collect the material in, and record that value in the purple box above the discharge rate column. Collect material for 1 minute. Weigh the collected material and subtract the weight of the tarp/canvas/bucket. Record this value in the first purple column of the calibration chart. Do this 3 times for each gate opening that is typically used. Average these three values together and record in the orange column in the calibration chart.

Step 5: Perform Calculations

Go inside and calculate your discharge rate using the calibration chart for each truck speed and gate setting you normally use. Refer to the reverse side of this fact sheet for calculation instructions. The formula you will be using is shown below:

$$D = \frac{B \times C}{A}$$

Step 6: Distribute Completed Calibration Cards!

Put a copy of the calibration card in the truck you just calibrated. Also, leave a copy of the calibration card in the office so you have a copy incase the original is damaged.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

Technology Transfer Center
New Hampshire LTAP at UNH

Calibration Chart (Pony Motor Type)

Material: _____ Truck/Spreader ID: _____

Date: _____ Performed by: _____

Tarp/Canvas/Bucket Weight: _____

Gate Opening	W	A	Discharge Rate (lb/min.)			B	D					
	Spread Width (ft.)	5.28 × W	Run 1	Run 2	Run 3	Average Discharge Rate *((Run1 + Run2 + Run3)/3)*	Pounds of Material Discharged per 1000 square ft. *(D = B × C ÷ A)*					
							5 mph (C = 12)	10 mph (C = 6)	15 mph (C = 4)	20 mph (C = 3)	25 mph (C = 2.4)	30 mph (C = 2)
1"												
1.5"												
2"												
2.5"												
3"												
EX	14	5.28 × 14= **73.92**	87	92	93	(87+92+93)÷3= **90.67**	12 × 90.67 ÷ 73.92= **14.72**	6 × 90.67 ÷ 73.92= **7.36**	4 × 90.67 ÷ 73.92= **4.91**	3 × 90.67 ÷ 73.92= **3.68**	2.4 × 90.67 ÷ 73.92= **2.94**	2 × 90.67 ÷ 73.92= **2.45**

Calculation Instructions: Multiply the spread width from column **W** by **5.28** and record the answer in column **A**. For each gate setting, add **Run 1**, **Run 2**, and **Run 3** together. Divide the result by **3** and record in column **B** to get the average discharge rate. To find the pounds of material discharge per 1000 square feet, you must know the number of minutes it takes to travel one mile at every truck speed you intend to calibrate for. These numbers are designated as variable "**C**". The "**C**" value for each travel speed is shown in red under that given speed. Multiply column **B** by the "**C**" value for that speed and divide by the **A** column to find the number of pounds of material discharged per 1000 square feet for the given speed. Record these numbers in the **D** columns. The full equation is shown here:

$$D = \frac{B \times C}{A}$$

Example: Step #1, blank calibration form

See the References and Resources section for a full size form to copy for calibration. This is how the empty form looks.(Keep a stack of these on a clipboard when ready to begin the calibration.)

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE_____ **SPREADER #** _____ **MATERIAL**_____

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1					
2					
3					

Figure 10: Blank calibration form

Example: Step #2, calibration form filled out during calibration

Fill in the header information and column 2, the discharge weight per setting.

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE 8-Aug-15 **SPREADER #** A4219 **MATERIAL** Rock Salt

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1	10				
2	22				
3	34				

Figure 11: Example calibration form with discharge and header information filled out

Example: Step #3, calibration form ready to put in truck for road application

Back in the shop, do the calculations to fill in the rest of the blanks. Multiply the weight in column 2 with the multiplier in the top row. This provides the pounds per mile that needed to fill in the table.

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE 8-Aug-15 SPREADER # A4219 MATERIAL Rock Salt

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1	10	* 120	60	40	30
		**			
2	22	264	132	88	66
3	34	408	204	136	102

* top half of each row = lbs/lane mile. To get this number, multiply lbs/min by the factor shown for each speed.

** bottom half of each row = lbs/1000 sq.ft. To find this, divide the number in the top half by 63.

Figure 12: Example calibration form with pounds per lane mile filled out



Some fish species are affected by concentrations of less than 1000 ppm NaCl, about 1 to 1.5 tablespoons of salt in 5 gallons of water.

Example: Step #4, calibration form ready to zip tie to hand spreader or put in truck for parking lot application.

Divide by 63 to convert pounds per lane mile to pounds per 1,000 square feet. This is very useful for parking lot and sidewalk applications.

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

DATE 8-Aug-15 SPREADER # A4219 MATERIAL Rock Salt

SETTING	POUNDS PER MINUTE	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1	10	*120	60	40	30
		**1.9	1.0	0.6	0.5
2	22	264	132	88	66
		4.2	2.1	1.4	1.0
3	34	408	204	136	102
		6.5	3.2	2.2	1.6

* top half of each row = lbs/lane mile. To get this number, multiply lbs/min by the factor shown for each speed.

** bottom half of each row = lbs/1000 sq.ft. To find this, divide the number in the top half by 63.

Figure 13: Example calibration form with pounds per 1000 sq. ft. filled out

Gravity Flow Equipment

This is applicable for equipment that does not have a motorized delivery system such as an auger. This type of equipment might be a pickup mounted spreader, gator mounted spreader or a hand push spreader. Gravity flow equipment is typically controlled by gate opening and speed of application.

Step 1: Calculate discharge rate

- Mark out a 10-foot stretch of pavement. (By increasing the size of the test area i.e., the longer the test area, the more accurate the results will be).
- Sweep it clean of sand or any other material.
- Using a constant speed, apply one pass of material to the test area.
- Measure the width the material is spread or bounces, in feet.
- Sweep up and weigh the material that is within the marked 10-foot stretch.
- Record the lever position/setting for the gate/chute. If there are no numbers for the positions, make permanent marks on the equipment to identify the positions.
- To improve accuracy, repeat this two more times and calculate the average weight of material applied.
- Record results in columns A, B, C, and D (Figure 14).

Step 2: Repeat step #1 for various settings.

Step 3: Fill out chart.

- Fill out columns E, F, and G (Figure 14).
- If using more than one type of material, repeat the test for each material.
- Place the completed calibration chart with the equipment.

Shortcuts:

- Put down a tarp over the application area; this makes it quicker to recover and weigh material.
- After the first pass, put a bag around spreader to catch discharge material. The first pass is needed to determine the spread width.

Calculate application rate:

Equipment: _____ Material: _____ Date: _____

A	B	C	D	E	F	G
Speed	Lever position or gate setting	Pounds spread in 10 feet*	Spread width in feet	Coverage area in sq. ft. **(D x 10)***	Application rate in lbs./1000 ft^2 **(1000/E x C)**	Application rate in lbs./lane mile (12' width) **(F x 63.4)**
.....EXAMPLE.....						
20 MPH	*Half-closed*	*0.4 lbs.*	*13 feet*	*130 sq. ft.*	*3.1 lbs. per 1000 sq. ft.*	*196 lbs./mile*

* If changing the test strip length, adjust the title in column C and the multiplier in column E.

Figure 14: Example calibration chart for gravity flow equipment

What if calibration is not a practice?

Even without calibrating the equipment, the amount of material to use can be determined but will take more time to calculate. Know the material, the size of the area to be treated, and the pavement temperature, then consult the application rate chart (application rate section) and do the math. Without calibration, the way to evenly distribute the recommended amount across the maintenance area must be determined by the professional. This approach may work well for treating sidewalks using the "chicken feed" method. For example:

- 20°F degrees pavement temperature and rising
- Using dry salt
- Sidewalk is 2,000 square feet
- Table recommends 2.25 lbs. per 1,000 square feet (for this situation)
- Measure about 4.5 lbs. of salt
- Figure out a way to spread it evenly over the 2,000 sq. ft. surface



Sand fills in lake bottoms, accelerating the aging process of lakes. Lakes get shallower as they age, some eventually becoming wetlands.

Calibration Charts

Calibration Chart for Gravity Flow Equipment						
Vehicle or spreader number:					Date:	
Material Type:				Calibrated by:		
		A	**B**	**C**	**D**	**E**
Speed	Lever position or gate setting	Lbs. Material recovered in 10 feet	Spread width in feet	Square feet covered with material **(B x 10)**	Application rate in lbs./1000 ft^2 **(1000/C x A)**	Application rate in lbs./lane mile (12' width) **(D x 63.4)**

Figure 15: Blank calibration chart for gravity flow equipment

CALIBRATION CHART FOR AUGER OR CONVEYOR SYSTEMS

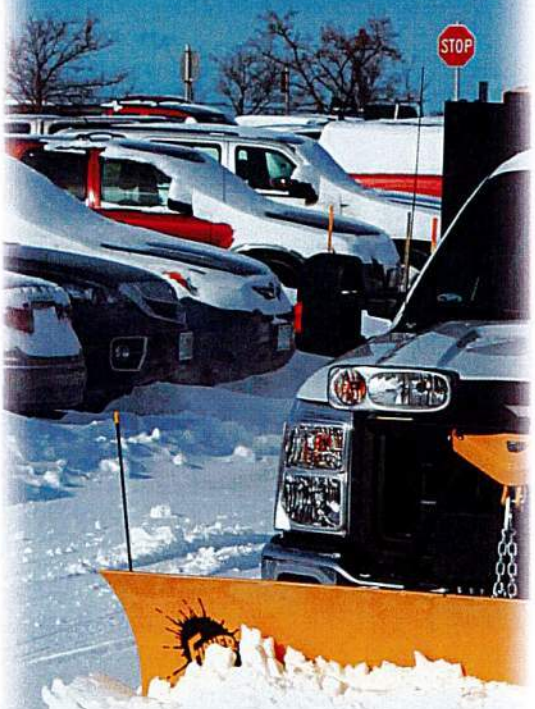
DATE _____ SPREADER # _____ MATERIAL _____

SETTING	POUNDS PER MINUTE	Quantity / Area	5 MPH (x12)	10 MPH (x6)	15 MPH (x4)	20 MPH (x3)
1		lbs/lane mile				
		lbs/1000 sq.ft.				
2		lbs/lane mile				
		lbs/1000 sq.ft.				
3		lbs/lane mile				
		lbs/1000 sq.ft.				
4		lbs/lane mile				
		lbs/1000 sq.ft.				
5		lbs/lane mile				
		lbs/1000 sq.ft.				
6		lbs/lane mile				
		lbs/1000 sq.ft.				

Figure 16: Blank calibration chart for augured or conveyed manual controlled spreaders

NEW HAMPSHIRE CERTIFIED

GREEN SnowPro



NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Hiring a NH Certified Green SnowPro as your snow removal contractor will help protect you and your company from slip and fall claims arising from snow and ice conditions.

What can you do?

Look for a certified salt applicator at http://des.nh.gov/organization/divisions/water/wmb/was/salt-reduction-initiative/salt-applicator-certification.htm or ask your current contractor to take the Green SnowPro course and become certified.

How can your organization benefit from the certification?

Reduce Your Liability

Under RSA 508:22, certified applicators and those who hire them are granted liability protection from claims arising from snow and ice conditions (slip and fall claims).

Certified Green SnowPros

NH Certified Green SnowPros are leaders in the snow removal industrywho are trained in the most up to date technologies and snow management practices to ensure a high level of service and safety to their customers.

Reduce Impacts to Local Waterbodies

Once in our water supplies, there is no practical way to remove salt. Certified Green SnowPros are trained in salt reduction practices to help ensure clean water for future generations.

Why is salt reduction important?

As of 2014, 46 water bodies in New Hampshire are polluted with chloride due to road salt application. In several watersheds analyzed in the southern I-93 corridor, more than 50% of the salt load comes from private roads and parking lots. The other major sources are state and local roads and highways.

Training

For upcoming Green SnowPro Training dates go to http://t2.unh.edu/greensnowpro-training-and-certification

For more information:

Visit http://www.des.nh.gov and see "Road Salt Reduction"under the A-Z list.

Contact: *Patrick Woodbrey*
Patrick.Woodbrey@des.nh.gov
(603) 271-5329

ATTACHMENT B – SMART SALTING PRACTICES

A checklist for snow and ice maintenance contractors.

Recommended practice	Check which response applies to current practices and anticipated site maintenance activities for job site.				
	Already do	Will do	Might do	Will not do	If "will not do"....why not?
Use an application rate chart.					
Calibrate equipment each year.					
Learn about the deicer ingredients and use the appropriate one for the condition.					
Look for reasons if and why materials are leaking or spilling from vehicles and fix them (e.g. gaps, overfilling, etc).					
Develop a comprehensive winter maintenance policy. Follow your policy.					
Measure and use pavement temperatures.					
Use anti-icing appropriately prior to the storm.					
Plow before applying deicers.					
Use wet materials (pre-wet or pre-treated).					
Don't apply sodium chloride (road salt) for pavement temperatures below 15ºF.					
Don't apply deicers for pavement temps under -10º F. It's too cold.					
Separate salt and sand. Use salt for melting. Use sand for traction.					
Apply deicers in the center of the road or on the high side of the curve.					
Store the salt in a building or under secure cover.					
Store salt away from water flow and direct the water away from storage area.					
Store snow away from lakes, ponds and wetlands.					
Sweep up sand, dispose of properly.					
For each event, document what you did and how well it worked. Use this information to make improvements.					

Checklist is adapted from worksheet created by Fortin Consulting as a part of the Minnesota Pollution Control Agency Smart Salting Voluntary Certification Program.

III. Control of Invasive Plants

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.

During maintenance activities, check for the presence of invasive plants and suitably remove according to the methods provided in the table below. The following table, based on the "Control of Invasive Plants" published by the New Hampshire Department of Agriculture, describes the most common invasive plants in this region and proper methods of disposal.

Name	Description	Invasive Qualities	Control Methods
Invasive Trees			
Norway Maple	- Large leaves - Will exude milky white sap when leaves are broken - Leaves turn color in Late October (fall foliage is yellow)	- Suppresses growth of grass, garden plants, and forest understory -Wind-borne seeds can germinate and grow in deep shade	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out plants, including the root systems. Use a forked spade or weed wrench. - Cut down the tree. Grind out the stump, or clip off re-growth. - Girdle[1] - Frill[2] - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray with glyphosate [3]* (mid-October to early November).
Tree of Heaven	- Long compound leaves with 11-25 lance shaped leaflets - Smell like peanut butter or burnt coffee when crushed	- Tough, can grow in poor conditions - Produces large quantities of wind-borne seeds - Grows rapidly - Secretes a toxin that kills other plants - Cannot be removed by mechanical means alone	- Pull seedlings when soil is moist. - Frill[2] (no more than 1" gap between cuts). Use Garlon 3a herbicide. - Cut stem/ cut stump with Garlon 3a. Follow label directions for cut stump application. Clip off sucker sprouts or paint with Garlon 3a.* - Foliar spray[3]* (on regrowth) - Paint bottom 12" of bark with Garlon 4 Ultra (February/March). Use maximum strength specified on label for all herbicide applications.
Invasive Shrubs			
Autumn Olive	- Formerly recommended for erosion control and wildlife value	- Highly invasive, diminishes the overall quality of wildlife habitat	- 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 (up to 4" diameter trunks). - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Bury stump - Do not mow

Invasive Shrubs (continued)			
Multiflora Rose	- Formerly recommended for erosion control, hedges, and wildlife habitat - Covered in white flowers in June - Very hard, curved thorns - Fringed edge to leaf stalk	- Huge shrub that chokes out all other vegetation - Too dense for most birds to nest in - Grows up trees like a vine in Shade	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems (at least 6" from the crown and 6" down). Use a forked spade or weed wrench for trees or shrubs. - Controlled burning[4] (on extensive infestations) - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* (mix Rodeo with extra sticker-spreader, or use Roundup Sure Shot Foam on small plants) - Herbicide may be applied in winter when other plants are dormant.
Bush Honeysuckles	- Includes Belle, Amur, Morrow's, and Tatarian Honeysuckle	- Creates dense shade reducing plant diversity and eliminating nest sites in forest interior spaces	- Deadhead to prevent spread of seeds (on ornamentals). Cut off seeds or fruits before they ripen. Bag and burn, or send to a landfill. - 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. - 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 (on shady sites only, brush cut in early spring and fall). - Controlled burning[4] (during growing season) - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate (late in the growing season). Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.*

Invasive Shrubs (continued)			
Blunt-Leaved Privet	- Medium sized shrub - Simple, oblong, dark green leaves 1-2" in length - Fragrant white flowers (spring) - Blackish-purple fruit (late summer)	- Toxic to mammals - Loss of valuable habitat	- 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. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers - Do not cut back or mow
Burning Bush, Winged Euonymus	- Wide, corky wings on the Branches - Brilliant red autumn leaves - Fruit	- High seed production	- 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. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers
Japanese Barberry	- Spiny deciduous shrub - Small leaves	- Very dense, displaces native plants - Can change chemistry of soil	- 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. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers

Invasive Woody Vines			
Japanese Honeysuckle	- Gold and White flowers - Heavy scent and sweet nectar in June	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Rampant grower - Spirals around trees, often strangling them	- 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. - 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. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* (fall or early spring when native vegetation is dormant) Plan to re-treat repeatedly
Oriental Bittersweet	- Bright orange seed capsules in clusters all along the stem - Flowers	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle	- 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. - Keep ornamental plants cut back, remove all fruits as soon as they open, and bag or burn fruits. - Cut stem/ cut stump with Garlon 3a. Follow label directions for cut stump application. Clip off sucker sprouts or paint with Garlon 3a.*
Japanese Knotweed, Mexican Bamboo	- The stems have knotty joints, similar to bamboo - Grows 6-10' tall - Large, pointed oval or triangular leaves	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Can grow in shade	- Cut stem/ cut stump with Glyphosate (at least 3 times each during growing season). Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* - Treat with Rodeo - In gardens, heavy mulch or dense shade may kill it.

Invasive Herbaceous Plants			
Garlic Mustard	- White-flowered biennial - Rough scalloped leaves (kidney, heart, or arrow shaped) - Garlic smell, mustard taste when its leaves are crushed	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Rampant grower - Spirals around trees, often strangling them	- Pull seedlings and small or shallow-rooted plants when soil is moist (before it flowers in spring). Dig out larger plants, including the crown and root systems. Use a forked spade or weed wrench for trees or shrubs. Tamp down soil afterwards. - Deadhead to prevent spread of seeds. Cut off seeds or fruits before they ripen. Bag and burn or send to a landfill. - Foliar spray[3]* (may be appropriate in some settings)
Japanese Stilt Grass	- Lime green color - Line of silvery hairs down the middle of the 2-3" long blade	- Tolerates sun or dense shade -Quickly invades areas left bare or disturbed by tilling or flooding - Builds a large seed bank in the soil	- Pull seedlings and small or shallow-rooted plants when soil is moist (pulled easily in early to mid-summer).Dig out larger plants, including root systems. Use a forked spade or weed wrench for trees or shrubs. Be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to a landfill. - 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. Mowing weekly or when it has just begun to flower may prevent it from setting seed. - Foliar spray[3]* (use glyphosate or herbicidal soap on large infestations. - Use a corn-based pre-emergence herbicide on annual weeds (spring). 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.

Invasive Herbaceous Plants (continued)			
Mile-A-Minute Vine, Devil's Tail Tearthumb	- Triangular leaves - Barbed stems - Turquoise berries	- Rapid growth - Quickly covers and shades out herbaceous plants	- Pull seedlings and small or shallow-rooted plants when soil is moist (pulled easily in early to mid-summer).Dig out larger plants, including root systems. Use a forked spade or weed wrench for trees or shrubs. Be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to a landfill. - 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. Mowing weekly or when it has just begun to flower may prevent it from setting seed. - Foliar spray[3]* (use glyphosate or herbicidal soap on large infestations. - Use a corn-based pre-emergence herbicide on annual weeds (spring). 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.
Spotted Knapweed	- Thistle-like flowers	- Dense, crowds out native species	- Do not pull unless the plant is young and the ground is very soft. The root will break and produce several new plants. - Wear sturdy gloves - Deadhead to prevent spread of seeds. Cut off seeds or fruits before they ripen. Bag and burn, or send to a landfill. - In lawns, spot treat with broad-leaf weed killer. 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. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]*

[1]Girdle: Cut through the bark and growing layer all around the trunk, about 6" above the ground. Girdling is most effective in spring (when the sap is rising) & middle-late summer (when the tree is sending food to the roots). Clip off sucker sprouts.

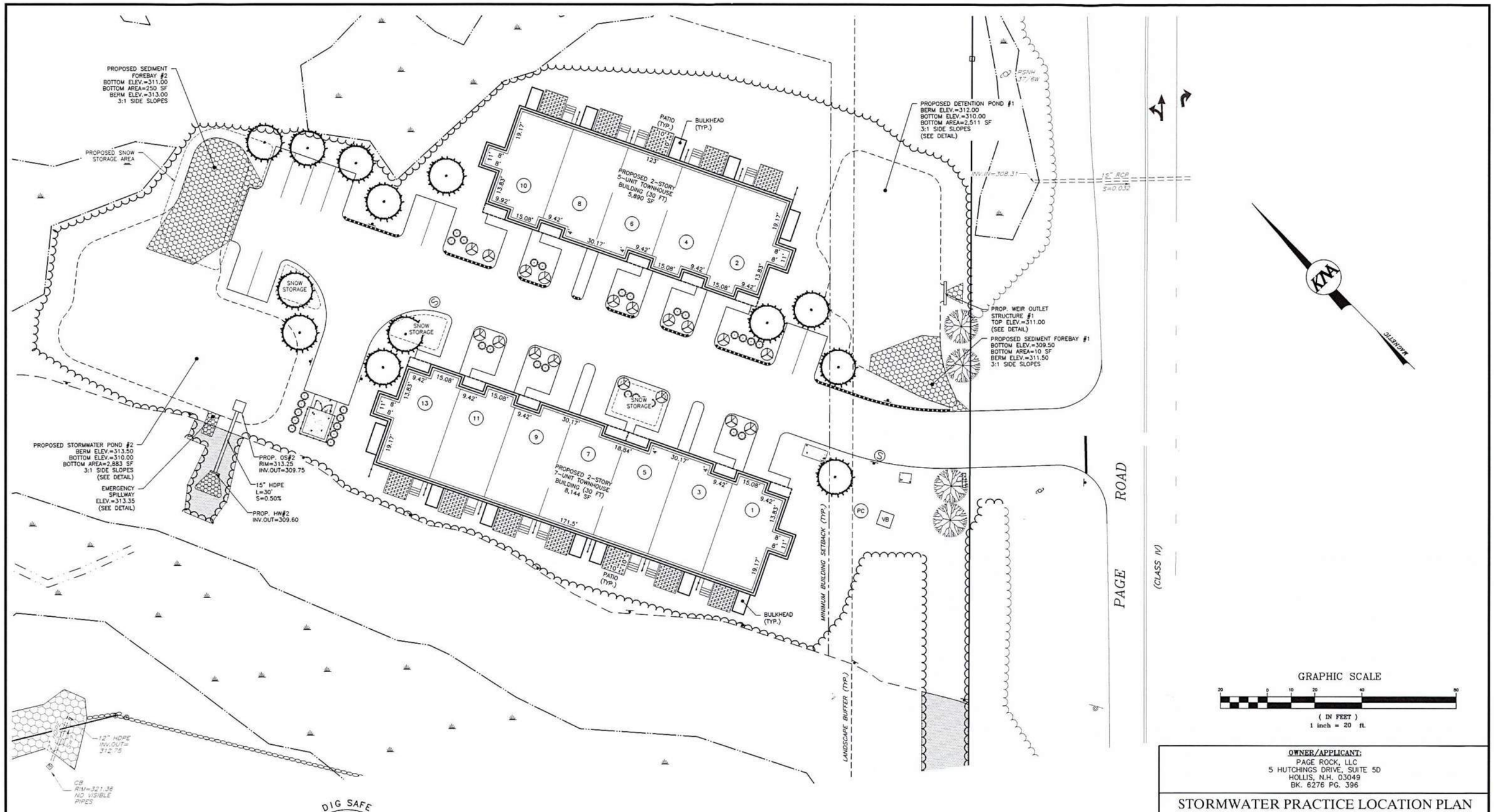
[2]Frill: Using a machete, hatchet, or similar device, hack scars (several holes in larger trees) downward into the growing layer, and squirt in glyphosate (or triclopyr if specified in table). Follow label directions for injection and frill applications. This is most effective from middle to late summer. Clip off any sucker sprouts or treat with glyphosate.

[3]Foliar Spray: 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.

[4]Controlled Burning: Burning during the spring (repeated over several years) will allow 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

*Herbicides: It is highly recommended that small populations try to be controlled using non-chemical methods where feasible. However, for large infestations, and for a few plants 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 or Garlon 3a 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.

IV. Stormwater Practice Location Plan



LEGEND

REBAR FOUND	PROPERTY LINE
IRON PIPE FOUND	ABUTTER LINE
UTILITY POLE	TREELINE
SIGN	EDGE OF PAVEMENT
GAS VALVE	BUILDING SETBACK
WATER VALVE	BUFFER LINE
HYDRANT	10' CONTOUR
WATER SHUT OFF	2' CONTOUR
CATCH BASIN	DRAINAGE LINE
TW TOP OF WALL	STONEWALL
BW BOTTOM OF WALL	WETLAND
TC TOP OF CURB	
BC BOTTOM OF CURB	
SEWER MANHOLE	
RIPRAP	
CONCRETE	

DIG SAFE — 811 CALL TOLL FREE

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

STORMWATER PRACTICE LOCATION PLAN

ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: 1" = 20'
FILE NO.:
SHEET NO. 1 OF 1

N:_project\2101131\dwg\Production Drawings\LOT 25 Townhouses\2101131- Lot 25 Townhouse Site_REV2.dwg, 2/18/2026 3:44:27 PM, \\KNA-DC01\TOSHIBA 7525AC

NAD83

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE SUBJECT PARCEL PRIOR TO DEVELOPMENT.
2. EXISTING FEATURES DEPICTED ON THIS PLAN WERE TAKEN FROM A COMBINATION OF "EXISTING CONDITIONS PLAN, PAGE ROCK TOWNHOMES, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. DATED JANUARY 7, 2025", "EXISTING CONDITIONS PLAN, ROCK ROCK TOWNHOMES, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. DATED MAY 6, 2025", AND TOWN GIS INFORMATION.
3. THE AREA OF EACH SUBCATCHMENT IS AS FOLLOWS:
   - SUBCATCHMENT 1S = 0.872 ACRES
   - SUBCATCHMENT 2S = 0.692 ACRES
   - SUBCATCHMENT 3S = 0.840 ACRES
   - SUBCATCHMENT 4S = 0.268 ACRES
   - SUBCATCHMENT 5S = 1.002 ACRES
   - SUBCATCHMENT 6S = 14.673 ACRES
   - SUBCATCHMENT 7S = 0.413 ACRES
   - SUBCATCHMENT 8S = 0.697 ACRES
   - SUBCATCHMENT 9S = 1.091 ACRES
   - SUBCATCHMENT 10S = 0.837 ACRES
   - SUBCATCHMENT 11S = 0.790 ACRES
   - SUBCATCHMENT 12S = 2.487 ACRES
   - SUBCATCHMENT 13S = 0.570 ACRES

DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

- SCS SOIL LINES
- SITE SPECIFIC SOIL LINES
- 44B — DENOTES SOIL TYPE
- P — DENOTES POND
- S — DENOTES SUBCATCHMENT AREA
- L — DENOTES POINT OF INTEREST
- R — DENOTES REACH
- LIMIT OF SUBCATCHMENT AREA
- TIME OF CONCENTRATION
- REACH



DIG SAFE
811
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
44B	MONTAUK	0–8%	WELL DRAINED	C
42D	CANTON	15–25%	WELL DRAINED	B
42E	CANTON	25+%	WELL DRAINED	B
446B	SCITUATE–NEWFIELDS COMPLEX	0–8%	MODERATELY WELL DRAINED	C
446C	SCITUATE–NEWFIELDS COMPLEX	8–15%	MODERATELY WELL DRAINED	C
448B	SCITUATE	0–8%	MODERATELY WELL DRAINED	C
448C	SCITUATE	8–15%	MODERATELY WELL DRAINED	C
448D	SCITUATE	15–25%	MODERATELY WELL DRAINED	C
444D	NEWFIELDS	15–25%	MODERATELY WELL DRAINED	C
546B/P	WALPOLE	0–8%	POORLY DRAINED	C
115B/VP	SCITUATE–NEWFIELDS COMPLEX	0–8%	VERY POORLY DRAINED	D

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION OF TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.

THE SITE SPECIFIC SOIL SURVEY (SSSS) WAS PRODUCED JULY 8, 2022, AND WAS PREPARED BY LUKE HURLEY, CWS # 095, BSC, INC. THE SURVEY AREA IS LOCATED AT 295 ROCKINGHAM ROAD, LONDONDERRY, NH.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE–WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.

HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTISTS OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009.

SCS SOILS LEGEND

- *43B* CANTON FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES, VERY STONY
- *446B* SCITUATE–NEWFIELDS COMPLEX, 3 TO 8 PERCENT SLOPES
- *547B* WALPOLE VERY FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES, VERY STONY
- *44B* MONTAUK FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
- *299* UDORTHENTS, SMOOTHED

SOURCE: USDA–SCS WEB SOIL SURVEY ROCKINGHAM COUNTY

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

PRE-DEVELOPMENT DRAINAGE AREA PLAN
ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21–0113–1
DATE: MARCH 20, 2025
SCALE: 1" = 80'
FILE NO.:
SHEET NO. 1 OF 2



NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE SUBJECT PARCEL AFTER DEVELOPMENT.
2. EXISTING FEATURES DEPICTED ON THIS PLAN WERE TAKEN FROM A COMBINATION OF "EXISTING CONDITIONS PLAN, PAGE ROCK TOWNHOMES, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. DATED JANUARY 7, 2025", "EXISTING CONDITIONS PLAN, ROCK ROCK TOWNHOMES, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. DATED MAY 6, 2025", AND TOWN GIS INFORMATION.
3. PROPOSED FEATURES DEPICTED ON THIS PLAN WERE TAKEN FROM "GRADING & DRAINAGE PLAN, ROCK ROAD TOWNHOMES, PREPARED BY KEACH–NORDSTROM ASSOCIATES, INC. DATED MAY 6, 2025".
4. THE AREA OF EACH SUBCATCHMENT IS AS FOLLOWS:
   - SUBCATCHMENT 1S = 0.872 ACRES
   - SUBCATCHMENT 2S = 0.692 ACRES
   - SUBCATCHMENT 3S = 0.840 ACRES
   - SUBCATCHMENT 4S = 0.153 ACRES
   - SUBCATCHMENT 5S = 1.002 ACRES
   - SUBCATCHMENT 6S = 14.362 ACRES
   - SUBCATCHMENT 7S = 0.413 ACRES
   - SUBCATCHMENT 8S = 0.697 ACRES
   - SUBCATCHMENT 9S = 1.091 ACRES
   - SUBCATCHMENT 10S = 0.837 ACRES
   - SUBCATCHMENT 11S = 0.790 ACRES
   - SUBCATCHMENT 12S = 1.759 ACRES
   - SUBCATCHMENT 13S = 0.570 ACRES
   - SUBCATCHMENT 14S = 0.535 ACRES
   - SUBCATCHMENT 15S = 0.619 ACRES

DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

- SCS SOIL LINES
- SITE SPECIFIC SOIL LINES
- 44B — DENOTES SOIL TYPE
- P — DENOTES POND
- S — DENOTES SUBCATCHMENT AREA
- L — DENOTES POINT OF INTEREST
- R — DENOTES REACH
- LIMIT OF SUBCATCHMENT AREA
- TIME OF CONCENTRATION
- REACH

DIG SAFE — UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM — 811 CALL TOLL-FREE

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
44B	MONTAUK	0–8%	WELL DRAINED	C
42D	CANTON	15–25%	WELL DRAINED	B
42E	CANTON	25+%	WELL DRAINED	B
446B	SCITUATE–NEWFIELDS COMPLEX	0–8%	MODERATELY WELL DRAINED	C
446C	SCITUATE–NEWFIELDS COMPLEX	8–15%	MODERATELY WELL DRAINED	C
448B	SCITUATE	0–8%	MODERATELY WELL DRAINED	C
448C	SCITUATE	8–15%	MODERATELY WELL DRAINED	C
448D	SCITUATE	15–25%	MODERATELY WELL DRAINED	C
444D	NEWFIELDS	15–25%	MODERATELY WELL DRAINED	C
546B/P	WALPOLE	0–8%	POORLY DRAINED	C
115B/VP	SCITUATE–NEWFIELDS COMPLEX	0–8%	VERY POORLY DRAINED	D

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION OF TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.

THE SITE SPECIFIC SOIL SURVEY (SSSS) WAS PRODUCED JULY 8, 2022, AND WAS PREPARED BY LUKE HURLEY, CWS # 095, BSC, INC. THE SURVEY AREA IS LOCATED AT 295 ROCKINGHAM ROAD, LONDONDERRY, NH.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE–WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.

HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTISTS OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009.

SCS SOILS LEGEND

- *43B* — CANTON FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES, VERY STONY
- *446B* — SCITUATE–NEWFIELDS COMPLEX, 3 TO 8 PERCENT SLOPES
- *547B* — WALPOLE VERY FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES, VERY STONY
- *44B* — MONTAUK FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
- *299* — UDORTHENTS, SMOOTHED

SOURCE: USDA–SCS WEB SOIL SURVEY ROCKINGHAM COUNTY

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049

POST-DEVELOPMENT DRAINAGE AREA PLAN
ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

PROJ. NO: 21–0113–1
DATE: MARCH 20, 2025
SCALE: 1" = 80'
FILE NO.:
SHEET NO. 2 OF 2

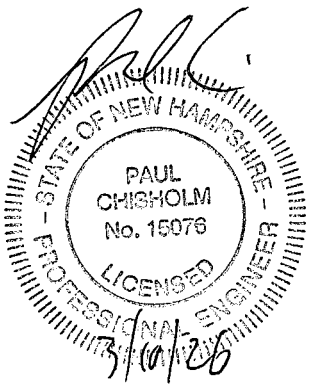
TRAFFIC IMPACT ANALYSIS

SHORT TRIP GENERATION MEMO

For

ROCK ROAD TOWNHOMES

Map 17; Lot 25
295 Rockingham Road
Londonderry, New Hampshire



May 6, 2025
Last Revised: March 10, 2026

KNA Project No. 21-0113-1

Prepared For: Page Rock, LLC
5 Hutchings Drive, Suite 5D
Hollis, New Hampshire 03049

Prepared By: Keach-Nordstrom Associates, Inc.
10 Commerce Park North, Suite 3
Bedford, New Hampshire 03110
(603) 627-2881
(603) 627-2915 (fax)

KNA KEACH-NORDSTROM ASSOCIATES, INC.

Table of Contents

PROJECT NARRATIVE

- DESCRIPTION OF SITE
- DESCRIPTION OF ROADWAYS
- SIGHT DISTANCE
- TRIP GENERATION
- SUMMARY

APPENDIX

- USGS LOCATION AND TAX MAP AERIAL EXHIBITS
- DRIVEWAY SIGHT DISTANCE PLAN & PROFILE
- ITE TRIP GENERATION LAND USE CODE 215
- SNHPC TRAFFIC COUNTS

KEACH-NORDSTROM ASSOCIATES, INC.

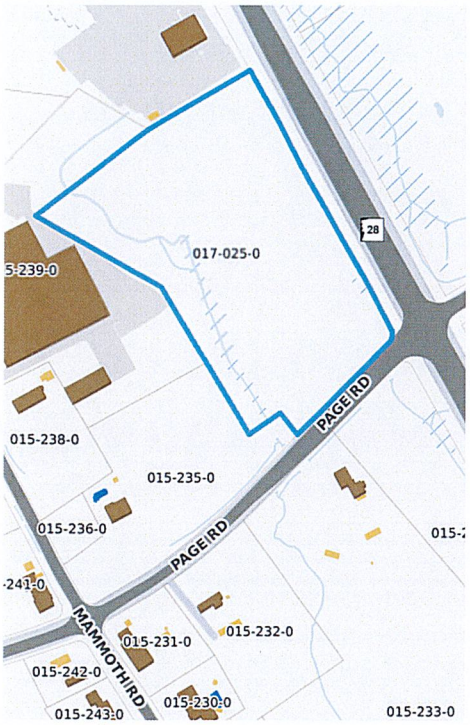
November 22, 2025

Town of Londonderry
Planning Department
268B Mammoth Road
Londonderry, NH 03054

Subject: **Rock Road Townhomes**
Short Form Traffic Impact Assessment
Map 17; Lot 25
295 Rockingham Road, Londonderry, New Hampshire
KNA Job No. 21-0113-1

On behalf of Page Rock, LLC (Owner & Applicant), Keach-Nordstrom Associates, Inc. respectfully submits the following short Traffic Impact Analysis (TIA), in accordance with the Town of Londonderry Site Plan Regulations Section 3.14.

The project proposes to develop the site to accommodate a 12-unit townhouse development consisting of two (2) buildings, with five (5) units in one and seven (7) in the other. Site work will include the erection of the two townhouse buildings, installation of a new driveway, and construction of the appropriate utilities and required stormwater management provisions.



The resulting traffic density falls under the "short" TIA criteria, since the project is anticipated to generate substantially less than 1,000 ADT and 100 PHT. As such, this TIA will include a description of the site, roadways, proposed driveway sight distance, and ITE trip generation with reasonable localized distribution analysis.

The project location map to the left was prepared using Town of Londonderry GIS mapping.

(Please also refer to additional USGS and Tax Map exhibits contained in the TIA appendix)

DESCRIPTION OF SITE:

The lot is located at 295 Rockingham Road and is approximately 7.901 acres in total area. The property has frontage along Page Road and Rockingham Road. The intersection of Page Road and Mammoth Road is about 613 feet to the west of the site. It is currently wooded and undeveloped.

DESCRIPTION OF ROADWAYS:

According to the New Hampshire Department of Transportation (NHDOT), Page Road is classified as a major collector while Rockingham Road is classified as a minor arterial. The proposed townhouse development will be accessed by a driveway off Page Road. Rockingham Road (NH Route 28) directs traffic to Page Road and Mammoth Road while Page Road primarily directs traffic to Rockingham Road, Mammoth Road, and Grenier Field Road. Rockingham Road and Page Road will be the primary focus of this report. Please refer to Table 1.0: Roadway Summary below for more information regarding each roadway.

Table 1.0: Roadway Summary

Road Name	Classification	Proximity to Site	SNHPC AADT
Rockingham Road (NH Route 28)	Minor Arterial	Northeast	12,700 (2021)
Page Road	Major Collector	Southwest	4,600 (2023)

*AADT is based on Southern New Hampshire Planning Commission (SNHPC) traffic counts

ROCKINGHAM ROAD:

Rockingham Road is an existing, paved, two (2) lane public minor arteiral road, which runs through Londonderry, New Hampshire. It connects to severeal surrounding towns inlcuding Manchester and Derry and provides access to South Willow Street in Manchetser and the Interstate 93 interchange in Londonderry.

There is Southern New Hampshire Planning Commission (SNHPC) data collection point located approximately 0.5 miles south of the Page Road intersection adjacent to the project site. This collection point provides an Average Annual Daily Traffic (AADT) count of 12,700 vehicles per day (VPD), which was collected in 2021.

PAGE ROAD:

Page Road, which begins at the intersection of Grenier Field Road and Mammoth Road, is an existing, paved, two (2) lane public major collector road, which runs through Londonderry, New Hampshire. It connects to Rockingham Road and the city of Manchester via Grenier Field Road and Harvey Road.

There is an SNHPC data collection point located on Page Road directly in front of the project site. The AADT for this point indicates a traffic volume of 4,600 VPD in study year 2023.

SIGHT DISTANCE:

Safe sight distance at the proposed driveway location was evaluated in accordance with the current Town of Londonderry Site Plan Regulations. The driveway location was evaluated to meet or

exceed the required all season safe sight distance requirements. Please refer to the sight distance plan & profile drawings included in this TIA report appendix.

TRIP GENERATION:

This TIA relies on empirical data provided by the Institute of Transportation Engineers (ITE) in their publication entitled Trip Generation Manual (12th edition) under Land Use Code 215: Single-Family Attached Housing in order to derive estimates of site generated traffic volumes (ITE Land Use Code 215 references data contained in TIA Appendix).

Trip Generation Calculation:	6.57 vehicles per day (vpd) x 12 units = 78.84 VPD (weekday rate with 50% entering & 50% exiting)
AM Peak (Weekday)	0.57 vehicles per hour (vph) x 12 units = 6.84 VPH (weekday rate with 23% entering & 77% exiting)
PM Peak (Weekday)	0.52 vehicles per hour (vph) x 12 units = 6.24 VPH (weekday rate with 62% entering & 38% exiting)
Peak Hour (Saturday)	0.47 vehicles per hour (vph) x 12 units = 5.64VPH (Saturday rate with 48% entering & 52% exiting)

Based on the above calculations, the proposed development is anticipated to generate the following traffic volumes at full build-out and occupancy:

A weekday average of 79 vpd with 40 vpd entering and 40 vpd exiting;
A weekday AM peak average of 7 vph with 2 vph entering and 5 vph exiting;
A weekday PM peak average of 6 vph with 4 vph entering and 2 vph exiting; and
A Saturday peak hour average of 6 vph.

TRIP DISTRIBUTION:

The proposed development will utilize existing roads and will not create any new road(s). This TIA assumes that the worst-case scenario of 98 vpd (Saturday average daily traffic) will be added to the surrounding roadways. The results are as follows:

Rockingham Road:

$$\frac{79 \text{ vpd}}{(12{,}700 \text{ vpd})} \times 100 = \mathbf{0.62\%}$$

Page Road:

$$\frac{79 \text{ vpd}}{(4{,}600 \text{ vpd})} \times 100 = \mathbf{1.72\%}$$

10 Commerce Park North, Suite 3B Bedford, NH 03110 Phone (603) 627-2881 Fax (603) 627-2915

Overall, the additional daily traffic increase to adjacent roadways will be less than one (1) percent to Rockingham Road and approximately two (2) percent to Page Road. These minor increases are anticipated to be negligible. Additionally, the proposed development will generate substantially less than 1,000 average daily trips and 100 peak hour trips. Therefore, due to the minor nature of this project and negligible traffic increases, specific onsite traffic counts and peak hour distribution analysis were not performed as part of this "Short Form" TIA.

SUMMARY:

Although the proposed development will slightly increase local traffic, this minor quantitative increase is unlikely to adversely impact existing local traffic operations.

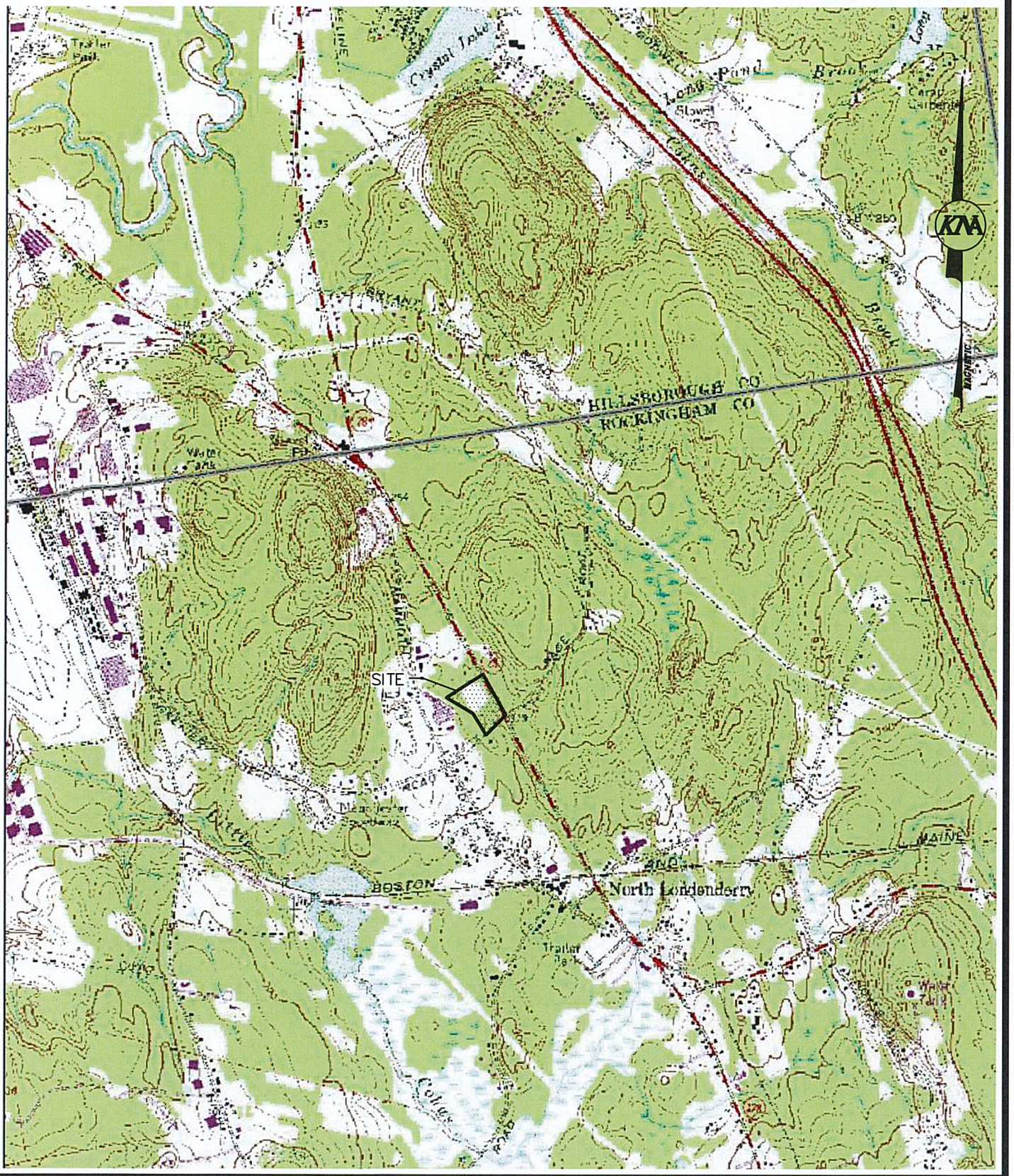
APPENDIX

USGS Location and Tax Map Aerial Exhibits

Driveway Sight Distance Plan & Profile

ITE Trip Generation Land Use Code 215

SNHPC Traffic Counts



KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110
Phone (603) 627-2881

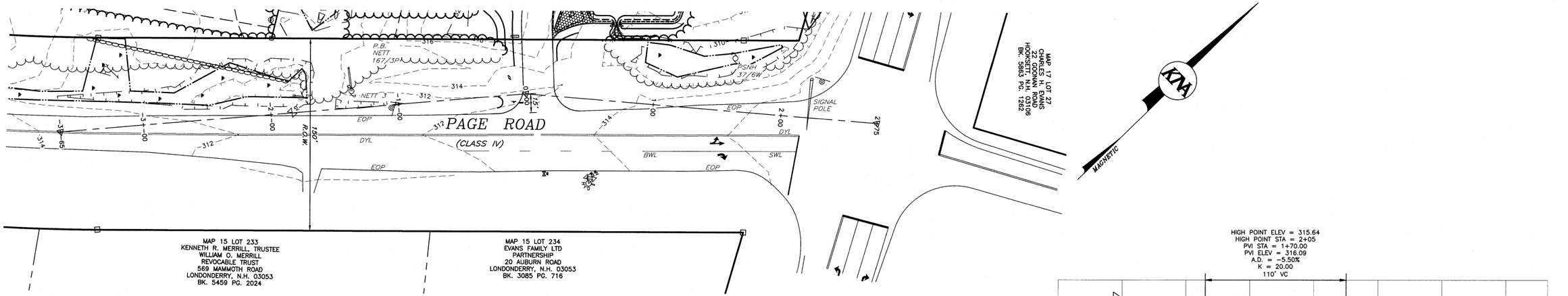
TITLE:

USGS

295 ROCKINGHAM ROAD

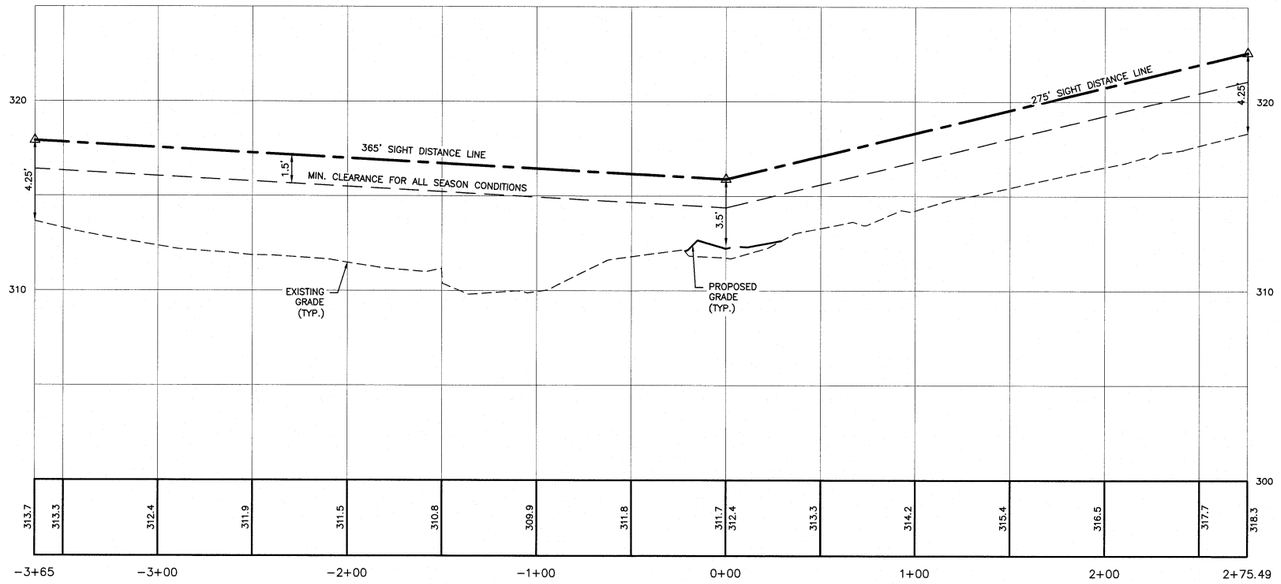
MAP 17; LOT 25 - 295 ROCKINGHAM ROAD - LONDONDERRY, NH

DATE: JUNE 26, 2024	JOB. NO. 21-0113-1
SCALE: 1" = 2000'	SHEET 1 OF 1



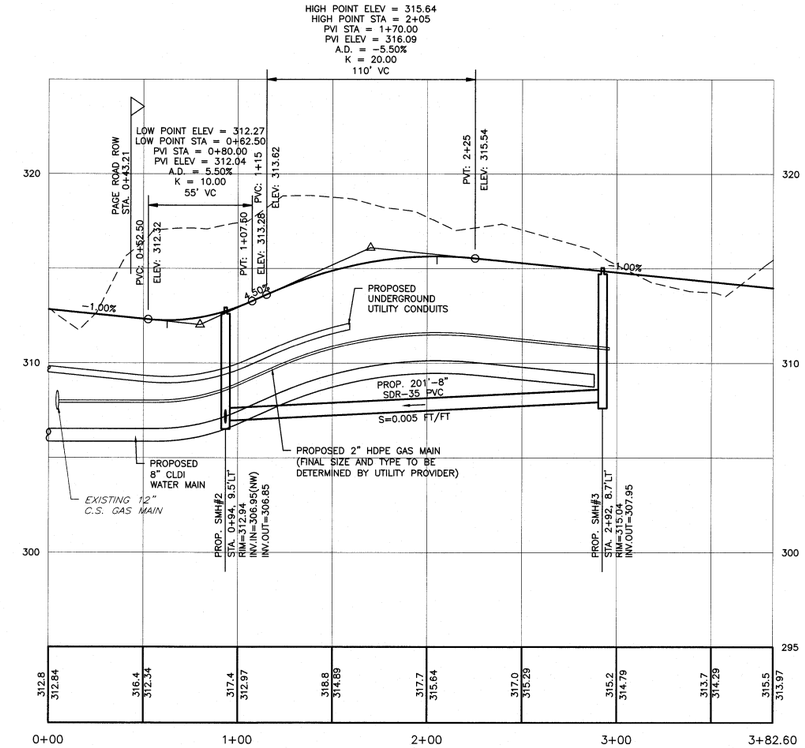
SIGHT DISTANCE PLAN

SCALE: 1" = 40'



SIGHT DISTANCE PROFILE

SCALE: 1" = 40' (HORIZ.)
1" = 4' (VERT.)



DRIVEWAY PROFILE

SCALE: 1" = 40' (HORIZ.)
1" = 4' (VERT.)

DIG SAFE
811 CALL TOLL-FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

LEGEND

- REBAR FOUND
- IRON PIPE FOUND
- UTILITY POLE
- SIGN
- GAS VALVE
- WATER VALVE
- HYDRANT
- WATER SHUT OFF
- CATCH BASIN
- PROPERTY LINE
- ABUTTER LINE
- TREELINE
- EDGE OF PAVEMENT
- BUILDING SETBACK
- BUFFER LINE
- STONEWALL
- PROP. EDGE OF PAVEMENT

BENCHMARK DATA

LOCATION	DATUM	DESCRIPTION
N:155165.31, E:1054227.35	ELEV.=317.51 (NAVD88)	BENCHMARK #1 – MAGNAIL SET
N:154442.42, E:1054087.65	ELEV.=311.87 (NAVD88)	BENCHMARK #2 – MAGNAIL SET

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	11/25/25	ENGINEERING & DRC REVISIONS	PCM
2	2/20/25	ENGINEERING REVISIONS	PCM

SIGHT DISTANCE NOTES:

1. THE PURPOSE OF THIS PLAN IS TO ILLUSTRATE THE AVAILABLE SIGHT DISTANCE AT THE PROPOSED DRIVEWAY AND PAGE ROAD.
2. THE CONTRACTOR SHALL REMOVE ALL OBSTRUCTIONS BETWEEN THE DRIVEWAY AND THE SIGHT LINES TO ACHIEVE VISIBILITY.
3. THE OWNER SHALL MAINTAIN SIGHT LINES VISIBILITY AND REMOVE ALL OBSTRUCTIONS BETWEEN THE DRIVEWAY AND THE SIGHT LINES TO ACHIEVE VISIBILITY.

KEACH–NORDSTROM ASSOCIATES, INC. HEREBY CERTIFIES THAT THE ALL SEASON SAFE SIGHT DISTANCE, AS REQUIRED BY THE TOWN OF LONDONDERRY, IS ACHIEVED UPON COMPLETION OF THE IMPROVEMENTS SHOWN ON THIS PLAN

PROFESSIONAL ENGINEER

3/9/26
DATE

OWNER/APPLICANT:
PAGE ROCK, LLC
5 HUTCHINGS DRIVE, SUITE 5D
HOLLIS, N.H. 03049
BK. 6276 PG. 396

SIGHT DISTANCE & DRIVEWAY PLAN & PROFILE

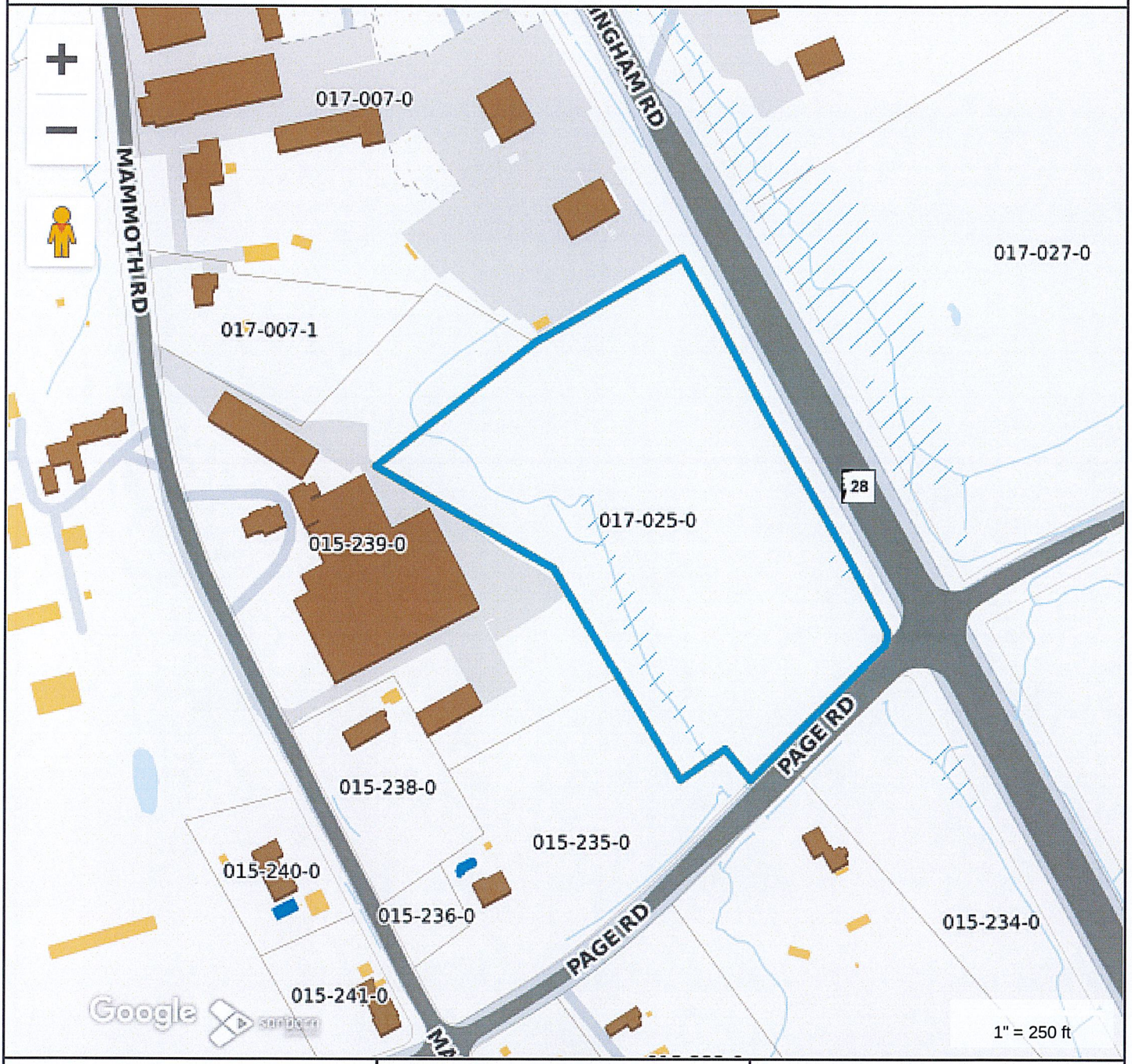
ROCK ROAD TOWNHOMES

MAP 17 LOT 25
295 ROCKINGHAM ROAD
LONDONDERRY, NEW HAMPSHIRE
ROCKINGHAM COUNTY

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

PROJ. NO: 21-0113-1
DATE: MAY 6, 2025
SCALE: 1" = 40'
FILE NO.:
SHEET NO. 11 OF 20

Tax Map



Property Information

Property ID	017-025-0
Location	295 ROCKINGHAM RD
Owner	PAGE ROCK LLC

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

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

Geometry updated 03/31/2025
Data updated 03/31/2023

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

Single-Family Attached Housing
(215)

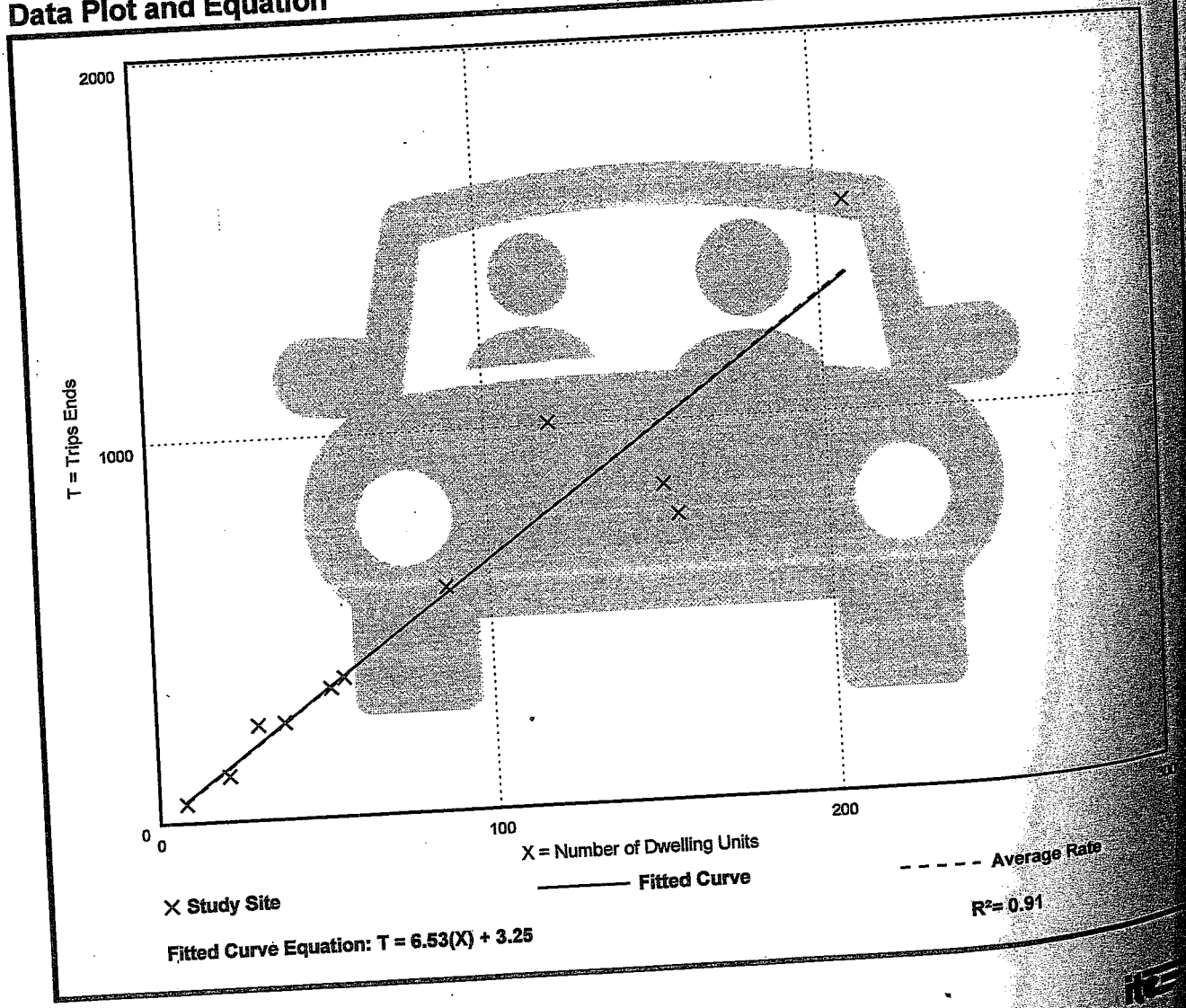
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 11
Avg. Num. of Dwelling Units: 84
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.57	4.80 - 8.45	1.28

Data Plot and Equation



Single-Family Attached Housing
(215)

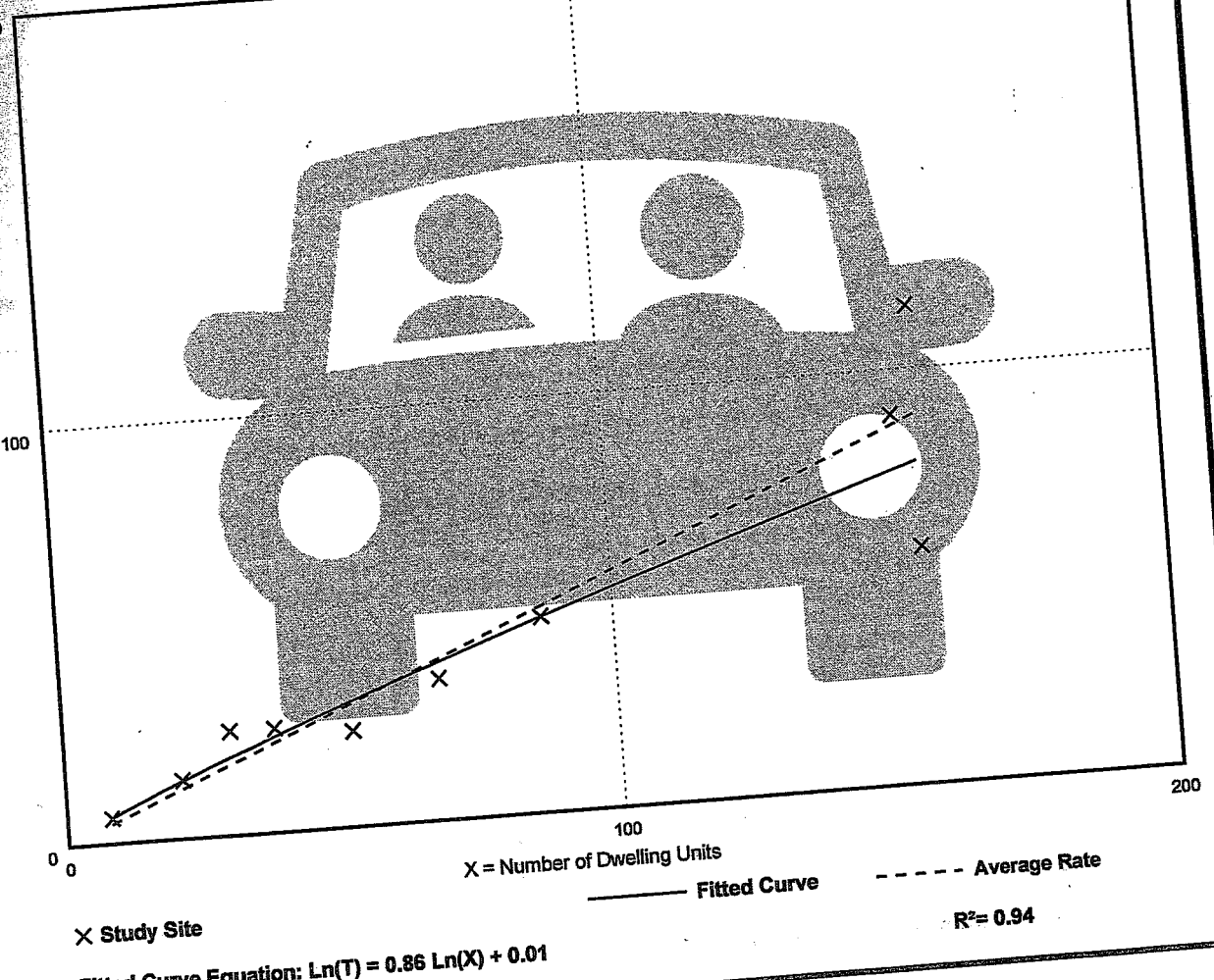
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 10
Avg. Num. of Dwelling Units: 77
Directional Distribution: 23% entering, 77% exiting

cle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.37 - 0.83	0.15

Plot and Equation



Fitted Curve Equation: Ln(T) = 0.86 Ln(X) + 0.01

Single-Family Attached Housing
(215)

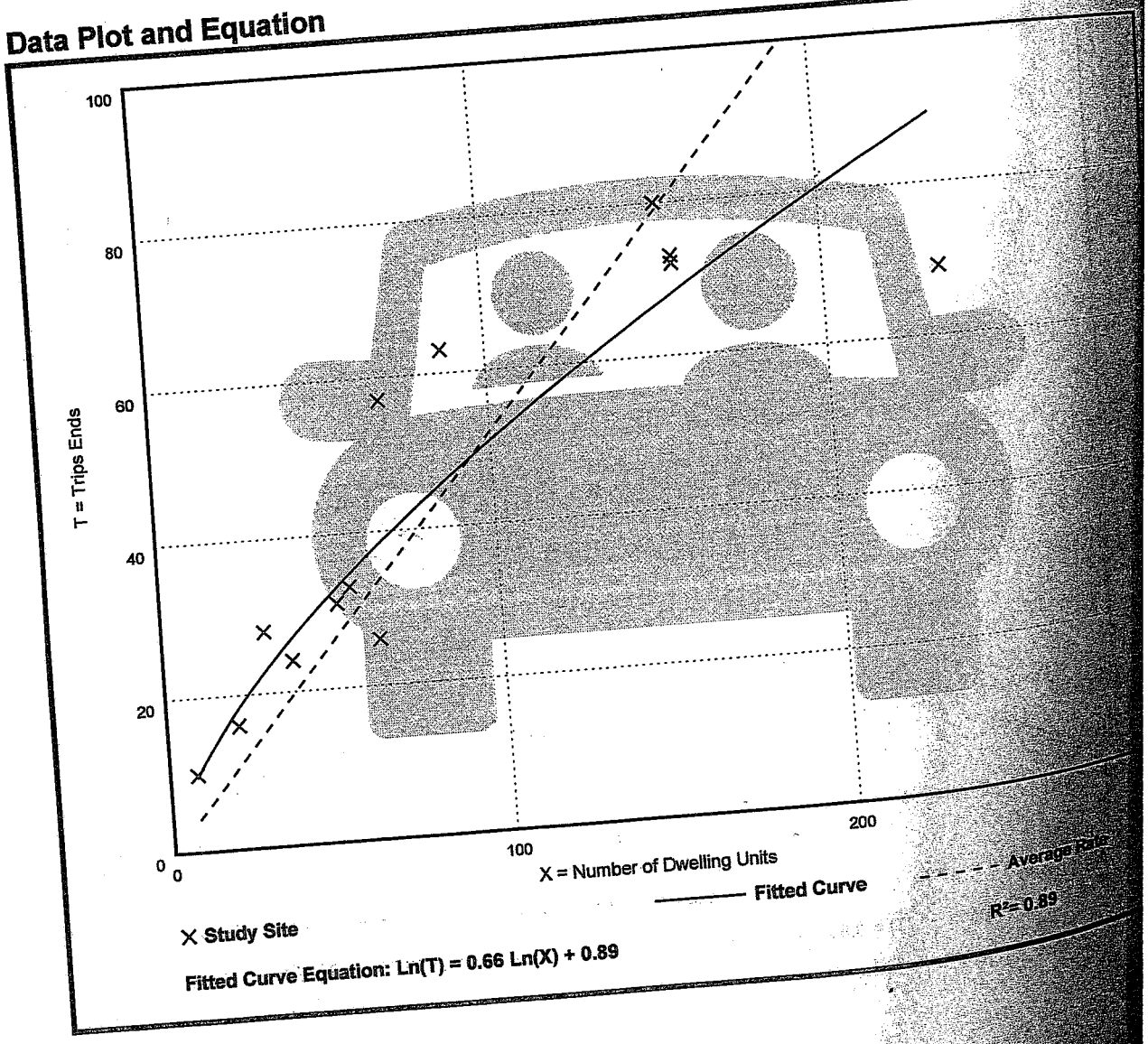
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 13
Avg. Num. of Dwelling Units: 86
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.52	0.29 - 1.25	0.19

Data Plot and Equation



Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units
On a: Saturday, Peak Hour of Generator

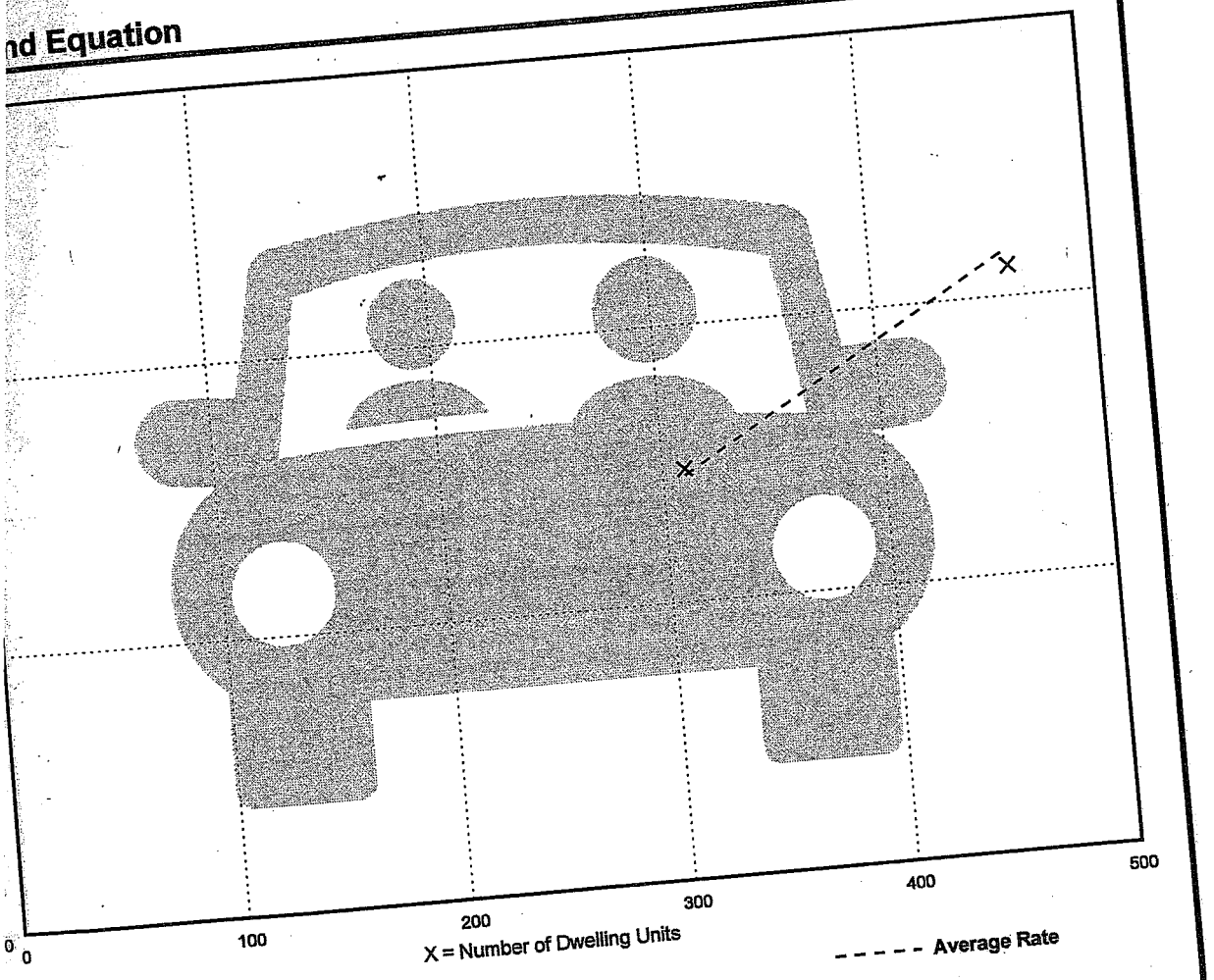
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 386
Directional Distribution: 48% entering, 52% exiting

Generation per Dwelling Unit

e Rate	Range of Rates	Standard Deviation
47	0.46 - 0.48	***

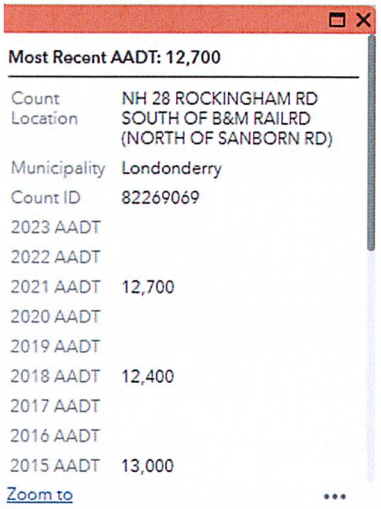
Caution – Small Sample Size

nd Equation



Fitted Curve Equation: Not Given

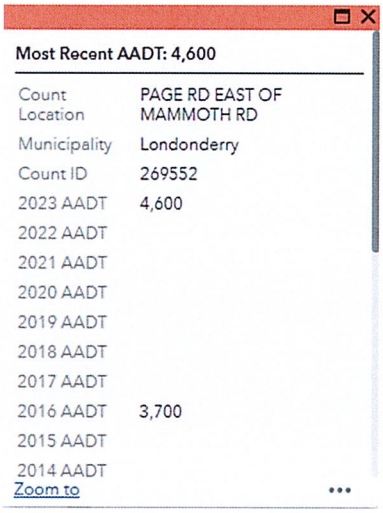
SNHPC TRAFFIC COUNTS:



Most Recent AADT: 12,700

Count Location	NH 28 ROCKINGHAM RD SOUTH OF B&M RAILRD (NORTH OF SANBORN RD)
Municipality	Londonderry
Count ID	82269069
2023 AADT	
2022 AADT	
2021 AADT	12,700
2020 AADT	
2019 AADT	
2018 AADT	12,400
2017 AADT	
2016 AADT	
2015 AADT	13,000

Zoom to ...



Most Recent AADT: 4,600

Count Location	PAGE RD EAST OF MAMMOTH RD
Municipality	Londonderry
Count ID	269552
2023 AADT	4,600
2022 AADT	
2021 AADT	
2020 AADT	
2019 AADT	
2018 AADT	
2017 AADT	
2016 AADT	3,700
2015 AADT	
2014 AADT	

Zoom to ...

Town of Londonderry, New Hampshire

Planning & Economic Development Department 603-432-1100
268B Mammoth Road 603-432-1128
Town Hall – 2nd Floor www.londonderrynh.org

Planning – Zoning – Economic Development – Conservation

MEMORANDUM

TO: Planning Board

FROM: Kristan Farr, Town Planner

DATE: April 1, 2026

RE: Public hearing of an application for formal review of a site plan and conditional use permit for a 12-unit townhome development and associated site improvements, a condominium conversion permit, and a conditional use permit for 1,522 square feet of wetland buffer impact in the Commercial II (C-II) District. 295 Rockingham Road, Tax Map 17, Lot 25, Page Rock, LLC (Owner/Applicant).

The applicant proposes to develop a 12-unit townhouse project consisting of one 7-unit building and one 5-unit building, with associated driveway, utilities, parking, two stormwater detention ponds, and related site improvements. The parcel is 7.901 acres, located entirely in the Commercial II (C-II) zoning district, where multifamily residential use is permitted only by Conditional Use Permit (CUP). Portions of the site lie within the Conservation Overlay District (COD), requiring a second CUP for permanent wetland buffer impact related to stormwater infrastructure. The application also includes a request for a Condominium Conversion Permit to allow the 12 townhouse units to be sold as individual condominium units. The project is located between Rockingham Road and Mammoth Road in the north end of town.

The applicant recently received two variances from the Zoning Board of Adjustment: one allowing driveway and parking areas to be located within the required 50-foot landscape buffer (LZO §4.3.3.B.2.A), and a second permitting these improvements within the buffer without the requirement to permanently plant and maintain the buffer (LZO §4.3.3.B.2.B) (Cases 03-18-2026-04 and 03-18-2026-05).

The Board will need to consider action on completeness, one waiver request, two conditional use permits, a condominium conversion and the site plan application.

Completeness: There are three outstanding checklist items**.** If the Board decides to accept the application as complete, these items should be waived for ***acceptance only***.

1. Site Plan Regulation 2.05.a.9 & 4.18 and Checklist Item II.5-Legal Documents (Easements, Covenants, Rights-of-Way). The applicant has not submitted the required legal documents, including proposed easements, rights, protective covenants, and condominium instruments associated with the project. These documents must accompany the site plan application for review. This item remains outstanding for Planning Board consideration. The project proposes multiple easements (notably

sewer easements onto Lot 235) and condominium conversion documents, none of which were provided.

2. Site Plan Regulation 3.06, 4.18.B and Checklist Items XI.5.e & XI.5.f.- Utility Clearance Letters (Sewer). The applicant has not submitted the required sewer utility clearance letter verifying capacity and acceptance for the proposed development. This documentation must be provided in accordance with the regulations. This item remains outstanding for Planning Board consideration. The project must demonstrate the sewer capacities for adequate for occupant use. Please provide these documents when available.
3. Site Plan Regulation: LSPR 4.13 & 4.18.e and Checklist Item: XII- Town Water Quality Permit/DES Sewer Discharge and Town Sewer Discharge Permits: The applicant must submit for and obtain Town stormwater permit, DES Sewer Discharge, and Town Sewer Discharge, and add the permit numbers to the plan.

Waivers:

1. Waiver from Site Plan Regulation 4.12.c.19.viii – Identification of Trees ≥ 15" Diameter. The applicant seeks to waive the requirement to identify all trees greater than 15 inches in diameter (DBH) and their species on the site. *The Applicant has submitted a written waiver request for these requirements for Planning Board consideration.*

Staff recommends that that the Board vote with respect to any requested waivers utilizing the criteria from RSA 674:36 and Londonderry Subdivision and Site Plan Regulations Section 6.04 and 7.04 as noted below:

In a case when the strict application of these regulations would:

a. Result in peculiar and exceptional practical difficulties or exceptional and undue hardship upon the owner of the affected property; or
b. An alternative site planning and building design approach meets the design objectives as stated in the regulations, equally well or better than would compliance with the regulations; and
c. In either of the foregoing circumstances, the waiver may be granted without substantial detriment to the public good;

Conditional Use Permit (Conservation Overlay District): The applicant is requesting a Conditional Use Permit (CUP) per Londonderry Zoning Ordinance Section 4.6.1.4.A Conservation Overlay District.

4.3.1.4.A. Uses permitted by conditional use permit

1. *The following uses may be permitted by conditional use permit: roads and other access ways; drainage ways; pipelines, power lines and other transmission lines; docks, boat launches, and piers; domestic water wells (and associated ancillary pipes and equipment); replacement septic tanks and leach fields where evidence is submitted that no alternative location is available on the property; provided that all of the following conditions are found to exist:*

   a. The proposed construction is essential to the productive use of land not within the CO District.
   b. Design and construction methods will be such as to minimize impact upon the wetlands and will include restoration of the site consistent with the permitted use.

c. There is no feasible alternative route on land controlled by the applicant that does not cross the CO District nor has less detrimental impact on the wetlands. Nothing in this Section shall limit the applicant from exploring alternatives with abutting property owners.
d. Economic advantage is not the sole reason for the proposed location of the construction.

1. The Applicant has requested a Conditional Use Permit to allow 1,522 square feet of permanent wetland buffer impacts in the Conservation Overlay District to construct stormwater management improvements. ***The Conservation Commission reviewed and had no objection to the CUP as presented at their March 10, 2026 meeting.***

CUP COD Recommendation: Based on the information available to date, Staff recommends that the Planning Board APPROVE the CUP with the Notice of Decision to read substantially as follows:

> ***Board Action Required***: Motion to *APPROVE* a Conditional Use Permit (CUP) per LZO Section 4.6.1 to allow *approximately 1,522 square feet of permanent wetlands buffer impact for the construction of stormwater management improvements, consistent with the Conservation Commission's March 10, 2026 recommendation and as shown on the plan set.*

Conditional Use Permit (Multifamily Residential Use in Commercial II Zoning District): The applicant is requesting a Conditional Use Permit (CUP) per Londonderry Zoning Ordinance Section 4.1.2 to allow a Multifamily Residential Use on a parcel in the underlying in the Commercial II (C-II) Zoning District.

6.2 General Criteria for CUP
The following criteria must be satisfied in order for the Planning Board to grant a conditional use permit:
A. Granting of the application would meet some public need or convenience.
B. Granting of the application is in the public interest.
C. The property in question is reasonably suited for the use requested.
D. The use requested would not have a substantial adverse effect on the rights of the owners of surrounding properties.
E. The traffic generated by the proposed use is consistent with the identified function, capacity, and level of service of transportation facilities serving the community
F. There must be appropriate provision for access facilities adequate for the estimated traffic from public streets and sidewalks, so as to assure public safety and to avoid traffic congestion.

6.3.4.B Multifamily Housing Criteria for CUP
In addition to the General Criteria of Section 6.2, the following specific criteria must be met in order to increase the maximum number of units in a multi-family building in the R-III District from 16 to not more than 20.

1. The proposed use is consistent with the Objectives and Characteristics of the R-III district, Section 4.2.2.1;
2. Granting of the application is in the public interest;

3. The property in question is reasonably suited for the larger buildings requested, and the design of the site represents to the extent practicable preservation of natural resources, open space, and does not create a hazard to surface or underground water resources.
4. The application demonstrates that the 20-unit buildings for which the Conditional Use Permit is sought does not impact the general health, safety, and general welfare of the Town, and is otherwise in compliance will all requirements of the Zoning Ordinance, Site Plan Regulations, and Subdivision Regulations, as applicable to the proposed project.
5. There exist on the property limitations (steep slopes, wetlands, CO District areas, flood hazard areas, or other natural constraints on the subject parcel) that reduce the buildable area of the parcel such that the parcel is limited to less than 60% of the permitted density allowed by Section 4.2.2.3(B)(1) utilizing 16 units per building. Such calculation must be demonstrated to the Planning Board by a NH licensed professional engineer (and other related professionals as applicable, such as certified wetland scientists or soil scientists).

CUP (Multifamily Residential Use in Commercial II Zoning District) Recommendation: Based on the information available to date, Staff recommends that the Planning Board APPROVE the CUP with the Notice of Decision to read substantially as follows:

> ***Board Action Required*:** Motion to APPROVE a Conditional Use Permit (CUP) per LZO Section 4.1.2 to allow multifamily residential use on a parcel in the Commercial II Zoning District.

SITE PLAN APPLICATION Recommendation: Conditional approval is appropriate when the project reaches the point at which Board involvement is no longer required, and outstanding items can be resolved with staff. Once the Board has made these decisions, there is no reason to require the Applicant to return to the Board next month.

Based on the information available to date, Staff recommends that the Planning Board **CONDITIONALLY APPROVE** this application.

If the Board CONTINUES the application, it should be continued to April 8, 2026.

If the Board CONDITIONALLY APPROVES this application, the Notice of Decision should read substantially as follows:

> *Board Action Required: Motion to grant conditional approval of the application for a formal review of a site plan and conditional use permit for a 12-unit multifamily residential townhome development and associated site improvements, and a condominium conversion permit, and conditional use permit for 1,522 square feet of wetland buffer impact in the Commercial II (C-II) District. 295 Rockingham Road, Tax Map 17, Lot 25, Page Rock, LLC (Owner/Applicant), with the precedent conditions to be fulfilled within 120 days of approval and prior to plan signature and general and subsequent conditions of approval to be fulfilled as noted in the Engineering Memo.*

CONDOMINIUM CONVERSION

CONDOMINIUM CONVERSION APPLICATION Recommendation: Based on the information available to date, Staff recommends that the Planning Board CONDITIONALLY APPROVE this application with the Notice of Decision to read substantially as follows:

Board Action Required: **Motion to grant conditional approval of a condominium conversion. 295 Rockingham Road, Map 17, Lot 25, zoned Commercial II (C-II), Page Rock LLC (Owner & Applicant). In accordance with plans prepared by Keach-Nordstrom Associates, Inc., dated May 6, 2025, last revised February 20, 2026 with the precedent conditions to be fulfilled within two years and prior to plan signature and general and subsequent conditions of approval to be fulfilled as noted in the Staff Recommendation Memorandum, dated April 1, 2026.**

Should the planning board decide to conditionally approve the application, the following conditions should be included:

"Applicant", herein, refers to the property owner, business owner, or organization submitting this application and to his/its agents, successors, and assigns.

PRECEDENT CONDITIONS

All of the precedent conditions below must be met by the Applicant, at the expense of the Applicant, prior to certification of the plans by the Planning Board. Certification of the plans is required prior to commencement of any site work, any construction on the site or issuance of a building permit.

1. The Applicant shall address all appropriate items from the Planning & Economic Development Department/Department of Engineering and Environmental Services/Stantec Review Memo and Traffic Impact Assessment dated April 1, 2026.

2. The Applicant shall obtain and note any and all applicable state, local, or other permitting on the plans.

3. Owner's signature shall be provided on the plans.

4. The Applicant shall provide a digital copy of the complete final plan to the Town prior to plan signature by the Planning Board in accordance with the Site Plan Regulations.

5. Third-party review fees shall be paid within 30 days of conditional site plan approval.

6. Financial guarantees be provided to the satisfaction of the Department of Public Works and Engineering.

7. Final engineering review.

PLEASE NOTE – If these conditions are not met within 120 days of the meeting at which the Planning Board grants approval, the Board's approval will be considered to have lapsed and re-submission of the application will be required.

GENERAL AND SUBSEQUENT CONDITIONS

All of the conditions below are attached to this approval.

1. **No construction or site work may be undertaken until a pre-construction meeting with Town staff has taken place, filing of an NPDES – EPA Permit (if required), and posting of the site-restoration financial guaranty with the Town.** Contact the Department of Public Works to arrange the pre-construction meeting.

2. The project must be built and executed as specified in the approved application package unless modifications are approved by the Planning Department & Department of Public Works, or, if Staff deems applicable, the Planning Board.

3. All of the documentation submitted in the application package by the applicant and any requirements imposed by other agencies are part of this approval unless otherwise updated, revised, clarified in some manner, or superseded in full or in part. In the case of conflicting information between documents, the most recent documentation and this notice herein shall generally be determining.

4. Fire department access roads shall be provided at the start of the project and maintained throughout construction. Fire department access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be provided with an all-weather driving surface.

5. It is the responsibility of the applicant to obtain all other local, state, and federal permits, licenses, and approvals which may be required as part of this project (that were not received prior to certification of the plans). Contact the Building Division at extension 115 regarding building permits.

6. Prior to issuance of a certificate of occupancy, all site improvements and off-site improvements shall be completed in accordance with the plan approved by the Planning Board. In accordance with Section 6.01.d of the Site Plan Regulations, in circumstances that prevent landscaping to be completed (due to weather conditions or other unique circumstance), the Building Division may issue a certificate of occupancy prior to the completion of landscaping improvements, if agreed upon by the Planning Division & Public Works Department, when a financial guaranty (see forms available from the Public Works Department) and agreement to complete improvements are placed with the Town. The landscaping shall be completed within 6 months from the issuance of the certificate of occupancy, or the Town shall utilize the financial guaranty to contract out the work to complete the improvements as stipulated in the agreement to complete landscaping improvements. ***No other improvements shall be permitted to use a financial guaranty for their completion for purposes of receiving a certificate of occupancy***.

7. As built site plans must to be submitted to the Public Works Department prior to the release of the applicant's financial guaranty.

MEMORANDUM

To: Planning Board

Date: April 1, 2026

From: Planning and Economic Development
Department of Public Works & Engineering
Stantec Consulting Services, Inc.

Re: Rock Road Townhomes Site Plan
Map 17 Lot 25
295 Rockingham Road

Owner/Applicant: Page Rock, LLC

Keach-Nordstrom Associates, Inc. submitted plans and supporting information for the above-referenced project. DRC and the Town's engineering consultant, Stantec Consulting Services Inc. reviewed the submitted plans and information, and review comments were forwarded to the Applicant's engineer. The Applicant submitted revised plans and information and we offer the following comments:

Checklist Items:

1. The Applicant's existing conditions plans do not indicate the trees greater than 15" in diameter and species per section 4.12.c.19.viii of the Site Plan Regulations and item VI.1.v of the Site Plan Application & Checklist. The Applicant has submitted a written **waiver request** for these requirements for Planning Board Consideration.

2. The Applicant's site design includes proposed easements and a condominium conversion but the submission did not include copies of the proposed rights, easement deeds, protective covenants, or other legal documents per section 2.05.a.9 and 4.18 of the Site Plan Regulations and item II.5 of the Site Plan Application & Checklist.

3. The Applicant has not provided utility clearance letters for the project water and sewer services under this application per sections 3.05, 3.06 and 4.18.B of the Site Plan Regulation and items XI.5.e and f of the checklist. We recommend the Applicant provide utility clearance letters in accordance with the regulations.

Design Review Items:

1. The Applicant indicates the NHDES Sewer Discharge Permit, and Londonderry Sewer Discharge Permit are submitted on the checklist. In addition, a Town of Londonderry Stormwater Permit is needed for the proposed development. The Applicant should submit for and obtain all project permits, indicate the permit approval numbers in the permit table in note 13 on sheet 1 and provide copies of all permits for the Planning Department files per sections 4.13 and 4.18.e of the Site Plan Regulations and Item XII of the Site Plan Application & Checklist.

2. The project stormwater design indicates an increase out flow (pre=10.62 cfs vs post 10.67 cfs) and pond elevation (pre=308.74 vs post =308.75) will occur at Pond 6 (an offsite wetland) as a result of the project development which does not comply with section 3.07.A of the site plan regulation of no increase in runoff. The Applicant shall revise the project design accordingly in compliance with the regulations.

3. The project design indicates the site driveway is located on Page Road and the development does not access Rockingham Road as implied by the project title and application. We recommend the plans and information be corrected to represent the project access address. We note the site entrance sign detail on sheet 13 states the address as 295 Rockingham Road, which may be incorrect. It is our understanding this revision affects

the address of the proposed condominiums relative to the Assessing Department and for emergency purposes under 911. We recommend the Applicant update the plans and project information to provide an appropriate address as acceptable to the Town.

4. Please revise the title block of the existing conditions plan, sheet 1, to provide the proper map, lot number, and address for the subject lot consistent with the other plans in the plan set.

5. We recommend the Applicant clarify/address the following on the **Construction Details**:
   a. The triple weir outlet structure detail on sheet 14 does not indicate the proper top of grate (A) elevation consistent with the stormwater analysis. In addition, please label weir 1 and weir 2 in the section view consistent with the B and C labels in the Close Up of Pond #2 Weir detail for proper construction. Please also revise the "J" dimension in the close up to properly dimension the width of the weir opening in the plate. Also, please label elevation D on the section detail for proper construction and consistent with Exhibit D108.
   b. We understand the sewer design and details, including the revised pump station design, will be reviewed by the Sewer Division. We recommend the Applicant coordinate the review with the Sewer Division. Please update acceptable to the Sewer Division.

6. We recommend the Applicant address the following relative to the **Project Drainage Analysis**:
   a. Please correct the post development drainage area plan to indicate the proper subcatchment labels for the development areas consistent with the revised analysis.
   b. Please revise the subcatchment areas listed on the revised predevelopment and post development drainage area plans to indicate square feet consistent with the calculations.

7. The revised Condominium Site Plan has not addressed the proposed easements associated with the proposed sewer line on the adjacent property (lot 235) since it is the responsibility of this project developer/owner to operate and maintain this private utility that serves the project. We recommend the plans be revised as necessary to properly address the proposed easements associated with the condominium site plans.

8. The Applicant provided updated traffic report information as noted in Stantec's letter dated April 1, 2026.

9. We recommend the Applicant provide documentation to support/verify the DRC comments for the project are adequately addressed as applicable:
   a. Please provide documentation to support the comments of Planning Department have been adequately addressed with the Planning Department.
   b. Please provide documentation to support the comments of Assessing Department have been adequately addressed with the Assessing Department.
   c. Please provide documentation to support the comments of Fire Department have been adequately addressed with the Fire Department.
   d. Please provide documentation to support the comments of Conservation Commission have been adequately addressed with the Conservation Commission.
   e. Please provide documentation to support the comments of Sewer Division have been adequately addressed with the Sewer Division.

Board Action Items:

1. The Applicant has submitted one (1) waiver request letter relative to the requirements of the Site Plan Regulations as noted in the letter dated November 22, 2025. The Board should carefully review and consider the waiver request as part of the project review.

2. The Applicant is proposing impacts within the buffer areas of the Conservation Overlay District (COD) for the proposed site development that will require a Conditional Use Permit (CUP) approval by the Planning Board. The Board will need to consider the Conditional Use Permit request as part of the review.

3. The Applicant requires a Conditional Use Permit for the proposed residential use in a Commercial Zone per section 4.1.1 and Table 4-1 of the Londonderry Zoning Ordinance. The Planning Board will need to consider the CUP application as part of the project review.

Stantec

Memo

To:	Ms. Kellie Caron & Ms. Kristan Farr Community Development Department Londonderry, NH	From:	Evan Drew PE PTOE RSP$_1$ Michael Leach
CC:	Mr. John Trottier, PE Director of Engineering and Environmental Services Londonderry, NH		Stantec 5 Dartmouth Drive Suite 200 Auburn, NH 03032-3984
Project/File:	179451092	Date:	April 1, 2026

Reference: Proposed Multi-Family Development – 295 Rockingham Road – Rock Road Townhomes – Traffic Resubmittal – Peer Review

Stantec Consulting Services, Inc. (“Stantec”) reviewed the Traffic Impact Analysis - Short Trip Generation Memo for Rock Road Townhomes relative to the proposed multi-family development at 295 Rockingham Road, with access on Page Road, dated with a revised March 10, 2026, prepared by Keach-Nordstrom Associates, Inc. (“KNA”) and submitted to the Town of Londonderry. The proposed development is served by a single driveway access from Page Road for two multifamily buildings totaling to twelve (12) units with five (5) townhouse units on the east side of the driveway and seven (7) on the west side with associated parking, underground utilities, and stormwater facilities to be constructed upon the subject lot. Stantec reviewed this memorandum following a “Short” analysis per the Town’s Site Plan Regulations Section 3.14 with minor comments and general acceptance of findings.

Stantec reviewed the memo following Section 3.14 of the most current Town of Londonderry’s Site Plan Regulations, the 12th Edition Trip Generation Manual by the Institute of Transportation Engineers (ITE), and industry best practices. As noted in the initial traffic memorandum review, It is our understanding that a scoping meeting between KNA and the Town did not occur. The memorandum provided covers a “short” analysis level of assessment per the Town’s Site Plan Regulations (Section 3.14.c.)

Stantec has confirmed the revised traffic memo has been stamped by a New Hampshire licensed professional engineer as required for Site Plan Regulations Section 3.14.c.6.

1. The first outstanding comment Stantec had in the initial review was questioning KNA’s use of Land Use Code (LUC) 220, representing multi-family housing (low-rise) developments, and not LUC 215 single-family attached housing, as proposed. Stantec had noted that the trip estimated between the two was nominal and did not result in questioning the final results and conclusion by KNA that the project was of low traffic impact.

   Stantec has confirmed that the LUC has been revised from LUC 220 to LUC 215 and Stantec has confirmed the estimated trip volumes and their impact of background volumes are relatively nominal (less than two percent increase) to background volumes along Page Road and Rockingham Road. Stantec finds the resubmittal complete and acceptable for this development proposed

Design Review Committee

Conservation Commission Comment Sheet

Project: Rock Road townhouses
Location: 295 Rockingham Rd Map 17 Lot 25
Date: 3/10/26

Please return comments by .

Please return comments to Michael Bazegian mbazegian@londonderrynh.org **Thank You.**

	Yes	No	N/A
Are there wetlands on the site?	☒	☐	☐
Are they high quality wetlands?	☐	☐	☐
Will they be impacted?	☐	☐	☐
Could the impacts be mitigated?	☐	☐	☐
Are there other important natural resources?	☐	☐	☐
Will they be impacted?	☐	☐	☐
Could the impacts be mitigated?	☐	☐	☐

Comments:

No Objections

Submitted by: MBazegian Date: 3/10/26

Design Review Committee

Fire Department Comment Sheet

Project 295 Rockingham Road
Location: 295 Rockingham Road Map 017 Lot 25
Date:5/29/2025

Please return comments by 6/12/2025

Please Return Comments to Alecia LaFlamme alaflamme@londonderrynh.gov

Are there any particular concerns regarding the following items? (Check item of concern, explain below)

- ☐ Access into the site
- ☐ Circulation within the site
- ☐ Road/Driveway design
- ☐ Availability of water
- ☐ Other issues (explain below)
- ☐ Water lines
- ☐ Fire Hydrants
- ☐ Lighting of site
- ☐ Access to sides/rear of building

Comments:

The road name and addressing shall be approved by the Londonderry Fire department 911 coordinator.

There shall be a fire hydrant located within 100 feet of the sprinkler fire department connection FDC, per Londonderry Fire Department regulations.

The turn around shall be marked with No Parking Fire Lane signs.

Both sides of the roadway shall be marked with No Parking Fire Lane signs.

Under Town of Londonderry Permits & Notification of Blasting. Note 4 shall be changed to: Notification must be made to the Londonderry Fire Department not less than 1 hour to each blast or series of blasts.

Submitted by: Brian Johnson, Division Chief Date: 06/10/2025

Fire Comments
295 RRoad

Location: 295 Rockingham Road Map 017 Lot 25
Date: 5/29/2025

Please return comments by 6/12/2025

Please Return Comments to Alecia LaFlamme alaflamme@londonderrynh.gov

Are there any particular concerns regarding the following items? (Check item of concern, explain below)

- ☐ Access into the site
- ☐ Circulation within the site
- ☐ Road/Driveway design
- ☐ Availability of water
- ☐ Other issues (explain below)
- ☐ Water lines
- ☐ Fire Hydrants
- ☐ Lighting of site
- ☐ Access to sides/rear of building

Comments:

The road name and addressing shall be approved by the Londonderry Fire department 911 coordinator.

There shall be a fire hydrant located within 100 feet of the sprinkler fire department connection FDC, per Londonderry Fire Department regulations.

The turn around shall be marked with No Parking Fire Lane signs.

Both sides of the roadway shall be marked with No Parking Fire Lane signs.

Under Town of Londonderry Permits & Notification of Blasting. Note 4 shall be changed to: Notification must be made to the Londonderry Fire Department not less than 1 hour to each blast or series of blasts.

Outlook

RE: DRC 295 Rockingham Road site plan and CUP

From Chabot, Guy <GCHABOT@manchesternh.gov>
Date Fri 5/30/2025 11:49 AM
To Alecia LaFlamme <alaflamme@londonderrynh.gov>
Cc Kellie Caron <kcaron@londonderrynh.gov>; Kristan Farr <kfarr@londonderrynh.gov>; John Trottier <jrtrottier@londonderrynh.gov>

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good Morning,

I have reviewed the plans for the above referenced project and offer the following comments:

Sheet 6:
a. The existing main in Page Rd. is 12” diameter and not 16” diameter.
b. The proposed 6” main should be placed within the access drive.
c. The plans shows a 20 degree bend which is not a choice. The bend should be 22-1/2 degrees.

Please forward revised plans or comments when they become available.

Regards,

Guy R. Chabot, P.E.
Deputy Director
Water Distribution

Manchester Water Works
281 Lincoln Street
Manchester, NH 03103

Direct Phone – (603) 792-2801

From: Alecia LaFlamme <alaflamme@londonderrynh.gov>
Sent: Thursday, May 29, 2025 5:28 PM
Cc: Kellie Caron <kcaron@londonderrynh.gov>; Kristan Farr <kfarr@londonderrynh.gov>; John Trottier <jrtrottier@londonderrynh.gov>
Subject: [External Email] DRC 295 Rockingham Road site plan and CUP

We have received a new design review application for a site plan and CUP FOR 295 Rockingham Road Map 17 Lot 25. Please turn in your comments by June 12, 2025 Please see attached for the DRC comment sheets and site plan.

Hard copies of the plans are available in the planning office.
Thank you,

Design Review Committee

Police Department Comment Sheet

Project 295 Rockingham Road
Location: 295 Rockingham Road Map 017 Lot 25
Date: 5/29/2025

Please return comments by 6/12/2025

Please Return Comments to Alecia LaFlamme alaflamme@londonderrynh.gov

Are there any particular concerns regarding the following items? (Check item of concern, explain below)

- ☐ Adequacy of Police Service to site
- ☐ Access into the site
- ☐ Circulation within site
- ☐ Access to sides/rear of buildings
- ☐ Entrances into buildings
- ☐ Security at site
- ☐ Traffic Generation
- ☐ Potential disturbance to neighbors
- ☐ Lighting/visibility of building/site
- ☐ Other issues (explain below)

Comments: No comments or concerns from the Police Department.

Submitted by: Deputy Chief Jason Breen Date: 6/03/25

Outlook

Re: DRC 295 Rockingham Road site plan and CUP

From Robert Kerry <rkerry@londonderrynh.gov>
Date Thu 6/12/2025 10:14 AM
To Alecia LaFlamme <alaflamme@londonderrynh.gov>
Cc Kellie Caron <kcaron@londonderrynh.gov>; Kristan Farr <kfarr@londonderrynh.gov>; John Trottier <jrtrottier@londonderrynh.gov>

Hi Alecia:

The sewer comments for the above referenced development are as follows:

"The sanitary sewer plans and detail sheets for 295 Rockingham Rd., as submitted, appear incomplete and are not sufficient for Department sign off and NHDES review. The following is a list of comments from the Department's initial review. This list should not be considered as all inclusive, as further Department review of applicant's re-submittals will be required.

1. A Town of Londonderry Sewer Discharge Permit is required. No foundation drains, roof drains, floor drains or other "non-sanitary drains" shall be connected to the municipal sewer. Applicable fees for the Town of Londonderry Sewer Discharge Permit are the responsibility of the Applicant as per the Town of Londonderry "Chapter IX – Sewer User Charge Ordinance". The Applicant will be required to pay all sewer access fees and connection fees prior to issuance of the Certificate of Occupancy for the proposed facility. As a condition of Department approval, the Department of requires that the applicant agree and acknowledge, in writing, to pay the required sewer access fee and connection fee.

2. Please submit sewer design flows and calculations (e.g., daily discharge flows, type of discharge, peak velocities, etc.). Further review by the Department of engineering and Environmental Services will be required. Consult "Table 1008-1 Unit Design Flow Figures" from Town of Londonderry "Chapter IX – Sewer User Charge Ordinance". All appropriate design flow calculations for the project should be prepared and stamped by a New Hampshire professional engineer.

3. There does not appear to be any design information for the proposed pump station. Please provide this information which should be prepared and stamped by a New Hampshire professional engineer.

4. Sheets 6 of 19, 7 of 19, and 8 of 19 - The force main material shall be fusion Jointed HDPE pipeline. Please revise accordingly.

5. Sheets 6 of 19 and 7 of 19 - The proposed alignment of the 2" diameter force main appears to be within the Town's right of way and also along a paved Town road. The Town does not allow a private force mains within its right of way or along a Town road. Please revise this alignment accordingly. The Department strongly suggests the revised alignment discharge into proposed

SMH #2 as shown on Sheet 7 of 19 of the adjacent Page Rock Townhomes, 3 Page Rd. Design plans.

6. Sheet 8-of 19 - Please note that additional review of the revised alignment and profile, taking into account proposed design flow rates and velocities, will be required.

7. A NHDES sewer connection permit **may** also be required prior to the Town issuing a Londonderry sewer connection permit. As such, the revised sewer plan and detail sheets and supporting documentation will need to be submitted to this Department to the determine if an NHDES permit review will be required."

Let me know if you have any questions.

Thanks,

Bob

Robert (Bob) Kerry
Environmental Engineer
Londonderry Department of Engineering and Environmental Services
268B Mammoth Rd.
Londonderry, NH 03053
P (603) 432-1100 ext.132
C (603) 548-4858
F (603) 432-1128
rkerry@londonderrynh.gov

Please note my new email address: rkerry@londonderrynh.gov

From: Alecia LaFlamme <alaflamme@londonderrynh.gov>
Sent: Thursday, June 12, 2025 10:13 AM
Cc: Kellie Caron <kcaron@londonderrynh.gov>; Kristan Farr <kfarr@londonderrynh.gov>; John Trottier <jrtrottier@londonderrynh.gov>
Subject: Re: DRC 295 Rockingham Road site plan and CUP

Good morning,

Just following up on the DRC comments for 295 Rockingham Road Site Plan and CUP. If you have sent comments, thank you. If you have not sent the comments, could you please do so soon and just email me to let me know.

Thank you

Enjoy the sunshine again today!

Alecia LaFlamme
Land Use Assistant
Town of Londonderry, New Hampshire
Office: (603) 432-1100, ext. 122

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

March 25, 2026

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, March 18, 2026:

Case No.: 03-18-2026-4

Applicant: Page Rock LLC
5 Hutchins Drive, Suite 5D
Hollis NH 03049

Owner: Page Rock LLC
5 Hutchins Drive, Suite 5D
P.O. Box 1675
Hollis NH 03049

Location of Property: 295 Rockingham Road, Map 017, Lot 25, Zoned Commercial II (C-II)

Request: Request for variance from LZO 4.3.3.B.2.A to allow a driveway and parking to be located within the 50-Foot landscape buffer. The parcel Is located at 295 Rockingham Road in the Commercial II (C-II) Zoning District. Tax Map 017, Lot 25, Page Rock LLC (Owner/Applicant).

Result: B. O'Brien moved in Case No. 03-18-2026-04 to grant the request for a variance from LZO 4.3.3.B.2.A to allow a driveway to be located within the 50-foot landscape buffer. The parcel is located at 295 Rockingham Road in the Commercial II (C-II) zoning district. G. Carson seconded the motion. The motion carried 5-0-0.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

TOWN OF LONDONDERRY
ZONING BOARD OF ADJUSTMENT
268B Mammoth Road, Londonderry, New Hampshire 03053 Phone: 432-1100; ext. 122

March 25, 2026

The following are the results of the Zoning Board of Adjustment hearing held Wednesday, March 18, 2026:

Case No.: 03-18-2026-5

Applicant: Page Rock LLC
5 Hutchins Drive, Suite 5D
Hollis NH 03049

Owner: Page Rock LLC
5 Hutchins Drive, Suite 5D
P.O. Box 1675
Hollis NH 03049

Location of Property: 295 Rockingham Road, Map 017, Lot 25, Zoned Commercial II (C-II)

Request: Request For Variance from LZO 4.3.3.B.2.B to allow a driveway and parking to be located within the 50-Foot landscape buffer without permanently planting and maintaining the buffer. The parcel is located at 295 Rockingham Road in the Commercial II (C-II) Zoning District. Tax Map 017, Lot 25, Page Rock LLC (Owner/Applicant).

Result: B. O'Brien moved in Case No. 03-18-2026-05 to grant the request for a variance from LZO 4.3.3.B.2.B. G. Carson seconded the motion. The motion carried 5-0-0.

NOTE: Actions of the ZBA, granted or denied, are subject to the rights of any party to the proceedings or person directly affected thereby to request a rehearing within thirty calendar days following a hearing and to the Superior Court in accordance with RSA 677:1-14. Variance shall be valid if exercised within two years from the date of final approval. See RSA 674:33, I-a (a) for further explanation and conditions.

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

DRAINAGE MEMORANDUM

Date: March 12, 2026

To: Mr. James Danis
Deputy Director of Public Works
Town of Londonderry
268B Mammoth Road
Londonderry, NH

From: TFMoran, Inc.
Nicholas Golon, P.E.

Re: Town Hall Office and Parking Expansion
268C Mammoth Road, Londonderry, NH
TFM Project No. 12434-04

NARRATIVE

TFMoran has prepared this drainage memo on behalf of our Client, Londonderry SAU #25, and the property owner, the Town of Londonderry, to evaluate post-development stormwater runoff associated with a parking lot expansion at the Town of Londonderry's offices. As specifically requested by the Town, the focus of this limited stormwater analysis is to evaluate pre-development and post-development flows for a new stormwater basin to ensure no increase in runoff from the basin in comparison to pre-development conditions, and to size pretreatment and treatment practices consistent with the Town of Londonderry Site Plan Regulations.

This will be a phased project consisting of two phases. The initial phase will involve construction of the stormwater basin, a portion of the proposed parking lot, and a 5,300± sf. town office addition. Construction of the parking lot for phase-1 will be limited to upgradient areas, avoiding areas defined as jurisdictional wetlands. Phase-2 consists of an expansion of the parking lot to provide the parking necessary to accommodate the building expansion and anticipated number of employees, as well as an expansion of the police impound area. Improvements in this area will require a standard wetland permit for permanently impact 5,614 sf. of forested wetland with an additional 916sf of temporary impacts.

Pre-Development:

The town's municipal complex comprises approximately 22 ac and is a mix of municipal buildings with associated parking, recreational ball fields, and woodland areas. The topography generally slopes down from East to West at 2%±. On the East side of the property is a forested wetland approximately ¾ of an acre in size. The limits of the drainage subcatchments presented in this drainage memo are reflective of a survey by this office and on-site evaluation.

Post-Development:

The project involves construction of a 5,300± sf. addition to the town office for school administration. Work associated with the building addition includes 200± lf. of new sidewalk,

reconstruction of 240± lf. of existing sidewalk, a new accessibility ramp, and conversion of standard parking spaces to ADA spaces. All work associated with the addition falls within previously disturbed areas. To the Northeast of the existing town office parking will be a paved parking lot expansion with 70 new spaces. To the East of the new parking, a 5,300± sf. fenced gravel area will be constructed for police impounds. To the West of the new parking, a drainage basin is proposed. Construction of these components is primarily in forested areas which result in the removal of 1.4± ac. of woodland and permanently impact 5,614 sf. of forested wetland with an additional 916sf of temporary impacts.

The improvements associated with this project resulted in a phase-1 increase in impervious cover of 12,114 sf., with an additional increase in phase-2 of 14,578 sf., for a total of 26,695 sf. Stormwater Basin #1 has been designed with the standard Londonderry outlet structure to attenuate post-development flows. A BMP worksheet and stage storage table for Basin #1 has been included to show compliance with pretreatment and treatment requirements.

CONCLUSION

Peak Rate Flows

Analysis was conducted at the outlet of Basin #1 to verify flows. In evaluating the contributing areas to the discharge location please note that there is a difference in the drainage areas from pre to post-development. This is a function of the evaluation point being the discharge to the basin and that with raising the grade in the area of the parking lot expansion, a portion of the offsite runon will be directed around the stormwater basin along its existing flow path towards Sargent Road. The comparison of pre-conditions to post-conditions shows no increase in the peak rate of runoff for the 25-yr storm (see Table 1). Post development volumes are as identified in Table 2. Peak elevation of the 50-yr storm is 429.03' which provides 1.07' freeboard from the top of basin berm (430.10').

Table 1: Flow Summary

FLOW (CFS)									
POI	DESCRIPTOR	2-YR		10-YR		25-YR		50-YR	
		PRE	POST	PRE	POST	PRE	POST	PRE	POST
1	Basin #1	0.5	0.3	1.3	1.2	2.1	2.0	2.8	2.6

Table 2: Volume Summary

VOLUME (CF)									
POI	DESCRIPTOR	2-YR		10-YR		25-YR		50-YR	
		PRE	POST	PRE	POST	PRE	POST	PRE	POST
1	Basin #1	3482	2,944	8395	7,199	12,897	10,653	17,465	13,969

In the proposed conditions there will be no increase in the peak rate runoff from Basin #1 for the 25yr storm, there is 1.07 freeboard during the 50yr storm, and pretreatment and treatment is sized appropriately. We believe the results of this limited study have met the objective of analyzing Basin #1 flows.

Should there be any questions or concerns regarding this memorandum or the project in general please do not hesitate to contact the undersigned at 603.472.4488 or ngolon@tfmoran.com

TFMORAN, INC.

Nicholas Golon, P.E.
Civil Department Manager, Principal



FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.08)

Type/Node Name: **Filtration Basin / Basin #1**

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

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.08(a).	
0.89	ac	A = Area draining to the practice	
0.62	ac	A_I = Impervious area draining to the practice	
0.70	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.68	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.61	ac-in	WQV= 1" x Rv x A	
2,198	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
550	cf	25% x WQV (check calc for sediment forebay volume)	
1,649	cf	75% x WQV (check calc for surface sand filter volume)	
Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
783	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
1,672	sf	A_{SA} = Surface area of the practice	
0.30	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)	
52.6	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
425.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
424.43	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
420.40	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
425.50	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
5.10	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
1.07	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
429.03	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
430.10	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**
2,209	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	D-05	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet	D-05	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:

Test Pit #1 Used (See test pit report for ESHWT elevation)

Minimum Basin Bottom = ESHWT (424.43)+1' seperation + 1.5' media = 426.93'

Basin Bottom Design Elev = 427.0'

Calculated by P.Silvernail 2/19/2026

Revised by P.Silvernail 3/3/2026

Stage-Area-Storage for Pond FB#1:

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
426.50	182	0
426.51	184	2
426.52	186	4
426.53	188	6
426.54	189	7
426.55	191	9
426.56	193	11
426.57	195	13
426.58	197	15
426.59	199	17
426.60	200	19
426.61	202	21
426.62	204	23
426.63	206	25
426.64	208	27
426.65	210	29
426.66	211	31
426.67	213	34
426.68	215	36
426.69	217	38
426.70	219	40
426.71	221	42
426.72	222	44
426.73	224	47
426.74	226	49
426.75	228	51
426.76	230	54
426.77	232	56
426.78	234	58
426.79	235	61
426.80	237	63
426.81	239	65
426.82	241	68
426.83	243	70
426.84	245	73
426.85	246	75
426.86	248	77
426.87	250	80
426.88	252	82
426.89	254	85
426.90	256	88
426.91	257	90
426.92	259	93
426.93	261	95
426.94	263	98
426.95	265	101
426.96	267	103
426.97	268	106
426.98	270	109
426.99	272	111
427.00	274	114
427.01	276	117
427.02	278	120
427.03	281	122
427.04	283	125
427.05	285	128
427.06	288	131
427.07	290	134
427.08	292	137
427.09	294	140
427.10	297	143
427.11	299	146
427.12	301	149
427.13	303	152
427.14	305	155
427.15	308	158
427.16	310	161
427.17	312	164
427.18	315	167
427.19	317	170
427.20	319	173
427.21	321	177
427.22	324	180
427.23	326	183
427.24	328	186
427.25	330	190
427.26	332	193
427.27	335	196
427.28	337	200
427.29	339	203
427.30	342	206
427.31	344	210
427.32	346	213
427.33	348	217
427.34	350	220
427.35	353	224
427.36	355	227
427.37	357	231
427.38	359	234
427.39	362	238
427.40	364	242
427.41	366	245
427.42	369	249
427.43	371	253
427.44	373	256
427.45	375	260
427.46	377	264
427.47	380	268
427.48	382	271
427.49	384	275
427.50	387	279
427.51	389	283
427.52	391	287
427.53	393	291

Stage-Area-Storage for Pond FB#1: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
427.54	396	295
427.55	398	299
427.56	400	303
427.57	402	307
427.58	404	311
427.59	407	315
427.60	409	319
427.61	411	323
427.62	414	327
427.63	416	331
427.64	418	335
427.65	420	340
427.66	423	344
427.67	425	348
427.68	427	352
427.69	429	357
427.70	431	361
427.71	434	365
427.72	436	370
427.73	438	374
427.74	441	378
427.75	443	383
427.76	445	387
427.77	447	392
427.78	449	396
427.79	452	401
427.80	454	405
427.81	456	410
427.82	458	414
427.83	461	419
427.84	463	424
427.85	465	428
427.86	468	433
427.87	470	438
427.88	472	442
427.89	474	447
427.90	476	452
427.91	479	457
427.92	481	461
427.93	483	466
427.94	485	471
427.95	488	476
427.96	490	481
427.97	492	486
427.98	495	491
427.99	497	496
428.00	499	501
428.01	502	506
428.02	504	511
428.03	507	516
428.04	510	521
428.05	512	526
428.06	515	531
428.07	518	536
428.08	520	541
428.09	523	546
428.10	526	552
428.11	528	557
428.12	531	562
428.13	534	568
428.14	536	573
428.15	539	578
428.16	542	584
428.17	544	589
428.18	547	595
428.19	550	600
428.20	552	606
428.21	555	611
428.22	558	617
428.23	560	622
428.24	563	628
428.25	566	634
428.26	568	639
428.27	571	645
428.28	573	651
428.29	576	656
428.30	579	662
428.31	581	668
428.32	584	674
428.33	587	680
428.34	589	686
428.35	592	691
428.36	595	697
428.37	597	703
428.38	600	709
428.39	603	715
428.40	605	721
428.41	608	727
428.42	611	734
428.43	613	740
428.44	616	746
428.45	619	752
428.46	621	758
428.47	624	764
428.48	627	771
428.49	629	777
428.50	632	783
428.51	635	790
428.52	638	796
428.53	641	802
428.54	644	809
428.55	647	815
428.56	650	822
428.57	653	828

Forebay #1 required WQV 550 cf.

Stage-Area-Storage for Pond FB#1: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
428.58	656	835
428.59	659	841
428.60	662	848
428.61	665	855
428.62	668	861
428.63	670	868
428.64	673	875
428.65	676	881
428.66	679	888
428.67	682	895
428.68	685	902
428.69	688	909
428.70	691	916
428.71	694	922
428.72	697	929
428.73	700	936
428.74	703	943
428.75	706	951
428.76	709	958
428.77	712	965
428.78	715	972
428.79	718	979
428.80	721	986
428.81	724	993
428.82	727	1,001
428.83	730	1,008
428.84	733	1,015
428.85	736	1,023
428.86	739	1,030
428.87	742	1,037
428.88	744	1,045
428.89	747	1,052
428.90	750	1,060
428.91	753	1,067
428.92	756	1,075
428.93	759	1,082
428.94	762	1,090
428.95	765	1,098
428.96	768	1,105
428.97	771	1,113
428.98	774	1,121
428.99	777	1,128
429.00	**780**	1,136
429.01	780	1,144
429.02	780	1,152
429.03	780	1,160
429.04	780	1,167
429.05	780	1,175
429.06	780	1,183
429.07	780	1,191
429.08	780	1,199
429.09	780	1,206
429.10	780	**1,214**

Stage-Area-Storage for Pond Basin#1:

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
427.00	2,027	0
427.01	2,034	20
427.02	2,042	41
427.03	2,049	61
427.04	2,057	82
427.05	2,064	102
427.06	2,072	123
427.07	2,079	144
427.08	2,087	165
427.09	2,094	185
427.10	2,102	206
427.11	2,109	228
427.12	2,117	249
427.13	2,124	270
427.14	2,132	291
427.15	2,139	312
427.16	2,147	334
427.17	2,154	355
427.18	2,162	377
427.19	2,169	399
427.20	2,177	420
427.21	2,184	442
427.22	2,192	464
427.23	2,199	486
427.24	2,207	508
427.25	2,214	530
427.26	2,222	552
427.27	2,229	575
427.28	2,237	597
427.29	2,244	619
427.30	2,252	642
427.31	2,259	664
427.32	2,267	687
427.33	2,274	710
427.34	2,282	732
427.35	2,289	755
427.36	2,297	778
427.37	2,304	801
427.38	2,312	824
427.39	2,319	847
427.40	2,327	871
427.41	2,334	894
427.42	2,342	917
427.43	2,349	941
427.44	2,357	964
427.45	2,364	988
427.46	2,372	1,012
427.47	2,379	1,035
427.48	2,387	1,059
427.49	2,394	1,083
427.50	2,402	1,107
427.51	2,409	1,131
427.52	2,416	1,155
427.53	2,424	1,180
427.54	2,431	1,204
427.55	2,439	1,228
427.56	2,446	1,253
427.57	2,454	1,277
427.58	2,461	1,302
427.59	2,469	1,326
427.60	2,476	1,351
427.61	2,484	1,376
427.62	2,491	1,401
427.63	2,499	1,426
427.64	2,506	1,451
427.65	2,514	1,476
427.66	2,521	1,501
427.67	2,529	1,526
427.68	2,536	1,552
427.69	2,544	1,577
427.70	2,551	1,602
427.71	2,559	1,628
427.72	2,566	1,654
427.73	2,574	1,679
427.74	2,581	1,705
427.75	2,589	1,731
427.76	2,596	1,757
427.77	2,604	1,783
427.78	2,611	1,809
427.79	2,619	1,835
427.80	2,626	1,861
427.81	2,634	1,888
427.82	2,641	1,914
427.83	2,649	1,940
427.84	2,656	1,967
427.85	2,664	1,994
427.86	2,671	2,020
427.87	2,679	2,047
427.88	2,686	2,074
427.89	2,694	2,101
427.90	2,701	2,128
427.91	2,709	2,155
427.92	2,716	2,182
427.93	2,724	2,209
427.94	2,731	2,236
427.95	2,739	2,264
427.96	2,746	2,291
427.97	2,754	2,319
427.98	2,761	2,346
427.99	2,769	2,374
428.00	2,776	2,402
428.01	2,784	2,429
428.02	2,792	2,457
428.03	2,800	2,485

Basin #1 required WQV 2,198 cf.

Stage-Area-Storage for Pond Basin#1: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
428.04	2,808	2,513	428.56	3,302	4,083
428.05	2,816	2,541	428.57	3,327	4,116
428.06	2,824	2,570	428.58	3,351	4,150
428.07	2,832	2,598	428.59	3,376	4,183
428.08	2,840	2,626	428.60	3,401	4,217
428.09	2,848	2,655	428.61	3,426	4,251
428.10	2,856	2,683	428.62	3,451	4,286
428.11	2,864	2,712	428.63	3,476	4,320
428.12	2,872	2,740	428.64	3,501	4,355
428.13	2,880	2,769	428.65	3,526	4,390
428.14	2,888	2,798	428.66	3,551	4,426
428.15	2,896	2,827	428.67	3,576	4,461
428.16	2,904	2,856	428.68	3,601	4,497
428.17	2,912	2,885	428.69	3,626	4,533
428.18	2,920	2,914	428.70	3,650	4,570
428.19	2,928	2,943	428.71	3,675	4,607
428.20	2,936	2,973	428.72	3,700	4,643
428.21	2,944	3,002	428.73	3,725	4,681
428.22	2,952	3,032	428.74	3,750	4,718
428.23	2,960	3,061	428.75	3,775	4,756
428.24	2,968	3,091	428.76	3,800	4,793
428.25	2,976	3,121	428.77	3,825	4,832
428.26	2,984	3,150	428.78	3,850	4,870
428.27	2,992	3,180	428.79	3,875	4,909
428.28	3,000	3,210	428.80	3,900	4,947
428.29	3,008	3,240	428.81	3,925	4,986
428.30	3,016	3,270	428.82	3,949	5,026
428.31	3,024	3,301	428.83	3,974	5,065
428.32	3,032	3,331	428.84	3,999	5,105
428.33	3,040	3,361	428.85	4,024	5,145
428.34	3,048	3,392	428.86	4,049	5,186
428.35	3,056	3,422	428.87	4,074	5,226
428.36	3,064	3,453	428.88	4,099	5,267
428.37	3,072	3,483	428.89	4,124	5,308
428.38	3,080	3,514	428.90	4,149	5,350
428.39	3,088	3,545	428.91	4,174	5,391
428.40	3,096	3,576	428.92	4,199	5,433
428.41	3,104	3,607	428.93	4,224	5,475
428.42	3,112	3,638	428.94	4,248	5,518
428.43	3,120	3,669	428.95	4,273	5,560
428.44	3,128	3,700	428.96	4,298	5,603
428.45	3,136	3,732	428.97	4,323	5,646
428.46	3,144	3,763	428.98	4,348	5,690
428.47	3,152	3,795	428.99	4,373	5,733
428.48	3,160	3,826	429.00	4,398	5,777
428.49	3,168	3,858	429.01	4,414	5,821
428.50	3,176	3,890	429.02	4,430	5,865
428.51	3,177	3,921	429.03	4,446	5,910
428.52	3,202	3,953	429.04	4,462	5,954
428.53	3,227	3,985	429.05	4,478	5,999
428.54	3,252	4,018	429.06	4,494	6,044
428.55	3,277	4,050	429.07	4,510	6,089

Stage-Area-Storage for Pond Basin#1: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
429.08	4,526	6,134
429.09	4,542	6,179
429.10	4,558	6,225
429.11	4,574	6,271
429.12	4,590	6,316
429.13	4,606	6,362
429.14	4,622	6,409
429.15	4,638	6,455
429.16	4,654	6,501
429.17	4,670	6,548
429.18	4,686	6,595
429.19	4,702	6,642
429.20	4,718	6,689
429.21	4,734	6,736
429.22	4,750	6,783
429.23	4,766	6,831
429.24	4,782	6,879
429.25	4,799	6,927
429.26	4,815	6,975
429.27	4,831	7,023
429.28	4,847	7,071
429.29	4,863	7,120
429.30	4,879	7,169
429.31	4,895	7,217
429.32	4,911	7,267
429.33	4,927	7,316
429.34	4,943	7,365
429.35	4,959	7,415
429.36	4,975	7,464
429.37	4,991	7,514
429.38	5,007	7,564
429.39	5,023	7,614
429.40	5,039	7,664
429.41	5,055	7,715
429.42	5,071	7,766
429.43	5,087	7,816
429.44	5,103	7,867
429.45	5,119	7,918
429.46	5,135	7,970
429.47	5,151	8,021
429.48	5,167	8,073
429.49	5,183	8,124
429.50	5,199	8,176
429.51	5,209	8,228
429.52	5,220	8,281
429.53	5,230	8,333
429.54	5,240	8,385
429.55	5,251	8,438
429.56	5,261	8,490
429.57	5,271	8,543
429.58	5,281	8,596
429.59	5,292	8,648
429.60	5,302	8,701
429.61	5,312	8,755
429.62	5,323	8,808
429.63	5,333	8,861
429.64	5,343	8,914
429.65	5,353	8,968
429.66	5,364	9,021
429.67	5,374	9,075
429.68	5,384	9,129
429.69	5,395	9,183
429.70	5,405	9,237
429.71	5,415	9,291
429.72	5,426	9,345
429.73	5,436	9,399
429.74	5,446	9,454
429.75	5,457	9,508
429.76	5,467	9,563
429.77	5,477	9,618
429.78	5,487	9,672
429.79	5,498	9,727
429.80	5,508	9,782
429.81	5,518	9,838
429.82	5,529	9,893
429.83	5,539	9,948
429.84	5,549	10,004
429.85	5,560	10,059
429.86	5,570	10,115
429.87	5,580	10,171
429.88	5,590	10,226
429.89	5,601	10,282
429.90	5,611	10,338
429.91	5,621	10,395
429.92	5,632	10,451
429.93	5,642	10,507
429.94	5,652	10,564
429.95	5,662	10,620
429.96	5,673	10,677
429.97	5,683	10,734
429.98	5,693	10,791
429.99	5,704	10,848
430.00	**5,714**	**10,905**
430.01	5,714	10,905
430.02	5,714	10,905
430.03	5,714	10,905
430.04	5,714	10,905
430.05	5,714	10,905
430.06	5,714	10,905
430.07	5,714	10,905
430.08	5,714	10,905
430.09	5,714	10,905
430.10	5,714	10,905

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

TEST PIT REPORT

FOR

Londonderry Town Hall Office & Parking Lot Expansion

238 Mammoth Road

Londonderry, NH

PREPARED FOR

Londonderry SAU #25

PREPARED BY

TFMORAN, INC.

48 Constitution Drive

Bedford, NH 03110



JN: 123434-04

February 9, 2026

Tp#1 January 30, 2026 (Elev = 427.1')

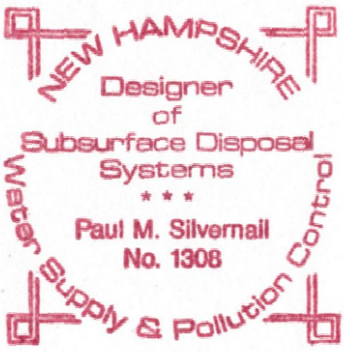
0" – 16 "	10yr 3/2 Very Dark Grayish Brown, Fine Sandy Loam, Granular, Friable
16" - 25"	2.5y 5/4 Light Olive Brown, Sandy Loam, Friable, Granular (previously Disturbed)
25" – 35"	10yr 5/4 Yellowish Brown, Medium Sand, Weak Blocky, Friable
35" – 96"	2.5y 5/4 Light Olive Brown, Silty fine sand, Blocky, Firm

20% redox. Concentrations at 32"
No Water Observed
No Ledge Observed
Roots to 36"
ESHWT = 32" (Elev = 424.43')

Tp#2 January 30, 2026 (Elev = 427.4')

0 - 8"	10yr 3/2 Very Dark Brown, Fine Sandy Loam, Granular, Friable
8" - 22"	2.5y 5/4 Light Olive Brown, Sandy Loam, Friable, Massive (previously Disturbed)
22" - 25"	10yr 2/2 Very Dark Brown, Fine Sandy Loam, Friable, Granular,
35" – 41"	10yr 3/2 Very Dark Grayish Brown, Loamy Sand, Weak Blocky, Friable
41" – 84"	2.5y 5/4 Silty Fine Sand, Blocky, Firm

Redox. Concentrations at 41"
No Water Observed
No Ledge Observed
Roots to 51"
ESHWT = 41" (Elev= 423.98')



Summary Tables

(25-Year Storm)

POST-DEVELOPMENT PIPES/SWALES

Node (#)	Location	Size	Type	Length (Ft)	Slope (Ft/Ft)	Manning's (N)	Peak Discharge (CFS)	Flow Depth (Ft)	Peak Velocity (FPS)
CB #1	CB#1 TO CB#2	15"	HDPE	177	0.010	0.013	1.8	0.66	3.79
CB #2	CB#2 TO HW #1	18"	HDPE	41	0.005	0.013	2.6	1.5	1.81
OS #1	Basin #1 to FES #1	15"	HDPE	15	0.120	0.013	2.1	0.30	2.85

RIPRAP CALCULATIONS
SAU #25 Parking & Town
Office Expansion
238 Mammoth Road
Londonderry, NH 03053
Date: February 20, 2026 By: P.Silvernail
Revised: March 3, 2026 By: P.Silvernail

Project No.: 12434-04

OUTLET	Do (ft.)	Q25 (cfs)	V (fps)	Tw (ft.)	La (ft.)	Wup (ft.)	Wdn (ft.)	d50 (in.)*
FES #1 (From Basin #1)	1.25	2.1	2.9	0.3	11.5	3.8	15.2	6.0
Headwall #1(Into forebay #1)	1.80	2.6	1.8	1.5	15.8	5.4	11.7	6.0
Forebay #1 Weir	6.00	3.7	1.2	0.3	42.5	18.0	60.5	6.0
Basin #1 Weir	9.00	0.0	0.0	0.0	63.0	27.0	90.0	6.0

*Note:6"min.

Notes:

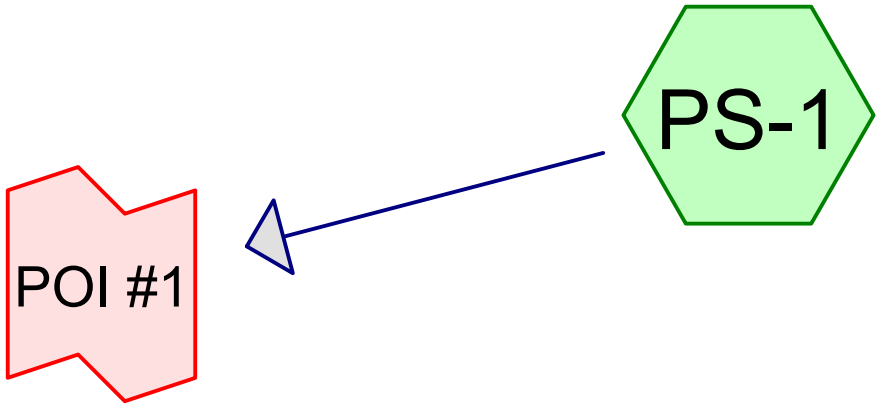
1 Use NHDOT Class C Stone
2 Depth of Stone to be 12" min. or 1.5 times d50 - which ever is larger
3 Actual riprap dimensions may vary from calculations. See Plans.

Calculations

1. 'When Tw < 0.5Do at pipe outlet:
La = 1.8Q/Do^3/2 + 7Do
Wup = 3Do
Wdn = 3Do + La
d50 = (0.02Q^4/3)/(TwDo)

2. When Tw > or = 0.5Do at pipe outlet:
La = 3Q/Do^3/2 + 7Do
Wup = 3Do
Wdn = 3Do + 0.4La
d50 = (0.02Q^4/3)/(TwDo)

Where:
Tw is the tailwater depth at the outlet of the pipe or channel
Do is the diameter of the pipe or the width of channel
Q is the discharge from the pipe of channel
La is the length of apron
Wup is the upstream width of apron
Wdn is the downstream width of apron
d50 is the median stone diameter



Subcat Reach Pond Link

Routing Diagram for 12434-04 SAU #25 Town Office and Parking Expansion PreDrainage

Prepared by T F Moran Inc, Printed 3/4/2026

HydroCAD® 10.20-7a s/n 00866 © 2025 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.038	74	>75% Grass cover, Good, HSG C (PS-1)
0.010	98	Roofs, HSG C (PS-1)
1.377	70	Woods, Good, HSG C (PS-1)
1.426	**70**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
1.426	HSG C	PS-1
0.000	HSG D	
0.000	Other	
1.426		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.038	0.000	0.000	0.038	>75% Grass cover, Good	PS-1
0.000	0.000	0.010	0.000	0.000	0.010	Roofs	PS-1
0.000	0.000	1.377	0.000	0.000	1.377	Woods, Good	PS-1
0.000	**0.000**	**1.426**	**0.000**	**0.000**	**1.426**	**TOTAL AREA**	

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

Subcatchment PS-1: Runoff Area=62,099 sf 0.73% Impervious Runoff Depth>0.67"
Flow Length=560' Tc=39.1 min CN=70 Runoff=0.5 cfs 3,482 cf

Link POI #1: Inflow=0.5 cfs 3,482 cf
Primary=0.5 cfs 3,482 cf

Total Runoff Area = 1.426 ac Runoff Volume = 3,482 cf Average Runoff Depth = 0.67"
99.27% Pervious = 1.415 ac 0.73% Impervious = 0.010 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 PS-1: Runoff Area=62,099 sf 0.73% Impervious Runoff Depth>1.62"
Flow Length=560' Tc=39.1 min CN=70 Runoff=1.3 cfs 8,395 cf

Link POI #1: Inflow=1.3 cfs 8,395 cf
Primary=1.3 cfs 8,395 cf

Total Runoff Area = 1.426 ac Runoff Volume = 8,395 cf Average Runoff Depth = 1.62"
99.27% Pervious = 1.415 ac 0.73% Impervious = 0.010 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 PS-1: Runoff Area=62,099 sf 0.73% Impervious Runoff Depth>2.49"
Flow Length=560' Tc=39.1 min CN=70 Runoff=2.1 cfs 12,897 cf

Link POI #1: Inflow=2.1 cfs 12,897 cf
Primary=2.1 cfs 12,897 cf

Total Runoff Area = 1.426 ac Runoff Volume = 12,897 cf Average Runoff Depth = 2.49"
99.27% Pervious = 1.415 ac 0.73% Impervious = 0.010 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 PS-1: Runoff Area=62,099 sf 0.73% Impervious Runoff Depth>3.37"
Flow Length=560' Tc=39.1 min CN=70 Runoff=2.8 cfs 17,465 cf

Link POI #1: Inflow=2.8 cfs 17,465 cf
Primary=2.8 cfs 17,465 cf

Total Runoff Area = 1.426 ac Runoff Volume = 17,465 cf Average Runoff Depth = 3.37"
99.27% Pervious = 1.415 ac 0.73% Impervious = 0.010 ac

Summary for Subcatchment PS-1:

Runoff = 1.3 cfs @ 12.57 hrs, Volume= 8,395 cf, Depth> 1.62"
Routed to Link POI #1 :

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 10yr Rainfall=4.45"

Area (sf)	CN	Description
59,988	70	Woods, Good, HSG C
454	98	Roofs, HSG C
1,657	74	>75% Grass cover, Good, HSG C
62,099	70	Weighted Average
61,645		99.27% Pervious Area
454		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.0	100	0.0125	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.94"
6.7	224	0.0123	0.55		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.4	236	0.0212	0.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
39.1	560	Total			

Summary for Link POI #1:

Inflow Area = 1.426 ac, 0.73% Impervious, Inflow Depth > 1.62" for 10yr event
Inflow = 1.3 cfs @ 12.57 hrs, Volume= 8,395 cf
Primary = 1.3 cfs @ 12.57 hrs, Volume= 8,395 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Subcatchment PS-1:

Runoff = 2.1 cfs @ 12.56 hrs, Volume= 12,897 cf, Depth> 2.49"
Routed to Link POI #1 :

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 Rainfall=5.63"

Area (sf)	CN	Description
59,988	70	Woods, Good, HSG C
454	98	Roofs, HSG C
1,657	74	>75% Grass cover, Good, HSG C
62,099	70	Weighted Average
61,645		99.27% Pervious Area
454		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.0	100	0.0125	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.94"
6.7	224	0.0123	0.55		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.4	236	0.0212	0.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
39.1	560	Total			

Summary for Link POI #1:

Inflow Area = 1.426 ac, 0.73% Impervious, Inflow Depth > 2.49" for 25yr event
Inflow = 2.1 cfs @ 12.56 hrs, Volume= 12,897 cf
Primary = 2.1 cfs @ 12.56 hrs, Volume= 12,897 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Subcatchment PS-1:

Runoff = 2.8 cfs @ 12.55 hrs, Volume= 17,465 cf, Depth> 3.37"
Routed to Link POI #1 :

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 50yr Rainfall=6.74"

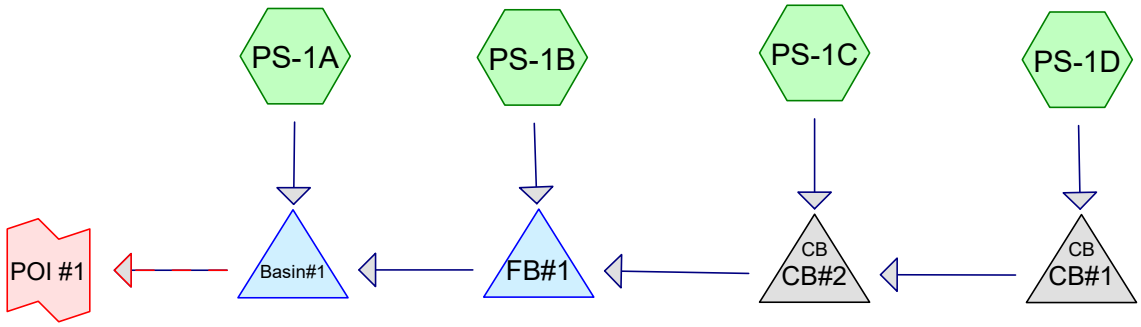
Area (sf)	CN	Description
59,988	70	Woods, Good, HSG C
454	98	Roofs, HSG C
1,657	74	>75% Grass cover, Good, HSG C
62,099	70	Weighted Average
61,645		99.27% Pervious Area
454		0.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.0	100	0.0125	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.94"
6.7	224	0.0123	0.55		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.4	236	0.0212	0.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
39.1	560	Total			

Summary for Link POI #1:

Inflow Area = 1.426 ac, 0.73% Impervious, Inflow Depth > 3.37" for 50yr event
Inflow = 2.8 cfs @ 12.55 hrs, Volume= 17,465 cf
Primary = 2.8 cfs @ 12.55 hrs, Volume= 17,465 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs



Subcat Reach Pond Link

Routing Diagram for 12434-04 SAU #25 Town Office and Parking Expansion PostDrainage

Prepared by T F Moran Inc, Printed 3/4/2026

HydroCAD® 10.20-7a s/n 00866 © 2025 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.265	74	>75% Grass cover, Good, HSG C (PS-1A, PS-1B, PS-1C)
0.613	98	Paved parking, HSG C (PS-1B, PS-1C, PS-1D)
0.010	98	Roofs, HSG C (PS-1B)
0.889	**91**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.889	HSG C	PS-1A, PS-1B, PS-1C, PS-1D
0.000	HSG D	
0.000	Other	
0.889		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	Basin#1	425.20	425.00	15.0	0.0133	0.013	0.0	15.0	0.0	
2	CB#1	429.84	427.75	177.0	0.0118	0.013	0.0	15.0	0.0	
3	CB#2	427.50	427.30	41.0	0.0049	0.013	0.0	18.0	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 PS-1A: Runoff Area=7,254 sf 0.00% Impervious Runoff Depth>0.87"
Tc=6.0 min CN=74 Runoff=0.2 cfs 526 cf

Subcatchment PS-1B: Runoff Area=4,949 sf 14.83% Impervious Runoff Depth>1.09"
Tc=6.0 min CN=78 Runoff=0.1 cfs 448 cf

Subcatchment PS-1C: Runoff Area=11,926 sf 99.23% Impervious Runoff Depth>2.71"
Tc=6.0 min CN=98 Runoff=0.8 cfs 2,690 cf

Subcatchment PS-1D: Runoff Area=14,578 sf 100.00% Impervious Runoff Depth>2.71"
Tc=6.0 min CN=98 Runoff=0.9 cfs 3,288 cf

Pond Basin#1: Peak Elev=428.26' Storage=3,159 cf Inflow=2.0 cfs 6,160 cf
Discarded=0.0 cfs 946 cf Primary=0.3 cfs 2,944 cf Secondary=0.0 cfs 0 cf Outflow=0.4 cfs 3,890 cf

Pond CB#1: Peak Elev=430.30' Inflow=0.9 cfs 3,288 cf
15.0" Round Culvert n=0.013 L=177.0' S=0.0118 '/' Outflow=0.9 cfs 3,288 cf

Pond CB#2: Peak Elev=428.79' Inflow=1.7 cfs 5,978 cf
18.0" Round Culvert n=0.013 L=41.0' S=0.0049 '/' Outflow=1.7 cfs 5,978 cf

Pond FB#1: Peak Elev=428.75' Storage=949 cf Inflow=1.8 cfs 6,426 cf
Outflow=1.8 cfs 5,634 cf

Link POI #1: Inflow=0.3 cfs 2,944 cf
Primary=0.3 cfs 2,944 cf

Total Runoff Area = 0.889 ac Runoff Volume = 6,952 cf Average Runoff Depth = 2.16"
29.87% Pervious = 0.265 ac 70.13% Impervious = 0.623 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 PS-1A: Runoff Area=7,254 sf 0.00% Impervious Runoff Depth>1.93"
Tc=6.0 min CN=74 Runoff=0.4 cfs 1,168 cf

Subcatchment PS-1B: Runoff Area=4,949 sf 14.83% Impervious Runoff Depth>2.25"
Tc=6.0 min CN=78 Runoff=0.3 cfs 928 cf

Subcatchment PS-1C: Runoff Area=11,926 sf 99.23% Impervious Runoff Depth>4.21"
Tc=6.0 min CN=98 Runoff=1.2 cfs 4,186 cf

Subcatchment PS-1D: Runoff Area=14,578 sf 100.00% Impervious Runoff Depth>4.21"
Tc=6.0 min CN=98 Runoff=1.4 cfs 5,116 cf

Pond Basin#1: Peak Elev=428.69' Storage=4,518 cf Inflow=3.2 cfs 10,605 cf
Discarded=0.0 cfs 1,065 cf Primary=1.2 cfs 7,199 cf Secondary=0.0 cfs 0 cf Outflow=1.2 cfs 8,264 cf

Pond CB#1: Peak Elev=430.42' Inflow=1.4 cfs 5,116 cf
15.0" Round Culvert n=0.013 L=177.0' S=0.0118 '/' Outflow=1.4 cfs 5,116 cf

Pond CB#2: Peak Elev=428.92' Inflow=2.6 cfs 9,302 cf
18.0" Round Culvert n=0.013 L=41.0' S=0.0049 '/' Outflow=2.6 cfs 9,302 cf

Pond FB#1: Peak Elev=428.83' Storage=1,009 cf Inflow=2.9 cfs 10,230 cf
Outflow=2.8 cfs 9,437 cf

Link POI #1: Inflow=1.2 cfs 7,199 cf
Primary=1.2 cfs 7,199 cf

Total Runoff Area = 0.889 ac Runoff Volume = 11,398 cf Average Runoff Depth = 3.53"
29.87% Pervious = 0.265 ac 70.13% Impervious = 0.623 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 PS-1A: Runoff Area=7,254 sf 0.00% Impervious Runoff Depth>2.87"
Tc=6.0 min CN=74 Runoff=0.6 cfs 1,737 cf

Subcatchment PS-1B: Runoff Area=4,949 sf 14.83% Impervious Runoff Depth>3.25"
Tc=6.0 min CN=78 Runoff=0.4 cfs 1,341 cf

Subcatchment PS-1C: Runoff Area=11,926 sf 99.23% Impervious Runoff Depth>5.39"
Tc=6.0 min CN=98 Runoff=1.5 cfs 5,356 cf

Subcatchment PS-1D: Runoff Area=14,578 sf 100.00% Impervious Runoff Depth>5.39"
Tc=6.0 min CN=98 Runoff=1.8 cfs 6,547 cf

Pond Basin#1: Peak Elev=428.89' Storage=5,314 cf Inflow=4.2 cfs 14,186 cf
Discarded=0.0 cfs 1,148 cf Primary=2.0 cfs 10,653 cf Secondary=0.0 cfs 0 cf Outflow=2.0 cfs 11,801 cf

Pond CB#1: Peak Elev=430.51' Inflow=1.8 cfs 6,547 cf
15.0" Round Culvert n=0.013 L=177.0' S=0.0118 '/' Outflow=1.8 cfs 6,547 cf

Pond CB#2: Peak Elev=429.02' Inflow=3.3 cfs 11,903 cf
18.0" Round Culvert n=0.013 L=41.0' S=0.0049 '/' Outflow=3.3 cfs 11,903 cf

Pond FB#1: Peak Elev=428.91' Storage=1,071 cf Inflow=3.7 cfs 13,243 cf
Outflow=3.6 cfs 12,449 cf

Link POI #1: Inflow=2.0 cfs 10,653 cf
Primary=2.0 cfs 10,653 cf

Total Runoff Area = 0.889 ac Runoff Volume = 14,981 cf Average Runoff Depth = 4.64"
29.87% Pervious = 0.265 ac 70.13% Impervious = 0.623 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 PS-1A: Runoff Area=7,254 sf 0.00% Impervious Runoff Depth>3.81"
Tc=6.0 min CN=74 Runoff=0.7 cfs 2,305 cf

Subcatchment PS-1B: Runoff Area=4,949 sf 14.83% Impervious Runoff Depth>4.24"
Tc=6.0 min CN=78 Runoff=0.6 cfs 1,747 cf

Subcatchment PS-1C: Runoff Area=11,926 sf 99.23% Impervious Runoff Depth>6.50"
Tc=6.0 min CN=98 Runoff=1.8 cfs 6,457 cf

Subcatchment PS-1D: Runoff Area=14,578 sf 100.00% Impervious Runoff Depth>6.50"
Tc=6.0 min CN=98 Runoff=2.2 cfs 7,893 cf

Pond Basin#1: Peak Elev=429.03' Storage=5,930 cf Inflow=5.0 cfs 17,606 cf
Discarded=0.0 cfs 1,215 cf Primary=2.6 cfs 13,969 cf Secondary=0.0 cfs 0 cf Outflow=2.7 cfs 15,184 cf

Pond CB#1: Peak Elev=430.58' Inflow=2.2 cfs 7,893 cf
15.0" Round Culvert n=0.013 L=177.0' S=0.0118 '/' Outflow=2.2 cfs 7,893 cf

Pond CB#2: Peak Elev=429.13' Inflow=3.9 cfs 14,350 cf
18.0" Round Culvert n=0.013 L=41.0' S=0.0049 '/' Outflow=3.9 cfs 14,350 cf

Pond FB#1: Peak Elev=429.05' Storage=1,178 cf Inflow=4.5 cfs 16,097 cf
Outflow=4.3 cfs 15,301 cf

Link POI #1: Inflow=2.6 cfs 13,969 cf
Primary=2.6 cfs 13,969 cf

Total Runoff Area = 0.889 ac Runoff Volume = 18,402 cf Average Runoff Depth = 5.71"
29.87% Pervious = 0.265 ac 70.13% Impervious = 0.623 ac

Summary for Subcatchment PS-1A:

Runoff = 0.4 cfs @ 12.10 hrs, Volume= 1,168 cf, Depth> 1.93"
Routed to Pond Basin#1 :

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 10yr Rainfall=4.45"

Area (sf)	CN	Description
7,254	74	>75% Grass cover, Good, HSG C
7,254		100.00% Pervious Area

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

Summary for Subcatchment PS-1B:

Runoff = 0.3 cfs @ 12.09 hrs, Volume= 928 cf, Depth> 2.25"
Routed to Pond FB#1 :

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 10yr Rainfall=4.45"

Area (sf)	CN	Description
454	98	Roofs, HSG C
280	98	Paved parking, HSG C
4,215	74	>75% Grass cover, Good, HSG C
4,949	78	Weighted Average
4,215		85.17% Pervious Area
734		14.83% Impervious Area

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

Summary for Subcatchment PS-1C:

Runoff = 1.2 cfs @ 12.09 hrs, Volume= 4,186 cf, Depth> 4.21"
Routed to Pond CB#2 :

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 10yr Rainfall=4.45"

Area (sf)	CN	Description
399	98	Paved parking, HSG C
11,435	98	Paved parking, HSG C
92	74	>75% Grass cover, Good, HSG C
11,926	98	Weighted Average
92		0.77% Pervious Area
11,834		99.23% Impervious Area

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

Summary for Subcatchment PS-1D:

Runoff = 1.4 cfs @ 12.09 hrs, Volume= 5,116 cf, Depth> 4.21"
Routed to Pond CB#1 :

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 10yr Rainfall=4.45"

Area (sf)	CN	Description
14,578	98	Paved parking, HSG C
14,578		100.00% Impervious Area

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

Summary for Pond Basin#1:

Inflow Area = 0.889 ac, 70.13% Impervious, Inflow Depth > 3.29" for 10yr event
Inflow = 3.2 cfs @ 12.10 hrs, Volume= 10,605 cf
Outflow = 1.2 cfs @ 12.35 hrs, Volume= 8,264 cf, Atten= 63%, Lag= 15.1 min
Discarded = 0.0 cfs @ 12.35 hrs, Volume= 1,065 cf
Primary = 1.2 cfs @ 12.35 hrs, Volume= 7,199 cf
Routed to Link POI #1 :
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POI #1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 428.69' @ 12.35 hrs Surf.Area= 3,615 sf Storage= 4,518 cf
Flood Elev= 430.10' Surf.Area= 5,714 sf Storage= 10,905 cf

Plug-Flow detention time= 152.0 min calculated for 8,264 cf (78% of inflow)
Center-of-Mass det. time= 73.8 min (871.7 - 797.9)

Volume	Invert	Avail.Storage	Storage Description
#1	427.00'	10,905 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
427.00	2,027	0	0
428.00	2,776	2,402	2,402
428.50	3,176	1,488	3,890
428.51	3,177	32	3,921
429.00	4,398	1,856	5,777
429.50	5,199	2,399	8,176
430.00	5,714	2,728	10,905

Device	Routing	Invert	Outlet Devices
#1	Discarded	427.00'	**0.300 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Device 4	427.93'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.70 0.70 1.17 Width (feet) 0.53 0.53 1.25 1.25
#3	Secondary	429.50'	**9.0' long + 3.0 '/' SideZ x 9.0' 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) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64 2.65 2.64 2.65 2.65 2.66 2.67 2.69
#4	Primary	425.20'	**15.0" Round Culvert** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 425.20' / 425.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#5	Device 4	429.10'	**36.0" x 36.0" Horiz. OS RIM (3'x3' Horiz. Rim)** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.0 cfs @ 12.35 hrs HW=428.69' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=1.2 cfs @ 12.35 hrs HW=428.69' TW=0.00' (Dynamic Tailwater)
└**4=Culvert** (Passes 1.2 cfs of 10.0 cfs potential flow)
  ├**2=Custom Weir/Orifice** (Weir Controls 1.2 cfs @ 2.66 fps)
  └**5=OS RIM (3'x3' Horiz. Rim)** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=427.00' TW=0.00' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond CB#1:

Inflow Area = 0.335 ac,100.00% Impervious, Inflow Depth > 4.21" for 10yr event
Inflow = 1.4 cfs @ 12.09 hrs, Volume= 5,116 cf
Outflow = 1.4 cfs @ 12.09 hrs, Volume= 5,116 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.09 hrs, Volume= 5,116 cf
Routed to Pond CB#2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 430.42' @ 12.09 hrs
Flood Elev= 434.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	429.84'	**15.0" Round Culvert** L= 177.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 429.84' / 427.75' S= 0.0118 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.4 cfs @ 12.09 hrs HW=430.41' TW=428.90' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.4 cfs @ 3.62 fps)

Summary for Pond CB#2:

Inflow Area = 0.608 ac, 99.65% Impervious, Inflow Depth > 4.21" for 10yr event
Inflow = 2.6 cfs @ 12.09 hrs, Volume= 9,302 cf
Outflow = 2.6 cfs @ 12.09 hrs, Volume= 9,302 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.09 hrs, Volume= 9,302 cf
Routed to Pond FB#1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 428.92' @ 12.12 hrs
Flood Elev= 432.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	427.50'	**18.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 427.50' / 427.30' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.0 cfs @ 12.09 hrs HW=428.90' TW=428.82' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.0 cfs @ 1.52 fps)

Summary for Pond FB#1:

Inflow Area = 0.722 ac, 86.31% Impervious, Inflow Depth > 3.90" for 10yr event
Inflow = 2.9 cfs @ 12.09 hrs, Volume= 10,230 cf
Outflow = 2.8 cfs @ 12.10 hrs, Volume= 9,437 cf, Atten= 1%, Lag= 1.0 min
Primary = 2.8 cfs @ 12.10 hrs, Volume= 9,437 cf
Routed to Pond Basin#1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 428.83' @ 12.10 hrs Surf.Area= 730 sf Storage= 1,009 cf
Flood Elev= 429.10' Surf.Area= 780 sf Storage= 1,214 cf

Plug-Flow detention time= 76.2 min calculated for 9,437 cf (92% of inflow)
Center-of-Mass det. time= 35.3 min (792.4 - 757.1)

Volume	Invert	Avail.Storage	Storage Description
#1	426.50'	1,214 cf	**FB #1 - 0% Voids (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
426.50	182	0	0
427.00	274	114	114
428.00	499	387	501
428.50	632	283	783
429.00	780	353	1,136
429.10	780	78	1,214

Device	Routing	Invert	Outlet Devices
#1	Primary	428.50'	**6.0' 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=2.8 cfs @ 12.10 hrs HW=428.83' TW=428.43' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 2.8 cfs @ 1.42 fps)

Summary for Link POI #1:

Inflow Area = 0.889 ac, 70.13% Impervious, Inflow Depth > 2.23" for 10yr event
Inflow = 1.2 cfs @ 12.35 hrs, Volume= 7,199 cf
Primary = 1.2 cfs @ 12.35 hrs, Volume= 7,199 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Subcatchment PS-1A:

Runoff = 0.6 cfs @ 12.09 hrs, Volume= 1,737 cf, Depth> 2.87"
Routed to Pond Basin#1 :

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 Rainfall=5.63"

Area (sf)	CN	Description
7,254	74	>75% Grass cover, Good, HSG C
7,254		100.00% Pervious Area

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

Summary for Subcatchment PS-1B:

Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,341 cf, Depth> 3.25"
Routed to Pond FB#1 :

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 Rainfall=5.63"

Area (sf)	CN	Description
454	98	Roofs, HSG C
280	98	Paved parking, HSG C
4,215	74	>75% Grass cover, Good, HSG C
4,949	78	Weighted Average
4,215		85.17% Pervious Area
734		14.83% Impervious Area

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

Summary for Subcatchment PS-1C:

Runoff = 1.5 cfs @ 12.09 hrs, Volume= 5,356 cf, Depth> 5.39"
Routed to Pond CB#2 :

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 Rainfall=5.63"

Area (sf)	CN	Description
399	98	Paved parking, HSG C
11,435	98	Paved parking, HSG C
92	74	>75% Grass cover, Good, HSG C
11,926	98	Weighted Average
92		0.77% Pervious Area
11,834		99.23% Impervious Area

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

Summary for Subcatchment PS-1D:

Runoff = 1.8 cfs @ 12.09 hrs, Volume= 6,547 cf, Depth> 5.39"
Routed to Pond CB#1 :

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 Rainfall=5.63"

Area (sf)	CN	Description
14,578	98	Paved parking, HSG C
14,578		100.00% Impervious Area

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

Summary for Pond Basin#1:

Inflow Area = 0.889 ac, 70.13% Impervious, Inflow Depth > 4.40" for 25yr event
Inflow = 4.2 cfs @ 12.10 hrs, Volume= 14,186 cf
Outflow = 2.0 cfs @ 12.26 hrs, Volume= 11,801 cf, Atten= 52%, Lag= 9.8 min
Discarded = 0.0 cfs @ 12.26 hrs, Volume= 1,148 cf
Primary = 2.0 cfs @ 12.26 hrs, Volume= 10,653 cf
Routed to Link POI #1 :
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POI #1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 428.89' @ 12.26 hrs Surf.Area= 4,127 sf Storage= 5,314 cf
Flood Elev= 430.10' Surf.Area= 5,714 sf Storage= 10,905 cf

Plug-Flow detention time= 132.8 min calculated for 11,801 cf (83% of inflow)
Center-of-Mass det. time= 65.4 min (855.1 - 789.7)

Volume	Invert	Avail.Storage	Storage Description
#1	427.00'	10,905 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
427.00	2,027	0	0
428.00	2,776	2,402	2,402
428.50	3,176	1,488	3,890
428.51	3,177	32	3,921
429.00	4,398	1,856	5,777
429.50	5,199	2,399	8,176
430.00	5,714	2,728	10,905

Device	Routing	Invert	Outlet Devices
#1	Discarded	427.00'	**0.300 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Device 4	427.93'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.70 0.70 1.17 Width (feet) 0.53 0.53 1.25 1.25
#3	Secondary	429.50'	**9.0' long + 3.0 '/' SideZ x 9.0' 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) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64 2.65 2.64 2.65 2.65 2.66 2.67 2.69
#4	Primary	425.20'	**15.0" Round Culvert** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 425.20' / 425.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#5	Device 4	429.10'	**36.0" x 36.0" Horiz. OS RIM (3'x3' Horiz. Rim)** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.0 cfs @ 12.26 hrs HW=428.89' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=1.9 cfs @ 12.26 hrs HW=428.89' TW=0.00' (Dynamic Tailwater)
└**4=Culvert** (Passes 1.9 cfs of 10.3 cfs potential flow)
  ├**2=Custom Weir/Orifice** (Weir Controls 1.9 cfs @ 2.80 fps)
  └**5=OS RIM (3'x3' Horiz. Rim)** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=427.00' TW=0.00' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond CB#1:

Inflow Area = 0.335 ac,100.00% Impervious, Inflow Depth > 5.39" for 25yr event
Inflow = 1.8 cfs @ 12.09 hrs, Volume= 6,547 cf
Outflow = 1.8 cfs @ 12.09 hrs, Volume= 6,547 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.8 cfs @ 12.09 hrs, Volume= 6,547 cf
Routed to Pond CB#2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 430.51' @ 12.09 hrs
Flood Elev= 434.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	429.84'	**15.0" Round Culvert** L= 177.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 429.84' / 427.75' S= 0.0118 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.7 cfs @ 12.09 hrs HW=430.50' TW=428.99' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.7 cfs @ 3.81 fps)

Summary for Pond CB#2:

Inflow Area = 0.608 ac, 99.65% Impervious, Inflow Depth > 5.39" for 25yr event
Inflow = 3.3 cfs @ 12.09 hrs, Volume= 11,903 cf
Outflow = 3.3 cfs @ 12.09 hrs, Volume= 11,903 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.3 cfs @ 12.09 hrs, Volume= 11,903 cf
Routed to Pond FB#1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 429.02' @ 12.12 hrs
Flood Elev= 432.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	427.50'	**18.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 427.50' / 427.30' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.6 cfs @ 12.09 hrs HW=428.99' TW=428.88' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 2.6 cfs @ 1.84 fps)

Summary for Pond FB#1:

Inflow Area = 0.722 ac, 86.31% Impervious, Inflow Depth > 5.05" for 25yr event
Inflow = 3.7 cfs @ 12.09 hrs, Volume= 13,243 cf
Outflow = 3.6 cfs @ 12.10 hrs, Volume= 12,449 cf, Atten= 2%, Lag= 0.6 min
Primary = 3.6 cfs @ 12.10 hrs, Volume= 12,449 cf
Routed to Pond Basin#1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 428.91' @ 12.29 hrs Surf.Area= 755 sf Storage= 1,071 cf
Flood Elev= 429.10' Surf.Area= 780 sf Storage= 1,214 cf

Plug-Flow detention time= 64.1 min calculated for 12,449 cf (94% of inflow)
Center-of-Mass det. time= 30.6 min (784.0 - 753.3)

Volume	Invert	Avail.Storage	Storage Description
#1	426.50'	1,214 cf	**FB #1 - 0% Voids (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
426.50	182	0	0
427.00	274	114	114
428.00	499	387	501
428.50	632	283	783
429.00	780	353	1,136
429.10	780	78	1,214

Device	Routing	Invert	Outlet Devices
#1	Primary	428.50'	**6.0' 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=3.0 cfs @ 12.10 hrs HW=428.89' TW=428.72' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3.0 cfs @ 1.28 fps)

Summary for Link POI #1:

Inflow Area = 0.889 ac, 70.13% Impervious, Inflow Depth > 3.30" for 25yr event
Inflow = 2.0 cfs @ 12.26 hrs, Volume= 10,653 cf
Primary = 2.0 cfs @ 12.26 hrs, Volume= 10,653 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Subcatchment PS-1A:

Runoff = 0.7 cfs @ 12.09 hrs, Volume= 2,305 cf, Depth> 3.81"
Routed to Pond Basin#1 :

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 50yr Rainfall=6.74"

Area (sf)	CN	Description
7,254	74	>75% Grass cover, Good, HSG C
7,254		100.00% Pervious Area

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

Summary for Subcatchment PS-1B:

Runoff = 0.6 cfs @ 12.09 hrs, Volume= 1,747 cf, Depth> 4.24"
Routed to Pond FB#1 :

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 50yr Rainfall=6.74"

Area (sf)	CN	Description
454	98	Roofs, HSG C
280	98	Paved parking, HSG C
4,215	74	>75% Grass cover, Good, HSG C
4,949	78	Weighted Average
4,215		85.17% Pervious Area
734		14.83% Impervious Area

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

Summary for Subcatchment PS-1C:

Runoff = 1.8 cfs @ 12.09 hrs, Volume= 6,457 cf, Depth> 6.50"
Routed to Pond CB#2 :

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 50yr Rainfall=6.74"

Area (sf)	CN	Description
399	98	Paved parking, HSG C
11,435	98	Paved parking, HSG C
92	74	>75% Grass cover, Good, HSG C
11,926	98	Weighted Average
92		0.77% Pervious Area
11,834		99.23% Impervious Area

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

Summary for Subcatchment PS-1D:

Runoff = 2.2 cfs @ 12.09 hrs, Volume= 7,893 cf, Depth> 6.50"
Routed to Pond CB#1 :

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 50yr Rainfall=6.74"

Area (sf)	CN	Description
14,578	98	Paved parking, HSG C
14,578		100.00% Impervious Area

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

Summary for Pond Basin#1:

Inflow Area = 0.889 ac, 70.13% Impervious, Inflow Depth > 5.46" for 50yr event
Inflow = 5.0 cfs @ 12.10 hrs, Volume= 17,606 cf
Outflow = 2.7 cfs @ 12.23 hrs, Volume= 15,184 cf, Atten= 47%, Lag= 7.8 min
Discarded = 0.0 cfs @ 12.23 hrs, Volume= 1,215 cf
Primary = 2.6 cfs @ 12.23 hrs, Volume= 13,969 cf
Routed to Link POI #1 :
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POI #1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 429.03' @ 12.23 hrs Surf.Area= 4,453 sf Storage= 5,930 cf
Flood Elev= 430.10' Surf.Area= 5,714 sf Storage= 10,905 cf

Plug-Flow detention time= 119.9 min calculated for 15,152 cf (86% of inflow)
Center-of-Mass det. time= 60.8 min (844.7 - 783.9)

Volume	Invert	Avail.Storage	Storage Description
#1	427.00'	10,905 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
427.00	2,027	0	0
428.00	2,776	2,402	2,402
428.50	3,176	1,488	3,890
428.51	3,177	32	3,921
429.00	4,398	1,856	5,777
429.50	5,199	2,399	8,176
430.00	5,714	2,728	10,905

Device	Routing	Invert	Outlet Devices
#1	Discarded	427.00'	**0.300 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Device 4	427.93'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.70 0.70 1.17 Width (feet) 0.53 0.53 1.25 1.25
#3	Secondary	429.50'	**9.0' long + 3.0 '/' SideZ x 9.0' 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) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64 2.65 2.64 2.65 2.65 2.66 2.67 2.69
#4	Primary	425.20'	**15.0" Round Culvert** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 425.20' / 425.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#5	Device 4	429.10'	**36.0" x 36.0" Horiz. OS RIM (3'x3' Horiz. Rim)** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.0 cfs @ 12.23 hrs HW=429.03' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=2.6 cfs @ 12.23 hrs HW=429.03' TW=0.00' (Dynamic Tailwater)
└**4=Culvert** (Passes 2.6 cfs of 10.6 cfs potential flow)
  ├**2=Custom Weir/Orifice** (Weir Controls 2.6 cfs @ 2.99 fps)
  └**5=OS RIM (3'x3' Horiz. Rim)** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=427.00' TW=0.00' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond CB#1:

Inflow Area = 0.335 ac,100.00% Impervious, Inflow Depth > 6.50" for 50yr event
Inflow = 2.2 cfs @ 12.09 hrs, Volume= 7,893 cf
Outflow = 2.2 cfs @ 12.09 hrs, Volume= 7,893 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.09 hrs, Volume= 7,893 cf
Routed to Pond CB#2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 430.58' @ 12.09 hrs
Flood Elev= 434.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	429.84'	**15.0" Round Culvert** L= 177.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 429.84' / 427.75' S= 0.0118 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.0 cfs @ 12.09 hrs HW=430.57' TW=429.10' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.0 cfs @ 3.93 fps)

Summary for Pond CB#2:

Inflow Area = 0.608 ac, 99.65% Impervious, Inflow Depth > 6.50" for 50yr event
Inflow = 3.9 cfs @ 12.09 hrs, Volume= 14,350 cf
Outflow = 3.9 cfs @ 12.09 hrs, Volume= 14,350 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.9 cfs @ 12.09 hrs, Volume= 14,350 cf
Routed to Pond FB#1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 429.13' @ 12.12 hrs
Flood Elev= 432.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	427.50'	**18.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 427.50' / 427.30' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.0 cfs @ 12.09 hrs HW=429.10' TW=428.97' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.0 cfs @ 2.01 fps)

Summary for Pond FB#1:

Inflow Area = 0.722 ac, 86.31% Impervious, Inflow Depth > 6.14" for 50yr event
Inflow = 4.5 cfs @ 12.09 hrs, Volume= 16,097 cf
Outflow = 4.3 cfs @ 12.10 hrs, Volume= 15,301 cf, Atten= 4%, Lag= 0.6 min
Primary = 4.3 cfs @ 12.10 hrs, Volume= 15,301 cf
Routed to Pond Basin#1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 429.05' @ 12.27 hrs Surf.Area= 780 sf Storage= 1,178 cf
Flood Elev= 429.10' Surf.Area= 780 sf Storage= 1,214 cf

Plug-Flow detention time= 55.8 min calculated for 15,301 cf (95% of inflow)
Center-of-Mass det. time= 27.2 min (778.0 - 750.7)

Volume	Invert	Avail.Storage	Storage Description
#1	426.50'	1,214 cf	**FB #1 - 0% Voids (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
426.50	182	0	0
427.00	274	114	114
428.00	499	387	501
428.50	632	283	783
429.00	780	353	1,136
429.10	780	78	1,214

Device	Routing	Invert	Outlet Devices
#1	Primary	428.50'	**6.0' 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=3.1 cfs @ 12.10 hrs HW=428.98' TW=428.89' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3.1 cfs @ 1.08 fps)

Summary for Link POI #1:

Inflow Area = 0.889 ac, 70.13% Impervious, Inflow Depth > 4.33" for 50yr event
Inflow = 2.6 cfs @ 12.23 hrs, Volume= 13,969 cf
Primary = 2.6 cfs @ 12.23 hrs, Volume= 13,969 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs



LEGEND

- PROPERTY LINE
- LIMITS OF DRAINAGE SUBCATCHMENT
- SOIL GROUP BREAKLINE
- FLOW PATH (Tc LINE)
- REACH
- POI-1 — POINT OF INTEREST
- ES-1 — SUBCATCHMENT AREA
- EP-1 — POND, CULVERT, OR CATCH BASIN
- ER-1 — REACH

NOTES

1. PER NRCS WEB SOIL SURVEY THE ENTIRE SITE CONSISTS OF 446B SOILS.

PRE-DEVELOPMENT SUBCATCHMENT AREAS	
PS-1	15,065 SF.
TOTAL	15,065

SOIL LEGEND
(PER USDA NRCS WEB SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP	DRAINAGE CLASS
446B	SCITUATE-NEWFIELDS COMPLEX 3% - 8% SLOPES, VERY STONY	B/C	MOD. WELL

STATE OF NEW HAMPSHIRE
NICHOLAS C. GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

TAX MAP 9 LOT 45

PRE-DEVELOPMENT DRAINAGE MAP

TOWN HALL OFFICE & PARKING EXPANSION

268B MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

PREPARED FOR

LONDONDERRY SAU 25

SCALE: 1"=30' **FEBRUARY 20, 2026**

HORIZONTAL SCALE 1"=30'
30 15 0 30

REV	DATE	DESCRIPTION	DR	CK

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

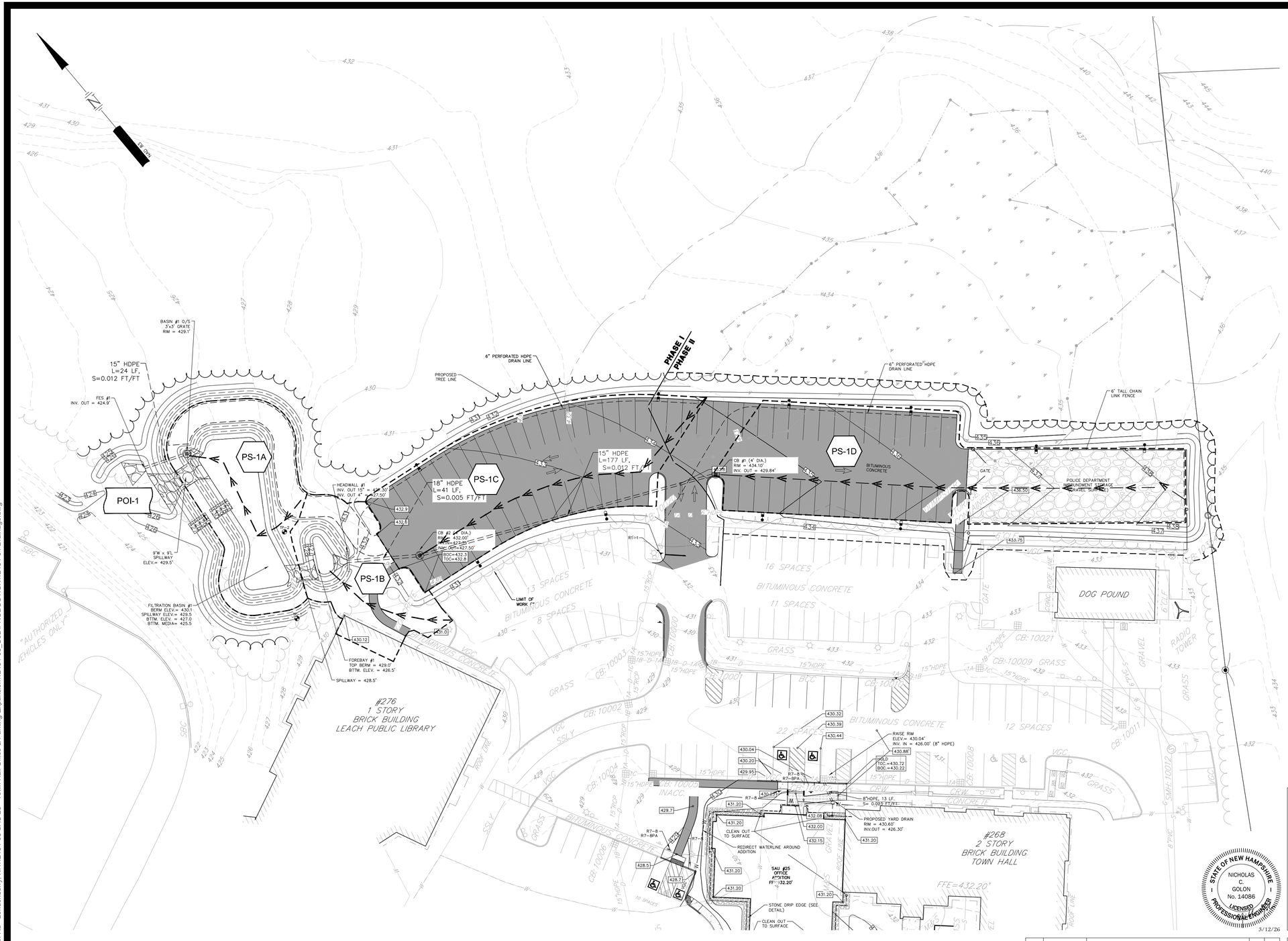
This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

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

FILE	DR	PS	CADFILE		
12434-04	CK	NG		12434-04 DRAINAGE	D-01

Mar 11, 2026 - 3:32pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-04 Drainage.dwg



LEGEND

- PROPERTY LINE
- LIMITS OF DRAINAGE SUBCATCHMENT
- SOIL GROUP BREAKLINE
- FLOW PATH (Tc LINE)
- REACH
- POI-1 — POINT OF INTEREST
- PS-1 — SUBCATCHMENT AREA
- PP-1 — POND, CULVERT, OR CATCH BASIN
- PR-1 — REACH

NOTES

1. PER NRCS WEB SOIL SURVEY THE ENTIRE SITE CONSISTS OF 446B SOILS.

POST-DEVELOPMENT SUBCATCHMENT AREAS	
PS-1A	7,254 SF.
PS-1B	4,949 SF.
PS-1C	11,926 SF.
PS-1D	14,578 SF.
TOTAL	38,707 SF.

SOIL LEGEND (PER USDA NRCS WEB SOIL SURVEY)			
SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP	DRAINAGE CLASS
446B	SCITUATE–NEWFIELDS COMPLEX 3% – 8% SLOPES, VERY STONY	B/C	MOD. WELL

HORIZONTAL SCALE 1"=20'
20 10 0 20

TAX MAP 9 LOT 45

POST-DEVELOPMENT DRAINAGE MAP

TOWN HALL OFFICE & PARKING EXPANSION

268B MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

PREPARED FOR

LONDONDERRY SAU 25

SCALE: 1"=30' **FEBRUARY 20, 2026**

STATE OF NEW HAMPSHIRE
NICHOLAS C. GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

REV	DATE	DESCRIPTION	DR	CK

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

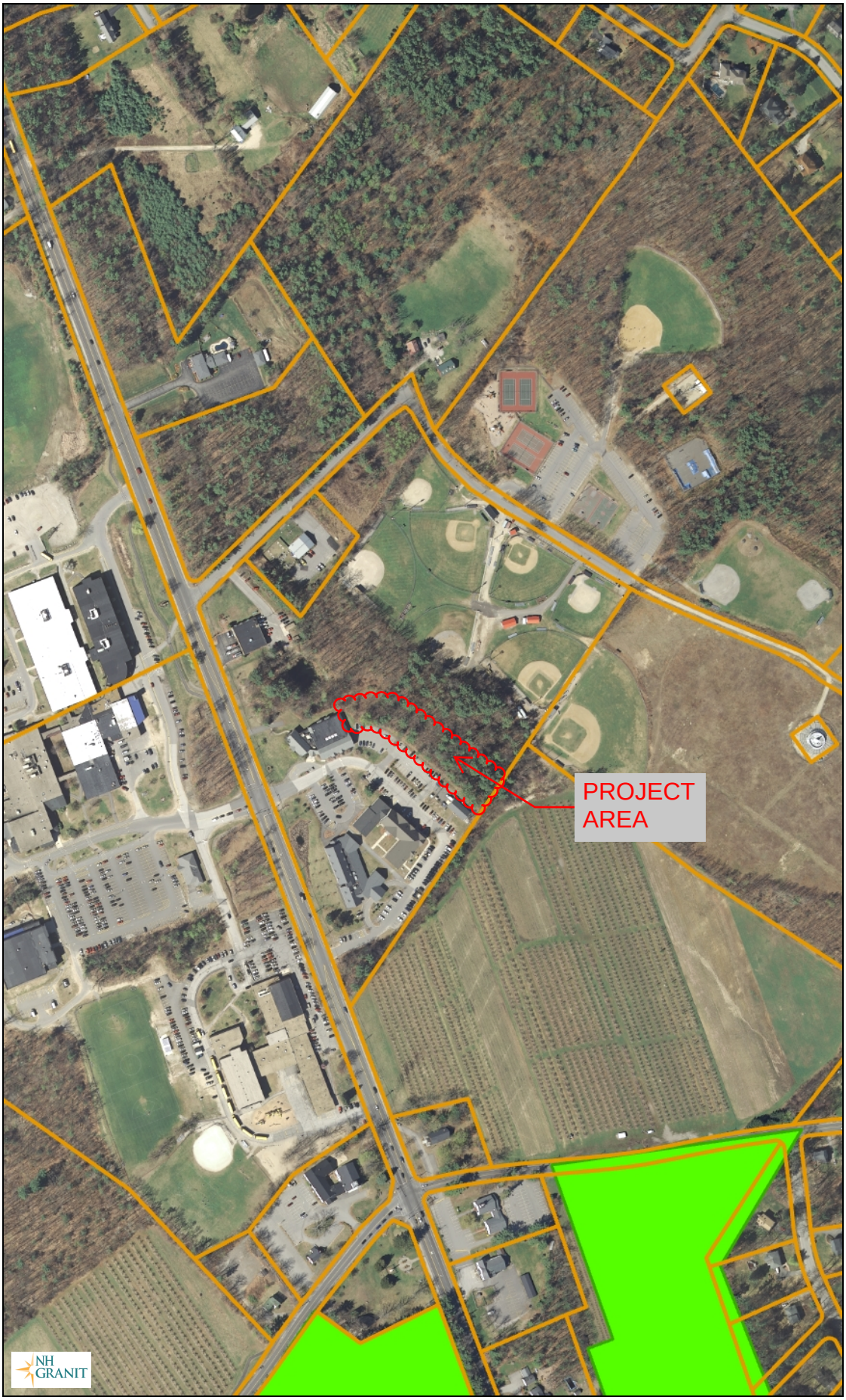
DIG SAFE
811 OR 1-888-DIG-SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

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

FILE	DR	PS	CADFILE		
12434-04	CK	NG	–	12434-04 DRAINAGE	D-02

Mar 11, 2026 - 3:34pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_CSD\PRODUCTION\12434-04 Drainage.dwg

Map by NH GRANIT



Legend

- Parcels
- Additional Lines
- State
- County
- City/Town
- Conservation and Public Lar
- World Imagery
- Low Resolution 15m Imager
- High Resolution 60cm Image
- High Resolution 30cm Image
- Citations
- 2.4m Resolution Metadata

Map Scale

1: 5,000

© NH GRANIT, www.granit.unh.edu

Map Generated: 2/26/2026

Notes

Aerial Overview



Application for a Conservation Overlay District Conditional Use Permit
Form A - For a Use permitted by Conditional Use Permit

Conditional Use permit is as part of a: ☒ Site Plan ❑ Subdivision

I. General Information:

A. Name of Project: TOWN HALL OFFICE & PARKING EXPANSION

B. Location of Project: 268B MAMMOTH ROAD (Street) | 9 (Map #) | 45 (Lot #)

C. Applicant:

Name: TOWN OF LONDONDERRY C/O SHAUN MULHOLLAND

Address: 268B MAMMOTH ROAD
LONDONDERRY, NH 03053

Phone: (603) 432-1100

Fax:

Signature:

II. Required Information:

- ■ Plans showing existing and proposed conditions.
- ■ Wetland delineation certified by a Certified Wetlands Scientist and mapped by a licensed land surveyor.
- ■ Areas on plans highlighted to show areas where conditional use permit is sought
- ■ Narrative description of project and conditional use permit request.
- ■ Criteria for conditional use permit described (see below).

III. Optional Information:

- ☒ Aerial Photographs
- ❑ Site Photographs

IV. Conditional Use Permit Criteria

Address, in the provided boxes, the following criteria in accordance with Section 2.6.3 of the Zoning Ordinance:

1. The proposed construction is essential to the productive use of land not within the CO District.

The growing needs of the town require an expansion to the town office and parking. The proposed construction impacts wetland and wetland buffers. The proposed construction is essential to meet parking requirements for the office expansion whereby meeting the growing needs of the public and residence of Londonderry.

2. Design and construction materials will be such as to minimize impact upon the wetlands and will include restoration of the site consistent with the permitted use.

The design of the parking minimizes impacts to the wetland by encroaching upon the edge of the wetland and not protruding or segmenting the wetland. Furthermore, the police impound area was designed narrower than the parking area to minimize impacts to the wet yet capitalize on the upland area behind the impound. A high visibility construction fence will delineate the fill limits. Two rows of silt sock erosion control will allow development and stabilization of embankments to happen while protecting the wetland. The temporary impacts from the erosion control will be removed upon completion of the project and stabilization of slopes.

3. There is no feasible alternative route on land controlled by the applicant that does not cross the CO District nor has less detrimental impact upon the wetlands. Nothing in this section shall limit the applicant from exploring alternatives with abutting property owners:

There is no feasible alternative to expand the parking that would not be a burden to those accessing town services.

4. Economic advantage is not the sole reason for the proposed location of the construction:

The impacts are resulting from parking construction. The location of the parking is primarily dictated by the need to be in close proximity of the building it serves and not an economic reason.

5. Square Footage of Wetland Impacts: 5,416 perm. 916 temp

6. Square footage of Buffer Impacts: 19,826

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

March 9, 2026

To: Ms Kristan Farr, Town Planner
Planning & Economic Development
268B Mammoth Road
Londonderry, NH 03053

From: TFMoran, Inc.
Nicholas Golon, P.E.

Re: Town Hall Office and Parking Expansion
Conditional Use Permit – CO District
268C Mammoth Road, Londonderry, NH
TFM Project No. 12434-04

Dear Ms Farr,

On behalf of our owner, the Town of Londonderry, and our client, Londonderry School District SAU#25, information pertaining to a conditional use permit for disturbance within the Conservation Overlay District (Londonderry Zoning Ordinance 4.6.1) is being provided for review. Although no formal permit is expected to be issued, this information has been provided to allow the Conservation Commission to make informed comments on the scope of the project as part of a courtesy review.

The Londonderry School District (SAU 25) is constructing an addition to the existing Londonderry Town Hall Office Building located at 268C Mammoth Road in Londonderry, NH as part of a phased construction project. In order to accommodate the operations and additional employees to be located on site, a total of 70 additional parking spaces are proposed, as is an expansion of the existing impound yard (approximately 5,500 sf. expansion) for the Londonderry Police Department. The Town administrative offices, Police Department, Library are currently located here, with the Fire Department located immediately adjacent. Phased construction is proposed to accommodate the project funding, with the first phase including construction of a portion of the parking lot (initially to be used as laydown area for construction materials) as well as the building to house the SAU 25 staff. Phase two improvements proposed to expand the parking lot and impound yard whereby the wetlands permit will be required. These expansions are imperative for the Town of Londonderry to provide adequate parking for the consolidation of the services at this location. The existing parking lot will be expanded to the east into a small, forested area to accommodate the parking lot expansion. Approximately 1 acre of tree cover will be removed. This forested block of land is surrounded by an apple orchard to the south, athletic fields to the east and the remaining area is developed.

Based on the Conservation Overlay District definition (4.4.1.2 A-4) all uplands with 50-feet of the delineated wetlands for this project are subject to the rules and restrictions of the Conservation Overlay District. Wetlands on the entire lot were delineated by a certified wetland scientist and a wetland functional assessment was completed to identify functionally significant wetlands within the project area. This document was used in the initial planning and layout of the project to ensure the more functionally significant wetlands are avoided to the extent practicable.

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

The principal functions supported by the wetland resource area (Wetland 1) within the project area are shown in Table 1 and further described below.

Table 1: Wetland Functional Assessment - Londonderry SAU							
	WETLAND ID#						
Function/Value	WET-1						
Groundwater Recharge/Discharge							
Floodflow Alteration							
Fish & Shellfish Habitat							
Sediment/toxicant Retention							
Nutrient Removal Attenuation							
Production Export							
Sediment/Shoreline Stabilization							
Wildlife Habitat							
Recreation							
Education/Scientific Value	P						
Uniqueness/Heritage							
Visual Quality/Aesthetics							
Threatened/Endangered Spp	P						
Ecological Integrity							
Vernal Pool							
P = Principle Function							
X = Supporting Function							

Education/Scientific Value
Given the proximity of this wetland to local schools and location on public land with safe and available off-street parking, this wetland has educational potential for learning about environmental as it relates to wetlands or wildlife.

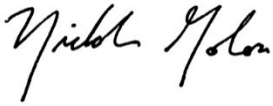
Threatened and Endangered Species
An ecological review has been conducted for possible endangered or threatened species in the vicinity of this project site. The report (DCT26-0429) has identified a State Threatened species (Spotted Turtle) may exist in the vicinity of the project area and will be further evaluated to determine if this project will have adverse impact to the species or its habitat. No indication of this species was observed during onsite investigations however tracks of gray squirrel and white tail deer were observed in the snow during a February visit to the site.

Conditional Use Permits may be granted provided the proposed buffer impacts meet the criteria in accordance with Section 4.6.1.4.B.2 of the zoning ordinance. The design of the parking minimizes impacts to the wetland by encroaching upon the edge of the wetland and not protruding or segmenting the wetland. Furthermore, the police impound area was designed narrower than the parking area to minimize impacts to the wet yet capitalize on the upland area behind the impound. A high visibility construction fence will delineate the fill limits. Two rows of silt sock erosion control will allow development and stabilization of embankments to happen while protecting the wetland. The temporary impacts from the erosion control will be removed upon completion of the project and stabilization of slopes.

An application to fill wetlands has been submitted to the NH Department of Environmental Services Wetlands Bureau. Wetland impacts total 5,416 sf. of permanent filling and 916 s.f of temporary construction impacts. Total impacts to the Conservation Overlay district 50-foot buffer is 19,826 s.f. As part of this review the NH Department of Fish and Game, and the U.S. Army Corps of Engineers and US Environmental Protection Agency will have the opportunity to review and comment on this project.

Please consider this request for relief from the Conservation Overlay District requirements. If you find you have concerns or need additional information regarding this request, please contact me at 603-472-4488 or ngolon@tfmoran.com.

Sincerely,
TFMoran, Inc.



Nicholas Golon, PE
Civil Department Manager/Principal

TOWN HALL OFFICE & PARKING EXPANSION

268B MAMMOTH ROAD
LONDONDERRY, NEW HAMPSHIRE

GENERAL INFORMATION

OWNER
TAX MAP 9 LOT 45
TOWN OF LONDONDERRY
268B MAMMOTH ROAD
LONDONDERRY, NH 03053

APPLICANT
TAX MAP 9 LOT 45
TOWN OF LONDONDERRY
268C MAMMOTH ROAD
LONDONDERRY, NH 03053

PREPARED FOR
LONDONDERRY SCHOOL DISTRICT
6A KITTY HAWK LANDING
LONDONDERRY, NH 03053

RESOURCE LIST

TOWN MANAGER
268B MAMMOTH ROAD
LONDONDERRY, NH 03053
(603) 432-1100 EXT. 151
SHAUN MULHOLLAND

PLANNING & ECONOMIC DEVELOPMENT
268B MAMMOTH ROAD
LONDONDERRY, NH 03053
(603) 432-1100 EXT. 149
KELLIE CARON, ASST. TOWN MANAGER, DIRECTOR OF ECONOMIC DEVELOPMENT

BUILDING & ZONING ENFORCEMENT
268B MAMMOTH ROAD
LONDONDERRY, NH 03053
(603) 432-1100 EXT. 115
NICK CODNER, CHIEF BUILDING INSPECTOR
GLENN APRILE, CODE ENFORCEMENT OFFICER

HEALTH DIVISION
268B MAMMOTH ROAD
LONDONDERRY, NH 03053
(603) 432-1100 EXT. 115

PUBLIC WORKS & ENGINEERING
268B MAMMOTH ROAD
LONDONDERRY, NH 03053
(603) 432-1100 EXT. 139
DAVE WHOLLEY, DIRECTOR PUBLIC WORKS & MUNICIPAL FACILITIES
JOHN TROTTIER, DIRECTOR OF ENGINEERING & ENVIRONMENTAL SERVICES

HIGHWAY DIVISION
268B MAMMOTH ROAD
LONDONDERRY, NH 03053
(603) 432-1100 EXT. 152
DAVE WHOLLEY, DIRECTOR PUBLIC WORKS & MUNICIPAL FACILITIES

POLICE DEPARTMENT
268 MAMMOTH ROAD
LONDONDERRY, NH 03053
(603) 432-1118
KIM ALAN BERNARD, CHIEF OF POLICE

FIRE DEPARTMENT
280 MAMMOTH ROAD
LONDONDERRY, NH 03053
(603) 432-1124
PHIL LeBLANC, ACTING CHIEF

ASSOCIATED PROFESSIONALS

ARCHITECT
MARINACE ARCHITECTS
BOX 429
NEW HAMPTON, NH
PAUL MARINACE

CIVIL ENGINEER
TFMORAN, INC.
48 CONSTITUTION DRIVE
BEDFORD, NH 03110
NICHOLAS GOLON, PE, PRINCIPAL

WETLAND SCIENTIST
TFMORAN, INC.
48 CONSTITUTION DRIVE
BEDFORD, NH 03110
JASON AUBE, CWS
CHRISTOPHER K. DANFORTH, CWS

ABUTTERS

TAX MAP 9 LOT 41-1-1
GREELEY-PARMENTER-HARRINGTON AMERICAN LEGION, INC. POST #27
PO BOX 631
LONDONDERRY, NH 03053

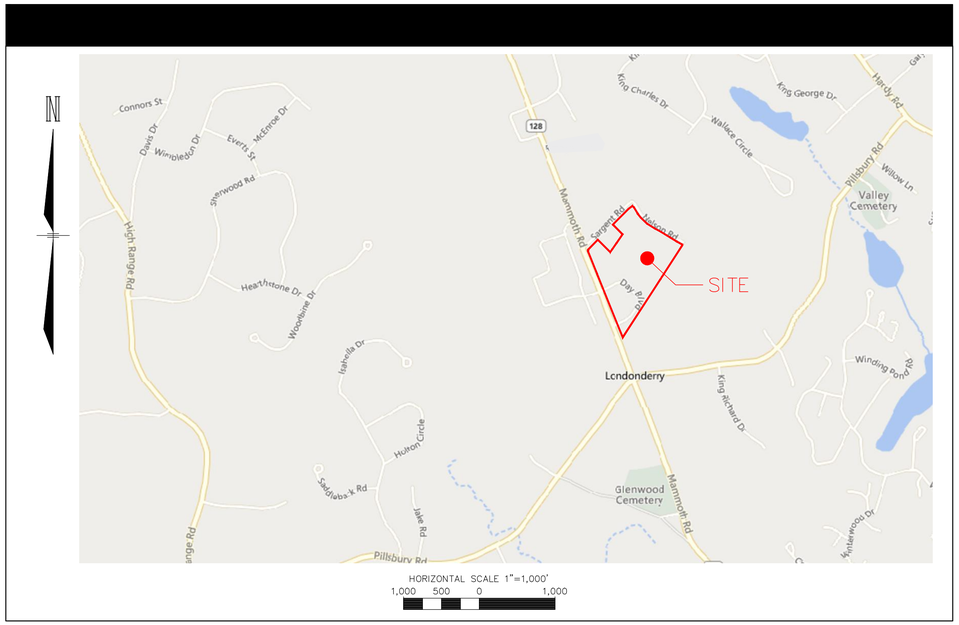
TAX MAP 9 LOT 41-2
E+C PEABODY LLC
15 BIRCH STREET
DERRY, NH 03038

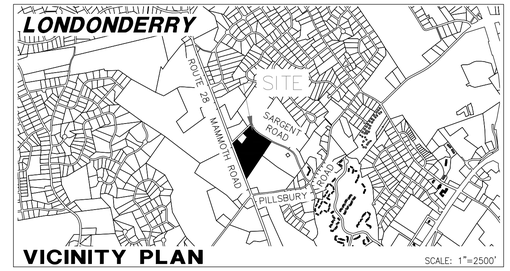
TAX MAP 9 LOT 42
CEDAR CREST DEVELOPMENT OF LONDONDERRY, LLC
25 BUTTRICK ROAD, UNIT 1A
LONDONDERRY, NH 03053

TAX MAP 9 LOT 49, LOT 49-1 & LOT 55A
TOWN OF LONDONDERRY
268B MAMMOTH ROAD
LONDONDERRY, NH 03053

TAX MAP 9 LOT 55
US OF AMERICA FED AVIAT ADMIN
12 NE EXECUTIVE PARK
BURLINGTON, MA 01803

TAX MAP 9 LOT 43 & LOT 48
LONDONDERRY SCHOOL DISTRICT
6A KITTY HAWK LANDING
LONDONDERRY, NH 03053



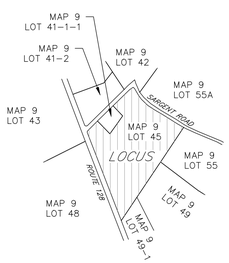


INDEX OF SHEETS

SHEET	SHEET TITLE
C-01	COVER
C-02	NOTES
SHEET 1 OF 1	EXISTING CONDITIONS
C-03	SITE PREPARATION & DEMOLITION PLAN (PHASE I)
C-04	SITE LAYOUT PLAN (PHASE I)
C-05	GRADING, DRAINAGE & UTILITY PLAN (PHASE I)
C-06	SITE PREPARATION & DEMOLITION PLAN (PHASE II)
C-07	SITE LAYOUT PLAN (PHASE II)
C-08	GRADING, DRAINAGE & UTILITY PLAN (PHASE II)
C-09	LANDSCAPE PLAN
D-01	DETAILS
D-02	DETAILS
D-03	DETAILS
D-04	DETAILS
D-05	DETAILS
D-06	DETAILS
D-07	DETAILS
D-08	DETAILS
REFERENCE PLANS BY ASSOCIATED PROFESSIONALS	
L-01	LIGHTING PLAN
A2	ARCHITECTURAL ELEVATION PLAN

PERMITS/APPROVALS

	NUMBER	APPROVED	EXPIRES
EPA NPDES ENOI CGP & SWPPP	–	–	–
NHDES WETLAND PERMIT (PHASE 2)	–	–	–



TAX MAP SKETCH
1" = 1,000'

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

DIG SAFE
CALL DIG-SAFE 811 OR 1-888-DIG-SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
NICHOLAS C. GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

TAX MAP 9 LOT 45

COVER SHEET

TOWN HALL OFFICE & PARKING EXPANSION
268C MAMMOTH ROAD
OWNED BY
TOWN OF LONDONDERRY
268B MAMMOTH ROAD, LONDONDERRY, NH
PREPARED FOR
LONDONDERRY SAU 25
6A KITTY HAWK LANDING, LONDONDERRY, NH
FEBRUARY 20, 2026

REV	DATE	DESCRIPTION	DR	CK
1	3/12/2026	REVISIONS PER TOWN COMMENTS	PS	NG

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

FILE	DR	CK	CADFILE		
12434-04				12434-03_COVER & DETAILS	C-01

Mar 12, 2026 - 2:46pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-03_Cover & Details.dwg

CONSTRUCTION SEQUENCE NOTES

PHASE I (ALL WORK EXCEPT LISTED BELOW IN PHASE II)

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

   AN AREA SHALL BE CONSIDERED STABILIZED IF:
   A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED, OR
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
4. INSTALL PHASE I UNDERGROUND UTILITIES.
5. CONSTRUCT BUILDINGS.

PHASE II (WETLAND IMPACT, SOUTHERLY PORTION PARKING, AND IMPOUND AREA)

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

   AN AREA SHALL BE CONSIDERED STABILIZED IF:
   A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED, OR
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
9. INSTALL PHASE II UNDERGROUND UTILITIES.
10. CONSTRUCT PARKING AND FINISH GRADE SITE ACCORDING TO PLAN. ALL SLOPES SHALL BE STABILIZED IMMEDIATELY AFTER GRADING.
11. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENTATION CONTROL MEASURES PERIODICALLY AND IMMEDIATELY AFTER STORM EVENTS.
12. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
13. REMOVE TEMPORARY EROSION CONTROL MEASURES ONCE ALL AREAS ARE STABILIZED WITH A SUITABLE STAND OF GRASS, PAVEMENT OR COMPACTED GRAVELS.

GENERAL NOTES

1. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE AS NECESSARY WITH THE UTILITY COMPANIES OF SAID UTILITIES. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
2. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY HIS WORK AT ALL TIMES.
3. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
4. EROSION CONTROL SYSTEMS SHALL BE INSTALLED AND MAINTAINED FOR THE DURATION OF THE PROJECT IN ACCORDANCE WITH APPLICABLE NHDES STANDARDS. THESE DETAILS SERVE AS A GUIDE ONLY.
5. REFER TO THE TOWN STANDARD DETAILS, LATEST REVISION, FOR ADDITIONAL INFORMATION AND CRITERIA.
6. THE CONTRACTOR SHALL STABILIZE ALL DITCHES, SWALES, AND PONDS PRIOR TO DIRECTING FLOW TO THEM.
7. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION.

WINTER CONSTRUCTION

IN ADDITION TO THE OTHER NOTES CONTAINED ON THIS PLAN, THE FOLLOWING MUST BE IMPLEMENTED:

1. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED AS SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.
2. AN AREA WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE MUST BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIER.
3. TEMPORARY MULCH MUST BE APPLIED WITHIN 7 DAYS OF SOIL EXPOSURE OR PRIOR TO ANY STORM EVENT, BUT AFTER EVERY WORKDAY IN AREAS WITHIN 100 FEET FROM A PROTECTED NATURAL RESOURCE.
4. AREAS THAT HAVE BEEN BROUGHT TO FINAL GRADE MUST BE PERMANENTLY MULCHED THE SAME DAY.
5. IN THE EVENT OF A SNOWFALL GREATER THAN 1 INCH (FRESH OR CUMULATIVE), THE SNOW SHALL BE REMOVED FROM THE AREAS DUE TO BE SEEDED AND MULCHED.
6. LOAM SHALL BE FREE OF FROZEN CLUMPS BEFORE IT IS APPLIED.
7. A DITCH THAT WILL BE CONSTRUCTED DURING THE WINTER MUST BE STABILIZED WITH RIPRAP.

OVERWINTER STABILIZATION

1. PERMANENT STABILIZATION CONSISTS OF AT LEAST 85% VEGETATION, PAVEMENT/GRAVEL BASE OR RIPRAP.
2. ALL PROPOSED VEGETATED AREAS THAT DO NO EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
3. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
4. AFTER NOVEMBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OR 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.
5. DO NOT EXPOSE SLOPES OR LEAVE SLOPES EXPOSED OVER THE WINTER OR FOR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS FULLY PROTECTED WITH MULCH.
6. APPLY HAY MULCH AT TWICE THE STANDARD RATE (150 LBS. PER 1,000 SF). THE MULCH MUST BE THICK ENOUGH SUCH THAT THE GROUND SURFACE WILL NOT BE VISIBLE AND MUST BE ANCHORED.
7. USE MULCH AND MULCH NETTING OR AN EROSION CONTROL MULCH BLANKET OR MIX FOR ALL SLOPES GREATER THAN 8% OR OTHER AREAS EXPOSED TO DIRECT WIND.
8. INSTALL AN EROSION CONTROL BLANKET IN ALL DRAINAGE WAYS (BOTTOM AND SIDES) WITH A SLOPE GREATER THAN 3%.
9. SEE THE VEGETATION MEASURES FOR MORE INFORMATION ON SEEDING DATES AND TYPES.

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

GENERAL NOTES

1. THESE PLANS WERE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. TFMORAN, INC. ASSUMES NO LIABILITY AS A RESULT OF ANY CHANGES OR NON-CONFORMANCE WITH THESE PLANS EXCEPT UPON THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD.
2. ALL IMPROVEMENTS SHOWN ON THE SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE LONDONDERRY PLANNING BOARD.
3. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE TOWN OF LONDONDERRY, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. ALL WORK TO CONFORM TO TOWN OF LONDONDERRY DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS. ALL WORK WITHIN THE RIGHT-OF-WAY OF THE TOWN AND/OR STATE SHALL COMPLY WITH APPLICABLE STANDARDS. COORDINATE ALL WORK WITHIN THE RIGHT-OF-WAY WITH APPROPRIATE TOWN, COUNTY, AND/OR STATE AGENCY.
4. THE SITE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH APPLICABLE SECTIONS OF ENV-WQ 1500. THE SITE CONTRACTOR SHALL NOTIFY THE ENGINEER IN ADVANCE OF CONSTRUCTION OF EACH STORMWATER FACILITY TO COORDINATE REQUIRED INSPECTIONS. THE CONTRACTOR SHALL TAKE PROGRESS PHOTOS DURING CONSTRUCTION OF ALL STORMWATER DRAINAGE COMPONENTS AND SEND TO THE ENGINEER.
5. SEE GRADING PLANS FOR THE HORIZONTAL AND VERTICAL DATUM.
6. SEE GRADING PLANS FOR BENCHMARK INFORMATION. VERIFY TBM ELEVATIONS PRIOR TO CONSTRUCTION.
7. CONTACT EASEMENT OWNERS PRIOR TO COMMENCING ANY WORK WITHIN THE EASEMENTS.
8. PRIOR TO COMMENCING ANY SITE WORK, ALL LIMITS OF WORK SHALL BE CLEARLY MARKED IN THE FIELD.
9. SITE WORK SHALL BE CONSTRUCTED FROM A COMPLETE SET OF PLANS, NOT ALL FEATURES ARE DETAILED ON EVERY PLAN. THE ENGINEER IS TO BE NOTIFIED OF ANY CONFLICT WITHIN THIS PLAN SET.
10. TFMORAN, INC. ASSUMES NO LIABILITY FOR WORK PERFORMED WITHOUT AN ACCEPTABLE PROGRAM OF TESTING AND INSPECTION AS APPROVED BY THE ENGINEER OF RECORD.
11. TEMPORARY FENCING SHALL BE PROVIDED AND COVERED WITH A FABRIC MATERIAL TO CONTROL DUST MITIGATION.
12. ALL DEMOLITION SHALL INSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKWAYS, AND ANY OTHER ADJACENT OPERATING FACILITIES. PRIOR WRITTEN PERMISSION FROM THE OWNER/DEVELOPER AND LOCAL PERMITTING AUTHORITY IS REQUIRED IF CLOSURE/OBSTRUCTIONS TO ROADS, STREET, WALKWAYS, AND OTHERS IS DEEMED NECESSARY. CONTRACTOR TO PROVIDE ALTERNATE ROUTES AROUND CLOSURES/OBSTRUCTIONS PER LOCAL/STATE/FEDERAL REGULATIONS.
13. REFER TO ARCHITECTURAL PLANS FOR LAYOUT OF BUILDING FOUNDATIONS AND CONCRETE ELEMENTS WHICH ABUT THE BUILDING SUCH AS STAIRS, SIDEWALKS, LOADING DOCK RAMPS, PADS, AND COMPACTOR PADS. DO NOT USE SITE PLANS FOR LAYOUT OF FOUNDATIONS.
14. IN THE EVENT OF A CONFLICT BETWEEN PLANS, SPECIFICATIONS, AND DETAILS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
15. IF CONDITIONS AT THE SITE ARE DIFFERENT THAN SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH THE AFFECTED WORK.
16. CONTRACTOR'S GENERAL RESPONSIBILITIES:
   A. BID AND PERFORM THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES, SPECIFICATIONS, REGULATIONS, AND STANDARDS AND CONDITIONS OF ALL PROJECT-SPECIFIC PERMITS AND APPROVALS AS LISTED ON THE COVER SHEET TO THESE PLANS OR OTHERWISE REQUIRED.
   B. NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES OF PROPOSED LAYOUT AND/OR EXISTING FEATURES.
   C. EMPLOY A LICENSED SURVEYOR TO DETERMINE ALL LINES AND GRADES AND LAYOUT OF SITE ELEMENTS AND BUILDINGS.
   D. THE CONTRACTOR SHALL BE RESPONSIBLE TO BECOME FAMILIAR WITH THE SITE AND ALL SURROUNDING CONDITIONS. THE CONTRACTOR SHALL ADVISE THE APPROPRIATE AUTHORITY OF INTENTIONS AT LEAST 48 HOURS IN ADVANCE.
   E. TAKE APPROPRIATE MEASURES TO REDUCE, TO THE FULLEST EXTENT POSSIBLE, NOISE, DUST, AND UNSIGHTLY DEBRIS. CONSTRUCTION ACTIVITIES SHALL BE CARRIED IN ACCORDANCE WITH THE APPLICABLE MUNICIPAL ORDINANCES AND REGULATIONS OF THE TOWN OF LONDONDERRY, NEW HAMPSHIRE.
   F. MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
   G. IN ACCORDANCE WITH RSA 430:53 AND AGR 3800, THE CONTRACTOR SHALL NOT TRANSPORT INVASIVE SPECIES OFF THE PROPERTY, AND SHALL DISPOSE OF INVASIVE SPECIES ON-SITE IN A LEGAL MANNER.
   H. COORDINATE WITH ALL UTILITY COMPANIES AND CONTACT DIGSAFE (811 OR 888-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION.
   I. PROTECT NEW AND EXISTING BURIED UTILITIES DURING INSTALLATION OF ALL SITE ELEMENTS. DAMAGED UTILITIES SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
   J. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY TFMORAN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE US OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
   K. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWING AND/OR SPECIFICATION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATIONS.
   L. VERIFY LAYOUT OF PROPOSED BUILDING FOUNDATIONS WITH ARCHITECT AND THAT PROPOSED FOUNDATION MEETS PROPERTY LINE AND/OR WETLAND SETBACKS PRIOR TO COMMENCING ANY FOUNDATION CONSTRUCTION.
   M. PROVIDE AN AS-BUILT PLAN AT THE COMPLETION OF THE PROJECT TO THE PLANNING DIRECTOR AND PER TOWN REGULATIONS.
   N. IF ANY DEVIATIONS FROM THE APPROVED PLANS AND SPECIFICATIONS HAVE BEEN MADE, THE SITE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS STAMPED BY A LICENSED SURVEYOR OR QUALIFIED ENGINEER ALONG WITH A LETTER STAMPED BY A QUALIFIED ENGINEER DESCRIBING ALL SUCH DEVIATIONS, AND BEAR ALL COSTS FOR PREPARING AND FILING ANY NEW PERMITS OR PERMIT AMENDMENTS THAT MAY BE REQUIRED.
   O. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO TOWN OF LONDONDERRY SITE PLAN REGULATIONS AND THE LATEST EDITION OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION.
   P. IN ACCORDANCE WITH SECTION 6.01 OF THE LONDONDERRY SITE PLAN REGULATIONS AND RSA § 676:13, ALL IMPROVEMENTS SPECIFIED ON THESE SITE PLANS SHALL BE CONSTRUCTED, COMPLETED, AND INSPECTED AND APPROVED BY THE TOWN OF LONDONDERRY PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

EROSION CONTROL NOTES

DURING CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED:

1. INSTALLATION OF SILTATION FENCES AND OTHER EROSION CONTROL MEASURES SHALL BE COMPLETED PRIOR TO THE START OF SITE WORK IN ANY GIVEN AREA. PREFABRICATED SILTATION FENCES SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
2. SILTATION FENCES AND OTHER EROSION CONTROL MEASURES SHALL BE KEPT CLEAN DURING CONSTRUCTION AND REMOVED WHEN ALL SLOPES HAVE A VEGETATIVE COVER OF GREATER THAN 85%. EROSION CONTROL MEASURES SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EVERY RAINFALL.
3. EXISTING VEGETATION IS TO REMAIN UNDISTURBED WHEREVER POSSIBLE.
4. THE AREA OF LAND EXPOSED AND THE TIME OF EXPOSURE SHALL BE MINIMIZED. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 72 HOURS AFTER FINAL GRADING.
5. ALL DISTURBED AREAS SHALL HAVE A MINIMUM OF 4" OF LOAM. ACCEPTABLE SEED MIXES ARE AS FOLLOWS:

   TYPICAL LAWN MIX (MIN. 200 LBS/ACRE):
   33% CREEPING RED FESCUE (MIN. 66 LBS/ACRE)
   42% PERENNIAL RYEGRASS (MIN. 84 LBS/ACRE)
   21% KENTUCKY BLUEGRASS (MIN. 42 LBS/ACRE)
   4% REDTOP (MIN. 8 LBS/ACRE)

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

   WILDFLOWER SLOPE (NHDOT TYPE 45) MIX 3:1 OR GREATER SLOPES (MIN. 160 LBS/ACRE):
   38% CREEPING RED FESCUE (MIN. 60 LBS/ACRE)
   32% PERENNIAL RYEGRASS (MIN. 51 LBS/ACRE)
   5% REDTOP (MIN. 8 LBS/ACRE)
   5% ALSIKE CLOVER (MIN. 8 LBS/ACRE)
   5% BIRDSFOOT TREFOIL (MIN. 8 LBS/ACRE)
   3% LANCE-LEAF COREOPSIS (MIN. 3 LBS/ACRE)
   3% OXEYE DAISY (MIN. 3 LBS/ACRE)
   3% BUTTERFLY WEED (MIN. 3 LBS/ACRE)
   3% BLACKEYED SUSAN (MIN. 3 LBS/ACRE)
   3% WILD LUPINE (MIN. 3 LBS/ACRE)

   GENERAL SLOPE (NHDOT TYPE 44) MIX 3:1 OR GREATER SLOPES (MIN. 160 LBS/ACRE):
   44% CREEPING RED FESCUE (MIN. 70 LBS/ACRE)
   38% PERENNIAL RYEGRASS (MIN. 60 LBS/ACRE)
   6% REDTOP (MIN. 10 LBS/ACRE)
   6% ALSIKE CLOVER (MIN. 10 LBS/ACRE)
   6% BIRDSFOOT TREFOIL (MIN. 10 LBS/ACRE)

   A. PLACING LOAM ON SITE
      a. ALL SUBGRADE ELEVATIONS SHOULD BE UNIFORMLY GRADED TO RECEIVE LOAM AND SHALL BE INSPECTED AND APPROVED BY THE GENERAL CONTRACTOR PRIOR TO PLACEMENT OF LOAM.
      a. PLACE LOAM TO FORM A MINIMUM DEPTH OF 4" WHEN ROLLED, UNLESS OTHERWISE INDICATED.
      b. ALL DEPRESSIONS EXPOSED DURING THE ROLLING SHALL BE FILLED WITH ADDITIONAL LOAM.
   B. SEED BED PREPARATION
      AFTER FINISH GRADING AND JUST BEFORE SEEDING, THE AREAS TO BE SEEDED SHALL BE LOOSENED TO PROVIDE A ROUGH, FIRM BUT FINELY PULVERIZED SEEDBED. THE INTENT IS A TEXTURE CAPABLE OF RETAINING WATER, SEED AND FERTILIZER WHILE REMAINING STABLE AND ALLOWING SEED TIME TO GERMINATE. SEED SHALL BE APPLIED TO THE CONDITIONED SEEDBED NOT MORE THAN 48 HOURS AFTER THE SEEDBED HAS BEEN PREPARED.
6. LIME AND FERTILIZER SHALL BE INCORPORATED INTO THE SOIL PRIOR TO OR AT THE TIME OF AT THE TIME OF SEEDING. A MINIMUM OF 2 TONS PER ACRE OF AGRICULTURAL LIMESTONE AND 500 LBS. PER ACRE OF 10-20-20 FERTILIZER SHALL BE APPLIED. SEEDING PRACTICES SHALL COMPLY WITH LOCAL USDA SOIL CONSERVATION SERVICES RECOMMENDATIONS.
7. HAY MULCH OR JUTE MATTING SHALL BE USED WHERE INDICATED ON THE PLANS. A MINIMUM OF 1.5 TONS OF MULCH PER ACRE SHALL BE APPLIED. MULCH SHALL BE ANCHORED IN PLACE WHERE NECESSARY. JUTE MATTING SHALL BE LAID IN THE DIRECTION OF RUNOFF FLOW AND APPLIED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
8. PERMANENT OR TEMPORARY COVER MUST BE IN PLACE BEFORE THE GROWING SEASON ENDS. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS AREA NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 15 TO SEPTEMBER 15. NO DISTURBED AREA SHALL BE LEFT EXPOSED DURING WINTER MONTHS.
9. WATER SHALL BE USED FOR DUST CONTROL IN APPROPRIATE AREAS.

STOCKPILE NOTES

1. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CONCENTRATED FLOWS OF STORMWATER, DRAINAGE COURSES AND INLETS.
2. PROTECT ALL STOCKPILES FROM STORMWATER RUN-ON USING TEMPORARY PERIMETER MEASURES SUCH AS DIVERSIONS, BERMS, SANDBAGS OR OTHER APPROVED PRACTICES.
3. STOCKPILES SHOULD BE SURROUNDED BY SEDIMENT BARRIERS, SUCH AS SILT FENCE OR SILT SOCK, TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.
4. IMPLEMENT WIND EROSION CONTROL PRACTICES AS APPROPRIATE ON ALL STOCKPILED MATERIAL.
5. PLACE BAGGED MATERIALS ON PALLETS AND UNDER COVER.
6. INACTIVE STOCKPILES
   a. INACTIVE SOIL STOCKPILES sHOULD BE COVERED WITH ANCHORED TARPS OR PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY SEED AND MULCH OR OTHER TEMPORARY PRACTICE) AND TEMPORARY PERIMETER SEDIMENT BARRIERS AT ALL TIMES.
   b. INACTIVE STOCKPILES OF CONCRETE RUBBLE, ASPHALT CONCRETE RUBBLE, AGGREGATE MATERIALS AND OTHER SIMILAR MATERIALS SHOULD BE PROTECTED WITH TEMPORARY SEDIMENT PERIMETER BARRIERS AT ALL TIMES. IF THE MATERIALS ARE A SOURCE OF DUST, THEY SHOULD ALSO BE COVERED.
7. ACTIVE STOCKPILES
   a. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY LINEAR SEDIMENT BARRIERS PRIOR TO THE ONSET OF PRECIPITATION. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.
   b. WHEN A STORM EVENT IS PREDICTED, STOCKPILES SHOULD BE PROTECTED WITH AN ANCHORED PROTECTIVE COVERING.

GRADING & DRAINAGE NOTES

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK THE ACCURACY OF THE TOPOGRAPHY AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO ANY EARTHWORK BEING PERFORMED ON THE SITE. NO CLAIM FOR EXTRA WORK WILL BE CONSIDERED FOR PAYMENT AFTER EARTHWORK HAS COMMENCED.
2. COORDINATE WITH STRUCTURAL PLANS FOR SITE PREPARATION AND OTHER BUILDING INFORMATION.
3. COORDINATE WITH ARCHITECTURAL PLANS FOR DETAILED GRADING AT BUILDING, AND SIZE AND LOCATION OF ALL BUILDING SERVICES.
4. COORDINATE WITH MECHANICAL AND PLUMBING PLANS FOR ROOF DRAIN INFORMATION.
5. LIMITS OF WORK ARE SHOWN AS APPROXIMATE. THE CONTRACTOR SHALL COORDINATE ALL WORK TO PROVIDE SMOOTH TRANSITIONS. THIS INCLUDES GRADING, PAVEMENT, CURBING, SIDEWALKS, AND ALIGNMENTS.
6. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE, RAMPS, AND LOADING AREAS.
7. THE SITE SHALL BE GRADED SO ALL FINISHED PAVEMENT HAS POSITIVE DRAINAGE AND SHALL NOT POND WATER DEEPER THAN 1/4" FOR A PERIOD OF MORE THAN 15 MINUTES AFTER FLOODING.
8. ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.
9. ALL SIDEWALK AND OTHER CURB REVEALS SHALL BE 6" WITH A TOLERANCE OF PLUS OR MINUS 3/8". WHERE SIDEWALK IS TO BE FLUSH, THE PAVEMENT REVEAL SHALL BE 1/4" WITH A TOLERANCE OF 1/8".
10. THE FINISHED GRADE AT BOTTOM OF ALL ACCESSIBLE RAMPS SHALL BE FLUSH WITH PAVEMENT WITH A TOLERANCE OF PLUS OR MINUS 1/4".
11. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE PRIOR TO INSTALLATION OF FINISHED PAVEMENT.
12. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS AND SHALL MEET LOCAL STANDARDS AND THE REQUIREMENTS OF THE LATEST NHDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE CONSTRUCTION AND THE NHDOT STANDARD STRUCTURE DRAWINGS UNLESS OTHERWISE NOTED.
13. STORMWATER DRAINAGE SYSTEM SHALL BE CONSTRUCTED TO LINE AND GRADE AS SHOWN ON THE PLANS. CONSTRUCTION METHODS SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS, SECTION 603. CATCH BASINS AND DRAIN MANHOLES SHALL CONFORM TO SECTION 604. ALL CATCH BASIN GRATES SHALL BE TYPE B AND CONFORM TO NHDOT STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
14. NO FILL SHALL BE PLACED IN ANY WETLAND AREA WITHOUT A PERMIT.
15. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
16. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED, FERTILIZER, AND MULCH.
17. DENSITY REQUIREMENTS:

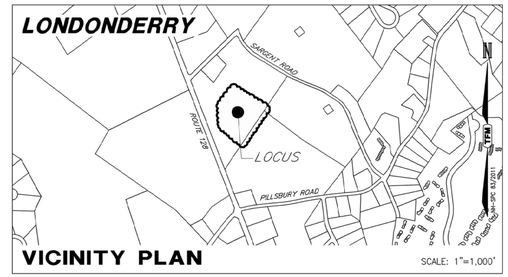
MINIMUM DENSITY*	LOCATION
95%	BELOW PAVED OR CONCRETE AREAS
95%	TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL
90%	BELOW LOAM AND SEED AREAS

*ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM D-6938.

UTILITY NOTES

1. LENGTH OF PIPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
2. ALL PROPOSED UTILITY WORK, INCLUDING MATERIAL, INSTALLATION, TERMINATION, EXCAVATION, BEDDING, BACKFILL, COMPACTION, TESTING, CONNECTIONS, AND CONSTRUCTION SHALL BE COORDINATED WITH AND COMPLETED IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS, CODES, AND STANDARDS OF ALL CORRESPONDING UTILITY ENTITIES AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIGSAFE" (811) AT LEAST 72 HOURS BEFORE DIGGING.
4. COORDINATE ALL WORK ADJACENT TO PROPOSED BUILDINGS WITH ARCHITECTURAL BUILDING DRAWINGS. CONFIRM UTILITY PENETRATIONS AND INVERT ELEVATIONS ARE COORDINATED PRIOR TO INSTALLATION.
5. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE AS NECESSARY WITH THE UTILITY COMPANIES OF SAID UTILITIES. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
6. THE EXACT LOCATION OF NEW UTILITY CONNECTIONS SHALL BE DETERMINED BY THE CONTRACTOR IN COORDINATION WITH UTILITY COMPANY, COUNTY AGENCY, AND/OR PRIVATE UTILITY COMPANY.
7. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER THE UTILITY INSTALLATION COMPLETE AND OPERATIONAL.
8. ALL UTILITY COMPANIES REQUIRE INDIVIDUAL CONDUITS. CONTRACTOR TO COORDINATE WITH TELEPHONE, CABLE, AND ELECTRIC COMPANIES REGARDING NUMBER, SIZE, AND TYPE OF CONDUITS REQUIRED PRIOR TO INSTALLATION OF ANY CONDUIT.
9. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING TO





NOTES

1. OWNER OF RECORD: TOWN OF LONDONDERRY
   268 MAMMOTH ROAD
   LONDONDERRY, NEW HAMPSHIRE
   DEED REFERENCE: BOOK 1866, PAGE 409
   AREA: 22± ACRES
2. 9–45 INDICATES TAX MAP AND LOT NUMBER.
3. THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS PRESENT AT THE TIME OF THE FIELD SURVEY FOR ASSESSORS MAP 9 LOT 45, SITUATED ON THE EASTERLY SIDE OF MAMMOTH ROAD IN THE TOWN OF LONDONDERRY, NEW HAMPSHIRE AS SHOWN HEREON AND NO OTHER PURPOSE.
4. THE INFORMATION SHOWN ON THIS PLAN WAS OBTAINED USING LIDAR AND PHOTOGRAMMETRY VIA DJI MATRICE 350 AERIAL DRONE, IN COMBINATION WITH A SURVEY–GRADE GPS UNIT. DATA OBTAINED WAS THEN PROCESSED USING ROCK DESKTOP AND ROCK CLOUD.
5. SOIL IN THE AREA OF SURVEY IS 446B OR SCITUATE–NEWFIELDS COMPLEX.
6. CURRENT ZONING IS

MINIMUM LOT SIZE:	NONE	
MINIMUM LOT FRONTAGE:	NONE	
MINIMUM FRONT BUILDING SETBACKS:	40	FEET
MINIMUM SIDE BUILDING SETBACKS:	15	FEET
MINIMUM REAR BUILDING SETBACKS:	15	FEET
MAXIMUM BUILDING HEIGHT:	35	FEET

7. EXAMINATION OF THE FLOOD INSURANCE RATE MAP FOR ROCKINGHAM COUNTY, NEW HAMPSHIRE (ALL JURISDICTIONS), MAP NUMBER 33015C0526E, EFFECTIVE DATE MAY 17, 2025, INDICATES THAT THE SUBJECT PARCELS ARE NOT LOCATED WITHIN A FLOOD HAZARD AREA.
8. HORIZONTAL DATUM: NH–SPC NAD83–2011
   VERTICAL DATUM: NAVD88

   BENCHMARKS SET: TBM–1: CHISELED SQUARE CUT SET IN CONCRETE LIGHT POLE BASE LOCATED AT THE EASTERLY SIDE OF THE WESTERLY PARKING LOT, AS SHOWN HEREON. EL= 429.54'

   TBM–2: CHISELED SQUARE CUT SET ON THE EASTERLY CORNER OF A CONCRETE AIR CONDITIONER PAD LOCATED AT THE EASTERLY CORNER OF THE 2 STORY BRICK BUILDING, AS SHOWN HEREON. EL= 431.80'

   DATUMS WERE OBTAINED WITH A SURVEY GRADE GPS UNIT ON SEPTEMBER 8, 2025.
9. EASEMENTS, RIGHTS, AND RESTRICTIONS SHOWN OR IDENTIFIED ARE THOSE WHICH WERE FOUND DURING RESEARCH PERFORMED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER RIGHTS, EASEMENTS, OR RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF SUBJECT PARCEL MAY DETERMINE.
10. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. TFMORAN, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UNDERGROUND UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
11. THE INFORMATION SHOW HEREON IS BASED ON AN ACTUAL SURVEY PERFORMED BY THIS OFFICE ON SEPTEMBER 8, 2025.

SEWER AND DRAINAGE TABLE

STRUCTURE	RIM	INV(1A)	INV(1B)	INV(1C)	INV(1D)	TR	SHELF	SUMP
CB: 10000	429.06'	425.7'	425.8'					423.7'
CB: 10001	429.31'	425.6'	425.8'					423.7'
CB: 10002	429.15'	424.7'	424.3'					422.2'
CB: 10003	428.18'	424.7'	424.8'	424.7'				422.6'
CB: 10004	427.53'	423.9'	423.6'	424.1'				421.7'
CB: 10005	428.55'	INACC.	INACC.	INACC.	INACC.	INACC.	INACC.	INACC.
CB: 10006	427.97'	423.3'	422.8'					420.5'
CB: 10007	429.59'	425.2'	425.3'					423.4'
CB: 10008	430.93'	427.0'						426.8'
CB: 10009	430.60'	426.6'	426.6'	426.5'				424.8'
CB: 10010	431.24'	426.4'	426.4'					424.3'
CB: 10011	431.87'	427.5'						425.5'
CB: 10014	429.79'	425.3'	426.0'					422.5'
CB: 10015	428.93'	423.8'	423.8'	423.9'	424.8'			420.2'
CB: 10017	428.43'	424.4'						422.4'
CB: 10020	431.58'	427.1'	425.4'					423.3'
CB: 10021	432.64'	INACC.	INACC.	INACC.	INACC.	INACC.	INACC.	INACC.
DMH: 10019	428.68'	423.0'	423.1'					422.7'
RCB: 10354	432.94'	INACC.	INACC.	INACC.	INACC.	INACC.	INACC.	INACC.
SMH: 10012	431.95'					425.0'	425.6'	
SMH: 10016	429.30'					423.1'	423.5'	
SMH: 10018	429.15'					422.0'	422.6'	

CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION "IT'S THE LAW"
811 Dig Safe
MA·ME·NH·RI·VT

Copyright 2026 © TFMoran, Inc., 48 Constitution Drive
Bedford, N.H. 03110
All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.
This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

REVISION	DATE	DESCRIPTION	DRAWN	CHECK

Graphic Scale
30' 15' 0' 30' 60' 90' 120'
1" = 30'

STATE OF NEW HAMPSHIRE
CHRISTOPHER K. DANFORTH
No. 077
CERTIFIED WETLAND SCIENTIST
3/12/26

WETLAND SCIENTIST CERTIFICATION

JURISDICTIONAL WETLANDS SHOWN ON THIS PLAN WERE DELINEATED BY CHRIS DANFORTH CWS #077. THE WETLANDS WERE DELINEATED ON OCTOBER 30, 2025 ACCORDING TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL (1987) AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2, JANUARY 2012. DOMINANT HYDRIC SOILS WITHIN THE WETLAND(S) WERE IDENTIFIED USING "FIELD INDICATORS OF HYDRIC SOILS OF THE UNITED STATES" A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, NRCS, VERSION 8.1, 2017. DOMINANCE OF HYDROPHYTIC VEGETATION WAS DETERMINED USING THE USACE NATIONAL WETLAND PLANT LIST, NWPL 2016 VERSION 3.3 HTTP://WETLAND_PLANTS.USACE.ARMY.MIL.

TAX MAP 9 LOT 45

PARTIAL EXISTING CONDITIONS PLAN

TOWN HALL OFFICE & PARKING EXPANSION

268B MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

268B MAMMOTH RD, LONDONDERRY, NH 03053

PREPARED FOR

LONDONDERRY SAU 25

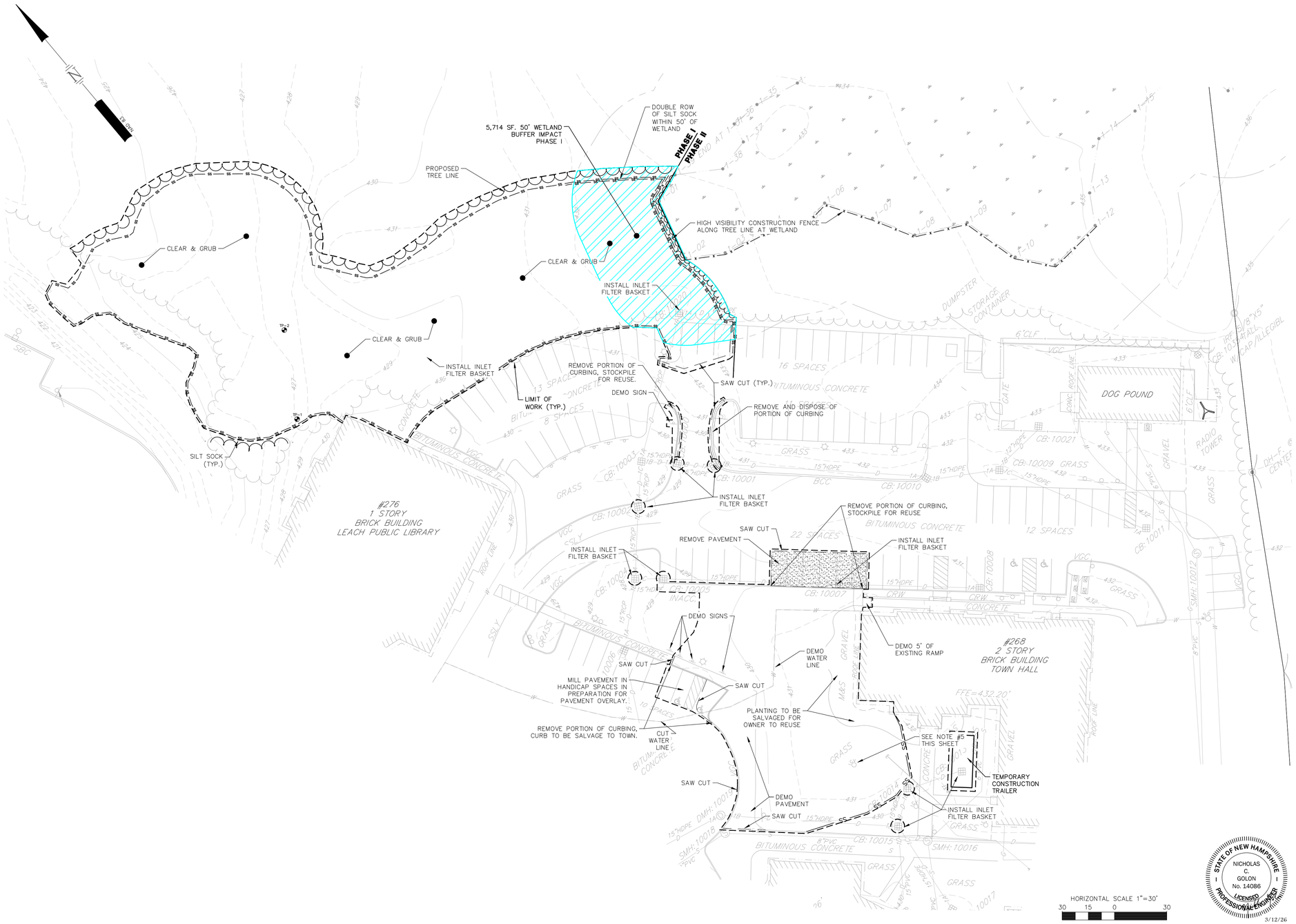
6A KITTY HAWK LANDING, LONDONDERRY, NH 03053

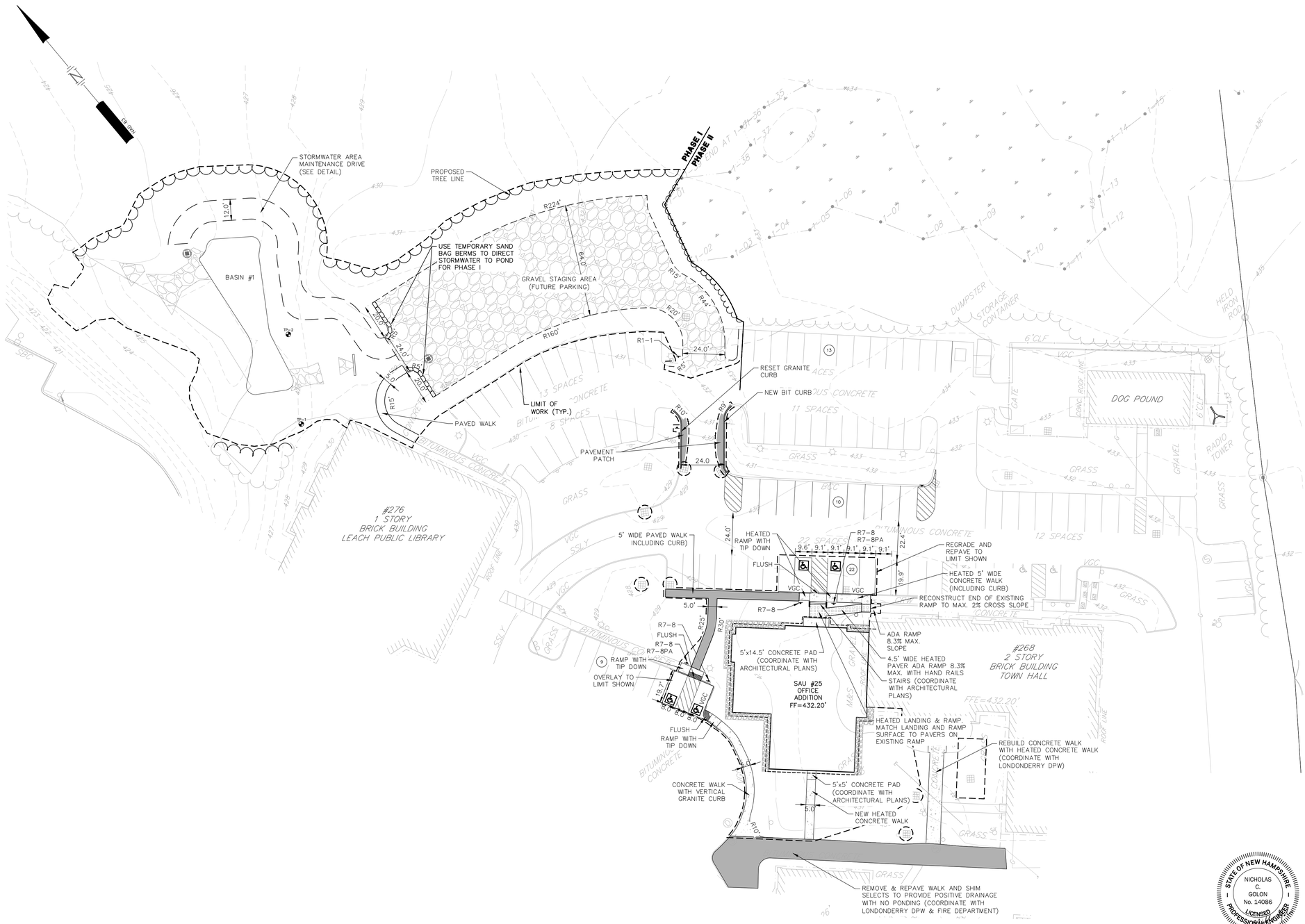
FEBRUARY 20, 2026

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

FILE	DR	JB	FB		
12434.03	CK	NG	CADFILE	12434–03 Survey	SHEET 1 OF 1

Mar 12, 2026 - 12:28pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434.03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-03 Survey_Partial for PB.dwg


PROPOSED TREE LINE
5,714 SF. 50' WETLAND BUFFER IMPACT PHASE I
DOUBLE ROW OF SILT SOCK WITHIN 50' OF WETLAND
PHASE I
PHASE II
HIGH VISIBILITY CONSTRUCTION FENCE ALONG TREE LINE AT WETLAND
CLEAR & GRUB
CLEAR & GRUB
CLEAR & GRUB
INSTALL INLET FILTER BASKET
INSTALL INLET FILTER BASKET
SILT SOCK (TYP.)
LIMIT OF WORK (TYP.)
REMOVE PORTION OF CURBING, STOCKPILE FOR REUSE.
DEMO SIGN
SAW CUT (TYP.)
REMOVE AND DISPOSE OF PORTION OF CURBING
INSTALL INLET FILTER BASKET
REMOVE PORTION OF CURBING, STOCKPILE FOR REUSE
SAW CUT
REMOVE PAVEMENT
INSTALL INLET FILTER BASKET
INSTALL INLET FILTER BASKET
DEMO SIGNS
DEMO 5' OF EXISTING RAMP
DEMO WATER LINE
SAW CUT
SAW CUT
MILL PAVEMENT IN HANDICAP SPACES IN PREPARATION FOR PAVEMENT OVERLAY.
PLANTING TO BE SALVAGED FOR OWNER TO REUSE
REMOVE PORTION OF CURBING, CURB TO BE SALVAGE TO TOWN.
CUT WATER LINE
SEE NOTE #5 THIS SHEET
TEMPORARY CONSTRUCTION TRAILER
SAW CUT
DEMO PAVEMENT
SAW CUT
INSTALL INLET FILTER BASKET
#276 1 STORY BRICK BUILDING LEACH PUBLIC LIBRARY
#268 2 STORY BRICK BUILDING TOWN HALL
DOG POUND
DUMPSTER
STORAGE CONTAINER
16 SPACES
13 SPACES
8 SPACES
22 SPACES
12 SPACES
BITUMINOUS CONCRETE
GRASS
GRAVEL
CONCRETE
FFE=432.20'
CB: 10001
CB: 10002
CB: 10003
CB: 10004
CB: 10005
CB: 10006
CB: 10007
CB: 10008
CB: 10009
CB: 10010
CB: 10011
CB: 10012
CB: 10014
CB: 10015
CB: 10016
CB: 10017
CB: 10021
SMH: 10012
SMH: 10016
SMH: 10018
TP-1
TP-2
15"HDPE
12"HDPE
8"DIP
6"CLF
RADIO TOWER
GAZEBO
FLAG POLE
GATE
ROOF LINE
SSA
SBC
VGC
CRW
INACC.
1-01
1-02
1-03
1-04
1-05
1-06
1-07
1-08
1-09
1-10
1-11
1-12
1-13
1-14
1-15
1-16
1-17
1-18
1-19
1-20
1-21
1-22
1-23
1-24
1-25
1-26
1-27
1-28
1-29
1-30
1-31
1-32
1-33
1-34
1-35
1-36
1-37
1-38
1-39
1-40



NOTES

1. OWNER OF RECORD: TOWN OF LONDONDERRY
   268 MAMMOTH ROAD
   LONDONDERRY, NEW HAMPSHIRE
   DEED REFERENCE: BOOK 1866, PAGE 409
   AREA: 22± ACRES

2. SEE NOTES ON SHEET #2

3. CURRENT ZONING IS AGRICULTURAL DISTRICT (AR-I)

MINIMUM LOT SIZE:	NONE
MINIMUM LOT FRONTAGE:	NONE
MINIMUM FRONT BUILDING SETBACKS:	40 FEET
MINIMUM SIDE BUILDING SETBACKS:	15 FEET
MINIMUM REAR BUILDING SETBACKS:	15 FEET
MAXIMUM BUILDING HEIGHT:	35 FEET
EXISTING USE:	MUNICIPAL OFFICE
PROPOSED USE:	MUNICIPAL OFFICE

4. THE PURPOSE OF THIS PLAN IS TO SHOW A PROPOSED OFFICE ADDITION FOR LONDONDERRY SAU #25 AND GRAVEL STAGING AREA.

5. PARKING CALCULATION:
   USE CATEGORY USED PER TABLE B "OFF STREET PARKING & LOADING" IS GENERAL OFFICE AT 3.0 SPACES PER 1,000 SQ.FT. EXISTING BUILDING AREAS LISTED PER ASSESSOR'S RECORDS FOR LIVING SPACE.

LIBRARY	(14,975 SF./1,000 SF) X 3 SPACES	= 44.925
TOWN OFFICES	(20,348 SF./1.000 SF) X 3 SPACES	= 61.044
POLICE	(30,649 SF./1,000 SF) X 3 SPACES	= 91.947
SAU ADDITION	(5,333 SF./1,000 SF) X 3 SPACES	= 19.999
	TOTAL REQUIRED SPACES	= 213.9

6. SEE SITE LAYOUT PHASE II (SHEET C-07) FOR PROVIDED PARKING COUNT.

7. EXAMINATION OF THE FLOOD INSURANCE RATE MAP FOR ROCKINGHAM COUNTY, NEW HAMPSHIRE (ALL JURISDICTIONS), MAP NUMBER 33015C0526E, EFFECTIVE DATE MAY 17, 2025, INDICATES THAT THE SUBJECT PARCELS ARE NOT LOCATED WITHIN A FLOOD HAZARD AREA.

8. THE ENTIRE PLAN SET WILL BE ON FILE WITH THE LONDONDERRY PLANNING DEPARTMENT.

HORIZONTAL SCALE 1"=30'
30 15 0 30

STATE OF NEW HAMPSHIRE
NICHOLAS C. GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

TAX MAP 9 LOT 45

SITE LAYOUT PLAN (PHASE I)

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY
268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25
6A KITTY HAWK LANDING, LONDONDERRY, NH

FEBRUARY 20, 2026

REV	DATE	DESCRIPTION	DR	CK
1	3/12/2026	REVISIONS PER TOWN COMMENTS	PS	NG

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

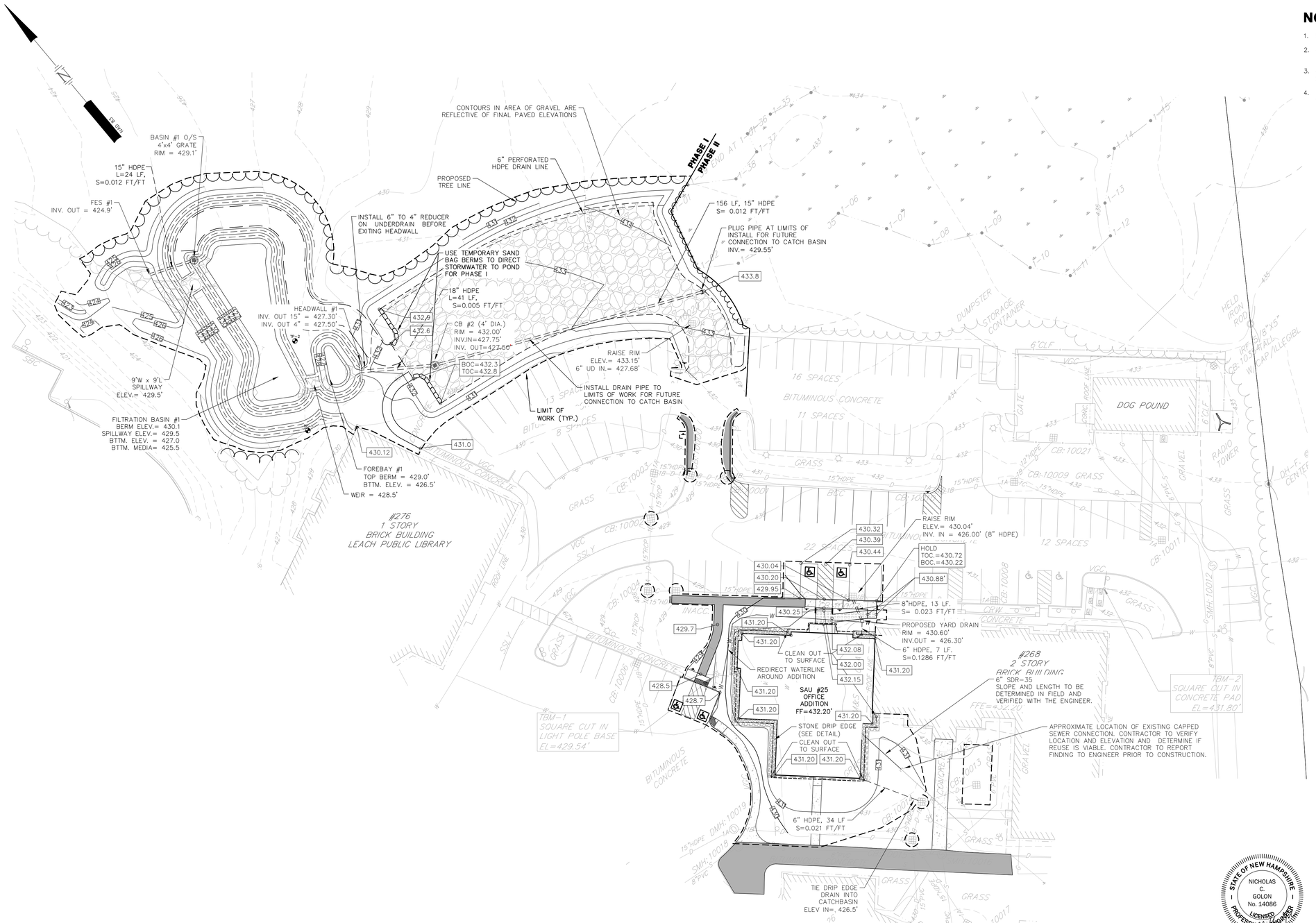
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
www.tfmoran.com

FILE	DR	PS	CADFILE		
12434-04	CK	NG	12434-03_DESIGN_LAYOUT	–	C-04

Mar 12, 2026 - 2:35pm
P:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-03_Design_Layout.dwg

NOTES

1. SEE NOTES ON SHEET C-02.
2. ALL DOORS AND GARAGE ENTRANCES SHALL BE AT FINISHED FLOOR ELEVATION UNLESS OTHERWISE NOTED.
3. ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.
4. HORIZONTAL DATUM: NH-SPC NAD83-2011
   VERTICAL DATUM: NAVD88



HORIZONTAL SCALE 1"=30'
30 15 0 30

TAX MAP 9 LOT 45

GRADING, DRAINAGE & UTILITY PLAN (PHASE I)

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25

6A KITTY HAWK LANDING, LONDONDERRY, NH

FEBRUARY 20, 2026

STATE OF NEW HAMPSHIRE
NICHOLAS C. GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

REV	DATE	DESCRIPTION	DR	CK
1	3/12/2026	REVISIONS PER TOWN COMMENTS	PS	NG

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

FILE 12434-04 | DR PS | CK NG | CADFILE – 12434-03_DESIGN_LAYOUT | C-05

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

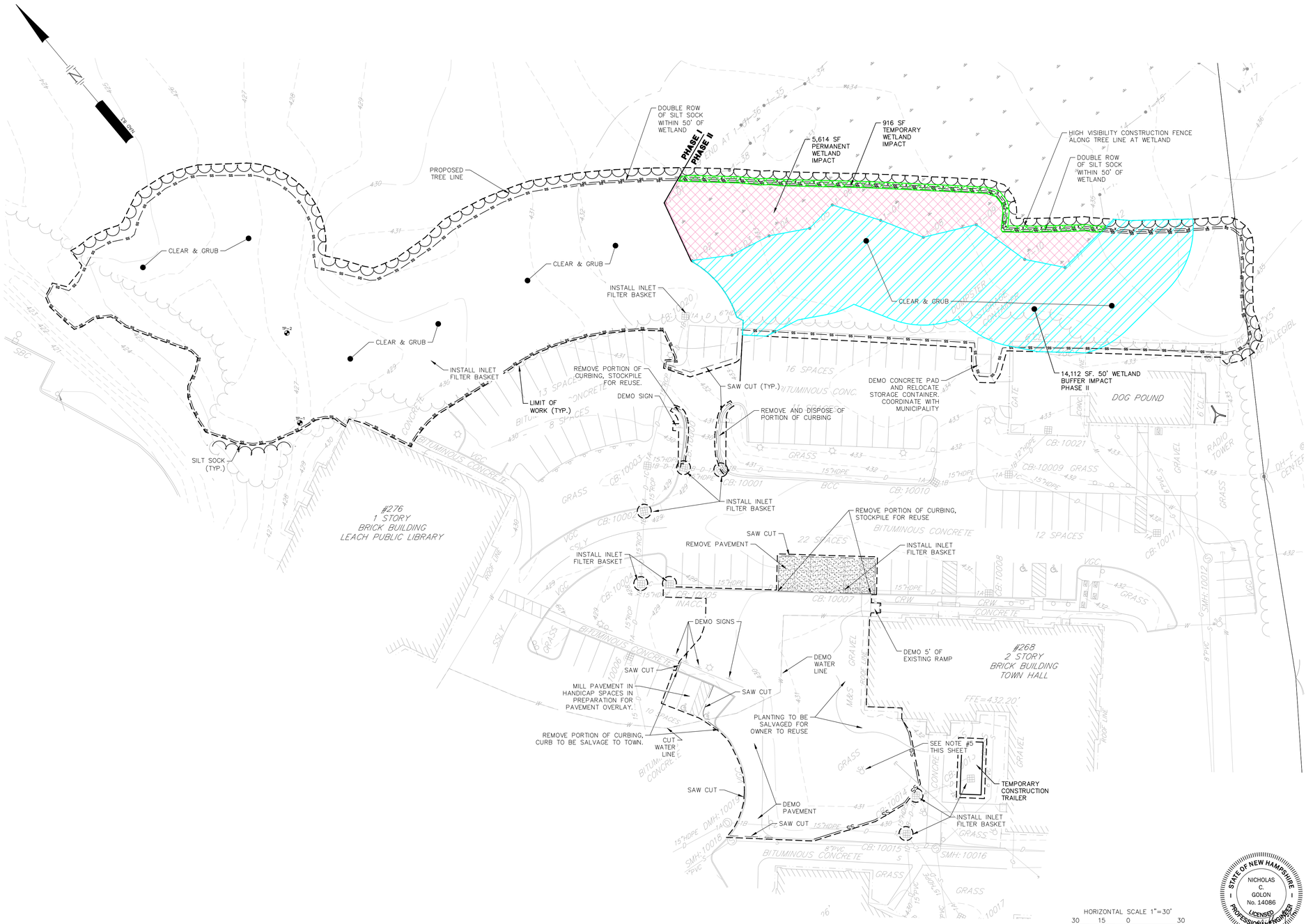
Mar 12, 2026 - 2:35pm
P:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-03_Design_Layout.dwg

NOTES

1. SEE NOTES ON SHEET C-02
2. EXISTING CONDITIONS IS FROM A SURVEY BY THIS OFFICE.
3. TREE LINE CLEARING FOR PHASE II SHALL BE DONE DURING PHASE II
4. THIS DEMO PLAN SHOWS DEMO ACTIVITIES ALREADY COMPLETED ON PHASE 1 OF THE PROJECT IN ADDITION TO THE ADDED DEMO ACTIVITIES UNDER PHASE II.

WETLAND IMPACT LEGEND

- TEMPORARY WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS
- LOCAL WETLAND BUFFER IMPACTS



HORIZONTAL SCALE 1"=30'
30 15 0 30

NICHOLAS C. GOLON No. 14086 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
3/12/26

TAX MAP 9 LOT 45

SITE PREPARATION & DEMOLITION PLAN (PHASE II)

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25

6A KITTY HAWK LANDING, LONDONDERRY, NH

FEBRUARY 20, 2026

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

DIG SAFE STATE OF NEW HAMPSHIRE — CONTACT DIG SAFE TO BUSINESS HOURS PRIOR TO CONSTRUCTION

WETLAND SCIENTIST CERTIFICATION

JURISDICTIONAL WETLANDS SHOWN ON THIS PLAN WERE DELINEATED BY CHRIS DANFORTH CWS #077. THE WETLANDS WERE DELINEATED ON OCTOBER 30, 2025 ACCORDING TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL (1987) AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2, JANUARY 2012. DOMINANT HYDRIC SOILS WITHIN THE WETLAND(S) WERE IDENTIFIED USING "FIELD INDICATORS OF HYDRIC SOILS OF THE UNITIED STATES" A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, NRCS, VERSION 8.1, 2017. DOMINANCE OF HYDROPHYTIC VEGETATION WAS DETERMINED USING THE USACE NATIONAL WETLAND PLANT LIST, NWPL 2016 VERSION 3.3 HTTP://WETLAND_PLANTS.USACE.ARMY.MIL.

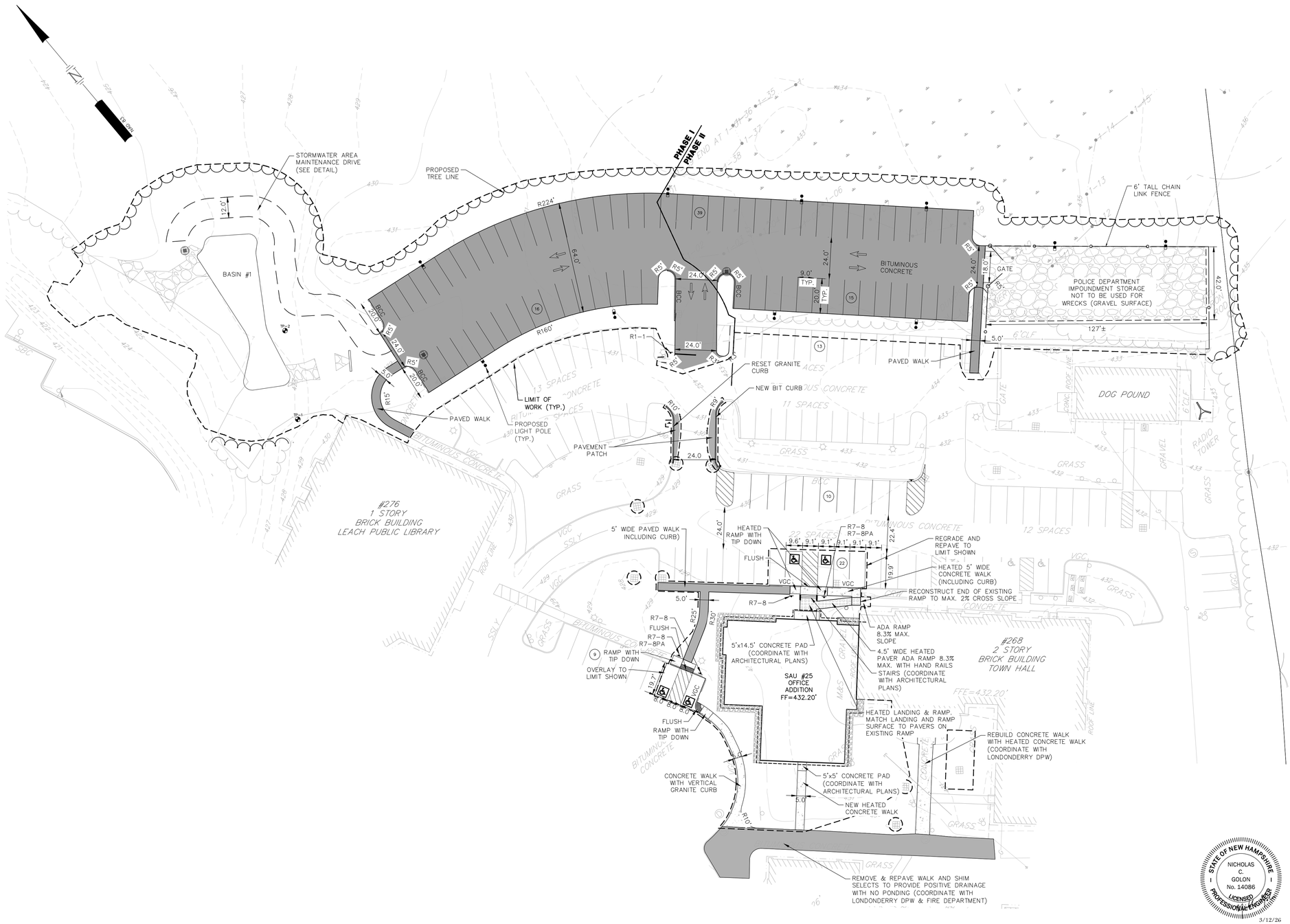
STATE OF NEW HAMPSHIRE — CHRISTOPHER K. DANFORTH — No. 077 — CERTIFIED WETLAND SCIENTIST
3/20/2026

REV	DATE	DESCRIPTION	DR	CK
1	3/12/2026	REVISIONS PER TOWN COMMENTS	PS	NG

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

PRT: F	12434-04	DR PS	CADFILE	–	C-06
		CK NG		12434-03_DESIGN_LAYOUT	

Mar 12, 2026 - 2:35pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-03_Design_Layout.dwg



NOTES

1. OWNER OF RECORD: TOWN OF LONDONDERRY
   268 MAMMOTH ROAD
   LONDONDERRY, NEW HAMPSHIRE
   DEED REFERENCE: BOOK 1866, PAGE 409
   AREA: 22* ACRES

2. SEE NOTES ON SHEET #2

3. CURRENT ZONING IS AGRICULTURAL DISTRICT (AR-I)

MINIMUM LOT SIZE:	NONE	
MINIMUM LOT FRONTAGE:	NONE	
MINIMUM FRONT BUILDING SETBACKS:	40	FEET
MINIMUM SIDE BUILDING SETBACKS:	15	FEET
MINIMUM REAR BUILDING SETBACKS:	15	FEET
MAXIMUM BUILDING HEIGHT:	35	FEET

EXISTING USE: MUNICIPAL OFFICE
PROPOSED USE: MUNICIPAL OFFICE

PROPOSED BUILDING COVERAGE IS 10.7%.
PROPOSED GREEN SPACE COVERAGE IS 72%

4. THE PURPOSE OF THIS PLAN IS TO SHOW A PROPOSED OFFICE ADDITION FOR LONDONDERRY SAU #25 AND ADDITIONAL PARKING.

5. THIS DESIGN REMOVES 4 EXISTING PARKING SPACES AND ADDS 70 NEW SPACES FOR A NET INCREASE OF 66 SPACES.

6. PARKING CALCULATION:
   USE CATEGORY USED PER TABLE B "OFF STREET PARKING & LOADING" IS GENERAL OFFICE AT 3.0 SPACES PER 1,000 SQ.FT. EXISTING BUILDING AREAS LISTED PER ASSESSOR'S RECORDS FOR LIVING SPACE.

LIBRARY	(14,975 SF./1,000 SF) x 3 SPACES	= 44.925
TOWN OFFICES	(20,348 SF./1.000 SF) X 3 SPACES	= 61.044
POLICE	(30,649 SF./1,000 SF) X 3 SPACES	= 91.947
SAU ADDITION	(5,333 SF./1,000 SF) X 3 SPACES	= 19.999
	TOTAL REQUIRED SPACES	= 213.9
	TOTAL PROVIDED SPACES	= 259 (9 ADA SPACES)

7. EXAMINATION OF THE FLOOD INSURANCE RATE MAP FOR ROCKINGHAM COUNTY, NEW HAMPSHIRE (ALL JURISDICTIONS), MAP NUMBER 33015C0526E, EFFECTIVE DATE MAY 17, 2025, INDICATES THAT THE SUBJECT PARCELS ARE NOT LOCATED WITHIN A FLOOD HAZARD AREA.

8. THE ENTIRE PLAN SET WILL BE ON FILE WITH THE LONDONDERRY PLANNING DEPARTMENT.

STATE OF NEW HAMPSHIRE
NICHOLAS C. GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

TAX MAP 9 LOT 45

SITE LAYOUT PLAN (PHASE II)

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY
268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25
6A KITTY HAWK LANDING, LONDONDERRY, NH

FEBRUARY 20, 2026

REV	DATE	DESCRIPTION	DR	CK
1	3/12/2026	REVISIONS PER TOWN COMMENTS	PS	NG

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

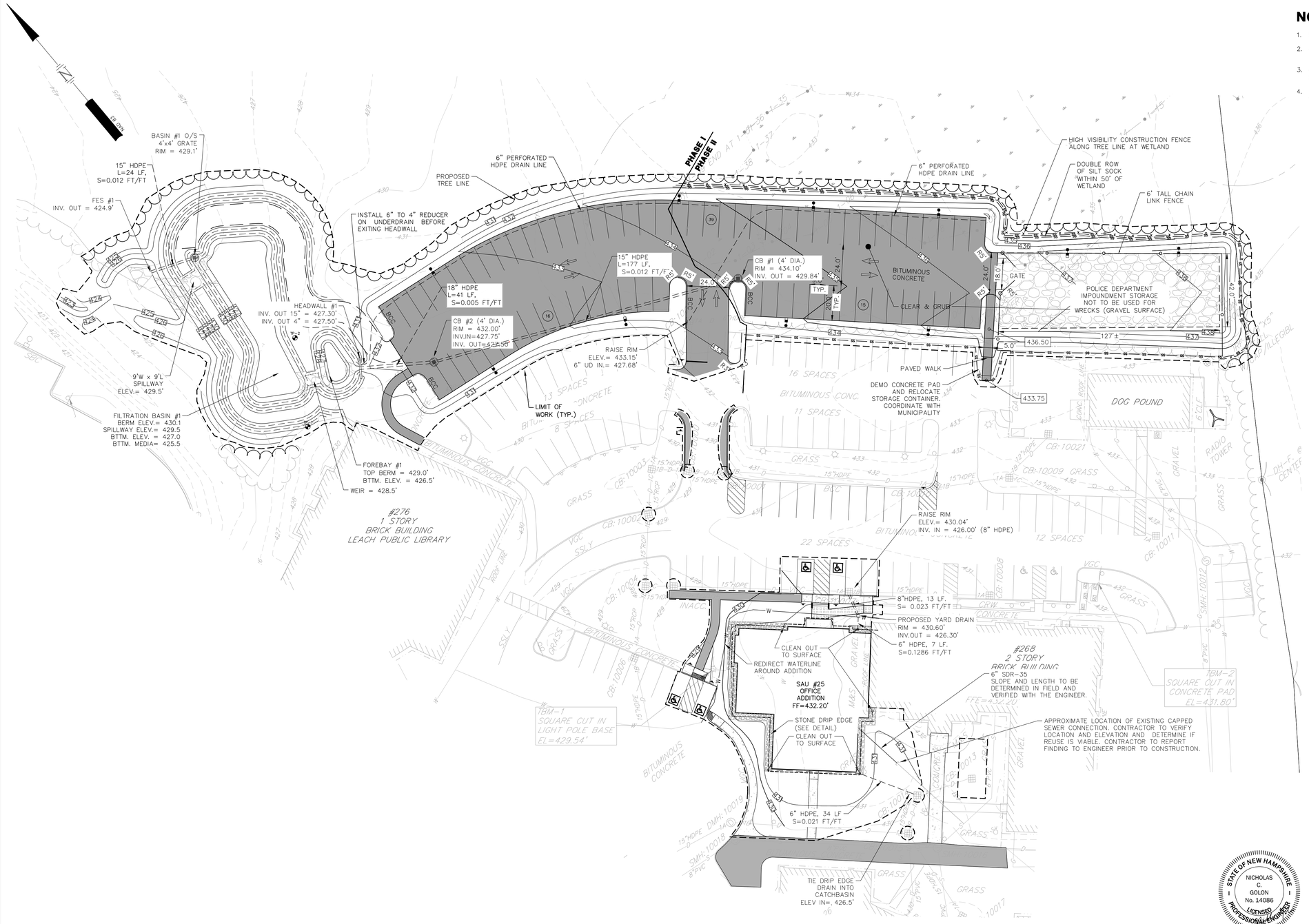
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
www.tfmoran.com

FILE	DR	CK	CADFILE		
12434-04	PS	NG	12434-03_DESIGN_LAYOUT	–	C-07

Mar 12, 2026 - 2:35pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-03_Design_Layout.dwg

NOTES

1. SEE NOTES ON SHEET C-02.
2. ALL DOORS AND GARAGE ENTRANCES SHALL BE AT FINISHED FLOOR ELEVATION UNLESS OTHERWISE NOTED.
3. ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.
4. HORIZONTAL DATUM: NH-SPC NAD83-2011
   VERTICAL DATUM: NAVD88



TAX MAP 9 LOT 45

GRADING & DRAINAGE PLAN (PHASE II)

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25

6A KITTY HAWK LANDING, LONDONDERRY, NH

FEBRUARY 20, 2026

STATE OF NEW HAMPSHIRE
NICHOLAS C. GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

REV	DATE	DESCRIPTION	DR	CK
1	3/12/2026	REVISIONS PER TOWN COMMENTS	PS	NG

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

FILE	DR	CK	CADFILE		
12434-04	PS	NG	12434-03_DESIGN_LAYOUT	-	C-08

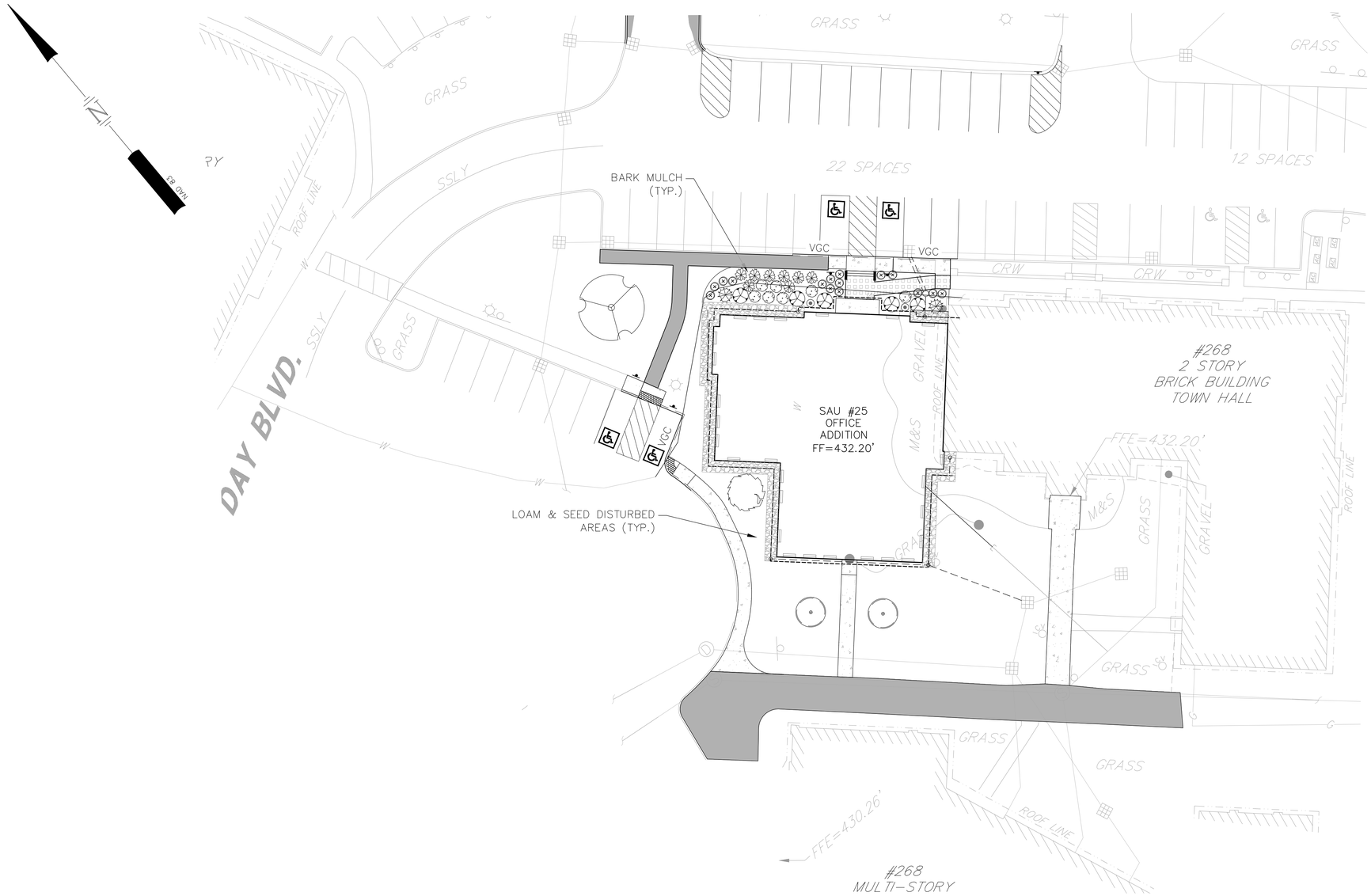
Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

DIG SAFE
CONTACT DIG SAFE - 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Mar 12, 2026 - 2:35pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_CSD\PRODUCTION\12434-03_Design_Layout.dwg



NOTES

1. SEE NOTES ON DETAIL SHEET.

LANDSCAPE LEGEND

SYMBOL	QTY	BOTANICAL NAME COMMON NAME	SIZE	REMARKS
	2	ACRE RUBRUM 'BOWHALL' BOWHALL RED MAPLE	2.5-3" CAL.	B&B
	1	MAGNOLIA LOEBNERI 'LEONARD MESSEL' LEONARD MESSEL MAGNOLIA	5' TO 6'	B&B
	1	PLATANUS X ACREIFOLIA 'BLOODGOOD' BLOODGOOD LONDON PLANETREE	2.5-3" CAL.	B&B
	7	AZALEA 'BLOOM A THON PINK DOUBLE' BLOOM A THON PINK DOUBLE AZALEA	5 GAL.	CONT.
	15	DEUTZIA X 'YUKI SNOWFLAKE' YUKI SNOWFLAKE DEUTZIA	3 GAL.	CONT.
	2	ILEX CRENATA 'SKY PENCIL' SKY PENCIL HOLLY	7 GAL.	CONT.
	8	MICROBIOTA DECUSSATA RUSSIAN CYPRESS	3 GAL.	CONT.
	2	THUJA O. 'SMARAGD' EMERALD GREEN ARBORVITAE	4' TO 5'	B&B
	5	RHODODENDRON MAXIMUM ROSEBAY RHODODENDRON	5 GAL.	CONT.

IRRIGATION NOTES

1. IRRIGATION SHALL BE A DESIGN-BUILD INSTALLATION. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR FINAL LAYOUT OF IRRIGATION SHOWING LOCATIONS AND SIZES OF MAIN LINES AND LATERAL LINES, ZONES, RAIN AND SOIL SENSORS, AND CUT SHEETS FOR CONTROLLER SYSTEM AND COMPONENTS. INCLUDE ANY NECESSARY SLEEVING.
2. IRRIGATION CONTRACTOR SHALL VERIFY PSI/GPM REQUIREMENTS AT THE SITE BEFORE STARTING CONSTRUCTION.
3. TREES SHALL BE ON A SEPARATE ZONE.
4. PROVIDE A REMOTE RAIN SENSOR ON A ROOF AREA THAT IS NOT OBSTRUCTED FROM THE OPEN SKY. COORDINATE WITH OWNER FOR POINT OF CONNECTION LOCATION.
5. COORDINATE WITH OWNER FOR IRRIGATION CONTROLLER AND BACKFLOW PREVENTION LOCATION.
6. INSTALL DRIP TUBING, .6GPH, 12" CENTERS, STAKED EVERY TURN OR EVERY 4'.
7. INSTALLER SHALL INSTALL LIGHTNING AND SURGE PROTECTION DEVICES THROUGHOUT SYSTEM AS PER MANUFACTURER'S HIGHEST SPECIFICATION LEVELS.
8. INSTALLER SHALL ADHERE TO ALL MANUFACTURER'S SPECIFICATIONS RELATED TO CONTROL SYSTEM INSTALLATION.
9. INSTALLER SHALL INSTALL MOISTURE SENSORS. CONTRACTOR SHALL INSTALL PER MANUFACTURERS'S SPECIFICATIONS AND SHALL BE RESPONSIBLE TO PROGRAM RELATED HYDROZONES TO RESPECTIVE SOIL MOISTURE SENSORS. PROVIDE ONE FOR EACH IRRIGATION ZONE WITH AUTOMATIC SHUT-OFF ONCE MOISTURE REQUIREMENTS ARE MET.
10. PRIOR TO BID, CONTRACTOR TO VERIFY THAT ALL MATERIALS, INSTALLATION PARAMETERS, AND OPERATIONS CONFORM TO ALL APPLICABLE CODES AND ORDINANCES. NO LATER THAN FIVE DAYS BEFORE BID SUBMITTALS CONTRACTOR SHALL NOTIFY DESIGNER AND OWNER OF ANY CHANGES REQUIRED DUE TO CURRENT CODE OR ORDINANCE DISCREPANCIES.
11. SEE NOTES ON DEMO PLAN FOR DETERMINING LIMITS OF EXISTING IRRIGATION TO BE RETAINED AND CONNECTED. NEW LAYOUT CAN BE INDEPENDANT ZONES, BUT THE OVERALL SYSTEM SHOULD TIE TO THE SAME POINT.

STATE OF NEW HAMPSHIRE
NICHOLAS C. GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

TAX MAP 9 LOT 45

LANDSCAPE PLAN

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25

6A KITTY HAWK LANDING, LONDONDERRY, NH

SCALE: 1"=20' **FEBRUARY 20, 2026**

REV	DATE	DESCRIPTION	DR	CK

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

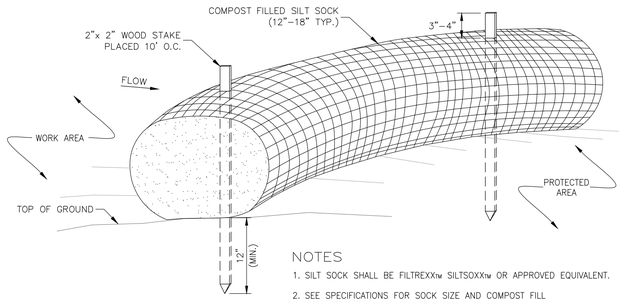
DIG SAFE
CALL 811 OR 1-888-DIG-SAFE (344-7233)
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

HORIZONTAL SCALE 1"=20'
20 10 0 20

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

FILE	12434-04	DR		CADFILE	-	C-09
		CK			12434-03_DESIGN_LAYOUT	

Mar 12, 2026 - 2:35pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-03_Design_Layout.dwg

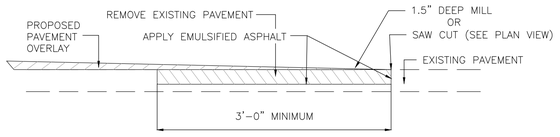


NOTES

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

SILT SOCK

NOT TO SCALE

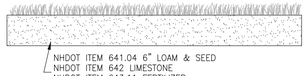


PAVEMENT SAWCUT

NOT TO SCALE

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

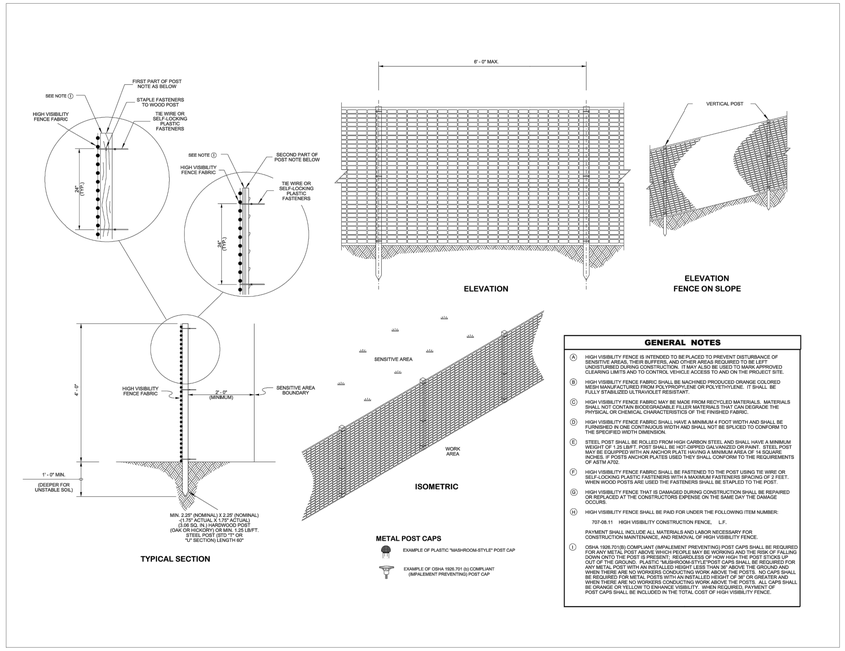
33% CREEPING RED FESCUE	(MIN. 40 LBS/ACRE)
42% PERENNIAL RYEGRASS	(MIN. 50 LBS/ACRE)
21% KENTUCKY BLUEGRASS	(MIN. 25 LBS/ACRE)
4% REDTOP	(MIN. 5 LBS/ACRE)



NHDOT ITEM 641.04 6" LOAM & SEED
NHDOT ITEM 642 LIMESTONE
NHDOT ITEM 643.11 FERTILIZER
NHDOT ITEM 645.101 MULCH

LOAM & SEED DETAIL

NOT TO SCALE



GENERAL NOTES

Ⓐ HIGH VISIBILITY FENCE IS INTENDED TO BE PLACED TO PREVENT DISTURBANCE OF SENSITIVE AREAS, THEIR BUFFERS, AND OTHER AREAS REQUIRED TO BE LEFT UNDISTURBED DURING CONSTRUCTION. IT IS NOT INTENDED TO DELINEATE APPROVED CLEARING LIMITS AND TO CONTROL VEHICLE ACCESS TO AND ON THE PROJECT SITE.

Ⓑ HIGH VISIBILITY FENCE FABRIC SHALL BE MACHINED PRODUCED ORANGE COLORED MESH MANUFACTURED FROM POLYPROPYLENE OR POLYETHYLENE. IT SHALL BE FULLY STABILIZED ULTRAVIOLET RESISTANT.

Ⓒ HIGH VISIBILITY FENCE FABRIC MAY BE MADE FROM RECYCLED MATERIALS. MATERIALS SHALL NOT CONTAIN BIODEGRADABLE FILLER MATERIALS THAT CAN DEGRADE THE PHYSICAL OR CHEMICAL CHARACTERISTICS OF THE FINISHED FABRIC.

Ⓓ HIGH VISIBILITY FENCE FABRIC SHALL HAVE A MINIMUM 4 FOOT WIDTH AND SHALL BE FURNISHED IN ONE CONTINUOUS WIDTH AND SHALL NOT BE SPLICED TO CONFORM TO THE SPECIFIED WIDTH DIMENSION.

Ⓔ STEEL POST SHALL BE ROLLED FROM HIGH CARBON STEEL AND SHALL HAVE A MINIMUM WEIGHT OF 1.25 LB/FT. POST SHALL BE HOT-DIPPED GALVANIZED OR PAINT. STEEL POST SHALL BE EQUIPPED WITH A PROJECTION TO SUPPORT A DRIVE ANCHOR AT LEAST 6 INCHES. IF POSTS ANCHOR PLATES USED THEY SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702.

Ⓕ HIGH VISIBILITY FENCE FABRIC SHALL BE FASTENED TO THE POST USING TIE WIRE OR SELF-LOCKING PLASTIC FASTENERS WITH A MAXIMUM FASTENERS SPACING OF 2 FEET. WHEN WOOD POSTS ARE USED THE FASTENERS SHALL BE STAPLED TO THE POST.

Ⓖ HIGH VISIBILITY FENCE THAT IS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED AT THE CONSTRUCTORS EXPENSE ON THE SAME DAY THE DAMAGE OCCURS.

Ⓗ HIGH VISIBILITY FENCE SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

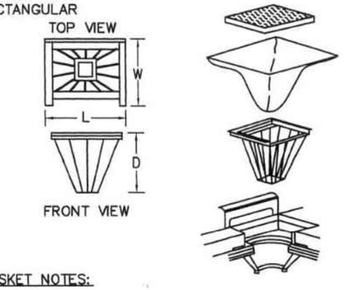
707.08.11 HIGH VISIBILITY CONSTRUCTION FENCE, L.F.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION MAINTENANCE, AND REMOVAL OF HIGH VISIBILITY FENCE.

① OSHA 1926.701(B) COMPLIANT (IMPALEMENT PREVENTING) POST CAPS SHALL BE REQUIRED FOR ANY REBAR POST ABOVE WHICH PEOPLE MAY BE WORKING AND THE RISK OF FALLING OVER THE POST EXISTS. IT IS PRESUMED THAT ANY POST WITH AN INSTALLED HEIGHT LESS THAN 36" ABOVE THE GROUND AND WHEN THERE ARE NO WORKERS CONDUCTING WORK ABOVE THE POSTS. NO CAPS SHALL BE REQUIRED FOR ANY METAL POST WITH AN INSTALLED HEIGHT LESS THAN 36" ABOVE THE GROUND AND WHEN THERE ARE NO WORKERS CONDUCTING WORK ABOVE THE POSTS. ALL CAPS SHALL BE ORANGE OR YELLOW TO ENHANCE VISIBILITY. WHEN REQUIRED, PAYMENT OF POST CAPS SHALL BE INCLUDED IN THE TOTAL COST OF HIGH VISIBILITY FENCE.

HIGH VISIBILITY FENCE

NOT TO SCALE



FILTER BASKET NOTES:

1. INLET BASKETS SHALL BE USED ON ALL CATCH BASINS WITHIN THE PROJECT LIMITS WITHIN PAVED AREAS. INLET FILTER BASKETS SHALL BE "SILT SACK®" OR APPROVED EQUAL.
2. FILTER FABRIC SHALL BE PUSHED DOWN AND FORMED TO THE SHAPE OF THE BASKET. THE SHEET OF FABRIC SHALL BE LARGE ENOUGH TO BE SUPPORTED BY THE BASKET FRAME WHEN HOLDING SEDIMENT AND EXTEND AT LEAST 6 INCHES PAST THE FRAME. THE INLET GRATE SHALL BE PLACED OVER THE BASKET/FRAME AND WILL SERVE AS THE FABRIC ANCHOR.
3. THE FILTER FABRIC SHALL BE A GEO–TEXTILE FABRIC: POLYESTER, POLYPROPYLENE, STABILIZED NYLON, POLYETHYLENE OR POLYVINYLIDENE CHLORIDE MEETING THE FOLLOWING SPECIFICATIONS:
   GRAB STRENGTH: 300 lb. MINIMUM IN ANY PRINCIPAL DIRECTION (ASTM D–4632).
   MULLEN BURST STRENGTH: MINIMUM 800 psi (ASTM D–3786).
4. THE FABRIC SHALL HAVE AN OPENING NO GREATER THAN A NUMBER 40 U.S. STANDARD SIEVE AND MINIMUM PERMEABILITY OF 40 gpm/sq. ft.
5. THE INLET BASKET SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM ENTERING THE DRAINAGE PIPING SYSTEM AND/OR CAUSING SURFACE FLOODING.
6. INLET BASKETS SHALL BE MAINTAINED IN PLACE UNTIL ALL PAVING IS COMPLETED AND ALL UNPAVED AREAS HAVE BEEN STABILIZED WITH VEGETATION.

INLET FILTER BASKET

NOT TO SCALE

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

DIG SAFE
811 OR 1-888-DIG-SAFE
CONTACT DIG SAFE TO BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
NICHOLAS C. GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

TAX MAP 9 LOT 45

DETAILS

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25

6A KITTY HAWK LANDING, LONDONDERRY, NH

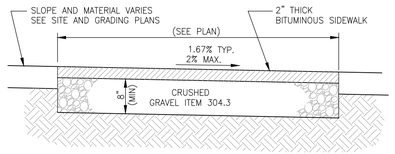
FEBRUARY 20, 2026

REV	DATE	DESCRIPTION	DR	CK
1	3/12/2026	REVISIONS PER TOWN COMMENTS	PS	NG

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

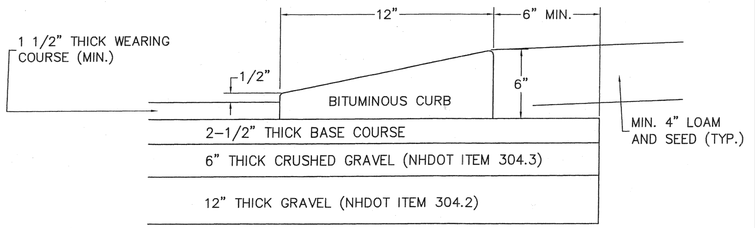
FILE	DR	PS	CADFILE		
12434–04	CK	NG		12434–03_COVER & DETAILS	D–01

Mar 12, 2026 - 2:35pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_CSD\PRODUCTION\12434-03_Cover & Details.dwg



BITUMINOUS SIDEWALK

NOT TO SCALE

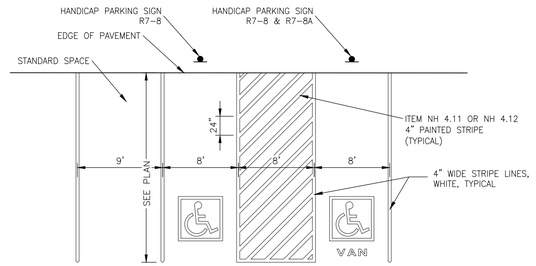


NOTES:

1. APPLY TACK COAT PRIOR TO PLACEMENT OF CURB
2. BITUMINOUS CURB MATERIAL SHALL MEET THE REQUIREMENTS OF NHDOT SECTION 609.
3. CAPE COD BERM DIMENSIONS SHALL MATCH THOSE GIVEN IN THIS DETAIL.

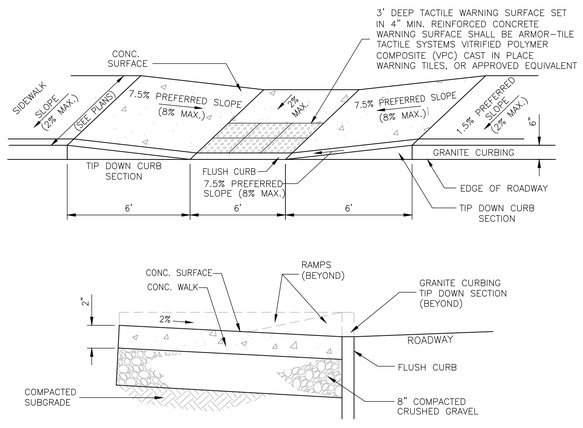
BITUMINOUS CONCRETE CURB

NOT TO SCALE



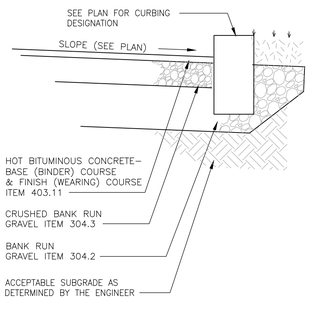
PARKING STRIPING DETAIL

NOT TO SCALE



ACCESSIBLE RAMP RECESSED IN WALK

WITH DETECTABLE WARNING SURFACE (VPC) NOT TO SCALE



LAYER	STANDARD DUTY
TOP	1.5"
BINDER	2.5"
CRUSHED GRAVEL	6"
BANK RUN GRAVEL	12"

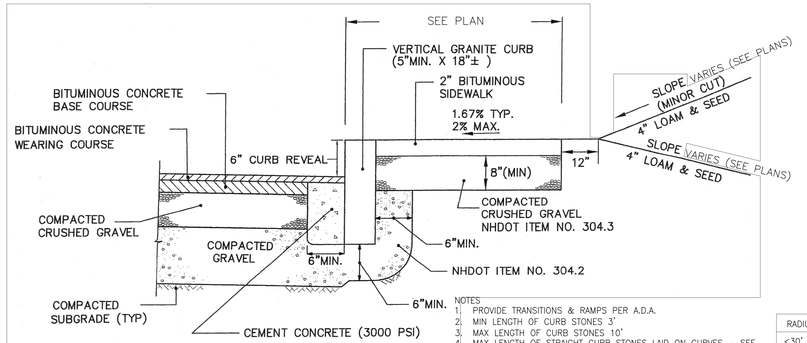
ROAD CONSTRUCTION NOTES

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

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

PAVEMENT SECTION

NOT TO SCALE



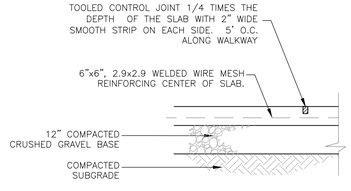
NOTES

1. PROVIDE TRANSITIONS & RAMPS PER A.D.A.
2. MIN LENGTH OF CURB STONES 3'
3. MAX LENGTH OF CURB STONES 10'
4. MAX LENGTH OF STRAIGHT CURB STONES LAID ON CURVES – SEE CHART
5. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATE LENGTH
6. CRUSHED GRAVEL TO BE COMPACTED TO 95% MIN HAND COMPACTION IS NOT ALLOWED
7. CONTRACTOR SHALL SAWCUT EXISTING PAVEMENT CONSISTENT WITH THE REQUIREMENTS OF THE TOWN OF LONDONDERRY FOR INSTALLATION OF SIDEWALK AND CURB AT AKIRA WAY

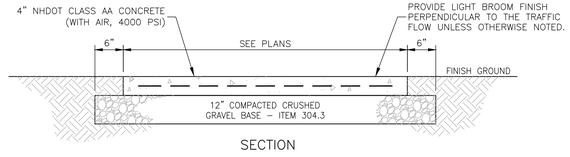
RADIUS	MAX LENGTH
<30'	CURVED CURB
31'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
OVER 60'	10'

BITUMINOUS SIDEWALK WITH VERTICAL GRANITE CURB

NOT TO SCALE



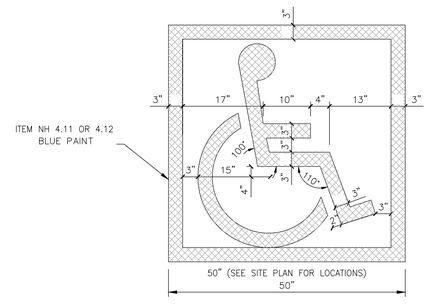
CONTROL JOINT



SECTION

CONCRETE SIDEWALK

NOT TO SCALE



PAINTED HANDICAP SYMBOL

NOT TO SCALE

STATE OF NEW HAMPSHIRE
NICHOLAS C. GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

TAX MAP 9 LOT 45

DETAILS

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25

6A KITTY HAWK LANDING, LONDONDERRY, NH

FEBRUARY 20, 2026

REV	DATE	DESCRIPTION	DR	CK
1	3/12/2026	REVISIONS PER TOWN COMMENTS	PS	NG

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

FILE	DR	PS	CADFILE		
12434-04	CK	NG		12434-03_COVER & DETAILS	D-02

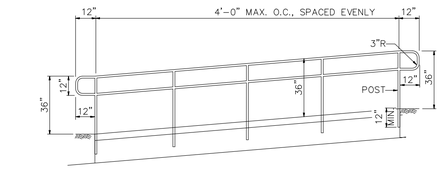
Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

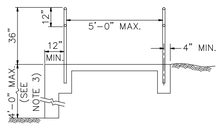
This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
CALL NH 811
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Mar 12, 2026 - 2:36pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-03_Cover & Details.dwg



ELEVATION



CROSS-SECTION

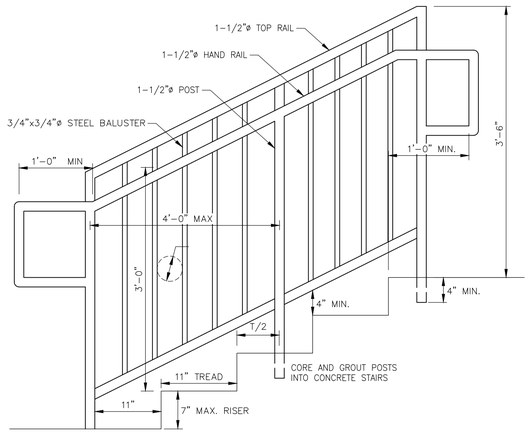
GENERAL NOTES

1. RAIL SHALL BE 1 1/2" O.D.
2. POSTS SHALL BE 1.1/2" NOMINAL.
3. WHEN THIS DIMENSION EXCEEDS 4'-0" A GUARD IS REQUIRED
4. ITEM 606.620X – RAMP HANDRAIL, (MATERIAL).

RAMP HANDRAIL

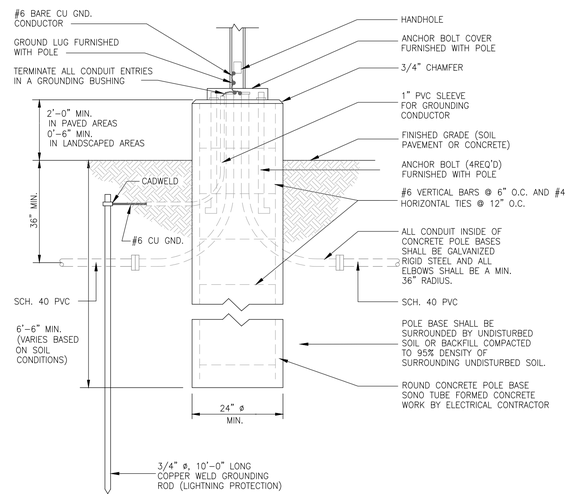
NOT TO SCALE

I:\Civil Reference\Details\ACADFILES\11-miscellaneous (Site Items)\Revised Ramp Handrail 12-2020.dwg



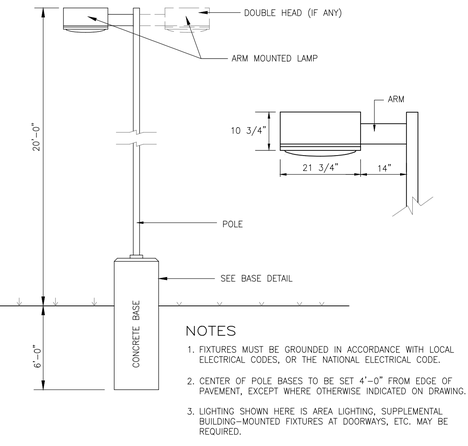
STAIR HAND RAIL DETAIL

NOT TO SCALE



LIGHT POLE BASE

NOT TO SCALE



NOTES

1. FIXTURES MUST BE GROUNDED IN ACCORDANCE WITH LOCAL ELECTRICAL CODES, OR THE NATIONAL ELECTRICAL CODE.
2. CENTER OF POLE BASES TO BE SET 4'-0" FROM EDGE OF PAVEMENT, EXCEPT WHERE OTHERWISE INDICATED ON DRAWING.
3. LIGHTING SHOWN HERE IS AREA LIGHTING, SUPPLEMENTAL BUILDING-MOUNTED FIXTURES AT DOORWAYS, ETC. MAY BE REQUIRED.
4. SEE LIGHTING PLAN FOR FIXTURE SCHEDULE.

LIGHT POLE

NOT TO SCALE



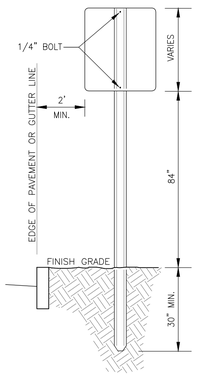
R7-8
12" x 18"

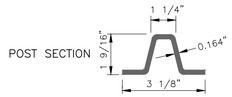


R1-1
30" X 30"



R7-8A
6" x 12"





LENGTH: P-12, 12'-0"; P-14, 14'-0"; P-16, 16'-0".

WEIGHT PER LINEAR FOOT: 2.50 LBS. (MIN.)

HOLES: 3/8" DIA. 1" C-C FULL LENGTH

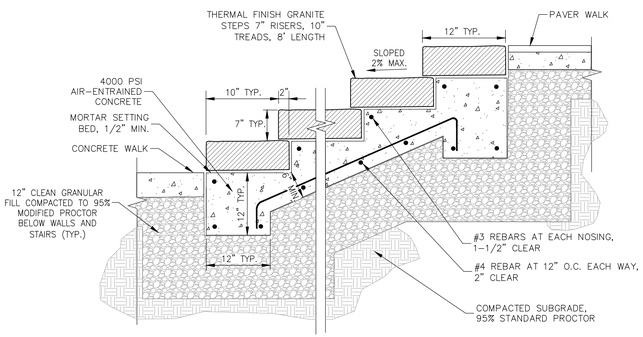
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070-1080).

NOTES

1. POSTS SHALL BE PLUMB; ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND PROPERLY REPLACED. POSTS MAY BE SET OR DRIVEN.
2. WHEN POSTS ARE SET, HOLES SHALL BE DUG TO THE PROPER DEPTH, AFTER INSERTING POSTS, THE HOLES SHALL BE BACKFILLED WITH SUITABLE MATERIAL IN LAYERS NO TO EXCEED 6" DEEP THOROUGHLY COMPACTED, CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST.
3. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED AND AFTER DRIVING THE TOP OF THE POST SHALL HAVE SUBSTANTIALLY THE SAME CROSS-SECTIONAL DIMENSION AS THE BODY OF THE POST; BATTERED HEADS WILL NOT BE ACCEPTED.
4. POSTS SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.
5. SIGNS SHALL BE ERECTED IN CONFORMANCE WITH THE REQUIEMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
6. WHEN SIGN IS IN PLACE NO PART OF POST SHALL EXTEND ABOVE THE SIGN.
7. DIMENSIONS SHOWN ARE NOMINAL.
8. ALTERNATE SECTIONS MUST BE APPROVED PRIOR TO USE.

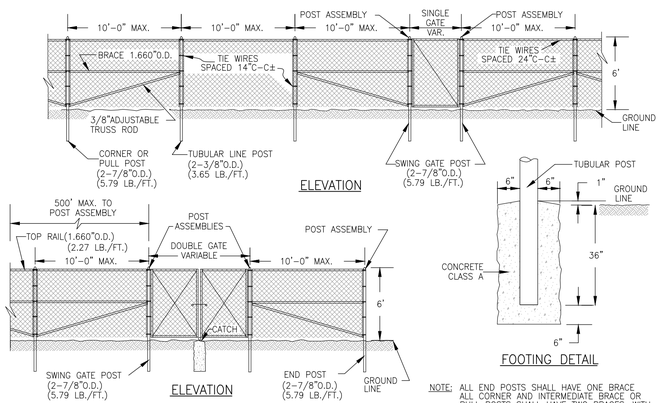
TRAFFIC SIGN POST IN GRADE

NOT TO SCALE



GRANITE STAIRS ON CONCRETE FOOTING

SECTION NOT TO SCALE



NOTE: ALL END POSTS SHALL HAVE ONE BRACE ALL CORNER AND INTERMEDIATE BRACE OR PULL POSTS SHALL HAVE TWO BRACES, WITH A MAXIMUM SPACING OF BETWEEN POST ASSEMBLIES OF 500 FEET.

CHAIN LINK FENCE DETAIL

NOT TO SCALE

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

DIG SAFE
811
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
NICHOLAS C. GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

REV	DATE	DESCRIPTION	DR	CK
1	3/12/2026	REVISIONS PER TOWN COMMENTS	PS	NG

TAX MAP 9 LOT 45

DETAILS

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25

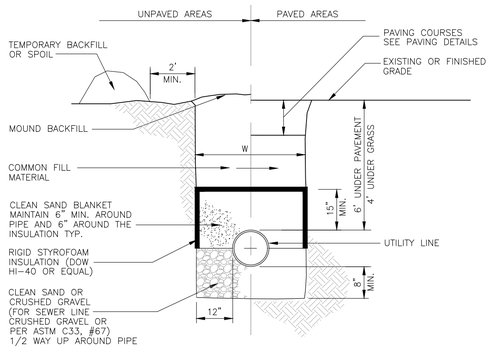
6A KITTY HAWK LANDING, LONDONDERRY, NH

FEBRUARY 20, 2026

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

FILE	DR	PS	CADFILE		
12434-04	CK	NG		12434-03_COVER & DETAILS	D-03

Mar 12, 2026 - 2:35pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-03_Cover & Details.dwg

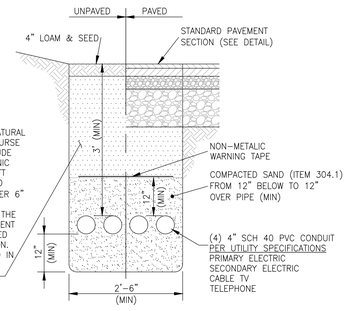


NOTE

W=MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D. W SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.

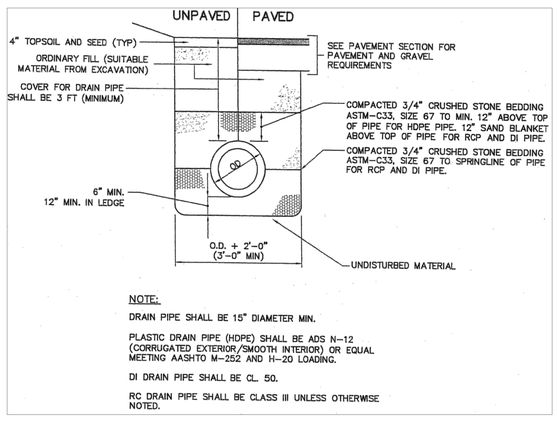
PIPE INSULATION

NOT TO SCALE



UTILITY TRENCH

NOT TO SCALE



NOTE:

DRAIN PIPE SHALL BE 15" DIAMETER MIN.

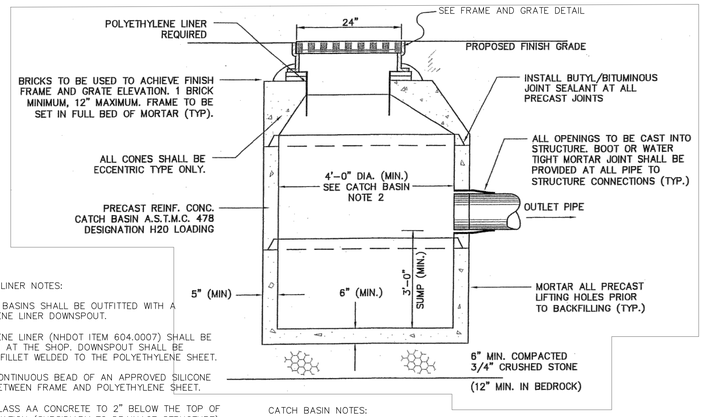
PLASTIC DRAIN PIPE (HDPE) SHALL BE ADS N-12 (CORRUGATED EXTERIOR/SMOOTH INTERIOR) OR EQUAL MEETING AASHTO M-252 AND H-20 LOADING.

DI DRAIN PIPE SHALL BE CL. 50.

RC DRAIN PIPE SHALL BE CLASS III UNLESS OTHERWISE NOTED.

STORM DRAIN TRENCH

NOT TO SCALE



POLYETHYLENE LINER NOTES:

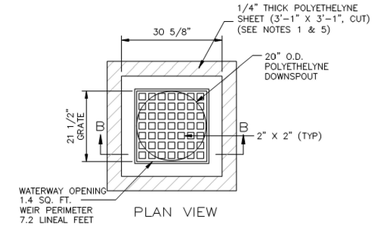
1. ALL CATCH BASINS SHALL BE OUTFITTED WITH A POLYETHYLENE LINER DOWNSPOUT.
2. POLYETHYLENE LINER (NHDOT ITEM 604.0007) SHALL BE FABRICATED AT THE SHOP. DOWNSPOUT SHALL BE EXTRUSION FILLET WELDED TO THE POLYETHYLENE SHEET.
3. PLACE A CONTINUOUS BEAD OF AN APPROVED SILICONE SEALANT BETWEEN FRAME AND POLYETHYLENE SHEET.
4. PLACE A CLASS AA CONCRETE TO 2" BELOW THE TOP OF GRATE ELEVATION (SUBSIDIARY TO DRAINAGE STRUCTURE).
5. TRIM POLYETHYLENE SHEET A MAXIMUM OF 4" OUTSIDE THE FLANGE ON THE FRAME FOR THE CATCH BASIN BEFORE PLACING CONCRETE (EXCEPT AS SHOWN WHEN USED WITH CURB).
6. THE CENTER OF THE GRATE & FRAME MAY BE SHIFTED A MAXIMUM OF 3" FROM THE CENTER OF THE DOWNSPOUT IN ANY DIRECTION.

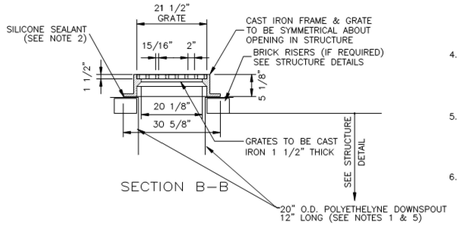
CATCH BASIN NOTES:

1. WHERE DEPTH EXCEEDS 12 FT, USE 5'-0" DIAMETER (MIN.)
2. MINIMUM PIPE DROP (INLET TO OUTLET) SHALL BE 3" UNLESS OTHERWISE APPROVED BY THE TOWN OF LONDONDERRY DEPARTMENT OF PUBLIC WORKS AND ENGINEERING.
3. ALL BOOTS, GASKETS, AND SEALANTS, SHALL BE IN ACCORDANCE WITH MANUFACTURES WRITTEN INSTRUCTIONS.
4. ALL PRECAST SECTIONS SHALL CONFORM TO ASTM C-478 DESIGNAT ION H20 LOADING.

CATCH BASIN

NOT TO SCALE



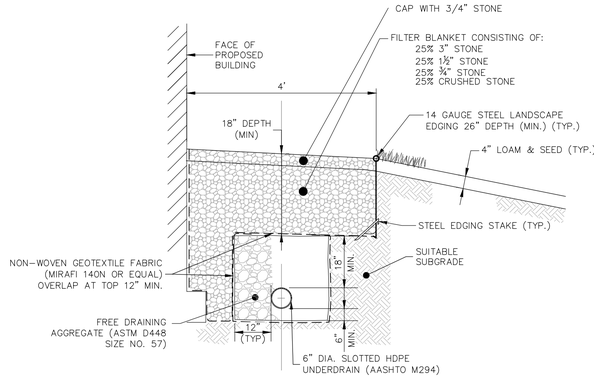


1. POLYETHYLENE LINER (ITEM 604.0007) SHALL BE FABRICATED AT THE SHOP. DOWNSPOUT SHALL BE EXTRUSION FILLET WELDED TO THE POLYETHYLENE SHEET.
2. PLACE A CONTINUOUS BEAD OF AN APPROVED SILICONE SEALANT (SUBSIDIARY TO ITEM 604.0007) BETWEEN FRAME AND POLYETHYLENE SHEET (SEE SECTION A-A, PLATE 4).
3. PLACE CLASS AA CONCRETE TO 2" BELOW THE TOP OF GRATE ELEVATION (SUBSIDIARY TO DRAINAGE STRUCTURE). USE ON DRAINAGE STRUCTURES 4' MIN. DIAMETER ONLY.
4. TRIM POLYETHYLENE SHEET A MAXIMUM OF 4" OUTSIDE THE FLANGE ON THE FRAME FOR THE CATCH BASIN BEFORE PLACING CONCRETE (EXCEPT AS SHOWN WHEN USED WITH 3-FLANGE FRAME AND CURB)
5. THE CENTER OF THE GRATE & FRAME MAY BE SHIFTED A MAXIMUM OF 6" FROM THE CENTER OF THE DOWNSPOUT IN AS SHOWN WHEN USED WITH 3-FLANGE FRAME AND CURB).
6. PLACED ONLY IN DRAINAGE STRUCTURES IN PAVEMENT. ANY DIRECTION.

CATCH BASIN FRAME AND GRATE

NEENAH R-3404 OR EQUIVALENT

NOT TO SCALE

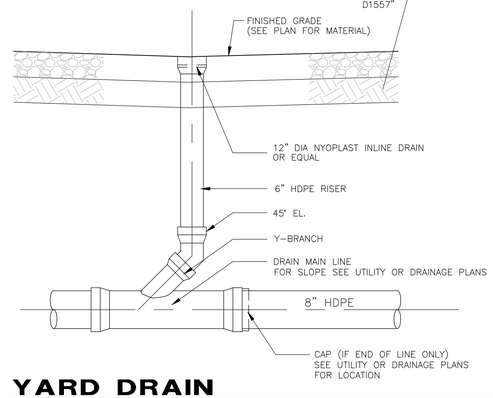


GRAVEL DRIP EDGE SECTION

WITH UNDERDRAIN

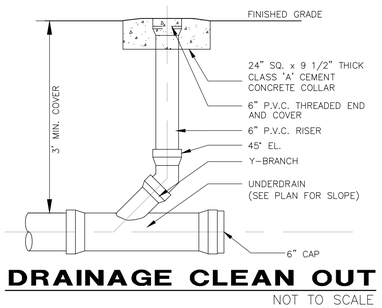
NOT TO SCALE

"IMPERVIOUS FILL SHALL BE FREE OF ORGANIC MATTER, HAVE A MAXIMUM PARTICLE SIZE LESS THAN ONE INCH, AND GREATER THAN 25 PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE. IMPERVIOUS FILL SHALL HAVE A LIQUID LIMIT NO GREATER THAN 30 AND PLASTICITY INDEX NO GREATER THAN 10. THE LIQUID LIMIT AND PLASTICITY INDEX SHALL BE DETERMINED USING ASTM D4318. MATERIAL SHALL BE COMPACTED TO 90 PERCENT OF THE IMPERVIOUS FILL'S MAXIMUM DRY DENSITY AS DETERMINED BT ASTM D1557"



YARD DRAIN

NOT TO SCALE



DRAINAGE CLEAN OUT

NOT TO SCALE

STATE OF NEW HAMPSHIRE
NICHOLAS C. GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

TAX MAP 9 LOT 45

DETAILS

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25

6A KITTY HAWK LANDING, LONDONDERRY, NH

FEBRUARY 20, 2026

REV	DATE	DESCRIPTION	DR	CK
1	3/12/2026	REVISIONS PER TOWN COMMENTS	PS	NG

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

PRJT. NO. 12434-04 | DR PS | CK NG | CADFILE 12434-03_COVER & DETAILS | D-04

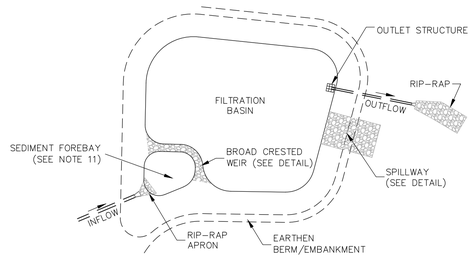
Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

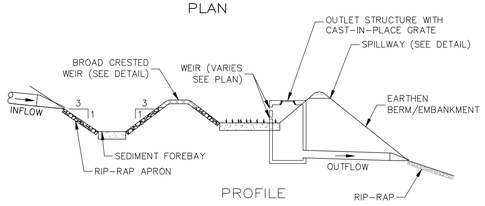
This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

DIG SAFE
811 OR 1-888-DIG-SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Mar 12, 2026 - 2:35pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-03_Cover & Details.dwg



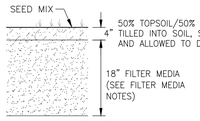
PLAN



PROFILE

FILTRATION BASIN NOTES

1. THE INSTALLER SHALL NOT ALLOW ANY VEHICULAR OR CONSTRUCTION EQUIPMENT TRAVEL TO OCCUR ACROSS THE PROPOSED BASIN AREA AT ANY TIME EXCEPT DURING EXCAVATION OF TOPSOIL, SUBSOIL AND OTHER MATERIALS NOT SUITABLE FOR BED BOTTOM CONDITIONS.
2. CAUTION SHOULD BE EXERCISED DURING SITE PREPARATION TO AVOID COMPACTION OF THE INFILTRATIVE SURFACE.
3. REMOVE ANY DREDGING MATERIAL, THICK LOAM LAYERS, OR IMPERVIOUS MATERIAL AT BASIN BOTTOM.
4. SEED MIX
   NEW ENGLAND ROADSIDE MATRIX WET MEADOW SEED MIX (MIN. 35 LBS/ACRE)
5. FILTER MEDIA SOIL SAMPLE TO BE PROVIDED TO THE ENGINEER PRIOR TO PLACEMENT. ON SITE MIXING OF MANUFACTURED SOIL MAY BE ACCEPTABLE PENDING ENGINEER APPROVAL.
6. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE BASIN.
7. AFTER THE BASIN 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.
8. VEGETATION SHOULD BE ESTABLISHED IMMEDIATELY.
9. DO NOT PLACE FILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
10. FILTRATION MEDIA SHALL BE INSTALLED ALONG INTERIOR SIDE SLOPES TO ELEVATION EQUAL TO OUTLET STRUCTURE RIM OR WEIR ELEVATION, WHICHEVER IS LOWER.
11. FILTER MEDIA SHALL BE PLACED IN BOTTOM OF SEDIMENT FOREBAY.



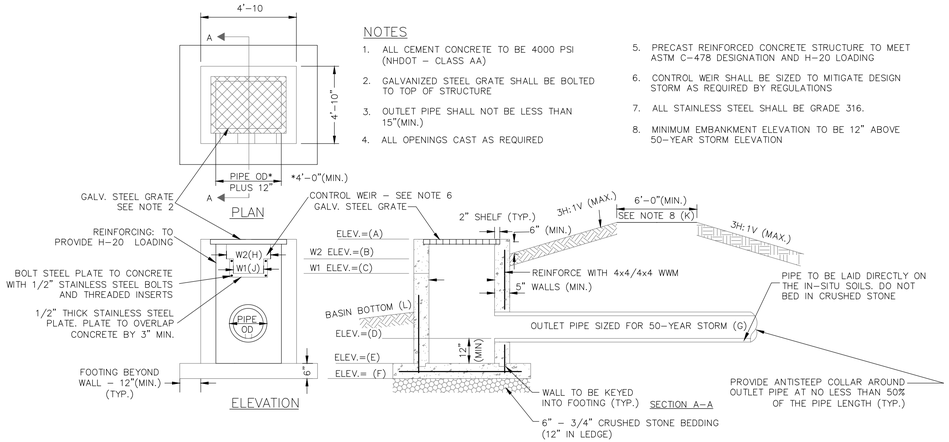
BASIN BOTTOM

FILTER MEDIA NOTES

1. ASTM C-33 CONCRETE SAND (50%-55% BY VOLUME)
2. LOAMY SAND TOPSOIL WITH 15%-25% FINES PASSING THE NO. 200 SIEVE (20%-30% BY VOLUME)
3. MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE NO. 200 SIEVE (20%-30% BY VOLUME)

FILTRATION BASIN

WITH OUTLET STRUCTURE — NOT TO SCALE



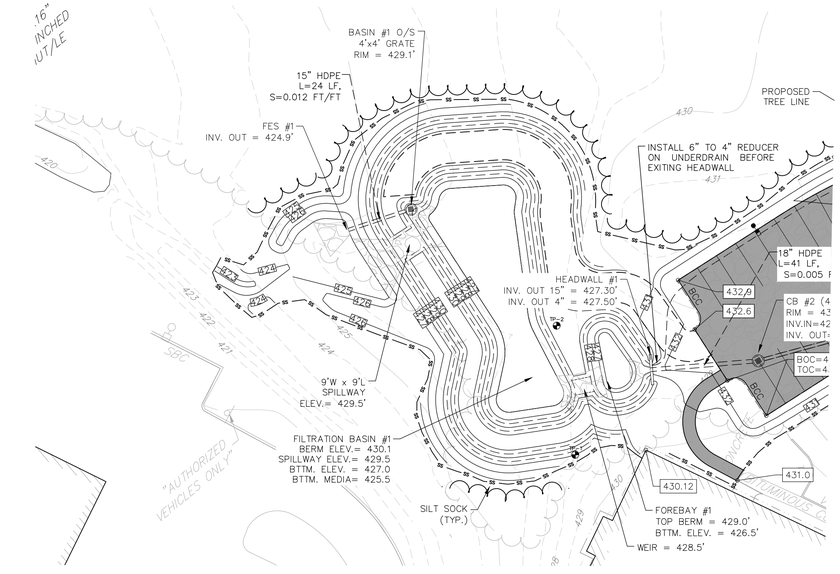
NOTES

1. ALL CEMENT CONCRETE TO BE 4000 PSI (NHDOT - CLASS AA)
2. GALVANIZED STEEL GRATE SHALL BE BOLTED TO TOP OF STRUCTURE
3. OUTLET PIPE SHALL NOT BE LESS THAN 15"(MIN.)
4. ALL OPENINGS CAST AS REQUIRED
5. PRECAST REINFORCED CONCRETE STRUCTURE TO MEET ASTM C-478 DESIGNATION AND H-20 LOADING
6. CONTROL WEIR SHALL BE SIZED TO MITIGATE DESIGN STORM AS REQUIRED BY REGULATIONS
7. ALL STAINLESS STEEL SHALL BE GRADE 316.
8. MINIMUM EMBANKMENT ELEVATION TO BE 12" ABOVE 50-YEAR STORM ELEVATION

	ELEVATIONS/DIMENSIONS										
OUTLET STRUCTURE	A	B	C	D	E	F	G	H	J	K	L
BASIN #1	429.10	428.63	427.93	425.20	424.20	423.70	15"	1.25'	0.53'	430.10	427.0

OUTLET STRUCTURE AT FILTRATION BASIN

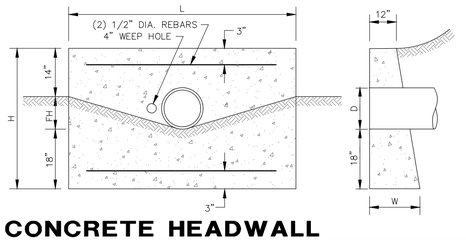
NOT TO SCALE



BASIN #1 PLAN VIEW

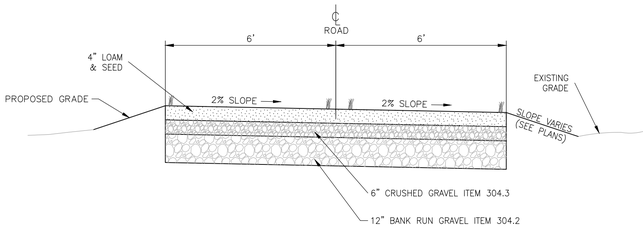
1" = 30'

NOMINAL PIPE SIZE D	LENGTH OF BARS	L	H	FH	W
12	3'-2"	3'-6"	3'-6"	0'-10"	1'-10.5"
15	4-2	4-6	3-9	1-1	1-11.25
18	5-2	5-6	4-0	1-4	2-0
24	7-2	7-6	4-6	1-10	2-1.5
30	9-2	9-6	5-0	2-4	2-3
36	11-2	11-6	5-6	2-10	2-4.5
42	13-2	13-6	6-0	3-4	2-6
48	15-2	15-6	6-6	3-10	2-7.5



CONCRETE HEADWALL

SINGLE PIPE SYSTEM — NOT TO SCALE



MAINTENANCE DRIVE

STORMWATER MANAGEMENT AREAS — NOT TO SCALE

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

DIG SAFE — CALL 811 OR 1-888-DIG-SAFE — CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE — NICHOLAS C. GOLON No. 14086 — LICENSED PROFESSIONAL ENGINEER

3/12/26

TAX MAP 9 LOT 45

DETAILS

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25

6A KITTY HAWK LANDING, LONDONDERRY, NH

FEBRUARY 20, 2026

REV	DATE	DESCRIPTION	DR	CK
1	3/12/2026	REVISIONS PER TOWN COMMENTS	PS	NG

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

FILE: 12434-04 | DR: PS | CK: NG | CADFILE: 12434-03_COVER & DETAILS | D-05

Mar 12, 2026 - 2:35pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_CSD\PRODUCTION\12434-03_Cover & Details.dwg

CONSTRUCTION SPECIFICATIONS

PREPARE BEDDING:

BACKFILL MATERIAL AROUND THE END SECTION MAY BE THE SAME AS THE MATERIAL AROUND THE PIPE, PLACE A FEW INCHES OF BACKFILL MATERIAL IN THE TRENCH OR DITCH WHERE THE END SECTION WILL BE PLACED. COMPACT AND CONTOUR THIS BEDDING MATERIAL TO GENERALLY MATCH THE END SECTION, EXCAVATE AN AREA IN THE BEDDING WHERE TOE TROUGH WILL SEAT SO THAT THE END SECTION WILL BE LEVEL WITH THE BOTTOM OF THE TRENCH OR DITCH IN THE FINISHED INSTALLATION.

PLACE END SECTION OF PIPE:

OPEN THE END SECTION COLLAR AND SEAT IT OVER THE TWO PIPE CONNECTIONS. ONCE THE END SECTION IS POSITIONED, CHECK TO MAKE SURE THAT THE INVERT OF THE END SECTION MATCHES THE INVERT OF THE PIPE AND THAT THE END SECTION IS LEVEL WITH THE TRENCH OR DITCH BOTTOM.

SECURE THE END SECTION:

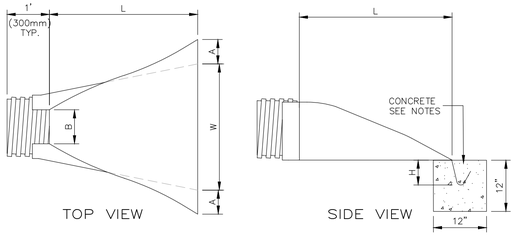
SLIP THE STAINLESS STEEL ROD THROUGH THE PRE-DRILLED HOLES AT THE TOP OF THE COLLAR. THE ROD SHOULD BE BETWEEN THE CROWNS OF THE TWO PIPE CONNECTIONS. PLACE A WASHER ON EITHER END OF THE ROD. PLACE A NUT ON EITHER END OF THE ROD AND TIGHTEN WITH A WRENCH.

SECURE THE TOE TROUGH:

TO PREVENT WASHOUTS FROM HIGH VELOCITY FLOW, IT IS RECOMMENDED THAT THE TROUGH BE SECURED WITH CONCRETE. POUR CONCRETE IN THE TROUGH UP TO THE LEVEL OF THE TRENCH OR DITCH BOTTOM AND ALONG THE ENTIRE LENGTH OF THE TROUGH.

FINISH BACKFILL:

SHOVEL BACKFILL AROUND THE END SECTION IN 6 TO 9 INCH LAYERS EQUALLY ON BOTH SIDES, KNIFING IT TO ELIMINATE VOIDS. TAMP WITH A SMALL-FACED COMPACTOR OR OTHER EQUIPMENT SUITABLE FOR SMALL AREAS. CONTINUE PLACING, KNIFING, AND COMPACTING BACKFILL LAYERS TO THE TOP OF THE END SECTION TO SEAT IT WELL INTO THE BACKFILL.



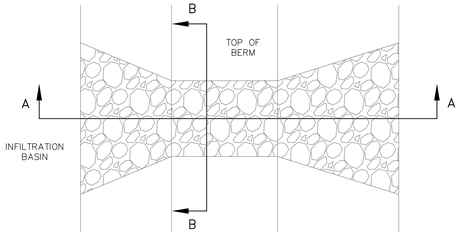
	DIMENSIONS, INCHES (mm)						
PIPE DIAMETER	PART NO.	A, ±1 (25)	B MAX	H, ±1 (25)	L, ±1/2 (13)	W, ±2 (50)
12", 15" (300,375)	1210 NP	6.5 (165)	10 (254)	6.5 (165)	25 (635)	29 (736)
18" (450)	1810 NP	7.5 (190)	15 (380)	6.5 (168)	32 (812)	35 (890)
24" (600)	2410 NP	7.5 (190)	18 (450)	6.5 (165)	36 (900)	45 (1140)
30" (750)	3010 NP	10.5 (266)	NA	7.0 (178)	53 (1346)	68 (1725)
36" (900)	3610 NP	10.5 (266)	NA	7.0 (178)	53 (1346)	68 (1725)

FLARED END SECTION

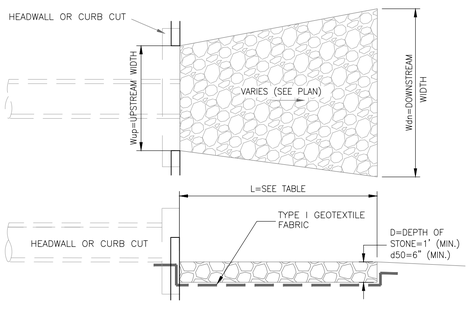
HIGH DENSITY POLYETHYLENE (HDPE) — NOT TO SCALE

DIMENSIONS INCHES (mm)							
OUTLET	D (FT)	Q25 (cfs)	Tw (FT)	L (FT)	Wup (FT)	Wdn (FT	d50 (IN)*
FES #1	1.25	2.1	0.3	11.5	3.8	15.2	6.0
HEADWALL #1	1.50	2.6	1.5	15.8	5.4	11.7	6.0
FOREBAY #1	6.00	1.2	0.3	42.5	18.0	60.5	6.0
BASIN #1	9.00	0.0	0.0	63.0	27.0	90.0	6.0

*NOTE: 6" MIN.



PLAN VIEW

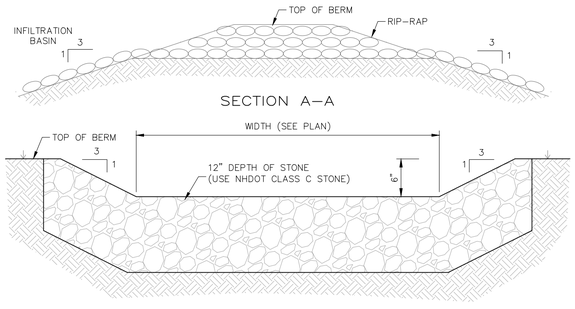


CONSTRUCTION SPECIFICATIONS:

1. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIP-RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK USED FOR RIP-RAP SHALL CONFORM TO THE SPECIFIED GRADATION (D50=6" (MIN)).
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.

OUTLET APRON

NOT TO SCALE

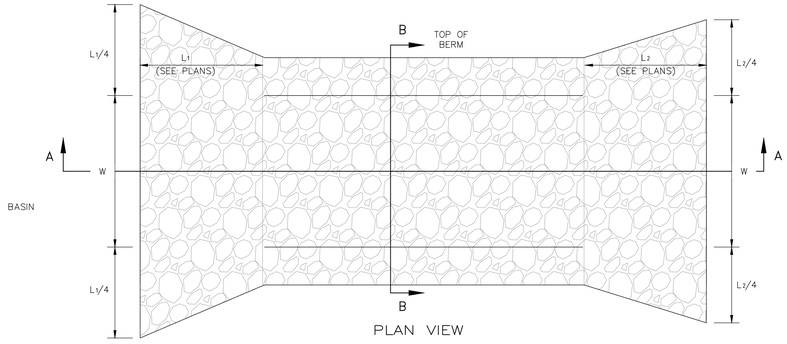


SECTION A-A

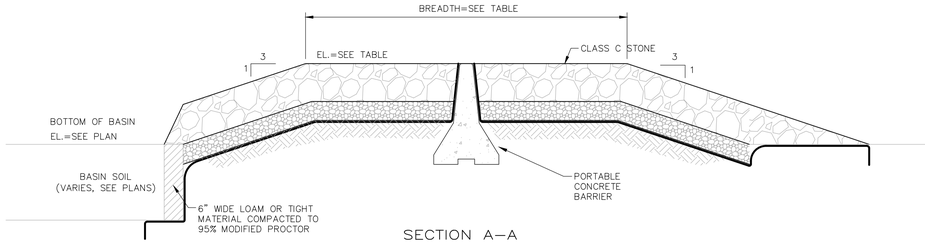
WEIR	TOP OF BASIN BERM EL.	WEIR INV.	WIDTH	LENGTH
SEDIMENT FOREBAY #1	429.0	428.5	6'	7'

BROAD CRESTED WEIR

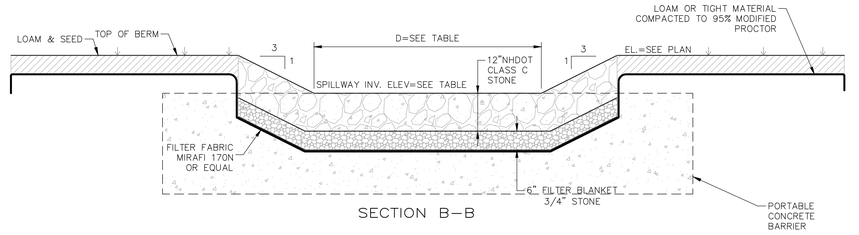
FROM FOREBAYS — NOT TO SCALE



PLAN VIEW



SECTION A-A



SECTION B-B

SYSTEM	TOP OF BASIN BERM EL.	SPILLWAY INV.	WIDTH (D)	BREADTH
FILTRATION BASIN #1	430.1	429.50	9'	9'

SPILLWAY

FROM BASINS — NOT TO SCALE

STATE OF NEW HAMPSHIRE
NICHOLAS C GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

TAX MAP 9 LOT 45

DETAILS

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25

6A KITTY HAWK LANDING, LONDONDERRY, NH

FEBRUARY 20, 2026

REV	DATE	DESCRIPTION	DR	CK
1	3/12/2026	REVISIONS PER TOWN COMMENTS	PS	NG

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

FILE	DR	CK	CADFILE		
12434-04	PS	NG	12434-03_COVER & DETAILS	D-06	

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Mar 12, 2026 - 2:35pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-03_Cover & Details.dwg

SITE AND SOIL PREPARATION

1. WHEN CONDITIONS DETRIMENTAL TO PLANT GROWTH ARE ENCOUNTERED, SUCH AS RUBBLE FILL, ADVERSE DRAINAGE CONDITIONS, OR LEDGE, NOTIFY LANDSCAPE ARCHITECT/ENGINEER BEFORE PLANTING.
2. ALL DISTURBED AREAS & PLANTING AREAS, INCLUDING AREAS TO BE SODDED, SHALL RECEIVE THE FOLLOWING SOIL PREPARATION PRIOR TO PLANTING: A MINIMUM OF 6 INCHES OF LIGHTLY COMPACTED TOPSOIL SHALL BE INSTALLED OVER THE SUBSOIL IF TOPSOIL HAS BEEN REMOVED OR IS NOT PRESENT.
3. LOAM SHALL CONSIST OF LOOSE FRIABLE TOPSOIL WITH NO ADMIXTURE OF REFUSE OR MATERIAL TOXIC TO PLANT GROWTH. LOAM SHALL BE FREE FROM STONES, LUMPS, STUMPS, OR SIMILAR OBJECTS LARGER THAN TWO INCHES (2") IN GREATEST DIAMETER, SUBSOIL, ROOTS, AND WEEDS. THE MINIMUM AND MAXIMUM PH VALUE SHALL BE FROM 5.5 TO 7.0. LOAM SHALL CONTAIN A MINIMUM OF TWO PERCENT (2%) AND A MAXIMUM OF FIVE PERCENT (5%) ORGANIC MATTER AS DETERMINED BY LOSS BY IGNITION. SOIL TEXTURE SHALL BE SANDY CLAY LOAM OR SANDY LOAM WITH CLAY CONTENT BETWEEN 15 AND 25%, AND A COMBINED CLAY/SILT CONTENT OF NO MORE THAN 55%. NOT MORE THAN SIXTY-FIVE PERCENT (65%) SHALL PASS A NO. 200 SIEVE AS DETERMINED BY THE WASH TEST IN ACCORDANCE WITH ASTM D1140. IN NO INSTANCE SHALL MORE THAN 20% OF THAT MATERIAL PASSING THE #4 SIEVE CONSIST OF CLAY SIZE PARTICLES.
4. NATURAL TOPSOIL NOT CONFORMING TO THE PARAGRAPH ABOVE OR CONTAINING EXCESSIVE AMOUNTS OF CLAY OR SAND SHALL BE TREATED BY THE CONTRACTOR TO MEET THOSE REQUIREMENTS.
5. SUBMIT TEST RESULTS OBTAINED FROM SOURCE TO ENGINEER/LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL, PRIOR TO SPREADING OPERATIONS.
6. APPROVAL BY THE ENGINEER/LANDSCAPE ARCHITECT TO USE THE TOPSOIL WILL DEPEND UPON THE RESULTS OF THE SOIL TESTS.
7. THE BURDEN OF PROOF OF SOIL AMENDMENT INSTALLATION RESTS WITH THE CONTRACTOR. SOIL TESTS MAY BE REQUIRED AT THE CONTRACTOR'S EXPENSE IN ORDER TO CONFIRM AMENDMENT INSTALLATION.

SEEDING

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

ACCEPTABLE SEED MIXES ARE AS FOLLOWS OR AS LABELED ON THE PLAN:

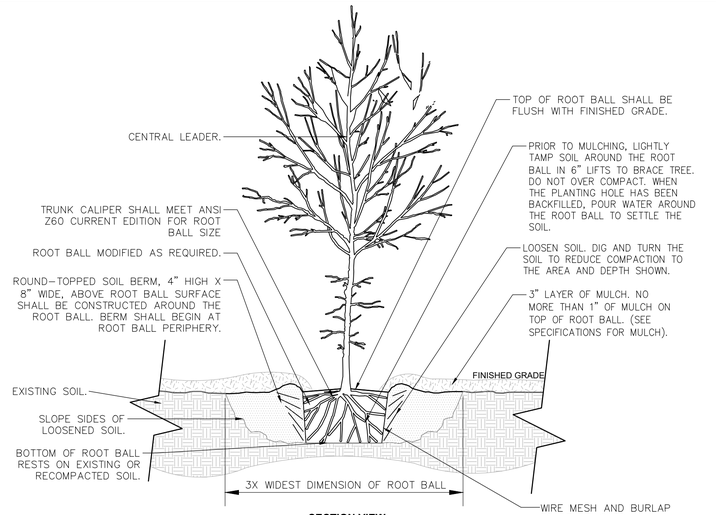
PARK SEED MIX (NHDOT TYPE 15) MIN. 120 LBS/ACRE:
33% CREEPING RED FESCUE (MIN. 40 LBS/ACRE)
42% PERENNIAL RYEGRASS (MIN. 50 LBS/ACRE)
21% KENTUCKY BLUEGRASS (MIN. 25 LBS/ACRE)
4% REDTOP (MIN. 5 LBS/ACRE)

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

SLOPE SEED (WF) (MIN. 25 LBS/ACRE)
NEW ENGLAND CONSERVATION/WILDLIFE MIX, BY: NEW ENGLAND WETLAND PLANTS, INC OR APPROVED EQUAL.
APPLICATION RATE: 25LBS/ACRE | 1750 SQ FT/LB
SPECIES: VIRGINIA WILD RYE (ELYMUS VIRGINICUS), LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM), BIG BLUESTEM (ANDROPOGON GERARDII), RED FESCUE (FESTUCA RUBRA), SWITCH GRASS (PANICUM VIRGATUM), PARTRIDGE PEA (CHAMAECRISTA FASCICULATA), PANICLEDLEAF TICK TREFOIL (DESMODIUM PANICULATUM), INDIAN GRASS (SORGHASTRUM NUTANS), BLUE VERVAIN (VERBENA HASTATA), BUTTERFLY MILKWEED (ASCLEPIAS TUBEROSA), BLACK EYED SUSAN (RUDBECKIA HIRTA), COMMON SNEEZEWEED (HELENIUM AUTUNALE), HEATH ASTER (ASTERPILOSUS/SYMPHYOTRICHUM PILOSUM), EARLY GOLDENROD (SOLIDAGO JUNCEA), UPLAND BENTGRASS (AGROSTIS PERENNANS).
CONTACT: 413-548-8000 / INFO@NEWP.COM

PLANTING

1. EXCAVATE PITS, PLANTERS, BEDS AND TRENCHES WITH VERTICAL SIDES AND WITH BOTTOM OF EXCAVATION SLIGHTLY RAISED AT CENTER TO PROVIDE PROPER DRAINAGE. LOOSEN HARD SUBSOIL IN BOTTOM OF EXCAVATION.
2. ANY LEDGE OR RUBBLE MATERIAL SHALL BE FRACTURED TO A DEPTH OF 3 FEET AND EXCAVATED TO A DEPTH OF 30 INCHES FOR TREE POCKETS AND 18 INCHES FOR SHRUB BEDS. THIS PROCEDURE SHALL BE HANDLED BY THE SITE CONTRACTOR. SITE TOPSOIL SHALL BE DEPOSITED IN ALL EXCAVATED POCKETS.
3. DISPOSE OF SUBSOIL REMOVED FROM PLANTING EXCAVATIONS. DO NOT MIX WITH PLANTING SOIL OR USE AS BACKFILL.
4. FILL EXCAVATIONS FOR TREES AND SHRUBS WITH WATER AND ALLOW TO PERCOLATE OUT BEFORE PLANTING.
5. DISH TOP OF BACKFILL TO ALLOW FOR MULCH – PLANT SAUCERS SHALL BE AS SHOWN ON DETAIL SHEETS; 6' DIAMETER FOR ALL DECIDUOUS TREES, AND FOR EVERGREEN TREES A RADIUS 2' BEYOND THE OUTER MOST BRANCHES.
6. MULCH TREES, SHRUBS, PLANTERS AND BEDS. PROVIDE NOT LESS THAN 3" THICKNESS OF BARK MULCH, 3/8"-2" OF WIDTH, AND WORK INTO TOP OF BACKFILL. FINISH LEVEL WITH ADJACENT FINISH GRADES AS DIRECTED IN THE FIELD.
7. TREEGATOR WATERING SYSTEM OR APPROVED EQUAL SHALL BE INSTALLED FOR ALL DECIDUOUS TREES AT TIME OF PLANTING AND REMOVED BEFORE FROST. WATERING RATE TO BE APPLIED PER MANUFACTURER'S SPECIFICATIONS.
8. ALL PLANT MATERIALS SHALL HAVE DEAD OR DAMAGED BRANCHES REMOVED AT TIME OF PLANTING. ALL TAGS AND RIBBONS SHALL BE REMOVED AT THIS TIME.
9. THE CONTRACTOR SHALL REQUEST A FINAL OBSERVATION BY THE OWNER'S REPRESENTATIVE UPON COMPLETION OF INSTALLATION.



SECTION VIEW

TREE WITH MULCH BERM

NOT TO SCALE

SECTION VIEW

SHRUB PLANTING

NOT TO SCALE

NICHOLAS C. GOLON No. 14086 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
3/12/26

TAX MAP 9 LOT 45

DETAILS

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY
268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25
6A KITTY HAWK LANDING, LONDONDERRY, NH

FEBRUARY 20, 2026

REV	DATE	DESCRIPTION	DR	CK

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

FILE	DR	CK	CADFILE		
12434-04	PS	NG		12434-03_COVER & DETAILS	D-07

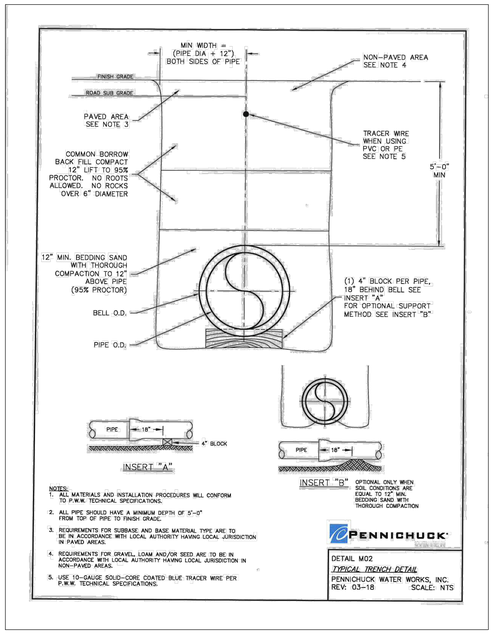
Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

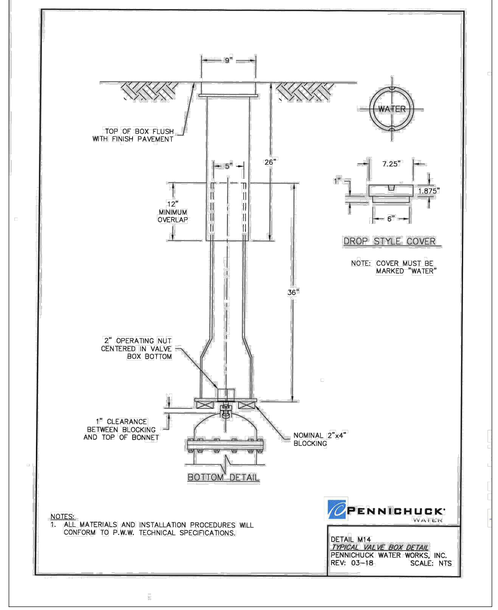
All rights reserved. These plans and materials may not be copied, duplicated, replicated or otherwise reproduced in any form whatsoever without the prior written permission of TFMoran, Inc.

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

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Mar 12, 2026 - 2:35pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-03_Cover & Details.dwg





SEWER SERVICE NOTES

1) MINIMUM SIZE PIPE FOR SEWER SERVICE SHALL BE FOUR INCHES.

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

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

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

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

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

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

B. DUCTILE-IRON PIPE, FITTINGS AND JOINTS.

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

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

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

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

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

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

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

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

LOW PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH:

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

UNI-BELL PVC PIPE ASSOCIATION UNI-B-6, "LOW PRESSURE AIR TESTING OF INSTALLED SEWER PIPE".

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

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

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

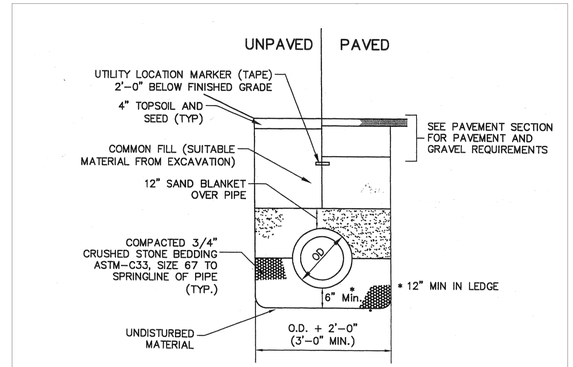
10) BEDDING: CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATERIAL AND MEETING ASTM C33-67.

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

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

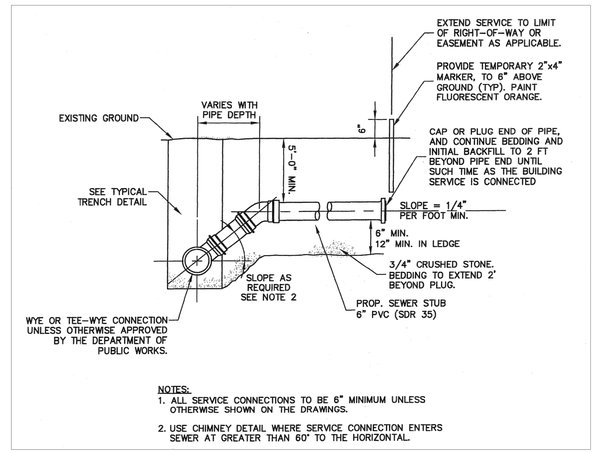
11) LOCATION: THE LOCATION OF THE TEE OR WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS METAL ROD OR PIPE SHALL BE PLACED OVER THE TEE OR WYE AS DESCRIBED IN THE TYPICAL "CHIMNEY" DETAIL, TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPEFINDER.

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



TYPICAL SEWER PIPE TRENCH

NOT TO SCALE



NOTES:
1. ALL SERVICE CONNECTIONS TO BE 6" MINIMUM UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
2. USE CHIMNEY DETAIL WHERE SERVICE CONNECTION ENTERS SEWER AT GREATER THAN 60° TO THE HORIZONTAL.

SEWER SERVICE CONNECTION

Copyright 2026 ©TFMoran, Inc.
48 Constitution Drive, Bedford, N.H. 03110

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

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

DIG SAFE
811 OR 1-888-DIG-SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
NICHOLAS C. GOLON
No. 14086
LICENSED PROFESSIONAL ENGINEER
3/12/26

REV	DATE	DESCRIPTION	DR	CK
1	3/12/2026	REVISIONS PER TOWN COMMENTS	PS	NG

TAX MAP 9 LOT 45

DETAILS

TOWN HALL OFFICE & PARKING EXPANSION

268C MAMMOTH ROAD

OWNED BY

TOWN OF LONDONDERRY

268B MAMMOTH ROAD, LONDONDERRY, NH

PREPARED FOR

LONDONDERRY SAU 25

6A KITTY HAWK LANDING, LONDONDERRY, NH

FEBRUARY 20, 2026

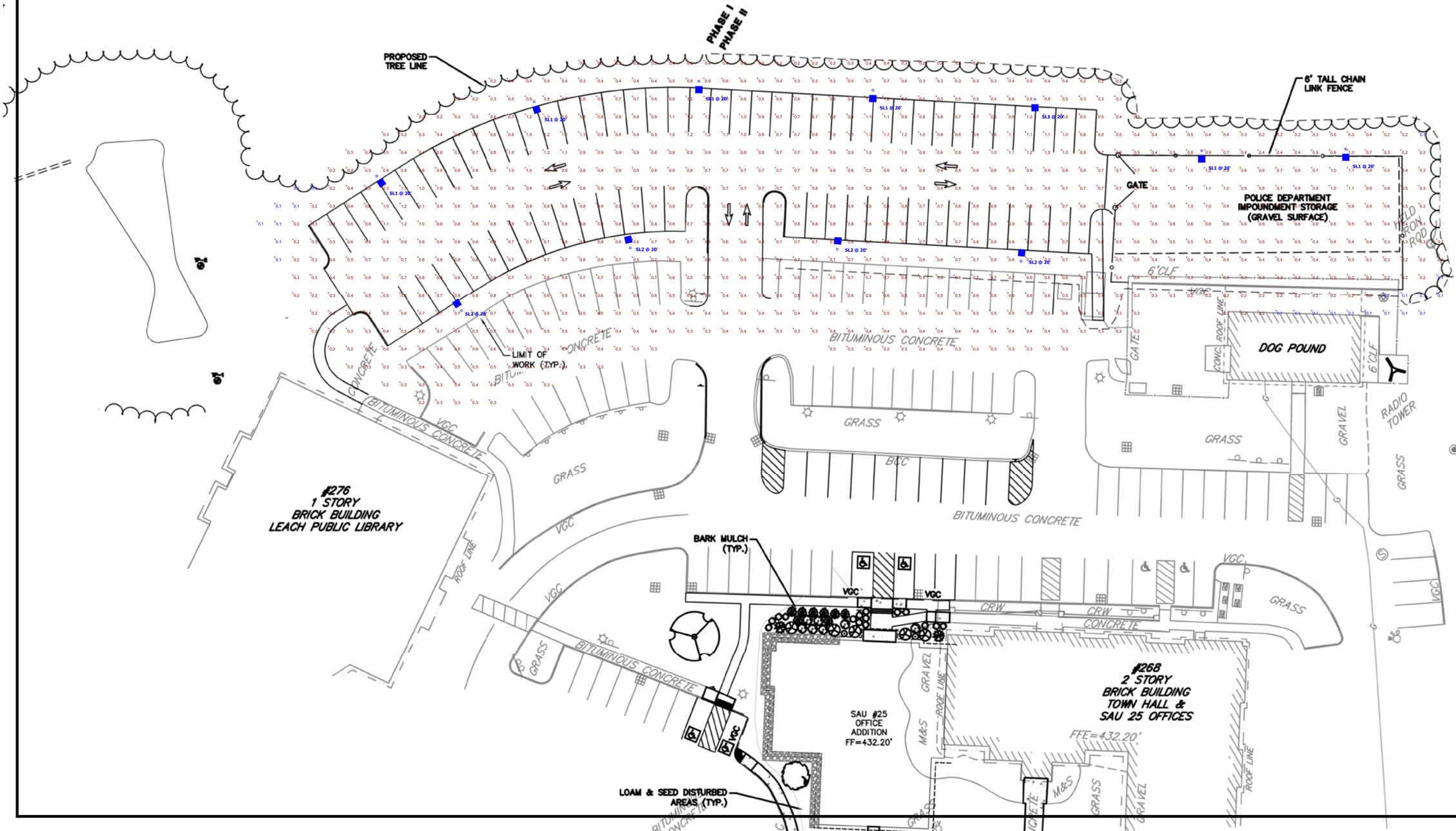
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
www.tfmoran.com

FILE	DR	CK	CADFILE		
12434-04	PS	NG	12434-03_COVER & DETAILS		D-08

Mar 12, 2026 - 2:41pm
F:\TFM Projects\12434 Mammoth Rd - Londonderry, NH\12434-03 SAU 25 - Town Hall Office & Parking Expansion\12434-03_C3D\PRODUCTION\12434-03_Cover & Details.dwg

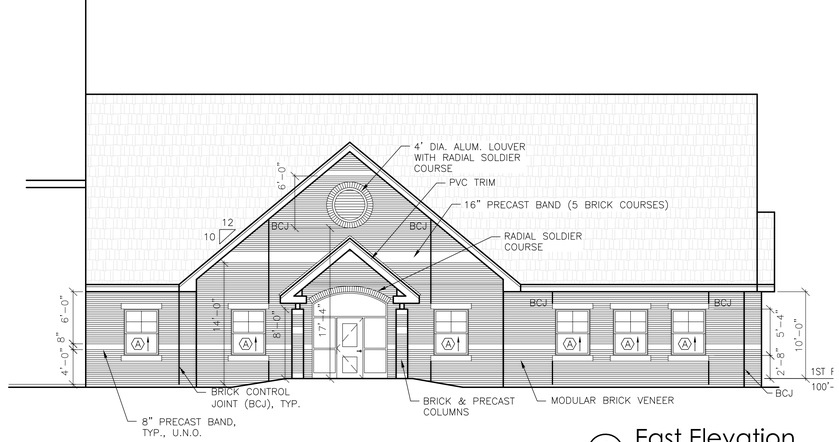
Schedule

Symbol	Label	Image	QTY	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens per Lamp	Lumen Multiplier	LLF	Wattage	Efficiency	Distribution	Polar Plot	Notes
	SL1		7	NLS LIGHTING	NV-1-T4FTW-16L-1-50K7	OUTDOOR AREA LIGHT		1	NV-1-T4FTW-16L-7-40K7.ies	3853	1	0.9	36	100%		Max: 2566cd	
	SL2		4	NLS LIGHTING	NV-1-T5W-16L-7-40K7	OUTDOOR AREA LIGHT		1	NV-1-T5W-16L-7-40K7.IES	5114	1	0.9	36	100%		Max: 2613cd	

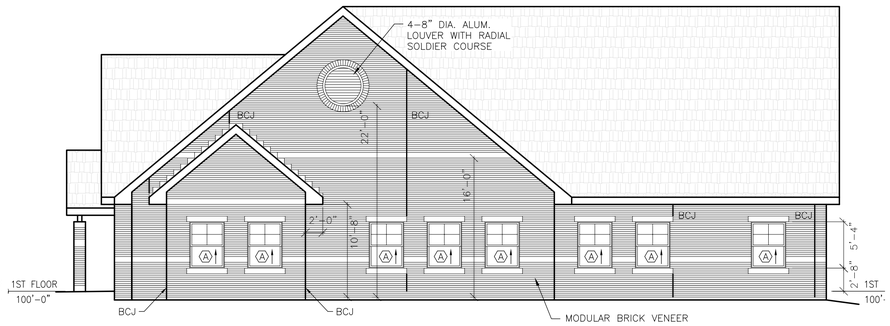


LONDONDERRY TOWN HALL
ADDITIONAL PARKING

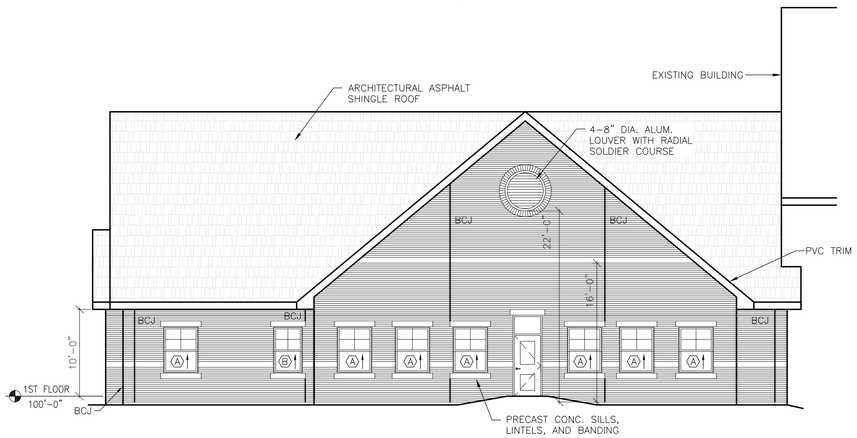
Designer
S. KIMBALL
Date
11/04/2025
Scale
Not to Scale
Drawing No.



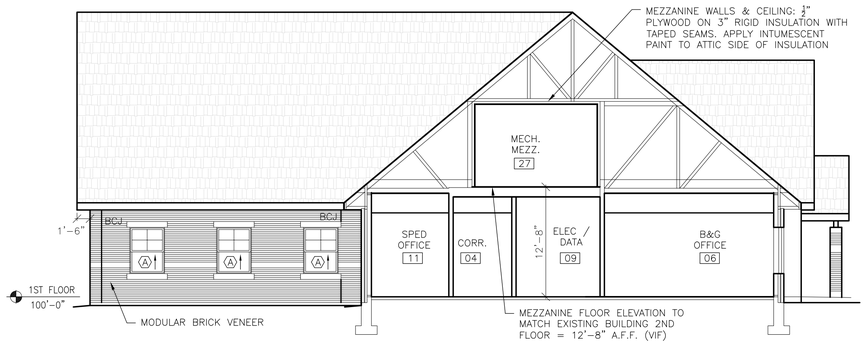
1 East Elevation
Scale 1/8" = 1'



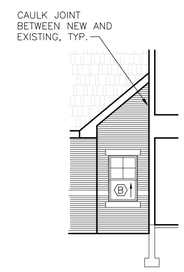
2 North Elevation
Scale 1/8" = 1'

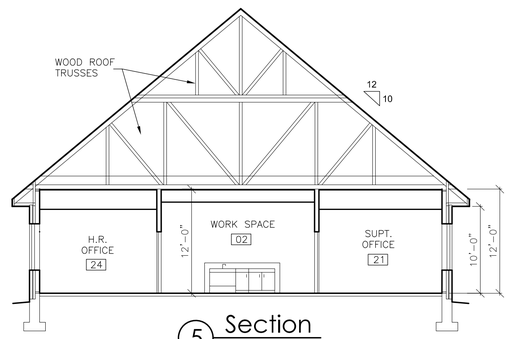


3 West Elevation
Scale 1/8" = 1'

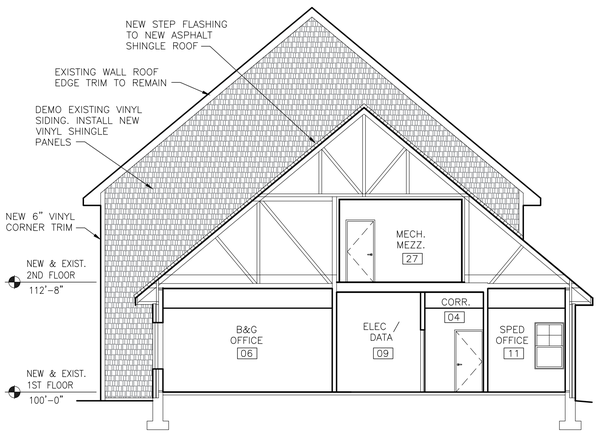


4 South Elevation
Scale 1/8" = 1'

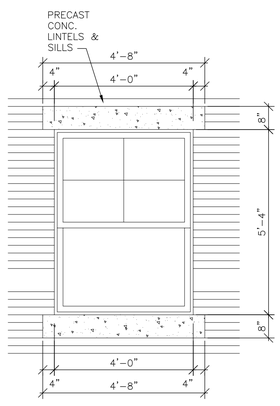




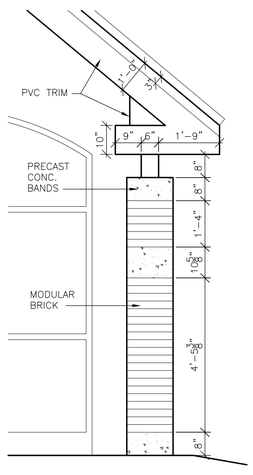
5 Section
Scale 1/8" = 1'



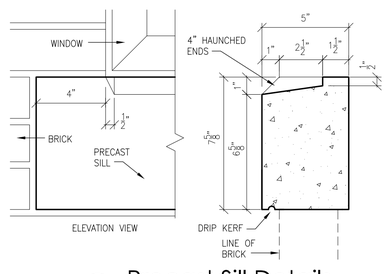
9 North Elevation (Exist. Bldg)
Scale 1/8" = 1'



8 Window Precast
Scale 1/2" = 1'



7 Canopy Column
Scale 1/2" = 1'



6 Precast Sill Details
Scale 3" = 1'

MARINACE ARCHITECTS
box 429, new hampton, new hampshire 03256
www.marinacearchitects.com

date: 11-3-25
~~scale: Noted~~
Project #: 2510
NOT TO SCALE

Elevations

Londonderry School District Central Office
Londonderry, NH

A2

Town of Londonderry, New Hampshire

Planning & Economic Development Department 603-432-1100
268B Mammoth Road 603-432-1128
Town Hall – 2nd Floor www.londonderrynh.org

Planning – Zoning – Economic Development – Conservation

MEMORANDUM

TO: Planning Board

FROM: Kellie Caron, Deputy Town Manager / Director of Economic Development

DATE: April 1, 2026

RE: Non-binding review and discussion in accordance with RSA 674:54 for a governmental land use associated with the SAU #25 Office Addition and Parking Expansion, 268C Mammoth Road, Map 009, Lot 045, Zoned AR-1. Town of Londonderry / SAU #25 (Owner/Applicant).

Project Overview

The applicant, the Town of Londonderry in coordination with SAU #25, is proposing an addition to the existing Town Hall complex to accommodate school administrative offices, along with associated site improvements including parking expansion and expansion of the police impound area.

The project is proposed in phases and includes:

- Construction of a new building for SAU #25 administrative functions
- Expansion of the existing parking area (approximately 70 additional spaces)
- Expansion of the existing police impound yard (approximately 5,500 square feet)
- Associated grading, drainage, and utility improvements

The parking expansion will extend into a forested area, resulting in clearing of approximately one acre of tree cover.

Completeness: Not applicable

Governmental Use: The applicant is before the Planning Board under RSA 674:54, which exempts governmental uses from local land use regulations.

- Under this statute:
    - The Planning Board may review and comment on the proposal
    - The review is **non-binding**

- The Board may conduct a public hearing and provide written comments regarding consistency with local regulations

Conservation Overlay District (Courtesy Review)

A portion of the proposed improvements is located within the Conservation Overlay District (COD), specifically within the 50-foot buffer to wetlands.

- Wetlands have been delineated and evaluated through a functional assessment
- Proposed impacts include:
  - Approximately 5,416 sf of permanent wetland fill
  - Approximately 916 sf of temporary impacts
  - Approximately 19,826 sf of disturbance within the 50-foot buffer

The applicant has indicated that the layout has been designed to minimize impacts and avoid more functionally significant wetland areas where practicable.

The project is subject to NH DES Wetlands Bureau review, with additional review by NH Fish & Game and federal agencies.

Recommendation

It is recommended that the Planning Board provide input on:

- Overall site layout and parking design
- Impacts and mitigation related to the Conservation Overlay District
- Phasing and functionality of the site improvements
- Coordination with existing municipal uses on site

Board Action Required

No formal action is required.

The Planning Board may provide **non-binding comments** in accordance with RSA 674:54.

Town of Londonderry, New Hampshire

Planning & Economic Development Department 603-432-1100
268B Mammoth Road 603-432-1128
Town Hall – 2nd Floor www.londonderrynh.org

Planning – Zoning – Economic Development – Conservation

MEMORANDUM

TO: Planning Board

FROM: Kellie Caron, Deputy Town Manager / Director of Economic Development

DATE: April 1, 2026

RE: Woodmont Commons 2025 Annual Update

Overview

Woodmont Commons is an approved Planned Unit Development (PUD) consisting of approximately 600 acres of mixed-use development, including residential, commercial, and industrial uses located between Exits 4 and 5 along Interstate 93.

The project was approved in 2013 along with a Master Plan and Development Agreement intended to:

- Establish permitted uses and development standards
- Coordinate infrastructure and public improvements
- Ensure long-term fiscal and planning benefits to the Town

Annual Fiscal Update Requirement

Pursuant to Section VIII (Fiscal Matters) of the Development Agreement, the Developer is required to:

- Prepare and submit an annual fiscal impact update to the Town
- Evaluate cumulative fiscal impacts of the development over time
- Compare revenues generated (taxes, fees) to incremental municipal costs

The analysis relies on the methodology established in the 2013 Fiscal Impact Analysis, including:

- Property tax revenues based on assessed value
- Motor vehicle revenues
- Incremental operating and capital costs based on functional population and service demand

Key Provision of Development Agreement

The Development Agreement includes a key fiscal protection mechanism:

- If Woodmont Commons, on a cumulative basis, results in a negative fiscal impact to the Town, the Developer is required to make a payment to offset the deficiency and restore fiscal neutrality.

Purpose of the Annual Update

The annual update provides:

- A snapshot of current development within Woodmont
- Updated estimates of population, employment, and valuation
- A comparison of:
    - Town revenues generated by the development
    - Incremental Town expenditures attributable to the development

The current report evaluates the fiscal period July 1, 2024 through June 30, 2025.

Planning Board Role

Consistent with the 2013 approvals and Development Agreement, the Planning Board's role is:

- To receive and review the annual fiscal update
- To ensure consistency with the methodology established in the 2013 Fiscal Impact Analysis
- To provide input or comments regarding:
    - Assumptions used in the analysis
    - Alignment with the PUD Master Plan and ongoing development
- To acknowledge the update as part of ongoing oversight of the Woodmont PUD

The Planning Board does not take formal action on the fiscal update but serves an important oversight and advisory function as part of the PUD framework.

Recommendation

It is recommended that the Planning Board:

- Receive the Woodmont Commons 2025 Annual Fiscal Update
- Provide any comments or feedback as appropriate

Board Action Required: No formal action is required.