TOWN of SUNAPEE
PLANNING BOARD AGENDA
For THURSDAY DECEMBER 14th, 2023
7:00 PM at the SUNAPEE MIDDLE HIGH SCHOOL GYMNASIUM
NORTH RD

NEW CASES

Case # TC 23-53 Parcel ID: 0128-0031-0000	Tree cutting application to remove 7 trees within the first 50-feet of the shoreline. *Tree Cutting & Vegetation Clearing* *Michael & Sharon Kelly* *90 Garnet Street* *Sunapee, NH* *Residential*
Case # TC 23-54 Parcel ID: 0118-0051-0000	Tree cutting application to remove a total of 18 trees. *Tree Cutting & Vegetation Clearing* *Daniel Cave* *Craig T. Howe, Talbot Builders, agent* *90 Burma Road* *Sunapee, NH* *Rural Residential*
Case # SPR 23-07 Parcel ID: 0106-0018-0000	Demolition of four existing buildings and the construction of new parking, walkways, drainage improvements, landscaping, and reconstruction of the waterfront marina building with associated boathouse *Site Plan Review* *Phase II Design Review* *Goodhue Sunapee Real Property, LLC* *Goodhue Boat Company Marina* *15 Cooper Street* *Sunapee, NH* *Village Commercial*

NOTE: In the event the meeting is cancelled, the agenda will be continued to the next scheduled Planning Board meeting.

Case # SPR 23-08 Parcel ID: 0104-0084-0000	Demolition of existing buildings and the construction of a new 5,400 SF boat showroom. A new 22 space parking lot to be constructed with new walkway to Cooper St. *Site Plan Review* *Phase II Design Review* *Goodhue Sunapee Real Property, LLC* *Goodhue Boat Company Showroom* *1282 Route 11* *Sunapee, NH* *Village Commercial*

CONTINUED CASES

Case # SPR 23-05 Parcel ID: 0232-0023-0000	Change the current use of the property from use of residential to commercial use, utilizing the existing house as office space for up to 20 employees and establishing parking areas. *Jared & Laura Raymond* *Jim Bruss - Agent* *60 Route 103* *Sunapee, NH 03782* *Mixed-Use District*
Case # TC 23-33 Parcel ID: 0113-0035-0000	Tree cutting application to remove an additional 10 trees where approximately 25 trees have previously been removed. *Richard & Joan Stanchfield* *6 Ridgewood Point Road* *Sunapee, NH* *Rural Residential*

CONSULTATION

Parcel ID: 0131-0025-0000	Change current use of property from residential to establish a venue for weddings and other functions. *Deb Samalis* *70 West Court Road* *Sunapee, NH 03782* *Rural Residential*

NOTE: In the event the meeting is cancelled, the agenda will be continued to the next scheduled Planning Board meeting.

Lot Mergers:

OTHER BUSINESS:

1. Parcel ID: 0106-0051-0000 & 0109-0008-0000
   15 Westwood Road
   Joan L. Heilbronner
2. Parcel ID: 0234-0012-0000 & 0234-0011-0000
   3 Timmothy Road
   Charles & Kimber Sink

MISCELLANEOUS: Review Minutes from Previous Meeting(s).

*NOTE: Any and all submissions of relevant case documents MUST be provided 5 days prior to the meeting.

NOTE: In the event the meeting is cancelled, the agenda will be continued to the next scheduled Planning Board meeting.

PERMIT APPROVAL #_____

TOWN OF SUNAPEE

TREE CUTTING & VEGETATION CLEARING REQUEST FORM

FEE-$75

For properties 250' or closer to certain lakes, pond and rivers.

RECEIVED
NOV 0 9 2023
TOWN OF SUNAPEE

This application is required prior to:

1) Any tree cutting within 150' of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River
2) Any stump or root removal within 50' of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River
3) Any project that involves the removal of more than 1,000 square feet of vegetation (plants, trees or saplings) within 150-feet of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River

What is the Shoreline Overlay? All lands within 250' feet of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River.[i]

What is the Natural Woodland Buffer? The Natural Woodland Buffer is the area within 150-feet from the shorelines (normal high-water mark) of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River.[ii]

1. Landowners Name: Michael/Sharon Kelly 2. Parcel ID: 128-31
2. Parcel Street Address: 90 Garnet St
3. Mailing Address: Sunapee, NH 03782

4. Phone #: 339-223-2422 5. Email: mgkelly3@gmail.com
5. Preferred method of contact (check all that apply): _X_ Phone _X_ Email __ US Post Mail

6. Name of river/lake/pond abutting property: Lake Sunapee

Have you obtained any permits from State of NH, Department of Environmental Services (DES) for this project?

_X_Yes __No __If yes, attach copy of permit to this application.

NOTE: Any cutting, or removal of natural vegetation, on ponds, lakes or rivers must be by permit from DES.[iii]

PROPOSED TREE CUTTING

Please mark all trees listed on this application with ribbon or surveyor's tape to assist the Town with any necessary site inspections. Attach any plan, site sketch, or photos to this application. Be sure to include location of buildings and driveways in relation to proposed tree cutting, and measurements to the shoreline and/or property lines.

Are you planning to cut more than 5 trees in the Woodland Buffer within a 12-month period? _X_Yes __No

Are those trees at least 6" in diameter (or 18" circumference) at 4.5' above the ground? _X_Yes __No

☐ If yes, attach to this application a Cutting & Clearing Plan, showing the exact location, size and type of tree to be cut. Your application will be reviewed by the Sunapee Planning Board at their next available meeting.[iv]

1. **List all trees within the first 50-feet** of the shoreline, that are at least 6" in diameter (i.e. 18" in circumference) at 4.5-feet above ground level.[v]

Tree Type	Diameter	Condition	Tree Type	Diameter	Condition
1. WP	18	Alive	4. WP	18	Alive
2. HEM	12	Alive	5. HEM	16	Alive
3. HEM	7	Alive	(Attach list of additional trees if needed)		

2. **List all trees located between 50 to 150-feet** of the shoreline, that are at least 6" in diameter (i.e. 18" in circumference) at 4.5-feet above ground level.

Tree Type	Diameter	Condition	Tree Type	Diameter	Condition
1.			4.		
2.			5.		
3.			(Attach list of additional trees if needed)		

STUMPS & ROOTS WITHIN THE FIRST 50-FEET OF THE SHORELINE

Stumps and their root systems which are located within 50' of normal high-water shall be left intact in the ground, *unless* removal is specifically approved by the Wetlands Board (NH DES) pursuant to RSA 482-A.[vi] **Check the appropriate option below:**

___ 1. Stumps or roots systems will NOT be removed within the first 50-feet of the shoreline.

_x_ 2. Stumps and roost systems WILL be removed within the first 50-feet of the shoreline, in accordance with the attached permit issued by NH DES.

___ 3. Not Applicable. This project does not involve any activity within the 50-foot buffer.

PROPOSED VEGETATION REMOVAL

Does your project include removal of more than 1,000 square feet of vegetation (plants, trees or saplings) within 150-feet of the shoreline, i.e. the Natural Woodland Buffer?

__Yes _X_No

☐ If yes, attach to this application a Cutting & Clearing Plan. Include a diagram showing the square footage of the vegetation area to be removed and describe in detail the replanting plan. Your application will be reviewed by the Sunapee Planning Board at their next available meeting.[vii]

Note: Where natural vegetation is removed it shall be replaced with other vegetation that is equally effective in retarding runoff, preventing erosion and preserving natural beauty.[viii]

***** SEE PAGE 3 FOR SIGNATURE *****

ADDITIONAL GUIDELINES

The following is a summary of additional requirements related to the Shoreline Overlay District, per the Sunapee Zoning Ordinance, *Article 4.33 Shorelines - Specific Provisions, Section B, (8) Erosion Control, Part (B) Cutting and Removal Of Natural Vegetation Within The Natural Woodland Buffer*. You may read the Zoning Ordinance in its entirety online at www.town.sunapee.nh.us or view the paper copy available at the Sunapee Town Office, 23 Edgemont Road.

Concerning The Removal Of Natural Vegetation Within The Natural Woodland Buffer:

- Where natural vegetation is removed it shall be replaced with other vegetation that is equally effective in retarding runoff, preventing erosion and preserving natural beauty.[ix]
- The following activities are permitted within the Natural Woodland Buffer: normal trimming, pruning, and thinning (of saplings less than 6" in diameter) to enhance growth, to minimize the entry of vegetative debris into lakes and ponds, or to prevent the overgrowth of natural beaches; and felling and replacement of decaying trees and shrubs.[x]
- Not more than 50% of the entire basal area* may be removed for any purpose in a 20-year period. Replacement planting with native or naturalized species may be permitted to maintain the 50% level.
    - Exception: Up to 7,500 square-feet of basal area removed for structures, driveways, or parking areas shall be excluded when computing percentage limitations.[xi]
- A *Well-Distributed Stand of Vegetative Matter* (see definition below) shall be maintained in the Natural Woodland Buffer . . .
    - Exception: . . . except for those areas within 20' of existing or proposed structures, 12' from the centerline of driveways, and 10' from the edge of parking areas.[xii]
- DEFINITIONS - *Well-Distributed Stand of Vegetative Matter* - This matter includes trees, saplings, shrubs, and ground covers and their living, undamaged root systems. The distribution of such shall be as follows[xiii]:
- *Undeveloped Lots (Prior to March 12, 1996)* - Permitted cutting per 50 feet of linear water frontage shall not reduce the total *basal area* below 9 square feet. If a lot is not 150' in depth, the required *basal area* shall be proportioned accordingly. Saplings with less than 2" diameter shall not be used to calculate minimum *basal area*. In no case shall there be any area more than 500 square feet completely cleared of vegetative matter unless such is naturally occurring.
- *Lots with Dwelling Units (Prior to March 12, 1996)* - Permitted cutting per 50 feet of linear water frontage shall not reduce the total *basal area* below 6 square feet. If a lot is not 150' in depth, the required *basal area* shall be proportioned accordingly. Saplings with less than 2" diameter shall not be used to calculate minimum basal area.
- *Basal area** is defined as the cross-sectional area of a tree measured at a point 4.5' above the ground. (Adopted 3/12/1996).
    - **Basal Area*: For purposes of this application, the basal area is considered the cross section at 4.5' from the ground of all trees, shrubs and saplings with at least a 2" diameter.

SIGNATURE OF PROPERTY OWNER(S):

By signing below, I verify that: 1) all trees listed on this application have been marked with ribbon or surveyor's tape; 2) I have read the above Additional Guidelines; and 3) I give permission for a Town official(s) to visit the property in association with the approval of this application.

See attached signature form **11/9/2023**
Signature of Landowner(s) **Date**

Michael Kelly
Printed Name(s)

THIS PAGE TO BE COMPLETED BY TOWN OF SUNAPEE:

__ Planning Board action required.

__ Planning Board not required.

_____

_____

Signature of Zoning Administrator Date

Planning Board

The application was reviewed by the Sunapee Planning Board on _____ (date) and the following action was taken:

__ Approved __ Approved with Conditions __ Denied __ Other

Signature of Planning Board Chair *or* Town Planner: _____

Printed Name / Title: _____ Date: _____

Zoning Administrator

The Applicant is hereby **Granted / Denied** a permit for cutting trees and/or clearing vegetation at

Parcel ID _____ pursuant to the attached application and conditions.

Conditions: _____

_____

_____

_____

Signature of Zoning Administrator Date

SOURCES from Sunapee Zoning Ordinance, March 2017 Edition

[i] Article II, Section 2.30, Water Resources Overlay Districts (3).

[ii] Article IV, Section 4.33 Shorelines - Specific Provisions, Section B, (8) Erosion Control, Part (b) Cutting And Removal of Natural Vegetation within the Natural Woodland Buffer. [iii] Article IV, Section 4.33.B.(8).(b).(I) [iv] Article IV, Section 4.33.B.(8).(b).(I).(1-2) [v] Article IV, Section 4.33.B.(8).(b).(I).(1) [vi] Article IV, Section 4.33.B.(8).(b).(VI) [vii] Article IV, Section 4.33.B.(8).(b).(I).(1-2) [viii] Article IV, Section 4.33.B.(8).(b).(III) [ix] Article IV, Section 4.33.B.(8).(b).(III) [x] Article IV, Section 4.33.B.(8).(b).(IV) [xi] Article IV, Section 4.33.B.(8).(b).(V) [xii] Article IV, Section 4.33.B.(8).(b).(VII)

[xiii] Article XI: Definitions and Explanations - Well-Distributed Stand of Vegetative Matter

1. **CONTINUED**

	Tree Type	Diameter	Condition
6.	WP	20	Alive
7.	WP	9	Alive

50 foot Abutters List Report

Tri Town, NH
May 01, 2023

Subject Property:

Parcel Number:	Sun-0128-0031-0000	Mailing Address:	KELLY, MICHAEL GEORGE & SHARON
CAMA Number:	Sun-0128-0031-0000		20 AZALEA DR
Property Address:	90 GARNET ST		BURLINGTON, MA 01803

Abutters:

Parcel Number:	Sun-0128-0025-0000	Mailing Address:	THOMAS FAMILY REVOCABLE TRUST
CAMA Number:	Sun-0128-0025-0000		JOHN R & NORMA P THOMAS, TRUST
Property Address:	GARNET ST		70 EGINTON ROAD
			MANKOTA, MN 56001
Parcel Number:	Sun-0128-0026-0000	Mailing Address:	TOWN OF SUNAPEE
CAMA Number:	Sun-0128-0026-0000		23 EDGEMONT ROAD
Property Address:	91 GARNET ST		SUNAPEE, NH 03782
Parcel Number:	Sun-0128-0027-0000	Mailing Address:	THOMAS FAMILY REVOCABLE TRUST
CAMA Number:	Sun-0128-0027-0000		JOHN R & NORMA P THOMAS, TRUS
Property Address:	89 GARNET ST		70 EGINTON ROAD
			MANKOTA, MN 56001
Parcel Number:	Sun-0128-0030-0000	Mailing Address:	HARKINS REVOC TRUST, SARA M SARA
CAMA Number:	Sun-0128-0030-0000		M HARKINS, TRUSTEE
Property Address:	92 GARNET ST		PO BOX 708
			SUNAPEE, NH 03782
Parcel Number:	Sun-0128-0032-0000	Mailing Address:	YORK REVOC TRUST, KATHERINE
CAMA Number:	Sun-0128-0032-0000		KATHERINE YORK, TRUSTEE
Property Address:	86 GARNET ST		4 WILLOWBROOK COURT
			BEDFORD, NH 03110

DB Landscaping, LLC
PO Box 356
Sunapee, NH 03782

Tri Town, NH

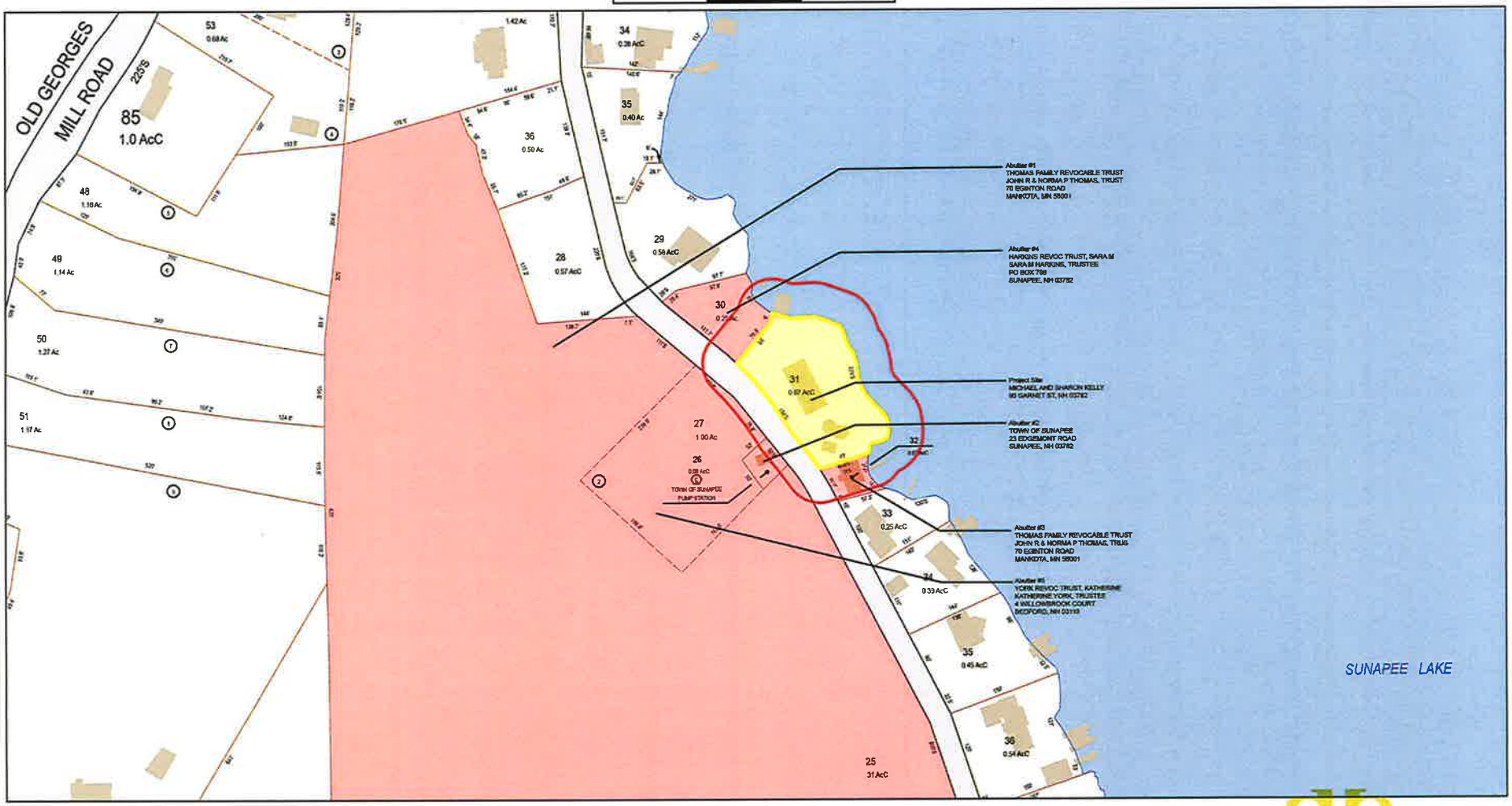
May 3, 2023

1 inch = 136 Feet

0 136 273 410

CAI Technologies

www.cai-tech.com



Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.

LANDSCAPING LLC | LANDSCAPE ARCHITECTURE

The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

SHORELAND IMPACT PERMIT 2023-01511

NOTE CONDITIONS

PERMITTEE:	**MICHAEL/SHARON KELLY** **20 AZALEA DR** **BURLINGTON MA 01803**
PROJECT LOCATION:	**90 GARNET ST, SUNAPEE** **TAX MAP #128, LOT #31**
WATERBODY:	**SUNAPEE LAKE**
APPROVAL DATE:	**SEPTEMBER 22, 2023**

EXPIRATION DATE: SEPTEMBER 22, 2028

Shoreland Permit Application 2023-01511 has been found to meet or exceed the requirements of RSA 483-B as required per RSA 483-B:6, II. The New Hampshire Department of Environmental Services (NHDES) hereby issues this Shoreland Impact Permit with conditions pursuant to RSA 483-B:6, II.

PERMIT DESCRIPTION:
Impact to an additional 2,525 square feet of protected shoreland in order to construct 2 pervious patios, pervious pathways, retaining walls, and reconfigure the driveway with temporary access areas to the workspaces. Construction and other work has been previously permitted under Shoreland Permit 2022-01910 and work within the Wetlands jurisdiction was previously permitted under Wetlands Permit 2023-01510.

Impervious Surface Percentage: Reduced to 24.3%

Natural Woodland Area Required per RSA 483-B:9, V(b): 724 Square Feet

THE FOLLOWING PROJECT-SPECIFIC CONDITIONS HAVE BEEN APPLIED TO THE PERMIT PURSUANT TO ENV-WQ 1406.15(c):

1. All work shall be in accordance with plans by DB Landscaping LLC dated May 22, 2023 and revised on August 24, 2023 as received by the New Hampshire Department of Environmental Services (NHDES) on August 25, 2023 pursuant to Env-Wq 1406.15(f).
2. Work shall be conducted in accordance with the communications and guidance provided via email to Aran LaFontaine of DB Landscaping LLC as agent on May 12, 2023 by the NH Fish & Game Department regarding the consultation request for NHB23-1350.
3. Within three days of final grading or temporary suspension of work in an area that is in or adjacent to wetlands or surface waters, all exposed soil areas shall be stabilized by seeding and mulching during the growing season, or if not within the growing season, by mulching with tack or netting and pinning on slopes steeper than 3:1 as required pursuant to RSA 483-B:9, V(d) Erosion and Siltation, (1).
4. All pervious technologies used shall be installed and maintained to effectively absorb and infiltrate stormwater as required per RSA 483-B:6, II and Rule Env-Wq 1406.15(c) in order to ensure compliance with RSA 483-B:9, V(g).
5. This permit shall not be interpreted as acceptance or approval of any impact that will occur within wetlands jurisdiction regulated under RSA 482-A including all wetlands, surface waters and their banks, the tidal-buffer zone, and sand dunes. The owner is responsible for maintaining compliance with RSA 482-A and Administrative Rules Env-Wt 100 - 900 and obtaining any Wetland Impact Permit that may be required prior to construction, excavation or fill that will occur within Wetlands jurisdiction as required pursuant to RSA 483-B:6, I(b).

The State of New Hampshire

Department of Environmental Services

Robert R. Scott, Commissioner

AMENDED WETLANDS AND NON-SITE SPECIFIC PERMIT 2023-01510

NOTE CONDITIONS

PERMITTEE:	**MICHAEL/SHARON KELLY** **20 AZALEA DR** **BURLINGTON MA 01803**
PROJECT LOCATION:	**90 GARNET ST, SUNAPEE** **TAX MAP #128, LOT #31**
WATERBODY:	**SUNAPEE LAKE**
AMENDMENT DATE:	**SEPTEMBER 28, 2023**
ORIGINAL APPROVAL DATE:	**SEPTEMBER 13, 2023**
EXPIRATION DATE:	**SEPTEMBER 13, 2028**

Based upon review of permit application 2023-01510 in accordance with RSA 482-A and RSA 485-A:17, the New Hampshire Department of Environmental Services (NHDES) hereby issues this Wetlands and Non-Site Specific Permit. To validate this Permit, signatures of the Permittee and the Principal Contractor are required.

AMENDED PERMIT DESCRIPTION:

Permanently remove a 6 foot x 27 foot seasonal pier and install a "U" shaped seasonal dock comprised of two 6 foot x 28 foot piers connected by a 6 foot x 10 foot walkway with a 6 foot x 12 foot access way, install a seasonal boatlift and a 10 foot x 10 foot 7 inch seasonal canopy within the center slip, replace in-kind a 20 foot x 35 foot boathouse and cantilevered dock supported by concrete cribs, dredge 4.5 cubic yards of material from the lakebed within the boathouse, repair 22 linear feet of retaining wall, construct a 396 square foot circular perched beach with a permeable access path, construct a 175 square foot circular permeable patio with a permeable path to the boathouse on an average of 302 feet of frontage along Lake Sunapee in Sunapee.

THIS PERMIT IS SUBJECT TO THE FOLLOWING AMENDED PROJECT-SPECIFIC CONDITIONS:

1. In accordance with Env-Wt 307.16, all work shall be done in accordance with the revised plans, revision dated September 22, 2023 by DB Landscaping, as received by the NH Department of Environmental Services (NHDES) on September 22, 2023.
2. This permit shall not be effective until it has been recorded in the Sullivan County Registry of Deeds and a copy of the recorded permit has been provided to the department as required pursuant to RSA 482-A:3, and Env-Wt 314.02.
3. Pursuant to Env-Wt 511.04, the proposed beach shall be constructed landward and above the hardened shoreline.
4. In accordance with Env-Wt 407.02(c) and recommendations from the Natural Heritage Bureau, work may begin no earlier than October 15th and conclude no later than the End of May in order to avoid potential impacts to American water-awlwort.
5. All pervious technologies used shall be installed and maintained to effectively absorb and infiltrate stormwater as required per RSA 483-B:6, II and Rule Env-Wq 1406.15(c) in order to ensure compliance with RSA 483-B:9, V(g).
6. Only those structures shown on the approved plans shall be installed or constructed along this frontage as required per Env-Wt 513.22, (a).

db LANDSCAPING LLC | LANDSCAPE ARCHITECTURE

May 5, 2023

Authorization

RE: Permitting Documents

To Whom It May Concern:

I, Michael Kelly, am contracted with db Landscaping LLC to provide professional services related to property located at 90 Garnet St. Sunapee, NH 03782. I consent permission for db landscaping LLC to submit any documents pertaining to the following permits and approvals for the above referenced property:

- NH Department of Environmental Services - Shoreland Permit Application
- NH Department of Environmental Services - Wetland Permit Application
- Town of Sunapee – Land disturbance
- Town of Sunapee – Tree Cutting Request Form

Respectively,

DocuSigned by:
Michael G. Kelly
D1F898EADD5849B...

MICHAEL KELLY

Date: 5/5/2023

PHOTO 1 2023-11-07
B5 - 18" White Pine

Legend

Photo Location

Locus Plan
not to scale

N

PHOTO 2 2023-11-207

Locus Plan
not to scale

N

KELLY PROPERTY
90 GARNET ST
SUNAPEE, NH
TAX MPA 128 LOT 28

Legend

Photo Location

Locus Plan
not to scale

N

PHOTO 3 2023-11-07
B5 - 18" White Pine
C13 - 12" Hemlock

Locus Plan
not to scale

N

PHOTO 4 2023-08-23
D2 - 7" Hemlock
D3 - 18" White Pine

KELLY PROPERTY
90 GARNET ST
SUNAPEE, NH
TAX MPA 128 LOT 28

PHOTO 5 2023-11-07
E13 - 20" White Pine
E14 - 9" White Pine

Legend

Photo Location

Locus Plan
not to scale

N

PHOTO 6 2023-11-07

Locus Plan
not to scale

N

KELLY PROPERTY
90 GARNET ST
SUNAPEE, NH
TAX MPA 128 LOT 28

PERMIT APPROVAL #_____

TOWN OF SUNAPEE

TREE CUTTING & VEGETATION CLEARING REQUEST FORM

FEE-$75

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This application is required prior to:

1) Any tree cutting within 150' of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River
2) Any stump or root removal within 50' of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River
3) Any project that involves the removal of more than 1,000 square feet of vegetation (plants, trees or saplings) within 150-feet of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River

What is the Shoreline Overlay? All lands within 250' feet of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River.[i]

What is the Natural Woodland Buffer? The Natural Woodland Buffer is the area within 150-feet from the shorelines (normal high-water mark) of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River.[ii]

1. Landowners Name: Dan Cave 2. Parcel ID: Map 118 Lot 51
2. Parcel Street Address: 90 Burma Road
3. Mailing Address: 11 Mockingbird Ln , Glastonbury, CT 06033
4. Phone #: (860) 830-1991 5. Email: cavedd@gmail.com
5. Preferred method of contact (check all that apply): __ Phone _X_ Email __ US PostMail
6. Name of river/lake/pond abutting property: Perkins Pond

Have you obtained any permits from State of NH, Department of Environmental Services (DES) for this project?

_X_ Yes __No __If yes, attach copy of permit to this application.

NOTE: Any cutting, or removal of natural vegetation, on ponds, lakes or rivers must be by permit from DES.[iii]

PROPOSED TREE CUTTING

Please mark all trees listed on this application with ribbon or surveyor's tape to assist the Town with any necessary site inspections. Attach any plan, site sketch, or photos to this application. Be sure to include location of buildings and driveways in relation to proposed tree cutting, and measurements to the shoreline and/or property lines.

Are you planning to cut more than 5 trees in the Woodland Buffer within a 12-month period? _X_ Yes __No

Are those trees at least 6" in diameter (or 18" circumference) at 4.5' above the ground? _X_Yes __No

☐ If yes, attach to this application a Cutting & Clearing Plan, showing the exact location, size and type of tree to be cut. Your application will be reviewed by the Sunapee Planning Board at their next available meeting.[iv]

1. **List all trees within the first 50-feet** of the shoreline, that are at least 6" in diameter (i.e. 18" in circumference) at 4.5-feet above ground level.[v]

Tree Type	Diameter	Condition	Tree Type	Diameter	Condition
1. White Spruce	10"	Decline	4.		
2.			5.		
3.			(Attach list of additional trees if needed)		

2. **List all trees located between 50 to 150-feet** of the shoreline, that are at least 6" in diameter (i.e. 18" in circumference) at 4.5-feet above ground level.

Tree Type	Diameter	Condition	Tree Type	Diameter	Condition
1. Red Maple	6"	Living	4. W. Spruce	9"	Living
2. Red Maple	9"	Living	5. Red Maple	16"	Living
3. White Birch	9"	Living	(Attach list of additional trees if needed)		
			See Attached Plan For Additional Removals		

STUMPS & ROOTS WITHIN THE FIRST 50-FEET OF THE SHORELINE

Stumps and their root systems which are located within 50' of normal high-water shall be left intact in the ground, *unless* removal is specifically approved by the Wetlands Board (NH DES) pursuant to RSA 482-A.[vi]

Check the appropriate option below:

X **1. Stumps or roots systems will NOT be removed within the first 50-feet of the shoreline.**

___ **2. Stumps and roost systems WILL be removed within the first 50-feet of the shoreline, in accordance with the attached permit issued by NH DES.**

___ **3. Not Applicable. This project does not involve any activity within the 50-foot buffer.**

PROPOSED VEGETATION REMOVAL

Does your project include removal of more than 1,000 square feet of vegetation (plants, trees or saplings) within 150-feet of the shoreline, i.e. the Natural Woodland Buffer?

X Yes __ No

☐ If yes, attach to this application a Cutting & Clearing Plan. Include a diagram showing the square footage of the vegetation area to be removed and describe in detail the replanting plan. Your application will be reviewed by the Sunapee Planning Board at their next available meeting.[vii]

Note: Where natural vegetation is removed it shall be replaced with other vegetation that is equally effective in retarding runoff, preventing erosion and preserving natural beauty.[viii]

***** SEE PAGE 3 FOR SIGNATURE *****

ADDITIONAL GUIDELINES

The following is a summary of additional requirements related to the Shoreline Overlay District, per the Sunapee Zoning Ordinance, *Article 4.33 Shorelines - Specific Provisions, Section B, (8) Erosion Control, Part (B) Cutting and Removal Of Natural Vegetation Within The Natural Woodland Buffer*. You may read the Zoning Ordinance in its entirety online at www.town.sunapee.nh.us or view the paper copy available at the Sunapee Town Office, 23 Edgemont Road.

Concerning The Removal Of Natural Vegetation Within The Natural Woodland Buffer:

- Where natural vegetation is removed it shall be replaced with other vegetation that is equally effective in retarding runoff, preventing erosion and preserving natural beauty.[ix]
- The following activities are permitted within the Natural Woodland Buffer: normal trimming, pruning, and thinning (of saplings less than 6" in diameter) to enhance growth, to minimize the entry of vegetative debris into lakes and ponds, or to prevent the overgrowth of natural beaches; and felling and replacement of decaying trees and shrubs.[x]
- Not more than 50% of the entire basal area* may be removed for any purpose in a 20-year period. Replacement planting with native or naturalized species may be permitted to maintain the 50% level.
    - Exception: Up to 7,500 square-feet of basal area removed for structures, driveways, or parking areas shall be excluded when computing percentage limitations.[xi]
- A *Well-Distributed Stand of Vegetative Matter* (see definition below) shall be maintained in the Natural Woodland Buffer . . .
    - Exception: . . . except for those areas within 20' of existing or proposed structures, 12' from the centerline of driveways, and 10' from the edge of parking areas.[xii]
- DEFINITIONS - *Well-Distributed Stand of Vegetative Matter* - This matter includes trees, saplings, shrubs, and ground covers and their living, undamaged root systems. The distribution of such shall be as follows[xiii]:
    - *Undeveloped Lots (Prior to March 12, 1996)* - Permitted cutting per 50 feet of linear water frontage shall not reduce the total *basal area* below 9 square feet. If a lot is not 150' in depth, the required *basal area* shall be proportioned accordingly. Saplings with less than 2" diameter shall not be used to calculate minimum *basal area*. In no case shall there be any area more than 500 square feet completely cleared of vegetative matter unless such is naturally occurring.
    - *Lots with Dwelling Units (Prior to March 12, 1996)* - Permitted cutting per 50 feet of linear water frontage shall not reduce the total *basal area* below 6 square feet. If a lot is not 150' in depth, the required *basal area* shall be proportioned accordingly. Saplings with less than 2" diameter shall not be used to calculate minimum basal area.
    - *Basal area** is defined as the cross-sectional area of a tree measured at a point 4.5' above the ground. (Adopted 3/12/1996).
        - **Basal Area*: For purposes of this application, the basal area is considered the cross section at 4.5' from the ground of all trees, shrubs and saplings with at least a 2" diameter.

SIGNATURE OF PROPERTY OWNER(S):

By signing below, I verify that: 1) all trees listed on this application have been marked with ribbon or surveyor's tape; 2) I have read the above Additional Guidelines; and 3) I give permission for a Town official(s) to visit the property in association with the approval of this application.

Agent — 11-8-2023

Signature of Landowner(s) — **Date**

Greg T Howe

Printed Name(s)

THIS PAGE TO BE COMPLETED BY TOWN OF SUNAPEE:

__ Planning Board action required.

__ Planning Board not required.

_____ _____

Signature of Zoning Administrator Date

Planning Board

The application was reviewed by the Sunapee Planning Board on _____(date) and the following action was taken:

__ Approved __ Approved with Conditions __ Denied __ Other

Signature of Planning Board Chair *or* Town Planner: _____

Printed Name / Title: _____ Date: _____

Zoning Administrator

The Applicant is hereby **Granted / Denied** a permit for cutting trees and/or clearing vegetation at

Parcel ID _____ pursuant to the attached application and conditions.

Conditions:_____

_____

_____ _____

Signature of Zoning Administrator Date

SOURCES from Sunapee Zoning Ordinance, March 2017 Edition

[i] Article II, Section 2.30, Water Resources Overlay Districts (3).

[ii] Article IV, Section 4.33 Shorelines - Specific Provisions, Section B, (8) Erosion Control, Part (b) Cutting And Removal of Natural Vegetation within the Natural Woodland Buffer.

[iii] Article IV, Section 4.33.B.(8).(b).(I)

[iv] Article IV, Section 4.33.B.(8).(b).(I).(1-2)

[v] Article IV, Section 4.33.B.(8).(b).(I).(1)

[vi] Article IV, Section 4.33.B.(8).(b).(VI)

[vii] Article IV, Section 4.33.B.(8).(b).(I).(1-2)

[viii] Article IV, Section 4.33.B.(8).(b).(III)

[ix] Article IV, Section 4.33.B.(8).(b).(III)

[x] Article IV, Section 4.33.B.(8).(b).(IV)

[xi] Article IV, Section 4.33.B.(8).(b).(V)

[xii] Article IV, Section 4.33.B.(8).(b).(VII)

[xiii] Article XI: Definitions and Explanations - Well-Distributed Stand of Vegetative Matter

Daniel D. Cave
11 Mockingbird Lane
Glastonbury, CT 06033
Tel. 860.830.1991 (mobile), 860.657.8766 (home); email: cavedd@gmail.com

October 11, 2023

Town of Sunapee
23 Edgemont Road
Sunapee, NH 03782

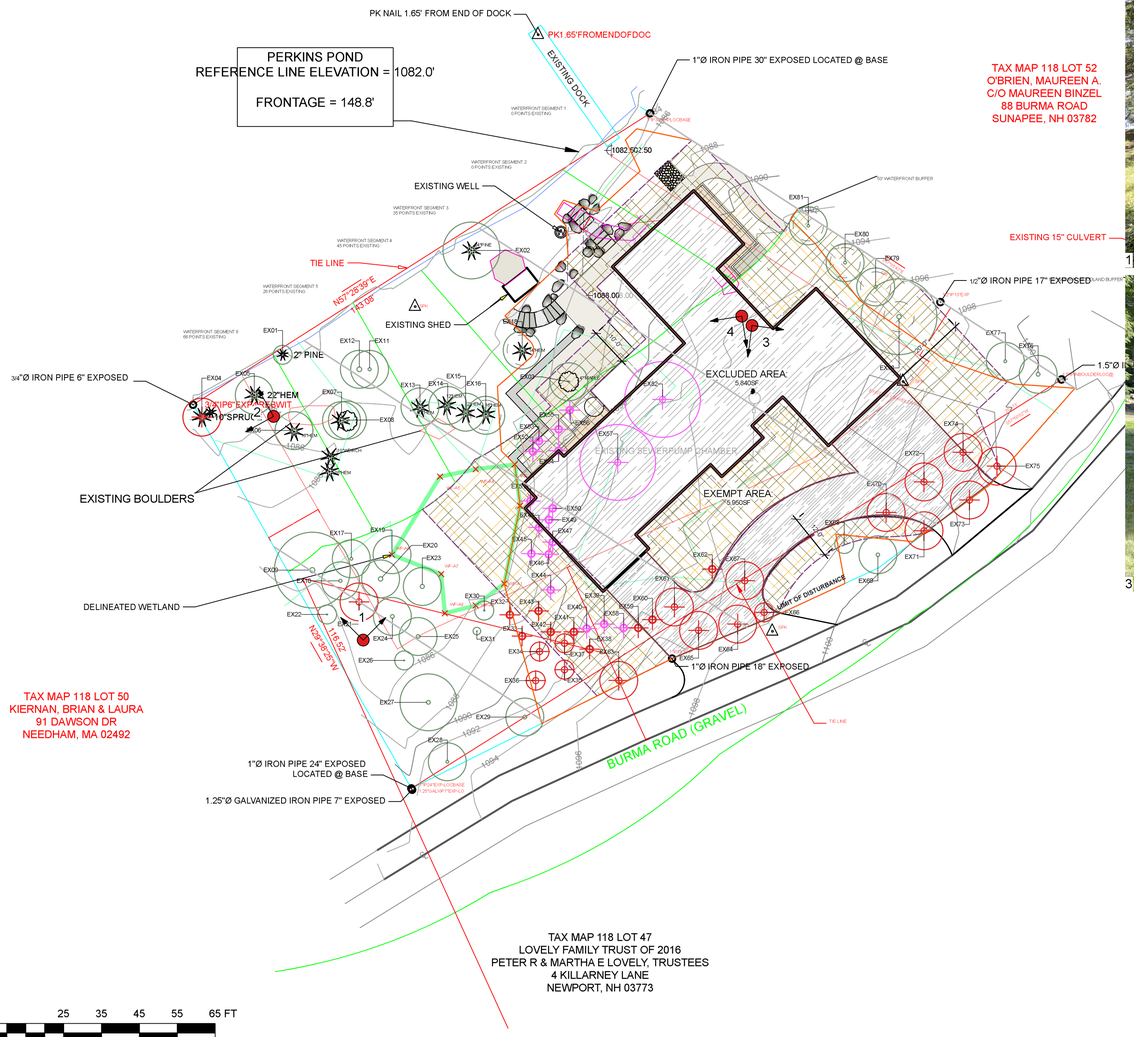
To Whom It May Concern:

As owner of the property at 90 Burma Road in the Town of Sunapee, I hereby authorize Craig T. Howe of Talbot Builders, LLC, with a principal place of business located at 38 Main Street, New London, NH 03782, to act on my behalf regarding permit applications to Town of Sunapee departments and officials as may be required from time to time related to the construction of a new home on the property. For the avoidance of doubt, this authorization includes but is not limited to, signature authority on forms and permits for land clearing/tree removal, demolition of the existing structure and construction of a new structure in its place, and any other associated permits and forms, and extends for the years 2023 and 2024 unless otherwise modified by me in writing.

Respectfully Yours,

Best Regards,

Daniel D. Cave
Owner
90 Burma Road
Sunapee, NH 03782




1


2


3


4

Legend:

- Existing Tree
- Existing Tree (w/ Tree Protection)
- Existing Tree (Remove)
- Existing Tree Removal (Previously Approved)
- Proposed House/Drive
- Tree Cutting Setback
- Shoreland Setbacks
- Existing Trees
- Limit Of Disturbance
- Excluded Area
- Exempt Area

N

Revisions

#	Description	Date

Basal Area Calculation:

Existing Basal Area 0'-150' = 42.107sf
Basal Area To Be Removed = 14.19sf*
Percentage To Be Removed = 33.70%

*All tree removals, except for 2.339sf (5.55%) of basal area, fall within footprint of proposed house (excluded), the proposed driveway (excluded), or adjacent exempt areas.

Notes:

1. Base information provided by Fuss & O'Neill, and is based on a field survey completed in November 2020. See Existing Conditions Survey for more information.
2. Tree locations landward of the 50' lake setback are based on field measurements completed on October 25th 2023 by Gradient, PLLC. All tree locations in this area are assumed to be approximate and should be verified in-field prior to cutting. Any discrepancies between existing site conditions and this plan should be brought to the Owners, General Contractors, and/or Landscape Architects attention immediately.
3. Contractor is responsible for obtaining all local and state permits prior to cutting commencing.
4. All work shall be completed on the subject property. Contractor is responsible for verifying property lines prior to work commencing, and verifying that no vegetation is removed over property boundaries.
5. See plans by Fuss & O'Neill for limits of disturbance.
6. All work to comply with RSA 483-B and conditions outlined in Shoreland Impact Permit #2023-02077.

Existing Tree's 0' - 50' Retain

ID	Botanical Name	Common Name	DBH (FT)	Total Basal Area (SF)	Action
				15.384	
EX01	Pinus strobus	White Pine	0.167	0.022	Retain
EX03	Fraxinus americana	White Ash	0.333	0.087	Retain
EX08	Betula papyrifera	White Birch	0.75	0.442	Retain
EX11	Tsuga canadensis	Canadian Hemlock	0.833	0.545	Retain
EX15	Tsuga canadensis	Canadian Hemlock	1	0.785	Retain
EX14	Tsuga canadensis	Canadian Hemlock	1	0.785	Retain
EX13	Tsuga canadensis	Canadian Hemlock	1	0.785	Retain
EX16	Tsuga canadensis	Canadian Hemlock	1.167	1.068	Retain
EX07	Tsuga canadensis	Canadian Hemlock	1.167	1.068	Retain
EX12	Tsuga canadensis	Canadian Hemlock	1.25	1.227	Retain
EX16	Tsuga canadensis	Canadian Hemlock	1.333	1.396	Retain
EX06	Tsuga canadensis	Canadian Hemlock	1.333	1.396	Retain
EX05	Tsuga canadensis	Canadian Hemlock	1.833	2.638	Retain
EX02	Pinus strobus	White Pine	2	3.14	Retain

Existing Tree's 0' - 50' Remove

ID	Botanical Name	Common Name	DBH (FT)	Total Basal Area (SF)	Action
				0.545	
EX04	Picea glauca	White Spruce	0.833	0.545	Remove

Existing Tree's 50' - 150' Retain

ID	Botanical Name	Common Name	DBH (FT)	Total Basal Area (SF)	Action
				12.533	
EX09	Fraxinus americana	White Ash	1.333	1.396	Retain
EX10	Fraxinus americana	White Ash	0.833	0.545	Retain
EX17	Fraxinus americana	White Ash	0.75	0.442	Retain
EX19	Fraxinus americana	White Ash	0.25	0.049	Retain
EX20	Acer rubrum	Red Maple, Swamp Maple	1.167	1.068	Retain
EX22	Alnus incana	Gray Alder, Speckled Alder	0.289	0.065	Retain
EX23	Tsuga canadensis	Canadian Hemlock	1.083	0.921	Retain
EX24	Tsuga canadensis	Canadian Hemlock	1	0.785	Retain
EX25	Acer rubrum	Red Maple, Swamp Maple	1	0.785	Retain
EX26	Quercus rubra	Red Oak	0.236	0.044	Retain
EX27	Betula alleghaniensis	Yellow Birch	1	0.785	Retain
EX28	Tsuga canadensis	Canadian Hemlock	0.75	0.442	Retain
EX29	Betula papyrifera	White Birch	1	0.785	Retain
EX30	Tsuga canadensis	Canadian Hemlock	0.333	0.087	Retain
EX31	Tsuga canadensis	Canadian Hemlock	0.167	0.022	Retain
EX68	Abies concolor	White Fir	0.167	0.022	Retain
EX69	Tsuga canadensis	Canadian Hemlock	0.917	0.66	Retain
EX76	Fraxinus americana	White Ash	1	0.785	Retain
EX77	Acer rubrum	Red Maple, Swamp Maple	0.75	0.442	Retain
EX78	Tsuga canadensis	Canadian Hemlock	1.167	1.068	Retain
EX79	Tsuga canadensis	Canadian Hemlock	0.833	0.545	Retain
EX80	Tsuga canadensis	Canadian Hemlock	0.75	0.442	Retain
EX81	Tsuga canadensis	Canadian Hemlock	0.667	0.349	Retain

Existing Tree's 50' - 150' Remove

ID	Botanical Name	Common Name	DBH (FT)	Total Basal Area (SF)	Action
				13.645	
EX21	Acer rubrum	Red Maple, Swamp Maple	0.75	0.442	Remove
EX32	Tsuga canadensis	Canadian Hemlock	0.25	0.049	Remove
EX33	Tsuga canadensis	Canadian Hemlock	0.25	0.049	Remove
EX34	Betula papyrifera	White Birch	0.75	0.442	Remove
EX35	Betula papyrifera	White Birch	0.833	0.545	Remove
EX36	Acer rubrum	Red Maple, Swamp Maple	0.583	0.267	Remove
EX37	Betula papyrifera	White Birch	1.178	1.09	Remove
EX38	Tsuga canadensis	Canadian Hemlock	0.25	0.049	Remove
EX39	Tsuga canadensis	Canadian Hemlock	0.25	0.049	Remove
EX40	Tsuga canadensis	Canadian Hemlock	0.167	0.022	Remove
EX41	Acer rubrum	Red Maple, Swamp Maple	0.167	0.022	Remove
EX42	Tsuga canadensis	Canadian Hemlock	0.25	0.049	Remove
EX43	Tsuga canadensis	Canadian Hemlock	0.167	0.022	Remove
EX44	Tsuga canadensis	Canadian Hemlock	0.417	0.136	Remove
EX45	Tsuga canadensis	Canadian Hemlock	0.167	0.022	Remove
EX46	Tsuga canadensis	Canadian Hemlock	0.167	0.022	Remove
EX47	Fraxinus americana	White Ash	0.25	0.049	Remove
EX48	Quercus rubra	Red Oak	0.333	0.087	Remove
EX49	Tsuga canadensis	Canadian Hemlock	0.25	0.049	Remove
EX50	Acer rubrum	Red Maple, Swamp Maple	0.25	0.049	Remove
EX51	Betula papyrifera	White Birch	0.486	0.185	Remove
EX52	Fraxinus americana	White Ash	0.167	0.022	Remove
EX53	Fraxinus americana	White Ash	0.25	0.049	Remove
EX54	Fraxinus americana	White Ash	0.167	0.022	Remove
EX55	Fraxinus americana	White Ash	0.25	0.049	Remove
EX56	Fraxinus americana	White Ash	0.25	0.049	Remove
EX57	Acer rubrum	Red Maple, Swamp Maple	1	0.785	Remove
EX58	Tsuga canadensis	Canadian Hemlock	0.25	0.049	Remove
EX59	Tsuga canadensis	Canadian Hemlock	0.167	0.022	Remove
EX60	Tsuga canadensis	Canadian Hemlock	0.167	0.022	Remove
EX61	Betula papyrifera	White Birch	0.833	0.545	Remove
EX62	Betula alleghaniensis	Yellow Birch	0.167	0.022	Remove
EX63	Acer rubrum	Red Maple, Swamp Maple	0.5	0.196	Remove
EX64	Acer rubrum	Red Maple, Swamp Maple	1.333	1.396	Remove
EX65	Picea glauca	White Spruce	0.75	0.442	Remove
EX66	Populus deltoides	Eastern Cottonwood, Easte	0.75	0.442	Remove
EX67	Acer rubrum	Red Maple, Swamp Maple	0.917	0.66	Remove
EX70	Tsuga canadensis	Canadian Hemlock	1.083	0.921	Remove
EX71	Acer rubrum	Red Maple, Swamp Maple	0.833	0.545	Remove
EX72	Fraxinus americana	White Ash	0.75	0.442	Remove
EX73	Betula papyrifera	White Birch	0.667	0.349	Remove
EX74	Betula papyrifera	White Birch	0.833	0.545	Remove
EX75	Acer rubrum	Red Maple, Swamp Maple	1.118	0.981	Remove
EX82	Tsuga canadensis	Canadian Hemlock	1.333	1.396	Remove

NOTE : REMOVALS LISTED IN PINK WERE INCLUDED ON A PREVIOUS TREE CUTTING APPLICATION

GRADIENT
LANDSCAPE ARCHITECTS
P.O. Box 311 | New London | NH | 03257

Project Name: Cave Residence

Drawing Title: Tree Cutting Plan

Project Manager: Chris Kessler
Drawn By: C. Kessler
Date: 8 Nov. 2023
Scale: 1" = 20'-0"

L2.1

50 foot Abutters List Report

Tri Town, NH
November 08, 2023

Subject Property:

Parcel Number:	Sun-0118-0051-0000	Mailing Address:	CAVE, DANIEL D
CAMA Number:	Sun-0118-0051-0000		11 MOCKINGBIRD LANE
Property Address:	90 BURMA RD		GLASTONBURY, CT 06033

Abutters:

Parcel Number:	Sun-0118-0045-0000	Mailing Address:	BINZEL, MAUREEN A
CAMA Number:	Sun-0118-0045-0000		88 BURMA RD
Property Address:	BURMA RD		SUNAPEE, NH 03782
Parcel Number:	Sun-0118-0047-0000	Mailing Address:	LOVELY FAMILY TRUST OF 2016 PETER
CAMA Number:	Sun-0118-0047-0000		R & MARTHA E LOVELY, TRU
Property Address:	BURMA RD		4 KILLARNEY LN
			NEWPORT, NH 03773
Parcel Number:	Sun-0118-0050-0000	Mailing Address:	KIERNAN, BRIAN & LAURA
CAMA Number:	Sun-0118-0050-0000		91 DAWSON DR
Property Address:	98 BURMA RD		NEEDHAM, MA 02492
Parcel Number:	Sun-0118-0052-0000	Mailing Address:	BINZEL, MAUREEN A
CAMA Number:	Sun-0118-0052-0000		88 BURMA RD
Property Address:	88 BURMA RD		SUNAPEE, NH 03782

GRADIENT, PLLC
PO BOX 311
NEW LONDON, NH 03257

TALBOT BUILDERS
PO BOX 1077
NEW LONDON, NH 03257

176 Newport Road – Suite 8, New London, NH 03257 • Ph 603-877-0116 • Fax 603-526-4285 • www.horizonsengineering.com

November 9, 2023

Town of Sunapee Planning Board
23 Edgemont Road
Sunapee, NH 03782

Re: **Goodhue Boat Company Marina – Site Plan Review Application**
Tax Map #106, Lot #18, Georges Mills, Sunapee, NH

Dear Board Members,

On behalf of our client, Goodhue Boat Company (Goodhue), Horizons Engineering, Inc. (Horizons) is pleased to provide the enclosed materials for your review. This application is for a Phase II Design Review pursuant to Article III, Section C of the Site Plan Review Regulations. The proposed project includes the demolition of four existing buildings, and the construction of new parking, ADA walkways, drainage improvements, landscaping, and the reconstruction of the waterfront marina building with associated boathouse. Other than elimination of the residential buildings, no change in use of the property is proposed.

The buildings proposed to be demolished are shown on the Demolition Plan in the site plan set. They include two single-family dwellings located along Cooper Street, and a cabin with associated shed in the northeast corner of the property. The existing marina building with boathouse, will be reconstructed in accordance with Article VI, Section 6.12 for Reconstruction of Nonconforming Structures.

The impervious lot coverage in the post-development condition is 32.0%, which is a reduction from the existing condition of 32.3%. Lot coverage is in compliance with the allowed maximum of 60% in the Village Commercial District. The existing site has no stormwater detention or treatment devices in place. The proposed project will include a bioretention area to provide stormwater treatment for the proposed parking lot, an infiltrating drip edge for the landward side of the marina building, and new plantings in the waterfront buffer.

Site Lighting has been proposed with down-lit fixtures to illuminate the parking area. Lighting will not trespass onto abutting properties. The existing marina building is served by municipal water and sewer, and the proposed reconstructed building would maintain those existing services. A landscaping plan has been provided that shows plantings throughout the property to enhance the waterfront area and revegetate disturbed areas.

Existing parking on the site includes parking for the residential buildings and marina parking in the gravel area in the upper portion of the site. The total marina parking on the existing site is 10 spaces. The proposed improvements will result in a total of 25 parking spaces on the site. The Site Plan Review Regulation guideline for parking at marinas is to include 1.5 spaces per boat slip and 1 space per employee. The marina has 14 boat slips and during peak season, can have as many as 12 employees working. So, the guideline would suggest the need for 14 slips x 1.5 + 12 employees x 1 = 33.

The site is highly constrained by the shoreland buffer and steep slopes. We have proposed the most efficient parking configuration based on the site constraints and the existing infrastructure. The 15 new spaces proposed are a major improvement to the property's parking challenges, while protecting the shoreline by reducing the overall impervious surfaces on the site. The project should improve upon the congested waterfront area be providing additional off-street parking.

A PDF of this documentation has been emailed to the Town and we will follow up with paper copies as requested. Please feel free to call or email with any additional questions or concerns. I can be reached at (603) 877-0116, or by email at wdavis@horizonsengineering.com.

Respectfully,

Will Davis, PE LEED AP
Vice President
Horizons Engineering, Inc.

TOWN OF SUNAPEE
APPLICATION FOR SITE PLAN REVIEW

(PDF OF SITE PLAN MUST BE INCLUDED WITH APPLICATION)

1. Landowner(s) Name(s) Goodhue Sunapee Real Property, LLC
   Address PO Box 1508 Wolfeboro, NH 03894
   (Mailing)_____
   Phone_____
2. Zoning District Village - Commercial
3. Project Location: 19 Cooper Street
4. Parcel ID: Tax Map 106, Lot 18
5. Complete description of current use of property:
   Two residential buildings and commercial boat marina

6. Does this project require a special exception or variance by the ZBA as outlined in the Sunapee Zoning Regulations? Yes___ No_X__ (If yes, complete the Zoning Board of Adjustment application, and Land Use Questionnaire.)
7. Complete description of proposed project (Include area dimensions, use, # of employees, # of dwelling units, etc.)

Demolition of existing residential buildings and construction of a new 15 space parking lot. Reconstruct marina building with boathouse in-kind. New walkways to the waterfront and landscaping are also proposed.

8. Certification/Permission for inspection. To the best of my knowledge, the above is true and accurate. I hereby grant permission for site inspection to Planning Board official(s). I also understand that it is my responsibility for providing a complete application. I realize that any of the application requirements, which are assumed waivable during the initial review, may still be required at the time of review by the Planning Board.

_____ 11/08/23

Signature(s) of Landowner(s) Date

Date of Application:
Phase I_____ Phase II_____
Phase III_____ Major Site Plan_____
Home Business_____
Fee Paid_____ Method of Payment_____

FINAL HEARING CHECKLIST

The following items must be submitted in accordance with the attached meeting and deadline schedule for the Planning Board meeting you wish to attend:

__X__ Completed Application
__X__ Fees
__X__ Two (2) copies of plans for review (with required information per Article V)
__X__ List of abutters, including mailing addresses
__X__ PDF of Site Plan emailed to zoning@town.sunapee.nh.us

The Planner will review the plans to determine if the appropriate information has been provided on the plans. If the submission is deemed complete, notices will be sent (14) calendar days prior to the hearing. The following items must be included on the plan per Article V:

__X__ Plan at a scale of 1" + 20' or less
__X__ Perimeter boundary survey
__X__ Title of drawing with name of applicant
__X__ Parcel ID
__X__ Name and mailing addresses of abutting property owners
__X__ Signature block for Water & Sewer Commission, Police Chief, Road Agent & Conservation Commission
__X__ Site location map
__X__ North point, bar scale, appropriate dates
__X__ Name, address, and seal of person preparing map
__X__ Location and shape of existing and proposed buildings
__X__ Square footage for each use designated on plan
__X__ Existing and proposed contours at an interval or no more than 5'. Spot elevations for level lot.
__X__ Streams, wetlands, and other water bodies
__X__ Width, location, and grades of existing and proposed streets and driveways
__X__ Layout and size of parking spaces
__X__ Sewage disposal facilities for property including mains and service lines
__X__ Water supply for property including mains and services lines
__X__ Proposed landscaping plan
__X__ Existing and proposed electric lines
__X__ Existing and proposed telephone lines
__X__ Exterior lighting plan

Article V requirements (cont.):

__X__ Proposed signs-size and location

__X__ Locations of retaining walls, fences, and outside storage areas
__n/a__ Location of fire alarms and sprinklers

The Planning Board may waive the following items if it is determined, the project's impact will be minor, and otherwise, each item will be required:
__X__ Drainage design, including drainage structures, culverts, ditches, and storm sewer lines
__n/a__ Drainage calculations
__n/a__ Plans for toxic waste storage
__n/a__ Location of hazardous materials storage

State of New Hampshire Permits:
__N/A__ Department of Transportation (Highway/Access)
__N/A__ NHWSPCD (Septic Systems
__N/A__ Water Supply Division
__N/A__ Site Specific (Department of Environmental Services)
PENDING Wetlands Board

50 foot Abutters List Report

Tri Town, NH
November 07, 2023

Subject Property:

Parcel Number:	Sun-0106-0018-0000	Mailing Address:	GOODHUE SUNAPEE REAL PROPERTY,
CAMA Number:	Sun-0106-0018-0000		PO BOX 1508
Property Address:	15 COOPER ST		WOLFEBORO, NH 03894

Abutters:

Parcel Number:	Sun-0104-0086-0000	Mailing Address:	SARGENT FAMILY LLC
CAMA Number:	Sun-0104-0086-0000		PO BOX 908
Property Address:	COOPER ST		NEW LONDON, NH 03257
Parcel Number:	Sun-0106-0017-0000	Mailing Address:	GM BOAT CLUB
CAMA Number:	Sun-0106-0017-0000		PO BOX 638
Property Address:	1024 LAKE AVE GM		NEW LONDON, NH 03257
Parcel Number:	Sun-0106-0019-0000	Mailing Address:	TOWN OF SUNAPEE
CAMA Number:	Sun-0106-0019-0000		23 EDGEMONT ROAD
Property Address:	18 COOPER ST		SUNAPEE, NH 03782
Parcel Number:	Sun-0106-0020-0000	Mailing Address:	DUPONT, DONALD R & BARBARA B
CAMA Number:	Sun-0106-0020-0000		42 CARY ST
Property Address:	16 COOPER ST		NEWPORT, NH 03773

CONSULTANTS:

ENGINEER AND SURVEYOR:
HORIZONS ENGINEERING
176 NEWPORT ROAD
SUITE 8
NEW LONDON, NH 03257
(603) 444-1343

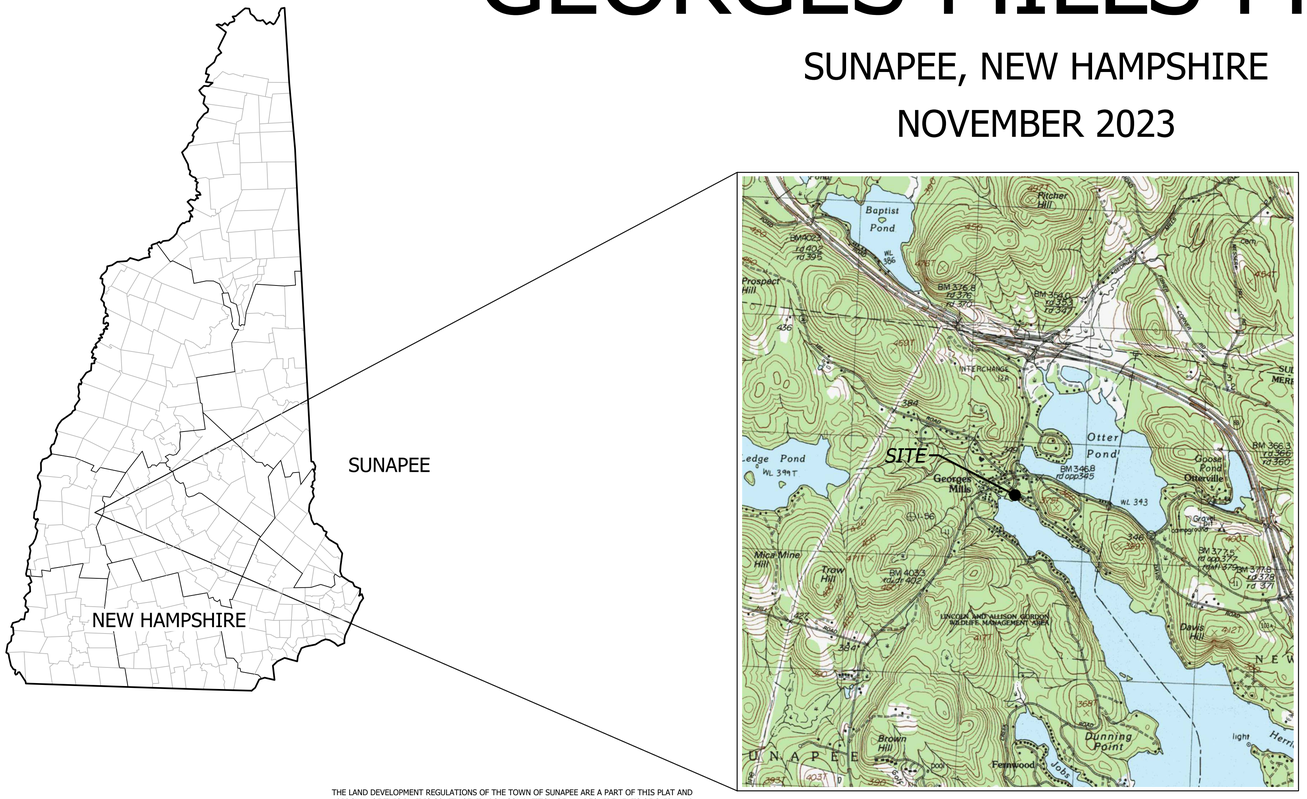
LANDSCAPE ARCHITECT:
SITEFORM STUDIO
ATTN: TOM HAND, ASLA, PLA
PO BOX 1272
STOWE, VT 05672

GOODHUE SUNAPEE REAL PROPERTY, LLC

GEORGES MILLS MARINA

SUNAPEE, NEW HAMPSHIRE

NOVEMBER 2023



LOCATION PLAN

OWNER:

GOODHUE SUNAPEE REAL PROPERTY, LLC
PO BOX 853
WOLFBORO, NEW HAMPSHIRE

ENGINEER AND SURVEYOR:

horizons Engineering

176 NEWPORT ROAD
SUITE 8
NEW LONDON, NH 03257
(603) 444-1343

LANDSCAPE ARCHITECT:

SITEFORM STUDIO
ATTN: TOM HAND, ASLA, PLA
PO BOX 1272
STOWE, VT 05672

SHEET LIST:

THE LAND DEVELOPMENT REGULATIONS OF THE TOWN OF SUNAPEE ARE A PART OF THIS PLAT AND APPROVAL OF THIS PLAT IS CONTINGENT UPON COMPLETION OF ALL REQUIREMENTS OF SAID LAND DEVELOPMENT REGULATIONS, EXCEPTING ONLY ANY ZONING VARIANCES OR MODIFICATIONS MADE IN WRITING BY THE BOARD AND ATTACHED HERETO.

I/WE, GOODHUE SUNAPEE REAL PROPERTY,LLC, CERTIFY THAT OUR ASSIGNS OR SUCCESSORS WILL SEEK APPROVAL BY THE PLANNING BOARD PRIOR TO MAKING ANY CHANGES TO THIS SITE PLAN.

APPROVED BY THE SUNAPEE, N.H. PLANNING BOARD

DATE _____

_____ _____
(CHAIR)

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

PERMIT NOTES

IT IS THE OWNERS RESPONSIBILITY TO INSURE ALL PERMITS ARE IN PLACE PRIOR TO CONSTRUCTION.

THIS PROJECT SHALL COMPLY WITH ALL CONDITIONS OF ALL PERMITS FOR THE PROJECT. COPIES OF THESE PERMITS MAY BE REQUESTED FROM THE HORIZONS ENGINEERING OFFICE IN SHARON, VT. PERMITS LISTED BELOW ARE REPRESENTATIVE OF PROJECT PERMITTING COLLECTED BY HORIZONS ENGINEERING. ALL REQUIRED PERMITS SHALL BE COLLECTED AND VERIFIED BY THE GENERAL CONTRACTOR.

STATE OF NEW HAMPSHIRE	
DEPARTMENT OF ENVIRONMENTAL SERVICES SHORELAND PERMIT	PENDING
TOWN OF SUNAPEE	
PLANNING BOARD SITE PLAN REVIEW	PENDING

FOR REVIEW
NOT FOR CONSTRUCTION

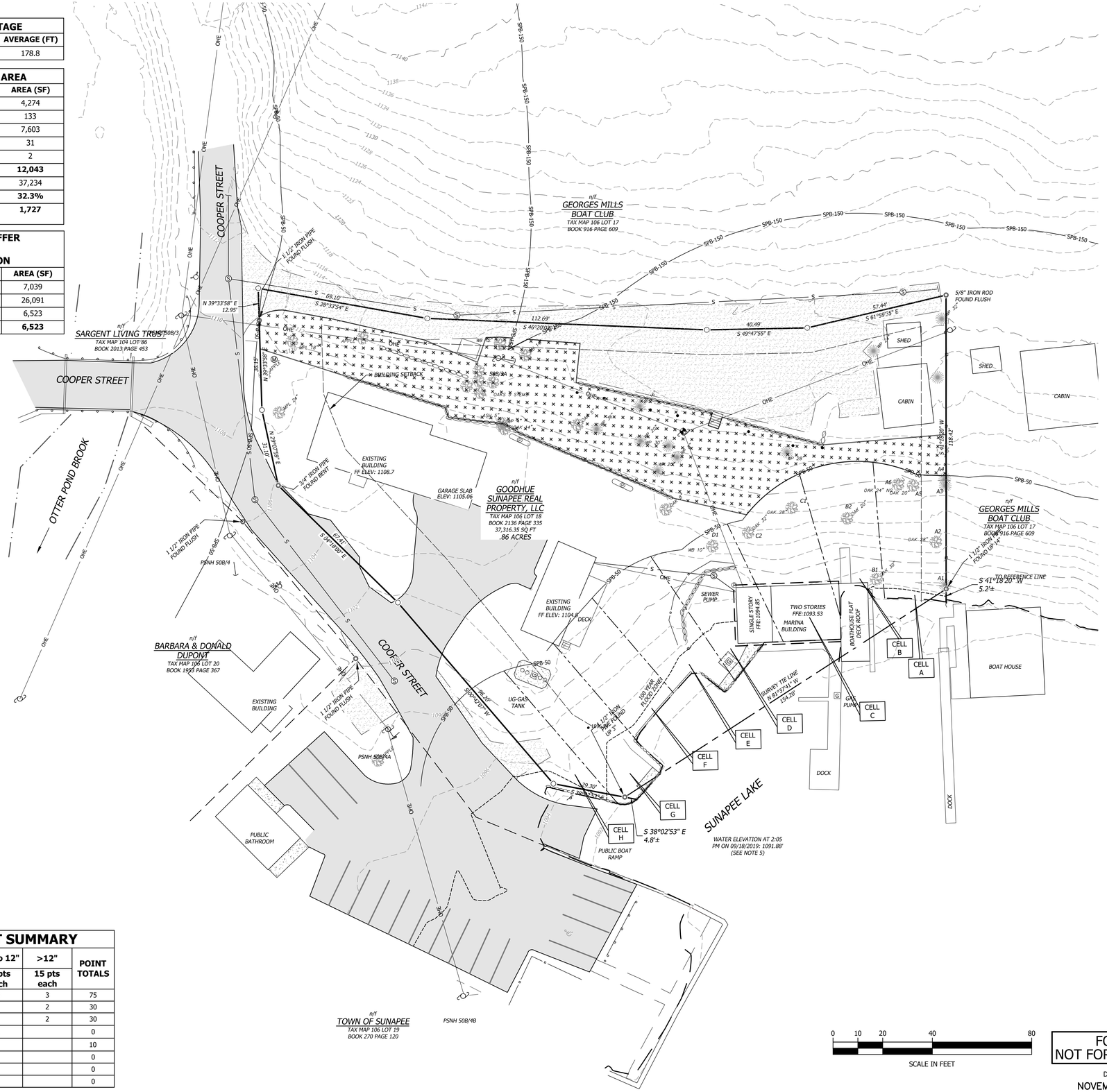
DATE OF PRINT
NOVEMBER 09 2023
HORIZONS ENGINEERING

LAKE SUNAPEE SHORELINE FRONTAGE			
LOT	**SHORELINE (FT)**	**PIN TO PIN (FT)**	**AVERAGE (FT)**
106-17	203.3	154.2	178.8

PRE-CONSTRUCTION IMPERVIOUS AREA	
STRUCTURE	**AREA (SF)**
PRIMARY STRUCTURES & ATTACHED DECKS	4,274
ACCESSORY STRUCTURES	133
IMPERVIOUS SURFACES (PAVEMENT, GRAVEL, ETC)	7,603
BOATHOUSE (ABOVE RLE)	31
BOATHOUSE DOCK & DECK (ABOVE RLE)	2
TOTAL IMPERVIOUS W/IN 250' BUFFER	**12,043**
TOTAL LOT AREA W/IN 250' BUFFER	37,234
PRE-CONSTRUCTION % COVERAGE	**32.3%**
TOTAL IMPERVIOUS W/IN 50' WATERFRONT BUFFER	**1,727**

NHDES NATURAL WOODLAND BUFFER PRE-CONSTRUCTION UNALTERED STATE CALCULATION	
CALCULATION	**AREA (SF)**
TOTAL UNALTERED AREA 50' TO 150' BUFFER	7,039
TOTAL LOT AREA 50' TO 150' BUFFER	26,091
25% OF TOTAL LOT AREA 50' TO 150' BUFFER	6,523
MINIMUM AREA TO REMAIN UNALTERED	**6,523**

NHDES TREE COUNT SUMMARY					
GRID SEGMENT	**1" to 3" 1pt each**	**>3 to 6" 5pt each**	**>6" to 12" 10 pts each**	**>12" 15 pts each**	**POINT TOTALS**
A			3	3	75
B				2	30
C				2	30
D			1		0
E					10
F					0
G					0
H					0



GENERAL NOTES

1. OWNER OF RECORD

   GOODHUE SUNAPEE REAL PROPERTY, LLC
   P.O. BOX 1508
   WOLFEBORO, NH 03894
   BOOK 2136 PAGE 335

2. DEED REFERENCES:
   A. "WARRANY DEED FROM DOIREANN SARGENT TO DOIREANN SARGENT, TRUSTEE OF THE DOIREANN SARGENT LIVING TRUST." DATED JULY 21, 2017 AND RECORDED AT THE SULLIVAN COUNTY REGISTRY OF DEEDS IN DEED BOOK 2013 PAGES 453-455.

3. PLAN REFERENCES:
   A. "PLAN OF STANDARD PROPERTY SURVEY PREPARED FOR THE GEORGES MILLS BOAT CLUB LOCATED IN SUNAPEE, N.H." DATED NOVEMBER 16, 2018. SURVEYED BY PENNYROYAL HILL LAND SURVEYING & FORESTRY LLC AND RECORDED AT THE SULLIVAN COUNTY REGISTRY OF DEEDS AS PLAN #5248.
   B. "BOUNDARY LINE AGREEMENT BETWEEN TOWN OF SUNAPEE & JOHN A. SARGENT GEORGES MILLS SUNAPEE, N.H." DATED NOVEMBER 27, 1984. SURVEYED BY CLIFFORD P. RICHER AND RECORDED AT THE SULLIVAN COUNTY REGISTRY OF DEEDS IN PLAN POOKET 10 FOLDER 4 NUMBER 23 PLAN FILE 2.
   C. "ALTA/ACSM LAND TITLE SURVEY PREPARED FOR HK SUNAPEE COVE, LLC 1250 ROUTE 11 GEORGES MILLS SULLIVAN COUNTY SUNAPEE, NEW HAMPSHIRE." DATED SEPTEMBER 30, 2013. PREPARED BY WAYNE MCCUTCHEON ASSOCIATES, INC AND RECORDED AT THE SULLIVAN COUNTY REGISTRY OF DEEDS IN DRAWING FOLDER 4 PLAN 13.
   D. "A BOUNDARY PLAN PREPARED FOR SPENCER HENRIOD FOR LANDS OF SARGENT LIVING TRUST", DATED SEPTEMBER, 2019. PREPARED BY HORIZONS ENGINEERING, INC. AND RECORDED AT THE SULLIVAN COUNTY REGISTRY OF DEEDS AS PLAN# 5301.

4. THE BASIS OF BEARING IS GRID. THE HORIZONTAL DATUM IS ON THE NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM NAD83 (2011), DERIVED FROM STATIC GPS OBSERVATIONS TAKEN AT THE TIME OF THE FIELD SURVEY AND PROCESSED USING THE ONLINE POSITIONING USER SYSTEM (OPUS).

5. THE VERTICAL DATUM IS THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29). THE CONTOUR INTERVAL IS 1FT. THE DATUM WAS DERIVED BY RECORDING THE TIMES OF LAKE WATER ELEVATIONS IN THE FIELD AND ADJUSTING THEM TO THE DATA AVAILABLE ON THE NH DEPARTMENT OF ENVIRONMENTAL LIVE STREAM GAUGE FOR SUNAPEE HARBOR.

6. THIS PLAN IS BASED ON A FIELD SURVEY COMPLETED IN SEPTEMBER OF 2019 WITH TOPCON HIPER V DUAL FREQUENCY SURVEY GRADE GNSS RECEIVERS AND A LEICA TS12 ROBOTIC TOTAL STATION. THE RAW PRECISION ERROR OF CLOSURE IS GREATER THAN 1 PART IN 18,200.

7. THE PROPERTY BOUNDARY WAS RETRACED USING THE DEEDS OF RECORD, REFERENCE PLANS AND EVIDENCE FOUND IN THE FIELD. ABUTTING PROPERTY LINES ARE APPROXIMATE PER THE TOWN OF SUNAPEE TAX MAPS.

8. SURVEY TIE LINE AS SHOWN HEREON IS FOR MATHEMATICAL CLOSURE PURPOSES ONLY AND SHOULD NOT BE USED FOR AREA CALCULATIONS.

9. A PORTION OF THE SURVEYED PARCEL IS MAPPED AS LYING INSIDE OF THE FLOOD ZONE PER F.E.M.A. FIRM MAP NUMBER 33019C0215E DATED 5/23/2006. THE LIMITS OF THE 100 YR FLOOD ZONE ELEVATION IS 1095.4' USING THE NGVD29 DATUM.

LEGEND

- IRON ROD OR PIPE FOUND
- CALCULATED POINT
- TREES
- GASOLINE PUMP OR TANK
- SEWER MANHOLE
- GUY WIRE
- UTILITY POLE
- PROPERTY LINE
- ABUTTER PROPERTY LINE
- ORDINARY HIGH WATER/LAKE REFERENCE LINE (1094.15')
- 100 YR FLOOD ZONE (1094.5')
- SHORELAND 50' BUFFER
- SHORELAND 150' BUFFER
- CONTOUR - MAJOR INTERVAL
- CONTOUR - MINOR INTERVAL
- LAKE
- OHE — OVERHEAD ELECTRIC
- PAVEMENT
- GRAVEL
- CONCRETE

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GOODHUE SUNAPEE REAL PROPERTY, LLC

GEORGES MILLS MARINA PROJECT

SUNPEE, NEW HAMPSHIRE

EXISTING CONDITIONS

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

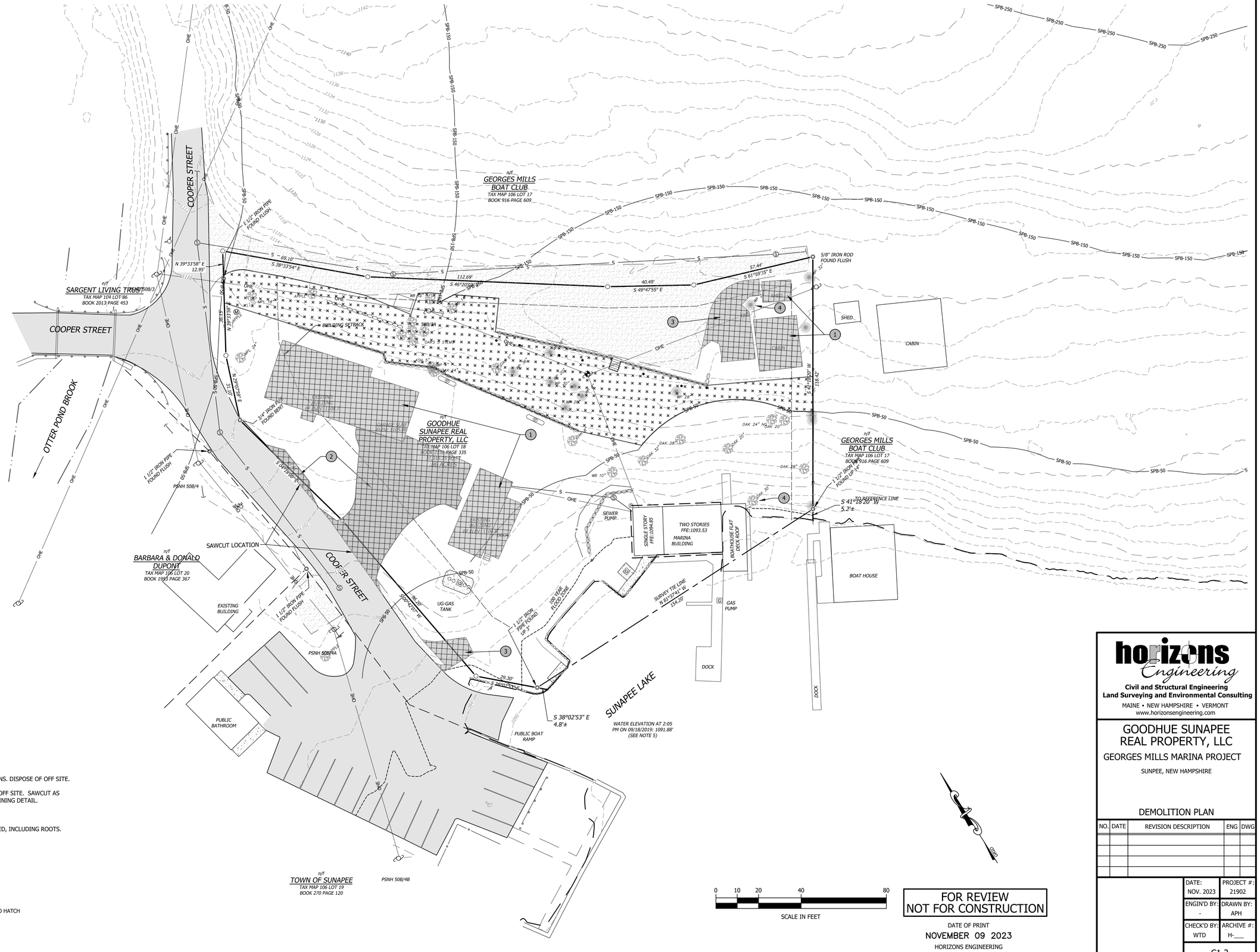
FOR REVIEW
NOT FOR CONSTRUCTION

DATE OF PRINT
NOVEMBER 09 2023
HORIZONS ENGINEERING

STATE OF NEW HAMPSHIRE — No. 967 ERIC S. POSPESIL — LICENSED LAND SURVEYOR
SIGNATURE

DATE: NOV. 2023	PROJECT #: 21902
SURV'D BY: EP/NS	DRAWN BY: APH
CHECK'D BY: -	ARCHIVE #: H-___

C1.1



DEMO NOTES

1. REMOVE EXISTING BUILDING AND FOUNDATIONS. DISPOSE OF OFF SITE.
2. REMOVE EXISTING ASPHALT AND DISPOSE OF OFF SITE. SAWCUT AS INDICATED ON THE PLANS. SEE PAVEMENT JOINING DETAIL.
3. REMOVE GRAVEL AND VEGETATE.
4. EXISTING TREES SHALL BE REMOVED AS NEEDED, INCLUDING ROOTS.

DEMO LEGEND

DEMO HATCH

0 10 20 40 80

SCALE IN FEET

FOR REVIEW
NOT FOR CONSTRUCTION

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GOODHUE SUNAPEE REAL PROPERTY, LLC

GEORGES MILLS MARINA PROJECT

SUNPEE, NEW HAMPSHIRE

DEMOLITION PLAN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOV. 2023	PROJECT #: 21902
ENGIN'D BY: -	DRAWN BY: APH
CHECK'D BY: WTD	ARCHIVE #: H-___

C1.2

POST-CONSTRUCTION IMPERVIOUS AREA	
STRUCTURE	**AREA (SF)**
PRIMARY STRUCTURES & ATTACHED DECKS	1,039
ACCESSORY STRUCTURES	0
IMPERVIOUS SURFACES (PAVEMENT, GRAVEL, WALKWAY/STAIR, ETC)	10,861
BOATHOUSE (ABOVE RLE)	31
BOATHOUSE DOCK & DECK (ABOVE RLE)	2
TOTAL IMPERVIOUS W/IN 250' BUFFER	**11,933**
TOTAL LOT AREA W/IN 250' BUFFER	37,234
POST-CONSTRUCTION % COVERAGE	**32.0%**
TOTAL IMPERVIOUS W/IN 50' WATERFRONT BUFFER	**1,405**

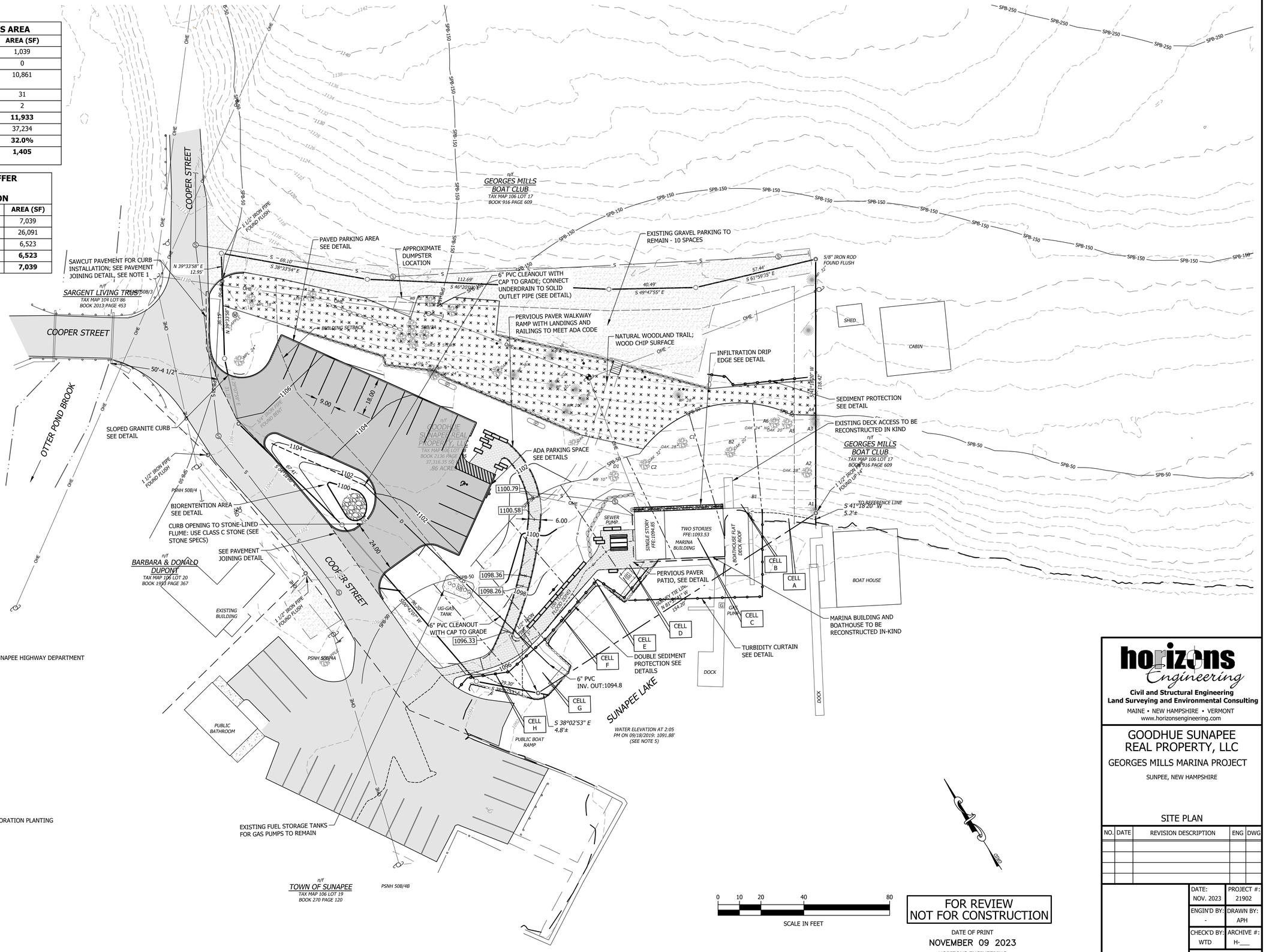
NHDES NATURAL WOODLAND BUFFER POST-CONSTRUCTION UNALTERED STATE CALCULATION	
CALCULATION	**AREA (SF)**
TOTAL UNALTERED AREA 50' TO 150' BUFFER	7,039
TOTAL LOT AREA 50' TO 150' BUFFER	26,091
25% OF TOTAL LOT AREA 50' TO 150' BUFFER	6,523
MINIMUM AREA TO REMAIN UNALTERED	**6,523**
POST-CONSTRUCTION UNALTERED AREA	**7,039**

CONSTRUCTION NOTES

1. COORDINATE ALL WORK IN THE RIGHT OF WAY WITH THE SUNAPEE HIGHWAY DEPARTMENT PRIOR TO STARTING WORK.

NOTES

1. SEE SHEET L1.1 FOR SHORELAND RESTORATION PLANTING



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GOODHUE SUNAPEE REAL PROPERTY, LLC

GEORGES MILLS MARINA PROJECT

SUNPEE, NEW HAMPSHIRE

SITE PLAN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOV. 2023	PROJECT #: 21902
ENGIN'D BY: -	DRAWN BY: APH
CHECK'D BY: WTD	ARCHIVE #: H-___

C2.1

SEEDING RECOMMENDATIONS

1. GRADING AND SHAPING

A. SLOPES SHALL NOT BE STEEPER THAN 2:1; 3:1 SLOPES OR FLATTER ARE PREFERRED. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.

2. SEEDBED PREPARATION

A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.

B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE AMENDED WITH ORGANIC MATTER AND TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER AND LIME THOROUGHLY INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.

3. ESTABLISHING VEGETATION

A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:

-AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100 LBS. PER 1,000 SQ. FT.
-NITROGEN (N), 50 LBS., PER ACRE OR 1.1 LBS. PER 1,000 SQ. FT.
-PHOSPHATE (P_2O_5), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ. FT.
-POTASH (K_2O), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ. FT.

(NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5-10-10).

B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING, AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.

C. SEEDING GUIDE:

USE	SEEDING MIXTURE (SEE 3D)	SOIL TYPE: DROUGHTY	WELL DRAINED	MOD. WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER	A	GOOD	GOOD	GOOD	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR

D. SEEDING RATES:

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 SQ. FT.
A TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
REDTOP	2	0.05
TOTAL:	42	0.95
B TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH **OR**	15 **OR**	0.35 **OR**
FLATPEA	30	0.75
TOTAL:	40 **OR** 55	0.95 **OR** 1.35
C TALL FESCUE	20	0.45
FLATPEA	30	0.75
TOTAL:	50	1.20

E. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO SEPTEMBER 15. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 10 TO SEPTEMBER 1.

F. TEMPORARY SEEDING RATES:

SPECIES	POUNDS PER ACRE	POUNDS PER 1,000 SQ. FT.	REMARKS
WINTER RYE	112	2.5	BEST FOR FALL SEEDING. SEED FROM AUGUST TO SEPTEMBER 5TH FOR BEST COVER. SEED TO A DEPTH OF 1 INCH.
OATS	80	2.0	BEST FOR SPRING SEEDING. SEED NO LATER THAN MAY 15TH FOR SUMMER PROTECTION. SEED TO A DEPTH OF 1 INCH.
ANNUAL RYEGRASS	40	1.0	GROWS QUICKLY, BUT IS OF SHORT DURATION. USE WHERE APPEARANCES ARE NOT IMPORTANT. SEED EARLY SPRING AND/OR BETWEEN AUGUST 15TH AND SEPTEMBER 15TH. COVER SEED WITH NO MORE THAN 0.25 INCH OF SOIL.
PERENNIAL RYEGRASS	30	0.7	GOOD COVER WHICH IS LONGER LASTING THAN ANNUAL RYEGRASS. SEED BETWEEN APRIL 1ST AND JUNE 1ST AND/OR BETWEEN AUGUST 15TH AND SEPTEMBER 15TH. MULCHING WILL ALLOW SEEDING THROUGHOUT THE GROWING SEASON. SEED TO A DEPTH OF APPROXIMATELY 0.5 INCH.

4. MULCH

A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.

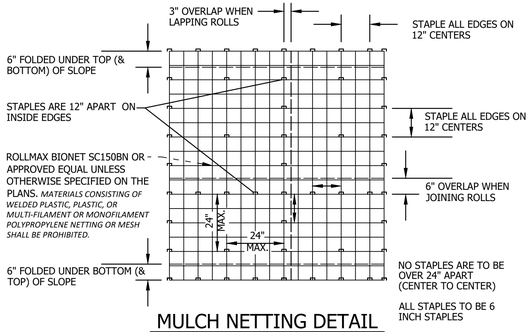
B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING.

5. MAINTENANCE TO ESTABLISH A STAND

A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.

B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ON SITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME ESTABLISHED.

C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, OCCASIONAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.



MULCH NETTING DETAIL

SOURCE: USDA SOIL CONSERVATION SERVICE
NO SCALE

EROSION CONTROL GENERAL NOTES

A. KEEP SITE MODIFICATION TO A MINIMUM

1. CONSIDER FITTING THE BUILDINGS AND STREETS TO THE NATURAL TOPOGRAPHY. THIS REDUCES THE NEED FOR CUTS AND FILLS. AVOID EXTENSIVE GRADING THAT WOULD ALTER DRAINAGE PATTERNS OR CREATE VERY STEEP SLOPES.
2. EXPOSE AREAS OF BARE SOIL TO EROSIVE ELEMENTS FOR THE SHORTEST TIME POSSIBLE.
3. SAVE AND PROTECT DESIRABLE EXISTING VEGETATION WHERE POSSIBLE. ERECT BARRIERS TO PREVENT DAMAGE FROM CONSTRUCTION EQUIPMENT.
4. LIMIT THE GRADES OF SLOPES SO VEGETATION CAN BE EASILY ESTABLISHED AND MAINTAINED.
5. AVOID SUBSTANTIAL INCREASE IN RUNOFF LEAVING THE SITE.

B. MINIMIZE POLLUTION OF WATER DURING CONSTRUCTION ACTIVITIES

1. STOCKPILE TOPSOIL REMOVED FROM CONSTRUCTION AREA AND SPREAD OVER ANY DISTURBED AREAS PRIOR TO REVEGETATION. TOPSOIL STOCKPILES MUST BE PROTECTED FROM EROSION.
2. PROTECT BARE SOIL AREAS EXPOSED BY GRADING ACTIVITIES WITH TEMPORARY VEGETATION OR MULCHES.
3. USE SEDIMENT BASINS TO TRAP DEBRIS AND SEDIMENT WHICH WILL PREVENT THESE MATERIALS FROM MOVING OFF SITE.
4. USE DIVERSIONS TO DIRECT WATER AROUND THE CONSTRUCTION AREA AND AWAY FROM EROSION PRONE AREAS TO POINTS OF SAFE DISPOSAL.
5. USE TEMPORARY CULVERTS OR BRIDGES WHEN CROSSING STREAMS WITH EQUIPMENT.
6. PLACE CONSTRUCTION FACILITIES, MATERIALS, AND EQUIPMENT STORAGE AND MAINTENANCE AREAS AWAY FROM DRAINAGE WAYS.

C. PROTECT AREA AFTER CONSTRUCTION.

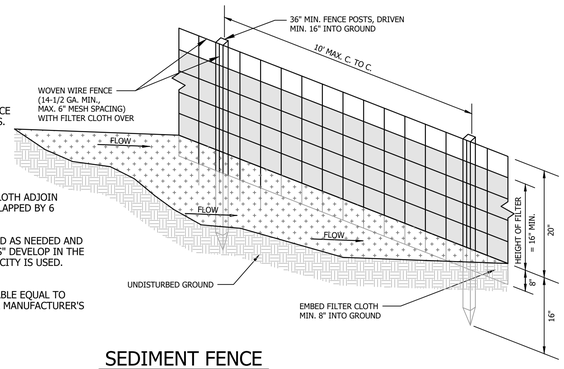
1. ESTABLISH GRASS OR OTHER SUITABLE VEGETATION ON ALL DISTURBED AREAS. SELECT SPECIES ADAPTED TO THE SITE CONDITIONS AND THE FUTURE USE OF THE AREA. FINAL GRADES SHALL BE SEEDED WITHIN 72 HOURS. STABILIZATION SHALL BE DEFINED AS 85% VEGETATIVE COVER.
2. MAINTAIN VEGETATED AREAS USING PROPER VEGETATIVE 'BEST MANAGEMENT PRACTICES' DURING THE CONSTRUCTION PERIOD.
3. MAINTAIN NEEDED STRUCTURAL 'BEST MANAGEMENT PRACTICES' AND REMOVE SEDIMENT FROM DETENTION PONDS AND SEDIMENT BASINS AS NEEDED.
4. DETERMINE RESPONSIBILITY FOR LONG TERM MAINTENANCE OF PERMANENT 'BEST MANAGEMENT PRACTICES'.
5. IF CONSTRUCTION IS ANTICIPATED DURING WINTER MONTHS, REFER TO 'COLD WEATHER SITE STABILIZATION REQUIREMENTS'.

D. INVASIVE SPECIES AND FUGITIVE DUST

1. THE PROJECT SHALL NOT CONTRIBUTE TO THE SPREAD OF INVASIVE SPECIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EVALUATE WORK AREAS FOR THE PRESENCE OF INVASIVE SPECIES, AND IF FOUND SHALL TAKE NECESSARY MEASURES TO PREVENT THEIR SPREAD IN ACCORDANCE WITH RSA 430:51-57 AND AGR 3800. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT THE INTRODUCTION OF INVASIVE SPECIES BY INSPECTING AND CLEANING ALL EQUIPMENT ARRIVING ON SITE.
2. FUGITIVE DUST SHALL BE CONTROLLED IN ACCORDANCE WITH ENV-A 1000.

CONSTRUCTION NOTES FOR SEDIMENT FENCE

1. WOVEN WIRE FENCE, IF REQUIRED, TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP, MID SECTION, AND BOTTOM.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED AND STAPLED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SEDIMENT FENCE, OR 50% OF CAPACITY IS USED.
5. 12" DIAMETER FILTREXX SILTSOXX SHALL BE CONSIDERED AN ACCEPTABLE EQUAL TO SEDIMENT FENCE IF INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.



SEDIMENT FENCE

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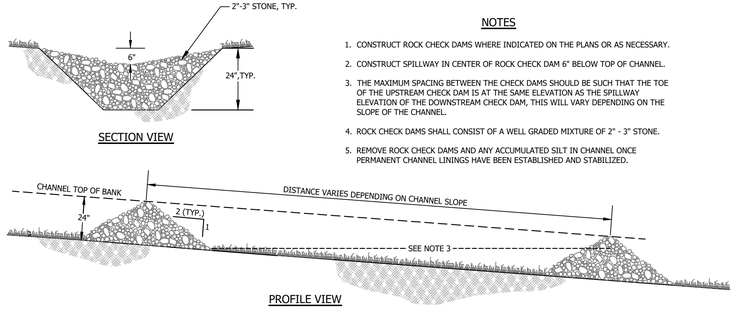


ROCK CHECK DAM DETAIL

NO SCALE

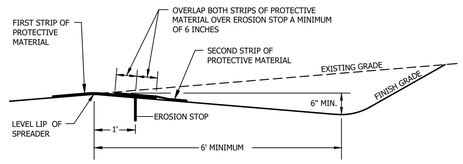
COLD WEATHER SITE STABILIZATION REQUIREMENTS

TO ADEQUATELY PROTECT WATER QUALITY DURING COLD WEATHER AND DURING SPRING RUNOFF, THE FOLLOWING ADDITIONAL STABILIZATION TECHNIQUES SHALL BE EMPLOYED DURING THE PERIOD FROM OCTOBER 15 THROUGH MAY 1:

1. THE AREA OF EXPOSED, UNSTABILIZED SOIL SHALL BE LIMITED TO 1 ACRE AND SHALL BE PROTECTED AGAINST EROSION BY THE METHODS DESCRIBED IN THIS SECTION PRIOR TO ANY THAW OR SPRING MELT EVENT. THE ALLOWABLE AREA OF EXPOSED SOIL MAY BE INCREASED IF A WINTER CONSTRUCTION PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, IS REVIEWED AND APPROVED BY NHDES.
2. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF LESS THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE SEEDED AND COVERED WITH 3 TO 4 TONS OF HAY OR STRAW MULCH PER ACRE, SECURED WITH ANCHORED NETTING OR TACKIFIER, OR 2 INCHES OF EROSION CONTROL MIX MEETING THE CRITERIA OF ENV-WQ 1506.05(D) THROUGH (H).
3. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF GREATER THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE SEEDED AND COVERED WITH PROPERLY INSTALLED AND ANCHORED EROSION CONTROL MATTING OR WITH A MINIMUM 4 INCH THICKNESS OF EROSION CONTROL MIX MEETING THE CRITERIA OF ENV-WQ 1506.05(D) THROUGH (H).
4. INSTALLATION OF ANCHORED HAY MULCH OR EROSION CONTROL MIX, MEETING THE CRITERIA OF ENV-WQ 1506.05(D) THROUGH (H), SHALL NOT OCCUR OVER SNOW OF GREATER THAN 1 INCH IN DEPTH.
5. INSTALLATION OF EROSION CONTROL MATTING SHALL NOT OCCUR OVER SNOW OF GREATER THAN ONE INCH IN DEPTH OR ON FROZEN GROUND.
6. ALL PROPOSED STABILIZATION IN ACCORDANCE WITH NOTES 2 OR 3 ABOVE, SHALL BE COMPLETED WITHIN 1 DAY OF ESTABLISHING THE GRADE THAT IS FINAL OR THAT OTHERWISE WILL EXIST FOR MORE THAN 5 DAYS.
7. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% 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, AS DETERMINED BY THE OWNER'S ENGINEERING CONSULTANT.
8. AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING AREAS WHERE ACTIVE CONSTRUCTION OF THE ROAD OR PARKING AREA HAS STOPPED FOR THE WINTER SEASON SHALL BE PROTECTED WITH A MINIMUM 3 INCH LAYER OF BASE COURSE GRAVELS MEETING THE GRADATION REQUIREMENTS OF NHDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM NO. 304.1 OR 304.2.

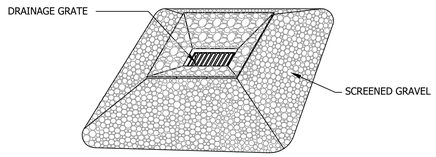
LEVEL LIP SPREADER INSTALLATION

1. CONSTRUCT THE LEVEL SPREADER LIP ON A ZERO PERCENT GRADE TO INSURE UNIFORM SPREADING OF RUNOFF.
2. LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL AND NOT ON FILL.
3. AN EROSION STOP SHALL BE PLACED VERTICALLY A MINIMUM OF SIX INCHES DEEP IN A SLIT TRENCH ONE FOOT BACK OF THE LEVEL LIP AND PARALLEL TO THE LIP. THE EROSION STOP SHALL EXTEND THE ENTIRE LENGTH OF THE LEVEL LIP.
4. THE ENTIRE LEVEL LIP AREA SHALL BE PROTECTED BY PLACING TWO STRIPS OF JUTE OR EXCELSIOR MATTING ALONG THE LIP. EACH STRIP SHALL OVERLAP THE EROSION STOP BY AT LEAST SIX INCHES.
5. THE ENTRANCE CHANNEL TO THE LEVEL SPREADER SHALL NOT EXCEED A 1 PERCENT GRADE FOR AT LEAST 50 FEET BEFORE ENTERING INTO THE SPREADER.
6. THE FLOW FROM THE LEVEL SPREADER SHALL OUTLET ONTO STABILIZED AREAS. WATER SHOULD NOT RE-CONCENTRATE IMMEDIATELY BELOW THE SPREADER.
7. PERIODIC INSPECTION AND REQUIRED MAINTENANCE SHALL BE PERFORMED.
8. PROTECTIVE MATERIAL AND EROSION STOP SHALL BE NORTH AMERICAN GREEN C125 EROSION CONTROL BLANKET OR APPROVED EQUAL.

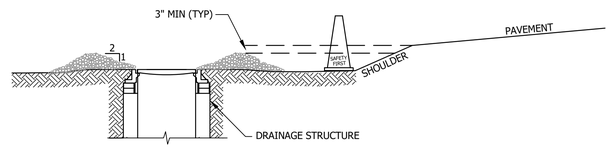


LEVEL SPREADER DETAIL

NO SCALE
SOURCE: ROCKINGHAM COUNTY CONSERVATION SERVICE



PERSPECTIVE VIEW



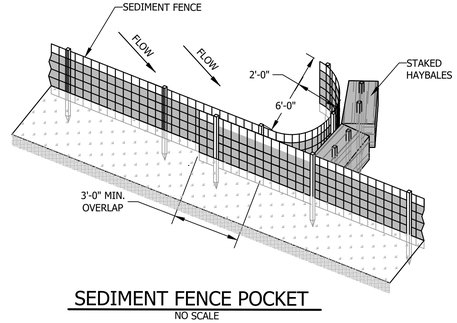
SECTION

MATERIALS SPECIFICATIONS:
1. SCREENED GRAVEL: UNIFORMLY GRADED 1" TO 4" DIA. STONE.

CONSTRUCTION SPECIFICATIONS:
1. INSTALL GRAVEL INLET PROTECTION WHERE INDICATED OR WARRANTED.
2. FOR ALL INSTALLATIONS WHERE INLET PROTECTION IS WITHIN 8' OF EDGE OF PAVEMENT, A ROADWAY CONE SHALL BE USED BETWEEN CATCH BASIN AND SHOULDER.
3. ENSURE CREST OF GRAVEL PLACED AROUND CATCH BASIN IS AT LEAST 3" BELOW ELEVATION OF EDGE OF PAVEMENT.

CATCH BASIN INLET PROTECTION DETAIL

NO SCALE



SEDIMENT FENCE POCKET

NO SCALE

CONSTRUCTION SEQUENCE

1. PREPARE AN EROSION CONTROL PLAN OR A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
2. INSTALL CONSTRUCTION ENTRANCE, SEE DETAIL.
3. CUT AND CLEAR TREES WITHIN THE CLEARING LIMITS.
4. INSTALL SEDIMENT FENCES, ROCK CHECK DAMS, AND OTHER APPROPRIATE EROSION CONTROL MEASURES AT LOCATIONS SHOWN ON THE PLANS AND AS NEEDED.
5. GRUB SITE WITHIN GRADING LIMITS.
6. STRIP AND STOCKPILE TOPSOIL AND INSTALL EROSION CONTROL MEASURES.
7. INSTALL/ADJUST SEDIMENT FENCE, CHECK DAMS, AND HAYBALES, AS REQUIRED.
8. CONSTRUCT PERMANENT STORMWATER CONTROLS AS SOON AS PRACTICAL. DO NOT DIRECT STORMWATER TOWARD TREATMENT BASINS, PONDS, SWALES, DITCHES AND LEVEL SPREADERS UNTIL THEY HAVE BEEN STABILIZED.
9. PROCEED WITH WORK, LIMITING THE DURATION OF DISTURBANCE. THE MAXIMUM OF UNCOVERED DISTURBED EARTH AT ANY ONE TIME IS FIVE ACRES. THE MAXIMUM LENGTH OF TIME THAT DISTURBED EARTH MAY BE LEFT UNSTABILIZED IS 45 DAYS.
10. BEGIN SEEDING AND MULCHING IMMEDIATELY AFTER GRADING. ALL DISTURBED AREAS SHALL BE STABILIZED WITH APPROVED METHODS WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.

    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" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED; OR
    D) EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
11. INSPECT ALL EROSION CONTROL MEASURES ON A DAILY BASIS AND AFTER EVERY 0.5 INCHES OF PRECIPITATION. MAINTAIN SEDIMENT FENCE, SEDIMENT TRAPS, HAY BALES, ETC., AS NECESSARY.
12. PAVE ROADWAYS AND/OR PARKING AREAS.
13. PLACE TOPSOIL, SEED AND MULCH.
14. COMPLETE ALL REMAINING PERMANENT EROSION CONTROL STRUCTURES.
15. MONITOR THE SITE AND MAINTAIN STRUCTURES AS NEEDED UNTIL FULL VEGETATION IS ESTABLISHED.

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GEORGES MILLS MARINA PROJECT
SUNPEE, NEW HAMPSHIRE

EROSION DETAILS

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOV. 2023	PROJECT #: 21902
ENGIN'D BY: -	DRAWN BY: APH
CHECK'D BY: WTD	ARCHIVE #: H-___

SHEET C3.1

DATE OF PRINT
NOVEMBER 09 2023
HORIZONS ENGINEERING

last revised: 2018-APR-18
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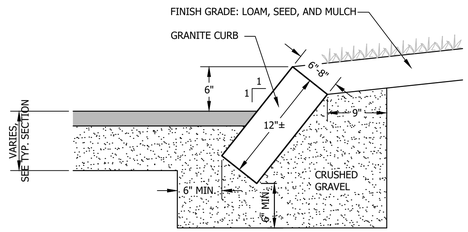


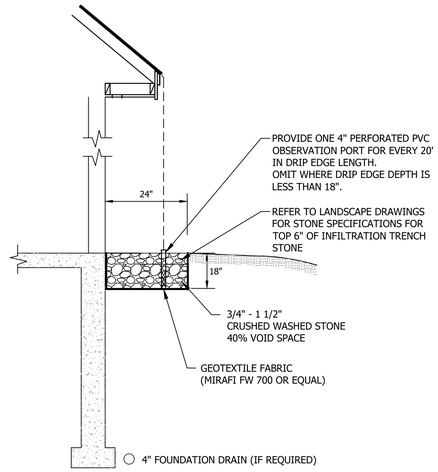
RADIUS	MAX. LENGTH
2'	USE CURVED CURB
2' - 15'	USE RADIAL JOINTS
16' - 28'	1.5'
29' - 41'	2'
42' - 55'	3'
56' - 68'	4'
69' - 82'	5'
83' - 96'	6'
97' - 110'	7'
OVER 110'	8'

NOTE:
ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH

MIN. LENGTH OF STRAIGHT CURB STONES = 1.5'
MAX. LENGTH OF STRAIGHT CURB STONES = 8'
SEE CHART FOR MAX. LENGTH OF STRAIGHT CURB STONES LAID ON CURVES

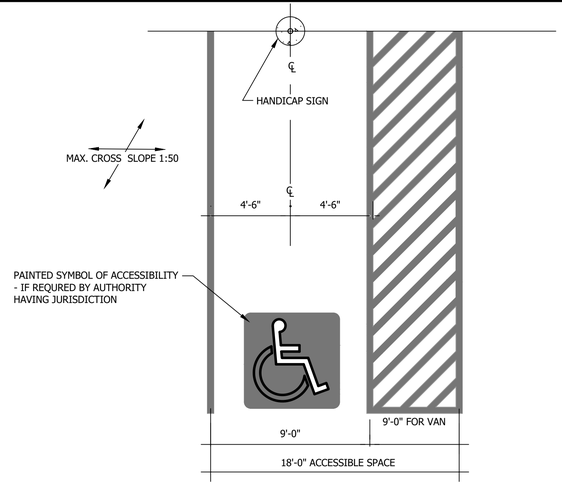
SLOPED GRANITE CURB

NOT TO SCALE



INFILTRATION STONE DRIP EDGE DETAIL

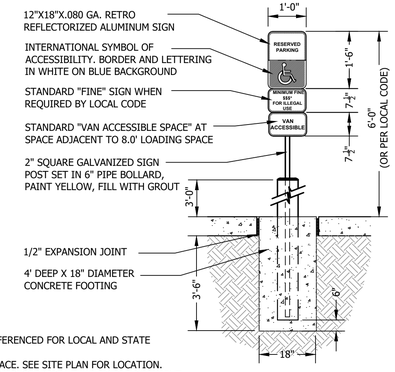
NOT TO SCALE



HANDICAP PARKING DETAIL

NOT TO SCALE

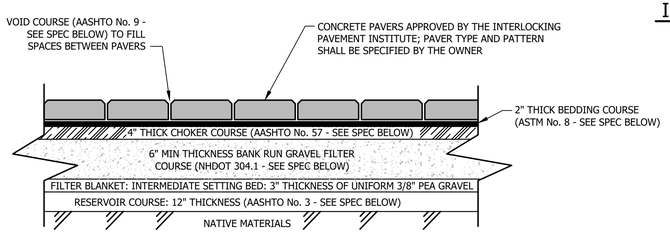
*INCLUDE ON ALL ACCESSIBLE SIGN POLES A SIGN INDICATING MINIMUM FINE OF $(FINE) FOR ILLEGAL PARKING. REFER TO LOCAL CODES FOR FINE AMOUNT.



NOTES:
A. SPECIFIC CODE SHOULD BE REFERENCED FOR LOCAL AND STATE REQUIREMENTS.
B. (1) SIGN AT EACH HANDICAP SPACE. SEE SITE PLAN FOR LOCATION.
C. EXPANSION JOINT MATERIAL NOT REQUIRED WITH FLEXIBLE PAVEMENT.

HANDICAP PARKING SIGN

NOT TO SCALE



U.S. STANDARD SIEVE SIZE	PERCENT PASSING (%) VOID COURSE (ASTM No. 9)	BEDDING COURSE (ASTM No. 8)	CHOKER COURSE (AASHTO No. 57)	FILTER COURSE (NHDOT 304.1)	RESERVOIR COURSE (AASHTO No. 3)	RESERVOIR COURSE ALT.* (AASHTO No. 5)
6" (150mm)	-	-	-	100		-
2 1/2" (63mm)	-	-	-		100	-
2" (50mm)	-	-	-		90-100	-
1 1/2" (37.5mm)	-	-	100		35-70	100
1" (25mm)	-	-	95-100		0-15	90-100
3/4" (19mm)	-	-	-		-	20-55
1/2" (12.5mm)	-	100	25-60		0-5	0-10
3/8" (9.5mm)	100	85 TO 100	-		-	0-5
#4 (4.75mm)	85 TO 100	10 TO 30	0-10	75-100	-	-
#8 (2.36mm)	10 TO 40	0 TO 10	0-5	0-12	-	-
#16 (1.18mm)	0 TO 10	-	-	-	-	-
#50 (0.30mm)	0 TO 5	-	-	-	-	-

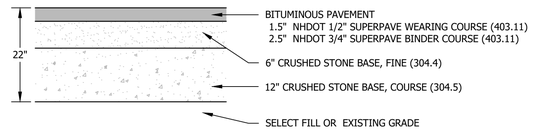
*ALTERNATE GRADATION (e.g. AASHTO No. 5) FOR RESERVOIR COURSE MAY BE ACCEPTED WITH ENGINEER'S APPROVAL.

NOTE:

THE CONTRACTOR AND OWNER ARE ADVISED TO REFERENCE THE "UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS" FOR CONSTRUCTION AND MAINTENANCE OF THE PAVEMENT SECTION.

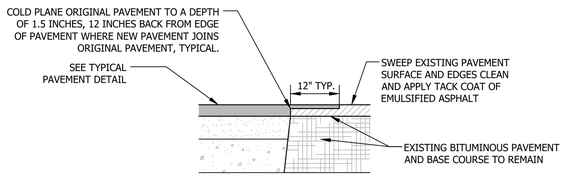
TYPICAL SIDEWALK SECTION- PERVIOUS PAVERS

NOT TO SCALE



TYPICAL PAVEMENT SECTION

NOT TO SCALE



PAVEMENT JOINING DETAIL

NOT TO SCALE

STONE SPECIFICATIONS

2.1 MATERIALS - STONE FILL

A. MATERIALS SHALL MEET THE REQUIREMENTS OF SECTION 585, STONE FILL, NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (NHS) FOR THE APPROPRIATE ITEM AS INDICATED ON THE DRAWINGS.

B. STONE FOR STONE FILL SHALL BE APPROVED QUARRY STONE, OR BROKEN ROCK OF A HARD, SOUND, AND DURABLE QUALITY. THE STONES AND SPALLS SHALL BE SO GRADED AS TO PRODUCE A DENSE FILL WITH A MINIMUM OF VOIDS.

1. **CLASS A STONE** SHALL BE IRREGULAR IN SHAPE WITH APPROXIMATELY 50 % OF THE MASS HAVING A MINIMUM VOLUME OF 12 CUBIC FEET, APPROXIMATELY 30 % OF THE MASS RANGING BETWEEN 3 AND 12 CUBIC FEET, APPROXIMATELY 10 % OF THE MASS RANGING BETWEEN 1 AND 3 CUBIC FEET, AND THE REMAINDER OF THE MASS COMPOSED OF SPALLS.

2. **CLASS B STONE** SHALL BE IRREGULAR IN SHAPE WITH APPROXIMATELY 50 % OF THE MASS HAVING A MINIMUM VOLUME OF 3 CUBIC FEET, APPROXIMATELY 40 % OF THE MASS RANGING BETWEEN 1 AND 3 CUBIC FEET, AND THE REMAINDER OF THE MASS COMPOSED OF SPALLS.

3. **CLASS C STONE** SHALL CONSIST OF CLEAN, DURABLE FRAGMENTS OF LEDGE ROCK, OF UNIFORM QUALITY, REASONABLY FREE FROM THIN OR ELONGATED PIECES. THE STONE SHALL BE MADE FROM ROCK WHICH IS FREE FROM TOPSOIL AND OTHER ORGANIC MATERIAL. THE STONE SHALL BE GRADED AS FOLLOWS:

SIEVE SIZE	PERCENTAGE PASSING BY WEIGHT
12 INCH	100
4 INCH	50-90
1-1/2 INCH	0-30
3/4 INCH	0-10

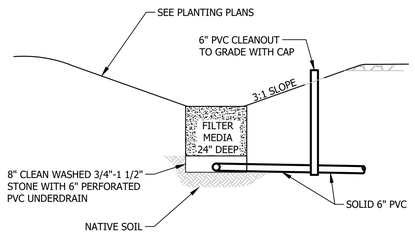
4. **CLASS D STONE** SHALL CONSIST OF CRUSHED STONE, GRAVEL, OR OTHER APPROVED INERT MATERIALS WITH SIMILAR CHARACTERISTICS OR COMBINATIONS THEREOF, HAVING HARD, STRONG, DURABLE PARTICLES, FREE FROM SURFACE COATING AND INJURIOUS AMOUNTS OF SOFT, FRIABLE, OR LAMINATED PIECES, AND FREE OF ALKALINE, ORGANIC, OR OTHER HARMFUL MATTER. THE STONE SHALL BE STANDARD STONE SIZE 467 (NO. 4 TO 1-1/2").

5. **EROSION STONE** SHALL BE IRREGULAR IN SHAPE WITH APPROXIMATELY 50% OF THE MASS HAVING A MINIMUM DIMENSION BETWEEN 6-INCHES AND 8-INCHES, APPROXIMATELY 40% OF THE MASS HAVING A MINIMUM DIMENSION BETWEEN 2-INCHES AND 6-INCHES AND THE REMAINDER OF THE MASS COMPOSED OF SPALLS.

6. **SPALLS** FOR FILLING VOIDS SHALL CONSIST OF A MIXTURE OF STONES OR ROCK FRAGMENTS AND PARTICLES WITH 95 TO 100% PASSING THE 3-INCH SIEVE AND 25 TO 70% PASSING THE NO. 4 SIEVE.

C. MINIMUM DEPTH OF STONE LAYER SHALL CONFORM TO THE FOLLOWING

STONE SIZE CLASS	MIN. DEPTH
EROSION STONE	12"
CLASS C	12"
CLASS B	18"
CLASS A	30"



NOTES:
1. FLOATING TURBIDITY BARRIER SHALL BE TYPE III HEAVY DUTY.
2. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
3. TURBIDITY BARRIER SHALL BE DEPLOYED DURING ACTIVITIES WHICH HAVE THE POTENTIAL TO CAUSE TURBIDITY. BARRIER SHALL BE TEMPORARILY REMOVED WHEN SIGNIFICANT ICE OR FLOATING DEBRIS IS EXPECTED AND NO WORK IS TAKING PLACE.

FLOATING TURBIDITY BARRIER DETAIL

NOT TO SCALE

BIORENTENTION AREA

NOT TO SCALE

NOTES:

1. BIORETENTION AREA PLANTINGS SHALL BE SPECIFIED IN COMPLIANCE WITH NEW HAMPSHIRE STORMWATER MANUAL GUIDANCE FOR BIORETENION AREAS.

2. FILTER MEDIA SHALL MEET ONE OF THE FOLLOWING SPECIFICATIONS:

A. 50% TO 55% BY VOLUME SAND ALSO IDENTIFIED AS ASTM C-33 CONCRETE SAND, 20% TO 30% BY VOLUME OF LOAMY SAND TOPSOIL WITH 15% TO 25% FINES PASSING THE NUMBER 200 SIEVE, AND 20% TO 30% BY VOLUME MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE NUMBER 200 SIEVE;

B. 20% TO 30% BY VOLUME OF MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH THAT HAS NO MORE THAN 5% FINES PASSING THE NUMBER 200 SIEVE, WITH 70 TO 80% BY VOLUME LOAMY COARSE SAND USED IN THE MIXTURE MEETING THE FOLLOWING SIEVE ANALYSIS SPECIFICATION:
1. FROM 85 TO 100 PERCENT BY WEIGHT SHALL PASS THE NUMBER 10 SIEVE;
2. FROM 70 TO 100 PERCENT BY WEIGHT SHALL PASS THE NUMBER 20 SIEVE;
3. FROM 15 TO 40 PERCENT BY WEIGHT SHALL PASS THE NUMBER 60 SIEVE;AND
4. FROM 8 TO 15 PERCENT BY WEIGHT SHALL PASS THE NUMBER 200 SIEVE

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GEORGES MILLS MARINA PROJECT
SUNPEE, NEW HAMPSHIRE

MISCELLANEOUS DETAILS 1

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE:	PROJECT #:
NOV. 2023	21902
ENGIN'D BY: -	DRAWN BY: APH
CHECK'D BY: WTD	ARCHIVE #: H-___

SHEET C3.2

DATE OF PRINT
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HORIZONS ENGINEERING

last revised: 2018-APR-18

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GENERAL NOTES

1. ALL CONTRACTORS ARE REQUIRED TO CONTACT DIG SAFE, THE MUNICIPALITIES PUBLIC WORKS DEPARTMENT, AND ANY OTHER PUBLIC OR PRIVATE AGENCIES NECESSARY FOR UTILITY LOCATION PRIOR TO ANY CONSTRUCTION.

2. UNDERGROUND UTILITIES WILL EXIST THROUGHOUT THIS SITE AND MUST BE LOCATED PRIOR TO CONSTRUCTION. WHERE UNDERGROUND UTILITIES EXIST, FIELD ADJUSTMENT MUST BE APPROVED BY A REPRESENTATIVE OF THE OWNER PRIOR TO INSTALLATION. NEITHER THE OWNER NOR THE LANDSCAPE ARCHITECT ASSUMES ANY RESPONSIBILITY WHATSOEVER, IN RESPECT TO THE CONTRACTORS ACCURACY IN LOCATING THE INDICATED ELEMENTS ON THE DRAWINGS.

3. THE LANDSCAPE ARCHITECT AND CONSULTANTS DO NOT WARRANT OR GUARANTEE THE ACCURACY AND COMPLETENESS OF THE WORK PRODUCT THEREIN BEYOND A REASONABLE DILIGENCE. IF ANY MISTAKES, OMISSIONS, OR DISCREPANCIES ARE FOUND TO EXIST WITH THE WORK PRODUCT, THE LANDSCAPE ARCHITECT SHALL BE PROMPTLY NOTIFIED SO THAT THEY MAY HAVE THE OPPORTUNITY TO TAKE ANY STEPS NECESSARY TO RESOLVE THE ISSUE. FAILURE TO PROMPTLY NOTIFY THE OWNER AND THE LANDSCAPE ARCHITECT OF SUCH CONDITIONS SHALL ABSOLVE THEM FROM ANY RESPONSIBILITY FOR THE CONSEQUENCES OF SUCH FAILURE. ACTIONS TAKEN WITHOUT THE KNOWLEDGE AND CONSENT OF THE OWNER AND THE LANDSCAPE ARCHITECT, OR IN CONTRADICTION TO THE OWNER AND THE LANDSCAPE ARCHITECTS WORK PRODUCT OR RECOMMENDATIONS, SHALL BECOME THE RESPONSIBILITY NOT OF THE OWNER AND THE LANDSCAPE ARCHITECT BUT FOR THE PARTIES RESPONSIBLE FOR THE TAKING OF SUCH ACTION.

4. IT IS THE LANDSCAPE ARCHITECT'S UNDERSTANDING THAT THE BASE INFORMATION WAS PROVIDED BY A LICENSED LAND SURVEYOR. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT OF ANY DISCREPANCIES AS SOON AS THEY ARE DISCOVERED AND PRIOR TO ANY ACTION BY THE CONTRACTOR.

PLANTING NOTES:

1. ALL PLANT MATERIAL SHALL BE NURSERY GROWN IN ACCORDANCE WITH ANSI Z60.1 STANDARDS.

2. ALL PLANT MATERIAL SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF COMPLETED INSTALLATION BY THE OWNER.

3. THE CONTRACTOR SHALL PROVIDE REPLACEMENT PLANTINGS PRIOR TO FINAL ACCEPTANCE FOR ANY PLANTS THAT ARE MISSING, UNHEALTHY, DEAD, OR NOT PER SPECIFICATION.

4. THE CONTRACTOR SHALL PROVIDE 3 MONTHS OF LANDSCAPE MAINTENANCE FOLLOWING FINAL ACCEPTANCE INCLUDING WATERING, WEEDING, FERTILIZING, MOWING, AND TRIMMING.

5. ALL PLANT MATERIALS SHALL BE SELECTED AND TAGGED AT THE NURSERY BY THE LANDSCAPE ARCHITECT PRIOR TO DELIVERY.

6. PROVIDE WRITTEN REQUEST OF PLANT SUBSTITUTIONS TO THE LANDSCAPE ARCHITECT FOR APPROVAL.

7. NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OF ANY DISCREPANCY BETWEEN THE PLANTING PLAN AND PLANT LIST. IF DISCREPANCIES EXIST IN THE QUANTITY OF PLANTS, THE PLAN TAKES PRECEDENT.

8. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING AND CONFIRMING PLANT COUNTS AS INDICATED ON THE PLANS WITH THE CONDITIONS IN THE FIELD AS CONSTRUCTED. NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OF ANY DISCREPANCIES.

9. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR HAVING THE GENERAL CONTRACTOR AND/OR DIG SAFE LOCATE ALL UNDERGROUND UTILITIES IN THE AREA PRIOR TO COMMENCING ANY EXCAVATION. NOTIFY THE LANDSCAPE ARCHITECT OF ANY UTILITY CONFLICTS WITH PROPOSED PLANT LOCATIONS.

10. ALL PLANT BEDS, SHRUB, AND TREE LOCATIONS SHALL BE STAKED IN THE FIELD BY THE CONTRACTOR FOR REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING.

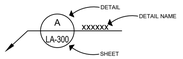
11. ALL DISTURBED AREAS SHALL BE TOPSOILED AND SEEDED OR SODDED AS INDICATED ON THE PLANS.

12. ALL PLANTS AND PLANT BEDS SHALL RECEIVE 2" OF PINE MULCH AS INDICATED ON PLANS AND DETAILS. MULCH SHALL CONSIST OF SHREDDED HARDWOOD MULCH OR APPROVED EQUAL.

13. AVOID DISTURBANCE TO EXISTING TREES AND SHRUBS TO REMAIN, EXCEPT AS INDICATED ON THE PLANS.

14. PRIOR TO CONSTRUCTION ALL EXISTING TREES TO REMAIN SHALL RECEIVE TREE PROTECTION FENCING AT THE TREE DRIPLINE AS INDICATED ON THE PLANS.

LANDSCAPE ARCHITECTURAL SYMBOLS



DETAIL BUBBLE

SECTION SYMBOL

EXTERIOR ELEVATION

NORTH ARROW

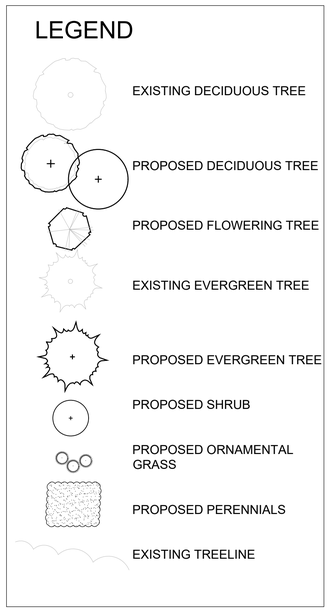
BUILDING ELEVATION NOTATION

+ 1000.00

SPOT ELEVATION

REVISION BUBBLE

DIMENSION
NOTE: ALL DIMENSIONS ARE TO OR FROM STRUCTRUAL GRID LINES OR FACE OF FINISH MATERIAL, U.O.N.



SITE FORM STUDIO
LANDSCAPE ARCHITECTURE
P.O. BOX 1272 STOWE, VT 05672 SITEFORMSTUDIO.COM

LICENSED LANDSCAPE ARCHITECT
THOMAS R. HAND
00222
STATE OF NEW HAMPSHIRE

PERMIT SUBMISSION
NOT FOR CONSTRUCTION

No.	Description	Date

GEORGES MILLS MARINA
GOODHUE SUNAPEE REAL PROPERTY, LLC
SUNAPEE, NH

NOTES & LEGENDS

JOB NO. 2023.006
SCALE: N/A
DRAWN BY: th CHECKED BY: th
DATE: 11.09.23
FILE: l1.0_planting plan_permit.dwg

L0.0

PLOT DATE: 2023-11-09

	BOTANICAL NAME	COMMON NAME	QTY	SIZE	MATURE SIZE	NOTES	Installed SF Coverage
Trees							
AR	Acer rubrum ' Red Sunset'	Red Maple	3	3-3.5" cal.	40-60' ht.	B&B	5
Ara	Acer rubrum ' Red Sunset'	Red Maple	6	2.5-3" cal.	40-60' ht.	B&B	1
AC	Amelanchier canadensis	Shadblow Serviceberry	1	6-8' ht.	20-30' ht.	B&B, clump	65
BN	Betula nigra 'Heritage'	River Birch	7	3-3.5" cal.	40-70' ht.	B&B, Single Stem	5
QA	Quercus alba	Swamp White Oak	1	2.5-3" cal.	50-70' ht.	B&B	1
QE	Quercus ellipsoidalis	Northern Pin Oak	2	2.5-3" cal.	50-70' ht.	B&B	1
QR	Quercus rubra	Northern Red Oak	4	3-3.5" cal.	50-75' ht.	B&B	5
QRa	Quercus rubra	Northern Red Oak	1	2.5-3" cal.	50-75' ht.	B&B	1
Shrubs							
Ca	Clethera alnifolia "Ruby Spice'	Summersweet	3	3 gal.	4-5' ht.	cont.	3
Cp	Comptonia peregrina	Sweetfern	34	3 gal.	2-4' ht.	cont.	2
Cs	Cornus sericea 'Arctic Fire'	Redosier Dogwood	19	3 gal.	3-4' ht.	cont.	5
Mm	Myrica pensylvanica 'Morton'	Bayberry	8	3 gal.	4-5' ht.	cont.	7
Mp	Myrica pensylvanica	Bayberry	11	3 gal.	6-9'	cont.	7
Ra	Rhus aromatica	Fragrant sumac	13	2 gal.	2-4' ht.	cont.	2
Ornamental Grasses							
pva	Panicum v. 'Heavy Metal'	Switch Grass	24	2 gal.	5' ht.	cont. Plant 24" o.c.	1.5
ssc	Schizachyrium scoparium	Little Bluestem	57	2 gal.	2-3' ht.	cont. Plant 24" o.c.	1.5
Perennials/Ferns							
asi	Asclepias incarnata	Swamp Milkweed	10	1 gal.	3-6' ht.	cont., Plant 24" o.c.	1
dma	Dryopteris marginalis	Marginal Wood Fern	198	1 gal.	1-3' ht.	cont., Plant 24" o.c.	1
epu	Eupatorium purpureum	Joe Pye Weed	12	1 gal.	3-6' ht.	cont. Plant 36" o.c.	1
hau	Helenium autumnale	Common Sneezeweed	8	1 gal.	2-5' ht.	cont. Plant 36" o.c.	1
sna	Symphyotrichum novae-angliae	New England Aster	12	1 gal.	2-4' ht.	cont. Plant 30" o.c.	1
vno	Verbena hastata	Swamp Verbena	10	1 gal.	2-5' ht.	cont. Plant 30" o.c.	1
Seed							
	Lawn Mix	"New England Premier Sun & Shade Mix", Seed 4 lbs/ 1000sf, LD Oliver Seed Company, 802-893-1241					
	Conservation Meadow Mix	"Northeast Native Grass Mix" Seed 1 lbs / 2000sf, Holland Wildflower Farm, 479-283-6709, or similar					

SITE LIGHTING SCHEDULE:

KEY	SYMBOL	QTY.	MANUFACTURER	MODEL	SIZE	DIST.	COLOR	TEMP	SPEC	NOTES
A		3	Landscape Forms	Leo	16' ht.	Type 3	Matte Black	3000k	4" pole, Single Luminaire	Roadway & Parking Lot Fixture

ROADWAY & PARKING FOOTING TYPE
x.R RAISED, 2' ABOVE GRADE, REFER TO DETAIL

NOTE:
1. REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL LAYOUT, DISTRIBUTION TYPE, AND LIGHTING CONTROLS.
2. ALL FIXTURES ARE FULL CUT-OFF AND DARK SKY COMPLIANT.

ISO-CONTOUR KEY

ISO-CONTOUR	FOOTCANDLE VALUE
————	1.00
—— ——	0.50
— — — —	0.25

PARKING LOT = 15 SPACES
15 / 10 = 1.5
4 TREES/ 10 * 1.5 = 6 TREES REQUIRED

PARKING LOT LANDSCAPING PER ARTICLE VI

1. M.3(b) PARKING LOTS IN EXCESS OF 10 SPACES REQUIRE A MINIMUM OF FOUR (4) 2.5"+ CALIPER TREES PER 10 SPACES.

   PARKING LOT = 15 SPACES
   15 / 10 = 1.5
   4 TREES / 10 SPACES X 1.5 = 6 TREES REQUIRED

2. M.3(D) A MINIMUM OF ONE TREE AND FOUR SHRUBS EXCLUSIVE OF PERIMETER PLANTINGS SHALL BE PLANTED FOR EVERY 3,000SF OF PARKING LOT.

   TOTAL PARKING LOT AREA = 6,147SF
   6,147 / 3,000 = 2.04
   (2) TREES REQUIRED, MINIMUM, (6) PROVIDED IN BIORETENTION & ISLANDS
   (8) SHRUBS REQUIRED, MINIMUM, (29) PROVIDED IN BIORETENTION & ISLANDS

0 10' 20' 40'

SITE FORM STUDIO
LANDSCAPE ARCHITECTURE
P.O. BOX 1272 STOWE, VT 05672 SITEFORMSTUDIO.COM

LICENSED LANDSCAPE ARCHITECT
THOMAS R. HAND
00222
STATE OF NEW HAMPSHIRE

PERMIT SUBMISSION
NOT FOR CONSTRUCTION

No.	Description	Date

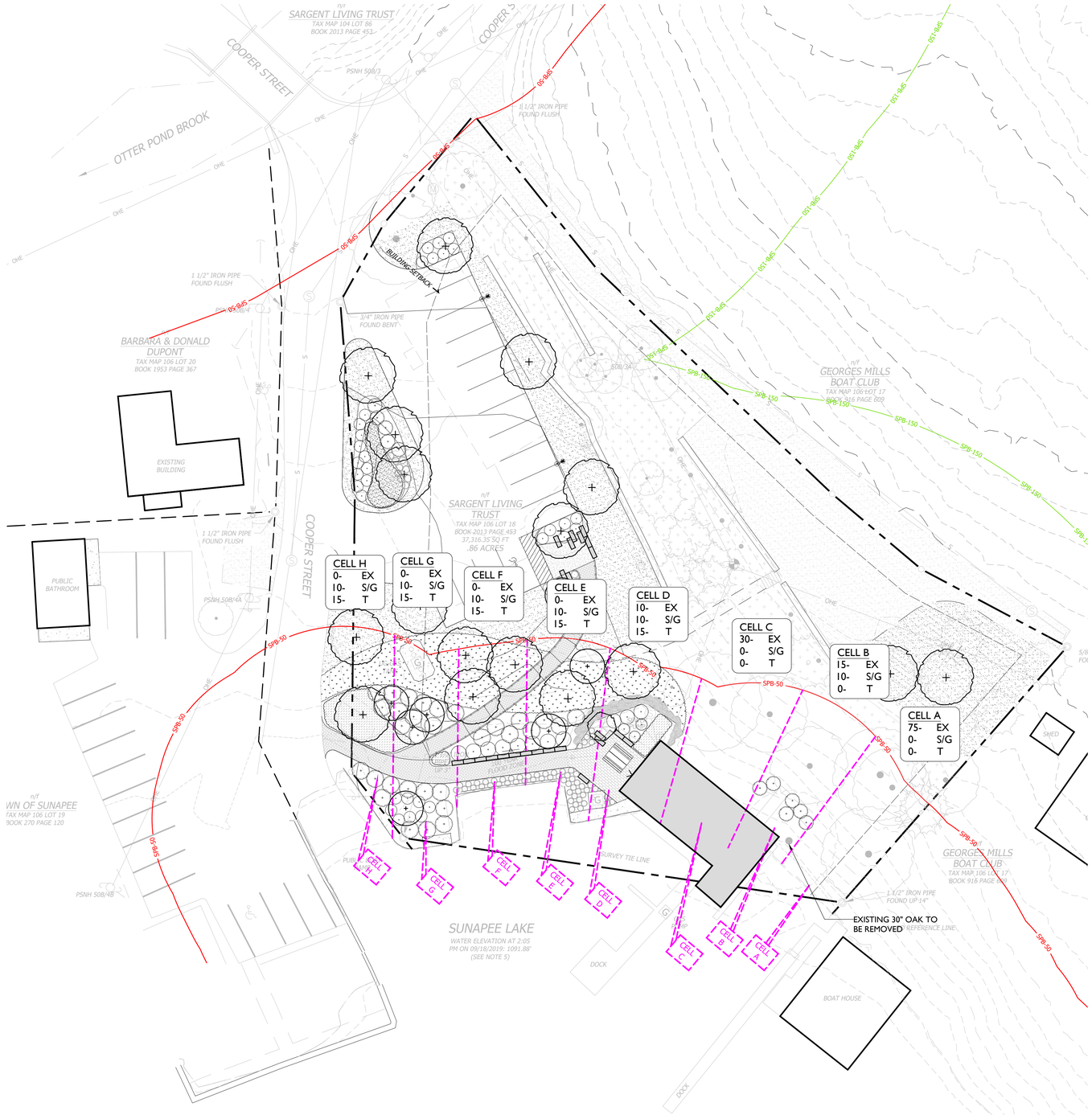
GEORGES MILLS MARINA
GOODHUE SUNAPEE REAL PROPERTY, LLC
SUNAPEE, NH

LANDSCAPE PLANTING & SITE LIGHTING PLAN

JOB NO. 2023.006
SCALE: 1" = 20'-0"
DRAWN BY: th CHECKED BY: th
DATE: 11.09.23
FILE: l1.0_planting plan_permit.dwg

L1.0

PLOT DATE: 2023-11-09



SHORELAND RESTORATION PLANTING

	CELL A	CELL B	CELL C	CELL D	CELL E	CELL F	CELL G	CELL H
Existing Trees	75	30	30	10	0	0	0	0
Removed Trees	0	15	0	0	0	0	0	0
SUBTOTAL	75	15	0	10	0	0	0	0
Proposed Shrubs	0	10	0	3	1	1	5	3
	0sf	49sf		*78 sf (19.5 pts)*	*49 sf (12 pts)*	*63 sf (15 pts)*	*67 sf (16 pts)*	*35 sf (8 pts)*
Proposed Groundcover	0	0	0	7	9	9	5	7
				378 sf	*468 sf*	*480 sf*	*272 sf*	*395 sf*
Proposed Trees 3"	0	0	0	5	15	15	15	15
				1 @ 3"	*3 @ 3"*	*3 @ 3"*	*3 @ 3"*	*3 @ 3"*
TOTAL POINTS / CELL	75	25	30	25	25	25	25	25

Note:

1. Square footage of shrubs and groundcover calculated as size of plant when installed. Refer to "SF Installed Coverage" column on Plant List.
2. Maximum point allowance for shrubs and groundcovers is 10 pts combined.

Shoreland Water Quality Protection Act- Chapter 483-B9 Requirements:

25 point minimum per 25'-0" wide grid cell
Trees/groundcovers = 10 point maximum combined
Trees 1-3" cal. = 1 point
Trees 3-6" cal. = 5 points
Trees 6-12" = 10 points
Trees 12"+ = 15 points

SITE FORM STUDIO
LANDSCAPE ARCHITECTURE
P.O. BOX 1272 STOWE, VT 05672 SITEFORMSTUDIO.COM

LICENSED LANDSCAPE ARCHITECT
THOMAS R. HAND
00222
STATE OF NEW HAMPSHIRE

PERMIT SUBMISSION
NOT FOR CONSTRUCTION

No.	Description	Date

GEORGES MILLS MARINA
GOODHUE SUNAPEE REAL PROPERTY, LLC
SUNAPEE, NH

SHORELAND RESTORATION PLANTING- CELL SUMMARY

JOB NO. 2023.006
SCALE: 1" = 20'-0"
DRAWN BY: th CHECKED BY: th
DATE: 11.09.23
FILE: l1.0_planting plan_permit.dwg

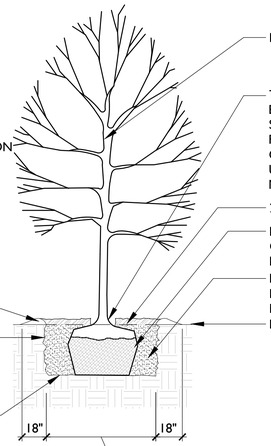
LI.1

0 10' 20' 40'

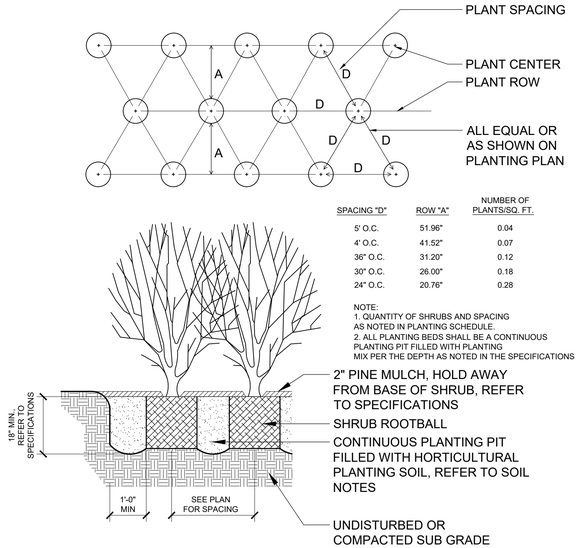
PLOT DATE: 2023-11-09

NOTE:
1. EXAMINE ENTIRE TREE AND REMOVE ALL NURSERY TAGS, ROPE, STRING, OR SURVEYORS TAPE TO PREVENT FUTURE GIRDLING.

2. SURROUNDING SOIL SHOULD NOT EXCEED 80% COMPACTION, DECOMPACTION WILL BE REQUIRED IF COMPACTED SOILS ARE PRESENT



TREE PLANTING
SCALE 1/4" = 1'-0"



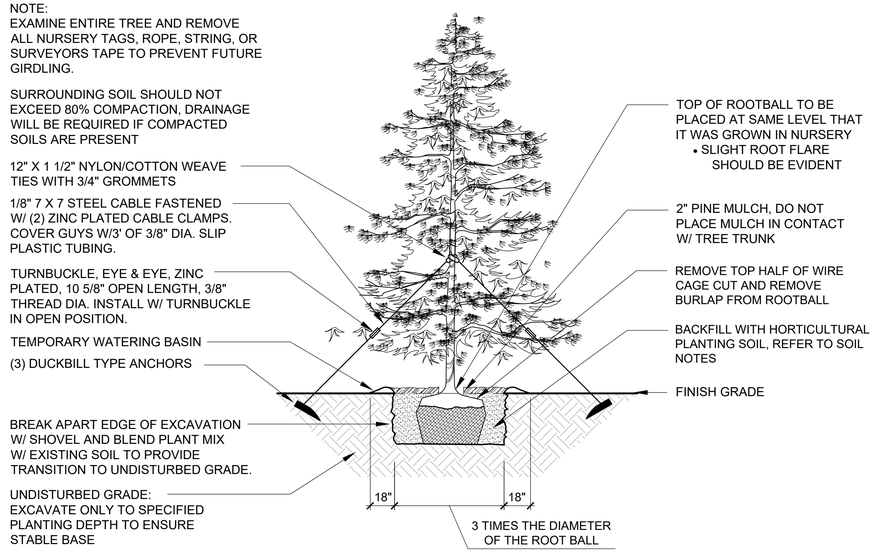
SPACING "D"	ROW "A"	NUMBER OF PLANTS/SQ. FT.
5' O.C.	51.96"	0.04
4' O.C.	41.52"	0.07
36" O.C.	31.20"	0.12
30" O.C.	26.00"	0.18
24" O.C.	20.76"	0.28

NOTE:
1. QUANTITY OF SHRUBS AND SPACING AS NOTED IN PLANTING SCHEDULE.
2. ALL PLANTING BEDS SHALL BE A CONTINUOUS PLANTING PIT FILLED WITH PLANTING MIX PER THE DEPTH AS NOTED IN THE SPECIFICATIONS

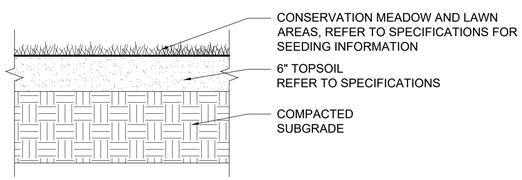
SHRUB PLANTING
SCALE: 1/2" = 1'-0"

NOTE:
EXAMINE ENTIRE TREE AND REMOVE ALL NURSERY TAGS, ROPE, STRING, OR SURVEYORS TAPE TO PREVENT FUTURE GIRDLING.

SURROUNDING SOIL SHOULD NOT EXCEED 80% COMPACTION, DRAINAGE WILL BE REQUIRED IF COMPACTED SOILS ARE PRESENT



EVERGREEN PLANTING
SCALE 1/4" = 1'-0"



CONSERVATION MEADOW & LAWN AREAS
SCALE 1" = 1'-0" p-conservation.dwg

PLOT DATE: 2023-11-09

SITE FORM STUDIO
LANDSCAPE ARCHITECTURE
P.O. BOX 1272 STOWE, VT 05672 SITEFORMSTUDIO.COM

LICENSED LANDSCAPE ARCHITECT
THOMAS R. HAND
00222
STATE OF NEW HAMPSHIRE

PERMIT SUBMISSION
NOT FOR CONSTRUCTION

No.	Description	Date

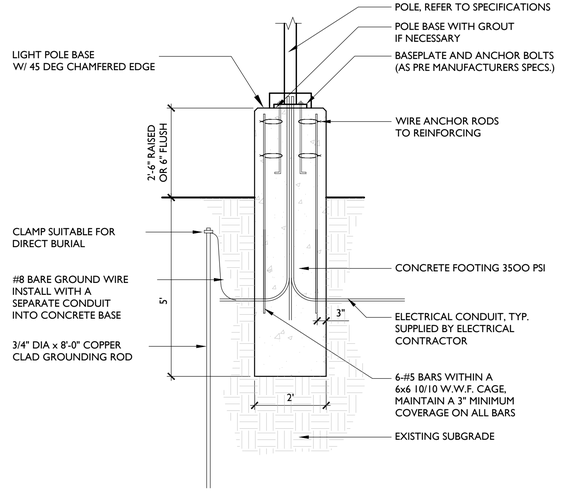
GEORGES MILLS MARINA
GOODHUE SUNAPEE REAL PROPERTY, LLC
SUNAPEE, NH

PLANTING DETAILS

JOB NO. 2023.006
SCALE: AS SHOWN
DRAWN BY: th CHECKED BY: th
DATE: 11.09.23
FILE: l1.0_planting plan_permit.dwg

L1.2

NOTE: POLE BASE IS TO BE ONE CONTINUOUS POUR. THE CONTRACTOR WILL TAKE SPECIAL CARE TO ENSURE CONCRETE POLE BASES ARE INSTALLED ABSOLUTELY VERTICAL AND LEVEL.



LIGHT POLE FOOTING

SCALE 1/2" = 1'-0"

LEO Area Light

landscapeforms

Product Data Sheet | LE330 & LE350

LEO area lights are at home in more places. LEO's multiple distributions and outputs address both visual comfort and performance, with configurable options that let landscape architects, lighting designers, and electrical engineers focus on what's important for their project, whether it is an improved visual experience for intimate pedestrian-scale settings or lumen outputs and pole spacing for cast-driven goals. LEO's simple, understated design fits a variety of site designs and architectural styles, and its 16"-diameter housing strikes an aesthetic balance for varying pole heights and spacing.

General Description

- Single, double, or staggered configurations
- Offered in 4 standard pole heights (12', 16', 20', and 25')
- Simple clamping mechanism mounts to 4", 5", and 6" diameter poles
- Optional ANSI136.41 7-pin twist lock receptacle
- Optional photo/motion sensor
- Mounting template and anchor hardware included
- Cast aluminum luminaire strips prewired and fully assembled
- Zero up-light, International Dark-Sky approved
- UL Listed, suitable for wet locations

Electrical

Surge protected 100V-277V 50/60 Hz, dimmable Class 2 LED driver mounted within cast aluminum driver compartment. LED cartridge with weatherproof quick-disconnect provides ease of installation and serviceability. LED strips prewired.

Housing

Luminaire components are cast aluminum. Acrylic lens seals to the LED cartridge housing. Luminaire mounts to 4", 5", and 6" diameter poles with a simple clamping mechanism and is secured with four screws. Driver compartment cover is secured by two screws on top of the luminaire. All hardware is magnI-coated.

LEO Area Light

Light Source: Nichia LEDs
Color Temperature: 3000K, 3500K, 4000K
CRI: 80 min
Optics: PMMA
Lens: Clear or Frosted Acrylic

Distributions

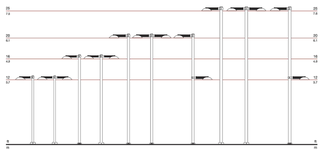
LEO Area Light

landscapeforms

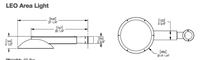
Product Data Sheet | LE330 & LE350

Pole Description

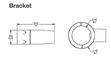
Poles are available in 4", 5", and 6" in diameter and are manufactured from seamless 6061 aluminum tubing and heat treated to produce a T6 temper. Wall thickness varies from 0.125" to 0.156" depending on mounting height and number of luminaires. Flush mounted hand hole cover includes two magnI-coated fasteners. Base options included a two-piece cast aluminum cover or cast aluminum nut covers.



LEO Area Light



Bracket



Weight: 40 lbs
EPA: 1.14 ft2

LEO Area Light

landscapeforms

Product Data Sheet | LE330 & LE350

Model	Distribution Type	Drive Current	Lumens	Watts	Efficacy	BUG Rating
LE330-T3-03F	Type II	350mA	2628	24	109	B1-U0-G1
LE330-T3-01F	Type II	515mA	4345	37	115	B1-U0-G1
LE330-T3-03F	Type III	350mA	2618	24	117	B1-U0-G1
LE330-T3-01F	Type III	515mA	4386	37	115	B1-U0-G1
LE330-T3-03F	Type IV	350mA	2787	24	116	B1-U0-G1
LE330-T4-01F	Type IV	515mA	4559	37	109	B1-U0-G1
LE330-T3-04F	Type II	540mA	5259	55	114	B2-U0-G2
LE330-T3-46F	Type II	480mA	4119	73	113	B2-U0-G2
LE330-T3-04F	Type III	540mA	5524	55	110	B1-U0-G1
LE330-T3-46F	Type III	480mA	7014	73	107	B3-U0-G2
LE330-T4-04F	Type IV	540mA	5950	55	108	B2-U0-G2
LE330-T4-46F	Type IV	480mA	7728	73	106	B3-U0-G2

LE330-T3-03F
IES Type II

LE330-T3-01F
IES Type III

LE330-T4-03F
IES Type IV

LE330-T3-04F
IES Type II

LE330-T3-04F
IES Type III

LE330-T4-04F
IES Type IV

LEO Area Light

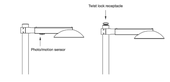
landscapeforms

Product Data Sheet | LE330 & LE350

Photo/Motion Sensor

- Fully adjustable high and low dimmed light levels; optional to daisy control
- Rated for extreme temperatures and up to 200,000 on/off cycles
- Hold off setpoint with automatic calibration option for convenience and added energy savings
- Adjustable via handheld wireless configuration tool
- IP66 rated for wet and outdoor locations
- Adjustable time delay and out off delay

Click here to view the technical data sheet for the Wattstopper® FSP-211 photo/motion sensor.



Finish

Pangaea® 88, offered exclusively by Landscape Forms, is a 19 step program of cleaning, priming, and powdercoating that resists rusting, chipping, peeling and fading to produce the finest metal finish available for site furniture and outdoor lighting. In addition, Pangaea® 88 contains no heavy metals and is free of Hazardous Air Pollutants.

Product Modifications

Don't see what you are looking for? Our goal is to partner with you as the designer to manufacture solutions needed for the space you are creating. We offer the option to modify our standard product to meet certain design specifications or needs. Contact your local Landscape Forms representative to learn more about these offerings.

Product Specifications

Ready to place an order or receive a quote for your project? Reference the LEO Area Light specification sheet available here.

Warranty

LEO lighting products are warranted for six years.

Other

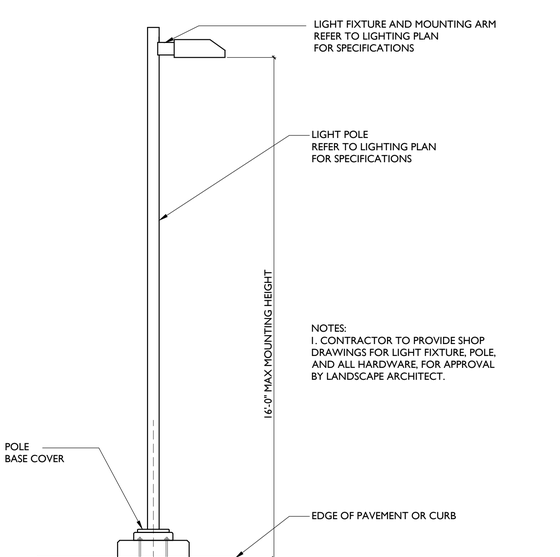
UL Listed, RoHS Compliant, Dark-Sky Approved

Designed by John Rizzi in collaboration with Clanton & Associates

Click here for patent information related to this product.

Visit our website landscapeforms.com for more information.
Specifications are subject to change without notice. Landscape Forms supports the Landscape Architecture Foundation at the Second Century level. ©2020 Landscape Forms, Inc. Printed in U.S.A.

PARKING LOT LIGHTS



LIGHT FIXTURE

SCALE 1/2" = 1'-0"

HGX

A complete security floodlighting solution

Catalog Number

Notes

Type

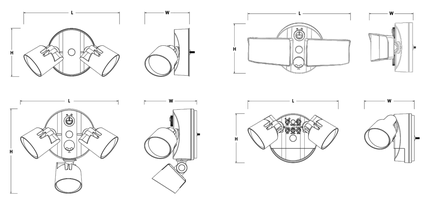
Use this Tab key or mouse over the page to see all interactive elements.

Introduction

The HomeGuard LED family of security flood lights, built with rugged die cast aluminum construction, are long lasting, energy efficient solutions for replacing incandescent PAR lamp fixtures. Mounted under the eave or on the wall, these luminaires provide reliable security lighting in residential and commercial applications.

The HGX family has six configurations both in bronze and white. Featuring a low cost version for switched circuits to a fully featured product that includes an integral photocell for that automatic dusk-to-dawn operation, color tuning, adjustable lumens and a motion sensor. With tool-less easy-to-aim lamps, HGX installs quickly and delivers a lumen range from 1700 to 4100. The HGX family provide great flexibility and versatility.

Luminaire	Length (L)	Width (W)	Height (H)	Lamp head dia (J)	Back plate dia (S)	Back plate thickness (C)	Weight
HGX 2RH	4.41" (11.2cm)	7.56" (19.2cm)	6.25" (15.8cm)	2.4" (6.1cm)	4.25" (10.8cm)	1.38" (3.5cm)	1.15 lbs (0.52 kg)
HGX 3RH	5.12" (13cm)	7.72" (19.6cm)	6.53" (15.2cm)	2.4" (6.1cm)	4.53" (11.51cm)	2.13" (5.4cm)	1.77 lbs (0.8kg)
HGX 2SH	4.53" (11.5cm)	7.56" (19.2cm)	6.53" (15cm)	2.48" (6.1cm)	4.53" (11cm)	1.54" (3.9cm)	1.31 lbs (0.6kg)
HGX 2RH PIR	4.96" (12.6cm)	7.72" (19.1cm)	6.53" (15.2cm)	2.48" (6.1cm)	4.53" (11.5cm)	1.89" (4.8cm)	1.378lbs (0.62 kg)
HGX 2RH ALO	4.53" (11.51cm)	7.56" (19.2cm)	6.53" (15cm)	2.48" (6.1cm)	4.53" (11cm)	1.54" (3.9cm)	1.318lbs (0.6kg)



BUILDING MOUNTED LIGHT FIXTURE

HomeGuard LED Stocked Configurations

	Low			Medium			High			
Nomenclature	Lumens	Wattage	CRI	Lumens	Wattage	CRI	Lumens	Wattage	CRI	Options
HGX LED 2RH 40K 120 DDB							2750	25	80	
HGX LED 2RH 40K 120 WH										
HGX LED 2RH ALO 40K 120 PE DDB	1750	15	80				2750	25	80	
HGX LED 2RH ALO 40K 120 PE WH										
HGX LED 2RH ALO SWW2 120 PE DDB	1800	15	80				2750	25	80	
HGX LED 2RH ALO SWW2 120 PE WH										
HGX LED 2SH ALO SWW2 120 PE DDB	1700	15	80				2700	25	80	
HGX LED 2SH ALO SWW2 120 PE WH										
HGX LED 3RH ALO SWW2 120 PE DDB										
HGX LED 3RH ALO SWW2 120 PE WH	1750	15	80	2750	25	80	4100	36	80	
HGX LED 2RH ALO SWW2 120 PIR DDB	2100	21	80				2600	26	80	
HGX LED 2RH ALO SWW2 120 PIR WH										

Adjustable Lumen Output | Dusk-to-Dawn Operation | Switchable CCT | Motion Sensor Capable

Easy, tool-less aiming.

Integrated visors allow for visually pleasing illumination with minimal glare.

Modern design with user-friendly controls. Non-obtrusive motion sensor with elegant accent light.

Adjustable Light Output (ALO) and CCT color switching from warm, cool or daylight settings.

FEATURES & SPECIFICATIONS

INTENDED USE
HGX security floods are ideal for energy efficient replacement for two lamp 2RH/ incandescent PAR 38 fixtures. HGX LED luminaires rate 50K hours of maintenance-free general illumination for outdoor applications. HGX with its 2RH/2RH/2SH head with PE options prevents daylight operation and saves on energy costs. Further with adjustable light output and color tuning capabilities, built-into HGX, it provides great flexibility for mounting and color selection. Ideal for entrances, walkways, corridors, yards, driveways and patios.

CONSTRUCTION
Cast-aluminum housing with dark bronze or white polyester powder paint for lasting durability. Photocell sensitivity is adjustable. LED lamp heads are thermally isolated from the driver that is housed in the rear housing, promoting a long service life. Lenses are sealed to prolong service life. LEDs maintain 70% of light output at 50,000 hours of service life.

ELECTRICAL
HGX security lumes in six configurations from low-cost version which is on switched circuit to a fully featured product which has adjustable lumens, photocell, color and motion. The HGX is rated for outdoor installations. The 2 RH versions consume 25W and 3RH version consumes 36W power. 120V input 60 HZ driver. LEDs with min. 80 CRI provide great quality of light and rendering. HGX with PIR option (motion sensor) has up to 180 degree motion detection angle, range of up to 40' (12.2 M) 8 and has three modes - test, 5 or five minutes on-time after motion is detected. Motion sensitivity and daylight sensing is adjustable. Wall Sconce PIR unit is recommended for wall mount only.

ADJUSTABLE FEATURES
Adjustable light output - select HGX products include adjustable lumen output: 2 settings on 2 head versions & 3 settings on 3 RH version. The lumens can be adjusted by rotation of dial. Use the same product to mount on various mounting heights by increasing or decreasing the light output. Color Tuning - Color temperature of the lamp heads can be switched with rotation of dial to select warm, cool or daylight. Adjustable photocell - the sensitivity of the PE can be adjusted. The dial can be turned off to make the light turn on during day time, or have it only as dusk-to-dawn operation.

INSTALLATION
Mounts to a recessed junction box on wall or ceiling. Crossbar and hardware provided. Wet location listed for mounting 4 feet above ground. Tool less adjustable heads allow for precise aiming.

LISTINGS
UL/cUL listed Listed to U.S. and Canadian safety standards for wet locations. Tested in accordance with IESNA LM-79 and LM-80 standards. Rated for -40° C minimum ambient. All models are rated except HGX PIR which is wet location. HGX is rated for use in ambient conditions ranging from -40° C. to 40° C.

WARRANTY
Five-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/support/customer-support/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

Ordering Information

EXAMPLE: HGX LED 3RH ALO SWW2 120 PE DDB

Homeguard ordering nomenclature and stocked configurations

Nomenclature	NPC	CU Code	Features
HGX LED 2RH 40K 120 DDB	0019499524416	*271973	
HGX LED 2RH 40K 120 WH	0019499524470	*271972	
HGX LED 2RH ALO 40K 120 PE DDB	0019499524288	*271971	
HGX LED 2RH ALO 40K 120 PE WH	0019499524196	*271974	
HGX LED 2RH ALO SWW2 120 PE DDB	0019499524251	*271970	
HGX LED 2RH ALO SWW2 120 PE WH	0019499524166	*271972	
HGX LED 2SH ALO SWW2 120 PE DDB	0019499525234	*271975	
HGX LED 2SH ALO SWW2 120 PE WH	0019499525207	*271974	
HGX LED 3RH ALO SWW2 120 PE DDB	0019499525160	*271998	
HGX LED 3RH ALO SWW2 120 PE WH	0019499525139	*271958	
HGX LED 2RH ALO SWW2 120 PIR DDB*	0019499524530	*271976	
HGX LED 2RH ALO SWW2 120 PIR WH*	0019499525092	*271956	

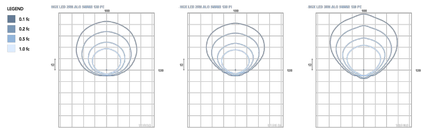
Adjustable Lumen Output ALO | Dusk-to-Dawn Operation PE | Switchable CCT SWW2 | Motion Sensor Capable PIR

*PIR unit is wet location rated and is recommended to be used for wall mount applications

Photometric Diagrams

Full photometric data report available within 2 weeks from request. Contact Acuity tech support.

LEGEND
0.1 fc
0.2 fc
0.5 fc
1.0 fc



SITE FORM STUDIO
LANDSCAPE ARCHITECTURE
P.O. BOX 1272 STOWE, VT 05672 SITEFORMSTUDIO.COM

LICENSED LANDSCAPE ARCHITECT
THOMAS R. HAND
00222
STATE OF NEW HAMPSHIRE

PERMIT SUBMISSION
NOT FOR CONSTRUCTION

No.	Description	Date

GEORGES MILLS MARINA
GOODHUE SUNAPEE REAL PROPERTY, LLC
SUNAPEE, NH

LIGHTING DETAILS & CUTSHEETS

JOB NO. 2023.006
SCALE: AS SHOWN
DRAWN BY: th CHECKED BY: th
DATE: 11.09.23
FILE: l1.0_planting plan_permit.dwg

L1.3

PLOT DATE: 2023-11-09

176 Newport Road – Suite 8, New London, NH 03257 • Ph 603-877-0116 • Fax 603-526-4285 • www.horizonsengineering.com

November 9, 2023

Town of Sunapee Planning Board
23 Edgemont Road
Sunapee, NH 03782

Re: **Goodhue Boat Company Showroom – Site Plan Review Application**
Tax Map #104, Lot #84, 1282 Route 11
Georges Mills, Sunapee, NH

Dear Board Members,

On behalf of our client, Goodhue Boat Company (Goodhue), Horizons Engineering, Inc. (Horizons) is pleased to provide the enclosed materials for your review. This application is for a Phase II Design Review pursuant to Article III, Section C of the Site Plan Review Regulations. The proposed project includes a boat showroom building with associated parking, stormwater management system, and landscaping. The following materials have been included:

- Town of Sunapee Application for Site Plan Review
- Site Plan Set
- NHDOT Driveway Permit Approval
- Transportation Assessment
- Drainage Report

The site plan is materially different than the previous plans reviewed by the Planning Board. However, we have tried to address several of the concerns raised during the course of that review, as specifically noted below.

The building plan reflects a total building height of 24 feet from floor to roof ridge. By the Zoning Ordinance definition, the building is allowed to be 40 feet tall from the lowest point 15 feet away from the face of the building. The lowest elevation at a point 15' horizontally from the building is 1137. This results in an allowed building ridge elevation of 1137 + 40 = 1177. The proposed building has a floor elevation of 1139.5 and a total height of 24 feet, which results in a proposed building ridge elevation of 1163.5. The proposed building is therefore zoning compliant with respect to height, as well as in all other respects.

The grading and changes to the natural topography of the site have been minimized to the extent practicable while striking a balance in the way the proposed building will fit with surrounding buildings, the safety of the driveway entrance, ADA requirements for parking, and best practices for parking lot grading. The proposed driveway is designed with a profile slope of 8%, which is the maximum slope allowed by NHDOT for a commercial entrance. The 8% slope allows the site grading for the parking area to come up as high as possible to meet existing grades. The earthwork required to construct the site as designed is in keeping with typical commercial site development and the cut proposed will reduce the height of the building as it compares to surrounding land.

The site has been reviewed for steep slopes as defined in Section 3.40 (l) in the Zoning Ordinance and steep slope areas have been shown on the plans. The only work proposed in the steep slope area is the stairs and walkway connection to Cooper Street, which is allowed. We completed additional research into the right-of way dimensions which define the front setback from NH Route 11. The 75' front building setback from the centerline of the road right-of-way, as defined in the Zoning Ordinance, has been depicted on the plans.

The lot coverage in the post-development condition is 54.6%, which is in compliance with the allowed maximum of 60% in the Village Commercial District. We have also completed the drainage analysis and design, and the drainage report has been included with this submission. The existing site has no stormwater detention or treatment devices in place. A portion of runoff from impervious surfaces on the site flows to the existing catch basin at the corner of Cooper and Route 11 which discharges through a culvert to Otter Pond Brook. The other portion of the existing site flows to the existing ditch along Cooper Street. We recognize the sensitivity of the site given its proximity to Otter Pond Brook and Lake Sunapee. In light of this condition, we have proposed a stormwater management system that far exceeds what is required by local regulations.

In the proposed condition, stormwater from impervious surfaces will be detained and treated to NHDES Alteration of Terrain (AoT) standards prior to conveyance off site. The design ensures a reduction in the peak rates of runoff for the 2, 10, and 50-year storm events as compared to the existing condition, in accordance with NHDES AoT standards. Treatment of the new impervious surfaces is accomplished using an underground detention system with a sand filter. Stormwater treatment standards in New Hampshire are based on the Water Quality Volume. The Water Quality Volume (WQV) is the amount of stormwater runoff from a rainfall event that should be captured and treated to remove the majority of stormwater pollutants on an average annual basis. The recommended WQV is the volume of runoff associated with the first one-inch of rainfall, which is equivalent to capturing and treating the runoff from the 90th percentile of all rainfall. The proposed design captures and treats over twice the WQV for this site, providing a level of treatment that far exceeds Sunapee Site Plan Review Regulation requirements, the state standard and best engineering practice.

We also analyzed the existing 15-inch culvert that discharges under Cooper Street to Otter Pond Brook. The existing culvert will pass the 50-year storm event and the peak rate of runoff post-construction will be reduced. Therefore, the culvert size does not need to be modified. We have submitted the NHDES Shoreland Permit application and the Town should have received a copy.

We have also included a transportation assessment prepared by Wall Consultant Group (WCG), who conducted traffic counts and provided a detailed analysis of the potential impact of the proposed project on the surrounding state and local roadways. The report concludes that "the proposed project is not expected to adversely impact the condition or capacity of the adjacent roads and associated infrastructure". We have also included the NHDOT Driveway Permit approval received on 10/9/2023 approving the construction of the proposed commercial driveway in the NHDOT right-of-way.

This project does not require any federal permits or approvals and is therefore not subject to a historic resource review under Section 106 of the National Environmental Protection Act.

A PDF of this documentation has been emailed to the Town and we will follow up with paper copies as requested. Please feel free to call or email with any additional questions or concerns. I can be reached at (603) 877-0116, or by email at wdavis@horizonsengineering.com.

Respectfully,

Will Davis, PE LEED AP
Vice President
Horizons Engineering, Inc

TOWN OF SUNAPEE
APPLICATION FOR SITE PLAN REVIEW

(PDF OF SITE PLAN MUST BE INCLUDED WITH APPLICATION)

1. Landowner(s) Name(s) Goodhue Sunapee Real Property, LLC
   Address PO Box 1508 Wolfeboro, NH 03894
   (Mailing)_____
   Phone_____
2. Zoning District Village - Commercial
3. Project Location: 1282 NH Route 11
4. Parcel ID: Tax Map 104, Lot 84
5. Complete description of current use of property:
   Residential Rental Property

6. Does this project require a special exception or variance by the ZBA as outlined in the Sunapee Zoning Regulations? Yes___ No_X__ (If yes, complete the Zoning Board of Adjustment application, and Land Use Questionnaire.)
7. Complete description of proposed project (Include area dimensions, use, # of employees, # of dwelling units, etc.)
   Demolition of exiting buildings and construction of a new 5,400 sq-ft boat show room. A new 22 space parking lot and walkway to Cooper Street will also be constructed.
8. Certification/Permission for inspection. To the best of my knowledge, the above is true and accurate. I hereby grant permission for site inspection to Planning Board official(s). I also understand that it is my responsibility for providing a complete application. I realize that any of the application requirements, which are assumed waivable during the initial review, may still be required at the time of review by the Planning Board.

_____ 11/08/23

Signature(s) of Landowner(s) Date

Date of Application:
Phase I_____ Phase II_____
Phase III_____ Major Site Plan_____
Home Business_____
Fee Paid_____ Method of Payment_____

FINAL HEARING CHECKLIST

The following items must be submitted in accordance with the attached meeting and deadline schedule for the Planning Board meeting you wish to attend:

__X__ Completed Application
__X__ Fees
__X__ Two (2) copies of plans for review (with required information per Article V)
__X__ List of abutters, including mailing addresses
__X__ PDF of Site Plan emailed to zoning@town.sunapee.nh.us

The Planner will review the plans to determine if the appropriate information has been provided on the plans. If the submission is deemed complete, notices will be sent (14) calendar days prior to the hearing. The following items must be included on the plan per Article V:

__X__ Plan at a scale of 1" + 20' or less
__X__ Perimeter boundary survey
__X__ Title of drawing with name of applicant
__X__ Parcel ID
__X__ Name and mailing addresses of abutting property owners
__X__ Signature block for Water & Sewer Commission, Police Chief, Road Agent & Conservation Commission
__X__ Site location map
__X__ North point, bar scale, appropriate dates
__X__ Name, address, and seal of person preparing map
__X__ Location and shape of existing and proposed buildings
__X__ Square footage for each use designated on plan
__X__ Existing and proposed contours at an interval or no more than 5'. Spot elevations for level lot.
__X__ Streams, wetlands, and other water bodies
__X__ Width, location, and grades of existing and proposed streets and driveways
__X__ Layout and size of parking spaces
__X__ Sewage disposal facilities for property including mains and service lines
__X__ Water supply for property including mains and services lines
__X__ Proposed landscaping plan
__X__ Existing and proposed electric lines
__X__ Existing and proposed telephone lines
__X__ Exterior lighting plan

Article V requirements (cont.):

__X__ Proposed signs-size and location

__X__ Locations of retaining walls, fences, and outside storage areas
__n/a__ Location of fire alarms and sprinklers

The Planning Board may waive the following items if it is determined, the project's impact will be minor, and otherwise, each item will be required:
__X__ Drainage design, including drainage structures, culverts, ditches, and storm sewer lines
__X__ Drainage calculations
__n/a__ Plans for toxic waste storage
__n/a__ Location of hazardous materials storage

State of New Hampshire Permits:
__X__ Department of Transportation (Highway/Access)
__N/A__ NHWSPCD (Septic Systems
__N/A__ Water Supply Division
__N/A__ Site Specific (Department of Environmental Services)
__N/A__ Wetlands Board

0 foot Abutters List Report

Tri Town, NH
November 07, 2023

Subject Property:

Parcel Number:	Sun-0104-0084-0000	Mailing Address:	GOODHUE SUNAPEE REAL PROPERTY,
CAMA Number:	Sun-0104-0084-0000		PO BOX 1508
Property Address:	1282 ROUTE 11		WOLFEBORO, NH 03894

Abutters:

Parcel Number:	Sun-0104-0069-0000	Mailing Address:	GARDNER TRUST, LINDA A. LINDA A
CAMA Number:	Sun-0104-0069-0000		GARDNER, TRUSTEE
Property Address:	1279 ROUTE 11		PO BOX 86
			GEORGES MILLS, NH 03751
Parcel Number:	Sun-0104-0070-0000	Mailing Address:	BIG LEAP LLC
CAMA Number:	Sun-0104-0070-0000		125 SUMMIT ROAD
Property Address:	1281 ROUTE 11		NEW LONDON, NH 03257
Parcel Number:	Sun-0104-0083-0000	Mailing Address:	CURRIER, JAMES P & CYNTHIA M
CAMA Number:	Sun-0104-0083-0000		PO BOX 116
Property Address:	1004 LAKE AVE GM		GEORGES MILLS, NH 03751
Parcel Number:	Sun-0104-0085-0000	Mailing Address:	CAREY, JOHN P & MAUREEN
CAMA Number:	Sun-0104-0085-0000		34205 SOMERSET ROAD
Property Address:	5 COOPER ST		POCOMOKE, MD 21851
Parcel Number:	Sun-0106-0017-0000	Mailing Address:	GM BOAT CLUB
CAMA Number:	Sun-0106-0017-0000		PO BOX 638
Property Address:	1024 LAKE AVE GM		NEW LONDON, NH 03257

CONSULTANTS:

ENGINEER AND SURVEYOR:
HORIZONS ENGINEERING
176 NEWPORT ROAD
SUITE 8
NEW LONDON, NH 03257
(603) 444-1343

LANDSCAPE ARCHITECT:
SITEFORM STUDIO
ATTN: TOM HAND, ASLA, PLA
PO BOX 1272
STOWE, VT 05672

ARCHITECT:
SAMYN - D'ELIA ARCHITECTS, P.A.
6 CENTRAL HOUSE ROAD
HOLDERNESS, NH 03245
(603) 968-7133

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

District 2 Office, 8 Eastman Hill Rd., Enfield, NH 03748 (603) 448-2654

William Cass, P.E.
Commissioner

David Rodrigue, P.E.
Assistant Commissioner

DRIVEWAY PERMIT

To: Cody Gray
PO Box 853
Wolfeboro, NH 03894

City/Town: Sunapee
Route/Road: NH 11 (S0000011)
Patrol Section: 214
Tax Map: 104
Lot: 84
Development:

Permit #: 02-435-0036
District: 02
Permit Date 10/9/2023

Permission is hereby granted to construct (alter) a driveway, entrance, exit or approach adjoining NH 11 (S0000011), pursuant to the location and specifications as described below. Failure to adhere to the standards and engineering drawings previously approved shall render this instrument null and void. Failure to start or complete construction of said facility within one calendar year of the date of this permit shall require application for permit extension or renewal in accordance with the Driveway Access Rules. Facilities constructed in violation of the permit specifications or the rules, shall be corrected immediately upon notification by a Department representative. Any cost by the State to correct deficiencies shall be fully borne by the landowner. The landowner shall defend, indemnify and hold harmless the Department and its duly appointed agents and employees against any action for personal injury and/or property damage sustained by reason of the exercise of this permit.

Drive 1

Location: Approximately 0.032 miles east of Cooper Street on the south side of NH 11 (S0000011).
SLD Station: 31777 (right) GPS: 43.43176 N 72.0658 W.

Specifications: This permit authorizes a paved access to be used as a Commercial drive. Any change in use, increase in use or reconstruction of the driveway requires reapplication.

The right-of-way line is located 50 feet from and parallel to the centerline of the highway. The entrance shall be graded so that the surface of the drive drops 1 inches at a point 5 feet from NH 11 (S0000011) edge of pavement to create a drainage swale.

The driveway shall not exceed 24 feet in width. The entrance of the drive may be flared; typically the flare radius is one half the driveway width.

This permit approves the relocation and change in use of the driveway access for 1282 NH Route 11 in Georges Mills. This parcel is a Lot of Record, reference Sullivan County Registry of Deeds Book 404 Page 30 dated 3/12/1965.

Other Conditions:

No structures, including buildings, permanent or portable signs, lights, displays, fences, walls, etc. shall be permitted on, over or under the Highway Right of Way.

No parking, catering or servicing shall be conducted within the Highway Right of Way.

The applicant shall comply with all applicable ordinances and regulations of the municipality or other State Agencies.

The Department has relied on the title and subdivision information provided by the landowner. The Department has not performed additional title research and makes no warranty or representation concerning landowner's legal right to access. In the event of a dispute about the landowner's legal right to the access provided herein, the landowner will defend and indemnify the Department.

All excavated topsoil, or in the absence of topsoil the top 6 inches of soil, within the limits of state ROW shall be properly re-used within the limits of the state ROW. All temporary stockpiles of the re-use material shall be located within the state ROW, or as otherwise approved by the District Engineer.

The Contractor shall be solely responsible for the handling, transport and disposal of any surplus material generated by their project and shall comply with all federal, state and local laws, ordinances and rules in doing so.

I/We, the contractor/Owner, certify that the property will not have any illicit unauthorized drainage connections to the NHDOT storm water drainage system. An illicit discharge is any direct or indirect discharge to the NHDOT drainage system that is not composed entirely of storm water. Illicit discharges include, without limitation, sewage, process wastewater, or wash water and any connections from floor drains, sinks, or toilets.

Reference plan is titled "Goodhue Sunapee Real Property, LLC - Georges Mills Show Room" with latest revisions on 9/18/2023 by Horizons Engineering. This plan must be at the permitted site at all times during construction.

Property Owner shall pre-post the approved and signed NHDOT District 2 Driveway Permit at a location so that it is readily visible from the accessing State roadway during the construction of the driveway.

Property Owner shall grade the driveway limits so that, including during construction, no stormwater runoff flows onto the State of New Hampshire roadway or shoulders. Site drainage shall not be permitted to cause ponding, ice or ice build-up in the right-of-way.

Property Owner shall not flare the end of the driveway onto the abutting properties.

Property Owner shall install the necessary erosion and sediment control measures during the construction and use of the driveway. All erosion and sediment control measures shall be maintained and remain in place until substantial vegetation growth has occurred.

Upon completion of the construction of the permitted driveway and other priority permanent features, Property Owner shall fine grade the adjacent areas to manage stormwater runoff, apply loam and seed or otherwise permanently stabilize all disturbed surface side areas.

Property Owner, for daily temporary traffic control, shall install the necessary roadway warning signage in accordance with the 2009 MUTCD Part 6, and at least one certified flagger shall be utilized while working or maneuvering along the NH State Road, including for during delivery of construction materials. Property Owner shall erect black on orange "Trucks Entering" signs, 36 inches by 36 inches dimension, to both approaches to the driveway (500 feet advance warning).

The permitted driveway is for an access only. Establishing a landing area and/or loading trucks within the highway right-of-way is strictly prohibited. Parking or storing any supplies, equipment and/or vehicles in the State right-of-way shall be prohibited.

Property Owner shall be responsible for maintaining the driveway permanently and also accomplish and maintain all necessary removal of vegetation including clearing of brush, trees, etc., snow, or other vision obstructing materials, so that the 400 feet minimum sight distances in both directions are not inhibited when entering/exiting the driveway. Property Owner shall not place/store any snow within the State right-of-way.

Property Owner shall be responsible for the maintenance of ditches, side slopes and other permanent structures or surface features, and establishing satisfactory adjacent drainage away from the State road. Disturbance, wetting, silting or damage to the roadway is prohibited, including for seasonal factors.

Copies: District, Town, Patrolman

Horizons Engineering, Inc.
Andy Heilmann
4930 Vermont Route 14, Unit 2
Sharon, VT 05065

Approved Ross Wood

Assistant District Engineer
For Director of Administration

WALL CONSULTANT GROUP

Date: 7 November 2023

To: Brent Pratt, Foulger-Pratt; Cody Gray, Goodhue Boat Company

From: Corey Mack, PE, PTOE, Consultant Transportation Engineer

Subject: Goodhue Showroom Georges Mills – Transportation Assessment

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WCG has reviewed the proposed Goodhue Boat Company boat showroom located at 1282 NH Route 11 in the Georges Mills community of Sunapee, New Hampshire. Following the Town of Sunapee Zoning Ordinance and Driveway Regulation, New Hampshire Department of Transportation (NHDOT) Driveway Permit Policies, and standard engineering practice outlined by the Institute of Transportation Engineers (ITE) and other sources, WCG has prepared the following assessment of the likely transportation impacts.

In summary:

- WCG collected traffic data over the course of a week, including the Labor Day holiday, representing peak traffic conditions near Lake Sunapee.
- Peak traffic occurred on Saturday morning from 11 AM to noon; similar traffic levels were observed during the Tuesday afternoon peak.
- No congestion or queueing issues were observed during the peak hours.
- The proposed project is estimated to generate 5 trips during a peak hour, well below the NHDOT threshold of 100 peak hour trips meriting further analysis.
- The proposed project is expected to improve the transportation and roadway system, including improved sight lines, increased intersection spacing, and a more activated streetscape with on-site pedestrian amenities.
- The proposed project is not expected to cause or worsen congestion or safety issues.

Based on the analysis conducted for this report, the proposed project is not expected to adversely impact the condition or capacity of the adjacent roads and associated infrastructure.

BACKGROUND

General project details related to the transportation assessment:

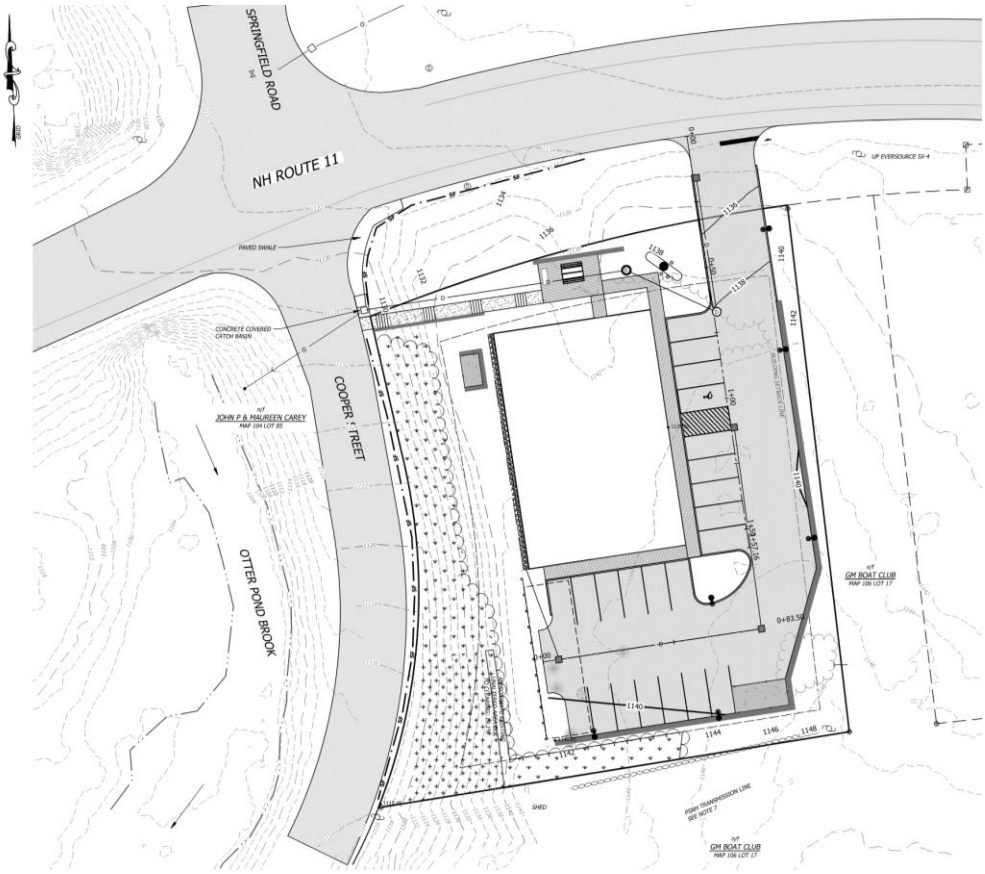
- The proposed site is located at 1282 Route 11 in Sunapee, New Hampshire.
- The proposed location currently serves a single-family house.
- The proposed project seeks to construct a 5,400 square foot boat showroom.
- The proposed project would have vehicular access on NH-11, replacing the current approximately 10-foot-wide driveway with a 24-foot-wide driveway, approximately 45-feet east of the existing site driveway and generally opposite the existing gas station /

convenience store driveway. The hillside along NH-11 will be regraded and relandscaped.

- The proposed project driveway is approximately 130-feet east of the existing NH-10 & Springfield Road / Cooper Street intersection.
- Parking would be provided in a surface lot proximate to the building with 21 general purpose parking spaces and 1 accessible parking space.
- The proposed showroom will have three to four employees on site. The site may provide parking for employees at the nearby waterfront marina during peak periods.
- The showroom will have space for up to four boats on trailers inside the building. The site is not expected to store or stage boats for sale or service.
- The existing Goodhue Marina facility on Cooper Street will continue to operate boat rentals, service, and dockage services. There is a project in development at the existing marina site to replace the building and boathouse with a similar size and use facility with updated infrastructure and formalized parking. The marina project is not expected to change transportation operating characteristics of the adjacent road network.

The proposed showroom site is illustrated in the following figure.

FIGURE 1: PROPOSED SITE PLAN (DATED 9/18/23)



TRANSPORTATION SYSTEM

With a location near Lake Sunapee, Otter Pond, and Mount Sunapee Resort, the general project area highway context may be described by NHDOT Group 5: Recreational Highways. The project site relative to the project area is illustrated in Figure 2.

The proposed project accesses the highway system via a new driveway directly accessing NH-11. NH-11 is a state highway under NHDOT District 2 jurisdiction, classified as a Tier 2 Statewide Corridor Minor Arterial with an estimated average annual daily traffic (AADT) of 6,575 vehicles per day (vpd) east of Springfield Road[1], and 8,214 vpd west of Springfield Road[2]. NH-11 consists of one travel lane and a wide shoulder in each direction, for a total roadway width of approximately 40-feet near the project drive. NH-11 is uncontrolled at the Springfield Road / Cooper Street intersection, with a flashing yellow overhead beacon at the intersection. The Springfield Road and Cooper Street approaches are stop controlled with a flashing red overhead beacon. There is no dedicated bicycle or pedestrian infrastructure along NH-11 adjacent to the project drive. The posted speed limit on NH-11 near the project area is 35 MPH.

Springfield Road is a Tier 4 local connector under NHDOT jurisdiction classified as a minor collector. Springfield Road connects NH-11 to I-89 Exit 12A, carrying an estimated AADT of 2,971 vpd[3]. Springfield Road consists of one lane and shoulder in each direction for a total roadway width of 28-feet, flaring to 60 feet at the stop-controlled southbound approach to NH-11. There is no dedicated bicycle or pedestrian infrastructure along Springfield Road. The posted speed limit on Springfield Road is 35 MPH.

Cooper Street is a U-shaped local roadway with two northbound stop-controlled single lane approach intersections to NH-11. The eastern intersection is opposite Springfield Road, and the western intersection is approximately 300-feet west of Springfield Road. The western approach of Cooper Street carries an estimated AADT of 238 vpd[4]. At approximately 18-feet wide, Cooper Street is a narrow, slow speed roadway. Cooper Street serves several existing single-family homes, the Lake Sunapee Rowing Club, a boat launch and beach / park, the existing Goodhue Boat Company Marina, and an assisted living facility. Parking is allowed on the northbound shoulder of the eastern section of the road, adding further roadside friction. The speed limit is not posted on Cooper Street; near the boat launch, a 20 MPH speed limit is posted. Given the narrow road width, road grade, and curvature, a 25 MPH design speed along Cooper Street is appropriate.

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[1] NHDOT Transportation Data Management System site 62435052; 2022 estimated AADT based on three-day count in September 2020.
[2] NHDOT Transportation Data Management System site 82435063; 2022 estimated AADT based on three-day count in September 2020.
[3] NHDOT Transportation Data Management System site 82435062; 2022 estimated AADT based on three-day count in August 2020.
[4] NHDOT Transportation Data Management System site 82435070; 2022 estimated AADT based on three-day count in August 2020.

FIGURE 2: PROJECT SITE CONTEXT

TRAFFIC OBSERVATIONS

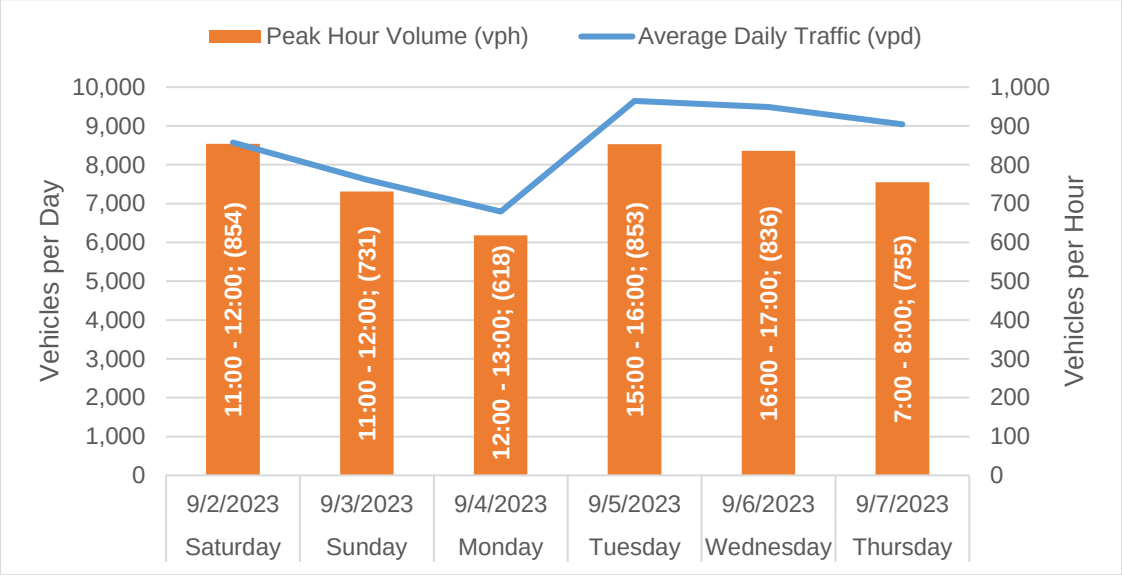
WCG collected traffic volume and speed data along NH-11 west of Cooper Street near Holmes Lane from Saturday, 9/2/2023 through Thursday 9/7/2023 (Figure 3). This period, encompassing the Labor Day Weekend Holiday, experienced above average temperatures and consistently sunny weather. The observation period is expected to have captured peak traffic volumes.

The Saturday late morning peak hour was similar in scale to the Tuesday afternoon peak hour. Other observed data from the radar counter:

- 85th percentile speed of 44 MPH
- 50th percentile speed of 39 MPH
- 10 MPH pace of 34 – 44 MPH
- %Trucks of 5.5%

WCG recorded video of the NH-11 & Springfield Road / Cooper Street and NH-11 & General Store / Site Driveway intersections during the radar count period. The Tuesday afternoon peak hour (3:30 PM – 4:30 PM) and Saturday morning peak hour (11:00 AM to 12:00 PM) were processed to record intersection turning movement counts, Figure 4 and Figure 5 respectively.

FIGURE 3: OBSERVED TRAFFIC VOLUMES ALONG NH-11 WEST OF COOPER STREET



In addition to the traffic volumes illustrated in Figure 4 and Figure 5, six pedestrians were observed to cross NH-11 during the Saturday morning peak hour at the Springfield Road intersection; no pedestrians were observed during the Tuesday PM peak hour.

As shown in the traffic volume figures, Cooper Street carries minimal peak hour traffic. No significant queues were observed along Springfield Road or within the General Store driveway. The maximum observed queue was four vehicles on Springfield Road; the queue cleared promptly. No capacity or congestion issues were observed.

FIGURE 4: OBSERVED WEEKDAY PM PEAK HOUR TRAFFIC VOLUMES AT THE PROJECT SITE

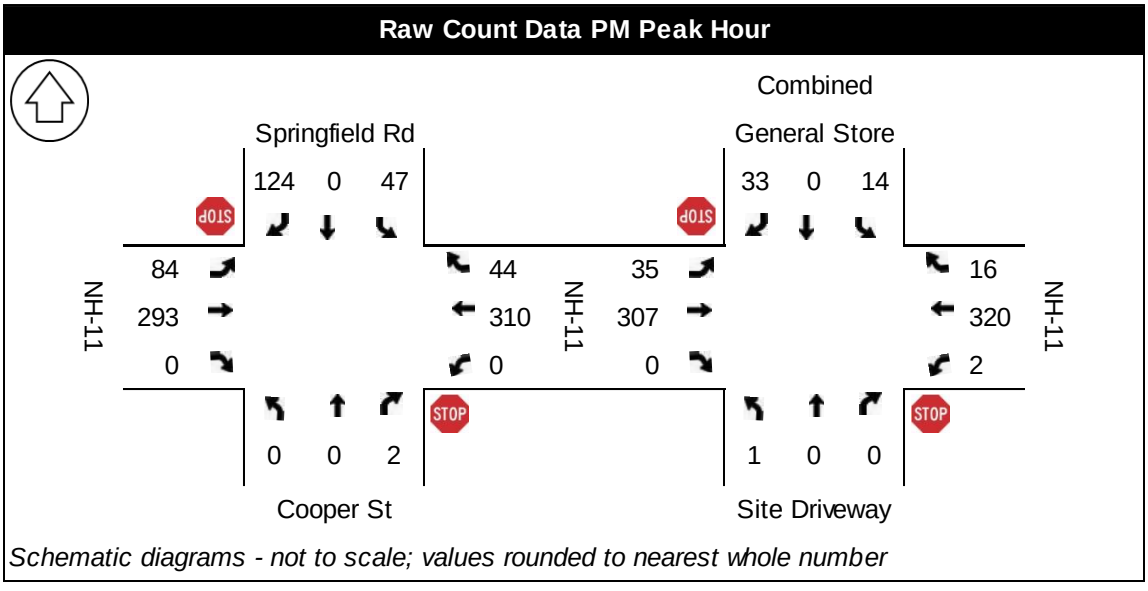
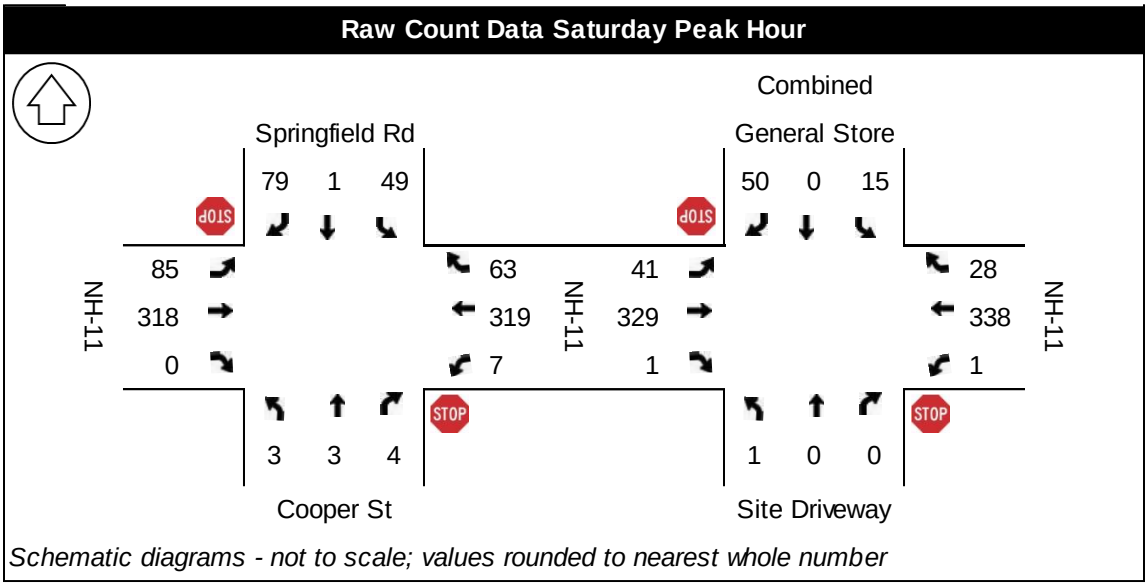


FIGURE 5: OBSERVED SATURDAY PEAK HOUR TRAFFIC VOLUMES AT THE PROJECT SITE



The existing site driveway, consisting of a single family detached residential dwelling unit, was observed to generate 3 trip ends in both the weekday PM and Saturday morning peak hours.

PROPOSED PROJECT TRIP GENERATION

Trip generation refers to the number of vehicle trips originating at or destined for a particular land use development. The proposed project will generate new trip ends from the land use being developed: a 5,400 square foot boat sales showroom. Data from the Institute of Transportation Engineers (ITE) can be applied to estimate trip generation associated with the existing and proposed land uses. WCG consulted the ITE Trip Generation Manual, 11th Edition to estimate base vehicle trips. While "Boat Showroom" is not a defined land use, Recreational Vehicle Sales is an appropriate approximation. Land use code (LUC) 842: Recreational Vehicle Sales. The land use code is described:

> ***Land Use: 842 Recreational Vehicle Sales.*** *A recreational vehicle (RV) sales dealership is a free-standing facility that specializes in the sales of new RVs. Recreational vehicle services, parts and accessories sales, and substantial used RV sales may also be available. Some RV dealerships may also include boat sales and servicing.*

The weekday AM and PM peak hour base vehicle trip generation is estimated in Table 1.

TABLE 1: ESTIMATED AM AND PM PEAK HOUR TRIP GENERATION OF THE PROPOSED SITE

	AM Peak Hour of Generator	PM Peak Hour of Generator
Total Trip Ends (Entering / Exiting)	5 (2/3)	4 (2/2)

These trip generation estimates are reasonable and appropriate for the proposed facility:

- The showroom is not expected to generate a significant amount of traffic related to retail sales; the management team estimates sales to be less than one per day.
- There are about 4 employees expected on site; not all employees are expected to arrive or depart in the same hour.
- The site may serve as employee parking for the nearby Marina facility during peak periods. Trips from these employees would reflect diverted trips, not new trips to the study area, since they currently travel to the area, parking at the Goodhue Boat Rental facility or other nearby locations. In addition, these employees would likely arrive and depart from the site outside of the peak traffic hours along NH-11.

The site is estimated to generate far fewer than the 100 peak hour trip threshold used by NHDOT to merit further traffic analysis. The estimated trip generation of the proposed site is one or two trips greater than the observed trip generation of the existing residential land use.

IMPACTS TO LOCAL ROADWAYS

The proposed site plan is expected to result in several improvements to the state and local highway system, including:

- The proposed site plan moves the existing driveway to the far east side of the property, increasing the intersection spacing as much as possible, and better aligning the driveway with the driveway for the General Store.
- The proposed site plan includes significant regrading and landscaping on the NH-11 frontage and at the southeast corner of the NH-11 & Springfield Road / Cooper Street intersection. The regraded slope and landscape modifications will improve sight distances from the site driveway and along NH-11.
- The proposed project includes a path, stairs, and outdoor patio from the site to Cooper Street.
- The enhanced roadway frontage, with a pathway, stairs, pedestrian infrastructure and landscaping, may result in a more activated streetscape, which may result in lower travel speeds along NH-11.

The proposed development is expected to improve sight distances and intersection spacing, resulting in improved roadway function. The proposed development is not expected to increase travel speeds in the study area and adds a minimal amount of traffic to the surrounding road network. In sum, the project is not expected to cause or worsen congestion or safety issues.

Town of Sunapee
Stormwater Management Plan

Goodhue Sunapee Real Property, LLC
Georges Mills Showroom
1282 Route 11
Sunapee, New Hampshire

176 Newport Road – Suite 8, New London, NH 03257 • Ph 603-877-0116 • Fax 603-444-1343 • www.horizonsengineering.com

TOWN OF SUNAPEE STORMWATER MANAGEMENT PLAN
FOR
GOODHUE SUNAPEE REAL PROPERTY, LLC
GEORGES MILLS SHOWROOM

NOVEMBER 2023

PROJECT NUMBER 21902

Horizons Engineering, Inc.

MAINE • NEW HAMPSHIRE • VERMONT

TABLE OF CONTENTS

1.0 PROJECT INFORMATION NARRATIVE

1.1 Project Summary

Goodhue Meredith LLC is applying for Site Plan Review from the Town of Sunapee Planning Board for the construction of a boat showroom located at 1282 Route 11 in Sunapee. The proposed work will demolish an existing building and construct a 60'x 90' architecturally designed boat showroom, as well as constructing associated parking, walkways, stairs, landscaping, stormwater and other utilities. The project is located on Tax Map 104, Lot 84. Excavation and grading will be required to complete the improvements. Within the project watershed, the total proposed post-project impervious area is 0.61 acres, an increase of 0.30 acres over the pre-project impervious area within the watershed. The parking area will be collected via catchbasins and conveyed to an underground sand filtration system. The outflow of all the closed drainage is to be conveyed to an existing catch basin adjacent to Cooper Street, referred to in this report as Drainage Point #1 (DP-1). A portion of the southwest of the site bypasses the drainage collection system, and flows to a ditchline continuing down Cooper Street. This is referred to in this report as Drainage Point #2 (DP-2). All flow is eventually conveyed to Sunapee Lake. The post-construction peak flow rate at each drainage point has been reduced for the modeled events.

The following table shows the peak flow rate comparisons at each discharge point.

Table 1.0 – 2, 10 & 50 Year Comparison

Watershed Area Discharge Point	Pre 2 Yr Flow Rate (cfs)	Post 2 Yr Flow Rate (cfs)	Pre 10 Yr Flow Rate (cfs)	Post 10 Yr Flow Rate (cfs)	Pre 50 Yr Flow Rate (cfs)	Post 50 Yr Flow Rate (cfs)
DP-1	0.38	0.38	0.89	0.76	1.76	1.34
DP-2	0.07	0.02	0.25	0.11	0.60	0.31

Impacts to watershed water quality from grading within the watersheds are likely to occur from uncontrolled discharge of site runoff during construction activities and stabilized post-project surfaces. To minimize the impacts to the watersheds, the site has been designed to cause no increase in runoff and erosion control methods have been specified in accordance with the Env-Wq 1500 and the *New Hampshire Stormwater Management Manual* (December, 2008).

1.2 Rainfall Data

Using SCS TR-20, run under HydroCAD Version 10.20-2g with Type III-24 hour rainfall events, pre- and post-development cover types and drainage paths were modeled to generate peak discharge rates. Rainfall events modeled have intensities described by data provided by the Northeast Regional Climate Center for the geographic location of the project. This data is provided in full in section 3.1 of this report, and are summarized below in **Table 1.2**.

Table 1.2 - Type III, 24 Hour Rainfall Depths for Project Site

Rainfall Event	Depth*
2-Year	2.60”
10-Year	3.78”
50-Year	5.49”

** Rainfall depths from the Northeast Regional Climate Center Extreme Precipitation Tables, http://precip.eas.cornell.edu, verified 8 August 2023. See section 3.1*

SECTION 2.0 - DRAINAGE CALCULATIONS, ANALYSIS & DESIGN

2.1 Pre-Development Analysis

2.1 Pre-development Analysis

In both the pre-development conditions, the project site has been modeled as two drainage areas. These drainage areas represent nearly the entire subject property (a very small area which drains to the abutting parcel to the East is excluded) plus some off-site areas of Route 11 and Cooper Street.

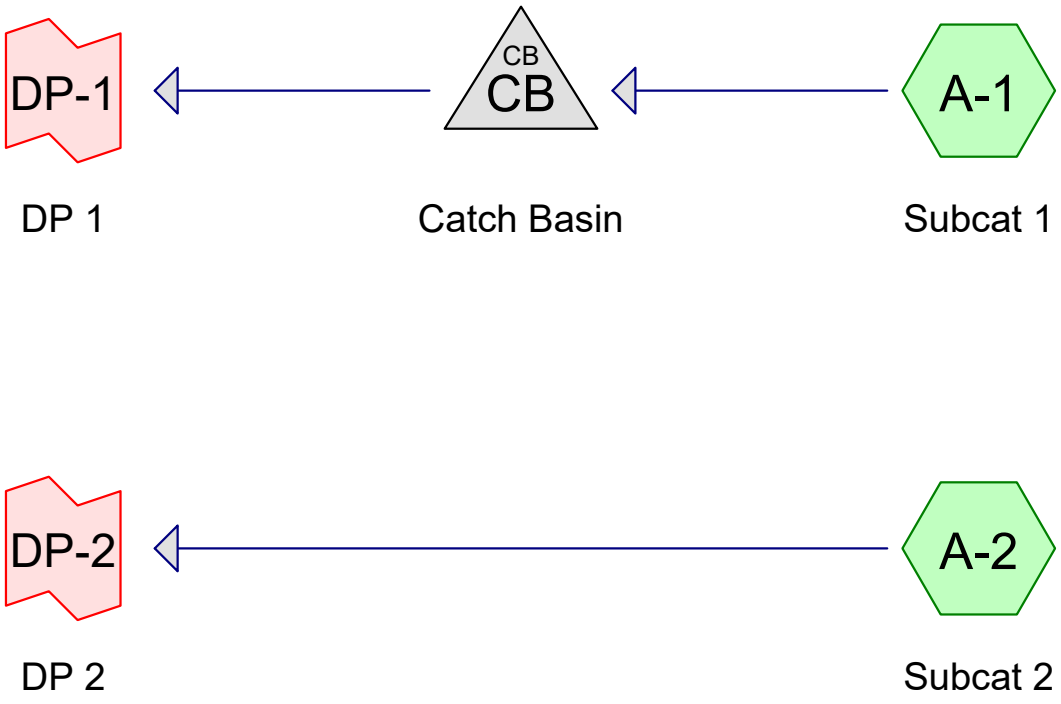
Drainage Area A-1 represents the north of the site, an area which drains to an existing catchbasin along Cooper Street. This catchbasin is Discharge Point #1, DP-1, in the drainage model.

The southern portion of the site, Drainage Area A-2, flows to a ditchline along Cooper Street, but at an elevation too low to be collected by DP-1. The point where this ditchline exits the parcel is identified as Drainage Point #2, DP-2. This also includes a portion of Cooper Street.

The total watershed to be analyzed is 44,780 square feet. To be conservative, all areas have been assumed to be either grass or impervious cover. Impervious cover includes existing residence roof, and driveway.

NRCS soils mapping and classification has been used to complete the analysis. The soils on site are mapped as Monadnock fine sandy loam. Soils have been modeled as hydrologic soil group B. This information can be found in **Section 3.3.** The watershed areas and have been shown on the watershed plan, in **Section 4.1.**

2.1.1 Pre-Development Full Summary and Diagram
10 - Year Storm Event



Subcat Reach Pond Link

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10 year	Type III 24-hr		Default	24.00	1	3.78	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.713	61	>75% Grass cover, Good, HSG B (A-1, A-2)
0.316	98	Unconnected pavement, HSG B (A-1, A-2)
1.028	**72**	**TOTAL AREA**

Soil Listing (all nodes)

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

Time span=5.00-20.00 hrs, dt=0.01 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment A-1: Subcat 1 Runoff Area=26,777 sf 34.57% Impervious Runoff Depth>1.32"
Flow Length=352' Tc=9.5 min CN=74 Runoff=0.89 cfs 0.067 af

Subcatchment A-2: Subcat 2 Runoff Area=18,017 sf 24.91% Impervious Runoff Depth>0.85"
Flow Length=163' Tc=24.8 min UI Adjusted CN=66 Runoff=0.25 cfs 0.029 af

Pond CB: Catch Basin Peak Elev=1,120.91' Inflow=0.89 cfs 0.067 af
15.0" Round Culvert n=0.025 L=54.0' S=18.6350 '/' Outflow=0.89 cfs 0.067 af

Link DP-1: DP 1 Inflow=0.89 cfs 0.067 af
Primary=0.89 cfs 0.067 af

Link DP-2: DP 2 Inflow=0.25 cfs 0.029 af
Primary=0.25 cfs 0.029 af

Total Runoff Area = 1.028 ac Runoff Volume = 0.097 af Average Runoff Depth = 1.13"
69.32% Pervious = 0.713 ac 30.68% Impervious = 0.316 ac

Summary for Subcatchment A-1: Subcat 1

Runoff = 0.89 cfs @ 12.14 hrs, Volume= 0.067 af, Depth> 1.32"
Routed to Pond CB : Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=3.78"

Area (sf)	CN	Description
17,520	61	>75% Grass cover, Good, HSG B
9,257	98	Unconnected pavement, HSG B
26,777	74	Weighted Average
17,520		65.43% Pervious Area
9,257		34.57% Impervious Area
9,257		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	82	0.0549	0.16		**Sheet Flow, Sheet Flow 1** Grass: Dense n= 0.240 P2= 2.87"
0.5	163	0.0644	5.15		**Shallow Concentrated Flow, Driveway** Paved Kv= 20.3 fps
0.4	107	0.0533	4.69		**Shallow Concentrated Flow, Roadway** Paved Kv= 20.3 fps
9.5	352	Total			

Summary for Subcatchment A-2: Subcat 2

Runoff = 0.25 cfs @ 12.40 hrs, Volume= 0.029 af, Depth> 0.85"
Routed to Link DP-2 : DP 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=3.78"

Area (sf)	CN	Adj	Description
13,529	61		>75% Grass cover, Good, HSG B
4,488	98		Unconnected pavement, HSG B
18,017	70	66	Weighted Average, UI Adjusted
13,529			75.09% Pervious Area
4,488			24.91% Impervious Area
4,488			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0661	0.07		**Sheet Flow, Sheet Flow 1** Woods: Dense underbrush n= 0.800 P2= 2.87"
0.3	63	0.4254	3.26		**Shallow Concentrated Flow, Steep Slope** Woodland Kv= 5.0 fps
24.8	163	Total			

Summary for Pond CB: Catch Basin

[57] Hint: Peaked at 1,120.91' (Flood elevation advised)

Inflow Area = 0.615 ac, 34.57% Impervious, Inflow Depth > 1.32" for 10 year event
Inflow = 0.89 cfs @ 12.14 hrs, Volume= 0.067 af
Outflow = 0.89 cfs @ 12.14 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min
Primary = 0.89 cfs @ 12.14 hrs, Volume= 0.067 af
Routed to Link DP-1 : DP 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 1,120.91' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,120.40'	**15.0" Round CMP_Round 15"** L= 54.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,120.40' / 114.11' S= 18.6350 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=0.89 cfs @ 12.14 hrs HW=1,120.91' (Free Discharge)
1=CMP_Round 15" (Inlet Controls 0.89 cfs @ 1.91 fps)

Summary for Link DP-1: DP 1

Inflow Area = 0.615 ac, 34.57% Impervious, Inflow Depth > 1.32" for 10 year event
Inflow = 0.89 cfs @ 12.14 hrs, Volume= 0.067 af
Primary = 0.89 cfs @ 12.14 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

Summary for Link DP-2: DP 2

Inflow Area = 0.414 ac, 24.91% Impervious, Inflow Depth > 0.85" for 10 year event
Inflow = 0.25 cfs @ 12.40 hrs, Volume= 0.029 af
Primary = 0.25 cfs @ 12.40 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

2.2 Post-Development Analysis

2.2 Post-Development Analysis

The same areas modeled in the pre-development condition, are modeled in the post-development condition, plus additional area along the eastern property line, which previously flowed off the site to the East, but will now be collected due to grading changes. The post-development model includes a total of 45,694 square feet, including 26,654 square feet of impervious cover.

The post-development condition utilizes the same two discharge points as the pre-development analysis. Drainage Area #1 is further subdivided to represent flows to specific treatment devices. This results in a total of four drainage areas to be modeled.

Major Drainage Area A-1 represents the north of the site, an area which drains to an existing catchbasin along Cooper Street. This catchbasin is Discharge Point #1, DP-1, in the drainage model. To model flow to specific drainage features, Drainage Area A-1 is further subdivided into three areas.

Drainage Area A-1a1 is a 2,880 square foot area representing the roof area contributing to a collection stone drip edge (P-DE).It serves the western half of the proposed building. An underdrain is provided within the drip edge which conveys stormwater into the closed collection system and to the underground sand filter system (P-ST). The filter is discussed in more detail below.

The remainder of the site which contributes to the filter system is modeled as Drainage Area A-1a2. This drainage area models a total of 15,825 square feet, of which 87.5% is impervious building roof, walkway or pavement.

The underground sand filter, P-ST, consists of a sand filter media beneath a detention system composed of Stormtech plastic chambers in a bed of crushed stone. The chamber system includes an ‘isolator row’, which provides pre-treatment for all stormwater by containing sediment and other pollutants in a concentrated and relatively easy to maintain area. The sand filter media is intended to provide treatment as stormwater trickles through, before being connected to an underdrain leading to a drainage run to Discharge Point #1. A weir is provided to allow the bypassing of high flows during large storm events. This ensures that the initial flush of stormwater, which contains the majority of pollutants, is treated, while allowing the system to remain functional in larger storm events. The system is designed such that under normal conditions, up to and including the 10-year storm event, all flow will pass through the filter media, and bypassing only occurs during truly large events.

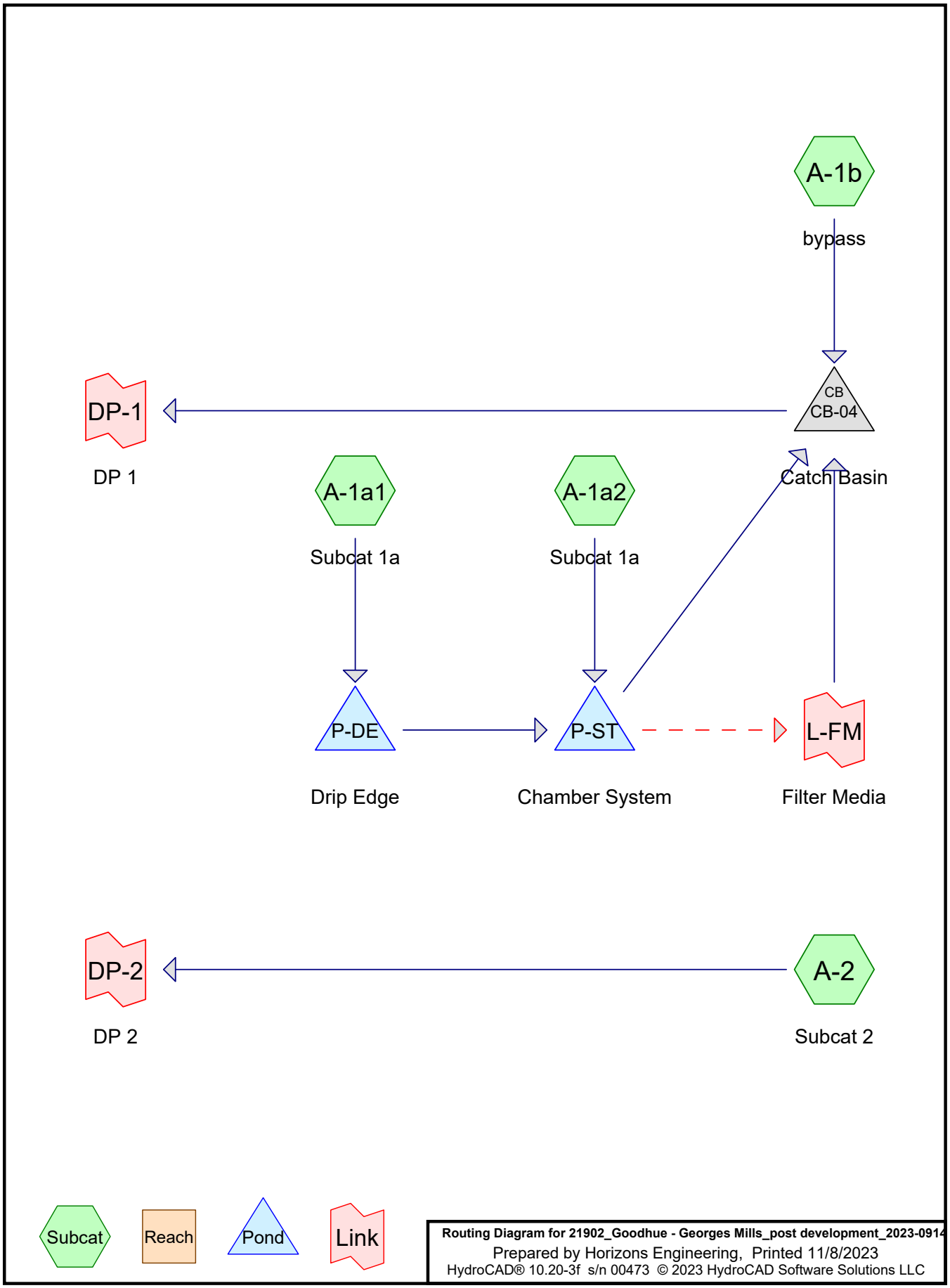
A portion of the flow to Discharge Point #1, primarily off-site areas of Route 11, is not captured by the practices described above. This area, consisting of 14,262 square feet, has been included in the model as Drainage Area A-1b. Runoff from this area produces the majority of the peak flow rate to Discharge Point #1.

Horizons also analyzed the capacity of the culvert downstream of Discharge Point #1. This 15" corrugated metal pipe has a maximum free-flow capacity of 4.30 cubic feet per second. Modeling indicates that the peak flow rate to the culvert, in the 50-year event, is 1.34 cubic feet per section. This indicates that the culvert has sufficient capacity. For further detail, see the culvert report found in **Section 3.2**.

The southern portion of the site, Drainage Area A-2, flows to a ditchline along Cooper Street, but at an elevation too low to be collected by DP-1. The point where this ditchline ceases to be in front of the parcel is identified as Drainage Point #2, (DP-2). Drainage Area A-2 is smaller in the post-development condition than the pre-development model, and does not include any additional impervious area.

For more detailed information on the post-developed area, see attached watershed plan in **Section 4.2** and the HydroCAD area listing found in **Section 3.4.1**.

2.2.1 Post-Development Full Summary Diagram
10 - Year Storm Event



Routing Diagram for 21902_Goodhue - Georges Mills_post development_2023-0914

Prepared by Horizons Engineering, Printed 11/8/2023

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.196	61	>75% Grass cover, Good, HSG B (A-1a2, A-1b)
0.237	56	Brush, Fair, HSG B (A-2)
0.550	98	Unconnected pavement, HSG B (A-1a2, A-1b, A-2)
0.062	98	Unconnected roofs, HSG B (A-1a1)
0.004	75	drip edge, HSG B (A-1a1)
1.049	**82**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.049	HSG B	A-1a1, A-1a2, A-1b, A-2
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.049		**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment A-1a1: Subcat 1a Runoff Area=2,880 sf 93.75% Impervious Runoff Depth=3.43"
Tc=6.0 min CN=97 Runoff=0.24 cfs 0.019 af

Subcatchment A-1a2: Subcat 1a Runoff Area=15,825 sf 87.54% Impervious Runoff Depth=3.01"
Tc=6.0 min CN=93 Runoff=1.23 cfs 0.091 af

Subcatchment A-1b: bypass Runoff Area=14,262 sf 53.93% Impervious Runoff Depth=1.94"
Tc=6.0 min CN=81 Runoff=0.74 cfs 0.053 af

Subcatchment A-2: Subcat 2 Runoff Area=12,721 sf 18.91% Impervious Runoff Depth=0.66"
Flow Length=163' Tc=24.8 min UI Adjusted CN=60 Runoff=0.11 cfs 0.016 af

Pond CB-04: Catch Basin Peak Elev=1,121.36' Inflow=0.76 cfs 0.163 af
15.0" Round Culvert n=0.025 L=54.0' S=18.6443 '/' Outflow=0.76 cfs 0.163 af

Pond P-DE: Drip Edge Peak Elev=1,138.00' Storage=0.000 af Inflow=0.24 cfs 0.019 af
6.0" Round Culvert n=0.010 L=36.0' S=0.0097 '/' Outflow=0.24 cfs 0.019 af

Pond P-ST: Chamber System Peak Elev=1,131.47' Storage=0.046 af Inflow=1.47 cfs 0.110 af
Primary=0.00 cfs 0.000 af Secondary=0.09 cfs 0.110 af Outflow=0.09 cfs 0.110 af

Link DP-1: DP 1 Inflow=0.76 cfs 0.163 af
Primary=0.76 cfs 0.163 af

Link DP-2: DP 2 Inflow=0.11 cfs 0.016 af
Primary=0.11 cfs 0.016 af

Link L-FM: Filter Media delayed by 288.0 min Inflow=0.09 cfs 0.110 af
Primary=0.09 cfs 0.110 af

Total Runoff Area = 1.049 ac Runoff Volume = 0.179 af Average Runoff Depth = 2.05"
41.67% Pervious = 0.437 ac 58.33% Impervious = 0.612 ac

Summary for Subcatchment A-1a1: Subcat 1a

Runoff = 0.24 cfs @ 12.08 hrs, Volume= 0.019 af, Depth= 3.43"
Routed to Pond P-DE : Drip Edge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=3.78"

	Area (sf)	CN	Description
	2,700	98	Unconnected roofs, HSG B
*	180	75	drip edge, HSG B
	2,880	97	Weighted Average
	180		6.25% Pervious Area
	2,700		93.75% Impervious Area
	2,700		100.00% Unconnected

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

Summary for Subcatchment A-1a2: Subcat 1a

Runoff = 1.23 cfs @ 12.08 hrs, Volume= 0.091 af, Depth= 3.01"
Routed to Pond P-ST : Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=3.78"

Area (sf)	CN	Description
1,972	61	>75% Grass cover, Good, HSG B
13,853	98	Unconnected pavement, HSG B
15,825	93	Weighted Average
1,972		12.46% Pervious Area
13,853		87.54% Impervious Area
13,853		100.00% Unconnected

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

Summary for Subcatchment A-1b: bypass

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.053 af, Depth= 1.94"
Routed to Pond CB-04 : Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=3.78"

Area (sf)	CN	Description
6,571	61	>75% Grass cover, Good, HSG B
7,691	98	Unconnected pavement, HSG B
14,262	81	Weighted Average
6,571		46.07% Pervious Area
7,691		53.93% Impervious Area
7,691		100.00% Unconnected

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

Summary for Subcatchment A-2: Subcat 2

Runoff = 0.11 cfs @ 12.43 hrs, Volume= 0.016 af, Depth= 0.66"
Routed to Link DP-2 : DP 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=3.78"

Area (sf)	CN	Adj	Description
10,315	56		Brush, Fair, HSG B
2,406	98		Unconnected pavement, HSG B
12,721	64	60	Weighted Average, UI Adjusted
10,315			81.09% Pervious Area
2,406			18.91% Impervious Area
2,406			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0661	0.07		**Sheet Flow, Sheet Flow 1** Woods: Dense underbrush n= 0.800 P2= 2.87"
0.3	63	0.4254	3.26		**Shallow Concentrated Flow, Steep Slope** Woodland Kv= 5.0 fps
24.8	163	Total			

Summary for Pond CB-04: Catch Basin

[57] Hint: Peaked at 1,121.36' (Flood elevation advised)

Inflow Area = 0.757 ac, 73.54% Impervious, Inflow Depth = 2.58" for 10 year event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 0.163 af
Outflow = 0.76 cfs @ 12.09 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 12.09 hrs, Volume= 0.163 af
Routed to Link DP-1 : DP 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1,121.36' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,120.90'	**15.0" Round CMP_Round 15"** L= 54.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,120.90' / 114.11' S= 18.6443 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=0.76 cfs @ 12.09 hrs HW=1,121.36' (Free Discharge)
1=CMP_Round 15" (Inlet Controls 0.76 cfs @ 1.83 fps)

Summary for Pond P-DE: Drip Edge

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 0.066 ac, 93.75% Impervious, Inflow Depth = 3.43" for 10 year event
Inflow = 0.24 cfs @ 12.08 hrs, Volume= 0.019 af
Outflow = 0.24 cfs @ 12.08 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Primary = 0.24 cfs @ 12.08 hrs, Volume= 0.019 af
Routed to Pond P-ST : Chamber System

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1,138.00' @ 12.08 hrs Surf.Area= 0.004 ac Storage= 0.000 af

Plug-Flow detention time= 0.0 min calculated for 0.019 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (762.0 - 762.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,138.00'	0.002 af	**2.00'W x 90.00'L x 1.50'H Prismatoid** 0.006 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	1,136.00'	**6.0" Round 6" underdrain** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,136.00' / 1,135.65' S= 0.0097 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.99 cfs @ 12.08 hrs HW=1,138.00' (Free Discharge)
1=6" underdrain (Inlet Controls 0.99 cfs @ 5.03 fps)

Summary for Pond P-ST: Chamber System

Inflow Area = 0.429 ac, 88.50% Impervious, Inflow Depth = 3.07" for 10 year event
Inflow = 1.47 cfs @ 12.08 hrs, Volume= 0.110 af
Outflow = 0.09 cfs @ 11.38 hrs, Volume= 0.110 af, Atten= 94%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond CB-04 : Catch Basin
Secondary = 0.09 cfs @ 11.38 hrs, Volume= 0.110 af
Routed to Link L-FM : Filter Media

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1,131.47' @ 13.67 hrs Surf.Area= 0.037 ac Storage= 0.046 af

Plug-Flow detention time= 180.9 min calculated for 0.110 af (100% of inflow)
Center-of-Mass det. time= 180.8 min (963.6 - 782.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,130.41'	0.021 af	**ADS_StormTech SC-740 +Cap** x 20 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 20 Chambers in 4 Rows
#2A	1,129.41'	0.021 af	**20.50'W x 39.22'L x 4.00'H Field A** 0.074 af Overall - 0.021 af Embedded = 0.053 af x 40.0% Voids
#3	1,126.16'	0.024 af	**20.50'W x 39.22'L x 3.25'H Concrete Sand + Pea Gravel + Crushed Stone** 0.060 af Overall x 40.0% Voids
		0.066 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,126.06'	**12.0" Round Culvert** L= 117.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,126.06' / 1,124.50' S= 0.0133 '/' Cc= 0.900 n= 0.009 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	1,133.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Secondary	1,126.16'	**0.093 cfs Constant Flow/Skimmer** Phase-In= 0.01'

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,126.16' (Free Discharge)
↑—**1=Culvert** (Passes 0.00 cfs of 0.03 cfs potential flow)
↑—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.09 cfs @ 11.38 hrs HW=1,126.24' (Free Discharge)
↑—**3=Constant Flow/Skimmer** (Constant Controls 0.09 cfs)

Pond P-ST: Chamber System - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

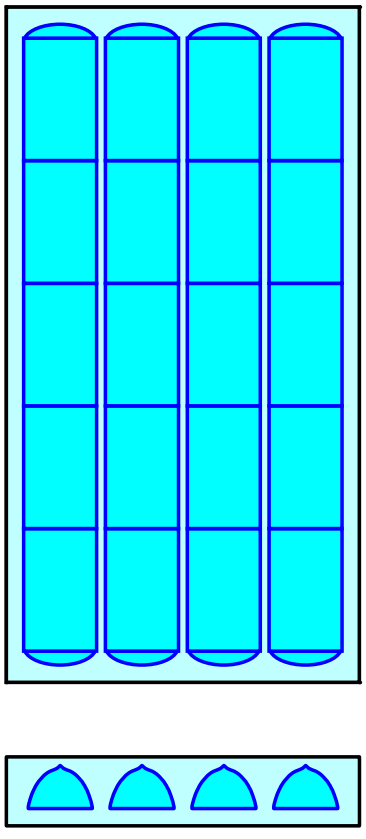
5 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 37.22' Row Length +12.0" End Stone x 2 = 39.22' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

20 Chambers x 45.9 cf = 918.8 cf Chamber Storage

3,215.8 cf Field - 918.8 cf Chambers = 2,297.0 cf Stone x 40.0% Voids = 918.8 cf Stone Storage

Chamber Storage + Stone Storage = 1,837.6 cf = 0.042 af
Overall Storage Efficiency = 57.1%
Overall System Size = 39.22' x 20.50' x 4.00'

20 Chambers
119.1 cy Field
85.1 cy Stone



Summary for Link DP-1: DP 1

Inflow Area = 0.757 ac, 73.54% Impervious, Inflow Depth = 2.58" for 10 year event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 0.163 af
Primary = 0.76 cfs @ 12.09 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Summary for Link DP-2: DP 2

Inflow Area = 0.292 ac, 18.91% Impervious, Inflow Depth = 0.66" for 10 year event
Inflow = 0.11 cfs @ 12.43 hrs, Volume= 0.016 af
Primary = 0.11 cfs @ 12.43 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Summary for Link L-FM: Filter Media

The delay provided by this node is intended to model the time required for stormwater to flow through the filter media below the chamber system. (10ft/day)

Inflow = 0.09 cfs @ 11.38 hrs, Volume= 0.110 af
Primary = 0.09 cfs @ 16.18 hrs, Volume= 0.110 af, Atten= 0%, Lag= 288.0 min
Routed to Pond CB-04 : Catch Basin

Primary outflow = Inflow delayed by 288.0 min, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

2.3 Inspection and Maintenance Plan

Inspection and Maintenance Plan

Goodhue Meredith, LLC
Georges Mills Showroom -- 1282 Route 11
Sunapee, NH

Introduction

This document is intended to provide a unified procedure for the party(ies) responsible for inspecting and maintaining the stormwater management device(s) that are located within the site development (see Design Plan for the device locations).

Responsible Parties

The ultimate responsibility for complying with this plan rests with the owners of the Property.

Owner's Name: Goodhue Meredith, LLC

Parties assigned to complete inspection and maintenance tasks are presented in the following table:

DEVICE	TASK	PARTY RESPONSIBLE
Stormwater Devices		
Stone Drip Edges, Chamber System & Catch Basins	Inspection	OWNER
	Maintenance	OWNER
	Reporting	OWNER

Frequency of Activities

The best time to perform inspections is during the onset of rain. To the extent practicable, inspections should be timed to coincide with moderate storms that do not have the potential for severe (thunderstorms, etc) precipitation. The frequency of inspection and maintenance will vary by intensity of use; however, the following shall serve as the minimum inspection frequency:

- Stone Drip Edge: Spring and Fall
- Chamber System: Spring and Fall
- Catch Basins: Spring and Fall

Maintenance frequencies will be determined based upon the results of the inspections and if specific maintenance thresholds are observed to have been crossed during inspections. All inspection activities should be recorded on the appropriate attached Inspection Form. One form should be used for each stormwater device.

COLLECTION STONE DRIP EDGE

Inspection Frequency:
Inspect the drip edge 2 times per year (spring and fall- following leaf drop) unless otherwise described- maintain features as described below.

Once per year the system must be checked to determine that it does not retain standing water for more than 72 hours. Refer to Drawdown Protocols contained in this Plan.

Maintenance Requirements:

- Inspect adjacent surfaces.
    - If erosion has occurred, then measures shall be taken to stabilize and protect the affected area of the outlet.
    - Accumulated debris and sediment shall be removed.
- The surface of the drip edge shall be checked twice a year for debris and sediment. When sediment accumulations become significant, the sediment and debris shall be removed and property disposed of.
    - It is particularly important to remove leaves and other organic mats that may diminish the infiltration rate to the collection pipe.

CB- CATCH BASINS

(*To include trench drains, drain manholes, and double catchbasins, and drop inlets*)

Inspection Frequency:

Inspect 2 times per year (spring and fall-after leaf drop) unless otherwise described- maintain features as described below.

Maintenance Requirements:

- Remove debris from inlets grates.
- If an oily sheen or hydrocarbons are present on the water surface contact your supervisor
    - Skimming/absorbants should be used to remove to the material and disposed of in accordance with state and federal regulations.
- Remove accumulated sediment in sump if sediment has accumulated to ½ sump depth or is within 1 foot below invert out of basin.
    - If sediment has accumulated to pipe invert out, check discharge end of pipe for sediment accumulations and remove sediment from pipe.
    - Note such conditions and increase inspection frequency if it is determined that the loads of sediment to the basin are consistently high.
    - Address source of sediment if possible.
- For drop inlets with no sump sediments will typically only accumulate if there is an obstruction in the downstream culvert and/or culvert outlet. Therefore where sediments are present in structure:
    - Inspect culvert and culvert outlet and remove debris and sediments.
- Do not dispose of catch basin cleanings in wetland areas or within 40 feet of wetland areas- refer to Appendix b; pages B-2 and B-4 in NH DES guidance document http://des.nh.gov/organization/divisions/water/stormwater/documents/nh_idde_sop.pdf to determine where catchbasin cleanings and street sweepings may be disposed of.

ST- STORMTECH INFILTRATION CHAMBERS
(*To include stormtech isolator rows*)

Photo Credit: Stormtech

Inspection Frequency:
Isolator Rows shall be inspected immediately after completion of the site construction and cleaned out if necessary. The typical inspection schedule after construction for the Isolator Rows is a minimum of twice a year (spring & fall) - maintain features as described below.

Inspection of the Isolator Row shall involve a visual check using either the inspection ports or the access manholes

Maintenance Requirements:

- If upon visual inspection of the Isolator Row, it is found that sediment has accumulated to an average depth exceeding 3 inches throughout the length of the Isolator Row, cleanout is required.
- Cleanout of the accumulated material in the Isolator Row should be accomplished by vacuum pumping.
- Cleanout should be performed during dry weather and care should be taken to avoid tearing the fabric in the Isolator Rows.
- 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. Call 1-888-892-2694 to speak with a Technical representative or visit www.stormtech.com.

72 Hour Drawdown Protocols

The stone drip edge noted in this Plan requires a periodic check to ensure that the feature does not retain water for more than 72 hours. This check is to be conducted once per year and is intended to determine if the soils under the feature continue to allow water to exfiltrate out of the floor of the feature or are clogged. Clogged soils can allow water to support nuisance mosquito populations and can reduce the stormwater treatment capacity of the feature during subsequent storms.

The following presents a step by step procedure to document the drawdown time of those stormwater features that require such a check.

- Plan on performing the check during the growing season (May to October)
- Review weather forecasts and pick a storm that is substantial enough to produce runoff into the feature to be checked during working hours.
- Once storm begins check to confirm that runoff has entered the drip edge.
- Once rainfall stops:
    - Take a photo of the water entering the feature or impounded within the feature.
    - Record the time of the photo and feature name/ID.
    - Record the rainfall depth.
        - Rainfall records for the area can be found in a variety of websites however the following is a suggested local source: https://www.wunderground.com/weather/us/nh/newbury/03255
- Return to the feature 48 hours after the photo was taken and take a second photo of the feature in the drained-down condition.
    - Record the time of the photo and feature name/ID
    - Observe standing water level via the observation port(s).
- If feature has not drained down in 48 hours after first photo:
    - Record depth to water level in observation well, and the time of observation.
    - Return to the feature 72 hours after the first photo was taken at that feature and determine if the feature has drained completely.
    - If the feature has drained down take a photo and record the time (should be equal to or less than 72 hours.)
    - If the feature has not drained down completely:
        - Record the water level drop (in inches) that has occurred since initial observation well measurement and divide by the number of hours that have elapsed.
        - This inches/hour exfiltration rate may be useful in determining if renovation of the feature is needed.
        - Contact DES and/or an engineer to determine if renovation of the feature is needed.
- Keep records of all drawdown checks.

Year: ____________

Stormwater BMP
Inspection and Maintenance Log
Georges Mills Showroom -- 1282 Route 11
Sunapee, NH

DEVICE/ LOCATION	**INSPECTION**		**FOLLOW UP ACTIVITY**	
	Date	Insp. Name	Date	Action Taken

2.4 References
Preparer's Certification

REFERENCES

Mays, Larry. *Stormwater Collection Systems Design Handbook*. McGraw-Hill. New York, NY. 2001

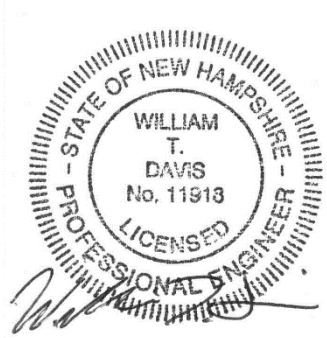
McCarthy, David. *Essentials of Soil Mechanics and Foundations: Sixth Edition*. Prentice Hall. Columbus, Ohio. 2002.

NHDES. *New Hampshire Stormwater Manual*. New Hampshire Department of Environmental Services. 2008.

NHDES. *New Hampshire Homeowner's Guide to Stormwater Management*. New Hampshire Department of Environmental Services. 2012

The UNH Stormwater Center, *The LID Stormwater Management Systems Demonstrate LID Stormwater Management Systems Demonstrate Superior Cold Climate Performance than Superior Cold Climate Performance than Conventional Stormwater Management Systems, UNH Stormwater Center, NEIWPCC 2007 NPS Conference, Newport, RI, May 2007*

PREPARER'S CERTIFICATION



Prepared by Will Davis, PE

SECTION 3.0 – ATTACHMENTS

3.1 Extreme Precipitation Tables
(Northeast Regional Climate Center)

3.2 Cooper Street Culvert Check

Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

September 29, 2023

Cooper Street Culvert

Invert Elev Dn (ft)	=	1114.11
Pipe Length (ft)	=	54.03
Slope (%)	=	11.64
Invert Elev Up (ft)	=	1120.40
Rise (in)	=	15.0
Shape	=	Circular
Span (in)	=	15.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Corrugate Metal Pipe
Culvert Entrance	=	Headwall
Coeff. K,M,c,Y,k	=	0.0078, 2, 0.0379, 0.69, 0.5

Embankment

Top Elevation (ft)	=	1127.00
Top Width (ft)	=	27.00
Crest Width (ft)	=	0.00

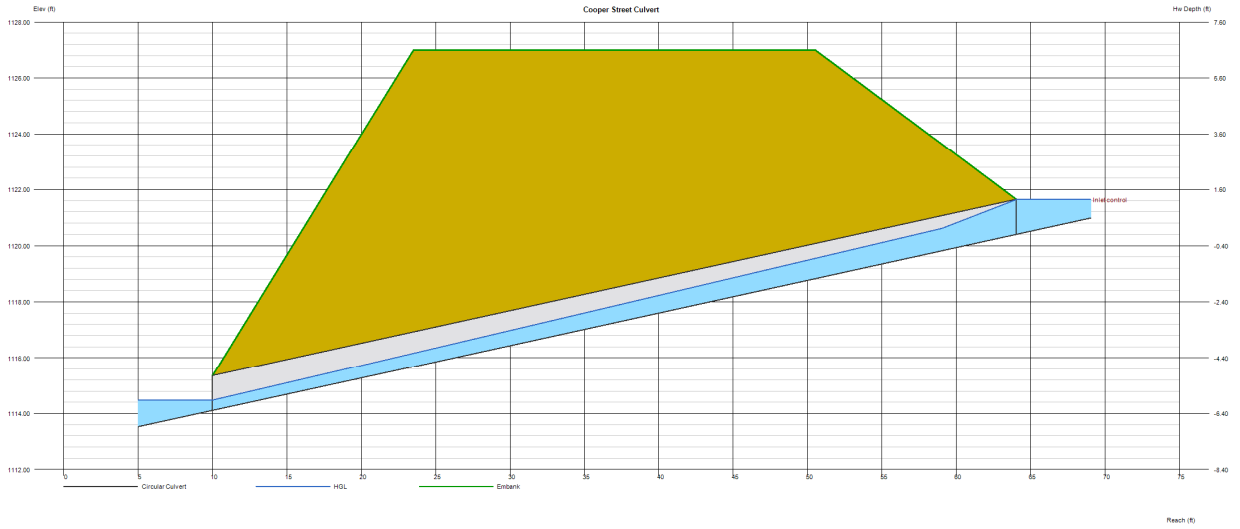
Calculations

Qmin (cfs)	=	4.00
Qmax (cfs)	=	4.50
Tailwater Elev (ft)	=	0.00

Highlighted

Qtotal (cfs)	=	4.30
Qpipe (cfs)	=	4.30
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	14.32
Veloc Up (ft/s)	=	4.91
HGL Dn (ft)	=	1114.48
HGL Up (ft)	=	1121.24
Hw Elev (ft)	=	1121.64
Hw/D (ft)	=	0.99
Flow Regime	=	Inlet Control

Maximum free-flow capacity: 4.30cfs
50-yr storm peak flowrate: 1.34cfs
Existing culvert is sufficient to pass 50-yr event.



3.2 NRCS Soil Resource Report

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 Sullivan County, New Hampshire

August 8, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

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: 1:754 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Sullivan County, New Hampshire
Survey Area Data: Version 28, Sep 12, 2022

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

Date(s) aerial images were photographed: May 27, 2020—Sep 16, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
McB	Monadnock fine sandy loam, 3 to 8 percent slopes	1.7	57.8%
McC	Monadnock fine sandy loam, 8 to 15 percent slopes	1.2	42.2%
Totals for Area of Interest		**2.9**	**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.

Sullivan County, New Hampshire

McB—Monadnock fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wlm3
Elevation: 390 to 1,570 feet
Mean annual precipitation: 31 to 95 inches
Mean annual air temperature: 27 to 55 degrees F
Frost-free period: 90 to 150 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Monadnock and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Monadnock

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial meltout till derived from phyllite and/or granite and gneiss and/or mica schist over sandy and gravelly supraglacial meltout till derived from phyllite and/or granite and gneiss and/or mica schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bs1 - 7 to 9 inches: fine sandy loam
Bs2 - 9 to 19 inches: gravelly fine sandy loam
BC - 19 to 22 inches: gravelly fine sandy loam
2C1 - 22 to 42 inches: gravelly loamy sand
2C2 - 42 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 15 to 30 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.03 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 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F144BY505ME - Loamy over Sandy

Hydric soil rating: No

Minor Components

Berkshire

Percent of map unit: 11 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Skerry

Percent of map unit: 6 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Cabot

Percent of map unit: 2 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Tunbridge

Percent of map unit: 1 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

McC—Monadnock fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wlm4
Elevation: 390 to 1,640 feet
Mean annual precipitation: 31 to 95 inches
Mean annual air temperature: 27 to 55 degrees F
Frost-free period: 90 to 150 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Monadnock and similar soils: 81 percent
Minor components: 19 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Monadnock

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainflank, mountainbase, interfluve, nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial meltout till derived from phyllite and/or granite and gneiss and/or mica schist over sandy and gravelly supraglacial meltout till derived from phyllite and/or granite and gneiss and/or mica schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bs1 - 7 to 9 inches: fine sandy loam
Bs2 - 9 to 19 inches: gravelly fine sandy loam
BC - 19 to 22 inches: gravelly fine sandy loam
2C1 - 22 to 42 inches: gravelly loamy sand
2C2 - 42 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 15 to 30 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.03 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 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F144BY505ME - Loamy over Sandy
Hydric soil rating: No

Minor Components

Berkshire

Percent of map unit: 10 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainflank, mountainbase, interfluve, nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex

Hydric soil rating: No

Skerry

Percent of map unit: 6 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainflank, mountainbase, interfluve, nose slope, side slope
Microfeatures of landform position: Closed depressions, closed depressions, open depressions, open depressions
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Cabot

Percent of map unit: 2 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Mountainflank, mountainbase, interfluve, nose slope, side slope
Microfeatures of landform position: Closed depressions, closed depressions, open depressions, open depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Tunbridge

Percent of map unit: 1 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainflank, mountainbase, interfluve, nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

SECTION 4.0 – PLANS

LEGEND

- CONIFEROUS TREE
- DECIDUOUS TREE
- SEWER MANHOLE
- GUY WIRE
- UTILITY POLE
- IRON PIPE OR REBAR FOUND
- CALCULATED CORNER
- STOP SIGN
- PROPERTY LINE
- APPROXIMATE PROPERTY LINE
- ABUTTING PROPERTY LINE
- CONTOUR - MAJOR INTERVAL
- CONTOUR - MINOR INTERVAL
- PAVEMENT

DRAINAGE LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT AREA (A-1a1)
- POND / FEATURE (P-DE) (NOT PRESENT IN PRE-DEVELOPMENT CONDITION)
- DRAINAGE ANALYSIS POINT (DP-1)

0 10 20 40 80

SCALE IN FEET

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DATE OF PRINT
OCTOBER 11 2023
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GOODHUE SUNAPEE REAL PROPERTY, LLC

GEORGES MILLS SHOW ROOM

SUNAPEE, NEW HAMPSHIRE

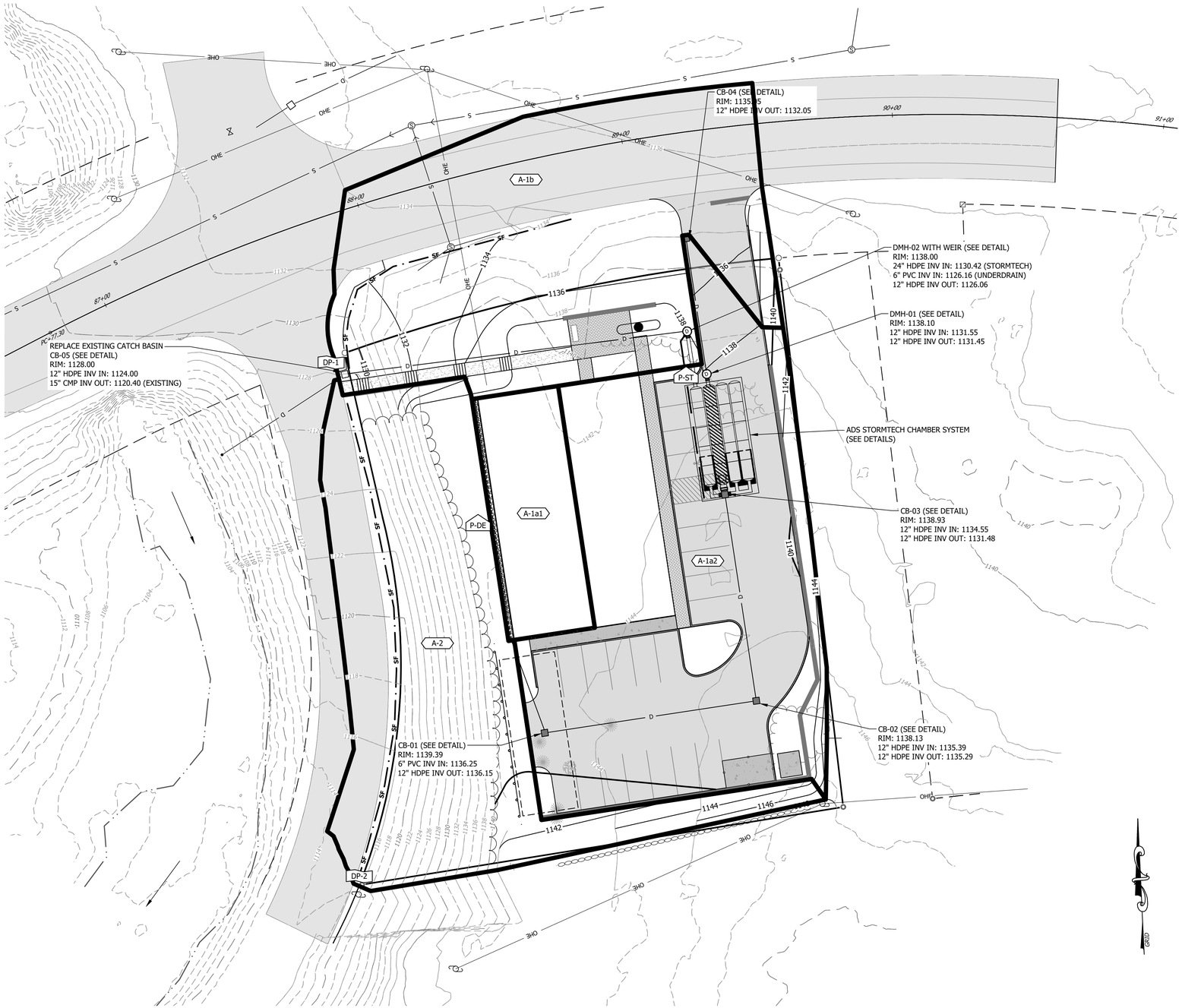
TAX MAP 104, LOT 84

PRE-DEVELOPMENT DRAINAGE PLAN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: SEPT. 2023	PROJECT #: 21902
ENGIN'D BY: WTD	DRAWN BY: CJH
CHECK'D BY: WTD	ARCHIVE #: H-___

DRAINAGE 4.2.1



LEGEND

- CONIFEROUS TREE
- DECIDUOUS TREE
- SEWER MANHOLE
- GUY WIRE
- UTILITY POLE
- IRON PIPE OR REBAR FOUND
- CALCULATED CORNER
- STOP SIGN
- PROPERTY LINE
- APPROXIMATE PROPERTY LINE
- ABUTTING PROPERTY LINE
- CONTOUR - MAJOR INTERVAL
- CONTOUR - MINOR INTERVAL
- PAVEMENT
- IMPERVIOUS PAVERS
- PERVIOUS PAVERS

DRAINAGE LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT AREA (A-1a1)
- POND / FEATURE (P-DE)
- DRAINAGE ANALYSIS POINT (DP-1)

0 10 20 40 80

SCALE IN FEET

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GOODHUE SUNAPEE REAL PROPERTY, LLC

GEORGES MILLS SHOW ROOM

SUNAPEE, NEW HAMPSHIRE

TAX MAP 104, LOT 84

POST-DEVELOPMENT DRAINAGE PLAN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: SEPT. 2023	PROJECT #: 21902
ENGIN'D BY: WTD	DRAWN BY: CJH
CHECK'D BY: WTD	ARCHIVE #: H-___

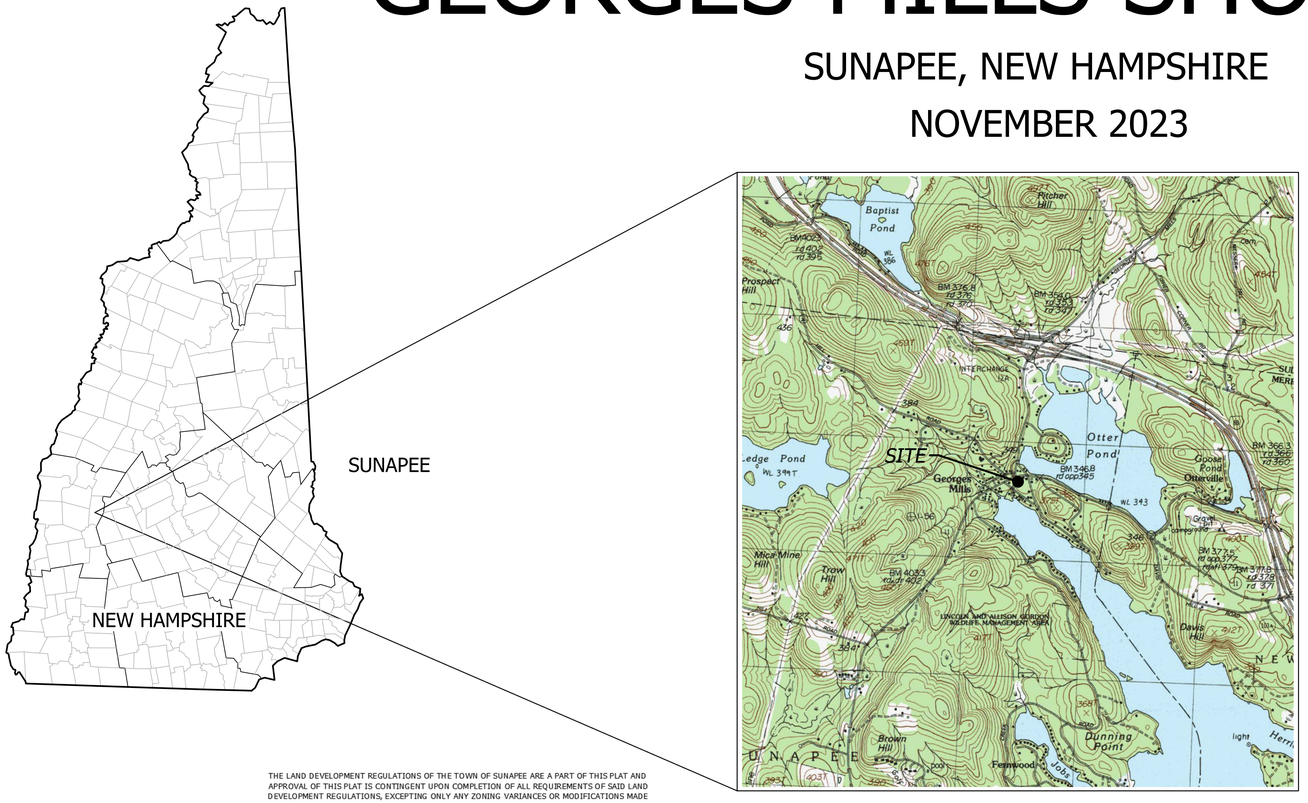
DRAINAGE 4.2.2

GOODHUE SUNAPEE REAL PROPERTY, LLC

GEORGES MILLS SHOW ROOM

SUNAPEE, NEW HAMPSHIRE

NOVEMBER 2023



LOCATION PLAN

SHEET LIST:

THE LAND DEVELOPMENT REGULATIONS OF THE TOWN OF SUNAPEE ARE A PART OF THIS PLAT AND APPROVAL OF THIS PLAT IS CONTINGENT UPON COMPLETION OF ALL REQUIREMENTS OF SAID LAND DEVELOPMENT REGULATIONS, EXCEPTING ONLY ANY ZONING VARIANCES OR MODIFICATIONS MADE IN WRITING BY THE BOARD AND ATTACHED HERETO.

I/WE, GOODHUE SUNAPEE REAL PROPERTY,LLC, CERTIFY THAT OUR ASSIGNS OR SUCCESSORS WILL SEEK APPROVAL BY THE PLANNING BOARD PRIOR TO MAKING ANY CHANGES TO THIS SITE PLAN.

APPROVED BY THE SUNAPEE, N.H. PLANNING BOARD

DATE _____

_____ _____

(CHAIR)

PERMIT NOTES

IT IS THE OWNERS RESPONSIBILITY TO INSURE ALL PERMITS ARE IN PLACE PRIOR TO CONSTRUCTION.

THIS PROJECT SHALL COMPLY WITH ALL CONDITIONS OF ALL PERMITS FOR THE PROJECT. COPIES OF THESE PERMITS MAY BE REQUESTED FROM THE HORIZONS ENGINEERING OFFICE IN SHARON, VT. PERMITS LISTED BELOW ARE REPRESENTATIVE OF PROJECT PERMITTING COLLECTED BY HORIZONS ENGINEERING. ALL REQUIRED PERMITS SHALL BE COLLECTED AND VERIFIED BY THE GENERAL CONTRACTOR.

STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION DRIVEWAY PERMIT	APPROVED	02-435-0036	10/9/2023
DEPARTMENT OF ENVIRONMENTAL SERVICES SHORELAND PERMIT	PENDING		
TOWN OF SUNAPEE			
PLANNING BOARD SITE PLAN REVIEW	PENDING		

OWNER:
GOODHUE SUNAPEE REAL PROPERTY, LLC
PO BOX 853
WOLFBORO, NEW HAMPSHIRE

ENGINEER AND SURVEYOR:
horizons Engineering
176 NEWPORT ROAD
SUITE 8
NEW LONDON, NH 03257
(603) 444-1343

LANDSCAPE ARCHITECT:
SITEFORM STUDIO
ATTN: TOM HAND, ASLA, PLA
PO BOX 1272
STOWE, VT 05672

ARCHITECT:
SAMYN - D'ELIA ARCHITECTS, P.A.
6 CENTRAL HOUSE ROAD
HOLDERNESS, NH 03245
(603) 968-7133

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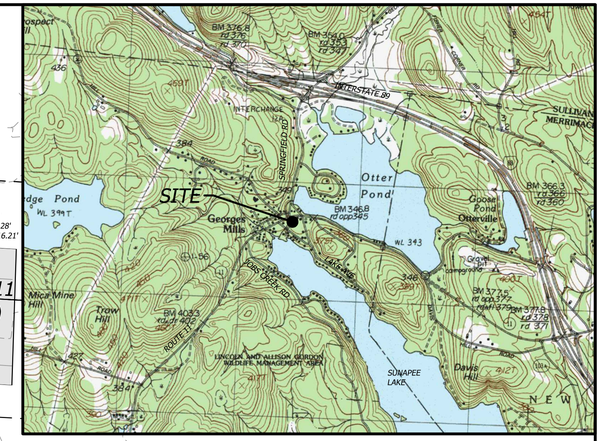
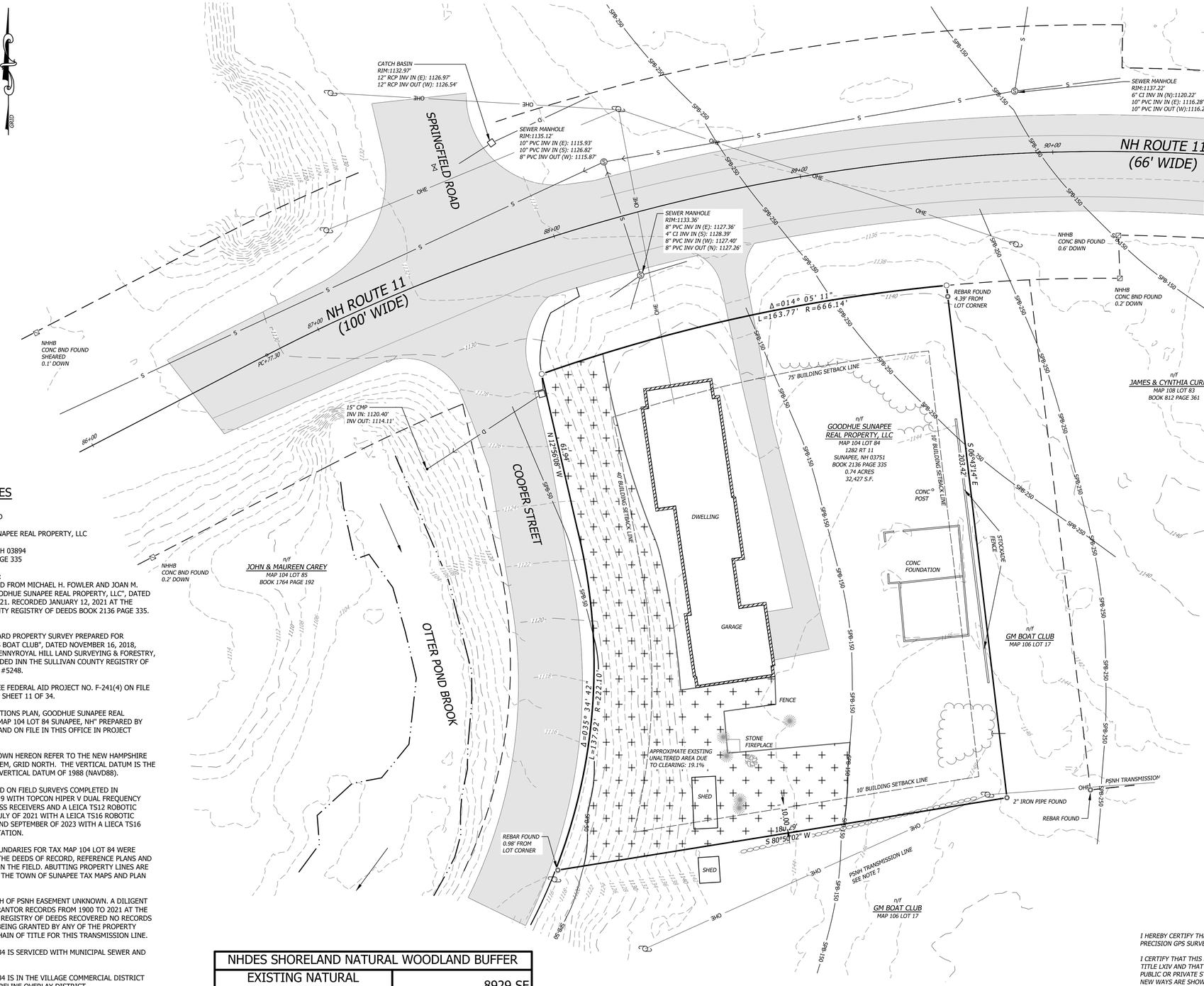


VICINITY MAP
1" = 2000'



GENERAL NOTES

1. OWNER OF RECORD

   GOODHUE SUNAPEE REAL PROPERTY, LLC
   PO BOX 853
   WOLFBORO, NH 03894
   BOOK 2136 PAGE 335

2. DEED REFERENCES:
   A. "WARRANTY DEED FROM MICHAEL H. FOWLER AND JOAN M. FOWLER TO GOODHUE SUNAPEE REAL PROPERTY, LLC", DATED JANUARY 12, 2021. RECORDED JANUARY 12, 2021 AT THE SULLIVAN COUNTY REGISTRY OF DEEDS BOOK 2136 PAGE 335.

3. PLAN REFERENCE:
   A. "PLAN OF STANDARD PROPERTY SURVEY PREPARED FOR GEORGES MILLS BOAT CLUB", DATED NOVEMBER 16, 2018, PREPARED BY PENNYROYAL HILL LAND SURVEYING & FORESTRY, LLC AND RECORDED INN THE SULLIVAN COUNTY REGISTRY OF DEEDS AS PLAN #5248.

   B. "PLAN OF SUNAPEE FEDERAL AID PROJECT NO. F-241(4) ON FILE AT THE NHDOT. SHEET 11 OF 34.

   C. "EXISTING CONTITIONS PLAN, GOODHUE SUNAPEE REAL PROPERTY LLC MAP 104 LOT 84 SUNAPEE, NH" PREPARED BY RTC JULY 2021 AND ON FILE IN THIS OFFICE IN PROJECT #20956.

4. THE BEARINGS SHOWN HEREON REFER TO THE NEW HAMPSHIRE COORDINATE SYSTEM, GRID NORTH. THE VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

5. THIS PLAN IS BASED ON FIELD SURVEYS COMPLETED IN SEPTEMBER OF 2019 WITH TOPCON HIPER V DUAL FREQUENCY SURVEY GRADE GNSS RECEIVERS AND A LEICA TS12 ROBOTIC TOTAL STATION, JULY OF 2021 WITH A LEICA TS16 ROBOTIC TOTAL STATION, AND SEPTEMBER OF 2023 WITH A LIECA TS16 ROBOTIC TOTAL STATION.

6. THE PROPERTY BOUNDARIES FOR TAX MAP 104 LOT 84 WERE RETRACED USING THE DEEDS OF RECORD, REFERENCE PLANS AND EVIDENCE FOUND IN THE FIELD. ABUTTING PROPERTY LINES ARE APPROXIMATE PER THE TOWN OF SUNAPEE TAX MAPS AND PLAN REFERENCE "A".

7. STATUS AND WIDTH OF PSNH EASEMENT UNKNOWN. A DILIGENT SEARCH OF THE GRANTOR RECORDS FROM 1900 TO 2021 AT THE SULLIVAN COUNTY REGISTRY OF DEEDS RECOVERED NO RECORDS OF AN EASEMENT BEING GRANTED BY ANY OF THE PROPERTY OWNERS IN THE CHAIN OF TITLE FOR THIS TRANSMISSION LINE.

8. TAX MAP 104 LOT 84 IS SERVICED WITH MUNICIPAL SEWER AND WATER.

9. TAX MAP 104 LOT 84 IS IN THE VILLAGE COMMERCIAL DISTRICT (VC) AND THE SHORELINE OVERLAY DISTRICT.

FRONT SETBACK	75' FROM ROUTE 11 CENTERLINE 40' FROM CENTERLINE OF ALL OTHER STREETS
SIDE & REAR SETBACK	10'
MAXIMUM LOT COVERAGE	60% IMPERVIOUS 80% TOTAL

10. UNALTERED AREA SHOWN ON TAX MAP 104 LOT 84 IS BASED ON A SITE VISIT BY HORIZONS ENGINEERING ON SEPTEMBER 29, 2021 TO INSPECT TREE CLEARING LIMITS.

NHDES SHORELAND NATURAL WOODLAND BUFFER	
EXISTING NATURAL WOODLAND AREA 50' TO 150'	8929 SF
TOTAL AREA 50' TO 150'	19522 SF
25% OF TOTAL AREA 50' TO 150'	4881 SF
NATURAL WOODLAND AREA TO REMAIN	4881 SF

0 10 20 40 80
SCALE IN FEET

LEGEND

- CONIFEROUS TREE
- DECIDUOUS TREE
- CATCH BASIN
- SEWER MANHOLE
- GUY WIRE
- UTILITY POLE
- IRON PIPE OR REBAR FOUND
- CALCULATED CORNER
- LIGHT POLE
- PROPERTY LINE
- ABUTTING PROPERTY LINE
- BUILDING SETBACK LINE
- SHORELAND 50' BUFFER
- SHORELAND 150' BUFFER
- SHORELAND 250' BUFFER
- UNDERGROUND SEWER LINE
- UNDERGROUND DRAIN LINE
- EDGE OF WATER
- BUILDING
- CONTOUR - MAJOR INTERVAL
- CONTOUR - MINOR INTERVAL
- PAVEMENT
- PAVEMENT

I HEREBY CERTIFY THAT THIS PLAT IS BASED ON A TOTAL STATION SURVEY, PRECISION GPS SURVEY AND IS CLASSIFIED URBAN.

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO RSA TITLE LXIV 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.

ANDREW J. NADEAU, LLS 947 — *10/06/2023* (DATE)

DATE OF PRINT
OCTOBER 09 2023
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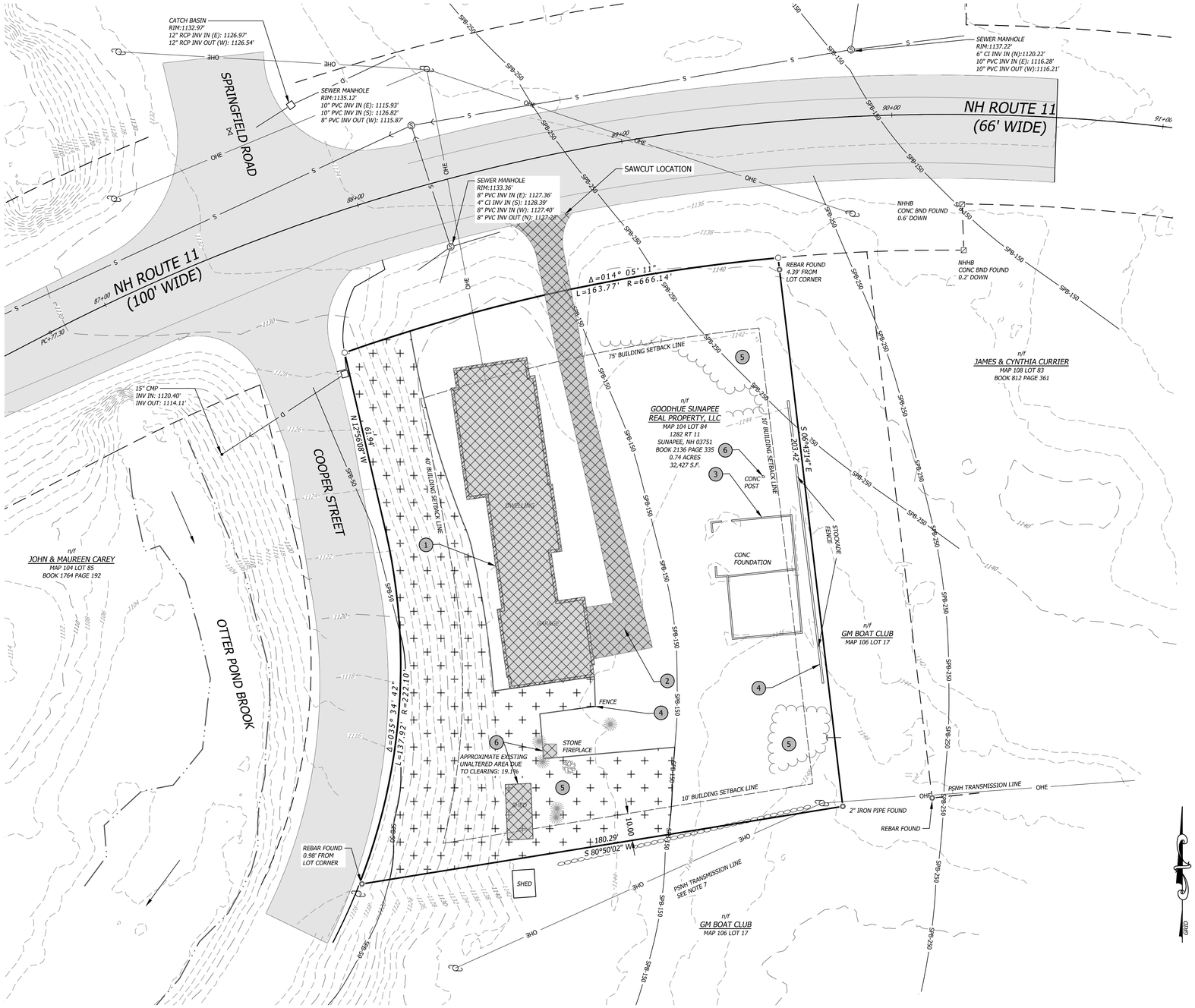
PLAN SHOWING A BOUNDARY & EXISTING CONDITIONS SURVEY PREPARED FOR
GOODHUE SUNAPEE
REAL PROPERTY, LLC
OF PROPERTY LOCATED ON:
1282 ROUTE 11 SUNAPEE, NH
RECORD OWNER: GOODHUE SUNAPEE REAL PROPERTY, LLC
SUNAPEE ASSESSORS MAP 104 LOT 84
S.C.R.D. BOOK 2136 PAGE 335

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

STATE OF NEW HAMPSHIRE — NO. 947 — ANDREW J. NADEAU — SIGNATURE — REGISTERED LAND SURVEYOR

DATE: OCT. 2023	PROJECT #: 21902
ENGIN'D BY: WTD	DRAWN BY: APH/NJV
CHECK'D BY: WTD/AJN	ARCHIVE #: H-___

SHEET C1.1



DEMO NOTES

1. REMOVE EXISTING BUILDING AND FOUNDATIONS. DISPOSE OF OFF SITE.
2. REMOVE EXISTING ASPHALT AND DISPOSE OF OFF SITE. SAWCUT AS INDICATED ON THE PLANS. SEE PAVEMENT JOINING DETAIL.
3. REMOVE EXISTING CONCRETE AND DISPOSE OF OFF SITE.
4. REMOVE FENCE AND DISPOSE OF OFF SITE.
5. EXISTING TREES SHALL BE REMOVED AS NEEDED, INCLUDING ROOTS.
6. MISCELLANEOUS DEMOLITION

DEMO LEGEND

DEMO HATCH

LEGEND

- CONIFEROUS TREE
- DECIDUOUS TREE
- SEWER MANHOLE
- GUY WIRE
- UTILITY POLE
- IRON PIPE OR REBAR FOUND
- CALCULATED CORNER
- LIGHT POLE
- PROPERTY LINE
- APPROXIMATE PROPERTY LINE
- ABUTTING PROPERTY LINE
- BUILDING SETBACK LINE
- SHORELAND 50' BUFFER
- SHORELAND 150' BUFFER
- SHORELAND 250' BUFFER
- CONTOUR - MAJOR INTERVAL
- CONTOUR - MINOR INTERVAL
- PAVEMENT
- EXISTING UNALTERED AREA (TAX MAP 104 LOT 84)

SCALE IN FEET: 0, 10, 20, 40, 80

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NOT FOR CONSTRUCTION

DATE OF PRINT
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GOODHUE SUNAPEE REAL PROPERTY, LLC

GRORGES MILLS SHOW ROOM

SUNAPEE, NEW HAMPSHIRE

TAX MAP 104, LOT 84

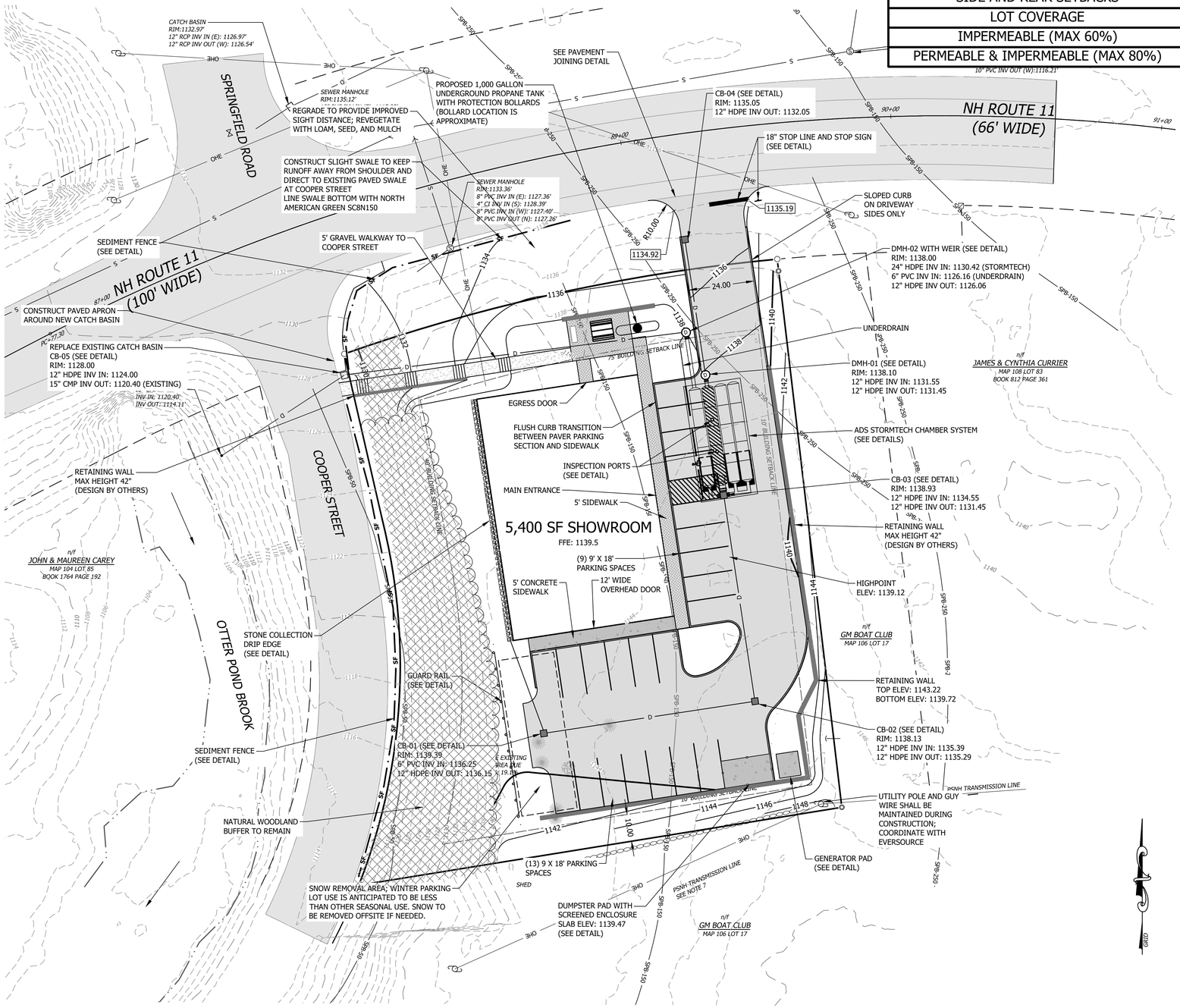
DEMOLITION

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: SEPT. 2023	PROJECT #: 21902
ENGIN'D BY: WTD	DRAWN BY: APH
CHECK'D BY: WTD	ARCHIVE #: H-___

SHEET C1.2

SUNAPEE DIMENSIONAL CONTROLS		
MIN. ROAD SETBACK (R. 11)		75'
MIN. ROAD SETBACK (COOPER)		40'
SIDE AND REAR SETBACKS		10'
LOT COVERAGE	PRE-DEVELOPMENT	POST-DEVELOPMENT
IMPERMEABLE (MAX 60%)	15.8%	54.6%
PERMEABLE & IMPERMEABLE (MAX 80%)	15.8%	54.6%



GENERAL NOTES

1. PER ARTICLE VI OF THE SUNAPEE SITE PLAN REVIEW REGULATIONS (AND THE RELATED APPENDIX), THE NUMBER, DIMENSIONS AND CONFIGURATION OF THE PARKING SPACES SHOWN ON THIS PLAN ARE BASED ON THE PROJECTED NEEDS OF THE SPECIFIC USE OF THE PROPERTY AS A MARINA EXCLUSIVELY FOR RETAIL SALES AND INDOOR DISPLAY OF WATERCRAFT AND OTHER MARINA EQUIPMENT. SEE SPECIAL EXCEPTION GRANTED BY THE SUNAPEE ZBA ON MARCH 2, 2023. A TOTAL OF TWENTY-TWO (22) PARKING SPACES, EACH 9' X 18' IN SIZE, WILL BE PROVIDED AS SHOWN ON THE PLAN.

LEGEND

- CONIFEROUS TREE
- DECIDUOUS TREE
- SEWER MANHOLE
- GUY WIRE
- UTILITY POLE
- IRON PIPE OR REBAR FOUND
- CALCULATED CORNER
- LIGHT POLE
- STOP SIGN
- PROPERTY LINE
- APPROXIMATE PROPERTY LINE
- ABUTTING PROPERTY LINE
- BUILDING SETBACK LINE
- SPB-50 — SHORELAND 50' BUFFER
- SPB-150 — SPB-150 — SHORELAND 150' BUFFER
- SPB-250 — SPB-250 — SHORELAND 250' BUFFER
- CONTOUR - MAJOR INTERVAL
- CONTOUR - MINOR INTERVAL
- PAVEMENT
- EXISTING UNALTERED AREA
- PAVERS
- CONCRETE
- STEEP SLOPES (>25%)
- CURB

0 10 20 40 80
SCALE IN FEET

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GOODHUE SUNAPEE REAL PROPERTY, LLC
GEORGES MILLS SHOW ROOM
SUNAPEE, NEW HAMPSHIRE
TAX MAP 104, LOT 84

SITE PLAN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

WILLIAM T. DAVIS No. 11918 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

DATE: NOV. 2023	PROJECT #: 21902
ENGIN'D BY: WTD	DRAWN BY: APH
CHECK'D BY: WTD	ARCHIVE #: H-___

SHEET C2.1

SEEDING RECOMMENDATIONS

1. GRADING AND SHAPING

A. SLOPES SHALL NOT BE STEEPER THAN 2:1; 3:1 SLOPES OR FLATTER ARE PREFERRED. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.

2. SEEDBED PREPARATION

A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.

B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE AMENDED WITH ORGANIC MATTER AND TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER AND LIME THOROUGHLY INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.

3. ESTABLISHING VEGETATION

A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:

-AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100 LBS. PER 1,000 SQ. FT.
-NITROGEN (N), 50 LBS., PER ACRE OR 1.1 LBS. PER 1,000 SQ. FT.
-PHOSPHATE (P_2O_5), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ. FT.
-POTASH (K_2O), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ. FT.

(NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5-10-10).

B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING, AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.

C. SEEDING GUIDE:

USE	SEEDING MIXTURE (SEE 3D)	SOIL TYPE: DROUGHTY	WELL DRAINED	MOD. WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILL-WAYS, AND OTHER CHANNELS WITH FLOWING WATER	A	GOOD	GOOD	GOOD	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR

D. SEEDING RATES:

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 SQ. FT.
A TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
REDTOP	2	0.05
TOTAL:	42	0.95
B TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH **OR**	15 **OR**	0.35 **OR**
FLATPEA	30	0.75
TOTAL:	40 **OR** 55	0.95 **OR** 1.35
C TALL FESCUE	20	0.45
FLATPEA	30	0.75
TOTAL:	50	1.20

E. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO SEPTEMBER 15. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 10 TO SEPTEMBER 1.

F. TEMPORARY SEEDING RATES:

SPECIES	POUNDS PER ACRE	POUNDS PER 1,000 SQ. FT.	REMARKS
WINTER RYE	112	2.5	BEST FOR FALL SEEDING. SEED FROM AUGUST TO SEPTEMBER 5TH FOR BEST COVER. SEED TO A DEPTH OF 1 INCH.
OATS	80	2.0	BEST FOR SPRING SEEDING. SEED NO LATER THAN MAY 15TH FOR SUMMER PROTECTION. SEED TO A DEPTH OF 1 INCH.
ANNUAL RYEGRASS	40	1.0	GROWS QUICKLY, BUT IS OF SHORT DURATION. USE WHERE APPEARANCES ARE NOT IMPORTANT. SEED EARLY SPRING AND/OR BETWEEN AUGUST 15TH AND SEPTEMBER 15TH. COVER SEED WITH NO MORE THAN 0.25 INCH OF SOIL.
PERENNIAL RYEGRASS	30	0.7	GOOD COVER WHICH IS LONGER LASTING THAN ANNUAL RYEGRASS. SEED BETWEEN APRIL 1ST AND JUNE 1ST AND/OR BETWEEN AUGUST 15TH AND SEPTEMBER 15TH. MULCHING WILL ALLOW SEEDING THROUGHOUT THE GROWING SEASON. SEED TO A DEPTH OF APPROXIMATELY 0.5 INCH.

4. MULCH

A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.

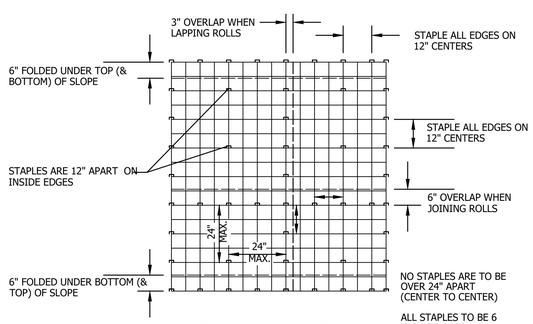
B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING.

5. MAINTENANCE TO ESTABLISH A STAND

A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.

B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ON SITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME ESTABLISHED.

C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, OCCASIONAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.



MULCH NETTING DETAIL

SOURCE: USDA SOIL CONSERVATION SERVICE

NO SCALE

EROSION CONTROL GENERAL NOTES

A. KEEP SITE MODIFICATION TO A MINIMUM

1. CONSIDER FITTING THE BUILDINGS AND STREETS TO THE NATURAL TOPOGRAPHY. THIS REDUCES THE NEED FOR CUTS AND FILLS. AVOID EXTENSIVE GRADING THAT WOULD ALTER DRAINAGE PATTERNS OR CREATE VERY STEEP SLOPES.
2. EXPOSE AREAS OF BARE SOIL TO EROSIVE ELEMENTS FOR THE SHORTEST TIME POSSIBLE.
3. SAVE AND PROTECT DESIRABLE EXISTING VEGETATION WHERE POSSIBLE. ERECT BARRIERS TO PREVENT DAMAGE FROM CONSTRUCTION EQUIPMENT.
4. LIMIT THE GRADES OF SLOPES SO VEGETATION CAN BE EASILY ESTABLISHED AND MAINTAINED.
5. AVOID SUBSTANTIAL INCREASE IN RUNOFF LEAVING THE SITE.

B. MINIMIZE POLLUTION OF WATER DURING CONSTRUCTION ACTIVITIES

1. STOCKPILE TOPSOIL REMOVED FROM CONSTRUCTION AREA AND SPREAD OVER ANY DISTURBED AREAS PRIOR TO REVEGETATION. TOPSOIL STOCKPILES MUST BE PROTECTED FROM EROSION.
2. PROTECT BARE SOIL AREAS EXPOSED BY GRADING ACTIVITIES WITH TEMPORARY VEGETATION OR MULCHES.
3. USE SEDIMENT BASINS TO TRAP DEBRIS AND SEDIMENT WHICH WILL PREVENT THESE MATERIALS FROM MOVING OFF SITE.
4. USE DIVERSIONS TO DIRECT WATER AROUND THE CONSTRUCTION AREA AND AWAY FROM EROSION PRONE AREAS TO POINTS OF SAFE DISPOSAL.
5. USE TEMPORARY CULVERTS OR BRIDGES WHEN CROSSING STREAMS WITH EQUIPMENT.
6. PLACE CONSTRUCTION FACILITIES, MATERIALS, AND EQUIPMENT STORAGE AND MAINTENANCE AREAS AWAY FROM DRAINAGE WAYS.

C. PROTECT AREA AFTER CONSTRUCTION.

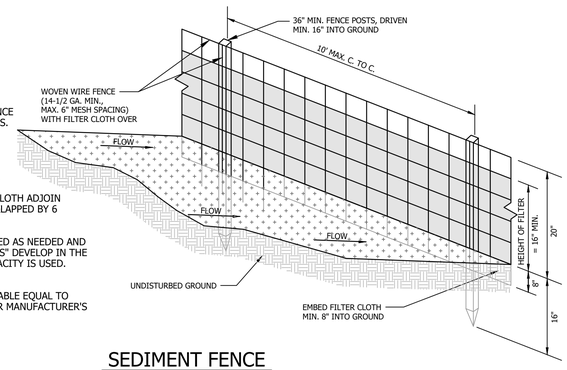
1. ESTABLISH GRASS OR OTHER SUITABLE VEGETATION ON ALL DISTURBED AREAS. SELECT SPECIES ADAPTED TO THE SITE CONDITIONS AND THE FUTURE USE OF THE AREA. FINAL GRADES SHALL BE SEEDED WITHIN 72 HOURS. STABILIZATION SHALL BE DEFINED AS 85% VEGETATIVE COVER.
2. MAINTAIN VEGETATED AREAS USING PROPER VEGETATIVE 'BEST MANAGEMENT PRACTICES' DURING THE CONSTRUCTION PERIOD.
3. MAINTAIN NEEDED STRUCTURAL 'BEST MANAGEMENT PRACTICES' AND REMOVE SEDIMENT FROM DETENTION PONDS AND SEDIMENT BASINS AS NEEDED.
4. DETERMINE RESPONSIBILITY FOR LONG TERM MAINTENANCE OF PERMANENT 'BEST MANAGEMENT PRACTICES'.
5. IF CONSTRUCTION IS ANTICIPATED DURING WINTER MONTHS, REFER TO 'COLD WEATHER SITE STABILIZATION REQUIREMENTS'.

D. INVASIVE SPECIES AND FUGITIVE DUST

1. THE PROJECT SHALL NOT CONTRIBUTE TO THE SPREAD OF INVASIVE SPECIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EVALUATE WORK AREAS FOR THE PRESENCE OF INVASIVE SPECIES, AND IF FOUND SHALL TAKE NECESSARY MEASURES TO PREVENT THEIR SPREAD IN ACCORDANCE WITH RSA 430:51-57 AND AGR 3800. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT THE INTRODUCTION OF INVASIVE SPECIES BY INSPECTING AND CLEANING ALL EQUIPMENT ARRIVING ON SITE.
2. FUGITIVE DUST SHALL BE CONTROLLED IN ACCORDANCE WITH ENV-A 1000.

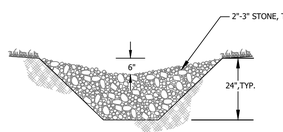
CONSTRUCTION NOTES FOR SEDIMENT FENCE

1. WOVEN WIRE FENCE, IF REQUIRED, TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP, MID SECTION, AND BOTTOM.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED AND STAPLED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SEDIMENT FENCE, OR 50% OF CAPACITY IS USED.
5. 12" DIAMETER FILTREXX SILTSOXX SHALL BE CONSIDERED AN ACCEPTABLE EQUIAL TO SEDIMENT FENCE IF INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.



SEDIMENT FENCE

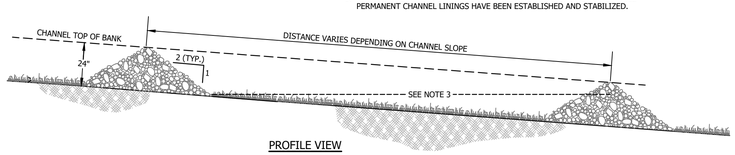
NO SCALE



SECTION VIEW

NOTES

1. CONSTRUCT ROCK CHECK DAMS WHERE INDICATED ON THE PLANS OR AS NECESSARY.
2. CONSTRUCT SPILLWAY IN CENTER OF ROCK CHECK DAM 6" BELOW TOP OF CHANNEL.
3. THE MAXIMUM SPACING BETWEEN THE CHECK DAMS SHOULD BE SUCH THAT THE TOE OF THE UPSTREAM CHECK DAM IS AT THE SAME ELEVATION AS THE SPILLWAY ELEVATION OF THE DOWNSTREAM CHECK DAM, THIS WILL VARY DEPENDING ON THE SLOPE OF THE CHANNEL.
4. ROCK CHECK DAMS SHALL CONSIST OF A WELL GRADED MIXTURE OF 2" - 3" STONE.
5. REMOVE ROCK CHECK DAMS AND ANY ACCUMULATED SILT IN CHANNEL ONCE PERMANENT CHANNEL LININGS HAVE BEEN ESTABLISHED AND STABILIZED.



PROFILE VIEW

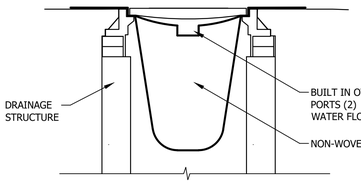
ROCK CHECK DAM DETAIL

NO SCALE

COLD WEATHER SITE STABILIZATION REQUIREMENTS

TO ADEQUATELY PROTECT WATER QUALITY DURING COLD WEATHER AND DURING SPRING RUNOFF, THE FOLLOWING ADDITIONAL STABILIZATION TECHNIQUES SHALL BE EMPLOYED DURING THE PERIOD FROM OCTOBER 15 THROUGH MAY 1:

1. THE AREA OF EXPOSED, UNSTABILIZED SOIL SHALL BE LIMITED TO 1 ACRE AND SHALL BE PROTECTED AGAINST EROSION BY THE METHODS DESCRIBED IN THIS SECTION PRIOR TO ANY THAW OR SPRING MELT EVENT. THE ALLOWABLE AREA OF EXPOSED SOIL MAY BE INCREASED IF A WINTER CONSTRUCTION PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, IS REVIEWED AND APPROVED BY NHDES.
2. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF LESS THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE SEEDED AND COVERED WITH 3 TO 4 TONS OF HAY OR STRAW MULCH PER ACRE, SECURED WITH ANCHORED NETTING OR TACKIFIER, OR 2 INCHES OF EROSION CONTROL MIX MEETING THE CRITERIA OF ENV-WQ 1506.05(D) THROUGH (H).
3. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF GREATER THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE SEEDED AND COVERED WITH PROPERLY INSTALLED AND ANCHORED EROSION CONTROL MATTING OR WITH A MINIMUM 4 INCH THICKNESS OF EROSION CONTROL MIX MEETING THE CRITERIA OF ENV-WQ 1506.05(D) THROUGH (H).
4. INSTALLATION OF ANCHORED HAY MULCH OR EROSION CONTROL MIX, MEETING THE CRITERIA OF ENV-WQ 1506.05(D) THROUGH (H), SHALL NOT OCCUR OVER SNOW OF GREATER THAN 1 INCH IN DEPTH.
5. INSTALLATION OF EROSION CONTROL MATTING SHALL NOT OCCUR OVER SNOW OF GREATER THAN ONE INCH IN DEPTH OR ON FROZEN GROUND.
6. ALL PROPOSED STABILIZATION IN ACCORDANCE WITH NOTES 2 OR 3 ABOVE, SHALL BE COMPLETED WITHIN 1 DAY OF ESTABLISHING THE GRADE THAT IS FINAL OR THAT OTHERWISE WILL EXIST FOR MORE THAN 5 DAYS.
7. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% 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, AS DETERMINED BY THE OWNER'S ENGINEERING CONSULTANT.
8. AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING AREAS WHERE ACTIVE CONSTRUCTION OF THE ROAD OR PARKING AREA HAS STOPPED FOR THE WINTER SEASON SHALL BE PROTECTED WITH A MINIMUM 3 INCH LAYER OF BASE COURSE GRAVELS MEETING THE GRADATION REQUIREMENTS OF NHDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM NO. 304.1 OR 304.2.



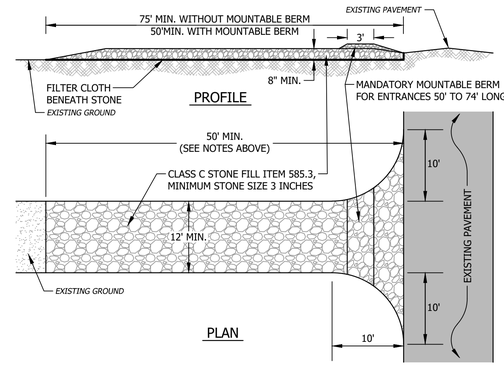
CATCH BASIN PROTECTION INSERT TYPE

NO SCALE

CONSTRUCTION SEQUENCE

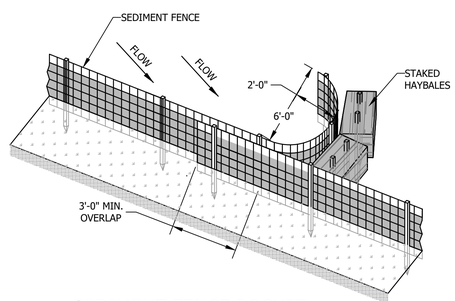
1. PREPARE AN EROSION CONTROL PLAN OR A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
2. INSTALL CONSTRUCTION ENTRANCE, SEE DETAIL.
3. CUT AND CLEAR TREES WITHIN THE CLEARING LIMITS.
4. INSTALL SEDIMENT FENCES, ROCK CHECK DAMS, AND OTHER APPROPRIATE EROSION CONTROL MEASURES AT LOCATIONS SHOWN ON THE PLANS AND AS NEEDED.
5. GRUB SITE WITHIN GRADING LIMITS.
6. STRIP AND STOCKPILE TOPSOIL AND INSTALL EROSION CONTROL MEASURES.
7. INSTALL/ADJUST SEDIMENT FENCE, CHECK DAMS, AND HAYBALES, AS REQUIRED.
8. CONSTRUCT PERMANENT STORMWATER CONTROLS AS SOON AS PRACTICAL. DO NOT DIRECT STORMWATER TOWARD TREATMENT BASINS, PONDS, SWALES, DITCHES AND LEVEL SPREADERS UNTIL THEY HAVE BEEN STABILIZED.
9. PROCEED WITH WORK, LIMITING THE DURATION OF DISTURBANCE. THE MAXIMUM OF UNCOVERED DISTURBED EARTH AT ANY ONE TIME IS FIVE ACRES. THE MAXIMUM LENGTH OF TIME THAT DISTURBED EARTH MAY BE LEFT UNSTABILIZED IS 45 DAYS.
10. BEGIN SEEDING AND MULCHING IMMEDIATELY AFTER GRADING. ALL DISTURBED AREAS SHALL BE STABILIZED WITH APPROVED METHODS WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.

    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" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED; OR
    D) EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
11. INSPECT ALL EROSION CONTROL MEASURES ON A DAILY BASIS AND AFTER EVERY 0.5 INCHES OF PRECIPITATION. MAINTAIN SEDIMENT FENCE, SEDIMENT TRAPS, HAY BALES, ETC., AS NECESSARY.
12. PAVE ROADWAYS AND/OR PARKING AREAS.
13. PLACE TOPSOIL, SEED AND MULCH.
14. COMPLETE ALL REMAINING PERMANENT EROSION CONTROL STRUCTURES.
15. MONITOR THE SITE AND MAINTAIN STRUCTURES AS NEEDED UNTIL FULL VEGETATION IS ESTABLISHED.



STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



SEDIMENT FENCE POCKET

NO SCALE

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DATE OF PRINT
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GRORGES MILLS SHOW ROOM

SUNAPEE, NEW HAMPSHIRE

TAX MAP 104, LOT 84

EROSION CONTROL NOTES AND DETAILS

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: SEPT. 2023	PROJECT #: 21902
ENGIN'D BY: WTD	DRAWN BY: APH
CHECK'D BY: WTD	ARCHIVE #: H-___

SHEET C3.1

last revised: 2018-APR-18

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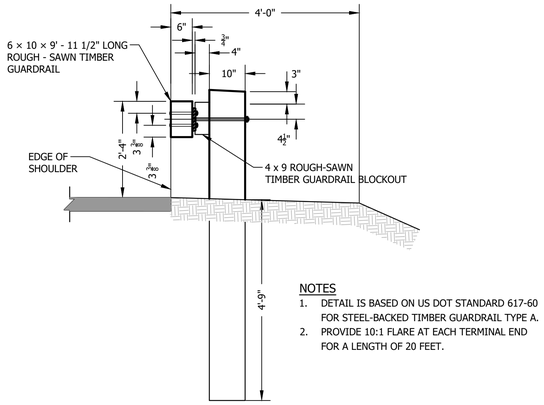


NOTES

1. DETAIL IS BASED ON US DOT STANDARD 617-60 FOR STEEL-BACKED TIMBER GUARDRAIL TYPE A.
2. PROVIDE 10:1 FLARE AT EACH TERMINAL END FOR A LENGTH OF 20 FEET.

STEEL BACKED TIMBER GUARDRAIL

NOT TO SCALE

STANDARD TRENCH NOTES:

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE SHALL BE REPLACED WITH BEDDING MATERIAL. SEE ALSO NOTE 4.

2. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM ORGANIC MATTER, CLAY, AND/OR LOAM MEETING ASTM C33 STONE SIZE NO. 67.

100% PASSING	1 INCH SCREEN
90-100% PASSING	¾ INCH SCREEN
20-55% PASSING	⅜ INCH SCREEN
0-10% PASSING	#4 SIEVE
0-5% PASSING	#8 SIEVE

3. SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER, SO GRADED THAT 100% PASSES A ½ INCH SIEVE AND NOT MORE THAN 15% PASSES A #200 SIEVE.

4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS, AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED FROM THE TRENCH DURING THE COURSE OF CONSTRUCTION, AFTER EXCLUDING DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT OR CLAY, EXCAVATED LEDGE MATERIAL, AND ALL ROCKS OVER SIX INCHES IN LARGEST DIMENSION, OR ANY MATERIAL NOT APPROVED BY THE ENGINEER.

   TRENCH BACKFILL IN CROSS-COUNTRY LOCATIONS SHALL BE SUITABLE MATERIAL AS DESCRIBED ABOVE, EXCEPT THAT TOP SOIL, LOAM, MUCK, OR PEAT MAY BE USED PROVIDED THAT THE COMPLETED CONSTRUCTION WILL BE STABLE AND ACCESS TO THE PIPE FOR MAINTENANCE AND RECONSTRUCTION IS PRESERVED. BACKFILL SHALL BE MOUNDED TO A HEIGHT OF SIX INCHES ABOVE THE ORIGINAL GROUND SURFACE

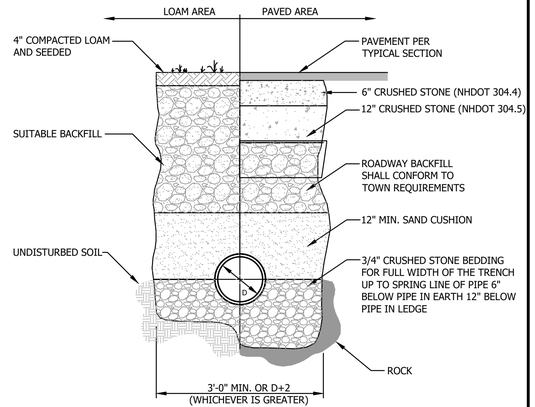
5. BASE COURSE FOR TRENCH REPAIR SHALL MEET THE REQUIREMENTS OF SECTION 300 OF THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.

6. SHEETING: ALL TRENCH SUPPORTS SHALL CONFORM TO OSHA STANDARDS. CONTRACTOR IS RESPONSIBLE FOR OSHA COMPLIANCE AND WORKER SAFETY THROUGHOUT CONSTRUCTION.

7. TRENCH DIMENSIONS: W = MAXIMUM ALLOWABLE TRENCH WIDTH MEASURED 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER (D) OR LESS, W SHALL BE NO MORE THAN 36 INCHES; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS THE PIPE OUTSIDE DIAMETER. W SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE. THE MAXIMUM ALLOWABLE TRENCH PAVEMENT PAYMENT WIDTH SHALL BE 8 FEET CENTERED OVER PIPE.

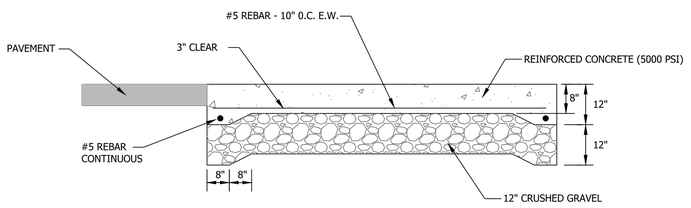
8. WATER/SEWER SEPARATION: WATER MAINS SHALL BE SEPARATED FROM SANITARY SEWER BY A MINIMUM OF 10 FEET HORIZONTALLY AND A MINIMUM OF 18 INCHES VERTICALLY, WITH THE WATER MAIN ABOVE THE SEWER.

9. PIPE COVER:
   COVER OVER WATER SHALL BE 6 FEET MINIMUM IN ALL LOCATIONS.



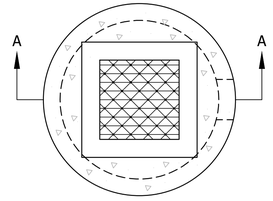
TYPICAL DRAINAGE TRENCH DETAIL

NOT TO SCALE

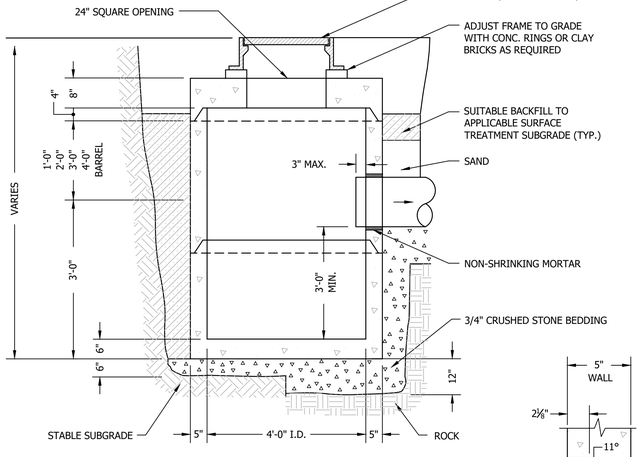


DUMPSTER PAD DETAIL

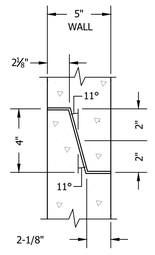
NOT TO SCALE



PLAN



SECTION A - A



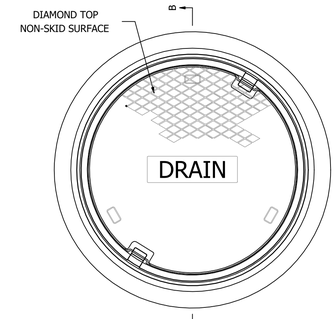
DETAIL OF SHIP LAP JOINT

NOTES:

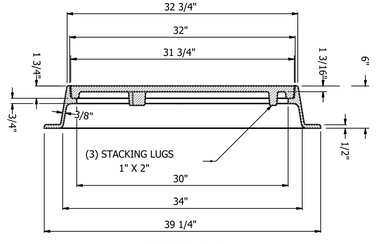
1. CONCRETE SHALL BE 4,000 P.S.I. AFTER 28 DAYS.
2. REINFORCING H-20 LOADING 4 x 4/4 x 4 W.W.M.
3. SHIP LAP JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT. AND SHALL BE SEALED WITH 1 STRIP OF 1" DIA. BUTYL RUBBER SEALANT.
4. EACH CASTING TO HAVE LIFTING HOLES CAST IN.

TYPICAL CATCH BASIN DETAIL

NOT TO SCALE



PLAN



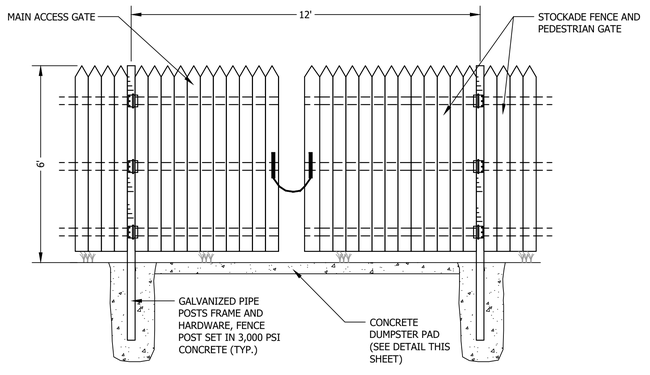
SECTION B-B

NOTES

1. ALL DIMENSIONS ARE NOMINAL
2. LABEL TYPE OF MANHOLE WITH 3" HIGH LETTERS IN THE CENTER OF THE COVER

DRAIN MANHOLE FRAME AND GRATE

NOT TO SCALE



SCREEN FENCE AND GATE FOR DUMPSTER PAD

NOT TO SCALE

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GRORGES MILLS SHOW ROOM
SUNAPEE, NEW HAMPSHIRE
TAX MAP 104, LOT 84

MISCELLANEOUS DETAILS 1

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

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CHECK'D BY: WTD	ARCHIVE #: H-___

SHEET C3.2

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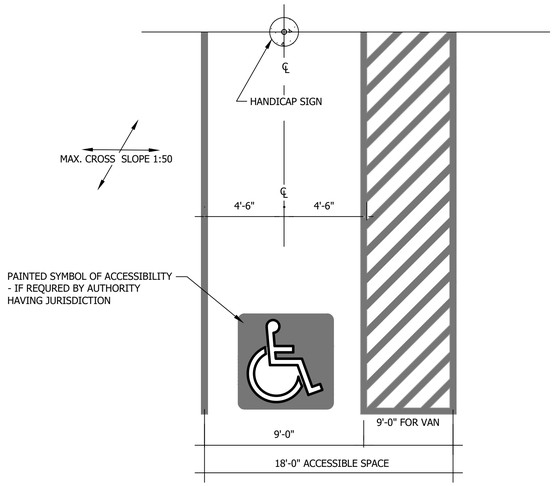
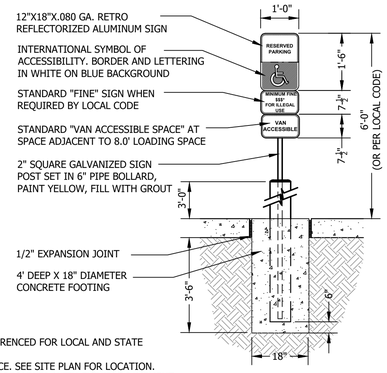


HANDICAP PARKING DETAIL

NOT TO SCALE

*INCLUDE ON ALL ACCESSIBLE SIGN POLES A SIGN INDICATING MINIMUM FINE OF $(FINE) FOR ILLEGAL PARKING. REFER TO LOCAL CODES FOR FINE AMOUNT.

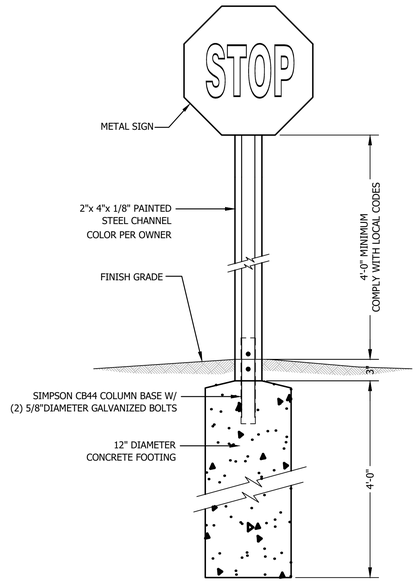


NOTES:

A. SPECIFIC CODE SHOULD BE REFERENCED FOR LOCAL AND STATE REQUIREMENTS.
B. (1) SIGN AT EACH HANDICAP SPACE. SEE SITE PLAN FOR LOCATION.
C. EXPANSION JOINT MATERIAL NOT REQUIRED WITH FLEXIBLE PAVEMENT.

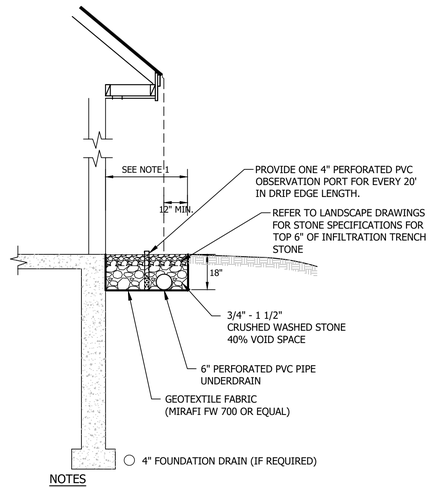
HANDICAP PARKING SIGN

NOT TO SCALE



TYPICAL STOP SIGN

NOT TO SCALE

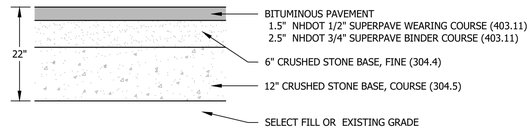


NOTES

1. DISTANCE VARIES PER ARCHITECTURE PLANS. THE MINIMUM OVERALL DRIP EDGE WIDTH SHALL BE NO LESS THAN 24".

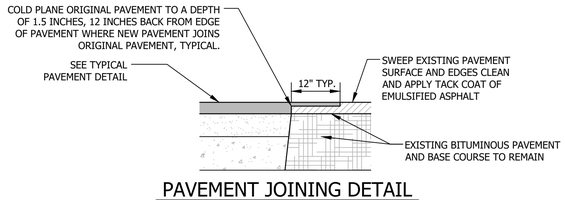
COLLECTION STONE DRIP EDGE DETAIL

NOT TO SCALE



TYPICAL PAVEMENT SECTION

NOT TO SCALE



PAVEMENT JOINING DETAIL

NOT TO SCALE

FOR REVIEW
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DATE OF PRINT
OCTOBER 25 2023
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Land Surveying and Environmental Consulting
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GOODHUE SUNAPEE REAL PROPERTY, LLC

GRORGES MILLS SHOW ROOM

SUNAPEE, NEW HAMPSHIRE

TAX MAP 104, LOT 84

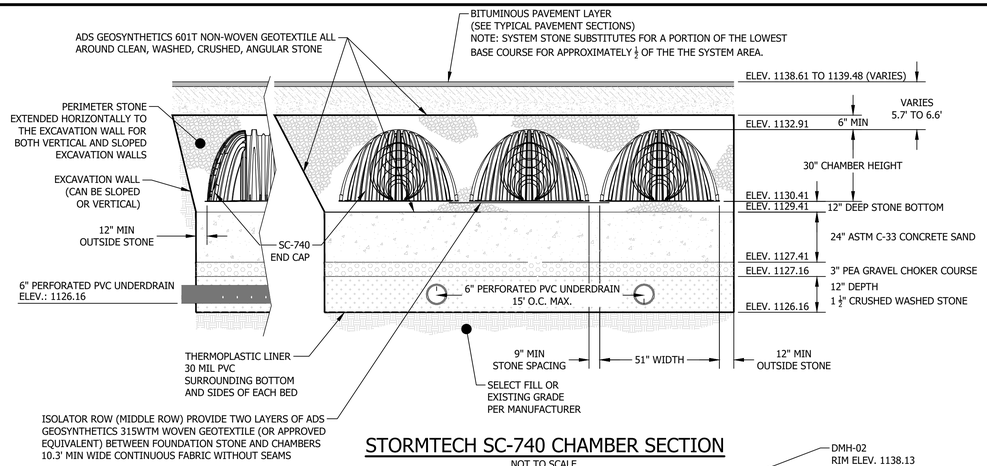
MISCELLANEOUS DETAILS 2

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: SEPT. 2023	PROJECT #: 21902
ENGIN'D BY: WTD	DRAWN BY: APH
CHECK'D BY: WTD	ARCHIVE #: H-___

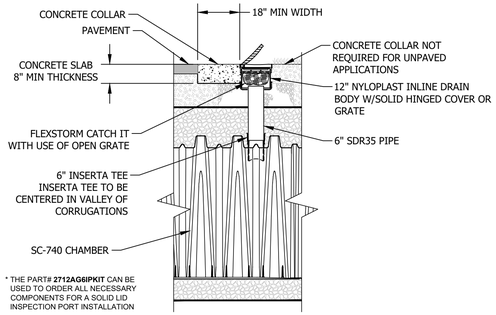
SHEET C3.3

last revised: 2018-APR-18



STORMTECH SC-740 CHAMBER SECTION

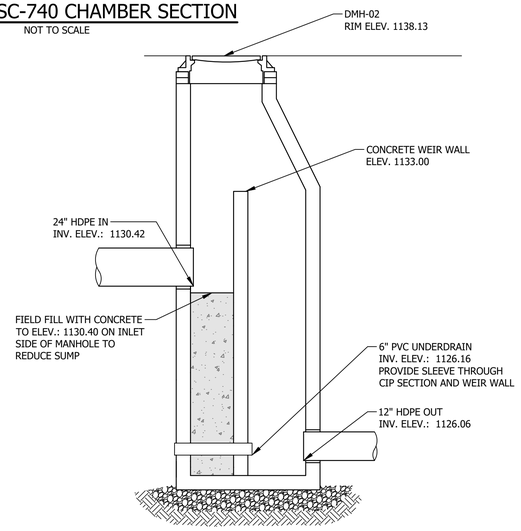
NOT TO SCALE



NOTE: PROVIDE TWO INSPECTION PORTS FOR ISOLATOR ROW
AT APPROXIMATELY 1/3 AND 2/3 OF THE ROW LENGTH

STORMTECH SC-740 6" INSPECTION PORT

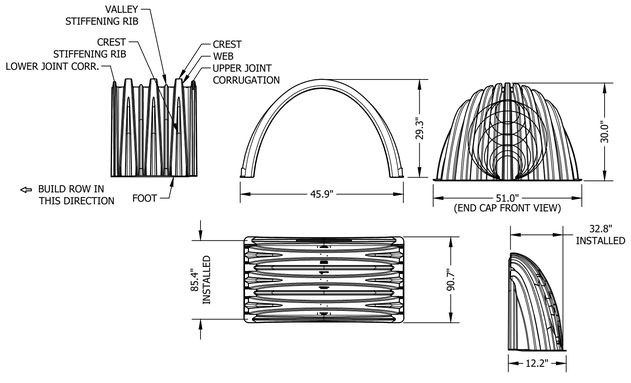
NOT TO SCALE



NOTES:
1. SEE DRAIN MANHOLE DETAIL, FOR STANDARD DMH CONSTRUCTION REQUIREMENTS. **DMH-02 SHALL BE A 5FT INNER DIAMETER STRUCTURE.**
2. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS TO VERIFY DIAMETER, INVERTS, AND WEIR.

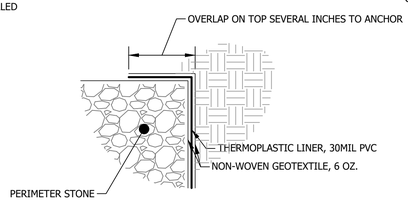
DRAIN MANHOLE DMH-02 DETAIL

NOT TO SCALE



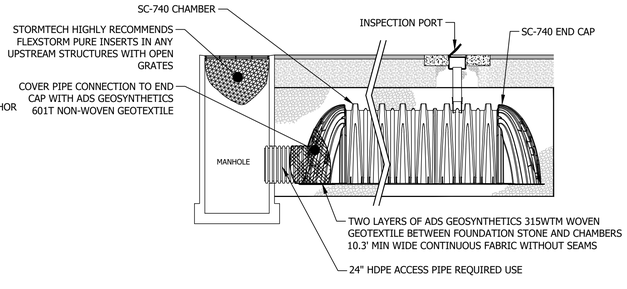
STORMTECH SC-740 CHAMBER DIMENSION

NOT TO SCALE



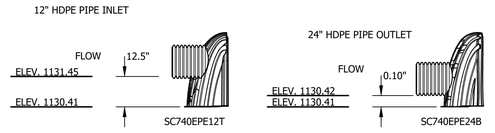
THERMOPLASTIC LINER DETAIL

NOT TO SCALE



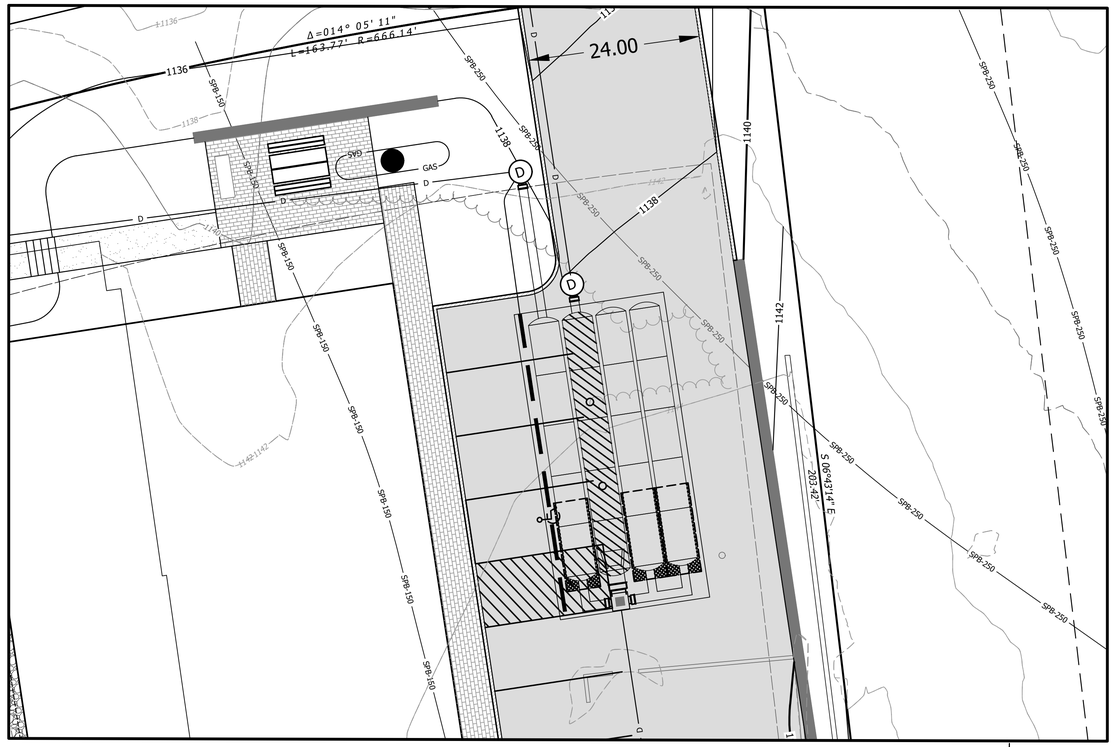
STORMTECH SC-740 ISOLATOR ROW DETAIL

NOT TO SCALE



STORMTECH SC-740 CHAMBER INLET SECTION

NOT TO SCALE



STORMWATER TREATMENT AREA PLAN

SCALE: 1" = 10'

0 5 10 20
SCALE IN FEET

IMPORTANT NOTES

THIS DRAINAGE SYSTEM DESIGN IS PRELIMINARY AND SUBJECT TO CHANGE PENDING FINAL DESIGN AND PERMITTING. NOT FOR CONSTRUCTION.

FOUNDATION AND EMBEDMENT STONE SHALL BE **CLEAN, WASHED, ANGULAR CRUSHED STONE**. ENGINEER SHALL INSPECT AND VERIFY MATERIAL PRIOR TO SYSTEM INSTALLATION.

THIS SYSTEM IS NOT DESIGNED TO EXFILTRATE TO SOIL. 30 MIL PVC LINER IS REQUIRED

STORMTECH SC-740 CHAMBER SPECIFICATIONS

51.0" WIDE + 6.0" SPACING = 57.0" C-C ROW SPACING

20 CHAMBERS, 8 END CAPS
LONGEST ROW:
[5 CHAMBERS/ROW x 7.12' LONG] + [0.81' CAP LENGTH x 2] = 37.22' ROW LENGTH
+ [12.0" END STONE x 2] = 39.22' BASE LENGTH

WIDEST WIDTH
[4 ROWS x 51.0" WIDE] + [6.0" SPACING X 2] + [12.0" SIDE STONE X 2] = 20.50' BASE WIDTH

[12.0" BASE + 30.0" CHAMBER HEIGHT + 6.0" COVER] = 4.00' FIELD HEIGHT

[20 CHAMBERS X 45.9 CF] = 918.8 CF CHAMBER STORAGE

3,215.8 CF FIELD - 918.8 CF CHAMBERS = 2,297.0 CF STONE X 40.0% VOIDS = 918.8 CF STONE STORAGE

OVERALL
CHAMBER STORAGE + STONE STORAGE = 1,837.6 CF = 0.042 AF
OVERALL STORAGE EFFICIENCY = 57.1%

DATE OF PRINT
OCTOBER 25 2023
HORIZONS ENGINEERING

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REAL PROPERTY, LLC
GRORGES MILLS SHOW ROOM
SUNAPEE, NEW HAMPSHIRE
TAX MAP 104, LOT 84

ADS STORMTECH CHAMBER
SYSTEM DETAILS

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: SEPT. 2023	PROJECT #: 21902
ENGIN'D BY: WTD	DRAWN BY: APH
CHECK'D BY: WTD	ARCHIVE #: H-___

SHEET C3.4

last revised: 2018-APR-18

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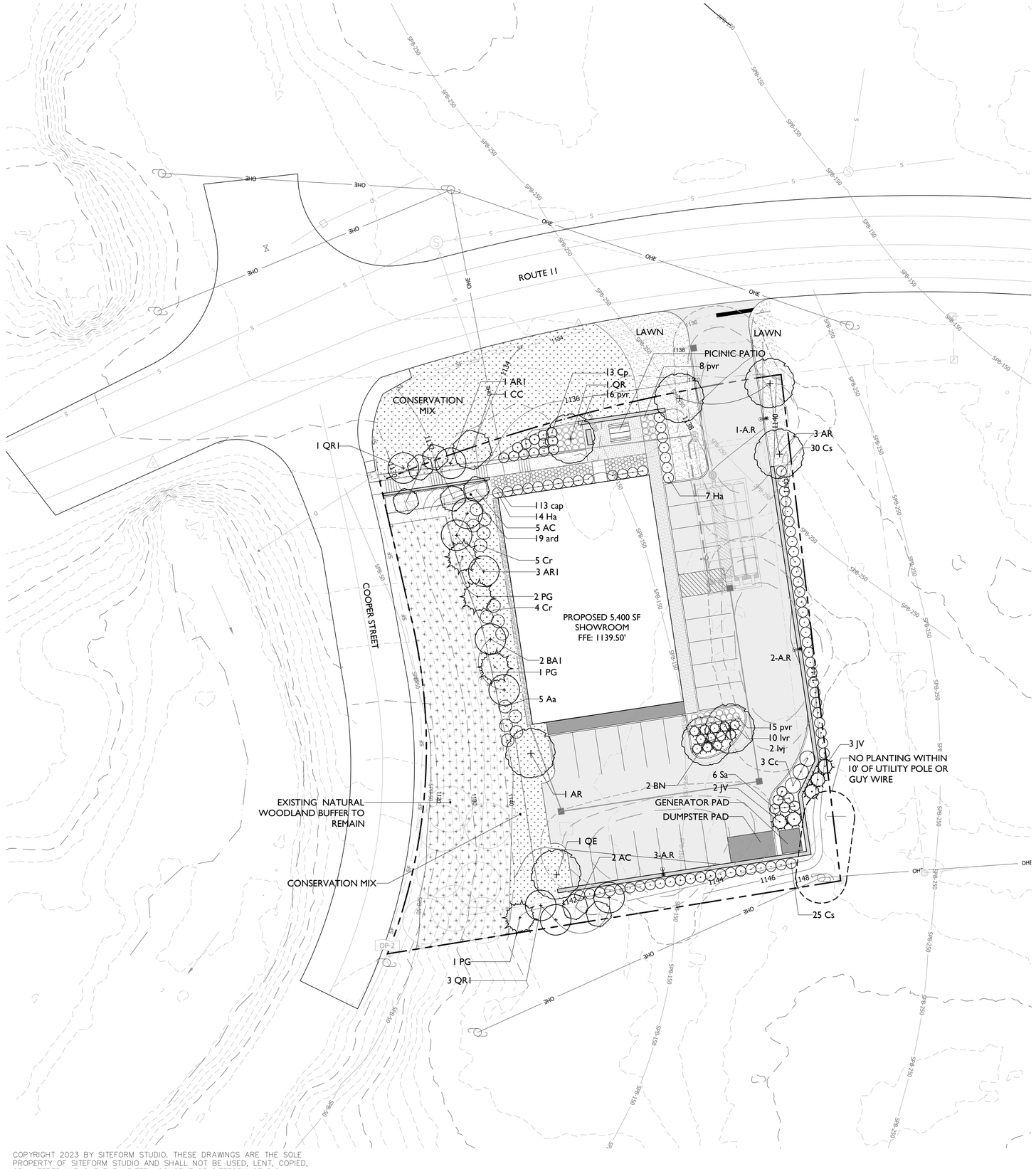


PLANT LIST

	BOTANICAL NAME	COMMON NAME	QTY	SIZE	MATURE SIZE	NOTES
Trees						
AR	Acer rubrum ' Red Sunset'	Red Maple	4	2.5-3" cal.	40-60' ht.	B&B
AR1	Acer rubrum ' Red Sunset'	Red Maple	4	1-1.5" cal.	40-60' ht.	B&B
AC	Amelanchier canadensis	Shadblow Serviceberry	7	6-8' ht.	20-30' ht.	B&B, clump
BA1	Betula alleghaniensis	Yellow Birch	2	1-1.5" cal.	40-70' ht.	B&B, Single Stem
BN	Betula nigra 'Heritage'	River Birch	2	2.5-3" cal.	40-70' ht.	B&B, Single Stem
CC	Cercis canadensis 'Northern Herald'	Eastern Redbud	1	7 gal.	20-35' ht.	B&B
JV	Juniperus virginiana 'Burkii'	Eastern Red Cedar	5	6-7' ht.	15-25' ht.	B&B
PG	Picea glauca	White spruce	4	8-10' ht.	40-60' ht.	B&B
QE	Quercus ellipsoidalis	Northern Pin Oak	1	2.5-3" cal.	50-70' ht.	B&B
QR	Quercus rubra	Northern Red Oak	1	3-3.5" cal.	50-75' ht.	B&B
QR1	Quercus rubra	Northern Red Oak	4	1-1.5" cal.	50-75' ht.	B&B
Shrubs						
Aa	Aronia arbutifolia 'Brilliantissima'	Red Chokeberry	5	48" ht.	6-9' ht.	B&B
Cc	Cornus Sericea ' Cardinal'	Red osier Dogwood	3	5 gal.	10-15'	cont.
Cp	Comptonia peregrina	Sweetfern	13	3 gal.	2-4' ht.	cont.
Cr	Cornus racemosa	Grey Dogwood	9	5 gal.	10-15'	cont.
Cs	Cornus sericea 'Arctic Fire'	Redosier Dogwood	55	3 gal.	3-4' ht.	cont.
Ha	Hydrangea arborescens 'Pinky Pollen Ring'	Lacecap Smooth Hydrangea	21	3 gal.	3-5'	cont.
Ivr	Ilex verticillata 'Red Sprite'	Winterberry	10	3 gal.	6-10'	cont.
Ivj	Ilex verticillata 'Jim Dandy'	Winterberry	2	3 gal.	6-10'	cont.
Sa	Spirea alba v. 'Latifolia'	Meadowsweet	6	2 gal.	4-6' ht.	cont.
Ornamental Grasses						
cap	Carex pensylvanica	Pensylvania Sedge	113	1 gal.	8" ht.	cont. Plant 12" o.c.
pvr	Panicum v. 'Heavy Metal'	Switch Grass	39	2 gal.	5' ht.	cont. Plant 24" o.c.
Perennials/Ferns						
ard	Aruncus dioicus	Goat's Beard	19	1 gal.	3-4' ht.	cont., Plant 24" o.c.
Seed						
	Lawn Mix	"New England Premier Sun & Shade Mix", Seed 4 lbs/ 1000sf, LD Oliver Seed Company, 802-893-1241				
	Conservation Meadow Mix	"New England Conservation/Wildlife Mix" Seed 1 lbs / 1750, New England Wetland Plants, 413-548-8000				

SITE LIGHTING SCHEDULE:

KEY	SYMBOL	QTY.	MANUFACTURER	MODEL	SIZE	DIST.	COLOR	TEMP	SPEC	NOTES
A		3	Landscape Forms	Leo	16' ht.	Type 3	Matte Black	3000k	4" pole, Single Luminaire	Roadway & Parking Loc Fixture

ROADWAY & PARKING FOOTING TYPE
x.R RAISED, 2' ABOVE GRADE, REFER TO DETAIL

NOTE:
1. REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL LAYOUT, DISTRIBUTION TYPE, AND LIGHTING CONTROLS.
2. ALL FIXTURES ARE FULL CUT-OFF AND DARK SKY COMPLIANT.

ISO-CONTOUR KEY

ISO-CONTOUR	FOOTCANDLE VALUE
———	1.00
— — —	0.50
– – – –	0.25

SITE +FORM STUDIO
LANDSCAPE ARCHITECTURE
P.O. BOX 1272 STOWE, VT 05672 SITEFORMSTUDIO.COM

LICENSED LANDSCAPE ARCHITECT
THOMAS R. HAND
00222
STATE OF NEW HAMPSHIRE

PERMIT SUBMISSION
NOT FOR CONSTRUCTION

No.	Description	Date
1	Planting Revisions	08.03.23
2	Planting & Site Layout Revisions	10.02.23
3	Eversource Planting Revisions	10.16.23

GEORGES MILLS SHOWROOM
GOODHUE REAL PROPERTY, LLC
SUNNAPEE, NH

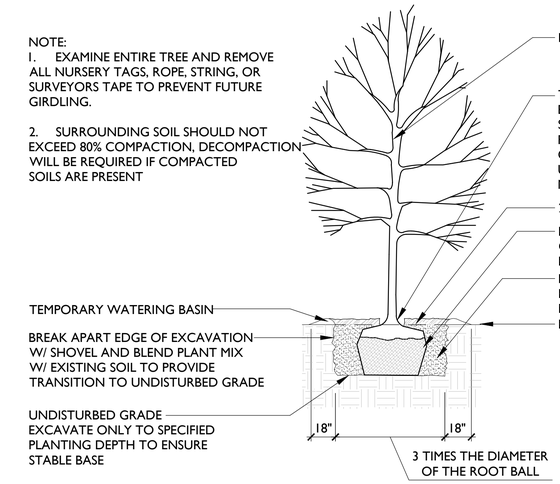
LANDSCAPE PLANTING & SITE LIGHTING PLAN

JOB NO. 2023.006
SCALE: 1" = 20'-0"
DRAWN BY: th CHECKED BY: th
DATE: 05.11.23
FILE: l1.0_planting plan_permit.dwg

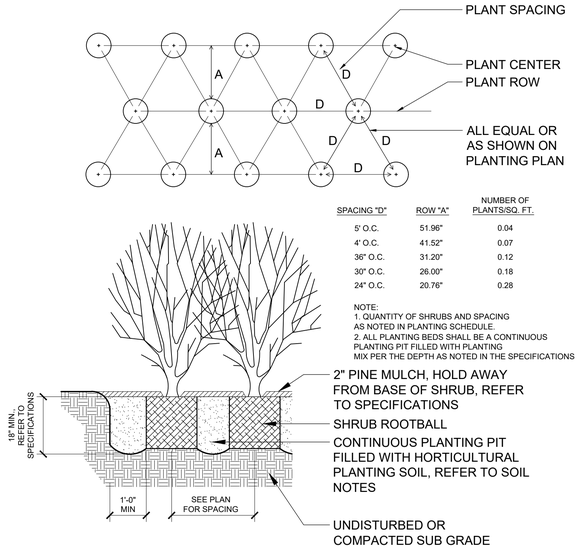
L1.1

0 10' 20' 40'

PLOT DATE: 2023-10-16



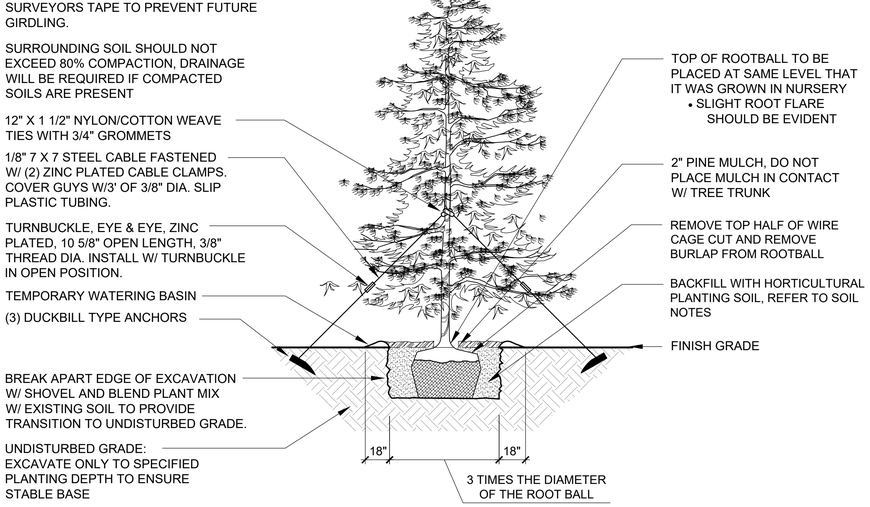
TREE PLANTING
SCALE 1/4" = 1'-0"



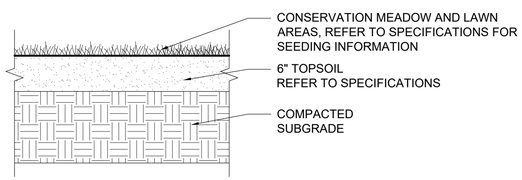
SPACING "D"	ROW "A"	NUMBER OF PLANTS/SQ. FT.
5' O.C.	51.96"	0.04
4' O.C.	41.52"	0.07
36" O.C.	31.20"	0.12
30" O.C.	26.00"	0.18
24" O.C.	20.76"	0.28

NOTE:
1. QUANTITY OF SHRUBS AND SPACING AS NOTED IN PLANTING SCHEDULE.
2. ALL PLANTING BEDS SHALL BE A CONTINUOUS PLANTING PIT FILLED WITH PLANTING MIX PER THE DEPTH AS NOTED IN THE SPECIFICATIONS

SHRUB PLANTING
SCALE: 1/2" = 1'-0"



EVERGREEN PLANTING
SCALE 1/4" = 1'-0"



CONSERVATION MEADOW & LAWN AREAS
SCALE 1" = 1'-0" p-conservation.dwg

PLOT DATE: 2023-05-10

SITE FORM STUDIO
LANDSCAPE ARCHITECTURE
P.O. BOX 1272 STOWE, VT 05672 SITEFORMSTUDIO.COM

LICENSED LANDSCAPE ARCHITECT
THOMAS R. HAND
00222
STATE OF NEW HAMPSHIRE

PERMIT SUBMISSION
NOT FOR CONSTRUCTION

No.	Description	Date

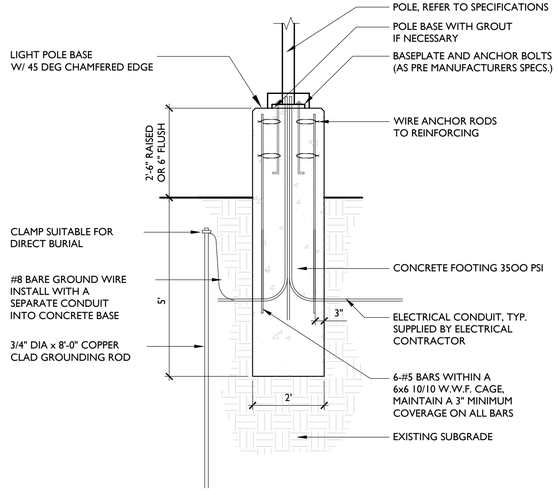
GEORGES MILLS SHOWROOM
GOODHUE REAL PROPERTY, LLC
SUNNAPEE, NH

PLANTING DETAILS

JOB NO. 2023.006
SCALE: AS SHOWN
DRAWN BY: th CHECKED BY: th
DATE: 05.11.23
FILE: l1.0_planting plan_permit.dwg

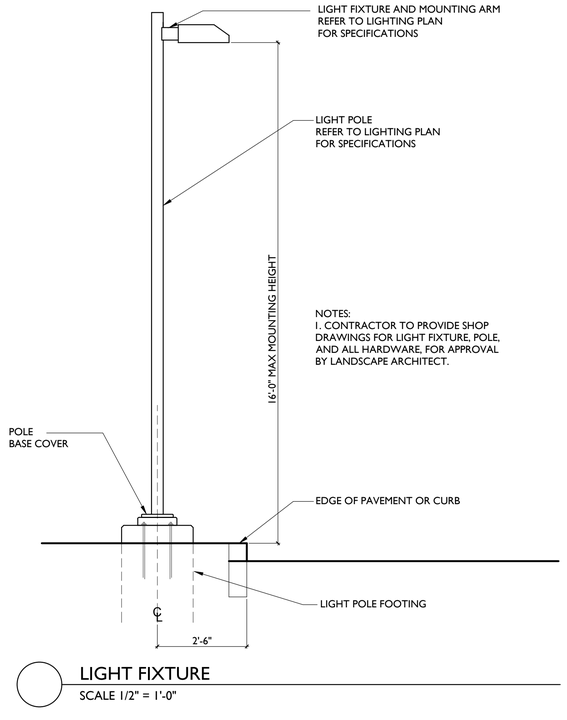
L1.2

NOTE: POLE BASE IS TO BE ONE CONTINUOUS POUR. THE CONTRACTOR WILL TAKE SPECIAL CARE TO ENSURE CONCRETE POLE BASES ARE INSTALLED ABSOLUTELY VERTICAL AND LEVEL.



LIGHT POLE FOOTING

SCALE 1/2" = 1'-0"



LIGHT FIXTURE

SCALE 1/2" = 1'-0"

PLOT DATE: 2023-05-10

LEO Area Light

landscapeforms

Product Data Sheet | LE330 & LE350

LEO area lights are at home in more places. LEO's multiple distributions and outputs address both visual comfort and performance, with configurable options that let landscape architects, lighting designers, and electrical engineers focus on what's important for their project, whether it is an improved visual experience for intimate pedestrian-scale settings or lumen outputs and pole spacing for cost-driven goals. LEO's simple, understated design fits a variety of site designs and architectural styles, and its 19"-diameter housing strikes an aesthetic balance for varying pole heights and spacing.

General Description

- Single, double, or staggered configurations
- Offered in 4 standard pole heights (12', 16', 20', and 25')
- Simple clamping mechanism mounts to 4", 5", and 6" diameter poles
- Optional ANSI136.41 7-pin twist lock receptacle
- Optional photo/motion sensor
- Mounting template and anchor hardware included
- Cast aluminum luminaire ships prewired and fully assembled
- Zero up-light, International Dark-Sky approved
- UL Listed, suitable for wet locations

Distributions

Electrical

Surge protected 100V-277V 50/60 Hz, dimmable Class 2 LED driver mounted within cast aluminum driver compartment. LED cartridge with weatherproof quick-disconnect provides ease of installation and serviceability. LEO ships prewired.

Housing

Luminaire components are cast aluminum. Acrylic lens seals to the LED cartridge housing. Luminaire mounts to 4", 5", and 6" diameter poles with a simple clamping mechanism and is secured with four screws. Driver compartment cover is secured by two screws on top of the luminaire. All hardware is magni-coated.

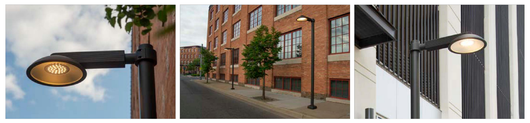
LEO Area Light

Light Source: Nichia LEDs
Color Temperature: 3000K, 3500K, 4000K
CRI: 80 min
Optics: PMMA
Lens: Clear or Frosted Acrylic

LEO Area Light

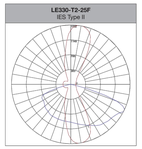
landscapeforms

Product Data Sheet | LE330 & LE350

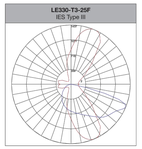


Model	Distribution Type	Drive Current	Lumens	Watts	Efficacy	BUG Rating
LE330-T2-25F	Type II	250mA	2929	24	122	B1-U0-G1
LE330-T2-37F	Type II	375mA	4245	37	115	B1-U0-G1
LE330-T3-25F	Type III	250mA	2819	24	117	B1-U0-G1
LE330-T3-37F	Type III	375mA	4085	37	110	B1-U0-G1
LE330-T4-25F	Type IV	250mA	2787	24	116	B1-U0-G1
LE330-T4-37F	Type IV	375mA	4039	37	109	B1-U0-G1
LE350-T2-34F	Type II	340mA	6259	55	114	B2-U0-G2
LE350-T2-46F	Type II	460mA	8119	73	113	B2-U0-G2
LE350-T3-34F	Type III	340mA	6024	55	110	B1-U0-G1
LE350-T3-46F	Type III	460mA	7814	73	107	B2-U0-G2
LE350-T4-34F	Type IV	340mA	5956	55	108	B2-U0-G2
LE350-T4-46F	Type IV	460mA	7726	73	106	B2-U0-G2

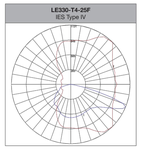
LE330-T2-25F
IES Type II



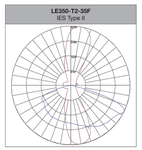
LE330-T3-25F
IES Type III



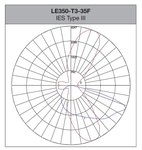
LE330-T4-25F
IES Type IV



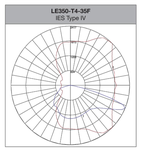
LE350-T2-35F
IES Type II



LE350-T3-35F
IES Type III



LE350-T4-35F
IES Type IV



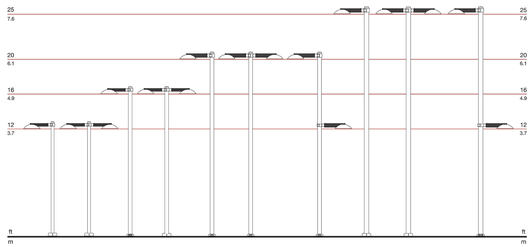
LEO Area Light

landscapeforms

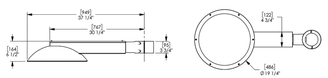
Product Data Sheet | LE330 & LE350

Pole Description

Poles are available in 4", 5", and 6" in diameter and are manufactured from seamless 6061 aluminum tubing and heat treated to produce a T6 temper. Wall thickness varies from 0.125" to 0.156" depending on mounting height and number of luminaires. Flush mounted hand hole cover includes two magni-coated fasteners. Base options included a two-piece cast aluminum cover or cast aluminum nut covers.

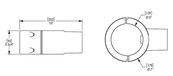


LEO Area Light



Weight: 40 lbs
EPA: 1.14 ft2

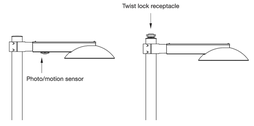
Bracket



Photo/Motion Sensor

- Fully adjustable high and low dimmed light levels; optional to dawn control
- Rated for extreme temperatures and up to 200,000 on/off cycles
- Hold off setpoint with automatic calibration option for convenience and added energy savings
- Adjustable via handheld wireless configuration tool
- IP66 rated for wet and outdoor locations
- Adjustable time delay and cut off delay

Click here to view the technical data sheet for the Wattstopper® FSP-211 photo/motion sensor.



Finish

Pangard III®, offered exclusively by Landscape Forms, is a 19 step program of cleaning, priming, and powdercoating that resists rusting, chipping, peeling and fading to produce the finest metal finish available for site furniture and outdoor lighting. In addition, Pangard III® contains no heavy metals and is free of Hazardous Air Pollutants.

Product Modifications

Don't see what you are looking for? Our goal is to partner with you as the designer to manufacture solutions needed for the space you are creating. We offer the option to modify our standard product to meet certain design specifications or needs. Contact your local Landscape Forms representative to learn more about these offerings.

Product Specifications

Ready to place an order or receive a quote for your project? Reference the LEO Area Light specification sheet available here.

Warranty

LED lighting products are warranted for six years.

Other

UL Listed, RoHS Compliant, Dark-Sky Approved

Designed by John Rizzi in collaboration with Clanton & Associates

Click here for patent information related to this product.

Visit our website landscapeforms.com for more information. Specifications are subject to change without notice. Landscape Forms supports the Landscape Architecture Foundation at the Second Century level. ©2020 Landscape Forms, Inc. Printed in U.S.A.

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LICENSED LANDSCAPE ARCHITECT
THOMAS R. HAND
00222
STATE OF NEW HAMPSHIRE

PERMIT SUBMISSION
NOT FOR CONSTRUCTION

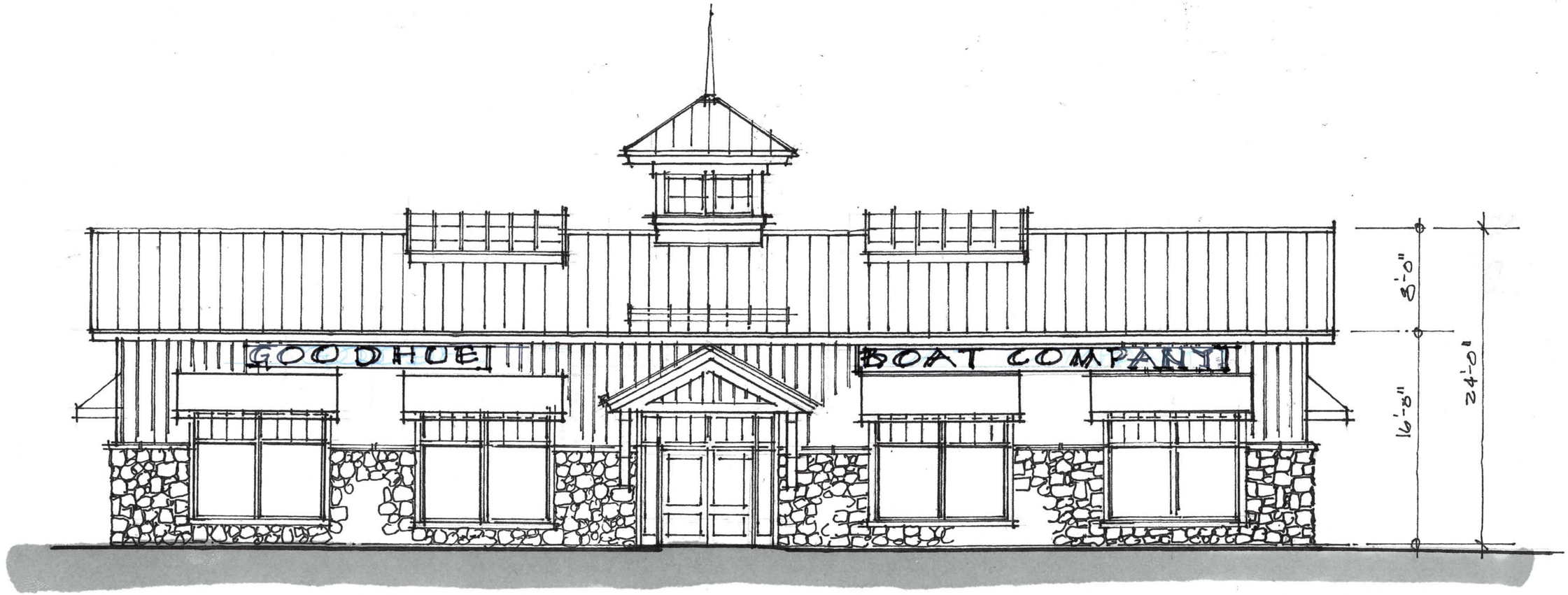
No.	Description	Date

GEORGES MILLS SHOWROOM
GOODHUE REAL PROPERTY, LLC
SUNNAPEE, NH

LIGHTING DETAILS

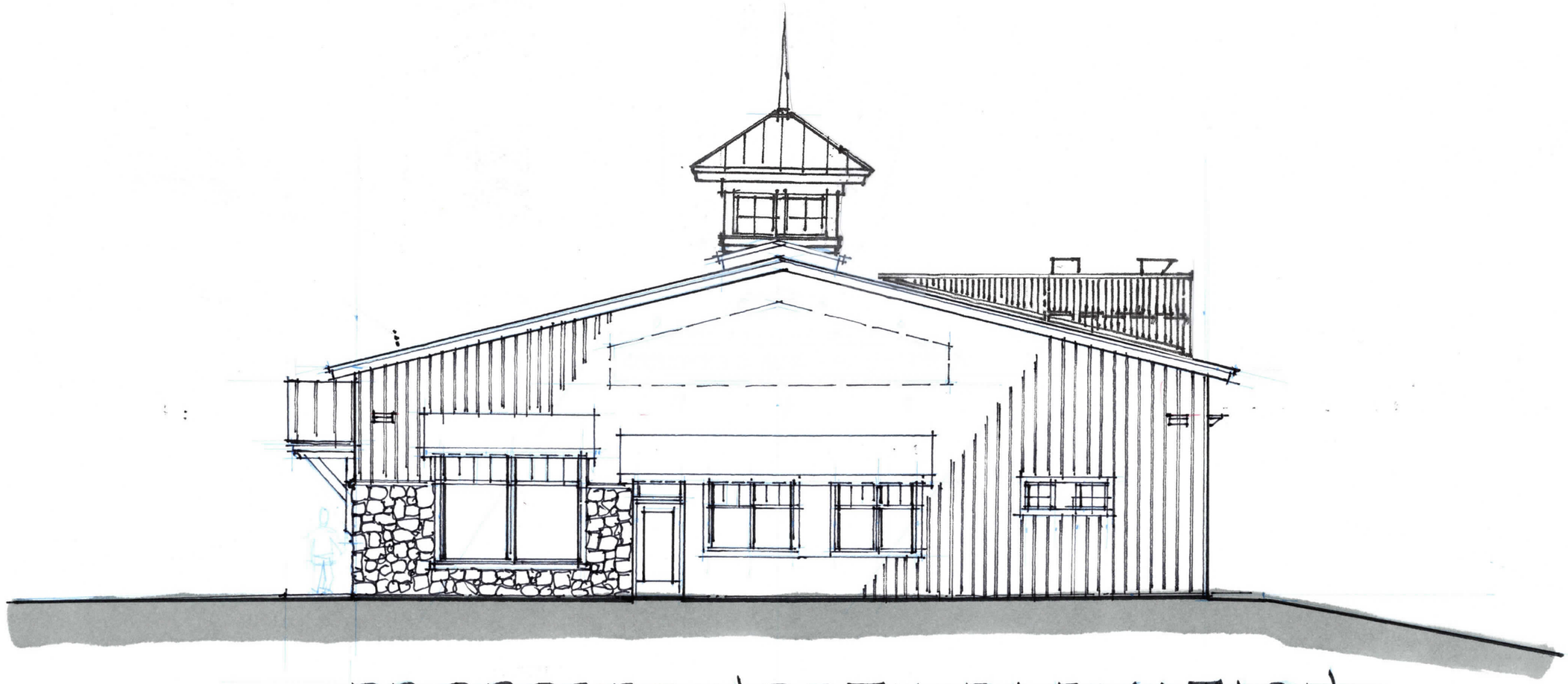
JOB NO. 2023.006
SCALE: AS SHOWN
DRAWN BY: th CHECKED BY: th
DATE: 05.11.23
FILE: l1.0_planting plan_permit.dwg

L1.3



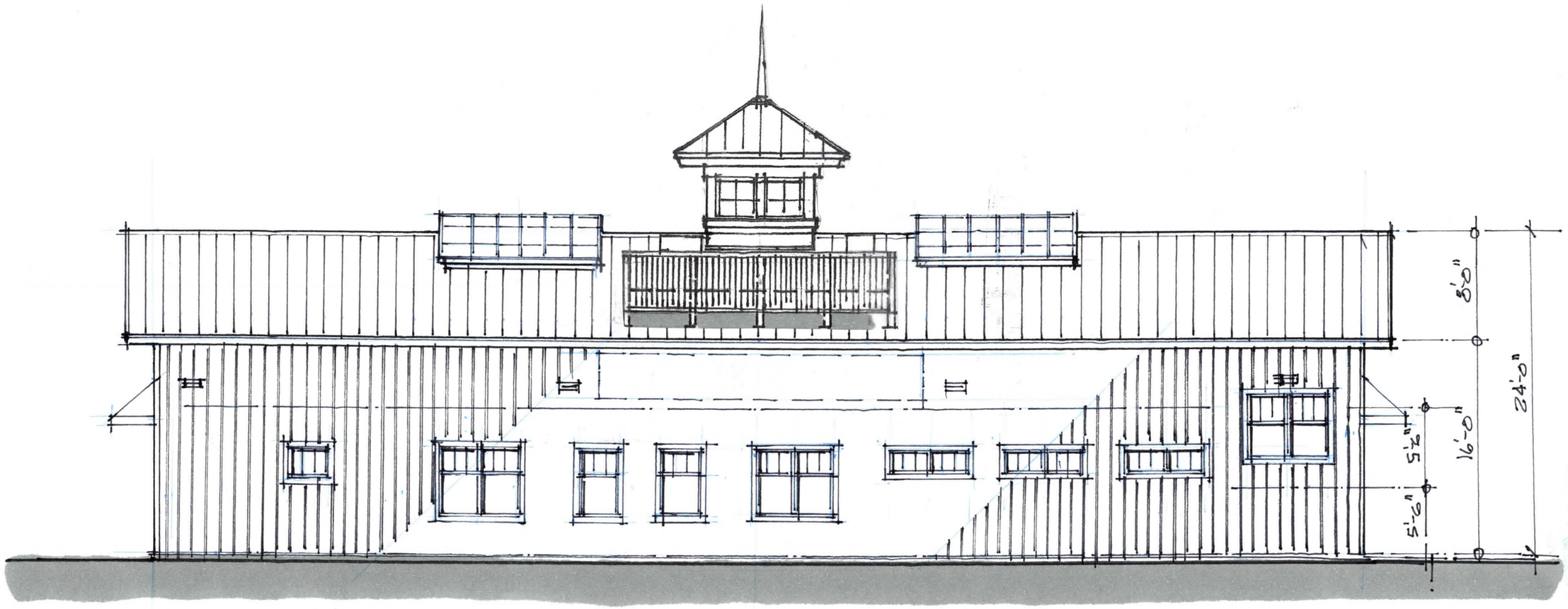
PROPOSED EAST ELEVATION

GOODHUE BOAT CO., SUNAPEE SDA2310 8.1.2023 1/8" = 1'-0"



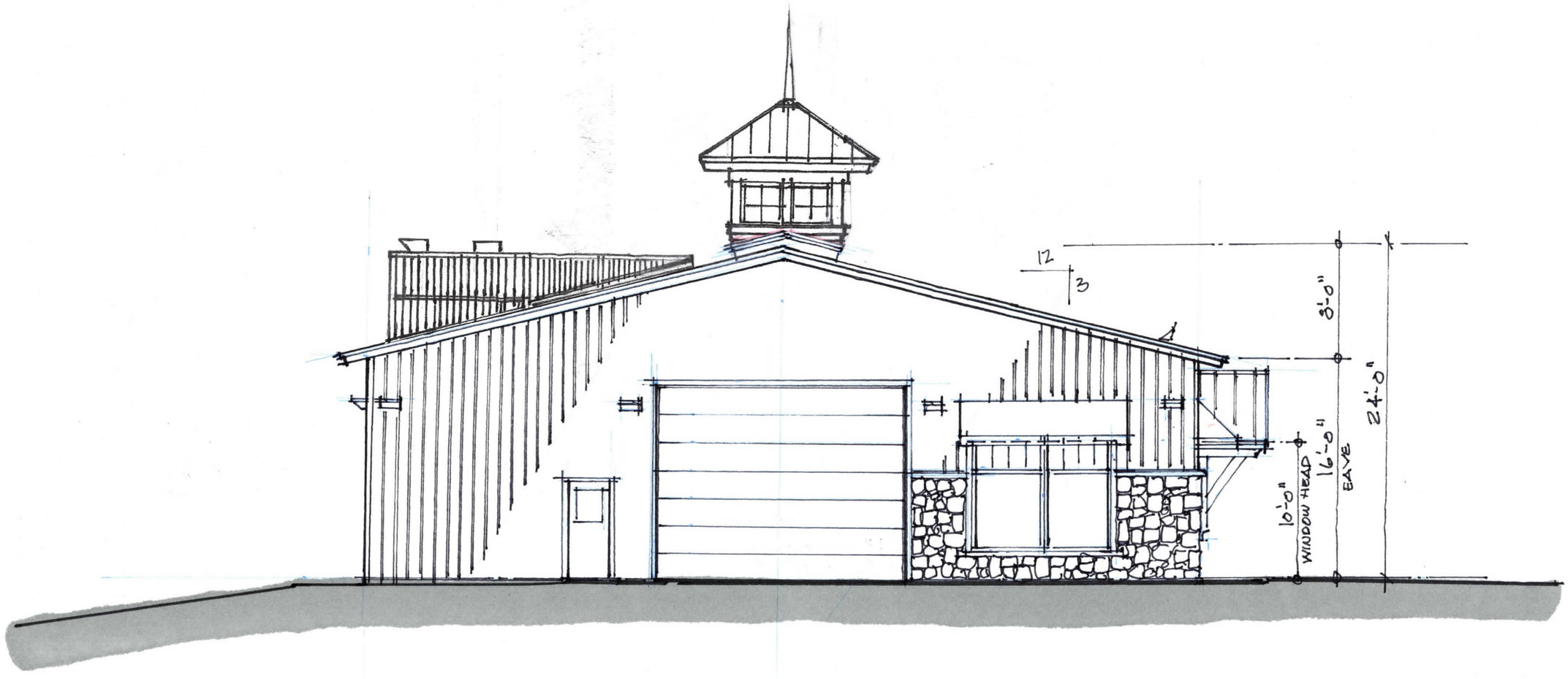
PROPOSED NORTH ELEVATION

GOODHUE BOAT CO., SUNAPEE SDA2310 8.1.2023 1/8"=1'-0"



PROPOSED WEST ELEVATION

GOODHUE BOAT CO., SUNAPEE SDA2310 8.1.2023 1/8"=1'-0"



PROPOSED SOUTH ELEVATION

GOODHUE BOAT CO., SUNAPEE SDA2310 8.1.2023 1/8"=1'-0"

176 Newport Road – Suite 8, New London, NH 03257 • Ph 603-877-0116 • Fax 603-444-1343 • www.horizonsengineering.com

December 8, 2023

Mr. Peter J. Conti
NH Department of Environmental Services
Wetland Bureau
PO Box 95
Concord, NH 03302-0095

Re: Request for More Information – Shoreland Permit Application (RSA 483-B)
NHDES File Number: 2023-02839
Subject Property: 1282 NH 11, Sunapee, Tax Map #104, Lot #84

Dear Mr. Conti,

On behalf of our client, Goodhue Sunapee Real Property, LLC, we are pleased to submit this response to your request for more information dated November 22, 2023. Please see below your requests followed by our response in italics.

1. In accordance with RSA 483-B:9, V(g)(1), no more than 30% of the area of a lot located within the Protected Shoreland may be impervious, unless a stormwater management system designed and certified by a professional engineer is implemented; the system design shall demonstrate that the post-development volume and peak flow rate based on the 10-year, 24-hour storm event, shall not exceed the pre-development condition. Please provide the required information. In accordance with RSA 483-B:9, V(g)(3), please provide the locations and species type of proposed native plantings. Plantings should be in sufficient quantity, type and location either to meet the minimum score for each shoreline grid segment or provide at least an equivalent level of protection as offered by the minimum score. Please select a variety of trees and/or shrubs from the DES native plantings list.

    a. Please provide calculations demonstrating that the system design shall demonstrate that the post-development volume and peak flow rate based on the 10-year, 24-hour storm event, shall not exceed the pre-development condition.

    A Stormwater Management plan has been included which demonstrates the post-development peak flow rate for a 10-yr, 24-hr event does not exceed the pre-development condition. Included in the report is an explanation for the infeasibility of infiltration for the project.

b. Please amend plans to include restoration of the portions of waterfront buffer that are present on the subject property up to the minimum point score required for those proportional segments.

A new waterfront exhibit is included in this response that along with the new site photos demonstrates compliance with the required point score for each segment.

2. Photographs of the existing conditions including the area within 50 feet of all proposed impacts as required by Env-Wq 1406.12.

a. Please provide up to date photographs of the area designated to remain as Unaltered Natural Woodland Buffer.

A new photo log has been included with this response.

Enclosed with is cover letter is a Stormwater Management Report, a new Waterfront Buffer Exhibit, and updated Photos. It is my hope that these responses satisfy your concerns regarding this project. Please let me know if you have any other questions or concerns.

Respectfully,

Andrew Heilmann
Project Engineer

Will Davis, PE LEED AP
Vice President

Stormwater Management Plan

Goodhue Sunapee Real Property, LLC
Georges Mills Showroom
1282 Route 11
Sunapee, New Hampshire

176 Newport Road – Suite 8, New London, NH 03257 • Ph 603-877-0116 • Fax 603-444-1343 • www.horizonsengineering.com

STORMWATER MANAGEMENT PLAN
FOR
GOODHUE SUNAPEE REAL PROPERTY, LLC
GEORGES MILLS SHOWROOM

DECEMBER 8, 2023

PROJECT NUMBER 21902

Horizons Engineering, Inc.

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TABLE OF CONTENTS

1.0 PROJECT INFORMATION NARRATIVE

1.1 Project Summary

Goodhue Meredith LLC is applying for Site Plan Review from the Town of Sunapee Planning Board for the construction of a boat showroom located at 1282 Route 11 in Sunapee. The proposed work will demolish an existing building and construct a 60'x 90' architecturally designed boat showroom, as well as constructing associated parking, walkways, stairs, landscaping, stormwater and other utilities. The project is located on Tax Map 104, Lot 84. Excavation and grading will be required to complete the improvements. Within the project watershed, the total proposed post-project impervious area is 0.61 acres, an increase of 0.30 acres over the pre-project impervious area within the watershed. The parking area will be collected via catchbasins and conveyed to an underground sand filtration system. The outflow of all the closed drainage is to be conveyed to an existing catch basin adjacent to Cooper Street, referred to in this report as Drainage Point #1 (DP-1). A portion of the southwest of the site bypasses the drainage collection system, and flows to a ditchline continuing down Cooper Street. This is referred to in this report as Drainage Point #2 (DP-2). All flow is eventually conveyed to Sunapee Lake. The post-construction peak flow rate at each drainage point has been reduced for the modeled events.

The following table shows the peak flow rate comparisons at each discharge point.

Table 1.0 – 2, 10 & 50 Year Comparison

Watershed Area Discharge Point	Pre 2 Yr Flow Rate (cfs)	Post 2 Yr Flow Rate (cfs)	Pre 10 Yr Flow Rate (cfs)	Post 10 Yr Flow Rate (cfs)	Pre 50 Yr Flow Rate (cfs)	Post 50 Yr Flow Rate (cfs)
DP-1	0.38	0.38	0.89	0.76	1.76	1.34
DP-2	0.07	0.02	0.25	0.11	0.60	0.31

Impacts to watershed water quality from grading within the watersheds are likely to occur from uncontrolled discharge of site runoff during construction activities and stabilized post-project surfaces. To minimize the impacts to the watersheds, the site has been designed to cause no increase in runoff and erosion control methods have been specified in accordance with the Env-Wq 1500 and the *New Hampshire Stormwater Management Manual* (December, 2008).

Test pits were excavated, and the soils were logged on the site to inform the drainage system design. See Section 3.4 for test pit logs and location exhibit. The seasonal high-water table is shallow on the site and the soils are not suitable for infiltration. Therefore, a detention and filtration practice was selected to provide treatment and to meet the peak runoff control requirements. Groundwater recharge and stormwater volume reduction are not feasible on this site.

1.2 Rainfall Data

Using SCS TR-20, run under HydroCAD Version 10.20-2g with Type III-24 hour rainfall events, pre- and post-development cover types and drainage paths were modeled to generate peak discharge rates. Rainfall events modeled have intensities described by data provided by the Northeast Regional Climate Center for the geographic location of the project. This data is provided in full in section 3.1 of this report, and are summarized below in **Table 1.2**.

Table 1.2 - Type III, 24 Hour Rainfall Depths for Project Site

Rainfall Event	Depth*
2-Year	2.60”
10-Year	3.78”
50-Year	5.49”

** Rainfall depths from the Northeast Regional Climate Center Extreme Precipitation Tables, http://precip.eas.cornell.edu, verified 8 August 2023. See section 3.1*

SECTION 2.0 - DRAINAGE CALCULATIONS, ANALYSIS & DESIGN

2.1 Pre-Development Analysis

2.1 Pre-development Analysis

In both the pre-development conditions, the project site has been modeled as two drainage areas. These drainage areas represent nearly the entire subject property (a very small area which drains to the abutting parcel to the East is excluded) plus some off-site areas of Route 11 and Cooper Street.

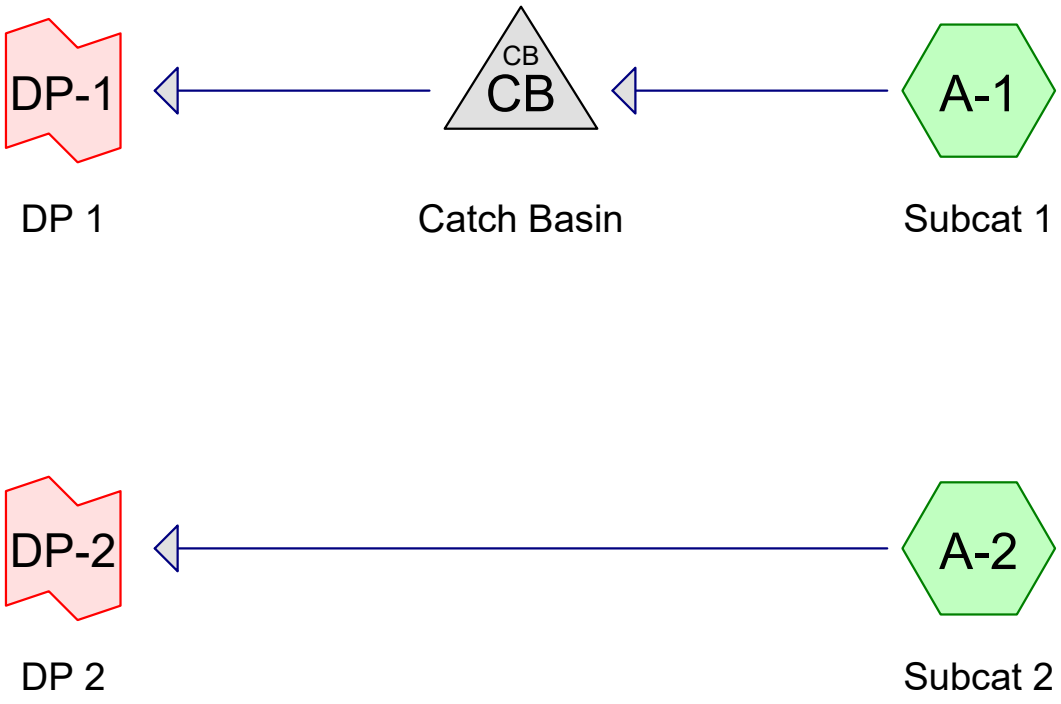
Drainage Area A-1 represents the north of the site, an area which drains to an existing catchbasin along Cooper Street. This catchbasin is Discharge Point #1, DP-1, in the drainage model.

The southern portion of the site, Drainage Area A-2, flows to a ditchline along Cooper Street, but at an elevation too low to be collected by DP-1. The point where this ditchline exits the parcel is identified as Drainage Point #2, DP-2. This also includes a portion of Cooper Street.

The total watershed to be analyzed is 44,780 square feet. To be conservative, all areas have been assumed to be either grass or impervious cover. Impervious cover includes existing residence roof, and driveway.

NRCS soils mapping and classification has been used to complete the analysis. The soils on site are mapped as Monadnock fine sandy loam. Soils have been modeled as hydrologic soil group B. This information can be found in **Section 3.3.** The watershed areas and have been shown on the watershed plan, in **Section 4.1.**

2.1.1 Pre-Development Full Summary and Diagram
10 - Year Storm Event



Subcat Reach Pond Link

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10 year	Type III 24-hr		Default	24.00	1	3.78	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.713	61	>75% Grass cover, Good, HSG B (A-1, A-2)
0.316	98	Unconnected pavement, HSG B (A-1, A-2)
1.028	**72**	**TOTAL AREA**

Soil Listing (all nodes)

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

Time span=5.00-20.00 hrs, dt=0.01 hrs, 1501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment A-1: Subcat 1 Runoff Area=26,777 sf 34.57% Impervious Runoff Depth>1.32"
Flow Length=352' Tc=9.5 min CN=74 Runoff=0.89 cfs 0.067 af

Subcatchment A-2: Subcat 2 Runoff Area=18,017 sf 24.91% Impervious Runoff Depth>0.85"
Flow Length=163' Tc=24.8 min UI Adjusted CN=66 Runoff=0.25 cfs 0.029 af

Pond CB: Catch Basin Peak Elev=1,120.91' Inflow=0.89 cfs 0.067 af
15.0" Round Culvert n=0.025 L=54.0' S=18.6350 '/' Outflow=0.89 cfs 0.067 af

Link DP-1: DP 1 Inflow=0.89 cfs 0.067 af
Primary=0.89 cfs 0.067 af

Link DP-2: DP 2 Inflow=0.25 cfs 0.029 af
Primary=0.25 cfs 0.029 af

Total Runoff Area = 1.028 ac Runoff Volume = 0.097 af Average Runoff Depth = 1.13"
69.32% Pervious = 0.713 ac 30.68% Impervious = 0.316 ac

Summary for Subcatchment A-1: Subcat 1

Runoff = 0.89 cfs @ 12.14 hrs, Volume= 0.067 af, Depth> 1.32"
Routed to Pond CB : Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=3.78"

Area (sf)	CN	Description
17,520	61	>75% Grass cover, Good, HSG B
9,257	98	Unconnected pavement, HSG B
26,777	74	Weighted Average
17,520		65.43% Pervious Area
9,257		34.57% Impervious Area
9,257		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	82	0.0549	0.16		**Sheet Flow, Sheet Flow 1** Grass: Dense n= 0.240 P2= 2.87"
0.5	163	0.0644	5.15		**Shallow Concentrated Flow, Driveway** Paved Kv= 20.3 fps
0.4	107	0.0533	4.69		**Shallow Concentrated Flow, Roadway** Paved Kv= 20.3 fps
9.5	352	Total			

Summary for Subcatchment A-2: Subcat 2

Runoff = 0.25 cfs @ 12.40 hrs, Volume= 0.029 af, Depth> 0.85"
Routed to Link DP-2 : DP 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=3.78"

Area (sf)	CN	Adj	Description
13,529	61		>75% Grass cover, Good, HSG B
4,488	98		Unconnected pavement, HSG B
18,017	70	66	Weighted Average, UI Adjusted
13,529			75.09% Pervious Area
4,488			24.91% Impervious Area
4,488			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0661	0.07		**Sheet Flow, Sheet Flow 1** Woods: Dense underbrush n= 0.800 P2= 2.87"
0.3	63	0.4254	3.26		**Shallow Concentrated Flow, Steep Slope** Woodland Kv= 5.0 fps
24.8	163	Total			

Summary for Pond CB: Catch Basin

[57] Hint: Peaked at 1,120.91' (Flood elevation advised)

Inflow Area = 0.615 ac, 34.57% Impervious, Inflow Depth > 1.32" for 10 year event
Inflow = 0.89 cfs @ 12.14 hrs, Volume= 0.067 af
Outflow = 0.89 cfs @ 12.14 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min
Primary = 0.89 cfs @ 12.14 hrs, Volume= 0.067 af
Routed to Link DP-1 : DP 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 1,120.91' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,120.40'	**15.0" Round CMP_Round 15"** L= 54.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,120.40' / 114.11' S= 18.6350 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=0.89 cfs @ 12.14 hrs HW=1,120.91' (Free Discharge)
1=CMP_Round 15" (Inlet Controls 0.89 cfs @ 1.91 fps)

Summary for Link DP-1: DP 1

Inflow Area = 0.615 ac, 34.57% Impervious, Inflow Depth > 1.32" for 10 year event
Inflow = 0.89 cfs @ 12.14 hrs, Volume= 0.067 af
Primary = 0.89 cfs @ 12.14 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

Summary for Link DP-2: DP 2

Inflow Area = 0.414 ac, 24.91% Impervious, Inflow Depth > 0.85" for 10 year event
Inflow = 0.25 cfs @ 12.40 hrs, Volume= 0.029 af
Primary = 0.25 cfs @ 12.40 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

2.2 Post-Development Analysis

2.2 Post-Development Analysis

The same areas modeled in the pre-development condition, are modeled in the post-development condition, plus additional area along the eastern property line, which previously flowed off the site to the East, but will now be collected due to grading changes. The post-development model includes a total of 45,694 square feet, including 26,654 square feet of impervious cover.

The post-development condition utilizes the same two discharge points as the pre-development analysis. Drainage Area #1 is further subdivided to represent flows to specific treatment devices. This results in a total of four drainage areas to be modeled.

Major Drainage Area A-1 represents the north of the site, an area which drains to an existing catchbasin along Cooper Street. This catchbasin is Discharge Point #1, DP-1, in the drainage model. To model flow to specific drainage features, Drainage Area A-1 is further subdivided into three areas.

Drainage Area A-1a1 is a 2,880 square foot area representing the roof area contributing to a collection stone drip edge (P-DE).It serves the western half of the proposed building. An underdrain is provided within the drip edge which conveys stormwater into the closed collection system and to the underground sand filter system (P-ST). The filter is discussed in more detail below.

The remainder of the site which contributes to the filter system is modeled as Drainage Area A-1a2. This drainage area models a total of 15,825 square feet, of which 87.5% is impervious building roof, walkway or pavement.

The underground sand filter, P-ST, consists of a sand filter media beneath a detention system composed of Stormtech plastic chambers in a bed of crushed stone. The chamber system includes an ‘isolator row’, which provides pre-treatment for all stormwater by containing sediment and other pollutants in a concentrated and relatively easy to maintain area. The sand filter media is intended to provide treatment as stormwater trickles through, before being connected to an underdrain leading to a drainage run to Discharge Point #1. A weir is provided to allow the bypassing of high flows during large storm events. This ensures that the initial flush of stormwater, which contains the majority of pollutants, is treated, while allowing the system to remain functional in larger storm events. The system is designed such that under normal conditions, up to and including the 10-year storm event, all flow will pass through the filter media, and bypassing only occurs during truly large events.

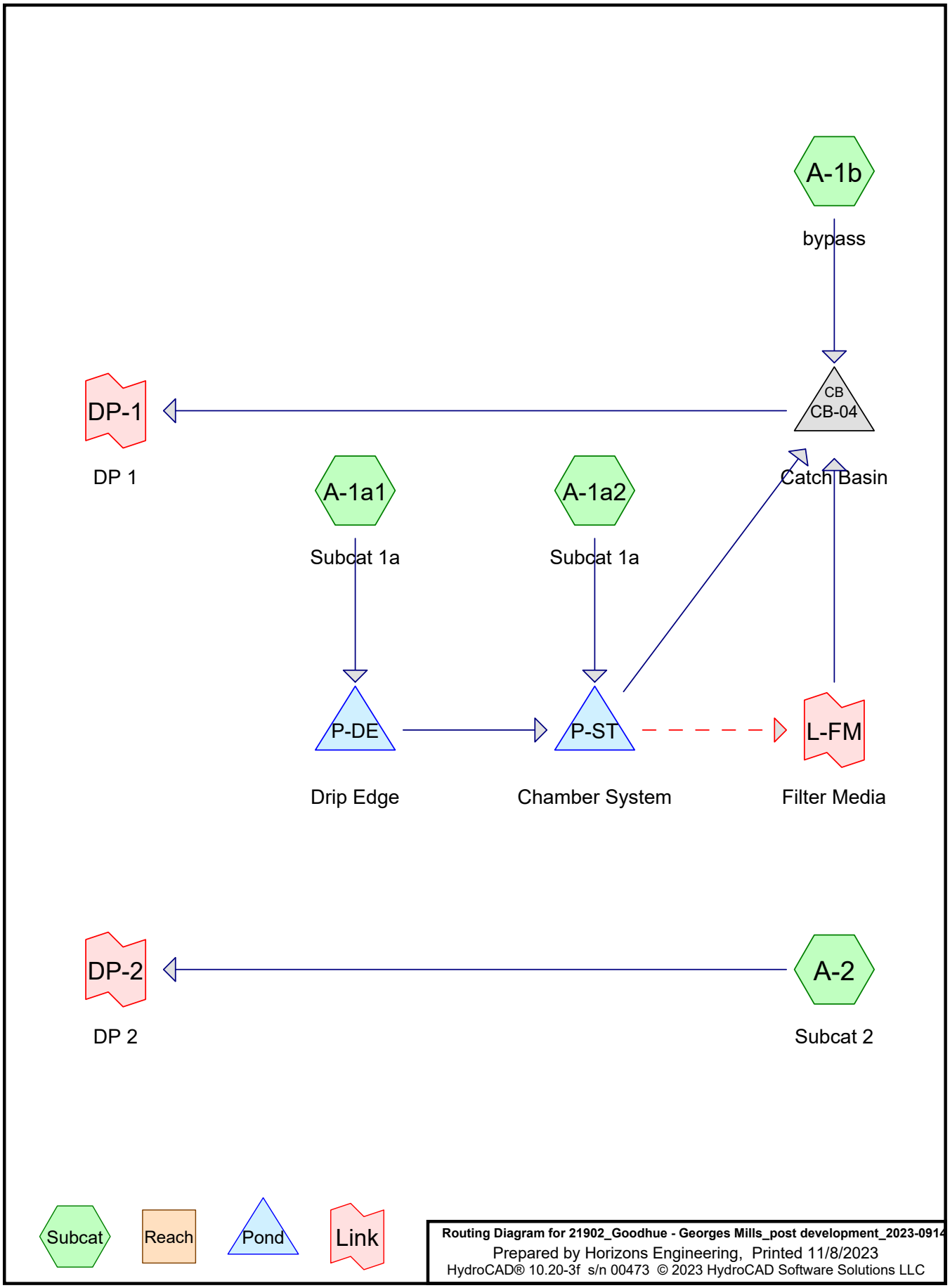
A portion of the flow to Discharge Point #1, primarily off-site areas of Route 11, is not captured by the practices described above. This area, consisting of 14,262 square feet, has been included in the model as Drainage Area A-1b. Runoff from this area produces the majority of the peak flow rate to Discharge Point #1.

Horizons also analyzed the capacity of the culvert downstream of Discharge Point #1. This 15" corrugated metal pipe has a maximum free-flow capacity of 4.30 cubic feet per second. Modeling indicates that the peak flow rate to the culvert, in the 50-year event, is 1.34 cubic feet per section. This indicates that the culvert has sufficient capacity. For further detail, see the culvert report found in **Section 3.2**.

The southern portion of the site, Drainage Area A-2, flows to a ditchline along Cooper Street, but at an elevation too low to be collected by DP-1. The point where this ditchline ceases to be in front of the parcel is identified as Drainage Point #2, (DP-2). Drainage Area A-2 is smaller in the post-development condition than the pre-development model, and does not include any additional impervious area.

For more detailed information on the post-developed area, see attached watershed plan in **Section 4.2** and the HydroCAD area listing found in **Section 3.4.1**.

2.2.1 Post-Development Full Summary Diagram
10 - Year Storm Event



Routing Diagram for 21902_Goodhue - Georges Mills_post development_2023-0914

Prepared by Horizons Engineering, Printed 11/8/2023

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.196	61	>75% Grass cover, Good, HSG B (A-1a2, A-1b)
0.237	56	Brush, Fair, HSG B (A-2)
0.550	98	Unconnected pavement, HSG B (A-1a2, A-1b, A-2)
0.062	98	Unconnected roofs, HSG B (A-1a1)
0.004	75	drip edge, HSG B (A-1a1)
1.049	**82**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.049	HSG B	A-1a1, A-1a2, A-1b, A-2
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.049		**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment A-1a1: Subcat 1a Runoff Area=2,880 sf 93.75% Impervious Runoff Depth=3.43"
Tc=6.0 min CN=97 Runoff=0.24 cfs 0.019 af

Subcatchment A-1a2: Subcat 1a Runoff Area=15,825 sf 87.54% Impervious Runoff Depth=3.01"
Tc=6.0 min CN=93 Runoff=1.23 cfs 0.091 af

Subcatchment A-1b: bypass Runoff Area=14,262 sf 53.93% Impervious Runoff Depth=1.94"
Tc=6.0 min CN=81 Runoff=0.74 cfs 0.053 af

Subcatchment A-2: Subcat 2 Runoff Area=12,721 sf 18.91% Impervious Runoff Depth=0.66"
Flow Length=163' Tc=24.8 min UI Adjusted CN=60 Runoff=0.11 cfs 0.016 af

Pond CB-04: Catch Basin Peak Elev=1,121.36' Inflow=0.76 cfs 0.163 af
15.0" Round Culvert n=0.025 L=54.0' S=18.6443 '/' Outflow=0.76 cfs 0.163 af

Pond P-DE: Drip Edge Peak Elev=1,138.00' Storage=0.000 af Inflow=0.24 cfs 0.019 af
6.0" Round Culvert n=0.010 L=36.0' S=0.0097 '/' Outflow=0.24 cfs 0.019 af

Pond P-ST: Chamber System Peak Elev=1,131.47' Storage=0.046 af Inflow=1.47 cfs 0.110 af
Primary=0.00 cfs 0.000 af Secondary=0.09 cfs 0.110 af Outflow=0.09 cfs 0.110 af

Link DP-1: DP 1 Inflow=0.76 cfs 0.163 af
Primary=0.76 cfs 0.163 af

Link DP-2: DP 2 Inflow=0.11 cfs 0.016 af
Primary=0.11 cfs 0.016 af

Link L-FM: Filter Media delayed by 288.0 min Inflow=0.09 cfs 0.110 af
Primary=0.09 cfs 0.110 af

Total Runoff Area = 1.049 ac Runoff Volume = 0.179 af Average Runoff Depth = 2.05"
41.67% Pervious = 0.437 ac 58.33% Impervious = 0.612 ac

Summary for Subcatchment A-1a1: Subcat 1a

Runoff = 0.24 cfs @ 12.08 hrs, Volume= 0.019 af, Depth= 3.43"
Routed to Pond P-DE : Drip Edge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=3.78"

	Area (sf)	CN	Description
	2,700	98	Unconnected roofs, HSG B
*	180	75	drip edge, HSG B
	2,880	97	Weighted Average
	180		6.25% Pervious Area
	2,700		93.75% Impervious Area
	2,700		100.00% Unconnected

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

Summary for Subcatchment A-1a2: Subcat 1a

Runoff = 1.23 cfs @ 12.08 hrs, Volume= 0.091 af, Depth= 3.01"
Routed to Pond P-ST : Chamber System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=3.78"

Area (sf)	CN	Description
1,972	61	>75% Grass cover, Good, HSG B
13,853	98	Unconnected pavement, HSG B
15,825	93	Weighted Average
1,972		12.46% Pervious Area
13,853		87.54% Impervious Area
13,853		100.00% Unconnected

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

Summary for Subcatchment A-1b: bypass

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.053 af, Depth= 1.94"
Routed to Pond CB-04 : Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=3.78"

Area (sf)	CN	Description
6,571	61	>75% Grass cover, Good, HSG B
7,691	98	Unconnected pavement, HSG B
14,262	81	Weighted Average
6,571		46.07% Pervious Area
7,691		53.93% Impervious Area
7,691		100.00% Unconnected

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

Summary for Subcatchment A-2: Subcat 2

Runoff = 0.11 cfs @ 12.43 hrs, Volume= 0.016 af, Depth= 0.66"
Routed to Link DP-2 : DP 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=3.78"

Area (sf)	CN	Adj	Description
10,315	56		Brush, Fair, HSG B
2,406	98		Unconnected pavement, HSG B
12,721	64	60	Weighted Average, UI Adjusted
10,315			81.09% Pervious Area
2,406			18.91% Impervious Area
2,406			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0661	0.07		**Sheet Flow, Sheet Flow 1** Woods: Dense underbrush n= 0.800 P2= 2.87"
0.3	63	0.4254	3.26		**Shallow Concentrated Flow, Steep Slope** Woodland Kv= 5.0 fps
24.8	163	Total			

Summary for Pond CB-04: Catch Basin

[57] Hint: Peaked at 1,121.36' (Flood elevation advised)

Inflow Area = 0.757 ac, 73.54% Impervious, Inflow Depth = 2.58" for 10 year event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 0.163 af
Outflow = 0.76 cfs @ 12.09 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 12.09 hrs, Volume= 0.163 af
Routed to Link DP-1 : DP 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1,121.36' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,120.90'	**15.0" Round CMP_Round 15"** L= 54.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,120.90' / 114.11' S= 18.6443 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=0.76 cfs @ 12.09 hrs HW=1,121.36' (Free Discharge)
1=CMP_Round 15" (Inlet Controls 0.76 cfs @ 1.83 fps)

Summary for Pond P-DE: Drip Edge

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 0.066 ac, 93.75% Impervious, Inflow Depth = 3.43" for 10 year event
Inflow = 0.24 cfs @ 12.08 hrs, Volume= 0.019 af
Outflow = 0.24 cfs @ 12.08 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Primary = 0.24 cfs @ 12.08 hrs, Volume= 0.019 af
Routed to Pond P-ST : Chamber System

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1,138.00' @ 12.08 hrs Surf.Area= 0.004 ac Storage= 0.000 af

Plug-Flow detention time= 0.0 min calculated for 0.019 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (762.0 - 762.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,138.00'	0.002 af	**2.00'W x 90.00'L x 1.50'H Prismatoid** 0.006 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	1,136.00'	**6.0" Round 6" underdrain** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,136.00' / 1,135.65' S= 0.0097 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.99 cfs @ 12.08 hrs HW=1,138.00' (Free Discharge)
1=6" underdrain (Inlet Controls 0.99 cfs @ 5.03 fps)

Summary for Pond P-ST: Chamber System

Inflow Area = 0.429 ac, 88.50% Impervious, Inflow Depth = 3.07" for 10 year event
Inflow = 1.47 cfs @ 12.08 hrs, Volume= 0.110 af
Outflow = 0.09 cfs @ 11.38 hrs, Volume= 0.110 af, Atten= 94%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond CB-04 : Catch Basin
Secondary = 0.09 cfs @ 11.38 hrs, Volume= 0.110 af
Routed to Link L-FM : Filter Media

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1,131.47' @ 13.67 hrs Surf.Area= 0.037 ac Storage= 0.046 af

Plug-Flow detention time= 180.9 min calculated for 0.110 af (100% of inflow)
Center-of-Mass det. time= 180.8 min (963.6 - 782.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,130.41'	0.021 af	**ADS_StormTech SC-740 +Cap** x 20 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 20 Chambers in 4 Rows
#2A	1,129.41'	0.021 af	**20.50'W x 39.22'L x 4.00'H Field A** 0.074 af Overall - 0.021 af Embedded = 0.053 af x 40.0% Voids
#3	1,126.16'	0.024 af	**20.50'W x 39.22'L x 3.25'H Concrete Sand + Pea Gravel + Crushed Stone** 0.060 af Overall x 40.0% Voids
		0.066 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,126.06'	**12.0" Round Culvert** L= 117.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,126.06' / 1,124.50' S= 0.0133 '/' Cc= 0.900 n= 0.009 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	1,133.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Secondary	1,126.16'	**0.093 cfs Constant Flow/Skimmer** Phase-In= 0.01'

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,126.16' (Free Discharge)
↑—**1=Culvert** (Passes 0.00 cfs of 0.03 cfs potential flow)
↑—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.09 cfs @ 11.38 hrs HW=1,126.24' (Free Discharge)
↑—**3=Constant Flow/Skimmer** (Constant Controls 0.09 cfs)

Pond P-ST: Chamber System - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

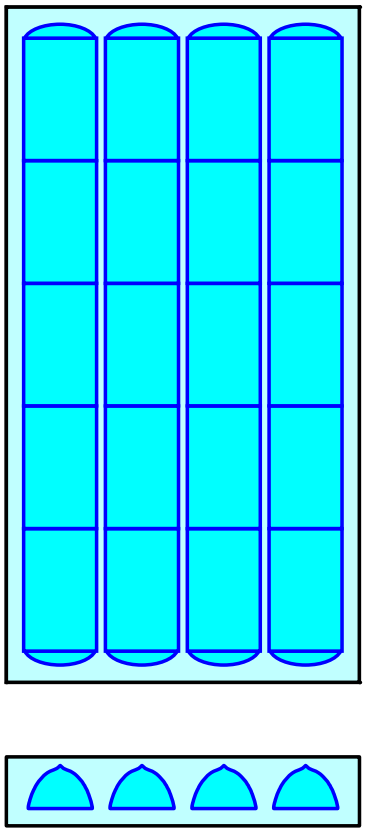
5 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 37.22' Row Length +12.0" End Stone x 2 = 39.22' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

20 Chambers x 45.9 cf = 918.8 cf Chamber Storage

3,215.8 cf Field - 918.8 cf Chambers = 2,297.0 cf Stone x 40.0% Voids = 918.8 cf Stone Storage

Chamber Storage + Stone Storage = 1,837.6 cf = 0.042 af
Overall Storage Efficiency = 57.1%
Overall System Size = 39.22' x 20.50' x 4.00'

20 Chambers
119.1 cy Field
85.1 cy Stone



Summary for Link DP-1: DP 1

Inflow Area = 0.757 ac, 73.54% Impervious, Inflow Depth = 2.58" for 10 year event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 0.163 af
Primary = 0.76 cfs @ 12.09 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Summary for Link DP-2: DP 2

Inflow Area = 0.292 ac, 18.91% Impervious, Inflow Depth = 0.66" for 10 year event
Inflow = 0.11 cfs @ 12.43 hrs, Volume= 0.016 af
Primary = 0.11 cfs @ 12.43 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Summary for Link L-FM: Filter Media

The delay provided by this node is intended to model the time required for stormwater to flow through the filter media below the chamber system. (10ft/day)

Inflow = 0.09 cfs @ 11.38 hrs, Volume= 0.110 af
Primary = 0.09 cfs @ 16.18 hrs, Volume= 0.110 af, Atten= 0%, Lag= 288.0 min
Routed to Pond CB-04 : Catch Basin

Primary outflow = Inflow delayed by 288.0 min, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

2.3 Inspection and Maintenance Plan

Inspection and Maintenance Plan
Goodhue Sunapee Real Property, LLC
Georges Mills Showroom -- 1282 Route 11
Sunapee, NH

Introduction

This document is intended to provide a unified procedure for the party (ies) responsible for inspecting and maintaining the stormwater management device(s) that are located within the site development (see Design Plan for the device locations).

Responsible Parties

The ultimate responsibility for complying with this plan rests with the owners of the Property.

Owner's Name: Goodhue Sunapee Real Property, LLC

Parties assigned to complete inspection and maintenance tasks are presented in the following table:

DEVICE	TASK	PARTY RESPONSIBLE
Stormwater Devices		
Stone Drip Edges, Pervious Pavers, Chamber System & Catch Basins	Inspection	OWNER
	Maintenance	OWNER
	Reporting	OWNER

Frequency of Activities

The best time to perform inspections is during the onset of rain. To the extent practicable, inspections should be timed to coincide with moderate storms that do not have the potential for severe (thunderstorms, etc) precipitation. The frequency of inspection and maintenance will vary by intensity of use; however, the following shall serve as the minimum inspection frequency:

- Stone Drip Edge: Spring and Fall
- Pervious Paving: Spring and Fall
- Chamber System: Spring and Fall
- Catch Basins: Spring and Fall

Maintenance frequencies will be determined based upon the results of the inspections and if specific maintenance thresholds are observed to have been crossed during inspections. All inspection activities should be recorded on the appropriate attached Inspection Form. One form should be used for each stormwater device.

COLLECTION STONE DRIP EDGE

Inspection Frequency:
Inspect the drip edge 2 times per year (spring and fall- following leaf drop) unless otherwise described- maintain features as described below.

Once per year the system must be checked to determine that it does not retain standing water for more than 72 hours. Refer to Drawdown Protocols contained in this Plan.

Maintenance Requirements:

- Inspect adjacent surfaces.
    - If erosion has occurred, then measures shall be taken to stabilize and protect the affected area of the outlet.
    - Accumulated debris and sediment shall be removed.
- The surface of the drip edge shall be checked twice a year for debris and sediment. When sediment accumulations become significant, the sediment and debris shall be removed and property disposed of.
    - It is particularly important to remove leaves and other organic mats that may diminish the infiltration rate to the collection pipe.

CB- CATCH BASINS

(*To include trench drains, drain manholes, and double catchbasins, and drop inlets*)

Inspection Frequency:

Inspect 2 times per year (spring and fall-after leaf drop) unless otherwise described- maintain features as described below.

Maintenance Requirements:

- Remove debris from inlets grates.
- If an oily sheen or hydrocarbons are present on the water surface contact your supervisor
    - Skimming/absorbants should be used to remove to the material and disposed of in accordance with state and federal regulations.
- Remove accumulated sediment in sump if sediment has accumulated to ½ sump depth or is within 1 foot below invert out of basin.
    - If sediment has accumulated to pipe invert out, check discharge end of pipe for sediment accumulations and remove sediment from pipe.
    - Note such conditions and increase inspection frequency if it is determined that the loads of sediment to the basin are consistently high.
    - Address source of sediment if possible.
- For drop inlets with no sump sediments will typically only accumulate if there is an obstruction in the downstream culvert and/or culvert outlet. Therefore where sediments are present in structure:
    - Inspect culvert and culvert outlet and remove debris and sediments.
- Do not dispose of catch basin cleanings in wetland areas or within 40 feet of wetland areas- refer to Appendix b; pages B-2 and B-4 in NH DES guidance document http://des.nh.gov/organization/divisions/water/stormwater/documents/nh_idde_sop.pdf to determine where catchbasin cleanings and street sweepings may be disposed of.

ST- STORMTECH INFILTRATION CHAMBERS
(*To include stormtech isolator rows*)

Photo Credit: Stormtech

Inspection Frequency:
Isolator Rows shall be inspected immediately after completion of the site construction and cleaned out if necessary. The typical inspection schedule after construction for the Isolator Rows is a minimum of twice a year (spring & fall) - maintain features as described below.

Inspection of the Isolator Row shall involve a visual check using either the inspection ports or the access manholes

Maintenance Requirements:

- If upon visual inspection of the Isolator Row, it is found that sediment has accumulated to an average depth exceeding 3 inches throughout the length of the Isolator Row, cleanout is required.
- Cleanout of the accumulated material in the Isolator Row should be accomplished by vacuum pumping.
- Cleanout should be performed during dry weather and care should be taken to avoid tearing the fabric in the Isolator Rows.
- 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. Call 1-888-892-2694 to speak with a Technical representative or visit www.stormtech.com.

72 Hour Drawdown Protocols

The stone drip edge noted in this Plan requires a periodic check to ensure that the feature does not retain water for more than 72 hours. This check is to be conducted once per year and is intended to determine if the soils under the feature continue to allow water to exfiltrate out of the floor of the feature or are clogged. Clogged soils can allow water to support nuisance mosquito populations and can reduce the stormwater treatment capacity of the feature during subsequent storms.

The following presents a step by step procedure to document the drawdown time of those stormwater features that require such a check.

- Plan on performing the check during the growing season (May to October)
- Review weather forecasts and pick a storm that is substantial enough to produce runoff into the feature to be checked during working hours.
- Once storm begins check to confirm that runoff has entered the drip edge.
- Once rainfall stops:
    - Take a photo of the water entering the feature or impounded within the feature.
    - Record the time of the photo and feature name/ID.
    - Record the rainfall depth.
        - Rainfall records for the area can be found in a variety of websites however the following is a suggested local source: https://www.wunderground.com/weather/us/nh/newbury/03255
- Return to the feature 48 hours after the photo was taken and take a second photo of the feature in the drained-down condition.
    - Record the time of the photo and feature name/ID
    - Observe standing water level via the observation port(s).
- If feature has not drained down in 48 hours after first photo:
    - Record depth to water level in observation well, and the time of observation.
    - Return to the feature 72 hours after the first photo was taken at that feature and determine if the feature has drained completely.
    - If the feature has drained down take a photo and record the time (should be equal to or less than 72 hours.)
    - If the feature has not drained down completely:
        - Record the water level drop (in inches) that has occurred since initial observation well measurement and divide by the number of hours that have elapsed.
        - This inches/hour exfiltration rate may be useful in determining if renovation of the feature is needed.
        - Contact DES and/or an engineer to determine if renovation of the feature is needed.
- Keep records of all drawdown checks.

Year: ____________

Stormwater BMP
Inspection and Maintenance Log
Georges Mills Showroom -- 1282 Route 11
Sunapee, NH

DEVICE/ LOCATION	INSPECTION		FOLLOW UP ACTIVITY	
	Date	Insp. Name	Date	Action Taken

2.4 References
Preparer's Certification

REFERENCES

Mays, Larry. *Stormwater Collection Systems Design Handbook*. McGraw-Hill. New York, NY. 2001

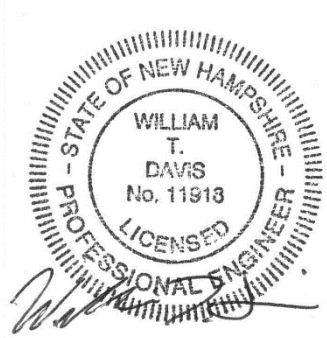
McCarthy, David. *Essentials of Soil Mechanics and Foundations: Sixth Edition*. Prentice Hall. Columbus, Ohio. 2002.

NHDES. *New Hampshire Stormwater Manual*. New Hampshire Department of Environmental Services. 2008.

NHDES. *New Hampshire Homeowner's Guide to Stormwater Management*. New Hampshire Department of Environmental Services. 2012

The UNH Stormwater Center, *The LID Stormwater Management Systems Demonstrate LID Stormwater Management Systems Demonstrate Superior Cold Climate Performance than Superior Cold Climate Performance than Conventional Stormwater Management Systems, UNH Stormwater Center, NEIWPCC 2007 NPS Conference, Newport, RI, May 2007*

PREPARER'S CERTIFICATION



Prepared by Will Davis, PE

SECTION 3.0 – ATTACHMENTS

3.1 Extreme Precipitation Tables
(Northeast Regional Climate Center)

3.2 Cooper Street Culvert Check

Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

September 29, 2023

Cooper Street Culvert

Invert Elev Dn (ft)	=	1114.11
Pipe Length (ft)	=	54.03
Slope (%)	=	11.64
Invert Elev Up (ft)	=	1120.40
Rise (in)	=	15.0
Shape	=	Circular
Span (in)	=	15.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Corrugate Metal Pipe
Culvert Entrance	=	Headwall
Coeff. K,M,c,Y,k	=	0.0078, 2, 0.0379, 0.69, 0.5

Embankment

Top Elevation (ft)	=	1127.00
Top Width (ft)	=	27.00
Crest Width (ft)	=	0.00

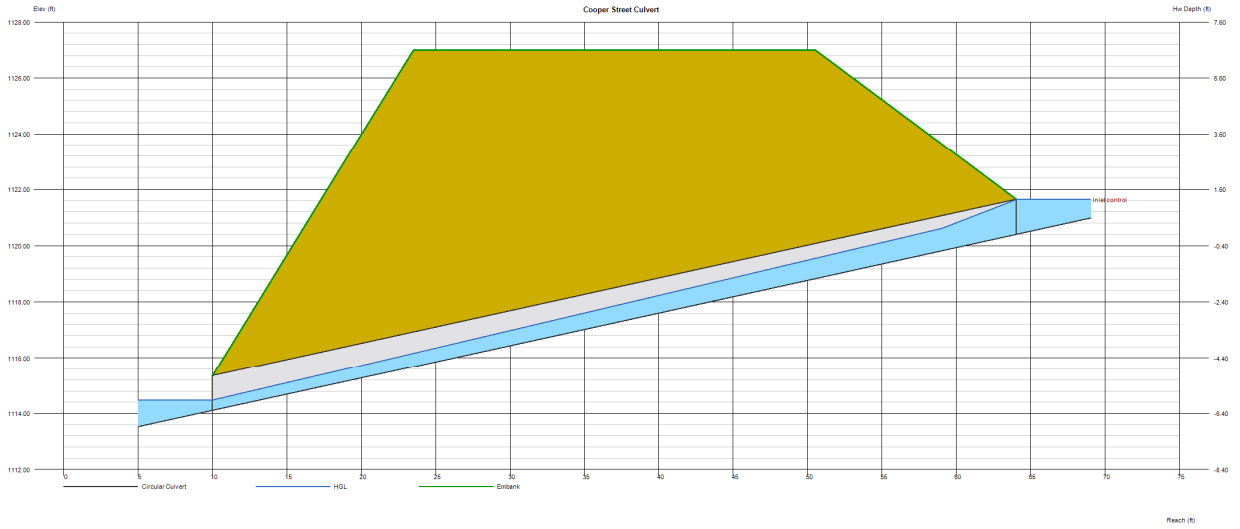
Calculations

Qmin (cfs)	=	4.00
Qmax (cfs)	=	4.50
Tailwater Elev (ft)	=	0.00

Highlighted

Qtotal (cfs)	=	4.30
Qpipe (cfs)	=	4.30
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	14.32
Veloc Up (ft/s)	=	4.91
HGL Dn (ft)	=	1114.48
HGL Up (ft)	=	1121.24
Hw Elev (ft)	=	1121.64
Hw/D (ft)	=	0.99
Flow Regime	=	Inlet Control

Maximum free-flow capacity: 4.30cfs
50-yr storm peak flowrate: 1.34cfs
Existing culvert is sufficient to pass 50-yr event.



3.2 NRCS Soil Resource Report

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 Sullivan County, New Hampshire

August 8, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

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: 1:754 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Sullivan County, New Hampshire
Survey Area Data: Version 28, Sep 12, 2022

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

Date(s) aerial images were photographed: May 27, 2020—Sep 16, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
McB	Monadnock fine sandy loam, 3 to 8 percent slopes	1.7	57.8%
McC	Monadnock fine sandy loam, 8 to 15 percent slopes	1.2	42.2%
Totals for Area of Interest		**2.9**	**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.

Sullivan County, New Hampshire

McB—Monadnock fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wlm3
Elevation: 390 to 1,570 feet
Mean annual precipitation: 31 to 95 inches
Mean annual air temperature: 27 to 55 degrees F
Frost-free period: 90 to 150 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Monadnock and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Monadnock

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial meltout till derived from phyllite and/or granite and gneiss and/or mica schist over sandy and gravelly supraglacial meltout till derived from phyllite and/or granite and gneiss and/or mica schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bs1 - 7 to 9 inches: fine sandy loam
Bs2 - 9 to 19 inches: gravelly fine sandy loam
BC - 19 to 22 inches: gravelly fine sandy loam
2C1 - 22 to 42 inches: gravelly loamy sand
2C2 - 42 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 15 to 30 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.03 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 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F144BY505ME - Loamy over Sandy

Hydric soil rating: No

Minor Components

Berkshire

Percent of map unit: 11 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Skerry

Percent of map unit: 6 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Cabot

Percent of map unit: 2 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Tunbridge

Percent of map unit: 1 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

McC—Monadnock fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wlm4
Elevation: 390 to 1,640 feet
Mean annual precipitation: 31 to 95 inches
Mean annual air temperature: 27 to 55 degrees F
Frost-free period: 90 to 150 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Monadnock and similar soils: 81 percent
Minor components: 19 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Monadnock

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainflank, mountainbase, interfluve, nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial meltout till derived from phyllite and/or granite and gneiss and/or mica schist over sandy and gravelly supraglacial meltout till derived from phyllite and/or granite and gneiss and/or mica schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bs1 - 7 to 9 inches: fine sandy loam
Bs2 - 9 to 19 inches: gravelly fine sandy loam
BC - 19 to 22 inches: gravelly fine sandy loam
2C1 - 22 to 42 inches: gravelly loamy sand
2C2 - 42 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 15 to 30 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.03 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 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F144BY505ME - Loamy over Sandy
Hydric soil rating: No

Minor Components

Berkshire

Percent of map unit: 10 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainflank, mountainbase, interfluve, nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex

Hydric soil rating: No

Skerry

Percent of map unit: 6 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainflank, mountainbase, interfluve, nose slope, side slope
Microfeatures of landform position: Closed depressions, closed depressions, open depressions, open depressions
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Cabot

Percent of map unit: 2 percent
Landform: Mountains, hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Mountainflank, mountainbase, interfluve, nose slope, side slope
Microfeatures of landform position: Closed depressions, closed depressions, open depressions, open depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Tunbridge

Percent of map unit: 1 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainflank, mountainbase, interfluve, nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

3.4 Test Pit Logs

3641A White Mountain Highway, North Conway, NH 03860 • Ph 603-447-2254 • Fax 603-444-1343 • www.horizonsengineering.com

TEST PITS - 5/3/2023
Job: 1282 NH Route 11, Georges Mills - #21902 – Goodhue

Field Brief:
Test pits observed and recorded on-site by Elias Buzzell of Horizons Engineering, North Conway, on 5/3/2023. Site conditions reflected recent heavy rains and were more saturated than normal. All pit locations were dug as staked on site. Prior to excavation Dig Safe NH was contacted (TICKET # 20231702954), and no underground utilities were at risk for the proposed pits. The on-site soil exploration revealed a shallow, restrictive, hardpan in natural soils with average water table depths.

Test Pit #1

0” – 6”	10YR 2/2	Very Dark Brown, Fine Sandy Loam, Granular, Loose
6” – 18”	10YR 4/6	Dark Yellowish Brown, Fine Sandy Loam, Single Grain Very Friable
18” – 34”	5Y 5/3	Olive, Coarse Sand & Gravel, Single Grain, Loose
34” – 55”	2.5Y 4/3	Olive Brown, Hardpan, Massive, Very Firm

ESHWT: 33”
Roots: 29”
Observed H20: N/O
Ledge: N/O
Restrictive Layer: 34”

NOTES:

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Test Pit #2

0" – 6"	10YR 3/2	Very Grayish Dark Brown, Fine Sandy Loam, Granular, Loose
6" – 14"	2.5Y 4/3	Olive Brown, Fine Sandy Loam, Single Grain Very Friable
14" – 22"	2.5Y 3/3	Dark Olive Brown, Coarse Sand & Gravel, Granular, Loose
22" – 76"	5Y 4/3	Olive, Hardpan, Massive, Very Firm

ESHWT: 20"
Roots: 15"
Observed H20: 70"
Ledge: N/O
Restrictive Layer: 22"

NOTES:

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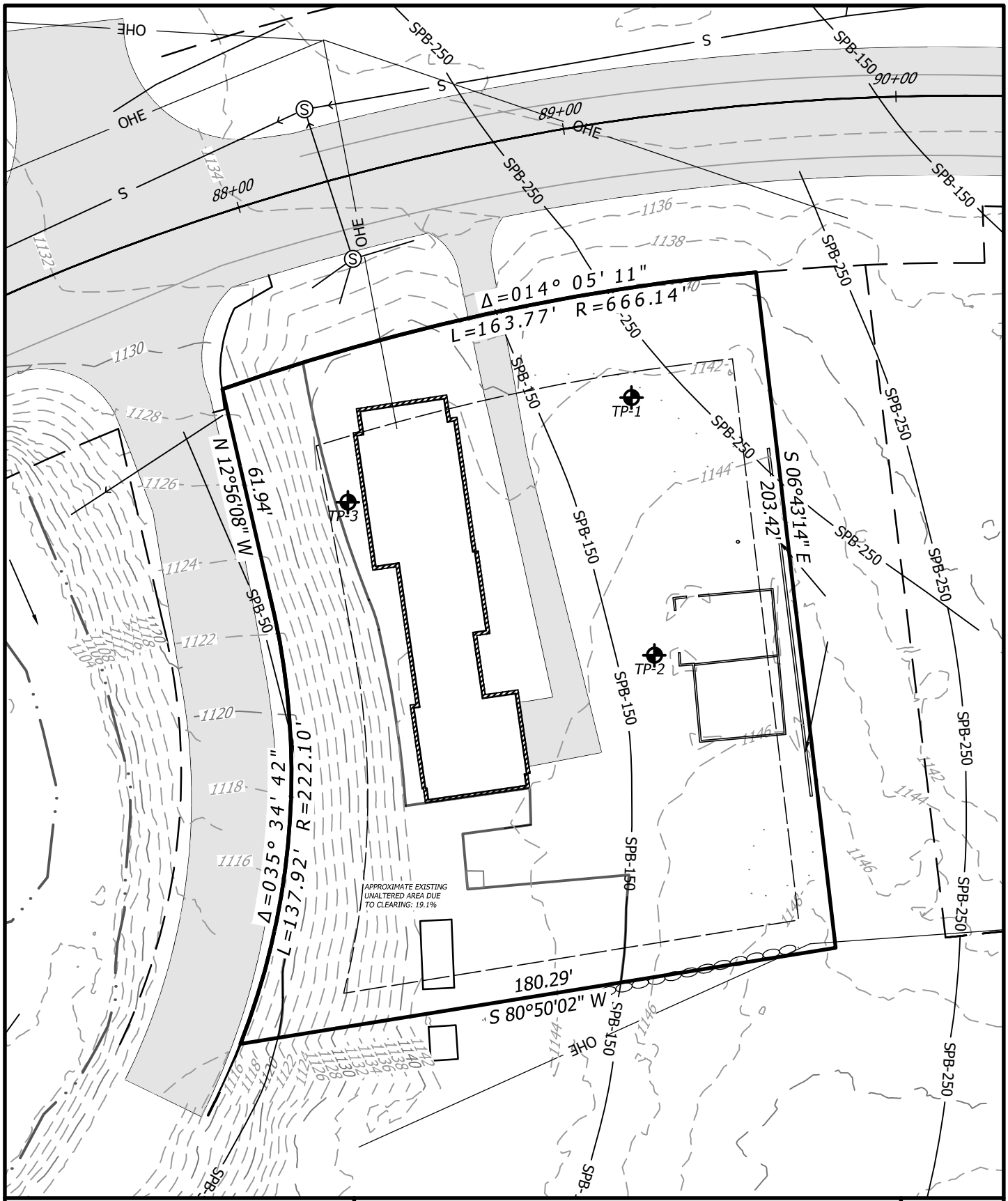
Test Pit #3

0" – 11"	10YR 3/2	Very Grayish Dark Brown, Fine Sandy Loam, Granular, Loose
11" – 22"	2.5Y 4/3	Olive Brown, Fine Sandy Loam, Single Grain, Very Friable
22" – 56"	5Y 3/2	Dark Olive Brown, Fine Loamy Sand, Single Grain, Loose

ESHWT: 21"
Roots: 20"
Observed H20: N/O
Ledge: N/O
Restrictive Layer: N/O

NOTES:
80% Large Stones and Fill Materials 4"-16" @ 20" depth.



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GOODHUE SUNAPEE REAL PROPERTY, LLC

GEORGES MILLS SHOWROOM

1282 ROUTE 11
SUNAPEE, NEW HAMPSHIRE

TEST PIT LOCATIONS

PROJECT #:	21902
ENGIN'D BY:	-
DRAWN BY:	APH
DATE:	MAY 2023

SECTION 4.0 – PLANS

LEGEND

- CONIFEROUS TREE
- DECIDUOUS TREE
- SEWER MANHOLE
- GUY WIRE
- UTILITY POLE
- IRON PIPE OR REBAR FOUND
- CALCULATED CORNER
- STOP SIGN
- PROPERTY LINE
- APPROXIMATE PROPERTY LINE
- ABUTTING PROPERTY LINE
- CONTOUR - MAJOR INTERVAL
- CONTOUR - MINOR INTERVAL
- PAVEMENT

DRAINAGE LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT AREA (A-1a1)
- POND / FEATURE (P-DE) (NOT PRESENT IN PRE-DEVELOPMENT CONDITION)
- DRAINAGE ANALYSIS POINT (DP-1)

0 10 20 40 80

SCALE IN FEET

FOR REVIEW
NOT FOR CONSTRUCTION

DATE OF PRINT
OCTOBER 11 2023
HORIZONS ENGINEERING

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Civil and Structural Engineering
Land Surveying and Environmental Consulting
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GEORGES MILLS SHOW ROOM

SUNAPEE, NEW HAMPSHIRE

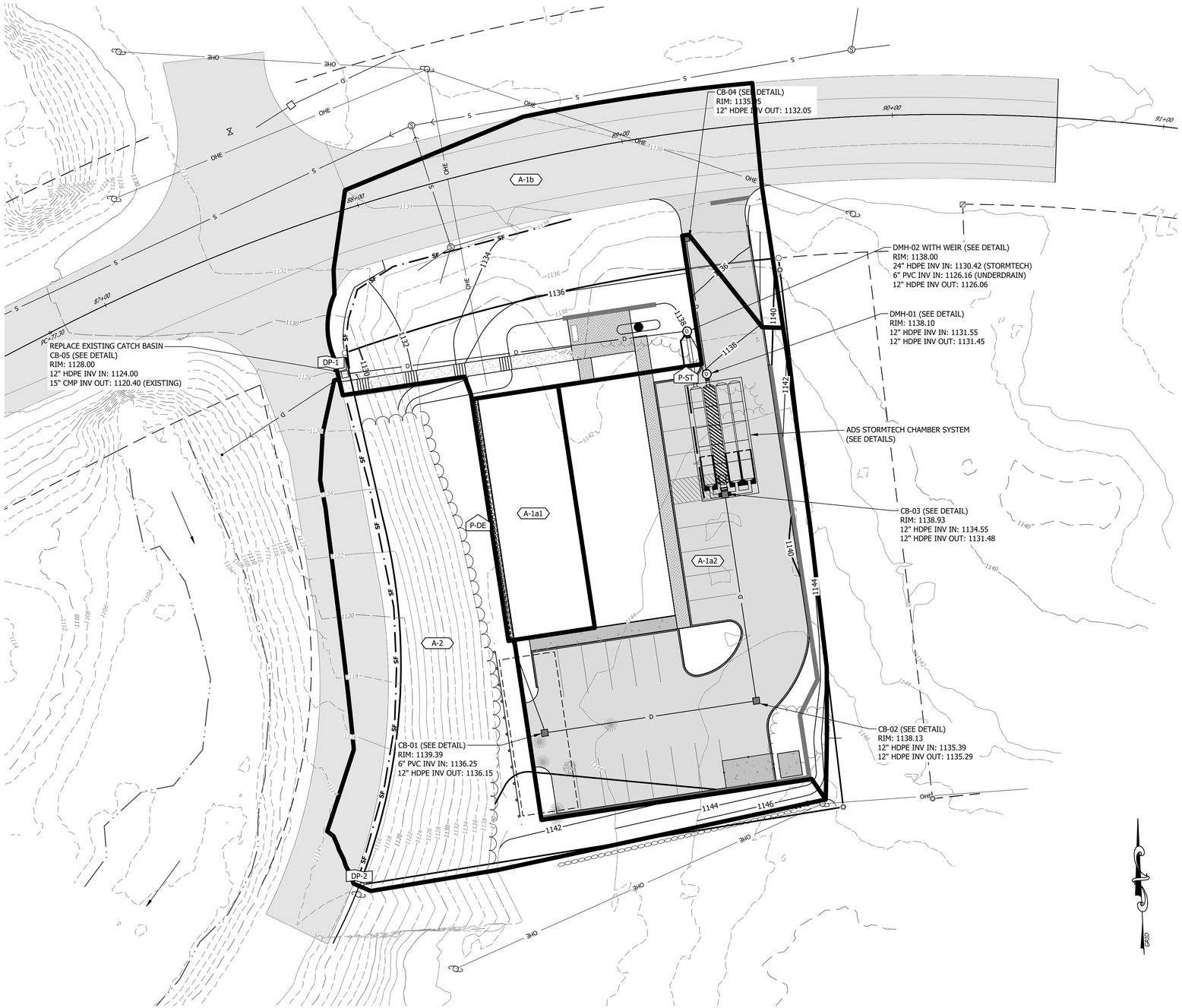
TAX MAP 104, LOT 84

PRE-DEVELOPMENT DRAINAGE PLAN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: SEPT. 2023	PROJECT #: 21902
ENGIN'D BY: WTD	DRAWN BY: CJH
CHECK'D BY: WTD	ARCHIVE #: H-___

DRAINAGE 4.2.1



LEGEND

- CONIFEROUS TREE
- DECIDUOUS TREE
- SEWER MANHOLE
- GUY WIRE
- UTILITY POLE
- IRON PIPE OR REBAR FOUND
- CALCULATED CORNER
- STOP SIGN
- PROPERTY LINE
- APPROXIMATE PROPERTY LINE
- ABUTTING PROPERTY LINE
- CONTOUR - MAJOR INTERVAL
- CONTOUR - MINOR INTERVAL
- PAVEMENT
- IMPERVIOUS PAVERS
- PERVIOUS PAVERS

DRAINAGE LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT AREA (A-1a1)
- POND / FEATURE (P-DE)
- DRAINAGE ANALYSIS POINT (DP-1)

0 10 20 40 80

SCALE IN FEET

FOR REVIEW
NOT FOR CONSTRUCTION

DATE OF PRINT
OCTOBER 11 2023
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GOODHUE SUNAPEE REAL PROPERTY, LLC

GEORGES MILLS SHOW ROOM

SUNAPEE, NEW HAMPSHIRE

TAX MAP 104, LOT 84

POST-DEVELOPMENT DRAINAGE PLAN

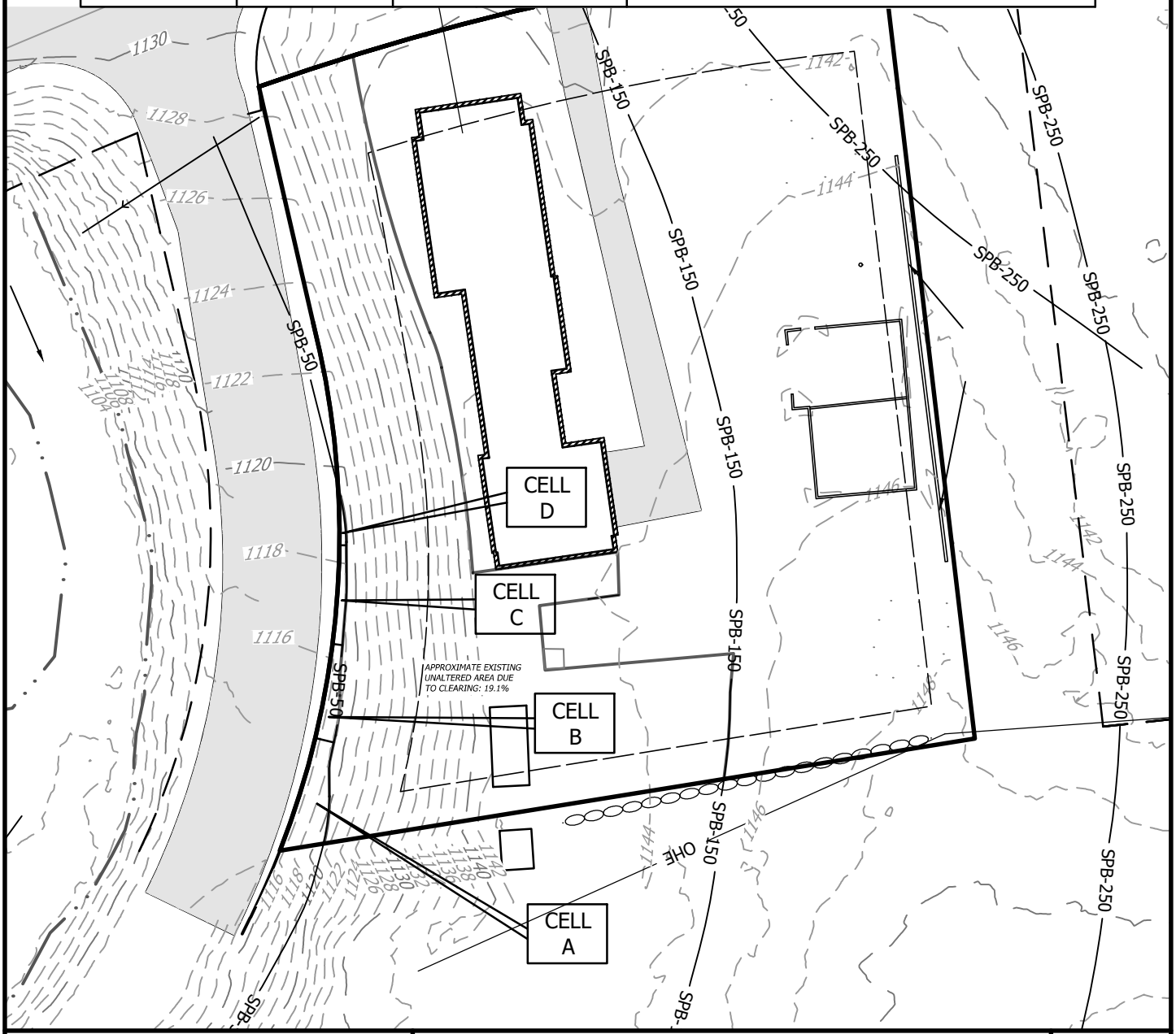
NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: SEPT. 2023	PROJECT #: 21902
ENGIN'D BY: WTD	DRAWN BY: CJH
CHECK'D BY: WTD	ARCHIVE #: H-___

DRAINAGE 4.2.2

NHDES TREE COUNT SUMMARY

GRID SEGMENT	AREA (SQ-FT)	PROPORTIONAL POINTS REQUIRED	
A	207	4	POINT TOTALS MET THROUGH GROUND COVER AND SHRUBS, SEE PHOTOS 10-14
B	93	2	
C	56	1	
D	17	0	



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GOODHUE SUNAPEE REAL PROPERTY, LLC

GEORGES MILLS SHOWROOM

1282 ROUTE 11
SUNAPEE, NEW HAMPSHIRE

WATERFRONT BUFFER

PROJECT #:	21902
ENGIN'D BY:	-
DRAWN BY:	APH
DATE:	MAY 2023

Photo # 1
View of existing parking and fence to be removed.

Photo # 2
South bound view of driveway and face of barn

horizons Engineering Inc.
176 Newport Road, Suite 8
New London, NH 03257
(603) 877-0116

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PO Box 853, Wolfeboro, NH 03894
Tax Map 104, Lot 84
Shoreland Application Photos
Project No. 21902
Date of Photos: 08/08/2023

Photo # 3

View north-west of the south-east facing side of the house showing the existing landscape and pavement

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Goodhue Sunapee Real Property, LLC

PO Box 853, Wolfeboro, NH 03894

Tax Map 104, Lot 84

Shoreland Application Photos

Project No. 21902

Date of Photos: 08/08/2023

Photo # 4
View east towards rear of house showing existing landscaping on NH-11 side.

Photo #5
View south of the back of the house showing existing landscaping on Cooper St side.

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Tax Map 104, Lot 84
Shoreland Application Photos
Project No. 21902
Date of Photos: 08/08/2023

Photo # 6
View north of rear of building showing existing conditions and trees in the impact area.

Photo #7
View north of Cooper St side. Pond Brook can be seen in the left side of the image.

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Project No. 21902
Date of Photos: 08/08/2023

Photo # 8
View of property from Cooper St.

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Shoreland Application Photos
Project No. 21902
Date of Photos: 08/08/2023

Photo # 9
View of property from Cooper St. Closeup on typical vegetation regrowth.

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Shoreland Application Photos
Project No. 21902
Date of Photos: 08/08/2023

Photo # 10
View of property from Cooper St.

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Shoreland Application Photos
Project No. 21902
Date of Photos: 08/08/2023

Photo # 10
Google maps view of Woodland and Waterfront buffers from August 2023.

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Tax Map 104, Lot 84
Shoreland Application Photos
Project No. 21902
Date of Photos: August, 2023

Photo # 12
View of property corner marker from Cooper St.

Photo # 13
Updated view of Woodland Buffer and Waterfront Buffer.

horizons Engineering Inc.
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New London, NH 03257
(603) 877-0116

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PO Box 853, Wolfeboro, NH 03894
Tax Map 104, Lot 84
Shoreland Application Photos
Project No. 21902
Date of Photos: 12/07/2023

Photo # 14

Updated view of Property from Cooper St., including stone rip rap at edge of Waterfront Buffer.

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New London, NH 03257
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Goodhue Sunapee Real Property, LLC

PO Box 853, Wolfeboro, NH 03894

Tax Map 104, Lot 84

Shoreland Application Photos

Project No. 21902

Date of Photos: 12/07/2023

PERMIT APPROVAL # TC-23-33

TOWN OF SUNAPEE

TREE CUTTING & VEGETATION CLEARING REQUEST FORM

FEE-$75

For properties 250' or closer to certain lakes, pond and rivers.

RECEIVED
AUG 2 1 2023
TOWN OF SUNAPEE

This application is required prior to:

1) Any tree cutting within 150' of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River
2) Any stump or root removal within 50' of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River
3) Any project that involves the removal of more than 1,000 square feet of vegetation (plants, trees or saplings) within 150-feet of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River

What is the Shoreline Overlay? All lands within 250' feet of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River.[i]

What is the Natural Woodland Buffer? The Natural Woodland Buffer is the area within 150-feet from the shorelines (normal high-water mark) of Lake Sunapee, Ledge Pond, Mountain View Lake, Otter Pond, Perkins Pond, Sugar River.[ii]

1. Landowners Name: Richard + Joan Stanchfield 2. Parcel ID: _____
2. Parcel Street Address: 6 Ridgewood Point Rd
3. Mailing Address: P.O. Box 503 Newbury NH 03255
4. Phone #: 860 305-4834 5. Email: acg_cpa@yahoo.com
5. Preferred method of contact (check all that apply): __ Phone X Email __ US Post Mail
6. Name of river/lake/pond abutting property: Sunapee

Have you obtained any permits from State of NH, Department of Environmental Services (DES) for this project?

__Yes X No __If yes, attach copy of permit to this application.

NOTE: Any cutting, or removal of natural vegetation, on ponds, lakes or rivers must be by permit from DES.[iii]

PROPOSED TREE CUTTING

Please mark all trees listed on this application with ribbon or surveyor's tape to assist the Town with any necessary site inspections. Attach any plan, site sketch, or photos to this application. Be sure to include location of buildings and driveways in relation to proposed tree cutting, and measurements to the shoreline and/or property lines.

Are you planning to cut more than 5 trees in the Woodland Buffer within a 12-month period? X Yes __No

Are those trees at least 6" in diameter (or 18" circumference) at 4.5' above the ground? X Yes __No

✓ If yes, attach to this application a Cutting & Clearing Plan, showing the exact location, size and type of tree to be cut. Your application will be reviewed by the Sunapee Planning Board at their next available meeting.[iv]

1. **List all trees within the first 50-feet** of the shoreline, that are at least 6" in diameter (i.e. 18" in circumference) at 4.5-feet above ground level.[v]

Tree Type	Diameter	Condition	Tree Type	Diameter	Condition
1.			4.		
2.			5.		
3.			(Attach list of additional trees if needed)		

none

2. **List all trees located between 50 to 150-feet** of the shoreline, that are at least 6" in diameter (i.e. 18" in circumference) at 4.5-feet above ground level.

Tree Type	Diameter	Condition	Tree Type	Diameter	Condition
1.			4.		
2.			5.		
3.			(Attach list of additional trees if needed)		

See attached

STUMPS & ROOTS WITHIN THE FIRST 50-FEET OF THE SHORELINE

Stumps and their root systems which are located within 50' of normal high-water shall be left intact in the ground, *unless* removal is specifically approved by the Wetlands Board (NH DES) pursuant to RSA 482-A.[vi]

Check the appropriate option below:

✓ **1. Stumps or roots systems will NOT be removed within the first 50-feet of the shoreline.**

___ 2. Stumps and roost systems WILL be removed within the first 50-feet of the shoreline, in accordance with the attached permit issued by NH DES.

___ 3. Not Applicable. This project does not involve any activity within the 50-foot buffer.

PROPOSED VEGETATION REMOVAL

Does your project include removal of more than 1,000 square feet of vegetation (plants, trees or saplings) within 150-feet of the shoreline, i.e. the Natural Woodland Buffer?

__Yes ✓ No

If yes, attach to this application a Cutting & Clearing Plan. Include a diagram showing the square footage of the vegetation area to be removed and describe in detail the replanting plan. Your application will be reviewed by the Sunapee Planning Board at their next available meeting.[vii]

Note: Where natural vegetation is removed it shall be replaced with other vegetation that is equally effective in retarding runoff, preventing erosion and preserving natural beauty.[viii]

***** SEE PAGE 3 FOR SIGNATURE *****

ADDITIONAL GUIDELINES

The following is a summary of additional requirements related to the Shoreline Overlay District, per the Sunapee Zoning Ordinance, *Article 4.33 Shorelines - Specific Provisions, Section B, (8) Erosion Control, Part (B) Cutting and Removal Of Natural Vegetation Within The Natural Woodland Buffer*. You may read the Zoning Ordinance in its entirety online at www.town.sunapee.nh.us or view the paper copy available at the Sunapee Town Office, 23 Edgemont Road.

Concerning The Removal Of Natural Vegetation Within The Natural Woodland Buffer:

- Where natural vegetation is removed it shall be replaced with other vegetation that is equally effective in retarding runoff, preventing erosion and preserving natural beauty.[ix]
- The following activities are permitted within the Natural Woodland Buffer: normal trimming, pruning, and thinning (of saplings less than 6" in diameter) to enhance growth, to minimize the entry of vegetative debris into lakes and ponds, or to prevent the overgrowth of natural beaches; and felling and replacement of decaying trees and shrubs.[x]
- Not more than 50% of the entire basal area* may be removed for any purpose in a 20-year period. Replacement planting with native or naturalized species may be permitted to maintain the 50% level.
    - Exception: Up to 7,500 square-feet of basal area removed for structures, driveways, or parking areas shall be excluded when computing percentage limitations.[xi]
- A *Well-Distributed Stand of Vegetative Matter* (see definition below) shall be maintained in the Natural Woodland Buffer . . .
    - Exception: . . . except for those areas within 20' of existing or proposed structures, 12' from the centerline of driveways, and 10' from the edge of parking areas.[xii]
- DEFINITIONS - *Well-Distributed Stand of Vegetative Matter* - This matter includes trees, saplings, shrubs, and ground covers and their living, undamaged root systems. The distribution of such shall be as follows[xiii]:
    - *Undeveloped Lots (Prior to March 12, 1996)* - Permitted cutting per 50 feet of linear water frontage shall not reduce the total *basal area* below 9 square feet. If a lot is not 150' in depth, the required *basal area* shall be proportioned accordingly. Saplings with less than 2" diameter shall not be used to calculate minimum *basal area*. In no case shall there be any area more than 500 square feet completely cleared of vegetative matter unless such is naturally occurring.
    - *Lots with Dwelling Units (Prior to March 12, 1996)* - Permitted cutting per 50 feet of linear water frontage shall not reduce the total *basal area* below 6 square feet. If a lot is not 150' in depth, the required *basal area* shall be proportioned accordingly. Saplings with less than 2" diameter shall not be used to calculate minimum basal area.
    - *Basal area** is defined as the cross-sectional area of a tree measured at a point 4.5' above the ground. (Adopted 3/12/1996).
        - **Basal Area*: For purposes of this application, the basal area is considered the cross section at 4.5' from the ground of all trees, shrubs and saplings with at least a 2" diameter.

SIGNATURE OF PROPERTY OWNER(S):

By signing below, I verify that: 1) all trees listed on this application have been marked with ribbon or surveyor's tape; 2) I have read the above Additional Guidelines; and 3) I give permission for a Town official(s) to visit the property in association with the approval of this application.

RLC

Signature of Landowner(s)

8/15/23

Date

Richard C. Stanchfield

Printed Name(s)

THIS PAGE TO BE COMPLETED BY TOWN OF SUNAPEE:

__ Planning Board action required.

__ Planning Board not required.

_____ _____

Signature of Zoning Administrator Date

Planning Board

The application was reviewed by the Sunapee Planning Board on _____(date) and the following action was taken:

__ Approved __ Approved with Conditions __ Denied __ Other

Signature of Planning Board Chair *or* Town Planner: _____

Printed Name / Title: _____ Date: _____

Zoning Administrator

The Applicant is hereby **Granted / Denied** a permit for cutting trees and/or clearing vegetation at

Parcel ID _____ pursuant to the attached application and conditions.

Conditions:_____

_____

_____ _____

Signature of Zoning Administrator Date

SOURCES from Sunapee Zoning Ordinance, March 2017 Edition

i Article II, Section 2.30, Water Resources Overlay Districts (3).
ii Article IV, Section 4.33 Shorelines - Specific Provisions, Section B, (8) Erosion Control, Part (b) Cutting And Removal of Natural Vegetation within the Natural Woodland Buffer.
iii Article IV, Section 4.33.B.(8).(b).(I)
iv Article IV, Section 4.33.B.(8).(b).(I).(1-2)
v Article IV, Section 4.33.B.(8).(b).(I).(1)
vi Article IV, Section 4.33.B.(8).(b).(VI)
vii Article IV, Section 4.33.B.(8).(b).(I).(1-2)
viii Article IV, Section 4.33.B.(8).(b).(III)
ix Article IV, Section 4.33.B.(8).(b).(III)
x Article IV, Section 4.33.B.(8).(b).(IV)
xi Article IV, Section 4.33.B.(8).(b).(V)
xii Article IV, Section 4.33.B.(8).(b).(VII)
xiii Article XI: Definitions and Explanations - Well-Distributed Stand of Vegetative Matter

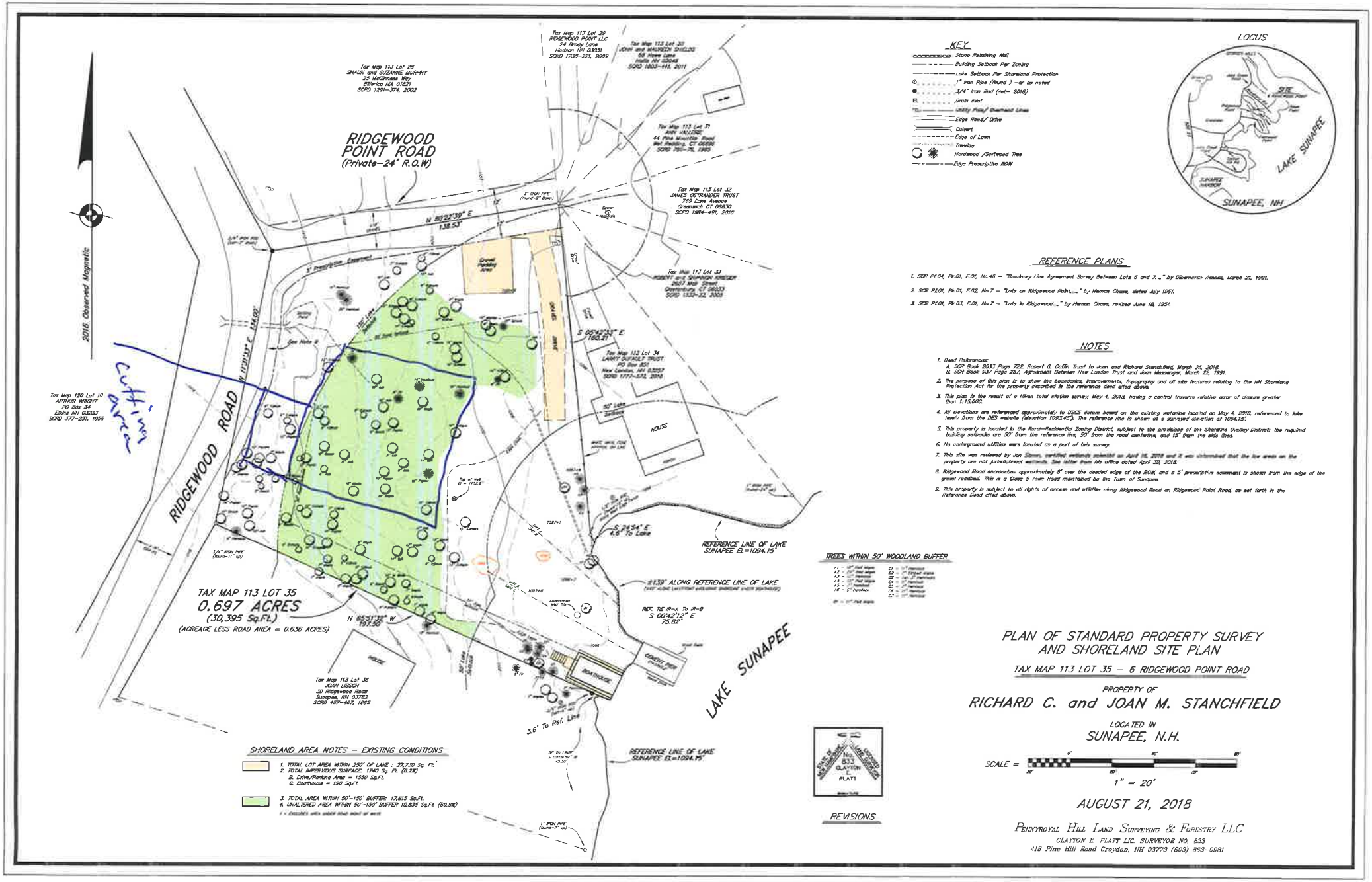
Abutters

Larry B Default Trust
210 Job Seamans Acres
New London, 03257

Shaun + Suzanne H Murphy
25 McGinness Way
Billerica, MA 01821

Gary Wight
28488 Mission Blvd #124
Hayward, CA 94544

Joan P Lirsch
c/o Joan Messenger
30 Ridgewood Road
Sunapee, NH 03782



KEY

- Stone Retaining Wall
- Building Setback Per Zoning
- Lake Setback Per Shoreland Protection
- 1" Iron Pipe (found) –or as noted
- 3/4" Iron Rod (set– 2018)
- Drain Inlet
- Utility Pole/ Overhead Lines
- Edge Road/ Drive
- Culvert
- Edge of Lawn
- Treeline
- Hardwood /Softwood Tree
- Edge Prescriptive ROW

LOCUS

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7. This site was reviewed by Jon Steven, certified wetlands scientist on April 16, 2018 and it was determined that the low areas on the property are not jurisdictional wetlands. See letter from his office dated April 30, 2018.
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TREES WITHIN 50' WOODLAND BUFFER

A1 – 12" Red Maple
A2 – 12" Red Maple
A3 – 12" Hemlock
A4 – 12" Red Maple
A5 – 7" Hemlock
A6 – 5" Hemlock
B – 11" Red Maple
C1 – 11" Hemlock
C2 – 11" Hemlock
C3 – 11" Hemlock
C4 – 11" Hemlock
C5 – 11" Hemlock

SHORELAND AREA NOTES – EXISTING CONDITIONS

1. TOTAL LOT AREA WITHIN 250' OF LAKE : 27,730 Sq. Ft.'
2. TOTAL IMPERVIOUS SURFACE: 1740 Sq. Ft. (6.2%)
   B. Drive/Parking Area = 1550 Sq.Ft.
   C. Boathouse = 190 Sq.Ft.
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4. UNALTERED AREA WITHIN 50'–150' BUFFER 10,835 Sq.Ft. (60.8%)

REVISIONS

PLAN OF STANDARD PROPERTY SURVEY AND SHORELAND SITE PLAN

TAX MAP 113 LOT 35 – 6 RIDGEWOOD POINT ROAD

PROPERTY OF

RICHARD C. and JOAN M. STANCHFIELD

LOCATED IN

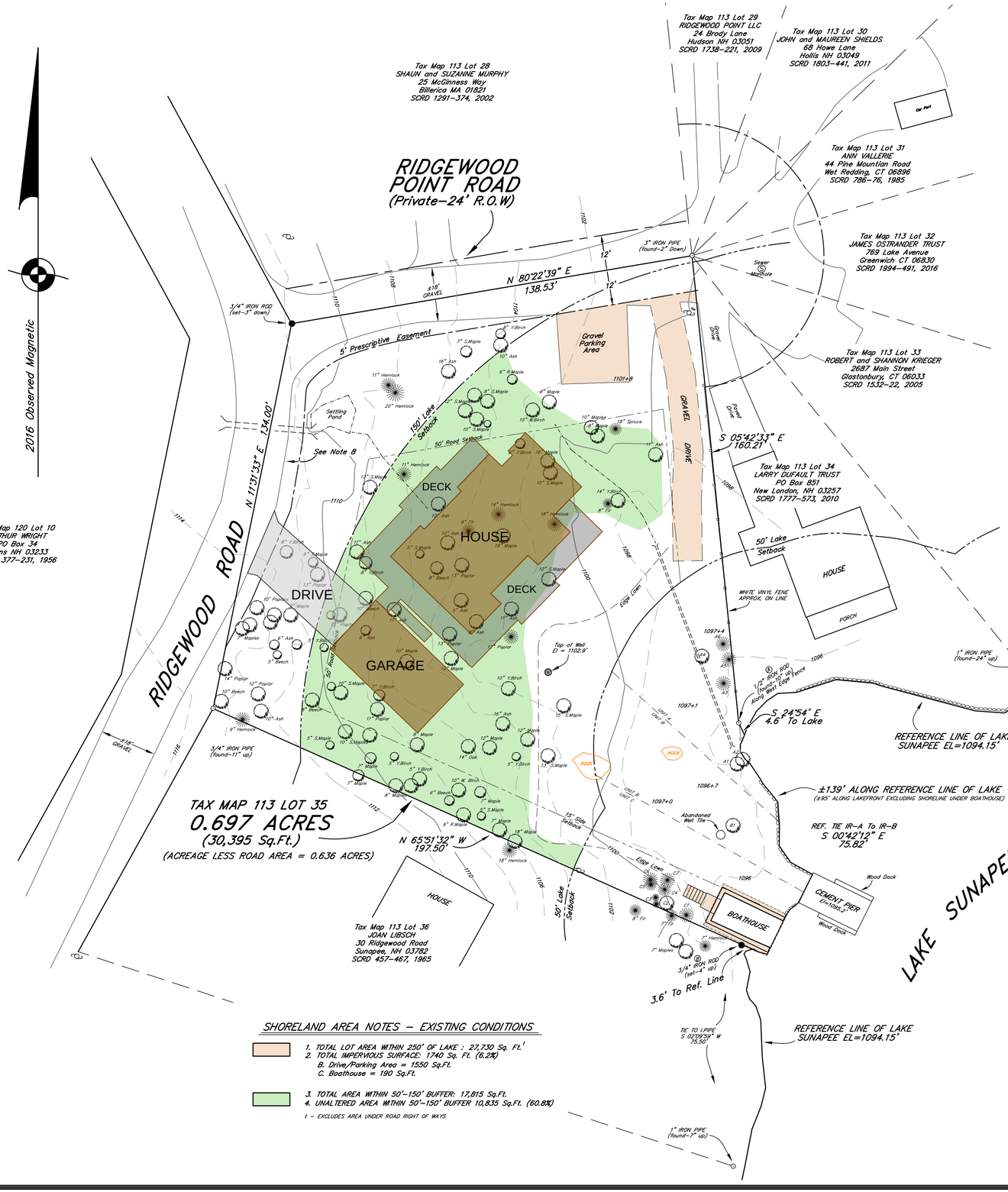
SUNAPEE, N.H.

SCALE = 0' 20' 40' 80'

1" = 20'

AUGUST 21, 2018

PENNYROYAL HILL LAND SURVEYING & FORESTRY LLC
CLAYTON E. PLATT LIC. SURVEYOR NO. 633
418 Pine Hill Road Croydon, NH 03773 (603) 863–0981



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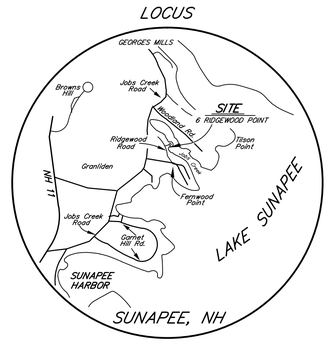
LOCUS



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8. Ridgewood Road encrooches approximately 8' over the deeded edge of the ROW, and a 5' prescriptive easement is shown from the edge of the gravel roadbed. This is a Class 5 Town Road maintained be the Town of Sunapee.
9. This property is subject to all rights of access and utilities along Ridgewood Road an Ridgewood Point Road, as set forth in the Reference Deed cited above.

TREES WITHIN 50' WOODLAND BUFFER

A1 – 18" Red Maple
A2 – 28" Red Maple
A3 – 12" Hemlock
A4 – 12" Red Maple
A5 – 7" Hemlock
A6 – 9" Hemlock
B1 – 17" Red Maple
C1 – 11" Hemlock
C2 – 7" Striped Maple
C3 – Two 3" Hemlocks
C4 – 8" Hemlock
C5 – 7" Hemlock
C6 – 11" Hemlock
C7 – 11" Hemlock

SHORELAND AREA NOTES – EXISTING CONDITIONS

1. TOTAL LOT AREA WITHIN 250' OF LAKE : 27,730 Sq. Ft.[1]
2. TOTAL IMPERVIOUS SURFACE: 1740 Sq. Ft. (6.2%)
   B. Drive/Parking Area = 1550 Sq.Ft.
   C. Boathouse = 190 Sq.Ft.
3. TOTAL AREA WITHIN 50'–150' BUFFER: 17,815 Sq.Ft.
4. UNALTERED AREA WITHIN 50'–150' BUFFER 10,835 Sq.Ft. (60.8%)

1 – EXCLUDES AREA UNDER ROAD RIGHT OF WAYS

STATE OF NEW HAMPSHIRE
No. 833
CLAYTON E. PLATT
LICENSED LAND SURVEYOR
SIGNATURE

REVISIONS

PLAN OF STANDARD PROPERTY SURVEY AND SHORELAND SITE PLAN

TAX MAP 113 LOT 35 – 6 RIDGEWOOD POINT ROAD

PROPERTY OF

RICHARD C. and JOAN M. STANCHFIELD

LOCATED IN

SUNAPEE, N.H.

SCALE = 0' 40' 80' / 20' 60'

1" = 20'

AUGUST 21, 2018

PENNYROYAL HILL LAND SURVEYING & FORESTRY LLC
CLAYTON E. PLATT LIC. SURVEYOR NO. 833
418 Pine Hill Road Croydon, NH 03773 (603) 863–0981

TOWN OF SUNAPEE
Planning & Zoning Department
23 Edgemont Road
Sunapee, New Hampshire 03782
Phone: (603) 763-2212 Fax: (603) 763-4925
E-mail: craigh@town.sunapee.nh.us

COPY

Joan M & Richard C Stanchfield
PO Box 503
Newbury NH 03255

July 19, 2023

RE: Zoning Compliance Violation at 6 Ridgewood Point Road Sunapee, New Hampshire 03782

Dear Mr & Mrs Stanchfield:

It has been brought to our attention that several trees were removed from your property on Ridgewood Point Road. The Town of Sunapee zoning ordinance section 4.33(8)(b)(1) requires that a cutting and clearing plan be approved by the Planning and Zoning Department to remove up to 5 trees in a one-year period or 10 trees in a 5-year period within the 150' Natural Woodland Buffer. The removal of over five trees in a calendar year would require approval from the Planning Board. If you have this permit, please submit a copy to the Email address above or in person to the Town Hall.

Please complete the enclosed Tree Cutting Request Form as well as an After-The-Fact Zoning Compliance Application. A copy of the enclosed permit applications can be found on the Town of Sunapee website www.town.sunapee.nh.us under the Zoning Department webpage, listed under the Planning and Zoning Forms.

Please Submit all necessary permit applications to the Sunapee Planning and Zoning Department within 15 days of receipt of this letter with the required fees for each permit.

Please do not hesitate to contact me if you have any questions.

Thank you,

Craig Heino
Town of Sunapee
Code Compliance Officer

6 Ridgewood Point Rd 0113-0035

6 Ridgewood Point Rd. 0113-0035

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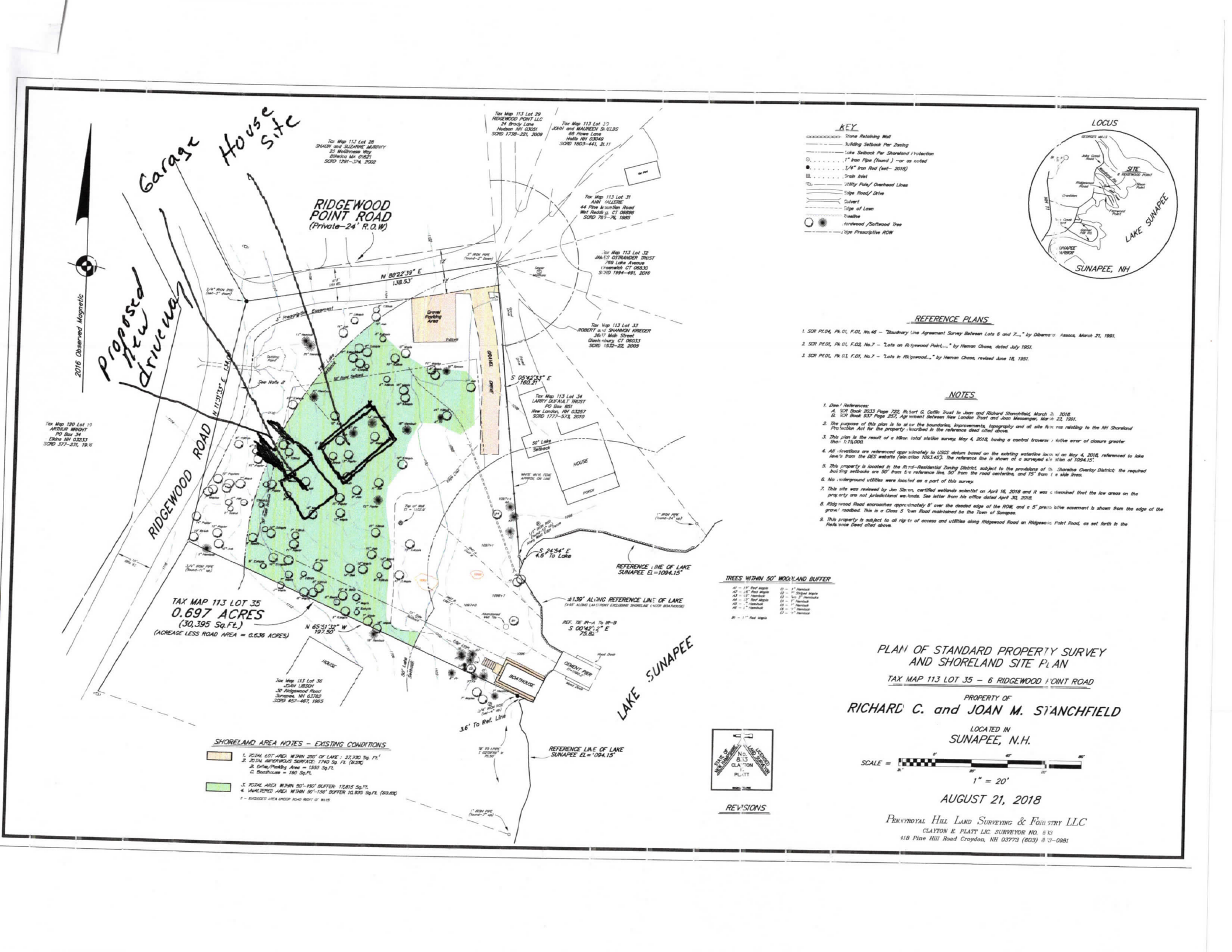

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SHORELAND AREA NOTES – EXISTING CONDITIONS

1. TOTAL LOT AREA WITHIN 250' OF LAKE : 27,230 Sq. Ft.
2. 20.2% IMPERVIOUS SURFACE: 1740 Sq. Ft. (6.2%)
   A. Entry/Parking Area = 1330 Sq.Ft.
   B. Boathouse = 190 Sq.Ft.
3. TOTAL AREA WITHIN 50'–150' BUFFER: 17,815 Sq.Ft.
4. UNMOWED AREA WITHIN 50'–150' BUFFER 10,935 Sq.Ft. (60.6%)

* – EXCLUDES AREA UNDER ROAD RIGHT OF WAYS

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TAX MAP 113 LOT 35 – 6 RIDGEWOOD POINT ROAD

PROPERTY OF

RICHARD C. and JOAN M. STANCHFIELD

LOCATED IN

SUNAPEE, N.H.

SCALE = 0' 40' 80' / 20' 0' 20' 40'

1" = 20'

AUGUST 21, 2018

PENNYROYAL HILL LAND SURVEYING & FORESTRY LLC
CLAYTON E. PLATT LIC. SURVEYOR NO. 813
418 Pine Hill Road Croydon, NH 03773 (603) 863–0981

RECEIVED
AUG 21 2023
TOWN OF SUNAPEE

TOWN OF SUNAPEE
AFTER-THE-FACT
ZONING COMPLIANCE APPLICATION

Name: Richard + Joan Standtfld

Parcel ID: 0113-0035

Address: P.O. Box 503
Newbury NH 03255

Project Location:

House #: 6

Phone #: 860 305-4834

Street: Ridgewood Point Rd

Description of work completed without a permit:

tree removal approximatly 25 trees to date - less than 10 to finish area for proposed home construction

Previous Certificates of Compliance issued on this property:

none

I herby certify that all work has ceased on this project and no further work will be done until all permits are issued.

Legal Deed Holder

Fee: to be submitted with application - $300.00 Residential
$330.00 Commercial

(OFFICE USE ONLY)

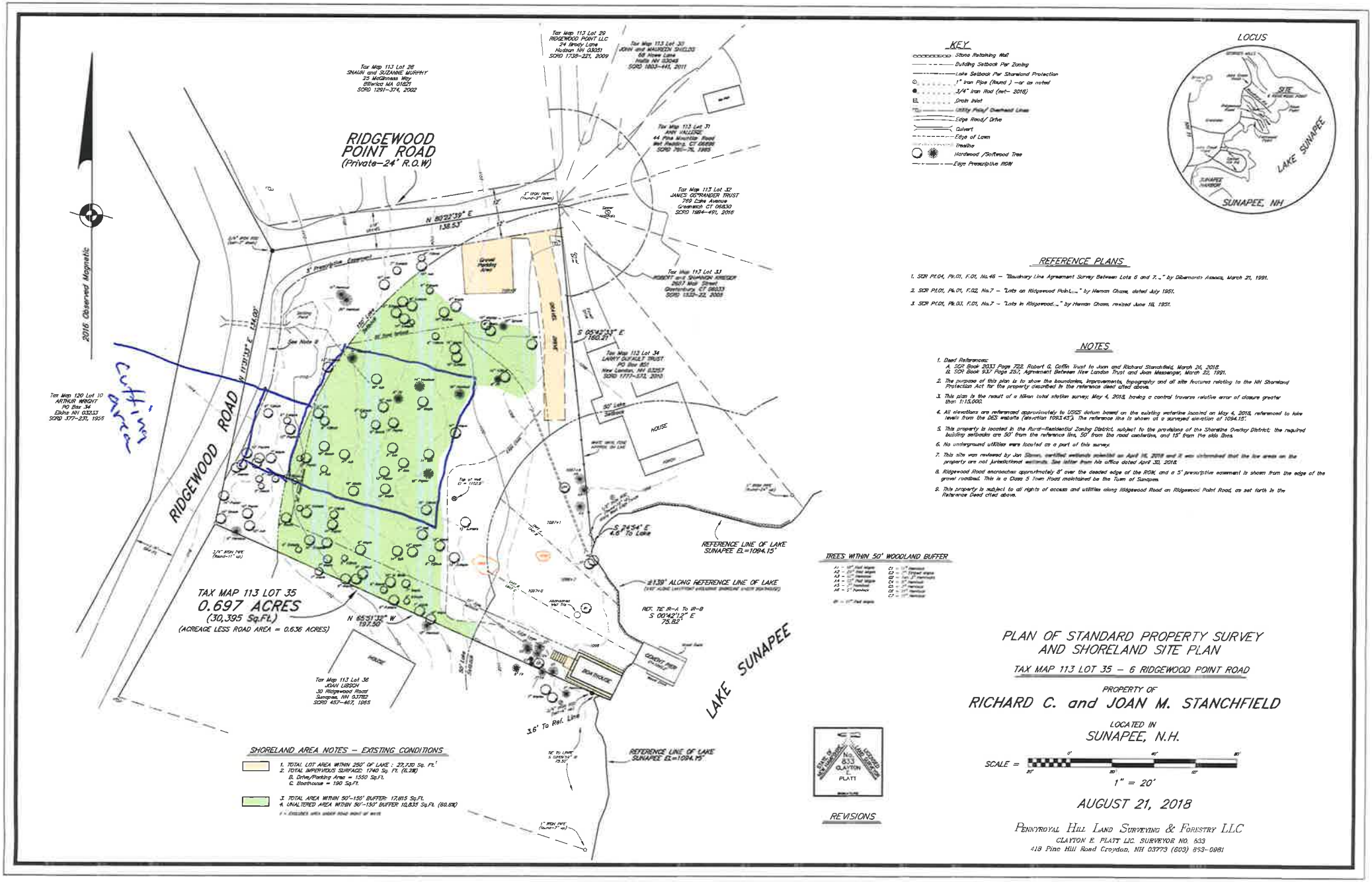
Date Received: _____ By: _____

Fee Paid: _____ Action Taken: _____

The Applicant is hereby Granted an After-The-Fact Permit for the work described above undertaken without proper permits. This permit is Granted in conjunction with Certificate of Compliance #_____.

Date: _____

Board of Selectmen



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418 Pine Hill Road Croydon, NH 03773 (603) 863–0981

RECEIVED
AUG 10 2023
TOWN OF SUNAPEE

TOWN OF SUNAPEE
APPLICATION FOR SITE PLAN REVIEW

(PDF OF SITE PLAN MUST BE INCLUDED WITH APPLICATION)

1. Landowner(s) Name(s) Jared and Laura Raymond
   Address 276 Mountain Road, Newbury, NH 03255
   (Mailing) Same As Above
   Phone 603-848-9917
2. Zoning District Mixed Use 1
3. Project Location: 60 Route 103, Sunapee
4. Parcel ID: 000232/000023 CU
5. Complete description of current use of property:

Proposing to turn property from residential use to office space within the existing building at this time.

6. Does this project require a special exception or variance by the ZBA as outlined in the Sunapee Zoning Regulations? Yes___ No ✓ (If yes, complete the Zoning Board of Adjustment application, and Land Use Questionnaire.)
7. Complete description of proposed project (Include area dimensions, use, # of employees, # of dwelling units, etc.)

The property will have 720' sq. ft. of residential dwelling space, with up to 20 employees coming and going throughout the day and will serve as a contractors yard for parking of equipment, working within the shop spaces, and storage of materials.

8. Certification/Permission for inspection. To the best of my knowledge, the above is true and accurate. I hereby grant permission for site inspection to Planning Board official(s). I also understand that it is my responsibility for providing a complete application. I realize that any of the application requirements, which are assumed waivable during the initial review, may still be required at the time of review by the Planning Board.

Signature(s) of Landowner(s) — Date 8/10/23

Date of Application:
Phase I 8/10/23 Phase II ___
Phase III ___ Major Site Plan ___
Home Business ___
Fee Paid ___ Method of Payment ___

FINAL HEARING CHECKLIST

The following items must be submitted in accordance with the attached meeting and deadline schedule for the Planning Board meeting you wish to attend:

__✓__ Completed Application
__✓__ Fees
__✓__ Two (2) copies of plans for review (with required information per Article V)
__✓__ List of abutters, including mailing addresses
__✓__ PDF of Site Plan emailed to frontdesk@town.sunapee.nh.us

The Planner will review the plans to determine if the appropriate information has been provided on the plans. If the submission is deemed complete, notices will be sent (14) calendar days prior to the hearing. The following items must be included on the plan per Article V:

__✓__ Plan at a scale of 1" + 20' or less
__✓__ Perimeter boundary survey
__✓__ Title of drawing with name of applicant
__✓__ Parcel ID
__✓__ Name and mailing addresses of abutting property owners
__✓__ Signature block for Water & Sewer Commission, Police Chief, Road Agent & Conservation Commission
__✓__ Site location map
__✓__ North point, bar scale, appropriate dates
__✓__ Name, address, and seal of person preparing map
__✓__ Location and shape of existing and proposed buildings
__✓__ Square footage for each use designated on plan
__✓__ Existing and proposed contours at an interval or no more than 5'. Spot elevations for level lot.
__N/A__ Streams, wetlands, and other water bodies
__✓__ Width, location, and grades of existing and proposed streets and driveways
__✓__ Layout and size of parking spaces
__✓__ Sewage disposal facilities for property including mains and service lines
__N/A__ Water supply for property including mains and services lines
__N/A__ Proposed landscaping plan
__✓__ Existing and proposed electric lines
__✓__ Existing and proposed telephone lines

N/A ____ Exterior lighting plan Existing Flood Light on House is All that is Planned

Article V requirements (cont.):

N/A ____ Proposed signs-size and location None Anticipated

N/A ____ Locations of retaining walls, fences, and outside storage areas

N/A ____ Location of fire alarms and sprinklers

The Planning Board may waive the following items if it is determined, the project's impact will be minor, and otherwise, each item will be required:

_____ Drainage design, including drainage structures, culverts, ditches, and storm sewer lines

_____ Drainage calculations

_____ Plans for toxic waste storage

_____ Location of hazardous materials storage

State of New Hampshire Permits:

_____ Department of Transportation (Highway/Access)

_____ NHWSPCD (Septic Systems

_____ Water Supply Division

_____ Site Specific (Department of Environmental Services)

_____ Wetlands Board

RE: 60 NH Route 103, Sunapee NH 03782

July 17, 2023

To Whom It May Concern:

I hereby give James Bruss of Bruss Building Services Group, LLC (DBA as Relax and Company) authority to act as my agent on all matters with the Town of Sunapee as well as the State of NH with regards to the permitting and performance of the business conversion project at my property located at 60 NH Route 103, Sunapee, NH.

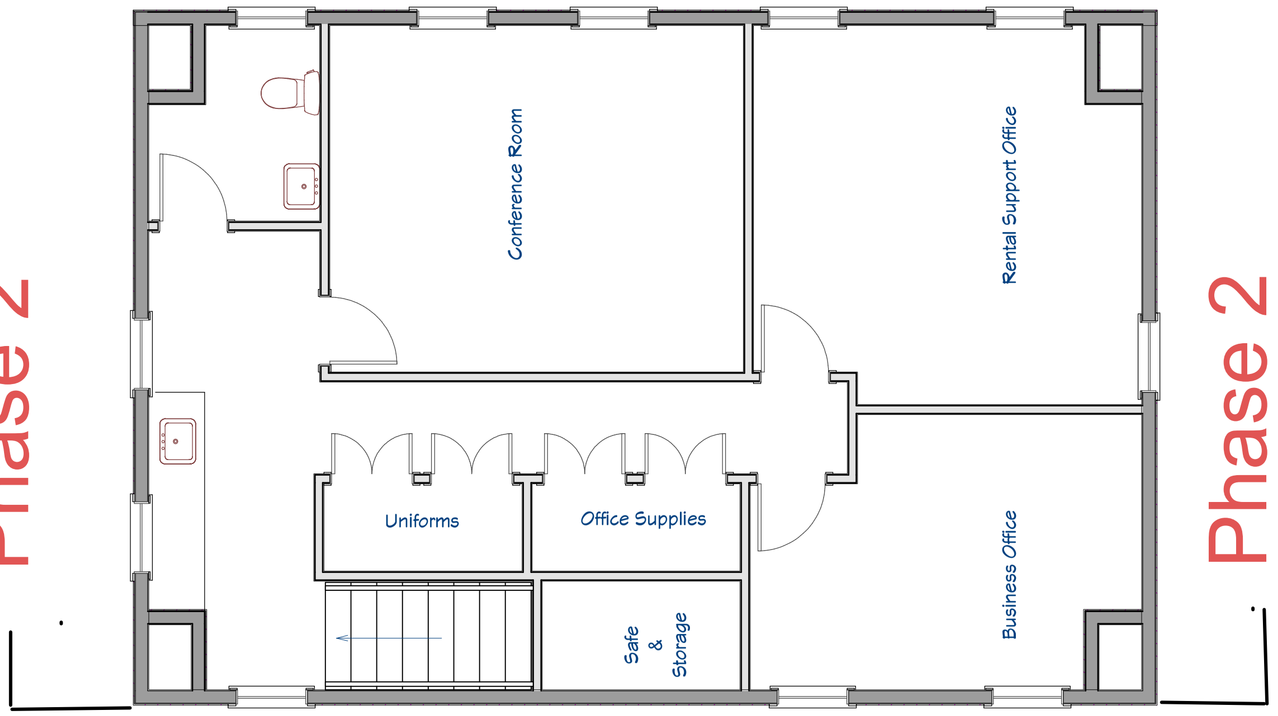
Sincerely,

Jared S. Raymond
276 Mountain Rd., Newbury, NH 03255
603-848-9971

DRAWINGS PROVIDED BY:	Harbor& Hearth Construction, LLC	DATE:	8/5/23
PROJECT DESCRIPTION:	Relax & Company Offices	SCALE:	1/4"=1'
SHEET TITLE:	Preliminary Floor Plans	SHEET:	A-3

NO.	DESCRIPTION	BY	DATE

Phase 2



Phase 2

Phase 2

Elevation 1

Phase 2

NO.	DESCRIPTION	BY	DATE

SHEET TITLE: Preliminary Elevations

PROJECT DESCRIPTION: Relax & Company Offices

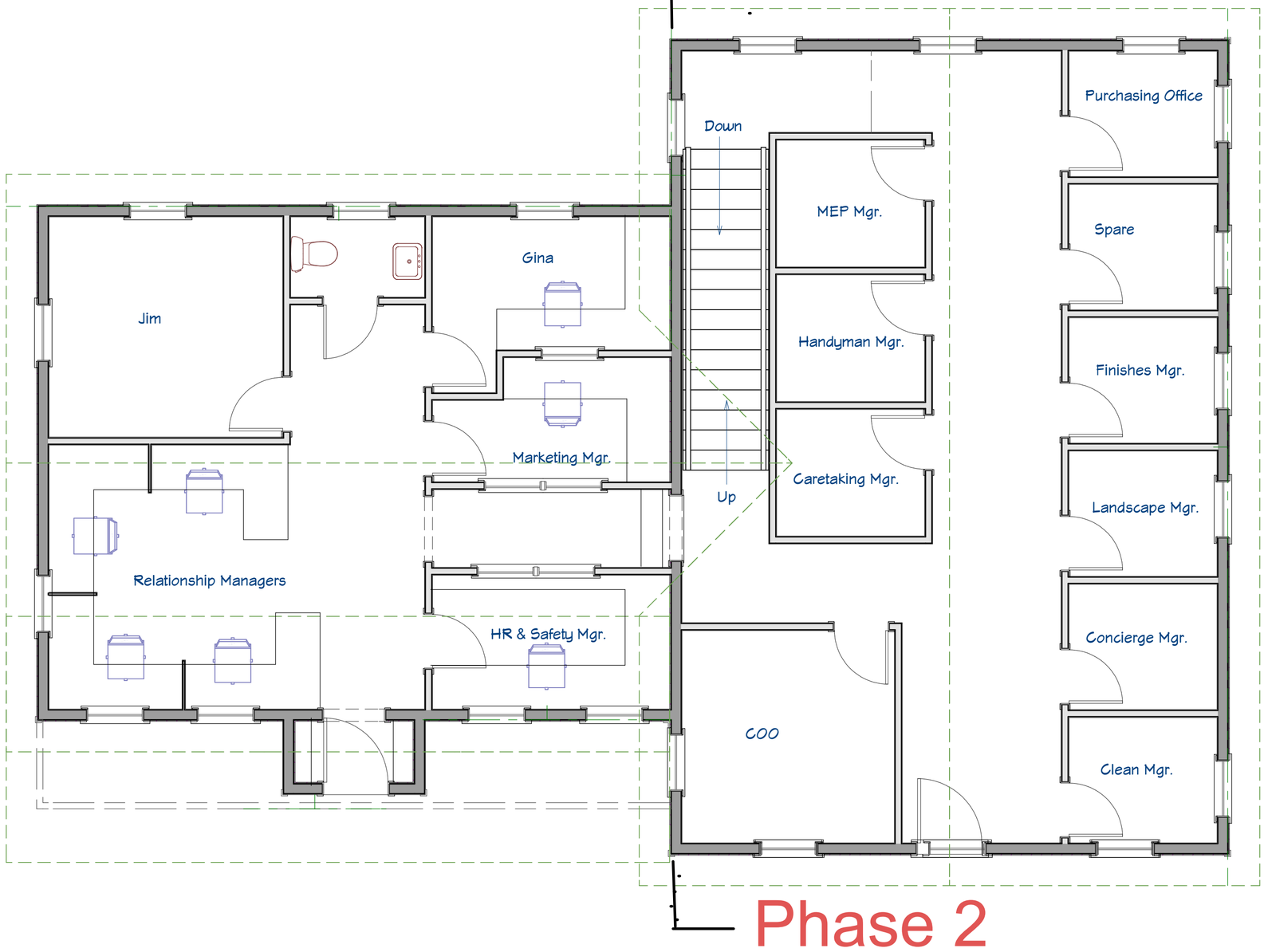
DRAWINGS PROVIDED BY: Harbor& Hearth Construction, LLC

DATE: 8/5/23

SCALE: 1/4"=1'

SHEET: **B-1**

Phase 2



Phase 2

NO.	DESCRIPTION	BY	DATE

SHEET TITLE: Preliminary Floor Plans

PROJECT DESCRIPTION: Relax & Company Offices

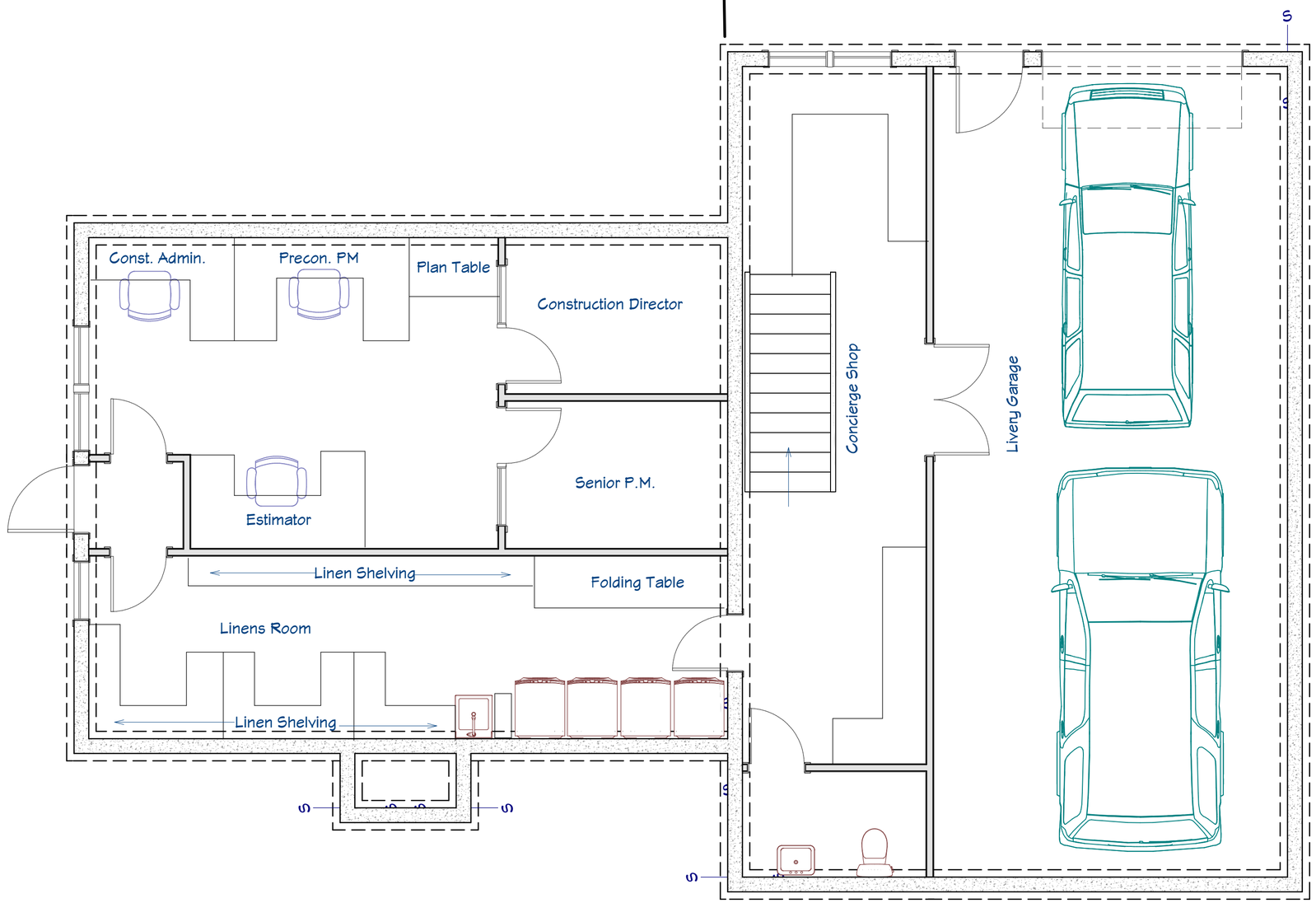
DRAWINGS PROVIDED BY: Harbor& Hearth Construction, LLC

DATE: 8/5/23

SCALE: 1/4"=1'

SHEET: A-2

Phase 2



Phase 2

NO.	DESCRIPTION	BY	DATE

SHEET TITLE: Preliminary Floor Plans

PROJECT DESCRIPTION: Relax & Company Offices

DRAWINGS PROVIDED BY: Harbor& Hearth Construction, LLC

DATE: 8/5/23

SCALE: 1/4"=1'

SHEET: A-1

Building Usage
Offices = 3204' sq. ft.
Shop = 660' sq. ft.
Parking Spaces = (19) 9'x18'
All Aisles = 24'

Green Space 46.7%
8166 / 17,076

Map & Lot # 000232/000018

Water & Sewer Commission: _____

Police Chief: _____

Road Agent: _____

Rock/ Retaining Wall

Seasonal Perennials

Malus Adams Crabapple

Canadian Hemlock

Sugar Maple

Montgomery Blue Spruce

Cheer Drop Arborvitae

Existing Trees

NO.	DESCRIPTION	BY	DATE

SHEET TITLE: Main Office
60 Route 103
Sunapee, NH

PROJECT DESCRIPTION: Relax and Company
Offices

DRAWINGS PROVIDED BY: Relax and Company

DATE: 10/03/23

SCALE: 1"=20'

SHEET: S-1

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N.H. ROUTE 103

Existing

Proposed

Fire Pit

OHE

12' WIDE ACCESS EASEMENT
*SEE NOTE 7

UP #30D/T10

20 0 10 20

SCALE: 1" = 20 ft.

16° DEC

NORTH

WEST EAST

GRID

Building Usage

Offices = 3204' sq. ft.
Shop = 660' sq. ft.
Parking Spaces = (19) 9'x18'
All Aisles = 24'

Parking Needs

Full Time Employees = 19
Part Time Employees = 10
Future Positions = 11 (Included above)
On-Site = 24 spaces + 1 handicapped + 2 inside
Depot Street = 7 spaces

Green Space 46.7%

8166 / 17,076

Map & Lot # 000232/000018

Water & Sewer Commission: _____

Police Chief: _____

Road Agent: _____

Seasonal Perennials
Malus Adams Crabapple
Canadian Hemlock
Sugar Maple
Montgomery Blue Spruce
Cheer Drop Arborvitae
Existing Trees

NO.	DESCRIPTION	BY	DATE

SHEET TITLE: Main Office
60 Route 103
Sunapee, NH

PROJECT DESCRIPTION: Relax and Company Offices

DRAWINGS PROVIDED BY: Relax and Company

DATE: 10/03/23

SCALE: 1"=20'

SHEET: S-1

STORMWATER MANAGEMENT NARRATIVE

for

Relax & Company

60 Rt. 103, Sunapee, NH

Project Description

The subject property is located at 60 Rt. 103 and is within the Mixed Use 1 (M1) zoning district. The subject property contains one existing structure, gravel driveway, and native vegetation. The property is serviced by a private well and septic system. Overhead utilities are also currently provided to the site from Depot Road. The subject property slopes from east to west and eventually drains to an adjacent road side ditch and then to a wetland area.

Existing Site Conditions

In the construction area, slopes range from 1% to more than 20%, with most slopes in the construction area around 7%.

The soil types in the proposed disturbance area (per NRCS Web Soil Survey) are Deerfield Loamy Fine Sand and Windsor Loamy Sand, designated with hydrologic ratings of soil Group A. These soils have a medium infiltration rate, with a Ksat value of 1.4 to 99.9 inches/hour. The site is mostly woods, with the exception of the existing buildings and adjacent gravel access and parking areas..

Currently the subject parcel contains roughly 1,600 square feet of impervious cover between roofs and gravel surface.

Proposed Site Conditions

In the proposed conditions, the size and shape of the subcatchment areas are not altered due to the placement of new site features. The single study points remain the same.

An underground infiltration system consisting of a stone reservoir, 2,400 cubic feet of crushed stone (20’ x 40’ x 3’) is proposed to handle the increase in impervious area on site. This system collects most of the new driveway, parking area and the new roof area, equaling just more than 8,200 square feet of impervious surfaces. The underground system provides a level of detention along with treatment for the area that is collected, infiltrating a majority of the stormwater that is directed there.

Overall, the increase in impervious cover on the site from pre-development to post-Development is 6,500 square feet. The underground system proposed provides treatment and detention for more than this amount.

Study Methodology

Runoff and routing calculations have been performed for the watershed areas affected by the proposed development. Times of concentration and runoff curve number calculations have been determined using the method described in the Natural Resource Conservation Service (NRCS) Technical Release 55, (TR-55). Time of concentration calculations have been amended where the values given by the TR-55 method is less than five minutes. In these cases a standard minimum value of five minutes has been used to keep this parameter within the acceptable working range of the model. Each Tc path and corresponding length and slope is identified in the pre and post development drainage area plan. The TR-20 based HydroCAD (version 10.0) modeling software has been utilized to perform the complex runoff and routing calculations.

Calculation Results

Preface

Existing-development and post-development calculations have been calculated for the 2-, 10-, 25-, and 50-year storm frequency in accordance with Town of Newmarket's Development Regulations. The SCS TR-20 method was used with a Type III 24-hour storm. The Time of Concentration (Tc) is calculated using the Lag Method. Two Study Points (**SP-1 AND SP-2**) were used for comparison of post-development runoff values with those from existing conditions.

Results

Peak Rate (cfs)

	2 Yr.	***10 Yr.***	***25 Yr.***
SP-1			
Existing	0.0	0.0	0.1
Proposed	0.0	0.0	0.1

Summary

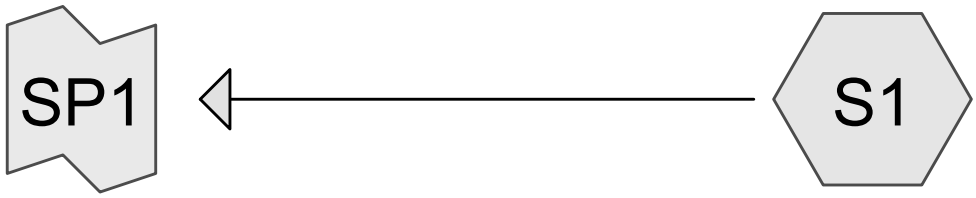
There is a reduction in peak flow and volume of stormwater runoff at the analysis point for all the design storm events. This is due to the underground infiltration system.

Per Appendix B of the New Hampshire Stormwater Manual infiltration BMP's remove 90% TSS, 60% total nitrogen and 60% total phosphorous.

This will help reduce the runoff generated from the site, increase the groundwater recharge, and further protect the water quality of the downstream areas.

In addition to collecting and treating nearly 150% of the increase of impervious area on site all of the disturbed areas will be loamed and seeded to provide an additional level of erosion control and stormwater retention.

PRE-DEVELOPMENT MODEL OUTPUT



Study Point #1

S1 - Ex. Cond

Subcat Reach Pond Link

Routing Diagram for 230764 PRE_RT103
Prepared by Horizons Engineering, Printed 11/10/2023

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 6516 NH Merrimack East
Rainfall events imported from "NRCS-Rain.txt" for 6522 NH Sullivan Other

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	NRCC 24-hr	C	Default	24.00	1	2.65	2
2	10-Year	NRCC 24-hr	C	Default	24.00	1	3.85	2
3	25-Year	NRCC 24-hr	C	Default	24.00	1	4.77	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.230	49	50-75% Grass cover, Fair, HSG A (S1)
0.021	96	Gravel surface, HSG A (S1)
0.016	98	Unconnected roofs, HSG A (S1)
0.117	36	Woods, Fair, HSG A (S1)
0.383	**50**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.383	HSG A	S1
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.383		**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
0.230	0.000	0.000	0.000	0.000	0.230	50-75% Grass cover, Fair	S1
0.021	0.000	0.000	0.000	0.000	0.021	Gravel surface	S1
0.016	0.000	0.000	0.000	0.000	0.016	Unconnected roofs	S1
0.117	0.000	0.000	0.000	0.000	0.117	Woods, Fair	S1
0.383	**0.000**	**0.000**	**0.000**	**0.000**	**0.383**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: S1 - Ex. Cond Runoff Area=16,700 sf 4.19% Impervious Runoff Depth>0.02"
Flow Length=50' Slope=0.0500 '/' Tc=8.8 min UI Adjusted CN=49 Runoff=0.00 cfs 0.001 af

Link SP1: Study Point #1 Inflow=0.00 cfs 0.001 af
Primary=0.00 cfs 0.001 af

Total Runoff Area = 0.383 ac Runoff Volume = 0.001 af Average Runoff Depth = 0.02"
95.81% Pervious = 0.367 ac 4.19% Impervious = 0.016 ac

Summary for Subcatchment S1: S1 - Ex. Cond

Runoff = 0.00 cfs @ 20.00 hrs, Volume= 0.001 af, Depth> 0.02"
Routed to Link SP1 : Study Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=2.65"

Area (sf)	CN	Adj	Description
700	98		Unconnected roofs, HSG A
900	96		Gravel surface, HSG A
10,000	49		50-75% Grass cover, Fair, HSG A
5,100	36		Woods, Fair, HSG A
16,700	50	49	Weighted Average, UI Adjusted
16,000			95.81% Pervious Area
700			4.19% Impervious Area
700			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0500	0.09		**Sheet Flow, A-B SHeet** Woods: Light underbrush n= 0.400 P2= 3.00"

Summary for Link SP1: Study Point #1

Inflow Area = 0.383 ac, 4.19% Impervious, Inflow Depth > 0.02" for 2-Year event
Inflow = 0.00 cfs @ 20.00 hrs, Volume= 0.001 af
Primary = 0.00 cfs @ 20.00 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentS1: S1 - Ex. Cond Runoff Area=16,700 sf 4.19% Impervious Runoff Depth>0.20"
Flow Length=50' Slope=0.0500 '/' Tc=8.8 min UI Adjusted CN=49 Runoff=0.03 cfs 0.006 af

Link SP1: Study Point #1 Inflow=0.03 cfs 0.006 af
Primary=0.03 cfs 0.006 af

Total Runoff Area = 0.383 ac Runoff Volume = 0.006 af Average Runoff Depth = 0.20"
95.81% Pervious = 0.367 ac 4.19% Impervious = 0.016 ac

Summary for Subcatchment S1: S1 - Ex. Cond

Runoff = 0.03 cfs @ 12.35 hrs, Volume= 0.006 af, Depth> 0.20"
Routed to Link SP1 : Study Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=3.85"

Area (sf)	CN	Adj	Description
700	98		Unconnected roofs, HSG A
900	96		Gravel surface, HSG A
10,000	49		50-75% Grass cover, Fair, HSG A
5,100	36		Woods, Fair, HSG A
16,700	50	49	Weighted Average, UI Adjusted
16,000			95.81% Pervious Area
700			4.19% Impervious Area
700			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0500	0.09		**Sheet Flow, A-B SHeet** Woods: Light underbrush n= 0.400 P2= 3.00"

Summary for Link SP1: Study Point #1

Inflow Area = 0.383 ac, 4.19% Impervious, Inflow Depth > 0.20" for 10-Year event
Inflow = 0.03 cfs @ 12.35 hrs, Volume= 0.006 af
Primary = 0.03 cfs @ 12.35 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentS1: S1 - Ex. Cond Runoff Area=16,700 sf 4.19% Impervious Runoff Depth>0.46"
Flow Length=50' Slope=0.0500 '/' Tc=8.8 min UI Adjusted CN=49 Runoff=0.13 cfs 0.015 af

Link SP1: Study Point #1 Inflow=0.13 cfs 0.015 af
Primary=0.13 cfs 0.015 af

Total Runoff Area = 0.383 ac Runoff Volume = 0.015 af Average Runoff Depth = 0.46"
95.81% Pervious = 0.367 ac 4.19% Impervious = 0.016 ac

Summary for Subcatchment S1: S1 - Ex. Cond

Runoff = 0.13 cfs @ 12.20 hrs, Volume= 0.015 af, Depth> 0.46"
Routed to Link SP1 : Study Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=4.77"

Area (sf)	CN	Adj	Description
700	98		Unconnected roofs, HSG A
900	96		Gravel surface, HSG A
10,000	49		50-75% Grass cover, Fair, HSG A
5,100	36		Woods, Fair, HSG A
16,700	50	49	Weighted Average, UI Adjusted
16,000			95.81% Pervious Area
700			4.19% Impervious Area
700			100.00% Unconnected

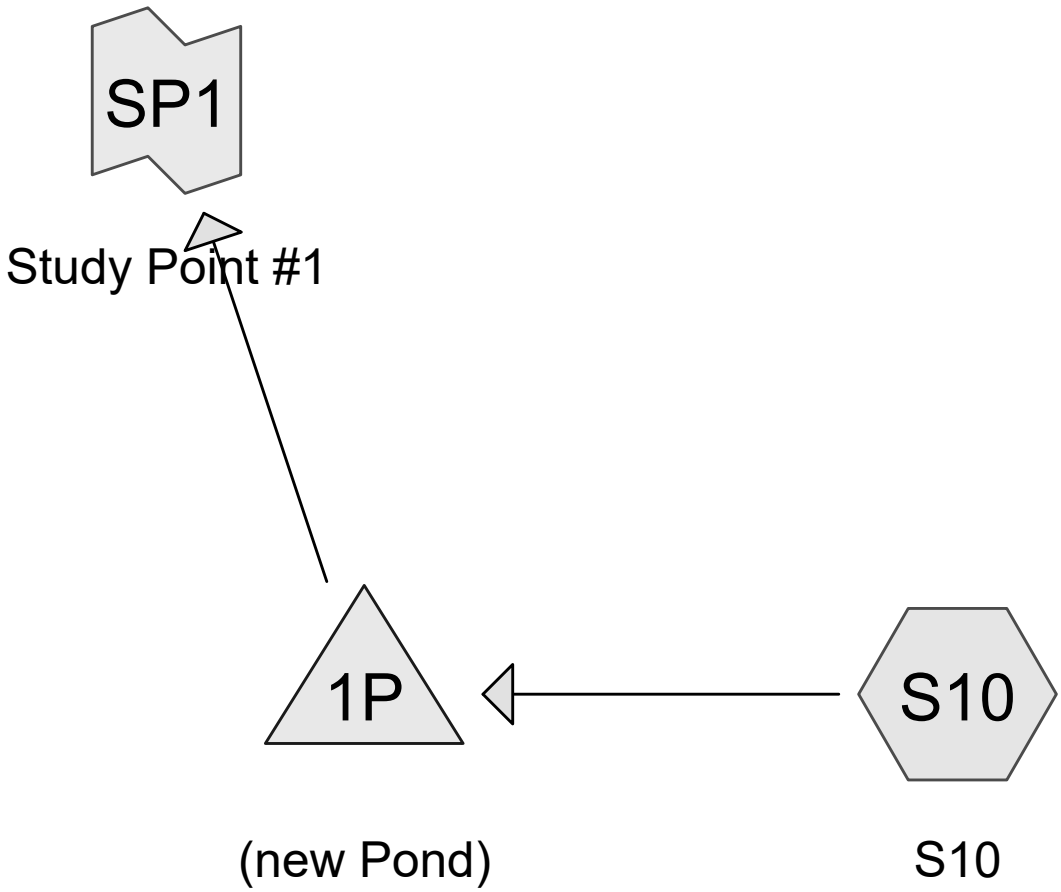
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0500	0.09		**Sheet Flow, A-B SHeet** Woods: Light underbrush n= 0.400 P2= 3.00"

Summary for Link SP1: Study Point #1

Inflow Area = 0.383 ac, 4.19% Impervious, Inflow Depth > 0.46" for 25-Year event
Inflow = 0.13 cfs @ 12.20 hrs, Volume= 0.015 af
Primary = 0.13 cfs @ 12.20 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

POST-DEVELOPMENT MODEL OUTPUT



Subcat Reach Pond Link

Routing Diagram for 230764 POST_RT103
Prepared by Horizons Engineering, Printed 11/10/2023

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 6516 NH Merrimack East
Rainfall events imported from "NRCS-Rain.txt" for 6522 NH Sullivan Other

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	NRCC 24-hr	C	Default	24.00	1	2.65	2
2	10-Year	NRCC 24-hr	C	Default	24.00	1	3.85	2
3	25-Year	NRCC 24-hr	C	Default	24.00	1	4.77	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.149	39	>75% Grass cover, Good, HSG A (S10)
0.149	98	Paved parking, HSG A (S10)
0.039	98	Unconnected roofs, HSG A (S10)
0.046	36	Woods, Fair, HSG A (S10)
0.383	**68**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.383	HSG A	S10
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.383		**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
0.149	0.000	0.000	0.000	0.000	0.149	>75% Grass cover, Good	S10
0.149	0.000	0.000	0.000	0.000	0.149	Paved parking	S10
0.039	0.000	0.000	0.000	0.000	0.039	Unconnected roofs	S10
0.046	0.000	0.000	0.000	0.000	0.046	Woods, Fair	S10
0.383	**0.000**	**0.000**	**0.000**	**0.000**	**0.383**	**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)
1	1P	937.50	937.00	50.0	0.0100	0.012	0.0	12.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentS10: S10 Runoff Area=16,700 sf 49.10% Impervious Runoff Depth>0.39"
Tc=6.0 min CN=68 Runoff=0.17 cfs 0.012 af

Pond 1P: (new Pond) Peak Elev=936.22' Storage=63 cf Inflow=0.17 cfs 0.012 af
Discarded=0.06 cfs 0.012 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.012 af

Link SP1: Study Point #1 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 0.383 ac Runoff Volume = 0.012 af Average Runoff Depth = 0.39"
50.90% Pervious = 0.195 ac 49.10% Impervious = 0.188 ac

Summary for Subcatchment S10: S10

Runoff = 0.17 cfs @ 12.15 hrs, Volume= 0.012 af, Depth> 0.39"
Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=2.65"

Area (sf)	CN	Description
1,700	98	Unconnected roofs, HSG A
0	96	Gravel surface, HSG A
6,500	98	Paved parking, HSG A
6,500	39	>75% Grass cover, Good, HSG A
2,000	36	Woods, Fair, HSG A
16,700	68	Weighted Average
8,500		50.90% Pervious Area
8,200		49.10% Impervious Area
1,700		20.73% Unconnected

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

Summary for Pond 1P: (new Pond)

Inflow Area = 0.383 ac, 49.10% Impervious, Inflow Depth > 0.39" for 2-Year event
Inflow = 0.17 cfs @ 12.15 hrs, Volume= 0.012 af
Outflow = 0.06 cfs @ 12.10 hrs, Volume= 0.012 af, Atten= 63%, Lag= 0.0 min
Discarded = 0.06 cfs @ 12.10 hrs, Volume= 0.012 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link SP1 : Study Point #1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 936.22' @ 12.37 hrs Surf.Area= 700 sf Storage= 63 cf

Plug-Flow detention time= 5.7 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 5.2 min (856.8 - 851.6)

Volume	Invert	Avail.Storage	Storage Description
#1	936.00'	840 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,100 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
936.00	700	0	0
939.00	700	2,100	2,100

Device	Routing	Invert	Outlet Devices
#1	Primary	937.50'	**12.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 937.50' / 937.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	938.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Discarded	936.00'	**4.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.06 cfs @ 12.10 hrs HW=936.06' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=936.00' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link SP1: Study Point #1

Inflow Area = 0.383 ac, 49.10% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentS10: S10 Runoff Area=16,700 sf 49.10% Impervious Runoff Depth>0.99"
Tc=6.0 min CN=68 Runoff=0.50 cfs 0.031 af

Pond 1P: (new Pond) Peak Elev=937.54' Storage=432 cf Inflow=0.50 cfs 0.031 af
Discarded=0.06 cfs 0.031 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.031 af

Link SP1: Study Point #1 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 0.383 ac Runoff Volume = 0.031 af Average Runoff Depth = 0.99"
50.90% Pervious = 0.195 ac 49.10% Impervious = 0.188 ac

Summary for Subcatchment S10: S10

Runoff = 0.50 cfs @ 12.14 hrs, Volume= 0.031 af, Depth> 0.99"
Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=3.85"

Area (sf)	CN	Description
1,700	98	Unconnected roofs, HSG A
0	96	Gravel surface, HSG A
6,500	98	Paved parking, HSG A
6,500	39	>75% Grass cover, Good, HSG A
2,000	36	Woods, Fair, HSG A
16,700	68	Weighted Average
8,500		50.90% Pervious Area
8,200		49.10% Impervious Area
1,700		20.73% Unconnected

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

Summary for Pond 1P: (new Pond)

Inflow Area = 0.383 ac, 49.10% Impervious, Inflow Depth > 0.99" for 10-Year event
Inflow = 0.50 cfs @ 12.14 hrs, Volume= 0.031 af
Outflow = 0.06 cfs @ 11.90 hrs, Volume= 0.031 af, Atten= 87%, Lag= 0.0 min
Discarded = 0.06 cfs @ 11.90 hrs, Volume= 0.031 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link SP1 : Study Point #1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 937.54' @ 13.07 hrs Surf.Area= 700 sf Storage= 432 cf

Plug-Flow detention time= 57.2 min calculated for 0.031 af (100% of inflow)
Center-of-Mass det. time= 56.5 min (883.7 - 827.2)

Volume	Invert	Avail.Storage	Storage Description
#1	936.00'	840 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,100 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
936.00	700	0	0
939.00	700	2,100	2,100

Device	Routing	Invert	Outlet Devices
#1	Primary	937.50'	**12.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 937.50' / 937.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	938.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Discarded	936.00'	**4.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.06 cfs @ 11.90 hrs HW=936.04' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=936.00' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link SP1: Study Point #1

Inflow Area = 0.383 ac, 49.10% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentS10: S10 Runoff Area=16,700 sf 49.10% Impervious Runoff Depth>1.54"
Tc=6.0 min CN=68 Runoff=0.80 cfs 0.049 af

Pond 1P: (new Pond) Peak Elev=938.55' Storage=713 cf Inflow=0.80 cfs 0.049 af
Discarded=0.06 cfs 0.045 af Primary=0.13 cfs 0.004 af Outflow=0.19 cfs 0.049 af

Link SP1: Study Point #1 Inflow=0.13 cfs 0.004 af
Primary=0.13 cfs 0.004 af

Total Runoff Area = 0.383 ac Runoff Volume = 0.049 af Average Runoff Depth = 1.54"
50.90% Pervious = 0.195 ac 49.10% Impervious = 0.188 ac

Summary for Subcatchment S10: S10

Runoff = 0.80 cfs @ 12.14 hrs, Volume= 0.049 af, Depth> 1.54"
Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=4.77"

Area (sf)	CN	Description
1,700	98	Unconnected roofs, HSG A
0	96	Gravel surface, HSG A
6,500	98	Paved parking, HSG A
6,500	39	>75% Grass cover, Good, HSG A
2,000	36	Woods, Fair, HSG A
16,700	68	Weighted Average
8,500		50.90% Pervious Area
8,200		49.10% Impervious Area
1,700		20.73% Unconnected

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

Summary for Pond 1P: (new Pond)

Inflow Area = 0.383 ac, 49.10% Impervious, Inflow Depth > 1.54" for 25-Year event
Inflow = 0.80 cfs @ 12.14 hrs, Volume= 0.049 af
Outflow = 0.19 cfs @ 12.52 hrs, Volume= 0.049 af, Atten= 76%, Lag= 22.8 min
Discarded = 0.06 cfs @ 11.70 hrs, Volume= 0.045 af
Primary = 0.13 cfs @ 12.52 hrs, Volume= 0.004 af
Routed to Link SP1 : Study Point #1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 938.55' @ 12.52 hrs Surf.Area= 700 sf Storage= 713 cf

Plug-Flow detention time= 98.1 min calculated for 0.049 af (100% of inflow)
Center-of-Mass det. time= 97.7 min (914.2 - 816.5)

Volume	Invert	Avail.Storage	Storage Description
#1	936.00'	840 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,100 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
936.00	700	0	0
939.00	700	2,100	2,100

Device	Routing	Invert	Outlet Devices
#1	Primary	937.50'	**12.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 937.50' / 937.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	938.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Discarded	936.00'	**4.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.06 cfs @ 11.70 hrs HW=936.03' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.12 cfs @ 12.52 hrs HW=938.54' (Free Discharge)
└**1=Culvert** (Passes 0.12 cfs of 2.79 cfs potential flow)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.12 cfs @ 0.68 fps)

Summary for Link SP1: Study Point #1

Inflow Area = 0.383 ac, 49.10% Impervious, Inflow Depth = 0.13" for 25-Year event
Inflow = 0.13 cfs @ 12.52 hrs, Volume= 0.004 af
Primary = 0.13 cfs @ 12.52 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

SOIL REPORT

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 Sullivan County, New Hampshire

November 10, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

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: 1:610 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 18N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Sullivan County, New Hampshire
Survey Area Data: Version 29, Aug 22, 2023

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

Date(s) aerial images were photographed: May 27, 2020—Sep 16, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HeB	Hermon sandy loam, 3 to 8 percent slopes	1.2	62.8%
MaB	Marlow fine sandy loam, 3 to 8 percent slopes	0.7	36.2%
Na	Naumburg loamy sand	0.0	1.0%
Totals for Area of Interest		**1.9**	**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.

Sullivan County, New Hampshire

HeB—Hermon sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w9r8
Elevation: 0 to 950 feet
Mean annual precipitation: 31 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Hermon and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hermon

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly supraglacial meltout till derived from granite and gneiss

Typical profile

Ap - 0 to 9 inches: sandy loam
Bs1 - 9 to 16 inches: very gravelly sandy loam
Bs2 - 16 to 32 inches: extremely gravelly loamy sand
C - 32 to 65 inches: very gravelly coarse sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 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 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144BY601ME - Dry Sand
Hydric soil rating: No

Minor Components

Monadnock

Percent of map unit: 4 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Skerry

Percent of map unit: 4 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Hydric soil rating: No

Tunbridge

Percent of map unit: 2 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

MaB—Marlow fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2ty5f
Elevation: 590 to 1,710 feet
Mean annual precipitation: 31 to 95 inches
Mean annual air temperature: 27 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Marlow and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marlow

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountainbase, interfluve, nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy lodgment till derived from granite and/or loamy lodgment till derived from mica schist and/or loamy lodgment till derived from phyllite

Typical profile

Ap - 0 to 4 inches: fine sandy loam
E - 4 to 6 inches: fine sandy loam
Bs1 - 6 to 10 inches: fine sandy loam
Bs2 - 10 to 15 inches: fine sandy loam
Bs3 - 15 to 20 inches: fine sandy loam
BC - 20 to 24 inches: fine sandy loam
Cd - 24 to 65 inches: fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)
Hydric soil rating: No

Minor Components

Peru

Percent of map unit: 7 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainbase, interfluve, nose slope, side slope
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Pillsbury

Percent of map unit: 3 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Mountainbase, interfluve, nose slope, side slope
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Concave
Across-slope shape: Concave

Hydric soil rating: Yes

Monadnock

Percent of map unit: 3 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, interfluve, nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Tunbridge

Percent of map unit: 2 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, interfluve, nose slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Na—Naumburg loamy sand

Map Unit Setting

National map unit symbol: 9d4x
Elevation: 150 to 1,800 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Naumburg and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Naumburg

Setting

Landform: Outwash terraces
Parent material: Sandy outwash derived mainly from granite, gneiss and schist

Typical profile

H1 - 0 to 7 inches: loamy sand
H2 - 7 to 33 inches: sand
H3 - 33 to 60 inches: sand

Properties and qualities

Slope: 0 to 3 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 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Hydrologic Soil Group: A/D
Ecological site: F144BY303ME - Acidic Swamp
Hydric soil rating: Yes

Minor Components

Croghan

Percent of map unit: 10 percent
Hydric soil rating: No

Not named wet

Percent of map unit: 10 percent
Landform: Depressions
Hydric soil rating: Yes

Not named wet

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

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60 Route 103 & 46 Depot Road - Typical Day Parking Numbers																									11/3/23	
60 Depot Road -Office	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	
Jim		1	1	1	1	1	1	1											1	1	1	1	1	1	1	
Exec. Asst						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Gina	1	1	1	1	1	1					1	1	1	1	1					1	1	1	1	1		
Marketing			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
HR							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
STR Owner Manager							1	1	1				1	1	1	1	1	1				1	1	1		
STR Tenant Manager						1	1	1	1				1	1	1						1	1	1			
STR Turnover Manager						1	1	1	1			1	1	1	1					1	1	1	1			
AP/AR Clerk - Parked at 46							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Director Finance																										
Director HR							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
Director Operations			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Scheduler			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Precon PM									1	1	1	1	1	1	1	1	1	1	1							
Estimator					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
Sr. PM			1	1	1	1															1	1	1	1		
PM 1			1	1	1	1															1	1	1	1		
PM 2			1	1	1	1															1	1	1	1		
Const. Exec.						1	1	1	1	1	1	1			1	1	1	1	1	1	1	1	1			
Const. Admin			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
Concierge Mgr.					1	1	1	1	1	1	1	1			1	1				1	1					
Caretaking Mgr.	1	1	1															1								
Handyman Mgr.				1	1	1														1	1					
Finishes Mgr.				1	1	1														1	1					
Visitors																										
Other Employee Visits			3	2	1																	3	2	1		
RM1					1	1	1	1	1	1	1							1	1	1	1					
RM2					1	1	1	1	1	1	1							1	1	1	1					
RM3					1	1	1	1	1	1	1							1	1	1	1					
Total Cars Parked Office	2	3	13	13	17	20	18	18	18	15	16	14	14	14	16	13	12	16	15	18	20	17	14	7	1	

46 Depot	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00
Landscape Manager		1	1	1	1	1	1	1	1				1	1	1	1						1	1		
Landscape Foreman			1	1														1	1						
Landscape Crew Lead 1					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Landscape Crew 1																									
Landscape Crew 1																									
Landscape Crew Lead 2					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			

Landscape Crew 2																									
Landscape Crew 2																									
Landscape Crew Lead 3					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Landscape Crew3																									
Landscape Crew 3																									
Landscape Crew Lead 4					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Landscape Crew 4																									
Landscape Crew 4																									
Handyman Crew					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Handyman Crew					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Handyman Crew					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Mow Crew 1 Lead			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Mow Crew 1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Mow Crew 2 Lead			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Mow Crew 2			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Res. Clean Manager					1	1	1	1									1	1	1	1	1				
Clean Lead 1					1														1						
Clean Crew 1					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Clean Lead 2					1														1						
Clean Crew 2					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Clean Lead 3					1														1						
Clean Crew 3					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Clean Lead 4					1														1						
Clean Crew 4					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Clean Lead 5					1														1						
Clean Crew 5					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Clean Lead 6					1														1						
Clean Crew 6					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Clean Lead 7					1														1						
Clean Crew 7					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Com. Clean Manager																				1	1	1	1	1	1
Com. Cleaner																					1	1	1	1	1
Com. Cleaner																					1	1	1	1	1
Com. Cleaner																					1	1	1	1	1
Com. Cleaner																					1	1	1	1	1
Com. Cleaner																					1	1	1	1	1
Com. Cleaner																					1	1	1	1	1
Com. Cleaner																					1	1	1	1	1
Fleet & Facilities Manager										1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Runner			1	1													1	1							
Shop Carpenter 1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
Shop Carpenter 2		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
Linen 1									1	1	1	1									1	1	1	1	1
Linen 2									1	1	1	1									1	1	1	1	1
Tenant -Works at 60	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
46 Depot Totals	1	3	9	9	29	22	22	22	23	23	23	23	22	22	22	22	23	24	28	10	19	19	12	11	11
Total Both Properties	**3**	**6**	**22**	**22**	**46**	**42**	**40**	**40**	**41**	**38**	**39**	**37**	**36**	**36**	**38**	**35**	**35**	**40**	**43**	**28**	**39**	**36**	**26**	**18**	**12**

60 Rt. 103 Available Parking	25
Inside Spaces	2
46 Depot St. Available Parking	29
Inside Spaces	12
Leased Available Parking	8
Total Spaces	**76**
Anticipated Future Position included above - Not currently existing	**22**