

**TOWN OF SUNAPEE  
PLANNING BOARD AGENDA  
For THURSDAY MAY 9, 2024  
7:00 PM at the TOWN MEETING ROOM  
23 EDMONT ROAD**

Join Zoom Meeting:

[https://us06web.zoom.us/join/register/tZYkdeorDMqHNMgTHePS8NgbJA\\_kDEywWqw](https://us06web.zoom.us/join/register/tZYkdeorDMqHNMgTHePS8NgbJA_kDEywWqw)

Meeting ID: 829 2602 8067

Passcode: 850461

**NEW CASES**

Case # SPR 24-03	Installation of new stand-alone biomass boiler
Parcel ID: 0130-0034-0000	plant, housing a woodchip fueled boiler and propane boiler back-up system.

*Town of Sunapee  
Sunapee Middle High School  
10 North Road,  
Sunapee, NH 03782  
Residential District*

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\*\*Please note, as per RSA 674:54, following the hearing on Case # SPR 23-03, the planning board will provide non-binding written comments on the proposal's compliance with land use regulations to the sponsor within 30 days. There will not be a notice of decision issued for this proposal.\*\*

**CONTINUED CASES**

Case # SPR 24-01	Erect a shop building on site for storage of project
Parcel ID: 0232-0023-0000	related materials.

*Jared & Laura Raymond  
Jim Bruss – Agent  
60 Route 103  
Sunapee, NH 03782  
Mixed-Use District*

**OTHER BUSINESS:**

Signing of Mylars for minor subdivision:  
Case # SUB 24-01  
Parcel ID: 0233-0013-0000

*V-OZ Asset Management Co, LLC  
Van Webb  
524 Stagecoach Road  
Sunapee, NH 03782  
Rural Residential District*

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

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**Lot Merger:**

0233-0076-0000 & 0233-0077-0000

*24 Nutting Road*

*Jean White – Perrone*

*Joseph Perrone*

*Rural Residential District*

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**MISCELLANEOUS:**

Review Minutes from Previous Meeting(s).

**\*NOTE: Any and all submissions must be provided 5 days prior to the meeting**

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

**TOWN OF SUNAPEE**  
**APPLICATION FOR SITE PLAN REVIEW**  
**(PDF OF SITE PLAN MUST BE INCLUDED WITH APPLICATION)**

1. Landowner(s) Name(s) \_\_\_\_\_  
Address \_\_\_\_\_  
(Mailing) \_\_\_\_\_  
Phone \_\_\_\_\_
2. Zoning District \_\_\_\_\_
3. Project Location: \_\_\_\_\_
4. Parcel ID: \_\_\_\_\_
5. Complete description of current use of property: \_\_\_\_\_

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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.) \_\_\_\_\_

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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.

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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:

- \_\_\_\_\_ Completed Application
- \_\_\_\_\_ Fees **Fee waiver requested, see attached**
- \_\_\_\_\_ 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 [zoning@town.sunapee.nh.us](mailto: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:

- \_\_\_\_\_ Plan at a scale of 1" = 20' or less
- \_\_\_\_\_ Perimeter boundary survey **Boundary not visible on site plan**
- \_\_\_\_\_ Title of drawing with name of applicant
- \_\_\_\_\_ Parcel ID **Provided separately,**
- \_\_\_\_\_ Name and mailing addresses of abutting property owners **not visible on plan**
- \_\_\_\_\_ Signature block for Water & Sewer Commission, Police Chief, Road Agent & Conservation Commission **Advisory review only per RSA 674:54**
- \_\_\_\_\_ Site location map **Provided separately**
- \_\_\_\_\_ 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.
- \_\_\_\_\_ Streams, wetlands, and other water bodies
- \_\_\_\_\_ Width, location, and grades of existing and proposed streets and driveways
- \_\_\_\_\_ Layout and size of parking spaces **No new parking spaces**
- \_\_\_\_\_ Sewage disposal facilities for property including mains and service lines
- \_\_\_\_\_ Water supply for property including mains and services lines
- \_\_\_\_\_ Proposed landscaping plan **No new landscaping**
- \_\_\_\_\_ Existing and proposed electric lines
- \_\_\_\_\_ Existing and proposed telephone lines



\_\_\_\_\_ Exterior lighting plan **No new exterior lighting**

Article V requirements (cont.):

\_\_\_\_\_ Proposed signs-size and location **No new signs**

\_\_\_\_\_ Locations of retaining walls, fences, and outside storage areas

\_\_\_\_\_ 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 **Minor drainage changes only**

\_\_\_\_\_ 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

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	ABUTTER'S PROPERTY LINE	
	EASEMENT LINE	
	RIGHT OF WAY LINE	
	ZONING SETBACK LINE	
	ZONING BOUNDARY	
	TOWN LINE	
	SOIL TYPE BOUNDARY	
	MAJOR CONTOUR	
	MINOR CONTOUR	
	BUILDINGS	
	BUILDING OVERHANG	
	ROADWAY CENTERLINE	
	EDGE OF PAVEMENT	
	CURB	
	EDGE OF GRAVEL	
	TRAIL	
	STONE WALL	
	TREE LINE	
	EDGE OF WETLANDS	
	WETLAND/ SHORELINE BUFFER	
	EDGE OF WATER	
	FLOOD PLAIN BOUNDARY	
	DITCH LINE	
	CONCRETE PAD	
	BARBED WIRE FENCE	
	CHAIN LINK FENCE	
	WOOD RAIL	
	GUARDRAIL	
	STORM DRAIN LINE	
	SEWER LINE	
	FORCE MAIN LINE	
	WATER LINE	
	GAS LINE	
	STEAM LINE	
	FIRE WATER LINE	
	UNDERGROUND ELECTRIC	
	OVERHEAD ELECTRIC	
	UNDERGROUND UTILITY	
	OVERHEAD UTILITY	
	UNDERGROUND UTILITY & ELECTRIC	
	OVERHEAD UTILITY & ELECTRIC	
	CONSTRUCTION FENCE	
	SILT FENCE	
	SILT CURTAIN	
	LIMIT OF DISTURBANCE	
	COFFER DAM	
	SIGN	
	LIGHTS	
	TEST PITS	
	MONITORING WELLS	
	BORING LOCATIONS	
	SPOT GRADES	
	CATCH BASINS	
	CLEAN OUTS	
	DRAINAGE MANHOLES	
	ELECTRIC PADS/ HANDHOLDS	
	GATES VALVES	
	HYDRANTS	
	SEWER MANHOLES	
	TELEPHONE/ UTILITY PADS & VAULTS	
	UTILITY POLES	
	POTABLE WATER WELLS	
	WATER SHUT OFFS	
	CONCRETE THRUST BLOCK	
	GUY POLES	
	GUY WIRES	
	CATCH BASIN SEDIMENT TRAPS	
	HAY BALES	
	STONE CHECK DAM	
	STONE INLET PROTECTION	
	DECIDUOUS TREES	
	EVERGREEN TREES	
	CONCRETE BOUNDARY MONUMENT	
	IRON ROD/ PIPE BOUNDARY MONUMENT	
	MAILBOX	
	STONE LINING	
	EROSION CONTROL MATTING	
	SNOW STORAGE AREAS	
STANDARD ABBREVIATIONS		
BCC	- BITUMINOUS CONCRETE CURB	
VGC	- VERTICAL GRANITE CURB	
SGC	- SLOPED GRANITE CURB	
CCC	- CAST-IN-PLACE CONCRETE CURB	
PCC	- PRECAST CONCRETE CURB	
ICC	- INTEGRAL CONCRETE CURB	
ROC	- REINFORCED CONCRETE CURB	
BCP	- BITUMINOUS CONCRETE PAVEMENT	
GRV	- GRAVEL DRIVE SURFACE	
PCS	- PORTLAND CEMENT CONCRETE SIDEWALK	
BCS	- BITUMINOUS CONCRETE SIDEWALK	
CB	- CATCH BASIN	
DMH	- DRAINAGE MANHOLE	
SMH	- SEWER MANHOLE	
TOW	- FINISHED SURFACE ELEVATION AT THE BACK OF THE WALL	
BOW	- FINISHED SURFACE ELEVATION AT THE FACE OF THE WALL	

PROJECT NOTES

1 GENERAL:

- ALL WORK SHALL BE PERFORMED IN A FIRST CLASS MANNER, AND IN ACCORDANCE WITH STATE CODE (IBC 2018 WITH LATEST SUPPLEMENTS), AND LOCAL CODES AND ORDINANCES.
- ALL EXISTING UNDERGROUND UTILITY LOCATIONS ARE APPROXIMATE. THE CONTRACTOR SHALL CONTACT DIG-SAFE (1-888-DIG-SAFE) AT LEAST 48 HOURS AND LESS THAN 30 DAYS PRIOR TO STARTING CONSTRUCTION AND SHALL VERIFY ALL UTILITY LOCATIONS IN THE FIELD.
- THE LIMITS OF SITE WATER AND SEWER WORK SHALL TERMINATE 2'-0" INSIDE THE BUILDING. THE SITE CONTRACTOR SHALL PROVIDE PIPING. GENERAL CONTRACTOR SHALL PROVIDE SLEEVES AS NECESSARY.
- GAS AND ELECTRIC LINES SHALL BE EXCAVATED AND BACKFILLED BY THE SITE CONTRACTOR. PIPING SHALL BE PROVIDED AND INSTALLED BY THE APPROPRIATE SUBCONTRACTOR.
- USE THESE CIVIL DRAWINGS IN CONJUNCTION WITH THE ARCHITECTURAL, STRUCTURAL, ELECTRICAL, LANDSCAPING & MECHANICAL DRAWINGS. SHOULD A CONFLICT DEVELOP, NOTIFY THE ENGINEER BEFORE PROCEEDING.
- ALL DIMENSIONS AND ELEVATIONS SHOWN MUST BE VERIFIED BY THE CONTRACTOR DURING CONSTRUCTION BY THE AID OF DRAWINGS, FIELD CHECKS, AND SUBCONTRACTORS SHOP DRAWINGS.
- CONTRACTOR SHALL PROTECT EXISTING FACILITIES, STRUCTURES, AND UTILITY LINES FROM ALL DAMAGE.
- CONTRACTOR IS RESPONSIBLE FOR ADEQUATE BRACING OF WALLS AND/OR SHORING OF EXCAVATIONS DURING CONSTRUCTION.
- THE CONTRACTOR SHALL REVIEW AND STAMP ALL SHOP DRAWINGS AND SUBMITTALS BEFORE SUBMISSION TO THE ENGINEER. THUS, PROVIDING ANY INFORMATION REQUIRED OF THE FABRICATOR SUCH AS FIELD DIMENSIONS, ELEVATIONS, ETC. OTHERWISE, THE SHOP DRAWINGS OR SUBMITTALS WILL BE REJECTED UNTIL SUCH INFORMATION IS FURNISHED BY THE CONTRACTOR.
- BACKFILL INSIDE OF FOUNDATION WALLS, UNDER CONCRETE SURFACES, AND UNDER PAVED SURFACES WITH IMPORTED STRUCTURAL BACKFILL, OR SELECT ON-SITE MATERIAL THAT WILL MEET STRUCTURAL BACKFILL SIEVE ANALYSIS AND COMPACTION CRITERIA, AS DETERMINED BY THE TESTING LABORATORY, IN 8" LIFTS TO 95% OF THE MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT, ASTM D1557.
- GENERAL BACKFILL SHALL BE COMPACTED TO 90% OF THE MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT, ASTM D1557.
- ALL DISTURBED AREAS, UNLESS OTHERWISE NOTED, TO BE TOPSOILED, SEEDED, AND MULCHED.

2 CONCRETE:

- ALL CONCRETE AND REINFORCING WORK SHALL BE IN STRICT ACCORDANCE WITH THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-14)". EXTERIOR CONCRETE SHALL BE AIR-ENTRAINED WITH AIR CONTENT OF 6% +OR- 1.5%. REINFORCED EXTERIOR SLAB CONCRETE SHALL HAVE A CORROSION INHIBITIVE ADMIXTURE. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS. SUBMIT CONCRETE MIX DESIGN FOLLOWING PROCEDURES OUTLINED IN THE FLOW CHART IN CHAPTER 5 OF ACI 301 FOR REVIEW OF ENGINEER. CONTRACTOR SHALL TAKE 4 TEST CYLINDERS OF CONCRETE FOR EACH 50 CUBIC YARDS OF CONCRETE OR FOR EACH DAY'S POUR IF LESS THAN 50 C.Y. TESTING WILL BE AT OWNER'S EXPENSE.
- MAXIMUM W/C RATIO FOR 4000 PSI CONCRETE: 0.44
- CONCRETE SHALL BE PROTECTED FROM FREEZING. CONTRACTOR SHALL FOLLOW THE "RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING (ACI 306, LATEST EDITION).
- ALL CONCRETE SHALL BE PLACED IN THE DRY. PUMP WATER FROM EXCAVATIONS AS NECESSARY.
- USE A PLASTICIZER ADDITIVE FOR SLAB ON GRADE CONCRETE. PROVIDE THE STANDARD MIX, EXCEPT THE SLUMP BEFORE ADDING THE MID RANGE PLASTICIZER SHALL BE 2" +OR- 1". SLUMP SHALL NOT EXCEED 6". DO NOT EXCEED SPECIFIED WATER CEMENT RATIOS.
- CONCRETE SHALL BE SO PROPORTIONED SO AS TO HAVE A MAXIMUM SLUMP OF 4", EXCEPT CONCRETE SPECIFIED TO HAVE A PLASTICIZER SHALL HAVE A SLUMP OF 2" +OR- 1".
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE SETTING SCREEDS AND FORMS. FORM RELEASE OIL SHALL BE AN APPROVED NON-TOXIC LIQUID.
- SLABS SHALL BE WET CURED USING BURLAP COVER TO KEEP ENTIRE SURFACE CONTINUOUSLY MOIST FOR A MINIMUM OF SEVEN DAYS.
- DURING PLACEMENT OF CONCRETE, USE TREMIE OR OTHER MEANS TO LIMIT FREE-FALL OF CONCRETE TO 5 FEET.
- CONCRETE SHALL BE CONSOLIDATED BY VIBRATION, SPADING, OR RODDING SO THE CONCRETE IS THOROUGHLY WORKED AROUND TO THE CORNERS OF FORMS, ELIMINATING AIR POCKETS WHICH MAY CAUSE HONEYCOMBING. (CARE SHALL BE TAKEN NOT TO OVER VIBRATE AND CAUSE SEGREGATION).

3 REINFORCING STEEL:

- REINFORCING STEEL SHALL BE NEW BILLET STEEL, ASTM A615, Fy=60 KSI.
- THE MINIMUM CLEAR DISTANCE FROM REINF. STEEL TO ADJACENT SURFACE SHALL BE: 3" FROM BOTTOM OF SLAB ON GRADE AND 2" FROM EDGES OF SLAB ON GRADE.
- PROVIDE LAP SPLICES OF ALL SLAB REINFORCEMENT AS FOLLOWS: #5 BAR - 2'-4" MINIMUM, #7 BAR - 3'-8" MINIMUM AT CHANGES IN DIRECTION OF SLAB, PROVIDE CORNER BARS WITH LEGS EQUAL TO BAR LAP SPLICE LENGTH (MINIMUM).
- REINFORCEMENT SHALL BE SECURELY TIED IN ITS PROPER PLACE BEFORE AND DURING CONCRETE PLACEMENT OPERATIONS USING APPROVED TIES, CHAIRS, AND SPACERS AS REQUIRED. NO BARS SHALL BE CUT OR OMITTED IN THE FIELD WITHOUT THE APPROVAL OF THE ENGINEER. USE PLASTIC TIPPED ACCESSORIES IN CONCRETE EXPOSED TO WEATHER, WATER, OR VIEW.

4 PRECAST CONCRETE:

- PRECAST CONCRETE SHALL BE THE PRODUCT OF A MANUFACTURER WHO HAS DEMONSTRATED THE ABILITY TO PRODUCE PRECAST PRODUCTS AND HAS BEEN IN BUSINESS FOR AT LEAST THE LAST THREE YEARS. THE MANUFACTURING PLANT AND METHODS SHALL CONFORM TO THE LATEST STANDARDS OF THE PRECAST CONCRETE INSTITUTE. THE DESIGN OF THE PRECAST MEMBERS SHALL BE BY A REGISTERED ENGINEER EXPERIENCED IN THE DESIGN OF PRECAST, PRESTRESSED CONCRETE DESIGN. PRECAST CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 28 DAYS OR HIGHER STRENGTH AS DEEMED NECESSARY BY DESIGN. ALL STEEL CONNECTION MATERIAL SHALL BE HOT-DIPPED GALVANIZED.
  - THE SUPERIMPOSED DESIGN LOADS ON ALL BURIED STRUCTURES SHALL MEET OR EXCEED AASHTO HS-20 LOADING UNLESS OTHERWISE NOTED.
- ALL PRECAST STRUCTURES TO BE BURIED IN THE GROUND SHALL BE DESIGNED TO RESIST FLOATATION WITH A MINIMUM FACTOR OF SAFETY OF 1.3

5 MATERIAL SPECIFICATIONS:

- CONTRACTOR TO PROVIDE SUBMITTALS TO ENGINEER FOR ALL MATERIALS SHOWN ON THE DESIGN PLANS AND/OR ANY MATERIALS WHICH ARE TO BE SUBSTITUTED FOR USE ON SITE FOR APPROVAL PRIOR TO CONSTRUCTION.
- MATERIALS NOT SPECIFIED HEREIN SHALL MEET OR EXCEED NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION.
- GENERAL FILL SHALL BE A COMPACTABLE SAND OR GRAVEL REASONABLY FREE FROM LOAM, SILT, CLAY AND ORGANIC MATERIALS AND SHALL HAVE 0-20 PERCENT PASSING THE NO. 100 SIEVE AND 40-100 PERCENT PASSING THE NO. 4 SIEVE.
- COARSE CRUSHED STONE SHALL MEET NHDOT STANDARD SPECIFICATION SECTION, TABLE 301-1, ITEM NUMBER 304.5.
- FINE CRUSHED STONE SHALL MEET NHDOT STANDARD SPECIFICATION SECTION, TABLE 301-1, ITEM NUMBER 304.4.
- 1 1/2" CRUSHED STONE SHALL BE FREE FROM LOAM, SILT, CLAY AND ORGANIC MATERIALS AND SHALL HAVE 100 PERCENT PASSING A 2" SIEVE, 95-100 PERCENT PASSING A 1 1/2" INCH SIEVE, 35-70 PERCENT PASSING A 3/4" INCH SIEVE, 10-30 PERCENT PASSING A 3/8" SIEVE, AND 0-5 PERCENT PASSING A NO. 4 SIEVE.
- GRANULAR BACKFILL FOR STRUCTURES SHALL BE FREE FROM LOAM, SILT, CLAY AND ORGANIC MATERIALS AND SHALL HAVE 100 PERCENT PASSING A 3" SIEVE, 45-75 PERCENT PASSING A NO. 4 SIEVE, 0-12 PERCENT PASSING ANO. 100 SIEVE, 0-6 PERCENT PASSING A NO. 200 SIEVE.
- SAND BORROW SHALL BE FREE FROM LOAM, SILT, CLAY AND ORGANIC MATERIALS AND SHALL HAVE 100 PERCENT PASSING A 2 INCH SIEVE, 90-100 PERCENT PASSING A 1 1/2" SIEVE, 70-100 PERCENT PASSING A 3/4" SIEVE, 60-100 PERCENT PASSING A NO. 4 SIEVE, 0-20 PERCENT PASSING A NO. 100 SIEVE, AND 0-8 PERCENT PASSING A NO. 200 SIEVE.
- 3/4" CRUSHED STONE SHALL BE FREE FROM LOAM, SILT, CLAY AND ORGANIC MATERIALS AND SHALL HAVE 100 PERCENT PASSING A 1" SIEVE, 90-100 PERCENT PASSING A 3/4" INCH SIEVE, 20-55 PERCENT PASSING A 3/8" INCH SIEVE, 0-10 PERCENT PASSING A NO. 4 SIEVE, AND 0-5 PERCENT PASSING A NO. 8 SIEVE.
- FLOWABLE FILL SHALL BE A LOW-STRENGTH, FLOWABLE SLURRY, WITH 115 TO 145 LB/CU. FT. DENSITY, COMPRISED OF A MIXTURE OF ASTM C 150, TYPE I, PORTLAND CEMENT; ASTM C 33 FINE AGGREGATES; ASTM C 618 FLY-ASH MINERAL ADMIXTURE, AND ASTM C 94 MIXING WATER. THE FLOWABLE FILL SHALL HAVE HAVE AN APPROXIMATE STRENGTH OF 100 PSI AT 28 DAYS.
- HDPE DRAIN PIPE AND FITTING MATERIAL SHALL BE HIGH-DENSITY POLYETHYLENE MEETING ASTM D3330 MINIMUM CELL CLASSIFICATION 324420C FOR 4" THROUGH 10" DIAMETERS OR 335420C FOR 12" THROUGH 60" DIAMETERS.
- COPPER TUBE SIZE (CTS) POLYETHYLENE TUBING SHALL HAVE A WORKING PRESSURE RATING OF 200 P.S.I. AND SHALL CONFORM TO AWWA C901, ASTM D3350 AND ASTM D2737.
- CATCH BASIN FRAMES AND GRATES: ASTM A 536, GRADE 60-40-18, HEAVY-DUTY DUCTILE IRON. INCLUDE 24-BY-24-INCH MINIMUM FLAT GRATE WITH SMALL SQUARE OR SHORT-SLOTTED DRAINAGE OPENINGS.
- BITUMINOUS CONCRETE DESIGN MIXES SHALL MEET DIVISION 400 OF THE NHDOT STANDARD SPECIFICATIONS.

EROSION CONTROL DURING CONSTRUCTION

- BEFORE ANY CLEARING, GRUBBING, OR DEMOLITION OF THE SITE IS INITIATED, AND DURING ALL EARTHWORK PHASES, EROSION CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED AT THE INLET OF ANY STORM DRAINS, SWALES, AND DITCHES RECEIVING WATER FROM THE PROJECT. SEE TYPICAL DETAILS AND PLANS FOR TYPES AND LOCATIONS.
- SILT FENCE SHALL BE PLACED DOWN GRADIENT OF ALL DISTURBED AREAS. IF THE DISTURBED AREA IS 100' OR LESS FROM THE WATERS OF THE STATE THE SILT FENCE SHALL BE WIRE MESH REINFORCED.
- ALL STOCKPILED SOIL SHALL BE ENCIRCLED WITH SILT FENCE, UNLESS AN EXISTING BARRIER WILL ENTRAP ALL EROSION FROM SUCH A STOCKPILE OR THE STOCKPILE IS COMPLETELY COVERED WITH VEGETATION THAT PREVENTS EROSION.
- NO MORE THAN 500 FEET OF TRENCH SHALL BE OPEN AT ONE TIME AND EXCAVATED MATERIAL TO BE USED FOR BACKFILL SHALL BE PLACED ON THE UPHILL SIDE OF THE TRENCH. ALL OTHER EXCAVATED MATERIAL SHALL BE DISPOSED OF OFF-SITE AT AN APPROVED LOCATION.
- STONE INLET PROTECTION OR SEDIMENT CATCH BASIN INSERTS SHALL BE PLACED IN ALL NEW AND EXISTING CATCH BASIN WHICH RECEIVE RUNOFF FROM DISTURBED AREAS. THE PLACING OF THESE TRAPS AND DAMS SHALL BE AS SHOWN ON THE PLANS.
- EROSION CONTROL MEASURES INDICATED ON THE PLANS ARE THE MINIMUM NUMBER REQUIRED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO USE ADDITIONAL BARRIERS AS FIELD CONDITIONS DICTATE AND TO INSURE THAT ANY EROSION CREATED BY THIS PROJECT DOES NOT REACH THE STATE'S WATERWAYS OR LEAVE THE SITE.
- WHERE SLOPE GRADE EXCEEDS 25 PERCENT (1 ON 4 SLOPE), EROSION CONTROL MATTING SECURELY ATTACHED TO THE GROUND SHALL BE PLACED AND MAINTAINED UNTIL A PERMANENT GRASS COVER IS ESTABLISHED.
- ALL DISTURBED TERRAIN AT FINAL GRADE SHALL BE SEEDED AND MULCHED WITHIN 48 HOURS OF COMPLETION, AND BY SEPTEMBER 15TH AT THE LATEST. BEFORE APPLYING FINAL SEEDING FOUR (4) INCH AVERAGE DEPTH OF TOPSOIL SHALL BE PLACED IN ALL DISTURBED AREAS TO BE SEEDED. SEED MIXTURES SHALL BE ONE AS SPECIFIED ON LANDSCAPING PLAN. IF NO SEED MIXTURE IS SPECIFIED IT SHALL BE ONE OF THE FOLLOWING

URBAN AREAS CONSERVATION MIX		
NAME	LBS/ACRE	% WT.
CREeping RED FESCUE	34.0	42.5
PERENNIAL RYE GRASS	8.0	10.0
KENTUCKY BLUE GRASS	34.0	42.5
ANNUAL RYEGRASS	4.0	5.0
	80.0	5.0

- ALL NEWLY SEEDED AREAS SHALL BE MULCHED AT A RATE OF TWO (2) TONS PER ACRE OF HAY OR STRAW DURING WINTER CONSTRUCTION MULCH SHALL BE APPLIED AT A RATE OF 4 TONS PER ACRE. EROSION CONTROL MATTING OR OTHER EQUAL NETTING SHALL BE USED WHERE WIND OR WATER MAY ERODE NEWLY-PLACED SEED OR MULCH OR WHERE GRADE EXCEEDS 25% (1:4) ALL NETTING, WHERE USED, SHALL BE STAKED TO THE GROUND IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- ALL AREAS THAT REACH FINISHED GRADE DURING THE WINTER CONSTRUCTION SEASON SHALL BE MULCHED AT A RATE OF 4 TONS/ACRE AND TACKED DOWN TO PREVENT WINDTHROW WITHIN 24 HOURS OF REACHING FINAL GRADE. THESE AREAS SHALL BE SEEDED AS SPECIFIED IN NOTE 8 IN THE SPRING AS SOON AS WEATHER ALLOWS.
- ALL HAY MULCH SHALL BE TACKED DOWN TO PREVENT WINDTHROW. EROSION CONTROL MATTING OR EQUIVALENT SHALL BE USED WHERE INDICATED ON PLANS. IN ALL OTHER AREAS MULCHED SHALL BE TRACKED WITH A BULLDOZER. THE CLEATS OF THE BULLDOZER SHALL BE PARALLEL TO THE CONTOURS. DURING THE WINTER CONSTRUCTION SEASON NETTING OR JUTE MATTING SHALL BE USED TO TACK DOWN ALL MULCH.
- ALL DISTURBED AREAS NOT AT FINAL GRADE THAT WILL NOT BE DISTURBED AGAIN FOR A PERIOD OF GREATER THAN THIRTY (30) DAYS, SHALL BE SEEDED WITH A TEMPORARY, RAPID-GROWING COVER CROP, SUCH AS RYE GRASS AND MILLET, AND SHALL BE MULCHED. NETTING SHALL ALSO BE APPLIED, AS SPECIFIED IN ITEM 9, TO STABILIZE THE MULCH AND SEED.
- ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY OR FINAL STABILIZATION WITHIN 14 DAYS OF THE INITIAL DISTURBANCE. AFTER THIS TIME, DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED IN ADVANCE OF ANY RUNOFF PRODUCING EVENT. A RUNOFF PRODUCING EVENT IS AN EVENT THAT PRODUCES RUNOFF FROM THE CONSTRUCTION SITE. THE FOLLOWING EXCEPTION TO THE ABOVE STABILIZATION REQUIREMENTS APPLY:

TEMPORARY STABILIZATION IS NOT REQUIRED IF WORK IS OCCURRING IN A SELF-CONTAINED EXCAVATION (I.E. NO OUTLET) WITH A DEPTH OF 2 FEET OR GREATER (E.G. HOUSE FOUNDATION EXCAVATION, UTILITY TRENCHES). AREAS OF A CONSTRUCTION SITE THAT DRAIN TO SEDIMENT BASINS ARE NOT CONSIDERED ELIGIBLE FOR THIS EXEMPTION AND THE EXCEPTION APPLIES ONLY TO THE EXCAVATED AREA ITSELF.
- DURING WINTER CONSTRUCTION ALL DISTURBED AREAS MUST HAVE TEMPORARY OR FINAL STABILIZATION AT THE END OF EACH WORK DAY. THE FOLLOWING EXCEPTIONS APPLY: i) STABILIZATION IS NOT REQUIRED IF WORK IS TO CONTINUE IN THE AREA IN THE NEXT 24 HOURS AND THERE IS NO PRECIPITATION FORECAST FOR THE NEXT 24 HOURS. ii) STABILIZATION IS NOT REQUIRED IF THE WORK IS OCCURRING IN A SELF-CONTAINED EXCAVATION (I.E. NO OUTLET) WITH A DEPTH OF 2-FEET OR GREATER (E.G. FOUNDATION EXCAVATION, UTILITY TRENCHES).
- ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS OF PERMANENT STABILIZATION OF THE SITE.
- EROSION CONTROLS SHALL BE INSPECTED WEEKLY AS WELL AS BEFORE AND AFTER ANY RAIN EVENT BY THE ON-SITE COORDINATOR, WHO WILL BE RESPONSIBLE FOR RECTIFYING ANY PROBLEMS FOUND. ALL INSPECTION FORMS SHALL BE KEPT ON-SITE AS RECORDS OF THE CONDITION OF THE EROSION CONTROL MEASURES. TEMPORARY EROSION CONTROL MEASURE SHALL BE REMOVE WITH 30 DAYS OF PERMANENT SITE STABILIZATION. DURING THE WINTER CONSTRUCTION SEASON SPECIAL ATTENTION SHALL BE PAID TO THE CHANGES IN WEATHER THAT COULD CAUSE SIGNIFICANT SNOW MELT AND RUNOFF.
- SEEDING MUST BE COMPLETED BY SEPTEMBER 15.
- CONTRACTOR SHALL APPLY DUST CONTROL MEASURES AS NECESSARY OR AS DIRECTED BY THE ENGINEER TO PREVENT THE AIR MOVEMENT OF DUST. ACCEPTABLE METHODS OF DUST CONTROL ARE VEGETATIVE COVER, MULCHING, SPRINKLING OF WATER, OR THE USE OF CALCIUM CHLORIDE.
- AT THE COMPLETION OF THE PROJECT, ALL STORMWATER DRAINAGE FACILITIES INCLUDING DITCHES, GRASSED SWALES, CATCH BASINS, SUMPS, CULVERTS, STORM DRAINS, STORM MANHOLES, OUTLET STRUCTURES, STORM FILTERS, ETC SHALL BE CLEANED AND FREE OF SILT, SEDIMENT OR DEBRIS WHICH MIGHT IMPAIR THE PROPER OPERATION OF THE FACILITIES.



no. date revision



project name:  
**SUNAPEE MIDDLE HIGH SCHOOL  
BIOMASS BOILER**

project location:  
**10 NORTH ROAD  
SUNAPEE, NEW HAMPSHIRE**

client:  
ENERGY EFFICIENT INVESTMENTS

project number: 23342  
drawn by: RBC  
checked by: BMLK  
scale: N/A  
date: 11 APR 2024  
released for: CONSTRUCTION  
sheet description:

LEGEND AND  
GENERAL NOTES

C0.01





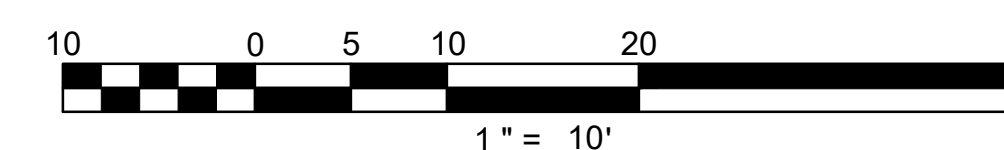
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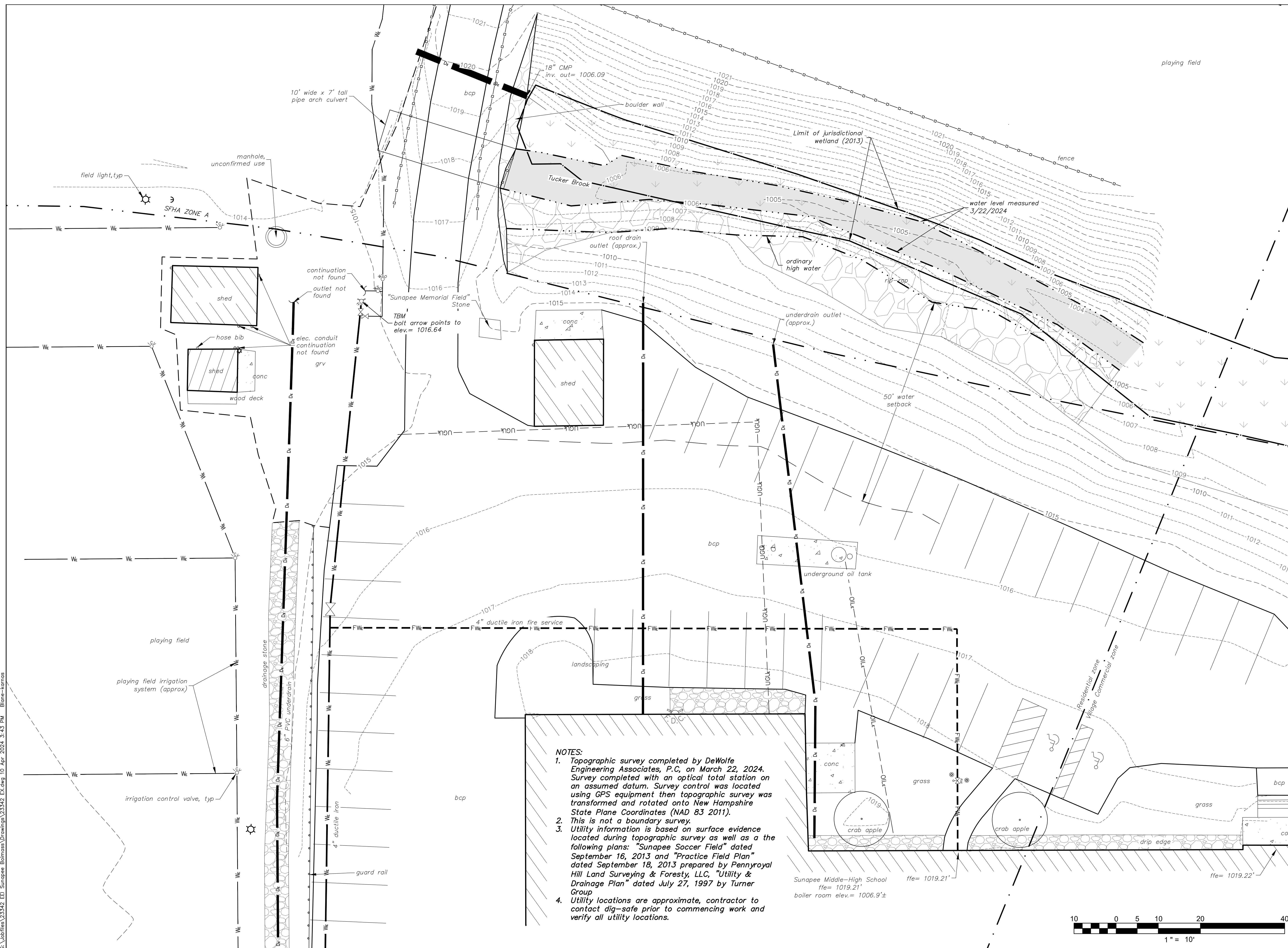
client:

## EXISTING CONDITIONS

## C1.01

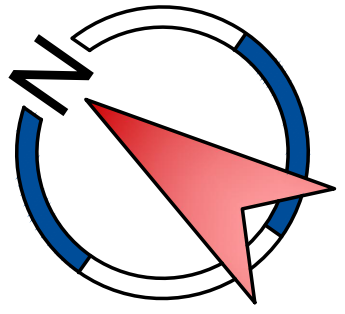
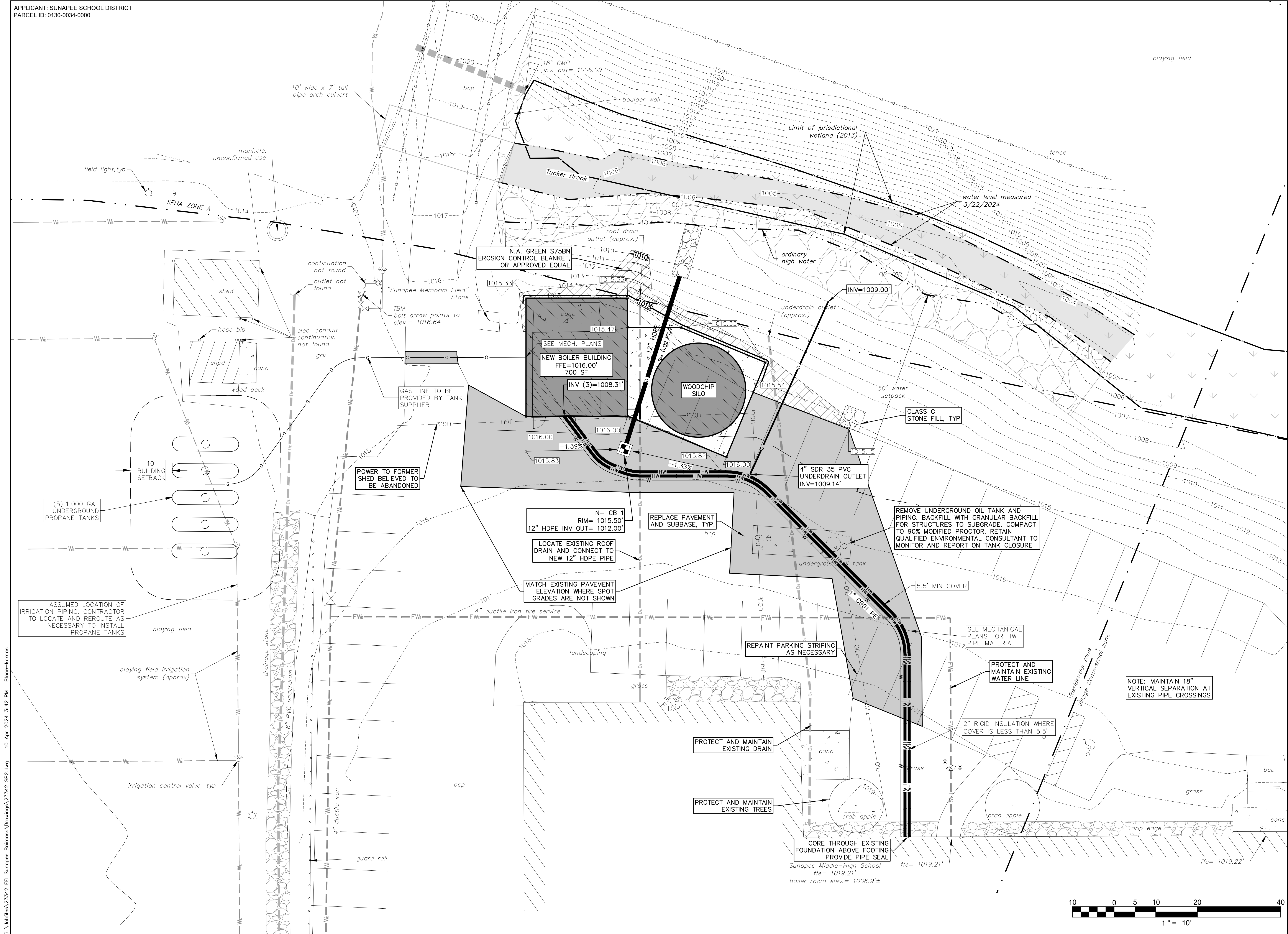


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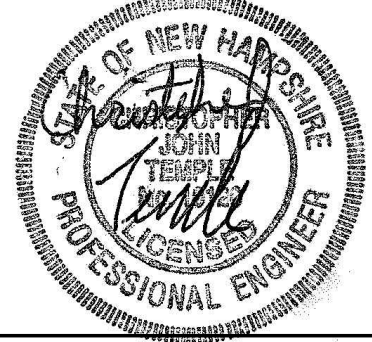


APPLICANT: SUNAPEE SCHOOL DISTRICT  
PARCEL ID: 0130-0034-0000



GRID

Civil & Structural Engineers  
**DeWolfe**  
ENGINEERING ASSOCIATES  
PROFESSIONAL CORPORATION  
1,802-223-4727 1,802-223-4740 www.dwtsteel.com  
317 River St., P.O. Box 1578, Manchester, VT 05601-1578



no.	date	revision
1		

project name: **SUNAPEE MIDDLE HIGH SCHOOL  
BIOMASS BOILER**  
project location: **10 NORTH ROAD  
SUNAPEE, NEW HAMPSHIRE**  
client: **ENERGY EFFICIENT INVESTMENTS**

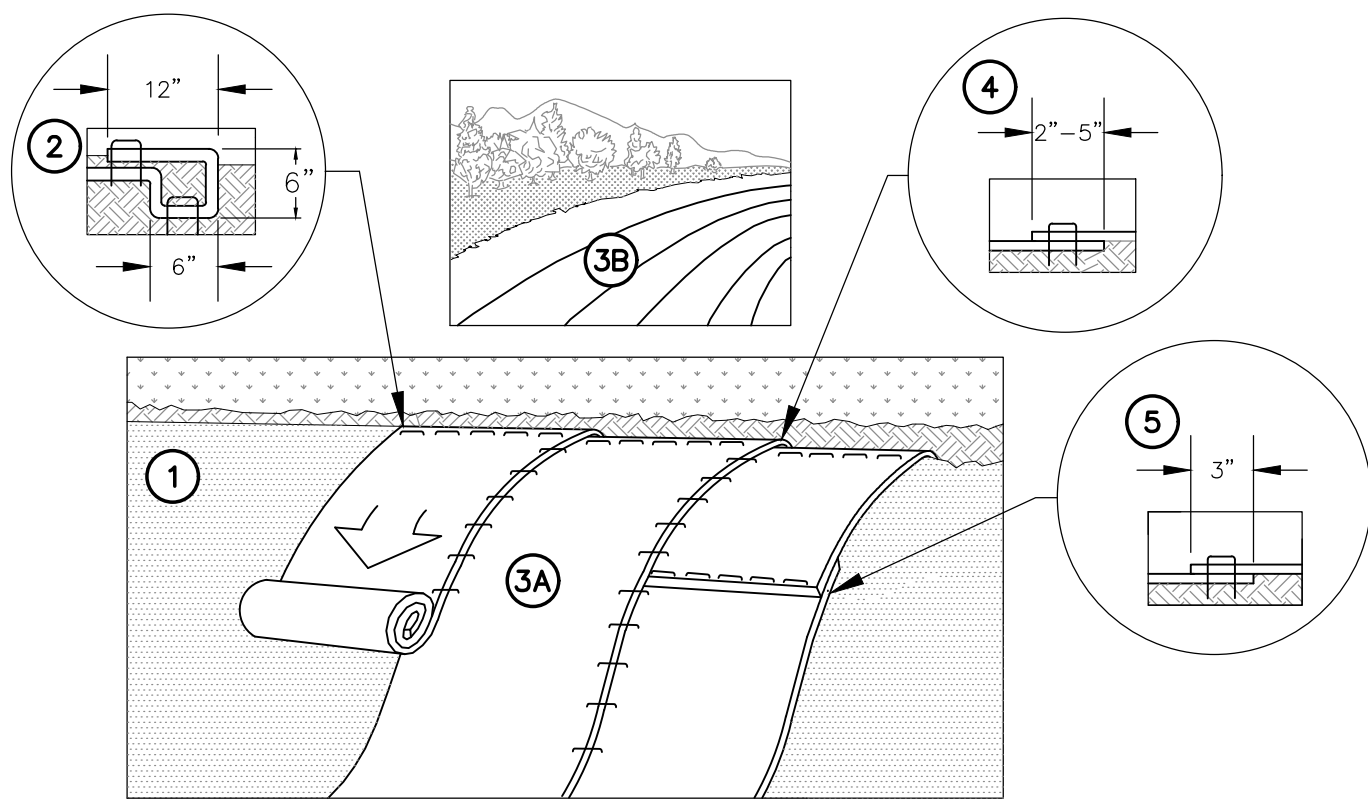
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date: 11 APR 2024  
released for: CONSTRUCTION  
sheet description:

SITE  
PLAN

C1.02

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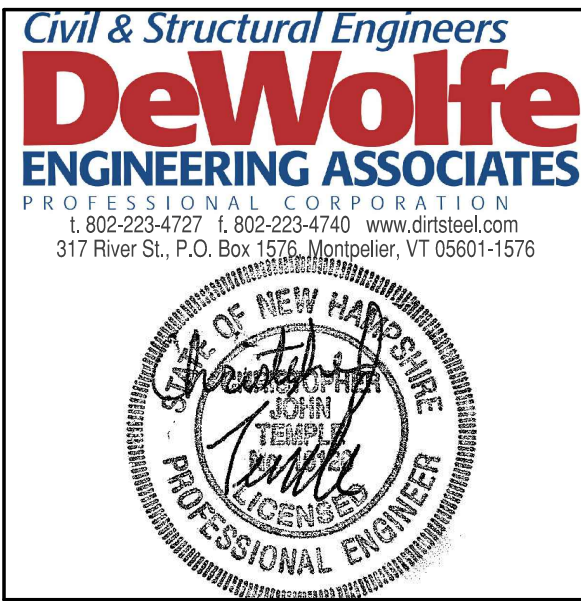
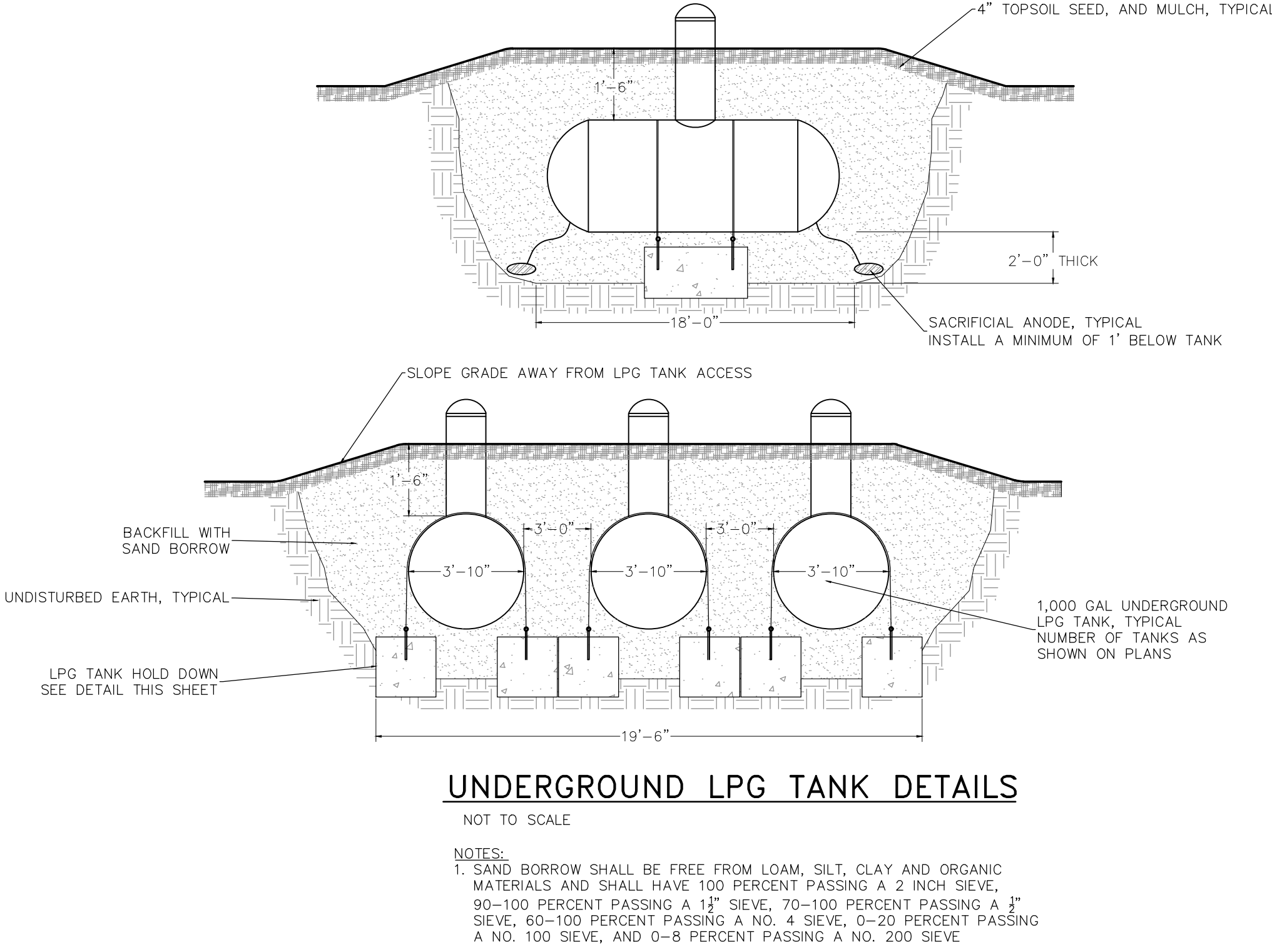
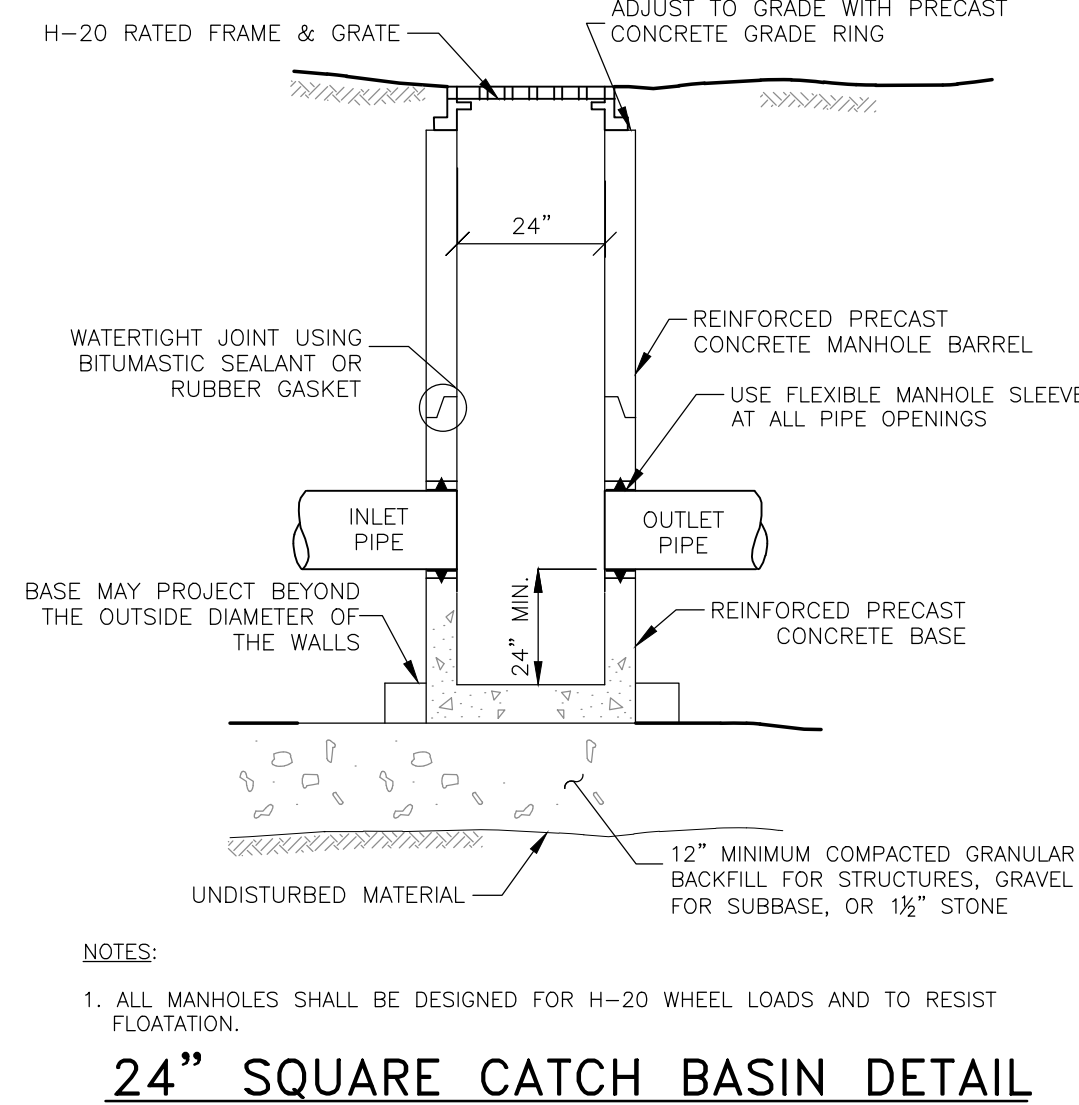
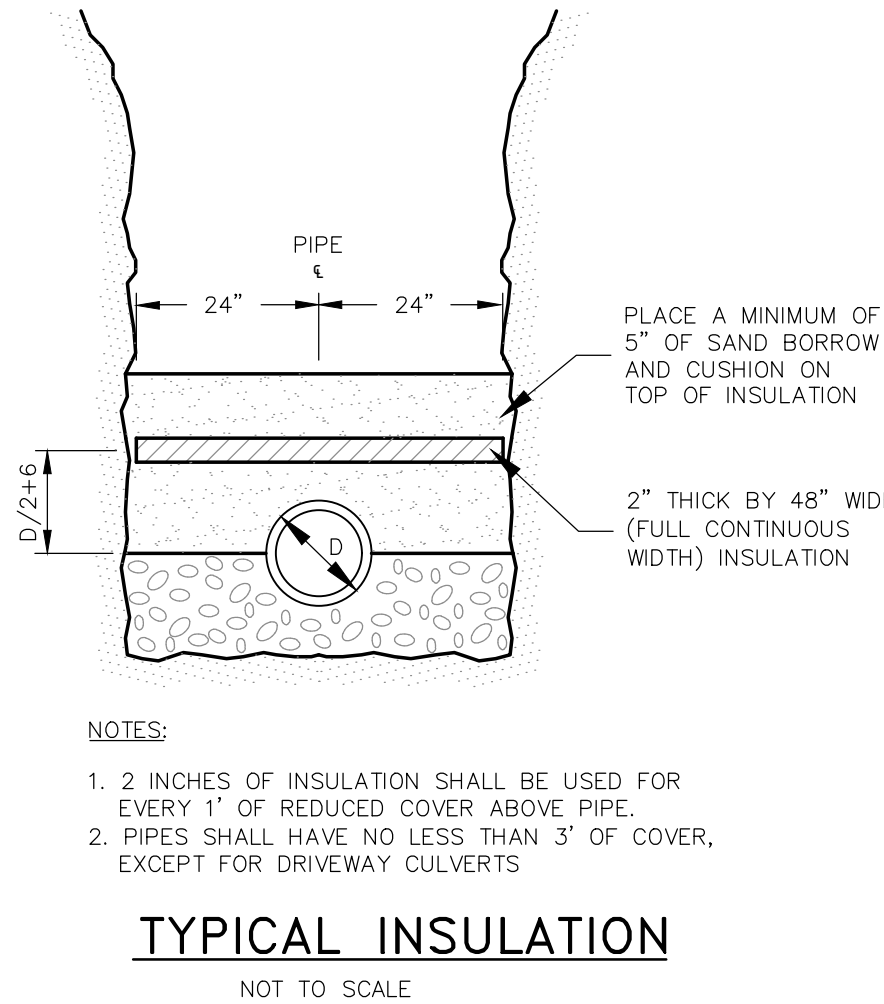
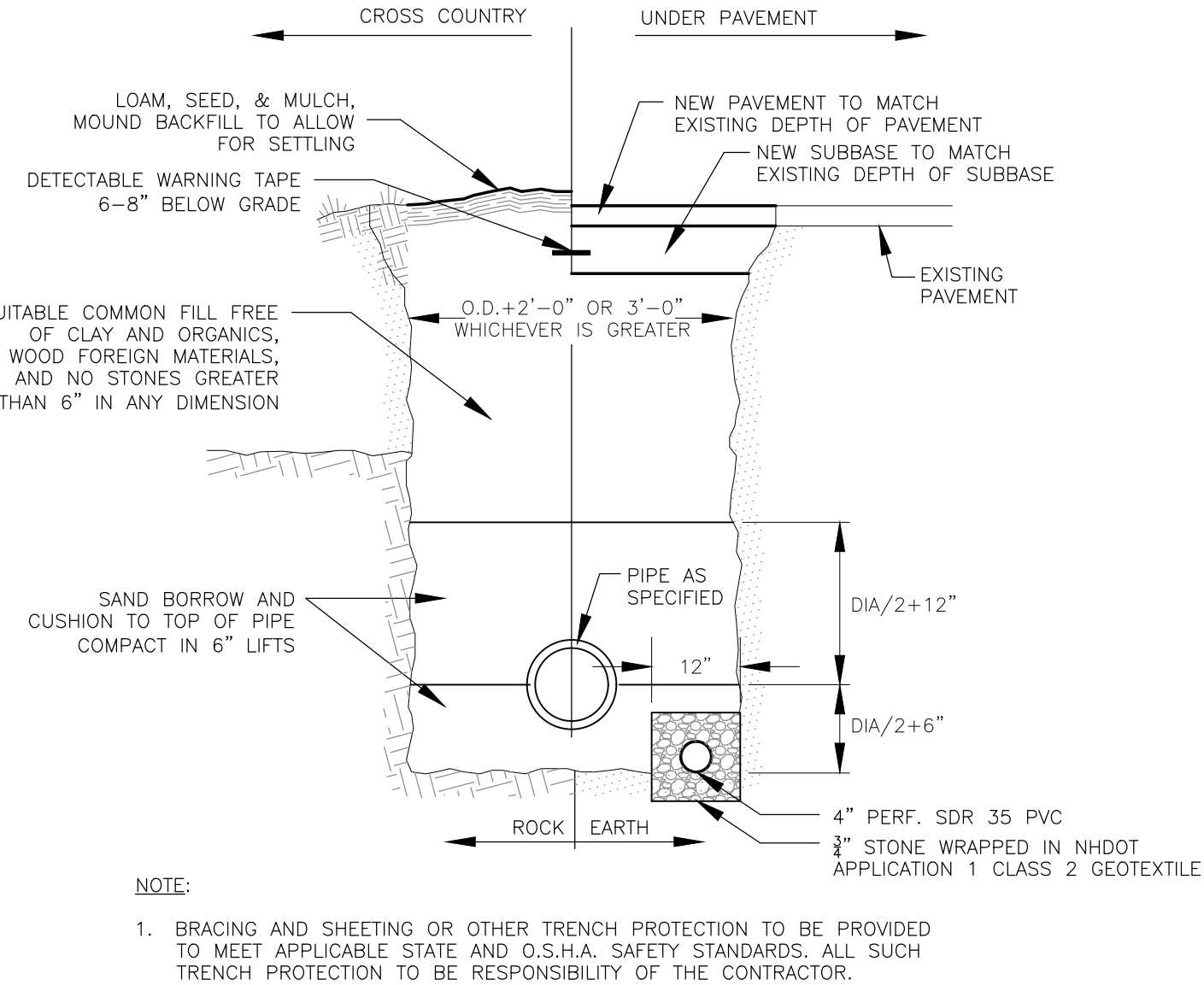
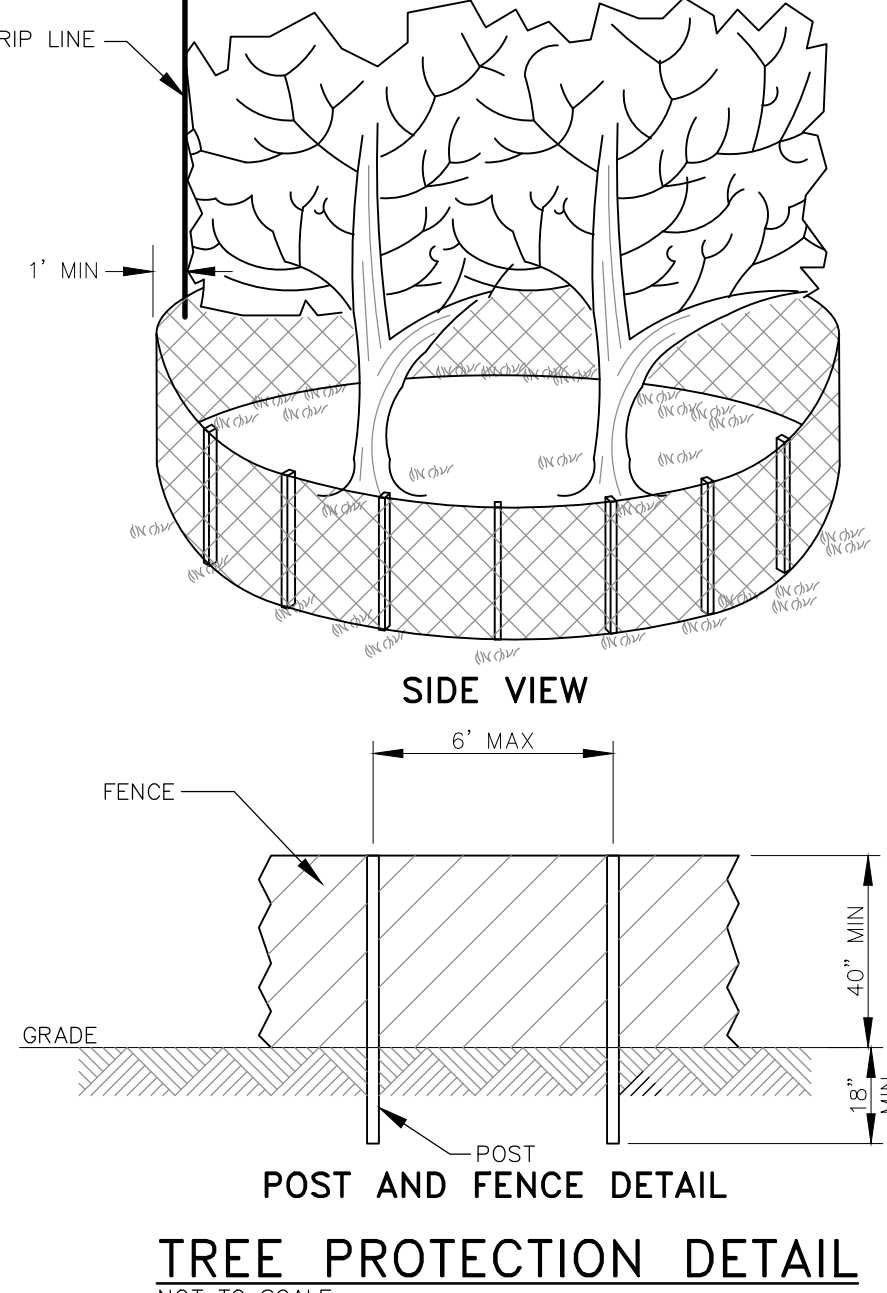
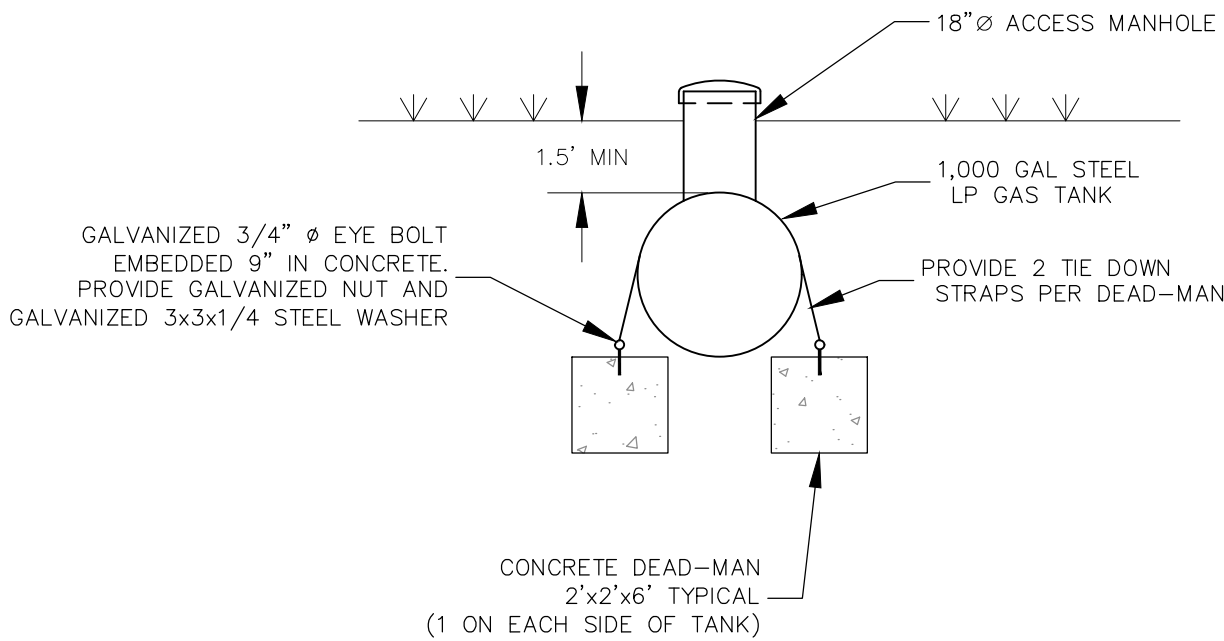
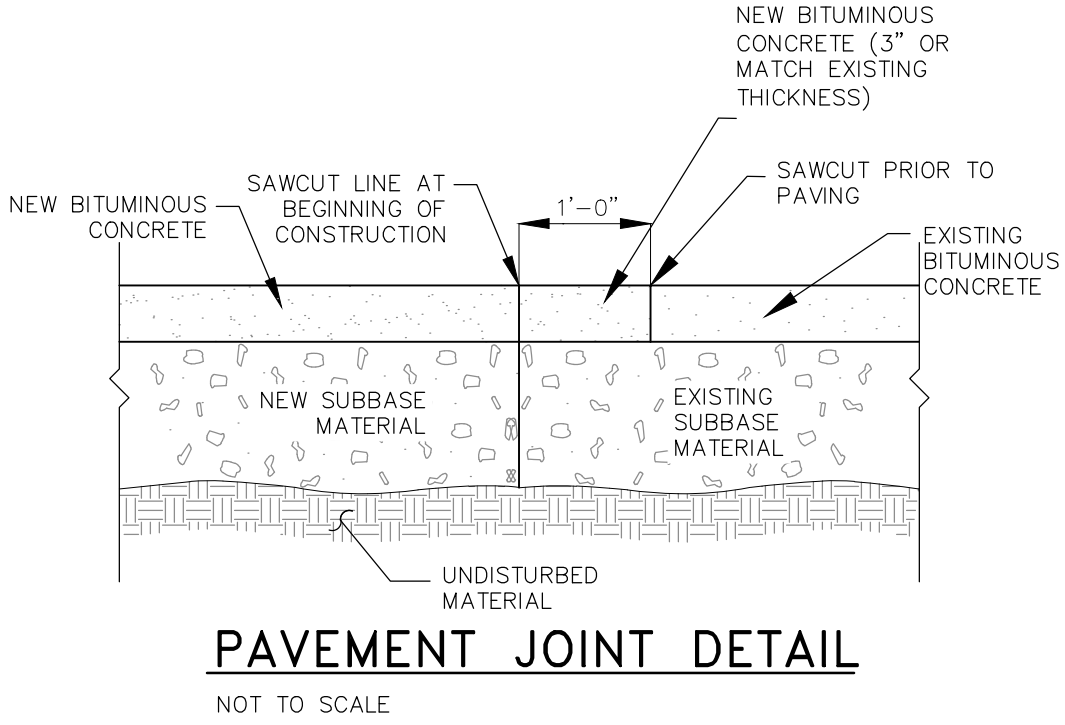
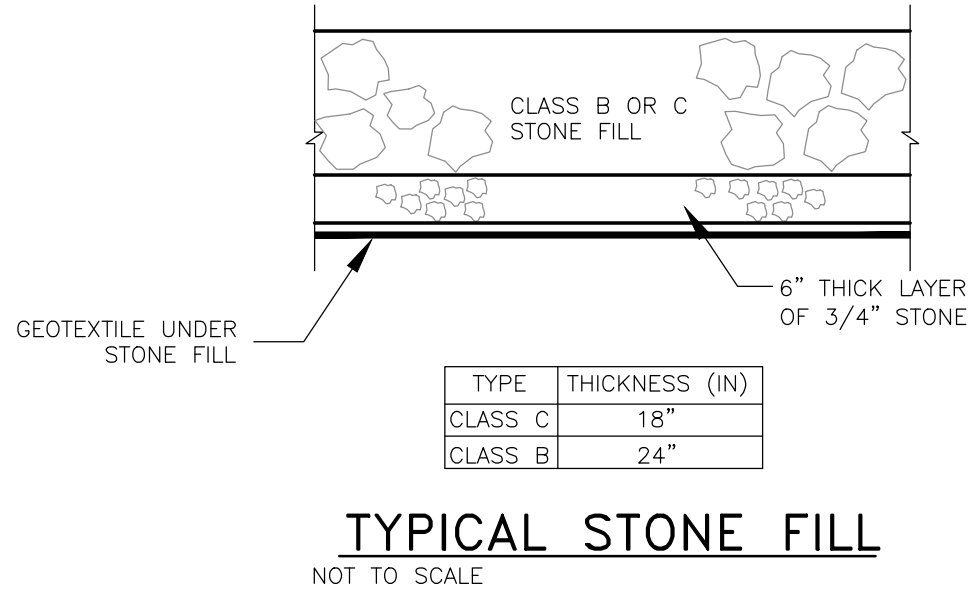
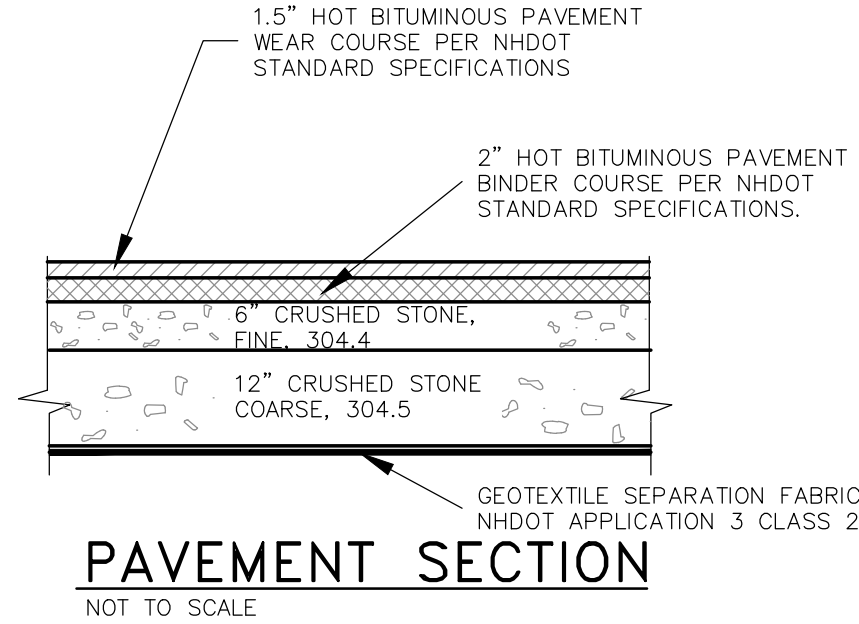


1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER AND SEED
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" TO 5" OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP's WIDTH. NOTE: \*IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

### SLOPE INSTALLATION

#### ROLLED EROSION CONTROL MATTING

NOT TO SCALE



no.	date	revision
1		

project name: **SUNAPEE MIDDLE HIGH SCHOOL**  
**BIOMASS BOILER**  
project location: **10 NORTH ROAD**  
**SUNAPEE, NEW HAMPSHIRE**  
client: **ENERGY EFFICIENT INVESTMENTS**

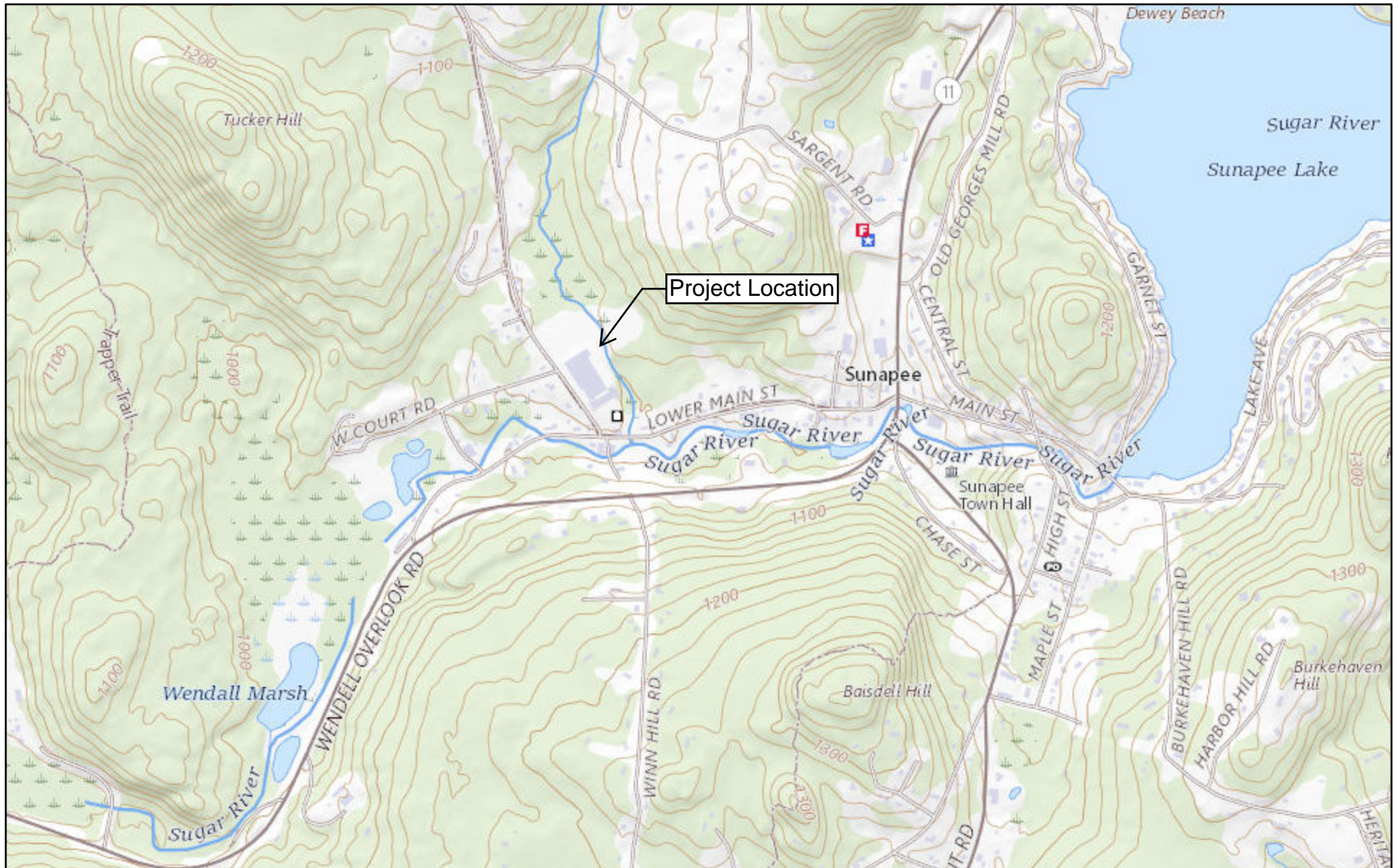
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checked by: **BMLK**  
scale: **AS NOTED**  
date: **11 APR 2024**  
released for: **CONSTRUCTION**

sheet description: **CONSTRUCTION DETAILS**

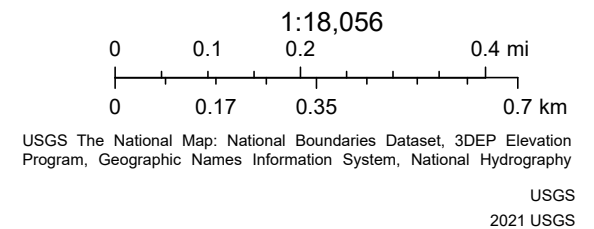
**C5.01**



# Sunapee MHS Biomass Location Map



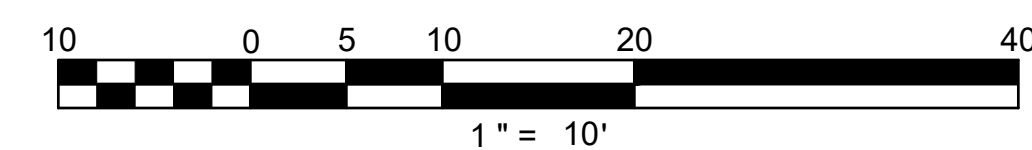
4/10/2024, 11:59:57 AM











A circular professional seal for John Terrell, a Licensed Professional Engineer in the State of New Hampshire. The seal features his name "John Terrell" written across it in cursive script. The outer ring contains the text "STATE OF NEW HAMPSHIRE" at the top and "LICENSED PROFESSIONAL ENGINEER" at the bottom. Inside the ring, above the signature, are the words "REGISTERED PROFESSIONAL" and below the signature is the word "ENGINEER".

project name: SUNAPEE MIDDLE HIGH SCHOOL  
BIOMASS BOILER  
project location: 10 NORTH ROAD  
SUNAPEE, NEW HAMPSHIRE  
client: ENERGY EFFICIENT INVESTMENTS

## SITE PLAN

## C1.02



RECEIVED

JAN 12 2024

RECEIVED

JAN 12 2024

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 + Laura Raymond  
Address 276 Mountain Rd, Newbury, NH 03255  
(Mailing) Same  
Phone 603 - 344 - 1552  
2. Zoning District Mixed Use 1  
3. Project Location: 60 Route 103  
4. Parcel ID: 000232 - 000023  
5. Complete description of current use of property:

Office Building + Parking

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.)

Erect a shop building on site for storage of project related 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.

JB As Agent  
Signature(s) of Landowner(s)

1/12/24  
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:

- ☒ 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 [zoning@town.sunapee.nh.us](mailto: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:

- ☒ 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.
- ☒ 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
- ☒ Water supply for property including mains and services lines
- ☒ Proposed landscaping plan
- ☒ Existing and proposed electric lines
- ☒ Existing and proposed telephone lines

☒ Exterior lighting plan

Article V requirements (cont.):

☒ Proposed signs-size and location

☒ Locations of retaining walls, fences, and outside storage areas

☒ 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



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
- Sugar Maple
- Montgomery Blue Spruce
- Malus Adams Crabapple
- Cheer Drop Arborvitae
- Canadian Hemlock
- Existing Trees

NO.	DESCRIPTION	BY	DATE
SHEET TITLE: 60 Route 103 Sunapee, NH			
PROJECT DESCRIPTION: Relax and Company Offices			
DRAWINGS PROVIDED BY: Relax and Company			
DATE: 1/04/24			
SCALE: 1"=20'			
SHEET: S-1			



# 200 foot Abutters List Report

Tri Town, NH

January 12, 2024

## Subject Property:

Parcel Number: Sun-0232-0023-0000  
CAMA Number: Sun-0232-0023-0000  
Property Address: 60 ROUTE 103

Mailing Address: RAYMOND, JARED S & LAURA A  
276 MOUNTAIN RD  
NEWBURY, NH 03255

## Abutters:

Parcel Number: Sun-0225-0013-0000  
CAMA Number: Sun-0225-0013-0000  
Property Address: 9 YOUNGS HILL RD

Mailing Address: KANGAS, WESLEY A.  
9 YOUNGS HILL RD  
SUNAPEE, NH 03782

Parcel Number: Sun-0225-0013-0100  
CAMA Number: Sun-0225-0013-0100  
Property Address: YOUNGS HILL RD Unit 100

Mailing Address: KANGAS, WESLEY  
9 YOUNGS HILL RD  
SUNAPEE, NH 03782

Parcel Number: Sun-0225-0036-0000  
CAMA Number: Sun-0225-0036-0000  
Property Address: 36 ROUTE 103

Mailing Address: MCDONOUGH FAMILY PROPERTIES, L  
1567 SUMMER ST  
BRISTOL, NH 03222

Parcel Number: Sun-0232-0001-0000  
CAMA Number: Sun-0232-0001-0000  
Property Address: YOUNGS HILL RD

Mailing Address: JOHNSON 2014 TRUST, JOLYON  
JOLYON JOHNSON, TRUSTEE  
PO BOX 596  
SUNAPEE, NH 03782

Parcel Number: Sun-0232-0016-0000  
CAMA Number: Sun-0232-0016-0000  
Property Address: 52 DEPOT RD

Mailing Address: INTREAL LTD, INC  
PO BOX 798  
SUNAPEE, NH 03782

Parcel Number: Sun-0232-0016-0000  
CAMA Number: Sun-0232-0016-0001  
Property Address: 54 DEPOT RD Unit 1

Mailing Address: INTREAL LTD, INC  
PO BOX 798  
SUNAPEE, NH 03782

Parcel Number: Sun-0232-0017-0000  
CAMA Number: Sun-0232-0017-0000  
Property Address: ROUTE 103

Mailing Address: ZORNIO, IDA C/O PETER ZORNIO  
9301 PRINCE WILLIAM  
AUSTIN, TX 78730

Parcel Number: Sun-0232-0018-0000  
CAMA Number: Sun-0232-0018-0000  
Property Address: 46 DEPOT RD

Mailing Address: LANDLADIES 46 LLC.  
276 MOUNTAIN ROAD  
NEWBURY, NH 03255

Parcel Number: Sun-0232-0020-0000  
CAMA Number: Sun-0232-0020-0000  
Property Address: 40 DEPOT RD

Mailing Address: JACKSON, GARY L  
40 DEPOT RD  
SUNAPEE, NH 03782

Parcel Number: Sun-0232-0022-0000  
CAMA Number: Sun-0232-0022-0000  
Property Address: 39 DEPOT RD

Mailing Address: INTREAL LTD, INC.  
PO BOX 798  
SUNAPEE, NH 03782



www.cai-tech.com

Data shown on this report 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 report.

1/12/2024

Page 1 of 1





William Cass, P.E.  
Commissioner

**THE STATE OF NEW HAMPSHIRE  
DEPARTMENT OF TRANSPORTATION**

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



David Rodrigue, P.E.  
Assistant Commissioner

**DRIVEWAY PERMIT**

To: Jared Raymond  
PO Box 289  
Newbury, NH 03255

City/Town: Sunapee  
Route/Road: Depot Rd (N4350041)  
Patrol Section: 213  
Tax Map: 232  
Lot: 23  
Development:

Permit #: **02-435-0039**  
District: 02  
Permit Date 10/19/2023

Permission is hereby granted to construct (alter) a driveway, entrance, exit or approach adjoining Depot Rd (N4350041), 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 0.034 miles west of NH Route 103 on the north side of Depot Rd (N4350041).  
SLD Station: 180 (right) GPS: 43.369677 N 72.122711 W.

Specifications: This permit authorizes a gravel 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 24.75 feet from and parallel to the centerline of the highway.  
The entrance shall be graded so that the surface of the drive drops 2 inches at a point 4 feet from Depot Rd (N4350041) edge of pavement to create a drainage swale.

The driveway shall not exceed 12 feet in width. The entrance of the drive may be flared; typically the flare radius is one half the driveway width.

The intent of this permit is to record the change in use of the driveway from residential to commercial and approve the reconstruction of the existing driveway at 60 Route 103 in Sunapee.

**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.

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

James Bruss  
PO Box 289  
Newbury, NH 03255

Approved



Assistant District Engineer  
For Director of Administration





William Cass, P.E.  
Commissioner

**THE STATE OF NEW HAMPSHIRE**  
**DEPARTMENT OF TRANSPORTATION**

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



David Rodrigue, P.E.  
Assistant Commissioner

**DRIVEWAY PERMIT**

To: Jared Raymond  
PO Box 289  
Newbury, NH 03255

City/Town: Sunapee  
Route/Road: NH 103 (S0000103)  
Patrol Section: 213  
Tax Map: 232  
Lot: 23  
Development:

Permit #: **02-435-0038**  
District: 02  
Permit Date 10/19/2023

Permission is hereby granted to construct (alter) a driveway, entrance, exit or approach adjoining NH 103 (S0000103), 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 0.006 miles south of Youngs Hill Road on the west side of NH 103 (S0000103).  
SLD Station: 1793 (right) GPS: 43.370033 N 72.122526 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 3 inches at a point 6 feet from NH 103 (S0000103) edge of pavement to create a drainage swale.

The driveway shall not exceed 22 feet in width. The entrance of the drive may be flared; typically the flare radius is one half the driveway width.

The intent of this permit is to record the change in use of the driveway from residential to commercial and approve the reconstruction and paving of the existing driveway at 60 Route 103 in Sunapee. The gravel base material shall be regraded so that the finished grade of the driveway pavement is flush with the highway pavement to ensure positive drainage to the swale at the beginning of the driveway.

**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.

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

Relax & Co.  
James Bruss  
PO Box 289  
Newbury, NH 03255

Approved



Assistant District Engineer  
For Director of Administration

# **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)***

	<b><i>2 Yr.</i></b>	<b><i>10 Yr.</i></b>	<b><i>25 Yr.</i></b>
<b><i>SP-1</i></b>			
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.

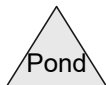
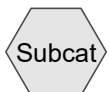
## **PRE-DEVELOPMENT MODEL OUTPUT**



Study Point #1



S1 - Ex. Cond



**Routing Diagram for 230764 PRE\_RT103**

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## **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

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**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)
<b>0.383</b>	<b>50</b>	<b>TOTAL AREA</b>



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**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	
<b>0.383</b>		<b>TOTAL AREA</b>

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**Ground Covers (all nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.230	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
<b>0.383</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.383</b>	<b>TOTAL AREA</b>	

**230764 PRE\_RT103***NRCC 24-hr C 2-Year Rainfall=2.65"*

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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&gt;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		<b>Sheet Flow, A-B Sheet</b> 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

**230764 PRE\_RT103**

NRCC 24-hr C 10-Year Rainfall=3.85"

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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&gt;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		<b>Sheet Flow, A-B Sheet</b> 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

**230764 PRE\_RT103**

NRCC 24-hr C 25-Year Rainfall=4.77"

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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&gt;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		<b>Sheet Flow, A-B Sheet</b> Woods: Light underbrush n= 0.400 P2= 3.00"

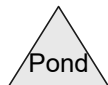
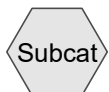
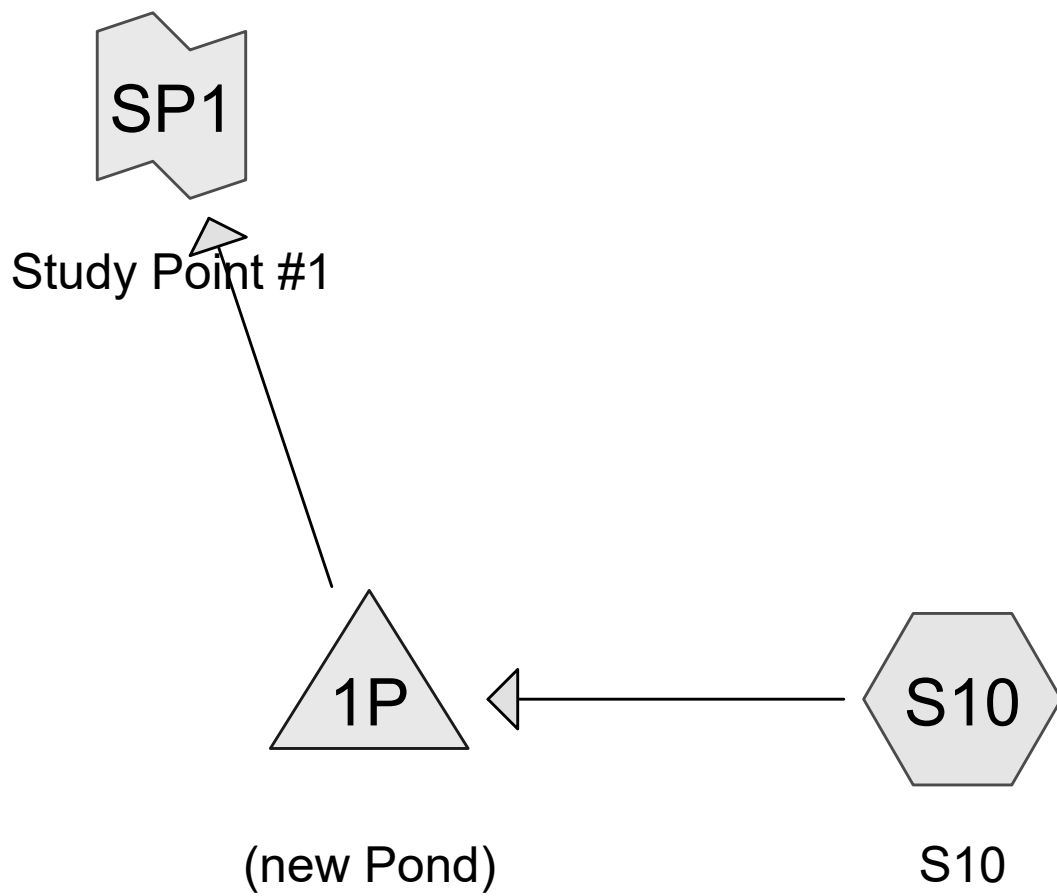
**Summary for Link SP1: Study Point #1**

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**



**Routing Diagram for 230764 POST\_RT103**

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## **230764 POST\_RT103**

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### **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

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**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

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**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)
<b>0.383</b>	<b>68</b>	<b>TOTAL AREA</b>

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**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	
<b>0.383</b>		<b>TOTAL AREA</b>

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**Ground Covers (all nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.149	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
<b>0.383</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.383</b>	<b>TOTAL AREA</b>	

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**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



**230764 POST\_RT103***NRCC 24-hr C 2-Year Rainfall=2.65"*

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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					<b>Direct Entry, DE</b>

**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	<b>Custom Stage Data (Prismatic)</b> 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'	<b>12.0" Round Culvert</b> 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'	<b>4.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#3	Discarded	936.00'	<b>4.000 in/hr Exfiltration over Surface area</b>

**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

**230764 POST\_RT103***NRCC 24-hr C 10-Year Rainfall=3.85"*

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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					<b>Direct Entry, DE</b>

**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	<b>Custom Stage Data (Prismatic)</b> 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'	<b>12.0" Round Culvert</b> 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'	<b>4.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#3	Discarded	936.00'	<b>4.000 in/hr Exfiltration over Surface area</b>

**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



**230764 POST\_RT103**

NRCC 24-hr C 25-Year Rainfall=4.77"

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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					<b>Direct Entry, DE</b>

**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	<b>Custom Stage Data (Prismatic)</b> 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'	<b>12.0" Round Culvert</b> 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'	<b>4.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#3	Discarded	936.00'	<b>4.000 in/hr Exfiltration over Surface area</b>

**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**



# Preface

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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](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

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

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

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

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

---

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map



Map Scale: 1:610 if printed on A landscape (11" x 8.5") sheet.

0 5 10 20 30 Meters

0 25 50 100 150 Feet

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

# Custom Soil Resource Report

## 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%
<b>Totals for Area of Interest</b>		<b>1.9</b>	<b>100.0%</b>

## 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, interfluvium, 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

## Custom Soil Resource Report

*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

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*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

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*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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[illegible]

**NOTICE OF MERGER OF LOTS  
PURSUANT TO NEW HAMPSHIRE RSA 674:39-A  
TOWN OF SUNAPEE, NEW HAMPSHIRE**

OWNER OF LOTS:

Jean Perrone - White, Joseph Perrone,  
Hennisee Buchanan - Perrone

Description of Lots:

Lot 1:

Town of Sunapee Tax Parcel ID: Map 233 Lot 76  
Deed to owner recorded at Sullivan County Registry of Deeds:

Book #: 1988 Page #: 983

Location/Street Address: 24 Nutting Rd.

Lot 2

Town of Sunapee Parcel ID: Map 233 Lot 77

Deed to owner recorded at Sullivan County Registry of Deeds:

Book #: 1988 Page #: 983

Location/Street Address: Nutting Rd.

1A

1. After reviewing the Owner's application to merge the Lots described above, the Lots will not violate any existing municipal land use ordinance regulation.
2. The Owner of the Lots described above agrees that, for the purposes of municipal regulation and taxation, the Lots shall be deemed to be merged into one lot. Neither one of the Lots may be separately transferred in the future without subdivision approval and compliance with all applicable municipal ordinances and regulations.
3. The original of this Notice shall be recorded at the Sullivan County Registry of Deeds, and a copy shall be sent to the Town of Sunapee Board of Selectmen.

Executed as of the day and year noted above.

TOWN OF SUNAPEE PLANNING BOARD

Signature: \_\_\_\_\_

Printed Name: \_\_\_\_\_  
(Chairman)

The foregoing instrument was acknowledged before me, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by \_\_\_\_\_, the  
Chairman of the Town of Sunapee Planning Board on behalf of such Board.

\_\_\_\_\_  
Justice of the Peace/Notary Public  
My Commission Expires: \_\_\_\_\_

COUNTY OF SULLIVAN

Signature: Joseph Perrone  
(Landowner)

Printed Name: JOSEPH PERRONE  
(Landowner)

Signature: Hennisee  
(Landowner)

Printed Name: Hennisee Buchanan-Perrone  
(Landowner)

STATE OF  
COUNTY OF

The foregoing instrument was acknowledged before me, this 2<sup>ND</sup> day of

May, 20 24 by Joseph Perrone

(Landowner)



Joshua Boone  
Justice of the Peace/Notary Public  
My Commission Expires: 10/13/2026

STATE OF  
COUNTY OF

The foregoing instrument was acknowledged before me, this 2<sup>ND</sup> day of

May, 20 24 by Hennisee Buchanan - Perrone

(Landowner)



Joshua Boone  
Justice of the Peace/Notary Public  
My Commission Expires: 10/13/2026

COUNTY OF SULLIVAN

Signature: Joseph Perrone DPOA on Behalf of Jean Perrone-White  
(Landowner)

Printed Name: Joseph Perrone  
(Landowner)

Signature: \_\_\_\_\_  
(Landowner)

Printed Name: \_\_\_\_\_  
(Landowner)

STATE OF  
COUNTY OF

The foregoing instrument was acknowledged before me, this 2<sup>ND</sup> day of  
May, 2024 by Joseph Perrone DPOA on behalf of Jean Perrone-White  
(Landowner)



Joshua P. Boone  
Justice of the Peace/Notary Public  
My Commission Expires: 10/13/2026

STATE OF  
COUNTY OF

The foregoing instrument was acknowledged before me, this \_\_\_\_\_ day of  
\_\_\_\_\_, 20\_\_\_\_ by \_\_\_\_\_.

(Landowner)

\_\_\_\_\_  
Justice of the Peace/Notary Public  
My Commission Expires: \_\_\_\_\_