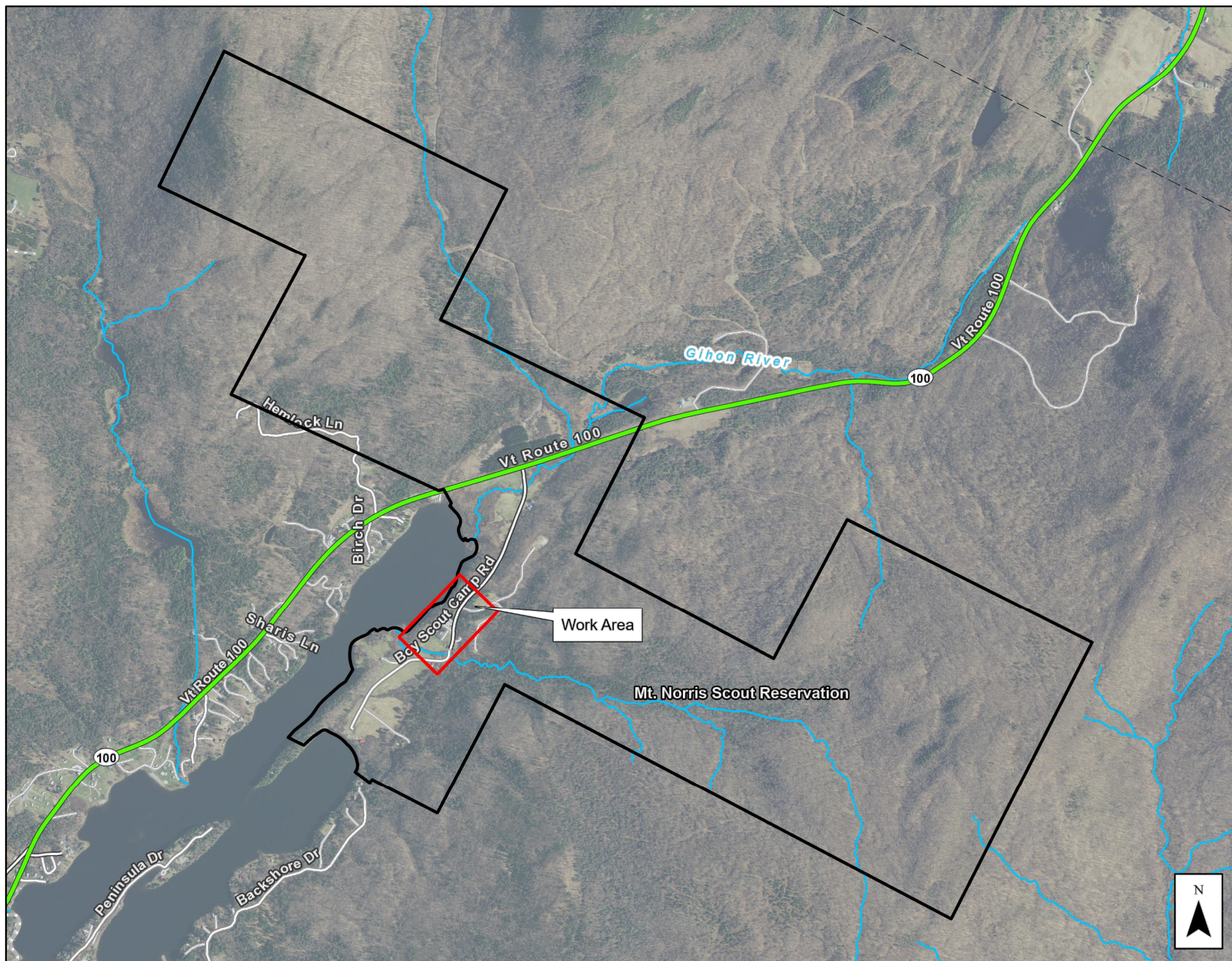


STORMWATER IMPROVEMENTS FINAL DESIGN MT. NORRIS SCOUT RESERVATION EDEN, VERMONT

December 20, 2021

This project involves treatment of stormwater on the Mt. Norris Scout Reservation in Eden, Vermont. Two infiltration practices with pretreatment forebays are proposed. The northern practice treats stormwater runoff from a portion of the main parking lot. The southern practice treats stormwater runoff from a portion of the main parking lot, road, and several camp buildings. A proposed diversion channel routes upslope runoff around the practices.



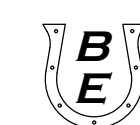
General Notes

1. These plans do not constitute a survey and shall not be used for the transfer of lots.
2. 1-foot contours shown on the plans were generated from a combination of 2017 0.7-meter LiDAR elevation data for Lamoille County and summer 2021 topographic survey by FEA. Actual elevation may vary.
3. All materials and construction shall conform to the technical specifications for project.
4. If a condition of the technical specifications cannot be met, the contractor shall notify the Designer/Engineer and coordinate a meeting with the Designer/Engineer prior to construction.
5. Prior to ordering materials or breaking ground, the Contractor is responsible for reviewing all contract documents including but not limited to shop drawings, design plans, technical specifications and other related documents to verify and coordinate dimensions, layouts, placement, and applicability. The Contractor shall conduct field checks to verify the accuracy of dimensions, topography, and existing conditions. The Contractor shall immediately notify the Designer/Engineer of any discrepancies between the information shown on these plans and the conditions existing in the field. If the Contractor fails to report any discrepancies discovered to the project Designer/Engineer, the Contractor shall be responsible for any errors which might have been avoided thereby. The Contractor shall submit the list and quantity of materials to order to the Town for review prior to ordering.
6. The location of utilities shown on these plans are not based on "dig safe" markings and do not purport to constitute or represent all utilities located upon or adjacent to the surveyed premises. The Contractor shall field verify all utility conflicts. All discrepancies shall be reported to the Designer/Engineer.
7. The Contractor shall provide traffic control signage during construction.
8. The Contractor shall repair/restore all disturbed areas (on or off the site) as a direct or indirect result of the construction to their original condition at the completion of construction.
9. Do not disturb trees greater than 3" diameter unless inside clearing areas defined on the plans.
10. In addition to the requirements set in these plans and specifications, the Contractor shall complete the work in accordance with all permit conditions and any local Public Works Standards.
11. All areas exposed during construction shall be protected in accordance with the standards published in the Vermont Department of Environmental Conservation's *Low Risk Site Handbook for Erosion Prevention and Sediment Control*.

Sheet Index

1. Watershed Overview
2. Existing Conditions Overview
3. Proposed Site Plan Overview
4. Proposed Site Plan North
5. Proposed Site Plan South
6. Proposed Site Plan East
7. Details
8. Construction Specifications

Prepared By:



BUERMANN ENGINEERING, LLC
7 Sanderson Road, Milton, Vermont 05468
Tel.: (802) 893-1308 www.belvt.com

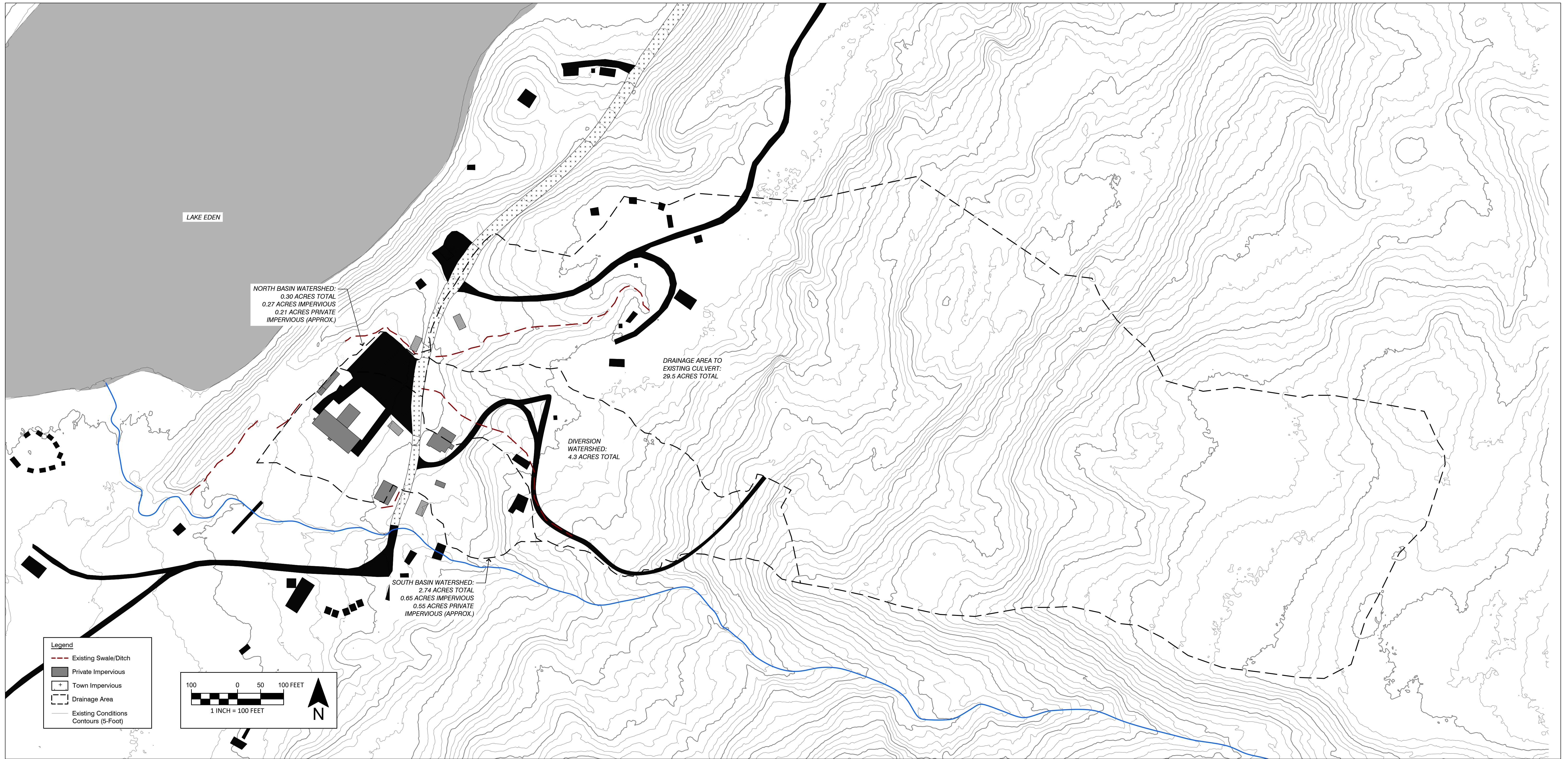
Prepared For:



LAMOILLE COUNTY CONSERVATION DISTRICT
109 PROFESSIONAL DRIVE, SUITE 2
MORRISVILLE, VT 05661
WEBSITE: lcnrcd.com

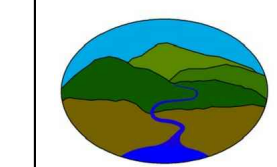


MT. NORRIS SCOUT RESERVATION
GREEN MOUNTAIN COUNCIL
BOY SCOUTS OF AMERICA
83 BOY SCOUT CAMP ROAD
EDEN, VT 05653



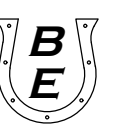
DESIGN DETAILS:

- PROPOSED PRACTICES:**
- TOTAL IMPERVIOUS AREA DRAINING TO PRACTICES: 0.92 ACRES
 - PRIVATE IMPERVIOUS AREA DRAINING TO PRACTICES: 0.76 ACRES
 - TOWN IMPERVIOUS AREA DRAINING TO PRACTICES: 0.16 ACRES
 - TREATMENT VOLUME (Tv):
 - PRACTICE 1: 0.27 ACRES IMPERVIOUS / 0.03 ACRES PERVIOUS (TOTAL Tv = 0.0212 ACRE-FEET)
 - 0.06 ACRES TOWN IMPERVIOUS (Tv = 0.0048 ACRE-FEET)
 - ESTIMATED CREDITABLE Tv = 0.0164 ACRE-FEET
 - PRACTICE 2: 0.65 ACRES IMPERVIOUS / 2.09 ACRES PERVIOUS (Tv = 0.0598 ACRE-FEET)
 - 0.10 ACRES TOWN IMPERVIOUS (Tv = 0.0079 ACRE-FEET)
 - ESTIMATED CREDITABLE Tv = 0.0519 ACRE-FEET
 - TOTAL Tv = 0.0810 ACRE-FEET
 - TOTAL ESTIMATED CREDITABLE Tv = 0.0683 ACRE-FEET
- PERMIT 3-9050 3-ACRE RULE REQUIREMENT:**
- TOTAL PARCEL IMPERVIOUS AREA: 3.34 ACRES
 - WATER QUALITY VOLUME (WQv): 3.34 ACRES / 12 = 0.2783 ACRE FEET
 - 50% WQv: **0.1392 ACRE-FEET**
- PERMIT 3-9050 3-ACRE RULE COMPLIANCE SUMMARY:**
- VOLUME PROVIDED BY TWO (2) BASINS: 0.0683 ACRE-FEET
 - PERCENT COMPLIANCE WITH RULE: 49.1%
 - REMAINING IMPERVIOUS TO BE TREATED/DISCONNECTED: 0.91 ACRES



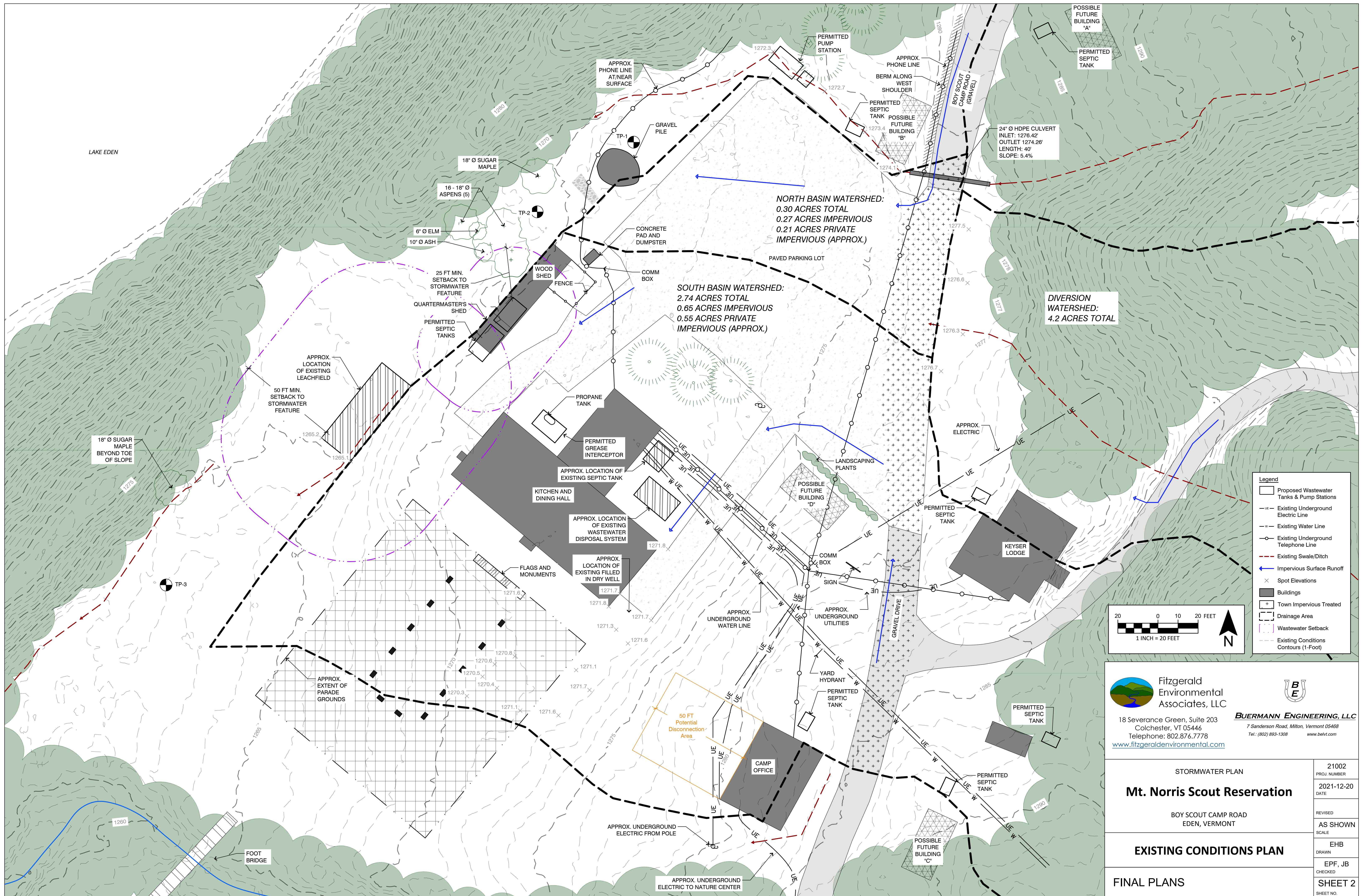
Fitzgerald
Environmental
Associates, LLC

18 Severance Green, Suite 203
Colchester, VT 05446
Telephone: 802.876.7778
www.fitzgeraldenvironmental.com

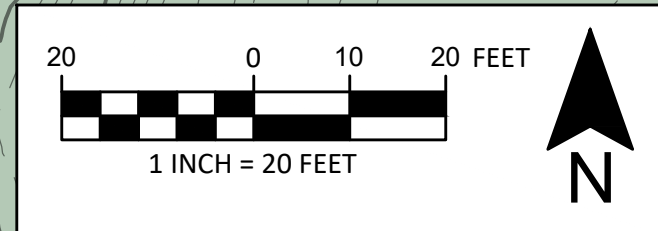


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Tel.: (802) 893-1308 www.belvt.com

STORMWATER PLAN	21002 PROJ. NUMBER
	2021-12-20 DATE
Mt. Norris Scout Reservation	REVISED
	AS SHOWN SCALE
BOY SCOUT CAMP ROAD EDEN, VERMONT	EHB DRAWN
	EPF, JB CHECKED
WATERSHED OVERVIEW	SHEET 1 SHEET NO.
FINAL PLANS	



- Legend**
- Proposed Wastewater Tanks & Pump Stations
 - Existing Underground Electric Line
 - Existing Water Line
 - Existing Underground Telephone Line
 - Existing Swale/Ditch
 - Impervious Surface Runoff
 - Spot Elevations
 - Buildings
 - Town Impervious Treated
 - Drainage Area
 - Wastewater Setback
 - Existing Conditions Contours (1-Foot)





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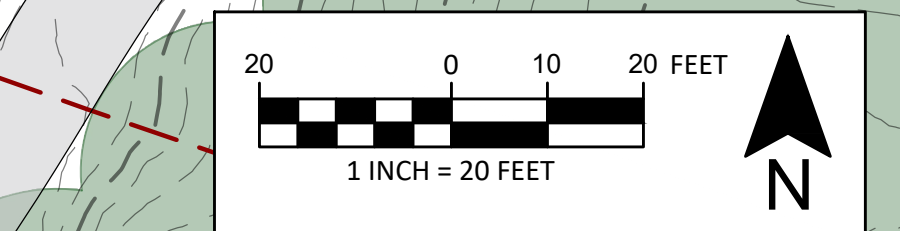
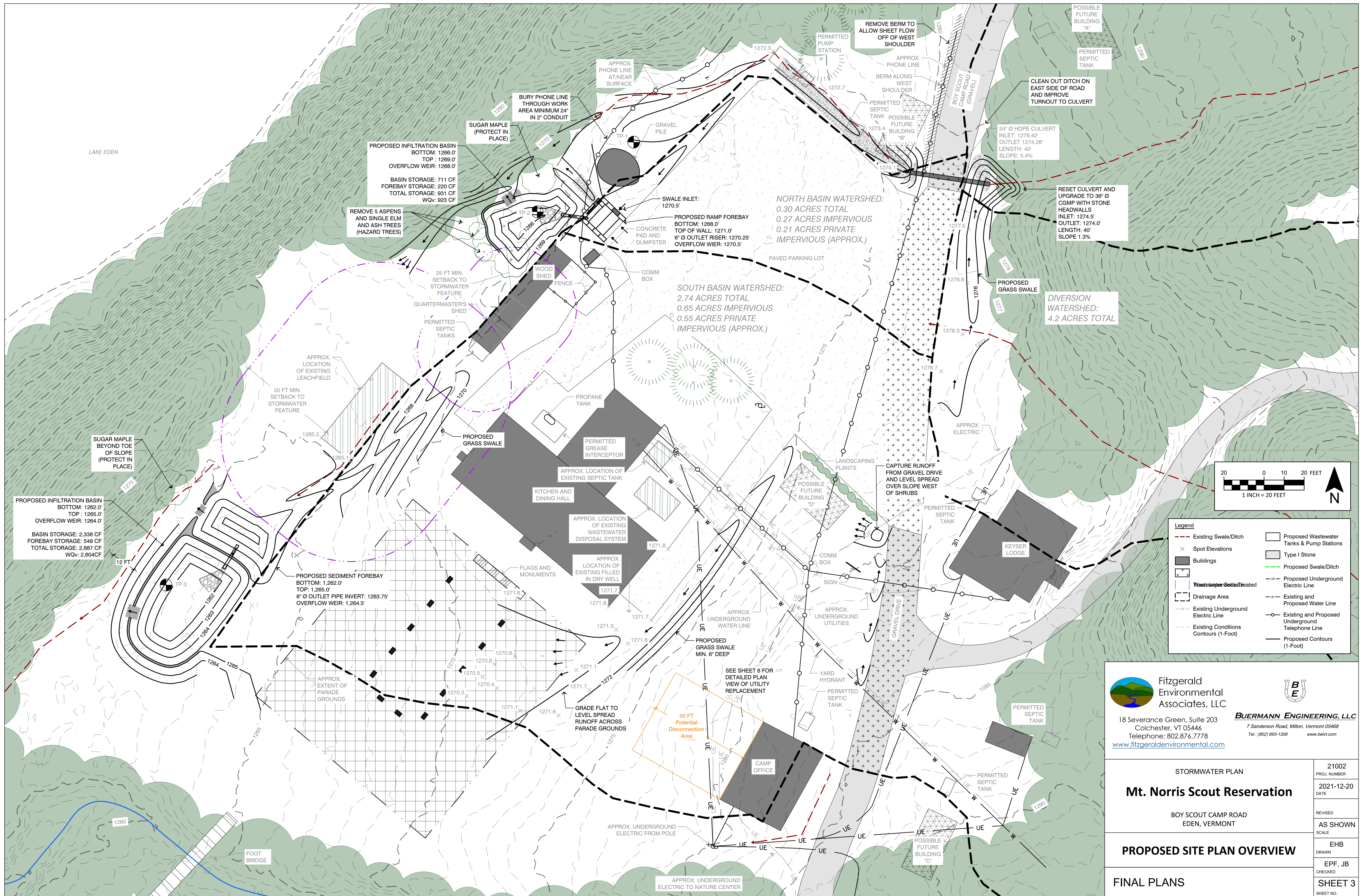
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www.fitzgeraldenvironmental.com



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7 Sanderson Road, Milton, Vermont 05468
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<p>STORMWATER PLAN</p> <p>Mt. Norris Scout Reservation</p> <p>BOY SCOUT CAMP ROAD EDEN, VERMONT</p> <p>EXISTING CONDITIONS PLAN</p> <p>FINAL PLANS</p>	<p>21002 PROJ. NUMBER</p> <p>2021-12-20 DATE</p> <p>REVISED</p> <p>AS SHOWN SCALE</p> <p>EHB DRAWN</p> <p>EPF, JB CHECKED</p> <p>SHEET 2 SHEET NO.</p>
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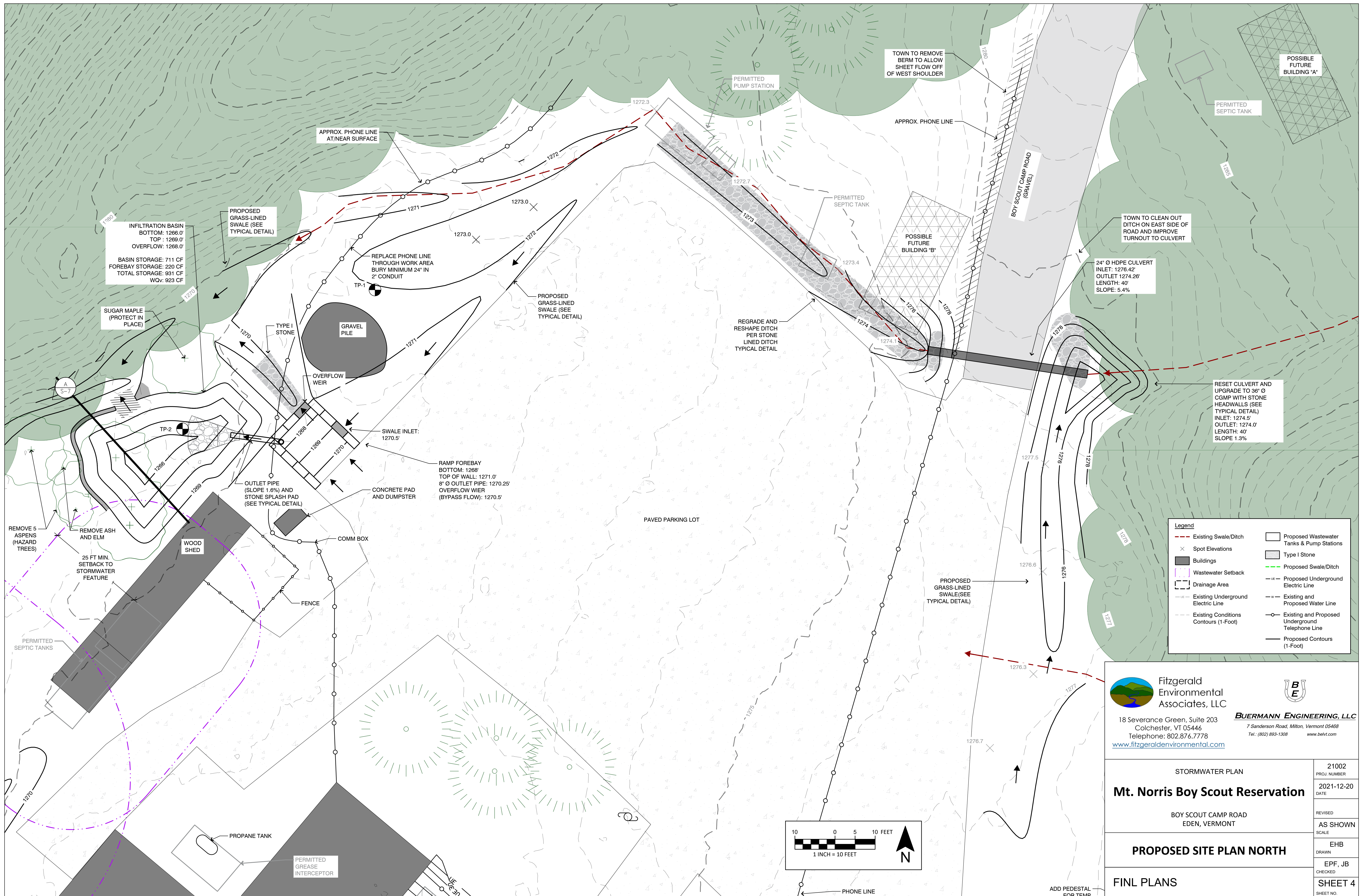


Legend	
	Existing Swale/Ditch
	Spot Elevations
	Buildings
	Drainage Area
	Existing Underground Electric Line
	Existing Conditions Contours (1-Foot)
	Proposed Wastewater Tanks & Pump Stations
	Type I Stone
	Proposed Swale/Ditch
	Proposed Underground Electric Line
	Existing and Proposed Water Line
	Existing and Proposed Underground Telephone Line
	Proposed Contours (1-Foot)

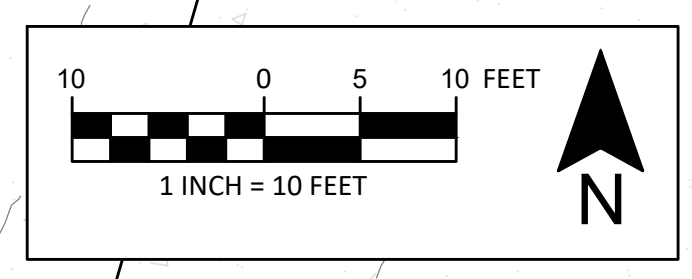

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STORMWATER PLAN Mt. Norris Scout Reservation BOY SCOUT CAMP ROAD EDEN, VERMONT	21002 PROJ. NUMBER
	2021-12-20 DATE
PROPOSED SITE PLAN OVERVIEW	REVISED SCALE
	AS SHOWN
FINAL PLANS	EHB DRAWN
	EPF, JB CHECKED
	SHEET 3 SHEET NO.



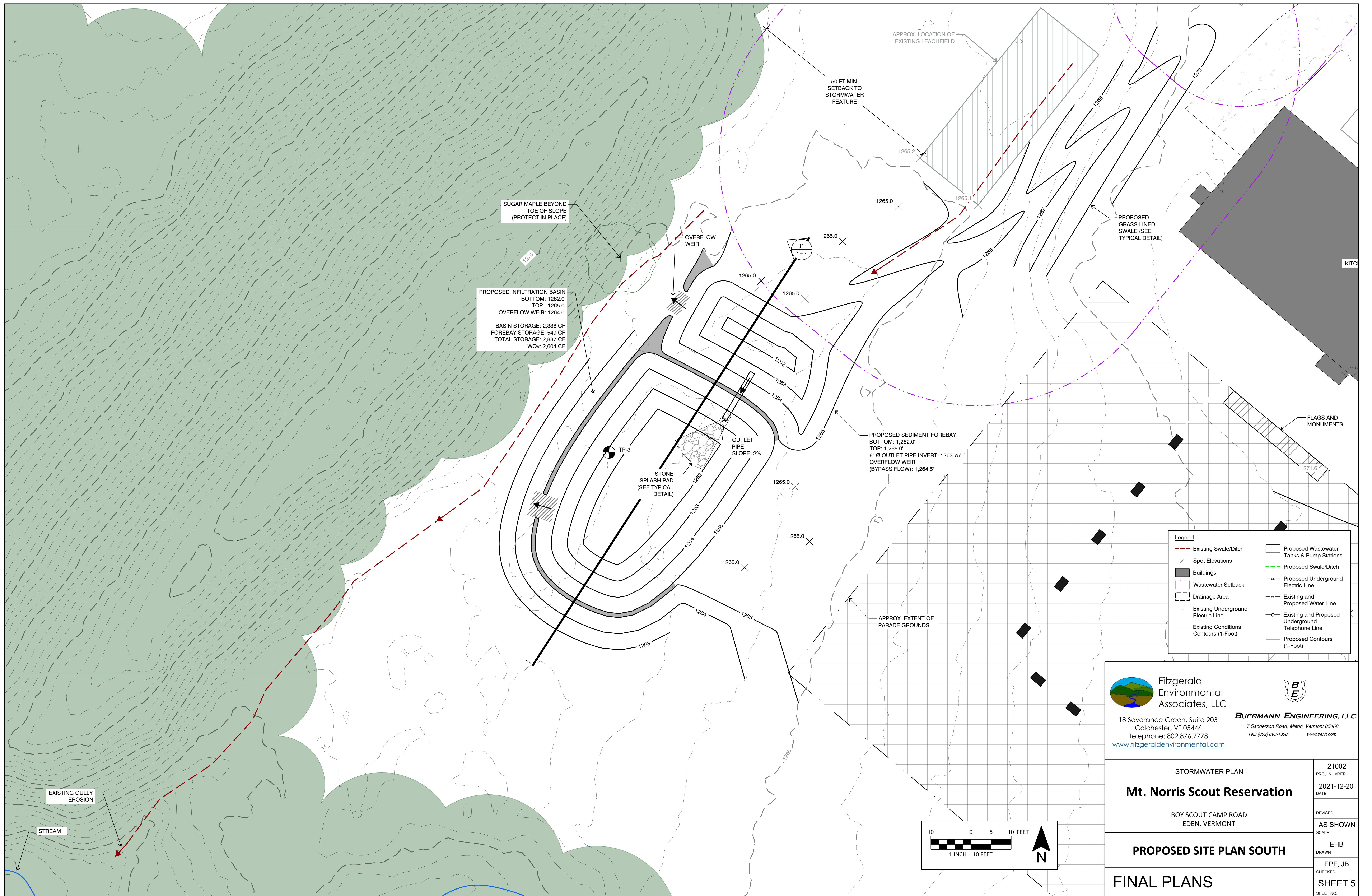
Legend	
	Existing Swale/Ditch
	Spot Elevations
	Buildings
	Wastewater Setback
	Drainage Area
	Existing Underground Electric Line
	Existing Conditions Contours (1-Foot)
	Proposed Wastewater Tanks & Pump Stations
	Type I Stone
	Proposed Swale/Ditch
	Proposed Underground Electric Line
	Existing and Proposed Water Line
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 18 Severance Green, Suite 203
 Colchester, VT 05446
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 7 Sanderson Road, Milton, Vermont 05468
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STORMWATER PLAN	21002 PROJ. NUMBER
Mt. Norris Boy Scout Reservation	2021-12-20 DATE
BOY SCOUT CAMP ROAD EDEN, VERMONT	REVISED
PROPOSED SITE PLAN NORTH	AS SHOWN SCALE
FINL PLANS	EHB DRAWN
	EPF, JB CHECKED
	SHEET 4 SHEET NO.



SUGAR MAPLE BEYOND TOE OF SLOPE (PROTECT IN PLACE)

PROPOSED INFILTRATION BASIN
 BOTTOM: 1262.0'
 TOP: 1265.0'
 OVERFLOW WEIR: 1264.0'

BASIN STORAGE: 2,338 CF
 FOREBAY STORAGE: 549 CF
 TOTAL STORAGE: 2,887 CF
 WQv: 2,604 CF

PROPOSED SEDIMENT FOREBAY
 BOTTOM: 1262.0'
 TOP: 1265.0'
 8" Ø OUTLET PIPE INVERT: 1263.75'
 OVERFLOW WEIR (BYPASS FLOW): 1264.5'

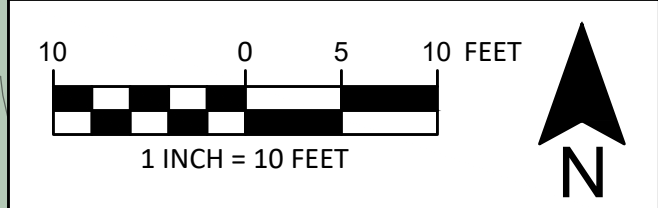
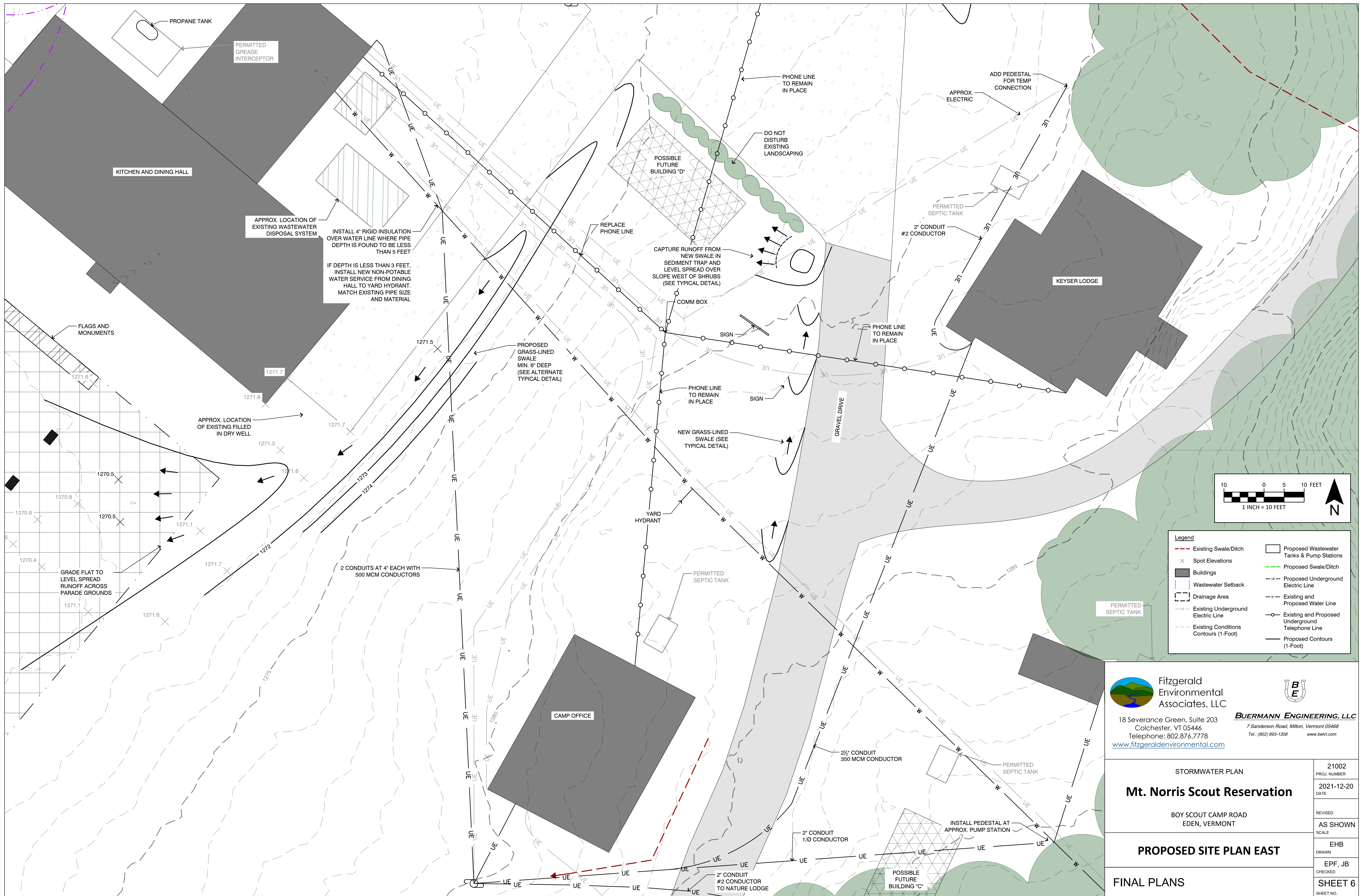
Legend	
	Existing Swale/Ditch
	Spot Elevations
	Buildings
	Wastewater Setback
	Drainage Area
	Existing Underground Electric Line
	Existing Conditions Contours (1-Foot)
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STORMWATER PLAN	21002 PROJ. NUMBER
Mt. Norris Scout Reservation	2021-12-20 DATE
BOY SCOUT CAMP ROAD EDEN, VERMONT	REVISION SCALE
PROPOSED SITE PLAN SOUTH	AS SHOWN
FINAL PLANS	EHB DRAWN
	EPF, JB CHECKED
	SHEET 5 SHEET NO.



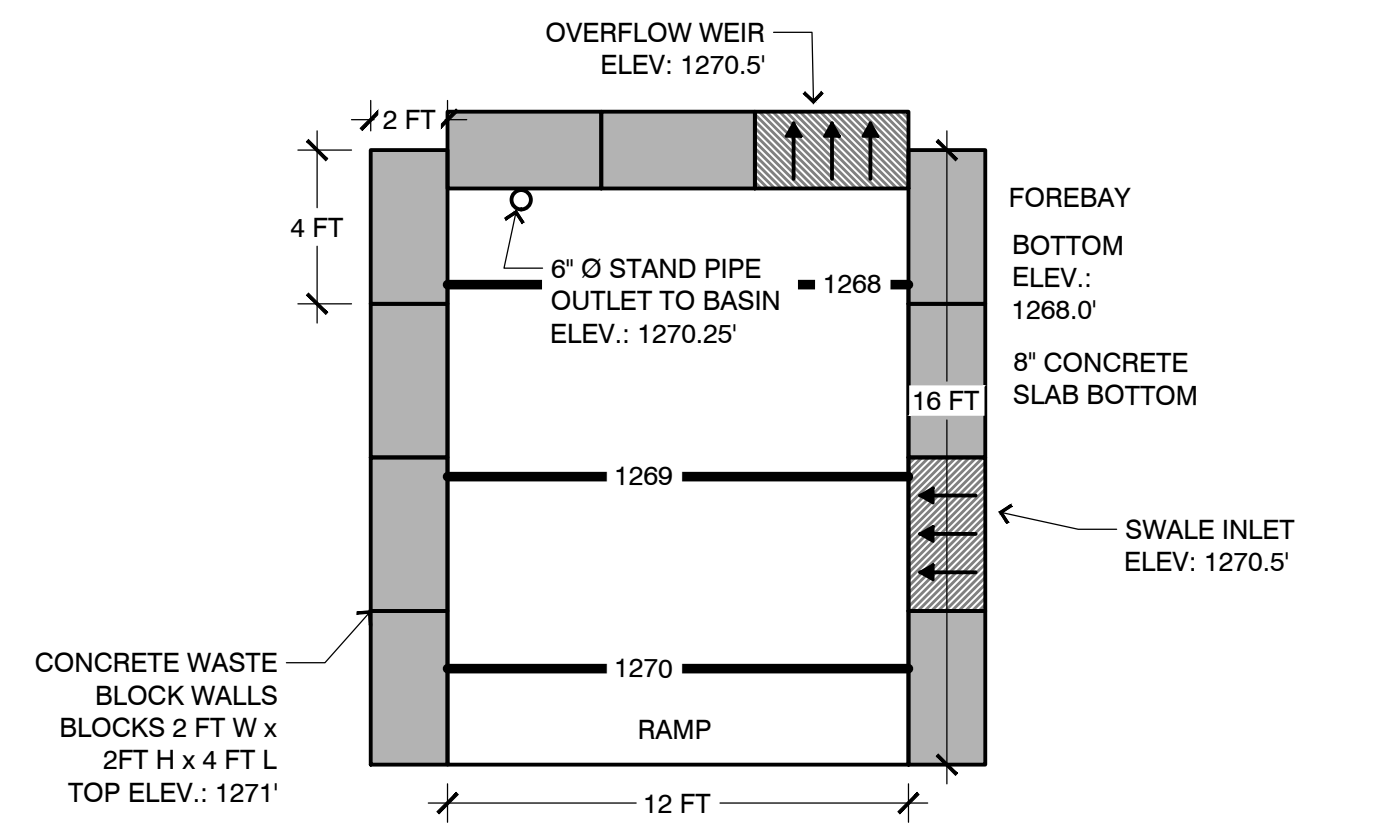


Legend	
	Existing Swale/Ditch
	Spot Elevations
	Buildings
	Wastewater Setback
	Drainage Area
	Existing Underground Electric Line
	Existing Conditions Contours (1-Foot)
	Proposed Wastewater Tanks & Pump Stations
	Proposed Swale/Ditch
	Proposed Underground Electric Line
	Existing and Proposed Water Line
	Existing and Proposed Underground Telephone Line
	Proposed Contours (1-Foot)

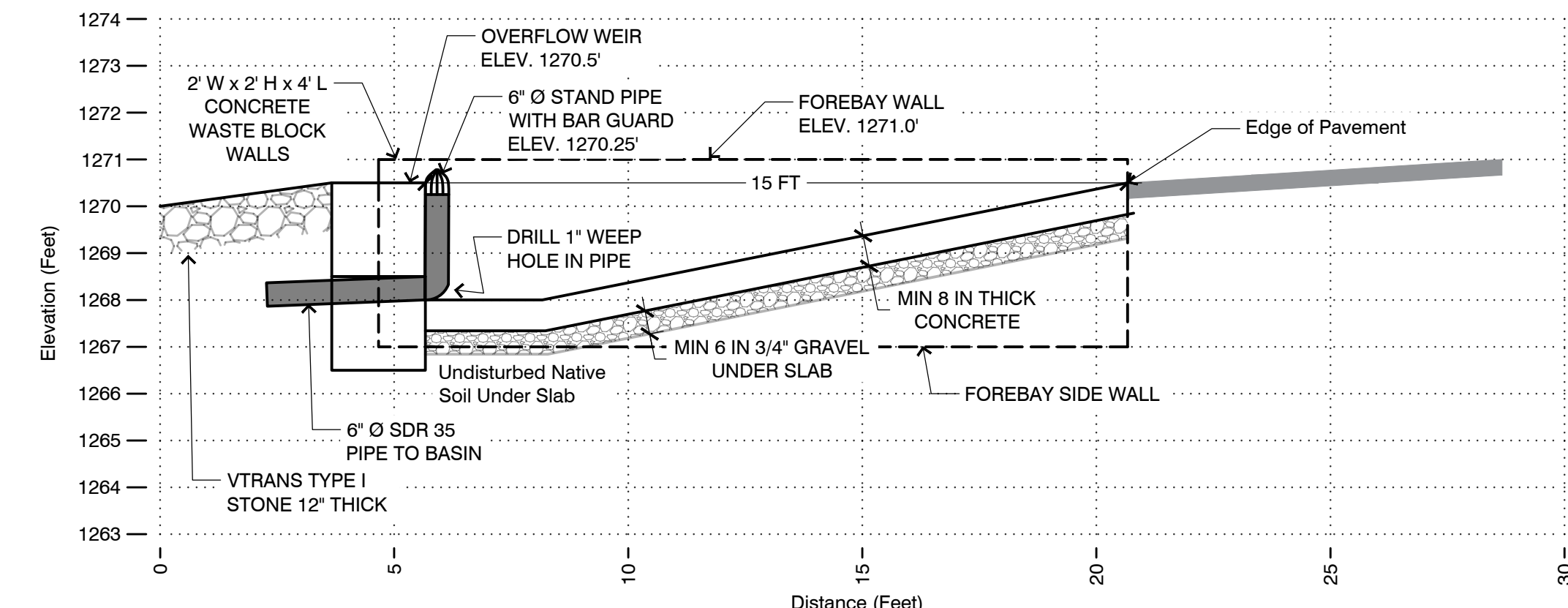

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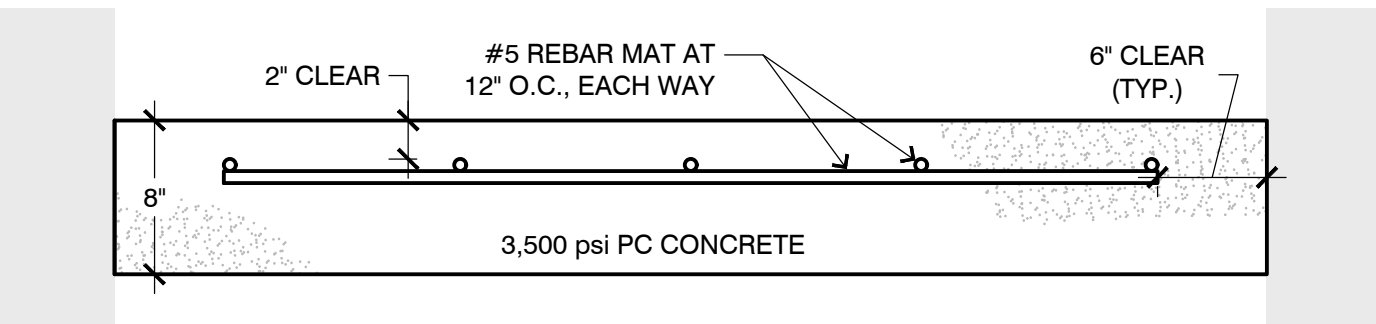
STORMWATER PLAN Mt. Norris Scout Reservation BOY SCOUT CAMP ROAD EDEN, VERMONT	21002 PROJ. NUMBER
	2021-12-20 DATE
PROPOSED SITE PLAN EAST	REVISED
	AS SHOWN SCALE
FINAL PLANS	EHB DRAWN
	EPF, JB CHECKED
	SHEET 6 SHEET NO.



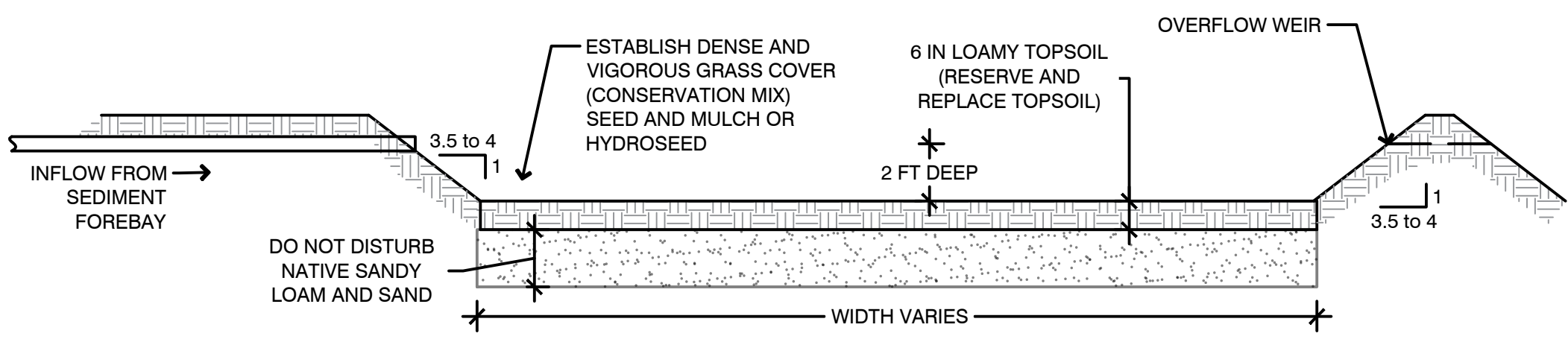
NORTHERN RAMP FOREBAY PLAN VIEW
1" = 5'



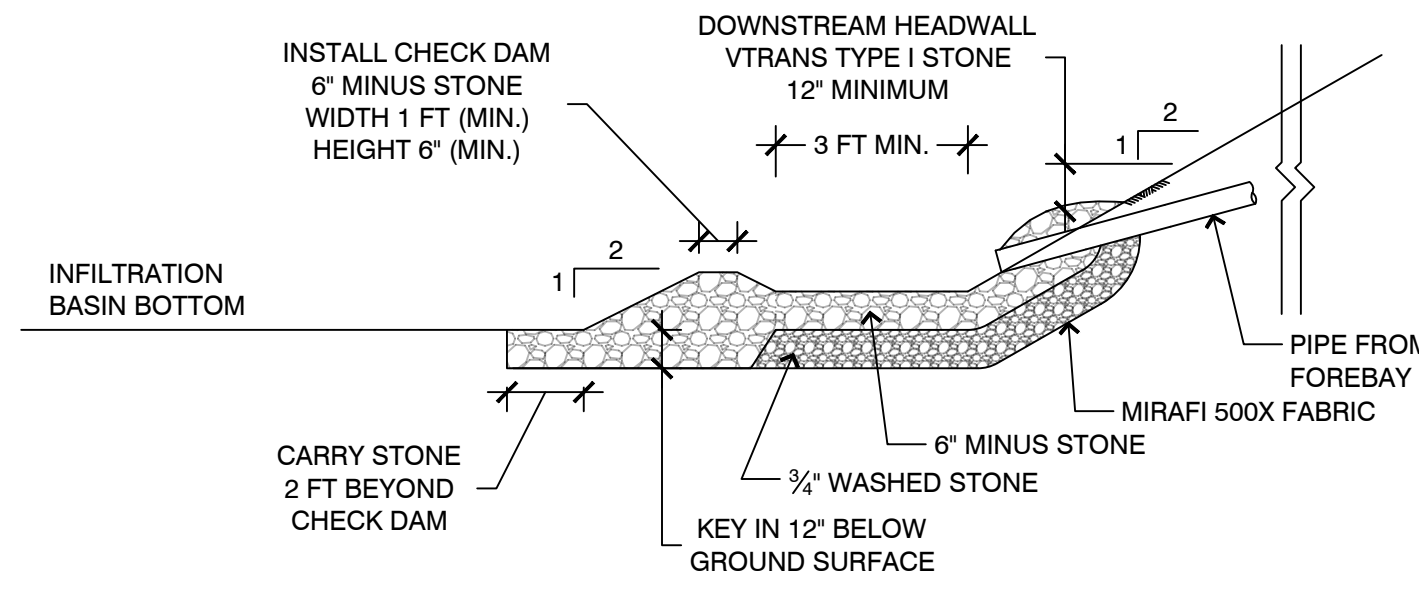
NORTHERN RAMP FOREBAY CROSS SECTION
1" = 3'



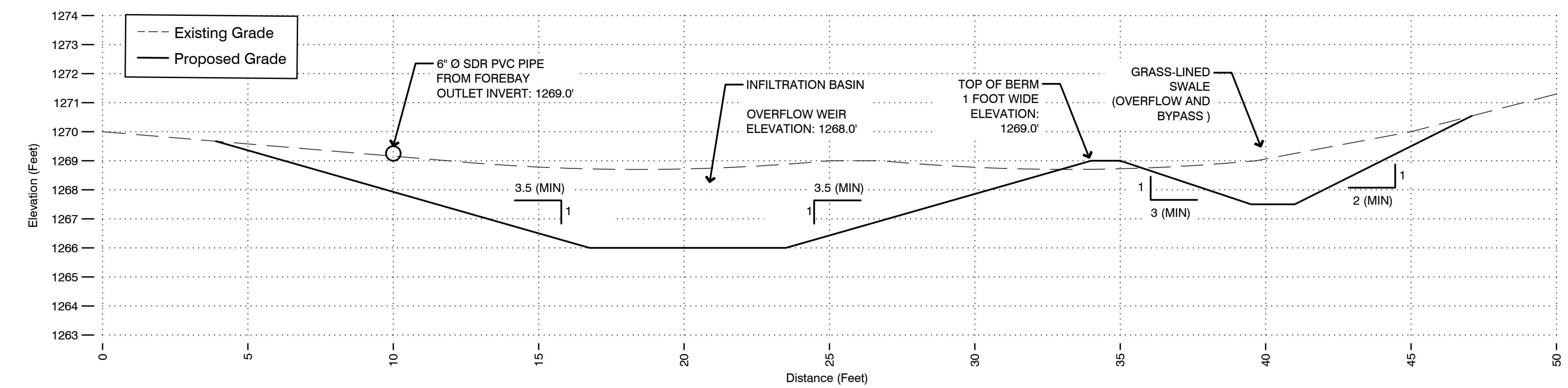
NORTHERN RAMP FOREBAY CONCRETE SLAB DETAIL
NOT TO SCALE



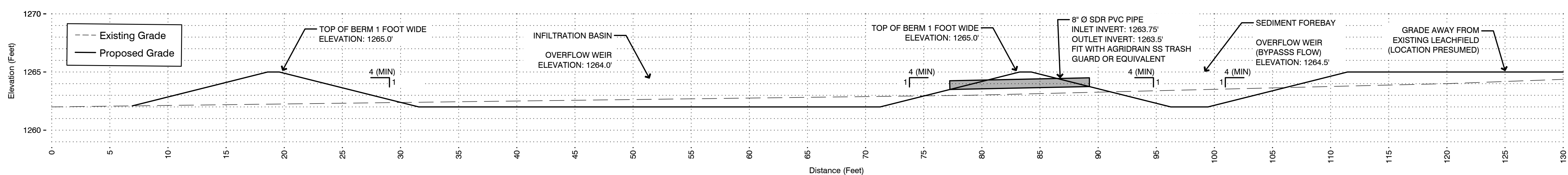
INFILTRATION BASIN TYPICAL DETAIL
N.T.S.



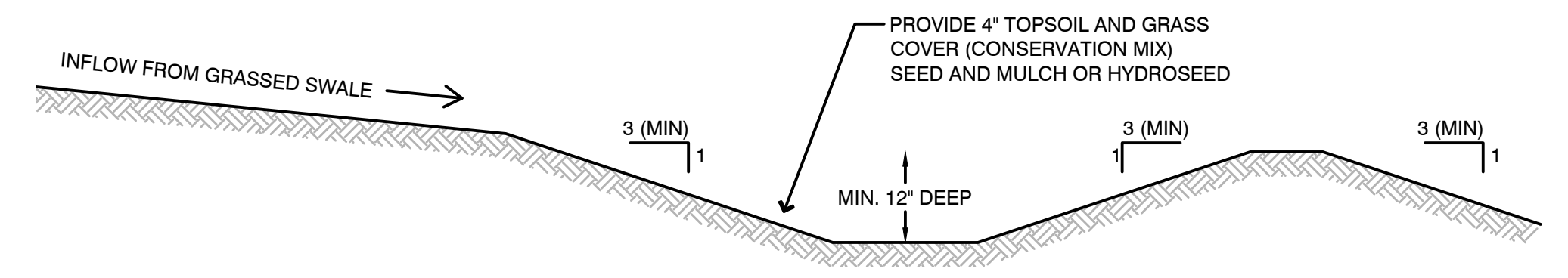
SPLASH PAD TYPICAL DETAIL
N.T.S.



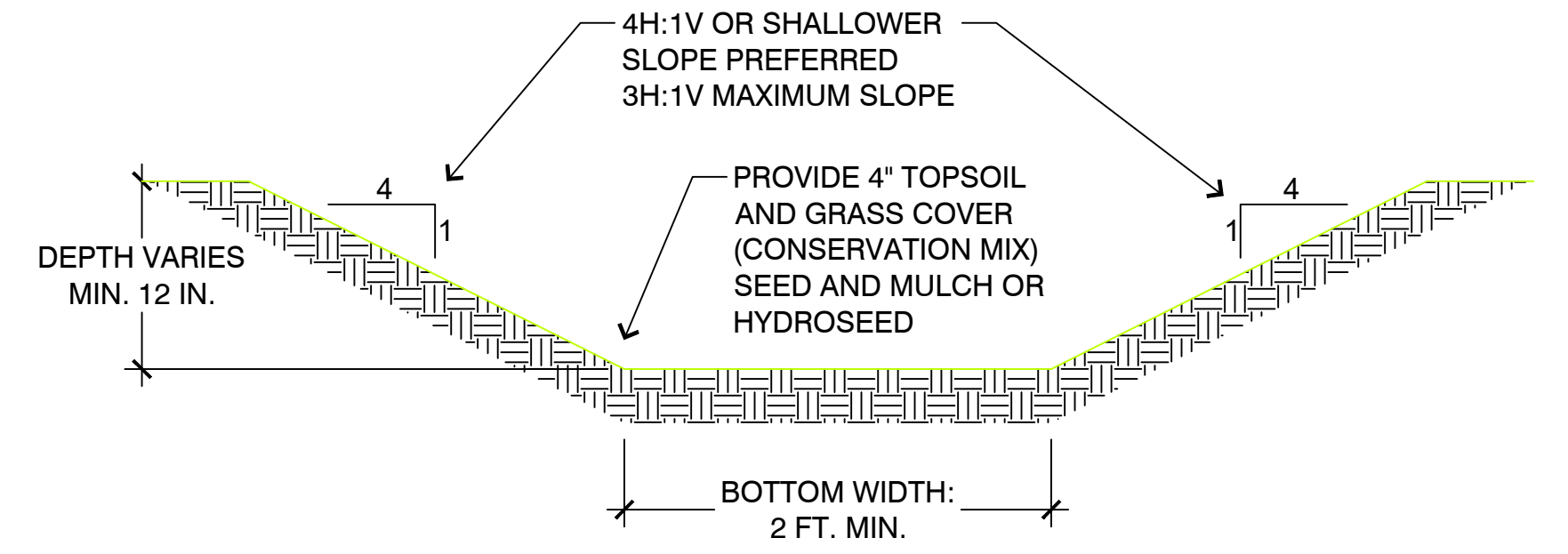
CROSS SECTION A: NORTHERN INFILTRATION BASIN
1" = 3'



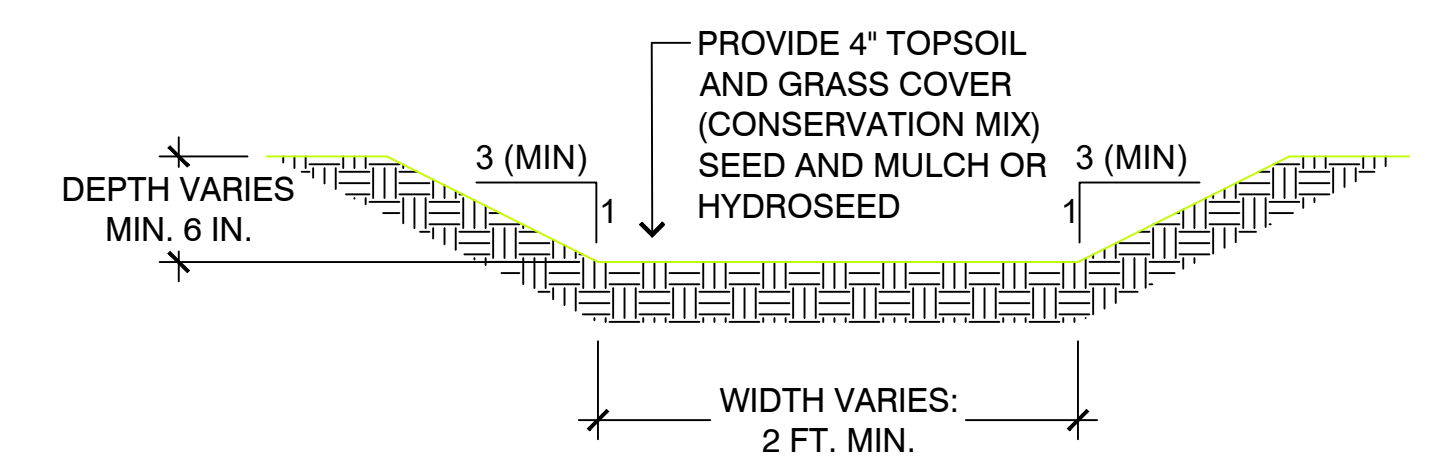
CROSS SECTION B: SOUTHERN FOREBAY AND INFILTRATION BASIN
1" = 5'



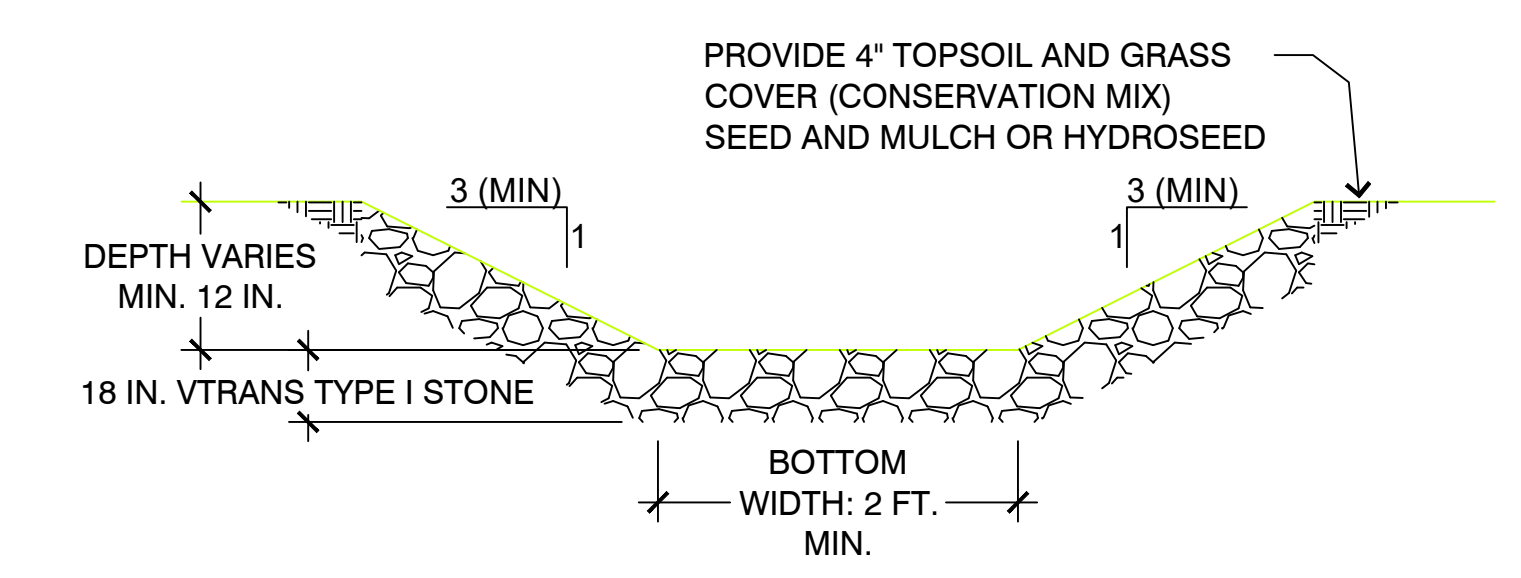
SEDIMENT TRAP AND LEVEL SPREADER TYPICAL DETAIL
N.T.S.



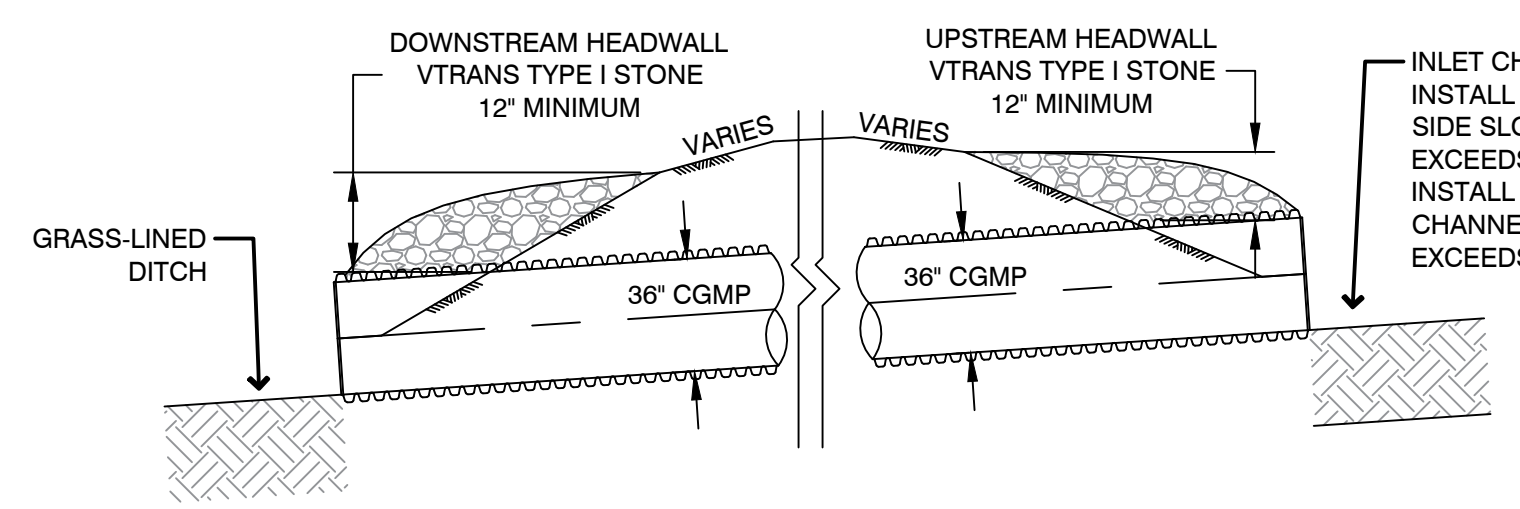
GRASS LINED DITCH - TYPICAL DETAIL
N.T.S.



GRASS LINED DITCH - ALTERNATE TYPICAL DETAIL
N.T.S.



PROVIDE 4" TOPSOIL AND GRASS COVER (CONSERVATION MIX) SEED AND MULCH OR HYDROSEED



CULVERT TYPICAL DETAIL
N.T.S.

Fitzgerald Environmental Associates, LLC
18 Severance Green, Suite 203 Colchester, VT 05446
Telephone: 802.876.7778
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www.belvt.com

STORMWATER PLAN	21002
	PROJECT NUMBER
Mt. Norris Scout Reservation	2021-12-20
	DATE
BOY SCOUT CAMP ROAD EDEN, VERMONT	REVISED
	AS SHOWN
DETAILS	SCALE
	EHB
FINAL PLANS	DRAWN
	EPF, JB
	CHECKED
	SHEET 7
	SHEET NO.

CONSTRUCTION SPECIFICATIONS

I. Equipment Access and Limits of Disturbance

1. Install orange barrier fence and/or signage around protected resources at the limits of disturbance during construction.

II. Earthwork/Related Items:

A. Materials:

1. Type I Stone Fill (VTAOT 706.04a)
 - a) Type I Stone Fill shall be angular blast rock with the long dimensions of the rock ranging in length from 1" to 12". At least 50% of the volume shall have a least dimension (thickness) of 4".
2. 6 to 8 Inch Minus Stone and Crushed Stone
 - a) Stone shall be a well-graded stone reasonably free from silt, loam, clay or organic matter
3. Trash/Debris Rack
 - a) Round intake risers shall be fitted with an Agri Drain heavy duty bar guard or equivalent as approved by the Designer/Engineer.

B. Excavation:

1. The Contractor shall protect existing structures and utilities from damage and excessive settlement during excavation, backfilling, and compaction activities. The Contractor shall repair any such damage at their own expense.

III. Site Restoration

A. Materials:

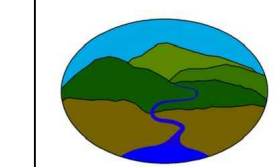
1. Grass Seed
 - a) Seed shall be furnished in new, clean, sealed, and properly labeled containers. Seed which has become wet, moldy or otherwise damaged shall not be acceptable.
 - b) Areas to be regularly mowed should use a mix containing about 45 percent Kentucky bluegrass, 45 percent creeping red fescue, and about 10 percent of ryegrass, applied at 45 pounds per acre.
 - c) Non-mowed areas should use a mix containing about 65 percent creeping red fescue, 5 percent redtop, and about 30 percent birdsfoot trefoil, applied at 30 pounds per acre.
 - d) Temporary seeding (including all seeding between October 15 and April 15) shall use annual rye applied at a rate of 45 pounds per acre.
 - e) Hydroseeding is acceptable as approved by the Designer/Engineer.
2. Topsoil
 - a) Topsoil shall comply with the Vermont Stormwater Management Manual SDQ standard (See Note).
 - b) Topsoil shall be natural friable surface soil capable of sustaining vigorous plant growth, free from subsoil, stones, plants, roots, sticks, and other extraneous materials.
3. Mulch
 - a) Hay mulch shall consist of mowed, properly cured grass and legumes reasonably free of weeds, twigs, debris, or other objectionable material.
 - b) Mulch at a rate of 2 tons per acre (90-120 bales spread 3 inches deep).

B. Installation Procedures

1. Restoration of all areas disturbed during construction shall comply with the Post Construction Soil Depth and Quality Standard (SDQ, See Note).
2. Rough grade the subsoil to the proper elevations, 4 inches or as needed below the finished grades specified on the plans for the area to be seeded to achieve 8 inches depth of uncompacted soil after amendment. Spread topsoil to meet the SDQ. Topsoil shall comply with the Vermont Stormwater Management Manual SDQ standard.
3. Remove sticks, stones and any other debris from the topsoil that may interfere with fine grading and future mowing of the area. Then fine grade the topsoil, taking care to maintain the SDQ and to provide for surface water runoff in accordance with the plans.
4. Temporary stabilization of disturbed soils during the period of April 15 to October 15 shall be completed within 14 days of initial disturbance. After the initial disturbance period, temporary stabilization shall be performed on a daily basis, except if work is to continue in the disturbed area within the next 24 hours and there is no forecast of precipitation for the next 24 hours, or if the work is occurring in a self-contained excavation with a depth of 2 feet or greater.
5. Permanent seeding shall occur only between April 15 and October 15. Bury permanent and temporary seeds with 1/4 inch of topsoil.
6. Apply hay or straw mulch evenly to the seeded area. Where mulch anchoring is necessary, mulch may be anchored by the use of a disk harrow or sheepsfoot roller (running parallel to the ground contours), or a tracked vehicle (running perpendicular to the ground slope); alternatively a thin layer of topsoil placed over the mulch as an anchor, or commercial nets, mats or asphalt tacking products may be acceptable with the Designer's/Engineer's prior approval.
7. Inspect seeded and mulched areas frequently during the first four weeks after seeding, and replace or reanchor the mulch whenever necessary. Check seeding near the end of the first growing season to determine whether all areas have become fully established. Scarify and reseed any areas without adequate plant cover, and reapply mulch.
8. Areas temporarily seeded and mulched between October 15 and April 15 shall be reseeded and mulched in accordance with these permanent seeding procedures after April 15.
9. Mow well-established areas of permanent planting on a regular basis to maintain vigorous growth.

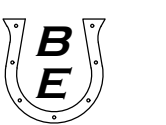
POST CONSTRUCTION SOIL DEPTH AND QUALITY STANDARD

1. Disturbed areas within the site limits not covered by an impervious surface are subject to the post-construction Soil Depth and Quality Standard (SDQ) standard (Subchapter 3.0 of the Vermont Stormwater Management Manual, 2017).
2. The contractor shall install topsoil to meet the SDQ near the end of the project. Areas should be protected from compaction once the SDQ is established.
3. The SDQ may be met through the following methods. Compost and soil amendment method must be approved by the Designer/Engineer.
 - a) Leave undisturbed soils in place and protect from compaction.
 - b) Scarify or till subsoils to a depth of 4 inches or as needed to achieve 8 inches depth of uncompacted soil after amendment. Amend soil to achieve 4 inches of settled soil at 4% organic content.
 - c) Stockpile topsoil on site at least 50 feet away from surface waters, wetlands, and critical resource areas. Scarify or till subsoils to a depth of 4 inches. Amend soil to achieve 4 inches of settled soil at 4% organic content.
 - d) Import topsoil mix. Topsoil shall contain sandy loam soils with 4% organic content.
4. Compost or other materials used to amend soils shall have a C:N ratio less than 25:1. Compost used to amend soils shall meet the definition of "compost" in the Vermont Agency of Natural Resources Solid Waste Management Rules.
5. **The contractor shall verify the SDQ** with nine 8-inch deep test holes per acre of area subject to the SDQ. The test holes shall be at least 50 feet apart and excavated with a hand shovel driven solely by the inspector's weight.



Fitzgerald
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STORMWATER PLAN	21002
	PROJ. NUMBER
Mt. Norris Scout Reservation	2021-12-20
	DATE
BOY SCOUT CAMP ROAD EDEN, VERMONT	REVISIONS
	AS SHOWN
CONSTRUCTION SPECIFICATIONS	SCALE
	EHB
FINAL PLANS	DRAWN
	EPF, JB
	CHECKED
	SHEET 8
	SHEET NO.