

UPPER MEEHAN ROAD 7-LOT SUBDIVISION

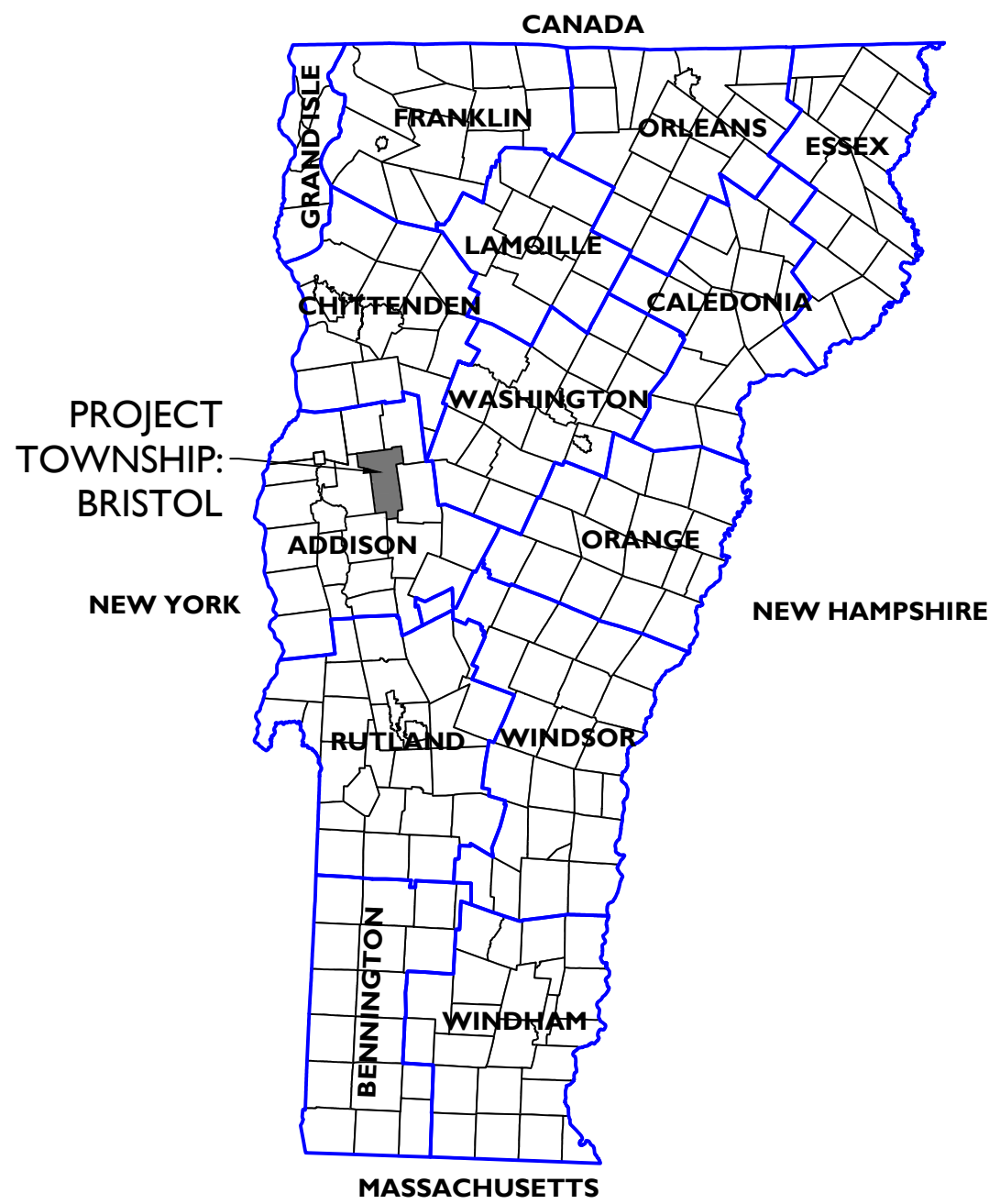
00 UPPER MEEHAN ROAD
BRISTOL, VERMONT
AUGUST 26, 2026

PREPARED BY:

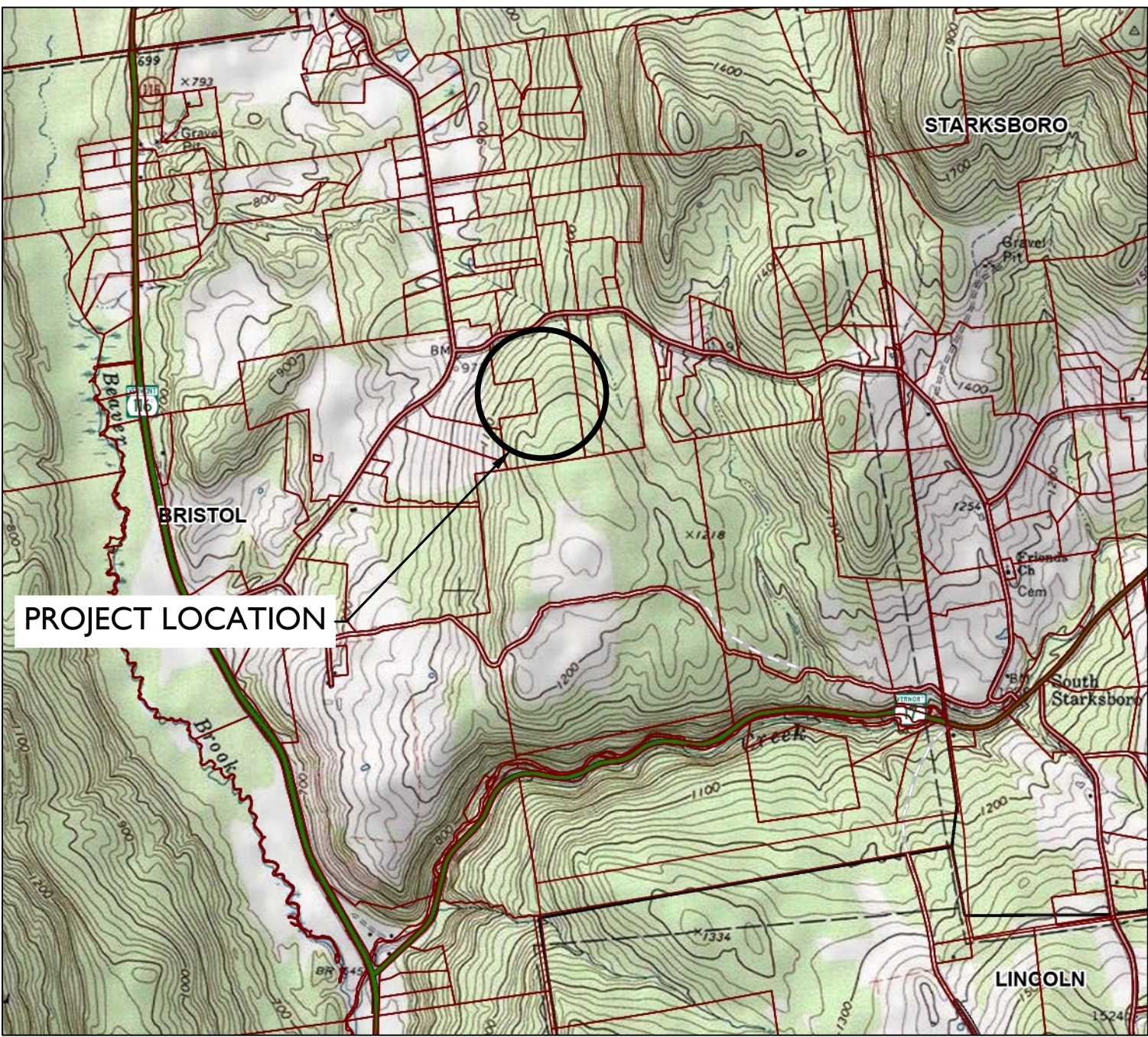


ENVIRONMENTAL SERVICES
Bristol, Vermont • 802-453-5100

STATE MAP



VICINITY MAP



INDEX OF SHEETS

SHEET NO.	SHEET TITLE
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C-1.1	OVERALL EROSION PROTECTION & SEDIMENT CONTROL SITE PLAN
C-1.2	EROSION PROTECTION & SEDIMENT CONTROL HANDBOOK
C-2.0	OVERALL STORMWATER MANAGEMENT SITE PLAN
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	BUILDING
	CONTOUR - MAJOR
	CONTOUR - MINOR
	CONTOUR - PROPOSED
	DRAIN PIPE
	FENCE
	GUARD RAIL
	LIMIT OF DISTURBANCE
	OVERHEAD UTILITIES
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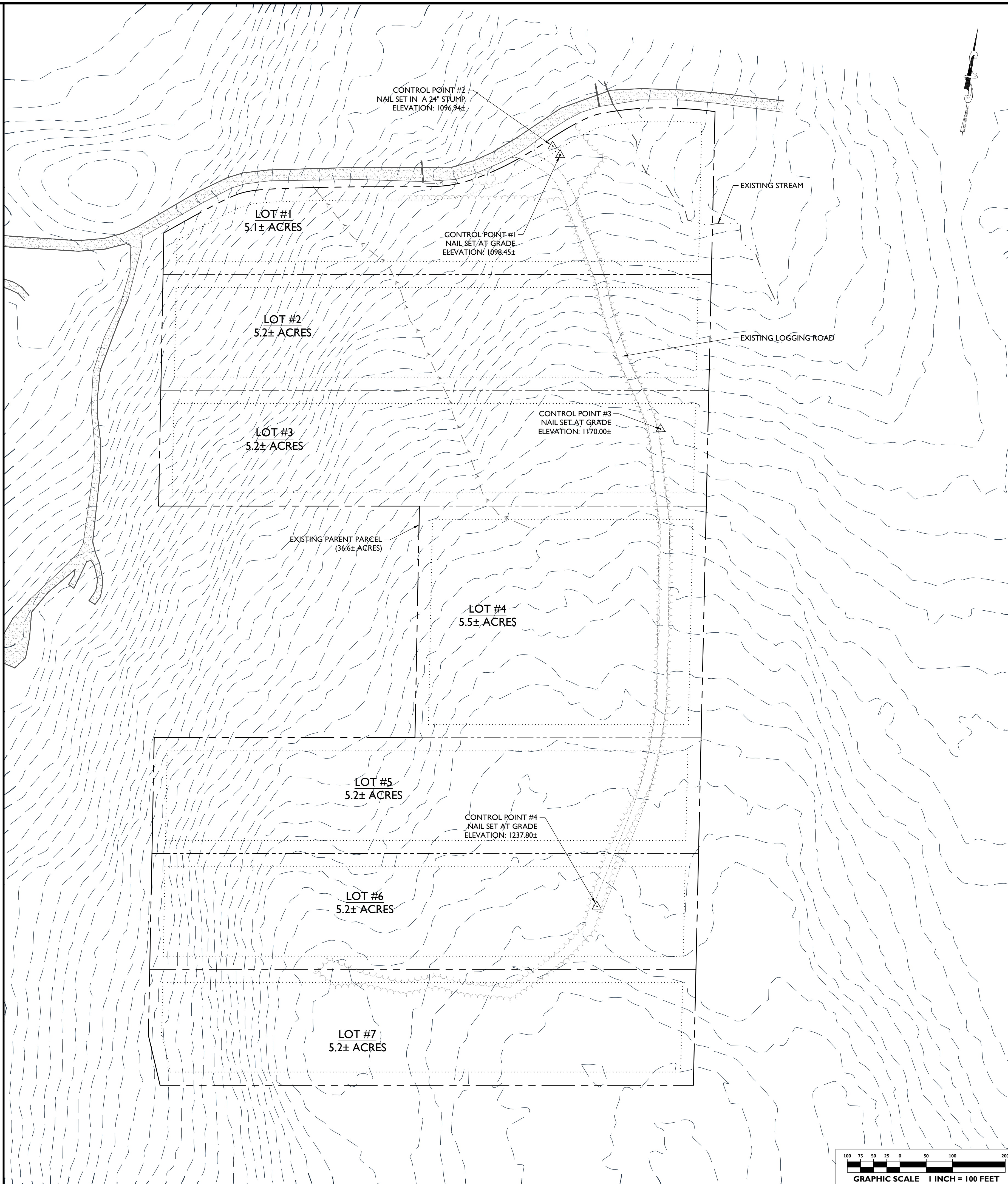
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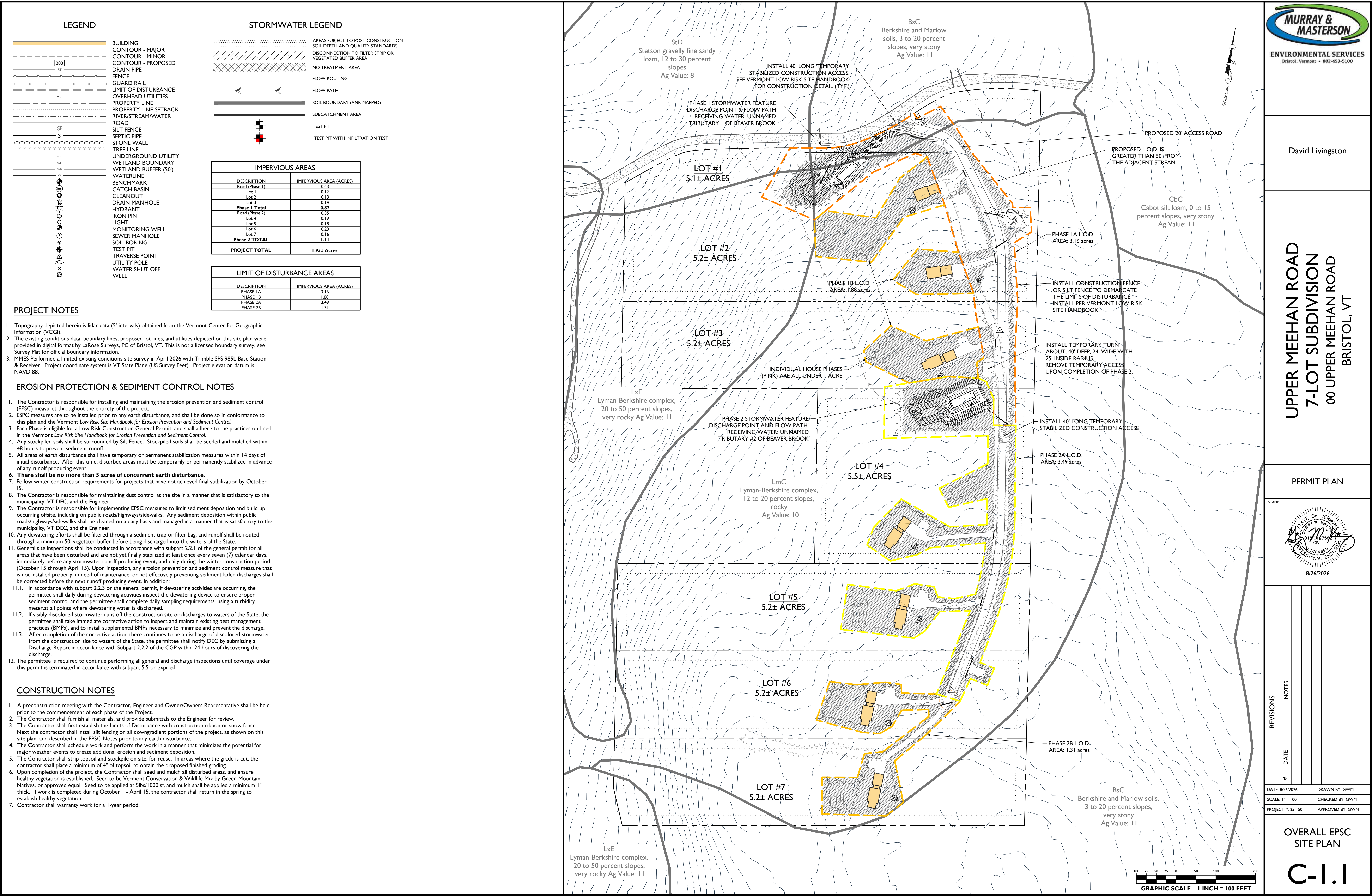
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4. All existing utilities shown on this plan are approximate and should be verified by the contractor prior to excavation and construction. The contractor is to be aware of utilities not shown that may exist. No attempt has been made to locate underground utilities.
5. The contractor is responsible for contacting Dig Safe (811 or 1-888-344-7233) prior to construction.
6. All excavation work shall be performed in general accordance with the applicable State of Vermont Occupational Safety and Health Administration (VOSHHA) guidelines.
7. The contractor is responsible for repairing/restoring all disturbed areas and damages that directly or indirectly occur during construction. Impacted areas shall be restored/repaired to their original condition upon completion of the project, or in a manner that is satisfactory to the owner and engineer.
8. Any equipment must be installed according to manufacturer's specifications unless otherwise directed by MMES.
9. A construction stormwater discharge permit 3-9020 shall be obtained for a construction activity resulting in land disturbance greater than or equal to 1 acre. Impervious surfaces totaling more than 1/2 acre require an Operational Stormwater Permit 3-9050. At a minimum, any earth work disturbance shall adhere to the erosion prevention and sediment control standards established in the Vermont Dept. of Environmental Conservation's Low Risk Site Handbook for Erosion Prevention and Sediment Control" (February 2020).
10. The property lines, easements, and other real estate property descriptions provided in the permit applications are for VT ANR permitting purposes only. They do not define legal rights or meet legal requirements for a land survey as described in 26 V.S.A. 2-520(4), and shall not be used in lieu of a survey as the basis for any land transfer or establishment of any property right.
11. Any alterations of these plans or specifications without authorization by MMES shall render these documents null and void.
12. The contractor shall maintain a copy of the site plans and permits on site at all times. The contractor shall adhere to all standards and specifications outlined in these plans and complete the work in conformance with all permit conditions. MMES is not responsible for any actions by the owner outside of the permits or the permit condition obtained for this project.

1. Owner Name: David Livingston
2. Parcel Address: 00 Upper Meehan Road
3. Project Town: Bristol
4. Zoning District: RA-5
5. Acreage: 36.7 ± acres
6. Parcel ID: 040151.111
7. SPAN #: 093-029-11961

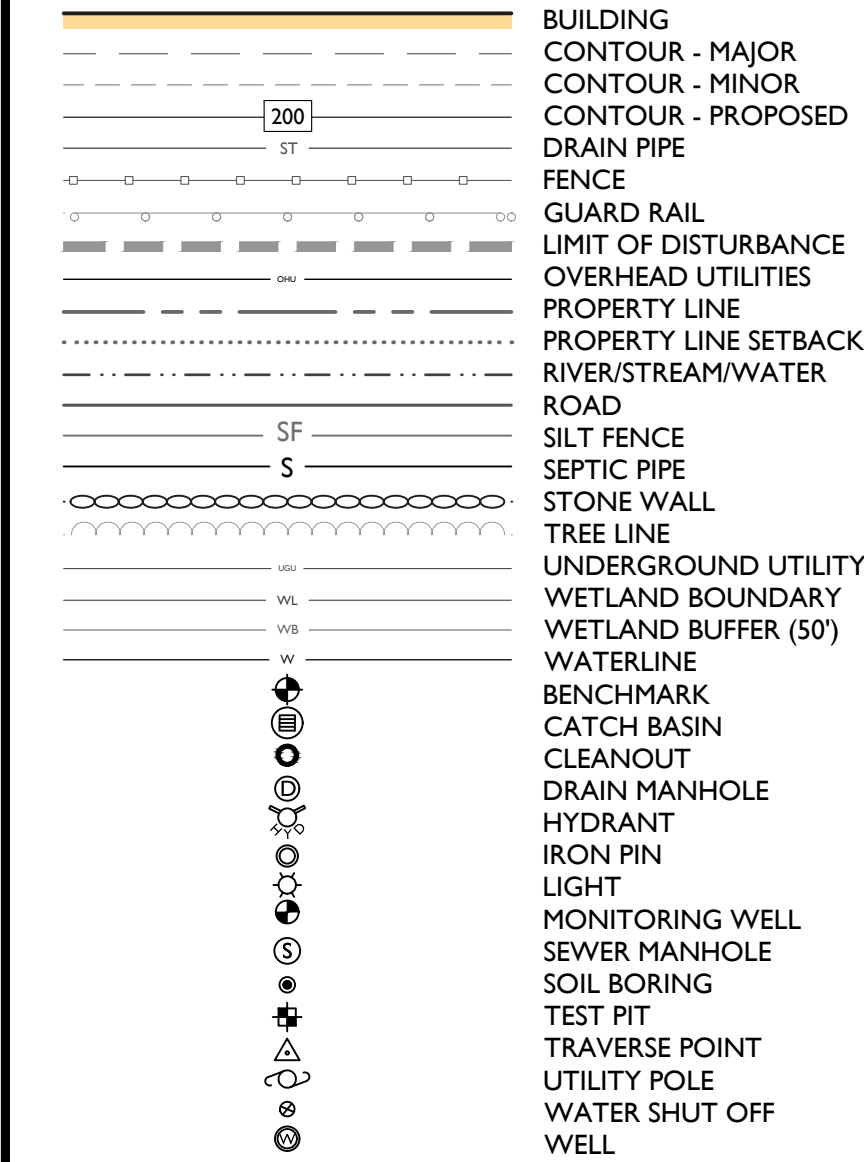
1. Residential Density: 1 unit/5 acres
2. Minimum Lot Area: 2 acres
3. Minimum Lot Frontage: 200 feet
4. Minimum Lot Depth: 125'
5. Front Setback Minimum: 80 feet from C/L of Road
6. Rear Setback Minimum: 25 feet
7. Side Setback Minimum: 25 feet
8. Building Height Maximum: 35 feet
9. Maximum Bldg. Footprint: 5,000 s.f. - Principal

The project parcel does not appear to have any mapped 'critical areas' shown on the Town of Bristol Town View Online GIS website. (as of 3/31/2026)

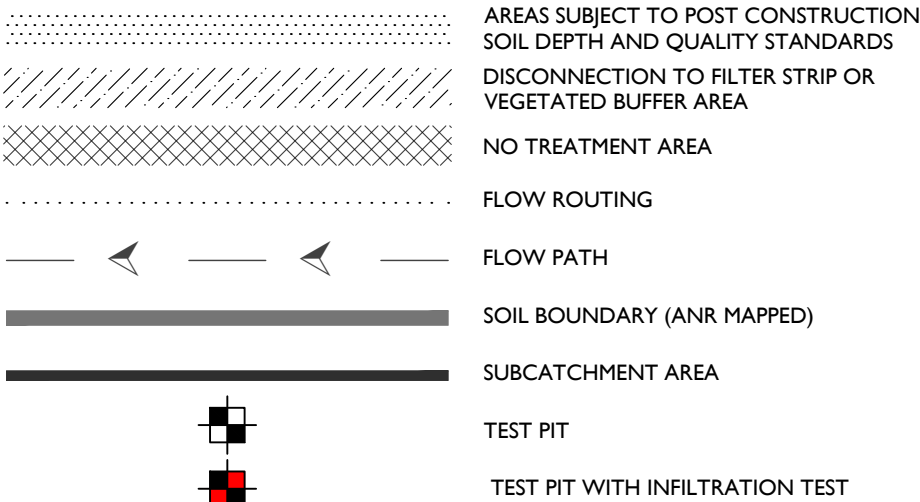




LEGEND



STORMWATER LEGEND



IMPERVIOUS AREAS	
DESCRIPTION	IMPERVIOUS AREA (ACRES)
Road (Phase 1)	0.43
Lot 1	0.12
Lot 2	0.13
Lot 3	0.14
Phase 1 Total	0.82
Road (Phase 2)	0.35
Lot 4	0.19
Lot 5	0.18
Lot 6	0.23
Lot 7	0.16
Phase 2 TOTAL	1.11
PROJECT TOTAL	1.93± Acres

LIMIT OF DISTURBANCE AREAS	
DESCRIPTION	IMPERVIOUS AREA (ACRES)
PHASE 1A	3.16
PHASE 1B	1.88
PHASE 2A	3.49
PHASE 2B	1.31

PROJECT NOTES

- Topography depicted herein is lidar data (5' intervals) obtained from the Vermont Center for Geographic Information (VCGI).
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- MMES Performed a limited existing conditions site survey in April 2026 with Trimble SPS 98SL Base Station & Receiver. Project coordinate system is VT State Plane (US Survey Feet). Project elevation datum is NAVD 88.

EROSION PROTECTION & SEDIMENT CONTROL NOTES

- The Contractor is responsible for installing and maintaining the erosion prevention and sediment control (EPSC) measures throughout the entirety of the project.
- EPSC measures are to be installed prior to any earth disturbance, and shall be done so in conformance to this plan and the Vermont *Low Risk Site Handbook for Erosion Prevention and Sediment Control*.
- Each Phase is eligible for a Low Risk Construction General Permit, and shall adhere to the practices outlined in the Vermont *Low Risk Site Handbook for Erosion Prevention and Sediment Control*.
- Any stockpiled soils shall be surrounded by Silt Fence. Stockpiled soils shall be seeded and mulched within 48 hours to prevent sediment runoff.
- All areas of earth disturbance shall have temporary or permanent stabilization measures within 14 days of initial disturbance. After this time, disturbed areas must be temporarily or permanently stabilized in advance of any runoff producing event.
- There shall be no more than 5 acres of concurrent earth disturbance.**
- Follow winter construction requirements for projects that have not achieved final stabilization by October 15.
- The Contractor is responsible for maintaining dust control at the site in a manner that is satisfactory to the municipality, VT DEC, and the Engineer.
- The Contractor is responsible for implementing EPSC measures to limit sediment deposition and build up occurring offsite, including on public roads/highways/sidewalks. Any sediment deposition within public roads/highways/sidewalks shall be cleaned on a daily basis and managed in a manner that is satisfactory to the municipality, VT DEC, and the Engineer.
- Any dewatering efforts shall be filtered through a sediment trap or filter bag, and runoff shall be routed through a minimum 50' vegetated buffer before being discharged into the waters of the State.
- General site inspections shall be conducted in accordance with subpart 2.2.1 of the general permit for all areas that have been disturbed and are not yet finally stabilized at least once every seven (7) calendar days, immediately before any stormwater runoff producing event, and daily during the winter construction period (October 15 through April 15). Upon inspection, any erosion prevention and sediment control measure that is not installed properly, in need of maintenance, or not effectively preventing sediment laden discharges shall be corrected before the next runoff producing event. In addition:
 - In accordance with subpart 2.2.3 of the general permit, if dewatering activities are occurring, the permittee shall daily during dewatering activities inspect the dewatering device to ensure proper sediment control and the permittee shall complete daily sampling requirements, using a turbidity meter, at all points where dewatering water is discharged.
 - If visibly discolored stormwater runs off the construction site or discharges to waters of the State, the permittee shall take immediate corrective action to inspect and maintain existing best management practices (BMPs), and to install supplemental BMPs necessary to minimize and prevent the discharge.
 - After completion of the corrective action, there continues to be a discharge of discolored stormwater from the construction site to waters of the State, the permittee shall notify DEC by submitting a Discharge Report in accordance with Subpart 2.2.2 of the CGP within 24 hours of discovering the discharge.
- The permittee is required to continue performing all general and discharge inspections until coverage under this permit is terminated in accordance with subpart 5.5 or expired.

CONSTRUCTION NOTES

- A preconstruction meeting with the Contractor, Engineer and Owner/Owners Representative shall be held prior to the commencement of each phase of the Project.
- The Contractor shall furnish all materials, and provide submittals to the Engineer for review.
- The Contractor shall first establish the Limits of Disturbance with construction ribbon or snow fence. Next the contractor shall install silt fencing on all downgradient portions of the project, as shown on this site plan, and described in the EPSC Notes prior to any earth disturbance.
- The Contractor shall schedule work and perform the work in a manner that minimizes the potential for major weather events to create additional erosion and sediment deposition.
- The Contractor shall strip topsoil and stockpile on site, for reuse. In areas where the grade is cut, the contractor shall place a minimum of 4" of topsoil to obtain the proposed finished grading.
- Upon completion of the project, the Contractor shall seed and mulch all disturbed areas, and ensure healthy vegetation is established. Seed to be Vermont Conservation & Wildlife Mix by Green Mountain Natives, or approved equal. Seed to be applied at 5lbs/1000 sf, and mulch shall be applied a minimum 1" thick. If work is completed during October 1 - April 15, the contractor shall return in the spring to establish healthy vegetation.
- Contractor shall warranty work for a 1-year period.



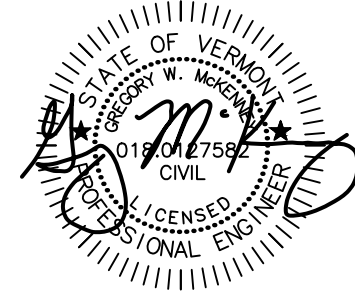
ENVIRONMENTAL SERVICES
Bristol, Vermont • 802-453-5100

David Livingston

UPPER MEEHAN ROAD
7-LOT SUBDIVISION
00 UPPER MEEHAN ROAD
BRISTOL, VT

PERMIT PLAN

STAMP



8/26/2026

REVISIONS

NOTES

DATE

#

DATE 8/26/2026

DRAWN BY: GWM

SCALE: 1" = 100'

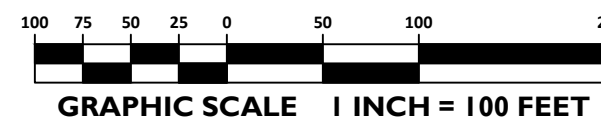
CHECKED BY: GWM

PROJECT #: 25-150

APPROVED BY: GWM

OVERALL EPSC
SITE PLAN

C-1.1



	BUILDING
	CONTOUR - MAJOR
	CONTOUR - MINOR
	CONTOUR - PROPOSED
	DRAIN PIPE
	FENCE
	GUARD RAIL
	LIMIT OF DISTURBANCE
	OVERHEAD UTILITIES
	PROPERTY LINE
	PROPERTY LINE SETBACK
	RIVER/STREAM/WATER
	ROAD
	SILT FENCE
	SEPTIC PIPE
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	TREE LINE
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	WATERLINE
	BENCHMARK
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	MONITORING WELL
	SEWER MANHOLE
	SOIL BORING
	TEST PIT
	TRAVERSE POINT
	UTILITY POLE
	WATER SHUT OFF
	WELL

	AREAS SUBJECT TO POST CONSTRUCTION SOIL DEPTH AND QUALITY STANDARDS
	DISCONNECTION TO FILTER STRIP OR VEGETATED BUFFER AREA
	NO TREATMENT AREA
	FLOW ROUTING
	FLOW PATH
	SOIL BOUNDARY (ANR MAPPED)
	SUBCATCHMENT AREA
	TEST PIT
	TEST PIT WITH INFILTRATION TEST

IMPERVIOUS AREAS	
DESCRIPTION	IMPERVIOUS AREA (ACRES)
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Lot 1	0.12
Lot 2	0.13
Lot 3	0.14
Phase 1 Total	0.82
Road (Phase 2)	0.35
Lot 4	0.19
Lot 5	0.18
Lot 6	0.23
Lot 7	0.16
Phase 2 TOTAL	1.11
PROJECT TOTAL	1.932 Acres

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DESCRIPTION	IMPERVIOUS AREA (ACRES)
PHASE 1A	3.16
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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 DESIGNER.
 - 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.**

ALL MAINTENANCE AND INSPECTION ACTIVITIES SHALL BE COMPLETED ANNUALLY OR AS NOTED. IN ADDITION WE RECOMMEND INSPECTING THE PRETREATMENT SWALES AND INFILTRATION BASIN FOLLOWING ANY HEAVY RAINFALL EVENT (>1" OF RAINFALL IN A 24-HOUR PERIOD) FOR THE FIRST TWO YEARS POST-CONSTRUCTION.

GRASS CONVEYANCE SWALES

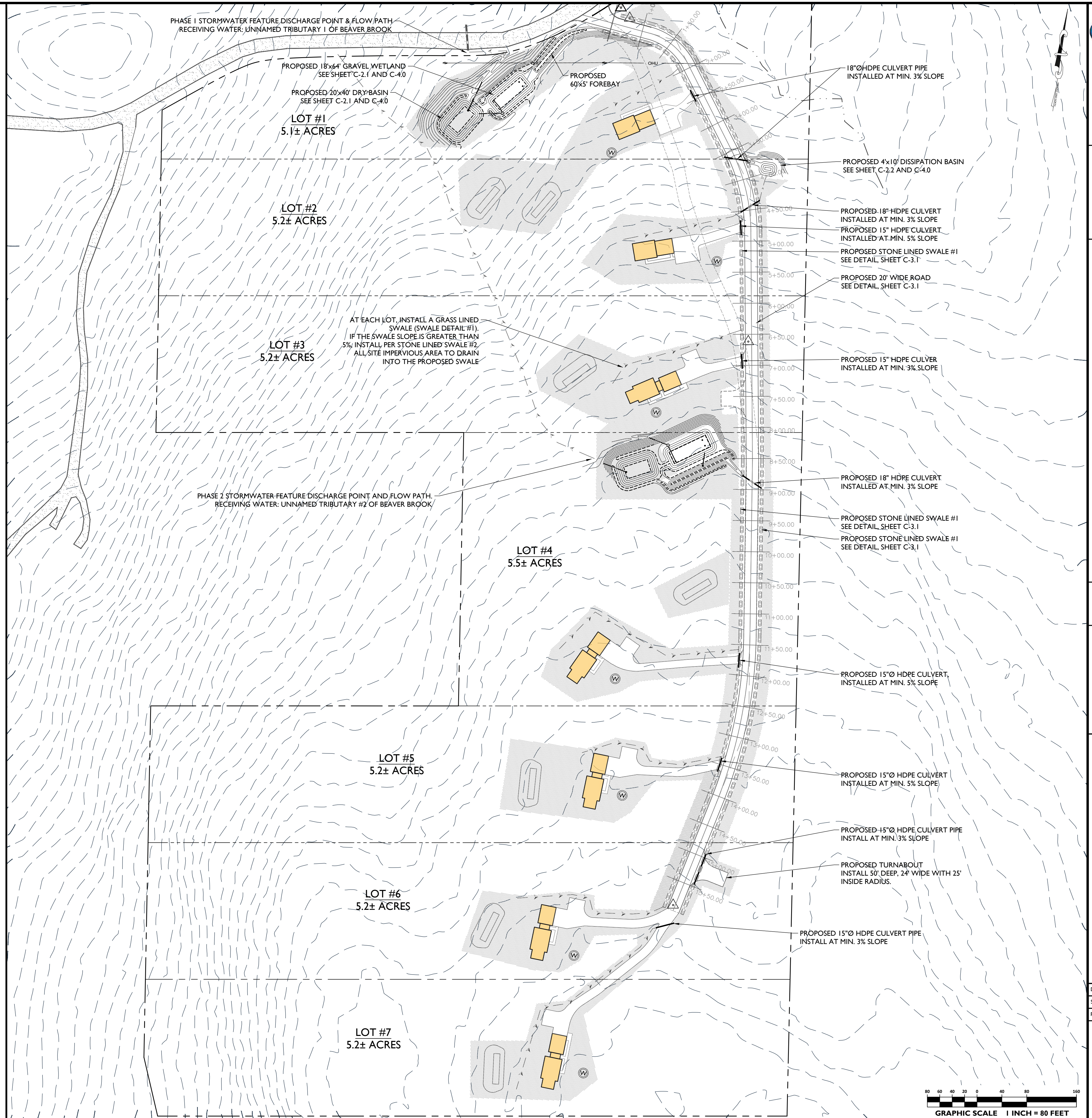
1. INSPECT SIDE SLOPES FOR EROSION. REPAIR AS NEEDED.
2. MOW AS NEEDED TO MAINTAIN DENSE HERBACEOUS VEGETATION.

FOREBAY

1. INSPECT SIDE SLOPES FOR EROSION. REPAIR AS NEEDED.
2. MONITOR FIXED SEDIMENT DEPTH INDICATOR; REMOVE ACCUMULATED SEDIMENTS WHEN DEPTH EXCEEDS 6".

GRAVEL WETLAND

1. INSPECT BOTTOM AND SIDE SLOPES FOR EROSION AND SEDIMENT ACCUMULATION. REPAIR AS NEEDED
2. SEMI-ANNUALLY, INSPECT WET PIPES FOR CLOGGING. REMOVE AS NEEDED.
3. SEMI-ANNUALLY, INSPECT WETLAND PLANTS. REMOVE DEAD OR DISEASED PLANTS AND REPLACE WITH APPROVED SPECIES - SEE PLANTING SCHEDULE.
4. INSPECT OUTLET STRUCTURE FOR CLOGGING. REMOVE ANY DEBRIS OR SEDIMENT AS NEEDED.

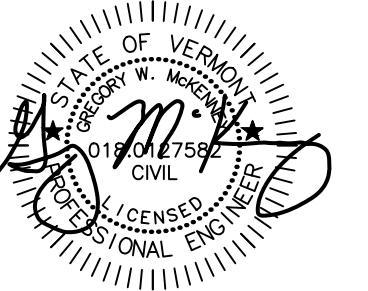


David Livingston

UPPER MEEHAN ROAD
7-LOT SUBDIVISION
00 UPPER MEEHAN ROAD
BRISTOL, VT

PERMIT PLAN

STAMP



8/26/2026

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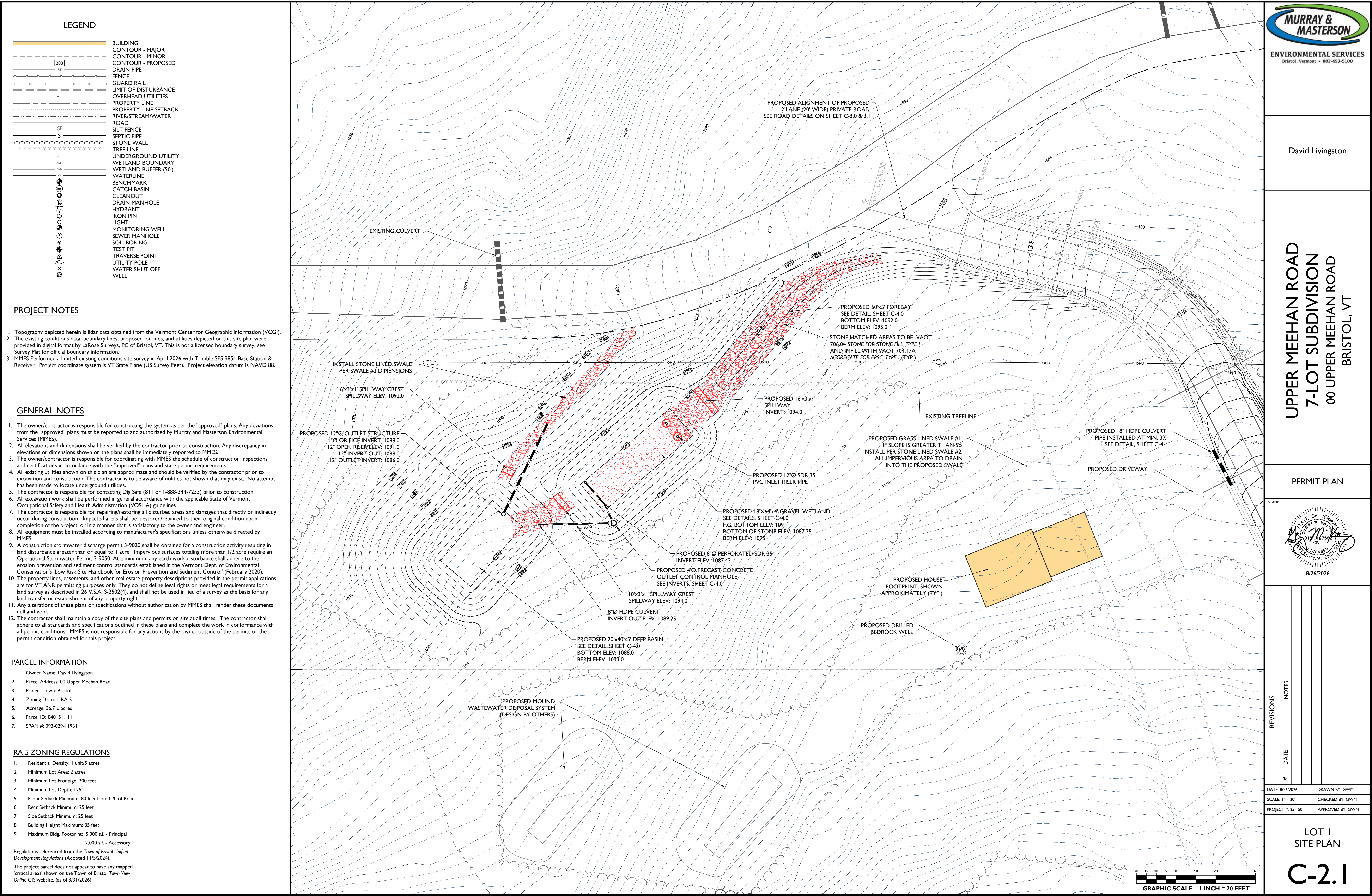
DATE: 8/26/2026 DRAWN BY: GWM

SCALE: 1" = 80' CHECKED BY: GWM

PROJECT #: 25-150	APPROVED BY: GWM
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OVERALL
STORMWATER
MANAGEMENT
SITE PLAN

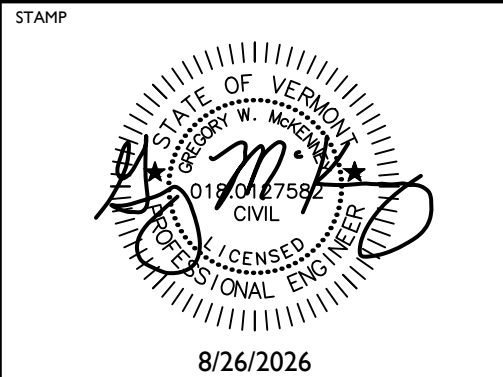
C-2.0



David Livingston

UPPER MEEHAN ROAD
7-LOT SUBDIVISION
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BRISTOL, VT

PERMIT PLAN



REVISIONS		NOTES	
DATE	#		

DATE: 8/26/2026 DRAWN BY: GWM
SCALE: 1" = 20' CHECKED BY: GWM
PROJECT #: 25-150 APPROVED BY: GWM

LOT 1
SITE PLAN

C-2.1

BUILDING
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 DRAIN PIPE
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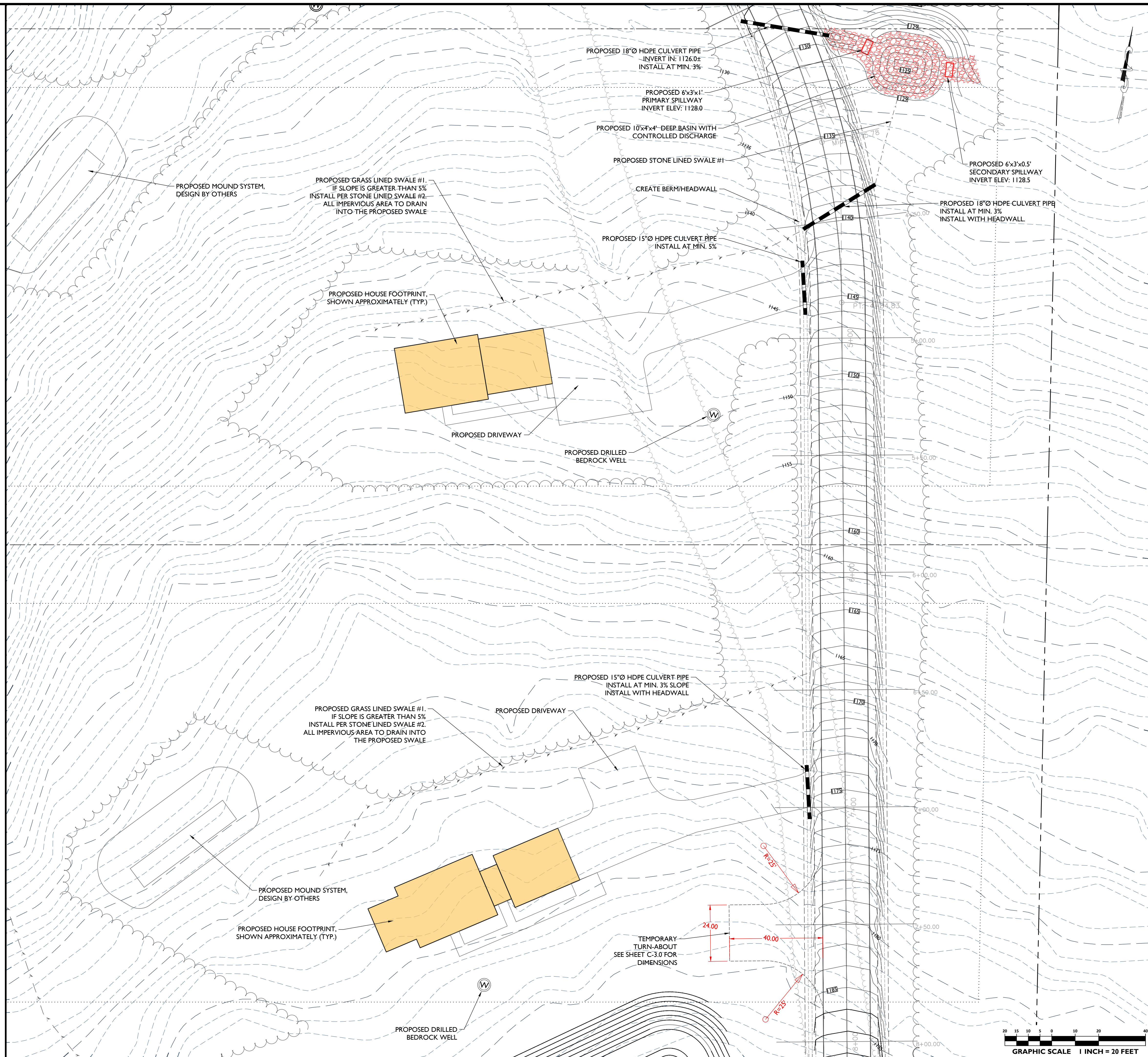
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2,000 s.f. - Accessory

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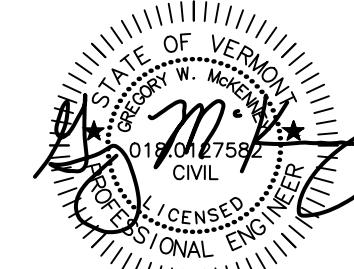


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PERMIT PLAN

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8/26/2026

[illegible]

DATE: 8/26/2020

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SCALE: 1" = 20'

CHECKED BY: GWN

LOT 2 & 3
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C-2.2

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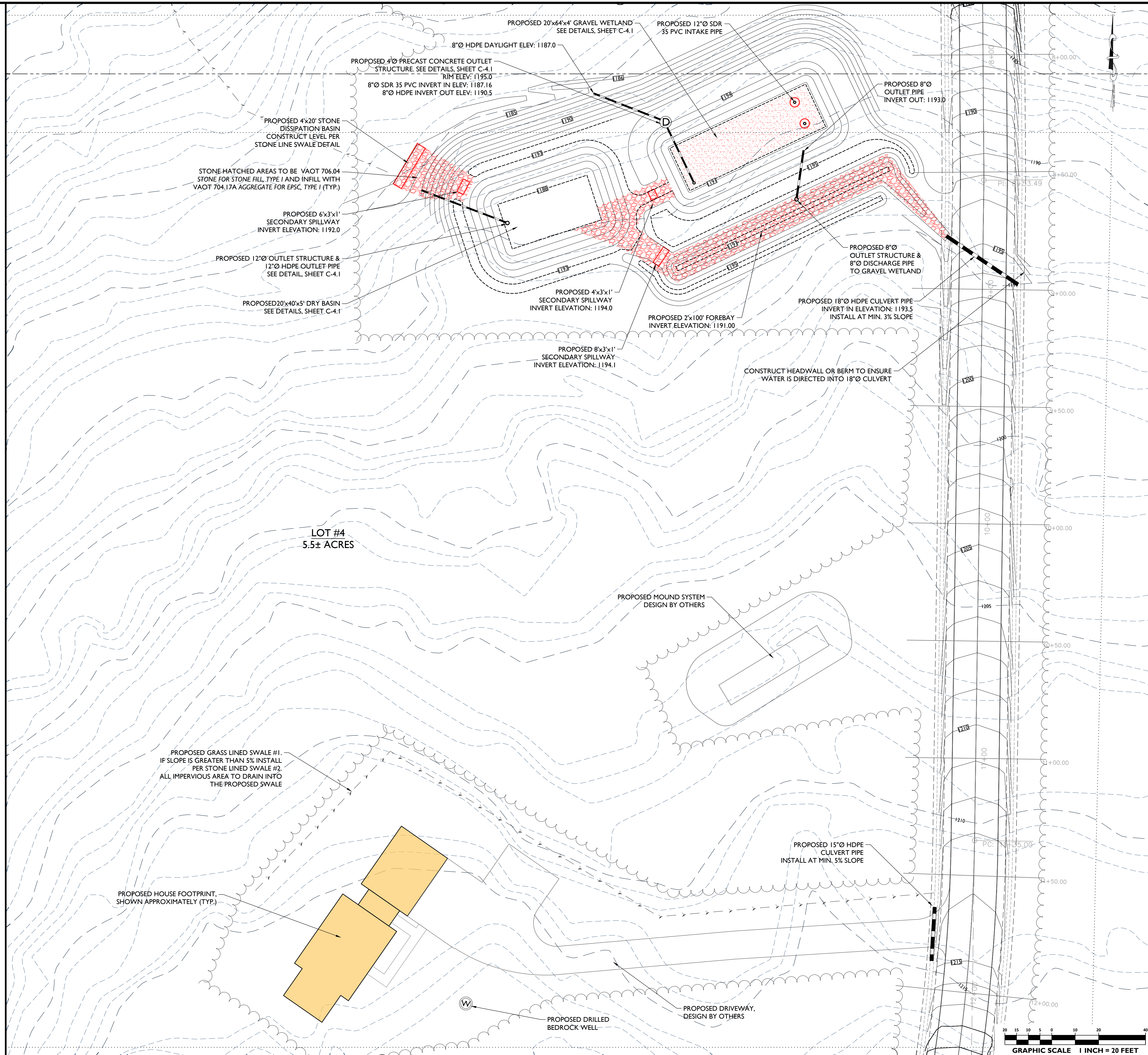
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6. All excavation work shall be performed in general accordance with the applicable State of Vermont Occupational Safety and Health Administration (VOSH/A) guidelines.
7. The contractor is responsible for repairing/restoring all disturbed areas and damages that directly or indirectly occur during construction. Impacted areas shall be restored/repaired to their original condition upon completion of the project, or in a manner that is satisfactory to the owner and engineer.
8. All equipment must be installed according to manufacturer's specifications unless otherwise directed by MMES.
9. A construction stormwater discharge permit 3-9020 shall be obtained for a construction activity resulting in land disturbance greater than or equal to 1 acre. Impervious surfaces totaling more than 1/2 acre require an Operational Stormwater Permit 3-9050. At a minimum, any earth work disturbance shall adhere to the erosion prevention and sediment control standards established in the Vermont Dept. of Environmental Conservation's Low Risk Site Handbook for Erosion Prevention and Sediment Control" (February 2020).
10. The property lines, easements, and other real estate property descriptions provided in the permit applications are for VT ANR permitting purposes only. They do not define legal rights or meet legal requirements for a land survey as described in 26 V.S.A. S-2502(4), and shall not be used in lieu of a survey as the basis for any land transfer or establishment of any property right.
11. Any alterations of these plans or specifications without authorization by MMES shall render these documents null and void.
12. The contractor shall maintain a copy of the site plans and permits on site at all times. The contractor shall adhere to all standards and specifications outlined in these plans and complete the work in conformance with all permit conditions. MMES is not responsible for any actions by the owner outside of the permits or the permit condition obtained for this project.

1. Owner Name: David Livingston
2. Parcel Address: 00 Upper Meehan Road
3. Project Town: Bristol
4. Zoning District: RA-5
5. Acreage: 36.7 ± acres
6. Parcel ID: 040151.111
7. SPAN #: 093-029-11961

1. Residential Density: 1 unit/5 acres
2. Minimum Lot Area: 2 acres
3. Minimum Lot Frontage: 200 feet
4. Minimum Lot Depth: 125'
5. Front Setback Minimum: 80 feet from C/L of Road
6. Rear Setback Minimum: 25 feet
7. Side Setback Minimum: 25 feet
8. Building Height Maximum: 35 feet
9. Maximum Bldg. Footprint: 5,000 s.f. - Principal
2,000 s.f. - Accessory

The project parcel does not appear to have any mapped 'critical areas' shown on the Town of Bristol Town View Online GIS website. (as of 3/31/2026)

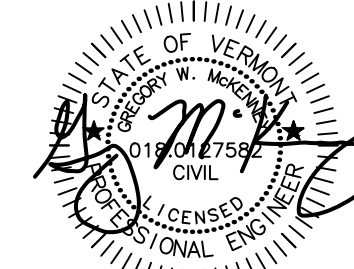


David Livingston

UPPER MEEHAN ROAD
7-LOT SUBDIVISION
00 UPPER MEEHAN ROAD
BRISTOL, VT

PERMIT PLAN

ST



8/26/2026

[illegible]

DATE: 8/26/2026 DRAWN BY: GWM

SCALE: 1" = 20' CHECKED BY: GW

PROJECT #: 25-150 APPROVED BY: GV

LOT 4
SITE PLAN

C-2.3

Figure 1: Standard Symbols for Utility Plans

[Solid line]	BUILDING
[Long dashed line]	CONTOUR - MAJOR
[Short dashed line]	CONTOUR - MINOR
[Dotted line]	CONTOUR - PROPOSED
[Line with circles]	DRAIN PIPE
[Line with vertical bars]	FENCE
[Line with triangles]	GUARD RAIL
[Thick solid line]	LIMIT OF DISTURBANCE
[Line with cross-ticks]	OVERHEAD UTILITIES
[Dashed line]	PROPERTY LINE
[Dashed line]	PROPERTY LINE SETBACK
[Wavy line]	RIVER/STREAM/WATER
[Line with cross-ticks]	ROAD
[Line with circles]	SILT FENCE
[Line with circles]	SEPTIC PIPE
[Line with circles]	STONE WALL
[Line with circles]	TREE LINE
[Line with circles]	UNDERGROUND UTILITY
[Line with circles]	WETLAND BOUNDARY
[Line with circles]	WETLAND BUFFER (50')
[Line with circles]	WATERLINE
[Line with circles]	BENCHMARK
[Line with circles]	CATCH BASIN
[Line with circles]	CLEANOUT
[Line with circles]	DRAIN MANHOLE
[Line with circles]	HYDRANT
[Line with circles]	IRON PIN
[Line with circles]	LIGHT
[Line with circles]	MONITORING WELL
[Line with circles]	SEWER MANHOLE
[Line with circles]	SOIL BORING
[Line with circles]	TEST PIT
[Line with circles]	TRAVERSE POINT
[Line with circles]	UTILITY POLE
[Line with circles]	WATER SHUT OFF
[Line with circles]	WELL

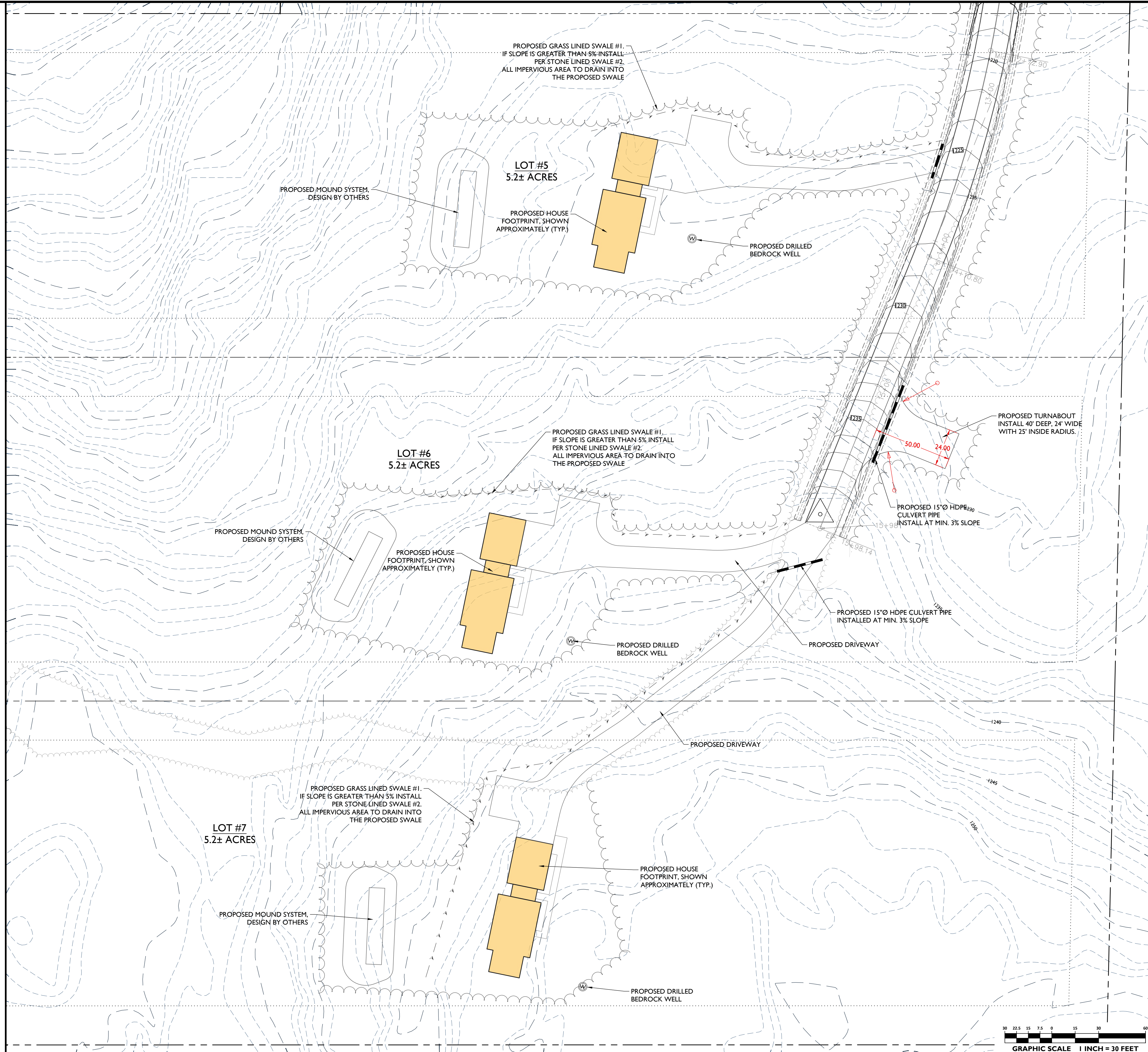
1. Topography depicted herein is lidar data obtained from the Vermont Center for Geographic Information (VCGI).
2. The existing conditions data, boundary lines, proposed lot lines, and utilities depicted on this site plan were provided in digital format by LaRose Surveys, PC of Bristol, VT. This is not a licensed boundary survey; see Survey Plat for official boundary information.
3. MMES Performed a limited existing conditions site survey in April 2016 with Trimble SPS 985L Base Station & Receiver. Project coordinate system is VT State Plane (US Survey Feet). Project elevation datum is NAVD 88.

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The project parcel does not appear to have any mapped 'critical areas' shown on the Town of Bristol Town View Online GIS website. (as of 3/31/2026)



UPPER MEEHAN ROAD
7-LOT SUBDIVISION
00 UPPER MEEHAN ROAD
BRISTOL, VT

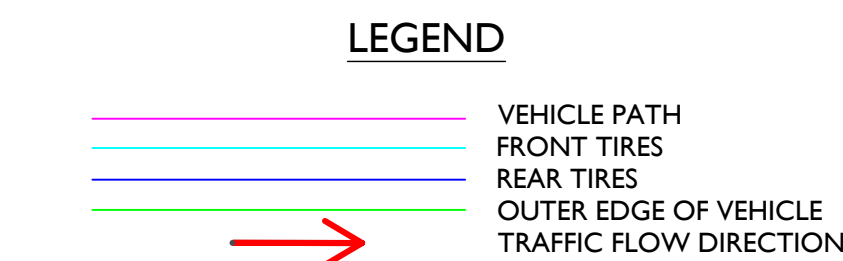
STAMP

STATE OF VERMONT
GREGORY W. MOORE
01901E7582
CIVIL
LICENSED
PROFESSIONAL ENGINEER
8/26/2026

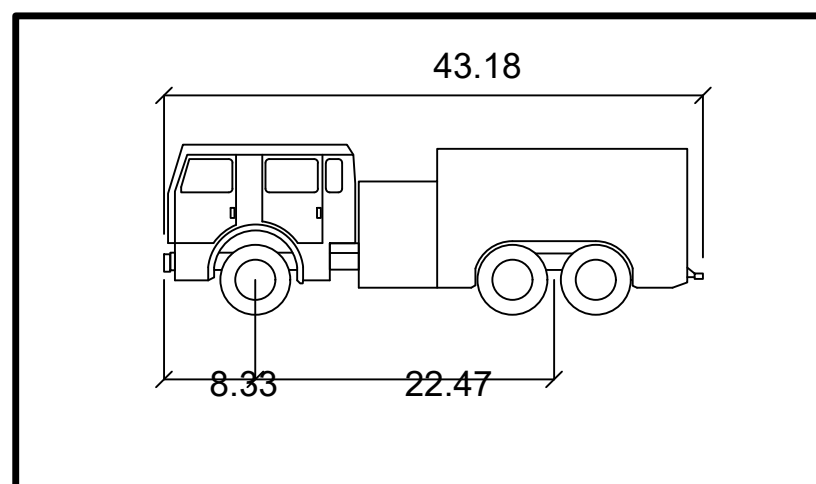
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DATE: 8/26/2026	DRAWN BY: GWM
SCALE: 1" = 30'	CHECKED BY: JB
PROJECT #: 25-150	APPROVED BY: GWM

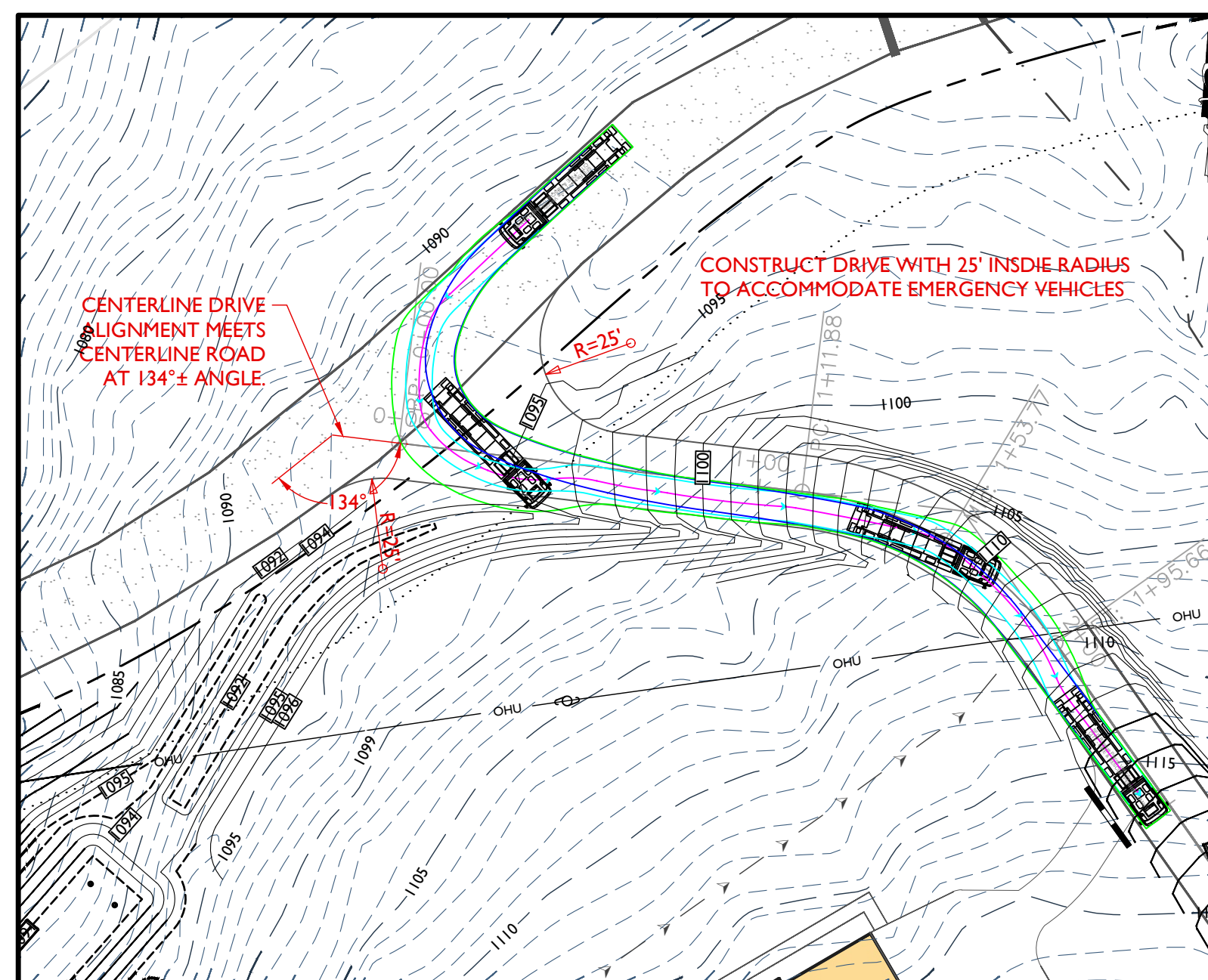
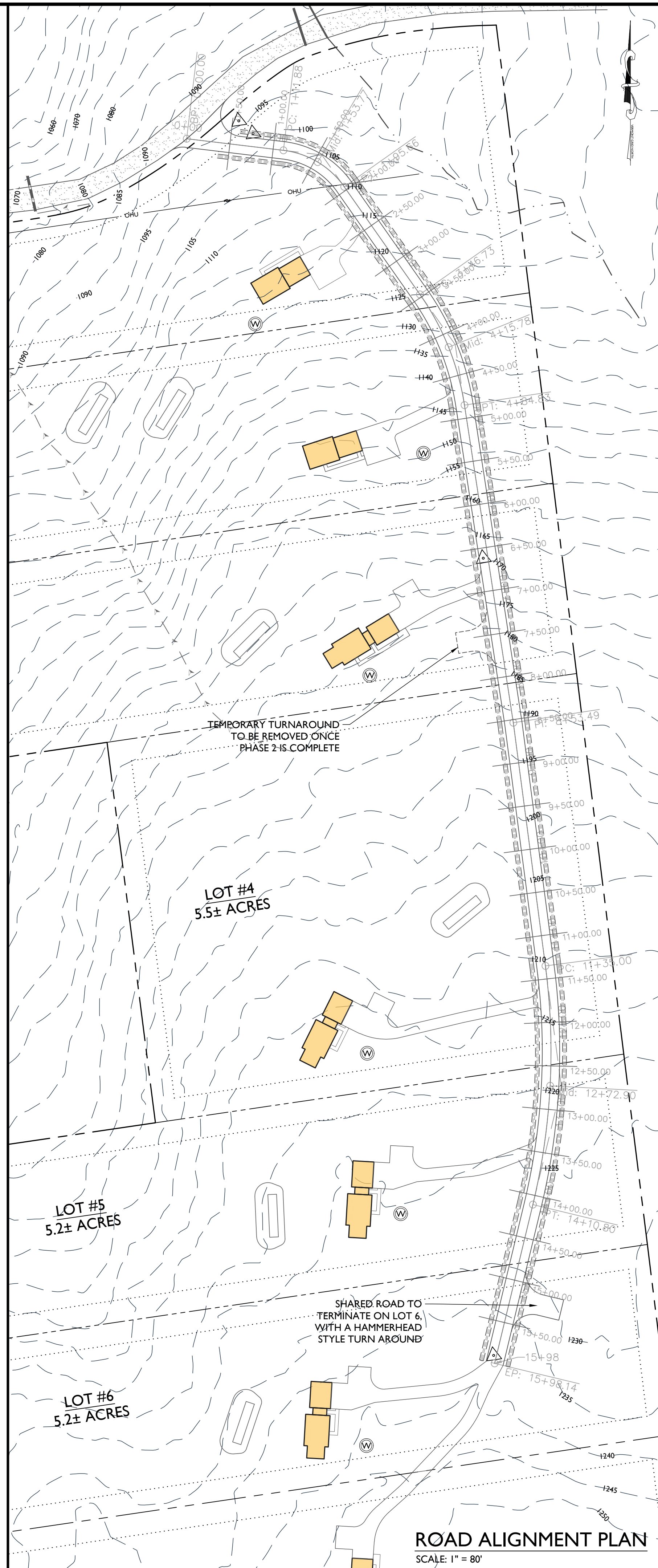
C-2.4



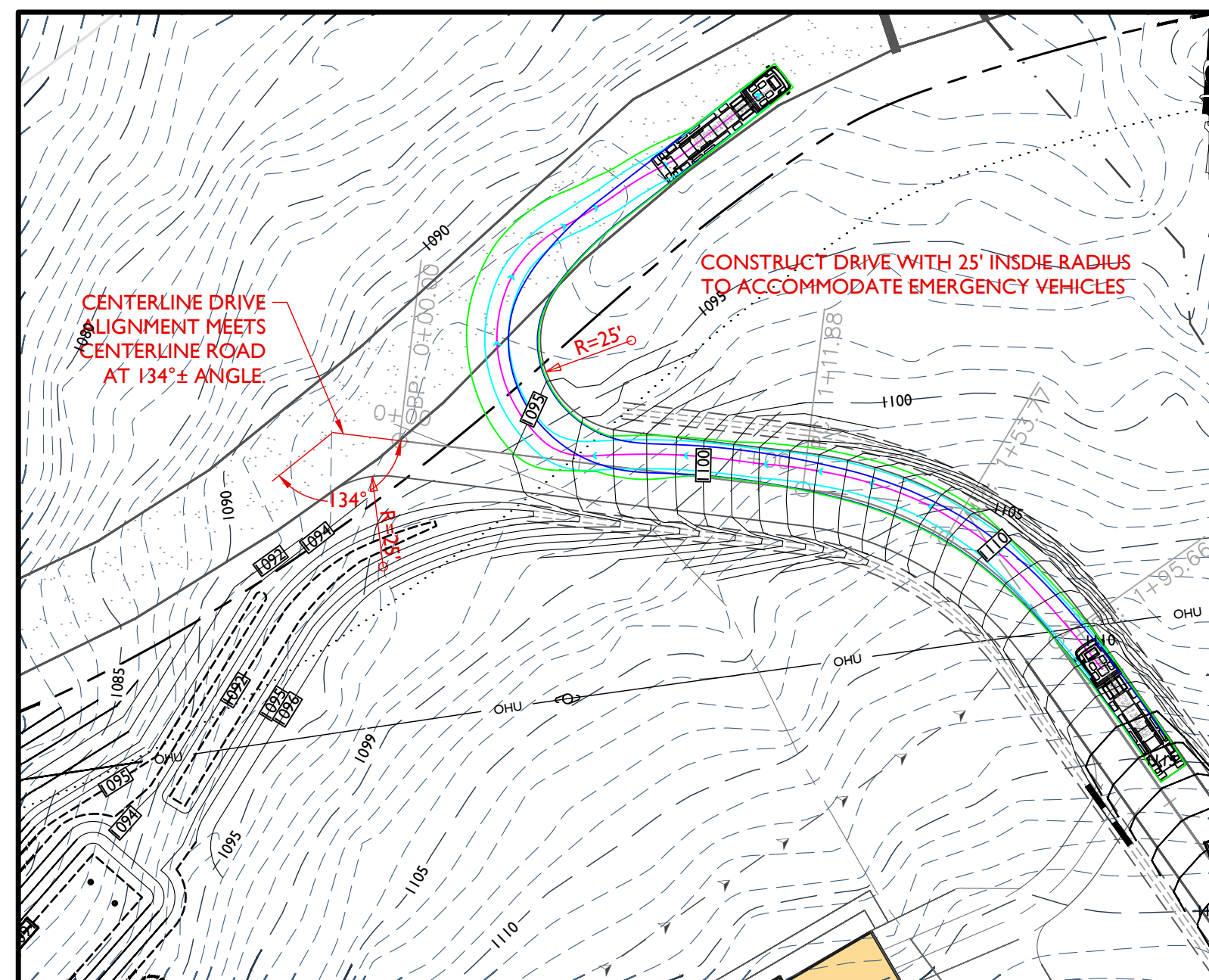
1. Topography depicted herein is lidar data (5' intervals) obtained from the Vermont Center for Geographic Information (VCGI).
2. The existing conditions data, boundary lines, proposed lot lines, and utilities depicted on this site plan were provided in digital format by LaRose Surveys, PC of Bristol, VT. This is not a licensed boundary survey; see Survey Plat for official boundary information.



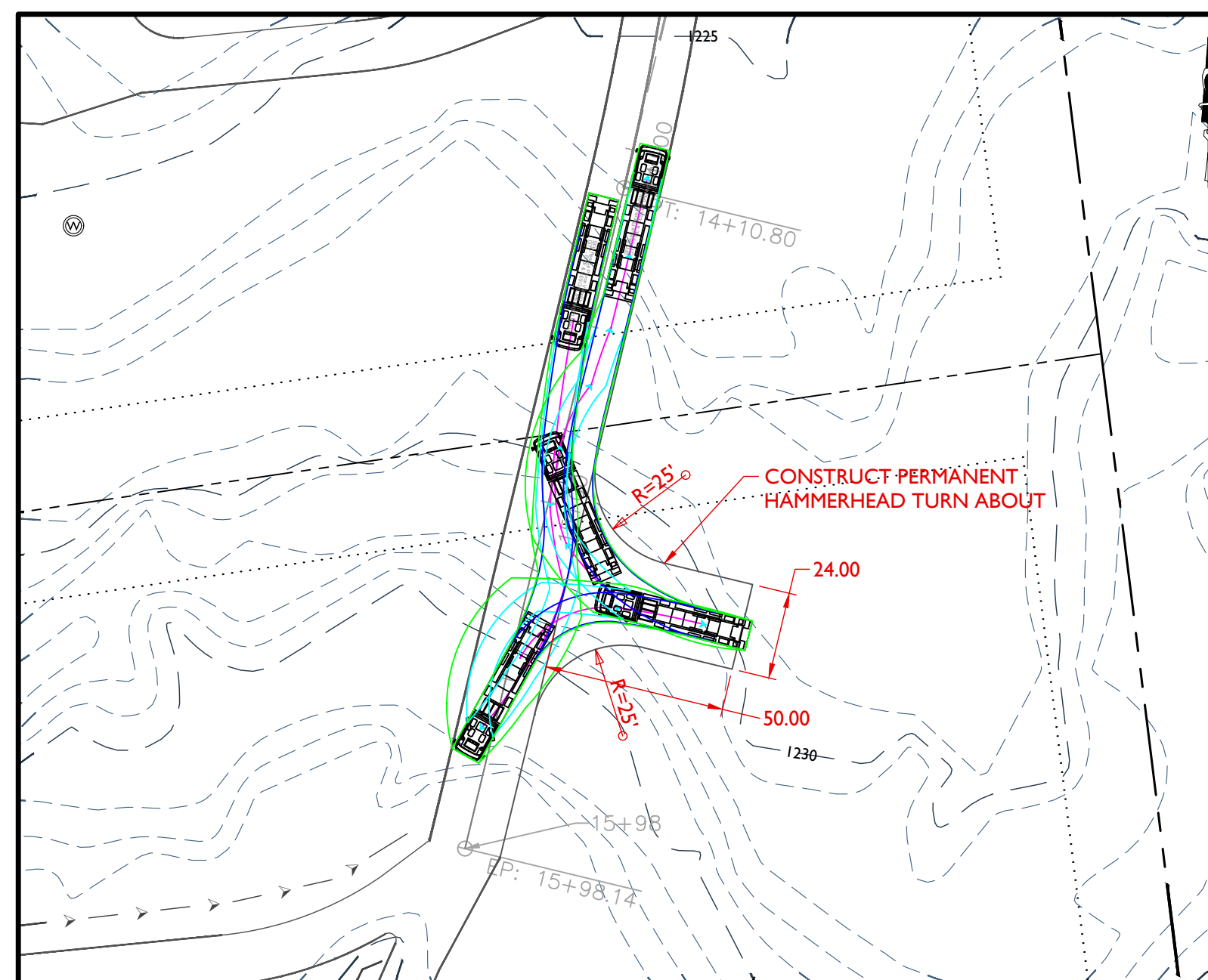
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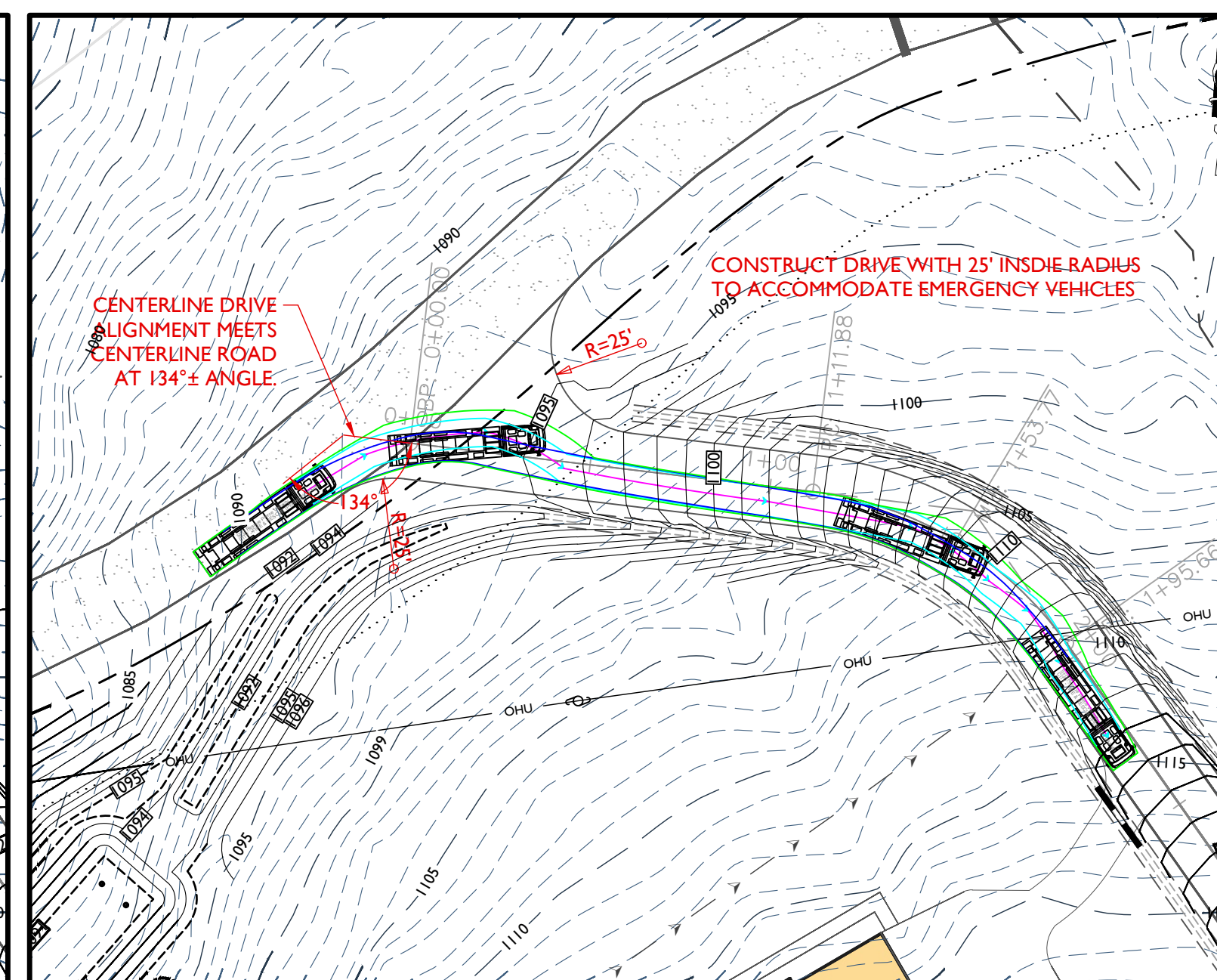
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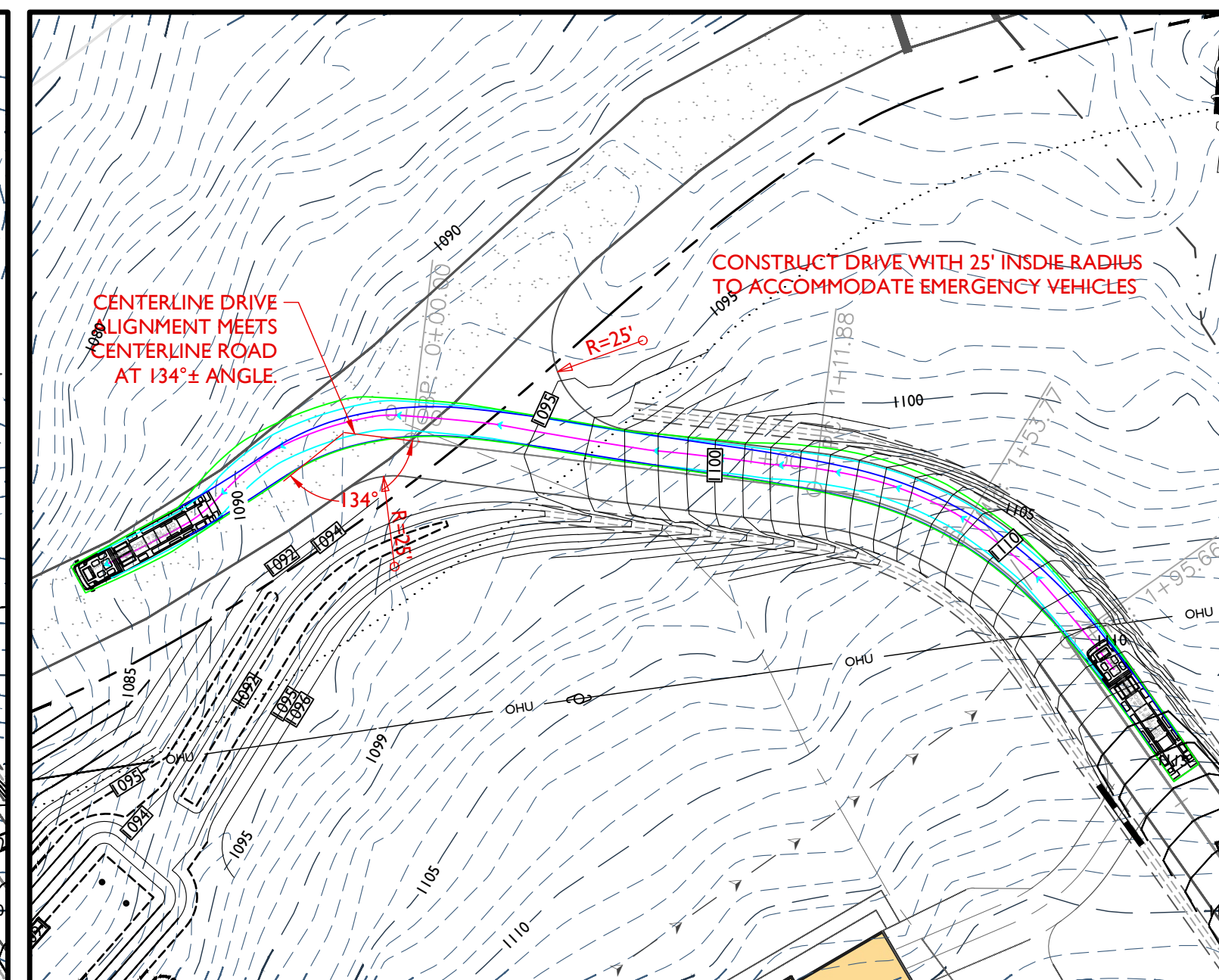
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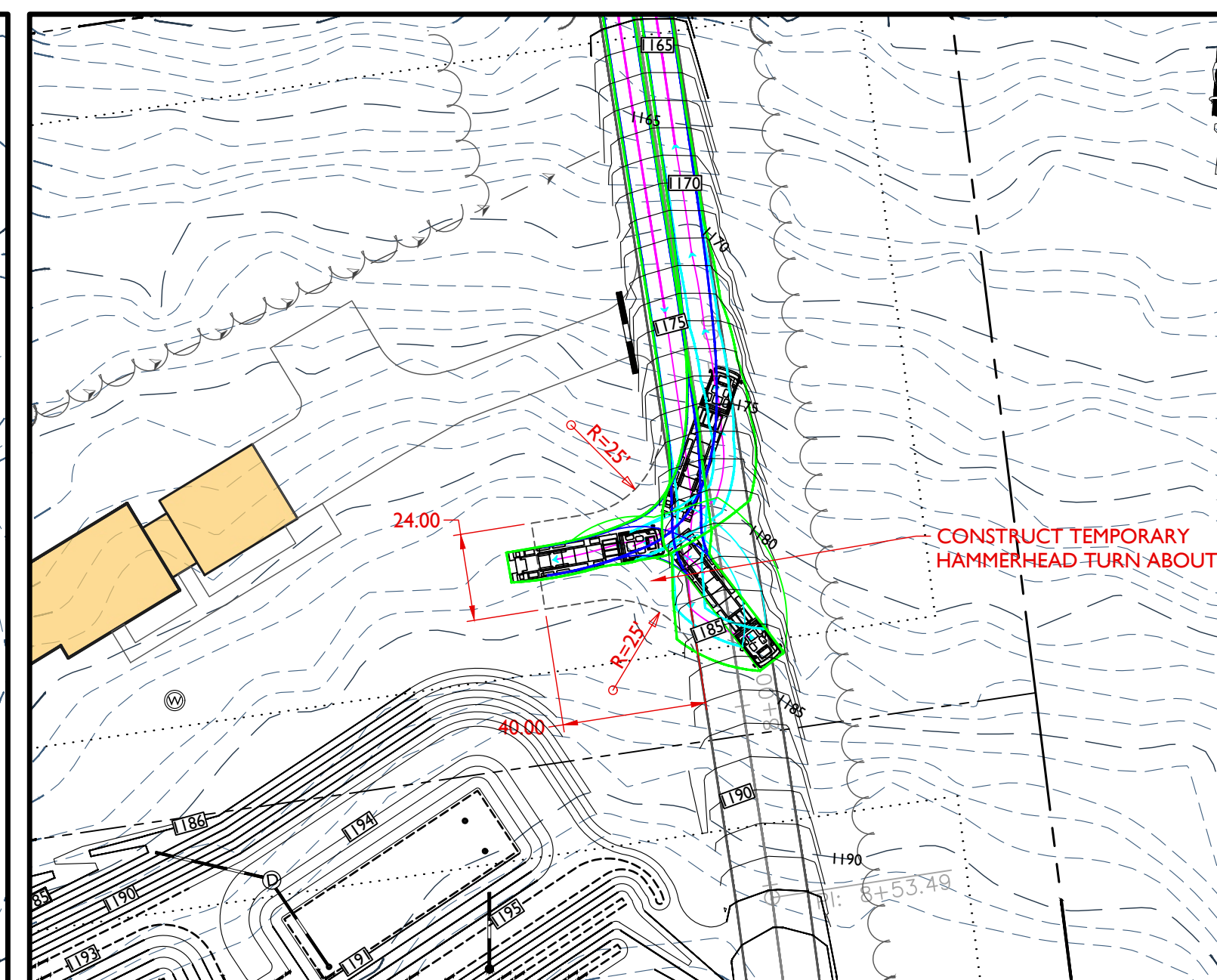
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SCALE: 1" = 40'



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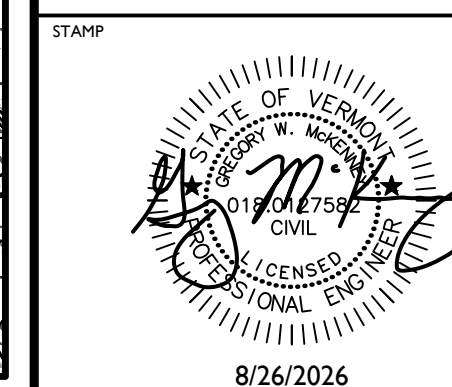


SCALE: 1" = 40'

David Livingston

UPPER MEEHAN ROAD
7-LOT SUBDIVISION
00 UPPER MEEHAN ROAD
BRISTOL, VT

PERMIT PLAN

[illegible]

DATE: 8/26/2026	DRAWN BY: GWM
SCALE: AS SHOWN	CHECKED BY: GWM
PROJECT #: 25-150	APPROVED BY: GWM

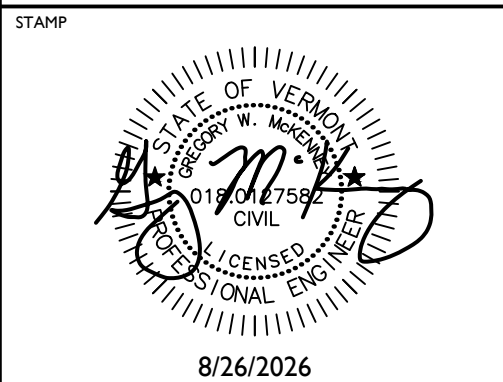
ROAD ALIGNMENT & TURNING MOVEMENTS SITE PLAN

C-3.0

David Livingston

**UPPER MEEHAN ROAD
7-LOT SUBDIVISION
00 UPPER MEEHAN ROAD
BRISTOL, VT**

PERMIT PLANS



8/26/2026

REVISIONS	DATE	NOTES

DATE: 8/26/2026 DRAWN BY: GWM
SCALE: NTS CHECKED BY: JB
PROJECT #: 25-150 APPROVED BY: GWM

**PHASE I
STORMWATER
DETAILS**

C-4.0

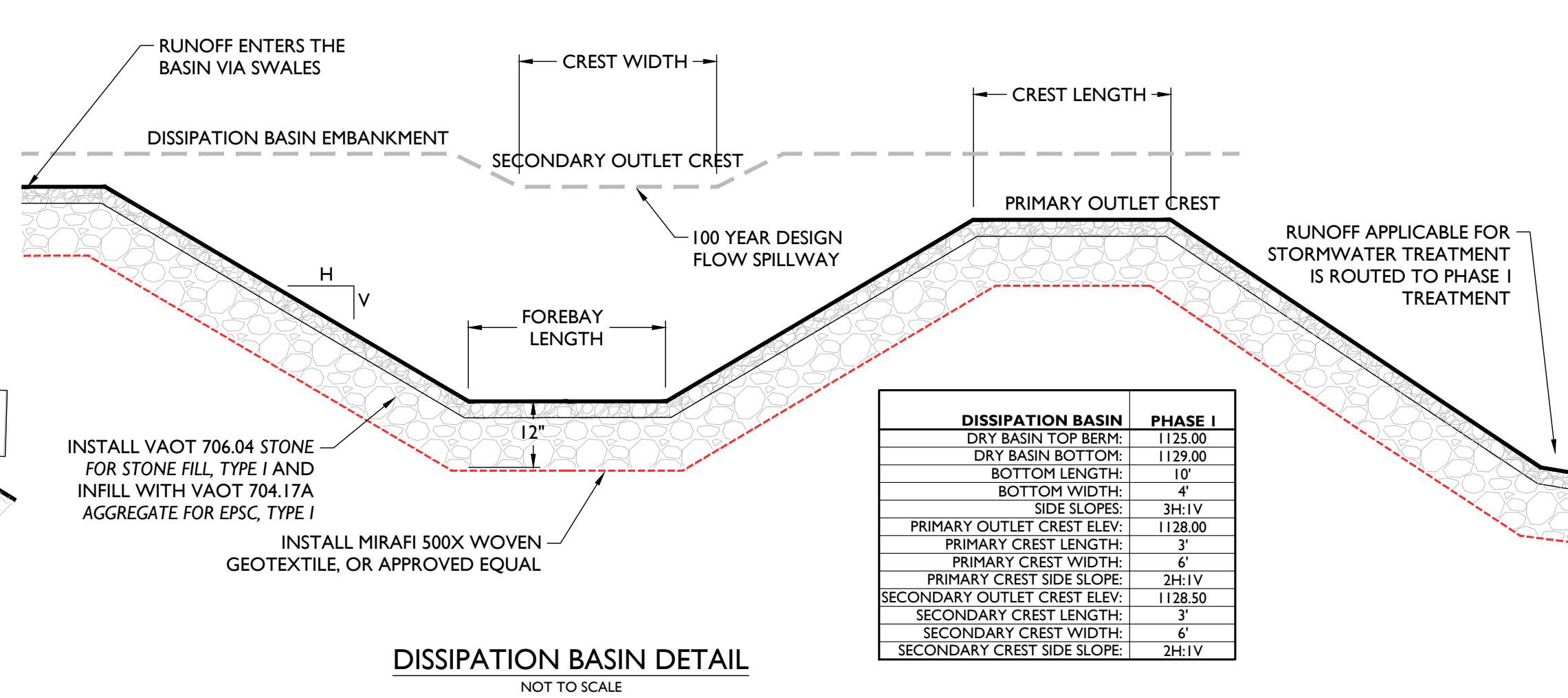
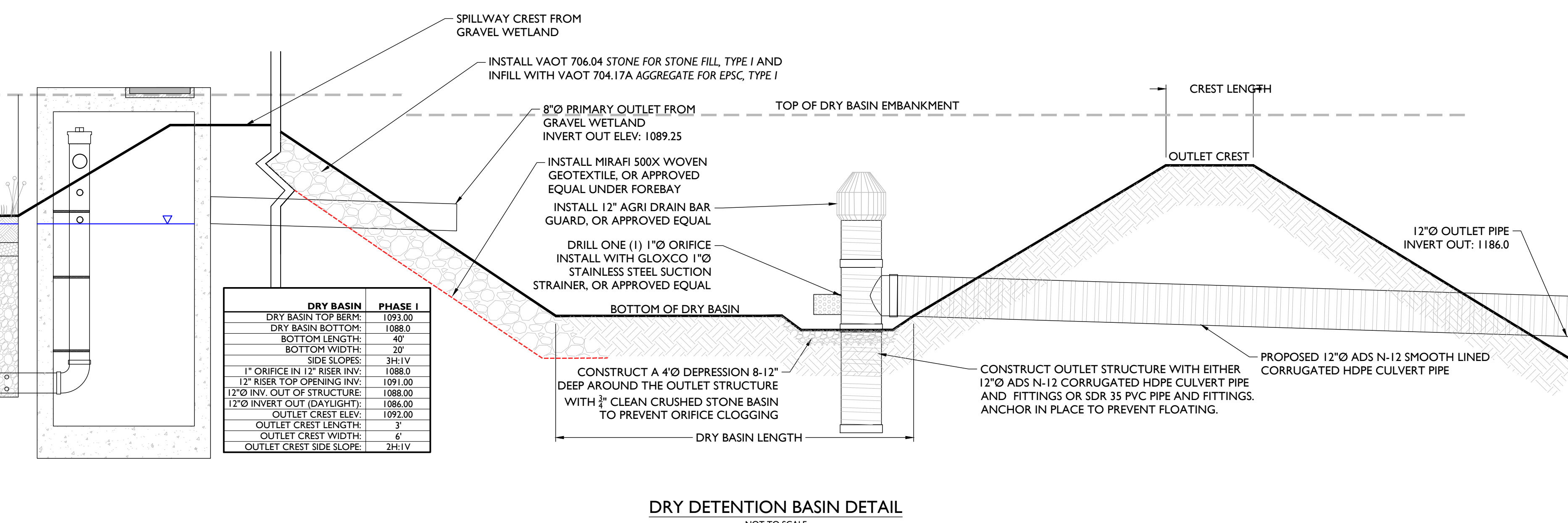
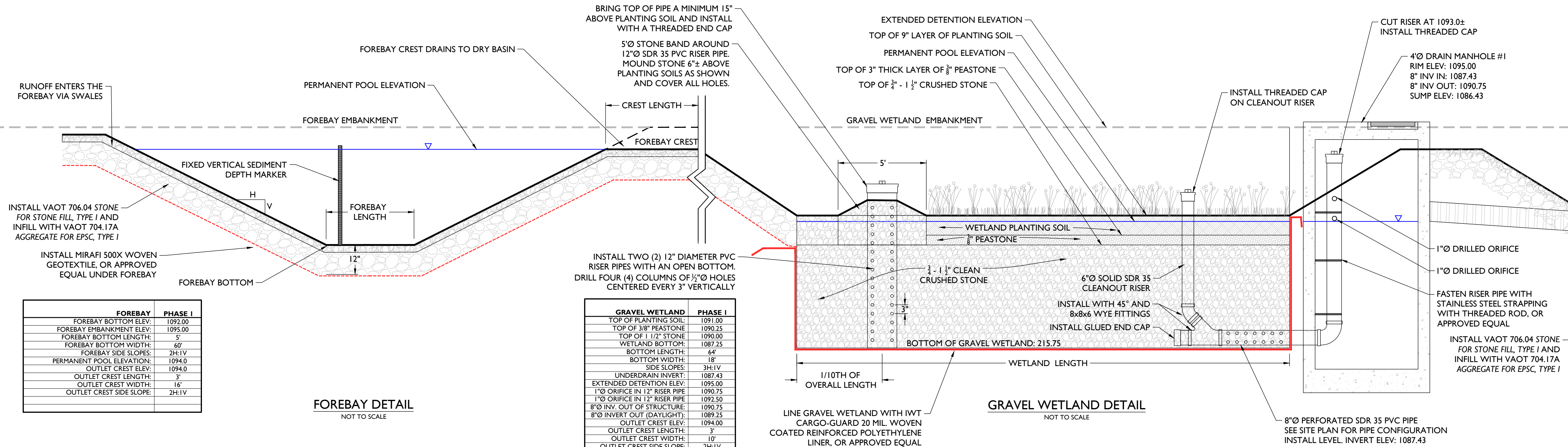
GRAVEL WETLAND NOTES

- Contractor to determine if on site topsoil is suitable for reuse as a wetland planting media.
- Phosphorus testing is required for gravel wetland soil layers. Final mixes must have a phosphorus saturation ratio (PSR) less than or equal to 0.1. PSR shall be determined using the methodology defined in the *Bio-retention and Gravel Wetland Soil Media Testing Guidance* document, (University of Vermont, 2023).
- The soil media shall have a low saturated hydraulic conductivity (Ksat) measured between 0.1-0.01 ft/day or with a soil texture conforming to hydrologic soil group D.
- Soil pH shall be between 6.0 and 7.0.
- Any donor soils required for the planting soil layer shall be obtained from a source other than a natural wetland.
- Install plantings at a rate of 1 plant per 2 square feet. Install in rows 24" on center.
- Use fully rooted landscape plugs as supplied by Vermont Wetland Plant Supply in Orwell, Vermont, or an alternate approved source.
- No woody vegetation >2" in diameter shall be planted or allowed to grow on or within 15' of the gravel wetland embankment or within 25' of a principal spillway.
- The gravel wetland liner is not necessary provided the in situ soils have an infiltration rate less than 0.05 inches/hr and the wetland is above the average groundwater table.
- If a liner is required, it shall adhere to section 4.3.5.2 of the 2017 Vermont Stormwater Management Rule and Design Guidance, which states, "acceptable liners include: 6 to 12 inches of clay soil (minimum 15% passing the #200 sieve and a maximum permeability of 1×10^{-9} cm/sec), 6 to 20 mil poly-liner, or (c) bentonite."

GRAVEL WETLAND PLANTING SCHEDULE

NAME	QUANTITY
nodding sedge (carex crinita)	25
longhair sedge (carex comosa)	75
boneset (eupatorium perfoliatum)	25
soft rush (juncus effusus)	75
softstem bulrush (schoenoplectus tabernaemontani)	75
sweetflag (acorus americanus)	75
swamp milkweed (asclepias incarnata)	75
blueflag iris (iris versicolor)	75
great blue lobelia (lobelia siphilitica)	75

- Notes
- Install plantings at a rate of 1 plant per 2 square feet. Install in rows 24" on center (approximately 575).
 - Use fully rooted landscape plugs as supplied by Vermont Wetland Plant Supply in Orwell, or an alternate approved source.
 - Plant list above is a suggestion - if an alternate is proposed, have plant supplier provide an updated planting schedule.



Bioretention and Gravel Wetland Soil Media Testing Guidance

Phosphorus Testing Requirement

P testing is required for upper media layer of bioretention systems and gravel wetland soil layers. Final mixes must have a Phosphorus Saturation Ratio (PSR) less than or equal to 0.10. PSR is to be determined using the following protocol:

- Samples are to be air dried and sieved through 2 mm prior to testing.
- Air-dried, sieved soil samples are to then be extracted with the Mehlich-3 solution (0.2 M CH₃COOH + 0.25 M NH₄NO₃ + 0.015 M NH₄F + 0.013 M HNO₃ + 0.001 M EDTA) by shaking a soil solution suspension for 5 minutes at a 1:10 ratio (soil mass in grams: solution volume in ml), followed by filtering to remove particles (pore size of 2 µm is recommended, max pore size ~ 8 µm).
- Extracts from the Mehlich-3 procedure are to be analyzed for P, Fe, and Al by ICP-OES.
- The Phosphorus Saturation Ratio (PSR) is then calculated as follows:

$$PSR = \frac{\left(\frac{P_{Me}}{31}\right)}{\left(\frac{P_{Me}}{31}\right) + \left(\frac{Fe_{Me}}{56}\right) + \left(\frac{Al_{Me}}{27}\right)}$$

where:

- P_{Me} = Mehlich-3 P in mg P per kg dry soil
- Fe_{Me} = Mehlich-3 Fe in mg Fe per kg dry soil
- Al_{Me} = Mehlich-3 Al in mg Al per kg dry soil

Mehlich-3 extractions follow the above protocol (for more details, see Wolf and Breege, 2009). Other soil test extractions, including Modified Morgan Tests, Oxidate Extractions, Water Extractions, or extractions used to quantify total elements, are not acceptable for this requirement.

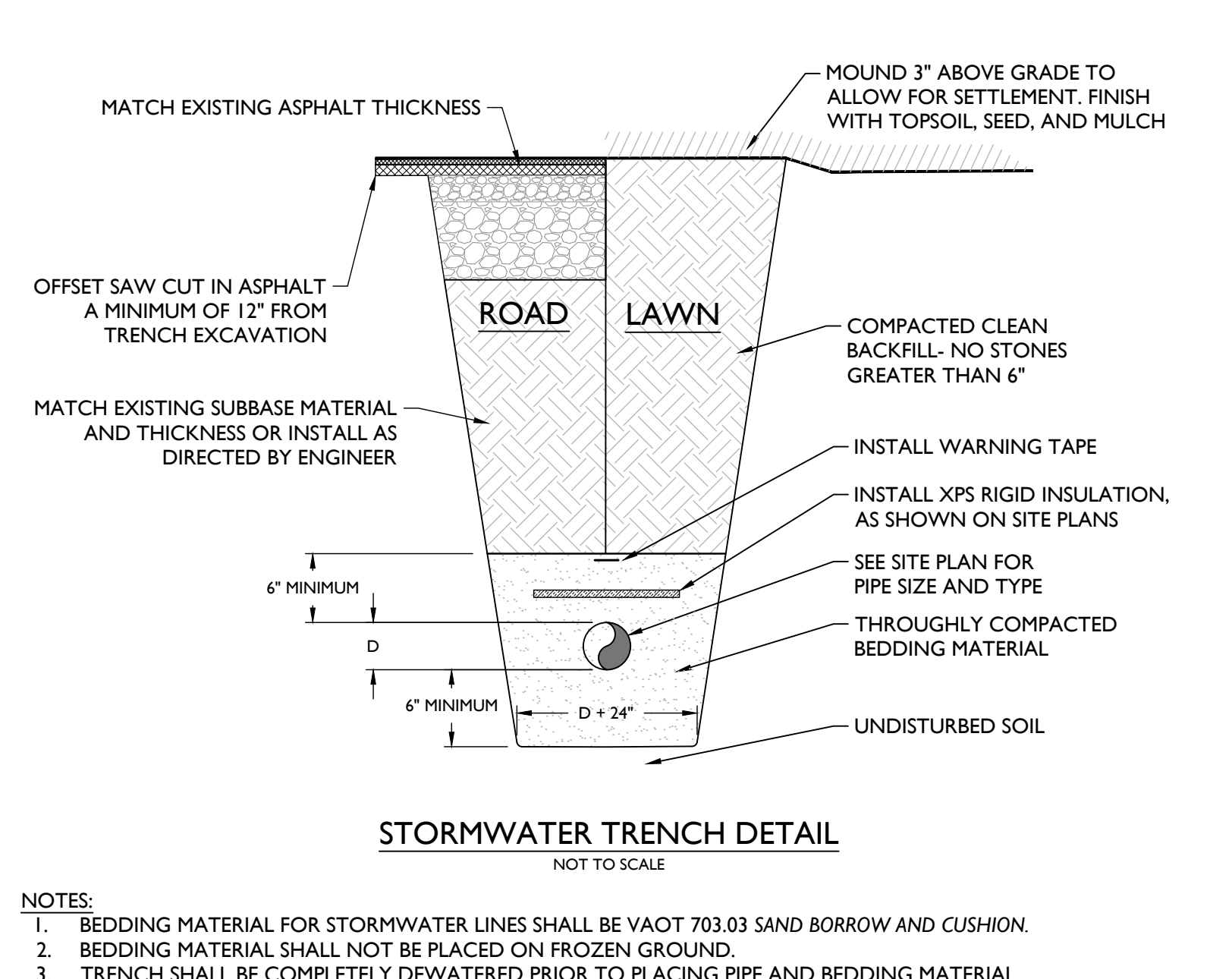
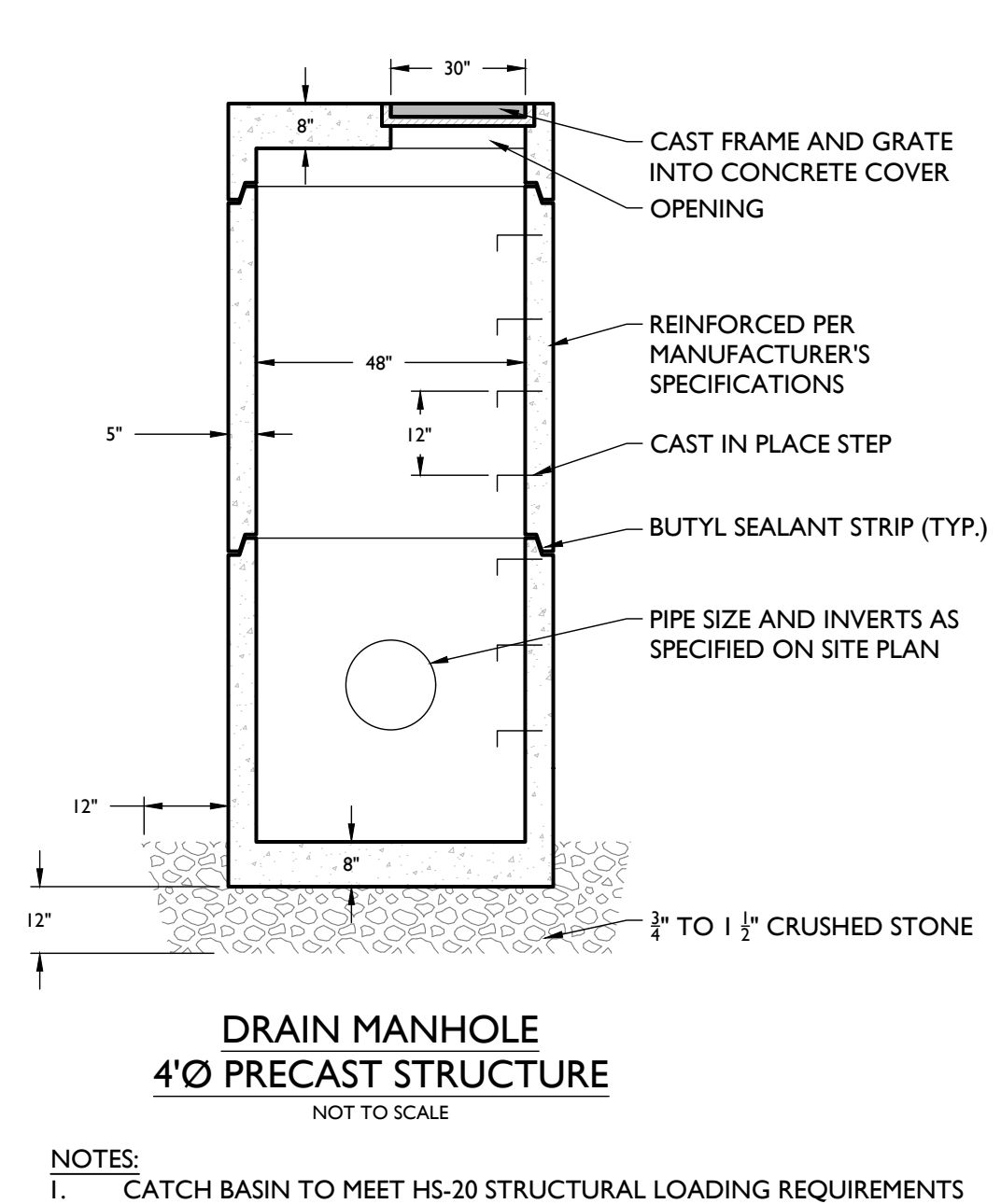
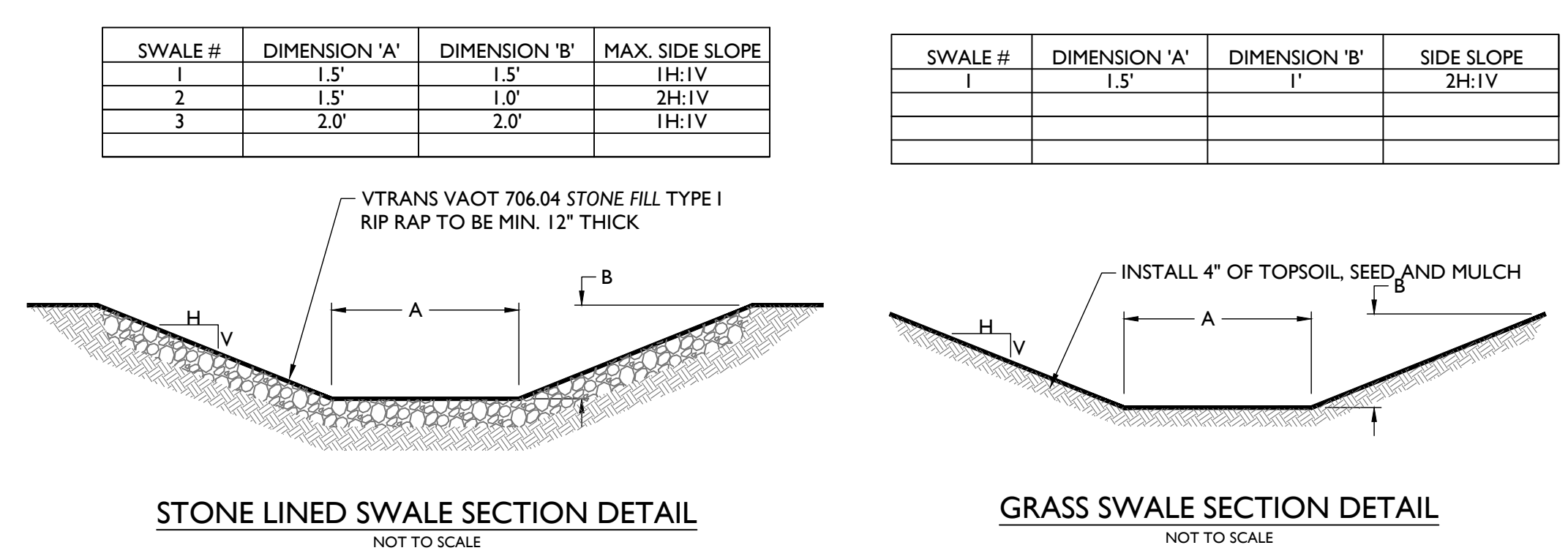
In cases where ingredient mixing has not yet occurred, ingredients can be mixed at the intended volumetric proportions in a small batch (at least one quart in volume) for testing purposes. If this small batch testing approach is taken, the final material to be used during installation must be re-tested to confirm acceptable PSR.

Soil Analysis

Soil samples for P, Fe, and Al analysis via Mehlich-3 extraction can be submitted to the Agricultural and Environmental Testing Laboratory (AETL) located at UVM. Each sample costs \$15. Please allow least 3-4 weeks for analysis.

How to take a soil sample [go.uvm.edu/soil-sampling]
Submitting a soil sample [go.uvm.edu/uvm-soil-lab]

University of Vermont 2025

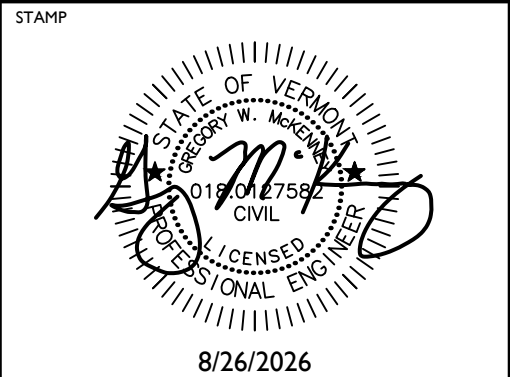


- NOTES:
- BEDDING MATERIAL FOR STORMWATER LINES SHALL BE VAOT 703.03 SAND BORROW AND CUSHION.
 - BEDDING MATERIAL SHALL NOT BE PLACED ON FROZEN GROUND.
 - TRENCH SHALL BE COMPLETELY DEWATERED PRIOR TO PLACING PIPE AND BEDDING MATERIAL.

David Livingston

UPPER MEEHAN ROAD
7-LOT SUBDIVISION
00 UPPER MEEHAN ROAD
BRISTOL, VT

PERMIT PLANS



REVISIONS		NOTES
DATE		
#		

DATE: 8/26/2026 DRAWN BY: GWM
SCALE: NTS CHECKED BY: JB
PROJECT #: 25-150 APPROVED BY: GWM

PHASE 2
STORMWATER
DETAILS
C-4.1

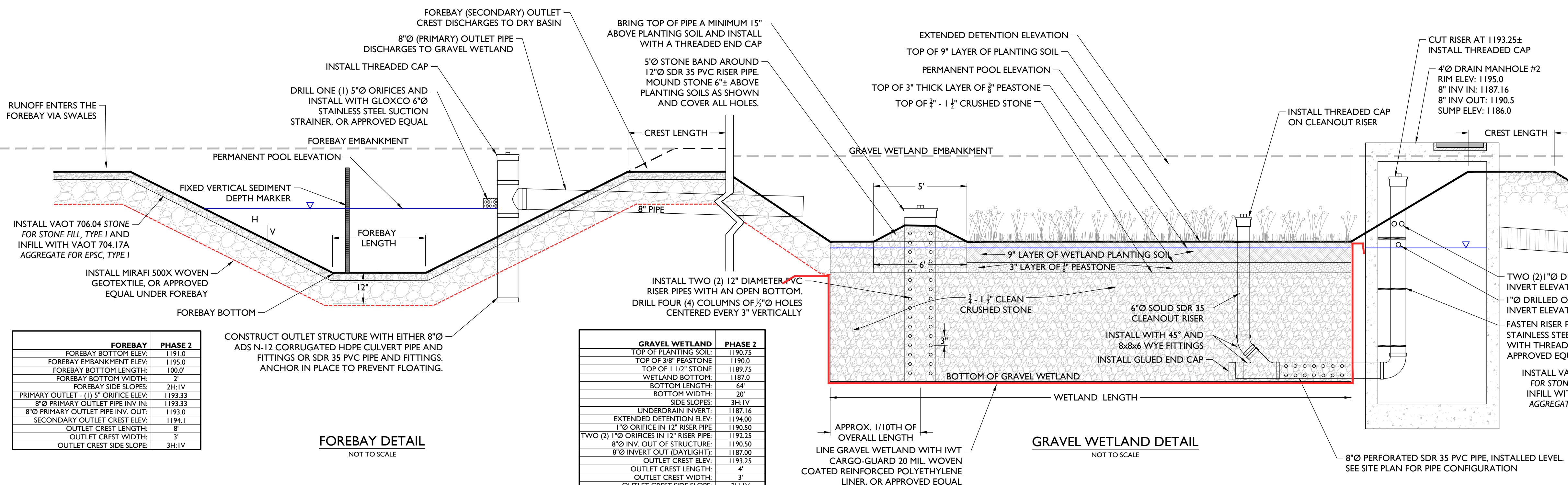
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- The soil media shall have a low saturated hydraulic conductivity (Ksat) measured between 0.1-0.01 ft/day or with a soil texture conforming to hydrologic soil group D.
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- Any donor soils required for the planting soil layer shall be obtained from a source other than a natural wetland.
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- Use fully rooted landscape plugs as supplied by Vermont Wetland Plant Supply in Orwell, Vermont, or an alternate approved source.
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- The gravel wetland liner is not necessary provided the in situ soils have an infiltration rate less than 0.05 inches/hr and the wetland is above the average groundwater table.
- If a liner is required, it shall adhere to section 4.3.5.2 of the 2017 Vermont Stormwater Management Rule and Design Guidance, which states, "acceptable liners include: (a) 6 to 12 inches of clay soil (minimum 15% passing the #200 sieve and a maximum permeability of 1×10^{-5} cm/sec), (b) a 30 mil poly-liner, or (c) bentonite."

GRAVEL WETLAND PLANTING SCHEDULE

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sweetflag (acorus americanus)	100
swamp milkweed (asclepias incarnata)	75
blueflag iris (iris versicolor)	100
great blue lobelia (lobelia siphitica)	75

- Notes:
- Install plantings at a rate of 1 plant per 2 square feet. Install in rows 24" on center. (approximately 640 plants)
 - Use fully rooted landscape plugs as supplied by Vermont Wetland Plant Supply in Orwell, or an alternate approved source.
 - Plant list above is a suggestion - if an alternate is proposed, have plant supplier provide an updated planting schedule.



FOREBAY	PHASE 2
FOREBAY BOTTOM ELEV:	1191.0
FOREBAY EMBANKMENT ELEV:	1195.0
FOREBAY BOTTOM LENGTH:	100.0'
FOREBAY SIDE SLOPE:	2H:1V
PRIMARY OUTLET - (1) 5" ORIFICE ELEV:	1193.33
8" PRIMARY OUTLET PIPE INV IN:	1193.33
8" PRIMARY OUTLET PIPE INV. OUT:	1193.0
SECONDARY OUTLET CREST ELEV:	1194.1
OUTLET CREST LENGTH:	8'
OUTLET CREST WIDTH:	3'
OUTLET CREST SIDE SLOPE:	2H:1V

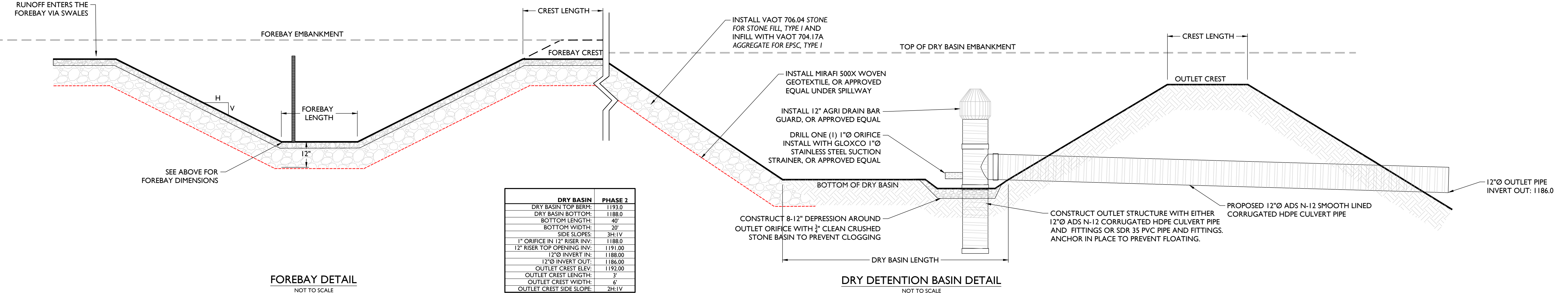
FOREBAY DETAIL

NOT TO SCALE

GRAVEL WETLAND	PHASE 2
TOP OF PLANTING SOIL:	1190.75
TOP OF 3/8" PEASTONE:	1190.0
TOP OF 1 1/2" STONE:	1189.75
WETLAND BOTTOM:	1187.0
BOTTOM LENGTH:	64'
BOTTOM WIDTH:	20'
SIDE SLOPE:	3H:1V
UNDERDRAIN INVERT:	1187.16
EXTENDED DETENTION ELEV:	1194.00
1" ORIFICE IN 12" RISER PIPE:	1190.50
TWO (2) 1" ORIFICES IN 12" RISER PIPE:	1192.25
8" INV. OUT OF STRUCTURE:	1190.50
8" INVERT OUT (DAYLIGHT):	1187.00
OUTLET CREST ELEV:	1193.25
OUTLET CREST LENGTH:	4'
OUTLET CREST WIDTH:	3'
OUTLET CREST SIDE SLOPE:	2H:1V

GRAVEL WETLAND DETAIL

NOT TO SCALE



FOREBAY DETAIL

NOT TO SCALE

DRY DETENTION BASIN DETAIL

NOT TO SCALE

STORMWATER TRENCH DETAIL

NOT TO SCALE

- NOTES:
- CATCH BASIN TO MEET HS-20 STRUCTURAL LOADING REQUIREMENTS

- NOTES:
- BEDDING MATERIAL FOR STORMWATER LINES SHALL BE VAOT 703.03 SAND BORROW AND CUSHION.
 - BEDDING MATERIAL SHALL NOT BE PLACED ON FROZEN GROUND.
 - TRENCH SHALL BE COMPLETELY DEWATERED PRIOR TO PLACING PIPE AND BEDDING MATERIAL.

Bioretention and Gravel Wetland Soil Media Testing Guidance

Phosphorus Testing Requirement

P testing is required for upper media layer of bioretention systems and gravel wetland soil layers. Final mixes must have a Phosphorus Saturation Ratio (PSR) less than or equal to 0.10. PSR is to be determined using the following protocol:

- Samples are to be air dried and sieved through 2 mm prior to testing.
- Air-dried, sieved soil samples are to then be extracted with the Mehlich-3 solution (0.2 M CH₃COOH + 0.25 M NH₄NO₃ + 0.015 M NH₄F + 0.013 M HNO₃ + 0.001 M EDTA) by shaking a soil solution suspension for 5 minutes at a 1:10 ratio (soil mass in grams: solution volume in mL), followed by filtering to remove particles (pore size of 2 µm is recommended, max pore size = 6 µm).
- Extracts from the Mehlich-3 procedure are to be analyzed for P, Fe, and Al by ICP-OES.
- The Phosphorus Saturation Ratio (PSR) is then calculated as follows:

$$PSR = \frac{\left(\frac{P_{Me}}{31}\right)}{\left(\frac{P_{Me}}{31}\right) + \left(\frac{Al_{Me}}{27}\right)}$$

where:

- P_{Me} = Mehlich-3 P in mg P per kg dry soil
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- Al_{Me} = Mehlich-3 Al in mg Al per kg dry soil

Mehlich-3 extractions follow the above protocol (for more details, see Wolf and Bregle, 2009). Other soil test extractions, including Modified Morgan Tests, Oxidate Extractions, Water Extractions, or extractions used to quantify total elements, are not acceptable for this requirement.

In cases where ingredient mixing has not yet occurred, ingredients can be mixed at the intended volumetric proportions in a small batch (at least one quart in volume) for testing purposes. If this small batch testing approach is taken, the final material to be used during installation must be re-tested to confirm acceptable PSR.

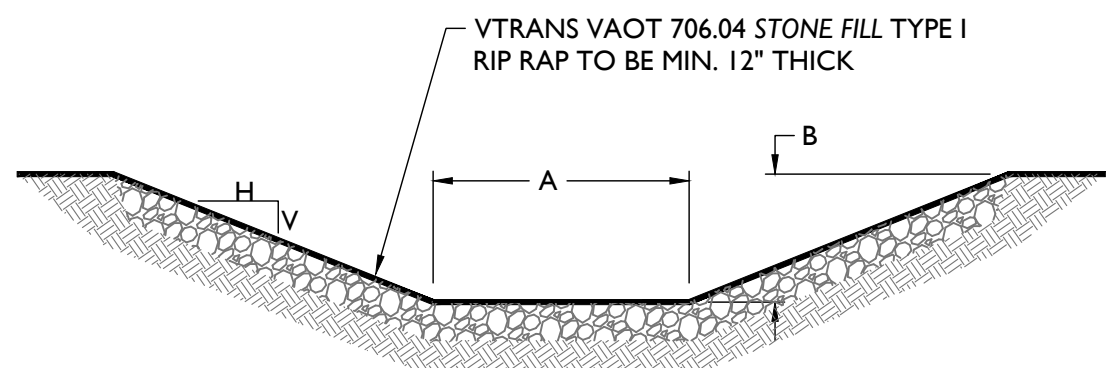
Soil Analysis

Soil samples for P, Fe, and Al analysis via Mehlich-3 extraction can be submitted to the Agricultural and Environmental Testing Laboratory (AETL) located at UVM. Each sample costs \$15. Please allow least 3-4 weeks for analysis.

How to take a soil sample [go.uvm.edu/soil-sampling]
Submitting a soil sample [go.uvm.edu/uvm-soil-lab]

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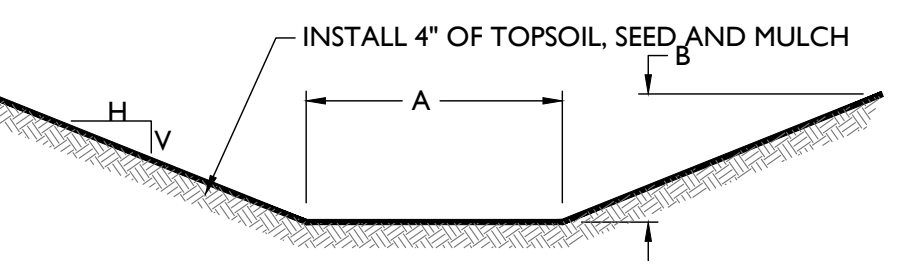
SWALE #	DIMENSION 'A'	DIMENSION 'B'	MAX. SIDE SLOPE
2	1.5'	1.5'	1H:1V
3	2.0'	2.0'	2H:1V



STONE LINED SWALE SECTION DETAIL

NOT TO SCALE

SWALE #	DIMENSION 'A'	DIMENSION 'B'	SIDE SLOPE
1	1.5'	1'	2H:1V



GRASS SWALE SECTION DETAIL

NOT TO SCALE