

To: Jennifer Fitch, P.E., Structures Project Manager

From: ^{MRG} Matthew Gardner, Geotechnical Engineer, via ^{CEE} Callie Ewald, P.E., Senior Geotechnical Engineer

Date: November 13th, 2015

Subject: Killington BF 020-2(42) – Geotechnical Data Report

1.0 INTRODUCTION

We have completed our geotechnical investigation for the proposed replacement of Bridge #33 located on US Route 4/VT Route 100 over the Ottauquechee River near a secondary access to the Killington Ski Area in the Town of Killington, Vermont. It is located approximately 150 feet of the intersection of US Route 4/VT Route 100 and Town Highway 15 (East Mountain Rd.). The proposed project includes the replacement of the existing bridge with a new structure. Contained herein are the results of field sampling and testing, laboratory and analyses of soil and rock samples, as well as boring logs.

2.0 FIELD INVESTIGATION

The field investigation was conducted between October 19th and November 5th, 2015. Two standard penetration borings were drilled to determine the existing subsurface stratum at the locations shown in Table 2.1. A boring location plan can be found attached. The values for the Northings and Eastings are based on the Vermont State Plane Grid Coordinate System NAD 83, and were provided in the initial boring request and modified when applicable by using our handheld Trimble GPS. Elevations, stations, and offsets were found based off of the Northings and Eastings using a VTrans survey file. The locations and elevations of the borings should be considered accurate only to the degree implied by the method used to determine them.

Table 2.1: Boring Locations

Boring	Station	Offset (ft)	Northing (ft)	Easting (ft)	Ground Elevation (ft)
B-101	398+50	-11.2	406024.24	1572888.14	1159.2
B-104	399+27	10.4	405959.45	1572933.11	1160.0

Borings were performed in general accordance with AASHTO T206, *Standard Method of Test for Penetration Test and Split-Barrel Sampling of Soils*. During the boring operations for boring B-101, split spoon samples and standard penetration tests (SPT) were taken continuously for the first 21 feet, then 5 foot intervals to a depth of 85 feet, followed by 10 foot intervals until the hole was terminated. For boring B-104, split spoon samples and SPT's were taken continuously for the first 21 feet, then 5 foot intervals until the hole was terminated. No bedrock was encountered in either of the borings.

Soil samples were visually identified in the field and SPT blow counts were recorded on the boring logs. Soil samples were preserved and returned to Construction and Materials Bureau Central laboratory for testing and further evaluation. Upon completion of the laboratory testing, the boring logs were revised to reflect the results of the laboratory classification results. The attached boring logs display the types of soils and strata encountered and include the laboratory test results, SPT data, and any pertinent observations made by the boring crew.

3.0 FIELD AND LABORATORY TESTS

The standard penetration resistance of the in-situ soil is determined by the number of blows required to drive a 2 inch OD split barrel sampler into the soil with a 140 pound hammer dropped from a height of 30 inches, in accordance with procedures specified in AASHTO T206. During the standard penetration test (SPT), the sampler is driven for a total length of 2 feet, while counting the blows for each 6 inch increment. The SPT N-value, which is defined as the sum of the number of blows required to drive the sampler through the second and third increments, is commonly used with established correlations to estimate a number of soil parameters, particularly the shear strength and density of cohesionless soils. The N-values provided on the boring logs are raw values and have not been corrected for energy, borehole diameter, rod length, or overburden pressure. The VT Agency of Transportation has determined a hammer correction value, C_E , to account for the efficiency of the SPT hammer on all VTrans drill rigs. For this project, a brand new CME 45C Skid Rig was used. Because the rig is brand new, an energy correction factor has not yet been determined for the hammer. A hammer energy correction factor of 1.30 is recommended for use in design based on a standard practice value for an automatic hammer. Laboratory tests were conducted on all samples to evaluate grain size, moisture content, and percent finer than No. 200 sieve. This testing was conducted on all of the soil samples and results can be found on the attached boring logs.

Due to the presence of a strong moth ball odor in a sample brought back to the laboratory for testing, the Agency's Hazardous Materials and Waste Coordinator, Andy Shively, was called to assess the sample. A photoionization detector test (PID) was performed in the lab using a hand-held detector on a sample taken from 65 to 66.2 feet at boring B-101. The PID measures volatile organic compounds and other gases in concentrations from sub parts per billion to 10,000 parts per million (ppm). The PID recorded on the sample was 0.40 ppm and is included on the boring log attached. An additional sample was taken of cuttings from 61 to 65 feet at boring B-104 because there was a similar "moth ball" odor, however no additional testing was performed on this sample.

4.0 SOIL PROFILE

Review of laboratory data and boring logs revealed the following information pertaining to the soil strata. Because groundwater elevations can fluctuate seasonally and are affected by temperature and precipitation, groundwater may be encountered during construction when not previously noted in the logs.

B-101: The ground surface elevation at B-101 was approximately 1159.2 feet. The groundwater was measured during drilling over a period of several days at an average

depth of 12.5 feet below the ground surface. Cobbles were encountered between 55 and 64.7 feet below the ground surface. Bedrock was not encountered.

Depth (Below Ground Surface Elevation)	Soil Profile
0 – 9 feet	Medium Dense Sandy Gravel
9 – 50 feet	Loose Silty Sand
50 – 111.0 feet	Very Dense Sandy Gravel

B-104: The ground surface elevation at B-104 was approximately 1160.0 feet. The groundwater was measured during drilling over a period of several days at an average depth of 12.7 feet below the ground surface. Cobbles and some boulders were encountered between 29 and 55 feet below the ground surface. Bedrock was not encountered.

Depth (Below Ground Surface Elevation)	Soil Profile
0 – 15 feet	Medium Dense Sandy Gravel/ Gravelly Sand
15 – 25 feet	Loose Sand with Cobbles and Boulders
25 – 45 feet	Medium Dense Sandy Gravel
45 – 70.1 feet	Very Dense Sandy Gravel

5.0 RECOMMENDATIONS

Based on the PID reading of 0.40 ppm on the soil sample taken at 65 feet below the ground surface in B-101, Andy Shively, the Agency's Hazardous Materials and Waste Coordinator agrees that the material does not represent a significant environmental impact or threat human exposure, and to pursue further analysis is not warranted at this site.

Based on a preliminary look at the subsurface investigation results, integral abutments supported on piles appear to be a feasible option. Cobbles and boulders were encountered within the borings, however based on our experience and the depth of these larger stones, we believe a minimum embedment tip can likely still be reached. To aid in this, we recommend up-sizing the piles slightly to handle higher driving stresses. We also recommend increasing the number of piles from a typical pile layout to limit the factored axial load on each pile as bedrock was not encountered in either of the borings.

6.0 CONCLUSION

Once further information becomes available, we would be happy to assist in the analysis and design of components of the substructure. If you have any questions, or you would like to discuss this report, please contact us at (802) 828-2561. The boring logs are attached as available in the M:\Projects\13b260\MaterialsResearch folder.

Attachments: Boring Logs - 4 pages
Boring Layout - 1 page

cc: Scott Burbank, VHB
Project File/CEE
MRG



STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

KILLINGTON
BF 020-2(42)
US-4 BR #33

Boring No.: **B-101**
Page No.: 1 of 2
Pin No.: 13b260
Checked By: MRG

Boring Crew: Garrow, Nieto
Date Started: 10/19/15 Date Finished: 11/02/15
VTSPG NAD83: N 406024.24 ft E 1572888.14 ft
Station: 398+50 Offset: -11.20
Ground Elevation: 1159.2 ft

Casing: WB
Sampler: SS
Type: WB
I.D.: 4 in
Hammer Wt: N.A.
Hammer Fall: N.A.
Rig: CME 45C SKID
C_E = Unknown

Groundwater Observations		
Date	Depth (ft)	Notes
10/27/15	12.2	W.T. Before Driling
10/28/15	12.9	W.T. Before Driling
11/02/15	12.4	W.T. Before Driling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.66 ft					
		A-1-b, SaGr, brn, Moist, Rec. = 1.5 ft	13-9-11-11	5.3	47.7	36.6	15.7
		Field Note: NXDC, Cleaned out casing.	(20)				
		A-1-b, SaGr, brn, Moist, Rec. = 0.9 ft	6-8-9-10	7.7	42.4	40.5	17.1
		Field Note: NXDC, Cleaned out casing.	(17)				
		A-1-a, SaGr, Lt/brn-brn, Moist, Rec. = 0.6 ft, Lab Note: Broken rock was within sample.	9-8-10-25	10.0	65.0	25.6	9.4
		Field Note: No Recovery	(18)				
		Field Note: NXDC, Cleaned out casing.	R@6" (R)				
10		A-2-4, Sa, gry-rust, Moist, Rec. = 0.8 ft, Lab Note: Sample was rust colored.	15-10-5-6	22.7	10.2	73.6	16.2
		Field Note: NXDC, Cleaned out casing.	(15)				
		A-2-4, SiSa, gry, Moist, Rec. = 0.9 ft, Lab Note: Black silt layers were within sample.	3-3-3-2	32.7	3.7	65.6	30.7
		Field Note: No Recovery	(6)				
		A-2-4, Sa, brn-gry, Moist, Rec. = 1.2 ft, Lab Note: Wood and wood fibers were within sample. Sample was black.	WH-2-2-2	59.8	4.2	79.4	16.4
		Field Note: No Recovery	(4)				
20		A-2-4, SiSa, gry, Moist, Rec. = 0.5 ft	2-3-4-4	28.2	1.4	73.5	25.1
			(7)				
			6-4-4-5				
			(8)				
			3-2-3-5				
			(5)				
		A-2-4, SiSa, brn, Moist, Rec. = 0.9 ft	3-3-3-3	27.3	0.2	68.2	31.6
			(6)				
30		Field Note: No Recovery	3-3-5-4				
			(8)				
		A-4, SaSi, brn, Moist, Rec. = 1.3 ft	2-2-2-2	34.2	2.9	31.3	65.8
			(4)				
40		A-4, SiSa, brn, Moist, Rec. = 0.9 ft	3-3-5-3	32.7	0.1	53.8	46.1
			(8)				
		Field Note: NXDC, Cleaned out casing.	6-6-6-7				
		Field Note: No Recovery	(12)				
		Field Note: NXDC, Cleaned out casing.					
50		A-1-b, GrSa, brn, Moist, Rec. = 1.0 ft	11-33-18-16	15.1	38.2	52.9	8.9
			(51)				
		Field Note: NXDC, Cleaned out casing.					
		Field Note: No Recovery	R@0" (R)				
		Field Note: NXDC, Cobbles					

BORING LOG 2 KILLINGTON BF020-2(42).GPJ VERMONT AOT.GDT 11/12/15

Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_e is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.



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BORING LOG

KILLINGTON
BF 020-2(42)
US-4 BR #33

Boring No.: B-101
Page No.: 2 of 2
Pin No.: 13b260
Checked By: MRG

Boring Crew: Garrow, Nieto
Date Started: 10/19/15 Date Finished: 11/02/15
VTSPG NAD83: N 406024.24 ft E 1572888.14 ft
Station: 398+50 Offset: -11.20
Ground Elevation: 1159.2 ft

Casing: WB Sampler: SS
Type: WB I.D.: 4 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 45C SKID C_E = Unknown

Groundwater Observations		
Date	Depth (ft)	Notes
10/27/15	12.2	W.T. Before Drilling
10/28/15	12.9	W.T. Before Drilling
11/02/15	12.4	W.T. Before Drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
65							
68		A-2-4, GrSiSa (Visual Description), white-Lt/gry, Moist, Rec. = 1.1 ft, Lab Note: Sample had a strong "moth ball" type odor. P.I.D. test performed showing 0.4 ppm.	R@2.5" (R)				
70		Field Note:., NXDC, Cleaned out casing. Visual Description:., SaGr, gry, Moist, Rec. = 2.2 ft, Lab Note: Insufficient sample for testing.	R@3.5" (R)	13.4			
75		Field Note:., NXDC, Cleaned out casing. A-1-b, Sa, Lt/gry, Moist, Rec. = 0.4 ft, Lab Note: Broken rock was within sample.	R@5" (R)	22.8	16.5	79.7	3.8
80		A-1-a, SaGr, Lt/gry, Moist, Rec. = 0.5 ft Field Note:., Sleeved 3.0 inch casing. Sampling with AWJ rod	R@6" (R)	10.3	50.6	35.0	14.4
85		Field Note:., NXDC, Cleaned out casing. A-1-b, SaGr, brn-gry, Moist, Rec. = 0.4 ft	R@5" (R)	14.3	48.2	32.9	18.9
95		Field Note:., NXDC, Cleaned out casing. Field Note:., No Recovery	R@5" (R)				
105		Field Note:., NXDC, Cleaned out casing. Visual Description:., Gr, gry-Lt/brn, Moist, Rec. = 0.2 ft, Lab Note: Insufficient sample for testing.	R@2.5" (R)	2.2			
110		Hole stopped @ 111.0 ft					
		Remarks: Hole Collapsed at 9.6 feet.					

BORING LOG 2 KILLINGTON BF020-2(42).GPJ VERMONT AOT.GDT 11/12/15

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BORING LOG

KILLINGTON
BF 020-2(42)
US-4 BR #33

Boring No.: B-104
Page No.: 1 of 2
Pin No.: 13b260
Checked By: MRG

Boring Crew: Gardner, GARROW, NIETO
Date Started: 11/03/15 Date Finished: 11/05/15
VTSPG NAD83: N 405959.45 ft E 1572933.11 ft
Station: 398+28 Offset: 10.40
Ground Elevation: 1160.0 ft

Casing: WB Sampler: SS
Type: WB I.D.: 4 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 45C SKID C_E = Unknown

Groundwater Observations

Date	Depth (ft)	Notes
11/04/15	12.6	W.T. before drilling
11/05/15	12.8	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.62 ft					
		A-1-b, SaGr, brn, Moist, Rec. = 1.3 ft, Lab Note: Broken rock was within sample.	10-7-8-9 (15)	9.1	44.8	40.4	14.8
		A-1-b, SaGr, brn, Wet, Rec. = 1.2 ft	7-6-5-5 (11)	24.3	44.1	39.9	16.0
5		Field Note:., NXDC, Cleaned out casing.					
		A-1-a, SaGr, gry, Moist, Rec. = 0.5 ft	5-6-6-7 (12)	16.4	59.5	27.8	12.7
		A-1-b, SaGr, brn, Moist, Rec. = 0.8 ft		9.3	42.1	41.5	16.4
		A-1-b, GrSa, brn, Wet, Rec. = 0.7 ft	8-15-6-5 (21)	25.9	46.2	47.5	6.3
		Field Note:., NXDC, Cleaned out casing.					
10		A-2-4, SiGrSa, brn, MTW, Rec. = 1.1 ft	2-2-6-6 (8)	32.9	32.2	41.7	26.1
		A-1-b, GrSa, brn-gry, Moist, Rec. = 1.4 ft	10-15-11-9 (26)	15.8	35.9	47.3	16.8
		Field Note:., NXDC, Cleaned out casing., Cobbles					
		A-2-4, GrSa, brn, Moist, Rec. = 1.5 ft, Lab Note: Sample contained rust colored layers.	6-7-8-6 (15)	17.7	24.9	56.4	18.7
15		A-2-4, SiSa, brn, Moist, Rec. = 1.1 ft, Lab Note: Sample contained rust colored layers.	2-WH-2-3 (W.H.)	26.1	9.1	65.8	25.1
		A-2-4, Sa, brn, Moist, Rec. = 1.0 ft	1-2-2-4 (4)	27.8	2.7	78.9	18.4
20		A-3, Sa, brn, Moist, Rec. = 1.0 ft	2-3-4-4 (7)	25.4	9.4	80.7	9.9
		Field Note:., NXDC, Cleaned out casing.					
25		A-1-a, SaGr, brn, Moist, Rec. = 0.4 ft, Lab Note: Broken rock was within sample.	6-7-6-6 (13)	13.6	58.7	36.3	5.0
		Field Note:., NXDC, Cleaned out casing., Cobbles					
30		A-1-a, SaGr, brn, Moist, Rec. = 0.4 ft, Lab Note: Broken rock was within sample.	8-8-8-8 (16)	16.3	55.4	38.6	6.0
		Field Note:., NXDC, Cleaned out casing., Cobbles					
35		A-1-a, SaGr, brn, Moist, Rec. = 0.9 ft, Lab Note: Broken rock was within sample.	6-33-8-10 (41)	12.8	60.1	32.2	7.7
		Field Note:., NXDC, Cleaned out casing., Boulder					

BORING LOG 2 KILLINGTON BF020-2(42).GPJ VERMONT AOT.GDT 11/12/15

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BORING LOG

KILLINGTON
BF 020-2(42)
US-4 BR #33

Boring No.: B-104
Page No.: 2 of 2
Pin No.: 13b260
Checked By: MRG

Boring Crew: Gardner, GARROW, NIETO
Date Started: 11/03/15 Date Finished: 11/05/15
VTSPG NAD83: N 405959.45 ft E 1572933.11 ft
Station: 398+28 Offset: 10.40
Ground Elevation: 1160.0 ft

Casing: WB Sampler: SS
Type: WB I.D.: 4 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 45C SKID C_E = Unknown

Groundwater Observations

Date	Depth (ft)	Notes
11/04/15	12.6	W.T. before drilling
11/05/15	12.8	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
45		A-1-a, SaGr, brn, Moist, Rec. = 0.8 ft, Lab Note: Broken rock was within sample.	10-9-6-5 (15)	11.8	54.6	34.8	10.6
		Field Note:., NXDC, Cleaned out casing., Cobbles					
50		A-1-b, GrSa, brn, Moist, Rec. = 0.5 ft	34-34-R@2.5" (R)	15.3	27.9	58.9	13.2
		Field Note:., NXDC, Cleaned out casing., Cobbles					
55		A-1-b, SiGrSa, brn, Moist, Rec. = 0.8 ft	20-R@3.5 (R)	15.6	27.1	51.3	21.6
		Field Note:., NXDC, Cleaned out casing., Cobbles					
60		A-1-a, SaGr, brn, Moist, Rec. = 0.4 ft, Lab Note: Broken rock was within sample.	R@5" (R)	10.2	55.8	30.4	13.8
		Field Note:., Sleeved 3.0 inch casing. Sampling with AWJ rod.					
65		A-1-a, SaGr, brn, Moist, Rec. = 0.7 ft, Lab Note: Broken rock was within sample.	4-R@6" (R)	11.0	59.3	28.2	12.5
70		A-1-a, SaGr, brn, Moist, Rec. = 0.5 ft	23-R@3.5" (R)	12.0	56.6	28.7	14.7
		Field Note:., NXDC, Cleaned out casing.					
75		Field Note:., No Recovery	R@1" (R)				
		Hole stopped @ 70.1 ft					
		Remarks: Hole Collapsed at 12.3					
		1.) Started mud drilling at 25.0 feet.					
		2.) Additional sample taken of cuttings from 61.0-65.0 feet. Sample had a moth ball like smell and had brown "oil like" spots. (Lab Note: Sample was not tested)					

BORING LOG 2 KILLINGTON BF020-2(42).GPJ VERMONT AOT.GDT 11/12/15

Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
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SOIL CLASSIFICATION

AASHTO

A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

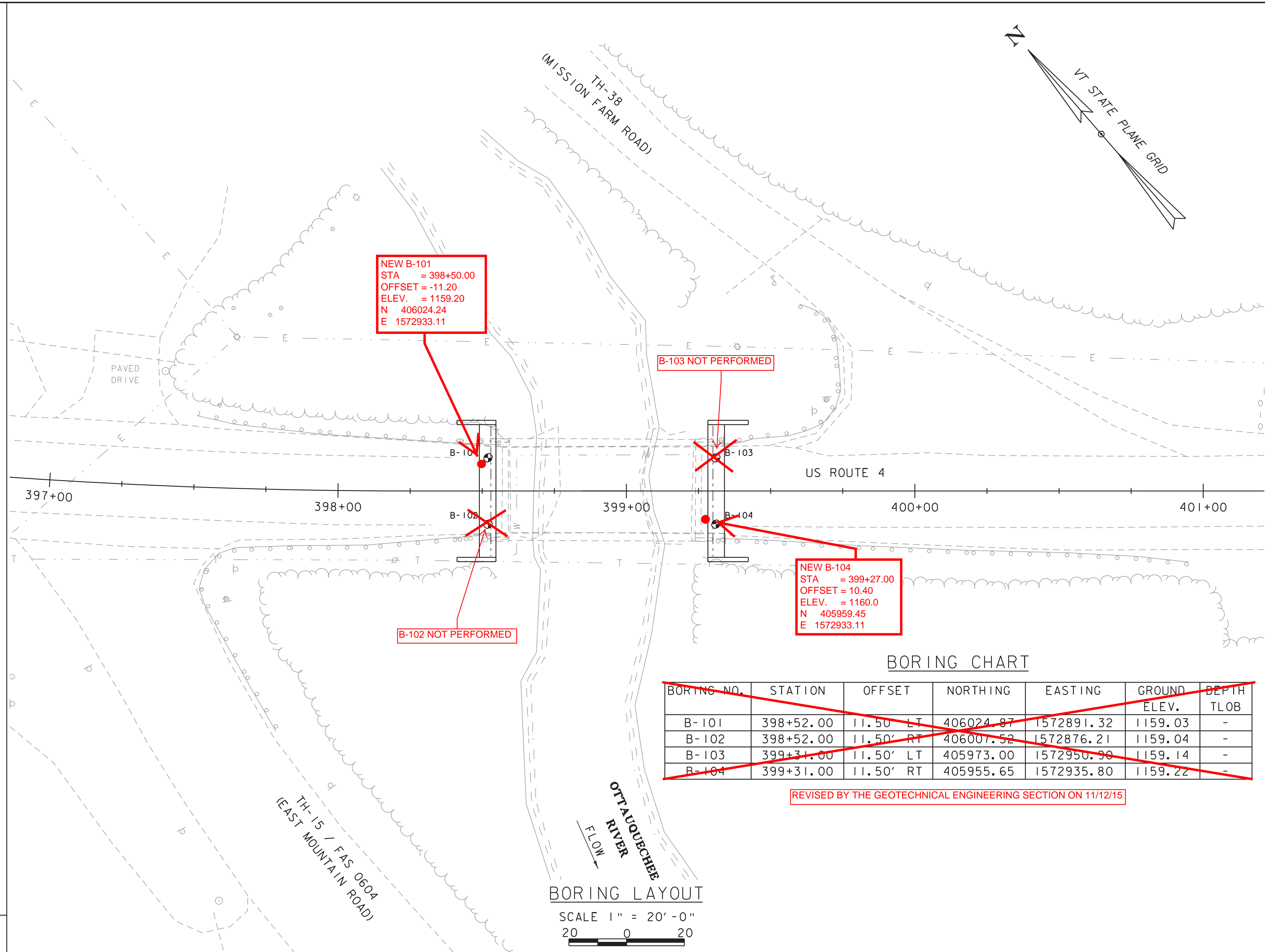
COMMONLY USED SYMBOLS

▼	Water Elevation
⊕	Standard Penetration Boring
⊗	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 3/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	Top of Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
1/2 Rec.	Percent Recovery
ROD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)
VTSPG	NAD83 - See Note 7

COLOR			
blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gr	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.	VARVED - Alternate layers of silt and clay.
BOULDER - A rock fragment with an average dimension > 12 inches.	HARDPAN - Extremely dense soil, cemented layer, not softened when wet.
COBBLE - Rock fragments with an average dimension between 3 and 12 inches.	MUCK - Soft organic soil (containing > 10% organic material).
GRAVEL - Rounded particles of rock < 3" and > 0.075" (#10 sieve).	MOISTURE CONTENT - Weight of water divided by dry weight of soil.
SAND - Particles of rock < 0.075" (#10 sieve) and > 0.0025" (#200 sieve).	FLOWING SAND - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.
SILT - Soil < 0.0025" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.	STRIKE - Angle from magnetic north to line of intersection of bed with a horizontal plane.
CLAY - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.	DIP - Inclination of bed with a horizontal plane.



GENERAL NOTES

- The subsurface explorations shown herein were made between and by the Agency.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
- Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
- Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.



PROJECT NAME: KILLINGTON
 PROJECT NUMBER: BF 020-2(42)
 FILE NAME: z13b260bor.dgn
 PROJECT LEADER: S.E. BURBANK
 DESIGNED BY: R.H. BARNES
 BORING INFORMATION SHEET

PLOT DATE: 8/26/2015
 DRAWN BY: R.H. BARNES
 CHECKED BY: S.E. BURBANK
 SHEET 1 OF 1