



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

BORING LOG

Springfield  
BF 0134(45)  
VT 11 Culv. 60

Boring No.: B-101

Page No.: 1 of 1

Pin No.: 13d336

Checked By: END

Boring Crew: Emerson, Judkins, Gomes

Date Started: 7/28/16 Date Finished: 7/29/16

VTSPG NAD83: N 291257.36 ft E 1641364.34 ft

Station: 365+09 Offset: -52.96

Ground Elevation: 485.4 ft

Type: WB SS  
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 SUB>><<SUB>> = 1.42

Groundwater Observations

Date	Depth (ft)	Notes
07/29/16	8.6	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-1-b, GrSa, brn, Moist, Rec. = 0.9 ft				2-4-3-2 (7)	10.6	36.8	45.3	17.9
		A-1-b, SiGrSa, brn, Moist, Rec. = 1.0 ft, Lab Note: Broken rock was within sample				34-27-3-4 (30)	10.6	35.9	42.4	21.7
5		Field Note: NXDC, Cleaned out casing				4-2-2-6 (4)				
		Field Note: No Recovery								
		Field Note: NXDC, Cleaned out casing								
		A-1-b, GrSa, brn, Moist, Rec. = 0.5 ft				4-4-6-3 (10)	13.9	37.7	44.4	17.9
		Field Note: NXDC, Cleaned out casing								
10		A-1-a, SaGr, gry, Moist, Rec. = 0.2 ft, Lab Note: Broken rock was within sample				R@3.5" (R)	9.2	69.6	25.0	5.4
		Field Note: NXDC, Cleaned out casing								
		A-2-4, SiSaGr, gry, Moist, Rec. = 1.0 ft				12-21-10-14 (31)	11.6	41.5	29.5	29.0
		Field Note: NXDC, Cleaned out casing								
		A-4, GrSaSi, gry, Moist, Rec. = 1.4 ft				10-12-22-20 (34)	11.4	25.3	35.0	39.7
15		A-4, SaSi, gry, Moist, Rec. = 13.0 ft				12-16-20-30 (36)	12.7	12.7	40.0	47.3
		Field Note: NXDC, Cleaned out casing								
		A-4, SaSi, gry, Moist, Rec. = 1.7 ft, Lab Note: A very small amount of clay was within sample. Sample tested non-plastic				10-12-16-26 (28)	11.2	13.8	40.4	45.8
		Field Note: NXDC, Cleaned out casing								
20		A-1-b, SaGr, brn, MTW, Rec. = 1.0 ft				R@2.5" (R)	11.7	48.1	36.7	15.2
		Field Note: NXDC, Cleaned out casing								
		A-2-4, GrSiSa, brn-gry, Moist, Rec. = 0.1 ft, Lab Note: Broken rock was within sample				R@1" (R)	8.8	29.2	36.3	34.5
		20.9 ft - 25.9 ft, Brown and tan, Rusty weathering, biotite-muscovite-quartz-plagioclase schist and Meta-Andesite, with hornblend. Penetrative rust staining and fine sandy silt coating along joints and broken rock. Schist is soft, moderately weathered. Moderately hard, Moderately weathered, Poor rock, NX, RMR=26	1 (70)	44 (0)	4					
25					4					
					2					
					2					
					2					
30		25.9 ft - 30.9 ft, Tan to white, Rusty weathering Meta-Andesite, with hornblende. Persistent rust and orange staining along Meta-Andesite. Hard, Slightly weathered, Poor rock, NX, RMR=34	2 (65-70)	56 (0)	1					
					2					
					1					
					2					
					1					
35		30.9 ft - 35.9 ft, White, Gneiss with brown to tan weathering and green/gray SCHIST, Gneiss is moderately hard. Soft, Moderately weathered, Poor rock, NX, RMR=25	3 (60)	14 (14)	1					
					2					
					2					
					2					
					2					
		Hole stopped @ 35.9 ft								
40		Remarks: Hole collapsed at 6.4 feet.								

Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.  
 <<SUB>><<SUB>> 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.

BORING LOG Z-SPRINGFIELD BF 0134(45).GPJ VERMONT AOT.GDT 9/9/16



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 CENTRAL LABORATORY

**BORING LOG**

**Springfield**  
**BF 0134(45)**  
**VT 11 Culv. 60**

Boring No.: **B-102**

Page No.: **1 of 1**

Pin No.: **13d336**

Checked By: **END**

Boring Crew: Emerson, Judkins, Gomes

Date Started: 7/28/16 Date Finished: 7/28/16

VTSPG NAD83: N 291171.15 ft E 1641329.99 ft

Station: 364+56 Offset: 23.22

Ground Elevation: 491.7 ft

Type:	Casing	Sampler
I.D.:	WB	SS
Hammer Wt:	4 in	1.5 in
Hammer Fall:	N.A.	140 lb.
Hammer/Rod Type:	N.A.	30 in.
Rig:	Auto/AWJ	
	CME 45C SKISUB>><<SUB>>	= 1.42

**Groundwater Observations**

Date	Depth (ft)	Notes
07/28/16		No W.T. observed

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.45 ft					
2.5		A-1-b, GrSa, brn, Moist, Rec. = 1.3 ft	4-3-3-3 (6)	9.2	40.0	46.8	13.2
		A-2-4, SiGrSa, brn, Moist, Rec. = 1.1 ft	4-6-22-14 (28)	11.0	30.4	46.5	23.1
		Field Note:, Rollercone, Cleaned out casing					
5.0		Field Note:, No Recovery	R@3.5" (R)				
		Hole stopped @ 5.3 ft					
7.5		Remarks: Hole collapsed at 2.5 feet.  1.) Hit culvert at 5.3 feet. Aborted drilling operations.					

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

BORING LOG 2 SPRINGFIELD BF 0134(45).GFG VERMONT AOTI.GDT 9/9/16



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 CENTRAL LABORATORY

BORING LOG

Springfield  
 BF 0134(45)  
 VT 11 Culv. 60

Boring No.: **B-102A**

Page No.: 1 of 1

Pin No.: 13d336

Checked By: END

Boring Crew: Emerson, Judkins, Gomes

Date Started: 7/28/16 Date Finished: 7/28/16

VTSPG NAD83: N 291172.28 ft E 1641334.86 ft

Station: 364+61 Offset: 23.22

Ground Elevation: 491.6 ft

Casing Sampler  
 Type: WB SS  
 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 SKISUB>><<SUB>> = 1.42

Groundwater Observations

Date	Depth (ft)	Notes
07/28/16	10.4	W.T. during drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
0 - 0.45		Asphalt Pavement, 0.0 ft - 0.45 ft								
0.45 - 10.0		Field Note:, NXDC, Cleaned out casing								
10.0 - 10.9		A-1-b, GrSa, brn, Moist, Rec. = 0.9 ft				5-4-6-15 (10)	11.7	37.6	48.7	13.7
10.9 - 11.7		A-1-b, GrSa, brn, Moist, Rec. = 0.3 ft				5-7-10-10 (17)	12.7	37.5	45.7	16.8
11.7 - 12.5		Field Note:, NXDC, Cleaned out casing								
12.5 - 13.0		A-1-b, GrSa, brn, Moist, Rec. = 0.8 ft				9-18-R@5" (R)	12.6	29.4	57.2	13.4
13.0 - 13.0		Field Note:, NXDC, Cleaned out casing								
13.0 - 14.3		13.0 ft - 14.3 ft, White, Biotite-muscovite-quartz-plagioclase-hornblend GNEISS, Brown and orange staining along joints. Hard, Slightly weathered, NX	1 (70)	76 (32)	2	Top of Bedrock @ 13.0 ft				
14.3 - 18.0		14.3 ft - 18.0 ft, Gray to black, Biotite-muscovite-quartz-plagioclase SCHIST, Rust staining along joints. Moderately hard, Slightly weathered, Fair rock, RMR=43			3					
18.0 - 23.0		18.0 ft - 23.0 ft, Gray, Interlayered biotite-quartz-plagioclase SCHIST, and white, biotite-muscovite-quartz-plagioclase-garnet GNEISS. Slightly vuggy. Light brown, yellow, and orange staining along joints. Gneiss is hard.. Moderately hard, Slightly weathered, Fair rock, NX, RMR=49	2 (70)	100 (64)	3					
23.0 - 25.0		Hole stopped @ 23.0 ft			2					
25.0 - 25.8		Remarks: Hole collapsed at 8.2 feet.			3					
25.8 - 26.6					3					
26.6 - 27.4					4					

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

BORING LOG - Z SPRINGFIELD BF 0134(45).GPFJ VERMONT AOT.GDT 3/9/10



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BORING LOG

Springfield  
 BF 0134(45)  
 VT 11 Culv. 60

Boring No.: B-103

Page No.: 1 of 1

Pin No.: 13d336

Checked By: END

Boring Crew: Gomes, Judkins, Emerson  
 Date Started: 8/02/16 Date Finished: 8/02/16  
 VTSPG NAD83: N 291227.45 ft E 1641387.84 ft  
 Station: 365+25.10 Offset: -18.50  
 Ground Elevation: 489.5 ft

Casing Type: WB Sampler: SS  
 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 SKISUB>><<SUB>> = 1.42

Groundwater Observations

Date	Depth (ft)	Notes
08/02/16	9.9	W.T. during drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.68 ft								
5		A-1-b, SaGr, brn, Moist, Rec. = 0.8 ft, Lab Note: Broken rock was within sample				7-6-7-6 (13)	8.9	46.5	43.8	9.7
		A-1-b, GrSa, brn, Moist, Rec. = 0.6 ft				7-7-8-6 (15)	9.5	35.3	49.9	14.8
		A-1-b, GrSa, brn, Moist, Rec. = 0.4 ft				9-7-5-7 (12)	13.8	30.0	53.4	16.6
		A-2-4, SiSa, brn, Moist, Rec. = 0.3 ft				7-4-5-3 (9)	13.0	18.8	56.8	24.4
10		A-2-4, SiSa, brn, Moist, Rec. = 0.9 ft				3-1-2-1 (3)	17.6	15.8	60.9	23.3
		Field Note:, Rollercone, cleaned out casing								
15		A-1-b, GrSa, gry-brn, Moist, Rec. = 0.2 ft				1-1-W.H.-8 (1)	13.4	41.0	45.9	13.1
		A-1-a, SaGr, gry-brn, Moist, Rec. = 0.9 ft, Lab Note: Pieces of wood and a lot of broken rock was within sample				5-7-28-19 (35)	11.9	68.4	23.3	8.3
		Field Note:, Rollercone, cleaned out casing								
		A-4, SaSi, gry, Moist, Rec. = 1.2 ft, Lab Note: Some clay was within sample. Sample tested non-plastic				8-2-5-8 (7)	13.3	14.4	35.7	49.9
20		Field Note:, No Recovery				22-R@2.5"				
		A-4, SiSa, gry-brn, Moist, Rec. = 1.5 ft				8-16-27-R@5" (43)	18.5	2.1	51.5	46.4
25		Field Note:, NXDC, cleaned out casing								
		A-4, SiSa, white-brn, Moist, Rec. = 0.1 ft, Lab Note: Sample consisted of weathered rock				R@1"	11.8	1.7	56.4	41.9
35										
		31.5 ft - 36.5 ft, Light green & gray, To white biotite-quartz-plagioclase-pyrite gneiss Meta-Andesite, with hornblende. Slight brown and rust staining along joints. Rare vugs. Hard, Very slightly weathered, Good rock, NX, RMR=69	1 (50)	98 (93)	7					
					7					
					6					
40					5					
					6					
		Hole stopped @ 36.5 ft								
		Remarks: Hole collapsed at 8.7 feet.								

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BORING LOG

Springfield  
BF 0134(45)  
VT 11 Culv. 60

Boring No.: **B-104**

Page No.: 1 of 1

Pin No.: 13d336

Checked By: END

Boring Crew: Gomes, Judkins, Emerson

Date Started: 8/01/16 Date Finished: 8/02/16

VTSPG NAD83: N 291164.18 ft E 1641300.31 ft

Station: 364+25.51 Offset: 23.28

Ground Elevation: 492.1 ft

Type: WB Casing SS Sampler  
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 SUB>><<SUB>> = 1.42

Groundwater Observations

Date	Depth (ft)	Notes
08/02/16	11.2	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.25 ft								
		A-1-b, GrSa, brn, Moist, Rec. = 0.8 ft				--4-4-3 (8)	11.3	32.6	51.1	16.3
		Field Note:, NXDC, Cleaned out casing								
		A-1-b, SaGr, brn, Moist, Rec. = 0.9 ft				4-5-7-14 (12)	10.2	51.5	34.5	14.0
		Field Note:, NXDC, Cleaned out casing								
5		A-1-b, SaGr, brn, Moist, Rec. = 1.2 ft, Lab Note: Broken rock was within sample				16-16-44-15 (60)	10.2	50.0	36.3	13.7
		A-2-4, SiGrSa, gry, Moist, Rec. = 1.0 ft, Lab Note: Broken rock was within sample				12-11-11-19 (22)	10.3	27.1	47.6	25.3
		Field Note:, NXDC, Cleaned out casing								
		Field Note:, No Recovery				R@2.5" (R)				
		Field Note:, NXDC, Cleaned out casing								
10		A-2-4, GrSiSa, gry, Moist, Rec. = 0.7 ft				11-11-11-29 (22)	12.0	21.2	56.4	22.4
		Field Note:, No Recovery				R@5" (R)				
		Field Note:, NXDC, Cleaned out casing								
15		A-4, SiSa, brn, Moist, Rec. = 1.1 ft				21-25-R@5" (R)	15.0	4.1	52.4	43.5
		A-1-b, SaGr, brn, Moist, Rec. = 0.4 ft, Lab Note: Broken rock was within sample				R@5" (R)	10.0	53.1	30.5	16.4
		16.7 ft - 19.7 ft, Gray, Biotite-quartz-plagioclase SCHIST, Brown and rust staining along joints. Vugs forming along plagioclase foliations at 16.9 feet to 17.05 feet. Moderately hard, Very slightly weathered, Fair rock, NX, RMR=46	1 (50)	60 (60)	5					
					5					
					3					
20		19.7 ft - 21.7 ft, Gray, Biotite-muscovite-quartz-plagioclase SCHIST, Brown and orange staining along slickensided joints. Slightly vuggy. Moderately hard, Slightly weathered, Fair rock, NX, RMR=41	2 (50)	20 (55)	5					
					5					
		Hole stopped @ 21.7 ft								
		Remarks: Hole collapsed at 6.4 feet.								
25										

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BORING LOG - Z SPRINGFIELD BF 01.34(45) GPJ VERMONT AUT. GDT 3/19/10