



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

BORING LOG

Bolton
IM 089-2(45)
I-89

Boring No.: **B-102**
Page No.: 1 of 2
Pin No.: 13a090
Checked By: MLM



STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
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BORING LOG

Bolton
IM 089-2(45)
I-89

Boring No.: **B-102**
Page No.: 2 of 2
Pin No.: 13a090
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Boring Crew: JUDKINS, HOOK	Type: Casing WB	Sampler SS	Groundwater Observations			
Date Started: 10/21/15 Date Finished: 10/28/15	I.D.: 4 in	1.5 in	Date	Depth (ft)	Notes	
VTSPG NAD83: N 685809.41 ft E 1531517.81 ft	Hammer Wt: N.A.	140 lb.	10/26/15	34.6	W.T. during drilling	
Station: 128+66 Offset: -36.80	Hammer Fall: N.A.	30 in.	10/27/15	34.9	W.T. during drilling	
Ground Elevation: 347.1 ft	Hammer/Rod Type: Auto/AWJ		10/28/15	34.8	W.T. during drilling	
	Rig: CME 45C TRACK	C = 1.34				

Boring Crew: JUDKINS, HOOK	Type: Casing WB	Sampler SS	Groundwater Observations			
Date Started: 10/21/15 Date Finished: 10/28/15	I.D.: 4 in	1.5 in	Date	Depth (ft)	Notes	
VTSPG NAD83: N 685809.41 ft E 1531517.81 ft	Hammer Wt: N.A.	140 lb.	10/26/15	34.6	W.T. during drilling	
Station: 128+66 Offset: -36.80	Hammer Fall: N.A.	30 in.	10/27/15	34.9	W.T. during drilling	
Ground Elevation: 347.1 ft	Hammer/Rod Type: Auto/AWJ		10/28/15	34.8	W.T. during drilling	
	Rig: CME 45C TRACK	C = 1.34				

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
5		A-2-4, GrSiSa, brn, Moist, Rec. = 1.1 ft, Lab Note: Grass and grass roots were within sample.				2-2-3-4 (5)	13.6	24.1	46.0	29.9
		A-2-4, GrSiSa, brn, Moist, Rec. = 0.9 ft, Lab Note: Broken rock was within sample.				6-7-9-12 (16)	8.8	26.9	43.0	30.1
		A-4, GrSiSa, brn, Moist, Rec. = 1.9 ft				13-13-11-12 (24)	7.4	20.0	43.2	36.8
		A-4, SaSi, brn, Moist, Rec. = 1.5 ft				9-8-8-10 (16)	9.4	15.1	40.3	44.6
		A-4, SiSa, brn, Moist, Rec. = 1.8 ft				7-8-8-9 (16)	8.0	13.8	43.4	42.8
10		A-4, SiSa, brn, Moist, Rec. = 1.5 ft				10-17-12-18 (29)	10.1	19.5	41.2	39.3
		A-2-4, SiSa, brn, Moist, Rec. = 1.7 ft				16-16-15-13 (31)	10.2	13.2	57.4	29.4
		A-4, SiSa, Lt/brn-gry, Moist, Rec. = 1.2 ft				13-11-13-15 (24)	12.8	19.0	44.7	36.3
		A-2-4, GrSiSa, Lt/brn, Moist, Rec. = 1.3 ft				15-13-15-15 (28)	12.1	20.1	46.7	33.2
		A-2-4, GrSiSa, Lt/brn-gry, Moist, Rec. = 0.9 ft				24-30-32 (62)	14.6	23.0	43.6	33.4
20		Field Note: Cleaned out with NXDC								
		A-4, Si, Lt/brn, Moist, Rec. = 0.6 ft, Lab Note: Sample tested non-plastic.				13-14-7-5 (21)	30.7	4.1	8.6	87.3
		Field Note: Cleaned out with NXDC								
30		A-4, Si, Lt/brn-gry, Moist, Rec. = 1.9 ft, Lab Note: Sample tested non-plastic.				6-4-5-5 (9)	28.1	1.6	12.5	85.9
35		A-4, SiSa, brn, Moist, Rec. = 1.6 ft				13-13-8-9 (21)	22.9	12.3	50.9	36.8
40		A-1-b, GrSa, Lt/brn-orange, Moist, Rec. = 0.9 ft, Lab Note: Broken rock was within sample. Sample was rust colored.				12-13-17-15 (30)	15.6	38.4	42.6	19.0
45		Field Note: No Recovery				3-5-8-12 (13)				

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 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.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %		
55		A-1-b, GrSa, gry-brn, Moist, Rec. = 0.5 ft, Lab Note: Broken rock was within sample.				12-28-13-12 (41)	13.2	39.9	47.0	13.1		
		Field Note: Cleaned out with NXDC										
		A-1-b, SiSaGr, gry-brn, Moist, Rec. = 0.8 ft						30-20-10-17 (30)	11.4	45.7	34.0	20.3
60		Field Note: Cleaned out with NXDC				7-6-3-5 (9)						
		Field Note: No Recovery										
65		Field Note: Cleaned out with NXDC				25-30-20-22 (50)	10.3	45.7	39.0	15.3		
		A-1-b, SaGr, brn, Moist, Rec. = 1.3 ft, Lab Note: Broken rock was within sample.										
70		Field Note: Cleaned out with NXDC				45-R@5.0" (R)	10.0	56.5	32.0	11.5		
		A-1-a, SaGr, gry-brn, Moist, Rec. = 0.5 ft, Lab Note: Broken rock was within sample.										
		Field Note: Boulder present 70.9' to 74.0'.										
75		A-1-b, SaGr, gry-brn, MTW, Rec. = 1.4 ft				10-9-9-28 (18)	13.3	45.8	44.9	9.3		
80		77.8 ft - 82.8 ft, Light gray, Muscovite-biotite-quartz SCHIST, with porphyroblasts of albite. Hard, Unweathered, Fair rock, BX, RMR=58	1 (80)	84 (78)	5	Top of Bedrock @ 77.8 ft						
					8							
					5							
					4							
85		82.8 ft - 87.8 ft, Light gray to silver, Muscovite-biotite-quartz SCHIST, with consistent 2 inch horizontal breaks (likely mechanical). Hard, Unweathered, Fair rock, BX, RMR=53	2 (70)	84 (84)	6							
					6							
					6							
					5							
Hole stopped @ 87.8 ft												
90	Remarks: Hole Collapsed at 35.0 feet.											
95	1.) CME 55 track drill used after 14.0 feet. (CE=1.46) 2.) Sleeved 3 inch casing into 4 inch casing at 70.0 feet. 3.) Added bentonite to drilling operation at 70.0 feet.											

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

Boring No.: **B-104**

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Pin No.: 13a090

Checked By: MLM

Bolton
IM 089-2(45)
I-89

	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 55 TRACK	C = 1.46

Groundwater Observations		
Date	Depth (ft)	Notes
10/12/15	35.3	W.T. before drilling
10/13/15	35.8	W.T. before drilling
10/20/15	36.4	W.T. after drilling

Boring Crew: HOOK, JUDKINS, NIETO
 Date Started: 10/07/15 Date Finished: 10/20/15
 VTSPG NAD83: N 685775.19 ft E 1531404.83 ft
 Station: 129+65 Offset: -101.70
 Ground Elevation: 346.0 ft

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Drill Rate in/feet/ft	Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
5		A-1-b, GrSa, brn, Moist, Rec. = 0.6 ft, Lab Note: Grass and Grass Roots were within sample, removed before testing.			WH-2-3-4 (5)	5.0	36.3	50.2	13.5
		A-4, SaSi, Lt/brn-brn, Moist, Rec. = 1.8 ft, Lab Note: Grass and Grass Roots were within sample, removed before testing.			3-4-6-5 (10)	15.5	5.3	38.7	56.0
		A-4, SaSi, Lt/brn-gry, Moist, Rec. = 1.5 ft			3-6-9-14 (15)	14.6	8.0	32.3	59.7
		A-4, SaSi, Lt/brn, Moist, Rec. = 1.7 ft			15-11-11-11 (22)	10.7	10.1	41.0	48.9
10		A-4, SaSi, Lt/brn, Moist, Rec. = 2.0 ft Field Note:., Cleaned out with NXDC			8-8-7-9 (15)	12.3	6.9	34.7	58.4
		A-4, SaSi, brn, MTW, Rec. = 0.5 ft			8-8-8-9 (16)	18.4	10.0	32.1	57.9
15		A-4, GrSaSi, brn, MTW, Rec. = 1.4 ft			10-11-10-28 (21)	15.0	26.6	36.5	36.9
		Field Note:., Cleaned out with NXDC A-2-4, SiGrSa, brn, Moist, Rec. = 0.6 ft, Lab Note: Broken rock was within sample.			25-25-20-14 (45)	12.5	33.5	37.5	29.0
		Field Note:., Cleaned out with NXDC A-4, SaSi, brn, Moist, Rec. = 0.6 ft			8-4-2-2 (6)	18.8	3.9	35.9	60.2
		Field Note:., No Recovery Field Note:., Cleaned out with NXDC A-4, SaSi, brn, Moist, Rec. = 1.1 ft, Lab Note: Layers of black silt were apparent in sample.			2-8-12-12 (20)	15.2	12.1	37.9	50.0
25		Field Note:., Cleaned out with NXDC A-4, SaSi, gry, Moist, Rec. = 0.5 ft			12-9-7-6 (16)	19.4	15.2	37.7	47.1
		A-4, SaSi, Dk/brn, Moist, Rec. = 0.5 ft, Lab Note: Small sticks and wood fibers were within sample.			26.3	11.2	38.4	50.4	
30		Field Note:., Cleaned out with NXDC A-4, Si, gry, Moist, Rec. = 1.0 ft			2-2-2-1 (4)	36.6	0.2	11.5	88.3
		Field Note:., Cleaned out with NXDC A-2-4, GrSa, orange-brn, Moist, Rec. = 1.2 ft, Lab Note: Sample was rust colored.			5-9-9-13 (18)	18.2	20.7	60.9	18.4
40		Field Note:., Cleaned out with NXDC A-1-b, GrSa, orange-brn, Moist, Rec. = 1.0 ft, Lab Note: Broken rock was within sample. Rust colored layers were apparent in sample.			9-14-36-50 (50)	14.4	31.8	48.4	19.8
		Field Note:., Cleaned out with NXDC A-1-b, SaGr, brn, Moist, Rec. = 0.5 ft			7-5-7-7 (12)	10.3	47.2	37.7	15.1

Notes: 2. N Values have not been corrected for hammer energy. C 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

Boring No.: B-104

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Pin No : 13a090

Checked By: MI M

Bolton
IM 089-2(45)
I-89

	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 55 TRACK	C. = 1.46

Boring Crew: HOOK, JUDKINS, NIETO
 Date Started: 10/07/15 Date Finished: 10/20/15
 VTSPG NAD83: N 685775.19 ft E 1531404.83 ft
 Station: 129+65 Offset: -101.70
 Ground Elevation: 346.0 ft

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Drill Rate minutes/ft	Bloves/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
55		Field Note:., Cleaned out with NXDC Field Note:., No Recovery			21-21-16-15 (37)				
60		Field Note:., Cleaned out with NXDC Field Note:., No Recovery			23-15-16-27 (31)	8.9	50.8	31.4	17.8
65		Field Note:., Cleaned out with NXDC A-1-a, SaGr, gry-brn, Moist, Rec. = 0.7 ft, Lab Note: Broken rock was within sample.			17-28-28-23 (56)				
70		Field Note:., Cleaned out with NXDC A-1-a, SaGr, gry-brn, Moist, Rec. = 0.5 ft			17-16-13-11 (29)	9.0	49.8	40.4	9.8
75		Field Note:., Cleaned out with NXDC A-1-a, SaGr, gry, Moist, Rec. = 0.3 ft, Lab Note: Broken rock was within sample.			R@4" (R)	8.9	63.6	25.7	10.7
80		Field Note:., Cleaned out with NXDC A-1-b, SaGr, gry, Moist, Rec. = 0.4 ft			15-15-15-16 (30)	9.3	44.2	43.0	12.8
85		80.0 ft - 85.0 ft, Light gray, Quartz-muscovite-biotite-albite SCHIST, Hard, Very slightly weathered, Fair rock, BX, RMR=52	1	6 7 6 6	Top of Bedrock @ 80.0 ft				
90		85.0 ft - 86.0 ft, Light gray, Quartz-muscovite-biotite SCHIST, Hard, Unweathered, Fair rock, BX, RMR=41 86.0 ft - 90.0 ft, Dark gray, Biotite-quartz SCHIST, with few pyrite porphyroblasts, Hard, Very slightly weathered, Fair rock, BX, RMR=41	2	5 4 3 4 3					
95		Hole stopped @ 90.0 ft							
		Remarks: Hole Collapsed at 24.1 feet. 1.) Stemmed down to 3 inch casing at 67.0 feet. 2.) Started mud drilling at 67.0 feet. 3.) Sample was attempted at 80 feet. No penetration and No recovery.							

Notes: 2. N Values have not been corrected for hammer energy. C is the hammer energy correction factor.
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BORING LOG		Boring No.: <u>B-106</u>
Bolton IM 089-2(45) I-89		Page No.: <u>1 of 2</u>
		Pin No.: <u>13a090</u>
		Checked By: <u>MLM</u>

Boring Crew: <u>HOOK, JUDKINS, NIETO</u>		Type: <u>Casing</u>	<u>WB</u>	<u>Sampler</u>	<u>SS</u>	Groundwater Observations				
Date Started: <u>10/01/15</u> Date Finished: <u>10/06/15</u>		I.D.:	<u>4 in</u>	<u>1.5 in</u>		Date	Depth (ft)	Notes		
VTSPG NAD83: <u>N 685898.57 ft E 1531441.44 ft</u>		Hammer Wt:	<u>N.A.</u>	<u>140 lb.</u>		10/02/15	10.4	W.T. before drilling.		
Station: <u>129+65</u> Offset: <u>27.00</u>		Hammer Fall:	<u>N.A.</u>	<u>30 in.</u>		10/05/15	36.8	W.T. before drilling.		
Ground Elevation: <u>349.6 ft</u>		Hammer/Rod Type:	<u>Auto/AWJ</u>			10/06/15	38.4	W.T. before drilling.		
		Rig:	<u>CME 45C TRACK</u>	<u>C = 1.34</u>						

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 %
5		A-1-b, SaGr, blk, Moist, Rec. = 0.5 ft, Lab Note: Broken rock was within sample.				1-1-3-3 (4)	8.5	48.2	41.1	10.7
		A-1-a, Gr, gry, Moist, Rec. = 0.3 ft, Lab Note: Broken rock was within sample.				2-3-5-11 (8)	4.8	72.8	18.8	8.4
		A-1-a, Gr, gry-brn, Moist, Rec. = 1.0 ft, Lab Note: Broken rock was within sample.				6-9-8-11 (17)	1.6	78.5	14.6	6.9
		A-2-4, SiGrSa, brn-gry, Moist, Rec. = 1.5 ft, Lab Note: Broken rock was within sample.				4-14-7-8 (21)	9.5	35.4	35.5	29.1
		A-2-4, GrSiSa, brn-gry, Moist, Rec. = 1.9 ft				12-12-12-13 (24)	9.2	22.7	47.2	30.1
10		Field Note: Cleaned out with NXDC				14-14-13-14 (27)	8.0	31.3	38.8	29.9
		A-2-4, SiGrSa, brn-gry, Moist, Rec. = 2.0 ft, Lab Note: Broken rock was within sample.				14-13-16-19 (29)	12.5	19.5	36.8	43.7
		A-4, SaSi, brn-gry, Moist, Rec. = 1.2 ft				13-11-14-16 (25)	17.3	13.5	21.3	65.2
		A-4, SaSi, Lt/brn-gry, Moist, Rec. = 1.7 ft				4-5-7-5 (12)	15.2	26.9	36.6	36.5
		Field Note: Cleaned out with NXDC				6-5-4-6 (9)	14.9	20.0	40.2	39.8
15		A-4, GrSiSa, Lt/brn, Moist, Rec. = 0.3 ft, Lab Note: Brown broken glass was within sample.				30-32-R@5" (R)	11.6	34.2	31.4	34.4
		A-4, SiSa, Lt/brn, Moist, Rec. = 0.8 ft								
		Field Note: Cleaned out with NXDC								
		A-4, SaSi, Lt/brn, Moist, Rec. = 1.0 ft				23-8-7-5 (15)	21.1	10.2	33.6	56.2
		Field Note: Cleaned out with NXDC								
20		Field Note: No Recovery.				14-15-15-16 (30)				
		Field Note: No Recovery.								
		A-1-a, SaGr, brn, Moist, Rec. = 1.0 ft, Lab Note: Sample had a very rusty color when washing.				14-7-9-19 (16)	9.7	56.5	32.0	11.5
		Field Note: Cleaned out with NXDC								
		Field Note: Cleaned out with NXDC								
25		A-1-b, GrSa, brn, Moist, Rec. = 0.7 ft				9-6-7-6 (13)	15.1	27.1	64.6	8.3
		Field Note: Cleaned out with NXDC								
		A-1-b, GrSa, brn, Moist, Rec. = 0.6 ft				18-36-39-R@2.5" (75)	13.9	38.9	49.8	11.3
		Field Note: Cleaned out with NXDC								
		Field Note: Cleaned out with NXDC								

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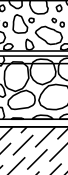
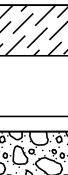
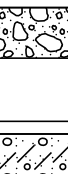
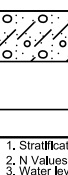
STATE OF VERMONT
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BORING LOG		Boring No.: <u>B-106</u>
Bolton IM 089-2(45) I-89		Page No.: <u>2 of 2</u>
		Pin No.: <u>13a090</u>
		Checked By: <u>MLM</u>

Boring Crew: <u>HOOK, JUDKINS, NIETO</u>		Type: <u>Casing</u>	<u>WB</u>	<u>Sampler</u>	<u>SS</u>	Groundwater Observations				
Date Started: <u>10/01/15</u> Date Finished: <u>10/06/15</u>		I.D.:	<u>4 in</u>	<u>1.5 in</u>		Date	Depth (ft)	Notes		
VTSPG NAD83: <u>N 685898.57 ft E 1531441.44 ft</u>		Hammer Wt:	<u>N.A.</u>	<u>140 lb.</u>		10/02/15	10.4	W.T. before drilling.		
Station: <u>129+65</u> Offset: <u>27.00</u>		Hammer Fall:	<u>N.A.</u>	<u>30 in.</u>		10/05/15	36.8	W.T. before drilling.		
Ground Elevation: <u>349.6 ft</u>		Hammer/Rod Type:	<u>Auto/AWJ</u>			10/06/15	38.4	W.T. before drilling.		
		Rig:	<u>CME 45C TRACK</u>	<u>C = 1.34</u>						

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 %
55		A-2-4, SiGrSa, Lt/brn, Moist, Rec. = 0.8 ft, Lab Note: Broken rock was within sample.				27-26-23-24 (49)	14.5	24.1	54.7	21.2
		Field Note: Cleaned out with NXDC				15-12-11-13 (23)				
		Field Note: No Recovery.				21-20-21-20 (41)				
		Field Note: No Recovery. Appears to be sand.				18-13-15-17 (28)				
		Field Note: No Recovery.				15-14-13-13 (27)	10.5	69.7	21.4	8.9
60		Field Note: No Recovery. Appears to be sand.								
		Field Note: No Recovery.								
		A-1-a, SaGr, brn, Moist, Rec. = 0.7 ft								
		Field Note: Cleaned out with NXDC								
		Field Note: Cleaned out with NXDC								
65		A-2-4, SiSa, brn, Moist, Rec. = 0.4 ft								
		76.1 ft - 81.1 ft, Light gray to dark gray, Biotite-muscovite-quartz SCHIST, with few pyrite porphyroblasts. Faint brown staining on joints. Hard, Very slightly weathered, Fair rock, NX, RMR=57	1 (75-80)	100 (52)	3	Top of Bedrock @ 76.1 ft				
		81.1 ft - 86.1 ft, Dark gray, Biotite-muscovite-quartz SCHIST, Vertical fracture at 82.9-84.1 feet. Light brown and orange staining on joints. Hard, Slightly weathered, Fair rock, NX, RMR=49	2 (75-80)	100 (55)	3					
		Hole stopped @ 86.1 ft								
		Remarks: Hole collapsed at 16.8 feet.								

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 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.

 STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: B-110							
		Bolton IM 089-2(45) I-89		Page No.: 1 of 2 Pin No.: 13a090 Checked By: MLM							
Boring Crew: JUDKINS, HOOK		Casing Type: WB I.D.: 4 in		Sampler SS 1.5 in		Groundwater Observations					
Date Started: 10/30/15 Date Finished: 11/04/15		Hammer Wt: N.A.		140 lb.		Date Depth (ft) Notes					
VTSPG NAD83: N 685859.88 ft E 1531353.95 ft		Hammer Fall: N.A.		30 in.		11/02/15 No W.T. to 22 feet					
Station: 130+37 Offset: -35.60		Hammer/Rod Type: Auto/AWJ				11/03/15 35.0 W.T. before drilling					
Ground Elevation: 347.6 ft		Rig: CME 55 TRACK		C = 1.46		11/04/15 34.5 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 %
5		A-4, Si, brn, Moist, Rec. = 1.2 ft					1-1-2-8 (3)	22.8	1.9	9.8	88.3
		Field Note:, Cobbles and Boulders					9-8-8-13 (16)	15.7	4.6	40.6	54.8
		Field Note:, Cleaned out with NXDC									
10		A-4, SaSi, brn, Moist, Rec. = 1.3 ft					13-35-R@1" (R)	11.8	0.3	28.5	71.1
		Field Note:, Cleaned out with NXDC									
		A-2-4, SiSaGr, gry-brn, Moist, Rec. = 0.8 ft, Lab Note: Broken rock was within sample									
15		A-1-a, SaGr, gry, Moist, Rec. = 0.7 ft					13-38-13-45 (51)	9.6	62.6	26.3	11.1
		Field Note:, Boulder									
		Field Note:, Cleaned out with NXDC									
20		A-4, SiSa, brn, Moist, Rec. = 0.8 ft					12-13-9-9 (22)	17.0	4.8	48.1	47.1
		A-4, SaSi, Dk/gry, Moist, Rec. = 0.8 ft									
		Field Note:, Cleaned out with NXDC									
25		A-4, SaSi, gry-orange, Moist, Rec. = 0.9 ft, Lab Note: Rust colored layers were within sample.					6-8-9-11 (17)	23.8	3.0	23.5	73.5
		Field Note:, Cleaned out with NXDC									
		A-1-b, SaGr, orange-brn, Moist, Rec. = 0.8 ft, Lab Note: Sample had a slight rust color.									
30		Field Note:, Cleaned out with NXDC					8-8-5-8 (13)	7.3	47.9	40.0	12.1
		Field Note:, Cleaned out with NXDC									
		A-2-4, SiGrSa, brn, Moist, Rec. = 0.9 ft									
35		Field Note:, Cleaned out with NXDC					15-3-4-8 (7)	14.2	25.3	54.4	20.3
		Field Note:, Cleaned out with NXDC									
		Field Note:, Cleaned out with NXDC									
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 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.										

 STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: B-110												
		Bolton IM 089-2(45) I-89		Page No.: 2 of 2 Pin No.: 13a090 Checked By: MLM												
Boring Crew: JUDKINS, HOOK		Casing Type: WB I.D.: 4 in		Sampler SS 1.5 in		Groundwater Observations										
Date Started: 10/30/15 Date Finished: 11/04/15		Hammer Wt: N.A.		140 lb.		Date Depth (ft) Notes										
VTSPG NAD83: N 685859.88 ft E 1531353.95 ft		Hammer Fall: N.A.		30 in.		11/02/15 No W.T. to 22 feet										
Station: 130+37 Offset: -35.60		Hammer/Rod Type: Auto/AWJ				11/03/15 35.0 W.T. before drilling										
Ground Elevation: 347.6 ft		Rig: CME 55 TRACK		C = 1.46		11/04/15 34.5 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 %					
45		A-1-a, SaGr, gry-brn, Moist, Rec. = 0.9 ft, Lab Note: Broken rock was within sample					10-6-6-7 (12)	10.7	56.3	34.9	8.8					
		Field Note:, Cleaned out with NXDC										4-7-7-7 (14)	9.2	68.4	24.4	7.2
		A-1-a, SaGr, brn-gry, Moist, Rec. = 0.2 ft, Lab Note: Broken rock was within sample														
50		A-1-a, SaGr, brn-gry, Moist, Rec. = 0.7 ft					9-6-6-7 (12)	11.5	49.9	40.4	9.7					
		Field Note:, Cleaned out with NXDC														
		A-1-a, SaGr, brn, Moist, Rec. = 0.8 ft														
55		Field Note:, Cleaned out with NXDC					8-7-8-7 (15)	11.2	54.1	32.3	13.6					
		A-1-a, SaGr, brn, Moist, Rec. = 0.8 ft														
		Field Note:, Cleaned out with NXDC														
60		Visual Description:, Broken Rock, Rec. = 0.2 ft					20-15-22-20 (37)	1.9								
		Field Note:, Cleaned out with NXDC														
		Field Note:, Cleaned out with NXDC														
65		63.7 ft - 68.7 ft. Light gray to green, Muscovite-biotite-chlorite-quartz-pyrite SCHIST. Light brown and orange staining on joints. Transitions to GREEN SCHIST at 64.8 feet. Massive quartz veins at 65.9-66.55 feet and at 67.0 and 67.5 feet. Hard, Very slightly weathered, Good rock, NX, RMR=62		1 (60-65)	90 (58)	4	Top of Bedrock @ 63.7 ft									
		Hole stopped @ 68.7 ft														
		Remarks: Hole Collapsed at 35.4 feet.														
70																
75																
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 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 2 BOLTON IM089-2(45).GP1 VERMONT AOT.GDT 12/4/15

		STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: B-112 Page No.: 1 of 2 Pin No.: 13a090 Checked By: MLM		
Boring Crew: HOOK, JUDKINS, NIETO Date Started: 9/28/15 Date Finished: 9/29/15 VTSPG NAD83: N 685863.56 ft E 1531494.63 ft Station: 129+04 Offset: 8.70 Ground Elevation: 351.0 ft				Type: Casing 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 TRACK C. = 1.34		Groundwater Observations Date Depth (ft) Notes 09/29/15 22.4 W.T. During Drilling. 09/29/15 42.6 W.T. After Drilling.		
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)		Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
5		Asphalt Pavement, 0.0 ft - 0.92 ft						
		A-1-a, SaGr, gry-brn, Moist, Rec. = 1.3 ft		19-36-27-16 (63)	1.8	58.2	30.9	10.9
10		A-1-b, SiSaGr, brn-gry, Moist, Rec. = 1.8 ft, Lab Note: Broken rock was within sample. Field Note:; Cleaned out with NXDC		20-26-23-27 (49)	4.0	43.9	35.1	21.0
		Field Note:; No Recovery.		8-9-9-10 (18)				
15		A-4, SaSi, Lt/brn-gry, Moist, Rec. = 0.8 ft		9-5-4-4 (9)	11.8	11.3	40.0	48.7
		Field Note:; Cleaned out with NXDC		4-3-3-4 (6)	17.6	17.9	32.0	50.1
20		A-4, SaSi, Lt/brn, Moist, Rec. = 1.0 ft		3-3-4-5 (7)	13.0	22.2	38.7	39.1
		A-4, GrSaSi, Lt/brn, Moist, Rec. = 0.7 ft		7-6-8-9 (14)	13.4	35.9	46.2	17.9
25		A-1-b, GrSa, brn-gry, Moist, Rec. = 0.7 ft, Lab Note: Broken rock was within sample.		4-4-5-9 (9)	15.3	14.3	45.9	39.8
		Field Note:; Cleaned out with NXDC		9-7-8-21 (15)	11.3	26.8	46.3	26.9
30		A-2-4, GrSiSa, brn, Moist, Rec. = 1.0 ft		21-8-9-6 (17)	11.1	38.9	39.8	21.3
		A-1-b, SiGrSa, brn-gry, Moist, Rec. = 0.8 ft, Lab Note: Broken rock was within sample.		28-38-@2.5" (R)	11.7	34.0	35.3	30.7
35		Field Note:; Cleaned out with roller cone		2-2-3-5 (5)	32.3		9.4	90.6
		A-4, Si, gry, Moist, Rec. = 1.2 ft, Lab Note: A very small amount of clay was within sample. Sample tested non-plastic.		2-4-7-6 (11)	28.0	7.5	10.2	82.3
40		Field Note:; Cleaned out with roller cone		10-12-16-18 (28)	14.7	26.7	52.0	21.3
		A-4, Si, gry-brn, Moist, Rec. = 1.3 ft						
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 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.						

		STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: B-112 Page No.: 2 of 2 Pin No.: 13a090 Checked By: MLM		
Boring Crew: HOOK, JUDKINS, NIETO Date Started: 9/28/15 Date Finished: 9/29/15 VTSPG NAD83: N 685863.56 ft E 1531494.63 ft Station: 129+04 Offset: 8.70 Ground Elevation: 351.0 ft				Type: Casing 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 TRACK C. = 1.34		Groundwater Observations Date Depth (ft) Notes 09/29/15 22.4 W.T. During Drilling. 09/29/15 42.6 W.T. After Drilling.		
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)		Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
50		A-1-b, GrSa, blk-Lt/brn, Moist, Rec. = 0.7 ft		10-8-9-8 (17)	15.6	30.6	51.1	18.3
		Field Note:; Cleaned out with NXDC		11-11-9-9 (20)				
55		Field Note:; Cleaned out with NXDC		12-10-7-7 (17)	13.1	35.2	53.5	11.3
		Field Note:; No Recovery.		12-11-13-13 (24)	14.0	4.6	77.4	18.0
60		A-1-b, GrSa, brn, Moist, Rec. = 0.6 ft						
		A-2-4, Sa, brn, Moist, Rec. = 0.2 ft						
65		Hole stopped @ 62.0 ft						
		Remarks: Hole collapsed at 4.8 feet.						
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 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.						

 STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: B-113						
		Bolton IM 089-2(45) I-89		Page No.: <u>1 of 2</u> Pin No.: <u>13a090</u> Checked By: <u>MLM</u>						
Boring Crew: <u>HOOK, JUDKINS, NIETO</u>		Casing Type: <u>WB</u> I.D.: <u>4 in</u>	Sampler SS <u>1.5 in</u>	Groundwater Observations						
Date Started: <u>10/06/15</u> Date Finished: <u>10/07/15</u>		Hammer Wt: <u>N.A.</u>	140 lb.	Date	Depth (ft)	Notes				
VTSPG NAD83: <u>N 685776.23 ft</u> <u>E 1531443.98 ft</u>		Hammer Fall: <u>N.A.</u>	30 in.	10/07/15	24.3	W.T. After Drilling.				
Station: <u>129+27</u> Offset: <u>-89.50</u>		Hammer/Rod Type: <u>Auto/AWJ</u>								
Ground Elevation: <u>346.0 ft</u>		Rig: <u>CME 55 TRACK</u>	<u>C = 1.46</u>							
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)				Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
5		Asphalt Pavement, 0.0 ft - 1.0 ft								
		A-1-a, SaGr, gry-brn, Moist, Rec. = 1.1 ft, Lab Note: Broken rock was within sample.				20-28-21-14 (49)	4.2	61.3	29.5	9.2
		A-4, SiSa, brn-gry, Moist, Rec. = 2.0 ft				13-11-11-11 (22)	7.9	16.3	46.7	37.0
		A-4, SaSi, Lt/brn-gry, Moist, Rec. = 1.7 ft				10-4-6-5 (10)	10.4	16.1	37.2	46.7
		A-4, SiSa, Lt/brn, Moist, Rec. = 1.4 ft				4-3-2-3 (5)	8.9	12.8	44.2	43.0
		A-4, SiSa, Lt/brn, Moist, Rec. = 0.3 ft				1-3-1-2 (4)	11.0	5.8	47.7	46.5
		A-2-4, GrSiSa, brn, Moist, Rec. = 1.1 ft				3-2-1-3 (3)	9.7	29.8	36.9	33.3
		A-4, SiSa, brn, Moist, Rec. = 0.9 ft				15-10-2-3 (12)	9.9	16.6	46.7	36.7
		A-4, SaSi, brn, Moist, Rec. = 2.0 ft Field Note:, Cleaned out with NXDC.				3-3-3-4 (6)	12.9	10.7	39.0	50.3
		A-1-b, GrSi, brn, Moist, Rec. = 0.7 ft, Lab Note: Broken rock was within sample.				6-6-13-6 (19)	10.9	60.7	19.2	20.1
20		A-1-b, SiGrSa, brn, Moist, Rec. = 0.8 ft				4-3-3-3 (6)	11.2	32.7	44.5	22.8
25		Field Note:, Cleaned out with NXDC.								
		A-4, SiSa, Lt/brn-Lt/gry, Moist, Rec. = 1.3 ft, Lab Note: Wood fibers and a rusty nail were within sample, removed before testing.				12-3-22-18-11 (40)	13.7	14.9	49.6	35.5
		Field Note:, Cleaned out with NXDC.								
30		A-4, Si, Dk/gry, Moist, Rec. = 1.8 ft, Lab Note: Sample tested non-plastic.				WH-WH-WH-WH (WH)	36.2	3.8	17.1	79.1
35		A-4, SaSi, gry, Moist, Rec. = 1.5 ft, Lab Note: Sample tested non-plastic.				WH-WH-3-2 (3)	30.5	4.6	23.2	72.2
		A-4, SiSa, gry, Moist, Rec. = 0.5 ft, Lab Note: Sample tested non-plastic.					27.4	4.4	56.2	39.4
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 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.								

 STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: B-113						
		Bolton IM 089-2(45) I-89		Page No.: <u>2 of 2</u> Pin No.: <u>13a090</u> Checked By: <u>MLM</u>						
Boring Crew: <u>HOOK, JUDKINS, NIETO</u>		Casing Type: <u>WB</u> I.D.: <u>4 in</u>	Sampler SS <u>1.5 in</u>	Groundwater Observations						
Date Started: <u>10/06/15</u> Date Finished: <u>10/07/15</u>		Hammer Wt: <u>N.A.</u>	140 lb.	Date	Depth (ft)	Notes				
VTSPG NAD83: <u>N 685776.23 ft</u> <u>E 1531443.98 ft</u>		Hammer Fall: <u>N.A.</u>	30 in.	10/07/15	24.3	W.T. After Drilling.				
Station: <u>129+27</u> Offset: <u>-89.50</u>		Hammer/Rod Type: <u>Auto/AWJ</u>								
Ground Elevation: <u>346.0 ft</u>		Rig: <u>CME 55 TRACK</u>	<u>C = 1.46</u>							
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)				Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
45		A-1-b, SaGr, brn, Moist, Rec. = 1.0 ft, Lab Note: Broken rock was within sample.				6-11-9-9 (20)	13.8	44.4	39.9	15.7
		Field Note:, Cleaned out with NXDC.								
		A-2-4, GrSa, brn, Moist, Rec. = 1.0 ft				10-11-16-21 (27)	13.8	25.4	62.1	12.5
50		Field Note:, Cleaned out with NXDC.								
		A-1-b, GrSa, Lt/brn, Moist, Rec. = 1.0 ft				12-11-12-14 (23)	12.0	38.3	51.8	9.9
55		A-1-b, GrSa, Lt/brn-Lt/gry, Moist, Rec. = 0.8 ft				16-13-14-17 (27)	10.8	40.3	46.2	13.5
60		A-1-b, Sa, Lt/gry, Moist, Rec. = 0.6 ft				4-8-9-14 (17)	15.6	5.7	87.5	6.8
65		Hole stopped @ 62.0 ft								
		Remarks: Hole Collapsed at 25.3 feet.								
		1.) Soft drilling 27.0-40.0 feet.								
70										
75										
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 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.								



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

BORING LOG

Bolton
IM 089-2(45)
I-89

Boring No.: **B-114**

Page No.: **1 of 1**

Pin No.: **13a090**

Checked By: **MLM**

Boring Crew: **NIETO, HOOK, JUDKINS**

Date Started: **9/28/15** Date Finished: **9/28/15**

VTSPG NAD83: **N 685874.15 ft E 1531474.99 ft**

Station: **129+26** Offset: **13.20**

Ground Elevation: **350.6 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 TRACK	C_e = 1.34

Groundwater Observations

Date	Depth (ft)	Notes
09/28/15		No water to depth

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.6 ft					
		A-1-a, SaGr, gry-brn, Moist, Rec. = 1.4 ft, Lab Note: Broken rock was within sample.	9-16-21-15 (37)	6.5	57.8	30.5	11.7
		A-1-b, SaGr, gry-brn, Moist, Rec. = 0.5 ft, Lab Note: Broken rock was within sample.	11-10-10-14 (20)	7.8	50.5	34.0	15.5
		A-2-4, SiSa, brn, Moist, Rec. = 1.1 ft		6.3	18.1	58.8	23.1
5		A-4, SaSi, brn, Moist, Rec. = 1.3 ft	8-6-4-3 (10)	11.8	8.2	29.1	62.7
		A-4, SaSi, brn, Moist, Rec. = 1.4 ft	3-3-2-4 (5)	11.9	3.7	32.1	64.2
10		A-2-4, SiSa, brn, Moist, Rec. = 1.2 ft	6-4-3-4 (7)	9.3	14.8	50.8	34.4
		A-2-4, SiSa, brn, Moist, Rec. = 1.2 ft	3-3-3-3 (6)	8.1	15.1	54.4	30.5
		A-4, SaSi, brn, Moist, Rec. = 1.6 ft	1-2-2-2 (4)	11.4	6.8	45.0	48.2
15		A-4, SaSi, brn, Moist, Rec. = 1.1 ft	2-3-3-3 (6)	11.9	12.1	41.3	46.6
		Field Note:, No Recovery	6-8-8-8 (16)				
20		Field Note:, No Recovery	8-9-8-10 (17)				
		Hole stopped @ 21.0 ft					
25		Remarks: Hole Collapsed at 21.0 feet. 1.) When sampling from 11-13 feet, the sampler went 0.3 feet past the bottom depth.					
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.						

BORING LOG 2 BOLTON IM089-2(45).GPJ VERMONT AOT.GDT 11/23/15