



STATE OF VERMONT
 AGENCY OF TRANSPORTATION
 MATERIALS & RESEARCH SECTION
 SUBSURFACE INFORMATION

BORING LOG

SOUTH HERO
STP HES 028-1(22)
US-2 & VT-314 ROADWAY

Boring No.: **B-152**
 Page No.: **1 of 1**
 Pin No.: **12B016**
 Checked By: **MLM**

Boring Crew: GARROW, DAIGNEAULT, JUDKINS
 Date Started: 7/12/13 Date Finished: 7/16/13
 VTSPG NAD83: N 790026.20 ft E 1426440.50 ft
 Station: 60+93 Offset: -38.00
 Ground Elevation: 123.22 ft

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 SKID C = 1.33

Groundwater Observations

Date	Depth (ft)	Notes

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 %	LL %	PI %
0		Visual Description:, Topsoil with Gr Sa, Dk/brn, Moist, Rec. = 0.4 ft				1-2-2-3 (4)	24.4					
0.4		A-4, SiSa, brn, Wet, Rec. = 0.7 ft				3-3-3-5 (6)	38.5	17.2	41.4	41.4		
1.1		A-7-6, Cl, Lt/brn, Moist, Rec. = 0.4 ft				3-6-7-10 (13)	28.7	0.2	5.4	94.4	48	25
1.5		Visual Description:, Cl, gry-brn, Rec. = 1.8 ft, Material similar as 10-12 ft.				2-4-7-10 (11)	31.4					
1.9		Field Note:, Cl Shelby Tube, gry-brn, Moist, Rec. = 1.5 ft										
2.0		A-7-6, Cl, gry-brn, Moist, Rec. = 2.0 ft				2-3-4-5 (7)	35.2	1.7	6.6	91.7	47	26
2.2		A-7-6, Cl, gry-brn, Moist, Rec. = 2.0 ft, Shelby Tube sample.					29.3	0.2	12.1	87.7	41	21
2.4		A-7-6, Cl, gry-brn, Moist, Rec. = 2.0 ft					32.3	3.3	17.0	79.7	47	26
21.8		A-4, SaSi, gry, Moist, Rec. = 1.1 ft				2-7-6-R (13)	11.1	19.8	26.9	53.3	18	6
21.8 - 26.8		21.8 ft - 26.8 ft, Dark gray, Calcareous Shale, Moderately hard, Unweathered, Good rock, NXMDC, RMR = 71	1 (45)	92 (86)	7			Top of Bedrock @ 21.8 ft				
25					7							
					6							
					4							
					4							
		Hole stopped @ 26.8 ft										
		Remarks: 1. Hole collapsed at 25.1 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.

BORING LOG 2 SOUTH HERO STP HES 028-1(22).GPJ VERMONT AOT.GDT 8/12/13



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BORING LOG

SOUTH HERO
STP HES 028-1(22)
US-2 & VT-314 ROADWAY

Boring No.: **B-153**
 Page No.: **1 of 1**
 Pin No.: **12B016**
 Checked By: **MLM**

Boring Crew: DAIGNEAULT, HALL
 Date Started: 6/20/13 Date Finished: 6/20/13
 VTSPG NAD83: N 789995.60 ft E 1426359.00 ft
 Station: 61+16 Offset: 46.00
 Ground Elevation: 124.83 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 SKID C_r = 1.33

Groundwater Observations		
Date	Depth (ft)	Notes
06/20/13	1.0	Casing removed.

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 %	LL %	PI %
0.0 - 0.72		Asphalt Pavement, 0.0 ft - 0.72 ft										
5.0 - 8.0		Visual Description: CI with large pieces of Broken Rock, brn, Moist, Rec. = 0.4 ft, Insufficient sample for testing.				4-7-5-5 (12)	20.1					
8.0 - 10.0		Visual Description: CI, brn, Moist, Rec. = 1.6 ft, Material similar as 8-10 ft.				2-3-3-4 (6)	40.9					
10.0 - 11.1		A-7-6, CI, brn, Moist, Rec. = 2.0 ft, Shelby Tube sample.					37.5	3.3	7.8	88.9	64	37
11.1 - 12.0		A-7-6, CI, brn, Moist, Rec. = 1.9 ft				1-3-3-3 (6)	45.5	1.8	7.3	90.9	63	35
12.0 - 15.7		Shelby Tube, brn, Moist, Rec. = 1.1 ft, 10.0 ft - 11.1 ft				(R@11.1")						
15.7 - 18.0		A-4, Cisi with sand, brn, Moist, Rec. = 1.6 ft				4-9-8-9 (17)	16.1	14.7	29.6	55.7	25	10
18.0 - 22.0		Visual Description: Cisi with large pieces of Broken Rock, brn, Moist, Rec. = 0.5 ft, Insufficient sample for testing. 15.7 ft - 18.0 ft, Dark gray, Calcareous Shale, Moderately hard, Unweathered, Good rock, NXDC, RMR = 67	1 (45)	87 (70)		10-R@2.5" (R)	7.8					
22.0 - 25.0		18.0 ft - 22.0 ft, Dark gray, Calcareous Shale, Moderately hard, Unweathered, Good rock, BXMDC, RMR = 67	2 (45)	90 (73)	7 5 6 6							
25.0 - 22.0		Hole stopped @ 22.0 ft										
25.0		Remarks: 1. Hole collapsed at 15.5 ft.										

Notes:
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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.

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SOUTH HERO
STP HES 028-1(22)
US-2 & VT-314 ROADWAY

Boring No.: **B-154**
 Page No.: 1 of 1
 Pin No.: 12B016
 Checked By: MLM

Boring Crew: DAIGNEAULT, HALL, JUDKINS
 Date Started: 7/11/13 Date Finished: 7/11/13
 VTSPG NAD83: N 789971.01 ft E 1426448.80 ft
 Station: 61+49 Offset: -41.00
 Ground Elevation: 123.43 ft

Casing H.S.A. Sampler SS
 I.D.: 3.25 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_i = 1.33

Groundwater Observations

Date	Depth (ft)	Notes

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
5		A-1-b, SaGr, brn, Moist, Rec. = 0.6 ft	5-17-25-14 (42)	8.9	49.7	33.5	16.8		
		Visual Description:, Broken Rock with Sand, brn, Moist, Rec. = 0.6 ft		3.9					
5		A-6, SiCl, brn, Moist, Rec. = 0.7 ft	2-5-7-7 (12)	21.8		18.9	81.1	38	17
		A-7-6, Cl, brn, Moist, Rec. = 0.2 ft	3-4-6-9 (10)	25.9		4.0	96.0	43	22
		A-7-6, Cl, brn, Moist, Rec. = 1.7 ft	3-7-9-8 (16)	25.7		4.7	95.3	43	22
		Visual Description:, Clay, brn, Moist, Rec. = 1.8 ft, Material similar as 6-8 ft.	2-5-6-8 (11)	29.4					
10		A-7-6, Cl, brn, Moist, Rec. = 1.8 ft	1-2-4-7 (6)	36.7	0.3	9.0	90.7	43	23
15		A-7-6, Cl, brn, Moist, Rec. = 2.0 ft	1-2-1-3 (3)	32.8	3.9	13.1	83.0	47	25
20		A-4, SaClSi, brn, Moist, Rec. = 1.4 ft	1-1-2-3 (3)	14.1	11.6	31.3	57.1	20	8
25		Field Note:, Auger refusal at 24.0 ft., Started BXMDC core							
		Field Note:, Bit broke off. Could not continue.							
Hole stopped @ 24.4 ft									
Remarks: 1. Auger refusal at 24.0 ft. 2. Attempted to core with BXMDC. 3. Bit broke completely off of the core barrel and could not continue.									

Notes:
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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.

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BORING LOG

SOUTH HERO
STP HES 028-1(22)
US-2 & VT-314 ROADWAY

Boring No.: **B-155**
 Page No.: 1 of 1
 Pin No.: 12B016
 Checked By: MLM

Boring Crew: GARROW, HALL
 Date Started: 6/21/13 Date Finished: 6/21/13
 VTSPG NAD83: N 789950.80 ft E 1426395.40 ft
 Station: 61+64 Offset: 14.00
 Ground Elevation: 123.49 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 SKID C = 1.33

Groundwater Observations		
Date	Depth (ft)	Notes
06/21/13	2.0	While 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 %	LL %	PI %
0.0 - 0.35		Asphalt Pavement, 0.0 ft - 0.35 ft										
		Visual Description:, Broken Rock, blk, Moist, Rec. = 0.2 ft				8-2-3-2 (5)						
5		Visual Description:, Cl, brn, Moist, Rec. = 1.9 ft, Material similar as 7-9 ft.				2-5-5-6 (10)	31.1					
		Shelby Tube, brn, Moist, Rec. = 1.8 ft, 5.0 ft - 7.0 ft										
		A-7-6, Cl, brn, Moist, Rec. = 2.0 ft				2-3-4-5 (7)	41.0	5.8	5.2	89.0	55	29
10		Shelby Tube, brn, Moist, Rec. = 1.5 ft, 9.0 ft - 11.0 ft										
		Visual Description:, Cl, brn, Moist, Rec. = 1.0 ft, Material similar as 7-9 ft.				2-3-4-5 (7)	40.4					
15		A-4, CISi with sand, brn, Moist, Rec. = 1.6 ft				3-3-6-6 (9)	15.8	15.4	27.8	56.8	24	10
17.8 - 20.8		17.8 ft - 20.8 ft, Dark gray, Calcareous Shale, Moderately hard, Unweathered, Good rock, NXMDC, RMR = 67	1 (45)	73 (67)	7							
20.8 - 22.8		20.8 ft - 22.8 ft, Dark gray, Calcareous Shale, Moderately hard, Unweathered, Good rock, NXMDC, RMR = 67	2 (45)	75 (70)	6							
		Hole stopped @ 22.8 ft										
25		Remarks: 1. Hole collapsed at 15.8 ft.										

Notes:
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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.

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SOUTH HERO
STP HES 028-1(22)
US-2 & VT-314 ROADWAY

Boring No.: **B-157**
 Page No.: 1 of 1
 Pin No.: 12B016
 Checked By: MLM

Boring Crew: GARROW, HALL
 Date Started: 6/24/13 Date Finished: 6/24/13
 VTSPG NAD83: N 789746.70 ft E 1426467.20 ft
 Station: 63+74 Offset: -38.00
 Ground Elevation: 121.06 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 C = 1.33

Groundwater Observations		
Date	Depth (ft)	Notes
06/24/13	4.8	While drilling.

Depth (ft)	Strata (*)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
0.0 - 1.5		Asphalt Pavement, 0.0 ft - 1.5 ft							
5.0 - 6.0		A-4, GrSaSi, brn, Moist, Rec. = 0.4 ft, Small layers of clay were noticeable.	2-3-2-4 (5)	14.3	26.1	36.3	37.6		
6.0 - 7.0		A-4, GrSaSi, brn, Moist, Rec. = 1.0 ft	4-4-4-3 (8)	16.6	23.5	35.7	40.8	23	6
7.0 - 8.0		Visual Description:, Broken Rock with Clay, blk-brn, Moist, Rec. = 0.5 ft	6-7-8-11 (15)	11.6					
8.0 - 9.0		Visual Description:, Large pieces of Broken Rock with sand & clay, brn, Moist, Rec. = 0.7 ft	6-5-7-6 (12)	11.8					
9.0 - 10.0		A-2-6, GrCl with sand, brn, Moist, Rec. = 0.7 ft, Black Wood pieces were within sample.	9-8-5-5 (13)	25.6	35.2	30.4	34.4	33	12
10.0 - 11.0		A-6, SiCl with sand, brn, Moist, Rec. = 1.3 ft	2-2-5-6 (7)	25.0	12.6	28.0	59.4	32	14
15.0 - 16.0		A-4, ClSi with sand, brn, Moist, Rec. = 1.8 ft	1-2-5-3 (7)	18.9	13.9	20.9	65.2	27	10
20.0 - 21.0		Visual Description:, ClSi with sand, brn, Moist, Rec. = 0.7 ft, Material similar as 25-26.9 ft.	WH-3-2-3 (5)	13.2					
25.0 - 26.0		A-4, ClSi with sand, brn, Moist, Rec. = 1.5 ft	1-2-5-R@5.0" (7)	11.1	26.2	26.2	47.6	19	7
26.9		Hole stopped @ 26.9 ft							
30.0		Remarks: 1. Hole collapsed at 23.2 ft.							

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SOUTH HERO
STP HES 028-1(22)
US-2 & VT-314 ROADWAY

Boring No.: **B-161b**
 Page No.: 1 of 1
 Pin No.: 12B016
 Checked By: MLM

Boring Crew: DAIGNEAULT, HALL
 Date Started: 6/14/13 Date Finished: 6/17/13
 VTSPG NAD83: N 789746.70 ft E 1426411.20 ft
 Station: 63+74 Offset: 18.00
 Ground Elevation: 121.5 ft

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 SKID C_c = 1.33

Groundwater Observations		
Date	Depth (ft)	Notes
06/17/13	0.0	AM, In casing.
06/17/13	14.2	Casing removed.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Field Note:, Cleaned out with roller cone to 6.0 feet							
5									
		A-1-b, SiSaGr, blk, Moist, Rec. = 0.4 ft, Broken Rock was within sample.	5-3-3-3 (6)	11.1	56.6	22.2	21.2		
		A-1-b, SiSaGr, blk, Moist, Rec. = 0.3 ft	2-2-1-2 (3)	14.5	50.7	25.7	23.6		
10		A-7-6, Cl, brn, Moist, Rec. = 1.0 ft	2-5-2-3 (7)	34.5	14.5	19.0	66.5	45	24
		Field Note:, No Recovery	2-3-5-5 (8)						
15		A-6, Cl, gry, Moist, Rec. = 2.0 ft	WH-WH-1-2 (1)	30.0	1.2	9.2	89.6	39	20
		Shelby Tube, Rec. = 1.7 ft, 17.0 ft - 19.0 ft							
20		A-4, SaCISi with sand, gry, Moist, Sample taken off Vane.		14.7	18.4	27.7	53.9	22	9
25		A-4, GrSaSi, gry, Moist, Rec. = 0.4 ft	2-6-6-7 (12)	12.5	29.4	32.1	38.5	18	6
		Hole stopped @ 27.0 ft NLTD							
30		Remarks: 1. Hole collapsed at 14.5 ft.							

Notes:
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