

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

BORING LOG
Richard BR# 0302(29)
Richford, VT
GeoDesign # 750-09.13

Boring No.: B-4
Page No.: 1 of 3
Pin No.: 12158
Checked By: JFW

Boring Crew: J. Leenhardt (TransTech), A. Barbovici (GeoDesign)
Date Started: 9/03/13 Date Finished: 9/04/13
VSPG MADDS: M 909724.15 ft E 1592624.76 ft
Station: 44+58 Offset: 5' R
Ground Elevation: 437 ft

Type: Casing Sampler
I.D.: 4 in 2 in
Hammer Wt: 140 lb. 140 lb.
Hammer Fall: 30 in. 30 in.
Hammer/rod Type: Auto/NEW
Rig: CME 550K ATV CE = ~1.5

Groundwater Observations (3)
Date Depth (ft) Notes
09/03/13 10.0 Wet sample
09/04/13 9.5 In Casing

Depth (ft)	Strat (ft)	CLASSIFICATION OF MATERIALS (Description)	Pen (lb/ft²)	Casing		Moisture Content (%)	Gravel %	Sand %	Fines %	LL %	PL %
				Core No. (ft)	Drill Rate (min/ft)						
0	0	6" Asphalt									
0-1	0-1	S1 (0.5' to 2'): Medium dense, tan fine to coarse SAND, little fine gravel, little SILT, slightly moist. (Roadbase F8) Rec. = 1.08 ft (AASHTO M145 Classification: A-1-b.)	8-15-14 (26)	4.7	29.3	51.9	18.8	NP	NP		
1-2	1-2	S2 (2' to 4'): Medium dense, brown fine to coarse SAND, some fine to coarse gravel, some SILT, moist. (Subbase F8) Rec. = 1.0 ft (AASHTO M145 Classification: A-1-b.)	11-9-7-6 (16)	8.0	42.5	35.7	21.8	NP	NP		
2-3	2-3	S3 (4' to 6'): Loose, brown fine to coarse SAND, some SILT, little fine gravel, moist. (Possible F8) Rec. = 0.67 ft (AASHTO M145 Classification: A-2-4.)	3-2-3-2 (5)	16.0	26.1	52.5	21.4	NP	NP		
3-4	3-4	S4 (6' to 8'): Loose, brown and gray fine to coarse SAND, some SILT, trace fine gravel, very moist. (Possible F8) Rec. = 1.08 ft (AASHTO M145 Classification: A-2-4.)	4-3-1-3 (4)	23.2	8.5	58.4	32.1	NP	NP		
4-5	4-5	S5 (9' to 11'): Loose, gray SILT, little fine to coarse SAND, trace fine gravel (concentrated in top of sample), wet. (SH / Sand) Rec. = 1.17 ft (AASHTO M145 Classification: A-4.)	3-3-2-4 (5)	25.1	9.6	4.2	86.2	22	1		
5-6	5-6	S6 (11' to 13'): Medium dense, gray SILT, some Clayey SILT, trace fine Sand, wet. (SH / Sand) Rec. = 1.67 ft (AASHTO M145 Classification: A-4.)	4-8-5-6 (11)	27.8	1.3	98.7	25	6			
6-7	6-7	S7 (14' to 16'): Loose, gray SILT and Clayey SILT (laminated), trace fine Sand, wet. (SH / Sand) Rec. = 1.67 ft (AASHTO M145 Classification: A-4.)	3-4-3-3 (7)	28.8	1.0	99.0	24	5			
7-8	7-8	S8A (16' to 17') - Upper 8" of S8: Medium dense, gray SILT, trace Clayey SILT, trace fine Sand, wet. (SH / Sand) Rec. = 1.0 ft (AASHTO M145 Classification: A-4.)	5-2-8-10 (10)	27.4	2.7	97.3	22	2			
8-9	8-9	S8B (17' to 18') - Lower 4" of S8: Medium dense, gray fine to coarse SAND, some SILT, some fine gravel, wet. (Diastal TB) (AASHTO M145 Classification: A-2-4.)	9-16-20 (26)	9.5	35.3	34.2	30.5	NP	NP		
9-10	9-10	S9 (19' to 21'): Dense, gray fine to coarse SAND, some fine to coarse gravel, some SILT, moist to wet. (Diastal TB) Rec. = 1.33 ft (AASHTO M145 Classification: A-2-4.)	24-29-27-28 (56)	10.0	32.7	32.0	35.5	NP	NP		
10-11	10-11	S10 (21' to 23'): Very dense, gray/green fine to coarse SAND and SILT, some fine gravel, moist to wet. (Diastal TB) Rec. = 1.25 ft (AASHTO M145 Classification: A-2-4.)	80/5.5" (8)	9.1	29.7	32.5	37.8	NP	NP		
11-12	11-12	S11 (24' to 24.4'): Refusal, gray SILT and fine to coarse SAND, some fine to coarse gravel, moist to wet. (Diastal TB) Rec. = 0.42 ft (AASHTO M145 Classification: A-4.)	80/5.5" (8)	9.7	14.4	33.8	51.8	NP	NP		
12-13	12-13	S12 (26' to 28.4'): Refusal, gray SILT and fine to coarse SAND, some fine gravel, moist. (Diastal TB) Rec. = 0.42									

Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
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3. Only test results have been made of fines and water content data. Fractures of granular material may occur due to other factors than those present at the time measurements were made.

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				Core No. (ft)	Drill Rate (min/ft)							
0	0	ft (AASHTO M145 Classification: A-4.)										
35	35	S13 (54' to 34.3'): Refusal, gray SILT, some fine to coarse SAND, some fine to coarse gravel (fractured, platy), moist. (Diastal TB) Rec. = 0.33 ft (AASHTO M145 Classification: A-4.)	80/4" (8)	9.3	29.0	28.9	44.1	NP	NP			
40	40	S14 (50' to 39.2'): Refusal, gray and white SILT, some fine to coarse gravel, some fine to coarse SAND, moist. (Diastal TB) Rec. = 0.25 ft (AASHTO M145 Classification: A-4.)	100/3" (6)	8.9	36.5	24.0	39.5	NP	NP			
45	45	S15 (44' to 44.2'): Refusal, gray WEATHERED PHYLLITE. C1 (44' to 48'): Very poor quality, gray to greenish-gray, fine-grained weathered to extremely weathered (majority of core weathered) PHYLLITE, fracture angle estimated of 70 to 90 degrees.	C1 25 (0)	2.5	100/2" (6)	4.3						
50	50	S16 (49' to 49.1'): Refusal, gray WEATHERED PHYLLITE with highly weathered zones. C2 (49' to 54'): Fair quality, greenish-gray fine grained, slightly to moderately weathered PHYLLITE, fracture angle approximately 45 to 70 degrees.	C2 78 (50)	5.5	100/1" (6)	2				Top of Bedrock @ 49.0 ft		
55	55	C3 (54' to 56'): Poor quality, greenish-gray fine grained, moderately weathered PHYLLITE, fracturing approximately 70 to 90 degrees.	C3 80 (25)	3.5		3.5						
		Hole stopped @ 56.0 ft										

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65	65	Remarks: 1) Hammer efficiency correction factor is assumed. Elevation, station and offset are estimated by GeoDesign from site plans provided by VTrans and topped measurements from existing features made in the field by GeoDesign personnel. They should be considered accurate only to the degree implied by the method of location used. 2) Samples S2 and S4 were not performed in accordance with ASTM D1586, (samples taken immediately after preceding spill upon sample without first clearing the borehole with the roller bit). 3) Soil moisture descriptions may not accurately depict actual conditions due to wash and drive drilling methods. Observe brown return water to approximately 10' deep, then turning gray. 4) Drove casing to 10' deep prior to advancing borehole open hole with the roller bit to 17' deep. At 17' deep encountered gravelly soils resulting in loss of water. Drive casing to 21 feet deep (prior to sampling S10) and advance the remainder of the borehole open hole with the roller bit until beginning curing of 44' deep. 5) Encountered weathered rock in sample S15 at 44' deep. Attempted core from 44' to 49' deep with low recovery / ROD sample obtained. Cleaned hole with roller bit to 49 feet and attempted spill again. 6) Return water light gray during rock core. Core fines inflated due to drill string oscillation leading to driller using a lower RPM drilling speed and having stop approximately 1 to 4 times per minute to correct, particularly for C2 and C3. 7) Borehole grouted with 1 bag portland cement, 1/2 bag bentonite powder, and 40 gallons water. Topped off borehole with approximately 3 inches of cold patch asphalt at the ground surface. 8) All visual descriptions are per the Burmister classification system. All lab gradations are per the AASHTO M 145 classification system.									
70	70										
75	75										
80	80										
85	85										

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