

	STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION	BORING LOG		Boring No.: 8-1A/B
		Richard BRF 0302(28) Richard, VT GeoDesign # 750-09.13	Page No.: 1 of 3 Pin No.: 12158 Checked By: JFW	Richard BRF 0302(28) Richard, VT GeoDesign # 750-09.13
Boring Crew: J. Leonhardt (TransTech), A. Barboiu (GeoDesign) Date Started: 9/04/13 Date Finished: 9/05/13 VTSFG MOBS: N 909895.07 ft E 1592596.89 ft Station: 44+19 Offset: S' L Ground Elevation: 436.5 ft	Casing Sampler Type: FJ SS L.O.: 4 in 2 in Hammer Wt: 140 lb. 140 lb. Hammer Fall: 30 in. 30 in. Hammer/Rod Type: Auto/NWJ Rig: CME S50X ATV CE = ~1.5	Groundwater Observations (3) Date: 09/04/13 Depth (ft): Notes: See Note 3.		

Depth (ft)	Strat (ft)	CLASSIFICATION OF MATERIALS (Description)	Run (ft)	Core Rec. (ft)	DR Bit (ft)	Wash. Content %	Gravel %	Sand %	Fines %	LL %	PL %	
5		8" Asphalt S1 (0.5' to 2'): Medium dense, brown-gray fine to coarse SAND, little fine gravel, little SILT, slightly moist. (TII) Rec. = 1.0 ft (AASHTO M145 Classification: A-1-b.) S2 (2' to 4'): Medium dense, brown-gray fine to coarse SAND, some fine to coarse gravel, little SILT, slightly moist. (TII) Rec. = 1.42 ft (AASHTO M145 Classification: A-1-b.) S3 (4' to 6'): Medium dense, brown fine to coarse SAND and fine to coarse GRAVEL, little SILT, very moist to wet. (TII) Rec. = 1.17 ft (AASHTO M145 Classification: A-1-b.) S4 (6' to 8'): Loose, brown fine to coarse SAND, some SILT, little fine gravel, very moist. (Passable FT) Rec. = 0.83 ft (AASHTO M145 Classification: A-2-4.) S5 (8' to 11'): Loose, no recovery. Rec. = 0.0 ft	18-9-8 (17)	4.2	35.4	48.5	15.1	NP	NP			
10		S6 (11' to 13'): Medium dense; S6A (Upper 5'): Brown fine to coarse SAND and SILT, trace fine gravel (concentrated at top of sample), wet. S6B (Lower 3'): Gray SILT, trace fine sand, wet. (Sand/Silt) Rec. = 0.87 ft (AASHTO M145 Classification: A-4.) C1 (13' to 13.7'): Hard, slightly weathered, gray with white QUARTZITE BOULDER.	4-6-11 (17)	7.1	41.4	43.3	15.3	NP	NP			
15		S7 (14' to 16'): Dense, greenish-gray fine to coarse GRAVEL and SILT, some fine to coarse sand, moist. (Glacial Till) Rec. = 0.5 ft (AASHTO M145 Classification: A-2-4.) S8 (16' to 18'): Dense, gray fine to coarse SAND, some SILT, some fine gravel, moist to wet. (Glacial Till) Rec. = 1.17 ft (AASHTO M145 Classification: A-2-4.) S9 (19' to 19.3'): Refused, gray SILT, some fine to coarse sand, some fine to coarse gravel (fractured), wet. (Glacial Till) Rec. = 0.25 ft (AASHTO M145 Classification: A-4.) S10 (21' to 21.2'): Refused, gray fine to coarse GRAVEL, some fine to coarse sand, little SILT, wet. (Glacial Till) Rec. = 0.17 ft (AASHTO M145 Classification: A-1-b.)	10-9-5 (15)	10.2	49.5	35.6	14.9	NP	NP			
20		S11 (24' to 24.5'): Refused, gray SILT and fine to coarse SAND, trace fine gravel, moist. (Glacial Till) Rec. = 0.5 ft (AASHTO M145 Classification: A-4.)	4-5-4-5 (8)	15.7	21.6	48.9	28.5	NP	NP			
25		S12 (29' to 28.5'): Refused, gray SILT and fine to coarse SAND, little fine gravel, moist. (Glacial Till) Rec. = 0.5 ft	7-4-5-7 (8)	7.4	5.5	7.0		NP	NP			
			7-6-6-6 (12)	28.7	2.3	97.7		NP	NP			
			16-19-19 (38)	10.5	48.1	17.5	34.4	NP	NP			
			9-18-18 (38)	10.4	38.0	31.5	29.5	NP	NP			
			90/3" (6)	8.5	38.4	23.4	38.2	NP	NP			
			90/2" (6)	7.5	63.1	20.0	16.9	NP	NP			
			100/6" (6)	8.5	14.9	31.7	53.4	NP	NP			
			100/6" (6)	9.0	18.1	29.9	52.0	NP	NP			

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

	STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION	BORING LOG		Boring No.: 8-1A/B
		Richard BRF 0302(28) Richard, VT GeoDesign # 750-09.13	Page No.: 1 of 3 Pin No.: 12158 Checked By: JFW	Richard BRF 0302(28) Richard, VT GeoDesign # 750-09.13
Boring Crew: J. Leonhardt (TransTech), A. Barboiu (GeoDesign) Date Started: 9/04/13 Date Finished: 9/05/13 VTSFG MOBS: N 909895.07 ft E 1592596.89 ft Station: 44+19 Offset: S' L Ground Elevation: 436.5 ft	Casing Sampler Type: FJ SS L.O.: 4 in 2 in Hammer Wt: 140 lb. 140 lb. Hammer Fall: 30 in. 30 in. Hammer/Rod Type: Auto/NWJ Rig: CME S50X ATV CE = ~1.5	Groundwater Observations (3) Date: 09/04/13 Depth (ft): Notes: See Note 3.		

Depth (ft)	Strat (ft)	CLASSIFICATION OF MATERIALS (Description)	Run (ft)	Core Rec. (ft)	DR Bit (ft)	Wash. Content %	Gravel %	Sand %	Fines %	LL %	PL %
35		(AASHTO M145 Classification: A-4.) S13 (34' to 35'): Refused, gray fine to coarse SAND and SILT, little fine gravel, wet. (Glacial Till) Rec. = 0.83 ft (AASHTO M145 Classification: A-4.)	58-100/3.5" (6)	12.2	18.0	46.3	35.7	NP	NP		
40		S14 (38' to 38.4'): Refused, gray and greenish gray fine to coarse SAND and SILT, some fine gravel, wet. Approximately 2" in spoon shoe of possible weathered bedrock. (Glacial Till) Rec. = 0.42 ft (AASHTO M145 Classification: A-2-4.) Inferred Weathered Bedrock C2 (41' to 48'): Poor quality, gray-greenish gray, moderately hard, fine grained, moderately weathered PHYLLITE interbedded with Quartz, fracture angle approximately 45 to 90 degrees.	100/3.5" (6)	11.8	35.2	30.4	34.4	NP	NP		
45		C3 (48' to 51'): Poor quality, greenish gray, moderately hard, fine grained, moderately weathered PHYLLITE, fracture angle approximately 80 to 80 degrees.	C2	93 (48)	3.5						
50		Hole stopped @ 51.0 ft B-1A abandoned; B-1B end of Core	C3	67 (47)	4						
55		Remarks: 1) Hammer efficiency correction factor is assumed. Elevation, station and offset are estimated by GeoDesign from site plans provided by VTrans and taped 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) Sample S2 not performed in accordance with ASTM D1596, (sampled immediately after sample S1 without clearing the borehole with the roller bit). 3) Soil moisture descriptions may not accurately depict actual conditions due to wash and drive drilling methods. Wash water observed to be brown in color to approximately 11' deep, then turning gray by 15' deep. 4) Cored through a boulder from 15' to 13.7' deep. Lost water upon breaking through. Casing became out of alignment while attempting to drive through boulder. Abandoned location and moved to B-1B, offset 3.5' east/west. (approximate STA 44+16, 44+17).									

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

	STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION	BORING LOG		Boring No.: 8-1A/B
		Richard BRF 0302(28) Richard, VT GeoDesign # 750-09.13	Page No.: 1 of 3 Pin No.: 12158 Checked By: JFW	Richard BRF 0302(28) Richard, VT GeoDesign # 750-09.13
Boring Crew: J. Leonhardt (TransTech), A. Barboiu (GeoDesign) Date Started: 9/04/13 Date Finished: 9/05/13 VTSFG MOBS: N 909895.07 ft E 1592596.89 ft Station: 44+19 Offset: S' L Ground Elevation: 436.5 ft	Casing Sampler Type: FJ SS L.O.: 4 in 2 in Hammer Wt: 140 lb. 140 lb. Hammer Fall: 30 in. 30 in. Hammer/Rod Type: Auto/NWJ Rig: CME S50X ATV CE = ~1.5	Groundwater Observations (3) Date: 09/04/13 Depth (ft): Notes: See Note 3.		

Depth (ft)	Strat (ft)	CLASSIFICATION OF MATERIALS (Description)	Run (ft)	Core Rec. (ft)	DR Bit (ft)	Wash. Content %	Gravel %	Sand %	Fines %	LL %	PL %
5		5) Advanced casing in B-18 to 14' deep prior to continuing with soil sampling. 6) Noted occasional roller bit grinding/chatter below 18' deep, on inferred gravel. 7) Encountered inferred weathered bedrock at approximately 39.2' deep based on spRl spoon resistance. Roller bit penetration slowed to approximately 1 inch in 5 minutes of approximately 41' deep on inferred top of competent rock. Began rock core at 41' deep. 8) Used reduced drilling RPM and pressure for entire rock core. Encountered oscillations of drill string below 48' deep, most pronounced from 50' to 51' deep, where drill bit had to pause every 10 to 30 seconds to correct. 9) Grouted borehole 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 of the rock surface. 10) All visual descriptions are per the Burslar classification system. All lab gradations are per the AASHTO M 145 classification system.									
70											
75											
80											
85											

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