

	STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION	BORING LOG		Boring No.: B-1	
		Bridge No. 93 over CAP Railroad Castleton BR# 015-2(10) (GeoDesign #750-08.14)		Page No.: 1 of 3 Pin No.: 12b13B Checked By: SPK	
Boring Crew: J. Leanhart (TransTech), J. Gilman (GeoDesign) Date Started: 10/18/13 Date Finished: 10/22/13 VTSPP MADS: N 403295.98 ft E 1452512.75 ft Station: 18+86 Offset: 8.40 Ground Elevation: 410.9 ft		Casing Sampler Type: FJ SS I.D.: 4 in. 1.38 in. Hammer Wt: 140 lb. 140 lb. Hammer Fall: 30 in. 30 in. Hammer/rod Type: Auto/WNJ Rig: CME S50X ATV CE = -1.5		Groundwater Observations (3) Date Depth (ft) Notes 10/21/13 27.8 in casing (2 days)	

Depth (ft)	Swell (1)	CLASSIFICATION OF MATERIALS (Description)	Moisture Content % (M ₁₀₀)	Moisture Content %	Gravel %	Sand %	Fine %	LL %	PL %	U _c
0-5		Existing Bridge Deck (Approx.) Air Space Between Bridge Deck and Ground Surface (See Remark 5).								
5-15		S1 (15' to 17'): Very loose, brown fine to coarse SAND, some SILT, little fine gravel, trace Roof Fibers, wet. Rec. = 1.0 ft (AASHTO M145 Classification: A-2-4).	14.8	26.0	43.2	30.8	NP	NP		
15-20		S2 (17' to 18'): Loose, brown fine to coarse SAND, some SILT, little fine gravel, wet. Rec. = 0.5 ft (AASHTO M145 Classification: A-2-4).	14.8	26.9	41.3	31.8	NP	NP		
20-25		S3 (19' to 21'): Medium dense, brown fine to coarse SAND, some SILT, little fine to coarse gravel, wet. Rec. = 0.7 ft (AASHTO M145 Classification: A-2-4).	14.0	33.0	39.3	27.7	NP	NP		
25-30		S4 (21' to 23'): Very loose, brown fine to coarse SAND, some SILT, some fine gravel, wet. Rec. = 0.4 ft (AASHTO M145 Classification: A-1-b).	13.1	33.8	41.9	24.5	NP	NP		
30-35		S5 (23' to 25'): Soft, tan with gray seams, SILT & CLAY, trace fine to coarse sand, trace fine gravel, wet. Rec. = 0.9 ft (AASHTO M145 Classification: A-4).	11.1	37.7	0.8	2.8	98.6	32	8	
35-40		S6 (29' to 31'): Medium dense, gray fine to coarse SAND and SILT & CLAY, little fine to coarse gravel, wet. Rec. = 1.2 ft (AASHTO M145 Classification: A-4).	11.4	29.9	31.8	38.5	22	5		
40-45		S7 (34' to 36'): Medium dense, gray fine to coarse SAND and Clayey SILT, trace fine gravel, wet. Rec. = 1.2 ft	11.8							
45-50		S8 (39' to 41'): Medium dense, no recovery. Rec. = 0.0 ft	11.3							
50-55		S9 (44' to 48'): Medium dense, gray SILT & CLAY and fine to coarse SAND, little fine to coarse gravel, wet. Rec. = 1.2 ft (AASHTO M145 Classification: A-4).	11.2	29.6	28.1	44.3	25	6		
55-60		S10 (49' to 51'): Medium dense, gray SILT & CLAY and fine to coarse SAND,	11.4							

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 test readings have been made of fines and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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55-60		S11 (54' to 56'): Dense, gray SILT & CLAY and fine to coarse SAND, little fine to coarse gravel, wet. Rec. = 0.7 ft	18.0	28.1	26.1	45.8	25	6		
60-65		S12 (59' to 61'): Dense, gray SILT & CLAY and fine to coarse SAND, little fine to coarse gravel, wet. Rec. = 0.9 ft (AASHTO M145 Classification: A-4).	11.3	28.1	26.1	45.8	25	6		
65-70		S13 (64' to 66'): Dense, gray SILT & CLAY and fine to coarse SAND, little fine to coarse gravel, wet. Rec. = 1.2 ft	11.5							
70-75		S14 (74' to 76'): Dense, gray Clayey SILT, some fine to coarse sand, little fine gravel, wet. Rec. = 1.5 ft (AASHTO M145 Classification: A-4).	13.2	23.7	22.8	53.5	24	4		
75-80		S15 (84' to 86'): Dense, gray Clayey SILT, some fine to coarse sand, little fine gravel, wet. Rec. = 1.0 ft	10.9							
80-85		S16 (84' to 86'): Dense, gray SILT & CLAY, some fine to coarse sand, trace fine gravel, wet. Rec. = 1.5 ft (AASHTO M145 Classification: A-4).	15.1	17.7	23.7	58.6	26	6		

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100-105		S17 (104' to 106'): Refusal, gray SILT & CLAY and fine to coarse SAND, little fine gravel, wet. Rec. = 0.9 ft	26.32	30.2	26.5	43.3	24	6		
105-110		S18 (114' to 116'): Refusal, gray SILT & CLAY and fine to coarse SAND, little fine gravel, wet. Rec. = 0.9 ft (AASHTO M145 Classification: A-4).	30.51	10.0	30.2	26.5	43.3	24	6	
110-115		S19 (120' to 122'): Very dense, gray SILT & CLAY and fine to coarse SAND, little fine gravel, wet. Rec. = 1.0 ft	30.46	8.7						
115-120		Hole stopped @ 122.0 ft Boring terminated at 122 feet deep with no refusal.								
120-125		Remarks: 1. Exploration locations were topped in the field by GeoDesign. Elevations were estimated based on topographic plan provided by V&B. 2. Sample moisture descriptions may not accurately reflect in-situ conditions due to wash-drive drilling methods. 3. Visual soil descriptions are per the Burmister system. Lab testing gradations reported are per AASHTO M145. 4. Samples S2 and S4 were not sampled in accordance with ASTM D 1566 procedures (borehole was not advanced between consecutive samples). 5. Boring was drilled through 6 inch core hole (performed by VTrans 10/18/13) and depths are measured from the bridge deck. Distance from deck to ground surface below was approximately 15 feet. 6. Driller advanced casing to 30 feet deep and then open hole below 30 feet deep; noted loss of water when drilling between 40 and 45 feet; drove casing to 50 feet deep. 7. Driller noted excessive rig chatter while advancing roller till from 71 to 72 feet deep (possible cobble/gravel). 8. At end of day on 10/18/13 borehole advanced to 76 feet deep. On 10/21/13, casing advanced to 80 feet deep. 9. Driller reported borehole instability while attempting to sample S4 to 86 feet deep (cave in ~5'). Therefore, driller advanced casing to 86 feet. 10. At end of day on 10/21/13 borehole advanced to 86 feet deep with casing at 95 feet deep. 11. Soil samples were tested by VTrans soil laboratory and results were transmitted to GeoDesign for incorporation into boring logs.								

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