

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

**BORING LOG**

Bridge No. 93 over C&P Railroad  
Castleton BR# 015-2(10)  
(GeoDesign #750-09.14)

Boring No.: B-6  
Page No.: 1 of 3  
Pin No.: 12b138  
Checked By: SPK

Boring Crew: Leonhardt (TransTech), JGG/JFW (GeoDesign)  
Date Started: 10/22/13 Date Finished: 10/24/13  
VTSFG NAD83: N 403359.36 ft E 1452541.92 ft  
Station: 19+54 Offset: 8.30  
Ground Elevation: 413.4 ft

Type: FJ SS  
L.O.: 4 in. 1.38 in.  
Hammer Wt: 140 lb. 140 lb.  
Hammer Fall: 30 in. 30 in.  
Hammer/Rod Type: Auto/MWJ  
Rig: CME 550X ATV CE = ~1.5

Casing Sampler  
Groundwater Observations (3)  
Date Depth (ft) Notes  
10/24/13 See Remark 2

Depth (ft)	Strat (1)	CLASSIFICATION OF MATERIALS (Description)	Moisture Content (%)	Gravel %	Sand %	Fines %	LL %	PL %
0-2	Existing Bridge Deck (Approx.)	Air Space Between Bridge Deck and Ground Surface (See Remark 4).						
2-1	S1 (13' to 15')	Very loose, tan brown fine to coarse SAND, some SIL, little fine to coarse Gravel, trace Asphalt, dry. Rec. = 0.8 ft (ASHTO M145 Classification: A-2-4).	2-1-1 (2)	9.0	22.8	44.9	32.5	NP
2-2	S2 (15' to 17')	Loose, tan brown SILT, some fine to coarse Sand, little fine Gravel, little Asphalt, dry. Rec. = 1.0 ft (ASHTO M145 Classification: A-4).	2-2-2 (4)	17.4	17.8	15.9	66.3	NP
2-3	S3 (17' to 19')	Very loose, brown fine to coarse SAND, some SIL, little fine to coarse Gravel, wet. Rec. = 0.5 ft (ASHTO M145 Classification: A-1-B).	2-3-3 (5)	16.8	19.9	57.1	21.4	NP
3-2	S4 (19' to 21')	Loose, tan brown SILT and fine to coarse SAND, little fine Gravel, wet. Rec. = 0.8 ft (ASHTO M145 Classification: A-4).	3-2-2 (4)	20.9	23.6	32.6	43.8	NP
3-3	S5 (21' to 23')	Loose, (Top 10") similar description as S4; (Bottom 12") tan brown with reddish layers Clayey SILT, trace fine to medium Sand, wet. Rec. = 1.8 ft (ASHTO M145 Classification: A-3).	2-3-3 (8)	31.6	1.2	96.8	26	1
3-4	S6 (24' to 26')	Medium, gray with dark gray layers, SILT & CLAY, trace fine to coarse Sand, trace fine Gravel, wet. Rec. = 2.0 ft (ASHTO M145 Classification: A-4).	WON-2-2 (4)	37.2	1.5	1.1	97.4	31
2-4	S7 (26' to 31')	Medium dense, gray Clayey SILT and fine to coarse SAND, little fine to coarse Gravel, wet. Rec. = 0.7 ft	2-4-9-14 (15)	24.3				
8-11	S8 (34' to 36')	Medium dense, gray fine to coarse SAND, some SIL, some fine to coarse Gravel, wet. Rec. = 0.3 ft (ASHTO M145 Classification: A-2-4).	8-11-16 (23)	11.3	38.7	31.6	29.7	NP
6-12	S9 (39' to 41')	Medium dense, gray Clayey SILT and fine to coarse SAND, little fine to coarse Gravel, wet. Rec. = 1.1 ft (ASHTO M145 Classification: A-4).	6-12-14 (26)	12.5	27.0	26.2	46.8	27
8-11	S10 (44' to 46')	Dense, gray layered Clayey SILT (grading locally to SILT & CLAY) and fine to coarse SAND, little fine to coarse Gravel (occasionally decomposed), wet. Rec. = 0.75 ft	8-11-19 (30)	11.4				
8-10	S11 (49' to 51')	Medium dense, gray SILT & CLAY (grading locally to Clayey	8-10-15	11.0				

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 of times 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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Groundwater Observations (3)  
Date Depth (ft) Notes  
10/24/13 See Remark 2

Depth (ft)	Strat (1)	CLASSIFICATION OF MATERIALS (Description)	Moisture Content (%)	Gravel %	Sand %	Fines %	LL %	PL %
58	S18	and fine to coarse SAND, some fine to coarse Gravel, wet. Rec. = 1.5 ft						
9-12	S12 (50' to 61')	Dense, gray SILT & CLAY (grading locally to Clayey SILT) and fine to coarse SAND, some fine to coarse Gravel, wet. Rec. = 0.85 ft (ASHTO M145 Classification: A-4).	9-12-18 (30)	10.3	29.6	26.7	43.7	24
11-15	S13 (60' to 71')	Dense, gray SILT & CLAY (grading locally to Clayey SILT) and fine to coarse SAND, some fine to coarse Gravel, wet. Rec. = 1.33 ft	11-15-21 (36)	11.9				
10-16	S14 (78' to 81')	Dense, gray SILT & CLAY (grading locally to Clayey SILT) and fine to coarse Sand, little fine to coarse Gravel, wet. Rec. = 1.17 ft (ASHTO M145 Classification: A-4).	10-16-19-22 (34)	12.5	23.0	26.7	50.3	25
9-15	S15 (89' to 91')	Dense, gray SILT & CLAY (grading locally to Clayey SILT) and fine to coarse SAND, little fine to coarse Gravel, wet. Rec. = 1.0 ft	9-15-19 (34)	13.5				
Hole stopped @ 91.0 ft Boring terminated at 91 feet deep with no refusal.								

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<p>REMARKS:</p> <ol style="list-style-type: none"> <li>Exploration locations were taped in the field by GeoDesign. Elevations were estimated based on topographic plan provided by VTR.</li> <li>Sample moisture descriptions may not accurately reflect in-situ conditions due to wash-drive drilling methods. Unable to discern ground water elevation due to continuously adding water to the borehole during roller bit advance.</li> <li>Samples S2 and S4 were not sampled in accordance with ASTM D 1586 procedures (borehole was not advanced between consecutive samples).</li> <li>Boring was drilled through 8 inch core hole (performed by VTRs 10/16/13) and depths are measured from the bridge deck. Distance from deck to ground surface below was 13 feet.</li> <li>At end of day on 10/22/13, borehole advanced to 41 feet deep.</li> <li>After sampling S13 at 60' deep noted rods beginning to bind on inferred cobbles between 50' and 60' deep. Driller advanced casing to 60' deep prior to continuing with borehole advance to S14 at 78' deep.</li> <li>At end of day on 10/23/13, borehole advanced to 91 feet deep.</li> <li>Soil samples were tested by VTRs soil laboratory and results were transmitted to GeoDesign for incorporation into boring logs.</li> </ol>								

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