

	STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION	BORING LOG		Boring No.:	B-4
		Bridge No. 93 over C&P Railroad CastIron BR# 015-2(10) (GeoDesign #750-09.14)		Page No.:	1 of 3
Boring Crew: J. Leonhardt (TransTech), J. Gilman (GeoDesign) Date Started: 10/16/13 Date Finished: 10/17/13 VSPG MADS: N 403336.83 ft E 1452518.45 ft Station: 19+28 Offset: 10.50 Ground Elevation: 388.9 ft		Casing Sampler Type: FJ SS L.D.: 4 in. 1.38 in. Hammer Wt: 140 lb. 140 lb. Hammer Fall: 30 in. 30 in. Rig: CME 550X ATV CE = ~1.5	Groundwater Observations (3) Date Depth (ft) Notes 10/17/13 See Remark 2		

Depth (ft)	Strat(1)	CLASSIFICATION OF MATERIALS (Description)	Moisture Content (%)	Gravel %	Sand %	Fines %	LL %	PL %	PT %
2-5-13	(10)	S1 (0' to 2'): Medium dense, dark brown SILT, some fine to coarse Sand, some fine to coarse Gravel, loose Root Fibers/Wood, moist. Rec. = 0.6 ft (AASHTO M145 Classification: A-4.)	7.3	57.3	28.2	36.5	HP	HP	
12-12-14-7	(10)	S2 (2' to 4'): Medium dense, brown fine to coarse SAND, some fine to coarse Gravel, some SILT, dry. Rec. = 1.6 ft (AASHTO M145 Classification: A-1-b.)	7.6	38.1	40.0	21.9	HP	HP	
12-28-30	(10)	S3 (4' to 6'): SILT, gray with dark gray seams, SILT & CLAY, trace fine Gravel, trace fine to coarse Sand, wet (dark some higher plasticity). Rec. = 1.2 ft	30.5	1.5	0.9	97.6			
12-10-20	(10)	S4 (6' to 8'): Medium dense, gray SILT & CLAY, some fine to coarse Sand, little fine to coarse Gravel, wet (top 3" similar description as S3). Rec. = 1.3 ft (AASHTO M145 Classification: A-4.)	11.2	15.5	24.2	52.6	23	5	
8-14-14	(10)	S5 (8' to 10'): Medium dense, gray SILT & CLAY, some fine to coarse Sand, little fine to coarse Gravel, wet. Rec. = 0.4 ft							
6-8-11-13	(18)	S8 (14' to 16'): Medium dense, gray fine to coarse SAND, some fine to coarse Gravel, some Clayey SILT, wet. Rec. = 0.2 ft							
8-10-12-13	(22)	S7 (19' to 21'): Medium dense, gray SILT and fine to coarse SAND, some fine to coarse Gravel, wet. Rec. = 1.0 ft (AASHTO M145 Classification: A-4.)	12.4	30.4	27.3	42.3	HP	HP	
14-12-18-16	(28)	S8 (24' to 26'): Medium dense, no recovery. Rec. = 0.0 ft							
7-9-12-19	(21)	S9 (29' to 31'): Medium dense, gray SILT & CLAY and fine to coarse SAND, little fine to coarse Gravel, wet. Rec. = 1.5 ft (AASHTO M145 Classification: A-4.)	12.1	23.2	26.6	50.2	28	6	
7-12-17-19	(28)	S10 (34' to 36'): Medium dense, gray SILT & CLAY and fine to coarse SAND, little fine to coarse Gravel, wet. Rec. = 1.0 ft	11.8						
6-9-15-18	(24)	S11 (39' to 41'): Medium dense, gray SILT & CLAY and fine to coarse SAND, little fine to coarse Gravel, wet. Rec. = 1.4 ft							
8-12-18-21	(30)	S12 (44' to 46'): Dense, gray SILT, some fine to coarse Sand, some fine to coarse Gravel, wet. Rec. = 0.8 ft (AASHTO M145 Classification: A-4.)	11.2	30.2	26.0	43.8	HP	HP	
16-13-		S13 (49' to 51'): Dense, no recovery. Rec. = 0.0 ft							

Notes: 1. Stratification lines represent approximate boundary between material types. Boundaries may be gradent. 2. If Values have not been corrected for hammer energy, CE is the hammer energy correction factor. 3. Higher blow 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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10-15-14	(17)	S14 (59' to 61'): Dense, gray fine to coarse SAND, some Clayey SILT, wet. Rec. = 0.1 ft							
10-15-13-20	(32)	S15 (64' to 65'): Hard, gray SILT & CLAY, some fine to coarse Sand, little fine Gravel, wet. Rec. = 1.5 ft (AASHTO M145 Classification: A-4.)	13.5	22.8	25.4	51.8	26	6	
12-17-22-23	(38)	S16 (74' to 76'): Hard, gray SILT & CLAY, some fine to coarse Sand, little fine Gravel, wet. Rec. = 1.5 ft	17.2						
15-20-20-26	(36)	S17 (84' to 86'): Refusal, gray Clayey SILT, some fine to coarse Sand, little fine Gravel, wet. Rec. = 1.7 ft (AASHTO M145 Classification: A-4.)	13.6	12.8	21.9	83.3	20	3	
20-26-48-37	(64)	S18 (94' to 96'): Very dense, gray Clayey SILT, some fine to coarse Sand, little fine Gravel, wet. Rec. = 1.5 ft	9.7						
Note stopped @ 96.0 ft Boring terminated at 96 feet deep with no refusal.									

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Remarks: 1. Exploration locations were topped in the field by GeoDesign. Elevations were estimated based on topographic plan provided by VTR. 2. 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. 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 1586 procedures (borehole was not advanced between consecutive samplings). 5. Driller advanced casing to 9 feet deep and then open hole below 9 feet deep. 6. At end of day on 10/16/13, borehole advanced to 46 feet deep. 7. Borehole covered to approximately 25 feet deep overnight. Driller advanced casing to 19 feet deep and cleaned out to resume advance. 8. Driller noted rig chatter when advancing roller bit 48 to 49 feet deep, and 71 to 71.5 feet deep (possible cobble/gravel). 9. Driller drove split spoon samples S15 and S16 and waited 5 minutes to withdraw to improve recovery. 10. Soil samples were tested by VTrans soil laboratory and results were transmitted to GeoDesign for incorporation into boring logs. 11. While cohesive soils were present in sample S3 at 4' deep, not enough was available to perform Atterberg Limits testing.									

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