

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-3					
Bridge No. 93 over C&P Railroad Castleton BR 015-2(10) (GeoDesign #750-09.14)		Page No.: 1 of 1		Pin No.: 12b138					
Boring Crew: J. Leonhardt (TransTech), J. Gilman (GeoDesign)		Casing Sampler		Groundwater Observations <sup>(9)</sup>					
Date Started: 10/24/13 Date Finished: 10/24/13		Type: FJ SS		Date Depth Notes					
VTSPG NAD83: N 403314.31 ft E 1452548.87 ft		I.D.: 4 in 2 in		10/24/13 See Remark 2					
Station: 19+08 Offset: 10.50		Hammer Wt: 140 lb. 140 lb.							
Ground Elevation: 389.3 ft		Hammer Fall: 30 in. 30 in.							
		Hammer/Rod Type: Auto/NWJ							
		Rig: CME 550X ATV C <sub>e</sub> = -1.5							
Depth (ft)	Strat <sup>(1)</sup>	CLASSIFICATION OF MATERIALS (Description)	Blow <sup>(2)</sup> (N Value) <sup>(3)</sup>	Moisture Content %	Gravel %	Sand %	Fines %	L %	P %
0-2	XXXX	S1 (0' to 2'): Loose, brown to gray SILT & CLAY and fine to coarse SAND, little fine to coarse Gravel, trace Wood, trace Glass, moist. Rec. = 0.9 ft (AASHTO M145 Classification: A-4.)	1-1-5-5 (6)	13.7	29.1	25.1	45.8	25	6
2-4	XXXX	S2 (2' to 4'): Loose, gray fine to coarse SAND and SILT, little fine to coarse Gravel, moist. Rec. = 1.8 ft (AASHTO M145 Classification: A-4.)	4-5-4-5 (9)	9.6	30.1	31.7	38.2	NP	NP
4-6	XXXX	S3 (4' to 6'): Medium dense, gray SILT & CLAY, some fine to coarse SAND, some fine to coarse Gravel, wet. Rec. = 1.0 ft (AASHTO M145 Classification: A-4.)	4-6-11-12 (17)	11.7	31.1	24.5	44.4	24	6
6-8	XXXX	S4 (6' to 8'): Medium dense, gray SILT & CLAY and fine to coarse SAND, trace fine Gravel, trace Glass, wet. Rec. = 1.3 ft (AASHTO M145 Classification: A-4.)	6-7-11-12 (18)	19.7	15.1	30.4	54.5	27	5
8-10	XXXX	S5 (8' to 10'): Dense, gray SILT & CLAY and fine to coarse SAND, some fine to coarse Gravel, wet. Rec. = 1.0 ft	5-33-11-12 (44)	11.3				Testing	Not Performed
10-15		S6 (14' to 16'): Medium dense, gray SILT & CLAY and fine to coarse SAND, some fine to coarse Gravel, wet. Rec. = 1.0 ft (AASHTO M145 Classification: A-4.)	6-8-20-18 (28)	11.4	33.5	25.6	40.9	25	6
15-20		S7 (19' to 21'): Medium dense, gray SILT & CLAY and fine to coarse SAND, some fine to coarse Gravel, wet. Rec. = 1.0 ft	5-9-13-15 (22)	11.9				Testing	Not Performed
20-25		S8 (24' to 26'): Medium dense, gray SILT & CLAY and fine to coarse SAND, little fine to coarse Gravel, wet. Rec. = 0.3 ft	7-10-13-17 (23)	15.7				Testing	Not Performed
25-30		S9 (29' to 31'): Medium dense, gray SILT & CLAY and fine to coarse SAND, little fine to coarse Gravel, wet. Rec. = 1.4 ft (AASHTO M145 Classification: A-4.)	7-11-13-16 (24)	12.8	29.5	25.5	45.0	25	6
30-36		S10 (34' to 36'): Medium dense, gray SILT & CLAY and fine to coarse SAND, little fine to coarse Gravel, wet. Rec. = 1.3 ft	15-12-16-20 (28)	11.8				Testing	Not Performed
Hole stopped @ 36.0 ft Boring terminated at 36 feet deep with no refusal.									
Remarks: 1. Exploration locations were taped in the field by GeoDesign. Elevations were estimated based on topographic plan provided by VHB. 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 advances. 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 samples). 5. Soil samples were tested by VTrans soil laboratory and results were transmitted to GeoDesign for incorporation into boring logs.									
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C <sub>e</sub> 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.									

ESTIMATED BOTTOM OF PERMANENT STEEL SHEET PILING, EL = 362.00

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-4					
Bridge No. 93 over C&P Railroad Castleton BR 015-2(10) (GeoDesign #750-09.14)		Page No.: 1 of 3		Pin No.: 12b138					
Boring Crew: J. Leonhardt (TransTech), J. Gilman (GeoDesign)		Casing Sampler		Groundwater Observations <sup>(9)</sup>					
Date Started: 10/16/13 Date Finished: 10/17/13		Type: FJ SS		Date Depth Notes					
VTSPG NAD83: N 403336.83 ft E 1452518.45 ft		I.D.: 4 in 2 in		10/17/13 See Remark 2					
Station: 19+28 Offset: 10.50		Hammer Wt: 140 lb. 140 lb.							
Ground Elevation: 388.9 ft		Hammer Fall: 30 in. 30 in.							
		Hammer/Rod Type: Auto/NWJ							
		Rig: CME 550X ATV C <sub>e</sub> = -1.5							
Depth (ft)	Strat <sup>(1)</sup>	CLASSIFICATION OF MATERIALS (Description)	Blow <sup>(2)</sup> (N Value) <sup>(3)</sup>	Moisture Content %	Gravel %	Sand %	Fines %	L %	P %
0-2	XXXX	S1 (0' to 2'): Medium dense, dark brown SILT, some fine to coarse Sand, some fine to coarse Gravel, trace Root Fibers/Wood, moist. Rec. = 0.6 ft (AASHTO M145 Classification: A-4.)	2-5-5-13 (10)	7.3	37.3	26.2	36.5	NP	NP
2-4	XXXX	S2 (2' to 4'): Medium dense, brown fine to coarse SAND, some fine to coarse Gravel, some Silt, dry. Rec. = 1.8 ft (AASHTO M145 Classification: A-1-b.)	12-12-14-7 (26)	7.6	38.1	40.0	21.9	NP	NP
4-6	XXXX	S3 (4' to 6'): Stiff, gray with dark gray seams, SILT & CLAY, trace fine Gravel, trace fine to coarse Sand, wet (dark seams higher plasticity), Rec. = 1.2 ft	4-5-5-30 (10)	30.5	1.5	0.9	97.6	Remark 11	
6-8	XXXX	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.)	12-10-10-14 (20)	15.5	23.2	24.2	52.6	23	5
8-10	XXXX	S5 (8' to 10'): Medium dense, gray SILT & CLAY, some fine to coarse Sand, little fine to coarse Gravel, wet. Rec. = 0.4 ft	6-6-8-14 (14)	11.2				Testing	Not Performed
10-15		S6 (14' to 16'): Medium dense, gray fine to coarse SAND, some fine to coarse Gravel, some Clayey Silt, wet. Rec. = 0.2 ft	6-8-11-15 (19)					Testing	Not Performed
15-20		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.)	6-10-12-15 (22)	12.4	30.4	27.3	42.3	NP	NP
20-25		S8 (24' to 26'): Medium dense, no recovery. Rec. = 0.0 ft	14-12-16-16 (28)					Testing	Not Performed
25-30		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.)	7-9-12-19 (21)	12.1	23.2	26.6	50.2	26	6
30-35		S10 (34' to 36'): Medium dense, gray SILT & CLAY and fine to coarse SAND, little fine to coarse Gravel, wet. Rec. = 1.0 ft	7-12-17-19 (29)	11.8				Testing	Not Performed
35-40		S11 (39' to 41'): Medium dense, gray SILT & CLAY and fine to coarse SAND, little fine to coarse Gravel, wet. Rec. = 1.4 ft	6-9-15-18 (24)					Testing	Not Performed
40-45		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.)	8-12-18-21 (30)	11.2	30.2	26.0	43.8	NP	NP
45-51		S13 (49' to 51'): Dense, no recovery. Rec. = 0.0 ft	16-13-					Testing	Not Performed
Hole stopped @ 96.0 ft Boring terminated at 96 feet deep with no refusal.									
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C <sub>e</sub> 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.									

ESTIMATED BOTTOM OF PERMANENT STEEL SHEET PILING, EL = 362.00

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-4					
Bridge No. 93 over C&P Railroad Castleton BR 015-2(10) (GeoDesign #750-09.14)		Page No.: 2 of 3		Pin No.: 12b138					
Boring Crew: J. Leonhardt (TransTech), J. Gilman (GeoDesign)		Casing Sampler		Groundwater Observations <sup>(9)</sup>					
Date Started: 10/16/13 Date Finished: 10/17/13		Type: FJ SS		Date Depth Notes					
VTSPG NAD83: N 403336.83 ft E 1452518.45 ft		I.D.: 4 in 2 in		10/17/13 See Remark 2					
Station: 19+28 Offset: 10.50		Hammer Wt: 140 lb. 140 lb.							
Ground Elevation: 388.9 ft		Hammer Fall: 30 in. 30 in.							
		Hammer/Rod Type: Auto/NWJ							
		Rig: CME 550X ATV C <sub>e</sub> = -1.5							
Depth (ft)	Strat <sup>(1)</sup>	CLASSIFICATION OF MATERIALS (Description)	Blow <sup>(2)</sup> (N Value) <sup>(3)</sup>	Moisture Content %	Gravel %	Sand %	Fines %	L %	P %
55-60		S14 (59' to 61'): Dense, gray fine to coarse SAND, some Clayey Silt, wet. Rec. = 0.1 ft	11-16-22-26 (38)					Testing	Not Performed
60-65		S15 (64' to 65'): Hard, gray SILT & CLAY, some fine to coarse Sand, little fine Gravel, wet. Rec. = 1.3 ft (AASHTO M145 Classification: A-4.)	10-13-19-22 (32)	13.5	22.8	25.4	51.8	26	6
65-70		S16 (74' to 76'): Hard, gray SILT & CLAY, some fine to coarse Sand, little fine Gravel, wet. Rec. = 1.3 ft	12-17-22-25 (39)	17.2				Testing	Not Performed
70-75		S17 (84' to 86'): Refusal, gray Clayey SILT, some fine to coarse Sand, little fine Gravel, wet. Rec. = 1.1 ft (AASHTO M145 Classification: A-4.)	18-30-50-2 (R)	13.6	12.8	21.9	65.3	20	3
75-80		S18 (94' to 96'): Very dense, gray Clayey SILT, some fine to coarse Sand, little fine Gravel, wet. Rec. = 1.3 ft	20-36-48-57 (84)	9.7				Testing	Not Performed
Hole stopped @ 96.0 ft Boring terminated at 96 feet deep with no refusal.									
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C <sub>e</sub> 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.									

ESTIMATED BOTTOM OF PERMANENT STEEL SHEET PILING, EL = 362.00

PROJECT NAME:	CASTLETON
PROJECT NUMBER:	BRF 015-2(10)
FILE NAME:	z12b138borlog.dgn
PROJECT LEADER:	S.E. BURBANK
DESIGNED BY:	GEODESIGN
BORING LOGS (2 OF 4)	
PLOT DATE:	9/19/2014
DRAWN BY:	E.A. FIALA
CHECKED BY:	S.E. BURBANK
SHEET	37 OF 82

