



STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Winoberg HES 021-1(10)
(GeoDesign #750-08.10)
Winoberg, VT

Boring No.: 83
Page No.: 1 of 2
File No.: 046304
Checked By: JFW

Boring Crew: T. Farrell (SAB), M. Hegedorn (GeoDesign)
Date Started: 6/02/15 Date Finished: 6/02/15
VTSPG INHBS: N 671048.00 H E 1478904.00 H
Station: 267+75 Offset: 41' BT
Ground Elevation: 374 H

Casing Sampler
Type: MODER SS
I.O.: 4.25 in 1.38 in
Hammer Mt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Red Type: Auto/MSJ
Rtg: CMC 5208 ATV CE = 1.35

Groundwater Observations (3)		
Date	Depth (ft)	Notes
06/02/15		None observed.

Depth (ft)	Strat(1)	CLASSIFICATION OF MATERIALS (Description)	Moist. Content %	Gravel %	Sand %	Fines %	LL %	PI %	Moist. Content %	Gravel %	Sand %	Fines %	LL %	PI %
2.5		S1 (2' - 4'): Medium dense, fine to coarse S&M, some SM, some fine to coarse Gravel, MnO Rusts, trace Clay & SH, moist. (General FN) Res. = 1.8 H (ANSI/NISO W145 Classification: A-1-b.)	10-8-1-3	10.8	33.6	45.8	21.4	NP	NP					
5.0		S2 (4' - 6'): Medium, brown mottled CLAY & SILT and fine to coarse S&M, trace fine to coarse Gravel, moist. Res. = 1.8 H (ANSI/NISO W145 Classification: A-6.)	5-1-1-6	28.2	18.3	37.9	51.8	35	18					
7.5		S3 (6' - 8'): S3a - (Upper 1'): Very soft, brown mottled CLAY & SILT and fine to coarse S&M, trace (<) fine to coarse Gravel, moist. Res. = 1.7 H (ANSI/NISO W145 Classification: A-6.) S3b - (Lower 1'): Medium dense, tan to brown fine to coarse S&M, some SM, some fine to coarse Gravel, moist. (ANSI/NISO W145 Classification: A-2-4.)	10-15-1-1	28.0	16.5	38.4	53.1	33	15					
10.0		S4 (8' - 10'): Medium dense, brown mottled SILT and fine to coarse S&M, MnO fine Gravel, moist. Res. = 1.8 H (ANSI/NISO W145 Classification: A-4.)	8-5-8-12	12.5	22.8	31.5	45.7	NP	NP					
12.5		S5 (10' - 12'): Dense, gray SILT, some fine to coarse Sand, MnO fine to coarse Gravel, moist. Res. = 1.8 H (ANSI/NISO W145 Classification: A-4.)	10-14-1-3	11.3	21.4	28.0	38.6	NP	NP					
15.0		S6 (12' - 14.4'): Very dense, gray SILT, some (<) fine to coarse Sand, MnO fine to coarse Gravel, moist. Res. = 1.2 H. (ANSI/NISO W145 Classification: A-4.)	13-18-1-3	0.7	22.6	27.8	48.6	NP	NP					

Notes: 1. Stratification lines represent approximate boundary between material types. Variation may be gradual.
2. If values have not been corrected for hammer energy, CE is the hammer energy correction factor.
3. Water final readings have been made of fines and their 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
06/02/15		None observed.

Depth (ft)	Strat(1)	CLASSIFICATION OF MATERIALS (Description)	Moist. Content %	Gravel %	Sand %	Fines %	LL %	PI %	Moist. Content %	Gravel %	Sand %	Fines %	LL %	PI %
22.5		S7 (20' - 20.5'): Refusal, gray SILT, some fine to coarse Sand, some fine Gravel, trace Clay & SM, moist. Res. = 0.8 H (ANSI/NISO W145 Classification: A-4.)	20-20-4	0.8	33.2	25.8	41.2	NP	NP					
25.0		C1 (22.8' - 27.8'): Fair quality, moderately hard to hard, trace with slightly weathered joints, very dense to moderate jointing, gray with infrequent white inclusions SILTSTONE. Moderate reaction to dilute HCl. Jointing near horizontal with occasional near vertical fractures.	1	83	3.7									
27.5					2.3									
					1.8									
					1.8									
30.0		Hole stopped @ 27.8 H Cored 5' into inferred bedrock.												
32.5		Remarks: 1. Ground surface elevation, boring, casing, station, and offset shown are approximated from files made from existing features in the field by GeoDesign personnel, the Preliminary Plan Set prepared by W&B and dated 4/30/2015, and an electronic site plan titled "1046304.dwg" provided by W&B via email on June 26, 2015. 2. Visual soil descriptions are per the Burmister system. Laboratory gradations where applicable were performed by VTrans and are per ANSI/NISO W145. 3. Auger chaffer observed from 14' - 15' deep. 4. Inferred bedrock of 18.5' deep. Originally assumed bedrock. Driller switched to 3" flush joint casing lowered through the augers and was able to advance casing past the obstruction. Remainder of borehole below 18.5' deep was advanced using wash rotary drilling methods. 5. Boring logs run C1 advance, from 22.8' - 24.5' deep of low rotary head speed, 24.5' - 25.8' of medium speed, and from 25.8' to 27.8' of high speed. 6. Consistent milky gray return observed throughout casing. 7. Backfilled with cuttings and 1.5 gallons bentonite chips. 8. Hammer energy is ceased.												

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