GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Hancock ER BRF 0174(16), Route 125, Hancock, Vermont

Boring No.: B-1 | Page No.: 1 of 2 | File No.: 750-09.4 | Checked By: DTH

Boring Company: Trans Tech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Dan Howey/Joshua Gilman
Date Started: February 13, 2012 | Date Finished: February 14, 2012
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 1046.5
Station: 268+16 | Offset: 4 ft Right

	Casing:	Sampler:
Type:	Flush	SS
I.D.:	4.0 in.	1.38 in.
Hammer Wt.:	N/A	140 lbs
Hammer Fall:	N/A	30 in.
Rig Type:	CME 75 Track Rig	
Hammer Type:	Automatic (C-E=1.43)	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 2/13/12, 13:00	12.0	1034.5	Wet sample. See remarks.
▼ 2/14/12, 7:40	8.5	1038.0	Casing overnight. See Remarks.
▼			

Depth (ft)	Casing Blows/ft.	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 inch interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation (feet)	Symbol	Sample Description (Classification System: Burmister)
		S1	SS	7	6	0.5	74	50/1"					Asphalt 1046.2		
		S2	SS	7	7	2	64	50/1"					Recent Temporary Bridge Fill with Possible Cobbles & Boulders		S1) Refusal, gray fine GRAVEL, some fine to coarse Sand, little Silt, moist.
															S2) Refusal, brown fine to coarse GRAVEL, some fine to coarse Sand, little Silt, moist.
5		S3	SS	14	6	5	20	25	50/2"						S3) Refusal, brown fine to coarse GRAVEL, some fine to coarse Sand, little Silt, moist.
		S4	SS	24	13	7	8	40	38	46			8		S4) Very dense, brown fine GRAVEL and fine to coarse SAND, little Silt, damp (3" asphalt observed 3" below top of sample).
													1038.5 Fill with Possible Cobbles & Boulders		
10		S5	SS	16	6	10	10	13	60/4"						S5) Refusal, brown fine to coarse SAND, some fine to coarse Gravel, some Silt, moist.
		S6	SS	24	13	12	6	9	31	21			▼		S6) Dense, gray brown fine to coarse SAND, some fine to coarse Gravel, some Silt, wet (bottom 3" brown and trace Silt).
15		S7	SS	10	7	15	24	60/4"							S7: Refusal, brown fine to coarse GRAVEL, some fine to coarse Sand, little Silt, wet.
		S8	SS	24	24	17	3	2	2	2			17 1029.5 Silt / Silty Fine Sand		S8) Medium / loose; S8A (Top 18"): medium, olive Layered SILT & CLAY to Clayey SILT, wet. S8B (Bottom 6"): gray fine SAND, some Silt, wet.
20		S9	SS	24	8	20	3	2	1	2					S9) Soft, olive Clayey SILT, little coarse Gravel, wet.
25		S10	SS	24	18	25	3	2	2	2					S10) Medium, olive layered Clayey SILT to SILT & CLAY, trace fine Sand, trace Silt in one 1/8" thick seam, wet.
30		S11	SS	24	20	30	2	3	3	5					S11) Loose, brown fine SAND, some Silt, wet.
35															

Remarks:
1) Exploration location was estimated in the field by GeoDesign by taping to existing features. Ground surface elevation is approximate and is based on an email from VTrans dated 2/28/12. Stream bed was approximately 16' below temporary bridge surface.
2) Hollow stem auger advance slow and grinding observed from 0' to 2' deep.
3) Driller switched to 4" flush joint casing and wash rotary methods after sampling S2. Relative moisture observations are likely to be affected by drill method.
4) Observed decreased resistance to casing advance at approximately 16.5' deep.
5) End day 1 after sampling S11.

Notes:
1) Stratification lines represent approximate boundary between material types. Transitions may be gradual.
2) 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. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; FS=Piston Sampler; HS=Split Barrel (Split Spoon); ST=Shelby Tube; U=Undisturbed; W&D=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; and = 35-50%
5) Stratification lines represent approximate boundary between material types. transitions may be gradual.

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		S12	SS	24	13	35	3	2	3	5			Silt / Silty Fine Sand (Continued)		S12) Loose, brown fine SAND, little Silt, wet.
40		S13	SS	24	24	40	WOH	2	3	3					S13) Loose, gray layered Clayey SILT, seams of fine to medium Sand (3" layer of sand 4" from bottom of sample).
													43 1003.5 Silty Sand & Gravel		
45		S14	SS	24	14	45	15	10	9	14					S14) Medium dense, gray fine to coarse SAND and fine to coarse GRAVEL, some Silt, wet.
50		S15	SS	24	14	50	25	15	15	16					S15) Dense, greenish gray fine to coarse GRAVEL and fine to coarse SAND, little Silt, wet.
		C1	C	48	36	52		[REC= 75%; RQD= 42%]			7		52 Schist 994.5		C1) Moderately hard, light greenish gray with white banding, fresh to slightly weathered along fracture surfaces, closely jointed, poor quality SCHIST. Fractures typically along foliation planes > 75 degrees from horizontal. No reaction to dilute HCl.
55											10				
		C2	C	60	60	56		[REC= 100%; RQD= 63%]			9				C2) Moderately hard, light greenish gray with white banding, fresh to slightly weathered along fracture surfaces, very closely (top 18") to closely jointed, fair quality SCHIST. Fractures typically along foliation planes at 45 degrees from horizontal. No reaction to dilute HCl.
60											14				
											7				
											6				
											7				
											8				
											9		61 Bottom of Exploration at 61.0 ft 985.5		
65															
70															

Remarks:
6) Driller noted increase grinding of roller bit at 43' deep.
7) Borehole collapsed approximately 4' between roller bit advance to 50' and attempting split spoon sample 50' to 52' deep. Driller telescoped 3" casing to 50' to collect sample S15 and resume advance.
8) Casing and roller bit refusal at 52' deep. Attempt core C1.

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SMALL REMARK FONT STANDARD 750-09.4-HANCOCK ER BRF 0174(16).GPJ GEODESIGN STANDARD.GDT 12/2/13