

BORING LOG		Boring No.:	B-13
Project Name		Page No.:	1 of 1
Knapp Airport		File No.:	965-03
Berlin, Vermont		Checked By:	KEW/AMH
<p><b>GEODESIGN INCORPORATED</b>            Geotechnical Engineers-Environmental Consultants-Construction Engineers            P.O. Box 699 Windsor, VT 05089 Phone: 802-674-2033 Fax: 802-674-5943            1233 Shelburne Rd, Suite 300 South Burlington, VT 05403 Phone: 802-652-5140</p>			
Boring Company: Specialty Drilling & Investigation Foreman: Chris Aldrich GeoDesign Rep.: Don Howey Date Started: July 18, 2006 Date Finished: July 18, 2006 N. Coordinate: E. Coordinate: Ground Surface Elevation (feet): Station: Offset: ft		Casting: H.S.A. SS Sampler: 2.25 in. 1.38 in. Date: 7/18/06, 0:00 Date: 7/17/06, 0:00 Hammer WL: NA 140 lbs 30 in. Hammer Fall: NA 30 in. Rig Type: Simco 2800 Hammer Type: Safety Hammer Groundwater Observations: None observed	
Sample Information		Sample Description	
Depth (ft)	Coring Interval (ft)	Strata Description	Symbol
1	SS 18-13	Pavement	
2	SS 24-12	Base Course Sand & Gravel	
3	SS 24-16	Subbase Sand	
4	SS 24-19	Sandy Silt	
5	SS 24-18	Till	
10	SS 24-19	Till	
10		Bottom of Exploration of 10.0 ft	

BORING LOG		Boring No.:	B-14
Project Name		Page No.:	1 of 1
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Sample Information		Sample Description	
Depth (ft)	Coring Interval (ft)	Strata Description	Symbol
0.5	SS 24-18	Topsoil	
2	SS 24-22	Sandy Silt	
3	SS 24-18	Medium dense, brown SILT, some (-) fine to coarse Sand, trace fine to coarse Gravel, (moist)	
4	SS 24-19	Dense, light brown SILT, little fine to coarse Sand, little (+) fine to coarse Gravel, (moist)	
5	SS 24-17	Glacial Till	
10	SS 24-17	Glacial Till	
10		Bottom of Exploration of 10.0 ft	

BORING LOG		Boring No.:	B-15
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Boring Company: Specialty Drilling & Investigation Foreman: Chris Aldrich GeoDesign Rep.: Don Howey Date Started: July 17, 2006 Date Finished: July 17, 2006 N. Coordinate: E. Coordinate: Ground Surface Elevation (feet): Station: Offset: ft		Casting: H.S.A. SS Sampler: 2.25 in. 1.38 in. Date: 7/17/06, 0:00 Date: 7/17/06, 0:00 Hammer WL: NA 140 lbs 30 in. Hammer Fall: NA 30 in. Rig Type: Simco 2800 Hammer Type: Safety Hammer Groundwater Observations: None observed	
Sample Information		Sample Description	
Depth (ft)	Coring Interval (ft)	Strata Description	Symbol
1	SS 18-10	Pavement	
2	SS 24-15	Base Course Gravel & Sand	
3	SS 24-16	Subbase Sand	
4	SS 24-20	Sandy Silt	
5	SS 24-20	Medium Dense	
6	SS 24-20	Top 6": pinkish tan fine to coarse GRAVEL, and medium to coarse SAND, little (+) SILT, (moist)	
8	SS 24-20	Bottom 4": brown fine to coarse SAND, little (-) SILT, little fine Gravel, (moist)	
10	SS 24-20	Loose, gray SILT and fine to coarse SAND, (moist)	
10	SS 24-20	Very loose, Clayey SILT, little (-) fine to coarse Sand, (moist)	
10	SS 24-20	Dense, brown SILT, some fine to coarse Sand, little (-) fine Gravel, (moist)	
10	SS 24-20	Glacial Till	
10	SS 24-20	Very dense, brown SILT, some (-) fine to coarse Gravel, little (-) fine to coarse Sand, (moist), (TILL)	
10		Bottom of Exploration of 10.0 ft	

- Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N.R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
- 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; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = 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.
- 6) Bedrock cores collected at locations c-1, c-2, and c-3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality, the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along the fissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Centennial Geologic Map of Vermont (döll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
- 7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe-ramping and splitting. A alternative method of removal is blasting.
- 8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
- 9) Rock Reuse Potential - the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

**Hoyle, Tanner & Associates, Inc.**

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PROJECT NAME: E. F. KNAPP STATE AIRPORT  
 A.I.P. 3-50-0001-011-2009  
 PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378shf.br 1.dgn  
 PROJECT LEADER: S. FORTNEY  
 DESIGNED BY: S. BOUCHARD  
 BORING LOGS B13-B15

PLOT DATE: 11/22/2011  
 DRAWN BY: D. STANDISH  
 CHECKED BY: J. DOWNAR  
 SHEET 159 OF 173