GEODESIGN INCORPORATED
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 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-19 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

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

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	30 in.	Simco 2800	Safety Hammer

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/18/06, 0:00			None observed
▼			
▼			
▼			

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	Casing Times (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
	1	SS	24	17	0	3	13	19	21			0.5 Topsoil		Top 6": TOPSOIL Bottom 11": Dense, brown SILT, some fine to coarse Sand, trace Root fibers, (moist)
	2	SS	24	18	2	13	10	10	15			Sandy Silt		Medium dense, brown SILT, some fine to coarse Sand, little fine to coarse Gravel, trace Root fibers, (moist)
5	3	SS	24	16	4	16	13	14	16					Medium dense, brown SILT, some fine to coarse Sand, little fine to coarse Gravel, trace Root fibers, (moist)
	4	SS	24	21	6	14	13	16	21			8		Medium dense, brown SILT, little (+) fine to coarse Sand, little fine to coarse Gravel, trace Root fibers, (moist)
	5	SS	24	20	8	23	29	31	46			Glacial Till		Very dense, brown SILT, some (+) fine to coarse Sand, (moist)
10												10 Bottom of Exploration at 10.0 ft		
15														
20														

Remarks

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.

Boring No.: B-19

GEODESIGN INCORPORATED
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 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-20 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

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

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	30 in.	Simco 2800	Safety Hammer

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/17/06, 0:00			None observed
▼			
▼			
▼			

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	Casing Times (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
	1	SS	24	12	0	3	9	12	8			0.6 Topsoil		Medium dense, brown SILT, some fine to coarse Sand, trace fine Gravel, (moist)
2												Fill		
	2	SS	24	15	2	22	31	20	14			Sand & Gravel		Very dense, Top 8": gray to brown fine to coarse SAND, some fine to coarse Gravel, trace Silt, (moist) Bottom 7": brown SILT, some (-) fine to coarse Sand, little fine to coarse Gravel, (moist)
	3	SS	24	5	4	14	20	25	29			3.5 Glacial Till		Dense, grayish brown SILT, some fine to coarse Sand, some (+) fine to coarse Gravel, (moist)
5	4	SS	24	20	6	17	9	13	14					Medium dense, grayish brown SILT and fine to coarse SAND, trace fine Gravel, (moist)
	5	SS	15	11	8	25	75	50/3"				8.7 Possible Bedrock		Medium dense, grayish brown SILT and fine to coarse SAND, trace fine Gravel, (moist)
												9.3 Bottom of Exploration at 9.3 ft		Very dense, Top 5": grayish brown SILT and fine to coarse SAND, trace fine Gravel, (moist) Bottom 6": weathered ROCK pieces (possible Shale)
10														
15														
20														

Remarks

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.

Boring No.: B-20

GEODESIGN INCORPORATED
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 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-21 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

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

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	30 in.	Simco 2800	Safety Hammer

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/17/06, 0:00			None observed
▼			
▼			
▼			

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	Casing Times (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													Pavement		
	1	SS	18	12	0.5	21	20	24	-			Base Course Gravel & Sand		Dense, Top 6": light gray fine to coarse GRAVEL and fine to coarse SAND, trace Silt, (moist) Bottom 6": brown fine to coarse SAND, trace (+) fine Gravel, trace Silt, (moist)
	2	SS	24	16	2	26	29	27	22			Subbase Sand		Very dense, brown fine to coarse SAND, trace (+) fine Gravel, trace Silt, (moist)
5	3	SS	24	12	4	13	6	9	18			4 Sandy Silt		Medium dense, brown SILT, some fine to coarse Sand, little (-) fine Gravel, (moist)
	4	SS	24	17	6	10	7	8	30					Medium dense, brown SILT, some fine to coarse Sand, little (-) fine Gravel, (moist)
	5	SS	24	23	8	33	35	42	67			8 Glacial Till		Very dense, brown SILT, some fine to coarse Sand, little (-) fine Gravel, (moist), (TILL)
10												10 Bottom of Exploration at 10.0 ft		
15														
20														

Remarks

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.

Boring No.: B-21

VT BORING LOG PRO 5/21/04 965-03.GPJ GEODESIGN PDAFTE07-12-04.GDT 4/24/09

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 th efissile 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 Contennial Geologic Map of Vermoont (doll, 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-ramming 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.
150 Dow Street
Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com
Hoyle Tanner & Associates © 2008

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

FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B19-B21

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 161 OF 173