BORING LOG — Boring No.: B-10

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

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-10
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 13, 2006 Date Finished: July 13, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	2.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Simco 2800	
Hammer Type:	Safety Hammer	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
7/13/06, 9:00	8.0		Wet sample

Sample Information (Classification System: Burmister)

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description (Depth & Elevation (feet))	Symbol	Sample Description
		1	SS	24	12	0	2	6	9	7			Topsoil / Fill		Medium dense, brown SILT, little (+) fine to coarse Sand, little fine Gravel, trace Root fibers, (moist)
		2	SS	24	14	2	14	28	27	13					Very dense, gray SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist)
5		3	SS	24	5	4	3	4	4	6					Loose, gray SILT (slightly plastic), some fine to coarse Sand, (piece of clay pipe in sample), (moist)
		4	SS	24	17	6	3	4	6	17			6 Sandy Silt		Medium dense, gray CLAY and SILT (top) grading to SILT (bottom), little fine Gravel, trace fine to coarse Sand, (with one 2" fine to coarse Sand seam), (moist)
		5	SS	24	24	8	27	33	41	56			8 Glacial Till		Very dense, Top 10": gray fine to coarse SAND, (wet) Bottom 14": olive SILT, trace 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-10

VT BORING LOG PID 5/21/04 965-03.GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/24/09

BORING LOG — Boring No.: B-11

GEODESIGN INCORPORATED
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Project Name: Knapp Airport, Berlin, Vermont

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Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 13, 2006 Date Finished: July 13, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	2.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Simco 2800	
Hammer Type:	Safety Hammer	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
7/13/06, 0:00			None observed

Sample Information (Classification System: Burmister)

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description (Depth & Elevation (feet))	Symbol	Sample Description
		1	SS	24	8	0	3	6	6	31			Topsoil / Sandy Silt		Medium dense, brown fine to medium SAND, some (+) fine to coarse Gravel, little(-) Silt, trace Root fibers, (moist)
		2	SS	24	16	2	10	18	15	18					Dense, olive gray SILT, little fine to coarse Sand, trace fine Gravel, (damp)
5		3	SS	24	14	4	11	26	18	26			4 Glacial Till		Dense, olive gray SILT, some fine to coarse slatey Gravel, little fine to coarse Sand, (damp)
		4	SS	24	19	6	19	28	35	62					Very dense, olive gray SILT, some fine to coarse Gravel, little fine to coarse Sand, (moist)
		5	SS	12	13	8	71	92							Very dense, olive gray SILT, some fine to coarse Sand, trace fine Gravel, (moist)
10													9 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
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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-11

VT BORING LOG PID 5/21/04 965-03.GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/24/09

BORING LOG — Boring No.: B-12

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers
P.O. Box 699
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Phone: 802-674-2033 Fax: 802-674-5943
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Phone: 802-652-5140

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-12
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 14, 2006 Date Finished: July 14, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	2.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Simco 2800	
Hammer Type:	Safety Hammer	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
7/14/06, 0:00			None observed

Sample Information (Classification System: Burmister)

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description (Depth & Elevation (feet))	Symbol	Sample Description
		1	SS	24	17	0	3	7	9	8			Topsoil / Sandy Silt		Medium dense, brown fine to coarse SAND, little (+) Silt, little fine to coarse Gravel, (moist)
		2	SS	24	20	2	6	7	11	12					Medium dense, light brown SILT, some (-) fine to coarse Sand, (moist)
5		3	SS	24	17	4	8	7	11	13					Medium dense, light brown/olive SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist)
		4	SS	24	22	6	14	18	20	25			6 Glacial Till		Dense, light brown/olive SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist)
		5	SS	24	17	8	29	36	42	53					Very dense, brown/olive fine to coarse SAND, some (-) Silt, little fine to coarse Gravel, (moist)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															

Remarks:

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Boring No.: B-12

VT BORING LOG PID 5/21/04 965-03.GPJ GEODESIGN PIDAFTER7-12-04.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
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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.

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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: z05h378sht_brl.dgn
PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY
DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD
CHECKED BY: J. DOWNAR
BORING LOGS B10-B12