

| GEO DESIGN INCORPORATED Geotechnical Engineers-Environmental Consultants-Construction Engineers | | | | | | | | | | BORING LOG | | Boring No.: B-16 | | | | | | | |
|---|----------------|--------|------|-----------------------|--------------------|------------|-------------------------|------|-------|---|-----------------------|--|--------------------------|---|---|--|--|-------|--|
| 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: 802-674-2033 Fax: 802-652-5140 | | Project Name Knapp Airport Berlin, Vermont | | Page No.: 1 of 1 File No.: 965-03 Checked By: KEW/AMH | | | | | |
| Boring Company: Specialty Drilling & Investigation Foreman: Chris Aldrich Geotechnical Rep.: Don Howey Date Started: July 17, 2006 N. Coordinate: E. Coordinate: Ground Surface Elevation (feet): Station: Offset: ft | | | | | | | | | | Casing: S.S. Type: H.S.A. I.D.: 2.25 in. S.S. 1.38 in. | | Sampler: SS | | Date: 7/17/06, 14:30 | | Groundwater Observations: 7.5 Wet sample | | Notes | |
| Sample Information | | | | | | | | | | Strata Description | | Sample Description | | | | | | | |
| Depth (ft) | Casing Blow/ft | Number | Type | Penetration (lb/inch) | Recovery (lb/inch) | Depth (ft) | Blows / 6 inch interval | | | | Coring Time (min./ft) | P.D. Reading (feet) | Depth & Elevation (feet) | Symbol | Classification System: Burmister | | | | |
| | | | | | | | 0-6 | 6-12 | 12-18 | 18-24 | | | | | | | | | |
| 1 | SS | 24 | 15 | 0 | 1 | 5 | 8 | 7 | | | | 0.5 | Topsoil Sandy Silt | | Top 6": TOPSOIL Bottom 9": Medium dense brown SILT and fine to coarse SAND, (moist) | | | | |
| 2 | SS | 24 | 19 | 2 | 1 | 12 | 12 | 17 | | | | | | | Medium dense, brown SILT and fine to coarse SAND, (moist) | | | | |
| 3 | SS | 24 | 19 | 4 | 14 | 21 | 29 | 34 | | | | | 4 | Glacial Till | Very dense, brown SILT and fine to coarse SAND, little fine to coarse Gravel, (moist), (TILL) | | | | |
| 4 | SS | 24 | 17 | 6 | 23 | 30 | 25 | 37 | | | | | 3 | Bottom of Exploration at 8.0 ft | Very dense, Top 12": brown SILT and fine to coarse SAND, little fine to coarse Gravel, (moist) Bottom 5": dark brown fine SAND, little Silt, (wet) | | | | |
| 10 | | | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | |
| Remarks | | | | | | | | | | | | | | | | | | | |

| GEO DESIGN INCORPORATED Geotechnical Engineers-Environmental Consultants-Construction Engineers | | | | | | | | | | BORING LOG | | Boring No.: B-17 | | | | | | | |
|---|----------------|--------|------|-----------------------|--------------------|------------|-------------------------|------|-------|---|-----------------------|--|--------------------------|---|---|---|--|-------|--|
| 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: 802-674-2033 Fax: 802-652-5140 | | Project Name Knapp Airport Berlin, Vermont | | Page No.: 1 of 1 File No.: 965-03 Checked By: KEW/AMH | | | | | |
| Boring Company: Specialty Drilling & Investigation Foreman: Chris Aldrich Geotechnical Rep.: Don Howey Date Started: July 17, 2006 N. Coordinate: E. Coordinate: Ground Surface Elevation (feet): Station: Offset: ft | | | | | | | | | | Casing: S.S. Type: H.S.A. I.D.: 2.25 in. S.S. 1.38 in. | | Sampler: SS | | Date: 7/17/06, 0:00 | | Groundwater Observations: None observed | | Notes | |
| Sample Information | | | | | | | | | | Strata Description | | Sample Description | | | | | | | |
| Depth (ft) | Casing Blow/ft | Number | Type | Penetration (lb/inch) | Recovery (lb/inch) | Depth (ft) | Blows / 6 inch interval | | | | Coring Time (min./ft) | P.D. Reading (feet) | Depth & Elevation (feet) | Symbol | Classification System: Burmister | | | | |
| | | | | | | | 0-6 | 6-12 | 12-18 | 18-24 | | | | | | | | | |
| 1 | SS | 24 | 20 | 0 | 2 | 4 | 9 | 11 | | | | | 0.5 | Topsoil Sandy Silt | Top 6": TOPSOIL Bottom 14": medium dense brown SILT, some fine to coarse Sand, (moist) | | | | |
| 2 | SS | 24 | 18 | 2 | 11 | 16 | 18 | 22 | | | | | | | Dense, brown SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist) | | | | |
| 3 | SS | 24 | 15 | 4 | 14 | 20 | 27 | 48 | | | | | 4 | Glacial Till | Dense, brown SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist) | | | | |
| 4 | SS | 24 | 17 | 6 | 45 | 58 | 68 | 79 | | | | | 3 | Bottom of Exploration at 8.0 ft | Very dense, brown SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist) | | | | |
| 10 | | | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | |
| Remarks | | | | | | | | | | | | | | | | | | | |

| GEO DESIGN INCORPORATED Geotechnical Engineers-Environmental Consultants-Construction Engineers | | | | | | | | | | BORING LOG | | Boring No.: B-18 | | | | | | | |
|---|----------------|--------|------|-----------------------|--------------------|------------|-------------------------|------|-------|---|-----------------------|--|--------------------------|---|---|--|--|-------|--|
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| Sample Information | | | | | | | | | | Strata Description | | Sample Description | | | | | | | |
| Depth (ft) | Casing Blow/ft | Number | Type | Penetration (lb/inch) | Recovery (lb/inch) | Depth (ft) | Blows / 6 inch interval | | | | Coring Time (min./ft) | P.D. Reading (feet) | Depth & Elevation (feet) | Symbol | Classification System: Burmister | | | | |
| | | | | | | | 0-6 | 6-12 | 12-18 | 18-24 | | | | | | | | | |
| 1 | SS | 10 | 12 | 0.5 | 10 | 13 | 10 | | | | | | | | | Pavement Base Course Gravel & Sand Sandy Silt | | | |
| 2 | SS | 24 | 14 | 2 | 6 | 8 | 10 | 12 | | | | | | | | Dense, Top 10": light gray fine to coarse SAND, and fine to coarse GRAVEL, little (-) Silt, (moist) Bottom 2": brown SILT, some fine to coarse Sand, (moist) | | | |
| 3 | SS | 24 | 17 | 4 | 8 | 10 | 21 | 22 | | | | | | | | Medium dense, brown SILT, some fine to coarse Sand, little (+) fine to coarse Gravel, (two 1/2" dark brown fine Sand seams), (moist) Dense, brown SILT, some (+) fine to coarse Sand, (moist) | | | |
| 4 | SS | 9 | 7 | 6 | 18 | 50/3" | | | | | | | 6.5 | Glacial Till | Very dense, brown SILT and fine to coarse SAND, some fine to coarse Gravel, (moist) | | | | |
| 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.
- 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 Release 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: z05h378shf.br 1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: J. DOWNAR
BORING LOGS B16-B18

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. BOUCHARD
SHEET 160 OF 173