1497 West 40 South
**Lindon, Utah - 84042**
Phone (801) 225-5711

3662 West 2100 South
**Salt Lake City, Utah - 84120**
Phone (801) 737-9138

1596 W. 2650 S. #108
**Ogden, Utah - 84401**
Phone (801) 399-9516

July 13, 2015

Mr. Martin Nobs
50 River Bluff Road
Elgin, IL 60120

**RE: Addendum I to the Geotechnical Report**
**Lot 15 Ski Lake Estates No. 3**
**6640 East 1100 South**
**Huntsville, Utah**
**Project No.: 145150G**

Mr. Nobs:

This letter is an addendum to the geotechnical report[1] prepared by Earthtec Engineering that was prepared for Lot 15 of the Ski Lake Estates No. 3 located in Huntsville, Utah, dated June 23, 2014. The purpose of this letter is to respond to the engineering review comments[2] provided by Taylor Geotechnical (TG). An engineering geology assessment evaluation[3] of the property was also performed for the property, dated July 10, 2015.

The review comments related to the geotechnical study and our responses are presented below. The review comments are italicized and our responses are presented in plain text.

Recommendations Comment 1 states: *"Engineering calculations that substantiate the recommended allowable bearing capacity and settlement analysis."*

See Appendix A.

Recommendations Comment 2 states: *"Engineering calculations that substantiate the recommended lateral earth pressure coefficients and equivalent fluid densities for active, at rest and passive conditions."*

See Appendix B.

Recommendations Comment 3 states: *"Data that substantiates the soil parameters used for second soil unit in the global stability analysis."*

Based on tests performed by the Bureau of Reclamation[4], "silty sands, poorly graded sand-silt mixture" have an internal friction angle of 33 to 35 degrees and a cohesion value of 280 to 560 psf. Accordingly, we used an internal friction angle of 32 degrees, an apparent cohesion of 125 psf, a saturated unit weight of 120 pcf, and a moist unit weight of 113 pcf for our analyses. Based on the new laboratory testing from the soil sample obtained from the geologic site investigation, the silty sand soils have an internal friction angle of 34 degrees, an apparent

[1] "Geotechnical Study, Lot 15 Ski Lake Estates No. 3, 6640 East 1100 South, Huntsville, Utah", EE Project No. 145150G, June 23, 2014.
[2] "Subect Document: Earthtec Engineering: "Geotechnical Study, Lot 15 Ski Lake Estates No. 3, 6640 East 1100 South, Huntsville, Utah," Project No. 145150G, prepared for Martin Nobs, dated June 23, 2014.
[3] "Engineering Geology Assessment, Lot 15, Ski Lake Estates No. 3, 6640 East 1100 South, Huntsville, Utah, Job No. 145150, dated July 10, 2015..
[4] U.S. Bureau of Reclamation, 1987, "Design Standards No. 13, Embankment Dams," Denver, Colorado.

cohesion of 240 psf, a saturated unit weight of 137 pcf, and a moist unit weight of 110 pcf for our analyses, thus the new direct shear test results were used in the modeling of the slope. The files for the direct shear testing can be found in Appendix D.

Recommendations Comment 4 states: *"Input and output files for the global stability analyses presented in the subject document."*

Earthtec Engineering performed a new stability analyses based on additional test pits and new laboratory testing on samples collected during a geologic site investigation for the property. See Appendix C.

Recommendations Comment 5 states: *"The entry and exit boundaries as presented in the global stability analyses were outside the boundaries of the home and limited the location of the exit point at the toe. It is recommended to verify that slope is stable near and just below the home as well as the general slope of the area. Please have Earthtec provide global stability analysis considering failure surfaces near the home as well as larger boundaries at the top and bottom of the slope."*

Representative soil samples collected during the geologic field investigation were tested in the laboratory to assess pertinent engineering properties and to aid in refining field classifications, if needed. Tests performed included natural moisture content, liquid and plastic limits determinations, mechanical (partial) gradation analyses, and direct shear tests. The table below summarizes the laboratory test results, which are also included on Figure Nos. 6 and 7, *Direct Shear Test.*

**Table 1: Laboratory Test Results**

| Test Pit No. | Depth (ft.) | Natural Moisture (%) | Natural Dry Density (pcf) | Atterberg Limits | | Grain Size Distribution (%) | | | Soil Type |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Liquid Limit | Plasticity Index | Gravel (+ #4) | Sand | Silt/Clay (- #200) | |
| TP-3 | 11 | 16 | --- | 33 | *NP | 0 | 70 | 30 | SM |
| TP-4 | 11 | 23 | --- | 55 | 24 | 0 | 31 | 69 | MH |

* NP = Non-Plastic

We evaluated the overall stability of the proposed slope at the subject property based on the new information obtained from the geologic investigation and the new laboratory testing that was performed on the elastic silt (MH) and silty sand (SM) soils. The properties of the native soils at the site were estimated using laboratory testing on samples recovered during our initial geotechnical investigation and the geological field investigation and our experience with similar soils. Our direct shear testing on the native Fat Clay with sand (CH) soils encountered during our initial geotechnical field investigation indicated the soils have an internal friction angle of about 21 degrees and cohesion of about 345 psf. To account for the variability in the native fat clay soils, we used an internal friction angle of 20 degrees, an apparent cohesion of 200 psf, a saturated unit weight of 130 pcf, and a moist unit weight of 110 pcf for our analyses.

Our direct shear testing on the native Silty Sand (SM) soils encountered during the geologic field investigation indicated the soils have an internal friction angle of about 34 degrees and cohesion of about 240 psf. Accordingly, we used an internal friction angle of 34 degrees, an

apparent cohesion of 240 psf, a saturated unit weight of 137 pcf, and a moist unit weight of 110 pcf for our analyses.

Our direct shear testing on the native Sandy Elastic Silt (MH) soils encountered during the geologic field investigation indicated the soils have an internal friction angle of about 31 degrees and cohesion of about 485 psf. To account for the variability in the native elastic silt soils, we used an internal friction angle of 27 degrees, an apparent cohesion of 400 psf, a saturated unit weight of 130 pcf, and a moist unit weight of 118 pcf for our analyses.

Due to the varying soil conditions that were observed throughout the property, certain layers were emitted from the profile due to the small quantities that were observed in the initial geotechnical investigation and the geologic investigation.

For the seismic (pseudostatic) analysis, a peak horizontal ground acceleration of 0.385g for the 2% probability of exceedance in 50 years was obtained for site (grid) locations of 41.247 degrees north latitude and -111.788 degrees west longitude. Typically, one-third to one-half this value is utilized in analysis. Accordingly, a value of 0.193 was used as the pseudostatic coefficient for the stability analysis. The seismic values can be found in Appendix E.

We evaluated the global stability of the proposed site using the computer program XSTABLE. This program uses a limit equilibrium (Bishop's modified) method for calculating factors of safety against sliding on an assumed failure surface and evaluates numerous potential failure surfaces, with the most critical failure surface identified as the one yielding the lowest factor of safety of those evaluated. The configuration analyzed was based on our observations during the initial geotechnical field investigation, the geologic field investigation, the cross section of the native soils based on the referenced geologic site investigation, assumption of the foundation layout, and the topography map of the site that was provided to us by Mr. Karl Lundin with Lundin Homes, see Figure No. 1, *Site Plan Showing Location of Slope Cross-Section.*

The configuration of the proposed slope was analyzed at Cross-Section A-A' and starts at the north portion of the lot near the toe of the slope where the lot was relatively flat. The lot then sloped up hill and to the south and consisted of an approximate 35-foot high slope inclined at approximately 3.7V:1H (Vertical:Horizontal) (approximately 27 percent slope). The lot the continued to slope up hill and to the south and consisted of an approximate 40-foot high slope inclined at approximately 3.25V:1H (Vertical:Horizontal) (approximately 31 percent slope). A 3 to 3½ foot tall rock wall was modeled just north of the proposed home, as indicated in the provide site plan, see Figure 1. The lot then was cut into the existing slope for approximately 30 feet followed by an approximate 10-foot high concrete wall. The slope was flat for approximately 10 feet followed by an approximate 10 foot high slope inclined at approximately 2H:1V (Vertical:Horizontal).

A water table was conservatively placed at approximately 5 to 20 feet below the ground surface, although groundwater was not encountered during our field exploration.

To model the load imposed on the slope by typical residential building, a 1,500 psf load was modeled approximately 45 feet north of the crest of the slope. Typically, the required minimum factors of safety are 1.5 for static conditions and 1.0 for seismic (pseudostatic) conditions. The results of our analyses indicate that the slope configuration described above meets both these requirements. The slope stability data are attached as Figure Nos. 2 through 5, *Stability*

*Results.* Any modifications to the slope, including the construction of retaining walls, should be properly designed and engineered.

The stability result for scenario A was initiated at the north end of the property at the toe of the slope. The model was then terminated on the south end of the property on the north side of 1100 South Street where critical point was located on the existing road that was cut into the existing slope.

The stability results for scenario B was initiated at the north end of the property at the toe of the slope. The model was then terminated on the south end of the proposed home location where the critical point would be located where the proposed home would be cut into the existing slope.

As indicated in the referenced geotechnical report and based on the new laboratory testing and the new stability data, the slope is stable under proposed conditions.

It should be clearly understood that slope movements or even failure can occur if the slope is undermined or the slope soils become saturated. The property owner and the owner's representatives should be made aware of the risks should these or other conditions occur that could saturate or erode/undermine the soils. Surface water should be directed away from the top and bottom of the slope, the slope should be vegetated with drought resistant plants, and sprinklers should not be placed on the face of the slope.

Recommendations Comment 6 states: *"It is recommended that the applicant have Earthtec's geologist review the geology of the site as recommended in the geologic review memo by Simon and Associates, attached to this file review."*

The project site is located within a geologically sensitive area of Huntsville which requires an engineering geology assessment evaluation of the property. The results of the study are contained in the report titled "Engineering Geology Assessment, Lot 15, Ski Lake Estates No. 3, 6640 East 1100 South, Huntsville, Utah, Job No. 145150, dated July 13, 2015.

**General Conditions**

The information presented in this letter is intended to provide supplementary geotechnical design recommendations for the subject property. This letter should be considered as Addendum II to the geotechnical report. All other recommendations in the above referenced report and letter should be followed. The General Conditions section of the geotechnical report applies to this letter.

We appreciate the opportunity of providing our services on this project. If we can answer questions or be of further service, please contact the undersigned at your convenience.

Respectfully Submitted,
**EARTHTEC ENGINEERING**

Shawn A. Stuart E.I.T.
Staff Geotechnical Engineer

PROFESSIONAL ENGINEER
No. 5567049-2202
TIMOTHY ALLAN MITCHELL
7/13/15
STATE OF UTAH

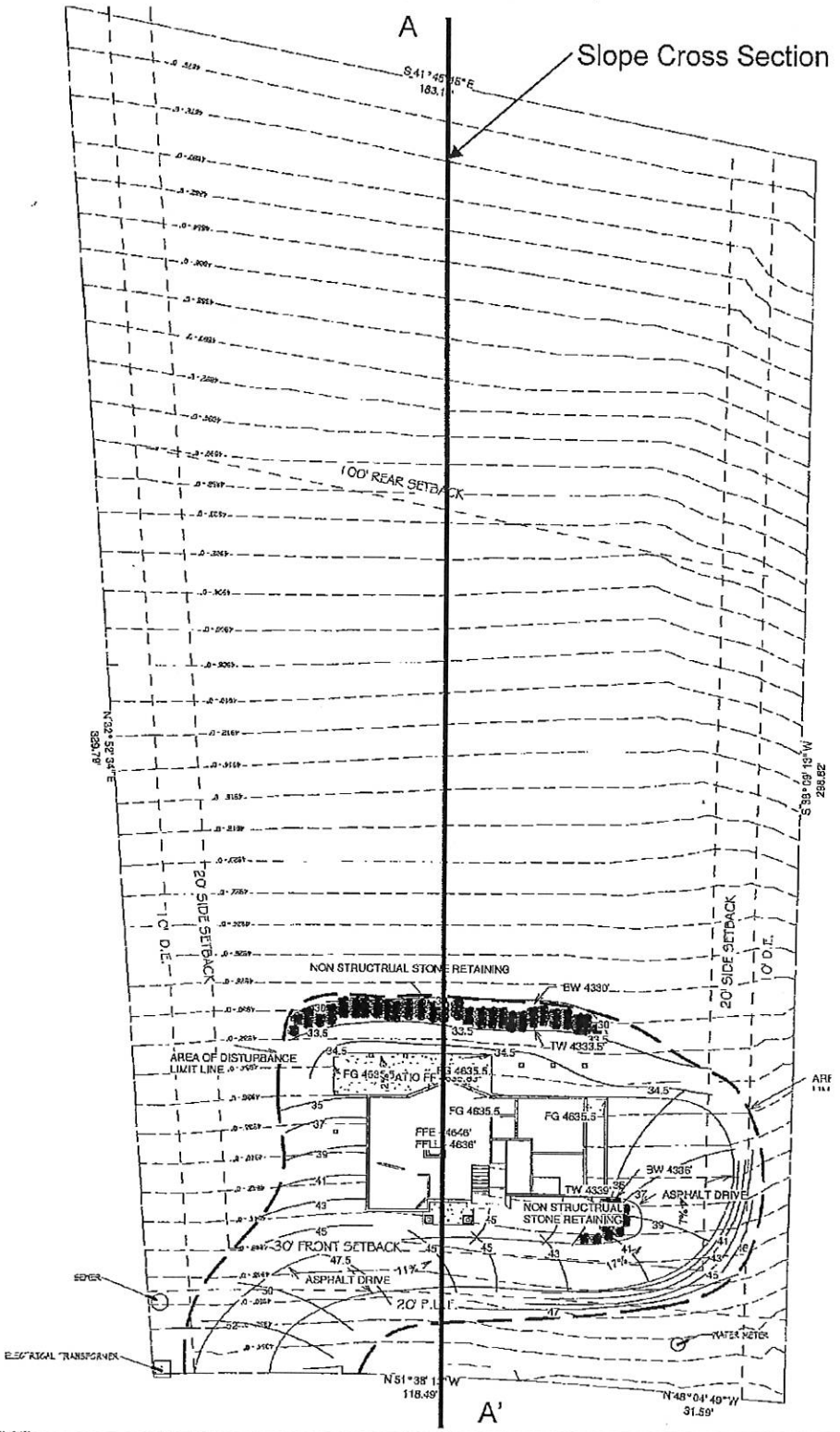
Timothy A. Mitchell, P.E.
Geotechnical Engineer

1 copy emailed
2 copies mailed

Attachments: Figure No. 1, *Site Plan Showing Location of Slope Cross Section*
Figure Nos. 2 - 5, *Slope Stability Results*
Figure Nos. 6 - 7, *Direct Shear Test*
Appendix A Bearing Capacity and Settlement Analysis
Appendix B Lateral Earth Pressures
Appendix C Slope Stability Analysis Files
Appendix D Direct Shear Files
Appendix E Seismic Values

# SITE PLAN SHOWING LOCATION OF SLOPE CROSS-SECTION

## LOT 15, SKI LAKE ESTATES NO. 3
## 6640 EAST 1100 SOUTH, HUNTSVILLE, UTAH




*Site Map Provided by Client

Not to Scale

N

| PROJECT NO.: 145150 | Earthtec Engineering | FIGURE NO.: 1 |
|---|---|---|

PROJECT NO.: 145150

FIGURE NO.: 2

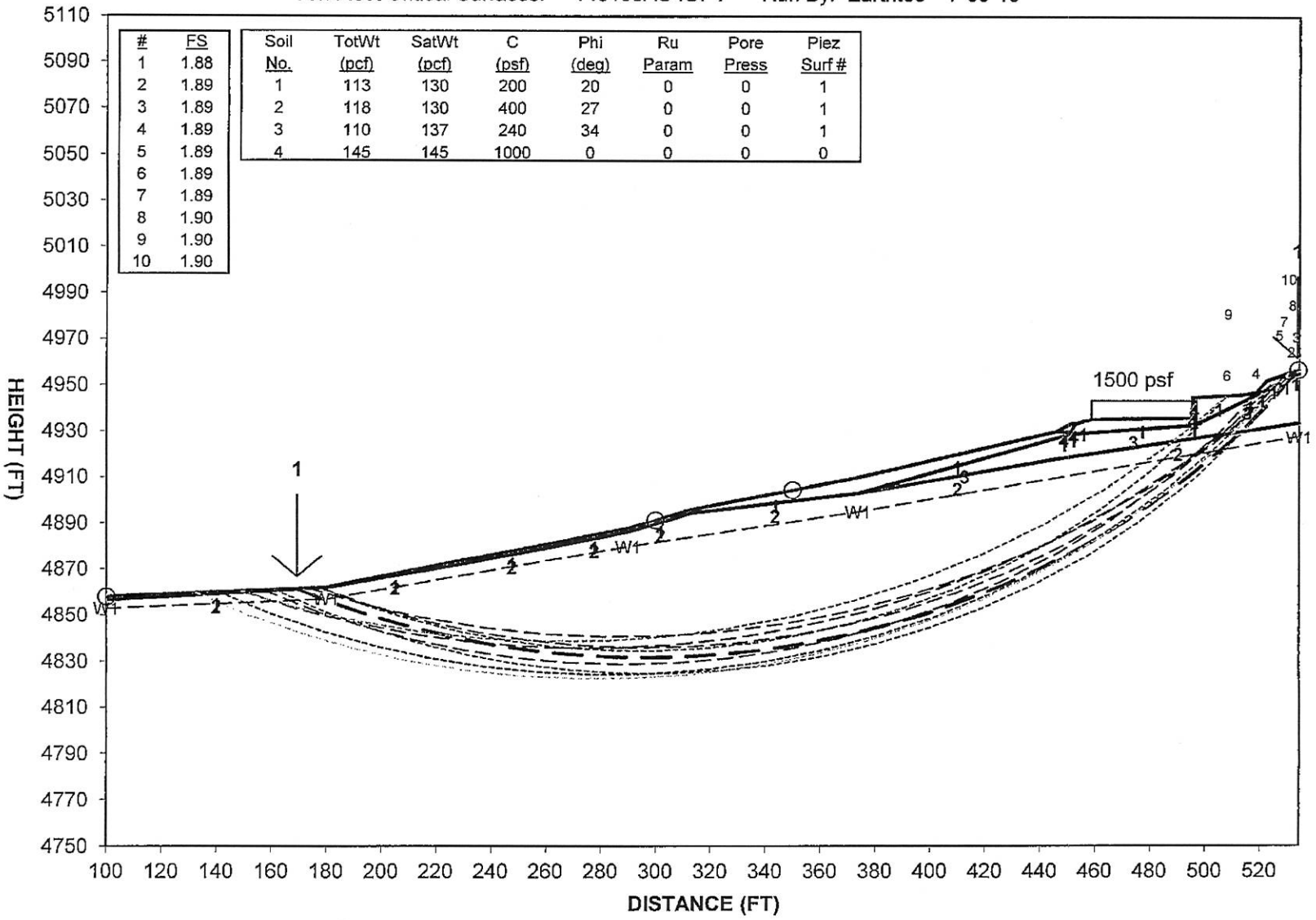
# STABILITY RESULTS

## Lot 15 Ski Lakes ~ Static - A

Ten Most Critical Surfaces. 145150AC .OPT Run By: Earthtec 7-09-15

| # | FS |
|---|---|
| 1 | 1.88 |
| 2 | 1.89 |
| 3 | 1.89 |
| 4 | 1.89 |
| 5 | 1.89 |
| 6 | 1.89 |
| 7 | 1.89 |
| 8 | 1.90 |
| 9 | 1.90 |
| 10 | 1.90 |

| Soil No. | TotWt (pcf) | SatWt (pcf) | C (psf) | Phi (deg) | Ru Param | Pore Press | Piez Surf # |
|---|---|---|---|---|---|---|---|
| 1 | 113 | 130 | 200 | 20 | 0 | 0 | 1 |
| 2 | 118 | 130 | 400 | 27 | 0 | 0 | 1 |
| 3 | 110 | 137 | 240 | 34 | 0 | 0 | 1 |
| 4 | 145 | 145 | 1000 | 0 | 0 | 0 | 0 |



PROJECT NO.: 145150

Earthtec Engineering

FIGURE NO.: 3

# STABILITY RESULTS

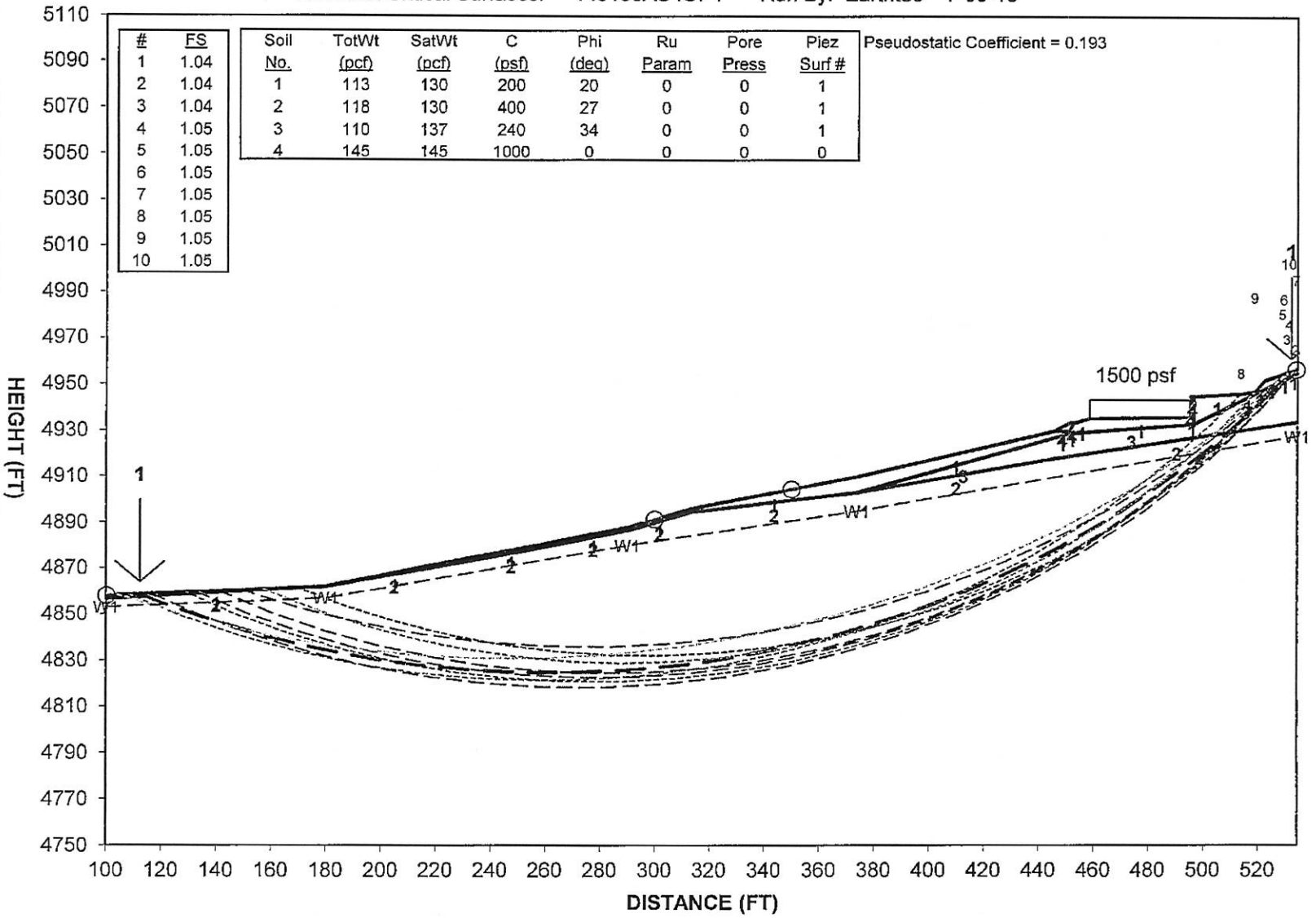
## Lot 15 Ski Lakes ~ Seismic - A

Ten Most Critical Surfaces. 145150AS .OPT Run By: Earthtec 7-09-15

| # | FS |
|---|---|
| 1 | 1.04 |
| 2 | 1.04 |
| 3 | 1.04 |
| 4 | 1.05 |
| 5 | 1.05 |
| 6 | 1.05 |
| 7 | 1.05 |
| 8 | 1.05 |
| 9 | 1.05 |
| 10 | 1.05 |

| Soil No. | TotWt (pcf) | SatWt (pcf) | C (psf) | Phi (deg) | Ru Param | Pore Press | Piez Surf # |
|---|---|---|---|---|---|---|---|
| 1 | 113 | 130 | 200 | 20 | 0 | 0 | 1 |
| 2 | 118 | 130 | 400 | 27 | 0 | 0 | 1 |
| 3 | 110 | 137 | 240 | 34 | 0 | 0 | 1 |
| 4 | 145 | 145 | 1000 | 0 | 0 | 0 | 0 |

Pseudostatic Coefficient = 0.193



PROJECT NO.: 145150

FIGURE NO.: 4

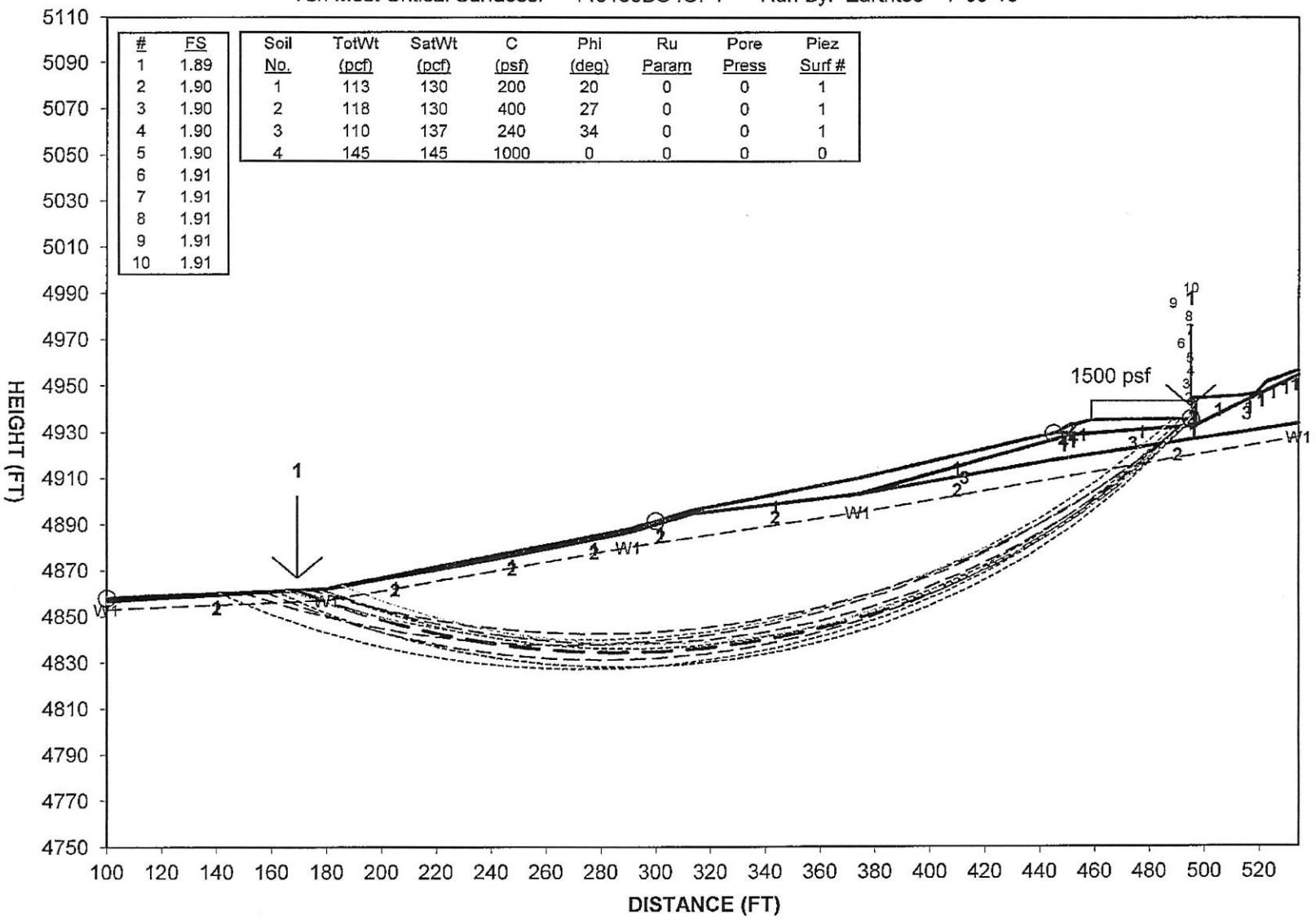
# STABILITY RESULTS

## Lot 15 Ski Lakes ~ Static - B

Ten Most Critical Surfaces. 145150BC .OPT Run By: Earthtec 7-09-15

| # | FS |
|---|---|
| 1 | 1.89 |
| 2 | 1.90 |
| 3 | 1.90 |
| 4 | 1.90 |
| 5 | 1.90 |
| 6 | 1.91 |
| 7 | 1.91 |
| 8 | 1.91 |
| 9 | 1.91 |
| 10 | 1.91 |

| Soil No. | TotWt (pcf) | SatWt (pcf) | C (psf) | Phi (deg) | Ru Param | Pore Press | Piez Surf # |
|---|---|---|---|---|---|---|---|
| 1 | 113 | 130 | 200 | 20 | 0 | 0 | 1 |
| 2 | 118 | 130 | 400 | 27 | 0 | 0 | 1 |
| 3 | 110 | 137 | 240 | 34 | 0 | 0 | 1 |
| 4 | 145 | 145 | 1000 | 0 | 0 | 0 | 0 |



PROJECT NO.: 145150

Earthtec Engineering

FIGURE NO.: 5

# STABILITY RESULTS

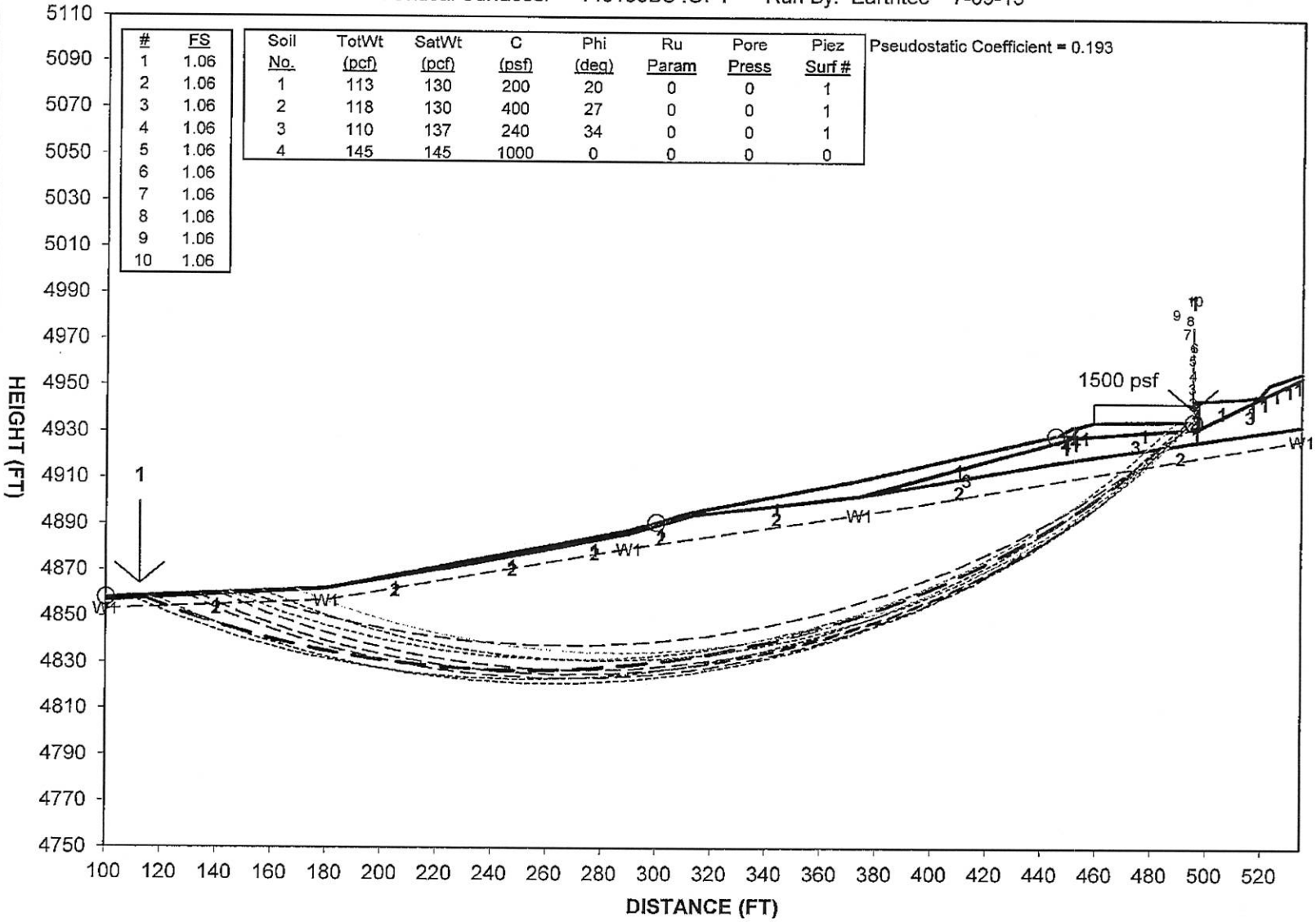
## Lot 15 Ski Lakes ~ Seismic - B

Ten Most Critical Surfaces. 145150BS .OPT Run By: Earthtec 7-09-15

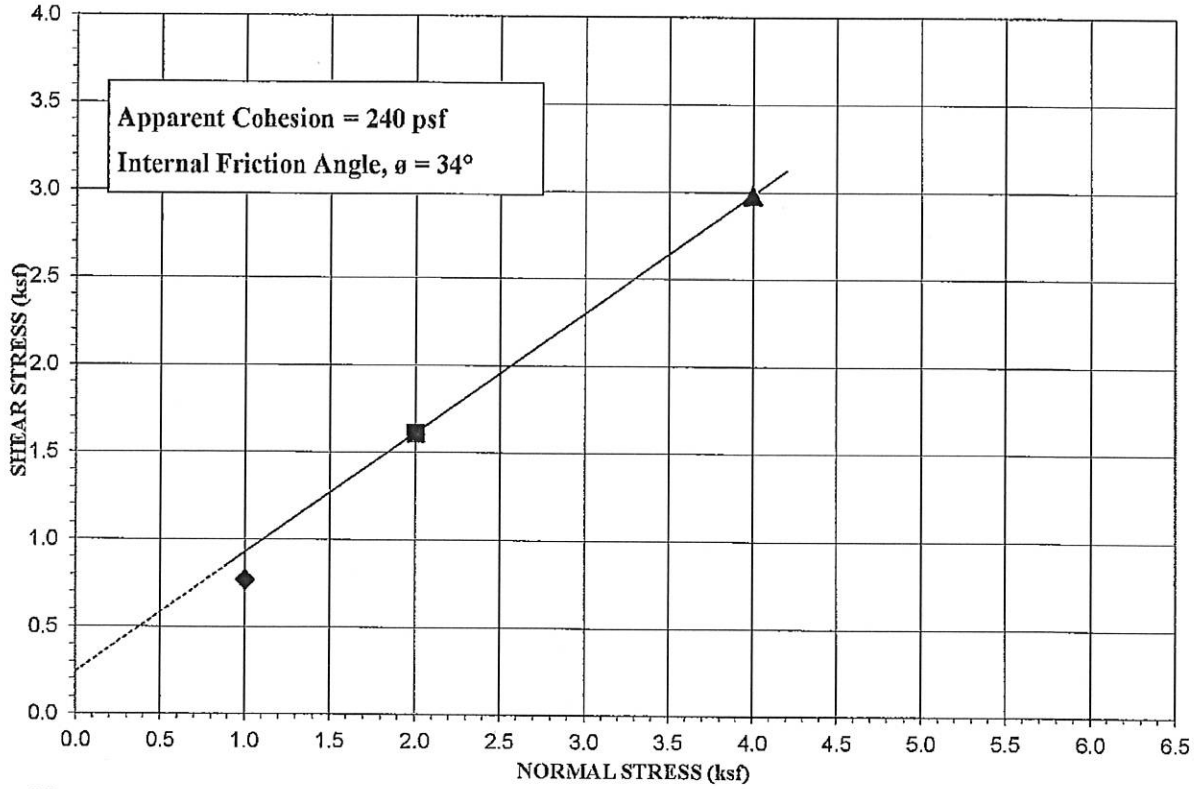
| # | FS |
|---|---|
| 1 | 1.06 |
| 2 | 1.06 |
| 3 | 1.06 |
| 4 | 1.06 |
| 5 | 1.06 |
| 6 | 1.06 |
| 7 | 1.06 |
| 8 | 1.06 |
| 9 | 1.06 |
| 10 | 1.06 |

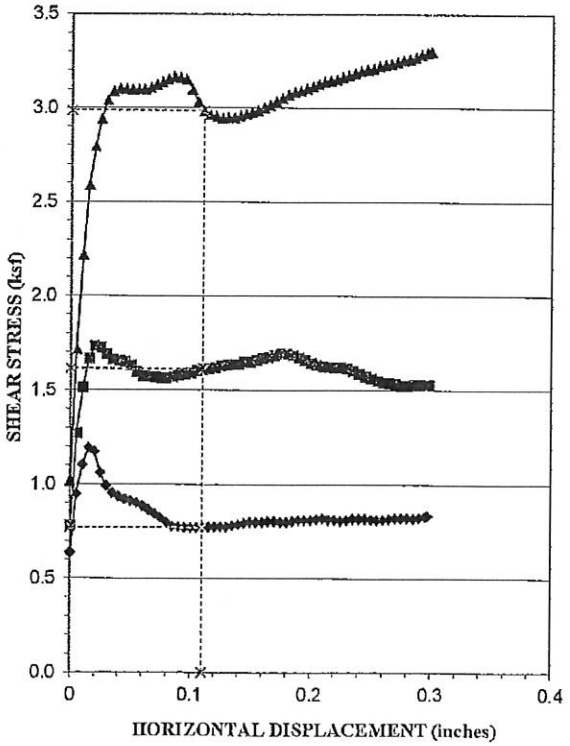
| Soil No. | TotWt (pcf) | SatWt (pcf) | C (psf) | Phi (deg) | Ru Param | Pore Press | Piez Surf # |
|---|---|---|---|---|---|---|---|
| 1 | 113 | 130 | 200 | 20 | 0 | 0 | 1 |
| 2 | 118 | 130 | 400 | 27 | 0 | 0 | 1 |
| 3 | 110 | 137 | 240 | 34 | 0 | 0 | 1 |
| 4 | 145 | 145 | 1000 | 0 | 0 | 0 | 0 |

Pseudostatic Coefficient = 0.193



# DIRECT SHEAR TEST



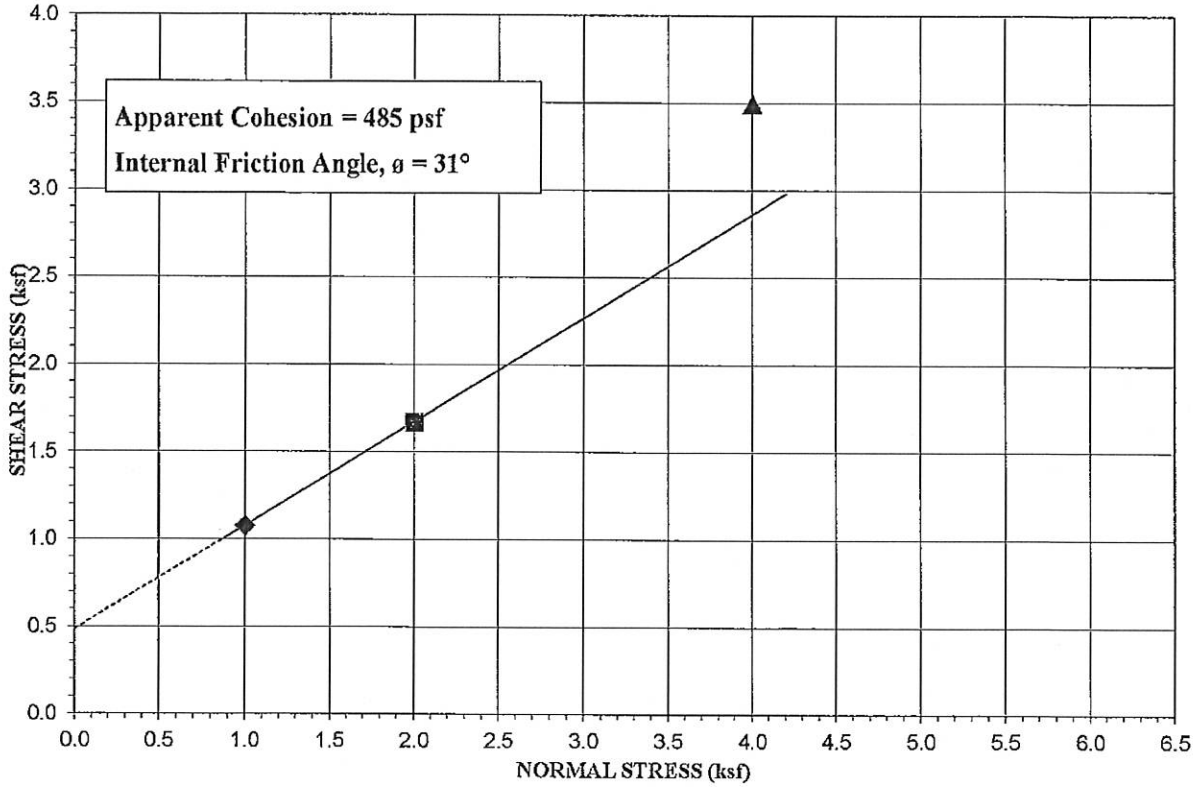

| Source: TP-3 | Depth: 11.0 ft | | |
|---|---|---|---|
| Type of Test: | Consolidated Drained/Saturated | | |
| Test No. (Symbol) | 1 (◆) | 2 (■) | 3 (▲) |
| Sample Type | Remolded | | |
| Initial Height, in. | 1 | 1 | 1 |
| Diameter, in. | 2.4 | 2.4 | 2.4 |
| Dry Density Before, pcf | 95.5 | 95.5 | 95.3 |
| Dry Density After, pcf | 95.9 | 80.2 | 98.7 |
| Moisture % Before | 16.2 | 16.2 | 16.2 |
| Moisture % After | 42.7 | 70.7 | 36.2 |
| Normal Load, ksf | 1.0 | 2.0 | 4.0 |
| Shear Stress, ksf | 0.77 | 1.61 | 2.98 |
| Strain Rate | .00005240 IN/SEC | | |

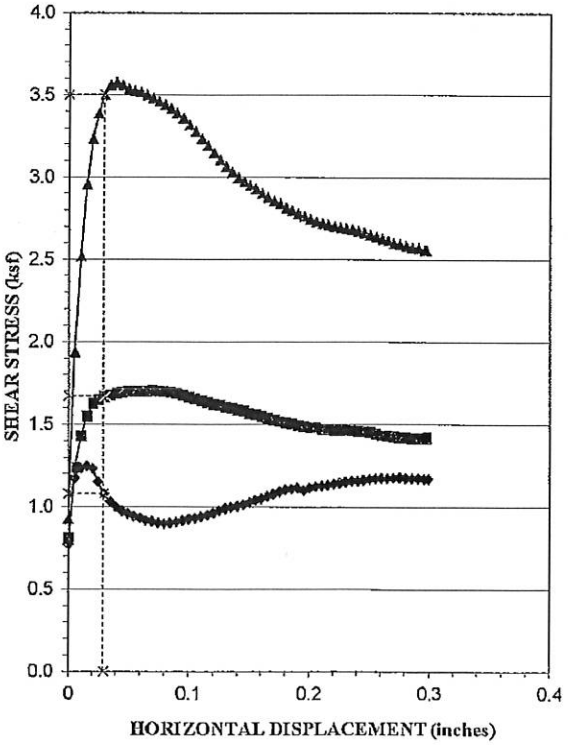
| Sample Properties | |
|---|---|
| Cohesion, psf | 240 |
| Friction Angle, ϕ | 34 |
| Liquid Limit, % | 33 |
| Plasticity Index, % | NP |
| Percent Gravel | 0 |
| Percent Sand | 70 |
| Percent Passing No. 200 sieve | 30 |
| Classification | Silty SAND (SM) |

PROJECT: Lot 15 Ski Lakes Estates No. 3

| PROJECT NO.: 145150G | Earthtec Engineering | FIGURE NO.: 6 |
|---|---|---|

# DIRECT SHEAR TEST




| Source: TP-4 | Depth: 11.0 ft | | |
|---|---|---|---|
| Type of Test: | Consolidated Drained/Saturated | | |
| Test No. (Symbol) | 1 (◆) | 2 (■) | 3 (▲) |
| Sample Type | Remolded | | |
| Initial Height, in. | 1 | 1 | 1 |
| Diameter, in. | 2.4 | 2.4 | 2.4 |
| Dry Density Before, pcf | 95.7 | 96.1 | 96.3 |
| Dry Density After, pcf | 92.9 | 91.2 | 93.7 |
| Moisture % Before | 23.5 | 23.5 | 23.5 |
| Moisture % After | 40.0 | 41.4 | 34.5 |
| Normal Load, ksf | 1.0 | 2.0 | 4.0 |
| Shear Stress, ksf | 1.08 | 1.67 | 3.50 |
| Strain Rate | .00006558 IN/SEC | | |

| Sample Properties | |
|---|---|
| Cohesion, psf | 485 |
| Friction Angle, ϕ | 31 |
| Liquid Limit, % | 55 |
| Plasticity Index, % | 24 |
| Percent Gravel | 0 |
| Percent Sand | 31 |
| Percent Passing No. 200 sieve | 69 |
| Classification | Sandy Elastic SILT (MH) |

**PROJECT:** Lot 15 Ski Lakes Estates No. 3

| PROJECT NO.: 145150G | Earthtec Engineering | FIGURE NO.: 7 |
|---|---|---|

# APPENDIX A

## ALLOWABLE BEARING CAPACITY AND SETTLEMENT CALCULATIONS

| SETTLEMENT OF FOOTINGS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project: | Lot 15 Ski Lake Estates No. 3 | | TP1 | | | | | |
| B: | 3.16228 | feet (width or diameter) | | b = | 1.581139 | ft (1/2 width/dia) | | |
| L: | 3.16228 | feet (length) | | l = | 1.581139 | ft (1/2 length) | | |
| foot. depth: | 2.5 | feet | | | Spread Load,k: | | 15 | |
| unit weight: | 120 | pcf (above footing depth) | | | Strip Load,k: | | 3 | |
| allowable q: | 1500 | psf | | | | | | |
| footing type: | 3 | (1=strip,2&3=square/rect.,4=circular) | | | | total = | 1.20 | |
| | 4 | (4 for center, 1 for corner of square/rect.) | | | | @ 2B= | 0.81 | |
| water depth: | 20 | feet | | | | | | |
| | | | | | | | | Bottom |
| **DEFINE SOIL PROFILE:** | | | preconsol | | Density | Below ftg. | Avg. | Depth |
| Soil type | $C_c'$ | $C_r'$ | press.,$\sigma_c'$(psf) | OCR | (pcf) | depth (ft) | OCR | of layer |
| Structural Fill | 0.001 | 0.000125 | | | 130 | 0.0 | 1.00 | 0 |
| CH | 0.148 | 0.0199 | 1200 | | 106 | 12.5 | 1.51 | 15 |

| | SQUARE/RECTANGULAR FOOTINGS (Westergard Method)... | | | | | | | (1=nc, 2&3 |
|---|---|---|---|---|---|---|---|---|
| | Below ftg. | | Increased | avg. ovrbn. | Incremnt. | Total | | Overcons. |
| Soil Type | depth (ft) | Influence | Stress (psf) | press.(psf) | Sett. (in.) | Set. (in.) | | Condition |
| Structural Fill | 0 | 0.000 | 0.0 | 300.0 | 0.000 | 0.00 | | 1 |
| CH | 1 | 0.774 | 1160.6 | 406.0 | 0.318 | 0.32 | | 3 |
| CH | 2 | 0.579 | 868.9 | 512.0 | 0.197 | 0.51 | | 3 |
| CH | 3 | 0.430 | 644.7 | 618.0 | 0.108 | 0.62 | | 3 |
| CH | 4 | 0.322 | 482.3 | 724.0 | 0.056 | 0.68 | | 3 |
| CH | 5 | 0.245 | 367.1 | 830.0 | 0.038 | 0.72 | | 2 |
| CH | 6 | 0.190 | 285.1 | 936.0 | 0.039 | 0.76 | | 3 |
| CH | 7 | 0.151 | 225.9 | 1042.0 | 0.057 | 0.81 | <---2B | 3 |
| CH | 8 | 0.122 | 182.4 | 1148.0 | 0.114 | 0.93 | | 1 |
| CH | 9 | 0.100 | 149.8 | 1254.0 | 0.087 | 1.01 | | 1 |
| CH | 10 | 0.083 | 124.9 | 1360.0 | 0.068 | 1.08 | | 1 |
| CH | 11 | 0.070 | 105.5 | 1466.0 | 0.054 | 1.14 | | 1 |
| CH | 12 | 0.060 | 90.2 | 1572.0 | 0.043 | 1.18 | | 1 |
| CH | 12.5 | 0.056 | 83.8 | 1625.0 | 0.019 | 1.20 | | 1 |

| SETTLEMENT OF FOOTINGS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project: | Lot 15 Ski Lake Estates No. 3 | | | TP2 | | | | |
| B: | 3.16228 | feet (width or diameter) | | b = | 1.581139 | ft (1/2 width/dia) | | |
| L: | 3.16228 | feet (length) | | l = | 1.581139 | ft (1/2 length) | | |
| foot. depth: | 2.5 | feet | | | Spread Load,k: | | 15 | |
| unit weight: | 120 | pcf (above footing depth) | | | Strip Load,k: | | 3 | |
| allowable q: | 1500 | psf | | | | | | |
| footing type: | 3 | (1=strip,2&3=square/rect.,4=circular) | | | | total = | 0.94 | |
| | 4 | (4 for center, 1 for corner of square/rect.) | | | | @ 2B= | 0.64 | |
| water depth: | 20 | feet | | | | | | |
| | | | | | | | | Bottom |
| **DEFINE SOIL PROFILE:** | | | preconsol | | Density | below ftg. | Avg. | Depth |
| Soil type | $C_c'$ | $C_r'$ | press.,$\sigma_c'$(psf) | OCR | (pcf) | depth (ft) | OCR | of layer |
| Structural Fill | 0.001 | 0.000125 | | | 130 | 0.0 | 1.00 | 0 |
| CL | 0.12 | 0.0226 | 1300 | | 111 | 12.5 | 1.56 | 15 |

| | **SQUARE/RECTANGULAR FOOTINGS (Westergard Method)...** | | | | | | | (1=nc, 2&3 |
|---|---|---|---|---|---|---|---|---|
| | Below ftg. | | Increased | avg. ovrbn. | Incremnt. | Total | | Overcons. |
| Soil Type | depth (ft) | Influence | Stress (psf) | press.(psf) | Sett. (in.) | Set. (in.) | | Condition |
| Structural Fill | 0 | 0.000 | 0.0 | 300.0 | 0.000 | 0.00 | | 1 |
| CL | 1 | 0.774 | 1160.6 | 411.0 | 0.254 | 0.25 | | 3 |
| CL | 2 | 0.579 | 868.9 | 522.0 | 0.150 | 0.40 | | 3 |
| CL | 3 | 0.430 | 644.7 | 633.0 | 0.083 | 0.49 | | 2 |
| CL | 4 | 0.322 | 482.3 | 744.0 | 0.059 | 0.55 | | 2 |
| CL | 5 | 0.245 | 367.1 | 855.0 | 0.042 | 0.59 | | 2 |
| CL | 6 | 0.190 | 285.1 | 966.0 | 0.030 | 0.62 | | 2 |
| CL | 7 | 0.151 | 225.9 | 1077.0 | 0.024 | 0.64 | <---2B | 3 |
| CL | 8 | 0.122 | 182.4 | 1188.0 | 0.089 | 0.73 | | 1 |
| CL | 9 | 0.100 | 149.8 | 1299.0 | 0.068 | 0.80 | | 1 |
| CL | 10 | 0.083 | 124.9 | 1410.0 | 0.053 | 0.85 | | 1 |
| CL | 11 | 0.070 | 105.5 | 1521.0 | 0.042 | 0.89 | | 1 |
| CL | 12 | 0.060 | 90.2 | 1632.0 | 0.034 | 0.93 | | 1 |
| CL | 12.5 | 0.056 | 83.8 | 1687.5 | 0.015 | 0.94 | | 1 |

# APPENDIX B

## LATERAL EARTH PRESSURES (STATIC AND DYNAMIC)

**LATERAL EARTH PRESSURES**

| | ENTER | | | | | |
|---|---|---|---|---|---|---|
| Project: | | | | | | |
| Density of water: | 62.4 | pcf | | | | |
| Internal Friction Angle of Soil: | 25 | deg. | = | 0.436332 | rad. | |
| Angle of Soil Backfill (from horiz.): | 0 | deg. | = | 0 | rad. | |
| Friction angle of soil/wall interface: | 12.5 | deg. | = | 0.218166 | rad. | |
| Angle of back of wall (from VERT.): | 0 | deg. | = | 0 | rad. ( | 1.570796 |
| Angle of front of wall (from VERT.): | 0 | deg. | = | 0 | rad. | |
| Density of soil (above water): | 110 | pcf | | | | |
| Horizontal Acceleration: | 0.19 | g | | | | |
| Vertical Acceleration: | 0.00 | g | => | 0.190367 | (theta, rad.) | |

CALCULATIONS

| | | | | | | |
|---|---|---|---|---|---|---|
| AT REST $K_o$ = | 0.577 | | | | | |
| At Rest Pressure = | 64 | psf/ft above water | = | 90 | psf/ft below water | |
| | | | | | | |
| Coulomb $K_a$ = | 0.367 | (Accounts for wall friction) | | | | |
| Coulomb $K_p$ = | 3.552 | (Accounts for wall friction) | | | | |
| Coulomb Active Pressure = | 40 | psf/ft above water | = | 80 | psf/ft below water | |
| Coulomb Passive Pressure = | 391 | psf/ft above water | = | 231 | psf/ft below water | |
| | | | | | | 0.700741 |
| Rankine $K_a$ = | 0.406 | (Does NOT account for wall friction) | | | | 0.582656 |
| Rankine $K_p$ = | 2.464 | (Does NOT account for wall friction) | | | | |
| Rankine Active Pressure = | 45 | psf/ft above water | = | 82 | psf/ft below water | |
| Rankine Passive Pressure = | 271 | psf/ft above water | = | 180 | psf/ft below water | |
| | | | | | | |
| Mononobe-Okabe Seismic $K_a$ = | 0.53 | | | | | |
| Mononobe-Okabe Seismic $K_p$ = | 2.92 | | | | | |
| M.-O. Seismic Active Pressure = | 58.4 | psf/ft above water | = | 88 | psf/ft below water | |
| M.-O. Seismic Passive Pressure= | 321 | psf/ft above water | = | 201 | psf/ft below water | |
| Est. M.-O. Seismic At-Rest Press.= | 80.3 | psf/ft above water | = | 97 | psf/ft below water | |
| (Estimated only from ratios of $K_o$ to $K_a$ and $K_p$) | | | | | | |
| | | | | | | |
| Dynamic Active Pressure ONLY = | 18 | psf/ft above water | = | 8 | psf/ft below water | |
| Dynamic Passive Press. ONLY = | 70 | psf/ft above water | = | 30 | psf/ft below water | |
| Est.Dynamic At-Rest Press.ONLY = | 17 | psf/ft above water | = | 7 | psf/ft below water | |

# APPENDIX C

## GLOBAL STABILITY INPUT AND OUT PUT FILES

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ä 94       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.004                 94 Ä 1295 *
*****************************************
```

Problem Description : Lot 15 Ski Lakes ~ Static

---
SEGMENT BOUNDARY COORDINATES
---

19 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|---|---|---|---|---|---|
| 1 | 100.0 | 4858.0 | 180.0 | 4862.0 | 1 |
| 2 | 180.0 | 4862.0 | 230.0 | 4874.0 | 1 |
| 3 | 230.0 | 4874.0 | 264.9 | 4882.0 | 1 |
| 4 | 264.9 | 4882.0 | 290.1 | 4888.0 | 1 |
| 5 | 290.1 | 4888.0 | 313.3 | 4896.0 | 1 |
| 6 | 313.3 | 4896.0 | 373.8 | 4910.0 | 1 |
| 7 | 373.8 | 4910.0 | 445.9 | 4930.0 | 1 |
| 8 | 445.9 | 4930.0 | 451.3 | 4933.5 | 4 |
| 9 | 451.3 | 4933.5 | 452.8 | 4933.5 | 4 |
| 10 | 452.8 | 4933.5 | 458.7 | 4935.5 | 1 |
| 11 | 458.7 | 4935.5 | 495.5 | 4936.0 | 1 |
| 12 | 495.5 | 4936.0 | 495.6 | 4945.0 | 4 |
| 13 | 495.6 | 4945.0 | 496.6 | 4945.0 | 4 |
| 14 | 496.6 | 4945.0 | 513.7 | 4946.0 | 1 |
| 15 | 513.7 | 4946.0 | 518.8 | 4947.0 | 1 |
| 16 | 518.8 | 4947.0 | 522.6 | 4952.0 | 1 |
| 17 | 522.6 | 4952.0 | 527.3 | 4954.0 | 1 |
| 18 | 527.3 | 4954.0 | 531.9 | 4956.0 | 1 |
| 19 | 531.9 | 4956.0 | 534.3 | 4957.0 | 1 |

15 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|---|---|---|---|---|---|
| 1 | 445.9 | 4930.0 | 451.3 | 4930.0 | 1 |
| 2 | 451.3 | 4930.0 | 452.8 | 4933.5 | 1 |
| 3 | 495.5 | 4936.0 | 496.5 | 4936.0 | 1 |
| 4 | 496.5 | 4936.0 | 496.6 | 4945.0 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| 5 | 100.0 | 4856.5 | 180.0 | 4862.0 | 2 |
| 6 | 180.0 | 4862.0 | 230.0 | 4872.5 | 2 |
| 7 | 230.0 | 4872.5 | 264.9 | 4880.5 | 2 |
| 8 | 264.9 | 4880.5 | 290.1 | 4886.5 | 2 |
| 9 | 290.1 | 4886.5 | 313.3 | 4894.5 | 2 |
| 10 | 313.3 | 4894.5 | 373.8 | 4903.0 | 2 |
| 11 | 373.8 | 4903.0 | 451.3 | 4929.0 | 3 |
| 12 | 451.3 | 4929.0 | 496.5 | 4933.0 | 3 |
| 13 | 496.5 | 4933.0 | 534.3 | 4955.0 | 3 |
| 14 | 373.8 | 4903.0 | 445.9 | 4918.0 | 2 |
| 15 | 445.9 | 4918.0 | 534.3 | 4934.0 | 2 |

---
ISOTROPIC Soil Parameters
---

4 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---|---|---|---|---|---|---|---|
| 1 | 113.0 | 130.0 | 200.0 | 20.00 | .000 | .0 | 1 |
| 2 | 118.0 | 130.0 | 400.0 | 27.00 | .000 | .0 | 1 |
| 3 | 110.0 | 137.0 | 240.0 | 34.00 | .000 | .0 | 1 |
| 4 | 145.0 | 145.0 | 1000.0 | .00 | .000 | .0 | 0 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

**********
PHREATIC SURFACE,
**********

| Point No. | x-water (ft) | y-water (ft) |
|---|---|---|
| 1 | 100.00 | 4853.00 |
| 2 | 180.00 | 4857.00 |
| 3 | 290.00 | 4880.00 |
| 4 | 373.80 | 4895.00 |
| 5 | 534.30 | 4928.00 |

BOUNDARY LOADS

1 load(s) specified

| Load No. | x-left (ft) | x-right (ft) | Intensity (psf) | Direction (deg) |
|---|---|---|---|---|
| 1 | 458.7 | 495.5 | 1500.0 | .0 |

NOTE - Intensity is specified as a uniformly distributed
force acting on a HORIZONTALLY projected surface.

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

1000 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 50 points equally spaced along the ground surface between x = 100.0 ft
and x = 300.0 ft

Each surface terminates between x = 350.0 ft
and x = 534.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

**********
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
**********
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for slices that have low self weight and a relatively high "c" shear strength parameter. This effect can be eliminated by inserting a crack or by reducing the "c" value.
**********

---
USER SELECTED option to maintain strength greater than zero
---

**********
** Factor of safety calculation for surface # 986 **
** failed to converge within FIFTY iterations **
**
** The last calculated value of the FOS was 1#INF... **
** This will be ignored for final summary of results **

**********

Circular surface (FOS =500.000) is defined by: xcenter = 343.18
ycenter = 3953.59 Init. Pt. = 300.00 Seg. Length = 86.37

---

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 43 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|---|---|---|
| 1 | 169.39 | 4861.47 |
| 2 | 178.44 | 4857.22 |
| 3 | 187.64 | 4853.29 |
| 4 | 196.96 | 4849.68 |
| 5 | 206.41 | 4846.39 |
| 6 | 215.96 | 4843.44 |
| 7 | 225.61 | 4840.82 |
| 8 | 235.34 | 4838.53 |
| 9 | 245.15 | 4836.58 |
| 10 | 255.02 | 4834.98 |
| 11 | 264.94 | 4833.71 |
| 12 | 274.90 | 4832.80 |
| 13 | 284.88 | 4832.22 |
| 14 | 294.88 | 4832.00 |
| 15 | 304.88 | 4832.12 |
| 16 | 314.87 | 4832.59 |
| 17 | 324.84 | 4833.40 |
| 18 | 334.77 | 4834.56 |
| 19 | 344.66 | 4836.07 |
| 20 | 354.48 | 4837.91 |
| 21 | 364.24 | 4840.10 |
| 22 | 373.92 | 4842.62 |
| 23 | 383.50 | 4845.48 |
| 24 | 392.98 | 4848.66 |
| 25 | 402.34 | 4852.18 |
| 26 | 411.58 | 4856.01 |
| 27 | 420.67 | 4860.17 |
| 28 | 429.62 | 4864.63 |
| 29 | 438.41 | 4869.41 |
| 30 | 447.02 | 4874.49 |
| 31 | 455.46 | 4879.86 |
| 32 | 463.70 | 4885.52 |
| 33 | 471.74 | 4891.46 |
| 34 | 479.57 | 4897.68 |
| 35 | 487.18 | 4904.17 |
| 36 | 494.56 | 4910.92 |
| 37 | 501.70 | 4917.92 |
| 38 | 508.60 | 4925.16 |
| 39 | 515.24 | 4932.64 |
| 40 | 521.62 | 4940.34 |
| 41 | 527.72 | 4948.26 |
| 42 | 533.55 | 4956.39 |

145150AC

43 533.82 4956.80

**** Simplified BISHOP FOS = 1.881 ****

**********
**
** Out of the 1000 surfaces generated and analyzed by XSTABL, **
** 1 surfaces were found to have MISLEADING FOS values. **
**
**********

The following is a summary of the TEN most critical surfaces

Problem Description : Lot 15 Ski Lakes ~ Static

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|---|---|---|---|---|---|---|---|
| 1. | 1.881 | 296.26 | 5120.03 | 288.01 | 169.39 | 533.82 | 2.566E+08 |
| 2. | 1.885 | 274.84 | 5169.61 | 333.80 | 148.98 | 531.29 | 2.773E+08 |
| 3. | 1.885 | 287.24 | 5160.10 | 319.38 | 173.47 | 533.19 | 2.475E+08 |
| 4. | 1.887 | 288.04 | 5113.65 | 284.67 | 157.14 | 518.59 | 2.543E+08 |
| 5. | 1.888 | 296.01 | 5120.96 | 284.88 | 177.55 | 527.04 | 2.332E+08 |
| 6. | 1.891 | 293.69 | 5096.92 | 262.17 | 177.55 | 507.80 | 2.052E+08 |
| 7. | 1.892 | 282.20 | 5123.49 | 298.99 | 140.82 | 528.77 | 2.919E+08 |
| 8. | 1.895 | 297.59 | 5100.26 | 275.34 | 161.22 | 531.84 | 2.696E+08 |
| 9. | 1.896 | 266.32 | 5165.81 | 327.13 | 148.98 | 508.32 | 2.406E+08 |
| 10. | 1.897 | 278.47 | 5128.28 | 305.67 | 132.65 | 530.43 | 3.085E+08 |

* * * END OF FILE * * *

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ä 94       *
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*                                       *
*  Ver. 5.004                94 Ä 1295  *
*****************************************
```

Problem Description : Lot 15 Ski Lakes ~ Seismic

---
SEGMENT BOUNDARY COORDINATES
---

19 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|---|---|---|---|---|---|
| 1 | 100.0 | 4858.0 | 180.0 | 4862.0 | 1 |
| 2 | 180.0 | 4862.0 | 230.0 | 4874.0 | 1 |
| 3 | 230.0 | 4874.0 | 264.9 | 4882.0 | 1 |
| 4 | 264.9 | 4882.0 | 290.1 | 4888.0 | 1 |
| 5 | 290.1 | 4888.0 | 313.3 | 4896.0 | 1 |
| 6 | 313.3 | 4896.0 | 373.8 | 4910.0 | 1 |
| 7 | 373.8 | 4910.0 | 445.9 | 4930.0 | 1 |
| 8 | 445.9 | 4930.0 | 451.3 | 4933.5 | 4 |
| 9 | 451.3 | 4933.5 | 452.8 | 4933.5 | 4 |
| 10 | 452.8 | 4933.5 | 458.7 | 4935.5 | 1 |
| 11 | 458.7 | 4935.5 | 495.5 | 4936.0 | 1 |
| 12 | 495.5 | 4936.0 | 495.6 | 4945.0 | 4 |
| 13 | 495.6 | 4945.0 | 496.6 | 4945.0 | 4 |
| 14 | 496.6 | 4945.0 | 513.7 | 4946.0 | 1 |
| 15 | 513.7 | 4946.0 | 518.8 | 4947.0 | 1 |
| 16 | 518.8 | 4947.0 | 522.6 | 4952.0 | 1 |
| 17 | 522.6 | 4952.0 | 527.3 | 4954.0 | 1 |
| 18 | 527.3 | 4954.0 | 531.9 | 4956.0 | 1 |
| 19 | 531.9 | 4956.0 | 534.3 | 4957.0 | 1 |

15 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|---|---|---|---|---|---|
| 1 | 445.9 | 4930.0 | 451.3 | 4930.0 | 1 |
| 2 | 451.3 | 4930.0 | 452.8 | 4933.5 | 1 |
| 3 | 495.5 | 4936.0 | 496.5 | 4936.0 | 1 |
| 4 | 496.5 | 4936.0 | 496.6 | 4945.0 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| 5 | 100.0 | 4856.5 | 180.0 | 4862.0 | 2 |
| 6 | 180.0 | 4862.0 | 230.0 | 4872.5 | 2 |
| 7 | 230.0 | 4872.5 | 264.9 | 4880.5 | 2 |
| 8 | 264.9 | 4880.5 | 290.1 | 4886.5 | 2 |
| 9 | 290.1 | 4886.5 | 313.3 | 4894.5 | 2 |
| 10 | 313.3 | 4894.5 | 373.8 | 4903.0 | 2 |
| 11 | 373.8 | 4903.0 | 451.3 | 4929.0 | 3 |
| 12 | 451.3 | 4929.0 | 496.5 | 4933.0 | 3 |
| 13 | 496.5 | 4933.0 | 534.3 | 4955.0 | 3 |
| 14 | 373.8 | 4903.0 | 445.9 | 4918.0 | 2 |
| 15 | 445.9 | 4918.0 | 534.3 | 4934.0 | 2 |

---
ISOTROPIC Soil Parameters
---

4 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---|---|---|---|---|---|---|---|
| 1 | 113.0 | 130.0 | 200.0 | 20.00 | .000 | .0 | 1 |
| 2 | 118.0 | 130.0 | 400.0 | 27.00 | .000 | .0 | 1 |
| 3 | 110.0 | 137.0 | 240.0 | 34.00 | .000 | .0 | 1 |
| 4 | 145.0 | 145.0 | 1000.0 | .00 | .000 | .0 | 0 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

**********
PHREATIC SURFACE,
**********

| Point No. | x-water (ft) | y-water (ft) |
|---|---|---|
| 1 | 100.00 | 4853.00 |
| 2 | 180.00 | 4857.00 |
| 3 | 290.00 | 4880.00 |
| 4 | 373.80 | 4895.00 |
| 5 | 534.30 | 4928.00 |

A horizontal earthquake loading coefficient
of .193 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

BOUNDARY LOADS

1 load(s) specified

| Load No. | x-left (ft) | x-right (ft) | Intensity (psf) | Direction (deg) |
|---|---|---|---|---|
| 1 | 458.7 | 495.5 | 1500.0 | .0 |

NOTE - Intensity is specified as a uniformly distributed force acting on a HORIZONTALLY projected surface.

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

1000 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 50 points equally spaced along the ground surface between x = 100.0 ft
and x = 300.0 ft

Each surface terminates between x = 350.0 ft
and x = 534.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

**********
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
**********
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for slices that have low self weight and a relatively high "c" shear strength parameter. This effect can be eliminated by inserting a crack or by reducing the "c" value.
**********

---
USER SELECTED option to maintain strength greater than zero
---

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 48 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|---|---|---|
| 1 | 112.24 | 4858.61 |
| 2 | 121.33 | 4854.43 |
| 3 | 130.53 | 4850.51 |
| 4 | 139.83 | 4846.85 |
| 5 | 149.25 | 4843.47 |
| 6 | 158.75 | 4840.36 |
| 7 | 168.34 | 4837.53 |
| 8 | 178.01 | 4834.98 |
| 9 | 187.75 | 4832.71 |
| 10 | 197.55 | 4830.72 |
| 11 | 207.40 | 4829.02 |
| 12 | 217.30 | 4827.60 |
| 13 | 227.24 | 4826.47 |
| 14 | 237.20 | 4825.63 |
| 15 | 247.19 | 4825.08 |
| 16 | 257.18 | 4824.81 |
| 17 | 267.18 | 4824.84 |
| 18 | 277.18 | 4825.16 |
| 19 | 287.16 | 4825.76 |
| 20 | 297.12 | 4826.66 |
| 21 | 307.05 | 4827.84 |
| 22 | 316.94 | 4829.31 |
| 23 | 326.79 | 4831.06 |
| 24 | 336.58 | 4833.10 |
| 25 | 346.30 | 4835.43 |
| 26 | 355.96 | 4838.03 |
| 27 | 365.53 | 4840.91 |
| 28 | 375.02 | 4844.07 |
| 29 | 384.41 | 4847.50 |
| 30 | 393.70 | 4851.21 |
| 31 | 402.88 | 4855.18 |
| 32 | 411.94 | 4859.41 |
| 33 | 420.87 | 4863.91 |
| 34 | 429.67 | 4868.66 |
| 35 | 438.33 | 4873.66 |
| 36 | 446.84 | 4878.92 |
| 37 | 455.19 | 4884.41 |
| 38 | 463.38 | 4890.15 |
| 39 | 471.40 | 4896.12 |
| 40 | 479.25 | 4902.32 |
| 41 | 486.91 | 4908.75 |
| 42 | 494.38 | 4915.40 |
| 43 | 501.66 | 4922.25 |
| 44 | 508.73 | 4929.32 |
| 45 | 515.60 | 4936.59 |
| 46 | 522.25 | 4944.06 |
| 47 | 528.69 | 4951.71 |
| 48 | 532.18 | 4956.12 |

**** Simplified BISHOP FOS = 1.040 ****

The following is a summary of the TEN most critical surfaces

Problem Description : Lot 15 Ski Lakes ~ Seismic

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|---|---|---|---|---|---|---|---|
| 1. | 1.040 | 261.13 | 5169.67 | 344.85 | 112.24 | 532.18 | 3.257E+08 |
| 2. | 1.044 | 271.56 | 5135.21 | 317.00 | 116.33 | 533.47 | 3.299E+08 |
| 3. | 1.044 | 278.47 | 5128.28 | 305.67 | 132.65 | 530.43 | 2.955E+08 |
| 4. | 1.045 | 274.84 | 5169.61 | 333.80 | 148.98 | 531.29 | 2.646E+08 |
| 5. | 1.045 | 282.20 | 5123.49 | 298.99 | 140.82 | 528.77 | 2.796E+08 |
| 6. | 1.046 | 277.09 | 5124.92 | 304.21 | 128.57 | 529.29 | 3.013E+08 |
| 7. | 1.049 | 296.26 | 5120.03 | 288.01 | 169.39 | 533.82 | 2.453E+08 |
| 8. | 1.049 | 258.49 | 5144.41 | 323.10 | 108.16 | 513.69 | 3.066E+08 |
| 9. | 1.050 | 288.04 | 5113.65 | 284.67 | 157.14 | 518.59 | 2.435E+08 |
| 10. | 1.051 | 246.98 | 5216.58 | 385.82 | 104.08 | 531.18 | 3.314E+08 |

* * * END OF FILE * * *

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
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*                                       *
*  Ver. 5.004                 94 Ä 1295 *
*****************************************
```

Problem Description : Lot 15 Ski Lakes ~ Static

---
SEGMENT BOUNDARY COORDINATES
---

19 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|---|---|---|---|---|---|
| 1 | 100.0 | 4858.0 | 180.0 | 4862.0 | 1 |
| 2 | 180.0 | 4862.0 | 230.0 | 4874.0 | 1 |
| 3 | 230.0 | 4874.0 | 264.9 | 4882.0 | 1 |
| 4 | 264.9 | 4882.0 | 290.1 | 4888.0 | 1 |
| 5 | 290.1 | 4888.0 | 313.3 | 4896.0 | 1 |
| 6 | 313.3 | 4896.0 | 373.8 | 4910.0 | 1 |
| 7 | 373.8 | 4910.0 | 445.9 | 4930.0 | 1 |
| 8 | 445.9 | 4930.0 | 451.3 | 4933.5 | 4 |
| 9 | 451.3 | 4933.5 | 452.8 | 4933.5 | 4 |
| 10 | 452.8 | 4933.5 | 458.7 | 4935.5 | 1 |
| 11 | 458.7 | 4935.5 | 495.5 | 4936.0 | 1 |
| 12 | 495.5 | 4936.0 | 495.6 | 4945.0 | 4 |
| 13 | 495.6 | 4945.0 | 496.6 | 4945.0 | 4 |
| 14 | 496.6 | 4945.0 | 513.7 | 4946.0 | 1 |
| 15 | 513.7 | 4946.0 | 518.8 | 4947.0 | 1 |
| 16 | 518.8 | 4947.0 | 522.6 | 4952.0 | 1 |
| 17 | 522.6 | 4952.0 | 527.3 | 4954.0 | 1 |
| 18 | 527.3 | 4954.0 | 531.9 | 4956.0 | 1 |
| 19 | 531.9 | 4956.0 | 534.3 | 4957.0 | 1 |

15 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|---|---|---|---|---|---|
| 1 | 445.9 | 4930.0 | 451.3 | 4930.0 | 1 |
| 2 | 451.3 | 4930.0 | 452.8 | 4933.5 | 1 |
| 3 | 495.5 | 4936.0 | 496.5 | 4936.0 | 1 |
| 4 | 496.5 | 4936.0 | 496.6 | 4945.0 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| 5 | 100.0 | 4856.5 | 180.0 | 4862.0 | 2 |
| 6 | 180.0 | 4862.0 | 230.0 | 4872.5 | 2 |
| 7 | 230.0 | 4872.5 | 264.9 | 4880.5 | 2 |
| 8 | 264.9 | 4880.5 | 290.1 | 4886.5 | 2 |
| 9 | 290.1 | 4886.5 | 313.3 | 4894.5 | 2 |
| 10 | 313.3 | 4894.5 | 373.8 | 4903.0 | 2 |
| 11 | 373.8 | 4903.0 | 451.3 | 4929.0 | 3 |
| 12 | 451.3 | 4929.0 | 496.5 | 4933.0 | 3 |
| 13 | 496.5 | 4933.0 | 534.3 | 4955.0 | 3 |
| 14 | 373.8 | 4903.0 | 445.9 | 4918.0 | 2 |
| 15 | 445.9 | 4918.0 | 534.3 | 4934.0 | 2 |

---
ISOTROPIC Soil Parameters
---

4 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---|---|---|---|---|---|---|---|
| 1 | 113.0 | 130.0 | 200.0 | 20.00 | .000 | .0 | 1 |
| 2 | 118.0 | 130.0 | 400.0 | 27.00 | .000 | .0 | 1 |
| 3 | 110.0 | 137.0 | 240.0 | 34.00 | .000 | .0 | 1 |
| 4 | 145.0 | 145.0 | 1000.0 | .00 | .000 | .0 | 0 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

**********
PHREATIC SURFACE,
**********

| Point No. | x-water (ft) | y-water (ft) |
|---|---|---|
| 1 | 100.00 | 4853.00 |
| 2 | 180.00 | 4857.00 |
| 3 | 290.00 | 4880.00 |
| 4 | 373.80 | 4895.00 |
| 5 | 534.30 | 4928.00 |

BOUNDARY LOADS

1 load(s) specified

| Load No. | x-left (ft) | x-right (ft) | Intensity (psf) | Direction (deg) |
|---|---|---|---|---|
| 1 | 458.7 | 495.5 | 1500.0 | .0 |

NOTE - Intensity is specified as a uniformly distributed force acting on a HORIZONTALLY projected surface.

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

1000 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 50 points equally spaced along the ground surface between x = 100.0 ft
and x = 300.0 ft

Each surface terminates between x = 445.0 ft
and x = 495.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

8.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

**********
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
**********
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for slices that have low self weight and a relatively high "c" shear strength parameter. This effect can be eliminated by inserting a crack or by reducing the "c" value.
**********

---
USER SELECTED option to maintain strength greater than zero
---

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 47 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|---|---|---|
| 1 | 169.39 | 4861.47 |
| 2 | 176.63 | 4858.07 |
| 3 | 183.97 | 4854.89 |
| 4 | 191.40 | 4851.93 |
| 5 | 198.92 | 4849.20 |
| 6 | 206.52 | 4846.70 |
| 7 | 214.19 | 4844.42 |
| 8 | 221.93 | 4842.38 |
| 9 | 229.72 | 4840.57 |
| 10 | 237.56 | 4838.99 |
| 11 | 245.45 | 4837.65 |
| 12 | 253.37 | 4836.55 |
| 13 | 261.33 | 4835.69 |
| 14 | 269.30 | 4835.07 |
| 15 | 277.29 | 4834.69 |
| 16 | 285.29 | 4834.54 |
| 17 | 293.29 | 4834.64 |
| 18 | 301.28 | 4834.98 |
| 19 | 309.26 | 4835.56 |
| 20 | 317.22 | 4836.38 |
| 21 | 325.15 | 4837.44 |
| 22 | 333.04 | 4838.74 |
| 23 | 340.90 | 4840.27 |
| 24 | 348.70 | 4842.04 |
| 25 | 356.44 | 4844.04 |
| 26 | 364.13 | 4846.27 |
| 27 | 371.74 | 4848.74 |
| 28 | 379.27 | 4851.43 |
| 29 | 386.72 | 4854.35 |
| 30 | 394.08 | 4857.48 |
| 31 | 401.34 | 4860.84 |
| 32 | 408.49 | 4864.42 |
| 33 | 415.54 | 4868.21 |
| 34 | 422.47 | 4872.21 |
| 35 | 429.27 | 4876.42 |
| 36 | 435.95 | 4880.83 |
| 37 | 442.49 | 4885.43 |
| 38 | 448.88 | 4890.24 |
| 39 | 455.14 | 4895.23 |
| 40 | 461.23 | 4900.41 |
| 41 | 467.17 | 4905.77 |
| 42 | 472.95 | 4911.30 |
| 43 | 478.55 | 4917.01 |
| 44 | 483.99 | 4922.88 |
| 45 | 489.24 | 4928.92 |
| 46 | 494.31 | 4935.11 |
| 47 | 494.99 | 4935.99 |

**** Simplified BISHOP FOS = 1.893 ****

The following is a summary of the TEN most critical surfaces

145150BC

Problem Description : Lot 15 Ski Lakes ~ Static

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|---|---|---|---|---|---|---|---|
| 1. | 1.893 | 286.03 | 5100.62 | 266.08 | 169.39 | 494.99 | 2.024E+08 |
| 2. | 1.897 | 287.69 | 5104.39 | 266.35 | 177.55 | 494.12 | 1.910E+08 |
| 3. | 1.899 | 280.13 | 5099.94 | 268.86 | 157.14 | 493.35 | 2.142E+08 |
| 4. | 1.900 | 278.61 | 5139.28 | 296.85 | 173.47 | 494.89 | 1.991E+08 |
| 5. | 1.902 | 266.65 | 5151.38 | 313.83 | 148.98 | 494.67 | 2.282E+08 |
| 6. | 1.906 | 289.39 | 5090.12 | 254.17 | 177.55 | 491.49 | 1.856E+08 |
| 7. | 1.907 | 286.68 | 5082.37 | 254.40 | 161.22 | 494.71 | 2.131E+08 |
| 8. | 1.908 | 272.66 | 5107.16 | 280.09 | 140.82 | 494.27 | 2.388E+08 |
| 9. | 1.910 | 274.32 | 5126.83 | 287.07 | 165.31 | 488.54 | 1.941E+08 |
| 10. | 1.910 | 295.86 | 5088.45 | 250.59 | 185.71 | 494.97 | 1.812E+08 |

* * * END OF FILE * * *

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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*****************************************
```

Problem Description : Lot 15 Ski Lakes ~ Seismic

---

SEGMENT BOUNDARY COORDINATES

---

19 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|---|---|---|---|---|---|
| 1 | 100.0 | 4858.0 | 180.0 | 4862.0 | 1 |
| 2 | 180.0 | 4862.0 | 230.0 | 4874.0 | 1 |
| 3 | 230.0 | 4874.0 | 264.9 | 4882.0 | 1 |
| 4 | 264.9 | 4882.0 | 290.1 | 4888.0 | 1 |
| 5 | 290.1 | 4888.0 | 313.3 | 4896.0 | 1 |
| 6 | 313.3 | 4896.0 | 373.8 | 4910.0 | 1 |
| 7 | 373.8 | 4910.0 | 445.9 | 4930.0 | 1 |
| 8 | 445.9 | 4930.0 | 451.3 | 4933.5 | 4 |
| 9 | 451.3 | 4933.5 | 452.8 | 4933.5 | 4 |
| 10 | 452.8 | 4933.5 | 458.7 | 4935.5 | 1 |
| 11 | 458.7 | 4935.5 | 495.5 | 4936.0 | 1 |
| 12 | 495.5 | 4936.0 | 495.6 | 4945.0 | 4 |
| 13 | 495.6 | 4945.0 | 496.6 | 4945.0 | 4 |
| 14 | 496.6 | 4945.0 | 513.7 | 4946.0 | 1 |
| 15 | 513.7 | 4946.0 | 518.8 | 4947.0 | 1 |
| 16 | 518.8 | 4947.0 | 522.6 | 4952.0 | 1 |
| 17 | 522.6 | 4952.0 | 527.3 | 4954.0 | 1 |
| 18 | 527.3 | 4954.0 | 531.9 | 4956.0 | 1 |
| 19 | 531.9 | 4956.0 | 534.3 | 4957.0 | 1 |

15 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|---|---|---|---|---|---|
| 1 | 445.9 | 4930.0 | 451.3 | 4930.0 | 1 |
| 2 | 451.3 | 4930.0 | 452.8 | 4933.5 | 1 |
| 3 | 495.5 | 4936.0 | 496.5 | 4936.0 | 1 |
| 4 | 496.5 | 4936.0 | 496.6 | 4945.0 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| 5 | 100.0 | 4856.5 | 180.0 | 4862.0 | 2 |
| 6 | 180.0 | 4862.0 | 230.0 | 4872.5 | 2 |
| 7 | 230.0 | 4872.5 | 264.9 | 4880.5 | 2 |
| 8 | 264.9 | 4880.5 | 290.1 | 4886.5 | 2 |
| 9 | 290.1 | 4886.5 | 313.3 | 4894.5 | 2 |
| 10 | 313.3 | 4894.5 | 373.8 | 4903.0 | 2 |
| 11 | 373.8 | 4903.0 | 451.3 | 4929.0 | 3 |
| 12 | 451.3 | 4929.0 | 496.5 | 4933.0 | 3 |
| 13 | 496.5 | 4933.0 | 534.3 | 4955.0 | 3 |
| 14 | 373.8 | 4903.0 | 445.9 | 4918.0 | 2 |
| 15 | 445.9 | 4918.0 | 534.3 | 4934.0 | 2 |

---
ISOTROPIC Soil Parameters
---

4 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---|---|---|---|---|---|---|---|
| 1 | 113.0 | 130.0 | 200.0 | 20.00 | .000 | .0 | 1 |
| 2 | 118.0 | 130.0 | 400.0 | 27.00 | .000 | .0 | 1 |
| 3 | 110.0 | 137.0 | 240.0 | 34.00 | .000 | .0 | 1 |
| 4 | 145.0 | 145.0 | 1000.0 | .00 | .000 | .0 | 0 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

**********
PHREATIC SURFACE,
**********

| Point No. | x-water (ft) | y-water (ft) |
|---|---|---|
| 1 | 100.00 | 4853.00 |
| 2 | 180.00 | 4857.00 |
| 3 | 290.00 | 4880.00 |
| 4 | 373.80 | 4895.00 |
| 5 | 534.30 | 4928.00 |

A horizontal earthquake loading coefficient
of .193 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

BOUNDARY LOADS

1 load(s) specified

| Load No. | x-left (ft) | x-right (ft) | Intensity (psf) | Direction (deg) |
|---|---|---|---|---|
| 1 | 458.7 | 495.5 | 1500.0 | .0 |

NOTE - Intensity is specified as a uniformly distributed force acting on a HORIZONTALLY projected surface.

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

1000 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 50 points equally spaced along the ground surface between x = 100.0 ft
and x = 300.0 ft

Each surface terminates between x = 445.0 ft
and x = 495.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

8.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

**********
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
**********
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for slices that have low self weight and a relatively high "c" shear strength parameter. This effect can be eliminated by inserting a crack or by reducing the "c" value.
**********

---
USER SELECTED option to maintain strength greater than zero
---

Factors of safety have been calculated by the :

* * * * *  SIMPLIFIED BISHOP METHOD  * * * * *

The most critical circular failure surface
is specified by 54 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|---|---|---|
| 1 | 112.24 | 4858.61 |
| 2 | 119.51 | 4855.26 |
| 3 | 126.86 | 4852.09 |
| 4 | 134.28 | 4849.11 |
| 5 | 141.77 | 4846.30 |
| 6 | 149.33 | 4843.69 |
| 7 | 156.95 | 4841.25 |
| 8 | 164.63 | 4839.01 |
| 9 | 172.36 | 4836.96 |
| 10 | 180.14 | 4835.09 |
| 11 | 187.97 | 4833.42 |
| 12 | 195.83 | 4831.94 |
| 13 | 203.72 | 4830.66 |
| 14 | 211.65 | 4829.57 |
| 15 | 219.60 | 4828.68 |
| 16 | 227.57 | 4827.98 |
| 17 | 235.55 | 4827.48 |
| 18 | 243.55 | 4827.17 |
| 19 | 251.55 | 4827.06 |
| 20 | 259.55 | 4827.15 |
| 21 | 267.54 | 4827.44 |
| 22 | 275.53 | 4827.92 |
| 23 | 283.50 | 4828.60 |
| 24 | 291.45 | 4829.47 |
| 25 | 299.38 | 4830.54 |
| 26 | 307.28 | 4831.80 |
| 27 | 315.14 | 4833.26 |
| 28 | 322.97 | 4834.91 |
| 29 | 330.76 | 4836.76 |
| 30 | 338.49 | 4838.79 |
| 31 | 346.18 | 4841.02 |
| 32 | 353.80 | 4843.43 |
| 33 | 361.37 | 4846.03 |
| 34 | 368.87 | 4848.81 |
| 35 | 376.30 | 4851.78 |
| 36 | 383.65 | 4854.93 |
| 37 | 390.93 | 4858.26 |
| 38 | 398.12 | 4861.77 |
| 39 | 405.22 | 4865.46 |
| 40 | 412.22 | 4869.31 |
| 41 | 419.14 | 4873.34 |
| 42 | 425.95 | 4877.54 |
| 43 | 432.65 | 4881.91 |
| 44 | 439.25 | 4886.43 |
| 45 | 445.73 | 4891.12 |
| 46 | 452.09 | 4895.97 |
| 47 | 458.34 | 4900.97 |
| 48 | 464.45 | 4906.13 |

| | | 145150BS |
|---|---|---|
| 49 | 470.44 | 4911.43 |
| 50 | 476.30 | 4916.88 |
| 51 | 482.02 | 4922.47 |
| 52 | 487.60 | 4928.20 |
| 53 | 493.04 | 4934.07 |
| 54 | 494.74 | 4935.99 |

**** Simplified BISHOP FOS = 1.056 ****

The following is a summary of the TEN most critical surfaces

Problem Description : Lot 15 Ski Lakes ~ Seismic

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|---|---|---|---|---|---|---|---|
| 1. | 1.056 | 252.01 | 5152.30 | 325.24 | 112.24 | 494.74 | 2.693E+08 |
| 2. | 1.058 | 268.55 | 5111.45 | 286.15 | 132.65 | 494.49 | 2.409E+08 |
| 3. | 1.058 | 272.66 | 5107.16 | 280.09 | 140.82 | 494.27 | 2.289E+08 |
| 4. | 1.059 | 266.65 | 5151.38 | 313.83 | 148.98 | 494.67 | 2.180E+08 |
| 5. | 1.059 | 267.16 | 5108.56 | 285.09 | 128.57 | 494.33 | 2.467E+08 |
| 6. | 1.060 | 260.79 | 5117.40 | 296.21 | 116.33 | 494.90 | 2.667E+08 |
| 7. | 1.060 | 252.33 | 5134.43 | 311.41 | 108.16 | 492.36 | 2.709E+08 |
| 8. | 1.061 | 280.13 | 5099.94 | 268.86 | 157.14 | 493.35 | 2.052E+08 |
| 9. | 1.062 | 269.11 | 5114.22 | 282.72 | 144.90 | 488.27 | 2.093E+08 |
| 10. | 1.063 | 286.03 | 5100.62 | 266.08 | 169.39 | 494.99 | 1.937E+08 |

* * * END OF FILE * * *

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*****************************************
```

Problem Description : Lot 15 Ski Lakes ~ Seismic

---

SEGMENT BOUNDARY COORDINATES

---

19 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|---|---|---|---|---|---|
| 1 | 100.0 | 4858.0 | 180.0 | 4862.0 | 1 |
| 2 | 180.0 | 4862.0 | 230.0 | 4874.0 | 1 |
| 3 | 230.0 | 4874.0 | 264.9 | 4882.0 | 1 |
| 4 | 264.9 | 4882.0 | 290.1 | 4888.0 | 1 |
| 5 | 290.1 | 4888.0 | 313.3 | 4896.0 | 1 |
| 6 | 313.3 | 4896.0 | 373.8 | 4910.0 | 1 |
| 7 | 373.8 | 4910.0 | 445.9 | 4930.0 | 1 |
| 8 | 445.9 | 4930.0 | 451.3 | 4933.5 | 4 |
| 9 | 451.3 | 4933.5 | 452.8 | 4933.5 | 4 |
| 10 | 452.8 | 4933.5 | 458.7 | 4935.5 | 1 |
| 11 | 458.7 | 4935.5 | 495.5 | 4936.0 | 1 |
| 12 | 495.5 | 4936.0 | 495.6 | 4945.0 | 4 |
| 13 | 495.6 | 4945.0 | 496.6 | 4945.0 | 4 |
| 14 | 496.6 | 4945.0 | 513.7 | 4946.0 | 1 |
| 15 | 513.7 | 4946.0 | 518.8 | 4947.0 | 1 |
| 16 | 518.8 | 4947.0 | 522.6 | 4952.0 | 1 |
| 17 | 522.6 | 4952.0 | 527.3 | 4954.0 | 1 |
| 18 | 527.3 | 4954.0 | 531.9 | 4956.0 | 1 |
| 19 | 531.9 | 4956.0 | 534.3 | 4957.0 | 1 |

15 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|---|---|---|---|---|---|
| 1 | 445.9 | 4930.0 | 451.3 | 4930.0 | 1 |
| 2 | 451.3 | 4930.0 | 452.8 | 4933.5 | 1 |
| 3 | 495.5 | 4936.0 | 496.5 | 4936.0 | 1 |
| 4 | 496.5 | 4936.0 | 496.6 | 4945.0 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| 5 | 100.0 | 4856.5 | 180.0 | 4862.0 | 2 |
| 6 | 180.0 | 4862.0 | 230.0 | 4872.5 | 2 |
| 7 | 230.0 | 4872.5 | 264.9 | 4880.5 | 2 |
| 8 | 264.9 | 4880.5 | 290.1 | 4886.5 | 2 |
| 9 | 290.1 | 4886.5 | 313.3 | 4894.5 | 2 |
| 10 | 313.3 | 4894.5 | 373.8 | 4903.0 | 2 |
| 11 | 373.8 | 4903.0 | 451.3 | 4929.0 | 3 |
| 12 | 451.3 | 4929.0 | 496.5 | 4933.0 | 3 |
| 13 | 496.5 | 4933.0 | 534.3 | 4955.0 | 3 |
| 14 | 373.8 | 4903.0 | 445.9 | 4918.0 | 2 |
| 15 | 445.9 | 4918.0 | 534.3 | 4934.0 | 2 |

---
ISOTROPIC Soil Parameters
---

4 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---|---|---|---|---|---|---|---|
| 1 | 113.0 | 130.0 | 200.0 | 20.00 | .000 | .0 | 1 |
| 2 | 118.0 | 130.0 | 400.0 | 27.00 | .000 | .0 | 1 |
| 3 | 110.0 | 137.0 | 240.0 | 34.00 | .000 | .0 | 1 |
| 4 | 145.0 | 145.0 | 1000.0 | .00 | .000 | .0 | 0 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

**********
PHREATIC SURFACE,
**********

| Point No. | x-water (ft) | y-water (ft) |
|---|---|---|
| 1 | 100.00 | 4853.00 |
| 2 | 180.00 | 4857.00 |
| 3 | 290.00 | 4880.00 |
| 4 | 373.80 | 4895.00 |
| 5 | 534.30 | 4928.00 |

A horizontal earthquake loading coefficient
of .193 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

BOUNDARY LOADS

1 load(s) specified

| Load No. | x-left (ft) | x-right (ft) | Intensity (psf) | Direction (deg) |
|---|---|---|---|---|
| 1 | 458.7 | 495.5 | 1500.0 | .0 |

NOTE - Intensity is specified as a uniformly distributed force acting on a HORIZONTALLY projected surface.

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

1000 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 50 points equally spaced along the ground surface between x = 100.0 ft
and x = 300.0 ft

Each surface terminates between x = 445.0 ft
and x = 495.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

8.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

**********
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
**********
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for slices that have low self weight and a relatively high "c" shear strength parameter. This effect can be eliminated by inserting a crack or by reducing the "c" value.
**********

---
USER SELECTED option to maintain strength greater than zero
---

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 54 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|---|---|---|
| 1 | 112.24 | 4858.61 |
| 2 | 119.51 | 4855.26 |
| 3 | 126.86 | 4852.09 |
| 4 | 134.28 | 4849.11 |
| 5 | 141.77 | 4846.30 |
| 6 | 149.33 | 4843.69 |
| 7 | 156.95 | 4841.25 |
| 8 | 164.63 | 4839.01 |
| 9 | 172.36 | 4836.96 |
| 10 | 180.14 | 4835.09 |
| 11 | 187.97 | 4833.42 |
| 12 | 195.83 | 4831.94 |
| 13 | 203.72 | 4830.66 |
| 14 | 211.65 | 4829.57 |
| 15 | 219.60 | 4828.68 |
| 16 | 227.57 | 4827.98 |
| 17 | 235.55 | 4827.48 |
| 18 | 243.55 | 4827.17 |
| 19 | 251.55 | 4827.06 |
| 20 | 259.55 | 4827.15 |
| 21 | 267.54 | 4827.44 |
| 22 | 275.53 | 4827.92 |
| 23 | 283.50 | 4828.60 |
| 24 | 291.45 | 4829.47 |
| 25 | 299.38 | 4830.54 |
| 26 | 307.28 | 4831.80 |
| 27 | 315.14 | 4833.26 |
| 28 | 322.97 | 4834.91 |
| 29 | 330.76 | 4836.76 |
| 30 | 338.49 | 4838.79 |
| 31 | 346.18 | 4841.02 |
| 32 | 353.80 | 4843.43 |
| 33 | 361.37 | 4846.03 |
| 34 | 368.87 | 4848.81 |
| 35 | 376.30 | 4851.78 |
| 36 | 383.65 | 4854.93 |
| 37 | 390.93 | 4858.26 |
| 38 | 398.12 | 4861.77 |
| 39 | 405.22 | 4865.46 |
| 40 | 412.22 | 4869.31 |
| 41 | 419.14 | 4873.34 |
| 42 | 425.95 | 4877.54 |
| 43 | 432.65 | 4881.91 |
| 44 | 439.25 | 4886.43 |
| 45 | 445.73 | 4891.12 |
| 46 | 452.09 | 4895.97 |
| 47 | 458.34 | 4900.97 |
| 48 | 464.45 | 4906.13 |

| | | 145150BS |
|---|---|---|
| 49 | 470.44 | 4911.43 |
| 50 | 476.30 | 4916.88 |
| 51 | 482.02 | 4922.47 |
| 52 | 487.60 | 4928.20 |
| 53 | 493.04 | 4934.07 |
| 54 | 494.74 | 4935.99 |

**** Simplified BISHOP FOS = 1.056 ****

The following is a summary of the TEN most critical surfaces

Problem Description : Lot 15 Ski Lakes ~ Seismic

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|---|---|---|---|---|---|---|---|
| 1. | 1.056 | 252.01 | 5152.30 | 325.24 | 112.24 | 494.74 | 2.693E+08 |
| 2. | 1.058 | 268.55 | 5111.45 | 286.15 | 132.65 | 494.49 | 2.409E+08 |
| 3. | 1.058 | 272.66 | 5107.16 | 280.09 | 140.82 | 494.27 | 2.289E+08 |
| 4. | 1.059 | 266.65 | 5151.38 | 313.83 | 148.98 | 494.67 | 2.180E+08 |
| 5. | 1.059 | 267.16 | 5108.56 | 285.09 | 128.57 | 494.33 | 2.467E+08 |
| 6. | 1.060 | 260.79 | 5117.40 | 296.21 | 116.33 | 494.90 | 2.667E+08 |
| 7. | 1.060 | 252.33 | 5134.43 | 311.41 | 108.16 | 492.36 | 2.709E+08 |
| 8. | 1.061 | 280.13 | 5099.94 | 268.86 | 157.14 | 493.35 | 2.052E+08 |
| 9. | 1.062 | 269.11 | 5114.22 | 282.72 | 144.90 | 488.27 | 2.093E+08 |
| 10. | 1.063 | 286.03 | 5100.62 | 266.08 | 169.39 | 494.99 | 1.937E+08 |

* * * END OF FILE * * *

# APPENDIX D

## DIRECT SHEAR FILES

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 1
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/12/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 1 of 10
Applied Stress: 0.05 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0 |
| 2 | 0.03 | 0.17 | 3.243e-005 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 1
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/12/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 2 of 10
Applied Stress: 0.125 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 3.243e-005 |
| 2 | 1.00 | 1.00 | 0.001427 |
| 3 | 2.00 | 1.42 | 0.001394 |
| 4 | 3.00 | 1.73 | 0.001492 |
| 5 | 4.00 | 2.00 | 0.001459 |
| 6 | 5.00 | 2.24 | 0.001459 |
| 7 | 7.00 | 2.65 | 0.001362 |
| 8 | 9.00 | 3.00 | 0.001167 |
| 9 | 11.00 | 3.32 | 0.001038 |
| 10 | 13.00 | 3.61 | 0.0009405 |
| 11 | 15.00 | 3.87 | 0.0008432 |
| 12 | 20.00 | 4.47 | 0.0007459 |
| 13 | 25.00 | 5.00 | 0.0006162 |
| 14 | 25.04 | 5.00 | 0.0006162 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 1
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/12/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 3 of 10
Applied Stress: 0.25 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.0006162 |
| 2 | 1.00 | 1.00 | 0.004151 |
| 3 | 2.00 | 1.42 | 0.004378 |
| 4 | 3.00 | 1.73 | 0.004508 |
| 5 | 4.00 | 2.00 | 0.00454 |
| 6 | 5.00 | 2.24 | 0.004605 |
| 7 | 7.00 | 2.65 | 0.004702 |
| 8 | 9.00 | 3.00 | 0.004702 |
| 9 | 11.00 | 3.32 | 0.004702 |
| 10 | 13.00 | 3.61 | 0.005027 |
| 11 | 15.00 | 3.87 | 0.005027 |
| 12 | 20.00 | 4.47 | 0.004962 |
| 13 | 25.00 | 5.00 | 0.004929 |
| 14 | 30.00 | 5.48 | 0.004897 |
| 15 | 35.00 | 5.92 | 0.005156 |
| 16 | 40.00 | 6.32 | 0.005092 |
| 17 | 40.13 | 6.33 | 0.005092 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 1
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/12/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 4 of 10
Applied Stress: 0.5 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.005092 |
| 2 | 1.00 | 1.00 | 0.01398 |
| 3 | 2.00 | 1.42 | 0.01479 |
| 4 | 3.00 | 1.73 | 0.01521 |
| 5 | 4.00 | 2.00 | 0.01544 |
| 6 | 5.00 | 2.24 | 0.01557 |
| 7 | 7.00 | 2.65 | 0.01579 |
| 8 | 9.00 | 3.00 | 0.01592 |
| 9 | 11.00 | 3.32 | 0.01599 |
| 10 | 13.00 | 3.61 | 0.01605 |
| 11 | 15.00 | 3.87 | 0.01609 |
| 12 | 20.00 | 4.47 | 0.01618 |
| 13 | 25.00 | 5.00 | 0.01634 |
| 14 | 30.00 | 5.48 | 0.01644 |
| 15 | 35.00 | 5.92 | 0.01654 |
| 16 | 40.00 | 6.32 | 0.01657 |
| 17 | 45.00 | 6.71 | 0.01673 |
| 18 | 50.00 | 7.07 | 0.0168 |
| 19 | 55.00 | 7.42 | 0.01683 |
| 20 | 60.00 | 7.75 | 0.01693 |
| 21 | 65.00 | 8.06 | 0.01706 |
| 22 | 70.00 | 8.37 | 0.01709 |
| 23 | 75.00 | 8.66 | 0.01716 |
| 24 | 80.00 | 8.94 | 0.01725 |
| 25 | 85.00 | 9.22 | 0.01719 |
| 26 | 90.00 | 9.49 | 0.01742 |
| 27 | 95.00 | 9.75 | 0.01742 |
| 28 | 100.00 | 10.00 | 0.01745 |
| 29 | 101.85 | 10.09 | 0.01742 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 1
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/12/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 5 of 10
Applied Stress: 0.5 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.01742 |
| 2 | 1.00 | 1.00 | 0.01754 |
| 3 | 2.00 | 1.42 | 0.01754 |
| 4 | 3.00 | 1.73 | 0.01754 |
| 5 | 4.00 | 2.00 | 0.01754 |
| 6 | 5.00 | 2.24 | 0.01754 |
| 7 | 7.00 | 2.65 | 0.01751 |
| 8 | 9.00 | 3.00 | 0.01751 |
| 9 | 11.00 | 3.32 | 0.01751 |
| 10 | 13.00 | 3.61 | 0.01751 |
| 11 | 15.00 | 3.87 | 0.01754 |
| 12 | 20.00 | 4.47 | 0.01751 |
| 13 | 25.00 | 5.00 | 0.01754 |
| 14 | 30.00 | 5.48 | 0.01758 |
| 15 | 35.00 | 5.92 | 0.01761 |
| 16 | 40.00 | 6.32 | 0.01758 |
| 17 | 45.00 | 6.71 | 0.01754 |
| 18 | 50.00 | 7.07 | 0.01758 |
| 19 | 55.00 | 7.42 | 0.01761 |
| 20 | 55.45 | 7.45 | 0.01758 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 1
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/12/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 6 of 10
Applied Stress: 1 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.01758 |
| 2 | 1.00 | 1.00 | 0.03629 |
| 3 | 2.00 | 1.42 | 0.03924 |
| 4 | 3.00 | 1.73 | 0.04028 |
| 5 | 4.00 | 2.00 | 0.04106 |
| 6 | 5.00 | 2.24 | 0.04154 |
| 7 | 7.00 | 2.65 | 0.04193 |
| 8 | 9.00 | 3.00 | 0.04229 |
| 9 | 11.00 | 3.32 | 0.04255 |
| 10 | 13.00 | 3.61 | 0.04271 |
| 11 | 15.00 | 3.87 | 0.04281 |
| 12 | 20.00 | 4.47 | 0.04316 |
| 13 | 25.00 | 5.00 | 0.04342 |
| 14 | 30.00 | 5.48 | 0.04362 |
| 15 | 35.00 | 5.92 | 0.04388 |
| 16 | 40.00 | 6.32 | 0.04401 |
| 17 | 45.00 | 6.71 | 0.04407 |
| 18 | 50.00 | 7.07 | 0.04414 |
| 19 | 55.00 | 7.42 | 0.04417 |
| 20 | 56.96 | 7.55 | 0.0442 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 1
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/12/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 7 of 10
Applied Stress: 2 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.0442 |
| 2 | 1.00 | 1.00 | 0.07559 |
| 3 | 2.00 | 1.42 | 0.07845 |
| 4 | 3.00 | 1.73 | 0.07975 |
| 5 | 4.00 | 2.00 | 0.08072 |
| 6 | 5.00 | 2.24 | 0.08143 |
| 7 | 7.00 | 2.65 | 0.0825 |
| 8 | 9.00 | 3.00 | 0.08299 |
| 9 | 11.00 | 3.32 | 0.08344 |
| 10 | 13.00 | 3.61 | 0.0838 |
| 11 | 15.00 | 3.87 | 0.08416 |
| 12 | 20.00 | 4.47 | 0.08445 |
| 13 | 25.00 | 5.00 | 0.08464 |
| 14 | 30.00 | 5.48 | 0.08484 |
| 15 | 35.00 | 5.92 | 0.08497 |
| 16 | 40.00 | 6.32 | 0.08523 |
| 17 | 45.00 | 6.71 | 0.08542 |
| 18 | 50.00 | 7.07 | 0.08555 |
| 19 | 52.63 | 7.25 | 0.08565 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 1
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/12/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 8 of 10
Applied Stress: 4 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.08565 |
| 2 | 1.00 | 1.00 | 0.1184 |
| 3 | 2.00 | 1.42 | 0.1197 |
| 4 | 3.00 | 1.73 | 0.1212 |
| 5 | 4.00 | 2.00 | 0.1223 |
| 6 | 5.00 | 2.24 | 0.1227 |
| 7 | 7.00 | 2.65 | 0.1235 |
| 8 | 9.00 | 3.00 | 0.1241 |
| 9 | 11.00 | 3.32 | 0.1251 |
| 10 | 13.00 | 3.61 | 0.1258 |
| 11 | 15.00 | 3.87 | 0.1262 |
| 12 | 20.00 | 4.47 | 0.1273 |
| 13 | 25.00 | 5.00 | 0.1278 |
| 14 | 30.00 | 5.48 | 0.1283 |
| 15 | 35.00 | 5.92 | 0.1288 |
| 16 | 40.00 | 6.32 | 0.1295 |
| 17 | 45.00 | 6.71 | 0.1297 |
| 18 | 50.00 | 7.07 | 0.1298 |
| 19 | 55.00 | 7.42 | 0.1299 |
| 20 | 60.00 | 7.75 | 0.1301 |
| 21 | 65.00 | 8.06 | 0.1302 |
| 22 | 68.62 | 8.28 | 0.1302 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 1
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/12/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 9 of 10
Applied Stress: 1 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.1302 |
| 2 | 1.00 | 1.00 | 0.1226 |
| 3 | 2.00 | 1.42 | 0.1224 |
| 4 | 3.00 | 1.73 | 0.1221 |
| 5 | 4.00 | 2.00 | 0.122 |
| 6 | 5.00 | 2.24 | 0.1218 |
| 7 | 7.00 | 2.65 | 0.1217 |
| 8 | 9.00 | 3.00 | 0.1214 |
| 9 | 11.00 | 3.32 | 0.1211 |
| 10 | 13.00 | 3.61 | 0.1209 |
| 11 | 15.00 | 3.87 | 0.1208 |
| 12 | 20.00 | 4.47 | 0.1206 |
| 13 | 25.00 | 5.00 | 0.1204 |
| 14 | 30.00 | 5.48 | 0.1203 |
| 15 | 35.00 | 5.92 | 0.1199 |
| 16 | 39.37 | 6.27 | 0.1197 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 1
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/12/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 10 of 10
Applied Stress: 0.25 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.1197 |
| 2 | 1.00 | 1.00 | 0.1159 |
| 3 | 2.00 | 1.42 | 0.1146 |
| 4 | 3.00 | 1.73 | 0.1143 |
| 5 | 4.00 | 2.00 | 0.1138 |
| 6 | 5.00 | 2.24 | 0.1134 |
| 7 | 7.00 | 2.65 | 0.1131 |
| 8 | 9.00 | 3.00 | 0.113 |
| 9 | 11.00 | 3.32 | 0.1129 |
| 10 | 13.00 | 3.61 | 0.1127 |
| 11 | 15.00 | 3.87 | 0.1125 |
| 12 | 20.00 | 4.47 | 0.1118 |
| 13 | 25.00 | 5.00 | 0.1112 |
| 14 | 30.00 | 5.48 | 0.1107 |
| 15 | 35.00 | 5.92 | 0.1103 |
| 16 | 40.00 | 6.32 | 0.1101 |
| 17 | 45.00 | 6.71 | 0.11 |
| 18 | 50.00 | 7.07 | 0.1098 |
| 19 | 55.00 | 7.42 | 0.1097 |
| 20 | 60.00 | 7.75 | 0.1096 |
| 21 | 65.00 | 8.06 | 0.1095 |
| 22 | 70.00 | 8.37 | 0.1093 |
| 23 | 75.00 | 8.66 | 0.1091 |
| 24 | 80.00 | 8.94 | 0.1088 |
| 25 | 85.00 | 9.22 | 0.1087 |
| 26 | 90.00 | 9.49 | 0.1084 |
| 27 | 95.00 | 9.75 | 0.1082 |
| 28 | 100.00 | 10.00 | 0.108 |
| 29 | 105.00 | 10.25 | 0.1079 |
| 30 | 110.00 | 10.49 | 0.1078 |
| 31 | 110.70 | 10.52 | 0.1077 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 2
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/10/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 1 of 10
Applied Stress: 0.05 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0 |
| 2 | 0.05 | 0.23 | -0.000227 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 2
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/10/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 2 of 10
Applied Stress: 0.125 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | -0.000227 |
| 2 | 1.00 | 1.00 | -0.0002919 |
| 3 | 2.00 | 1.42 | -0.0002594 |
| 4 | 3.00 | 1.73 | -0.0002594 |
| 5 | 4.00 | 2.00 | -0.0002594 |
| 6 | 5.00 | 2.24 | -0.0002594 |
| 7 | 7.00 | 2.65 | -0.0002594 |
| 8 | 9.00 | 3.00 | -0.0002919 |
| 9 | 11.00 | 3.32 | -0.0002594 |
| 10 | 13.00 | 3.61 | -0.0002594 |
| 11 | 15.00 | 3.87 | -0.0002594 |
| 12 | 20.00 | 4.47 | -0.0002594 |
| 13 | 25.00 | 5.00 | -0.0002594 |
| 14 | 30.00 | 5.48 | -0.000227 |
| 15 | 35.00 | 5.92 | -0.0001297 |
| 16 | 40.00 | 6.32 | -0.0001622 |
| 17 | 45.00 | 6.71 | -0.0006162 |
| 18 | 50.00 | 7.07 | -0.0009729 |
| 19 | 55.00 | 7.42 | -0.001232 |
| 20 | 60.00 | 7.75 | -0.001394 |
| 21 | 65.00 | 8.06 | -0.001459 |
| 22 | 70.00 | 8.37 | -0.001167 |
| 23 | 75.00 | 8.66 | -0.0009729 |
| 24 | 80.00 | 8.94 | -0.000908 |
| 25 | 80.74 | 8.99 | -0.0008756 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 2
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/10/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 3 of 10
Applied Stress: 0.25 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | -0.0008756 |
| 2 | 1.00 | 1.00 | 0.001719 |
| 3 | 2.00 | 1.42 | 0.001751 |
| 4 | 3.00 | 1.73 | 0.001784 |
| 5 | 4.00 | 2.00 | 0.001816 |
| 6 | 5.00 | 2.24 | 0.001816 |
| 7 | 7.00 | 2.65 | 0.001881 |
| 8 | 9.00 | 3.00 | 0.001913 |
| 9 | 11.00 | 3.32 | 0.001913 |
| 10 | 13.00 | 3.61 | 0.001913 |
| 11 | 15.00 | 3.87 | 0.001913 |
| 12 | 16.83 | 4.10 | 0.001881 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 2
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/10/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 4 of 10
Applied Stress: 0.5 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.001881 |
| 2 | 1.00 | 1.00 | 0.007459 |
| 3 | 2.00 | 1.42 | 0.007783 |
| 4 | 3.00 | 1.73 | 0.007978 |
| 5 | 4.00 | 2.00 | 0.008108 |
| 6 | 5.00 | 2.24 | 0.008172 |
| 7 | 7.00 | 2.65 | 0.008302 |
| 8 | 9.00 | 3.00 | 0.008399 |
| 9 | 11.00 | 3.32 | 0.008367 |
| 10 | 13.00 | 3.61 | 0.008464 |
| 11 | 15.00 | 3.87 | 0.008432 |
| 12 | 18.64 | 4.32 | 0.008432 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 2
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/10/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 5 of 10
Applied Stress: 0.5 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.008432 |
| 2 | 1.00 | 1.00 | 0.008432 |
| 3 | 2.00 | 1.42 | 0.008562 |
| 4 | 3.00 | 1.73 | 0.008562 |
| 5 | 4.00 | 2.00 | 0.008562 |
| 6 | 5.00 | 2.24 | 0.008562 |
| 7 | 7.00 | 2.65 | 0.008529 |
| 8 | 9.00 | 3.00 | 0.008529 |
| 9 | 11.00 | 3.32 | 0.008497 |
| 10 | 13.00 | 3.61 | 0.008497 |
| 11 | 15.00 | 3.87 | 0.008497 |
| 12 | 20.00 | 4.47 | 0.008497 |
| 13 | 25.00 | 5.00 | 0.008529 |
| 14 | 30.00 | 5.48 | 0.008464 |
| 15 | 35.00 | 5.92 | 0.008594 |
| 16 | 40.00 | 6.32 | 0.008691 |
| 17 | 45.00 | 6.71 | 0.008821 |
| 18 | 50.00 | 7.07 | 0.008951 |
| 19 | 55.00 | 7.42 | 0.009048 |
| 20 | 60.00 | 7.75 | 0.009178 |
| 21 | 65.00 | 8.06 | 0.009243 |
| 22 | 70.00 | 8.37 | 0.009243 |
| 23 | 75.00 | 8.66 | 0.009275 |
| 24 | 80.00 | 8.94 | 0.009275 |
| 25 | 85.00 | 9.22 | 0.009243 |
| 26 | 90.00 | 9.49 | 0.00921 |
| 27 | 95.00 | 9.75 | 0.009113 |
| 28 | 100.00 | 10.00 | 0.009145 |
| 29 | 105.00 | 10.25 | 0.009113 |
| 30 | 110.00 | 10.49 | 0.00908 |
| 31 | 115.00 | 10.72 | 0.009016 |
| 32 | 120.00 | 10.95 | 0.009016 |
| 33 | 125.00 | 11.18 | 0.008951 |
| 34 | 130.00 | 11.40 | 0.008853 |
| 35 | 135.00 | 11.62 | 0.008789 |
| 36 | 140.00 | 11.83 | 0.008691 |
| 37 | 145.00 | 12.04 | 0.008594 |
| 38 | 150.00 | 12.25 | 0.008562 |
| 39 | 155.00 | 12.45 | 0.008529 |
| 40 | 160.00 | 12.65 | 0.008432 |
| 41 | 165.00 | 12.85 | 0.008335 |
| 42 | 170.00 | 13.04 | 0.00827 |
| 43 | 175.00 | 13.23 | 0.008205 |
| 44 | 180.00 | 13.42 | 0.008172 |
| 45 | 185.00 | 13.60 | 0.008108 |
| 46 | 190.00 | 13.78 | 0.00801 |
| 47 | 195.00 | 13.96 | 0.007945 |
| 48 | 200.00 | 14.14 | 0.007913 |
| 49 | 205.00 | 14.32 | 0.007783 |
| 50 | 210.00 | 14.49 | 0.007686 |
| 51 | 215.00 | 14.66 | 0.007621 |
| 52 | 220.00 | 14.83 | 0.007621 |
| 53 | 225.00 | 15.00 | 0.007556 |
| 54 | 230.00 | 15.17 | 0.007524 |
| 55 | 235.00 | 15.33 | 0.007459 |
| 56 | 240.00 | 15.49 | 0.007459 |
| 57 | 245.00 | 15.65 | 0.007394 |
| 58 | 250.00 | 15.81 | 0.007362 |
| 59 | 255.00 | 15.97 | 0.007297 |
| 60 | 260.00 | 16.12 | 0.007264 |
| 61 | 265.00 | 16.28 | 0.007394 |
| 62 | 270.00 | 16.43 | 0.007621 |
| 63 | 275.00 | 16.58 | 0.007816 |
| 64 | 280.00 | 16.73 | 0.00801 |
| 65 | 285.00 | 16.88 | 0.008172 |
| 66 | 290.00 | 17.03 | 0.00827 |
| 67 | 295.00 | 17.18 | 0.008367 |
| 68 | 300.00 | 17.32 | 0.008497 |
| 69 | 305.00 | 17.46 | 0.008594 |
| 70 | 310.00 | 17.61 | 0.008724 |
| 71 | 315.00 | 17.75 | 0.008821 |
| 72 | 320.00 | 17.89 | 0.008951 |
| 73 | 325.00 | 18.03 | 0.00908 |
| 74 | 330.00 | 18.17 | 0.009178 |
| 75 | 335.00 | 18.30 | 0.009307 |
| 76 | 340.00 | 18.44 | 0.009372 |
| 77 | 345.00 | 18.57 | 0.00947 |
| 78 | 350.00 | 18.71 | 0.009502 |
| 79 | 355.00 | 18.84 | 0.009632 |
| 80 | 360.00 | 18.97 | 0.009697 |
| 81 | 365.00 | 19.10 | 0.009761 |

| | | | |
|---|---|---|---|
| 82 | 370.00 | 19.24 | 0.009826 |
| 83 | 375.00 | 19.36 | 0.009091 |
| 84 | 380.00 | 19.49 | 0.009956 |
| 85 | 385.00 | 19.62 | 0.01002 |
| 86 | 390.00 | 19.75 | 0.01009 |
| 87 | 395.00 | 19.87 | 0.01015 |
| 88 | 400.00 | 20.00 | 0.01031 |
| 89 | 405.00 | 20.12 | 0.01035 |
| 90 | 410.00 | 20.25 | 0.01035 |
| 91 | 415.00 | 20.37 | 0.01041 |
| 92 | 420.00 | 20.49 | 0.01047 |
| 93 | 425.00 | 20.62 | 0.01047 |
| 94 | 430.00 | 20.74 | 0.01051 |
| 95 | 435.00 | 20.86 | 0.01051 |
| 96 | 440.00 | 20.98 | 0.01051 |
| 97 | 445.00 | 21.10 | 0.01054 |
| 98 | 450.00 | 21.21 | 0.01044 |
| 99 | 455.00 | 21.33 | 0.01038 |
| 100 | 460.00 | 21.45 | 0.01028 |
| 101 | 465.00 | 21.56 | 0.01022 |
| 102 | 470.00 | 21.68 | 0.01015 |
| 103 | 475.00 | 21.79 | 0.01012 |
| 104 | 480.00 | 21.91 | 0.01009 |
| 105 | 485.00 | 22.02 | 0.01005 |
| 106 | 489.99 | 22.14 | 0.01002 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 2
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/10/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 6 of 10
Applied Stress: 1 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.01002 |
| 2 | 1.00 | 1.00 | 0.01871 |
| 3 | 2.00 | 1.42 | 0.0191 |
| 4 | 3.00 | 1.73 | 0.0193 |
| 5 | 4.00 | 2.00 | 0.01943 |
| 6 | 5.00 | 2.24 | 0.01949 |
| 7 | 7.00 | 2.65 | 0.01965 |
| 8 | 9.00 | 3.00 | 0.01972 |
| 9 | 11.00 | 3.32 | 0.01981 |
| 10 | 13.00 | 3.61 | 0.01985 |
| 11 | 15.00 | 3.87 | 0.01985 |
| 12 | 20.00 | 4.47 | 0.02004 |
| 13 | 25.00 | 5.00 | 0.02011 |
| 14 | 30.00 | 5.48 | 0.02014 |
| 15 | 33.60 | 5.80 | 0.0204 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 2
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/10/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 7 of 10
Applied Stress: 2 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.0204 |
| 2 | 1.00 | 1.00 | 0.0372 |
| 3 | 2.00 | 1.42 | 0.03866 |
| 4 | 3.00 | 1.73 | 0.03911 |
| 5 | 4.00 | 2.00 | 0.0394 |
| 6 | 5.00 | 2.24 | 0.03963 |
| 7 | 7.00 | 2.65 | 0.03989 |
| 8 | 9.00 | 3.00 | 0.04028 |
| 9 | 11.00 | 3.32 | 0.04064 |
| 10 | 13.00 | 3.61 | 0.0408 |
| 11 | 15.00 | 3.87 | 0.04115 |
| 12 | 20.00 | 4.47 | 0.04138 |
| 13 | 25.00 | 5.00 | 0.04167 |
| 14 | 30.00 | 5.48 | 0.04177 |
| 15 | 35.00 | 5.92 | 0.0418 |
| 16 | 40.00 | 6.32 | 0.0419 |
| 17 | 45.00 | 6.71 | 0.04187 |
| 18 | 50.00 | 7.07 | 0.04187 |
| 19 | 55.00 | 7.42 | 0.0419 |
| 20 | 60.00 | 7.75 | 0.04183 |
| 21 | 65.00 | 8.06 | 0.0419 |
| 22 | 70.00 | 8.37 | 0.04187 |
| 23 | 75.00 | 8.66 | 0.04203 |
| 24 | 77.12 | 8.78 | 0.042 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 2
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/10/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 8 of 10
Applied Stress: 4 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.042 |
| 2 | 1.00 | 1.00 | 0.06963 |
| 3 | 2.00 | 1.42 | 0.072 |
| 4 | 3.00 | 1.73 | 0.07268 |
| 5 | 4.00 | 2.00 | 0.07303 |
| 6 | 5.00 | 2.24 | 0.07339 |
| 7 | 7.00 | 2.65 | 0.07378 |
| 8 | 9.00 | 3.00 | 0.07449 |
| 9 | 11.00 | 3.32 | 0.07491 |
| 10 | 13.00 | 3.61 | 0.07534 |
| 11 | 15.00 | 3.87 | 0.0755 |
| 12 | 20.00 | 4.47 | 0.07592 |
| 13 | 25.00 | 5.00 | 0.07621 |
| 14 | 30.00 | 5.48 | 0.07647 |
| 15 | 35.00 | 5.92 | 0.07667 |
| 16 | 40.00 | 6.32 | 0.07679 |
| 17 | 45.00 | 6.71 | 0.07692 |
| 18 | 50.00 | 7.07 | 0.07699 |
| 19 | 55.00 | 7.42 | 0.07725 |
| 20 | 60.00 | 7.75 | 0.07728 |
| 21 | 65.00 | 8.06 | 0.07774 |
| 22 | 70.00 | 8.37 | 0.07774 |
| 23 | 75.00 | 8.66 | 0.07777 |
| 24 | 80.00 | 8.94 | 0.07796 |
| 25 | 85.00 | 9.22 | 0.07799 |
| 26 | 86.25 | 9.29 | 0.07799 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 2
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/10/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 9 of 10
Applied Stress: 1 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.07799 |
| 2 | 1.00 | 1.00 | 0.06856 |
| 3 | 2.00 | 1.42 | 0.06791 |
| 4 | 3.00 | 1.73 | 0.06758 |
| 5 | 4.00 | 2.00 | 0.06742 |
| 6 | 5.00 | 2.24 | 0.06726 |
| 7 | 7.00 | 2.65 | 0.06713 |
| 8 | 9.00 | 3.00 | 0.0669 |
| 9 | 11.00 | 3.32 | 0.0669 |
| 10 | 13.00 | 3.61 | 0.06671 |
| 11 | 15.00 | 3.87 | 0.06671 |
| 12 | 20.00 | 4.47 | 0.06645 |
| 13 | 25.00 | 5.00 | 0.06645 |
| 14 | 30.00 | 5.48 | 0.06622 |
| 15 | 35.00 | 5.92 | 0.06622 |
| 16 | 40.00 | 6.32 | 0.06625 |
| 17 | 45.00 | 6.71 | 0.06625 |
| 18 | 50.00 | 7.07 | 0.06625 |
| 19 | 55.00 | 7.42 | 0.06629 |
| 20 | 60.00 | 7.75 | 0.06632 |
| 21 | 65.00 | 8.06 | 0.06606 |
| 22 | 70.00 | 8.37 | 0.06609 |
| 23 | 72.84 | 8.53 | 0.06613 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes No. 3
Boring No.: 2
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/10/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation:

Soil Description: Consolidation
Remarks: UNDISTURBED

Load Increment: 10 of 10
Applied Stress: 0.25 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.06613 |
| 2 | 1.00 | 1.00 | 0.05828 |
| 3 | 2.00 | 1.42 | 0.05737 |
| 4 | 3.00 | 1.73 | 0.05685 |
| 5 | 4.00 | 2.00 | 0.05653 |
| 6 | 5.00 | 2.24 | 0.05617 |
| 7 | 7.00 | 2.65 | 0.05578 |
| 8 | 9.00 | 3.00 | 0.05507 |
| 9 | 11.00 | 3.32 | 0.05461 |
| 10 | 13.00 | 3.61 | 0.05429 |
| 11 | 15.00 | 3.87 | 0.0539 |
| 12 | 20.00 | 4.47 | 0.05354 |
| 13 | 25.00 | 5.00 | 0.05312 |
| 14 | 30.00 | 5.48 | 0.05306 |
| 15 | 35.00 | 5.92 | 0.05299 |
| 16 | 40.00 | 6.32 | 0.05289 |
| 17 | 45.00 | 6.71 | 0.05293 |
| 18 | 50.00 | 7.07 | 0.05276 |
| 19 | 55.00 | 7.42 | 0.05276 |
| 20 | 60.00 | 7.75 | 0.05276 |
| 21 | 65.00 | 8.06 | 0.05244 |
| 22 | 70.00 | 8.37 | 0.05247 |
| 23 | 75.00 | 8.66 | 0.0525 |
| 24 | 79.88 | 8.94 | 0.0525 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes
Boring No.: 1
Sample No.: 1
Test No.: 1

Location:
Tested By: Shawn
Test Date: 6/13/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation: Not Marked

Soil Description: 1 ksf
Remarks: Undisturbed

Load Increment: 1 of 1
Applied Stress: 0.5 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0 |
| 2 | 0.17 | 0.41 | 0.004021 |
| 3 | 0.33 | 0.58 | 0.005124 |
| 4 | 0.50 | 0.71 | 0.009113 |
| 5 | 0.67 | 0.82 | 0.01086 |
| 6 | 0.83 | 0.91 | 0.01125 |
| 7 | 1.00 | 1.00 | 0.01158 |
| 8 | 1.17 | 1.08 | 0.01174 |
| 9 | 1.34 | 1.16 | 0.01187 |
| 10 | 1.50 | 1.23 | 0.0119 |
| 11 | 1.67 | 1.29 | 0.01193 |
| 12 | 1.84 | 1.35 | 0.01197 |
| 13 | 2.00 | 1.42 | 0.01203 |
| 14 | 2.17 | 1.47 | 0.01206 |
| 15 | 2.34 | 1.53 | 0.01206 |
| 16 | 2.50 | 1.58 | 0.0121 |
| 17 | 2.67 | 1.63 | 0.01213 |
| 18 | 2.84 | 1.68 | 0.0121 |
| 19 | 3.00 | 1.73 | 0.01213 |
| 20 | 3.17 | 1.78 | 0.01216 |
| 21 | 3.33 | 1.83 | 0.01216 |
| 22 | 3.50 | 1.87 | 0.01216 |
| 23 | 3.67 | 1.92 | 0.01216 |
| 24 | 3.83 | 1.96 | 0.01216 |
| 25 | 4.00 | 2.00 | 0.01216 |
| 26 | 4.17 | 2.04 | 0.01216 |
| 27 | 4.34 | 2.08 | 0.01219 |
| 28 | 4.50 | 2.12 | 0.01219 |
| 29 | 4.67 | 2.16 | 0.01219 |
| 30 | 4.84 | 2.20 | 0.01223 |
| 31 | 5.00 | 2.24 | 0.01219 |
| 32 | 5.17 | 2.27 | 0.01223 |
| 33 | 5.34 | 2.31 | 0.01223 |
| 34 | 5.50 | 2.35 | 0.01223 |
| 35 | 5.67 | 2.38 | 0.01223 |
| 36 | 5.84 | 2.42 | 0.01223 |
| 37 | 6.00 | 2.45 | 0.01223 |
| 38 | 6.17 | 2.48 | 0.01223 |
| 39 | 6.33 | 2.52 | 0.01223 |
| 40 | 6.50 | 2.55 | 0.01223 |
| 41 | 6.67 | 2.58 | 0.01223 |
| 42 | 6.83 | 2.61 | 0.01223 |
| 43 | 7.00 | 2.65 | 0.01223 |
| 44 | 7.17 | 2.68 | 0.01223 |
| 45 | 7.34 | 2.71 | 0.01223 |
| 46 | 7.50 | 2.74 | 0.01226 |
| 47 | 7.67 | 2.77 | 0.01226 |
| 48 | 7.84 | 2.80 | 0.01226 |
| 49 | 8.00 | 2.83 | 0.01226 |
| 50 | 8.17 | 2.86 | 0.01226 |
| 51 | 8.34 | 2.89 | 0.01226 |
| 52 | 8.50 | 2.92 | 0.01226 |
| 53 | 8.67 | 2.94 | 0.01226 |
| 54 | 8.83 | 2.97 | 0.01226 |
| 55 | 9.00 | 3.00 | 0.01226 |
| 56 | 9.17 | 3.03 | 0.01226 |
| 57 | 9.33 | 3.06 | 0.01226 |
| 58 | 9.50 | 3.08 | 0.01226 |
| 59 | 9.67 | 3.11 | 0.01229 |
| 60 | 9.83 | 3.14 | 0.01229 |
| 61 | 10.00 | 3.16 | 0.01226 |
| 62 | 10.17 | 3.19 | 0.01232 |
| 63 | 10.34 | 3.21 | 0.01232 |
| 64 | 10.50 | 3.24 | 0.01232 |
| 65 | 10.54 | 3.25 | 0.01232 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes
Boring No.: 1
Sample No.: 1
Test No.: 1

Location:
Tested By: Shawn
Test Date: 6/13/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation: Not Marked

Soil Description: 2 ksf
Remarks: Undisturbed

Load Increment: 1 of 1
Applied Stress: 1 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0 |
| 2 | 0.17 | 0.41 | 0.007816 |
| 3 | 0.33 | 0.58 | 0.01878 |
| 4 | 0.50 | 0.71 | 0.02688 |
| 5 | 0.67 | 0.82 | 0.03288 |
| 6 | 0.83 | 0.91 | 0.03512 |
| 7 | 1.00 | 1.00 | 0.03593 |
| 8 | 1.17 | 1.08 | 0.03635 |
| 9 | 1.34 | 1.16 | 0.03681 |
| 10 | 1.50 | 1.23 | 0.03704 |
| 11 | 1.67 | 1.29 | 0.03713 |
| 12 | 1.84 | 1.36 | 0.03733 |
| 13 | 2.00 | 1.41 | 0.03746 |
| 14 | 2.17 | 1.47 | 0.03765 |
| 15 | 2.33 | 1.53 | 0.03775 |
| 16 | 2.50 | 1.58 | 0.03794 |
| 17 | 2.67 | 1.63 | 0.03807 |
| 18 | 2.83 | 1.68 | 0.03817 |
| 19 | 3.00 | 1.73 | 0.03824 |
| 20 | 3.17 | 1.78 | 0.0383 |
| 21 | 3.34 | 1.83 | 0.0384 |
| 22 | 3.50 | 1.87 | 0.03843 |
| 23 | 3.67 | 1.92 | 0.03843 |
| 24 | 3.84 | 1.96 | 0.03846 |
| 25 | 4.00 | 2.00 | 0.03849 |
| 26 | 4.17 | 2.04 | 0.03853 |
| 27 | 4.34 | 2.08 | 0.03856 |
| 28 | 4.50 | 2.12 | 0.03856 |
| 29 | 4.67 | 2.16 | 0.03859 |
| 30 | 4.84 | 2.20 | 0.03862 |
| 31 | 5.00 | 2.24 | 0.03866 |
| 32 | 5.17 | 2.27 | 0.03869 |
| 33 | 5.33 | 2.31 | 0.03872 |
| 34 | 5.50 | 2.35 | 0.03885 |
| 35 | 5.67 | 2.38 | 0.03885 |
| 36 | 5.83 | 2.42 | 0.03892 |
| 37 | 6.00 | 2.45 | 0.03895 |
| 38 | 6.17 | 2.48 | 0.03895 |
| 39 | 6.34 | 2.52 | 0.03901 |
| 40 | 6.50 | 2.55 | 0.03905 |
| 41 | 6.67 | 2.58 | 0.03908 |
| 42 | 6.84 | 2.61 | 0.03908 |
| 43 | 7.00 | 2.65 | 0.03914 |
| 44 | 7.17 | 2.68 | 0.03918 |
| 45 | 7.34 | 2.71 | 0.03924 |
| 46 | 7.50 | 2.74 | 0.03931 |
| 47 | 7.67 | 2.77 | 0.03931 |
| 48 | 7.83 | 2.80 | 0.03931 |
| 49 | 8.00 | 2.83 | 0.03934 |
| 50 | 8.17 | 2.86 | 0.0394 |
| 51 | 8.33 | 2.89 | 0.0394 |
| 52 | 8.50 | 2.92 | 0.0394 |
| 53 | 8.67 | 2.94 | 0.0394 |
| 54 | 8.83 | 2.97 | 0.03944 |
| 55 | 9.00 | 3.00 | 0.0395 |
| 56 | 9.17 | 3.03 | 0.0395 |
| 57 | 9.34 | 3.06 | 0.03953 |
| 58 | 9.50 | 3.08 | 0.03953 |
| 59 | 9.67 | 3.11 | 0.03956 |
| 60 | 9.84 | 3.14 | 0.03956 |
| 61 | 10.00 | 3.16 | 0.03956 |
| 62 | 10.17 | 3.19 | 0.03956 |
| 63 | 10.34 | 3.22 | 0.0396 |
| 64 | 10.50 | 3.24 | 0.0396 |
| 65 | 10.67 | 3.27 | 0.0396 |
| 66 | 10.69 | 3.27 | 0.0396 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes
Boring No.: 1
Sample No.: 1
Test No.: 1

Location:
Tested By: Shawn
Test Date: 6/13/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation: Not Marked

Soil Description: 4 ksf
Remarks: Undisturbed

Load Increment: 1 of 1
Applied Stress: 2 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0 |
| 2 | 0.17 | 0.41 | 0.02303 |
| 3 | 0.33 | 0.58 | 0.04226 |
| 4 | 0.50 | 0.71 | 0.05377 |
| 5 | 0.67 | 0.82 | 0.06006 |
| 6 | 0.83 | 0.91 | 0.06097 |
| 7 | 1.00 | 1.00 | 0.06217 |
| 8 | 1.17 | 1.08 | 0.06311 |
| 9 | 1.34 | 1.16 | 0.06369 |
| 10 | 1.50 | 1.23 | 0.06386 |
| 11 | 1.67 | 1.29 | 0.06402 |
| 12 | 1.84 | 1.35 | 0.06418 |
| 13 | 2.00 | 1.42 | 0.06444 |
| 14 | 2.17 | 1.47 | 0.06463 |
| 15 | 2.34 | 1.53 | 0.0648 |
| 16 | 2.50 | 1.58 | 0.06502 |
| 17 | 2.67 | 1.63 | 0.06518 |
| 18 | 2.84 | 1.68 | 0.06528 |
| 19 | 3.00 | 1.73 | 0.06541 |
| 20 | 3.17 | 1.78 | 0.06551 |
| 21 | 3.33 | 1.83 | 0.06561 |
| 22 | 3.50 | 1.87 | 0.06577 |
| 23 | 3.67 | 1.92 | 0.0659 |
| 24 | 3.83 | 1.96 | 0.06603 |
| 25 | 4.00 | 2.00 | 0.06616 |
| 26 | 4.17 | 2.04 | 0.06629 |
| 27 | 4.34 | 2.08 | 0.06638 |
| 28 | 4.50 | 2.12 | 0.06648 |
| 29 | 4.67 | 2.16 | 0.06655 |
| 30 | 4.84 | 2.20 | 0.06661 |
| 31 | 5.00 | 2.24 | 0.06668 |
| 32 | 5.17 | 2.27 | 0.06671 |
| 33 | 5.34 | 2.31 | 0.06674 |
| 34 | 5.50 | 2.35 | 0.06677 |
| 35 | 5.67 | 2.38 | 0.06681 |
| 36 | 5.83 | 2.42 | 0.06684 |
| 37 | 6.00 | 2.45 | 0.06687 |
| 38 | 6.17 | 2.48 | 0.06694 |
| 39 | 6.33 | 2.52 | 0.067 |
| 40 | 6.50 | 2.55 | 0.06703 |
| 41 | 6.67 | 2.58 | 0.06707 |
| 42 | 6.83 | 2.61 | 0.06707 |
| 43 | 7.00 | 2.65 | 0.0671 |
| 44 | 7.17 | 2.68 | 0.06713 |
| 45 | 7.34 | 2.71 | 0.06716 |
| 46 | 7.50 | 2.74 | 0.06716 |
| 47 | 7.67 | 2.77 | 0.0672 |
| 48 | 7.84 | 2.80 | 0.06723 |
| 49 | 8.00 | 2.83 | 0.06723 |
| 50 | 8.17 | 2.86 | 0.06723 |
| 51 | 8.34 | 2.89 | 0.06723 |
| 52 | 8.50 | 2.92 | 0.06726 |
| 53 | 8.67 | 2.94 | 0.06729 |
| 54 | 8.83 | 2.97 | 0.06729 |
| 55 | 9.00 | 3.00 | 0.06729 |
| 56 | 9.17 | 3.03 | 0.06733 |
| 57 | 9.33 | 3.06 | 0.06736 |
| 58 | 9.50 | 3.08 | 0.06736 |
| 59 | 9.67 | 3.11 | 0.06736 |
| 60 | 9.84 | 3.14 | 0.06739 |
| 61 | 10.00 | 3.16 | 0.06742 |
| 62 | 10.17 | 3.19 | 0.06745 |
| 63 | 10.34 | 3.21 | 0.06745 |
| 64 | 10.50 | 3.24 | 0.06745 |
| 65 | 10.67 | 3.27 | 0.06749 |
| 66 | 10.74 | 3.28 | 0.06749 |

DIRECT SHEAR TEST DATA

Project: Lot 15 Ski Lakes
Boring No.: 1
Sample No.: 1
Test No.: 1

Location:
Tested By: Shawn
Test Date: 6/13/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation: Not Marked

Soil Description: 1 ksf
Remarks: Undisturbed

Step: 1 of 1

| | Elapsed Time min | Vertical Stress tsf | Vertical Displacement in | Horizontal Stress tsf | Horizontal Displacement in | Cumulative Displacement in |
|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.4981 | 0.01547 | 0.1448 | 0 | 0 |
| 2 | 1.63 | 0.4989 | 0.01609 | 0.2222 | 0.004992 | 0.004992 |
| 3 | 3.22 | 0.4981 | 0.01657 | 0.273 | 0.009983 | 0.009983 |
| 4 | 4.72 | 0.4989 | 0.0167 | 0.3121 | 0.01498 | 0.01498 |
| 5 | 6.34 | 0.4998 | 0.0169 | 0.3479 | 0.01997 | 0.01997 |
| 6 | 7.70 | 0.4998 | 0.01696 | 0.3704 | 0.02501 | 0.02501 |
| 7 | 9.03 | 0.4998 | 0.01693 | 0.3854 | 0.03 | 0.03 |
| 8 | 10.48 | 0.5014 | 0.01693 | 0.3979 | 0.03499 | 0.03499 |
| 9 | 12.07 | 0.5006 | 0.01693 | 0.4062 | 0.03998 | 0.03998 |
| 10 | 13.49 | 0.5006 | 0.01693 | 0.4078 | 0.04497 | 0.04497 |
| 11 | 14.97 | 0.5006 | 0.0167 | 0.3995 | 0.04997 | 0.04997 |
| 12 | 16.32 | 0.5006 | 0.01664 | 0.397 | 0.05501 | 0.05501 |
| 13 | 17.89 | 0.5014 | 0.01647 | 0.392 | 0.06 | 0.06 |
| 14 | 19.35 | 0.5006 | 0.01618 | 0.387 | 0.06499 | 0.06499 |
| 15 | 20.87 | 0.5006 | 0.01596 | 0.3812 | 0.06998 | 0.06998 |
| 16 | 22.19 | 0.5006 | 0.01566 | 0.377 | 0.07497 | 0.07497 |
| 17 | 23.57 | 0.5006 | 0.01521 | 0.3721 | 0.07997 | 0.07997 |
| 18 | 25.14 | 0.5014 | 0.01489 | 0.3671 | 0.08501 | 0.08501 |
| 19 | 26.61 | 0.5014 | 0.01466 | 0.3621 | 0.09 | 0.09 |
| 20 | 27.96 | 0.5014 | 0.01437 | 0.3579 | 0.09499 | 0.09499 |
| 21 | 29.36 | 0.5014 | 0.01411 | 0.3537 | 0.09998 | 0.09998 |
| 22 | 30.90 | 0.5006 | 0.01372 | 0.3496 | 0.105 | 0.105 |
| 23 | 32.33 | 0.5006 | 0.01352 | 0.3446 | 0.11 | 0.11 |
| 24 | 33.89 | 0.5006 | 0.0133 | 0.3404 | 0.115 | 0.115 |
| 25 | 35.25 | 0.5006 | 0.0131 | 0.3388 | 0.12 | 0.12 |
| 26 | 36.74 | 0.5006 | 0.013 | 0.3346 | 0.125 | 0.125 |
| 27 | 38.05 | 0.5006 | 0.01287 | 0.3313 | 0.13 | 0.13 |
| 28 | 39.63 | 0.5006 | 0.01278 | 0.3288 | 0.135 | 0.135 |
| 29 | 41.17 | 0.5006 | 0.01268 | 0.3279 | 0.14 | 0.14 |
| 30 | 42.55 | 0.5006 | 0.01258 | 0.3263 | 0.145 | 0.145 |
| 31 | 44.01 | 0.5006 | 0.01252 | 0.3254 | 0.15 | 0.15 |
| 32 | 45.47 | 0.5006 | 0.01249 | 0.3238 | 0.155 | 0.155 |
| 33 | 46.85 | 0.5006 | 0.01245 | 0.3238 | 0.16 | 0.16 |
| 34 | 48.37 | 0.4998 | 0.01242 | 0.3229 | 0.165 | 0.165 |
| 35 | 49.77 | 0.5006 | 0.01239 | 0.3221 | 0.17 | 0.17 |
| 36 | 51.20 | 0.4998 | 0.01232 | 0.3213 | 0.175 | 0.175 |
| 37 | 52.71 | 0.4998 | 0.01223 | 0.3204 | 0.18 | 0.18 |
| 38 | 54.20 | 0.5006 | 0.01216 | 0.3188 | 0.185 | 0.185 |
| 39 | 55.71 | 0.4998 | 0.0121 | 0.3171 | 0.19 | 0.19 |
| 40 | 56.97 | 0.4998 | 0.01206 | 0.3163 | 0.195 | 0.195 |
| 41 | 58.58 | 0.4998 | 0.0121 | 0.3171 | 0.2 | 0.2 |
| 42 | 59.96 | 0.4998 | 0.0121 | 0.3155 | 0.205 | 0.205 |
| 43 | 61.35 | 0.4998 | 0.0121 | 0.3155 | 0.21 | 0.21 |
| 44 | 62.72 | 0.4998 | 0.01206 | 0.3155 | 0.215 | 0.215 |
| 45 | 64.04 | 0.4998 | 0.01203 | 0.3138 | 0.22 | 0.22 |
| 46 | 65.41 | 0.4998 | 0.01203 | 0.3138 | 0.225 | 0.225 |
| 47 | 67.08 | 0.5006 | 0.01203 | 0.3105 | 0.23 | 0.23 |
| 48 | 68.53 | 0.4989 | 0.012 | 0.3088 | 0.235 | 0.235 |
| 49 | 70.08 | 0.4998 | 0.01197 | 0.3088 | 0.24 | 0.24 |
| 50 | 71.39 | 0.4998 | 0.01193 | 0.3096 | 0.245 | 0.245 |
| 51 | 72.81 | 0.4998 | 0.01193 | 0.3088 | 0.25 | 0.25 |
| 52 | 74.20 | 0.4998 | 0.0119 | 0.3071 | 0.255 | 0.255 |
| 53 | 75.60 | 0.4989 | 0.0119 | 0.3055 | 0.26 | 0.26 |
| 54 | 77.19 | 0.4989 | 0.0119 | 0.3055 | 0.265 | 0.265 |
| 55 | 78.62 | 0.4998 | 0.0119 | 0.3046 | 0.27 | 0.27 |
| 56 | 79.91 | 0.4998 | 0.0119 | 0.3046 | 0.275 | 0.275 |
| 57 | 81.44 | 0.4998 | 0.01187 | 0.3046 | 0.28 | 0.28 |
| 58 | 82.92 | 0.4998 | 0.01187 | 0.303 | 0.285 | 0.285 |
| 59 | 84.44 | 0.4998 | 0.0119 | 0.3021 | 0.29 | 0.29 |
| 60 | 85.86 | 0.4998 | 0.0119 | 0.3021 | 0.295 | 0.295 |
| 61 | 86.31 | 0.4998 | 0.0119 | 0.3021 | 0.2965 | 0.2965 |

DIRECT SHEAR TEST DATA

Project: Lot 15 Ski Lakes
Boring No.: 1
Sample No.: 1
Test No.: 1

Location:
Tested By: Shawn
Test Date: 6/13/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation: Not Marked

Soil Description: 2 ksf
Remarks: Undisturbed

Step: 1 of 1

| | Elapsed Time min | Vertical Stress tsf | Vertical Displacement in | Horizontal Stress tsf | Horizontal Displacement in | Cumulative Displacement in |
|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.9971 | 0.04368 | 0.1848 | 0 | 0 |
| 2 | 1.32 | 0.9962 | 0.04443 | 0.2447 | 0.004992 | 0.004992 |
| 3 | 2.98 | 0.9971 | 0.04569 | 0.2971 | 0.009983 | 0.009983 |
| 4 | 4.66 | 0.9979 | 0.04689 | 0.3404 | 0.01498 | 0.01498 |
| 5 | 6.00 | 0.9979 | 0.04748 | 0.3704 | 0.01997 | 0.01997 |
| 6 | 7.49 | 0.9987 | 0.048 | 0.3979 | 0.02501 | 0.02501 |
| 7 | 9.05 | 0.9971 | 0.04858 | 0.4228 | 0.03 | 0.03 |
| 8 | 10.46 | 0.9979 | 0.04903 | 0.4594 | 0.03499 | 0.03499 |
| 9 | 11.98 | 0.9979 | 0.04952 | 0.4911 | 0.03998 | 0.03998 |
| 10 | 13.48 | 0.9971 | 0.04972 | 0.5119 | 0.04497 | 0.04497 |
| 11 | 14.89 | 0.9979 | 0.04985 | 0.5285 | 0.04997 | 0.04997 |
| 12 | 16.26 | 0.9987 | 0.04994 | 0.5418 | 0.05501 | 0.05501 |
| 13 | 17.63 | 0.9987 | 0.0501 | 0.551 | 0.06 | 0.06 |
| 14 | 19.07 | 0.9987 | 0.05033 | 0.561 | 0.06499 | 0.06499 |
| 15 | 20.65 | 0.9987 | 0.05046 | 0.5685 | 0.06998 | 0.06998 |
| 16 | 22.19 | 0.9987 | 0.05062 | 0.5768 | 0.07497 | 0.07497 |
| 17 | 23.56 | 0.9987 | 0.05085 | 0.5818 | 0.07997 | 0.07997 |
| 18 | 25.05 | 0.9987 | 0.05098 | 0.5876 | 0.08501 | 0.08501 |
| 19 | 26.30 | 0.9987 | 0.05111 | 0.5926 | 0.09 | 0.09 |
| 20 | 27.89 | 0.9987 | 0.05121 | 0.5959 | 0.09499 | 0.09499 |
| 21 | 29.40 | 0.9987 | 0.05124 | 0.5993 | 0.09998 | 0.09998 |
| 22 | 30.78 | 0.9996 | 0.05137 | 0.6001 | 0.105 | 0.105 |
| 23 | 32.15 | 0.9996 | 0.0514 | 0.6034 | 0.11 | 0.11 |
| 24 | 33.67 | 0.9987 | 0.05147 | 0.6051 | 0.115 | 0.115 |
| 25 | 35.16 | 0.9987 | 0.05153 | 0.6051 | 0.12 | 0.12 |
| 26 | 36.70 | 0.9987 | 0.05179 | 0.6068 | 0.125 | 0.125 |
| 27 | 38.05 | 0.9987 | 0.05192 | 0.6093 | 0.13 | 0.13 |
| 28 | 39.57 | 0.9996 | 0.05205 | 0.6109 | 0.135 | 0.135 |
| 29 | 40.89 | 0.9987 | 0.05228 | 0.6109 | 0.14 | 0.14 |
| 30 | 42.44 | 0.9996 | 0.05244 | 0.6109 | 0.145 | 0.145 |
| 31 | 43.77 | 0.9987 | 0.05263 | 0.6084 | 0.15 | 0.15 |
| 32 | 45.40 | 0.9987 | 0.05289 | 0.6059 | 0.155 | 0.155 |
| 33 | 46.81 | 0.9987 | 0.05309 | 0.6034 | 0.16 | 0.16 |
| 34 | 48.32 | 0.9987 | 0.05319 | 0.6034 | 0.165 | 0.165 |
| 35 | 49.81 | 0.9987 | 0.05332 | 0.6051 | 0.17 | 0.17 |
| 36 | 51.32 | 0.9996 | 0.05338 | 0.6059 | 0.175 | 0.175 |
| 37 | 52.65 | 0.9996 | 0.05335 | 0.6051 | 0.18 | 0.18 |
| 38 | 54.17 | 0.9987 | 0.05341 | 0.6026 | 0.185 | 0.185 |
| 39 | 55.56 | 0.9987 | 0.05345 | 0.6026 | 0.19 | 0.19 |
| 40 | 56.98 | 0.9987 | 0.05351 | 0.6018 | 0.195 | 0.195 |
| 41 | 58.39 | 0.9987 | 0.05354 | 0.6001 | 0.2 | 0.2 |
| 42 | 59.95 | 0.9987 | 0.05361 | 0.5984 | 0.205 | 0.205 |
| 43 | 61.34 | 0.9996 | 0.05364 | 0.5968 | 0.21 | 0.21 |
| 44 | 62.72 | 0.9987 | 0.0537 | 0.5968 | 0.215 | 0.215 |
| 45 | 64.08 | 0.9996 | 0.05377 | 0.5951 | 0.22 | 0.22 |
| 46 | 65.57 | 0.9987 | 0.05383 | 0.5934 | 0.225 | 0.225 |
| 47 | 67.03 | 0.9987 | 0.05387 | 0.591 | 0.23 | 0.23 |
| 48 | 68.35 | 0.9996 | 0.0539 | 0.591 | 0.235 | 0.235 |
| 49 | 69.95 | 0.9996 | 0.0539 | 0.5893 | 0.24 | 0.24 |
| 50 | 71.22 | 0.9987 | 0.0539 | 0.5885 | 0.245 | 0.245 |
| 51 | 72.88 | 0.9987 | 0.05396 | 0.5868 | 0.25 | 0.25 |
| 52 | 74.26 | 0.9996 | 0.05396 | 0.586 | 0.255 | 0.255 |
| 53 | 75.56 | 0.9996 | 0.05403 | 0.5826 | 0.26 | 0.26 |
| 54 | 77.08 | 0.9996 | 0.054 | 0.5801 | 0.265 | 0.265 |
| 55 | 78.55 | 0.9996 | 0.05406 | 0.5801 | 0.27 | 0.27 |
| 56 | 80.02 | 0.9987 | 0.05406 | 0.5793 | 0.275 | 0.275 |
| 57 | 81.42 | 0.9987 | 0.05409 | 0.5785 | 0.28 | 0.28 |
| 58 | 82.94 | 0.9987 | 0.05419 | 0.5801 | 0.285 | 0.285 |
| 59 | 84.31 | 0.9996 | 0.05419 | 0.5776 | 0.29 | 0.29 |
| 60 | 85.83 | 0.9987 | 0.05422 | 0.581 | 0.295 | 0.295 |
| 61 | 86.32 | 0.9987 | 0.05419 | 0.581 | 0.2971 | 0.2971 |

# DIRECT SHEAR TEST DATA

Project: Lot 15 Ski Lakes
Boring No.: 1
Sample No.: 1
Test No.: 1

Location:
Tested By: Shawn
Test Date: 6/13/14
Sample Type: Block

Project No.: 145150G
Checked By: Shawn
Depth: 3.5'
Elevation: Not Marked

Soil Description: 4 ksf
Remarks: Undisturbed

Step: 1 of 1

| | Elapsed Time min | Vertical Stress tsf | Vertical Displacement in | Horizontal Stress tsf | Horizontal Displacement in | Cumulative Displacement in |
|---|---|---|---|---|---|---|
| 1 | 0.00 | 1.997 | 0.07339 | 0.2863 | 0 | 0 |
| 2 | 1.60 | 1.997 | 0.0741 | 0.4178 | 0.004992 | 0.004992 |
| 3 | 3.18 | 1.996 | 0.07495 | 0.5169 | 0.009983 | 0.009983 |
| 4 | 4.67 | 1.997 | 0.07589 | 0.5893 | 0.01498 | 0.01498 |
| 5 | 6.08 | 1.997 | 0.07673 | 0.6434 | 0.01997 | 0.01997 |
| 6 | 7.70 | 1.998 | 0.07731 | 0.7017 | 0.02501 | 0.02501 |
| 7 | 9.09 | 1.999 | 0.07786 | 0.7433 | 0.03 | 0.03 |
| 8 | 10.41 | 1.999 | 0.07832 | 0.7791 | 0.03499 | 0.03499 |
| 9 | 11.98 | 1.997 | 0.07881 | 0.8165 | 0.03998 | 0.03998 |
| 10 | 13.42 | 1.997 | 0.07949 | 0.8473 | 0.04502 | 0.04502 |
| 11 | 14.82 | 1.998 | 0.07984 | 0.8723 | 0.04997 | 0.04997 |
| 12 | 16.30 | 1.999 | 0.08026 | 0.8931 | 0.05501 | 0.05501 |
| 13 | 17.94 | 1.999 | 0.08085 | 0.9106 | 0.06 | 0.06 |
| 14 | 19.24 | 1.998 | 0.0814 | 0.9197 | 0.06499 | 0.06499 |
| 15 | 20.69 | 1.998 | 0.08179 | 0.9289 | 0.06998 | 0.06998 |
| 16 | 22.27 | 1.998 | 0.08205 | 0.9364 | 0.07497 | 0.07497 |
| 17 | 23.54 | 1.998 | 0.08234 | 0.9405 | 0.07997 | 0.07997 |
| 18 | 25.21 | 1.998 | 0.08266 | 0.9447 | 0.08501 | 0.08501 |
| 19 | 26.50 | 1.998 | 0.08286 | 0.9455 | 0.09 | 0.09 |
| 20 | 27.93 | 1.999 | 0.08302 | 0.9464 | 0.09499 | 0.09499 |
| 21 | 29.53 | 1.999 | 0.08318 | 0.9464 | 0.09998 | 0.09998 |
| 22 | 30.75 | 1.999 | 0.08328 | 0.9447 | 0.105 | 0.105 |
| 23 | 32.35 | 1.999 | 0.08335 | 0.9422 | 0.11 | 0.11 |
| 24 | 33.66 | 1.999 | 0.08344 | 0.9389 | 0.115 | 0.115 |
| 25 | 35.09 | 1.999 | 0.08354 | 0.9364 | 0.12 | 0.12 |
| 26 | 36.62 | 1.999 | 0.08361 | 0.9322 | 0.125 | 0.125 |
| 27 | 37.98 | 1.999 | 0.0837 | 0.9289 | 0.13 | 0.13 |
| 28 | 39.42 | 1.999 | 0.08386 | 0.9264 | 0.135 | 0.135 |
| 29 | 40.90 | 1.999 | 0.08396 | 0.9214 | 0.14 | 0.14 |
| 30 | 42.45 | 1.999 | 0.08409 | 0.9172 | 0.145 | 0.145 |
| 31 | 43.85 | 1.999 | 0.08419 | 0.9131 | 0.15 | 0.15 |
| 32 | 45.29 | 1.999 | 0.08432 | 0.9097 | 0.155 | 0.155 |
| 33 | 46.67 | 1.999 | 0.08438 | 0.9047 | 0.16 | 0.16 |
| 34 | 48.09 | 1.999 | 0.08448 | 0.9022 | 0.165 | 0.165 |
| 35 | 49.58 | 1.999 | 0.08458 | 0.8981 | 0.17 | 0.17 |
| 36 | 50.98 | 1.999 | 0.08474 | 0.8948 | 0.175 | 0.175 |
| 37 | 52.59 | 1.999 | 0.08484 | 0.8914 | 0.18 | 0.18 |
| 38 | 53.96 | 1.999 | 0.08503 | 0.8889 | 0.185 | 0.185 |
| 39 | 55.41 | 1.999 | 0.08526 | 0.8856 | 0.19 | 0.19 |
| 40 | 56.75 | 1.999 | 0.08539 | 0.8831 | 0.195 | 0.195 |
| 41 | 58.18 | 1.999 | 0.08562 | 0.8814 | 0.2 | 0.2 |
| 42 | 59.78 | 1.999 | 0.08578 | 0.8773 | 0.205 | 0.205 |
| 43 | 61.31 | 1.999 | 0.08597 | 0.8764 | 0.21 | 0.21 |
| 44 | 62.54 | 1.999 | 0.08607 | 0.8748 | 0.215 | 0.215 |
| 45 | 63.97 | 1.999 | 0.08623 | 0.8739 | 0.22 | 0.22 |
| 46 | 65.33 | 1.998 | 0.08639 | 0.8731 | 0.225 | 0.225 |
| 47 | 66.80 | 1.999 | 0.08649 | 0.8723 | 0.23 | 0.23 |
| 48 | 68.32 | 1.999 | 0.08665 | 0.8706 | 0.235 | 0.235 |
| 49 | 69.78 | 1.999 | 0.08685 | 0.8698 | 0.24 | 0.24 |
| 50 | 71.17 | 1.999 | 0.08695 | 0.869 | 0.245 | 0.245 |
| 51 | 72.56 | 1.999 | 0.08704 | 0.8673 | 0.25 | 0.25 |
| 52 | 74.06 | 1.999 | 0.08714 | 0.8656 | 0.255 | 0.255 |
| 53 | 75.40 | 1.999 | 0.08737 | 0.8656 | 0.26 | 0.26 |
| 54 | 76.97 | 1.999 | 0.08746 | 0.8656 | 0.265 | 0.265 |
| 55 | 78.38 | 1.999 | 0.08759 | 0.864 | 0.27 | 0.27 |
| 56 | 79.74 | 1.999 | 0.08766 | 0.8648 | 0.275 | 0.275 |
| 57 | 81.28 | 1.999 | 0.08776 | 0.864 | 0.28 | 0.28 |
| 58 | 82.65 | 1.999 | 0.08785 | 0.8656 | 0.285 | 0.285 |
| 59 | 84.16 | 1.998 | 0.08798 | 0.8681 | 0.29 | 0.29 |
| 60 | 85.56 | 1.999 | 0.08811 | 0.8698 | 0.295 | 0.295 |
| 61 | 85.83 | 1.999 | 0.08811 | 0.8706 | 0.296 | 0.296 |

# DIRECT SHEAR TEST DATA

Project: Lot 15 Ski Lakes
Boring No.: 3
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/30/15
Sample Type: Bag

Project No.: 145150G
Checked By: Tim
Depth: 11'
Elevation: Not Marked

Soil Description: 1 ksf
Remarks: Disturbed-Remolded

Step: 1 of 1

| | Elapsed Time min | Vertical Stress tsf | Vertical Displacement in | Horizontal Stress tsf | Horizontal Displacement in | Cumulative Displacement in |
|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.5014 | 0.01485 | 0.3188 | 0 | 0 |
| 2 | 1.63 | 0.5023 | 0.01411 | 0.4736 | 0.004992 | 0.004992 |
| 3 | 3.18 | 0.5014 | 0.01258 | 0.5518 | 0.009983 | 0.009983 |
| 4 | 4.72 | 0.5056 | 0.01119 | 0.5968 | 0.01498 | 0.01498 |
| 5 | 6.28 | 0.5064 | 0.009437 | 0.586 | 0.01997 | 0.01997 |
| 6 | 8.01 | 0.5031 | 0.007816 | 0.5302 | 0.02501 | 0.02501 |
| 7 | 9.53 | 0.5014 | 0.007329 | 0.4961 | 0.03 | 0.03 |
| 8 | 11.04 | 0.5014 | 0.006486 | 0.4769 | 0.03499 | 0.03499 |
| 9 | 12.65 | 0.5006 | 0.005773 | 0.4678 | 0.03998 | 0.03998 |
| 10 | 14.10 | 0.5006 | 0.005156 | 0.4603 | 0.04497 | 0.04497 |
| 11 | 15.69 | 0.5014 | 0.004573 | 0.4553 | 0.04997 | 0.04997 |
| 12 | 17.32 | 0.5031 | 0.003924 | 0.4511 | 0.05501 | 0.05501 |
| 13 | 18.99 | 0.5039 | 0.003308 | 0.4428 | 0.06 | 0.06 |
| 14 | 20.43 | 0.5023 | 0.002659 | 0.432 | 0.06499 | 0.06499 |
| 15 | 21.94 | 0.5006 | 0.002076 | 0.4212 | 0.06998 | 0.06998 |
| 16 | 23.62 | 0.5014 | 0.001816 | 0.4112 | 0.07497 | 0.07497 |
| 17 | 25.04 | 0.5006 | 0.001557 | 0.3987 | 0.07997 | 0.07997 |
| 18 | 26.78 | 0.5006 | 0.001135 | 0.3887 | 0.08501 | 0.08501 |
| 19 | 28.20 | 0.5014 | 0.000908 | 0.387 | 0.09 | 0.09 |
| 20 | 29.79 | 0.5006 | 0.0006486 | 0.3845 | 0.09499 | 0.09499 |
| 21 | 31.51 | 0.5014 | 0.0004865 | 0.3845 | 0.09998 | 0.09998 |
| 22 | 32.86 | 0.5006 | 0.0003567 | 0.3845 | 0.105 | 0.105 |
| 23 | 34.62 | 0.5006 | 0.0001946 | 0.3845 | 0.11 | 0.11 |
| 24 | 36.12 | 0.5006 | 6.486e-005 | 0.3862 | 0.115 | 0.115 |
| 25 | 37.52 | 0.5006 | 3.243e-005 | 0.3862 | 0.12 | 0.12 |
| 26 | 39.19 | 0.5006 | -9.729e-005 | 0.387 | 0.125 | 0.125 |
| 27 | 40.74 | 0.5006 | -9.729e-005 | 0.3862 | 0.13 | 0.13 |
| 28 | 42.29 | 0.5006 | -0.0002594 | 0.3895 | 0.135 | 0.135 |
| 29 | 43.75 | 0.5006 | -0.0002919 | 0.3929 | 0.14 | 0.14 |
| 30 | 45.42 | 0.5006 | -0.0004216 | 0.3962 | 0.145 | 0.145 |
| 31 | 46.96 | 0.5006 | -0.0004216 | 0.3995 | 0.15 | 0.15 |
| 32 | 48.52 | 0.5006 | -0.000681 | 0.3987 | 0.155 | 0.155 |
| 33 | 50.09 | 0.5006 | -0.000681 | 0.3995 | 0.16 | 0.16 |
| 34 | 51.62 | 0.4998 | -0.000908 | 0.4012 | 0.165 | 0.165 |
| 35 | 53.16 | 0.5006 | -0.000908 | 0.4012 | 0.17 | 0.17 |
| 36 | 54.90 | 0.5006 | -0.001103 | 0.3995 | 0.175 | 0.175 |
| 37 | 56.49 | 0.5006 | -0.001103 | 0.3995 | 0.18 | 0.18 |
| 38 | 57.90 | 0.5006 | -0.001265 | 0.402 | 0.185 | 0.185 |
| 39 | 59.49 | 0.5006 | -0.001265 | 0.4045 | 0.19 | 0.19 |
| 40 | 60.88 | 0.5006 | -0.001265 | 0.4045 | 0.195 | 0.195 |
| 41 | 62.61 | 0.5006 | -0.001524 | 0.4053 | 0.2 | 0.2 |
| 42 | 64.21 | 0.5006 | -0.001524 | 0.407 | 0.205 | 0.205 |
| 43 | 65.92 | 0.5006 | -0.001557 | 0.4087 | 0.21 | 0.21 |
| 44 | 67.38 | 0.5006 | -0.001816 | 0.4062 | 0.215 | 0.215 |
| 45 | 68.96 | 0.5006 | -0.001849 | 0.4053 | 0.22 | 0.22 |
| 46 | 70.36 | 0.5006 | -0.001881 | 0.4037 | 0.225 | 0.225 |
| 47 | 71.93 | 0.5006 | -0.002205 | 0.4053 | 0.23 | 0.23 |
| 48 | 73.53 | 0.4998 | -0.00227 | 0.4087 | 0.235 | 0.235 |
| 49 | 75.10 | 0.4998 | -0.002303 | 0.4087 | 0.24 | 0.24 |
| 50 | 76.56 | 0.4998 | -0.002594 | 0.4087 | 0.245 | 0.245 |
| 51 | 78.11 | 0.5006 | -0.002659 | 0.407 | 0.25 | 0.25 |
| 52 | 79.86 | 0.5006 | -0.002692 | 0.4053 | 0.255 | 0.255 |
| 53 | 81.21 | 0.5006 | -0.002984 | 0.407 | 0.26 | 0.26 |
| 54 | 82.87 | 0.5006 | -0.003016 | 0.4078 | 0.265 | 0.265 |
| 55 | 84.47 | 0.5006 | -0.003178 | 0.4103 | 0.27 | 0.27 |
| 56 | 85.90 | 0.5006 | -0.003178 | 0.4103 | 0.275 | 0.275 |
| 57 | 87.70 | 0.5006 | -0.003373 | 0.4112 | 0.28 | 0.28 |
| 58 | 89.03 | 0.4998 | -0.003373 | 0.4095 | 0.285 | 0.285 |
| 59 | 90.72 | 0.5006 | -0.003535 | 0.4112 | 0.29 | 0.29 |
| 60 | 92.24 | 0.5006 | -0.003535 | 0.4145 | 0.295 | 0.295 |
| 61 | 92.81 | 0.4998 | -0.003535 | 0.4162 | 0.2968 | 0.2968 |

DIRECT SHEAR TEST DATA

Project: Lot 15 Ski Lakes
Boring No.: 3
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/30/15
Sample Type: Bag

Project No.: 145150G
Checked By: Tim
Depth: 11'
Elevation: Not Marked

Soil Description: 2 ksf
Remarks: Disturbed-Remolded

Step: 1 of 1

| | Elapsed Time min | Vertical Stress tsf | Vertical Displacement in | Horizontal Stress tsf | Horizontal Displacement in | Cumulative Displacement in |
|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.9987 | 0.01829 | 0.3912 | 0 | 0 |
| 2 | 1.84 | 1.001 | 0.01829 | 0.6359 | 0.004992 | 0.004992 |
| 3 | 3.33 | 1.001 | 0.01826 | 0.7574 | 0.009983 | 0.009983 |
| 4 | 4.90 | 1.004 | 0.01732 | 0.8348 | 0.01498 | 0.01498 |
| 5 | 6.49 | 1.004 | 0.01651 | 0.8665 | 0.01997 | 0.01997 |
| 6 | 8.22 | 1.005 | 0.01531 | 0.864 | 0.02501 | 0.02501 |
| 7 | 9.72 | 1.003 | 0.01424 | 0.8448 | 0.03 | 0.03 |
| 8 | 11.21 | 1.001 | 0.01359 | 0.8332 | 0.03499 | 0.03499 |
| 9 | 12.89 | 1.003 | 0.01291 | 0.829 | 0.03998 | 0.03998 |
| 10 | 14.29 | 1.003 | 0.01236 | 0.8257 | 0.04497 | 0.04497 |
| 11 | 15.83 | 1.001 | 0.01167 | 0.8157 | 0.04997 | 0.04997 |
| 12 | 17.45 | 1.002 | 0.01112 | 0.799 | 0.05501 | 0.05501 |
| 13 | 19.15 | 1.001 | 0.0109 | 0.7882 | 0.06 | 0.06 |
| 14 | 20.56 | 1 | 0.01077 | 0.7866 | 0.06499 | 0.06499 |
| 15 | 22.08 | 1 | 0.01035 | 0.7841 | 0.06998 | 0.06998 |
| 16 | 23.80 | 1 | 0.01035 | 0.7824 | 0.07497 | 0.07497 |
| 17 | 25.21 | 1 | 0.01031 | 0.7832 | 0.07997 | 0.07997 |
| 18 | 26.97 | 1 | 0.009956 | 0.7857 | 0.08501 | 0.08501 |
| 19 | 28.38 | 1 | 0.009956 | 0.789 | 0.09 | 0.09 |
| 20 | 29.94 | 1 | 0.009956 | 0.7932 | 0.09499 | 0.09499 |
| 21 | 31.67 | 0.9996 | 0.009729 | 0.7957 | 0.09998 | 0.09998 |
| 22 | 32.98 | 1 | 0.009729 | 0.8024 | 0.105 | 0.105 |
| 23 | 34.80 | 1 | 0.009697 | 0.8065 | 0.11 | 0.11 |
| 24 | 36.15 | 1 | 0.009632 | 0.8074 | 0.115 | 0.115 |
| 25 | 37.70 | 1 | 0.009632 | 0.8115 | 0.12 | 0.12 |
| 26 | 39.39 | 1 | 0.009599 | 0.8157 | 0.125 | 0.125 |
| 27 | 40.90 | 0.9996 | 0.009599 | 0.8182 | 0.13 | 0.13 |
| 28 | 42.48 | 1 | 0.009567 | 0.8198 | 0.135 | 0.135 |
| 29 | 43.96 | 1 | 0.009307 | 0.8198 | 0.14 | 0.14 |
| 30 | 45.64 | 0.9996 | 0.009307 | 0.8265 | 0.145 | 0.145 |
| 31 | 47.20 | 0.9987 | 0.00921 | 0.8265 | 0.15 | 0.15 |
| 32 | 48.70 | 0.9996 | 0.009178 | 0.8315 | 0.155 | 0.155 |
| 33 | 50.22 | 0.9996 | 0.009178 | 0.8357 | 0.16 | 0.16 |
| 34 | 51.73 | 0.9996 | 0.00908 | 0.8382 | 0.165 | 0.165 |
| 35 | 53.34 | 1 | 0.00908 | 0.8423 | 0.17 | 0.17 |
| 36 | 54.91 | 0.9996 | 0.00908 | 0.8465 | 0.175 | 0.175 |
| 37 | 56.60 | 1 | 0.009048 | 0.8465 | 0.18 | 0.18 |
| 38 | 58.12 | 1 | 0.009016 | 0.8431 | 0.185 | 0.185 |
| 39 | 59.68 | 1 | 0.008724 | 0.8373 | 0.19 | 0.19 |
| 40 | 61.15 | 1 | 0.008691 | 0.8307 | 0.195 | 0.195 |
| 41 | 62.69 | 1 | 0.008626 | 0.8232 | 0.2 | 0.2 |
| 42 | 64.39 | 0.9996 | 0.00814 | 0.8173 | 0.205 | 0.205 |
| 43 | 66.06 | 0.9996 | 0.008075 | 0.8148 | 0.21 | 0.21 |
| 44 | 67.44 | 0.9996 | 0.008075 | 0.8132 | 0.215 | 0.215 |
| 45 | 68.97 | 0.9996 | 0.008043 | 0.8115 | 0.22 | 0.22 |
| 46 | 70.44 | 1 | 0.00801 | 0.8115 | 0.225 | 0.225 |
| 47 | 72.02 | 0.9996 | 0.007783 | 0.809 | 0.23 | 0.23 |
| 48 | 73.65 | 1 | 0.007751 | 0.8032 | 0.235 | 0.235 |
| 49 | 75.23 | 0.9996 | 0.007718 | 0.7949 | 0.24 | 0.24 |
| 50 | 76.76 | 1 | 0.007297 | 0.7874 | 0.245 | 0.245 |
| 51 | 78.24 | 1 | 0.007264 | 0.7816 | 0.25 | 0.25 |
| 52 | 79.85 | 1 | 0.007264 | 0.7774 | 0.255 | 0.255 |
| 53 | 81.33 | 1 | 0.007232 | 0.7724 | 0.26 | 0.26 |
| 54 | 83.05 | 0.9996 | 0.007232 | 0.7699 | 0.265 | 0.265 |
| 55 | 84.65 | 0.9987 | 0.007232 | 0.7682 | 0.27 | 0.27 |
| 56 | 86.01 | 0.9996 | 0.007005 | 0.7641 | 0.275 | 0.275 |
| 57 | 87.67 | 0.9987 | 0.007005 | 0.7641 | 0.28 | 0.28 |
| 58 | 89.18 | 0.9996 | 0.007005 | 0.7657 | 0.285 | 0.285 |
| 59 | 90.77 | 0.9996 | 0.007005 | 0.7666 | 0.29 | 0.29 |
| 60 | 92.31 | 0.9987 | 0.00707 | 0.7657 | 0.295 | 0.295 |
| 61 | 93.01 | 0.9996 | 0.00707 | 0.7657 | 0.2973 | 0.2973 |

# DIRECT SHEAR TEST DATA

Project: Lot 15 Ski Lakes
Boring No.: 3
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/30/15
Sample Type: Bag

Project No.: 145150G
Checked By: Tim
Depth: 11'
Elevation: Not Marked

Soil Description: 4 ksf
Remarks: Disturbed-Remolded

Step: 1 of 1

| | Elapsed Time min | Vertical Stress tsf | Vertical Displacement in | Horizontal Stress tsf | Horizontal Displacement in | Cumulative Displacement in |
|---|---|---|---|---|---|---|
| 1 | 0.00 | 1.998 | 0.03026 | 0.5094 | 0 | 0 |
| 2 | 1.79 | 1.998 | 0.03068 | 0.8581 | 0.004992 | 0.004992 |
| 3 | 3.34 | 1.999 | 0.03078 | 1.109 | 0.009983 | 0.009983 |
| 4 | 5.12 | 2.002 | 0.03113 | 1.295 | 0.01498 | 0.01498 |
| 5 | 6.54 | 2.002 | 0.03091 | 1.397 | 0.01997 | 0.01997 |
| 6 | 8.02 | 2.002 | 0.03029 | 1.47 | 0.02501 | 0.02501 |
| 7 | 9.59 | 2.002 | 0.03003 | 1.521 | 0.03 | 0.03 |
| 8 | 11.15 | 2.001 | 0.02938 | 1.543 | 0.03499 | 0.03499 |
| 9 | 12.70 | 2.001 | 0.02912 | 1.551 | 0.03998 | 0.03998 |
| 10 | 14.33 | 2.002 | 0.02867 | 1.55 | 0.04497 | 0.04497 |
| 11 | 15.93 | 2.001 | 0.02838 | 1.548 | 0.04997 | 0.04997 |
| 12 | 17.47 | 2.002 | 0.02834 | 1.549 | 0.05501 | 0.05501 |
| 13 | 18.95 | 2.001 | 0.02795 | 1.549 | 0.06 | 0.06 |
| 14 | 20.46 | 2.002 | 0.02792 | 1.554 | 0.06499 | 0.06499 |
| 15 | 22.22 | 2.001 | 0.02773 | 1.562 | 0.06998 | 0.06998 |
| 16 | 23.76 | 2.001 | 0.02753 | 1.568 | 0.07497 | 0.07497 |
| 17 | 25.32 | 2.001 | 0.02753 | 1.576 | 0.07997 | 0.07997 |
| 18 | 26.91 | 2.001 | 0.02744 | 1.583 | 0.08501 | 0.08501 |
| 19 | 28.61 | 2 | 0.02724 | 1.581 | 0.09 | 0.09 |
| 20 | 29.90 | 2.001 | 0.02727 | 1.576 | 0.09499 | 0.09499 |
| 21 | 31.52 | 2 | 0.02705 | 1.55 | 0.09998 | 0.09998 |
| 22 | 33.17 | 1.997 | 0.02701 | 1.516 | 0.105 | 0.105 |
| 23 | 34.62 | 1.999 | 0.02688 | 1.492 | 0.11 | 0.11 |
| 24 | 36.24 | 1.999 | 0.02688 | 1.482 | 0.115 | 0.115 |
| 25 | 37.72 | 1.999 | 0.02688 | 1.477 | 0.12 | 0.12 |
| 26 | 39.30 | 1.999 | 0.02688 | 1.473 | 0.125 | 0.125 |
| 27 | 40.90 | 2 | 0.02721 | 1.474 | 0.13 | 0.13 |
| 28 | 42.42 | 1.999 | 0.02727 | 1.475 | 0.135 | 0.135 |
| 29 | 44.03 | 1.999 | 0.02731 | 1.48 | 0.14 | 0.14 |
| 30 | 45.57 | 1.999 | 0.02737 | 1.484 | 0.145 | 0.145 |
| 31 | 47.18 | 1.999 | 0.0274 | 1.488 | 0.15 | 0.15 |
| 32 | 48.63 | 1.999 | 0.02753 | 1.493 | 0.155 | 0.155 |
| 33 | 50.27 | 1.999 | 0.02766 | 1.501 | 0.16 | 0.16 |
| 34 | 51.92 | 1.999 | 0.02779 | 1.507 | 0.165 | 0.165 |
| 35 | 53.49 | 1.998 | 0.02789 | 1.517 | 0.17 | 0.17 |
| 36 | 55.01 | 1.998 | 0.02808 | 1.526 | 0.175 | 0.175 |
| 37 | 56.67 | 1.999 | 0.02818 | 1.535 | 0.18 | 0.18 |
| 38 | 58.14 | 1.999 | 0.02838 | 1.541 | 0.185 | 0.185 |
| 39 | 59.77 | 1.999 | 0.02851 | 1.546 | 0.19 | 0.19 |
| 40 | 61.27 | 1.999 | 0.0287 | 1.552 | 0.195 | 0.195 |
| 41 | 62.82 | 1.999 | 0.02883 | 1.558 | 0.2 | 0.2 |
| 42 | 64.39 | 1.999 | 0.0289 | 1.564 | 0.205 | 0.205 |
| 43 | 66.04 | 1.999 | 0.02909 | 1.569 | 0.21 | 0.21 |
| 44 | 67.61 | 1.999 | 0.02922 | 1.573 | 0.215 | 0.215 |
| 45 | 69.03 | 1.998 | 0.02941 | 1.576 | 0.22 | 0.22 |
| 46 | 70.56 | 1.998 | 0.02951 | 1.582 | 0.225 | 0.225 |
| 47 | 72.14 | 1.999 | 0.02974 | 1.587 | 0.23 | 0.23 |
| 48 | 73.76 | 1.999 | 0.02987 | 1.593 | 0.235 | 0.235 |
| 49 | 75.35 | 1.999 | 0.02997 | 1.599 | 0.24 | 0.24 |
| 50 | 76.97 | 1.999 | 0.03019 | 1.603 | 0.245 | 0.245 |
| 51 | 78.27 | 1.999 | 0.03029 | 1.606 | 0.25 | 0.25 |
| 52 | 80.02 | 1.999 | 0.03055 | 1.612 | 0.255 | 0.255 |
| 53 | 81.54 | 1.999 | 0.03058 | 1.616 | 0.26 | 0.26 |
| 54 | 83.15 | 1.999 | 0.03074 | 1.619 | 0.265 | 0.265 |
| 55 | 84.74 | 1.999 | 0.03084 | 1.623 | 0.27 | 0.27 |
| 56 | 86.28 | 1.999 | 0.03097 | 1.629 | 0.275 | 0.275 |
| 57 | 87.78 | 1.999 | 0.03107 | 1.631 | 0.28 | 0.28 |
| 58 | 89.37 | 1.999 | 0.0312 | 1.635 | 0.285 | 0.285 |
| 59 | 90.92 | 1.999 | 0.0313 | 1.643 | 0.29 | 0.29 |
| 60 | 92.50 | 1.999 | 0.03146 | 1.649 | 0.295 | 0.295 |
| 61 | 93.47 | 1.999 | 0.03159 | 1.651 | 0.2981 | 0.2981 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes
Boring No.: 3
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/30/15
Sample Type: Bag

Project No.: 145150G
Checked By: Tim
Depth: 11'
Elevation: Not Marked

Soil Description: 1 ksf
Remarks: Disturbed-Remolded

Load Increment: 1 of 1
Applied Stress: 0.5 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0 |
| 2 | 0.17 | 0.41 | 0.004638 |
| 3 | 0.33 | 0.58 | 0.006713 |
| 4 | 0.50 | 0.71 | 0.008918 |
| 5 | 0.67 | 0.82 | 0.01138 |
| 6 | 0.83 | 0.91 | 0.01155 |
| 7 | 1.00 | 1.00 | 0.01164 |
| 8 | 1.17 | 1.08 | 0.01171 |
| 9 | 1.34 | 1.16 | 0.0118 |
| 10 | 1.50 | 1.23 | 0.01193 |
| 11 | 1.67 | 1.29 | 0.01193 |
| 12 | 1.84 | 1.35 | 0.012 |
| 13 | 2.00 | 1.42 | 0.012 |
| 14 | 2.17 | 1.47 | 0.01216 |
| 15 | 2.34 | 1.53 | 0.01216 |
| 16 | 2.50 | 1.58 | 0.01216 |
| 17 | 2.67 | 1.63 | 0.01216 |
| 18 | 2.84 | 1.68 | 0.01216 |
| 19 | 3.00 | 1.73 | 0.01216 |
| 20 | 3.17 | 1.78 | 0.01226 |
| 21 | 3.33 | 1.83 | 0.01226 |
| 22 | 3.50 | 1.87 | 0.01226 |
| 23 | 3.67 | 1.92 | 0.01226 |
| 24 | 3.83 | 1.96 | 0.01226 |
| 25 | 4.00 | 2.00 | 0.01226 |
| 26 | 4.17 | 2.04 | 0.01226 |
| 27 | 4.34 | 2.08 | 0.01226 |
| 28 | 4.50 | 2.12 | 0.01226 |
| 29 | 4.67 | 2.16 | 0.01226 |
| 30 | 4.84 | 2.20 | 0.01226 |
| 31 | 5.00 | 2.24 | 0.01226 |
| 32 | 5.17 | 2.27 | 0.01249 |
| 33 | 5.34 | 2.31 | 0.01249 |
| 34 | 5.50 | 2.35 | 0.01249 |
| 35 | 5.67 | 2.38 | 0.01249 |
| 36 | 5.83 | 2.42 | 0.01249 |
| 37 | 6.00 | 2.45 | 0.01249 |
| 38 | 6.17 | 2.48 | 0.01249 |
| 39 | 6.33 | 2.52 | 0.01249 |
| 40 | 6.50 | 2.55 | 0.01245 |
| 41 | 6.67 | 2.58 | 0.01245 |
| 42 | 6.84 | 2.61 | 0.01245 |
| 43 | 7.00 | 2.65 | 0.01245 |
| 44 | 7.17 | 2.68 | 0.01245 |
| 45 | 7.34 | 2.71 | 0.01245 |
| 46 | 7.50 | 2.74 | 0.01245 |
| 47 | 7.67 | 2.77 | 0.01245 |
| 48 | 7.84 | 2.80 | 0.01245 |
| 49 | 8.00 | 2.83 | 0.01245 |
| 50 | 8.17 | 2.86 | 0.01245 |
| 51 | 8.34 | 2.89 | 0.01245 |
| 52 | 8.50 | 2.92 | 0.01245 |
| 53 | 8.67 | 2.94 | 0.01245 |
| 54 | 8.83 | 2.97 | 0.01245 |
| 55 | 9.00 | 3.00 | 0.01245 |
| 56 | 9.17 | 3.03 | 0.01245 |
| 57 | 9.33 | 3.06 | 0.01245 |
| 58 | 9.50 | 3.08 | 0.01258 |
| 59 | 9.67 | 3.11 | 0.01258 |
| 60 | 9.84 | 3.14 | 0.01258 |
| 61 | 10.00 | 3.16 | 0.01258 |
| 62 | 10.17 | 3.19 | 0.01258 |
| 63 | 10.34 | 3.21 | 0.01258 |
| 64 | 10.50 | 3.24 | 0.01255 |
| 65 | 10.57 | 3.25 | 0.01255 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes
Boring No.: 3
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/30/15
Sample Type: Bag

Project No.: 145150G
Checked By: Tim
Depth: 11'
Elevation: Not Marked

Soil Description: 2 ksf
Remarks: Disturbed-Remolded

Load Increment: 1 of 1
Applied Stress: 1 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0 |
| 2 | 0.17 | 0.41 | 0.007621 |
| 3 | 0.34 | 0.58 | 0.01518 |
| 4 | 0.50 | 0.71 | 0.01596 |
| 5 | 0.67 | 0.82 | 0.01615 |
| 6 | 0.84 | 0.91 | 0.01625 |
| 7 | 1.00 | 1.00 | 0.01628 |
| 8 | 1.17 | 1.08 | 0.01631 |
| 9 | 1.34 | 1.16 | 0.01638 |
| 10 | 1.50 | 1.23 | 0.01641 |
| 11 | 1.67 | 1.29 | 0.01644 |
| 12 | 1.83 | 1.35 | 0.01651 |
| 13 | 2.00 | 1.41 | 0.01651 |
| 14 | 2.17 | 1.47 | 0.01651 |
| 15 | 2.33 | 1.53 | 0.01654 |
| 16 | 2.50 | 1.58 | 0.01654 |
| 17 | 2.67 | 1.63 | 0.01657 |
| 18 | 2.84 | 1.68 | 0.01657 |
| 19 | 3.00 | 1.73 | 0.01657 |
| 20 | 3.17 | 1.78 | 0.01657 |
| 21 | 3.34 | 1.83 | 0.0166 |
| 22 | 3.50 | 1.87 | 0.0166 |
| 23 | 3.67 | 1.92 | 0.01664 |
| 24 | 3.84 | 1.96 | 0.01664 |
| 25 | 4.00 | 2.00 | 0.01664 |
| 26 | 4.17 | 2.04 | 0.01664 |
| 27 | 4.34 | 2.08 | 0.01667 |
| 28 | 4.50 | 2.12 | 0.0167 |
| 29 | 4.67 | 2.16 | 0.0167 |
| 30 | 4.83 | 2.20 | 0.0167 |
| 31 | 5.00 | 2.24 | 0.01673 |
| 32 | 5.17 | 2.27 | 0.01673 |
| 33 | 5.33 | 2.31 | 0.01673 |
| 34 | 5.50 | 2.35 | 0.01673 |
| 35 | 5.67 | 2.38 | 0.01673 |
| 36 | 5.84 | 2.42 | 0.01677 |
| 37 | 6.00 | 2.45 | 0.0168 |
| 38 | 6.17 | 2.48 | 0.0168 |
| 39 | 6.34 | 2.52 | 0.0168 |
| 40 | 6.50 | 2.55 | 0.01683 |
| 41 | 6.67 | 2.58 | 0.01686 |
| 42 | 6.84 | 2.61 | 0.01686 |
| 43 | 7.00 | 2.65 | 0.01686 |
| 44 | 7.17 | 2.68 | 0.01683 |
| 45 | 7.33 | 2.71 | 0.01683 |
| 46 | 7.50 | 2.74 | 0.01683 |
| 47 | 7.67 | 2.77 | 0.01683 |
| 48 | 7.83 | 2.80 | 0.01683 |
| 49 | 8.00 | 2.83 | 0.01683 |
| 50 | 8.17 | 2.86 | 0.01683 |
| 51 | 8.33 | 2.89 | 0.01683 |
| 52 | 8.50 | 2.92 | 0.01683 |
| 53 | 8.67 | 2.94 | 0.01683 |
| 54 | 8.84 | 2.97 | 0.01683 |
| 55 | 9.00 | 3.00 | 0.01686 |
| 56 | 9.17 | 3.03 | 0.01686 |
| 57 | 9.34 | 3.06 | 0.01686 |
| 58 | 9.50 | 3.08 | 0.01686 |
| 59 | 9.67 | 3.11 | 0.01683 |
| 60 | 9.84 | 3.14 | 0.01683 |
| 61 | 10.00 | 3.16 | 0.01686 |
| 62 | 10.17 | 3.19 | 0.01686 |
| 63 | 10.33 | 3.21 | 0.01686 |
| 64 | 10.34 | 3.22 | 0.01686 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes
Boring No.: 3
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/30/15
Sample Type: Bag

Project No.: 145150G
Checked By: Tim
Depth: 11'
Elevation: Not Marked

Soil Description: 4 ksf
Remarks: Disturbed-Remolded

Load Increment: 1 of 1
Applied Stress: 2 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0 |
| 2 | 0.17 | 0.41 | 0.01871 |
| 3 | 0.33 | 0.58 | 0.02455 |
| 4 | 0.50 | 0.71 | 0.02481 |
| 5 | 0.67 | 0.82 | 0.02494 |
| 6 | 0.83 | 0.91 | 0.025 |
| 7 | 1.00 | 1.00 | 0.0251 |
| 8 | 1.17 | 1.08 | 0.02517 |
| 9 | 1.34 | 1.16 | 0.02523 |
| 10 | 1.50 | 1.23 | 0.02526 |
| 11 | 1.67 | 1.29 | 0.02526 |
| 12 | 1.84 | 1.35 | 0.02533 |
| 13 | 2.00 | 1.42 | 0.02533 |
| 14 | 2.17 | 1.47 | 0.02539 |
| 15 | 2.34 | 1.53 | 0.02539 |
| 16 | 2.50 | 1.58 | 0.02543 |
| 17 | 2.67 | 1.63 | 0.02546 |
| 18 | 2.84 | 1.68 | 0.02546 |
| 19 | 3.00 | 1.73 | 0.02546 |
| 20 | 3.17 | 1.78 | 0.02556 |
| 21 | 3.33 | 1.83 | 0.02552 |
| 22 | 3.50 | 1.87 | 0.02556 |
| 23 | 3.67 | 1.92 | 0.02552 |
| 24 | 3.83 | 1.96 | 0.02565 |
| 25 | 4.00 | 2.00 | 0.02565 |
| 26 | 4.17 | 2.04 | 0.02565 |
| 27 | 4.34 | 2.08 | 0.02565 |
| 28 | 4.50 | 2.12 | 0.02565 |
| 29 | 4.67 | 2.16 | 0.02565 |
| 30 | 4.84 | 2.20 | 0.02565 |
| 31 | 5.00 | 2.24 | 0.02565 |
| 32 | 5.17 | 2.27 | 0.02575 |
| 33 | 5.34 | 2.31 | 0.02575 |
| 34 | 5.50 | 2.35 | 0.02572 |
| 35 | 5.67 | 2.38 | 0.02572 |
| 36 | 5.84 | 2.42 | 0.02572 |
| 37 | 6.00 | 2.45 | 0.02572 |
| 38 | 6.17 | 2.48 | 0.02572 |
| 39 | 6.33 | 2.52 | 0.02572 |
| 40 | 6.50 | 2.55 | 0.02572 |
| 41 | 6.67 | 2.58 | 0.02585 |
| 42 | 6.83 | 2.61 | 0.02585 |
| 43 | 7.00 | 2.65 | 0.02585 |
| 44 | 7.17 | 2.68 | 0.02585 |
| 45 | 7.34 | 2.71 | 0.02585 |
| 46 | 7.50 | 2.74 | 0.02585 |
| 47 | 7.67 | 2.77 | 0.02585 |
| 48 | 7.84 | 2.80 | 0.02585 |
| 49 | 8.00 | 2.83 | 0.02585 |
| 50 | 8.17 | 2.86 | 0.02585 |
| 51 | 8.34 | 2.89 | 0.02585 |
| 52 | 8.50 | 2.92 | 0.02581 |
| 53 | 8.67 | 2.94 | 0.02585 |
| 54 | 8.83 | 2.97 | 0.02581 |
| 55 | 9.00 | 3.00 | 0.02588 |
| 56 | 9.17 | 3.03 | 0.02588 |
| 57 | 9.33 | 3.06 | 0.02588 |
| 58 | 9.50 | 3.08 | 0.02588 |
| 59 | 9.67 | 3.11 | 0.02588 |
| 60 | 9.83 | 3.14 | 0.02588 |
| 61 | 10.00 | 3.16 | 0.02588 |
| 62 | 10.17 | 3.19 | 0.02588 |
| 63 | 10.34 | 3.21 | 0.02588 |
| 64 | 10.50 | 3.24 | 0.02588 |
| 65 | 10.67 | 3.27 | 0.02588 |
| 66 | 10.82 | 3.29 | 0.02588 |

DIRECT SHEAR TEST DATA

Project: Lot 15 Ski Lakes
Boring No.: 4
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/29/15
Sample Type: Bag

Project No.: 145150G
Checked By: Tim
Depth: 11'
Elevation: Not Marked

Soil Description: 1 ksf
Remarks: Disturbed-Remolded

Step: 1 of 1

| | Elapsed Time min | Vertical Stress tsf | Vertical Displacement in | Horizontal Stress tsf | Horizontal Displacement in | Cumulative Displacement in |
|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.5006 | 0.0167 | 0.3854 | 0 | 0 |
| 2 | 1.39 | 0.5014 | 0.01634 | 0.5876 | 0.004992 | 0.004992 |
| 3 | 2.82 | 0.5039 | 0.0157 | 0.6168 | 0.009983 | 0.009983 |
| 4 | 3.95 | 0.5014 | 0.01476 | 0.6234 | 0.01498 | 0.01498 |
| 5 | 5.25 | 0.5006 | 0.01346 | 0.6159 | 0.01997 | 0.01997 |
| 6 | 6.66 | 0.5023 | 0.01287 | 0.5751 | 0.02501 | 0.02501 |
| 7 | 7.79 | 0.5031 | 0.01229 | 0.5393 | 0.03 | 0.03 |
| 8 | 8.99 | 0.5031 | 0.01151 | 0.516 | 0.03499 | 0.03499 |
| 9 | 10.21 | 0.5039 | 0.01077 | 0.5002 | 0.03998 | 0.03998 |
| 10 | 11.48 | 0.5023 | 0.01018 | 0.4877 | 0.04497 | 0.04497 |
| 11 | 12.61 | 0.5006 | 0.009729 | 0.4794 | 0.04997 | 0.04997 |
| 12 | 13.85 | 0.5014 | 0.009145 | 0.4719 | 0.05501 | 0.05501 |
| 13 | 15.17 | 0.5023 | 0.008789 | 0.4669 | 0.06 | 0.06 |
| 14 | 16.49 | 0.5023 | 0.008399 | 0.4586 | 0.06499 | 0.06499 |
| 15 | 17.65 | 0.5006 | 0.008075 | 0.4561 | 0.06998 | 0.06998 |
| 16 | 18.82 | 0.5006 | 0.007718 | 0.452 | 0.07502 | 0.07502 |
| 17 | 20.17 | 0.5006 | 0.007264 | 0.4495 | 0.07997 | 0.07997 |
| 18 | 21.38 | 0.5023 | 0.006778 | 0.4503 | 0.08501 | 0.08501 |
| 19 | 22.70 | 0.5014 | 0.006324 | 0.4536 | 0.09 | 0.09 |
| 20 | 23.81 | 0.5006 | 0.005902 | 0.4586 | 0.09499 | 0.09499 |
| 21 | 25.07 | 0.5014 | 0.005383 | 0.4636 | 0.09998 | 0.09998 |
| 22 | 26.48 | 0.5014 | 0.004865 | 0.4661 | 0.105 | 0.105 |
| 23 | 27.55 | 0.5014 | 0.004475 | 0.4703 | 0.11 | 0.11 |
| 24 | 28.97 | 0.5014 | 0.003989 | 0.4753 | 0.115 | 0.115 |
| 25 | 30.11 | 0.5006 | 0.003697 | 0.4819 | 0.12 | 0.12 |
| 26 | 31.23 | 0.5014 | 0.003438 | 0.4886 | 0.125 | 0.125 |
| 27 | 32.60 | 0.5014 | 0.003243 | 0.4952 | 0.13 | 0.13 |
| 28 | 33.85 | 0.5006 | 0.003016 | 0.4994 | 0.135 | 0.135 |
| 29 | 35.15 | 0.5006 | 0.002854 | 0.5027 | 0.14 | 0.14 |
| 30 | 36.29 | 0.5006 | 0.002659 | 0.5069 | 0.145 | 0.145 |
| 31 | 37.63 | 0.5014 | 0.00253 | 0.5144 | 0.15 | 0.15 |
| 32 | 38.93 | 0.5014 | 0.0024 | 0.5202 | 0.155 | 0.155 |
| 33 | 40.14 | 0.5014 | 0.002173 | 0.5252 | 0.16 | 0.16 |
| 34 | 41.43 | 0.5014 | 0.001946 | 0.5319 | 0.165 | 0.165 |
| 35 | 42.61 | 0.5014 | 0.001589 | 0.5385 | 0.17 | 0.17 |
| 36 | 43.86 | 0.5014 | 0.001394 | 0.546 | 0.175 | 0.175 |
| 37 | 45.27 | 0.5014 | 0.001135 | 0.5527 | 0.18 | 0.18 |
| 38 | 46.47 | 0.5006 | 0.0009729 | 0.5543 | 0.185 | 0.185 |
| 39 | 47.62 | 0.5006 | 0.0007459 | 0.5585 | 0.19 | 0.19 |
| 40 | 48.88 | 0.4965 | 0.0008108 | 0.5502 | 0.195 | 0.195 |
| 41 | 50.08 | 0.4998 | 0.0008108 | 0.5577 | 0.2 | 0.2 |
| 42 | 51.43 | 0.5006 | 0.0007783 | 0.5627 | 0.205 | 0.205 |
| 43 | 52.65 | 0.4998 | 0.000681 | 0.5643 | 0.21 | 0.21 |
| 44 | 54.00 | 0.5006 | 0.0005837 | 0.566 | 0.215 | 0.215 |
| 45 | 55.20 | 0.5014 | 0.0003243 | 0.5701 | 0.22 | 0.22 |
| 46 | 56.40 | 0.5014 | 9.729e-005 | 0.5726 | 0.225 | 0.225 |
| 47 | 57.56 | 0.5006 | -6.486e-005 | 0.576 | 0.23 | 0.23 |
| 48 | 58.82 | 0.5006 | -0.0002919 | 0.5793 | 0.235 | 0.235 |
| 49 | 60.05 | 0.5006 | -0.0004865 | 0.5785 | 0.24 | 0.24 |
| 50 | 61.33 | 0.5006 | -0.000681 | 0.5818 | 0.245 | 0.245 |
| 51 | 62.47 | 0.5014 | -0.0008432 | 0.5843 | 0.25 | 0.25 |
| 52 | 63.70 | 0.5006 | -0.00107 | 0.586 | 0.255 | 0.255 |
| 53 | 65.20 | 0.5006 | -0.001297 | 0.5876 | 0.26 | 0.26 |
| 54 | 66.27 | 0.4998 | -0.001427 | 0.5868 | 0.265 | 0.265 |
| 55 | 67.59 | 0.5006 | -0.001719 | 0.5885 | 0.27 | 0.27 |
| 56 | 68.84 | 0.5014 | -0.001946 | 0.5893 | 0.275 | 0.275 |
| 57 | 70.00 | 0.5006 | -0.002173 | 0.5876 | 0.28 | 0.28 |
| 58 | 71.49 | 0.5014 | -0.002303 | 0.5868 | 0.285 | 0.285 |
| 59 | 72.50 | 0.5006 | -0.002432 | 0.5868 | 0.29 | 0.29 |
| 60 | 73.83 | 0.4989 | -0.002562 | 0.5851 | 0.295 | 0.295 |
| 61 | 74.74 | 0.5006 | -0.002627 | 0.5851 | 0.2986 | 0.2986 |

# DIRECT SHEAR TEST DATA

Project: Lot 15 Ski Lakes
Boring No.: 4
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/29/15
Sample Type: Bag

Project No.: 145150G
Checked By: Tim
Depth: 11'
Elevation: Not Marked

Soil Description: 2 ksf
Remarks: Disturbed-Remolded

Step: 1 of 1

| | Elapsed Time min | Vertical Stress tsf | Vertical Displacement in | Horizontal Stress tsf | Horizontal Displacement in | Cumulative Displacement in |
|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.9996 | 0.009307 | 0.407 | 0 | 0 |
| 2 | 1.33 | 0.9987 | 0.009275 | 0.6201 | 0.004992 | 0.004992 |
| 3 | 2.47 | 0.9979 | 0.009243 | 0.7141 | 0.009983 | 0.009983 |
| 4 | 3.76 | 0.9987 | 0.009275 | 0.7757 | 0.01498 | 0.01498 |
| 5 | 5.19 | 1 | 0.009275 | 0.8148 | 0.01997 | 0.01997 |
| 6 | 6.37 | 0.9987 | 0.009275 | 0.8257 | 0.02501 | 0.02501 |
| 7 | 7.66 | 1.001 | 0.00921 | 0.8357 | 0.03 | 0.03 |
| 8 | 8.99 | 0.9996 | 0.009178 | 0.8398 | 0.03499 | 0.03499 |
| 9 | 10.20 | 0.9996 | 0.009178 | 0.8448 | 0.03998 | 0.03998 |
| 10 | 11.44 | 1 | 0.009178 | 0.8481 | 0.04497 | 0.04497 |
| 11 | 12.65 | 0.9996 | 0.00921 | 0.8515 | 0.04997 | 0.04997 |
| 12 | 13.95 | 0.9996 | 0.009145 | 0.8506 | 0.05501 | 0.05501 |
| 13 | 15.13 | 1 | 0.009113 | 0.8506 | 0.06 | 0.06 |
| 14 | 16.29 | 0.9996 | 0.008951 | 0.8515 | 0.06499 | 0.06499 |
| 15 | 17.48 | 1 | 0.008951 | 0.8531 | 0.06998 | 0.06998 |
| 16 | 18.91 | 1 | 0.008853 | 0.8523 | 0.07497 | 0.07497 |
| 17 | 20.16 | 1 | 0.008724 | 0.8498 | 0.07997 | 0.07997 |
| 18 | 21.38 | 1 | 0.008562 | 0.8481 | 0.08501 | 0.08501 |
| 19 | 22.61 | 1 | 0.008335 | 0.844 | 0.09 | 0.09 |
| 20 | 23.80 | 1 | 0.008335 | 0.8398 | 0.09499 | 0.09499 |
| 21 | 25.12 | 1 | 0.008075 | 0.834 | 0.09998 | 0.09998 |
| 22 | 26.40 | 1.001 | 0.007848 | 0.8282 | 0.105 | 0.105 |
| 23 | 27.59 | 1 | 0.007686 | 0.8232 | 0.11 | 0.11 |
| 24 | 28.78 | 1 | 0.007654 | 0.8182 | 0.115 | 0.115 |
| 25 | 30.01 | 1 | 0.007427 | 0.8124 | 0.12 | 0.12 |
| 26 | 31.28 | 1 | 0.0072 | 0.8082 | 0.125 | 0.125 |
| 27 | 32.50 | 1 | 0.007167 | 0.804 | 0.13 | 0.13 |
| 28 | 33.78 | 1 | 0.00707 | 0.8007 | 0.135 | 0.135 |
| 29 | 35.06 | 1 | 0.006972 | 0.7965 | 0.14 | 0.14 |
| 30 | 36.19 | 1 | 0.006778 | 0.7924 | 0.145 | 0.145 |
| 31 | 37.51 | 1 | 0.006648 | 0.7841 | 0.15 | 0.15 |
| 32 | 38.69 | 1 | 0.006518 | 0.7799 | 0.155 | 0.155 |
| 33 | 40.08 | 1 | 0.006259 | 0.7741 | 0.16 | 0.16 |
| 34 | 41.21 | 1 | 0.006129 | 0.7699 | 0.165 | 0.165 |
| 35 | 42.55 | 1 | 0.006032 | 0.7641 | 0.17 | 0.17 |
| 36 | 43.93 | 1 | 0.005935 | 0.7591 | 0.175 | 0.175 |
| 37 | 45.15 | 1 | 0.005805 | 0.7558 | 0.18 | 0.18 |
| 38 | 46.27 | 1 | 0.005773 | 0.7524 | 0.185 | 0.185 |
| 39 | 47.57 | 1 | 0.005708 | 0.7483 | 0.19 | 0.19 |
| 40 | 48.79 | 1 | 0.005643 | 0.7458 | 0.195 | 0.195 |
| 41 | 50.05 | 1 | 0.005448 | 0.7433 | 0.2 | 0.2 |
| 42 | 51.30 | 1 | 0.005416 | 0.7408 | 0.205 | 0.205 |
| 43 | 52.59 | 1 | 0.005221 | 0.7383 | 0.21 | 0.21 |
| 44 | 53.75 | 1 | 0.005059 | 0.7358 | 0.215 | 0.215 |
| 45 | 54.92 | 1 | 0.0048 | 0.7341 | 0.22 | 0.22 |
| 46 | 56.11 | 1 | 0.004767 | 0.7341 | 0.225 | 0.225 |
| 47 | 57.45 | 1 | 0.004605 | 0.7349 | 0.23 | 0.23 |
| 48 | 58.63 | 1 | 0.004605 | 0.7333 | 0.235 | 0.235 |
| 49 | 59.82 | 0.9996 | 0.004573 | 0.7316 | 0.24 | 0.24 |
| 50 | 61.12 | 1 | 0.004411 | 0.7291 | 0.245 | 0.245 |
| 51 | 62.27 | 1 | 0.004378 | 0.7275 | 0.25 | 0.25 |
| 52 | 63.74 | 1 | 0.004281 | 0.7216 | 0.255 | 0.255 |
| 53 | 64.85 | 1 | 0.004183 | 0.7183 | 0.26 | 0.26 |
| 54 | 66.04 | 1 | 0.004054 | 0.7166 | 0.265 | 0.265 |
| 55 | 67.31 | 0.9996 | 0.003989 | 0.715 | 0.27 | 0.27 |
| 56 | 68.59 | 0.9996 | 0.003859 | 0.7108 | 0.275 | 0.275 |
| 57 | 69.92 | 1 | 0.003827 | 0.7108 | 0.28 | 0.28 |
| 58 | 71.07 | 1 | 0.003827 | 0.71 | 0.285 | 0.285 |
| 59 | 72.36 | 0.9996 | 0.003794 | 0.71 | 0.29 | 0.29 |
| 60 | 73.53 | 1 | 0.003438 | 0.7091 | 0.295 | 0.295 |
| 61 | 74.03 | 1 | 0.003405 | 0.7108 | 0.2969 | 0.2969 |

DIRECT SHEAR TEST DATA

Project: Lot 15 Ski Lakes
Boring No.: 4
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/29/15
Sample Type: Bag

Project No.: 145150G
Checked By: Tim
Depth: 11'
Elevation: Not Marked

Soil Description: 4 ksf
Remarks: Disturbed-Remolded

Step: 1 of 1

| | Elapsed Time min | Vertical Stress tsf | Vertical Displacement in | Horizontal Stress tsf | Horizontal Displacement in | Cumulative Displacement in |
|---|---|---|---|---|---|---|
| 1 | 0.00 | 1.998 | 0.06467 | 0.4636 | 0 | 0 |
| 2 | 1.47 | 1.997 | 0.06541 | 0.9688 | 0.004992 | 0.004992 |
| 3 | 2.67 | 1.997 | 0.0657 | 1.26 | 0.009983 | 0.009983 |
| 4 | 4.06 | 1.999 | 0.06606 | 1.479 | 0.01498 | 0.01498 |
| 5 | 5.50 | 1.999 | 0.06632 | 1.618 | 0.01997 | 0.01997 |
| 6 | 6.67 | 1.999 | 0.06645 | 1.694 | 0.02501 | 0.02501 |
| 7 | 7.98 | 2 | 0.06655 | 1.75 | 0.03 | 0.03 |
| 8 | 9.31 | 1.999 | 0.06658 | 1.781 | 0.03499 | 0.03499 |
| 9 | 10.56 | 2 | 0.06664 | 1.789 | 0.03998 | 0.03998 |
| 10 | 11.86 | 2 | 0.06671 | 1.78 | 0.04497 | 0.04497 |
| 11 | 13.16 | 2 | 0.06674 | 1.77 | 0.04997 | 0.04997 |
| 12 | 14.37 | 2.001 | 0.06684 | 1.763 | 0.05501 | 0.05501 |
| 13 | 15.53 | 2.001 | 0.06697 | 1.76 | 0.06 | 0.06 |
| 14 | 16.71 | 2.001 | 0.06687 | 1.751 | 0.06499 | 0.06499 |
| 15 | 17.91 | 2.001 | 0.06668 | 1.742 | 0.06998 | 0.06998 |
| 16 | 19.33 | 2.001 | 0.06642 | 1.731 | 0.07497 | 0.07497 |
| 17 | 20.63 | 2.001 | 0.06622 | 1.72 | 0.07997 | 0.07997 |
| 18 | 21.81 | 2.001 | 0.06606 | 1.709 | 0.08501 | 0.08501 |
| 19 | 23.08 | 2.001 | 0.06587 | 1.696 | 0.09 | 0.09 |
| 20 | 24.18 | 2.001 | 0.06577 | 1.68 | 0.09499 | 0.09499 |
| 21 | 25.52 | 2.001 | 0.06564 | 1.66 | 0.09998 | 0.09998 |
| 22 | 26.81 | 2.002 | 0.06554 | 1.639 | 0.105 | 0.105 |
| 23 | 27.98 | 2.001 | 0.06544 | 1.618 | 0.11 | 0.11 |
| 24 | 29.19 | 2.001 | 0.06538 | 1.597 | 0.115 | 0.115 |
| 25 | 30.46 | 2.001 | 0.06531 | 1.574 | 0.12 | 0.12 |
| 26 | 31.71 | 2.001 | 0.06525 | 1.554 | 0.125 | 0.125 |
| 27 | 33.02 | 2.001 | 0.06518 | 1.533 | 0.13 | 0.13 |
| 28 | 34.22 | 2 | 0.06509 | 1.517 | 0.135 | 0.135 |
| 29 | 35.53 | 2.001 | 0.06502 | 1.5 | 0.14 | 0.14 |
| 30 | 36.67 | 2.001 | 0.06496 | 1.488 | 0.145 | 0.145 |
| 31 | 38.00 | 2.001 | 0.06489 | 1.476 | 0.15 | 0.15 |
| 32 | 39.13 | 2 | 0.0648 | 1.465 | 0.155 | 0.155 |
| 33 | 40.49 | 2 | 0.06476 | 1.452 | 0.16 | 0.16 |
| 34 | 41.67 | 2.001 | 0.06473 | 1.439 | 0.165 | 0.165 |
| 35 | 43.02 | 2 | 0.0647 | 1.428 | 0.17 | 0.17 |
| 36 | 44.32 | 2.001 | 0.0646 | 1.42 | 0.175 | 0.175 |
| 37 | 45.60 | 2.001 | 0.06454 | 1.408 | 0.18 | 0.18 |
| 38 | 46.72 | 2 | 0.06447 | 1.4 | 0.185 | 0.185 |
| 39 | 48.07 | 2 | 0.06441 | 1.391 | 0.19 | 0.19 |
| 40 | 49.25 | 2.001 | 0.06437 | 1.382 | 0.195 | 0.195 |
| 41 | 50.50 | 2 | 0.06437 | 1.374 | 0.2 | 0.2 |
| 42 | 51.78 | 2 | 0.06434 | 1.366 | 0.205 | 0.205 |
| 43 | 53.09 | 2 | 0.06431 | 1.361 | 0.21 | 0.21 |
| 44 | 54.23 | 2 | 0.06428 | 1.356 | 0.215 | 0.215 |
| 45 | 55.46 | 2.001 | 0.06424 | 1.351 | 0.22 | 0.22 |
| 46 | 56.64 | 2.001 | 0.06418 | 1.348 | 0.225 | 0.225 |
| 47 | 57.93 | 2.001 | 0.06415 | 1.345 | 0.23 | 0.23 |
| 48 | 59.16 | 2 | 0.06418 | 1.342 | 0.235 | 0.235 |
| 49 | 60.29 | 2 | 0.06415 | 1.338 | 0.24 | 0.24 |
| 50 | 61.69 | 2 | 0.06405 | 1.332 | 0.245 | 0.245 |
| 51 | 62.80 | 2.001 | 0.06398 | 1.326 | 0.25 | 0.25 |
| 52 | 64.20 | 2 | 0.06395 | 1.32 | 0.255 | 0.255 |
| 53 | 65.40 | 2.001 | 0.06392 | 1.314 | 0.26 | 0.26 |
| 54 | 66.55 | 2.001 | 0.06386 | 1.308 | 0.265 | 0.265 |
| 55 | 67.85 | 2 | 0.06382 | 1.3 | 0.27 | 0.27 |
| 56 | 69.15 | 2.001 | 0.06369 | 1.298 | 0.275 | 0.275 |
| 57 | 70.39 | 2 | 0.06369 | 1.293 | 0.28 | 0.28 |
| 58 | 71.66 | 2 | 0.06369 | 1.288 | 0.285 | 0.285 |
| 59 | 72.92 | 2 | 0.06369 | 1.285 | 0.29 | 0.29 |
| 60 | 74.12 | 2 | 0.06366 | 1.279 | 0.295 | 0.295 |
| 61 | 74.43 | 2 | 0.06366 | 1.279 | 0.2963 | 0.2963 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes
Boring No.: 4
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/29/15
Sample Type: Bag

Project No.: 145150G
Checked By: Tim
Depth: 11'
Elevation: Not Marked

Soil Description: 1 ksf
Remarks: Disturbed-Remolded

Load Increment: 1 of 1
Applied Stress: 0.5 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0 |
| 2 | 0.17 | 0.41 | 0.006875 |
| 3 | 0.33 | 0.58 | 0.00934 |
| 4 | 0.50 | 0.71 | 0.01281 |
| 5 | 0.67 | 0.82 | 0.01625 |
| 6 | 0.83 | 0.91 | 0.01644 |
| 7 | 1.00 | 1.00 | 0.01657 |
| 8 | 1.17 | 1.08 | 0.01673 |
| 9 | 1.34 | 1.16 | 0.0168 |
| 10 | 1.50 | 1.23 | 0.01683 |
| 11 | 1.67 | 1.29 | 0.0169 |
| 12 | 1.84 | 1.35 | 0.0169 |
| 13 | 2.00 | 1.42 | 0.0169 |
| 14 | 2.17 | 1.47 | 0.0169 |
| 15 | 2.34 | 1.53 | 0.0169 |
| 16 | 2.50 | 1.58 | 0.0169 |
| 17 | 2.67 | 1.63 | 0.0169 |
| 18 | 2.84 | 1.68 | 0.01706 |
| 19 | 3.00 | 1.73 | 0.01706 |
| 20 | 3.17 | 1.78 | 0.01706 |
| 21 | 3.33 | 1.83 | 0.01706 |
| 22 | 3.50 | 1.87 | 0.01706 |
| 23 | 3.67 | 1.92 | 0.01706 |
| 24 | 3.83 | 1.96 | 0.01706 |
| 25 | 4.00 | 2.00 | 0.01706 |
| 26 | 4.17 | 2.04 | 0.01706 |
| 27 | 4.34 | 2.08 | 0.01706 |
| 28 | 4.50 | 2.12 | 0.01706 |
| 29 | 4.67 | 2.16 | 0.01703 |
| 30 | 4.84 | 2.20 | 0.01706 |
| 31 | 5.00 | 2.24 | 0.01706 |
| 32 | 5.17 | 2.27 | 0.01703 |
| 33 | 5.34 | 2.31 | 0.01703 |
| 34 | 5.50 | 2.35 | 0.01706 |
| 35 | 5.67 | 2.38 | 0.01703 |
| 36 | 5.84 | 2.42 | 0.01703 |
| 37 | 6.00 | 2.45 | 0.01706 |
| 38 | 6.17 | 2.48 | 0.01706 |
| 39 | 6.33 | 2.52 | 0.01706 |
| 40 | 6.50 | 2.55 | 0.01703 |
| 41 | 6.67 | 2.58 | 0.01706 |
| 42 | 6.83 | 2.61 | 0.01703 |
| 43 | 7.00 | 2.65 | 0.01706 |
| 44 | 7.17 | 2.68 | 0.01703 |
| 45 | 7.34 | 2.71 | 0.01703 |
| 46 | 7.50 | 2.74 | 0.01706 |
| 47 | 7.67 | 2.77 | 0.01706 |
| 48 | 7.84 | 2.80 | 0.01706 |
| 49 | 8.00 | 2.83 | 0.01706 |
| 50 | 8.17 | 2.86 | 0.01703 |
| 51 | 8.34 | 2.89 | 0.01706 |
| 52 | 8.50 | 2.92 | 0.01706 |
| 53 | 8.67 | 2.94 | 0.01706 |
| 54 | 8.83 | 2.97 | 0.01706 |
| 55 | 9.00 | 3.00 | 0.01706 |
| 56 | 9.17 | 3.03 | 0.01706 |
| 57 | 9.33 | 3.06 | 0.01706 |
| 58 | 9.50 | 3.08 | 0.01706 |
| 59 | 9.67 | 3.11 | 0.01706 |
| 60 | 9.84 | 3.14 | 0.01706 |
| 61 | 10.00 | 3.16 | 0.01706 |
| 62 | 10.17 | 3.19 | 0.01706 |
| 63 | 10.33 | 3.21 | 0.01706 |
| 64 | 10.50 | 3.24 | 0.01706 |
| 65 | 10.62 | 3.26 | 0.01706 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes
Boring No.: 4
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/29/15
Sample Type: Bag

Project No.: 145150G
Checked By: Tim
Depth: 11'
Elevation: Not Marked

Soil Description: 2 ksf
Remarks: Disturbed-Remolded

Load Increment: 1 of 1
Applied Stress: 1 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0 |
| 2 | 0.17 | 0.41 | 0.003924 |
| 3 | 0.33 | 0.58 | 0.007329 |
| 4 | 0.50 | 0.71 | 0.007881 |
| 5 | 0.67 | 0.82 | 0.00801 |
| 6 | 0.83 | 0.91 | 0.00801 |
| 7 | 1.00 | 1.00 | 0.008108 |
| 8 | 1.17 | 1.08 | 0.008108 |
| 9 | 1.34 | 1.16 | 0.008108 |
| 10 | 1.50 | 1.23 | 0.008205 |
| 11 | 1.67 | 1.29 | 0.008205 |
| 12 | 1.84 | 1.36 | 0.008205 |
| 13 | 2.00 | 1.42 | 0.008205 |
| 14 | 2.17 | 1.47 | 0.008205 |
| 15 | 2.34 | 1.53 | 0.008205 |
| 16 | 2.50 | 1.58 | 0.008205 |
| 17 | 2.67 | 1.63 | 0.008205 |
| 18 | 2.83 | 1.68 | 0.008205 |
| 19 | 3.00 | 1.73 | 0.008205 |
| 20 | 3.17 | 1.78 | 0.008205 |
| 21 | 3.33 | 1.83 | 0.008205 |
| 22 | 3.50 | 1.87 | 0.008335 |
| 23 | 3.67 | 1.92 | 0.008335 |
| 24 | 3.83 | 1.96 | 0.008335 |
| 25 | 4.00 | 2.00 | 0.008367 |
| 26 | 4.17 | 2.04 | 0.008399 |
| 27 | 4.34 | 2.08 | 0.008399 |
| 28 | 4.50 | 2.12 | 0.008399 |
| 29 | 4.67 | 2.16 | 0.008399 |
| 30 | 4.84 | 2.20 | 0.008399 |
| 31 | 5.00 | 2.24 | 0.008399 |
| 32 | 5.17 | 2.27 | 0.008399 |
| 33 | 5.34 | 2.31 | 0.008399 |
| 34 | 5.50 | 2.35 | 0.008399 |
| 35 | 5.67 | 2.38 | 0.008367 |
| 36 | 5.83 | 2.42 | 0.008399 |
| 37 | 6.00 | 2.45 | 0.008399 |
| 38 | 6.17 | 2.48 | 0.008399 |
| 39 | 6.33 | 2.52 | 0.008399 |
| 40 | 6.50 | 2.55 | 0.008399 |
| 41 | 6.67 | 2.58 | 0.008399 |
| 42 | 6.83 | 2.61 | 0.008399 |
| 43 | 7.00 | 2.65 | 0.008399 |
| 44 | 7.17 | 2.68 | 0.008399 |
| 45 | 7.34 | 2.71 | 0.008399 |
| 46 | 7.50 | 2.74 | 0.008399 |
| 47 | 7.67 | 2.77 | 0.008399 |
| 48 | 7.84 | 2.80 | 0.008399 |
| 49 | 8.00 | 2.83 | 0.008399 |
| 50 | 8.17 | 2.86 | 0.008399 |
| 51 | 8.34 | 2.89 | 0.008399 |
| 52 | 8.50 | 2.92 | 0.008399 |
| 53 | 8.67 | 2.94 | 0.008756 |
| 54 | 8.83 | 2.97 | 0.008756 |
| 55 | 9.00 | 3.00 | 0.008756 |
| 56 | 9.17 | 3.03 | 0.008756 |
| 57 | 9.33 | 3.06 | 0.008756 |
| 58 | 9.50 | 3.08 | 0.008756 |
| 59 | 9.67 | 3.11 | 0.008756 |
| 60 | 9.84 | 3.14 | 0.008756 |
| 61 | 10.00 | 3.16 | 0.008756 |
| 62 | 10.17 | 3.19 | 0.008756 |
| 63 | 10.34 | 3.21 | 0.008756 |
| 64 | 10.50 | 3.24 | 0.008756 |
| 65 | 10.67 | 3.27 | 0.008756 |
| 66 | 10.84 | 3.29 | 0.008756 |
| 67 | 11.00 | 3.32 | 0.008756 |
| 68 | 11.17 | 3.34 | 0.008756 |
| 69 | 11.34 | 3.37 | 0.008756 |
| 70 | 11.50 | 3.39 | 0.008756 |
| 71 | 11.67 | 3.42 | 0.008756 |
| 72 | 11.83 | 3.44 | 0.008789 |
| 73 | 12.00 | 3.46 | 0.008756 |
| 74 | 12.17 | 3.49 | 0.008756 |
| 75 | 12.33 | 3.51 | 0.008789 |
| 76 | 12.50 | 3.54 | 0.008789 |
| 77 | 12.67 | 3.56 | 0.008789 |
| 78 | 12.84 | 3.58 | 0.008789 |
| 79 | 13.00 | 3.61 | 0.008789 |
| 80 | 13.17 | 3.63 | 0.008789 |
| 81 | 13.34 | 3.65 | 0.008789 |

| | | | |
|---|---|---|---|
| 82 | 13.50 | 3.67 | 0.008789 |
| 83 | 13.67 | 3.70 | 0.008789 |
| 84 | 13.84 | 3.72 | 0.008789 |
| 85 | 14.00 | 3.74 | 0.008789 |
| 86 | 14.17 | 3.76 | 0.008789 |
| 87 | 14.34 | 3.79 | 0.008789 |
| 88 | 14.50 | 3.81 | 0.008789 |
| 89 | 14.67 | 3.83 | 0.008789 |
| 90 | 14.83 | 3.85 | 0.008789 |
| 91 | 15.00 | 3.87 | 0.008789 |
| 92 | 15.17 | 3.89 | 0.008789 |
| 93 | 15.33 | 3.92 | 0.008789 |
| 94 | 15.50 | 3.94 | 0.008789 |
| 95 | 15.67 | 3.96 | 0.008756 |
| 96 | 15.84 | 3.98 | 0.008756 |
| 97 | 16.00 | 4.00 | 0.008756 |
| 98 | 16.17 | 4.02 | 0.008756 |
| 99 | 16.34 | 4.04 | 0.008756 |
| 100 | 16.50 | 4.06 | 0.008756 |
| 101 | 16.67 | 4.08 | 0.008756 |
| 102 | 16.84 | 4.10 | 0.008756 |
| 103 | 17.00 | 4.12 | 0.008756 |
| 104 | 17.17 | 4.14 | 0.008756 |
| 105 | 17.33 | 4.16 | 0.008756 |
| 106 | 17.50 | 4.18 | 0.008756 |
| 107 | 17.67 | 4.20 | 0.008756 |
| 108 | 17.83 | 4.22 | 0.008756 |
| 109 | 18.00 | 4.24 | 0.008756 |
| 110 | 18.17 | 4.26 | 0.008756 |
| 111 | 18.33 | 4.28 | 0.008756 |
| 112 | 18.50 | 4.30 | 0.008756 |
| 113 | 18.67 | 4.32 | 0.008756 |
| 114 | 18.84 | 4.34 | 0.008756 |
| 115 | 18.84 | 4.34 | 0.008756 |

DIRECT SHEAR TEST CONSOLIDATION DATA

Project: Lot 15 Ski Lakes
Boring No.: 4
Sample No.: 1
Test No.: 1

Location: Huntsville
Tested By: Shawn
Test Date: 6/29/15
Sample Type: Bag

Project No.: 145150G
Checked By: Tim
Depth: 11'
Elevation: Not Marked

Soil Description: 4 ksf
Remarks: Disturbed-Remolded

Load Increment: 1 of 1
Applied Stress: 2 tsf

| | Elapsed Time min | Sq.Rt. of Time min | Displacement in |
|---|---|---|---|
| 1 | 0.00 | 0.00 | 0 |
| 2 | 0.17 | 0.41 | 0.02429 |
| 3 | 0.33 | 0.58 | 0.04492 |
| 4 | 0.50 | 0.71 | 0.05542 |
| 5 | 0.67 | 0.82 | 0.05811 |
| 6 | 0.83 | 0.91 | 0.05876 |
| 7 | 1.00 | 1.00 | 0.05948 |
| 8 | 1.17 | 1.08 | 0.05964 |
| 9 | 1.34 | 1.16 | 0.05983 |
| 10 | 1.50 | 1.23 | 0.06003 |
| 11 | 1.67 | 1.29 | 0.06026 |
| 12 | 1.84 | 1.35 | 0.06035 |
| 13 | 2.00 | 1.42 | 0.06045 |
| 14 | 2.17 | 1.47 | 0.06051 |
| 15 | 2.34 | 1.53 | 0.06064 |
| 16 | 2.50 | 1.58 | 0.06074 |
| 17 | 2.67 | 1.63 | 0.06081 |
| 18 | 2.84 | 1.68 | 0.0609 |
| 19 | 3.00 | 1.73 | 0.0611 |
| 20 | 3.17 | 1.78 | 0.0611 |
| 21 | 3.33 | 1.83 | 0.06116 |
| 22 | 3.50 | 1.87 | 0.0612 |
| 23 | 3.67 | 1.92 | 0.06123 |
| 24 | 3.83 | 1.96 | 0.06129 |
| 25 | 4.00 | 2.00 | 0.06129 |
| 26 | 4.17 | 2.04 | 0.06129 |
| 27 | 4.34 | 2.08 | 0.06133 |
| 28 | 4.50 | 2.12 | 0.06133 |
| 29 | 4.67 | 2.16 | 0.06142 |
| 30 | 4.84 | 2.20 | 0.06139 |
| 31 | 5.00 | 2.24 | 0.06142 |
| 32 | 5.17 | 2.27 | 0.06142 |
| 33 | 5.34 | 2.31 | 0.06142 |
| 34 | 5.50 | 2.35 | 0.06146 |
| 35 | 5.67 | 2.38 | 0.06146 |
| 36 | 5.84 | 2.42 | 0.06146 |
| 37 | 6.00 | 2.45 | 0.06146 |
| 38 | 6.17 | 2.48 | 0.06149 |
| 39 | 6.33 | 2.52 | 0.06152 |
| 40 | 6.50 | 2.55 | 0.06152 |
| 41 | 6.67 | 2.58 | 0.06152 |
| 42 | 6.83 | 2.61 | 0.06152 |
| 43 | 7.00 | 2.65 | 0.06152 |
| 44 | 7.17 | 2.68 | 0.06152 |
| 45 | 7.34 | 2.71 | 0.06155 |
| 46 | 7.50 | 2.74 | 0.06155 |
| 47 | 7.67 | 2.77 | 0.06155 |
| 48 | 7.84 | 2.80 | 0.06155 |
| 49 | 8.00 | 2.83 | 0.06155 |
| 50 | 8.17 | 2.86 | 0.06159 |
| 51 | 8.34 | 2.89 | 0.06159 |
| 52 | 8.50 | 2.92 | 0.06159 |
| 53 | 8.67 | 2.94 | 0.06159 |
| 54 | 8.83 | 2.97 | 0.06159 |
| 55 | 9.00 | 3.00 | 0.06159 |
| 56 | 9.17 | 3.03 | 0.06159 |
| 57 | 9.33 | 3.06 | 0.06159 |
| 58 | 9.50 | 3.08 | 0.06159 |
| 59 | 9.67 | 3.11 | 0.06159 |
| 60 | 9.83 | 3.14 | 0.06162 |
| 61 | 10.00 | 3.16 | 0.06175 |
| 62 | 10.17 | 3.19 | 0.06175 |
| 63 | 10.34 | 3.21 | 0.06175 |
| 64 | 10.50 | 3.24 | 0.06175 |
| 65 | 10.56 | 3.25 | 0.06175 |

# APPENDIX E

## SEISMIC VALUES

Project Name = 145150G
Conterminous 48 States
2002 Data
Hazard Curve for PGA
Latitude = 41.2470
Longitude = -111.7880
Data are based on a 0.05 deg grid spacing
Frequency of Exceedance values less than
1E-4 should be used with caution.

| Ground Motion (g) | Frequency of Exceedance (per year) |
|---|---|
| 0.005 | 1.7308E-01 |
| 0.007 | 1.4641E-01 |
| 0.010 | 1.1724E-01 |
| 0.014 | 8.8382E-02 |
| 0.019 | 6.2373E-02 |
| 0.027 | 4.1484E-02 |
| 0.038 | 2.6265E-02 |
| 0.053 | 1.5847E-02 |
| 0.074 | 9.2836E-03 |
| 0.103 | 5.424E-03 |
| 0.145 | 3.1376E-03 |
| 0.203 | 1.776E-03 |
| 0.284 | 9.008E-04 |
| 0.397 | 3.7389E-04 |
| 0.556 | 1.161E-04 |
| 0.778 | 2.5662E-05 |
| 1.090 | 3.9622E-06 |
| 1.520 | 5.8182E-07 |
| 2.130 | 1.1613E-07 |

| Ground Motion (g) | Freq. of Exceed. (per year) | Return Pd. (years) | P.E. % | Exp. Time (years) |
|---|---|---|---|---|
| 0.3854 | 4.0404E-04 | 2475.00 | 2.00 | 50.0 |

Project Name = 145150G
Conterminous 48 States
2006 International Residential Code
Latitude = 41.247
Longitude = -111.788
Residential Seismic Design Category
Ss and S1 = Mapped Spectral Acceleration Values
Site Class D - Fa = 1.12, Fv = 1.71
MCE MAP VALUES
Short Period Map Value - Ss = 0.94g
1.0 sec Period Map Value - S1 = 0.35g

RESIDENTIAL DESIGN INFORMATION
Short Period Map Value - Ss = 0.94g
Soil factor for Site Class D - Fa = 1.12
Residential Site Value = 2/3 x Fa x Ss = 0.70g
Residential Seismic Design Category = D1