Intermountain GeoEnvironmental Services, Inc.
12429 South 300 East, Suite 100, Draper, Utah 84020 ~ T: (801) 748-4044 ~ F: (801) 748-4045

February 11, 2016

Summit Powder Mountain
c/o Ms. Andrea Milner
3632 North Wolf Creek Drive
Eden, Utah 84310

IGES Project No. 01628-006

Subject: Addendum to Geotechnical Report – Geology & Slope Stability
Lot 34R of Powder Mountain Resort
7958 East Heartwood Drive
Weber County, Utah

Ms. Milner:

As requested, IGES has prepared the following addendum to the referenced geotechnical report to further address geologic issues, such as the presence (or absence) of geologic hazards and slope stability. This addendum is intended to address issues that have recently come to light during the review process for adjacent properties; specifically, geologic review comments by the Weber County geologist. The purpose of this addendum is to adequately address geology consistent with recent questions brought up by the Weber County geologist, and to comply with the *Weber County Hillside Development Review Procedures*.

**Description of Geologic Units**

A geologic investigation that included geologic mapping of Lot 13 and the surrounding area was conducted by IGES between August 26 and 27, 2015 (IGES, 2015a). This investigation covered the Lot 34R property area within its area of investigation, and included field mapping, aerial photograph review, and the review of other available geologic data (Western Geologic, 2012; Sorenson and Crittenden, Jr., 1979) pertaining to the area of interest. A brief description of the geologic units found adjacent to and across the Lot 34R property is presented in the following paragraphs.

A prominent bedrock outcrop of the Dolomite Member of the Cambrian St. Charles Limestone near the southwestern corner of Lot 27 (located just south of Lot 34R) provided an understanding of the bedrock stratigraphy. At lot 27, approximately 45 feet of bedrock is continuously exposed, and displays four distinct lithologic units:

1. Unit 1: The uppermost unit is a dark gray, sparry[1] dolomite found to contain abundant round, curved, whitish-yellow shell fragments in massive blocks. The exposed thickness of this unit at this location is approximately 3 feet.

[1] A term loosely applied to ay transparent or translucent light-colored crystalline mineral, usually readily cleavable and somewhat lustrous (AGI, 1984).

2. Unit 2: Immediately underlying Unit 1 is a dark gray to light gray sparry dolomite containing faint laminations in thickly bedded blocks. Within the unit are distinct dark gray beds that contain abundant rounded *Girvanella*[2] nodules up to 1 centimeter in diameter. Bedding becomes more prominent with depth in this unit, which is approximately 10 to 12 feet thick.

3. Unit 3: Immediately underlying Unit 2 is a dark gray, sparry dolomite that is transitional between the overlying two units, in that it contains some laminations and curved shelly material. The unit is thickly to moderately bedded, and is distinct from the overlying units in that it contains abundant thin yellow stringers of calcium carbonate. The unit is seen to be approximately 20 to 25 feet thick.

4. Unit 4: The basal unit in the exposed outcrop is a light gray to pinkish gray, finely sparry dolomite with a highly variegated, mottled coloration in irregular, elongated lobes. Distinct to this unit is the presence of small vugs up to 2 inches in diameter, commonly filled with recrystallized dolomite. The exposed thickness of this unit at this location is approximately 5 feet.

Bedding at this outcrop (Lot 27) was found to strike at N24°W and dip at 25°NE, which was largely characteristic of the bedding found on Lot 34R and the Ridge Nest property to the west, which, as a whole, consist largely of bedrock outcrops. Across Lot 34R and adjacent properties to the west and south, the bedrock was found to have blocky jointing, with the two major joint sets being orthogonal to one another. The joint set parallel to the bedding has the same strike and dip orientation as the bedding, while the other major joint set perpendicular to the first has a strike of approximately N24°W and a dip of approximately 65°SW.

Bedrock was found to be largely moderately fractured (distance between fractures ~0.5-1.0 feet) to little fractured (distance between fractures ~1.0-4.0 feet), with localized areas of intense fracturing (distance between fractures ~0.05-0.1 feet). Joint spacing was largely found to be a product of the lithology. The finer-grained dolomite lithologies were more thinly bedded, and therefore had a smaller distance (approximately 1 to 4 inches) between bedding plane joints. These lithologies also tended to fracture into rectangular blocks generally between 4 and 18 inches in length and width, and contained both bedding-confined and through-going fractures. Coarser-grained dolomite lithologies were more thickly bedded to massive, with bedding plane joints separated by between 6 inches to as much as several feet. These lithologies tended to fracture into rectangular blocks with highly variable dimensions, ranging in width and length from between a couple inches to several feet, though larger blocks (with dimensions of several feet x several feet x several feet) were most common. Most fracturing associated with the coarser-grained dolomite lithologies consisted of large through-going fractures.

Nearly all of the joints encountered in the field investigation were open, had slightly rough to rough surfaces, and did not contain a secondary mineralization, except rare calcite infilling in places. No slickensides were observed on any joint surface. Joint apertures varied from between

[2] Girvanella is a *microbial biscuit* (hemispherical or disk-shaped calcareous mass) characterized by a complex of microscopic filaments (AGI, 2005).

a few millimeters to a couple inches in width. Joints with smaller apertures tended to be devoid of any sort of fill, while the larger aperture joints were often filled with soil.

The dolomite bedrock described above covers all of the Lot 34R property, with the exception of the southeastern corner of the property. This area, where TP-1 was excavated, contains a veneer of undifferentiated Quaternary colluvial and slopewash deposits up to as much as 12 feet thick. This unit is comprised of a combination of angular dolomite and rounded quartzite clasts, with the dolomite clasts commonly found to be moderately weathered and oxidized.

The preceding bedrock characteristics were discussed between the engineering geologist and the geotechnical engineer and were taken into consideration in development of the subsurface model, geologic cross section, and subsequent slope stability analysis.

**Faulting**

Based upon a review of the available geologic data for the Lot 34R property and surrounding area, no evidence of faulting was observed. According to the USGS Quaternary Fault and Fold Database of the United States (USGS and UGS, 2006), the closest fault to the area of investigation is approximately 2.5 miles to the southwest. IGES reviewed three stereo pairs of aerial photographs that cover the Ridge Nests property and adjacent areas. The aerial photographs reviewed for this exercise are listed in Table 1. The aerial photographs were examined stereoscopically for the presence of photo-lineaments which might be indicative of faulting, as well as other additional geomorphic features. No photo-lineaments were observed either crossing or projecting toward the subject property. Additionally, no fault-related geomorphic features indicative of past surface faulting at or near the property, including fault scarps, vegetation lineaments, gullies, vegetation/soil contrasts, aligned springs or seeps, sag ponds, aligned or disrupted drainages, faceted spurs, grabens, or displaced landforms were observed in either the aerial photographs reviewed or the site reconnaissance.

**Table 1**
**Stereoscopic Aerial Photographs Reviewed**

| SOURCE* | DATE | FLIGHT | PHOTOGRAPHS | SCALE |
|---|---|---|---|---|
| 1947 AAJ | August 10, 1946 | AAJ_1B | 88-90 | 1:20,000 |
| 1953 AAI | September 14, 1952 | AAI_4K | 34-36 | 1:20,000 |
| 1963 ELK | June 25, 1963 | ELK_3 | 57-59 | 1:15,840 |

*https://geodata.geology.utah.gov/imagery/

**Slope Stability Analysis**

The global stability of the slope was modeled using gSTABL7 slope stability software. Bishop's Method and Janbu's Simplified method was used to model the slope, as appropriate. For our analysis, we have assessed Section A-A', illustrated on Figure 1 (*Geologic Map*) and the *Geologic Cross-Section*, Figure 2, attached. Calculations for stability were developed by searching for the minimum factor-of-safety for both a circular-type failure and a block-type (translational) failure. For the circular analysis model, arcuate failure surfaces and homogenous

earth materials were assumed. For the block analysis, anisotropic strength parameters in the bedrock was assumed, based on the apparent dip of bedding and jointing as measured at bedrock outcrops just west and north of Lot 34R (apparent dip of approximately 4 degrees, the slope stability software has been allowed to search between 0 and 15 degrees). A minimum static factor-of-safety of 1.5 and seismic factor-of-safety of 1.0 (global stability) was considered acceptable for this project considering the available information and design assumptions.

The earth materials present on Lot 34R generally consist of relatively competent, moderately weathered dolomite and coarse colluvium. The software package RocLab (V. 1.033), which is based on the Hoek-Brown failure Criterion (1997) was utilized to estimate equivalent strength parameters for dolomite (friction angle and cohesion) to be used in conventional limit-equilibrium slope stability software. Input parameters utilized to estimate reasonable strength parameters were as follows:

- Uniaxial Compressive Strength: 1,500 ksf
- GSI: 45 (geologic strength index)
- Mi Value: 9 (intact rock parameter)
- D: 0.7 (disturbance factor)
- MR: 425 (Modulus Ratio, used to estimate the intact rock deformation modulus, Ei)

Based on these input parameters, RocLab indicates an equivalent cohesion of 44.844 ksf and a friction angle of 20.1 degrees for the dolomite. For our analysis, IGES has conservatively reduced the estimated equivalent cohesion by approximately 20% to 35 ksf. For our anisotropic analysis, strength along bedding and/or jointing has been estimated to have a friction angle of 42 degrees and a cohesion of zero (IGES, 2015b). The output file for RocLab is attached.

The surficial unit described on the geologic map as Qc-sw is undifferentiated colluvium and slope wash. This material is generally very coarse and bouldery; constituents generally have a moderate degree of angularity. Accordingly, we have assigned a friction angle of 42 degrees and a cohesion of zero for the colluvium north of Lot 34R.

For the seismic (pseudo-static) assessment of the slopes, the seismic coefficient $k_h$ is modeled as equal to 50% of the peak ground acceleration (PGA) resulting from a MCE seismic event (2PE50). From our referenced geotechnical report, the PGA resulting from a 2PE50 seismic event is taken as 0.33g. Therefore, for seismic analysis we have adopted a seismic coefficient of 0.165g.

The exact configuration of the new home's foundations is currently unknown; however, based on experience with similar projects, IGES has estimated an approximate and reasonable foundation configuration to assess the impact of a new home to the slope. Various surcharge loads have been included in the analysis to model a) possible fill sections, and b) foundation loading of 1500 psf.

Based on our analysis, the global stability of the north-facing natural slope meets the minimum factors-of-safety of 1.5 and 1.0 for static and seismic conditions, respectively. The results of the global stability analyses are attached.

**Conclusions**

Based on the geologic evidence presented on the attached *Geologic Map* (Figure 1), the associated *Geologic Cross-Section* (Figure 2), and the slope stability assessment presented herein, the following conclusions are made:

1. The stability of the slope is not adversely impacted by the geologic, stratigraphic, or hydrologic conditions observed.

2. There are no evident potential on-site or off-site geologic hazards that can adversely affect the subject property, and the site is considered suitable for development from a geologic hazards standpoint.

3. The site is considered suitable for development from a geotechnical perspective, provided the recommendations presented in the referenced 2014 geotechnical report are incorporated into the design and construction of the project.

Also, once construction plans are established, IGES should review the plans and assess compatibility with our recommendations and conclusions. The impact of the proposed foundation and grading to slope stability should also be assessed.

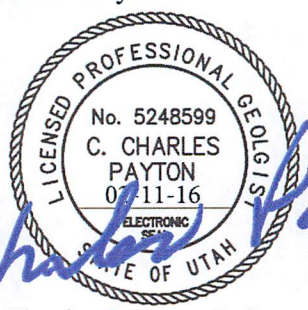
**Closure**

We appreciate the opportunity to provide you with our services. If you have any questions please contact the undersigned at your convenience (801) 748-4044.

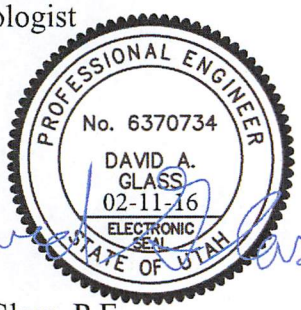
Respectfully Submitted,
IGES, Inc.

Peter E. Doumit, P.G., C.P.G.
Senior Geologist

Reviewed by:




C. Charles Payton, P.G.
Engineering Geologist




David A. Glass, P.E.
Senior Geotechnical Engineer

Attachments:

References
Figure 1 – Geologic Map
Figure 2 – Geologic Cross-Section A-A'
Slope Stability Analysis

## References

American Geological Institute (AGI), 1984, Dictionary of Geological Terms (Third Edition), Robert L. Bates and Julia A. Jackson, Editors.

AGI, 2005, Glossary of Geology, 5th Edition, Neuendorf, K.K, Mehr, Fr., J.P., and Jackson, J.A., editors.

Hoek, E., and Brown, E.T., 1997, Practical Estimates of Rock Mass Strength, in *International Journal of Rock Mechanics & Mining Science & Geomechanics Abstracts*, 34(8), 1165-1186.

IGES, Inc., 2014, Geotechnical Investigation Report (Revised), Lot 34 of Powder Mountain Resort, 7958 East Heartwood Drive, Weber County, Utah, Project No. 01628-006, dated August 11, 2014.

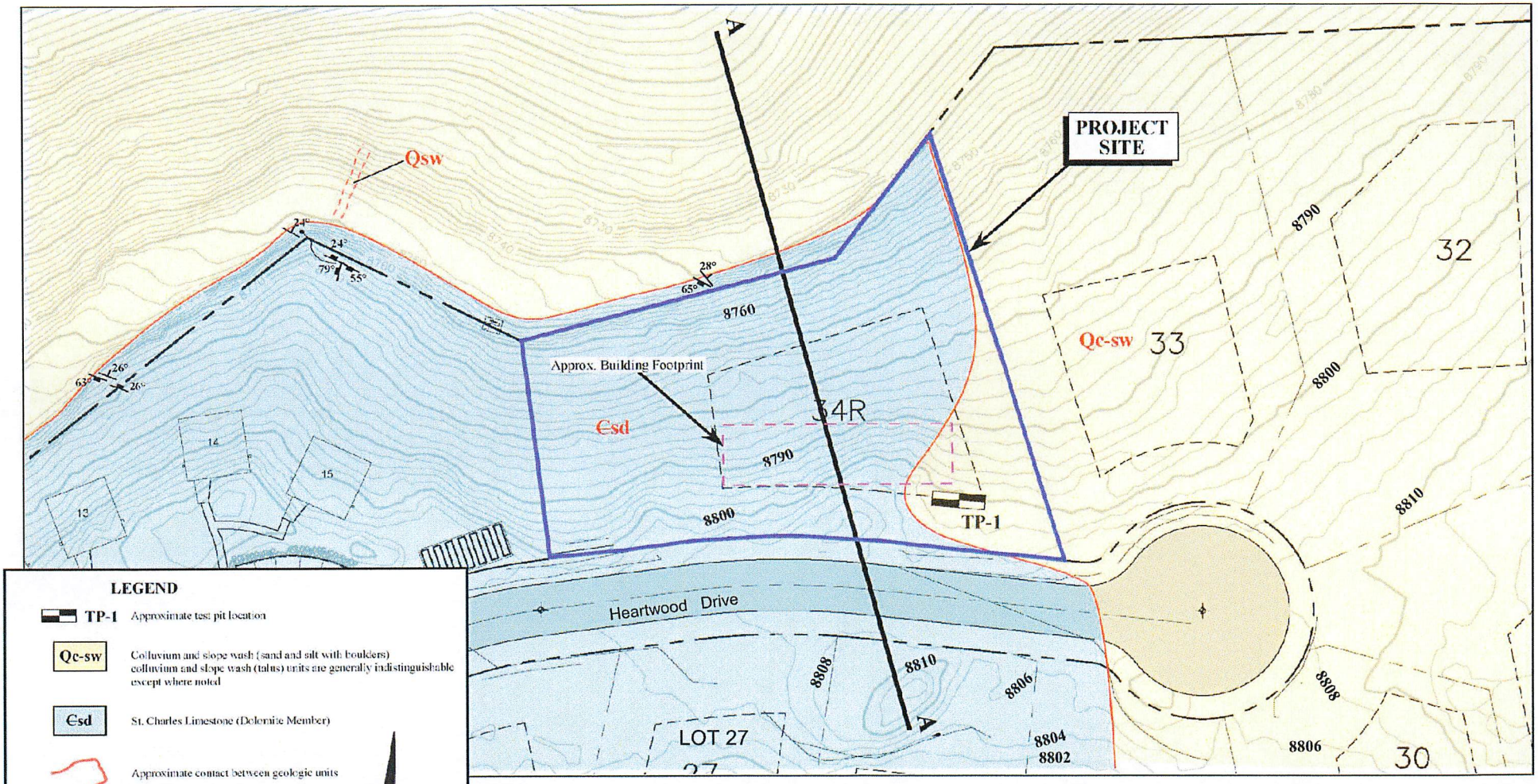
IGES, Inc., 2015a, Response to Review Comments-Geology, Geotechnical Investigation, The Ridge Nests Development, Powder Mountain Resort, Weber and Cache Counties, Utah, Project No. 01628-008, dated September 1, 2015.

IGES, Inc., 2015b, Response to Review Comments-Geotechnical Engineering, Geotechnical Investigation, The Ridge Nests Development, Powder Mountain Resort, Weber and Cache Counties, Utah, Project No. 01628-008, dated December 4, 2015.

Sorensen, M.L., and Crittenden, M.D., Jr., 1979, Geologic map of the Huntsville quadrangle, Weber and Cache Counties, Utah: U.S. Geological Survey Geologic Quadrangle Series Map GQ-1503, scale 1:24,000.

U.S. Geological Survey and Utah Geological Survey, 2006, Quaternary fault and fold database for the United States, accessed August 31, 2015, from USGS web site: http://earthquake.usgs.gov/hazards/qfaults/.

Western Geologic, 2012, Report: Geologic Hazards Reconnaissance, Proposed Area 1 Mixed-Use Development, Powder Mountain Resort, Weber County, Utah, dated August 28, 2012.




**LEGEND**

- **TP-1** — Approximate test pit location
- **Qc-sw** — Colluvium and slope wash (sand and silt with boulders) colluvium and slope wash (talus) units are generally indistinguishable except where noted
- **Csd** — St. Charles Limestone (Dolomite Member)
- Approximate contact between geologic units
- 24° — Strike and dip of bedding
- 79° — Strike and dip of jointing
- A — A' — Geologic cross section

0 25 50

SCALE 1"=50'

Base Map:
Summit Eden Phase 1B, Sheet 3
Prepared by NV5, Dated January 2014

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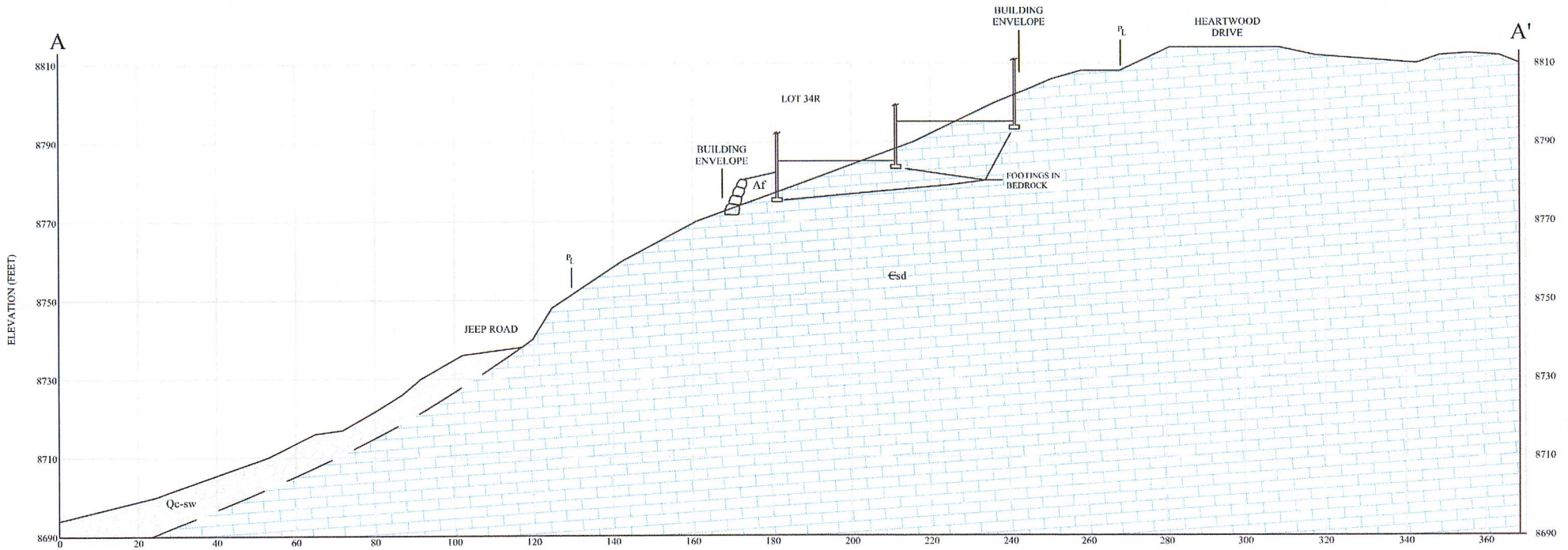
Project No. D1628-006

Geotechnical Investigation
Lot 34R of Powder Mountain Resort
7958 East Heartwood Drive
Weber County, Utah

GEOLOGIC MAP

**Figure 1**

FOUNDATION
CONFIGURATION
CONCEPTUAL ONLY




LEGEND

| | |
|---|---|
| Af | ENGINEERED FILL |
| Qc-sw | COLLUVIUM (SOIL PROFILE) |
| Csd | DOLOMITE BEDROCK |

0 25 50
SCALE: 1" = 25'

| MARK | | DATE | BY | CHK |
|---|---|---|---|---|
| | | | | |

REVISIONS

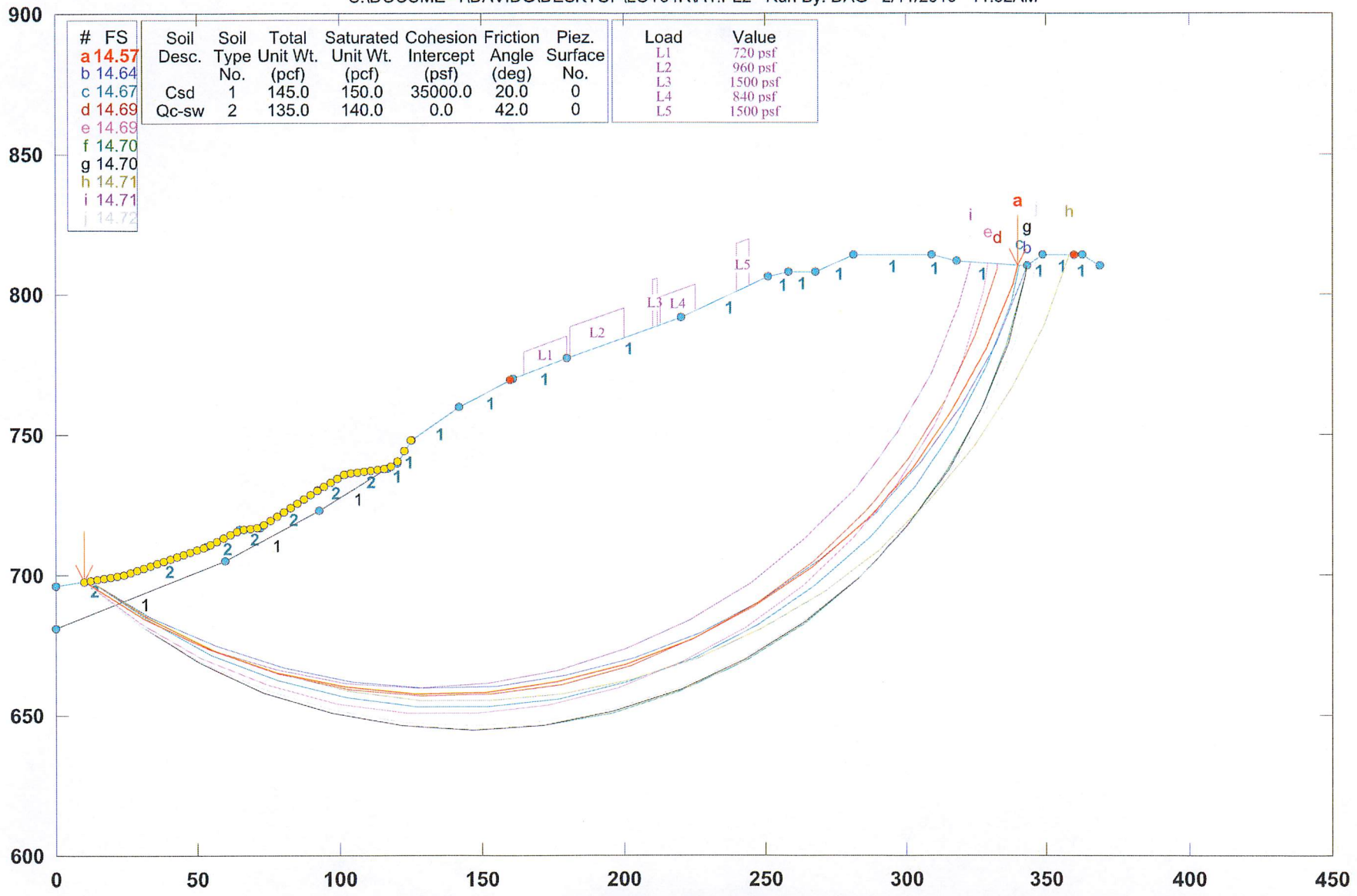
IGES®
12429 SOUTH 300 EAST, STE. 100
DRAPER, UTAH 84020
(801) 748-4044 FAX: (801) 748-4045

GEOTECHNICAL INVESTIGATION
LOT 34R, POWDER MOUNTAIN
7958 HEARTWOOD DRIVE
WEBER COUNTY, UTAH
GEOLOGIC CROSS SECTION

| | | |
|---|---|---|
| DESIGNED BY: DAG FEB 11, 2016 | | PLOT SCALE 1=1 |
| DRAWN BY: DAG FEB 11, 2016 | | DWG SCALE 1"=25' |
| IGES PROJECT NO. 01628-006 | FIGURE NO. 2 | REV. N/A |

# Summit/Lot 34R; A-A'; 01628-005; Static

C:\DOCUME~1\DAVIDG\DESKTOP\LOT34R\A1.PL2 Run By: DAG 2/11/2016 11:32AM




**GSTABL7 v.2 FSmin=14.57**

**Safety Factors Are Calculated By The Modified Bishop Method**

GSTABL7

*** GSTABL7 ***

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.002, December 2001 **



**********

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static Earthquake, and Applied Force Options.

**********

1

Analysis Run Date: 2/11/2016
Time of Run: 11:32AM
Run By: DAG
Input Data Filename: C:a1.
Output Filename: C:a1.OUT
Unit System: English

Plotted Output Filename: C:a1.PLT

PROBLEM DESCRIPTION: Summit/Lot 34R; A-A'; 01628-005; Static

1

BOUNDARY COORDINATES

23 Top Boundaries
26 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|---|---|---|---|---|---|
| 1 | 0.00 | 696.00 | 24.00 | 700.00 | 2 |
| 2 | 24.00 | 700.00 | 53.00 | 710.00 | 2 |
| 3 | 53.00 | 710.00 | 65.00 | 716.00 | 2 |
| 4 | 65.00 | 716.00 | 72.00 | 717.00 | 2 |
| 5 | 72.00 | 717.00 | 92.00 | 730.00 | 2 |
| 6 | 92.00 | 730.00 | 102.00 | 736.00 | 2 |
| 7 | 102.00 | 736.00 | 117.00 | 738.00 | 2 |
| 8 | 117.00 | 738.00 | 120.00 | 740.00 | 1 |
| 9 | 120.00 | 740.00 | 125.00 | 748.00 | 1 |
| 10 | 125.00 | 748.00 | 142.00 | 760.00 | 1 |
| 11 | 142.00 | 760.00 | 161.00 | 770.00 | 1 |
| 12 | 161.00 | 770.00 | 180.00 | 777.00 | 1 |
| 13 | 180.00 | 777.00 | 220.00 | 792.00 | 1 |
| 14 | 220.00 | 792.00 | 251.00 | 806.00 | 1 |
| 15 | 251.00 | 806.00 | 258.00 | 808.00 | 1 |
| 16 | 258.00 | 808.00 | 268.00 | 808.00 | 1 |
| 17 | 268.00 | 808.00 | 281.00 | 814.00 | 1 |
| 18 | 281.00 | 814.00 | 309.00 | 814.00 | 1 |
| 19 | 309.00 | 814.00 | 318.00 | 812.00 | 1 |
| 20 | 318.00 | 812.00 | 343.00 | 810.00 | 1 |
| 21 | 343.00 | 810.00 | 349.00 | 814.00 | 1 |
| 22 | 349.00 | 814.00 | 363.00 | 814.00 | 1 |
| 23 | 363.00 | 814.00 | 369.00 | 810.00 | 1 |
| 24 | 0.00 | 681.00 | 60.00 | 705.00 | 1 |
| 25 | 60.00 | 705.00 | 93.00 | 723.00 | 1 |
| 26 | 93.00 | 723.00 | 117.00 | 738.00 | 1 |

User Specified Y-Origin = 600.00(ft)

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

| Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit Wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---|---|---|---|---|---|---|---|
| 1 | 145.0 | 150.0 | 35000.0 | 20.0 | 0.00 | 0.0 | 0 |
| 2 | 135.0 | 140.0 | 0.0 | 42.0 | 0.00 | 0.0 | 0 |

BOUNDARY LOAD(S)

5 Load(s) Specified

| Load No. | X-Left (ft) | X-Right (ft) | Intensity (psf) | Deflection (deg) |
|---|---|---|---|---|
| 1 | 165.00 | 180.00 | 720.0 | 0.0 |
| 2 | 181.00 | 200.00 | 960.0 | 0.0 |
| 3 | 210.00 | 212.00 | 1500.0 | 0.0 |
| 4 | 213.00 | 225.00 | 840.0 | 0.0 |
| 5 | 240.00 | 244.00 | 1500.0 | 0.0 |

NOTE - Intensity Is Specified As A Uniformly Distributed
Force Acting On A Horizontally Projected Surface.

1

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.

2500 Trial Surfaces Have Been Generated.

50 Surface(s) Initiate(s) From Each Of 50 Points Equally Spaced
Along The Ground Surface Between X = 10.00(ft)
and X = 125.00(ft)

Each Surface Terminates Between X = 160.00(ft)
and X = 360.00(ft)

Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)

25.00(ft) Line Segments Define Each Trial Failure Surface.

Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -40.0
And -20.0 deg.

Following Is Displayed The Most Critical Of The Trial
Failure Surfaces Evaluated.

* * Safety Factors Are Calculated By The Modified Bishop Method * *

Total Number of Trial Surfaces Evaluated = 2500

Statistical Data On All Valid FS Values:
FS Max = 58.513 FS Min = 14.573 FS Ave = 20.333
Standard Deviation = 4.572 Coefficient of Variation = 22.49 %

Failure Surface Specified By 18 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 10.00 | 697.67 |
| 2 | 31.16 | 684.34 |
| 3 | 53.72 | 673.57 |
| 4 | 77.38 | 665.50 |
| 5 | 101.82 | 660.24 |
| 6 | 126.70 | 657.85 |
| 7 | 151.70 | 658.38 |
| 8 | 176.46 | 661.81 |
| 9 | 200.66 | 668.09 |
| 10 | 223.96 | 677.15 |
| 11 | 246.04 | 688.86 |
| 12 | 266.62 | 703.06 |
| 13 | 285.40 | 719.56 |
| 14 | 302.14 | 738.13 |
| 15 | 316.60 | 758.53 |
| 16 | 328.60 | 780.46 |
| 17 | 337.95 | 803.64 |
| 18 | 339.76 | 810.26 |

Circle Center At X = 134.64 ; Y = 871.83 ; and Radius = 214.17

Factor of Safety
*** 14.573 ***

Individual data on the 48 slices

| Slice No. | Width (ft) | Weight (lbs) | Water Force Top (lbs) | Water Force Bot (lbs) | Tie Force Norm (lbs) | Tie Force Tan (lbs) | Earthquake Force Hor (lbs) | Earthquake Force Ver (lbs) | Surcharge Load (lbs) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 12.3 | 8133.7 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 2 | 1.7 | 2417.1 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 3 | 7.2 | 14526.4 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 4 | 21.8 | 84015.9 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 5 | 0.7 | 3726.1 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 6 | 6.3 | 35411.4 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 7 | 5.0 | 31606.3 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 8 | 7.0 | 48209.4 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 9 | 5.4 | 40488.5 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 10 | 14.6 | 129033.2 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 11 | 1.0 | 9792.5 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 12 | 8.8 | 91454.4 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 13 | 0.2 | 2006.5 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 14 | 15.0 | 168010.6 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 15 | 3.0 | 34958.1 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 16 | 5.0 | 62166.5 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 17 | 1.7 | 22374.9 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 18 | 15.3 | 214257.1 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 19 | 9.7 | 146611.8 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 20 | 9.3 | 146411.4 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 21 | 4.0 | 64261.1 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 22 | 11.5 | 187060.3 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 8251.2 |
| 23 | 3.5 | 58559.0 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 2548.8 |
| 24 | 1.0 | 16578.0 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 25 | 19.0 | 318154.6 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 18240.0 |
| 26 | 0.7 | 11096.6 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 27 | 9.3 | 157957.4 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 28 | 2.0 | 33787.5 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 3000.0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 29 | 1.0 | 16890.7 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 30 | 7.0 | 118178.9 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 5880.0 |
| 31 | 4.0 | 66842.3 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 3323.6 |
| 32 | 1.0 | 17638.6 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 876.4 |
| 33 | 15.0 | 252215.8 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 34 | 4.0 | 66824.9 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 6000.0 |
| 35 | 2.0 | 34088.2 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 36 | 5.0 | 82132.1 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 37 | 7.0 | 113984.7 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 38 | 8.6 | 134881.5 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 39 | 1.4 | 20871.8 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 40 | 13.0 | 190412.8 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 41 | 4.4 | 61542.3 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 42 | 16.7 | 206650.8 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 43 | 6.9 | 70645.8 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 44 | 7.6 | 66138.6 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 45 | 1.4 | 10602.0 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 46 | 10.6 | 62689.0 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 47 | 9.4 | 25409.1 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 48 | 1.8 | 887.0 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |

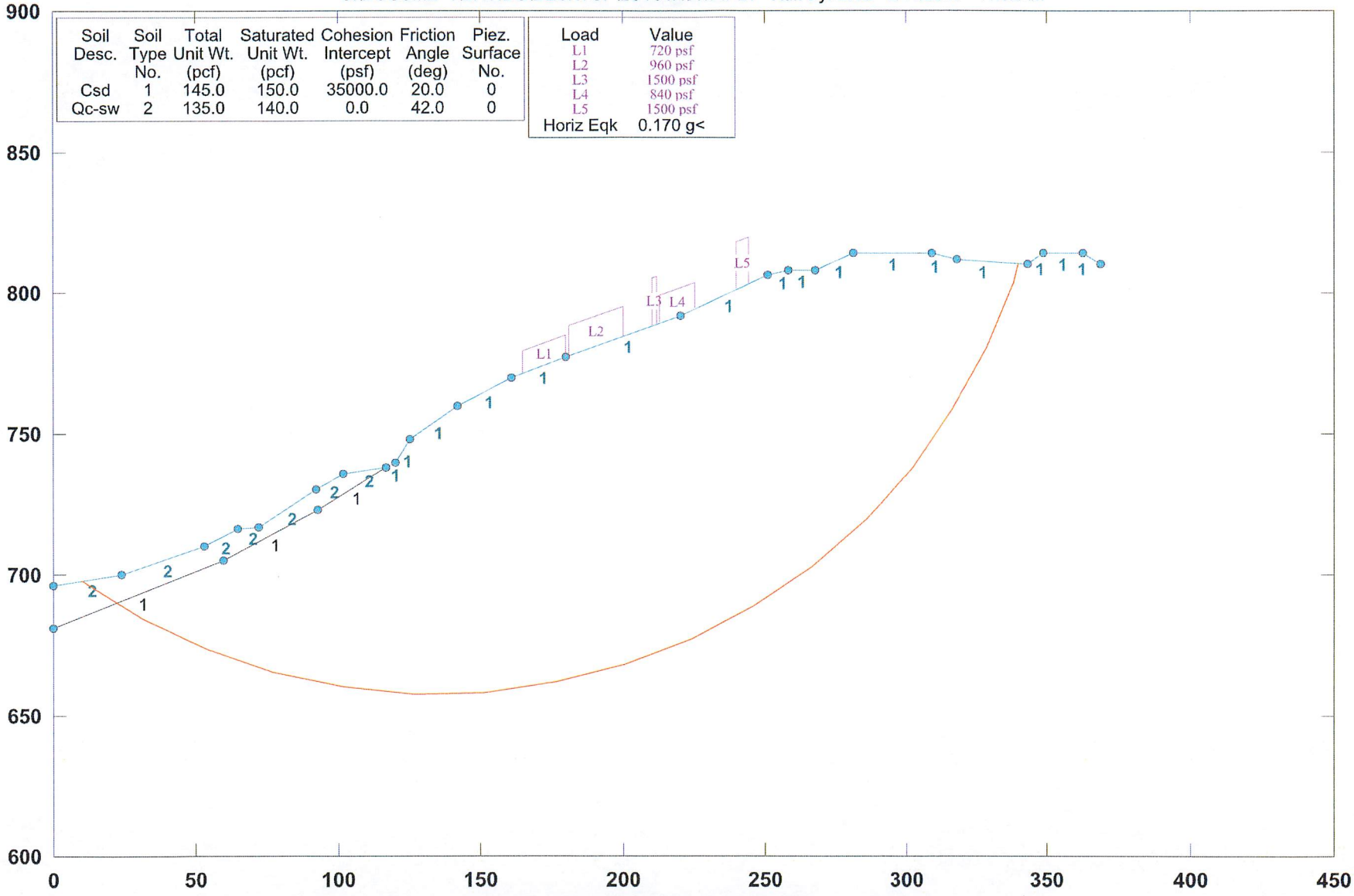
**** END OF GSTABL7 OUTPUT ****

# Summit/Lot 34R; A-A'; 01628-005; P-Static

C:\DOCUME~1\DAVIDG\DESKTOP\LOT34R\A1P.PLT Run By: DAG 2/11/2016 11:32AM

| Soil Desc. | Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit Wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Piez. Surface No. |
|---|---|---|---|---|---|---|
| Csd | 1 | 145.0 | 150.0 | 35000.0 | 20.0 | 0 |
| Qc-sw | 2 | 135.0 | 140.0 | 0.0 | 42.0 | 0 |

| Load | Value |
|---|---|
| L1 | 720 psf |
| L2 | 960 psf |
| L3 | 1500 psf |
| L4 | 840 psf |
| L5 | 1500 psf |
| Horiz Eqk | 0.170 g< |




**GSTABL7 v.2 FSmin=10.50**

**Factor Of Safety Is Calculated By The Simplified Janbu Method**

GSTABL7

*** GSTABL7 ***

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.002, December 2001 **



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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static Earthquake, and Applied Force Options.

********** 1

Analysis Run Date: 2/11/2016
Time of Run: 11:32AM
Run By: DAG
Input Data Filename: C:a1p.
Output Filename: C:a1p.OUT
Unit System: English

Plotted Output Filename: C:a1p.PLT

PROBLEM DESCRIPTION: Summit/Lot 34R; A-A'; 01628-005; P-Stati 1
c

BOUNDARY COORDINATES

23 Top Boundaries
26 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|---|---|---|---|---|---|
| 1 | 0.00 | 696.00 | 24.00 | 700.00 | 2 |
| 2 | 24.00 | 700.00 | 53.00 | 710.00 | 2 |
| 3 | 53.00 | 710.00 | 65.00 | 716.00 | 2 |
| 4 | 65.00 | 716.00 | 72.00 | 717.00 | 2 |
| 5 | 72.00 | 717.00 | 92.00 | 730.00 | 2 |
| 6 | 92.00 | 730.00 | 102.00 | 736.00 | 2 |
| 7 | 102.00 | 736.00 | 117.00 | 738.00 | 2 |
| 8 | 117.00 | 738.00 | 120.00 | 740.00 | 1 |
| 9 | 120.00 | 740.00 | 125.00 | 748.00 | 1 |
| 10 | 125.00 | 748.00 | 142.00 | 760.00 | 1 |
| 11 | 142.00 | 760.00 | 161.00 | 770.00 | 1 |
| 12 | 161.00 | 770.00 | 180.00 | 777.00 | 1 |
| 13 | 180.00 | 777.00 | 220.00 | 792.00 | 1 |
| 14 | 220.00 | 792.00 | 251.00 | 806.00 | 1 |
| 15 | 251.00 | 806.00 | 258.00 | 808.00 | 1 |
| 16 | 258.00 | 808.00 | 268.00 | 808.00 | 1 |
| 17 | 268.00 | 808.00 | 281.00 | 814.00 | 1 |
| 18 | 281.00 | 814.00 | 309.00 | 814.00 | 1 |
| 19 | 309.00 | 814.00 | 318.00 | 812.00 | 1 |
| 20 | 318.00 | 812.00 | 343.00 | 810.00 | 1 |
| 21 | 343.00 | 810.00 | 349.00 | 814.00 | 1 |
| 22 | 349.00 | 814.00 | 363.00 | 814.00 | 1 |
| 23 | 363.00 | 814.00 | 369.00 | 810.00 | 1 |
| 24 | 0.00 | 681.00 | 60.00 | 705.00 | 1 |
| 25 | 60.00 | 705.00 | 93.00 | 723.00 | 1 |
| 26 | 93.00 | 723.00 | 117.00 | 738.00 | 1 |

User Specified Y-Origin = 600.00(ft)

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

| Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit Wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---|---|---|---|---|---|---|---|
| 1 | 145.0 | 150.0 | 35000.0 | 20.0 | 0.00 | 0.0 | 0 |
| 2 | 135.0 | 140.0 | 0.0 | 42.0 | 0.00 | 0.0 | 0 |

BOUNDARY LOAD(S)

5 Load(s) Specified

| Load No. | X-Left (ft) | X-Right (ft) | Intensity (psf) | Deflection (deg) |
|---|---|---|---|---|
| 1 | 165.00 | 180.00 | 720.0 | 0.0 |
| 2 | 181.00 | 200.00 | 960.0 | 0.0 |
| 3 | 210.00 | 212.00 | 1500.0 | 0.0 |
| 4 | 213.00 | 225.00 | 840.0 | 0.0 |
| 5 | 240.00 | 244.00 | 1500.0 | 0.0 |

NOTE - Intensity Is Specified As A Uniformly Distributed
Force Acting On A Horizontally Projected Surface.

A Horizontal Earthquake Loading Coefficient
Of0.170 Has Been Assigned

A Vertical Earthquake Loading Coefficient
Of0.000 Has Been Assigned

Cavitation Pressure = 0.0(psf)

Janbu's Empirical Coef. is being used for the case of c & phi both > 0
1

Trial Failure Surface Specified By 18 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 10.00 | 697.67 |
| 2 | 31.16 | 684.34 |
| 3 | 53.72 | 673.57 |
| 4 | 77.38 | 665.50 |
| 5 | 101.82 | 660.24 |
| 6 | 126.70 | 657.85 |
| 7 | 151.70 | 658.38 |
| 8 | 176.46 | 661.81 |
| 9 | 200.66 | 668.09 |
| 10 | 223.96 | 677.15 |
| 11 | 246.04 | 688.86 |
| 12 | 266.62 | 703.06 |
| 13 | 285.40 | 719.56 |
| 14 | 302.14 | 738.13 |
| 15 | 316.60 | 758.53 |
| 16 | 328.60 | 780.46 |
| 17 | 337.95 | 803.64 |
| 18 | 339.76 | 810.26 |

Janbu's Empirical Coefficient (fo) = 1.082

* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *

Factor Of Safety For The Preceding Specified Surface = 10.498

***Table 1 - Individual Data on the 48 Slices***

| Slice No. | Width (ft) | Weight (lbs) | Water Force Top (lbs) | Water Force Bot (lbs) | Tie Force Norm (lbs) | Tie Force Tan (lbs) | Earthquake Force Hor (lbs) | Earthquake Force Ver (lbs) | Surcharge Load (lbs) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 12.3 | 8133.7 | 0.0 | 0.0 | 0.0 | 0.0 | 1382.7 | 0.0 | 0.0 |
| 2 | 1.7 | 2418.5 | 0.0 | 0.0 | 0.0 | 0.0 | 411.1 | 0.0 | 0.0 |
| 3 | 7.2 | 14540.2 | 0.0 | 0.0 | 0.0 | 0.0 | 2471.8 | 0.0 | 0.0 |
| 4 | 21.8 | 84009.5 | 0.0 | 0.0 | 0.0 | 0.0 | 14281.6 | 0.0 | 0.0 |
| 5 | 0.7 | 3747.7 | 0.0 | 0.0 | 0.0 | 0.0 | 637.1 | 0.0 | 0.0 |
| 6 | 6.3 | 35391.8 | 0.0 | 0.0 | 0.0 | 0.0 | 6016.6 | 0.0 | 0.0 |
| 7 | 5.0 | 31607.3 | 0.0 | 0.0 | 0.0 | 0.0 | 5373.2 | 0.0 | 0.0 |
| 8 | 7.0 | 48210.3 | 0.0 | 0.0 | 0.0 | 0.0 | 8195.8 | 0.0 | 0.0 |
| 9 | 5.4 | 40514.8 | 0.0 | 0.0 | 0.0 | 0.0 | 6887.5 | 0.0 | 0.0 |
| 10 | 14.6 | 129004.5 | 0.0 | 0.0 | 0.0 | 0.0 | 21930.8 | 0.0 | 0.0 |
| 11 | 1.0 | 9792.1 | 0.0 | 0.0 | 0.0 | 0.0 | 1664.7 | 0.0 | 0.0 |
| 12 | 8.8 | 91493.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15553.8 | 0.0 | 0.0 |
| 13 | 0.2 | 1962.9 | 0.0 | 0.0 | 0.0 | 0.0 | 333.7 | 0.0 | 0.0 |
| 14 | 15.0 | 168004.5 | 0.0 | 0.0 | 0.0 | 0.0 | 28560.8 | 0.0 | 0.0 |
| 15 | 3.0 | 34957.6 | 0.0 | 0.0 | 0.0 | 0.0 | 5942.8 | 0.0 | 0.0 |
| 16 | 5.0 | 62166.3 | 0.0 | 0.0 | 0.0 | 0.0 | 10568.3 | 0.0 | 0.0 |
| 17 | 1.7 | 22349.7 | 0.0 | 0.0 | 0.0 | 0.0 | 3799.4 | 0.0 | 0.0 |
| 18 | 15.3 | 214280.1 | 0.0 | 0.0 | 0.0 | 0.0 | 36427.6 | 0.0 | 0.0 |
| 19 | 9.7 | 146663.4 | 0.0 | 0.0 | 0.0 | 0.0 | 24932.8 | 0.0 | 0.0 |
| 20 | 9.3 | 146350.7 | 0.0 | 0.0 | 0.0 | 0.0 | 24879.6 | 0.0 | 0.0 |
| 21 | 4.0 | 64259.0 | 0.0 | 0.0 | 0.0 | 0.0 | 10924.0 | 0.0 | 0.0 |
| 22 | 11.5 | 187054.9 | 0.0 | 0.0 | 0.0 | 0.0 | 31799.3 | 0.0 | 8251.2 |
| 23 | 3.5 | 58556.7 | 0.0 | 0.0 | 0.0 | 0.0 | 9954.6 | 0.0 | 2548.8 |
| 24 | 1.0 | 16577.7 | 0.0 | 0.0 | 0.0 | 0.0 | 2818.2 | 0.0 | 0.0 |
| 25 | 19.0 | 318158.6 | 0.0 | 0.0 | 0.0 | 0.0 | 54087.0 | 0.0 | 18240.0 |
| 26 | 0.7 | 11160.5 | 0.0 | 0.0 | 0.0 | 0.0 | 1897.3 | 0.0 | 0.0 |
| 27 | 9.3 | 157901.7 | 0.0 | 0.0 | 0.0 | 0.0 | 26843.3 | 0.0 | 0.0 |
| 28 | 2.0 | 33789.2 | 0.0 | 0.0 | 0.0 | 0.0 | 5744.2 | 0.0 | 3000.0 |
| 29 | 1.0 | 16891.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2871.6 | 0.0 | 0.0 |
| 30 | 7.0 | 118184.9 | 0.0 | 0.0 | 0.0 | 0.0 | 20091.4 | 0.0 | 5880.0 |
| 31 | 4.0 | 66902.2 | 0.0 | 0.0 | 0.0 | 0.0 | 11373.4 | 0.0 | 3326.4 |
| 32 | 1.0 | 17583.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2989.1 | 0.0 | 873.6 |
| 33 | 15.0 | 252226.1 | 0.0 | 0.0 | 0.0 | 0.0 | 42878.4 | 0.0 | 0.0 |
| 34 | 4.0 | 66826.5 | 0.0 | 0.0 | 0.0 | 0.0 | 11360.5 | 0.0 | 6000.0 |
| 35 | 2.0 | 34011.1 | 0.0 | 0.0 | 0.0 | 0.0 | 5781.9 | 0.0 | 0.0 |
| 36 | 5.0 | 82211.0 | 0.0 | 0.0 | 0.0 | 0.0 | 13975.9 | 0.0 | 0.0 |
| 37 | 7.0 | 113987.2 | 0.0 | 0.0 | 0.0 | 0.0 | 19377.8 | 0.0 | 0.0 |
| 38 | 8.6 | 134881.5 | 0.0 | 0.0 | 0.0 | 0.0 | 22929.9 | 0.0 | 0.0 |
| 39 | 1.4 | 20877.3 | 0.0 | 0.0 | 0.0 | 0.0 | 3549.1 | 0.0 | 0.0 |
| 40 | 13.0 | 190416.4 | 0.0 | 0.0 | 0.0 | 0.0 | 32370.8 | 0.0 | 0.0 |
| 41 | 4.4 | 61485.8 | 0.0 | 0.0 | 0.0 | 0.0 | 10452.6 | 0.0 | 0.0 |
| 42 | 16.7 | 206696.9 | 0.0 | 0.0 | 0.0 | 0.0 | 35138.5 | 0.0 | 0.0 |
| 43 | 6.9 | 70654.4 | 0.0 | 0.0 | 0.0 | 0.0 | 12011.2 | 0.0 | 0.0 |
| 44 | 7.6 | 66105.3 | 0.0 | 0.0 | 0.0 | 0.0 | 11237.9 | 0.0 | 0.0 |
| 45 | 1.4 | 10626.3 | 0.0 | 0.0 | 0.0 | 0.0 | 1806.5 | 0.0 | 0.0 |
| 46 | 10.6 | 62712.3 | 0.0 | 0.0 | 0.0 | 0.0 | 10661.1 | 0.0 | 0.0 |
| 47 | 9.3 | 25390.5 | 0.0 | 0.0 | 0.0 | 0.0 | 4316.4 | 0.0 | 0.0 |
| 48 | 1.8 | 887.6 | 0.0 | 0.0 | 0.0 | 0.0 | 150.9 | 0.0 | 0.0 |

***Table 2 - Base Stress Data on the 48 Slices***

| Slice No. * | Alpha (deg) | X-Coord. Slice Cntr (ft) | Base Leng. (ft) | Available Shear Strength (psf) | Mobilized Shear Stress (psf) |
|---|---|---|---|---|---|
| 1 | -32.20 | 16.15 | 14.54 | 743.84 | -257.28 |
| 2 | -32.20 | 23.15 | 2.01 | 42912.03 | -553.53 |

| | | | | | |
|---|---|---|---|---|---|
| 3 | -32.20 | 27.58 | 8.46 | 43179.41 | -790.11 |
| 4 | -25.52 | 42.08 | 24.20 | 41013.98 | -1067.05 |
| 5 | -25.52 | 53.36 | 0.80 | 41571.14 | -1443.93 |
| 6 | -18.83 | 56.86 | 6.64 | 39615.59 | -912.54 |
| 7 | -18.83 | 62.50 | 5.28 | 39882.49 | -1023.59 |
| 8 | -18.83 | 68.50 | 7.40 | 40102.65 | -1115.19 |
| 9 | -18.83 | 74.69 | 5.68 | 40353.05 | -1219.38 |
| 10 | -12.15 | 84.69 | 14.95 | 39380.42 | -390.09 |
| 11 | -12.15 | 92.50 | 1.02 | 39743.63 | -432.90 |
| 12 | -12.15 | 97.41 | 9.02 | 39961.65 | -458.60 |
| 13 | -5.49 | 101.91 | 0.18 | 39279.25 | 802.59 |
| 14 | -5.49 | 109.50 | 15.07 | 39387.63 | 824.34 |
| 15 | -5.49 | 118.50 | 3.01 | 39553.54 | 857.62 |
| 16 | -5.49 | 122.50 | 5.02 | 39839.96 | 915.08 |
| 17 | -5.49 | 125.85 | 1.71 | 40101.78 | 967.61 |
| 18 | 1.21 | 134.35 | 15.30 | 40077.04 | 2677.22 |
| 19 | 1.21 | 146.85 | 9.70 | 40482.55 | 2890.30 |
| 20 | 7.89 | 156.35 | 9.39 | 40920.07 | 4809.29 |
| 21 | 7.89 | 163.00 | 4.04 | 41040.07 | 4909.57 |
| 22 | 7.89 | 170.73 | 11.57 | 41397.59 | 5087.11 |
| 23 | 14.55 | 178.23 | 3.66 | 42269.74 | 7057.69 |
| 24 | 14.55 | 180.50 | 1.03 | 42014.96 | 6891.94 |
| 25 | 14.55 | 190.50 | 19.63 | 42435.13 | 7202.70 |
| 26 | 14.55 | 200.33 | 0.68 | 42138.72 | 7030.00 |
| 27 | 21.25 | 205.33 | 10.02 | 43567.57 | 8805.46 |
| 28 | 21.25 | 211.00 | 2.15 | 44141.17 | 9343.14 |
| 29 | 21.25 | 212.50 | 1.07 | 43562.03 | 8797.96 |
| 30 | 21.25 | 216.50 | 7.51 | 43882.61 | 9098.20 |
| 31 | 21.25 | 221.98 | 4.25 | 43886.84 | 9103.93 |
| 32 | 27.94 | 224.48 | 1.18 | 46081.69 | 10854.00 |
| 33 | 27.94 | 232.50 | 16.98 | 45704.82 | 10403.78 |
| 34 | 27.94 | 242.00 | 4.53 | 46267.78 | 11039.48 |
| 35 | 27.94 | 245.02 | 2.31 | 45647.00 | 10315.35 |
| 36 | 34.61 | 248.52 | 6.03 | 48687.77 | 11732.37 |
| 37 | 34.61 | 254.50 | 8.50 | 48562.13 | 11526.46 |
| 38 | 34.61 | 262.31 | 10.47 | 48287.30 | 11076.00 |
| 39 | 41.30 | 267.31 | 1.84 | 52325.61 | 11917.28 |
| 40 | 41.30 | 274.50 | 17.30 | 52099.46 | 11538.40 |
| 41 | 41.30 | 283.20 | 5.86 | 51782.88 | 11007.97 |
| 42 | 47.97 | 293.77 | 25.00 | 56800.55 | 10576.62 |
| 43 | 54.67 | 305.57 | 11.86 | 63881.96 | 9415.23 |
| 44 | 54.67 | 312.80 | 13.14 | 62921.02 | 7951.28 |
| 45 | 61.31 | 317.30 | 2.92 | 73980.15 | 7277.94 |
| 46 | 61.31 | 323.30 | 22.08 | 72786.53 | 5672.85 |
| 47 | 68.03 | 333.27 | 24.99 | 88590.83 | 2691.10 |
| 48 | 74.71 | 338.85 | 6.86 | 118363.88 | 495.02 |

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = ********** (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 49454.76(psf)

Sum of the Driving Forces = 2074292.50 (lbs)

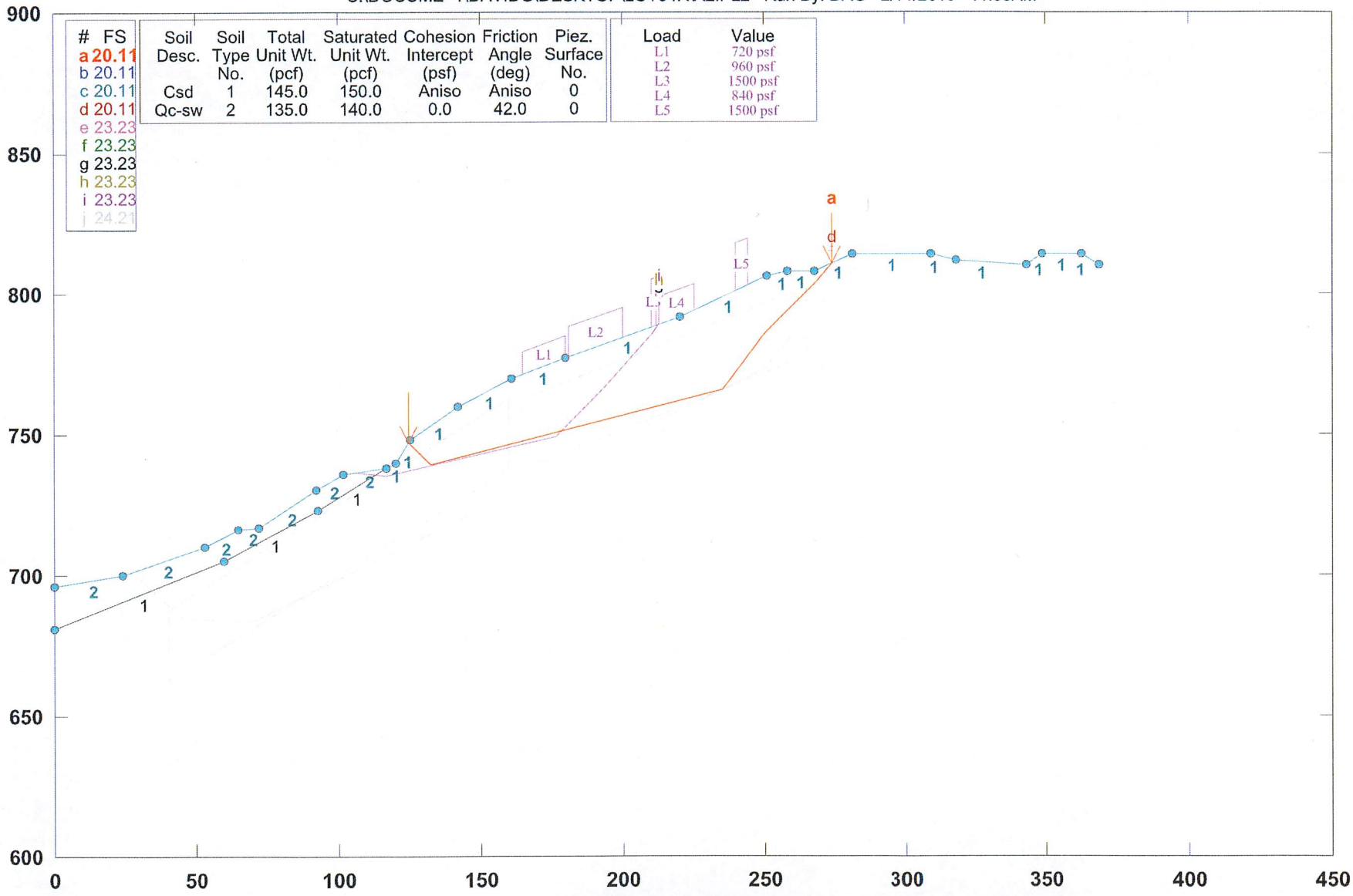
Average Mobilized Shear Stress = 5098.31(psf)

Total length of the failure surface = 406.86(ft)

**** END OF GSTABL7 OUTPUT ****

# Summit/Lot 34R; A-A'; 01628-005; Block Analysis, anisotropic; Static

C:\DOCUME~1\DAVIDG\DESKTOP\LOT34R\A2.PL2 Run By: DAG 2/11/2016 11:35AM




| # | FS |
|---|---|
| a | 20.11 |
| b | 20.11 |
| c | 20.11 |
| d | 20.11 |
| e | 23.23 |
| f | 23.23 |
| g | 23.23 |
| h | 23.23 |
| i | 23.23 |
| j | 24.21 |

| Soil Desc. | Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit Wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Piez. Surface No. |
|---|---|---|---|---|---|---|
| Csd | 1 | 145.0 | 150.0 | Aniso | Aniso | 0 |
| Qc-sw | 2 | 135.0 | 140.0 | 0.0 | 42.0 | 0 |

| Load | Value |
|---|---|
| L1 | 720 psf |
| L2 | 960 psf |
| L3 | 1500 psf |
| L4 | 840 psf |
| L5 | 1500 psf |

**GSTABL7 v.2 FSmin=20.11**

**Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0**

GSTABL7

*** GSTABL7 ***

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.002, December 2001 **



**********

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static Earthquake, and Applied Force Options.

**********



Analysis Run Date: 2/11/2016
Time of Run: 11:35AM
Run By: DAG
Input Data Filename: C:a2.
Output Filename: C:a2.OUT
Unit System: English

Plotted Output Filename: C:a2.PLT

PROBLEM DESCRIPTION: Summit/Lot 34R; A-A'; 01628-005; Block A
nalysis, anisotropic; Static

BOUNDARY COORDINATES

23 Top Boundaries
26 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|---|---|---|---|---|---|
| 1 | 0.00 | 696.00 | 24.00 | 700.00 | 2 |
| 2 | 24.00 | 700.00 | 53.00 | 710.00 | 2 |
| 3 | 53.00 | 710.00 | 65.00 | 716.00 | 2 |
| 4 | 65.00 | 716.00 | 72.00 | 717.00 | 2 |
| 5 | 72.00 | 717.00 | 92.00 | 730.00 | 2 |
| 6 | 92.00 | 730.00 | 102.00 | 736.00 | 2 |
| 7 | 102.00 | 736.00 | 117.00 | 738.00 | 2 |
| 8 | 117.00 | 738.00 | 120.00 | 740.00 | 1 |
| 9 | 120.00 | 740.00 | 125.00 | 748.00 | 1 |
| 10 | 125.00 | 748.00 | 142.00 | 760.00 | 1 |
| 11 | 142.00 | 760.00 | 161.00 | 770.00 | 1 |
| 12 | 161.00 | 770.00 | 180.00 | 777.00 | 1 |
| 13 | 180.00 | 777.00 | 220.00 | 792.00 | 1 |
| 14 | 220.00 | 792.00 | 251.00 | 806.00 | 1 |
| 15 | 251.00 | 806.00 | 258.00 | 808.00 | 1 |
| 16 | 258.00 | 808.00 | 268.00 | 808.00 | 1 |
| 17 | 268.00 | 808.00 | 281.00 | 814.00 | 1 |
| 18 | 281.00 | 814.00 | 309.00 | 814.00 | 1 |
| 19 | 309.00 | 814.00 | 318.00 | 812.00 | 1 |
| 20 | 318.00 | 812.00 | 343.00 | 810.00 | 1 |
| 21 | 343.00 | 810.00 | 349.00 | 814.00 | 1 |
| 22 | 349.00 | 814.00 | 363.00 | 814.00 | 1 |
| 23 | 363.00 | 814.00 | 369.00 | 810.00 | 1 |
| 24 | 0.00 | 681.00 | 60.00 | 705.00 | 1 |
| 25 | 60.00 | 705.00 | 93.00 | 723.00 | 1 |
| 26 | 93.00 | 723.00 | 117.00 | 738.00 | 1 |

User Specified Y-Origin = 600.00(ft)

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

| Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit Wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---|---|---|---|---|---|---|---|
| 1 | 145.0 | 150.0 | 35000.0 | 20.0 | 0.00 | 0.0 | 0 |
| 2 | 135.0 | 140.0 | 0.0 | 42.0 | 0.00 | 0.0 | 0 |

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

Soil Type 1 Is Anisotropic

Number Of Direction Ranges Specified = 3

| Direction Range No. | Counterclockwise Direction Limit (deg) | Cohesion Intercept (psf) | Friction Angle (deg) |
|---|---|---|---|
| 1 | 0.0 | 35000.00 | 20.00 |
| 2 | 15.0 | 0.00 | 42.00 |
| 3 | 90.0 | 35000.00 | 20.00 |

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso
C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and

C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and
C equal to zero, with water weight in the tension crack.

1

BOUNDARY LOAD(S)

5 Load(s) Specified

| Load No. | X-Left (ft) | X-Right (ft) | Intensity (psf) | Deflection (deg) |
|---|---|---|---|---|
| 1 | 165.00 | 180.00 | 720.0 | 0.0 |
| 2 | 181.00 | 200.00 | 960.0 | 0.0 |
| 3 | 210.00 | 212.00 | 1500.0 | 0.0 |
| 4 | 213.00 | 225.00 | 840.0 | 0.0 |
| 5 | 240.00 | 244.00 | 1500.0 | 0.0 |

NOTE - Intensity Is Specified As A Uniformly Distributed
Force Acting On A Horizontally Projected Surface.

Janbus Empirical Coef is being used for the case of c & phi both > 0

1

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.

2500 Trial Surfaces Have Been Generated.

2 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 25.0

| Box No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Height (ft) |
|---|---|---|---|---|---|
| 1 | 40.00 | 675.00 | 160.00 | 750.00 | 25.00 |
| 2 | 165.00 | 750.00 | 265.00 | 790.00 | 25.00 |

Following Is Displayed The Most Critical Of The Trial
Failure Surfaces Evaluated.

* * Safety Factors Are Calculated By The Simplified Janbu Method * *

Total Number of Trial Surfaces Evaluated = 2500

Statistical Data On All Valid FS Values:
FS Max = 480.270 FS Min = 20.109 FS Ave = 45.025
Standard Deviation = 35.793 Coefficient of Variation = 79.50 %

Failure Surface Specified By 6 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 124.48 | 747.18 |
| 2 | 132.69 | 738.99 |
| 3 | 235.36 | 766.12 |
| 4 | 250.66 | 785.89 |
| 5 | 268.15 | 803.76 |
| 6 | 273.79 | 810.67 |

Factor of Safety
*** 20.109 ***

Individual data on the 22 slices

| Slice No. | Width (ft) | Weight (lbs) | Water Force Top (lbs) | Water Force Bot (lbs) | Tie Force Norm (lbs) | Tie Force Tan (lbs) | Earthquake Force Hor (lbs) | Earthquake Force Ver (lbs) | Surcharge Load (lbs) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.5 | 50.1 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 2 | 7.7 | 8793.7 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 3 | 9.3 | 22270.3 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 4 | 19.0 | 57962.4 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 5 | 4.0 | 13767.2 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 6 | 15.0 | 53778.7 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 10800.0 |
| 7 | 1.0 | 3706.5 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 8 | 19.0 | 73474.1 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 18240.0 |
| 9 | 10.0 | 40998.3 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 10 | 2.0 | 8392.3 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 3000.0 |
| 11 | 1.0 | 4220.2 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 12 | 7.0 | 29991.1 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 5880.0 |
| 13 | 5.0 | 22042.7 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 4200.0 |
| 14 | 10.4 | 47810.9 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 15 | 4.6 | 20784.4 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 16 | 4.0 | 15792.9 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 6000.0 |
| 17 | 6.7 | 21966.6 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 18 | 0.3 | 982.9 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 19 | 7.0 | 17441.8 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 20 | 10.0 | 13775.7 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 21 | 0.1 | 92.4 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |
| 22 | 5.6 | 1764.8 | 0.0 | 0.0 | 0. | 0. | 0.0 | 0.0 | 0.0 |

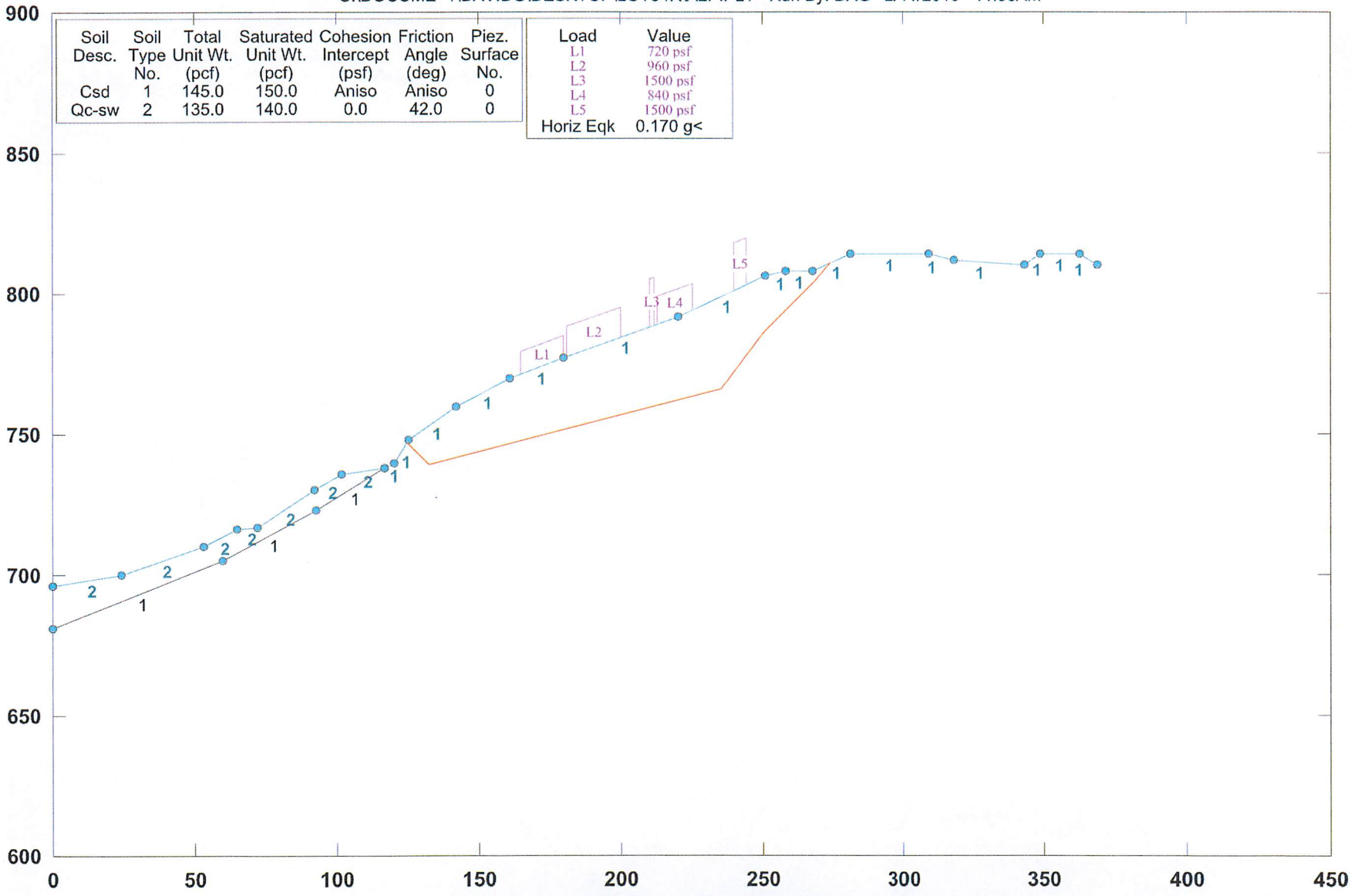
**** END OF GSTABL7 OUTPUT ****

# Summit/Lot 34R; A-A'; 01628-005; Block Analysis, anisotropic; P-Static

C:\DOCUME~1\DAVIDG\DESKTOP\LOT34R\A2P.PLT Run By: DAG 2/11/2016 11:36AM

| Soil Desc. | Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit Wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Piez. Surface No. |
|---|---|---|---|---|---|---|
| Csd | 1 | 145.0 | 150.0 | Aniso | Aniso | 0 |
| Qc-sw | 2 | 135.0 | 140.0 | 0.0 | 42.0 | 0 |

| Load | Value |
|---|---|
| L1 | 720 psf |
| L2 | 960 psf |
| L3 | 1500 psf |
| L4 | 840 psf |
| L5 | 1500 psf |
| Horiz Eqk | 0.170 g< |




**GSTABL7 v.2 FSmin=14.60**

**Factor Of Safety Is Calculated By The Simplified Janbu Method**

GSTABL7

*** GSTABL7 ***

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.002, December 2001 **



**********

SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static Earthquake, and Applied Force Options.

**********



Analysis Run Date: 2/11/2016
Time of Run: 11:36AM
Run By: DAG
Input Data Filename: C:a2p.
Output Filename: C:a2p.OUT
Unit System: English

Plotted Output Filename: C:a2p.PLT

PROBLEM DESCRIPTION: Summit/Lot 34R; A-A'; 01628-005; Block A
nalysis, anisotropic; P-Static

BOUNDARY COORDINATES

23 Top Boundaries
26 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|---|---|---|---|---|---|
| 1 | 0.00 | 696.00 | 24.00 | 700.00 | 2 |
| 2 | 24.00 | 700.00 | 53.00 | 710.00 | 2 |
| 3 | 53.00 | 710.00 | 65.00 | 716.00 | 2 |
| 4 | 65.00 | 716.00 | 72.00 | 717.00 | 2 |
| 5 | 72.00 | 717.00 | 92.00 | 730.00 | 2 |
| 6 | 92.00 | 730.00 | 102.00 | 736.00 | 2 |
| 7 | 102.00 | 736.00 | 117.00 | 738.00 | 2 |
| 8 | 117.00 | 738.00 | 120.00 | 740.00 | 1 |
| 9 | 120.00 | 740.00 | 125.00 | 748.00 | 1 |
| 10 | 125.00 | 748.00 | 142.00 | 760.00 | 1 |
| 11 | 142.00 | 760.00 | 161.00 | 770.00 | 1 |
| 12 | 161.00 | 770.00 | 180.00 | 777.00 | 1 |
| 13 | 180.00 | 777.00 | 220.00 | 792.00 | 1 |
| 14 | 220.00 | 792.00 | 251.00 | 806.00 | 1 |
| 15 | 251.00 | 806.00 | 258.00 | 808.00 | 1 |
| 16 | 258.00 | 808.00 | 268.00 | 808.00 | 1 |
| 17 | 268.00 | 808.00 | 281.00 | 814.00 | 1 |
| 18 | 281.00 | 814.00 | 309.00 | 814.00 | 1 |
| 19 | 309.00 | 814.00 | 318.00 | 812.00 | 1 |
| 20 | 318.00 | 812.00 | 343.00 | 810.00 | 1 |
| 21 | 343.00 | 810.00 | 349.00 | 814.00 | 1 |
| 22 | 349.00 | 814.00 | 363.00 | 814.00 | 1 |
| 23 | 363.00 | 814.00 | 369.00 | 810.00 | 1 |
| 24 | 0.00 | 681.00 | 60.00 | 705.00 | 1 |
| 25 | 60.00 | 705.00 | 93.00 | 723.00 | 1 |
| 26 | 93.00 | 723.00 | 117.00 | 738.00 | 1 |

User Specified Y-Origin = 600.00(ft)

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

| Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit Wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---|---|---|---|---|---|---|---|
| 1 | 145.0 | 150.0 | 35000.0 | 20.0 | 0.00 | 0.0 | 0 |
| 2 | 135.0 | 140.0 | 0.0 | 42.0 | 0.00 | 0.0 | 0 |

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

Soil Type 1 Is Anisotropic

Number Of Direction Ranges Specified = 3

| Direction Range No. | Counterclockwise Direction Limit (deg) | Cohesion Intercept (psf) | Friction Angle (deg) |
|---|---|---|---|
| 1 | 0.0 | 35000.00 | 20.00 |
| 2 | 15.0 | 0.00 | 42.00 |
| 3 | 90.0 | 35000.00 | 20.00 |

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso
C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and

C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and
C equal to zero, with water weight in the tension crack.

1

BOUNDARY LOAD(S)

5 Load(s) Specified

| Load No. | X-Left (ft) | X-Right (ft) | Intensity (psf) | Deflection (deg) |
|---|---|---|---|---|
| 1 | 165.00 | 180.00 | 720.0 | 0.0 |
| 2 | 181.00 | 200.00 | 960.0 | 0.0 |
| 3 | 210.00 | 212.00 | 1500.0 | 0.0 |
| 4 | 213.00 | 225.00 | 840.0 | 0.0 |
| 5 | 240.00 | 244.00 | 1500.0 | 0.0 |

NOTE - Intensity Is Specified As A Uniformly Distributed
Force Acting On A Horizontally Projected Surface.

A Horizontal Earthquake Loading Coefficient
Of0.170 Has Been Assigned

A Vertical Earthquake Loading Coefficient
Of0.000 Has Been Assigned

Cavitation Pressure = 0.0(psf)

Janbu's Empirical Coef. is being used for the case of c & phi both > 0

1

Trial Failure Surface Specified By 6 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 124.48 | 747.17 |
| 2 | 132.69 | 738.99 |
| 3 | 235.36 | 766.12 |
| 4 | 250.66 | 785.89 |
| 5 | 268.15 | 803.76 |
| 6 | 273.79 | 810.67 |

Janbu's Empirical Coefficient (fo) = 1.062

* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *

Factor Of Safety For The Preceding Specified Surface = 14.598

***Table 1 - Individual Data on the 22 Slices***

| Slice No. | Width (ft) | Weight (lbs) | Water Force Top (lbs) | Water Force Bot (lbs) | Tie Force Norm (lbs) | Tie Force Tan (lbs) | Earthquake Force Hor (lbs) | Earthquake Force Ver (lbs) | Surcharge Load (lbs) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.5 | 50.9 | 0.0 | 0.0 | 0.0 | 0.0 | 8.7 | 0.0 | 0.0 |
| 2 | 7.7 | 8802.3 | 0.0 | 0.0 | 0.0 | 0.0 | 1496.4 | 0.0 | 0.0 |
| 3 | 9.3 | 22266.1 | 0.0 | 0.0 | 0.0 | 0.0 | 3785.2 | 0.0 | 0.0 |
| 4 | 19.0 | 57963.8 | 0.0 | 0.0 | 0.0 | 0.0 | 9853.8 | 0.0 | 0.0 |
| 5 | 4.0 | 13767.8 | 0.0 | 0.0 | 0.0 | 0.0 | 2340.5 | 0.0 | 0.0 |
| 6 | 15.0 | 53781.7 | 0.0 | 0.0 | 0.0 | 0.0 | 9142.9 | 0.0 | 10800.0 |
| 7 | 1.0 | 3706.8 | 0.0 | 0.0 | 0.0 | 0.0 | 630.2 | 0.0 | 0.0 |
| 8 | 19.0 | 73480.0 | 0.0 | 0.0 | 0.0 | 0.0 | 12491.6 | 0.0 | 18240.0 |
| 9 | 10.0 | 41002.3 | 0.0 | 0.0 | 0.0 | 0.0 | 6970.4 | 0.0 | 0.0 |
| 10 | 2.0 | 8393.2 | 0.0 | 0.0 | 0.0 | 0.0 | 1426.8 | 0.0 | 3000.0 |
| 11 | 1.0 | 4220.7 | 0.0 | 0.0 | 0.0 | 0.0 | 717.5 | 0.0 | 0.0 |
| 12 | 7.0 | 29994.4 | 0.0 | 0.0 | 0.0 | 0.0 | 5099.1 | 0.0 | 5880.0 |
| 13 | 5.0 | 22045.2 | 0.0 | 0.0 | 0.0 | 0.0 | 3747.7 | 0.0 | 4200.0 |
| 14 | 10.4 | 47839.4 | 0.0 | 0.0 | 0.0 | 0.0 | 8132.7 | 0.0 | 0.0 |
| 15 | 4.6 | 20767.1 | 0.0 | 0.0 | 0.0 | 0.0 | 3530.4 | 0.0 | 0.0 |
| 16 | 4.0 | 15796.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2685.4 | 0.0 | 6000.0 |
| 17 | 6.7 | 21975.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3735.7 | 0.0 | 0.0 |
| 18 | 0.3 | 979.1 | 0.0 | 0.0 | 0.0 | 0.0 | 166.4 | 0.0 | 0.0 |
| 19 | 7.0 | 17444.4 | 0.0 | 0.0 | 0.0 | 0.0 | 2965.5 | 0.0 | 0.0 |
| 20 | 10.0 | 13777.7 | 0.0 | 0.0 | 0.0 | 0.0 | 2342.2 | 0.0 | 0.0 |
| 21 | 0.1 | 94.6 | 0.0 | 0.0 | 0.0 | 0.0 | 16.1 | 0.0 | 0.0 |
| 22 | 5.6 | 1762.0 | 0.0 | 0.0 | 0.0 | 0.0 | 299.5 | 0.0 | 0.0 |

***Table 2 - Base Stress Data on the 22 Slices***

| Slice No. * | Alpha (deg) | X-Coord. Slice Cntr (ft) | Base Leng. (ft) | Available Shear Strength (psf) | Mobilized Shear Stress (psf) |
|---|---|---|---|---|---|
| 1 | -44.89 | 124.74 | 0.73 | 50710.71 | -57.28 |
| 2 | -44.89 | 128.85 | 10.85 | 51262.16 | -669.93 |
| 3 | 14.80 | 137.35 | 9.63 | 2191.63 | 1004.09 |
| 4 | 14.80 | 151.50 | 19.65 | 2795.61 | 1280.80 |
| 5 | 14.80 | 163.00 | 4.14 | 3154.11 | 1445.05 |
| 6 | 14.80 | 172.50 | 15.51 | 3945.40 | 1689.24 |
| 7 | 14.80 | 180.50 | 1.03 | 3396.79 | 1556.23 |
| 8 | 14.80 | 190.50 | 19.65 | 4423.67 | 1868.91 |
| 9 | 14.80 | 205.00 | 10.34 | 3757.35 | 1721.42 |
| 10 | 14.80 | 211.00 | 2.07 | 5220.21 | 2145.09 |
| 11 | 14.80 | 212.50 | 1.03 | 3867.72 | 1771.99 |
| 12 | 14.80 | 216.50 | 7.24 | 4696.34 | 2013.55 |

| | | | | | |
|---|---|---|---|---|---|
| 13 | 14.80 | 222.50 | 5.17 | 4810.09 | 2065.67 |
| 14 | 14.80 | 230.18 | 10.72 | 4231.54 | 1938.67 |
| 15 | 52.26 | 237.68 | 7.58 | 57980.70 | 4005.19 |
| 16 | 52.26 | 242.00 | 6.54 | 58541.56 | 4720.28 |
| 17 | 52.26 | 247.33 | 10.88 | 57303.10 | 2952.70 |
| 18 | 45.62 | 250.83 | 0.49 | 50256.29 | 2400.38 |
| 19 | 45.62 | 254.50 | 10.01 | 50059.62 | 2077.31 |
| 20 | 45.62 | 263.00 | 14.30 | 49494.21 | 1148.48 |
| 21 | 45.62 | 268.08 | 0.21 | 49115.23 | 525.92 |
| 22 | 50.79 | 270.97 | 8.92 | 53895.55 | 275.64 |

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 4157308.00 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 23526.56(psf)

Sum of the Driving Forces = 302453.66 (lbs)

Average Mobilized Shear Stress = 1711.61(psf)

Total length of the failure surface = 176.71(ft)

**** END OF GSTABL7 OUTPUT ****