Appendix D

Geotechnical Study

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March 5, 2012
Project No. 0787-CR3

Trumark Company
9911 Irvine Center Drive, Suite 150
Irvine, California 92618

Attention: Mr. James O'Malley

Subject: Geotechnical Setback Line Update
Crestridge Project
Rancho Palos Verdes, Los Angeles County, California

References: See Pages 6 and 7

Dear Mr. O'Malley:

In accordance with your request, GeoTek, Inc. (GeoTek) has prepared this Geotechnical Setback Line Update for the subject project. This report presents updated slope stability analyses with specific respect to a previously established geotechnical setback line at the project site. Unless superseded herein, the recommendations presented in the referenced reports remain pertinent and applicable. A full geotechnical grading plan review, including updated earthwork recommendations, foundation design criteria and 2010 CBC seismic design parameters will be provided at a later date when site development plans become more finalized.

SITE LOCATION AND EXISTING CONDITIONS

The Crestridge Project site is located adjacent to and on the north side of Crestridge Road, east of Crenshaw Boulevard and south of Indian Peak Road in Rancho Palos Verdes, Los Angeles County, California. The irregular shaped property is bound to the southeast by an assisted living facility, to the west by a multi-family residential development, and Indian Peak Road to the north. Overall site topography slopes down moderately to the south, north and west from the southeast-central portion of the site, where an east-west trending ridgeline is located.

Topographically the highest elevation on the site is roughly 1228± msl located along the apex

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of the natural ridgeline toward the southeastern portion of the site, to a low of approximately 980± toward the northeastern corner of the property.

For the most part, the subject property is currently in a natural condition with no known structural improvements present. Perimeter grading is apparent along the western and southeastern edges of the property, and is associated with the existing adjacent development of the properties located at these locations. Grading associated with Crestridge Road, along the southern edge of the site, appears to have resulted in areas of both cut and fill slopes. A stabilization fill is reported along a portion of this area as well (Pacific Soils, 1999).

INTENT

This report has been prepared as an update to the referenced reports by Pacific Soils Engineering, Inc. (see references), and specifically to provide additional evaluation of the previously established geotechnical setback line located along the northern edge of previously and currently proposed site development (Pacific Soils, 2008a). It is the intent of this report to aid in the design and construction of the proposed development. The professional opinions and geotechnical analyses provided in this report are not intended to imply total performance of the project or guarantee that unusual or variable conditions will not be discovered during or after construction.

SITE RECONNAISSANCE

A recent site reconnaissance was performed in order to confirm that site conditions have not significantly changed since publication of the referenced reports. Site conditions recently observed appear to be essentially the same as previously reported by other geotechnical consultants (see references).

PREVIOUS FIELD EXPLORATIONS

Numerous prior geotechnical field explorations and evaluation reports have been completed for the subject property (see references), most recently by Pacific Soils Engineering, Inc. (2008a). As part of the previous geotechnical studies, the site has been explored by means of geologic field mapping as well as by excavating exploratory subsurface borings and trenches. As a result of these previous geotechnical studies, a relatively detailed characterization of existing site geotechnical conditions has been established. The Geotechnical Map (Plate 1) at the back of this report has been prepared by this firm to graphically show the previously established geotechnical site conditions, as well as the

locations of geotechnical explorations (borings and trenches) completed by others, on the current site development plan.

As previously indicated, the primary geotechnical constraint for the site resulting from the previous geotechnical site studies was the establishment of a geotechnical setback line along the northern edge of proposed development. This setback line is identified on the attached Geotechnical Map.

PLAN REVIEW

A 40-scale plan (undated) recently prepared by RBF Consulting Inc. (project civil engineer) was provided for our review in conjunction with completing the herein review of the geotechnical setback line. The plan depicts existing and currently proposed grades as well as the layout of currently proposed streets and residences along with significant landscape improvement areas. The plan serves as the base for the accompanying Geotechnical Map (Plate 1). Updated or revised rough grading plans should be provided for our review when they become available. The scope of our current work is based on our understanding of the project and the client's needs, and geotechnical engineering standards normally used on similar projects in this region.

SLOPE STABILITY EVALUATION

As previously indicated, the intent of the herein evaluation is to re-analyze the previously established geotechnical setback line for the project site, with specific respect to currently proposed site development. As such, an updated stability analyses has been completed for Cross Sections A-A' and B-B' which span the setback zone area. The locations of the cross sections are shown on the attached Geotechnical Map (Plate 1), and the cross sections themselves are shown on Plate 2. It should be noted that Cross-Sections A-A' and B-B' are in the same locations as PSE's (2008a) Cross-Sections A-A' and B-B'. The geotechnical information provided in the referenced reports was used in our analyses, including interpretations of subsurface geotechnical information and engineering aspects of the described materials.

GeoTek performed both static and Newmark displacement analyses using the computer program GSTABL7. The analyses used across-bedding shear strength values of cohesion (c)=700 psf and friction angle (phi)=30 degrees and along bedding strengths of c=150 and phi=12 degrees as utilized in the PSE (2006b) report. Similarly, as utilized in the PSE (2006b) report, the across bedding shear strengths were increased by 20 percent when performing

seismic slope stability analyses. A probabilistic site acceleration (PGA) of 0.41g (PSE, 2006a, 2006b) was used in the Newmark displacement analysis.

The analysis indicated static factors-of-safety of 1.57 and 1.61 at the location of the setback line for Cross Sections A-A' and B-B', respectively. Newmark displacements of approximately 9 cm and 6 cm were estimated for Cross Sections A-A' and B-B', respectively. PSE's (2006b) report indicated displacement of 9 cm for both Cross Sections A-A' and B-B'. GeoTek did not perform a Newmark displacement estimate using the Jibson and Jibson method, since that methodology lead to a smaller estimated displacement than the methods incorporated into GSTABL7 program. This issue is discussed in the PSE (2006a) report.

In summary, the results of the slope stability analyses are generally consistent with PSE's findings considering the currently proposed grades are lower along the northern edge than those evaluated previously by PSE (SPE 2006a, b; 2008a, b). It is GeoTek's opinion that the existing geotechnical setback line is acceptable with the currently proposed site plan.

FUTURE PLAN REVIEWS

Future plans that become available as the project progresses should be reviewed by GeoTek. Such plans may include, but are not limited to: rough and precise grading plans; utility plans; retaining wall plans; landscape plans, storm water disposal plans; swimming pool and foundation plans. Additional recommendations may be necessary based on review of the plans.

LIMITATIONS

The materials described on the project site appear to be representative of the area; however, soil and bedrock materials vary in character between excavations and natural outcrops or conditions exposed during site construction. Site conditions may vary due to seasonal changes or other factors. GeoTek, Inc. assumes no responsibility or liability for work, testing or recommendations performed or provided by others.

Since our conclusions and recommendations are based on the site conditions observed and encountered, and laboratory testing, our conclusion and recommendations are professional opinions that are limited to the extent of the available data. Observations during construction are important to allow for any change in recommendations found to be warranted. These opinions have been derived in accordance with current standards of practice and no warranty is expressed or implied. Standards of practice are subject to change with time.

We appreciate the opportunity to be of service. We look forward to working with you toward the successful completion of this project. If you have any questions, please do not hesitate to contact the undersigned.

Respectfully submitted,
GeoTek, Inc.

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GE 2524, Exp. 06/30/13
Senior Project Engineer

Enclosure: Appendix A – Slope Stability Analyses
Plate 1 – Geotechnical Map
Plate 2 – Geotechnical Cross Sections

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CITED REFERENCES

California Code of Regulations, Title 24, 2010, "California Building Code," 3 volumes.

GMU Geotechnical, Inc., 2005, "Geotechnical Consulting Services, Third Party Review of the Proposed Crestridge Project, Rancho Palos Verdes, California," Project 05-118-00, datd June 30.

Group Delta Consultants, 2005, "Response to City Review Comments, dated January 7, 2005, Review of Supplemental Report, Geology and Geotechnical Investigation, Proposed Crestridge Estates Development, Rancho Palos Verdes, Califonria, PN 97082-162," GDC Project No.: L-569, dated Feburary 16.

NAC, 2004, "Phase I Environmental Site Asssessment Report, Vacant Land, NWC Crestridge Road & Crenshaw Boulevard, Rancho Palos Verdes, California, 90275," Project No. 04-17821.1, dated January 2.

Pacific Soils Engineering, Inc., 2008a, "Geotechncial Comments, Revised Conceptual Grading Plan and Response to Geotechnical Response Checklist, Tentative Tract Map No. 66163, Crestridge Senior Villas, 5601 Crestridge Road, City of Rancho Palos Verdes, California," Work Order 102604-H, dated August 26.

____, 2008b, "Geotechnical Comments, Revised Conceptual Grading Plan, Tentative Tract Map No. 66163, Crestridge Senior Villas, 5601 Crestridge Road, City of Rancho Palos Verdes, California," Work Order 102604-H, dated April 25.

____, 2006a, "Response to City of Rancho Palos Verdes, Report Checklist dated November 11, 2006 regarding the Vellana Project, City of Rancho Palos Verdes, California," Work Order 102604, dated December 7.

____, 2006b, "Addendum Geotechnical Evalaution and Response to Review Comments, Vellana Project, 5601 Crestridge Road, City of Rancho Palos Verdes, California," Work Order 102604, dated October 19.

____, 2006c, "Geotechnical Comments, Slope Stability Evaluation, Crestridge Estates Project, 5601 Crestridge Road, City of Rancho Palos Verdes, California," Work Order 102604, dated June 2.

____, 2006d, "Supplemental Geotechnical Investigation and Evaluation of Slope Stability, Proposed Senior Center, Crestridge Estates Project, City of Rancho Palos Verdes, California," Work Order 102604, dated March 23.

____, 2005a, "Supplemental Field Investigation, Crestridge Estates Project, City of Rancho Palos Verdes, California," Work Order 102604, dated November 18.

____, 2005b, "Preliminary Comments, Structure Setback from Top of Slope, Proposed Crestridge Estates Development, East of the Intersection of Crenshaw Boulevard and Crestridge Road, City of Rancho Palos Verdes, California," Work Order 102604, dated June 30.

____, 1999, "Geotechnical Feasibility Study, Tentative Parcel Map 25271, City of Rancho Palos Verdes, California," Work Order 10892-F, dated March 26.

APPENDIX A

SLOPE STABILITY ANALYSES

GEOTEK

Proj. No. 0787.CR3 Crestridge Section A-A' Static Analysis

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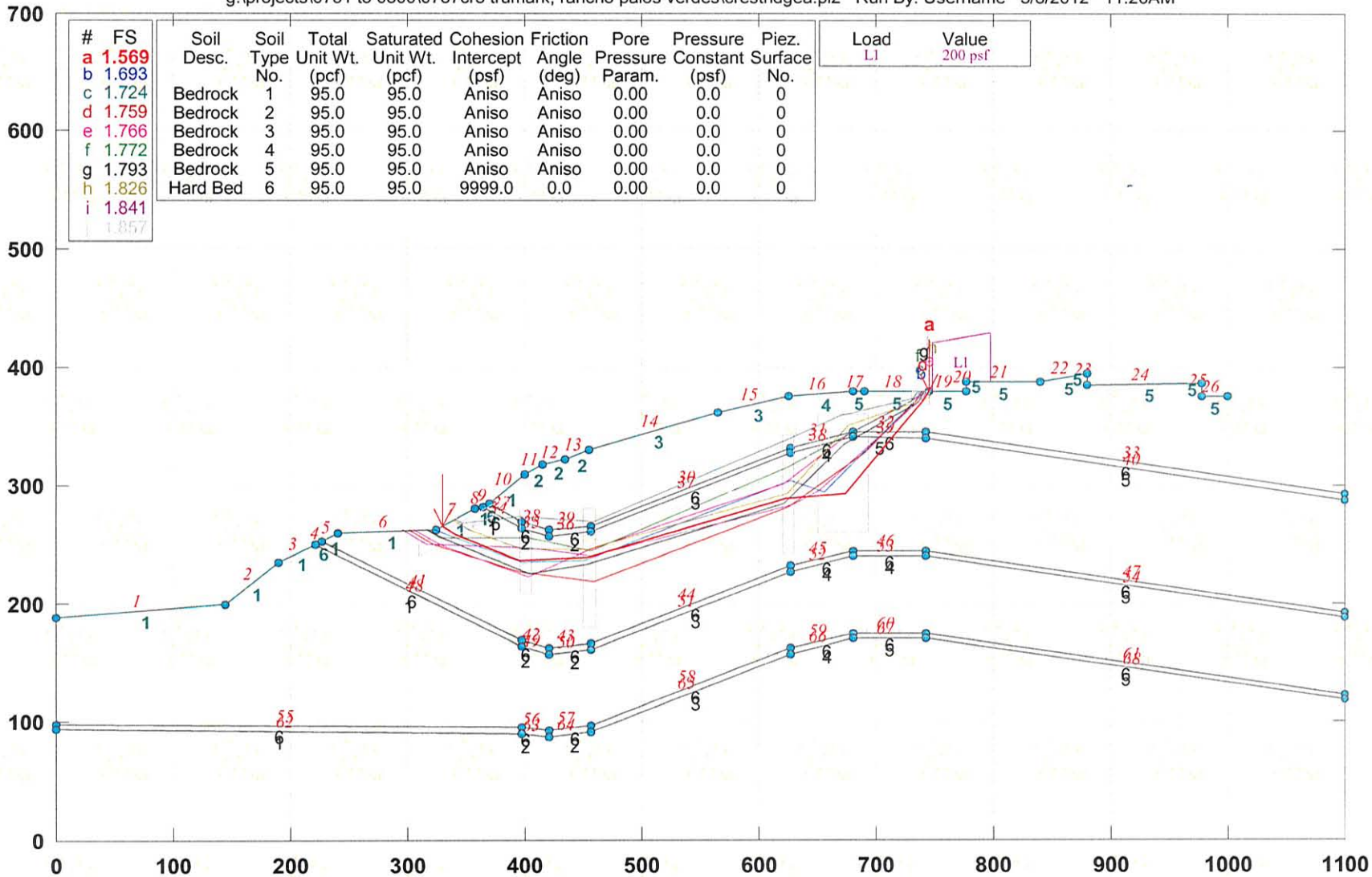
#	FS
a	1.569
b	1.693
c	1.724
d	1.759
e	1.766
f	1.772
g	1.793
h	1.826
i	1.841
j	1.857

Soil Desc.	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.
Bedrock	1	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	2	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	3	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	4	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	5	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Hard Bed	6	95.0	95.0	9999.0	0.0	0.00	0.0	0

Load	Value
L1	200 psf



GSTABL7 v.2 FSmin=1.569

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

GSTABL7

***** GSTABL7 *****

** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.2, Jan. 2011 **
(All Rights Reserved-Unauthorized Use Prohibited)

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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 & Newmark Earthquake, and Applied Forces.

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Analysis Run Date: 3/8/2012
Time of Run: 11:26AM
Run By: Username
Input Data Filename: G:\Projects\0751 to 0800\0787CR3 Trumark, Rancho Palos Verde s\crestridgea.in
Output Filename: G:\Projects\0751 to 0800\0787CR3 Trumark, Rancho Palos Verde s\crestridgea.OUT
Unit System: English
Plotted Output Filename: G:\Projects\0751 to 0800\0787CR3 Trumark, Rancho Palos Verde s\crestridgea.PLT
PROBLEM DESCRIPTION: Proj. No. 0787.CR3 Crestridge
Section A-A' Static Analysis

BOUNDARY COORDINATES
26 Top Boundaries
68 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	189.00	145.00	200.00	1
2	145.00	200.00	190.00	235.00	1
3	190.00	235.00	222.00	250.00	1
4	222.00	250.00	227.00	253.00	6
5	227.00	253.00	240.00	260.00	1
6	240.00	260.00	325.00	263.00	1
7	325.00	263.00	357.00	280.00	1
8	357.00	280.00	365.00	282.00	1
9	365.00	282.00	370.00	285.00	6
10	370.00	285.00	400.00	310.00	1
11	400.00	310.00	415.00	317.00	2
12	415.00	317.00	435.00	322.00	2
13	435.00	322.00	455.00	330.00	2
14	455.00	330.00	565.00	362.00	3
15	565.00	362.00	625.00	376.00	3
16	625.00	376.00	680.00	379.00	4
17	680.00	379.00	690.00	380.00	5
18	690.00	380.00	745.00	380.00	5
19	745.00	380.00	777.00	380.00	5
20	777.00	380.00	777.10	388.00	5
21	777.10	388.00	840.00	388.00	5
22	840.00	388.00	880.00	394.00	5
23	880.00	394.00	880.10	385.00	5
24	880.10	385.00	977.00	387.00	5
25	977.00	387.00	977.10	376.00	5
26	977.10	376.00	1000.00	376.00	5
27	370.00	285.00	397.00	269.00	6
28	397.00	269.00	421.00	262.00	6
29	421.00	262.00	457.00	266.00	6
30	457.00	266.00	627.00	332.00	6
31	627.00	332.00	680.00	345.00	6
32	680.00	345.00	743.00	345.00	6
33	743.00	345.00	1100.00	293.00	6
34	365.00	282.00	397.00	264.00	1
35	397.00	264.00	421.00	257.00	2
36	421.00	257.00	457.00	261.00	2
37	457.00	261.00	627.00	327.00	3
38	627.00	327.00	680.00	341.00	4

39	680.00	341.00	743.00	340.00	5
40	743.00	340.00	1100.00	288.00	5
41	227.00	253.00	397.00	169.00	6
42	397.00	169.00	421.00	162.00	6
43	421.00	162.00	457.00	166.00	6
44	457.00	166.00	627.00	232.00	6
45	627.00	232.00	680.00	245.00	6
46	680.00	245.00	743.00	245.00	6
47	743.00	245.00	1100.00	193.00	6
48	222.00	250.00	397.00	164.00	1
49	397.00	164.00	421.00	157.00	2
50	421.00	157.00	457.00	161.00	2
51	457.00	161.00	627.00	227.00	3
52	627.00	227.00	680.00	240.00	4
53	680.00	240.00	743.00	240.00	4
54	743.00	240.00	1100.00	188.00	5
55	0.00	97.00	397.00	95.00	6
56	397.00	95.00	421.00	92.00	6
57	421.00	92.00	457.00	96.00	6
58	457.00	96.00	627.00	162.00	6
59	627.00	162.00	680.00	175.00	6
60	680.00	175.00	743.00	175.00	6
61	743.00	175.00	1100.00	123.00	6
62	0.00	94.00	397.00	90.00	1
63	397.00	90.00	421.00	87.00	2
64	421.00	87.00	457.00	91.00	2
65	457.00	91.00	627.00	157.00	3
66	627.00	157.00	680.00	170.00	4
67	680.00	170.00	743.00	170.00	5
68	743.00	170.00	1100.00	118.00	5

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

6 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	95.0	95.0	700.0	30.0	0.00	0.0	0
2	95.0	95.0	700.0	30.0	0.00	0.0	0
3	95.0	95.0	700.0	30.0	0.00	0.0	0
4	95.0	95.0	700.0	30.0	0.00	0.0	0
5	95.0	95.0	700.0	30.0	0.00	0.0	0
6	95.0	95.0	9999.0	0.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

5 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	-28.0	700.00	30.00
2	-20.0	150.00	12.00
3	90.0	700.00	30.00

Soil Type 2 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	-20.0	700.00	30.00
2	8.0	150.00	12.00
3	90.0	700.00	30.00

Soil Type 3 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)

1	8.0	700.00	30.00
2	23.0	150.00	12.00
3	90.0	700.00	30.00

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	0.0	700.00	30.00
2	8.0	150.00	12.00
3	90.0	700.00	30.00

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	-22.0	700.00	30.00
2	-5.0	150.00	12.00
3	90.0	700.00	30.00

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.

BOUNDARY LOAD(S)
1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	748.00	798.00	200.0	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
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.
500 Trial Surfaces Have Been Generated.
6 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 32.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	310.00	245.00	385.00	285.00	10.00
2	396.00	244.00	405.00	244.00	70.00
3	450.00	230.00	460.00	230.00	100.00
4	620.00	292.00	630.00	292.00	100.00
5	650.00	310.00	693.00	310.00	100.00
6	730.00	374.00	745.00	374.00	10.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 500
Number of Trial Surfaces With Valid FS = 500
Statistical Data On All Valid FS Values:
FS Max = 9.011 FS Min = 1.569 FS Ave = 3.796
Standard Deviation = 1.229 Coefficient of Variation = 32.38 %
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	329.733	265.514
2	341.142	258.928
3	396.393	235.998
4	453.400	239.808

5	622.731	288.283
6	674.153	292.367
7	740.117	371.744
8	744.884	380.000

Factor of Safety
*** 1.569 ***

Individual data on the 24 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	11.4	6853.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	15.9	30357.9	0.0	0.0	0.	0.	0.0	0.0	0.0
3	8.0	23038.5	0.0	0.0	0.	0.	0.0	0.0	0.0
4	5.0	16867.9	0.0	0.0	0.	0.	0.0	0.0	0.0
5	26.4	136705.2	0.0	0.0	0.	0.	0.0	0.0	0.0
6	0.6	4109.0	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.0	20694.3	0.0	0.0	0.	0.	0.0	0.0	0.0
8	15.0	109382.8	0.0	0.0	0.	0.	0.0	0.0	0.0
9	6.0	45775.6	0.0	0.0	0.	0.	0.0	0.0	0.0
10	14.0	109245.6	0.0	0.0	0.	0.	0.0	0.0	0.0
11	18.4	151181.0	0.0	0.0	0.	0.	0.0	0.0	0.0
12	1.6	13623.4	0.0	0.0	0.	0.	0.0	0.0	0.0
13	2.0	17050.3	0.0	0.0	0.	0.	0.0	0.0	0.0
14	108.0	923332.6	0.0	0.0	0.	0.	0.0	0.0	0.0
15	57.7	486559.4	0.0	0.0	0.	0.	0.0	0.0	0.0
16	2.3	18828.7	0.0	0.0	0.	0.	0.0	0.0	0.0
17	2.0	16627.3	0.0	0.0	0.	0.	0.0	0.0	0.0
18	47.2	389277.6	0.0	0.0	0.	0.	0.0	0.0	0.0
19	5.8	46076.1	0.0	0.0	0.	0.	0.0	0.0	0.0
20	10.0	70376.9	0.0	0.0	0.	0.	0.0	0.0	0.0
21	24.1	123850.5	0.0	0.0	0.	0.	0.0	0.0	0.0
22	3.8	13363.3	0.0	0.0	0.	0.	0.0	0.0	0.0
23	22.2	45664.5	0.0	0.0	0.	0.	0.0	0.0	0.0
24	4.8	1869.5	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	323.201	262.936
2	329.350	259.387
3	397.439	234.562
4	451.672	236.976
5	627.487	303.420
6	655.299	294.222
7	733.892	372.476
8	738.236	380.000

Factor of Safety
*** 1.693 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	340.913	271.454
2	346.049	268.488
3	396.349	273.117
4	459.523	270.179
5	626.901	339.748
6	670.248	358.676
7	733.951	374.234
8	737.280	380.000

Factor of Safety
*** 1.724 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	301.613	262.175
2	321.513	250.685
3	396.569	227.521

4	458.908	218.324
5	626.052	282.424
6	689.774	327.133
7	734.785	371.783
8	739.530	380.000

Factor of Safety
*** 1.759 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	305.860	262.324
2	327.152	250.031
3	403.503	222.121
4	456.691	245.765
5	622.038	301.271
6	678.227	343.636
7	744.937	378.824
8	745.616	380.000

Factor of Safety
*** 1.766 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	315.721	262.673
2	327.299	255.988
3	403.099	255.617
4	457.023	245.179
5	624.401	314.748
6	659.498	333.676
7	730.201	371.734
8	734.973	380.000

Factor of Safety
*** 1.772 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	317.079	262.720
2	330.229	255.129
3	404.013	225.539
4	453.664	233.461
5	621.667	284.279
6	671.928	334.457
7	735.474	369.937
8	741.284	380.000

Factor of Safety
*** 1.793 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	338.843	270.354
2	352.055	262.726
3	397.773	246.457
4	453.137	246.156
5	623.796	292.287
6	676.379	350.277
7	744.761	373.550
8	748.485	380.000

Factor of Safety
*** 1.826 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	295.836	261.971
2	316.093	250.275
3	402.528	248.166
4	456.623	240.004
5	628.610	283.791

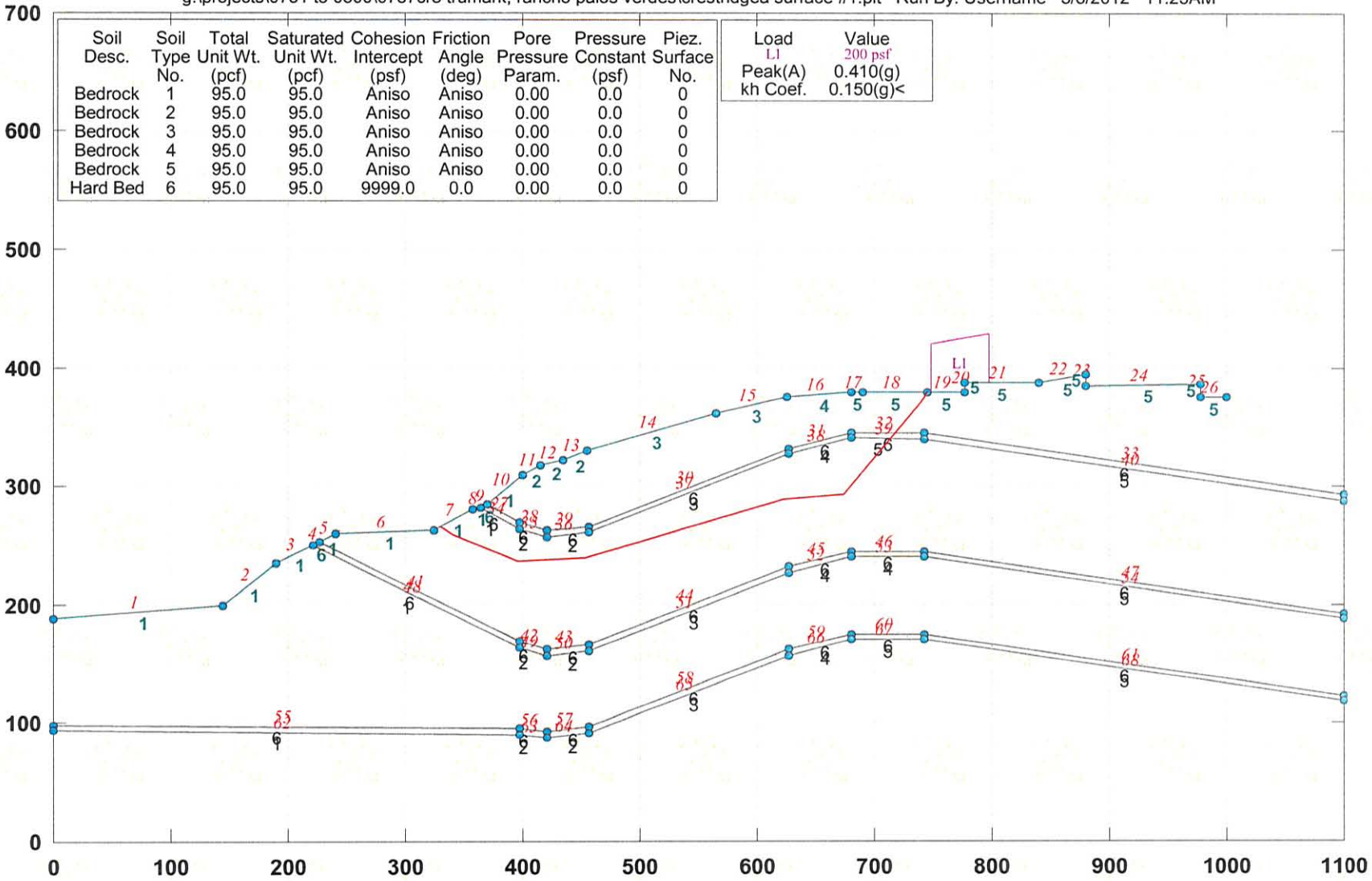
```
        6        651.730      295.687
        7        740.030      374.107
        8        743.432      380.000
           Factor of Safety
          ***    1.841   ***
     Failure Surface Specified By  8 Coordinate Points
       Point      X-Surf      Y-Surf
        No.        (ft)        (ft)
        1        341.663      271.852
        2        348.979      267.629
        3        397.263      243.039
        4        456.164      258.461
        5        624.167      309.279
        6        682.678      359.457
        7        739.224      372.437
        8        743.591      380.000
           Factor of Safety
          ***    1.857   ***
              **** END OF GSTABL7 OUTPUT ****
```

Proj. No. 0787.CR3 Crestridge Section A-A' Pseudostatic/Newmark Anal.

g:\projects\0751 to 0800\0787cr3 trumark, rancho palos verdes\crestridgea surface #1.plt Run By: Username 3/8/2012 11:25AM

Soil Desc.	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.
Bedrock	1	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	2	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	3	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	4	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	5	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Hard Bed	6	95.0	95.0	9999.0	0.0	0.00	0.0	0

Load	Value
L1	200 psf
Peak(A)	0.410(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=0.992

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

***** GSTABL7 *****

** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.2, Jan. 2011 **
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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 & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/8/2012
Time of Run: 11:25AM
Run By: Username
Input Data Filename: G:\Projects\0751 to 0800\0787CR3 Trumark, Rancho Palos Verde s\crestridgea Surface #1.in
Output Filename: G:\Projects\0751 to 0800\0787CR3 Trumark, Rancho Palos Verde s\crestridgea Surface #1.OUT
Unit System: English
Plotted Output Filename: G:\Projects\0751 to 0800\0787CR3 Trumark, Rancho Palos Verde s\crestridgea Surface #1.PLT
PROBLEM DESCRIPTION: Proj. No. 0787.CR3 Crestridge
Section A-A' Pseudostatic/Newmark Anal.

BOUNDARY COORDINATES
26 Top Boundaries
68 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	189.00	145.00	200.00	1
2	145.00	200.00	190.00	235.00	1
3	190.00	235.00	222.00	250.00	1
4	222.00	250.00	227.00	253.00	6
5	227.00	253.00	240.00	260.00	1
6	240.00	260.00	325.00	263.00	1
7	325.00	263.00	357.00	280.00	1
8	357.00	280.00	365.00	282.00	1
9	365.00	282.00	370.00	285.00	6
10	370.00	285.00	400.00	310.00	1
11	400.00	310.00	415.00	317.00	2
12	415.00	317.00	435.00	322.00	2
13	435.00	322.00	455.00	330.00	2
14	455.00	330.00	565.00	362.00	3
15	565.00	362.00	625.00	376.00	3
16	625.00	376.00	680.00	379.00	4
17	680.00	379.00	690.00	380.00	5
18	690.00	380.00	745.00	380.00	5
19	745.00	380.00	777.00	380.00	5
20	777.00	380.00	777.10	388.00	5
21	777.10	388.00	840.00	388.00	5
22	840.00	388.00	880.00	394.00	5
23	880.00	394.00	880.10	385.00	5
24	880.10	385.00	977.00	387.00	5
25	977.00	387.00	977.10	376.00	5
26	977.10	376.00	1000.00	376.00	5
27	370.00	285.00	397.00	269.00	6
28	397.00	269.00	421.00	262.00	6
29	421.00	262.00	457.00	266.00	6
30	457.00	266.00	627.00	332.00	6
31	627.00	332.00	680.00	345.00	6
32	680.00	345.00	743.00	345.00	6
33	743.00	345.00	1100.00	293.00	6
34	365.00	282.00	397.00	264.00	1
35	397.00	264.00	421.00	257.00	2
36	421.00	257.00	457.00	261.00	2
37	457.00	261.00	627.00	327.00	3
38	627.00	327.00	680.00	341.00	4

39	680.00	341.00	743.00	340.00	5
40	743.00	340.00	1100.00	288.00	5
41	227.00	253.00	397.00	169.00	6
42	397.00	169.00	421.00	162.00	6
43	421.00	162.00	457.00	166.00	6
44	457.00	166.00	627.00	232.00	6
45	627.00	232.00	680.00	245.00	6
46	680.00	245.00	743.00	245.00	6
47	743.00	245.00	1100.00	193.00	6
48	222.00	250.00	397.00	164.00	1
49	397.00	164.00	421.00	157.00	2
50	421.00	157.00	457.00	161.00	2
51	457.00	161.00	627.00	227.00	3
52	627.00	227.00	680.00	240.00	4
53	680.00	240.00	743.00	240.00	4
54	743.00	240.00	1100.00	188.00	5
55	0.00	97.00	397.00	95.00	6
56	397.00	95.00	421.00	92.00	6
57	421.00	92.00	457.00	96.00	6
58	457.00	96.00	627.00	162.00	6
59	627.00	162.00	680.00	175.00	6
60	680.00	175.00	743.00	175.00	6
61	743.00	175.00	1100.00	123.00	6
62	0.00	94.00	397.00	90.00	1
63	397.00	90.00	421.00	87.00	2
64	421.00	87.00	457.00	91.00	2
65	457.00	91.00	627.00	157.00	3
66	627.00	157.00	680.00	170.00	4
67	680.00	170.00	743.00	170.00	5
68	743.00	170.00	1100.00	118.00	5

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
6 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	95.0	95.0	840.0	34.7	0.00	0.0	0
2	95.0	95.0	840.0	34.7	0.00	0.0	0
3	95.0	95.0	840.0	34.7	0.00	0.0	0
4	95.0	95.0	840.0	34.7	0.00	0.0	0
5	95.0	95.0	840.0	34.7	0.00	0.0	0
6	95.0	95.0	9999.0	0.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
5 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	-28.0	840.00	34.70
2	-20.0	150.00	12.00
3	90.0	840.00	34.70

Soil Type 2 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	-20.0	840.00	34.70
2	8.0	150.00	12.00
3	90.0	840.00	34.70

Soil Type 3 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)

1	8.0	840.00	34.70
2	23.0	150.00	12.00
3	90.0	840.00	34.70

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	0.0	340.00	34.70
2	8.0	150.00	12.00
3	90.0	840.00	34.70

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	-22.0	840.00	34.70
2	-5.0	150.00	12.00
3	90.0	840.00	34.70

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.

BOUNDARY LOAD(S)
1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	748.00	798.00	200.0	0.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.
Specified Peak Ground Acceleration Coefficient (A) = 0.410(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	329.733	265.514
2	341.142	258.928
3	396.393	235.998
4	453.400	239.808
5	622.731	288.283
6	674.153	292.367
7	740.117	371.744
8	744.884	380.000

Janbu's Empirical Coefficient (fo) = 1.060
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
Factor Of Safety For The Preceding Specified Surface = 0.992

Table 1 - Individual Data on the 24 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	11.4	6854.0	0.0	0.0	0.0	0.0	1028.1	0.0	0.0
2	15.9	30356.7	0.0	0.0	0.0	0.0	4553.5	0.0	0.0
3	8.0	23038.2	0.0	0.0	0.0	0.0	3455.7	0.0	0.0
4	5.0	16867.7	0.0	0.0	0.0	0.0	2530.2	0.0	0.0
5	26.4	136705.6	0.0	0.0	0.0	0.0	20505.8	0.0	0.0
6	0.6	4107.6	0.0	0.0	0.0	0.0	616.1	0.0	0.0
7	3.0	20694.2	0.0	0.0	0.0	0.0	3104.1	0.0	0.0
8	15.0	109382.6	0.0	0.0	0.0	0.0	16407.4	0.0	0.0
9	6.0	45775.5	0.0	0.0	0.0	0.0	6866.3	0.0	0.0
10	14.0	109245.6	0.0	0.0	0.0	0.0	16386.8	0.0	0.0

11	18.4	151179.0	0.0	0.0	0.0	0.0	22676.8	0.0	0.0
12	1.6	13625.8	0.0	0.0	0.0	0.0	2043.9	0.0	0.0
13	2.0	17050.3	0.0	0.0	0.0	0.0	2557.6	0.0	0.0
14	108.0	923333.9	0.0	0.0	0.0	0.0	*******	0.0	0.0
15	57.7	486556.7	0.0	0.0	0.0	0.0	72983.5	0.0	0.0
16	2.3	18831.2	0.0	0.0	0.0	0.0	2824.7	0.0	0.0
17	2.0	16627.3	0.0	0.0	0.0	0.0	2494.1	0.0	0.0
18	47.2	389273.8	0.0	0.0	0.0	0.0	58391.1	0.0	0.0
19	5.8	46079.3	0.0	0.0	0.0	0.0	6911.9	0.0	0.0
20	10.0	70376.3	0.0	0.0	0.0	0.0	10556.5	0.0	0.0
21	24.1	123846.0	0.0	0.0	0.0	0.0	18576.9	0.0	0.0
22	3.8	13363.1	0.0	0.0	0.0	0.0	2004.5	0.0	0.0
23	22.2	45664.5	0.0	0.0	0.0	0.0	6849.7	0.0	0.0
24	4.8	1869.5	0.0	0.0	0.0	0.0	280.4	0.0	0.0

Table 2 - Base Stress Data on the 24 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-30.00	335.44	13.17	2428.93	-222.32
2	-22.54	349.07	17.17	661.79	-468.57
3	-22.54	361.00	8.66	905.67	-704.89
4	-22.54	367.50	5.41	1030.39	-825.75
5	-22.54	383.20	28.58	1486.60	-1267.83
6	3.82	396.70	0.61	5291.03	1463.99
7	3.82	398.50	3.01	1596.97	1492.41
8	3.82	407.50	15.03	1679.74	1577.67
9	3.82	418.00	6.01	1750.53	1650.60
10	3.82	428.00	14.03	1787.08	1688.25
11	3.82	444.20	18.44	1873.82	1777.60
12	15.98	454.20	1.66	5840.48	3571.86
13	15.98	456.00	2.08	5845.93	3575.67
14	15.98	511.00	112.34	1928.00	3585.83
15	15.98	593.87	60.05	1902.71	3534.92
16	4.54	623.87	2.28	6260.49	1898.08
17	4.54	626.00	2.01	6269.85	1901.34
18	4.54	650.58	47.30	1878.80	1888.05
19	50.27	677.08	9.15	5354.86	6816.60
20	50.27	685.00	15.65	4858.38	6087.31
21	50.27	702.06	37.74	3738.03	4441.59
22	50.27	716.01	5.91	15644.59	3062.60
23	50.27	729.00	34.77	1924.20	1777.21
24	60.00	742.50	9.53	1006.41	369.03

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 1097180.62 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 2331.52(psf)
Sum of the Driving Forces = 1172247.25 (lbs)
Average Mobilized Shear Stress = 2491.03(psf)
Total length of the failure surface = 470.59(ft)

*** SEISMIC SLOPE DISPLACEMENT DATA ***

(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.1474(g)
Calculated Newmark Seismic Displacement = 0.308(ft)
Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

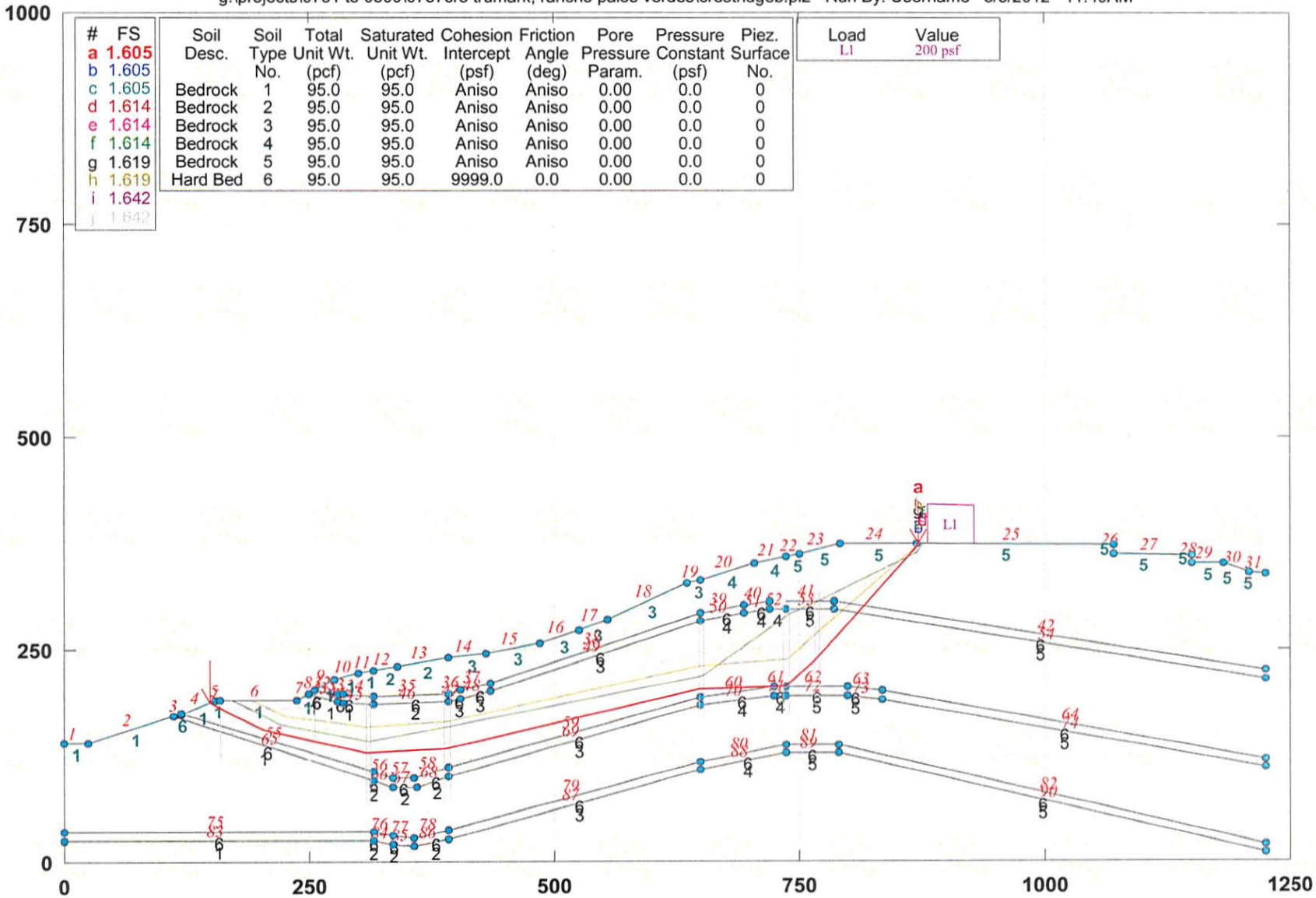
Proj. No. 0834.CR3 Crestridge Section B-B' Static Analysis

g:\projects\0751 to 0800\0787cr3 trumark, rancho palos verdes\crestridgeb.pl2 Run By: Username 3/8/2012 11:40AM

#	FS
a	1.605
b	1.605
c	1.605
d	1.614
e	1.614
f	1.614
g	1.619
h	1.619
i	1.642
j	1.642

Soil Desc.	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.
Bedrock	1	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	2	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	3	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	4	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	5	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Hard Bed	6	95.0	95.0	9999.0	0.0	0.00	0.0	0

Load	Value
L1	200 psf



GSTABL7 v.2 FSmin=1.605

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

GSTABL7

***** GSTABL7 *****

** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.2, Jan. 2011 **
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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 & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/8/2012
Time of Run: 11:40AM
Run By: Username
Input Data Filename: G:\Projects\0751 to 0800\0787CR3 Trumark, Rancho Palos Verdes\crestridgeb.in
Output Filename: G:\Projects\0751 to 0800\0787CR3 Trumark, Rancho Palos Verdes\crestridgeb.OUT
Unit System: English
Plotted Output Filename: G:\Projects\0751 to 0800\0787CR3 Trumark, Rancho Palos Verdes\crestridgeb.PLT
PROBLEM DESCRIPTION: Proj. No. 0834.CR3 Crestridge
Section B-B' Static Analysis

BOUNDARY COORDINATES
31 Top Boundaries
90 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	140.00	25.00	140.00	1
2	25.00	140.00	112.00	171.00	1
3	112.00	171.00	120.00	173.00	6
4	120.00	173.00	155.00	190.00	1
5	155.00	190.00	160.00	190.00	1
6	160.00	190.00	237.00	190.00	1
7	237.00	190.00	250.00	197.00	1
8	250.00	197.00	255.00	202.00	6
9	255.00	202.00	275.00	215.00	1
10	275.00	215.00	300.00	222.00	1
11	300.00	222.00	315.00	225.00	1
12	315.00	225.00	340.00	230.00	2
13	340.00	230.00	392.00	240.00	2
14	392.00	240.00	430.00	245.00	3
15	430.00	245.00	485.00	258.00	3
16	485.00	258.00	525.00	273.00	3
17	525.00	273.00	555.00	285.00	3
18	555.00	285.00	635.00	327.00	3
19	635.00	327.00	650.00	331.00	3
20	650.00	331.00	705.00	350.00	4
21	705.00	350.00	736.00	359.00	4
22	736.00	359.00	750.00	362.00	5
23	750.00	362.00	791.00	374.00	5
24	791.00	374.00	870.00	373.00	5
25	870.00	373.00	1070.00	372.00	5
26	1070.00	372.00	1070.10	361.00	5
27	1070.10	361.00	1150.00	360.00	5
28	1150.00	360.00	1150.10	350.00	5
29	1150.10	350.00	1182.00	350.00	5
30	1182.00	350.00	1208.00	340.00	5
31	1208.00	340.00	1225.00	338.00	5
32	255.00	202.00	278.00	198.00	6
33	278.00	198.00	285.00	197.00	6
34	285.00	197.00	315.00	195.00	6
35	315.00	195.00	392.00	198.00	6
36	392.00	198.00	405.00	202.00	6
37	405.00	202.00	435.00	210.00	6
38	435.00	210.00	650.00	293.00	6

39	650.00	293.00	693.00	302.00	6
40	693.00	302.00	720.00	307.00	6
41	736.00	307.00	785.00	307.00	6
42	785.00	307.00	1225.00	225.00	6
43	250.00	197.00	278.00	188.00	1
44	278.00	188.00	285.00	187.00	1
45	285.00	187.00	315.00	185.00	1
46	315.00	185.00	392.00	188.00	2
47	392.00	188.00	405.00	192.00	3
48	405.00	192.00	435.00	200.00	3
49	435.00	200.00	650.00	283.00	3
50	650.00	283.00	693.00	292.00	4
51	693.00	292.00	720.00	297.00	4
52	720.00	297.00	736.00	297.00	4
53	736.00	297.00	785.00	297.00	5
54	785.00	297.00	1225.00	215.00	5
55	120.00	175.00	315.00	105.00	6
56	315.00	105.00	335.00	98.00	6
57	335.00	98.00	357.00	98.00	6
58	357.00	98.00	392.00	110.00	6
59	392.00	110.00	650.00	193.00	6
60	650.00	193.00	725.00	205.00	6
61	725.00	205.00	736.00	205.00	6
62	736.00	205.00	800.00	205.00	6
63	800.00	205.00	835.00	200.00	6
64	835.00	200.00	1225.00	120.00	6
65	112.00	171.00	315.00	95.00	1
66	315.00	95.00	335.00	88.00	2
67	335.00	88.00	360.00	88.00	2
68	360.00	88.00	392.00	100.00	2
69	392.00	100.00	650.00	183.00	3
70	650.00	183.00	725.00	195.00	4
71	725.00	195.00	736.00	195.00	4
72	736.00	195.00	800.00	195.00	5
73	800.00	195.00	835.00	190.00	5
74	835.00	190.00	1225.00	110.00	5
75	0.00	35.00	315.00	35.00	6
76	315.00	35.00	335.00	30.00	6
77	335.00	30.00	357.00	28.00	6
78	357.00	28.00	392.00	36.00	6
79	392.00	36.00	650.00	117.00	6
80	650.00	117.00	736.00	137.00	6
81	736.00	137.00	790.00	137.00	6
82	790.00	137.00	1225.00	20.00	6
83	0.00	25.00	315.00	25.00	1
84	315.00	25.00	335.00	20.00	2
85	335.00	20.00	357.00	18.00	2
86	357.00	18.00	392.00	26.00	2
87	392.00	26.00	650.00	107.00	3
88	650.00	107.00	736.00	127.00	4
89	736.00	127.00	790.00	127.00	5
90	790.00	127.00	1225.00	10.00	5

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

6 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	95.0	95.0	700.0	30.0	0.00	0.0	0
2	95.0	95.0	700.0	30.0	0.00	0.0	0
3	95.0	95.0	700.0	30.0	0.00	0.0	0
4	95.0	95.0	700.0	30.0	0.00	0.0	0
5	95.0	95.0	700.0	30.0	0.00	0.0	0
6	95.0	95.0	9999.0	0.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

```
    5 soil type(s)
 Soil Type  1 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion     Friction
   Range       Direction Limit    Intercept      Angle
    No.            (deg)            (psf)        (deg)
     1            -20.0             700.00        30.00
     2            -10.0             150.00        12.00
     3             90.0             700.00        30.00
 Soil Type  2 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion     Friction
   Range       Direction Limit    Intercept      Angle
    No.            (deg)            (psf)        (deg)
     1            -10.0             700.00        30.00
     2             15.0             150.00        12.00
     3             90.0             700.00        30.00
 Soil Type  3 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion     Friction
   Range       Direction Limit    Intercept      Angle
    No.            (deg)            (psf)        (deg)
     1             10.0             700.00        30.00
     2             20.0             150.00        12.00
     3             90.0             700.00        30.00
 Soil Type  4 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion     Friction
   Range       Direction Limit    Intercept      Angle
    No.            (deg)            (psf)        (deg)
     1              0.0             700.00        30.00
     2             10.0             150.00        12.00
     3             90.0             700.00        30.00
 Soil Type  5 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion     Friction
   Range       Direction Limit    Intercept      Angle
    No.            (deg)            (psf)        (deg)
     1            -15.0             700.00        30.00
     2             -5.0             150.00        12.00
     3             90.0             700.00        30.00
 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.
BOUNDARY LOAD(S)
    1 Load(s) Specified
 Load        X-Left      X-Right     Intensity     Deflection
  No.         (ft)         (ft)        (psf)          (deg)
   1         880.00       928.00       200.0           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
 A Critical Failure Surface Searching Method, Using A Random
 Technique For Generating Sliding Block Surfaces, Has Been
 Specified.
 The Active And Passive Portions Of The Sliding Surfaces
 Are Generated According To The Rankine Theory.
 5000 Trial Surfaces Have Been Generated.
 7 Boxes Specified For Generation Of Central Block Base
 Length Of Line Segments For Active And Passive Portions Of
 Sliding Block Is  32.0
 Box        X-Left     Y-Left    X-Right    Y-Right      Height
 No.         (ft)       (ft)       (ft)       (ft)         (ft)
```

1	160.00	150.00	255.00	150.00	60.00
2	308.00	135.00	312.00	135.00	125.00
3	388.00	135.00	394.00	135.00	130.00
4	647.00	225.00	652.00	225.00	110.00
5	734.00	240.00	740.00	240.00	130.00
6	766.00	250.00	770.00	250.00	130.00
7	868.00	367.00	870.00	367.00	10.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 5000
Number of Trial Surfaces With Valid FS = 5000
Statistical Data On All Valid FS Values:
FS Max = 7.980 FS Min = 1.605 FS Ave = 3.572
Standard Deviation = 0.997 Coefficient of Variation = 27.91 %
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	148.006	186.603
2	175.630	170.655
3	203.343	154.655
4	308.401	126.814
5	388.224	131.755
6	648.180	202.220
7	736.491	205.143
8	766.175	235.139
9	868.680	367.981
10	871.573	372.992

Factor of Safety
*** 1.605 ***
Individual data on the 42 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	7.0	2469.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	5.0	4217.2	0.0	0.0	0.	0.	0.0	0.0	0.0
3	15.6	22025.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	27.7	71992.9	0.0	0.0	0.	0.	0.0	0.0	0.0
5	33.7	127275.1	0.0	0.0	0.	0.	0.0	0.0	0.0
6	13.0	61116.8	0.0	0.0	0.	0.	0.0	0.0	0.0
7	5.0	27489.4	0.0	0.0	0.	0.	0.0	0.0	0.0
8	20.0	133351.3	0.0	0.0	0.	0.	0.0	0.0	0.0
9	3.0	22843.4	0.0	0.0	0.	0.	0.0	0.0	0.0
10	7.0	55113.5	0.0	0.0	0.	0.	0.0	0.0	0.0
11	15.0	126643.3	0.0	0.0	0.	0.	0.0	0.0	0.0
12	8.4	75750.9	0.0	0.0	0.	0.	0.0	0.0	0.0
13	6.6	61010.6	0.0	0.0	0.	0.	0.0	0.0	0.0
14	25.0	236322.2	0.0	0.0	0.	0.	0.0	0.0	0.0
15	48.2	478167.2	0.0	0.0	0.	0.	0.0	0.0	0.0
16	3.8	38518.4	0.0	0.0	0.	0.	0.0	0.0	0.0
17	13.0	131299.0	0.0	0.0	0.	0.	0.0	0.0	0.0
18	25.0	246203.8	0.0	0.0	0.	0.	0.0	0.0	0.0
19	5.0	48371.3	0.0	0.0	0.	0.	0.0	0.0	0.0
20	50.0	479180.5	0.0	0.0	0.	0.	0.0	0.0	0.0
21	40.0	387946.8	0.0	0.0	0.	0.	0.0	0.0	0.0
22	30.0	302396.4	0.0	0.0	0.	0.	0.0	0.0	0.0
23	80.0	898285.2	0.0	0.0	0.	0.	0.0	0.0	0.0
24	13.2	160675.7	0.0	0.0	0.	0.	0.0	0.0	0.0
25	1.8	22217.5	0.0	0.0	0.	0.	0.0	0.0	0.0
26	43.0	553253.6	0.0	0.0	0.	0.	0.0	0.0	0.0
27	12.0	164188.5	0.0	0.0	0.	0.	0.0	0.0	0.0
28	15.0	210655.2	0.0	0.0	0.	0.	0.0	0.0	0.0
29	3.1	44684.2	0.0	0.0	0.	0.	0.0	0.0	0.0
30	1.9	26756.0	0.0	0.0	0.	0.	0.0	0.0	0.0
31	7.2	103348.0	0.0	0.0	0.	0.	0.0	0.0	0.0

32	3.8	55970.8	0.0	0.0	0.	0.	0.0	0.0	0.0
33	0.5	7184.3	0.0	0.0	0.	0.	0.0	0.0	0.0
34	13.5	190681.2	0.0	0.0	0.	0.	0.0	0.0	0.0
35	16.2	211127.6	0.0	0.0	0.	0.	0.0	0.0	0.0
36	18.8	218458.6	0.0	0.0	0.	0.	0.0	0.0	0.0
37	6.0	62528.2	0.0	0.0	0.	0.	0.0	0.0	0.0
38	19.3	172261.9	0.0	0.0	0.	0.	0.0	0.0	0.0
39	6.7	49381.5	0.0	0.0	0.	0.	0.0	0.0	0.0
40	51.7	190598.7	0.0	0.0	0.	0.	0.0	0.0	0.0
41	1.3	487.1	0.0	0.0	0.	0.	0.0	0.0	0.0
42	1.6	204.2	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	148.006	186.603
2	175.630	170.655
3	203.343	154.655
4	308.401	126.814
5	388.224	131.755
6	648.180	202.220
7	736.491	205.143
8	766.175	235.139
9	868.680	367.981
10	871.573	372.992

Factor of Safety
*** 1.605 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	148.006	186.603
2	175.630	170.655
3	203.343	154.655
4	308.401	126.814
5	388.224	131.755
6	648.180	202.220
7	736.491	205.143
8	766.175	235.139
9	868.680	367.981
10	871.573	372.992

Factor of Safety
*** 1.605 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.442	190.000
2	193.025	177.539
3	220.738	161.539
4	310.555	140.669
5	390.401	157.844
6	650.209	216.990
7	738.996	291.154
8	766.766	304.391
9	869.374	362.956
10	875.158	372.974

Factor of Safety
*** 1.614 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.442	190.000
2	193.025	177.539
3	220.738	161.539
4	310.555	140.669
5	390.401	157.844
6	650.209	216.990
7	738.996	291.154
8	766.766	304.391

9	869.374	362.956
10	875.158	372.974

Factor of Safety
*** 1.614 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.442	190.000
2	193.025	177.539
3	220.738	161.539
4	310.555	140.669
5	390.401	157.844
6	650.209	216.990
7	738.996	291.154
8	766.766	304.391
9	869.374	362.956
10	875.158	372.974

Factor of Safety
*** 1.614 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	191.853	190.000
2	199.380	185.655
3	227.093	169.655
4	309.401	158.064
5	389.724	164.255
6	649.430	229.720
7	737.991	237.643
8	767.175	267.639
9	869.180	370.481
10	870.633	372.997

Factor of Safety
*** 1.619 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	191.853	190.000
2	199.380	185.655
3	227.093	169.655
4	309.401	158.064
5	389.724	164.255
6	649.430	229.720
7	737.991	237.643
8	767.175	267.639
9	869.180	370.481
10	870.633	372.997

Factor of Safety
*** 1.619 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	169.219	190.000
2	191.468	177.155
3	311.901	173.689
4	393.474	180.505
5	647.555	243.470
6	735.741	253.893
7	769.675	283.889
8	868.430	371.731
9	869.169	373.011

Factor of Safety
*** 1.642 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	169.219	190.000

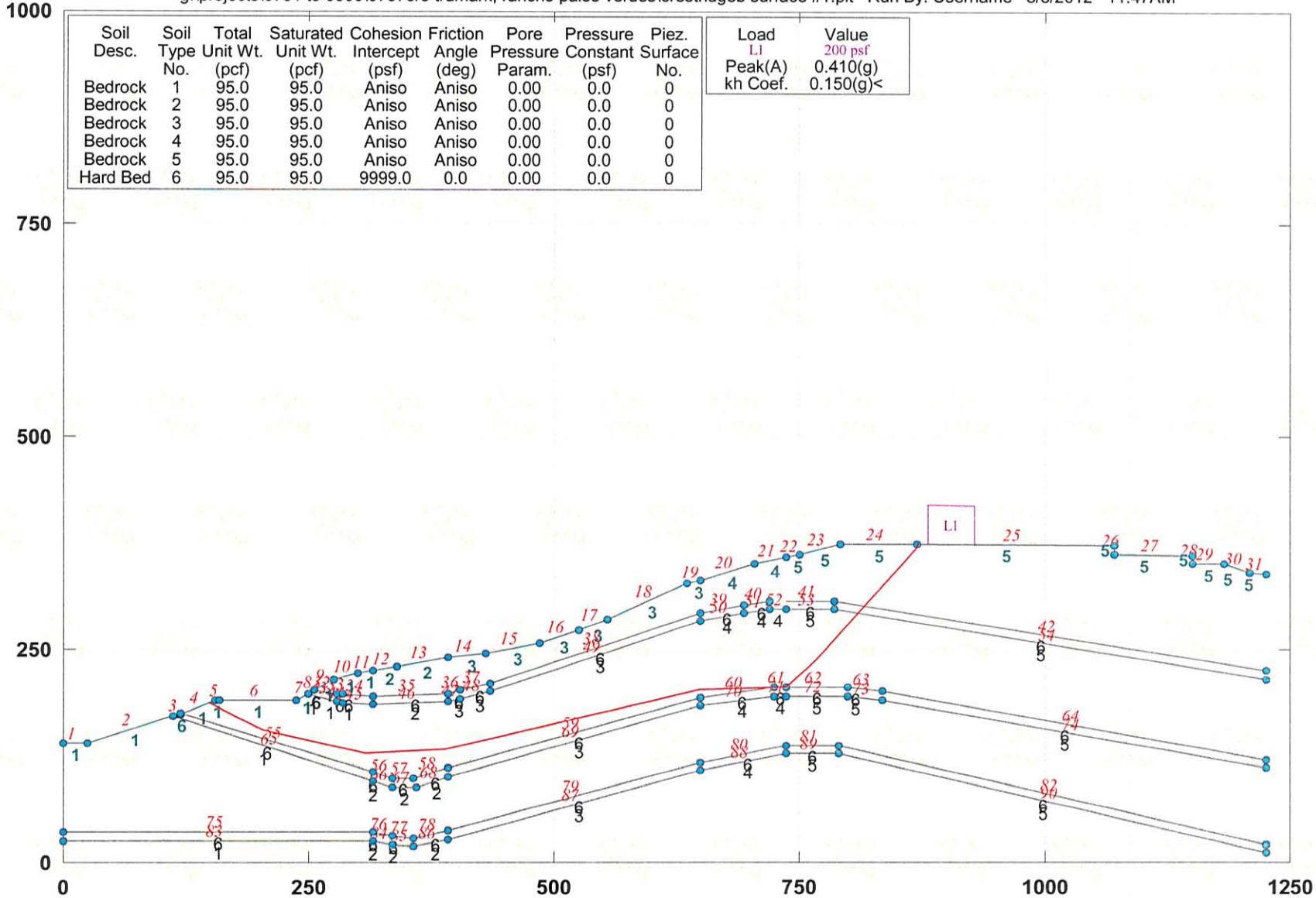
```
2        191.468      177.155
3        311.901      173.689
4        393.474      180.505
5        647.555      243.470
6        735.741      253.893
7        769.675      283.889
8        868.430      371.731
9        869.169      373.011
   Factor of Safety
  ***    1.642   ***
      **** END OF GSTABL7 OUTPUT ****
```

Proj. No. 0834.CR3 Crestridge Section B-B' Pseudostatic/Newmark Anal.

g:\projects\0751 to 0800\0787cr3 trumark, rancho palos verdes\crestridgeb surface #1.plt Run By: Username 3/8/2012 11:47AM

Soil Desc.	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.
Bedrock	1	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	2	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	3	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	4	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Bedrock	5	95.0	95.0	Aniso	Aniso	0.00	0.0	0
Hard Bed	6	95.0	95.0	9999.0	0.0	0.00	0.0	0

Load	Value
L1	200 psf
Peak(A)	0.410(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.080

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

***** GSTABL7 *****

** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.2, Jan. 2011 **
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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 & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/8/2012
Time of Run: 11:47AM
Run By: Username
Input Data Filename: G:\Projects\0751 to 0800\0787CR3 Trumark, Rancho Palos Verde s\crestridgeb Surface #1.in
Output Filename: G:\Projects\0751 to 0800\0787CR3 Trumark, Rancho Palos Verde s\crestridgeb Surface #1.OUT
Unit System: English
Plotted Output Filename: G:\Projects\0751 to 0800\0787CR3 Trumark, Rancho Palos Verde s\crestridgeb Surface #1.PLT
PROBLEM DESCRIPTION: Proj. No. 0834.CR3 Crestridge
Section B-B' Pseudostatic/Newmark Anal.

BOUNDARY COORDINATES
31 Top Boundaries
90 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	140.00	25.00	140.00	1
2	25.00	140.00	112.00	171.00	1
3	112.00	171.00	120.00	173.00	6
4	120.00	173.00	155.00	190.00	1
5	155.00	190.00	160.00	190.00	1
6	160.00	190.00	237.00	190.00	1
7	237.00	190.00	250.00	197.00	1
8	250.00	197.00	255.00	202.00	6
9	255.00	202.00	275.00	215.00	1
10	275.00	215.00	300.00	222.00	1
11	300.00	222.00	315.00	225.00	1
12	315.00	225.00	340.00	230.00	2
13	340.00	230.00	392.00	240.00	2
14	392.00	240.00	430.00	245.00	3
15	430.00	245.00	485.00	258.00	3
16	485.00	258.00	525.00	273.00	3
17	525.00	273.00	555.00	285.00	3
18	555.00	285.00	635.00	327.00	3
19	635.00	327.00	650.00	331.00	3
20	650.00	331.00	705.00	350.00	4
21	705.00	350.00	736.00	359.00	4
22	736.00	359.00	750.00	362.00	5
23	750.00	362.00	791.00	374.00	5
24	791.00	374.00	870.00	373.00	5
25	870.00	373.00	1070.00	372.00	5
26	1070.00	372.00	1070.10	361.00	5
27	1070.10	361.00	1150.00	360.00	5
28	1150.00	360.00	1150.10	350.00	5
29	1150.10	350.00	1182.00	350.00	5
30	1182.00	350.00	1208.00	340.00	5
31	1208.00	340.00	1225.00	338.00	5
32	255.00	202.00	278.00	198.00	6
33	278.00	198.00	285.00	197.00	6
34	285.00	197.00	315.00	195.00	6
35	315.00	195.00	392.00	198.00	6
36	392.00	198.00	405.00	202.00	6
37	405.00	202.00	435.00	210.00	6
38	435.00	210.00	650.00	293.00	6

39	650.00	293.00	693.00	302.00	6
40	693.00	302.00	720.00	307.00	6
41	736.00	307.00	785.00	307.00	6
42	785.00	307.00	1225.00	225.00	6
43	250.00	197.00	278.00	188.00	1
44	278.00	188.00	285.00	187.00	1
45	285.00	187.00	315.00	185.00	1
46	315.00	185.00	392.00	188.00	2
47	392.00	188.00	405.00	192.00	3
48	405.00	192.00	435.00	200.00	3
49	435.00	200.00	650.00	283.00	3
50	650.00	283.00	693.00	292.00	4
51	693.00	292.00	720.00	297.00	4
52	720.00	297.00	736.00	297.00	4
53	736.00	297.00	785.00	297.00	5
54	785.00	297.00	1225.00	215.00	5
55	120.00	175.00	315.00	105.00	6
56	315.00	105.00	335.00	98.00	6
57	335.00	98.00	357.00	98.00	6
58	357.00	98.00	392.00	110.00	6
59	392.00	110.00	650.00	193.00	6
60	650.00	193.00	725.00	205.00	6
61	725.00	205.00	736.00	205.00	6
62	736.00	205.00	800.00	205.00	6
63	800.00	205.00	835.00	200.00	6
64	835.00	200.00	1225.00	120.00	6
65	112.00	171.00	315.00	95.00	1
66	315.00	95.00	335.00	88.00	2
67	335.00	88.00	360.00	88.00	2
68	360.00	88.00	392.00	100.00	2
69	392.00	100.00	650.00	183.00	3
70	650.00	183.00	725.00	195.00	4
71	725.00	195.00	736.00	195.00	4
72	736.00	195.00	800.00	195.00	5
73	800.00	195.00	835.00	190.00	5
74	835.00	190.00	1225.00	110.00	5
75	0.00	35.00	315.00	35.00	6
76	315.00	35.00	335.00	30.00	6
77	335.00	30.00	357.00	28.00	6
78	357.00	28.00	392.00	36.00	6
79	392.00	36.00	650.00	117.00	6
80	650.00	117.00	736.00	137.00	6
81	736.00	137.00	790.00	137.00	6
82	790.00	137.00	1225.00	20.00	6
83	0.00	25.00	315.00	25.00	1
84	315.00	25.00	335.00	20.00	2
85	335.00	20.00	357.00	18.00	2
86	357.00	18.00	392.00	26.00	2
87	392.00	26.00	650.00	107.00	3
88	650.00	107.00	736.00	127.00	4
89	736.00	127.00	790.00	127.00	5
90	790.00	127.00	1225.00	10.00	5

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

6 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	95.0	95.0	840.0	34.7	0.00	0.0	0
2	95.0	95.0	840.0	34.7	0.00	0.0	0
3	95.0	95.0	840.0	34.7	0.00	0.0	0
4	95.0	95.0	840.0	34.7	0.00	0.0	0
5	95.0	95.0	840.0	34.7	0.00	0.0	0
6	95.0	95.0	9999.0	0.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

5 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	-20.0	840.00	34.70
2	-10.0	150.00	12.00
3	90.0	840.00	34.70

Soil Type 2 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	-10.0	840.00	34.70
2	15.0	150.00	12.00
3	90.0	840.00	34.70

Soil Type 3 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	10.0	840.00	34.70
2	20.0	150.00	12.00
3	90.0	840.00	34.70

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	0.0	840.00	34.70
2	10.0	150.00	12.00
3	90.0	840.00	34.70

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	-15.0	840.00	34.70
2	-5.0	150.00	12.00
3	90.0	840.00	34.70

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.

BOUNDARY LOAD(S)
1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	880.00	928.00	200.0	0.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.
Specified Peak Ground Acceleration Coefficient (A) = 0.410(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	148.006	186.603
2	175.630	170.655
3	203.343	154.655
4	308.401	126.814

5	388.224	131.755
6	648.180	202.220
7	736.491	205.143
8	766.175	235.139
9	868.680	367.981
10	871.573	372.992

Janbu's Empirical Coefficient (fo) = 1.065

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

Factor Of Safety For The Preceding Specified Surface = 1.080

Table 1 - Individual Data on the 42 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	7.0	2470.0	0.0	0.0	0.0	0.0	370.5	0.0	0.0
2	5.0	4217.1	0.0	0.0	0.0	0.0	632.6	0.0	0.0
3	15.6	22025.1	0.0	0.0	0.0	0.0	3303.8	0.0	0.0
4	27.7	71992.1	0.0	0.0	0.0	0.0	10798.8	0.0	0.0
5	33.7	127272.0	0.0	0.0	0.0	0.0	19090.8	0.0	0.0
6	13.0	61116.2	0.0	0.0	0.0	0.0	9167.4	0.0	0.0
7	5.0	27489.1	0.0	0.0	0.0	0.0	4123.4	0.0	0.0
8	20.0	133350.5	0.0	0.0	0.0	0.0	20002.6	0.0	0.0
9	3.0	22843.3	0.0	0.0	0.0	0.0	3426.5	0.0	0.0
10	7.0	55113.3	0.0	0.0	0.0	0.0	8267.0	0.0	0.0
11	15.0	126642.8	0.0	0.0	0.0	0.0	18996.4	0.0	0.0
12	8.4	75749.6	0.0	0.0	0.0	0.0	11362.4	0.0	0.0
13	6.6	61011.6	0.0	0.0	0.0	0.0	9151.7	0.0	0.0
14	25.0	236321.5	0.0	0.0	0.0	0.0	35448.2	0.0	0.0
15	48.2	478168.5	0.0	0.0	0.0	0.0	71725.3	0.0	0.0
16	3.8	38515.8	0.0	0.0	0.0	0.0	5777.4	0.0	0.0
17	13.0	131298.8	0.0	0.0	0.0	0.0	19694.8	0.0	0.0
18	25.0	246203.3	0.0	0.0	0.0	0.0	36930.5	0.0	0.0
19	5.0	48371.3	0.0	0.0	0.0	0.0	7255.7	0.0	0.0
20	50.0	479179.8	0.0	0.0	0.0	0.0	71877.0	0.0	0.0
21	40.0	387946.2	0.0	0.0	0.0	0.0	58191.9	0.0	0.0
22	30.0	302395.9	0.0	0.0	0.0	0.0	45359.4	0.0	0.0
23	80.0	898283.8	0.0	0.0	0.0	0.0	*******	0.0	0.0
24	13.2	160674.0	0.0	0.0	0.0	0.0	24101.1	0.0	0.0
25	1.8	22219.0	0.0	0.0	0.0	0.0	3332.8	0.0	0.0
26	43.0	553253.6	0.0	0.0	0.0	0.0	82988.0	0.0	0.0
27	12.0	164188.7	0.0	0.0	0.0	0.0	24628.3	0.0	0.0
28	15.0	210655.6	0.0	0.0	0.0	0.0	31598.3	0.0	0.0
29	3.1	44646.7	0.0	0.0	0.0	0.0	6697.0	0.0	0.0
30	1.9	26793.6	0.0	0.0	0.0	0.0	4019.0	0.0	0.0
31	7.2	103518.4	0.0	0.0	0.0	0.0	15527.8	0.0	0.0
32	3.8	55800.7	0.0	0.0	0.0	0.0	8370.1	0.0	0.0
33	0.5	7179.9	0.0	0.0	0.0	0.0	1077.0	0.0	0.0
34	13.5	190685.8	0.0	0.0	0.0	0.0	28602.9	0.0	0.0
35	16.2	211133.0	0.0	0.0	0.0	0.0	31669.9	0.0	0.0
36	18.8	218453.4	0.0	0.0	0.0	0.0	32768.0	0.0	0.0
37	6.0	62528.2	0.0	0.0	0.0	0.0	9379.2	0.0	0.0
38	19.3	172261.5	0.0	0.0	0.0	0.0	25839.2	0.0	0.0
39	6.7	49382.0	0.0	0.0	0.0	0.0	7407.3	0.0	0.0
40	51.7	190598.0	0.0	0.0	0.0	0.0	28589.7	0.0	0.0
41	1.3	487.1	0.0	0.0	0.0	0.0	73.1	0.0	0.0
42	1.6	204.2	0.0	0.0	0.0	0.0	30.6	0.0	0.0

Table 2 - Base Stress Data on the 42 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-30.00	151.50	8.08	1988.11	-130.69
2	-30.00	157.50	5.77	2610.42	-312.13
3	-30.00	167.82	18.05	3328.52	-521.49
4	-30.00	189.49	32.00	4837.45	-961.42
5	-14.84	220.17	34.82	1040.98	-420.38
6	-14.84	243.50	13.45	1254.37	-522.63
7	-14.84	252.50	5.17	1439.17	-611.19

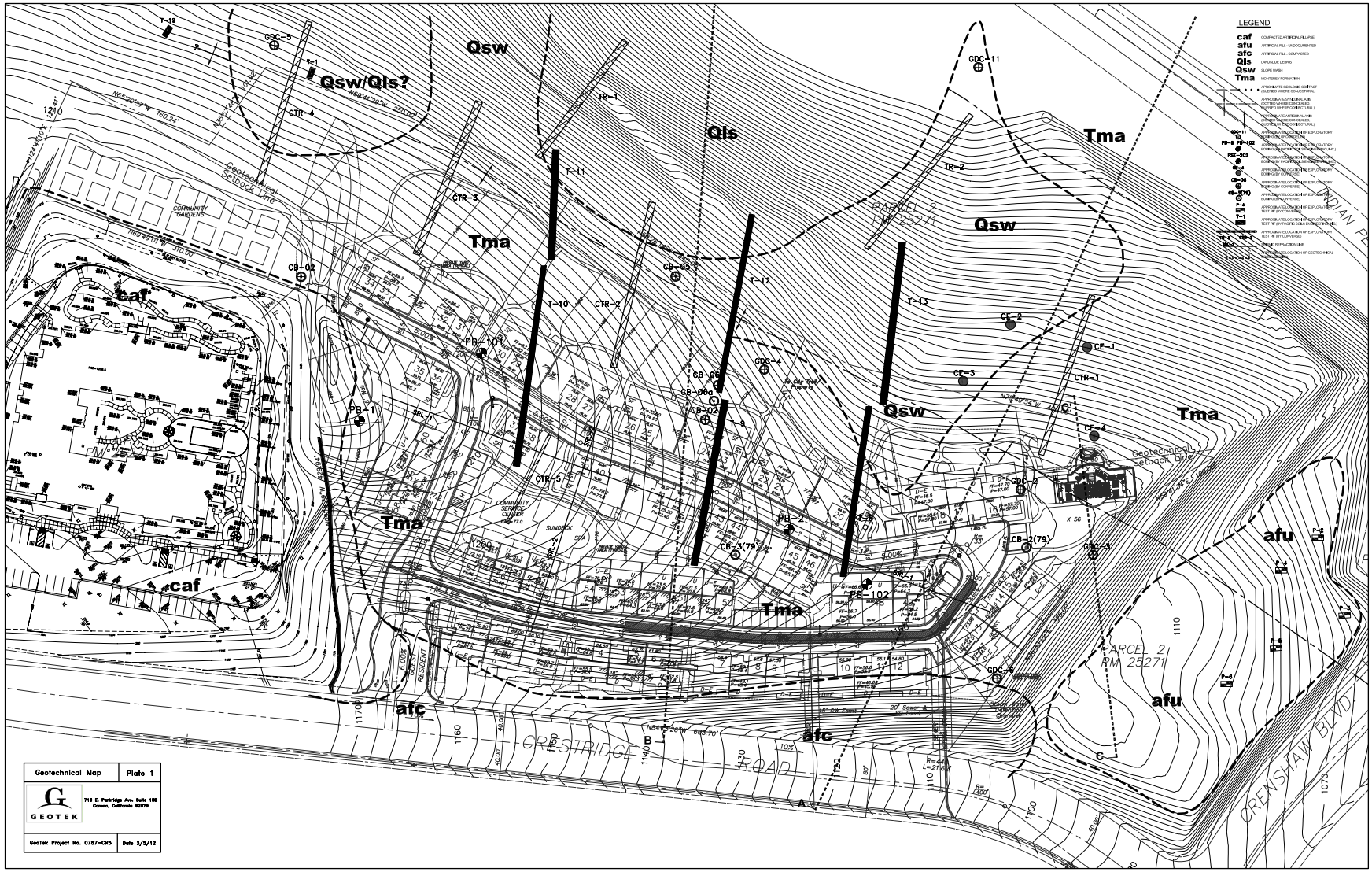
8	-14.84	265.00	20.69	1710.53	-741.22
9	-14.84	276.50	3.10	1930.21	-846.49
10	-14.84	281.50	7.24	1990.27	-875.27
11	-14.84	292.50	15.52	2122.39	-938.58
12	-14.84	304.20	8.69	2255.53	-1002.38
13	3.54	311.70	6.61	6978.86	1955.39
14	3.54	327.50	25.05	2137.36	1999.23
15	3.54	364.11	48.32	2234.72	2097.09
16	15.17	390.11	3.91	6975.90	4145.34
17	15.17	398.50	13.47	2259.17	4104.60
18	15.17	417.50	25.90	2206.53	4002.28
19	15.17	432.50	5.18	2170.18	3931.61
20	15.17	460.00	51.80	2151.23	3894.77
21	15.17	505.00	41.44	2175.28	3941.53
22	15.17	540.00	31.08	2254.98	4096.45
23	15.17	595.00	82.89	2495.14	4563.27
24	15.17	641.59	13.66	2696.32	4954.31
25	1.90	649.09	1.82	9105.23	2234.08
26	1.90	671.50	43.02	2867.73	2354.53
27	1.90	699.00	12.01	3040.16	2503.86
28	1.90	712.50	15.01	3116.50	2569.98
29	1.90	721.56	3.13	3163.30	2610.52
30	1.90	724.06	1.87	10004.48	2621.70
31	1.90	728.59	7.17	10004.48	2641.91
32	1.90	734.09	3.83	3227.95	2666.51
33	1.90	736.25	0.49	10742.93	2675.84
34	45.30	743.25	19.21	9157.35	11522.54
35	45.30	758.09	23.00	8522.64	10655.26
36	52.35	775.59	30.82	7935.37	10250.65
37	52.35	788.00	9.82	7202.94	9205.62
38	52.35	800.64	31.55	6284.19	7894.74
39	52.35	813.65	11.04	16367.55	6466.01
40	52.35	842.85	84.56	3035.23	3259.09
41	60.00	869.34	2.64	1038.22	347.24
42	60.00	870.79	3.15	881.25	122.14

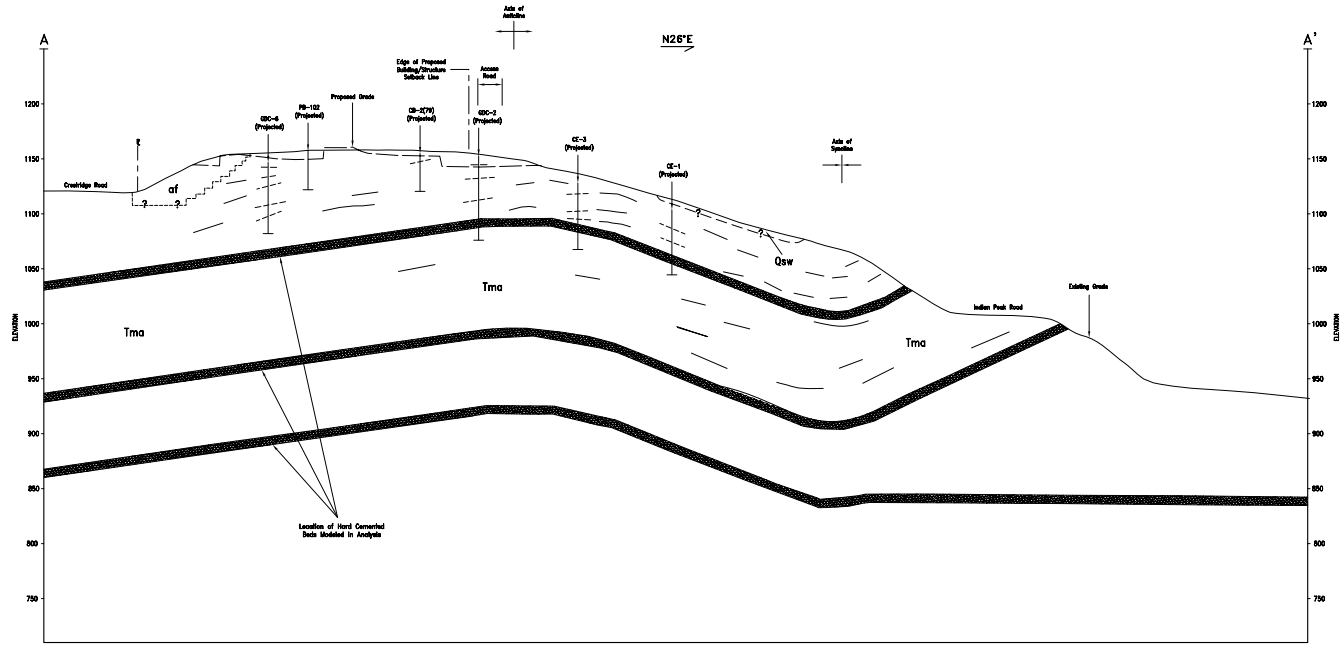
Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing
Soil Nail, and Applied Forces if applicable) = 2909937.25 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing,
Soil Nail, and Applied Forces if applicable) = 3522.79(psf)
Sum of the Driving Forces = 2870316.25 (lbs)
Average Mobilized Shear Stress = 3474.82(psf)
Total length of the failure surface = 826.03(ft)

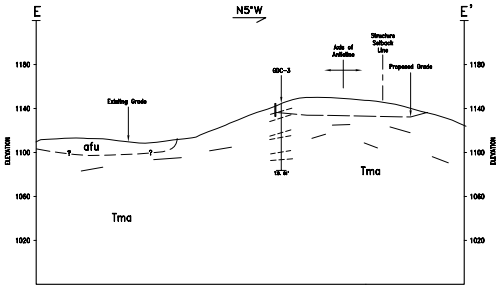
*** SEISMIC SLOPE DISPLACEMENT DATA ***

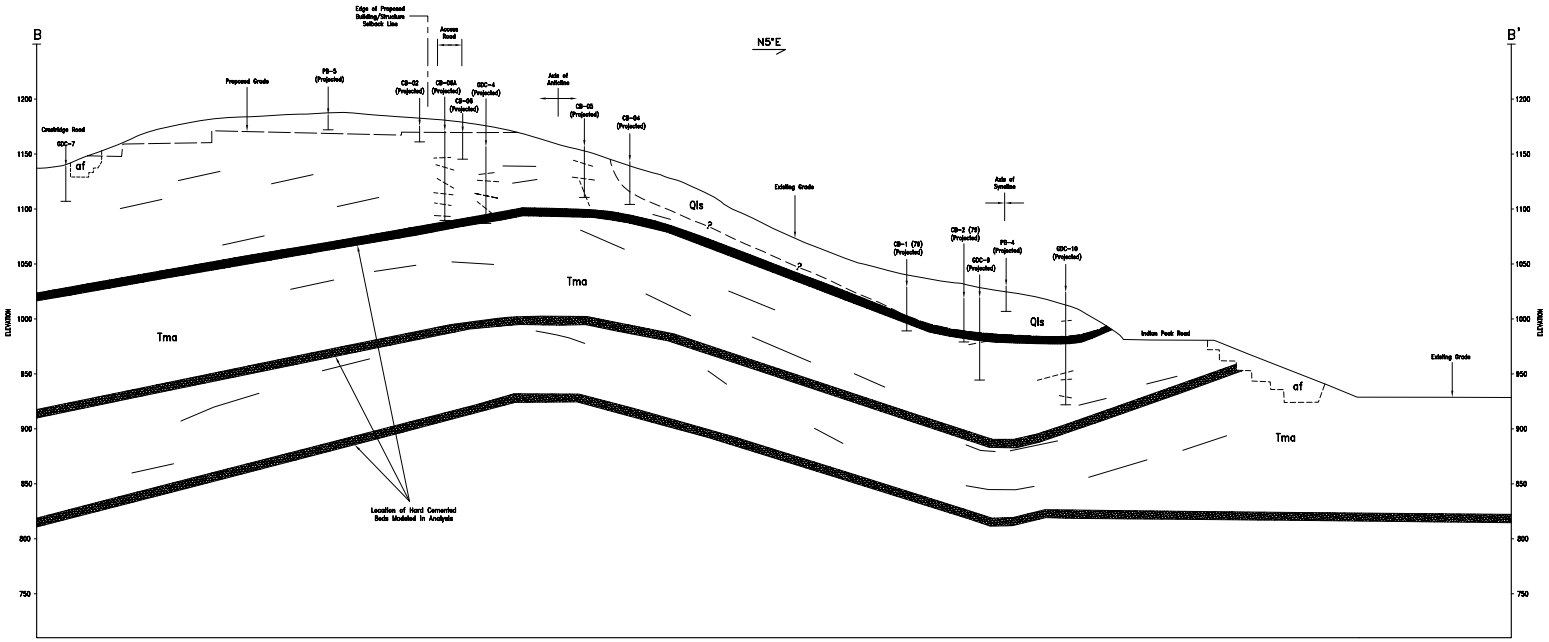
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.1807(g)
Calculated Newmark Seismic Displacement = 0.205(ft)
Non-Symmetrical Sliding Resistance Has Been Specified
for Downhill Sliding.

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


LEGEND
caf COMPACTED ARTIFICIAL FILL-FSE
afu ARTIFICIAL FILL-UNDOCUMENTED
afc ARTIFICIAL FILL-COMPACTED
Qls LANDSLIDE DEBRIS
Qsw SLOPE WASH
Tma MONTEREY FORMATION
APPROXIMATE GEOLOGIC CONTACT (DASHED WHERE CONJECTURAL)
APPROXIMATE CHILDLAW AND (DOTTED WHERE CONSEALED) (DASHED WHERE CONJECTURAL)
APPROXIMATE ANTICLINAL AXIS (DASHED WHERE CONJECTURAL)
APPROXIMATE SYNCLINAL AXIS (DASHED WHERE CONJECTURAL)
APPROXIMATE LOCATION OF EXPLORATORY BORING (NO PROFILE)
APPROXIMATE LOCATION OF EXPLORATORY BORING (PROFILE SHOWN ON ENGINEERING PLAN)
APPROXIMATE LOCATION OF EXPLORATORY BORING (BY CONRADES)
APPROXIMATE LOCATION OF EXPLORATORY BORING (BY CONRADES)
APPROXIMATE LOCATION OF EXPLORATORY TEST PIT (BY CORE-TEK)
APPROXIMATE LOCATION OF EXPLORATORY TEST PIT (BY PACIFIC SOILS ENGINEERING)
APPROXIMATE LOCATION OF EXPLORATORY TEST PIT (BY CORE-TEK)
SCALE: 1 INFINITY=50 FEET
APPROXIMATE LOCATION OF GEOTECHNICAL SETBACK LINE
Qsw
Qsw/Qls?
Qls
Tma
caf
afc
afu
PARCEL 2
PM 25271
Geotechnical Setback Line
COMMUNITY GARDENS
COMMUNITY SERVICE CENTER
SUNDECK
SPA
CRESTRIDGE ROAD
CRENSHAW BLVD
INDIAN PL
T-19
T-1
T-11
T-10
T-12
T-13
T-8
TR-1
TR-2
CTR-1
CTR-2
CTR-3
CTR-4
CTR-5
GDC-5
GDC-11
GDC-4
GDC-6
CB-02
CB-03
CB-06
CB-06a
CB-02a
CB-3(79)
CB-2(79)
PB-1
PB-2
PB-101
PB-102
CF-1
CF-2
CF-3
CF-4
A
B
C
Geotechnical Map
Plate 1
GEOTEK
710 E. Partridge Ave. Suite 105
Corona, California 92879
GeoTek Project No. 07B7-CR3
Date 3/3/12







SCALE: 1"=40'

Geotechnical Cross Sections	Plate 2
GEOTEK — 710 E. Parkridge Ave. Suite 108, Corona, California 92879	
GeoTek Project No. 0787-CR3	Date 3/5/12