

Appendix E

Slope Stability Analyses

Summary of Slope Stability Analysis

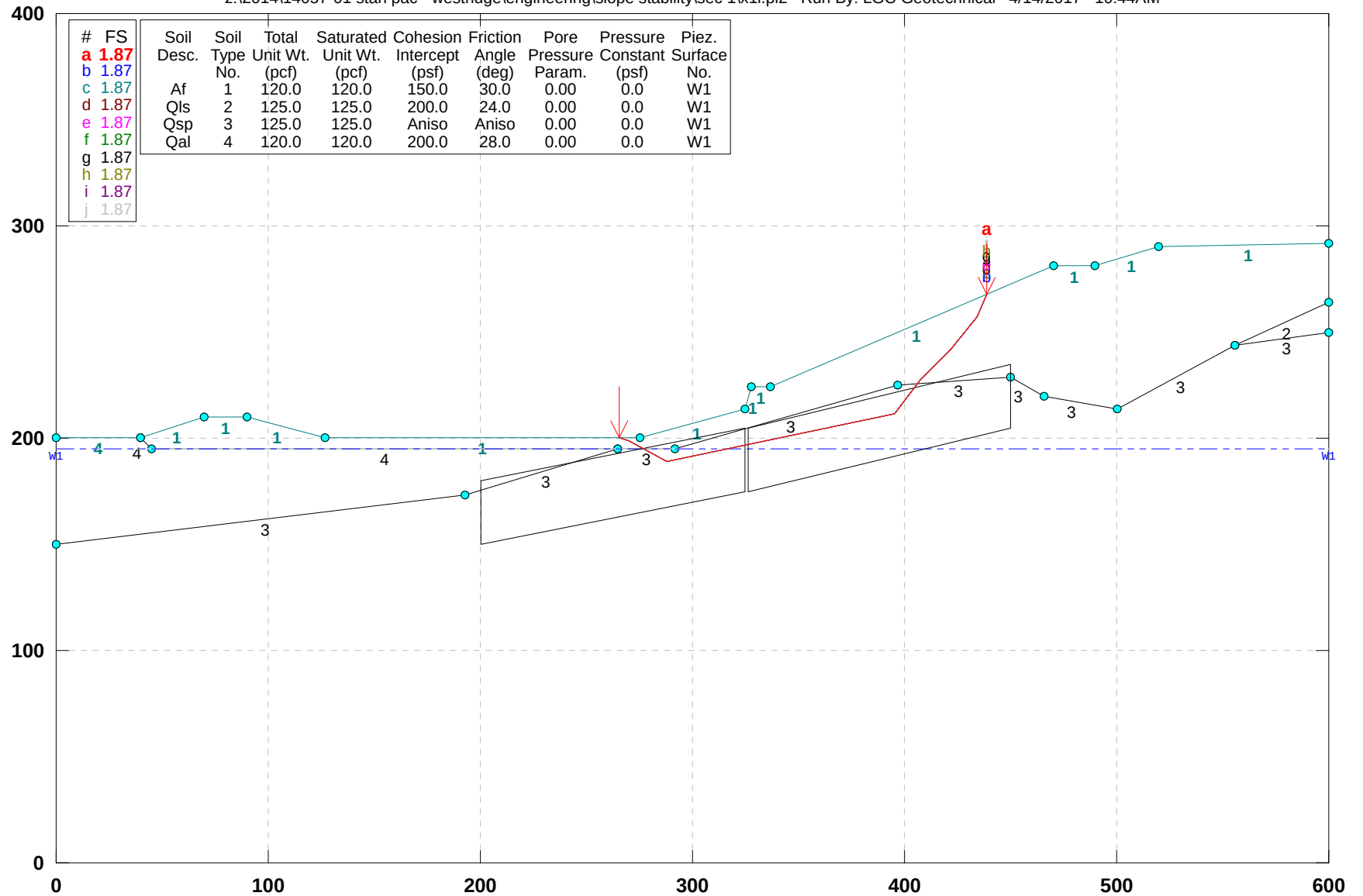
Cross-Section	File Name	Factor of Safety	Description
1-1"	x1l	1.87	Lower Basin Slope - Static
	x1le	1.41	Seismic
	x1tl	1.89	Entire Length – Static
	x1t1e	1.38	Seismic
	x1rd	1.56	Rapid Drawdown
	x1qls	1.74	Landslide
	x1u2	2.10	Upper Slope – Static
	x1u2e	1.55	Seismic
2-2"	x2l	1.78	Lower Basin Slope - Static
	x2le	1.29	Seismic
	x2tlx	2.21	Entire Length – Static
	x2tlxe	1.43	Seismic
	x2rd	1.51	Rapid Drawdown
	x2qlsx	1.68	Landslide
3-3'	x3ub	1.88	Upper Slope - Static
	x3ube	1.42	Seismic
	x3u	2.11	Upper Slope - Static
	x3ue	1.64	Seismic
4-4'	x4u	1.70	Upper Slope – Static
	x4ue	1.42	Seismic
5-5'	x5du	1.64	Upper Slope – Block – Static
	x5due	1.33	Seismic
	x5dur	1.59	Upper Slope – Rotational – Static
	x5dure	1.33	Seismic
	x5tc	1.28	Upper Slope – Temp Backcut
6-6'	x6dur	1.85	Upper Slope – Rotational – Static
	x6dure	1.56	Seismic
	x6du	2.30	Upper Slope – Block – Static
	x6due	1.78	Seismic
7-7'	x7du	1.96	Upper Slope – Static
	x7due	1.47	Seismic
8-8'	x8du	2.61	Upper Slope – Static
	x8due	2.00	Seismic
	x8dl	1.82	Lower Slope – Static
	x8dle	1.53	Seismic
	x8dlb	2.25	Lower Slope – Qsp Search – Static
	x8dlbe	1.59	Seismic
	x8utc	1.37	Upper Slope – Temp. Backcut
9-9'	x9dexrf	1.61	Upper Slope – Rotational – Static
	x9dexrfe	1.36	Seismic
	x9dex	2.17	Upper Slope – Block – Static
	x9dexe	1.82	Seismic

Summary of Slope Stability Analysis (Cont.)

Cross-Section	File Name	Factor of Safety	Description
10-10'	x10	2.28	Static
	x10e	1.90	Seismic
	x10b	2.33	Static – Lower Slope
	x10be	2.08	Seismic
11-11'	x11	1.93	Upper Slope - Static
	x11e	1.49	Seismic
12'-12''	x12	1.90	Upper Slope - Static
	x12e	1.54	Seismic
	x12tlx	4.86	Entire Length – Static
	x12tlxe	2.29	Seismic
	x12tcx	1.31	Upper Slope – Temp. Backcut
13-13'	x13d	1.55	MSE Wall – Rotational - Static
	x13de	1.35	Seismic
	x13db	1.72	Block - Static
	x13dbe	1.33	Seismic
	x13tcx	1.75	Upper Slope – Rotational - Temp. Backcut
	x13tcbx	1.80	Upper Slope – Block - Temp. Backcut
	x13tl	1.72	Upper Slope – Block - Temp. Backcut
14-14'	x14ux	2.42	Upper Slope - Static
	x14ue	1.86	Seismic
Generic	-	1.99	Surficial Slope Stability Analysis

Westridge/14057-01/Sec 1-1' Lower Basin / Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 1x1l.pl2 Run By: LGC Geotechnical 4/14/2017 10:44AM

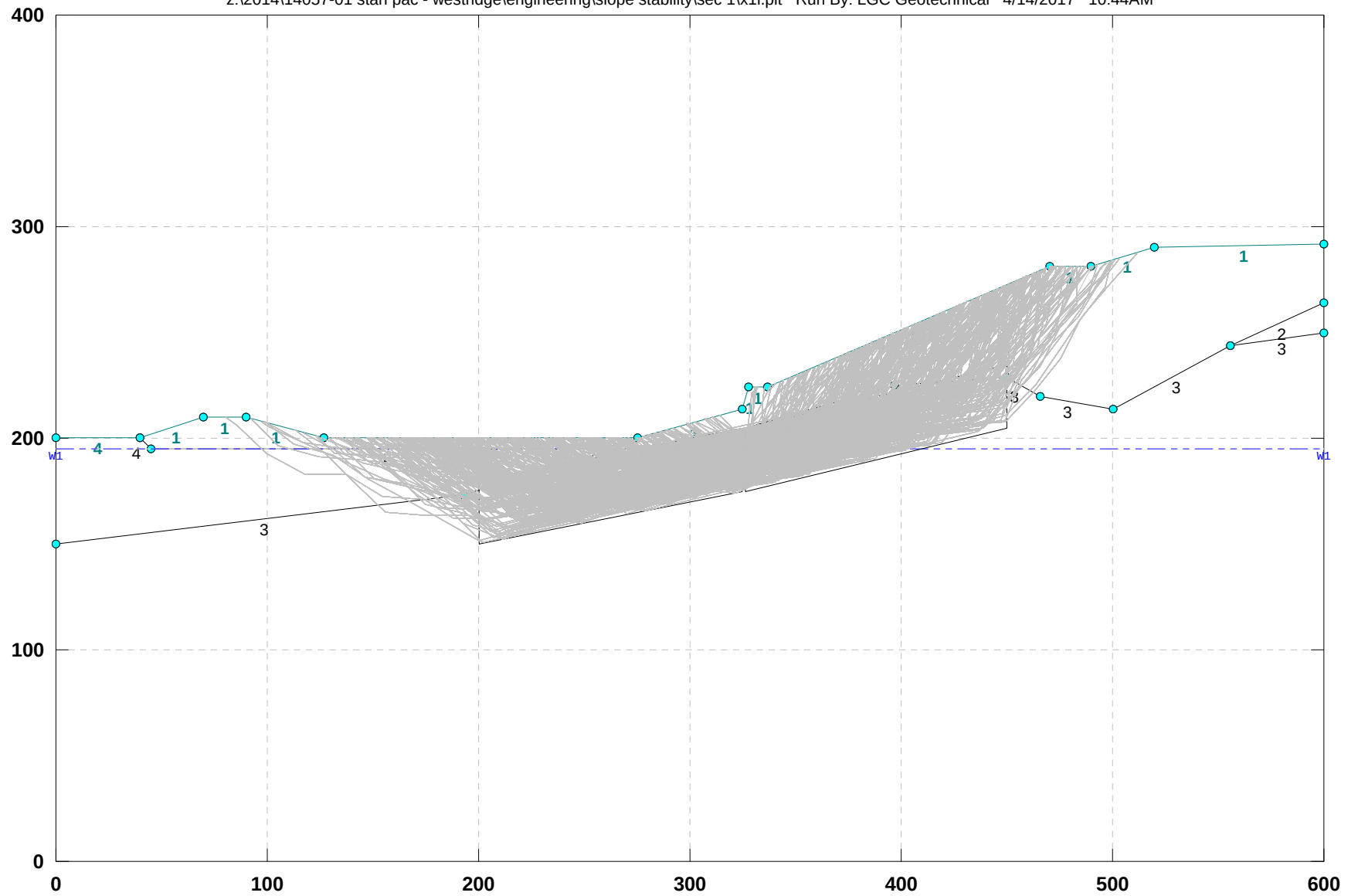


GSTABL7 v.2 FSmin=1.87

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

Westridge/14057-01/Sec 1-1' Lower Basin / Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 1\1\1.plt Run By: LGC Geotechnical 4/14/2017 10:44AM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 10:44AM
Run By: LGC Geotechnical
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 1\xl.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 1\xl.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 1\xl.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 1-1'/ Lower
Basin / Static

BOUNDARY COORDINATES

12 Top Boundaries

24 Total Boundaries

Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	200.00	40.00	200.00	4
	2	40.00	200.00	70.00	210.00	1
	3	70.00	210.00	90.00	210.00	1
	4	90.00	210.00	127.00	200.00	1
	5	127.00	200.00	275.00	200.00	1
	6	275.00	200.00	325.00	214.00	1
	7	325.00	214.00	327.50	224.00	1
	8	327.50	224.00	337.00	224.00	1
	9	337.00	224.00	470.00	281.00	1
	10	470.00	281.00	490.00	281.00	1
	11	490.00	281.00	520.00	290.00	1
	12	520.00	290.00	600.00	292.00	1
	13	40.00	200.00	45.00	195.00	4
	14	45.00	195.00	265.00	195.00	4
	15	265.00	195.00	292.00	195.00	3
	16	292.00	195.00	397.00	225.00	3
	17	397.00	225.00	450.00	229.00	3
	18	450.00	229.00	466.00	220.00	3
	19	466.00	220.00	500.00	214.00	3
	20	500.00	214.00	556.00	244.00	3
	21	556.00	244.00	600.00	264.00	2
	22	556.00	244.00	600.00	250.00	3
	23	0.00	150.00	193.00	173.00	3
	24	193.00	173.00	265.00	195.00	3

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
Surface	Type	Unit	Wt.	Unit	Wt.	Intercept	Angle
No.	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	Pressure
							Constant
							(psf)

1	1	120.0	120.0	150.0	30.0	0.00	0.0
	2	125.0	125.0	200.0	24.0	0.00	0.0
1							
	3	125.0	125.0	300.0	32.0	0.00	0.0
1							
	4	120.0	120.0	200.0	28.0	0.00	0.0
1							

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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

1 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points
Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)

1	0.00	195.00
2	600.00	195.00

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.

5000 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 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	200.00	165.00	325.00	190.00	30.00
2	326.00	190.00	450.00	220.00	30.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 5000

Number of Trial Surfaces With Valid FS = 5000

Statistical Data On All Valid FS Values:
FS Max = 16.628 FS Min = 1.873 FS Ave = 3.073
Standard Deviation = 1.216 Coefficient of Variation =
39.59 %

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	265.233	200.000
2	270.296	198.957
3	287.822	189.323
4	395.379	211.654
5	407.455	227.597
6	421.579	241.757
7	434.238	257.241
8	439.119	267.765

Factor of Safety
*** 1.873 ***

Individual data on the 16 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Ver (lbs)
1	5.1	316.7	0.0	0.0	0.	0.	0.0	0.0
2	4.7	1318.6	0.0	0.0	0.	0.	0.0	0.0
3	2.5	1395.9	0.0	0.0	0.	0.	0.0	0.0
4	10.3	12518.5	0.0	2087.5	0.	0.	0.0	0.0
5	4.2	7338.5	0.0	1396.2	0.	0.	0.0	0.0
6	23.2	43494.7	0.0	3550.5	0.	0.	0.0	0.0
7	9.8	19936.8	0.0	0.0	0.	0.	0.0	0.0
8	2.5	6603.2	0.0	0.0	0.	0.	0.0	0.0
9	9.5	29394.1	0.0	0.0	0.	0.	0.0	0.0
10	58.4	219678.1	0.0	0.0	0.	0.	0.0	0.0
11	1.6	7224.7	0.0	0.0	0.	0.	0.0	0.0

12	9.0	34719.6	0.0	0.0	0.	0.	0.0	0.0
13	1.5	4748.9	0.0	0.0	0.	0.	0.0	0.0
14	14.1	38210.3	0.0	0.0	0.	0.	0.0	0.0
15	12.7	20449.7	0.0	0.0	0.	0.	0.0	0.0
16	4.9	2469.6	0.0	0.0	0.	0.	0.0	0.0

Failure Surface Specified By 8 Coordinate Points

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Factor of Safety
*** 1.873 ***

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Failure Surface Specified By 8 Coordinate Points

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Factor of Safety
*** 1.873 ***

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Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
*** 1.873 ***

Failure Surface Specified By 8 Coordinate Points

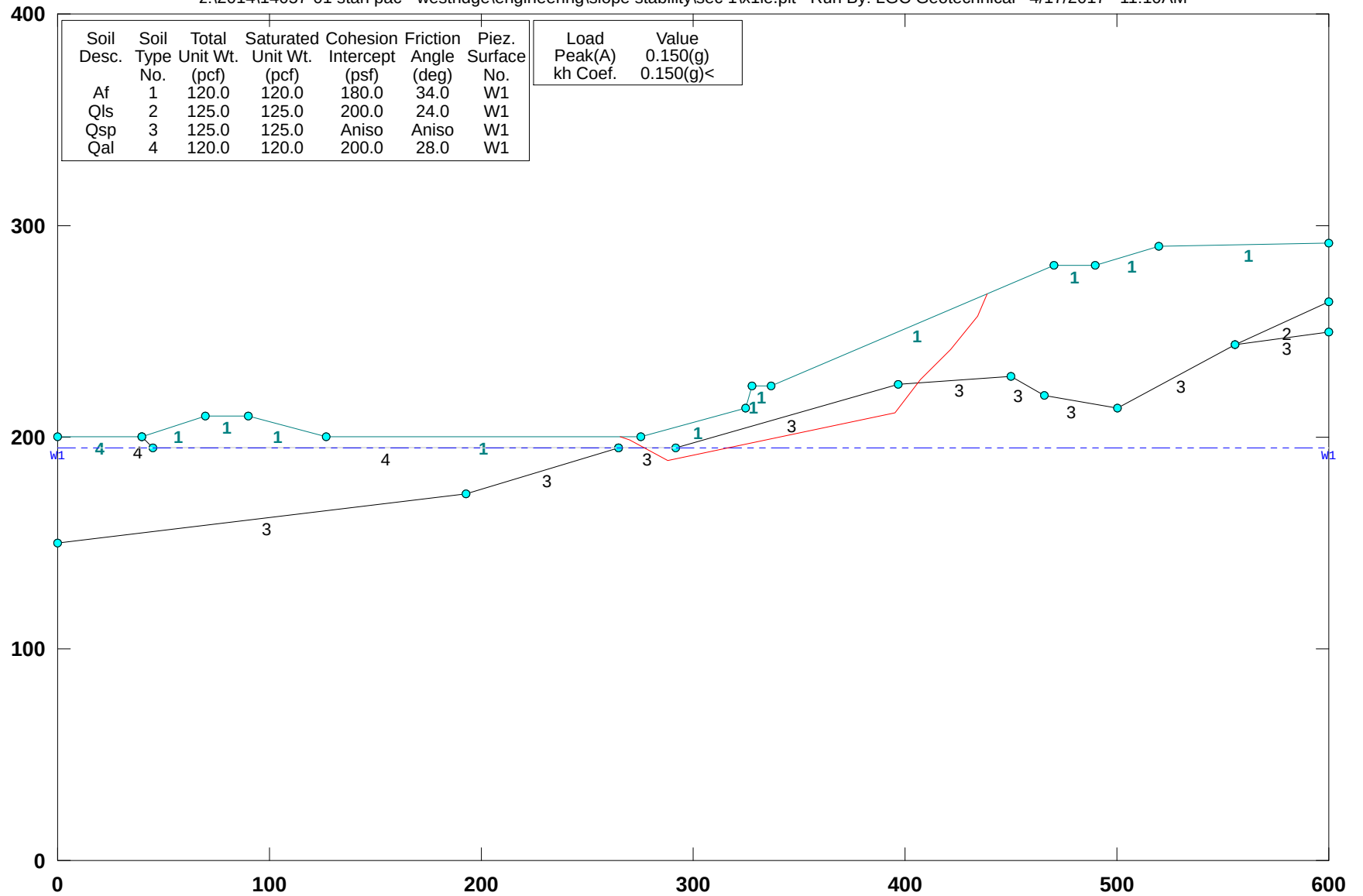
Point No.	X-Surf (ft)	Y-Surf (ft)
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2	270.296	198.957
3	287.822	189.323
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Factor of Safety
*** 1.873 ***

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

Westridge/14057-01/Sec 1-1' Lower Basin / Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 1\1e.plt Run By: LGC Geotechnical 4/17/2017 11:10AM



GSTABL7 v.2 FSmin=1.41

Factor Of Safety Is Calculated By The Simplified Janbu Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/17/2017
Time of Run: 11:10AM
Run By: LGC Geotechnical
Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 1\1le.in
Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 1\1le.OUT
Unit System: English
Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 1\1le.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 1-1'/ Lower Basin / Seismic

BOUNDARY COORDINATES

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
12 Top Boundaries					
24 Total Boundaries					
1	0.00	200.00	40.00	200.00	4
2	40.00	200.00	70.00	210.00	1
3	70.00	210.00	90.00	210.00	1
4	90.00	210.00	127.00	200.00	1
5	127.00	200.00	275.00	200.00	1
6	275.00	200.00	325.00	214.00	1
7	325.00	214.00	327.50	224.00	1
8	327.50	224.00	337.00	224.00	1
9	337.00	224.00	470.00	281.00	1
10	470.00	281.00	490.00	281.00	1
11	490.00	281.00	520.00	290.00	1
12	520.00	290.00	600.00	292.00	1
13	40.00	200.00	45.00	195.00	4
14	45.00	195.00	265.00	195.00	4
15	265.00	195.00	292.00	195.00	3
16	292.00	195.00	397.00	225.00	3
17	397.00	225.00	450.00	229.00	3
18	450.00	229.00	466.00	220.00	3
19	466.00	220.00	500.00	214.00	3
20	500.00	214.00	556.00	244.00	3
21	556.00	244.00	600.00	264.00	2
22	556.00	244.00	600.00	250.00	3
23	0.00	150.00	193.00	173.00	3
24	193.00	173.00	265.00	195.00	3

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant (psf)	Piez. Surface No.
4 Type(s) of Soil							
1	120.0	120.0	180.0	34.0	0.00	0.0	1
2	125.0	125.0	200.0	24.0	0.00	0.0	1
3	125.0	125.0	500.0	34.0	0.00	0.0	1
4	120.0	120.0	200.0	28.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)
Soil Type 3 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction (deg)	Cohesion Limit (psf)	Friction Angle (deg)
1	7.0	500.00	34.00
2	12.0	200.00	27.00
3	90.0	500.00	34.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	195.00
2	600.00	195.00

Specified Peak Ground Acceleration Coefficient (A) = 0.150(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	265.233	200.000
2	270.296	198.957
3	287.822	189.323
4	395.379	211.654
5	407.455	227.597
6	421.579	241.757
7	434.238	257.241
8	439.119	267.765

Janbu's Empirical Coefficient (fo) = 1.071

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

Factor Of Safety For The Preceding Specified Surface = 1.408

Table 1 - Individual Data on the 16 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)	Surcharge Force Ver (lbs)	Load (lbs)
1	5.1	316.8	0.0	0.0	0.0	0.0	47.5	0.0	0.0
2	4.7	1318.5	0.0	0.0	0.0	0.0	197.8	0.0	0.0
3	2.5	1396.0	0.0	0.0	0.0	0.0	209.4	0.0	0.0
4	10.3	12518.2	0.0	2087.4	0.0	0.0	1877.7	0.0	0.0
5	4.2	7338.3	0.0	1396.1	0.0	0.0	1100.7	0.0	0.0
6	23.2	43493.0	0.0	3550.2	0.0	0.0	6523.9	0.0	0.0
7	9.8	19938.0	0.0	0.0	0.0	0.0	2990.7	0.0	0.0
8	2.5	6603.1	0.0	0.0	0.0	0.0	990.5	0.0	0.0
9	9.5	29394.0	0.0	0.0	0.0	0.0	4409.1	0.0	0.0
10	58.4	219677.2	0.0	0.0	0.0	0.0	32951.6	0.0	0.0
11	1.6	7225.4	0.0	0.0	0.0	0.0	1083.8	0.0	0.0
12	9.0	34721.0	0.0	0.0	0.0	0.0	5208.2	0.0	0.0
13	1.5	4748.7	0.0	0.0	0.0	0.0	712.3	0.0	0.0
14	14.1	38210.4	0.0	0.0	0.0	0.0	5731.6	0.0	0.0
15	12.7	20449.5	0.0	0.0	0.0	0.0	3067.4	0.0	0.0
16	4.9	2469.5	0.0	0.0	0.0	0.0	370.4	0.0	0.0

Table 2 - Base Stress Data on the 16 Slices

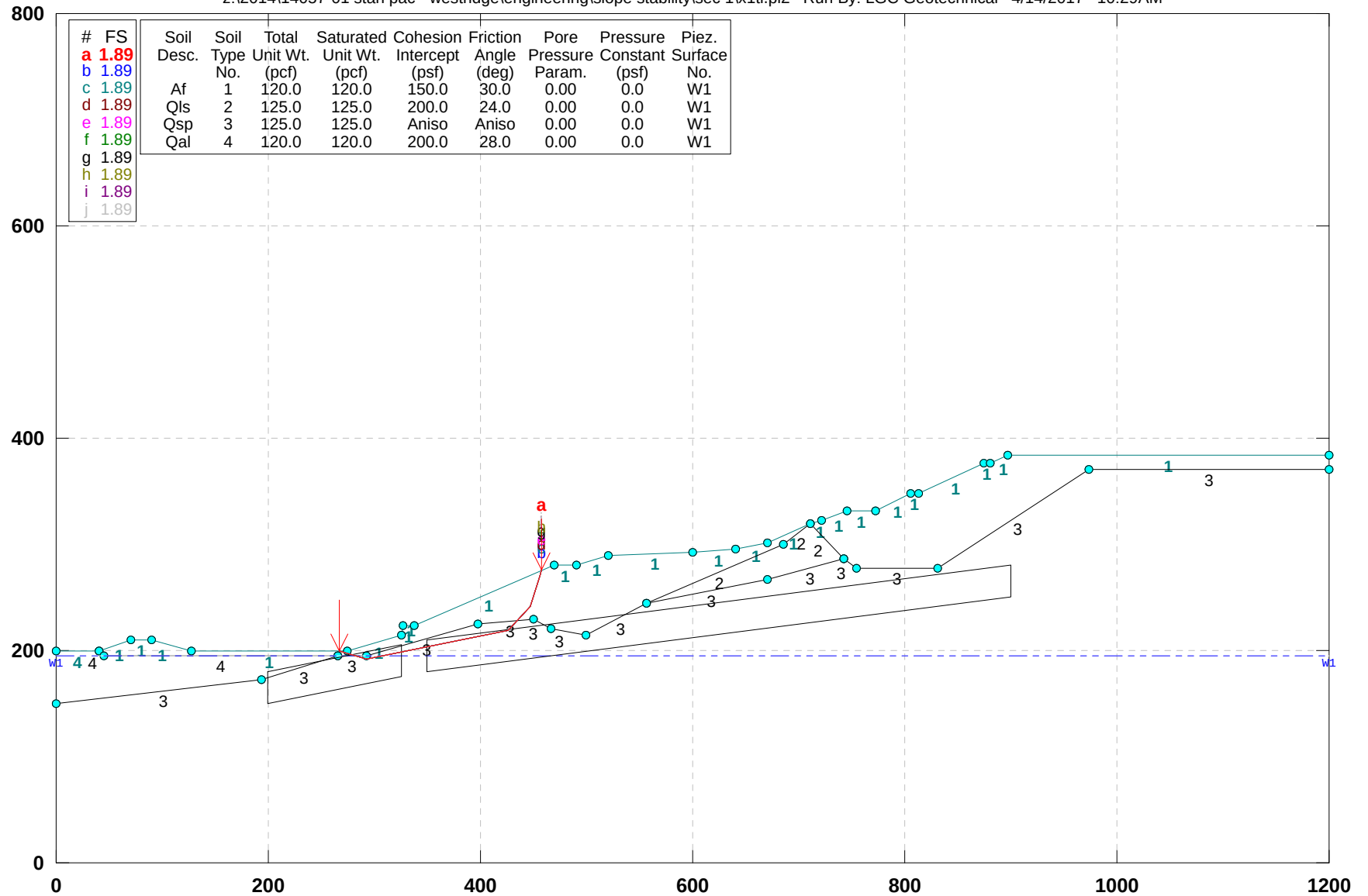
Slice No.	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-11.64	267.76	5.17	251.71	-3.43
2	-28.80	272.65	5.37	571.65	-98.18
3	-28.80	276.25	2.85	863.47	-196.02
4	-28.80	282.66	11.78	1855.76	-424.57
5	11.73	289.91	4.27	881.79	615.01

6	11.73	303.58	23.66	1026.14	657.42
7	11.73	320.08	10.04	1171.26	709.86
8	11.73	326.25	2.55	1468.45	924.84
9	11.73	332.25	9.70	1687.65	1083.41
10	11.73	366.19	59.62	2011.39	1317.61
11	52.86	396.19	2.68	3557.90	3956.85
12	52.86	401.50	14.91	3146.88	3423.73
13	52.86	406.73	2.41	2420.22	2902.34
14	45.07	414.52	20.00	1917.92	2201.98
15	50.73	427.91	20.00	1264.90	1404.02
16	65.12	436.68	11.60	609.51	490.91

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing
Soil Nail, and Applied Forces if applicable) = 338130.34 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing,
Soil Nail, and Applied Forces if applicable) = 1636.48(psf)
Sum of the Driving Forces = 257103.67 (lbs)
Average Mobilized Shear Stress = 1244.33(psf)
Total length of the failure surface = 206.62(ft)
*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.3416(g)
Calculated Newmark Seismic Displacement = 0.003(ft)
Non-Symmetrical Sliding Resistance Has Been Specified
for Downhill Sliding.
**** END OF GSTABL7 OUTPUT ****

Westridge/14057-01/Sec 1-1' / Entire Length / Static

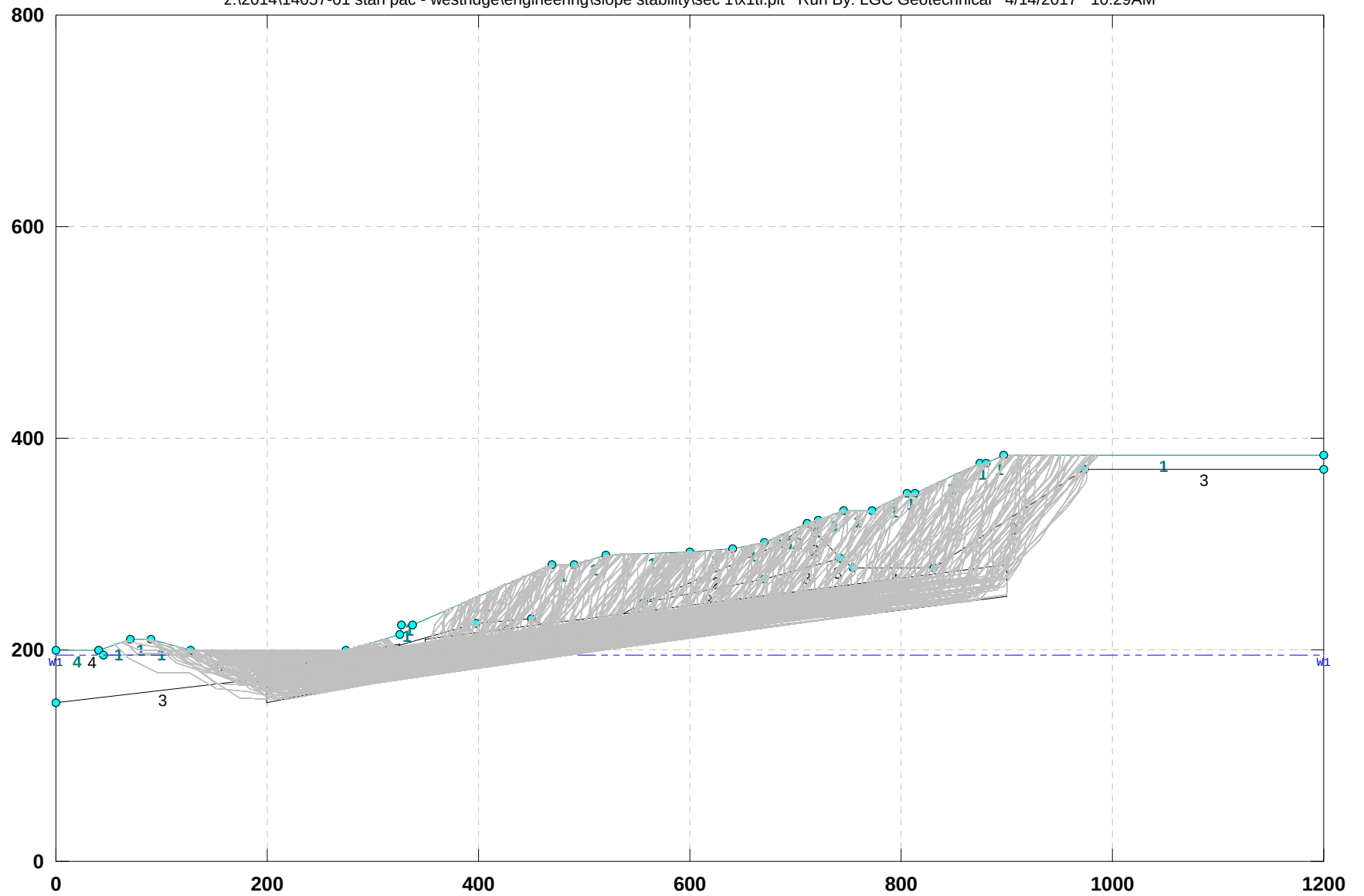
z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 1\1tl.pl2 Run By: LGC Geotechnical 4/14/2017 10:29AM



GSTABL7 v.2 FSmin=1.89

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

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 1\1x1t.plt Run By: LGC Geotechnical 4/14/2017 10:29AM



*** GSTABL7 ***

Ph.D.,P.E.,D.GE ** ** GSTABL7 by Dr. Garry H. Gregory,

Feb. 2013 ** ** Original Version 1.0, January 1996; Current Ver. 2.005.3,
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Prohibited)

Slices. SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of
(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: 4/14/2017
Time of Run: 10:29AM
Run By: LGC Geotechnical
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 1\xttl.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 1\xttl.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 1\xttl.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 1-1'/ Entire
Length / Static

BOUNDARY COORDINATES
24 Top Boundaries

43 Total Boundaries

Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	200.00	40.00	200.00	4
	2	40.00	200.00	70.00	210.00	1
	3	70.00	210.00	90.00	210.00	1
	4	90.00	210.00	127.00	200.00	1
	5	127.00	200.00	275.00	200.00	1
	6	275.00	200.00	325.00	214.00	1
	7	325.00	214.00	327.50	224.00	1
	8	327.50	224.00	337.00	224.00	1
	9	337.00	224.00	470.00	281.00	1
	10	470.00	281.00	490.00	281.00	1
	11	490.00	281.00	520.00	290.00	1
	12	520.00	290.00	600.00	292.00	1
	13	600.00	292.00	641.00	295.00	1
	14	641.00	295.00	671.00	302.00	1
	15	671.00	302.00	711.00	320.00	1
	16	711.00	320.00	721.00	323.00	1
	17	721.00	323.00	746.00	332.00	1
	18	746.00	332.00	772.00	332.00	1
	19	772.00	332.00	805.00	348.00	1
	20	805.00	348.00	813.00	348.00	1
	21	813.00	348.00	874.00	376.00	1
	22	874.00	376.00	880.00	376.00	1
	23	880.00	376.00	897.00	384.00	1
	24	897.00	384.00	1200.00	384.00	1
	25	40.00	200.00	45.00	195.00	4
	26	45.00	195.00	265.00	195.00	4
	27	265.00	195.00	292.00	195.00	3
	28	292.00	195.00	397.00	225.00	3
	29	397.00	225.00	450.00	229.00	3
	30	450.00	229.00	466.00	220.00	3
	31	466.00	220.00	500.00	214.00	3
	32	500.00	214.00	556.00	244.00	3
	33	556.00	244.00	686.00	300.00	2
	34	686.00	300.00	711.00	320.00	2
	35	711.00	320.00	743.00	287.00	2
	36	743.00	287.00	754.00	277.00	3
	37	754.00	277.00	831.00	277.00	3
	38	831.00	277.00	974.00	371.00	3
	39	974.00	371.00	1200.00	371.00	3
	40	556.00	244.00	670.00	267.00	3
	41	670.00	267.00	743.00	287.00	3
	42	0.00	150.00	193.00	173.00	3
	43	193.00	173.00	265.00	195.00	3

Default Y-Origin = 0.00(ft)

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

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant (psf)
1	1	120.0	120.0	150.0	30.0	0.00	0.0
1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	300.0	32.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

ANISOTROPIC SOIL NOTES:

- crack.
- (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
 - (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

1 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points
Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	195.00
2	1200.00	195.00

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.

5000 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 30.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	200.00	165.00	325.00	190.00	30.00
2	350.00	195.00	900.00	265.00	30.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 5000

Number of Trial Surfaces With Valid FS = 5000

Statistical Data On All Valid FS Values:
FS Max = 8.932 FS Min = 1.885 FS Ave = 2.923
Standard Deviation = 0.664 Coefficient of Variation = 22.71 %

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	267.176	200.000
2	292.827	191.877
3	426.236	218.859
4	446.461	241.016
5	456.142	269.411
6	457.988	275.852

Factor of Safety
*** 1.885 ***

Individual data on the 14 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	7.8	1163.2	0.0	0.0	0.	0.	0.0	0.0
2	8.0	4638.8	0.0	0.0	0.	0.	0.0	0.0
3	9.0	10827.2	0.0	846.2	0.	0.	0.0	0.0

4	0.8	1289.7	0.0	162.0	0.	0.	0.0	0.0
5	15.4	25726.9	0.0	1535.5	0.	0.	0.0	0.0
6	16.7	30492.4	0.0	0.0	0.	0.	0.0	0.0
7	2.5	6186.0	0.0	0.0	0.	0.	0.0	0.0
8	9.5	27847.0	0.0	0.0	0.	0.	0.0	0.0
9	60.0	218714.2	0.0	0.0	0.	0.	0.0	0.0
10	29.2	142093.9	0.0	0.0	0.	0.	0.0	0.0
11	8.2	40094.8	0.0	0.0	0.	0.	0.0	0.0
12	12.0	49000.2	0.0	0.0	0.	0.	0.0	0.0
13	9.7	20648.0	0.0	0.0	0.	0.	0.0	0.0
14	1.8	625.6	0.0	0.0	0.	0.	0.0	0.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	267.176	200.000
2	292.827	191.877
3	426.236	218.859
4	446.461	241.016
5	456.142	269.411
6	457.988	275.852

Factor of Safety
*** 1.885 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
*** 1.885 ***

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Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
*** 1.885 ***

1

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Factor of Safety
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Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
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1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
*** 1.885 ***

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Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
*** 1.885 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	267.176	200.000
2	292.827	191.877
3	426.236	218.859
4	446.461	241.016
5	456.142	269.411
6	457.988	275.852

Factor of Safety
*** 1.885 ***

Failure Surface Specified By 6 Coordinate Points

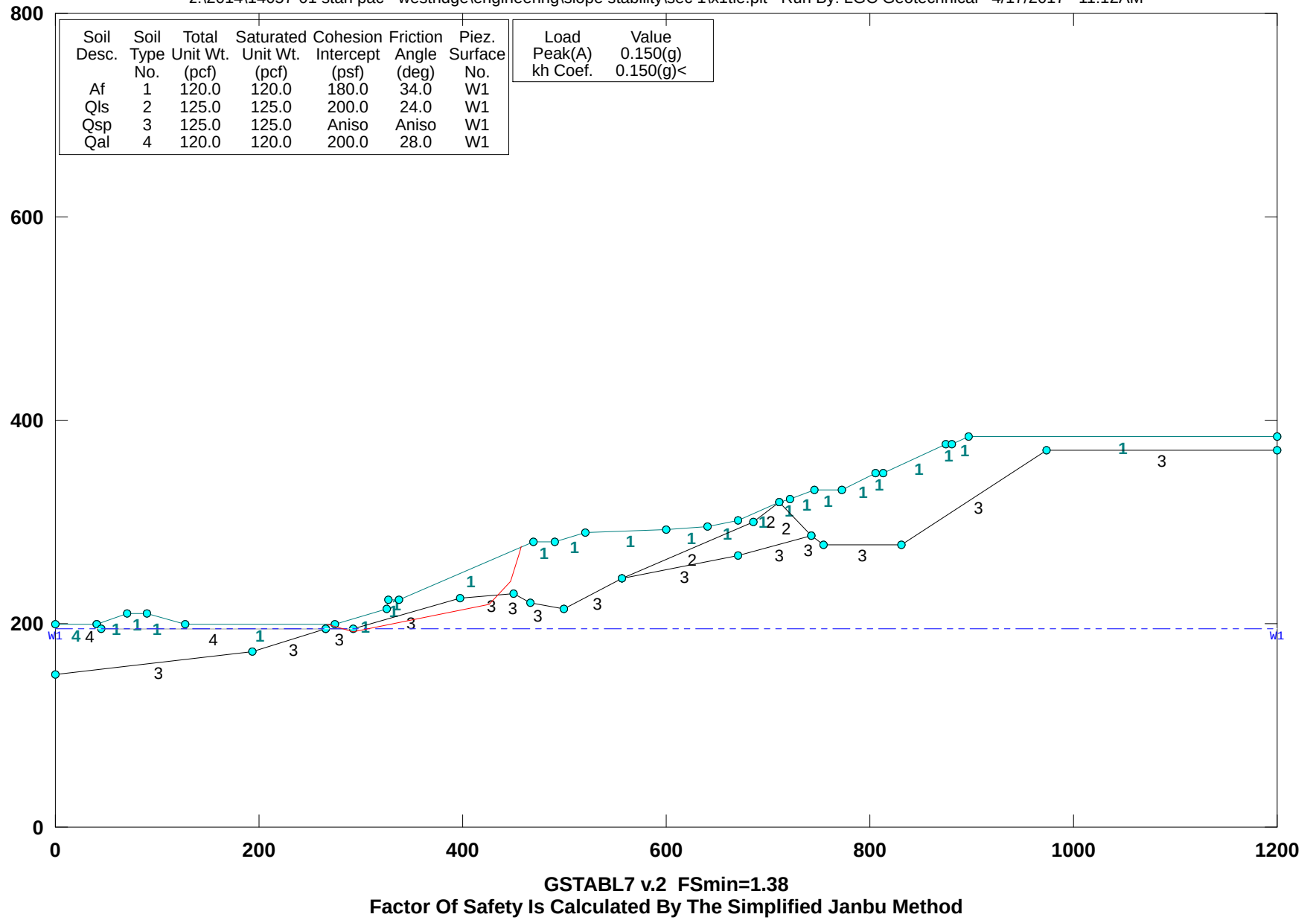
Point No.	X-Surf (ft)	Y-Surf (ft)
1	267.176	200.000
2	292.827	191.877
3	426.236	218.859
4	446.461	241.016
5	456.142	269.411
6	457.988	275.852

Factor of Safety
*** 1.885 ***

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

Westridge/14057-01/Sec 1-1' Entire Length / Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 1\1tle.plt Run By: LGC Geotechnical 4/17/2017 11:12AM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/17/2017

Time of Run: 11:12AM

Run By: LGC Geotechnical

Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab

ility\Sec 1\xtitle.in

Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab

ility\Sec 1\xtitle.OUT

Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab

ility\Sec 1\xtitle.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 1-1'/ Entire
Length / Seismic

BOUNDARY COORDINATES

24 Top Boundaries

43 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	200.00	40.00	200.00	4
2	40.00	200.00	70.00	210.00	1
3	70.00	210.00	90.00	210.00	1
4	90.00	210.00	127.00	200.00	1
5	127.00	200.00	275.00	200.00	1
6	275.00	200.00	325.00	214.00	1
7	325.00	214.00	327.50	224.00	1
8	327.50	224.00	337.00	224.00	1
9	337.00	224.00	470.00	281.00	1
10	470.00	281.00	490.00	281.00	1
11	490.00	281.00	520.00	290.00	1
12	520.00	290.00	600.00	292.00	1
13	600.00	292.00	641.00	295.00	1
14	641.00	295.00	671.00	302.00	1
15	671.00	302.00	711.00	320.00	1
16	711.00	320.00	721.00	323.00	1
17	721.00	323.00	746.00	332.00	1
18	746.00	332.00	772.00	332.00	1
19	772.00	332.00	805.00	348.00	1
20	805.00	348.00	813.00	348.00	1
21	813.00	348.00	874.00	376.00	1
22	874.00	376.00	880.00	376.00	1
23	880.00	376.00	897.00	384.00	1
24	897.00	384.00	1200.00	384.00	1
25	40.00	200.00	45.00	195.00	4
26	45.00	195.00	265.00	195.00	4
27	265.00	195.00	292.00	195.00	3
28	292.00	195.00	397.00	225.00	3
29	397.00	225.00	450.00	229.00	3
30	450.00	229.00	466.00	220.00	3
31	466.00	220.00	500.00	214.00	3
32	500.00	214.00	556.00	244.00	3
33	556.00	244.00	686.00	300.00	2
34	686.00	300.00	711.00	320.00	2
35	711.00	320.00	743.00	287.00	2
36	743.00	287.00	754.00	277.00	3
37	754.00	277.00	831.00	277.00	3
38	831.00	277.00	974.00	371.00	3
39	974.00	371.00	1200.00	371.00	3
40	556.00	244.00	670.00	267.00	3

41 670.00 267.00 743.00 287.00 3

42 0.00 150.00 193.00 173.00 3

43 193.00 173.00 265.00 195.00 3

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil No.	Total (pcf)	Saturated (pcf)	Cohesion (psf)	Friction (deg)	Pore Pressure Param. (psf)	Pressure Constant	Piez. Surface No.
1	120.0	120.0	180.0	34.0	0.00	0.0	1
2	125.0	125.0	200.0	24.0	0.00	0.0	1
3	125.0	125.0	500.0	34.0	0.00	0.0	1
4	120.0	120.0	200.0	28.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 3 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise Direction Limit (deg)	Cohesion (psf)	Friction Angle (deg)
1	7.0	500.00	34.00
2	12.0	200.00	27.00
3	90.0	500.00	34.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	195.00
2	1200.00	195.00

Specified Peak Ground Acceleration Coefficient (A) = 0.150(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 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	267.176	200.000
2	292.827	191.877
3	426.236	218.859
4	446.461	241.016
5	456.142	269.411
6	457.988	275.852

Janbu's Empirical Coefficient (fo) = 1.072

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

Factor Of Safety For The Preceding Specified Surface = 1.376

Table 1 - Individual Data on the 14 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Top (lbs)	Water Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Surcharge Load Ver (lbs)	Surcharge Load (lbs)
1	7.8	1163.1	0.0	0.0	0.0	0.0	174.5	0.0	0.0
2	8.0	4639.5	0.0	0.0	0.0	0.0	695.9	0.0	0.0
3	9.0	10825.9	0.0	846.0	0.0	0.0	1623.9	0.0	0.0
4	0.8	1289.8	0.0	162.0	0.0	0.0	193.5	0.0	0.0
5	15.4	25721.9	0.0	1535.0	0.0	0.0	3858.3	0.0	0.0
6	16.7	30495.4	0.0	0.0	0.0	0.0	4574.3	0.0	0.0
7	2.5	6185.8	0.0	0.0	0.0	0.0	927.9	0.0	0.0
8	9.5	27846.5	0.0	0.0	0.0	0.0	4177.0	0.0	0.0

9	60.0	218711.1	0.0	0.0	0.0	0.0	32806.7	0.0	0.0
10	29.2	142092.9	0.0	0.0	0.0	0.0	21313.9	0.0	0.0
11	8.2	40095.2	0.0	0.0	0.0	0.0	6014.3	0.0	0.0
12	12.0	49001.8	0.0	0.0	0.0	0.0	7350.3	0.0	0.0
13	9.7	20647.1	0.0	0.0	0.0	0.0	3097.1	0.0	0.0
14	1.8	625.8	0.0	0.0	0.0	0.0	93.9	0.0	0.0

Table 2 - Base Stress Data on the 14 Slices									
Slice No.	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)				
1	-17.57	271.09	8.21	347.99	-23.62				
2	-17.57	278.98	8.35	711.30	-92.55				
3	-17.57	287.48	9.48	1549.56	-190.40				
4	-17.57	292.41	0.87	1770.67	-247.83				
5	11.43	300.55	15.75	948.35	575.13				
6	11.43	316.63	17.07	1071.30	629.27				
7	11.43	326.25	2.55	1386.50	854.28				
8	11.43	332.25	9.69	1607.46	1012.03				
9	11.43	367.00	61.21	1952.77	1258.53				
10	11.43	411.62	29.83	2540.39	1678.03				
11	47.61	430.33	12.14	3672.22	4114.19				
12	47.61	440.44	17.86	2822.90	3417.06				
13	71.17	451.30	30.00	2057.84	2121.88				
14	74.01	457.07	6.70	547.36	339.88				

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 427238.62 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 1859.85(psf)
Sum of the Driving Forces = 332803.47 (lbs)
Average Mobilized Shear Stress = 1448.76(psf)
Total length of the failure surface = 229.72(ft)

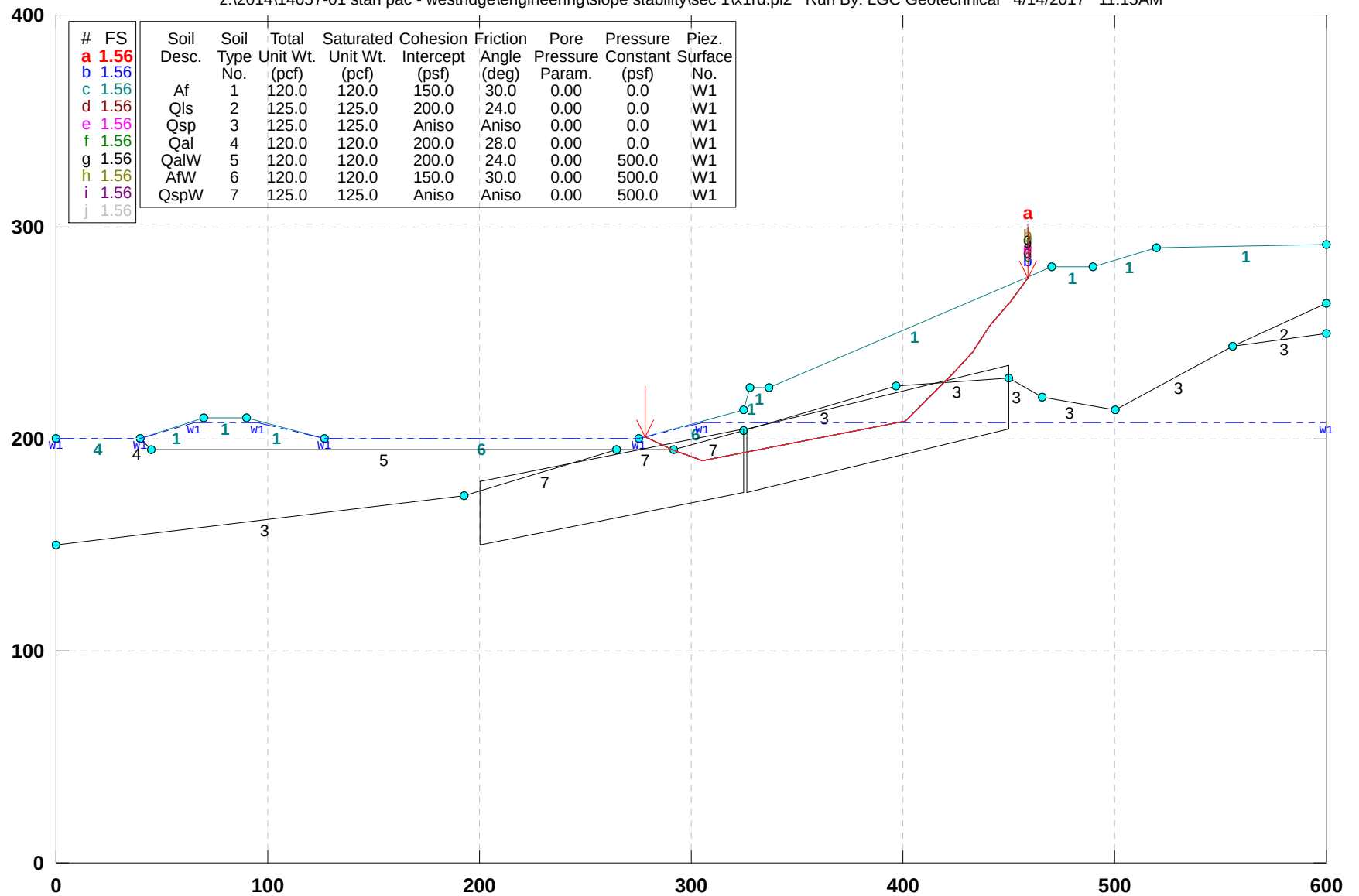
*** SEISMIC SLOPE DISPLACEMENT DATA ***

(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.3160(g)
Calculated Newmark Seismic Displacement = 0.003(ft)
Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

Westridge/14057-01/Sec 1-1' Lower Basin / Rapid Drawdown

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 1\1rd.pl2 Run By: LGC Geotechnical 4/14/2017 11:15AM

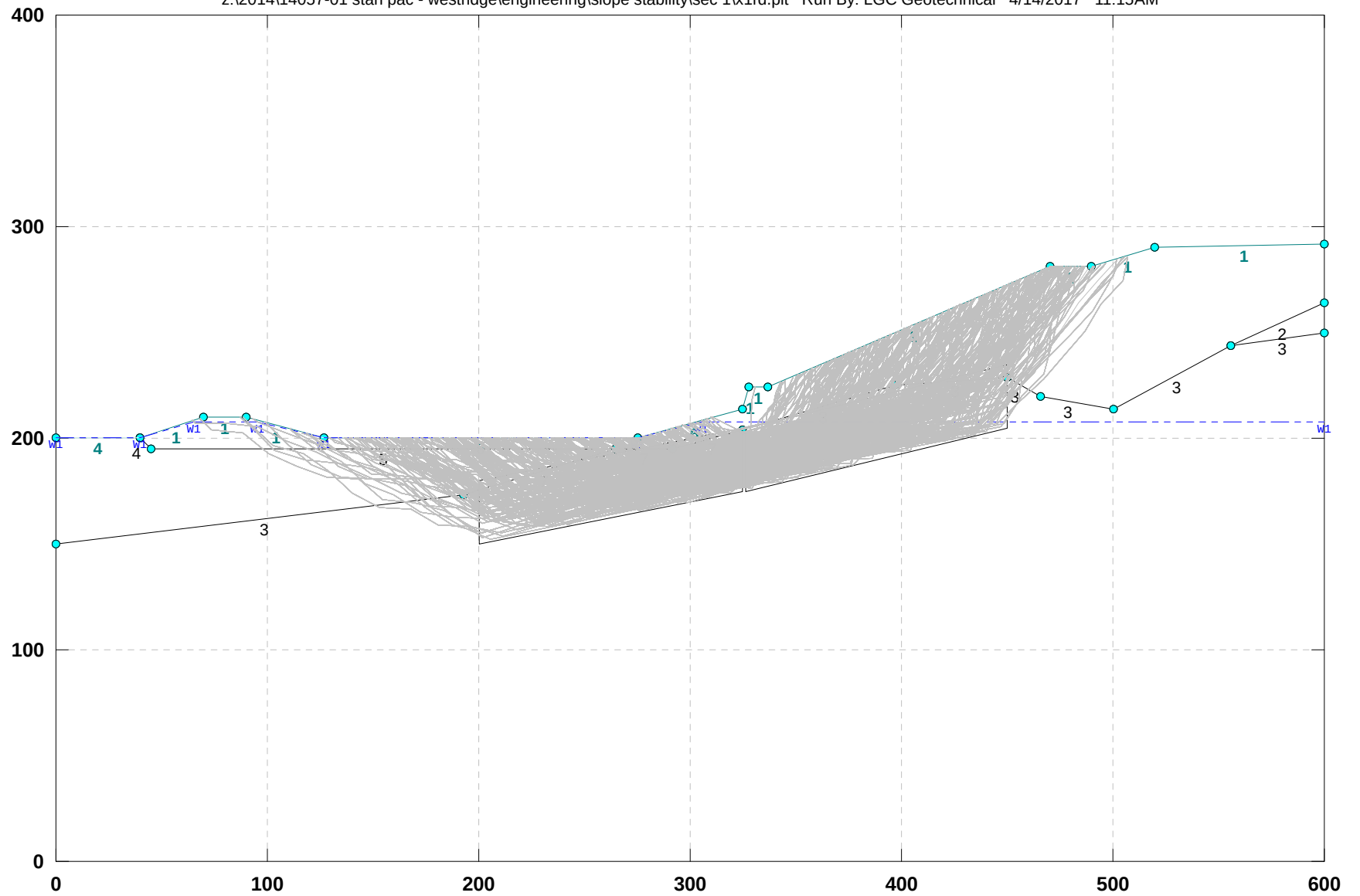


GSTABL7 v.2 FSmin=1.56

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

Westridge/14057-01/Sec 1-1' Lower Basin / Rapid Drawdown

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 1\1rd.plt Run By: LGC Geotechnical 4/14/2017 11:15AM



*** GSTABL7 ***
** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **
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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: 4/14/2017
Time of Run: 11:15AM
Run By: LGC Geotechnical
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 1\x1rd.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 1\x1rd.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 1\x1rd.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 1-1'/ Lower
Basin / Rapid Drawdown

BOUNDARY COORDINATES
12 Top Boundaries

25 Total Boundaries

Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	200.00	40.00	200.00	4
	2	40.00	200.00	70.00	210.00	1
	3	70.00	210.00	90.00	210.00	1
	4	90.00	210.00	127.00	200.00	1
	5	127.00	200.00	275.00	200.00	6
	6	275.00	200.00	325.00	214.00	6
	7	325.00	214.00	327.50	224.00	1
	8	327.50	224.00	337.00	224.00	1
	9	337.00	224.00	470.00	281.00	1
	10	470.00	281.00	490.00	281.00	1
	11	490.00	281.00	520.00	290.00	1
	12	520.00	290.00	600.00	292.00	1
	13	40.00	200.00	45.00	195.00	4
	14	45.00	195.00	265.00	195.00	5
	15	265.00	195.00	292.00	195.00	7
	16	292.00	195.00	325.00	204.20	7
	17	325.00	204.20	397.00	225.00	3
	18	397.00	225.00	450.00	229.00	3
	19	450.00	229.00	466.00	220.00	3
	20	466.00	220.00	500.00	214.00	3
	21	500.00	214.00	556.00	244.00	3
	22	556.00	244.00	600.00	264.00	2
	23	556.00	244.00	600.00	250.00	3
	24	0.00	150.00	193.00	173.00	3
	25	193.00	173.00	265.00	195.00	7

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

7 Type(s) of Soil

Piez.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
Surface	Type	Unit	Wt.	Unit	Wt.	Intercept	Angle
No.	No.	(pcf)	(pcf)	(psf)	(deg)	Pressure	Constant
						Param.	(psf)

1	1	120.0	120.0	150.0	30.0	0.00	0.0
1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	300.0	32.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0
1	5	120.0	120.0	200.0	24.0	0.00	500.0
1	6	120.0	120.0	150.0	30.0	0.00	500.0
1	7	125.0	125.0	300.0	32.0	0.00	500.0

ANISOTROPIC STRENGTH PARAMETERS
2 soil type(s)

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	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

Soil Type 7 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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

crack.
C equal to zero, with no water weight in the tension
(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

1 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 8 Coordinate Points
Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	200.00
2	40.00	200.00
3	65.00	208.00
4	95.00	208.00
5	127.00	200.00
6	275.00	200.00
7	305.00	208.00
8	600.00	208.00

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.

5000 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 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)

1	200.00	165.00	325.00	190.00	30.00
2	326.00	190.00	450.00	220.00	30.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 5000

Number of Trial Surfaces With Valid FS = 5000

Statistical Data On All Valid FS Values:

22.49 % FS Max = 4.869 FS Min = 1.555 FS Ave = 2.257
Standard Deviation = 0.508 Coefficient of Variation =

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	277.900	200.812
2	291.304	195.024
3	305.217	189.418
4	401.494	208.461
5	412.101	219.068
6	422.537	229.842
7	433.098	240.494
8	440.667	253.444
9	450.681	264.612
10	459.188	276.366

Factor of Safety
*** 1.555 ***

Individual data on the 20 slices

Water Water Tie Tie Earthquake

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Force	Force	Force	Force	Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1 0.0	0.1	0.1	0.0	30.1	0.	0.	0.0	0.0
2 0.0	13.3	7673.2	0.0	11359.3	0.	0.	0.0	0.0
3 0.0	0.1	68.4	0.0	68.3	0.	0.	0.0	0.0
4 0.0	0.6	748.8	0.0	739.5	0.	0.	0.0	0.0
5 0.0	13.0	22855.3	0.0	18965.6	0.	0.	0.0	0.0
6 0.0	0.2	503.9	0.0	387.6	0.	0.	0.0	0.0
7 0.0	19.8	48133.1	0.0	31004.3	0.	0.	0.0	0.0
8 0.0	2.5	7763.8	0.0	2293.4	0.	0.	0.0	0.0
9 0.0	9.5	33875.7	0.0	7997.8	0.	0.	0.0	0.0
10 0.0	1.2	4005.7	0.0	894.1	0.	0.	0.0	0.0
11 0.0	58.8	253980.2	0.0	23386.4	0.	0.	0.0	0.0
12 0.0	2.2	11201.6	0.0	29.5	0.	0.	0.0	0.0
13 0.0	2.3	12192.1	0.0	0.0	0.	0.	0.0	0.0
14 0.0	10.6	51734.8	0.0	0.0	0.	0.	0.0	0.0
15 0.0	7.4	31073.0	0.0	0.0	0.	0.	0.0	0.0
16 0.0	3.0	11599.0	0.0	0.0	0.	0.	0.0	0.0
17 0.0	10.6	35172.4	0.0	0.0	0.	0.	0.0	0.0
18 0.0	7.6	18017.7	0.0	0.0	0.	0.	0.0	0.0
19 0.0	10.0	13876.0	0.0	0.0	0.	0.	0.0	0.0
20 0.0	8.5	4138.6	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	277.900	200.812
2	291.304	195.024
3	305.217	189.418
4	401.494	208.461
5	412.101	219.068
6	422.537	229.842
7	433.098	240.494
8	440.667	253.444
9	450.681	264.612
10	459.188	276.366

Factor of Safety
*** 1.555 ***

1

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	277.900	200.812
2	291.304	195.024
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Factor of Safety
*** 1.555 ***

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Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
*** 1.555 ***

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Factor of Safety
*** 1.555 ***

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Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
*** 1.555 ***

1

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
*** 1.555 ***

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Point No.	X-Surf (ft)	Y-Surf (ft)
1	277.900	200.812
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Factor of Safety
*** 1.555 ***

1

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	277.900	200.812
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Factor of Safety
*** 1.555 ***

Failure Surface Specified By 10 Coordinate Points

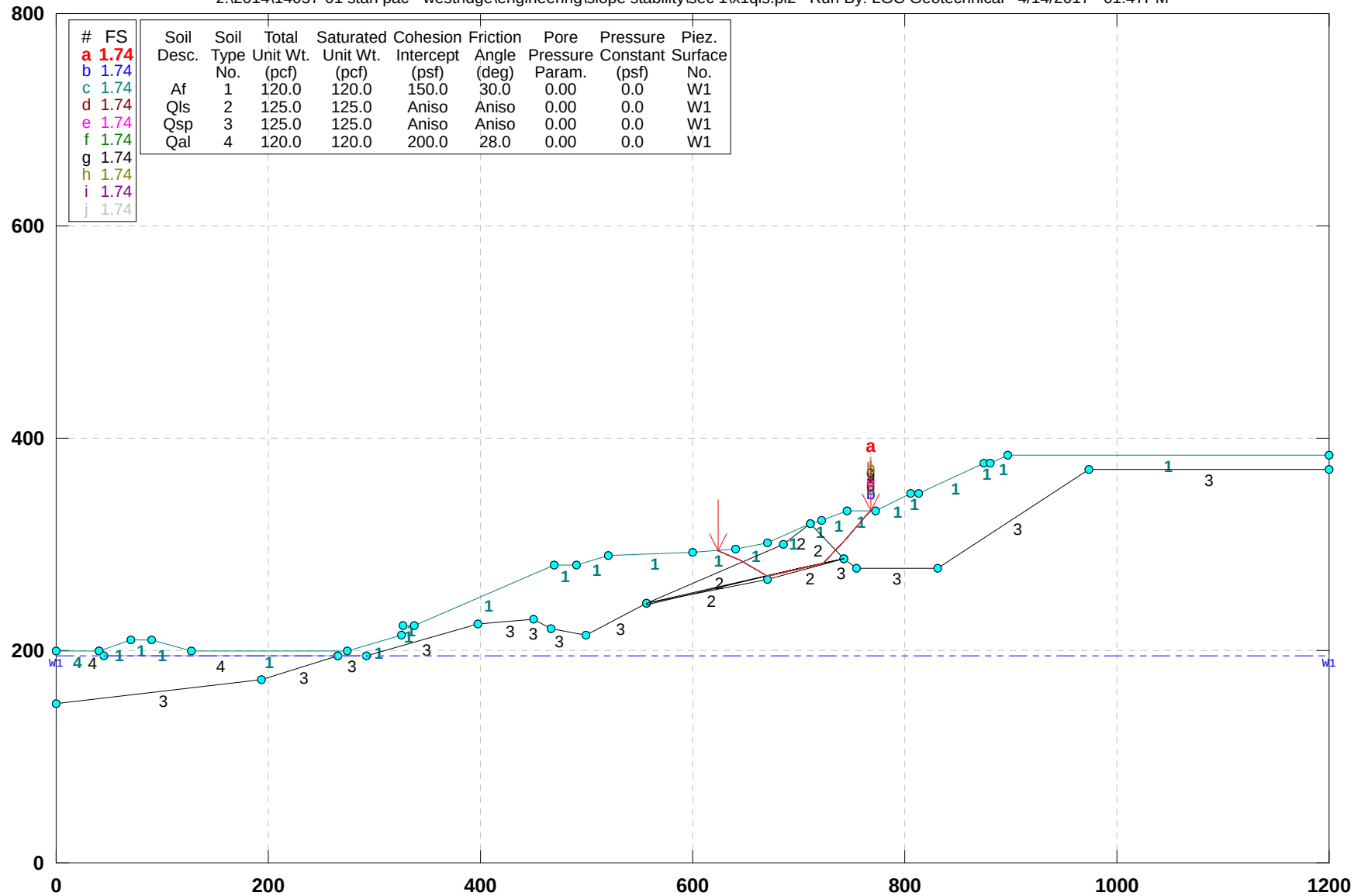
Point No.	X-Surf (ft)	Y-Surf (ft)
1	277.900	200.812
2	291.304	195.024
3	305.217	189.418
4	401.494	208.461
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7	433.098	240.494
8	440.667	253.444
9	450.681	264.612
10	459.188	276.366

Factor of Safety
*** 1.555 ***

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

Westridge/14057-01/Sec 1-1' Qls / Static

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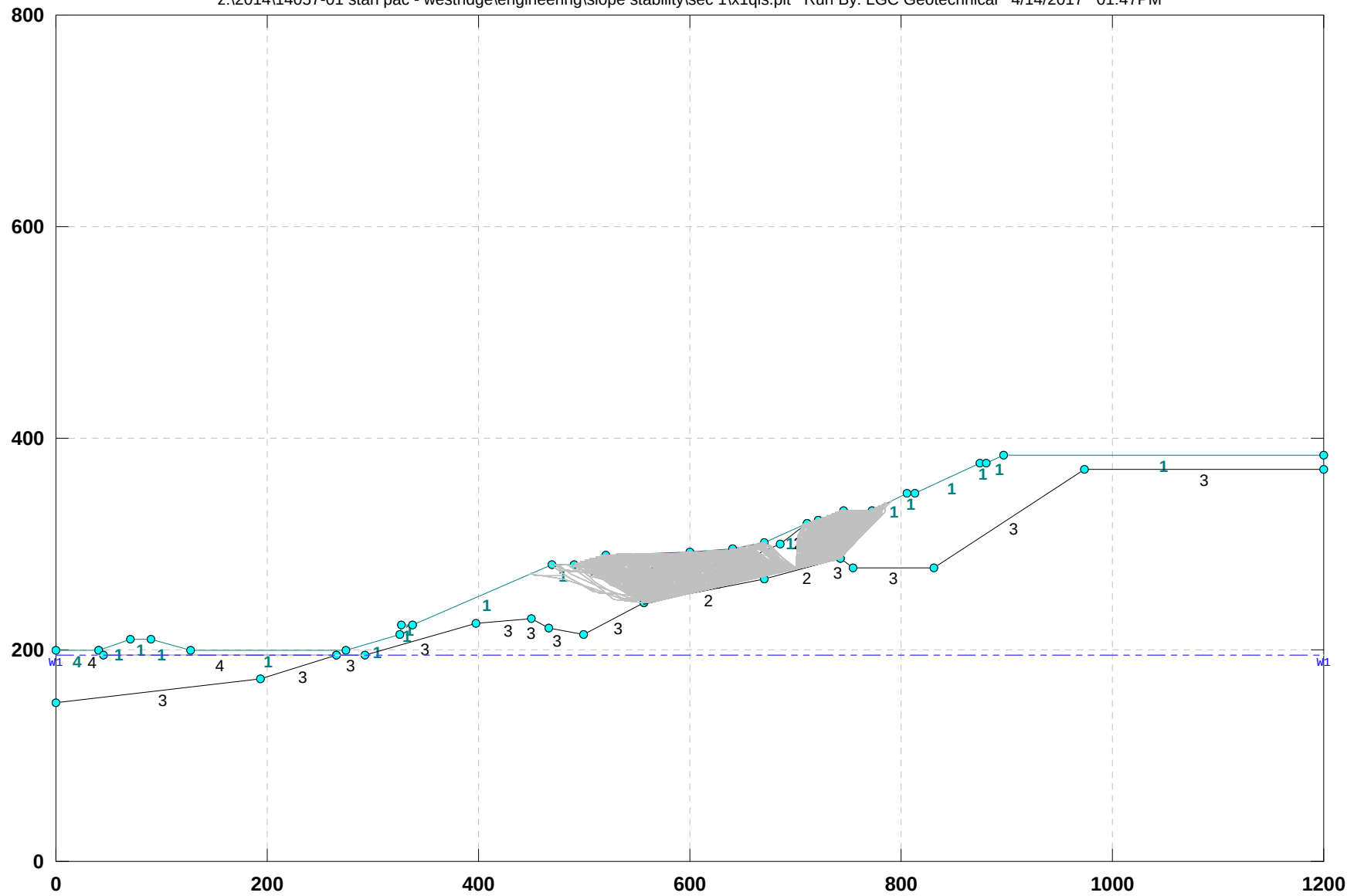


GSTABL7 v.2 FSmin=1.74

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

Westridge/14057-01/Sec 1-1' Qls / Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 1\1qls.plt Run By: LGC Geotechnical 4/14/2017 01:47PM



*** GSTABL7 ***

Ph.D.,P.E.,D.GE ** ** GSTABL7 by Dr. Garry H. Gregory,
 Feb. 2013 ** ** Original Version 1.0, January 1996; Current Ver. 2.005.3,
 Prohibited) (All Rights Reserved-Unauthorized Use

Slices. SLOPE STABILITY ANALYSIS SYSTEM
 Modified Bishop, Simplified Janbu, or GLE Method of
 (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: 4/14/2017
 Time of Run: 01:47PM
 Run By: LGC Geotechnical
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 Westridge\Engineering\Slope Stability\Sec 1\xlqsl.in
 Output Filename: Z:\2014\14057-01 Stan Pac -
 Westridge\Engineering\Slope Stability\Sec 1\xlqsl.OUT
 Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
 Westridge\Engineering\Slope Stability\Sec 1\xlqsl.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 1-1'/ Qls
 / Static

BOUNDARY COORDINATES

24 Top Boundaries

43 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	200.00	40.00	200.00	4
	2	40.00	200.00	70.00	210.00	1
	3	70.00	210.00	90.00	210.00	1
	4	90.00	210.00	127.00	200.00	1
	5	127.00	200.00	275.00	200.00	1
	6	275.00	200.00	325.00	214.00	1
	7	325.00	214.00	327.50	224.00	1
	8	327.50	224.00	337.00	224.00	1
	9	337.00	224.00	470.00	281.00	1
	10	470.00	281.00	490.00	281.00	1
	11	490.00	281.00	520.00	290.00	1
	12	520.00	290.00	600.00	292.00	1
	13	600.00	292.00	641.00	295.00	1
	14	641.00	295.00	671.00	302.00	1
	15	671.00	302.00	711.00	320.00	1
	16	711.00	320.00	721.00	323.00	1
	17	721.00	323.00	746.00	332.00	1
	18	746.00	332.00	772.00	332.00	1
	19	772.00	332.00	805.00	348.00	1
	20	805.00	348.00	813.00	348.00	1
	21	813.00	348.00	874.00	376.00	1
	22	874.00	376.00	880.00	376.00	1
	23	880.00	376.00	897.00	384.00	1
	24	897.00	384.00	1200.00	384.00	1
	25	40.00	200.00	45.00	195.00	4
	26	45.00	195.00	265.00	195.00	4
	27	265.00	195.00	292.00	195.00	3
	28	292.00	195.00	397.00	225.00	3
	29	397.00	225.00	450.00	229.00	3
	30	450.00	229.00	466.00	220.00	3
	31	466.00	220.00	500.00	214.00	3
	32	500.00	214.00	556.00	244.00	3
	33	556.00	244.00	686.00	300.00	2
	34	686.00	300.00	711.00	320.00	2
	35	711.00	320.00	743.00	287.00	2
	36	743.00	287.00	754.00	277.00	3
	37	754.00	277.00	831.00	277.00	3
	38	831.00	277.00	974.00	371.00	3
	39	974.00	371.00	1200.00	371.00	3
	40	556.00	244.00	670.00	267.00	2
	41	670.00	267.00	743.00	287.00	2
	42	0.00	150.00	193.00	173.00	3
	43	193.00	173.00	265.00	195.00	3

Default Y-Origin = 0.00(ft)

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

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant (psf)
1	1	120.0	120.0	150.0	30.0	0.00	0.0
1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	300.0	32.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
2 soil type(s)

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	5.0	24.00	24.00
2	15.0	0.00	13.00
3	90.0	200.00	24.00

Soil Type 3 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction	Counterclockwise	Cohesion	Friction

Range No.	Direction Limit (deg)	Intercept (psf)	Angle (deg)
1	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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.

crack.

1

1 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points
Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	195.00
2	1200.00	195.00

both > 0
1

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

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

5000 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 30.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	556.00	244.00	700.00	277.20	0.50
2	700.10	277.20	743.10	287.00	0.50

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 5000

Number of Trial Surfaces With Valid FS = 5000

Statistical Data On All Valid FS Values:

FS Max = 9.972 FS Min = 1.737 FS Ave = 2.670
Standard Deviation = 0.948 Coefficient of Variation = 35.49 %

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	624.498	293.793
2	644.785	285.308
3	670.706	270.205
4	722.574	282.355
5	743.322	304.023
6	763.230	326.465
7	768.160	332.000

Factor of Safety
*** 1.737 ***

Individual data on the 14 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force	Water Force	Tie Force	Tie Force	Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	16.5	8028.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	3.8	4243.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	3.0	4281.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	22.9	62836.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	0.3	1153.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	15.0	61875.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	25.0	117138.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	10.0	50523.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	1.6	7973.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	12.4	55753.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	8.4	29974.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
12	2.7	8351.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
13	17.2	31523.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
14	4.9	1637.0	0.0	0.0	0.	0.	0.0	0.0
0.0								

Failure Surface Specified By 7 Coordinate Points

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2	644.785	285.308
3	670.706	270.205
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6	763.230	326.465
7	768.160	332.000

Factor of Safety

*** 1.737 ***

1

Failure Surface Specified By 7 Coordinate Points

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Factor of Safety
*** 1.737 ***

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*** 1.737 ***

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Factor of Safety

*** 1.737 ***

Failure Surface Specified By 7 Coordinate Points

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Factor of Safety
*** 1.737 ***

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Failure Surface Specified By 7 Coordinate Points

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6	763.230	326.465
7	768.160	332.000

Factor of Safety
*** 1.737 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

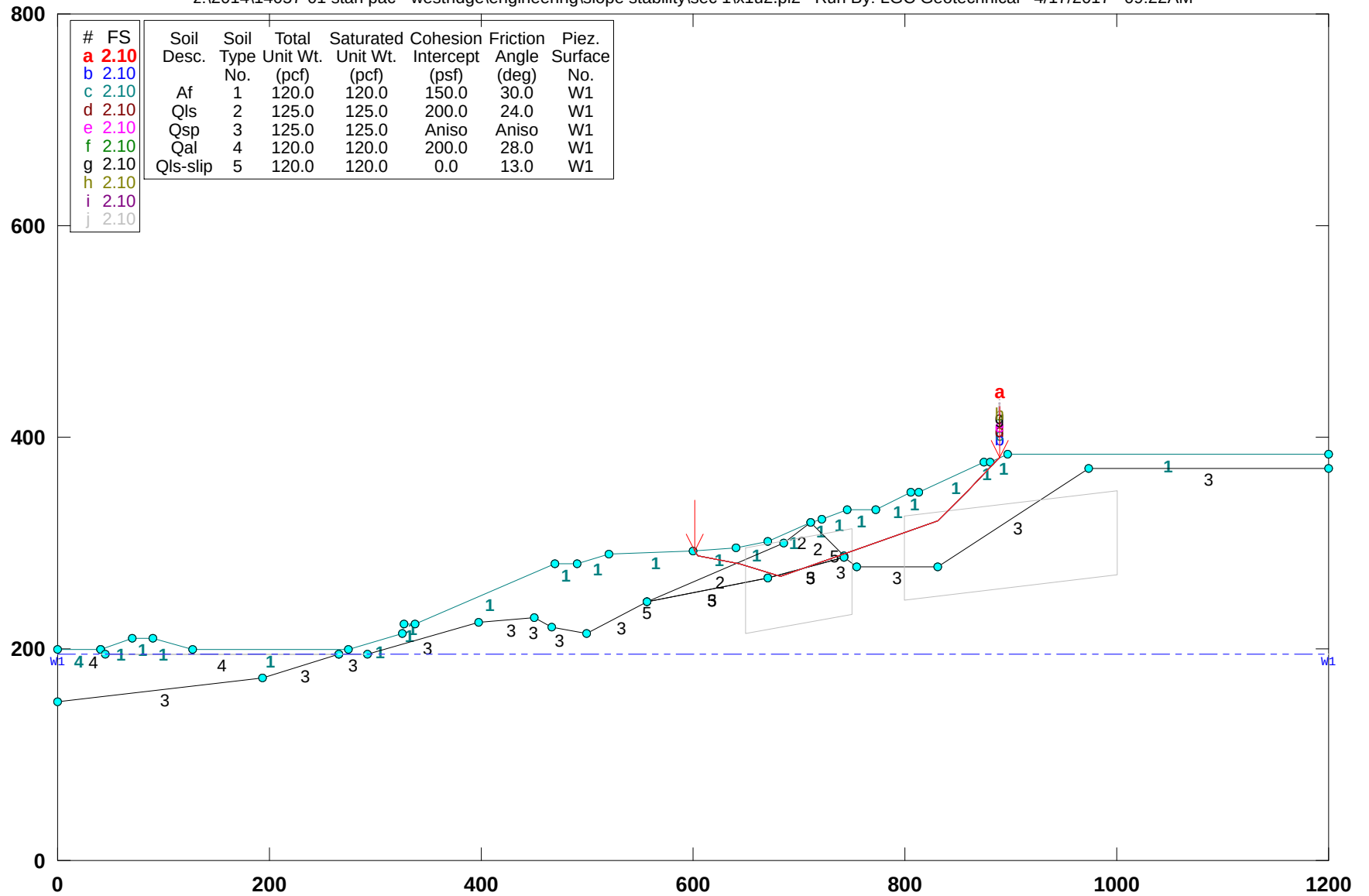
1	624.498	293.793
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5	743.322	304.023
6	763.230	326.465
7	768.160	332.000

Factor of Safety
*** 1.737 ***

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

Westridge/14057-01/Sec 1-1' Upper Slope / Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 1\1u2.pl2 Run By: LGC Geotechnical 4/17/2017 09:22AM

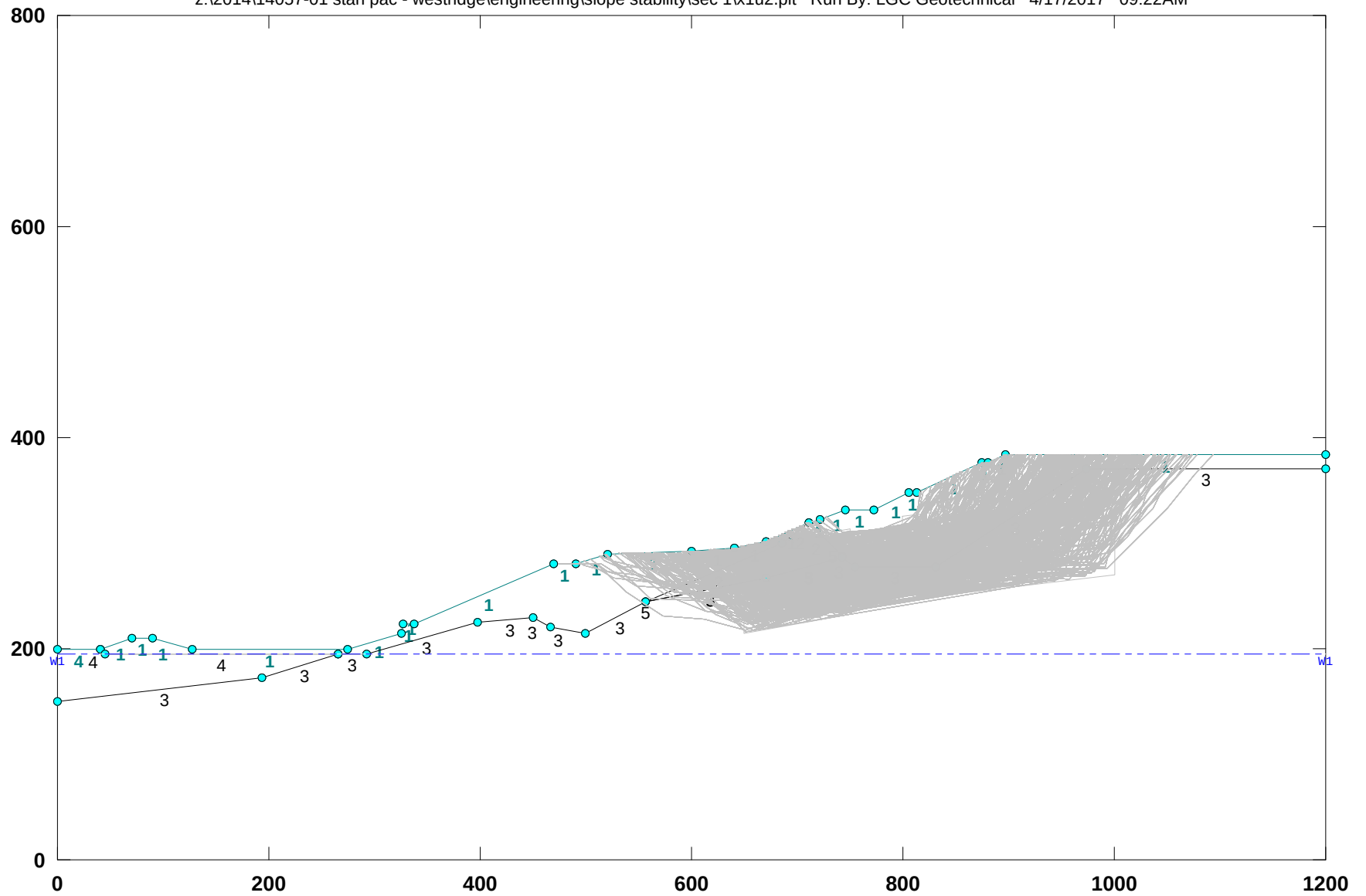


GSTABL7 v.2 FSmin=2.10

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

Westridge/14057-01/Sec 1-1'/ Upper Slope / Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 1x1u2.plt Run By: LGC Geotechnical 4/17/2017 09:22AM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/17/2017
 Time of Run: 09:22AM
 Run By: LGC Geotechnical
 Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 1\1x1u2.in
 Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 1\1x1u2.0UT
 Unit System: English
 Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 1\1x1u2.PLT
 PROBLEM DESCRIPTION: Westridge/14057-01/Sec 1-1'/ Upper Slope / Static

BOUNDARY COORDINATES

24 Top Boundaries

47 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	200.00	40.00	200.00	4
2	40.00	200.00	70.00	210.00	1
3	70.00	210.00	90.00	210.00	1
4	90.00	210.00	127.00	200.00	1
5	127.00	200.00	275.00	200.00	1
6	275.00	200.00	325.00	214.00	1
7	325.00	214.00	327.50	224.00	1
8	327.50	224.00	337.00	224.00	1
9	337.00	224.00	470.00	281.00	1
10	470.00	281.00	490.00	281.00	1
11	490.00	281.00	520.00	290.00	1
12	520.00	290.00	600.00	292.00	1
13	600.00	292.00	641.00	295.00	1
14	641.00	295.00	671.00	302.00	1
15	671.00	302.00	711.00	320.00	1
16	711.00	320.00	721.00	323.00	1
17	721.00	323.00	746.00	332.00	1
18	746.00	332.00	772.00	332.00	1
19	772.00	332.00	805.00	348.00	1
20	805.00	348.00	813.00	348.00	1
21	813.00	348.00	874.00	376.00	1
22	874.00	376.00	880.00	376.00	1
23	880.00	376.00	897.00	384.00	1
24	897.00	384.00	1200.00	384.00	1
25	40.00	200.00	45.00	195.00	4
26	45.00	195.00	265.00	195.00	4
27	265.00	195.00	292.00	195.00	3
28	292.00	195.00	397.00	225.00	3
29	397.00	225.00	450.00	229.00	3
30	450.00	229.00	466.00	220.00	3
31	466.00	220.00	500.00	214.00	3
32	500.00	214.00	556.00	244.00	3
33	556.00	244.00	556.10	244.50	5
34	556.10	244.50	686.00	300.00	2
35	686.00	300.00	711.00	320.00	2
36	711.00	320.00	743.00	287.50	2
37	743.00	287.50	743.10	287.00	5
38	743.00	287.00	754.00	277.00	3
39	754.00	277.00	831.00	277.00	3
40	831.00	277.00	974.00	371.00	3

	41	42	43	44	45	46	47
	974.00	371.00	1200.00	371.00	3		
	556.00	244.00	670.00	267.00	5		
	670.00	267.00	743.00	287.00	5		
	0.00	150.00	193.00	173.00	3		
	193.00	173.00	265.00	195.00	3		
	556.00	244.00	670.00	266.50	3		
	670.00	266.50	743.00	287.00	3		

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

5 Type(s) of Soil

Soil Type	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant	Piez. Surface No.
1	120.0	120.0	150.0	30.0	0.00	0.0	1
2	125.0	125.0	200.0	24.0	0.00	0.0	1
3	125.0	125.0	300.0	32.0	0.00	0.0	1
4	120.0	120.0	200.0	28.0	0.00	0.0	1
5	120.0	120.0	0.0	13.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 3 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise Direction Limit (deg)	Cohesion (psf)	Friction Angle (deg)
1	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	195.00
2	1200.00	195.00

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.

5000 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 40.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	650.00	255.00	750.00	273.00	80.00
2	800.00	286.00	1000.00	310.00	80.00

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 = 13.141 FS Min = 2.104 FS Ave = 3.460

Standard Deviation = 1.001 Coefficient of Variation = 28.92 %

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	601.117	292.082

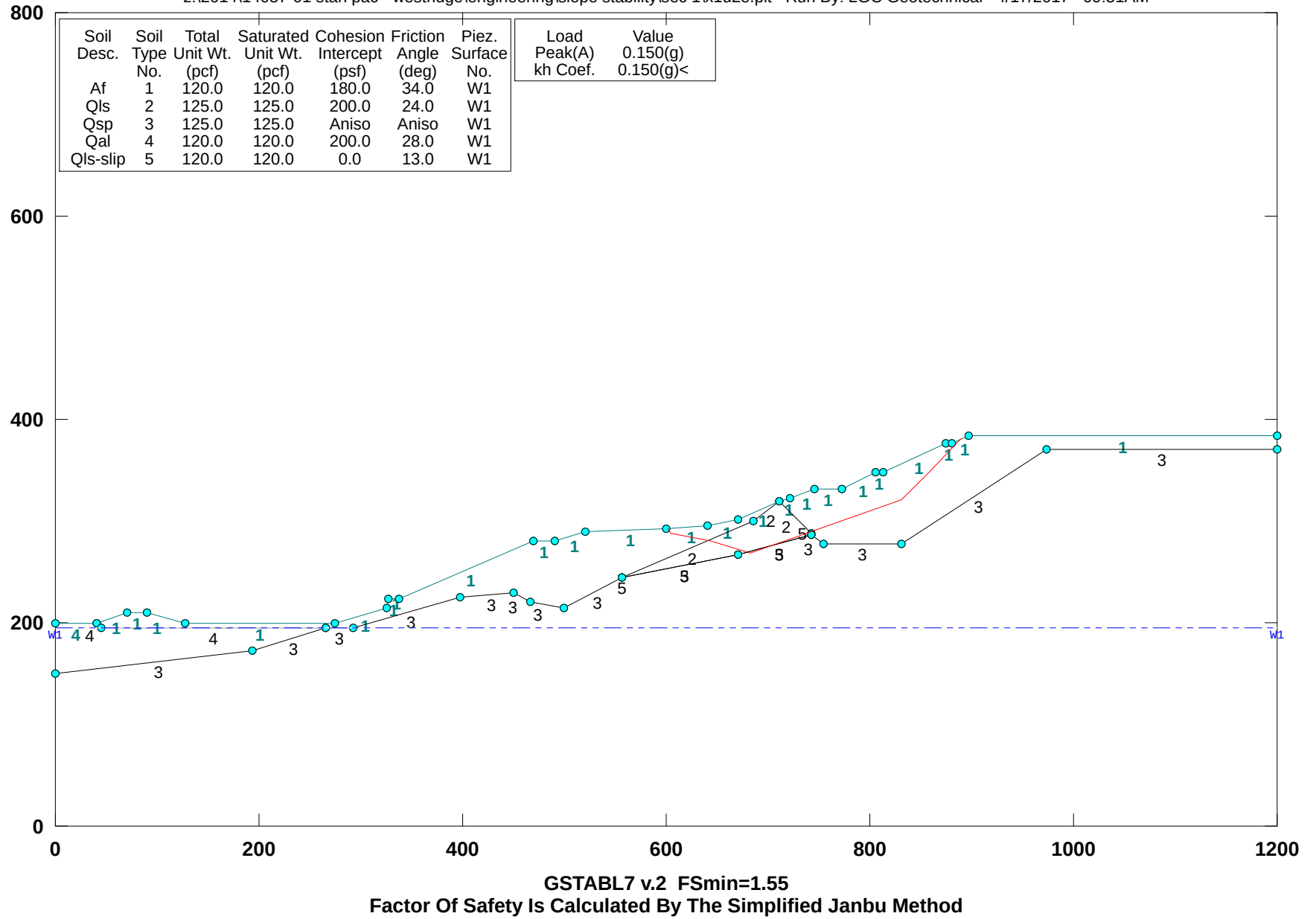
	2	604.919	288.440							
	3	644.227	281.036							
	4	682.343	268.903							
	5	830.994	321.355							
	6	858.907	350.006							
	7	887.168	378.313							
	8	889.169	380.315							
	Factor of Safety									
	*** 2.104 ***									
	Individual data on the 24 slices									
		Water	Water	Tie	Tie	Earthquake				
		Force	Force	Force	Force	Force	Surcharge			
Slice	Width	Weight	Top	Bot	Norm	Tan	Hor	Ver	Load	
No.	(ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	
1	3.8	894.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	36.1	37398.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
3	1.4	2317.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
4	1.8	3123.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	26.8	72491.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
6	8.8	35985.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7	0.7	3267.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
8	1.8	8242.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
9	3.7	17379.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
10	11.1	53870.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
11	4.0	19754.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
12	9.9	50090.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
13	10.0	50572.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
14	19.9	98383.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
15	5.1	24616.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
16	26.0	112470.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
17	33.0	133210.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
18	8.0	33029.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
19	18.0	73304.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
20	27.9	90389.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
21	15.1	27115.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
22	6.0	5667.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
23	7.2	2548.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
24	2.0	127.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Failure Surface Specified By 8 Coordinate Points									
	Point	X-Surf	Y-Surf							
	No.	(ft)	(ft)							
	1	601.117	292.082							
	2	604.919	288.440							
	3	644.227	281.036							
	4	682.343	268.903							
	5	830.994	321.355							
	6	858.907	350.006							
	7	887.168	378.313							
	8	889.169	380.315							
	Factor of Safety									
	*** 2.104 ***									
	Failure Surface Specified By 8 Coordinate Points									
	Point	X-Surf	Y-Surf							
	No.	(ft)	(ft)							
	1	601.117	292.082							
	2	604.919	288.440							
	3	644.227	281.036							
	4	682.343	268.903							
	5	830.994	321.355							
	6	858.907	350.006							
	7	887.168	378.313							
	8	889.169	380.315							
	Factor of Safety									
	*** 2.104 ***									
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	Point	X-Surf	Y-Surf							
	No.	(ft)	(ft)							
	1	601.117	292.082							
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	6	858.907	350.006							
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	8	889.169	380.315							
	Factor of Safety									
	*** 2.104 ***									
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	Point	X-Surf	Y-Surf							
	No.	(ft)	(ft)							
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	2	604.919	288.440							
	3	644.227	281.036							

	4	682.343	268.903							
	5	830.994	321.355							
	6	858.907	350.006							
	7	887.168	378.313							
	8	889.169	380.315							
	Factor of Safety									
	*** 2.104 ***									
	Failure Surface Specified By 8 Coordinate Points									
	Point	X-Surf	Y-Surf							
	No.	(ft)	(ft)							
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	6	858.907	350.006							
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	8	889.169	380.315							
	Factor of Safety									
	*** 2.104 ***									
	Failure Surface Specified By 8 Coordinate Points									
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	No.	(ft)	(ft)							
	1	601.117	292.082							
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	3	644.227	281.036							
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	5	830.994	321.355							
	6	858.907	350.006							
	7	887.168	378.313							
	8	889.169	380.315							
	Factor of Safety									
	*** 2.104 ***									
	Failure Surface Specified By 8 Coordinate Points									
	Point	X-Surf	Y-Surf							
	No.	(ft)	(ft)							
	1	601.117	292.082							
	2	604.919	288.440							
	3	644.227	281.036							
	4	682.343	268.903							
	5	830.994	321.355							
	6	858.907	350.006							
	7	887.168	378.313							
	8	889.169	380.315							
	Factor of Safety									
	*** 2.104 ***									
	Failure Surface Specified By 8 Coordinate Points									
	Point	X-Surf	Y-Surf							
	No.	(ft)	(ft)							
	1	601.117	292.082							
	2	604.919	288.440							
	3	644.227	281.036							

```
Factor of Safety
*** 2.104 ***
Failure Surface Specified By 8 Coordinate Points
Point X-Surf Y-Surf
No. (ft) (ft)
1 601.117 292.082
2 604.919 288.440
3 644.227 281.036
4 682.343 268.903
5 830.994 321.355
6 858.907 350.006
7 887.168 378.313
8 889.169 380.315
Factor of Safety
*** 2.104 ***
**** END OF GSTABL7 OUTPUT ****
```

Westridge/14057-01/Sec 1-1' Upper Slope / Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 1\1u2e.plt Run By: LGC Geotechnical 4/17/2017 09:31AM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **

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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: 4/17/2017

Time of Run: 09:31AM

Run By: LGC Geotechnical

Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 1\x1u2e.in

Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 1\x1u2e.OUT

Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 1\x1u2e.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 1-1'/ Upper Slope / Seismic

BOUNDARY COORDINATES

24 Top Boundaries

47 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	200.00	40.00	200.00	4
2	40.00	200.00	70.00	210.00	1
3	70.00	210.00	90.00	210.00	1
4	90.00	210.00	127.00	200.00	1
5	127.00	200.00	275.00	200.00	1
6	275.00	200.00	325.00	214.00	1
7	325.00	214.00	327.50	224.00	1
8	327.50	224.00	337.00	224.00	1
9	337.00	224.00	470.00	281.00	1
10	470.00	281.00	490.00	281.00	1
11	490.00	281.00	520.00	290.00	1
12	520.00	290.00	600.00	292.00	1
13	600.00	292.00	641.00	295.00	1
14	641.00	295.00	671.00	302.00	1
15	671.00	302.00	711.00	320.00	1
16	711.00	320.00	721.00	323.00	1
17	721.00	323.00	746.00	332.00	1
18	746.00	332.00	772.00	332.00	1
19	772.00	332.00	805.00	348.00	1
20	805.00	348.00	813.00	348.00	1
21	813.00	348.00	874.00	376.00	1
22	874.00	376.00	880.00	376.00	1
23	880.00	376.00	897.00	384.00	1
24	897.00	384.00	1200.00	384.00	1
25	40.00	200.00	45.00	195.00	4
26	45.00	195.00	265.00	195.00	4
27	265.00	195.00	292.00	195.00	3
28	292.00	195.00	397.00	225.00	3
29	397.00	225.00	450.00	229.00	3
30	450.00	229.00	466.00	220.00	3
31	466.00	220.00	500.00	214.00	3
32	500.00	214.00	556.00	244.00	3
33	556.00	244.00	556.10	244.50	5
34	556.10	244.50	686.00	300.00	2
35	686.00	300.00	711.00	320.00	2
36	711.00	320.00	743.00	287.50	2
37	743.00	287.50	743.10	287.00	5
38	743.00	287.00	754.00	277.00	3
39	754.00	277.00	831.00	277.00	3
40	831.00	277.00	974.00	371.00	3

41	974.00	371.00	1200.00	371.00	3
42	556.00	244.00	670.00	267.00	5
43	670.00	267.00	743.00	287.00	5
44	0.00	150.00	193.00	173.00	3
45	193.00	173.00	265.00	195.00	3
46	556.00	244.00	670.00	266.50	3
47	670.00	266.50	743.00	287.00	3

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

5 Type(s) of Soil

Soil Type	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Piez. Constant Surface No.
1	120.0	120.0	180.0	34.0	0.00	0.0
2	125.0	125.0	200.0	24.0	0.00	0.0
3	125.0	125.0	500.0	34.0	0.00	0.0
4	120.0	120.0	200.0	28.0	0.00	0.0
5	120.0	120.0	0.0	13.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 3 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise Direction Limit (deg)	Cohesion (psf)	Friction Angle (deg)
1	7.0	500.00	34.00
2	12.0	200.00	27.00
3	90.0	500.00	34.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	195.00
2	1200.00	195.00

Specified Peak Ground Acceleration Coefficient (A) = 0.150(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	601.117	292.082
2	604.919	288.440
3	644.227	281.036
4	682.343	268.903
5	830.994	321.355
6	858.907	350.006
7	887.168	378.313
8	889.169	380.315

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 = 1.548

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	3.8	894.2	0.0	0.0	0.0	0.0	134.1	0.0	0.0

2	36.1	37400.2	0.0	0.0	0.0	0.0	5610.0	0.0	0.0
3	1.4	2316.0	0.0	0.0	0.0	0.0	347.4	0.0	0.0
4	1.8	3124.6	0.0	0.0	0.0	0.0	468.7	0.0	0.0
5	26.8	72492.7	0.0	0.0	0.0	0.0	10873.9	0.0	0.0
6	8.8	35988.0	0.0	0.0	0.0	0.0	5398.2	0.0	0.0
7	0.7	3267.4	0.0	0.0	0.0	0.0	490.1	0.0	0.0
8	1.8	8242.0	0.0	0.0	0.0	0.0	1236.3	0.0	0.0
9	3.7	17377.6	0.0	0.0	0.0	0.0	2606.6	0.0	0.0
10	11.1	53863.2	0.0	0.0	0.0	0.0	8079.5	0.0	0.0
11	4.0	19755.0	0.0	0.0	0.0	0.0	2963.3	0.0	0.0
12	9.9	50096.4	0.0	0.0	0.0	0.0	7514.5	0.0	0.0
13	10.0	50572.4	0.0	0.0	0.0	0.0	7585.9	0.0	0.0
14	19.9	98383.4	0.0	0.0	0.0	0.0	14757.5	0.0	0.0
15	5.1	24616.5	0.0	0.0	0.0	0.0	3692.5	0.0	0.0
16	26.0	112470.8	0.0	0.0	0.0	0.0	16870.6	0.0	0.0
17	33.0	133211.2	0.0	0.0	0.0	0.0	19981.7	0.0	0.0
18	8.0	33029.5	0.0	0.0	0.0	0.0	4954.4	0.0	0.0
19	18.0	73306.7	0.0	0.0	0.0	0.0	10996.0	0.0	0.0
20	27.9	90388.9	0.0	0.0	0.0	0.0	13558.3	0.0	0.0
21	15.1	27115.3	0.0	0.0	0.0	0.0	4067.3	0.0	0.0
22	6.0	5667.5	0.0	0.0	0.0	0.0	850.1	0.0	0.0
23	7.2	2549.0	0.0	0.0	0.0	0.0	382.3	0.0	0.0
24	2.0	127.3	0.0	0.0	0.0	0.0	19.1	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	-43.77	603.02	5.26	804.98	-137.21
2	-10.67	622.96	36.72	974.64	-39.07
3	-10.67	641.71	1.44	1424.75	-61.76
4	-10.67	643.32	1.85	1040.50	-64.95
5	-17.66	657.61	28.10	1623.73	-434.28
6	-17.66	675.42	9.28	2323.42	-652.47
7	-17.66	680.21	0.76	1151.22	-725.91
8	-17.66	681.46	1.86	4426.58	-744.95
9	19.44	684.17	3.88	3405.33	2253.31
10	19.44	691.55	11.77	3466.93	2300.43
11	19.44	699.10	4.23	1152.88	2350.60
12	19.44	706.04	10.51	2358.93	2396.75
13	19.44	716.00	10.60	2360.18	2398.14
14	19.44	730.97	21.16	2306.34	2338.57
15	19.44	743.47	5.36	3187.02	2311.29
16	19.44	759.00	27.57	2847.12	2051.29
17	19.44	788.50	34.99	2667.90	1914.20
18	19.44	809.00	8.48	2724.92	1957.82
19	19.44	822.00	19.08	2690.98	1931.85
20	45.75	844.95	40.00	2340.80	2658.42
21	45.05	866.45	21.36	1371.26	1461.79
22	45.05	877.00	8.49	805.08	768.57
23	45.05	883.58	10.15	413.67	289.35
24	45.01	888.17	2.83	219.57	51.73

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 671393.12 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 2061.21(psf)
Sum of the Driving Forces = 459853.97 (lbs)
Average Mobilized Shear Stress = 1411.77(psf)
Total length of the failure surface = 325.73(ft)

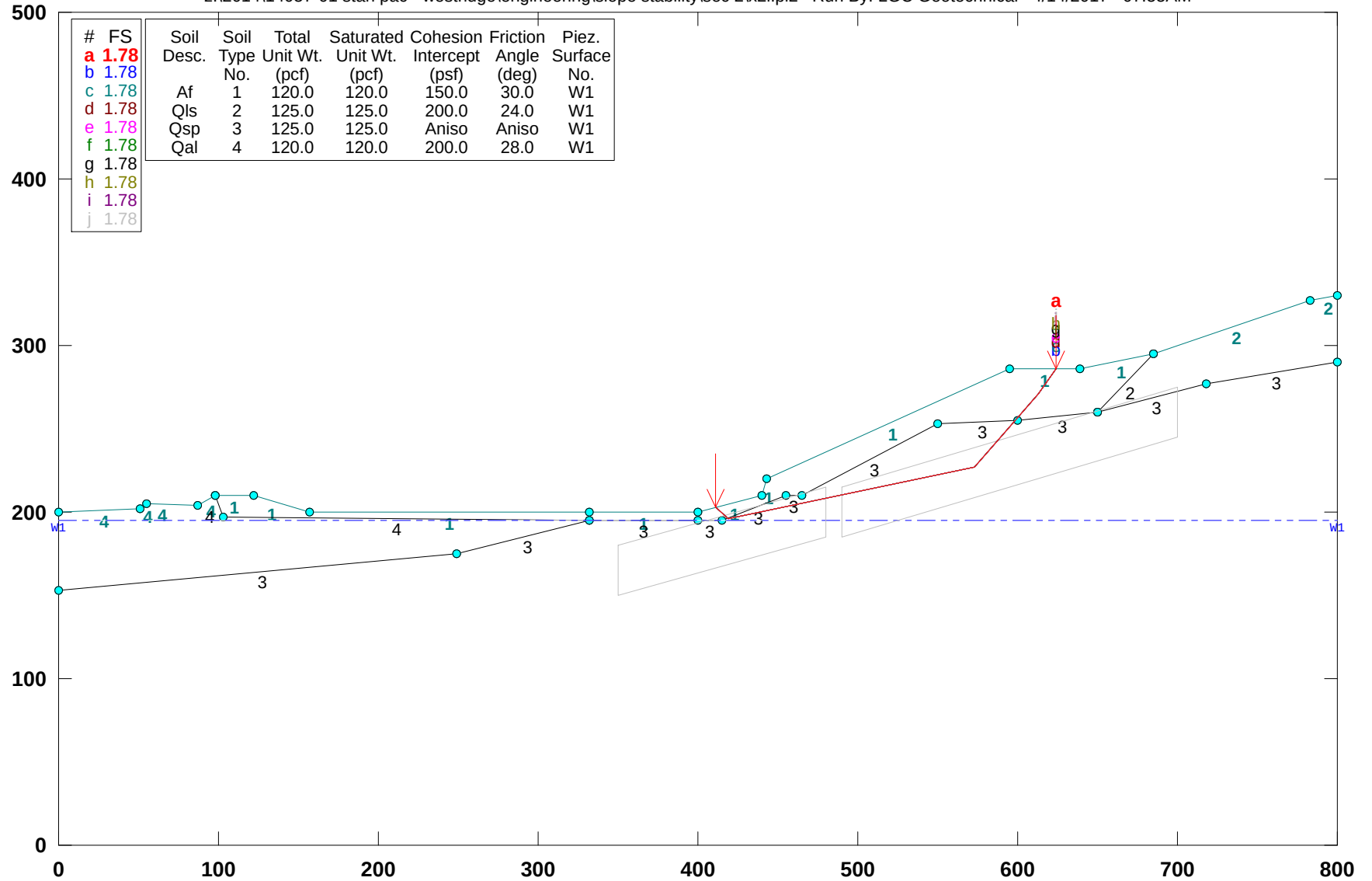
*** SEISMIC SLOPE DISPLACEMENT DATA ***

(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.3725(g)
Calculated Newmark Seismic Displacement = 0.002(ft)
Non-Symmetrical Sliding Resistance Has Been Specified
for Downhill Sliding.

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

Westridge/14057-01/Sec 2-2" / Lower Basin / Static

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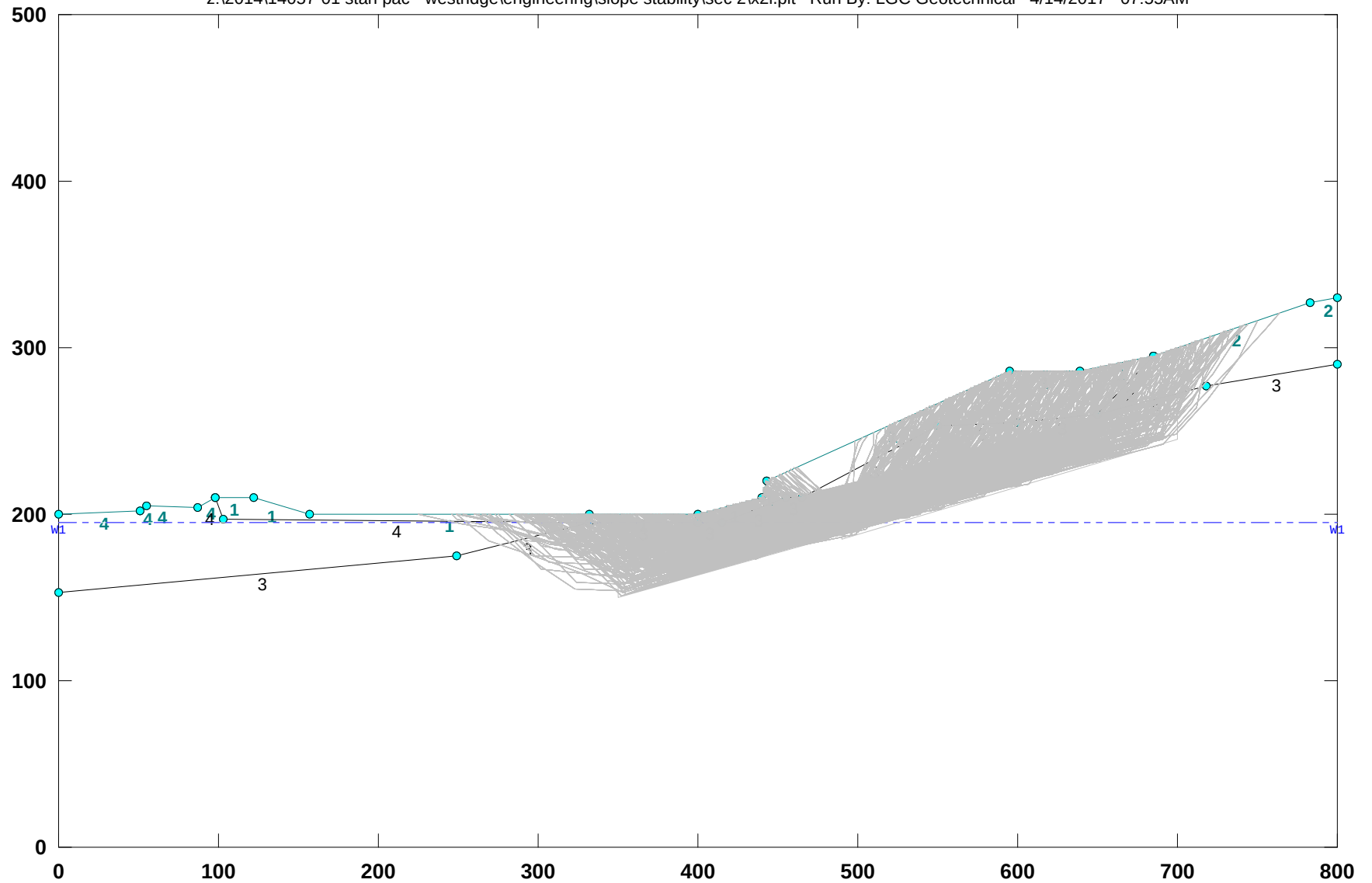


GSTABL7 v.2 FSmin=1.78

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

Westridge/14057-01/Sec 2-2" / Lower Basin / Static

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*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/14/2017
 Time of Run: 07:55AM
 Run By: LGC Geotechnical
 Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\21.in
 Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\21.0UT
 Unit System: English
 Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\21.PLT
 PROBLEM DESCRIPTION: Westridge/14057-01/Sec 2-2" / Lower Basin / Static

BOUNDARY COORDINATES

15 Top Boundaries

29 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	200.00	51.00	202.00	4
2	51.00	202.00	55.00	205.00	4
3	55.00	205.00	87.00	204.00	4
4	87.00	204.00	98.00	210.00	4
5	98.00	210.00	122.00	210.00	1
6	122.00	210.00	157.00	200.00	1
7	157.00	200.00	332.00	200.00	1
8	332.00	200.00	400.00	200.00	1
9	400.00	200.00	440.00	210.00	1
10	440.00	210.00	442.50	220.00	1
11	442.50	220.00	595.00	286.00	1
12	595.00	286.00	639.00	286.00	1
13	639.00	286.00	685.00	295.00	1
14	685.00	295.00	783.00	327.00	2
15	783.00	327.00	800.00	330.00	2
16	98.00	210.00	103.00	197.00	4
17	103.00	197.00	332.00	195.00	4
18	332.00	195.00	400.00	195.00	3
19	400.00	195.00	415.00	195.00	3
20	415.00	195.00	455.00	210.00	3
21	455.00	210.00	465.00	210.00	3
22	465.00	210.00	550.00	253.00	3
23	550.00	253.00	600.00	255.00	3
24	600.00	255.00	650.00	260.00	3
25	650.00	260.00	685.00	295.00	2
26	0.00	153.00	249.00	175.00	3
27	249.00	175.00	332.00	195.00	3
28	650.00	260.00	718.00	277.00	3
29	718.00	277.00	800.00	290.00	3

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Piez. Surface No.
1	120.0	120.0	150.0	30.0	0.00	1
2	125.0	125.0	200.0	24.0	0.00	1
3	125.0	125.0	300.0	32.0	0.00	1

4 120.0 120.0 200.0 28.0 0.00 0.0 1
 ANISOTROPIC STRENGTH PARAMETERS
 1 soil type(s)
 Soil Type 3 Is Anisotropic
 Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	195.00
2	800.00	195.00

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.

5000 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 30.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	350.00	165.00	480.00	200.00	30.00
2	490.00	200.00	700.00	260.00	30.00

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 = 9.441 FS Min = 1.775 FS Ave = 2.552

Standard Deviation = 0.575 Coefficient of Variation = 22.55 %

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	411.225	202.806
2	418.959	196.089
3	572.582	227.138
4	592.708	249.386
5	613.126	271.365
6	624.270	286.000

Factor of Safety

*** 1.775 ***

Slice No.	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force		Surcharge Load (lbs)
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	
1	7.4	3690.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.3	324.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	21.0	23348.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	2.5	4375.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	12.5	31239.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	10.0	28109.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	85.0	355745.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0

8	22.6	129388.6	0.0	0.0	0.	0.	0.0	0.0	0.0
9	20.1	103993.8	0.0	0.0	0.	0.	0.0	0.0	0.0
10	2.3	9641.1	0.0	0.0	0.	0.	0.0	0.0	0.0
11	2.8	11151.5	0.0	0.0	0.	0.	0.0	0.0	0.0
12	15.3	41924.4	0.0	0.0	0.	0.	0.0	0.0	0.0
13	11.1	9785.2	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	411.225	202.806
2	418.959	196.089
3	572.582	227.138
4	592.708	249.386
5	613.126	271.365
6	624.270	286.000

Factor of Safety
*** 1.775 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	411.225	202.806
2	418.959	196.089
3	572.582	227.138
4	592.708	249.386
5	613.126	271.365
6	624.270	286.000

Factor of Safety
*** 1.775 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	411.225	202.806
2	418.959	196.089
3	572.582	227.138
4	592.708	249.386
5	613.126	271.365
6	624.270	286.000

Factor of Safety
*** 1.775 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	411.225	202.806
2	418.959	196.089
3	572.582	227.138
4	592.708	249.386
5	613.126	271.365
6	624.270	286.000

Factor of Safety
*** 1.775 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	411.225	202.806
2	418.959	196.089
3	572.582	227.138
4	592.708	249.386
5	613.126	271.365
6	624.270	286.000

Factor of Safety
*** 1.775 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	411.225	202.806
2	418.959	196.089
3	572.582	227.138
4	592.708	249.386
5	613.126	271.365
6	624.270	286.000

Factor of Safety

*** 1.775 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	411.225	202.806
2	418.959	196.089
3	572.582	227.138
4	592.708	249.386
5	613.126	271.365
6	624.270	286.000

Factor of Safety

*** 1.775 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	411.225	202.806
2	418.959	196.089
3	572.582	227.138
4	592.708	249.386
5	613.126	271.365
6	624.270	286.000

Factor of Safety

*** 1.775 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	411.225	202.806
2	418.959	196.089
3	572.582	227.138
4	592.708	249.386
5	613.126	271.365
6	624.270	286.000

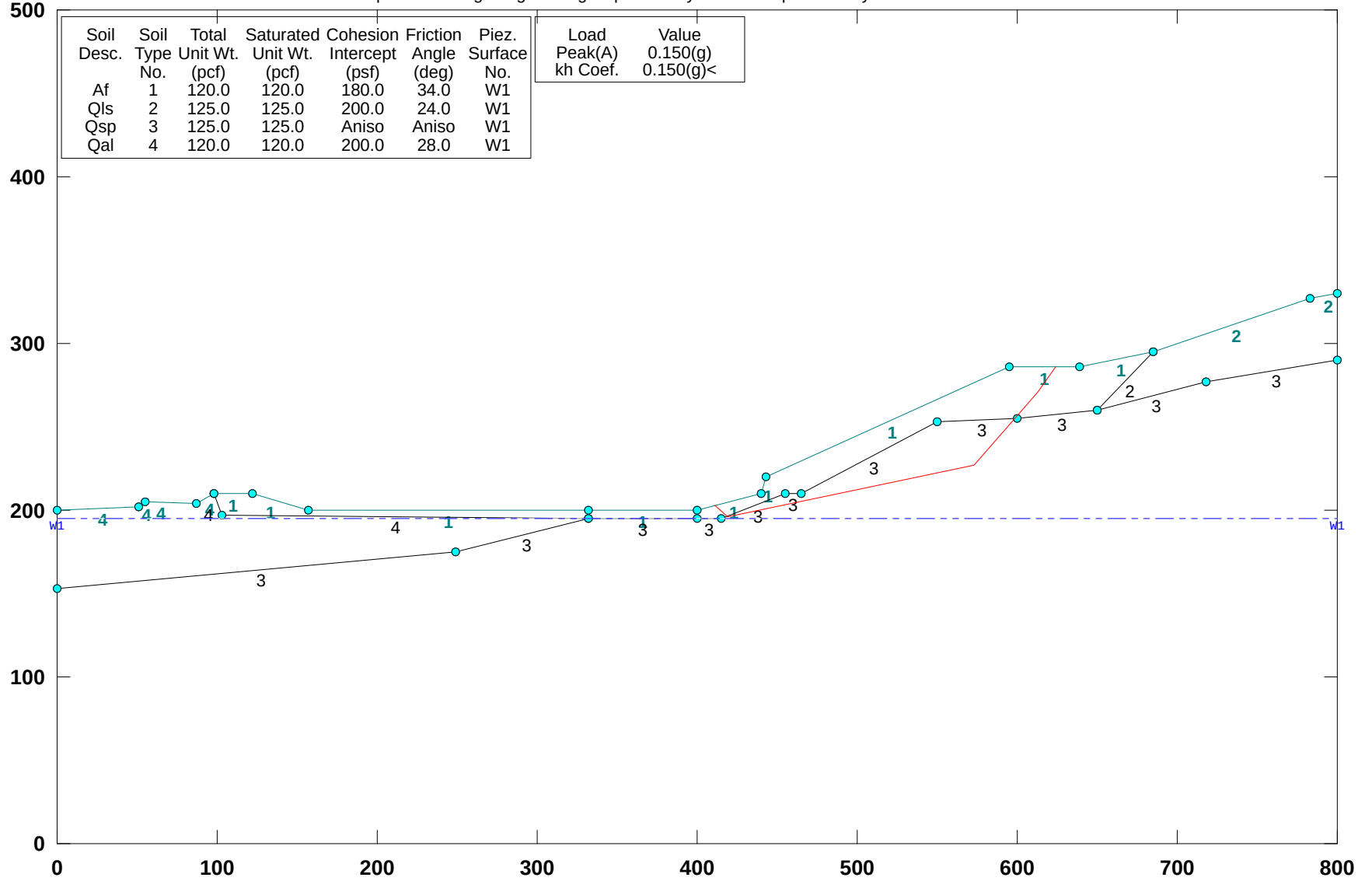
Factor of Safety

*** 1.775 ***

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

Westridge/14057-01/Sec 2-2" / Lower Basin / Seismic

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GSTABL7 v.2 FSmin=1.29

Factor Of Safety Is Calculated By The Simplified Janbu Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/14/2017
Time of Run: 01:58PM
Run By: LGC Geotechnical
Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\2le.in
Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\2le.OUT
Unit System: English
Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\2le.PLT
PROBLEM DESCRIPTION: Westridge/14057-01/Sec 2-2" / Lower Basin / Seismic

BOUNDARY COORDINATES

15 Top Boundaries

29 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	200.00	51.00	202.00	4
2	51.00	202.00	55.00	205.00	4
3	55.00	205.00	87.00	204.00	4
4	87.00	204.00	98.00	210.00	4
5	98.00	210.00	122.00	210.00	1
6	122.00	210.00	157.00	200.00	1
7	157.00	200.00	332.00	200.00	1
8	332.00	200.00	400.00	200.00	1
9	400.00	200.00	440.00	210.00	1
10	440.00	210.00	442.50	220.00	1
11	442.50	220.00	595.00	286.00	1
12	595.00	286.00	639.00	286.00	1
13	639.00	286.00	685.00	295.00	1
14	685.00	295.00	783.00	327.00	2
15	783.00	327.00	800.00	330.00	2
16	98.00	210.00	103.00	197.00	4
17	103.00	197.00	332.00	195.00	4
18	332.00	195.00	400.00	195.00	3
19	400.00	195.00	415.00	195.00	3
20	415.00	195.00	455.00	210.00	3
21	455.00	210.00	465.00	210.00	3
22	465.00	210.00	550.00	253.00	3
23	550.00	253.00	600.00	255.00	3
24	600.00	255.00	650.00	260.00	3
25	650.00	260.00	685.00	295.00	2
26	0.00	153.00	249.00	175.00	3
27	249.00	175.00	332.00	195.00	3
28	650.00	260.00	718.00	277.00	3
29	718.00	277.00	800.00	290.00	3

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	180.0	34.0	0.00	0.0	1
2	125.0	125.0	200.0	24.0	0.00	0.0	1
3	125.0	125.0	500.0	34.0	0.00	0.0	1

Direction Range	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
4	120.0	120.0	200.0
28.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 3 Is Anisotropic
Number Of Direction Ranges Specified = 3
Direction Range Counterclockwise Direction Limit (deg) Cohesion Intercept (psf) Friction Angle (deg)

No. 1	7.0	500.00	34.00
2	12.0	200.00	27.00
3	90.0	500.00	34.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	195.00
2	800.00	195.00

Specified Peak Ground Acceleration Coefficient (A) = 0.150(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 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	411.225	202.006
2	418.959	196.089
3	572.582	227.138
4	592.708	249.386
5	613.126	271.365
6	624.270	286.000

Janbu's Empirical Coefficient (fo) = 1.061

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

Factor Of Safety For The Preceding Specified Surface = 1.293

Table 1 - Individual Data on the 13 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force		Tie Force Norm (lbs)	Tie Force Tan (lbs)		Earthquake Force		Surcharge Load (lbs)
			Top (lbs)	Bot (lbs)		Hor (lbs)	Ver (lbs)			
1	7.4	3690.8	0.0	0.0	0.0	0.0	0.0	553.6	0.0	0.0
2	0.3	323.8	0.0	0.0	0.0	0.0	0.0	48.6	0.0	0.0
3	21.0	23347.5	0.0	0.0	0.0	0.0	0.0	3502.1	0.0	0.0
4	2.5	4374.8	0.0	0.0	0.0	0.0	0.0	656.2	0.0	0.0
5	12.5	31238.9	0.0	0.0	0.0	0.0	0.0	4685.8	0.0	0.0
6	10.0	28108.7	0.0	0.0	0.0	0.0	0.0	4216.3	0.0	0.0
7	85.0	355743.5	0.0	0.0	0.0	0.0	0.0	53361.5	0.0	0.0
8	22.6	129386.2	0.0	0.0	0.0	0.0	0.0	19407.9	0.0	0.0
9	20.1	103993.5	0.0	0.0	0.0	0.0	0.0	15599.0	0.0	0.0
10	2.3	9642.0	0.0	0.0	0.0	0.0	0.0	1446.3	0.0	0.0
11	2.8	11148.9	0.0	0.0	0.0	0.0	0.0	1672.3	0.0	0.0
12	15.3	41925.0	0.0	0.0	0.0	0.0	0.0	6288.8	0.0	0.0
13	11.1	9785.6	0.0	0.0	0.0	0.0	0.0	1467.8	0.0	0.0

Table 2 - Base Stress Data on the 13 Slices

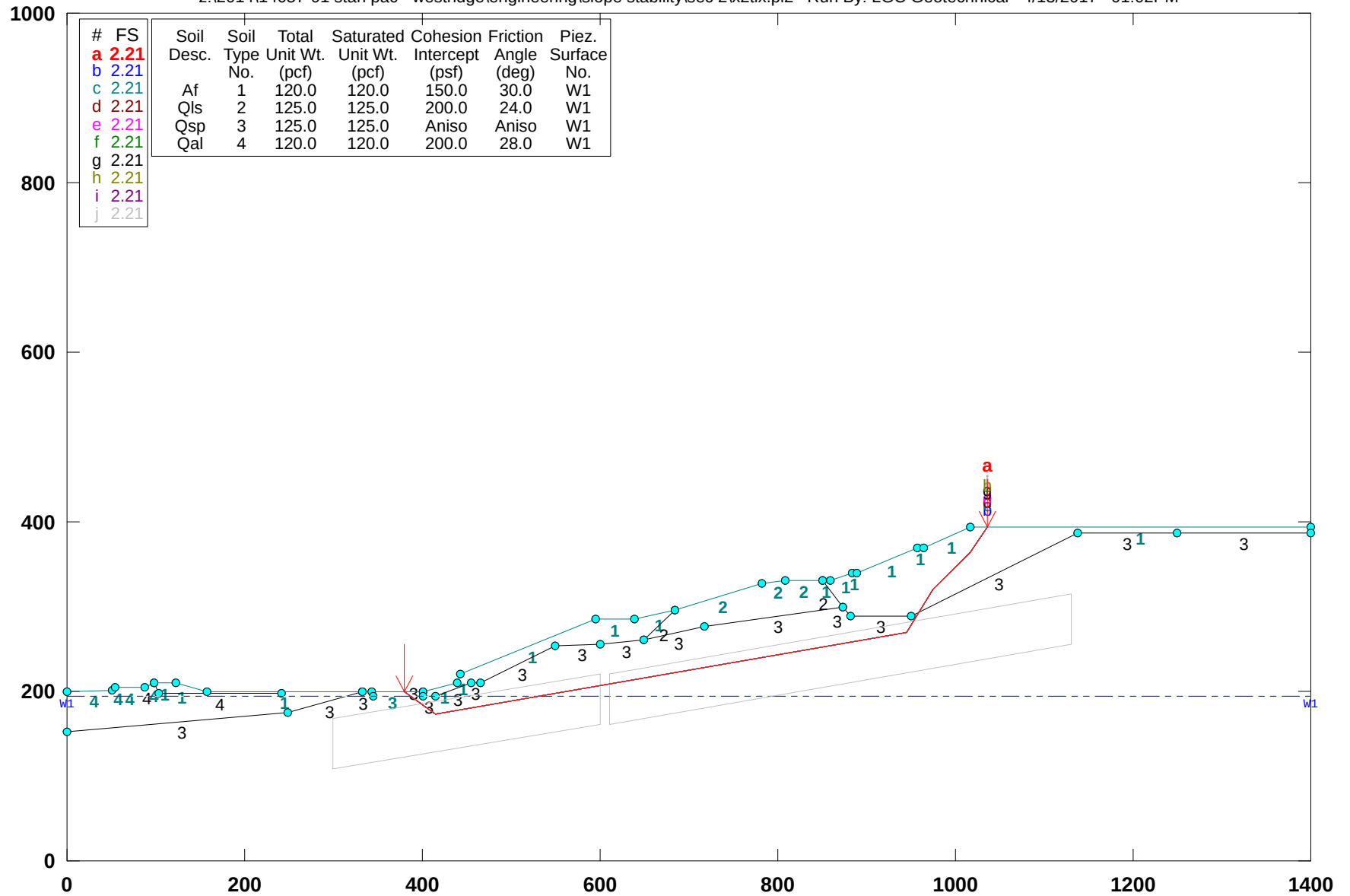
Slice No.	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength		Mobilized Shear Stress (psf)
				psf	psf	
1	-40.98	414.93	9.82	1248.98	269.99	
2	-40.98	418.80	0.42	2873.51	-552.10	
3	11.43	429.48	21.47	723.25	382.97	
4	11.43	441.25	2.55	1031.55	603.96	
5	11.43	448.75	12.75	1392.26	862.52	

6	11.43	460.00	10.20	1542.36	970.12
7	11.43	507.50	86.72	2204.08	1444.46
8	11.43	561.29	23.04	2947.67	1977.48
9	47.87	582.65	30.00	3767.74	4351.84
10	47.11	593.85	3.37	3140.23	3511.57
11	47.11	596.42	4.18	2959.07	3273.30
12	47.11	605.48	22.45	1910.34	2289.91
13	52.71	618.70	18.39	756.49	778.41

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing
Soil Nail, and Applied Forces if applicable) = 512090.12 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing,
Soil Nail, and Applied Forces if applicable) = 2087.03(psf)
Sum of the Driving Forces = 420387.81 (lbs)
Average Mobilized Shear Stress = 1713.29(psf)
Total length of the failure surface = 245.37(ft)
*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.2851(g)
Calculated Newmark Seismic Displacement = 0.004(ft)
Non-Symmetrical Sliding Resistance Has Been Specified
for Downhill Sliding.
**** END OF GSTABL7 OUTPUT ****

Westridge/14057-01/Sec 2-2" / Entire Length / Static

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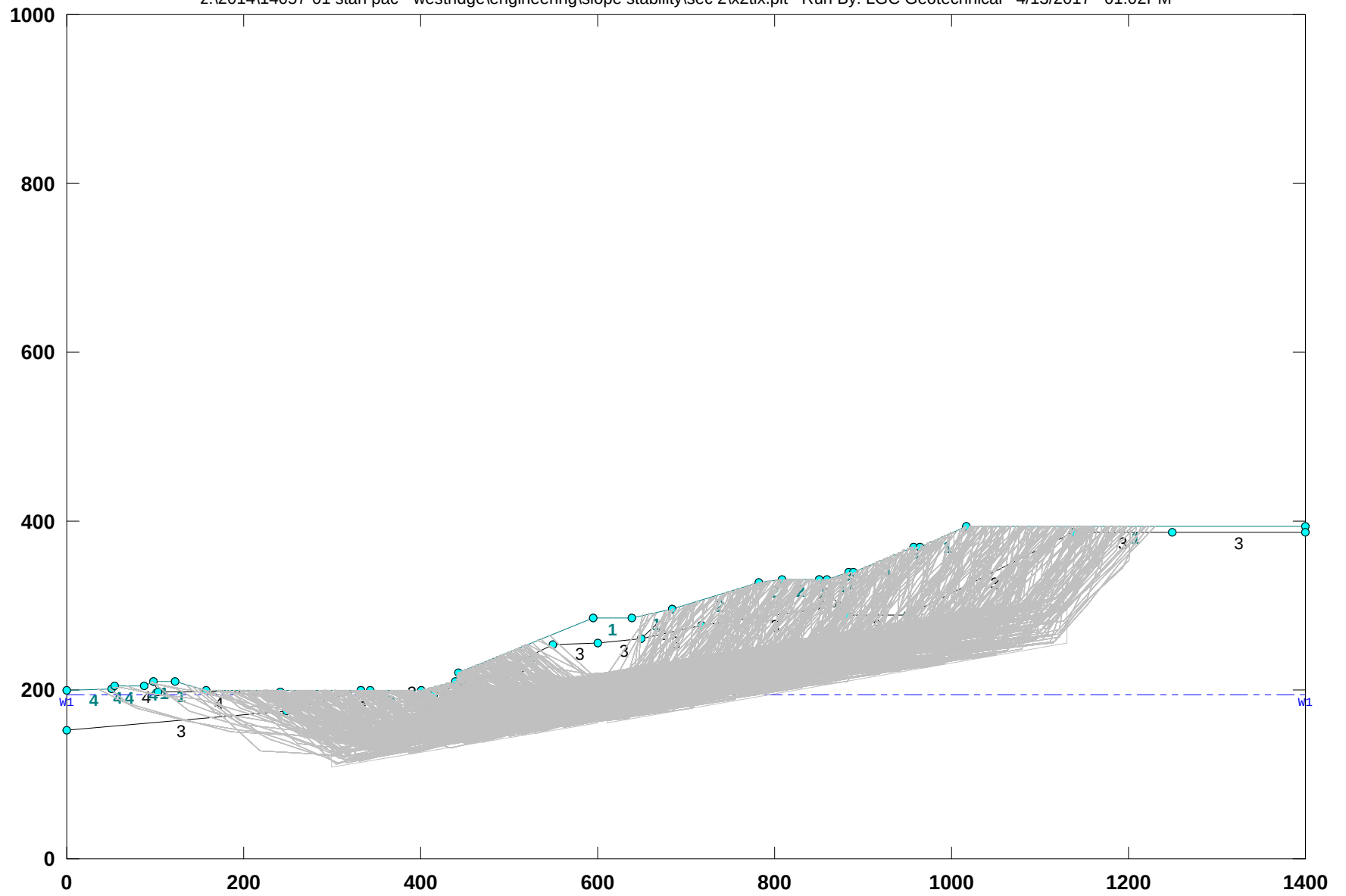


GSTABL7 v.2 FSmin=2.21

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

Westridge/14057-01/Sec 2-2" / Entire Length / Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 2\2tlx.plt Run By: LGC Geotechnical 4/13/2017 01:02PM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/13/2017

Time of Run: 01:02PM

Run By: LGC Geotechnical

Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab

ility\Sec 2\2t1x.in

Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab

ility\Sec 2\2t1x.OUT

Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab

ility\Sec 2\2t1x.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 2-2" / Entire
Length / Static

BOUNDARY COORDINATES

23 Top Boundaries

44 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	200.00	51.00	202.00	4
2	51.00	202.00	55.00	205.00	4
3	55.00	205.00	87.00	204.00	4
4	87.00	204.00	98.00	210.00	4
5	98.00	210.00	122.00	210.00	1
6	122.00	210.00	157.00	200.00	1
7	157.00	200.00	332.00	200.00	1
8	332.00	200.00	400.00	200.00	3
9	400.00	200.00	440.00	210.00	1
10	440.00	210.00	442.50	220.00	1
11	442.50	220.00	595.00	286.00	1
12	595.00	286.00	639.00	286.00	1
13	639.00	286.00	685.00	295.00	1
14	685.00	295.00	783.00	327.00	2
15	783.00	327.00	809.00	331.00	2
16	809.00	331.00	850.00	330.00	2
17	850.00	330.00	860.00	330.00	1
18	860.00	330.00	883.00	339.00	1
19	883.00	339.00	889.00	339.00	1
20	889.00	339.00	957.00	370.00	1
21	957.00	370.00	965.00	370.00	1
22	965.00	370.00	1017.00	394.00	1
23	1017.00	394.00	1400.00	394.00	1
24	98.00	210.00	103.00	197.00	4
25	103.00	197.00	241.00	198.00	4
26	343.00	200.00	345.00	194.00	3
27	400.00	200.00	400.10	195.00	3
28	400.10	195.00	415.00	195.00	3
29	415.00	195.00	455.00	210.00	3
30	455.00	210.00	465.00	210.00	3
31	465.00	210.00	550.00	253.00	3
32	550.00	253.00	600.00	255.00	3
33	600.00	255.00	650.00	260.00	3
34	650.00	260.00	685.00	295.00	2
35	0.00	153.00	249.00	175.00	3
36	249.00	175.00	332.00	200.00	3
37	850.00	330.00	874.00	300.00	2
38	874.00	300.00	882.00	289.00	3
39	882.00	289.00	951.00	289.00	3
40	951.00	289.00	1138.00	386.00	3

41	1138.00	386.00	1250.00	386.00	3
42	1250.00	386.00	1400.00	386.00	3
43	650.00	260.00	718.00	277.00	3
44	718.00	277.00	874.00	300.00	3

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	150.0	30.0	0.00	0.0	1
2	125.0	125.0	200.0	24.0	0.00	0.0	1
3	125.0	125.0	300.0	32.0	0.00	0.0	1
4	120.0	120.0	200.0	28.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 3 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion (psf)	Friction Angle (deg)
1	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No. X-Water (ft) Y-Water (ft)

1 0.00 195.00

2 1400.00 195.00

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.

5000 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 60.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	300.00	138.00	600.00	191.00	60.00
2	610.00	191.00	1130.00	285.00	60.00

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 = 8.816 FS Min = 2.208 FS Ave = 3.058

Standard Deviation = 0.804 Coefficient of Variation = 26.30 %

Failure Surface Specified By 6 Coordinate Points

Point No. X-Surf (ft) Y-Surf (ft)

1 379.512 200.000

2 415.118 173.466

3 944.363 269.120

4 974.819 320.815

5 1016.990 363.495

Failure Point No.	Surface Specified By X-Surf (ft)	6 Coordinate Points Y-Surf (ft)
1	379.512	200.000
2	415.118	173.466
3	944.363	269.120
4	974.819	320.815
5	1016.990	363.495
6	1035.971	394.000

Factor of Safety
*** 2.208 ***

Failure Point No.	Surface Specified By X-Surf (ft)	6 Coordinate Points Y-Surf (ft)
1	379.512	200.000
2	415.118	173.466
3	944.363	269.120
4	974.819	320.815
5	1016.990	363.495
6	1035.971	394.000

Factor of Safety
*** 2.208 ***

Point No.	X-Surf (ft)	Y-Surf (ft)
1	379.512	200.000
2	415.118	173.466
3	944.363	269.120

Factor of Safety
*** 2.200 ***

```

***      2.208      ***
ure Surface Specifie

```

Failure Point No.	Surface X-Surf (ft)	Specified Y-Surf (ft)	By 6 Coordinate Points
1	379.512	200.000	
2	415.118	173.466	
3	944.363	269.120	
4	974.819	320.815	
5	1016.990	363.495	
6	1035.971	394.000	

Factor of Safety
*** 2.208 ***

```
***      2.208      ***
ure Surface Specifie
```

Failure Point No.	Surface X-Surf (ft)	Specified Y-Surf (ft)	By 6 Coordinate Points
1	379.512	200.000	
2	415.118	173.466	
3	944.363	269.120	
4	974.819	320.815	
5	1016.990	363.495	
6	1035.971	394.000	

Factor of Safety
*** 2.208 ***

```

***      2.208      ***
ure Surface Specifie

```

Failure Point No.	Surface X-Surf (ft)	Specified Y-Surf (ft)	By 6 Coordinate Points
1	379.512	200.000	
2	415.118	173.466	
3	944.363	269.120	
4	974.819	320.815	
5	1016.990	363.495	
6	1035.971	394.000	

Factor of Safety
*** 2.208 ***

```

***      2.208      ***
ure Surface Specifie

```

Failure Point No.	Surface X-Surf (ft)	Specified Y-Surf (ft)	By 6 Coordinate Points
1	379.512	200.000	
2	415.118	173.466	
3	944.363	269.120	
4	974.819	320.815	
5	1016.990	363.495	
6	1035.971	394.000	

Factor of Safety
*** 2.208 ***

```

***      2.208      ***
ure Surface Specifie

```

Point No.	Surface X-Surf (ft)	Specified Y-Surf (ft)	By 6 Coordinate Points
1	379.512	200.000	
2	415.118	173.466	
3	944.363	269.120	
4	974.819	320.815	
5	1016.990	363.495	
6	1035.971	394.000	

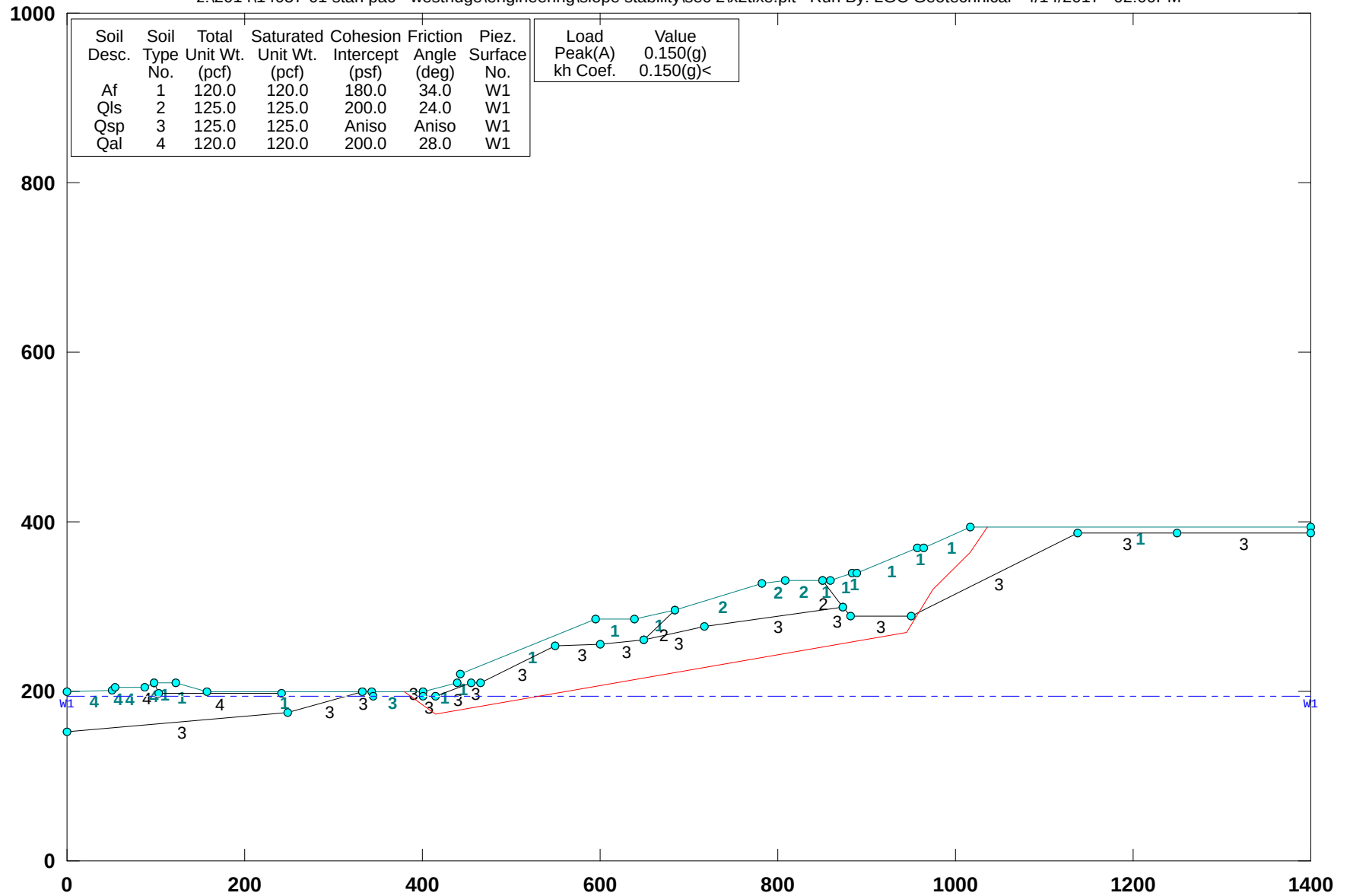
Factor of Safety

Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\xtlx.OUT Page 5

*** 2.208 ***
**** END OF GSTABL7 OUTPUT ****

Westridge/14057-01/Sec 2-2" / Entire Length / Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 2\2tlxe.plt Run By: LGC Geotechnical 4/14/2017 02:00PM



GSTABL7 v.2 FSmin=1.43

Factor Of Safety Is Calculated By The Simplified Janbu Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/14/2017
 Time of Run: 02:00PM
 Run By: LGC Geotechnical
 Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\2t1xe.in
 Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\2t1xe.OUT
 Unit System: English
 Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\2t1xe.PLT
 PROBLEM DESCRIPTION: Westridge/14057-01/Sec 2-2" / Entire Length / Seismic

BOUNDARY COORDINATES

23 Top Boundaries

44 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	200.00	51.00	202.00	4
2	51.00	202.00	55.00	205.00	4
3	55.00	205.00	87.00	204.00	4
4	87.00	204.00	98.00	210.00	4
5	98.00	210.00	122.00	210.00	1
6	122.00	210.00	157.00	200.00	1
7	157.00	200.00	332.00	200.00	1
8	332.00	200.00	400.00	200.00	3
9	400.00	200.00	440.00	210.00	1
10	440.00	210.00	442.50	220.00	1
11	442.50	220.00	595.00	286.00	1
12	595.00	286.00	639.00	286.00	1
13	639.00	286.00	685.00	295.00	1
14	685.00	295.00	783.00	327.00	2
15	783.00	327.00	809.00	331.00	2
16	809.00	331.00	850.00	330.00	2
17	850.00	330.00	860.00	330.00	1
18	860.00	330.00	883.00	339.00	1
19	883.00	339.00	889.00	339.00	1
20	889.00	339.00	957.00	370.00	1
21	957.00	370.00	965.00	370.00	1
22	965.00	370.00	1017.00	394.00	1
23	1017.00	394.00	1400.00	394.00	1
24	98.00	210.00	103.00	197.00	4
25	103.00	197.00	241.00	198.00	4
26	343.00	200.00	345.00	194.00	3
27	400.00	200.00	400.10	195.00	3
28	400.10	195.00	415.00	195.00	3
29	415.00	195.00	455.00	210.00	3
30	455.00	210.00	465.00	210.00	3
31	465.00	210.00	550.00	253.00	3
32	550.00	253.00	600.00	255.00	3
33	600.00	255.00	650.00	260.00	3
34	650.00	260.00	685.00	295.00	2
35	0.00	153.00	249.00	175.00	3
36	249.00	175.00	332.00	200.00	3
37	850.00	330.00	874.00	300.00	2
38	874.00	300.00	882.00	289.00	3
39	882.00	289.00	951.00	289.00	3
40	951.00	289.00	1138.00	386.00	3

	41	1138.00	386.00	1250.00	386.00	3
42	1250.00	386.00	1400.00	386.00	3	
43	650.00	260.00	718.00	277.00	3	
44	718.00	277.00	874.00	300.00	3	

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Piez. Constant Surface No.
1	120.0	120.0	180.0	34.0	0.00	0.0
2	125.0	125.0	200.0	24.0	0.00	0.0
3	125.0	125.0	500.0	34.0	0.00	0.0
4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 3 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise Direction Limit (deg)	Cohesion (psf)	Friction Angle (deg)
1	7.0	500.00	34.00
2	12.0	200.00	27.00
3	90.0	500.00	34.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point X-Water (ft) Y-Water (ft)

1 0.00 195.00

2 1400.00 195.00

Specified Peak Ground Acceleration Coefficient (A) = 0.150(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 6 Coordinate Points

Point X-Surf (ft) Y-Surf (ft)

1 379.512 200.000

2 415.118 173.466

3 944.363 269.120

4 974.819 320.815

5 1016.990 363.495

6 1035.971 394.000

Janbu's Empirical Coefficient (fo) = 1.055

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

Factor Of Safety For The Preceding Specified Surface = 1.431

Table 1 - Individual Data on the 34 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force		Tie Force Norm (lbs)	Tie Force Tan (lbs)		Earthquake Force		Surcharge Load (lbs)
			Top (lbs)	Bot (lbs)		Hor (lbs)	Ver (lbs)			
1	6.7	2096.7	0.0	0.0	0.0	0.0	314.5	0.0	0.0	
2	13.8	17453.8	0.0	5504.9	0.0	0.0	2618.1	0.0	0.0	
3	0.1	190.2	0.0	80.2	0.0	0.0	28.5	0.0	0.0	
4	14.9	41917.8	0.0	18429.9	0.0	0.0	6287.7	0.0	0.0	
5	0.1	441.1	0.0	197.4	0.0	0.0	66.2	0.0	0.0	
6	24.9	96069.4	0.0	30428.4	0.0	0.0	14410.4	0.0	0.0	
7	2.5	11376.5	0.0	2665.0	0.0	0.0	1706.5	0.0	0.0	

8	12.5	66497.6	0.0	12250.6	0.0	0.0	9974.6	0.0	0.0
9	10.0	56616.3	0.0	8511.1	0.0	0.0	8492.4	0.0	0.0
10	69.3	478758.9	0.0	27491.1	0.0	0.0	71813.8	0.0	0.0
11	15.7	130086.4	0.0	0.0	0.0	0.0	19513.0	0.0	0.0
12	45.0	413196.3	0.0	0.0	0.0	0.0	61979.4	0.0	0.0
13	5.0	48954.3	0.0	0.0	0.0	0.0	7343.1	0.0	0.0
14	39.0	362859.3	0.0	0.0	0.0	0.0	54428.9	0.0	0.0
15	11.0	97690.0	0.0	0.0	0.0	0.0	14653.5	0.0	0.0
16	35.0	314704.0	0.0	0.0	0.0	0.0	47205.6	0.0	0.0
17	33.0	310043.3	0.0	0.0	0.0	0.0	46506.5	0.0	0.0
18	65.0	668735.6	0.0	0.0	0.0	0.0	*****	0.0	0.0
19	26.0	281757.6	0.0	0.0	0.0	0.0	42263.6	0.0	0.0
20	41.0	420967.3	0.0	0.0	0.0	0.0	63145.1	0.0	0.0
21	10.0	95976.5	0.0	0.0	0.0	0.0	14396.5	0.0	0.0
22	14.0	134123.3	0.0	0.0	0.0	0.0	20118.5	0.0	0.0
23	8.0	78216.0	0.0	0.0	0.0	0.0	11732.4	0.0	0.0
24	1.0	9859.1	0.0	0.0	0.0	0.0	1478.9	0.0	0.0
25	6.0	58821.3	0.0	0.0	0.0	0.0	8823.2	0.0	0.0
26	55.4	588216.3	0.0	0.0	0.0	0.0	88232.5	0.0	0.0
27	6.6	72948.4	0.0	0.0	0.0	0.0	10942.3	0.0	0.0
28	6.0	60023.8	0.0	0.0	0.0	0.0	9003.6	0.0	0.0
29	1.3	12306.0	0.0	0.0	0.0	0.0	1845.9	0.0	0.0
30	6.7	57434.3	0.0	0.0	0.0	0.0	8615.2	0.0	0.0
31	9.8	70442.2	0.0	0.0	0.0	0.0	10566.3	0.0	0.0
32	42.2	213091.9	0.0	0.0	0.0	0.0	31963.8	0.0	0.0
33	0.0	36.4	0.0	0.0	0.0	0.0	5.5	0.0	0.0
34	19.0	34704.3	0.0	0.0	0.0	0.0	5205.6	0.0	0.0

Table 2 - Base Stress Data on the 34 Slices

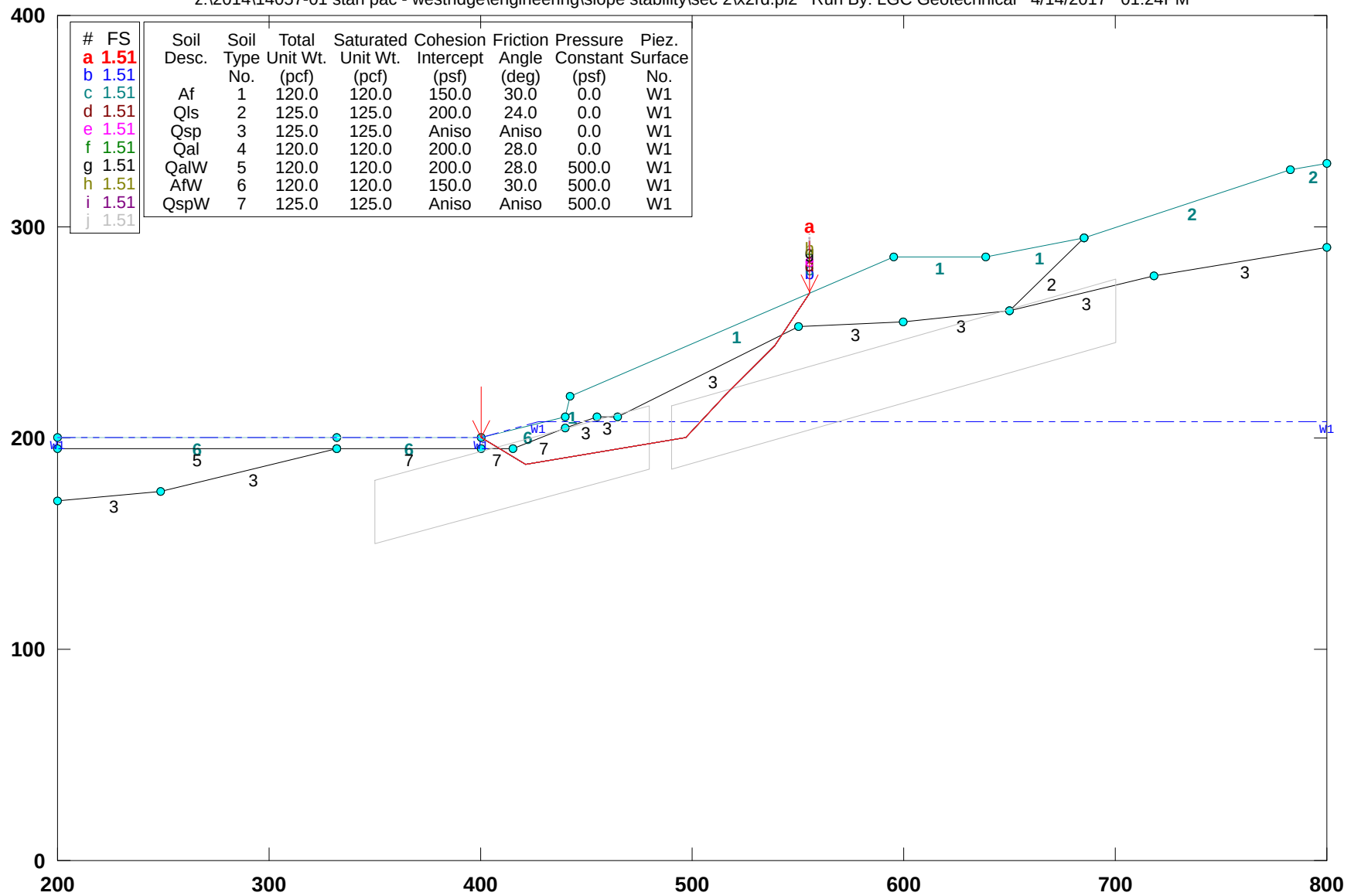
Slice No.	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-36.69	382.87	8.37	1366.21	-149.14
2	-36.69	393.11	17.18	2188.04	-604.57
3	-36.69	400.05	0.12	2593.48	-907.83
4	-36.69	407.55	18.58	3322.59	-1342.68
5	-36.69	415.06	0.15	4068.95	-1784.08
6	10.24	427.56	25.29	1483.82	1256.62
7	10.24	441.25	2.54	1894.41	1481.05
8	10.24	448.75	12.70	2309.77	1731.40
9	10.24	460.00	10.16	2537.78	1842.65
10	10.24	499.63	70.39	3363.56	2249.64
11	10.24	542.13	15.99	4212.54	2690.50
12	10.24	572.50	45.73	4657.90	2988.45
13	10.24	597.50	5.08	4954.03	3186.57
14	10.24	619.50	39.63	4717.22	3028.14
15	10.24	644.50	11.18	4511.36	2890.41
16	10.24	667.50	35.57	4565.18	2926.42
17	10.24	701.50	33.53	4761.57	3057.81
18	10.24	750.50	66.05	5196.00	3348.45
19	10.24	796.00	26.42	5462.88	3526.99
20	10.24	829.50	41.66	5185.90	3341.70
21	10.24	855.00	10.16	4860.04	3123.69
22	10.24	867.00	14.23	4851.57	3118.02
23	10.24	878.00	8.13	4947.29	3182.06
24	10.24	882.50	1.02	4987.25	3208.79
25	10.24	886.00	6.10	4960.20	3190.70
26	10.24	916.68	56.26	5359.69	3457.96
27	59.50	947.68	13.08	8661.87	10306.72
28	59.50	954.00	11.82	7933.06	9381.03
29	59.50	957.65	2.58	7488.79	8816.74
30	59.50	961.65	13.18	6534.18	8049.12
31	59.50	969.91	19.34	5493.55	6727.37
32	45.34	995.90	60.00	3456.76	4127.13
33	58.11	1016.99	0.02	2852.50	3397.00
34	58.11	1026.49	35.91	1522.94	1698.18

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 3171734.25 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 4296.85(psf)
Sum of the Driving Forces = 2338569.75 (lbs)

Average Mobilized Shear Stress = 3168.14(psf)
Total length of the failure surface = 738.15(ft)
*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.3150(g)
Calculated Newmark Seismic Displacement = 0.003(ft)
Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.
**** END OF GSTABL7 OUTPUT ****

Westridge/14057-01/Sec 2-2" / Lower Basin / Rapid Drawdown

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 2\2rd.pl2 Run By: LGC Geotechnical 4/14/2017 01:24PM

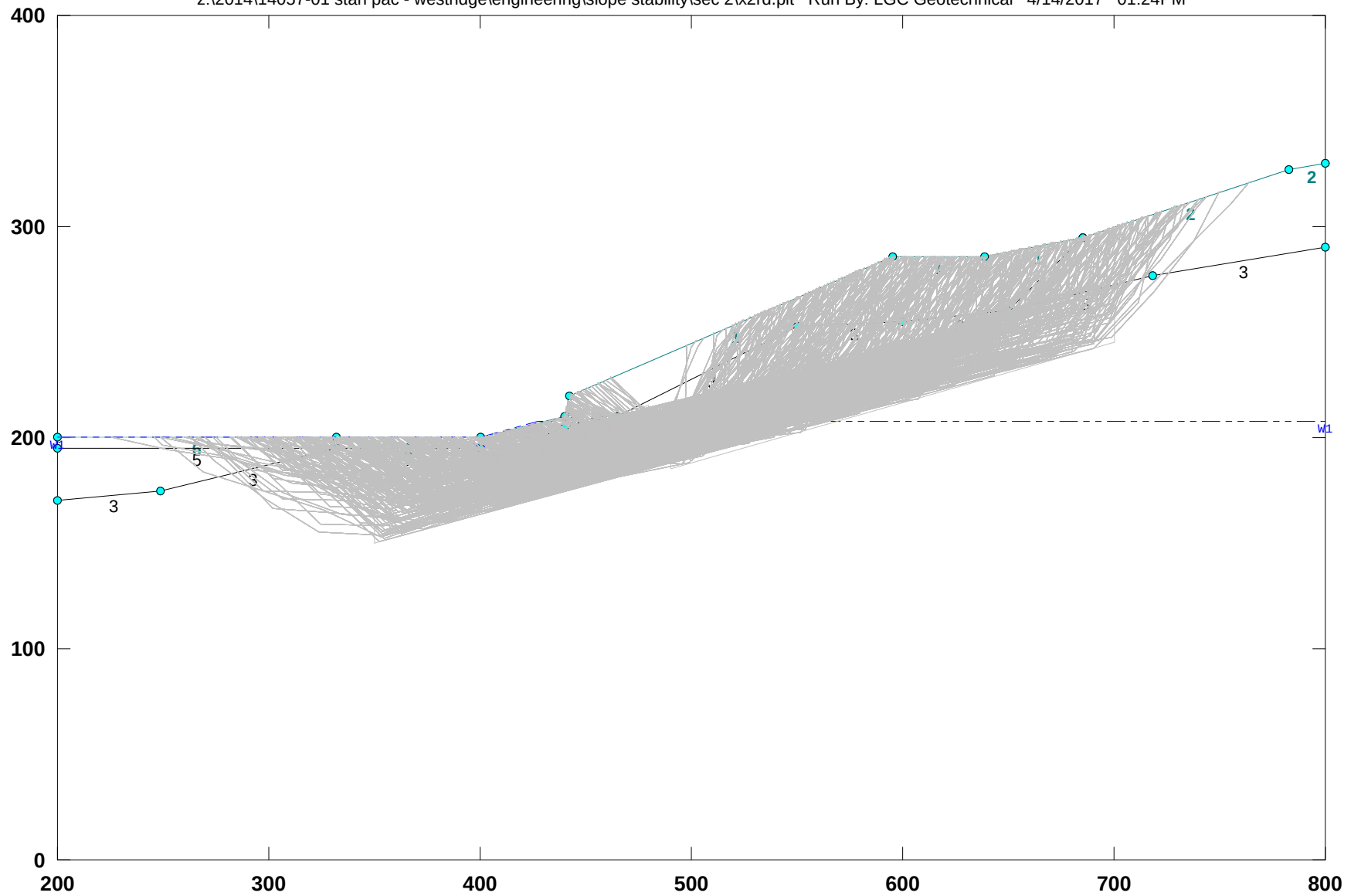


GSTABL7 v.2 FSmin=1.51

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

Westridge/14057-01/Sec 2-2" / Lower Basin / Rapid Drawdown

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*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
(All Rights Reserved-Unauthorized Use Prohibited)*****
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: 4/14/2017
 Time of Run: 01:24PM
 Run By: LGC Geotechnical
 Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\2rd.in
 Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\2rd.OUT
 Unit System: English
 Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\2rd.PLT
 PROBLEM DESCRIPTION: Westridge/14057-01/Sec 2-2" / Lower Basin / Rapid Drawdown

BOUNDARY COORDINATES

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	200.00	200.00	332.00	200.00	6
2	332.00	200.00	400.00	200.00	6
3	400.00	200.00	440.00	210.00	6
4	440.00	210.00	442.50	220.00	1
5	442.50	220.00	595.00	286.00	1
6	595.00	286.00	639.00	286.00	1
7	639.00	286.00	685.00	295.00	1
8	685.00	295.00	783.00	327.00	2
9	783.00	327.00	800.00	330.00	2
10	200.00	195.00	332.00	195.00	5
11	332.00	195.00	400.00	195.00	7
12	400.00	195.00	415.00	195.00	7
13	415.00	195.00	440.00	204.40	7
14	440.00	204.40	455.00	210.00	3
15	455.00	210.00	465.00	210.00	3
16	465.00	210.00	550.00	253.00	3
17	550.00	253.00	600.00	255.00	3
18	600.00	255.00	650.00	260.00	3
19	650.00	260.00	685.00	295.00	2
20	200.00	170.00	249.00	175.00	3
21	249.00	175.00	332.00	195.00	3
22	650.00	260.00	718.00	277.00	3
23	718.00	277.00	800.00	290.00	3

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

ISOTROPIC SOIL PARAMETERS

Soil Type	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	150.0	30.0	0.00	0.0	1
2	125.0	125.0	200.0	24.0	0.00	0.0	1
3	125.0	125.0	300.0	32.0	0.00	0.0	1
4	120.0	120.0	200.0	28.0	0.00	0.0	1
5	120.0	120.0	200.0	28.0	0.00	500.0	1
6	120.0	120.0	150.0	30.0	0.00	500.0	1
7	125.0	125.0	300.0	32.0	0.00	500.0	1

ANISOTROPIC STRENGTH PARAMETERS

2 soil type(s)

Soil Type 3 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise	Cohesion (psf)	Friction Angle (deg)
1	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

Soil Type 7 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise	Cohesion (psf)	Friction Angle (deg)
1	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 4 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	200.00	200.00
2	400.00	200.00
3	427.00	208.00
4	800.00	208.00

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.

5000 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 30.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	350.00	165.00	480.00	200.00	30.00
2	490.00	200.00	700.00	260.00	30.00

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 = 8.194 FS Min = 1.506 FS Ave = 2.299

Standard Deviation = 0.529 Coefficient of Variation = 23.00 %

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	400.201	200.050
2	420.991	187.729
3	497.114	200.419
4	517.612	222.324
5	538.633	243.728
6	555.453	268.569
7	555.835	269.050

Factor of Safety

*** 1.506 ***

Individual data on the

Slice	Width	Weight	Water Force Top	Water Force Bot	16 Tie Force Norm	slices Tie Force Tan	Earthquake Force Hor	Surcharge Force Ver	Load

No.	(ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
1	8.5	3671.3	29.2	7204.9	0.	0.	0.0	0.0	0.0
2	6.3	7460.0	52.7	8182.0	0.	0.	0.0	0.0	0.0
3	6.0	10977.4	74.9	10081.9	0.	0.	0.0	0.0	0.0
4	6.0	13118.6	134.9	9933.8	0.	0.	0.0	0.0	0.0
5	13.0	29743.5	0.0	21545.3	0.	0.	0.0	0.0	0.0
6	2.5	7340.0	0.0	2671.7	0.	0.	0.0	0.0	0.0
7	7.1	25928.7	0.0	7270.4	0.	0.	0.0	0.0	0.0
8	5.4	20550.2	0.0	5099.7	0.	0.	0.0	0.0	0.0
9	10.0	40798.2	0.0	8709.6	0.	0.	0.0	0.0	0.0
10	32.1	153349.8	0.0	20838.5	0.	0.	0.0	0.0	0.0
11	7.1	35713.8	0.0	2455.6	0.	0.	0.0	0.0	0.0
12	13.4	56615.1	0.0	0.0	0.	0.	0.0	0.0	0.0
13	21.0	61553.0	0.0	0.0	0.	0.	0.0	0.0	0.0
14	3.6	6988.4	0.0	0.0	0.	0.	0.0	0.0	0.0
15	13.2	11403.2	0.0	0.0	0.	0.	0.0	0.0	0.0
16	0.4	7.2	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 7 Coordinate Points

Point	X-Surf	Y-Surf
No.	(ft)	(ft)
1	400.201	200.050
2	420.991	187.729
3	497.114	200.419
4	517.612	222.324
5	538.633	243.728
6	555.453	268.569
7	555.835	269.050

Factor of Safety
*** 1.506 ***

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Factor of Safety
*** 1.506 ***

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Factor of Safety
*** 1.506 ***

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Factor of Safety
*** 1.506 ***

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Factor of Safety

*** 1.506 ***

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Factor of Safety

*** 1.506 ***

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Factor of Safety

*** 1.506 ***

Failure Surface Specified By 7 Coordinate Points

Point	X-Surf	Y-Surf
No.	(ft)	(ft)
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2	420.991	187.729
3	497.114	200.419
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6	555.453	268.569
7	555.835	269.050

Factor of Safety

*** 1.506 ***

Failure Surface Specified By 7 Coordinate Points

Point	X-Surf	Y-Surf
No.	(ft)	(ft)
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2	420.991	187.729
3	497.114	200.419
4	517.612	222.324
5	538.633	243.728
6	555.453	268.569
7	555.835	269.050

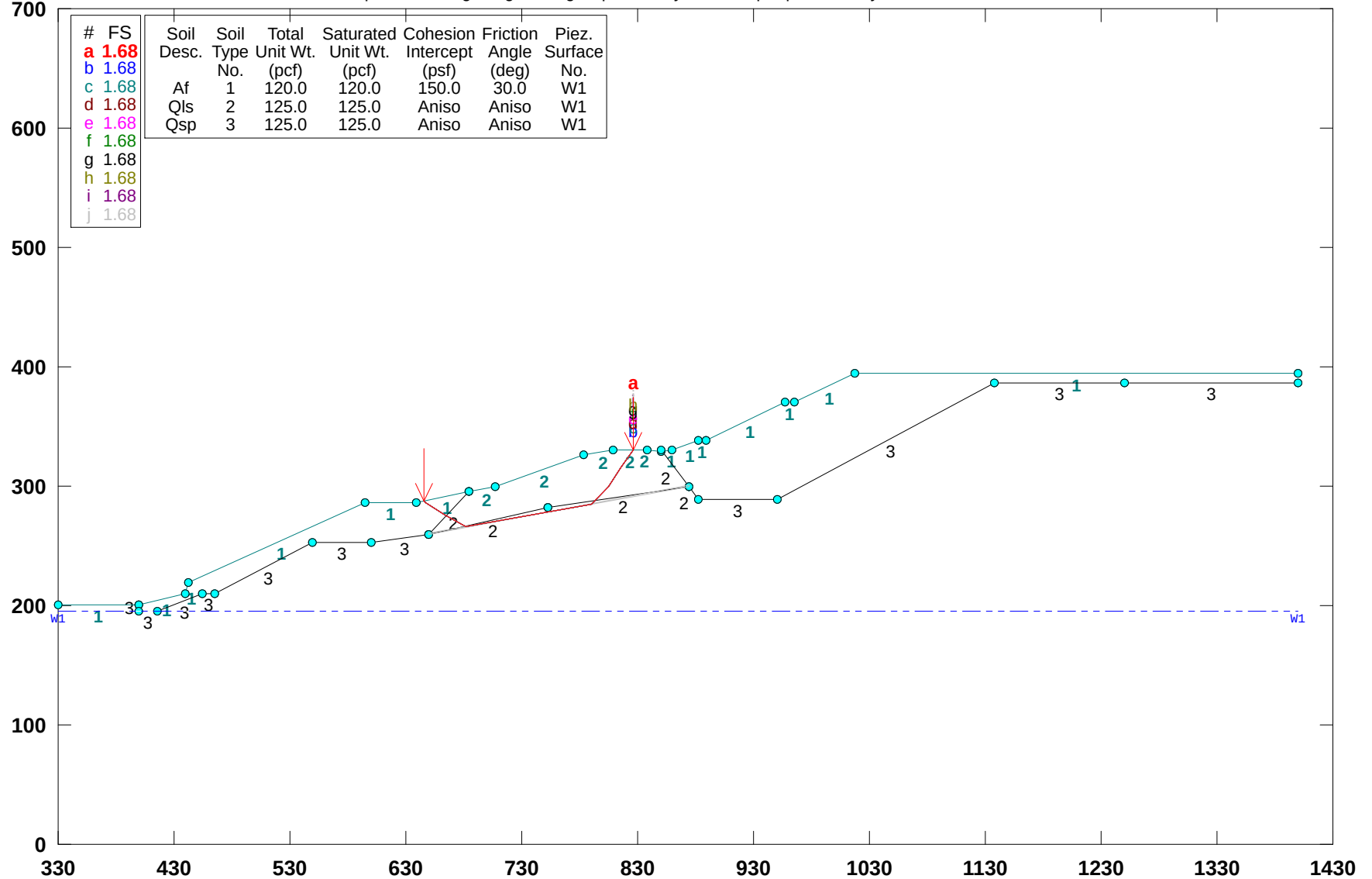
Factor of Safety

*** 1.506 ***

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

Westridge / 14057-01 / Sec 2-2' / Qls / Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 2\2qlsx.pl2 Run By: LGC Geotechnical 4/13/2017 01:19PM

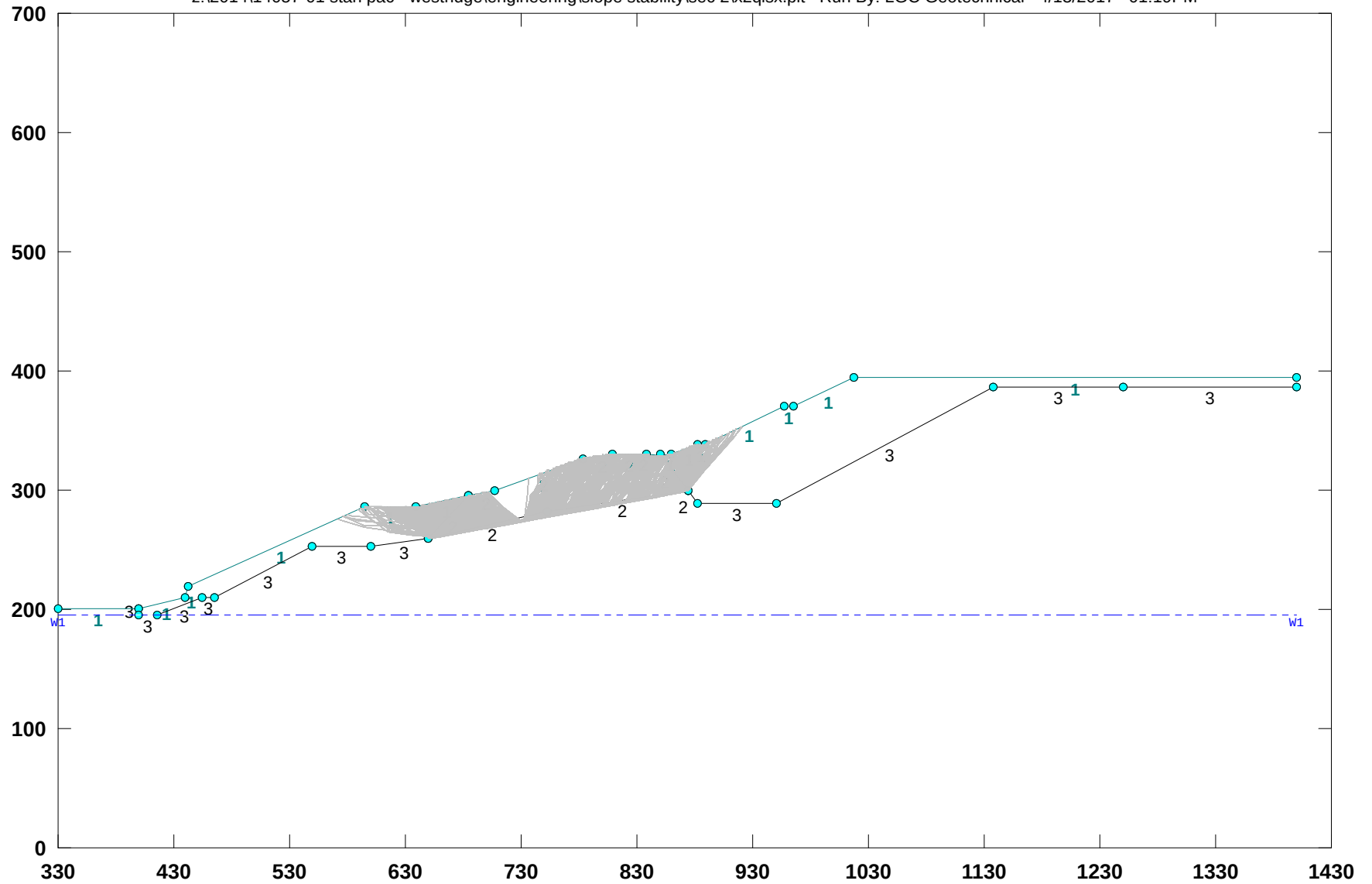


GSTABL7 v.2 FSmin=1.68

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

Westridge / 14057-01 / Sec 2-2' / Qls / Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 2\2qlsx.plt Run By: LGC Geotechnical 4/13/2017 01:19PM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/13/2017
Time of Run: 01:19PM
Run By: LGC Geotechnical
Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\2qlsx.in
Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\2qlsx.OUT
Unit System: English
Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\2qlsx.PLT
PROBLEM DESCRIPTION: Westridge / 14057-01 / Sec 2-2' / Qls / Static

BOUNDARY COORDINATES

Note: User origin value specified.

Add 330.00 to X-values and 0.00 to Y-values listed.

18 Top	Boundaries					
34 Total	Boundaries					
Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below	Soil Type Bnd
1	330.00	200.00	400.00	200.00		1
2	400.00	200.00	440.00	210.00		1
3	440.00	210.00	442.50	220.00		1
4	442.50	220.00	595.00	286.00		1
5	595.00	286.00	639.00	286.00		1
6	639.00	286.00	685.00	295.00		1
7	685.00	295.00	707.00	300.00		2
8	707.00	300.00	783.00	327.00		2
9	783.00	327.00	809.00	331.00		2
10	809.00	331.00	838.00	330.00		2
11	838.00	330.00	850.00	329.00		2
12	850.00	329.00	860.00	330.00		1
13	860.00	330.00	883.00	339.00		1
14	883.00	339.00	889.00	339.00		1
15	889.00	339.00	957.00	370.00		1
16	957.00	370.00	965.00	370.00		1
17	965.00	370.00	1017.00	394.00		1
18	1017.00	394.00	1400.00	394.00		1
19	400.00	200.00	400.10	195.00		3
20	400.10	195.00	415.00	195.00		3
21	415.00	195.00	455.00	210.00		3
22	455.00	210.00	465.00	210.00		3
23	465.00	210.00	550.00	253.00		3
24	550.00	253.00	600.00	253.00		3
25	600.00	253.00	650.00	260.00		3
26	650.00	260.00	685.00	295.00		2
27	650.00	260.00	752.00	282.00		2
28	850.00	330.00	874.00	300.00		2
29	752.00	282.00	874.00	300.00		2
30	874.00	300.00	882.00	289.00		2
31	882.00	289.00	951.00	289.00		3
32	951.00	289.00	1138.00	386.00		3
33	1138.00	386.00	1250.00	386.00		3
34	1250.00	386.00	1400.00	386.00		3

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

Soil Type	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant	Piez. Surface
1	120.0	120.0	150.0	30.0	0.00	0.0	1
2	125.0	125.0	200.0	24.0	0.00	0.0	1
3	125.0	125.0	300.0	32.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

2 soil type(s)

Soil Type 2 Is Anisotropic			
Number Of Direction Ranges Specified = 3			
Direction	Counterclockwise Range	Cohesion Intercept (psf)	Friction Angle (deg)
1	8.0	200.00	24.00
2	11.0	0.00	13.00
3	90.0	200.00	24.00

Soil Type 3 Is Anisotropic			
Number Of Direction Ranges Specified = 3			
Direction	Counterclockwise Range	Cohesion Intercept (psf)	Friction Angle (deg)
1	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	330.00	195.00
2	1400.00	195.00

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.

9999 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 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	650.00	260.00	730.00	274.10	1.00
2	730.10	274.10	875.00	300.00	1.00

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 = 9999

Number of Trial Failure Surfaces is Greater Than 5000.

Statistical Data on FS Values are Not Generated.

To Generate Stastical Data, Reduce Number of Trial

Failure Surfaces to 5000 or less.

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	645.613	287.294
2	647.025	286.034
3	663.993	275.447
4	681.479	265.740
5	790.726	284.624

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)	Surcharge Ver (lbs)	Load (lbs)
1	1.4	130.2	0.0	0.0	0.	0.	0.0	0.0	0.0
2	17.0	17286.8	0.0	0.0	0.	0.	0.0	0.0	0.0
3	0.9	1771.6	0.0	0.0	0.	0.	0.0	0.0	0.0
4	15.2	40719.1	0.0	0.0	0.	0.	0.0	0.0	0.0
5	1.4	4754.4	0.0	0.0	0.	0.	0.0	0.0	0.0
6	3.5	12566.0	0.0	0.0	0.	0.	0.0	0.0	0.0
7	22.0	80438.1	0.0	0.0	0.	0.	0.0	0.0	0.0
8	45.0	190985.3	0.0	0.0	0.	0.	0.0	0.0	0.0
9	31.0	158427.2	0.0	0.0	0.	0.	0.0	0.0	0.0
10	7.7	42141.4	0.0	0.0	0.	0.	0.0	0.0	0.0
11	3.3	17516.4	0.0	0.0	0.	0.	0.0	0.0	0.0
12	10.3	46006.1	0.0	0.0	0.	0.	0.0	0.0	0.0
13	4.6	16091.4	0.0	0.0	0.	0.	0.0	0.0	0.0
14	6.0	14684.4	0.0	0.0	0.	0.	0.0	0.0	0.0
15	10.6	9670.8	0.0	0.0	0.	0.	0.0	0.0	0.0

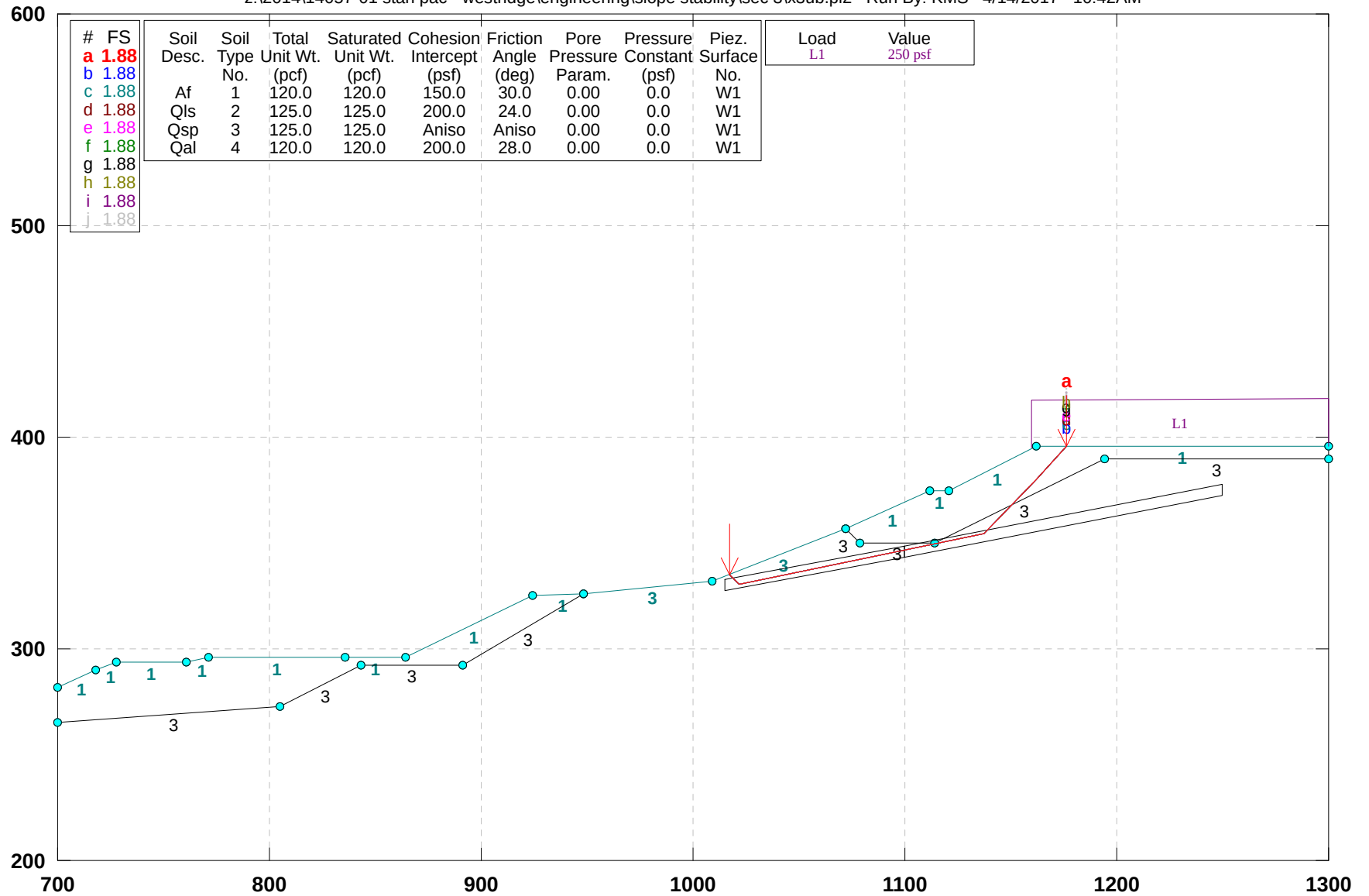
4	681.479	265.740
5	790.726	284.624
6	804.352	299.263
7	815.026	316.177
8	825.613	330.427
Factor of Safety		
*** 1.678 ***		
Failure Point	Surface Specified	By 8 Coordinate Points
No.	X-Surf (ft)	Y-Surf (ft)
1	645.613	287.294
2	647.025	286.034
3	663.993	275.447
4	681.479	265.740
5	790.726	284.624
6	804.352	299.263
7	815.026	316.177
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Factor of Safety		
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No.	X-Surf (ft)	Y-Surf (ft)
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2	647.025	286.034
3	663.993	275.447
4	681.479	265.740
5	790.726	284.624
6	804.352	299.263
7	815.026	316.177
8	825.613	330.427
Factor of Safety		
*** 1.678 ***		

Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 2\2qlsx.0UT Page 5

Factor of Safety
*** 1.678 ***
**** END OF GSTABL7 OUTPUT ****

Westridge/14057-01/Sec 3-3'/ Upper Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 3\3sub.pl2 Run By: KMS 4/14/2017 10:42AM

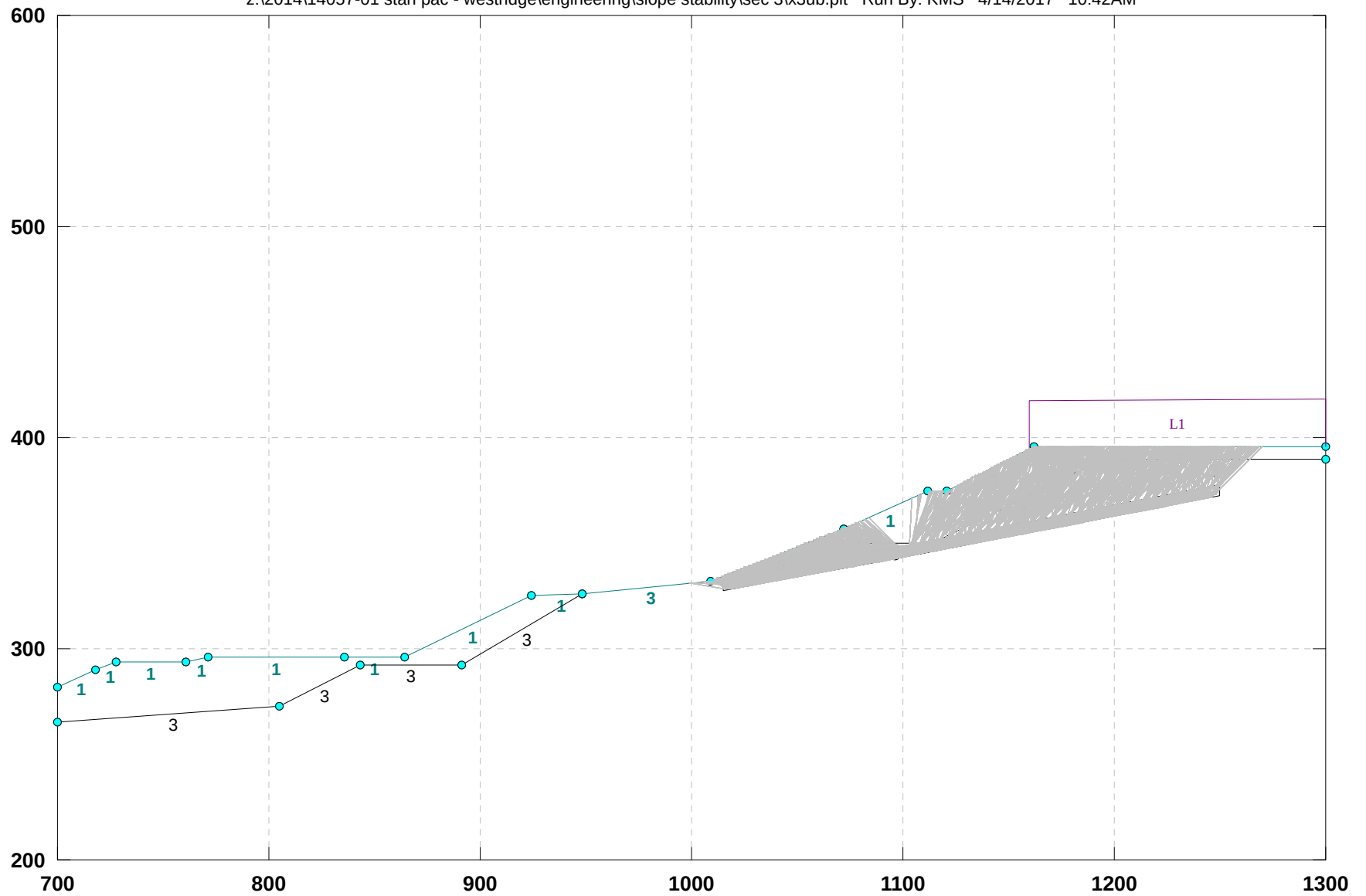


GSTABL7 v.2 FSmin=1.88

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

Westridge/14057-01/Sec 3-3'/ Upper Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 3\3ub.plt Run By: KMS 4/14/2017 10:42AM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 10:42AM
Run By: KMS
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Westridge\Engineering\Slope Stability\Sec 3\3ub.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 3\3ub.0UT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 3\3ub.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 3-3'/
Upper Slope - Static

BOUNDARY COORDINATES

14 Top Boundaries

22 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	700.00	282.00	718.00	290.00	1
	2	718.00	290.00	728.00	294.00	1
	3	728.00	294.00	761.00	294.00	1
	4	761.00	294.00	771.00	296.00	1
	5	771.00	296.00	836.00	296.00	1
	6	836.00	296.00	864.00	296.00	1
	7	864.00	296.00	924.00	325.00	1
	8	924.00	325.00	948.00	326.00	1
	9	948.00	326.00	1009.00	332.00	3
	10	1009.00	332.00	1072.00	357.00	3
	11	1072.00	357.00	1112.00	375.00	1
	12	1112.00	375.00	1121.00	375.00	1
	13	1121.00	375.00	1162.00	396.00	1
	14	1162.00	396.00	1300.00	396.00	1
	15	1072.00	357.00	1079.00	350.00	3
	16	1079.00	350.00	1114.00	350.00	3
	17	1114.00	350.00	1194.00	390.00	3
	18	1194.00	390.00	1300.00	390.00	3
	19	700.00	265.00	805.00	273.00	3
	20	805.00	273.00	843.00	292.00	3
	21	843.00	292.00	891.00	292.00	3
	22	891.00	292.00	948.00	326.00	3

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
	Type	Unit	Wt.	Unit	Wt.	Intercept	Angle
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	Constant
1	1	120.0	120.0	150.0	30.0	0.00	0.0

1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	300.0	32.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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)
1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	1160.00	1300.00	250.0	0.0

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

both > 0
1
Janbus Empirical Coef is being used for the case of c & phi

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

9999 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 35.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	1015.00	330.00	1100.00	346.00	5.00
2	1100.10	346.00	1250.00	375.00	5.00

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 = 9999

Number of Trial Failure Surfaces is Greater Than 5000. Statistical Data on FS Values are Not Generated. To Generate Stastical Data, Reduce Number of Trial Failure Surfaces to 5000 or less.

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1017.232	335.267
2	1021.822	330.827
3	1137.236	354.786

4 1161.778 379.740
5 1176.598 396.000

Factor of Safety
*** 1.882 ***

Individual data on the 12 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Ver (lbs)
1 0.0	4.6	1796.1	0.0	0.0	0.	0.	0.0	0.0
2 0.0	50.2	69048.6	0.0	0.0	0.	0.	0.0	0.0
3 0.0	7.0	14351.7	0.0	0.0	0.	0.	0.0	0.0
4 0.0	33.0	85594.4	0.0	0.0	0.	0.	0.0	0.0
5 0.0	2.0	6061.3	0.0	0.0	0.	0.	0.0	0.0
6 0.0	7.0	20458.6	0.0	0.0	0.	0.	0.0	0.0
7 0.0	16.2	51131.8	0.0	0.0	0.	0.	0.0	0.0
8 0.0	13.2	40197.4	0.0	0.0	0.	0.	0.0	0.0
9 0.0	9.5	22274.6	0.0	0.0	0.	0.	0.0	0.0
10 444.5	1.8	3541.2	0.0	0.0	0.	0.	0.0	0.0
11 55.5	0.2	428.0	0.0	0.0	0.	0.	0.0	0.0
12 3649.4	14.6	14028.8	0.0	0.0	0.	0.	0.0	0.0

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1017.232	335.267
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3 1137.236 354.786
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Factor of Safety
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Factor of Safety
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Factor of Safety
*** 1.882 ***

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Point No.	X-Surf (ft)	Y-Surf (ft)
1	1017.232	335.267
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3	1137.236	354.786
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Factor of Safety
*** 1.882 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1017.232	335.267
2	1021.822	330.827
3	1137.236	354.786
4	1161.778	379.740
5	1176.598	396.000

Factor of Safety
*** 1.882 ***

1

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1017.232	335.267
2	1021.822	330.827
3	1137.236	354.786
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Factor of Safety
*** 1.882 ***

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Point No.	X-Surf (ft)	Y-Surf (ft)
1	1017.232	335.267
2	1021.822	330.827
3	1137.236	354.786
4	1161.778	379.740
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Factor of Safety
*** 1.882 ***

1

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1017.232	335.267
2	1021.822	330.827
3	1137.236	354.786
4	1161.778	379.740
5	1176.598	396.000

Factor of Safety
*** 1.882 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1017.232	335.267
2	1021.822	330.827
3	1137.236	354.786
4	1161.778	379.740
5	1176.598	396.000

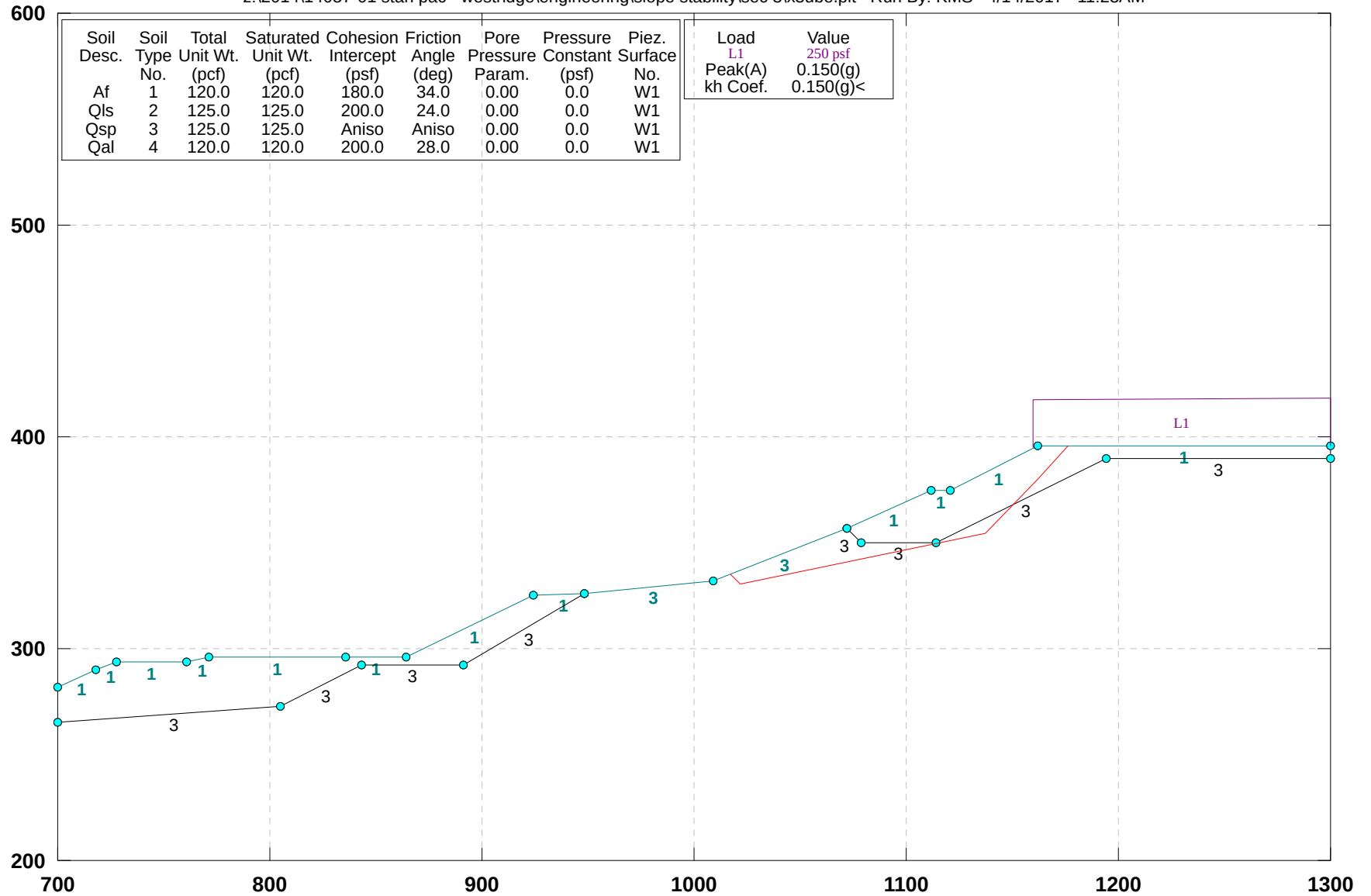
Factor of Safety

*** 1.882 ***

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

Westridge/14057-01/Sec 3-3' Upper Slope - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 3\3ube.plt Run By: KMS 4/14/2017 11:23AM



GSTABL7 v.2 FSmin=1.42

Factor Of Safety Is Calculated By The Simplified Janbu Method

1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	500.0	34.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	500.00	34.00
2	12.0	200.00	27.00
3	90.0	500.00	34.00

ANISOTROPIC SOIL NOTES:

- crack.
- (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
 - (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)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	1160.00	1300.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)

Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

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

Trial Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1017.232	335.267
2	1021.822	330.827
3	1137.236	354.786
4	1161.778	379.740
5	1176.598	396.000

Janbu's Empirical Coefficient (fo) = 1.057

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

Factor Of Safety For The Preceding Specified Surface = 1.420

Table 1 - Individual Data on the 12 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1 0.0	4.6	1796.2	0.0	0.0	0.0	0.0	269.4	0.0
2 0.0	50.2	69049.8	0.0	0.0	0.0	0.0	10357.5	0.0
3 0.0	7.0	14351.7	0.0	0.0	0.0	0.0	2152.8	0.0

4	33.0	85594.0	0.0	0.0	0.0	0.0	12839.1	0.0
0.0								
5	2.0	6061.3	0.0	0.0	0.0	0.0	909.2	0.0
0.0								
6	7.0	20458.4	0.0	0.0	0.0	0.0	3068.8	0.0
0.0								
7	16.2	51129.5	0.0	0.0	0.0	0.0	7669.4	0.0
0.0								
8	13.2	40194.8	0.0	0.0	0.0	0.0	6029.2	0.0
0.0								
9	9.5	22277.1	0.0	0.0	0.0	0.0	3341.6	0.0
0.0								
10	1.8	3540.6	0.0	0.0	0.0	0.0	531.1	0.0
444.5								
11	0.2	428.5	0.0	0.0	0.0	0.0	64.3	0.0
55.5								
12	14.6	14028.3	0.0	0.0	0.0	0.0	2104.2	0.0
3649.5								

Table 2 - Base Stress Data on the 12 Slices

Slice Mobilized No. Stress * (psf)	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	-44.05	1019.53	6.39	1965.71	-
229.87					
2	11.73	1046.91	51.25	856.59	
481.81					
3	11.73	1075.50	7.15	1183.09	
717.85					
4	11.73	1095.50	33.70	1446.33	
908.15					
5	11.73	1113.00	2.04	1657.92	
1061.11					
6	11.73	1117.50	7.15	1605.61	
1023.29					
7	11.73	1129.12	16.58	1715.32	
1102.61					
8	45.48	1143.85	18.85	2453.29	
2487.52					
9	45.48	1155.23	13.61	1687.34	
1909.68					
10	45.48	1160.89	2.54	1627.16	
1807.49					
11	47.65	1161.89	0.33	1610.69	
1806.00					
12	47.65	1169.30	21.67	972.91	
992.10					

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 250276.58 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 1380.75(psf)

Sum of the Driving Forces = 186299.77 (lbs)

Average Mobilized Shear Stress = 1027.80(psf)

Total length of the failure surface = 181.26(ft)

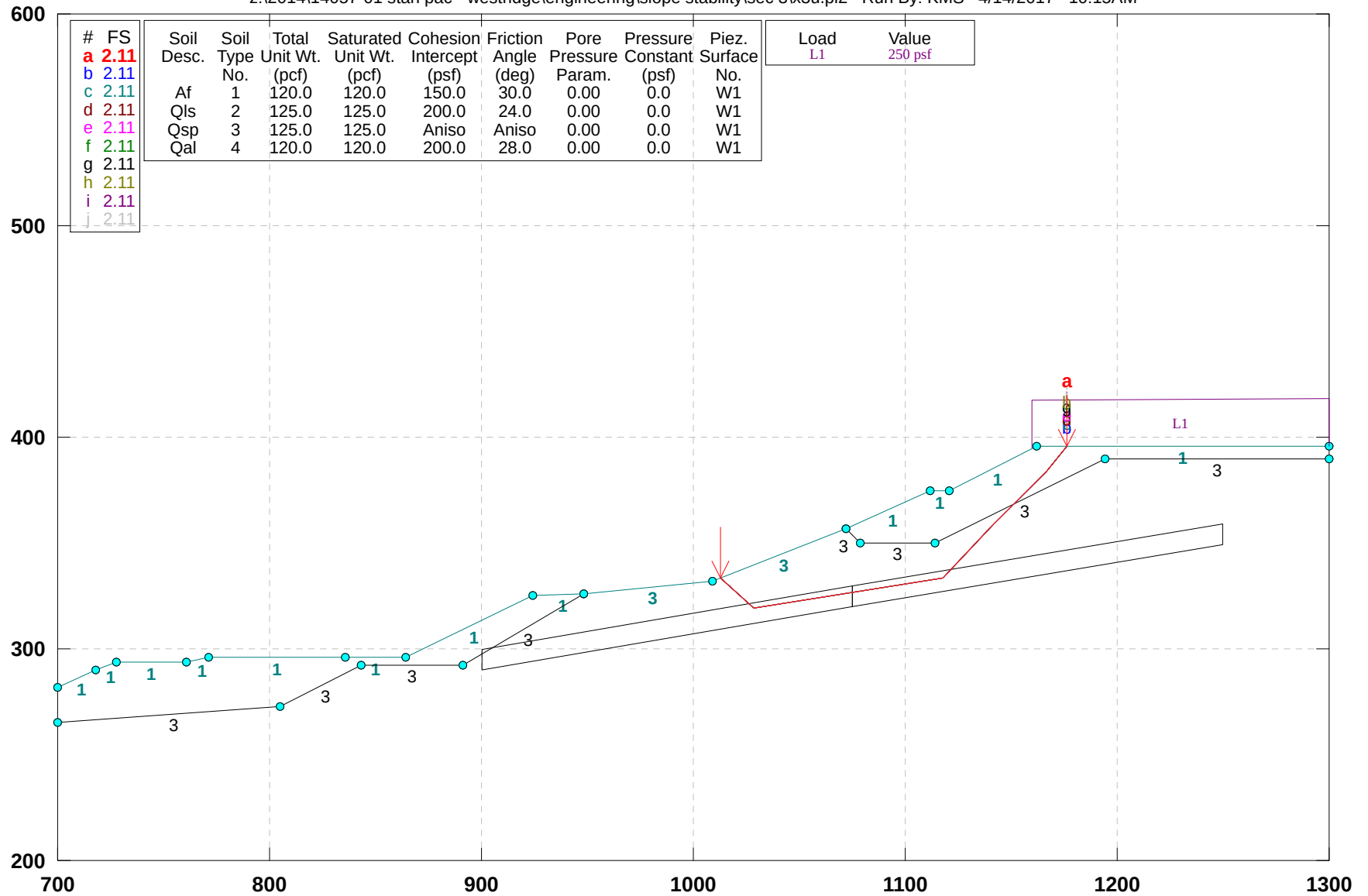
*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.3650(g)
Calculated Newmark Seismic Displacement = 0.002(ft)

Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

Westridge/14057-01/Sec 3-3'/ Upper Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 3\3u.pl2 Run By: KMS 4/14/2017 10:15AM

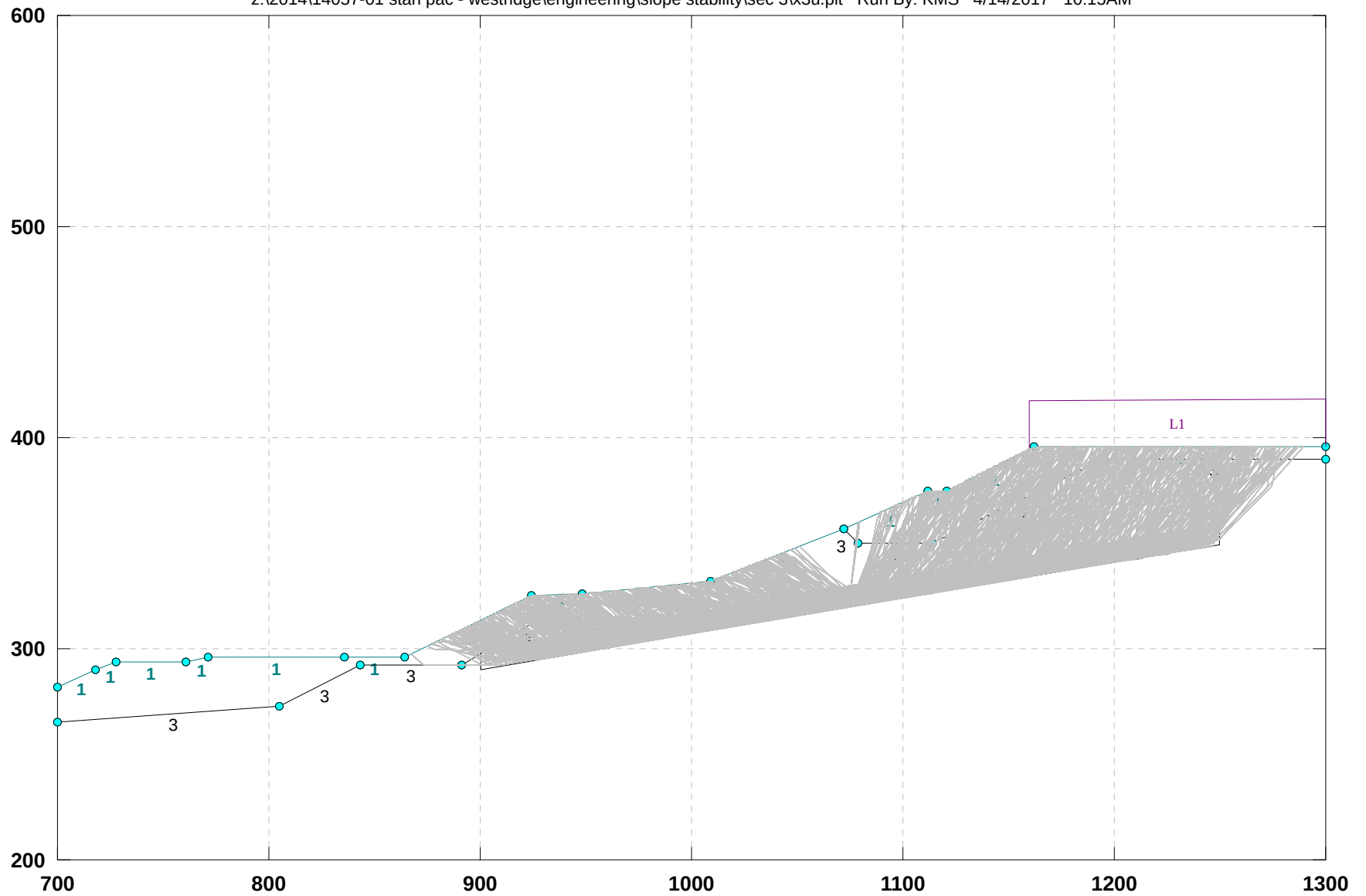


GSTABL7 v.2 FSmin=2.11

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

Westridge/14057-01/Sec 3-3'/ Upper Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 3\3u.plt Run By: KMS 4/14/2017 10:15AM



*** GSTABL7 ***
** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **
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Prohibited)

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: 4/14/2017
Time of Run: 10:15AM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 3\3u.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 3\3u.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 3\3u.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 3-3'/
Upper Slope - Static

BOUNDARY COORDINATES
14 Top Boundaries

22 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	700.00	282.00	718.00	290.00	1
	2	718.00	290.00	728.00	294.00	1
	3	728.00	294.00	761.00	294.00	1
	4	761.00	294.00	771.00	296.00	1
	5	771.00	296.00	836.00	296.00	1
	6	836.00	296.00	864.00	296.00	1
	7	864.00	296.00	924.00	325.00	1
	8	924.00	325.00	948.00	326.00	1
	9	948.00	326.00	1009.00	332.00	3
	10	1009.00	332.00	1072.00	357.00	3
	11	1072.00	357.00	1112.00	375.00	1
	12	1112.00	375.00	1121.00	375.00	1
	13	1121.00	375.00	1162.00	396.00	1
	14	1162.00	396.00	1300.00	396.00	1
	15	1072.00	357.00	1079.00	350.00	3
	16	1079.00	350.00	1114.00	350.00	3
	17	1114.00	350.00	1194.00	390.00	3
	18	1194.00	390.00	1300.00	390.00	3
	19	700.00	265.00	805.00	273.00	3
	20	805.00	273.00	843.00	292.00	3
	21	843.00	292.00	891.00	292.00	3
	22	891.00	292.00	948.00	326.00	3

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil Total Saturated Cohesion Friction Pore Pressure						
	Type	Unit	Wt.	Unit	Wt.	Intercept	Angle
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	150.0	30.0	0.00	0.0

1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	300.0	32.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

crack.
1
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	1160.00	1300.00	250.0	0.0

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

both > 0
1
Janbus Empirical Coef is being used for the case of c & phi

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

9999 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 35.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	900.00	295.00	1075.00	325.00	10.00
2	1075.10	325.00	1250.00	354.00	10.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 9999

Number of Trial Failure Surfaces is Greater Than 5000. Statistical Data on FS Values are Not Generated. To Generate Stastical Data, Reduce Number of Trial Failure Surfaces to 5000 or less.

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1012.975	333.577
2	1028.206	319.619
3	1117.747	333.516

4	1142.078	358.675
5	1166.214	384.022
6	1175.947	396.000

Factor of Safety
*** 2.110 ***

Individual data on the 13 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Ver (lbs)
1	15.2	19040.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	43.8	138461.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	7.0	27486.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	33.0	151836.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	2.0	10305.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	3.7	19114.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	3.3	15822.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	21.1	83668.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	9.8	28794.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	8.2	19296.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	2.0	4066.1	0.0	0.0	0.	0.	0.0	0.0
500.0								
12	4.2	7176.8	0.0	0.0	0.	0.	0.0	0.0
1053.6								
13	9.7	6995.1	0.0	0.0	0.	0.	0.0	0.0
2433.2								

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	1012.975	333.577
2	1028.206	319.619
3	1117.747	333.516
4	1142.078	358.675
5	1166.214	384.022
6	1175.947	396.000

Factor of Safety
*** 2.110 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1012.975	333.577
2	1028.206	319.619
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4	1142.078	358.675
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Factor of Safety
*** 2.110 ***

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Factor of Safety
*** 2.110 ***

1

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Factor of Safety
*** 2.110 ***

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Factor of Safety
*** 2.110 ***

1

Failure Surface Specified By 6 Coordinate Points

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2	1028.206	319.619
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Factor of Safety
*** 2.110 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1012.975	333.577
2	1028.206	319.619
3	1117.747	333.516
4	1142.078	358.675
5	1166.214	384.022
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Factor of Safety
*** 2.110 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1012.975	333.577
2	1028.206	319.619
3	1117.747	333.516
4	1142.078	358.675
5	1166.214	384.022
6	1175.947	396.000

Factor of Safety
*** 2.110 ***

Failure Surface Specified By 6 Coordinate Points

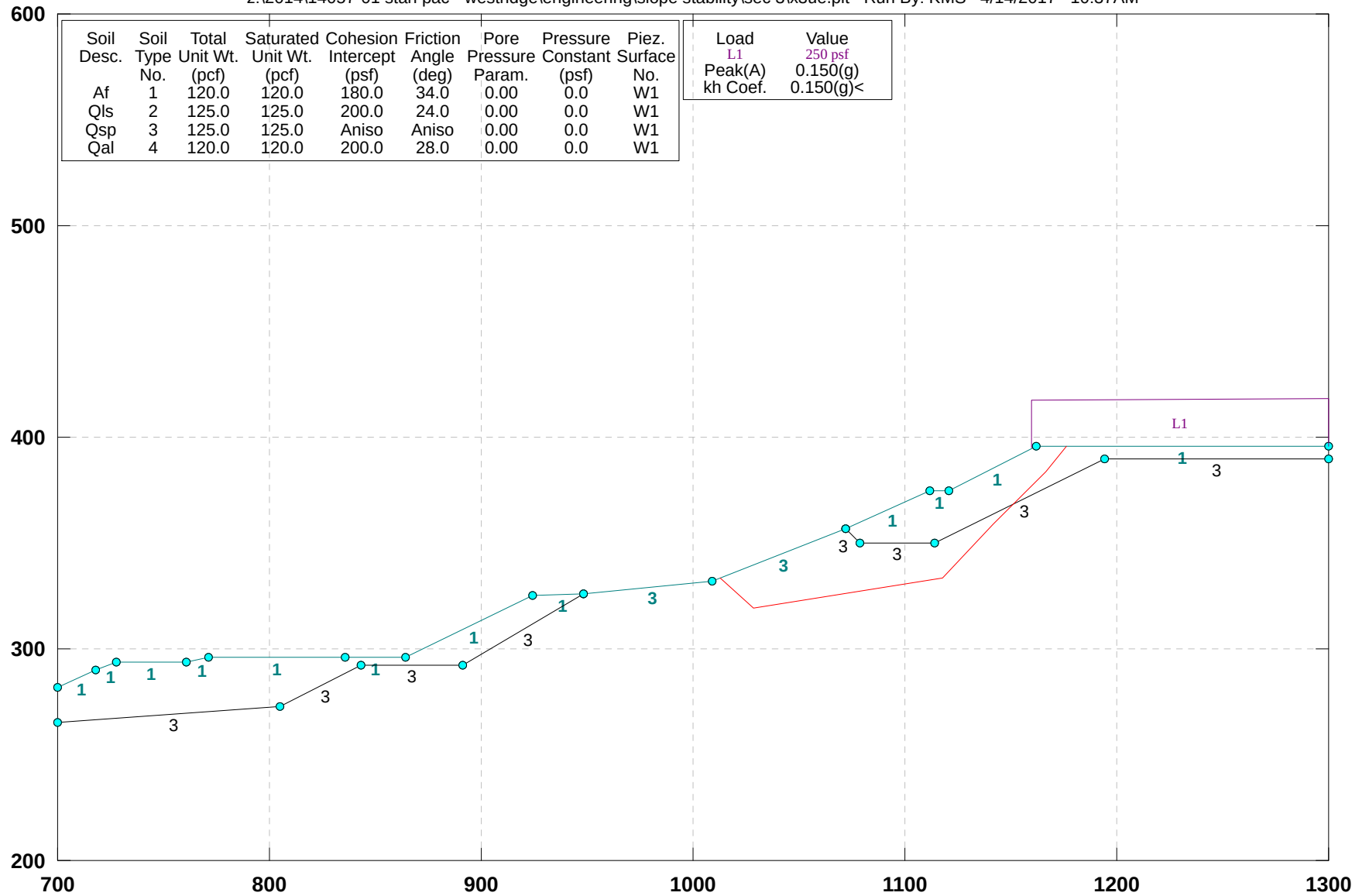
Point No.	X-Surf (ft)	Y-Surf (ft)
1	1012.975	333.577
2	1028.206	319.619
3	1117.747	333.516
4	1142.078	358.675
5	1166.214	384.022
6	1175.947	396.000

Factor of Safety
*** 2.110 ***

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

Westridge/14057-01/Sec 3-3'/ 4-4-16 Design - Upper Slope - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 3\3ue.plt Run By: KMS 4/14/2017 10:37AM



GSTABL7 v.2 FSmin=1.64
Factor Of Safety Is Calculated By The Simplified Janbu Method

*** GSTABL7 ***
** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **
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Prohibited)

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: 4/14/2017
Time of Run: 10:37AM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 3\3ue.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 3\3ue.0UT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 3\3ue.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 3-3'/ 4-4-16 Desi
gn - Upper Slope - Seismic

BOUNDARY COORDINATES
14 Top Boundaries

22 Total Boundaries

Type Bnd	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	700.00	282.00	718.00	290.00	1
	2	718.00	290.00	728.00	294.00	1
	3	728.00	294.00	761.00	294.00	1
	4	761.00	294.00	771.00	296.00	1
	5	771.00	296.00	836.00	296.00	1
	6	836.00	296.00	864.00	296.00	1
	7	864.00	296.00	924.00	325.00	1
	8	924.00	325.00	948.00	326.00	1
	9	948.00	326.00	1009.00	332.00	3
	10	1009.00	332.00	1072.00	357.00	3
	11	1072.00	357.00	1112.00	375.00	1
	12	1112.00	375.00	1121.00	375.00	1
	13	1121.00	375.00	1162.00	396.00	1
	14	1162.00	396.00	1300.00	396.00	1
	15	1072.00	357.00	1079.00	350.00	3
	16	1079.00	350.00	1114.00	350.00	3
	17	1114.00	350.00	1194.00	390.00	3
	18	1194.00	390.00	1300.00	390.00	3
	19	700.00	265.00	805.00	273.00	3
	20	805.00	273.00	843.00	292.00	3
	21	843.00	292.00	891.00	292.00	3
	22	891.00	292.00	948.00	326.00	3

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
	Type	Unit	Wt. Unit	Intercept	Angle	Pressure	Constant
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	180.0	34.0	0.00	0.0

1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	500.0	34.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	500.00	34.00
2	12.0	200.00	27.00
3	90.0	500.00	34.00

ANISOTROPIC SOIL NOTES:

- crack.
- 1
- (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	1160.00	1300.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)

Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

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

Trial Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1012.975	333.577
2	1028.206	319.619
3	1117.747	333.516
4	1142.078	358.675
5	1166.214	384.022
6	1175.947	396.000

Janbu's Empirical Coefficient (fo) = 1.075

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

Factor Of Safety For The Preceding Specified Surface = 1.636

Table 1 - Individual Data on the 13 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force	Water Force	Tie Force	Tie Force	Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1 0.0	15.2	19040.8	0.0	0.0	0.0	0.0	2856.1	0.0
2 0.0	43.8	138461.6	0.0	0.0	0.0	0.0	20769.2	0.0

3	7.0	27486.2	0.0	0.0	0.0	0.0	4122.9	0.0
0.0								
4	33.0	151836.2	0.0	0.0	0.0	0.0	22775.4	0.0
0.0								
5	2.0	10305.2	0.0	0.0	0.0	0.0	1545.8	0.0
0.0								
6	3.7	19115.2	0.0	0.0	0.0	0.0	2867.3	0.0
0.0								
7	3.3	15821.8	0.0	0.0	0.0	0.0	2373.3	0.0
0.0								
8	21.1	83667.7	0.0	0.0	0.0	0.0	12550.2	0.0
0.0								
9	9.7	28792.8	0.0	0.0	0.0	0.0	4318.9	0.0
0.0								
10	8.2	19297.6	0.0	0.0	0.0	0.0	2894.6	0.0
0.0								
11	2.0	4065.9	0.0	0.0	0.0	0.0	609.9	0.0
500.0								
12	4.2	7176.0	0.0	0.0	0.0	0.0	1076.4	0.0
1053.5								
13	9.7	6994.8	0.0	0.0	0.0	0.0	1049.2	0.0
2433.3								

Table 2 - Base Stress Data on the 13 Slices

Slice Mobilized No. Stress * (psf)	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	-42.50	1020.59	20.66	2928.67	-
706.40					
2	8.82	1050.10	44.32	1748.12	
953.53					
3	8.82	1075.50	7.08	2124.36	
1184.23					
4	8.82	1095.50	33.40	2456.11	
1387.65					
5	8.82	1113.00	2.02	2727.36	
1553.98					
6	8.82	1115.87	3.79	2702.24	
1538.58					
7	45.96	1119.37	4.68	3812.72	
4003.36					
8	45.96	1131.54	30.32	3204.41	
3267.29					
9	46.40	1146.95	14.14	2521.73	
2444.19					
10	46.40	1155.91	11.85	1793.90	
1954.31					
11	46.40	1161.00	2.90	1740.42	
1863.60					

12	46.40	1164.11	6.11	1515.12
1590.42				
13	50.90	1171.08	15.43	876.66
819.75				

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 448335.72 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 2279.21(psf)

Sum of the Driving Forces = 294664.75 (lbs)

Average Mobilized Shear Stress = 1497.99(psf)

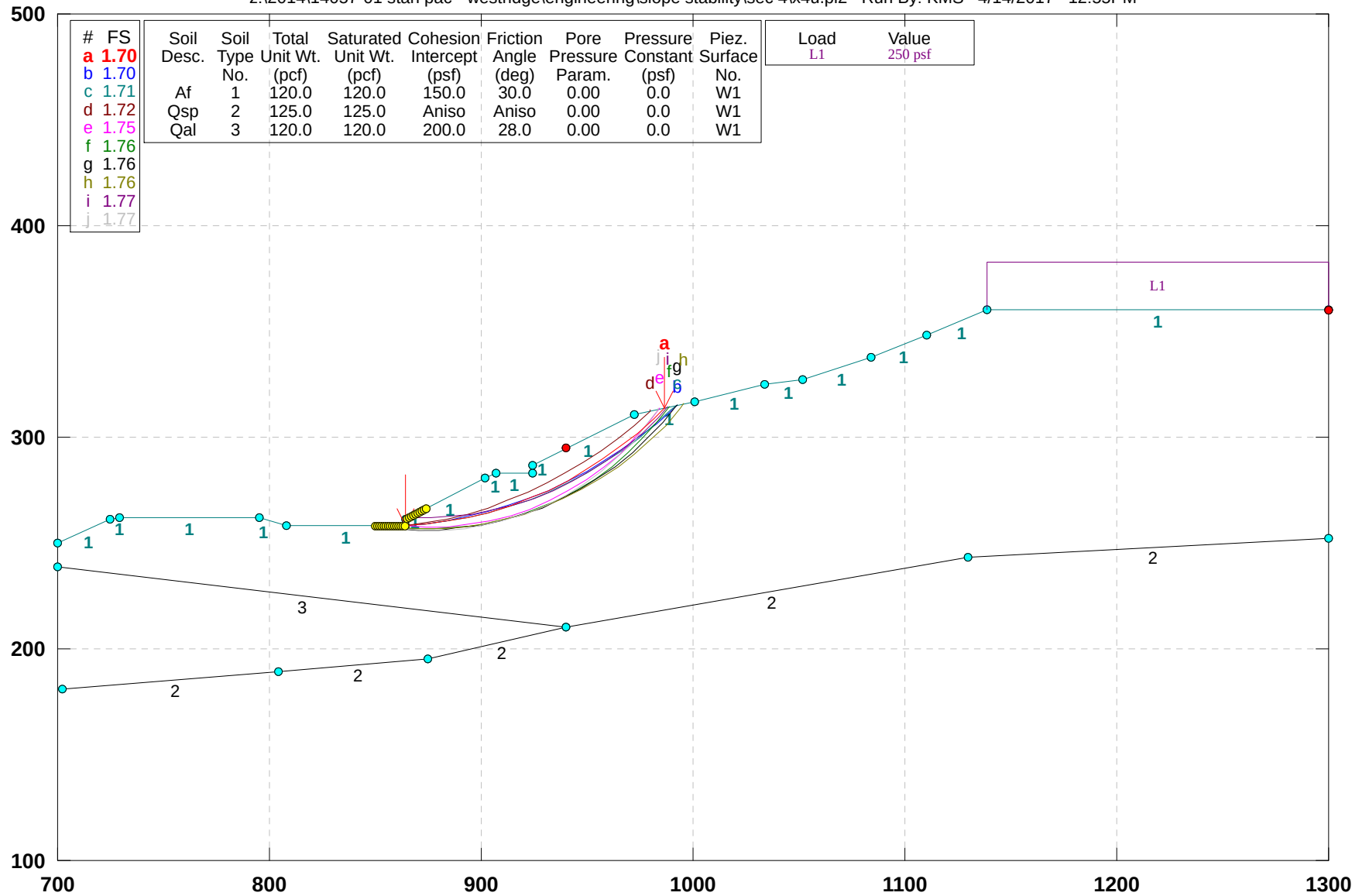
Total length of the failure surface = 196.71(ft)

*** SEISMIC SLOPE DISPLACEMENT DATA ***
 (Note: kv is set = zero for displacement calculations)
 Seismic Yield Coefficient (ky) = 0.5230(g)
 Calculated Newmark Seismic Displacement = 0.001(ft)
 Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

Westridge/14057-01/Sec 4-4'/ Upper Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 4\4u.pl2 Run By: KMS 4/14/2017 12:55PM



GSTABL7 v.2 FSmin=1.70
Safety Factors Are Calculated By The Modified Bishop Method

*** GSTABL7 ***
** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **
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Prohibited)

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: 4/14/2017
Time of Run: 12:55PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 4\4u.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 4\4u.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 4\4u.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 4-4'/
Upper Slope - Static

BOUNDARY COORDINATES
18 Top Boundaries

24 Total Boundaries

Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	700.00	250.00	725.00	261.00	1
	2	725.00	261.00	729.00	262.00	1
	3	729.00	262.00	795.00	262.00	1
	4	795.00	262.00	808.00	258.00	1
	5	808.00	258.00	864.00	258.00	1
	6	864.00	258.00	864.10	261.00	1
	7	864.10	261.00	902.00	281.00	1
	8	902.00	281.00	907.00	283.00	1
	9	907.00	283.00	924.00	283.00	1
	10	924.00	283.00	924.10	287.00	1
	11	924.10	287.00	972.00	311.00	1
	12	972.00	311.00	1001.00	317.00	1
	13	1001.00	317.00	1034.00	325.00	1
	14	1034.00	325.00	1052.00	327.00	1
	15	1052.00	327.00	1084.00	338.00	1
	16	1084.00	338.00	1110.00	348.00	1
	17	1110.00	348.00	1139.00	360.00	1
	18	1139.00	360.00	1300.00	360.00	1
	19	700.00	239.00	940.00	210.00	3
	20	940.00	210.00	1130.00	243.00	2
	21	1130.00	243.00	1300.00	252.00	2
	22	702.00	181.00	804.00	189.00	2
	23	804.00	189.00	875.00	195.00	2
	24	875.00	195.00	940.00	210.00	2

User Specified Y-Origin = 100.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

Piez.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
Surface	Type	Unit	Wt.	Unit	Wt.	Intercept	Angle
No.	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)

1 1 120.0 120.0 150.0 30.0 0.00 0.0
1 2 125.0 125.0 300.0 32.0 0.00 0.0
1 3 120.0 120.0 200.0 28.0 0.00 0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	300.00	32.00
2	14.0	200.00	27.00
3	90.0	300.00	32.00

ANISOTROPIC SOIL NOTES:

- crack.
- 1
- (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
(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	1139.00	1300.00	250.0	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.

5000 Trial Surfaces Have Been Generated.

Spaced 200 Surface(s) Initiate(s) From Each Of 25 Points Equally
Along The Ground Surface Between X = 850.00(ft)
and X = 874.00(ft)

Each Surface Terminates Between X = 940.00(ft)
and X =1300.00(ft)

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

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

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 Modified Bishop 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 = 4.466 FS Min = 1.703 FS Ave = 2.815
Standard Deviation = 0.650 Coefficient of Variation =
23.08 %

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	864.000	258.000
2	873.963	258.860
3	883.866	260.252
4	893.680	262.172
5	903.377	264.615
6	912.929	267.573
7	922.310	271.037
8	931.492	274.999
9	940.448	279.447
10	949.154	284.367
11	957.584	289.746
12	965.714	295.568
13	973.521	301.817
14	980.983	308.475
15	986.555	314.011

Circle Center At X = 852.917 ; Y = 444.485 ; and Radius = 186.814

Factor of Safety
*** 1.703 ***

Individual data on the 20 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top	Bot	Norm	Tan	Hor	Ver
			(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
1	0.1	17.9	0.0	0.0	0.	0.	0.0	0.0
2	9.9	6116.6	0.0	0.0	0.	0.	0.0	0.0
3	9.9	11005.3	0.0	0.0	0.	0.	0.0	0.0
4	9.8	15083.0	0.0	0.0	0.	0.	0.0	0.0
5	8.3	15560.3	0.0	0.0	0.	0.	0.0	0.0
6	1.4	2781.0	0.0	0.0	0.	0.	0.0	0.0
7	3.6	7434.8	0.0	0.0	0.	0.	0.0	0.0
8	5.9	11629.9	0.0	0.0	0.	0.	0.0	0.0

9	9.4	15416.0	0.0	0.0	0.	0.	0.0	0.0
10	1.7	2352.2	0.0	0.0	0.	0.	0.0	0.0
11	0.1	158.5	0.0	0.0	0.	0.	0.0	0.0
12	7.4	13701.7	0.0	0.0	0.	0.	0.0	0.0
13	9.0	16900.6	0.0	0.0	0.	0.	0.0	0.0
14	8.7	16156.8	0.0	0.0	0.	0.	0.0	0.0
15	8.4	14778.3	0.0	0.0	0.	0.	0.0	0.0
16	8.1	12835.9	0.0	0.0	0.	0.	0.0	0.0
17	6.3	8554.6	0.0	0.0	0.	0.	0.0	0.0
18	1.5	1816.1	0.0	0.0	0.	0.	0.0	0.0
19	7.5	6214.0	0.0	0.0	0.	0.	0.0	0.0
20	5.6	1465.5	0.0	0.0	0.	0.	0.0	0.0

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	864.000	258.000
2	873.943	259.063
3	883.826	260.589
4	893.627	262.573
5	903.325	265.013
6	912.899	267.902
7	922.327	271.234
8	931.590	275.002
9	940.668	279.197
10	949.540	283.811
11	958.187	288.834
12	966.590	294.255
13	974.732	300.061
14	982.594	306.240
15	990.160	312.780
16	992.823	315.308

Circle Center At X = 846.294 ; Y = 471.247 ; and Radius = 213.981

Factor of Safety
*** 1.704 ***

1

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	864.000	258.000
2	873.964	258.843
3	883.874	260.184
4	893.704	262.020
5	903.430	264.346
6	913.027	267.157
7	922.470	270.445
8	931.738	274.203
9	940.805	278.420
10	949.649	283.086
11	958.249	288.190
12	966.582	293.718
13	974.627	299.657
14	982.365	305.992
15	989.776	312.706
16	992.256	315.191

199.037 Circle Center At X = 852.280 ; Y = 456.692 ; and Radius =

Factor of Safety
*** 1.705 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	864.000	258.000
2	873.890	259.479
3	883.697	261.435
4	893.397	263.863
5	902.969	266.760
6	912.389	270.116
7	921.635	273.925
8	930.686	278.178
9	939.520	282.864
10	948.116	287.972

11	956.455	293.491
12	964.517	299.408
13	972.283	305.709
14	979.734	312.378
15	980.019	312.659

206.315 Circle Center At X = 838.450 ; Y = 462.727 ; and Radius =

Factor of Safety
*** 1.721 ***

1

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	864.000	258.000
2	873.986	257.473
3	883.983	257.701
4	893.935	258.683
5	903.784	260.413
6	913.475	262.882
7	922.951	266.076
8	932.159	269.976
9	941.047	274.560
10	949.563	279.801
11	957.659	285.671
12	965.289	292.135
13	972.409	299.157
14	978.979	306.696
15	984.053	313.494

132.370 Circle Center At X = 875.969 ; Y = 389.828 ; and Radius =

Factor of Safety
*** 1.750 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	858.000	258.000
2	867.951	257.013
3	877.948	256.749
4	887.937	257.212
5	897.866	258.397
6	907.684	260.299
7	917.338	262.908
8	926.777	266.210
9	935.952	270.187
10	944.814	274.820
11	953.317	280.082
12	961.416	285.948
13	969.069	292.385
14	976.235	299.360
15	982.876	306.836
16	988.716	314.458

Circle Center At X = 876.581 ; Y = 394.531 ; and Radius = 137.789

Factor of Safety
*** 1.758 ***

1

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	850.000	258.000
2	859.926	256.786
3	869.911	256.236
4	879.910	256.352
5	889.880	257.134
6	899.775	258.578
7	909.552	260.679
8	919.167	263.425
9	928.578	266.806
10	937.743	270.806
11	946.622	275.408
12	955.174	280.591
13	963.361	286.332
14	971.149	292.606
15	978.501	299.384
16	985.385	306.637
17	991.771	314.333
18	992.415	315.224

Circle Center At X = 873.181 ; Y = 406.138 ; and Radius = 149.941

Factor of Safety
*** 1.761 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	851.000	258.000
2	860.937	256.876
3	870.925	256.393
4	880.924	256.554
5	890.891	257.358
6	900.787	258.802
7	910.568	260.879
8	920.196	263.582
9	929.630	266.898
10	938.831	270.815
11	947.761	275.315
12	956.383	280.381
13	964.661	285.991
14	972.561	292.122
15	980.050	298.749
16	987.098	305.844
17	993.674	313.378
18	995.589	315.880

Circle Center At X = 873.455 ; Y = 411.443 ; and Radius = 155.077

Factor of Safety
*** 1.762 ***

1

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	866.000	262.003
2	876.000	261.957

3	885.982	262.554
4	895.905	263.791
5	905.729	265.663
6	915.411	268.162
7	924.913	271.278
8	934.196	274.998
9	943.220	279.306
10	951.949	284.186
11	960.346	289.616
12	968.377	295.574
13	976.009	302.036
14	983.209	308.975
15	988.095	314.330

155.580 Circle Center At X = 871.709 ; Y = 417.477 ; and Radius =

Factor of Safety
*** 1.768 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	853.000	258.000
2	862.903	256.609
3	872.883	255.986
4	882.882	256.132
5	892.840	257.048
6	902.698	258.729
7	912.397	261.163
8	921.880	264.338
9	931.090	268.233
10	939.973	272.826
11	948.476	278.089
12	956.548	283.992
13	964.142	290.498
14	971.212	297.570
15	977.716	305.166
16	983.616	313.240
17	983.732	313.427

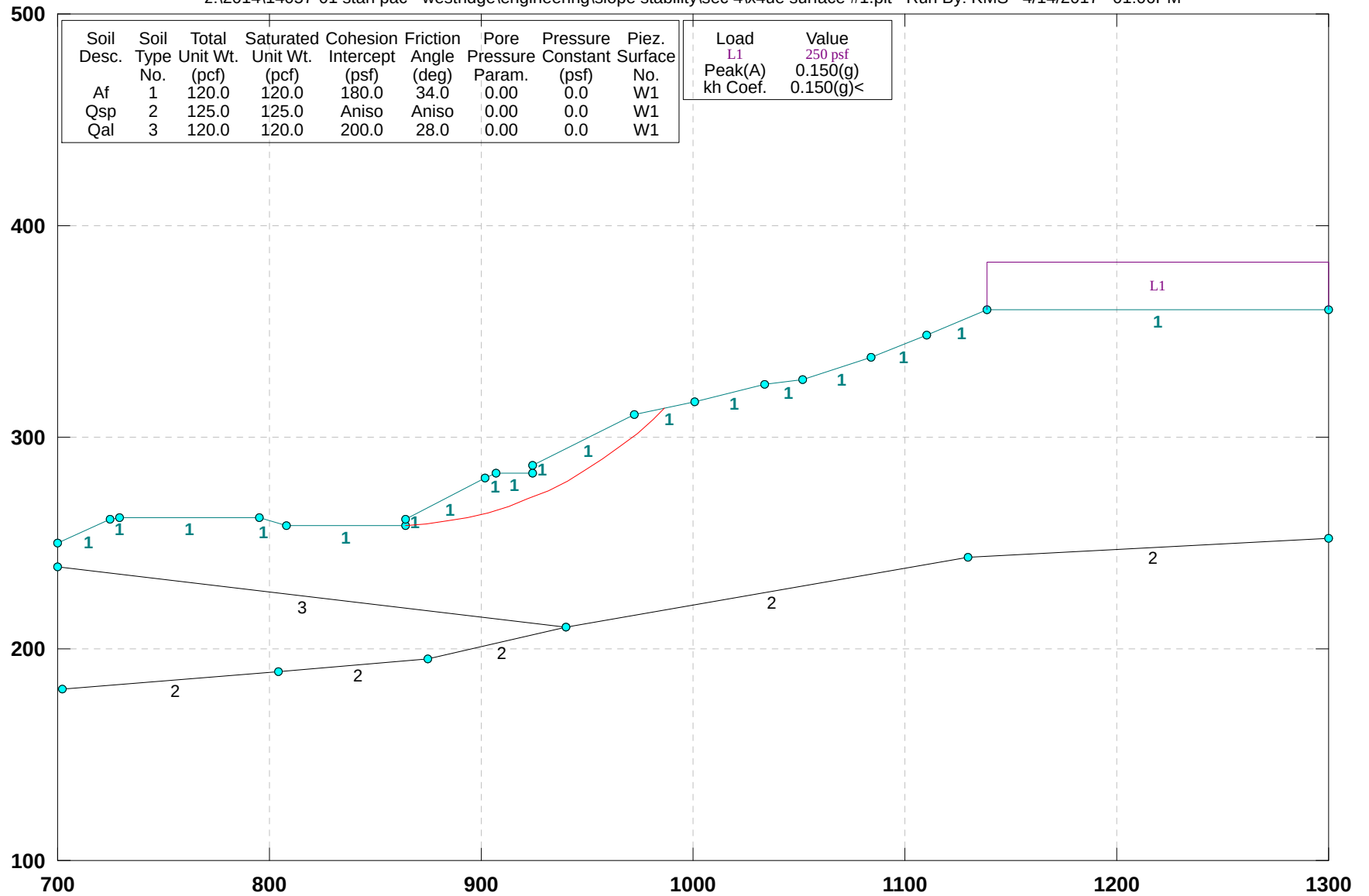
129.753 Circle Center At X = 875.982 ; Y = 385.701 ; and Radius =

Factor of Safety
*** 1.770 ***

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

Westridge/14057-01/Sec 4-4'/ Upper Slope - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 4\4ue surface #1.plt Run By: KMS 4/14/2017 01:06PM



GSTABL7 v.2 FSmin=1.42
Factor Of Safety Is Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 01:06PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 4\4ue.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 4\4ue.0UT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 4\4ue.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 4-4'/
Upper Slope - Seismic

BOUNDARY COORDINATES

18 Top Boundaries

24 Total Boundaries

Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	700.00	250.00	725.00	261.00	1
	2	725.00	261.00	729.00	262.00	1
	3	729.00	262.00	795.00	262.00	1
	4	795.00	262.00	808.00	258.00	1
	5	808.00	258.00	864.00	258.00	1
	6	864.00	258.00	864.10	261.00	1
	7	864.10	261.00	902.00	281.00	1
	8	902.00	281.00	907.00	283.00	1
	9	907.00	283.00	924.00	283.00	1
	10	924.00	283.00	924.10	287.00	1
	11	924.10	287.00	972.00	311.00	1
	12	972.00	311.00	1001.00	317.00	1
	13	1001.00	317.00	1034.00	325.00	1
	14	1034.00	325.00	1052.00	327.00	1
	15	1052.00	327.00	1084.00	338.00	1
	16	1084.00	338.00	1110.00	348.00	1
	17	1110.00	348.00	1139.00	360.00	1
	18	1139.00	360.00	1300.00	360.00	1
	19	700.00	239.00	940.00	210.00	3
	20	940.00	210.00	1130.00	243.00	2
	21	1130.00	243.00	1300.00	252.00	2
	22	702.00	181.00	804.00	189.00	2
	23	804.00	189.00	875.00	195.00	2
	24	875.00	195.00	940.00	210.00	2

User Specified Y-Origin = 100.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

Piez.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
Surface	Type	Unit Wt.	Unit Wt.	Intercept	Angle	Pressure	Constant
No.	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)

1	1	120.0	120.0	180.0	34.0	0.00	0.0
1	2	125.0	125.0	500.0	34.0	0.00	0.0
1	3	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	500.00	34.00
2	14.0	200.00	27.00
3	90.0	500.00	34.00

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)
1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	1139.00	1300.00	250.0	0.0

NOTE - Intensity Is Specified As A Uniformly Distributed
Force Acting On A Horizontally Projected Surface.
Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)

Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

1

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

5000 Trial Surfaces Have Been Generated.

Spaced
200 Surface(s) Initiate(s) From Each Of 25 Points Equally
Along The Ground Surface Between X = 850.00(ft)
and X = 874.00(ft)

Each Surface Terminates Between X = 940.00(ft)
and X =1300.00(ft)

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

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

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 Modified Bishop 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 = 2.962 FS Min = 1.417 FS Ave = 2.162
Standard Deviation = 0.392 Coefficient of Variation =
18.11 %

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	864.000	258.000
2	873.943	259.063
3	883.826	260.589
4	893.627	262.573
5	903.325	265.013
6	912.899	267.902
7	922.327	271.234
8	931.590	275.002
9	940.668	279.197
10	949.540	283.811
11	958.187	288.834
12	966.590	294.255
13	974.732	300.061
14	982.594	306.240
15	990.160	312.780
16	992.823	315.308

Circle Center At X = 846.294 ; Y = 471.247 ; and Radius = 213.981

Factor of Safety
*** 1.417 ***

Individual data on the 21 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top	Bot	Norm	Tan	Hor	Ver
(lbs)	(ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
1	0.1	17.9	0.0	0.0	0.	0.	2.7	0.0
0.0								
2	9.8	5977.1	0.0	0.0	0.	0.	896.6	0.0
0.0								
3	9.9	10645.0	0.0	0.0	0.	0.	1596.8	0.0
0.0								
4	9.8	14601.1	0.0	0.0	0.	0.	2190.2	0.0
0.0								
5	8.4	15235.9	0.0	0.0	0.	0.	2285.4	0.0
0.0								

6	1.3	2611.0	0.0	0.0	0.	0.	391.6	0.0
0.0								
7	3.7	7363.3	0.0	0.0	0.	0.	1104.5	0.0
0.0								
8	5.9	11317.5	0.0	0.0	0.	0.	1697.6	0.0
0.0								
9	9.4	15197.7	0.0	0.0	0.	0.	2279.7	0.0
0.0								
10	1.7	2293.3	0.0	0.0	0.	0.	344.0	0.0
0.0								
11	0.1	156.7	0.0	0.0	0.	0.	23.5	0.0
0.0								
12	7.5	13841.0	0.0	0.0	0.	0.	2076.1	0.0
0.0								
13	9.1	17349.6	0.0	0.0	0.	0.	2602.4	0.0
0.0								
14	8.9	17054.6	0.0	0.0	0.	0.	2558.2	0.0
0.0								
15	8.6	16176.9	0.0	0.0	0.	0.	2426.5	0.0
0.0								
16	8.4	14763.1	0.0	0.0	0.	0.	2214.5	0.0
0.0								
17	5.4	8738.8	0.0	0.0	0.	0.	1310.8	0.0
0.0								
18	2.7	3998.1	0.0	0.0	0.	0.	599.7	0.0
0.0								
19	7.9	8706.3	0.0	0.0	0.	0.	1305.9	0.0
0.0								
20	7.6	4053.3	0.0	0.0	0.	0.	608.0	0.0
0.0								
21	2.7	316.1	0.0	0.0	0.	0.	47.4	0.0
0.0								

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	864.000	258.000
2	873.964	258.843
3	883.874	260.184
4	893.704	262.020
5	903.430	264.346
6	913.027	267.157
7	922.470	270.445
8	931.738	274.203
9	940.805	278.420
10	949.649	283.086
11	958.249	288.190
12	966.582	293.718
13	974.627	299.657
14	982.365	305.992
15	989.776	312.706

16 992.256 315.191
Circle Center At X = 852.280 ; Y = 456.692 ; and Radius =
199.037

Factor of Safety
*** 1.418 ***

1

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	864.000	258.000
2	873.963	258.860
3	883.866	260.252
4	893.680	262.172
5	903.377	264.615
6	912.929	267.573
7	922.310	271.037
8	931.492	274.999
9	940.448	279.447
10	949.154	284.367
11	957.584	289.746
12	965.714	295.568
13	973.521	301.817
14	980.983	308.475
15	986.555	314.011

Circle Center At X = 852.917 ; Y = 444.485 ; and Radius =
186.814

Factor of Safety
*** 1.421 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	864.000	258.000
2	873.890	259.479
3	883.697	261.435

4	893.397	263.863
5	902.969	266.760
6	912.389	270.116
7	921.635	273.925
8	930.686	278.178
9	939.520	282.864
10	948.116	287.972
11	956.455	293.491
12	964.517	299.408
13	972.283	305.709
14	979.734	312.378
15	980.019	312.659

Circle Center At X = 838.450 ; Y = 462.727 ; and Radius =
206.315

Factor of Safety
*** 1.441 ***

1

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	864.000	258.000
2	874.000	258.093
3	883.984	258.641
4	893.934	259.645
5	903.827	261.101
6	913.644	263.007
7	923.364	265.359
8	932.966	268.151
9	942.430	271.379
10	951.738	275.035
11	960.869	279.112
12	969.805	283.602
13	978.526	288.494
14	987.016	293.779
15	995.255	299.446
16	1003.228	305.482
17	1010.916	311.876
18	1018.305	318.614
19	1021.716	322.022

Circle Center At X = 866.973 ; Y = 477.147 ; and Radius =
219.167

Factor of Safety
*** 1.461 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	864.000	258.000
2	873.986	257.473
3	883.983	257.701
4	893.935	258.683
5	903.784	260.413
6	913.475	262.882
7	922.951	266.076
8	932.159	269.976
9	941.047	274.560
10	949.563	279.801
11	957.659	285.671
12	965.289	292.135
13	972.409	299.157
14	978.979	306.696
15	984.053	313.494

Circle Center At X = 875.969 ; Y = 389.828 ; and Radius = 132.370

Factor of Safety
*** 1.464 ***

1

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	851.000	258.000
2	860.937	256.876
3	870.925	256.393
4	880.924	256.554
5	890.891	257.358
6	900.787	258.802
7	910.568	260.879
8	920.196	263.582
9	929.630	266.898

10	938.831	270.815
11	947.761	275.315
12	956.383	280.381
13	964.661	285.991
14	972.561	292.122
15	980.050	298.749
16	987.098	305.844
17	993.674	313.378
18	995.589	315.880

Circle Center At X = 873.455 ; Y = 411.443 ; and Radius = 155.077

Factor of Safety
*** 1.467 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	865.000	261.475
2	874.996	261.747
3	884.967	262.506
4	894.890	263.750
5	904.740	265.476
6	914.494	267.680
7	924.129	270.356
8	933.622	273.499
9	942.951	277.101
10	952.093	281.154
11	961.027	285.647
12	969.731	290.570
13	978.185	295.911
14	986.369	301.658
15	994.263	307.797
16	1001.848	314.313
17	1005.949	318.200

Circle Center At X = 864.419 ; Y = 466.612 ; and Radius = 205.138

Factor of Safety
*** 1.468 ***

1

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	866.000	262.003
2	875.989	262.472
3	885.944	263.423
4	895.841	264.854
5	905.657	266.762
6	915.370	269.141
7	924.957	271.986
8	934.395	275.291
9	943.662	279.049
10	952.737	283.249
11	961.599	287.883
12	970.226	292.939
13	978.599	298.406
14	986.699	304.271
15	994.506	310.520
16	1002.001	317.139
17	1002.143	317.277

206.995 Circle Center At X = 861.280 ; Y = 468.944 ; and Radius =

Factor of Safety
*** 1.469 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	850.000	258.000
2	859.926	256.786
3	869.911	256.236
4	879.910	256.352
5	889.880	257.134
6	899.775	258.578
7	909.552	260.679
8	919.167	263.425
9	928.578	266.806
10	937.743	270.806
11	946.622	275.408
12	955.174	280.591
13	963.361	286.332

14	971.149	292.606
15	978.501	299.384
16	985.385	306.637
17	991.771	314.333
18	992.415	315.224

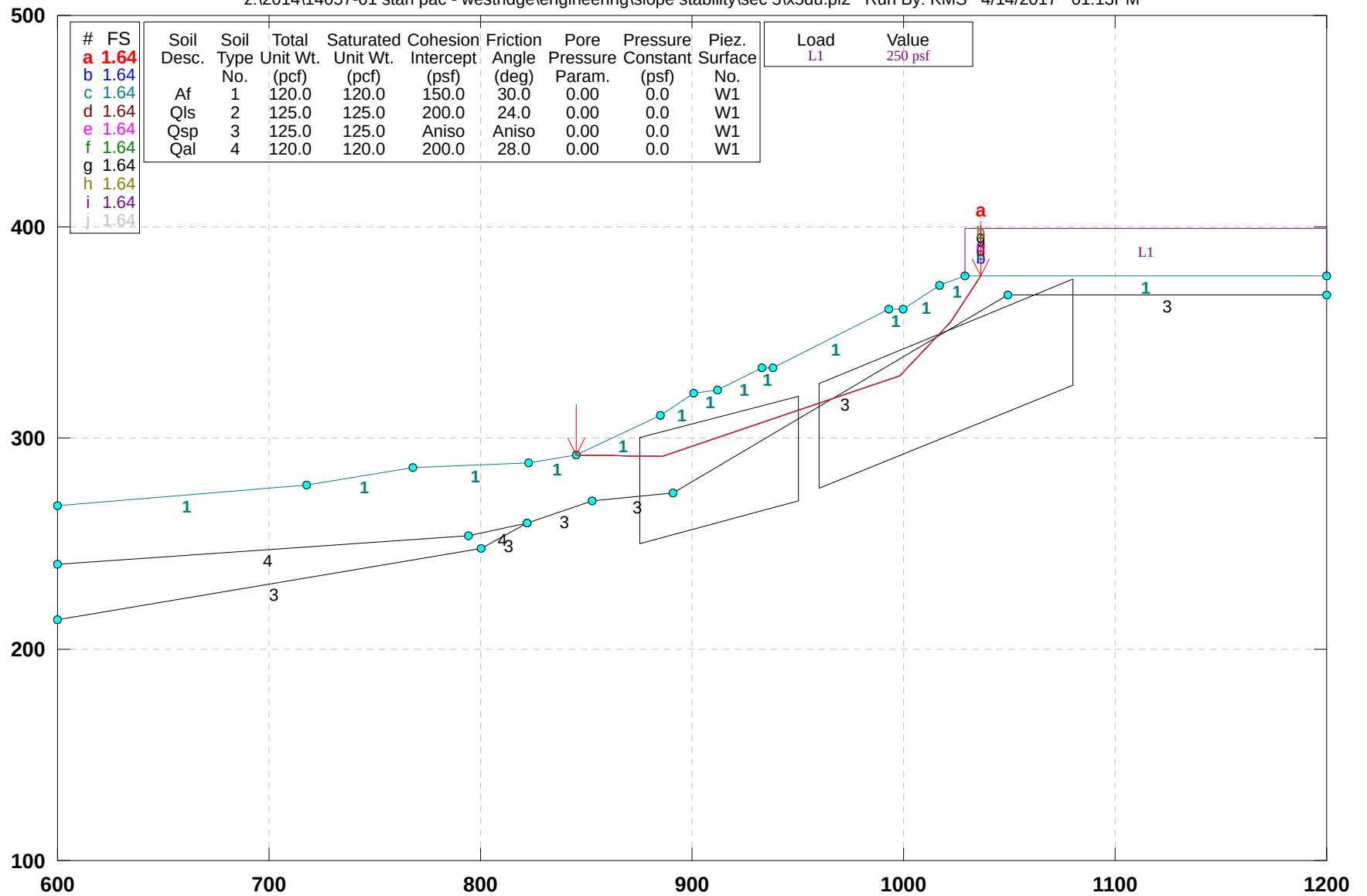
149.941 Circle Center At X = 873.181 ; Y = 406.138 ; and Radius =

Factor of Safety
*** 1.469 ***

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

Westridge/14057-01/Sec 5-5'/ Upper Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 5\5du.pl2 Run By: KMS 4/14/2017 01:13PM

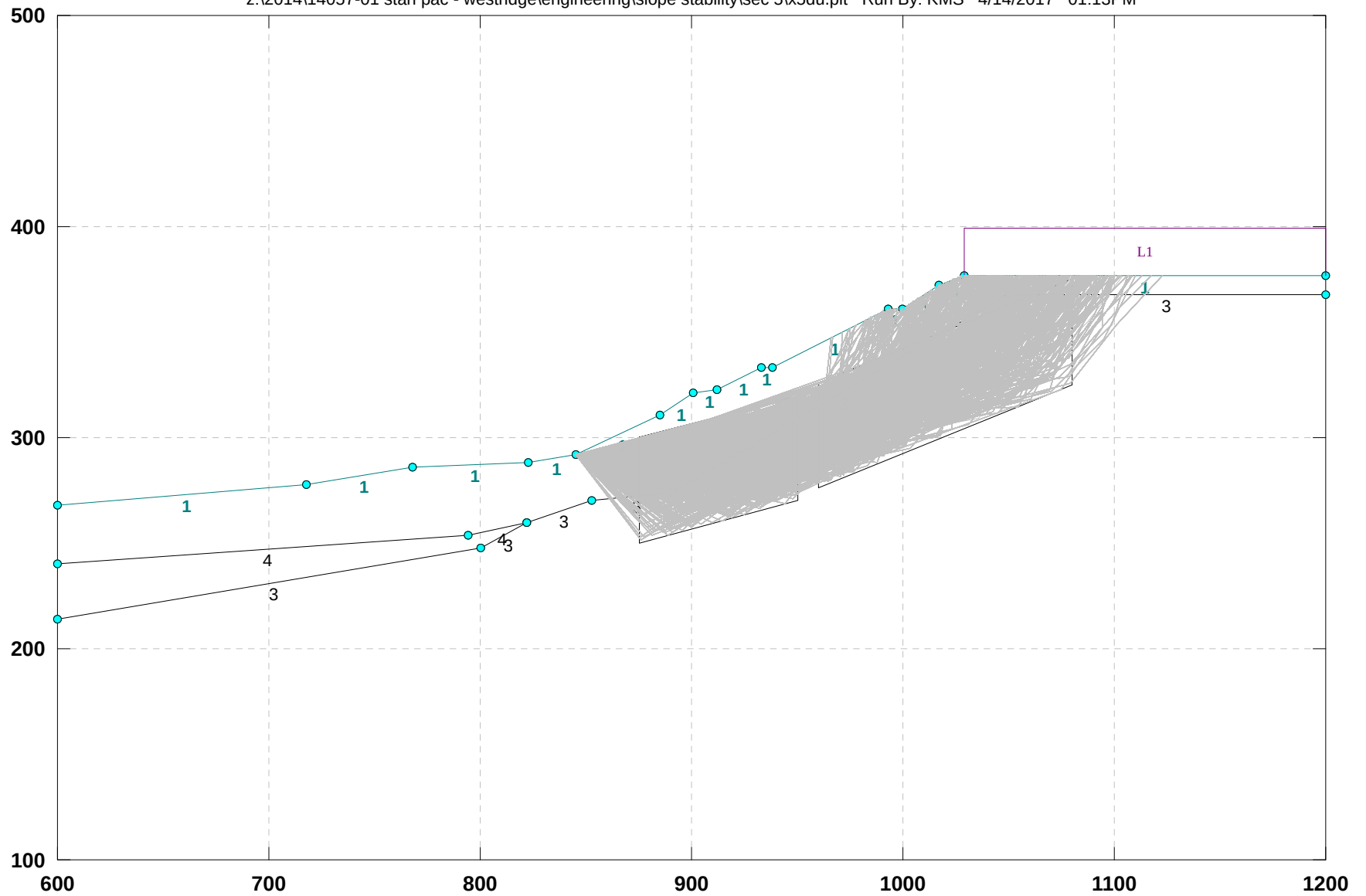


GSTABL7 v.2 FSmin=1.64

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

Westridge/14057-01/Sec 5-5'/ Upper Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 5\5du.plt Run By: KMS 4/14/2017 01:13PM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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Prohibited)

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: 4/14/2017
Time of Run: 01:13PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\5du.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\5du.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\5du.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 5-5'/
Upper Slope - Static

BOUNDARY COORDINATES
14 Top Boundaries

22 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	600.00	268.00	718.00	278.00	1
	2	718.00	278.00	768.00	286.00	1
	3	768.00	286.00	823.00	288.00	1
	4	823.00	288.00	845.00	292.00	1
	5	845.00	292.00	885.00	311.00	1
	6	885.00	311.00	901.00	321.00	1
	7	901.00	321.00	912.00	323.00	1
	8	912.00	323.00	933.00	333.00	1
	9	933.00	333.00	938.00	333.00	1
	10	938.00	333.00	993.00	361.00	1
	11	993.00	361.00	1000.00	361.00	1
	12	1000.00	361.00	1017.00	372.00	1
	13	1017.00	372.00	1029.00	377.00	1
	14	1029.00	377.00	1200.00	377.00	1
	15	600.00	240.00	794.00	254.00	4
	16	794.00	254.00	822.00	260.00	4
	17	822.00	260.00	853.00	270.00	3
	18	853.00	270.00	891.00	274.00	3
	19	891.00	274.00	1049.00	368.00	3
	20	1049.00	368.00	1200.00	368.00	3
	21	600.00	214.00	800.00	248.00	3
	22	800.00	248.00	822.00	260.00	3

User Specified Y-Origin = 100.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil Total Saturated Cohesion Friction Pore Pressure						
	Type	Unit	Wt. Unit	Wt. Intercept	Angle	Pressure	Constant
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	150.0	30.0	0.00	0.0

1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	300.0	32.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	300.00	32.00
2	22.0	200.00	27.00
3	90.0	300.00	32.00

crack.
1
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	1029.00	1200.00	250.0	0.0

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

both > 0
1
Janbus Empirical Coef is being used for the case of c & phi
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

9999 Trial Surfaces Have Been Generated.
3 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 35.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	845.00	292.00	845.00	292.00	0.00
2	875.00	275.00	950.00	295.00	50.00
3	960.00	301.00	1080.00	350.00	50.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 9999
Number of Trial Failure Surfaces is Greater Than 5000. Statistical Data on FS Values are Not Generated. To Generate Stastical Data, Reduce Number of Trial Failure Surfaces to 5000 or less.

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	845.000	292.000
2	886.092	291.175

3	998.079	329.742
4	1022.257	355.048
5	1036.292	377.000

Factor of Safety
*** 1.640 ***

Individual data on the 15 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Ver (lbs)
1	40.0	47527.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	1.1	2640.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	14.9	40429.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	11.0	31411.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	21.0	61202.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	5.0	14885.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	28.3	89226.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	26.7	99175.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	5.1	19769.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	1.9	7047.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	15.7	49493.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
12	1.3	3521.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
13	5.3	13120.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
14	6.7	12359.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
15	7.3	4990.3	0.0	0.0	0.	0.	0.0	0.0
1823.0								

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	845.000	292.000
2	886.092	291.175
3	998.079	329.742
4	1022.257	355.048
5	1036.292	377.000

Factor of Safety
*** 1.640 ***

1

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Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
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Factor of Safety
*** 1.640 ***

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Factor of Safety
*** 1.640 ***

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2	886.092	291.175
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4	1022.257	355.048
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Factor of Safety
*** 1.640 ***

1

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	845.000	292.000
2	886.092	291.175
3	998.079	329.742
4	1022.257	355.048
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Factor of Safety
*** 1.640 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	845.000	292.000
2	886.092	291.175
3	998.079	329.742
4	1022.257	355.048
5	1036.292	377.000

Factor of Safety
*** 1.640 ***

1

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	845.000	292.000
2	886.092	291.175
3	998.079	329.742
4	1022.257	355.048
5	1036.292	377.000

Factor of Safety
*** 1.640 ***

Failure Surface Specified By 5 Coordinate Points

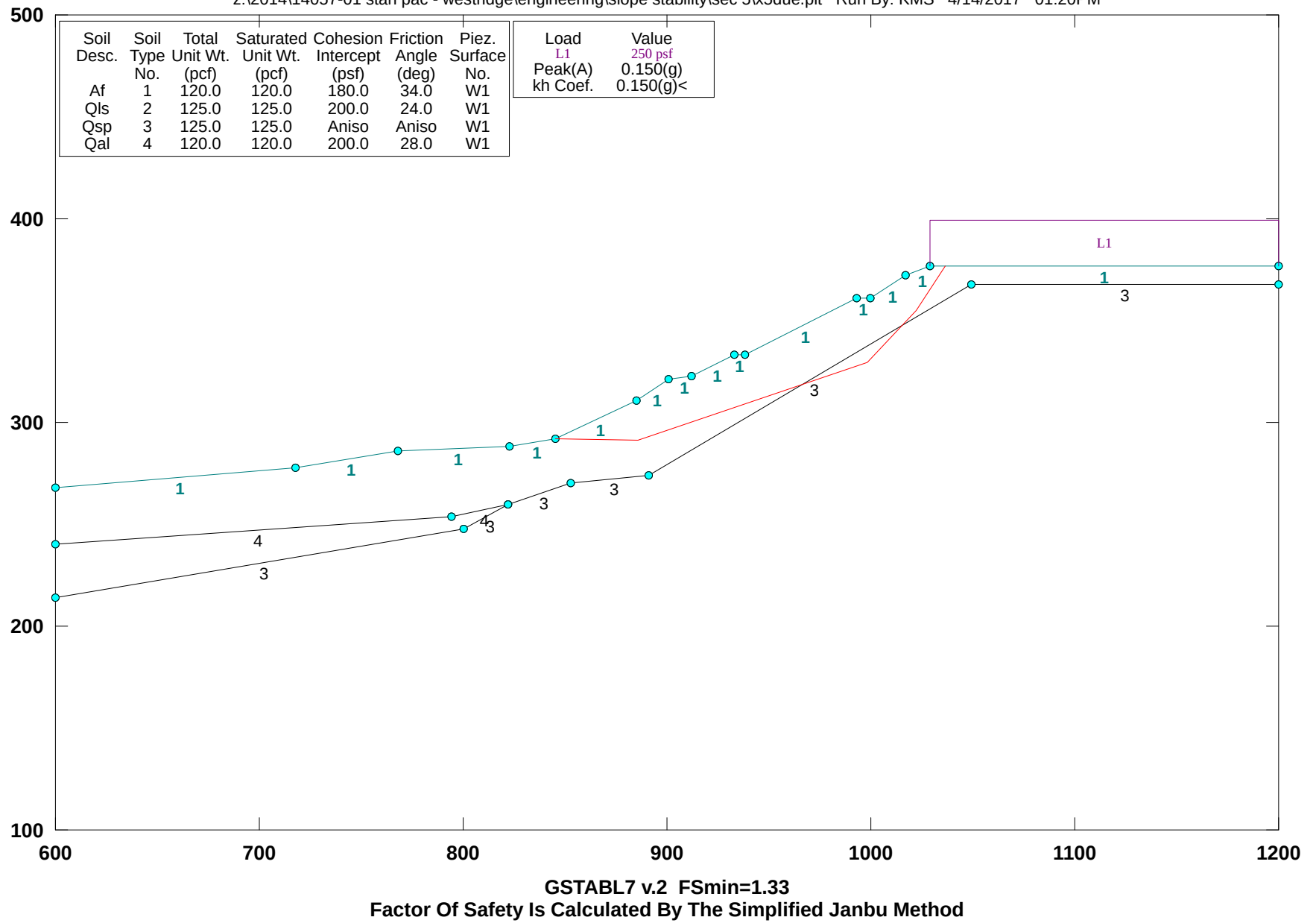
Point No.	X-Surf (ft)	Y-Surf (ft)
1	845.000	292.000

2	886.092	291.175
3	998.079	329.742
4	1022.257	355.048
5	1036.292	377.000

Factor of Safety
*** 1.640 ***

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

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 5\5due.plt Run By: KMS 4/14/2017 01:20PM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 01:20PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\5due.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\5due.0UT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\5due.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 5-5'/
Upper Slope - Seismic

BOUNDARY COORDINATES
14 Top Boundaries

22 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
	No.	(ft)	(ft)	(ft)	(ft)	Below
Bnd	1	600.00	268.00	718.00	278.00	1
	2	718.00	278.00	768.00	286.00	1
	3	768.00	286.00	823.00	288.00	1
	4	823.00	288.00	845.00	292.00	1
	5	845.00	292.00	885.00	311.00	1
	6	885.00	311.00	901.00	321.00	1
	7	901.00	321.00	912.00	323.00	1
	8	912.00	323.00	933.00	333.00	1
	9	933.00	333.00	938.00	333.00	1
	10	938.00	333.00	993.00	361.00	1
	11	993.00	361.00	1000.00	361.00	1
	12	1000.00	361.00	1017.00	372.00	1
	13	1017.00	372.00	1029.00	377.00	1
	14	1029.00	377.00	1200.00	377.00	1
	15	600.00	240.00	794.00	254.00	4
	16	794.00	254.00	822.00	260.00	4
	17	822.00	260.00	853.00	270.00	3
	18	853.00	270.00	891.00	274.00	3
	19	891.00	274.00	1049.00	368.00	3
	20	1049.00	368.00	1200.00	368.00	3
	21	600.00	214.00	800.00	248.00	3
	22	800.00	248.00	822.00	260.00	3

User Specified Y-Origin = 100.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
	Type	Unit	Wt.	Unit	Wt.	Intercept	Angle
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	Constant
1	1	120.0	120.0	180.0	34.0	0.00	0.0

1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	500.0	34.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	500.00	34.00
2	22.0	200.00	27.00
3	90.0	500.00	34.00

ANISOTROPIC SOIL NOTES:

- crack.
- 1
- (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
 - (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	1029.00	1200.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)

Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

both > 0
1

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

Trial Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	845.000	292.000
2	886.092	291.175
3	998.079	329.742
4	1022.257	355.048
5	1036.292	377.000

Janbu's Empirical Coefficient (fo) = 1.054

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

Factor Of Safety For The Preceding Specified Surface = 1.326

Table 1 - Individual Data on the 15 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top	Bot	Norm	Tan	Hor	Ver
	(ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
1	40.0	47527.3	0.0	0.0	0.0	0.0	7129.1	0.0
2	1.1	2641.2	0.0	0.0	0.0	0.0	396.2	0.0
3	14.9	40428.9	0.0	0.0	0.0	0.0	6064.3	0.0

4	11.0	31411.7	0.0	0.0	0.0	0.0	4711.8	0.0
0.0								
5	21.0	61202.0	0.0	0.0	0.0	0.0	9180.3	0.0
0.0								
6	5.0	14885.7	0.0	0.0	0.0	0.0	2232.9	0.0
0.0								
7	28.3	89229.7	0.0	0.0	0.0	0.0	13384.5	0.0
0.0								
8	26.7	99170.5	0.0	0.0	0.0	0.0	14875.6	0.0
0.0								
9	5.1	19770.1	0.0	0.0	0.0	0.0	2965.5	0.0
0.0								
10	1.9	7046.2	0.0	0.0	0.0	0.0	1056.9	0.0
0.0								
11	15.7	49492.2	0.0	0.0	0.0	0.0	7423.8	0.0
0.0								
12	1.3	3522.0	0.0	0.0	0.0	0.0	528.3	0.0
0.0								
13	5.3	13120.5	0.0	0.0	0.0	0.0	1968.1	0.0
0.0								
14	6.7	12358.9	0.0	0.0	0.0	0.0	1853.8	0.0
0.0								
15	7.3	4989.9	0.0	0.0	0.0	0.0	748.5	0.0
1823.0								

Table 2 - Base Stress Data on the 15 Slices

Slice Mobilized No. Stress *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	-1.15	865.00	40.01	991.77	
154.34					
2	-1.15	885.55	1.09	1830.45	
314.17					
3	19.00	893.55	15.77	1808.18	
1267.66					
4	19.00	906.50	11.63	1895.42	
1334.84					
5	19.00	922.50	22.21	1931.10	
1362.31					
6	19.00	935.50	5.29	1969.19	
1391.65					
7	19.00	952.15	29.93	2076.21	
1474.06					
8	19.00	979.65	28.24	1954.16	
1735.94					
9	19.00	995.54	5.37	2039.28	
1819.55					
10	46.31	999.04	2.78	2809.24	
3032.15					

11	46.31	1007.85	22.74	2479.75
2604.64				
12	46.31	1016.35	1.87	1906.50
2253.05				
13	46.31	1019.63	7.61	1760.16
2063.17				
14	57.41	1025.63	12.52	1464.13
1692.32				
15	57.41	1032.65	13.54	837.57
842.46				

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 380829.44 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 1726.36(psf)

Sum of the Driving Forces = 302730.03 (lbs)

Average Mobilized Shear Stress = 1372.32(psf)

Total length of the failure surface = 220.60(ft)

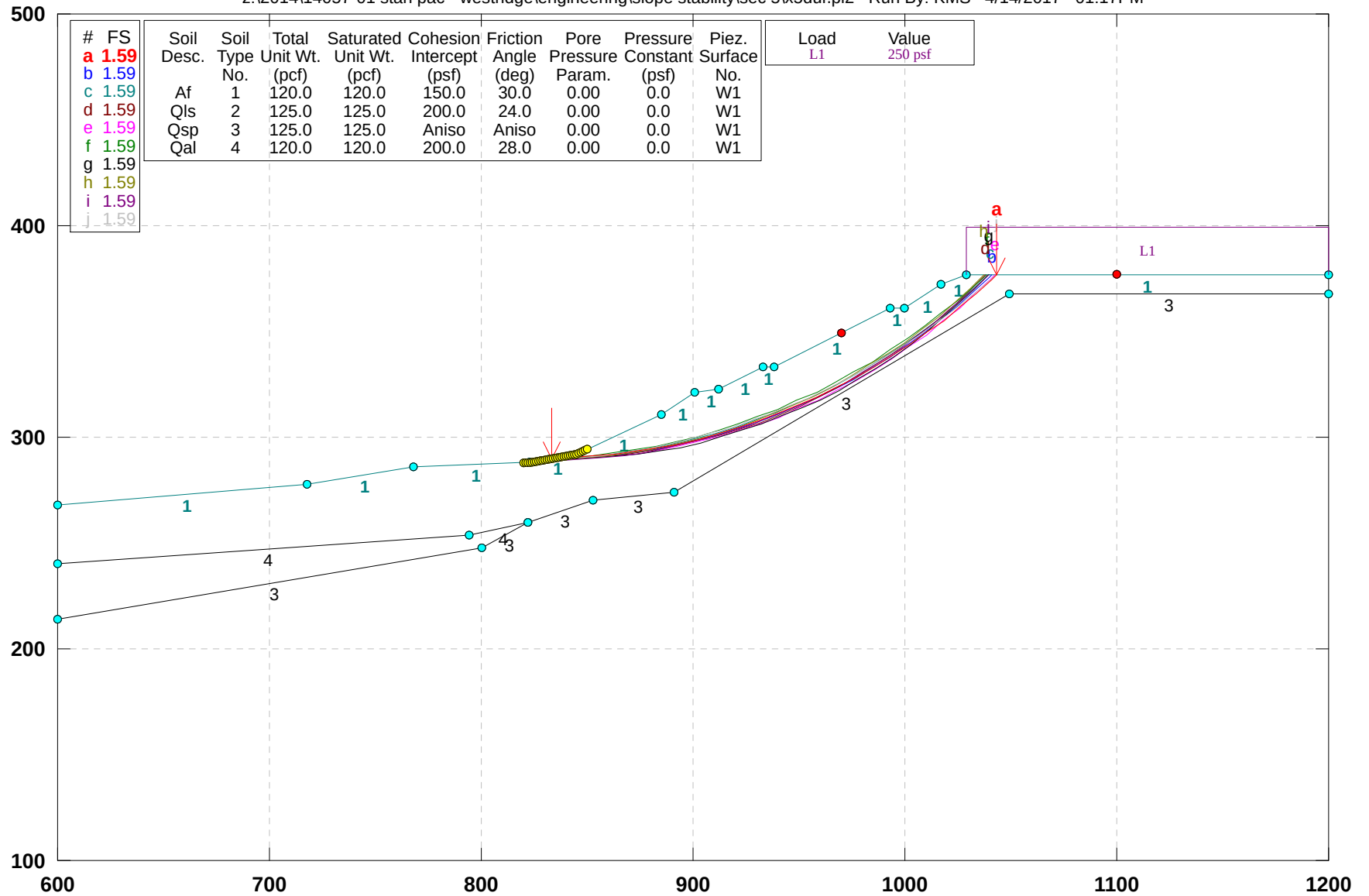
*** SEISMIC SLOPE DISPLACEMENT DATA ***
 (Note: kv is set = zero for displacement calculations)
 Seismic Yield Coefficient (ky) = 0.3010(g)
 Calculated Newmark Seismic Displacement = 0.004(ft)

Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

Westridge/14057-01/Sec 5-5'/ Upper Slope - Rotational - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 5\5dur.pl2 Run By: KMS 4/14/2017 01:17PM



GSTABL7 v.2 FSmin=1.59

Safety Factors Are Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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Slices.

Water

Applied Forces.

SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of
(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,
Surfaces, Pseudo-Static & Newmark Earthquake, and

Analysis Run Date: 4/14/2017
Time of Run: 01:17PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\x5dur.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\x5dur.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\x5dur.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 5-5'/
Upper Slope - Rotational - Static

BOUNDARY COORDINATES

14 Top Boundaries

22 Total Boundaries

Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	600.00	268.00	718.00	278.00	1
	2	718.00	278.00	768.00	286.00	1
	3	768.00	286.00	823.00	288.00	1
	4	823.00	288.00	845.00	292.00	1
	5	845.00	292.00	885.00	311.00	1
	6	885.00	311.00	901.00	321.00	1
	7	901.00	321.00	912.00	323.00	1
	8	912.00	323.00	933.00	333.00	1
	9	933.00	333.00	938.00	333.00	1
	10	938.00	333.00	993.00	361.00	1
	11	993.00	361.00	1000.00	361.00	1
	12	1000.00	361.00	1017.00	372.00	1
	13	1017.00	372.00	1029.00	377.00	1
	14	1029.00	377.00	1200.00	377.00	1
	15	600.00	240.00	794.00	254.00	4
	16	794.00	254.00	822.00	260.00	4
	17	822.00	260.00	853.00	270.00	3
	18	853.00	270.00	891.00	274.00	3
	19	891.00	274.00	1049.00	368.00	3
	20	1049.00	368.00	1200.00	368.00	3
	21	600.00	214.00	800.00	248.00	3
	22	800.00	248.00	822.00	260.00	3

User Specified Y-Origin = 100.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
Surface	Type	Unit	Unit	Intercept	Angle	Pressure	Constant
No.	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	150.0	30.0	0.00	0.0

1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	300.0	32.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	300.00	32.00
2	22.0	200.00	27.00
3	90.0	300.00	32.00

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)
1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	1029.00	1200.00	250.0	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.

9982 Trial Surfaces Have Been Generated.

Spaced 322 Surface(s) Initiate(s) From Each Of 31 Points Equally
Along The Ground Surface Between X = 820.00(ft)
and X = 850.00(ft)

Each Surface Terminates Between X = 970.00(ft)
and X =1100.00(ft)

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

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

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 Modified Bishop Method

Total Number of Trial Surfaces Attempted = 0
Number of Trial Surfaces With Valid FS = 0

Statistical Data On All Valid FS Values:
FS Max = 0.000 FS Min = 500.000 FS Ave = NaN
Standard Deviation = 0.000 Coefficient of Variation =
NaN %

Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	833.000	289.818
2	842.993	290.190
3	852.969	290.881
4	862.918	291.888
5	872.830	293.212
6	882.695	294.851
7	892.503	296.803
8	902.243	299.067
9	911.906	301.640
10	921.483	304.519
11	930.963	307.702
12	940.337	311.185
13	949.595	314.965
14	958.728	319.038
15	967.726	323.400
16	976.582	328.046
17	985.284	332.972
18	993.826	338.172
19	1002.197	343.642
20	1010.390	349.376
21	1018.396	355.367
22	1026.208	361.611
23	1033.816	368.100
24	1041.214	374.829
25	1043.454	377.000

Circle Center At X = 826.316 ; Y = 603.682 ; and Radius = 313.935

Factor of Safety
 *** 1.587 ***

Individual data on the 0 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top	Bot	Norm	Tan	Hor	Ver
	(ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)

Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	832.000	289.636
2	841.997	289.897
3	851.979	290.489
4	861.936	291.413
5	871.857	292.667
6	881.731	294.250
7	891.547	296.161
8	901.294	298.396
9	910.961	300.954
10	920.538	303.832
11	930.014	307.026
12	939.379	310.533
13	948.622	314.350
14	957.733	318.471
15	966.703	322.893
16	975.520	327.611
17	984.176	332.618
18	992.660	337.911
19	1000.964	343.483
20	1009.078	349.327
21	1016.994	355.438
22	1024.702	361.808
23	1032.195	368.431
24	1039.463	375.300
25	1041.147	377.000

Circle Center At X = 829.159 ; Y = 590.570 ; and Radius = 300.947

Factor of Safety
 *** 1.587 ***

1

Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	832.000	289.636
2	841.991	290.067
3	851.962	290.818
4	861.905	291.889
5	871.808	293.279
6	881.661	294.987
7	891.454	297.010
8	901.177	299.347
9	910.820	301.996
10	920.373	304.952
11	929.826	308.215

12	939.169	311.779
13	948.393	315.642
14	957.488	319.799
15	966.444	324.247
16	975.253	328.980
17	983.906	333.993
18	992.393	339.282
19	1000.705	344.841
20	1008.835	350.664
21	1016.773	356.746
22	1024.512	363.079
23	1032.043	369.658
24	1039.359	376.476
25	1039.886	377.000

311.138 Circle Center At X = 823.609 ; Y = 600.661 ; and Radius =

Factor of Safety
*** 1.587 ***

Failure Surface Specified By 24 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	834.000	290.000
2	843.999	290.150
3	853.986	290.654
4	863.949	291.513
5	873.875	292.726
6	883.752	294.290
7	893.567	296.204
8	903.308	298.466
9	912.963	301.072
10	922.519	304.019
11	931.964	307.304
12	941.286	310.922
13	950.474	314.869
14	959.516	319.140
15	968.401	323.730
16	977.117	328.632
17	985.653	333.841
18	993.999	339.349
19	1002.144	345.151
20	1010.078	351.238
21	1017.791	357.603
22	1025.273	364.238
23	1032.514	371.134

24 1038.250 377.000

281.342 Circle Center At X = 834.818 ; Y = 571.341 ; and Radius =

Factor of Safety
*** 1.588 ***

1

Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	833.000	289.818
2	843.000	289.911
3	852.990	290.349
4	862.959	291.131
5	872.896	292.258
6	882.787	293.728
7	892.622	295.538
8	902.388	297.687
9	912.074	300.173
10	921.669	302.991
11	931.160	306.139
12	940.537	309.614
13	949.789	313.410
14	958.903	317.524
15	967.871	321.950
16	976.679	326.684
17	985.319	331.718
18	993.780	337.049
19	1002.052	342.669
20	1010.124	348.571
21	1017.988	354.748
22	1025.634	361.194
23	1033.052	367.900
24	1040.234	374.858
25	1042.298	377.000

289.370 Circle Center At X = 835.325 ; Y = 579.179 ; and Radius =

Factor of Safety
*** 1.589 ***

Failure Surface Specified By 24 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	833.000	289.818
2	842.982	290.420
3	852.940	291.333
4	862.865	292.558
5	872.746	294.093
6	882.575	295.936
7	892.341	298.086
8	902.035	300.540
9	911.648	303.296
10	921.170	306.352
11	930.591	309.704
12	939.903	313.349
13	949.097	317.283
14	958.162	321.504
15	967.092	326.006
16	975.876	330.785
17	984.506	335.836
18	992.974	341.156
19	1001.272	346.737
20	1009.390	352.575
21	1017.322	358.665
22	1025.060	364.999
23	1032.596	371.573
24	1038.438	377.000

Circle Center At X = 818.807 ; Y = 608.905 ; and Radius = 319.402

Factor of Safety
*** 1.589 ***

1

Failure Surface Specified By 24 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	834.000	290.000
2	844.000	289.983
3	853.994	290.331
4	863.969	291.044
5	873.910	292.121

6	883.806	293.560
7	893.643	295.360
8	903.407	297.518
9	913.086	300.032
10	922.667	302.897
11	932.136	306.111
12	941.482	309.668
13	950.692	313.564
14	959.753	317.795
15	968.654	322.353
16	977.382	327.234
17	985.926	332.430
18	994.274	337.935
19	1002.416	343.741
20	1010.340	349.841
21	1018.036	356.226
22	1025.494	362.888
23	1032.703	369.818
24	1039.647	377.000

Circle Center At X = 839.473 ; Y = 563.612 ; and Radius = 273.667

Factor of Safety
*** 1.590 ***

Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	831.000	289.455
2	840.995	289.773
3	850.974	290.426
4	860.925	291.414
5	870.837	292.735
6	880.700	294.387
7	890.501	296.370
8	900.231	298.680
9	909.877	301.315
10	919.430	304.272
11	928.878	307.548
12	938.211	311.138
13	947.419	315.040
14	956.490	319.249
15	965.415	323.759
16	974.184	328.566
17	982.786	333.665
18	991.213	339.049

19	999.455	344.713
20	1007.501	350.650
21	1015.345	356.853
22	1022.975	363.316
23	1030.385	370.032
24	1037.565	376.992
25	1037.573	377.000

Circle Center At X = 826.510 ; Y = 587.538 ; and Radius = 298.118

Factor of Safety
*** 1.590 ***

1

Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	828.000	288.909
2	837.999	289.059
3	847.987	289.546
4	857.953	290.369
5	867.886	291.528
6	877.773	293.022
7	887.605	294.848
8	897.370	297.005
9	907.056	299.490
10	916.653	302.301
11	926.150	305.433
12	935.535	308.884
13	944.799	312.650
14	953.931	316.726
15	962.920	321.108
16	971.755	325.791
17	980.428	330.769
18	988.928	336.036
19	997.246	341.588
20	1005.372	347.417
21	1013.296	353.516
22	1021.010	359.880
23	1028.505	366.500
24	1035.772	373.369
25	1039.363	377.000

Circle Center At X = 828.564 ; Y = 585.311 ; and Radius = 296.403

Factor of Safety
*** 1.591 ***

Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	828.000	288.909
2	837.985	289.452
3	847.950	290.288
4	857.886	291.417
5	867.785	292.838
6	877.637	294.549
7	887.435	296.550
8	897.170	298.837
9	906.833	301.410
10	916.417	304.265
11	925.912	307.402
12	935.312	310.816
13	944.606	314.505
14	953.788	318.466
15	962.850	322.695
16	971.783	327.189
17	980.581	331.944
18	989.235	336.955
19	997.737	342.218
20	1006.082	347.729
21	1014.260	353.484
22	1022.266	359.476
23	1030.092	365.701
24	1037.732	372.154
25	1043.139	377.000

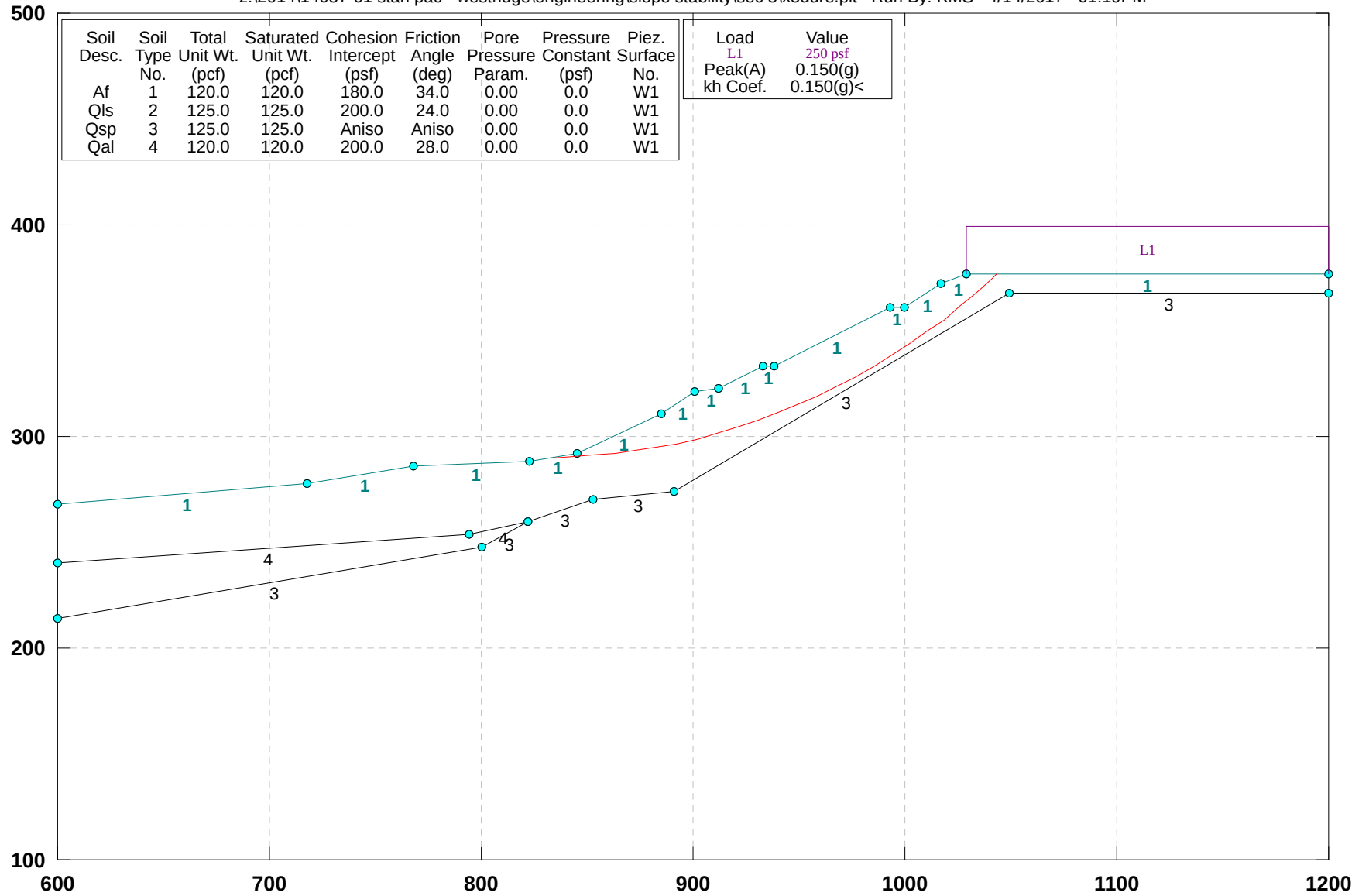
Circle Center At X = 814.532 ; Y = 628.669 ; and Radius = 340.027

Factor of Safety
*** 1.592 ***

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

Westridge/14057-01/Sec 5-5' Upper Slope - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 5\5dure.plt Run By: KMS 4/14/2017 01:19PM



GSTABL7 v.2 FSmin=1.33

Factor Of Safety Is Calculated By The Simplified Janbu Method

*** GSTABL7 ***
** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **
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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: 4/14/2017
Time of Run: 01:19PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\5dure.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\5dure.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\5dure.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 5-5'/
Upper Slope - Seismic

BOUNDARY COORDINATES
14 Top Boundaries

22 Total Boundaries

Type Bnd	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	600.00	268.00	718.00	278.00	1
	2	718.00	278.00	768.00	286.00	1
	3	768.00	286.00	823.00	288.00	1
	4	823.00	288.00	845.00	292.00	1
	5	845.00	292.00	885.00	311.00	1
	6	885.00	311.00	901.00	321.00	1
	7	901.00	321.00	912.00	323.00	1
	8	912.00	323.00	933.00	333.00	1
	9	933.00	333.00	938.00	333.00	1
	10	938.00	333.00	993.00	361.00	1
	11	993.00	361.00	1000.00	361.00	1
	12	1000.00	361.00	1017.00	372.00	1
	13	1017.00	372.00	1029.00	377.00	1
	14	1029.00	377.00	1200.00	377.00	1
	15	600.00	240.00	794.00	254.00	4
	16	794.00	254.00	822.00	260.00	4
	17	822.00	260.00	853.00	270.00	3
	18	853.00	270.00	891.00	274.00	3
	19	891.00	274.00	1049.00	368.00	3
	20	1049.00	368.00	1200.00	368.00	3
	21	600.00	214.00	800.00	248.00	3
	22	800.00	248.00	822.00	260.00	3

User Specified Y-Origin = 100.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
	Type	Unit	Wt.	Unit	Wt.	Intercept	Angle
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	Constant
1	1	120.0	120.0	180.0	34.0	0.00	0.0

1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	500.0	34.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	300.00	32.00
2	22.0	200.00	27.00
3	90.0	300.00	32.00

ANISOTROPIC SOIL NOTES:

- crack.
- (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
 - (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)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	1029.00	1200.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)

Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

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

Trial Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	833.000	289.818
2	842.993	290.190
3	852.969	290.881
4	862.918	291.888
5	872.830	293.212
6	882.695	294.851
7	892.503	296.803
8	902.243	299.067
9	911.906	301.640
10	921.483	304.519
11	930.963	307.702
12	940.337	311.185
13	949.595	314.965
14	958.728	319.038
15	967.726	323.400
16	976.582	328.046
17	985.284	332.972
18	993.826	338.172
19	1002.197	343.642
20	1010.390	349.376
21	1018.396	355.367
22	1026.208	361.611
23	1033.816	368.100
24	1041.214	374.829
25	1043.454	377.000

Janbu's Empirical Coefficient (fo) = 1.041

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

Factor Of Safety For The Preceding Specified Surface = 1.330

Table 1 - Individual Data on the 34 Slices

Surchage Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Ver (lbs)
1	10.0	866.5	0.0	0.0	0.0	0.0	130.0	0.0
2	2.0	375.2	0.0	0.0	0.0	0.0	56.3	0.0
3	8.0	3143.9	0.0	0.0	0.0	0.0	471.6	0.0
4	9.9	8075.1	0.0	0.0	0.0	0.0	1211.3	0.0
5	9.9	12269.3	0.0	0.0	0.0	0.0	1840.4	0.0
6	9.9	16017.6	0.0	0.0	0.0	0.0	2402.6	0.0
7	2.3	4251.9	0.0	0.0	0.0	0.0	637.8	0.0
8	7.5	15565.7	0.0	0.0	0.0	0.0	2334.9	0.0
9	8.5	20957.8	0.0	0.0	0.0	0.0	3143.7	0.0
10	1.2	3309.9	0.0	0.0	0.0	0.0	496.5	0.0
11	9.7	25221.6	0.0	0.0	0.0	0.0	3783.2	0.0
12	0.1	240.7	0.0	0.0	0.0	0.0	36.1	0.0
13	9.5	25222.1	0.0	0.0	0.0	0.0	3783.3	0.0
14	9.5	26918.2	0.0	0.0	0.0	0.0	4037.7	0.0
15	2.0	5972.7	0.0	0.0	0.0	0.0	895.9	0.0
16	5.0	14167.3	0.0	0.0	0.0	0.0	2125.1	0.0
17	2.3	6406.5	0.0	0.0	0.0	0.0	961.0	0.0
18	9.3	26075.7	0.0	0.0	0.0	0.0	3911.4	0.0
19	9.1	26550.9	0.0	0.0	0.0	0.0	3982.6	0.0
20	9.0	26587.8	0.0	0.0	0.0	0.0	3988.2	0.0

21	8.9	26211.5	0.0	0.0	0.0	0.0	3931.7	0.0
22	8.7	25425.0	0.0	0.0	0.0	0.0	3813.8	0.0
23	7.7	21958.3	0.0	0.0	0.0	0.0	3293.8	0.0
24	0.8	2287.6	0.0	0.0	0.0	0.0	343.1	0.0
25	6.2	15418.3	0.0	0.0	0.0	0.0	2312.8	0.0
26	2.2	4952.9	0.0	0.0	0.0	0.0	742.9	0.0
27	8.2	18250.6	0.0	0.0	0.0	0.0	2737.6	0.0
28	6.6	14287.3	0.0	0.0	0.0	0.0	2143.1	0.0
29	1.4	2922.6	0.0	0.0	0.0	0.0	438.4	0.0
30	7.8	14736.7	0.0	0.0	0.0	0.0	2210.5	0.0
31	2.8	4562.1	0.0	0.0	0.0	0.0	684.3	0.0
32	4.8	6330.5	0.0	0.0	0.0	0.0	949.6	0.0
33	7.4	4914.2	0.0	0.0	0.0	0.0	737.1	0.0
34	2.2	291.8	0.0	0.0	0.0	0.0	43.8	0.0

Table 2 - Base Stress Data on the 34 Slices

Slice Mobilized No. Stress * (psf)	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	2.13	838.00	10.00	234.23	
2	3.96	844.00	2.01	296.43	
3	3.96	848.98	7.99	431.99	
4	5.78	857.94	10.00	695.47	
5	7.61	867.87	10.00	958.95	
6	9.43	877.76	10.00	1192.19	
7	11.26	883.85	2.35	1319.01	
8	11.26	888.75	7.65	1462.64	

9	13.09	896.75	8.72	1693.17
918.80				
10	13.09	901.62	1.28	1814.81
991.95				
11	14.91	907.07	10.00	1769.18
1049.94				
12	16.73	911.95	0.10	1727.87
1104.94				
13	16.73	916.74	9.90	1788.52
1147.77				
14	18.56	926.22	10.00	1888.53
1307.57				
15	20.38	931.98	2.17	1936.82
1433.52				
16	20.38	935.50	5.33	1877.08
1385.28				
17	20.38	939.17	2.49	1821.27
1340.21				
18	22.21	944.97	10.00	1861.01
1455.80				
19	24.04	954.16	10.00	1911.66
1582.33				
20	25.86	963.23	10.00	1938.30
1687.81				
21	27.68	972.15	10.00	1941.09
1768.15				
22	29.51	980.93	10.00	1920.05
1820.70				
23	31.33	989.14	9.03	1878.02
1844.43				
24	31.33	993.41	0.97	1831.97
1794.97				
25	33.16	996.91	7.38	1672.72
1679.64				
26	33.16	1001.10	2.62	1525.73
1516.26				
27	34.99	1006.29	10.00	1515.57
1551.03				
28	36.81	1013.70	8.26	1482.85
1554.60				
29	36.81	1017.70	1.74	1441.37
1505.74				
30	38.63	1022.30	10.00	1322.93
1398.83				
31	40.46	1027.60	3.67	1176.23
1246.84				
32	40.46	1031.41	6.33	1133.21
1165.25				
33	42.29	1037.52	10.00	736.91
688.89				
34	44.10	1042.33	3.12	407.50
278.68				

Sum of the Resisting Forces (including Pier/Pile, Tieback,
Reinforcing
Soil Nail, and Applied Forces if applicable) = 331110.34 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile,
Reinforcing,
Soil Nail, and Applied Forces if applicable) = 1420.34(psf)

Sum of the Driving Forces = 259179.06 (lbs)

Average Mobilized Shear Stress = 1111.78(psf)

Total length of the failure surface = 233.12(ft)

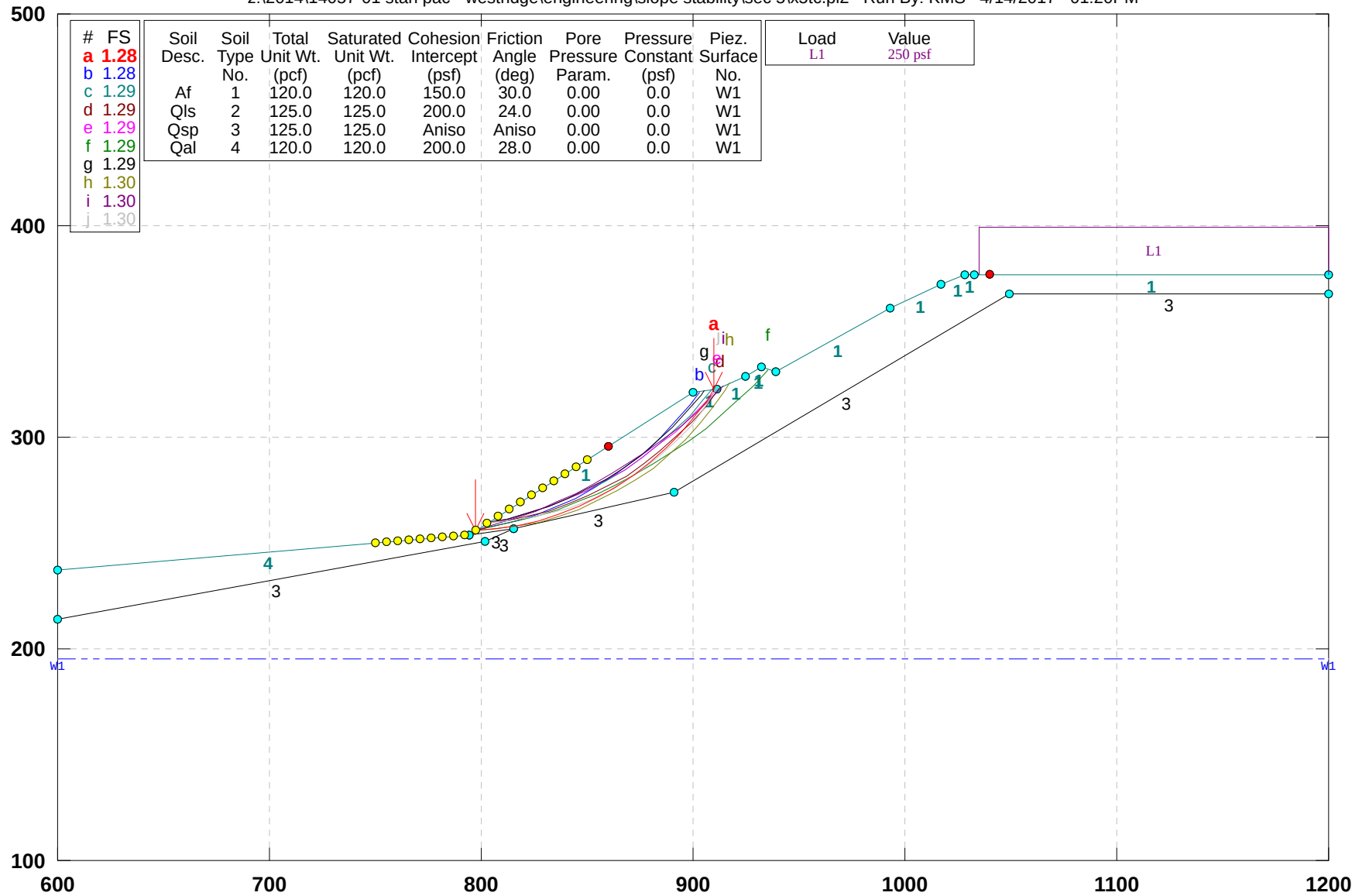
*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.3029(g)
Calculated Newmark Seismic Displacement = 0.004(ft)

Non-Symmetrical Sliding Resistance Has Been Specified
for Downhill Sliding.

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

Westridge/14057-01/Sec 5-5'/Temp Backcut Analysis/1.6H:1V

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 5\5tc.pl2 Run By: KMS 4/14/2017 01:20PM



GSTABL7 v.2 FSmin=1.28

Safety Factors Are Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 01:20PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\5tc.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\5tc.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 5\5tc.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 5-5'/Temp
Backcut Analysis/1.6H:1V

BOUNDARY COORDINATES

11 Top Boundaries

17 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	600.00	237.00	794.00	254.00	4
	2	794.00	254.00	900.00	321.00	1
	3	900.00	321.00	911.00	323.00	1
	4	911.00	323.00	925.00	329.00	1
	5	925.00	329.00	932.00	333.00	1
	6	932.00	333.00	939.00	331.00	1
	7	939.00	331.00	993.00	361.00	1
	8	993.00	361.00	1017.00	372.00	1
	9	1017.00	372.00	1028.00	377.00	1
	10	1028.00	377.00	1033.00	377.00	1
	11	1033.00	377.00	1200.00	377.00	1
	12	794.00	254.00	815.00	257.00	3
	13	815.00	257.00	891.00	274.00	3
	14	891.00	274.00	1049.00	368.00	3
	15	1049.00	368.00	1200.00	368.00	3
	16	600.00	214.00	802.00	251.00	3
	17	802.00	251.00	815.00	257.00	3
User Specified Y-Origin =				100.00(ft)		
Default X-Plus Value = 0.00(ft)						
Default Y-Plus Value = 0.00(ft)						
1						
ISOTROPIC SOIL PARAMETERS						
4 Type(s) of Soil						
Piez. Surface No.	Soil Type	Total Unit Wt.	Saturated Unit Wt.	Cohesion Intercept	Friction Angle	Pore Pressure Constant
	No.	(pcf)	(pcf)	(psf)	(deg)	Param. (psf)
	1	120.0	120.0	150.0	30.0	0.00 0.0
	2	125.0	125.0	200.0	24.0	0.00 0.0
1	3	125.0	125.0	300.0	32.0	0.00 0.0
1						

1

4 120.0 120.0 200.0 28.0 0.00 0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	300.00	32.00
2	22.0	200.00	27.00
3	90.0	300.00	32.00

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
(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

1 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points
Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	600.00	195.00
2	1200.00	195.00

1

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	1035.00	1200.00	250.0	0.0

1

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

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

5000 Trial Surfaces Have Been Generated.

Spaced

250 Surface(s) Initiate(s) From Each Of 20 Points Equally
Along The Ground Surface Between X = 750.00(ft)
and X = 850.00(ft)

Each Surface Terminates Between X = 860.00(ft)
and X =1040.00(ft)

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

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

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 Modified Bishop 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 = 6.298 FS Min = 1.282 FS Ave = 1.929
Standard Deviation = 0.364 Coefficient of Variation =

18.86 %

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	797.369	256.129
2	807.335	256.948
3	817.217	258.483
4	826.962	260.726
5	836.520	263.666
6	845.841	267.287
7	854.877	271.570
8	863.581	276.494
9	871.907	282.033
10	879.813	288.157
11	887.256	294.835
12	894.199	302.032
13	900.604	309.711
14	906.440	317.832
15	909.441	322.717

Circle Center At X = 791.010 ; Y = 394.623 ; and Radius =

138.639

Factor of Safety
*** 1.282 ***

Individual data on the 15 slices

Surcharge		Water Force		Tie Force		Earthquake Force		
Slice Width	Weight	Top	Bot	Norm	Tan	Hor	Ver	
No. (ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	
Load								
No. (lbs)								

1	10.0	3277.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	9.9	9292.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	9.7	14208.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	9.6	17960.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	9.3	20520.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	9.0	21897.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	8.7	22139.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	8.3	21330.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	7.9	19586.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	7.4	17057.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	6.9	13917.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
12	5.8	9507.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
13	0.6	849.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
14	5.8	5510.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
15	3.0	781.4	0.0	0.0	0.	0.	0.0	0.0
0.0								

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	797.369	256.129
2	807.207	257.922
3	816.911	260.336
4	826.443	263.360
5	835.763	266.983
6	844.835	271.190
7	853.622	275.965
8	862.088	281.287
9	870.199	287.136
10	877.923	293.488
11	885.228	300.317
12	892.085	307.595
13	898.466	315.295
14	903.012	321.548

Circle Center At X = 774.172 ; Y = 411.599 ; and Radius =

157.191

Factor of Safety
*** 1.283 ***

1

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	802.632	259.456
2	812.439	261.412
3	822.115	263.936
4	831.628	267.019
5	840.945	270.650
6	850.035	274.819
7	858.867	279.509
8	867.410	284.706
9	875.636	290.392
10	883.517	296.548
11	891.026	303.152
12	898.138	310.182
13	904.829	317.614
14	908.819	322.603

171.143 Circle Center At X = 774.146 ; Y = 428.211 ; and Radius =

Factor of Safety
*** 1.287 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	802.632	259.456
2	812.545	260.767
3	822.352	262.725
4	832.009	265.320
5	841.476	268.542
6	850.712	272.377
7	859.676	276.808
8	868.332	281.816

9	876.641	287.380
10	884.568	293.477
11	892.079	300.079
12	899.141	307.158
13	905.725	314.685
14	911.802	322.626
15	912.471	323.631

152.681 Circle Center At X = 787.577 ; Y = 411.392 ; and Radius =

Factor of Safety
*** 1.287 ***

1

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	802.632	259.456
2	812.414	261.530
3	822.070	264.133
4	831.569	267.257
5	840.885	270.893
6	849.988	275.031
7	858.854	279.657
8	867.455	284.759
9	875.765	290.321
10	883.761	296.327
11	891.418	302.759
12	898.714	309.598
13	905.627	316.823
14	910.911	322.984

183.472 Circle Center At X = 769.530 ; Y = 439.917 ; and Radius =

Factor of Safety
*** 1.288 ***

Failure Surface Specified By 18 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	797.369	256.129
2	807.198	257.970
3	816.941	260.223
4	826.580	262.886
5	836.098	265.953
6	845.478	269.419
7	854.703	273.278
8	863.757	277.523
9	872.624	282.147
10	881.288	287.140
11	889.734	292.495
12	897.946	298.201
13	905.910	304.249
14	913.611	310.628
15	921.036	317.326
16	928.172	324.332
17	935.006	331.632
18	935.358	332.041

236.775 Circle Center At X = 758.733 ; Y = 489.731 ; and Radius =

Factor of Safety
*** 1.294 ***

1

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	802.632	259.456
2	812.426	261.473
3	822.080	264.082
4	831.557	267.274
5	840.822	271.036
6	849.841	275.355
7	858.581	280.215
8	867.009	285.597
9	875.094	291.482
10	882.806	297.848
11	890.116	304.672
12	896.998	311.927
13	903.425	319.588
14	905.166	321.939

163.854 Circle Center At X = 774.562 ; Y = 420.888 ; and Radius =

Factor of Safety
*** 1.294 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	797.369	256.129
2	807.351	256.725
3	817.268	258.012
4	827.071	259.984
5	836.715	262.632
6	846.151	265.942
7	855.335	269.899
8	864.222	274.483
9	872.770	279.673
10	880.937	285.443
11	888.684	291.766
12	895.974	298.611
13	902.772	305.945
14	909.044	313.734
15	914.761	321.939
16	916.912	325.534

143.723 Circle Center At X = 793.870 ; Y = 399.810 ; and Radius =

Factor of Safety
*** 1.296 ***

1

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	797.369	256.129
2	807.001	258.814
3	816.518	261.885
4	825.904	265.336

5	835.143	269.163
6	844.220	273.359
7	853.121	277.916
8	861.831	282.828
9	870.337	288.087
10	878.624	293.685
11	886.678	299.611
12	894.488	305.857
13	902.040	312.412
14	909.321	319.266
15	914.415	324.464

Circle Center At X = 735.529 ; Y = 496.604 ; and Radius = 248.299

Factor of Safety
*** 1.297 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	802.632	259.456
2	812.604	260.203
3	822.492	261.693
4	832.242	263.917
5	841.798	266.865
6	851.106	270.518
7	860.116	274.856
8	868.777	279.856
9	877.039	285.489
10	884.858	291.724
11	892.188	298.525
12	898.990	305.856
13	905.225	313.674
14	910.858	321.936
15	911.628	323.269

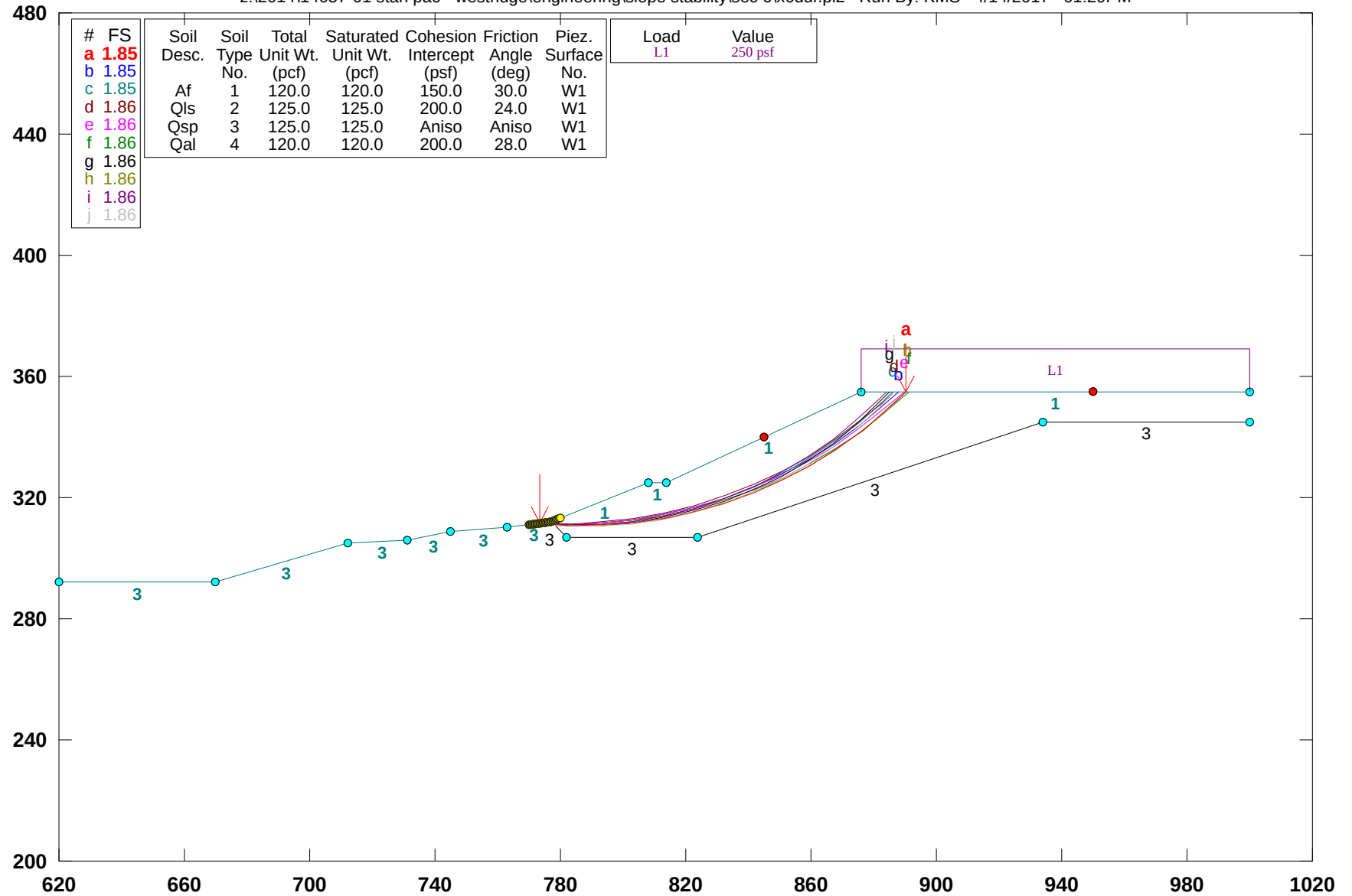
Circle Center At X = 797.640 ; Y = 393.076 ; and Radius = 133.713

Factor of Safety
*** 1.298 ***

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

Westridge/14057-01/Sec 6-6'/ Upper Slope - Rotational - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 6\6dur.pl2 Run By: KMS 4/14/2017 01:29PM



GSTABL7 v.2 FSmin=1.85

Safety Factors Are Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 01:29PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 6\6dur.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 6\6dur.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 6\6dur.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 6-6'/
Upper Slope - Rotational - Static

BOUNDARY COORDINATES

10 Top Boundaries

14 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	620.00	292.00	670.00	292.00	3
	2	670.00	292.00	712.00	305.00	3
	3	712.00	305.00	731.00	306.00	3
	4	731.00	306.00	745.00	309.00	3
	5	745.00	309.00	763.00	310.00	3
	6	763.00	310.00	777.00	312.00	3
	7	777.00	312.00	808.00	325.00	1
	8	808.00	325.00	814.00	325.00	1
	9	814.00	325.00	876.00	355.00	1
	10	876.00	355.00	1000.00	355.00	1
	11	777.00	312.00	782.00	307.00	3
	12	782.00	307.00	824.00	307.00	3
	13	824.00	307.00	934.00	345.00	3
	14	934.00	345.00	1000.00	345.00	3
User Specified Y-Origin = 200.00(ft)						
Default X-Plus Value = 0.00(ft)						
Default Y-Plus Value = 0.00(ft)						
1						

ISOTROPIC SOIL PARAMETERS							
4 Type(s) of Soil							
Piez. Surface No.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
	Type	Unit	Unit	Intercept	Angle	Pressure	Constant
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	150.0	30.0	0.00	0.0
1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	300.0	32.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	2.0	300.00	32.00
2	13.0	200.00	27.00
3	90.0	300.00	32.00

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	876.00	1000.00	250.0	0.0

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

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

15000 Trial Surfaces Have Been Generated.

Spaced 500 Surface(s) Initiate(s) From Each Of 30 Points Equally
Along The Ground Surface Between X = 770.00(ft)
and X = 780.00(ft)

Each Surface Terminates Between X = 845.00(ft)
and X = 950.00(ft)

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

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

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 Modified Bishop Method

Total Number of Trial Surfaces Attempted = 0

Number of Trial Surfaces With Valid FS = 0

Statistical Data On All Valid FS Values:
FS Max = 0.000 FS Min = 500.000 FS Ave = NaN
Standard Deviation = 0.000 Coefficient of Variation =

NaN %

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	773.448	311.493
2	783.429	310.876
3	793.429	310.961
4	803.398	311.749
5	813.287	313.235
6	823.047	315.412
7	832.630	318.269
8	841.989	321.792

9	851.078	325.964
10	859.850	330.764
11	868.264	336.168
12	876.278	342.149
13	883.852	348.679
14	890.219	355.000

Circle Center At X = 787.229 ; Y = 452.962 ; and Radius = 142.139

Factor of Safety
*** 1.853 ***

Individual data on the 18 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	3.6	161.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	0.8	86.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	5.7	1669.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	10.0	7048.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	10.0	11513.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	4.6	6593.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	5.3	7716.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	0.7	999.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	9.0	13880.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	9.6	17083.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	9.4	18247.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
12	9.1	18391.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
13	8.8	17580.1	0.0	0.0	0.	0.	0.0	0.0
0.0								

14	8.4	15908.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
15	7.7	13064.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
16	0.3	432.4	0.0	0.0	0.	0.	0.0	0.0
69.5								
17	7.6	8712.1	0.0	0.0	0.	0.	0.0	0.0
1893.4								
18	6.4	2414.6	0.0	0.0	0.	0.	0.0	0.0
1591.7								

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	773.104	311.443
2	783.099	311.142
3	793.092	311.514
4	803.038	312.558
5	812.890	314.269
6	822.605	316.640
7	832.138	319.660
8	841.446	323.314
9	850.487	327.587
10	859.220	332.459
11	867.605	337.908
12	875.604	343.910
13	883.181	350.436
14	887.809	355.000

Circle Center At X = 782.634 ; Y = 459.161 ; and Radius = 148.025

Factor of Safety
*** 1.853 ***

1

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	773.448	311.493
2	783.440	311.086
3	793.435	311.395
4	803.383	312.416
5	813.233	314.145

6	822.933	316.573
7	832.436	319.687
8	841.692	323.472
9	850.654	327.908
10	859.277	332.973
11	867.516	338.640
12	875.329	344.882
13	882.676	351.665
14	885.807	355.000

139.515 Circle Center At X = 784.188 ; Y = 450.594 ; and Radius =

Factor of Safety
*** 1.853 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	773.448	311.493
2	783.448	311.351
3	793.434	311.873
4	803.364	313.057
5	813.193	314.897
6	822.878	317.385
7	832.378	320.510
8	841.649	324.258
9	850.650	328.613
10	859.343	333.556
11	867.689	339.064
12	875.652	345.115
13	883.195	351.680
14	886.534	355.000

150.176 Circle Center At X = 780.650 ; Y = 461.495 ; and Radius =

Factor of Safety
*** 1.855 ***

1

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	773.104	311.443
2	783.102	311.247
3	793.092	311.689
4	803.034	312.767
5	812.886	314.477
6	822.610	316.811
7	832.165	319.761
8	841.512	323.315
9	850.614	327.458
10	859.433	332.172
11	867.933	337.439
12	876.080	343.238
13	883.841	349.545
14	889.741	355.000

156.425 Circle Center At X = 781.219 ; Y = 467.657 ; and Radius =

Factor of Safety
*** 1.855 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	773.104	311.443
2	783.097	311.087
3	793.093	311.383
4	803.048	312.329
5	812.920	313.921
6	822.668	316.153
7	832.250	319.015
8	841.625	322.495
9	850.753	326.578
10	859.597	331.246
11	868.117	336.481
12	876.278	342.260
13	884.046	348.558
14	891.011	355.000

153.386 Circle Center At X = 783.572 ; Y = 464.471 ; and Radius =

Factor of Safety
*** 1.856 ***

1

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	773.104	311.443
2	783.081	310.777
3	793.081	310.870
4	803.045	311.722
5	812.915	313.327
6	822.635	315.677
7	832.148	318.758
8	841.401	322.552
9	850.339	327.038
10	858.910	332.188
11	867.066	337.975
12	874.759	344.363
13	881.945	351.318
14	885.213	355.000

Circle Center At X = 786.909 ; Y = 441.964 ; and Radius = 131.249

Factor of Safety
*** 1.858 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	772.414	311.345
2	782.395	310.728
3	792.395	310.802
4	802.365	311.565
5	812.260	313.016
6	822.030	315.146
7	831.630	317.945
8	841.014	321.401
9	850.137	325.496
10	858.956	330.211

11	867.428	335.524
12	875.513	341.409
13	883.172	347.838
14	890.370	354.780
15	890.568	355.000

Circle Center At X = 786.329 ; Y = 455.437 ; and Radius = 144.762

Factor of Safety
*** 1.859 ***

1

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	773.448	311.493
2	783.435	310.983
3	793.433	311.225
4	803.383	312.217
5	813.231	313.955
6	822.921	316.427
7	832.397	319.621
8	841.606	323.518
9	850.497	328.097
10	859.018	333.330
11	867.122	339.189
12	874.762	345.641
13	881.896	352.648
14	883.956	355.000

Circle Center At X = 785.272 ; Y = 443.558 ; and Radius = 132.593

Factor of Safety
*** 1.860 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	772.414	311.345
2	782.380	310.524
3	792.380	310.465
4	802.355	311.167
5	812.248	312.626
6	822.002	314.834
7	831.559	317.777
8	840.864	321.440
9	849.863	325.800
10	858.504	330.833
11	866.737	336.509
12	874.515	342.795
13	881.791	349.655
14	886.659	355.000

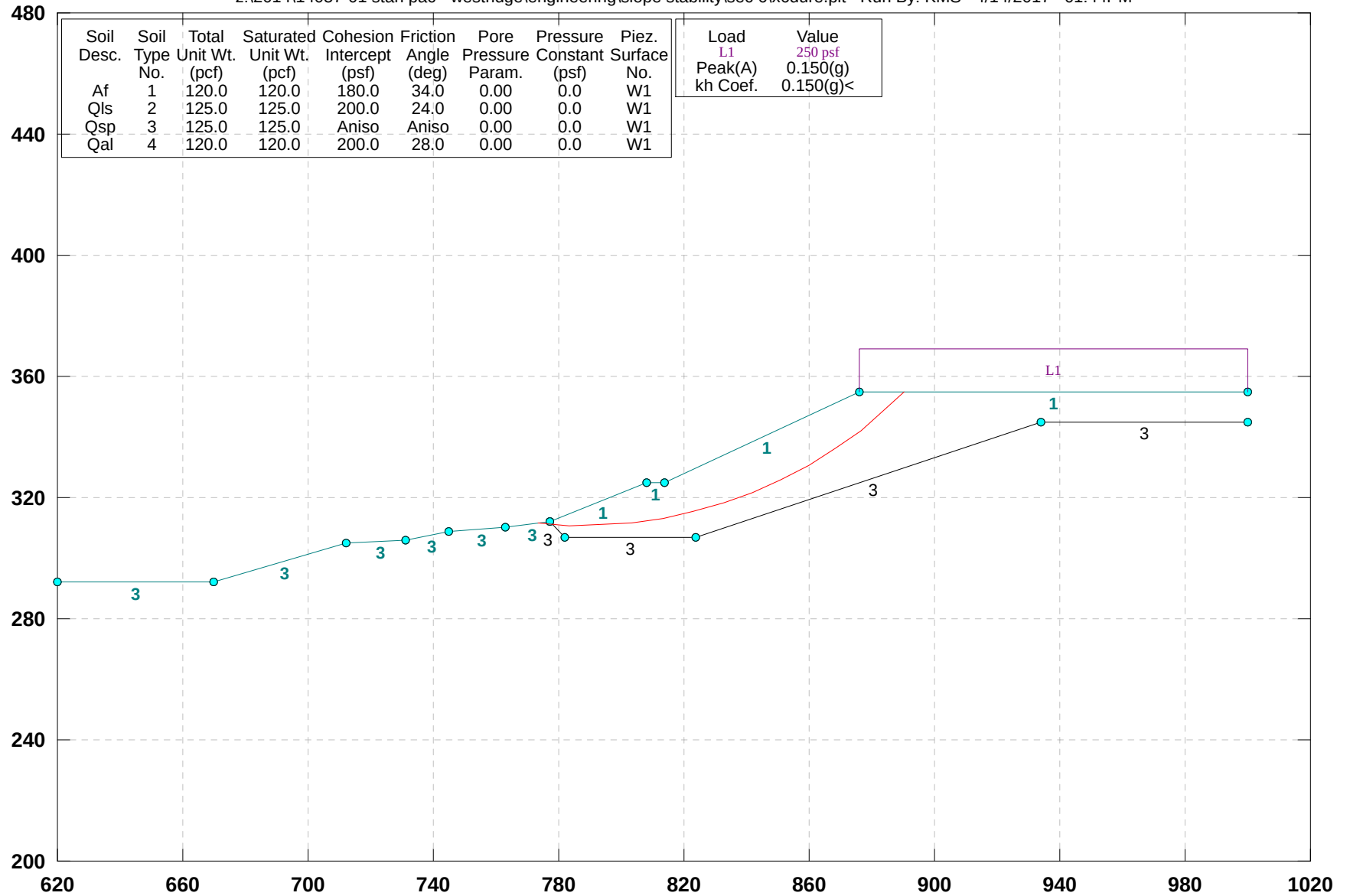
130.970 Circle Center At X = 788.196 ; Y = 441.360 ; and Radius =

Factor of Safety
*** 1.860 ***

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

Westridge/14057-01/Sec 6-6' Upper Slope - Rotational - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 6\6dure.plt Run By: KMS 4/14/2017 01:44PM



GSTABL7 v.2 FSmin=1.56

Factor Of Safety Is Calculated By The Modified Bishop Method

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

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	2.0	500.00	34.00
2	13.0	200.00	27.00
3	90.0	500.00	34.00

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	876.00	1000.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)

Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)

Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

Trial Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	773.448	311.493
2	783.429	310.876
3	793.429	310.961
4	803.398	311.749
5	813.287	313.235
6	823.047	315.412
7	832.630	318.269
8	841.989	321.792
9	851.078	325.964
10	859.850	330.764
11	868.264	336.168
12	876.278	342.149
13	883.852	348.679
14	890.219	355.000

DEFLECTION ANGLE & SEGMENT DATA FOR SPECIFIED SURFACE(Excluding Last Segment)

Angle/Segment No.	Deflection(Deg)	Segment Length(ft)
1	4.02	10.00
2	4.03	10.00
3	4.03	10.00
4	4.03	10.00
5	4.03	10.00
6	4.03	10.00
7	4.03	10.00
8	4.03	10.00
9	4.02	10.00
10	4.02	10.00
11	4.03	10.00

Circle Center At X = 787.228(ft) ; Y = 452.964(ft); and Radius = 142.141(ft)

* * Factor Of Safety Is Calculated By The Modified Bishop Method * *

Factor Of Safety For The Preceding Specified Surface = 1.555

Table 1 - Individual Data on the 18 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	3.6	161.4	0.0	0.0	0.0	0.0	24.2	0.0
0.0								
2	0.8	86.3	0.0	0.0	0.0	0.0	12.9	0.0
0.0								
3	5.7	1669.0	0.0	0.0	0.0	0.0	250.4	0.0
0.0								
4	10.0	7049.2	0.0	0.0	0.0	0.0	1057.4	0.0
0.0								
5	10.0	11514.0	0.0	0.0	0.0	0.0	1727.1	0.0
0.0								
6	4.6	6593.9	0.0	0.0	0.0	0.0	989.1	0.0
0.0								
7	5.3	7716.3	0.0	0.0	0.0	0.0	1157.4	0.0
0.0								
8	0.7	999.7	0.0	0.0	0.0	0.0	150.0	0.0
0.0								
9	9.0	13880.7	0.0	0.0	0.0	0.0	2082.1	0.0
0.0								
10	9.6	17083.3	0.0	0.0	0.0	0.0	2562.5	0.0
0.0								
11	9.4	18248.1	0.0	0.0	0.0	0.0	2737.2	0.0
0.0								
12	9.1	18393.3	0.0	0.0	0.0	0.0	2759.0	0.0
0.0								
13	8.8	17578.2	0.0	0.0	0.0	0.0	2636.7	0.0
0.0								
14	8.4	15907.8	0.0	0.0	0.0	0.0	2386.2	0.0
0.0								
15	7.7	13064.8	0.0	0.0	0.0	0.0	1959.7	0.0
0.0								
16	0.3	432.2	0.0	0.0	0.0	0.0	64.8	0.0
69.5								
17	7.6	8712.5	0.0	0.0	0.0	0.0	1306.9	0.0
1893.5								
18	6.4	2414.7	0.0	0.0	0.0	0.0	362.2	0.0
1591.8								

Table 2 - Base Stress Data on the 18 Slices

Slice Mobilized No. Stress * (psf)	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	-3.53	775.22	3.56	545.25	
3.98					
2	-3.53	777.39	0.78	590.98	
9.74					
3	-3.53	780.60	5.67	389.54	
25.56					
4	0.49	788.43	10.00	653.06	
109.54					
5	4.52	798.41	10.00	927.25	
257.06					
6	8.55	805.70	4.65	1076.30	
411.80					
7	8.55	810.64	5.35	1093.16	
419.29					
8	12.57	813.64	0.73	1026.51	
489.89					
9	12.57	818.52	9.27	1107.71	
535.14					
10	16.60	827.84	10.00	1224.11	
720.27					
11	20.63	837.31	10.00	1285.27	
883.39					
12	24.66	846.53	10.00	1288.44	
1001.61					
13	28.69	855.46	10.00	1237.82	
1059.69					
14	32.71	864.06	10.00	1138.14	
1047.21					
15	36.73	872.13	9.65	996.51	
962.17					
16	36.73	876.14	0.35	1055.48	
1006.24					
17	40.77	880.07	10.00	818.43	
787.10					
18	44.79	887.04	8.97	422.49	
342.82					
Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 125967.10 (lbs)					
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 976.70(psf)					

Sum of the Driving Forces = 81014.35 (lbs)

Average Mobilized Shear Stress = 628.15(psf)

Total length of the failure surface = 128.97(ft)

Bishop
Surface

CAUTION - Factor Of Safety Is Calculated By The Modified
Method. This Method Is Valid Only If The Failure
Approximates A Circular Arc.

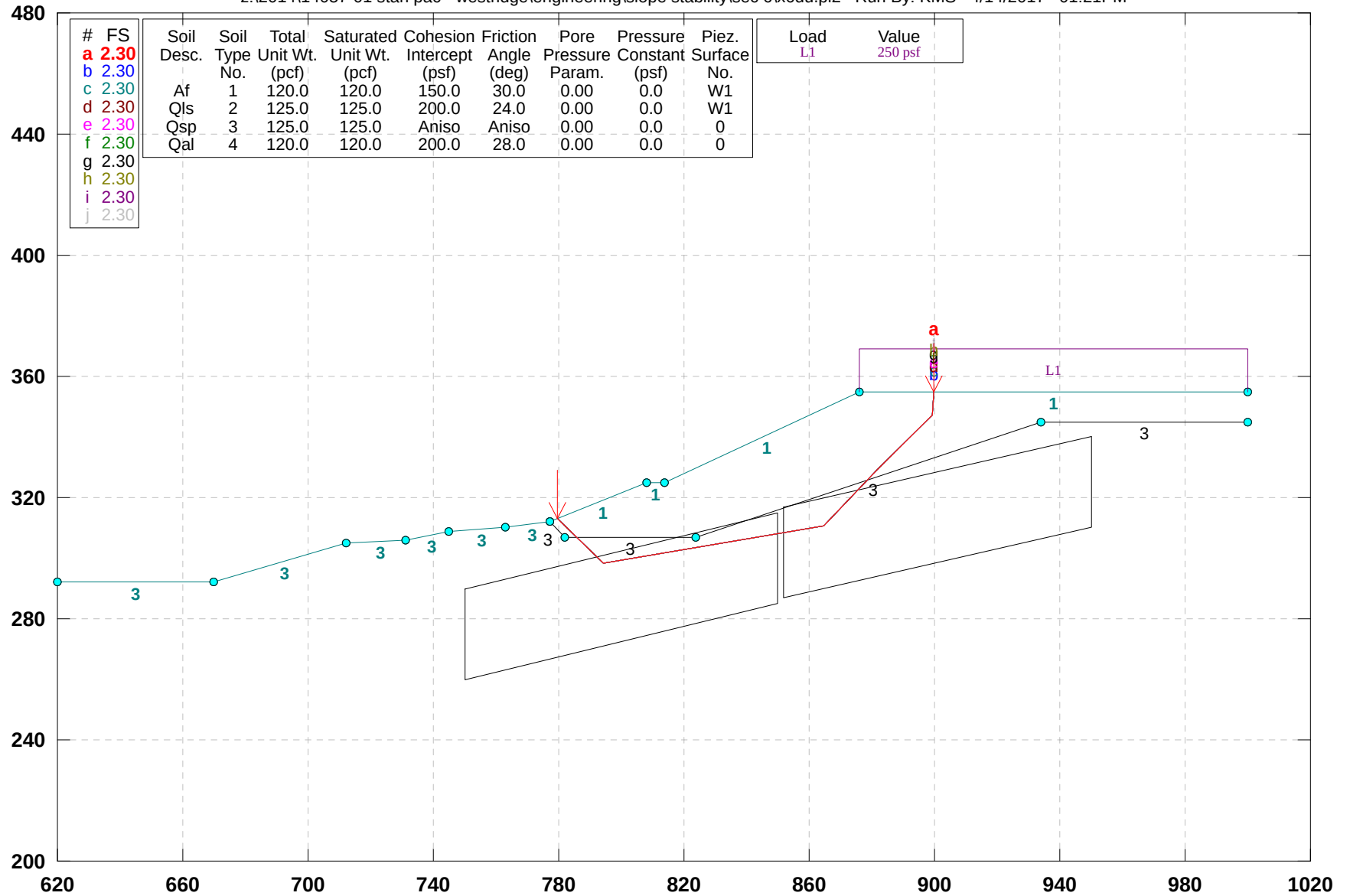
*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.4091(g)
Calculated Newmark Seismic Displacement = 0.002(ft)

Non-Symmetrical Sliding Resistance Has Been Specified
for Downhill Sliding.

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

Westridge/14057-01/Sec 6-6'/ Upper Slope - Block - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 6\6du.pl2 Run By: KMS 4/14/2017 01:21PM

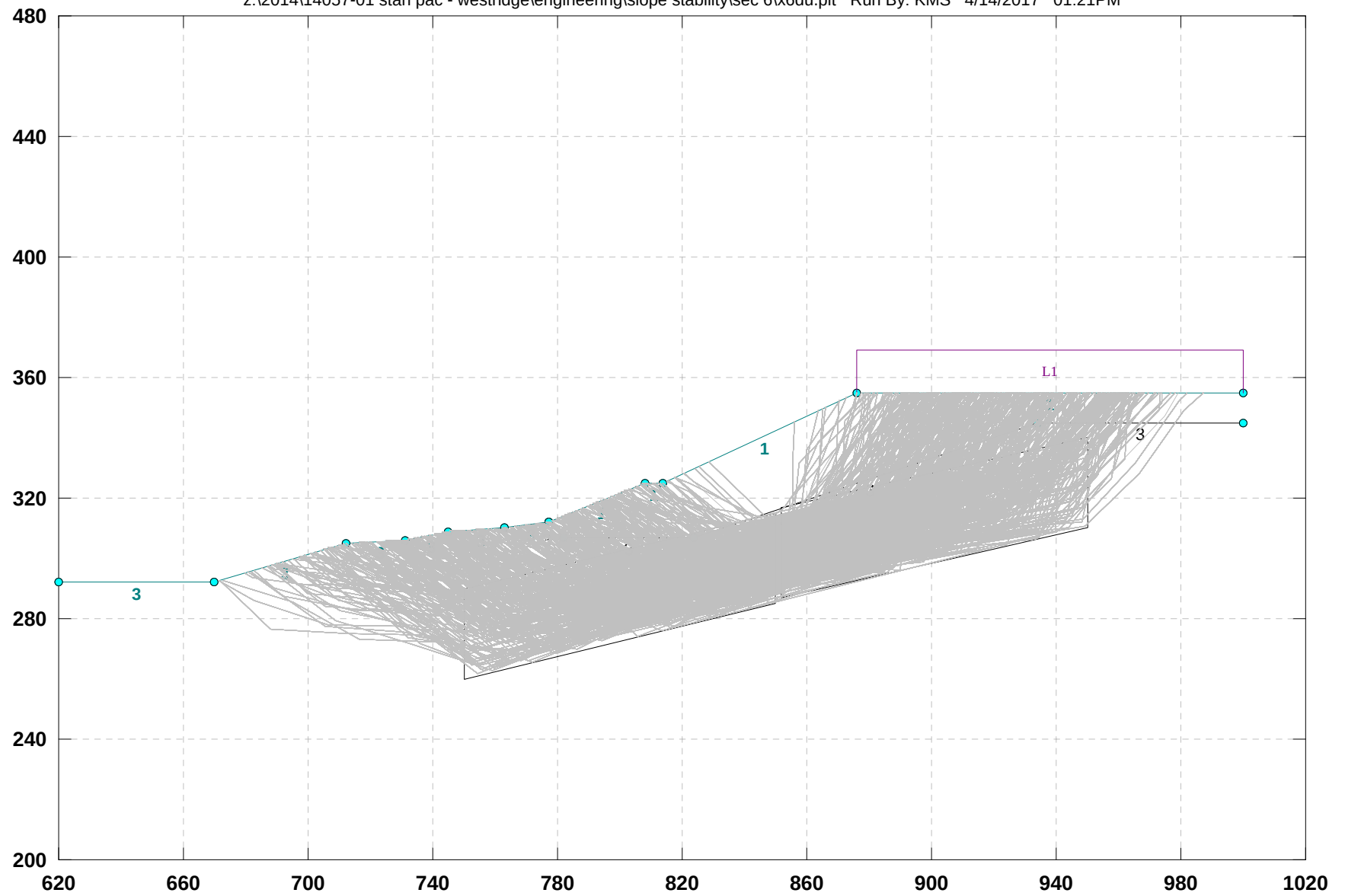


GSTABL7 v.2 FSmin=2.30

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

Westridge/14057-01/Sec 6-6'/ Upper Slope - Block - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 6\6du.plt Run By: KMS 4/14/2017 01:21PM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 01:21PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 6\6du.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 6\6du.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 6\6du.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 6-6'/
Upper Slope - Block - Static

BOUNDARY COORDINATES

10 Top Boundaries

14 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	620.00	292.00	670.00	292.00	3
	2	670.00	292.00	712.00	305.00	3
	3	712.00	305.00	731.00	306.00	3
	4	731.00	306.00	745.00	309.00	3
	5	745.00	309.00	763.00	310.00	3
	6	763.00	310.00	777.00	312.00	3
	7	777.00	312.00	808.00	325.00	1
	8	808.00	325.00	814.00	325.00	1
	9	814.00	325.00	876.00	355.00	1
	10	876.00	355.00	1000.00	355.00	1
	11	777.00	312.00	782.00	307.00	3
	12	782.00	307.00	824.00	307.00	3
	13	824.00	307.00	934.00	345.00	3
	14	934.00	345.00	1000.00	345.00	3
User Specified Y-Origin = 200.00(ft)						
Default X-Plus Value = 0.00(ft)						
Default Y-Plus Value = 0.00(ft)						
1						

ISOTROPIC SOIL PARAMETERS							
4 Type(s) of Soil							
Piez. Surface No.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
	Type	Unit	Unit	Intercept	Angle	Pressure	Constant
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	150.0	30.0	0.00	0.0
1	2	125.0	125.0	200.0	24.0	0.00	0.0
0	3	125.0	125.0	300.0	32.0	0.00	0.0
0	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	2.0	300.00	32.00
2	13.0	200.00	27.00
3	90.0	300.00	32.00

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.

crack.

1

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	876.00	1000.00	250.0	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.

9999 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	750.00	275.00	850.00	300.00	30.00
2	852.00	302.00	950.00	325.00	30.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 9999

Number of Trial Failure Surfaces is Greater Than 5000. Statistical Data on FS Values are Not Generated. To Generate Stastical Data, Reduce Number of Trial Failure Surfaces to 5000 or less.

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	779.433	313.020
2	794.403	298.199
3	864.842	310.828
4	881.544	329.430
5	899.221	347.109
6	899.819	355.000

Factor of Safety
*** 2.304 ***

Individual data on the 11 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	6.1	3126.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	8.9	16021.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	13.6	37605.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	6.0	17329.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	10.0	29992.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	40.8	160953.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	11.2	47544.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	2.2	8151.3	0.0	0.0	0.	0.	0.0	0.0
556.0								
9	3.3	10924.2	0.0	0.0	0.	0.	0.0	0.0
830.0								
10	17.7	35489.3	0.0	0.0	0.	0.	0.0	0.0
4419.1								
11	0.6	283.2	0.0	0.0	0.	0.	0.0	0.0
149.5								

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	779.433	313.020
2	794.403	298.199
3	864.842	310.828
4	881.544	329.430
5	899.221	347.109
6	899.819	355.000

Factor of Safety
*** 2.304 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
*** 2.304 ***

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Factor of Safety
*** 2.304 ***

1

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Factor of Safety
*** 2.304 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
*** 2.304 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
*** 2.304 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	779.433	313.020
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Factor of Safety
*** 2.304 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	779.433	313.020
2	794.403	298.199
3	864.842	310.828
4	881.544	329.430
5	899.221	347.109
6	899.819	355.000

Factor of Safety
*** 2.304 ***

Failure Surface Specified By 6 Coordinate Points

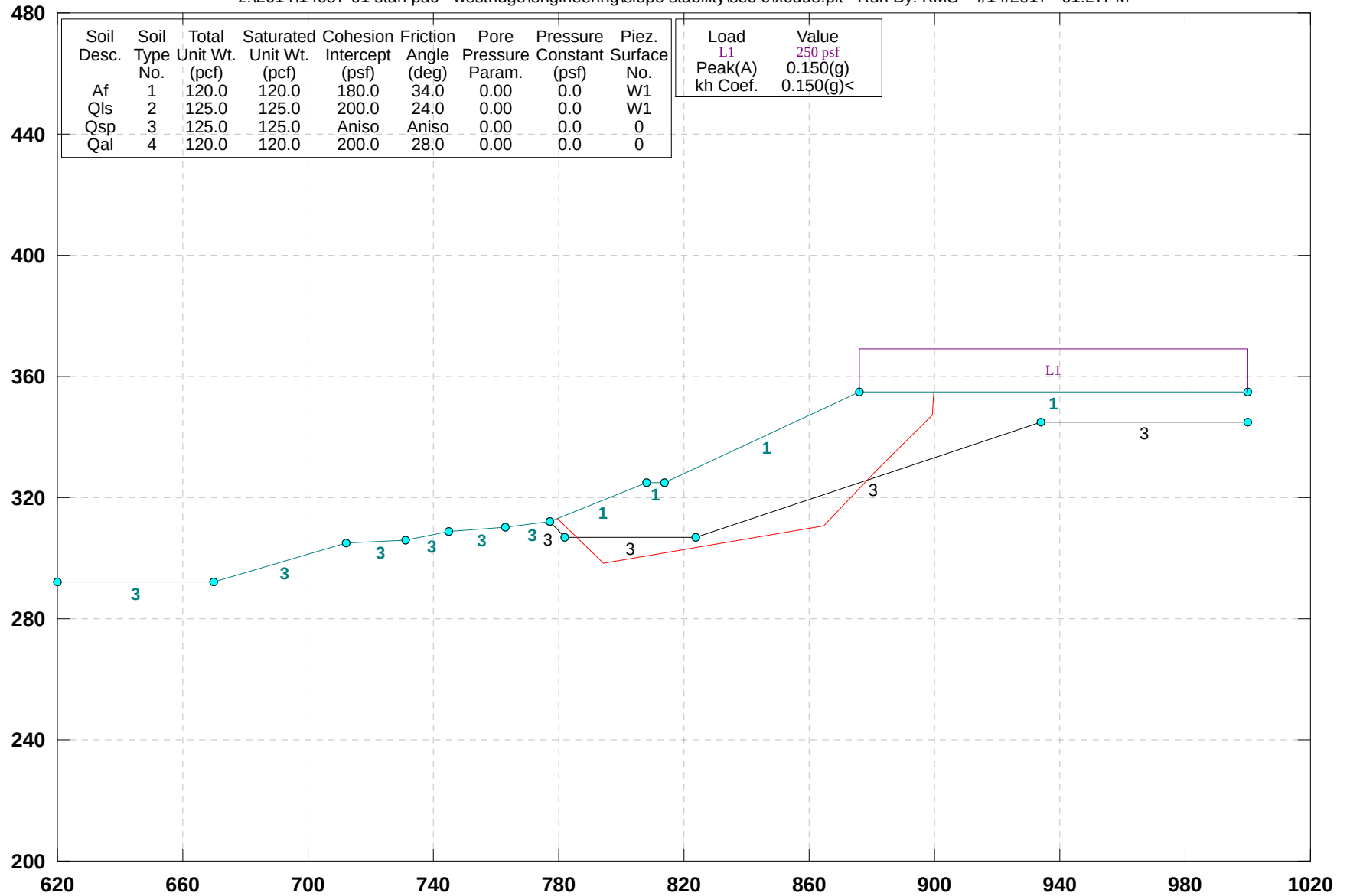
Point No.	X-Surf (ft)	Y-Surf (ft)
1	779.433	313.020
2	794.403	298.199
3	864.842	310.828
4	881.544	329.430
5	899.221	347.109
6	899.819	355.000

Factor of Safety
*** 2.304 ***

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

Westridge/14057-01/Sec 6-6'/ Upper Slope - Block - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 6\6due.plt Run By: KMS 4/14/2017 01:27PM



GSTABL7 v.2 FSmin=1.78

Factor Of Safety Is Calculated By The Simplified Janbu Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 01:27PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 6\6due.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 6\6due.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 6\6due.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 6-6'/
Upper Slope - Block - Seismic

BOUNDARY COORDINATES

10 Top Boundaries

14 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	620.00	292.00	670.00	292.00	3
	2	670.00	292.00	712.00	305.00	3
	3	712.00	305.00	731.00	306.00	3
	4	731.00	306.00	745.00	309.00	3
	5	745.00	309.00	763.00	310.00	3
	6	763.00	310.00	777.00	312.00	3
	7	777.00	312.00	808.00	325.00	1
	8	808.00	325.00	814.00	325.00	1
	9	814.00	325.00	876.00	355.00	1
	10	876.00	355.00	1000.00	355.00	1
	11	777.00	312.00	782.00	307.00	3
	12	782.00	307.00	824.00	307.00	3
	13	824.00	307.00	934.00	345.00	3
	14	934.00	345.00	1000.00	345.00	3
User Specified Y-Origin = 200.00(ft)						
Default X-Plus Value = 0.00(ft)						
Default Y-Plus Value = 0.00(ft)						
1						

ISOTROPIC SOIL PARAMETERS							
4 Type(s) of Soil							
Piez. Surface No.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
	Type	Unit	Unit	Intercept	Angle	Pressure	Constant
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	180.0	34.0	0.00	0.0
1	2	125.0	125.0	200.0	24.0	0.00	0.0
0	3	125.0	125.0	500.0	34.0	0.00	0.0
0	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	2.0	500.00	34.00
2	13.0	200.00	27.00
3	90.0	500.00	34.00

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	876.00	1000.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(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

1

Trial Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	779.433	313.020
2	794.403	298.199
3	864.842	310.828
4	881.544	329.430
5	899.221	347.109
6	899.819	355.000

Janbu's Empirical Coefficient (fo) = 1.079

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

Factor Of Safety For The Preceding Specified Surface = 1.784

Table 1 - Individual Data on the 11 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	6.1	3126.8	0.0	0.0	0.0	0.0	469.0	0.0
2	8.9	16019.9	0.0	0.0	0.0	0.0	2403.0	0.0
3	13.6	37604.4	0.0	0.0	0.0	0.0	5640.7	0.0
4	6.0	17329.0	0.0	0.0	0.0	0.0	2599.3	0.0
5	10.0	29992.0	0.0	0.0	0.0	0.0	4498.8	0.0
6	40.8	160950.7	0.0	0.0	0.0	0.0	24142.6	0.0

7	11.2	47544.7	0.0	0.0	0.0	0.0	7131.7	0.0
0.0								
8	2.2	8149.3	0.0	0.0	0.0	0.0	1222.4	0.0
555.9								
9	3.3	10925.4	0.0	0.0	0.0	0.0	1638.8	0.0
830.1								
10	17.7	35489.4	0.0	0.0	0.0	0.0	5323.4	0.0
4419.3								
11	0.6	283.1	0.0	0.0	0.0	0.0	42.5	0.0
149.5								

Table 2 - Base Stress Data on the 11 Slices

Slice Mobilized No. Stress	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
*					
(psf)					
1	-44.71	782.47	8.56	1185.12	-
306.98					
2	-44.71	789.96	12.51	3859.12	-
1075.85					
3	10.16	801.20	13.81	1555.17	
896.40					
4	10.16	811.00	6.10	1615.50	
936.12					
5	10.16	819.00	10.16	1670.18	
972.10					
6	10.16	844.42	41.49	2133.86	
1277.30					
7	48.08	870.42	16.70	3553.62	
3597.58					
8	48.08	877.11	3.33	3307.83	
3280.41					
9	48.08	879.88	4.97	2704.58	
2964.01					
10	45.00	890.38	25.00	1747.38	
1809.43					
11	85.67	899.52	7.91	1475.60	
726.71					

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 333196.81 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 2213.32(psf)

Sum of the Driving Forces = 201601.78 (lbs)

Average Mobilized Shear Stress = 1339.17(psf)

Total length of the failure surface = 150.54(ft)

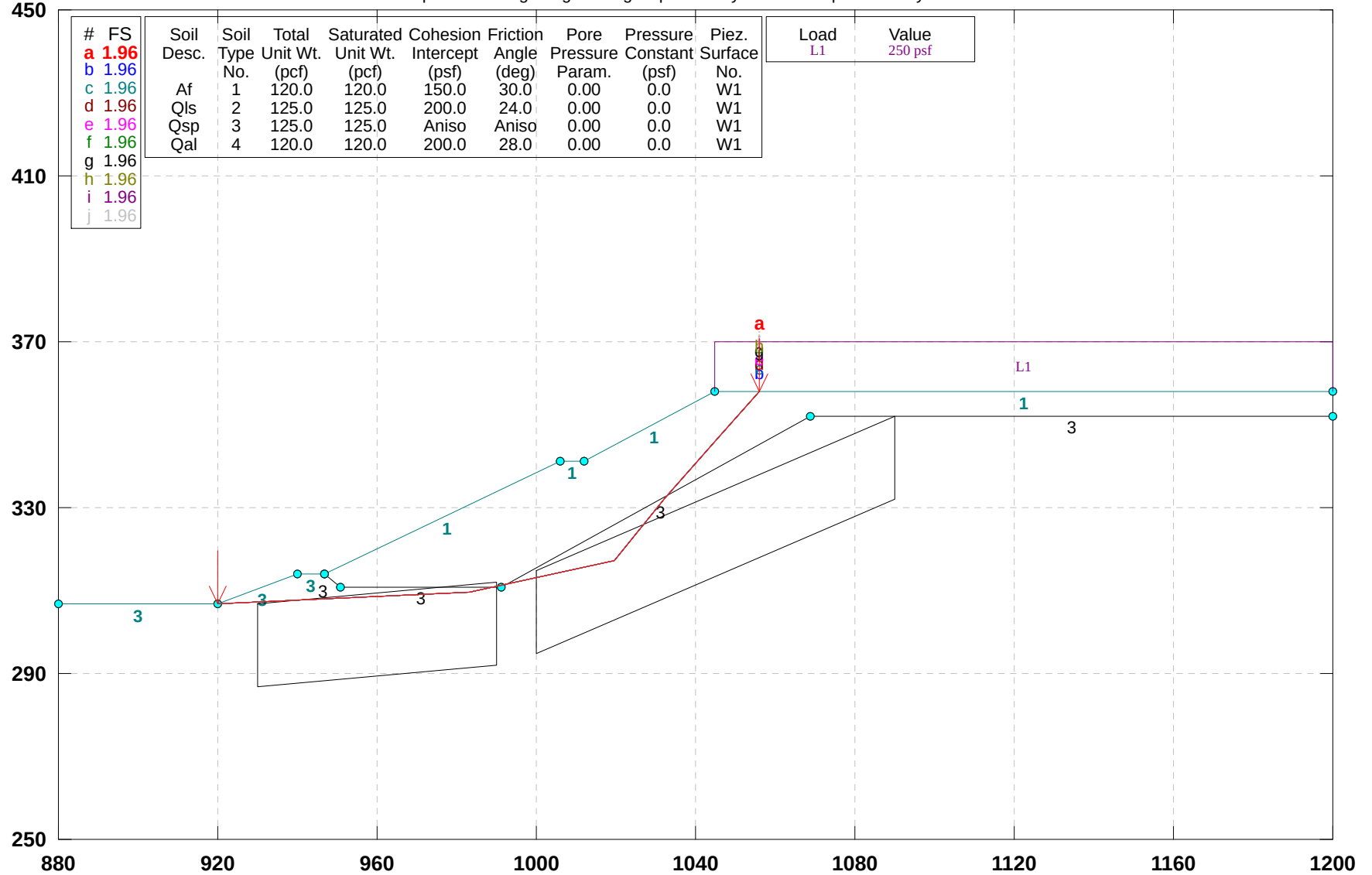
*** SEISMIC SLOPE DISPLACEMENT DATA ***
 (Note: kv is set = zero for displacement calculations)
 Seismic Yield Coefficient (ky) = 0.6819(g)
 Calculated Newmark Seismic Displacement = 0.001(ft)

Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

Westridge/14057-01/Sec 7-7' Upper Slope - Static

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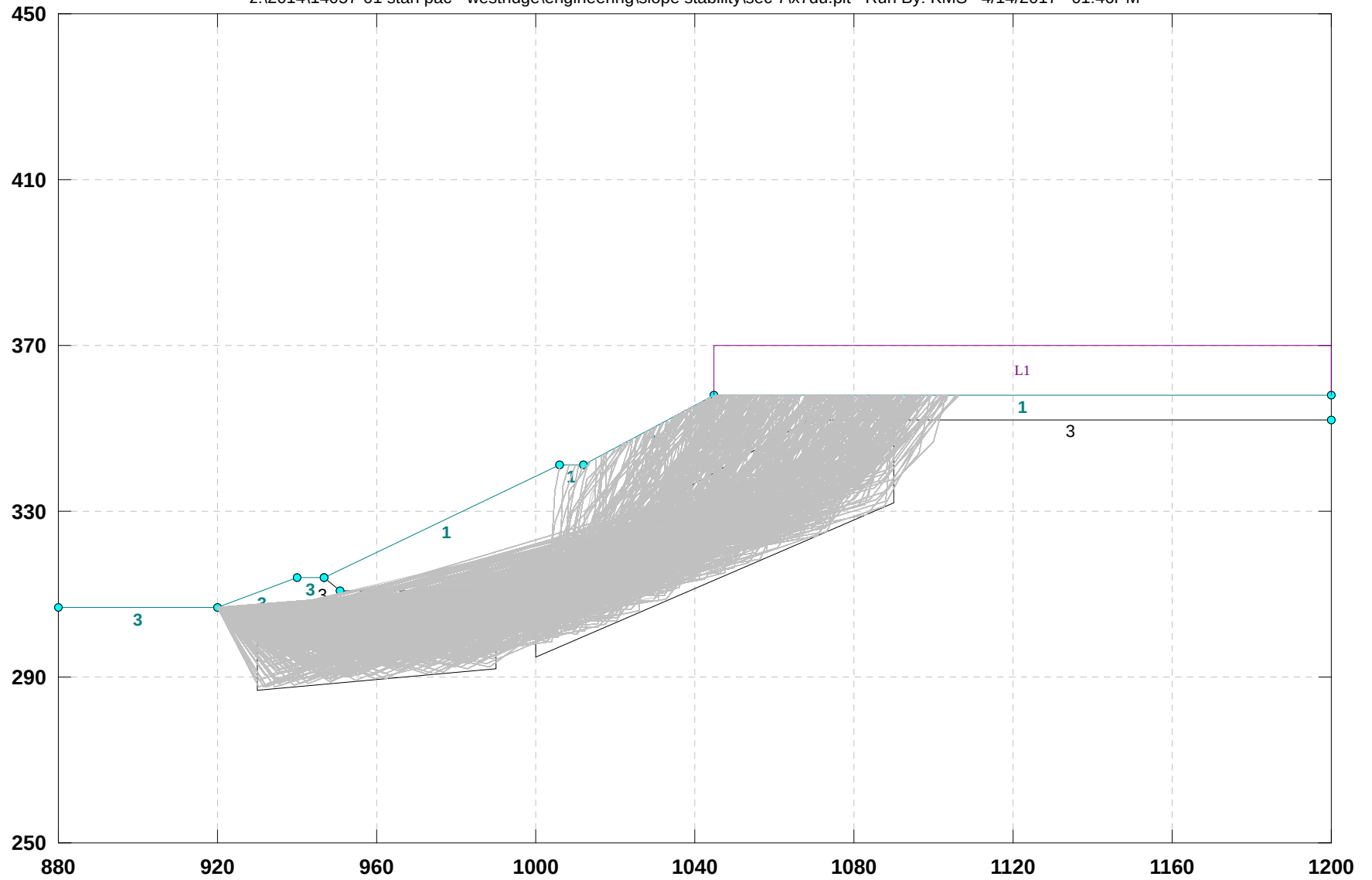


GSTABL7 v.2 FSmin=1.96

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

Westridge/14057-01/Sec 7-7'/ Upper Slope - Static

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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	0.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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	1045.00	1200.00	250.0	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

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

9999 Trial Surfaces Have Been Generated.

3 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	920.00	307.00	920.00	307.00	0.00
2	930.00	297.00	990.00	302.00	20.00
3	1000.00	305.00	1090.00	342.00	20.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 9999

Number of Trial Failure Surfaces is Greater Than 5000. Statistical Data on FS Values are Not Generated. To Generate Stastical Data, Reduce Number of Trial Failure Surfaces to 5000 or less.

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	920.000	307.000
2	983.156	309.700
3	1019.572	317.205
4	1032.358	332.585
5	1046.110	347.106
6	1056.148	358.000

Factor of Safety
*** 1.961 ***

Individual data on the 14 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Ver (lbs)
1	20.0	7681.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	7.0	5246.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	4.0	3289.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	32.2	55018.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	6.3	16401.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	2.5	6899.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	14.0	41898.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	6.0	18864.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	7.6	24390.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	12.8	36032.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	0.3	657.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
12	12.4	22834.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
13	1.1	1529.6	0.0	0.0	0.	0.	0.0	0.0
277.6								
14	10.0	6560.8	0.0	0.0	0.	0.	0.0	0.0
2509.3								

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	920.000	307.000
2	983.156	309.700
3	1019.572	317.205
4	1032.358	332.585
5	1046.110	347.106
6	1056.148	358.000

Factor of Safety
*** 1.961 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	920.000	307.000
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4	1032.358	332.585
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Factor of Safety
*** 1.961 ***

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Point No.	X-Surf (ft)	Y-Surf (ft)
1	920.000	307.000
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Factor of Safety
*** 1.961 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	920.000	307.000
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Factor of Safety
*** 1.961 ***

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Point No.	X-Surf (ft)	Y-Surf (ft)
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2	983.156	309.700
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4	1032.358	332.585
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Factor of Safety
*** 1.961 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	920.000	307.000
2	983.156	309.700
3	1019.572	317.205
4	1032.358	332.585
5	1046.110	347.106
6	1056.148	358.000

Factor of Safety
*** 1.961 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	920.000	307.000
2	983.156	309.700
3	1019.572	317.205
4	1032.358	332.585
5	1046.110	347.106
6	1056.148	358.000

Factor of Safety
*** 1.961 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	920.000	307.000
2	983.156	309.700
3	1019.572	317.205
4	1032.358	332.585
5	1046.110	347.106
6	1056.148	358.000

Factor of Safety
*** 1.961 ***

Failure Surface Specified By 6 Coordinate Points

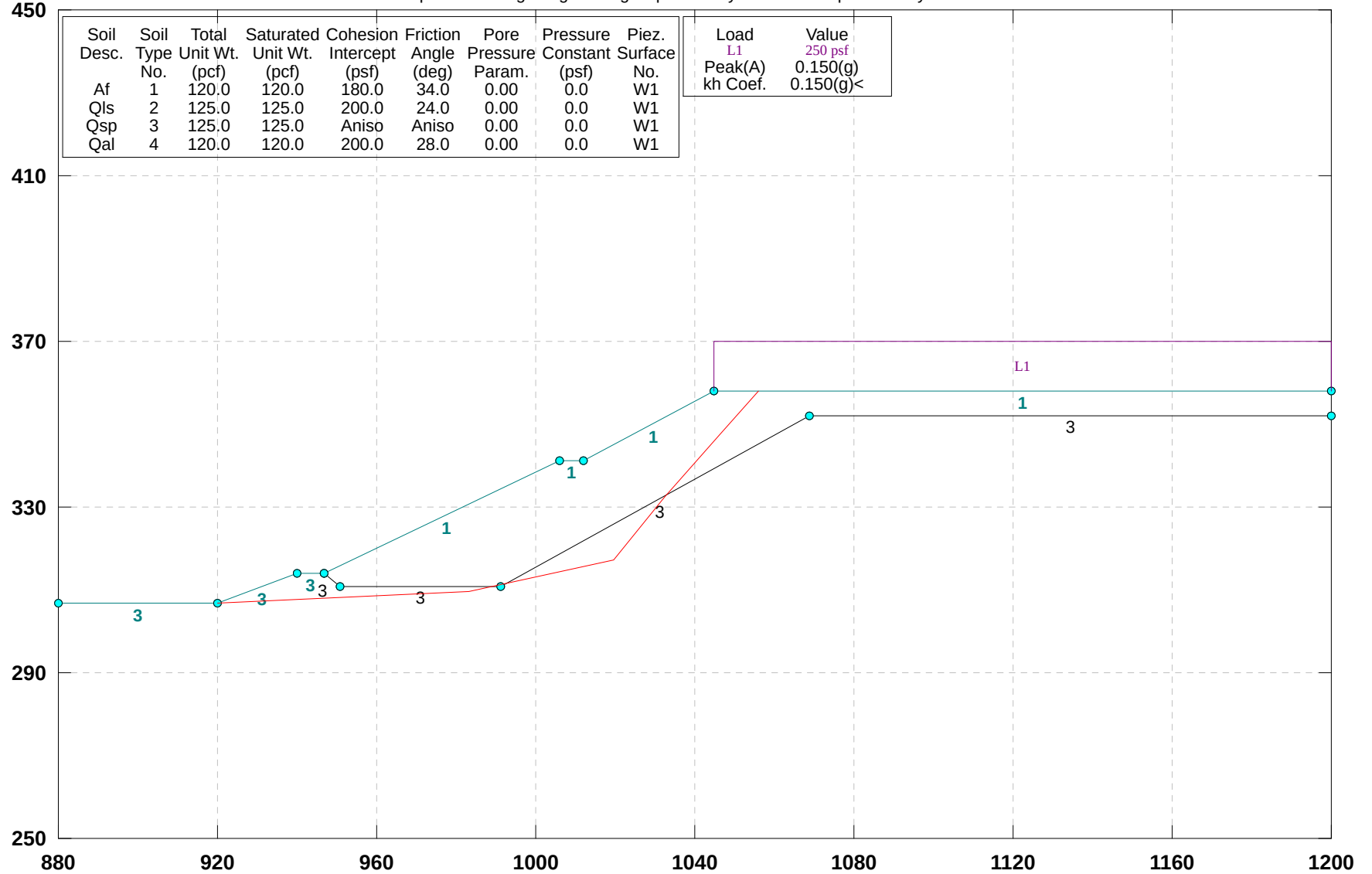
Point No.	X-Surf (ft)	Y-Surf (ft)
1	920.000	307.000
2	983.156	309.700
3	1019.572	317.205
4	1032.358	332.585
5	1046.110	347.106
6	1056.148	358.000

Factor of Safety
*** 1.961 ***

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

Westridge/14057-01/Sec 7-7'/ Upper Slope - Seismic

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GSTABL7 v.2 FSmin=1.47

Factor Of Safety Is Calculated By The Simplified Janbu Method

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	0.0	500.00	34.00
2	12.0	200.00	27.00
3	90.0	500.00	34.00

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	1045.00	1200.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(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

Trial Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	920.000	307.000
2	983.156	309.700
3	1019.572	317.205
4	1032.358	332.585
5	1046.110	347.106
6	1056.148	358.000

Janbu's Empirical Coefficient (fo) = 1.066

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

Factor Of Safety For The Preceding Specified Surface = 1.465

Table 1 - Individual Data on the 14 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force	Water Force	Tie Force	Tie Force	Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	20.0	7681.2	0.0	0.0	0.0	0.0	1152.2	0.0
0.0								
2	7.0	5245.9	0.0	0.0	0.0	0.0	786.9	0.0
0.0								
3	4.0	3289.4	0.0	0.0	0.0	0.0	493.4	0.0
0.0								
4	32.2	55019.0	0.0	0.0	0.0	0.0	8252.8	0.0
0.0								
5	6.3	16400.2	0.0	0.0	0.0	0.0	2460.0	0.0
0.0								
6	2.5	6898.8	0.0	0.0	0.0	0.0	1034.8	0.0
0.0								
7	14.0	41898.9	0.0	0.0	0.0	0.0	6284.8	0.0
0.0								
8	6.0	18864.2	0.0	0.0	0.0	0.0	2829.6	0.0
0.0								

9	7.6	24390.2	0.0	0.0	0.0	0.0	3658.5	0.0
0.0								
10	12.8	36035.3	0.0	0.0	0.0	0.0	5405.3	0.0
0.0								
11	0.3	658.6	0.0	0.0	0.0	0.0	98.8	0.0
0.0								
12	12.4	22831.6	0.0	0.0	0.0	0.0	3424.7	0.0
0.0								
13	1.1	1529.1	0.0	0.0	0.0	0.0	229.4	0.0
277.5								
14	10.0	6561.3	0.0	0.0	0.0	0.0	984.2	0.0
2509.5								

Table 2 - Base Stress Data on the 14 Slices

Slice Mobilized No. Stress * (psf)	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	2.45	930.00	20.02	390.25	
73.96					
2	2.45	943.50	7.01	573.85	
144.32					
3	2.45	949.00	4.00	610.50	
158.37					
4	2.45	967.08	32.19	1057.06	
329.50					
5	11.65	986.31	6.44	1452.66	
906.76					
6	11.65	990.73	2.58	1885.05	
952.13					
7	11.65	999.00	14.30	1642.39	
1043.08					
8	11.65	1009.00	6.13	1716.77	
1096.52					
9	11.65	1015.79	7.73	1754.18	
1123.39					
10	50.26	1025.97	20.00	2417.05	
2437.46					
11	46.56	1032.50	0.42	1980.44	
1873.40					
12	46.56	1038.82	17.96	1396.32	
1532.94					
13	46.56	1045.55	1.61	1250.42	
1323.86					
14	47.34	1051.13	14.81	776.90	
730.98					

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 195691.58 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 1260.83(psf)

Sum of the Driving Forces = 142393.45 (lbs)

Average Mobilized Shear Stress = 917.43(psf)

Total length of the failure surface = 155.21(ft)

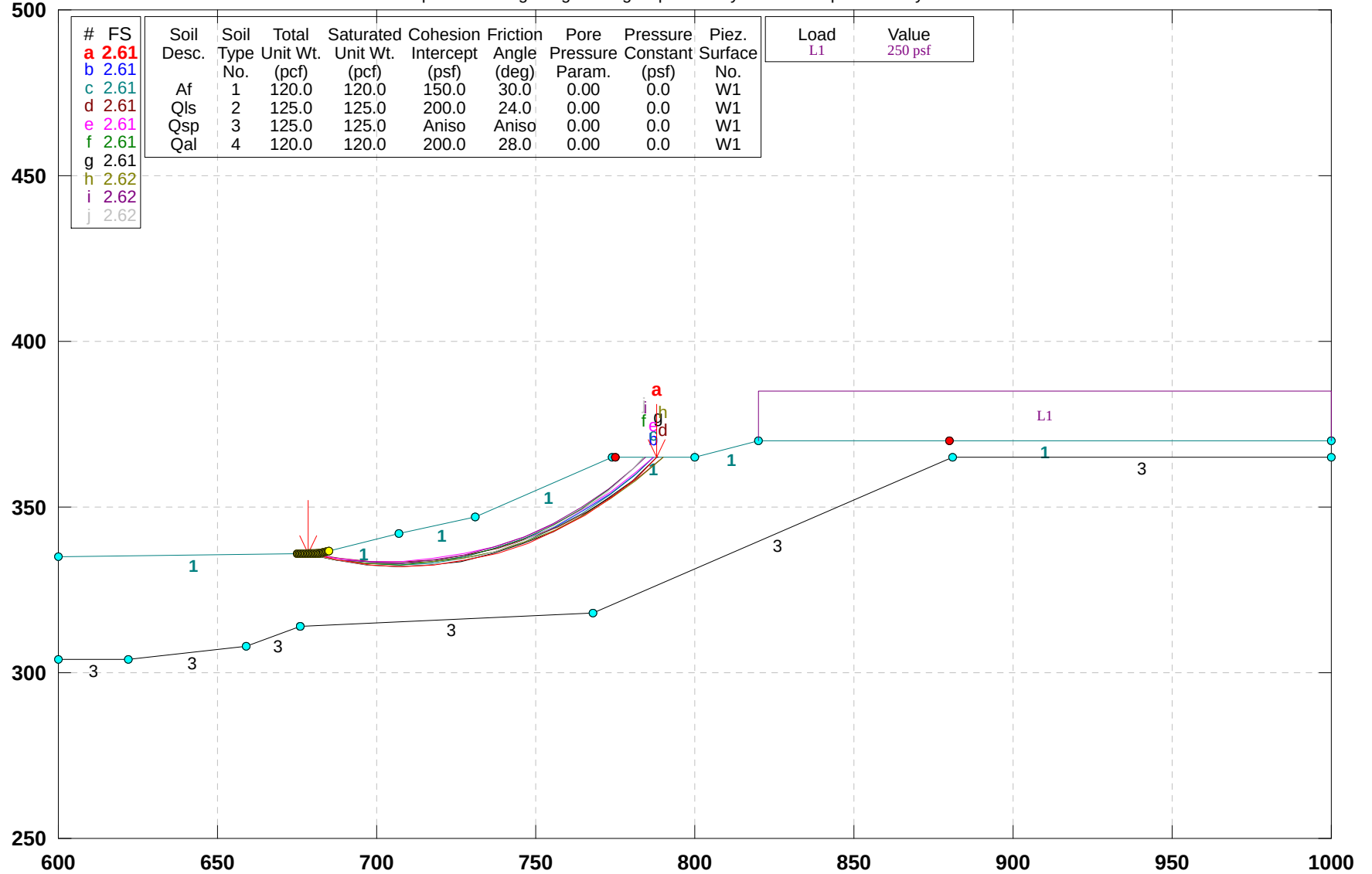
*** SEISMIC SLOPE DISPLACEMENT DATA ***
 (Note: kv is set = zero for displacement calculations)
 Seismic Yield Coefficient (ky) = 0.3545(g)
 Calculated Newmark Seismic Displacement = 0.003(ft)

Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

Westridge/14057-01/Sec 8-8'/ Upper Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 8\8du.pl2 Run By: KMS 4/14/2017 02:08PM



GSTABL7 v.2 FSmin=2.61

Safety Factors Are Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 02:08PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8du.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8du.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8du.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 8-8'/
Upper Slope - Static

BOUNDARY COORDINATES

7 Top Boundaries

13 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	600.00	335.00	682.00	336.00	1
	2	682.00	336.00	707.00	342.00	1
	3	707.00	342.00	731.00	347.00	1
	4	731.00	347.00	774.00	365.00	1
	5	774.00	365.00	800.00	365.00	1
	6	800.00	365.00	820.00	370.00	1
	7	820.00	370.00	1000.00	370.00	1
	8	676.00	314.00	768.00	318.00	3
	9	768.00	318.00	881.00	365.00	3
	10	881.00	365.00	1000.00	365.00	3
	11	600.00	304.00	622.00	304.00	3
	12	622.00	304.00	659.00	308.00	3
	13	659.00	308.00	676.00	314.00	3

User Specified Y-Origin = 250.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil Total Saturated Cohesion Friction Pore Pressure						
	Type	Unit	Wt.	Unit	Wt.	Intercept	Angle
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	Constant
							(psf)
1	1	120.0	120.0	150.0	30.0	0.00	0.0
1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	300.0	32.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	0.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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	820.00	1000.00	250.0	0.0

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

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

15000 Trial Surfaces Have Been Generated.

Spaced 500 Surface(s) Initiate(s) From Each Of 30 Points Equally
Along The Ground Surface Between X = 675.00(ft)
and X = 685.00(ft)

Each Surface Terminates Between X = 775.00(ft)
and X = 880.00(ft)

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

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

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 Modified Bishop Method

Total Number of Trial Surfaces Attempted = 0

Number of Trial Surfaces With Valid FS = 0

Statistical Data On All Valid FS Values:
FS Max = 0.000 FS Min = 500.000 FS Ave = NaN
Standard Deviation = 0.000 Coefficient of Variation =

NaN %

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	678.448	335.957
2	688.217	333.818
3	698.135	332.538
4	708.126	332.127
5	718.116	332.587
6	728.027	333.915
7	737.785	336.101
8	747.316	339.129

9	756.547	342.974
10	765.408	347.609
11	773.832	352.998
12	781.754	359.100
13	788.170	365.000

Circle Center At X = 707.847 ; Y = 446.862 ; and Radius = 114.735

Factor of Safety
*** 2.606 ***

Individual data on the 16 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	3.6	174.9	0.0	0.0	0.	0.	0.0	0.0
2	6.2	1676.7	0.0	0.0	0.	0.	0.0	0.0
3	9.9	6550.6	0.0	0.0	0.	0.	0.0	0.0
4	8.9	9128.2	0.0	0.0	0.	0.	0.0	0.0
5	1.1	1347.2	0.0	0.0	0.	0.	0.0	0.0
6	10.0	13088.5	0.0	0.0	0.	0.	0.0	0.0
7	9.9	14388.4	0.0	0.0	0.	0.	0.0	0.0
8	3.0	4438.6	0.0	0.0	0.	0.	0.0	0.0
9	6.8	10649.7	0.0	0.0	0.	0.	0.0	0.0
10	9.5	16263.7	0.0	0.0	0.	0.	0.0	0.0
11	9.2	16295.0	0.0	0.0	0.	0.	0.0	0.0
12	8.9	15159.4	0.0	0.0	0.	0.	0.0	0.0
13	8.4	13001.9	0.0	0.0	0.	0.	0.0	0.0

14	0.2	240.5	0.0	0.0	0.	0.	0.0	0.0
15	7.8	8268.0	0.0	0.0	0.	0.	0.0	0.0
16	6.4	2271.0	0.0	0.0	0.	0.	0.0	0.0

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	677.759	335.948
2	687.595	334.147
3	697.546	333.156
4	707.544	332.982
5	717.524	333.627
6	727.417	335.087
7	737.157	337.351
8	746.679	340.405
9	755.920	344.227
10	764.817	348.793
11	773.310	354.071
12	781.343	360.027
13	787.015	365.000

Circle Center At X = 704.661 ; Y = 455.065 ; and Radius = 122.116

Factor of Safety
*** 2.608 ***

1

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	677.414	335.944
2	687.209	333.931
3	697.140	332.759
4	707.135	332.439
5	717.121	332.971
6	727.025	334.352
7	736.776	336.573
8	746.301	339.616
9	755.533	343.460
10	764.403	348.077

11	772.848	353.433
12	780.806	359.489
13	786.892	365.000

117.235 Circle Center At X = 705.894 ; Y = 449.667 ; and Radius =

Factor of Safety
*** 2.609 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	678.448	335.957
2	688.315	334.326
3	698.277	333.455
4	708.276	333.347
5	718.255	334.004
6	728.154	335.422
7	737.915	337.592
8	747.482	340.502
9	756.799	344.135
10	765.811	348.469
11	774.466	353.479
12	782.712	359.137
13	789.995	365.000

130.740 Circle Center At X = 704.682 ; Y = 464.038 ; and Radius =

Factor of Safety
*** 2.612 ***

1

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	677.759	335.948
2	687.632	334.363
3	697.599	333.551

4	707.599	333.519
5	717.571	334.266
6	727.455	335.787
7	737.190	338.073
8	746.717	341.111
9	755.979	344.883
10	764.919	349.364
11	773.482	354.528
12	781.618	360.343
13	787.162	365.000

128.264 Circle Center At X = 703.016 ; Y = 461.701 ; and Radius =

Factor of Safety
*** 2.612 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	677.759	335.948
2	687.563	333.978
3	697.502	332.880
4	707.500	332.664
5	717.478	333.329
6	727.358	334.873
7	737.064	337.282
8	746.519	340.537
9	755.650	344.614
10	764.386	349.480
11	772.659	355.098
12	780.404	361.424
13	784.069	365.000

113.264 Circle Center At X = 704.954 ; Y = 445.899 ; and Radius =

Factor of Safety
*** 2.613 ***

1

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	677.069	335.940
2	686.838	333.801
3	696.753	332.505
4	706.743	332.060
5	716.735	332.469
6	726.655	333.731
7	736.431	335.835
8	745.992	338.766
9	755.267	342.503
10	764.190	347.019
11	772.694	352.280
12	780.718	358.248
13	788.203	364.880
14	788.317	365.000

116.960 Circle Center At X = 706.950 ; Y = 449.019 ; and Radius =

Factor of Safety
*** 2.614 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	677.414	335.944
2	687.242	334.098
3	697.185	333.035
4	707.182	332.762
5	717.168	333.280
6	727.083	334.585
7	736.863	336.670
8	746.448	339.522
9	755.777	343.123
10	764.792	347.450
11	773.437	352.477
12	781.658	358.171
13	789.402	364.497
14	789.928	365.000

126.271 Circle Center At X = 705.639 ; Y = 459.020 ; and Radius =

Factor of Safety
*** 2.615 ***

1

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	677.759	335.948
2	687.603	334.191
3	697.560	333.269
4	707.560	333.189
5	717.531	333.952
6	727.402	335.552
7	737.103	337.978
8	746.566	341.213
9	755.722	345.234
10	764.506	350.012
11	772.858	355.513
12	780.715	361.698
13	784.252	365.000

118.589 Circle Center At X = 703.506 ; Y = 451.708 ; and Radius =

Factor of Safety
*** 2.615 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	677.759	335.948
2	687.519	333.770
3	697.438	332.500
4	707.432	332.148
5	717.415	332.718
6	727.304	334.204
7	737.014	336.595
8	746.463	339.869
9	755.570	343.999
10	764.259	348.950
11	772.454	354.680

12	780.088	361.140
13	783.878	365.000

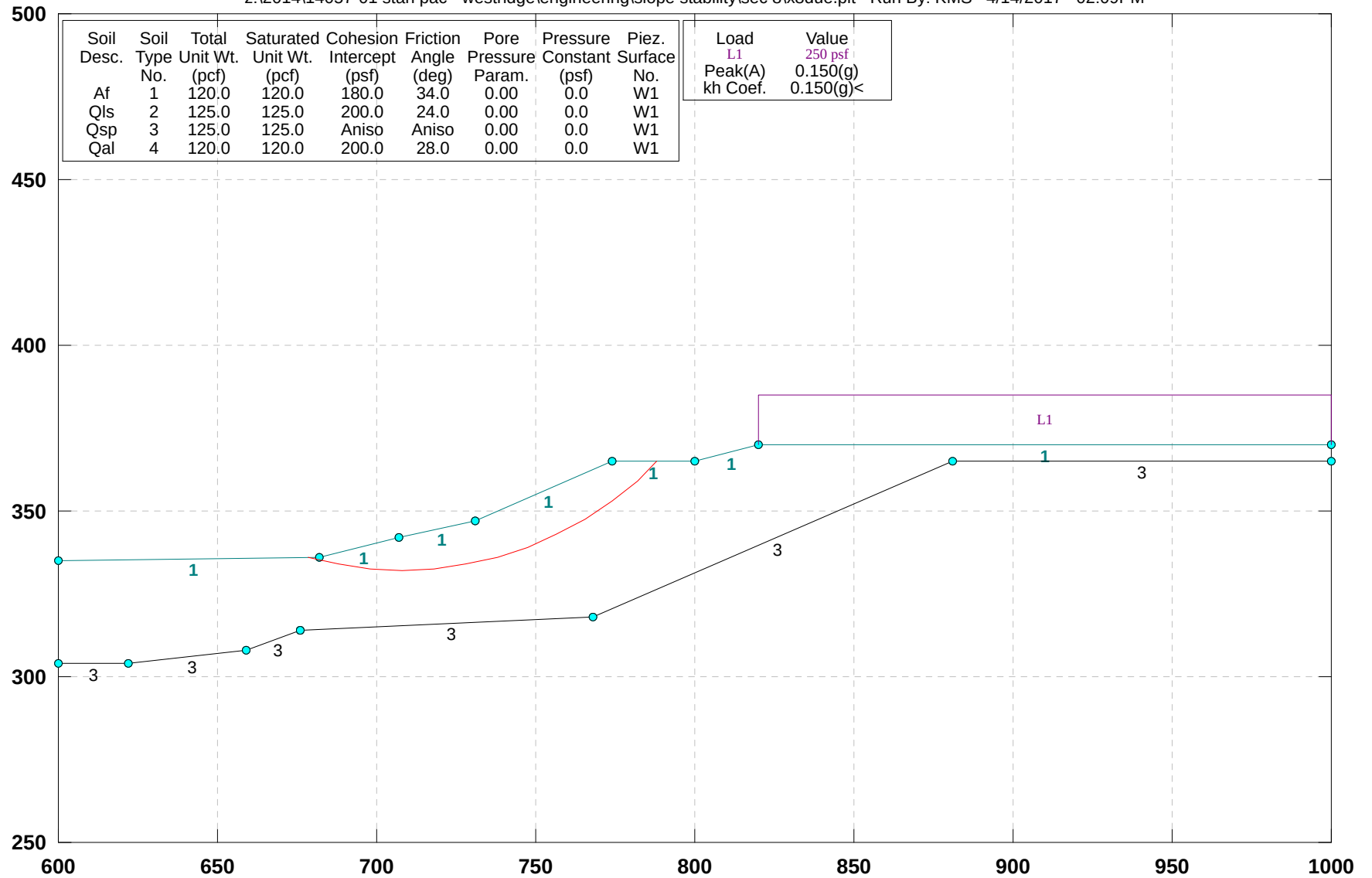
108.511 Circle Center At X = 706.247 ; Y = 440.653 ; and Radius =

Factor of Safety
*** 2.615 ***

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

Westridge/14057-01/Sec 8-8'/ Upper Slope - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 8\8due.plt Run By: KMS 4/14/2017 02:09PM



GSTABL7 v.2 FSmin=2.00
Factor Of Safety Is Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 02:09PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8due.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8due.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8due.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 8-8'/
Upper Slope - Seismic

BOUNDARY COORDINATES

7 Top Boundaries

13 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	600.00	335.00	682.00	336.00	1
	2	682.00	336.00	707.00	342.00	1
	3	707.00	342.00	731.00	347.00	1
	4	731.00	347.00	774.00	365.00	1
	5	774.00	365.00	800.00	365.00	1
	6	800.00	365.00	820.00	370.00	1
	7	820.00	370.00	1000.00	370.00	1
	8	676.00	314.00	768.00	318.00	3
	9	768.00	318.00	881.00	365.00	3
	10	881.00	365.00	1000.00	365.00	3
	11	600.00	304.00	622.00	304.00	3
	12	622.00	304.00	659.00	308.00	3
	13	659.00	308.00	676.00	314.00	3

User Specified Y-Origin = 250.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil Total Saturated Cohesion Friction Pore Pressure						
	Type	Unit	Wt.	Unit	Wt.	Intercept	Angle
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	Constant
							(psf)
1	1	120.0	120.0	180.0	34.0	0.00	0.0
1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	500.0	34.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	0.0	500.00	34.00
2	12.0	200.00	27.00
3	90.0	500.00	34.00

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
(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	820.00	1000.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

Trial Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	678.448	335.957
2	688.217	333.818
3	698.135	332.538
4	708.126	332.127
5	718.116	332.587
6	728.027	333.915
7	737.785	336.101
8	747.316	339.129
9	756.547	342.974
10	765.408	347.609
11	773.832	352.998
12	781.754	359.100
13	788.170	365.000

DEFLECTION ANGLE & SEGMENT DATA FOR SPECIFIED SURFACE(Excluding Last
Segment)

Angle/Segment No.	Deflection(Deg)	Segment Length(ft)
1	4.99	10.00
2	5.00	10.00
3	4.99	10.00
4	5.00	10.00
5	5.00	10.00
6	5.00	10.00
7	4.99	10.00
8	5.00	10.00
9	4.99	10.00
10	5.00	10.00

Circle Center At X = 707.847(ft) ; Y = 446.866(ft); and
Radius = 114.739(ft)

* * Factor Of Safety Is Calculated By The Modified Bishop
Method * *

Factor Of Safety For The Preceding Specified Surface = 1.996

Table 1 - Individual Data on the 16 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Ver (lbs)
1	3.6	175.0	0.0	0.0	0.0	0.0	26.2	0.0
2	6.2	1676.7	0.0	0.0	0.0	0.0	251.5	0.0
3	9.9	6550.9	0.0	0.0	0.0	0.0	982.6	0.0
4	8.9	9128.0	0.0	0.0	0.0	0.0	1369.2	0.0
5	1.1	1346.7	0.0	0.0	0.0	0.0	202.0	0.0
6	10.0	13088.7	0.0	0.0	0.0	0.0	1963.3	0.0
7	9.9	14387.6	0.0	0.0	0.0	0.0	2158.1	0.0
8	3.0	4438.9	0.0	0.0	0.0	0.0	665.8	0.0
9	6.8	10649.1	0.0	0.0	0.0	0.0	1597.4	0.0
10	9.5	16263.7	0.0	0.0	0.0	0.0	2439.6	0.0
11	9.2	16295.2	0.0	0.0	0.0	0.0	2444.3	0.0
12	8.9	15160.0	0.0	0.0	0.0	0.0	2274.0	0.0
13	8.4	13003.0	0.0	0.0	0.0	0.0	1950.5	0.0
14	0.2	239.9	0.0	0.0	0.0	0.0	36.0	0.0
15	7.8	8268.6	0.0	0.0	0.0	0.0	1240.3	0.0
16	6.4	2271.2	0.0	0.0	0.0	0.0	340.7	0.0

Table 2 - Base Stress Data on the 16 Slices

Slice Mobilized No. Stress * (psf)	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear

1	-12.35	680.22	3.64	230.26
-3.25				
2	-12.35	685.11	6.36	390.84
18.13				
3	-7.35	693.18	10.00	654.05
11.25				
4	-2.36	702.57	8.87	886.85
106.13				
5	-2.36	707.56	1.13	1000.66
122.20				
6	2.64	713.12	10.00	1047.43
246.97				
7	7.63	723.07	10.00	1108.94
393.62				
8	12.63	729.51	3.05	1103.53
519.91				
9	12.63	734.39	6.95	1151.45
545.88				
10	17.63	742.55	10.00	1201.92
709.80				
11	22.61	751.93	10.00	1201.52
836.55				
12	27.61	760.98	10.00	1133.58
890.03				
13	32.61	769.62	10.00	1004.05
854.06				
14	37.61	773.92	0.21	907.19
816.13				
15	37.61	777.88	9.79	713.51
611.00				
16	42.60	784.96	8.72	319.48
204.65				

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 107146.65 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 902.54(psf)

Sum of the Driving Forces = 53691.95 (lbs)

Average Mobilized Shear Stress = 452.27(psf)

Total length of the failure surface = 118.72(ft)

Bishop
Surface

CAUTION - Factor Of Safety Is Calculated By The Modified
Method. This Method Is Valid Only If The Failure
Approximates A Circular Arc.

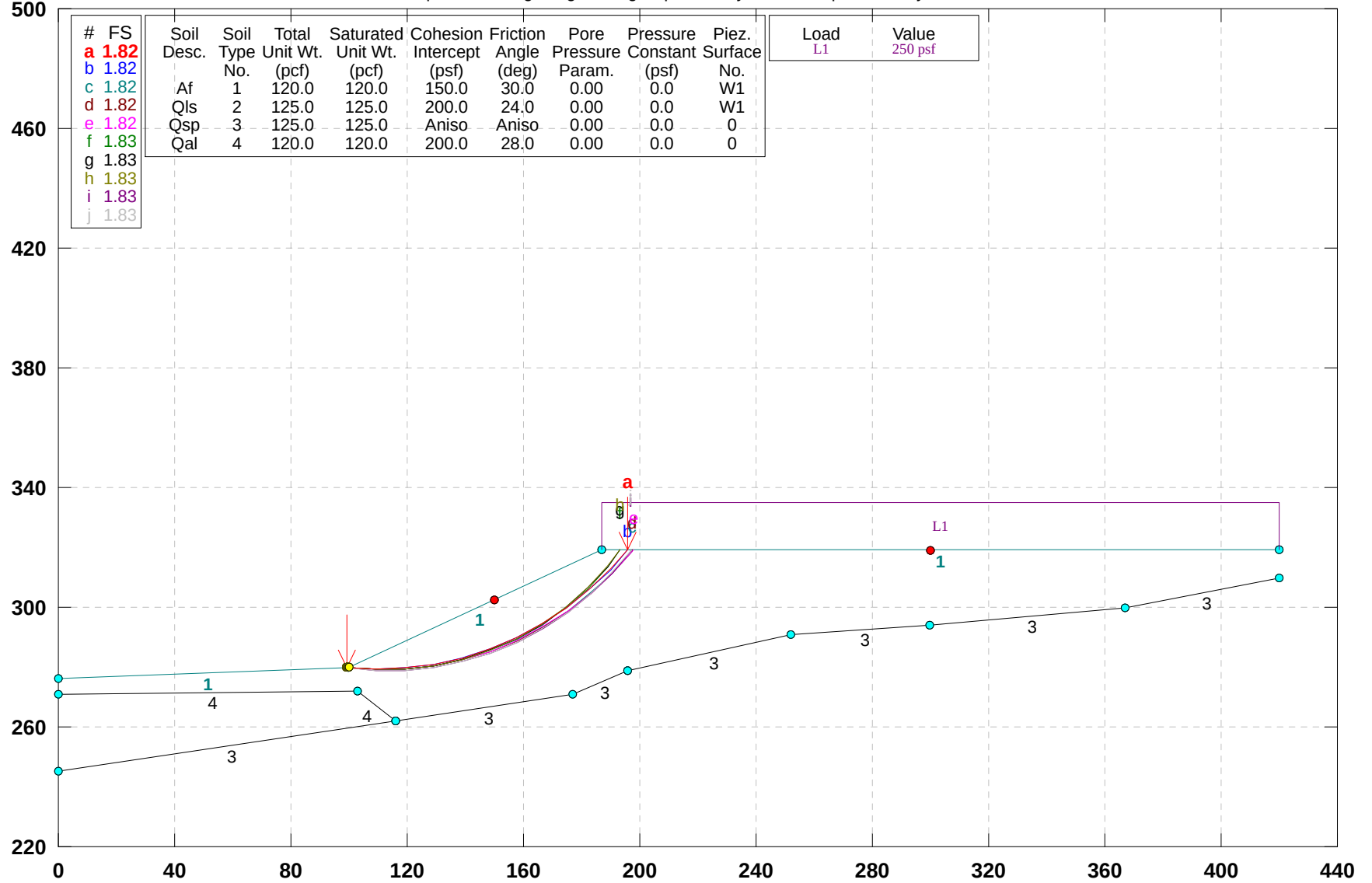
*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.5406(g)
Calculated Newmark Seismic Displacement = 0.001(ft)

Non-Symmetrical Sliding Resistance Has Been Specified
for Downhill Sliding.

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

Westridge/14057-01/Sec 8-8'/ Lower Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 8\8dl.pl2 Run By: KMS 4/14/2017 01:49PM



GSTABL7 v.2 FSmin=1.82
Safety Factors Are Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 01:49PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8dl.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8dl.0UT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8dl.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 8-8'/
Lower Slope - Static

BOUNDARY COORDINATES

3 Top Boundaries

12 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	276.00	100.00	280.00	1
	2	100.00	280.00	187.00	319.00	1
	3	187.00	319.00	420.00	319.00	1
	4	0.00	271.00	103.00	272.00	4
	5	103.00	272.00	116.00	262.00	4
	6	196.00	279.00	252.00	291.00	3
	7	252.00	291.00	300.00	294.00	3
	8	300.00	294.00	367.00	300.00	3
	9	367.00	300.00	420.00	310.00	3
	10	0.00	245.00	116.00	262.00	3
	11	116.00	262.00	177.00	271.00	3
	12	177.00	271.00	196.00	279.00	3
	User Specified Y-Origin = 220.00(ft)					
	Default X-Plus Value = 0.00(ft)					
	Default Y-Plus Value = 0.00(ft)					
1						

ISOTROPIC SOIL PARAMETERS						
4 Type(s) of Soil						
Piez.	Soil	Total	Saturated	Cohesion	Friction	Pore Pressure
	Type	Unit Wt.	Unit Wt.	Intercept	Angle	Pressure Constant
Surface	No.	(pcf)	(pcf)	(psf)	(deg)	Param. (psf)
1	1	120.0	120.0	150.0	30.0	0.00 0.0
	2	125.0	125.0	200.0	24.0	0.00 0.0
1	3	125.0	125.0	300.0	32.0	0.00 0.0
0	4	120.0	120.0	200.0	28.0	0.00 0.0
0						

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

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	0.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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.

crack.

1

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	187.00	420.00	250.0	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.

15000 Trial Surfaces Have Been Generated.

Spaced 500 Surface(s) Initiate(s) From Each Of 30 Points Equally

Along The Ground Surface Between X = 99.00(ft)
and X = 100.00(ft)

Each Surface Terminates Between X = 150.00(ft)
and X = 300.00(ft)

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

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

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 Modified Bishop Method

* *

Total Number of Trial Surfaces Attempted = 0

Number of Trial Surfaces With Valid FS = 0

Statistical Data On All Valid FS Values:
FS Max = 0.000 FS Min = 500.000 FS Ave = NaN
Standard Deviation = 0.000 Coefficient of Variation =

NaN %

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	99.207	279.968
2	109.192	279.416
3	119.186	279.753
4	129.111	280.978
5	138.887	283.081
6	148.438	286.046
7	157.687	289.847
8	166.561	294.457
9	174.990	299.837
10	182.908	305.946

11 190.250 312.734
12 195.920 319.000

112.090 Circle Center At X = 110.430 ; Y = 391.495 ; and Radius =

Factor of Safety
*** 1.816 ***

Individual data on the 0 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	99.103	279.964
2	109.088	279.412
3	119.083	279.747
4	129.008	280.967
5	138.786	283.062
6	148.339	286.017
7	157.593	289.806
8	166.475	294.402
9	174.914	299.767
10	182.844	305.860
11	190.202	312.631
12	195.995	319.000

112.434 Circle Center At X = 110.342 ; Y = 391.835 ; and Radius =

Factor of Safety
*** 1.816 ***

1

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	99.345	279.974
2	109.320	279.275
3	119.318	279.472
4	129.259	280.561
5	139.062	282.535
6	148.650	285.378
7	157.944	289.067
8	166.872	293.573
9	175.361	298.858
10	183.343	304.882
11	190.755	311.595
12	197.536	318.944
13	197.579	319.000

111.714 Circle Center At X = 112.128 ; Y = 390.954 ; and Radius =

Factor of Safety
*** 1.822 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	99.207	279.968
2	109.182	279.270
3	119.181	279.463
4	129.122	280.546
5	138.927	282.510
6	148.518	285.340
7	157.819	289.014
8	166.756	293.501
9	175.257	298.767
10	183.255	304.769
11	190.687	311.460
12	197.493	318.786
13	197.659	319.000

112.132 Circle Center At X = 112.019 ; Y = 391.366 ; and Radius =

Factor of Safety
*** 1.822 ***

1

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	99.069	279.963
2	109.045	279.264
3	119.043	279.454
4	128.985	280.530
5	138.792	282.485
6	148.387	285.302
7	157.694	288.960
8	166.639	293.430
9	175.153	298.676
10	183.167	304.657
11	190.619	311.325
12	197.449	318.629
13	197.739	319.000

Circle Center At X = 111.911 ; Y = 391.779 ; and Radius = 112.551

Factor of Safety
*** 1.822 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	99.000	279.960
2	108.960	279.072
3	118.960	279.175
4	128.900	280.268
5	138.683	282.341
6	148.212	285.373
7	157.394	289.334
8	166.138	294.186
9	174.359	299.880
10	181.975	306.361

11 188.911 313.564
12 193.193 319.000

Circle Center At X = 112.963 ; Y = 379.422 ; and Radius = 100.437

Factor of Safety
*** 1.828 ***

1

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	99.103	279.964
2	109.064	279.076
3	119.063	279.182
4	129.003	280.281
5	138.784	282.362
6	148.310	285.404
7	157.486	289.378
8	166.222	294.244
9	174.432	299.954
10	182.033	306.452
11	188.952	313.672
12	193.125	319.000

Circle Center At X = 113.043 ; Y = 379.136 ; and Radius = 100.147

Factor of Safety
*** 1.828 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	99.241	279.970
2	109.202	279.081
3	119.201	279.191
4	129.140	280.297
5	138.919	282.389

6	148.440	285.446
7	157.609	289.437
8	166.334	294.322
9	174.529	300.054
10	182.111	306.574
11	189.005	313.817
12	193.034	319.000

99.762 Circle Center At X = 113.150 ; Y = 378.757 ; and Radius =

Factor of Safety
*** 1.828 ***

1

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	99.276	279.971
2	109.232	279.034
3	119.232	279.041
4	129.187	279.993
5	139.007	281.880
6	148.605	284.686
7	157.896	288.385
8	166.795	292.946
9	175.224	298.326
10	183.108	304.478
11	190.376	311.347
12	196.962	318.872
13	197.055	319.000

105.791 Circle Center At X = 114.155 ; Y = 384.711 ; and Radius =

Factor of Safety
*** 1.829 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	99.138	279.966
2	109.094	279.029
3	119.094	279.032
4	129.049	279.977
5	138.871	281.854
6	148.474	284.647
7	157.770	288.331
8	166.679	292.873
9	175.122	298.233
10	183.022	304.363
11	190.311	311.210
12	196.923	318.712
13	197.132	319.000

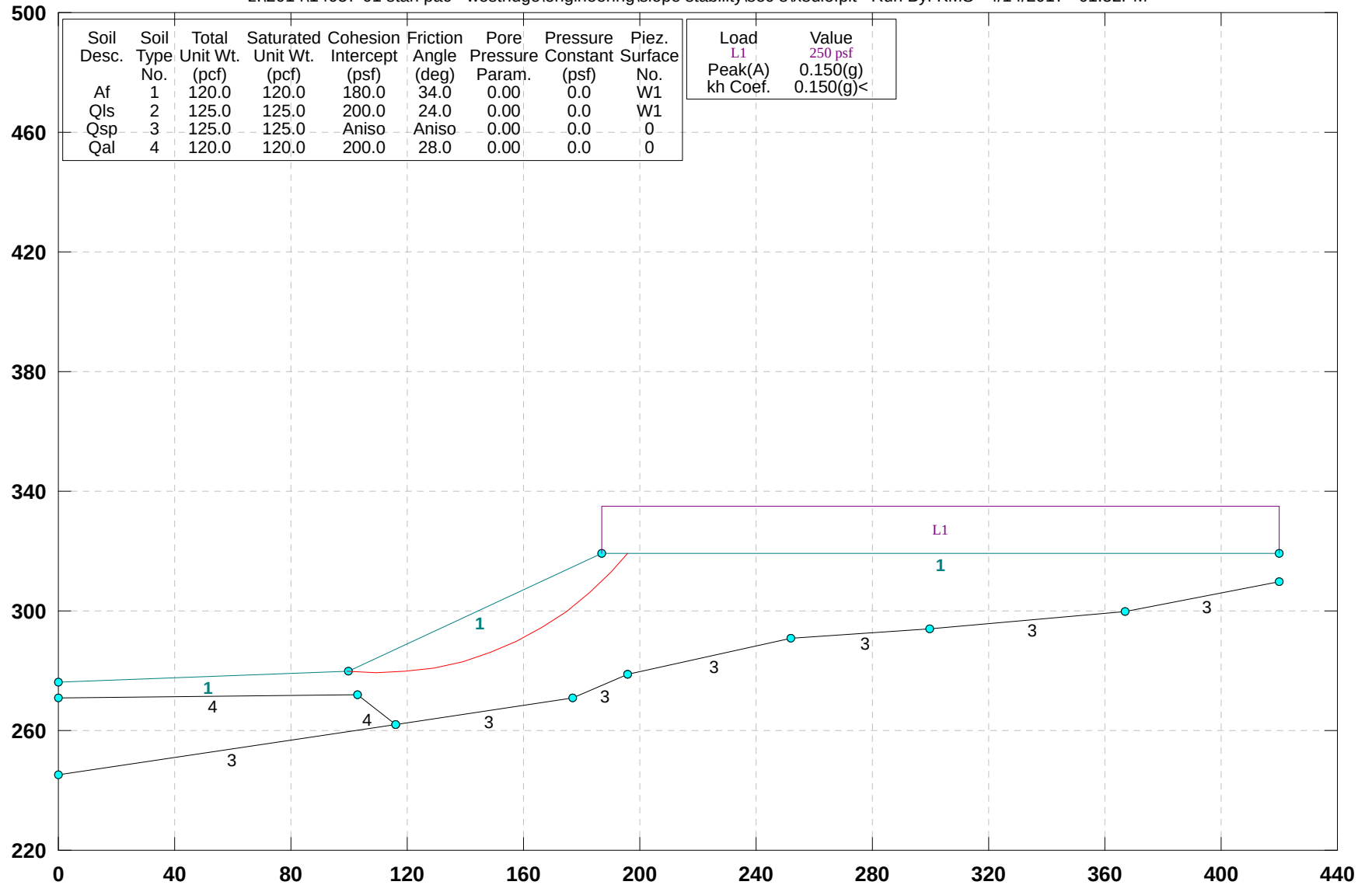
106.176 Circle Center At X = 114.053 ; Y = 385.088 ; and Radius =

Factor of Safety
*** 1.829 ***

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

Westridge/14057-01/Sec 8-8' Lower Slope - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 8\8dle.plt Run By: KMS 4/14/2017 01:52PM



GSTABL7 v.2 FSmin=1.53
Factor Of Safety Is Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 01:52PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8dle.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8dle.0UT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8dle.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 8-8'/
Lower Slope - Seismic

BOUNDARY COORDINATES

3 Top Boundaries

12 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	276.00	100.00	280.00	1
	2	100.00	280.00	187.00	319.00	1
	3	187.00	319.00	420.00	319.00	1
	4	0.00	271.00	103.00	272.00	4
	5	103.00	272.00	116.00	262.00	4
	6	196.00	279.00	252.00	291.00	3
	7	252.00	291.00	300.00	294.00	3
	8	300.00	294.00	367.00	300.00	3
	9	367.00	300.00	420.00	310.00	3
	10	0.00	245.00	116.00	262.00	3
	11	116.00	262.00	177.00	271.00	3
	12	177.00	271.00	196.00	279.00	3
User Specified Y-Origin = 220.00(ft)						
Default X-Plus Value = 0.00(ft)						
Default Y-Plus Value = 0.00(ft)						

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
	Type	Unit Wt.	Unit Wt.	Intercept	Angle	Pressure	Constant
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	180.0	34.0	0.00	0.0
	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	500.0	34.0	0.00	0.0
0	4	120.0	120.0	200.0	28.0	0.00	0.0
0							

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

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	0.0	500.00	34.00
2	12.0	200.00	27.00
3	90.0	500.00	34.00

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.

crack.

1

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	187.00	420.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

1

Trial Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	99.207	279.968
2	109.192	279.416
3	119.186	279.753
4	129.111	280.978
5	138.887	283.081
6	148.438	286.046
7	157.687	289.847
8	166.561	294.457
9	174.990	299.837
10	182.908	305.946
11	190.250	312.734
12	195.920	319.000

DEFLECTION ANGLE & SEGMENT DATA FOR SPECIFIED SURFACE(Excluding Last Segment)

Angle/Segment No.	Deflection(Deg)	Segment Length(ft)
1	5.10	10.00
2	5.11	10.00
3	5.10	10.00
4	5.11	10.00
5	5.09	10.00
6	5.11	10.00
7	5.10	10.00
8	5.10	10.00
9	5.10	10.00

Circle Center At X = 110.429(ft) ; Y = 391.496(ft); and
Radius = 112.091(ft)

* * Factor Of Safety Is Calculated By The Modified Bishop
Method * *

Factor Of Safety For The Preceding Specified Surface = 1.528

Table 1 - Individual Data on the 13 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	0.8	3.6	0.0	0.0	0.0	0.0	0.5	0.0
0.0								
2	9.2	2636.3	0.0	0.0	0.0	0.0	395.4	0.0
0.0								
3	10.0	8126.4	0.0	0.0	0.0	0.0	1219.0	0.0
0.0								
4	9.9	12457.5	0.0	0.0	0.0	0.0	1868.6	0.0
0.0								
5	9.8	15498.6	0.0	0.0	0.0	0.0	2324.8	0.0
0.0								
6	9.6	17202.5	0.0	0.0	0.0	0.0	2580.4	0.0
0.0								
7	9.2	17580.7	0.0	0.0	0.0	0.0	2637.1	0.0
0.0								
8	8.9	16715.1	0.0	0.0	0.0	0.0	2507.3	0.0
0.0								
9	8.4	14747.3	0.0	0.0	0.0	0.0	2212.1	0.0
0.0								
10	7.9	11876.5	0.0	0.0	0.0	0.0	1781.5	0.0
0.0								
11	4.1	5030.8	0.0	0.0	0.0	0.0	754.6	0.0
0.0								
12	3.2	3029.7	0.0	0.0	0.0	0.0	454.4	0.0
812.5								
13	5.7	2131.7	0.0	0.0	0.0	0.0	319.8	0.0
1417.5								

Table 2 - Base Stress Data on the 13 Slices

Slice Mobilized No. Stress * (psf)	Alpha (deg)	X-Coord.		Base		Available	
		Slice Cntr (ft)		Leng. (ft)		Shear Strength (psf)	Shear
1	-3.17	99.60		0.79		187.64	
0.43							
2	-3.17	104.60		9.21		382.80	
26.62							
3	1.93	114.19		10.00		717.78	
145.53							
4	7.04	124.15		10.00		973.57	
329.33							

5	12.14	134.00	10.00	1140.99
539.55				
6	17.25	143.66	10.00	1226.75
739.14				
7	22.34	153.06	10.00	1237.59
893.58				
8	27.45	162.12	10.00	1179.91
975.51				
9	32.55	170.78	10.00	1061.12
965.55				
10	37.65	178.95	10.00	888.94
856.53				
11	42.75	184.95	5.57	716.73
706.06				
12	42.75	188.62	4.43	694.11
661.12				
13	47.86	193.08	8.45	404.75
336.28				

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 98390.69 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 907.24(psf)

Sum of the Driving Forces = 64395.62 (lbs)

Average Mobilized Shear Stress = 593.78(psf)

Total length of the failure surface = 108.45(ft)

CAUTION - Factor Of Safety Is Calculated By The Modified Bishop Method. This Method Is Valid Only If The Failure Surface Approximates A Circular Arc.

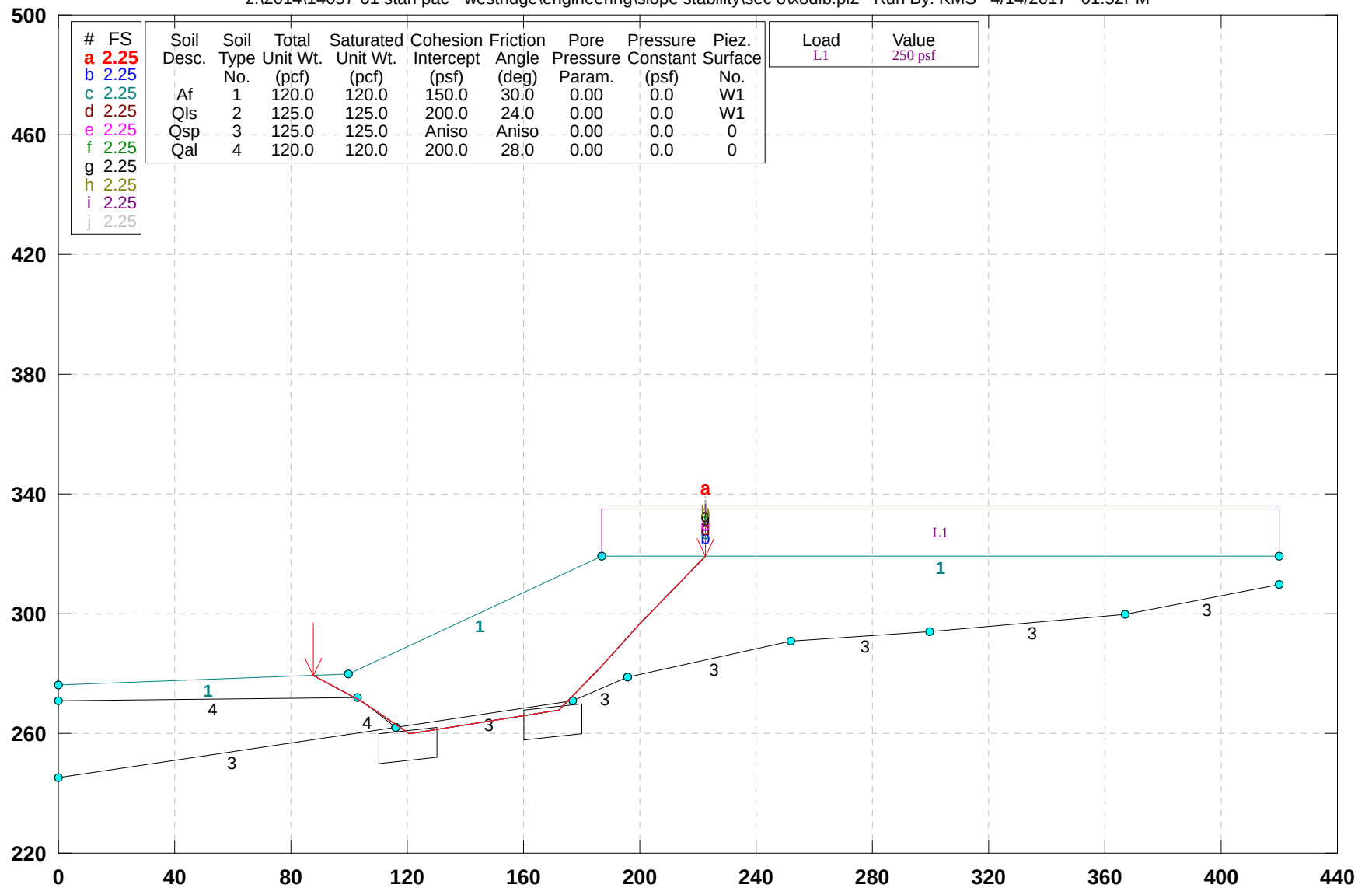
*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.4010(g)
Calculated Newmark Seismic Displacement = 0.002(ft)

Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

Westridge/14057-01/Sec 8-8'/ Lower Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 8\8dlb.pl2 Run By: KMS 4/14/2017 01:52PM

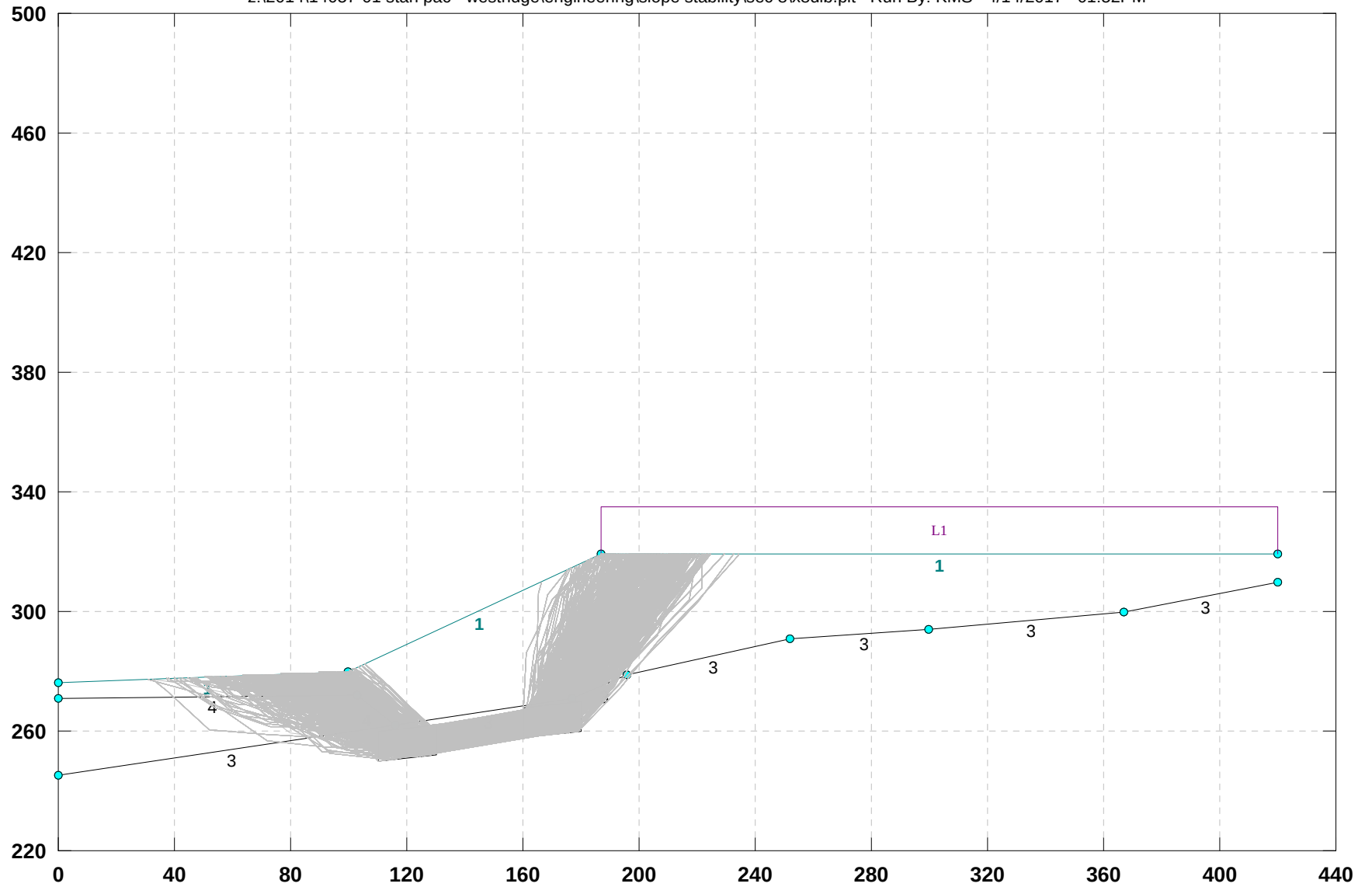


GSTABL7 v.2 FSmin=2.25

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

Westridge/14057-01/Sec 8-8' Lower Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 8\8dlb.plt Run By: KMS 4/14/2017 01:52PM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 01:52PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8dlb.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8dlb.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8dlb.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 8-8'/
Lower Slope - Static

BOUNDARY COORDINATES

3 Top Boundaries

12 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	276.00	100.00	280.00	1
	2	100.00	280.00	187.00	319.00	1
	3	187.00	319.00	420.00	319.00	1
	4	0.00	271.00	103.00	272.00	4
	5	103.00	272.00	116.00	262.00	4
	6	196.00	279.00	252.00	291.00	3
	7	252.00	291.00	300.00	294.00	3
	8	300.00	294.00	367.00	300.00	3
	9	367.00	300.00	420.00	310.00	3
	10	0.00	245.00	116.00	262.00	3
	11	116.00	262.00	177.00	271.00	3
	12	177.00	271.00	196.00	279.00	3
User Specified Y-Origin = 220.00(ft)						
Default X-Plus Value = 0.00(ft)						
Default Y-Plus Value = 0.00(ft)						
1						

ISOTROPIC SOIL PARAMETERS							
4 Type(s) of Soil							
Piez. Surface No.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
	Type	Unit Wt.	Unit Wt.	Intercept	Angle	Pressure	Constant
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	150.0	30.0	0.00	0.0
	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	300.0	32.0	0.00	0.0
0	4	120.0	120.0	200.0	28.0	0.00	0.0
0							

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

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	0.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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.

crack.

1

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	187.00	420.00	250.0	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.

5000 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 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	110.00	255.00	130.00	257.00	10.00
2	160.00	263.00	180.00	265.00	10.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 5000

Number of Trial Surfaces With Valid FS = 5000

Statistical Data On All Valid FS Values:

FS Max = 6.857 FS Min = 2.249 FS Ave = 2.945
Standard Deviation = 0.678 Coefficient of Variation = 23.02 %

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	87.522	279.501
2	103.793	270.708
3	120.741	260.090
4	172.333	267.814
5	186.258	282.170
6	200.243	296.468
7	214.381	310.614
8	222.607	319.000

Factor of Safety

*** 2.249 ***

Individual data on the 14 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	12.5	5422.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	1.4	1364.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	1.6	1776.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	0.8	1008.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	4.8	7778.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	8.8	22016.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	3.4	11106.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	51.6	229165.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	2.8	14872.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	11.1	52914.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	0.7	3229.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
12	13.2	46565.1	0.0	0.0	0.	0.	0.0	0.0
3310.7								
13	14.1	26227.2	0.0	0.0	0.	0.	0.0	0.0
3534.5								
14	8.2	4139.2	0.0	0.0	0.	0.	0.0	0.0
2056.6								

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	87.522	279.501
2	103.793	270.708
3	120.741	260.090

4	172.333	267.814
5	186.258	282.170
6	200.243	296.468
7	214.381	310.614
8	222.607	319.000

Factor of Safety
*** 2.249 ***

1

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	87.522	279.501
2	103.793	270.708
3	120.741	260.090
4	172.333	267.814
5	186.258	282.170
6	200.243	296.468
7	214.381	310.614
8	222.607	319.000

Factor of Safety
*** 2.249 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	87.522	279.501
2	103.793	270.708
3	120.741	260.090
4	172.333	267.814
5	186.258	282.170
6	200.243	296.468
7	214.381	310.614
8	222.607	319.000

Factor of Safety
*** 2.249 ***

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Factor of Safety
*** 2.249 ***

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Factor of Safety
*** 2.249 ***

1

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No.	(ft)	(ft)
1	87.522	279.501
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Factor of Safety
*** 2.249 ***

1

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Point No.	X-Surf (ft)	Y-Surf (ft)
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6	200.243	296.468
7	214.381	310.614

8 222.607 319.000

Factor of Safety
*** 2.249 ***

Failure Surface Specified By 8 Coordinate Points

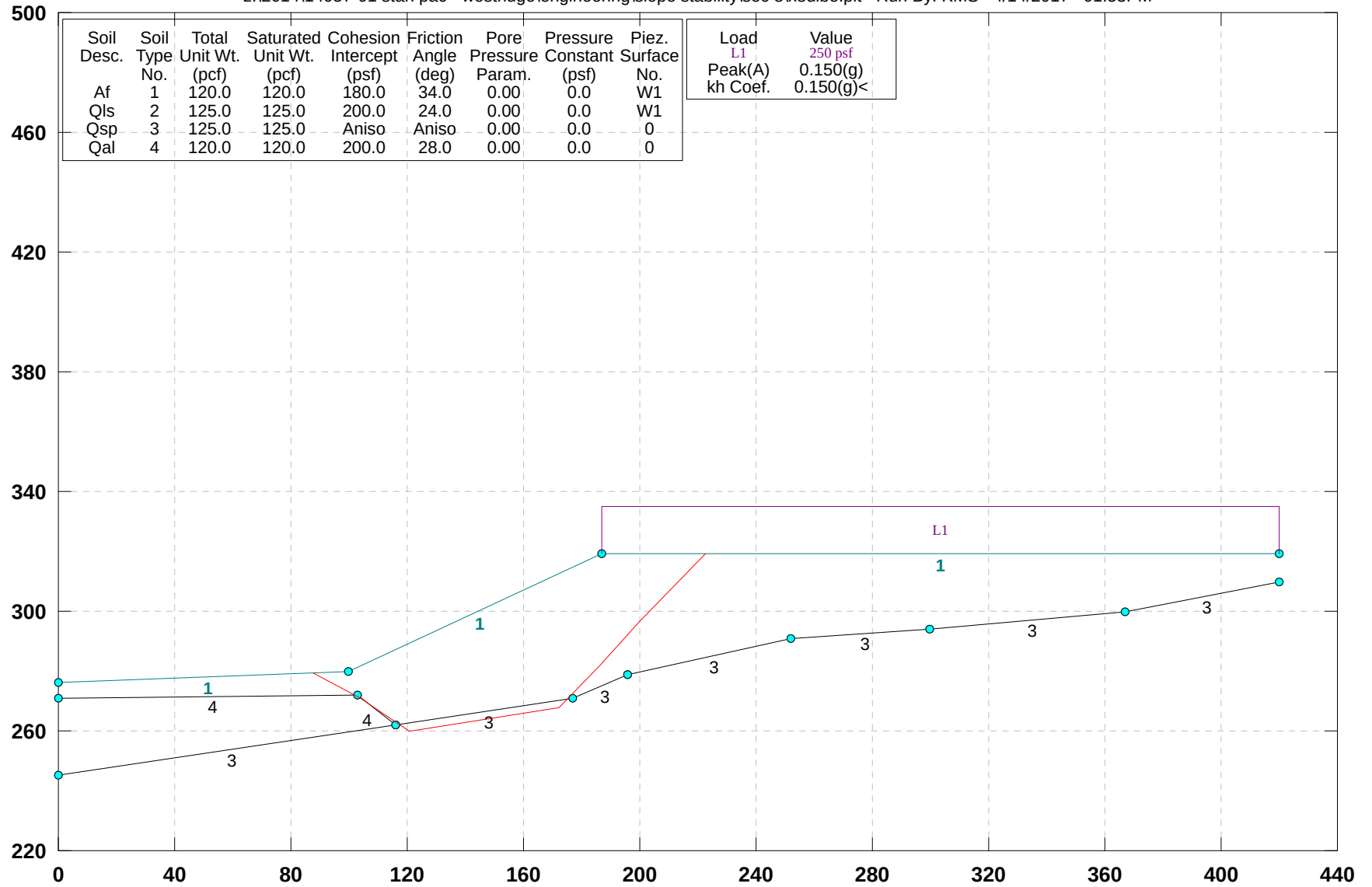
Point No.	X-Surf (ft)	Y-Surf (ft)
1	87.522	279.501
2	103.793	270.708
3	120.741	260.090
4	172.333	267.814
5	186.258	282.170
6	200.243	296.468
7	214.381	310.614
8	222.607	319.000

Factor of Safety
*** 2.249 ***

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

Westridge/14057-01/Sec 8-8' Lower Slope - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 8\8dlbe.plt Run By: KMS 4/14/2017 01:53PM



GSTABL7 v.2 FSmin=1.59
Factor Of Safety Is Calculated By The Simplified Janbu Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 01:53PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8dlbe.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8dlbe.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8dlbe.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 8-8'/
Lower Slope - Seismic

BOUNDARY COORDINATES

3 Top Boundaries

12 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	276.00	100.00	280.00	1
	2	100.00	280.00	187.00	319.00	1
	3	187.00	319.00	420.00	319.00	1
	4	0.00	271.00	103.00	272.00	4
	5	103.00	272.00	116.00	262.00	4
	6	196.00	279.00	252.00	291.00	3
	7	252.00	291.00	300.00	294.00	3
	8	300.00	294.00	367.00	300.00	3
	9	367.00	300.00	420.00	310.00	3
	10	0.00	245.00	116.00	262.00	3
	11	116.00	262.00	177.00	271.00	3
	12	177.00	271.00	196.00	279.00	3
User Specified Y-Origin = 220.00(ft)						
Default X-Plus Value = 0.00(ft)						
Default Y-Plus Value = 0.00(ft)						

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
	Type	Unit Wt.	Unit Wt.	Intercept	Angle	Pressure	Constant
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	180.0	34.0	0.00	0.0
	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	500.0	34.0	0.00	0.0
0	4	120.0	120.0	200.0	28.0	0.00	0.0
0							

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

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	0.0	500.00	34.00
2	12.0	200.00	27.00
3	90.0	500.00	34.00

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.

crack.

1

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	187.00	420.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

1

Trial Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	87.522	279.501
2	103.793	270.708
3	120.741	260.090
4	172.333	267.814
5	186.258	282.170
6	200.243	296.468
7	214.381	310.614
8	222.607	319.000

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

Factor Of Safety For The Preceding Specified Surface = 1.586

Table 1 - Individual Data on the 14 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	12.5	5422.1	0.0	0.0	0.0	0.0	813.3	0.0
0.0								
2	1.4	1364.5	0.0	0.0	0.0	0.0	204.7	0.0
0.0								
3	1.6	1776.6	0.0	0.0	0.0	0.0	266.5	0.0
0.0								
4	0.8	1008.7	0.0	0.0	0.0	0.0	151.3	0.0
0.0								
5	4.8	7775.5	0.0	0.0	0.0	0.0	1166.3	0.0
0.0								
6	8.8	22020.1	0.0	0.0	0.0	0.0	3303.0	0.0
0.0								
7	3.4	11105.0	0.0	0.0	0.0	0.0	1665.8	0.0
0.0								
8	51.6	229166.5	0.0	0.0	0.0	0.0	34375.0	0.0
0.0								
9	2.8	14872.3	0.0	0.0	0.0	0.0	2230.8	0.0
0.0								
10	11.1	52911.5	0.0	0.0	0.0	0.0	7936.7	0.0
0.0								

11	0.7	3230.8	0.0	0.0	0.0	0.0	484.6	0.0
0.0								
12	13.2	46565.1	0.0	0.0	0.0	0.0	6984.8	0.0
3310.7								
13	14.1	26227.1	0.0	0.0	0.0	0.0	3934.1	0.0
3534.5								
14	8.2	4139.0	0.0	0.0	0.0	0.0	620.8	0.0
2056.5								

Table 2 - Base Stress Data on the 14 Slices

Slice Mobilized No. Stress * (psf)	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	-28.39	93.76	14.18	698.27	-
149.24					
2	-28.39	100.72	1.63	1215.34	-
327.63					
3	-28.39	102.22	1.78	1113.13	-
388.76					
4	-28.39	103.40	0.90	1216.58	-
436.89					
5	-32.07	106.18	5.64	1591.28	-
657.08					
6	-32.07	112.97	10.38	3005.38	-
1010.61					
7	-32.07	119.06	3.98	4378.85	-
1330.14					
8	8.51	146.54	52.17	2376.39	
1316.62					
9	45.87	173.75	4.06	4042.05	
4325.58					
10	45.87	180.71	15.94	3390.50	
3920.16					
11	45.63	186.63	1.06	3106.56	
3569.40					
12	45.63	193.62	18.94	2711.32	
3061.21					
13	45.02	207.31	20.00	1587.56	
1685.64					
14	45.55	218.49	11.75	685.32	
590.52					

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 361419.59 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing,

Soil Nail, and Applied Forces if applicable) = 2225.37(psf)

Sum of the Driving Forces = 227921.25 (lbs)

Average Mobilized Shear Stress = 1403.38(psf)

Total length of the failure surface = 162.41(ft)

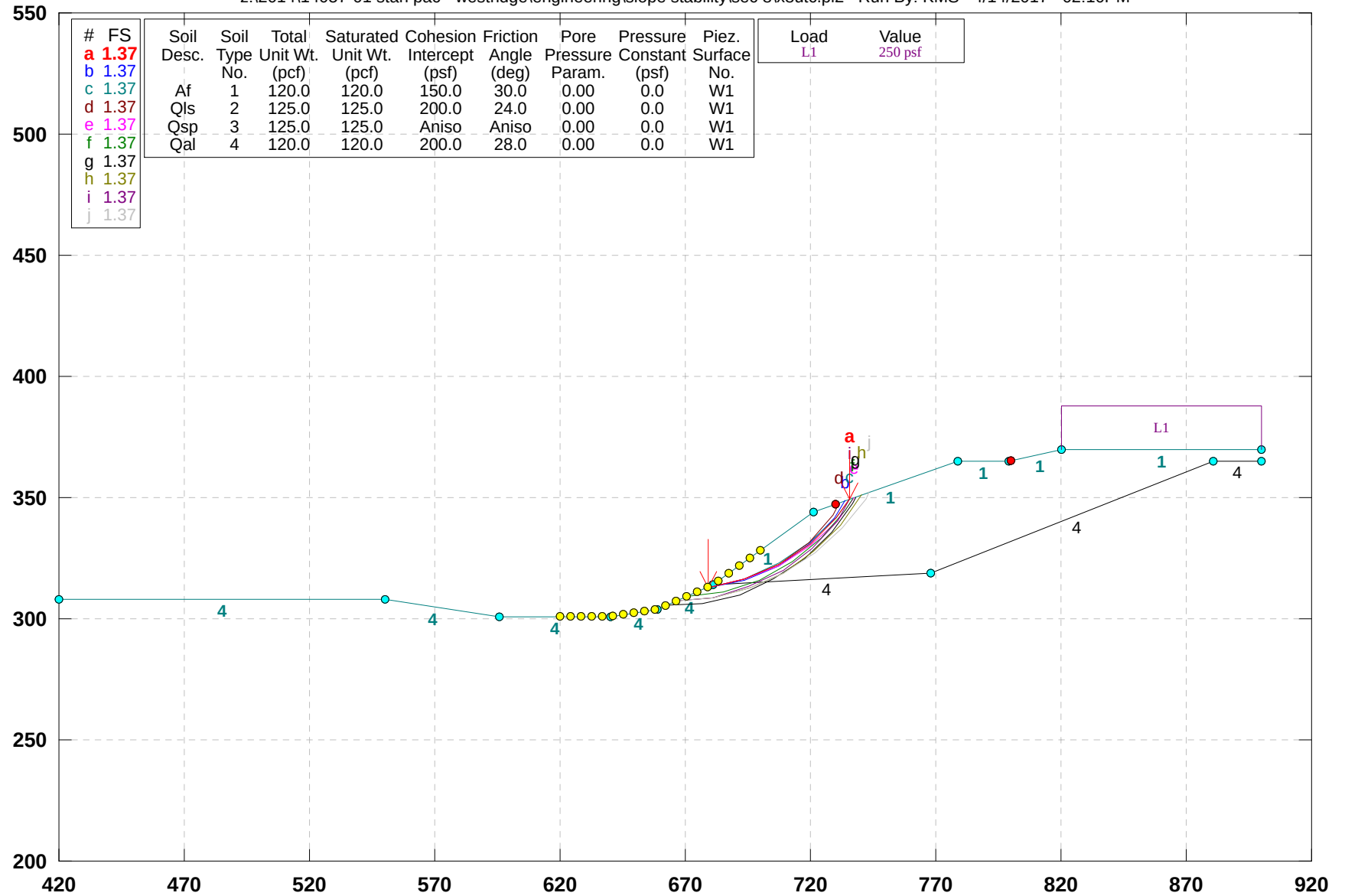
*** SEISMIC SLOPE DISPLACEMENT DATA ***
 (Note: kv is set = zero for displacement calculations)
 Seismic Yield Coefficient (ky) = 0.4378(g)
 Calculated Newmark Seismic Displacement = 0.002(ft)

Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

Westridge/14057-01/Sec 8-8'/Temp Backcut Analysis

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 8x8utc.pl2 Run By: KMS 4/14/2017 02:10PM



GSTABL7 v.2 FSmin=1.37

Safety Factors Are Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 02:10PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8utc.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8utc.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 8\8utc.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 8-8'/Temp
Backcut Analysis

BOUNDARY COORDINATES
10 Top Boundaries

13 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	420.00	308.00	550.00	308.00	4
	2	550.00	308.00	596.00	301.00	4
	3	596.00	301.00	640.00	301.00	4
	4	640.00	301.00	659.00	304.00	4
	5	659.00	304.00	681.00	314.00	4
	6	681.00	314.00	721.00	344.00	1
	7	721.00	344.00	779.00	365.00	1
	8	779.00	365.00	799.00	365.00	1
	9	799.00	365.00	820.00	370.00	1
	10	820.00	370.00	900.00	370.00	1
	11	681.00	314.00	768.00	319.00	4
	12	768.00	319.00	881.00	365.00	4
	13	881.00	365.00	900.00	365.00	4
User Specified Y-Origin =				200.00(ft)		
Default X-Plus Value = 0.00(ft)						
Default Y-Plus Value = 0.00(ft)						
1						
ISOTROPIC SOIL PARAMETERS						
4 Type(s) of Soil						
Piez. Surface No.	Soil	Total	Saturated	Cohesion	Friction	Pore Pressure
	Type	Unit Wt.	Unit Wt.	Intercept	Angle	Pressure Constant
	No.	(pcf)	(pcf)	(psf)	(deg)	Param. (psf)
1	1	120.0	120.0	150.0	30.0	0.00 0.0
1	2	125.0	125.0	200.0	24.0	0.00 0.0
1	3	125.0	125.0	300.0	32.0	0.00 0.0
1	4	120.0	120.0	200.0	28.0	0.00 0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	0.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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	820.00	900.00	250.0	0.0

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

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

5000 Trial Surfaces Have Been Generated.

Spaced 250 Surface(s) Initiate(s) From Each Of 20 Points Equally
Along The Ground Surface Between X = 620.00(ft)
and X = 700.00(ft)

Each Surface Terminates Between X = 730.00(ft)
and X = 800.00(ft)

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

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

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 Modified Bishop 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 = 3.159 FS Min = 1.365 FS Ave = 1.917
Standard Deviation = 0.344 Coefficient of Variation =

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	678.947	313.067
2	693.615	316.208
3	707.394	322.135
4	719.762	330.622
5	730.248	341.348
6	735.385	349.208

75.455 Circle Center At X = 670.707 ; Y = 388.071 ; and Radius =

Factor of Safety
*** 1.365 ***

Individual data on the 8 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force	Water Force	Tie Force	Tie Force	Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	2.1	60.8	0.0	0.0	0.	0.	0.0	0.0
2	3.1	505.5	0.0	0.0	0.	0.	0.0	0.0
3	9.5	5357.6	0.0	0.0	0.	0.	0.0	0.0
4	13.8	15637.1	0.0	0.0	0.	0.	0.0	0.0
5	12.4	17890.8	0.0	0.0	0.	0.	0.0	0.0
6	1.2	1824.7	0.0	0.0	0.	0.	0.0	0.0
7	9.2	10049.3	0.0	0.0	0.	0.	0.0	0.0
8	5.1	1849.3	0.0	0.0	0.	0.	0.0	0.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	678.947	313.067
2	693.679	315.889
3	707.460	321.812
4	719.645	330.560
5	729.665	341.723
6	733.516	348.532

67.826 Circle Center At X = 673.803 ; Y = 380.697 ; and Radius =

Factor of Safety
*** 1.367 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	678.947	313.067
2	693.521	316.615
3	707.222	322.722
4	719.603	331.191
5	730.262	341.745
6	735.506	349.252

81.544 Circle Center At X = 667.178 ; Y = 393.757 ; and Radius =

Factor of Safety
*** 1.367 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	678.947	313.067
2	693.614	316.212
3	707.240	322.483
4	719.169	331.577
5	728.826	343.055
6	731.246	347.710

66.784 Circle Center At X = 672.537 ; Y = 379.543 ; and Radius =

Factor of Safety
*** 1.367 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	678.947	313.067
2	693.633	316.123
3	707.484	321.880
4	720.009	330.134
5	730.763	340.591
6	737.272	349.891

78.458 Circle Center At X = 670.487 ; Y = 391.067 ; and Radius =

Factor of Safety
*** 1.367 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	670.526	309.239
2	685.388	311.269
3	699.618	316.014
4	712.724	323.310
5	724.254	332.905
6	733.809	344.467
7	736.688	349.680

80.717 Circle Center At X = 667.081 ; Y = 389.883 ; and Radius =

Factor of Safety
*** 1.368 ***

1

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	662.105	305.411
2	677.070	306.432
3	691.618	310.089
4	705.287	316.266
5	717.645	324.768
6	728.301	335.324
7	736.918	347.602
8	738.121	350.199

83.639 Circle Center At X = 664.041 ; Y = 389.028 ; and Radius =

Factor of Safety
*** 1.368 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	666.316	307.325
2	681.255	308.675
3	695.723	312.634
4	709.268	319.079
5	721.466	327.808
6	731.936	338.550
7	740.351	350.967
8	740.372	351.014

84.830 Circle Center At X = 666.186 ; Y = 392.155 ; and Radius =

Factor of Safety
*** 1.369 ***

1

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	666.316	307.325
2	681.240	308.834

3	695.619	313.105
4	708.947	319.987
5	720.755	329.237
6	730.627	340.531
7	735.804	349.360

79.936 Circle Center At X = 665.771 ; Y = 387.259 ; and Radius =

Factor of Safety
*** 1.370 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	666.316	307.325
2	681.248	308.749
3	695.746	312.598
4	709.417	318.770
5	721.893	327.097
6	732.837	337.355
7	741.954	349.267
8	743.482	352.140

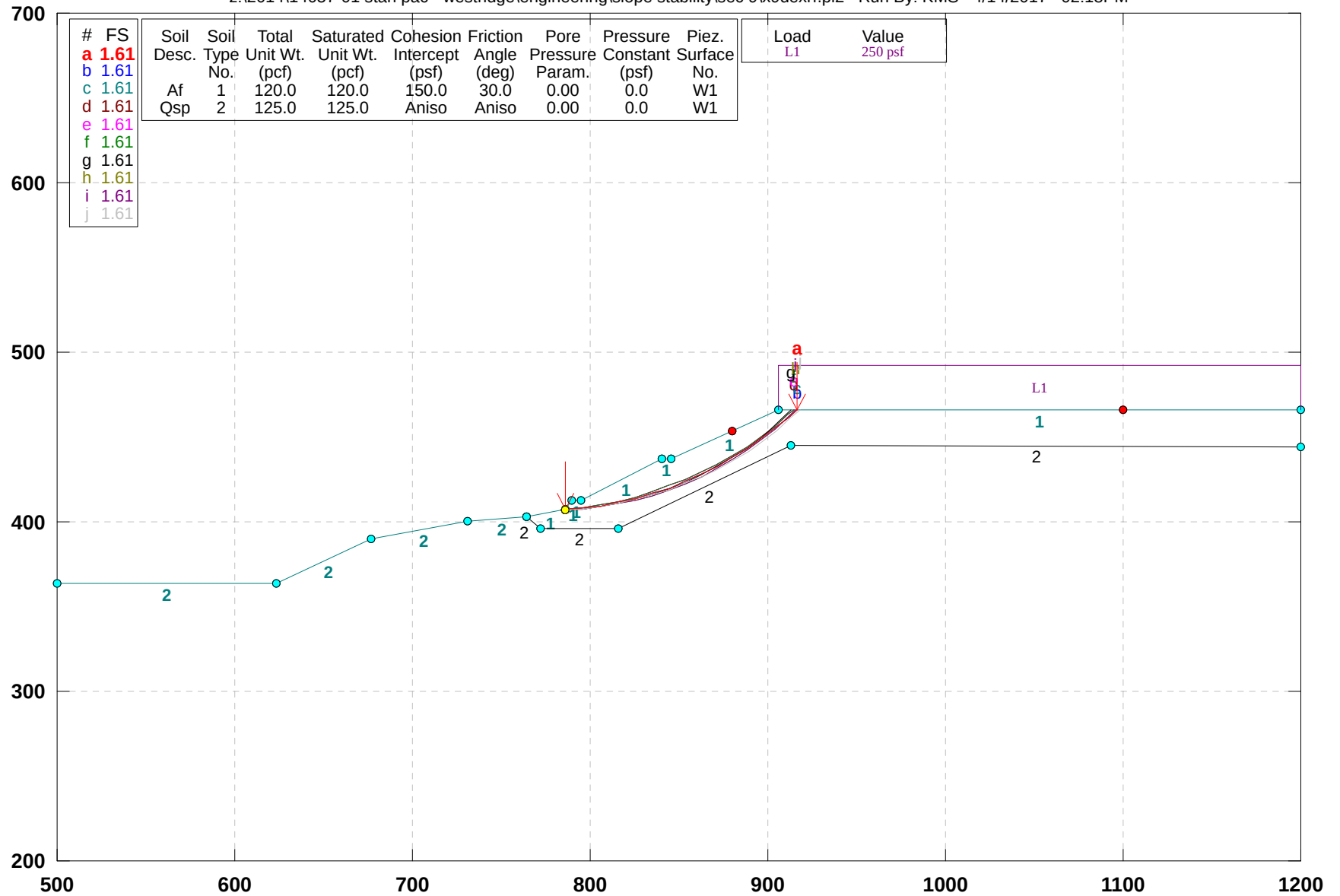
90.499 Circle Center At X = 665.358 ; Y = 397.819 ; and Radius =

Factor of Safety
*** 1.370 ***

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

Westridge/14057-01/Sec 9-9'/ Upper Slope - Rotational - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 9x9dextrf.pl2 Run By: KMS 4/14/2017 02:18PM



GSTABL7 v.2 FSmin=1.61

Safety Factors Are Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 02:18PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 9\x9dexrf.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 9\x9dexrf.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 9\x9dexrf.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 9-9'/
Upper Slope - Rotational - Static

BOUNDARY COORDINATES
11 Top Boundaries

15 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	500.00	364.00	623.00	364.00	2
	2	623.00	364.00	677.00	390.00	2
	3	677.00	390.00	731.00	400.00	2
	4	731.00	400.00	764.00	403.00	2
	5	764.00	403.00	786.00	407.00	1
	6	786.00	407.00	790.00	413.00	1
	7	790.00	413.00	795.00	413.00	1
	8	795.00	413.00	840.00	437.00	1
	9	840.00	437.00	846.00	437.00	1
	10	846.00	437.00	906.00	466.00	1
	11	906.00	466.00	1200.00	466.00	1
	12	764.00	403.00	772.00	396.00	2
	13	772.00	396.00	816.00	396.00	2
	14	816.00	396.00	913.00	445.00	2
	15	913.00	445.00	1200.00	444.00	2

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Piez. Surface No.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
	Type	Unit	Wt.	Unit	Wt.	Intercept	Angle
	No.	(pcf)	(pcf)	(psf)	(deg)	Pressure	Constant
						Param.	(psf)
	1	120.0	120.0	150.0	30.0	0.00	0.0
	2	125.0	125.0	300.0	32.0	0.00	0.0
1							
1							

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	-4.0	300.00	32.00
2	10.0	200.00	27.00
3	90.0	300.00	32.00

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
- (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	906.00	1200.00	250.0	0.0

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

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

15000 Trial Surfaces Have Been Generated.

500 Surface(s) Initiate(s) From Each Of 30 Points Equally
Along The Ground Surface Between X = 786.00(ft)

and X = 786.00(ft)

Each Surface Terminates Between X = 880.00(ft)
and X =1100.00(ft)

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

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

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 Modified Bishop Method

Total Number of Trial Surfaces Attempted = 0

Number of Trial Surfaces With Valid FS = 0

Statistical Data On All Valid FS Values:

FS Max = 0.000 FS Min = 500.000 FS Ave = NaN
Standard Deviation = 0.000 Coefficient of Variation =

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	786.000	407.000
2	795.949	408.008
3	805.839	409.489
4	815.647	411.440
5	825.351	413.855
6	834.929	416.729
7	844.359	420.056
8	853.620	423.829
9	862.691	428.038
10	871.551	432.674
11	880.181	437.727

12	888.560	443.185
13	896.670	449.036
14	904.491	455.267
15	912.008	461.862
16	916.293	466.000

Circle Center At X = 769.921 ; Y = 615.875 ; and Radius = 209.493

Factor of Safety
*** 1.611 ***

Individual data on the 0 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force	Water Force	Tie Force	Tie Force	Earthquake Force	
			Top	Bot	Norm	Tan	Hor	Ver
			(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	786.000	407.000
2	795.949	408.008
3	805.839	409.489
4	815.647	411.440
5	825.351	413.855
6	834.929	416.729
7	844.359	420.056
8	853.620	423.829
9	862.691	428.038
10	871.551	432.674
11	880.181	437.727
12	888.560	443.185
13	896.670	449.036
14	904.491	455.267
15	912.008	461.862
16	916.293	466.000

Circle Center At X = 769.921 ; Y = 615.875 ; and Radius = 209.493

Factor of Safety
*** 1.611 ***

1

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	786.000	407.000
2	795.949	408.008
3	805.839	409.489
4	815.647	411.440
5	825.351	413.855
6	834.929	416.729
7	844.359	420.056
8	853.620	423.829
9	862.691	428.038
10	871.551	432.674
11	880.181	437.727
12	888.560	443.185
13	896.670	449.036
14	904.491	455.267
15	912.008	461.862
16	916.293	466.000

Circle Center At X = 769.921 ; Y = 615.875 ; and Radius = 209.493

Factor of Safety
*** 1.611 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	786.000	407.000
2	795.926	408.218
3	805.785	409.891
4	815.557	412.014
5	825.221	414.583
6	834.757	417.594
7	844.145	421.038

8	853.365	424.910
9	862.398	429.201
10	871.224	433.902
11	879.825	439.003
12	888.183	444.494
13	896.280	450.362
14	904.099	456.596
15	911.624	463.182
16	914.560	466.000

217.339 Circle Center At X = 764.562 ; Y = 623.279 ; and Radius =

Factor of Safety
*** 1.612 ***

1

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	786.000	407.000
2	795.926	408.218
3	805.785	409.891
4	815.557	412.014
5	825.221	414.583
6	834.757	417.594
7	844.145	421.038
8	853.365	424.910
9	862.398	429.201
10	871.224	433.902
11	879.825	439.003
12	888.183	444.494
13	896.280	450.362
14	904.099	456.596
15	911.624	463.182
16	914.560	466.000

217.339 Circle Center At X = 764.562 ; Y = 623.279 ; and Radius =

Factor of Safety
*** 1.612 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	786.000	407.000
2	795.926	408.218
3	805.785	409.891
4	815.557	412.014
5	825.221	414.583
6	834.757	417.594
7	844.145	421.038
8	853.365	424.910
9	862.398	429.201
10	871.224	433.902
11	879.825	439.003
12	888.183	444.494
13	896.280	450.362
14	904.099	456.596
15	911.624	463.182
16	914.560	466.000

217.339 Circle Center At X = 764.562 ; Y = 623.279 ; and Radius =

Factor of Safety
*** 1.612 ***

1

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	786.000	407.000
2	795.968	407.799
3	805.880	409.123
4	815.708	410.968
5	825.426	413.328
6	835.005	416.198
7	844.420	419.569
8	853.643	423.433
9	862.651	427.777
10	871.416	432.590
11	879.915	437.859
12	888.125	443.569
13	896.022	449.704
14	903.584	456.247

15 910.791 463.180
16 913.428 466.000
189.088 Circle Center At X = 775.948 ; Y = 595.821 ; and Radius =

Factor of Safety
*** 1.613 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	786.000	407.000
2	795.976	407.690
3	805.902	408.904
4	815.751	410.637
5	825.495	412.885
6	835.108	415.641
7	844.562	418.899
8	853.832	422.649
9	862.893	426.880
10	871.719	431.582
11	880.286	436.740
12	888.570	442.341
13	896.548	448.370
14	904.199	454.810
15	911.501	461.642
16	915.693	466.000

189.918 Circle Center At X = 777.947 ; Y = 596.747 ; and Radius =

Factor of Safety
*** 1.613 ***

1

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	786.000	407.000

2 795.977 407.681
3 805.904 408.887
4 815.754 410.613
5 825.499 412.856
6 835.113 415.608
7 844.568 418.864
8 853.839 422.612
9 862.899 426.844
10 871.725 431.546
11 880.290 436.707
12 888.572 442.312
13 896.547 448.345
14 904.193 454.789
15 911.490 461.627
16 915.689 466.000
189.437 Circle Center At X = 778.157 ; Y = 596.274 ; and Radius =

Factor of Safety
*** 1.613 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	786.000	407.000
2	795.968	407.805
3	805.883	409.099
4	815.724	410.878
5	825.465	413.138
6	835.083	415.875
7	844.556	419.080
8	853.859	422.747
9	862.971	426.867
10	871.870	431.429
11	880.534	436.423
12	888.941	441.837
13	897.073	447.657
14	904.909	453.869
15	912.431	460.459
16	918.160	466.000

203.206 Circle Center At X = 774.674 ; Y = 609.890 ; and Radius =

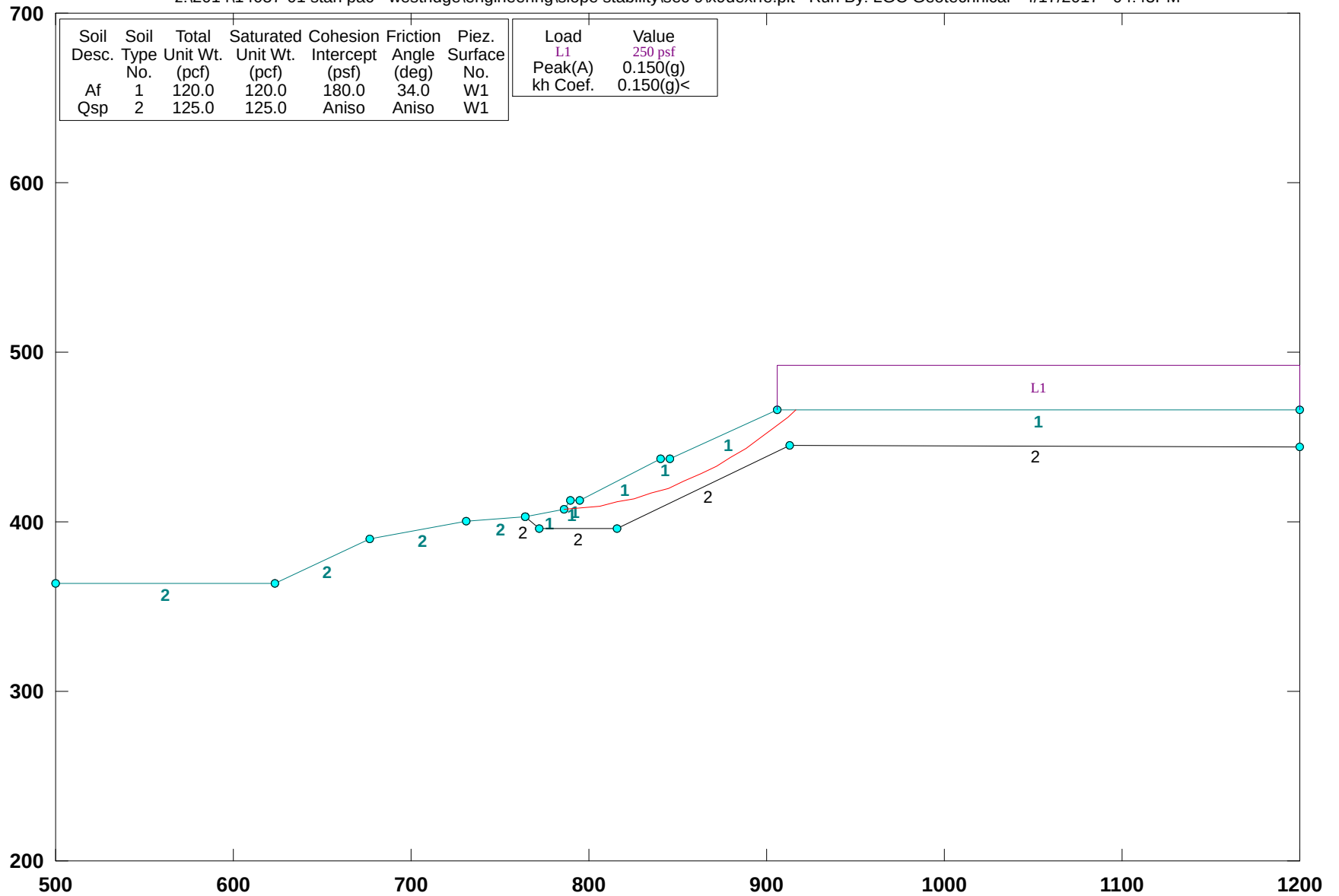
Factor of Safety

*** 1.614 ***

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

Westridge/14057-01/Sec 9-9' Upper Slope - Rotational - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 9\9dexrfe.plt Run By: LGC Geotechnical 4/17/2017 04:43PM



GSTABL7 v.2 FSmin=1.36

Factor Of Safety Is Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **
 ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/17/2017

Time of Run: 04:43PM

Run By: LGC Geotechnical

Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab

ility\Sec 9\9dextrfe.in

Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab

ility\Sec 9\9dextrfe.OUT

Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab

ility\Sec 9\9dextrfe.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 9-9'/

Upper Slope - Rotational - Seismic

BOUNDARY COORDINATES

11 Top Boundaries

15 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	500.00	364.00	623.00	364.00	2
2	623.00	364.00	677.00	390.00	2
3	677.00	390.00	731.00	400.00	2
4	731.00	400.00	764.00	403.00	2
5	764.00	403.00	786.00	407.00	1
6	786.00	407.00	790.00	413.00	1
7	790.00	413.00	795.00	413.00	1
8	795.00	413.00	840.00	437.00	1
9	840.00	437.00	846.00	437.00	1
10	846.00	437.00	906.00	466.00	1
11	906.00	466.00	1200.00	466.00	1
12	764.00	403.00	772.00	396.00	2
13	772.00	396.00	816.00	396.00	2
14	816.00	396.00	913.00	445.00	2
15	913.00	445.00	1200.00	444.00	2

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(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	120.0	120.0	180.0	34.0	0.00	0.0	1
2	125.0	125.0	500.0	34.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 2 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise Direction Limit (deg)	Cohesion (psf)	Friction Angle (deg)
1	-4.0	500.00	34.00
2	10.0	200.00	27.00
3	90.0	500.00	34.00

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	906.00	1200.00	250.0	0.0

NOTE - Intensity Is Specified As A Uniformly Distributed

Force Acting On A Horizontally Projected Surface.

Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)

Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)

Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

Trial Failure Surface Specified By 16 Coordinate Points

Point X-Surf Y-Surf

No.	X-Surf (ft)	Y-Surf (ft)
1	786.000	407.000
2	795.949	408.008
3	805.839	409.489
4	815.647	411.440
5	825.351	413.855
6	834.929	416.729
7	844.359	420.056
8	853.620	423.829
9	862.691	428.038
10	871.551	432.674
11	880.181	437.727
12	888.560	443.185
13	896.670	449.036
14	904.491	455.267
15	912.008	461.862
16	916.293	466.000

DEFLECTION ANGLE & SEGMENT DATA FOR SPECIFIED SURFACE(Excluding Last Segment)

Angle/Segment No. Deflection(Deg) Segment Length(ft)

1	2.73	10.00
2	2.73	10.00
3	2.72	10.00
4	2.73	10.00
5	2.73	10.00
6	2.73	10.00
7	2.73	10.00
8	2.73	10.00
9	2.73	10.00
10	2.73	10.00
11	2.73	10.00
12	2.74	10.00
13	2.72	10.00

Circle Center At X = 769.919(ft) ; Y = 615.879(ft); and Radius = 209.497(ft)

* * Factor Of Safety Is Calculated By The Modified Bishop Method * *

Factor Of Safety For The Preceding Specified Surface = 1.359

Table 1 - Individual Data on the 20 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)	Surcharge Ver (lbs)	Load (lbs)
1	4.0	1342.7	0.0	0.0	0.0	0.0	201.4	0.0	0.0
2	5.0	3204.9	0.0	0.0	0.0	0.0	480.7	0.0	0.0
3	0.9	602.8	0.0	0.0	0.0	0.0	90.4	0.0	0.0
4	9.9	8776.4	0.0	0.0	0.0	0.0	1316.5	0.0	0.0
5	9.8	12866.3	0.0	0.0	0.0	0.0	1929.9	0.0	0.0
6	9.7	16246.8	0.0	0.0	0.0	0.0	2437.0	0.0	0.0
7	9.6	18906.3	0.0	0.0	0.0	0.0	2836.0	0.0	0.0
8	5.1	10968.1	0.0	0.0	0.0	0.0	1645.2	0.0	0.0
9	4.4	9265.2	0.0	0.0	0.0	0.0	1389.8	0.0	0.0
10	1.6	3270.9	0.0	0.0	0.0	0.0	490.6	0.0	0.0
11	7.6	15146.8	0.0	0.0	0.0	0.0	2272.0	0.0	0.0
12	9.1	18441.3	0.0	0.0	0.0	0.0	2766.2	0.0	0.0
13	8.9	17917.5	0.0	0.0	0.0	0.0	2687.6	0.0	0.0
14	8.6	16812.7	0.0	0.0	0.0	0.0	2521.9	0.0	0.0
15	8.4	15172.5	0.0	0.0	0.0	0.0	2275.9	0.0	0.0

16	8.1	13060.4	0.0	0.0	0.0	0.0	1959.1	0.0	0.0
17	7.8	10538.8	0.0	0.0	0.0	0.0	1580.8	0.0	0.0
18	1.5	1757.6	0.0	0.0	0.0	0.0	263.6	0.0	0.0
19	6.0	4883.4	0.0	0.0	0.0	0.0	732.5	0.0	1502.0
20	4.3	1063.9	0.0	0.0	0.0	0.0	159.6	0.0	1071.3

Table 2 - Base Stress Data on the 20 Slices

Slice No.	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	5.79	788.00	4.02	386.97	83.17
2	5.79	792.50	5.03	583.03	158.23
3	5.79	795.47	0.95	579.31	156.81
4	8.52	800.89	10.00	724.71	257.84
5	11.25	810.74	10.00	969.17	435.26
6	13.98	820.50	10.00	1165.37	620.73
7	16.70	830.14	10.00	1315.55	803.87
8	19.43	837.46	5.38	1394.72	953.99
9	19.43	842.18	4.62	1373.28	937.74
10	22.17	845.18	1.77	1268.06	941.87
11	22.17	849.81	8.23	1265.03	939.35
12	24.89	858.16	10.00	1260.94	1015.95
13	27.62	867.12	10.00	1225.78	1058.06
14	30.35	875.87	10.00	1157.70	1057.31
15	33.08	884.37	10.00	1059.06	1010.64
16	35.81	892.61	10.00	932.43	916.71
17	38.54	900.58	10.00	780.38	776.12
18	41.26	905.25	2.01	672.76	673.11
19	41.26	909.00	7.99	624.85	594.31
20	44.00	914.15	5.96	348.90	268.13

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 145941.08 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 999.89(psf)
Sum of the Driving Forces = 107364.94 (lbs)
Average Mobilized Shear Stress = 735.59(psf)
Total length of the failure surface = 145.96(ft)
CAUTION - Factor Of Safety Is Calculated By The Modified Bishop Method. This Method Is Valid Only If The Failure Surface Approximates A Circular Arc.

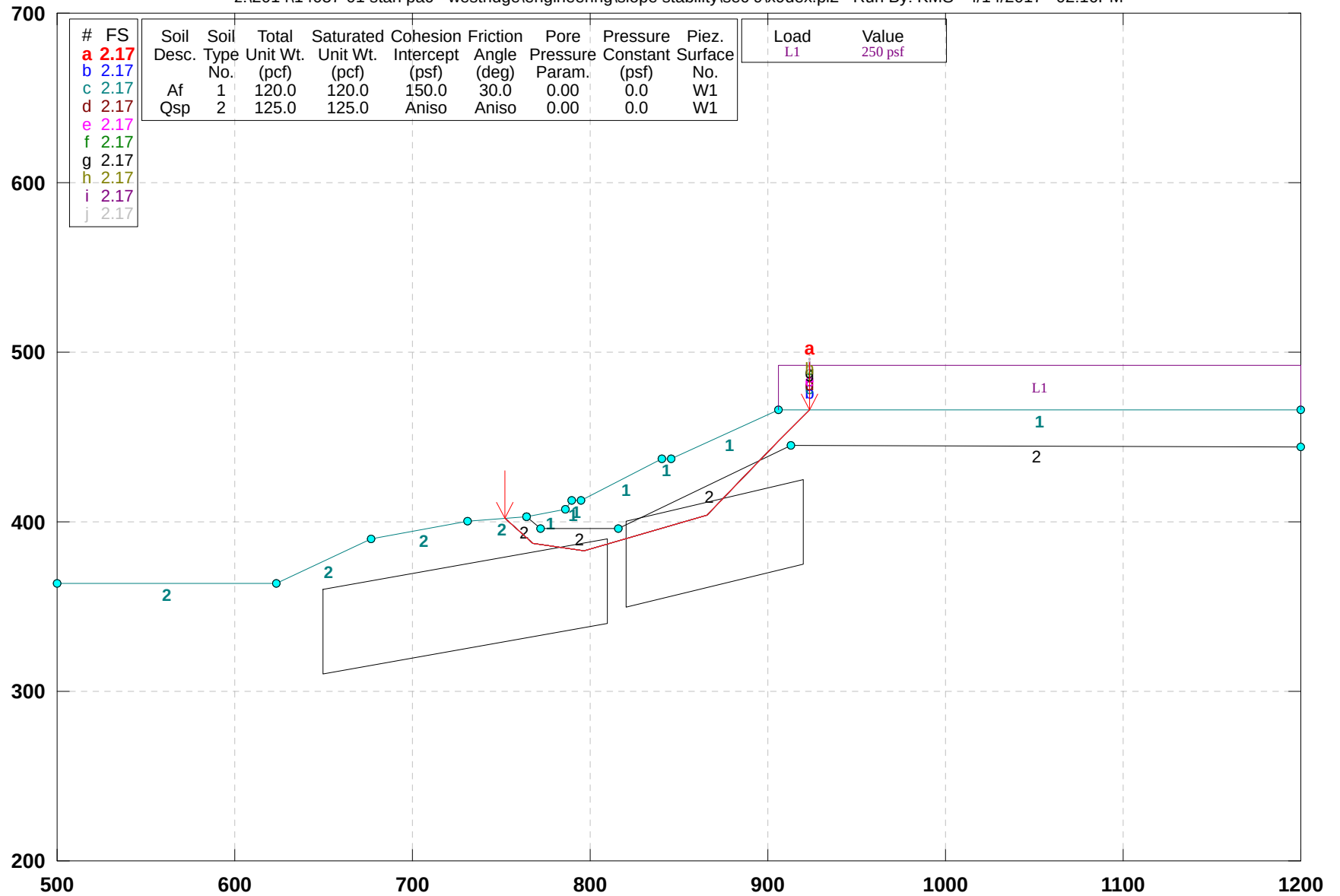
*** SEISMIC SLOPE DISPLACEMENT DATA ***

(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.3215(g)
Calculated Newmark Seismic Displacement = 0.003(ft)
Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

Westridge/14057-01/Sec 9-9' Upper Slope - Block - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 9\9dex.pl2 Run By: KMS 4/14/2017 02:16PM

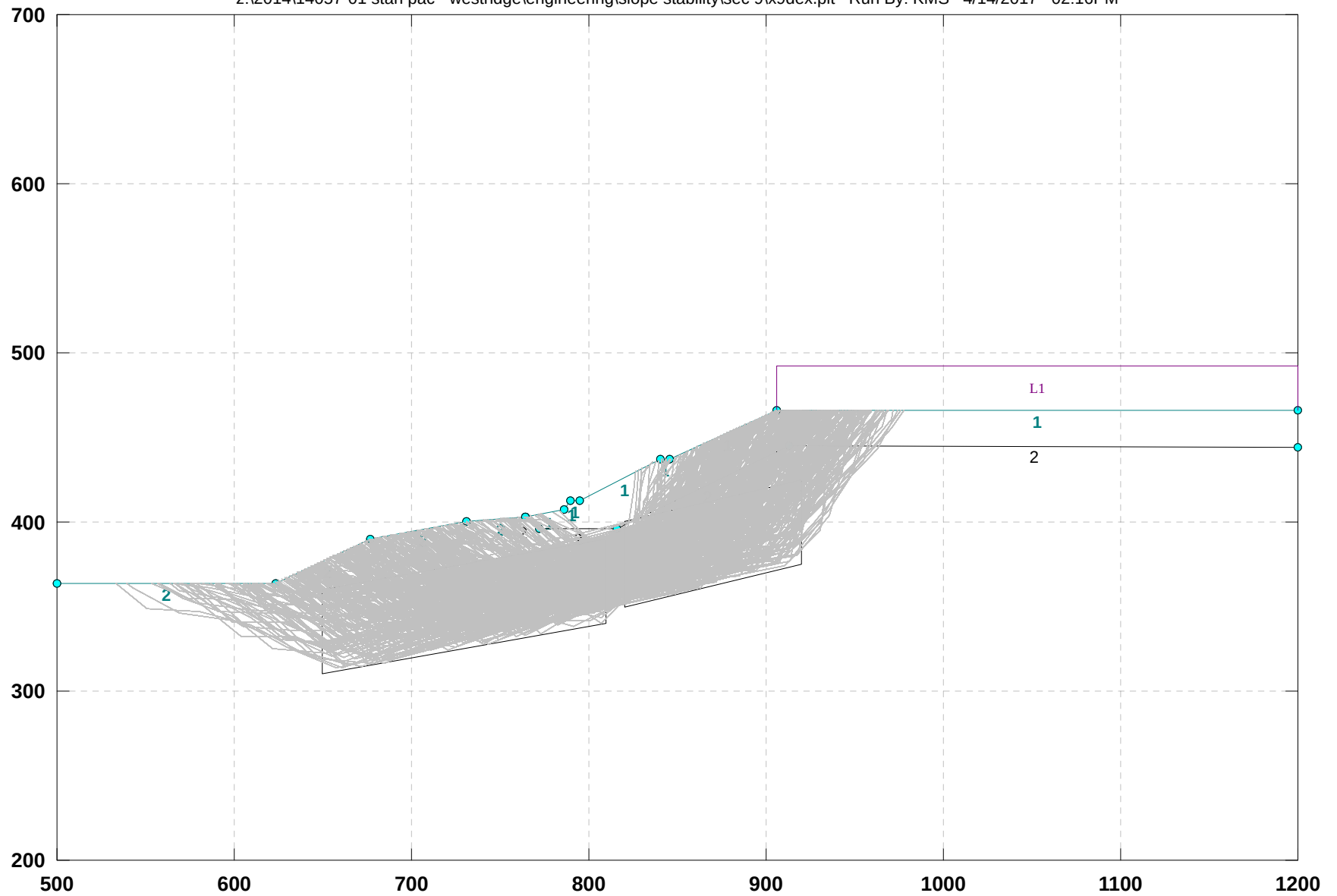


GSTABL7 v.2 FSmin=2.17

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

Westridge/14057-01/Sec 9-9' Upper Slope - Block - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 9\9dex.plt Run By: KMS 4/14/2017 02:16PM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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Prohibited)

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: 4/14/2017
Time of Run: 02:16PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 9\x9dex.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 9\x9dex.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 9\x9dex.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 9-9'/
Upper Slope - Block - Static

BOUNDARY COORDINATES

11 Top Boundaries

15 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	500.00	364.00	623.00	364.00	2
	2	623.00	364.00	677.00	390.00	2
	3	677.00	390.00	731.00	400.00	2
	4	731.00	400.00	764.00	403.00	2
	5	764.00	403.00	786.00	407.00	1
	6	786.00	407.00	790.00	413.00	1
	7	790.00	413.00	795.00	413.00	1
	8	795.00	413.00	840.00	437.00	1
	9	840.00	437.00	846.00	437.00	1
	10	846.00	437.00	906.00	466.00	1
	11	906.00	466.00	1200.00	466.00	1
	12	764.00	403.00	772.00	396.00	2
	13	772.00	396.00	816.00	396.00	2
	14	816.00	396.00	913.00	445.00	2
	15	913.00	445.00	1200.00	444.00	2

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Piez. Surface No.	Soil Total Saturated Cohesion Friction Pore Pressure						
	Type	Unit	Wt.	Unit	Wt.	Intercept	Angle
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	Constant
	1	120.0	120.0	150.0	30.0	0.00	0.0
	2	125.0	125.0	300.0	32.0	0.00	0.0
1							
1							

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	-4.0	300.00	32.00
2	10.0	200.00	27.00
3	90.0	300.00	32.00

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	906.00	1200.00	250.0	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

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

9999 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 30.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	650.00	335.00	810.00	365.00	50.00
2	820.00	375.00	920.00	400.00	50.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 9999

Number of Trial Failure Surfaces is Greater Than 5000. Statistical Data on FS Values are Not Generated. To Generate Stastical Data, Reduce Number of Trial Failure Surfaces to 5000 or less.

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	752.382	401.944
2	767.354	387.146
3	797.061	382.957
4	865.380	403.481
5	885.563	425.676
6	905.858	447.769
7	923.076	466.000

Factor of Safety
*** 2.165 ***

Individual data on the 16 slices								
Surcharge			Water	Water	Tie	Tie	Earthquake	
Slice	Width	Weight	Force	Force	Force	Force	Force	
Load			Top	Bot	Norm	Tan	Hor	Ver
No.	(ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
(lbs)								
1	11.6	9104.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	3.4	6050.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	4.6	9856.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	14.0	34710.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	4.0	12602.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	5.0	17950.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	2.1	7661.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	18.9	76757.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	24.0	111621.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	6.0	29361.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	19.4	97112.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
12	20.2	89961.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
13	9.4	31157.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
14	10.9	28160.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
15	0.1	309.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
16	17.1	18524.4	0.0	0.0	0.	0.	0.0	0.0
4269.1								

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	752.382	401.944
2	767.354	387.146
3	797.061	382.957
4	865.380	403.481

5	885.563	425.676
6	905.858	447.769
7	923.076	466.000

Factor of Safety
*** 2.165 ***

1

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	752.382	401.944
2	767.354	387.146
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4	865.380	403.481
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Factor of Safety
*** 2.165 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	752.382	401.944
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Factor of Safety
*** 2.165 ***

1

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
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2	767.354	387.146
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Factor of Safety
*** 2.165 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
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Factor of Safety
*** 2.165 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
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4	865.380	403.481

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Factor of Safety
*** 2.165 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	752.382	401.944
2	767.354	387.146
3	797.061	382.957
4	865.380	403.481
5	885.563	425.676
6	905.858	447.769
7	923.076	466.000

Factor of Safety
*** 2.165 ***

1

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	752.382	401.944
2	767.354	387.146
3	797.061	382.957
4	865.380	403.481
5	885.563	425.676
6	905.858	447.769
7	923.076	466.000

Factor of Safety
*** 2.165 ***

Failure Surface Specified By 7 Coordinate Points

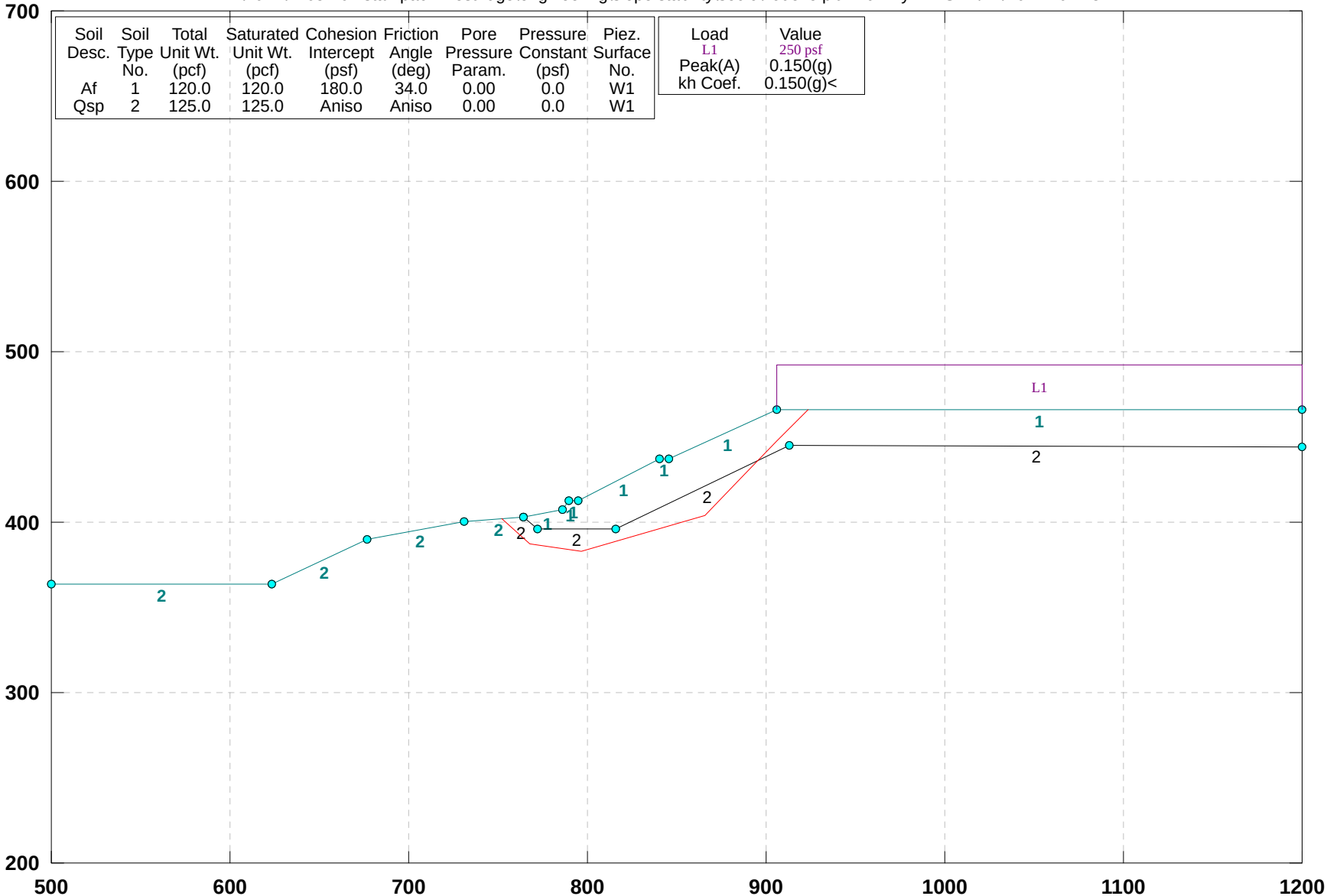
Point No.	X-Surf (ft)	Y-Surf (ft)
1	752.382	401.944
2	767.354	387.146
3	797.061	382.957
4	865.380	403.481
5	885.563	425.676
6	905.858	447.769
7	923.076	466.000

Factor of Safety
*** 2.165 ***

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

Westridge/14057-01/Sec 9-9'/ Upper Slope - Block - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 9\9dexe.plt Run By: KMS 4/14/2017 02:18PM



GSTABL7 v.2 FSmin=1.82

Factor Of Safety Is Calculated By The Simplified Janbu Method

*** GSTABL7 ***
** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **
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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: 4/14/2017
Time of Run: 02:18PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 9\x9dexe.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 9\x9dexe.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 9\x9dexe.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 9-9'/
Upper Slope - Block - Seismic

BOUNDARY COORDINATES
11 Top Boundaries

15 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	500.00	364.00	623.00	364.00	2
	2	623.00	364.00	677.00	390.00	2
	3	677.00	390.00	731.00	400.00	2
	4	731.00	400.00	764.00	403.00	2
	5	764.00	403.00	786.00	407.00	1
	6	786.00	407.00	790.00	413.00	1
	7	790.00	413.00	795.00	413.00	1
	8	795.00	413.00	840.00	437.00	1
	9	840.00	437.00	846.00	437.00	1
	10	846.00	437.00	906.00	466.00	1
	11	906.00	466.00	1200.00	466.00	1
	12	764.00	403.00	772.00	396.00	2
	13	772.00	396.00	816.00	396.00	2
	14	816.00	396.00	913.00	445.00	2
	15	913.00	445.00	1200.00	444.00	2

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Piez. Surface No.	Soil Total Saturated Cohesion Friction Pore Pressure						
	Type	Unit	Wt.	Unit	Wt.	Intercept	Angle
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	180.0	34.0	0.00	0.0
1	2	125.0	125.0	500.0	34.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	-4.0	500.00	34.00
2	10.0	200.00	27.00
3	90.0	500.00	34.00

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	906.00	1200.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(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

Trial Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	752.382	401.944
2	767.354	387.146
3	797.061	382.957
4	865.380	403.481
5	885.563	425.676
6	905.858	447.769
7	923.076	466.000

Janbu's Empirical Coefficient (fo) = 1.074

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

Factor Of Safety For The Preceding Specified Surface = 1.822

Table 1 - Individual Data on the 16 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1 0.0	11.6	9104.9	0.0	0.0	0.0	0.0	1365.7	0.0
2 0.0	3.4	6050.0	0.0	0.0	0.0	0.0	907.5	0.0
3 0.0	4.6	9857.5	0.0	0.0	0.0	0.0	1478.6	0.0
4 0.0	14.0	34710.2	0.0	0.0	0.0	0.0	5206.5	0.0
5 0.0	4.0	12602.7	0.0	0.0	0.0	0.0	1890.4	0.0
6 0.0	5.0	17949.9	0.0	0.0	0.0	0.0	2692.5	0.0
7 0.0	2.1	7663.1	0.0	0.0	0.0	0.0	1149.5	0.0

8	18.9	76754.8	0.0	0.0	0.0	0.0	11513.2	0.0
0.0								
9	24.0	111621.0	0.0	0.0	0.0	0.0	16743.1	0.0
0.0								
10	6.0	29360.9	0.0	0.0	0.0	0.0	4404.1	0.0
0.0								
11	19.4	97113.6	0.0	0.0	0.0	0.0	14567.0	0.0
0.0								
12	20.2	89960.6	0.0	0.0	0.0	0.0	13494.1	0.0
0.0								
13	9.4	31158.9	0.0	0.0	0.0	0.0	4673.8	0.0
0.0								
14	10.9	28159.4	0.0	0.0	0.0	0.0	4223.9	0.0
0.0								
15	0.1	308.9	0.0	0.0	0.0	0.0	46.3	0.0
0.0								
16	17.1	18524.7	0.0	0.0	0.0	0.0	2778.7	0.0
4269.0								

Table 2 - Base Stress Data on the 16 Slices

Slice Mobilized No. Stress * (psf)	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	-44.66	758.19	16.34	2280.60	-
467.29					
2	-44.66	765.68	4.72	3806.20	-
1075.56					
3	-8.03	769.68	4.69	2057.63	
18.88					
4	-8.03	779.00	14.14	2314.62	
22.06					
5	-8.03	788.00	4.04	2797.12	
28.04					
6	-8.03	792.50	5.05	3112.86	
31.95					
7	-8.03	796.03	2.08	3204.99	
33.09					
8	16.72	806.53	19.78	3038.48	
1748.22					
9	16.72	828.00	25.06	3417.59	
2006.24					
10	16.72	843.00	6.26	3571.35	
2110.90					
11	16.72	855.69	20.24	3645.85	
2161.60					
12	47.72	875.47	30.00	3704.11	
3747.49					
13	47.43	890.25	13.84	2891.30	
2787.81					

14	47.43	900.39	16.16	2020.64
2158.81				
15	46.64	905.93	0.21	1723.04
1804.92				
16	46.64	914.54	24.87	1130.40
1082.18				

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 581949.75 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 2805.08(psf)

Sum of the Driving Forces = 343032.72 (lbs)

Average Mobilized Shear Stress = 1653.47(psf)

Total length of the failure surface = 207.46(ft)

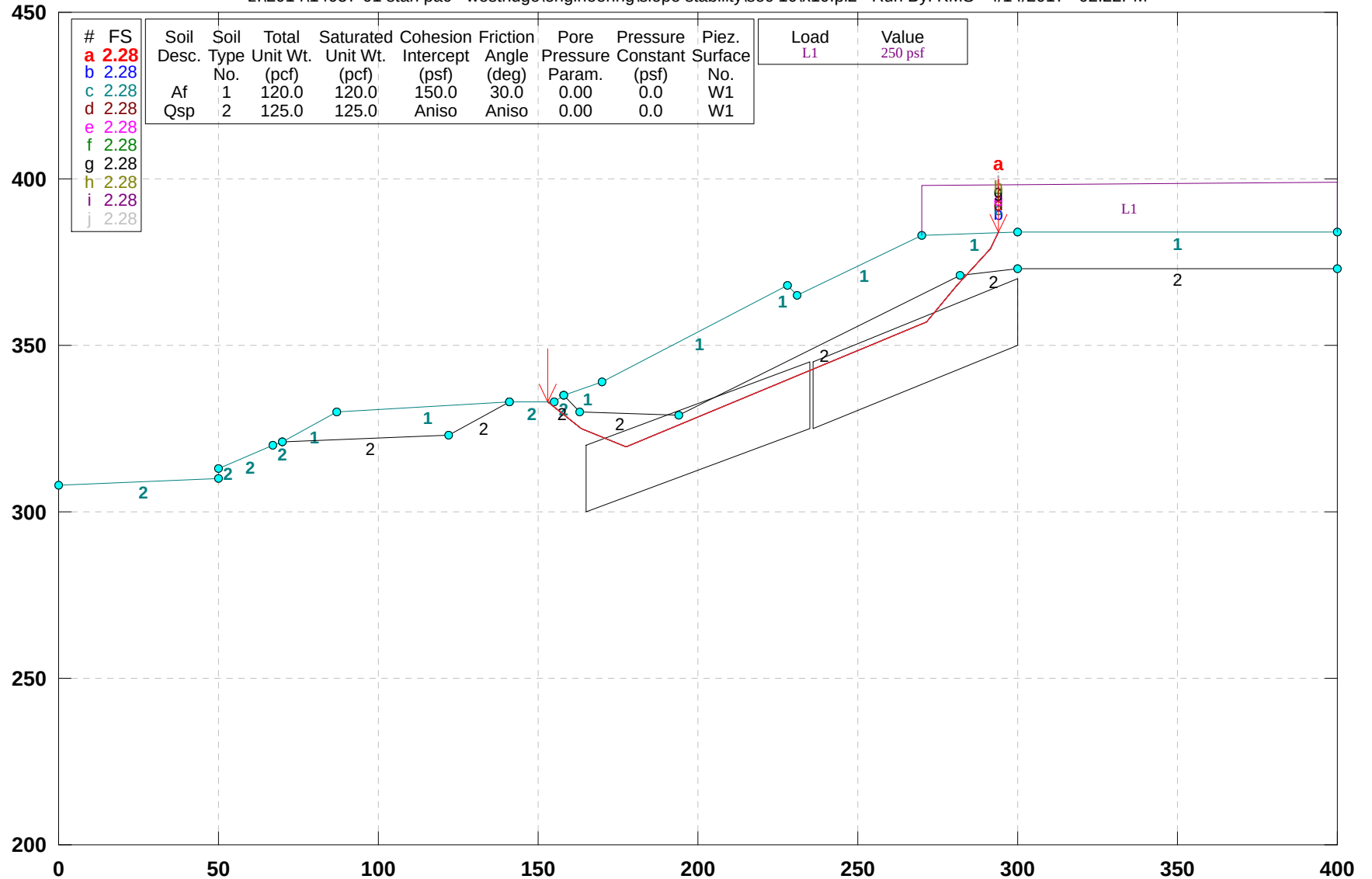
*** SEISMIC SLOPE DISPLACEMENT DATA ***
 (Note: kv is set = zero for displacement calculations)
 Seismic Yield Coefficient (ky) = 0.6530(g)
 Calculated Newmark Seismic Displacement = 0.001(ft)

Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

Westridge/14057-01/Sec 10-10' Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 10\10.pl2 Run By: KMS 4/14/2017 02:22PM

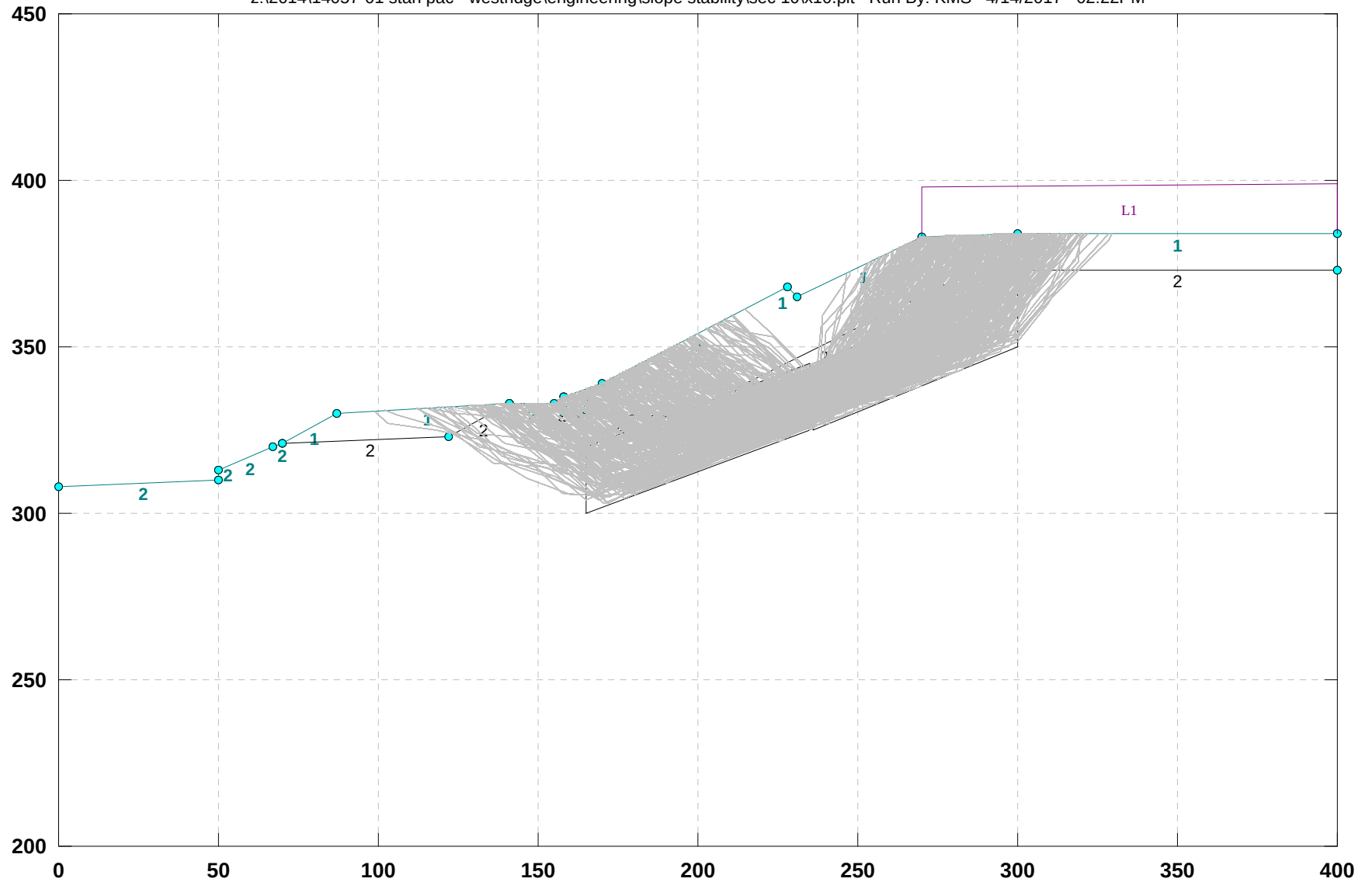


GSTABL7 v.2 FSmin=2.28

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

Westridge/14057-01/Sec 10-10' Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 10\10.plt Run By: KMS 4/14/2017 02:22PM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 02:22PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 10\10.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 10\10.0UT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 10\10.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 10-10'/
Static

BOUNDARY COORDINATES

14 Top Boundaries

21 Total Boundaries

Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	308.00	50.00	310.00	2
	2	50.00	310.00	50.10	313.00	2
	3	50.10	313.00	67.00	320.00	2
	4	67.00	320.00	70.00	321.00	2
	5	70.00	321.00	87.00	330.00	1
	6	87.00	330.00	141.00	333.00	1
	7	141.00	333.00	155.00	333.00	2
	8	155.00	333.00	158.00	335.00	2
	9	158.00	335.00	170.00	339.00	1
	10	170.00	339.00	228.00	368.00	1
	11	228.00	368.00	231.00	365.00	1
	12	231.00	365.00	270.00	383.00	1
	13	270.00	383.00	300.00	384.00	1
	14	300.00	384.00	400.00	384.00	1
	15	70.00	321.00	122.00	323.00	2
	16	122.00	323.00	141.00	333.00	2
	17	158.00	335.00	163.00	330.00	2
	18	163.00	330.00	194.00	329.00	2
	19	194.00	329.00	282.00	371.00	2
	20	282.00	371.00	300.00	373.00	2
	21	300.00	373.00	400.00	373.00	2

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Piez.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
Surface	Type	Unit	Unit	Intercept	Angle	Pressure	Constant
No.	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	150.0	30.0	0.00	0.0

1 2 125.0 125.0 300.0 32.0 0.00 0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	-4.0	300.00	32.00
2	4.0	200.00	27.00
3	90.0	300.00	32.00

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)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	270.00	400.00	250.0	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.

9999 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 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	165.00	310.00	235.00	335.00	20.00
2	236.00	335.00	300.00	360.00	20.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 9999

Number of Trial Failure Surfaces is Greater Than 5000.
Statistical Data on FS Values are Not Generated.
To Generate Stastical Data, Reduce Number of Trial
Failure Surfaces to 5000 or less.

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.972	333.000
2	163.645	325.000
3	177.676	319.697
4	271.434	356.814
5	281.164	368.230
6	291.742	378.864
7	294.164	383.805

Factor of Safety
*** 2.277 ***

Individual data on the 16 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Ver (lbs)
1	2.0	192.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	3.0	1366.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	5.0	5214.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	0.6	907.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	6.4	10977.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	7.7	18539.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	16.3	47511.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	34.0	109290.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	3.0	9549.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	39.0	120666.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	1.4	4622.9	0.0	0.0	0.	0.	0.0	0.0
358.4								
12	9.7	24435.5	0.0	0.0	0.	0.	0.0	0.0
2432.5								
13	0.8	1488.1	0.0	0.0	0.	0.	0.0	0.0
209.1								
14	2.2	3449.2	0.0	0.0	0.	0.	0.0	0.0
539.4								
15	7.6	7778.4	0.0	0.0	0.	0.	0.0	0.0
1896.1								
16	2.4	706.3	0.0	0.0	0.	0.	0.0	0.0
605.5								

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.972	333.000
2	163.645	325.000
3	177.676	319.697
4	271.434	356.814
5	281.164	368.230
6	291.742	378.864
7	294.164	383.805

Factor of Safety
*** 2.277 ***

1

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.972	333.000
2	163.645	325.000
3	177.676	319.697
4	271.434	356.814
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6	291.742	378.864
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Factor of Safety
*** 2.277 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.972	333.000
2	163.645	325.000
3	177.676	319.697
4	271.434	356.814
5	281.164	368.230
6	291.742	378.864
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Factor of Safety
*** 2.277 ***

1

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Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.972	333.000
2	163.645	325.000
3	177.676	319.697
4	271.434	356.814
5	281.164	368.230
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Factor of Safety
*** 2.277 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.972	333.000
2	163.645	325.000
3	177.676	319.697
4	271.434	356.814
5	281.164	368.230
6	291.742	378.864
7	294.164	383.805

Factor of Safety
*** 2.277 ***

1

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.972	333.000
2	163.645	325.000
3	177.676	319.697
4	271.434	356.814
5	281.164	368.230
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Factor of Safety
*** 2.277 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.972	333.000
2	163.645	325.000
3	177.676	319.697
4	271.434	356.814
5	281.164	368.230
6	291.742	378.864
7	294.164	383.805

Factor of Safety
*** 2.277 ***

1

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.972	333.000
2	163.645	325.000
3	177.676	319.697
4	271.434	356.814
5	281.164	368.230
6	291.742	378.864
7	294.164	383.805

Factor of Safety
*** 2.277 ***

Failure Surface Specified By 7 Coordinate Points

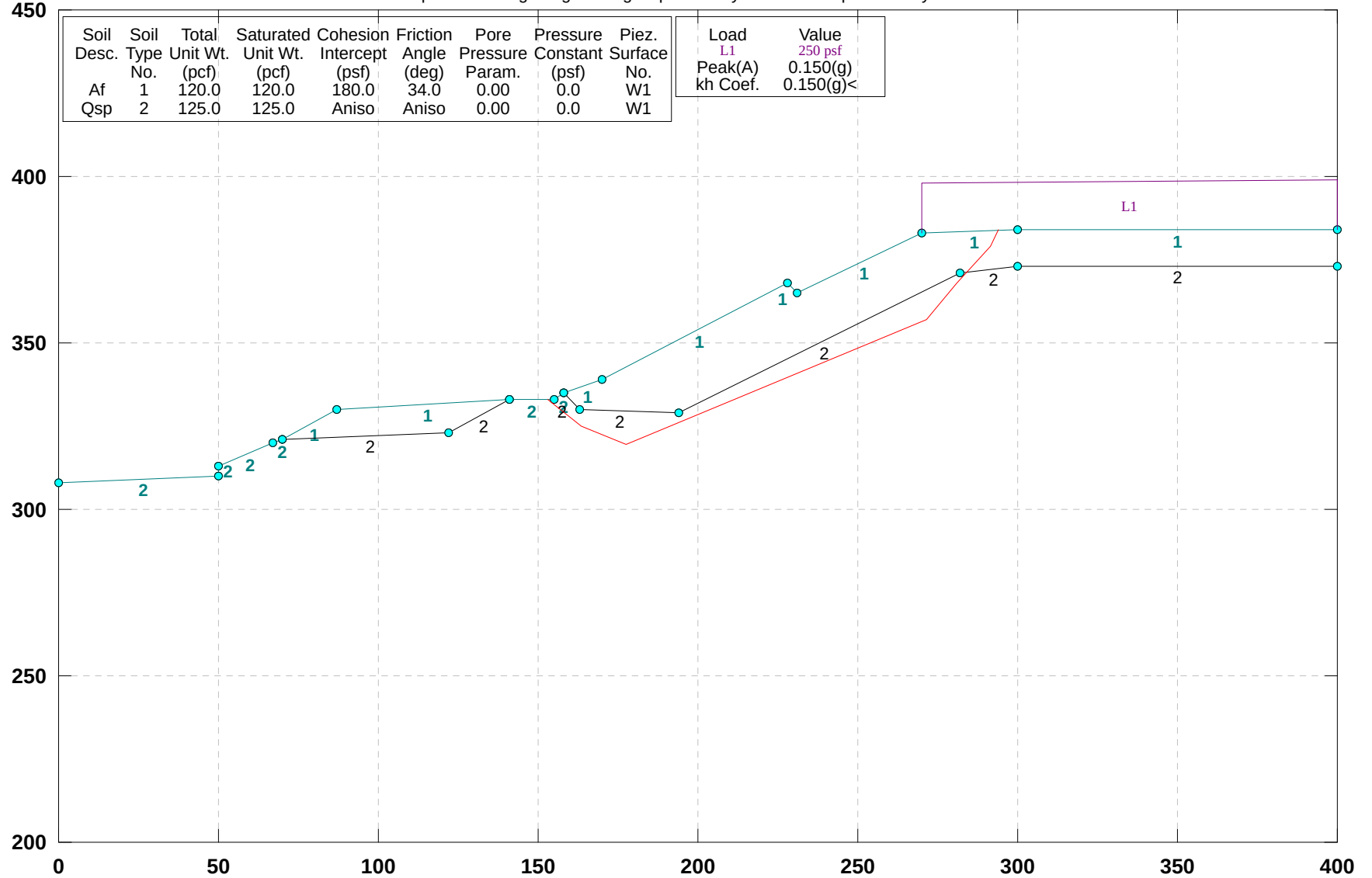
Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.972	333.000
2	163.645	325.000
3	177.676	319.697
4	271.434	356.814
5	281.164	368.230
6	291.742	378.864
7	294.164	383.805

Factor of Safety
*** 2.277 ***

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

Westridge/14057-01/Sec 10-10' Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 10\10e.plt Run By: KMS 4/14/2017 02:24PM



GSTABL7 v.2 FSmin=1.90

Factor Of Safety Is Calculated By The Simplified Janbu Method

*** GSTABL7 ***
** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **
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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: 4/14/2017
Time of Run: 02:24PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 10\10e.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 10\10e.0UT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 10\10e.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 10-10'/
Seismic

BOUNDARY COORDINATES
14 Top Boundaries

21 Total Boundaries

Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	308.00	50.00	310.00	2
	2	50.00	310.00	50.10	313.00	2
	3	50.10	313.00	67.00	320.00	2
	4	67.00	320.00	70.00	321.00	2
	5	70.00	321.00	87.00	330.00	1
	6	87.00	330.00	141.00	333.00	1
	7	141.00	333.00	155.00	333.00	2
	8	155.00	333.00	158.00	335.00	2
	9	158.00	335.00	170.00	339.00	1
	10	170.00	339.00	228.00	368.00	1
	11	228.00	368.00	231.00	365.00	1
	12	231.00	365.00	270.00	383.00	1
	13	270.00	383.00	300.00	384.00	1
	14	300.00	384.00	400.00	384.00	1
	15	70.00	321.00	122.00	323.00	2
	16	122.00	323.00	141.00	333.00	2
	17	158.00	335.00	163.00	330.00	2
	18	163.00	330.00	194.00	329.00	2
	19	194.00	329.00	282.00	371.00	2
	20	282.00	371.00	300.00	373.00	2
	21	300.00	373.00	400.00	373.00	2

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Piez.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
Surface	Type	Unit	Unit	Intercept	Angle	Pressure	Constant
No.	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	180.0	34.0	0.00	0.0

1

2 125.0 125.0 500.0 34.0 0.00 0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	-4.0	500.00	34.00
2	4.0	200.00	27.00
3	90.0	500.00	34.00

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)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	270.00	400.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(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
1

Trial Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.972	333.000
2	163.645	325.000
3	177.676	319.697
4	271.434	356.814
5	281.164	368.230
6	291.742	378.864
7	294.164	383.805

Janbu's Empirical Coefficient (fo) = 1.056

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

Factor Of Safety For The Preceding Specified Surface = 1.897

Table 1 - Individual Data on the 16 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top	Bot	Norm	Tan	Hor	Ver
	(ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
1 0.0	2.0	192.7	0.0	0.0	0.0	0.0	28.9	0.0
2 0.0	3.0	1366.7	0.0	0.0	0.0	0.0	205.0	0.0
3 0.0	5.0	5214.2	0.0	0.0	0.0	0.0	782.1	0.0
4 0.0	0.6	907.9	0.0	0.0	0.0	0.0	136.2	0.0

5	6.4	10977.6	0.0	0.0	0.0	0.0	1646.6	0.0
0.0								
6	7.7	18538.2	0.0	0.0	0.0	0.0	2780.7	0.0
0.0								
7	16.3	47512.2	0.0	0.0	0.0	0.0	7126.8	0.0
0.0								
8	34.0	109289.7	0.0	0.0	0.0	0.0	16393.5	0.0
0.0								
9	3.0	9549.2	0.0	0.0	0.0	0.0	1432.4	0.0
0.0								
10	39.0	120666.1	0.0	0.0	0.0	0.0	18099.9	0.0
0.0								
11	1.4	4624.2	0.0	0.0	0.0	0.0	693.6	0.0
358.5								
12	9.7	24435.3	0.0	0.0	0.0	0.0	3665.3	0.0
2432.5								
13	0.8	1487.3	0.0	0.0	0.0	0.0	223.1	0.0
209.0								
14	2.2	3449.5	0.0	0.0	0.0	0.0	517.4	0.0
539.5								
15	7.6	7778.1	0.0	0.0	0.0	0.0	1166.7	0.0
1896.0								
16	2.4	706.4	0.0	0.0	0.0	0.0	106.0	0.0
605.5								

Table 2 - Base Stress Data on the 16 Slices

Slice Mobilized No. Stress *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	-36.85	153.99	2.53	961.05	-
45.58					
2	-36.85	156.50	3.75	1375.39	-
218.55					
3	-36.85	160.50	6.25	2050.28	-
500.29					
4	-36.85	163.32	0.81	2469.51	-
675.31					
5	-20.70	166.82	6.79	2056.42	-
368.33					
6	-20.70	173.84	8.21	2629.27	-
514.96					
7	21.60	185.84	17.56	2322.35	
1477.28					
8	21.60	211.00	36.57	2515.57	
1631.49					
9	21.60	229.50	3.23	2495.64	
1615.59					
10	21.60	250.50	41.94	2439.00	
1570.38					

11	21.60	270.72	1.54	2681.08
1728.72				
12	49.56	276.30	15.00	2570.10
2345.93				
13	45.15	281.58	1.19	1951.99
1626.74				
14	45.15	283.08	3.06	1824.78
1479.65				
15	45.15	287.95	10.75	1086.80
1012.83				
16	63.89	292.95	5.50	718.19
505.63				

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 365303.91 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 2218.29(psf)

Sum of the Driving Forces = 203329.00 (lbs)

Average Mobilized Shear Stress = 1234.71(psf)

Total length of the failure surface = 164.68(ft)

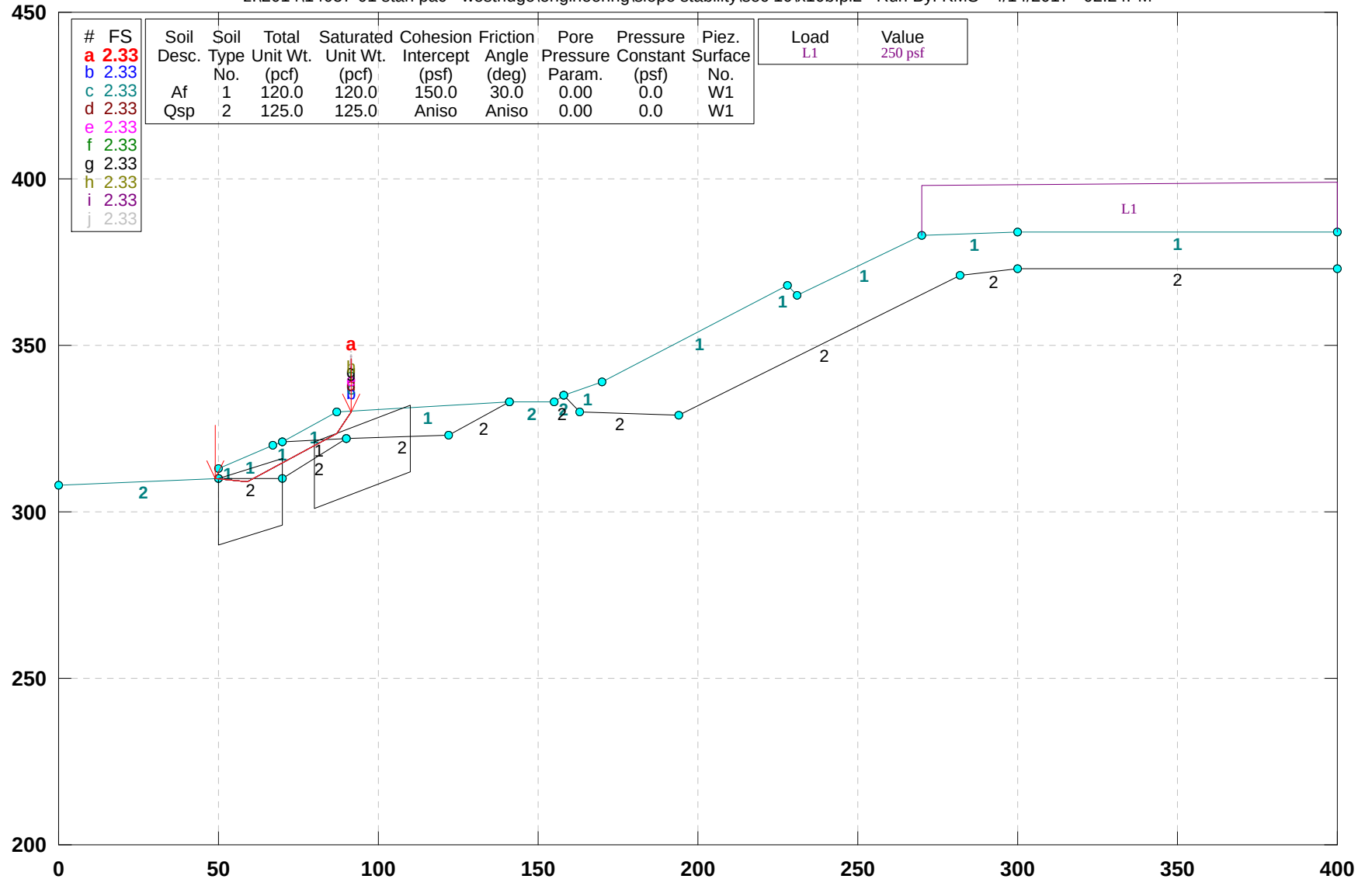
*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.5906(g)
Calculated Newmark Seismic Displacement = 0.001(ft)

Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

Westridge/14057-01/Sec 10-10' Lower Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 10x10b.pl2 Run By: KMS 4/14/2017 02:24PM

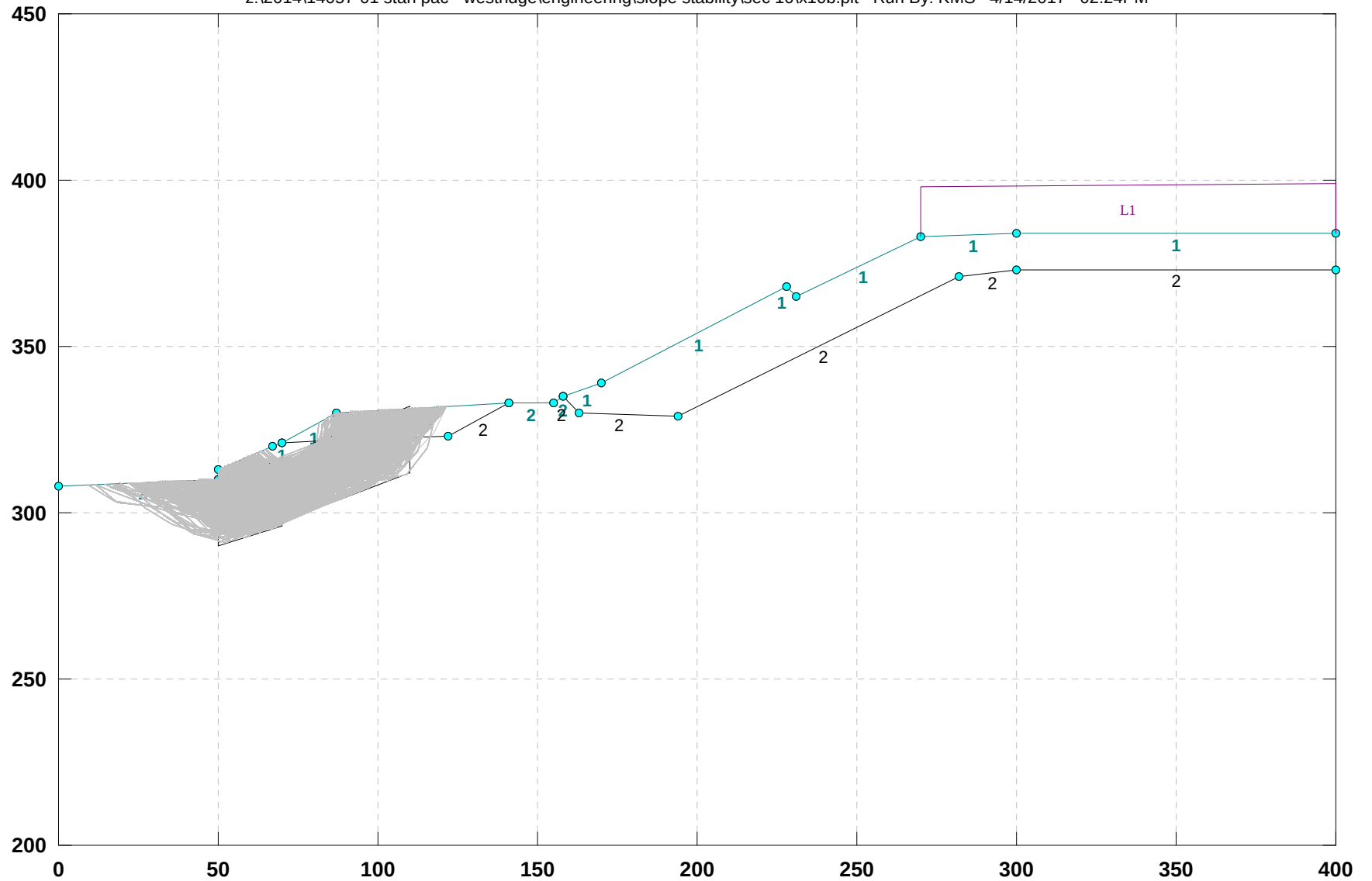


GSTABL7 v.2 FSmin=2.33

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

Westridge/14057-01/Sec 10-10' Lower Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 10\10b.plt Run By: KMS 4/14/2017 02:24PM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 02:24PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 10\x10b.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 10\x10b.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 10\x10b.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 10-10'/
Lower Slope - Static

BOUNDARY COORDINATES

14 Top Boundaries

24 Total Boundaries

Type Bnd	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	308.00	50.00	310.00	2
	2	50.00	310.00	50.10	313.00	1
	3	50.10	313.00	67.00	320.00	1
	4	67.00	320.00	70.00	321.00	1
	5	70.00	321.00	87.00	330.00	1
	6	87.00	330.00	141.00	333.00	1
	7	141.00	333.00	155.00	333.00	2
	8	155.00	333.00	158.00	335.00	2
	9	158.00	335.00	170.00	339.00	1
	10	170.00	339.00	228.00	368.00	1
	11	228.00	368.00	231.00	365.00	1
	12	231.00	365.00	270.00	383.00	1
	13	270.00	383.00	300.00	384.00	1
	14	300.00	384.00	400.00	384.00	1
	15	70.00	321.00	90.00	322.00	1
	16	90.00	322.00	122.00	323.00	2
	17	122.00	323.00	141.00	333.00	2
	18	158.00	335.00	163.00	330.00	2
	19	163.00	330.00	194.00	329.00	2
	20	194.00	329.00	282.00	371.00	2
	21	282.00	371.00	300.00	373.00	2
	22	300.00	373.00	400.00	373.00	2
	23	50.00	310.00	70.00	310.00	2
	24	70.00	310.00	90.00	322.00	2

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Piez. Surface No.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
	Type	Unit Wt.	Unit Wt.	Intercept	Angle	Pressure	Constant
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)

1 1 120.0 120.0 150.0 30.0 0.00 0.0
1 2 125.0 125.0 300.0 32.0 0.00 0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	-4.0	300.00	32.00
2	4.0	200.00	27.00
3	90.0	300.00	32.00

ANISOTROPIC SOIL NOTES:

- crack.
- 1
- (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	270.00	400.00	250.0	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.

9999 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 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	50.00	300.00	70.00	306.00	20.00
2	80.00	311.00	110.00	322.00	20.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 9999

Number of Trial Failure Surfaces is Greater Than 5000. Statistical Data on FS Values are Not Generated. To Generate Stastical Data, Reduce Number of Trial Failure Surfaces to 5000 or less.

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	49.004	309.960
2	49.053	309.927
3	59.008	308.980
4	87.051	323.565
5	91.303	330.239

Factor of Safety
*** 2.329 ***

Individual data on the 11 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1 0.0	0.0	0.1	0.0	0.0	0.	0.	0.0	0.0
2 0.0	0.9	11.7	0.0	0.0	0.	0.	0.0	0.0
3 0.0	0.1	20.1	0.0	0.0	0.	0.	0.0	0.0
4 0.0	8.9	5842.2	0.0	0.0	0.	0.	0.0	0.0
5 0.0	2.0	1794.4	0.0	0.0	0.	0.	0.0	0.0
6 0.0	6.0	5198.7	0.0	0.0	0.	0.	0.0	0.0
7 0.0	3.0	2369.9	0.0	0.0	0.	0.	0.0	0.0
8 0.0	13.4	10242.8	0.0	0.0	0.	0.	0.0	0.0
9 0.0	3.6	2777.4	0.0	0.0	0.	0.	0.0	0.0
10 0.0	0.1	39.8	0.0	0.0	0.	0.	0.0	0.0
11 0.0	4.3	1642.5	0.0	0.0	0.	0.	0.0	0.0

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	49.004	309.960
2	49.053	309.927
3	59.008	308.980
4	87.051	323.565
5	91.303	330.239

Factor of Safety
*** 2.329 ***

1

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	49.004	309.960
2	49.053	309.927
3	59.008	308.980
4	87.051	323.565
5	91.303	330.239

Factor of Safety
*** 2.329 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	49.004	309.960
2	49.053	309.927
3	59.008	308.980
4	87.051	323.565
5	91.303	330.239

Factor of Safety
*** 2.329 ***

1

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	49.004	309.960
2	49.053	309.927

3	59.008	308.980
4	87.051	323.565
5	91.303	330.239

Factor of Safety
*** 2.329 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	49.004	309.960
2	49.053	309.927
3	59.008	308.980
4	87.051	323.565
5	91.303	330.239

Factor of Safety
*** 2.329 ***

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Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	49.004	309.960
2	49.053	309.927
3	59.008	308.980
4	87.051	323.565
5	91.303	330.239

Factor of Safety
*** 2.329 ***

Failure Surface Specified By 5 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	49.004	309.960
2	49.053	309.927
3	59.008	308.980
4	87.051	323.565
5	91.303	330.239

Factor of Safety
*** 2.329 ***

1

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	49.004	309.960
2	49.053	309.927
3	59.008	308.980
4	87.051	323.565
5	91.303	330.239

Factor of Safety
*** 2.329 ***

Failure Surface Specified By 5 Coordinate Points

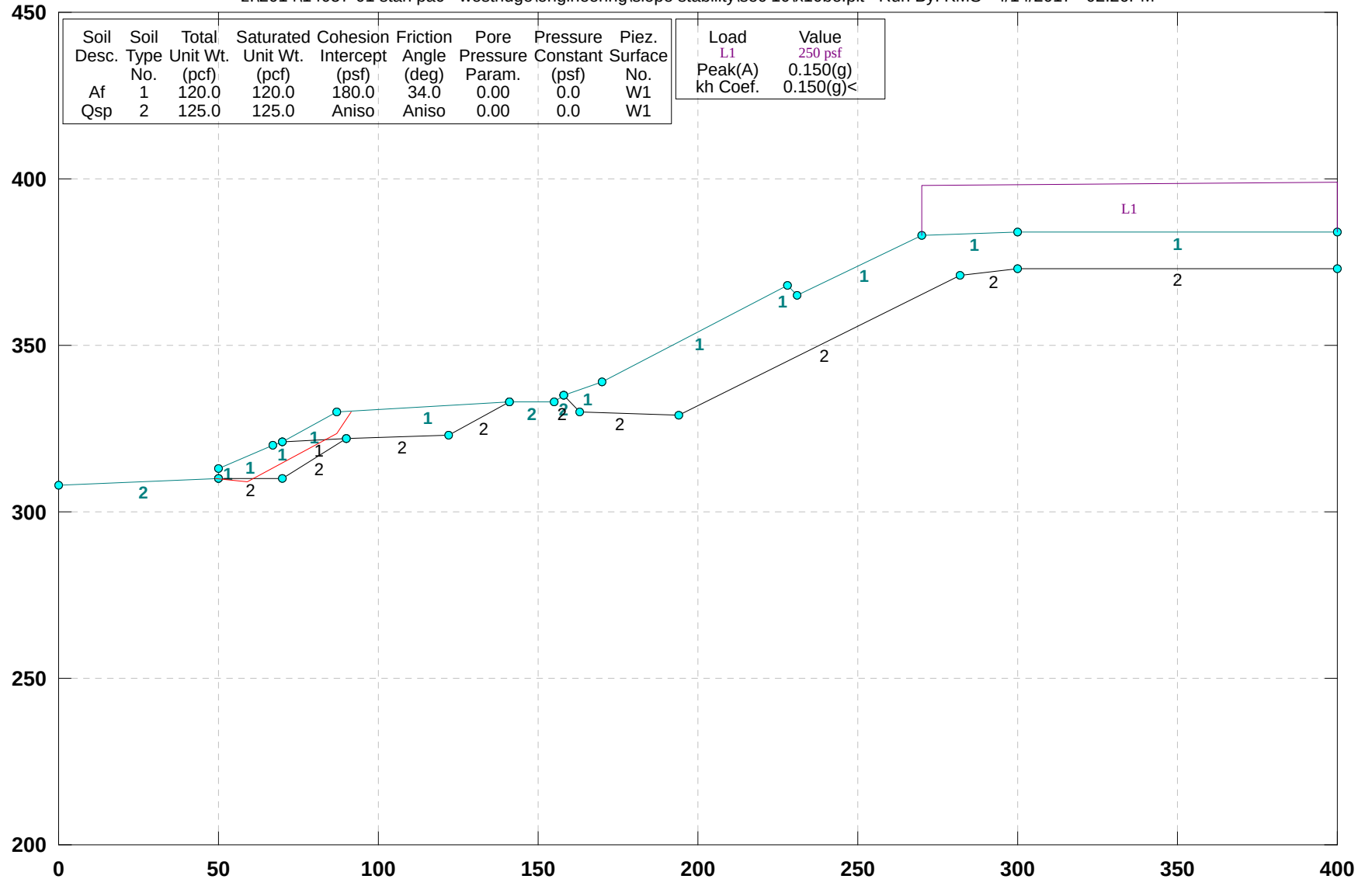
Point No.	X-Surf (ft)	Y-Surf (ft)
1	49.004	309.960
2	49.053	309.927
3	59.008	308.980
4	87.051	323.565
5	91.303	330.239

Factor of Safety
*** 2.329 ***

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

Westridge/14057-01/Sec 10-10' Lower Slope - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 10x10be.plt Run By: KMS 4/14/2017 02:26PM



GSTABL7 v.2 FSmin=2.08

Factor Of Safety Is Calculated By The Simplified Janbu Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 02:26PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 10\10be.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 10\10be.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 10\10be.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 10-10'/
Lower Slope - Seismic

BOUNDARY COORDINATES

14 Top Boundaries

24 Total Boundaries

Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	308.00	50.00	310.00	2
	2	50.00	310.00	50.10	313.00	1
	3	50.10	313.00	67.00	320.00	1
	4	67.00	320.00	70.00	321.00	1
	5	70.00	321.00	87.00	330.00	1
	6	87.00	330.00	141.00	333.00	1
	7	141.00	333.00	155.00	333.00	2
	8	155.00	333.00	158.00	335.00	2
	9	158.00	335.00	170.00	339.00	1
	10	170.00	339.00	228.00	368.00	1
	11	228.00	368.00	231.00	365.00	1
	12	231.00	365.00	270.00	383.00	1
	13	270.00	383.00	300.00	384.00	1
	14	300.00	384.00	400.00	384.00	1
	15	70.00	321.00	90.00	322.00	1
	16	90.00	322.00	122.00	323.00	2
	17	122.00	323.00	141.00	333.00	2
	18	158.00	335.00	163.00	330.00	2
	19	163.00	330.00	194.00	329.00	2
	20	194.00	329.00	282.00	371.00	2
	21	282.00	371.00	300.00	373.00	2
	22	300.00	373.00	400.00	373.00	2
	23	50.00	310.00	70.00	310.00	2
	24	70.00	310.00	90.00	322.00	2

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Piez.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
Surface	Type	Unit	Wt.	Unit	Wt.	Intercept	Angle
No.		(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)

1	1	120.0	120.0	180.0	34.0	0.00	0.0
1	2	125.0	125.0	500.0	34.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	-4.0	500.00	34.00
2	4.0	200.00	27.00
3	90.0	500.00	34.00

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	270.00	400.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(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
1

Trial Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	49.004	309.960
2	49.053	309.927
3	59.008	308.980
4	87.051	323.565
5	91.303	330.239

Janbu's Empirical Coefficient (fo) = 1.047

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

Factor Of Safety For The Preceding Specified Surface = 2.077

Table 1 - Individual Data on the 11 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top	Bot	Norm	Tan	Hor	Ver
	(ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
1 0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
2 0.0	0.9	11.7	0.0	0.0	0.0	0.0	1.8	0.0
3 0.0	0.1	20.1	0.0	0.0	0.0	0.0	3.0	0.0
4 0.0	8.9	5842.9	0.0	0.0	0.0	0.0	876.4	0.0

5	2.0	1795.0	0.0	0.0	0.0	0.0	269.3	0.0
0.0								
6	6.0	5198.1	0.0	0.0	0.0	0.0	779.7	0.0
0.0								
7	3.0	2370.0	0.0	0.0	0.0	0.0	355.5	0.0
0.0								
8	13.4	10242.1	0.0	0.0	0.0	0.0	1536.3	0.0
0.0								
9	3.6	2777.8	0.0	0.0	0.0	0.0	416.7	0.0
0.0								
10	0.1	39.5	0.0	0.0	0.0	0.0	5.9	0.0
0.0								
11	4.3	1642.4	0.0	0.0	0.0	0.0	246.4	0.0
0.0								

Table 2 - Base Stress Data on the 11 Slices

Slice Mobilized No. Stress * (psf)	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	-34.12	49.03	0.06	776.72	
-0.96					
2	-5.43	49.53	0.95	526.93	
0.68					
3	-5.43	50.05	0.10	658.79	
10.98					
4	-5.43	54.55	8.95	976.86	
35.83					
5	27.48	59.99	2.21	1077.45	
544.12					
6	27.48	63.98	6.80	734.19	
512.41					
7	27.48	68.50	3.38	687.40	
469.65					
8	27.48	76.70	15.11	670.41	
454.12					
9	27.48	85.20	4.05	676.59	
459.77					
10	27.48	87.03	0.06	676.98	
460.12					
11	57.50	89.18	7.91	543.07	
356.90					

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 36052.39 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing,

Soil Nail, and Applied Forces if applicable) = 727.13(psf)

Sum of the Driving Forces = 18171.83 (lbs)

Average Mobilized Shear Stress = 366.50(psf)

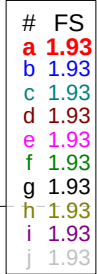
Total length of the failure surface = 49.58(ft)

*** SEISMIC SLOPE DISPLACEMENT DATA ***
 (Note: kv is set = zero for displacement calculations)
 Seismic Yield Coefficient (ky) = 0.6669(g)
 Calculated Newmark Seismic Displacement = 0.001(ft)

Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 11\11.pl2 Run By: KMS 4/14/2017 02:27PM



Soil Desc.	Soil Type	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant	Piez. Surface No.
Af	1	120.0	120.0	150.0	30.0	0.00	0.0	W1
Qsp	2	125.0	125.0	Aniso	Aniso	0.00	0.0	W1
Qal	3	120.0	120.0	200.0	28.0	0.00	0.0	W1

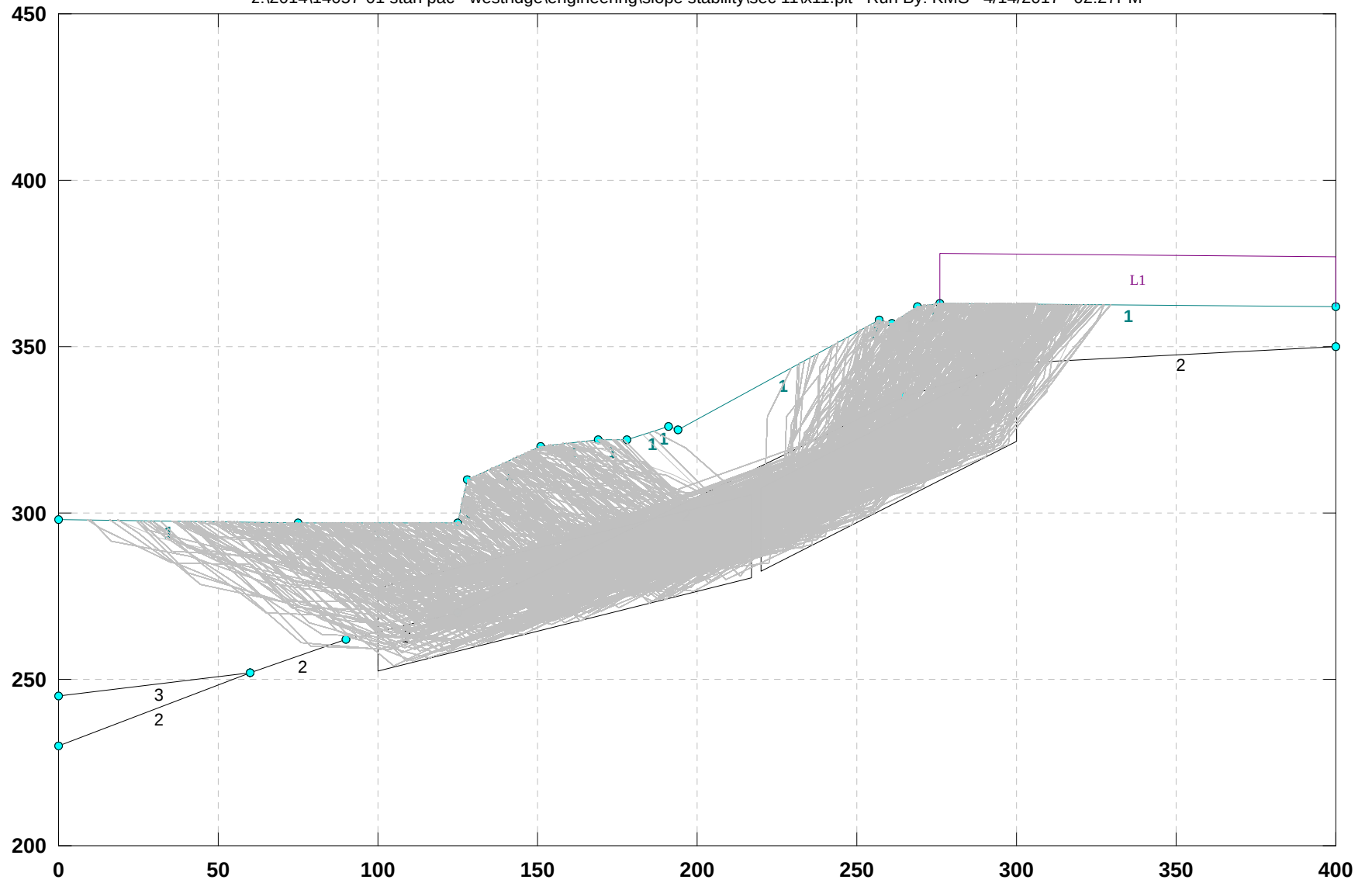
Load L1	Value 250 psf

GSTABL7 v.2 FSmin=1.93

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

Westridge/14057-01/Sec 11-11' Upper Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 11\11.plt Run By: KMS 4/14/2017 02:27PM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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
Applied Forces.
Surfaces, Pseudo-Static & Newmark Earthquake, and

Analysis Run Date: 4/14/2017
Time of Run: 02:27PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 11\x11.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 11\x11.0UT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 11\x11.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 11-11'/
Upper Slope - Static

BOUNDARY COORDINATES
13 Top Boundaries

20 Total Boundaries

Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	298.00	75.00	297.00	1
	2	75.00	297.00	125.00	297.00	1
	3	125.00	297.00	128.00	310.00	1
	4	128.00	310.00	151.00	320.00	1
	5	151.00	320.00	169.00	322.00	1
	6	169.00	322.00	178.00	322.00	1
	7	178.00	322.00	191.00	326.00	1
	8	191.00	326.00	194.00	325.00	1
	9	194.00	325.00	257.00	358.00	1
	10	257.00	358.00	261.00	357.00	1
	11	261.00	357.00	269.00	362.00	1
	12	269.00	362.00	276.00	363.00	1
	13	276.00	363.00	400.00	362.00	1
	14	0.00	245.00	60.00	252.00	3
	15	60.00	252.00	90.00	262.00	2
	16	90.00	262.00	125.00	270.00	2
	17	125.00	270.00	265.00	335.00	2
	18	265.00	335.00	300.00	345.00	2
	19	300.00	345.00	400.00	350.00	2
	20	0.00	230.00	60.00	252.00	2

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

Piez.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
Surface	Type	Unit Wt.	Unit Wt.	Intercept	Angle	Pressure	Constant
No.	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
	1	120.0	120.0	150.0	30.0	0.00	0.0
	2	125.0	125.0	300.0	32.0	0.00	0.0
1							
1							

1 3 120.0 120.0 200.0 28.0 0.00 0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	5.0	300.00	32.00
2	20.0	200.00	27.00
3	90.0	300.00	32.00

ANISOTROPIC SOIL NOTES:

- crack.
- (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
 - (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)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	276.00	400.00	250.0	0.0

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

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

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

9999 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	100.00	265.00	217.00	293.00	25.00
2	220.00	295.00	300.00	334.00	25.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 9999

Number of Trial Failure Surfaces is Greater Than 5000. Statistical Data on FS Values are Not Generated. To Generate Stastical Data, Reduce Number of Trial Failure Surfaces to 5000 or less.

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	103.104	297.000
2	107.760	293.973
3	127.415	278.523
4	266.362	322.306
5	280.116	343.183
6	297.043	361.581
7	297.832	362.824

Factor of Safety
*** 1.927 ***

Individual data on the 20 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	4.7	845.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	17.2	20279.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	2.4	6595.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	0.6	2115.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	23.0	90165.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	18.0	69571.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	8.0	28057.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	1.0	3214.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	13.0	42955.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	3.0	9563.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	63.0	244725.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
12	4.0	18251.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
13	4.0	18018.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
14	1.4	6274.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
15	2.6	11820.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
16	7.0	26130.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
17	1.0	2979.7	0.0	0.0	0.	0.	0.0	0.0
245.0								
18	3.1	8345.0	0.0	0.0	0.	0.	0.0	0.0
784.0								

19	16.9	21362.4	0.0	0.0	0.	0.	0.0	0.0
4231.8								
20	0.8	59.2	0.0	0.0	0.	0.	0.0	0.0
197.2								

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	103.104	297.000
2	107.760	293.973
3	127.415	278.523
4	266.362	322.306
5	280.116	343.183
6	297.043	361.581
7	297.832	362.824

Factor of Safety
*** 1.927 ***

1

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	103.104	297.000
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Factor of Safety
*** 1.927 ***

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Factor of Safety
*** 1.927 ***

1

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Point No.	X-Surf (ft)	Y-Surf (ft)

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Factor of Safety
*** 1.927 ***

Failure Surface Specified By 7 Coordinate Points

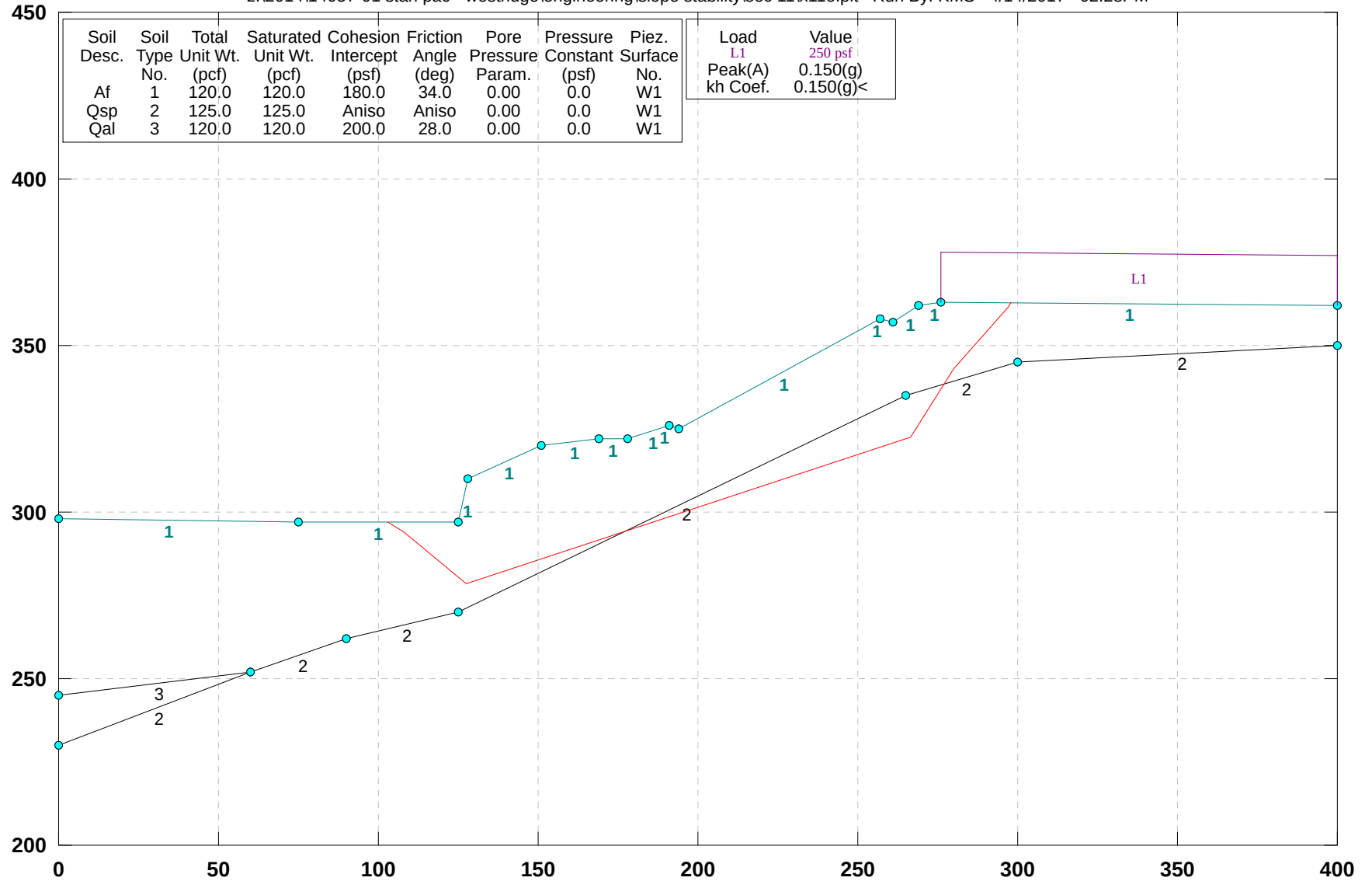
Point No.	X-Surf (ft)	Y-Surf (ft)
1	103.104	297.000
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7	297.832	362.824

Factor of Safety
*** 1.927 ***

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

Westridge/14057-01/Sec 11-11' Upper Slope - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 11\11e.plt Run By: KMS 4/14/2017 02:28PM



GSTABL7 v.2 FSmin=1.49

Factor Of Safety Is Calculated By The Simplified Janbu Method

*** GSTABL7 ***
** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **
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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: 4/14/2017
Time of Run: 02:28PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 11\x11e.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 11\x11e.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 11\x11e.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 11-11'/
Upper Slope - Seismic

BOUNDARY COORDINATES
13 Top Boundaries

20 Total Boundaries

Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	0.00	298.00	75.00	297.00	1
	2	75.00	297.00	125.00	297.00	1
	3	125.00	297.00	128.00	310.00	1
	4	128.00	310.00	151.00	320.00	1
	5	151.00	320.00	169.00	322.00	1
	6	169.00	322.00	178.00	322.00	1
	7	178.00	322.00	191.00	326.00	1
	8	191.00	326.00	194.00	325.00	1
	9	194.00	325.00	257.00	358.00	1
	10	257.00	358.00	261.00	357.00	1
	11	261.00	357.00	269.00	362.00	1
	12	269.00	362.00	276.00	363.00	1
	13	276.00	363.00	400.00	362.00	1
	14	0.00	245.00	60.00	252.00	3
	15	60.00	252.00	90.00	262.00	2
	16	90.00	262.00	125.00	270.00	2
	17	125.00	270.00	265.00	335.00	2
	18	265.00	335.00	300.00	345.00	2
	19	300.00	345.00	400.00	350.00	2
	20	0.00	230.00	60.00	252.00	2

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

Piez.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
Surface	Type	Unit Wt.	Unit Wt.	Intercept	Angle	Pressure	Constant
No.	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
	1	120.0	120.0	180.0	34.0	0.00	0.0
	2	125.0	125.0	500.0	34.0	0.00	0.0
1							
1							

1

3 120.0 120.0 200.0 28.0 0.00 0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	5.0	500.00	34.00
2	20.0	200.00	27.00
3	90.0	500.00	34.00

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)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	276.00	400.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(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
1

Trial Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	103.104	297.000
2	107.760	293.973
3	127.415	278.523
4	266.362	322.306
5	280.116	343.183
6	297.043	361.581
7	297.832	362.824

Janbu's Empirical Coefficient (fo) = 1.056

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

Factor Of Safety For The Preceding Specified Surface = 1.485

Table 1 - Individual Data on the 20 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top	Bot	Norm	Tan	Hor	Ver
	(ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
1 0.0	4.7	845.6	0.0	0.0	0.0	0.0	126.8	0.0
2 0.0	17.2	20280.2	0.0	0.0	0.0	0.0	3042.0	0.0
3 0.0	2.4	6596.0	0.0	0.0	0.0	0.0	989.4	0.0
4 0.0	0.6	2114.2	0.0	0.0	0.0	0.0	317.1	0.0

5	23.0	90166.4	0.0	0.0	0.0	0.0	13525.0	0.0
0.0								
6	18.0	69572.1	0.0	0.0	0.0	0.0	10435.8	0.0
0.0								
7	8.0	28052.5	0.0	0.0	0.0	0.0	4207.9	0.0
0.0								
8	1.0	3219.6	0.0	0.0	0.0	0.0	482.9	0.0
0.0								
9	13.0	42955.6	0.0	0.0	0.0	0.0	6443.3	0.0
0.0								
10	3.0	9563.2	0.0	0.0	0.0	0.0	1434.5	0.0
0.0								
11	63.0	244725.7	0.0	0.0	0.0	0.0	36708.9	0.0
0.0								
12	4.0	18251.2	0.0	0.0	0.0	0.0	2737.7	0.0
0.0								
13	4.0	18018.1	0.0	0.0	0.0	0.0	2702.7	0.0
0.0								
14	1.4	6272.9	0.0	0.0	0.0	0.0	940.9	0.0
0.0								
15	2.6	11821.9	0.0	0.0	0.0	0.0	1773.3	0.0
0.0								
16	7.0	26130.1	0.0	0.0	0.0	0.0	3919.5	0.0
0.0								
17	1.0	2980.2	0.0	0.0	0.0	0.0	447.0	0.0
245.0								
18	3.1	8345.6	0.0	0.0	0.0	0.0	1251.8	0.0
784.0								
19	16.9	21361.6	0.0	0.0	0.0	0.0	3204.2	0.0
4231.7								
20	0.8	59.1	0.0	0.0	0.0	0.0	8.9	0.0
197.3								

Table 2 - Base Stress Data on the 20 Slices

Slice Mobilized No. Stress (psf)	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	-33.03	105.43	5.55	512.06	-
76.15					
2	-38.17	116.38	21.93	1926.03	-
588.24					
3	-38.17	126.21	3.07	4001.13	-
1365.79					
4	17.49	127.71	0.61	2400.90	
1603.22					
5	17.49	139.50	24.11	2590.33	
1739.05					
6	17.49	160.00	18.87	2556.20	
1714.58					

7	17.49	173.02	8.42	2325.97
1549.49				
8	17.49	177.52	1.02	1791.29
1474.17				
9	17.49	184.50	13.63	1782.18
1465.79				
10	17.49	192.50	3.15	1726.00
1414.09				
11	17.49	225.50	66.05	2061.92
1723.20				
12	17.49	259.00	4.19	2388.90
2024.08				
13	17.49	263.00	4.19	2360.81
1998.23				
14	17.49	265.68	1.43	2409.55
2043.07				
15	56.62	267.68	4.80	3789.76
4112.07				
16	56.62	272.50	12.72	3246.61
3425.24				
17	56.62	276.49	1.78	2926.01
2999.20				
18	56.62	278.55	5.70	2306.11
2650.64				
19	47.38	288.58	25.00	1186.30
1240.86				
20	57.59	297.44	1.47	434.14
280.38				

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 485976.84 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 2134.20(psf)

Sum of the Driving Forces = 345528.53 (lbs)

Average Mobilized Shear Stress = 1517.41(psf)

Total length of the failure surface = 227.71(ft)

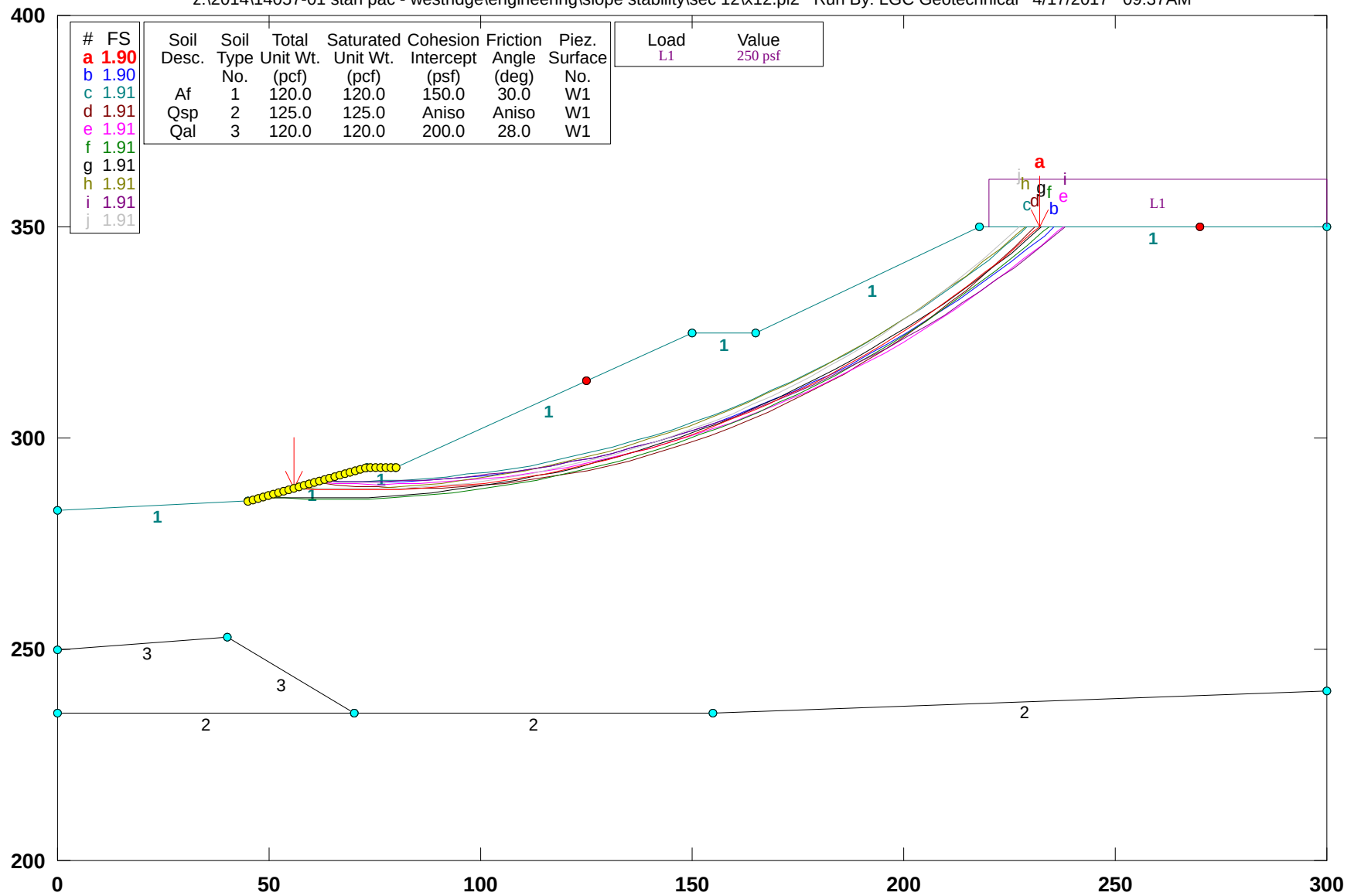
*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.3995(g)
Calculated Newmark Seismic Displacement = 0.002(ft)

Non-Symmetrical Sliding Resistance Has Been Specified
for Downhill Sliding.

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

Westridge/14057-01/Sec 12'-12"/ Upper Slope - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 12\12.pl2 Run By: LGC Geotechnical 4/17/2017 09:37AM



GSTABL7 v.2 FSmin=1.90
Safety Factors Are Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/17/2017
 Time of Run: 09:37AM
 Run By: LGC Geotechnical
 Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\12.in
 Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\12.0UT
 Unit System: English
 Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\12.PLT
 PROBLEM DESCRIPTION: Westridge/14057-01/Sec 12'-12"/
 Upper Slope - Static

BOUNDARY COORDINATES

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
7 Top Boundaries					
12 Total Boundaries					
1	0.00	283.00	45.00	285.00	1
2	45.00	285.00	73.00	293.00	1
3	73.00	293.00	80.00	293.00	1
4	80.00	293.00	150.00	325.00	1
5	150.00	325.00	165.00	325.00	1
6	165.00	325.00	218.00	350.00	1
7	218.00	350.00	300.00	350.00	1
8	0.00	250.00	40.00	253.00	3
9	40.00	253.00	70.00	235.00	3
10	70.00	235.00	155.00	235.00	2
11	155.00	235.00	300.00	240.00	2
12	0.00	235.00	70.00	235.00	2

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant (psf)	Piez. Surface No.
3 Type(s) of Soil							
1	120.0	120.0	150.0	30.0	0.00	0.0	1
2	125.0	125.0	300.0	32.0	0.00	0.0	1
3	120.0	120.0	200.0	28.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

Soil Type No.	Direction Range	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1 soil type(s)				
2 Is Anisotropic				
Number Of Direction Ranges Specified = 3				
1	5.0		300.00	32.00
2	20.0		200.00	27.00
3	90.0		300.00	32.00

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)

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1 Load(s) Specified				
1	220.00	300.00	250.0	0.0

NOTE - Intensity Is Specified As A Uniformly Distributed

Force Acting On A Horizontally Projected Surface.

A Critical Failure Surface Searching Method, Using A Random

Technique For Generating Circular Surfaces, Has Been Specified.

9990 Trial Surfaces Have Been Generated.

333 Surface(s) Initiate(s) From Each Of 30 Points Equally Spaced

Along The Ground Surface Between X = 45.00(ft)

and X = 80.00(ft)

Each Surface Terminates Between X = 125.00(ft)

and X = 270.00(ft)

Unless Further Limitations Were Imposed, The Minimum Elevation

At Which A Surface Extends Is Y = 0.00(ft)

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

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 Modified Bishop Method * *

Total Number of Trial Surfaces Attempted = 0

Number of Trial Surfaces With Valid FS = 0

Statistical Data On All Valid FS Values:

FS Max = 0.000 FS Min = 500.000 FS Ave = NaN

Standard Deviation = 0.000 Coefficient of Variation = NaN %

Failure Surface Specified By 40 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	55.862	288.103
2	60.854	287.823
3	65.851	287.647
4	70.851	287.577
5	75.851	287.613
6	80.849	287.754
7	85.842	288.000
8	90.830	288.351
9	95.809	288.807
10	100.778	289.369
11	105.733	290.035
12	110.673	290.805
13	115.596	291.679
14	120.500	292.657
15	125.382	293.737
16	130.240	294.921
17	135.071	296.207
18	139.875	297.594
19	144.649	299.082
20	149.389	300.671
21	154.096	302.359
22	158.766	304.146
23	163.397	306.031
24	167.987	308.013
25	172.535	310.091
26	177.037	312.265
27	181.493	314.534
28	185.900	316.895
29	190.256	319.350
30	194.560	321.895
31	198.809	324.531
32	203.001	327.255
33	207.136	330.067
34	211.209	332.966
35	215.221	335.950
36	219.169	339.018
37	223.052	342.169
38	226.867	345.401
39	230.614	348.712
40	232.010	350.000

Circle Center At X = 71.682 ; Y = 524.677 ; and Radius = 237.102

Factor of Safety
*** 1.903 ***

Slice No.	Width (ft)	Weight (lbs)	Individual data on the		0 slices		Earthquake Force (lbs)	Surcharge (lbs)
			Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)		
			Force	Force	Force	Force	Force	Force
			Top	Bot	Norm	Tan	Hor	Ver
			(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)

Failure Surface Specified By 39 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	61.897	289.828
2	66.894	289.659
3	71.893	289.590
4	76.893	289.622
5	81.891	289.754
6	86.886	289.986
7	91.875	290.318
8	96.856	290.750
9	101.828	291.282
10	106.788	291.914
11	111.734	292.644
12	116.665	293.474
13	121.578	294.402
14	126.471	295.429
15	131.343	296.553
16	136.192	297.775
17	141.015	299.094
18	145.810	300.509
19	150.576	302.021
20	155.311	303.627
21	160.013	305.328
22	164.680	307.123
23	169.310	309.011
24	173.901	310.991
25	178.451	313.063
26	182.959	315.226
27	187.423	317.479
28	191.841	319.820
29	196.211	322.250
30	200.531	324.767
31	204.800	327.370
32	209.016	330.058
33	213.177	332.830
34	217.282	335.685
35	221.329	338.622
36	225.316	341.639
37	229.242	344.735
38	233.105	347.910
39	235.547	350.000

Circle Center At X = 72.811 ; Y = 539.031 ; and Radius = 249.442

Factor of Safety
*** 1.904 ***

Failure Surface Specified By 38 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	61.897	289.828
2	66.896	289.740
3	71.896	289.755
4	76.894	289.873
5	81.890	290.093
6	86.879	290.415
7	91.861	290.839
8	96.833	291.365
9	101.794	291.993
10	106.740	292.722
11	111.671	293.552
12	116.583	294.484
13	121.476	295.515
14	126.346	296.647

15	131.192	297.878
16	136.012	299.207
17	140.804	300.636
18	145.565	302.162
19	150.294	303.785
20	154.989	305.505
21	159.648	307.321
22	164.269	309.231
23	168.849	311.236
24	173.388	313.334
25	177.882	315.525
26	182.331	317.807
27	186.732	320.180
28	191.084	322.642
29	195.384	325.193
30	199.631	327.832
31	203.823	330.557
32	207.959	333.367
33	212.036	336.262
34	216.053	339.239
35	220.008	342.298
36	223.900	345.437
37	227.726	348.655
38	229.261	350.000

Circle Center At X = 68.671 ; Y = 533.826 ; and Radius = 244.092

Factor of Safety
*** 1.905 ***

Failure Surface Specified By 39 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	60.690	289.483
2	65.664	288.982
3	70.650	288.601
4	75.643	288.342
5	80.641	288.204
6	85.641	288.188
7	90.640	288.293
8	95.635	288.519
9	100.623	288.866
10	105.601	289.334
11	110.566	289.923
12	115.516	290.632
13	120.447	291.460
14	125.356	292.409
15	130.241	293.476
16	135.098	294.661
17	139.925	295.964
18	144.720	297.384
19	149.478	298.919
20	154.198	300.570
21	158.876	302.334
22	163.510	304.212
23	168.097	306.201
24	172.635	308.301
25	177.120	310.511
26	181.550	312.829
27	185.923	315.254
28	190.236	317.784
29	194.486	320.417
30	198.671	323.154
31	202.788	325.991
32	206.835	328.927
33	210.810	331.960
34	214.710	335.089
35	218.533	338.312
36	222.276	341.626
37	225.938	345.031
38	229.517	348.523
39	230.958	350.000

Circle Center At X = 83.825 ; Y = 494.230 ; and Radius = 206.050

Factor of Safety
*** 1.907 ***
Failure Surface Specified By 40 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	60.690	289.483
2	65.683	289.229
3	70.681	289.077
4	75.681	289.026
5	80.680	289.077
6	85.678	289.230
7	90.672	289.485
8	95.659	289.841
9	100.638	290.299
10	105.607	290.858
11	110.563	291.517
12	115.505	292.278
13	120.430	293.139
14	125.337	294.100
15	130.223	295.160
16	135.087	296.320
17	139.926	297.579
18	144.738	298.935
19	149.522	300.390
20	154.275	301.941
21	158.996	303.589
22	163.682	305.333
23	168.332	307.171
24	172.943	309.104
25	177.514	311.130
26	182.043	313.249
27	186.528	315.459
28	190.967	317.761
29	195.358	320.152
30	199.699	322.632
31	203.990	325.199
32	208.227	327.854
33	212.409	330.594
34	216.535	333.419
35	220.602	336.327
36	224.609	339.318
37	228.555	342.389
38	232.437	345.540
39	236.254	348.769
40	237.651	350.000

Circle Center At X = 75.673 ; Y = 534.660 ; and Radius = 245.635

Factor of Safety
*** 1.908 ***
Failure Surface Specified By 42 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	48.621	286.034
2	53.613	285.754
3	58.609	285.572
4	63.609	285.488
5	68.609	285.504
6	73.607	285.618
7	78.603	285.830
8	83.593	286.142
9	88.576	286.551
10	93.551	287.059
11	98.514	287.665
12	103.464	288.369
13	108.399	289.171
14	113.318	290.070
15	118.218	291.065
16	123.097	292.158
17	127.954	293.346
18	132.786	294.630
19	137.592	296.009

20	142.370	297.483
21	147.118	299.051
22	151.834	300.712
23	156.516	302.466
24	161.163	304.312
25	165.772	306.249
26	170.342	308.277
27	174.872	310.395
28	179.358	312.602
29	183.800	314.897
30	188.196	317.279
31	192.545	319.748
32	196.843	322.302
33	201.090	324.940
34	205.285	327.662
35	209.425	330.466
36	213.508	333.351
37	217.534	336.316
38	221.501	339.360
39	225.407	342.481
40	229.250	345.680
41	233.029	348.953
42	234.191	350.000

Circle Center At X = 65.342 ; Y = 538.686 ; and Radius = 253.204

Factor of Safety
*** 1.908 ***
Failure Surface Specified By 41 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	48.621	286.034
2	53.617	285.839
3	58.616	285.739
4	63.616	285.735
5	68.615	285.827
6	73.611	286.015
7	78.603	286.299
8	83.589	286.678
9	88.566	287.153
10	93.534	287.724
11	98.489	288.390
12	103.431	289.151
13	108.357	290.006
14	113.266	290.956
15	118.156	292.000
16	123.025	293.138
17	127.871	294.368
18	132.693	295.692
19	137.488	297.108
20	142.255	298.616
21	146.993	300.215
22	151.699	301.904
23	156.371	303.684
24	161.009	305.552
25	165.610	307.510
26	170.172	309.555
27	174.694	311.688
28	179.175	313.907
29	183.612	316.212
30	188.004	318.601
31	192.350	321.074
32	196.647	323.631
33	200.894	326.269
34	205.090	328.988
35	209.233	331.787
36	213.322	334.665
37	217.354	337.621
38	221.329	340.654
39	225.245	343.763
40	229.101	346.947
41	232.658	350.000

Circle Center At X = 61.321 ; Y = 546.240 ; and Radius = 260.515

Factor of Safety

*** 1.909 ***

Failure Surface Specified By 39 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	55.862	288.103
2	60.861	287.994
3	65.861	287.983
4	70.860	288.073
5	75.856	288.263
6	80.848	288.552
7	85.833	288.940
8	90.809	289.429
9	95.774	290.016
10	100.727	290.702
11	105.665	291.487
12	110.586	292.371
13	115.489	293.353
14	120.371	294.432
15	125.231	295.608
16	130.066	296.881
17	134.875	298.251
18	139.655	299.716
19	144.406	301.276
20	149.124	302.931
21	153.808	304.680
22	158.456	306.522
23	163.067	308.456
24	167.638	310.482
25	172.168	312.599
26	176.655	314.806
27	181.097	317.101
28	185.492	319.486
29	189.838	321.957
30	194.134	324.514
31	198.379	327.157
32	202.570	329.884
33	206.705	332.695
34	210.784	335.587
35	214.804	338.560
36	218.764	341.612
37	222.662	344.743
38	226.497	347.952
39	228.849	350.000

Circle Center At X = 63.868 ; Y = 538.454 ; and Radius = 250.478

Factor of Safety

*** 1.909 ***

Failure Surface Specified By 40 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	61.897	289.828
2	66.894	289.682
3	71.894	289.632
4	76.894	289.679
5	81.892	289.823
6	86.886	290.063
7	91.875	290.399
8	96.856	290.832
9	101.828	291.360
10	106.789	291.985
11	111.737	292.705
12	116.670	293.520
13	121.586	294.431
14	126.484	295.436
15	131.362	296.535
16	136.217	297.729
17	141.049	299.016
18	145.855	300.396
19	150.633	301.868

20 155.382 303.433

21 160.100 305.089

22 164.785 306.835

23 169.435 308.672

24 174.049 310.598

25 178.625 312.613

26 183.162 314.715

27 187.657 316.905

28 192.109 319.181

29 196.516 321.543

30 200.876 323.989

31 205.189 326.519

32 209.452 329.132

33 213.664 331.827

34 217.823 334.602

35 221.928 337.457

36 225.976 340.391

37 229.968 343.402

38 233.900 346.490

39 237.773 349.653

40 238.181 350.000

Circle Center At X = 71.962 ; Y = 548.652 ; and Radius = 259.020

Factor of Safety

*** 1.909 ***

Failure Surface Specified By 39 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	57.069	288.448
2	62.062	288.185
3	67.060	288.033
4	72.060	287.990
5	77.059	288.059
6	82.056	288.238
7	87.048	288.527
8	92.032	288.926
9	97.006	289.435
10	101.967	290.055
11	106.914	290.783
12	111.843	291.621
13	116.753	292.567
14	121.640	293.622
15	126.503	294.784
16	131.339	296.054
17	136.146	297.430
18	140.921	298.912
19	145.663	300.499
20	150.368	302.191
21	155.035	303.986
22	159.661	305.884
23	164.243	307.883
24	168.781	309.983
25	173.271	312.183
26	177.711	314.482
27	182.100	316.878
28	186.434	319.371
29	190.712	321.959
30	194.932	324.640
31	199.092	327.414
32	203.189	330.280
33	207.223	333.235
34	211.189	336.279
35	215.088	339.410
36	218.917	342.626
37	222.673	345.925
38	226.356	349.307
39	227.077	350.000

Circle Center At X = 71.468 ; Y = 514.272 ; and Radius = 226.283

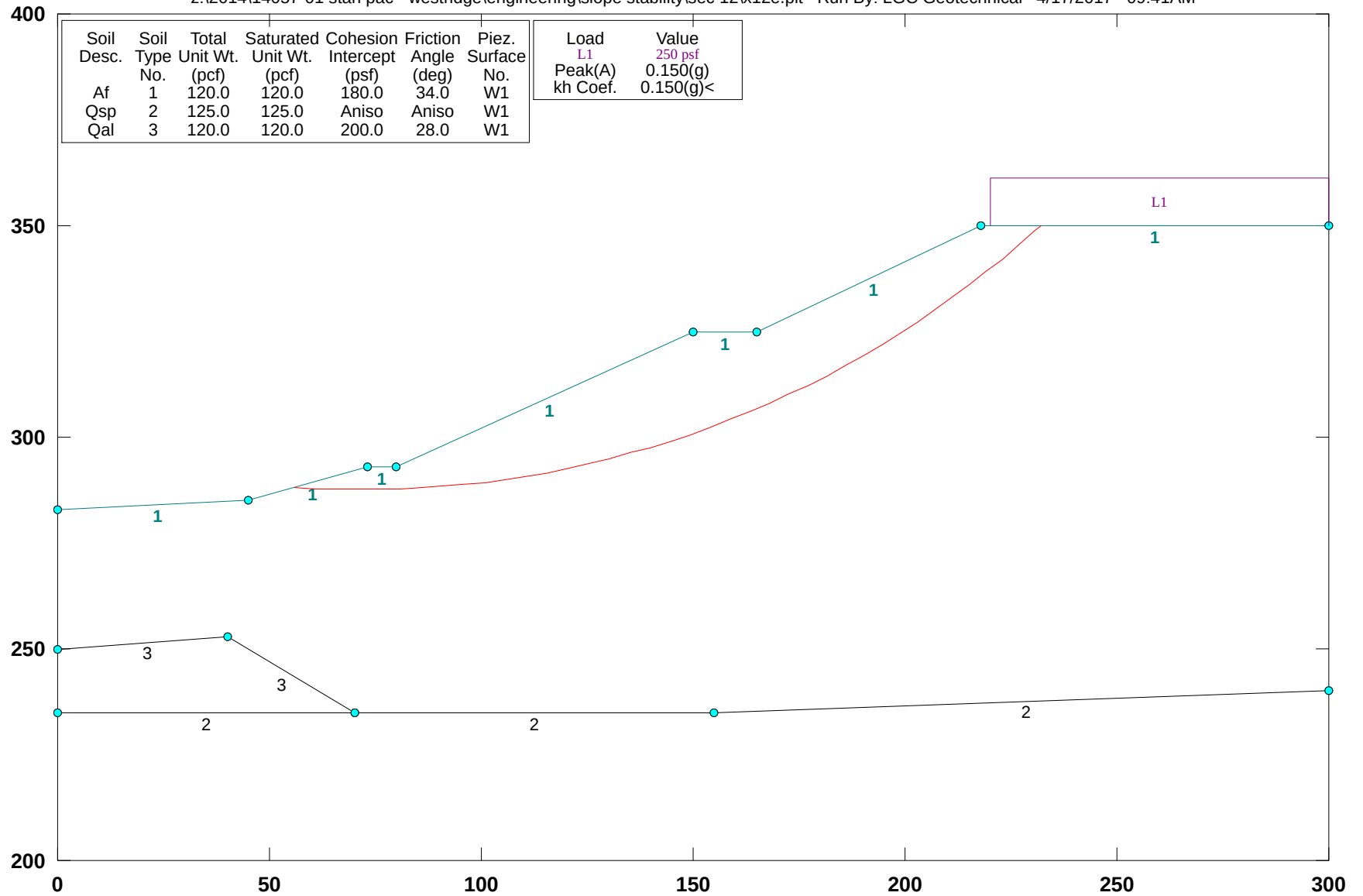
Factor of Safety

*** 1.910 ***

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

Westridge/14057-01/Sec 12'-12"/ Upper Slope - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 12\12e.plt Run By: LGC Geotechnical 4/17/2017 09:41AM



GSTABL7 v.2 FSmin=1.54
Factor Of Safety Is Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/17/2017

Time of Run: 09:41AM

Run By: LGC Geotechnical

Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\X12e.in

Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\X12e.OUT

Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\X12e.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 12'-12"/
Upper Slope - Seismic

BOUNDARY COORDINATES

7 Top Boundaries

12 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	283.00	45.00	285.00	1
2	45.00	285.00	73.00	293.00	1
3	73.00	293.00	80.00	293.00	1
4	80.00	293.00	150.00	325.00	1
5	150.00	325.00	165.00	325.00	1
6	165.00	325.00	218.00	350.00	1
7	218.00	350.00	300.00	350.00	1
8	0.00	250.00	40.00	253.00	3
9	40.00	253.00	70.00	235.00	3
10	70.00	235.00	155.00	235.00	2
11	155.00	235.00	300.00	240.00	2
12	0.00	235.00	70.00	235.00	2

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

Soil Type No.	Total (pcf)	Saturated (pcf)	Cohesion (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	180.0	34.0	0.00	0.0	1
2	125.0	125.0	500.0	34.0	0.00	0.0	1
3	120.0	120.0	200.0	28.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 2 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Counterclockwise Friction

Range Direction Limit Intercept Angle

No. (deg) (psf) (deg)

1 5.0 500.00 34.00

2 20.0 200.00 27.00

3 90.0 500.00 34.00

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	220.00	300.00	250.0	0.0

NOTE - Intensity Is Specified As A Uniformly Distributed

Force Acting On A Horizontally Projected Surface.

Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)

Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)

Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

Trial Failure Surface Specified By 40 Coordinate Points

Point X-Surf Y-Surf

No.	(ft)	(ft)
1	55.862	288.103
2	60.854	287.823
3	65.851	287.647
4	70.851	287.577
5	75.851	287.613
6	80.849	287.754
7	85.842	288.000
8	90.830	288.351
9	95.809	288.807
10	100.778	289.369
11	105.733	290.035
12	110.673	290.805
13	115.596	291.679
14	120.500	292.657
15	125.382	293.737
16	130.240	294.921
17	135.071	296.207
18	139.875	297.594
19	144.649	299.082
20	149.389	300.671
21	154.096	302.359
22	158.766	304.146
23	163.397	306.031
24	167.987	308.013
25	172.535	310.091
26	177.037	312.265
27	181.493	314.534
28	185.900	316.895
29	190.256	319.350
30	194.560	321.895
31	198.809	324.531
32	203.001	327.255
33	207.136	330.067
34	211.209	332.966
35	215.221	335.950
36	219.169	339.018
37	223.052	342.169
38	226.867	345.401
39	230.614	348.712
40	232.010	350.000

DEFLECTION ANGLE & SEGMENT DATA FOR SPECIFIED SURFACE(Excluding Last Segment)

Angle/Segment No. Deflection(Deg) Segment Length(ft)

1	1.20	5.00
2	1.21	5.00
3	1.21	5.00
4	1.20	5.00
5	1.20	5.00
6	1.20	5.00
7	1.21	5.00
8	1.22	5.00
9	1.20	5.00
10	1.20	5.00
11	1.21	5.00
12	1.21	5.00
13	1.20	5.00
14	1.22	5.00

15	1.21	5.00							
16	1.20	5.00							
17	1.21	5.00							
18	1.22	5.00							
19	1.20	5.00							
20	1.21	5.00							
21	1.21	5.00							
22	1.21	5.00							
23	1.20	5.00							
24	1.22	5.00							
25	1.21	5.00							
26	1.19	5.00							
27	1.23	5.00							
28	1.19	5.00							
29	1.22	5.00							
30	1.20	5.00							
31	1.20	5.00							
32	1.22	5.00							
33	1.20	5.00							
34	1.21	5.00							
35	1.21	5.00							
36	1.21	5.00							
37	1.19	5.00							
Circle Center At X = 71.680(ft) ; Y = 524.681(ft); and Radius = 237.106(ft)									
* * Factor Of Safety Is Calculated By The Modified Bishop Method * *									
Factor Of Safety For The Preceding Specified Surface = 1.540									
Table 1 - Individual Data on the 45 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)	Ver (lbs)	Surcharge Load (lbs)
1	5.0	511.2	0.0	0.0	0.0	0.0	76.7	0.0	0.0
2	5.0	1504.2	0.0	0.0	0.0	0.0	225.6	0.0	0.0
3	5.0	2435.8	0.0	0.0	0.0	0.0	365.4	0.0	0.0
4	2.1	1317.3	0.0	0.0	0.0	0.0	197.6	0.0	0.0
5	2.9	1846.5	0.0	0.0	0.0	0.0	277.0	0.0	0.0
6	4.1	2652.9	0.0	0.0	0.0	0.0	397.9	0.0	0.0
7	0.8	555.5	0.0	0.0	0.0	0.0	83.3	0.0	0.0
8	5.0	3985.8	0.0	0.0	0.0	0.0	597.9	0.0	0.0
9	5.0	5168.7	0.0	0.0	0.0	0.0	775.3	0.0	0.0
10	5.0	6279.5	0.0	0.0	0.0	0.0	941.9	0.0	0.0
11	5.0	7319.2	0.0	0.0	0.0	0.0	1097.9	0.0	0.0
12	5.0	8282.2	0.0	0.0	0.0	0.0	1242.3	0.0	0.0
13	4.9	9172.3	0.0	0.0	0.0	0.0	1375.8	0.0	0.0
14	4.9	9986.9	0.0	0.0	0.0	0.0	1498.0	0.0	0.0
15	4.9	10725.3	0.0	0.0	0.0	0.0	1608.8	0.0	0.0
16	4.9	11384.7	0.0	0.0	0.0	0.0	1707.7	0.0	0.0
17	4.9	11966.7	0.0	0.0	0.0	0.0	1795.0	0.0	0.0
18	4.8	12468.1	0.0	0.0	0.0	0.0	1870.2	0.0	0.0
19	4.8	12897.5	0.0	0.0	0.0	0.0	1934.6	0.0	0.0
20	4.8	13247.6	0.0	0.0	0.0	0.0	1987.1	0.0	0.0
21	4.7	13515.1	0.0	0.0	0.0	0.0	2027.3	0.0	0.0
22	0.6	1765.5	0.0	0.0	0.0	0.0	264.8	0.0	0.0
23	4.1	11489.5	0.0	0.0	0.0	0.0	1723.4	0.0	0.0
24	4.7	12187.3	0.0	0.0	0.0	0.0	1828.1	0.0	0.0
25	4.6	11065.2	0.0	0.0	0.0	0.0	1659.8	0.0	0.0
26	1.6	3582.3	0.0	0.0	0.0	0.0	537.3	0.0	0.0
27	3.0	6572.5	0.0	0.0	0.0	0.0	985.9	0.0	0.0
28	4.5	10058.1	0.0	0.0	0.0	0.0	1508.7	0.0	0.0
29	4.5	9961.0	0.0	0.0	0.0	0.0	1494.1	0.0	0.0
30	4.5	9801.0	0.0	0.0	0.0	0.0	1470.2	0.0	0.0
31	4.4	9574.4	0.0	0.0	0.0	0.0	1436.2	0.0	0.0
32	4.4	9285.3	0.0	0.0	0.0	0.0	1392.8	0.0	0.0
33	4.3	8938.1	0.0	0.0	0.0	0.0	1340.7	0.0	0.0
34	4.2	8531.6	0.0	0.0	0.0	0.0	1279.7	0.0	0.0
35	4.2	8070.4	0.0	0.0	0.0	0.0	1210.6	0.0	0.0
36	4.1	7561.7	0.0	0.0	0.0	0.0	1134.3	0.0	0.0
37	4.1	6998.8	0.0	0.0	0.0	0.0	1049.8	0.0	0.0
38	4.0	6395.9	0.0	0.0	0.0	0.0	959.4	0.0	0.0
39	2.8	4106.7	0.0	0.0	0.0	0.0	616.0	0.0	0.0

		1.2	1604.3	0.0	0.0	0.0	0.0	240.6	0.0	0.0
		0.8	1061.5	0.0	0.0	0.0	0.0	159.2	0.0	0.0
		3.1	3321.6	0.0	0.0	0.0	0.0	498.2	0.0	763.0
		3.8	2845.2	0.0	0.0	0.0	0.0	426.8	0.0	953.8
		3.7	1232.5	0.0	0.0	0.0	0.0	198.5	0.0	936.7
		1.4	107.9	0.0	0.0	0.0	0.0	16.2	0.0	349.0
Table 2 - Base Stress Data on the 45 Slices										
Slice No. *	Alpha (deg)	X-Coord Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)					
1	-3.22	58.36	5.00	255.36	9.55					
2	-2.02	63.35	5.00	389.05	34.27					
3	-0.80	68.35	5.00	511.74	65.62					
4	0.41	71.93	2.15	591.60	95.37					
5	0.41	74.43	2.85	614.92	100.70					
6	1.62	77.93	4.15	603.83	112.78					
7	1.62	80.42	0.85	613.71	115.37					
8	2.82	83.35	5.00	703.27	157.01					
9	4.03	88.34	5.00	852.67	224.40					
10	5.23	93.32	5.00	990.94	297.97					
11	6.45	98.29	5.00	1118.14	376.97					
12	7.66	103.26	5.00	1234.74	459.66					
13	8.86	108.20	5.00	1340.85	545.47					
14	10.07	113.13	5.00	1436.61	633.47					
15	11.28	118.05	5.00	1522.22	722.61					
16	12.47	122.94	5.00	1598.09	811.30					
17	13.70	127.81	5.00	1663.90	899.93					
18	14.91	132.66	5.00	1720.24	986.10					
19	16.10	137.47	5.00	1767.39	1068.96					
20	17.31	142.26	5.00	1805.28	1148.35					
21	18.53	147.02	5.00	1833.94	1223.45					
22	19.73	149.69	0.65	1840.03	1281.48					
23	19.73	152.05	4.35	1790.77	1244.58					
24	20.94	156.43	5.00	1661.75	1195.77					
25	22.15	161.08	5.00	1520.57	1127.86					
26	23.36	164.20	1.75	1418.99	1083.78					
27	23.36	166.49	3.25	1399.48	1067.28					
28	24.56	170.26	5.00	1392.95	1098.67					
29	25.78	174.79	5.00	1380.43	1123.91					
30	26.99	179.26	5.00	1360.23	1140.02					
31	28.18	183.70	5.00	1332.69	1146.59					
32	29.41	188.08	5.00	1297.50	1143.98					
33	30.60	192.41	5.00	1255.57	1130.87					
34	31.81	196.68	5.00	1206.51	1107.93					
35	33.02	200.90	5.00	1150.98	1074.45					
36	34.22	205.07	5.00	1089.09	1030.62					
37	35.44	209.17	5.00	1020.81	976.54					
38	36.64	213.21	5.00	946.85	911.99					
39	37.85	216.61	3.52	877.95	849.66					
40	37.85	218.58	1.48	824.89	789.34					
41	39.06	219.58	1.07	768.47	737.19					
42	39.06	221.53	3.93	798.80	750.83					
43	40.27	224.96	5.00	621.18	555.14					
44	41.47	228.74	5.00	423.12	328.82					
45	42.70	231.31	1.90	285.42	169.36					
Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 222811.59 (lbs)										
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 1161.08(psf)										
Sum of the Driving Forces = 144681.75 (lbs)										
Average Mobilized Shear Stress = 753.94(psf)										
Total length of the failure surface = 191.90(ft)										
CAUTION - Factor Of Safety Is										

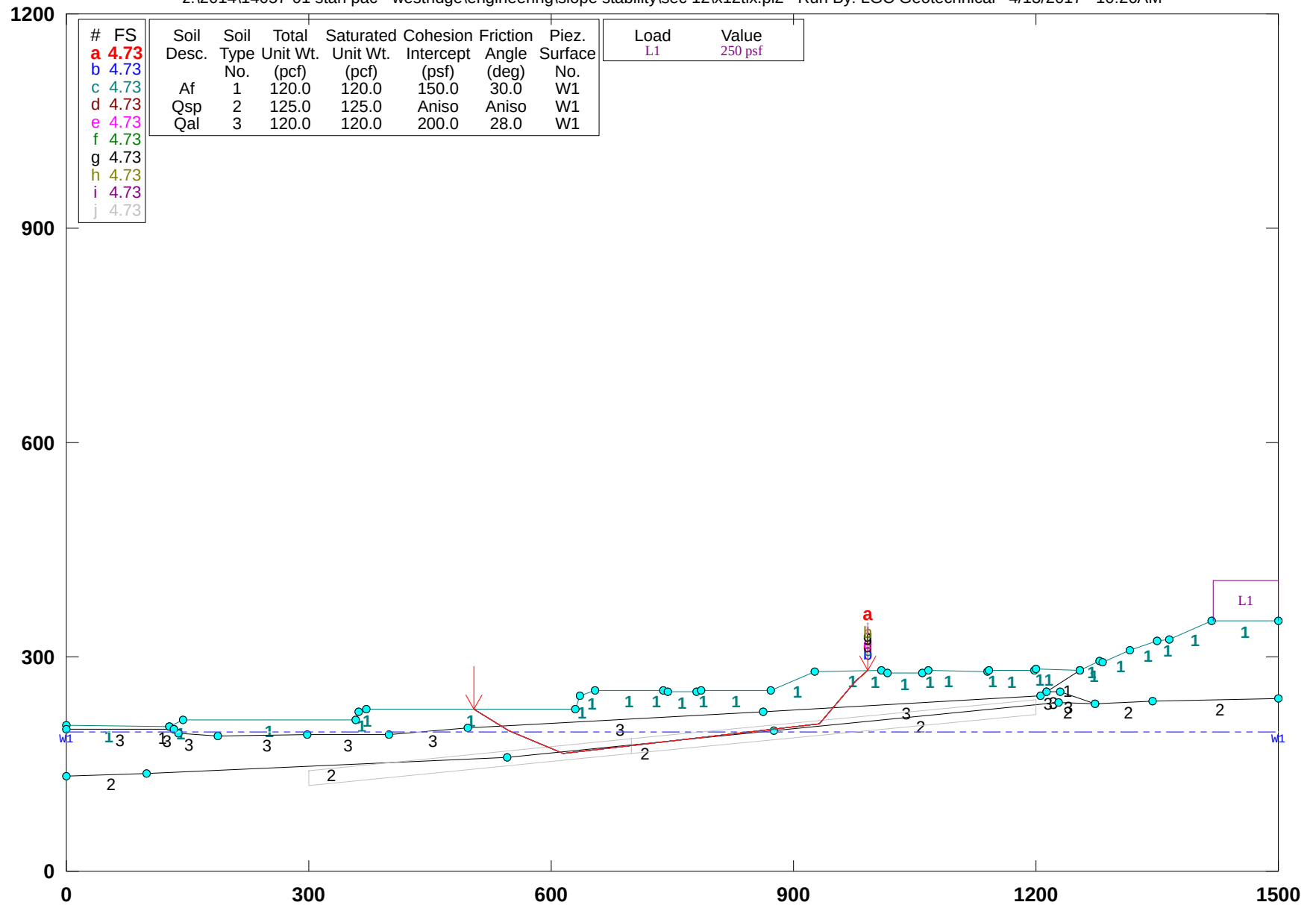
Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\x12e.0UT Page 5

for Downhill Sliding.

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

Westridge/14057-01/Sec 12-12"/ Entire Length / Static

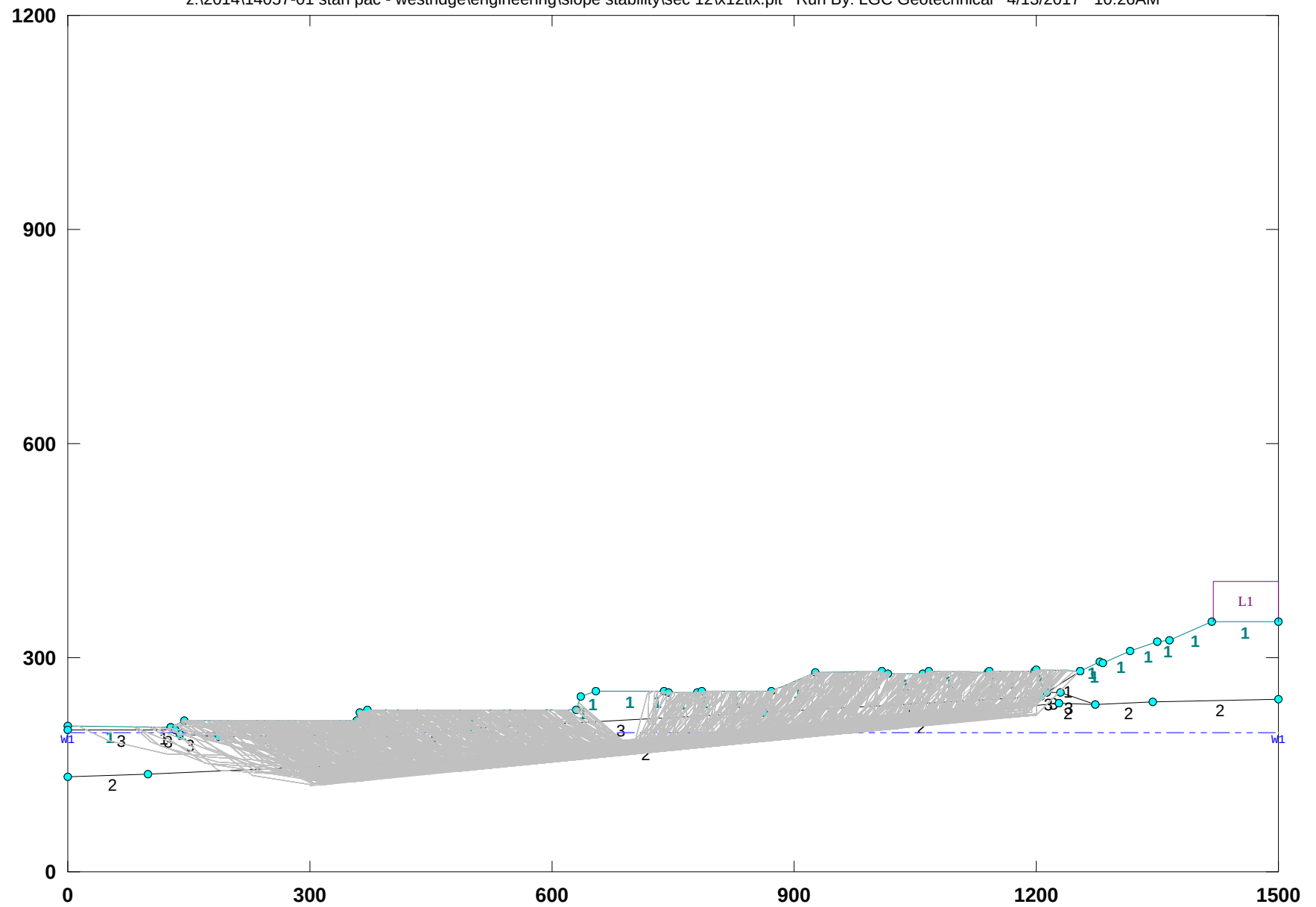
z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 12\12tlx.pl2 Run By: LGC Geotechnical 4/13/2017 10:26AM



GSTABL7 v.2 FSmin=4.73

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

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 12\12tlx.plt Run By: LGC Geotechnical 4/13/2017 10:26AM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **

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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: 4/13/2017
 Time of Run: 10:26AM
 Run By: LGC Geotechnical
 Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\12t1x.in
 Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\12t1x.OUT
 Unit System: English
 Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\12t1x.PLT
 PROBLEM DESCRIPTION: Westridge/14057-01/Sec 12-12"/ Entire Length / Static

BOUNDARY COORDINATES

30 Top Boundaries

50 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	204.00	128.00	203.00	1
2	128.00	203.00	145.00	212.00	1
3	145.00	212.00	358.00	211.00	1
4	358.00	211.00	361.00	224.00	1
5	361.00	224.00	371.00	226.00	1
6	371.00	226.00	630.00	226.00	1
7	630.00	226.00	635.00	245.00	1
8	635.00	245.00	655.00	254.00	1
9	655.00	254.00	738.00	254.00	1
10	738.00	254.00	744.00	251.00	1
11	744.00	251.00	780.00	251.00	1
12	780.00	251.00	786.00	253.00	1
13	786.00	253.00	872.00	253.00	1
14	872.00	253.00	926.00	279.00	1
15	926.00	279.00	1009.00	281.00	1
16	1009.00	281.00	1016.00	278.00	1
17	1016.00	278.00	1059.00	278.00	1
18	1059.00	278.00	1067.00	281.00	1
19	1067.00	281.00	1140.00	280.00	1
20	1140.00	280.00	1141.00	281.00	1
21	1141.00	281.00	1199.00	282.00	1
22	1199.00	282.00	1200.00	283.00	1
23	1200.00	283.00	1255.00	282.00	1
24	1255.00	282.00	1279.00	294.00	1
25	1279.00	294.00	1282.00	293.00	1
26	1282.00	293.00	1316.00	310.00	1
27	1316.00	310.00	1350.00	323.00	1
28	1350.00	323.00	1365.00	325.00	1
29	1365.00	325.00	1417.00	350.00	1
30	1417.00	350.00	1500.00	350.00	1
31	128.00	203.00	133.00	199.00	1
32	133.00	199.00	138.00	194.00	3
33	138.00	194.00	187.00	190.00	3
34	187.00	190.00	298.00	191.00	3
35	298.00	191.00	400.00	192.00	3
36	400.00	192.00	496.00	200.00	3
37	496.00	200.00	862.00	224.00	3
38	862.00	224.00	1205.00	246.00	3
39	1205.00	246.00	1213.00	252.00	3
40	1213.00	252.00	1255.00	282.00	1

	41	42	43	44	45	46	47	48	49	50
	0.00	1213.00	1230.00	0.00	100.00	546.00	875.00	1228.00	1273.00	1345.00
	199.00	252.00	252.00	134.00	137.00	160.00	197.00	237.00	235.00	238.00
	133.00	1273.00	1273.00	100.00	546.00	875.00	1228.00	1273.00	1345.00	1500.00
	199.00	252.00	252.00	137.00	160.00	197.00	237.00	235.00	238.00	242.00
	3	3	3	2	2	2	2	2	2	2

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

Soil No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	150.0	30.0	0.00	0.0	1
2	125.0	125.0	300.0	32.0	0.00	0.0	1
3	120.0	120.0	200.0	28.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 2 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	5.0	300.00	32.00
2	20.0	200.00	27.00
3	90.0	300.00	32.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	195.00
2	1500.00	195.00

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	1420.00	1500.00	250.0	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.

5000 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 75.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	300.00	130.00	700.00	175.00	20.00
2	700.10	175.00	1200.00	230.00	20.00

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 = 43.711 FS Min = 4.734 FS Ave = 7.258

Standard Deviation = 2.538 Coefficient of Variation = 34.97 %

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1.	504.127	226.000
2	546.834	196.453
3	615.308	165.852
4	931.835	206.139
5	977.355	265.745
6	991.252	280.572

Factor of Safety
*** 4.734 ***

Individual data on the

21 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)	Surcharge Load Ver (lbs)
1	33.6	46928.8	0.0	0.0	0.0	0.0	0.0	0.0
2	9.1	28783.4	0.0	0.0	0.0	0.0	0.0	0.0
3	3.3	11810.4	0.0	0.0	0.0	0.0	0.0	0.0
4	61.7	331948.3	0.0	58233.6	0.0	0.0	0.0	0.0
5	3.5	24761.4	0.0	6734.9	0.0	0.0	0.0	0.0
6	14.7	104532.7	0.0	26074.7	0.0	0.0	0.0	0.0
7	5.0	40518.2	0.0	8479.4	0.0	0.0	0.0	0.0
8	20.0	191835.9	0.0	31916.0	0.0	0.0	0.0	0.0
9	83.0	775335.6	0.0	98228.2	0.0	0.0	0.0	0.0
10	6.0	50870.5	0.0	4963.1	0.0	0.0	0.0	0.0
11	2.4	19893.1	0.0	1917.1	0.0	0.0	0.0	0.0
12	33.6	267289.0	0.0	21808.9	0.0	0.0	0.0	0.0
13	6.0	46659.2	0.0	2945.5	0.0	0.0	0.0	0.0
14	58.3	431858.2	0.0	13614.3	0.0	0.0	0.0	0.0
15	17.7	120685.6	0.0	0.0	0.0	0.0	0.0	0.0
16	10.0	66135.5	0.0	0.0	0.0	0.0	0.0	0.0
17	54.0	414978.9	0.0	0.0	0.0	0.0	0.0	0.0
18	5.8	51323.3	0.0	0.0	0.0	0.0	0.0	0.0
19	17.9	132334.8	0.0	0.0	0.0	0.0	0.0	0.0
20	27.6	106631.8	0.0	0.0	0.0	0.0	0.0	0.0
21	13.9	12083.7	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
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2	546.834	196.453
3	615.308	165.852
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5	977.355	265.745
6	991.252	280.572

Factor of Safety
*** 4.734 ***

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Factor of Safety
*** 4.734 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1.	504.127	226.000
2	546.834	196.453
3	615.308	165.852
4	931.835	206.139
5	977.355	265.745
6	991.252	280.572

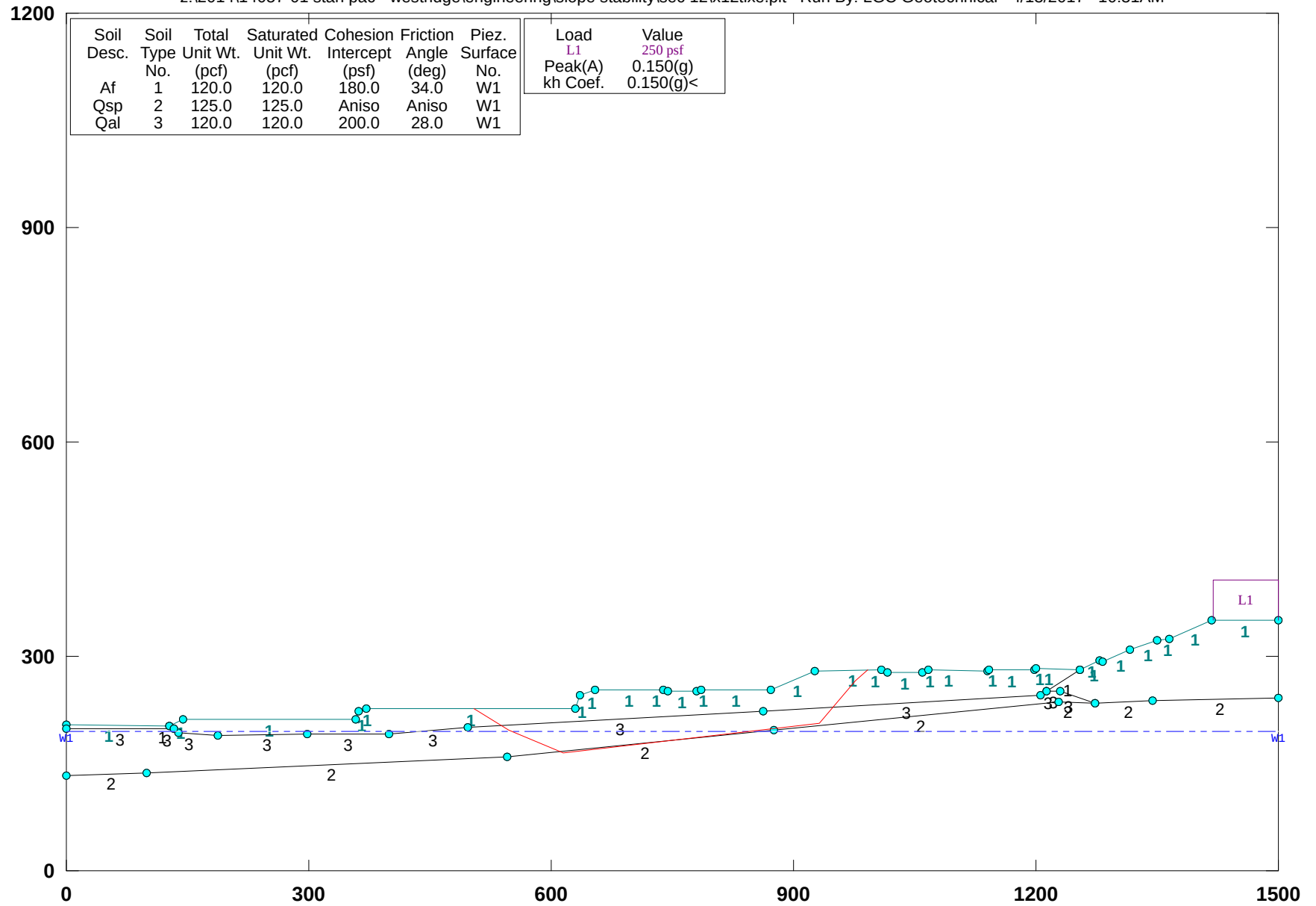
Factor of Safety
*** 4.734 ***

Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\x12tlx.0UT Page 5

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

Westridge/14057-01/Sec 12-12"/ Entire Length / Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 12\12tlxe.plt Run By: LGC Geotechnical 4/13/2017 10:31AM



Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Af	1	120.0	120.0	180.0	34.0	W1
Qsp	2	125.0	125.0	Aniso	Aniso	W1
Qal	3	120.0	120.0	200.0	28.0	W1

Load	Value
L1	250 psf
Peak(A)	0.150(g)
kh Coef.	0.150(g)<

GSTABL7 v.2 FSmin=2.22
Factor Of Safety Is Calculated By The Simplified Janbu Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/13/2017
 Time of Run: 10:31AM
 Run By: LGC Geotechnical
 Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\12tlxe.in
 Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\12tlxe.OUT
 Unit System: English
 Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 12\12tlxe.PLT
 PROBLEM DESCRIPTION: Westridge/14057-01/Sec 12-12"/ Entire Length / Seismic

BOUNDARY COORDINATES

30 Top Boundaries

50 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	204.00	128.00	203.00	1
2	128.00	203.00	145.00	212.00	1
3	145.00	212.00	358.00	211.00	1
4	358.00	211.00	361.00	224.00	1
5	361.00	224.00	371.00	226.00	1
6	371.00	226.00	630.00	226.00	1
7	630.00	226.00	635.00	245.00	1
8	635.00	245.00	655.00	254.00	1
9	655.00	254.00	738.00	254.00	1
10	738.00	254.00	744.00	251.00	1
11	744.00	251.00	780.00	251.00	1
12	780.00	251.00	786.00	253.00	1
13	786.00	253.00	872.00	253.00	1
14	872.00	253.00	926.00	279.00	1
15	926.00	279.00	1009.00	281.00	1
16	1009.00	281.00	1016.00	278.00	1
17	1016.00	278.00	1059.00	278.00	1
18	1059.00	278.00	1067.00	281.00	1
19	1067.00	281.00	1140.00	280.00	1
20	1140.00	280.00	1141.00	281.00	1
21	1141.00	281.00	1199.00	282.00	1
22	1199.00	282.00	1200.00	283.00	1
23	1200.00	283.00	1255.00	282.00	1
24	1255.00	282.00	1279.00	294.00	1
25	1279.00	294.00	1282.00	293.00	1
26	1282.00	293.00	1316.00	310.00	1
27	1316.00	310.00	1350.00	323.00	1
28	1350.00	323.00	1365.00	325.00	1
29	1365.00	325.00	1417.00	350.00	1
30	1417.00	350.00	1500.00	350.00	1
31	128.00	203.00	133.00	199.00	1
32	133.00	199.00	138.00	194.00	3
33	138.00	194.00	187.00	190.00	3
34	187.00	190.00	298.00	191.00	3
35	298.00	191.00	400.00	192.00	3
36	400.00	192.00	496.00	200.00	3
37	496.00	200.00	862.00	224.00	3
38	862.00	224.00	1205.00	246.00	3
39	1205.00	246.00	1213.00	252.00	3
40	1213.00	252.00	1255.00	282.00	1

	41	42	43	44	45	46	47	48	49	50
	0.00	1213.00	1230.00	0.00	100.00	546.00	875.00	1228.00	1273.00	1345.00
	199.00	252.00	252.00	134.00	137.00	160.00	197.00	237.00	235.00	238.00
	133.00	1273.00	1273.00	100.00	546.00	875.00	1228.00	1273.00	1345.00	1500.00
	199.00	252.00	252.00	137.00	160.00	197.00	237.00	235.00	238.00	242.00
	3	3	3	2	2	2	2	2	2	2

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

Soil No.	Total (pcf)	Saturated (pcf)	Cohesion (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	180.0	34.0	0.00	0.0	1
2	125.0	125.0	300.0	32.0	0.00	0.0	1
3	120.0	120.0	200.0	28.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 2 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	5.0	500.00	34.00
2	20.0	200.00	27.00
3	90.0	500.00	34.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	195.00
2	1500.00	195.00

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	1420.00	1500.00	250.0	0.0

NOTE - Intensity Is Specified As A Uniformly Distributed

Force Acting On A Horizontally Projected Surface.

Specified Peak Ground Acceleration Coefficient (A) = 0.150(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 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	504.127	226.000
2	546.834	196.453
3	615.308	165.852
4	931.835	206.139
5	977.355	265.745
6	991.252	280.572

Janbu's Empirical Coefficient (fo) = 1.058

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

Factor Of Safety For The Preceding Specified Surface = 2.218

Table 1 - Individual Data on the 21 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	33.6	46929.2	0.0	0.0	0.0	0.0	7039.4	0.0	0.0
2	9.1	28782.7	0.0	0.0	0.0	0.0	4317.4	0.0	0.0
3	3.3	11811.3	0.0	0.0	0.0	0.0	1771.7	0.0	0.0
4	61.7	331953.1	0.0	58234.2	0.0	0.0	49793.0	0.0	0.0
5	3.5	24758.7	0.0	6734.2	0.0	0.0	3713.8	0.0	0.0
6	14.7	104529.7	0.0	26073.8	0.0	0.0	15679.5	0.0	0.0
7	5.0	40518.1	0.0	8479.3	0.0	0.0	6077.7	0.0	0.0
8	20.0	191835.5	0.0	31915.7	0.0	0.0	28775.3	0.0	0.0
9	83.0	775334.6	0.0	98227.7	0.0	0.0	*****	0.0	0.0
10	6.0	50870.5	0.0	4963.1	0.0	0.0	7630.6	0.0	0.0
11	2.4	19884.1	0.0	1916.2	0.0	0.0	2982.6	0.0	0.0
12	33.6	267298.1	0.0	21809.8	0.0	0.0	40094.7	0.0	0.0
13	6.0	46659.2	0.0	2945.6	0.0	0.0	6998.9	0.0	0.0
14	58.3	431866.0	0.0	13614.6	0.0	0.0	64779.9	0.0	0.0
15	17.7	120678.7	0.0	0.0	0.0	0.0	18101.8	0.0	0.0
16	10.0	66135.7	0.0	0.0	0.0	0.0	9920.4	0.0	0.0
17	54.0	414980.3	0.0	0.0	0.0	0.0	62247.1	0.0	0.0
18	5.8	51326.7	0.0	0.0	0.0	0.0	7699.0	0.0	0.0
19	17.9	132333.9	0.0	0.0	0.0	0.0	19850.1	0.0	0.0
20	27.6	106629.5	0.0	0.0	0.0	0.0	15994.4	0.0	0.0
21	13.9	12084.2	0.0	0.0	0.0	0.0	1812.6	0.0	0.0

Table 2 - Base Stress Data on the 21 Slices

Slice No.	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-34.68	520.94	40.89	1726.97	-621.94
2	-34.68	542.29	11.05	2747.48	-1411.92
3	-24.08	548.46	3.56	2614.88	-984.72
4	-24.08	580.96	67.64	3190.14	-1457.17
5	-24.08	613.57	3.80	5215.69	-1932.54
6	7.25	622.65	14.81	2867.90	1956.97
7	7.25	632.50	5.04	3400.43	2228.98
8	7.25	645.00	20.16	4192.63	2638.31
9	7.25	696.50	83.67	4271.79	2569.43
10	7.25	741.00	6.05	4017.51	2332.07
11	7.25	745.21	2.43	3912.13	2264.80
12	7.25	763.21	33.86	4000.22	2189.15
13	7.25	783.00	6.05	3987.16	2139.01
14	7.25	815.16	58.79	3926.95	2036.91
15	7.25	853.16	17.82	3745.52	1877.27
16	7.25	867.00	10.08	3635.57	1819.12
17	7.25	899.00	54.44	4192.76	2113.78
18	7.25	928.92	5.88	4770.88	2419.51
19	52.63	940.80	29.56	5169.42	6534.19
20	52.63	963.56	45.44	3285.14	3424.58
21	46.85	984.30	20.32	846.33	723.64

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 1946907.62 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 3596.50(psf)
Sum of the Driving Forces = 928930.69 (lbs)
Average Mobilized Shear Stress = 1716.00(psf)
Total length of the failure surface = 541.33(ft)

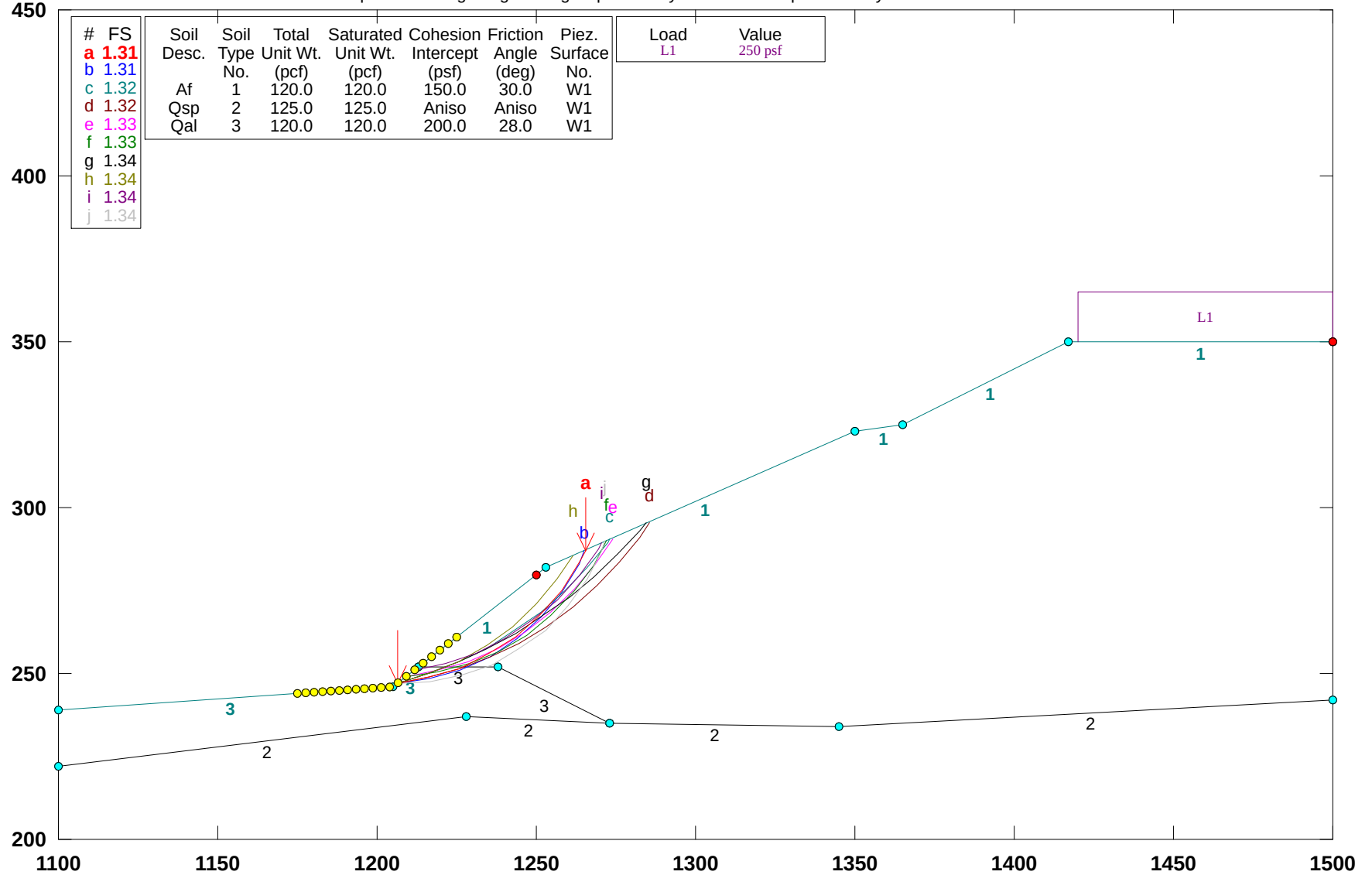
*** SEISMIC SLOPE DISPLACEMENT DATA ***

(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.4860(g)
Calculated Newmark Seismic Displacement = 0.001(ft)
Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

Westridge/14057-01/Sec 12'-12" / Temp. Backcut Analysis

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 12\12tcx.pl2 Run By: LGC Geotechnical 4/17/2017 09:57AM



GSTABL7 v.2 FSmin=1.31

Safety Factors Are Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/17/2017

Time of Run: 09:57AM

Run By: LGC Geotechnical

Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab

ility\Sec 12\12tcx.in

Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab

ility\Sec 12\12tcx.OUT

Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab

ility\Sec 12\12tcx.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 12'-12" / Temp.

Backcut Analysis

BOUNDARY COORDINATES

7 Top Boundaries

13 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	1100.00	239.00	1205.00	246.00	3
2	1205.00	246.00	1213.00	252.00	3
3	1213.00	252.00	1253.10	282.00	1
4	1253.10	282.00	1350.00	323.00	1
5	1350.00	323.00	1365.00	325.00	1
6	1365.00	325.00	1417.00	350.00	1
7	1417.00	350.00	1500.00	350.00	1
8	1213.00	252.00	1238.00	252.00	3
9	1238.00	252.00	1273.00	235.00	3
10	1273.00	235.00	1345.00	234.00	2
11	1345.00	234.00	1500.00	242.00	2
12	1100.00	222.00	1228.00	237.00	2
13	1228.00	237.00	1273.00	235.00	2

User Specified Y-Origin = 200.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

Soil Type	Total Unit Wt.	Saturated Unit Wt.	Cohesion Intercept	Friction Angle	Pore Pressure Param.	Pressure Constant	Piez. Surface
No.	(pcf)	(pcf)	(psf)	(deg)		(psf)	No.
1	120.0	120.0	150.0	30.0	0.00	0.0	1
2	125.0	125.0	300.0	32.0	0.00	0.0	1
3	120.0	120.0	200.0	28.0	0.00	0.0	1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 2 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	5.0	300.00	32.00
2	20.0	200.00	27.00
3	90.0	300.00	32.00

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	1420.00	1500.00	250.0	0.0

NOTE - Intensity Is Specified As A Uniformly Distributed

Force Acting On A Horizontally Projected Surface.

A Critical Failure Surface Searching Method, Using A Random

Technique For Generating Circular Surfaces, Has Been Specified.

5000 Trial Surfaces Have Been Generated.

250 Surface(s) Initiate(s) From Each Of 20 Points Equally Spaced

Along The Ground Surface Between X =1175.00(ft)

and X =1225.00(ft)

Each Surface Terminates Between X =1250.00(ft)

and X =1500.00(ft)

Unless Further Limitations Were Imposed, The Minimum Elevation

At Which A Surface Extends Is Y = 0.00(ft)

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

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 Modified Bishop 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 = 3.666 FS Min = 1.306 FS Ave = 2.338

Standard Deviation = 0.622 Coefficient of Variation = 26.61 %

Failure Surface Specified By 9 Coordinate Points

Point No. X-Surf (ft) Y-Surf (ft)

1	1206.579	247.184
2	1216.453	248.769
3	1226.020	251.679
4	1235.104	255.860
5	1243.536	261.236
6	1251.161	267.706
7	1257.836	275.152
8	1263.440	283.434
9	1265.276	287.152

Circle Center At X = 1199.896 ; Y = 320.388 ; and Radius = 73.508

Factor of Safety

*** 1.306 ***

Individual data on the 11 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Norm (lbs)	Tie Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	6.4	1458.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	3.5	1988.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	9.6	9113.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.7	851.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	8.4	11541.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	8.4	13298.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	7.6	12101.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	1.9	2905.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	4.7	5963.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	5.6	3965.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	1.8	323.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 9 Coordinate Points

Point No. X-Surf (ft) Y-Surf (ft)

1	1206.579	247.184
2	1216.505	248.402
3	1226.146	251.057
4	1235.296	255.091
5	1243.759	260.417
6	1251.354	266.923
7	1257.917	274.468
8	1263.308	282.890

9 1265.214 287.126
 Circle Center At X = 1203.245 ; Y = 315.400 ; and Radius = 68.297
 Factor of Safety
 *** 1.312 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1206.579	247.184
2	1216.206	249.890
3	1225.567	253.407
4	1234.594	257.711
5	1243.221	262.768
6	1251.384	268.543
7	1259.026	274.994
8	1266.089	282.073
9	1272.522	289.729
10	1273.013	290.425

Circle Center At X = 1179.846 ; Y = 360.909 ; and Radius = 116.824
 Factor of Safety
 *** 1.318 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1206.579	247.184
2	1216.430	248.905
3	1226.091	251.487
4	1235.487	254.910
5	1244.544	259.148
6	1253.193	264.168
7	1261.365	269.931
8	1268.998	276.392
9	1276.032	283.500
10	1282.412	291.200
11	1285.529	295.721

Circle Center At X = 1192.021 ; Y = 359.597 ; and Radius = 113.351
 Factor of Safety
 *** 1.320 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1209.211	249.158
2	1219.061	250.884
3	1228.648	253.726
4	1237.848	257.647
5	1246.538	262.595
6	1254.604	268.505
7	1261.941	275.300
8	1268.453	282.889
9	1273.759	290.741

Circle Center At X = 1199.107 ; Y = 335.792 ; and Radius = 87.221
 Factor of Safety
 *** 1.325 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1209.211	249.158
2	1219.137	250.371
3	1228.815	252.886
4	1238.076	256.659
5	1246.757	261.623
6	1254.705	267.692
7	1261.780	274.759
8	1267.858	282.700
9	1272.057	290.021

Circle Center At X = 1205.045 ; Y = 324.486 ; and Radius = 75.443
 Factor of Safety
 *** 1.332 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	1206.579	247.184
2	1216.164	250.036
3	1225.548	253.490
4	1234.695	257.533
5	1243.566	262.148
6	1252.127	267.317
7	1260.342	273.019
8	1268.179	279.231
9	1275.605	285.927
10	1282.592	293.082
11	1284.480	295.277

Circle Center At X = 1166.484 ; Y = 399.482 ; and Radius = 157.488
 Factor of Safety
 *** 1.335 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1206.579	247.184
2	1216.225	249.823
3	1225.499	253.563
4	1234.277	258.354
5	1242.439	264.131
6	1249.876	270.816
7	1256.487	278.319
8	1261.502	285.555

Circle Center At X = 1188.870 ; Y = 331.027 ; and Radius = 85.692
 Factor of Safety
 *** 1.336 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	1211.842	251.132
2	1221.650	253.082
3	1231.148	256.212
4	1240.194	260.475
5	1248.653	265.808
6	1256.400	272.131
7	1263.320	279.350
8	1269.310	287.358
9	1270.444	289.339

Circle Center At X = 1200.786 ; Y = 332.367 ; and Radius = 81.984
 Factor of Safety
 *** 1.336 ***

Failure Surface Specified By 10 Coordinate Points

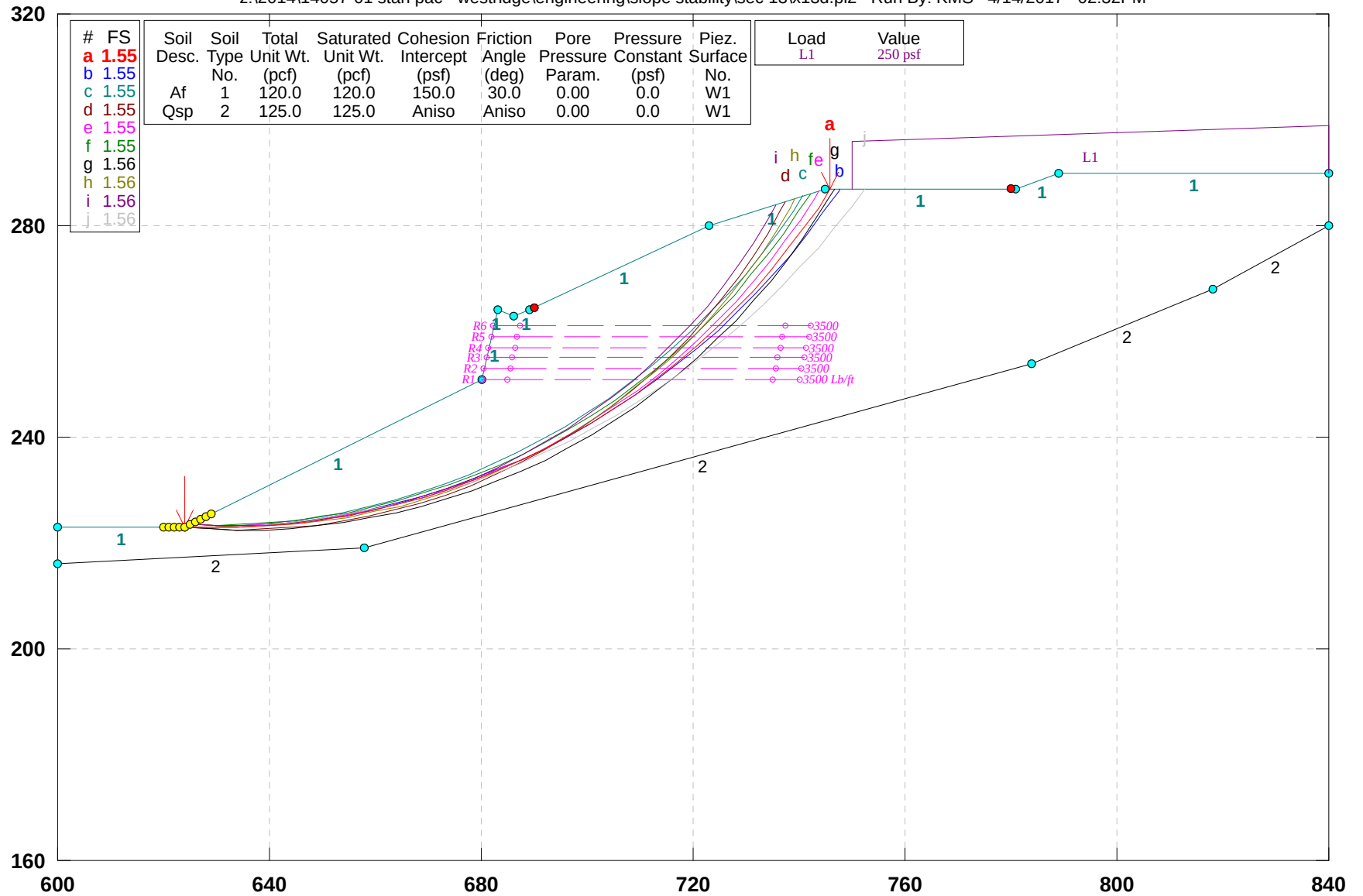
Point No.	X-Surf (ft)	Y-Surf (ft)
1	1206.579	247.184
2	1216.573	247.543
3	1226.402	249.383
4	1235.849	252.661
5	1244.705	257.307
6	1252.772	263.216
7	1259.872	270.258
8	1265.847	278.277
9	1270.565	287.094
10	1271.528	289.797

Circle Center At X = 1209.280 ; Y = 313.871 ; and Radius = 66.742
 Factor of Safety
 *** 1.339 ***

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

Westridge/14057-01/Sec 13-13' MSE Wall - Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 13\13d.pl2 Run By: KMS 4/14/2017 02:32PM



GSTABL7 v.2 FSmin=1.55
Safety Factors Are Calculated By The Modified Bishop Method

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	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	750.00	840.00	250.0	0.0

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

1

REINFORCING LAYER(S)

6 REINFORCING LAYER(S) SPECIFIED

REINFORCING LAYER NO. 1

4 POINTS DEFINE THIS LAYER

POINT	X-COORD	Y-COORD	FORCE	INCLINATION

NO.				FACTOR
1	680.00	251.00	0.00	0.000
2	685.00	251.00	3500.00	0.000
3	735.00	251.00	3500.00	0.000
4	740.00	251.00	0.00	0.000

REINFORCING LAYER NO. 2

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	680.46	253.00	0.00	0.000
2	685.46	253.00	3500.00	0.000
3	735.46	253.00	3500.00	0.000
4	740.46	253.00	0.00	0.000

REINFORCING LAYER NO. 3

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	680.92	255.00	0.00	0.000
2	685.92	255.00	3500.00	0.000
3	735.92	255.00	3500.00	0.000
4	740.92	255.00	0.00	0.000

REINFORCING LAYER NO. 4

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	681.38	257.00	0.00	0.000
2	686.38	257.00	3500.00	0.000
3	736.38	257.00	3500.00	0.000
4	741.38	257.00	0.00	0.000

REINFORCING LAYER NO. 5

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	681.85	259.00	0.00	0.000
2	686.85	259.00	3500.00	0.000
3	736.85	259.00	3500.00	0.000
4	741.85	259.00	0.00	0.000

REINFORCING LAYER NO. 6

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	682.31	261.00	0.00	0.000
2	687.31	261.00	3500.00	0.000
3	737.31	261.00	3500.00	0.000
4	742.31	261.00	0.00	0.000

1

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

5000 Trial Surfaces Have Been Generated.

Spaced

500 Surface(s) Initiate(s) From Each Of 10 Points Equally

Along The Ground Surface Between X = 620.00(ft)
and X = 629.00(ft)

Each Surface Terminates Between X = 690.00(ft)
and X = 780.00(ft)

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

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

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 Modified Bishop 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 = 2.943 FS Min = 1.551 FS Ave = 2.195

Standard Deviation = 0.416 Coefficient of Variation =

18.97 %

Failure Surface Specified By 30 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	624.000	223.000
2	628.999	222.884
3	633.998	222.950
4	638.992	223.198
5	643.974	223.627
6	648.936	224.237
7	653.873	225.027
8	658.779	225.997
9	663.645	227.144
10	668.467	228.467
11	673.237	229.964
12	677.950	231.635
13	682.599	233.475
14	687.178	235.483
15	691.681	237.657
16	696.102	239.993
17	700.435	242.488
18	704.674	245.139
19	708.815	247.942
20	712.850	250.894
21	716.776	253.991
22	720.586	257.229
23	724.276	260.603
24	727.841	264.109
25	731.276	267.742
26	734.576	271.498
27	737.738	275.371
28	740.757	279.357
29	743.629	283.450
30	745.932	287.000

Circle Center At X = 629.693 ; Y = 360.304 ; and Radius = 137.422

Factor of Safety
*** 1.551 ***

Individual data on the 35 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	5.0	784.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	5.0	2299.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	5.0	3699.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	5.0	4978.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	5.0	6131.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	4.9	7151.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	4.9	8035.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	4.9	8781.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	4.8	9386.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	4.8	9852.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	4.7	10178.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
12	2.0	4537.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
13	2.6	7383.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
14	0.4	1422.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
15	3.0	10508.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
16	1.2	3954.8	0.0	0.0	0.	0.	0.0	0.0
0.0								

17	1.8	6071.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
18	2.7	8886.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
19	4.4	14576.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
20	4.3	14102.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
21	4.2	13514.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
22	4.1	12823.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
23	4.0	12036.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
24	3.9	11166.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
25	3.8	10222.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
26	2.4	6112.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
27	1.3	3089.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
28	3.6	7964.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
29	3.4	6661.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
30	3.3	5362.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
31	3.2	4079.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
32	3.0	2827.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
33	2.9	1620.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
34	1.4	374.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
35	0.9	80.3	0.0	0.0	0.	0.	0.0	0.0
0.0								

Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	624.000	223.000
2	629.000	222.947
3	633.998	223.068
4	638.990	223.363
5	643.968	223.830
6	648.926	224.471
7	653.860	225.283
8	658.762	226.266
9	663.628	227.419

10	668.450	228.741
11	673.223	230.229
12	677.942	231.882
13	682.601	233.698
14	687.193	235.675
15	691.714	237.810
16	696.158	240.102
17	700.520	242.546
18	704.795	245.140
19	708.976	247.881
20	713.060	250.766
21	717.041	253.791
22	720.915	256.952
23	724.677	260.246
24	728.321	263.669
25	731.845	267.217
26	735.243	270.885
27	738.512	274.668
28	741.647	278.563
29	744.645	282.565
30	747.502	286.668
31	747.717	287.000

Circle Center At X = 628.021 ; Y = 366.818 ; and Radius = 143.875

Factor of Safety
*** 1.552 ***

1

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	624.000	223.000
2	629.000	222.995
3	633.997	223.175
4	638.984	223.539
5	643.953	224.087
6	648.900	224.818
7	653.816	225.731
8	658.694	226.825
9	663.530	228.098
10	668.314	229.549
11	673.042	231.176
12	677.707	232.976
13	682.302	234.947
14	686.822	237.086

15	691.259	239.391
16	695.608	241.858
17	699.863	244.483
18	704.018	247.265
19	708.068	250.197
20	712.006	253.277
21	715.828	256.501
22	719.529	259.863
23	723.103	263.360
24	726.545	266.986
25	729.852	270.737
26	733.017	274.607
27	736.038	278.592
28	738.909	282.685
29	740.848	285.679

Circle Center At X = 626.633 ; Y = 358.387 ; and Radius = 135.413

Factor of Safety
*** 1.553 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	624.000	223.000
2	628.988	222.649
3	633.986	222.513
4	638.985	222.592
5	643.977	222.886
6	648.951	223.395
7	653.898	224.117
8	658.810	225.051
9	663.677	226.195
10	668.491	227.548
11	673.242	229.107
12	677.921	230.869
13	682.520	232.830
14	687.031	234.987
15	691.445	237.337
16	695.753	239.874
17	699.949	242.594
18	704.023	245.492
19	707.969	248.562
20	711.779	251.800
21	715.447	255.198
22	718.965	258.751

23	722.327	262.452
24	725.526	266.295
25	728.558	270.271
26	731.415	274.374
27	734.093	278.596
28	736.588	282.930
29	737.455	284.599

Circle Center At X = 634.648 ; Y = 338.718 ; and Radius =

116.207

Factor of Safety
*** 1.553 ***

1

Failure Surface Specified By 30 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	625.000	223.500
2	629.997	223.329
3	634.997	223.351
4	639.992	223.563
5	644.976	223.968
6	649.941	224.563
7	654.879	225.348
8	659.783	226.322
9	664.646	227.483
10	669.461	228.830
11	674.221	230.361
12	678.919	232.073
13	683.547	233.964
14	688.100	236.032
15	692.570	238.272
16	696.951	240.682
17	701.236	243.258
18	705.419	245.997
19	709.494	248.894
20	713.455	251.946
21	717.296	255.147
22	721.012	258.493
23	724.596	261.979
24	728.044	265.600
25	731.351	269.350
26	734.511	273.225
27	737.520	277.218
28	740.374	281.324
29	743.069	285.535

30	743.682	286.581

Circle Center At X = 631.960 ; Y = 353.593 ; and Radius =
130.279

Factor of Safety
*** 1.554 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	625.000	223.500
2	629.999	223.419
3	634.998	223.526
4	639.989	223.822
5	644.966	224.307
6	649.920	224.979
7	654.846	225.838
8	659.736	226.883
9	664.583	228.111
10	669.379	229.522
11	674.120	231.113
12	678.796	232.882
13	683.403	234.826
14	687.932	236.943
15	692.379	239.230
16	696.736	241.683
17	700.997	244.298
18	705.157	247.073
19	709.208	250.003
20	713.146	253.084
21	716.965	256.312
22	720.659	259.681
23	724.223	263.188
24	727.652	266.827
25	730.941	270.593
26	734.086	274.480
27	737.081	278.483
28	739.923	282.597
29	742.148	286.093

Circle Center At X = 629.654 ; Y = 355.742 ; and Radius =
132.324

Factor of Safety
*** 1.554 ***

1

Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	624.000	223.000
2	628.988	222.655
3	633.986	222.504
4	638.986	222.549
5	643.980	222.788
6	648.961	223.221
7	653.922	223.848
8	658.854	224.668
9	663.751	225.679
10	668.604	226.881
11	673.407	228.270
12	678.152	229.846
13	682.833	231.605
14	687.441	233.545
15	691.970	235.664
16	696.413	237.957
17	700.764	240.421
18	705.015	243.053
19	709.160	245.849
20	713.194	248.804
21	717.109	251.914
22	720.900	255.174
23	724.561	258.579
24	728.087	262.125
25	731.471	265.805
26	734.710	269.614
27	737.799	273.546
28	740.731	277.596
29	743.504	281.757
30	746.112	286.022
31	746.659	287.000

Circle Center At X = 635.350 ; Y = 350.822 ; and Radius =

128.325

Factor of Safety
*** 1.555 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	625.000	223.500
2	629.992	223.214
3	634.991	223.136
4	639.990	223.266
5	644.978	223.605
6	649.948	224.152
7	654.891	224.906
8	659.798	225.865
9	664.661	227.028
10	669.471	228.392
11	674.220	229.957
12	678.900	231.717
13	683.502	233.672
14	688.019	235.817
15	692.442	238.148
16	696.764	240.662
17	700.978	243.353
18	705.075	246.219
19	709.050	249.252
20	712.894	252.449
21	716.602	255.803
22	720.167	259.309
23	723.582	262.961
24	726.843	266.752
25	729.942	270.676
26	732.875	274.725
27	735.636	278.893
28	738.221	283.173
29	739.331	285.196

Circle Center At X = 634.359 ; Y = 342.989 ; and Radius =
119.855

Factor of Safety
*** 1.555 ***

1

Failure Surface Specified By 28 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	625.000	223.500
2	629.993	223.243

3	634.993	223.202
4	639.990	223.375
5	644.975	223.762
6	649.939	224.364
7	654.872	225.178
8	659.766	226.203
9	664.611	227.438
10	669.399	228.879
11	674.120	230.525
12	678.766	232.372
13	683.329	234.418
14	687.799	236.657
15	692.170	239.086
16	696.431	241.701
17	700.577	244.497
18	704.598	247.468
19	708.489	250.609
20	712.240	253.914
21	715.846	257.378
22	719.301	260.993
23	722.596	264.753
24	725.727	268.651
25	728.688	272.681
26	731.472	276.833
27	734.076	281.102
28	735.700	284.041

Circle Center At X = 633.482 ; Y = 339.470 ; and Radius = 116.280

Factor of Safety
*** 1.557 ***

Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	624.000	223.000
2	629.000	222.971
3	633.998	223.105
4	638.989	223.400
5	643.969	223.857
6	648.930	224.476
7	653.869	225.255
8	658.780	226.194
9	663.658	227.292
10	668.498	228.547
11	673.294	229.959

12	678.043	231.526
13	682.738	233.245
14	687.374	235.117
15	691.948	237.137
16	696.453	239.306
17	700.886	241.619
18	705.241	244.074
19	709.515	246.670
20	713.702	249.403
21	717.798	252.270
22	721.799	255.269
23	725.700	258.396
24	729.499	261.648
25	733.189	265.021
26	736.768	268.512
27	740.232	272.118
28	743.578	275.834
29	746.801	279.657
30	749.898	283.582
31	752.419	287.000

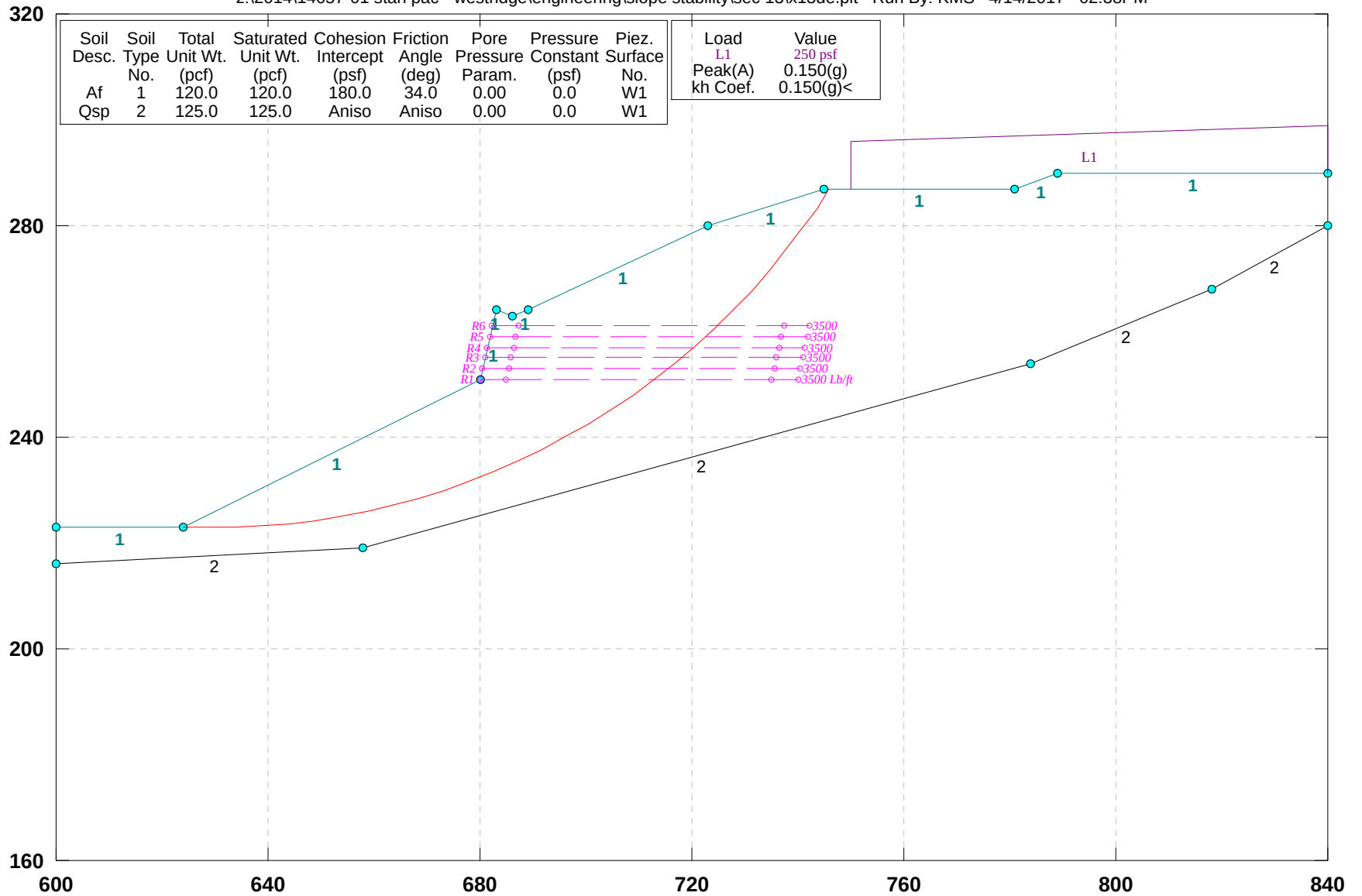
Circle Center At X = 627.389 ; Y = 377.064 ; and Radius = 154.102

Factor of Safety
*** 1.557 ***

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

Westridge/14057-01/Sec 13-13'/ MSE Wall - Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 13\13de.plt Run By: KMS 4/14/2017 02:38PM



GSTABL7 v.2 FSmin=1.35

Factor Of Safety Is Calculated By The Modified Bishop Method

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	7.0	500.00	34.00
2	12.0	200.00	27.00
3	90.0	500.00	34.00

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.

crack.

1

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	750.00	840.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

1

REINFORCING LAYER(S)

6 REINFORCING LAYER(S) SPECIFIED

REINFORCING LAYER NO. 1

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	680.00	251.00	0.00	0.000
2	685.00	251.00	3500.00	0.000
3	735.00	251.00	3500.00	0.000
4	740.00	251.00	0.00	0.000

REINFORCING LAYER NO. 2

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	680.46	253.00	0.00	0.000
2	685.46	253.00	3500.00	0.000
3	735.46	253.00	3500.00	0.000
4	740.46	253.00	0.00	0.000

REINFORCING LAYER NO. 3

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	680.92	255.00	0.00	0.000
2	685.92	255.00	3500.00	0.000
3	735.92	255.00	3500.00	0.000
4	740.92	255.00	0.00	0.000

REINFORCING LAYER NO. 4

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	681.38	257.00	0.00	0.000
2	686.38	257.00	3500.00	0.000
3	736.38	257.00	3500.00	0.000
4	741.38	257.00	0.00	0.000

REINFORCING LAYER NO. 5

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	681.85	259.00	0.00	0.000
2	686.85	259.00	3500.00	0.000
3	736.85	259.00	3500.00	0.000
4	741.85	259.00	0.00	0.000

REINFORCING LAYER NO. 6

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	682.31	261.00	0.00	0.000
2	687.31	261.00	3500.00	0.000
3	737.31	261.00	3500.00	0.000
4	742.31	261.00	0.00	0.000

Trial Failure Surface Specified By 30 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	624.000	223.000
2	628.999	222.884
3	633.998	222.950
4	638.992	223.198
5	643.974	223.627
6	648.936	224.237
7	653.873	225.027
8	658.779	225.997
9	663.645	227.144
10	668.467	228.467
11	673.237	229.964
12	677.950	231.635
13	682.599	233.475
14	687.178	235.483
15	691.681	237.657
16	696.102	239.993
17	700.435	242.488

18	704.674	245.139
19	708.815	247.942
20	712.850	250.894
21	716.776	253.991
22	720.586	257.229
23	724.276	260.603
24	727.841	264.109
25	731.276	267.742
26	734.576	271.498
27	737.738	275.371
28	740.757	279.357
29	743.629	283.450
30	745.932	287.000

DEFLECTION ANGLE & SEGMENT DATA FOR SPECIFIED SURFACE(Excluding Last Segment)

Angle/Segment No.	Deflection(Deg)	Segment Length(ft)
1	2.09	5.00
2	2.09	5.00
3	2.08	5.00
4	2.09	5.00
5	2.08	5.00
6	2.09	5.00
7	2.08	5.00
8	2.08	5.00
9	2.08	5.00
10	2.10	5.00
11	2.07	5.00
12	2.09	5.00
13	2.09	5.00
14	2.08	5.00
15	2.08	5.00
16	2.09	5.00
17	2.07	5.00
18	2.10	5.00

19	2.08	5.00
20	2.09	5.00
21	2.08	5.00
22	2.08	5.00
23	2.08	5.00
24	2.09	5.00
25	2.07	5.00
26	2.09	5.00
27	2.08	5.00

Circle Center At X = 629.692(ft) ; Y = 360.307(ft); and
Radius = 137.425(ft)

* * Factor Of Safety Is Calculated By The Modified Bishop
Method * *

Sum of Reinforcing Forces on Failure Surface = 15908.23
(lbs)

Factor Of Safety For The Preceding Specified Surface = 1.352

The calculated factor of safety for the specified surface
without piers/piles,
reinforcement, soil nails, or applied forces = 1.206

Table 1 - Individual Data on the 35 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top	Bot	Norm	Tan	Hor	Ver
	(ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
1	5.0	784.5	0.0	0.0	0.0	0.0	117.7	0.0

2	5.0	2298.9	0.0	0.0	0.0	0.0	344.8	0.0
0.0	3	5.0	3699.7	0.0	0.0	0.0	555.0	0.0
0.0	4	5.0	4979.4	0.0	0.0	0.0	746.9	0.0
0.0	5	5.0	6130.3	0.0	0.0	0.0	919.6	0.0
0.0	6	4.9	7150.8	0.0	0.0	0.0	1072.6	0.0
0.0	7	4.9	8036.6	0.0	0.0	0.0	1205.5	0.0
0.0	8	4.9	8779.5	0.0	0.0	0.0	1316.9	0.0
0.0	9	4.8	9387.2	0.0	0.0	0.0	1408.1	0.0
0.0	10	4.8	9851.4	0.0	0.0	0.0	1477.7	0.0
0.0	11	4.7	10178.4	0.0	0.0	0.0	1526.8	0.0
0.0	12	2.0	4537.9	0.0	0.0	0.0	680.7	0.0
0.0	13	2.6	7382.3	0.0	0.0	0.0	1107.4	0.0
0.0	14	0.4	1422.8	0.0	0.0	0.0	213.4	0.0
0.0	15	3.0	10508.9	0.0	0.0	0.0	1576.3	0.0
0.0	16	1.2	3954.0	0.0	0.0	0.0	593.1	0.0
0.0	17	1.8	6072.5	0.0	0.0	0.0	910.9	0.0
0.0	18	2.7	8886.1	0.0	0.0	0.0	1332.9	0.0
0.0	19	4.4	14577.1	0.0	0.0	0.0	2186.6	0.0
0.0	20	4.3	14102.1	0.0	0.0	0.0	2115.3	0.0
0.0	21	4.2	13513.0	0.0	0.0	0.0	2026.9	0.0
0.0	22	4.1	12825.4	0.0	0.0	0.0	1923.8	0.0
0.0	23	4.0	12035.3	0.0	0.0	0.0	1805.3	0.0
0.0	24	3.9	11167.9	0.0	0.0	0.0	1675.2	0.0
0.0	25	3.8	10221.8	0.0	0.0	0.0	1533.3	0.0
0.0	26	2.4	6112.1	0.0	0.0	0.0	916.8	0.0
0.0	27	1.3	3090.5	0.0	0.0	0.0	463.6	0.0
0.0	28	3.6	7964.3	0.0	0.0	0.0	1194.6	0.0
0.0								

29	3.4	6661.8	0.0	0.0	0.0	0.0	999.3	0.0
0.0								
30	3.3	5361.1	0.0	0.0	0.0	0.0	804.2	0.0
0.0								
31	3.2	4079.7	0.0	0.0	0.0	0.0	612.0	0.0
0.0								
32	3.0	2827.8	0.0	0.0	0.0	0.0	424.2	0.0
0.0								
33	2.9	1621.0	0.0	0.0	0.0	0.0	243.1	0.0
0.0								
34	1.4	374.3	0.0	0.0	0.0	0.0	56.2	0.0
0.0								
35	0.9	80.3	0.0	0.0	0.0	0.0	12.1	0.0
0.0								

Table 2 - Base Stress Data on the 35 Slices

Slice Mobilized No. Stress * (psf)	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	-1.33	626.50	5.00	324.53	
19.78					
2	0.76	631.50	5.00	545.27	
74.08					
3	2.84	636.50	5.00	741.07	
145.06					
4	4.92	641.48	5.00	913.18	
229.73					
5	7.01	646.46	5.00	1062.48	
325.29					
6	9.09	651.40	5.00	1190.01	
428.41					
7	11.18	656.33	5.00	1296.53	
536.20					
8	13.26	661.21	5.00	1383.13	
644.89					
9	15.34	666.06	5.00	1450.57	
751.65					
10	17.42	670.85	5.00	1499.57	
853.54					
11	19.52	675.59	5.00	1530.62	
948.00					
12	21.59	678.97	2.20	1535.12	
1023.81					
13	21.59	681.30	2.80	1923.06	
1306.20					
14	23.68	682.80	0.44	2315.74	
1698.96					
15	23.68	684.50	3.28	2288.29	
1677.96					

16	23.68	686.59	1.29	2199.44
1609.90				
17	25.77	688.09	2.02	2142.42
1664.83				
18	25.77	690.34	2.98	2131.53
1655.94				
19	27.85	693.89	5.00	2079.50
1704.87				
20	29.93	698.27	5.00	2013.38
1732.24				
21	32.02	702.55	5.00	1934.65
1737.67				
22	34.09	706.74	5.00	1844.55
1720.19				
23	36.19	710.83	5.00	1743.11
1680.16				
24	38.27	714.81	5.00	1631.93
1617.32				
25	40.36	718.68	5.00	1511.35
1532.61				
26	42.44	721.79	3.27	1399.78
1446.24				
27	42.44	723.64	1.73	1344.80
1384.35				
28	44.52	726.06	5.00	1219.62
1271.04				
29	46.60	729.56	5.00	1047.86
1093.71				
30	48.70	732.93	5.00	873.64
903.78				
31	50.77	736.16	5.00	698.51
704.69				
32	52.86	739.25	5.00	523.33
499.63				
33	54.94	742.19	5.00	349.66
292.47				
34	57.03	744.31	2.52	219.17
136.61				
35	57.03	745.47	1.71	143.32
43.17				

NOTE: Pier/Pile, reinforcement, soil nail, and applied forces (if applicable) are included in the Available Shear values in Table 2 by uniform distribution on each slice base, based upon the converged factor of safety.

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 185590.98 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile,
Reinforcing,
Soil Nail, and Applied Forces if applicable) = 1286.75(psf)

Sum of the Driving Forces = 137295.61 (lbs)

Average Mobilized Shear Stress = 951.91(psf)

Total length of the failure surface = 144.23(ft)

Bishop
Surface
CAUTION - Factor Of Safety Is Calculated By The Modified
Method. This Method Is Valid Only If The Failure
Approximates A Circular Arc.

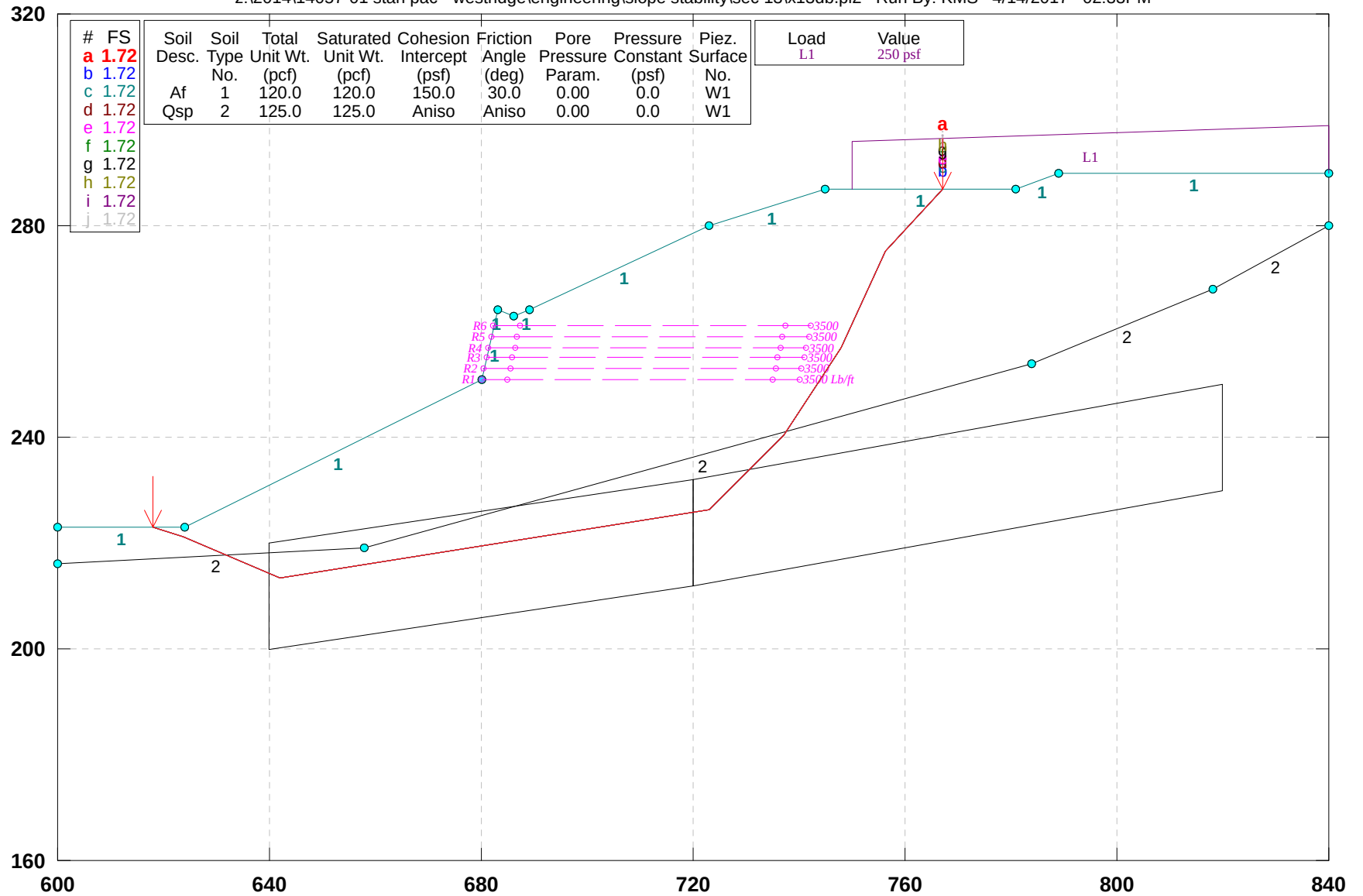
*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.3451(g)
Calculated Newmark Seismic Displacement = 0.003(ft)

Non-Symmetrical Sliding Resistance Has Been Specified
for Downhill Sliding.

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

Westridge/14057-01/Sec 13-13' MSE Wall - Block - Static

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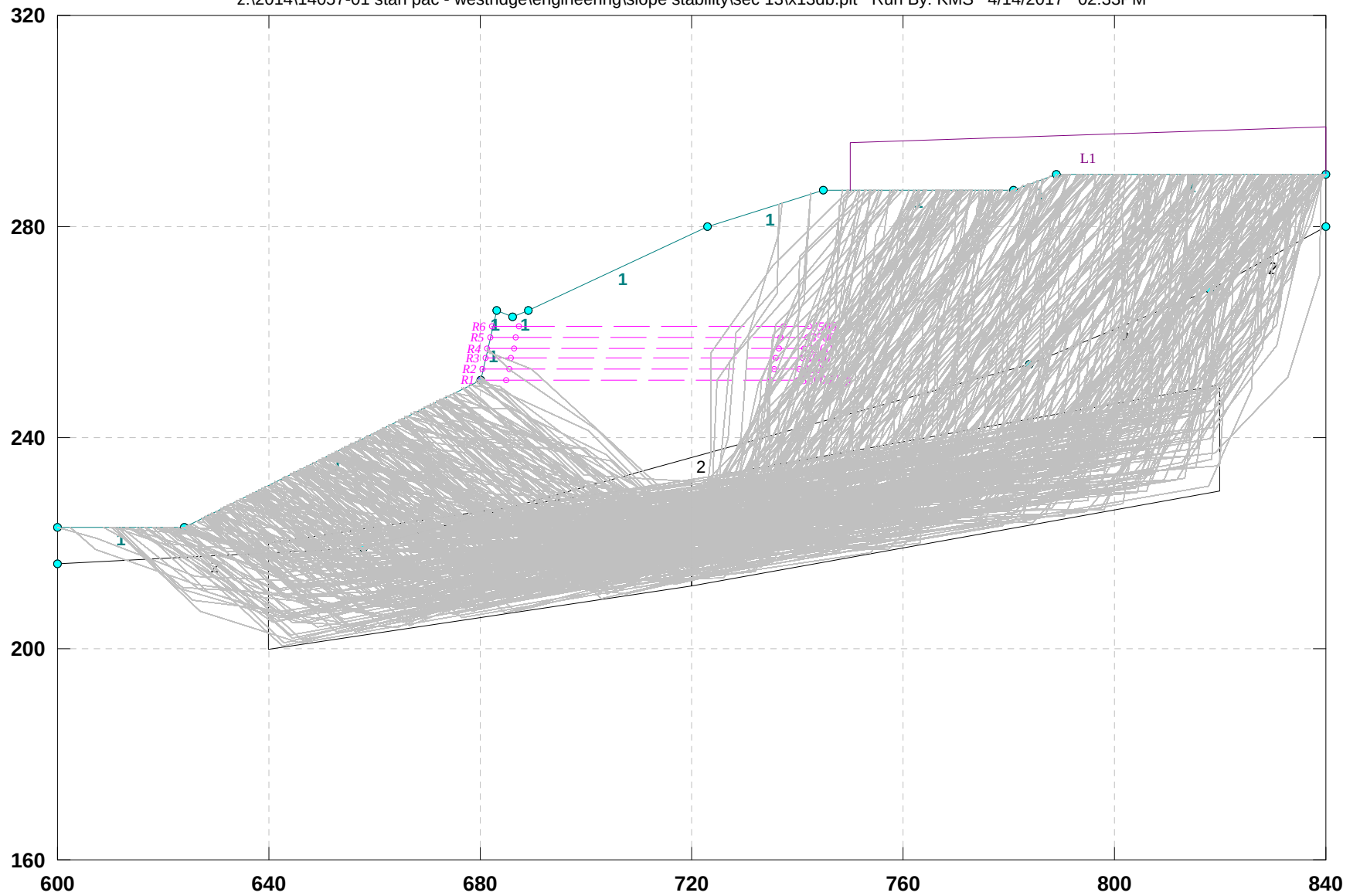


GSTABL7 v.2 FSmin=1.72

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

Westridge/14057-01/Sec 13-13' MSE Wall - Block - Static

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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	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	750.00	840.00	250.0	0.0

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

1

REINFORCING LAYER(S)

6 REINFORCING LAYER(S) SPECIFIED

REINFORCING LAYER NO. 1

4 POINTS DEFINE THIS LAYER

POINT	X-COORD	Y-COORD	FORCE	INCLINATION

NO.				FACTOR
1	680.00	251.00	0.00	0.000
2	685.00	251.00	3500.00	0.000
3	735.00	251.00	3500.00	0.000
4	740.00	251.00	0.00	0.000

REINFORCING LAYER NO. 2

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	680.46	253.00	0.00	0.000
2	685.46	253.00	3500.00	0.000
3	735.46	253.00	3500.00	0.000
4	740.46	253.00	0.00	0.000

REINFORCING LAYER NO. 3

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	680.92	255.00	0.00	0.000
2	685.92	255.00	3500.00	0.000
3	735.92	255.00	3500.00	0.000
4	740.92	255.00	0.00	0.000

REINFORCING LAYER NO. 4

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	681.38	257.00	0.00	0.000
2	686.38	257.00	3500.00	0.000
3	736.38	257.00	3500.00	0.000
4	741.38	257.00	0.00	0.000

REINFORCING LAYER NO. 5

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	681.85	259.00	0.00	0.000
2	686.85	259.00	3500.00	0.000
3	736.85	259.00	3500.00	0.000
4	741.85	259.00	0.00	0.000

REINFORCING LAYER NO. 6

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	682.31	261.00	0.00	0.000
2	687.31	261.00	3500.00	0.000
3	737.31	261.00	3500.00	0.000
4	742.31	261.00	0.00	0.000

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.

9999 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 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	640.00	210.00	720.00	222.00	20.00
2	720.10	222.00	820.00	240.00	20.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 9999

Number of Trial Failure Surfaces is Greater Than 5000.
Statistical Data on FS Values are Not Generated.
To Generate Stastical Data, Reduce Number of Trial
Failure Surfaces to 5000 or less.

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	618.062	223.000
2	623.556	221.181
3	641.968	213.370
4	722.899	226.155
5	737.040	240.298
6	748.023	257.013
7	756.391	275.178
8	767.144	287.000

Factor of Safety
*** 1.723 ***

Individual data on the 18 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1 0.0	5.5	599.7	0.0	0.0	0.	0.	0.0	0.0
2 0.0	0.4	102.0	0.0	0.0	0.	0.	0.0	0.0
3 0.0	7.9	5343.1	0.0	0.0	0.	0.	0.0	0.0

4	10.1	17009.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	16.0	41401.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	22.0	74034.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	3.0	13727.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	3.0	15721.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	3.0	15556.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	33.9	198782.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	0.1	659.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
12	14.0	82884.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
13	0.5	2781.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
14	7.4	34833.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
15	3.0	11713.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
16	2.0	6604.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
17	6.4	14388.0	0.0	0.0	0.	0.	0.0	0.0
1597.9								
18	10.8	7627.1	0.0	0.0	0.	0.	0.0	0.0
2688.1								

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	618.062	223.000
2	623.556	221.181
3	641.968	213.370
4	722.899	226.155
5	737.040	240.298
6	748.023	257.013
7	756.391	275.178
8	767.144	287.000

Factor of Safety
*** 1.723 ***

1

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	618.062	223.000
2	623.556	221.181
3	641.968	213.370
4	722.899	226.155
5	737.040	240.298
6	748.023	257.013
7	756.391	275.178
8	767.144	287.000

Factor of Safety
*** 1.723 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	618.062	223.000
2	623.556	221.181
3	641.968	213.370
4	722.899	226.155
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6	748.023	257.013
7	756.391	275.178
8	767.144	287.000

Factor of Safety
*** 1.723 ***

1

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	618.062	223.000
2	623.556	221.181
3	641.968	213.370

4	722.899	226.155
5	737.040	240.298
6	748.023	257.013
7	756.391	275.178
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Factor of Safety
*** 1.723 ***

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1	618.062	223.000
2	623.556	221.181
3	641.968	213.370
4	722.899	226.155
5	737.040	240.298
6	748.023	257.013
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Factor of Safety
*** 1.723 ***

1

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	618.062	223.000
2	623.556	221.181
3	641.968	213.370
4	722.899	226.155
5	737.040	240.298
6	748.023	257.013
7	756.391	275.178
8	767.144	287.000

Factor of Safety
*** 1.723 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	618.062	223.000
2	623.556	221.181
3	641.968	213.370
4	722.899	226.155
5	737.040	240.298
6	748.023	257.013
7	756.391	275.178
8	767.144	287.000

Factor of Safety
*** 1.723 ***

1

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	618.062	223.000
2	623.556	221.181
3	641.968	213.370
4	722.899	226.155
5	737.040	240.298
6	748.023	257.013
7	756.391	275.178
8	767.144	287.000

Factor of Safety
*** 1.723 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

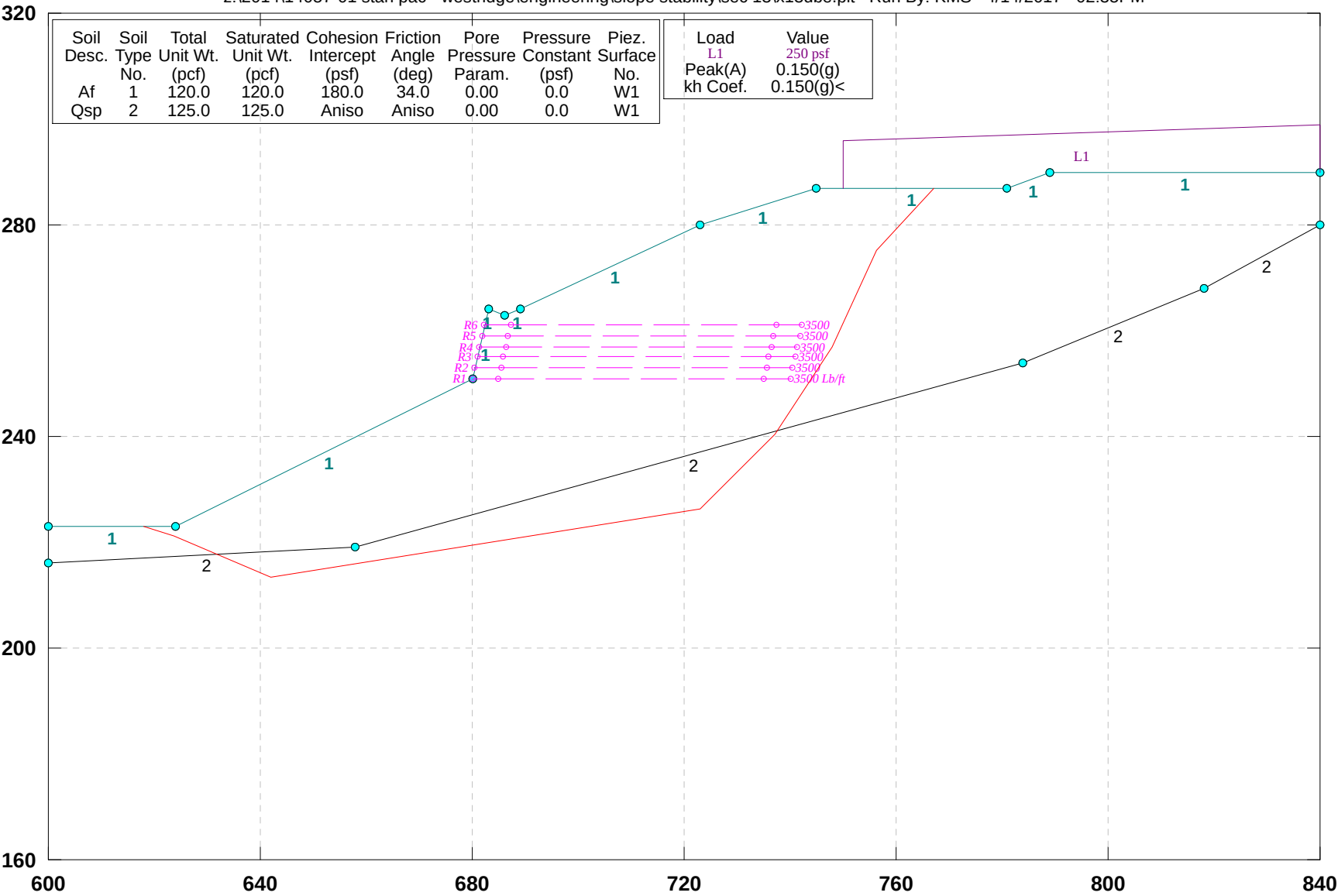
1	618.062	223.000
2	623.556	221.181
3	641.968	213.370
4	722.899	226.155
5	737.040	240.298
6	748.023	257.013
7	756.391	275.178
8	767.144	287.000

Factor of Safety
*** 1.723 ***

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

Westridge/14057-01/Sec 13-13' MSE Wall - Seismic

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GSTABL7 v.2 FSmin=1.33
Factor Of Safety Is Calculated By The Simplified Janbu Method

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	7.0	500.00	34.00
2	12.0	200.00	27.00
3	90.0	500.00	34.00

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.

crack.

1

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	750.00	840.00	250.0	0.0

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

Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

1

REINFORCING LAYER(S)

6 REINFORCING LAYER(S) SPECIFIED

REINFORCING LAYER NO. 1

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	680.00	251.00	0.00	0.000
2	685.00	251.00	3500.00	0.000
3	735.00	251.00	3500.00	0.000
4	740.00	251.00	0.00	0.000

REINFORCING LAYER NO. 2

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	680.46	253.00	0.00	0.000
2	685.46	253.00	3500.00	0.000
3	735.46	253.00	3500.00	0.000
4	740.46	253.00	0.00	0.000

REINFORCING LAYER NO. 3

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	680.92	255.00	0.00	0.000
2	685.92	255.00	3500.00	0.000
3	735.92	255.00	3500.00	0.000
4	740.92	255.00	0.00	0.000

REINFORCING LAYER NO. 4

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	681.38	257.00	0.00	0.000
2	686.38	257.00	3500.00	0.000
3	736.38	257.00	3500.00	0.000
4	741.38	257.00	0.00	0.000

REINFORCING LAYER NO. 5

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	681.85	259.00	0.00	0.000
2	686.85	259.00	3500.00	0.000
3	736.85	259.00	3500.00	0.000
4	741.85	259.00	0.00	0.000

REINFORCING LAYER NO. 6

4 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	682.31	261.00	0.00	0.000
2	687.31	261.00	3500.00	0.000
3	737.31	261.00	3500.00	0.000
4	742.31	261.00	0.00	0.000

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

both > 0
1

Trial Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	618.062	223.000
2	623.556	221.181
3	641.968	213.370
4	722.899	226.155
5	737.040	240.298
6	748.023	257.013
7	756.391	275.178
8	767.144	287.000

Janbu's Empirical Coefficient (fo) = 1.079

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

Sum of Reinforcing Forces on Failure Surface = 0.00
(lbs)

Factor Of Safety For The Preceding Specified Surface = 1.333

The calculated factor of safety for the specified surface
without piers/piles,
reinforcement, soil nails, or applied forces = 1.333

Table 1 - Individual Data on the 18 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force	Water Force	Tie Force	Tie Force	Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	5.5	599.6	0.0	0.0	0.0	0.0	89.9	0.0
2	0.4	101.9	0.0	0.0	0.0	0.0	15.3	0.0
3	7.9	5343.3	0.0	0.0	0.0	0.0	801.5	0.0
4	10.1	17009.3	0.0	0.0	0.0	0.0	2551.4	0.0
5	16.0	41401.4	0.0	0.0	0.0	0.0	6210.2	0.0
6	22.0	74035.1	0.0	0.0	0.0	0.0	11105.3	0.0
7	3.0	13727.3	0.0	0.0	0.0	0.0	2059.1	0.0
8	3.0	15722.1	0.0	0.0	0.0	0.0	2358.3	0.0
9	3.0	15556.8	0.0	0.0	0.0	0.0	2333.5	0.0
10	33.9	198785.8	0.0	0.0	0.0	0.0	29817.9	0.0
11	0.1	657.3	0.0	0.0	0.0	0.0	98.6	0.0

12	14.0	82884.1	0.0	0.0	0.0	0.0	12432.6	0.0
0.0								
13	0.5	2782.2	0.0	0.0	0.0	0.0	417.3	0.0
0.0								
14	7.4	34833.0	0.0	0.0	0.0	0.0	5225.0	0.0
0.0								
15	3.0	11712.6	0.0	0.0	0.0	0.0	1756.9	0.0
0.0								
16	2.0	6605.0	0.0	0.0	0.0	0.0	990.8	0.0
0.0								
17	6.4	14386.4	0.0	0.0	0.0	0.0	2158.0	0.0
1597.7								
18	10.8	7627.4	0.0	0.0	0.0	0.0	1144.1	0.0
2688.2								

Table 2 - Base Stress Data on the 18 Slices

Slice Mobilized No. Stress (psf)	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	-18.32	620.81	5.79	326.14	-
18.76					
2	-22.99	623.78	0.48	473.46	-
57.96					
3	-22.99	627.94	8.56	901.07	-
171.15					
4	-22.99	636.92	10.96	2315.24	-
425.73					
5	8.98	649.98	16.23	1440.70	
785.58					
6	8.98	669.00	22.27	1819.79	
1023.71					
7	8.98	681.50	3.04	2406.02	
1391.95					
8	8.98	684.50	3.04	2728.03	
1594.23					
9	8.98	687.50	3.04	2701.36	
1577.47					
10	8.98	705.95	34.32	3029.92	
1783.86					
11	45.00	722.95	0.14	4471.44	
5291.32					
12	45.00	730.02	19.86	4099.29	
4800.76					
13	56.69	737.30	0.96	4027.70	
4832.69					
14	56.69	741.28	13.53	3322.80	
4303.36					
15	56.69	746.51	5.51	2777.67	
3557.18					

16	65.27	749.01	4.73	2660.91
3244.14				
17	65.27	753.20	15.27	2041.44
2412.88				
18	47.71	761.77	15.98	767.97
781.26				

NOTE: Pier/Pile, reinforcement, soil nail, and applied forces (if applicable) are included in the Available Shear values in Table 2 by uniform distribution on each slice base, based upon the converged factor of safety.

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 429209.00 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 2336.43(psf)

Sum of the Driving Forces = 347592.00 (lbs)

Average Mobilized Shear Stress = 1892.14(psf)

Total length of the failure surface = 183.70(ft)

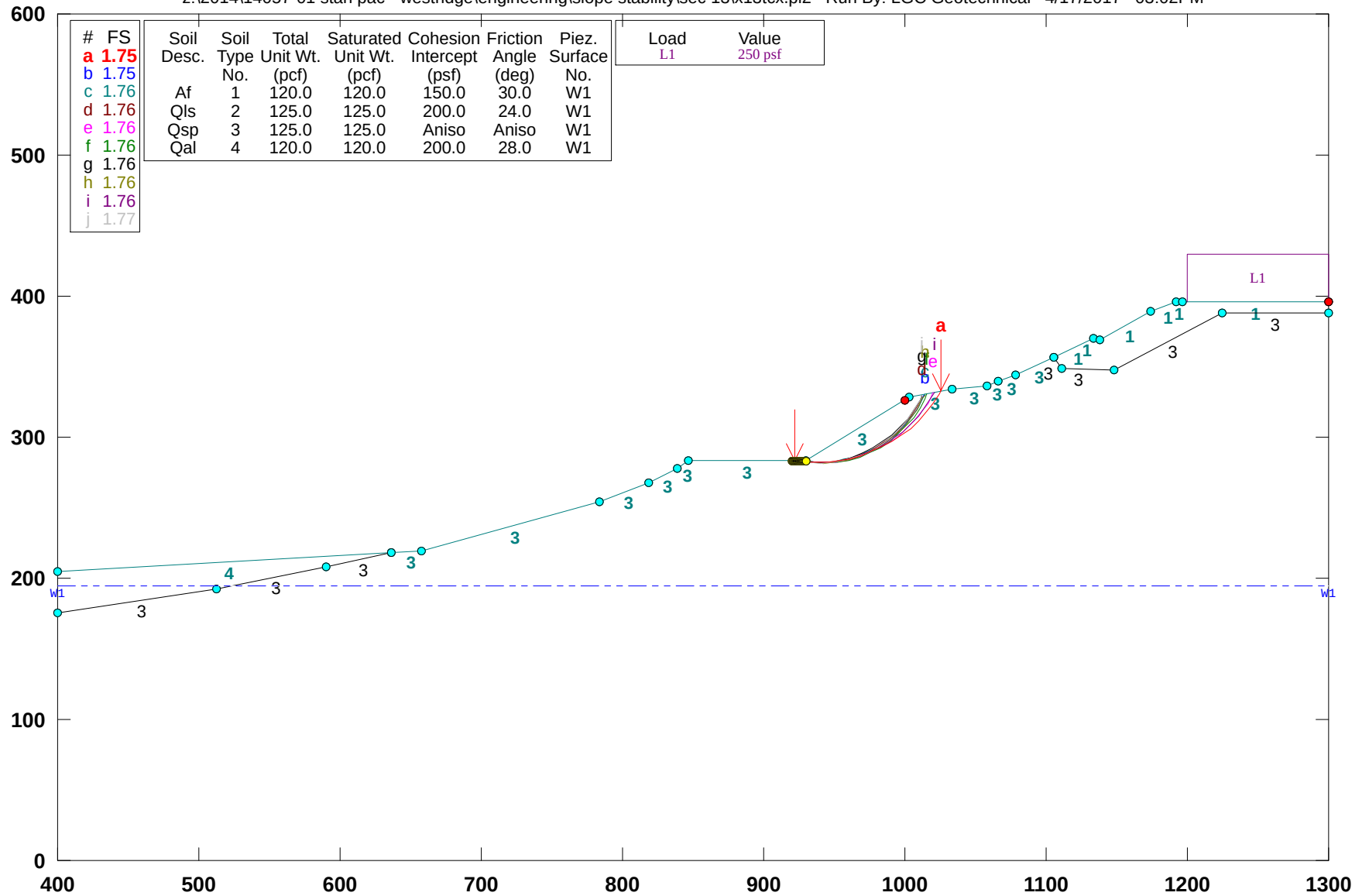
*** SEISMIC SLOPE DISPLACEMENT DATA ***
 (Note: kv is set = zero for displacement calculations)
 Seismic Yield Coefficient (ky) = 0.3136(g)
 Calculated Newmark Seismic Displacement = 0.003(ft)

Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

Westridge/14057-01/Sec 13-13' Temp Backcut Analysis

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 13\13tcx.pl2 Run By: LGC Geotechnical 4/17/2017 03:02PM



GSTABL7 v.2 FSmin=1.75

Safety Factors Are Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/17/2017
 Time of Run: 03:02PM
 Run By: LGC Geotechnical
 Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab
 ility\Sec 13\13tcx.in
 Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab
 ility\Sec 13\13tcx.OUT
 Unit System: English
 Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stab
 ility\Sec 13\13tcx.PLT
 PROBLEM DESCRIPTION: Westridge/14057-01/Sec 13-13'/
 Temp Backcut Analysis

BOUNDARY COORDINATES

Note: User origin value specified.

Add 400.00 to X-values and 0.00 to Y-values listed.

19 Top Boundaries					
26 Total Boundaries					
Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	400.00	205.00	636.00	218.00	4
2	636.00	218.00	658.00	219.00	3
3	658.00	219.00	784.00	254.00	3
4	784.00	254.00	818.00	268.00	3
5	818.00	268.00	839.00	278.00	3
6	839.00	278.00	847.00	284.00	3
7	847.00	284.00	930.00	283.00	3
8	930.00	283.00	1003.00	328.00	3
9	1003.00	328.00	1033.00	334.00	3
10	1033.00	334.00	1058.00	336.00	3
11	1058.00	336.00	1066.00	340.00	3
12	1066.00	340.00	1078.00	344.00	3
13	1078.00	344.00	1105.00	357.00	3
14	1105.00	357.00	1134.00	370.00	1
15	1134.00	370.00	1138.00	369.00	1
16	1138.00	369.00	1174.00	389.00	1
17	1174.00	389.00	1192.00	396.00	1
18	1192.00	396.00	1196.00	396.00	1
19	1196.00	396.00	1300.00	396.00	1
20	400.00	176.00	513.00	192.00	3
21	513.00	192.00	590.00	208.00	3
22	590.00	208.00	636.00	218.00	3
23	1105.00	357.00	1111.00	349.00	3
24	1111.00	349.00	1148.00	348.00	3
25	1148.00	348.00	1225.00	388.00	3
26	1225.00	388.00	1300.00	388.00	3

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion (psf)	Friction Angle (deg)	Pore Pressure Param. (psf)	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	150.0	30.0	0.00	0.0	1
2	125.0	125.0	200.0	24.0	0.00	0.0	1
3	125.0	125.0	300.0	32.0	0.00	0.0	1

4 120.0 120.0 200.0 28.0 0.00 0.0 1
 ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 3 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	400.00	195.00
2	1300.00	195.00

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	1200.00	1300.00	250.0	0.0

NOTE - Intensity Is Specified As A Uniformly Distributed

Force Acting On A Horizontally Projected Surface.

Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)

Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)

Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

EARTHQUAKE DATA HAS BEEN SUPPRESSED

A Critical Failure Surface Searching Method, Using A Random

Technique For Generating Circular Surfaces, Has Been Specified.

5000 Trial Surfaces Have Been Generated.

250 Surface(s) Initiate(s) From Each Of 20 Points Equally Spaced

Along The Ground Surface Between X = 920.00(ft)

and X = 930.00(ft)

Each Surface Terminates Between X =1000.00(ft)

and X =1300.00(ft)

Unless Further Limitations Were Imposed, The Minimum Elevation

At Which A Surface Extends Is Y = 0.00(ft)

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

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 Modified Bishop 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 = 3.653 FS Min = 1.751 FS Ave = 2.779

Standard Deviation = 0.507 Coefficient of Variation = 18.26 %

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	921.579	283.101
2	929.530	282.220
3	937.526	281.959
4	945.518	282.319
5	953.458	283.298
6	961.297	284.891
7	968.990	287.088
8	976.489	289.876
9	983.748	293.237

Point No.	X-Surf (ft)	Y-Surf (ft)
1	923.158	283.082
2	931.101	282.133
3	939.099	281.947
4	947.078	282.528
5	954.965	283.870
6	962.687	285.960
7	970.173	288.779
8	977.356	292.302
9	984.168	296.497
10	990.548	301.323
11	996.437	306.739
12	1001.780	312.693
13	1006.529	319.130
14	1010.640	325.993
15	1012.498	329.900

Circle Center At X = 937.033 ; Y = 365.425 ; and Radius = 83.504
Factor of Safety
*** 1.763 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	926.316	283.044
2	934.246	281.988
3	942.242	281.733
4	950.223	282.283
5	958.108	283.632
6	965.818	285.767
7	973.274	288.666
8	980.402	292.299
9	987.128	296.630
10	993.385	301.615
11	999.109	307.204
12	1004.243	313.339
13	1009.734	319.959
14	1012.538	326.997
15	1013.861	330.172

Circle Center At X = 940.771 ; Y = 361.234 ; and Radius = 79.515
Factor of Safety
*** 1.763 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	923.684	283.076
2	931.639	282.232
3	939.638	282.063
4	947.622	282.572
5	955.534	283.755
6	963.317	285.602
7	970.917	288.101
8	978.278	291.235
9	985.347	294.979
10	992.075	299.309
11	998.411	304.192
12	1004.313	309.593
13	1009.736	315.475
14	1014.642	321.794
15	1018.996	328.505
16	1020.607	331.521

Circle Center At X = 937.660 ; Y = 376.294 ; and Radius = 94.259
Factor of Safety
*** 1.764 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	924.210	283.070
2	932.131	281.943
3	940.124	281.621
4	948.109	282.107

5	956.005	283.396
6	963.730	285.475
7	971.206	288.322
8	978.357	291.909
9	985.110	296.198
10	991.396	301.147
11	997.150	306.705
12	1002.314	312.815
13	1006.836	319.414
14	1010.670	326.436
15	1012.095	329.819

Circle Center At X = 939.311 ; Y = 360.834 ; and Radius = 79.217
Factor of Safety
*** 1.769 ***

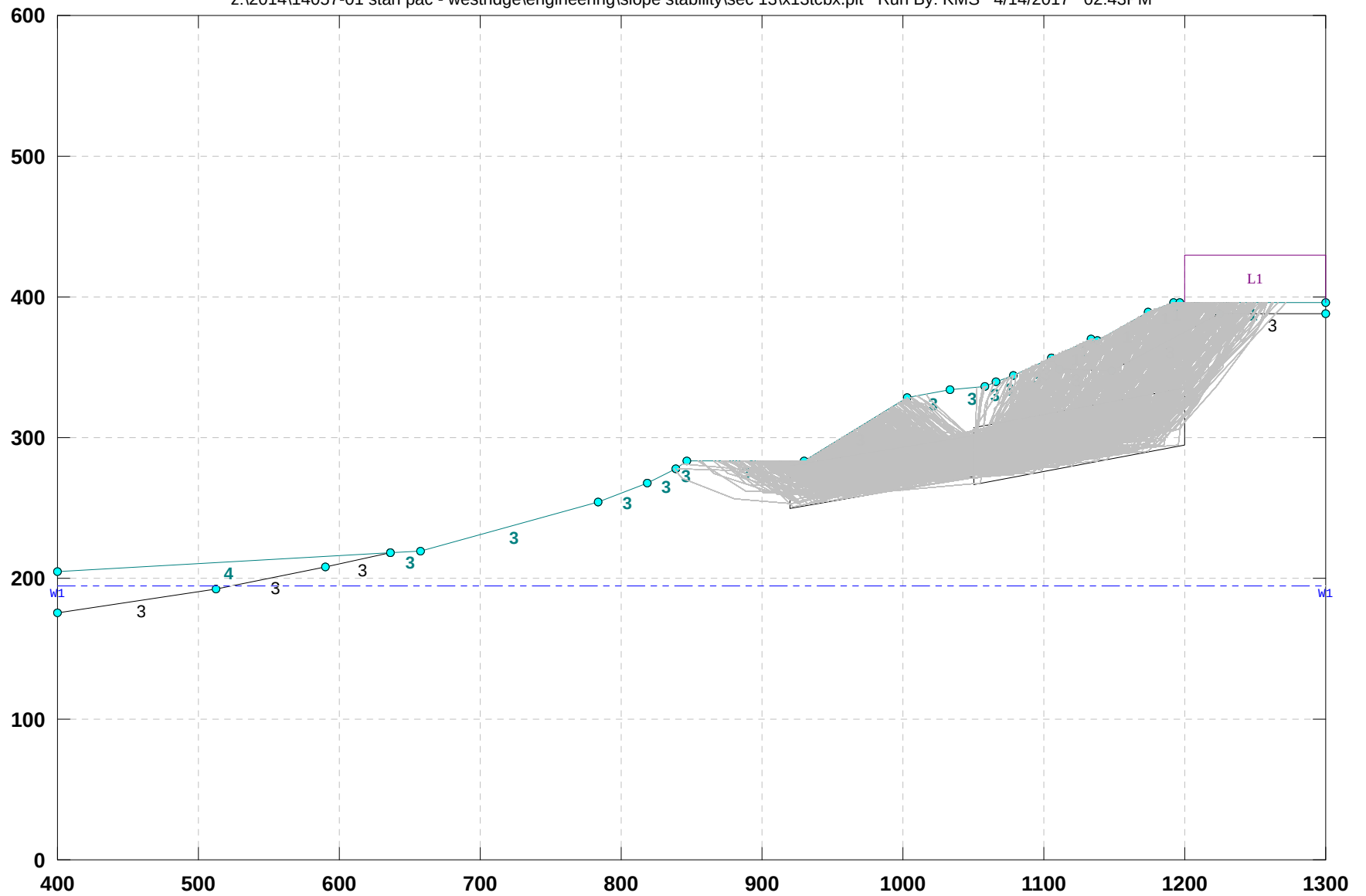
**** END OF GSTABL7 OUTPUT ****

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 13\x13tcbx.pl2 Run By: KMS 4/14/2017 02:43PM



Westridge/14057-01/Sec 13-13' Temp Backcut Analysis - Search

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*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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
Applied Forces.
Surfaces, Pseudo-Static & Newmark Earthquake, and

Analysis Run Date: 4/14/2017
Time of Run: 02:43PM
Run By: KMS
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Westridge\Engineering\Slope Stability\Sec 13\x13tcbx.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 13\x13tcbx.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 13\x13tcbx.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 13-13'/
Temp Backcut Analysis - Search

BOUNDARY COORDINATES

19 Top Boundaries

26 Total Boundaries

Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	400.00	205.00	636.00	218.00	4
	2	636.00	218.00	658.00	219.00	3
	3	658.00	219.00	784.00	254.00	3
	4	784.00	254.00	818.00	268.00	3
	5	818.00	268.00	839.00	278.00	3
	6	839.00	278.00	847.00	284.00	3
	7	847.00	284.00	930.00	283.00	3
	8	930.00	283.00	1003.00	328.00	3
	9	1003.00	328.00	1033.00	334.00	3
	10	1033.00	334.00	1058.00	336.00	3
	11	1058.00	336.00	1066.00	340.00	3
	12	1066.00	340.00	1078.00	344.00	3
	13	1078.00	344.00	1105.00	357.00	3
	14	1105.00	357.00	1134.00	370.00	1
	15	1134.00	370.00	1138.00	369.00	1
	16	1138.00	369.00	1174.00	389.00	1
	17	1174.00	389.00	1192.00	396.00	1
	18	1192.00	396.00	1196.00	396.00	1
	19	1196.00	396.00	1300.00	396.00	1
	20	400.00	176.00	513.00	192.00	3
	21	513.00	192.00	590.00	208.00	3
	22	590.00	208.00	636.00	218.00	3
	23	1105.00	357.00	1111.00	349.00	3
	24	1111.00	349.00	1148.00	348.00	3
	25	1148.00	348.00	1225.00	388.00	3
	26	1225.00	388.00	1300.00	388.00	3

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez.	Soil	Total	Saturated	Cohesion	Friction	Pore	Pressure
Surface	Type	Unit	Wt. Unit	Wt. Intercept	Angle	Pressure	Constant

No.	No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)
1	1	120.0	120.0	150.0	30.0	0.00	0.0
1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	300.0	32.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points
Pore Pressure Inclination Factor = 0.50

Point No.	X-Water (ft)	Y-Water (ft)
1	400.00	195.00
2	1300.00	195.00

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	1200.00	1300.00	250.0	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

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

9999 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 40.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	920.00	265.00	1050.00	287.00	30.00
2	1050.10	287.00	1200.00	315.00	40.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 9999

Number of Trial Failure Surfaces is Greater Than 5000.
Statistical Data on FS Values are Not Generated.
To Generate Stastical Data, Reduce Number of Trial
Failure Surfaces to 5000 or less.

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	921.396	283.104
2	935.322	274.359
3	1144.986	315.991
4	1171.960	345.527
5	1193.022	379.533
6	1205.029	396.000

Factor of Safety
*** 1.803 ***

Individual data on the 21 slices

Surcharge		Water Force		Tie Force		Earthquake Force		
Slice No.	Width	Weight	Top	Bot	Norm	Tan	Hor	Ver
Load No.	(ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
(lbs)								
1	8.6	2850.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	5.3	5727.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	67.7	220481.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	30.0	150840.8	0.0	0.0	0.	0.	0.0	0.0
0.0								

5	25.0	121136.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	8.0	38487.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	12.0	60752.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	27.0	152312.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	6.0	37113.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	23.0	151433.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	4.0	27223.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
12	7.0	47795.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
13	3.0	20739.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
14	24.0	142930.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
15	2.0	10239.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
16	11.6	46352.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
17	6.4	16975.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
18	1.0	2120.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
19	3.0	5154.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
20	4.0	4627.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
21	5.0	2081.1	0.0	0.0	0.	0.	0.0	0.0
1257.3								

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	921.396	283.104
2	935.322	274.359
3	1144.986	315.991
4	1171.960	345.527
5	1193.022	379.533
6	1205.029	396.000

Factor of Safety
*** 1.803 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	921.396	283.104
2	935.322	274.359
3	1144.986	315.991
4	1171.960	345.527
5	1193.022	379.533
6	1205.029	396.000

Factor of Safety
*** 1.803 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	921.396	283.104
2	935.322	274.359
3	1144.986	315.991
4	1171.960	345.527
5	1193.022	379.533
6	1205.029	396.000

Factor of Safety
*** 1.803 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	921.396	283.104
2	935.322	274.359
3	1144.986	315.991
4	1171.960	345.527
5	1193.022	379.533

6 1205.029 396.000

Factor of Safety
*** 1.803 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	921.396	283.104
2	935.322	274.359
3	1144.986	315.991
4	1171.960	345.527
5	1193.022	379.533
6	1205.029	396.000

Factor of Safety
*** 1.803 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	921.396	283.104
2	935.322	274.359
3	1144.986	315.991
4	1171.960	345.527
5	1193.022	379.533
6	1205.029	396.000

Factor of Safety
*** 1.803 ***

Failure Surface Specified By 6 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	921.396	283.104
2	935.322	274.359
3	1144.986	315.991
4	1171.960	345.527
5	1193.022	379.533
6	1205.029	396.000

Factor of Safety
*** 1.803 ***

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

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	921.396	283.104
2	935.322	274.359
3	1144.986	315.991
4	1171.960	345.527
5	1193.022	379.533
6	1205.029	396.000

Factor of Safety
*** 1.803 ***

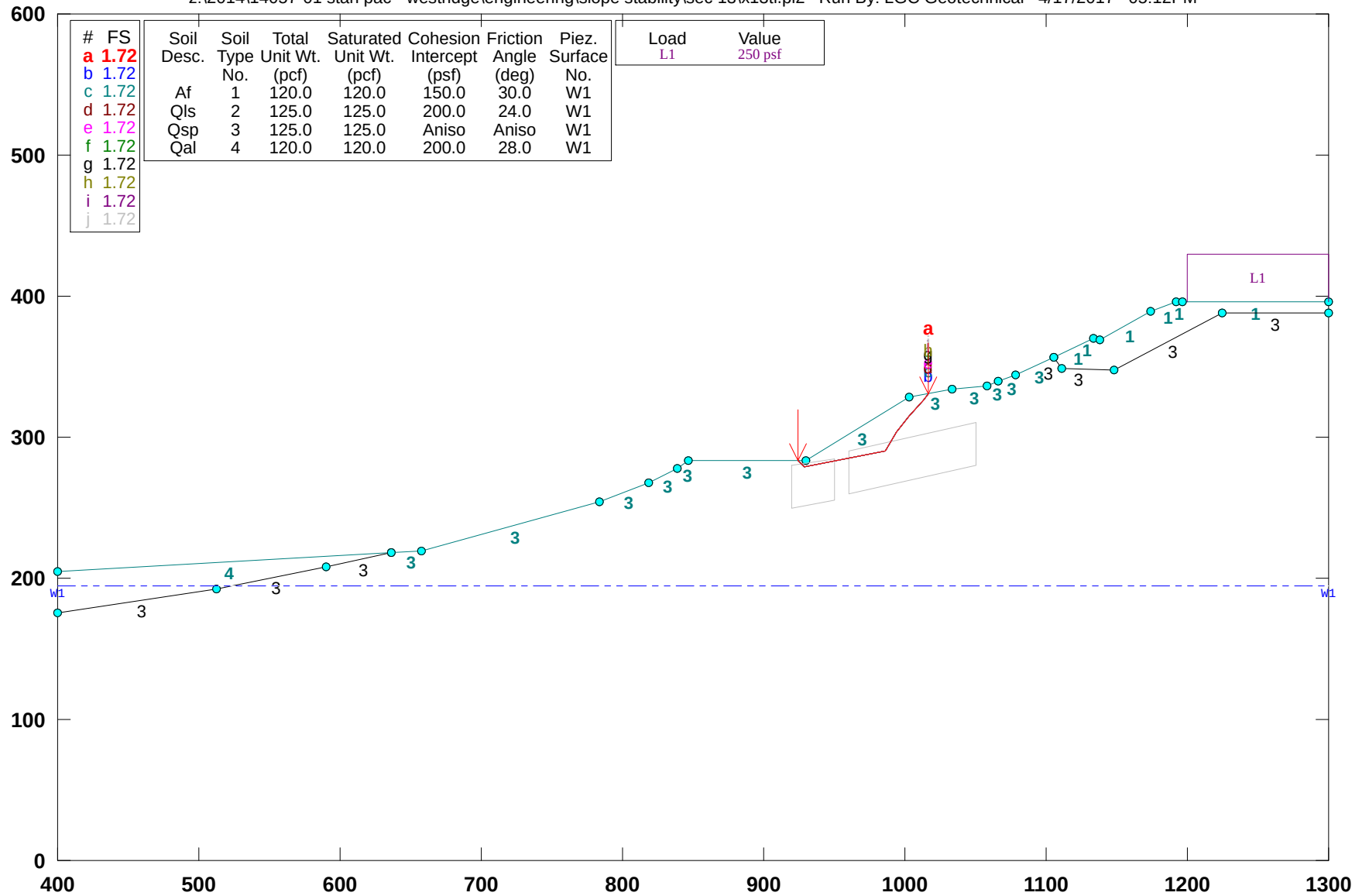
Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	921.396	283.104
2	935.322	274.359
3	1144.986	315.991
4	1171.960	345.527
5	1193.022	379.533
6	1205.029	396.000

Factor of Safety
*** 1.803 ***

Westridge/14057-01/Sec 13-13'/ Temp Backcut Lower Slope

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 13\13tl.pl2 Run By: LGC Geotechnical 4/17/2017 05:12PM

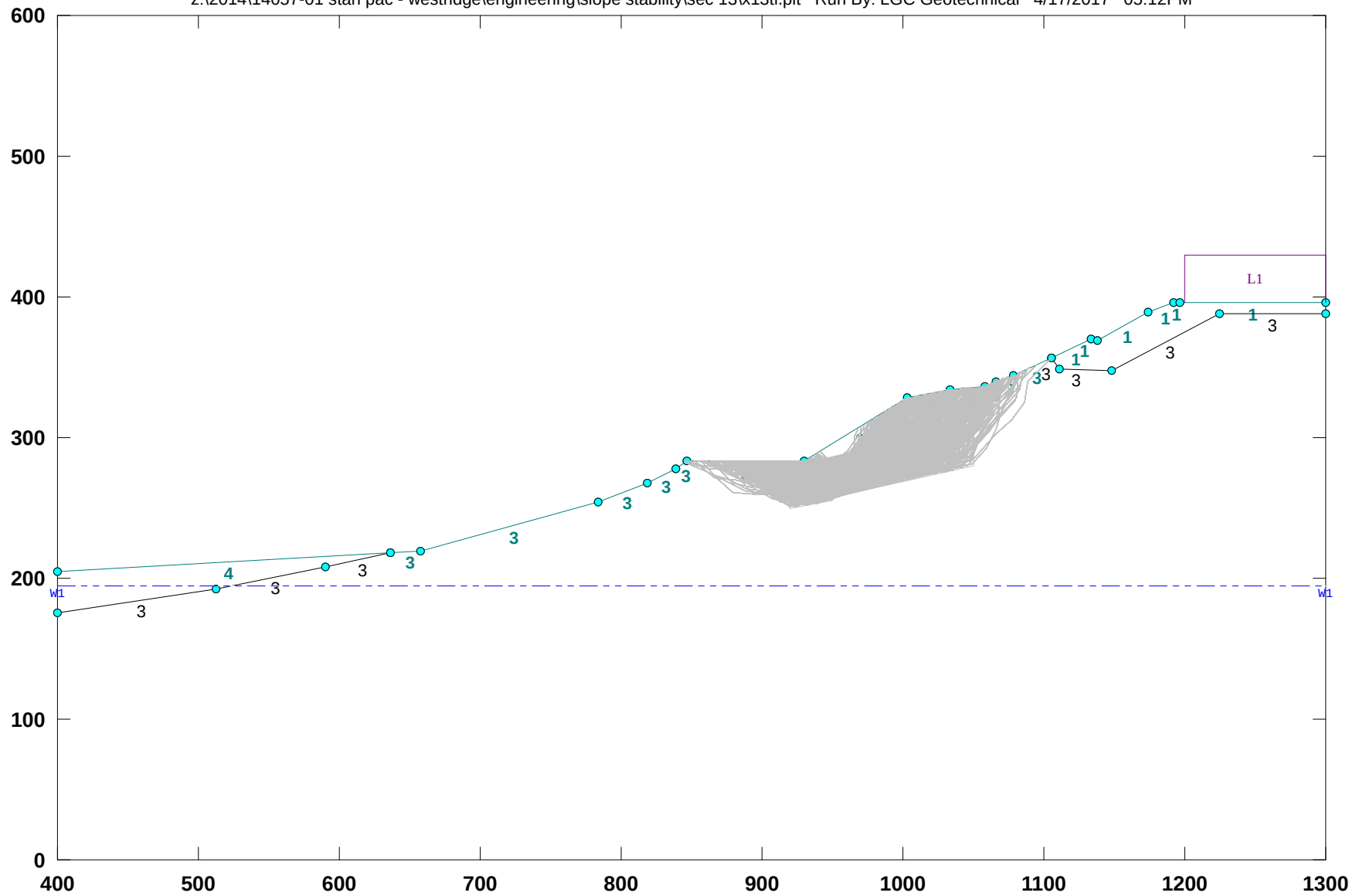


GSTABL7 v.2 FSmin=1.72

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

Westridge/14057-01/Sec 13-13'/ Temp Backcut Lower Slope

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 13\13tl.plt Run By: LGC Geotechnical 4/17/2017 05:12PM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D., P.E., D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
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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: 4/17/2017

Time of Run: 05:12PM

Run By: LGC Geotechnical

Input Data Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 13\X13tl.in

Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 13\X13tl.OUT

Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac - Westridge\Engineering\Slope Stability\Sec 13\X13tl.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 13-13'/
Temp Backcut Lower Slope

BOUNDARY COORDINATES

Note: User origin value specified.

Add 400.00 to X-values and 0.00 to Y-values listed.

19 Top	Boundaries					Soil Type	
26 Total	Boundaries						
Boundary	X-Left	Y-Left	X-Right	Y-Right			
No.	(ft)	(ft)	(ft)	(ft)	Below Bnd		
1	400.00	205.00	636.00	218.00	4		
2	636.00	218.00	658.00	219.00	3		
3	658.00	219.00	784.00	254.00	3		
4	784.00	254.00	818.00	268.00	3		
5	818.00	268.00	839.00	278.00	3		
6	839.00	278.00	847.00	284.00	3		
7	847.00	284.00	930.00	283.00	3		
8	930.00	283.00	1003.00	328.00	3		
9	1003.00	328.00	1033.00	334.00	3		
10	1033.00	334.00	1058.00	336.00	3		
11	1058.00	336.00	1066.00	340.00	3		
12	1066.00	340.00	1078.00	344.00	3		
13	1078.00	344.00	1105.00	357.00	3		
14	1105.00	357.00	1134.00	370.00	1		
15	1134.00	370.00	1138.00	369.00	1		
16	1138.00	369.00	1174.00	389.00	1		
17	1174.00	389.00	1192.00	396.00	1		
18	1192.00	396.00	1196.00	396.00	1		
19	1196.00	396.00	1300.00	396.00	1		
20	400.00	176.00	513.00	192.00	3		
21	513.00	192.00	590.00	208.00	3		
22	590.00	208.00	636.00	218.00	3		
23	1105.00	357.00	1111.00	349.00	3		
24	1111.00	349.00	1148.00	348.00	3		
25	1148.00	348.00	1225.00	388.00	3		
26	1225.00	388.00	1300.00	388.00	3		

Default Y-Origin = 0.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Soil Type	Total Unit Wt.	Saturated Unit Wt.	Cohesion	Friction	Pore Pressure	Pressure	Piez.
No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)	No.
1	120.0	120.0	150.0	30.0	0.00	0.0	1
2	125.0	125.0	200.0	24.0	0.00	0.0	1
3	125.0	125.0	300.0	32.0	0.00	0.0	1

4 120.0 120.0 200.0 28.0 0.00 0.0 1

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

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	7.0	300.00	32.00
2	12.0	200.00	27.00
3	90.0	300.00	32.00

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 PIEZOMETRIC SURFACE(S) SPECIFIED

Unit Weight of Water = 62.40 (pcf)

Piezometric Surface No. 1 Specified by 2 Coordinate Points

Pore Pressure Inclination Factor = 0.50

Point	X-Water	Y-Water
No.	(ft)	(ft)
1	400.00	195.00
2	1300.00	195.00

BOUNDARY LOAD(S)

1 Load(s) Specified

Load	X-Left	X-Right	Intensity	Deflection
No.	(ft)	(ft)	(psf)	(deg)
1	1200.00	1300.00	250.0	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.

5000 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 15.0

Box	X-Left	Y-Left	X-Right	Y-Right	Height
No.	(ft)	(ft)	(ft)	(ft)	(ft)
1	920.00	265.00	950.00	270.00	30.00
2	960.00	275.00	1050.00	295.00	30.00

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 = 7.424 FS Min = 1.721 FS Ave = 2.745

Standard Deviation = 0.687 Coefficient of Variation = 25.03 %

Failure Surface Specified By 7 Coordinate Points

Point	X-Surf	Y-Surf
No.	(ft)	(ft)
1	924.355	283.068
2	929.036	278.919
3	986.186	290.639
4	993.828	303.546
5	1003.351	315.136
6	1012.915	326.691
7	1016.112	330.622

Factor of Safety

*** 1.721 ***

		Individual data on the		8 slices		Earthquake	
		Water	Water	Tie	Tie	Force	Force
		Force	Force	Force	Force	Force	Force
		Top	Bot	Norm	Tan	Hor	Ver
Slice	Width	Weight					Surcharge
							Load

No.	(ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
1	4.7	1197.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	1.0	480.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	56.2	108437.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	7.6	21873.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	9.2	18396.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.4	574.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	9.6	9700.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	3.2	657.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	924.355	283.068
2	929.036	278.919
3	986.186	290.639
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5	1003.351	315.136
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Factor of Safety
*** 1.721 ***

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Factor of Safety
*** 1.721 ***

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Factor of Safety
*** 1.721 ***

Failure Surface Specified By 7 Coordinate Points

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4	993.828	303.546
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6	1012.915	326.691
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Factor of Safety
*** 1.721 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	924.355	283.068
2	929.036	278.919
3	986.186	290.639
4	993.828	303.546
5	1003.351	315.136
6	1012.915	326.691
7	1016.112	330.622

Factor of Safety
*** 1.721 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	924.355	283.068
2	929.036	278.919
3	986.186	290.639
4	993.828	303.546
5	1003.351	315.136
6	1012.915	326.691
7	1016.112	330.622

Factor of Safety

*** 1.721 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	924.355	283.068
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4	993.828	303.546
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6	1012.915	326.691
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Factor of Safety

*** 1.721 ***

Failure Surface Specified By 7 Coordinate Points

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1	924.355	283.068
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3	986.186	290.639
4	993.828	303.546
5	1003.351	315.136
6	1012.915	326.691
7	1016.112	330.622

Factor of Safety

*** 1.721 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	924.355	283.068
2	929.036	278.919
3	986.186	290.639
4	993.828	303.546
5	1003.351	315.136
6	1012.915	326.691
7	1016.112	330.622

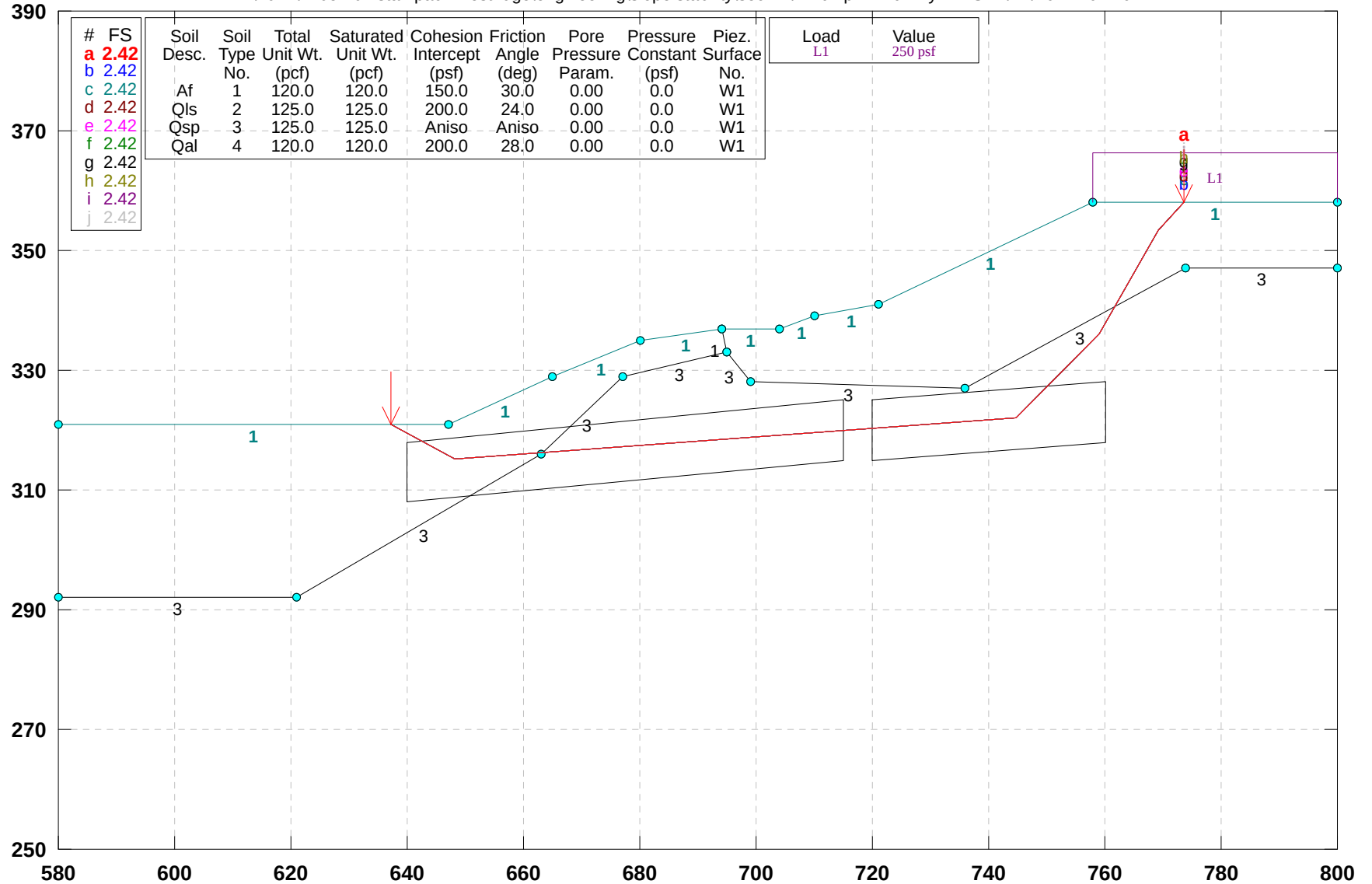
Factor of Safety

*** 1.721 ***

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

Westridge/14057-01/Sec 14-14'/Upper Slope/Static

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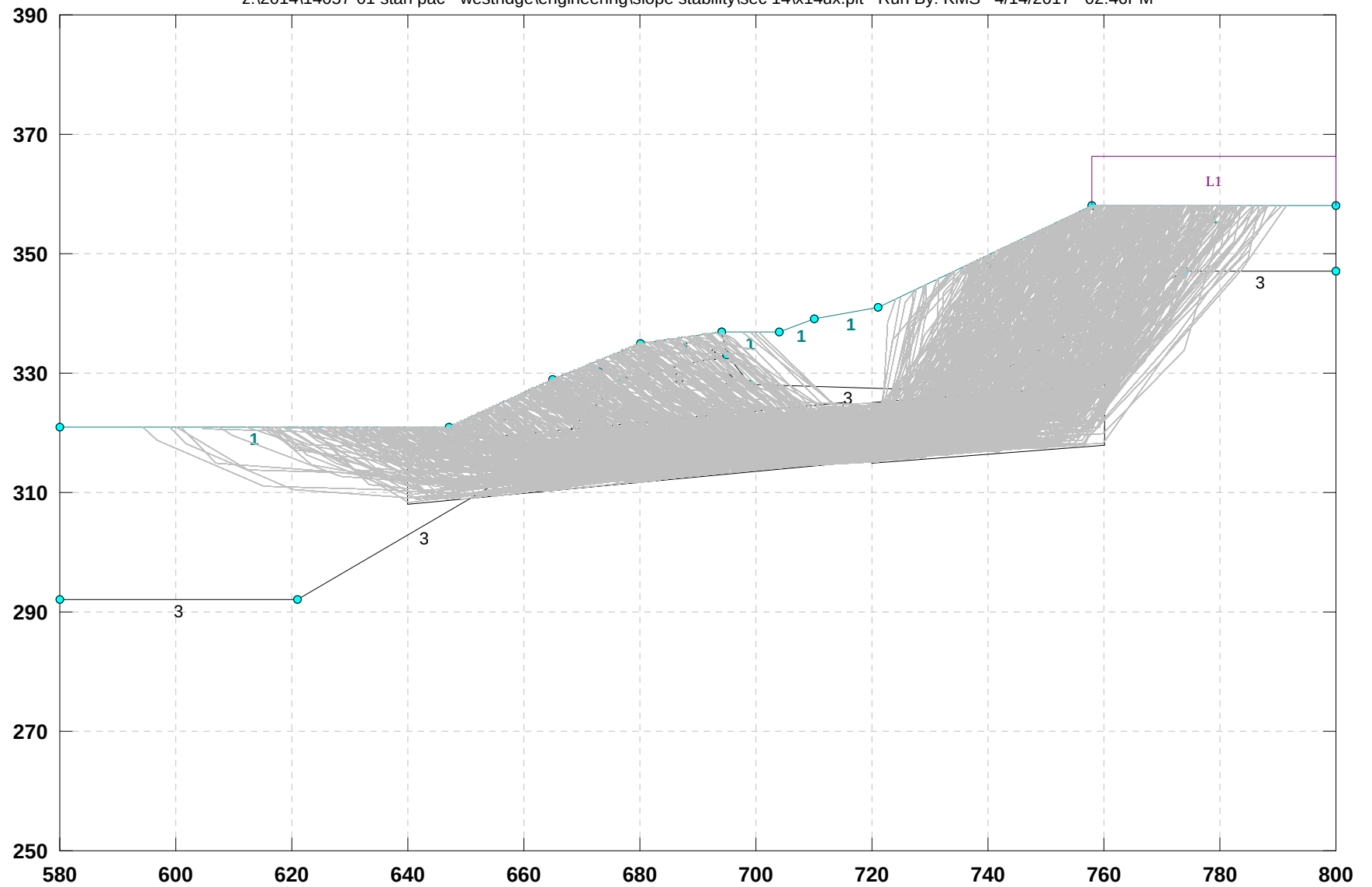


GSTABL7 v.2 FSmin=2.42

Safety Factors Are Calculated By The Simplified Janbu Method

Westridge/14057-01/Sec 14-14'/Upper Slope/Static

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 14\14ux.plt Run By: KMS 4/14/2017 02:46PM



*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 02:46PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 14\x14ux.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 14\x14ux.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 14\x14ux.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 14-14'/Upper
Slope/Static

BOUNDARY COORDINATES

9 Top Boundaries

23 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	580.00	321.00	647.00	321.00	1
	2	647.00	321.00	665.00	329.00	1
	3	665.00	329.00	680.00	335.00	1
	4	680.00	335.00	694.00	337.00	1
	5	694.00	337.00	704.00	337.00	1
	6	704.00	337.00	710.00	339.00	1
	7	710.00	339.00	721.00	341.00	1
	8	721.00	341.00	758.00	358.00	1
	9	758.00	358.00	800.00	358.00	1
	10	694.00	337.00	695.00	333.00	1
	11	695.00	333.00	699.00	328.00	3
	12	699.00	328.00	736.00	327.00	3
	13	736.00	327.00	774.00	347.00	3
	14	774.00	347.00	800.00	347.00	3
	15	60.00	300.00	73.00	299.00	1
	16	73.00	299.00	86.00	300.00	1
	17	86.00	300.00	90.00	296.00	1
	18	580.00	292.00	621.00	292.00	3
	19	621.00	292.00	663.00	316.00	3
	20	663.00	316.00	677.00	329.00	3
	21	677.00	329.00	695.00	333.00	3
	22	0.00	279.00	67.00	279.00	3
	23	67.00	279.00	88.00	297.00	3

User Specified Y-Origin = 250.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil Total Saturated Cohesion Friction Pore Pressure					
	Type	Unit	Wt.	Unit	Wt.	Intercept
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.
						(psf)

1	1	120.0	120.0	150.0	30.0	0.00	0.0
1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	30.0	32.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	3.0	300.00	32.00
2	6.0	200.00	27.00
3	90.0	300.00	32.00

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)
1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	758.00	800.00	250.0	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 Sliding Block Surfaces, Has Been Specified.

9999 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 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	640.00	313.00	715.00	320.00	10.00
2	720.00	320.00	760.00	323.00	10.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

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

Total Number of Trial Surfaces Attempted = 9999

Number of Trial Failure Surfaces is Greater Than 5000. Statistical Data on FS Values are Not Generated. To Generate Stastical Data, Reduce Number of Trial Failure Surfaces to 5000 or less.

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	637.161	321.000
2	648.070	315.144
3	744.753	322.051
4	758.891	336.198
5	769.286	353.285

6 773.602 358.000

Factor of Safety
*** 2.423 ***

Individual data on the 19 slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)
1	9.8	3117.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
2	1.1	745.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
3	15.2	16684.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
4	1.8	2599.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
5	12.0	21448.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
6	3.0	6329.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	14.0	31296.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	1.0	2296.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	4.0	9050.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	5.0	11047.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	6.0	13677.9	0.0	0.0	0.	0.	0.0	0.0
0.0								
12	11.0	26868.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
13	15.0	42874.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
14	8.8	29915.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
15	13.2	42195.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
16	0.9	2391.5	0.0	0.0	0.	0.	0.0	0.0
222.7								
17	2.6	6048.6	0.0	0.0	0.	0.	0.0	0.0
637.5								

18	7.8	10508.4	0.0	0.0	0.	0.	0.0	0.0
1961.2								
19	4.3	1221.1	0.0	0.0	0.	0.	0.0	0.0
1079.0								

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	637.161	321.000
2	648.070	315.144
3	744.753	322.051
4	758.891	336.198
5	769.286	353.285
6	773.602	358.000

Factor of Safety
*** 2.423 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
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2	648.070	315.144
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Factor of Safety
*** 2.423 ***

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Factor of Safety
*** 2.423 ***

1

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
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4	758.891	336.198
5	769.286	353.285
6	773.602	358.000

Factor of Safety
*** 2.423 ***

Failure Surface Specified By 6 Coordinate Points

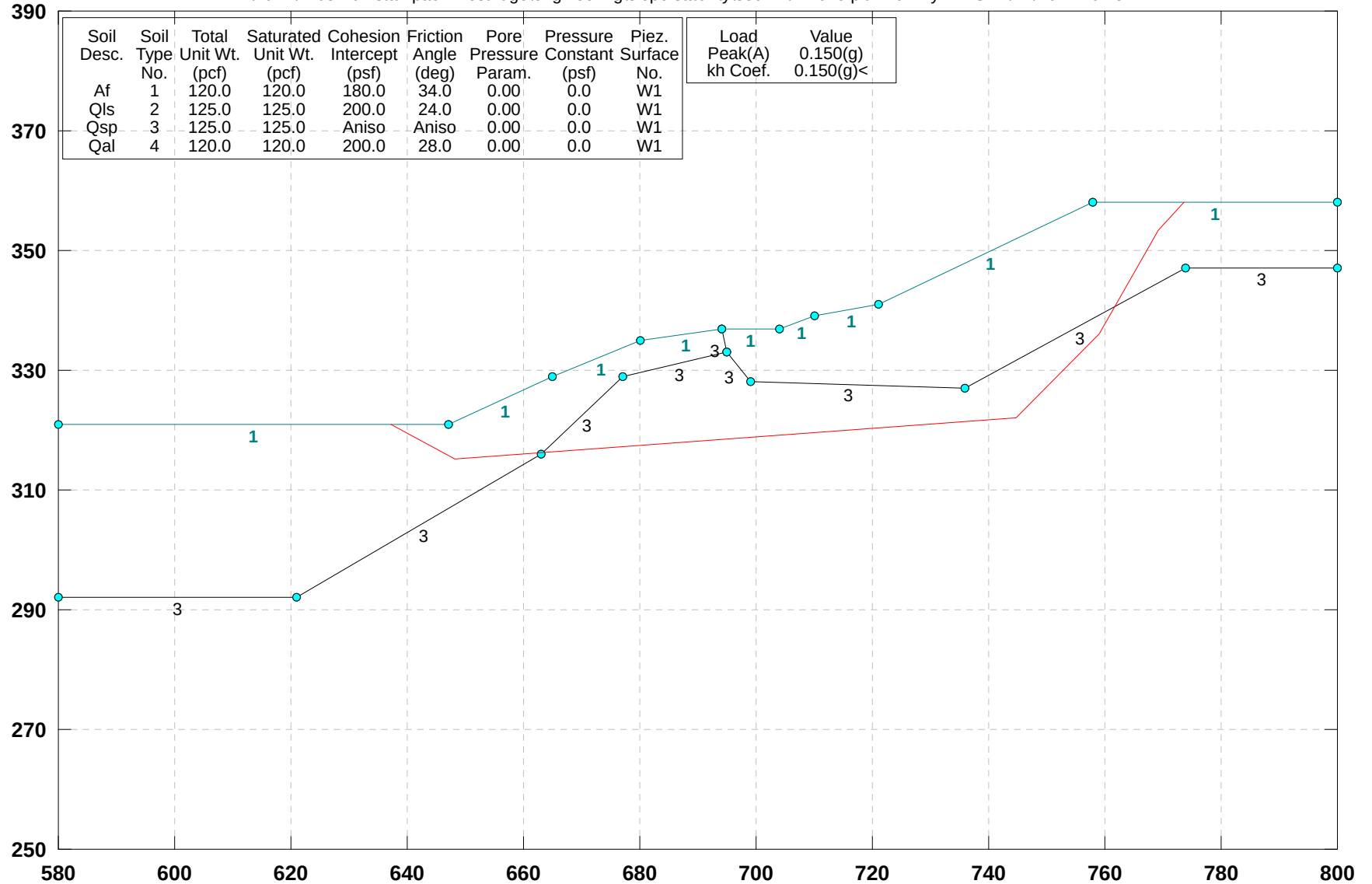
Point No.	X-Surf (ft)	Y-Surf (ft)
1	637.161	321.000
2	648.070	315.144
3	744.753	322.051
4	758.891	336.198
5	769.286	353.285
6	773.602	358.000

Factor of Safety
*** 2.423 ***

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

Westridge/14057-01/Sec 14-14'/Upper Slope/ Seismic

z:\2014\14057-01 stan pac - westridge\engineering\slope stability\sec 14\14uxe.plt Run By: KMS 4/14/2017 02:51PM



GSTABL7 v.2 FSmin=1.86

Factor Of Safety Is Calculated By The Simplified Janbu Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.3,
Feb. 2013 **

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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: 4/14/2017
Time of Run: 02:51PM
Run By: KMS
Input Data Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 14\x14uxe.in
Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 14\x14uxe.OUT
Unit System: English

Plotted Output Filename: Z:\2014\14057-01 Stan Pac -
Westridge\Engineering\Slope Stability\Sec 14\x14uxe.PLT

PROBLEM DESCRIPTION: Westridge/14057-01/Sec 14-14'/Upper
Slope/ Seismic

BOUNDARY COORDINATES

9 Top Boundaries

23 Total Boundaries						
Type	Boundary	X-Left	Y-Left	X-Right	Y-Right	Soil
Bnd	No.	(ft)	(ft)	(ft)	(ft)	Below
	1	580.00	321.00	647.00	321.00	1
	2	647.00	321.00	665.00	329.00	1
	3	665.00	329.00	680.00	335.00	1
	4	680.00	335.00	694.00	337.00	1
	5	694.00	337.00	704.00	337.00	1
	6	704.00	337.00	710.00	339.00	1
	7	710.00	339.00	721.00	341.00	1
	8	721.00	341.00	758.00	358.00	1
	9	758.00	358.00	800.00	358.00	1
	10	694.00	337.00	695.00	333.00	3
	11	695.00	333.00	699.00	328.00	3
	12	699.00	328.00	736.00	327.00	3
	13	736.00	327.00	774.00	347.00	3
	14	774.00	347.00	800.00	347.00	3
	15	60.00	300.00	73.00	299.00	1
	16	73.00	299.00	86.00	300.00	1
	17	86.00	300.00	90.00	296.00	1
	18	580.00	292.00	621.00	292.00	3
	19	621.00	292.00	663.00	316.00	3
	20	663.00	316.00	677.00	329.00	3
	21	677.00	329.00	695.00	333.00	3
	22	0.00	279.00	67.00	279.00	3
	23	67.00	279.00	88.00	297.00	3

User Specified Y-Origin = 250.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

4 Type(s) of Soil

Piez. Surface No.	Soil Total Saturated Cohesion Friction Pore Pressure					
	Type	Unit	Wt.	Unit	Wt.	Intercept
	No.	(pcf)	(pcf)	(psf)	(deg)	Param.
						(psf)

1	1	120.0	120.0	180.0	34.0	0.00	0.0
1	2	125.0	125.0	200.0	24.0	0.00	0.0
1	3	125.0	125.0	500.0	34.0	0.00	0.0
1	4	120.0	120.0	200.0	28.0	0.00	0.0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

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	3.0	500.00	34.00
2	6.0	200.00	27.00
3	90.0	500.00	34.00

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.

Specified Peak Ground Acceleration Coefficient (A) = 0.150(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
1

Trial Failure Surface Specified By 6 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	637.161	321.000
2	648.070	315.144
3	744.753	322.051
4	758.891	336.198
5	769.286	353.285
6	773.602	358.000

Janbu's Empirical Coefficient (fo) = 1.070

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

Factor Of Safety For The Preceding Specified Surface = 1.862

Table 1 - Individual Data on the 19 Slices

Surcharge Slice Load No. (lbs)	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Ver (lbs)
1	9.8	3117.9	0.0	0.0	0.0	0.0	467.7	0.0
0.0								
2	1.1	745.6	0.0	0.0	0.0	0.0	111.8	0.0
0.0								
3	15.2	16684.5	0.0	0.0	0.0	0.0	2502.7	0.0
0.0								
4	1.8	2600.0	0.0	0.0	0.0	0.0	390.0	0.0
0.0								
5	12.0	21448.5	0.0	0.0	0.0	0.0	3217.3	0.0
0.0								
6	3.0	6329.8	0.0	0.0	0.0	0.0	949.5	0.0
0.0								
7	14.0	31296.6	0.0	0.0	0.0	0.0	4694.5	0.0
0.0								
8	1.0	2307.4	0.0	0.0	0.0	0.0	346.1	0.0
0.0								
9	4.0	9050.2	0.0	0.0	0.0	0.0	1357.5	0.0
0.0								
10	5.0	11047.7	0.0	0.0	0.0	0.0	1657.2	0.0
0.0								

11	6.0	13678.1	0.0	0.0	0.0	0.0	2051.7	0.0
0.0								
12	11.0	26868.8	0.0	0.0	0.0	0.0	4030.3	0.0
0.0								
13	15.0	42874.4	0.0	0.0	0.0	0.0	6431.2	0.0
0.0								
14	8.8	29913.8	0.0	0.0	0.0	0.0	4487.1	0.0
0.0								
15	13.2	42197.6	0.0	0.0	0.0	0.0	6329.6	0.0
0.0								
16	0.9	2392.3	0.0	0.0	0.0	0.0	358.9	0.0
0.0								
17	2.6	6049.0	0.0	0.0	0.0	0.0	907.4	0.0
0.0								
18	7.8	10507.9	0.0	0.0	0.0	0.0	1576.2	0.0
0.0								
19	4.3	1221.0	0.0	0.0	0.0	0.0	183.2	0.0
0.0								

Table 2 - Base Stress Data on the 19 Slices

Slice Mobilized No. Stress * (psf)	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Shear
1	-28.23	642.08	11.17	554.76	-
108.00					
2	-28.23	647.54	1.21	915.79	-
237.47					
3	4.09	655.66	15.21	900.61	
242.84					
4	4.09	664.12	1.76	939.23	
327.36					
5	4.09	671.00	12.03	1092.20	
394.79					
6	4.09	678.50	3.01	1253.80	
466.03					
7	4.09	687.00	14.04	1316.70	
493.76					
8	4.09	694.50	1.00	1352.73	
509.65					
9	4.09	697.00	4.01	1330.27	
499.75					
10	4.09	701.50	5.01	1303.71	
488.03					
11	4.09	707.00	6.02	1338.85	
503.53					
12	4.09	715.50	11.03	1420.49	
539.52					
13	4.09	728.50	15.04	1628.76	
631.33					

14	4.09	740.38	8.78	1908.96
754.86				
15	45.02	751.38	18.74	2750.10
2590.92				
16	45.02	758.45	1.26	2399.64
2183.91				
17	58.69	760.17	4.91	2532.37
2211.24				
18	58.69	765.36	15.09	1306.69
1248.79				
19	47.53	771.44	6.39	393.49
237.33				

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 223482.25 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 1435.30(psf)

Sum of the Driving Forces = 128438.80 (lbs)

Average Mobilized Shear Stress = 824.89(psf)

Total length of the failure surface = 155.70(ft)

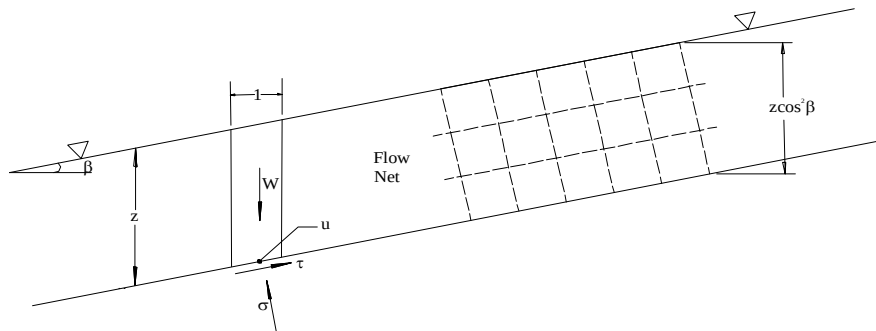
*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.4736(g)
Calculated Newmark Seismic Displacement = 0.001(ft)

Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

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

MANUFACTURED 2H:1V FILL SLOPE

INFINITE SLOPE CONDITION



ASSUMPTION

Depth of Saturation (ft), z 4
(and steady seepage parallel to slope face)

SOIL PARAMETERS

Angle of Internal Friction, ϕ 26
Cohesion (psf), c 300
Saturated Unit Weight of Soil (pcf), γ_{sat} 125
Unit Weight of Water (pcf), γ_w 62.4
Slope Angle (2H:1V), β 26.6

CALCULATIONS

Normal Stress Along Failure Plane

$$\sigma = \gamma_{\text{sat}} * z * \cos^2 \beta \quad \sigma = 399.756 \text{ lb/ft}^2$$

Shear Stress Along Failure Plane

$$\tau_d = \gamma_{\text{sat}} * z * \sin \beta * \cos \beta \quad \tau_d = 200.183 \text{ lb/ft}^2$$

Pore Pressure Along Failure Plane

$$u = \gamma_w * z * \cos^2 \beta \quad u = 199.558 \text{ lb/ft}^2$$

Resisting Shear Stress Along Failure Plane

$$\tau_r = c + (\sigma - u) \tan \phi \quad \tau_r = 397.643 \text{ lb/ft}^2$$

FACTOR OF SAFETY

$$\text{FS} = \frac{\tau_r}{\tau_d}$$

$$\text{FS} = 1.99$$



**SURFICIAL
STABILITY**

Project Name :	Rancho La Habra
Project Number :	14057-01
Designed/Checked :	BTZ
Date:	April, 2017