STABILIZATION OF FERROCARRIL LANDSLIDE HAZARD AREA AND REPAIR OF FERROCARRIL LANDSLIDE, MISSION VIEJO, CALIFORNIA

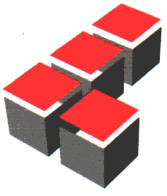
Prepared for

City of Mission Viejo

200 Civic Center
Mission Viejo, California 92691

Project No. 011492-001

October 19, 2006



Leighton and Associates, Inc.

A LEIGHTON GROUP COMPANY

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October 19, 2006

Project No. 011492-001

To: City of Mission Viejo
200 Civic Center
Mission Viejo, California 92691

Attention: Mr. Richard Schlesinger

Subject: Stabilization of Ferrocarril Landslide Hazard Area and Repair of Ferrocarril Landslide, Mission Viejo, California

References: Petra Geotechnical, Inc., 2005, Preliminary Geotechnical Investigation of the Ferrocarril Landslide, City of Mission Viejo, California, Job No. 173-05, dated September 30, 2005.

Petra Geotechnical, Inc., 2005, Summary of Geotechnical Observation and Testing during Temporary Repair of the Ferrocarril Landslide, City of Mission Viejo, California, Job No. 211-05, dated May 31, 2006.

In accordance with your request, this report presents the recommended measures to stabilize the landsliding hazard that was evidenced by the January 2005 landslide at Ferrocarril and remains a threat to the stability of the neighboring properties. The hazard is created by the presence of a weak clay bed that underlies the slope which separates the building pads on Encorvado Lane from the building pads on Ferrocarril and Chrisanta.

Figure 1 depicts the spatial relation of this clay bed to the separating slope, and delineates the areas subjected to unacceptable levels of landsliding risk. The recommended measures will alleviate the landsliding hazard and return safety and value to the affected properties. These recommendations are detailed in Attachment B of this report.

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The recommended repair and stabilization measures consisting of soldier piles, tie-backs, and grading are estimated to cost over 3 million dollars. Implementation of a portion of these measures on an emergency basis was undertaken by the City of Mission Viejo utilizing FEMA funding. The implementation of the remaining portion of these measures is estimated to cost approximately 1.82 million dollars (see Attachment B). It is our recommendation that formation of a Geologic Hazard Abatement District (GHAD) is a most viable approach for funding and managing the remaining portions of the stabilization measures.

In a GHAD, the cost of abating the geologic hazard (landsliding in this case) is shared by the properties which benefit from the abatement. The benefit to each property is considered to be proportional to the at risk value of the property. Namely, the greater the value of the property and the greater the risk of the hazard, the larger is the assessment of the remediation cost to the property. The identification of properties at risk, assessment of the property values, and the amount of risk are addressed in a "Plan of Control" (POC) report. The POC is included as Attachment A of this report. This attachment identifies 15 private properties and portions of the public right-of-way (delineated on Figure 1) which are affected by the hazard and will benefit from the abatement. The amount of remediation cost to be assessed to each property and to the City of Mission Viejo as the "owner" of the public right-of-way is shown on Table 1.

TABLE 1

GHAD Participant	% Participation	Assessment
24411 Encorvado	3.724	$67,770
24412 Encorvado	7.611	$138.525
24421 Encorvado	6.377	$116,063
24422 Encorvado	7.469	$135,942
24431 Encorvado	7.069	$128,653
24412 Ferrocarril	6.672	$121,436
24422 Ferrocarril	7.246	$131,876
24432 Ferrocarril	5.912	$107,601
24442 Ferrocarril	6.493	$118,176
24452 Ferrocarril	1.446	$26,318
24472 Ferrocarril	6.925	$126,033
24482 Ferrocarril	6.493	$118,176
24492 Ferrocarril	8.298	$151,015
24471 Chrisanta	3.336	$60,718
24481 Chrisanta	2.912	$52,995
City of Mission Viejo	12.017	$218,703
TOTAL	**100.00**	**$1,820,000**

Leighton appreciates being a participant in this project and looks forward to continued team work which is needed to stabilize the hazard area. If you have any questions, please do not hesitate to contact this office.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

Iraj Poormand, PE, GE
Senior Geotechnical Consultant

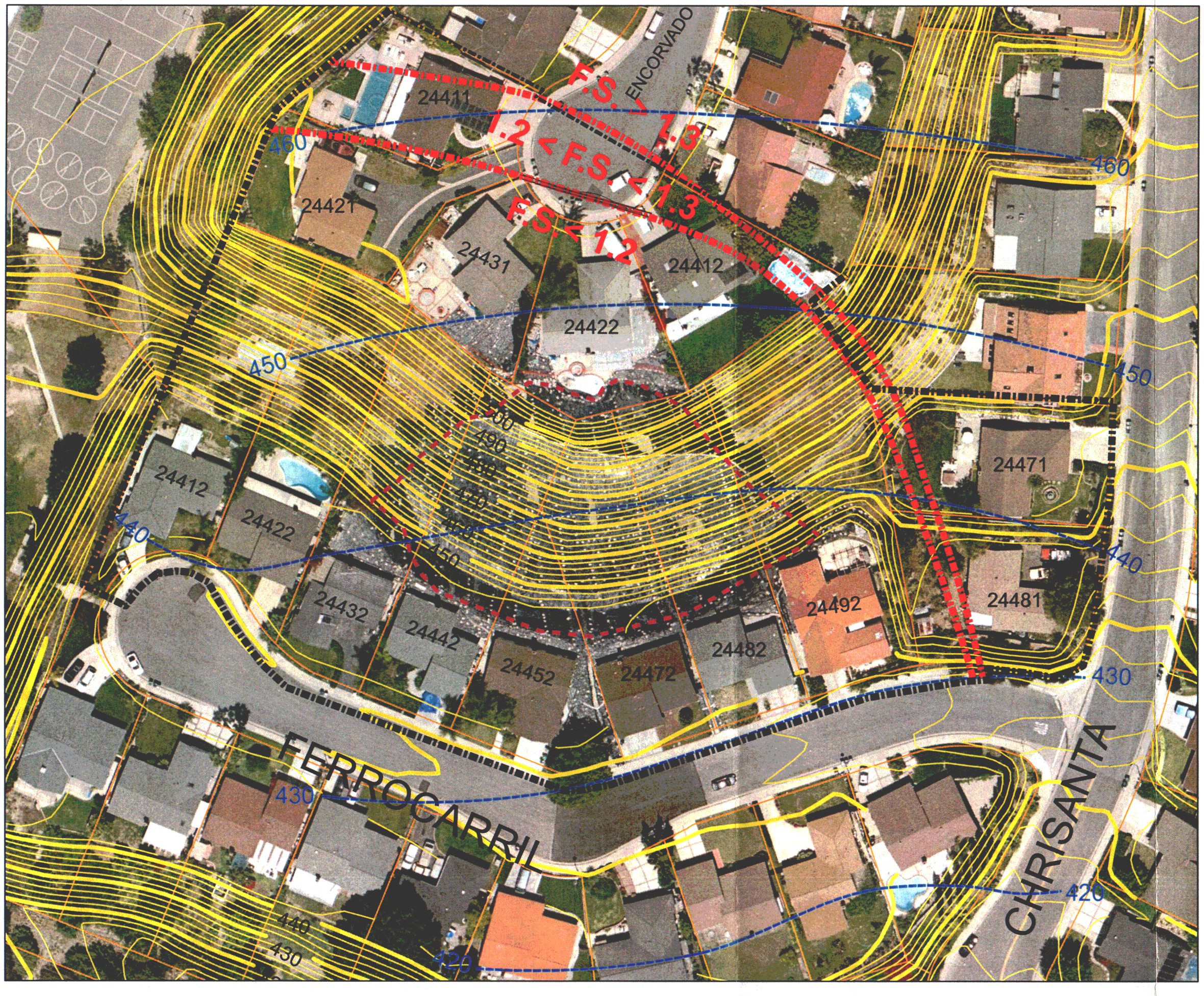
IP/lr

Attachments: Figure 1
Attachment A – Plan of Control
Plates A1, A2, and A3
Appendix A-1 – Landslide Risk, Ferrocarril Landslide Area
Appendix A-2 – Property Valuations

Attachment B – Landslide Remediation and Abatement of Landslide Hazard
Plate B1
Appendix B-1 – Slope Stability Analysis After Remediation
Appendix B-2 – Tie-Back and Pile Design

Distribution: (5) Addressee

Figure 1



Legend:

- Proposed GHAD Boundary
- Clay Bed Surface Contours
- Factor of Safety Delineation Limits
- January 2005 Landslide Boundary

N E W S

1 inch = 60 feet

0 30 60 90 120 Feet

Leighton

ATTACHMENT A

PLAN OF CONTROL
FERROCARRIL GEOLOGIC HAZARD ABATEMENT DISTRICT

Introduction and Background

The geotechnical investigation of January 2005 Ferrocarril Landslide (Petra, 2005) revealed that a primary cause of landsliding was the presence of a weak clay bed with a slight tilt to the southwest, near the toe of the major slope that separates building pads on Encorvado Lane on the top of the slope from pads on Ferrocarril and Chrisanta at the base of the slope. As a result of the presence of this clay bed which apparently was not discovered during the tract development in the 1960s, the constructed slope lacked an adequate margin of safety and could not endure the rain-caused change in the delicate balance that must have existed between the forces that tend to promote landsliding (slope failure) and those forces that resist landsliding. Considering that the height of the separating slope remains essentially the same and the culprit clay bed extends below the exiting unfailed portions of the slope and that its depth below the back yards of the lower pads diminishes towards the end of Ferrocarril cul-de-sac, one would expect that the stability of the slope remains marginal beyond the limits of the January 2005 landslide. Future changes in groundwater conditions or other factors that influence stability of slopes (such as earthquake loading) may trigger land movement, jeopardizing the safety and integrity of the neighboring properties.

In the accompanying Attachment B of this report we present a number of remedial measures engineered to elevate the safety of the slope to what is normally considered an acceptable level. The cost of implementing these measures is estimated at over 3 million dollars. The City of Mission Viejo, utilizing FEMA funding, has already implemented some of the remedial work. The remaining stabilization efforts are estimated to cost approximately 1.82 million dollars. In this POC, we have first explained how slope stability (or instability risk/landslide hazard) is quantified. Then we have proposed a scale for acceptable risk levels, borderline risk levels, and unacceptable risk levels. We have used this scale to include or exclude properties from the proposed GHAD and to assess the level of landsliding risk to the included properties (see Figure 1 for the delineations and Appendix A1 for details). Using "Zillow.com", a real estate valuation website, the relative value of each of the included properties was then estimated (see Appendix A2). The combination of landslide hazard risk and relative property value was used to proportion the estimated cost of stabilization to the involved properties.

Landslide Hazard Quantifications

Stability of slopes is evaluated by slope stability analysis. This analysis compares the likely forces that tend to cause failure of the slope with those forces that resist such a failure. If these two force categories could be determined with a high level of precision, then as long as the resisting forces exceed the driving forces, there would be no chance for landsliding. With recognition of the inherent variability of soil and bedrock strength and our inability to precisely measure these variables, and considering the complexity of the analytical models, the geotechnical profession as

well as municipal agencies require that the computed resisting forces should exceed the computed driving forces by 50 percent during the design phase. The ratio of the resisting forces to driving forces is called the safety factor or 'Factors of Safety' (FS) and the usual design requirement is a minimum safety factor of 1.5 which implies a negligible risk of deep seated failure (landsliding).

In developed areas if stability of slopes is evaluated for new buildings, most agencies again require a safety factor of 1.5 before a building permit is issued. But, if evaluations are performed for other than new construction purposes such as for feasibility for purchase, there are no preset standards. If the factor of safety is close to unity, landslide potential is considered to be intolerably high and the property is considered unsuitable for residential use. But, if the safety of factor exceeds 1.2 or 1.3, depending on reliability of strength and geometric data, it may be improper to condemn the property.

In evaluating risk of landsliding at the slope which separates the residential pads on Encorvado Lane from those on Ferrocarril, we proposed to use factors of safety of 1.2 and 1.3 as risk level criteria.

We propose that if the computed safety factor is 1.3 or higher, and if no new construction is planned, the landsliding risk would be tolerable and if the factor of safety is less than 1.2, the risk is intolerably high.

The following three cases are distinguished for pads located on the top of the slope (on Encorvado Lane pads). On these "upper" pads, landsliding would result in wasting and loss of all or a portion of the pad.

Case 1: If the computed factor of safety of the entirety of a residential pad exceeds 1.3, the pad does not necessarily need the planned stabilization work, even though there may be incidental benefit to the stability of that pad.

Case 2: If the structure of the residence is underlain by pad areas with less than a safety factor of 1.2, then the property is at a high risk of landsliding hazard, needs stabilization work and should be considered a full participant in the repair cost.

Case 3: If portions of the pad have a safety factor that is less than 1.2, but the entirety of the residential structure is on ground with a safety factor of 1.2 or better, the benefit to the property is substantial but only half as much as the benefit to properties of Case 2. Participation level of these properties would also be half as much as Case 2 participants.

Landsliding impact to the lower pads (pads on Ferrocarril and Chrisanta) is by heave (upward) or lateral movement of all or a portion of the pad and/or by encroachment of slide debris on to the pad. This impact is quantified by evaluating the stability level of the slope above the pad in the direction that impacts the pad.

Case 1: If the slope has a safety factor of no less than 1.3, the risk is considered nominal and participation is not considered mandatory.

Case 2: If the safety factor of the slope in the direction of the residential structure of the pad is less than 1.2, the landslide hazard risk is high and a risk factor of 1.0 is considered proper.

Case 3: If the safety factor is less than 1.3, but the structure is on portions of the pad with a safety factor of 1.2 or more, the hazard level is moderate and a risk factor of 0.5 is appropriate.

Applying the same risk standard to public rights-of-way, we recommend full risk consideration for safety factors of 1.2 or less and 50 percent risk factor for 1.2 to 1.3 range of safety factor.

Based on a specific series of slope stability analyses (Appendix A1) and with consideration of changes in topographic conditions, we have determined the risk zones identified above and presented these zones on Figure 1. The risk factor for our recommended participating properties is as follows:

Private Properties

50% Risk Factor:	Properties at: 24411 Encorvado, 24471 and 24481 Chrisanta
100 % Risk Factor	24412, 24421, 24422 and 24431 Encorvado, 24412, 24422, 24432, 24442 24452, 24472, 24482 and 24492 Ferrocarril

Public Right-of-Way

50% Risk Factor	A 3,860-sq-ft portion of Encorvado cul-de-sac
100 % Risk Factor	A 13-ft-wide, 600-ft-long strip of northwesterly sidewalk and roadway of Ferrocarril as well as a 645-sq-ft portion of Encorvado

Please note that considering the distance between the toe of the slope and edge of Ferrocarril Street right-of-way, assignment of a 100 percent risk factor is considered conservative. The 13-foot width of the instability impact zone, however, is based on engineering judgment considering a worst case scenario.

Valuation of Properties

In addition to level of risk, properties in a GHAD share the cost of remediation proportional to their value. The valuation of the property is done by a real estate appraiser. For this preliminary POC, we have used the internet site "zillow.com" and with modification that are explained in Appendix A-2, computed the following property values:

TABLE A-1

GHAD Participant	Property Value	Risk Factor
24411 Encorvado	$672,735	0.5
24412 Encorvado	$687,552	1.0
24421 Encorvado	$576,067	1.0
24422 Encorvado	$679,735	1.0
24431 Encorvado	$638,554	1.0
24412 Ferrocarril	$602,735	1.0
24422 Ferrocarril	$654,552	1.0
24432 Ferrocarril	$539,067	1.0
24442 Ferrocarril	$588,554	1.0
24452 Ferrocarril	$130,629	1.0
24472 Ferrocarril	$627,552	1.0
24482 Ferrocarril	$588,554	1.0
24492 Ferrocarril	$751,545	1.0
24471 Chrisanta	$602,735	0.5
24481 Chrisanta	$526,067	0.5
City of Mission Viejo	$1,287,442*	**
TOTAL	**$10,054,075**	

* See Appendix A-2 for details
** Mixed risk factor

LEGEND

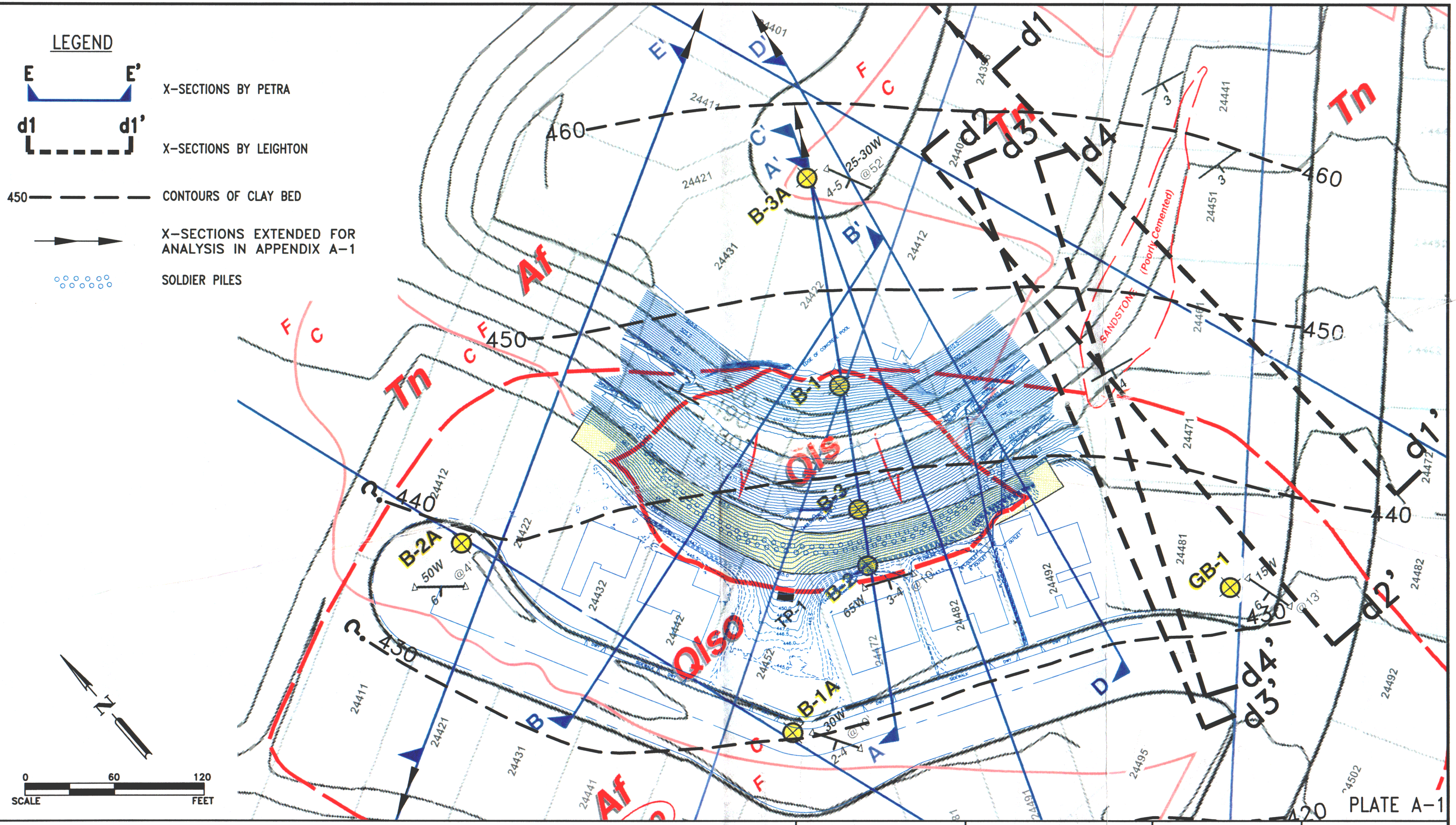
E — E' X-SECTIONS BY PETRA

d1 — d1' X-SECTIONS BY LEIGHTON

450 CONTOURS OF CLAY BED

X-SECTIONS EXTENDED FOR ANALYSIS IN APPENDIX A-1

SOLDIER PILES



FERROCARRIL LANDSLIDE

MISSION VIEJO, CALIFORNIA

(BASE MAP FROM PETRA GEOTECHNICAL, INC.)

Leighton

Proj: 011492-001	Scale: 1"=60'	Date: 10/06
Eng./Geol. IP	Drafted By: VMN	CP By: BQT

P:\DRAFTING\011492\001\OF_06-10-17\PLATE_A-1.DWG (10-19-06 9:55:19AM) Plotted by: btran

PLATE A-1

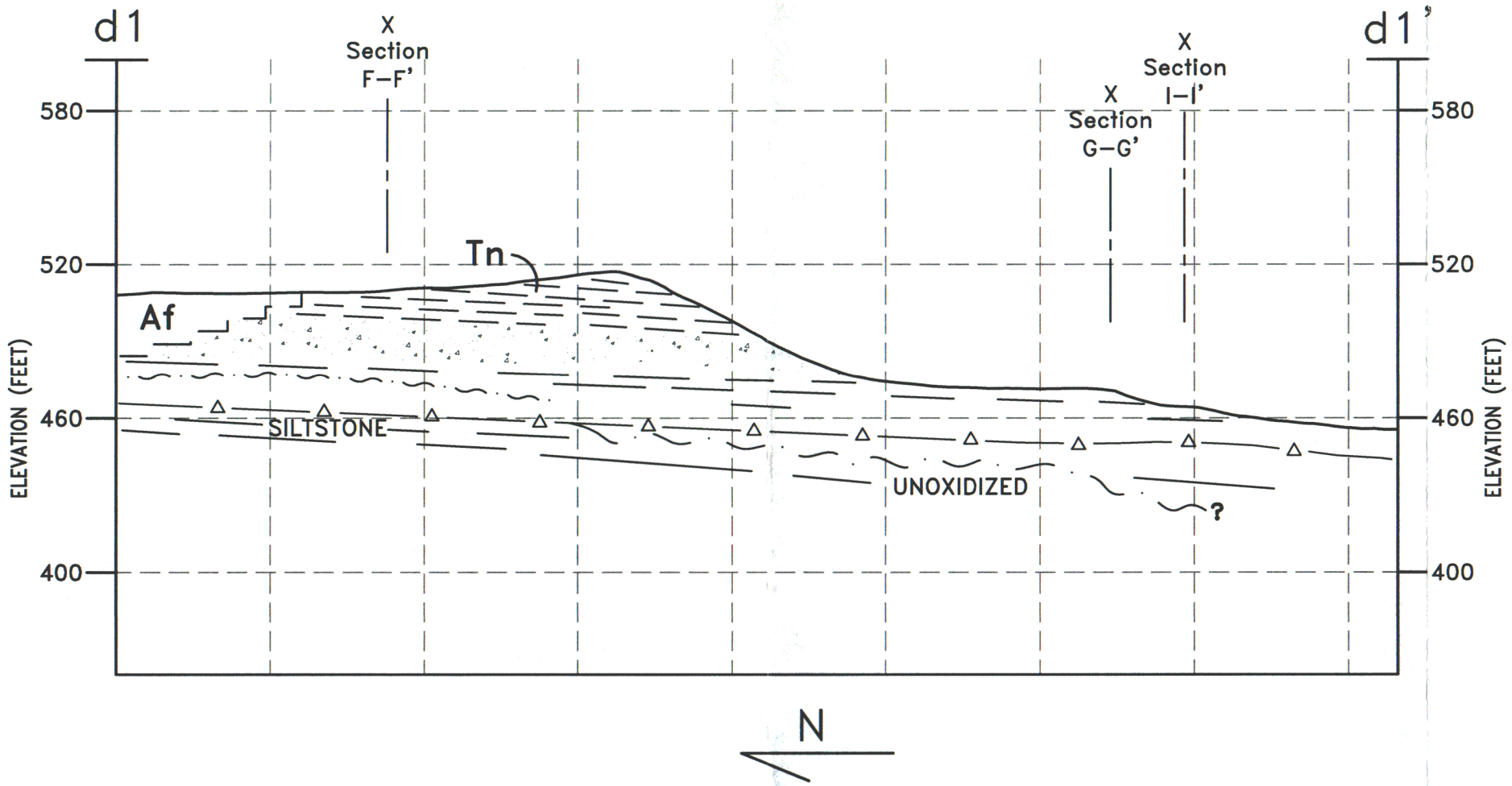


PLATE A–2

GEOTECHNICAL CROSS SECTION

FERROCARRIL LANDSLIDE
MISSION VIEJO, CALIFORNIA

Leighton

Proj: 011492–001	Scale: 1"=60'	Date: 10/06
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P:\DRAFTING\011492\001\OF_06-10-17\PLATE_A-2-3.DWG (10-17-06 5:03:45PM) Plotted by: btran

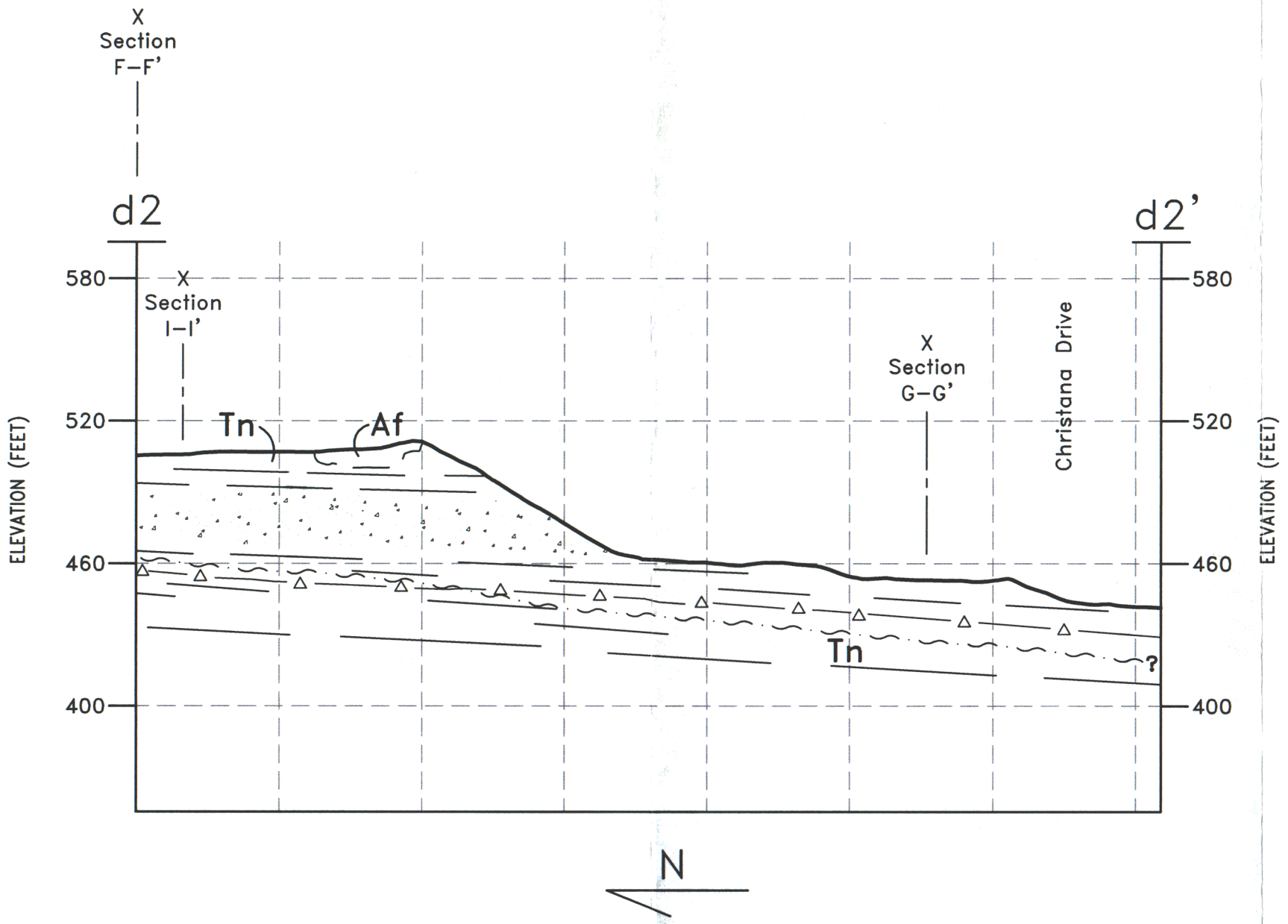

PLATE A-3

GEOTECHNICAL CROSS SECTION

FERROCARRIL LANDSLIDE
MISSION VIEJO, CALIFORNIA

Leighton

Proj: 011492-001	Scale: 1"=60'	Date: 10/06
Eng./Geol. IP	Drafted By: VMN	CP By: BQT

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APPENDIX A-1

LANDSLIDE RISK - FERROCARRIL LANDSLIDE AREA

To evaluate the lateral extent of instability (or landslide risk) affecting the slope that separates the residential pads on Encorvado from those on Ferrocarril and Chrisanta, several cross-sections prepared by Petra were selected and analyzed.

Routine slope stability analysis involves modeling the surface geometry, subsurface soil, bedrock and groundwater delineation as well as soil and bedrock strength characteristics. By use of a computer program numerous geometric modes of failure are hypothetically assumed and for each mode of failure a factor of safety (the ratio of the forces resisting to the forces promoting failure) is computed. The program then lists the lowest 10 of the computed safety factors and the hypothetical mode (or trial rupture surfaces) for which the safety factors were computed. As an example, the attached printout for Cross-Section AA' on Figures A1-2 through A1-7 may be examined. On the first page, 10 safety factors ranging from 0.936 to 1.005 are listed and the 10 trial surfaces for which these safety factors were computed are shown. All the trial rupture surfaces were initiated within a 30-foot zone from the edge of the slope. As it can be seen on Figure A1-2, the 10 shown safety factors are all very close to unity (indicating a very high risk of landsliding). If the input data is manipulated so that trial surfaces initiating further away from the edge of the slope are evaluated (see page A1-8 through A1-61), progressively higher and higher safety factors are computed. These higher safety factors reflect progressively lower risk of landslide hazard. On page A1-1, we have plotted the distance from the top-of-slope and the associated minimum safety factor (for Cross-Section AA').

The same procedure was carried out on Cross-Sections DD' and EE' (Figures A1-62 through A1-127 and A1-128 through A1-157, respectively. Four additional cross-sections, d1-d1', d2-d2', d3-d3', and d4-d4' (see Plates 1, 2, and 3) were drawn and analyzed for stability of the separating slope as it turns to face south and southeast. Factors of safety obtained for all but d3-d3' of these cross-sections exceeded 1.3. The results for d3-d3' are shown on Figures A1-158 through A1-192.

Based on an examination of the data on Figure A1-1 and with consideration of location and orientation of the subsurface clay bed, the zones of unacceptable (FS< 1.2) and tolerable landslide risk (FS > 1.3) are delineated on Figure 1. The area between the two is considered moderate risk.

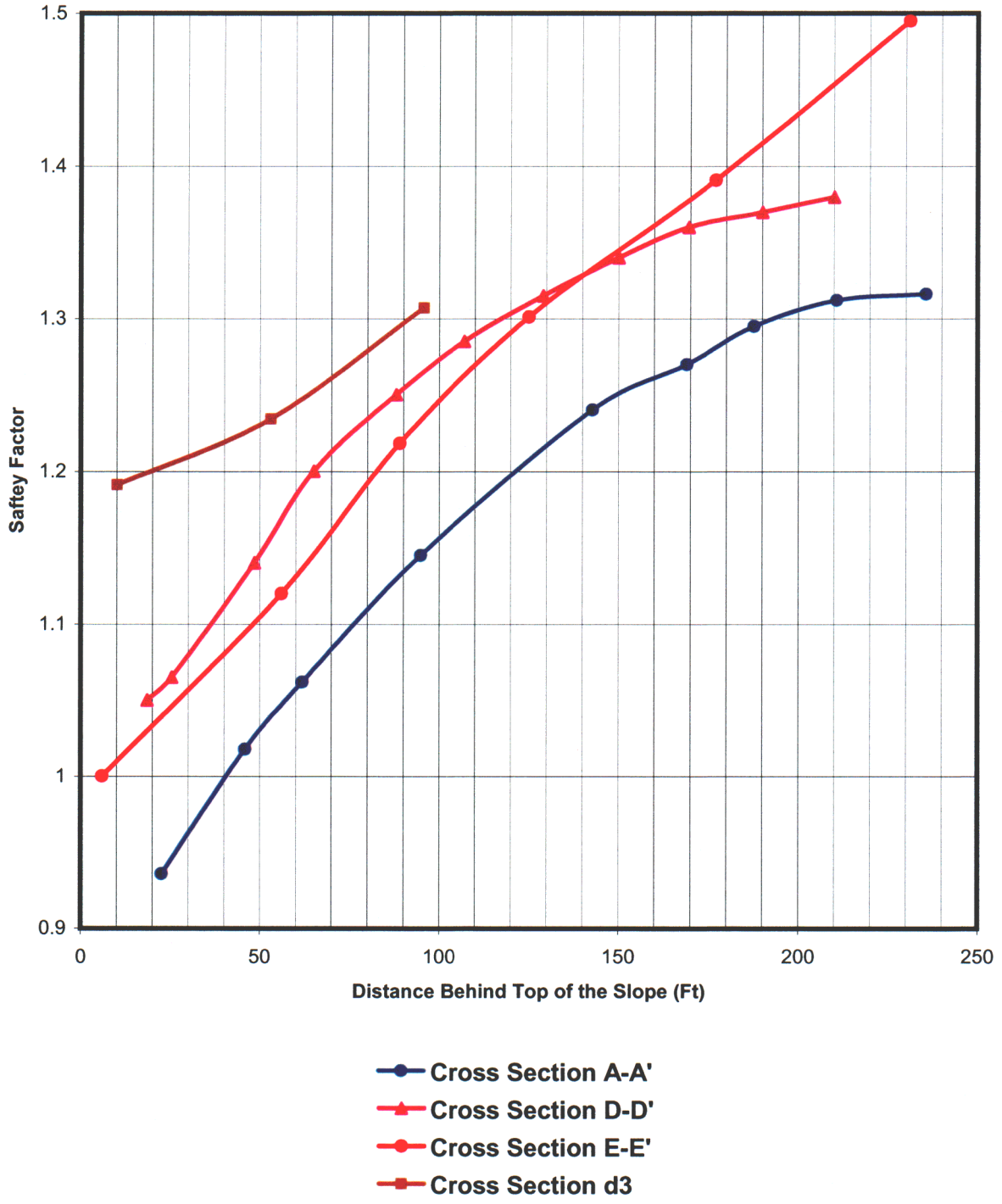

1.5
1.4
1.3
1.2
1.1
1
0.9
Saftey Factor
0
50
100
150
200
250
Distance Behind Top of the Slope (Ft)
Cross Section A-A'
Cross Section D-D'
Cross Section E-E'
Cross Section d3

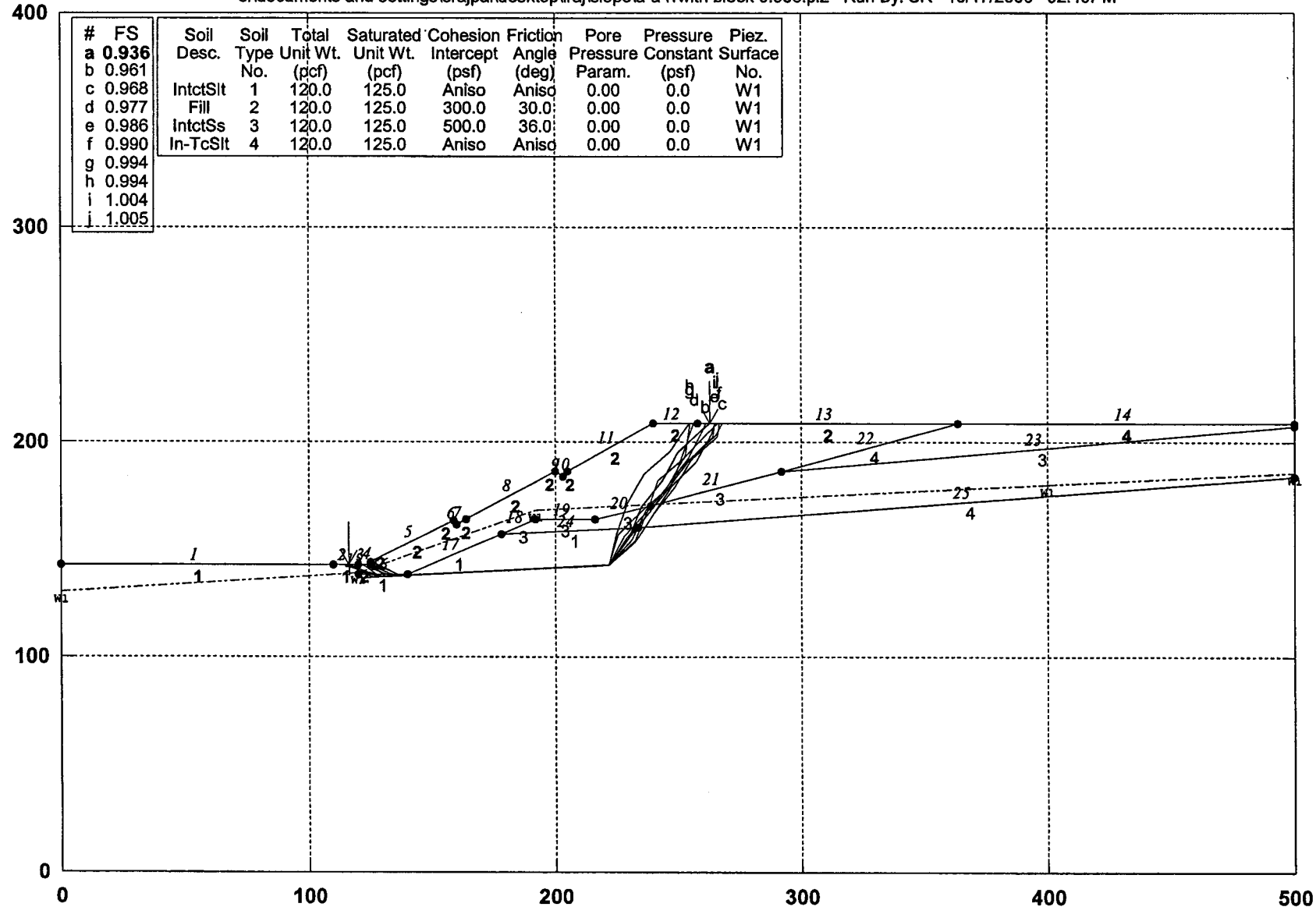
FIGURE A1-1

MV/Landslide/011492-001 Section A-A' (Search for min.)

c:\documents and settings\srajpal\desktop\iraj\slope\a-a'\1with block 0.936.pl2 Run By: SR 10/17/2006 02:49PM

#	FS
a	**0.936**
b	0.961
c	0.968
d	0.977
e	0.986
f	0.990
g	0.994
h	0.994
i	1.004
j	1.005

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
IntctSlt	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
IntctSs	3	120.0	125.0	500.0	36.0	0.00	0.0	W1
In-TcSlt	4	120.0	125.0	Aniso	Aniso	0.00	0.0	W1



GSTABL7 v.2 FSmin=0.936

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

FIGURE A1-2

```
                                  *** GSTABL7 ***
                          ** GSTABL7 by Garry H. Gregory, P.E. **
          ** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
                      (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:        10/17/2006
  Time of Run:              02:49PM
  Run By:                   SR
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ith block 0.936.in
  Output Filename:          C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1w
ith block 0.936.OUT
  Unit System:              English
  Plotted Output Filename:  C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1w
ith block 0.936.PLT
  PROBLEM DESCRIPTION:  MV/Landslide/011492-001
                        Section A-A' (Search for min.)
  BOUNDARY COORDINATES
     14 Top   Boundaries
     25 Total Boundaries
  Boundary     X-Left      Y-Left     X-Right     Y-Right     Soil Type
     No.        (ft)        (ft)        (ft)        (ft)     Below Bnd
      1          0.00      142.50      110.00      142.50         1
      2        110.00      142.50      120.00      142.50         1
      3        120.00      142.50      125.00      142.50         2
      4        125.00      142.50      125.01      144.00         2
      5        125.01      144.00      158.50      163.00         2
      6        158.50      163.00      160.00      161.00         2
      7        160.00      161.00      164.00      164.00         2
      8        164.00      164.00      200.00      186.00         2
      9        200.00      186.00      203.00      184.00         2
     10        203.00      184.00      205.00      186.00         2
     11        205.00      186.00      240.00      209.00         2
     12        240.00      209.00      258.00      209.00         2
     13        258.00      209.00      364.00      209.00         2
     14        364.00      209.00      500.00      209.00         4
     15        120.00      142.50      120.10      138.00         1
     16        120.10      138.00      140.00      138.00         1
     17        140.00      138.00      178.00      157.00         1
     18        178.00      157.00      192.00      164.00         3
     19        192.00      164.00      216.00      164.00         3
     20        216.00      164.00      239.00      170.00         3
     21        239.00      170.00      292.00      186.00         3
     22        292.00      186.00      364.00      209.00         4
     23        292.00      186.00      500.00      207.20         3
     24        178.00      157.00      234.00      160.00         1
     25        234.00      160.00      500.00      184.00         4
  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  Total  Saturated  Cohesion Friction   Pore    Pressure   Piez.
  Type Unit Wt. Unit Wt. Intercept   Angle  Pressure Constant Surface
   No.  (pcf)    (pcf)     (psf)     (deg)   Param.    (psf)     No.
    1   120.0    125.0     700.0     37.0    0.00       0.0       1
    2   120.0    125.0     300.0     30.0    0.00       0.0       1
    3   120.0    125.0     500.0     36.0    0.00       0.0       1
    4   120.0    125.0     700.0     37.0    0.00       0.0       1
```

FIGURE A1-3

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	4.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 5 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	130.00
2	120.00	138.50
3	192.00	168.00
4	400.00	180.00
5	500.00	185.76

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.
100 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	120.00	136.50	140.00	137.70	0.00
2	222.00	142.50	222.00	142.50	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 1.336 FS Min = 0.936 FS Ave = 1.090
Standard Deviation = 0.079 Coefficient of Variation = 7.27 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	116.251	142.500
2	127.948	136.977
3	222.000	142.500
4	230.065	155.148
5	235.256	169.221
6	243.752	181.583
7	250.170	195.140

FIGURE A1-4

8	260.317	206.188
9	262.837	209.000

Factor of Safety
*** 0.936 ***

Individual data on the 29 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	3.7	398.2	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.0	8.5	0.0	0.0	0.	0.	0.0	0.0	0.0
3	2.5	709.7	0.0	0.0	0.	0.	0.0	0.0	0.0
4	2.5	1065.6	0.0	185.9	0.	0.	0.0	0.0	0.0
5	0.0	6.0	0.0	1.5	0.	0.	0.0	0.0	0.0
6	0.8	568.4	0.0	134.6	0.	0.	0.0	0.0	0.0
7	2.2	2008.1	0.0	571.8	0.	0.	0.0	0.0	0.0
8	12.1	17415.8	0.0	5194.1	0.	0.	0.0	0.0	0.0
9	18.5	44477.8	0.0	14173.3	0.	0.	0.0	0.0	0.0
10	1.5	4291.5	0.0	1478.3	0.	0.	0.0	0.0	0.0
11	4.0	11625.9	0.0	4183.4	0.	0.	0.0	0.0	0.0
12	14.0	49730.5	0.0	17406.5	0.	0.	0.0	0.0	0.0
13	14.0	63066.6	0.0	21706.7	0.	0.	0.0	0.0	0.0
14	8.0	41969.4	0.0	13630.4	0.	0.	0.0	0.0	0.0
15	3.0	16142.2	0.0	5110.3	0.	0.	0.0	0.0	0.0
16	2.0	10726.2	0.0	3406.6	0.	0.	0.0	0.0	0.0
17	11.0	64580.6	0.0	18731.6	0.	0.	0.0	0.0	0.0
18	6.0	38887.9	0.0	10213.9	0.	0.	0.0	0.0	0.0
19	8.1	50205.8	0.0	19786.7	0.	0.	0.0	0.0	0.0
20	1.7	9654.9	0.0	4009.6	0.	0.	0.0	0.0	0.0
21	3.4	16361.9	0.0	3609.8	0.	0.	0.0	0.0	0.0
22	0.1	355.5	0.0	20.1	0.	0.	0.0	0.0	0.0
23	0.9	3977.0	0.0	64.1	0.	0.	0.0	0.0	0.0
24	3.8	15818.8	0.0	0.0	0.	0.	0.0	0.0	0.0
25	3.8	13572.6	0.0	0.0	0.	0.	0.0	0.0	0.0
26	6.4	15896.2	0.0	0.0	0.	0.	0.0	0.0	0.0
27	7.8	9017.3	0.0	0.0	0.	0.	0.0	0.0	0.0
28	2.3	1132.4	0.0	0.0	0.	0.	0.0	0.0	0.0
29	2.5	425.2	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.811	142.500
2	116.280	141.634
3	130.590	137.135
4	222.000	142.500
5	229.247	155.633
6	238.807	167.192
7	246.249	180.215
8	254.617	192.665
9	260.423	206.496
10	261.155	209.000

Factor of Safety
*** 0.961 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	122.054	142.500
2	128.768	137.026
3	222.000	142.500
4	231.167	154.373
5	236.947	168.214
6	246.706	179.606
7	254.894	192.174
8	265.334	202.944
9	268.414	209.000

Factor of Safety
*** 0.968 ***

FIGURE A1-5

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.158	144.084
2	137.142	137.529
3	222.000	142.500
4	230.108	155.120
5	238.515	167.542
6	247.278	179.717
7	252.006	193.952
8	256.423	208.287
9	257.110	209.000

Factor of Safety
*** 0.977 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	115.661	142.500
2	125.809	136.849
3	222.000	142.500
4	232.527	153.185
5	240.310	166.008
6	247.478	179.185
7	257.519	190.328
8	263.575	204.051
9	265.001	209.000

Factor of Safety
*** 0.986 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.007	143.558
2	136.576	137.495
3	222.000	142.500
4	232.510	153.202
5	240.147	166.113
6	248.486	178.581
7	255.899	191.621
8	266.050	202.664
9	267.033	209.000

Factor of Safety
*** 0.990 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.622	142.500
2	134.877	137.393
3	222.000	142.500
4	225.002	157.197
5	229.449	171.522
6	236.196	184.919
7	246.795	195.534
8	254.445	208.436
9	254.994	209.000

Factor of Safety
*** 0.994 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.000	142.494
2	131.215	137.173
3	222.000	142.500
4	228.412	156.061
5	237.753	167.797
6	246.058	180.288
7	253.115	193.524
8	255.287	208.366

FIGURE A1-6

9	255.303	209.000

Factor of Safety

*** 0.994 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.530	142.500
2	133.422	137.305
3	222.000	142.500
4	225.619	157.057
5	235.768	168.103
6	246.259	178.823
7	254.543	191.328
8	264.502	202.545
9	264.730	209.000

Factor of Safety

*** 1.004 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.860	142.500
2	114.034	142.387
3	128.026	136.982
4	222.000	142.500
5	232.217	153.482
6	237.227	167.621
7	241.592	181.972
8	252.189	192.588
9	262.024	203.913
10	266.326	209.000

Factor of Safety

*** 1.005 ***

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

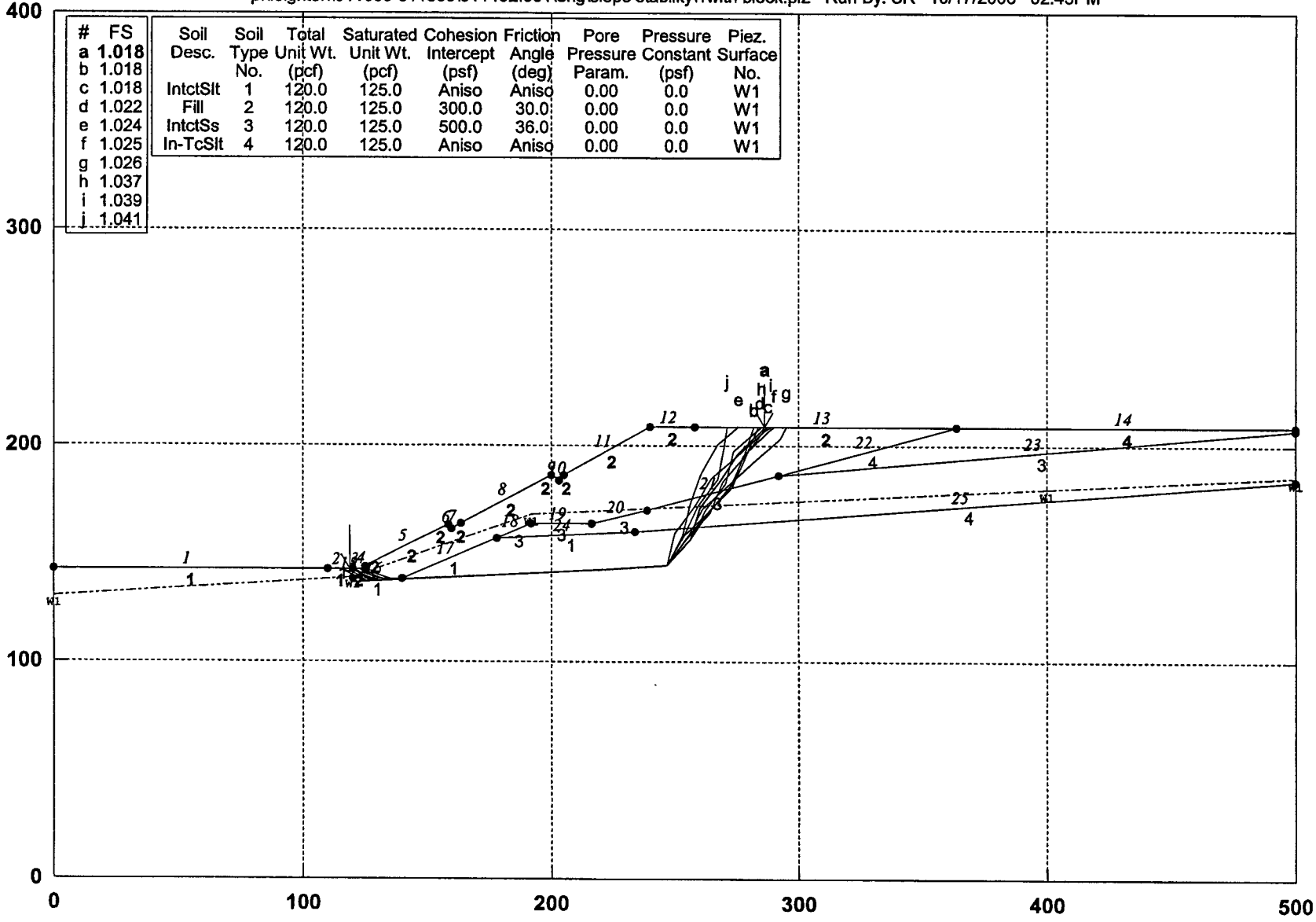
FIGURE A1-7

MV/Landslide/011492-001 Section A-A' (Risk Level)

p:\leighton\011000-011500\011492.001\eng\slope stability\1with block.pl2 Run By: SR 10/17/2006 02:43PM

#	FS
a	1.018
b	1.018
c	1.018
d	1.022
e	1.024
f	1.025
g	1.026
h	1.037
i	1.039
j	1.041

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
IntctSlt	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
IntctSs	3	120.0	125.0	500.0	36.0	0.00	0.0	W1
In-TcSlt	4	120.0	125.0	Aniso	Aniso	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.018

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

FIGURE A1-8

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 02:43PM
Run By: SR
Input Data Filename: p:\Leighton\011000-011500\011492.001\ENG\Slope Stability\1with block.in
Output Filename: p:\Leighton\011000-011500\011492.001\ENG\Slope Stability\1with block.OUT
Unit System: English
Plotted Output Filename: p:\Leighton\011000-011500\011492.001\ENG\Slope Stability\1with block.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001
Section A-A' (Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	142.50	110.00	142.50	1
2	110.00	142.50	120.00	142.50	1
3	120.00	142.50	125.00	142.50	2
4	125.00	142.50	125.01	144.00	2
5	125.01	144.00	158.50	163.00	2
6	158.50	163.00	160.00	161.00	2
7	160.00	161.00	164.00	164.00	2
8	164.00	164.00	200.00	186.00	2
9	200.00	186.00	203.00	184.00	2
10	203.00	184.00	205.00	186.00	2
11	205.00	186.00	240.00	209.00	2
12	240.00	209.00	258.00	209.00	2
13	258.00	209.00	364.00	209.00	2
14	364.00	209.00	500.00	209.00	4
15	120.00	142.50	120.10	138.00	1
16	120.10	138.00	140.00	138.00	1
17	140.00	138.00	178.00	157.00	1
18	178.00	157.00	192.00	164.00	3
19	192.00	164.00	216.00	164.00	3
20	216.00	164.00	239.00	170.00	3
21	239.00	170.00	292.00	186.00	3
22	292.00	186.00	364.00	209.00	4
23	292.00	186.00	500.00	207.20	3
24	178.00	157.00	234.00	160.00	1
25	234.00	160.00	500.00	184.00	4

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 Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1
4	120.0	125.0	700.0	37.0	0.00	0.0	1

FIGURE A1-9

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	4.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 5 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	130.00
2	120.00	138.50
3	192.00	168.00
4	400.00	180.00
5	500.00	185.76

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.
100 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 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	120.00	136.50	140.00	137.70	0.00
2	222.00	142.50	222.00	142.50	0.00
3	247.00	144.50	247.00	144.50	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 1.529 FS Min = 1.018 FS Ave = 1.135
Standard Deviation = 0.089 Coefficient of Variation = 7.80 %
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	118.451	142.500
2	129.794	137.088
3	222.000	142.500
4	247.000	144.500
5	256.534	156.080
6	260.134	170.642

FIGURE A1-10

7	268.204	183.286
8	275.496	196.395
9	285.594	207.487
10	286.051	209.000

Factor of Safety

*** 1.018 ***

Individual data on the 33 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	1.5	68.7	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.0	1.5	0.0	0.0	0.	0.	0.0	0.0	0.0
3	3.7	711.7	0.0	0.0	0.	0.	0.0	0.0	0.0
4	1.3	450.0	0.0	53.7	0.	0.	0.0	0.0	0.0
5	0.0	4.7	0.0	0.8	0.	0.	0.0	0.0	0.0
6	2.9	2147.4	0.0	487.6	0.	0.	0.0	0.0	0.0
7	1.9	2023.5	0.0	605.1	0.	0.	0.0	0.0	0.0
8	10.2	15337.2	0.0	4603.9	0.	0.	0.0	0.0	0.0
9	18.5	44473.5	0.0	14171.2	0.	0.	0.0	0.0	0.0
10	1.5	4291.2	0.0	1478.1	0.	0.	0.0	0.0	0.0
11	4.0	11625.1	0.0	4183.1	0.	0.	0.0	0.0	0.0
12	14.0	49728.2	0.0	17405.3	0.	0.	0.0	0.0	0.0
13	14.0	63065.0	0.0	21705.9	0.	0.	0.0	0.0	0.0
14	8.0	41968.7	0.0	13630.1	0.	0.	0.0	0.0	0.0
15	3.0	16142.0	0.0	5110.2	0.	0.	0.0	0.0	0.0
16	2.0	10726.1	0.0	3406.5	0.	0.	0.0	0.0	0.0
17	11.0	64580.2	0.0	18731.3	0.	0.	0.0	0.0	0.0
18	6.0	38887.8	0.0	10213.9	0.	0.	0.0	0.0	0.0
19	12.0	85339.2	0.0	20355.0	0.	0.	0.0	0.0	0.0
20	5.0	38496.7	0.0	8421.9	0.	0.	0.0	0.0	0.0
21	1.0	7906.8	0.0	1680.2	0.	0.	0.0	0.0	0.0
22	1.9	15180.5	0.0	3211.7	0.	0.	0.0	0.0	0.0
23	5.1	40171.0	0.0	8510.6	0.	0.	0.0	0.0	0.0
24	9.5	68175.5	0.0	19803.7	0.	0.	0.0	0.0	0.0
25	1.5	8882.7	0.0	4848.4	0.	0.	0.0	0.0	0.0
26	0.0	222.7	0.0	99.1	0.	0.	0.0	0.0	0.0
27	2.1	10766.0	0.0	2976.4	0.	0.	0.0	0.0	0.0
28	0.9	3865.3	0.0	63.8	0.	0.	0.0	0.0	0.0
29	3.7	15082.9	0.0	0.0	0.	0.	0.0	0.0	0.0
30	3.5	12077.3	0.0	0.0	0.	0.	0.0	0.0	0.0
31	7.3	16765.4	0.0	0.0	0.	0.	0.0	0.0	0.0
32	10.1	8554.2	0.0	0.0	0.	0.	0.0	0.0	0.0
33	0.5	41.5	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	118.282	142.500
2	118.754	142.239
3	132.909	137.275
4	222.000	142.500
5	247.000	144.500
6	256.560	156.059
7	264.002	169.082
8	272.370	181.532
9	278.176	195.362
10	282.161	209.000

Factor of Safety

*** 1.018 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.047	142.500
2	127.738	136.964
3	222.000	142.500
4	247.000	144.500
5	255.247	157.029

FIGURE A1-11

6	264.605	168.752
7	269.354	182.981
8	278.397	194.948
9	286.158	207.784
10	287.305	209.000

Factor of Safety
*** 1.018 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.207	142.500
2	130.648	137.139
3	222.000	142.500
4	247.000	144.500
5	254.826	157.297
6	263.795	169.320
7	273.352	180.881
8	278.745	194.878
9	284.040	208.912
10	284.091	209.000

Factor of Safety
*** 1.022 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	115.363	142.500
2	115.626	142.371
3	129.662	137.080
4	222.000	142.500
5	247.000	144.500
6	253.199	158.159
7	256.200	172.856
8	260.648	187.182
9	267.395	200.578
10	275.804	209.000

Factor of Safety
*** 1.024 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	122.745	142.500
2	132.992	137.280
3	222.000	142.500
4	247.000	144.500
5	253.780	157.880
6	263.632	169.191
7	273.035	180.878
8	277.508	195.196
9	287.789	206.118
10	290.254	209.000

Factor of Safety
*** 1.025 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	122.279	142.500
2	122.556	142.223
3	136.796	137.508
4	222.000	142.500
5	247.000	144.500
6	255.237	157.036
7	261.513	170.660
8	271.606	181.756
9	282.000	192.571
10	292.565	203.220
11	295.090	209.000

Factor of Safety

FIGURE A1-12

```
      ***    1.026   ***
Failure Surface Specified By 10 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1        120.585      142.500
    2        127.050      136.923
    3        222.000      142.500
    4        247.000      144.500
    5        256.314      156.258
    6        262.480      169.932
    7        270.575      182.560
    8        273.626      197.247
    9        284.211      207.874
   10        285.034      209.000
       Factor of Safety
      ***    1.037   ***
Failure Surface Specified By 10 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1        114.728      142.500
    2        125.448      136.827
    3        222.000      142.500
    4        247.000      144.500
    5        250.084      159.180
    6        258.048      171.891
    7        265.179      185.087
    8        275.624      195.854
    9        286.112      206.577
   10        288.533      209.000
       Factor of Safety
      ***    1.039   ***
Failure Surface Specified By  9 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1        114.898      142.500
    2        124.301      136.758
    3        222.000      142.500
    4        247.000      144.500
    5        253.582      157.979
    6        259.350      171.825
    7        267.340      184.520
    8        270.131      199.258
    9        270.948      209.000
       Factor of Safety
      ***    1.041   ***
          **** END OF GSTABL7 OUTPUT ****
```

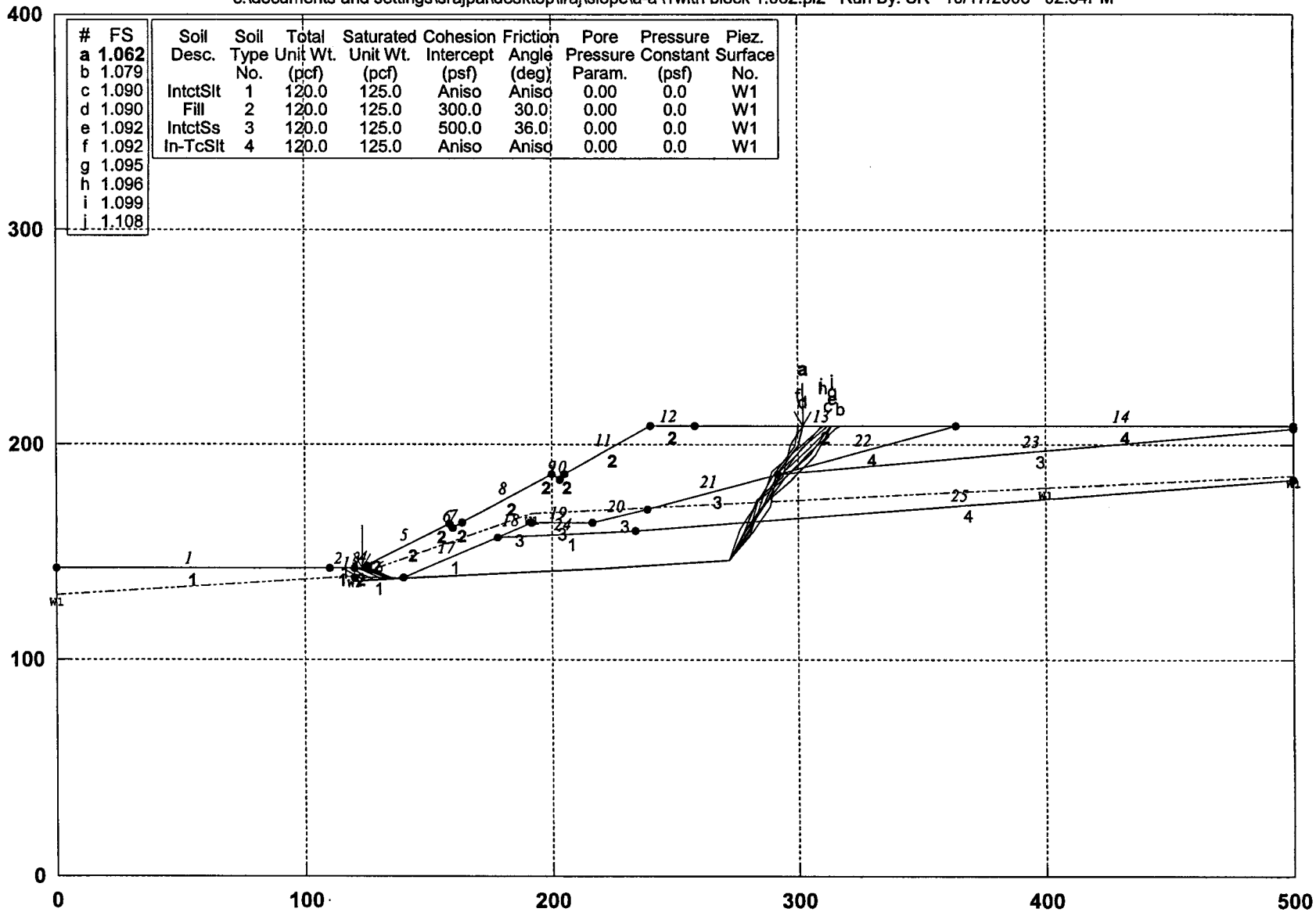
FIGURE A1-13

MV/Landslide/011492-001 Section A-A' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\a-a'\1with block 1.062.pl2 Run By: SR 10/17/2006 02:54PM

#	FS
a	1.062
b	1.079
c	1.090
d	1.090
e	1.092
f	1.092
g	1.095
h	1.096
i	1.099
j	1.108

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
IntctSlt	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
IntctSs	3	120.0	125.0	500.0	36.0	0.00	0.0	W1
In-TcSlt	4	120.0	125.0	Aniso	Aniso	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.062

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

FIGURE A1-14

```
                                    *** GSTABL7 ***
                            ** GSTABL7 by Garry H. Gregory, P.E. **
          ** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
                        (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:        10/17/2006
 Time of Run:              02:54PM
 Run By:                   SR
 Input Data Filename:      C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1w
ith block 1.062.in
 Output Filename:          C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1w
ith block 1.062.OUT
 Unit System:              English
 Plotted Output Filename:  C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1w
ith block 1.062.PLT
 PROBLEM DESCRIPTION:  MV/Landslide/011492-001
                       Section A-A' (Risk Level)
 BOUNDARY COORDINATES
    14 Top   Boundaries
    25 Total Boundaries
 Boundary     X-Left     Y-Left     X-Right    Y-Right    Soil Type
    No.        (ft)       (ft)       (ft)       (ft)     Below Bnd
     1          0.00     142.50     110.00     142.50        1
     2        110.00     142.50     120.00     142.50        1
     3        120.00     142.50     125.00     142.50        2
     4        125.00     142.50     125.01     144.00        2
     5        125.01     144.00     158.50     163.00        2
     6        158.50     163.00     160.00     161.00        2
     7        160.00     161.00     164.00     164.00        2
     8        164.00     164.00     200.00     186.00        2
     9        200.00     186.00     203.00     184.00        2
    10        203.00     184.00     205.00     186.00        2
    11        205.00     186.00     240.00     209.00        2
    12        240.00     209.00     258.00     209.00        2
    13        258.00     209.00     364.00     209.00        2
    14        364.00     209.00     500.00     209.00        4
    15        120.00     142.50     120.10     138.00        1
    16        120.10     138.00     140.00     138.00        1
    17        140.00     138.00     178.00     157.00        1
    18        178.00     157.00     192.00     164.00        3
    19        192.00     164.00     216.00     164.00        3
    20        216.00     164.00     239.00     170.00        3
    21        239.00     170.00     292.00     186.00        3
    22        292.00     186.00     364.00     209.00        4
    23        292.00     186.00     500.00     207.20        3
    24        178.00     157.00     234.00     160.00        1
    25        234.00     160.00     500.00     184.00        4
  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  Total  Saturated  Cohesion Friction   Pore    Pressure   Piez.
  Type Unit Wt. Unit Wt. Intercept   Angle  Pressure Constant Surface
   No.  (pcf)    (pcf)     (psf)     (deg)   Param.    (psf)     No.
    1   120.0    125.0     700.0     37.0    0.00       0.0       1
    2   120.0    125.0     300.0     30.0    0.00       0.0       1
    3   120.0    125.0     500.0     36.0    0.00       0.0       1
    4   120.0    125.0     700.0     37.0    0.00       0.0       1
```

FIGURE A1-15

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	4.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 5 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	130.00
2	120.00	138.50
3	192.00	168.00
4	400.00	180.00
5	500.00	185.76

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.
100 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 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	120.00	136.50	140.00	137.70	0.00
2	222.00	142.50	222.00	142.50	0.00
3	272.00	146.50	272.00	146.50	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 1.519 FS Min = 1.062 FS Ave = 1.188
Standard Deviation = 0.077 Coefficient of Variation = 6.47 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.249	142.500
2	135.214	137.413
3	222.000	142.500
4	272.000	146.500
5	279.818	159.302
6	286.399	172.781

FIGURE A1-16

7	292.168	186.627
8	300.158	199.322
9	301.991	209.000

Factor of Safety
*** 1.062 ***

Individual data on the 30 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	1.8	78.3	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.0	1.8	0.0	0.0	0.	0.	0.0	0.0	0.0
3	1.4	510.0	0.0	0.0	0.	0.	0.0	0.0	0.0
4	7.4	6620.0	0.0	1544.6	0.	0.	0.0	0.0	0.0
5	1.4	1984.1	0.0	631.5	0.	0.	0.0	0.0	0.0
6	4.8	8002.9	0.0	2441.6	0.	0.	0.0	0.0	0.0
7	18.5	44459.8	0.0	14164.3	0.	0.	0.0	0.0	0.0
8	1.5	4290.3	0.0	1477.7	0.	0.	0.0	0.0	0.0
9	4.0	11622.7	0.0	4181.8	0.	0.	0.0	0.0	0.0
10	14.0	49721.0	0.0	17401.6	0.	0.	0.0	0.0	0.0
11	14.0	63059.7	0.0	21703.2	0.	0.	0.0	0.0	0.0
12	8.0	41966.6	0.0	13629.0	0.	0.	0.0	0.0	0.0
13	3.0	16141.3	0.0	5109.9	0.	0.	0.0	0.0	0.0
14	2.0	10725.7	0.0	3406.3	0.	0.	0.0	0.0	0.0
15	11.0	64579.0	0.0	18730.6	0.	0.	0.0	0.0	0.0
16	6.0	38887.6	0.0	10213.7	0.	0.	0.0	0.0	0.0
17	12.0	85339.2	0.0	20355.0	0.	0.	0.0	0.0	0.0
18	5.0	38496.7	0.0	8421.9	0.	0.	0.0	0.0	0.0
19	1.0	7906.8	0.0	1680.2	0.	0.	0.0	0.0	0.0
20	1.9	15180.5	0.0	3211.7	0.	0.	0.0	0.0	0.0
21	16.1	126190.5	0.0	26793.0	0.	0.	0.0	0.0	0.0
22	14.0	107779.8	0.0	23024.1	0.	0.	0.0	0.0	0.0
23	7.8	53408.6	0.0	18663.9	0.	0.	0.0	0.0	0.0
24	2.5	14111.2	0.0	3969.6	0.	0.	0.0	0.0	0.0
25	4.1	20054.4	0.0	2783.8	0.	0.	0.0	0.0	0.0
26	0.3	1223.6	0.0	15.3	0.	0.	0.0	0.0	0.0
27	5.2	18308.5	0.0	0.0	0.	0.	0.0	0.0	0.0
28	0.3	748.2	0.0	0.0	0.	0.	0.0	0.0	0.0
29	8.0	15365.3	0.0	0.0	0.	0.	0.0	0.0	0.0
30	1.8	1064.4	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.002	142.849
2	136.469	137.488
3	222.000	142.500
4	272.000	146.500
5	278.858	159.841
6	286.861	172.527
7	295.142	185.034
8	304.691	196.602
9	315.220	207.286
10	316.659	209.000

Factor of Safety
*** 1.079 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.005	143.319
2	135.756	137.445
3	222.000	142.500
4	272.000	146.500
5	278.301	160.113
6	283.663	174.121
7	293.364	185.562
8	301.419	198.216
9	312.015	208.833

FIGURE A1-17

10	312.025	209.000

Factor of Safety
*** 1.090 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.139	142.500
2	131.483	137.189
3	222.000	142.500
4	272.000	146.500
5	278.156	160.179
6	283.307	174.266
7	293.511	185.261
8	296.658	199.927
9	301.858	209.000

Factor of Safety
*** 1.090 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	114.857	142.500
2	123.842	136.730
3	222.000	142.500
4	272.000	146.500
5	279.634	159.412
6	287.185	172.373
7	292.973	186.211
8	303.347	197.045
9	313.301	208.267
10	313.954	209.000

Factor of Safety
*** 1.092 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	120.934	142.500
2	121.631	141.921
3	135.951	137.457
4	222.000	142.500
5	272.000	146.500
6	279.775	159.328
7	283.495	173.859
8	290.527	187.109
9	298.951	199.520
10	299.832	209.000

Factor of Safety
*** 1.092 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	118.052	142.500
2	128.007	136.980
3	222.000	142.500
4	272.000	146.500
5	278.070	160.217
6	286.327	172.740
7	296.876	183.404
8	306.757	194.690
9	312.898	208.375
10	313.522	209.000

Factor of Safety
*** 1.095 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.477	142.500
2	122.145	142.268

FIGURE A1-18

3	136.361	137.482
4	222.000	142.500
5	272.000	146.500
6	280.523	158.843
7	285.077	173.135
8	289.263	187.540
9	299.851	198.164
10	310.065	209.000

Factor of Safety
*** 1.096 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.514	142.500
2	133.583	137.315
3	222.000	142.500
4	272.000	146.500
5	281.016	158.488
6	288.444	171.520
7	291.412	186.223
8	301.244	197.551
9	309.242	209.000

Factor of Safety
*** 1.099 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	122.204	142.500
2	133.910	137.335
3	222.000	142.500
4	272.000	146.500
5	276.154	160.913
6	283.846	173.791
7	294.445	184.405
8	304.724	195.330
9	312.698	208.034
10	313.525	209.000

Factor of Safety
*** 1.108 ***

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

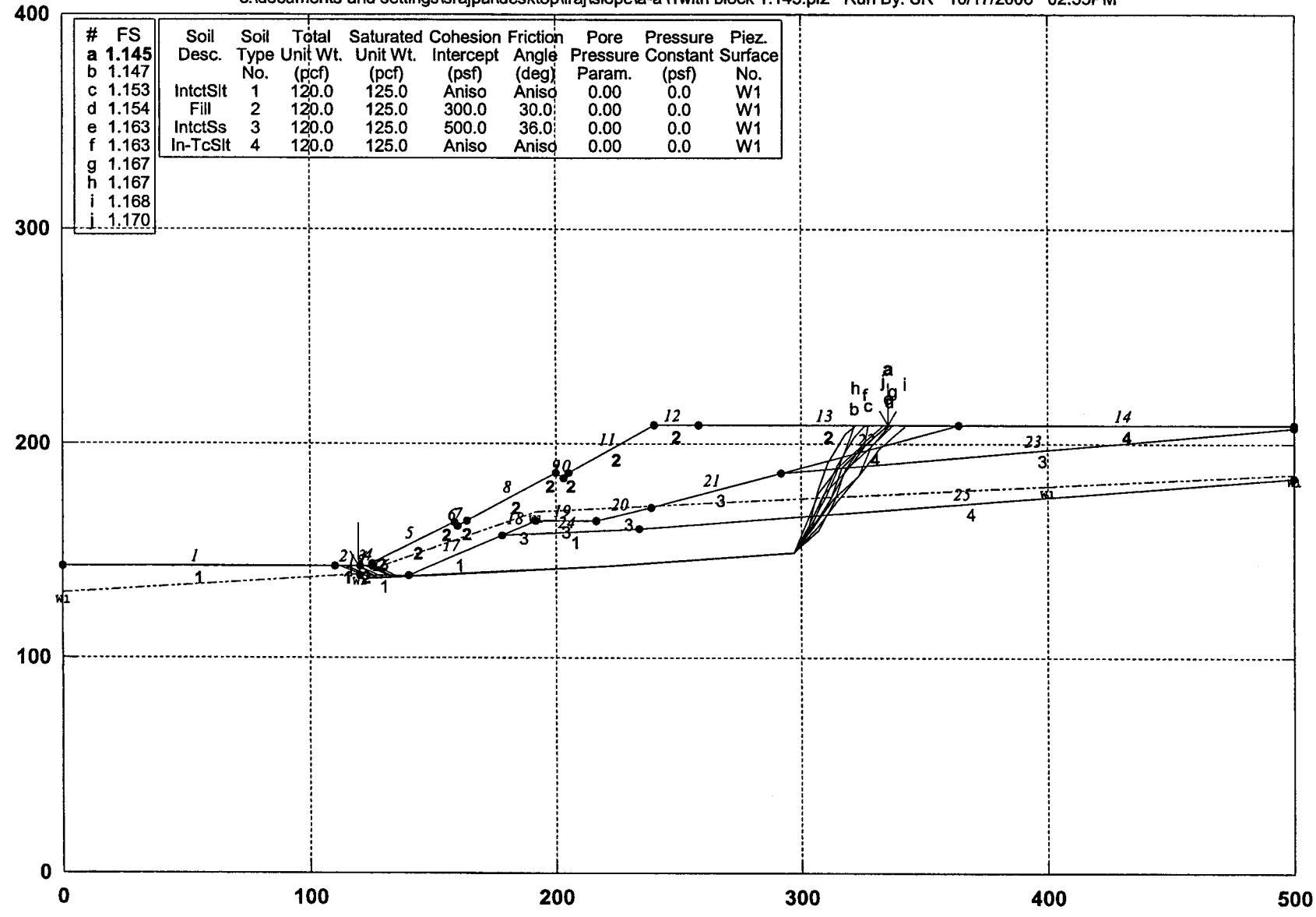
FIGURE A1-19

MV/Landslide/011492-001 Section A-A' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\a-a'\1with block 1.145.pl2 Run By: SR 10/17/2006 02:55PM

#	FS
a	1.145
b	1.147
c	1.153
d	1.154
e	1.163
f	1.163
g	1.167
h	1.167
i	1.168
j	1.170

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
IntctSlt	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
IntctSs	3	120.0	125.0	500.0	36.0	0.00	0.0	W1
In-TcSlt	4	120.0	125.0	Aniso	Aniso	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.145

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

FIGURE A1-20

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(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: 10/17/2006
Time of Run: 02:55PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.145.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.145.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.145.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001
Section A-A' (Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	142.50	110.00	142.50	1
2	110.00	142.50	120.00	142.50	1
3	120.00	142.50	125.00	142.50	2
4	125.00	142.50	125.01	144.00	2
5	125.01	144.00	158.50	163.00	2
6	158.50	163.00	160.00	161.00	2
7	160.00	161.00	164.00	164.00	2
8	164.00	164.00	200.00	186.00	2
9	200.00	186.00	203.00	184.00	2
10	203.00	184.00	205.00	186.00	2
11	205.00	186.00	240.00	209.00	2
12	240.00	209.00	258.00	209.00	2
13	258.00	209.00	364.00	209.00	2
14	364.00	209.00	500.00	209.00	4
15	120.00	142.50	120.10	138.00	1
16	120.10	138.00	140.00	138.00	1
17	140.00	138.00	178.00	157.00	1
18	178.00	157.00	192.00	164.00	3
19	192.00	164.00	216.00	164.00	3
20	216.00	164.00	239.00	170.00	3
21	239.00	170.00	292.00	186.00	3
22	292.00	186.00	364.00	209.00	4
23	292.00	186.00	500.00	207.20	3
24	178.00	157.00	234.00	160.00	1
25	234.00	160.00	500.00	184.00	4

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 Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1
4	120.0	125.0	700.0	37.0	0.00	0.0	1

FIGURE A1-21

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	4.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 5 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	130.00
2	120.00	138.50
3	192.00	168.00
4	400.00	180.00
5	500.00	185.76

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.
100 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 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	120.00	136.50	140.00	137.70	0.00
2	222.00	142.50	222.00	142.50	0.00
3	297.00	148.50	297.00	148.50	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 1.588 FS Min = 1.145 FS Ave = 1.261
Standard Deviation = 0.076 Coefficient of Variation = 6.03 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	119.685	142.500
2	126.942	136.917
3	222.000	142.500
4	297.000	148.500
5	305.205	161.057
6	312.095	174.381

FIGURE A1-22

7	316.324	188.772
8	326.093	200.156
9	334.937	209.000

Factor of Safety

*** 1.145 ***

Individual data on the 34 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	0.3	4.6	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.0	0.2	0.0	0.0	0.	0.	0.0	0.0	0.0
3	3.2	561.3	0.0	0.0	0.	0.	0.0	0.0	0.0
4	1.8	747.6	0.0	152.6	0.	0.	0.0	0.0	0.0
5	0.0	5.9	0.0	1.7	0.	0.	0.0	0.0	0.0
6	0.5	380.4	0.0	101.4	0.	0.	0.0	0.0	0.0
7	1.4	1248.5	0.0	398.9	0.	0.	0.0	0.0	0.0
8	13.1	18458.9	0.0	5484.4	0.	0.	0.0	0.0	0.0
9	18.5	44480.1	0.0	14174.5	0.	0.	0.0	0.0	0.0
10	1.5	4291.7	0.0	1478.4	0.	0.	0.0	0.0	0.0
11	4.0	11626.3	0.0	4183.6	0.	0.	0.0	0.0	0.0
12	14.0	49731.7	0.0	17407.1	0.	0.	0.0	0.0	0.0
13	14.0	63067.5	0.0	21707.2	0.	0.	0.0	0.0	0.0
14	8.0	41969.7	0.0	13630.6	0.	0.	0.0	0.0	0.0
15	3.0	16142.3	0.0	5110.4	0.	0.	0.0	0.0	0.0
16	2.0	10726.2	0.0	3406.6	0.	0.	0.0	0.0	0.0
17	11.0	64580.8	0.0	18731.7	0.	0.	0.0	0.0	0.0
18	6.0	38887.9	0.0	10213.9	0.	0.	0.0	0.0	0.0
19	12.0	85339.2	0.0	20355.0	0.	0.	0.0	0.0	0.0
20	5.0	38496.7	0.0	8421.9	0.	0.	0.0	0.0	0.0
21	1.0	7906.8	0.0	1680.2	0.	0.	0.0	0.0	0.0
22	1.9	15180.5	0.0	3211.7	0.	0.	0.0	0.0	0.0
23	16.1	126190.5	0.0	26793.0	0.	0.	0.0	0.0	0.0
24	34.0	258449.0	0.0	55441.0	0.	0.	0.0	0.0	0.0
25	5.0	37060.3	0.0	8016.9	0.	0.	0.0	0.0	0.0
26	8.2	54189.6	0.0	18267.0	0.	0.	0.0	0.0	0.0
27	2.9	15922.9	0.0	4249.2	0.	0.	0.0	0.0	0.0
28	4.0	18448.5	0.0	2313.1	0.	0.	0.0	0.0	0.0
29	0.2	674.9	0.0	9.9	0.	0.	0.0	0.0	0.0
30	4.0	13025.6	0.0	0.0	0.	0.	0.0	0.0	0.0
31	0.1	217.2	0.0	0.0	0.	0.	0.0	0.0	0.0
32	5.9	11901.4	0.0	0.0	0.	0.	0.0	0.0	0.0
33	3.9	5138.1	0.0	0.0	0.	0.	0.0	0.0	0.0
34	8.8	4693.5	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	119.441	142.500
2	130.204	137.112
3	222.000	142.500
4	297.000	148.500
5	301.787	162.716
6	306.702	176.888
7	315.225	189.231
8	319.779	203.523
9	321.371	209.000

Factor of Safety

*** 1.147 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.000	142.546
2	132.845	137.271
3	222.000	142.500
4	297.000	148.500
5	303.851	161.844
6	310.007	175.523

FIGURE A1-23

7	315.158	189.610
8	325.362	200.605
9	327.163	209.000

Factor of Safety
*** 1.153 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.851	142.500
2	133.475	137.309
3	222.000	142.500
4	297.000	148.500
5	304.785	161.321
6	312.801	174.000
7	323.248	184.764
8	328.278	198.895
9	335.883	209.000

Factor of Safety
*** 1.154 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.005	143.319
2	135.756	137.445
3	222.000	142.500
4	297.000	148.500
5	303.301	162.113
6	308.663	176.121
7	318.364	187.562
8	326.419	200.216
9	335.186	209.000

Factor of Safety
*** 1.163 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	111.700	142.500
2	124.218	136.753
3	222.000	142.500
4	297.000	148.500
5	304.063	161.733
6	309.020	175.890
7	314.151	189.985
8	321.555	203.031
9	325.863	209.000

Factor of Safety
*** 1.163 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	114.857	142.500
2	123.842	136.730
3	222.000	142.500
4	297.000	148.500
5	304.634	161.412
6	312.185	174.373
7	317.973	188.211
8	328.347	199.045
9	337.178	209.000

Factor of Safety
*** 1.167 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	122.651	142.500
2	133.221	137.293
3	222.000	142.500

FIGURE A1-24

4	297.000	148.500
5	303.199	162.159
6	306.200	176.856
7	310.648	191.182
8	317.395	204.578
9	321.810	209.000

Factor of Safety
*** 1.167 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.757	142.500
2	127.489	136.949
3	222.000	142.500
4	297.000	148.500
5	306.197	160.350
6	314.238	173.012
7	323.409	184.882
8	331.137	197.738
9	341.698	208.391
10	341.999	209.000

Factor of Safety
*** 1.168 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.079	142.500
2	133.607	137.316
3	222.000	142.500
4	297.000	148.500
5	307.041	159.643
6	313.097	173.367
7	317.251	187.780
8	324.943	200.658
9	333.274	209.000

Factor of Safety
*** 1.170 ***

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

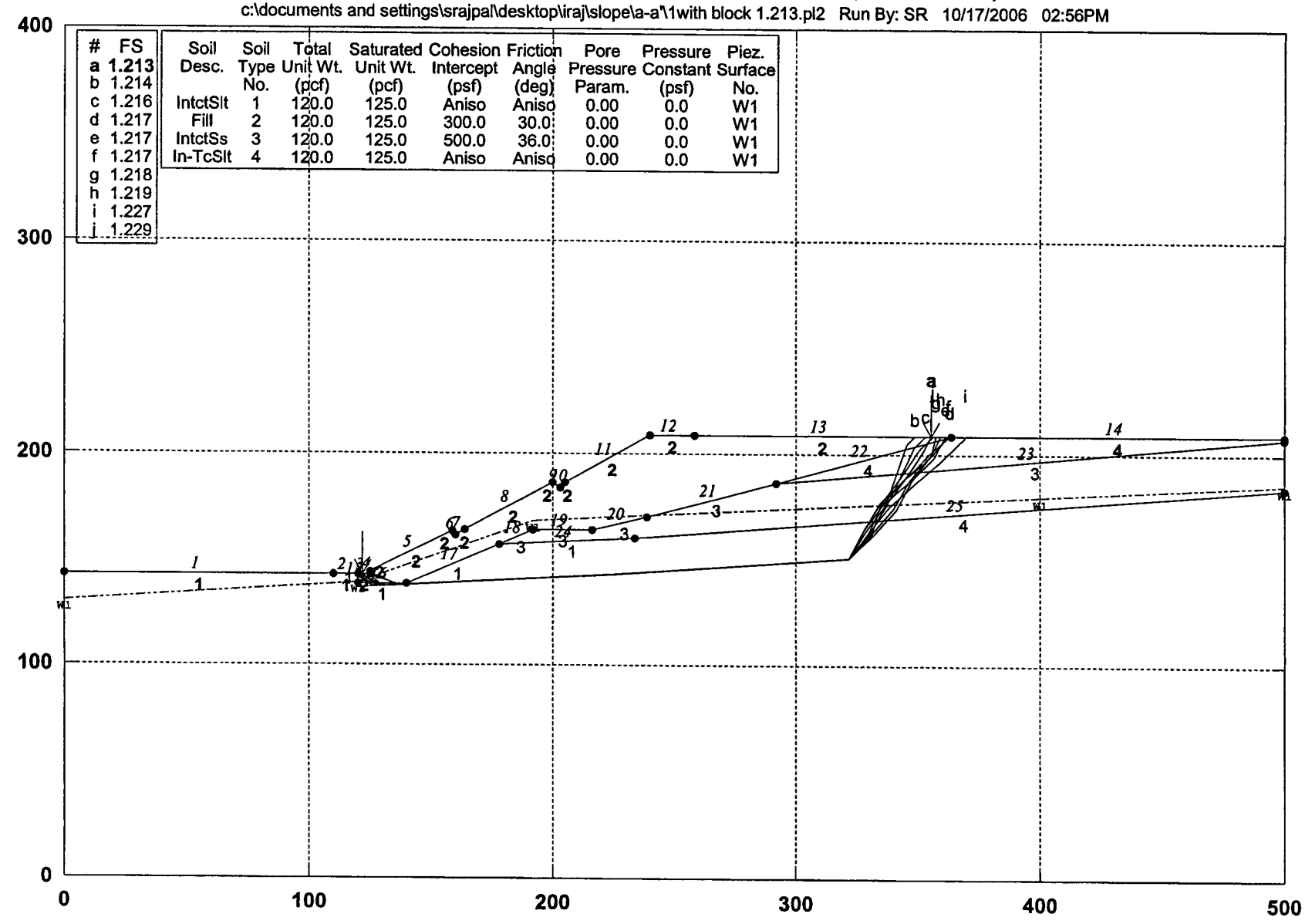
FIGURE A1-25

MV/Landslide/011492-001 Section A-A' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\a-a'\1with block 1.213.pl2 Run By: SR 10/17/2006 02:56PM

#	FS
a	1.213
b	1.214
c	1.216
d	1.217
e	1.217
f	1.217
g	1.218
h	1.219
i	1.227
j	1.229

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
IntctSlt	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
IntctSs	3	120.0	125.0	500.0	36.0	0.00	0.0	W1
In-TcSlt	4	120.0	125.0	Aniso	Aniso	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.213

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

FIGURE A1-26

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 02:56PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.213.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.213.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.213.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001
Section A-A' (Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	142.50	110.00	142.50	1
2	110.00	142.50	120.00	142.50	1
3	120.00	142.50	125.00	142.50	2
4	125.00	142.50	125.01	144.00	2
5	125.01	144.00	158.50	163.00	2
6	158.50	163.00	160.00	161.00	2
7	160.00	161.00	164.00	164.00	2
8	164.00	164.00	200.00	186.00	2
9	200.00	186.00	203.00	184.00	2
10	203.00	184.00	205.00	186.00	2
11	205.00	186.00	240.00	209.00	2
12	240.00	209.00	258.00	209.00	2
13	258.00	209.00	364.00	209.00	2
14	364.00	209.00	500.00	209.00	4
15	120.00	142.50	120.10	138.00	1
16	120.10	138.00	140.00	138.00	1
17	140.00	138.00	178.00	157.00	1
18	178.00	157.00	192.00	164.00	3
19	192.00	164.00	216.00	164.00	3
20	216.00	164.00	239.00	170.00	3
21	239.00	170.00	292.00	186.00	3
22	292.00	186.00	364.00	209.00	4
23	292.00	186.00	500.00	207.20	3
24	178.00	157.00	234.00	160.00	1
25	234.00	160.00	500.00	184.00	4

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 Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1
4	120.0	125.0	700.0	37.0	0.00	0.0	1

FIGURE A1-27

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	4.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 5 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	130.00
2	120.00	138.50
3	192.00	168.00
4	400.00	180.00
5	500.00	185.76

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.
100 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 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	120.00	136.50	140.00	137.70	0.00
2	222.00	142.50	222.00	142.50	0.00
3	322.00	150.50	322.00	150.50	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 1.528 FS Min = 1.213 FS Ave = 1.313
Standard Deviation = 0.070 Coefficient of Variation = 5.34 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.706	142.500
2	127.567	136.954
3	222.000	142.500
4	322.000	150.500
5	328.304	164.111
6	334.771	177.646

FIGURE A1-28

7	345.026	188.592
8	352.341	201.687
9	355.847	209.000

Factor of Safety
*** 1.213 ***

Individual data on the 32 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	2.4	336.4	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.9	282.0	0.0	43.0	0.	0.	0.0	0.0	0.0
3	0.0	4.7	0.0	1.0	0.	0.	0.0	0.0	0.0
4	1.5	1013.1	0.0	269.8	0.	0.	0.0	0.0	0.0
5	1.1	1037.6	0.0	370.1	0.	0.	0.0	0.0	0.0
6	12.4	17818.2	0.0	5306.6	0.	0.	0.0	0.0	0.0
7	18.5	44478.6	0.0	14173.8	0.	0.	0.0	0.0	0.0
8	1.5	4291.6	0.0	1478.3	0.	0.	0.0	0.0	0.0
9	4.0	11626.0	0.0	4183.5	0.	0.	0.0	0.0	0.0
10	14.0	49731.0	0.0	17406.7	0.	0.	0.0	0.0	0.0
11	14.0	63067.0	0.0	21706.9	0.	0.	0.0	0.0	0.0
12	8.0	41969.5	0.0	13630.5	0.	0.	0.0	0.0	0.0
13	3.0	16142.2	0.0	5110.4	0.	0.	0.0	0.0	0.0
14	2.0	10726.2	0.0	3406.6	0.	0.	0.0	0.0	0.0
15	11.0	64580.7	0.0	18731.6	0.	0.	0.0	0.0	0.0
16	6.0	38887.9	0.0	10213.9	0.	0.	0.0	0.0	0.0
17	12.0	85339.2	0.0	20355.0	0.	0.	0.0	0.0	0.0
18	5.0	38496.7	0.0	8421.9	0.	0.	0.0	0.0	0.0
19	1.0	7906.8	0.0	1680.2	0.	0.	0.0	0.0	0.0
20	1.9	15180.5	0.0	3211.7	0.	0.	0.0	0.0	0.0
21	16.1	126190.5	0.0	26793.0	0.	0.	0.0	0.0	0.0
22	34.0	258449.0	0.0	55441.0	0.	0.	0.0	0.0	0.0
23	30.0	218720.2	0.0	47577.9	0.	0.	0.0	0.0	0.0
24	6.3	39686.0	0.0	17200.3	0.	0.	0.0	0.0	0.0
25	2.2	11326.8	0.0	3025.1	0.	0.	0.0	0.0	0.0
26	3.6	15759.9	0.0	1886.4	0.	0.	0.0	0.0	0.0
27	0.7	2664.4	0.0	0.0	0.	0.	0.0	0.0	0.0
28	10.3	31849.3	0.0	0.0	0.	0.	0.0	0.0	0.0
29	1.7	3781.6	0.0	0.0	0.	0.	0.0	0.0	0.0
30	5.6	8386.2	0.0	0.0	0.	0.	0.0	0.0	0.0
31	2.0	1265.9	0.0	0.0	0.	0.	0.0	0.0	0.0
32	1.5	272.0	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	119.150	142.500
2	125.770	136.846
3	222.000	142.500
4	322.000	150.500
5	330.617	162.778
6	336.575	176.544
7	341.013	190.872
8	345.482	205.191
9	348.878	209.000

Factor of Safety
*** 1.214 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.492	142.500
2	130.126	137.108
3	222.000	142.500
4	322.000	150.500
5	330.370	162.948
6	337.221	176.292
7	343.377	189.970
8	348.528	204.058

FIGURE A1-29

9	353.115	209.000

Factor of Safety
*** 1.216 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.002	142.849
2	136.469	137.488
3	222.000	142.500
4	322.000	150.500
5	328.858	163.841
6	336.861	176.527
7	345.142	189.034
8	354.691	200.602
9	362.967	209.000

Factor of Safety
*** 1.217 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	118.052	142.500
2	128.007	136.980
3	222.000	142.500
4	322.000	150.500
5	328.070	164.217
6	336.327	176.740
7	346.876	187.404
8	356.757	198.690
9	361.384	209.000

Factor of Safety
*** 1.217 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.398	142.500
2	128.680	137.021
3	222.000	142.500
4	322.000	150.500
5	330.235	163.037
6	335.378	177.128
7	344.819	188.784
8	355.353	199.464
9	362.249	209.000

Factor of Safety
*** 1.217 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	120.054	142.500
2	131.302	137.178
3	222.000	142.500
4	322.000	150.500
5	331.798	161.858
6	341.112	173.616
7	347.278	187.290
8	355.374	199.918
9	357.260	209.000

Factor of Safety
*** 1.218 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.249	142.500
2	137.206	137.532
3	222.000	142.500
4	322.000	150.500
5	331.020	162.485

FIGURE A1-30

6	339.927	174.554
7	346.833	187.870
8	355.792	199.900
9	359.473	209.000

Factor of Safety
*** 1.219 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	118.250	142.500
2	126.376	136.883
3	222.000	142.500
4	322.000	150.500
5	329.714	163.364
6	338.577	175.466
7	348.685	186.549
8	359.265	197.182
9	369.196	208.423
10	369.465	209.000

Factor of Safety
*** 1.227 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	118.451	142.500
2	129.794	137.088
3	222.000	142.500
4	322.000	150.500
5	331.534	162.080
6	335.134	176.642
7	343.204	189.286
8	350.496	202.395
9	356.510	209.000

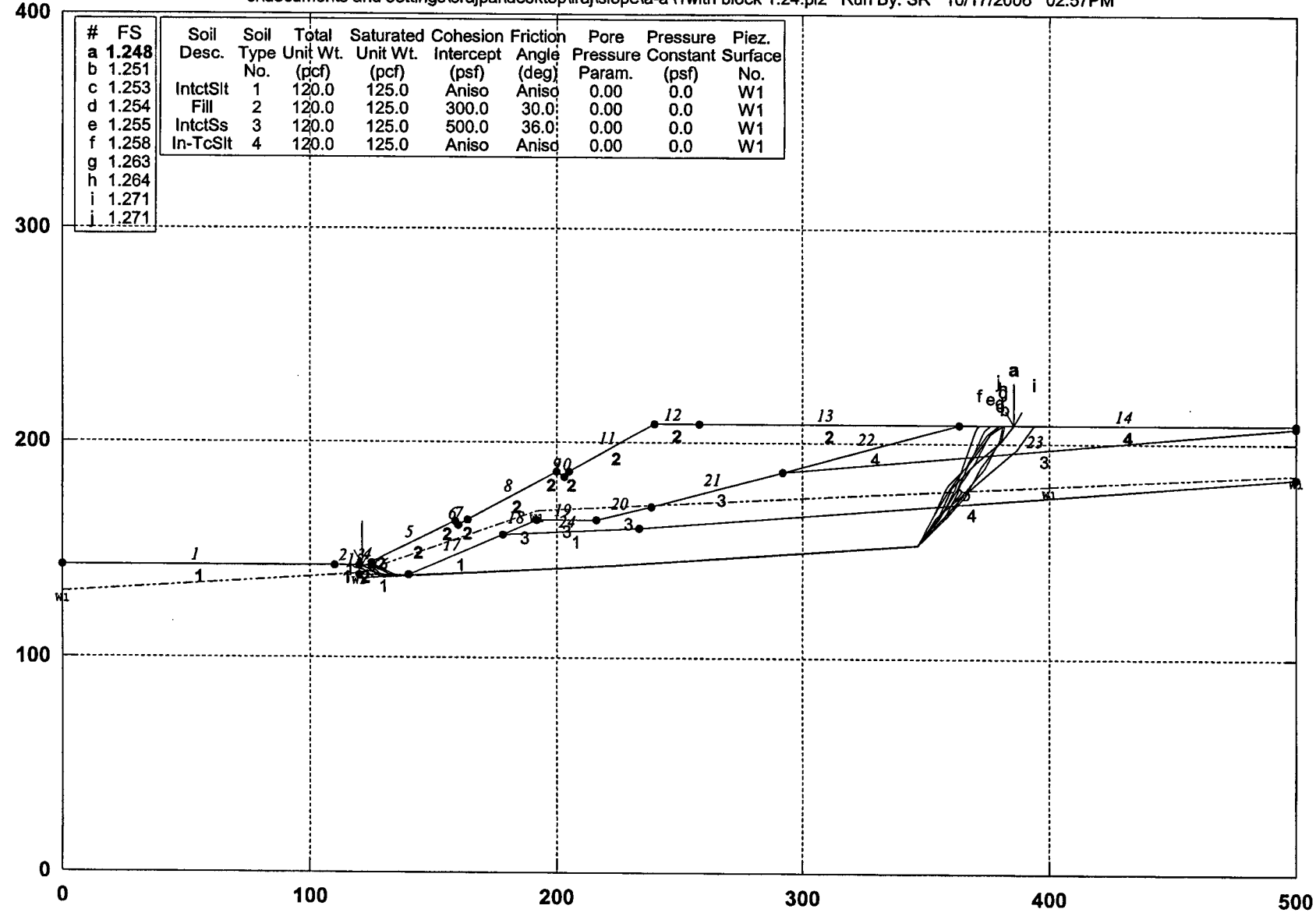
Factor of Safety
*** 1.229 ***

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

FIGURE A1-31

MV/Landslide/011492-001 Section A-A' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\a-a'\1with block 1.24.pl2 Run By: SR 10/17/2006 02:57PM



GSTABL7 v.2 FSmin=1.248

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

FIGURE A1-32

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(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: 10/17/2006
Time of Run: 02:57PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.24.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.24.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.24.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001
Section A-A' (Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	142.50	110.00	142.50	1
2	110.00	142.50	120.00	142.50	1
3	120.00	142.50	125.00	142.50	2
4	125.00	142.50	125.01	144.00	2
5	125.01	144.00	158.50	163.00	2
6	158.50	163.00	160.00	161.00	2
7	160.00	161.00	164.00	164.00	2
8	164.00	164.00	200.00	186.00	2
9	200.00	186.00	203.00	184.00	2
10	203.00	184.00	205.00	186.00	2
11	205.00	186.00	240.00	209.00	2
12	240.00	209.00	258.00	209.00	2
13	258.00	209.00	364.00	209.00	2
14	364.00	209.00	500.00	209.00	4
15	120.00	142.50	120.10	138.00	1
16	120.10	138.00	140.00	138.00	1
17	140.00	138.00	178.00	157.00	1
18	178.00	157.00	192.00	164.00	3
19	192.00	164.00	216.00	164.00	3
20	216.00	164.00	239.00	170.00	3
21	239.00	170.00	292.00	186.00	3
22	292.00	186.00	364.00	209.00	4
23	292.00	186.00	500.00	207.20	3
24	178.00	157.00	234.00	160.00	1
25	234.00	160.00	500.00	184.00	4

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 Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1
4	120.0	125.0	700.0	37.0	0.00	0.0	1

FIGURE A1-33

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	4.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 5 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	130.00
2	120.00	138.50
3	192.00	168.00
4	400.00	180.00
5	500.00	185.76

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.
100 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 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	120.00	136.50	140.00	137.70	0.00
2	222.00	142.50	222.00	142.50	0.00
3	347.00	152.50	347.00	152.50	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 1.682 FS Min = 1.248 FS Ave = 1.352
Standard Deviation = 0.076 Coefficient of Variation = 5.65 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.398	142.500
2	128.680	137.021
3	222.000	142.500
4	347.000	152.500
5	355.235	165.037
6	360.378	179.128

FIGURE A1-34

7	369.819	190.784
8	380.353	201.464
9	385.803	209.000

Factor of Safety

*** 1.248 ***

Individual data on the 32 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	2.9	392.7	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.7	194.4	0.0	19.3	0.	0.	0.0	0.0	0.0
3	0.0	4.2	0.0	0.6	0.	0.	0.0	0.0	0.0
4	2.4	1668.8	0.0	397.1	0.	0.	0.0	0.0	0.0
5	1.3	1308.9	0.0	434.9	0.	0.	0.0	0.0	0.0
6	11.3	16616.4	0.0	4968.7	0.	0.	0.0	0.0	0.0
7	18.5	44476.1	0.0	14172.5	0.	0.	0.0	0.0	0.0
8	1.5	4291.4	0.0	1478.2	0.	0.	0.0	0.0	0.0
9	4.0	11625.6	0.0	4183.3	0.	0.	0.0	0.0	0.0
10	14.0	49729.6	0.0	17406.0	0.	0.	0.0	0.0	0.0
11	14.0	63066.0	0.0	21706.4	0.	0.	0.0	0.0	0.0
12	8.0	41969.1	0.0	13630.3	0.	0.	0.0	0.0	0.0
13	3.0	16142.1	0.0	5110.3	0.	0.	0.0	0.0	0.0
14	2.0	10726.1	0.0	3406.6	0.	0.	0.0	0.0	0.0
15	11.0	64580.5	0.0	18731.5	0.	0.	0.0	0.0	0.0
16	6.0	38887.8	0.0	10213.9	0.	0.	0.0	0.0	0.0
17	12.0	85339.2	0.0	20355.0	0.	0.	0.0	0.0	0.0
18	5.0	38496.7	0.0	8421.9	0.	0.	0.0	0.0	0.0
19	1.0	7906.8	0.0	1680.2	0.	0.	0.0	0.0	0.0
20	1.9	15180.5	0.0	3211.7	0.	0.	0.0	0.0	0.0
21	16.1	126190.5	0.0	26793.0	0.	0.	0.0	0.0	0.0
22	34.0	258449.0	0.0	55441.0	0.	0.	0.0	0.0	0.0
23	55.0	394310.3	0.0	86266.1	0.	0.	0.0	0.0	0.0
24	8.2	50395.8	0.0	17232.8	0.	0.	0.0	0.0	0.0
25	2.2	11039.4	0.0	3807.4	0.	0.	0.0	0.0	0.0
26	2.4	9953.1	0.0	1392.5	0.	0.	0.0	0.0	0.0
27	0.5	1935.6	0.0	0.0	0.	0.	0.0	0.0	0.0
28	3.6	12011.2	0.0	0.0	0.	0.	0.0	0.0	0.0
29	5.8	15229.4	0.0	0.0	0.	0.	0.0	0.0	0.0
30	3.5	6819.8	0.0	0.0	0.	0.	0.0	0.0	0.0
31	7.1	9455.6	0.0	0.0	0.	0.	0.0	0.0	0.0
32	5.4	2464.4	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	120.054	142.500
2	131.302	137.178
3	222.000	142.500
4	347.000	152.500
5	356.798	163.858
6	366.112	175.616
7	372.278	189.290
8	380.374	201.918
9	381.845	209.000

Factor of Safety

*** 1.251 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	117.135	142.500
2	118.137	141.498
3	132.523	137.251
4	222.000	142.500
5	347.000	152.500
6	355.105	165.122
7	362.739	178.034
8	370.291	190.994

FIGURE A1-35

9	376.078	204.833
10	380.068	209.000

Factor of Safety
*** 1.253 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.008	143.627
2	132.928	137.276
3	222.000	142.500
4	347.000	152.500
5	353.353	166.088
6	360.210	179.429
7	368.213	192.116
8	376.495	204.623
9	380.108	209.000

Factor of Safety
*** 1.254 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.492	142.500
2	130.126	137.108
3	222.000	142.500
4	347.000	152.500
5	355.370	164.948
6	362.221	178.292
7	368.377	191.970
8	373.528	206.058
9	376.259	209.000

Factor of Safety
*** 1.255 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	119.150	142.500
2	125.770	136.846
3	222.000	142.500
4	347.000	152.500
5	355.617	164.778
6	361.575	178.544
7	366.013	192.872
8	370.482	207.191
9	372.095	209.000

Factor of Safety
*** 1.258 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	119.101	142.500
2	125.516	136.831
3	222.000	142.500
4	347.000	152.500
5	354.301	165.603
6	364.903	176.215
7	373.836	188.264
8	380.130	201.880
9	381.424	209.000

Factor of Safety
*** 1.263 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.005	143.319
2	135.756	137.445
3	222.000	142.500
4	347.000	152.500

FIGURE A1-36

5	353.301	166.113
6	358.663	180.121
7	368.364	191.562
8	376.419	204.216
9	381.194	209.000

Factor of Safety
*** 1.264 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.883	142.500
2	134.296	137.358
3	222.000	142.500
4	347.000	152.500
5	356.320	164.253
6	365.625	176.018
7	376.214	186.642
8	386.699	197.369
9	394.016	209.000

Factor of Safety
*** 1.271 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.079	142.500
2	133.607	137.316
3	222.000	142.500
4	347.000	152.500
5	357.041	163.643
6	363.097	177.367
7	367.251	191.780
8	374.943	204.658
9	379.279	209.000

Factor of Safety
*** 1.271 ***

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

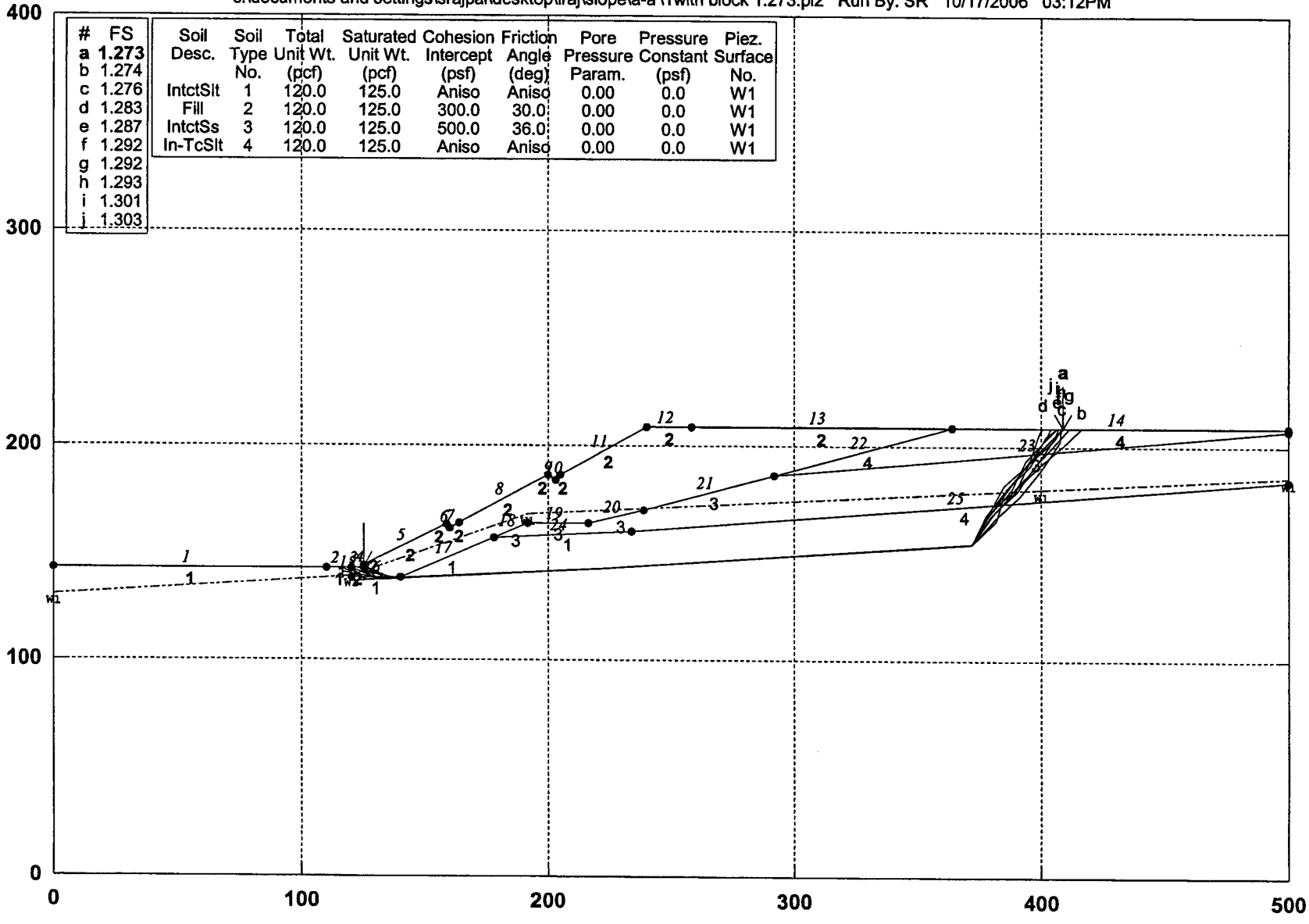
FIGURE A1-37

MV/Landslide/011492-001 Section A-A' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\a-a'\1with block 1.273.pl2 Run By: SR 10/17/2006 03:12PM

#	FS
a	1.273
b	1.274
c	1.276
d	1.283
e	1.287
f	1.292
g	1.292
h	1.293
i	1.301
j	1.303

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
IntctSlt	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
IntctSs	3	120.0	125.0	500.0	36.0	0.00	0.0	W1
In-TcSlt	4	120.0	125.0	Aniso	Aniso	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.273

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

FIGURE A1-38

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(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: 10/17/2006
Time of Run: 03:12PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.273.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.273.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.273.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001
Section A-A' (Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	142.50	110.00	142.50	1
2	110.00	142.50	120.00	142.50	1
3	120.00	142.50	125.00	142.50	2
4	125.00	142.50	125.01	144.00	2
5	125.01	144.00	158.50	163.00	2
6	158.50	163.00	160.00	161.00	2
7	160.00	161.00	164.00	164.00	2
8	164.00	164.00	200.00	186.00	2
9	200.00	186.00	203.00	184.00	2
10	203.00	184.00	205.00	186.00	2
11	205.00	186.00	240.00	209.00	2
12	240.00	209.00	258.00	209.00	2
13	258.00	209.00	364.00	209.00	2
14	364.00	209.00	500.00	209.00	4
15	120.00	142.50	120.10	138.00	1
16	120.10	138.00	140.00	138.00	1
17	140.00	138.00	178.00	157.00	1
18	178.00	157.00	192.00	164.00	3
19	192.00	164.00	216.00	164.00	3
20	216.00	164.00	239.00	170.00	3
21	239.00	170.00	292.00	186.00	3
22	292.00	186.00	364.00	209.00	4
23	292.00	186.00	500.00	207.20	3
24	178.00	157.00	234.00	160.00	1
25	234.00	160.00	500.00	184.00	4

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 Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1
4	120.0	125.0	700.0	37.0	0.00	0.0	1

FIGURE A1-39

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	4.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 5 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	130.00
2	120.00	138.50
3	192.00	168.00
4	400.00	180.00
5	500.00	185.76

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.
100 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 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	120.00	136.50	140.00	137.70	0.00
2	222.00	142.50	222.00	142.50	0.00
3	372.00	154.50	372.00	154.50	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 1.645 FS Min = 1.273 FS Ave = 1.374
Standard Deviation = 0.069 Coefficient of Variation = 5.02 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.002	142.849
2	136.469	137.488
3	222.000	142.500
4	372.000	154.500
5	378.858	167.841
6	386.861	180.527

FIGURE A1-40

7	395.142	193.034
8	404.691	204.602
9	409.025	209.000

Factor of Safety

*** 1.273 ***

Individual data on the 31 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	0.0	0.5	0.0	0.0	0.	0.	0.0	0.0	0.0
2	2.6	786.2	0.0	0.0	0.	0.	0.0	0.0	0.0
3	7.8	7450.5	0.0	1814.8	0.	0.	0.0	0.0	0.0
4	1.1	1675.1	0.0	549.0	0.	0.	0.0	0.0	0.0
5	3.5	6043.1	0.0	1849.7	0.	0.	0.0	0.0	0.0
6	18.5	44456.4	0.0	14162.5	0.	0.	0.0	0.0	0.0
7	1.5	4290.0	0.0	1477.5	0.	0.	0.0	0.0	0.0
8	4.0	11622.1	0.0	4181.5	0.	0.	0.0	0.0	0.0
9	14.0	49719.1	0.0	17400.7	0.	0.	0.0	0.0	0.0
10	14.0	63058.4	0.0	21702.5	0.	0.	0.0	0.0	0.0
11	8.0	41966.1	0.0	13628.7	0.	0.	0.0	0.0	0.0
12	3.0	16141.2	0.0	5109.8	0.	0.	0.0	0.0	0.0
13	2.0	10725.6	0.0	3406.3	0.	0.	0.0	0.0	0.0
14	11.0	64578.6	0.0	18730.4	0.	0.	0.0	0.0	0.0
15	6.0	38887.6	0.0	10213.7	0.	0.	0.0	0.0	0.0
16	12.0	85339.2	0.0	20355.0	0.	0.	0.0	0.0	0.0
17	5.0	38496.7	0.0	8421.9	0.	0.	0.0	0.0	0.0
18	1.0	7906.8	0.0	1680.2	0.	0.	0.0	0.0	0.0
19	1.9	15180.5	0.0	3211.7	0.	0.	0.0	0.0	0.0
20	16.1	126190.5	0.0	26793.0	0.	0.	0.0	0.0	0.0
21	34.0	258449.0	0.0	55441.0	0.	0.	0.0	0.0	0.0
22	72.0	510244.7	0.0	*******	0.	0.	0.0	0.0	0.0
23	8.0	53586.2	0.0	12006.0	0.	0.	0.0	0.0	0.0
24	6.9	39956.7	0.0	16297.7	0.	0.	0.0	0.0	0.0
25	3.5	16256.7	0.0	3382.3	0.	0.	0.0	0.0	0.0
26	3.7	14432.5	0.0	1199.1	0.	0.	0.0	0.0	0.0
27	0.8	2942.4	0.0	0.0	0.	0.	0.0	0.0	0.0
28	8.3	22080.2	0.0	0.0	0.	0.	0.0	0.0	0.0
29	3.1	5292.2	0.0	0.0	0.	0.	0.0	0.0	0.0
30	6.4	6375.4	0.0	0.0	0.	0.	0.0	0.0	0.0
31	4.3	1143.7	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	118.250	142.500
2	126.376	136.883
3	222.000	142.500
4	372.000	154.500
5	379.714	167.364
6	388.577	179.466
7	398.685	190.549
8	409.265	201.182
9	416.172	209.000

Factor of Safety

*** 1.274 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	120.246	142.500
2	125.912	136.855
3	222.000	142.500
4	372.000	154.500
5	377.720	168.367
6	386.160	180.767
7	395.163	192.765
8	405.689	203.451
9	408.041	209.000

FIGURE A1-41

Factor of Safety
*** 1.276 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	116.498	142.500
2	125.809	136.849
3	222.000	142.500
4	372.000	154.500
5	379.168	167.676
6	389.209	178.820
7	395.265	192.543
8	399.419	206.956
9	400.640	209.000

Factor of Safety
*** 1.283 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.008	143.690
2	133.641	137.318
3	222.000	142.500
4	372.000	154.500
5	378.906	167.816
6	387.865	179.846
7	393.490	193.752
8	403.175	205.206
9	406.081	209.000

Factor of Safety
*** 1.287 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.999	142.353
2	131.420	137.185
3	222.000	142.500
4	372.000	154.500
5	377.690	168.379
6	388.247	179.035
7	397.586	190.773
8	405.098	203.756
9	407.093	209.000

Factor of Safety
*** 1.292 ***
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	122.846	142.500
2	124.954	140.399
3	139.706	137.682
4	222.000	142.500
5	372.000	154.500
6	379.684	167.382
7	389.756	178.497
8	397.512	191.337
9	407.116	202.859
10	411.552	209.000

Factor of Safety
*** 1.292 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.711	142.500
2	129.813	137.089
3	222.000	142.500
4	372.000	154.500
5	381.055	166.459

FIGURE A1-42

6	391.553	177.173
7	400.112	189.491
8	407.296	202.659
9	408.342	209.000

Factor of Safety

*** 1.293 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	120.187	142.500
2	131.073	137.164
3	222.000	142.500
4	372.000	154.500
5	382.009	165.672
6	385.876	180.165
7	395.887	191.336
8	402.173	204.955
9	406.215	209.000

Factor of Safety

*** 1.301 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	115.293	142.500
2	117.131	140.761
3	131.703	137.202
4	222.000	142.500
5	372.000	154.500
6	378.304	168.111
7	384.771	181.646
8	395.026	192.592
9	402.341	205.687
10	403.929	209.000

Factor of Safety

*** 1.303 ***

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

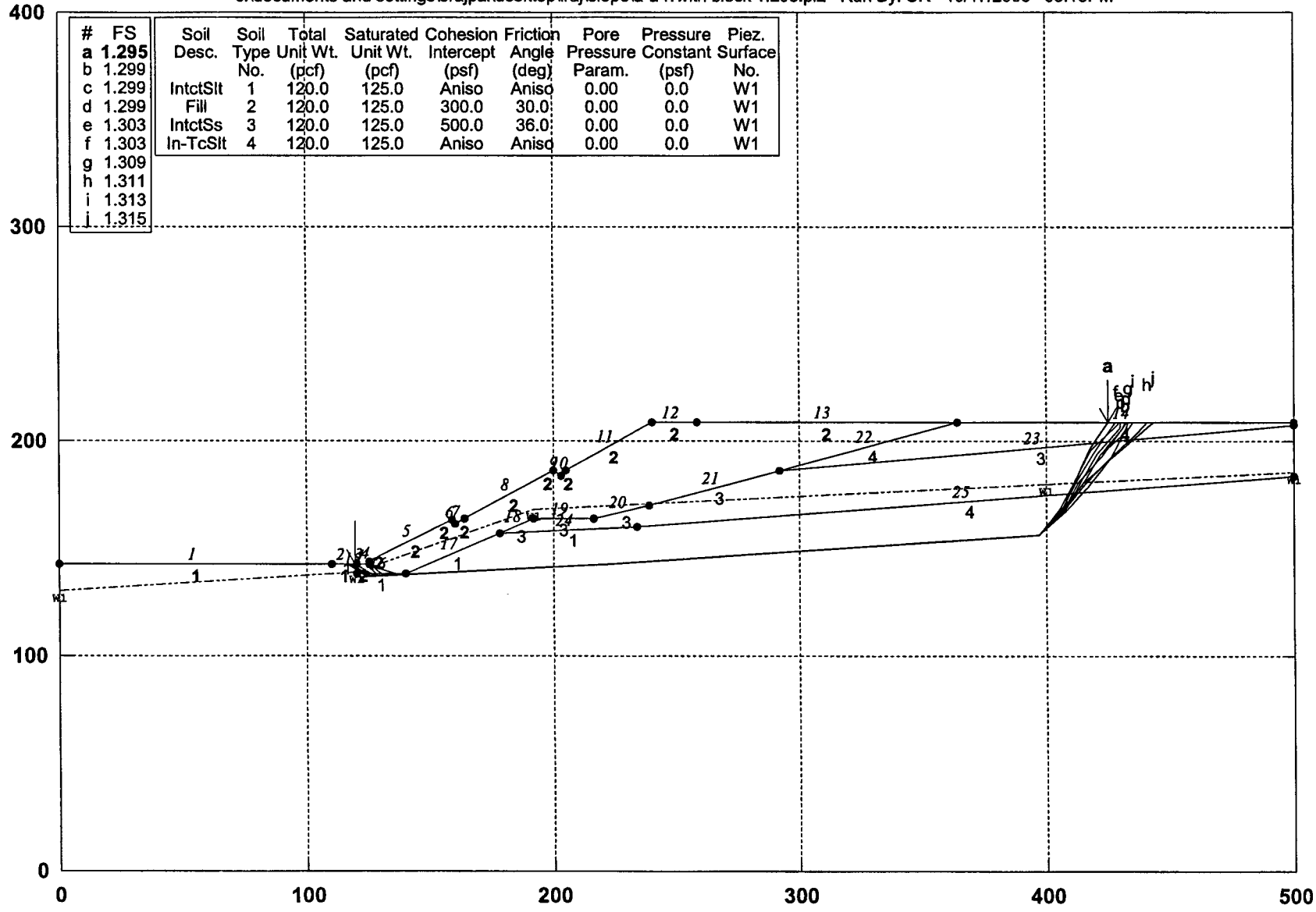
FIGURE A1-43

MV/Landslide/011492-001 Section A-A' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\a-a'\1with block 1.295.pl2 Run By: SR 10/17/2006 03:13PM

#	FS
a	**1.295**
b	1.299
c	1.299
d	1.299
e	1.303
f	1.303
g	1.309
h	1.311
i	1.313
j	1.315

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
IntctSlt	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
IntctSs	3	120.0	125.0	500.0	36.0	0.00	0.0	W1
In-TcSlt	4	120.0	125.0	Aniso	Aniso	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.295

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

FIGURE A1-44

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 03:13PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.295.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.295.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.295.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001
Section A-A' (Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	142.50	110.00	142.50	1
2	110.00	142.50	120.00	142.50	1
3	120.00	142.50	125.00	142.50	2
4	125.00	142.50	125.01	144.00	2
5	125.01	144.00	158.50	163.00	2
6	158.50	163.00	160.00	161.00	2
7	160.00	161.00	164.00	164.00	2
8	164.00	164.00	200.00	186.00	2
9	200.00	186.00	203.00	184.00	2
10	203.00	184.00	205.00	186.00	2
11	205.00	186.00	240.00	209.00	2
12	240.00	209.00	258.00	209.00	2
13	258.00	209.00	364.00	209.00	2
14	364.00	209.00	500.00	209.00	4
15	120.00	142.50	120.10	138.00	1
16	120.10	138.00	140.00	138.00	1
17	140.00	138.00	178.00	157.00	1
18	178.00	157.00	192.00	164.00	3
19	192.00	164.00	216.00	164.00	3
20	216.00	164.00	239.00	170.00	3
21	239.00	170.00	292.00	186.00	3
22	292.00	186.00	364.00	209.00	4
23	292.00	186.00	500.00	207.20	3
24	178.00	157.00	234.00	160.00	1
25	234.00	160.00	500.00	184.00	4

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 Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1
4	120.0	125.0	700.0	37.0	0.00	0.0	1

FIGURE A1-45

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	4.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 5 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	130.00
2	120.00	138.50
3	192.00	168.00
4	400.00	180.00
5	500.00	185.76

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.
100 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 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	120.00	136.50	140.00	137.70	0.00
2	222.00	142.50	222.00	142.50	0.00
3	397.00	156.50	397.00	156.50	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 1.586 FS Min = 1.295 FS Ave = 1.382
Standard Deviation = 0.059 Coefficient of Variation = 4.29 %
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	119.484	142.500
2	126.967	136.918
3	222.000	142.500
4	397.000	156.500
5	406.557	168.061
6	411.950	182.058

FIGURE A1-46

7	417.245	196.093
8	424.774	209.000

Factor of Safety
*** 1.295 ***

Individual data on the 34 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)	
1	0.5	11.9	0.0	0.0	0.	0.	0.0	0.0	0.0	
2	0.0	0.4	0.0	0.0	0.	0.	0.0	0.0	0.0	
3	3.1	582.0	0.0	0.0	0.	0.	0.0	0.0	0.0	
4	1.9	777.7	0.0	157.7	0.	0.	0.0	0.0	0.0	
5	0.0	6.0	0.0	1.7	0.	0.	0.0	0.0	0.0	
6	0.5	367.9	0.0	97.2	0.	0.	0.0	0.0	0.0	
7	1.5	1286.2	0.0	406.3	0.	0.	0.0	0.0	0.0	
8	13.0	18434.3	0.0	5477.7	0.	0.	0.0	0.0	0.0	
9	18.5	44480.0	0.0	14174.5	0.	0.	0.0	0.0	0.0	
10	1.5	4291.7	0.0	1478.4	0.	0.	0.0	0.0	0.0	
11	4.0	11626.3	0.0	4183.6	0.	0.	0.0	0.0	0.0	
12	14.0	49731.7	0.0	17407.1	0.	0.	0.0	0.0	0.0	
13	14.0	63067.5	0.0	21707.2	0.	0.	0.0	0.0	0.0	
14	8.0	41969.7	0.0	13630.6	0.	0.	0.0	0.0	0.0	
15	3.0	16142.3	0.0	5110.4	0.	0.	0.0	0.0	0.0	
16	2.0	10726.2	0.0	3406.6	0.	0.	0.0	0.0	0.0	
17	11.0	64580.8	0.0	18731.7	0.	0.	0.0	0.0	0.0	
18	6.0	38887.9	0.0	10213.9	0.	0.	0.0	0.0	0.0	
19	12.0	85339.2	0.0	20355.0	0.	0.	0.0	0.0	0.0	
20	5.0	38496.7	0.0	8421.9	0.	0.	0.0	0.0	0.0	
21	1.0	7906.8	0.0	1680.2	0.	0.	0.0	0.0	0.0	
22	1.9	15180.5	0.0	3211.7	0.	0.	0.0	0.0	0.0	
23	16.1	126190.5	0.0	26793.0	0.	0.	0.0	0.0	0.0	
24	34.0	258449.0	0.0	55441.0	0.	0.	0.0	0.0	0.0	
25	72.0	510244.7	0.0	*******	0.	0.	0.0	0.0	0.0	
26	33.0	217036.9	0.0	48948.6	0.	0.	0.0	0.0	0.0	
27	3.0	18570.7	0.0	6346.1	0.	0.	0.0	0.0	0.0	
28	6.6	35860.3	0.0	10335.0	0.	0.	0.0	0.0	0.0	
29	3.0	13452.5	0.0	4428.2	0.	0.	0.0	0.0	0.0	
30	1.9	6872.4	0.0	758.9	0.	0.	0.0	0.0	0.0	
31	0.5	1790.6	0.0	0.0	0.	0.	0.0	0.0	0.0	
32	5.3	12659.9	0.0	0.0	0.	0.	0.0	0.0	0.0	
33	1.7	2284.7	0.0	0.0	0.	0.	0.0	0.0	0.0	
34	5.9	3545.7	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	123.249	142.500
2	137.206	137.532
3	222.000	142.500
4	397.000	156.500
5	406.020	168.485
6	414.927	180.554
7	421.833	193.870
8	430.792	205.900
9	432.046	209.000

Factor of Safety
*** 1.299 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	120.146	142.500
2	126.615	136.897
3	222.000	142.500
4	397.000	156.500
5	407.455	167.256
6	414.040	180.733
7	420.859	194.093

FIGURE A1-47

8	429.944	206.029
9	430.226	209.000

Factor of Safety
*** 1.299 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	116.078	142.500
2	125.145	136.809
3	222.000	142.500
4	397.000	156.500
5	406.756	167.894
6	413.168	181.454
7	422.509	193.191
8	430.814	205.682
9	432.583	209.000

Factor of Safety
*** 1.299 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.440	142.500
2	128.954	137.037
3	222.000	142.500
4	397.000	156.500
5	405.764	168.673
6	411.678	182.458
7	418.003	196.060
8	428.211	207.050
9	429.541	209.000

Factor of Safety
*** 1.303 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.002	142.768
2	131.322	137.179
3	222.000	142.500
4	397.000	156.500
5	406.383	168.203
6	412.736	181.791
7	419.594	195.132
8	427.597	207.818
9	428.379	209.000

Factor of Safety
*** 1.303 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	115.659	142.500
2	128.768	137.026
3	222.000	142.500
4	397.000	156.500
5	406.759	167.891
6	414.947	180.459
7	425.387	191.230
8	432.187	204.600
9	433.129	209.000

Factor of Safety
*** 1.309 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	117.538	142.500
2	124.769	136.786
3	222.000	142.500
4	397.000	156.500

FIGURE A1-48

5	406.999	167.682
6	415.535	180.016
7	425.147	191.532
8	435.695	202.196
9	440.709	209.000

Factor of Safety
*** 1.311 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	116.066	142.500
2	123.490	136.709
3	222.000	142.500
4	397.000	156.500
5	406.520	168.092
6	414.923	180.518
7	422.142	193.666
8	432.748	204.273
9	435.013	209.000

Factor of Safety
*** 1.313 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	117.413	142.500
2	125.507	136.830
3	222.000	142.500
4	397.000	156.500
5	407.576	167.137
6	416.895	178.891
7	425.617	191.095
8	435.993	201.927
9	443.032	209.000

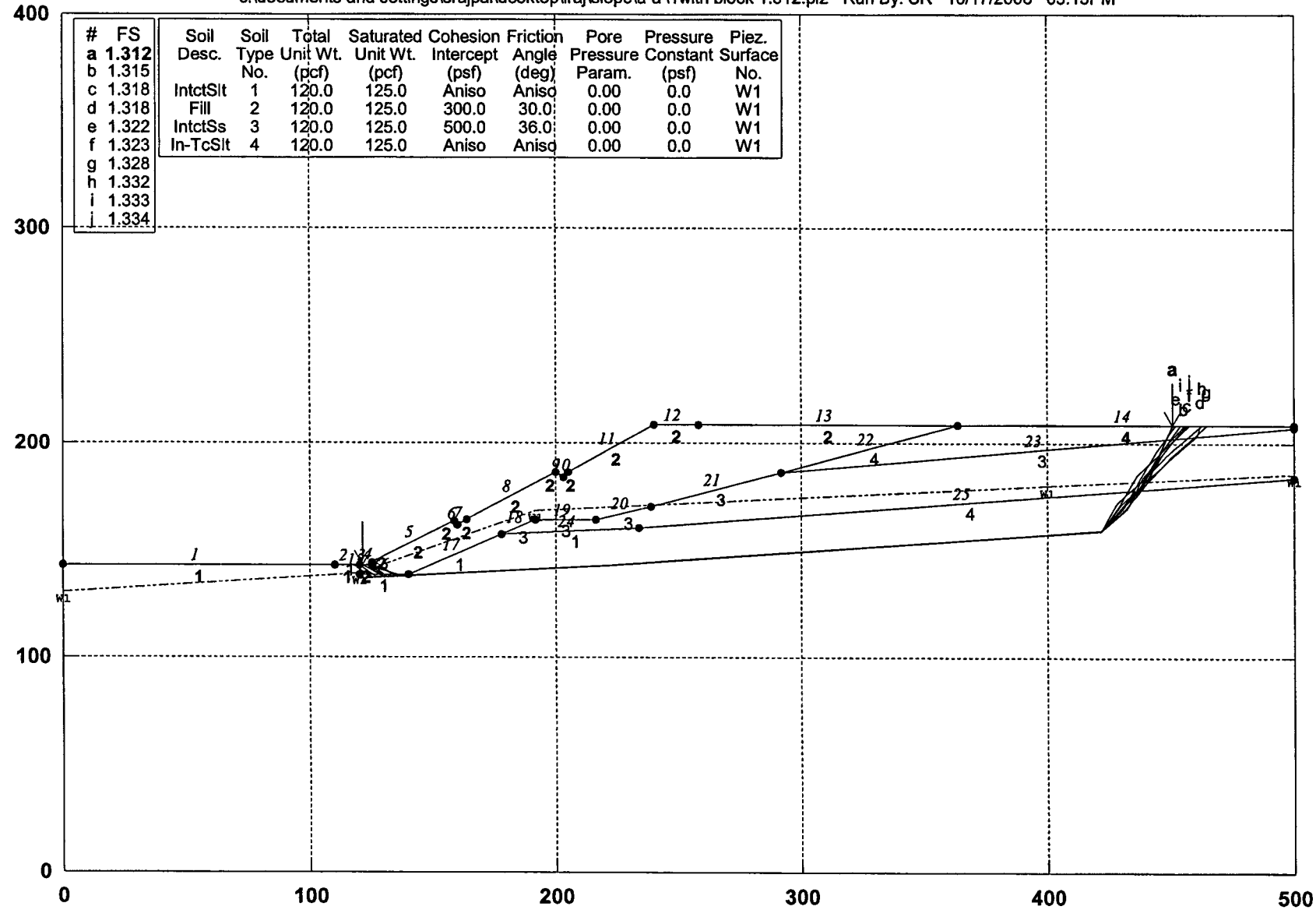
Factor of Safety
*** 1.315 ***

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

FIGURE A1-49

MV/Landslide/011492-001 Section A-A' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\a-a'\1with block 1.312.pl2 Run By: SR 10/17/2006 03:13PM



#	FS
a	1.312
b	1.315
c	1.318
d	1.318
e	1.322
f	1.323
g	1.328
h	1.332
i	1.333
j	1.334

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
IntctSlt	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
IntctSs	3	120.0	125.0	500.0	36.0	0.00	0.0	W1
In-TcSlt	4	120.0	125.0	Aniso	Aniso	0.00	0.0	W1

GSTABL7 v.2 FSmin=1.312

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

FIGURE A1-50

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 03:13PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.312.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.312.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.312.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001
Section A-A' (Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	142.50	110.00	142.50	1
2	110.00	142.50	120.00	142.50	1
3	120.00	142.50	125.00	142.50	2
4	125.00	142.50	125.01	144.00	2
5	125.01	144.00	158.50	163.00	2
6	158.50	163.00	160.00	161.00	2
7	160.00	161.00	164.00	164.00	2
8	164.00	164.00	200.00	186.00	2
9	200.00	186.00	203.00	184.00	2
10	203.00	184.00	205.00	186.00	2
11	205.00	186.00	240.00	209.00	2
12	240.00	209.00	258.00	209.00	2
13	258.00	209.00	364.00	209.00	2
14	364.00	209.00	500.00	209.00	4
15	120.00	142.50	120.10	138.00	1
16	120.10	138.00	140.00	138.00	1
17	140.00	138.00	178.00	157.00	1
18	178.00	157.00	192.00	164.00	3
19	192.00	164.00	216.00	164.00	3
20	216.00	164.00	239.00	170.00	3
21	239.00	170.00	292.00	186.00	3
22	292.00	186.00	364.00	209.00	4
23	292.00	186.00	500.00	207.20	3
24	178.00	157.00	234.00	160.00	1
25	234.00	160.00	500.00	184.00	4

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 Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1
4	120.0	125.0	700.0	37.0	0.00	0.0	1

FIGURE A1-51

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	4.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 5 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	130.00
2	120.00	138.50
3	192.00	168.00
4	400.00	180.00
5	500.00	185.76

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.
100 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 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	120.00	136.50	140.00	137.70	0.00
2	222.00	142.50	222.00	142.50	0.00
3	422.00	158.50	422.00	158.50	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 1.655 FS Min = 1.312 FS Ave = 1.402
Standard Deviation = 0.069 Coefficient of Variation = 4.93 %
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.287	142.500
2	130.106	137.106
3	222.000	142.500
4	422.000	158.500
5	430.969	170.523
6	440.526	182.084

FIGURE A1-52

7	445.919	196.081
8	450.793	209.000

Factor of Safety

*** 1.312 ***

Individual data on the 32 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	3.4	424.3	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.3	81.9	0.0	3.7	0.	0.	0.0	0.0	0.0
3	0.0	3.6	0.0	0.2	0.	0.	0.0	0.0	0.0
4	3.6	2621.8	0.0	581.2	0.	0.	0.0	0.0	0.0
5	1.5	1599.7	0.0	511.8	0.	0.	0.0	0.0	0.0
6	9.9	14964.2	0.0	4496.6	0.	0.	0.0	0.0	0.0
7	18.5	44472.8	0.0	14170.8	0.	0.	0.0	0.0	0.0
8	1.5	4291.2	0.0	1478.1	0.	0.	0.0	0.0	0.0
9	4.0	11625.0	0.0	4183.0	0.	0.	0.0	0.0	0.0
10	14.0	49727.8	0.0	17405.1	0.	0.	0.0	0.0	0.0
11	14.0	63064.7	0.0	21705.7	0.	0.	0.0	0.0	0.0
12	8.0	41968.6	0.0	13630.0	0.	0.	0.0	0.0	0.0
13	3.0	16141.9	0.0	5110.2	0.	0.	0.0	0.0	0.0
14	2.0	10726.0	0.0	3406.5	0.	0.	0.0	0.0	0.0
15	11.0	64580.2	0.0	18731.3	0.	0.	0.0	0.0	0.0
16	6.0	38887.8	0.0	10213.9	0.	0.	0.0	0.0	0.0
17	12.0	85339.2	0.0	20355.0	0.	0.	0.0	0.0	0.0
18	5.0	38496.7	0.0	8421.9	0.	0.	0.0	0.0	0.0
19	1.0	7906.8	0.0	1680.2	0.	0.	0.0	0.0	0.0
20	1.9	15180.5	0.0	3211.7	0.	0.	0.0	0.0	0.0
21	16.1	126190.5	0.0	26793.0	0.	0.	0.0	0.0	0.0
22	34.0	258449.0	0.0	55441.0	0.	0.	0.0	0.0	0.0
23	72.0	510244.7	0.0	*******	0.	0.	0.0	0.0	0.0
24	36.0	236243.1	0.0	53323.1	0.	0.	0.0	0.0	0.0
25	22.0	138174.7	0.0	31694.0	0.	0.	0.0	0.0	0.0
26	9.0	48645.3	0.0	15925.1	0.	0.	0.0	0.0	0.0
27	6.5	27096.3	0.0	4775.5	0.	0.	0.0	0.0	0.0
28	3.1	10675.9	0.0	611.4	0.	0.	0.0	0.0	0.0
29	0.1	316.5	0.0	2.1	0.	0.	0.0	0.0	0.0
30	5.3	12573.9	0.0	0.0	0.	0.	0.0	0.0	0.0
31	2.2	2640.7	0.0	0.0	0.	0.	0.0	0.0	0.0
32	2.7	1137.2	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	120.146	142.500
2	126.615	136.897
3	222.000	142.500
4	422.000	158.500
5	432.455	169.256
6	439.040	182.733
7	445.859	196.093
8	454.944	208.029
9	455.036	209.000

Factor of Safety

*** 1.315 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.249	142.500
2	137.206	137.532
3	222.000	142.500
4	422.000	158.500
5	431.020	170.485
6	439.927	182.554
7	446.833	195.870
8	455.792	207.900
9	456.237	209.000

FIGURE A1-53

Factor of Safety
*** 1.318 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	119.801	142.500
2	127.172	136.930
3	222.000	142.500
4	422.000	158.500
5	429.761	171.336
6	440.054	182.247
7	450.279	193.223
8	460.657	204.053
9	461.857	209.000

Factor of Safety
*** 1.318 ***
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.002	142.768
2	131.322	137.179
3	222.000	142.500
4	422.000	158.500
5	431.383	170.203
6	437.736	183.791
7	444.594	197.132
8	452.081	209.000

Factor of Safety
*** 1.322 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.332	142.500
2	129.750	137.085
3	222.000	142.500
4	422.000	158.500
5	430.800	170.647
6	439.623	182.778
7	446.357	196.181
8	456.049	207.630
9	457.416	209.000

Factor of Safety
*** 1.323 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	117.538	142.500
2	124.769	136.786
3	222.000	142.500
4	422.000	158.500
5	431.999	169.682
6	440.535	182.016
7	450.147	193.532
8	460.695	204.196
9	464.235	209.000

Factor of Safety
*** 1.328 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.153	142.500
2	130.248	137.115
3	222.000	142.500
4	422.000	158.500
5	428.329	172.100
6	438.763	182.876
7	448.183	194.549

FIGURE A1-54

8	458.769	205.176
9	462.594	209.000

Factor of Safety

*** 1.332 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.603	144.336
2	134.208	137.352
3	222.000	142.500
4	422.000	158.500
5	429.477	171.504
6	436.519	184.748
7	446.500	195.945
8	453.957	208.960
9	453.995	209.000

Factor of Safety

*** 1.333 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.932	142.500
2	136.083	137.465
3	222.000	142.500
4	422.000	158.500
5	432.587	169.126
6	438.307	182.992
7	446.747	195.393
8	455.750	207.391
9	457.335	209.000

Factor of Safety

*** 1.334 ***

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

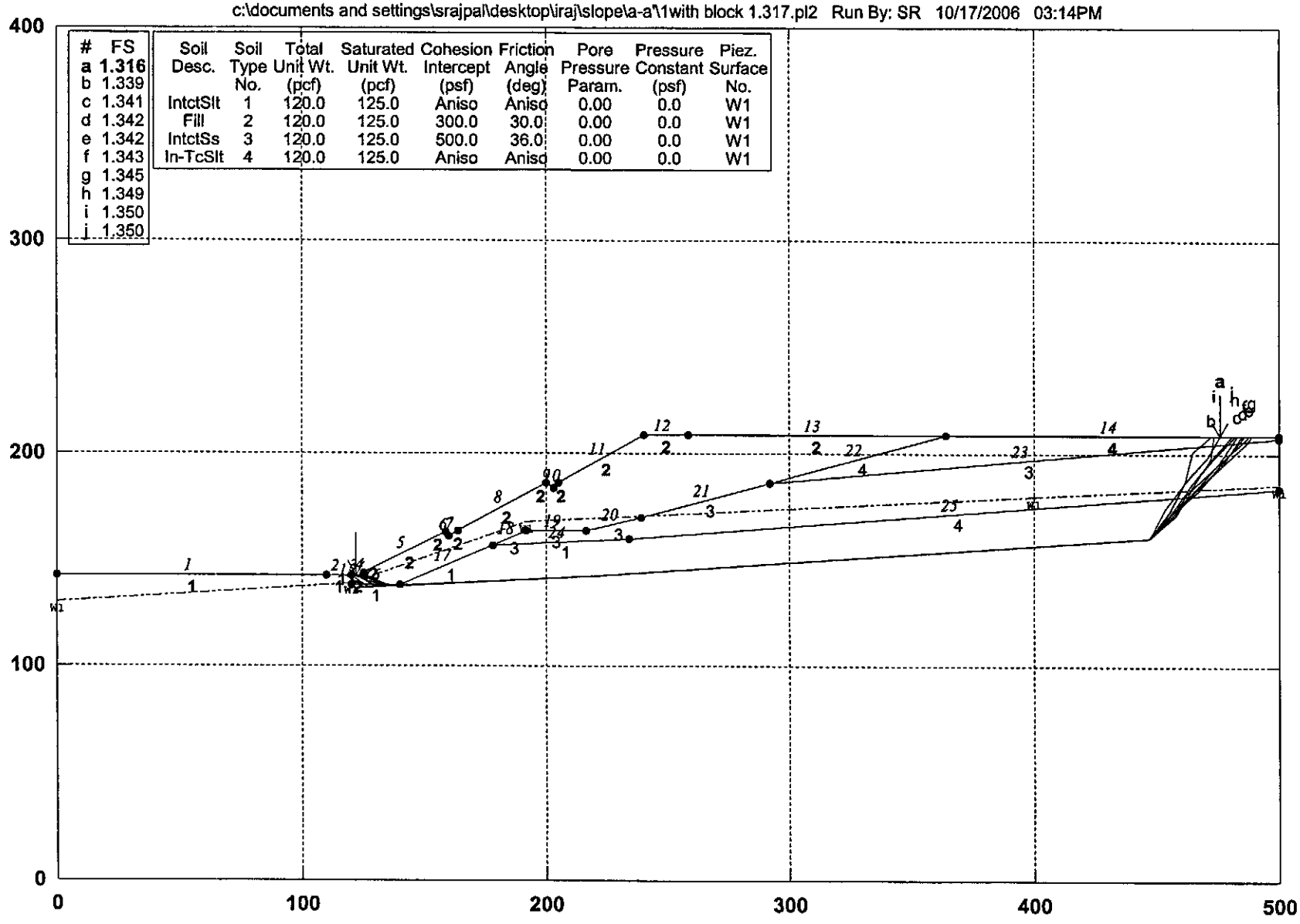
FIGURE A1-55

MV/Landslide/011492-001 Section A-A' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\a-a'\1with block 1.317.pl2 Run By: SR 10/17/2006 03:14PM

#	FS
a	1.316
b	1.339
c	1.341
d	1.342
e	1.342
f	1.343
g	1.345
h	1.349
i	1.350
j	1.350

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
IntctSlt	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
IntctSs	3	120.0	125.0	500.0	36.0	0.00	0.0	W1
In-TcSlt	4	120.0	125.0	Aniso	Aniso	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.316

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

FIGURE A1-56

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(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: 10/17/2006
Time of Run: 03:14PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.317.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.317.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\A-A'\1with block 1.317.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001
Section A-A' (Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	142.50	110.00	142.50	1
2	110.00	142.50	120.00	142.50	1
3	120.00	142.50	125.00	142.50	2
4	125.00	142.50	125.01	144.00	2
5	125.01	144.00	158.50	163.00	2
6	158.50	163.00	160.00	161.00	2
7	160.00	161.00	164.00	164.00	2
8	164.00	164.00	200.00	186.00	2
9	200.00	186.00	203.00	184.00	2
10	203.00	184.00	205.00	186.00	2
11	205.00	186.00	240.00	209.00	2
12	240.00	209.00	258.00	209.00	2
13	258.00	209.00	364.00	209.00	2
14	364.00	209.00	500.00	209.00	4
15	120.00	142.50	120.10	138.00	1
16	120.10	138.00	140.00	138.00	1
17	140.00	138.00	178.00	157.00	1
18	178.00	157.00	192.00	164.00	3
19	192.00	164.00	216.00	164.00	3
20	216.00	164.00	239.00	170.00	3
21	239.00	170.00	292.00	186.00	3
22	292.00	186.00	364.00	209.00	4
23	292.00	186.00	500.00	207.20	3
24	178.00	157.00	234.00	160.00	1
25	234.00	160.00	500.00	184.00	4

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 Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1
4	120.0	125.0	700.0	37.0	0.00	0.0	1

FIGURE A1-57

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	4.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 5 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	130.00
2	120.00	138.50
3	192.00	168.00
4	400.00	180.00
5	500.00	185.76

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.
100 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 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	120.00	136.50	140.00	137.70	0.00
2	222.00	142.50	222.00	142.50	0.00
3	447.00	160.50	447.00	160.50	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 1.679 FS Min = 1.316 FS Ave = 1.402
Standard Deviation = 0.055 Coefficient of Variation = 3.90 %
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.579	142.500
2	129.852	137.091
3	222.000	142.500
4	447.000	160.500
5	454.780	173.325
6	460.954	186.995

FIGURE A1-58

7	470.315	198.715
8	475.702	209.000

Factor of Safety

*** 1.316 ***

Individual data on the 32 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	3.2	390.0	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.3	69.4	0.0	2.9	0.	0.	0.0	0.0	0.0
3	0.0	3.6	0.0	0.2	0.	0.	0.0	0.0	0.0
4	3.5	2460.5	0.0	548.6	0.	0.	0.0	0.0	0.0
5	1.4	1502.0	0.0	487.8	0.	0.	0.0	0.0	0.0
6	10.1	15267.7	0.0	4583.9	0.	0.	0.0	0.0	0.0
7	18.5	44473.3	0.0	14171.1	0.	0.	0.0	0.0	0.0
8	1.5	4291.2	0.0	1478.1	0.	0.	0.0	0.0	0.0
9	4.0	11625.1	0.0	4183.0	0.	0.	0.0	0.0	0.0
10	14.0	49728.1	0.0	17405.3	0.	0.	0.0	0.0	0.0
11	14.0	63064.9	0.0	21705.9	0.	0.	0.0	0.0	0.0
12	8.0	41968.7	0.0	13630.1	0.	0.	0.0	0.0	0.0
13	3.0	16142.0	0.0	5110.2	0.	0.	0.0	0.0	0.0
14	2.0	10726.1	0.0	3406.5	0.	0.	0.0	0.0	0.0
15	11.0	64580.2	0.0	18731.3	0.	0.	0.0	0.0	0.0
16	6.0	38887.8	0.0	10213.9	0.	0.	0.0	0.0	0.0
17	12.0	85339.2	0.0	20355.0	0.	0.	0.0	0.0	0.0
18	5.0	38496.7	0.0	8421.9	0.	0.	0.0	0.0	0.0
19	1.0	7906.8	0.0	1680.2	0.	0.	0.0	0.0	0.0
20	1.9	15180.5	0.0	3211.7	0.	0.	0.0	0.0	0.0
21	16.1	126190.5	0.0	26793.0	0.	0.	0.0	0.0	0.0
22	34.0	258449.0	0.0	55441.0	0.	0.	0.0	0.0	0.0
23	72.0	510244.7	0.0	*******	0.	0.	0.0	0.0	0.0
24	36.0	236243.1	0.0	53323.1	0.	0.	0.0	0.0	0.0
25	47.0	289485.6	0.0	66886.1	0.	0.	0.0	0.0	0.0
26	7.8	39916.0	0.0	14993.7	0.	0.	0.0	0.0	0.0
27	3.1	12112.5	0.0	3051.6	0.	0.	0.0	0.0	0.0
28	1.5	4752.9	0.0	345.2	0.	0.	0.0	0.0	0.0
29	1.6	4612.8	0.0	0.0	0.	0.	0.0	0.0	0.0
30	9.4	18136.6	0.0	0.0	0.	0.	0.0	0.0	0.0
31	3.0	2682.6	0.0	0.0	0.	0.	0.0	0.0	0.0
32	2.4	641.4	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	119.867	142.500
2	126.918	136.915
3	222.000	142.500
4	447.000	160.500
5	453.167	174.174
6	461.262	186.802
7	464.312	201.488
8	471.794	209.000

Factor of Safety

*** 1.339 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	120.723	142.500
2	133.065	137.284
3	222.000	142.500
4	447.000	160.500
5	457.448	171.263
6	464.619	184.437
7	474.941	195.322
8	482.563	208.241
9	482.714	209.000

Factor of Safety

FIGURE A1-59

*** 1.341 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.932	142.500
2	130.297	137.118
3	222.000	142.500
4	447.000	160.500
5	456.626	172.004
6	466.173	183.574
7	476.274	194.663
8	483.848	207.610
9	485.209	209.000

Factor of Safety
*** 1.342 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	117.538	142.500
2	124.769	136.786
3	222.000	142.500
4	447.000	160.500
5	456.999	171.682
6	465.535	184.016
7	475.147	195.532
8	485.695	206.196
9	487.761	209.000

Factor of Safety
*** 1.342 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.511	142.500
2	133.353	137.301
3	222.000	142.500
4	447.000	160.500
5	456.329	172.246
6	466.933	182.855
7	475.733	195.002
8	484.556	207.133
9	485.495	209.000

Factor of Safety
*** 1.343 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.883	142.500
2	134.296	137.358
3	222.000	142.500
4	447.000	160.500
5	456.320	172.253
6	465.625	184.018
7	476.214	194.642
8	486.699	205.369
9	488.983	209.000

Factor of Safety
*** 1.345 ***
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.099	144.051
2	132.577	137.255
3	222.000	142.500
4	447.000	160.500
5	455.769	172.670
6	463.595	185.467
7	472.564	197.490

FIGURE A1-60

```
      8        482.078      209.000
         Factor of Safety
        ***    1.349   ***
  Failure Surface Specified By  8 Coordinate Points
    Point      X-Surf      Y-Surf
     No.        (ft)        (ft)
      1        125.001      142.678
      2        136.034      137.462
      3        222.000      142.500
      4        447.000      160.500
      5        456.341      172.236
      6        464.646      184.727
      7        471.703      197.964
      8        473.318      209.000
         Factor of Safety
        ***    1.350   ***
  Failure Surface Specified By  8 Coordinate Points
    Point      X-Surf      Y-Surf
     No.        (ft)        (ft)
      1        123.932      142.500
      2        136.083      137.465
      3        222.000      142.500
      4        447.000      160.500
      5        457.587      171.126
      6        463.307      184.992
      7        471.747      197.393
      8        480.457      209.000
         Factor of Safety
        ***    1.350   ***
            **** END OF GSTABL7 OUTPUT ****
```

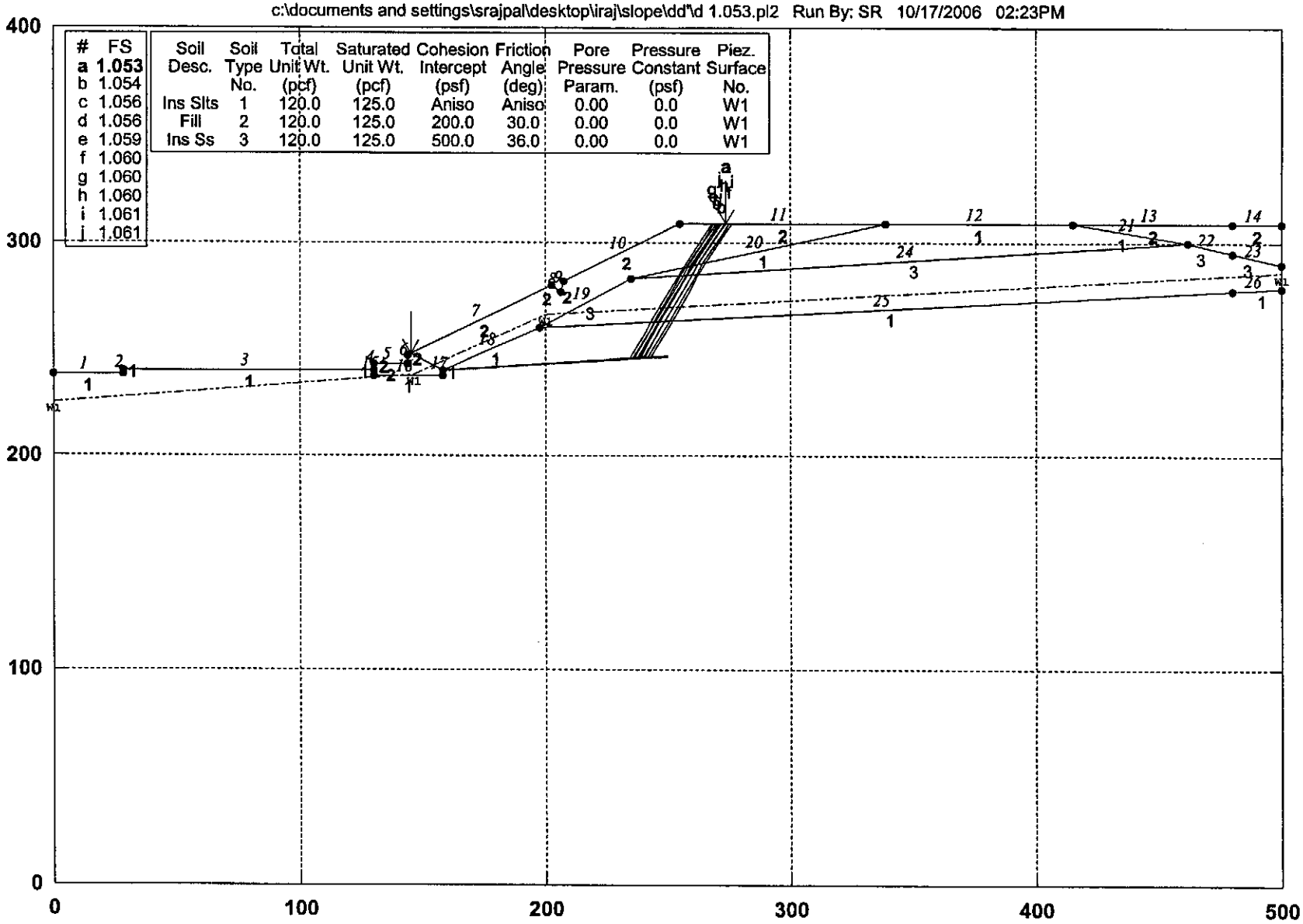
FIGURE A1-61

MV Landslide/ 011492-001 Sec D-D' (Search for min.)

c:\documents and settings\srajpal\desktop\iraj\slope\dd'\d 1.053.pl2 Run By: SR 10/17/2006 02:23PM

#	FS
a	1.053
b	1.054
c	1.056
d	1.056
e	1.059
f	1.060
g	1.060
h	1.060
i	1.061
j	1.061

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Ins Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Ins Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.053

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

FIGURE A1-62

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

****

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: 10/17/2006
Time of Run: 02:23PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.053.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.053.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.053.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec D-D'
(Search for min.)

BOUNDARY COORDINATES
14 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	238.00	28.00	238.00	1
2	28.00	238.00	28.01	240.00	1
3	28.01	240.00	130.00	240.00	1
4	130.00	240.00	130.01	243.00	2
5	130.01	243.00	144.00	243.00	2
6	144.00	243.00	144.01	247.00	2
7	144.01	247.00	202.50	280.00	2
8	202.50	280.00	206.00	277.00	2
9	206.00	277.00	207.50	282.00	2
10	207.50	282.00	255.00	309.00	2
11	255.00	309.00	339.00	309.00	2
12	339.00	309.00	415.00	309.00	1
13	415.00	309.00	480.00	309.00	2
14	480.00	309.00	500.00	309.00	2
15	130.00	240.00	130.01	237.50	1
16	130.01	237.50	157.90	237.50	1
17	157.90	237.50	158.00	240.00	1
18	158.00	240.00	197.50	260.00	1
19	197.50	260.00	235.00	283.00	3
20	235.00	283.00	339.00	309.00	1
21	415.00	309.00	462.00	300.00	1
22	462.00	300.00	480.00	295.00	3
23	480.00	295.00	500.00	290.20	3
24	235.00	283.00	462.00	300.00	3
25	197.50	260.00	480.00	277.50	1
26	480.00	277.50	500.00	279.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

FIGURE A1-63

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	225.00
2	146.00	238.00
3	200.00	266.00
4	500.00	286.00

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.
The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.
1000 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	158.00	240.00	180.00	241.60	0.20
2	228.00	245.00	250.00	246.60	0.20

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 = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 1.498 FS Min = 1.053 FS Ave = 1.242
Standard Deviation = 0.113 Coefficient of Variation = 9.08 %
Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.985	247.550
2	145.035	247.522
3	158.026	240.022
4	240.476	245.995
5	247.169	259.419
6	249.050	263.193
7	255.860	276.559
8	260.100	284.880
9	262.603	289.901
10	270.103	302.891
11	273.630	309.000

Factor of Safety
*** 1.053 ***
Individual data on the 21 slices

FIGURE A1-64

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	0.0	0.2	0.0	0.0	0.	0.	0.0	0.0	0.0
2	9.1	5790.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	3.8	5896.4	0.0	583.7	0.	0.	0.0	0.0	0.0
4	0.0	36.5	0.0	5.3	0.	0.	0.0	0.0	0.0
5	39.5	119021.7	0.0	32144.5	0.	0.	0.0	0.0	0.0
6	2.5	10753.3	0.0	3500.4	0.	0.	0.0	0.0	0.0
7	2.5	11129.0	0.0	3586.4	0.	0.	0.0	0.0	0.0
8	3.5	15155.3	0.0	5017.2	0.	0.	0.0	0.0	0.0
9	1.5	6642.4	0.0	2148.9	0.	0.	0.0	0.0	0.0
10	0.7	3180.4	0.0	960.6	0.	0.	0.0	0.0	0.0
11	26.8	149160.5	0.0	38291.2	0.	0.	0.0	0.0	0.0
12	5.5	35704.3	0.0	7783.0	0.	0.	0.0	0.0	0.0
13	6.7	40651.3	0.0	15176.4	0.	0.	0.0	0.0	0.0
14	1.9	9958.9	0.0	2079.1	0.	0.	0.0	0.0	0.0
15	3.2	15506.2	0.0	1338.5	0.	0.	0.0	0.0	0.0
16	2.7	11871.0	0.0	0.0	0.	0.	0.0	0.0	0.0
17	0.9	3435.7	0.0	0.0	0.	0.	0.0	0.0	0.0
18	4.2	14388.9	0.0	0.0	0.	0.	0.0	0.0	0.0
19	2.5	6491.9	0.0	0.0	0.	0.	0.0	0.0	0.0
20	7.5	11343.5	0.0	0.0	0.	0.	0.0	0.0	0.0
21	3.5	1292.7	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.065	247.595
2	145.121	247.563
3	158.111	240.063
4	238.499	245.843
5	245.192	259.267
6	247.089	263.072
7	253.899	276.437
8	258.125	284.732
9	260.432	289.358
10	267.932	302.348
11	271.772	309.000

Factor of Safety

*** 1.054 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.145	247.640
2	145.207	247.604
3	158.197	240.104
4	236.523	245.691
5	243.216	259.115
6	245.128	262.950
7	251.938	276.316
8	256.151	284.584
9	258.260	288.815
10	265.760	301.805
11	269.914	309.000

Factor of Safety

*** 1.056 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.011	247.565
2	145.070	247.531
3	158.060	240.031
4	158.154	239.984
5	237.511	245.667
6	244.204	259.091
7	246.160	263.014

FIGURE A1-65

8	252.970	276.379
9	257.190	284.662
10	259.403	289.101
11	266.903	302.091
12	270.892	309.000

Factor of Safety
*** 1.056 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.091	247.610
2	145.154	247.573
3	158.144	240.073
4	158.240	240.025
5	235.534	245.515
6	242.227	258.939
7	244.199	262.893
8	251.009	276.258
9	255.215	284.514
10	257.232	288.558
11	264.732	301.548
12	269.034	309.000

Factor of Safety
*** 1.059 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.128	247.631
2	145.193	247.593
3	158.184	240.093
4	158.434	239.968
5	242.087	246.122
6	248.780	259.546
7	250.648	263.292
8	257.458	276.657
9	261.709	285.000
10	264.373	290.343
11	271.873	303.334
12	275.144	309.000

Factor of Safety
*** 1.060 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.036	247.579
2	145.096	247.544
3	158.087	240.044
4	158.283	239.946
5	234.546	245.538
6	241.239	258.962
7	243.167	262.829
8	249.977	276.194
9	254.176	284.436
10	256.089	288.272
11	263.589	301.263
12	268.056	309.000

Factor of Safety
*** 1.060 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.208	247.676
2	145.277	247.635
3	158.268	240.135
4	158.520	240.010
5	240.110	245.969
6	246.803	259.393

FIGURE A1-66

7	248.687	263.171
8	255.497	276.536
9	259.734	284.852
10	262.201	289.800
11	269.701	302.791
12	273.286	309.000

Factor of Safety
*** 1.060 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.183	247.662
2	145.251	247.622
3	158.241	240.122
4	158.391	240.048
5	243.075	246.098
6	249.768	259.522
7	251.680	263.356
8	258.490	276.721
9	262.748	285.078
10	265.515	290.629
11	273.015	303.619
12	276.122	309.000

Factor of Safety
*** 1.061 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.287	247.721
2	145.361	247.678
3	158.351	240.178
4	158.606	240.051
5	238.134	245.817
6	244.827	259.241
7	246.726	263.049
8	253.535	276.414
9	257.759	284.704
10	260.029	289.257
11	267.529	302.248
12	271.428	309.000

Factor of Safety
*** 1.061 ***

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

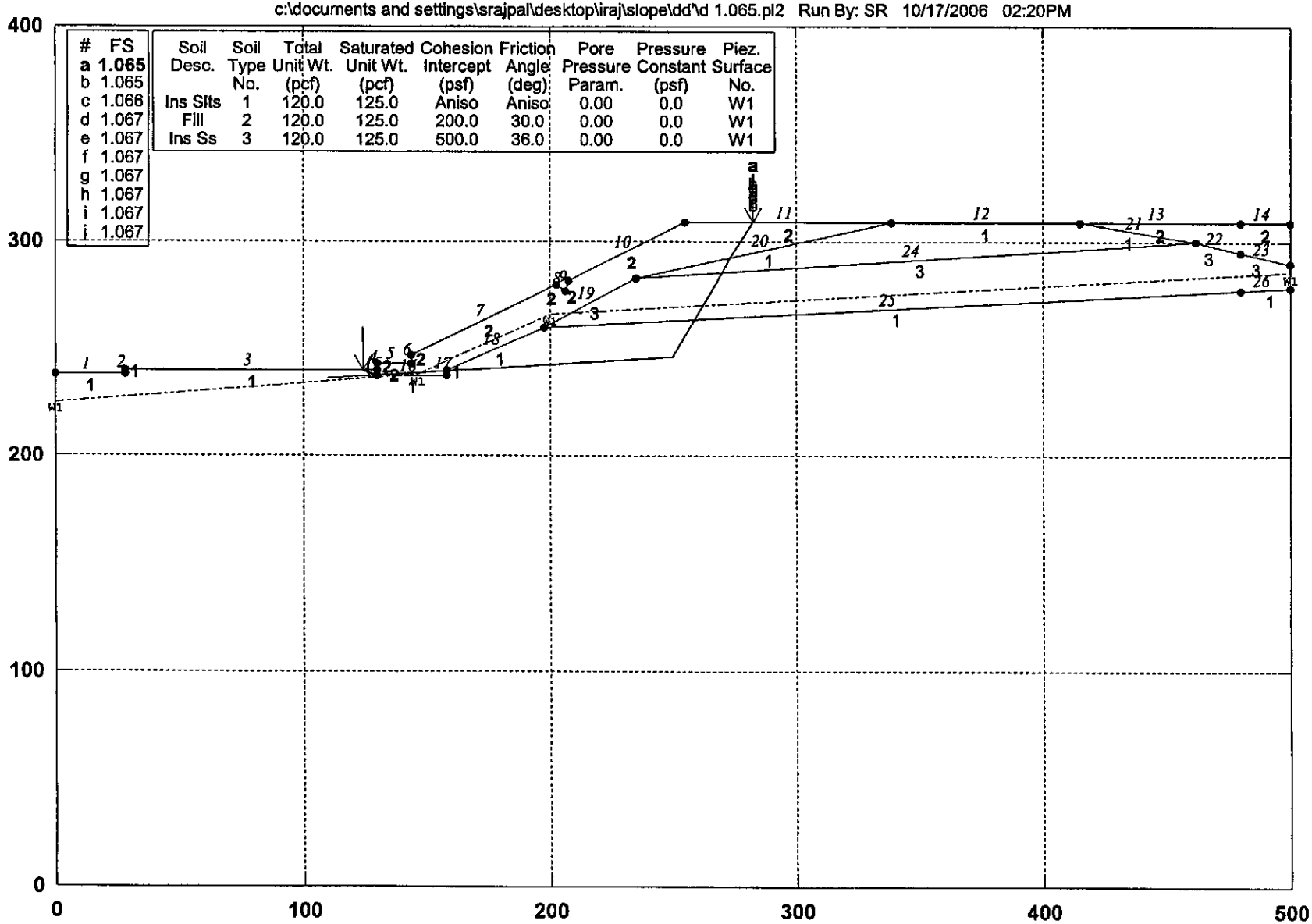
FIGURE A1-67

MV Landslide/ 011492-001 Sec D-D' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\dd'\d 1.065.pl2 Run By: SR 10/17/2006 02:20PM

#	FS
a	1.065
b	1.065
c	1.066
d	1.067
e	1.067
f	1.067
g	1.067
h	1.067
i	1.067
j	1.067

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Ins Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Ins Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.065

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

FIGURE A1-68

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

****

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: 10/17/2006
Time of Run: 02:20PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.065.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.065.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.065.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec D-D'
(Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	238.00	28.00	238.00	1
2	28.00	238.00	28.01	240.00	1
3	28.01	240.00	130.00	240.00	1
4	130.00	240.00	130.01	243.00	2
5	130.01	243.00	144.00	243.00	2
6	144.00	243.00	144.01	247.00	2
7	144.01	247.00	202.50	280.00	2
8	202.50	280.00	206.00	277.00	2
9	206.00	277.00	207.50	282.00	2
10	207.50	282.00	255.00	309.00	2
11	255.00	309.00	339.00	309.00	2
12	339.00	309.00	415.00	309.00	1
13	415.00	309.00	480.00	309.00	2
14	480.00	309.00	500.00	309.00	2
15	130.00	240.00	130.01	237.50	1
16	130.01	237.50	157.90	237.50	1
17	157.90	237.50	158.00	240.00	1
18	158.00	240.00	197.50	260.00	1
19	197.50	260.00	235.00	283.00	3
20	235.00	283.00	339.00	309.00	1
21	415.00	309.00	462.00	300.00	1
22	462.00	300.00	480.00	295.00	3
23	480.00	295.00	500.00	290.20	3
24	235.00	283.00	462.00	300.00	3
25	197.50	260.00	480.00	277.50	1
26	480.00	277.50	500.00	279.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

FIGURE A1-69

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	225.00
2	146.00	238.00
3	200.00	266.00
4	500.00	286.00

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.
The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.
1000 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	110.00	236.30	130.00	237.50	0.20
2	250.00	246.40	250.00	246.40	0.20

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 = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 1.110 FS Min = 1.065 FS Ave = 1.088
Standard Deviation = 0.012 Coefficient of Variation = 1.08 %
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.401	240.000
2	129.652	237.382
3	250.000	246.479
4	256.693	259.903
5	258.629	263.787
6	265.439	277.152
7	269.745	285.602
8	273.210	292.553
9	280.710	305.543
10	282.706	309.000

Factor of Safety
*** 1.065 ***
Individual data on the 26 slices

	Water	Water	Tie	Tie	Earthquake

FIGURE A1-70

Slice No.	Width (ft)	Weight (lbs)	Force Top (lbs)	Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Force Hor (lbs)	Force Ver (lbs)	Surcharge Load (lbs)
1	5.3	824.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.3	108.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	0.0	5.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	1.2	800.9	0.0	0.0	0.	0.	0.0	0.0	0.0
5	12.8	7697.3	0.0	0.0	0.	0.	0.0	0.0	0.0
6	0.0	7.8	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.4	3801.3	0.0	0.0	0.	0.	0.0	0.0	0.0
8	10.6	16350.3	0.0	1553.2	0.	0.	0.0	0.0	0.0
9	0.0	35.6	0.0	5.6	0.	0.	0.0	0.0	0.0
10	39.5	121243.0	0.0	33234.7	0.	0.	0.0	0.0	0.0
11	2.5	10868.1	0.0	3558.6	0.	0.	0.0	0.0	0.0
12	2.5	11241.4	0.0	3643.5	0.	0.	0.0	0.0	0.0
13	3.5	15308.4	0.0	5095.0	0.	0.	0.0	0.0	0.0
14	1.5	6706.6	0.0	2181.5	0.	0.	0.0	0.0	0.0
15	0.7	3208.8	0.0	975.1	0.	0.	0.0	0.0	0.0
16	26.8	150152.2	0.0	38796.5	0.	0.	0.0	0.0	0.0
17	15.0	102488.1	0.0	21515.6	0.	0.	0.0	0.0	0.0
18	5.0	34101.7	0.0	12591.2	0.	0.	0.0	0.0	0.0
19	1.7	10416.8	0.0	2727.0	0.	0.	0.0	0.0	0.0
20	1.9	11035.0	0.0	2166.2	0.	0.	0.0	0.0	0.0
21	3.2	16340.5	0.0	1358.5	0.	0.	0.0	0.0	0.0
22	3.6	15195.5	0.0	0.0	0.	0.	0.0	0.0	0.0
23	4.3	14271.9	0.0	0.0	0.	0.	0.0	0.0	0.0
24	3.5	8284.8	0.0	0.0	0.	0.	0.0	0.0	0.0
25	7.5	8957.0	0.0	0.0	0.	0.	0.0	0.0	0.0
26	2.0	414.0	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.772	240.000
2	129.984	237.401
3	250.000	246.392
4	256.693	259.816
5	258.674	263.790
6	265.484	277.155
7	269.790	285.605
8	273.260	292.565
9	280.760	305.555
10	282.748	309.000

Factor of Safety

*** 1.065 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.559	240.000
2	129.730	237.422
3	250.000	246.470
4	256.693	259.894
5	258.634	263.787
6	265.444	277.152
7	269.749	285.602
8	273.215	292.554
9	280.715	305.544
10	282.710	309.000

Factor of Safety

*** 1.066 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.383	240.000
2	129.594	237.402
3	250.000	246.435
4	256.693	259.859
5	258.652	263.788

FIGURE A1-71

6	265.462	277.153
7	269.767	285.604
8	273.235	292.559
9	280.735	305.549
10	282.727	309.000

Factor of Safety
*** 1.067 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.754	240.000
2	129.926	237.421
3	250.000	246.349
4	256.693	259.773
5	258.696	263.791
6	265.506	277.156
7	269.812	285.607
8	273.284	292.571
9	280.784	305.561
10	282.770	309.000

Factor of Safety
*** 1.067 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.836	240.000
2	129.125	237.363
3	250.000	246.487
4	256.693	259.911
5	258.625	263.787
6	265.435	277.152
7	269.741	285.602
8	273.206	292.551
9	280.706	305.542
10	282.702	309.000

Factor of Safety
*** 1.067 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.893	240.000
2	129.945	237.481
3	250.000	246.497
4	256.693	259.921
5	258.620	263.786
6	265.430	277.151
7	269.736	285.601
8	273.200	292.550
9	280.700	305.540
10	282.697	309.000

Factor of Safety
*** 1.067 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.207	240.000
2	129.457	237.382
3	250.000	246.400
4	256.693	259.824
5	258.670	263.789
6	265.480	277.154
7	269.785	285.605
8	273.255	292.564
9	280.755	305.554
10	282.744	309.000

Factor of Safety
*** 1.067 ***

FIGURE A1-72

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.577	240.000
2	129.789	237.402
3	250.000	246.314
4	256.693	259.738
5	258.714	263.792
6	265.524	277.157
7	269.830	285.608
8	273.304	292.576
9	280.804	305.566
10	282.787	309.000

Factor of Safety

*** 1.067 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.659	240.000
2	128.988	237.343
3	250.000	246.452
4	256.693	259.876
5	258.643	263.788
6	265.453	277.153
7	269.759	285.603
8	273.226	292.556
9	280.726	305.547
10	282.719	309.000

Factor of Safety

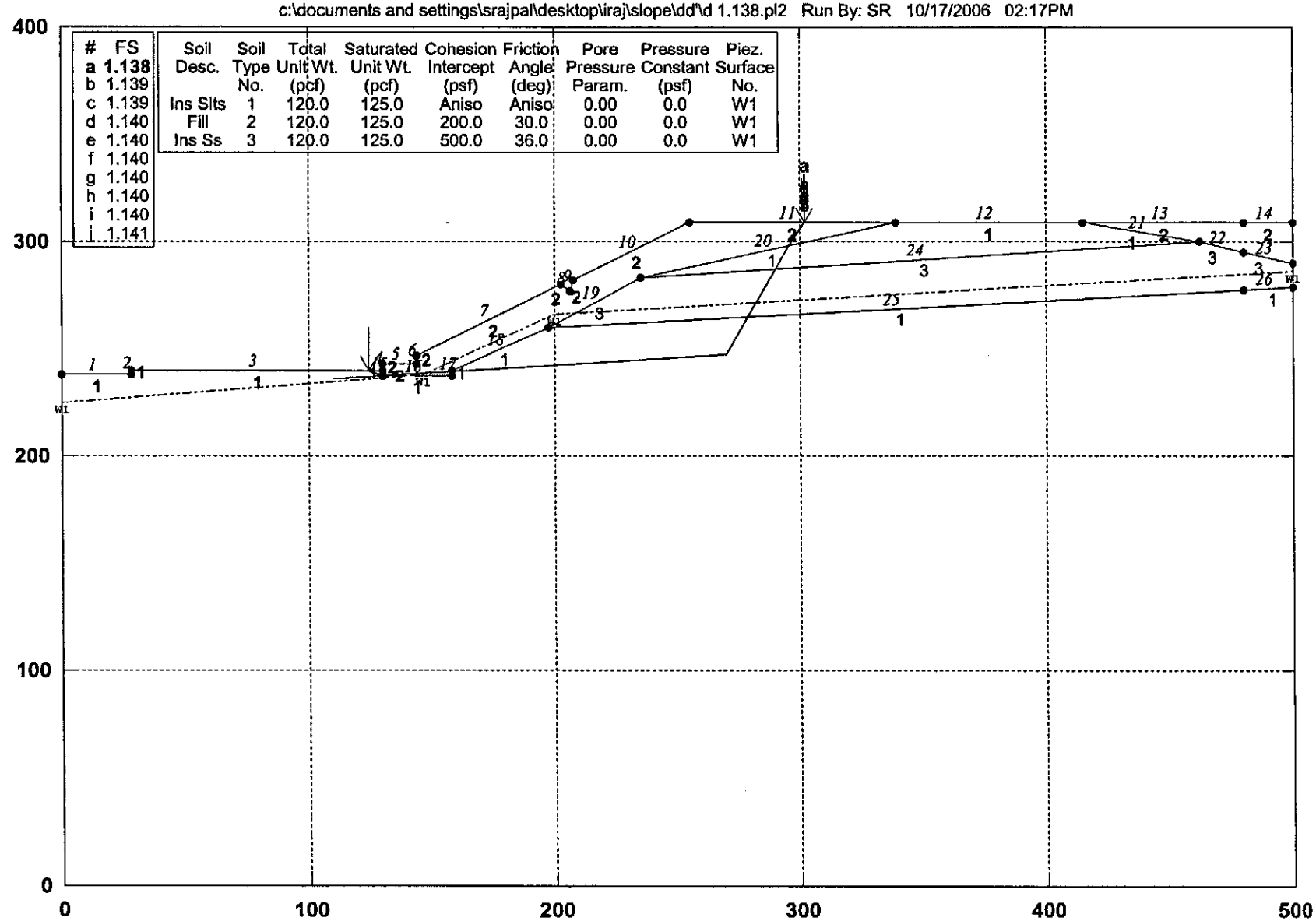
*** 1.067 ***

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

FIGURE A1-73

MV Landslide/ 011492-001 Sec D-D' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\dd'\d 1.138.pl2 Run By: SR 10/17/2006 02:17PM



#	FS
a	1.138
b	1.139
c	1.139
d	1.140
e	1.140
f	1.140
g	1.140
h	1.140
i	1.140
j	1.141

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Ins Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Ins Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1

GSTABL7 v.2 FSmin=1.138

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

FIGURE A1-74

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(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: 10/17/2006
Time of Run: 02:17PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.138.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.138.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.138.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec D-D'
(Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	238.00	28.00	238.00	1
2	28.00	238.00	28.01	240.00	1
3	28.01	240.00	130.00	240.00	1
4	130.00	240.00	130.01	243.00	2
5	130.01	243.00	144.00	243.00	2
6	144.00	243.00	144.01	247.00	2
7	144.01	247.00	202.50	280.00	2
8	202.50	280.00	206.00	277.00	2
9	206.00	277.00	207.50	282.00	2
10	207.50	282.00	255.00	309.00	2
11	255.00	309.00	339.00	309.00	2
12	339.00	309.00	415.00	309.00	1
13	415.00	309.00	480.00	309.00	2
14	480.00	309.00	500.00	309.00	2
15	130.00	240.00	130.01	237.50	1
16	130.01	237.50	157.90	237.50	1
17	157.90	237.50	158.00	240.00	1
18	158.00	240.00	197.50	260.00	1
19	197.50	260.00	235.00	283.00	3
20	235.00	283.00	339.00	309.00	1
21	415.00	309.00	462.00	300.00	1
22	462.00	300.00	480.00	295.00	3
23	480.00	295.00	500.00	290.20	3
24	235.00	283.00	462.00	300.00	3
25	197.50	260.00	480.00	277.50	1
26	480.00	277.50	500.00	279.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

FIGURE A1-75

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	225.00
2	146.00	238.00
3	200.00	266.00
4	500.00	286.00

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.
The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.
1000 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	110.00	236.30	130.00	237.50	0.20
2	270.00	247.60	270.00	247.60	0.20

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 = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 1.181 FS Min = 1.138 FS Ave = 1.160
Standard Deviation = 0.011 Coefficient of Variation = 0.93 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.401	240.000
2	129.652	237.382
3	270.000	247.679
4	276.693	261.103
5	278.649	265.027
6	285.459	278.392
7	289.902	287.112
8	295.378	298.094
9	301.674	309.000

Factor of Safety
*** 1.138 ***
Individual data on the 25 slices

	Water Force	Water Force	Tie Force	Tie Force	Earthquake Force	Surcharge

FIGURE A1-76

Slice No.	Width (ft)	Weight (lbs)	Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	Load (lbs)
1	5.3	824.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.3	108.8	0.0	0.0	0.	0.	0.0	0.0	0.0
3	0.0	5.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	1.3	832.5	0.0	0.0	0.	0.	0.0	0.0	0.0
5	12.7	7693.2	0.0	0.0	0.	0.	0.0	0.0	0.0
6	0.0	7.9	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.3	3707.4	0.0	0.0	0.	0.	0.0	0.0	0.0
8	10.7	16521.7	0.0	1586.2	0.	0.	0.0	0.0	0.0
9	0.0	40.5	0.0	6.4	0.	0.	0.0	0.0	0.0
10	39.5	121770.6	0.0	33493.3	0.	0.	0.0	0.0	0.0
11	2.5	10916.1	0.0	3582.1	0.	0.	0.0	0.0	0.0
12	2.5	11291.1	0.0	3667.8	0.	0.	0.0	0.0	0.0
13	3.5	15380.9	0.0	5130.5	0.	0.	0.0	0.0	0.0
14	1.5	6738.7	0.0	2197.2	0.	0.	0.0	0.0	0.0
15	0.7	3223.4	0.0	982.2	0.	0.	0.0	0.0	0.0
16	26.8	150837.1	0.0	39132.9	0.	0.	0.0	0.0	0.0
17	20.0	140246.1	0.0	28975.5	0.	0.	0.0	0.0	0.0
18	15.0	113096.3	0.0	21621.5	0.	0.	0.0	0.0	0.0
19	6.7	44411.7	0.0	15442.9	0.	0.	0.0	0.0	0.0
20	2.0	10863.7	0.0	2219.8	0.	0.	0.0	0.0	0.0
21	3.3	16086.2	0.0	1400.7	0.	0.	0.0	0.0	0.0
22	3.5	14437.8	0.0	0.0	0.	0.	0.0	0.0	0.0
23	4.4	13993.9	0.0	0.0	0.	0.	0.0	0.0	0.0
24	5.5	10774.5	0.0	0.0	0.	0.	0.0	0.0	0.0
25	6.3	4119.9	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	124.772	240.000
2	129.984	237.401
3	270.000	247.592
4	276.693	261.016
5	278.694	265.030
6	285.504	278.395
7	289.947	287.115
8	295.427	298.107
9	301.716	309.000

Factor of Safety

*** 1.139 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.559	240.000
2	129.730	237.422
3	270.000	247.670
4	276.693	261.094
5	278.654	265.027
6	285.464	278.392
7	289.907	287.112
8	295.383	298.096
9	301.678	309.000

Factor of Safety

*** 1.139 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.836	240.000
2	129.125	237.363
3	270.000	247.687
4	276.693	261.111
5	278.645	265.027
6	285.455	278.392
7	289.898	287.111
8	295.373	298.093
9	301.670	309.000

FIGURE A1-77

Factor of Safety
*** 1.140 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.383	240.000
2	129.594	237.402
3	270.000	247.635
4	276.693	261.059
5	278.672	265.028
6	285.482	278.393
7	289.925	287.113
8	295.403	298.101
9	301.695	309.000

Factor of Safety
*** 1.140 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.659	240.000
2	128.988	237.343
3	270.000	247.652
4	276.693	261.076
5	278.663	265.028
6	285.473	278.393
7	289.916	287.113
8	295.393	298.098
9	301.687	309.000

Factor of Safety
*** 1.140 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.207	240.000
2	129.457	237.382
3	270.000	247.600
4	276.693	261.024
5	278.690	265.029
6	285.500	278.395
7	289.943	287.115
8	295.423	298.106
9	301.712	309.000

Factor of Safety
*** 1.140 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.754	240.000
2	129.926	237.421
3	270.000	247.549
4	276.693	260.973
5	278.716	265.031
6	285.526	278.396
7	289.969	287.117
8	295.452	298.113
9	301.738	309.000

Factor of Safety
*** 1.140 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.893	240.000
2	129.945	237.481
3	270.000	247.697
4	276.693	261.121
5	278.640	265.026
6	285.450	278.392

FIGURE A1-78

7	289.893	287.111
8	295.368	298.092
9	301.666	309.000

Factor of Safety

*** 1.140 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.030	240.000
2	129.320	237.363
3	270.000	247.565
4	276.693	260.989
5	278.708	265.031
6	285.518	278.396
7	289.961	287.116
8	295.443	298.111
9	301.730	309.000

Factor of Safety

*** 1.141 ***

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

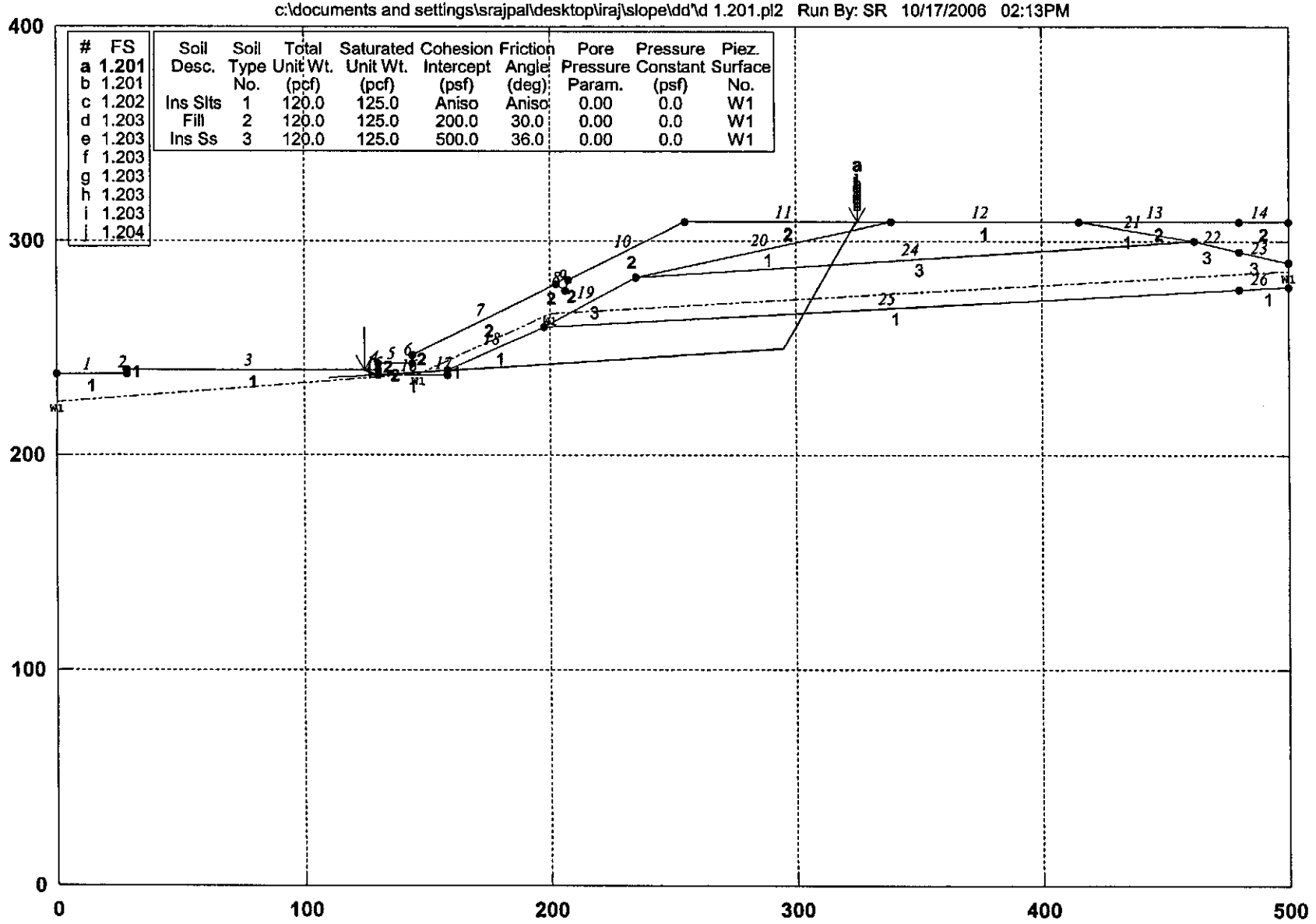
FIGURE A1-79

MV Landslide/ 011492-001 Sec D-D' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\dd'\d 1.201.pl2 Run By: SR 10/17/2006 02:13PM

#	FS
a	1.201
b	1.201
c	1.202
d	1.203
e	1.203
f	1.203
g	1.203
h	1.203
i	1.203
j	1.204

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Ins Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Ins Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.201

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

FIGURE A1-80

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 02:13PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.201.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.201.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.201.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec D-D'
(Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	238.00	28.00	238.00	1
2	28.00	238.00	28.01	240.00	1
3	28.01	240.00	130.00	240.00	1
4	130.00	240.00	130.01	243.00	2
5	130.01	243.00	144.00	243.00	2
6	144.00	243.00	144.01	247.00	2
7	144.01	247.00	202.50	280.00	2
8	202.50	280.00	206.00	277.00	2
9	206.00	277.00	207.50	282.00	2
10	207.50	282.00	255.00	309.00	2
11	255.00	309.00	339.00	309.00	2
12	339.00	309.00	415.00	309.00	1
13	415.00	309.00	480.00	309.00	2
14	480.00	309.00	500.00	309.00	2
15	130.00	240.00	130.01	237.50	1
16	130.01	237.50	157.90	237.50	1
17	157.90	237.50	158.00	240.00	1
18	158.00	240.00	197.50	260.00	1
19	197.50	260.00	235.00	283.00	3
20	235.00	283.00	339.00	309.00	1
21	415.00	309.00	462.00	300.00	1
22	462.00	300.00	480.00	295.00	3
23	480.00	295.00	500.00	290.20	3
24	235.00	283.00	462.00	300.00	3
25	197.50	260.00	480.00	277.50	1
26	480.00	277.50	500.00	279.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

FIGURE A1-81

```
ANISOTROPIC STRENGTH PARAMETERS
     1 soil type(s)
 Soil Type  1 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction     Counterclockwise      Cohesion      Friction
   Range        Direction Limit     Intercept       Angle
    No.             (deg)             (psf)         (deg)
     1               2.0              700.00         37.00
     2               7.0                0.00          8.00
     3              90.0              700.00         37.00
 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 =  1.00
   Point      X-Water      Y-Water
    No.         (ft)         (ft)
     1          0.00       225.00
     2        146.00       238.00
     3        200.00       266.00
     4        500.00       286.00
 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.
 The Active And Passive Portions Of The Sliding Surfaces
 Are Generated According To The Rankine Theory.
 1000 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         110.00      236.30     130.00      237.50        0.20
  2         295.00      250.20     295.00      250.20        0.20
 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 =  1000
       Number of Trial Surfaces With Valid FS = 1000
       Statistical Data On All Valid FS Values:
          FS Max =   1.243   FS Min =   1.201   FS Ave =   1.223
          Standard Deviation =    0.011   Coefficient of Variation =    0.89 %
       Failure Surface Specified By 10 Coordinate Points
         Point      X-Surf      Y-Surf
          No.         (ft)        (ft)
           1        124.401     240.000
           2        129.652     237.382
           3        295.000     250.279
           4        301.693     263.703
           5        303.109     266.542
           6        309.918     279.907
           7        314.529     288.956
           8        321.222     302.380
           9        322.461     304.865
          10        324.848     309.000
              Factor of Safety
             ***    1.201   ***
            Individual data on the    26  slices
                      Water  Water     Tie     Tie     Earthquake
```

FIGURE A1-82

Slice No.	Width (ft)	Weight (lbs)	Force Top (lbs)	Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Force Hor (lbs)	Force Ver (lbs)	Surcharge Load (lbs)
1	5.3	824.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.3	108.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	0.0	5.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	1.2	768.8	0.0	0.0	0.	0.	0.0	0.0	0.0
5	12.8	7699.8	0.0	0.0	0.	0.	0.0	0.0	0.0
6	0.0	7.8	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.5	3904.0	0.0	0.0	0.	0.	0.0	0.0	0.0
8	10.5	16163.5	0.0	1517.6	0.	0.	0.0	0.0	0.0
9	0.0	30.3	0.0	4.7	0.	0.	0.0	0.0	0.0
10	39.5	120670.6	0.0	32954.2	0.	0.	0.0	0.0	0.0
11	2.5	10816.1	0.0	3533.2	0.	0.	0.0	0.0	0.0
12	2.5	11187.4	0.0	3617.2	0.	0.	0.0	0.0	0.0
13	3.5	15229.7	0.0	5056.6	0.	0.	0.0	0.0	0.0
14	1.5	6671.7	0.0	2164.5	0.	0.	0.0	0.0	0.0
15	0.7	3193.0	0.0	967.3	0.	0.	0.0	0.0	0.0
16	26.8	149409.1	0.0	38431.6	0.	0.	0.0	0.0	0.0
17	20.0	138910.6	0.0	28316.8	0.	0.	0.0	0.0	0.0
18	40.0	293805.5	0.0	55782.5	0.	0.	0.0	0.0	0.0
19	6.7	42292.3	0.0	14569.3	0.	0.	0.0	0.0	0.0
20	1.4	7508.0	0.0	1525.2	0.	0.	0.0	0.0	0.0
21	3.3	15754.7	0.0	1453.2	0.	0.	0.0	0.0	0.0
22	3.5	13533.1	0.0	0.0	0.	0.	0.0	0.0	0.0
23	4.6	13592.8	0.0	0.0	0.	0.	0.0	0.0	0.0
24	6.7	10707.7	0.0	0.0	0.	0.	0.0	0.0	0.0
25	1.2	799.6	0.0	0.0	0.	0.	0.0	0.0	0.0
26	2.4	592.2	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.772	240.000
2	129.984	237.401
3	295.000	250.192
4	301.693	263.616
5	303.153	266.545
6	309.963	279.910
7	314.574	288.959
8	321.267	302.383
9	322.510	304.878
10	324.890	309.000

Factor of Safety

*** 1.201 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.559	240.000
2	129.730	237.422
3	295.000	250.270
4	301.693	263.694
5	303.113	266.542
6	309.923	279.908
7	314.533	288.956
8	321.226	302.380
9	322.466	304.866
10	324.852	309.000

Factor of Safety

*** 1.202 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.836	240.000
2	129.125	237.363
3	295.000	250.287
4	301.693	263.711
5	303.104	266.542

FIGURE A1-83

6	309.914	279.907
7	314.525	288.956
8	321.218	302.380
9	322.456	304.864
10	324.844	309.000

Factor of Safety
*** 1.203 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.383	240.000
2	129.594	237.402
3	295.000	250.235
4	301.693	263.659
5	303.131	266.544
6	309.941	279.909
7	314.551	288.958
8	321.244	302.382
9	322.486	304.871
10	324.869	309.000

Factor of Safety
*** 1.203 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.659	240.000
2	128.988	237.343
3	295.000	250.252
4	301.693	263.676
5	303.122	266.543
6	309.932	279.908
7	314.543	288.957
8	321.353	302.322
9	322.676	304.919
10	325.032	309.000

Factor of Safety
*** 1.203 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.207	240.000
2	129.457	237.382
3	295.000	250.200
4	301.693	263.624
5	303.149	266.545
6	309.959	279.910
7	314.570	288.959
8	321.263	302.383
9	322.506	304.876
10	324.886	309.000

Factor of Safety
*** 1.203 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.754	240.000
2	129.926	237.421
3	295.000	250.149
4	301.693	263.573
5	303.175	266.546
6	309.985	279.911
7	314.596	288.961
8	321.289	302.385
9	322.535	304.884
10	324.912	309.000

Factor of Safety
*** 1.203 ***

FIGURE A1-84

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.893	240.000
2	129.945	237.481
3	295.000	250.297
4	301.693	263.721
5	303.099	266.542
6	309.909	279.907
7	314.520	288.955
8	321.213	302.379
9	322.451	304.863
10	324.514	309.000

Factor of Safety

*** 1.203 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.717	240.000
2	129.808	237.462
3	295.000	250.262
4	301.693	263.686
5	303.117	266.543
6	309.927	279.908
7	314.538	288.957
8	321.231	302.381
9	322.471	304.868
10	324.857	309.000

Factor of Safety

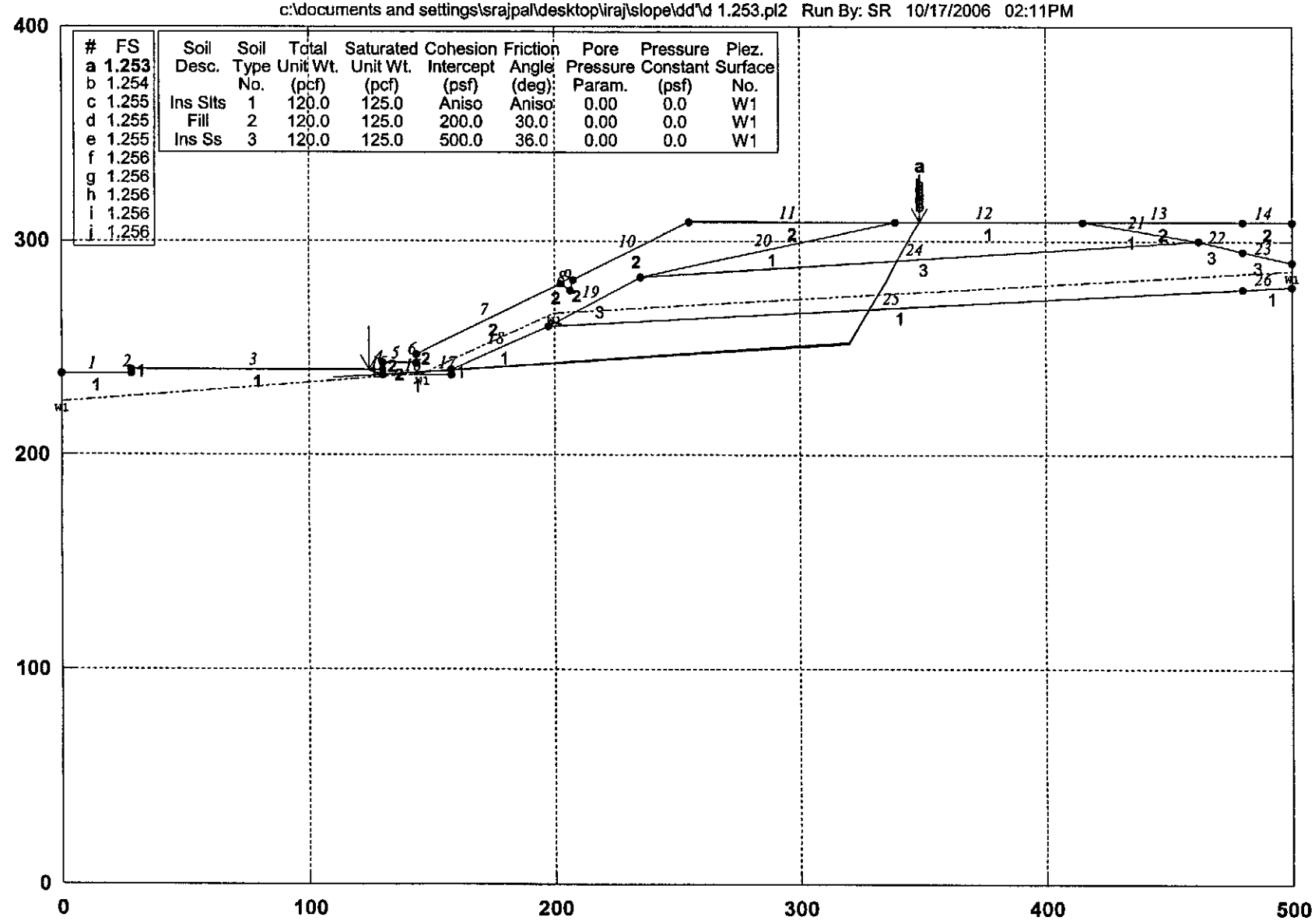
*** 1.204 ***

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

FIGURE A1-85

MV Landslide/ 011492-001 Sec D-D' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\dd'\d 1.253.pl2 Run By: SR 10/17/2006 02:11PM



#	FS
a	1.253
b	1.254
c	1.255
d	1.255
e	1.255
f	1.256
g	1.256
h	1.256
i	1.256
j	1.256

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Ins Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Ins Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1

GSTABL7 v.2 FSmin=1.253

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

FIGURE A1-86

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 02:11PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.253.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.253.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.253.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec D-D'
(Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	238.00	28.00	238.00	1
2	28.00	238.00	28.01	240.00	1
3	28.01	240.00	130.00	240.00	1
4	130.00	240.00	130.01	243.00	2
5	130.01	243.00	144.00	243.00	2
6	144.00	243.00	144.01	247.00	2
7	144.01	247.00	202.50	280.00	2
8	202.50	280.00	206.00	277.00	2
9	206.00	277.00	207.50	282.00	2
10	207.50	282.00	255.00	309.00	2
11	255.00	309.00	339.00	309.00	2
12	339.00	309.00	415.00	309.00	1
13	415.00	309.00	480.00	309.00	2
14	480.00	309.00	500.00	309.00	2
15	130.00	240.00	130.01	237.50	1
16	130.01	237.50	157.90	237.50	1
17	157.90	237.50	158.00	240.00	1
18	158.00	240.00	197.50	260.00	1
19	197.50	260.00	235.00	283.00	3
20	235.00	283.00	339.00	309.00	1
21	415.00	309.00	462.00	300.00	1
22	462.00	300.00	480.00	295.00	3
23	480.00	295.00	500.00	290.20	3
24	235.00	283.00	462.00	300.00	3
25	197.50	260.00	480.00	277.50	1
26	480.00	277.50	500.00	279.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

FIGURE A1-87

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	225.00
2	146.00	238.00
3	200.00	266.00
4	500.00	286.00

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.
The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.
1000 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	110.00	236.30	130.00	237.50	0.20
2	320.00	252.15	320.00	252.15	0.20

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 = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 1.295 FS Min = 1.253 FS Ave = 1.276
Standard Deviation = 0.011 Coefficient of Variation = 0.83 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.401	240.000
2	129.652	237.382
3	320.000	252.229
4	326.693	265.653
5	327.902	268.078
6	334.712	281.443
7	339.492	290.825
8	346.302	304.191
9	348.753	309.000

Factor of Safety
*** 1.253 ***
Individual data on the 26 slices

	Water Force	Water Force	Tie Force	Tie Force	Earthquake Force	Surcharge

FIGURE A1-88

Slice No.	Width (ft)	Weight (lbs)	Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	Load (lbs)
1	5.3	824.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.3	108.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	0.0	5.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	1.2	768.8	0.0	0.0	0.	0.	0.0	0.0	0.0
5	12.8	7699.8	0.0	0.0	0.	0.	0.0	0.0	0.0
6	0.0	7.8	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.5	3904.0	0.0	0.0	0.	0.	0.0	0.0	0.0
8	10.5	16163.5	0.0	1517.6	0.	0.	0.0	0.0	0.0
9	0.0	30.3	0.0	4.7	0.	0.	0.0	0.0	0.0
10	39.5	120670.6	0.0	32954.2	0.	0.	0.0	0.0	0.0
11	2.5	10816.1	0.0	3533.2	0.	0.	0.0	0.0	0.0
12	2.5	11187.4	0.0	3617.2	0.	0.	0.0	0.0	0.0
13	3.5	15229.7	0.0	5056.6	0.	0.	0.0	0.0	0.0
14	1.5	6671.7	0.0	2164.5	0.	0.	0.0	0.0	0.0
15	0.7	3193.0	0.0	967.3	0.	0.	0.0	0.0	0.0
16	26.8	149409.1	0.0	38431.5	0.	0.	0.0	0.0	0.0
17	20.0	138910.5	0.0	28316.8	0.	0.	0.0	0.0	0.0
18	65.0	469782.7	0.0	90070.2	0.	0.	0.0	0.0	0.0
19	6.7	40716.6	0.0	14304.1	0.	0.	0.0	0.0	0.0
20	1.2	6159.5	0.0	1288.6	0.	0.	0.0	0.0	0.0
21	3.4	15395.4	0.0	1507.4	0.	0.	0.0	0.0	0.0
22	3.4	12639.3	0.0	0.0	0.	0.	0.0	0.0	0.0
23	4.3	12014.7	0.0	0.0	0.	0.	0.0	0.0	0.0
24	0.5	1102.5	0.0	0.0	0.	0.	0.0	0.0	0.0
25	6.8	9391.1	0.0	0.0	0.	0.	0.0	0.0	0.0
26	2.5	707.2	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	124.772	240.000
2	129.984	237.401
3	320.000	252.142
4	326.693	265.566
5	327.947	268.081
6	334.756	281.446
7	339.537	290.829
8	346.230	304.253
9	348.597	309.000

Factor of Safety

*** 1.254 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.559	240.000
2	129.730	237.422
3	320.000	252.220
4	326.693	265.644
5	327.906	268.078
6	334.716	281.443
7	339.497	290.826
8	346.190	304.250
9	348.558	309.000

Factor of Safety

*** 1.255 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.836	240.000
2	129.125	237.363
3	320.000	252.237
4	326.693	265.661
5	327.898	268.078
6	334.708	281.443
7	339.488	290.825
8	346.181	304.249

FIGURE A1-89

9	348.550	309.000

Factor of Safety
*** 1.255 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.383	240.000
2	129.594	237.402
3	320.000	252.185
4	326.693	265.609
5	327.924	268.079
6	334.734	281.445
7	339.515	290.827
8	346.208	304.251
9	348.576	309.000

Factor of Safety
*** 1.255 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.659	240.000
2	128.988	237.343
3	320.000	252.202
4	326.693	265.626
5	327.916	268.079
6	334.726	281.444
7	339.506	290.826
8	346.199	304.250
9	348.567	309.000

Factor of Safety
*** 1.256 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.207	240.000
2	129.457	237.382
3	320.000	252.150
4	326.693	265.574
5	327.942	268.081
6	334.752	281.446
7	339.533	290.828
8	346.226	304.252
9	348.593	309.000

Factor of Safety
*** 1.256 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.893	240.000
2	129.945	237.481
3	320.000	252.247
4	326.693	265.671
5	327.893	268.077
6	334.703	281.443
7	339.483	290.825
8	346.176	304.249
9	348.545	309.000

Factor of Safety
*** 1.256 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.754	240.000
2	129.926	237.421
3	320.000	252.099
4	326.693	265.523
5	327.969	268.082

FIGURE A1-90

6	334.779	281.447
7	339.560	290.830
8	346.253	304.254
9	348.619	309.000

Factor of Safety

*** 1.256 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.030	240.000
2	129.320	237.363
3	320.000	252.115
4	326.693	265.539
5	327.960	268.082
6	334.770	281.447
7	339.551	290.830
8	346.244	304.254
9	348.611	309.000

Factor of Safety

*** 1.256 ***

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

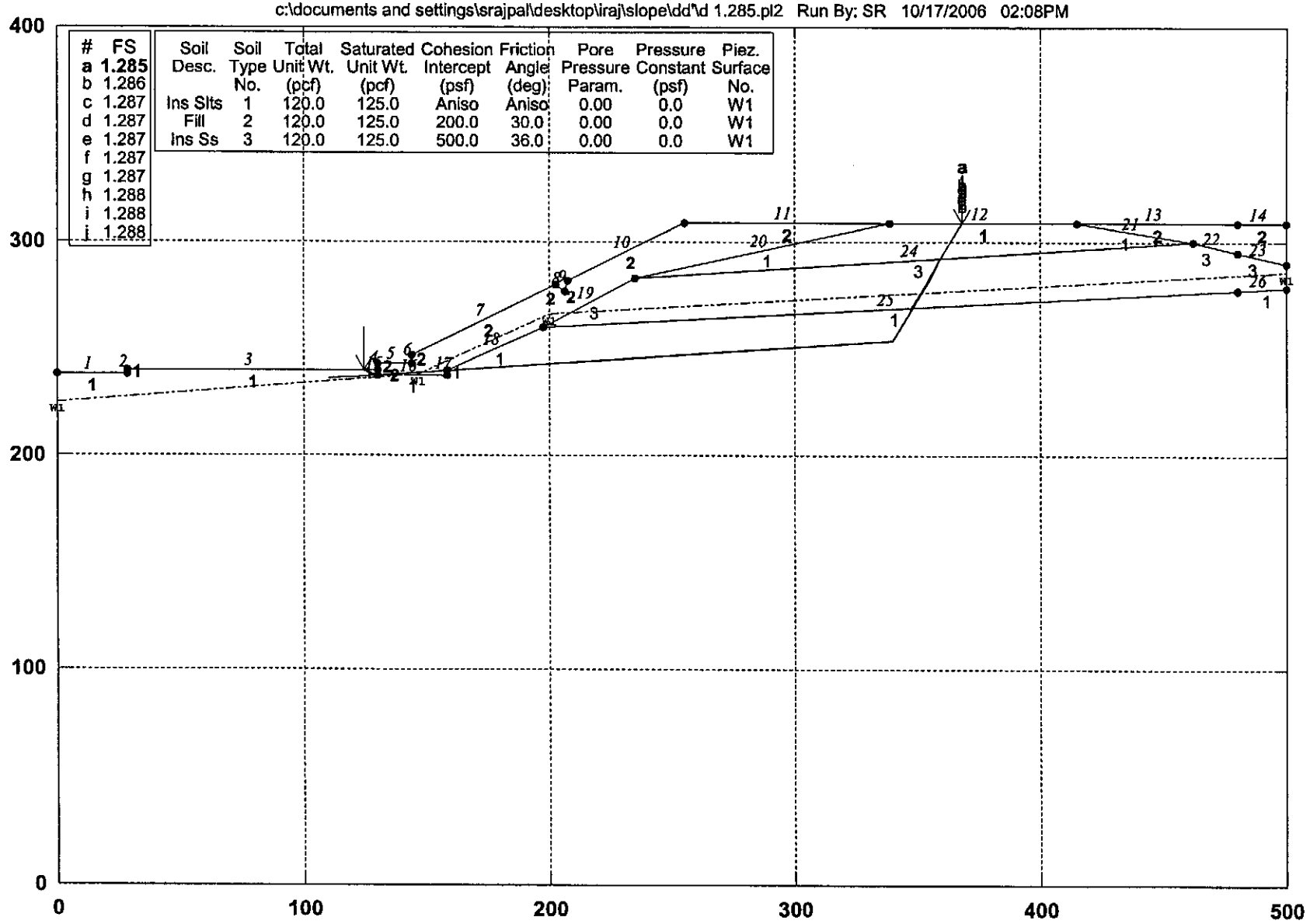
FIGURE A1-91

MV Landslide/ 011492-001 Sec D-D' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\dd'\d 1.285.pl2 Run By: SR 10/17/2006 02:08PM

#	FS
a	1.285
b	1.286
c	1.287
d	1.287
e	1.287
f	1.287
g	1.287
h	1.288
i	1.288
j	1.288

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Ins Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Ins Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.285

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

FIGURE A1-92

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(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: 10/17/2006
Time of Run: 02:08PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.285.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.285.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.285.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec D-D'
(Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	238.00	28.00	238.00	1
2	28.00	238.00	28.01	240.00	1
3	28.01	240.00	130.00	240.00	1
4	130.00	240.00	130.01	243.00	2
5	130.01	243.00	144.00	243.00	2
6	144.00	243.00	144.01	247.00	2
7	144.01	247.00	202.50	280.00	2
8	202.50	280.00	206.00	277.00	2
9	206.00	277.00	207.50	282.00	2
10	207.50	282.00	255.00	309.00	2
11	255.00	309.00	339.00	309.00	2
12	339.00	309.00	415.00	309.00	1
13	415.00	309.00	480.00	309.00	2
14	480.00	309.00	500.00	309.00	2
15	130.00	240.00	130.01	237.50	1
16	130.01	237.50	157.90	237.50	1
17	157.90	237.50	158.00	240.00	1
18	158.00	240.00	197.50	260.00	1
19	197.50	260.00	235.00	283.00	3
20	235.00	283.00	339.00	309.00	1
21	415.00	309.00	462.00	300.00	1
22	462.00	300.00	480.00	295.00	3
23	480.00	295.00	500.00	290.20	3
24	235.00	283.00	462.00	300.00	3
25	197.50	260.00	480.00	277.50	1
26	480.00	277.50	500.00	279.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

FIGURE A1-93

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	225.00
2	146.00	238.00
3	200.00	266.00
4	500.00	286.00

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.
The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.
1000 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	110.00	236.30	130.00	237.50	0.20
2	340.00	253.55	340.00	253.55	0.20

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 = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 1.326 FS Min = 1.285 FS Ave = 1.307
Standard Deviation = 0.010 Coefficient of Variation = 0.77 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.401	240.000
2	129.652	237.382
3	340.000	253.629
4	346.693	267.053
5	347.819	269.312
6	354.629	282.677
7	359.546	292.327
8	366.239	305.751
9	367.859	309.000

Factor of Safety
*** 1.285 ***
Individual data on the 26 slices

	Water Force	Water Force	Tie Force	Tie Force	Earthquake Force	Surcharge

FIGURE A1-94

Slice No.	Width (ft)	Weight (lbs)	Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	Load (lbs)
1	5.3	824.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.3	108.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	0.0	5.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	1.2	778.7	0.0	0.0	0.	0.	0.0	0.0	0.0
5	12.8	7699.2	0.0	0.0	0.	0.	0.0	0.0	0.0
6	0.0	7.8	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.5	3871.5	0.0	0.0	0.	0.	0.0	0.0	0.0
8	10.5	16222.5	0.0	1528.8	0.	0.	0.0	0.0	0.0
9	0.0	32.0	0.0	5.0	0.	0.	0.0	0.0	0.0
10	39.5	120851.2	0.0	33042.7	0.	0.	0.0	0.0	0.0
11	2.5	10832.5	0.0	3541.2	0.	0.	0.0	0.0	0.0
12	2.5	11204.4	0.0	3625.5	0.	0.	0.0	0.0	0.0
13	3.5	15254.6	0.0	5068.7	0.	0.	0.0	0.0	0.0
14	1.5	6682.7	0.0	2169.8	0.	0.	0.0	0.0	0.0
15	0.7	3198.0	0.0	969.8	0.	0.	0.0	0.0	0.0
16	26.8	149643.6	0.0	38546.7	0.	0.	0.0	0.0	0.0
17	20.0	139129.8	0.0	28424.9	0.	0.	0.0	0.0	0.0
18	84.0	600925.9	0.0	*******	0.	0.	0.0	0.0	0.0
19	1.0	6757.7	0.0	1358.7	0.	0.	0.0	0.0	0.0
20	6.7	39590.0	0.0	14241.7	0.	0.	0.0	0.0	0.0
21	1.1	5559.5	0.0	1202.5	0.	0.	0.0	0.0	0.0
22	3.5	15089.6	0.0	1551.7	0.	0.	0.0	0.0	0.0
23	3.4	11938.5	0.0	0.0	0.	0.	0.0	0.0	0.0
24	4.9	12684.9	0.0	0.0	0.	0.	0.0	0.0	0.0
25	6.7	8000.0	0.0	0.0	0.	0.	0.0	0.0	0.0
26	1.6	315.7	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	124.772	240.000
2	129.984	237.401
3	340.000	253.542
4	346.693	266.966
5	347.864	269.315
6	354.674	282.680
7	359.591	292.331
8	366.284	305.755
9	367.902	309.000

Factor of Safety

*** 1.286 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.559	240.000
2	129.730	237.422
3	340.000	253.620
4	346.693	267.044
5	347.824	269.312
6	354.633	282.677
7	359.551	292.328
8	366.244	305.752
9	367.863	309.000

Factor of Safety

*** 1.287 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.836	240.000
2	129.125	237.363
3	340.000	253.637
4	346.693	267.061
5	347.815	269.312
6	354.625	282.677
7	359.542	292.327
8	366.235	305.751

FIGURE A1-95

9	367.855	309.000

Factor of Safety
*** 1.287 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.383	240.000
2	129.594	237.402
3	340.000	253.585
4	346.693	267.009
5	347.842	269.313
6	354.651	282.678
7	359.569	292.329
8	366.262	305.753
9	367.881	309.000

Factor of Safety
*** 1.287 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.659	240.000
2	128.988	237.343
3	340.000	253.602
4	346.693	267.026
5	347.833	269.313
6	354.643	282.678
7	359.560	292.328
8	366.253	305.752
9	367.872	309.000

Factor of Safety
*** 1.287 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.207	240.000
2	129.457	237.382
3	340.000	253.550
4	346.693	266.974
5	347.860	269.314
6	354.669	282.679
7	359.587	292.330
8	366.280	305.754
9	367.898	309.000

Factor of Safety
*** 1.287 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.893	240.000
2	129.945	237.481
3	340.000	253.647
4	346.693	267.071
5	347.810	269.311
6	354.620	282.676
7	359.537	292.327
8	366.230	305.751
9	367.850	309.000

Factor of Safety
*** 1.288 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.754	240.000
2	129.926	237.421
3	340.000	253.499
4	346.693	266.923
5	347.886	269.316

FIGURE A1-96

6	354.696	282.681
7	359.613	292.332
8	366.306	305.756
9	367.924	309.000

Factor of Safety

*** 1.288 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.030	240.000
2	129.320	237.363
3	340.000	253.515
4	346.693	266.939
5	347.878	269.315
6	354.687	282.681
7	359.605	292.332
8	366.298	305.756
9	367.915	309.000

Factor of Safety

*** 1.288 ***

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

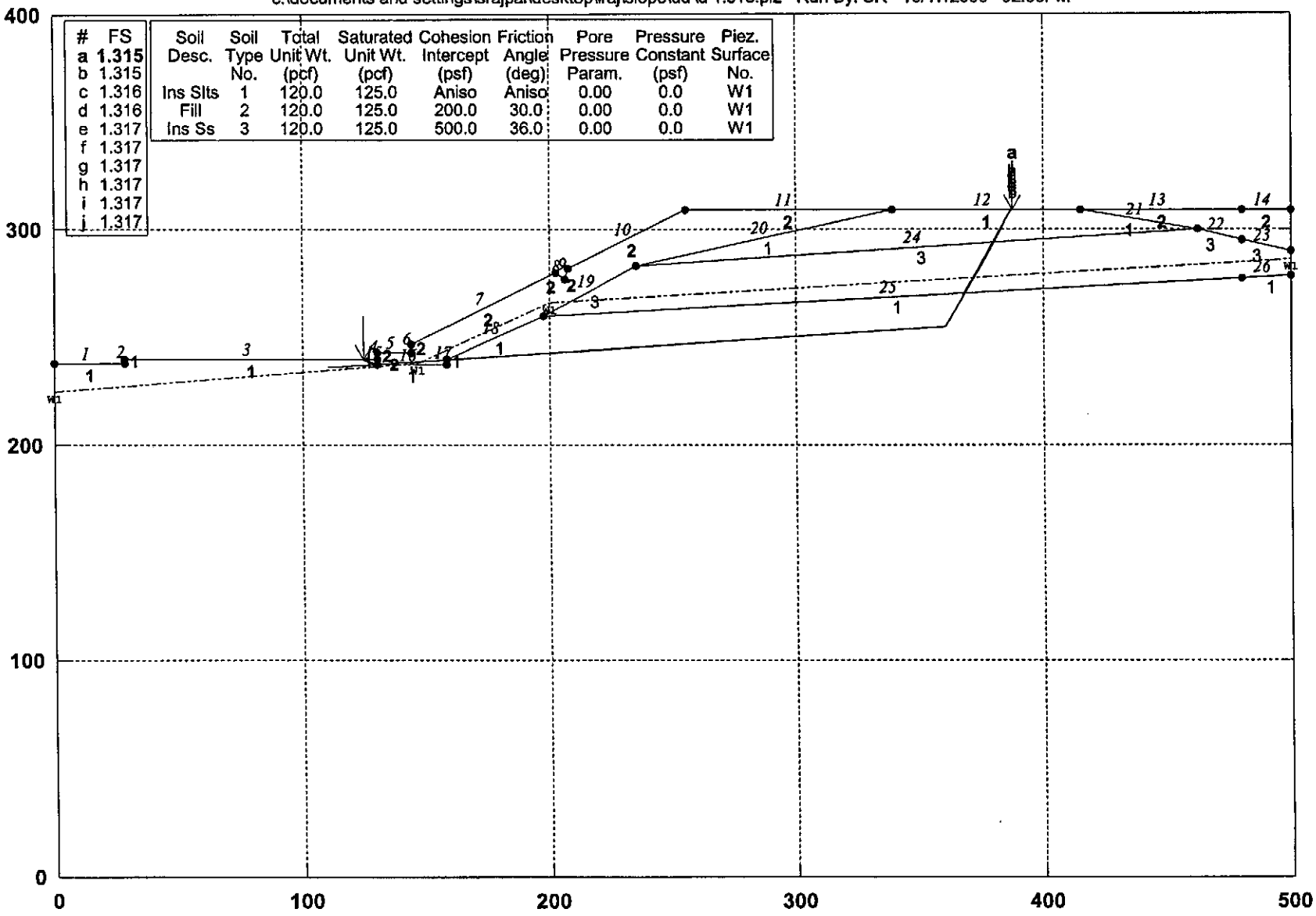
FIGURE A1-97

MV Landslide/ 011492-001 Sec D-D' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\dd"\d 1.315.pl2 Run By: SR 10/17/2006 02:06PM

#	FS
a	1.315
b	1.315
c	1.316
d	1.316
e	1.317
f	1.317
g	1.317
h	1.317
i	1.317
j	1.317

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Ins Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Ins Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.315

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

FIGURE A1-98

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 02:06PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.315.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.315.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.315.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec D-D'
(Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	238.00	28.00	238.00	1
2	28.00	238.00	28.01	240.00	1
3	28.01	240.00	130.00	240.00	1
4	130.00	240.00	130.01	243.00	2
5	130.01	243.00	144.00	243.00	2
6	144.00	243.00	144.01	247.00	2
7	144.01	247.00	202.50	280.00	2
8	202.50	280.00	206.00	277.00	2
9	206.00	277.00	207.50	282.00	2
10	207.50	282.00	255.00	309.00	2
11	255.00	309.00	339.00	309.00	2
12	339.00	309.00	415.00	309.00	1
13	415.00	309.00	480.00	309.00	2
14	480.00	309.00	500.00	309.00	2
15	130.00	240.00	130.01	237.50	1
16	130.01	237.50	157.90	237.50	1
17	157.90	237.50	158.00	240.00	1
18	158.00	240.00	197.50	260.00	1
19	197.50	260.00	235.00	283.00	3
20	235.00	283.00	339.00	309.00	1
21	415.00	309.00	462.00	300.00	1
22	462.00	300.00	480.00	295.00	3
23	480.00	295.00	500.00	290.20	3
24	235.00	283.00	462.00	300.00	3
25	197.50	260.00	480.00	277.50	1
26	480.00	277.50	500.00	279.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

FIGURE A1-99

```
ANISOTROPIC STRENGTH PARAMETERS
     1 soil type(s)
 Soil Type  1 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion      Friction
   Range       Direction Limit    Intercept       Angle
    No.            (deg)            (psf)         (deg)
     1              2.0             700.00         37.00
     2              7.0               0.00          8.00
     3             90.0             700.00         37.00
 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 =  1.00
   Point      X-Water     Y-Water
    No.         (ft)        (ft)
     1          0.00      225.00
     2        146.00      238.00
     3        200.00      266.00
     4        500.00      286.00
 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.
 The Active And Passive Portions Of The Sliding Surfaces
 Are Generated According To The Rankine Theory.
 1000 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        110.00      236.30      130.00      237.50       0.20
  2        360.00      254.80      360.00      254.80       0.20
 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 =  1000
       Number of Trial Surfaces With Valid FS = 1000
       Statistical Data On All Valid FS Values:
          FS Max =   1.354   FS Min =   1.315   FS Ave =   1.336
          Standard Deviation =    0.010   Coefficient of Variation =    0.73 %
       Failure Surface Specified By  9 Coordinate Points
         Point      X-Surf      Y-Surf
          No.         (ft)        (ft)
           1        124.401     240.000
           2        129.652     237.382
           3        360.000     254.879
           4        366.693     268.303
           5        367.814     270.550
           6        374.623     283.915
           7        379.678     293.835
           8        386.370     307.259
           9        387.239     309.000
             Factor of Safety
            ***    1.315   ***
            Individual data on the    26  slices
                      Water  Water     Tie     Tie     Earthquake
                      Force  Force    Force   Force       Force   Surcharge
```

FIGURE A1-100

Slice No.	Width (ft)	Weight (lbs)	Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	Load (lbs)
1	5.3	824.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.3	108.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	0.0	5.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	1.2	795.9	0.0	0.0	0.	0.	0.0	0.0	0.0
5	12.8	7697.8	0.0	0.0	0.	0.	0.0	0.0	0.0
6	0.0	7.8	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.4	3817.0	0.0	0.0	0.	0.	0.0	0.0	0.0
8	10.6	16321.7	0.0	1547.7	0.	0.	0.0	0.0	0.0
9	0.0	34.8	0.0	5.5	0.	0.	0.0	0.0	0.0
10	39.5	121155.1	0.0	33191.6	0.	0.	0.0	0.0	0.0
11	2.5	10860.1	0.0	3554.7	0.	0.	0.0	0.0	0.0
12	2.5	11233.1	0.0	3639.5	0.	0.	0.0	0.0	0.0
13	3.5	15296.3	0.0	5089.1	0.	0.	0.0	0.0	0.0
14	1.5	6701.2	0.0	2178.9	0.	0.	0.0	0.0	0.0
15	0.7	3206.4	0.0	973.9	0.	0.	0.0	0.0	0.0
16	26.8	150038.1	0.0	38740.4	0.	0.	0.0	0.0	0.0
17	20.0	139498.8	0.0	28606.9	0.	0.	0.0	0.0	0.0
18	84.0	603174.4	0.0	*******	0.	0.	0.0	0.0	0.0
19	21.0	140693.0	0.0	28761.2	0.	0.	0.0	0.0	0.0
20	6.7	38588.8	0.0	14319.7	0.	0.	0.0	0.0	0.0
21	1.1	5364.5	0.0	1210.3	0.	0.	0.0	0.0	0.0
22	3.5	14767.1	0.0	1596.8	0.	0.	0.0	0.0	0.0
23	3.3	11250.5	0.0	0.0	0.	0.	0.0	0.0	0.0
24	5.1	12205.7	0.0	0.0	0.	0.	0.0	0.0	0.0
25	6.7	6789.2	0.0	0.0	0.	0.	0.0	0.0	0.0
26	0.9	90.7	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	124.772	240.000
2	129.984	237.401
3	360.000	254.792
4	366.693	268.216
5	367.858	270.553
6	374.668	283.918
7	379.722	293.838
8	386.415	307.262
9	387.282	309.000

Factor of Safety

*** 1.315 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.836	240.000
2	129.125	237.363
3	360.000	254.887
4	366.693	268.311
5	367.809	270.550
6	374.619	283.915
7	379.673	293.835
8	386.366	307.259
9	387.235	309.000

Factor of Safety

*** 1.316 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.559	240.000
2	129.730	237.422
3	360.000	254.870
4	366.693	268.294
5	367.818	270.551
6	374.628	283.916
7	379.682	293.835
8	386.375	307.259

FIGURE A1-101

9	387.243	309.000

Factor of Safety
*** 1.316 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.659	240.000
2	128.988	237.343
3	360.000	254.852
4	366.693	268.276
5	367.827	270.551
6	374.637	283.916
7	379.691	293.836
8	386.384	307.260
9	387.252	309.000

Factor of Safety
*** 1.317 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.383	240.000
2	129.594	237.402
3	360.000	254.835
4	366.693	268.259
5	367.836	270.552
6	374.646	283.917
7	379.700	293.837
8	386.393	307.261
9	387.260	309.000

Factor of Safety
*** 1.317 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.207	240.000
2	129.457	237.382
3	360.000	254.800
4	366.693	268.224
5	367.854	270.553
6	374.664	283.918
7	379.718	293.838
8	386.411	307.262
9	387.278	309.000

Factor of Safety
*** 1.317 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.893	240.000
2	129.945	237.481
3	360.000	254.897
4	366.693	268.321
5	367.804	270.550
6	374.614	283.915
7	379.668	293.834
8	386.361	307.258
9	387.230	309.000

Factor of Safety
*** 1.317 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.030	240.000
2	129.320	237.363
3	360.000	254.765
4	366.693	268.189
5	367.872	270.554

FIGURE A1-102

6	374.682	283.919
7	379.736	293.839
8	386.429	307.263
9	387.295	309.000

Factor of Safety
*** 1.317 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.754	240.000
2	129.926	237.421
3	360.000	254.749
4	366.693	268.173
5	367.880	270.555
6	374.690	283.920
7	379.745	293.840
8	386.438	307.264
9	387.303	309.000

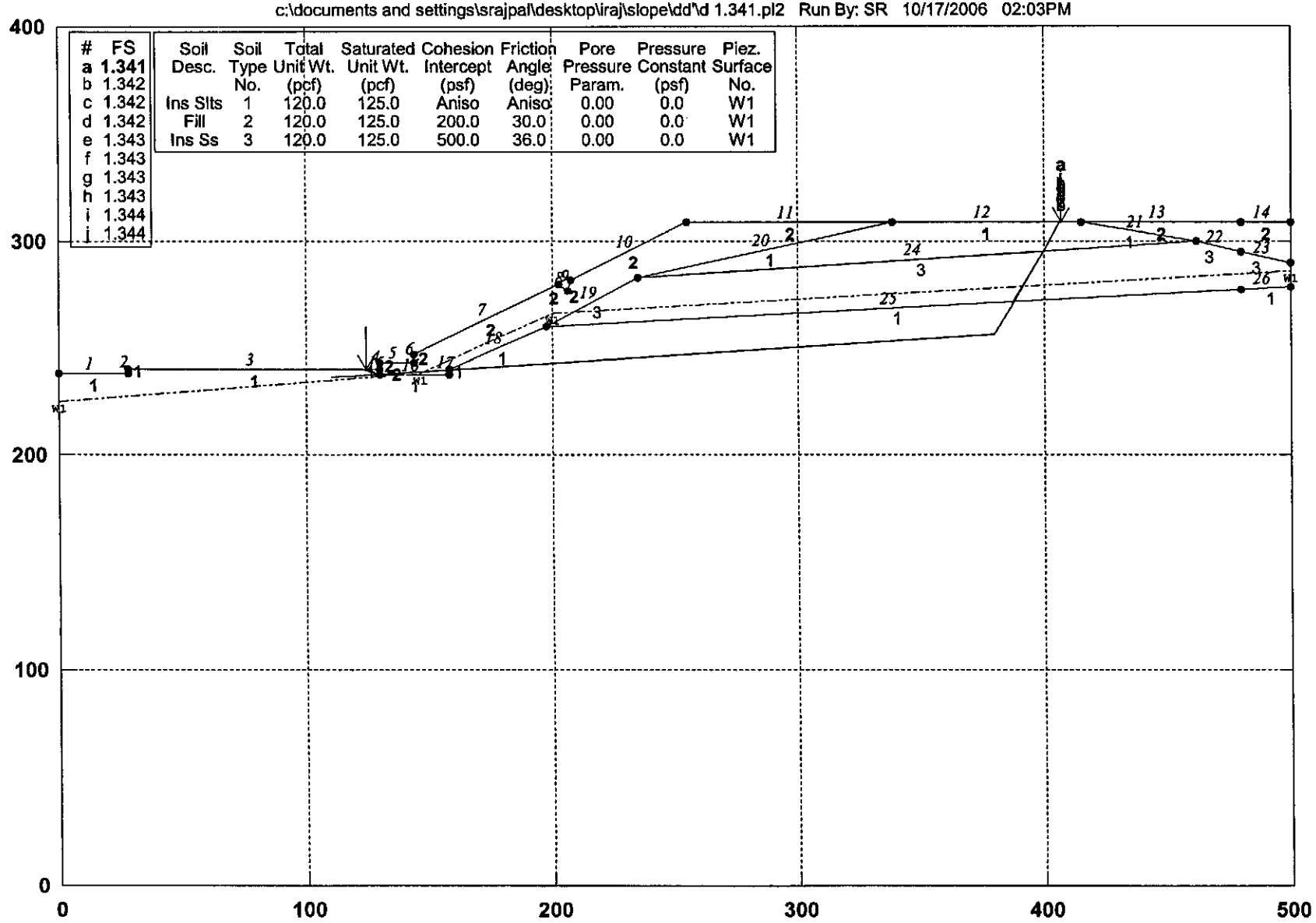
Factor of Safety
*** 1.317 ***

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

FIGURE A1-103

MV Landslide/ 011492-001 Sec D-D' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\dd'\d 1.341.pl2 Run By: SR 10/17/2006 02:03PM



#	FS
a	1.341
b	1.342
c	1.342
d	1.342
e	1.343
f	1.343
g	1.343
h	1.343
i	1.344
j	1.344

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Ins Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Ins Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1

GSTABL7 v.2 FSmin=1.341

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

FIGURE A1-104

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(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: 10/17/2006
Time of Run: 02:03PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.341.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.341.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.341.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec D-D'
(Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	238.00	28.00	238.00	1
2	28.00	238.00	28.01	240.00	1
3	28.01	240.00	130.00	240.00	1
4	130.00	240.00	130.01	243.00	2
5	130.01	243.00	144.00	243.00	2
6	144.00	243.00	144.01	247.00	2
7	144.01	247.00	202.50	280.00	2
8	202.50	280.00	206.00	277.00	2
9	206.00	277.00	207.50	282.00	2
10	207.50	282.00	255.00	309.00	2
11	255.00	309.00	339.00	309.00	2
12	339.00	309.00	415.00	309.00	1
13	415.00	309.00	480.00	309.00	2
14	480.00	309.00	500.00	309.00	2
15	130.00	240.00	130.01	237.50	1
16	130.01	237.50	157.90	237.50	1
17	157.90	237.50	158.00	240.00	1
18	158.00	240.00	197.50	260.00	1
19	197.50	260.00	235.00	283.00	3
20	235.00	283.00	339.00	309.00	1
21	415.00	309.00	462.00	300.00	1
22	462.00	300.00	480.00	295.00	3
23	480.00	295.00	500.00	290.20	3
24	235.00	283.00	462.00	300.00	3
25	197.50	260.00	480.00	277.50	1
26	480.00	277.50	500.00	279.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

FIGURE A1-105

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	225.00
2	146.00	238.00
3	200.00	266.00
4	500.00	286.00

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.
The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.
1000 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	110.00	236.30	130.00	237.50	0.20
2	380.00	256.10	380.00	256.10	0.20

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 = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 1.380 FS Min = 1.341 FS Ave = 1.362
Standard Deviation = 0.009 Coefficient of Variation = 0.70 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.401	240.000
2	129.652	237.382
3	380.000	256.179
4	386.693	269.603
5	387.782	271.787
6	394.592	285.152
7	399.783	295.341
8	406.476	308.765
9	406.593	309.000

Factor of Safety
*** 1.341 ***
Individual data on the 26 slices

	Water Force	Water Force	Tie Force	Tie Force	Earthquake Force	Surcharge

FIGURE A1-106

Slice No.	Width (ft)	Weight (lbs)	Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	Load (lbs)
1	5.3	824.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.3	108.8	0.0	0.0	0.	0.	0.0	0.0	0.0
3	0.0	5.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	1.2	807.9	0.0	0.0	0.	0.	0.0	0.0	0.0
5	12.8	7696.6	0.0	0.0	0.	0.	0.0	0.0	0.0
6	0.0	7.8	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.4	3779.9	0.0	0.0	0.	0.	0.0	0.0	0.0
8	10.6	16389.4	0.0	1560.7	0.	0.	0.0	0.0	0.0
9	0.0	36.7	0.0	5.8	0.	0.	0.0	0.0	0.0
10	39.5	121363.1	0.0	33293.5	0.	0.	0.0	0.0	0.0
11	2.5	10879.0	0.0	3564.0	0.	0.	0.0	0.0	0.0
12	2.5	11252.7	0.0	3649.0	0.	0.	0.0	0.0	0.0
13	3.5	15324.9	0.0	5103.1	0.	0.	0.0	0.0	0.0
14	1.5	6713.9	0.0	2185.1	0.	0.	0.0	0.0	0.0
15	0.7	3212.1	0.0	976.7	0.	0.	0.0	0.0	0.0
16	26.8	150308.0	0.0	38873.0	0.	0.	0.0	0.0	0.0
17	20.0	139751.3	0.0	28731.4	0.	0.	0.0	0.0	0.0
18	84.0	604712.8	0.0	*******	0.	0.	0.0	0.0	0.0
19	41.0	271961.5	0.0	56426.9	0.	0.	0.0	0.0	0.0
20	6.7	37545.8	0.0	14350.9	0.	0.	0.0	0.0	0.0
21	1.1	5048.7	0.0	1186.1	0.	0.	0.0	0.0	0.0
22	3.6	14429.8	0.0	1642.5	0.	0.	0.0	0.0	0.0
23	3.3	10578.6	0.0	0.0	0.	0.	0.0	0.0	0.0
24	5.2	11682.1	0.0	0.0	0.	0.	0.0	0.0	0.0
25	6.7	5579.8	0.0	0.0	0.	0.	0.0	0.0	0.0
26	0.1	1.7	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	124.772	240.000
2	129.984	237.401
3	380.000	256.092
4	386.693	269.516
5	387.827	271.790
6	394.636	285.155
7	399.828	295.344
8	406.521	308.768
9	406.637	309.000

Factor of Safety

*** 1.342 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.836	240.000
2	129.125	237.363
3	380.000	256.187
4	386.693	269.611
5	387.778	271.787
6	394.588	285.152
7	399.779	295.340
8	406.472	308.764
9	406.589	309.000

Factor of Safety

*** 1.342 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.559	240.000
2	129.730	237.422
3	380.000	256.170
4	386.693	269.594
5	387.787	271.788
6	394.596	285.153
7	399.787	295.341
8	406.480	308.765

FIGURE A1-107

9	406.598	309.000

Factor of Safety
*** 1.342 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.659	240.000
2	128.988	237.343
3	380.000	256.152
4	386.693	269.576
5	387.796	271.788
6	394.606	285.153
7	399.797	295.342
8	406.490	308.766
9	406.607	309.000

Factor of Safety
*** 1.343 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.383	240.000
2	129.594	237.402
3	380.000	256.135
4	386.693	269.559
5	387.805	271.789
6	394.614	285.154
7	399.806	295.342
8	406.499	308.766
9	406.615	309.000

Factor of Safety
*** 1.343 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.207	240.000
2	129.457	237.382
3	380.000	256.100
4	386.693	269.524
5	387.823	271.790
6	394.632	285.155
7	399.824	295.344
8	406.517	308.768
9	406.633	309.000

Factor of Safety
*** 1.343 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.893	240.000
2	129.945	237.481
3	380.000	256.197
4	386.693	269.621
5	387.773	271.787
6	394.583	285.152
7	399.774	295.340
8	406.467	308.764
9	406.585	309.000

Factor of Safety
*** 1.343 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.030	240.000
2	129.320	237.363
3	380.000	256.065
4	386.693	269.489
5	387.840	271.791

FIGURE A1-108

6	394.650	285.156
7	399.842	295.345
8	406.535	308.769
9	406.650	309.000

Factor of Safety
*** 1.344 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.270	240.000
2	128.597	237.344
3	380.000	256.195
4	386.693	269.619
5	387.774	271.787
6	394.584	285.152
7	399.775	295.340
8	406.468	308.764
9	406.585	309.000

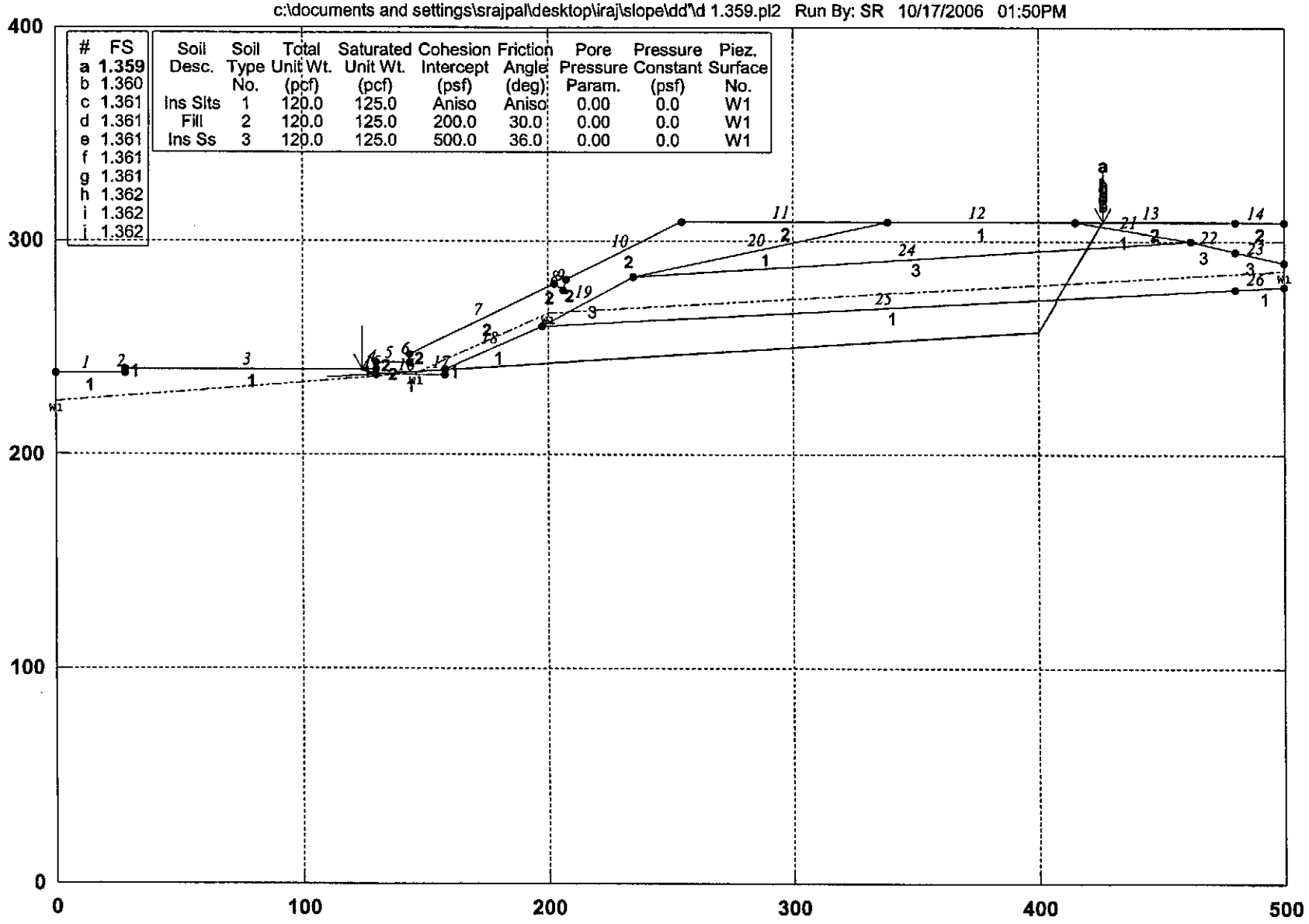
Factor of Safety
*** 1.344 ***

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

FIGURE A1-109

MV Landslide/ 011492-001 Sec D-D' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\dd'\d 1.359.pl2 Run By: SR 10/17/2006 01:50PM



#	FS
a	1.359
b	1.360
c	1.361
d	1.361
e	1.361
f	1.361
g	1.361
h	1.362
i	1.362
j	1.362

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Ins Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Ins Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1

GSTABL7 v.2 FSmin=1.359

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

FIGURE A1-110

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 01:50PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.359.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.359.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.359.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec D-D'
(Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	238.00	28.00	238.00	1
2	28.00	238.00	28.01	240.00	1
3	28.01	240.00	130.00	240.00	1
4	130.00	240.00	130.01	243.00	2
5	130.01	243.00	144.00	243.00	2
6	144.00	243.00	144.01	247.00	2
7	144.01	247.00	202.50	280.00	2
8	202.50	280.00	206.00	277.00	2
9	206.00	277.00	207.50	282.00	2
10	207.50	282.00	255.00	309.00	2
11	255.00	309.00	339.00	309.00	2
12	339.00	309.00	415.00	309.00	1
13	415.00	309.00	480.00	309.00	2
14	480.00	309.00	500.00	309.00	2
15	130.00	240.00	130.01	237.50	1
16	130.01	237.50	157.90	237.50	1
17	157.90	237.50	158.00	240.00	1
18	158.00	240.00	197.50	260.00	1
19	197.50	260.00	235.00	283.00	3
20	235.00	283.00	339.00	309.00	1
21	415.00	309.00	462.00	300.00	1
22	462.00	300.00	480.00	295.00	3
23	480.00	295.00	500.00	290.20	3
24	235.00	283.00	462.00	300.00	3
25	197.50	260.00	480.00	277.50	1
26	480.00	277.50	500.00	279.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

FIGURE A1-111

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	225.00
2	146.00	238.00
3	200.00	266.00
4	500.00	286.00

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.
The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.
1000 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	110.00	236.30	130.00	237.50	0.20
2	400.00	257.40	400.00	257.40	0.20

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 = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 1.397 FS Min = 1.359 FS Ave = 1.379
Standard Deviation = 0.009 Coefficient of Variation = 0.67 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.401	240.000
2	129.652	237.382
3	400.000	257.479
4	406.693	270.903
5	407.751	273.024
6	414.561	286.389
7	419.889	296.846
8	424.994	307.086
9	426.099	309.000

Factor of Safety
*** 1.359 ***
Individual data on the 27 slices

	Water Force	Water Force	Tie Force	Tie Force	Earthquake Force	Surcharge

FIGURE A1-112

Slice No.	Width (ft)	Weight (lbs)	Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	Load (lbs)
1	5.3	824.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.3	108.8	0.0	0.0	0.	0.	0.0	0.0	0.0
3	0.0	5.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	1.2	818.5	0.0	0.0	0.	0.	0.0	0.0	0.0
5	12.8	7695.3	0.0	0.0	0.	0.	0.0	0.0	0.0
6	0.0	7.9	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.3	3748.3	0.0	0.0	0.	0.	0.0	0.0	0.0
8	10.6	16447.0	0.0	1571.8	0.	0.	0.0	0.0	0.0
9	0.0	38.4	0.0	6.1	0.	0.	0.0	0.0	0.0
10	39.5	121540.2	0.0	33380.3	0.	0.	0.0	0.0	0.0
11	2.5	10895.1	0.0	3571.8	0.	0.	0.0	0.0	0.0
12	2.5	11269.4	0.0	3657.2	0.	0.	0.0	0.0	0.0
13	3.5	15349.2	0.0	5115.0	0.	0.	0.0	0.0	0.0
14	1.5	6724.7	0.0	2190.4	0.	0.	0.0	0.0	0.0
15	0.7	3217.0	0.0	979.1	0.	0.	0.0	0.0	0.0
16	26.8	150538.0	0.0	38986.0	0.	0.	0.0	0.0	0.0
17	20.0	139966.4	0.0	28837.5	0.	0.	0.0	0.0	0.0
18	84.0	606023.5	0.0	*******	0.	0.	0.0	0.0	0.0
19	61.0	400468.1	0.0	84309.3	0.	0.	0.0	0.0	0.0
20	6.7	36502.9	0.0	14382.1	0.	0.	0.0	0.0	0.0
21	1.1	4742.5	0.0	1161.4	0.	0.	0.0	0.0	0.0
22	3.6	14077.2	0.0	1688.8	0.	0.	0.0	0.0	0.0
23	3.2	9922.0	0.0	0.0	0.	0.	0.0	0.0	0.0
24	0.4	1169.6	0.0	0.0	0.	0.	0.0	0.0	0.0
25	4.9	9943.7	0.0	0.0	0.	0.	0.0	0.0	0.0
26	5.1	4309.3	0.0	0.0	0.	0.	0.0	0.0	0.0
27	1.1	126.9	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	124.772	240.000
2	129.984	237.401
3	400.000	257.392
4	406.693	270.816
5	407.795	273.027
6	414.605	286.392
7	419.933	296.850
8	425.033	307.079
9	426.143	309.000

Factor of Safety
*** 1.360 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.559	240.000
2	129.730	237.422
3	400.000	257.470
4	406.693	270.894
5	407.755	273.025
6	414.565	286.390
7	419.893	296.847
8	424.998	307.086
9	426.103	309.000

Factor of Safety
*** 1.361 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.659	240.000
2	128.988	237.343
3	400.000	257.452
4	406.693	270.876
5	407.765	273.025
6	414.574	286.390
7	419.902	296.847

FIGURE A1-113

8	425.006	307.084
9	426.112	309.000

Factor of Safety
*** 1.361 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.383	240.000
2	129.594	237.402
3	400.000	257.435
4	406.693	270.859
5	407.773	273.026
6	414.583	286.391
7	419.911	296.848
8	425.014	307.082
9	426.121	309.000

Factor of Safety
*** 1.361 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.836	240.000
2	129.125	237.363
3	400.000	257.487
4	406.693	270.911
5	407.747	273.024
6	414.440	286.448
7	419.614	296.826
8	424.752	307.133
9	425.831	309.000

Factor of Safety
*** 1.361 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.207	240.000
2	129.457	237.382
3	400.000	257.400
4	406.693	270.824
5	407.791	273.027
6	414.601	286.392
7	419.929	296.849
8	425.030	307.079
9	426.139	309.000

Factor of Safety
*** 1.361 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.270	240.000
2	128.597	237.344
3	400.000	257.495
4	406.693	270.919
5	407.742	273.024
6	414.552	286.389
7	419.880	296.846
8	425.089	307.068
9	426.204	309.000

Factor of Safety
*** 1.362 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.893	240.000
2	129.945	237.481
3	400.000	257.497
4	406.693	270.921

FIGURE A1-114

5	407.742	273.024
6	414.551	286.389
7	419.879	296.846
8	424.986	307.088
9	426.090	309.000

Factor of Safety
*** 1.362 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.030	240.000
2	129.320	237.363
3	400.000	257.365
4	406.693	270.789
5	407.809	273.028
6	414.619	286.393
7	419.947	296.851
8	425.046	307.076
9	426.156	309.000

Factor of Safety
*** 1.362 ***

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

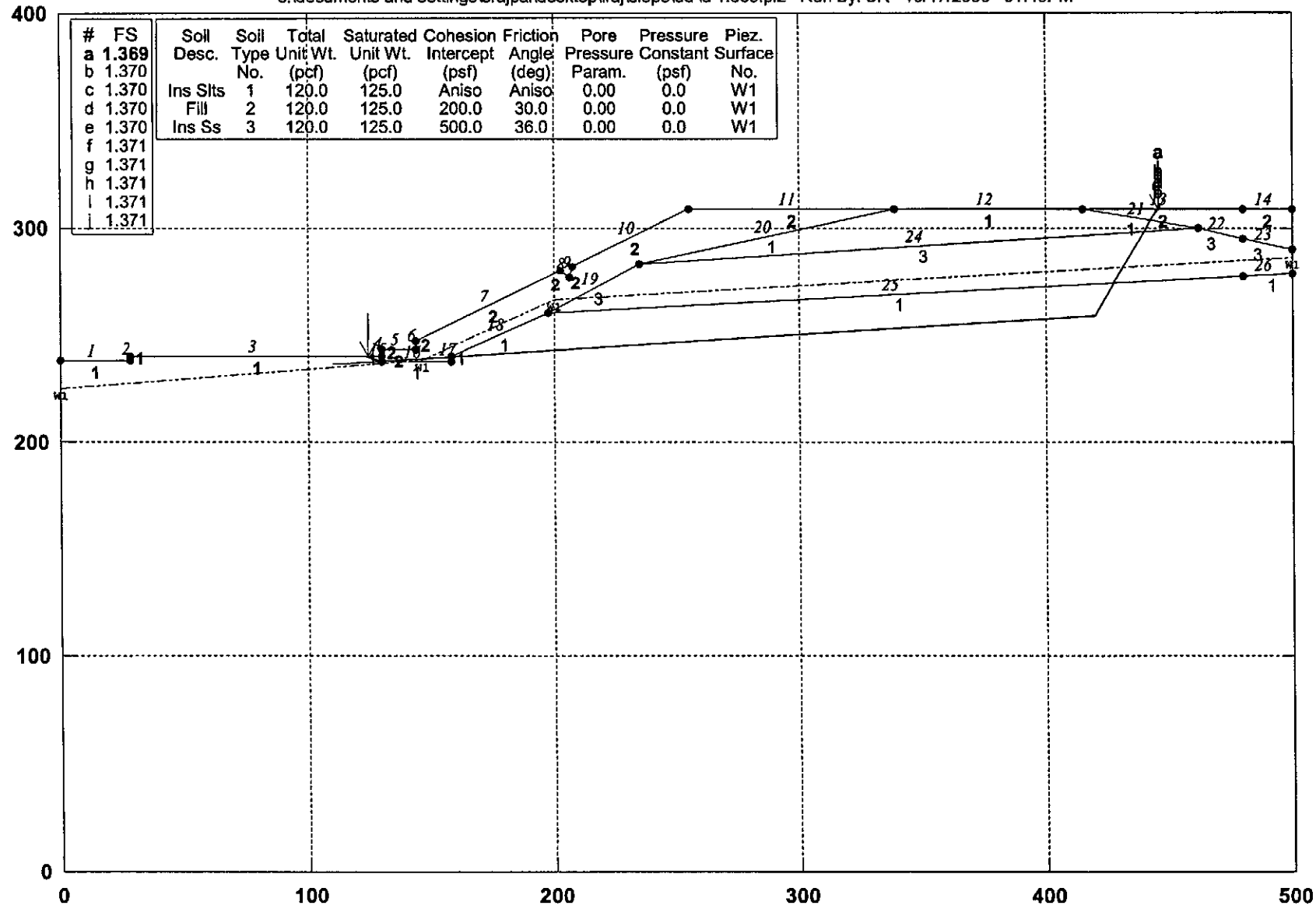
FIGURE A1-115

MV Landslide/ 011492-001 Sec D-D' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\dd'\d 1.369.pl2 Run By: SR 10/17/2006 01:43PM

#	FS
a	1.369
b	1.370
c	1.370
d	1.370
e	1.370
f	1.371
g	1.371
h	1.371
i	1.371
j	1.371

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Ins Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Ins Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.369

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

FIGURE A1-116

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 01:43PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.369.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.369.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.369.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec D-D'
(Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	238.00	28.00	238.00	1
2	28.00	238.00	28.01	240.00	1
3	28.01	240.00	130.00	240.00	1
4	130.00	240.00	130.01	243.00	2
5	130.01	243.00	144.00	243.00	2
6	144.00	243.00	144.01	247.00	2
7	144.01	247.00	202.50	280.00	2
8	202.50	280.00	206.00	277.00	2
9	206.00	277.00	207.50	282.00	2
10	207.50	282.00	255.00	309.00	2
11	255.00	309.00	339.00	309.00	2
12	339.00	309.00	415.00	309.00	1
13	415.00	309.00	480.00	309.00	2
14	480.00	309.00	500.00	309.00	2
15	130.00	240.00	130.01	237.50	1
16	130.01	237.50	157.90	237.50	1
17	157.90	237.50	158.00	240.00	1
18	158.00	240.00	197.50	260.00	1
19	197.50	260.00	235.00	283.00	3
20	235.00	283.00	339.00	309.00	1
21	415.00	309.00	462.00	300.00	1
22	462.00	300.00	480.00	295.00	3
23	480.00	295.00	500.00	290.20	3
24	235.00	283.00	462.00	300.00	3
25	197.50	260.00	480.00	277.50	1
26	480.00	277.50	500.00	279.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

FIGURE A1-117

```
ANISOTROPIC STRENGTH PARAMETERS
     1 soil type(s)
 Soil Type  1 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction     Counterclockwise      Cohesion      Friction
   Range        Direction Limit     Intercept       Angle
    No.             (deg)             (psf)         (deg)
     1               2.0              700.00         37.00
     2               7.0                0.00          8.00
     3              90.0              700.00         37.00
 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 =  1.00
   Point       X-Water      Y-Water
    No.          (ft)         (ft)
     1          0.00       225.00
     2        146.00       238.00
     3        200.00       266.00
     4        500.00       286.00
 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.
 The Active And Passive Portions Of The Sliding Surfaces
 Are Generated According To The Rankine Theory.
 1000 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         110.00      236.30      130.00      237.50        0.20
  2         420.00      258.80      420.00      258.80        0.20
 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 =  1000
       Number of Trial Surfaces With Valid FS = 1000
       Statistical Data On All Valid FS Values:
          FS Max =   1.406   FS Min =   1.369   FS Ave =   1.389
          Standard Deviation =    0.009   Coefficient of Variation =    0.65 %
       Failure Surface Specified By  9 Coordinate Points
         Point       X-Surf       Y-Surf
          No.          (ft)         (ft)
           1         124.401      240.000
           2         129.652      237.382
           3         420.000      258.879
           4         426.693      272.303
           5         427.668      274.258
           6         434.478      287.623
           7         439.942      298.348
           8         442.616      303.712
           9         445.670      309.000
              Factor of Safety
             ***    1.369   ***
            Individual data on the    27  slices
                      Water  Water     Tie     Tie     Earthquake
                      Force  Force    Force   Force       Force   Surcharge
```

FIGURE A1-118

Slice No.	Width (ft)	Weight (lbs)	Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	Load (lbs)
1	5.3	824.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.3	108.8	0.0	0.0	0.	0.	0.0	0.0	0.0
3	0.0	5.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	1.2	822.7	0.0	0.0	0.	0.	0.0	0.0	0.0
5	12.8	7694.7	0.0	0.0	0.	0.	0.0	0.0	0.0
6	0.0	7.9	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.3	3735.7	0.0	0.0	0.	0.	0.0	0.0	0.0
8	10.6	16470.0	0.0	1576.2	0.	0.	0.0	0.0	0.0
9	0.0	39.0	0.0	6.2	0.	0.	0.0	0.0	0.0
10	39.5	121611.2	0.0	33415.1	0.	0.	0.0	0.0	0.0
11	2.5	10901.6	0.0	3575.0	0.	0.	0.0	0.0	0.0
12	2.5	11276.0	0.0	3660.5	0.	0.	0.0	0.0	0.0
13	3.5	15359.0	0.0	5119.8	0.	0.	0.0	0.0	0.0
14	1.5	6729.0	0.0	2192.5	0.	0.	0.0	0.0	0.0
15	0.7	3219.0	0.0	980.0	0.	0.	0.0	0.0	0.0
16	26.8	150630.1	0.0	39031.2	0.	0.	0.0	0.0	0.0
17	20.0	140052.6	0.0	28880.0	0.	0.	0.0	0.0	0.0
18	84.0	606548.5	0.0	*******	0.	0.	0.0	0.0	0.0
19	76.0	494539.4	0.0	*******	0.	0.	0.0	0.0	0.0
20	5.0	30728.9	0.0	6822.2	0.	0.	0.0	0.0	0.0
21	6.7	35376.2	0.0	14319.7	0.	0.	0.0	0.0	0.0
22	1.0	4217.0	0.0	1072.2	0.	0.	0.0	0.0	0.0
23	3.6	13710.3	0.0	1735.6	0.	0.	0.0	0.0	0.0
24	3.2	9282.3	0.0	0.0	0.	0.	0.0	0.0	0.0
25	5.5	10501.3	0.0	0.0	0.	0.	0.0	0.0	0.0
26	2.7	2557.6	0.0	0.0	0.	0.	0.0	0.0	0.0
27	3.1	968.8	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	124.772	240.000
2	129.984	237.401
3	420.000	258.792
4	426.693	272.216
5	427.712	274.261
6	434.522	287.626
7	439.987	298.351
8	442.656	303.704
9	445.713	309.000

Factor of Safety
*** 1.370 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.559	240.000
2	129.730	237.422
3	420.000	258.870
4	426.693	272.294
5	427.672	274.258
6	434.482	287.624
7	439.947	298.348
8	442.620	303.711
9	445.674	309.000

Factor of Safety
*** 1.370 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.836	240.000
2	129.125	237.363
3	420.000	258.887
4	426.693	272.311
5	427.664	274.258
6	434.474	287.623
7	439.938	298.348

FIGURE A1-119

8	442.613	303.712
9	445.249	309.000

Factor of Safety
*** 1.370 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.659	240.000
2	128.988	237.343
3	420.000	258.852
4	426.693	272.276
5	427.682	274.259
6	434.492	287.624
7	439.956	298.349
8	442.629	303.709
9	445.683	309.000

Factor of Safety
*** 1.370 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.383	240.000
2	129.594	237.402
3	420.000	258.835
4	426.693	272.259
5	427.690	274.260
6	434.500	287.625
7	439.965	298.350
8	442.636	303.708
9	445.692	309.000

Factor of Safety
*** 1.371 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.207	240.000
2	129.457	237.382
3	420.000	258.800
4	426.693	272.224
5	427.708	274.261
6	434.518	287.626
7	439.983	298.351
8	442.652	303.705
9	445.709	309.000

Factor of Safety
*** 1.371 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.030	240.000
2	129.320	237.363
3	420.000	258.765
4	426.693	272.189
5	427.726	274.262
6	434.536	287.627
7	440.001	298.353
8	442.668	303.702
9	445.727	309.000

Factor of Safety
*** 1.371 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.893	240.000
2	129.945	237.481
3	420.000	258.897
4	426.693	272.321

FIGURE A1-120

5	427.659	274.258
6	434.469	287.623
7	439.933	298.347
8	442.608	303.713
9	445.661	309.000

Factor of Safety

*** 1.371 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.270	240.000
2	128.597	237.344
3	420.000	258.895
4	426.693	272.319
5	427.660	274.258
6	434.469	287.623
7	439.934	298.347
8	442.609	303.713
9	445.662	309.000

Factor of Safety

*** 1.371 ***

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

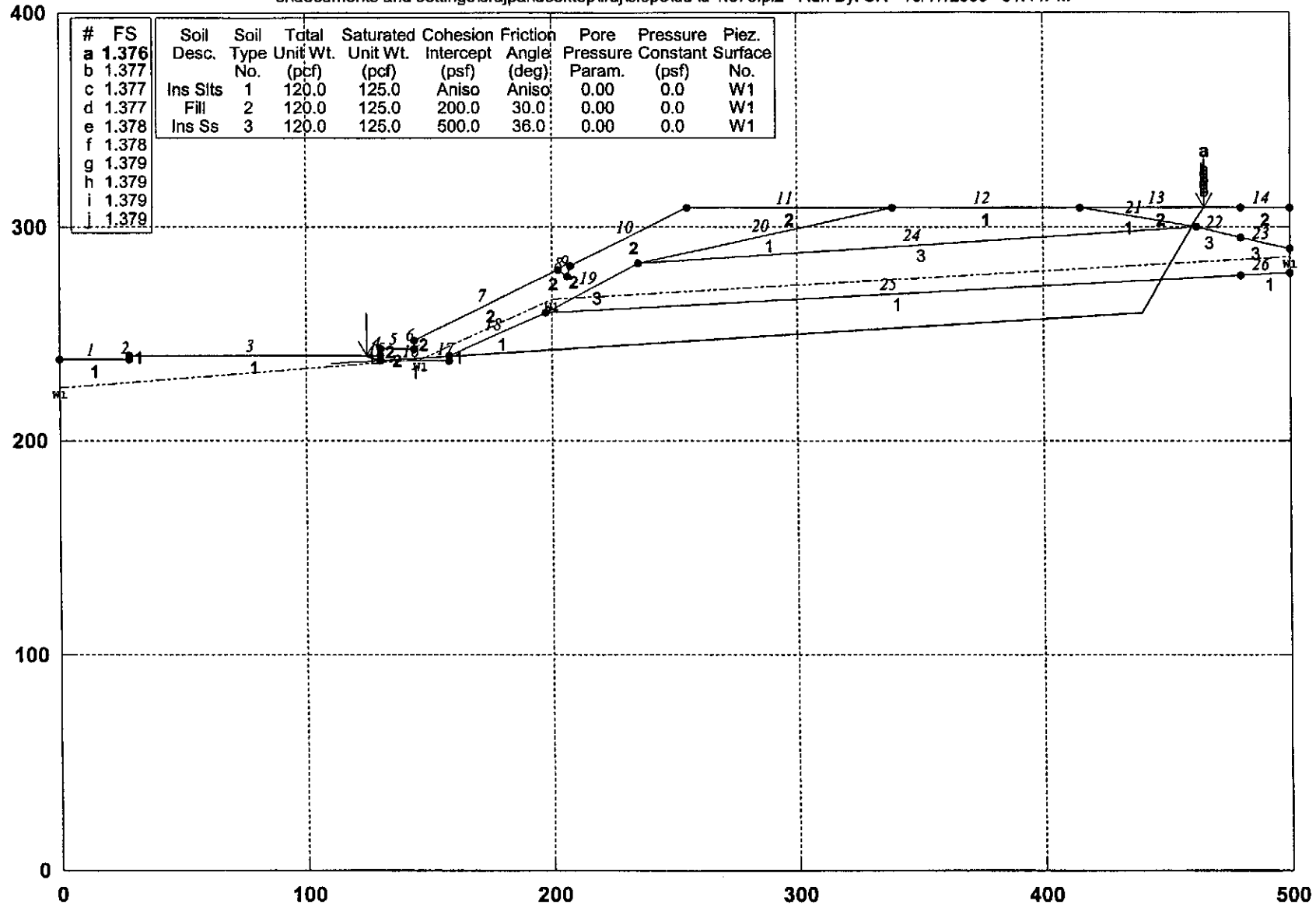
FIGURE A1-121

MV Landslide/ 011492-001 Sec D-D' (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\dd'\d 1.376.pl2 Run By: SR 10/17/2006 01:44PM

#	FS
a	1.376
b	1.377
c	1.377
d	1.377
e	1.378
f	1.378
g	1.379
h	1.379
i	1.379
j	1.379

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Ins Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Ins Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.376

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

FIGURE A1-122

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 01:44PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.376.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.376.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\DD'\d 1.376.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec D-D'
(Risk Level)

BOUNDARY COORDINATES
14 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	238.00	28.00	238.00	1
2	28.00	238.00	28.01	240.00	1
3	28.01	240.00	130.00	240.00	1
4	130.00	240.00	130.01	243.00	2
5	130.01	243.00	144.00	243.00	2
6	144.00	243.00	144.01	247.00	2
7	144.01	247.00	202.50	280.00	2
8	202.50	280.00	206.00	277.00	2
9	206.00	277.00	207.50	282.00	2
10	207.50	282.00	255.00	309.00	2
11	255.00	309.00	339.00	309.00	2
12	339.00	309.00	415.00	309.00	1
13	415.00	309.00	480.00	309.00	2
14	480.00	309.00	500.00	309.00	2
15	130.00	240.00	130.01	237.50	1
16	130.01	237.50	157.90	237.50	1
17	157.90	237.50	158.00	240.00	1
18	158.00	240.00	197.50	260.00	1
19	197.50	260.00	235.00	283.00	3
20	235.00	283.00	339.00	309.00	1
21	415.00	309.00	462.00	300.00	1
22	462.00	300.00	480.00	295.00	3
23	480.00	295.00	500.00	290.20	3
24	235.00	283.00	462.00	300.00	3
25	197.50	260.00	480.00	277.50	1
26	480.00	277.50	500.00	279.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

FIGURE A1-123

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	225.00
2	146.00	238.00
3	200.00	266.00
4	500.00	286.00

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.
The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.
1000 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	110.00	236.30	130.00	237.50	0.20
2	440.00	260.20	440.00	260.20	0.20

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 = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 1.414 FS Min = 1.376 FS Ave = 1.396
Standard Deviation = 0.009 Coefficient of Variation = 0.66 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.401	240.000
2	129.652	237.382
3	440.000	260.279
4	446.693	273.703
5	447.585	275.492
6	454.395	288.857
7	459.996	299.850
8	460.239	300.337
9	465.240	309.000

Factor of Safety
*** 1.376 ***

Individual data on the 27 slices

	Water Force	Water Force	Tie Force	Tie Force	Earthquake Force	Surcharge

FIGURE A1-124

Slice No.	Width (ft)	Weight (lbs)	Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	Load (lbs)
1	5.3	824.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.3	108.8	0.0	0.0	0.	0.	0.0	0.0	0.0
3	0.0	5.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	1.2	826.5	0.0	0.0	0.	0.	0.0	0.0	0.0
5	12.7	7694.1	0.0	0.0	0.	0.	0.0	0.0	0.0
6	0.0	7.9	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.3	3724.7	0.0	0.0	0.	0.	0.0	0.0	0.0
8	10.7	16490.0	0.0	1580.1	0.	0.	0.0	0.0	0.0
9	0.0	39.6	0.0	6.3	0.	0.	0.0	0.0	0.0
10	39.5	121672.9	0.0	33445.4	0.	0.	0.0	0.0	0.0
11	2.5	10907.2	0.0	3577.7	0.	0.	0.0	0.0	0.0
12	2.5	11281.9	0.0	3663.3	0.	0.	0.0	0.0	0.0
13	3.5	15367.5	0.0	5123.9	0.	0.	0.0	0.0	0.0
14	1.5	6732.7	0.0	2194.3	0.	0.	0.0	0.0	0.0
15	0.7	3220.7	0.0	980.9	0.	0.	0.0	0.0	0.0
16	26.8	150710.4	0.0	39070.7	0.	0.	0.0	0.0	0.0
17	20.0	140127.6	0.0	28917.0	0.	0.	0.0	0.0	0.0
18	84.0	607005.8	0.0	*******	0.	0.	0.0	0.0	0.0
19	76.0	495150.9	0.0	*******	0.	0.	0.0	0.0	0.0
20	25.0	151656.3	0.0	34116.1	0.	0.	0.0	0.0	0.0
21	6.7	34249.6	0.0	14257.3	0.	0.	0.0	0.0	0.0
22	0.9	3717.6	0.0	982.8	0.	0.	0.0	0.0	0.0
23	3.7	13328.2	0.0	1783.1	0.	0.	0.0	0.0	0.0
24	3.1	8658.0	0.0	0.0	0.	0.	0.0	0.0	0.0
25	5.6	9844.4	0.0	0.0	0.	0.	0.0	0.0	0.0
26	0.2	259.7	0.0	0.0	0.	0.	0.0	0.0	0.0
27	5.0	2599.6	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	124.772	240.000
2	129.984	237.401
3	440.000	260.192
4	446.693	273.616
5	447.629	275.495
6	454.439	288.860
7	460.041	299.853
8	460.278	300.330
9	465.284	309.000

Factor of Safety

*** 1.377 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.836	240.000
2	129.125	237.363
3	440.000	260.287
4	446.693	273.711
5	447.581	275.492
6	454.391	288.857
7	459.992	299.850
8	460.235	300.338
9	465.236	309.000

Factor of Safety

*** 1.377 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.559	240.000
2	129.730	237.422
3	440.000	260.270
4	446.693	273.694
5	447.589	275.492
6	454.399	288.857
7	460.000	299.850

FIGURE A1-125

8	460.243	300.336
9	465.245	309.000

Factor of Safety
*** 1.377 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.659	240.000
2	128.988	237.343
3	440.000	260.252
4	446.693	273.676
5	447.599	275.493
6	454.409	288.858
7	460.010	299.851
8	460.251	300.335
9	465.254	309.000

Factor of Safety
*** 1.378 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.383	240.000
2	129.594	237.402
3	440.000	260.235
4	446.693	273.659
5	447.607	275.493
6	454.417	288.858
7	460.018	299.852
8	460.259	300.333
9	465.262	309.000

Factor of Safety
*** 1.378 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.270	240.000
2	128.597	237.344
3	440.000	260.295
4	446.693	273.719
5	447.577	275.491
6	454.387	288.857
7	459.988	299.849
8	460.232	300.339
9	465.232	309.000

Factor of Safety
*** 1.379 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.030	240.000
2	129.320	237.363
3	440.000	260.165
4	446.693	273.589
5	447.643	275.496
6	454.453	288.861
7	460.055	299.854
8	460.291	300.327
9	465.298	309.000

Factor of Safety
*** 1.379 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.893	240.000
2	129.945	237.481
3	440.000	260.297
4	446.693	273.721

FIGURE A1-126

5	447.576	275.491
6	454.386	288.857
7	459.987	299.849
8	460.231	300.339
9	465.231	309.000

Factor of Safety
*** 1.379 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.994	240.000
2	129.203	237.403
3	440.000	260.278
4	446.693	273.702
5	447.585	275.492
6	454.395	288.857
7	459.996	299.850
8	460.239	300.337
9	465.241	309.000

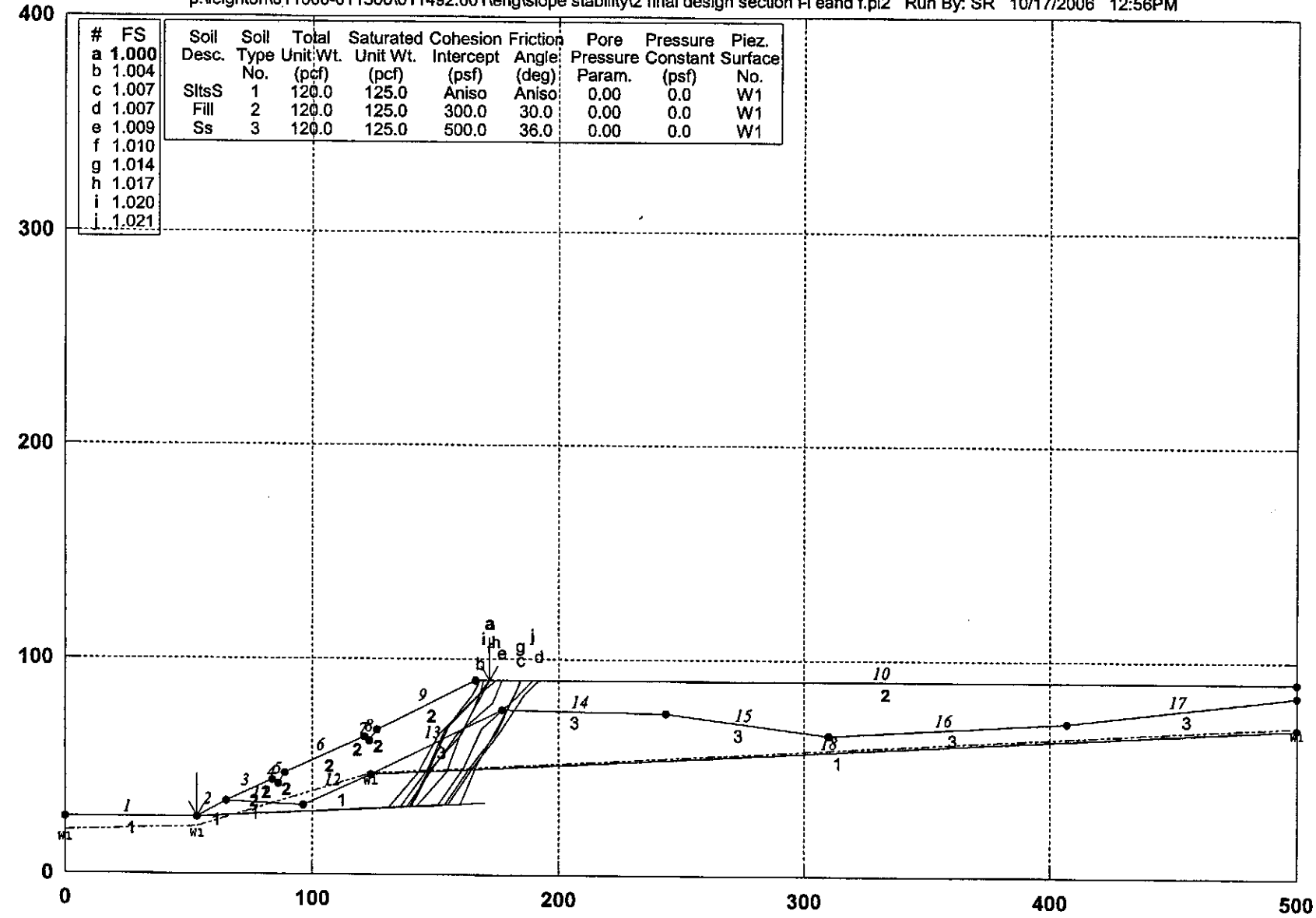
Factor of Safety
*** 1.379 ***

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

FIGURE A1-127

MV/Landslide/011492-001 Section E-E' E 24411-F 24422 (Search for min.)

p:\leighton\011000-011500\011492.001\eng\slope stability\2 final design section i-i eand f.pl2 Run By: SR 10/17/2006 12:56PM



GSTABL7 v.2 FSmin=1.000

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

FIGURE A1-128

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

****

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: 10/17/2006
Time of Run: 12:56PM
Run By: SR
Input Data Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 final design section i-i eand f.in
Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 final design section i-i eand f.OUT
Unit System: English
Plotted Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 final design section i-i eand f.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001 Section E-E'
E 24411-F 24422 (Search for min.)

BOUNDARY COORDINATES
10 Top Boundaries
18 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	26.00	53.00	26.00	1
2	53.00	26.00	65.00	34.00	1
3	65.00	34.00	84.00	44.00	2
4	84.00	44.00	86.00	42.00	2
5	86.00	42.00	89.00	47.00	2
6	89.00	47.00	121.00	64.00	2
7	121.00	64.00	123.00	62.00	2
8	123.00	62.00	126.00	67.00	2
9	126.00	67.00	166.00	90.00	2
10	166.00	90.00	500.00	90.00	2
11	65.00	34.00	96.00	32.00	1
12	96.00	32.00	124.00	46.00	1
13	124.00	46.00	177.00	76.00	3
14	177.00	76.00	244.00	75.00	3
15	244.00	75.00	310.00	65.00	3
16	310.00	65.00	407.00	71.00	3
17	407.00	71.00	500.00	84.00	3
18	124.00	46.00	500.00	69.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00

FIGURE A1-129

2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	20.00
2	53.00	22.00
3	124.00	47.00
4	500.00	70.00

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.
100 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	53.00	26.00	53.00	26.00	0.00
2	130.00	30.70	170.00	33.20	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 1.628 FS Min = 1.000 FS Ave = 1.135
Standard Deviation = 0.130 Coefficient of Variation = 11.47 %
Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	139.216	31.276
3	147.617	49.426
4	154.766	68.105
5	167.702	83.358
6	171.930	90.000

Factor of Safety
*** 1.000 ***
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	12.0	5231.3	0.0	0.0	0.	0.	0.0	0.0	0.0	
2	1.7	1610.9	0.0	0.0	0.	0.	0.0	0.0	0.0	
3	16.9	24585.2	0.0	2600.7	0.	0.	0.0	0.0	0.0	
4	0.3	660.6	0.0	105.4	0.	0.	0.0	0.0	0.0	
5	2.0	3663.1	0.0	663.8	0.	0.	0.0	0.0	0.0	
6	3.0	5990.5	0.0	1132.2	0.	0.	0.0	0.0	0.0	
7	7.0	17433.6	0.0	3278.3	0.	0.	0.0	0.0	0.0	
8	25.0	85407.4	0.0	18983.1	0.	0.	0.0	0.0	0.0	
9	2.0	8027.3	0.0	2009.7	0.	0.	0.0	0.0	0.0	
10	1.0	3984.8	0.0	1032.1	0.	0.	0.0	0.0	0.0	
11	2.0	8463.0	0.0	2062.4	0.	0.	0.0	0.0	0.0	

FIGURE A1-130

12	0.0	86.1	0.0	20.1	0.	0.	0.0	0.0	0.0
13	13.2	64424.8	0.0	13761.0	0.	0.	0.0	0.0	0.0
14	7.5	33806.8	0.0	9778.8	0.	0.	0.0	0.0	0.0
15	0.5	1780.2	0.0	35.4	0.	0.	0.0	0.0	0.0
16	0.5	1704.0	0.0	0.0	0.	0.	0.0	0.0	0.0
17	4.9	14605.3	0.0	0.0	0.	0.	0.0	0.0	0.0
18	2.3	4886.4	0.0	0.0	0.	0.	0.0	0.0	0.0
19	11.2	16233.8	0.0	0.0	0.	0.	0.0	0.0	0.0
20	1.7	1561.7	0.0	0.0	0.	0.	0.0	0.0	0.0
21	4.2	1684.8	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	53.000	26.000
2	135.769	31.061
3	146.522	47.924
4	153.444	66.688
5	164.771	83.171
6	168.005	90.000

Factor of Safety
*** 1.004 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	153.933	32.196
3	163.856	49.560
4	175.013	66.160
5	182.754	84.601
6	184.332	90.000

Factor of Safety
*** 1.007 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	154.832	32.252
3	165.013	49.466
4	176.132	66.091
5	186.016	83.478
6	192.012	90.000

Factor of Safety
*** 1.007 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	137.898	31.194
3	148.278	48.289
4	158.966	65.194
5	172.896	79.545
6	176.617	90.000

Factor of Safety
*** 1.009 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	142.058	31.454
3	154.212	47.337
4	160.677	66.263
5	169.331	84.294
6	171.826	90.000

Factor of Safety
*** 1.010 ***

Failure Surface Specified By 6 Coordinate Points

Point	X-Surf	Y-Surf

FIGURE A1-131

No.	(ft)	(ft)
1	53.000	26.000
2	159.753	32.560
3	166.808	51.274
4	175.646	69.215
5	183.911	87.428
6	184.436	90.000

Factor of Safety
*** 1.014 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	130.691	30.743
3	142.455	46.917
4	151.434	64.789
5	164.356	80.053
6	174.276	90.000

Factor of Safety
*** 1.017 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	139.871	31.317
3	148.295	49.456
4	160.894	64.989
5	168.148	83.627
6	169.528	90.000

Factor of Safety
*** 1.020 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	150.906	32.007
3	160.975	49.287
4	168.691	67.739
5	182.523	82.184
6	189.457	90.000

Factor of Safety
*** 1.021 ***

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

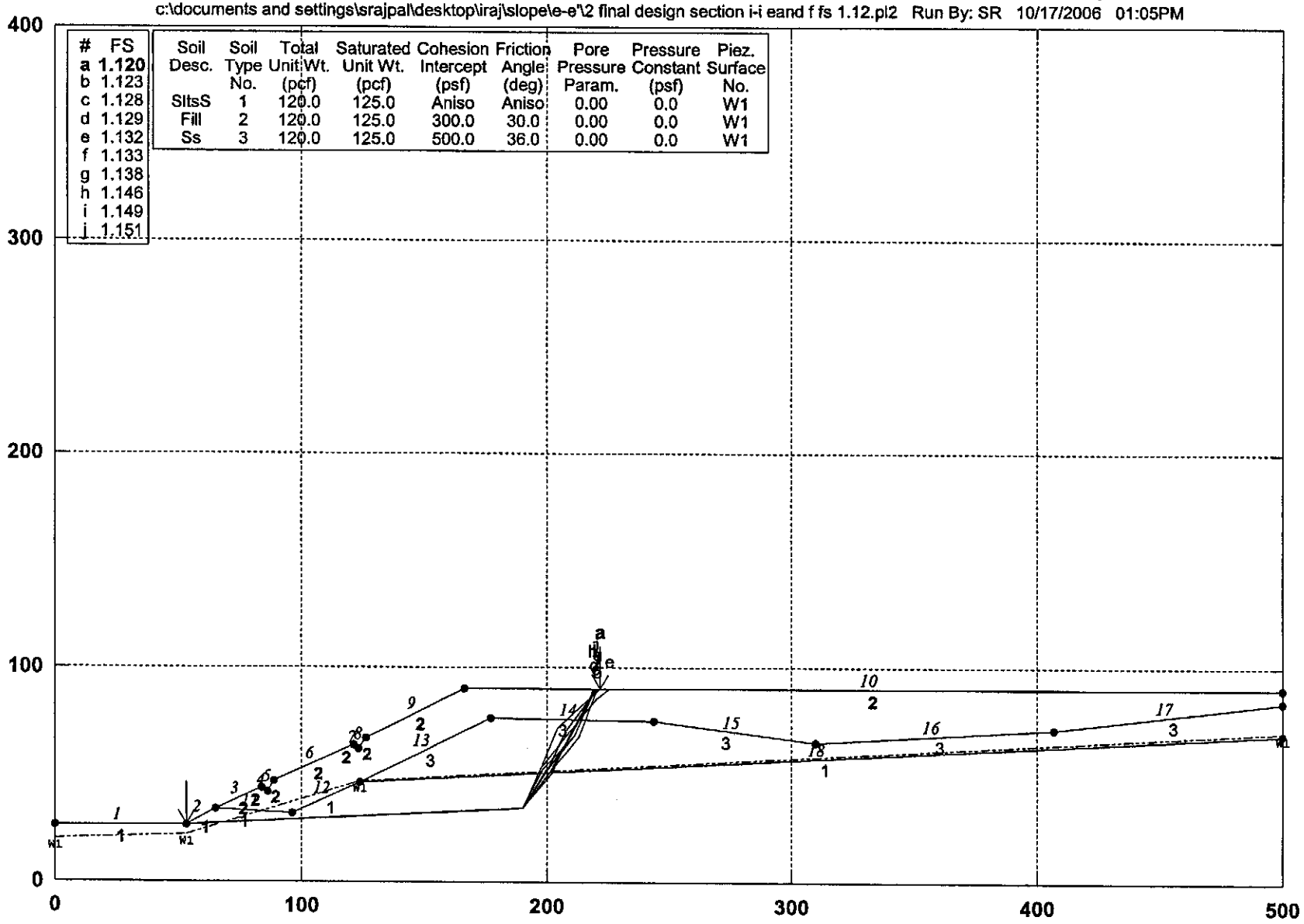
FIGURE A1-132

MV/Landslide/011492-001 Section E-E' E 24411-F 24422 (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\e-e'\2 final design section i-i eand f fs 1.12.pl2 Run By: SR 10/17/2006 01:05PM

#	FS
a	1.120
b	1.123
c	1.128
d	1.129
e	1.132
f	1.133
g	1.138
h	1.146
i	1.149
j	1.151

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
SltsS	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.120

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

FIGURE A1-133

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(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: 10/17/2006
Time of Run: 01:05PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.12.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.12.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.12.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001 Section E-E'
E 24411-F 24422 (Risk Level)

BOUNDARY COORDINATES
10 Top Boundaries
18 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	26.00	53.00	26.00	1
2	53.00	26.00	65.00	34.00	1
3	65.00	34.00	84.00	44.00	2
4	84.00	44.00	86.00	42.00	2
5	86.00	42.00	89.00	47.00	2
6	89.00	47.00	121.00	64.00	2
7	121.00	64.00	123.00	62.00	2
8	123.00	62.00	126.00	67.00	2
9	126.00	67.00	166.00	90.00	2
10	166.00	90.00	500.00	90.00	2
11	65.00	34.00	96.00	32.00	1
12	96.00	32.00	124.00	46.00	1
13	124.00	46.00	177.00	76.00	3
14	177.00	76.00	244.00	75.00	3
15	244.00	75.00	310.00	65.00	3
16	310.00	65.00	407.00	71.00	3
17	407.00	71.00	500.00	84.00	3
18	124.00	46.00	500.00	69.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00

FIGURE A1-134

2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	20.00
2	53.00	22.00
3	124.00	47.00
4	500.00	70.00

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.
100 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	53.00	26.00	53.00	26.00	0.00
2	190.00	34.40	190.00	34.40	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 1.631 FS Min = 1.120 FS Ave = 1.241
Standard Deviation = 0.104 Coefficient of Variation = 8.34 %
Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	190.000	34.400
3	199.699	51.891
4	207.792	70.180
5	218.801	86.878
6	221.890	90.000

Factor of Safety
*** 1.120 ***
Individual data on the 22 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)	
1	12.0	5230.2	0.0	0.0	0.	0.	0.0	0.0	0.0	
2	1.8	1616.0	0.0	0.0	0.	0.	0.0	0.0	0.0	
3	16.9	24574.2	0.0	2597.9	0.	0.	0.0	0.0	0.0	
4	0.3	660.4	0.0	105.3	0.	0.	0.0	0.0	0.0	
5	2.0	3662.2	0.0	663.4	0.	0.	0.0	0.0	0.0	
6	3.0	5989.0	0.0	1131.4	0.	0.	0.0	0.0	0.0	
7	7.0	17429.5	0.0	3276.3	0.	0.	0.0	0.0	0.0	
8	25.0	85386.8	0.0	18972.9	0.	0.	0.0	0.0	0.0	
9	2.0	8025.3	0.0	2008.7	0.	0.	0.0	0.0	0.0	
10	1.0	3983.8	0.0	1031.6	0.	0.	0.0	0.0	0.0	
11	2.0	8460.9	0.0	2061.3	0.	0.	0.0	0.0	0.0	

FIGURE A1-135

12	0.0	86.1	0.0	20.1	0.	0.	0.0	0.0	0.0
13	40.0	227958.2	0.0	41620.3	0.	0.	0.0	0.0	0.0
14	11.0	75804.5	0.0	11443.1	0.	0.	0.0	0.0	0.0
15	13.0	88439.2	0.0	13522.2	0.	0.	0.0	0.0	0.0
16	9.0	51562.0	0.0	10184.7	0.	0.	0.0	0.0	0.0
17	0.6	2680.5	0.0	36.9	0.	0.	0.0	0.0	0.0
18	0.1	686.1	0.0	0.0	0.	0.	0.0	0.0	0.0
19	8.1	28129.9	0.0	0.0	0.	0.	0.0	0.0	0.0
20	3.5	7209.0	0.0	0.0	0.	0.	0.0	0.0	0.0
21	7.5	7945.5	0.0	0.0	0.	0.	0.0	0.0	0.0
22	3.1	578.7	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)
1	53.000	26.000
2	190.000	34.400
3	200.178	51.616
4	210.247	68.897
5	217.964	87.348
6	220.503	90.000

Factor of Safety
*** 1.123 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	190.000	34.400
3	199.923	51.765
4	211.080	68.364
5	218.821	86.805
6	219.755	90.000

Factor of Safety
*** 1.128 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	190.000	34.400
3	201.160	50.997
4	210.295	68.789
5	218.503	87.027
6	219.590	90.000

Factor of Safety
*** 1.129 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	190.000	34.400
3	197.626	52.889
4	208.880	69.422
5	220.883	85.420
6	225.395	90.000

Factor of Safety
*** 1.132 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	190.000	34.400
3	199.208	52.154
4	211.153	68.195
5	218.653	86.736
6	221.413	90.000

Factor of Safety
*** 1.133 ***

Failure Surface Specified By 6 Coordinate Points

FIGURE A1-136

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	190.000	34.400
3	201.686	50.631
4	209.570	69.011
5	218.004	87.146
6	220.654	90.000

Factor of Safety
*** 1.138 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	190.000	34.400
3	198.424	52.539
4	211.023	68.072
5	218.277	86.710
6	218.990	90.000

Factor of Safety
*** 1.146 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	190.000	34.400
3	197.676	52.868
4	204.323	71.731
5	217.861	86.453
6	219.132	90.000

Factor of Safety
*** 1.149 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	190.000	34.400
3	201.210	50.963
4	212.893	67.196
5	219.197	86.176
6	220.375	90.000

Factor of Safety
*** 1.151 ***

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

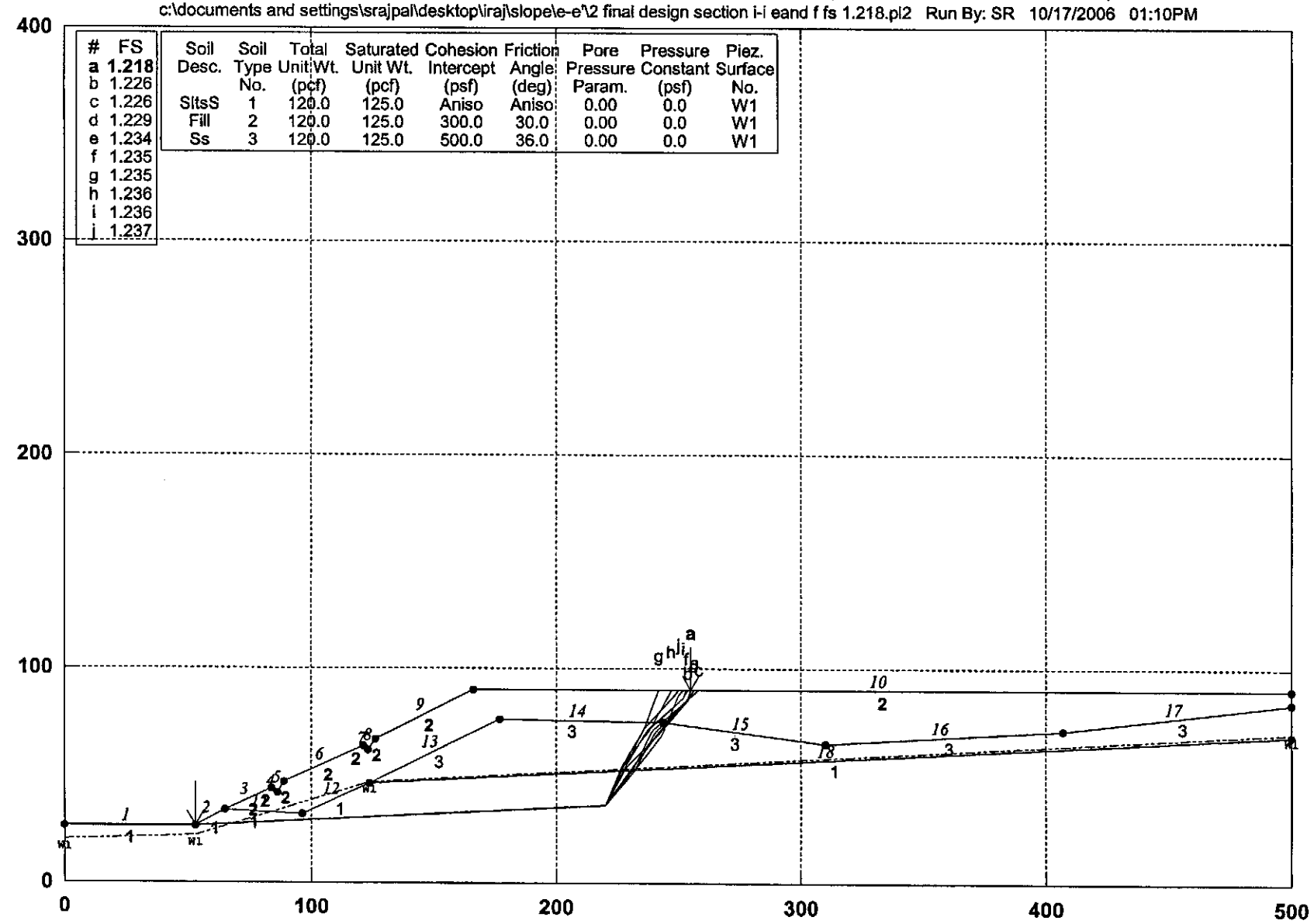
FIGURE A1-137

MV/Landslide/011492-001 Section E-E' E 24411-F 24422 (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\e-e'\2 final design section i-i eand f fs 1.218.pl2 Run By: SR 10/17/2006 01:10PM

#	FS
a	1.218
b	1.226
c	1.226
d	1.229
e	1.234
f	1.235
g	1.235
h	1.236
i	1.236
j	1.237

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
SltsS	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.218

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

FIGURE A1-138

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 01:10PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.218.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.218.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.218.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001 Section E-E'
E 24411-F 24422 (Risk Level)

BOUNDARY COORDINATES
10 Top Boundaries
18 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	26.00	53.00	26.00	1
2	53.00	26.00	65.00	34.00	1
3	65.00	34.00	84.00	44.00	2
4	84.00	44.00	86.00	42.00	2
5	86.00	42.00	89.00	47.00	2
6	89.00	47.00	121.00	64.00	2
7	121.00	64.00	123.00	62.00	2
8	123.00	62.00	126.00	67.00	2
9	126.00	67.00	166.00	90.00	2
10	166.00	90.00	500.00	90.00	2
11	65.00	34.00	96.00	32.00	1
12	96.00	32.00	124.00	46.00	1
13	124.00	46.00	177.00	76.00	3
14	177.00	76.00	244.00	75.00	3
15	244.00	75.00	310.00	65.00	3
16	310.00	65.00	407.00	71.00	3
17	407.00	71.00	500.00	84.00	3
18	124.00	46.00	500.00	69.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00

FIGURE A1-139

2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	20.00
2	53.00	22.00
3	124.00	47.00
4	500.00	70.00

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.
100 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	53.00	26.00	53.00	26.00	0.00
2	220.00	36.30	220.00	36.30	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 2.217 FS Min = 1.218 FS Ave = 1.359
Standard Deviation = 0.152 Coefficient of Variation = 11.16 %
Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	220.000	36.300
3	230.811	53.127
4	242.021	69.690
5	253.704	85.922
6	255.058	90.000

Factor of Safety
*** 1.218 ***
Individual data on the 23 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	12.0	5227.1	0.0	0.0	0.	0.	0.0	0.0	0.0
2	1.8	1631.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	16.9	24540.5	0.0	2589.5	0.	0.	0.0	0.0	0.0
4	0.3	659.9	0.0	105.0	0.	0.	0.0	0.0	0.0
5	2.0	3659.3	0.0	661.9	0.	0.	0.0	0.0	0.0
6	3.0	5984.3	0.0	1129.1	0.	0.	0.0	0.0	0.0
7	7.0	17417.0	0.0	3270.1	0.	0.	0.0	0.0	0.0
8	25.0	85323.9	0.0	18941.9	0.	0.	0.0	0.0	0.0
9	2.0	8019.0	0.0	2005.6	0.	0.	0.0	0.0	0.0
10	1.0	3980.6	0.0	1030.0	0.	0.	0.0	0.0	0.0
11	2.0	8454.4	0.0	2058.1	0.	0.	0.0	0.0	0.0

FIGURE A1-140

12	0.0	86.0	0.0	20.0	0.	0.	0.0	0.0	0.0
13	40.0	227789.5	0.0	41536.9	0.	0.	0.0	0.0	0.0
14	11.0	75745.4	0.0	11413.8	0.	0.	0.0	0.0	0.0
15	43.0	287499.8	0.0	44580.7	0.	0.	0.0	0.0	0.0
16	10.4	57437.1	0.0	10563.0	0.	0.	0.0	0.0	0.0
17	0.4	1770.6	0.0	32.2	0.	0.	0.0	0.0	0.0
18	0.3	1264.7	0.0	6.5	0.	0.	0.0	0.0	0.0
19	10.9	37197.8	0.0	0.0	0.	0.	0.0	0.0	0.0
20	2.0	4497.6	0.0	0.0	0.	0.	0.0	0.0	0.0
21	1.7	3270.9	0.0	0.0	0.	0.	0.0	0.0	0.0
22	8.0	9327.0	0.0	0.0	0.	0.	0.0	0.0	0.0
23	1.4	331.3	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	53.000	26.000
2	220.000	36.300
3	227.889	54.678
4	237.620	72.151
5	251.656	86.398
6	253.842	90.000

Factor of Safety
*** 1.226 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	220.000	36.300
3	231.764	52.474
4	240.743	70.345
5	253.666	85.610
6	258.043	90.000

Factor of Safety
*** 1.226 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	220.000	36.300
3	231.201	52.869
4	239.513	71.060
5	253.473	85.382
6	256.061	90.000

Factor of Safety
*** 1.229 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	220.000	36.300
3	228.553	54.379
4	241.618	69.522
5	254.036	85.200
6	256.200	90.000

Factor of Safety
*** 1.234 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	220.000	36.300
3	227.207	54.956
4	238.121	71.716
5	251.744	86.359
6	253.034	90.000

Factor of Safety
*** 1.235 ***

FIGURE A1-141

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	220.000	36.300
3	228.146	54.566
4	235.957	72.978
5	241.594	90.000

Factor of Safety
*** 1.235 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	220.000	36.300
3	226.922	55.064
4	238.249	71.547
5	246.807	89.623
6	247.153	90.000

Factor of Safety
*** 1.236 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	220.000	36.300
3	232.024	52.282
4	243.004	68.998
5	249.862	87.786
6	251.655	90.000

Factor of Safety
*** 1.236 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	220.000	36.300
3	226.619	55.173
4	236.282	72.684
5	249.029	88.095
6	250.117	90.000

Factor of Safety
*** 1.237 ***

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

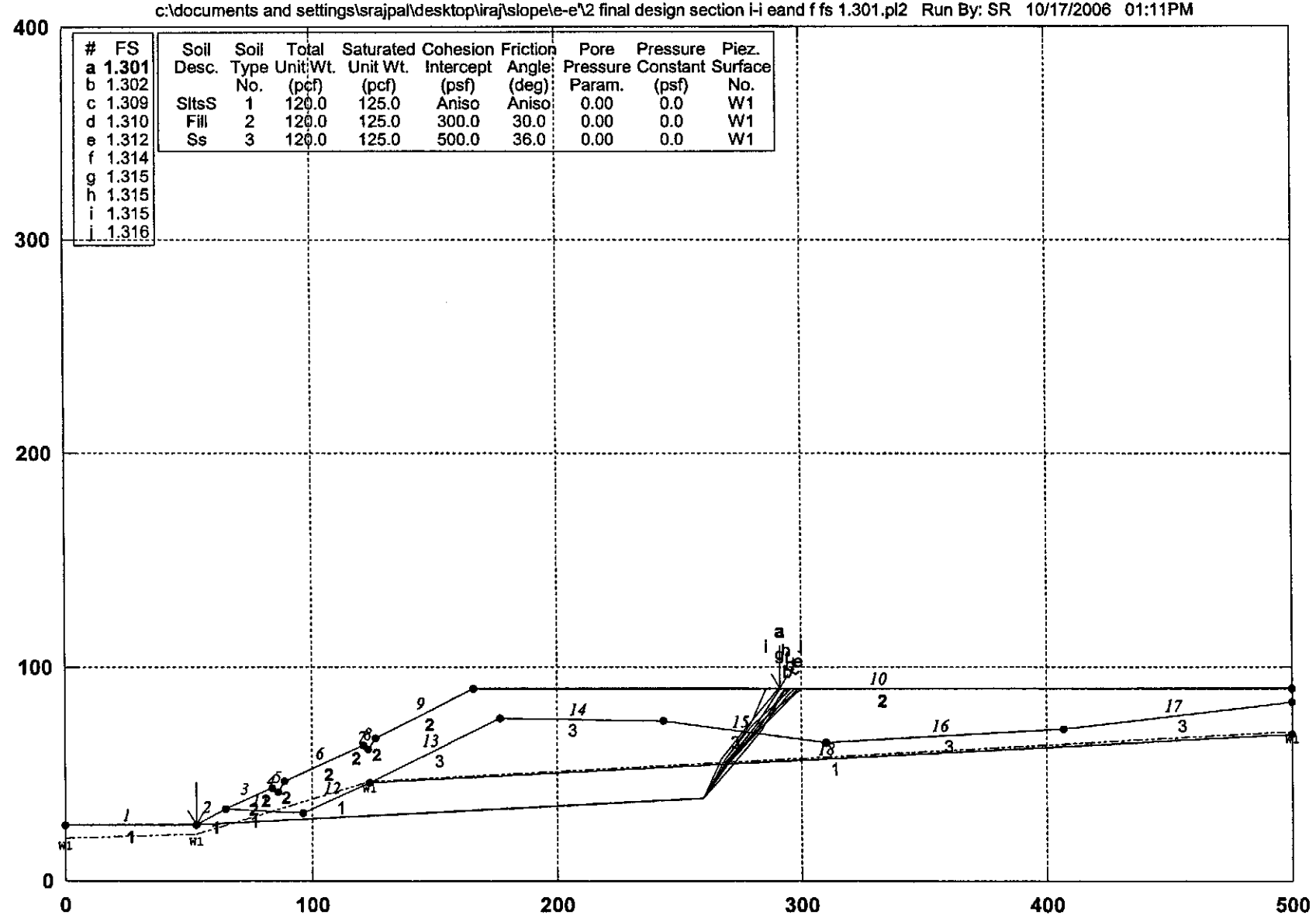
FIGURE A1-142

MV/Landslide/011492-001 Section E-E' E 24411-F 24422 (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\e-e'\2 final design section i-i eand f fs 1.301.pl2 Run By: SR 10/17/2006 01:11PM

#	FS
a	1.301
b	1.302
c	1.309
d	1.310
e	1.312
f	1.314
g	1.315
h	1.315
i	1.315
j	1.316

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
SltsS	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.301

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

FIGURE A1-143

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

****

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: 10/17/2006
Time of Run: 01:11PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.301.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.301.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.301.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001 Section E-E'
E 24411-F 24422 (Risk Level)

BOUNDARY COORDINATES
10 Top Boundaries
18 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	26.00	53.00	26.00	1
2	53.00	26.00	65.00	34.00	1
3	65.00	34.00	84.00	44.00	2
4	84.00	44.00	86.00	42.00	2
5	86.00	42.00	89.00	47.00	2
6	89.00	47.00	121.00	64.00	2
7	121.00	64.00	123.00	62.00	2
8	123.00	62.00	126.00	67.00	2
9	126.00	67.00	166.00	90.00	2
10	166.00	90.00	500.00	90.00	2
11	65.00	34.00	96.00	32.00	1
12	96.00	32.00	124.00	46.00	1
13	124.00	46.00	177.00	76.00	3
14	177.00	76.00	244.00	75.00	3
15	244.00	75.00	310.00	65.00	3
16	310.00	65.00	407.00	71.00	3
17	407.00	71.00	500.00	84.00	3
18	124.00	46.00	500.00	69.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00

FIGURE A1-144

2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	20.00
2	53.00	22.00
3	124.00	47.00
4	500.00	70.00

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.
100 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	53.00	26.00	53.00	26.00	0.00
2	260.00	38.70	260.00	38.70	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 1.836 FS Min = 1.301 FS Ave = 1.399
Standard Deviation = 0.089 Coefficient of Variation = 6.35 %
Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	260.000	38.700
3	270.182	55.914
4	281.301	72.539
5	291.185	89.926
6	291.253	90.000

Factor of Safety
*** 1.301 ***
Individual data on the 23 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	12.0	5229.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	1.8	1617.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	16.9	24570.6	0.0	2597.0	0.	0.	0.0	0.0	0.0
4	0.3	660.4	0.0	105.3	0.	0.	0.0	0.0	0.0
5	2.0	3661.9	0.0	663.2	0.	0.	0.0	0.0	0.0
6	3.0	5988.5	0.0	1131.2	0.	0.	0.0	0.0	0.0
7	7.0	17428.2	0.0	3275.6	0.	0.	0.0	0.0	0.0
8	25.0	85380.1	0.0	18969.6	0.	0.	0.0	0.0	0.0
9	2.0	8024.6	0.0	2008.4	0.	0.	0.0	0.0	0.0
10	1.0	3983.4	0.0	1031.4	0.	0.	0.0	0.0	0.0
11	2.0	8460.2	0.0	2061.0	0.	0.	0.0	0.0	0.0

FIGURE A1-145

12	0.0	86.1	0.0	20.1	0.	0.	0.0	0.0	0.0
13	40.0	227940.2	0.0	41611.4	0.	0.	0.0	0.0	0.0
14	11.0	75798.2	0.0	11439.9	0.	0.	0.0	0.0	0.0
15	67.0	442439.6	0.0	69649.8	0.	0.	0.0	0.0	0.0
16	16.0	100768.0	0.0	16625.2	0.	0.	0.0	0.0	0.0
17	9.6	50109.4	0.0	10350.1	0.	0.	0.0	0.0	0.0
18	0.6	2478.0	0.0	37.6	0.	0.	0.0	0.0	0.0
19	0.0	79.2	0.0	0.0	0.	0.	0.0	0.0	0.0
20	9.2	29912.2	0.0	0.0	0.	0.	0.0	0.0	0.0
21	1.9	4396.3	0.0	0.0	0.	0.	0.0	0.0	0.0
22	9.9	10399.6	0.0	0.0	0.	0.	0.0	0.0	0.0
23	0.1	0.3	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	53.000	26.000
2	260.000	38.700
3	270.811	55.527
4	282.021	72.090
5	293.704	88.322
6	294.261	90.000

Factor of Safety
*** 1.302 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	260.000	38.700
3	270.341	55.819
4	283.146	71.182
5	294.857	87.395
6	297.457	90.000

Factor of Safety
*** 1.309 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	260.000	38.700
3	268.604	56.755
4	279.745	73.365
5	293.832	87.561
6	295.734	90.000

Factor of Safety
*** 1.310 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	260.000	38.700
3	269.267	56.424
4	281.512	72.237
5	295.634	86.399
6	298.925	90.000

Factor of Safety
*** 1.312 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	260.000	38.700
3	272.027	54.680
4	283.903	70.772
5	293.110	88.527
6	294.208	90.000

Factor of Safety
*** 1.314 ***

FIGURE A1-146

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	260.000	38.700
3	267.626	57.189
4	278.880	73.722
5	290.883	89.720
6	291.159	90.000

Factor of Safety
*** 1.315 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	260.000	38.700
3	269.389	56.359
4	282.697	71.289
5	292.640	88.642
6	293.962	90.000

Factor of Safety
*** 1.315 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	260.000	38.700
3	268.540	56.785
4	279.293	73.649
5	285.325	90.000

Factor of Safety
*** 1.315 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	260.000	38.700
3	269.774	56.149
4	282.959	71.188
5	296.450	85.952
6	299.888	90.000

Factor of Safety
*** 1.316 ***

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

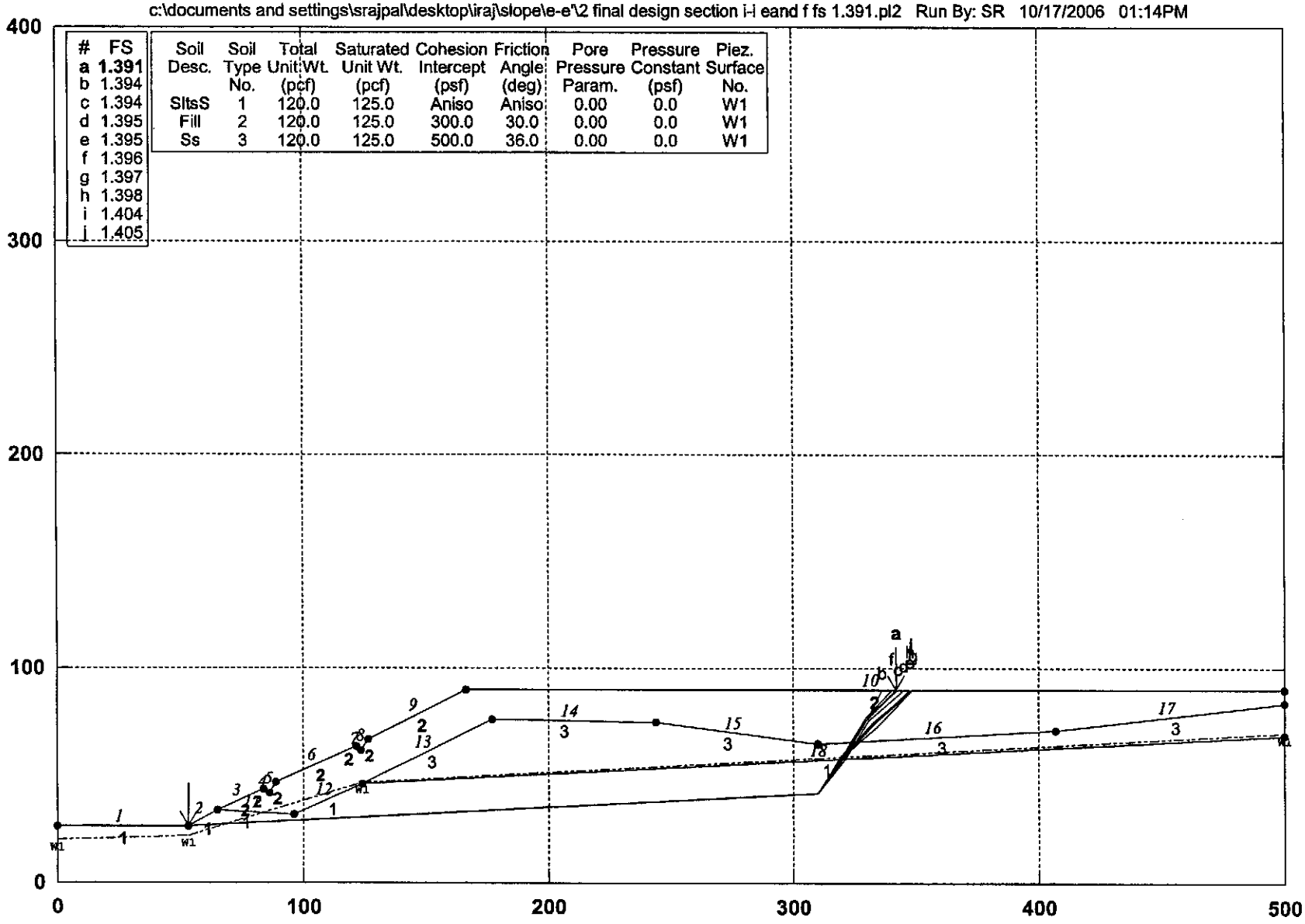
FIGURE A1-147

MV/Landslide/011492-001 Section E-E' E 24411-F 24422 (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\e-e'\2 final design section i-i eand f fs 1.391.pl2 Run By: SR 10/17/2006 01:14PM

#	FS
a	1.391
b	1.394
c	1.394
d	1.395
e	1.395
f	1.396
g	1.397
h	1.398
i	1.404
j	1.405

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
SltsS	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.391

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

FIGURE A1-148

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 01:14PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.391.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.391.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.391.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001 Section E-E'
E 24411-F 24422 (Risk Level)

BOUNDARY COORDINATES
10 Top Boundaries
18 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	26.00	53.00	26.00	1
2	53.00	26.00	65.00	34.00	1
3	65.00	34.00	84.00	44.00	2
4	84.00	44.00	86.00	42.00	2
5	86.00	42.00	89.00	47.00	2
6	89.00	47.00	121.00	64.00	2
7	121.00	64.00	123.00	62.00	2
8	123.00	62.00	126.00	67.00	2
9	126.00	67.00	166.00	90.00	2
10	166.00	90.00	500.00	90.00	2
11	65.00	34.00	96.00	32.00	1
12	96.00	32.00	124.00	46.00	1
13	124.00	46.00	177.00	76.00	3
14	177.00	76.00	244.00	75.00	3
15	244.00	75.00	310.00	65.00	3
16	310.00	65.00	407.00	71.00	3
17	407.00	71.00	500.00	84.00	3
18	124.00	46.00	500.00	69.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00

FIGURE A1-149

2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	20.00
2	53.00	22.00
3	124.00	47.00
4	500.00	70.00

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.
100 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	53.00	26.00	53.00	26.00	0.00
2	310.00	41.80	310.00	41.80	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 2.174 FS Min = 1.391 FS Ave = 1.480
Standard Deviation = 0.109 Coefficient of Variation = 7.35 %
Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	310.000	41.800
3	320.377	58.897
4	329.934	76.466
5	342.130	90.000

Factor of Safety
*** 1.391 ***
Individual data on the 22 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	12.0	5228.8	0.0	0.0	0.	0.	0.0	0.0	0.0
2	1.8	1623.1	0.0	0.0	0.	0.	0.0	0.0	0.0
3	16.9	24558.9	0.0	2594.1	0.	0.	0.0	0.0	0.0
4	0.3	660.2	0.0	105.2	0.	0.	0.0	0.0	0.0
5	2.0	3660.8	0.0	662.7	0.	0.	0.0	0.0	0.0
6	3.0	5986.8	0.0	1130.4	0.	0.	0.0	0.0	0.0
7	7.0	17423.8	0.0	3273.5	0.	0.	0.0	0.0	0.0
8	25.0	85358.2	0.0	18958.8	0.	0.	0.0	0.0	0.0
9	2.0	8022.5	0.0	2007.3	0.	0.	0.0	0.0	0.0
10	1.0	3982.3	0.0	1030.9	0.	0.	0.0	0.0	0.0
11	2.0	8458.0	0.0	2059.9	0.	0.	0.0	0.0	0.0
12	0.0	86.0	0.0	20.0	0.	0.	0.0	0.0	0.0

FIGURE A1-150

13	40.0	227881.6	0.0	41582.4	0.	0.	0.0	0.0	0.0
14	11.0	75777.6	0.0	11429.8	0.	0.	0.0	0.0	0.0
15	67.0	442273.4	0.0	69567.2	0.	0.	0.0	0.0	0.0
16	66.0	403286.0	0.0	68444.3	0.	0.	0.0	0.0	0.0
17	9.8	47693.9	0.0	10378.9	0.	0.	0.0	0.0	0.0
18	0.6	2114.2	0.0	37.4	0.	0.	0.0	0.0	0.0
19	0.1	241.3	0.0	0.5	0.	0.	0.0	0.0	0.0
20	3.7	12339.8	0.0	0.0	0.	0.	0.0	0.0	0.0
21	5.8	13015.8	0.0	0.0	0.	0.	0.0	0.0	0.0
22	12.2	9903.2	0.0	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	53.000	26.000
2	310.000	41.800
3	320.178	59.016
4	330.247	76.297
5	335.978	90.000

Factor of Safety
*** 1.394 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	310.000	41.800
3	320.073	59.078
4	329.186	76.881
5	342.260	90.000

Factor of Safety
*** 1.394 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	310.000	41.800
3	321.204	58.367
4	330.830	75.898
5	344.931	90.000

Factor of Safety
*** 1.395 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	310.000	41.800
3	320.137	59.041
4	332.576	74.702
5	346.715	88.847
6	347.550	90.000

Factor of Safety
*** 1.395 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	310.000	41.800
3	320.756	58.661
4	329.180	76.801
5	339.887	90.000

Factor of Safety
*** 1.396 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	310.000	41.800
3	320.678	58.711

FIGURE A1-151

4	333.324	74.205
5	347.332	88.480
6	348.734	90.000

Factor of Safety
*** 1.397 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	310.000	41.800
3	319.774	59.249
4	332.959	74.288
5	346.450	89.052
6	347.255	90.000

Factor of Safety
*** 1.398 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	310.000	41.800
3	319.161	59.579
4	332.657	74.338
5	346.791	88.489
6	347.605	90.000

Factor of Safety
*** 1.404 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	310.000	41.800
3	320.253	58.972
4	334.276	73.232
5	347.264	88.441
6	348.358	90.000

Factor of Safety
*** 1.405 ***

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

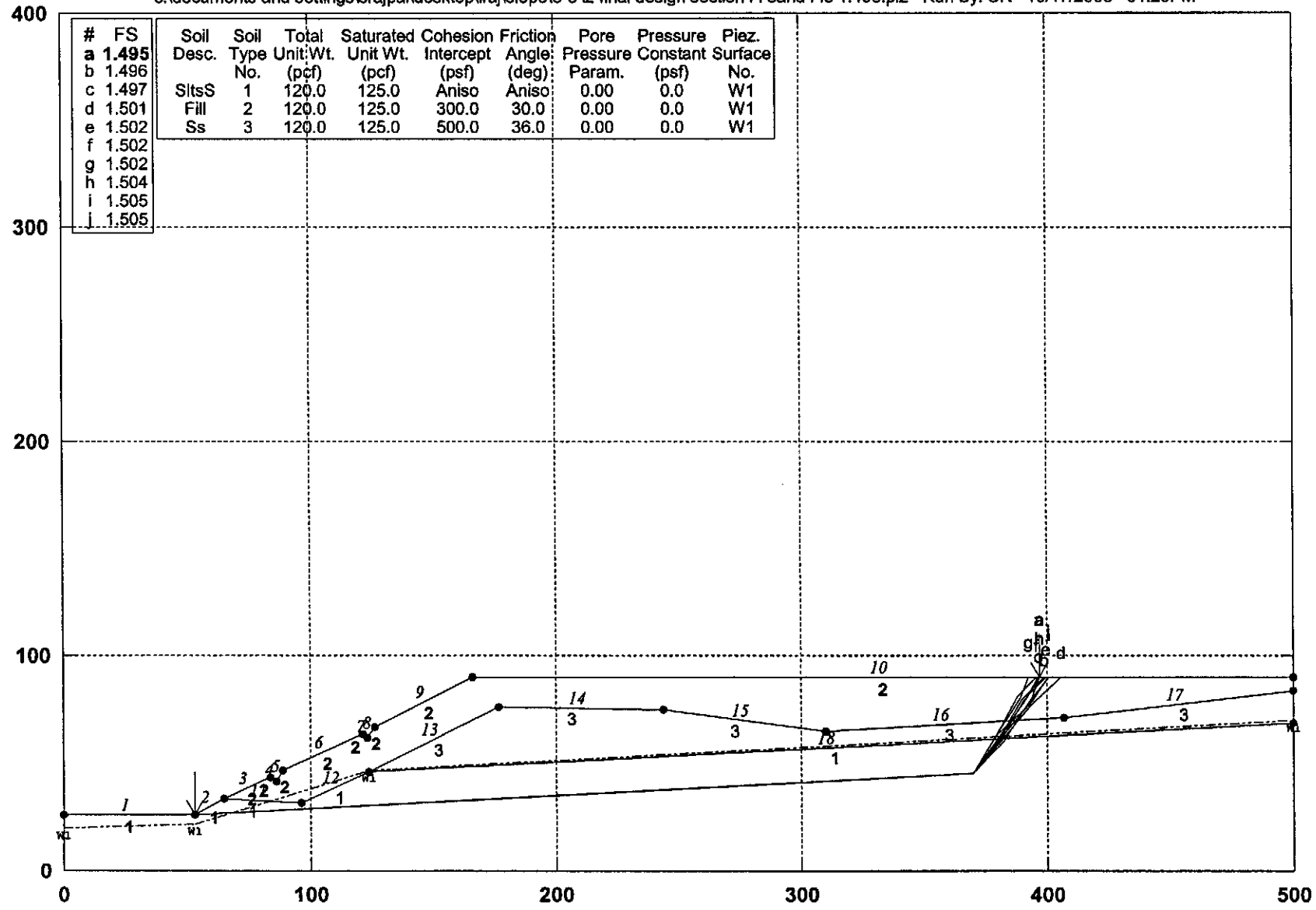
FIGURE A1-152

MV/Landslide/011492-001 Section E-E' E 24411-F 24422 (Risk Level)

c:\documents and settings\srajpal\desktop\iraj\slope\e-e'\2 final design section i-i eand f fs 1.495.pl2 Run By: SR 10/17/2006 01:20PM

#	FS
a	**1.495**
b	1.496
c	1.497
d	1.501
e	1.502
f	1.502
g	1.502
h	1.504
i	1.505
j	1.505

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
SltsS	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.495

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

FIGURE A1-153

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

****

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: 10/17/2006
Time of Run: 01:20PM
Run By: SR
Input Data Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.495.in
Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.495.OUT
Unit System: English
Plotted Output Filename: C:\Documents and Settings\srajpal\Desktop\Iraj\slope\E-E'\2 final design section i-i eand f FS 1.495.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001 Section E-E'
E 24411-F 24422 (Risk Level)

BOUNDARY COORDINATES
10 Top Boundaries
18 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	26.00	53.00	26.00	1
2	53.00	26.00	65.00	34.00	1
3	65.00	34.00	84.00	44.00	2
4	84.00	44.00	86.00	42.00	2
5	86.00	42.00	89.00	47.00	2
6	89.00	47.00	121.00	64.00	2
7	121.00	64.00	123.00	62.00	2
8	123.00	62.00	126.00	67.00	2
9	126.00	67.00	166.00	90.00	2
10	166.00	90.00	500.00	90.00	2
11	65.00	34.00	96.00	32.00	1
12	96.00	32.00	124.00	46.00	1
13	124.00	46.00	177.00	76.00	3
14	177.00	76.00	244.00	75.00	3
15	244.00	75.00	310.00	65.00	3
16	310.00	65.00	407.00	71.00	3
17	407.00	71.00	500.00	84.00	3
18	124.00	46.00	500.00	69.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00

FIGURE A1-154

2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	20.00
2	53.00	22.00
3	124.00	47.00
4	500.00	70.00

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.
100 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	53.00	26.00	53.00	26.00	0.00
2	370.00	45.50	370.00	45.50	0.00

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 = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 2.199 FS Min = 1.495 FS Ave = 1.578
Standard Deviation = 0.102 Coefficient of Variation = 6.48 %
Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	370.000	45.500
3	380.807	62.329
4	390.985	79.545
5	397.077	90.000

Factor of Safety
*** 1.495 ***
Individual data on the 23 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	12.0	5228.5	0.0	0.0	0.	0.	0.0	0.0	0.0
2	1.8	1624.6	0.0	0.0	0.	0.	0.0	0.0	0.0
3	16.9	24555.6	0.0	2593.2	0.	0.	0.0	0.0	0.0
4	0.3	660.2	0.0	105.2	0.	0.	0.0	0.0	0.0
5	2.0	3660.6	0.0	662.6	0.	0.	0.0	0.0	0.0
6	3.0	5986.4	0.0	1130.1	0.	0.	0.0	0.0	0.0
7	7.0	17422.6	0.0	3272.8	0.	0.	0.0	0.0	0.0
8	25.0	85352.0	0.0	18955.8	0.	0.	0.0	0.0	0.0
9	2.0	8021.8	0.0	2007.0	0.	0.	0.0	0.0	0.0
10	1.0	3982.0	0.0	1030.7	0.	0.	0.0	0.0	0.0
11	2.0	8457.3	0.0	2059.6	0.	0.	0.0	0.0	0.0
12	0.0	86.0	0.0	20.0	0.	0.	0.0	0.0	0.0

FIGURE A1-155

13	40.0	227865.0	0.0	41574.3	0.	0.	0.0	0.0	0.0
14	11.0	75771.8	0.0	11426.9	0.	0.	0.0	0.0	0.0
15	67.0	442226.5	0.0	69543.9	0.	0.	0.0	0.0	0.0
16	66.0	403220.2	0.0	68411.6	0.	0.	0.0	0.0	0.0
17	60.0	338654.5	0.0	62111.0	0.	0.	0.0	0.0	0.0
18	10.4	45862.2	0.0	10530.1	0.	0.	0.0	0.0	0.0
19	0.4	1393.1	0.0	33.0	0.	0.	0.0	0.0	0.0
20	0.2	769.1	0.0	5.4	0.	0.	0.0	0.0	0.0
21	4.1	11698.4	0.0	0.0	0.	0.	0.0	0.0	0.0
22	5.9	10816.0	0.0	0.0	0.	0.	0.0	0.0	0.0
23	6.1	3821.3	0.0	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	53.000	26.000
2	370.000	45.500
3	380.377	62.597
4	389.934	80.166
5	398.796	90.000

Factor of Safety
*** 1.496 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	370.000	45.500
3	380.944	62.240
4	391.317	79.340
5	396.131	90.000

Factor of Safety
*** 1.497 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	370.000	45.500
3	382.164	61.376
4	393.674	77.732
5	405.344	90.000

Factor of Safety
*** 1.501 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	370.000	45.500
3	381.764	61.674
4	390.743	79.545
5	399.594	90.000

Factor of Safety
*** 1.502 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	370.000	45.500
3	379.079	63.321
4	388.119	81.161
5	395.817	90.000

Factor of Safety
*** 1.502 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	370.000	45.500
3	379.313	63.199

FIGURE A1-156

4	389.064	80.661
5	392.653	90.000

Factor of Safety
*** 1.502 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	370.000	45.500
3	381.210	62.063
4	392.893	78.296
5	396.780	90.000

Factor of Safety
*** 1.504 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	370.000	45.500
3	382.747	60.912
4	392.670	78.276
5	400.550	90.000

Factor of Safety
*** 1.505 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	53.000	26.000
2	370.000	45.500
3	379.562	63.066
4	393.324	77.579
5	400.652	90.000

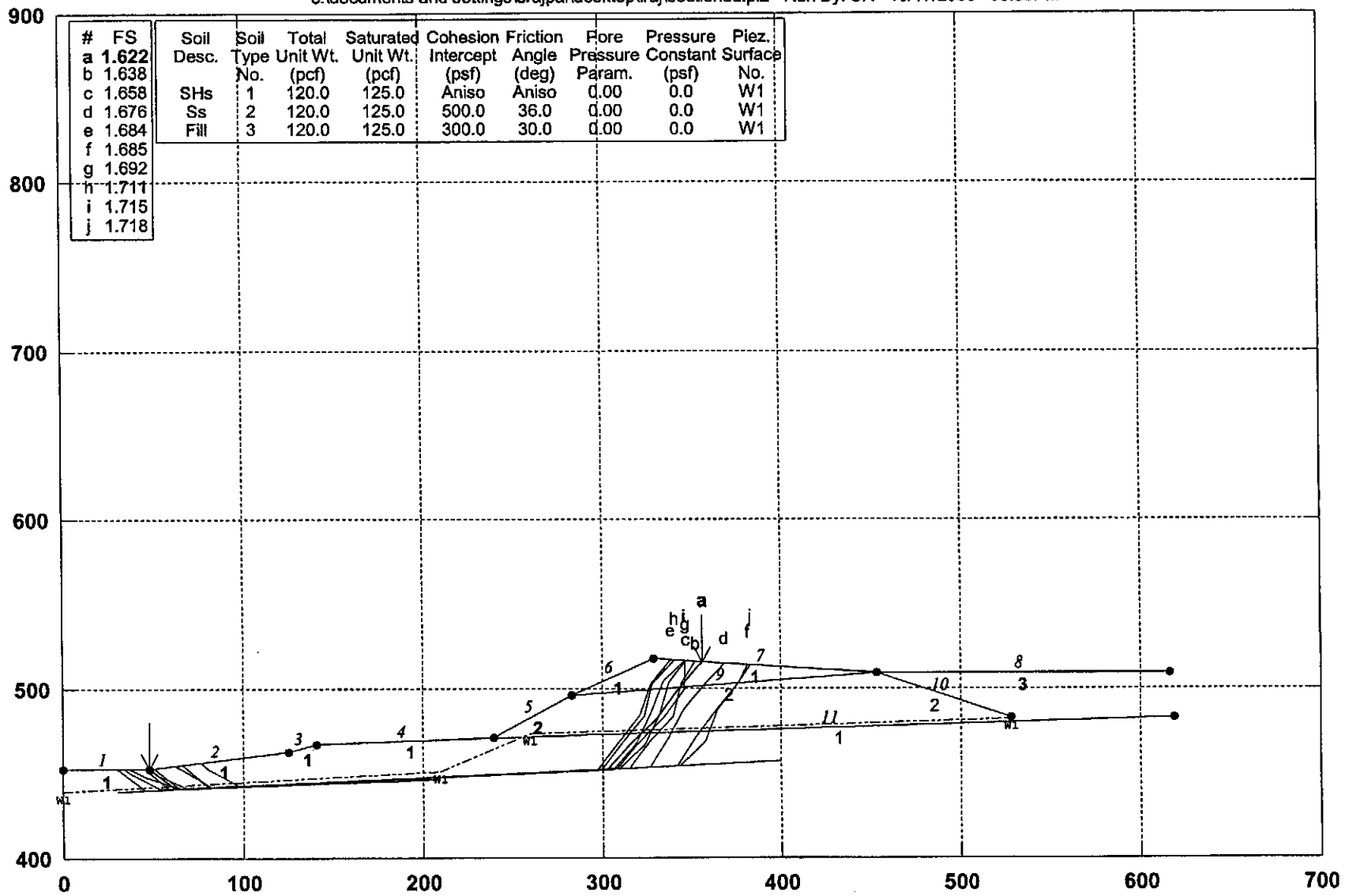
Factor of Safety
*** 1.505 ***

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

FIGURE A1-157

MV/Landslide/011492-001 d1 (Search for min.)

c:\documents and settings\srajpal\desktop\iraj\sectiondd.pl2 Run By: SR 10/17/2006 05:56PM



#	FS
a	1.622
b	1.638
c	1.658
d	1.676
e	1.684
f	1.685
g	1.692
h	1.711
i	1.715
j	1.718

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
SHs	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Ss	2	120.0	125.0	500.0	36.0	0.00	0.0	W1
Fill	3	120.0	125.0	300.0	30.0	0.00	0.0	W1

GSTABL7 v.2 FSmin=1.622

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

FIGURE A1-158

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 05:56PM
Run By: SR
Input Data Filename: c:\Documents and Settings\srajpal\Desktop\Iraj\sectiondd.in
Output Filename: c:\Documents and Settings\srajpal\Desktop\Iraj\sectiondd.OUT
Unit System: English
Plotted Output Filename: c:\Documents and Settings\srajpal\Desktop\Iraj\sectiondd.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001
d1 (Search for min.)

BOUNDARY COORDINATES
8 Top Boundaries
11 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	452.50	48.00	452.50	1
2	48.00	452.50	125.00	462.50	1
3	125.00	462.50	140.50	467.50	1
4	140.50	467.50	240.00	471.20	1
5	240.00	471.20	283.20	496.20	2
6	283.20	496.20	328.80	517.50	1
7	328.80	517.50	453.60	508.75	1
8	453.60	508.75	616.80	508.75	3
9	283.20	496.20	453.60	508.75	2
10	453.60	508.75	528.00	482.50	2
11	240.00	471.20	618.80	482.50	1

User Specified Y-Origin = 400.00(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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	500.0	36.0	0.00	0.0	1
3	120.0	125.0	300.0	30.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

FIGURE A1-159

Unit Weight of Water = 62.40 (pcf)
Piezometric Surface No. 1 Specified by 4 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	439.50
2	210.00	451.40
3	260.00	473.80
4	528.00	481.80

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.
400 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	30.00	439.70	210.00	446.70	0.00
2	240.00	448.40	400.00	457.50	0.00

WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	109.92	460.54
2	112.97	457.54
3	127.20	443.48
4	247.88	448.85
5	248.08	468.85
6	259.84	482.68

Factor of Safety for the Preceding Surface is Between22.148 and22.139
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 = 400
WARNING! The Factor of Safety Calculation for one or More Trial Surfaces
Did Not Converge in 20 Iterations.
Number of Trial Surfaces with Non-Converged FS = 1
Number of Trial Surfaces With Valid FS = 399
Percentage of Trial Surfaces With Non-Valid FS Solutions
of the Total Attempted = 0.2 %
Statistical Data On All Valid FS Values:
FS Max = 35.408 FS Min = 1.622 FS Ave = 2.644
Standard Deviation = 2.048 Coefficient of Variation = 77.45 %
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	48.225	452.529
2	62.904	440.980
3	302.295	451.943
4	315.436	467.020
5	329.325	481.410
6	341.318	497.416
7	353.657	513.156
8	355.978	515.594

Factor of Safety
*** 1.622 ***
Individual data on the 19 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	12.2	8196.0	0.0	0.0	0.	0.	0.0	0.0	0.0
2	2.5	3668.2	0.0	204.6	0.	0.	0.0	0.0	0.0

FIGURE A1-160

3	62.1	120470.2	0.0	9396.2	0.	0.	0.0	0.0	0.0
4	15.5	38948.7	0.0	2753.7	0.	0.	0.0	0.0	0.0
5	69.5	190195.7	0.0	14352.9	0.	0.	0.0	0.0	0.0
6	30.0	81518.2	0.0	18209.0	0.	0.	0.0	0.0	0.0
7	15.2	49179.6	0.0	17869.0	0.	0.	0.0	0.0	0.0
8	4.8	18651.2	0.0	6832.2	0.	0.	0.0	0.0	0.0
9	23.2	111174.9	0.0	34214.1	0.	0.	0.0	0.0	0.0
10	19.1	114852.6	0.0	27757.9	0.	0.	0.0	0.0	0.0
11	13.1	77842.3	0.0	19689.8	0.	0.	0.0	0.0	0.0
12	6.4	32697.4	0.0	2997.1	0.	0.	0.0	0.0	0.0
13	2.0	9581.3	0.0	179.4	0.	0.	0.0	0.0	0.0
14	5.0	22745.4	0.0	0.0	0.	0.	0.0	0.0	0.0
15	0.5	2291.7	0.0	0.0	0.	0.	0.0	0.0	0.0
16	12.0	39763.3	0.0	0.0	0.	0.	0.0	0.0	0.0
17	2.5	5351.6	0.0	0.0	0.	0.	0.0	0.0	0.0
18	9.8	10793.4	0.0	0.0	0.	0.	0.0	0.0	0.0
19	2.3	362.3	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	34.194	452.500
2	37.013	450.418
3	54.467	440.651
4	314.795	452.654
5	326.183	469.095
6	339.913	483.638
7	344.370	503.135
8	351.876	515.882

Factor of Safety
*** 1.638 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	37.149	452.500
2	46.597	447.623
3	65.497	441.080
4	309.287	452.341
5	323.426	466.486
6	331.822	484.639
7	337.290	503.877
8	346.355	516.269

Factor of Safety
*** 1.658 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	76.196	456.162
2	80.659	452.430
3	97.928	442.342
4	326.240	453.305
5	336.366	470.552
6	345.972	488.094
7	358.465	503.712
8	368.416	514.722

Factor of Safety
*** 1.676 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	50.834	452.868
2	65.101	441.065
3	297.373	451.663
4	308.369	468.369
5	320.847	483.999
6	327.179	502.971
7	337.687	516.877

Factor of Safety

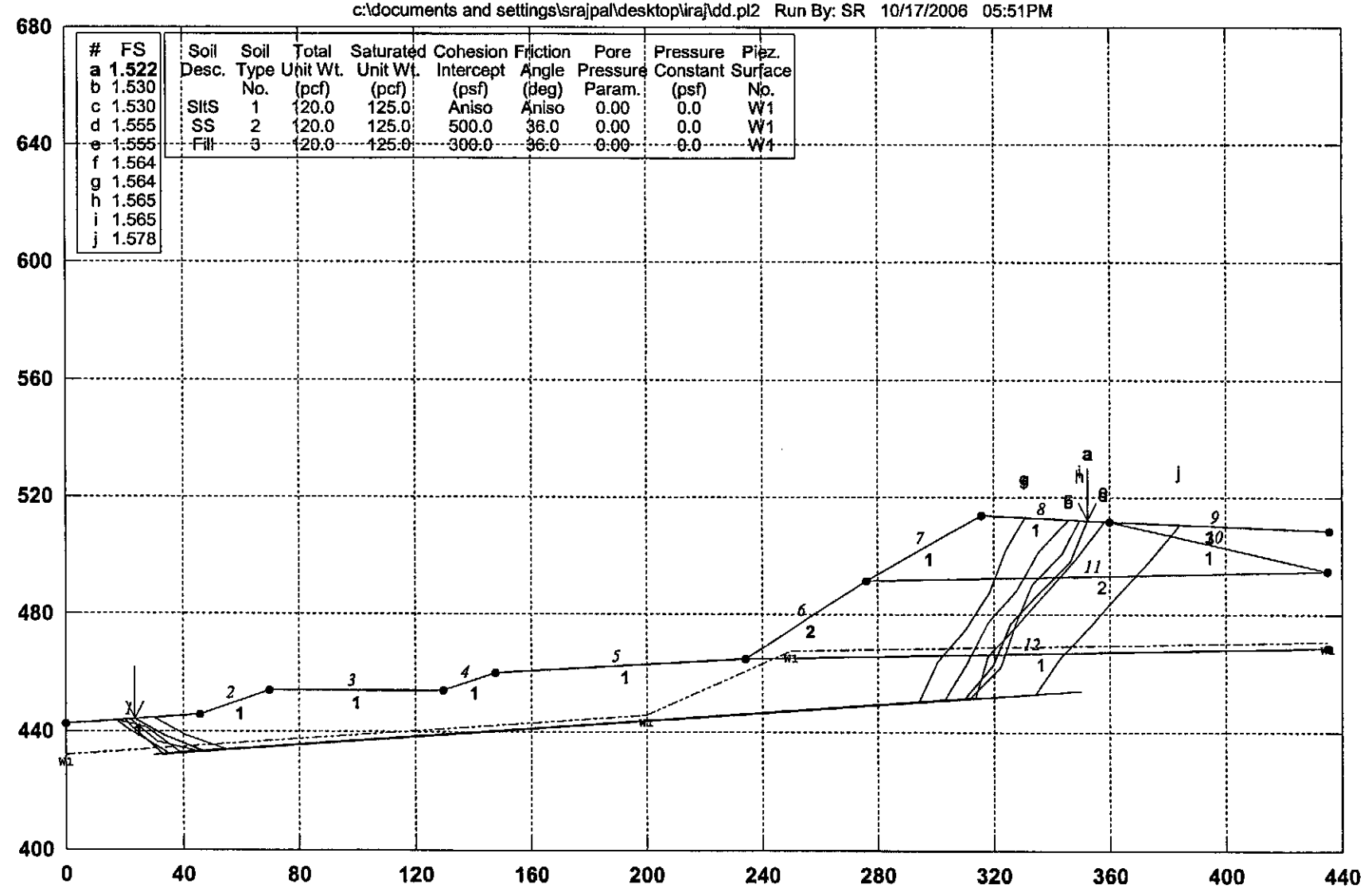
FIGURE A1-161

```
      ***    1.684   ***
Failure Surface Specified By  8 Coordinate Points
  Point       X-Surf      Y-Surf
   No.         (ft)        (ft)
    1         62.465      454.379
    2         65.962      452.983
    3         82.504      441.742
    4        341.592      454.178
    5        351.623      471.481
    6        363.472      487.593
    7        376.103      503.099
    8        381.666      513.793
       Factor of Safety
      ***    1.685   ***
Failure Surface Specified By  8 Coordinate Points
  Point       X-Surf      Y-Surf
   No.         (ft)        (ft)
    1         29.943      452.500
    2         30.058      452.418
    3         45.985      440.322
    4        308.193      452.279
    5        320.434      468.095
    6        334.169      482.633
    7        345.566      499.068
    8        346.342      516.270
       Factor of Safety
      ***    1.692   ***
Failure Surface Specified By  8 Coordinate Points
  Point       X-Surf      Y-Surf
   No.         (ft)        (ft)
    1         48.670      452.587
    2         51.703      449.568
    3         69.891      441.251
    4        299.443      451.781
    5        310.906      468.170
    6        323.589      483.635
    7        327.643      503.219
    8        340.315      516.693
       Factor of Safety
      ***    1.711   ***
Failure Surface Specified By  7 Coordinate Points
  Point       X-Surf      Y-Surf
   No.         (ft)        (ft)
    1         66.686      454.927
    2         81.317      441.696
    3        305.850      452.145
    4        318.451      467.676
    5        327.163      485.679
    6        334.250      504.381
    7        345.438      516.333
       Factor of Safety
      ***    1.715   ***
Failure Surface Specified By  7 Coordinate Points
  Point       X-Surf      Y-Surf
   No.         (ft)        (ft)
    1         45.907      452.500
    2         58.949      440.826
    3        343.154      454.267
    4        357.158      468.546
    5        364.086      487.308
    6        376.247      503.186
    7        382.775      513.716
       Factor of Safety
      ***    1.718   ***
          **** END OF GSTABL7 OUTPUT ****
```

FIGURE A1-162

011492.001/ Cross Section at d2 (Search for min.)

c:\documents and settings\srajpal\desktop\iraj\dd.pl2 Run By: SR 10/17/2006 05:51PM



#	FS
a	1.522
b	1.530
c	1.530
d	1.555
e	1.555
f	1.564
g	1.564
h	1.565
i	1.565
j	1.578

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
SltS	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
SS	2	120.0	125.0	500.0	36.0	0.00	0.0	W1
Fill	3	120.0	125.0	300.0	36.0	0.00	0.0	W1

GSTABL7 v.2 FSmin=1.522

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

FIGURE A1-163

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

****

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: 10/17/2006
Time of Run: 05:51PM
Run By: SR
Input Data Filename: c:\Documents and Settings\srajpal\Desktop\Iraj\dd.in
Output Filename: c:\Documents and Settings\srajpal\Desktop\Iraj\dd.OUT
Unit System: English
Plotted Output Filename: c:\Documents and Settings\srajpal\Desktop\Iraj\dd.PLT
PROBLEM DESCRIPTION: 011492.001/ Cross Section at d2
(Search for min.)

BOUNDARY COORDINATES
9 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	442.50	45.80	445.60	1
2	45.80	445.60	69.60	453.75	1
3	69.60	453.75	129.60	453.75	1
4	129.60	453.75	147.60	460.00	1
5	147.60	460.00	234.00	465.00	1
6	234.00	465.00	276.00	491.25	2
7	276.00	491.25	315.60	513.75	1
8	315.60	513.75	360.00	511.50	1
9	360.00	511.50	435.60	508.50	3
10	360.00	511.50	435.00	495.00	1
11	276.00	491.25	435.00	495.00	2
12	234.00	465.00	435.00	468.75	1

User Specified Y-Origin = 400.00(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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	500.0	36.0	0.00	0.0	1
3	120.0	125.0	300.0	36.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 62.50 (pcf)
Piezometric Surface No. 1 Specified by 4 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	432.00
2	200.00	445.80
3	250.00	467.60
4	435.00	470.80

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.
600 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	30.00	432.07	230.00	445.87	0.00
2	240.00	446.56	350.00	454.15	0.00

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 = 600
Number of Trial Surfaces With Valid FS = 600
Statistical Data On All Valid FS Values:
FS Max = 53.677 FS Min = 1.522 FS Ave = 2.495
Standard Deviation = 2.423 Coefficient of Variation = 97.14 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	23.395	444.083
2	33.035	438.646
3	47.029	433.245
4	309.898	451.383
5	319.538	462.875
6	325.575	476.607
7	335.941	487.449
8	346.338	498.260
9	352.048	511.903

Factor of Safety
*** 1.522 ***
Individual data on the 22 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	9.6	3522.4	0.0	0.0	0.	0.	0.0	0.0	0.0
2	9.6	9521.4	0.0	0.0	0.	0.	0.0	0.0	0.0
3	3.2	4253.7	0.0	152.9	0.	0.	0.0	0.0	0.0
4	1.2	1828.5	0.0	141.6	0.	0.	0.0	0.0	0.0
5	22.6	43187.8	0.0	2828.1	0.	0.	0.0	0.0	0.0
6	60.0	122118.7	0.0	7517.8	0.	0.	0.0	0.0	0.0
7	18.0	37573.0	0.0	2255.3	0.	0.	0.0	0.0	0.0
8	52.4	123290.8	0.0	6565.5	0.	0.	0.0	0.0	0.0
9	34.0	79096.9	0.0	17549.5	0.	0.	0.0	0.0	0.0
10	10.5	28250.5	0.0	10774.4	0.	0.	0.0	0.0	0.0
11	5.5	17882.4	0.0	6681.0	0.	0.	0.0	0.0	0.0
12	26.0	111689.5	0.0	32052.5	0.	0.	0.0	0.0	0.0
13	33.9	209173.0	0.0	38500.9	0.	0.	0.0	0.0	0.0
14	5.7	39635.9	0.0	7710.0	0.	0.	0.0	0.0	0.0
15	3.9	25264.4	0.0	3155.9	0.	0.	0.0	0.0	0.0
16	1.6	9683.8	0.0	1041.4	0.	0.	0.0	0.0	0.0
17	1.0	5362.7	0.0	167.2	0.	0.	0.0	0.0	0.0

FIGURE A1-165

18	3.4	16621.1	0.0	0.0	0.	0.	0.0	0.0	0.0
19	10.4	38503.2	0.0	0.0	0.	0.	0.0	0.0	0.0
20	5.1	13838.0	0.0	0.0	0.	0.	0.0	0.0	0.0
21	5.3	10618.3	0.0	0.0	0.	0.	0.0	0.0	0.0
22	5.7	4772.8	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	21.716	443.970
2	30.779	436.614
3	45.369	433.130
4	303.399	450.935
5	310.876	463.938
6	317.918	477.183
7	327.899	488.380
8	335.356	501.395
9	345.823	512.139
10	345.897	512.215

Factor of Safety
*** 1.530 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	21.716	443.970
2	30.779	436.614
3	45.369	433.130
4	303.399	450.935
5	310.876	463.938
6	317.918	477.183
7	327.899	488.380
8	335.356	501.395
9	345.823	512.139
10	345.897	512.215

Factor of Safety
*** 1.530 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	17.274	443.669
2	21.887	440.078
3	34.773	432.399
4	313.685	451.644
5	317.980	466.016
6	328.216	476.981
7	338.451	487.946
8	348.370	499.198
9	357.547	511.064
10	357.996	511.602

Factor of Safety
*** 1.555 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	17.274	443.669
2	21.887	440.078
3	34.773	432.399
4	313.685	451.644
5	317.980	466.016
6	328.216	476.981
7	338.451	487.946
8	348.370	499.198
9	357.547	511.064
10	357.996	511.602

Factor of Safety
*** 1.555 ***

Failure Surface Specified By 9 Coordinate Points

Point	X-Surf	Y-Surf

FIGURE A1-166

No.	(ft)	(ft)
1	20.065	443.858
2	21.773	442.156
3	33.064	432.281
4	294.053	450.290
5	300.830	463.672
6	310.240	475.353
7	318.671	487.759
8	324.231	501.691
9	330.776	512.981

Factor of Safety
*** 1.564 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	20.065	443.858
2	21.773	442.156
3	33.064	432.281
4	294.053	450.290
5	300.830	463.672
6	310.240	475.353
7	318.671	487.759
8	324.231	501.691
9	330.776	512.981

Factor of Safety
*** 1.564 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	18.382	443.744
2	27.151	441.555
3	39.265	432.709
4	311.859	451.518
5	322.464	462.126
6	327.367	476.302
7	333.206	490.119
8	343.655	500.881
9	349.718	512.021

Factor of Safety
*** 1.565 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	18.382	443.744
2	27.151	441.555
3	39.265	432.709
4	311.859	451.518
5	322.464	462.126
6	327.367	476.302
7	333.206	490.119
8	343.655	500.881
9	349.718	512.021

Factor of Safety
*** 1.565 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	29.756	444.514
2	40.639	438.469
3	54.890	433.787
4	334.202	453.060
5	342.866	465.305
6	353.284	476.097
7	363.224	487.330
8	373.634	498.130
9	383.424	509.495
10	383.698	510.560

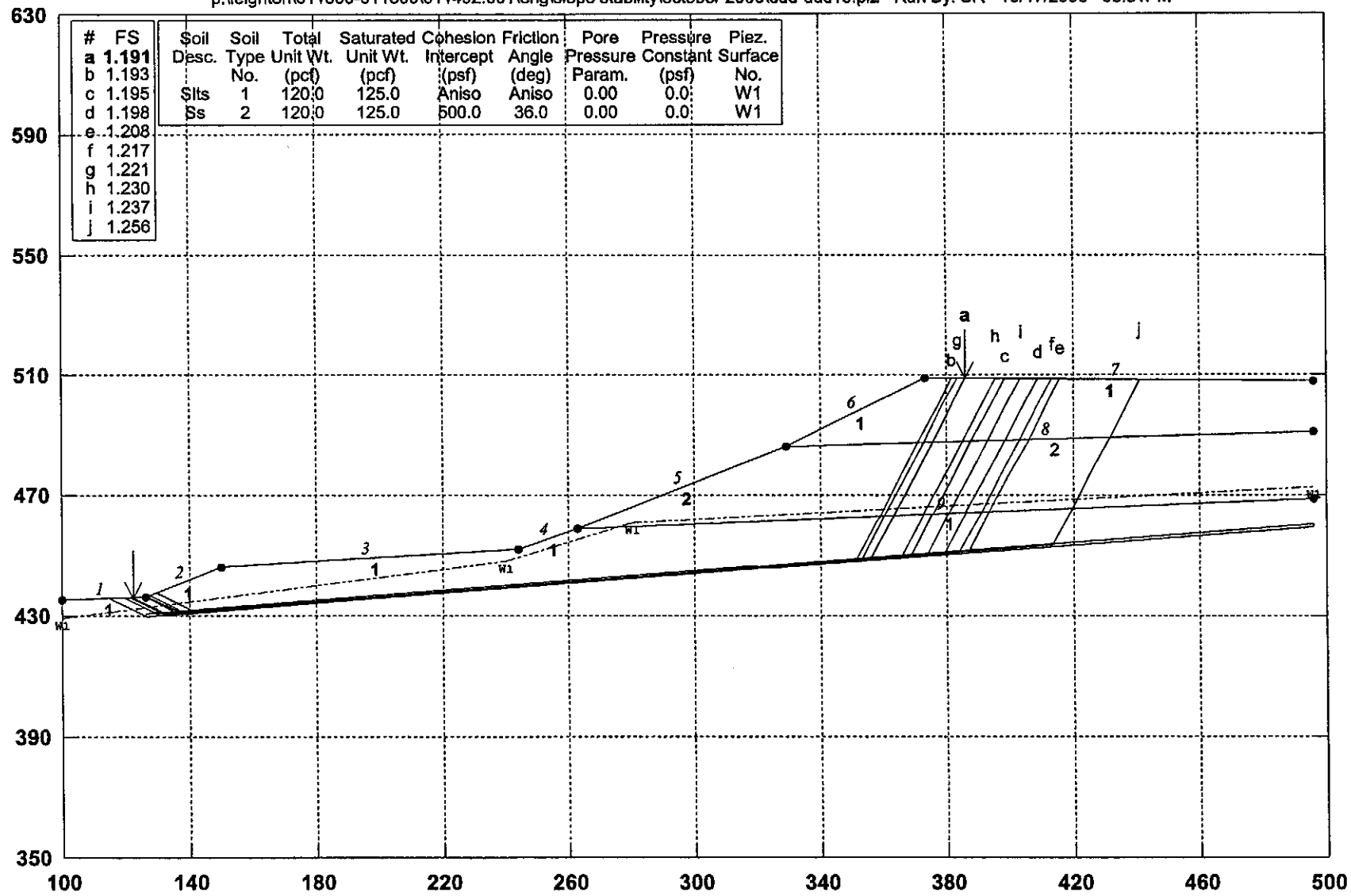
FIGURE A1-167

```
 Factor of Safety
***     1.578    ***
     **** END OF GSTABL7 OUTPUT ****
```

FIGURE A1-168

MV Landslide/ 011492-001 Sec d3 (Search for min.)

p:\leighton\011000-011500\011492.001\eng\slope stability\october 2006\ddd-ddd'r3.pl2 Run By: SR 10/17/2006 03:51PM



#	FS
a	1.191
b	1.193
c	1.195
d	1.198
e	1.208
f	1.217
g	1.221
h	1.230
i	1.237
j	1.256

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Ss	2	120.0	125.0	500.0	36.0	0.00	0.0	W1

GSTABL7 v.2 FSmin=1.191

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

FIGURE A1-169

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 10/17/2006
Time of Run: 03:51PM
Run By: SR
Input Data Filename: p:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\ddd-ddd'r3.in
Output Filename: p:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\ddd-ddd'r3.OUT
Unit System: English
Plotted Output Filename: p:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\ddd-ddd'r3.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec d3
(Search for min.)

BOUNDARY COORDINATES
7 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	100.00	435.00	126.00	436.00	1
2	126.00	436.00	150.00	446.00	1
3	150.00	446.00	244.00	452.00	1
4	244.00	452.00	263.00	459.00	1
5	263.00	459.00	329.00	486.00	2
6	329.00	486.00	373.00	509.00	1
7	373.00	509.00	496.00	508.00	1
8	329.00	486.00	496.00	491.00	2
9	263.00	459.00	496.00	469.00	1

User Specified Y-Origin = 350.00(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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	500.0	36.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	100.00	429.00
2	240.00	448.00
3	280.00	461.00
4	496.00	473.00

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.
The Active And Passive Portions Of The Sliding Surfaces
Are Generated According To The Rankine Theory.
400 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	126.00	430.10	320.00	445.80	1.00
2	323.00	446.00	496.00	460.00	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 = 400
Number of Trial Surfaces With Valid FS = 400
Statistical Data On All Valid FS Values:
FS Max = 4.622 FS Min = 1.191 FS Ave = 1.373
Standard Deviation = 0.468 Coefficient of Variation = 34.10 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	122.416	435.862
2	133.614	430.279
3	356.060	448.947
4	362.753	462.371
5	363.217	463.301
6	370.027	476.666
7	375.492	487.392
8	382.185	500.816
9	386.212	508.893

Factor of Safety
*** 1.191 ***
Individual data on the 19 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	3.6	414.0	0.0	0.0	0.	0.	0.0	0.0	0.0
2	2.4	889.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	5.2	4094.8	0.0	592.3	0.	0.	0.0	0.0	0.0
4	16.4	23152.0	0.0	3803.9	0.	0.	0.0	0.0	0.0
5	90.0	148078.5	0.0	36419.4	0.	0.	0.0	0.0	0.0
6	4.0	6184.3	0.0	2323.2	0.	0.	0.0	0.0	0.0
7	19.0	35709.4	0.0	14333.8	0.	0.	0.0	0.0	0.0
8	12.5	30823.2	0.0	12398.3	0.	0.	0.0	0.0	0.0
9	4.5	12648.3	0.0	5046.1	0.	0.	0.0	0.0	0.0
10	49.0	188728.1	0.0	54436.3	0.	0.	0.0	0.0	0.0
11	27.1	149229.5	0.0	28234.8	0.	0.	0.0	0.0	0.0
12	6.7	37460.8	0.0	9128.5	0.	0.	0.0	0.0	0.0
13	0.5	2284.6	0.0	180.0	0.	0.	0.0	0.0	0.0
14	1.2	5808.9	0.0	194.3	0.	0.	0.0	0.0	0.0
15	5.6	23357.2	0.0	0.0	0.	0.	0.0	0.0	0.0
16	3.0	10217.0	0.0	0.0	0.	0.	0.0	0.0	0.0

FIGURE A1-171

17	2.5	7190.3	0.0	0.0	0.	0.	0.0	0.0	0.0
18	6.7	11925.7	0.0	0.0	0.	0.	0.0	0.0	0.0
19	4.0	1959.3	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	119.663	435.756
2	129.635	430.784
3	351.161	448.026
4	357.854	461.450
5	358.680	463.106
6	365.490	476.472
7	370.985	487.257
8	377.678	500.681
9	381.790	508.929

Factor of Safety
*** 1.193 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	126.815	436.340
2	137.213	431.155
3	368.731	450.018
4	375.424	463.442
5	375.619	463.833
6	382.429	477.199
7	387.811	487.761
8	394.504	501.185
9	398.298	508.794

Factor of Safety
*** 1.195 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.629	435.832
2	132.477	430.423
3	379.375	450.398
4	386.068	463.822
5	386.302	464.292
6	393.112	477.657
7	398.422	488.078
8	405.115	501.503
9	408.708	508.710

Factor of Safety
*** 1.198 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.988	435.846
2	132.098	430.805
3	387.146	451.548
4	393.658	464.608
5	400.467	477.973
6	405.728	488.297
7	412.421	501.721
8	415.876	508.651

Factor of Safety
*** 1.208 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	126.143	436.060
2	136.455	430.918
3	384.274	451.319
4	390.840	464.487
5	397.649	477.852
6	402.929	488.213

FIGURE A1-172

7	409.622	501.637
8	413.130	508.674

Factor of Safety
*** 1.217 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	127.487	436.620
2	137.971	431.392
3	353.188	448.717
4	359.881	462.141
5	360.399	463.180
6	367.209	476.545
7	372.693	487.308
8	379.386	500.732
9	383.466	508.915

Factor of Safety
*** 1.221 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	129.313	437.380
2	141.571	431.269
3	365.859	449.789
4	372.552	463.213
5	372.802	463.713
6	379.611	477.078
7	385.012	487.677
8	391.705	501.101
9	395.552	508.817

Factor of Safety
*** 1.230 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	129.523	437.468
2	141.192	431.650
3	373.631	449.939
4	380.324	463.363
5	380.666	464.050
6	387.476	477.415
7	392.824	487.911
8	399.517	501.335
9	403.216	508.754

Factor of Safety
*** 1.237 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	115.083	435.580
2	126.604	429.836
3	413.333	453.229
4	419.560	465.719
5	426.370	479.084
6	431.457	489.068
7	438.150	502.492
8	441.119	508.446

Factor of Safety
*** 1.256 ***

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

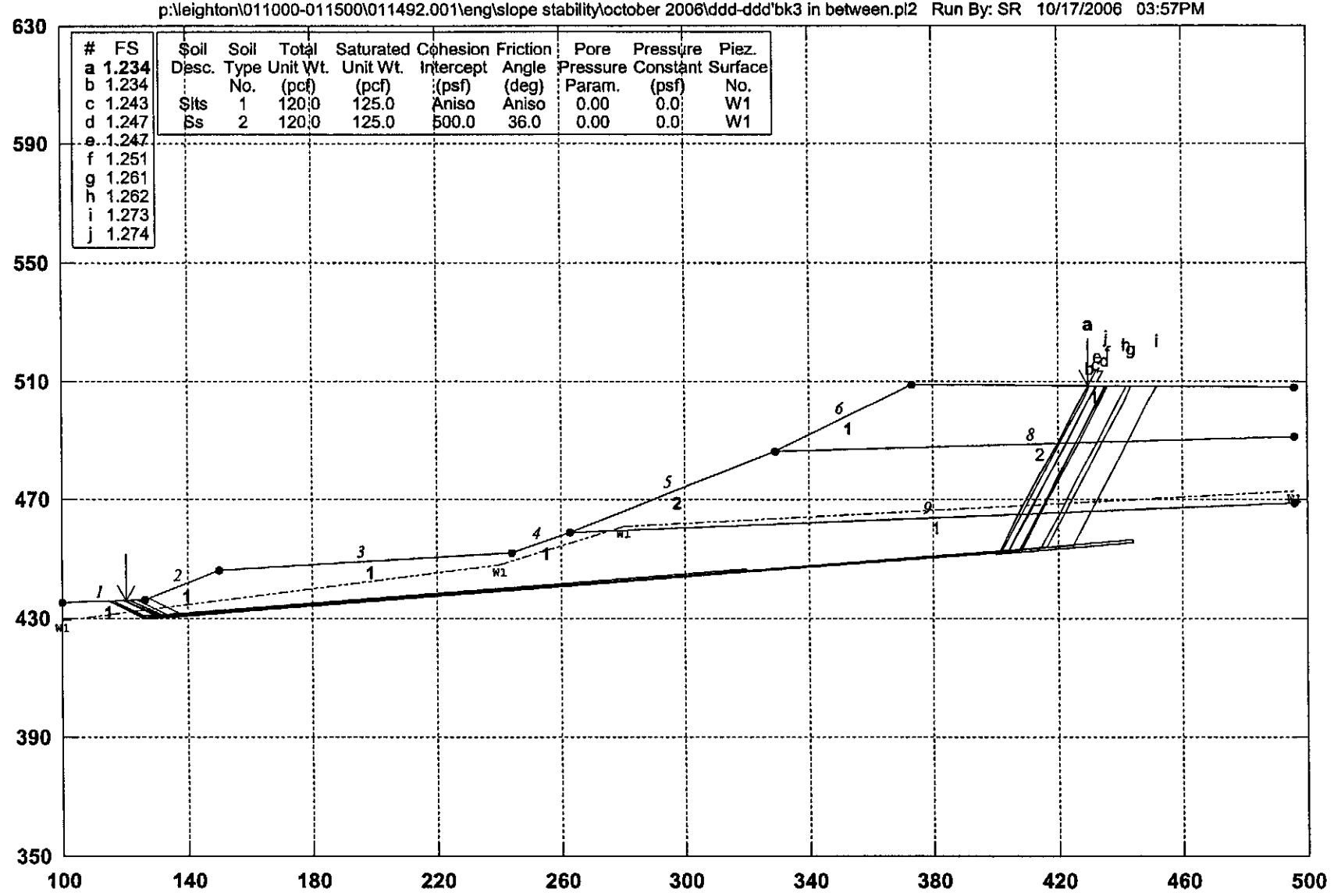
FIGURE A1-173

MV Landslide/ 011492-001 Sec d3 (Risk Level)

p:\leighton\011000-011500\011492.001\eng\slope stability\october 2006\ddd-ddd'bk3 in between.pl2 Run By: SR 10/17/2006 03:57PM

#	FS
a	1.234
b	1.234
c	1.243
d	1.247
e	1.247
f	1.251
g	1.261
h	1.262
i	1.273
j	1.274

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Ss	2	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.234

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

FIGURE A1-174

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(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: 10/17/2006
Time of Run: 03:57PM
Run By: SR
Input Data Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\ddd-ddd'bk3 in between.in
Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\ddd-ddd'bk3 in between.OUT
Unit System: English
Plotted Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\ddd-ddd'bk3 in between.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec d3
(Risk Level)

BOUNDARY COORDINATES
7 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	100.00	435.00	126.00	436.00	1
2	126.00	436.00	150.00	446.00	1
3	150.00	446.00	244.00	452.00	1
4	244.00	452.00	263.00	459.00	1
5	263.00	459.00	329.00	486.00	2
6	329.00	486.00	373.00	509.00	1
7	373.00	509.00	496.00	508.00	1
8	329.00	486.00	496.00	491.00	2
9	263.00	459.00	496.00	469.00	1

User Specified Y-Origin = 350.00(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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	500.0	36.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

FIGURE A1-175

Unit Weight of Water = 62.40 (pcf)
Piezometric Surface No. 1 Specified by 4 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	100.00	429.00
2	240.00	448.00
3	280.00	461.00
4	496.00	473.00

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.
The Active And Passive Portions Of The Sliding Surfaces
Are Generated According To The Rankine Theory.
400 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	126.00	430.10	320.00	445.80	1.00
2	400.00	452.20	444.00	455.80	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 = 400
Number of Trial Surfaces With Valid FS = 400
Statistical Data On All Valid FS Values:
FS Max = 2.566 FS Min = 1.234 FS Ave = 1.590
Standard Deviation = 0.286 Coefficient of Variation = 17.98 %
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	120.449	435.787
2	130.772	430.640
3	401.233	452.483
4	407.575	465.205
5	414.385	478.570
6	419.552	488.711
7	426.245	502.135
8	429.439	508.541

Factor of Safety
*** 1.234 ***
Individual data on the 18 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	5.6	992.7	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.8	309.5	0.0	0.0	0.	0.	0.0	0.0	0.0
3	4.0	2673.3	0.0	353.6	0.	0.	0.0	0.0	0.0
4	19.2	24701.5	0.0	3689.0	0.	0.	0.0	0.0	0.0
5	90.0	143616.7	0.0	34175.4	0.	0.	0.0	0.0	0.0
6	4.0	6060.1	0.0	2260.4	0.	0.	0.0	0.0	0.0
7	19.0	35206.0	0.0	14077.9	0.	0.	0.0	0.0	0.0
8	12.5	30569.7	0.0	12268.1	0.	0.	0.0	0.0	0.0
9	4.5	12572.0	0.0	5006.6	0.	0.	0.0	0.0	0.0
10	49.0	188415.5	0.0	54265.7	0.	0.	0.0	0.0	0.0
11	44.0	262742.5	0.0	45499.6	0.	0.	0.0	0.0	0.0
12	28.2	197150.6	0.0	27585.7	0.	0.	0.0	0.0	0.0
13	6.3	38268.1	0.0	8042.7	0.	0.	0.0	0.0	0.0
14	1.5	7633.5	0.0	299.4	0.	0.	0.0	0.0	0.0
15	5.3	22452.7	0.0	0.0	0.	0.	0.0	0.0	0.0
16	5.2	15502.5	0.0	0.0	0.	0.	0.0	0.0	0.0
17	6.7	10578.5	0.0	0.0	0.	0.	0.0	0.0	0.0

FIGURE A1-176

18 3.2 1232.6 0.0 0.0 0. 0. 0.0 0.0 0.0

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	116.193	435.623
2	126.414	430.527
3	401.963	452.540
4	408.293	465.236
5	415.103	478.601
6	420.265	488.732
7	426.958	502.156
8	430.138	508.535

Factor of Safety
*** 1.234 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	114.689	435.565
2	126.036	429.908
3	403.940	452.223
4	410.474	465.329
5	417.284	478.694
6	422.432	488.797
7	429.125	502.221
8	432.264	508.518

Factor of Safety
*** 1.243 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	119.663	435.756
2	129.635	430.784
3	407.162	452.533
4	413.609	465.464
5	420.419	478.829
6	425.546	488.891
7	432.239	502.315
8	435.319	508.493

Factor of Safety
*** 1.247 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.561	435.906
2	134.371	430.516
3	404.455	452.793
4	410.711	465.340
5	417.521	478.705
6	422.667	488.804
7	429.360	502.228
8	432.495	508.516

Factor of Safety
*** 1.247 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	122.416	435.862
2	133.614	430.279
3	408.408	453.159
4	414.564	465.505
5	421.374	478.870
6	426.494	488.919
7	433.187	502.343
8	436.249	508.486

Factor of Safety
*** 1.251 ***

Failure Surface Specified By 8 Coordinate Points

FIGURE A1-177

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.988	435.846
2	132.098	430.805
3	416.315	453.892
4	422.269	465.836
5	429.079	479.201
6	434.148	489.148
7	440.841	502.572
8	443.759	508.425

Factor of Safety
*** 1.261 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.629	435.832
2	132.477	430.423
3	414.338	453.209
4	420.598	465.764
5	427.408	479.129
6	432.487	489.098
7	439.180	502.522
8	442.130	508.438

Factor of Safety
*** 1.262 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	115.441	435.594
2	126.225	430.217
3	424.951	454.682
4	430.693	466.197
5	437.503	479.562
6	442.514	489.399
7	449.207	502.823
8	451.967	508.358

Factor of Safety
*** 1.273 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	127.487	436.620
2	137.971	431.392
3	407.678	453.103
4	413.846	465.474
5	420.656	478.839
6	425.781	488.898
7	432.474	502.322
8	435.550	508.491

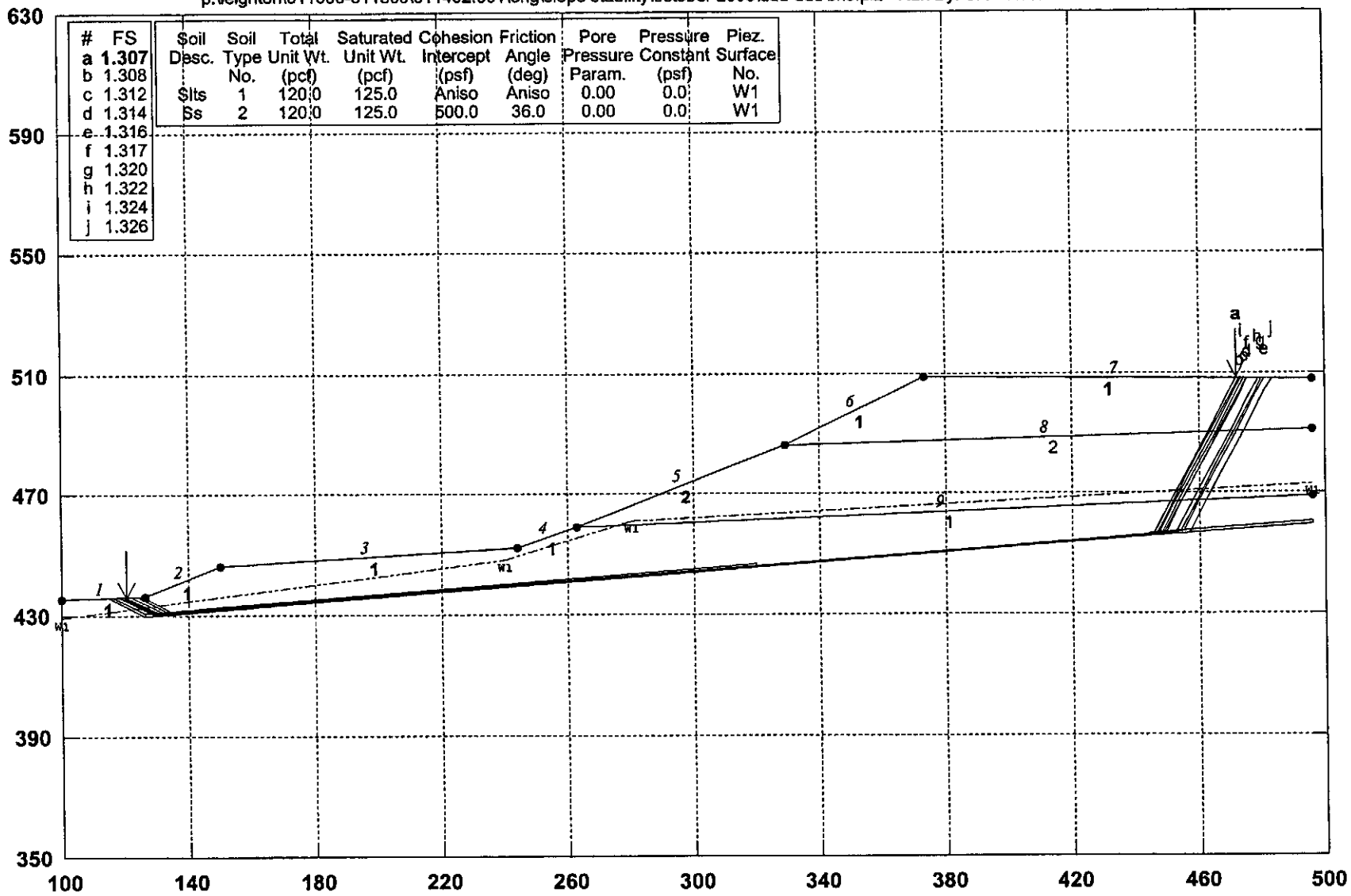
Factor of Safety
*** 1.274 ***

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

FIGURE A1-178

MV Landslide/ 011492-001 Sec d3 (Risk Level)

p:\leighton\011000-011500\011492.001\eng\slope stability\october 2006\ddd-ddd'bk3.pl2 Run By: SR 10/17/2006 03:53PM



#	FS
a	1.307
b	1.308
c	1.312
d	1.314
e	1.316
f	1.317
g	1.320
h	1.322
i	1.324
j	1.326

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Ss	2	120.0	125.0	500.0	36.0	0.00	0.0	W1

GSTABL7 v.2 FSmin=1.307

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

FIGURE A1-179

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(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: 10/17/2006
Time of Run: 03:53PM
Run By: SR
Input Data Filename: p:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\ddd-ddd'bk3.in
Output Filename: p:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\ddd-ddd'bk3.OUT
Unit System: English
Plotted Output Filename: p:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\ddd-ddd'bk3.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec d3
(Risk Level)

BOUNDARY COORDINATES
7 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	100.00	435.00	126.00	436.00	1
2	126.00	436.00	150.00	446.00	1
3	150.00	446.00	244.00	452.00	1
4	244.00	452.00	263.00	459.00	1
5	263.00	459.00	329.00	486.00	2
6	329.00	486.00	373.00	509.00	1
7	373.00	509.00	496.00	508.00	1
8	329.00	486.00	496.00	491.00	2
9	263.00	459.00	496.00	469.00	1

User Specified Y-Origin = 350.00(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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	500.0	36.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

FIGURE A1-180

Unit Weight of Water = 62.40 (pcf)
Piezometric Surface No. 1 Specified by 4 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	100.00	429.00
2	240.00	448.00
3	280.00	461.00
4	496.00	473.00

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.
The Active And Passive Portions Of The Sliding Surfaces
Are Generated According To The Rankine Theory.
400 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	126.00	430.10	320.00	445.80	1.00
2	444.00	455.80	496.00	460.00	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 = 400
Number of Trial Surfaces With Valid FS = 400
Statistical Data On All Valid FS Values:
FS Max = 2.554 FS Min = 1.307 FS Ave = 0.815
Standard Deviation = 0.637 Coefficient of Variation = 78.21 %
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	120.449	435.787
2	130.772	430.640
3	445.457	456.100
4	450.924	467.065
5	457.734	480.431
6	462.610	490.000
7	469.303	503.424
8	471.683	508.198

Factor of Safety
*** 1.307 ***
Individual data on the 18 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	5.6	992.7	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.8	309.5	0.0	0.0	0.	0.	0.0	0.0	0.0
3	4.0	2673.3	0.0	353.6	0.	0.	0.0	0.0	0.0
4	19.2	24698.1	0.0	3687.3	0.	0.	0.0	0.0	0.0
5	90.0	143513.0	0.0	34123.9	0.	0.	0.0	0.0	0.0
6	4.0	6052.2	0.0	2256.5	0.	0.	0.0	0.0	0.0
7	19.0	35164.2	0.0	14057.2	0.	0.	0.0	0.0	0.0
8	12.5	30538.7	0.0	12252.8	0.	0.	0.0	0.0	0.0
9	4.5	12560.2	0.0	5000.8	0.	0.	0.0	0.0	0.0
10	49.0	188263.0	0.0	54190.0	0.	0.	0.0	0.0	0.0
11	44.0	262568.9	0.0	45413.2	0.	0.	0.0	0.0	0.0
12	72.5	488316.8	0.0	68087.8	0.	0.	0.0	0.0	0.0
13	5.5	30946.2	0.0	6698.3	0.	0.	0.0	0.0	0.0
14	1.8	8547.8	0.0	424.1	0.	0.	0.0	0.0	0.0
15	5.0	19734.6	0.0	0.0	0.	0.	0.0	0.0	0.0
16	4.9	13502.3	0.0	0.0	0.	0.	0.0	0.0	0.0
17	6.7	9262.0	0.0	0.0	0.	0.	0.0	0.0	0.0

FIGURE A1-181

18 2.4 684.4 0.0 0.0 0. 0. 0.0 0.0 0.0

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	116.193	435.623
2	126.414	430.527
3	446.320	456.167
4	451.772	467.102
5	458.582	480.467
6	463.452	490.026
7	470.145	503.450
8	472.509	508.191

Factor of Safety
*** 1.308 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	118.946	435.729
2	130.393	430.021
3	447.793	455.810
4	453.459	467.174
5	460.268	480.539
6	465.127	490.076
7	471.820	503.500
8	474.153	508.178

Factor of Safety
*** 1.312 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	114.689	435.565
2	126.036	429.908
3	448.656	455.877
4	454.307	467.211
5	461.116	480.576
6	465.970	490.101
7	472.663	503.525
8	474.979	508.171

Factor of Safety
*** 1.314 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	118.159	435.698
2	129.256	430.166
3	454.801	456.941
4	460.044	467.457
5	466.853	480.822
6	471.668	490.272
7	478.361	503.696
8	480.570	508.125

Factor of Safety
*** 1.316 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.561	435.906
2	134.371	430.516
3	449.265	456.454
4	454.636	467.225
5	461.445	480.590
6	466.297	490.111
7	472.990	503.535
8	475.300	508.168

Factor of Safety
*** 1.317 ***

Failure Surface Specified By 8 Coordinate Points

FIGURE A1-182

Point No.	X-Surf (ft)	Y-Surf (ft)
1	122.416	435.862
2	133.614	430.279
3	453.937	456.874
4	459.195	467.420
5	466.005	480.786
6	470.826	490.246
7	477.519	503.670
8	479.743	508.132

Factor of Safety
*** 1.320 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	119.663	435.756
2	129.635	430.784
3	452.465	456.231
4	458.018	467.370
5	464.828	480.735
6	469.657	490.211
7	476.350	503.635
8	478.596	508.141

Factor of Safety
*** 1.322 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.064	435.964
2	134.750	431.135
3	446.929	455.744
4	452.610	467.138
5	459.420	480.503
6	464.285	490.050
7	470.978	503.474
8	473.326	508.184

Factor of Safety
*** 1.324 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	118.518	435.712
2	128.877	430.547
3	457.136	456.651
4	462.578	467.566
5	469.388	480.931
6	474.186	490.347
7	480.879	503.771
8	483.040	508.105

Factor of Safety
*** 1.326 ***

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

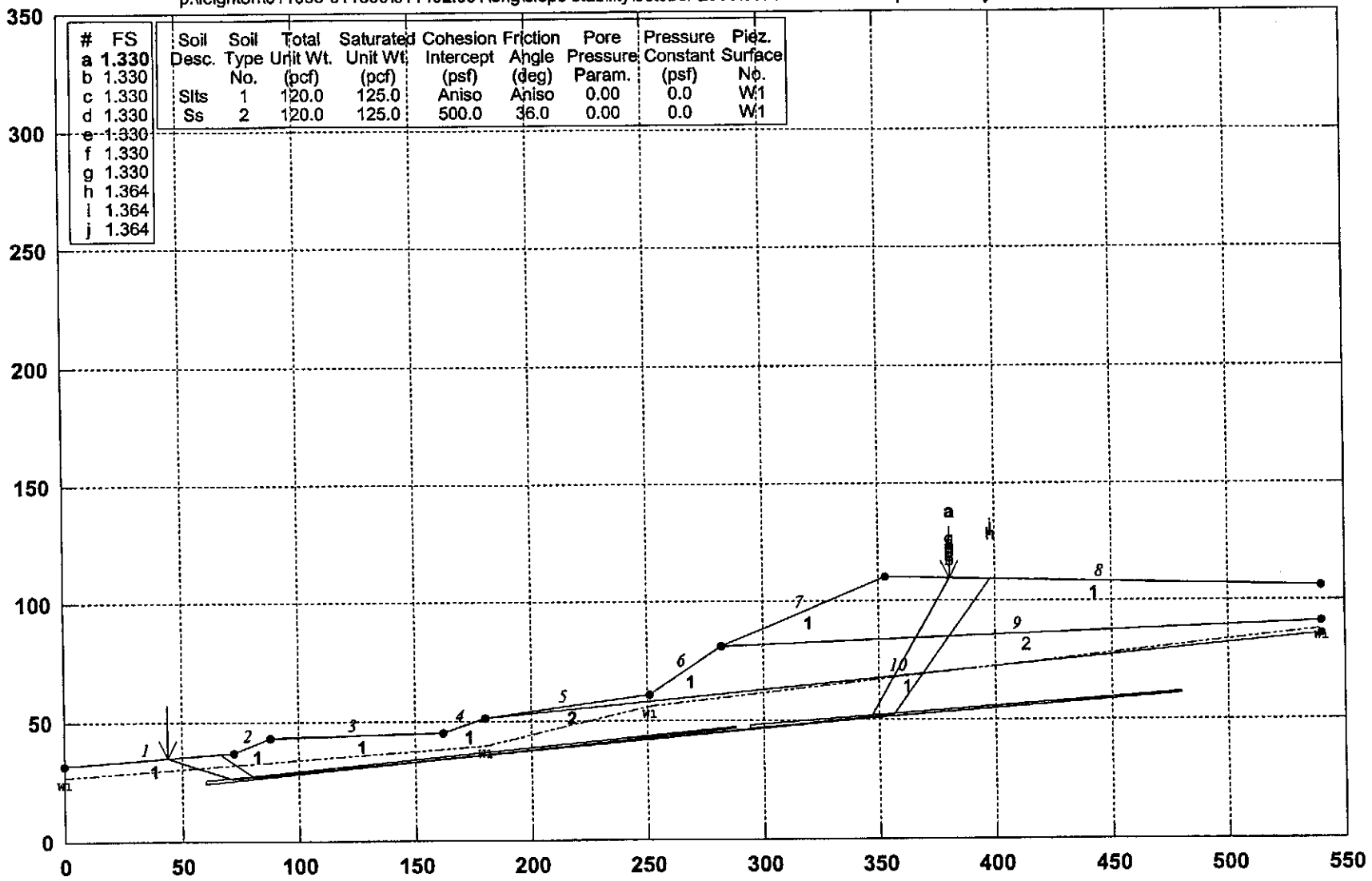
FIGURE A1-183

MV Landslide - PN 011492-001 - Sec d4 (Search for min.)

p:\leighton\011000-011500\011492.001\eng\slope stability\october 2006\oct 16 06\sec dddd.pl2 Run By: SR 10/17/2006 03:59PM

#	FS
a	1.330
b	1.330
c	1.330
d	1.330
e	1.330
f	1.330
g	1.330
h	1.364
i	1.364
j	1.364

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Ss	2	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.330

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

FIGURE A1-184

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(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: 10/17/2006
Time of Run: 03:59PM
Run By: SR
Input Data Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\Oct 16 06\sec dddd.in
Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\Oct 16 06\sec dddd.OUT
Unit System: English
Plotted Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\Oct 16 06\sec dddd.PLT
PROBLEM DESCRIPTION: MV Landslide - PN 011492-001 - Sec d4
(Search for min.)

BOUNDARY COORDINATES
8 Top Boundaries
10 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	32.00	72.00	37.00	1
2	72.00	37.00	88.00	43.00	1
3	88.00	43.00	162.00	45.00	1
4	162.00	45.00	180.00	51.00	1
5	180.00	51.00	251.00	61.00	2
6	251.00	61.00	282.00	81.00	1
7	282.00	81.00	353.00	110.00	1
8	353.00	110.00	540.00	106.00	1
9	282.00	81.00	540.00	91.00	2
10	180.00	51.00	540.00	86.00	1

Default Y-Origin = 0.00(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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	500.0	36.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

FIGURE A1-185

Unit Weight of Water = 62.40 (pcf)
Piezometric Surface No. 1 Specified by 4 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	27.00
2	180.00	40.00
3	251.00	56.00
4	540.00	88.00

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 75.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	60.00	25.00	288.00	47.00	1.00
2	294.00	47.10	480.00	61.00	1.00

WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.55	43.91
2	134.24	31.93
3	336.67	50.10
4	337.35	103.61

Factor of Safety for the Preceding Surface is Between 4.440 and 4.424
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.42	44.17
2	143.65	33.25
3	369.41	52.53
4	370.03	109.64

Factor of Safety for the Preceding Surface is Between 3.642 and 3.632
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	223.14	57.08
2	238.17	42.15
3	316.47	48.89
4	316.51	95.09

Factor of Safety for the Preceding Surface is Between61.823 and56.350
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.52	60.65
2	267.28	45.40
3	397.98	54.89
4	398.71	109.02

Factor of Safety for the Preceding Surface is Between 7.282 and 7.256
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.55	43.91

FIGURE A1-186

2	134.24	31.93
3	336.67	50.10
4	337.35	103.61

Factor of Safety for the Preceding Surface is Between 4.440 and 4.424
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.42	44.17
2	143.65	33.25
3	369.41	52.53
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Factor of Safety for the Preceding Surface is Between 3.642 and 3.632
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Factor of Safety for the Preceding Surface is Between 3.642 and 3.632
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Factor of Safety for the Preceding Surface is Between 7.282 and 7.256
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By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.55	43.91
2	134.24	31.93
3	336.67	50.10
4	337.35	103.61

Factor of Safety for the Preceding Surface is Between 4.440 and 4.424
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.42	44.17
2	143.65	33.25
3	369.41	52.53
4	370.03	109.64

Factor of Safety for the Preceding Surface is Between 3.642 and 3.632
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The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	223.14	57.08
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3	316.47	48.89
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Factor of Safety for the Preceding Surface is Between61.823 and56.350
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The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.52	60.65
2	267.28	45.40
3	397.98	54.89
4	398.71	109.02

Factor of Safety for the Preceding Surface is Between 7.282 and 7.256
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.55	43.91
2	134.24	31.93
3	336.67	50.10
4	337.35	103.61

Factor of Safety for the Preceding Surface is Between 4.440 and 4.424
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.42	44.17
2	143.65	33.25
3	369.41	52.53
4	370.03	109.64

Factor of Safety for the Preceding Surface is Between 3.642 and 3.632

FIGURE A1-188

WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	223.14	57.08
2	238.17	42.15
3	316.47	48.89
4	316.51	95.09

Factor of Safety for the Preceding Surface is Between61.823 and56.350
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.52	60.65
2	267.28	45.40
3	397.98	54.89
4	398.71	109.02

Factor of Safety for the Preceding Surface is Between 7.282 and 7.256
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.55	43.91
2	134.24	31.93
3	336.67	50.10
4	337.35	103.61

Factor of Safety for the Preceding Surface is Between 4.440 and 4.424
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.42	44.17
2	143.65	33.25
3	369.41	52.53
4	370.03	109.64

Factor of Safety for the Preceding Surface is Between 3.642 and 3.632
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	223.14	57.08
2	238.17	42.15
3	316.47	48.89
4	316.51	95.09

Factor of Safety for the Preceding Surface is Between61.823 and56.350
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.52	60.65
2	267.28	45.40
3	397.98	54.89
4	398.71	109.02

Factor of Safety for the Preceding Surface is Between 7.282 and 7.256
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.55	43.91
2	134.24	31.93

```
    3        336.67       50.10
    4        337.35      103.61
Factor of Safety for the Preceding Surface is Between 4.440 and 4.424
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following  4 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
    1        131.42       44.17
    2        143.65       33.25
    3        369.41       52.53
    4        370.03      109.64
Factor of Safety for the Preceding Surface is Between 3.642 and 3.632
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following  4 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
    1        223.14       57.08
    2        238.17       42.15
    3        316.47       48.89
    4        316.51       95.09
Factor of Safety for the Preceding Surface is Between61.823 and56.350
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following  4 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
    1        248.52       60.65
    2        267.28       45.40
    3        397.98       54.89
    4        398.71      109.02
Factor of Safety for the Preceding Surface is Between 7.282 and 7.256
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following  4 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
    1        121.55       43.91
    2        134.24       31.93
    3        336.67       50.10
    4        337.35      103.61
Factor of Safety for the Preceding Surface is Between 4.440 and 4.424
WARNING! The factor of safety calculation did not converge in 20 iterations.
The Trial Failure Surface In Question Is Defined
By The Following  4 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
    1        131.42       44.17
    2        143.65       33.25
    3        369.41       52.53
    4        370.03      109.64
  ##################### SOME LINES SKIPPED ####################
      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
      WARNING! The Factor of Safety Calculation for one or More Trial Surfaces
      Did Not Converge in 20 Iterations.
      Number of Trial Surfaces with Non-Converged FS =   30
      Number of Trial Surfaces With Valid FS = 4970
      Percentage of Trial Surfaces With Non-Valid FS Solutions
      of the Total Attempted =   0.6 %
      Statistical Data On All Valid FS Values:
         FS Max =   5.318   FS Min =   1.330   FS Ave =   1.818
         Standard Deviation =    0.456   Coefficient of Variation =   25.09 %
```

FIGURE A1-190

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	44.072	35.061
2	71.787	26.448
3	346.029	50.935
4	380.750	109.406

Factor of Safety

*** 1.330 ***

Individual data on the 14 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	12.7	3700.2	0.0	0.0	0.	0.	0.0	0.0	0.0
2	15.0	14036.5	0.0	2807.3	0.	0.	0.0	0.0	0.0
3	0.2	275.6	0.0	76.6	0.	0.	0.0	0.0	0.0
4	16.0	25059.4	0.0	5609.6	0.	0.	0.0	0.0	0.0
5	74.0	115455.2	0.0	22383.9	0.	0.	0.0	0.0	0.0
6	18.0	27781.2	0.0	4559.4	0.	0.	0.0	0.0	0.0
7	71.0	145548.1	0.0	38785.8	0.	0.	0.0	0.0	0.0
8	31.0	103209.3	0.0	26960.7	0.	0.	0.0	0.0	0.0
9	64.0	358206.6	0.0	59771.4	0.	0.	0.0	0.0	0.0
10	7.0	43661.9	0.0	8607.7	0.	0.	0.0	0.0	0.0
11	2.9	15826.1	0.0	828.8	0.	0.	0.0	0.0	0.0
12	0.3	1544.8	0.0	0.0	0.	0.	0.0	0.0	0.0
13	9.6	38623.7	0.0	0.0	0.	0.	0.0	0.0	0.0
14	14.9	22837.1	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	44.072	35.061
2	71.787	26.448
3	346.029	50.935
4	380.750	109.406

Factor of Safety

*** 1.330 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	44.072	35.061
2	71.787	26.448
3	346.029	50.935
4	380.750	109.406

Factor of Safety

*** 1.330 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	44.072	35.061
2	71.787	26.448
3	346.029	50.935
4	380.750	109.406

Factor of Safety

*** 1.330 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	44.072	35.061
2	71.787	26.448
3	346.029	50.935
4	380.750	109.406

Factor of Safety

*** 1.330 ***

Failure Surface Specified By 4 Coordinate Points

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

FIGURE A1-191

```
    1          44.072        35.061
    2          71.787        26.448
    3         346.029        50.935
    4         380.750       109.406
       Factor of Safety
      ***     1.330    ***
Failure Surface Specified By  4 Coordinate Points
  Point       X-Surf       Y-Surf
   No.          (ft)         (ft)
    1          44.072        35.061
    2          71.787        26.448
    3         346.029        50.935
    4         380.750       109.406
       Factor of Safety
      ***     1.330    ***
Failure Surface Specified By  4 Coordinate Points
  Point       X-Surf       Y-Surf
   No.          (ft)         (ft)
    1          66.698        36.632
    2          81.138        26.696
    3         356.564        51.771
    4         398.565       109.025
       Factor of Safety
      ***     1.364    ***
Failure Surface Specified By  4 Coordinate Points
  Point       X-Surf       Y-Surf
   No.          (ft)         (ft)
    1          66.698        36.632
    2          81.138        26.696
    3         356.564        51.771
    4         398.565       109.025
       Factor of Safety
      ***     1.364    ***
Failure Surface Specified By  4 Coordinate Points
  Point       X-Surf       Y-Surf
   No.          (ft)         (ft)
    1          66.698        36.632
    2          81.138        26.696
    3         356.564        51.771
    4         398.565       109.025
       Factor of Safety
      ***     1.364    ***
          **** END OF GSTABL7 OUTPUT ****
```

FIGURE A1-192

APPENDIX A-2

PROPERTY VALUATIONS

Zillow.com, a property valuation website was used to get an estimate of the property values. The site is known to provide realistic "ballpark" estimates of property values on a regional basis, but not necessarily realistic estimates for specific individual properties. The method used for estimation of the relative values of the involved properties, while approximate in nature, is believed to provide consistent values and values that are probably no more than 10 percent off if a real estate appraiser was assigned to the task.

We assumed that while the individual value estimates provided by Zillow may be off, the total value for the involved 15 properties would be a reasonable regional estimate. Using the total value, as well as the pad size, the building area, and other readily decipherable factors that influence the value of a real estate property, namely view, pool, and tile roof, we recomputed relative property values. The details of the steps involved in this process and the resulting property values combined with the landslide hazard risk factors (from Appendix A-1) are reflected on Table B-1 and its notes. A printout from Zillow's information on each property follows the table.

TABLE A-2 – VALUATION AND ASSESSMENT

Note (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Property Address	**From Zillow.com Value**	**Area**	**Pad**	**Premiums View**	**Pool**	**Tile Roof**	**Pad Value**	**Bldg Value**	**Total Value**	**Repair Credits**	**Risk Factor**	**At Risk Value**	**Percent Participation**	**Preliminary Assessment**
E 24411	$661,679	1,360	6,000	$50,000	$20,000		$120,581	$485,187	$672,735		0.5	$336,367	3.724	$67,770
E 24412	$659,387	1,430	6,000	$50,000	$10,000		$120,581	$510,160	$687,552		1	$687,552	7.611	$138.525
E 24421	$546,170	1,124	6,000	$50,000		$7,000	$120,581	$400,993	$576,067		1	$576,067	6.377	$116,063
E 24422	$644,268	1,360	6,000	$50,000	$20,000	$7,000	$120,581	$485,187	$679,735	$5,000	1	$674,735	7.469	$135,942
E 24431	$613,657	1,320	6,000	$50,000			$120,581	$470,917	$638,554		1	$638,554	7.069	$128,653
F 24412	$670,456	1,360	6,000				$120,581	$485,187	$602,735		1	$602,735	6.672	$121,436
F 24422	$659,299	1,430	6,000		$20,000	$7,000	$120,581	$510,160	$654,552		1	$654,552	7.246	$131,876
F 24432	$553,664	1,124	6,000		$20,000		$120,581	$400,993	$539,067	$5,000	1	$634,067	5.912	$107,601
F 24442	$647,086	1,320	6,000				$120,581	$470,917	$588,554	$2,000	1	$586,554	6.493	$118,176
F 24452	$646,021	1,360	6,500				$130,629	$0	$130,629		1	$130,629	1.446	$26,318
F 24472	$685,201	1,430	6,000				$120,581	$510,160	$627,552	$2,000	1	$625,552	6.925	$126,033
F 24482	$649,045	1,320	6,000				$120,581	$470,917	$588,554	$2,000	1	$586,554	6.493	$118,176
F 24492	$627,706	1,760	6,000			$7,000	$120,581	$627,889	$751,545	$2,000	1	$749,545	8.298	$151,015
C 24471	$649,552	1,360	6,000				$120,581	$485,187	$602,735		0.5	$301,367	3.336	$60,718
C 24481	$555,600	1,124	6,000			$7,000	$120,581	$400,993	$526,067		0.5	$263,034	2.912	$52,995
Subtotals	**$9,468,791**	**20,182**	**90,500**	**$250,000**	**$90,000**	**$35,000**	**$1,893,758**	**$6,714,846**	**$8,866,632**	**$18,000**		**$7,947,863**	**87.983**	**$1,601,297**
City of Mission Viejo	Note (16)											$1,085,511	12.017	$218,703
Totals	Note (17)											**$9,033,374**	**100.00**	**$1,820,000**

Notes:

(1) E: Encorvado; F: Ferrocarril; C: Chrisanta

(2) Home Values as listed on "Zillow.com" as of 04/25/06

(3) Square footage of buildings as reflected on Zillow listing, except for F24492. . For valuation purposes, the listed building area for this residence (1,360-sq ft) was increased by 400-sq.ft to account for an estimated 800-sq ft building addition.

(4) Zillow lists 6,000 sq ft as lot size for all but one of the properties (6,500-sq ft for F24452). The actual lot areas are larger, but the listed 6,000- and 6,500-sq ft, refer to the "Pad Areas", or the flat portion of the lot, which is more relevant for valuation purposes.

(5), (6), and (7) The indicated premium amounts are based on informal consultation with real estate appraisers. Note that the pool at E24412 is an above ground pool with a lower premium.

(8) The "Pad Value" for each property was considered to be 1/5 of its total value reduced by the premiums:
Pad Value = Pad Area X [[$9,468,791 – (250,000 + 90,000 + 35,000)] / 5] / 90,500

(9) The value per sq ft of building area was approximated to be equal to the total of property values discounted by pad values and premiums divided by the total area of all the buildings (20,182 sq ft). the unit value is close to $356.76 per sq ft.

(10) The adjusted "Total Value" of each property is the sum of its pad value, building value, and premium(s).

Notes Continued:

(11) Repair credits are estimated cost of repairs to structures or pools caused by the January 2006 landslide.

(12) The criteria for selection of the risk factors are discussed in the body of this attachment report.

(13) The "At Risk Value" is the total property value (Column 10) discounted by repair credits (Column 11) multiplied by Risk Factor (Column 12)

(14) Percentage participation is computed by dividing the "At Risk Value" of each property by the total of at risk values ($9,033,374) expressed in percentages.

(15) Column 14 multiplied by one hundredth of the estimate repair cost ($1,820,000) is the assessed share of each property.

(16) The value of public right-of-way was assumed to be the same as developed property. This value was taken to be equal to $9,468,791 divided by 90,500-sq ft, or approximately $104.63 per sq ft. A 600 foot long, 13 foot wide strip along Ferrocarril as well as a 645 sq ft portion of Encorvado were assumed to be at full risk (risk factor of 1.0) A 3,860 sq ft portion of the Encorvado cul-de-sac was considered at a 0.5 risk factor. The computed total value and at risk value of the City's property are $1,287,442 and $1,085,511, respectively.

(17) Apparent mismatch in summations of Columns 10 through 15 are due to omitted decimal figures which were included in the summation but not shown in this table.

Zillow.com ßeta
Your Edge in Real Estate

24411 Encorvado Ln, Mission Viejo, CA 92691

Last updated: 04/25/2006

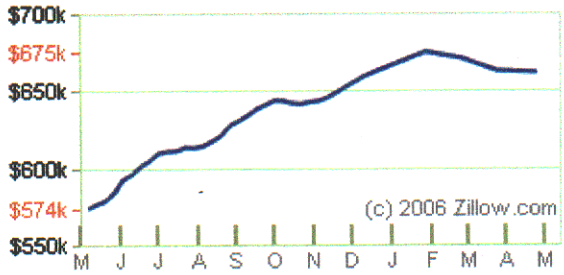
ZESTIMATE™: $661,679

Value Range: $575,661 - $721,230

Home Facts

Residence:	Single family
Bedrooms:	3
Baths:	2.0
Total rooms:	6.0
# Stories:	--
Sq ft:	1,360
Lot size:	6,000 sq ft / 0.14 acres
Year built:	1967
Heating:	--
Cooling:	--
Construction quality:	0
Parcel #:	78436106
County:	Orange
Zillow Home ID:	25611669
Legal description: N TR 6333 LOT 78	

FIGURE A2-1



Zestimate Ranking

41% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes

How this home stacks up

This home $ per sq ft:
$487
Comps avg $ per sq ft:
$458

About comparables

FIGURE A2-2

Zillow.com ßeta
Your Edge in Real Estate

24412 Encorvado Ln, Mission Viejo, CA 92691

Last updated: 04/25/2006

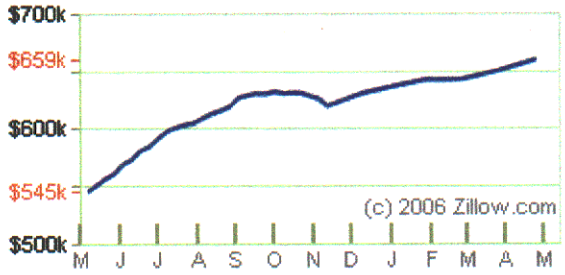
ZESTIMATE™: $659,387

Value Range: $573,667 - $718,732

Home Facts

Residence:	Single family
Bedrooms:	4
Baths:	2.0
Total rooms:	6.0
# Stories:	--
Sq ft:	1,430
Lot size:	6,000 sq ft / 0.14 acres
Year built:	1967
Heating:	--
Cooling:	--
Construction quality:	0
Parcel #:	78436110
County:	Orange
Zillow Home ID:	25611673
Legal description: N TR 6333 LOT 74	

FIGURE A2-3



Zestimate Ranking

39% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes

How this home stacks up

This home $ per sq ft:
$461
Comps avg $ per sq ft:
$453

About comparables

FIGURE A2-4

Zillow.com ßeta
Your Edge in Real Estate

24421 Encorvado Ln, Mission Viejo, CA 92691

Last updated: 04/25/2006

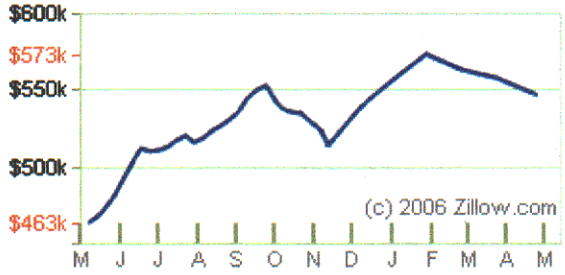
ZESTIMATE™: $546,170

Value Range: $475,168 - $595,325

Home Facts

Residence:	Single family
Bedrooms:	2
Baths:	1.5
Total rooms:	4.0
# Stories:	--
Sq ft:	1,124
Lot size:	6,000 sq ft / 0.14 acres
Year built:	1967
Heating:	--
Cooling:	--
Parcel #:	78436107
County:	Orange
Zillow Home ID:	25611670
Legal description: N TR 6333 LOT 77	

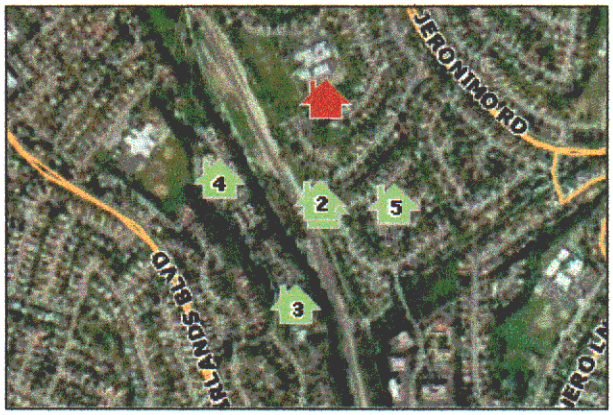
FIGURE A2-5



Zestimate Ranking

16% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes



How this home stacks up

This home $ per sq ft:
$486
Comps avg $ per sq ft:
$422

About comparables

FIGURE A2-6

Zillow.com ßeta
Your Edge in Real Estate

24422 Encorvado Ln, Mission Viejo, CA 92691

Last updated: 04/25/2006

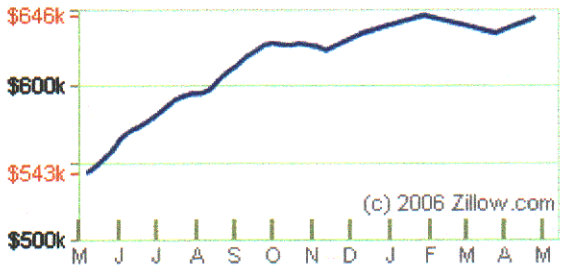
ZESTIMATE™: $644,268

Value Range: $560,513 - $702,252

Home Facts

Residence:	Single family
Bedrooms:	3
Baths:	2.0
Total rooms:	6.0
# Stories:	--
Sq ft:	1,360
Lot size:	6,000 sq ft / 0.14 acres
Year built:	1967
Heating:	--
Cooling:	--
Construction quality:	0
Parcel #:	78436109
County:	Orange
Zillow Home ID:	25611672
Legal description: N TR 6333 LOT 75	

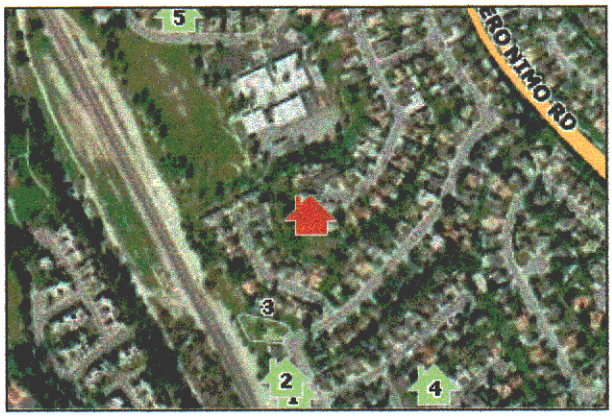
FIGURE A2-7



Zestimate Ranking

33% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes



How this home stacks up

This home $ per sq ft:
$474
Comps avg $ per sq ft:
$458

About comparables

FIGURE A2-8

Zillow.com ßeta
Your Edge in Real Estate

24431 Encorvado Ln, Mission Viejo, CA 92691

Last updated: 04/25/2006

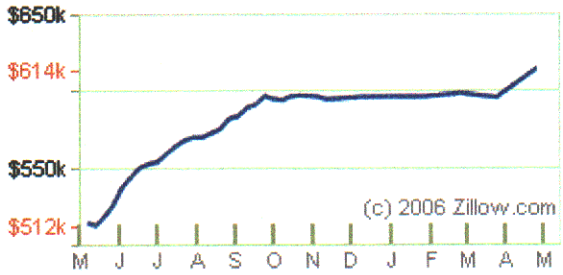
ZESTIMATE™: $613,657

Value Range: $533,882 - $668,886

Home Facts

Residence:	Single family
Bedrooms:	3
Baths:	2.0
Total rooms:	5.0
# Stories:	--
Sq ft:	1,320
Lot size:	6,000 sq ft / 0.14 acres
Year built:	1967
Heating:	--
Cooling:	--
Construction quality:	0
Parcel #:	78436108
County:	Orange
Zillow Home ID:	25611671
Legal description: N TR 6333 LOT 76	

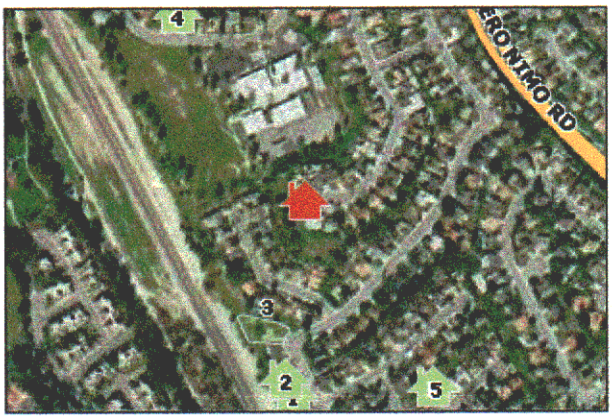
FIGURE A2-9



Zestimate Ranking

26% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes



How this home stacks up

This home $ per sq ft:
$465
Comps avg $ per sq ft:
$458

About comparables

FIGURE A2-10

Zillow.com ßeta
Your Edge in Real Estate

24412 Ferrocarril, Mission Viejo, CA 92691

Last updated: 04/25/2006

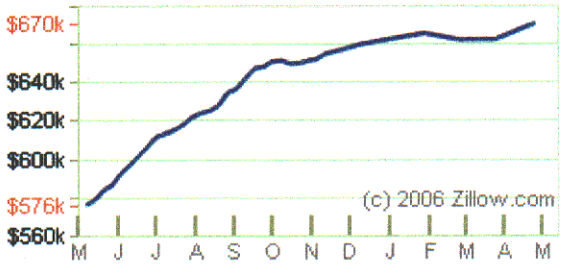
ZESTIMATE™: $670,456

Value Range: $583,297 - $730,797

Home Facts

Residence:	Single family
Bedrooms:	3
Baths:	2.0
Total rooms:	6.0
# Stories:	--
Sq ft:	1,360
Lot size:	6,500 sq ft / 0.15 acres
Year built:	1967
Heating:	--
Cooling:	--
Construction quality:	0
Parcel #:	78436175
County:	Orange
Zillow Home ID:	25611711
Legal description: N TR 6340 LOT 85	

FIGURE A2-11



Zestimate Ranking

45% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes

How this home stacks up

This home $ per sq ft:
$493
Comps avg $ per sq ft:
$435

About comparables

FIGURE A2-12

Zillow.com ßeta
Your Edge in Real Estate

24422 Ferrocarril, Mission Viejo, CA 92691

Last updated: 04/25/2006

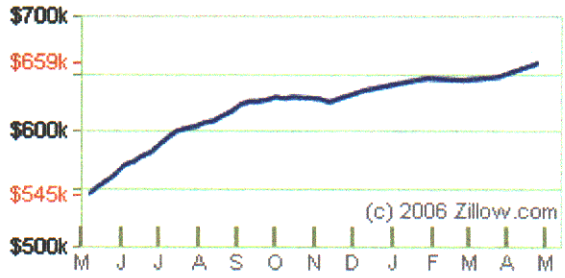
ZESTIMATE™: $659,299

Value Range: $573,590 - $718,636

Home Facts

Residence:	Single family
Bedrooms:	4
Baths:	2.0
Total rooms:	6.0
# Stories:	--
Sq ft:	1,430
Lot size:	6,000 sq ft / 0.14 acres
Year built:	1967
Heating:	--
Cooling:	--
Construction quality:	0
Parcel #:	78436174
County:	Orange
Zillow Home ID:	25611710
Legal description: N TR 6340 LOT 86	

FIGURE A2-13



Zestimate Ranking

39% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes

How this home stacks up

This home $ per sq ft:
$461
Comps avg $ per sq ft:
$459

About comparables

FIGURE A2-14

Zillow.com Beta
Your Edge in Real Estate

24432 Ferrocarril, Mission Viejo, CA 92691

Last updated: 04/25/2006

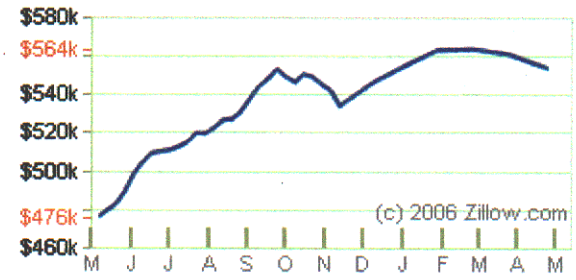
ZESTIMATE™: $553,664

Value Range: $481,688 - $603,494

Home Facts

Residence:	Single family
Bedrooms:	2
Baths:	1.5
Total rooms:	4.0
# Stories:	--
Sq ft:	1,124
Lot size:	6,000 sq ft / 0.14 acres
Year built:	1967
Heating:	--
Cooling:	--
Construction quality:	0
Parcel #:	78436173
County:	Orange
Zillow Home ID:	25611709
Legal description: N TR 6340 LOT 87	

FIGURE A2-15



Zestimate Ranking

17% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes

How this home stacks up

This home $ per sq ft:
$493
Comps avg $ per sq ft:
$422

About comparables

FIGURE A2-16

Zillow.com ßeta
Your Edge in Real Estate

24442 Ferrocarril, Mission Viejo, CA 92691

Last updated: 04/25/2006

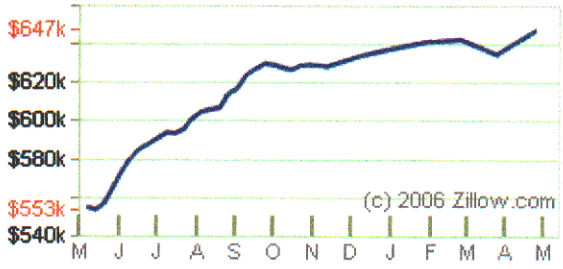
ZESTIMATE™: $647,086

Value Range: $562,965 - $705,324

Home Facts

Residence:	Single family
Bedrooms:	3
Baths:	2.0
Total rooms:	5.0
# Stories:	--
Sq ft:	1,320
Lot size:	6,500 sq ft / 0.15 acres
Year built:	1967
Heating:	--
Cooling:	--
Construction quality:	0
Parcel #:	78436172
County:	Orange
Zillow Home ID:	25611708
Legal description: N TR 6340 LOT 88	

FIGURE A2-17



Zestimate Ranking

34% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes

How this home stacks up

This home $ per sq ft:
$490
Comps avg $ per sq ft:
$458

About comparables

FIGURE A2-18

Zillow.com ßeta
Your Edge in Real Estate

24452 Ferrocarril, Mission Viejo, CA 92691

Last updated: 04/25/2006

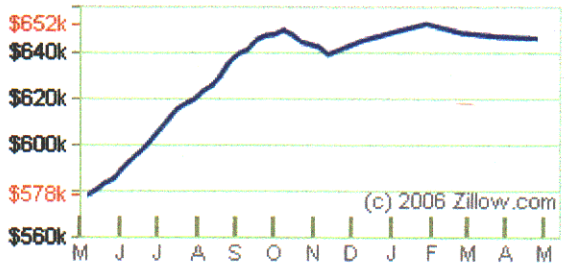
ZESTIMATE™: $646,021

Value Range: $562,038 - $704,163

Home Facts

Residence:	Single family
Bedrooms:	3
Baths:	2.0
Total rooms:	6.0
# Stories:	--
Sq ft:	1,360
Lot size:	6,000 sq ft / 0.14 acres
Year built:	1967
Heating:	--
Cooling:	--
Parcel #:	78436132
County:	Orange
Zillow Home ID:	25611695
Legal description: N TR 6340 LOT 89	

FIGURE A2-19



Zestimate Ranking

33% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes

How this home stacks up

This home $ per sq ft:
$475
Comps avg $ per sq ft:
$429

About comparables

FIGURE A2-20

Zillow.com ßeta
Your Edge in Real Estate

24472 Ferrocarril, Mission Viejo, CA 92691

Last updated: 04/25/2006

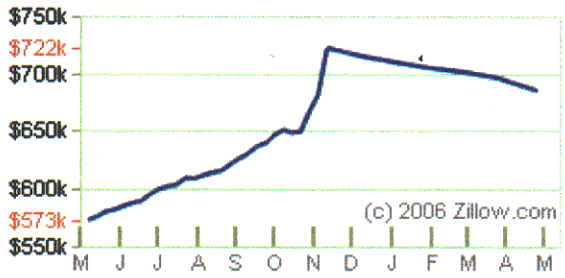
ZESTIMATE™: $685,201

Value Range: $596,125 - $746,869

Home Facts

Residence:	Single family
Bedrooms:	4
Baths:	2.0
Total rooms:	6.0
# Stories:	--
Sq ft:	1,430
Lot size:	6,000 sq ft / 0.14 acres
Year built:	1967
Heating:	--
Cooling:	--
Construction quality:	0
Parcel #:	78436131
County:	Orange
Zillow Home ID:	25611694
Legal description: N TR 6340 LOT 90	

FIGURE A2-21



Zestimate Ranking

50% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes

How this home stacks up

This home $ per sq ft:
$479
Comps avg $ per sq ft:
$453

About comparables

FIGURE A2-22

Zillow.com ßeta
Your Edge in Real Estate

24482 Ferrocarril, Mission Viejo, CA 92691

Last updated: 04/25/2006

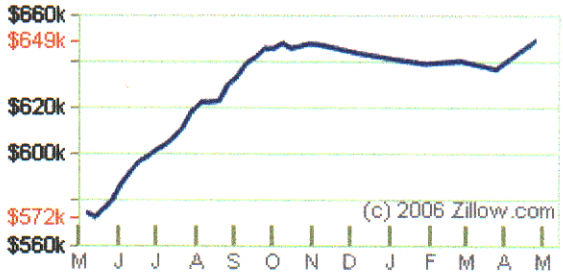
ZESTIMATE™: $649,045

Value Range: $564,669 - $707,459

Home Facts

Residence:	Single family
Bedrooms:	3
Baths:	2.0
Total rooms:	5.0
# Stories:	--
Sq ft:	1,320
Lot size:	6,000 sq ft / 0.14 acres
Year built:	1967
Heating:	--
Cooling:	--
Construction quality:	0
Parcel #:	78436130
County:	Orange
Zillow Home ID:	25611693
Legal description: N TR 6340 LOT 91	

FIGURE A2-23



Zestimate Ranking

35% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes

How this home stacks up

This home $ per sq ft:
$492
Comps avg $ per sq ft:
$453

About comparables

FIGURE A2-24

Zillow.com ßeta
Your Edge in Real Estate

24492 Ferrocarril, Mission Viejo, CA 92691

Last updated: 04/25/2006

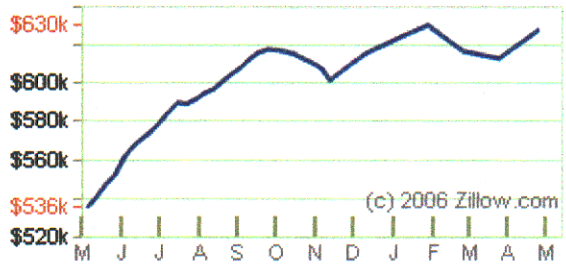
ZESTIMATE™: $627,706

Value Range: $546,104 - $684,200

Home Facts

Residence:	Single family
Bedrooms:	3
Baths:	2.0
Total rooms:	6.0
# Stories:	--
Sq ft:	1,360
Lot size:	6,000 sq ft / 0.14 acres
Year built:	1967
Heating:	--
Cooling:	--
Construction quality:	0
Parcel #:	78436129
County:	Orange
Zillow Home ID:	25611692
Legal description: N TR 6340 LOT 92	

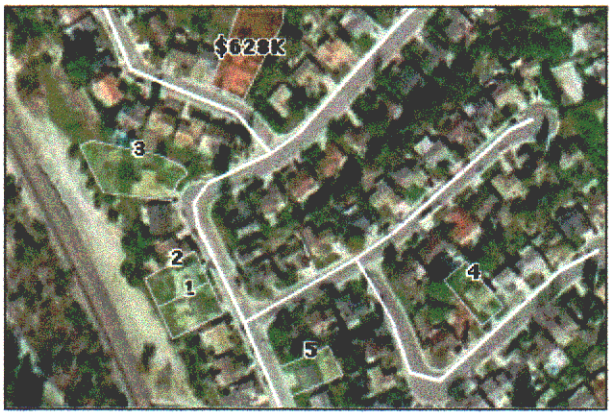
FIGURE A2-25



Zestimate Ranking

29% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes



How this home stacks up

This home $ per sq ft:
$462
Comps avg $ per sq ft:
$453

About comparables

FIGURE A2-26

Zillow.com ßeta
Your Edge in Real Estate

24471 Chrisanta Dr, Mission Viejo, CA 92691

Last updated: 04/25/2006

ZESTIMATE™: $649,552

Value Range: $565,110 - $708,012

Home Facts

Residence:	Single family
Bedrooms:	3
Baths:	2.0
Total rooms:	6.0
# Stories:	--
Sq ft:	1,360
Lot size:	6,000 sq ft / 0.14 acres
Year built:	1967
Heating:	--
Cooling:	--
Construction quality:	0
Parcel #:	78436127
County:	Orange
Zillow Home ID:	25611690
Legal description: N TR 6333 LOT 52	

FIGURE A2-27

Zillow.com ßeta
Your Edge in Real Estate

24481 Chrisanta Dr, Mission Viejo, CA 92691

Last updated: 04/25/2006

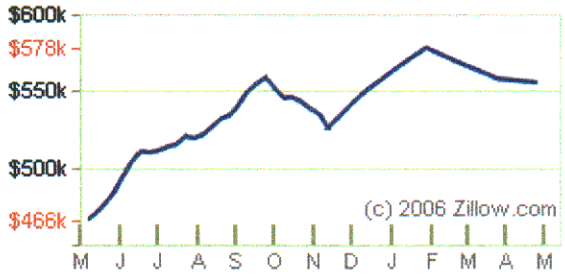
ZESTIMATE™: $555,600

Value Range: $483,372 - $605,604

Home Facts

Residence:	Single family
Bedrooms:	2
Baths:	1.5
Total rooms:	4.0
# Stories:	--
Sq ft:	1,124
Lot size:	6,000 sq ft / 0.14 acres
Year built:	1967
Heating:	--
Cooling:	--
Construction quality:	0
Parcel #:	78436128
County:	Orange
Zillow Home ID:	25611691
Legal description: N TR 6340 LOT 93	

FIGURE A2-29



Zestimate Ranking

17% of homes in the 92691 ZIP code have a value lower than this home.

Recently Sold Comparable Homes

How this home stacks up

This home $ per sq ft:
$494
Comps avg $ per sq ft:
$422

About comparables

FIGURE A2-30

ATTACHMENT B

LANDSLIDE REMEDIATION AND ABATEMENT OF LANDSLIDE HAZARD

The marginal level of stability of the slope that separates the building pads on Encorvado Lane from the pads on Ferrocarril is explained in the Petra 2005 report, and the landslide hazard level is quantified in Appendix A-1 of this report. Pursuant to the January 2005 occurrence of the landslide with geotechnical input from Petra and Leighton, the City of Mission Viejo undertook remedial measures to limit the extent of landslide damage. Initially the failed slope was reshaped by transferring some of the slope mass from the upper portion of the slope to the toe area of the slope. This operation which improved the factor of safety by about 8 percent (see Appendix B-1) slowed the landslide movement enough to allow installation of a series of soldier piles close to the toe area of the slide and improved the factor of safety to 1.25 and allowed conditional reoccupancy of the affected residences. This phase of the project is fully described in the Petra 2006 report. Stability calculations and the resulting improvement in the factor of safety (Cross-Sections AA' and DD') are presented in Appendix B-1 herein. The choice of soldier piles for stabilization was in part to comply with FEMA's guidelines. Leighton's initial consideration of remediation by tie-back anchors was rejected since it apparently would not qualify as "temporary and emergency" type of remediation covered by FEMA funding. Soldier pile design details are presented in Appendix B-2.

While the emergency level stabilization of the landslide has resulted in sufficient improvement in level of safety of the failed portion of the slope to allow conditional occupancy, implementation of further stabilization measures are needed to upgrade the stability level into code compliance and return safety and value to the properties on or near the marginally stable slope. The recommended measures are shown on the attached Remediation Plan (Plate B-1, in pocket). Stability analysis in Appendix B-1 indicates that the post-remediation factors of safety will be code compliant (no less than 1.5)

It is noted that the details portrayed on Plate B-1, while sufficient for safety factor evaluation and for preliminary cost estimates, do not provide enough detail for construction, and Plate B-1 is not a "construction plan". We recommend preparation of construction plans by the project civil engineer based on this report. We also recommend that an additional topographic survey be performed to provide topographic details of the entire proposed assessment area. Limited input was sought and obtained from PB&A Structural Engineers, but the final plans need more structural engineering detailing as well.

The principal remedial element that is designed to elevate the factor of safety is a series of tie-back anchors, each designed with an anchorage capacity of 196 kips. These anchors designed at lengths of between 90 and 120 feet extend from the face of the slope at an inclination of 2:1 into the bedrock below the "clay bed" which underlies the slope. At the face of the unfailed portions of the slope, the anchors are supported by facing reinforced concrete elements (pads) which are approximately 2 feet in thickness and have minimum dimensions of 9 feet by 7 feet. Within the failed portion of the slope (January 2005 landslide) these facing elements are interconnected to

form a "whaler", which in addition to providing face support for the anchors, acts as a near-vertical grade separator allowing the proposed regrading of the previously 1.5:1 (H:V) slope to a 2:1 inclination consistent with the present grading code.

The soldier piles installed on an emergency basis will be interconnected with a grade beam which will also act as a drainage terrace. Most of the other remediation features relate to transitioning the failed area to its adjacent unfailed, but high landslide risk areas, and providing surface and subsurface drainage to the project area as well as providing connection of existing drainage features to the recommended drains.

The cost of implementation of these measures based on the preliminary estimate of quantities shown in Table B-1 is approximately 1.82 million dollars. It is our understanding that the cost of implementing the emergency temporary measures was close to 1.25 million dollars.

TABLE B-1

Item	Quantity	Rate	Amount
Cut + Place as Compacted Fill	1800 cy	@$35/cy	$ 63,000
Cut & Export	950 cy	@$15/cy	$ 14,500
Tie-backs	81	@$5,000 each	$ 400,000
Shotcrete Whaler	560 cy	@$860/cy	$ 481,600
Shotcrete Facing	1,500 sq ft	@$28	$ 42,000
Gunite Platform	120 cy	@$500	$ 60,000
Soil Nails	12	@$500	$ 6,000
2-ft wide French Drain	335 ft	@$30	$ 10,050
3-ft wide Toe Drain	75 ft	@$50	$ 3,750
6-inch thick Gunite Strip	170 ft	@$30	$ 5,100
Demolish V-Ditch	65 ft	@$10	$ 650
Construct New V-Ditch	160 ft	@$40	$ 6,400
Jute Mat & Landscape	40,000 sq ft	@$5	$ 200,000
Special Concrete Work	LS		$ 30,000
General Clean Up	LS		$ 15,000
	Total		$1,343,050
	Contingency (15%)		$ 201,458
	Oversight & Engineering (20%)		$ 268,610
	Total		$1,813,118
	Round-Up		$1,820,000

APPENDIX B-1

SLOPE STABILITY ANALYSIS AFTER REMEDIATION

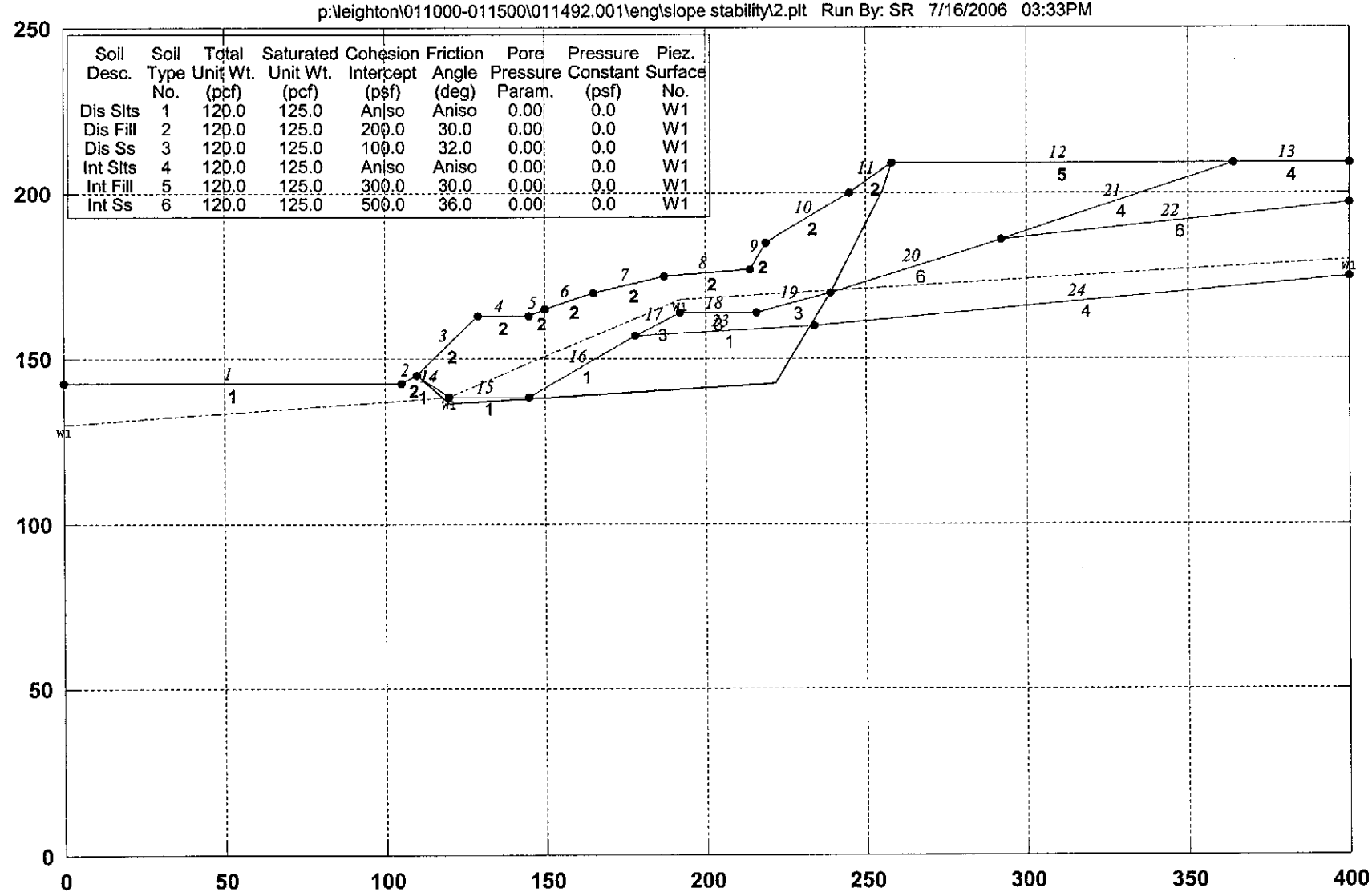
Slope stability analyses using "ESTABLE7" computer program were performed to allow quantitative comparison of factors of safety after implementation of different levels of stabilization. The analysis of the condition prior to landsliding of January 2006 or any remediation is included in Appendix A-1-1 of this report. This appendix includes the details of the analyses reflecting the subsequent conditions.

The FS for Cross-Section AA' after reshaping was an increase from 0.99 prior to failure to 1.07 or about 8 percent improvement (see Figures B-1-1 to B-1-4). The effect of installation of the soldier piles is reflected on Figures B-1-5 through B-1-13 where it can be seen that the safety factor relating to Cross-Section AA' improves to 1.25 for Cross-Section DD' to 1.33 and for Cross-Section d3 to 1.51. Installation of the recommended tie-back anchors further improves the FS. The FS for Cross-Sections AA', DD' and EE' are elevated to 1.51, 1.54, and 1.53, respectively.

Finally on Figures B-1-35 through B-1-39 reflect the results for a pseudostatic (seismic) evaluation of the slope. The computed SF of 1.1 is in code compliance. Note that in this evaluation the shear strength of the clay bed was changed to an angel of internal friction of 10 degrees which we believe is a conservative estimate of the undrained strength of the clay bed.

MV/Landslide/011492-001 Section A-A'/ Post Failure & Reshaping

p:\leighton\011000-011500\011492.001\eng\slope stability\2.plt Run By: SR 7/16/2006 03:33PM



GSTABL7 v.2 FSmin=1.072

Factor Of Safety Is Calculated By The Simplified Janbu Method

Figure B1-1

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(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: 7/16/2006
Time of Run: 03:33PM
Run By: SR
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Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2.OUT
Unit System: English
Plotted Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2.PLT

PROBLEM DESCRIPTION: MV/Landslide/011492-001
Section A-A'/ Post Failure & Reshaping

BOUNDARY COORDINATES
13 Top Boundaries
24 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	142.50	105.00	142.50	1
2	105.00	142.50	110.00	145.00	2
3	110.00	145.00	129.00	163.00	2
4	129.00	163.00	145.00	163.00	2
5	145.00	163.00	150.00	165.00	2
6	150.00	165.00	165.00	170.00	2
7	165.00	170.00	187.00	175.00	2
8	187.00	175.00	214.00	177.00	2
9	214.00	177.00	219.00	185.00	2
10	219.00	185.00	245.00	200.00	2
11	245.00	200.00	258.00	209.00	2
12	258.00	209.00	364.00	209.00	5
13	364.00	209.00	400.00	209.00	4
14	110.00	145.00	120.10	138.50	1
15	120.10	138.50	145.00	138.50	1
16	145.00	138.50	178.00	157.00	1
17	178.00	157.00	192.00	164.00	3
18	192.00	164.00	216.00	164.00	3
19	216.00	164.00	239.00	170.00	3
20	239.00	170.00	292.00	186.00	6
21	292.00	186.00	364.00	209.00	4
22	292.00	186.00	400.00	197.00	6
23	178.00	157.00	234.00	160.00	1
24	234.00	160.00	400.00	175.00	4

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

ISOTROPIC SOIL PARAMETERS
6 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	125.0	575.0	25.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	100.0	32.0	0.00	0.0	1
4	120.0	125.0	700.0	37.0	0.00	0.0	1
5	120.0	125.0	300.0	30.0	0.00	0.0	1
6	120.0	125.0	500.0	36.0	0.00	0.0	1

Figure B1-2

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	575.00	25.00
2	4.0	0.00	8.00
3	90.0	575.00	25.00

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	4.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	130.00
2	120.00	138.50
3	192.00	168.00
4	400.00	180.00

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	110.000	145.000
2	120.000	136.500
3	222.000	142.500
4	239.000	170.000
5	255.000	200.000
6	258.000	209.000

Janbu's Empirical Coefficient (fo) = 1.086
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
Factor Of Safety For The Preceding Specified Surface = 1.072
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	7.8	6608.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	2.2	4186.7	0.0	177.9	0.0	0.0	0.0	0.0	0.0
3	0.1	132.6	0.0	7.7	0.0	0.0	0.0	0.0	0.0
4	0.0	84.6	0.0	4.9	0.0	0.0	0.0	0.0	0.0
5	8.9	23673.7	0.0	2000.9	0.0	0.0	0.0	0.0	0.0
6	16.0	49597.2	0.0	7966.3	0.0	0.0	0.0	0.0	0.0
7	5.0	15820.7	0.0	3641.0	0.0	0.0	0.0	0.0	0.0
8	15.0	52966.3	0.0	14213.1	0.0	0.0	0.0	0.0	0.0
9	13.0	51143.3	0.0	16310.0	0.0	0.0	0.0	0.0	0.0
10	9.0	37581.8	0.0	13463.0	0.0	0.0	0.0	0.0	0.0
11	5.0	21417.8	0.0	8247.1	0.0	0.0	0.0	0.0	0.0
12	22.0	94877.2	0.0	37476.6	0.0	0.0	0.0	0.0	0.0
13	2.0	9035.2	0.0	3405.3	0.0	0.0	0.0	0.0	0.0
14	3.0	14939.8	0.0	5107.4	0.0	0.0	0.0	0.0	0.0

Figure B1-3

15	3.0	16051.8	0.0	5106.7	0.0	0.0	0.0	0.0	0.0
16	10.8	50965.8	0.0	24076.5	0.0	0.0	0.0	0.0	0.0
17	6.2	22406.3	0.0	4109.1	0.0	0.0	0.0	0.0	0.0
18	0.4	1235.7	0.0	18.5	0.0	0.0	0.0	0.0	0.0
19	5.6	15068.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	10.0	15403.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	3.0	1246.2	0.0	0.0	0.0	0.0	0.0	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	-40.36	113.91	10.27	2016.90	-546.74
2	-40.36	118.91	2.85	3008.24	-1248.42
3	3.37	120.03	0.06	285.66	127.44
4	3.37	120.08	0.04	286.26	127.75
5	3.37	124.55	8.92	340.26	156.20
6	3.37	137.00	16.03	363.63	182.03
7	3.37	147.50	5.01	340.49	185.80
8	3.37	157.50	15.03	361.17	207.35
9	3.37	171.50	13.02	374.64	231.02
10	3.37	182.50	9.02	374.76	245.21
11	3.37	189.50	5.01	368.41	251.54
12	3.37	203.00	22.04	364.92	253.24
13	3.37	215.00	2.00	393.68	265.28
14	3.37	217.50	3.01	458.30	292.43
15	3.37	220.50	3.01	510.11	314.20
16	58.28	227.39	20.50	2492.12	4022.31
17	58.28	235.89	11.83	2088.16	3062.97
18	61.93	239.20	0.83	2124.57	2784.62
19	61.93	242.20	11.92	1851.75	2370.72
20	61.93	250.00	21.25	1151.87	1359.16
21	71.57	256.50	9.49	531.78	394.07

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 192981.14 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 1009.75(psf)
Sum of the Driving Forces = 195489.77 (lbs)
Average Mobilized Shear Stress = 1022.88(psf)
Total length of the failure surface = 191.12(ft)

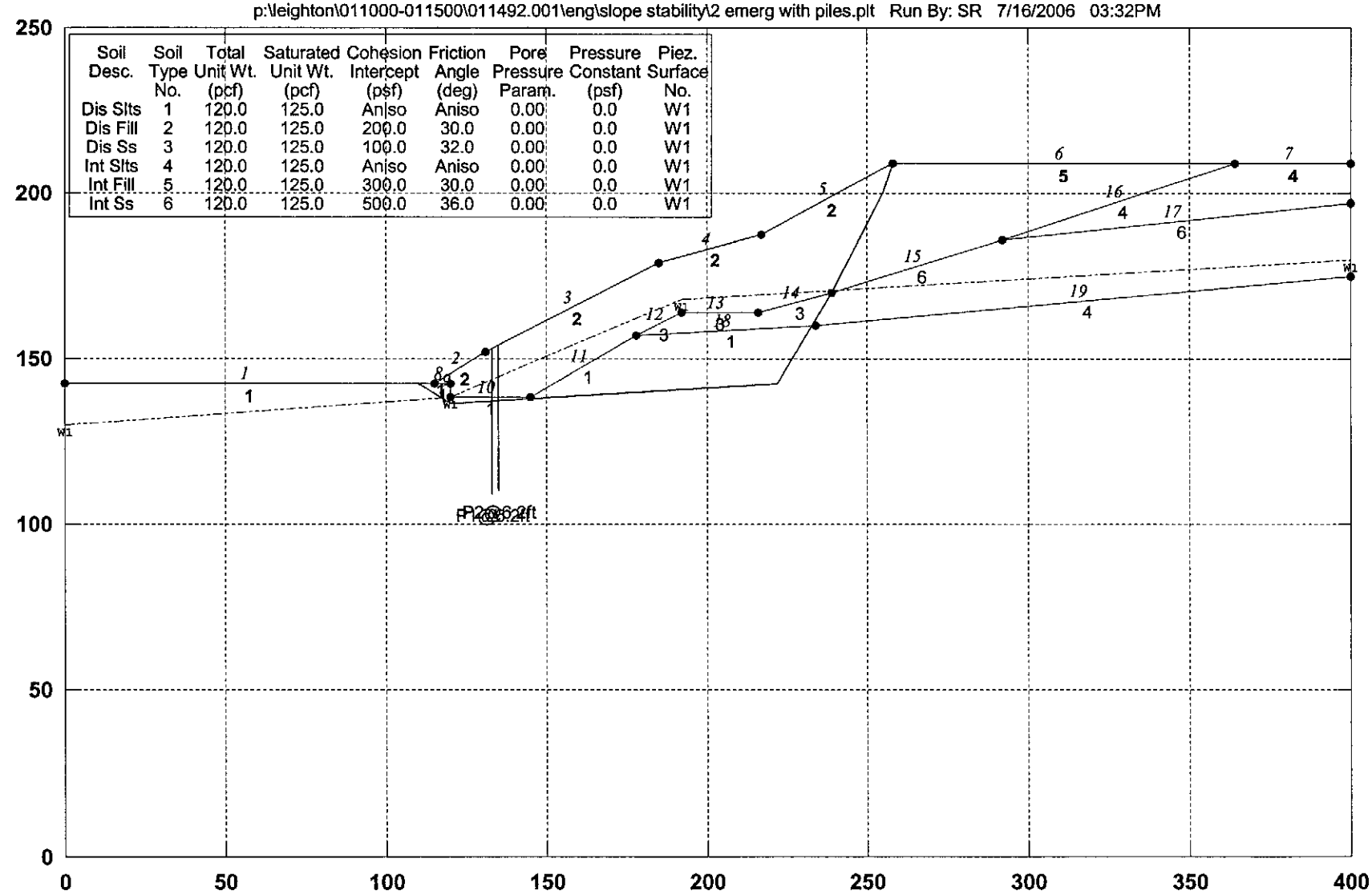
**** END OF GSTABL7 OUTPUT ****

Figure B1-4

MV/Landslide/011492-001 Section A-A'/ Emerg. Regrade With Piles

p:\leighton\011000-011500\011492.001\eng\slope stability\2 emerg with piles.plt Run By: SR 7/16/2006 03:32PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Dis Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Dis Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Dis Ss	3	120.0	125.0	100.0	32.0	0.00	0.0	W1
Int Slts	4	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Int Fill	5	120.0	125.0	300.0	30.0	0.00	0.0	W1
Int Ss	6	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.251

Factor Of Safety Is Calculated By The Simplified Janbu Method

Figure B1-5

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

****

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: 7/16/2006
Time of Run: 03:32PM
Run By: SR
Input Data Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 emerg with piles.in
Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 emerg with piles.OUT
Unit System: English
Plotted Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 emerg with piles.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001
Section A-A'/ Emerg. Regrade With Piles

BOUNDARY COORDINATES
7 Top Boundaries
19 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	142.50	115.00	142.50	1
2	115.00	142.50	131.00	152.00	2
3	131.00	152.00	185.00	179.00	2
4	185.00	179.00	217.00	187.50	2
5	217.00	187.50	258.00	209.00	2
6	258.00	209.00	364.00	209.00	5
7	364.00	209.00	400.00	209.00	4
8	115.00	142.50	120.00	142.50	1
9	120.00	142.50	120.10	138.50	1
10	120.10	138.50	145.00	138.50	1
11	145.00	138.50	178.00	157.00	1
12	178.00	157.00	192.00	164.00	3
13	192.00	164.00	216.00	164.00	3
14	216.00	164.00	239.00	170.00	3
15	239.00	170.00	292.00	186.00	6
16	292.00	186.00	364.00	209.00	4
17	292.00	186.00	400.00	197.00	6
18	178.00	157.00	234.00	160.00	1
19	234.00	160.00	400.00	175.00	4

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

ISOTROPIC SOIL PARAMETERS
6 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	125.0	575.0	25.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	100.0	32.0	0.00	0.0	1
4	120.0	125.0	700.0	37.0	0.00	0.0	1
5	120.0	125.0	300.0	30.0	0.00	0.0	1
6	120.0	125.0	500.0	36.0	0.00	0.0	1

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

Direction	Counterclockwise	Cohesion	Friction

Figure B1-6

Range No.	Direction Limit (deg)	Intercept (psf)	Angle (deg)
1	2.0	575.00	25.00
2	7.0	0.00	8.00
3	90.0	575.00	25.00

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	130.00
2	120.00	138.50
3	192.00	168.00
4	400.00	180.00

PIER/PILE LOAD(S)
2 Pier/Pile Load(s) Specified

Pier/Pile No.	X-Pos (ft)	Y-Pos (ft)	Load (lbs)	Spacing (ft)	Inclination (deg)	Length (ft)
1	133.00	153.00	172000.0	6.2	90.00	44.0
2	135.00	154.00	172000.0	6.2	90.00	44.0

NOTE - An Equivalent Line Load Is Calculated For Each Row Of Piers/Piles Assuming A Uniform Distribution Of Load Horizontally Between Individual Piers/Piles.
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	110.000	142.500
2	120.000	136.500
3	222.000	142.500
4	239.000	170.000
5	255.000	200.000
6	258.000	209.000

Janbu's Empirical Coefficient (fo) = 1.085
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
COORDINATES OF INTERSECTION OF PIER/PILE(S) WITH FAILURE SURFACE

Pier/Pile No.	X-Int.	Y-Int.
1	133.00	137.26
2	135.00	137.38

Sum of Pier/Pile Forces on Failure Surface = 54945.02 (lbs)
Factor Of Safety For The Preceding Specified Surface = 1.251
The calculated factor of safety for the specified surface without piers/piles, reinforcement, soil nails, or applied forces = 0.872

Table 1 - Individual Data on the 18 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	5.0	900.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	2.0	1018.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	3.0	2587.0	0.0	217.0	0.0	0.0	0.0	0.0	0.0

Figure B1-7

4	0.1	107.8	0.0	12.5	0.0	0.0	0.0	0.0	0.0
5	0.0	1.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
6	10.9	15829.5	0.0	2689.6	0.0	0.0	0.0	0.0	0.0
7	14.0	30723.3	0.0	7277.6	0.0	0.0	0.0	0.0	0.0
8	33.0	114835.7	0.0	34164.0	0.0	0.0	0.0	0.0	0.0
9	7.0	32016.5	0.0	10317.7	0.0	0.0	0.0	0.0	0.0
10	7.0	34007.5	0.0	11392.4	0.0	0.0	0.0	0.0	0.0
11	24.0	125974.5	0.0	40881.8	0.0	0.0	0.0	0.0	0.0
12	1.0	5559.1	0.0	1702.5	0.0	0.0	0.0	0.0	0.0
13	5.0	28555.7	0.0	8511.6	0.0	0.0	0.0	0.0	0.0
14	10.8	54985.6	0.0	24076.5	0.0	0.0	0.0	0.0	0.0
15	6.2	24393.7	0.0	4109.1	0.0	0.0	0.0	0.0	0.0
16	0.4	1352.6	0.0	18.5	0.0	0.0	0.0	0.0	0.0
17	15.6	33653.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	3.0	1336.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 2 - Base Stress Data on the 18 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-30.96	112.50	5.83	1692.04	-92.61
2	-30.96	116.01	2.35	2080.69	-259.61
3	-30.96	118.51	3.48	2440.78	-446.43
4	3.37	120.05	0.10	192.71	63.98
5	3.37	120.10	0.00	193.15	64.17
6	3.37	125.55	10.92	241.16	85.28
7	3.37	138.00	14.02	335.09	128.87
8	3.37	161.50	33.06	489.23	204.35
9	3.37	181.50	7.01	620.41	268.58
10	3.37	188.50	7.01	646.64	285.28
11	3.37	204.00	24.04	709.62	308.23
12	3.37	216.50	1.00	771.82	326.44
13	3.37	219.50	5.01	802.27	335.37
14	58.28	227.39	20.50	3387.11	4339.55
15	58.28	235.89	11.83	2819.38	3334.64
16	61.93	239.20	0.83	2834.17	3048.04
17	61.93	247.20	33.17	1876.98	1902.42
18	71.57	256.50	9.49	657.56	422.74

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) = 251522.09 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 1326.21(psf)
Sum of the Driving Forces = 218150.88 (lbs)
Average Mobilized Shear Stress = 1150.25(psf)
Total length of the failure surface = 189.66(ft)

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

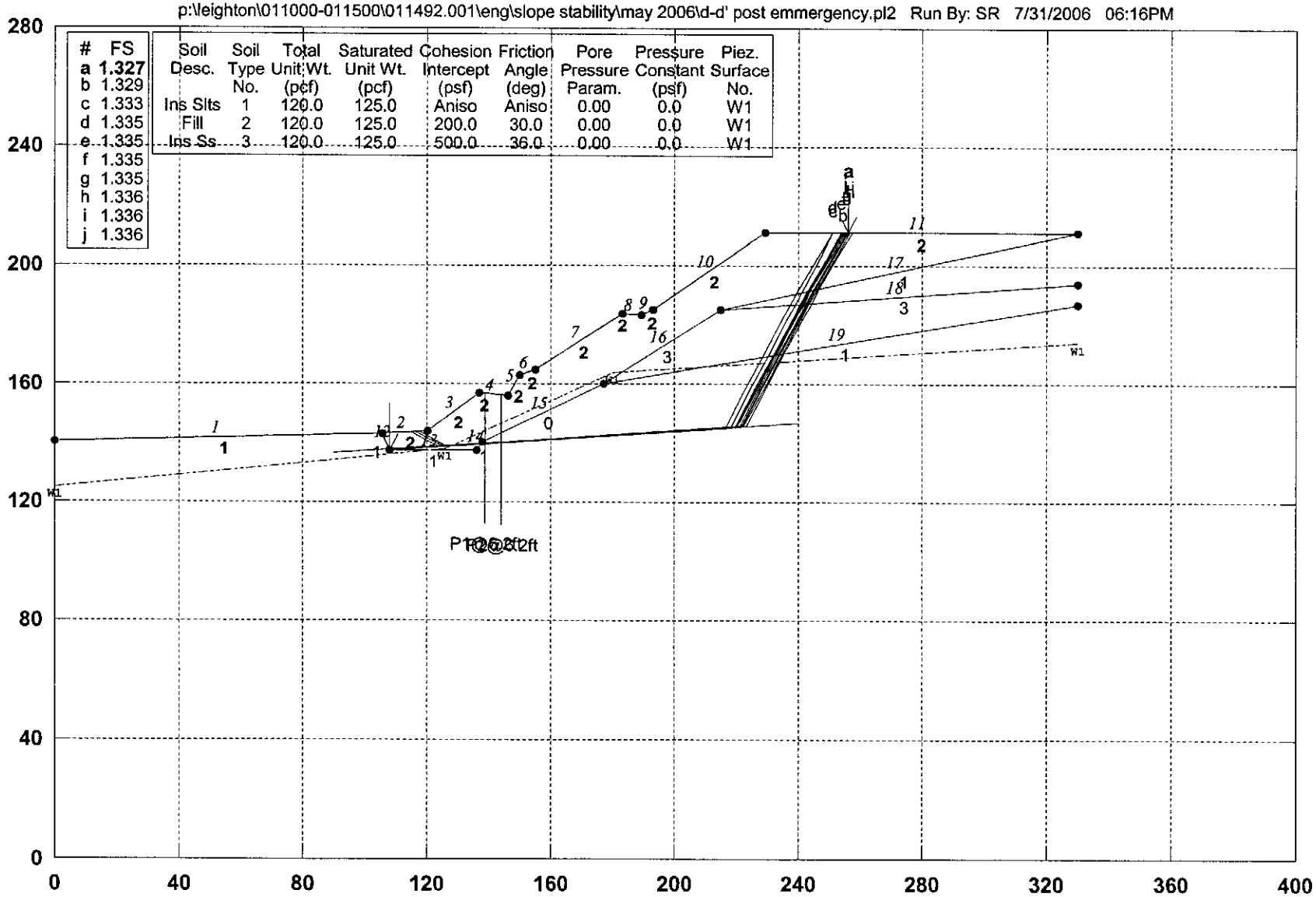
Figure B1-8

MV Landslide/ 011492-001 Sec D-D' Post Emergency Stability

p:\leighton\011000-011500\011492.001\eng\slope stability\may 2006\d-d' post emmergency.pl2 Run By: SR 7/31/2006 06:16PM

#	FS
a	1.327
b	1.329
c	1.333
d	1.335
e	1.335
f	1.335
g	1.335
h	1.336
i	1.336
j	1.336

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Ins Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Ins Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.327

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

Figure B1-9

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 7/31/2006
Time of Run: 06:16PM
Run By: SR
Input Data Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\May 2006\d-d' post emmergency.in
Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\May 2006\d-d' post emmergency.OUT
Unit System: English
Plotted Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\May 2006\d-d' post emmergency.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec D-D' Post Emergency Stability

BOUNDARY COORDINATES
11 Top Boundaries
19 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	140.00	106.00	143.00	1
2	106.00	143.00	120.00	144.00	2
3	120.00	144.00	137.00	157.00	2
4	137.00	157.00	146.00	156.00	2
5	146.00	156.00	150.00	163.00	2
6	150.00	163.00	155.00	165.00	2
7	155.00	165.00	183.50	184.00	2
8	183.50	184.00	189.50	183.50	2
9	189.50	183.50	193.00	185.00	2
10	193.00	185.00	229.50	211.00	2
11	229.50	211.00	330.00	211.00	2
12	106.00	143.00	108.00	137.50	1
13	108.00	137.50	136.00	137.50	1
14	136.00	137.50	138.00	140.00	1
15	138.00	140.00	177.50	160.00	0
16	177.50	160.00	215.00	185.00	3
17	215.00	185.00	330.00	211.00	1
18	215.00	185.00	330.00	194.00	3
19	177.50	160.00	330.00	187.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

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

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

Figure B1-10

1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	125.00
2	126.00	138.00
3	180.00	164.00
4	330.00	174.00

PIER/PILE LOAD(S)
2 Pier/Pile Load(s) Specified

Pier/Pile No.	X-Pos (ft)	Y-Pos (ft)	Load (lbs)	Spacing (ft)	Inclination (deg)	Length (ft)
1	139.00	156.78	172000.0	6.2	90.00	44.0
2	144.00	156.22	172000.0	6.2	90.00	44.0

NOTE - An Equivalent Line Load Is Calculated For Each Row Of Piers/Piles Assuming A Uniform Distribution Of Load Horizontally Between Individual Piers/Piles.
Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.
1000 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	90.00	136.30	145.00	140.15	0.00
2	200.00	144.00	240.00	146.80	0.20

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 = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 1.610 FS Min = 1.327 FS Ave = 1.402
Standard Deviation = 0.063 Coefficient of Variation = 4.52 %
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.955	137.623
2	108.057	137.564
3	221.707	145.538
4	228.400	158.962
5	233.895	169.985
6	240.705	183.350
7	242.648	187.164
8	245.002	191.783
9	252.502	204.773
10	256.097	211.000

Factor of Safety
*** 1.327 ***

Figure B1-11

Individual data on the 27 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	0.1	67.6	0.0	0.0	0.	0.	0.0	0.0	0.0
2	11.9	8012.1	0.0	0.0	0.	0.	0.0	0.0	0.0
3	8.0	8042.1	0.0	0.0	0.	0.	0.0	0.0	0.0
4	9.0	15504.7	0.0	1041.9	0.	0.	0.0	0.0	0.0
5	0.7	1503.5	0.0	172.4	0.	0.	0.0	0.0	0.0
6	0.3	593.8	0.0	72.0	0.	0.	0.0	0.0	0.0
7	8.0	13989.5	0.0	0.0	0.	0.	0.0	0.0	0.0
8	4.0	7000.2	0.0	0.0	0.	0.	0.0	0.0	0.0
9	5.0	10080.4	0.0	0.0	0.	0.	0.0	0.0	0.0
10	22.5	49475.8	0.0	0.0	0.	0.	0.0	0.0	0.0
11	2.5	11753.7	0.0	3264.4	0.	0.	0.0	0.0	0.0
12	3.5	17215.7	0.0	4681.4	0.	0.	0.0	0.0	0.0
13	0.4	1960.2	0.0	520.0	0.	0.	0.0	0.0	0.0
14	5.6	27972.1	0.0	7499.0	0.	0.	0.0	0.0	0.0
15	3.5	17530.2	0.0	4674.1	0.	0.	0.0	0.0	0.0
16	19.2	111992.8	0.0	25630.0	0.	0.	0.0	0.0	0.0
17	2.8	18496.7	0.0	3688.7	0.	0.	0.0	0.0	0.0
18	6.7	47195.0	0.0	8916.6	0.	0.	0.0	0.0	0.0
19	6.7	45135.1	0.0	13809.5	0.	0.	0.0	0.0	0.0
20	1.1	6714.2	0.0	1107.8	0.	0.	0.0	0.0	0.0
21	3.2	17752.4	0.0	1355.5	0.	0.	0.0	0.0	0.0
22	1.2	6254.0	0.0	0.0	0.	0.	0.0	0.0	0.0
23	6.8	28056.1	0.0	0.0	0.	0.	0.0	0.0	0.0
24	1.9	6003.2	0.0	0.0	0.	0.	0.0	0.0	0.0
25	2.4	6079.9	0.0	0.0	0.	0.	0.0	0.0	0.0
26	7.5	11449.5	0.0	0.0	0.	0.	0.0	0.0	0.0
27	3.6	1343.0	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.923	137.711
2	108.164	137.572
3	219.910	145.308
4	226.603	158.732
5	232.050	169.658
6	238.860	183.023
7	240.900	187.027
8	243.052	191.342
9	250.552	204.333
10	254.401	211.000

Factor of Safety

*** 1.329 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.891	137.799
2	108.272	137.579
3	218.113	145.278
4	224.806	158.702
5	230.096	169.312
6	236.906	182.677
7	239.048	186.882
8	241.046	190.889
9	247.739	204.313
10	251.073	211.000

Factor of Safety

*** 1.333 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.859	137.887
2	108.379	137.587

Figure B1-12

3	216.316	145.048
4	223.009	158.472
5	228.251	168.985
6	235.061	182.350
7	237.300	186.745
8	239.152	190.461
9	246.652	203.451
10	251.011	211.000

Factor of Safety
*** 1.335 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	116.280	143.734
2	124.922	138.745
3	219.597	145.416
4	226.290	158.840
5	231.649	169.587
6	238.458	182.952
7	240.520	186.997
8	242.639	191.249
9	250.139	204.239
10	254.043	211.000

Factor of Safety
*** 1.335 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	115.047	143.646
2	123.687	138.658
3	220.261	145.461
4	226.954	158.885
5	232.352	169.711
6	239.162	183.077
7	241.186	187.049
8	243.361	191.412
9	250.861	204.402
10	254.670	211.000

Factor of Safety
*** 1.335 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	116.173	143.727
2	124.815	138.737
3	221.394	145.446
4	228.087	158.870
5	233.603	169.933
6	240.413	183.298
7	242.371	187.142
8	244.645	191.702
9	252.145	204.693
10	255.787	211.000

Factor of Safety
*** 1.335 ***

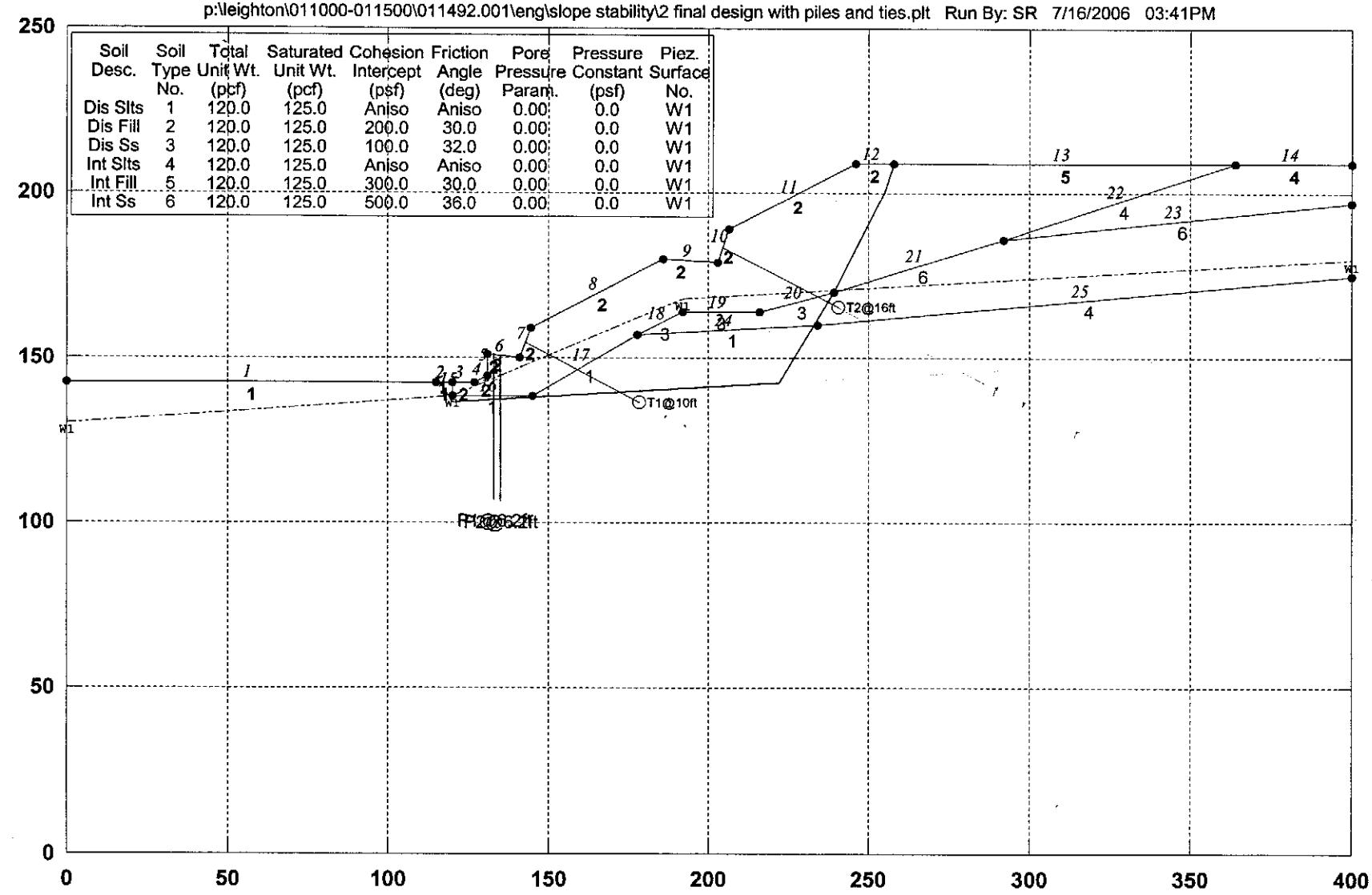
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	117.298	143.807
2	125.943	138.816
3	222.527	145.630
4	229.220	159.054
5	234.745	170.135
6	241.555	183.500
7	243.453	187.227
8	245.817	191.967
9	253.317	204.958

Figure B1-13

MV/Landslide/011492-001 Section A-A'/ Final Design with Piles & Ties

p:\leighton\011000-011500\011492.001\eng\slope stability\2 final design with piles and ties.plt Run By: SR 7/16/2006 03:41PM



GSTABL7 v.2 FSmin=1.507

Factor Of Safety Is Calculated By The Simplified Janbu Method

Figure B1-14

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

****

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: 7/16/2006
Time of Run: 03:41PM
Run By: SR
Input Data Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 final design with piles and ties.in
Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 final design with piles and ties.OUT
Unit System: English
Plotted Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 final design with piles and ties.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001 Section
A-A'/ Final Design with Piles & Ties

BOUNDARY COORDINATES
14 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	142.50	115.00	142.50	1
2	115.00	142.50	120.00	142.50	1
3	120.00	142.50	127.00	142.50	2
4	127.00	142.50	131.00	144.50	2
5	131.00	144.50	131.10	151.00	2
6	131.10	151.00	141.00	150.00	2
7	141.00	150.00	144.50	159.00	2
8	144.50	159.00	186.00	180.00	2
9	186.00	180.00	203.00	179.00	2
10	203.00	179.00	206.50	189.00	2
11	206.50	189.00	246.00	209.00	2
12	246.00	209.00	258.00	209.00	2
13	258.00	209.00	364.00	209.00	5
14	364.00	209.00	400.00	209.00	4
15	120.00	142.50	120.10	138.50	1
16	120.10	138.50	145.00	138.50	1
17	145.00	138.50	178.00	157.00	1
18	178.00	157.00	192.00	164.00	3
19	192.00	164.00	216.00	164.00	3
20	216.00	164.00	239.00	170.00	3
21	239.00	170.00	292.00	186.00	6
22	292.00	186.00	364.00	209.00	4
23	292.00	186.00	400.00	197.00	6
24	178.00	157.00	234.00	160.00	1
25	234.00	160.00	400.00	175.00	4

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

ISOTROPIC SOIL PARAMETERS
6 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	125.0	575.0	25.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	100.0	32.0	0.00	0.0	1
4	120.0	125.0	700.0	37.0	0.00	0.0	1
5	120.0	125.0	300.0	30.0	0.00	0.0	1

Figure B1-15

```
   6   120.0    125.0     500.0     36.0    0.00       0.0      1
ANISOTROPIC STRENGTH PARAMETERS
     2 soil type(s)
 Soil Type  1 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion     Friction
   Range       Direction Limit    Intercept      Angle
    No.            (deg)            (psf)        (deg)
     1              2.0             575.00        25.00
     2              7.0               0.00         8.00
     3             90.0             575.00        25.00
 Soil Type  4 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion     Friction
   Range       Direction Limit    Intercept      Angle
    No.            (deg)            (psf)        (deg)
     1              2.0             700.00        37.00
     2              7.0               0.00         8.00
     3             90.0             700.00        37.00
 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 =  1.00
   Point      X-Water     Y-Water
    No.         (ft)        (ft)
     1          0.00       130.00
     2        120.00       138.50
     3        192.00       168.00
     4        400.00       180.00
TIEBACK LOAD(S)
     2 Tieback Load(s) Specified
 Tieback   X-Pos     Y-Pos      Load     Spacing  Inclination  Length  Force
   No.      (ft)      (ft)      (lbs)      (ft)      (deg)       (ft)   Method
    1      142.75   154.50   196000.0     10.0      26.60       40.0     2
    2      204.57   183.50   196000.0     16.0      26.60       40.0     2
 NOTE - An Equivalent Line Load Is Calculated For Each Row Of Tiebacks
        Assuming A Uniform Distribution Of Load Horizontally Between Individual
        Tiebacks. Force Method 1 Considers Only Tangential Tieback Forces.
        Force Method 2 Considers Both Tangential and Normal Tieback Forces.
        Force Method 3 Considers Only Normal Tieback Forces.
        Force Method 4 Limits Normal and Tangential Tieback-Force Distribution
        to 1.5 Times the Tieback Inclination, or to 30 Degrees Below (Left of)
        the Tieback-Failure Surface Intersection, Whichever is Greater.
PIER/PILE LOAD(S)
     2 Pier/Pile Load(s) Specified
Pier/Pile  X-Pos     Y-Pos      Load     Spacing  Inclination  Length
   No.      (ft)      (ft)      (lbs)      (ft)      (deg)       (ft)
    1      133.00   150.81   172000.0      6.2      90.00       44.0
    2      135.00   150.61   172000.0      6.2      90.00       44.0
 NOTE - An Equivalent Line Load Is Calculated For Each Row Of Piers/Piles
        Assuming A Uniform Distribution Of Load Horizontally Between
        Individual Piers/Piles.
 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      Y-Surf
    No.         (ft)        (ft)
     1        116.000     142.500
     2        120.000     136.500
     3        222.000     142.500
     4        239.000     170.000
```

Figure B1-16

5	255.000	200.000
6	258.000	209.000

Janbu's Empirical Coefficient (fo) = 1.086
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
COORDINATES OF INTERSECTION OF PIER/PILE(S) WITH FAILURE SURFACE

Pier/Pile No.	X-Int.	Y-Int.
1	133.00	137.26
2	135.00	137.38

Sum of Pier/Pile Forces on Failure Surface = 54945.02 (lbs)
Factor Of Safety For The Preceding Specified Surface = 1.507
The calculated factor of safety for the specified surface without piers/piles, reinforcement, soil nails, or applied forces = 1.181

Table 1 - Individual Data on the 23 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	2.7	669.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	1.3	777.2	0.0	143.2	0.0	0.0	0.0	0.0	0.0
3	0.1	72.2	0.0	12.5	0.0	0.0	0.0	0.0	0.0
4	0.0	0.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0
5	6.9	4907.1	0.0	1399.9	0.0	0.0	0.0	0.0	0.0
6	4.0	3209.0	0.0	1289.7	0.0	0.0	0.0	0.0	0.0
7	0.1	130.1	0.0	36.7	0.0	0.0	0.0	0.0	0.0
8	9.9	15888.2	0.0	4722.8	0.0	0.0	0.0	0.0	0.0
9	3.5	7172.6	0.0	2184.0	1433.7	0.0	0.0	0.0	0.0
10	0.5	1296.9	0.0	333.9	252.3	15.5	0.0	0.0	0.0
11	33.0	116231.3	0.0	34164.0	13750.2	14718.3	0.0	0.0	0.0
12	8.0	37265.9	0.0	11879.3	1155.7	2663.9	0.0	0.0	0.0
13	6.0	29057.0	0.0	9830.7	643.4	1754.3	0.0	0.0	0.0
14	11.0	52008.6	0.0	18742.6	994.1	1403.8	0.0	0.0	0.0
15	3.5	18333.1	0.0	5961.8	395.0	398.1	0.0	0.0	0.0
16	9.5	57766.7	0.0	16177.5	1240.4	1082.8	0.0	0.0	0.0
17	6.0	38981.0	0.0	10214.1	848.3	765.8	0.0	0.0	0.0
18	10.8	63558.8	0.0	24076.5	4685.2	836.7	0.0	0.0	0.0
19	6.2	29228.6	0.0	4109.1	3113.8	551.7	0.0	0.0	0.0
20	0.4	1654.0	0.0	18.5	211.2	53.9	0.0	0.0	0.0
21	6.6	24105.6	0.0	0.0	3134.7	1365.1	0.0	0.0	0.0
22	9.0	18832.5	0.0	0.0	2594.7	2209.7	0.0	0.0	0.0
23	3.0	1620.0	0.0	0.0	649.3	553.6	0.0	0.0	0.0

Table 2 - Base Stress Data on the 23 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-56.31	117.36	4.92	4445.95	-204.19
2	-56.31	119.36	2.30	5355.89	-507.89
3	3.37	120.05	0.10	107.70	42.85
4	3.37	120.10	0.00	107.46	42.84
5	3.37	123.55	6.91	90.72	41.76
6	3.37	129.00	4.01	85.68	47.11
7	3.37	131.05	0.10	166.70	76.42
8	3.37	136.05	9.92	201.30	94.24
9	3.37	142.75	3.51	327.35	120.34
10	3.37	144.75	0.50	433.58	121.22
11	3.37	161.50	33.06	518.07	-239.18
12	3.37	182.00	8.01	592.17	-59.44
13	3.37	189.00	6.01	591.13	-8.01
14	3.37	197.50	11.02	556.01	150.02
15	3.37	204.75	3.51	651.06	193.85
16	3.37	211.25	9.52	804.59	243.10
17	3.37	219.00	6.01	880.84	253.87
18	58.28	227.39	20.50	4133.78	4938.53
19	58.28	235.89	11.83	3752.97	3906.93
20	61.93	239.20	0.83	3769.29	3589.62
21	61.93	242.70	14.04	3310.12	3011.98
22	61.93	250.50	19.13	2020.76	1600.80
23	71.57	256.50	9.49	858.37	327.74

Figure B1-17

NOTE: Tieback forces are included in the Available Shear
Strength values in Table 2, as shown in Table 1.
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) = 310906.00 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing,
Soil Nail, and Applied Forces if applicable) = 1678.72(psf)
Sum of the Driving Forces = 223943.14 (lbs)
Average Mobilized Shear Stress = 1209.17(psf)
Total length of the failure surface = 185.20(ft)
**** END OF GSTABL7 OUTPUT ****

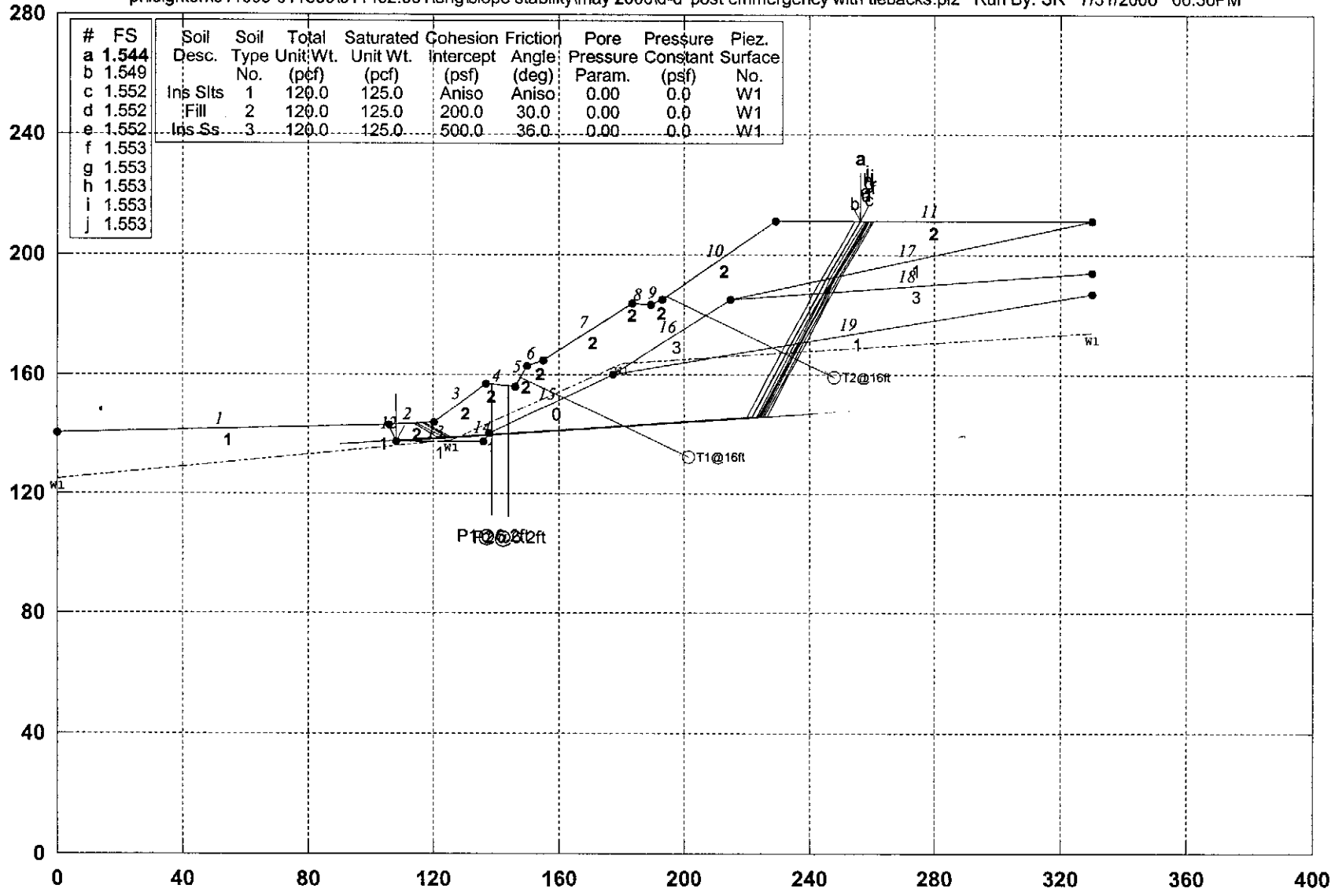
Figure B1-18

MV Landslide/ 011492-001 Sec D-D' Final Design

p:\leighton\011000-011500\011492.001\eng\slope stability\may 2006\d-d' post emmergency with tiebacks.pl2 Run By: SR 7/31/2006 06:36PM

#	FS
a	1.544
b	1.549
c	1.552
d	1.552
e	1.552
f	1.553
g	1.553
h	1.553
i	1.553
j	1.553

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Ins Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Ins Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.544

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

Figure B1-19

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 7/31/2006
Time of Run: 06:36PM
Run By: SR
Input Data Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\May 2006\d-d' post emmergency with tiebacks.in
Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\May 2006\d-d' post emmergency with tiebacks.OUT
Unit System: English
Plotted Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\May 2006\d-d' post emmergency with tiebacks.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec D-D'
Final Design

BOUNDARY COORDINATES
11 Top Boundaries
19 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	140.00	106.00	143.00	1
2	106.00	143.00	120.00	144.00	2
3	120.00	144.00	137.00	157.00	2
4	137.00	157.00	146.00	156.00	2
5	146.00	156.00	150.00	163.00	2
6	150.00	163.00	155.00	165.00	2
7	155.00	165.00	183.50	184.00	2
8	183.50	184.00	189.50	183.50	2
9	189.50	183.50	193.00	185.00	2
10	193.00	185.00	229.50	211.00	2
11	229.50	211.00	330.00	211.00	2
12	106.00	143.00	108.00	137.50	1
13	108.00	137.50	136.00	137.50	1
14	136.00	137.50	138.00	140.00	1
15	138.00	140.00	177.50	160.00	0
16	177.50	160.00	215.00	185.00	3
17	215.00	185.00	330.00	211.00	1
18	215.00	185.00	330.00	194.00	3
19	177.50	160.00	330.00	187.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

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

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

Figure B1-20

1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	125.00
2	126.00	138.00
3	180.00	164.00
4	330.00	174.00

TIEBACK LOAD(S)
2 Tieback Load(s) Specified

Tieback No.	X-Pos (ft)	Y-Pos (ft)	Load (lbs)	Spacing (ft)	Inclination (deg)	Length (ft)	Force Method
1	147.71	159.00	196000.0	16.0	26.50	60.0	2
2	194.40	186.00	196000.0	16.0	26.50	60.0	2

NOTE - An Equivalent Line Load Is Calculated For Each Row Of Tiebacks Assuming A Uniform Distribution Of Load Horizontally Between Individual Tiebacks. Force Method 1 Considers Only Tangential Tieback Forces. Force Method 2 Considers Both Tangential and Normal Tieback Forces. Force Method 3 Considers Only Normal Tieback Forces. Force Method 4 Limits Normal and Tangential Tieback-Force Distribution to 1.5 Times the Tieback Inclination, or to 30 Degrees Below (Left of) the Tieback-Failure Surface Intersection, Whichever is Greater.

PIER/PILE LOAD(S)
2 Pier/Pile Load(s) Specified

Pier/Pile No.	X-Pos (ft)	Y-Pos (ft)	Load (lbs)	Spacing (ft)	Inclination (deg)	Length (ft)
1	139.00	156.78	172000.0	6.2	90.00	44.0
2	144.00	156.22	172000.0	6.2	90.00	44.0

NOTE - An Equivalent Line Load Is Calculated For Each Row Of Piers/Piles Assuming A Uniform Distribution Of Load Horizontally Between Individual Piers/Piles.

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.
1000 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	90.00	136.30	145.00	140.15	0.00
2	200.00	144.00	240.00	146.80	0.20

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 = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 1.942 FS Min = 1.544 FS Ave = 1.638
Standard Deviation = 0.084 Coefficient of Variation = 5.10 %
Failure Surface Specified By 10 Coordinate Points

Figure B1-21

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.955	137.623
2	108.057	137.564
3	221.707	145.538
4	228.400	158.962
5	233.895	169.985
6	240.705	183.350
7	242.648	187.164
8	245.002	191.783
9	252.502	204.773
10	256.097	211.000

Factor of Safety
*** 1.544 ***

Individual data on the 27 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	0.1	67.6	0.0	0.0	0.	0.	0.0	0.0	0.0
2	11.9	8012.1	0.0	0.0	0.	0.	0.0	0.0	0.0
3	8.0	8042.1	0.0	0.0	0.	0.	0.0	0.0	0.0
4	9.0	15504.7	0.0	1041.9	0.	0.	0.0	0.0	0.0
5	0.7	1503.5	0.0	172.4	0.	0.	0.0	0.0	0.0
6	0.3	593.8	0.0	72.0	0.	0.	0.0	0.0	0.0
7	8.0	13989.5	0.0	0.0	337.	0.	0.0	0.0	0.0
8	4.0	7000.2	0.0	0.0	518.	0.	0.0	0.0	0.0
9	5.0	10080.4	0.0	0.0	897.	168.	0.0	0.0	0.0
10	22.5	49475.8	0.0	0.0	3269.	3035.	0.0	0.0	0.0
11	2.5	11753.7	0.0	3264.4	242.	317.	0.0	0.0	0.0
12	3.5	17215.7	0.0	4681.4	340.	424.	0.0	0.0	0.0
13	0.4	1960.2	0.0	520.0	38.	46.	0.0	0.0	0.0
14	5.6	27972.1	0.0	7499.0	579.	626.	0.0	0.0	0.0
15	3.5	17530.2	0.0	4674.1	396.	361.	0.0	0.0	0.0
16	19.2	111992.8	0.0	25630.0	2680.	1908.	0.0	0.0	0.0
17	2.8	18496.7	0.0	3688.7	403.	334.	0.0	0.0	0.0
18	6.7	47195.0	0.0	8916.6	945.	865.	0.0	0.0	0.0
19	6.7	45135.1	0.0	13809.5	3077.	345.	0.0	0.0	0.0
20	1.1	6714.2	0.0	1107.8	551.	65.	0.0	0.0	0.0
21	3.2	17752.4	0.0	1355.5	1607.	193.	0.0	0.0	0.0
22	1.2	6254.0	0.0	0.0	618.	99.	0.0	0.0	0.0
23	6.8	28056.1	0.0	0.0	3003.	1069.	0.0	0.0	0.0
24	1.9	6003.2	0.0	0.0	690.	392.	0.0	0.0	0.0
25	2.4	6079.9	0.0	0.0	733.	494.	0.0	0.0	0.0
26	7.5	11449.5	0.0	0.0	1485.	1470.	0.0	0.0	0.0
27	3.6	1343.0	0.0	0.0	500.	622.	0.0	0.0	0.0

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.923	137.711
2	108.164	137.572
3	219.910	145.308
4	226.603	158.732
5	232.050	169.658
6	238.860	183.023
7	240.900	187.027
8	243.052	191.342
9	250.552	204.333
10	254.401	211.000

Factor of Safety
*** 1.549 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.651	138.459
2	109.077	137.635
3	224.636	145.752

Figure B1-22

4	231.329	159.176
5	236.992	170.533
6	243.801	183.898
7	245.582	187.393
8	248.123	192.489
9	255.623	205.479
10	258.810	211.000

Factor of Safety
*** 1.552 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	114.833	143.631
2	123.472	138.643
3	223.855	145.722
4	230.548	159.146
5	236.151	170.384
6	242.961	183.749
7	244.786	187.331
8	247.260	192.294
9	254.760	205.284
10	258.061	211.000

Factor of Safety
*** 1.552 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	116.065	143.719
2	124.707	138.730
3	223.191	145.676
4	229.884	159.100
5	235.448	170.260
6	242.258	183.625
7	244.120	187.279
8	246.539	192.130
9	254.039	205.121
10	257.433	211.000

Factor of Safety
*** 1.552 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.683	138.371
2	108.970	137.628
3	226.433	145.782
4	233.126	159.206
5	238.946	170.879
6	245.756	184.244
7	247.434	187.538
8	250.129	192.942
9	257.629	205.932
10	260.554	211.000

Factor of Safety
*** 1.553 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	115.958	143.711
2	124.600	138.722
3	224.988	145.706
4	231.681	159.130
5	237.402	170.606
6	244.212	183.971
7	245.972	187.424
8	248.544	192.584
9	256.044	205.574
10	259.177	211.000

Figure B1-23

Factor of Safety
*** 1.553 ***
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	117.191	143.799
2	125.835	138.808
3	224.324	145.660
4	231.017	159.084
5	236.699	170.481
6	243.509	183.846
7	245.305	187.372
8	247.823	192.421
9	255.323	205.411
10	258.549	211.000

Factor of Safety
*** 1.553 ***
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	114.726	143.623
2	123.365	138.636
3	225.652	145.752
4	232.345	159.176
5	238.106	170.730
6	244.916	184.095
7	246.638	187.476
8	249.266	192.747
9	256.766	205.738
10	259.805	211.000

Factor of Safety
*** 1.553 ***
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.600	143.543
2	122.237	138.557
3	224.519	145.768
4	231.212	159.192
5	236.855	170.509
6	243.664	183.874
7	245.453	187.383
8	247.982	192.457
9	255.482	205.447
10	258.688	211.000

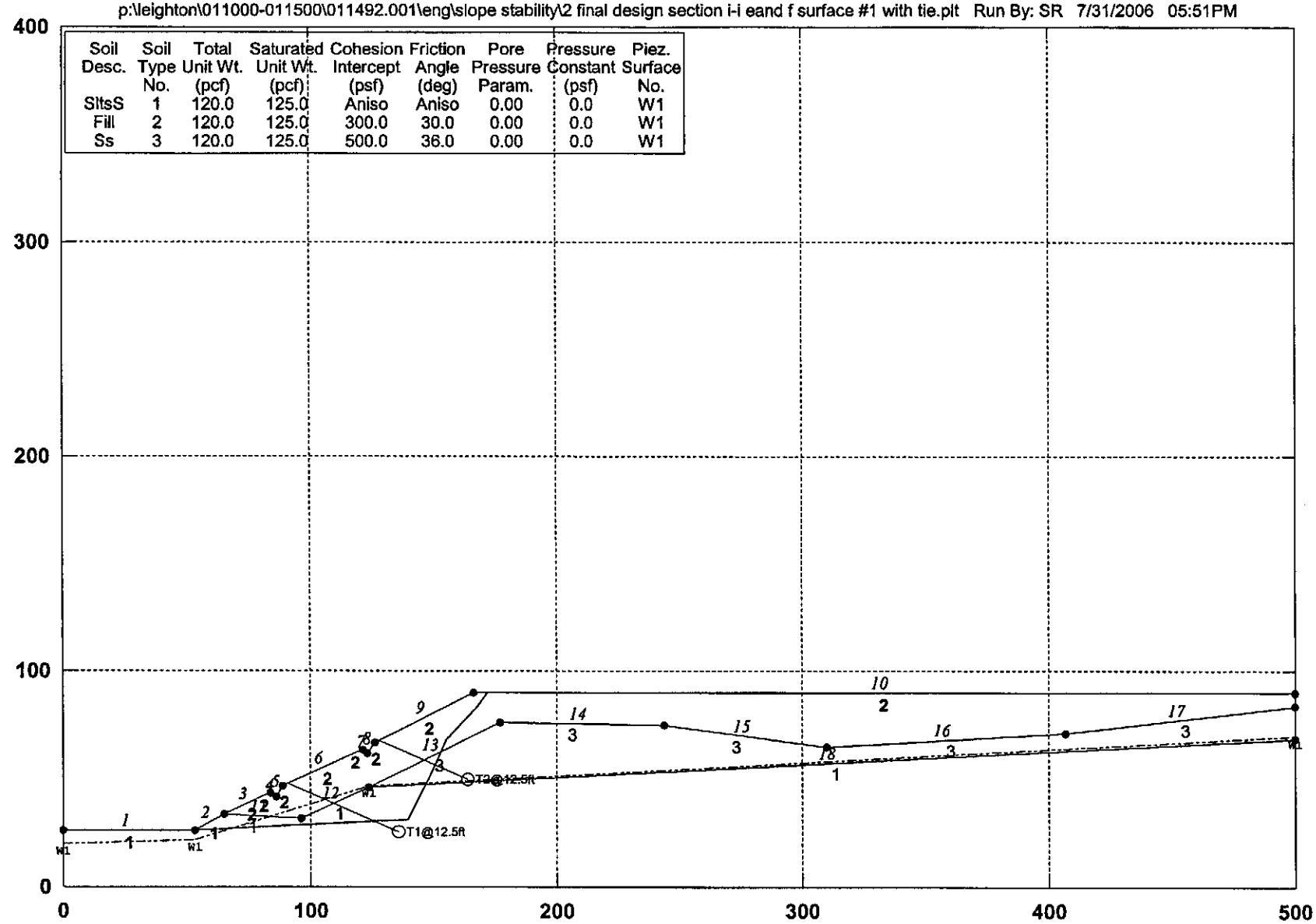
Factor of Safety
*** 1.553 ***
**** END OF GSTABL7 OUTPUT ****

Figure B1-24

MV/Landslide/011492-001 Section E-E' E 24411-F 24422, Reinforced

p:\leighton\011000-011500\011492.001\eng\slope stability\2 final design section i-i eand f surface #1 with tie.plt Run By: SR 7/31/2006 05:51PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
SltsS	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Fill	2	120.0	125.0	300.0	30.0	0.00	0.0	W1
Ss	3	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.527

Factor Of Safety Is Calculated By The Simplified Janbu Method

Figure B1-25

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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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: 7/31/2006
Time of Run: 05:51PM
Run By: SR
Input Data Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 final design section i-i eand f surface #1 with tie.in
Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 final design section i-i eand f surface #1 with tie.OUT
Unit System: English
Plotted Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 final design section i-i eand f surface #1 with tie.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001 Section E-E'
E 24411-F 24422, Reinforced

BOUNDARY COORDINATES
10 Top Boundaries
18 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	26.00	53.00	26.00	1
2	53.00	26.00	65.00	34.00	1
3	65.00	34.00	84.00	44.00	2
4	84.00	44.00	86.00	42.00	2
5	86.00	42.00	89.00	47.00	2
6	89.00	47.00	121.00	64.00	2
7	121.00	64.00	123.00	62.00	2
8	123.00	62.00	126.00	67.00	2
9	126.00	67.00	166.00	90.00	2
10	166.00	90.00	500.00	90.00	2
11	65.00	34.00	96.00	32.00	1
12	96.00	32.00	124.00	46.00	1
13	124.00	46.00	177.00	76.00	3
14	177.00	76.00	244.00	75.00	3
15	244.00	75.00	310.00	65.00	3
16	310.00	65.00	407.00	71.00	3
17	407.00	71.00	500.00	84.00	3
18	124.00	46.00	500.00	69.00	1

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 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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	300.0	30.0	0.00	0.0	1
3	120.0	125.0	500.0	36.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00

Figure B1-26

2	7.0	0.00	8.00
3	90.0	700.00	37.00

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 = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	0.00	20.00
2	53.00	22.00
3	124.00	47.00
4	500.00	70.00

TIEBACK LOAD(S)
2 Tieback Load(s) Specified

Tieback No.	X-Pos (ft)	Y-Pos (ft)	Load (lbs)	Spacing (ft)	Inclination (deg)	Length (ft)	Force Method
1	90.88	48.00	196000.0	12.5	26.50	50.0	2
2	127.74	68.00	196000.0	12.5	26.50	40.0	2

NOTE - An Equivalent Line Load Is Calculated For Each Row Of Tiebacks Assuming A Uniform Distribution Of Load Horizontally Between Individual Tiebacks. Force Method 1 Considers Only Tangential Tieback Forces. Force Method 2 Considers Both Tangential and Normal Tieback Forces. Force Method 3 Considers Only Normal Tieback Forces. Force Method 4 Limits Normal and Tangential Tieback-Force Distribution to 1.5 Times the Tieback Inclination, or to 30 Degrees Below (Left of) the Tieback-Failure Surface Intersection, Whichever is Greater.

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	53.000	26.000
2	139.216	31.276
3	147.617	49.426
4	154.766	68.105
5	167.702	83.358
6	171.930	90.000

Janbu's Empirical Coefficient (fo) = 1.084
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
Factor Of Safety For The Preceding Specified Surface = 1.527

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	12.0	5231.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	1.7	1610.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	16.9	24585.2	0.0	2600.7	0.0	0.0	0.0	0.0	0.0
4	0.3	660.6	0.0	105.4	26.7	0.0	0.0	0.0	0.0
5	2.0	3663.1	0.0	663.8	230.8	0.0	0.0	0.0	0.0
6	3.0	5990.5	0.0	1132.2	610.7	0.0	0.0	0.0	0.0
7	7.0	17433.6	0.0	3278.3	2686.5	57.2	0.0	0.0	0.0
8	25.0	85407.4	0.0	18983.1	5364.8	4491.2	0.0	0.0	0.0
9	2.0	8027.3	0.0	2009.7	375.4	355.7	0.0	0.0	0.0
10	1.0	3984.8	0.0	1032.1	189.7	174.4	0.0	0.0	0.0
11	2.0	8463.0	0.0	2062.4	380.9	338.4	0.0	0.0	0.0
12	0.0	86.1	0.0	20.1	3.7	3.2	0.0	0.0	0.0
13	13.2	64423.1	0.0	13760.6	2754.9	2131.7	0.0	0.0	0.0
14	7.5	33807.5	0.0	9778.9	5568.8	650.0	0.0	0.0	0.0
15	0.5	1780.2	0.0	35.4	448.7	57.8	0.0	0.0	0.0
16	0.5	1703.9	0.0	0.0	450.5	57.9	0.0	0.0	0.0

Figure B1-27

17	4.9	14604.1	0.0	0.0	6050.4	684.9	0.0	0.0	0.0
18	2.3	4886.6	0.0	0.0	2476.1	857.2	0.0	0.0	0.0
19	11.2	16233.8	0.0	0.0	2861.0	3972.5	0.0	0.0	0.0
20	1.7	1561.5	0.0	0.0	193.4	341.2	0.0	0.0	0.0
21	4.2	1684.9	0.0	0.0	545.2	821.1	0.0	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	3.50	59.00	12.02	61.04	26.63
2	3.50	65.87	1.75	128.91	56.24
3	3.50	75.21	16.94	182.06	88.80
4	3.50	83.83	0.34	240.29	118.97
5	3.50	85.00	2.00	226.18	111.87
6	3.50	87.50	3.01	255.30	121.97
7	3.50	92.50	7.01	336.89	143.95
8	3.50	108.50	25.05	402.20	29.02
9	3.50	122.00	2.00	447.77	67.30
10	3.50	123.50	1.00	440.20	68.98
11	3.50	124.99	1.98	479.60	90.14
12	3.50	125.99	0.02	506.85	104.36
13	3.50	132.61	13.24	566.14	136.45
14	65.16	142.94	17.75	4536.22	4027.02
15	65.16	146.91	1.13	4084.69	3270.18
16	65.16	147.38	1.11	4040.43	3183.91
17	69.06	150.05	13.59	3750.71	2666.92
18	69.06	153.62	6.41	2468.33	1617.51
19	49.70	160.38	17.37	1314.52	748.47
20	49.70	166.85	2.63	932.51	499.21
21	57.52	169.82	7.87	665.93	141.99

NOTE: Tieback forces are included in the Available Shear Strength values in Table 2, as shown in Table 1.
Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 207440.56 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 1344.83(psf)
Sum of the Driving Forces = 147269.00 (lbs)
Average Mobilized Shear Stress = 954.74(psf)
Total length of the failure surface = 154.25(ft)

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

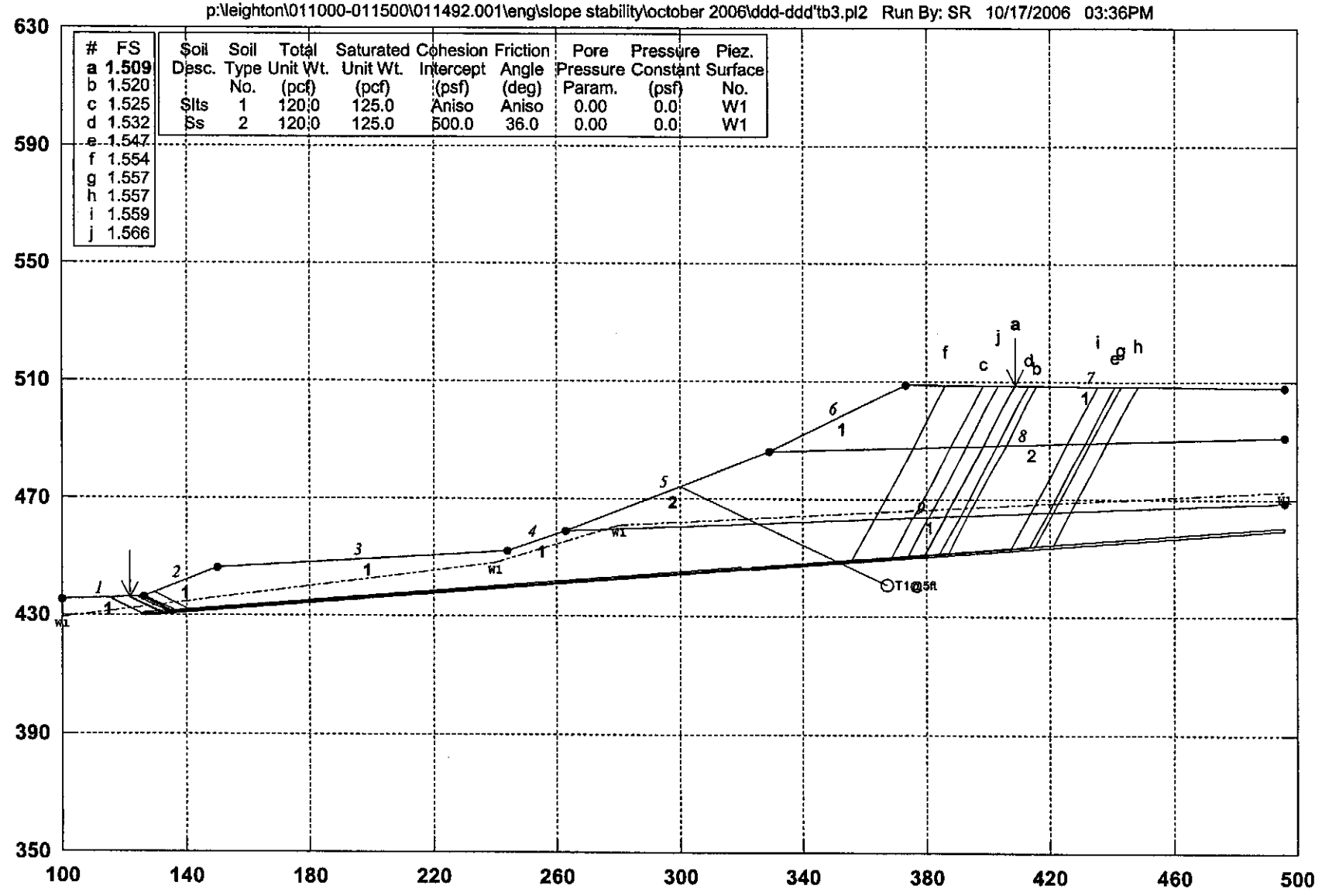
Figure B1-28

MV Landslide/ 011492-001 Sec d3 Static Tiebacks

p:\leighton\011000-011500\011492.001\eng\slope stability\october 2006\ddd-ddd'tb3.pl2 Run By: SR 10/17/2006 03:36PM

#	FS
a	1.509
b	1.520
c	1.525
d	1.532
e	1.547
f	1.554
g	1.557
h	1.557
i	1.559
j	1.566

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Ss	2	120.0	125.0	500.0	36.0	0.00	0.0	W1



GSTABL7 v.2 FSmin=1.509

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

Figure B1-29

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

****

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: 10/17/2006
Time of Run: 03:36PM
Run By: SR
Input Data Filename: p:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\ddd-ddd'tb3.in
Output Filename: p:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\ddd-ddd'tb3.OUT
Unit System: English
Plotted Output Filename: p:\Leighton\011000-011500\011492.001\ENG\Slope Stability\October 2006\ddd-ddd'tb3.PLT
PROBLEM DESCRIPTION: MV Landslide/ 011492-001 Sec d3
Static Tiebacks

BOUNDARY COORDINATES
7 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	100.00	435.00	126.00	436.00	1
2	126.00	436.00	150.00	446.00	1
3	150.00	446.00	244.00	452.00	1
4	244.00	452.00	263.00	459.00	1
5	263.00	459.00	329.00	486.00	2
6	329.00	486.00	373.00	509.00	1
7	373.00	509.00	496.00	508.00	1
8	329.00	486.00	496.00	491.00	2
9	263.00	459.00	496.00	469.00	1

User Specified Y-Origin = 350.00(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	125.0	700.0	37.0	0.00	0.0	1
2	120.0	125.0	500.0	36.0	0.00	0.0	1

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.0	700.00	37.00
2	7.0	0.00	8.00
3	90.0	700.00	37.00

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

Figure B1-30

Unit Weight of Water = 62.40 (pcf)
Piezometric Surface No. 1 Specified by 4 Coordinate Points
Pore Pressure Inclination Factor = 1.00

Point No.	X-Water (ft)	Y-Water (ft)
1	100.00	429.00
2	240.00	448.00
3	280.00	461.00
4	496.00	473.00

TIEBACK LOAD(S)
1 Tieback Load(s) Specified

Tieback No.	X-Pos (ft)	Y-Pos (ft)	Load (lbs)	Spacing (ft)	Inclination (deg)	Length (ft)	Force Method
1	300.00	474.14	196000.0	5.0	26.50	75.0	2

NOTE - An Equivalent Line Load Is Calculated For Each Row Of Tiebacks
Assuming A Uniform Distribution Of Load Horizontally Between Individual
Tiebacks. Force Method 1 Considers Only Tangential Tieback Forces.
Force Method 2 Considers Both Tangential and Normal Tieback Forces.
Force Method 3 Considers Only Normal Tieback Forces.
Force Method 4 Limits Normal and Tangential Tieback-Force Distribution
to 1.5 Times the Tieback Inclination, or to 30 Degrees Below (Left of)
the Tieback-Failure Surface Intersection, Whichever is Greater.
Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
The Active And Passive Portions Of The Sliding Surfaces
Are Generated According To The Rankine Theory.
400 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	126.00	430.10	320.00	445.80	1.00
2	323.00	446.00	496.00	460.00	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 = 400
Number of Trial Surfaces With Valid FS = 400
Statistical Data On All Valid FS Values:
FS Max = 9.332 FS Min = 1.509 FS Ave = 1.790
Standard Deviation = 0.820 Coefficient of Variation = 45.80 %
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.629	435.832
2	132.477	430.423
3	379.375	450.398
4	386.068	463.822
5	386.302	464.292
6	393.112	477.657
7	398.422	488.078
8	405.115	501.503
9	408.708	508.710

Factor of Safety
*** 1.509 ***
Individual data on the 19 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	4.4	615.6	0.0	0.0	0.	0.	0.0	0.0	0.0
2	1.8	671.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	4.7	3491.5	0.0	489.5	0.	0.	0.0	0.0	0.0

4	17.5	23890.5	0.0	3800.5	0.	0.	0.0	0.0	0.0
5	90.0	147504.1	0.0	36122.7	0.	0.	0.0	0.0	0.0
6	4.0	6229.7	0.0	2345.4	0.	0.	0.0	0.0	0.0
7	19.0	36007.5	0.0	14479.5	0.	0.	0.0	0.0	0.0
8	12.5	31093.5	0.0	12530.6	0.	0.	0.0	0.0	0.0
9	4.5	12760.1	0.0	5100.9	0.	0.	0.0	0.0	0.0
10	49.0	190439.5	0.0	55280.0	19155.	1327.	0.0	0.0	0.0
11	44.0	264524.5	0.0	46392.6	8286.	13433.	0.0	0.0	0.0
12	6.4	45524.0	0.0	6466.8	609.	1500.	0.0	0.0	0.0
13	6.7	41933.4	0.0	8982.5	3397.	902.	0.0	0.0	0.0
14	0.2	1263.8	0.0	93.1	110.	40.	0.0	0.0	0.0
15	1.4	7122.1	0.0	246.2	615.	241.	0.0	0.0	0.0
16	5.4	23849.6	0.0	0.0	2207.	1069.	0.0	0.0	0.0
17	5.3	16533.5	0.0	0.0	1792.	1129.	0.0	0.0	0.0
18	6.7	11224.6	0.0	0.0	1838.	1434.	0.0	0.0	0.0
19	3.6	1560.2	0.0	0.0	801.	738.	0.0	0.0	0.0

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	121.988	435.846
2	132.098	430.805
3	387.146	451.548
4	393.658	464.608
5	400.467	477.973
6	405.728	488.297
7	412.421	501.721
8	415.876	508.651

Factor of Safety
*** 1.520 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	126.815	436.340
2	137.213	431.155
3	368.731	450.018
4	375.424	463.442
5	375.619	463.833
6	382.429	477.199
7	387.811	487.761
8	394.504	501.185
9	398.298	508.794

Factor of Safety
*** 1.525 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	126.143	436.060
2	136.455	430.918
3	384.274	451.319
4	390.840	464.487
5	397.649	477.852
6	402.929	488.213
7	409.622	501.637
8	413.130	508.674

Factor of Safety
*** 1.532 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	115.083	435.580
2	126.604	429.836
3	413.333	453.229
4	419.560	465.719
5	426.370	479.084
6	431.457	489.068
7	438.150	502.492
8	441.119	508.446

Figure B1-32

Factor of Safety
*** 1.547 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	122.416	435.862
2	133.614	430.279
3	356.060	448.947
4	362.753	462.371
5	363.217	463.301
6	370.027	476.666
7	375.492	487.392
8	382.185	500.816
9	386.212	508.893

Factor of Safety
*** 1.554 ***
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	123.954	435.921
2	134.940	430.444
3	415.360	453.920
4	421.280	465.793
5	428.090	479.158
6	433.165	489.119
7	439.858	502.543
8	442.794	508.433

Factor of Safety
*** 1.557 ***
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	115.441	435.594
2	126.225	430.217
3	421.104	454.379
4	426.916	466.035
5	433.726	479.400
6	438.763	489.286
7	445.456	502.710
8	448.286	508.388

Factor of Safety
*** 1.557 ***
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.458	435.979
2	135.319	431.063
3	407.589	452.770
4	413.924	465.477
5	420.734	478.843
6	425.859	488.900
7	432.552	502.324
8	435.626	508.491

Factor of Safety
*** 1.559 ***
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	129.523	437.468
2	141.192	431.650
3	373.631	449.939
4	380.324	463.363
5	380.666	464.050
6	387.476	477.415
7	392.824	487.911
8	399.517	501.335
9	403.216	508.754

Figure B1-33

```
 Factor of Safety
***     1.566    ***
    **** END OF GSTABL7 OUTPUT ****
```

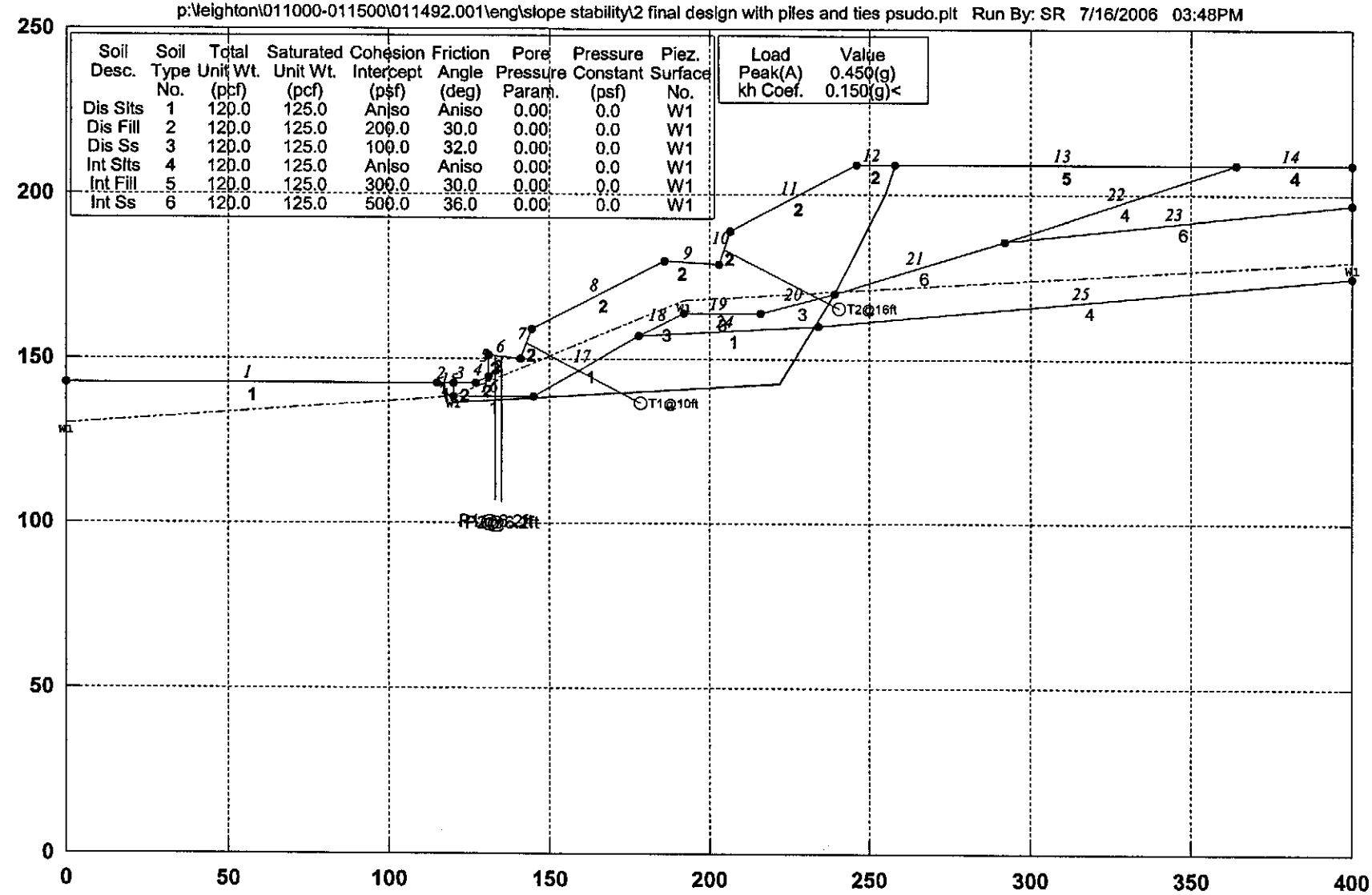
Figure B1-34

MV/Landslide/011492-001 Section A-A'/ Final Design with Piles & Ties Psudo

p:\leighton\011000-011500\011492.001\eng\slope stability\2 final design with piles and ties psudo.plt Run By: SR 7/16/2006 03:48PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Dis Slts	1	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Dis Fill	2	120.0	125.0	200.0	30.0	0.00	0.0	W1
Dis Ss	3	120.0	125.0	100.0	32.0	0.00	0.0	W1
Int Slts	4	120.0	125.0	Aniso	Aniso	0.00	0.0	W1
Int Fill	5	120.0	125.0	300.0	30.0	0.00	0.0	W1
Int Ss	6	120.0	125.0	500.0	36.0	0.00	0.0	W1

Load	Value
Peak(A)	0.450(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.102

Factor Of Safety Is Calculated By The Simplified Janbu Method

Figure B1-35

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

****
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: 7/16/2006
Time of Run: 03:48PM
Run By: SR
Input Data Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 final design with piles and ties psudo.in
Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 final design with piles and ties psudo.OUT
Unit System: English
Plotted Output Filename: P:\Leighton\011000-011500\011492.001\ENG\Slope Stability\2 final design with piles and ties psudo.PLT
PROBLEM DESCRIPTION: MV/Landslide/011492-001 Section A-A'/
Final Design with Piles & Ties Psudo

BOUNDARY COORDINATES
14 Top Boundaries
25 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	142.50	115.00	142.50	1
2	115.00	142.50	120.00	142.50	1
3	120.00	142.50	127.00	142.50	2
4	127.00	142.50	131.00	144.50	2
5	131.00	144.50	131.10	151.00	2
6	131.10	151.00	141.00	150.00	2
7	141.00	150.00	144.50	159.00	2
8	144.50	159.00	186.00	180.00	2
9	186.00	180.00	203.00	179.00	2
10	203.00	179.00	206.50	189.00	2
11	206.50	189.00	246.00	209.00	2
12	246.00	209.00	258.00	209.00	2
13	258.00	209.00	364.00	209.00	5
14	364.00	209.00	400.00	209.00	4
15	120.00	142.50	120.10	138.50	1
16	120.10	138.50	145.00	138.50	1
17	145.00	138.50	178.00	157.00	1
18	178.00	157.00	192.00	164.00	3
19	192.00	164.00	216.00	164.00	3
20	216.00	164.00	239.00	170.00	3
21	239.00	170.00	292.00	186.00	6
22	292.00	186.00	364.00	209.00	4
23	292.00	186.00	400.00	197.00	6
24	178.00	157.00	234.00	160.00	1
25	234.00	160.00	400.00	175.00	4

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

ISOTROPIC SOIL PARAMETERS
6 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	125.0	575.0	25.0	0.00	0.0	1
2	120.0	125.0	200.0	30.0	0.00	0.0	1
3	120.0	125.0	100.0	32.0	0.00	0.0	1
4	120.0	125.0	700.0	37.0	0.00	0.0	1
5	120.0	125.0	300.0	30.0	0.00	0.0	1

Figure B1-36

```
   6   120.0     125.0      500.0      36.0     0.00        0.0       1
ANISOTROPIC STRENGTH PARAMETERS
     2 soil type(s)
 Soil Type  1 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction     Counterclockwise      Cohesion      Friction
   Range        Direction Limit     Intercept       Angle
    No.             (deg)             (psf)         (deg)
     1               2.0              575.00         25.00
     2               7.0                0.00         10.00
     3              90.0              575.00         25.00
 Soil Type  4 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction     Counterclockwise      Cohesion      Friction
   Range        Direction Limit     Intercept       Angle
    No.             (deg)             (psf)         (deg)
     1               2.0              700.00         37.00
     2               7.0                0.00         10.00
     3              90.0              700.00         37.00
 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 =  1.00
   Point       X-Water      Y-Water
    No.          (ft)         (ft)
     1          0.00       130.00
     2        120.00       138.50
     3        192.00       168.00
     4        400.00       180.00
 Specified Peak Ground Acceleration Coefficient (A) =    0.450(g)
 Specified Horizontal Earthquake Coefficient (kh) =    0.150(g)
 Specified Vertical Earthquake Coefficient (kv) =    0.000(g)
 Specified Seismic Pore-Pressure Factor =    0.000
TIEBACK LOAD(S)
     2 Tieback Load(s) Specified
 Tieback   X-Pos     Y-Pos      Load     Spacing  Inclination  Length  Force
   No.      (ft)      (ft)      (lbs)      (ft)       (deg)      (ft)  Method
    1      142.75    154.50   196000.0     10.0       26.60      40.0     2
    2      204.57    183.50   196000.0     16.0       26.60      40.0     2
 NOTE - An Equivalent Line Load Is Calculated For Each Row Of Tiebacks
        Assuming A Uniform Distribution Of Load Horizontally Between Individual
        Tiebacks. Force Method 1 Considers Only Tangential Tieback Forces.
        Force Method 2 Considers Both Tangential and Normal Tieback Forces.
        Force Method 3 Considers Only Normal Tieback Forces.
        Force Method 4 Limits Normal and Tangential Tieback-Force Distribution
        to 1.5 Times the Tieback Inclination, or to 30 Degrees Below (Left of)
        the Tieback-Failure Surface Intersection, Whichever is Greater.
PIER/PILE LOAD(S)
     2 Pier/Pile Load(s) Specified
Pier/Pile  X-Pos     Y-Pos      Load     Spacing  Inclination  Length
   No.      (ft)      (ft)      (lbs)      (ft)       (deg)      (ft)
    1      133.00    150.81   172000.0      6.2       90.00      44.0
    2      135.00    150.61   172000.0      6.2       90.00      44.0
 NOTE - An Equivalent Line Load Is Calculated For Each Row Of Piers/Piles
        Assuming A Uniform Distribution Of Load Horizontally Between
        Individual Piers/Piles.
 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       Y-Surf
    No.          (ft)         (ft)
```

Figure B1-37

1	116.000	142.500
2	120.000	136.500
3	222.000	142.500
4	239.000	170.000
5	255.000	200.000
6	258.000	209.000

Janbu's Empirical Coefficient (fo) = 1.086
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
COORDINATES OF INTERSECTION OF PIER/PILE(S) WITH FAILURE SURFACE

Pier/Pile No.	X-Int.	Y-Int.
1	133.00	137.26
2	135.00	137.38

Sum of Pier/Pile Forces on Failure Surface = 54945.02 (lbs)
Factor Of Safety For The Preceding Specified Surface = 1.102
The calculated factor of safety for the specified surface without piers/piles, reinforcement, soil nails, or applied forces = 0.931

Table 1 - Individual Data on the 23 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	2.7	669.2	0.0	0.0	0.0	0.0	100.4	0.0	0.0
2	1.3	777.2	0.0	143.2	0.0	0.0	116.6	0.0	0.0
3	0.1	72.2	0.0	12.5	0.0	0.0	10.8	0.0	0.0
4	0.0	0.7	0.0	0.1	0.0	0.0	0.1	0.0	0.0
5	6.9	4907.1	0.0	1399.9	0.0	0.0	736.1	0.0	0.0
6	4.0	3209.0	0.0	1289.7	0.0	0.0	481.4	0.0	0.0
7	0.1	130.1	0.0	36.7	0.0	0.0	19.5	0.0	0.0
8	9.9	15888.2	0.0	4722.8	0.0	0.0	2383.2	0.0	0.0
9	3.5	7172.6	0.0	2184.0	1433.7	0.0	1075.9	0.0	0.0
10	0.5	1296.9	0.0	333.9	252.3	15.5	194.5	0.0	0.0
11	33.0	116231.3	0.0	34164.0	13750.2	14718.3	17434.7	0.0	0.0
12	8.0	37265.9	0.0	11879.3	1155.7	2663.9	5589.9	0.0	0.0
13	6.0	29057.0	0.0	9830.7	643.4	1754.3	4358.5	0.0	0.0
14	11.0	52008.6	0.0	18742.6	994.1	1403.8	7801.3	0.0	0.0
15	3.5	18333.1	0.0	5961.8	395.0	398.1	2750.0	0.0	0.0
16	9.5	57766.7	0.0	16177.5	1240.4	1082.8	8665.0	0.0	0.0
17	6.0	38981.0	0.0	10214.1	848.3	765.8	5847.2	0.0	0.0
18	10.8	63558.8	0.0	24076.5	4685.2	836.7	9533.8	0.0	0.0
19	6.2	29228.6	0.0	4109.1	3113.8	551.7	4384.3	0.0	0.0
20	0.4	1654.0	0.0	18.5	211.2	53.9	248.1	0.0	0.0
21	6.6	24105.6	0.0	0.0	3134.7	1365.1	3615.8	0.0	0.0
22	9.0	18832.5	0.0	0.0	2594.7	2209.7	2824.9	0.0	0.0
23	3.0	1620.0	0.0	0.0	649.3	553.6	243.0	0.0	0.0

Table 2 - Base Stress Data on the 23 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-56.31	117.36	4.92	7963.92	-183.77
2	-56.31	119.36	2.30	9593.87	-457.10
3	3.37	120.05	0.10	124.65	152.12
4	3.37	120.10	0.00	124.37	152.07
5	3.37	123.55	6.91	105.00	148.25
6	3.37	129.00	4.01	99.17	167.24
7	3.37	131.05	0.10	192.93	271.29
8	3.37	136.05	9.92	232.98	334.56
9	3.37	142.75	3.51	378.86	427.21
10	3.37	144.75	0.50	501.80	509.63
11	3.37	161.50	33.06	599.59	288.23
12	3.37	182.00	8.01	685.35	638.09
13	3.37	189.00	6.01	684.14	717.16
14	3.37	197.50	11.02	643.50	858.01
15	3.37	204.75	3.51	753.50	978.19
16	3.37	211.25	9.52	931.20	1153.63
17	3.37	219.00	6.01	1019.44	1226.72
18	58.28	227.39	20.50	3451.63	5403.67
19	58.28	235.89	11.83	3080.00	4277.43

Figure B1-38

20	61.93	239.20	0.83	3080.87	3887.80
21	61.93	242.70	14.04	2705.57	3269.46
22	61.93	250.50	19.13	1651.69	1748.50
23	71.57	256.50	9.49	682.97	353.35

NOTE: Tieback forces are included in the Available Shear Strength values in Table 2, as shown in Table 1.

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) = 306777.69 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 1656.43(psf)

Sum of the Driving Forces = 302358.12 (lbs)

Average Mobilized Shear Stress = 1632.56(psf)

Total length of the failure surface = 185.20(ft)

The FS Calculation To Determine The Seismic Yield Coefficient (ky) Did Not Converge in 20 Iterations.

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

APPENDIX B-2

TIE-BACK AND PILE DESIGN

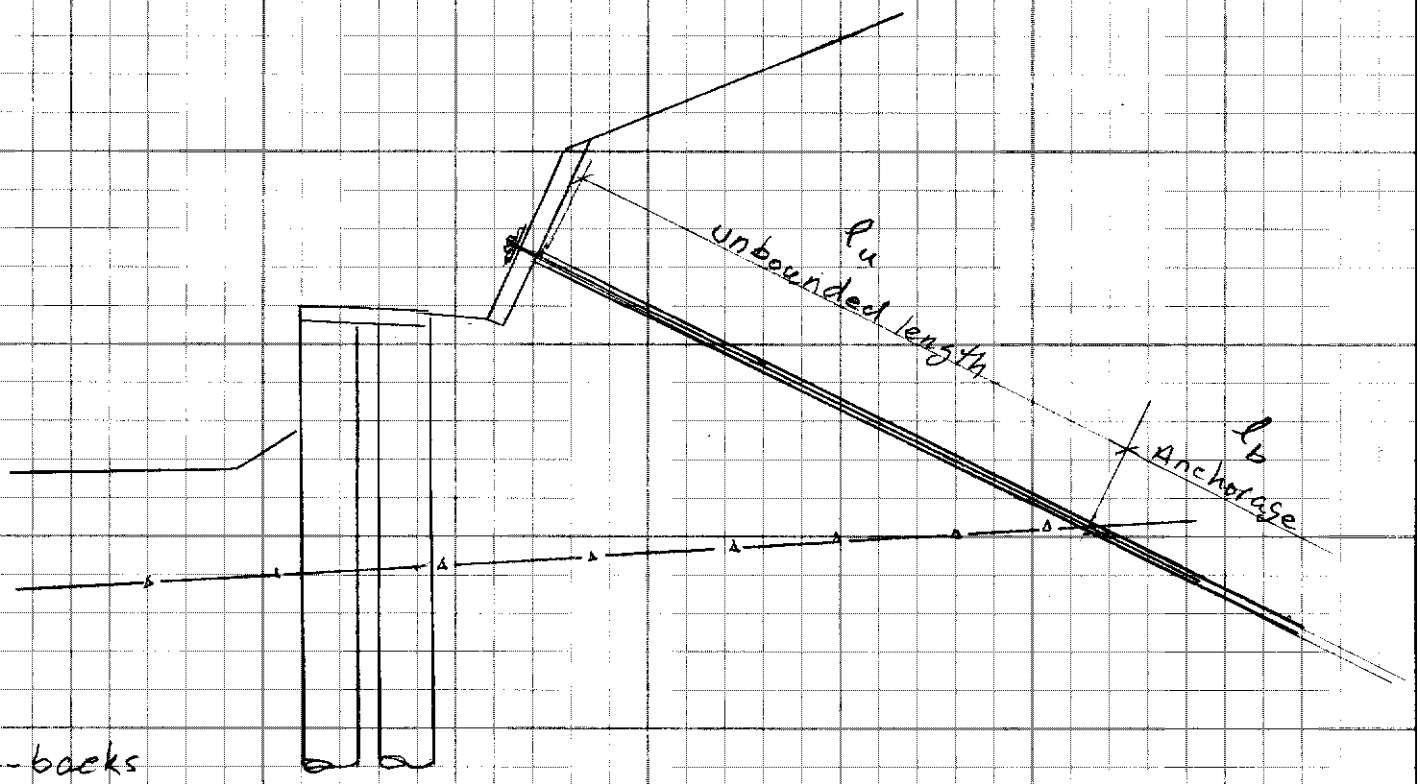
In the slope stability analysis presented in Appendix B-1, a load of 196 kips is used for the tie-backs and a load of 172 kips for the soldier piles.

The attached Figures B1-1 and B1-2 verify the adequacy of the capacity of the piles which were installed on an emergency basis and provide estimates of lengths for the proposed tie-back anchors.

The unbounded length (that portion of the anchor length which is above the clay bed) is estimated to be 40 feet or less for the lower anchors and 80 feet or less for the upper anchors.

The length of the bounded portion is governed by the adhesion of grout to siltstone below the clay bed. The computed lengths are based on the strength parameter of the siltstone. These lengths are preliminary and need to be revised based on field performance testing performed at the start of tie-back installation. The present estimates we believe are realistic.

The pile capacity computations indicate that the load capacity matches the loads used in the stability analyses and that the pile depths below the clay bed are adequate.



1. Tie-backs

For Anchorage capacity into siltstone ($\gamma = 0.12$ KCF, $\phi = 37°$ & $C = 0.7$ KSF) with post grouting, a capacity of over 60 psi is suggested (8.6 KSF). Ignoring the effect of "regrouting", we assume anchorage capacity of $\gamma z \tan\phi + C$ for the proposed tie-backs. The recommended unbound length is 80' for the upper tie-backs and 40' for the lower ti-backs. The average depth of the bounded length (l_b), with the given geometry can be estimated at $z = 60 + l_b/4$ for the upper tie backs and $z = 40 + l_b/4$ for the lower ones. Using these average depth expressions and the above capacity expression, with a safety factor of 2, bound length of 37 and 49' are recommended for the upper and lower rows respectively.

Tie-back and Pile Capacity Computations

Project No. _____

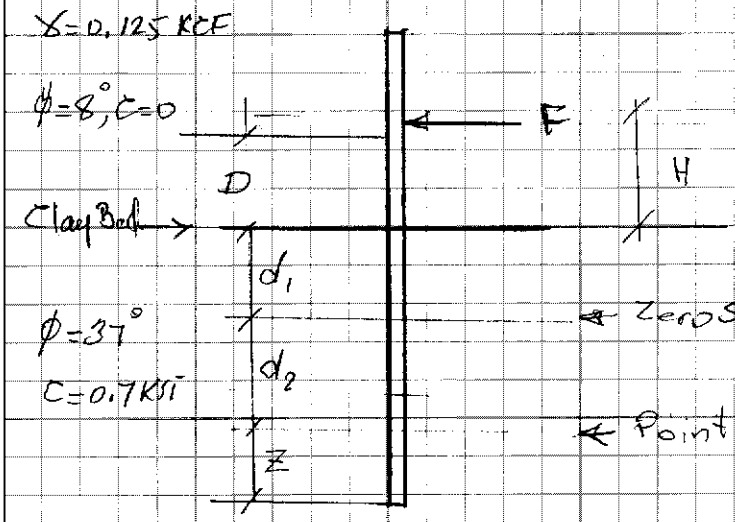
Project Name _____

Engineer _____

Date _____ Figure No. B2-1

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

Analytic Model



$F = \frac{172}{2 \times 6.25} = 55^K$

$H = \frac{13}{2} = 6.5$ & $D = 5.2'$

Based on the soil parameters & NAVFAC (1986, Fig. 2, P 7.2-62)

$q_1 = 0.16$, $q_2 = 0.503$,

$Q_1 = 5.2 \times q_2 + 2.208$,

$Q_2 = (5.2 + d_1 + d_2) q_2 + 2.208$

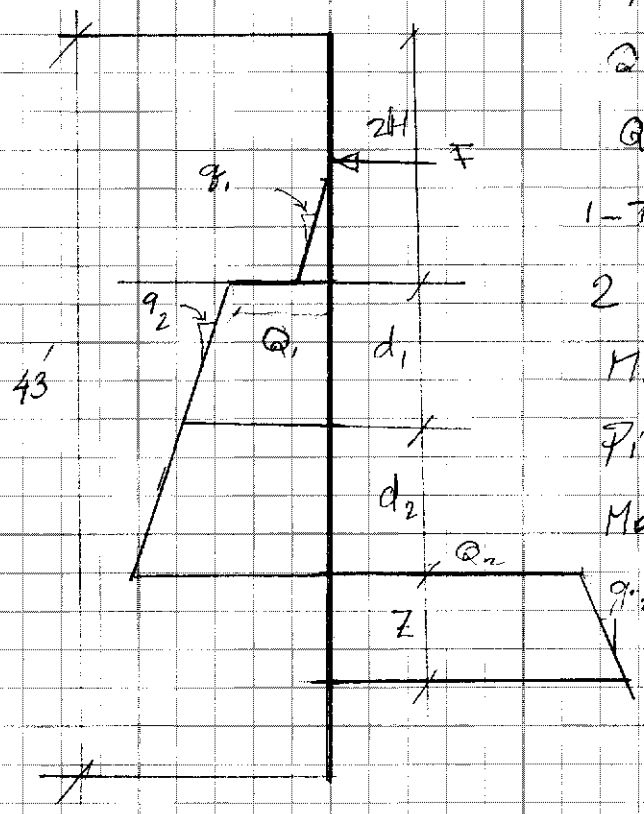
1- To find d_1 ΣF_x at $d_1 = 0$ $= d_1 = 7.276$

2 Max Moment @ $d_1 \Rightarrow$ 561.71 Kft/ft

Maximum moment/pile $= \frac{561.7 \times 6.25}{2} = 1755$

Pile Capacity (W24×162, $S = 468\ in^3$

Moment Capacity $= \frac{0.9 \times 50 \times 468}{12} = 1755$, OK



Compute d_2 & Z by simultaneous solution of shear and moment formulas $\Rightarrow$ $d_2 = 7,682$

$Z = 5.846$

Required Min. length = $13 + 7.276 + 7.682 + 5.846 = 33.8' < 39'$, OK,

Project No. _____

Project Name _____

Engineer _____

Date _____ Figure No. B2-2

Leighton and Associates

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