LOS VALLES PROJECT

Draft Environmental Impact Report

Volume X – Appendices

SCH No. 2013121056
Project No. 98-034
Revised Vesting Tentative Tract No. 52584
Variance No. 201300003
Conditional Use Permit No. 201300081
Oak Tree Permit No. 201300023
Environmental Assessment No. 201300138

Lead Agency:

County of Los Angeles
Department of Regional Planning
Land Divisions
320 West Temple Street, Room 1362
Los Angeles, CA 90012

Prepared by:

Impact Sciences, Inc.
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Pasadena, CA 91101

March 2016

APPENDIX 5.6-5

Allan E. Seward Engineering Geology, Inc.,
Geologic and Geotechnical Report, April 16, 2003.

ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
Geological And Geotechnical Consultants

GEOLOGIC AND GEOTECHNICAL REPORT – Addendum No. 4
Response to Los Angeles County Geologic and Soils Engineering Review Sheets dated January 27, 2003 and January 28, 2003

GEOLOGIC AND GEOTECHNICAL REPORT
Amended Vesting Tentative Tract map (dated April 15, 2003)
VTT 52584
Halsey Canyon
Castaic, California

VOLUME I OF II

Prepared for:

Hasley Canyon Land Company, LLC.
c/o Palmer Investments, Inc.
233 Wilshire Boulevard
Suite 800
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Job No: 03-1617-4
Dated April 16, 2003

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- **Maps**

Geologic Maps (1”=100’)	**Plates I-III**	(In pocket)
Geotechnical Maps (1”=100’)	**Plates IV-VI**	(In pocket)
Geologic and Geotechnical Maps Legend	**Plate VII**	(In pocket)

- **Revised Cross Sections**
  7-7′, 17-17′, 19-19′, 21-21′ and 27-27′ through 28-28′
  30-30′ through 31-31′, 34-34′ and 37-37′
  40-40′ through 42-42′ and 47-47′ through 48-48′
  50-50′ and 53-53′ through 57-57′
- **New Cross Sections**
  A-A′ through O-O′

ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
Geological And Geotechnical Consultants

April 16, 2003 Job No: 03-1617-4

Hasley Canyon Land Company, LLC.
c/o Palmer Investments, Inc.
233 Wilshire Boulevard
Suite 800
Santa Monica, California 90401

Attention: Mr. Dan Palmer

Subject: **GEOLOGIC AND GEOTECHNICAL REPORT – Addendum No. 4**
Response to L.A. County Review Sheets dated 1/27/03 and 1/28/03 for VTT 52584

GEOLOGIC AND GEOTECHNICAL REPORT
Amended Vesting Tentative Tract Map 52584 (dated April 15, 2003)

Project: Hasley Canyon
VTT 52584
Castaic, California

References: At end of text

Gentlemen:

This report is divided into two parts. The first part presents our response to the Geologic and Soils Engineering Review Sheets respectively dated 1/27/03 and 1/28/03 for VTT 52584 issued by the Los Angeles County Department of Public Works, Geotechnical and Materials Engineering Division. The second part of the report presents our opinions on the existing geologic and geotechnical conditions for amended VTT 52584 dated April 15, 2003 and their effects on the proposed development. This report is supplementary to our prior referenced reports (Ref. No. 1-5) for VTT 52584 and the Conclusions and Recommendations presented therein are still applicable except where superceded in this report.

PART 1
GEOLOGIC AND GEOTECHNICAL REPORT – ADDENDUM NO. 1

In order to facilitate the review process, we have listed the County's remarks in **bold** in the order in which they appear on the original review sheet. Each remark is followed immediately by our response. Copies of the review sheet are attached at the end of the text.

GEOLOGIC REVIEW SHEET (Dated 1/27/03)

Remark No. 1

The final map must be approved by the Geology and Soils Sections to assure that all geotechnical (geology and soils) factors have been properly evaluated.

Response

Acknowledged.

Remark No. 2

A grading plan must be geotechnically approved by the Geology and Soils Sections. This grading plan must be based on a detailed engineering geology report and/or soils engineering report and show all recommendations submitted by them. It also must agree with the tentative map and conditions as approved by the Planning Commission. If the subdivision is to be recorded prior to the completion and acceptance of grading and completion of soils work, corrective grading bonds will be required.

Response

Acknowledged.

Remark No. 3

All geologic hazards associated with this proposed development must be eliminated or delineate restricted use areas, approved by the consultant geologist and/or soils engineer, to the satisfaction of the Geology and Soils Sections, and dedicate to the

County the right to prohibit the erection of buildings or other structures within the restricted use areas.

Response

Per our referenced reports and the attached report addressing the amended map, all geologic hazards associated with the proposed development (VTT 52584) will either be eliminated or delineated as a restricted use area, which prohibits the erection of buildings or other structures within the restricted use areas.

Remark No. 4

The Soils Engineering review dated 1/28/03 is attached.

Response

Our response to the Soils Engineering review sheet dated 1/28/03 immediately follows the response to this geologic review sheet.

Remark No. 5

Geotechnical Recordation Map verification deposit estimate 6 hours.

Response

Acknowledged.

SOILS ENGINEERING REVIEW SHEET (Dated 1/28/03)

Remark No. 1

Provide static and seismic slope stability analyses for all proposed 2:1 cut slopes higher than 30 feet that were previously proposed as 3:1 (i.e. cut slopes north of lots 89, 166, & 171, etc.). Also provide a geotechnical cross section, for each section analyzed, showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane.

Show locations of the cross sections used in slope stability analyses on the geotechnical map. Recommend mitigation if factors of safety are below County minimum standards.

Response

Part 2 of this report presents a review and analyses of all cut-slopes (higher than 25 ft.), natural slopes and fill slopes along with slope stability calculations where appropriate and where necessary, mitigation measures are illustrated on the cross sections and Geotechnical Maps (**Plates IV-VI**).

Remark No. 2

Show the following on the geotechnical map plans: All recommended mitigation measures, as necessary.

Response

We have shown all recommended mitigation measures, as necessary, on the attached geotechnical maps (see **Plates IV through VI**).

Remark No. 3

Requirements of the Geology Section are attached.

Response

Acknowledged.

Remark No. 4

Include a copy of this review sheet with your response.

Response

We have included copies of the Geology and Soils Review sheets at the end of the text.

PART 2
GEOLOGIC AND GEOTECHNICAL REPORT
Review of Amended Vesting Tentative Tract Map (dated April 15, 2003)

This portion of our report presents our opinions on the existing geologic and geotechnical conditions on VTT 52584 relative to the amended map (dated April 15, 2003) and their effects on the proposed development. This report supplements and updates our reports dated 1/15/99, 10/22/99, 3/31/00 and 1/9/01 for VTT 52584, hereinafter called "Previous Reports", and the conclusions and recommendations presented therein are still applicable except where they are superseded in this report.

1.0 SCOPE OF WORK FOR AMENDED VTT 52584 (DATED APRIL 15, 2003)

1. Geologic/Geotechnical Review of Amended Vesting Tentative Tract Map 52584.

2. Excavation and geologic logging of an additional twenty-five (25) backhoe trenches, T-235 through T-259, to a maximum depth of approximately 15 feet.

3. Coordination with the Supervising Civil Engineer, Penco Engineering.

4. Additional laboratory testing of selected drive samples obtained in our subsurface investigations. Testing included dry density and moisture content of in-situ soils and hydroconsolidation.

5. Geologic and geotechnical engineering analyses and preparation of Conclusions and Recommendations based on the existing site conditions and future use intended. Analyses included detailed static and pseudostatic stability analyses of proposed and modified grades, including cut-slopes, natural slopes and fill slopes where appropriate. Based on the results, the need for tentative stabilization measures were provided.

6. Preparation of the Revised Geologic/Geotechnical Maps, Revised Recommendations and Removal Maps, Revised Geologic/Geotechnical Maps Legend, Revised and New Cross Sections, additional Trench Logs, and this report.

2.0 BACKGROUND

Geologic and geotechnical aspects of Vesting Tentative Tract 52584 were addressed in our previous reports referenced at the end of text. Our response to the County's Review Sheets are presented in the first part of this report. The Amended Vesting Tentative Tract Map prepared by Penco is attached as the base map for our 100-Scale Geologic Maps (**Plates I through III)** and Geotechnical Maps (**Plates IV through VI**).

3.0 REVISIONS AMENDED VTT 52584

We have reviewed the Amended Vesting Tentative Tract Map 52584 and the most significant changes occur on the locations, gradients, heights and orientations of the proposed cut slopes, which in turn have affected the configuration of proposed natural slopes. Minor revisions to street alignments and overall lot layouts also occur. The lot numbers have also changed relative to the map addressed in our 1/9/01 report. A total of 209 single-family residential lots are proposed, along with two street lots, two open space lots and one lot designated for the golf course. A water tank pad is proposed on the northeastern portion of the property.

We have re-designated all of the proposed cut-slopes greater than 25± feet in height as CS-1 through CS-34 on the attached Geologic and Geotechnical Maps. Twenty-one Cross Sections have been revised from our March 31, 2000 report and an additional fifteen new cross sections have been constructed to illustrate the anticipated geologic/geotechnical conditions relative to the Amended Tentative Tract design. Fifteen cross sections were omitted from the maps due to obsolescence. The revised cross sections show amended proposed grades as well as revised existing topography due to the more recent topographic base map.

4.0 SUPPLEMENTAL FIELD EXPLORATION AND TESTING OF SOIL PROPERTIES

4.1 Subsurface Investigations

Our recent field explorations included field mapping on the latest topographic base map and logging of track-mounted backhoe trenches. D.E. Eddings excavated the trackhoe trenches. All of the trenches were logged, probed with a steel rod and sampled where appropriate by AESEGI personnel. Copies of our recent trench logs are presented in

Appendix A. The locations of these additional trenches are shown on the Geologic Maps (**Plates I through III**).

4.2 Sampling Procedures

California-Drive samples (relatively undisturbed ring samples) were obtained in selected backhoe trenches at various depths (see logs in Appendix A). Recovered soil samples were sealed in plastic containers and brought to our laboratory for further classification and testing.

4.3 Laboratory Program

After visual and tactile classification in the field, the soil samples were brought to our laboratory. The soil classifications were checked in accordance with the Unified Soils Classification System. The field logs were reviewed to assess which samples would be analyzed or tested further. The results of the field investigation and the laboratory tests, along with a comprehensive review of previous data, were used as the basis for our analyses and recommendations presented in this report. Laboratory test results are presented in **Appendix B**. For details on the geologic units see our January 15, 1999 report

4.4 Hydroconsolidation Potential

Six additional consolidation tests were performed on selected samples of alluvial and terrace deposits ranging from six (6) to twelve (12) feet in depth. The consolidation test results indicate that the alluvial and terrace deposits are not susceptible to significant hydro-consolidation at the depths tested. For details on soil characteristics see our report dated January 15, 1999.

5.0 GENERAL CONSLUSIONS AND RECOMMENDATIONS

5.1 Feasibility of Development

Amended Vesting Tentative Tract 52584 (dated April 15, 2003) is feasible for development from the standpoint of geology/geotechnical conditions provided our recommendations are followed and implemented during construction. The conclusions

and recommendations presented within our previous reports are still applicable, except where they are superceded in this report.

5.2 Earthwork and Grading Recommendations

5.2.1 Revised Removals

Due to proposed grade changes, new topographic base map, additional subsurface exploration and laboratory testing, we have revised our recommended removals relative to our previous reports. Recommended Removal depths for unsuitable soils (exclusive of landslide material) range from 1 to 15 feet below existing grades. The limits and depths of recommended removals are shown on the Geotechnical Maps (**Plates IV through VI**). Recommendations for landslides are presented in Table I and shown on the Geotechnical Maps (**Plates IV through VI**).

5.2.2 Overexcavation

We have updated our overexcavation recommendations as follows. Cut pads for structures require a minimum 5 ft. overexcavation and recompaction and streets in cut areas require a 3 ft minimum overexcavation and recompaction. Laboratory testing performed in our previous reports indicates that the fine-grained beds of the bedrock on site can be medium to highly expansive. Cut lots or streets that are underlain by expansive soils may require deeper overexcavations (up to 8 ft.) depending upon the expansion potential of materials encountered and tested during grading.

6.0 GENERAL DESIGN CONSIDERATIONS & RECOMMENDATIONS

6.1 Stability of Proposed Slopes and Proposed Grades

Stability analyses were performed on new and revised cross sections of the currently proposed development grades for this project, including cut-slopes, natural slopes and fill slopes. Based upon the results from the analyses, the need for recommended stabilization measures was explored, where necessary, and dimensional design of these measures was performed, as needed, in a step-by-step fashion utilizing slope stability analyses.

It should be noted that due to the overall coarse grained nature of the bedrock on the site that well developed planar surfaces are relatively rare. However, we searched for

potential bedding planes in the critical cross sections analyzed where no data from subsurface exploration was available. Specified planes of weakness were modeled where encountered in subsurface explorations.

The analyzed cross sections also reflect critical conditions for stability (i.e. adverse geologic conditions and greater slope height). The analyses are presented in **Appendix C**, along with a summary of the results in **Table C1**.

Shear strength parameters used for the stability analyses have not been revised since our 3/31/00 report and are presented below.

MATERIALS	UNIT WEIGHT (PCF)	STATIC		PSEUDOSTATIC	
		PHI (DEG.)	C (PSF)	PHI (DEG.)	C (PSF)
Landslide Plane	130	7	290	28	210
Landslide Debris	133	26	510	29	1800
Bedding Plane (clay bed)	129	17	1650	28	1270
Bedding Plane (silty claystone)	129	22	347	27	1168
Bedding Plane (silty claystone BA-11)	136	22.5	480	34	2687
Bedrock cross bedding	119	40.5	410	42	880
Terrace Deposits	120	41	200	42	290
Compacted Fill	125	29	300	32	316
Alluvium	119	34	169	38	338

6.1.1 Existing Cut-Slopes

The three existing cut-slopes associated with VTT 20685 and located adjacent to Hasley Canyon Road have been designated as ECS-1, ECS-2 and ECS-3 for reference on Plate II of the Geologic Maps. Our slope stability analysis indicates that **ECS-1 does not meet** L.A. County **minimum factors** of **safety** due to the presence of landslide Qls-6 (see **Appendix C**). Recommended **mitigation measures** are shown on cross section 7-7′ and **consist** of cutting a **120 ft. wide** horizontal **bench** at the lowermost existing terrace bench of ECS-1 in conjunction **with** a **3:1** (h:v) ascending **cut** that catches near the top of proposed cut-slope CS-18. **ECS-2** and **ECS-3** are **grossly stable** per our slope stability analysis performed on cross section 50-50′ at ECS-2, which is more critical than ECS-3.

6.1.2 Proposed Cut-Slopes

We have identified thirty-four (34) proposed Cut-Slopes (greater than 25 feet in height) on the subject site and designated them as CS-1 through CS-34 on the Geologic Maps (**Plates I through III**). The slope geometry, anticipated geologic conditions and recommended mitigation, if necessary, for each slope are presented in the Cut-Slope Summary (**Table 2**) located at the end of the text, and shown on the Geotechnical Maps (**Plates IV through VI**). If any of the smaller proposed cut-slopes (less than 25± feet in height) have adverse geologic or grading configurations (fill over cut) they can be mitigated if necessary with a standard 15 to 20-foot wide keyway (depending on the proposed cut-slope height) and benching similar to a Stability Fill.

All permanent cut-slopes should be constructed at a slope ratio not steeper than 2:1 (horizontal to vertical). All permanent cut-slopes exposing alluvium should be constructed as a stability fill. It is not anticipated however, should any potentially unstable subsurface conditions be exposed during construction, such as adverse bedding or exposed seepage, either flatter slopes than specified above or construction of benches may be required. We recommend that an Engineering Geologist observe all cut-slope excavations during the grading operations and provide appropriate recommendations if necessary.

6.1.3 Natural Slopes

We have updated our slope stability analyses of the natural slopes proposed on the subject site relative to amended design grades. The natural slopes have gradients ranging from 5:1 to ½:1 (h:v). We have revised pertinent cross sections and constructed new Cross Sections to illustrate the more critical conditions (daylighted bedding and/or steeper than 2:1). Natural slopes illustrated on cross sections **I-I′**; **K-K′** and **M-M′ require remedial measures** as shown on the cross sections and discussed in **Appendix C**.

Review of the amended map indicates that the proposed **natural slope north** and **east** of **Lots 67** and **68 requires modifications**. The portion north of Lot 68 will be removed and replaced with compacted fill via landslide Qls-3 removals. The remainder portion of the natural slope at the back of **Lot 67** is considered to be

grossly stable (antidip) however, due to potential surficial instability **either** an **impact wall** should be constructed at the base of the slope **or** this slope should be removed and replaced with a 2:1 **compacted fill** with **backdrains**. Specific recommendations will be provided at the grading plan stage. We have shown this area on the Geotechnical Map (**Plate V**).

Lots 98 and **102** will also **require impact walls** at the base of the ascending natural slopes as shown on the Geotechnical Map (**Plate V**).

6.1.4 Proposed Fill Slopes

Review of the amended map indicates that fill slopes are proposed at gradients of 2:1 (h:v) or flatter the majority of which are proposed at 3:1 (h:v). Our slope stability analyses performed on the highest 2:1 fill slope, which is considered to be the most critical proposed fill slope (located at cross section 55-55′), indicates that this slope will be grossly stable (see **Appendix C**).

6.1.5 Deep Fill Areas

In areas of deep fills (>40 ft. in thickness) the portion deeper than 40 ft. below proposed grades should be compacted to a minimum 93 percent of the maximum dry density of the fill materials. Areas of deep fills will be shown on the geotechnical maps at the Grading Plan stage. The areas of deep fill will also require settlement monitoring.

6.1.6 Landslides

We have revised the landslide summary table (Table 1) in order to reflect the amended map grades. All landslide material is to be completely removed with the exception of landslide Qls-6, which will be partially removed for stabilization and placed within a Restricted Use Area. Refer to Section 6.1.1 for details on Qls-6 and ECS-1 stabilization measures.

Removal depths for the landslides are shown in Table 1 and on the Geotechnical Maps (**Plates IV through VI**).

6.1.7 Restricted Use Areas

We have shown Building Setback Zones associated with landslide Qls-6 and the Zone of Tectonic Deformation on the Geotechnical Maps. These areas represent Restricted Use Areas and will need to be shown on the Final Map.

6.1.8 Exploratory Trench and Boring Backfill

The location and dimensions of the exploratory trenches and borings should be noted relative to the proposed development unless the trenches or borings are removed by future grading operations. If future foundations do traverse the trenches or borings, they should be designed for potential settlement. Once 40-scale (1″=40′) Grading Plans are available a more detailed review of the effects of boring and trench backfill should be performed.

7.0 LOS ANGELES COUNTY 111 STATEMENT

In compliance with Section 111 of the Los Angeles County Building Code, it is the finding of this firm that the Building Sites designated on the proposed Amended Vesting Tentative Tract Map 52584 will not affect offsite property provided all our recommendations are incorporated in the Grading Plan and implemented during construction.

8.0 GEOLOGIST/GEOTECHNICAL ENGINEER OF RECORD

This report has been prepared assuming that Allan E. Seward Engineering Geology, Inc. will refine all geology and geotechnically-related data for the Grading Plan stage. If the recommendations contained in this report are to be utilized, and expansion of the geology/geotechnical work is performed by others, the party performing the work must review this report and assume full responsibility for the recommendations contained herein. That party would then assume the title of responsibility as “Geologist/Geotechnical Engineer of Record” for the project.

At the Grading Stage, representatives of the Geology/Geotechnical Engineer of Record should be present to observe all grading operations. A report presenting the results of those observations and related testing should be issued upon completion of the operations. All footing excavations should be observed by a representative of the Geologist/Geotechnical Engineer of Record prior to placing steel or pouring concrete into the excavations.

9.0 LIMITATIONS

This report has been prepared for the exclusive use of Hasley Canyon Land Company, LLC and their design consultants for the specific site discussed herein. This report should not be considered transferable. Prior to use by others, we should be notified, as additional work may be required to update this report.

In the event that any modifications in the design or location of the proposed development, as discussed herein, are planned, the conclusions and recommendations contained in this report will require a written review by this firm with respect to the planned modifications.

In performing these professional services, we have used the degree of care and skill ordinarily exercised, under similar circumstances, by reputable engineering geologists and geotechnical engineers practicing in this or similar localities.

The analyses and interpretations presented in this report have been based on the results of pertinent field and laboratory soil investigations. It should be recognized that subsurface conditions can vary in time and laterally and with depth at a given site. Our conclusions and recommendations are based on the data available and our interpretation of the data based on our experience and background. Hence, our **conclusions** and **recommendations** are **professional opinions** and are **not meant** to be a control of nature; therefore, **no warranty** is herein **expressed** or **implied**.

It should be noted that faulting is normally confined to the area immediately adjacent to a known fault, or within a few feet of the last fault movement. Regardless of what criteria is used however, absolute assurance against future fault displacement or strong ground motion cannot be obtained in tectonically active areas. New faults can form, as the orientation and magnitude of deformational forces in the earth's crust change with time. Therefore, the location of new breaks or ground motions during a seismic event cannot be located or anticipated.

This report may not be duplicated without the written consent of this firm.

This opportunity to be of service is appreciated. Please contact us if you would like to discuss this report further.

Respectfully submitted,

Eric J. Seward, CEG 2110
Certified Engineering Geologist
Vice President

Dharmesh P. Amin, M.S., P.E., GE 2553
Senior Geotechnical Engineer

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The following attachments and appendices complete this report.

References
County of Los Angeles Geologic and Soils Engineering Review Sheets
(dated 1/27/03 and 1/28/03)
Summary of Landslides Table 1
Summary of Cut-Slopes Table 2

APPENDIX A - Subsurface Logs
- Backhoe Trenches T-235 through T-259

APPENDIX B – Geotechnical Laboratory Investigation and Test Results

APPENDIX C – Slope Stability Analyses

APPENDIX D - Maps And Cross Sections

- **Maps**

Geologic Maps (1”=100’)	**Plates I-III**	(In pocket)
Geotechnical Maps (1”=100’)	**Plate IV-VI**	(In pocket)
Geologic and Geotechnical Maps Legend	**Plate VII**	(In pocket)

- **Revised Cross Sections**
  7-7′, 17-17′, 19-19′, 21-21′ and 27-27′ through 28-28′, 30-30′ through 31-31′, 34-34′, 37-37′, 40-40′ through 42-42′ 47-47′ through 48-48, 50-50′ and 53-53′ through 57-57′.
- **New Cross Sections**
  A-A′ through O-O′

Distribution: (1) Palmer Investments, Inc.
Attn: Mr. Dan Palmer
(5) Penco Engineering
3 - Attn: Department of Public Works

REFERENCES

By Allan E. Seward Engineering Geology, Inc.

1. **Geologic and Geotechnical Report**
   Vesting Tentative Tract map 52584
   Castaic, California
   Dated January 15, 1999 – JN: 99-1617-4

2. **Geologic and Geotechnical Report – Addendum No. 1**
   Response to County Comments (Review Sheet dated 3/3/99, 3/4/99, 5/6/99, 9/9/99 and 9/16/99)

3. **Geologic and Geotechnical Report – Revised Map**
   Revised Vesting Tentative Tract No. 52584 (Revised 10/99)
   Castaic, California
   Dated October 22, 1999 – JN: 99-1617-4

4. **Geologic and Geotechnical Report - Addendum No. 2**
   Response to County Comments (Review Sheet dated 11/18/99 and 12/28/99)
   Castaic, California
   Dated March 31, 2000 – JN: 00-1617-4

5. **Geologic and Geotechnical Report – Addendum No. 3**
   Vesting Tentative Tract 52584
   Response to County Comments (Review Sheets dated 5/4/00 and 5/23/00)
   Castaic, California
   Dated June 7, 2000 – JN: 00-1617-4

6. **Geologic and Geotechnical Report – Addendum No. 4**
   Revised Vesting Tentative Tract 52584 (Revised 12/2000)
   Castaic, California
   Dated January 9, 2001 – JN: 01-1617-4

Sheet 1 of 1

REVIEWER CALLING HOURS
8-9 a.m. & 3-4 p.m. Mon.-Thurs.

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 S. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Geologist
__ Soils Engineer
1 LDMA/Proc. Center
1 Section File
1 Subdivision

TENTATIVE TRACT/MINOR LAND SUBDIVISION 52584
SUBDIVIDER Hasley Canyon Land Co., LLC
ENGINEER Land Design Consultants
GEOLOGIST & SOILS ENGINEER Allan Seward

TENTATIVE MAP DATED 12/30/02 (Amendment)
LOCATION Hasley Canyon

REPORT DATE 1/9/01, 6/7/00, 3/31/00, 10/22/99, 1/15/99

TENTATIVE MAP FEASIBILITY IS NOT RECOMMENDED FOR APPROVAL. PRIOR TO FILING THE FINAL LAND DIVISION MAP, THE FOLLOWING CONDITIONS MUST BE FULFILLED:

1. The final map must be approved by the Geology and Soils Sections to assure that all geotechnical (geology and soils) factors have been properly evaluated.

2. A grading plan must be geotechnically approved by the Geology and Soils Sections. This grading plan must be based on a detailed engineering geology report and/or soils engineering report and show all recommendations submitted by them. It must also agree with the tentative map and conditions as approved by the Planning Commission. If the subdivision is to be recorded prior to the completion and acceptance of grading and completion of soils work, corrective grading bonds will be required.

3. All geologic hazards associated with this proposed development must be eliminated,

   or

   delineate restricted use areas, approved by the consultant geologist and/or soils engineer, to the satisfaction of the Geology and Soils Sections, and dedicate to the County the right to prohibit the erection of buildings or other structures within the restricted use areas.

4. The Soils Engineering review dated 1/28/03 is attached.

5. Geotechnical Recordation Map verification deposit estimate 6 hours.

Prepared by _____ Reviewed by _____ Date 1/27/03
Geir R. Mathisen — Charles T. Nestle

The **"Manual for Preparation of Geotechnical Reports"** prepared by County of Los Angeles, Department of Public Works is available on the Internet at the following address: http://dpw.co.la.ca.us/med/manual.pdf

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

District Office 8.2

Sheet 1 of 1

Address: 900 S. Fremont Ave.
Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

Tentative Tract 52584
Location Hasley Canyon
Developer/Owner Hasley Canyon Land Co., LLC
Engineer/Architect Land Design Consultants
Soils Engineer Allen Seward
Geologist Same as above

Review of:

Amended Tentative Tract Dated By Regional Planning 12/30/02

Previous review sheet dated 3/9/01

ACTION:

Tentative Map feasibility is not recommended for approval.

REMARKS:

1. Provide static and seismic slope stability analyses for all proposed 2:1cut slopes higher than 30 feet, that were previously proposed as 3:1 (i.e. cut slopes north of lots 89, 166, & 171, etc.). Also, provide a geotechnical cross section, for each section analyzed, showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Recommend mitigation if factors of safety are below County minimum standards.

2. Show the following on the geotechnical map plans:

   All recommended mitigation measures, as necessary.

3. Requirements of the Geology Section are attached.

4. Include a copy of this review sheet with your response.

NOTE(S) TO THE PLAN CHECKER/BUILDING AND SAFETY ENGINEER:

THE ON-SITE SOILS ARE CORROSIVE TO FERROUS METALS.

REGISTERED PROFESSIONAL ENGINEER
GAN N. LEM
NO 2328
EXP 6/30/03
GEOTECHNICAL
STATE OF CALIFORNIA

Prepared by Yoshiya Morisaku Reviewed by Gan N. Lem Date 1/28/03

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.

Yosh:52584TentT.wpd

SUMMARY OF LANDSLIDES
AMENDED VTT 52584

LANDSLIDE DESIGNATION	PLATE NO.	COMMENTS AND MITIGATION*
Qls-1	I and IV	Moderate to large landslide located at proposed 3:1 cut slope CS-30 (in "previous report" was designated as CS-36) and the fairway for golf course hole number 3. Proposed cut-slope CS-30 will remove approximately 80% of this landslide (upper portion) as illustrated on Revised Cross Section **17-17′**. The **remainder** will need **to be completely removed** prior to the placement of compacted fill. Estimated maximum removal depths of the remainder portion of Qls-1 below proposed tentative map grades range from 5 to 20 feet.
Qls-2	I and IV	Small landslide located across the canyon from Qls-1. Proposed cut will remove most of this landslide however the remaining portion of Qls-2 below proposed grades will need **to be completely removed** prior to placement of compacted fill. Maximum removal depths of the remainder portion of Qls-2 below proposed tentative map grades are estimated to range from 5 to 20 feet.
Qls-3	II and V	Small to moderate size landslide located entirely in an area of proposed fill (adjacent to lots 66-69). Qls-3 **to be completely removed** prior to the placement of compacted fill. Estimated maximum removal depths of Qls-3 range from 15 to 35 feet. Removals at head of landslide will undercut proposed natural slope at Lots 67 and 68, which will need to be replaced with a compacted fill. (See Section 7.1.3 of this report).
Qls-4	I and IV	Small landslide located near the tee for golf hole 7 and lot 17. Proposed cut will remove most of this landslide however the toe area is located in an area of proposed fill and will need **to be completely removed** prior to placement of compacted fill. Estimated maximum removal depths of the remainder portion of Qls-4 below proposed tentative map grades range from 5 to 20 feet.
Qls-5	II and V	Large landslide located near the entry to the proposed development adjacent to Hasley Canyon Road and proposed cut-slope CS-17. Revised Cross Section **19-19′** illustrates the landslide geometry, proposed grades, existing grades and underlying geologic structure. Approximately 75% of this landslide will be removed by the proposed cut, however the remainder portion of Qls-5 below proposed grades will need **to be completely removed** prior to the placement of compacted fill. Estimated maximum removal depths of the remainder portion of Qls-5 below proposed tentative map grades range from 5 to 35 feet.

SUMMARY OF LANDSLIDES

LANDSLIDE DESIGNATION	PLATE NO.	COMMENTS AND MITIGATION*
Qls-6	II and V	Large landslide located adjacent to the proposed recreation area at existing cut-slope ECS-1. Revised Cross Section **7-7′** illustrates the landslide geometry, underlying geologic structure, proposed tentative map grades, existing grades and recommended mitigation cut grades necessary to stabilize this landslide in order to meet L.A. County minimum criteria. Our slope stability analysis indicates that existing cut-slope ECS-1 does not meet L.A. County minimum factors of safety due to Qls-6. Recommended mitigation measures consist of cutting a 120 ft. wide bench at the lowermost terrace bench of existing cut-slope ECS-1 at an approximate elevation of 1230 and a 3:1 ascending cut that catches near the top of CS-18 as shown on Cross Section **7-7′**. No structures are proposed over this landslide however, we have designated a **Building Setback** around this landslide that will need to be shown as a Restricted Use Area on the Final Map.
Qls-7	II and V	Moderate size landslide located on lots 53-55 and the fairway for golf course hole 4 needs **to be completely removed**. Approximately half of the landslide is in proposed cut and half in proposed fill area. Estimated maximum removal depths of the remainder portion of Qls-7 below proposed tentative map grades, range from 5 to 25 feet.
Qls-8	II and V	Small landslide located in the fairway of golf course hole 6. Most of this landslide will be removed by proposed cut, however the remainder portion of Qls-8 below proposed grades will need **to be completely removed** prior to the placement of compacted fill. Estimated maximum removal depths of the remainder portion of Qls-8 below proposed tentative map grades range from 5 to 15 feet.

*All landslide removals to be performed under the observation of the project geologist and/or geotechnical engineer. Where applicable (fill areas) removal bottoms need to be surveyed after geologic/geotechnical inspection and mapping has been completed.

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PROPOSED CUT-SLOPE SUMMARY
HASLEY CANYON – AMENDED VTT 52584

Cut Slope	Plate No.	Cross Section	Slope Gradient	Slope Height (Feet ±)	Slope Face Direction	Geologic Materials	Geologic Stability	Mitigation/Comments
CS-1*	II & V	---	3:1	40	SE and NW	TQs (Qt will be removed by proposed cut)	Favorable bedding; grossly stable however	Located within zone of tectonic deformation recommend **stability fill** (20 ft. x 3 ft. minimum keyway)
CS-2	II	47-47'	3:1	80	SE	TQs (Qt will be removed by proposed cut)	Bedding dipping toward slope face north of syncline axis and into slope south of syncline axis; grossly stable per slope stability analysis.	
CS-3	II	---	3:1	30	ESE	TQs	Favorable bedding; grossly stable	
CS-4	II	---	2:1	51	W	TQs	Favorable bedding; grossly stable	
CS-5	II	A-A'	2:1	82	S	TQs	Bedding dipping 30° towards slope face; grossly stable per slope stability analysis.	
CS-6	II	C-C'	2:1	67	SW	TQs	Bedding component dipping 24° out-of-slope; grossly stable per slope stability analysis.	
CS-7	II	D-D'	2:1	110	SE	TQs (af will be moved by proposed cut)	Bedding component dipping 28° towards slope face; grossly stable per slope stability analysis.	
CS-8	II	F-F'	3:1	65	S	TQs	Bedding dipping 32° towards 3:1 slope face; grossly stable	
CS-9	II	---	3:1	30	SE	TQs	Bedding component dipping 28° towards 3:1 slope face; grossly stable	
CS-10	II	41-41'	2:1 to 3:1	51	S and SE	TQs	Bedding dipping 28 to 32° toward slope face; grossly stable. D-D' is more critical @ CS-7	
CS-11	II and I	30-30'	2:1	~195	SW	TQs (mostly sandstone and conglomerate with silty claystone ~60' below toe)	Bedding component dipping 20° out-of-slope; grossly stable per slope stability analysis.	
CS-12	II	40-40'	3:1	87	SSW	TQs	Bedding dipping 32 to 28° towards 3:1 slope face; grossly stable per slope stability analysis.	
CS-13	II	---	3:1	69	SE	TQs	Bedding component dipping 25° towards 3:1 slope face; grossly stable	
CS-14	II	---	3:1	72	S	TQs	Favorable bedding; grossly stable	
CS-15	II	---	3:1	42	SW	TQs	Favorable bedding; grossly stable	

* Cut-slopes that require remedial measures.

PROPOSED CUT-SLOPE SUMMARY
HASLEY CANYON – AMENDED VTT 52584

Cut Slope	Plate No.	Cross Section	Slope Gradient	Slope Height (Feet ±)	Slope Face Direction	Geologic Materials	Geologic Stability	Mitigation/Comments
CS-16*	II & V	---	3:1	45	SW	TQs/Qal/af	Favorable bedding; grossly stable however	Western most portions will be removed and replaced with a fill due to Qal/af removals and eastern portion is within zone of tectonic deformation, recommended **stability fill** (20 ft. x 3 ft. minimum keyway).
CS-17	II	19-19'	3:1	40	S and SE	TQs and Qls-5	Favorable bedding in TQs portion however	Due to complete removal and recompaction of Qls-5 portions of CS-17 will result in a 3:1 fill slope.
CS-18*	II & V	---	3:1	42	NNW	TQs	Bedding dipping "horizontal" to 42° towards 3:1 slope face; grossly stable however	Due to proximity to zone of tectonic deformation and anticline axis at crest recommend **stability fill** (20 ft. x 3 ft. minimum keyway).
CS-19*	II & V	---	3:1	30'	SW	TQs	Favorable bedding; grossly stable	Located within zone of tectonic deformation, recommend **stability fill** (20 ft. x 3 ft. minimum keyway).
CS-20	II	---	3:1	30'	E	TQs	Favorable bedding; grossly stable	
CS-21	II	---	3:1	30'	SW	TQs	Favorable bedding; grossly stable however	Due to adjacent fill slope configurations will probably be removed during grading operations and replaced with a fill slope
CS-22	I	---	3:1	32	ESE	TQs	Favorable bedding; grossly stable	
CS-23	I	---	3:1 or flatter	62	S, SW and NW	TQs (Qls-4 will be removed by proposed cut)	Favorable bedding; grossly stable	
CS-24	I	---	3:1	45	SW	TQs	Favorable bedding; grossly stable	
CS-25	I	G-G'	2:1	63	SW	TQs	Bedding component dipping 23° out-of-slope; grossly stable per slope stability analysis.	
CS-26	I	H-H'	3:1 to 2:1	102	SE and NE	TQs	Bedding component dipping 29° toward slope face; grossly stable per slope stability analysis	
CS-27	I	J-J'	2:1	92	S	TQs	Bedding component dipping 29° toward slope face; grossly stable per slope stability analysis	

* Cut-slopes that require remedial measures.

PROPOSED CUT-SLOPE SUMMARY
HASLEY CANYON – AMENDED VTT 52584

Cut Slope	Plate No.	Cross Section	Slope Gradient	Slope Height (Feet ±)	Slope Face Direction	Geologic Materials	Geologic Stability	Mitigation/Comments
CS-28	I	53-53'	2:1	104	S and SW	TQs (Qt will be removed by proposed cut)	Bedding component dipping 26° out-of-slope; grossly stable per slope stability analysis.	
CS-29	I	---	3:1	80	E	TQs (Qls-2 will be removed by proposed cut and landslide removal operations)	Favorable bedding; grossly stable, however	Removal and recompaction of Qls-2 @ the southern edge will push cut/fill line to the north.
CS-30	I	17-17', 31-31' and 56-56'	3:1	154	E and SE	TQs, Qt and Qls-1	Bedding dipping 11° to 14° out of 3:1 slope to 25° towards 3:1 slope face and horizontal Qts deposits; grossly stable per slope stability analysis however	The lower portion of CS-30 in the vicinity of Qls-1 removals will result in a fill slope (see X - Section 17-17').
CS-31*	I	---	2:1 to 4:1	32	E	TQs and Qt	Favorable bedding; grossly stable, however	Due to fill over cut configuration, recommend removal and replacement with **stability fill** (20 ft.x3 ft. min. keyway)
CS-32	I	31-31'	3:1	30	SE	TQs	Favorable bedding; grossly stable	
CS-33	I	42-42'	3:1	26	W	TQs (Qt will be removed by proposed cut)	Extreme bedding component dipping 16° out-of-slope; grossly stable per slope stability analysis. Fill over cut contact is also favorable.	
CS-34	I	54-54'	3:1	32	WNW	TQs	Bedding component dipping 21° toward 3:1 slope face; grossly stable	

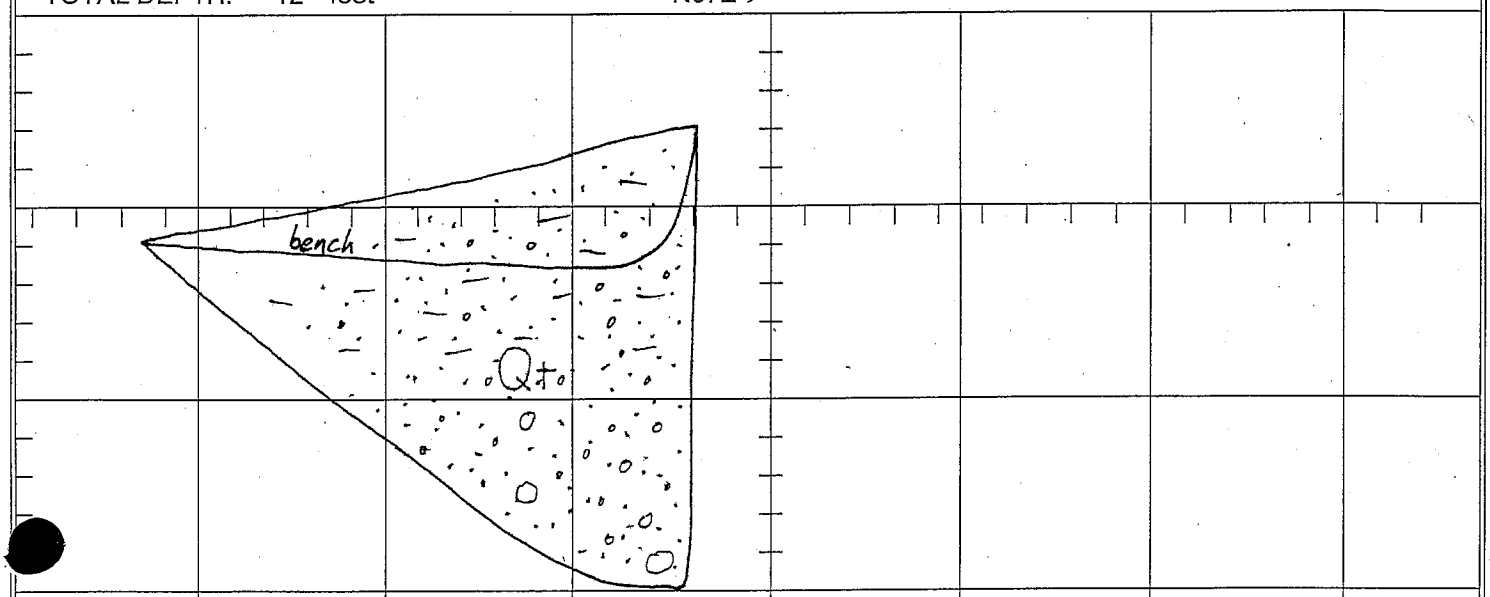
* Cut-slopes that require remedial measures.

Appendix A

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO.** T-235	
	LOGGED BY: MJD		
	EXCAVATED: 2/17/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**QUATERNARY TERRACE; Qt, (0-12 ft.)** @ 0' Poorly graded sand with silt and gravel; loose to medium dense; moist to damp; light yellowish- to orangish-brown; scattered cobbles; roots and voids				
5				SP	@ 6' Poorly graded sand with gravel and cobbles; medium-dense; damp; light yellowish-brown; roots and pinhole voids; vaguely bedded				
10					COMMENTS: -Highly weathered to 5 ft. -Probes tight @ 6-12 ft. -8-10 ft. recommended removal				
20									

TOTAL DEPTH: 12 feet N67E→ SCALE: 1 inch = 5 feet

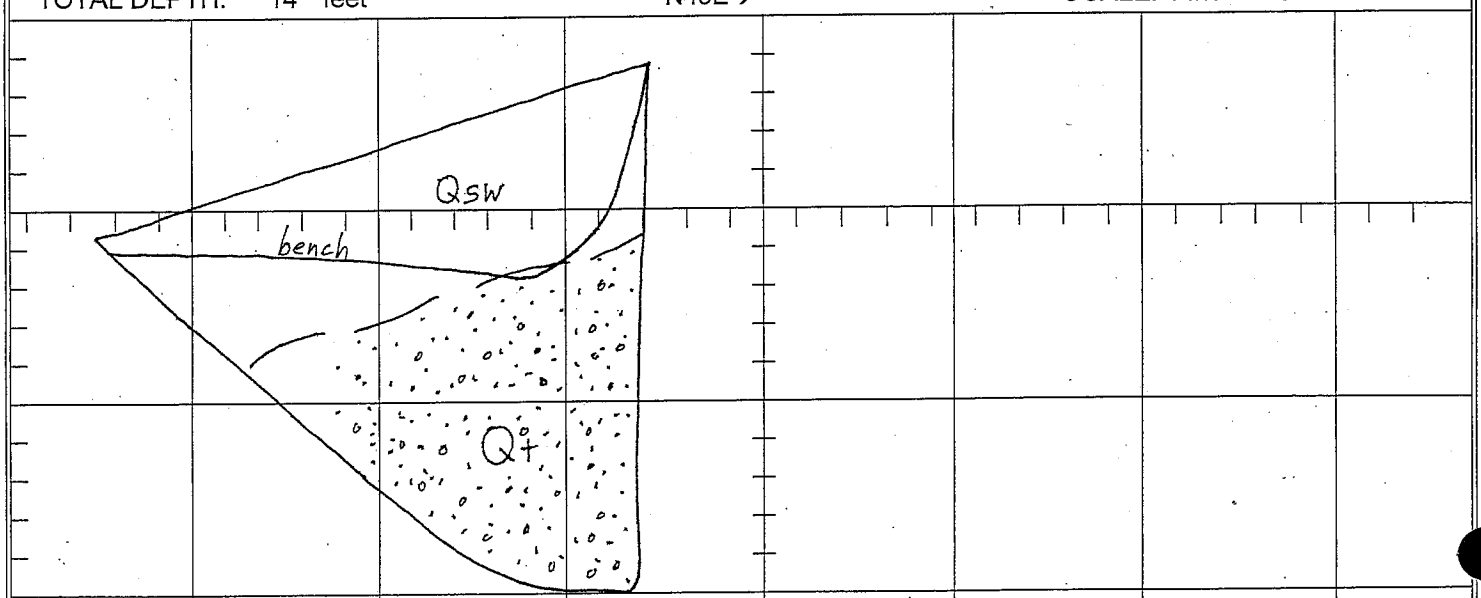


NO Caving
NO Groundwater

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO. T-236**	
	LOGGED BY: MJD		
	EXCAVATED: 2/17/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SC	**SOIL/SLOPEWASH; Qsw, (0-5 ft.)** @ 0' Poorly graded sand with silty clay and gravel; loose; moist; medium- to dark-brown; roots and voids				
5				SP	**QUATERNARY TERRACE; Qt, (5-14 ft.)** @ 5' Poorly graded sand with gravel; loose to medium-dense; moist to damp; yellowish-brown; locally slightly friable; roots and voids to 8 ft.; pinhole voids to 12 ft.; vaguely bedded; scattered cobbles				
10									
15					COMMENTS: -Highly weathered to 8 ft. -Probes tight 8-14 ft. -10-12 ft. recommended removal				
20									

TOTAL DEPTH: 14 feet N45E→ SCALE: 1 inch = 5 feet

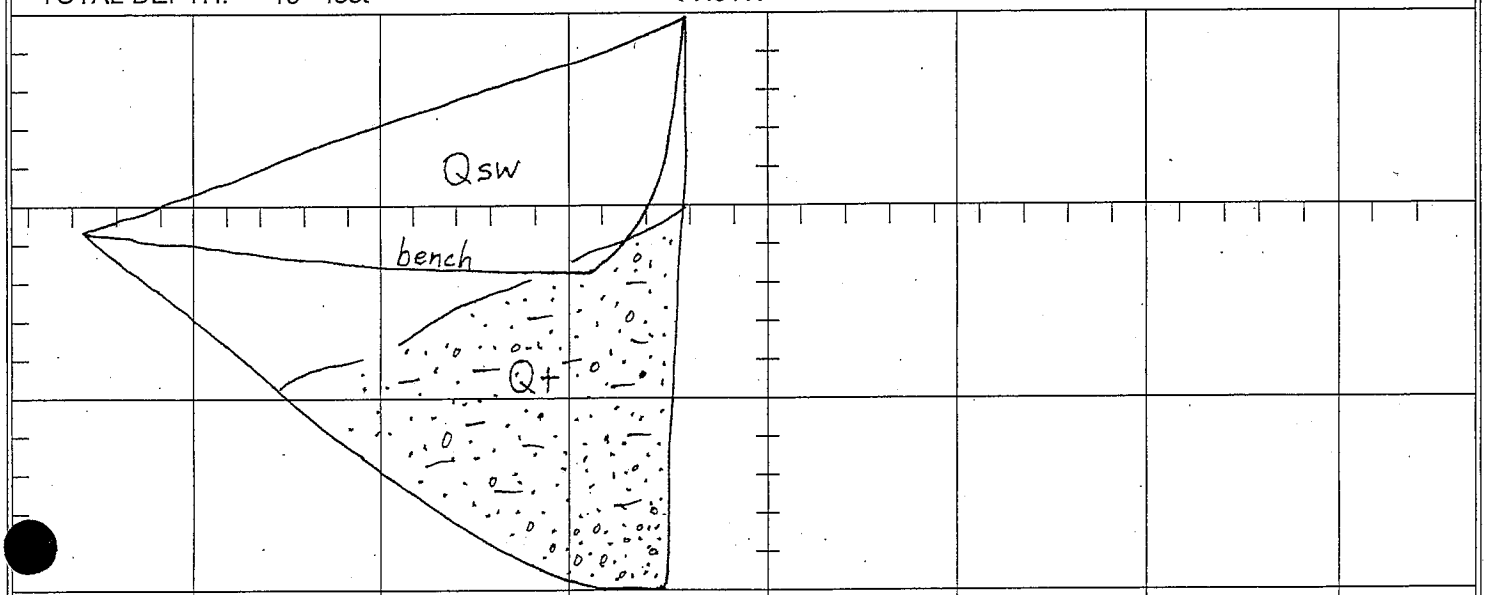


NO Caving
NO Groundwater

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO. T-237**	
	LOGGED BY: MJD		
	EXCAVATED: 2/17/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL/SLOPEWASH; Qsw, (0-5 ft.)** @ 0' Poorly graded sand with silt and gravel; loose; moist; medium-brown; roots and voids				
5				SP-SM	**QUATERNARY TERRACE; Qt, (5-15 ft.)** @ 5' Poorly graded sand with silt and gravel; medium-dense; slightly damp; yellowish-brown; roots and voids to 12 ft.; pinhole voids; vaguely bedded; scattered cobbles				
10				SP	@ 13' Poorly graded sand with gravel				
					COMMENTS: -Highly weathered to 10 ft. -Probes tight @ 7-15' ft. -12-14 ft. recommended removal				
20									

TOTAL DEPTH: 15 feet ←N81W SCALE: 1 inch = 5 feet

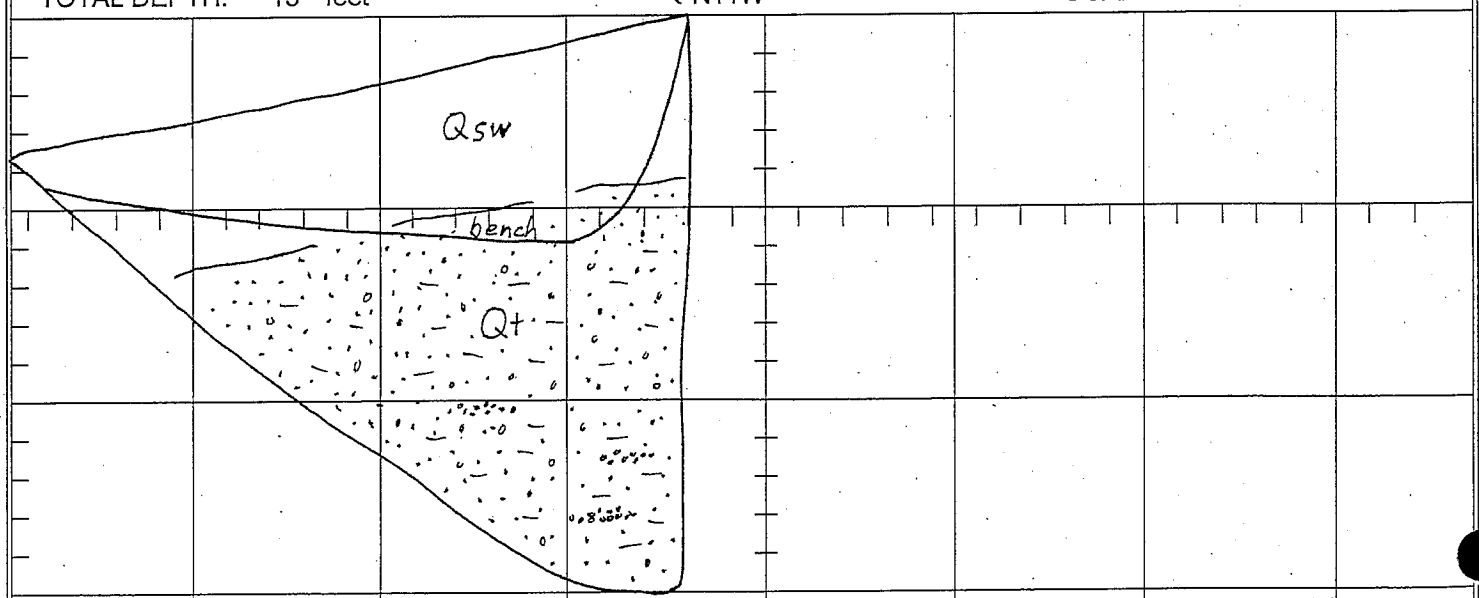


NO Caving
NO Groundwater

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG NO. T-238**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03		
	LOGGED BY: MJD		
	EXCAVATED: 2/17/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SC	**SOIL/SLOPEWASH; Qsw, (0-4 ft.)** @ 0' Poorly graded sand with silty clay and gravel; loose; moist; medium-brown; roots and voids				
5				SP-SM	**QUATERNARY TERRACE; Qt, (4-15 ft.)** @ 4' Poorly graded sand with silt and gravel; medium-dense; moist to damp; yellowish-brown; roots and voids common to 15 ft.; locally slightly friable; massive to vaguely bedded; scattered cobbles; local, discontinuous gravel lenses				
10									
15					COMMENTS: -Highly weathered to 12 ft. -Probes tight 6-15 ft. but has a weathered appearance -Removal 15 ft. -Digging was relatively hard				
20									

TOTAL DEPTH: 15 feet ←N11W SCALE: 1 inch = 5 feet

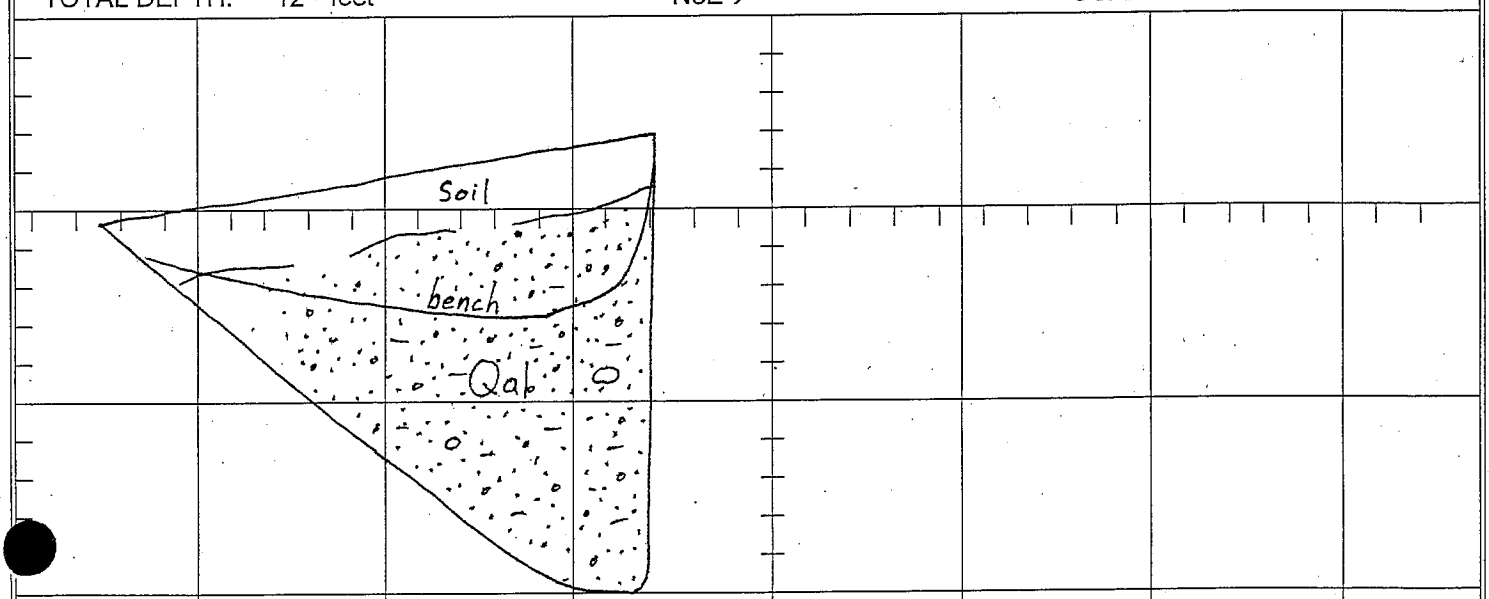


NO Caving
NO Groundwater

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO. T-239**	
	LOGGED BY: MJD		
	EXCAVATED: 2/17/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL; (0-1.5 ft.)** @ 0' Poorly graded sand with silt and gravel; loose; moist; medium-brown; roots and voids				
				SP	**QUATERNARY ALLUVIUM; Qal, (1.5-12 ft.)** @ 1.5' Poorly graded sand with gravel; loose to medium-dense; moist; light yellowish-brown; voids and roots; friable; gravel lenses				
5					@ 3' Yellowish-brown; slightly silty; scattered cobbles; massive to vaguely bedded; slightly friable				
					@ 6' Pinhole voids and root hairs				
10									
					COMMENTS: -Highly weathered to 5 ft. -Probes tight 6-12 ft. -6-8 ft. recommended removal				
20									

TOTAL DEPTH: 12 feet N3E→ SCALE: 1 inch = 5 feet



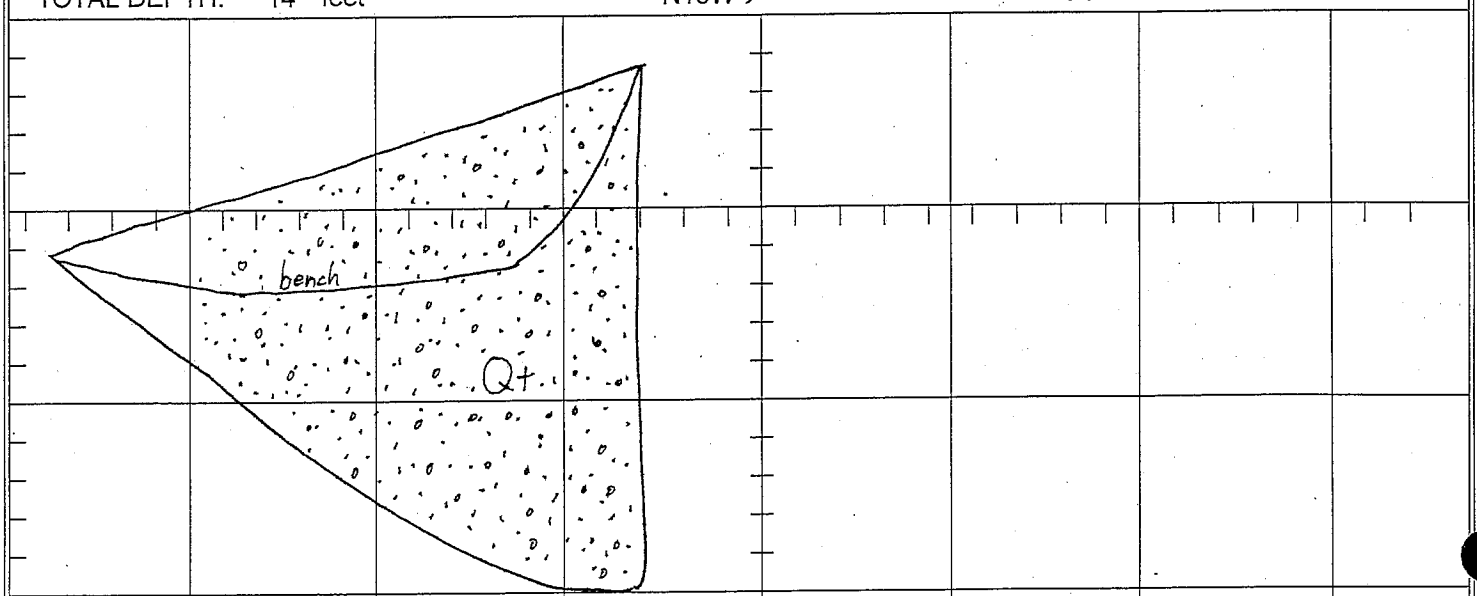
NO Caving
NO Groundwater

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG NO. T-240**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03		
	LOGGED BY: MJD		
	EXCAVATED: 2/17/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP	**QUATERNARY TERRACE; Qt, (0-14 ft.)** @ 0' Poorly graded sand with gravel; loose to medium-dense; moist; yellowish-brown; roots and voids; scattered cobbles; highly weathered @ 4' Damp; light yellowish-brown; roots and voids; moderately weathered; vaguely bedded @ 10' - dense; pinhole voids @ 14' - dense COMMENTS: -Highly weathered to 4 ft. -Probes tight to 4-14 ft. -8-10 ft. recommended removal				
5									
10									
15									
20									

TOTAL DEPTH: 14 feet N15W→ SCALE: 1 inch = 5 feet

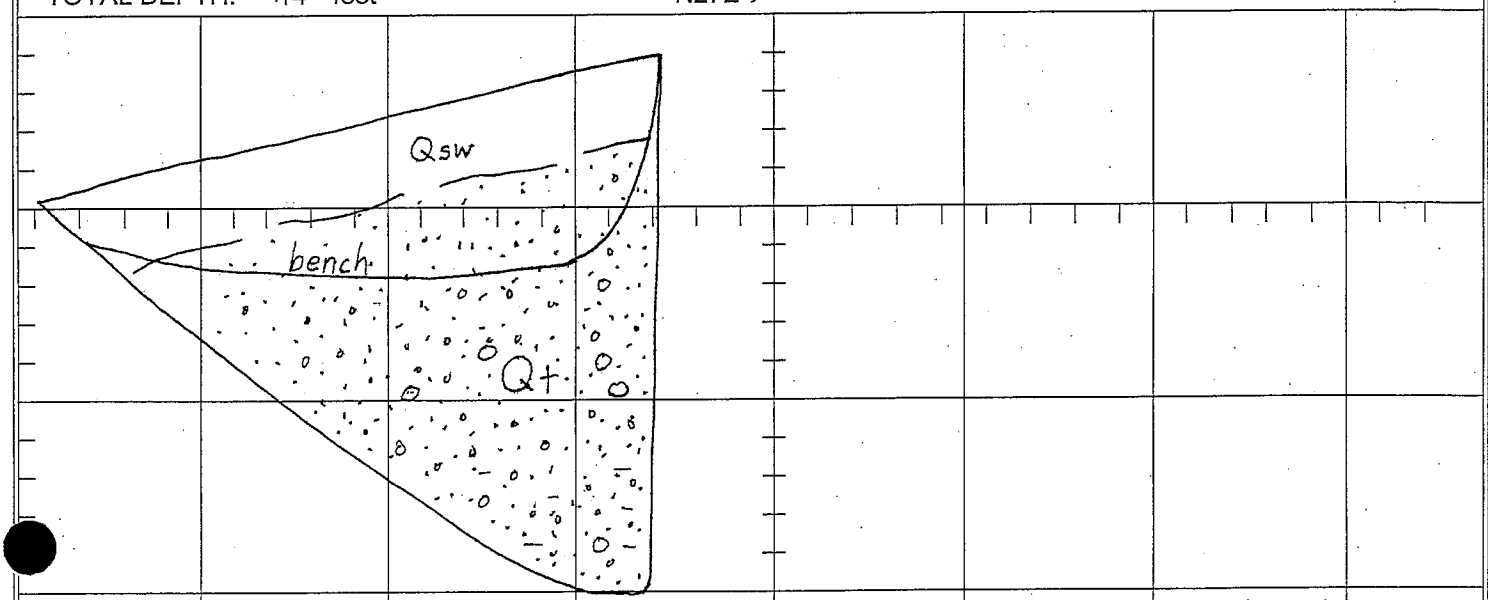


NO Caving
NO Groundwater

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO. T-241**	
	LOGGED BY: MJD		
	EXCAVATED: 2/17/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL/SLOPEWASH; Qsw, (0-2 ft.)** @ 0' Poorly graded sand with silt and gravel; loose; moist; medium-brown; roots and voids				
				SP	**QUATERNARY TERRACE; Qt, (2-14 ft.)** @ 2' Poorly graded sand with gravel and cobbles; loose to medium dense; moist to damp; yellowish-gray to light yellowish-brown; roots and voids to 7 ft.; well-bedded; locally friable				
5									
10					@ 10' dense; scattered roots; local pinhole voids; localy slightly silty				
					COMMENTS: -Highly weathered to 8 ft. -Probes tight 6-14 ft. -8-10 ft. recommended removal				
20									

TOTAL DEPTH: 14 feet N27E→ SCALE: 1 inch = 5 feet

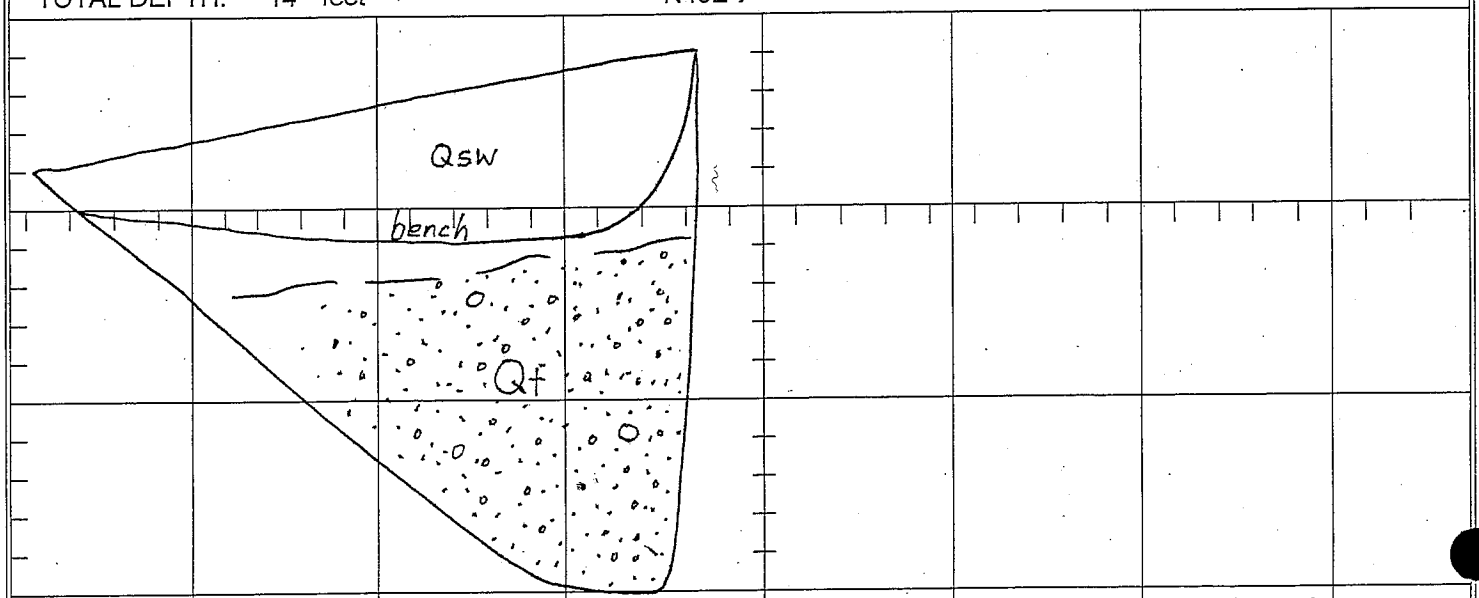


NO Caving
NO Groundwater

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO. T-242**	
	LOGGED BY: MJD		
	EXCAVATED: 2/17/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL/SLOPEWASH; Qsw, (0-5 ft.)** @ 0' Poorly graded sand with silt and gravel; loose; moist; medium-brown; roots and voids				
5				SP	**QUATERNARY TERRACE; Qt, (5-14 ft.)** @ 5' Poorly graded sand with gravel; medium-dense; moist to damp; yellowish-brown; roots to 12 ft.; local voids; scattered cobbles; massive				
10					@ 12' - dense; vaguely bedded				
15					COMMENTS: -Highly weathered to approximately 12 ft. -Probes tight 6-14 ft. -10-12 ft. recommended removal				
20									

TOTAL DEPTH: 14 feet N46E→ SCALE: 1 inch = 5 feet



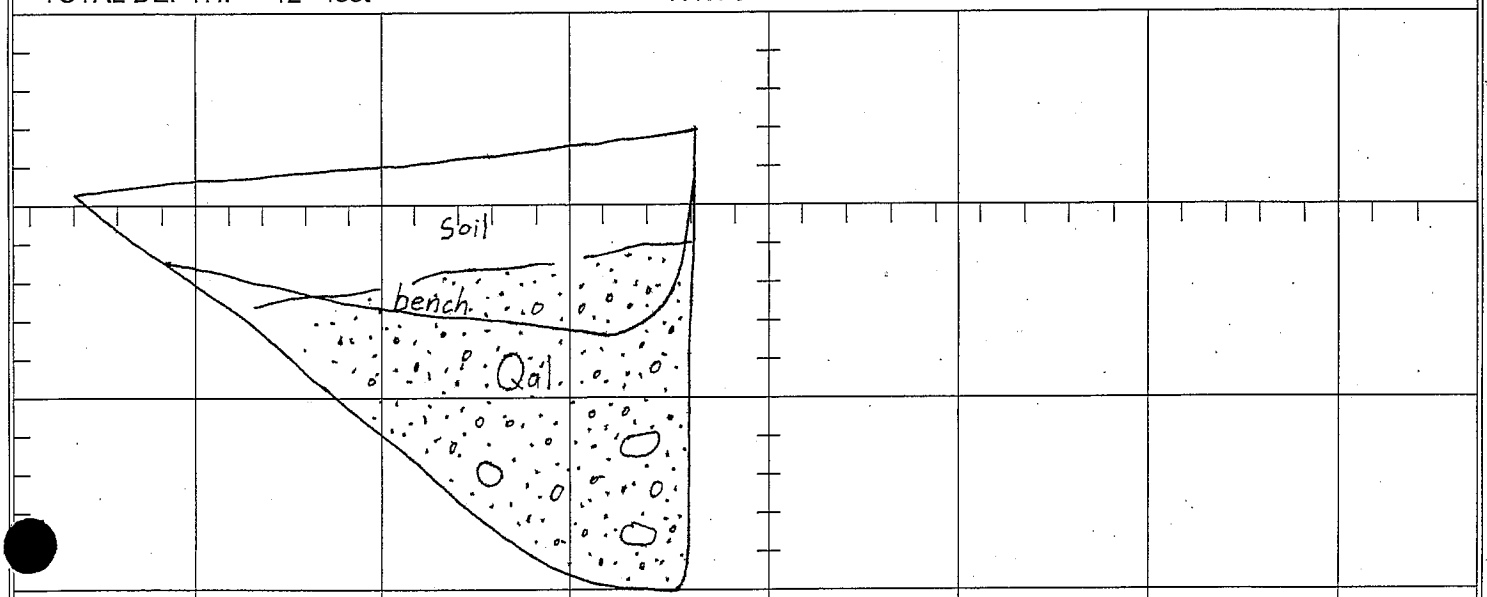
NO Caving
NO Groundwater

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO. T-243**	
	LOGGED BY: MJD		
	EXCAVATED: 2/17/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL; (0-3 ft.)** @ 0' Poorly graded sand with silt and gravel; loose; moist; dark-brown; roots and voids				
				SP	**QUATERNARY ALLUVIUM; Qal, (3-12 ft.)** @ 3' Poorly graded sand with gravel and cobbles; loose to medium-dense; moist; medium-brown to orangish-brown; scattered boulders; roots and voids; root hairs and pinhole voids; massive, structureless		5.03	116.7	Consol
5									
10					COMMENTS: -Highly weathered to 5 ft. -8 ft. recommended removal -Probes tight 6-12 ft.		5.31	118.8	Consol
20									

TOTAL DEPTH: 12 feet N4W→ SCALE: 1 inch = 5 feet

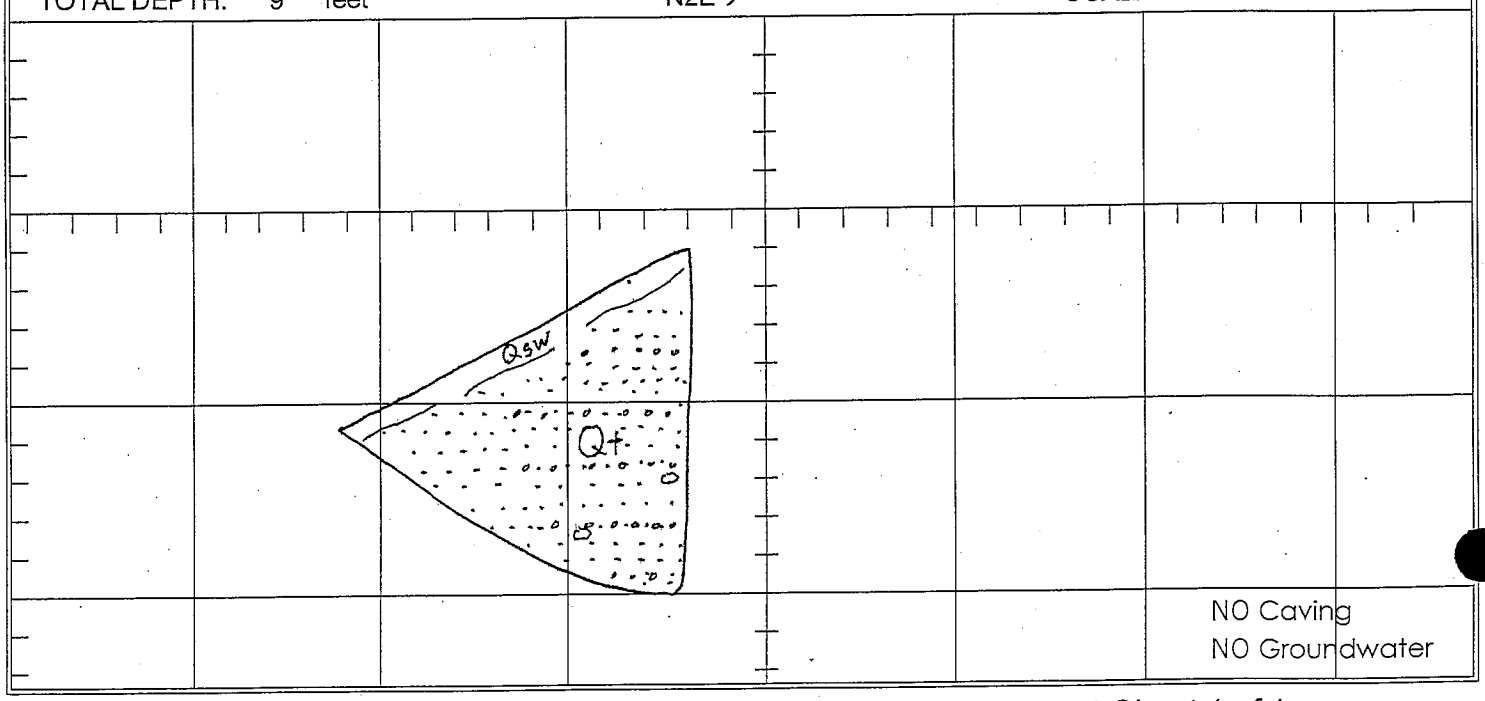


NO Caving
NO Groundwater

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO. T-244**	
	LOGGED BY: MJD		
	EXCAVATED: 2/18/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP	**SOIL/SLOPEWASH; Qsw, (0-0.5 ft.)** @ 0' Poorly graded sand with gravel; loose; moist; light-brown; roots **QUATERNARY TERRACE; Qt, (0.5-9 ft.)** @ 0.5' Poorly graded sand with gravel; loose to medium-dense; moist to damp; yellowish-brown; roots to 5 ft.; moderately well-bedded; locally friable; scattered cobbles				
5									
10					COMMENTS: -Highly weathered to 6 ft. -Moist to 4' from recent rain -6 ft. recommended removal				
15									
20									

TOTAL DEPTH: 9 feet N2E→ SCALE: 1 inch = 5 feet

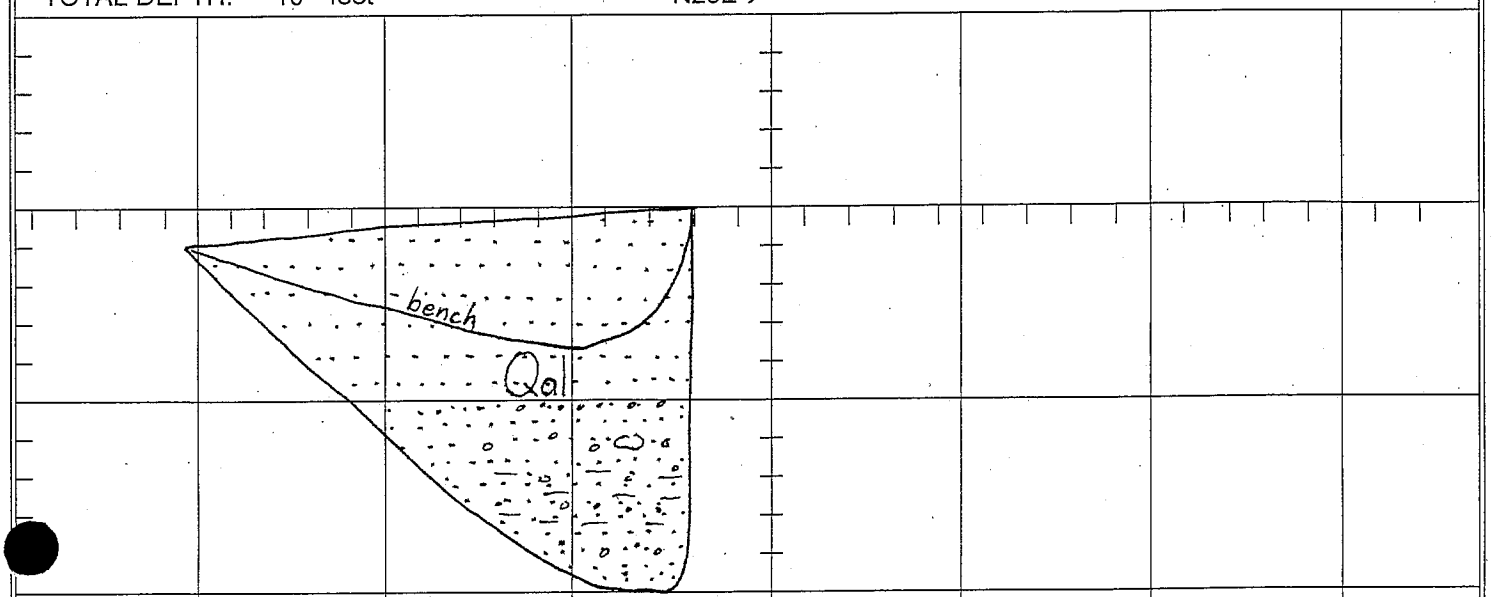


ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO.** T-245	
	LOGGED BY: MJD		
	EXCAVATED: 2/18/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP	**QUATERNARY ALLUVIUM; Qal, (0-10 ft.)** @ 0' Poorly graded sand; loose; moist; light yellowish-brown to yellowish-gray				
5					@ 5' - medium-dense; with gravel @ 6' - with cobbles				
				SP-SM	@ 7' Poorly graded sand with silt and gravel; medium-dense; moist; orangish-brown				
				SP	@ 8.5' Poorly graded sand with gravel; yellowish-gray				
10					COMMENTS: -Probes tight 6-10 ft. -6-8 ft. recommended removal				
20									

TOTAL DEPTH: 10 feet N23E→ SCALE: 1 inch = 5 feet

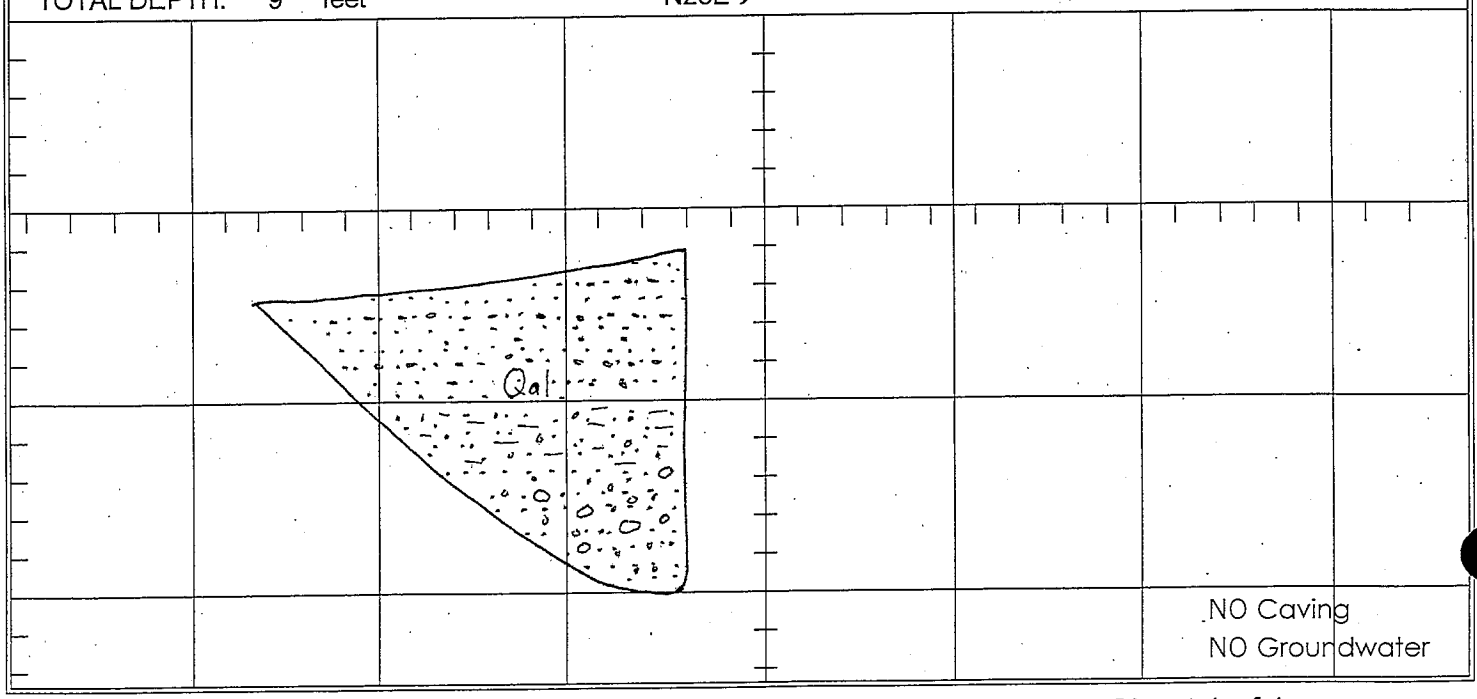


NO Caving
NO Groundwater

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG NO. T-246**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03		
	LOGGED BY: MJD		
	EXCAVATED: 2/18/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP	**QUATERNARY ALLUVIUM; Qal, (0-9 ft.)** @ 0' Poorly graded sand with gravel; loose to medium dense; moist; yellowish-gray to light yellowish-brown; well-bedded; laminated; scattered cobbles; roots to 5 ft.				
5				SP-SM	@ 4' Poorly graded sand with silt and gravel; small voids				
				SP	@ 6' Poorly graded sand with gravel and cobbles				
10					COMMENTS: -Highly weathered to 5 ft. -Probes tight 5-10 ft. -6-8 ft. recommended removal				
15									
20									

TOTAL DEPTH: 9 feet N28E→ SCALE: 1 inch = 5 feet

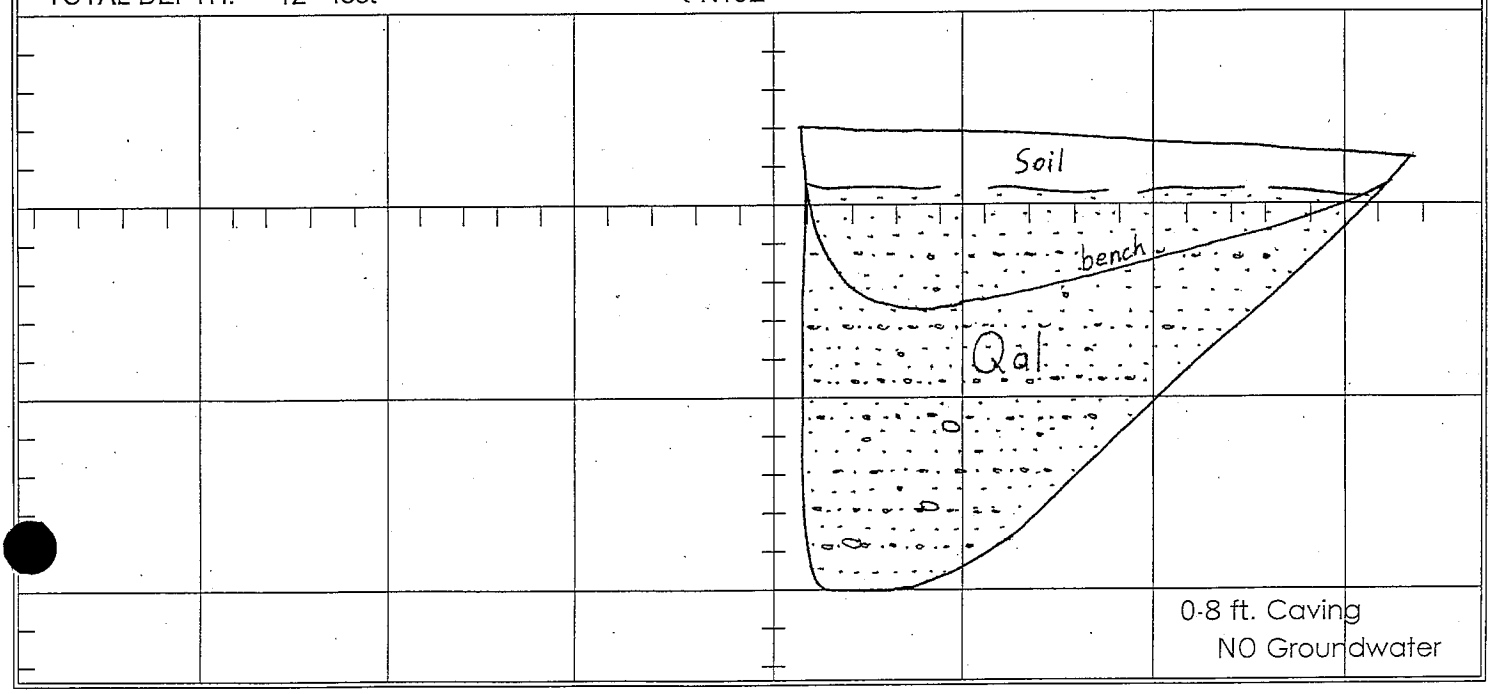


NO Caving
NO Groundwater

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG NO. T-247**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03		
	LOGGED BY: MJD		
	EXCAVATED: 2/18/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM SP	**SOIL; (0-1.5 ft.)** @ 0' Poorly graded sand with silt; loose; moist; medium-brown; roots **QUATERNARY ALLUVIUM; Qal, (1.5-12 ft.)** @ 1.5' Poorly graded sand with gravel; loose; moist; yellowish-gray to light yellowish-brown; well-bedded; scattered cobbles				
5							4.23	118.4	Consol
					@ 8' - medium-dense				
10							6.33	117.6	Consol
					COMMENTS: -Highly weathered to 3 ft. -Caving 0-8 ft. -8-10 ft. recommended removal -Surface logged				
20									

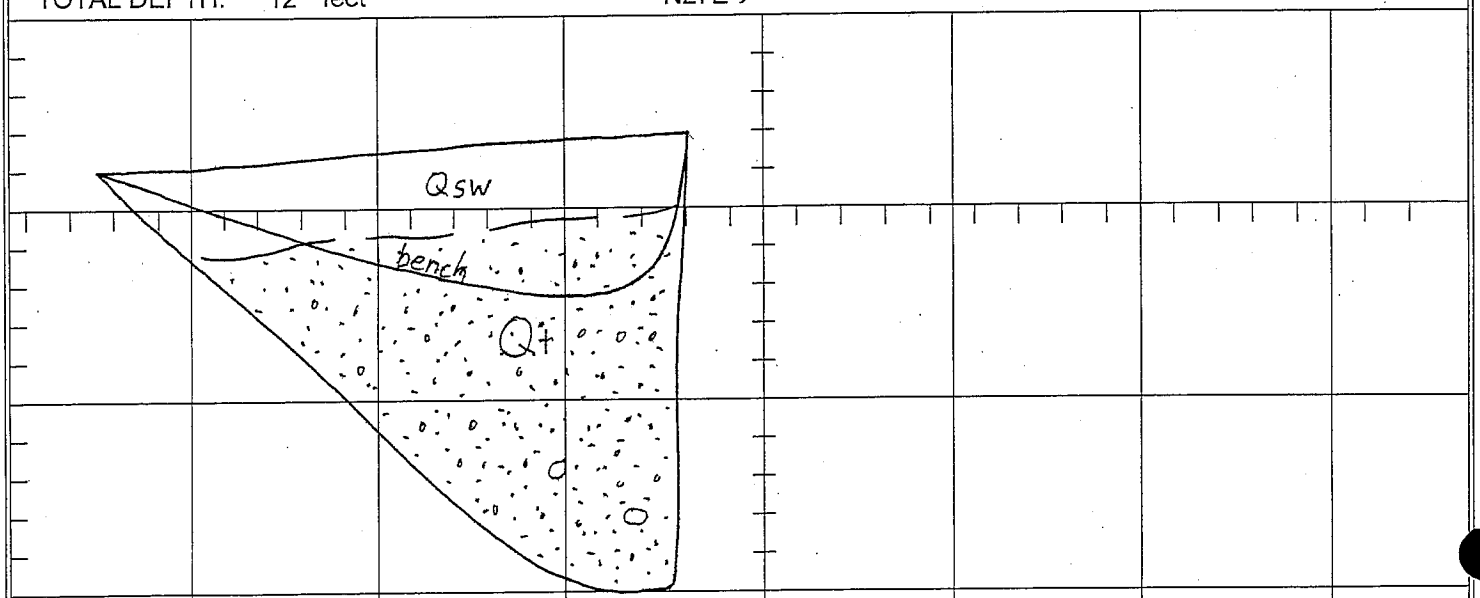
TOTAL DEPTH: 12 feet ←N15E SCALE: 1 inch = 5 feet



CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG NO. T-248**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03		
	LOGGED BY: MJD		
	EXCAVATED: 2/18/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL/SLOPEWASH; Qsw, (0-2 ft.)** @ 0' Poorly graded sand with silt and gravel; loose; moist; medium brown; roots				
				SP	**QUATERNARY TERRACE; Qt, (2-12 ft.)** @ 2' Poorly graded sand with gravel; loose to medium-dense; moist to 4 ft.; damp 4-12 ft.; yellowish-brown; scattered cobbles; local slightly silty pods/lenses; massive to vaguely bedded; roots and voids to 7 ft.				
5							3.05	122.2	Consol
10					@ 10' - dense				
					COMMENTS: -Highly weathered to 6 ft. -8 ft. recommended removal				
15									
20									

TOTAL DEPTH: 12 feet N27E→ SCALE: 1 inch = 5 feet



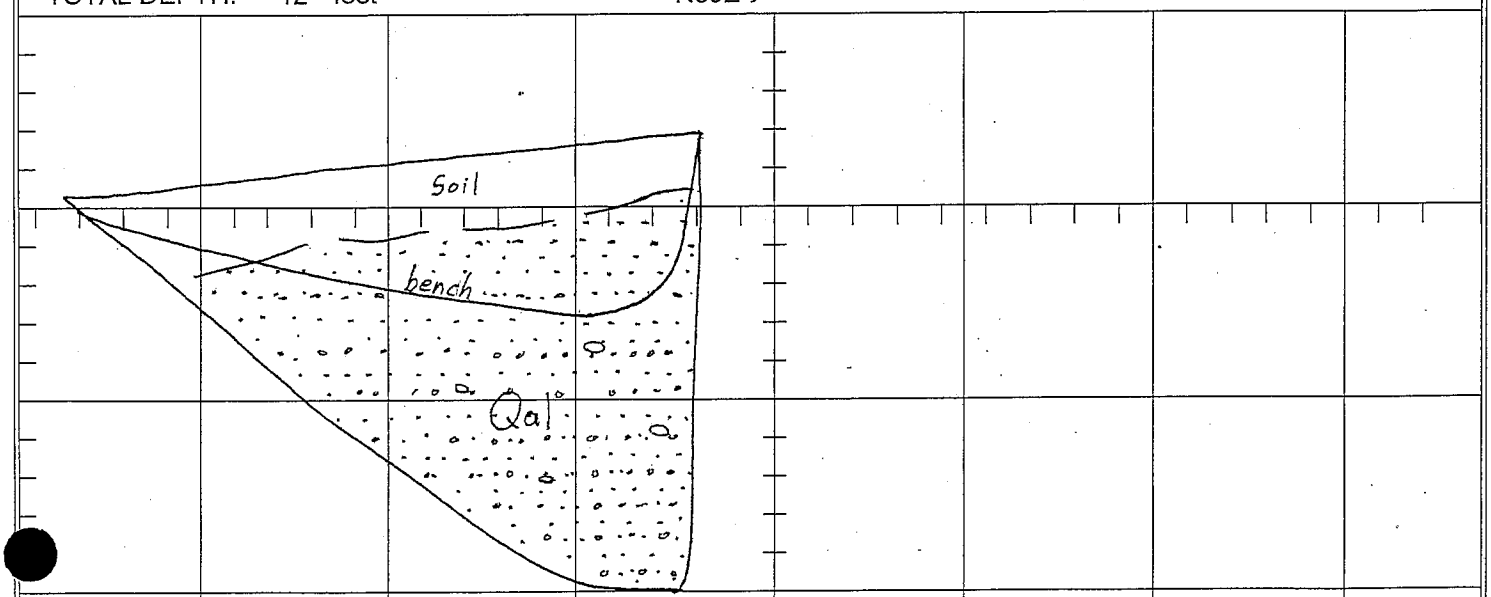
NO Caving
NO Groundwater

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG NO. T-249**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 3/16/03		
	LOGGED BY: MJD		
	EXCAVATED: 2/18/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM SP	**SOIL; (0-1.5 ft.)** @ 0' Poorly graded sand with silt and gravel; loose; moist; medium-brown; roots; scattered cobbles and boulders **QUATERNARY ALLUVIUM; Qal, (1.5-12 ft.)** @ 1.5' Poorly graded sand with gravel; loose to medium-dense; moist; yellowish-gray to light yellowish- brown; well-bedded; scattered cobbles; scattered roots to 8 ft.				
5							2.75	110.4	Consol
10					COMMENTS: -Caving 0-7 ft. -Surface logged -8-10 ft. recommended removal				
20									

TOTAL DEPTH: 12 feet N30E→ SCALE: 1 inch = 5 feet

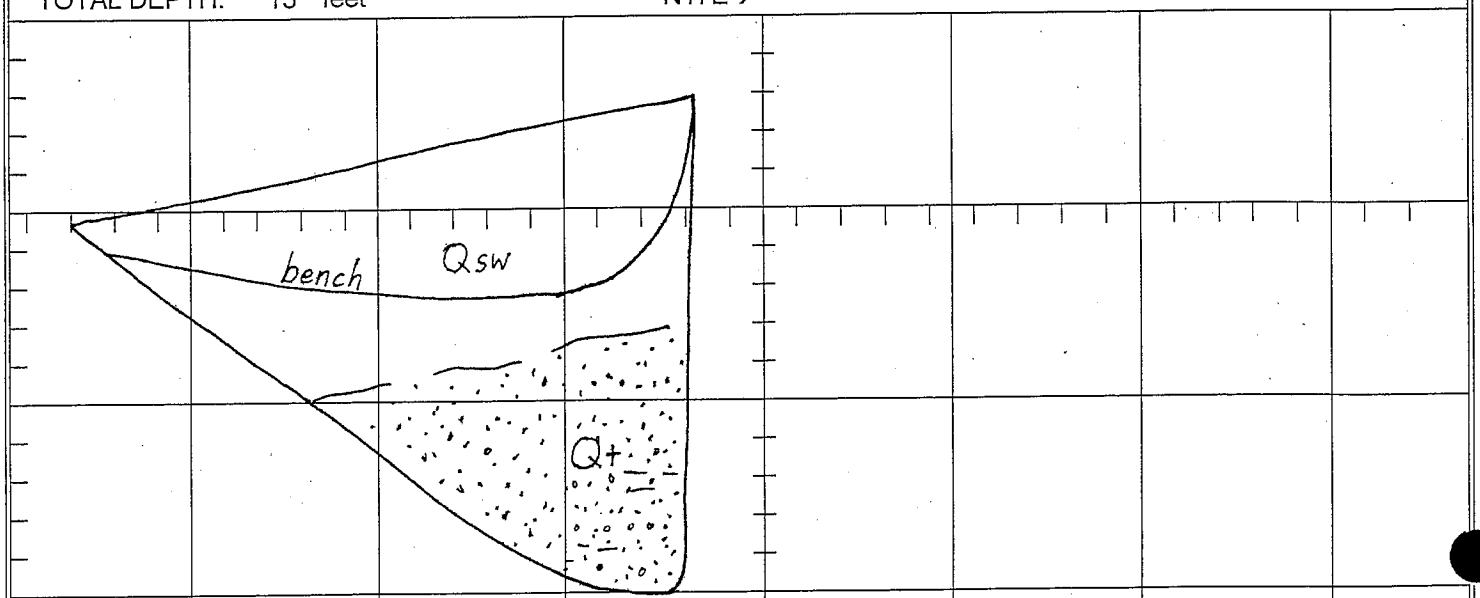


0-7 ft. Caving
NO Groundwater

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG NO. T-250**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 3/16/03		
	LOGGED BY: MJD		
	EXCAVATED: 2/18/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL/SLOPEWASH; Qsw, (0-6 ft.)** @ 0' Poorly graded sand with silt and gravel; loose; moist; medium-brown; roots and voids				
5				SP	**QUATERNARY TERRACE; Qt, (6-13 ft.)** @ 6' Poorly graded sand; medium-dense to dense; damp; light brown to yellowish-brown; vaguely bedded; locally silty and gravelly; scattered roots and voids to 10 ft.; pinhole voids				
10									
15					COMMENTS: -Highly weathered to 10 ft. -Probes tight 8-13 ft. -10-12 ft. recommended removal				
20									

TOTAL DEPTH: 13 feet N17E→ SCALE: 1 inch = 5 feet



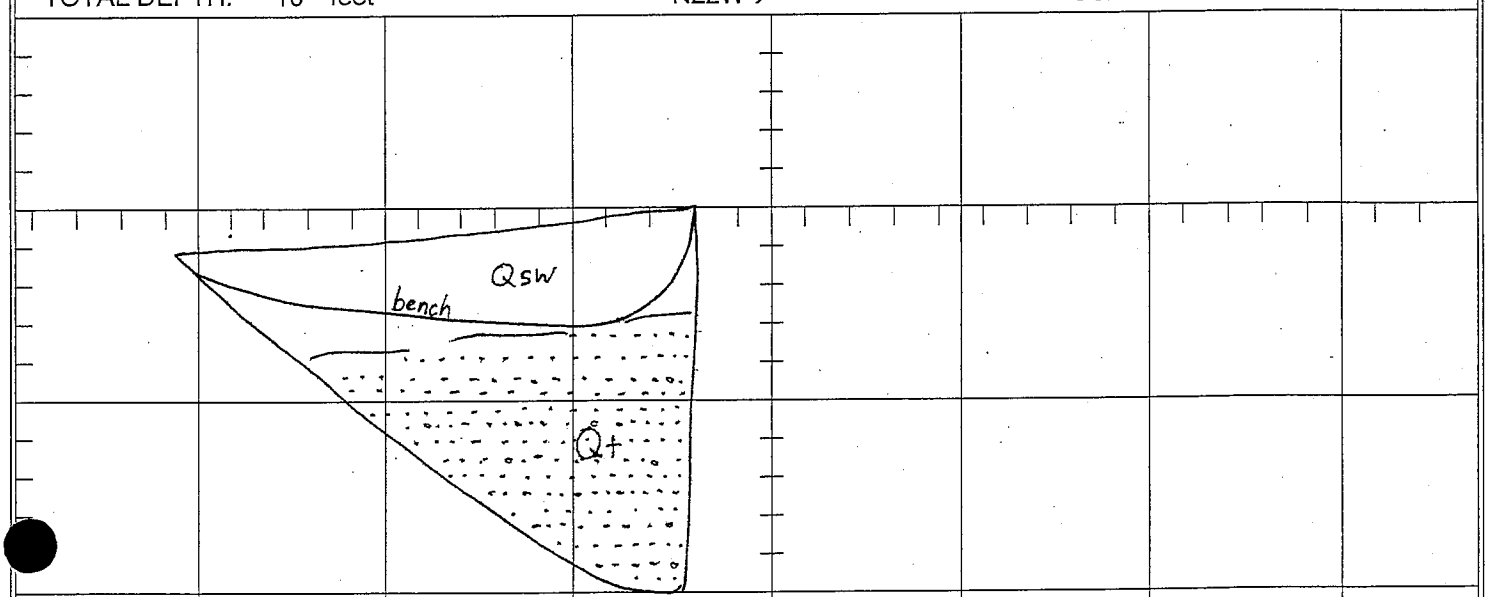
NO Caving
NO Groundwater

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO. T-251**	
	LOGGED BY: MJD		
	EXCAVATED: 2/18/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL/SLOPEWASH; Qsw, (0-3 ft.)** @ 0' Poorly graded sand with silt; loose; moist; medium-brown; roots and voids				
				SP	**QUATERNARY TERRACE; Qt, (3-10 ft.)** @ 3' Poorly graded sand with gravel; loose to medium-dense; yellowish-gray to light yellowish-brown; roots to 7 ft.; moderately well-bedded; scattered cobbles; local pinhole voids				
5									
					@ 8' - dense				
10									
					COMMENTS: -Highly weathered to 7 ft. -8 ft. recommended removal				
20									

TOTAL DEPTH: 10 feet N22W→ SCALE: 1 inch = 5 feet

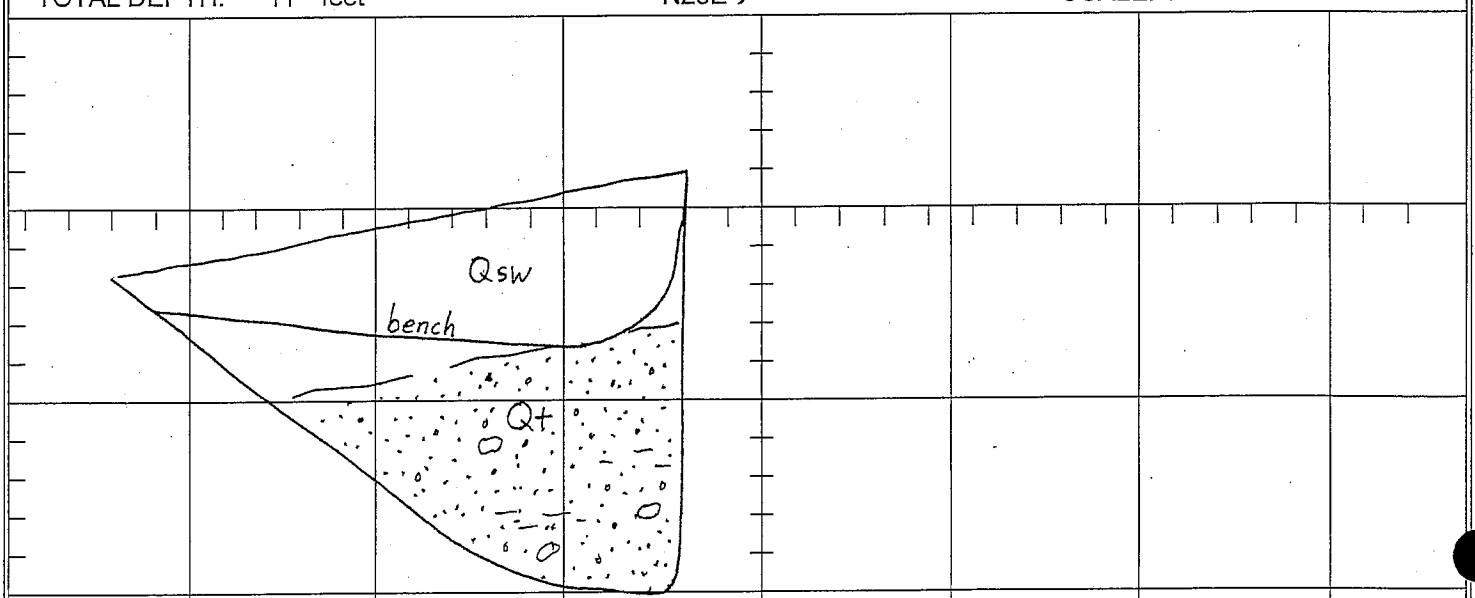


NO Caving
NO Groundwater

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO.** T-252	
	LOGGED BY: MJD		
	EXCAVATED: 2/18/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL/SLOPEWASH; Qsw, (0-4 ft.)** @ 0' Poorly graded sand with silt; loose; moist; medium-brown; roots and voids; scattered pebbles and cobbles				
5				SP	**QUATERNARY TERRACE; Qt, (4-11 ft.)** @ 4' Poorly graded sand with gravel; loose to medium dense; moist to damp; light yellowish-brown; roots and voids to 9 ft.; vaguely bedded; scattered cobbles; locally slightly silty; pinhole voids				
10									
15					COMMENTS: -Highly weathered to 9 ft. -10 ft. recommended removal				
20									

TOTAL DEPTH: 11 feet N28E→ SCALE: 1 inch = 5 feet



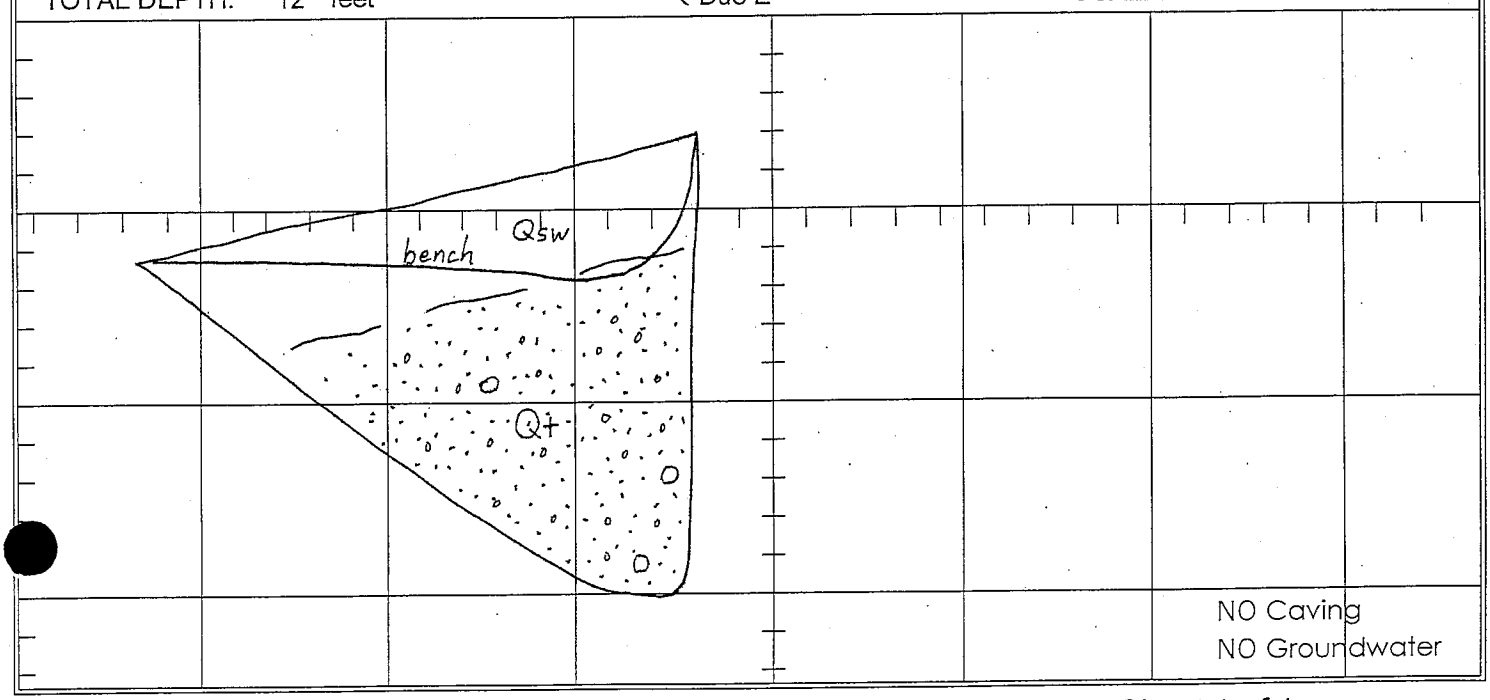
NO Caving
NO Groundwater

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG NO. T-253**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03		
	LOGGED BY: MJD		
	EXCAVATED: 2/19/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL/SLOPEWASH; Qsw, (0-3 ft.)** @ 0' Poorly graded sand with silt; loose; moist; medium-brown; roots and voids; scattered pebbles				
				SP	**QUATERNARY TERRACE; Qt, (3-12 ft.)** @ 3' Poorly graded sand with gravel; medium-dense; moist to damp; light brown; scattered cobbles; vaguely bedded; roots and voids to 9 ft.; locally slightly silty				
5									
10					@ 10' - dense				
20					COMMENTS: -Highly weathered to 9 ft. -10 ft. recommended removal -Moist to 4 ft. due to recent rain				

TOTAL DEPTH: 12 feet ←Due E SCALE: 1 inch = 5 feet

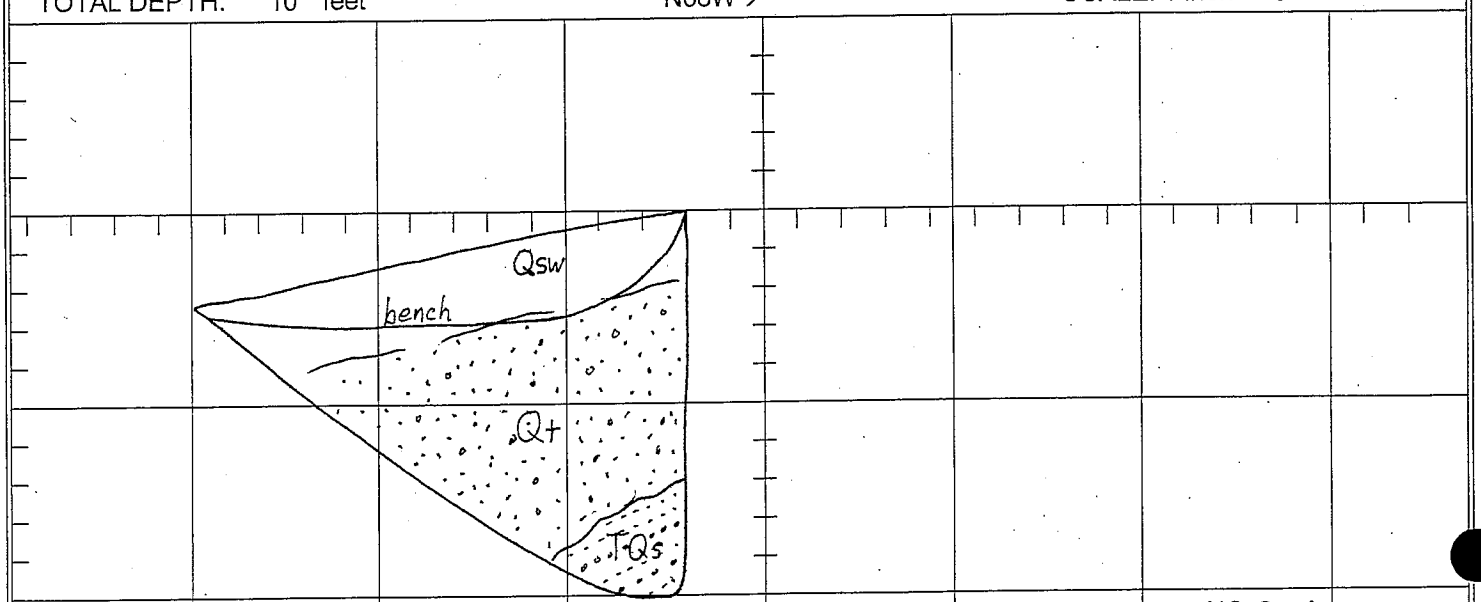


NO Caving
NO Groundwater

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO.** T-254	
	LOGGED BY: MJD		
	EXCAVATED: 2/19/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SOIL/SLOPEWASH; Qsw, (0-2 ft.)** @ 0' Poorly graded sand with silt; loose; moist; medium-brown; roots and voids; scattered pebbles **QUATERNARY TERRACE; Qt, (2-7 ft.)** @ 2' Poorly graded sand with gravel; medium-dense; moist to damp; light brown; scattered cobbles; vaguely bedded; roots and voids to 9 ft.; locally slightly silty; erosional contact with bedrock below **BEDROCK; TQs, (7-10 ft.)** @ 7' Yellowish-gray sandstone and pebbly sandstone; hard; damp; well-bedded; cross-bedded; scattered cobbles; iron laminations COMMENTS: -Highly weathered to 7 ft. -8 ft. recommended removal	B:N49E,26SE			
5									
10									
15									
20									

TOTAL DEPTH: 10 feet N68W→ SCALE: 1 inch = 5 feet



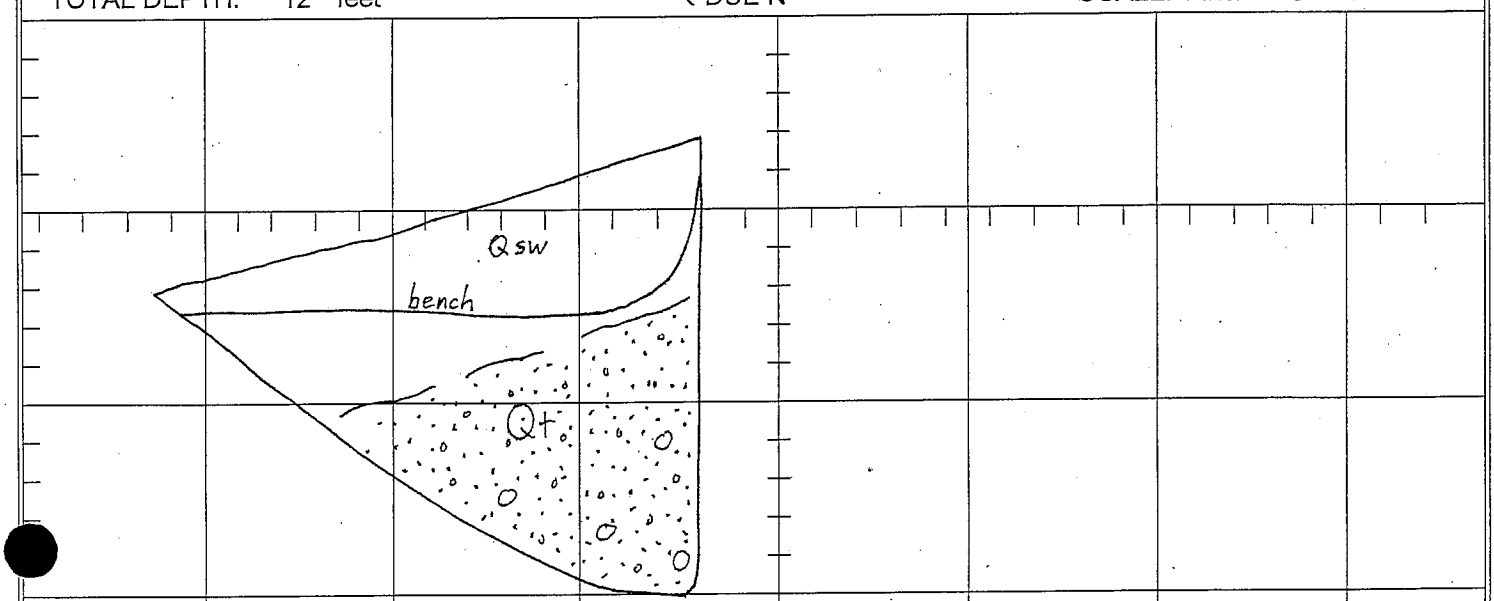
NO Caving
NO Groundwater

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO. T-255**	
	LOGGED BY: MJD		
	EXCAVATED: 2/19/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL/SLOPEWASH; Qsw, (0-4 ft.)** @ 0' Poorly graded sand with silt and gravel; loose; moist; medium-brown; roots and voids				
5				SP	**QUATERNARY TERRACE; Qt, (4-12 ft.)** @ 4' Poorly graded sand with gravel; loose to medium-dense; yellowish-brown; roots and voids to 10 ft.; vaguely bedded; locally slightly friable; locally slightly silty; scattered cobbles				
10					COMMENTS: -Highly weathered to 10 ft. -10-12 ft. recommended removal				
20									

TOTAL DEPTH: 12 feet ←DUE N SCALE: 1 inch = 5 feet



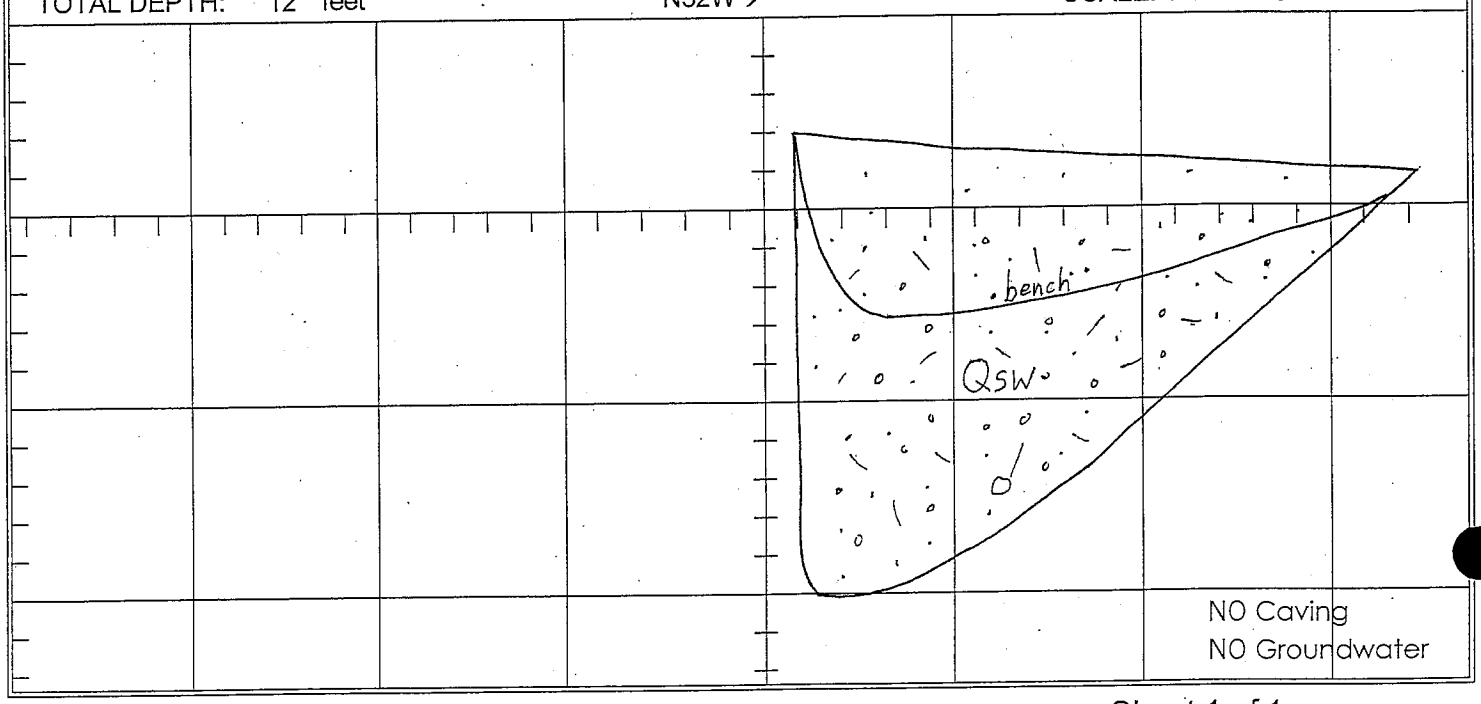
NO Caving
NO Groundwater

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO. T-256**	
	LOGGED BY: MJD		
	EXCAVATED: 2/19/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL/SLOPEWASH; Qsw, (0-12 ft.)** @ 0' Poorly graded sand with silt and gravel; loose to medium-dense; moist to 5 ft.; slightly damp 5-12 ft.; medium- to light-brown; massive, structureless; local sandy and silty pockets/pods; roots and voids to 12 ft.; scattered cobbles				
5									
10									
15					COMMENTS: -Located in large side canyon swale -Highly weathered to 10 ft. -Probes tight 6-12 ft. but looks incompetent -12+ ft. recommended removal				
20									

TOTAL DEPTH: 12 feet N32W→ SCALE: 1 inch = 5 feet



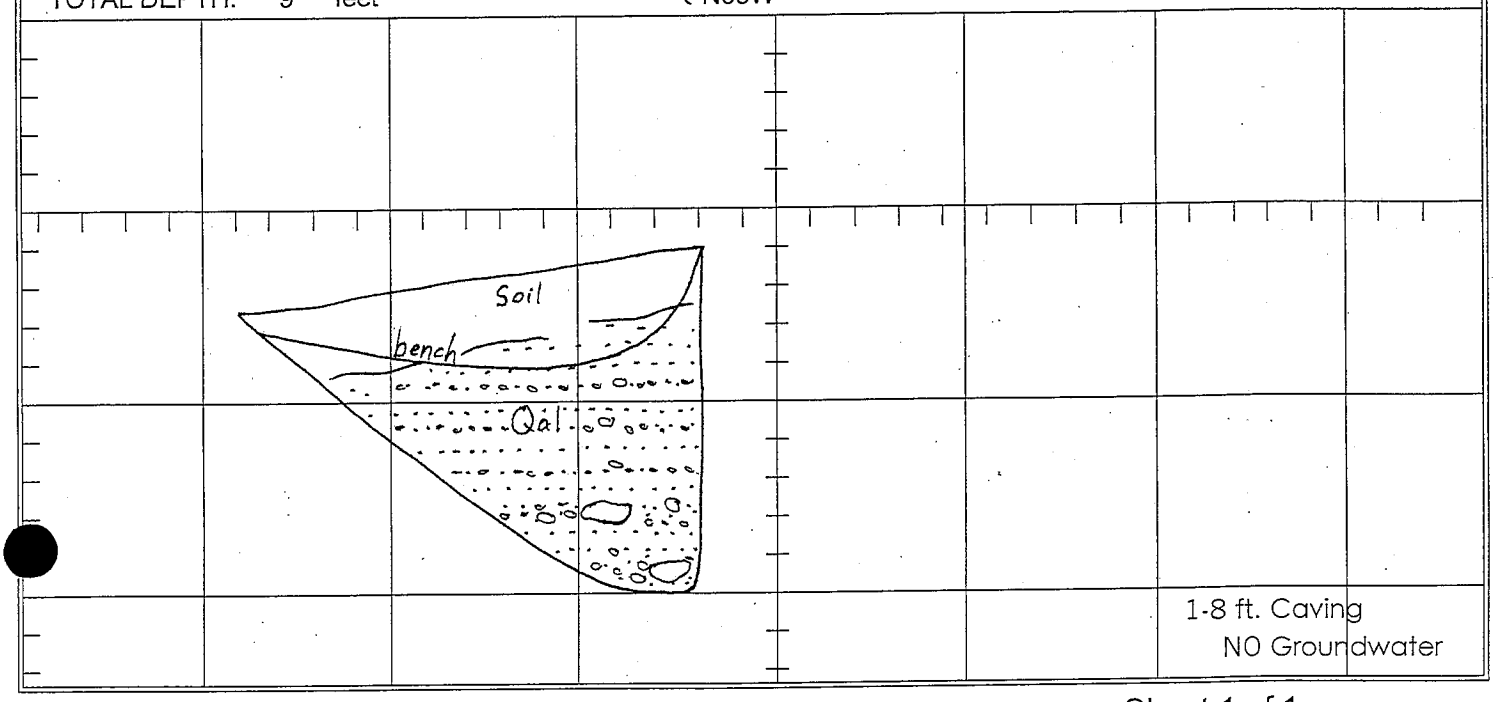
NO Caving
NO Groundwater

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO. T-257**	
	LOGGED BY: MJD		
	EXCAVATED: 2/19/03		
AVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM SP	**SOIL; (0-1.5 ft.)** @ 0' Poorly graded sand with silt and gravel; loose; moist; medium-brown; roots and voids; scattered cobbles **QUATERNARY ALLUVIUM; Qal, (1.5-9 ft.)** @ 1.5' Poorly graded sand with gravel and cobbles; loose to medium dense; moist; yellowish-brown; roots to 6 ft.; scattered boulders; well-bedded				
5									
10					COMMENTS: -Highly weathered to 5 ft. -Caving 1-8 ft. -8 ft. recommended removal				
20									

TOTAL DEPTH: 9 feet ←N65W SCALE: 1 inch = 5 feet

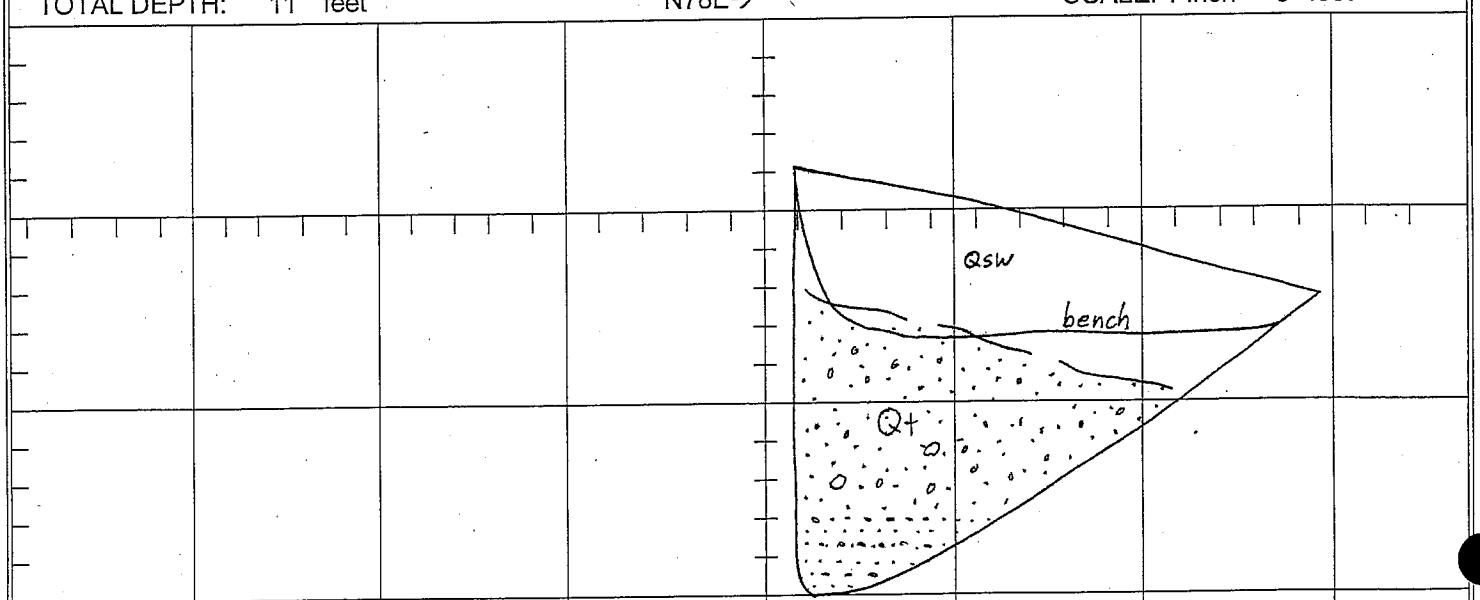


ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG NO. T-258**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03		
	LOGGED BY: MJD		
	EXCAVATED: 2/19/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL/SLOPEWASH; Qsw, (0-3 ft.)** @ 0' Poorly graded sand with silt and gravel; loose; moist; medium-brown; roots and voids				
				SP	**QUATERNARY TERRACE; Qt, (3-11 ft.)** @ 3' Poorly graded sand with gravel; loose to medium dense; moist to damp; yellowish-brown; roots and voids to 9 ft.; pinhole voids; scattered cobbles; massive to 9 ft.; moderately well-bedded 9-11 ft.				
5									
10					COMMENTS: -Highly weathered to 9 ft. -10 ft. recommended removal				
15									
20									

TOTAL DEPTH: 11 feet N78E→ SCALE: 1 inch = 5 feet

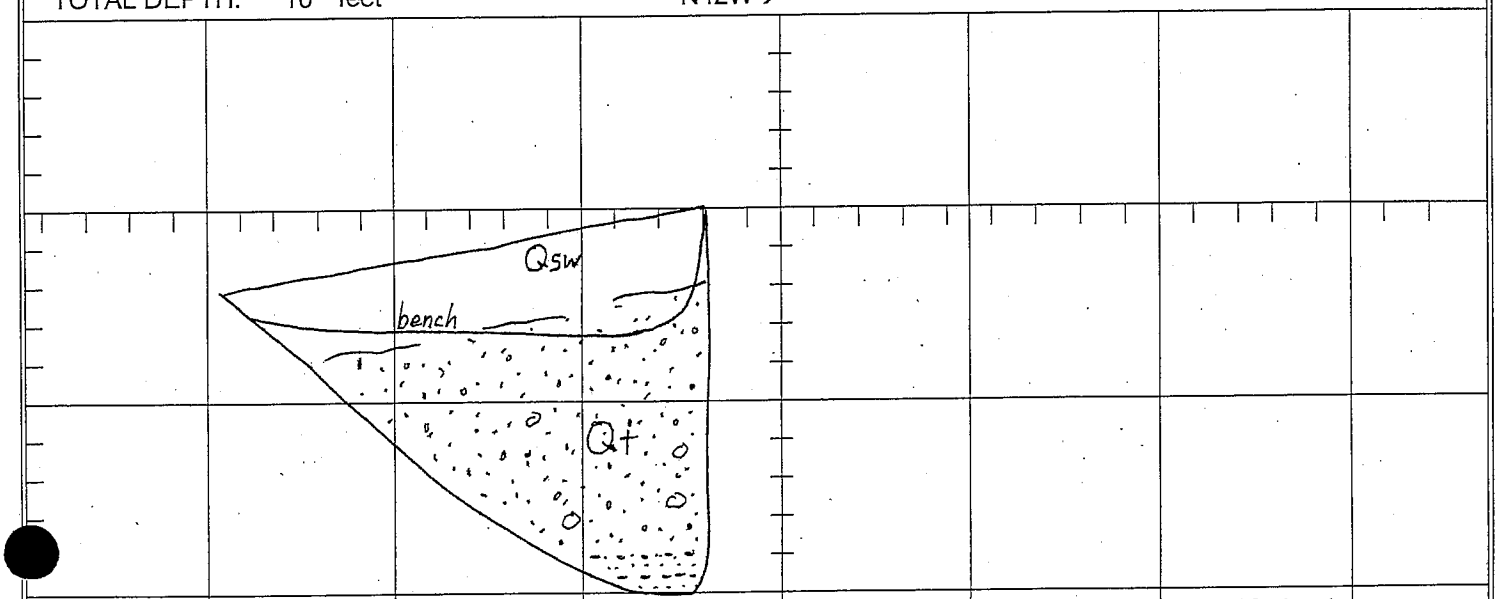


NO Caving
NO Groundwater

CLIENT: Hasley Canyon Land Company, L.L.C.	JOB NO: 03-1617-4	**TRENCH LOG**	
PROJECT: Hasley Canyon Golf Course TT 52584	DATE: 4/16/03	**NO.** T-259	
	LOGGED BY: MJD		
	EXCAVATED: 2/19/03		
EXCAVATION METHOD: Trackhoe	ELEVATION:		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SP-SM	**SOIL/SLOPEWASH; Qsw, (0-2 ft.)** @ 0' Poorly graded sand with silt and gravel; loose; moist; medium-brown; roots and voids				
				SP	**QUATERNARY TERRACE; Qt, (2-10 ft.)** @ 2' Poorly graded sand with gravel; loose to medium dense; moist to damp; yellowish-brown; roots and voids to 9 ft.; pinhole voids; scattered cobbles; massive to 9 ft.; moderately well-bedded 9-10 ft.				
5									
10					COMMENTS: -Highly weathered to 9 ft. -10 ft. recommended removal				
20									

TOTAL DEPTH: 10 feet N42W→ SCALE: 1 inch = 5 feet



NO Caving
NO Groundwater

Appendix B

APPENDIX B

GEOTECHNICAL LABORATORY INVESTIGATION

1. General

a. The purpose of the laboratory investigation was to further evaluate the geotechnical engineering characteristics of the more laterally significant alluvial and terrace deposits in areas of relatively deep (>30 ft.) proposed fill for the support of structures. The laboratory tests performed for this report supplement our existing database. The investigation program was carried out employing, whenever practical, currently accepted test procedures of the American Society Testing and Materials (ASTM).

b. Relatively undisturbed ring samples were obtained during the course of the field investigation. Laboratory sample identification is by project name and number, trench number and depth.

c. Geotechnical laboratory testing is classified in two major subgroups:
   - Index Properties Tests, and
   - Geotechnical Engineering Properties Tests

2. Index Properties Tests

The following Index Properties test were performed on native soils collected during the field exploration.

TEST TYPE	NO. OF TESTS PERFORMED	TESTING STANDARD
Moisture Content & Unit Weight	6	ASTM D 2216 (Water Content)

The purpose of the test is briefly described below.

a. The in-situ water content and dry unit weight of soils provided an indication of their strength before additional testing was performed. Test results are presented on the Trench Logs within **Appendix A**.

APPENDIX B

3. Geotechnical Engineering Properties Tests

The following Geotechnical Engineering Property Tests were performed on relatively undisturbed ring samples collected at this site.

Test Type	TEST NO.	TESTING STANDARD
Consolidation	6	ASTM D 2435

The purpose of the test is briefly described below.

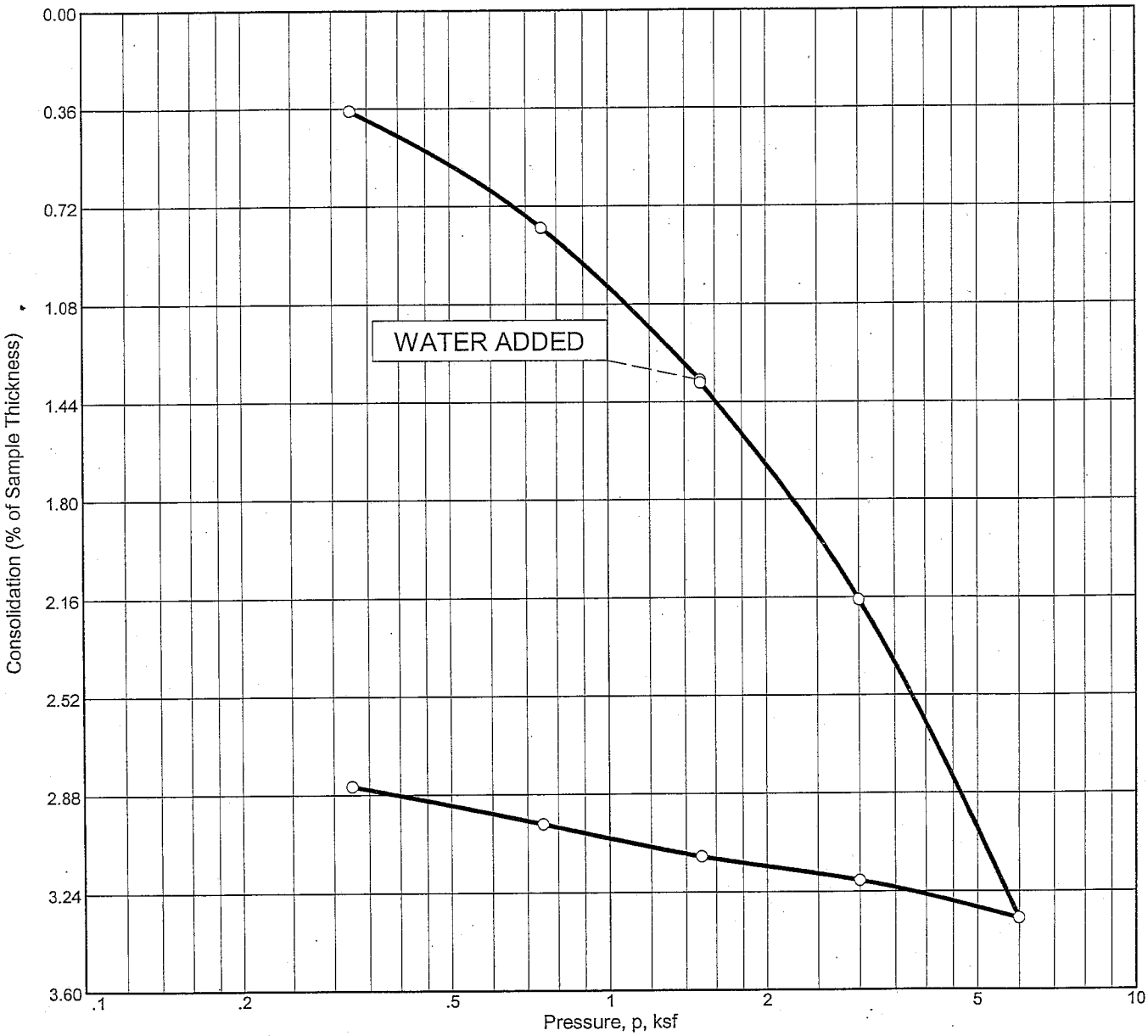
a. One-dimensional consolidation tests were performed on selected ring samples to assess the soils compressibility characteristics by subjecting the specimens to loads ranging from 325 psf to 6,000 psf, and with the addition of water at loads near the overburden pressure. Tests results are plotted on **Figures B3.1 through B3.6** within this **Appendix.**

The following attachments complete this Appendix

LABORATORY TEST RESULTS

- Consolidation Test Reports Figures B3.1 thru B3.6

CONSOLIDATION TEST REPORT



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	113.4	5.2	30.3	1.000	0.459	2.65	0.06	0.72	1.62	
FINAL	116.7	13.6	86.3	0.971	0.417					

Source: T-243 **Elev./Depth:** 6
Material Description: Poorly graded sand with gravel and cobbles
Remarks: QUATERNARY ALLUVIUM

ALLAN E. SEWARD	**Client:** Hasley Canyon Land Company, L.L.C.
	Project: Hasley Canyon Golf Course TT 52584
ENGINEERING GEOLOGY, INC.	**Job No.:** 03-1617-4 **Figure** B3.1

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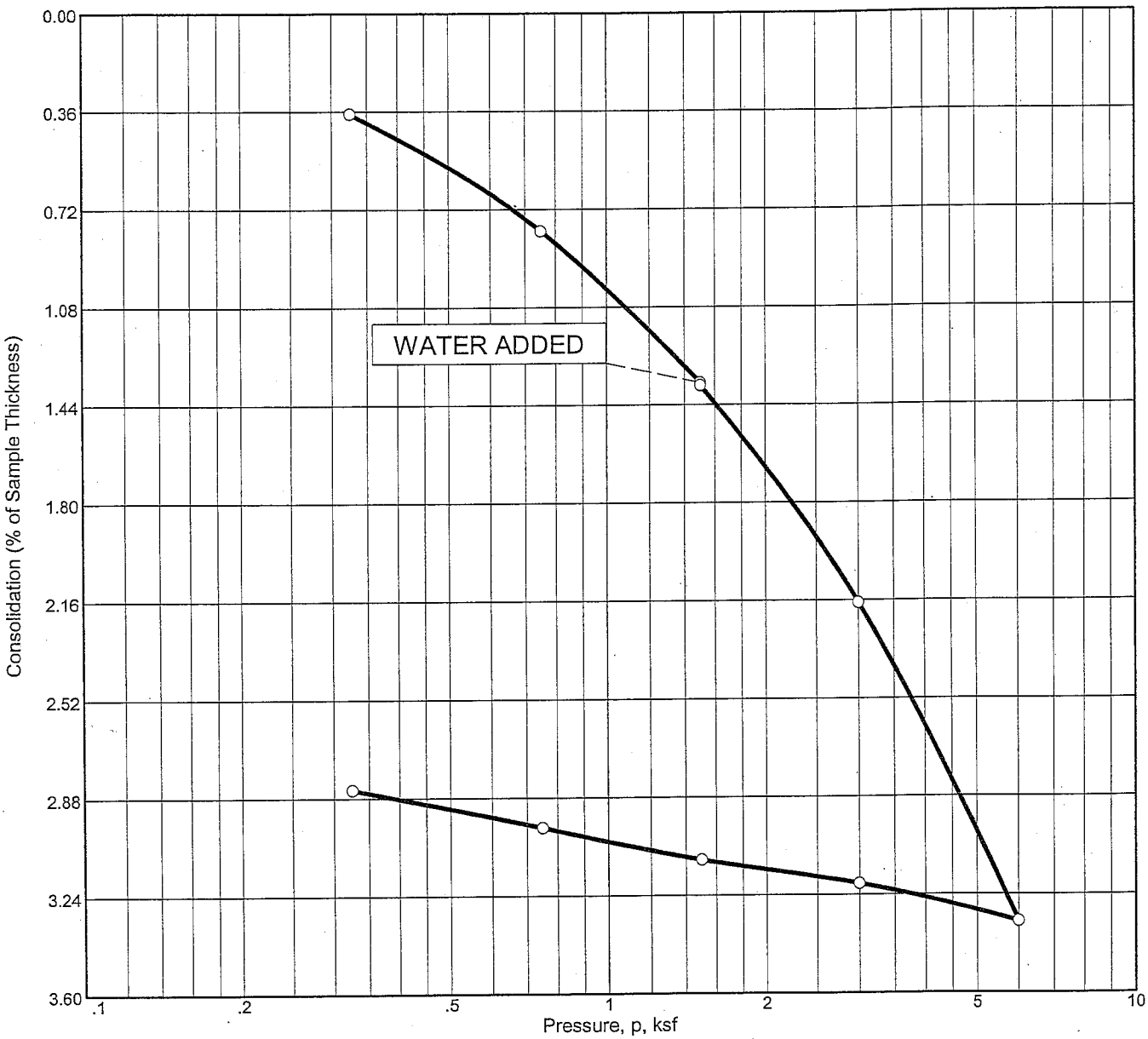
CONSOLIDATION TEST REPORT



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	113.4	5.2	30.3	1.000	0.459	2.65	0.06	0.72	1.62	
FINAL	116.7	13.6	86.3	0.971	0.417					

Source: T-243 **Elev./Depth:** 12
Material Description: Poorly graded sand with gravel and cobbles
Remarks: QUATERNARY ALLUVIUM

ALLAN E. SEWARD **ENGINEERING GEOLOGY, INC.**	**Client:** Hasley Canyon Land Company, L.L.C. **Project:** Hasley Canyon Golf Course TT 52584 **Job No.:** 03-1617-4 **Figure** B3.2

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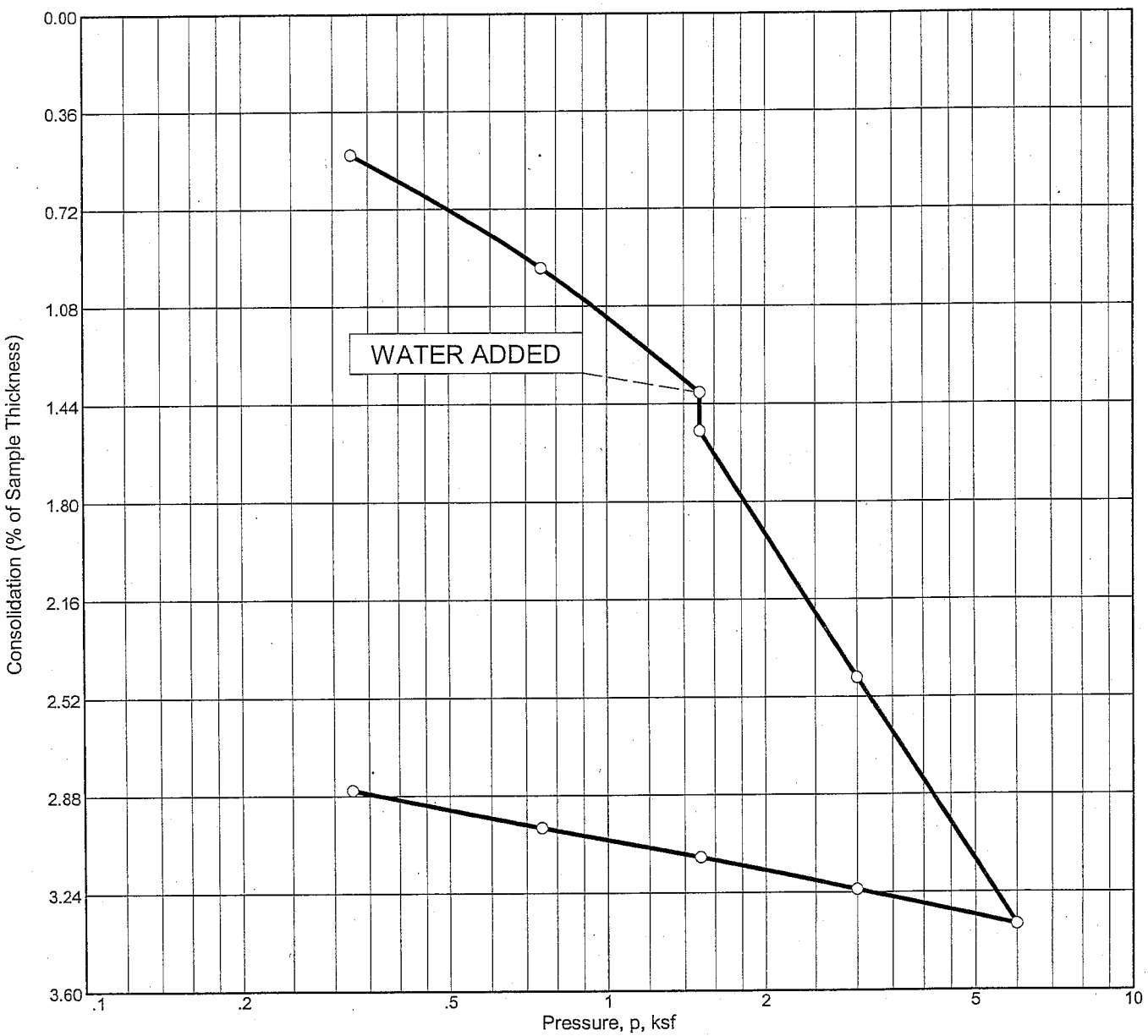
CONSOLIDATION TEST REPORT



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	108.1	4.1	20.4	1.000	0.531	2.65	0.05	0.72	1.02	
FINAL	111.3	15.6	85.1	0.971	0.487					

Source: T-247
Material Description: Poorly graded sand with gravel
Remarks: QUATERNARY ALLUVIUM

Elev./Depth: 6

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Figure B3.3

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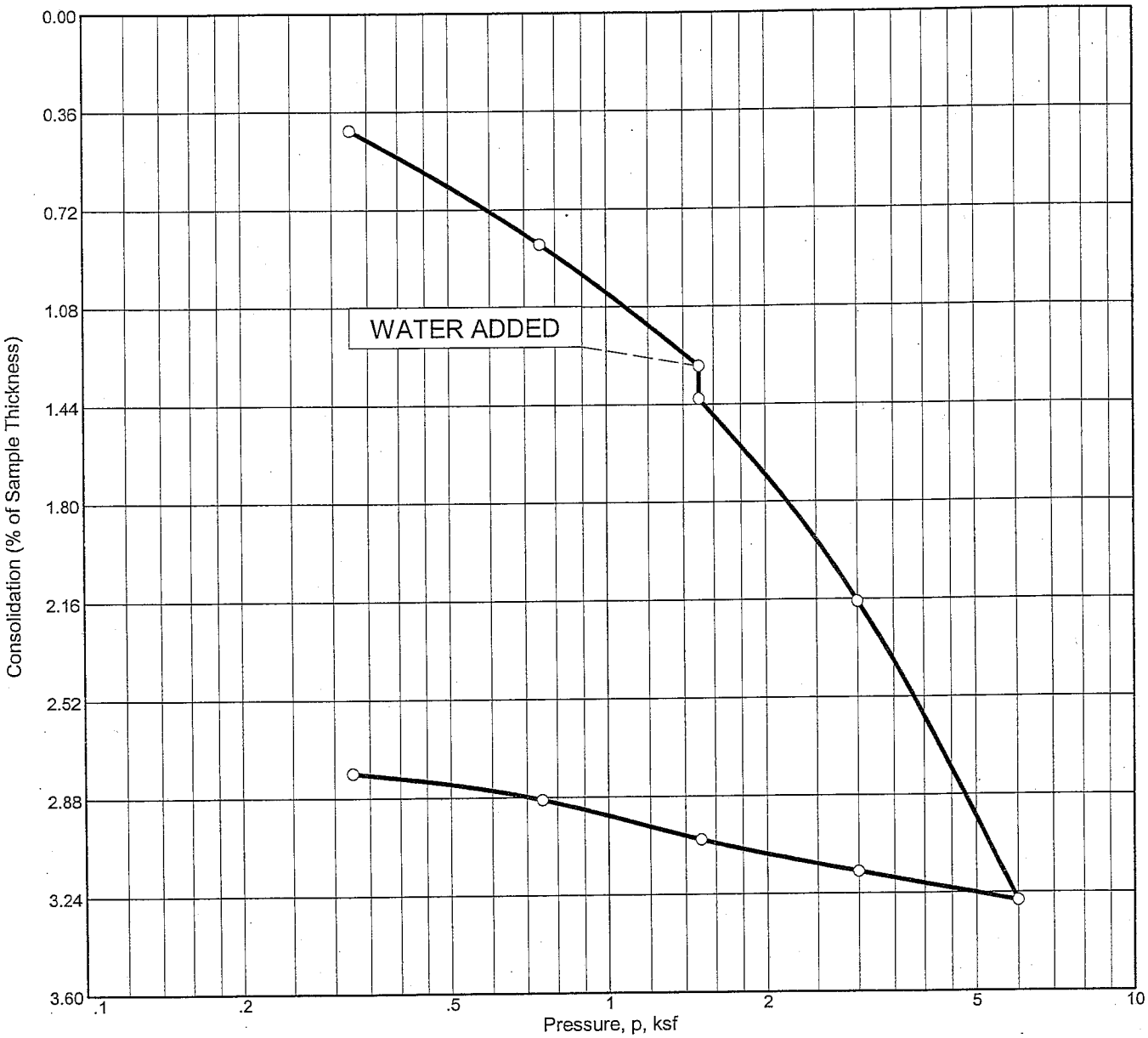
CONSOLIDATION TEST REPORT



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SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	113.7	6.4	37.2	1.000	0.454	2.65	0.05	1.44	3.14	
FINAL	117.0	12.9	82.4	0.972	0.414					

Source: T-247
Material Description: Poorly graded sand with gravel
Remarks: QUATERNARY ALLUVIUM

Elev./Depth: 12

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TT 52584
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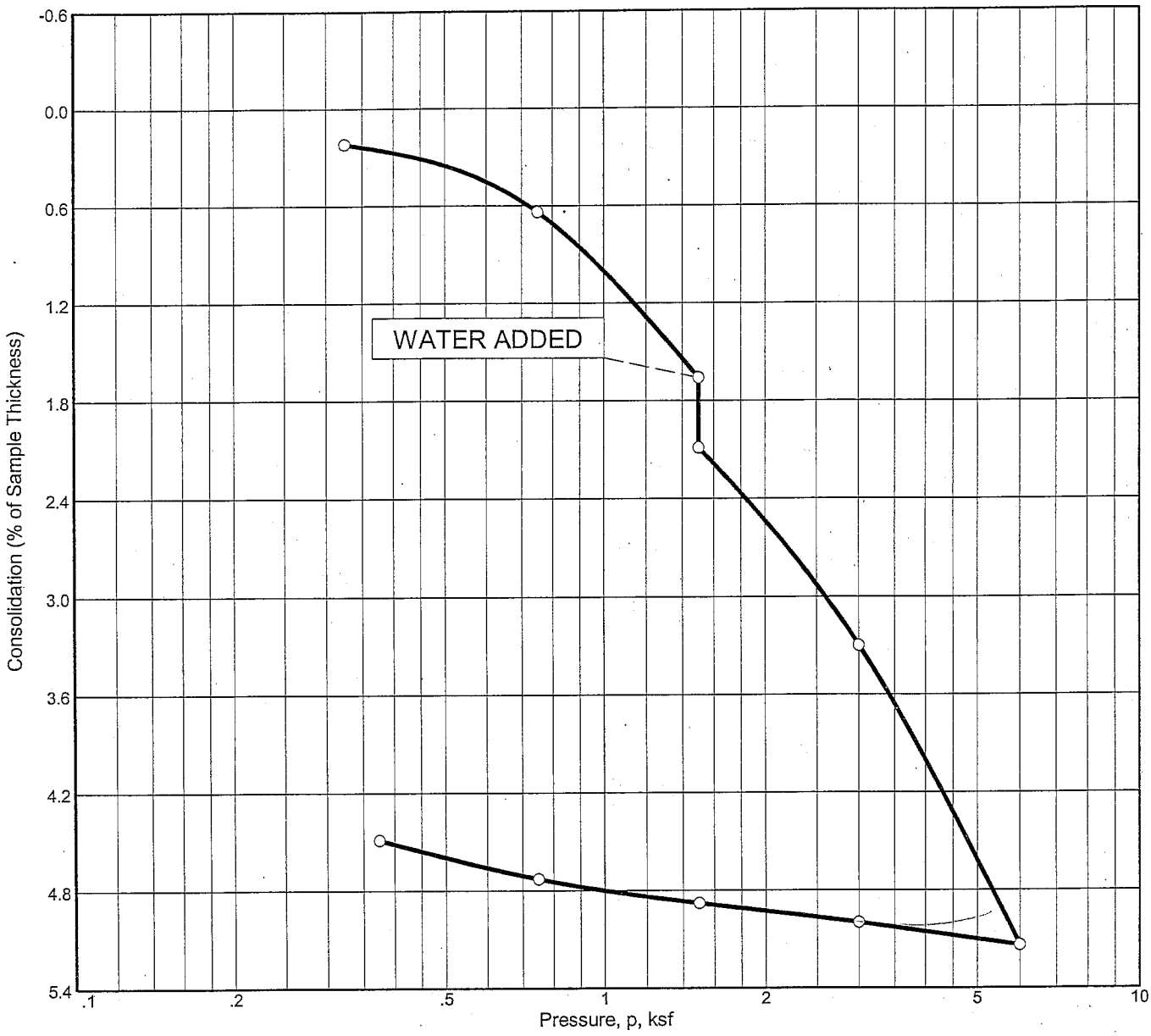
Figure B3.4

CONSOLIDATION TEST REPORT



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DATE

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	115.9	3.5	21.8	1.000	0.427	2.65	0.09	0.96	1.28	
FINAL	121.4	4.8	35.3	0.955	0.363					

Source: T-248 **Elev./Depth:** 8
Material Description: Poorly graded sand with gravel
Remarks: QUATERNARY TERRACE

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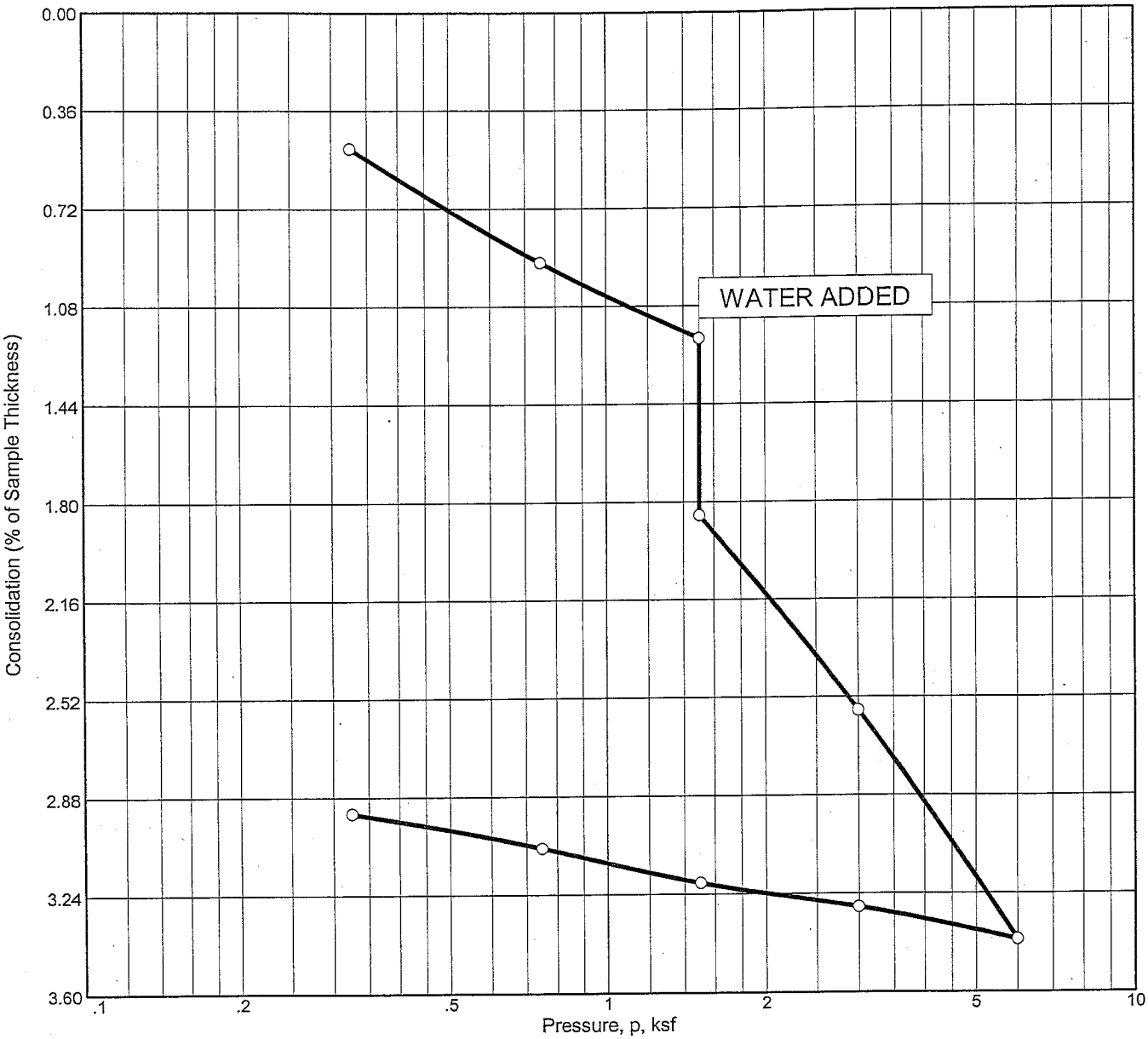
Project: Hasley Canyon Golf Course
TT 52584
Job No.: 03-1617-4 **Figure** B3.5

CONSOLIDATION TEST REPORT



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SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	109.8	3.3	17.0	1.000	0.506	2.65	0.04	0.96	3.07	
FINAL	113.2	14.0	80.3	0.971	0.462					

Source: T-249
Material Description: Poorly graded sand with gravel
Remarks: QUATERNARY ALLUVIUM

Elev./Depth: 8

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Job No.: 03-1617-4

Figure B3.6

Appendix C

APPENDIX C

SLOPE STABILITY ANALYSES

Introduction

Table C1 summarizes the results of state-of-the-practice computerized static and pseudo-static (i.e. with a statically-simulated seismic load) stability analyses performed on critical cross sections of cut-slopes, fill slopes and natural slopes for the currently proposed development of the Amended Vesting Tentative Tract 52584. The total number of stability calculation runs presented in this report are eighty-one. Based upon the results from the analyses, factors of safety for gross stability comply with County of Los Angeles minimum factors of safety except for Revised Cross Section 7-7′ and new Cross Sections I-I′, K-K′ and M-M′.

Remedial Measures

Slope conditions illustrated on Cross Sections 7-7′, I-I′, K-K′ and M-M′ did not meet required minimum factors of safety as designed per Amended Vesting Tentative Tract map 52584. The remedial measures for each is discussed briefly below and shown on the respective cross sections with a dash dot dot line type:

Cross Section 7-7′ – Existing cut-slope ECS-1 required a 120 ft. wide horizontal bench cut at the lowermost terrace bench of ECS-1 (~ el. 1230) and an ascending 3:1 cut that catches at proposed cut-slope CS-18. Remedial measures are shown on 7-7′, and need to be incorporated into the Amended Vesting Tentative Tract Map.

Cross Section I-I′ – Steep natural slope with a mantle of terrace deposits underlain by a daylighted component of bedding. Requires cutting of the ridge top to an elevation of 1600 as shown on I-I′ and the Geotechnical Map (**Plate IV**). Remedial measures need to be incorporated into the Amended Vesting Tentative Tract Map.

Cross Sections K-K′ and M-M′ – Very steep Natural Slopes require cutting back for stability. 3:1 (h:v) gradients are recommended to avoid terrace benches. Cross Sections K-K′ and M-M′ represent the most critical portion of their respective slope areas. The approximate limits of the areas requiring the 3:1 remedial cuts shown on these cross sections are shown on the Geotechnical Map (**Plate IV**) and need to be incorporated into the Amended Vesting Tentative Tract Map.

APPENDIX C

Analysis Approach and Sections Analyzed

The gross stability of the proposed cut, fill and natural slopes was evaluated. Slope cases representing the critical proposed grades and subsurface conditions were selected for stability analyses. Critical conditions for stability included potential adverse bedding, slope height, slope gradient, and/or anticipated future groundwater. Based on our analyses, the respective factors of safety for gross slope stability, presented in **Table C1,** are the lowest values obtained.

Geometry and Groundwater

As shown on the respective cross sections, the analyzed geometries of cut slopes included removal of bedrock, terrace deposits and landslide materials and adding certified compacted fill to achieve the proposed grades, as needed on portions of the slopes. Analyses included cross-bedding and potential adverse bedding with dips ranging from neutral to 32 degrees depending on geologic data obtained near each cross section.

Review of groundwater data in the vicinity and exploratory trench and boring log data indicates that the proposed cut-slopes in bedrock are above historic high groundwater levels and no perched groundwater was observed within the bedrock on hillsides or within our exploratory borings and trenches in bedrock. However, due to the future landscaping and irrigation associated with the proposed development along with the proposed golf course, groundwater was modeled on all interior slopes located in close proximity to or down gradient of a potential future water sources as shown on the analyzed cross sections. Backdrains are proposed for all Stability Fills.

Shear Strength Parameters

The shear strength parameters utilized in the slope stability analyses are the same as the values presented and utilized in our March 31, 2000 report and are shown in Section 6.1 of this report.

VTT 52584 - HASLEY CANYON
SLOPE STABILITY ANALYSES RESULTS[1] (REVISED)

Slope Designation	File Name	Cross Section	Analyzed Plane	Method	Factor of Safety		Mitigation/Comments	Run No.
					Static	Pseudostatic[1] (Coeff=0.15)		
ECS-1	HASL7E11	7-7′	Slide plane	Janbu	1.02[2]		Existing cut slope ECS-1 does not meet minimum factor of safety requirements (see mitigation measure below)	1
ECS-1	HASL7E21	7-7′	Mitigation measure for above analysis (entire slope)	Janbu	1.74		Stabilization consists of a 120′ wide bench at the lowermost terrace bench of ECS-1 at an elevation of approximately 1230 and a 3:1 ascending cut that catches at proposed cut-slope CS-18 as shown on 7-7′	2
ECS-1	HASLPS11	7-7′	Pseudostatic analysis	Janbu		2.34	Used peak shear strength in this analysis.	3
Remedial 3:1 cut-slope	HASL7E22	7-7′	Slide mass above the 120′ wide bench, bedding plane search	Janbu	3.01		Upper slope, bedding plane search in 3:1 cut that catches at CS-18	4
Remedial 3:1 cut-slope	HASL7E23	7-7′	Slide mass above the 120′ wide bench, circular search	Bishop	3.05		Upper slope, circular analysis in 3:1 cut that catches at CS-18	5

[1] Peak shear strength values were not utilized except where noted.
[2] See mitigation measure.

VTT 52584 - HASLEY CANYON
SLOPE STABILITY ANALYSES RESULTS[1] (REVISED)

Slope Designation	File Name	Cross Section	Analyzed Plane	Method	Factor of Safety		Mitigation/Comments	Run No.
					Static	Pseudostatic[1] (Coeff=0.15)		
CS-30	HC17S10	17-17′	Bedding Plane Search	Janbu	2.38		Bedding plane search below proposed cut-slope CS-30 (Revised to remove Qls-1, Qls-2 and Qal removal) Pseudostatic analysis is not critical and not performed.	6
CS-30	HC17S11	17-17′	Bedding plane search (Deeper search)	Janbu	3.67		Pseudostatic analysis is not critical and not performed.	7
Natural Slope		27-27′	Not analyzed				Section L-L′ is more critical. See Section L-L′ and analysis	n/a
Natural slope		28-28′	Not analyzed				Section L-L′ is more critical. See Section L-L′	n/a
CS-11	T30S1A	30-30′	Silty claystone bed located 60 ft. below the toe of **2:1** CS-11	Janbu	1.65		Critical surface	8
CS-11	T30PS1A	30-30′		Janbu		1.14	Pseudostatic analysis[1]	9
CS-11	T30S2A	30-30′	Search in TQs below upper toe and above silty claystone bed	Janbu	2.71		Pseudostatic analysis is not critical and not performed	10

[1] Peak shear strength values were not utilized except where noted.
[2] See mitigation measure.

VTT 52584 - HASLEY CANYON
SLOPE STABILITY ANALYSES RESULTS[1] (REVISED)

Slope Designation	File Name	Cross Section	Analyzed Plane	Method	Factor of Safety		Mitigation/Comments	Run No.
					Static	Pseudostatic[1] (Coeff=0.15)		
CS-11	T30S3A	30-30′	Search above upper toe in TQs (lower area)	Janbu	3.35		Pseudostatic analysis is not critical and not performed.	11
CS-30	T31S1	31-31′	Silty clay stone bed	Janbu	3.20		Upper clay bed is not critical and not analyzed. Pseudostatic is not critical and not performed.	12
Natural slope	HAS34S10	34-34′	Circular search	Bishop	2.41		Pseudostatic is not critical and not performed	13
Natural Slope with Qt	T37S1	37-37′	Bedding plane search	Janbu	2.12		Analyzed 29° bedding plane below Qt	14
Natural Slope with Qt	T37PS10	37-37′	Bedding plane search	Janbu		1.55	Pseudostatic analysis[1].	15
Natural slope with Qt	T37S12	37-37′	Bedding plane search (deeper search)	Janbu	2.32		Pseudostatic analysis is not critical and not performed	16
Natural slope with Qt	T37S20	37-37′	Circular search	Janbu	2.62		Circular search in Qt pseudostatic analysis is not critical and not performed	17
CS-12	HC40S1	40-40′	Bedding Plane Search	Janbu	1.69		3:1 Cut-slope at syncline axis	18

[1] Peak shear strength values were not utilized except where noted.
[2] See mitigation measure

VTT 52584 - HASLEY CANYON
SLOPE STABILITY ANALYSES RESULTS[1] (REVISED)

Slope Designation	File Name	Cross Section	Analyzed Plane	Method	Factor of Safety		Mitigation/Comments	Run No.
					Static	Pseudostatic[1] (Coeff=0.15)		
CS-12	HC40PS1	40-40′	Bedding plane search	Janbu		1.14	Pseudostatic analysis[1]	19
CS-10	HC41S2	41-41′	Bedding Plane Search	Janbu	3.36		Pseudostatic analysis not performed.	20
CS-33	HA42S10	42-42′	Circular search	Bishop	4.02		Bedding plane analysis is not critical.	21
CS-2	HC47S10	47-47′	Bedding Plane Search	Janbu	2.21		Pseudostatic analysis is not critical and not performed	22
ECS-2	HC50S11	50-50′	Bedding Plane Search	Janbu	2.16		Pseudostatic analysis is not critical and not performed.	23
CS-28	HC53S1	53-53′	Bedding Plane Search	Janbu	1.67		Critical surface	24
CS-28	HC53PS1	53-53′	Bedding plane search	Janbu		1.21	Pseudostatic analysis[1]	25
CS-28	HC53S12	53-53′	Bedding plane search (Deeper search)	Janbu	2.12		Pseudostatic is not critical and not performed	26
CS-34		54-54′	Not analyzed				Not critical and not analyzed	n/a
Fill Slope	HC55S1A	55-55′	Circular search	Janbu	1.72		Analyzed critical fill slope (highest 2:1)	27

[1] Peak shear strength values were not utilized except where noted.
[2] See mitigation measure

VTT 52584 - HASLEY CANYON
SLOPE STABILITY ANALYSES RESULTS[1] (REVISED)

Slope Designation	File Name	Cross Section	Analyzed Plane	Method	Factor of Safety		Mitigation/Comments	Run No.
					Static	Pseudostatic[1] (Coeff=0.15)		
Fill Slope	HC55PS1	55-55′	Circular search	Janbu		1.21	Pseudostatic analysis[1]	28
CS-30	HC56S10A	56-56′	Bedding plane search	Janbu	2.37		Pseudostatic analysis is not critical and not performed	29
CS-30	HC56S11A	56-56′	Bedding plane search (Deeper search)	Janbu	2.48		Pseudostatic analysis is not critical and not performed	30
CS-30	T56S310A	56-56′	Circular search	Bishop	3.76		Analyzed horizontal Qt deposits	31
Natural Slope	HC57S3	57-57′	Bedding plane at lower clay bed	Janbu	2.55		Upper silty clay stone is not critical and not analyzed.	32
CS-5	TAS1	A-A′	Bedding plane search	Janbu	2.21		Pseudostatic is not critical and not performed	33
CS-5	TAS11	A-A′	Bedding plane search (Deeper search)	Janbu	2.29		Pseudostatic is not critical and not performed	34
Natural slope	TBBS12	B-B′	Bedding plane search	Janbu	1.76		Critical surface	35
Natural slope	TBBPS12	B-B′	Bedding plane search	Janbu		1.22	Pseudostatic analysis[1]	36

[1] Peak shear strength values were not utilized except where noted.
[2] See mitigation measure

VTT 52584 - HASLEY CANYON
SLOPE STABILITY ANALYSES RESULTS[1] (REVISED)

Slope Designation	File Name	Cross Section	Analyzed Plane	Method	Factor of Safety		Mitigation/Comments	Run No.
					Static	Pseudostatic[1] (Coeff=0.15)		
Natural slope	TBBS14	B-B′	Bedding plane search (Deeper search)	Janbu	2.06		Not critical	37
Natural slope	TBBS10	B-B′	Bedding plane search (Shallower search)	Janbu	1.96		Not critical	38
Natural slope	TBBS40	B-B′	Bedding plane search (Upper slope area)	Janbu	2.75		Pseudostatic is not critical and not performed	39
Natural slope	TBBS50	B-B′	Circular search	Janbu	2.52		Circular search, pseudostatic is not critical	40
CS-6 and Natural slope	TCCS10	C-C′	Bedding plane search	Janbu	1.55		Critical surface	41
CS-6 and Natural slope	TCCPS10	C-C′	Bedding plane search	Janbu		1.11	Pseudostatic analysis[1]	42
CS-6 and Natural slope	TCCS14	C-C′	Bedding plane search (Deeper search)	Janbu	1.58		Pseudostatic is not critical compare to Run No. 41	43
CS-6 and Natural slope	TCCS18	C-C′	Bedding plane search (Shallower search)	Janbu	1.63		Pseudostatic is not critical compare to Run No. 41	44

[1] Peak shear strength values were not utilized except where noted.
[2] See mitigation measure

VTT 52584 - HASLEY CANYON
SLOPE STABILITY ANALYSES RESULTS[1] (REVISED)

Slope Designation	File Name	Cross Section	Analyzed Plane	Method	Factor of Safety		Mitigation/Comments	Run No.
					Static	Pseudostatic[1] (Coeff=0.15)		
CS-6 and Natural slope	TCCS20	C-C'	Circular search	Janbu	2.36		Pseudostatic is not critical	45
CS-7	TDDS20	D-D′	Bedding plane search	Janbu	1.71		Critical surface	46
CS-7	TDDS21	D-D′	Bedding plane search	Janbu		1.27	Pseudostatic analysis[1]	47
CS-7	TDDS30	D-D′	Bedding plane search (deeper search)	Janbu	1.95		Pseudostatic analysis is not critical and not analyzed	48
CS-7	TDDS10	D-D′	Bedding plane search (Shallower search)	Janbu	1.75		Pseudostatic analysis is not critical and not analyzed	49
CS-7	TDDS10	D-D′	Circular search	Janbu	2.46		Pseudostatic analysis is not critical and not analyzed	50
Natural slope	TES1A	E-E′	Bedding plane search	Janbu	1.601.59		Critical surface	51
Natural slope	TEPS1A	E-E′	Bedding plane search	Janbu		1.16	Pseudostatic analysis[1]	52
Natural slope	TES2A	E-E′	Bedding plane search (Deeper search)	Janbu	2.49		Pseudostatic is not critical in compare to Run. No. 51	53
Natural slope	TES3A	E-E′	Circular search	Janbu	1.60		Pseudostatic analysis is not critical and not analyzed.	54

[1] Peak shear strength values were not utilized except where noted.
[2] See mitigation measure

VTT 52584 - HASLEY CANYON
SLOPE STABILITY ANALYSES RESULTS[1] (REVISED)

Slope Designation	File Name	Cross Section	Analyzed Plane	Method	Factor of Safety		Mitigation/Comments	Run No.
					Static	Pseudostatic[1] (Coeff=0.15)		
CS-8	TFFS2	F-F′	Bedding plane search	Janbu	1.83		3:1 cut slope, circular analysis is not critical and not analyzed	55
CS-8	TFFPS2	F-F′	Bedding plane search	Janbu		1.42	Pseudostatic analysis[1]	56
CS-8	TFFP	F-F′	Bedding plane search (Shallower search)	Janbu	3.41		Pseudostatic analysis is not critical and not analyzed	57
CS-25	TGGS10	G-G′	Bedding plane search	Janbu	1.97		Critical surface	58
CS-25	TGGSP10	G-G′	Bedding plane search	Janbu		1.41	Pseudostatic analysis[1]	59
CS-26	THS1	H-H′	Clay bed	Janbu	4.46		Analyzed along clay bed. Pseudostatic analysis is not critical and not performed	60
Natural slope	TIS1	I-I′	Bedding plane search	Janbu	1.37[2]		FS < 1.5, see mitigation measure below	61
Natural slope	TIIS90	I-I′	Bedding plane search	Janbu	1.57		Cut ridge to an elevation of 1600′	62
Natural slope	TIIPS91	I-I′	Bedding plane search	Janbu		1.12	Pseudostatic analysis[1]	63
Natural slope	TIIS92	I-I′	Circular search with ridge cut	Janbu	1.87		Pseudostatic analysis is not critical and not performed	64
CS-27	TJS10	J-J′	Bedding plane search	Janbu	1.82		Critical surface	65

[1] Peak shear strength values were not utilized except where noted.
[2] See mitigation measures.

VTT 52584 - HASLEY CANYON
SLOPE STABILITY ANALYSES RESULTS[1] (REVISED)

Slope Designation	File Name	Cross Section	Analyzed Plane	Method	Factor of Safety		Mitigation/Comments	Run No.
					Static	Pseudostatic[1] (Coeff=0.15)		
CS-27	TJPS10	J-J′	Bedding plane search	Janbu		1.35	Pseudostatic analysis[1]	66
CS-27	TJS20	J-J′	Bedding plane search (Deeper search)	Janbu	1.97		Pseudostatic analysis is not critical	67
CS-27	TJS30	J-J′	Bedding plane search (Shallower search)	Janbu	1.84		Pseudostatic analyses is not critical	68
Natural slope	TKS1	K-K′	Circular search	Janbu	1.42[2]		F.S. < 1.5, see mitigation measure below	69
Natural slope	TKS30	K-K′	Circular search with 3:1 cut	Janbu	2.05		Trim over steepend ridge back to 3:1 (H:V) as shown on K-K′ (Run 70 is preferred to Run 71 mitigation) Pseudostatic analysis is not critical.	70
Natural slope	TKS30	K-K′	Circular search with flat cut at el. 1600 (Upper steep slope)	Janbu	2.08		Top of ridge trimmed nearly flat to an elevation of approximately 1600. Pseudostatic analysis is not critical and not performed. Bedding plane is not critical and not analyzed.	71

[1] Peak shear strength values were not utilized except where noted.
[2] See mitigation measures.

VTT 52584 - HASLEY CANYON
SLOPE STABILITY ANALYSES RESULTS[1] (REVISED)

Slope Designation	File Name	Cross Section	Analyzed Plane	Method	Factor of Safety		Mitigation/Comments	Run No.
					Static	Pseudostatic[1] (Coeff=0.15)		
Natural slope	TLS1A	L-L′	TQs search	Janbu	2.10		Pseudostatic analysis is not critical and based on subsurface exploration no silty claystone or clay beds modeled in analysis. L-L′ considered more critical than 27-27′ and 28-28′ (higher and steeper). 27-27′ and 28-28′ are underlain by same sandy bedrock per borings BA-5, BA-8 and BA-10.	72
Natural slope	TLS2A	L-L′	TQs search (Deeper search)	Janbu	2.33		Not critical	73
Natural slope	TLS4A	L-L′	Circular search	Janbu	2.04		Critical surface. Pseudostatic analysis is not critical and not performed	74
Natural slope	TMMS20	M-M′	Circular search upper slope	Janbu	1.32[2]		FS<1.5, see mitigation measure below	75
Natural slope	TMMS50	M-M′	Upper slope with 3:1 cut circular search	Janbu	2.23		Trim upper steeper slope to a 3:1 (H:V) gradient pseudostatic analysis not critical and not performed	76
Natural slope	TNS1	N-N′	Bedding plane search	Janbu	1.65		Critical surface	77
Natural slope	TNPS1	N-N′	Bedding plane search	Janbu		1.27	Pseudostatic analysis[1]	78

[1] Peak shear strength values were not utilized except where noted.
[2] See mitigation measures.

VTT 52584 - HASLEY CANYON
SLOPE STABILITY ANALYSES RESULTS[1] (REVISED)

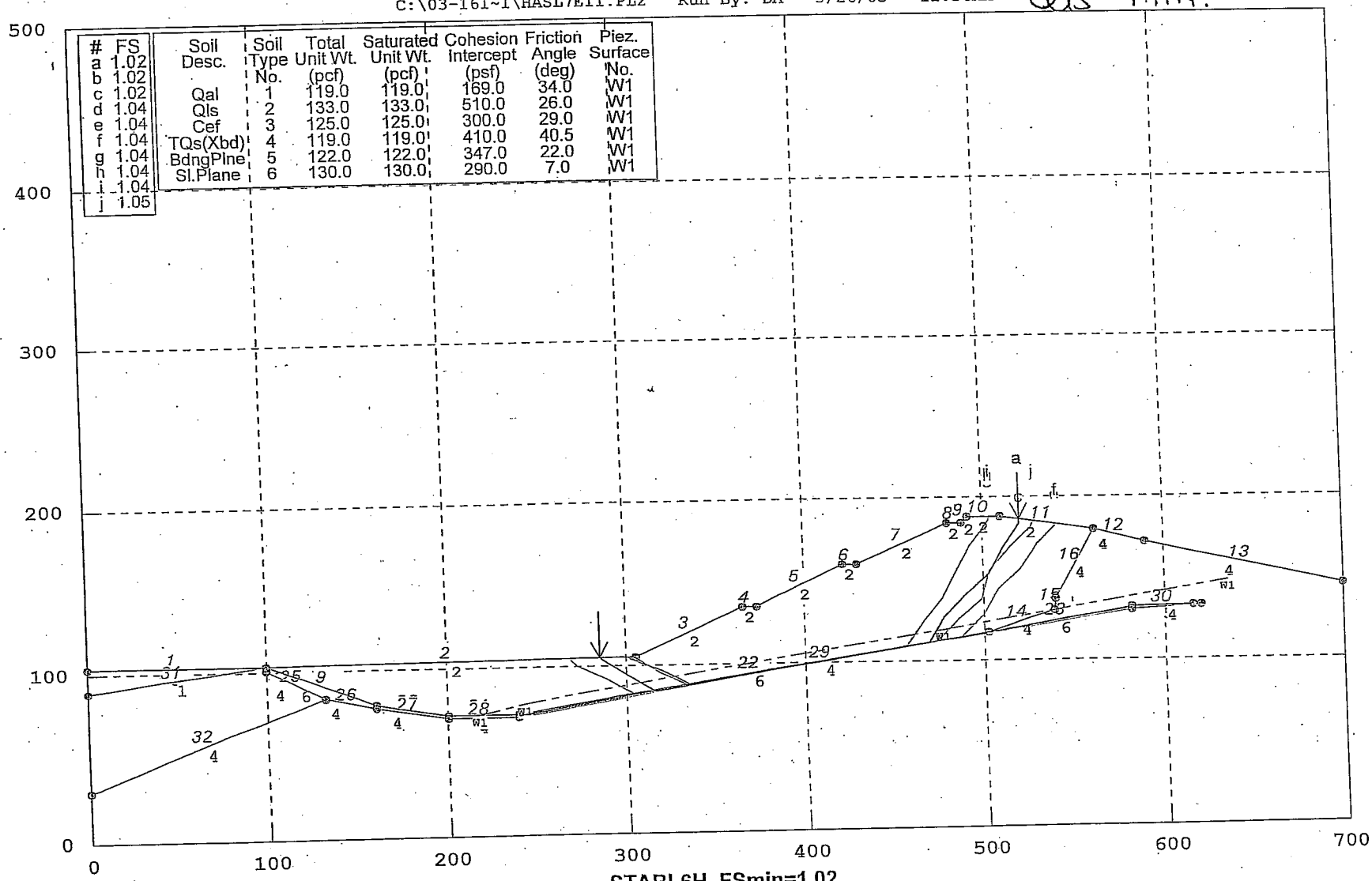
Slope Designation	File Name	Cross Section	Analyzed Plane	Method	Factor of Safety		Mitigation/Comments	Run No.
					Static	Pseudostatic[1] (Coeff=0.15)		
Natural slope	TNS40	N-N′	Bedding plane search (Shallower search)	Janbu	1.88		Pseudostatic analysis is not critical and not performed	79
Natural slope	TNS20	N-N′	Bedding plane search (Deeper search)	Janbu	1.75		Pseudostatic analysis is not critical and not performed	80
Natural slope	TOS1A	O-O′	Circular search	Bishop	2.22		Pseudostatic analysis is not critical and not performed	81

T52584-Hasley Cyn-Sec.7-7'Existing Cut Slope-Static (existing condition)

C:\03-161~1\HASL7E11.PL2 Run By: DA 3/26/03 11:36AM Qls MIN.

#	FS
a	1.02
b	1.02
c	1.02
d	1.04
e	1.04
f	1.04
g	1.04
h	1.04
i	1.04
j	1.05

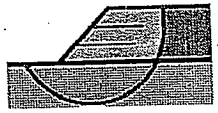
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qal	1	119.0	119.0	169.0	34.0	W1
Qls	2	133.0	133.0	510.0	26.0	W1
Cef	3	125.0	125.0	300.0	29.0	W1
TQs(Xbd)	4	119.0	119.0	410.0	40.5	W1
BdngPlne	5	122.0	122.0	347.0	22.0	W1
Sl.Plane	6	130.0	130.0	290.0	7.0	W1



STABL6H FSmin=1.02

Safety Factors Are Calculated By The Modified Janbu Method

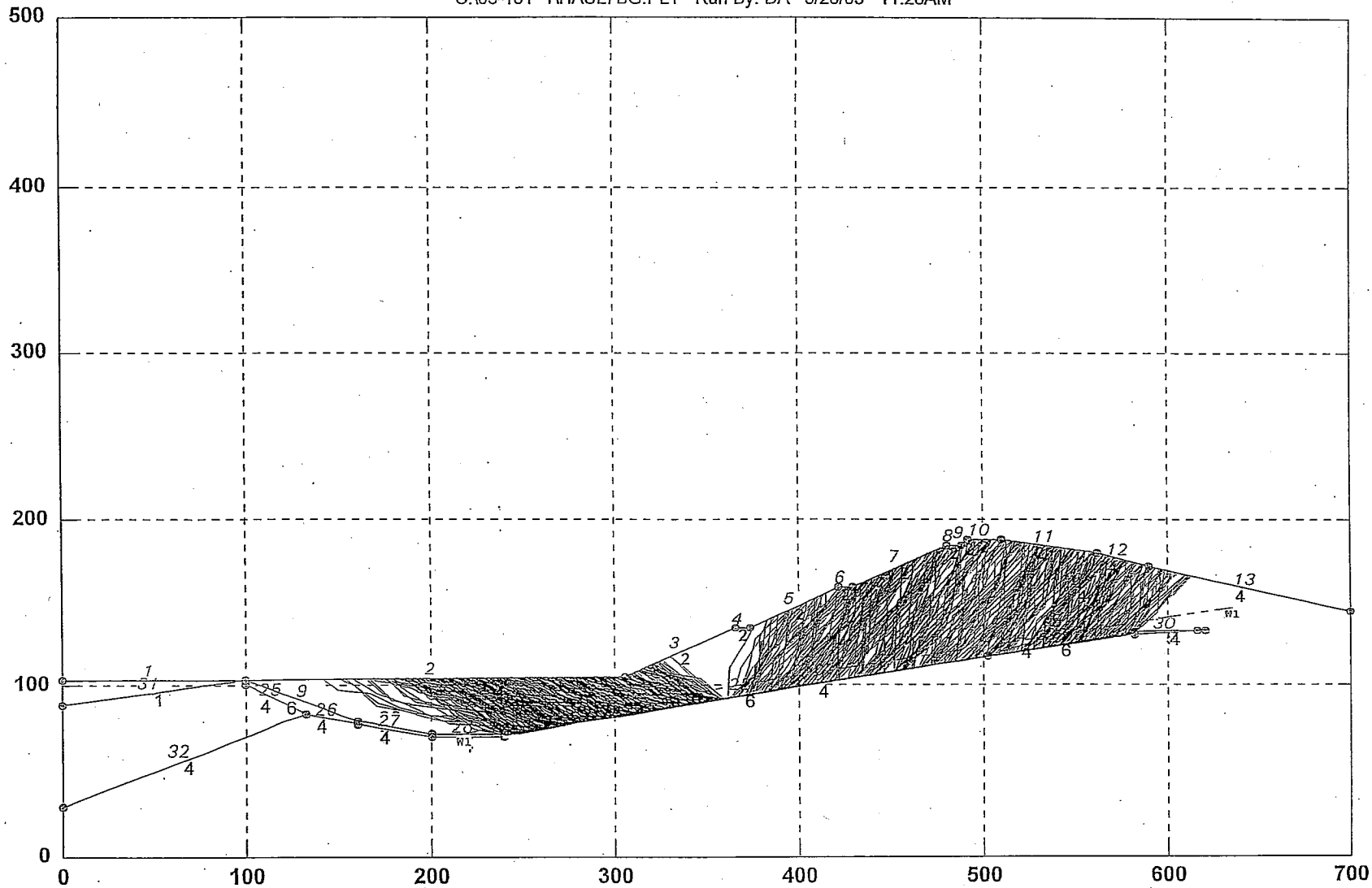
STED



RUN NO. 1

T52584-Hasley Cyn-Sec.7-7'existing cut existing cut slope-Static

C:\03-161~1\HASL7BG.PLT Run By: DA 3/26/03 11:28AM



STED

** STABL6H **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/26/03
Time of Run: 11:36AM
Run By: DA
Input Data Filename: C:HASL7E11.IN
Output Filename: C:HASL7E11.OUT
Plotted Output Filename: C:HASL7E11.PLT
PROBLEM DESCRIPTION T52584-Hasley Cyn-Sec.7-7'Existing Cut Slope-Static (existing condition)

BOUNDARY COORDINATES
13 Top Boundaries
32 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	103.00	100.00	103.00	3
2	100.00	103.00	305.00	105.00	2
3	305.00	105.00	366.00	135.00	2
4	366.00	135.00	374.00	135.00	2
5	374.00	135.00	422.00	160.00	2
6	422.00	160.00	430.00	160.00	2
7	430.00	160.00	480.00	185.00	2
8	480.00	185.00	488.00	185.00	2
9	488.00	185.00	492.00	188.00	2
10	492.00	188.00	510.00	188.00	2
11	510.00	188.00	562.00	180.00	2
12	562.00	180.00	590.00	172.00	4
13	590.00	172.00	700.00	145.00	4
14	502.00	117.00	539.00	130.00	4
15	539.00	130.00	539.50	137.00	4
16	539.50	137.00	562.00	180.00	4
17	502.00	117.00	582.00	132.00	5
18	582.00	132.00	616.00	133.00	5
19	100.00	103.00	160.00	79.00	6
20	160.00	79.00	200.00	72.00	6
21	200.00	72.00	240.00	72.00	6
22	240.00	72.00	502.00	117.00	6
23	502.00	117.00	582.00	132.00	6
24	582.00	132.00	620.00	133.00	6
25	100.00	101.00	132.00	83.00	4
26	132.00	83.00	160.00	77.00	4
27	160.00	77.00	200.00	70.00	4
28	200.00	70.00	240.00	70.00	4
29	240.00	70.00	582.00	130.00	4
30	582.00	130.00	620.00	133.00	4
31	.00	88.00	100.00	103.00	1
32	.00	30.00	132.00	83.00	4

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	119.0	119.0	169.0	34.0	.00	.0	1
2	133.0	133.0	510.0	26.0	.00	.0	1
3	125.0	125.0	300.0	29.0	.00	.0	1
4	119.0	119.0	410.0	40.5	.00	.0	1
5	122.0	122.0	347.0	22.0	.00	.0	1
6	130.0	130.0	290.0	7.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 4 Coordinate Points

Point	X-Water	Y-Water

No.	(ft)	(ft)
1	218.00	72.00
2	243.00	78.00
3	477.00	119.00
4	635.00	148.00

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

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 18.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	240.00	71.00	360.00	92.10	.00
2	361.00	92.20	582.00	131.00	.00

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

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

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	285.24	104.81
2	286.12	104.09
3	300.62	93.43
4	316.19	84.40
5	469.27	111.21
6	477.58	127.18
7	490.27	139.95
8	502.86	152.81
9	510.71	169.01
10	520.55	184.08
11	521.05	186.30

*** 1.017 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	285.24	104.81
2	286.12	104.09
3	300.62	93.43
4	316.19	84.40
5	469.27	111.21
6	477.58	127.18
7	490.27	139.95
8	502.86	152.81
9	510.71	169.01
10	520.55	184.08
11	521.05	186.30

*** 1.017 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	285.24	104.81
2	286.12	104.09
3	300.62	93.43
4	316.19	84.40
5	469.27	111.21
6	477.58	127.18
7	490.27	139.95
8	502.86	152.81
9	510.71	169.01
10	520.55	184.08
11	521.05	186.30

*** 1.017 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	267.74	104.64
2	273.37	100.13
3	289.16	91.49
4	304.68	82.37
5	487.35	114.38
6	499.42	127.74
7	508.32	143.38
8	521.05	156.11
9	530.58	171.38
10	540.49	183.31

*** 1.042 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	267.74	104.64
2	273.37	100.13
3	289.16	91.49
4	304.68	82.37
5	487.35	114.38
6	499.42	127.74
7	508.32	143.38
8	521.05	156.11
9	530.58	171.38
10	540.49	183.31

*** 1.042 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	267.74	104.64
2	273.37	100.13
3	289.16	91.49
4	304.68	82.37
5	487.35	114.38
6	499.42	127.74
7	508.32	143.38
8	521.05	156.11
9	530.58	171.38
10	540.49	183.31

*** 1.042 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	299.78	104.95
2	303.45	103.11
3	319.96	95.95
4	336.06	87.89
5	456.65	108.99
6	466.09	124.32
7	477.12	138.54
8	484.57	154.93
9	492.59	171.04
10	503.37	185.46
11	503.99	188.00

*** 1.045 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	299.78	104.95
2	303.45	103.11
3	319.96	95.95
4	336.06	87.89
5	456.65	108.99
6	466.09	124.32
7	477.12	138.54

8	484.57	154.93
9	492.59	171.04
10	503.37	185.46
11	503.99	188.00

*** 1.045 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	299.78	104.95
2	303.45	103.11
3	319.96	95.95
4	336.06	87.89
5	456.65	108.99
6	466.09	124.32
7	477.12	138.54
8	484.57	154.93
9	492.59	171.04
10	503.37	185.46
11	503.99	188.00

*** 1.045 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	304.34	104.99
2	318.19	95.50
3	334.36	87.59
4	473.37	111.93
5	485.79	124.96
6	498.47	137.74
7	503.32	155.07
8	514.38	169.28
9	527.10	182.01
10	528.92	185.09

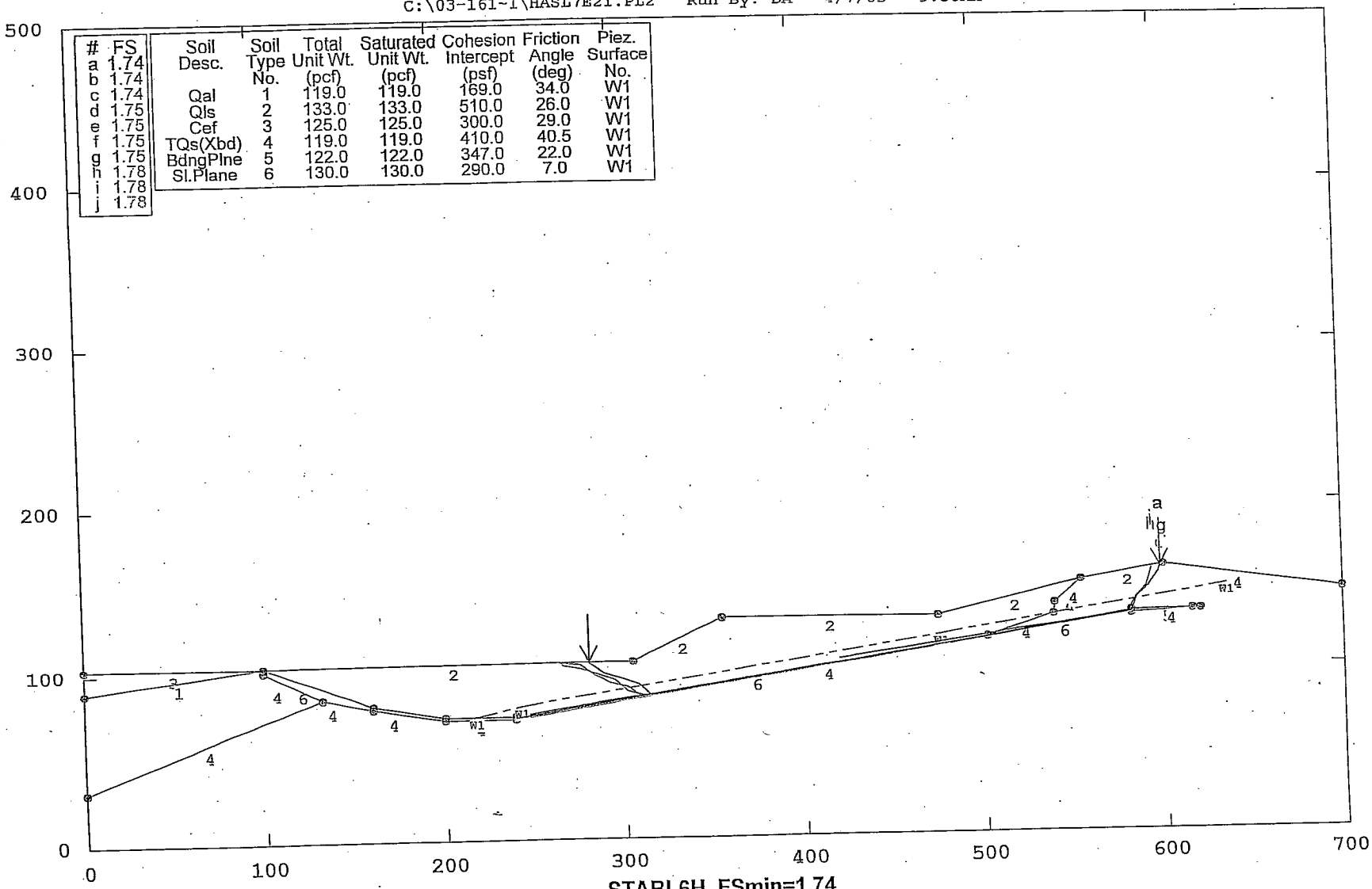
*** 1.055 ***

T52584-Hasley Cyn-Sec.7-7'Existing Cut Slope-Static (Stabilization Measure)

C:\03-161-1\HASL7E21.PL2 Run By: DA 4/7/03 9:58AM

#	FS
a	1.74
b	1.74
c	1.74
d	1.75
e	1.75
f	1.75
g	1.75
h	1.78
i	1.78
j	1.78

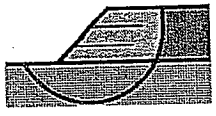
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qal	1	119.0	119.0	169.0	34.0	W1
Qls	2	133.0	133.0	510.0	26.0	W1
Cef	3	125.0	125.0	300.0	29.0	W1
TQs(Xbd)	4	119.0	119.0	410.0	40.5	W1
BdngPlne	5	122.0	122.0	347.0	22.0	W1
Sl.Plane	6	130.0	130.0	290.0	7.0	W1



STABL6H FSmin=1.74

Safety Factors Are Calculated By The Modified Janbu Method

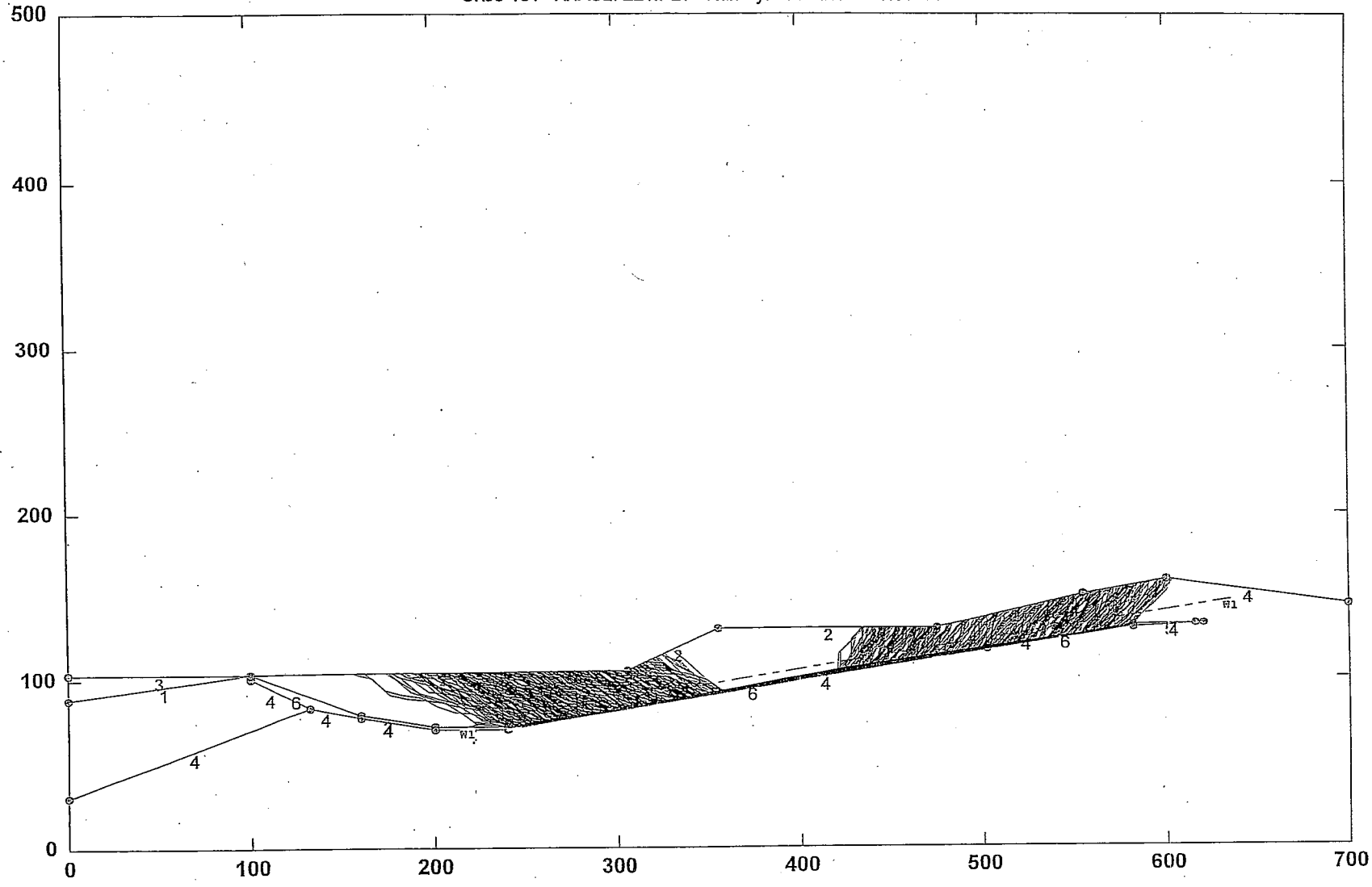
STED



RUN No. - 2

T52584-Hasley Cyn-Sec.7-7'Existing Cut Slope-Static (Stabilization Measure)

C:\03-161~1\HASL7E21.PLT Run By: DA 4/7/03 9:58AM



STED

** STABL6H **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/7/03
Time of Run: 9:58AM
Run By: DA
Input Data Filename: C:hasl7e21.in
Output Filename: C:hasl7e21.OUT
Plotted Output Filename: C:hasl7e21.PLT
PROBLEM DESCRIPTION T52584-Hasley Cyn-Sec.7-7'Existing Cut Slope-Static (Stabilization Measure)

BOUNDARY COORDINATES
7 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	103.00	100.00	103.00	3
2	100.00	103.00	305.00	105.00	2
3	305.00	105.00	355.00	130.00	2
4	355.00	130.00	475.00	130.00	2
5	475.00	130.00	555.00	151.00	2
6	555.00	151.00	600.00	160.00	2
7	600.00	160.00	700.00	145.00	4
8	502.00	117.00	539.00	130.00	4
9	539.00	130.00	539.50	137.00	4
10	539.50	137.00	555.00	151.00	4
11	502.00	117.00	582.00	132.00	5
12	582.00	132.00	616.00	133.00	5
13	100.00	103.00	160.00	79.00	6
14	160.00	79.00	200.00	72.00	6
15	200.00	72.00	240.00	72.00	6
16	240.00	72.00	502.00	117.00	6
17	502.00	117.00	582.00	132.00	6
18	582.00	132.00	620.00	133.00	6
19	100.00	101.00	132.00	83.00	4
20	132.00	83.00	160.00	77.00	4
21	160.00	77.00	200.00	70.00	4
22	200.00	70.00	240.00	70.00	4
23	240.00	70.00	582.00	130.00	4
24	582.00	130.00	620.00	133.00	4
25	.00	88.00	100.00	103.00	1
26	.00	30.00	132.00	83.00	4

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	119.0	119.0	169.0	34.0	.00	.0	1
2	133.0	133.0	510.0	26.0	.00	.0	1
3	125.0	125.0	300.0	29.0	.00	.0	1
4	119.0	119.0	410.0	40.5	.00	.0	1
5	122.0	122.0	347.0	22.0	.00	.0	1
6	130.0	130.0	290.0	7.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 4 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	218.00	72.00
2	243.00	78.00
3	477.00	119.00
4	635.00	148.00

A Critical Failure Surface Searching Method, Using A Random

Technique For Generating Sliding Block Surfaces, Has Been Specified.
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 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	240.00	71.00	360.00	92.10	.00
2	420.00	105.00	582.00	131.00	.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	280.94	104.77
2	281.24	104.52
3	288.95	98.15
4	298.37	94.80
5	307.68	91.13
6	314.85	84.16
7	581.71	130.95
8	585.71	140.12
9	592.77	147.21
10	597.66	155.93
11	598.10	159.62

*** 1.742 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	280.94	104.77
2	281.24	104.52
3	288.95	98.15
4	298.37	94.80
5	307.68	91.13
6	314.85	84.16
7	581.71	130.95
8	585.71	140.12
9	592.77	147.21
10	597.66	155.93
11	598.10	159.62

*** 1.742 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	280.94	104.77
2	281.24	104.52
3	288.95	98.15
4	298.37	94.80
5	307.68	91.13
6	314.85	84.16
7	581.71	130.95
8	585.71	140.12
9	592.77	147.21
10	597.66	155.93
11	598.10	159.62

*** 1.742 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	264.41	104.60
2	266.46	102.56
3	276.30	100.75
4	285.77	97.52

5	294.78	93.20
6	302.03	86.30
7	311.65	83.60
8	579.62	130.62
9	584.74	139.21
10	591.45	146.62
11	596.62	155.18
12	600.57	159.91

*** 1.748 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	264.41	104.60
2	266.46	102.56
3	276.30	100.75
4	285.77	97.52
5	294.78	93.20
6	302.03	86.30
7	311.65	83.60
8	579.62	130.62
9	584.74	139.21
10	591.45	146.62
11	596.62	155.18
12	600.57	159.91

*** 1.748 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	264.41	104.60
2	266.46	102.56
3	276.30	100.75
4	285.77	97.52
5	294.78	93.20
6	302.03	86.30
7	311.65	83.60
8	579.62	130.62
9	584.74	139.21
10	591.45	146.62
11	596.62	155.18
12	600.57	159.91

*** 1.748 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	264.41	104.60
2	266.46	102.56
3	276.30	100.75
4	285.77	97.52
5	294.78	93.20
6	302.03	86.30
7	311.65	83.60
8	579.62	130.62
9	584.74	139.21
10	591.45	146.62
11	596.62	155.18
12	600.57	159.91

*** 1.748 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	264.59	104.61
2	265.73	104.40
3	275.62	102.91
4	283.46	96.70
5	292.01	91.51
6	301.77	89.36

7	309.69	83.25
8	579.81	130.65
9	584.06	139.70
10	590.94	146.97
11	593.53	156.62
12	593.86	158.77

*** 1.779 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	264.59	104.61
2	265.73	104.40
3	275.62	102.91
4	283.46	96.70
5	292.01	91.51
6	301.77	89.36
7	309.69	83.25
8	579.81	130.65
9	584.06	139.70
10	590.94	146.97
11	593.53	156.62
12	593.86	158.77

*** 1.779 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	264.59	104.61
2	265.73	104.40
3	275.62	102.91
4	283.46	96.70
5	292.01	91.51
6	301.77	89.36
7	309.69	83.25
8	579.81	130.65
9	584.06	139.70
10	590.94	146.97
11	593.53	156.62
12	593.86	158.77

*** 1.779 ***

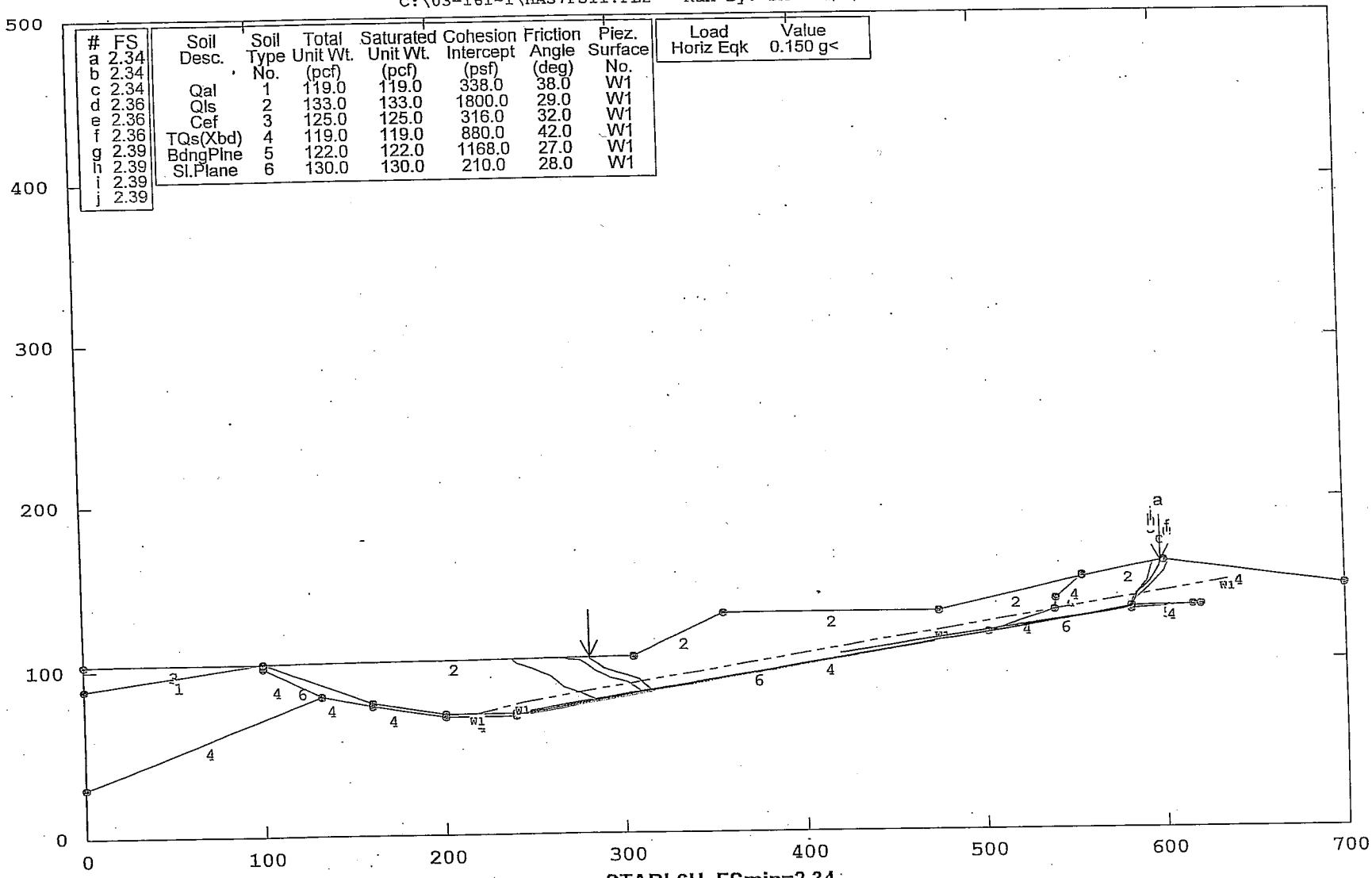
T52584-Hasley Cyn-Sec.7-7'Existing Cut Slope-Static (Stabilization Measure)

C:\03-161~1\HAS7PS11.PL2 Run By: DA 4/7/03 10:07AM

#	FS
a	2.34
b	2.34
c	2.34
d	2.36
e	2.36
f	2.36
g	2.39
h	2.39
i	2.39
j	2.39

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qal	1	119.0	119.0	338.0	38.0	W1
Qls	2	133.0	133.0	1800.0	29.0	W1
Cef	3	125.0	125.0	316.0	32.0	W1
TQs(Xbd)	4	119.0	119.0	880.0	42.0	W1
BdngPlne	5	122.0	122.0	1168.0	27.0	W1
Sl.Plane	6	130.0	130.0	210.0	28.0	W1

Load	Value
Horiz Eqk	0.150 g<



STABL6H FSmin=2.34

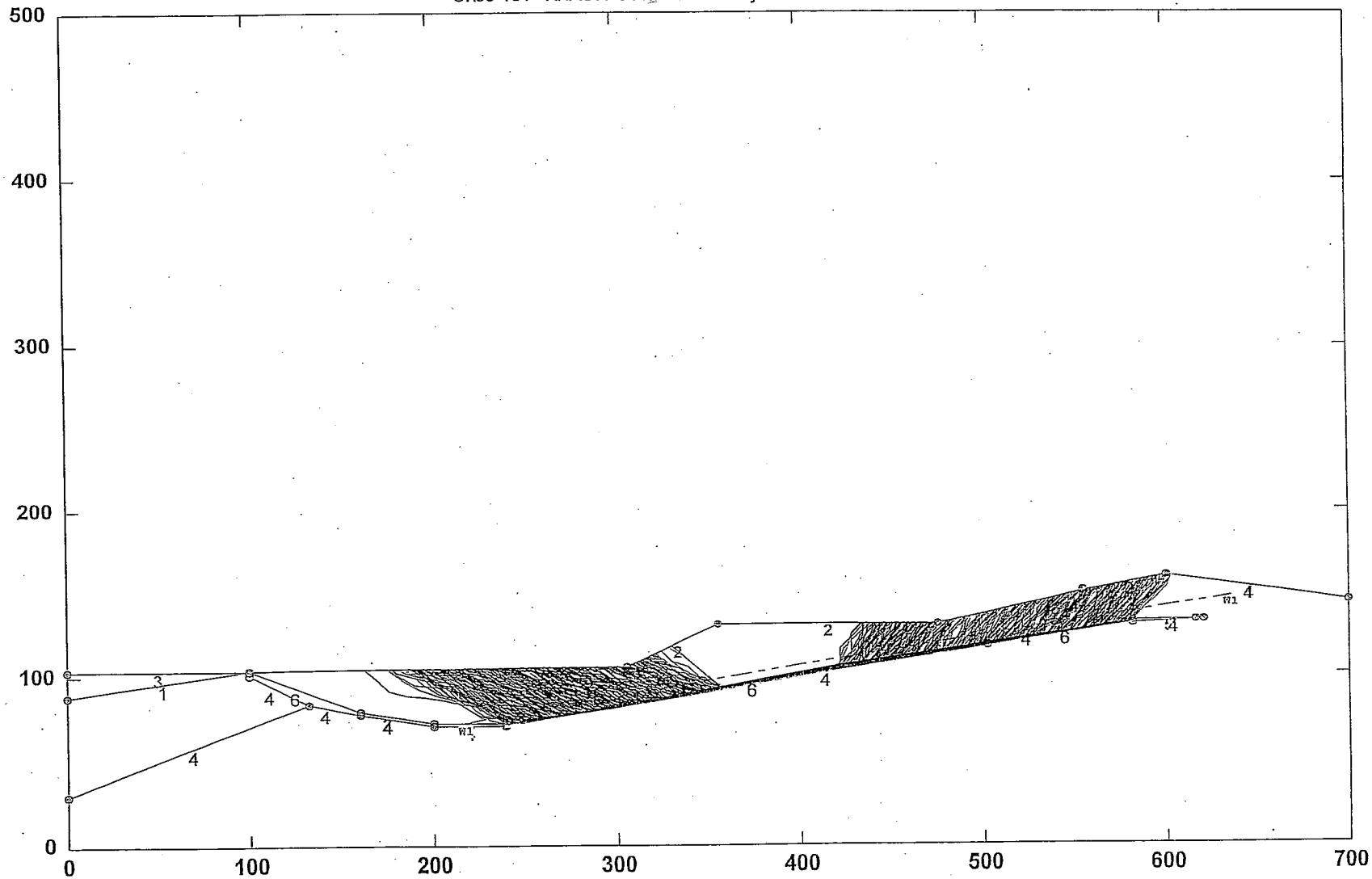
Safety Factors Are Calculated By The Modified Janbu Method

STED

RUN NO. 3

T52584-Hasley Cyn-Sec.7-7'Existing Cut Slope-Static (Stabilization Measure)

C:\03-161~1\HAS7PS11.PLT Run By: DA 4/7/03 10:07AM



STED

** STABL6H **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/7/03
Time of Run: 10:07AM
Run By: DA
Input Data Filename: C:HAS7PS11.IN
Output Filename: C:HAS7PS11.OUT
Plotted Output Filename: C:HAS7PS11.PLT
PROBLEM DESCRIPTION T52584-Hasley Cyn-Sec.7-7'Existing Cut Slope-Static (Stabilization Measure)

BOUNDARY COORDINATES
7 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	103.00	100.00	103.00	3
2	100.00	103.00	305.00	105.00	2
3	305.00	105.00	355.00	130.00	2
4	355.00	130.00	475.00	130.00	2
5	475.00	130.00	555.00	150.50	2
6	555.00	150.50	600.00	160.00	2
7	600.00	160.00	700.00	145.00	4
8	502.00	117.00	539.00	130.00	4
9	539.00	130.00	539.50	137.00	4
10	539.50	137.00	555.00	151.00	4
11	502.00	117.00	582.00	132.00	5
12	582.00	132.00	616.00	133.00	5
13	100.00	103.00	160.00	79.00	6
14	160.00	79.00	200.00	72.00	6
15	200.00	72.00	240.00	72.00	6
16	240.00	72.00	502.00	117.00	6
17	502.00	117.00	582.00	132.00	6
18	582.00	132.00	620.00	133.00	6
19	100.00	101.00	132.00	83.00	4
20	132.00	83.00	160.00	77.00	4
21	160.00	77.00	200.00	70.00	4
22	200.00	70.00	240.00	70.00	4
23	240.00	70.00	582.00	130.00	4
24	582.00	130.00	620.00	133.00	4
25	.00	88.00	100.00	103.00	1
26	.00	30.00	132.00	83.00	4

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	119.0	119.0	338.0	38.0	.00	.0	1
2	133.0	133.0	1800.0	29.0	.00	.0	1
3	125.0	125.0	316.0	32.0	.00	.0	1
4	119.0	119.0	880.0	42.0	.00	.0	1
5	122.0	122.0	1168.0	27.0	.00	.0	1
6	130.0	130.0	210.0	28.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 4 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	218.00	72.00
2	243.00	78.00
3	477.00	119.00
4	635.00	148.00

A Horizontal Earthquake Loading Coefficient

Of .150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of .000 Has Been Assigned
Cavitation Pressure = .0 psf
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
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 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	240.00	71.00	360.00	92.10	.00
2	420.00	105.00	582.00	131.00	.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	280.94	104.77
2	281.24	104.52
3	288.95	98.15
4	298.37	94.80
5	307.68	91.13
6	314.85	84.16
7	581.71	130.95
8	585.71	140.12
9	592.77	147.21
10	597.66	155.93
11	598.10	159.60

*** 2.339 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	280.94	104.77
2	281.24	104.52
3	288.95	98.15
4	298.37	94.80
5	307.68	91.13
6	314.85	84.16
7	581.71	130.95
8	585.71	140.12
9	592.77	147.21
10	597.66	155.93
11	598.10	159.60

*** 2.339 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	280.94	104.77
2	281.24	104.52
3	288.95	98.15
4	298.37	94.80
5	307.68	91.13
6	314.85	84.16
7	581.71	130.95
8	585.71	140.12
9	592.77	147.21
10	597.66	155.93
11	598.10	159.60

*** 2.339 ***

Failure Surface Specified By 12 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	237.69	104.34
2	240.91	101.89
3	250.15	98.08
4	259.07	93.54
5	266.65	87.02
6	275.95	83.34
7	284.90	78.90
8	579.89	130.66
9	586.43	138.23
10	593.35	145.45
11	599.83	153.07
12	602.45	159.63

*** 2.363 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	237.69	104.34
2	240.91	101.89
3	250.15	98.08
4	259.07	93.54
5	266.65	87.02
6	275.95	83.34
7	284.90	78.90
8	579.89	130.66
9	586.43	138.23
10	593.35	145.45
11	599.83	153.07
12	602.45	159.63

*** 2.363 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	237.69	104.34
2	240.91	101.89
3	250.15	98.08
4	259.07	93.54
5	266.65	87.02
6	275.95	83.34
7	284.90	78.90
8	579.89	130.66
9	586.43	138.23
10	593.35	145.45
11	599.83	153.07
12	602.45	159.63

*** 2.363 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	264.59	104.61
2	265.73	104.40
3	275.62	102.91
4	283.46	96.70
5	292.01	91.51
6	301.77	89.36
7	309.69	83.25
8	579.81	130.65
9	584.06	139.70
10	590.94	146.97
11	593.53	156.62
12	593.85	158.70

*** 2.392 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	264.59	104.61

2	265.73	104.40
3	275.62	102.91
4	283.46	96.70
5	292.01	91.51
6	301.77	89.36
7	309.69	83.25
8	579.81	130.65
9	584.06	139.70
10	590.94	146.97
11	593.53	156.62
12	593.85	158.70

*** 2.392 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	264.59	104.61
2	265.73	104.40
3	275.62	102.91
4	283.46	96.70
5	292.01	91.51
6	301.77	89.36
7	309.69	83.25
8	579.81	130.65
9	584.06	139.70
10	590.94	146.97
11	593.53	156.62
12	593.85	158.70

*** 2.392 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	264.59	104.61
2	265.73	104.40
3	275.62	102.91
4	283.46	96.70
5	292.01	91.51
6	301.77	89.36
7	309.69	83.25
8	579.81	130.65
9	584.06	139.70
10	590.94	146.97
11	593.53	156.62
12	593.85	158.70

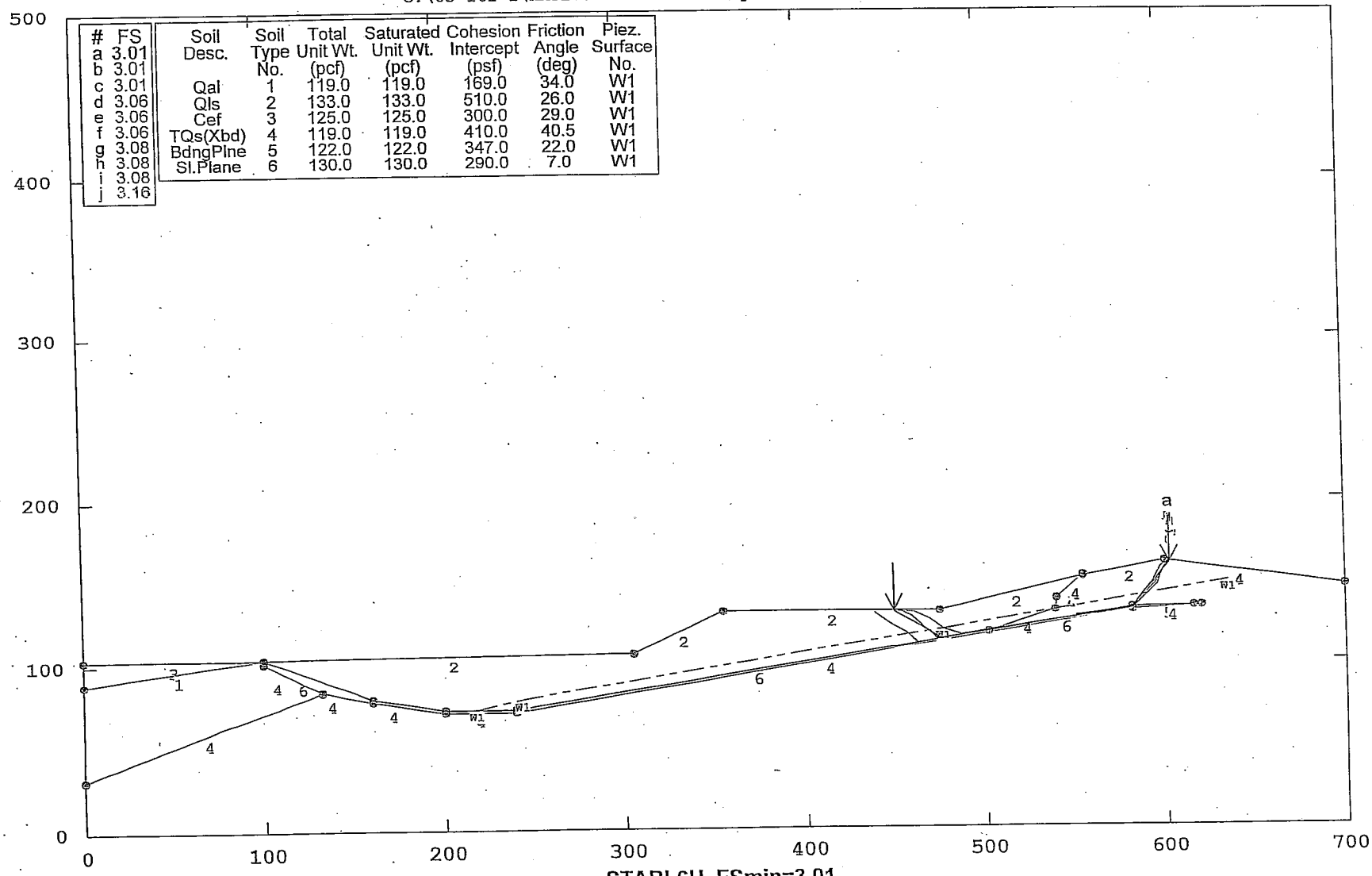
*** 2.392 ***

T52584-Hasley Cyn-Sec.7-7'Existing Cut Slope-Static (Stabilization Measure)

C:\03-161~1\HASL7S22.PL2 Run By: DA 4/7/03 10:14AM

#	FS
a	3.01
b	3.01
c	3.01
d	3.06
e	3.06
f	3.06
g	3.08
h	3.08
i	3.08
j	3.16

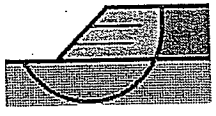
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qal	1	119.0	119.0	169.0	34.0	W1
Qls	2	133.0	133.0	510.0	26.0	W1
Cef	3	125.0	125.0	300.0	29.0	W1
TQs(Xbd)	4	119.0	119.0	410.0	40.5	W1
BdngPlne	5	122.0	122.0	347.0	22.0	W1
Sl.Plane	6	130.0	130.0	290.0	7.0	W1



STABL6H FSmin=3.01

Safety Factors Are Calculated By The Modified Janbu Method

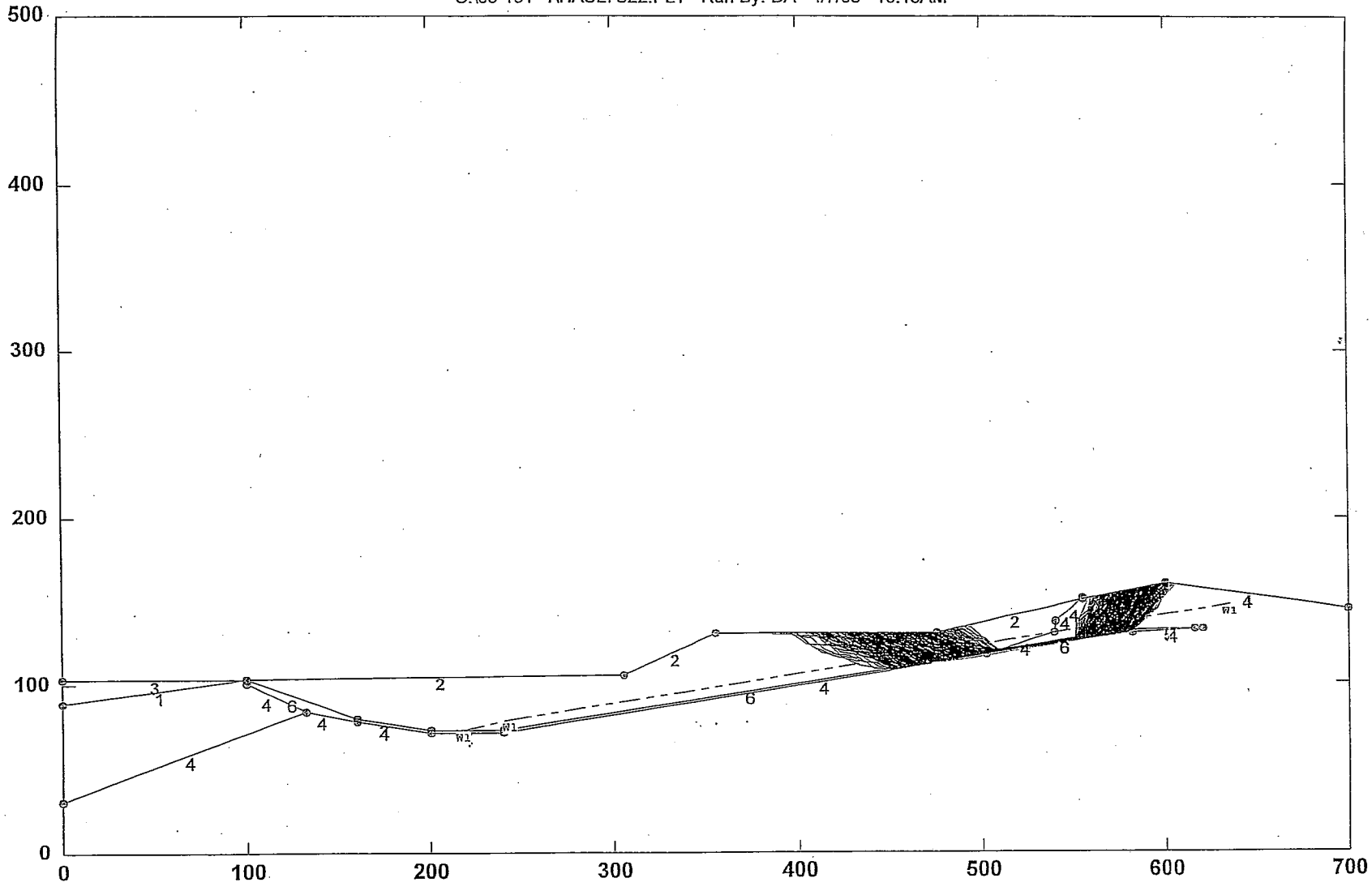
STED



RUN NO. - 4

T52584-Hasley Cyn-Sec.7-7'Existing Cut Slope-Static (Stabilization Measure)

C:\03-161~1\HASL7S22.PLT Run By: DA 4/7/03 10:13AM



STED

** STABL6H **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/7/03
Time of Run: 10:14AM
Run By: DA
Input Data Filename: C:HASL7S22.IN
Output Filename: C:HASL7S22.OUT
Plotted Output Filename: C:HASL7S22.PLT
PROBLEM DESCRIPTION T52584-Hasley Cyn-Sec.7-7'Existing Cut
Slope-Static (Stabilization Measure)

BOUNDARY COORDINATES
7 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	103.00	100.00	103.00	3
2	100.00	103.00	305.00	105.00	2
3	305.00	105.00	355.00	130.00	2
4	355.00	130.00	475.00	130.00	2
5	475.00	130.00	555.00	150.50	2
6	555.00	150.50	600.00	160.00	2
7	600.00	160.00	700.00	145.00	4
8	502.00	117.00	539.00	130.00	4
9	539.00	130.00	539.50	137.00	4
10	539.50	137.00	555.00	151.00	4
11	502.00	117.00	582.00	132.00	5
12	582.00	132.00	616.00	133.00	5
13	100.00	103.00	160.00	79.00	6
14	160.00	79.00	200.00	72.00	6
15	200.00	72.00	240.00	72.00	6
16	240.00	72.00	502.00	117.00	6
17	502.00	117.00	582.00	132.00	6
18	582.00	132.00	620.00	133.00	6
19	100.00	101.00	132.00	83.00	4
20	132.00	83.00	160.00	77.00	4
21	160.00	77.00	200.00	70.00	4
22	200.00	70.00	240.00	70.00	4
23	240.00	70.00	582.00	130.00	4
24	582.00	130.00	620.00	133.00	4
25	.00	88.00	100.00	103.00	1
26	.00	30.00	132.00	83.00	4

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	119.0	119.0	169.0	34.0	.00	.0	1
2	133.0	133.0	510.0	26.0	.00	.0	1
3	125.0	125.0	300.0	29.0	.00	.0	1
4	119.0	119.0	410.0	40.5	.00	.0	1
5	122.0	122.0	347.0	22.0	.00	.0	1
6	130.0	130.0	290.0	7.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 4 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	218.00	72.00
2	243.00	78.00
3	477.00	119.00
4	635.00	148.00

A Critical Failure Surface Searching Method, Using A Random

Technique For Generating Sliding Block Surfaces, Has Been Specified.
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 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	450.00	108.00	510.00	120.00	.00
2	550.00	127.00	582.00	131.00	.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	449.49	130.00
2	450.15	129.64
3	458.50	124.14
4	467.23	119.26
5	475.03	113.01
6	581.96	130.99
7	588.94	138.15
8	595.73	145.50
9	599.71	154.67
10	602.63	159.61

*** 3.007 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	449.49	130.00
2	450.15	129.64
3	458.50	124.14
4	467.23	119.26
5	475.03	113.01
6	581.96	130.99
7	588.94	138.15
8	595.73	145.50
9	599.71	154.67
10	602.63	159.61

*** 3.007 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	449.49	130.00
2	450.15	129.64
3	458.50	124.14
4	467.23	119.26
5	475.03	113.01
6	581.96	130.99
7	588.94	138.15
8	595.73	145.50
9	599.71	154.67
10	602.63	159.61

*** 3.007 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	452.80	130.00
2	459.36	126.81
3	466.45	119.75
4	473.55	112.71
5	580.11	130.76
6	587.06	137.95
7	593.77	145.36

8	599.45	153.60
9	604.72	159.29

*** 3.061 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	452.80	130.00
2	459.36	126.81
3	466.45	119.75
4	473.55	112.71
5	580.11	130.76
6	587.06	137.95
7	593.77	145.36
8	599.45	153.60
9	604.72	159.29

*** 3.061 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	452.80	130.00
2	459.36	126.81
3	466.45	119.75
4	473.55	112.71
5	580.11	130.76
6	587.06	137.95
7	593.77	145.36
8	599.45	153.60
9	604.72	159.29

*** 3.061 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	450.10	130.00
2	450.25	129.87
3	460.24	129.42
4	469.21	125.01
5	477.10	118.86
6	486.44	115.29
7	581.98	131.00
8	587.37	139.42
9	594.31	146.62
10	599.68	155.06
11	603.82	159.43

*** 3.080 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	450.10	130.00
2	450.25	129.87
3	460.24	129.42
4	469.21	125.01
5	477.10	118.86
6	486.44	115.29
7	581.98	131.00
8	587.37	139.42
9	594.31	146.62
10	599.68	155.06
11	603.82	159.43

*** 3.080 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	450.10	130.00
2	450.25	129.87
3	460.24	129.42
4	469.21	125.01

5	477.10	118.86
6	486.44	115.29
7	581.98	131.00
8	587.37	139.42
9	594.31	146.62
10	599.68	155.06
11	603.82	159.43

*** 3.080 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	438.35	130.00
2	439.44	128.91
3	447.27	122.69
4	455.89	117.63
5	463.00	110.60
6	581.48	130.94
7	587.35	139.03
8	593.23	147.12
9	597.72	156.06
10	600.94	159.86

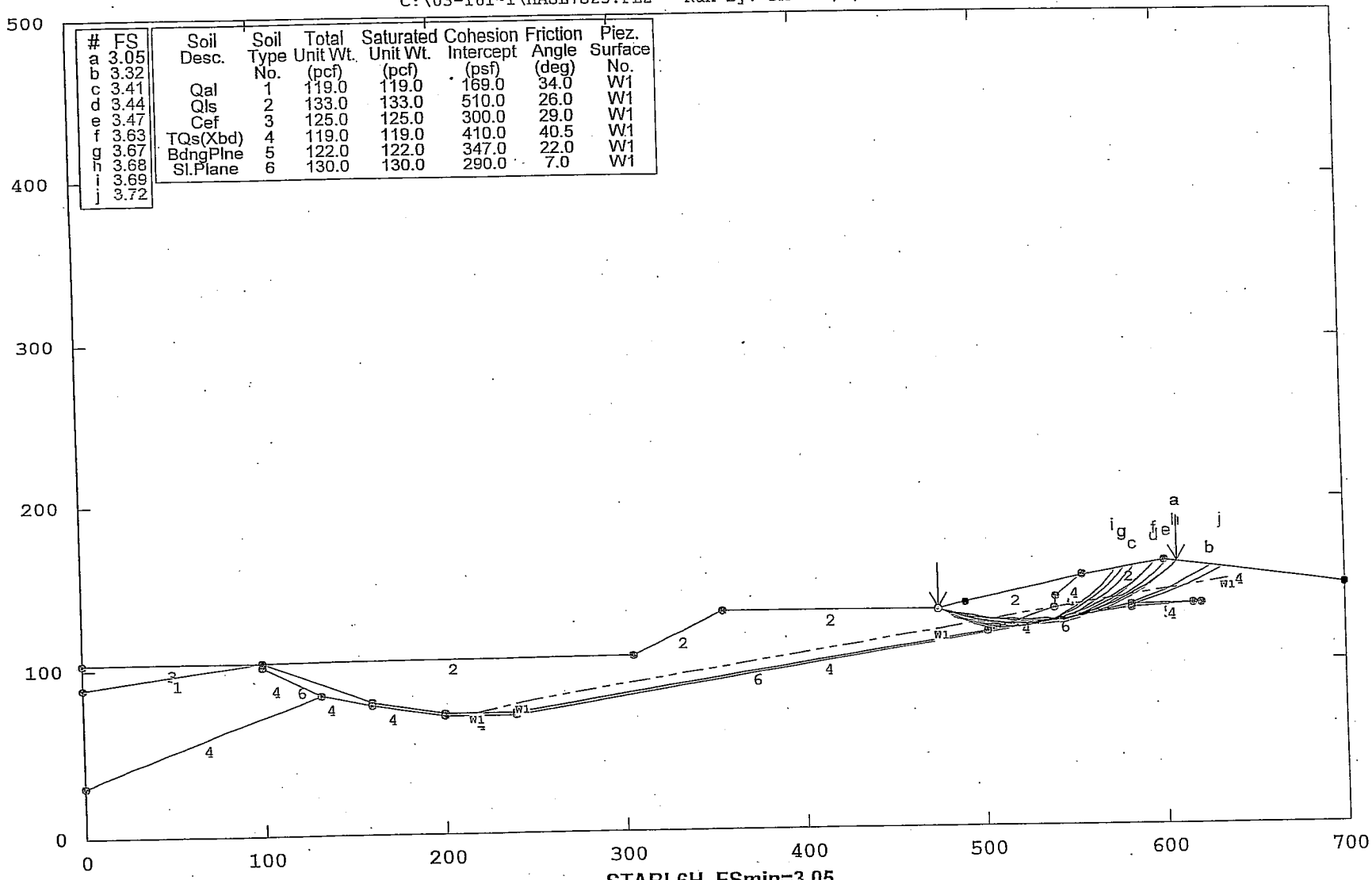
*** 3.165 ***

T52584-Hasley Cyn-Sec.7-7'Existing Cut Slope-Static (Stabilization Measure)

C:\03-161~1\HASL7S23.PL2 Run By: DA 4/7/03 10:20AM

#	FS
a	3.05
b	3.32
c	3.41
d	3.44
e	3.47
f	3.63
g	3.67
h	3.68
i	3.69
j	3.72

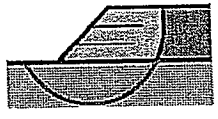
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qal	1	119.0	119.0	169.0	34.0	W1
Qls	2	133.0	133.0	510.0	26.0	W1
Cef	3	125.0	125.0	300.0	29.0	W1
TQs(Xbd)	4	119.0	119.0	410.0	40.5	W1
BdngPlne	5	122.0	122.0	347.0	22.0	W1
Sl.Plane	6	130.0	130.0	290.0	7.0	W1



STABL6H FSmin=3.05

Safety Factors Are Calculated By The Modified Bishop Method

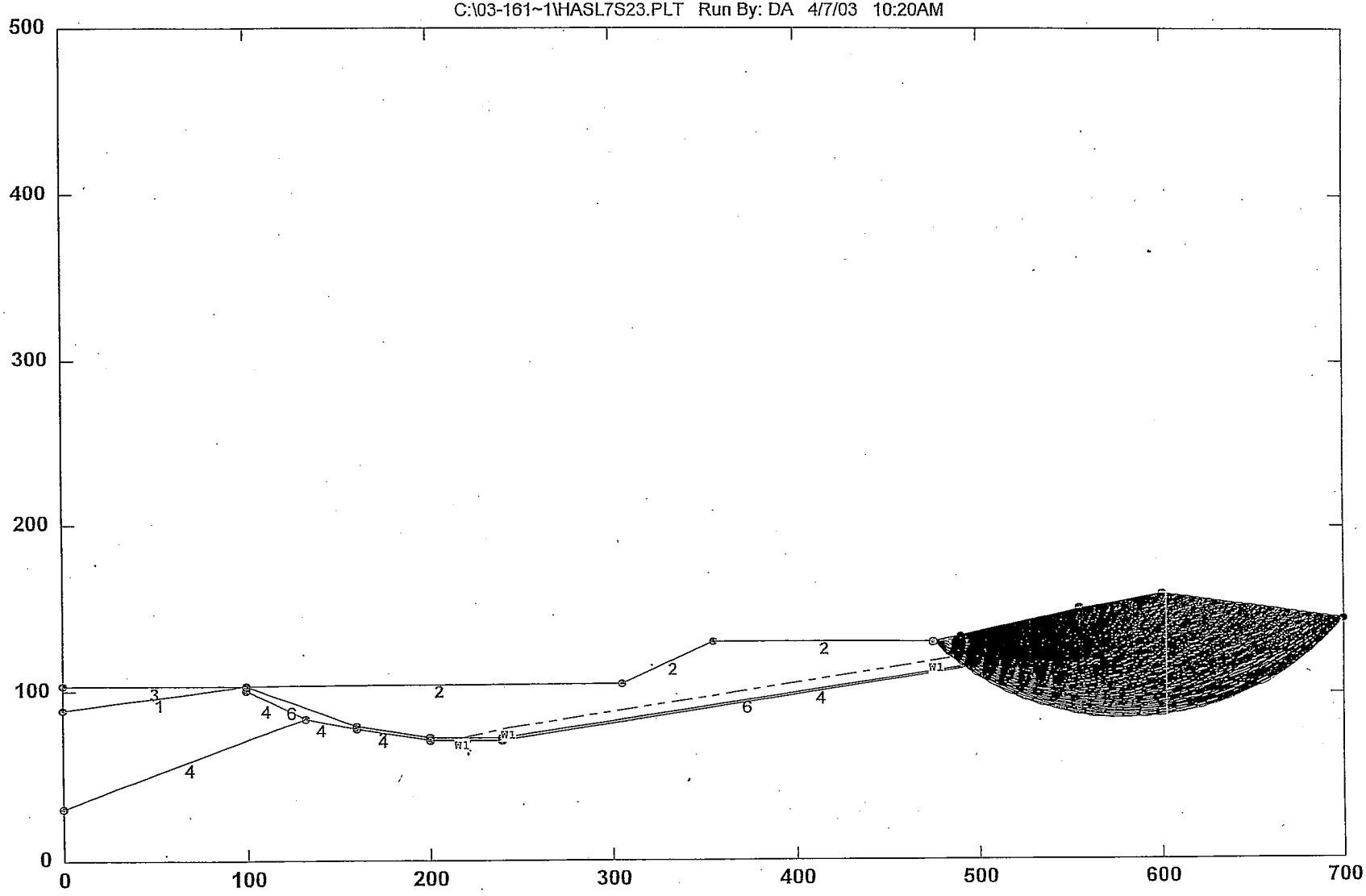
STED



RUN No. - 5

T52584-Hasley Cyn-Sec.7-7'Existing Cut Slope-Static (Stabilization Measure)

C:\03-161~1\HASL7S23.PLT Run By: DA 4/7/03 10:20AM



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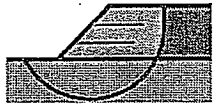


** STABL6H **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/7/03
Time of Run: 10:20AM
Run By: DA
Input Data Filename: C:HASL7S23.IN
Output Filename: C:HASL7S23.OUT
Plotted Output Filename: C:HASL7S23.PLT
PROBLEM DESCRIPTION T52584-Hasley Cyn-Sec.7-7'Existing Cut Slope-Static (Stabilization Measure)

BOUNDARY COORDINATES
7 Top Boundaries
26 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	103.00	100.00	103.00	3
2	100.00	103.00	305.00	105.00	2
3	305.00	105.00	355.00	130.00	2
4	355.00	130.00	475.00	130.00	2
5	475.00	130.00	555.00	150.50	2
6	555.00	150.50	600.00	160.00	2
7	600.00	160.00	700.00	145.00	4
8	502.00	117.00	539.00	130.00	4
9	539.00	130.00	539.50	137.00	4
10	539.50	137.00	555.00	151.00	4
11	502.00	117.00	582.00	132.00	5
12	582.00	132.00	616.00	133.00	5
13	100.00	103.00	160.00	79.00	6
14	160.00	79.00	200.00	72.00	6
15	200.00	72.00	240.00	72.00	6
16	240.00	72.00	502.00	117.00	6
17	502.00	117.00	582.00	132.00	6
18	582.00	132.00	620.00	133.00	6
19	100.00	101.00	132.00	83.00	4
20	132.00	83.00	160.00	77.00	4
21	160.00	77.00	200.00	70.00	4
22	200.00	70.00	240.00	70.00	4
23	240.00	70.00	582.00	130.00	4
24	582.00	130.00	620.00	133.00	4
25	.00	88.00	100.00	103.00	1
26	.00	30.00	132.00	83.00	4

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	119.0	119.0	169.0	34.0	.00	.0	1
2	133.0	133.0	510.0	26.0	.00	.0	1
3	125.0	125.0	300.0	29.0	.00	.0	1
4	119.0	119.0	410.0	40.5	.00	.0	1
5	122.0	122.0	347.0	22.0	.00	.0	1
6	130.0	130.0	290.0	7.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 4 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	218.00	72.00
2	243.00	78.00
3	477.00	119.00
4	635.00	148.00

A Critical Failure Surface Searching Method, Using A Random

Technique For Generating Circular Surfaces, Has Been Specified.
2000 Trial Surfaces Have Been Generated.
2000 Surfaces Initiate From Each Of 1 Points Equally Spaced
Along The Ground Surface Between X = 475.00 ft.
and X = 475.00 ft.
Each Surface Terminates Between X = 490.00 ft.
and X = 700.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = .00 ft.
10.00 ft. Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And 20.0 deg.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	475.00	130.00
2	484.43	126.67
3	494.10	124.14
4	503.95	122.41
5	513.91	121.50
6	523.91	121.42
7	533.88	122.16
8	543.76	123.72
9	553.47	126.10
10	562.96	129.27
11	572.15	133.21
12	580.98	137.90
13	589.39	143.31
14	597.33	149.39
15	604.74	156.10
16	607.36	158.90

Circle Center At X = 519.9 ; Y = 242.3 and Radius, 120.9
*** 3.047 ***
Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	475.00	130.00
2	484.65	127.39
3	494.44	125.35
4	504.34	123.89
5	514.30	123.02
6	524.29	122.73
7	534.29	123.02
8	544.25	123.91
9	554.14	125.38
10	563.93	127.42
11	573.58	130.04
12	583.06	133.22
13	592.34	136.96
14	601.38	141.23
15	610.16	146.02
16	618.64	151.32
17	625.47	156.18

Circle Center At X = 524.2 ; Y = 292.9 and Radius, 170.2
*** 3.323 ***
Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	475.00	130.00
2	483.98	125.59
3	493.43	122.32

4	503.21	120.24
5	513.17	119.38
6	523.16	119.75
7	533.03	121.35
8	542.63	124.16
9	551.81	128.13
10	560.43	133.20
11	568.36	139.29
12	575.48	146.31
13	581.68	154.16
14	583.05	156.42

Circle Center At X = 515.1 ; Y = 200.4 and Radius, 81.0
*** 3.413 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	475.00	130.00
2	484.29	126.30
3	493.90	123.54
4	503.74	121.76
5	513.71	120.96
6	523.71	121.15
7	533.64	122.34
8	543.40	124.50
9	552.90	127.63
10	562.04	131.69
11	570.73	136.63
12	578.89	142.42
13	586.43	148.99
14	593.28	156.27
15	595.40	159.03

Circle Center At X = 516.8 ; Y = 221.4 and Radius, 100.5
*** 3.438 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	475.00	130.00
2	484.24	126.18
3	493.81	123.26
4	503.60	121.26
5	513.55	120.20
6	523.55	120.09
7	533.51	120.93
8	543.35	122.72
9	552.98	125.43
10	562.30	129.05
11	571.24	133.53
12	579.71	138.85
13	587.63	144.94
14	594.94	151.77
15	601.57	159.25
16	601.91	159.71

Circle Center At X = 519.7 ; Y = 225.1 and Radius, 105.1
*** 3.473 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	475.00	130.00
2	484.13	125.91
3	493.63	122.81
4	503.41	120.72
5	513.36	119.67
6	523.36	119.67
7	533.30	120.72
8	543.08	122.80
9	552.59	125.91

10	561.71	129.99
11	570.36	135.01
12	578.44	140.92
13	585.84	147.63
14	592.51	155.09
15	595.33	159.01

Circle Center At X = 518.4 ; Y = 214.6 and Radius, 95.1
*** 3.625 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	475.00	130.00
2	483.94	125.52
3	493.39	122.26
4	503.19	120.26
5	513.17	119.57
6	523.15	120.20
7	532.96	122.14
8	542.43	125.35
9	551.40	129.78
10	559.71	135.34
11	567.21	141.95
12	573.78	149.49
13	577.60	155.27

Circle Center At X = 513.4 ; Y = 195.5 and Radius, 75.9
*** 3.668 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	475.00	130.00
2	484.27	126.26
3	493.84	123.35
4	503.63	121.30
5	513.56	120.12
6	523.56	119.82
7	533.54	120.41
8	543.43	121.87
9	553.16	124.20
10	562.64	127.38
11	571.80	131.39
12	580.57	136.19
13	588.89	141.74
14	596.68	148.01
15	603.89	154.94
16	607.35	158.90

Circle Center At X = 521.9 ; Y = 233.0 and Radius, 113.2
*** 3.685 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	475.00	130.00
2	483.73	125.13
3	493.08	121.58
4	502.85	119.43
5	512.82	118.73
6	522.80	119.48
7	532.55	121.68
8	541.88	125.27
9	550.59	130.19
10	558.49	136.32
11	565.42	143.53
12	571.22	151.68
13	572.50	154.20

Circle Center At X = 512.7 ; Y = 187.2 and Radius, 68.5
*** 3.695 ***

Failure Surface Specified By 18 Coordinate Points

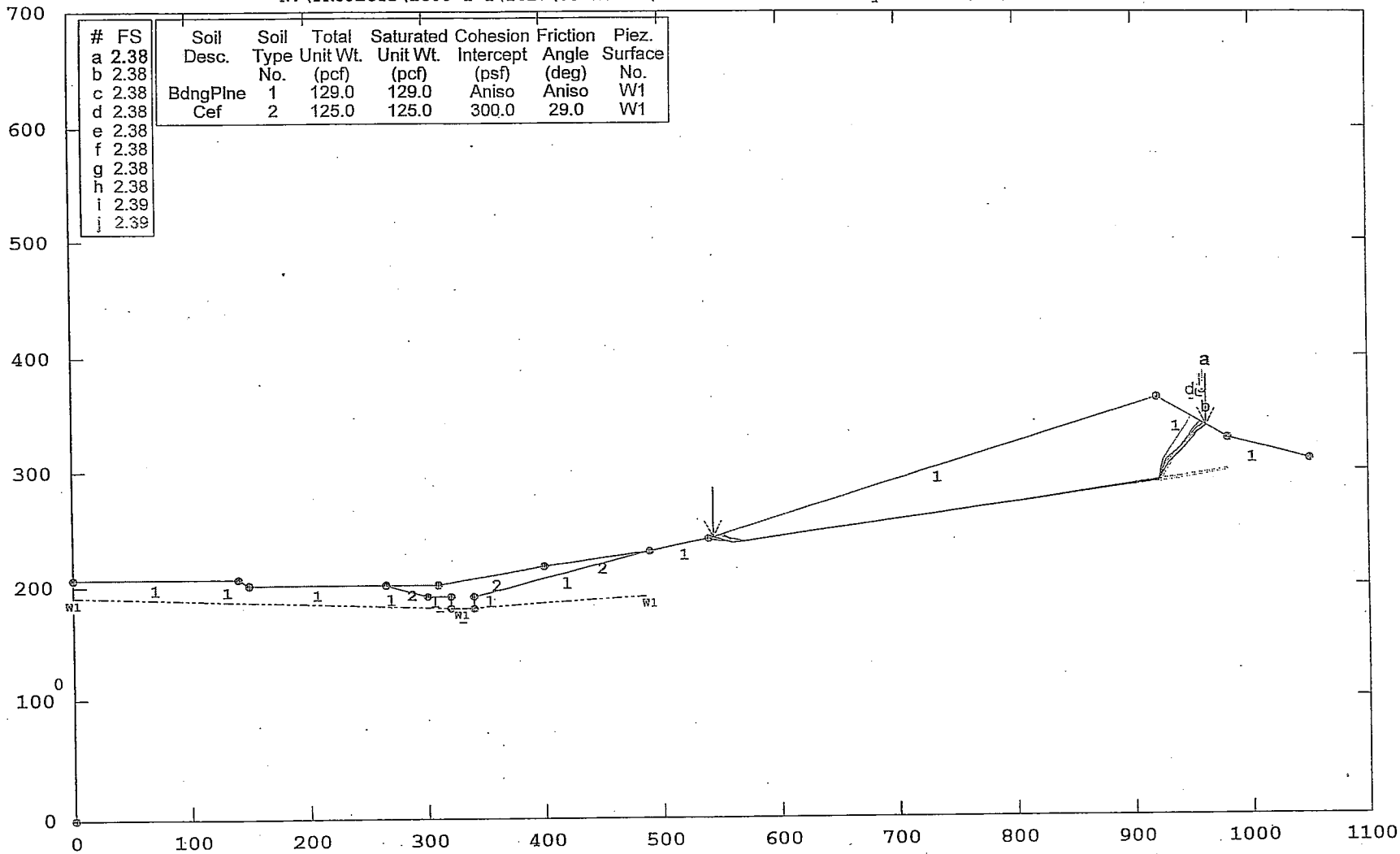
Point No.	X-Surf (ft)	Y-Surf (ft)
1	475.00	130.00
2	484.74	127.73
3	494.58	125.95
4	504.50	124.67
5	514.47	123.89
6	524.46	123.62
7	534.46	123.86
8	544.43	124.60
9	554.36	125.84
10	564.20	127.58
11	573.95	129.82
12	583.57	132.55
13	593.04	135.76
14	602.34	139.44
15	611.44	143.59
16	620.31	148.19
17	628.95	153.24
18	631.95	155.21

Circle Center At X = 524.8 ; Y = 321.5 and Radius, 197.8

*** 3.724 ***

VTT52584-Hasley Cyn-17-17' C S30 Static (Qls and Qal Removal)

N:\PROJECTS\1600-1~1\1617\03-161~1\HCS17S10.PL2 Run By: DA 4/15/2003 9:32AM



#	FS
a	2.38
b	2.38
c	2.38
d	2.38
e	2.38
f	2.38
g	2.38
h	2.38
i	2.39
j	2.39

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
BdngPlne	1	129.0	129.0	Aniso	Aniso	W1
Cef	2	125.0	125.0	300.0	29.0	W1

GSTABL7 FSmin=2.38

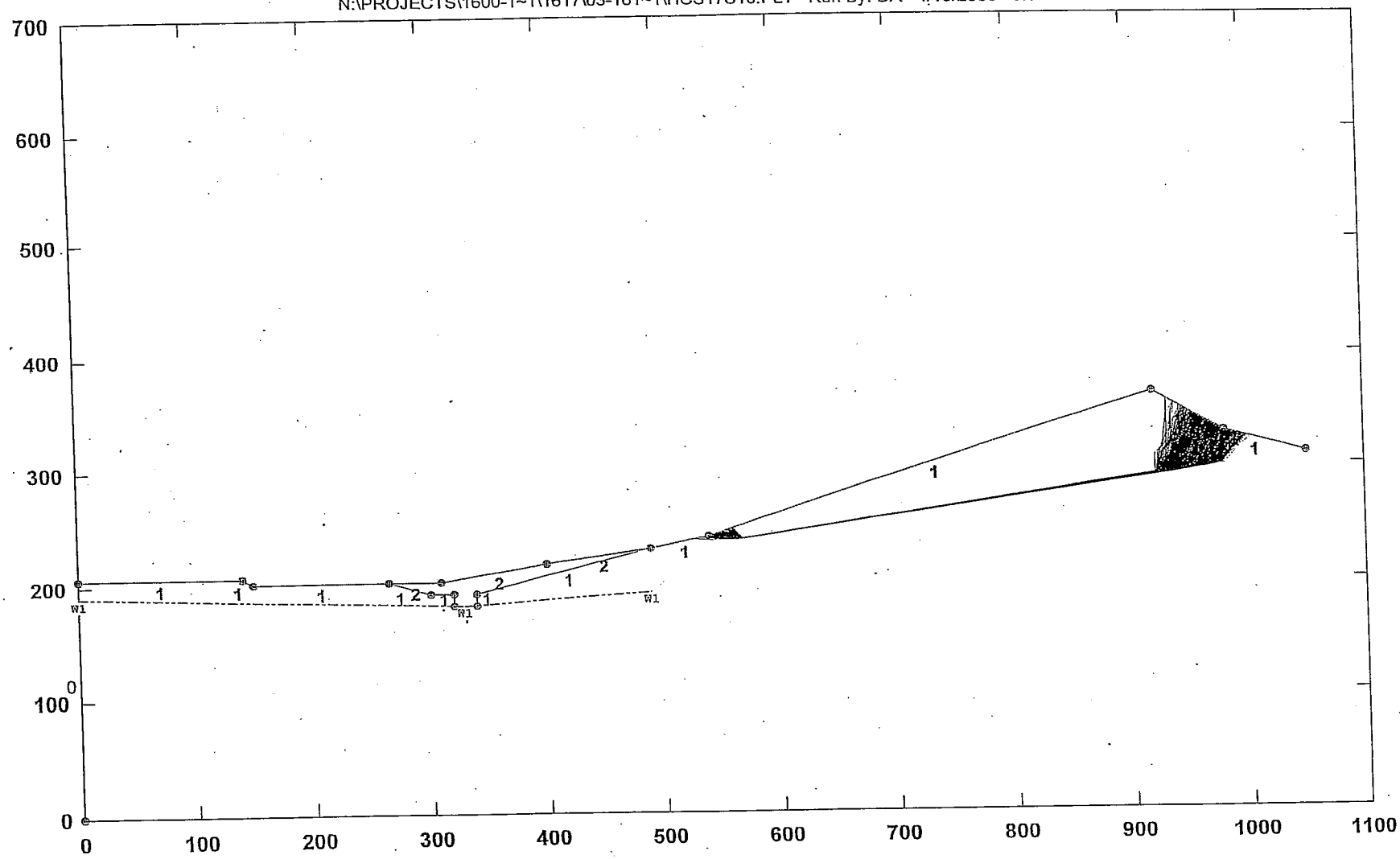
Safety Factors Are Calculated By The Simplified Janbu Method

STED

RUN NO. 1-6

VTT52584-Hasley Cyn-17-17' C S30 Static (Qls and Qal Removal)

N:\PROJECTS\1600-1~1\1617\03-161~1\HCS17S10.PLT Run By: DA 4/15/2003 9:32AM



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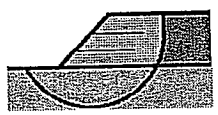

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                    ***  GSTABL7  ***
        ** GSTABL7 by Garry H. Gregory, P.E. **
** Version 1.0, January 1996; Version 1.16, May 2000 **
              --Slope Stability Analysis--
            Simplified Janbu, Modified Bishop
              or Spencer`s Method of Slices
      (Based on STABL6-1986, by Purdue University)
Run Date:                    4/15/2003
Time of Run:                 9:32AM
Run By:                      DA
Input Data Filename:         N:hcs17s10.in
Output Filename:             N:hcs17s10.OUT
Unit System:                 English
Plotted Output Filename:     N:hcs17s10.PLT
PROBLEM DESCRIPTION    VTT52584-Hasley Cyn-17-17' C S30
                       Static (Qls and Qal Removal)
BOUNDARY COORDINATES
   10 Top   Boundaries
   17 Total Boundaries
Boundary      X-Left      Y-Left     X-Right     Y-Right    Soil Type
   No.         (ft)        (ft)        (ft)        (ft)     Below Bnd
    1          0.00      206.00      140.00      206.00         1
    2        140.00      206.00      150.00      201.00         1
    3        150.00      201.00      265.00      201.00         1
    4        265.00      201.00      310.00      201.00         2
    5        310.00      201.00      400.00      216.00         2
    6        400.00      216.00      490.00      230.00         2
    7        490.00      230.00      540.00      240.00         1
    8        540.00      240.00      920.00      364.00         1
    9        920.00      364.00      980.00      328.00         1
   10        980.00      328.00     1050.00      310.00         1
   11        265.00      201.00      300.00      190.00         1
   12        300.00      190.00      320.00      190.00         1
   13        320.00      190.00      320.10      180.00         1
   14        320.10      180.00      340.00      180.00         1
   15        340.00      180.00      340.10      190.00         1
   16        340.10      190.00      490.00      230.00         1
   17          0.00      230.00        0.00        0.00         0
ISOTROPIC SOIL PARAMETERS
  2 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   129.0    129.0     347.0     22.0    0.00      0.0      1
   2   125.0    125.0     300.0     29.0    0.00      0.0      1
ANISOTROPIC STRENGTH PARAMETERS
     1 soil type(s)
 Soil Type  1 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion      Friction
   Range       Direction Limit     Intercept      Angle
    No.            (deg)             (psf)        (deg)
     1             8.0               410.0        40.5
     2            12.0               347.0        22.0
     3            90.0               410.0        40.5
 1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
 Unit Weight of Water =  62.40
 Piezometric Surface No.  1 Specified by  3 Coordinate Points
   Point       X-Water     Y-Water
    No.         (ft)        (ft)
     1          0.00      190.00
     2        330.00      180.00
     3        490.00      190.00
 A Critical Failure Surface Searching Method, Using A Random
 Technique For Generating Sliding Block Surfaces, Has Been
 Specified.
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 18.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	560.00	236.00	570.00	238.00	0.00
2	920.00	290.00	980.00	300.00	2.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	543.94	241.28
2	560.14	236.03
3	920.83	289.98
4	930.20	305.35
5	942.92	318.08
6	954.70	331.69
7	961.58	339.05

*** 2.375 ***

Individual data on the 7 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	16.2	11023.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	359.9	1965707.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.8	7917.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	9.4	76143.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	12.7	69516.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	11.8	33177.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	6.9	5096.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	543.94	241.28
2	560.14	236.03
3	920.83	289.98
4	930.20	305.35
5	942.92	318.08
6	954.70	331.69
7	961.58	339.05

*** 2.375 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	541.16	240.38
2	543.67	238.37
3	561.55	236.31
4	921.09	290.67
5	925.19	308.20
6	934.70	323.47
7	944.83	338.36
8	949.47	346.32

*** 2.376 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	541.16	240.38
2	543.67	238.37
3	561.55	236.31
4	921.09	290.67
5	925.19	308.20
6	934.70	323.47
7	944.83	338.36

8	949.47	346.32

*** 2.376 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	551.00	243.59
2	563.72	236.74
3	921.92	291.04
4	928.43	307.82
5	941.10	320.60
6	951.13	335.55
7	957.11	341.73

*** 2.377 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	551.00	243.59
2	563.72	236.74
3	921.92	291.04
4	928.43	307.82
5	941.10	320.60
6	951.13	335.55
7	957.11	341.73

*** 2.377 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	550.87	243.55
2	562.21	236.44
3	920.80	289.68
4	928.16	306.11
5	940.20	319.49
6	952.90	332.24
7	959.27	340.44

*** 2.379 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	550.87	243.55
2	562.21	236.44
3	920.80	289.68
4	928.16	306.11
5	940.20	319.49
6	952.90	332.24
7	959.27	340.44

*** 2.379 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	550.45	243.41
2	552.27	241.63
3	569.90	237.98
4	924.52	291.63
5	933.73	307.10
6	942.13	323.02
7	954.63	335.97
8	959.16	340.51

*** 2.391 ***

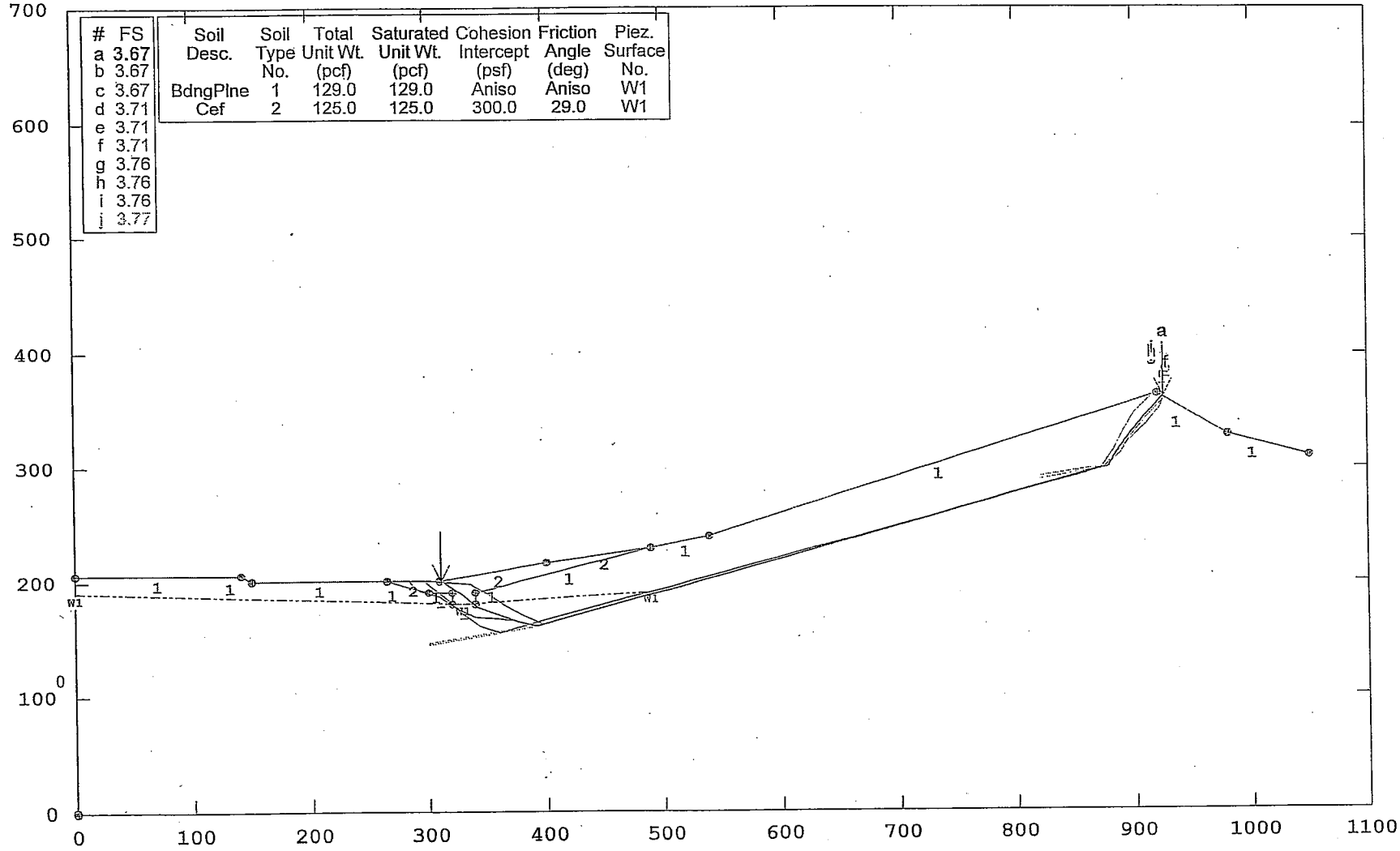
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	550.45	243.41
2	552.27	241.63
3	569.90	237.98
4	924.52	291.63
5	933.73	307.10
6	942.13	323.02

```
7          954.63       335.97
8          959.16       340.51
  ***       2.391    ***
```

VTT52584-Hasley Cyn-17-17' C S 30 Static (Qls and Qal Removal)

N:\PROJECTS\1600-1~1\1617\03-161~1\HCS17S11.PL2 Run By: DA 4/15/2003 9:37AM



#	FS
a	3.67
b	3.67
c	3.67
d	3.71
e	3.71
f	3.71
g	3.76
h	3.76
i	3.76
j	3.77

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
BdngPlne	1	129.0	129.0	Aniso	Aniso	W1
Cef	2	125.0	125.0	300.0	29.0	W1

GSTABL7 FSmin=3.67

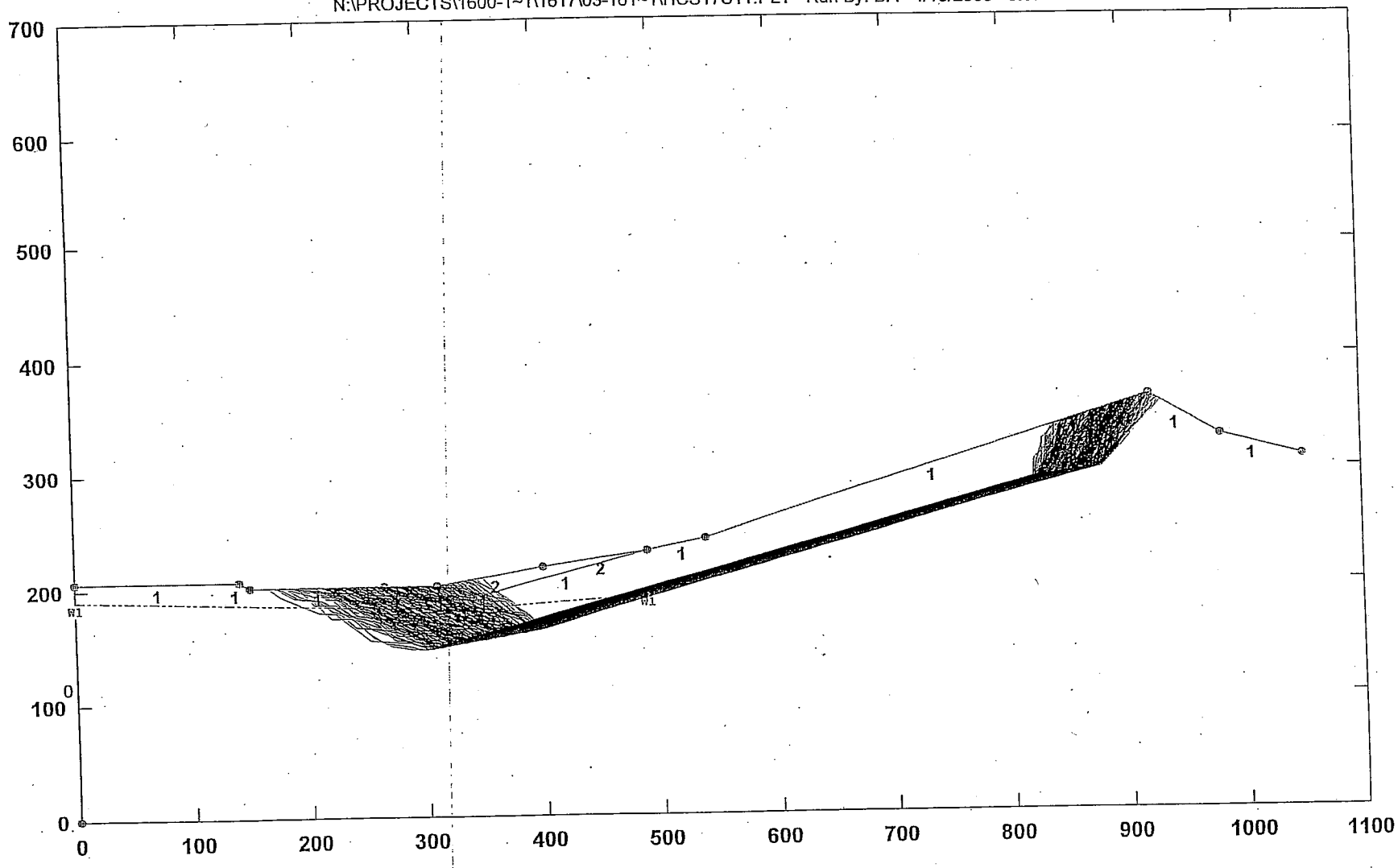
Safety Factors Are Calculated By The Simplified Janbu Method

STED

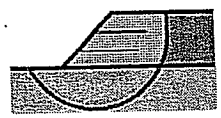
RUN NO. - 7

VTT52584-Hasley Cyn-17-17' C S 30 Static (Qls and Qal Removal)

N:\PROJECTS\1600-1~1\1617\03-161~1\HCS17S11.PLT Run By: DA 4/15/2003 9:37AM



STED



```
                    ***  GSTABL7  ***
        ** GSTABL7 by Garry H. Gregory, P.E. **
 ** Version 1.0, January 1996; Version 1.16, May 2000 **
              --Slope Stability Analysis--
           Simplified Janbu, Modified Bishop
             or Spencer`s Method of Slices
      (Based on STABL6-1986, by Purdue University)
 Run Date:                    4/15/2003
 Time of Run:                 9:37AM
 Run By:                      DA
 Input Data Filename:         N:hcs17s11.in
 Output Filename:             N:hcs17s11.OUT
 Unit System:                 English
 Plotted Output Filename:     N:hcs17s11.PLT
 PROBLEM DESCRIPTION   VTT52584-Hasley Cyn-17-17' C S 30
                       Static (Qls and Qal Removal)
 BOUNDARY COORDINATES
    10 Top   Boundaries
    17 Total Boundaries
 Boundary     X-Left      Y-Left     X-Right     Y-Right     Soil Type
    No.        (ft)        (ft)       (ft)        (ft)      Below Bnd
     1         0.00      206.00      140.00      206.00         1
     2       140.00      206.00      150.00      201.00         1
     3       150.00      201.00      265.00      201.00         1
     4       265.00      201.00      310.00      201.00         2
     5       310.00      201.00      400.00      216.00         2
     6       400.00      216.00      490.00      230.00         2
     7       490.00      230.00      540.00      240.00         1
     8       540.00      240.00      920.00      364.00         1
     9       920.00      364.00      980.00      328.00         1
    10       980.00      328.00     1050.00      310.00         1
    11       265.00      201.00      300.00      190.00         1
    12       300.00      190.00      320.00      190.00         1
    13       320.00      190.00      320.10      180.00         1
    14       320.10      180.00      340.00      180.00         1
    15       340.00      180.00      340.10      190.00         1
    16       340.10      190.00      490.00      230.00         1
    17         0.00      230.00        0.00        0.00         0
ISOTROPIC SOIL PARAMETERS
  2 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   129.0    129.0     347.0     22.0    0.00      0.0       1
   2   125.0    125.0     300.0     29.0    0.00      0.0       1
ANISOTROPIC STRENGTH PARAMETERS
     1 soil type(s)
 Soil Type  1 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion      Friction
   Range       Direction Limit    Intercept       Angle
    No.            (deg)            (psf)         (deg)
     1              8.0             410.0          40.5
     2             12.0             347.0          22.0
     3             90.0             410.0          40.5
 1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
 Unit Weight of Water =  62.40
 Piezometric Surface No.  1 Specified by  3 Coordinate Points
   Point       X-Water     Y-Water
    No.          (ft)        (ft)
     1          0.00      190.00
     2        330.00      180.00
     3        490.00      190.00
 A Critical Failure Surface Searching Method, Using A Random
 Technique For Generating Sliding Block Surfaces, Has Been
 Specified.
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 18.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	300.00	145.00	400.00	162.00	2.00
2	820.00	290.00	880.00	300.00	2.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	311.35	201.23
2	313.15	199.77
3	327.53	188.94
4	341.33	177.39
5	358.22	171.16
6	374.76	164.06
7	392.43	160.61
8	877.65	299.56
9	887.58	314.57
10	897.64	329.50
11	909.19	343.30
12	921.51	356.43
13	925.68	360.59

*** 3.668 ***

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	1.8	196.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	14.4	15035.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	10.1	25368.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.6	1814.7	0.0	11.9	0.0	0.0	0.0	0.0	0.0
5	1.8	5932.5	0.0	190.4	0.0	0.0	0.0	0.0	0.0
6	0.0	21.5	0.0	1.1	0.0	0.0	0.0	0.0	0.0
7	0.1	325.4	0.0	16.5	0.0	0.0	0.0	0.0	0.0
8	1.2	4401.2	0.0	275.9	0.0	0.0	0.0	0.0	0.0
9	16.9	71629.2	0.0	7802.9	0.0	0.0	0.0	0.0	0.0
10	16.5	90468.8	0.0	16446.1	0.0	0.0	0.0	0.0	0.0
11	17.7	115234.8	0.0	23553.1	0.0	0.0	0.0	0.0	0.0
12	7.6	52126.6	0.0	11010.9	0.0	0.0	0.0	0.0	0.0
13	90.0	547715.8	0.0	67159.6	0.0	0.0	0.0	0.0	0.0
14	50.0	253403.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	337.7	1911152.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	9.9	57318.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	10.1	42843.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	11.6	33077.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	10.8	18368.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	1.5	1542.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	4.2	1791.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	311.35	201.23
2	313.15	199.77
3	327.53	188.94
4	341.33	177.39
5	358.22	171.16
6	374.76	164.06
7	392.43	160.61
8	877.65	299.56
9	887.58	314.57
10	897.64	329.50

11	909.19	343.30
12	921.51	356.43
13	925.68	360.59

*** 3.668 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	311.35	201.23
2	313.15	199.77
3	327.53	188.94
4	341.33	177.39
5	358.22	171.16
6	374.76	164.06
7	392.43	160.61
8	877.65	299.56
9	887.58	314.57
10	897.64	329.50
11	909.19	343.30
12	921.51	356.43
13	925.68	360.59

*** 3.668 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	283.48	201.00
2	292.52	192.14
3	309.40	185.89
4	323.98	175.34
5	340.39	167.94
6	358.37	167.05
7	376.20	164.61
8	393.65	160.17
9	875.81	298.73
10	888.49	311.50
11	897.75	326.93
12	909.06	340.94
13	921.63	353.82
14	927.30	359.62

*** 3.714 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	283.48	201.00
2	292.52	192.14
3	309.40	185.89
4	323.98	175.34
5	340.39	167.94
6	358.37	167.05
7	376.20	164.61
8	393.65	160.17
9	875.81	298.73
10	888.49	311.50
11	897.75	326.93
12	909.06	340.94
13	921.63	353.82
14	927.30	359.62

*** 3.714 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	283.48	201.00
2	292.52	192.14
3	309.40	185.89
4	323.98	175.34
5	340.39	167.94
6	358.37	167.05
7	376.20	164.61

8	393.65	160.17
9	875.81	298.73
10	888.49	311.50
11	897.75	326.93
12	909.06	340.94
13	921.63	353.82
14	927.30	359.62

*** 3.714 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	292.30	201.00
2	299.59	200.20
3	317.57	199.43
4	335.55	198.57
5	351.09	189.47
6	365.40	178.56
7	380.81	169.26
8	397.11	161.63
9	872.97	299.74
10	883.20	314.55
11	891.37	330.59
12	900.60	346.05
13	913.01	359.08
14	915.58	362.56

*** 3.764 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	292.30	201.00
2	299.59	200.20
3	317.57	199.43
4	335.55	198.57
5	351.09	189.47
6	365.40	178.56
7	380.81	169.26
8	397.11	161.63
9	872.97	299.74
10	883.20	314.55
11	891.37	330.59
12	900.60	346.05
13	913.01	359.08
14	915.58	362.56

*** 3.764 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	292.30	201.00
2	299.59	200.20
3	317.57	199.43
4	335.55	198.57
5	351.09	189.47
6	365.40	178.56
7	380.81	169.26
8	397.11	161.63
9	872.97	299.74
10	883.20	314.55
11	891.37	330.59
12	900.60	346.05
13	913.01	359.08
14	915.58	362.56

*** 3.764 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	296.23	201.00
2	303.58	195.83

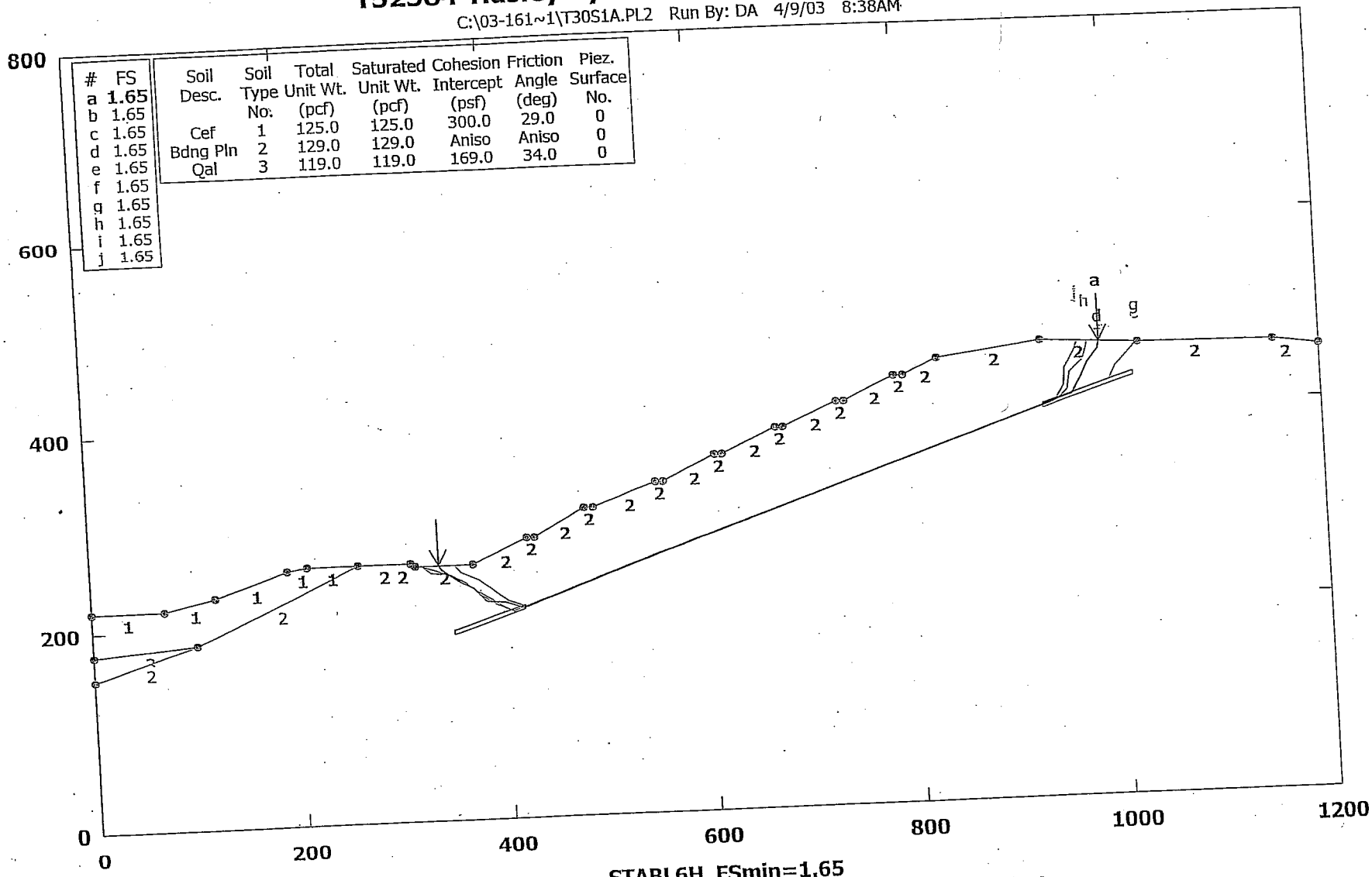
3	316.87	183.69
4	329.74	171.11
5	343.86	159.94
6	361.13	154.87
7	874.58	298.18
8	886.20	311.92
9	898.57	325.00
10	911.18	337.85
11	922.43	351.89
12	924.93	361.04
***	3.766	***

T52584-Hasley Cyn 30-30' ,Cut Slope 11, Static

C:\03-161~1\T30S1A.PL2 Run By: DA 4/9/03 8:38AM

#	FS
a	**1.65**
b	1.65
c	1.65
d	1.65
e	1.65
f	1.65
g	1.65
h	1.65
i	1.65
j	1.65

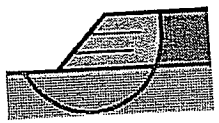
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
Bdng Pln	2	129.0	129.0	Aniso	Aniso	0
Qal	3	119.0	119.0	169.0	34.0	0



STABL6H FSmin=1.65

Safety Factors Are Calculated By The Modified Janbu Method

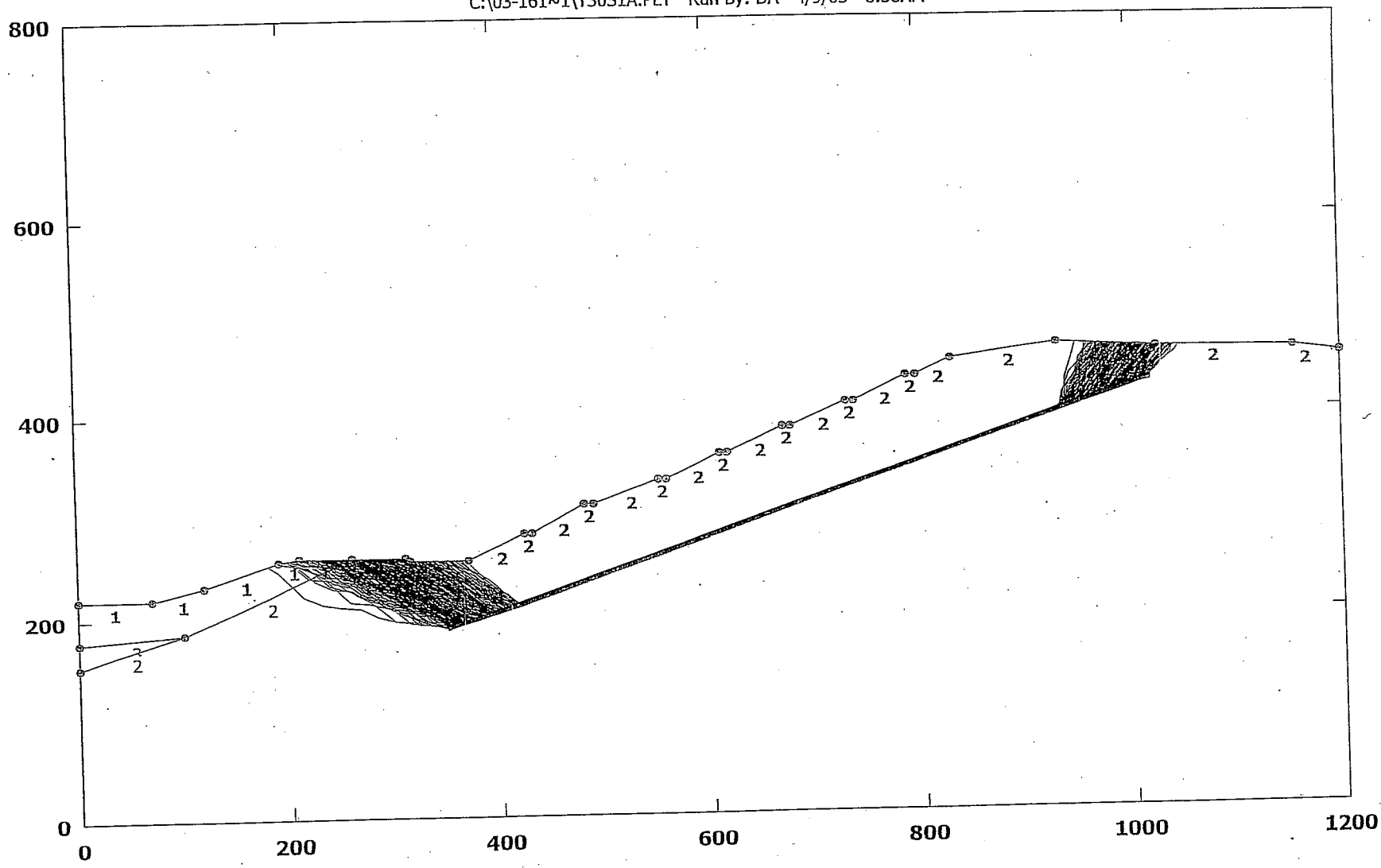
STED



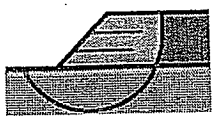
RUN NO. 1

T52584-Hasley Cyn 30-30' ,Cut Slope 11, Static

C:\03-161~1\T30S1A.PLT Run By: DA 4/9/03 8:38AM



STED



** STABL6H **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/9/03
Time of Run: 8:38AM
Run By: DA
Input Data Filename: C:T30S1A.IN
Output Filename: C:T30S1A.OUT
Plotted Output Filename: C:T30S1A.PLT
PROBLEM DESCRIPTION T52584-Hasley Cyn 30-30' ,Cut Slope 11,
Static

BOUNDARY COORDINATES
27 Top Boundaries
30 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	220.00	70.00	220.00	1
2	70.00	220.00	120.00	233.00	1
3	120.00	233.00	190.00	256.00	1
4	190.00	256.00	210.00	260.00	1
5	210.00	260.00	260.00	260.00	1
6	260.00	260.00	310.00	260.00	2
7	310.00	260.00	315.00	256.00	2
8	315.00	256.00	370.00	256.00	2
9	370.00	256.00	425.00	282.00	2
10	425.00	282.00	432.00	282.00	2
11	432.00	282.00	482.00	310.00	2
12	482.00	310.00	490.00	310.00	2
13	490.00	310.00	552.00	335.00	2
14	552.00	335.00	560.00	335.00	2
15	560.00	335.00	610.00	360.00	2
16	610.00	360.00	618.00	360.00	2
17	618.00	360.00	670.00	385.00	2
18	670.00	385.00	678.00	385.00	2
19	678.00	385.00	730.00	410.00	2
20	730.00	410.00	738.00	410.00	2
21	738.00	410.00	788.00	435.00	2
22	788.00	435.00	796.00	435.00	2
23	796.00	435.00	830.00	452.00	2
24	830.00	452.00	930.00	466.00	2
25	930.00	466.00	1025.00	462.00	2
26	1025.00	462.00	1155.00	460.00	2
27	1155.00	460.00	1200.00	455.00	2
28	.00	175.00	100.00	185.00	3
29	100.00	185.00	260.00	260.00	2
30	.00	150.00	100.00	185.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	129.0	129.0	347.0	22.0	.00	.0	0
3	119.0	119.0	169.0	34.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	20.0	410.0	40.5
2	24.0	347.0	22.0

```
    3                90.0              410.0          40.5
 A Critical Failure Surface Searching Method, Using A Random
 Technique For Generating Sliding Block Surfaces, Has Been
 Specified.
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  18.0
 Box        X-Left     Y-Left    X-Right    Y-Right      Height
 No.         (ft)       (ft)       (ft)       (ft)        (ft)
  1        350.00     188.00     420.00     212.00       4.00
  2        930.00     398.00    1018.00     430.00       4.00
 Following Are Displayed The Ten Most Critical Of The Trial
       Failure Surfaces Examined.  They Are Ordered - Most Critical
       First.
       * * Safety Factors Are Calculated By The Modified Janbu Method * *
       Failure Surface Specified By 12 Coordinate Points
         Point      X-Surf      Y-Surf
          No.        (ft)        (ft)
           1        337.08      256.00
           2        340.63      252.55
           3        354.23      240.77
           4        370.02      232.12
           5        382.98      219.63
           6        400.91      217.98
           7        417.76      211.65
           8        959.11      409.81
           9        967.01      425.98
          10        975.19      442.01
          11        986.09      456.33
          12        986.78      463.61
             ***     1.647    ***
       Failure Surface Specified By 12 Coordinate Points
         Point      X-Surf      Y-Surf
          No.        (ft)        (ft)
           1        337.08      256.00
           2        340.63      252.55
           3        354.23      240.77
           4        370.02      232.12
           5        382.98      219.63
           6        400.91      217.98
           7        417.76      211.65
           8        959.11      409.81
           9        967.01      425.98
          10        975.19      442.01
          11        986.09      456.33
          12        986.78      463.61
             ***     1.647    ***
       Failure Surface Specified By 12 Coordinate Points
         Point      X-Surf      Y-Surf
          No.        (ft)        (ft)
           1        337.08      256.00
           2        340.63      252.55
           3        354.23      240.77
           4        370.02      232.12
           5        382.98      219.63
           6        400.91      217.98
           7        417.76      211.65
           8        959.11      409.81
           9        967.01      425.98
          10        975.19      442.01
          11        986.09      456.33
          12        986.78      463.61
             ***     1.647    ***
       Failure Surface Specified By 12 Coordinate Points
         Point      X-Surf      Y-Surf
```

No.	(ft)	(ft)
1	337.08	256.00
2	340.63	252.55
3	354.23	240.77
4	370.02	232.12
5	382.98	219.63
6	400.91	217.98
7	417.76	211.65
8	959.11	409.81
9	967.01	425.98
10	975.19	442.01
11	986.09	456.33
12	986.78	463.61

*** 1.647 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	321.68	256.00
2	329.68	249.74
3	347.54	247.51
4	362.75	237.88
5	376.38	226.13
6	391.28	216.03
7	407.79	208.86
8	994.19	422.58
9	1002.59	438.50
10	1014.39	452.09
11	1023.42	462.07

*** 1.648 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	321.68	256.00
2	329.68	249.74
3	347.54	247.51
4	362.75	237.88
5	376.38	226.13
6	391.28	216.03
7	407.79	208.86
8	994.19	422.58
9	1002.59	438.50
10	1014.39	452.09
11	1023.42	462.07

*** 1.648 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	321.68	256.00
2	329.68	249.74
3	347.54	247.51
4	362.75	237.88
5	376.38	226.13
6	391.28	216.03
7	407.79	208.86
8	994.19	422.58
9	1002.59	438.50
10	1014.39	452.09
11	1023.42	462.07

*** 1.648 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	320.08	256.00
2	332.46	252.18
3	349.55	246.51
4	364.16	236.00

5	379.06	225.91
6	394.21	216.18
7	410.00	207.54
8	941.45	401.76
9	953.94	414.72
10	957.44	432.37
11	970.05	445.22
12	975.37	462.41
13	975.72	464.07

*** 1.648 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	352.01	256.00
2	358.84	249.20
3	375.34	242.01
4	389.03	230.32
5	402.92	218.87
6	419.88	212.83
7	941.83	403.19
8	950.65	418.89
9	952.77	436.76
10	960.78	452.88
11	966.46	464.46

*** 1.650 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	352.01	256.00
2	358.84	249.20
3	375.34	242.01
4	389.03	230.32
5	402.92	218.87
6	419.88	212.83
7	941.83	403.19
8	950.65	418.89
9	952.77	436.76
10	960.78	452.88
11	966.46	464.46

*** 1.650 ***

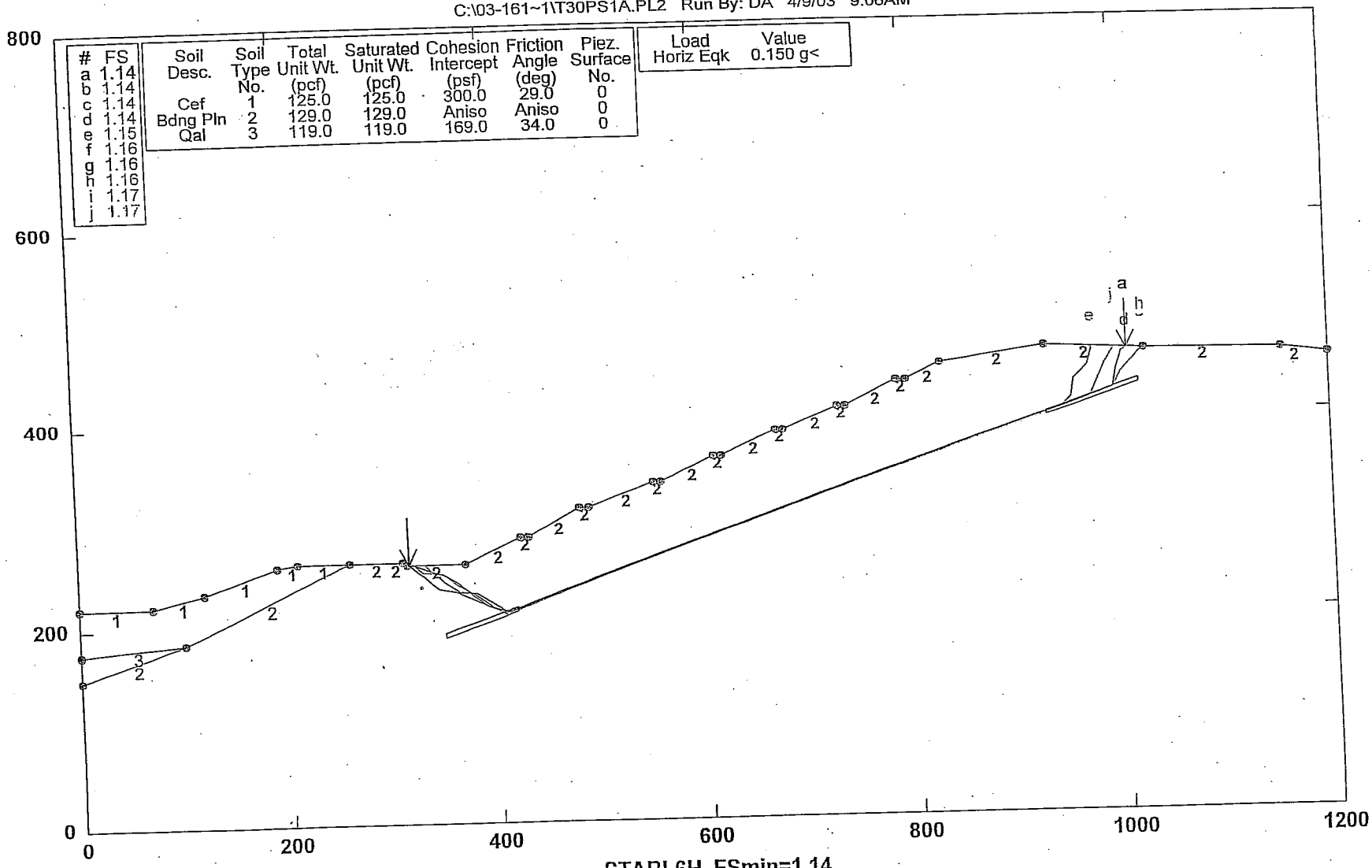
T52584-Hasley Cyn 30-30' ,Cut Slope 11, Pseudostatic

C:\03-161~1\T30PS1A.PL2 Run By: DA 4/9/03 9:06AM

#	FS
a	1.14
b	1.14
c	1.14
d	1.14
e	1.15
f	1.16
g	1.16
h	1.16
i	1.17
j	1.17

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
Bdng Pln	2	129.0	129.0	Aniso	Aniso	0
Qal	3	119.0	119.0	169.0	34.0	0

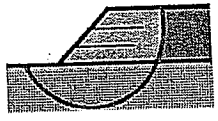
Load	Value
Horiz Eqk	0.150 g<



STABL6H FSmin=1.14

Safety Factors Are Calculated By The Modified Janbu Method

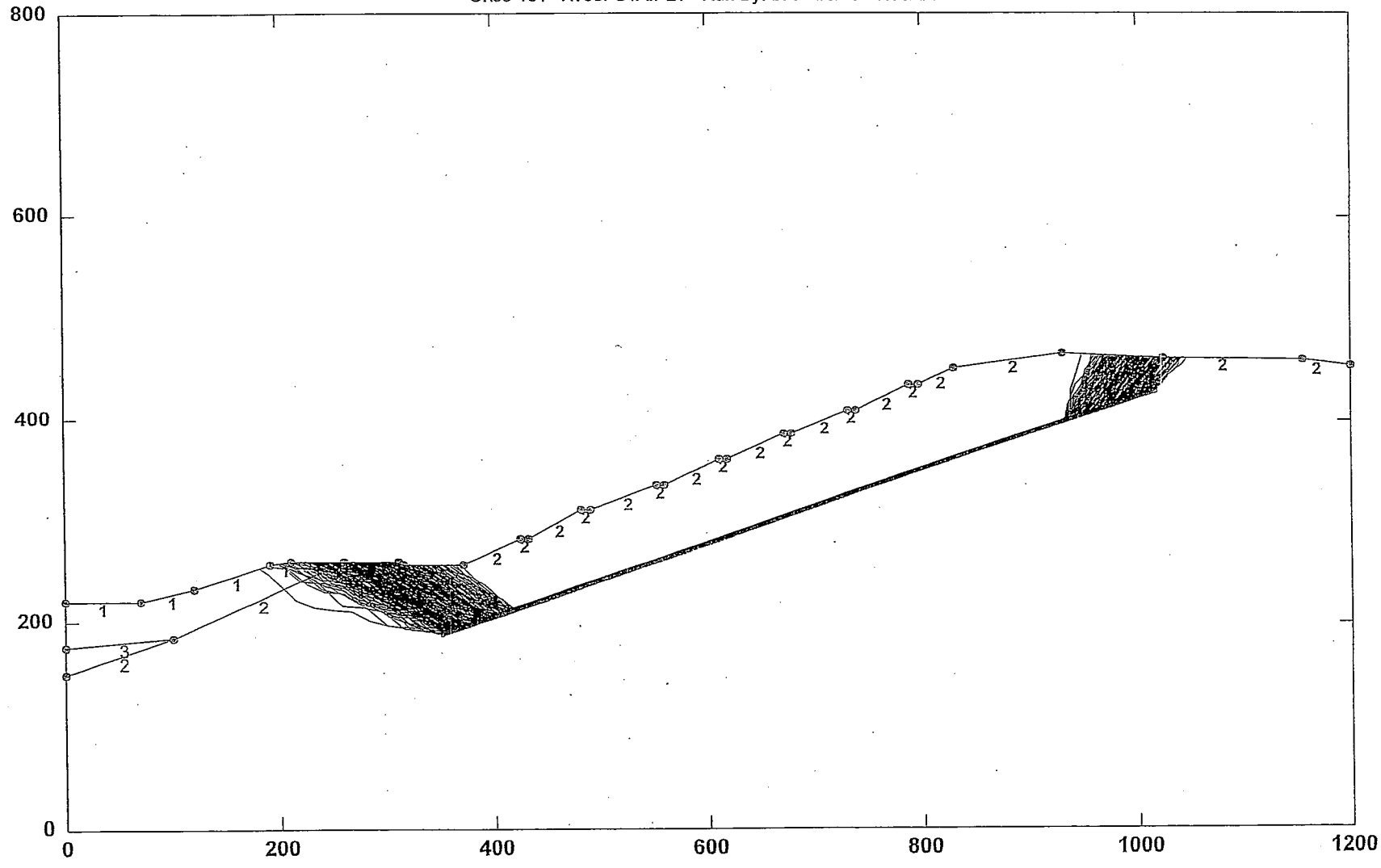
STED



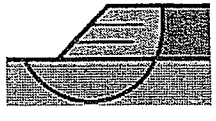
RUN NO. 1-9

T52584-Hasley Cyn 30-30' ,Cut Slope 11, Pseudostatic

C:\03-161~1\T30PS1A.PLT Run By: DA 4/9/03 9:06AM



STED



** STABL6H **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/9/03
Time of Run: 9:06AM
Run By: DA
Input Data Filename: C:t30ps1a.in
Output Filename: C:t30ps1a.OUT
Plotted Output Filename: C:t30ps1a.PLT
PROBLEM DESCRIPTION T52584-Hasley Cyn 30-30' ,Cut Slope 11,
Pseudostatic

BOUNDARY COORDINATES
27 Top Boundaries
30 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	220.00	70.00	220.00	1
2	70.00	220.00	120.00	233.00	1
3	120.00	233.00	190.00	256.00	1
4	190.00	256.00	210.00	260.00	1
5	210.00	260.00	260.00	260.00	1
6	260.00	260.00	310.00	260.00	2
7	310.00	260.00	315.00	256.00	2
8	315.00	256.00	370.00	256.00	2
9	370.00	256.00	425.00	282.00	2
10	425.00	282.00	432.00	282.00	2
11	432.00	282.00	482.00	310.00	2
12	482.00	310.00	490.00	310.00	2
13	490.00	310.00	552.00	335.00	2
14	552.00	335.00	560.00	335.00	2
15	560.00	335.00	610.00	360.00	2
16	610.00	360.00	618.00	360.00	2
17	618.00	360.00	670.00	385.00	2
18	670.00	385.00	678.00	385.00	2
19	678.00	385.00	730.00	410.00	2
20	730.00	410.00	738.00	410.00	2
21	738.00	410.00	788.00	435.00	2
22	788.00	435.00	796.00	435.00	2
23	796.00	435.00	830.00	452.00	2
24	830.00	452.00	930.00	466.00	2
25	930.00	466.00	1025.00	462.00	2
26	1025.00	462.00	1155.00	460.00	2
27	1155.00	460.00	1200.00	455.00	3
28	.00	175.00	100.00	185.00	2
29	100.00	185.00	260.00	260.00	2
30	.00	150.00	100.00	185.00	

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	125.0	125.0	300.0	29.0	.00	.0	0
2	129.0	129.0	347.0	22.0	.00	.0	0
3	119.0	119.0	169.0	34.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	20.0	410.0	40.5
2	24.0	347.0	22.0

```
    3              90.0              410.0          40.5
 A Horizontal Earthquake Loading Coefficient
 Of .150 Has Been Assigned
 A Vertical Earthquake Loading Coefficient
 Of .000 Has Been Assigned
 Cavitation Pressure =      .0 psf
 A Critical Failure Surface Searching Method, Using A Random
 Technique For Generating Sliding Block Surfaces, Has Been
 Specified.
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  18.0
 Box        X-Left     Y-Left    X-Right    Y-Right      Height
 No.         (ft)       (ft)       (ft)       (ft)        (ft)
  1        350.00     188.00     420.00     212.00       4.00
  2        930.00     398.00    1018.00     430.00       4.00
 Following Are Displayed The Ten Most Critical Of The Trial
       Failure Surfaces Examined.  They Are Ordered - Most Critical
       First.
       * * Safety Factors Are Calculated By The Modified Janbu Method * *
       Failure Surface Specified By 11 Coordinate Points
         Point      X-Surf      Y-Surf
          No.        (ft)        (ft)
           1        317.12      256.00
           2        330.80      244.95
           3        344.47      233.24
           4        362.16      229.92
           5        378.02      221.40
           6        394.51      214.18
           7        411.95      209.72
           8        995.11      423.55
           9        997.74      441.36
          10       1003.53      458.40
          11       1007.79      462.72
             ***     1.143   ***
       Failure Surface Specified By 11 Coordinate Points
         Point      X-Surf      Y-Surf
          No.        (ft)        (ft)
           1        317.12      256.00
           2        330.80      244.95
           3        344.47      233.24
           4        362.16      229.92
           5        378.02      221.40
           6        394.51      214.18
           7        411.95      209.72
           8        995.11      423.55
           9        997.74      441.36
          10       1003.53      458.40
          11       1007.79      462.72
             ***     1.143   ***
       Failure Surface Specified By 11 Coordinate Points
         Point      X-Surf      Y-Surf
          No.        (ft)        (ft)
           1        317.12      256.00
           2        330.80      244.95
           3        344.47      233.24
           4        362.16      229.92
           5        378.02      221.40
           6        394.51      214.18
           7        411.95      209.72
           8        995.11      423.55
           9        997.74      441.36
          10       1003.53      458.40
          11       1007.79      462.72
             ***     1.143   ***
```

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	317.12	256.00
2	330.80	244.95
3	344.47	233.24
4	362.16	229.92
5	378.02	221.40
6	394.51	214.18
7	411.95	209.72
8	995.11	423.55
9	997.74	441.36
10	1003.53	458.40
11	1007.79	462.72

*** 1.143 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	320.08	256.00
2	332.46	252.18
3	349.55	246.51
4	364.16	236.00
5	379.06	225.91
6	394.21	216.18
7	410.00	207.54
8	941.45	401.76
9	953.94	414.72
10	957.44	432.37
11	970.05	445.22
12	975.37	462.41
13	975.72	464.07

*** 1.155 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	321.68	256.00
2	329.68	249.74
3	347.54	247.51
4	362.75	237.88
5	376.38	226.13
6	391.28	216.03
7	407.79	208.86
8	994.19	422.58
9	1002.59	438.50
10	1014.39	452.09
11	1023.42	462.07

*** 1.156 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	321.68	256.00
2	329.68	249.74
3	347.54	247.51
4	362.75	237.88
5	376.38	226.13
6	391.28	216.03
7	407.79	208.86
8	994.19	422.58
9	1002.59	438.50
10	1014.39	452.09
11	1023.42	462.07

*** 1.156 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	321.68	256.00

2	329.68	249.74
3	347.54	247.51
4	362.75	237.88
5	376.38	226.13
6	391.28	216.03
7	407.79	208.86
8	994.19	422.58
9	1002.59	438.50
10	1014.39	452.09
11	1023.42	462.07

*** 1.156 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	331.66	256.00
2	335.69	252.01
3	348.76	239.63
4	363.81	229.76
5	381.67	227.46
6	397.01	218.04
7	412.34	208.61
8	972.75	413.42
9	979.72	430.02
10	986.27	446.78
11	995.51	462.23
12	995.98	463.22

*** 1.168 ***

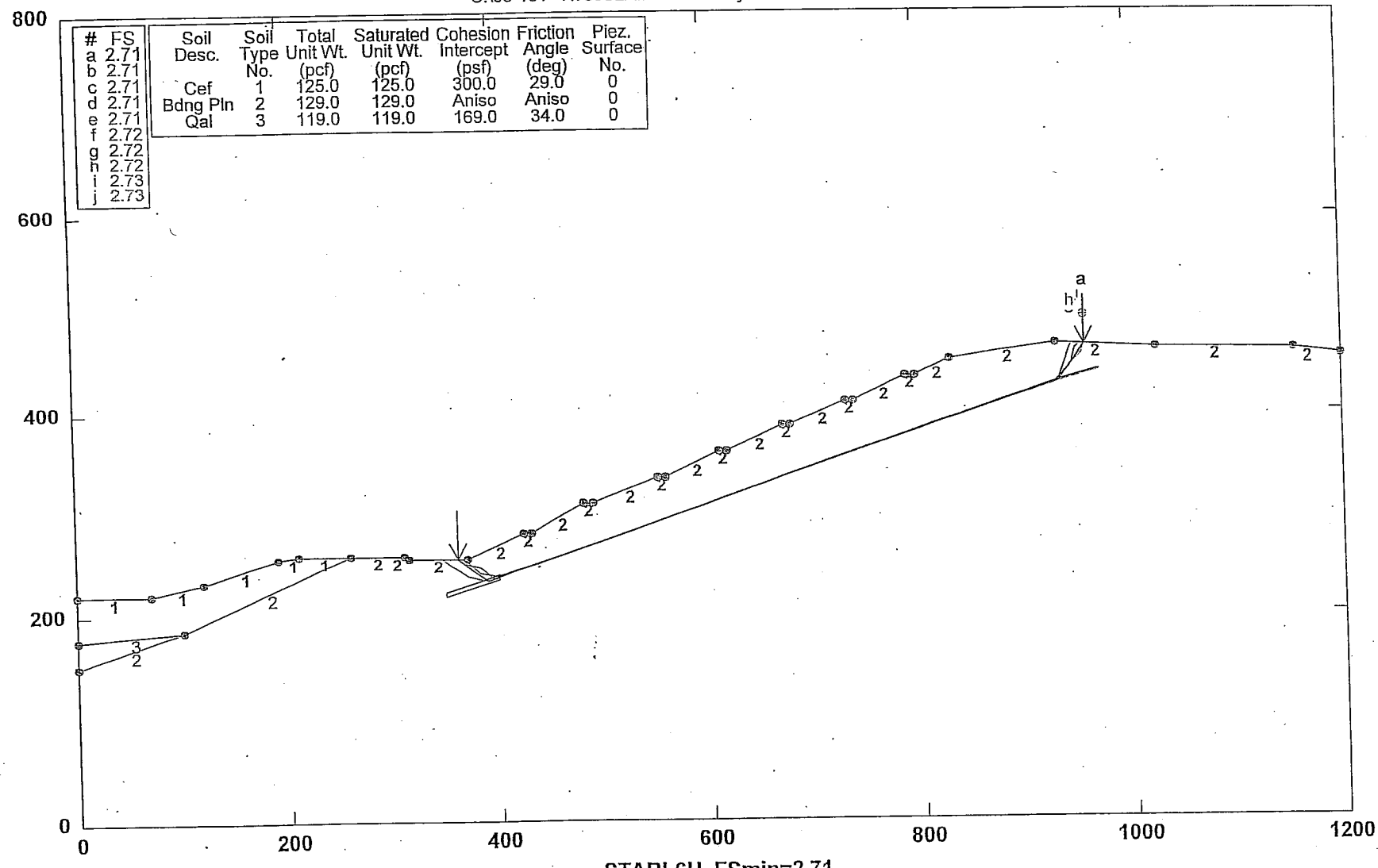
Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	331.66	256.00
2	335.69	252.01
3	348.76	239.63
4	363.81	229.76
5	381.67	227.46
6	397.01	218.04
7	412.34	208.61
8	972.75	413.42
9	979.72	430.02
10	986.27	446.78
11	995.51	462.23
12	995.98	463.22

*** 1.168 ***

T52584-Hasley Cyn 30-30' ,Cut Slope 11, Static

C:\03-161~1\T30S2A.PL2 Run By: DA 4/9/03 9:03AM



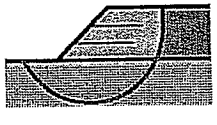
#	FS
a	2.71
b	2.71
c	2.71
d	2.71
e	2.71
f	2.72
g	2.72
h	2.72
i	2.73
j	2.73

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
Bdng Pln	2	129.0	129.0	Aniso	Aniso	0
Qal	3	119.0	119.0	169.0	34.0	0

STABL6H FSmin=2.71

Safety Factors Are Calculated By The Modified Janbu Method

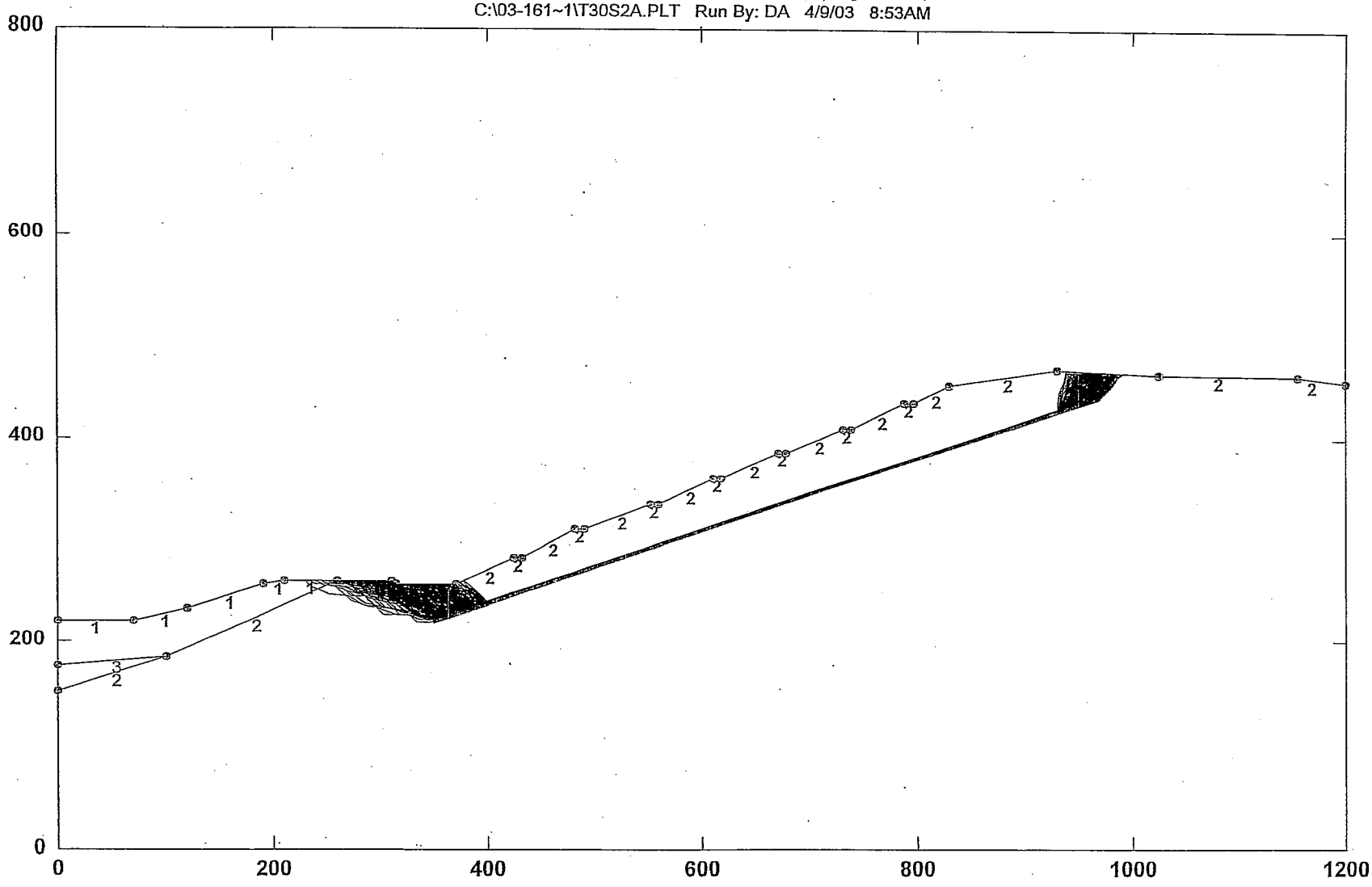
STED



RUN NO. 1-10

T52584-Hasley Cyn 30-30' ,Cut Slope 11, Static

C:\03-161~1\T30S2A.PLT Run By: DA 4/9/03 8:53AM



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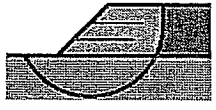


** STABL6H **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/9/03
Time of Run: 9:03AM
Run By: DA
Input Data Filename: C:t30s2a.in
Output Filename: C:t30s2a.OUT
Plotted Output Filename: C:t30s2a.PLT
PROBLEM DESCRIPTION T52584-Hasley Cyn 30-30' ,Cut Slope 11, Static

BOUNDARY COORDINATES
27 Top Boundaries
30 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	220.00	70.00	220.00	1
2	70.00	220.00	120.00	233.00	1
3	120.00	233.00	190.00	256.00	1
4	190.00	256.00	210.00	260.00	1
5	210.00	260.00	260.00	260.00	1
6	260.00	260.00	310.00	260.00	2
7	310.00	260.00	315.00	256.00	2
8	315.00	256.00	370.00	256.00	2
9	370.00	256.00	425.00	282.00	2
10	425.00	282.00	432.00	282.00	2
11	432.00	282.00	482.00	310.00	2
12	482.00	310.00	490.00	310.00	2
13	490.00	310.00	552.00	335.00	2
14	552.00	335.00	560.00	335.00	2
15	560.00	335.00	610.00	360.00	2
16	610.00	360.00	618.00	360.00	2
17	618.00	360.00	670.00	385.00	2
18	670.00	385.00	678.00	385.00	2
19	678.00	385.00	730.00	410.00	2
20	730.00	410.00	738.00	410.00	2
21	738.00	410.00	788.00	435.00	2
22	788.00	435.00	796.00	435.00	2
23	796.00	435.00	830.00	452.00	2
24	830.00	452.00	930.00	466.00	2
25	930.00	466.00	1025.00	462.00	2
26	1025.00	462.00	1155.00	460.00	2
27	1155.00	460.00	1200.00	455.00	3
28	.00	175.00	100.00	185.00	2
29	100.00	185.00	260.00	260.00	2
30	.00	150.00	100.00	185.00	

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	125.0	125.0	300.0	29.0	.00	.0	0
2	129.0	129.0	347.0	22.0	.00	.0	0
3	119.0	119.0	169.0	34.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	20.0	410.0	40.5
2	24.0	410.0	40.5

```
    3              90.0              410.0          40.5
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
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  18.0
Box        X-Left      Y-Left     X-Right     Y-Right      Height
No.         (ft)        (ft)        (ft)        (ft)        (ft)
 1         350.00      220.00      400.00      238.00       4.00
 2         930.00      428.00      970.00      440.00       2.00
Following Are Displayed The Ten Most Critical Of The Trial
      Failure Surfaces Examined.  They Are Ordered - Most Critical
      First.
      * * Safety Factors Are Calculated By The Modified Janbu Method * *
      Failure Surface Specified By  8 Coordinate Points
       Point      X-Surf      Y-Surf
        No.        (ft)        (ft)
         1        361.06      256.00
         2        361.17      255.95
         3        374.84      244.24
         4        390.08      234.67
         5        931.19      427.75
         6        942.40      441.83
         7        952.36      456.82
         8        956.66      464.88
           ***     2.710   ***
      Failure Surface Specified By  8 Coordinate Points
       Point      X-Surf      Y-Surf
        No.        (ft)        (ft)
         1        361.06      256.00
         2        361.17      255.95
         3        374.84      244.24
         4        390.08      234.67
         5        931.19      427.75
         6        942.40      441.83
         7        952.36      456.82
         8        956.66      464.88
           ***     2.710   ***
      Failure Surface Specified By  8 Coordinate Points
       Point      X-Surf      Y-Surf
        No.        (ft)        (ft)
         1        361.06      256.00
         2        361.17      255.95
         3        374.84      244.24
         4        390.08      234.67
         5        931.19      427.75
         6        942.40      441.83
         7        952.36      456.82
         8        956.66      464.88
           ***     2.710   ***
      Failure Surface Specified By  8 Coordinate Points
       Point      X-Surf      Y-Surf
        No.        (ft)        (ft)
         1        347.24      256.00
         2        356.09      249.71
         3        370.62      239.09
         4        387.94      234.17
         5        930.72      428.56
         6        941.62      442.88
         7        954.27      455.68
         8        956.88      464.87
           ***     2.714   ***
      Failure Surface Specified By  8 Coordinate Points
       Point      X-Surf      Y-Surf
```

No.	(ft)	(ft)
1	347.24	256.00
2	356.09	249.71
3	370.62	239.09
4	387.94	234.17
5	930.72	428.56
6	941.62	442.88
7	954.27	455.68
8	956.88	464.87

*** 2.714 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	363.86	256.00
2	368.95	254.51
3	381.82	241.93
4	399.59	239.08
5	931.22	428.20
6	937.23	445.17
7	943.95	461.87
8	944.41	465.39

*** 2.721 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	363.86	256.00
2	368.95	254.51
3	381.82	241.93
4	399.59	239.08
5	931.22	428.20
6	937.23	445.17
7	943.95	461.87
8	944.41	465.39

*** 2.721 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	363.86	256.00
2	368.95	254.51
3	381.82	241.93
4	399.59	239.08
5	931.22	428.20
6	937.23	445.17
7	943.95	461.87
8	944.41	465.39

*** 2.721 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.10	256.00
2	365.46	251.75
3	382.83	247.04
4	396.32	235.13
5	931.41	429.20
6	943.56	442.48
7	948.43	459.81
8	953.15	465.03

*** 2.726 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.10	256.00
2	365.46	251.75
3	382.83	247.04
4	396.32	235.13
5	931.41	429.20

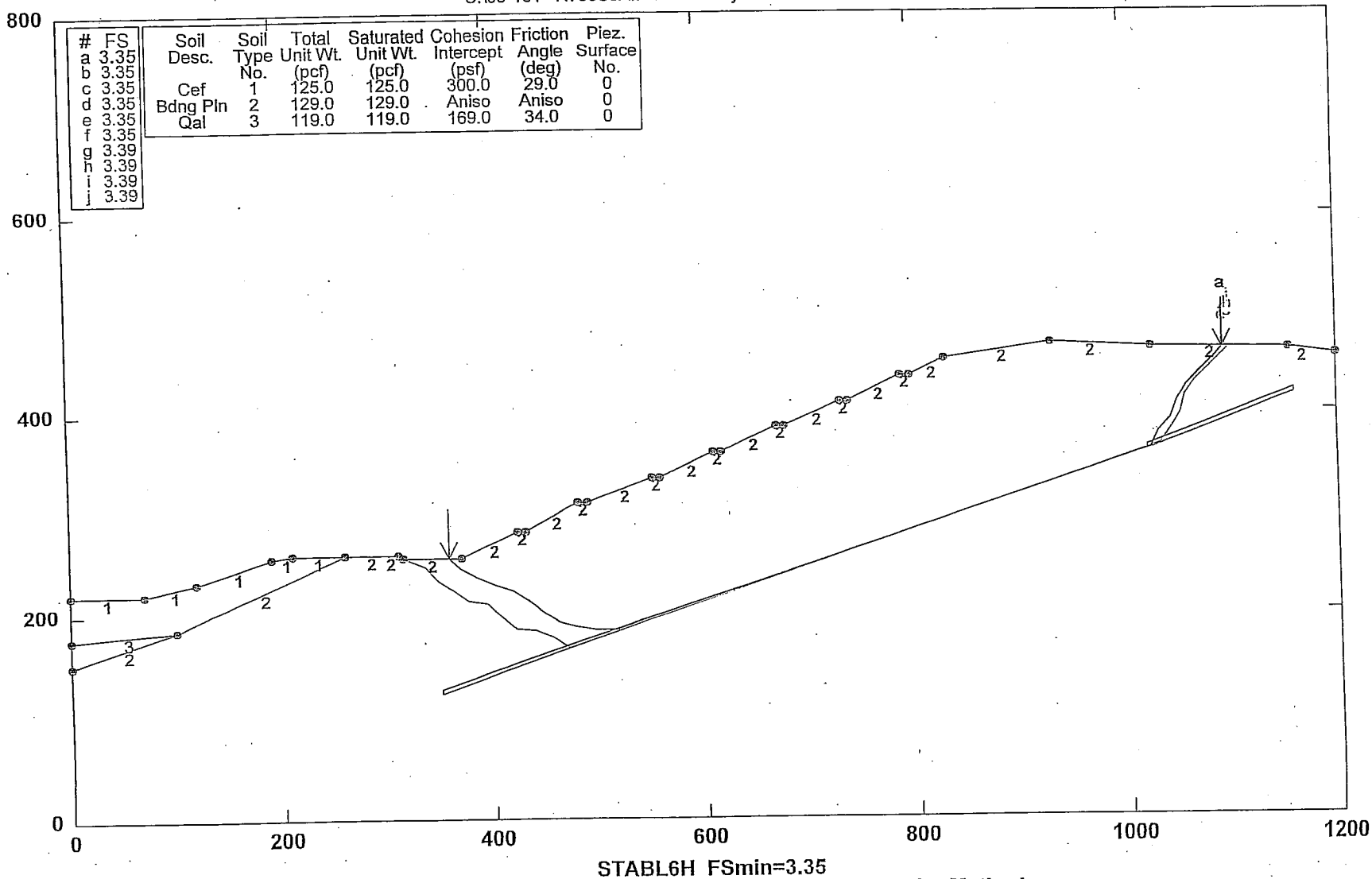
6	943.56	442.48
7	948.43	459.81
8	953.15	465.03
***	2.726	***

T52584-Hasley Cyn 30-30' ,Cut Slope 11, Static

C:\03-161~1\T30S3A.PL2 Run By: DA 4/9/03 8:58AM

#	FS
a	3.35
b	3.35
c	3.35
d	3.35
e	3.35
f	3.35
g	3.39
h	3.39
i	3.39
j	3.39

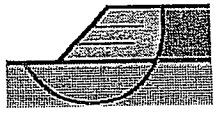
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
Bdng Pln	2	129.0	129.0	Aniso	Aniso	0
Qal	3	119.0	119.0	169.0	34.0	0



STABL6H FSmin=3.35

Safety Factors Are Calculated By The Modified Janbu Method

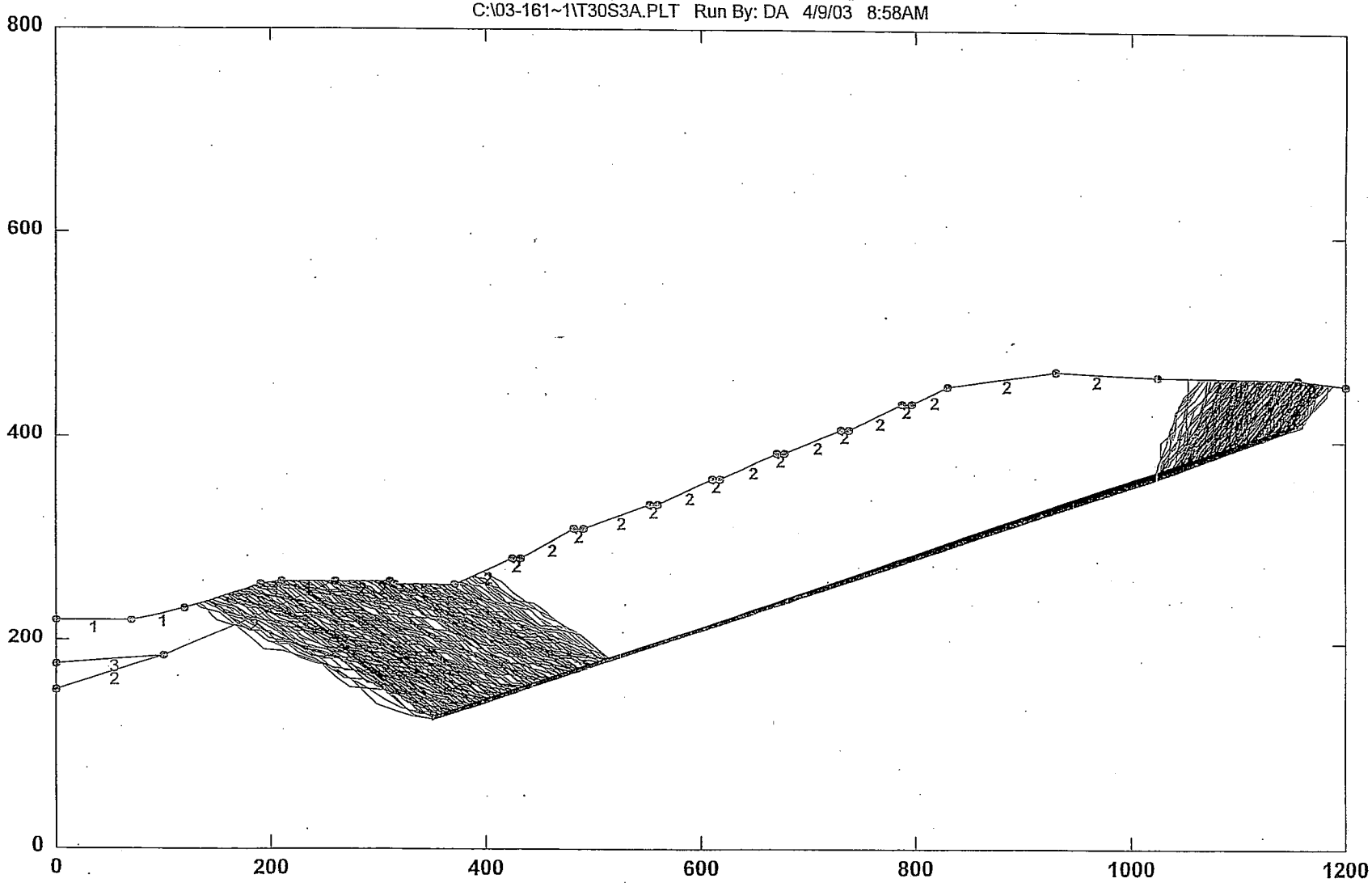
STED



RUN NO. 11

T52584-Hasley Cyn 30-30' ,Cut Slope 11, Static

C:\03-161~1\T30S3A.PLT Run By: DA 4/9/03 8:58AM



STED

** STABL6H **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/9/03
Time of Run: 8:58AM
Run By: DA
Input Data Filename: C:T30S3A.IN
Output Filename: C:T30S3A.OUT
Plotted Output Filename: C:T30S3A.PLT
PROBLEM DESCRIPTION T52584-Hasley Cyn 30-30' ,Cut Slope 11, Static

BOUNDARY COORDINATES
27 Top Boundaries
30 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	220.00	70.00	220.00	1
2	70.00	220.00	120.00	233.00	1
3	120.00	233.00	190.00	256.00	1
4	190.00	256.00	210.00	260.00	1
5	210.00	260.00	260.00	260.00	1
6	260.00	260.00	310.00	260.00	2
7	310.00	260.00	315.00	256.00	2
8	315.00	256.00	370.00	256.00	2
9	370.00	256.00	425.00	282.00	2
10	425.00	282.00	432.00	282.00	2
11	432.00	282.00	482.00	310.00	2
12	482.00	310.00	490.00	310.00	2
13	490.00	310.00	552.00	335.00	2
14	552.00	335.00	560.00	335.00	2
15	560.00	335.00	610.00	360.00	2
16	610.00	360.00	618.00	360.00	2
17	618.00	360.00	670.00	385.00	2
18	670.00	385.00	678.00	385.00	2
19	678.00	385.00	730.00	410.00	2
20	730.00	410.00	738.00	410.00	2
21	738.00	410.00	788.00	435.00	2
22	788.00	435.00	796.00	435.00	2
23	796.00	435.00	830.00	452.00	2
24	830.00	452.00	930.00	466.00	2
25	930.00	466.00	1025.00	462.00	2
26	1025.00	462.00	1155.00	460.00	2
27	1155.00	460.00	1200.00	455.00	2
28	.00	175.00	100.00	185.00	3
29	100.00	185.00	260.00	260.00	2
30	.00	150.00	100.00	185.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	129.0	129.0	347.0	22.0	.00	.0	0
3	119.0	119.0	169.0	34.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	20.0	410.0	40.5
2	24.0	410.0	40.5

```
    3              90.0              410.0          40.5
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
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  18.0
Box        X-Left      Y-Left     X-Right     Y-Right      Height
No.         (ft)        (ft)        (ft)        (ft)        (ft)
 1         350.00      122.00      518.00      183.00       4.00
 2        1020.00      362.00     1160.00      418.00       4.00
Following Are Displayed The Ten Most Critical Of The Trial
      Failure Surfaces Examined.  They Are Ordered - Most Critical
      First.
      * * Safety Factors Are Calculated By The Modified Janbu Method * *
      Failure Surface Specified By 19 Coordinate Points
        Point       X-Surf      Y-Surf
         No.         (ft)        (ft)
          1         358.90      256.00
          2         369.56      245.45
          3         385.21      236.55
          4         401.54      228.98
          5         418.64      223.37
          6         433.13      212.68
          7         446.48      200.61
          8         461.80      191.17
          9         479.14      186.33
         10         496.93      183.62
         11         514.91      182.76
         12        1022.28      361.53
         13        1030.04      377.78
         14        1041.97      391.25
         15        1048.77      407.92
         16        1057.57      423.62
         17        1069.83      436.80
         18        1082.41      449.67
         19        1091.32      460.98
            ***      3.353    ***
      Failure Surface Specified By 19 Coordinate Points
        Point       X-Surf      Y-Surf
         No.         (ft)        (ft)
          1         358.90      256.00
          2         369.56      245.45
          3         385.21      236.55
          4         401.54      228.98
          5         418.64      223.37
          6         433.13      212.68
          7         446.48      200.61
          8         461.80      191.17
          9         479.14      186.33
         10         496.93      183.62
         11         514.91      182.76
         12        1022.28      361.53
         13        1030.04      377.78
         14        1041.97      391.25
         15        1048.77      407.92
         16        1057.57      423.62
         17        1069.83      436.80
         18        1082.41      449.67
         19        1091.32      460.98
            ***      3.353    ***
      Failure Surface Specified By 19 Coordinate Points
        Point       X-Surf      Y-Surf
         No.         (ft)        (ft)
          1         358.90      256.00
```

2	369.56	245.45
3	385.21	236.55
4	401.54	228.98
5	418.64	223.37
6	433.13	212.68
7	446.48	200.61
8	461.80	191.17
9	479.14	186.33
10	496.93	183.62
11	514.91	182.76
12	1022.28	361.53
13	1030.04	377.78
14	1041.97	391.25
15	1048.77	407.92
16	1057.57	423.62
17	1069.83	436.80
18	1082.41	449.67
19	1091.32	460.98

*** 3.353 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	358.90	256.00
2	369.56	245.45
3	385.21	236.55
4	401.54	228.98
5	418.64	223.37
6	433.13	212.68
7	446.48	200.61
8	461.80	191.17
9	479.14	186.33
10	496.93	183.62
11	514.91	182.76
12	1022.28	361.53
13	1030.04	377.78
14	1041.97	391.25
15	1048.77	407.92
16	1057.57	423.62
17	1069.83	436.80
18	1082.41	449.67
19	1091.32	460.98

*** 3.353 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	358.90	256.00
2	369.56	245.45
3	385.21	236.55
4	401.54	228.98
5	418.64	223.37
6	433.13	212.68
7	446.48	200.61
8	461.80	191.17
9	479.14	186.33
10	496.93	183.62
11	514.91	182.76
12	1022.28	361.53
13	1030.04	377.78
14	1041.97	391.25
15	1048.77	407.92
16	1057.57	423.62
17	1069.83	436.80
18	1082.41	449.67
19	1091.32	460.98

*** 3.353 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	358.90	256.00
2	369.56	245.45
3	385.21	236.55
4	401.54	228.98
5	418.64	223.37
6	433.13	212.68
7	446.48	200.61
8	461.80	191.17
9	479.14	186.33
10	496.93	183.62
11	514.91	182.76
12	1022.28	361.53
13	1030.04	377.78
14	1041.97	391.25
15	1048.77	407.92
16	1057.57	423.62
17	1069.83	436.80
18	1082.41	449.67
19	1091.32	460.98

*** 3.353 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	317.24	256.00
2	319.26	254.28
3	335.74	247.04
4	348.74	234.58
5	362.83	223.39
6	377.05	212.35
7	394.79	209.28
8	407.54	196.58
9	421.44	185.15
10	439.26	182.57
11	455.76	175.37
12	470.62	165.22
13	1031.30	366.74
14	1042.37	380.94
15	1051.42	396.50
16	1055.29	414.08
17	1066.28	428.34
18	1078.79	441.27
19	1091.51	454.01
20	1098.22	460.87

*** 3.394 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	317.24	256.00
2	319.26	254.28
3	335.74	247.04
4	348.74	234.58
5	362.83	223.39
6	377.05	212.35
7	394.79	209.28
8	407.54	196.58
9	421.44	185.15
10	439.26	182.57
11	455.76	175.37
12	470.62	165.22
13	1031.30	366.74
14	1042.37	380.94
15	1051.42	396.50
16	1055.29	414.08
17	1066.28	428.34

18	1078.79	441.27
19	1091.51	454.01
20	1098.22	460.87

*** 3.394 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	317.24	256.00
2	319.26	254.28
3	335.74	247.04
4	348.74	234.58
5	362.83	223.39
6	377.05	212.35
7	394.79	209.28
8	407.54	196.58
9	421.44	185.15
10	439.26	182.57
11	455.76	175.37
12	470.62	165.22
13	1031.30	366.74
14	1042.37	380.94
15	1051.42	396.50
16	1055.29	414.08
17	1066.28	428.34
18	1078.79	441.27
19	1091.51	454.01
20	1098.22	460.87

*** 3.394 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	317.24	256.00
2	319.26	254.28
3	335.74	247.04
4	348.74	234.58
5	362.83	223.39
6	377.05	212.35
7	394.79	209.28
8	407.54	196.58
9	421.44	185.15
10	439.26	182.57
11	455.76	175.37
12	470.62	165.22
13	1031.30	366.74
14	1042.37	380.94
15	1051.42	396.50
16	1055.29	414.08
17	1066.28	428.34
18	1078.79	441.27
19	1091.51	454.01
20	1098.22	460.87

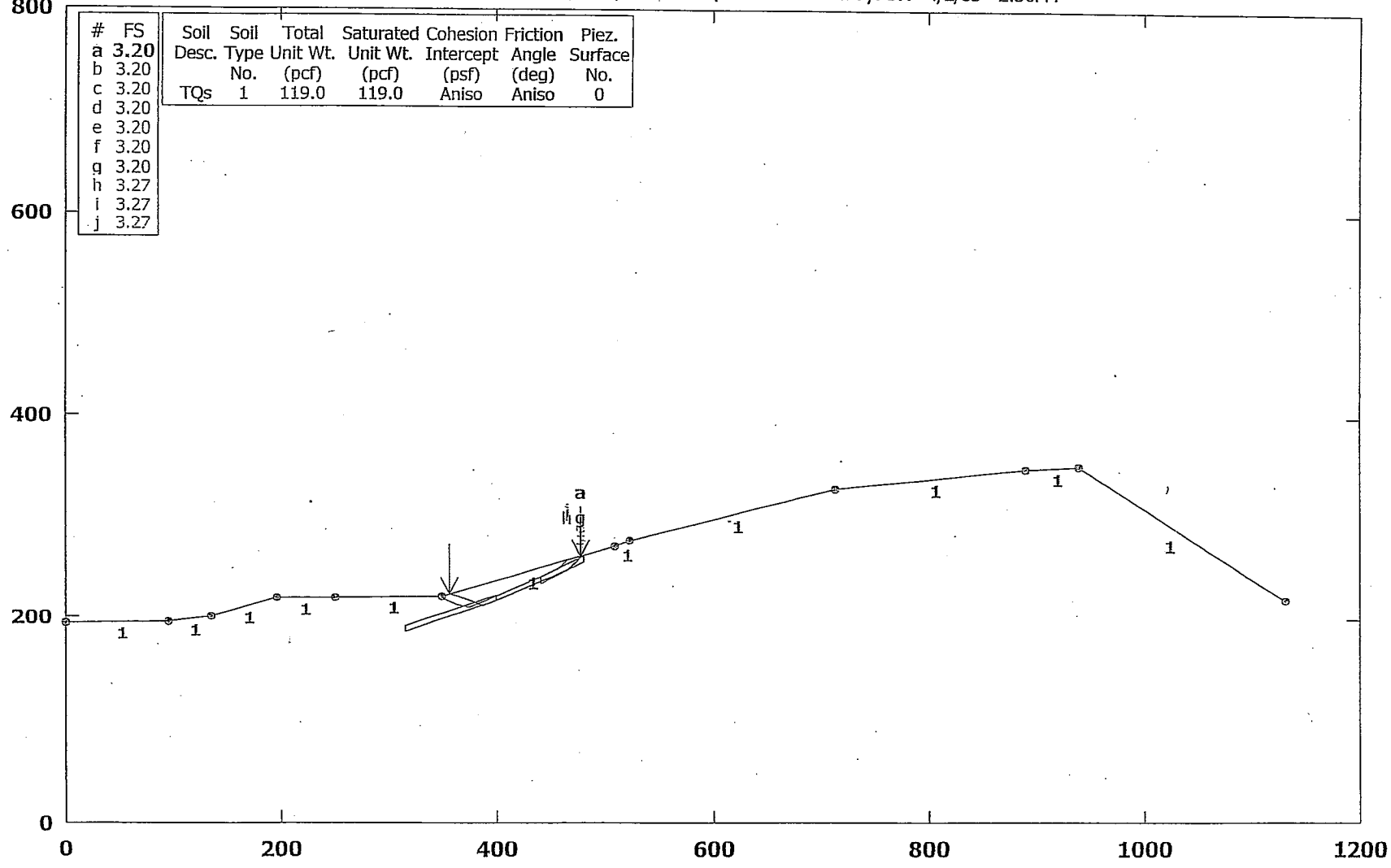
*** 3.394 ***

Amended VTT52584, 31-31' Cut slope Aniso, Silty clay bed pl surface, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\T31S1.PL2 Run By: DA 4/2/03 2:36PM

#	FS
a	3.20
b	3.20
c	3.20
d	3.20
e	3.20
f	3.20
g	3.20
h	3.27
i	3.27
j	3.27

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs	1	119.0	119.0	Aniso	Aniso	0



PCSTABL5M/si FSmin=3.20

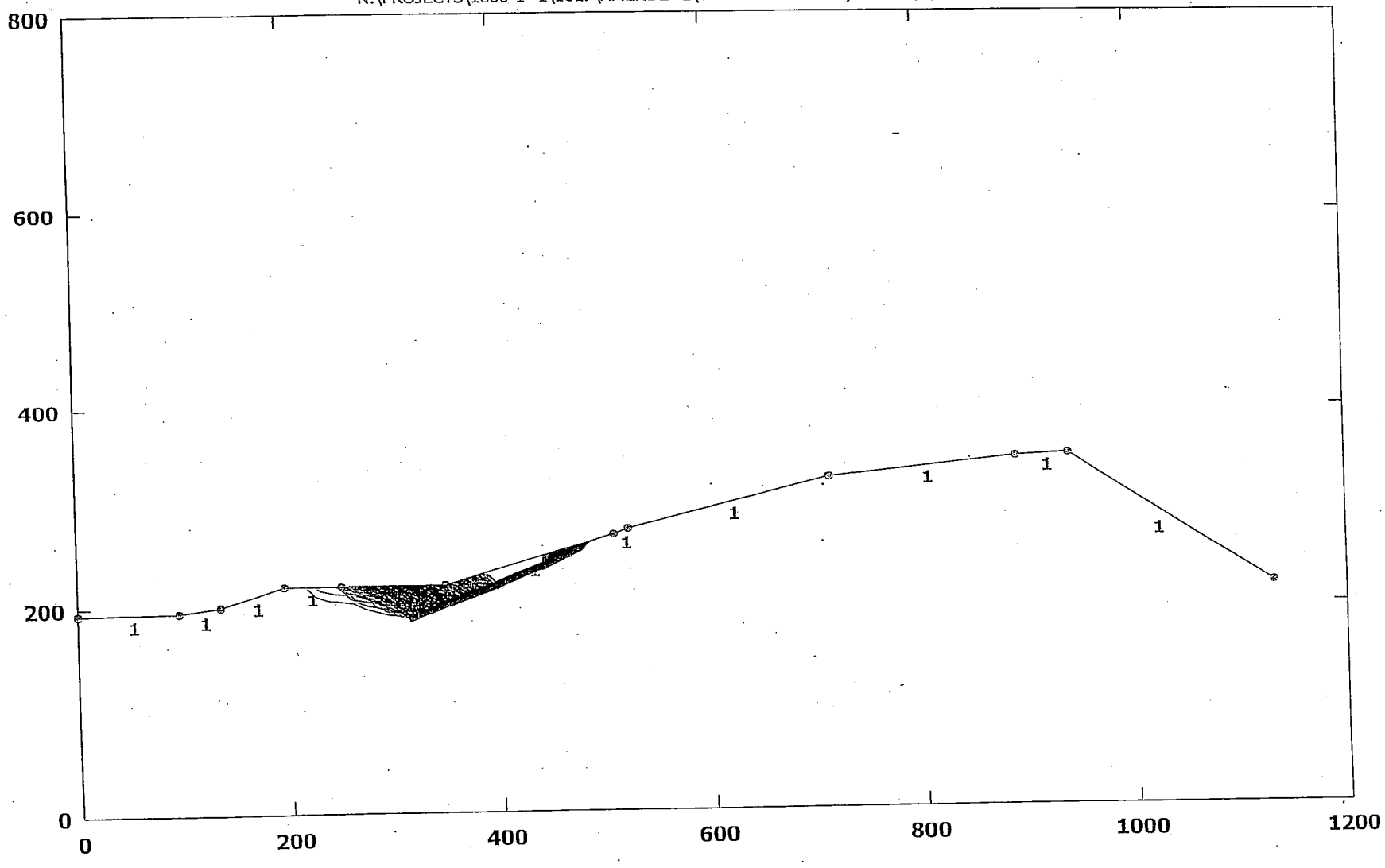
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

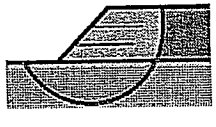
RUN No. - 12

Amended VTT52584, 31-31' Cut slope Aniso, Silty clay bed pl surface, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\T31S1.PLT Run By: DA 4/2/03 2:36PM



STED



```
                    ** PCSTABL5M **
                          by
                    Purdue University
            --Slope Stability Analysis--
         Simplified Janbu, Simplified Bishop
            or Spencer`s Method of Slices
Run Date:                    4/2/03
Time of Run:                 2:36PM
Run By:                      DA
Input Data Filename:         N:T31S1.IN
Output Filename:             N:T31S1.OUT
Unit:                        ENGLISH
Plotted Output Filename:     N:T31S1.PLT
PROBLEM DESCRIPTION   Amended VTT52584, 31-31'  Cut slope
                      Aniso, Silty clay bed pl surface, Static
BOUNDARY COORDINATES
   11 Top   Boundaries
   11 Total Boundaries
Boundary     X-Left      Y-Left     X-Right     Y-Right     Soil Type
   No.        (ft)        (ft)       (ft)        (ft)      Below Bnd
    1          .00      194.00      96.00      195.00         1
    2        96.00      195.00     135.00      200.00         1
    3       135.00      200.00     196.00      221.00         1
    4       196.00      221.00     250.00      221.00         1
    5       250.00      221.00     349.00      222.00         1
    6       349.00      222.00     509.00      271.00         1
    7       509.00      271.00     523.00      277.00         1
    8       523.00      277.00     714.00      328.00         1
    9       714.00      328.00     890.00      348.00         1
   10       890.00      348.00     940.00      350.00         1
   11       940.00      350.00    1130.00      220.00         1
ISOTROPIC SOIL PARAMETERS
  1 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   119.0    119.0     410.0     40.5     .00        .0      0
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            24.0              410.0        40.5
     2            28.0              347.0        22.0
     3            90.0              410.0        40.5
 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.
3000 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  12.0
 Box        X-Left     Y-Left     X-Right     Y-Right      Height
 No.         (ft)       (ft)       (ft)        (ft)         (ft)
  1        315.00     188.00     400.00      220.00        6.00
  2        440.00     238.00     480.00      258.00        6.00
 Following Are Displayed The Ten Most Critical Of The Trial
       Failure Surfaces Examined.  They Are Ordered - Most Critical
       First.
       * * Safety Factors Are Calculated By The Modified Janbu Method * *
       Failure Surface Specified By  7 Coordinate Points
         Point      X-Surf      Y-Surf
          No.        (ft)        (ft)
```

1	356.35	224.25
2	364.37	221.59
3	375.42	216.91
4	386.38	212.02
5	466.15	248.24
6	474.63	256.73
7	477.72	261.42

*** 3.199 ***

Individual data on the 6 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	8.0	2441.3	.0	.0	.0	.0	.0	.0	.0
2	11.0	12027.0	.0	.0	.0	.0	.0	.0	.0
3	11.0	22569.5	.0	.0	.0	.0	.0	.0	.0
4	79.8	147425.0	.0	.0	.0	.0	.0	.0	.0
5	8.5	6755.5	.0	.0	.0	.0	.0	.0	.0
6	3.1	687.2	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	356.35	224.25
2	364.37	221.59
3	375.42	216.91
4	386.38	212.02
5	466.15	248.24
6	474.63	256.73
7	477.72	261.42

*** 3.199 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	356.35	224.25
2	364.37	221.59
3	375.42	216.91
4	386.38	212.02
5	466.15	248.24
6	474.63	256.73
7	477.72	261.42

*** 3.199 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	356.35	224.25
2	364.37	221.59
3	375.42	216.91
4	386.38	212.02
5	466.15	248.24
6	474.63	256.73
7	477.72	261.42

*** 3.199 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	356.35	224.25
2	364.37	221.59
3	375.42	216.91
4	386.38	212.02
5	466.15	248.24
6	474.63	256.73
7	477.72	261.42

*** 3.199 ***

Failure Surface Specified By 7 Coordinate Points

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

1	356.35	224.25
2	364.37	221.59
3	375.42	216.91
4	386.38	212.02
5	466.15	248.24
6	474.63	256.73
7	477.72	261.42

*** 3.199 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	356.35	224.25
2	364.37	221.59
3	375.42	216.91
4	386.38	212.02
5	466.15	248.24
6	474.63	256.73
7	477.72	261.42

*** 3.199 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	349.14	222.04
2	352.28	218.99
3	362.93	213.45
4	374.35	209.76
5	456.42	248.23
6	464.53	257.08
7	464.73	257.44

*** 3.268 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	349.14	222.04
2	352.28	218.99
3	362.93	213.45
4	374.35	209.76
5	456.42	248.23
6	464.53	257.08
7	464.73	257.44

*** 3.268 ***

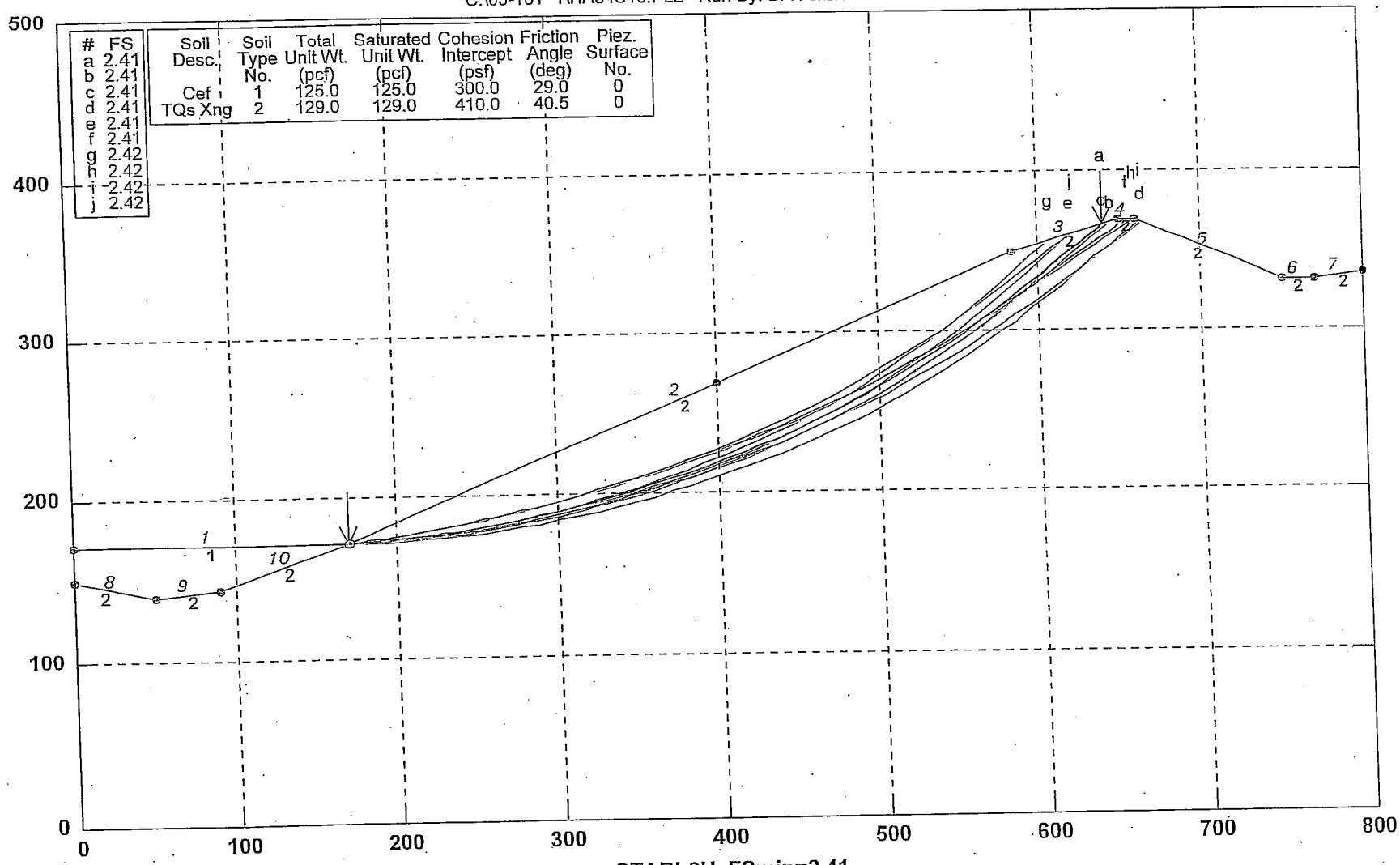
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	349.14	222.04
2	352.28	218.99
3	362.93	213.45
4	374.35	209.76
5	456.42	248.23
6	464.53	257.08
7	464.73	257.44

*** 3.268 ***

T52584-Hasley Cyn-CS34-34', Natural Slope, Static

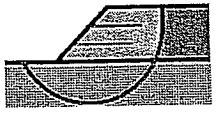
C:\03-161~1\HA34S10.PL2 Run By: DA . 3/27/03 8:37AM



STABL6H FSmin=2.41

Safety Factors Are Calculated By The Modified Bishop Method

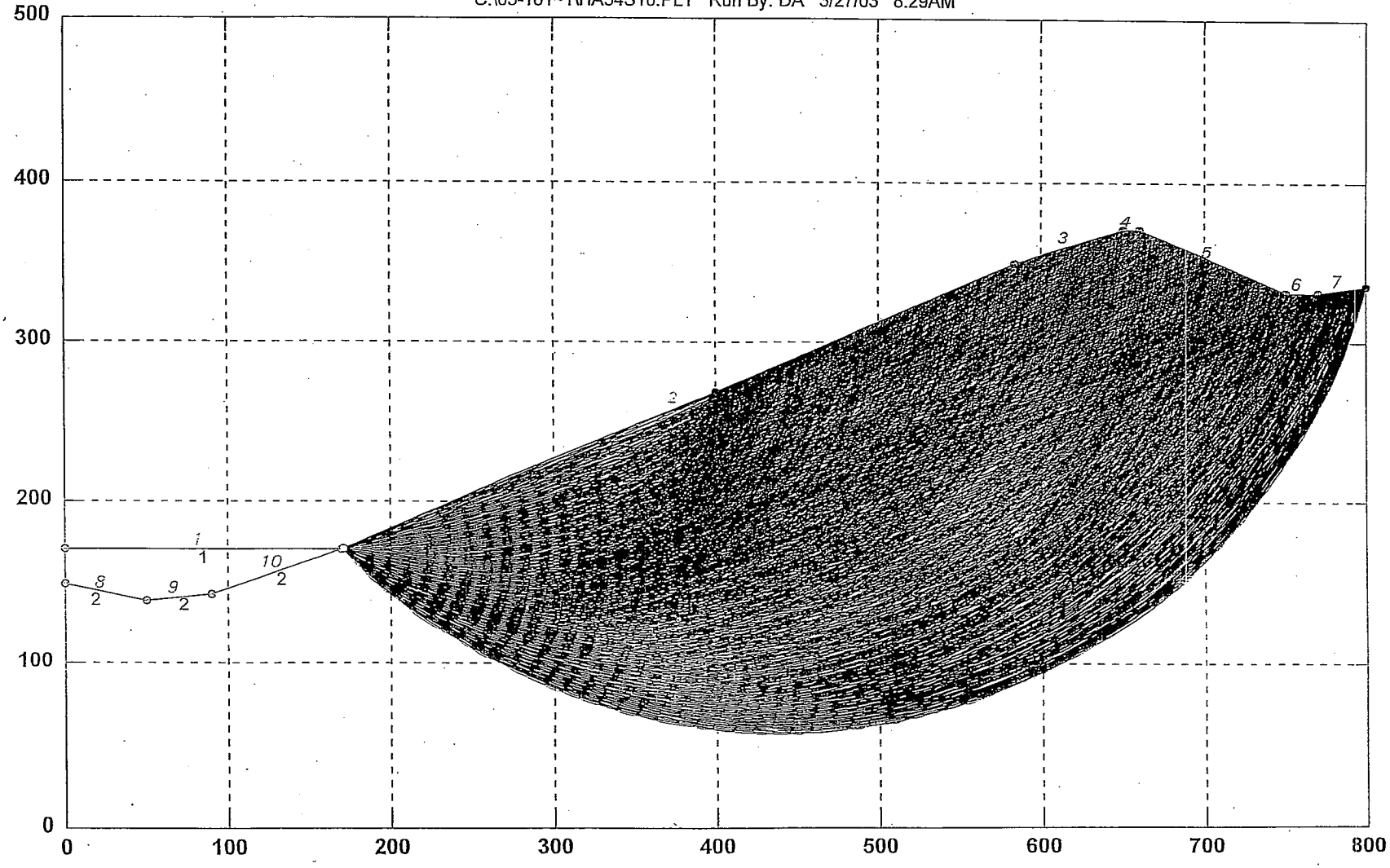
STED



RUN No. 13

T52584-Hasley Cyn-CS34-34', Natural Slope, Static

C:\03-161~1\HA34S10.PLT Run By: DA 3/27/03 8:29AM



** STABL6H **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/27/03
Time of Run: 8:37AM
Run By: DA
Input Data Filename: C:HA34S10.IN
Output Filename: C:HA34S10.OUT
Plotted Output Filename: C:HA34S10.PLT
PROBLEM DESCRIPTION T52584-Hasley Cyn-CS34-34',
Natural Slope, Static

BOUNDARY COORDINATES
7 Top Boundaries
10 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	171.00	170.00	171.00	1
2	170.00	171.00	584.00	348.00	2
3	584.00	348.00	650.00	370.00	2
4	650.00	370.00	660.00	370.00	2
5	660.00	370.00	750.00	330.00	2
6	750.00	330.00	770.00	330.00	2
7	770.00	330.00	800.00	334.00	2
8	.00	150.00	50.00	140.00	2
9	50.00	140.00	90.00	144.00	2
10	90.00	144.00	170.00	171.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	129.0	129.0	410.0	40.5	.00	.0	0

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
2000 Trial Surfaces Have Been Generated.
1000 Surfaces Initiate From Each Of 2 Points Equally Spaced
Along The Ground Surface Between X = 170.00 ft.
and X = 171.00 ft.
Each Surface Terminates Between X = 400.00 ft.
and X = 800.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = .00 ft.
12.00 ft. Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And 35.0 deg.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Failure Surface Specified By 45 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	170.00	171.00
2	181.98	171.70
3	193.95	172.59
4	205.90	173.68
5	217.83	174.95
6	229.74	176.41
7	241.63	178.06
8	253.48	179.90
9	265.31	181.93

10	277.11	184.14
11	288.86	186.55
12	300.58	189.13
13	312.26	191.91
14	323.88	194.87
15	335.47	198.01
16	346.99	201.34
17	358.47	204.85
18	369.89	208.55
19	381.24	212.42
20	392.54	216.47
21	403.77	220.71
22	414.93	225.12
23	426.02	229.71
24	437.03	234.47
25	447.97	239.41
26	458.82	244.52
27	469.60	249.80
28	480.29	255.25
29	490.89	260.88
30	501.40	266.67
31	511.82	272.62
32	522.14	278.74
33	532.36	285.03
34	542.48	291.47
35	552.50	298.08
36	562.41	304.84
37	572.22	311.77
38	581.91	318.84
39	591.49	326.07
40	600.95	333.45
41	610.29	340.98
42	619.51	348.66
43	628.61	356.48
44	637.59	364.45
45	640.01	366.67

Circle Center At X = 131.8 ; Y = 925.1 and Radius, 755.1
*** 2.408 ***

Failure Surface Specified By 45 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	170.00	171.00
2	181.99	171.46
3	193.97	172.13
4	205.94	172.99
5	217.90	174.05
6	229.83	175.30
7	241.74	176.76
8	253.63	178.41
9	265.48	180.26
10	277.31	182.31
11	289.10	184.55
12	300.85	186.99
13	312.55	189.62
14	324.22	192.44
15	335.83	195.46
16	347.39	198.67
17	358.90	202.07
18	370.35	205.66
19	381.74	209.44
20	393.07	213.41
21	404.32	217.57
22	415.51	221.91
23	426.62	226.44
24	437.66	231.15
25	448.62	236.04

26	459.49	241.12
27	470.28	246.37
28	480.98	251.81
29	491.59	257.41
30	502.10	263.20
31	512.52	269.16
32	522.83	275.29
33	533.05	281.59
34	543.15	288.05
35	553.15	294.69
36	563.04	301.49
37	572.81	308.45
38	582.47	315.58
39	592.01	322.86
40	601.42	330.30
41	610.71	337.89
42	619.88	345.64
43	628.91	353.54
44	637.81	361.59
45	645.04	368.35

Circle Center At X = 148.0 ; Y = 894.4 and Radius, 723.7
*** 2.409 ***
Failure Surface Specified By 45 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.00	171.43
2	183.00	171.75
3	194.98	172.28
4	206.96	173.02
5	218.92	173.96
6	230.87	175.12
7	242.79	176.48
8	254.69	178.05
9	266.56	179.82
10	278.39	181.80
11	290.19	183.98
12	301.95	186.37
13	313.67	188.97
14	325.34	191.77
15	336.96	194.76
16	348.52	197.97
17	360.03	201.37
18	371.48	204.97
19	382.86	208.77
20	394.17	212.76
21	405.42	216.95
22	416.59	221.34
23	427.68	225.92
24	438.69	230.69
25	449.62	235.65
26	460.45	240.81
27	471.20	246.14
28	481.85	251.67
29	492.41	257.38
30	502.86	263.27
31	513.21	269.34
32	523.46	275.59
33	533.59	282.02
34	543.61	288.62
35	553.51	295.40
36	563.30	302.35
37	572.96	309.46
38	582.50	316.74
39	591.91	324.19
40	601.19	331.80
41	610.33	339.57

42	619.34	347.50
43	628.21	355.58
44	636.94	363.82
45	639.78	366.59

Circle Center At X = 158.5 ; Y = 862.1 and Radius, 690.8
*** 2.412 ***

Failure Surface Specified By 47 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	170.00	171.00
2	181.98	171.78
3	193.94	172.73
4	205.89	173.85
5	217.82	175.14
6	229.73	176.59
7	241.62	178.22
8	253.48	180.02
9	265.32	181.99
10	277.13	184.12
11	288.90	186.43
12	300.65	188.90
13	312.35	191.54
14	324.02	194.34
15	335.65	197.31
16	347.23	200.45
17	358.77	203.75
18	370.25	207.22
19	381.69	210.85
20	393.08	214.64
21	404.41	218.59
22	415.68	222.71
23	426.89	226.98
24	438.04	231.42
25	449.13	236.01
26	460.15	240.76
27	471.10	245.66
28	481.98	250.73
29	492.79	255.94
30	503.52	261.32
31	514.17	266.84
32	524.75	272.51
33	535.24	278.34
34	545.65	284.31
35	555.97	290.43
36	566.20	296.70
37	576.34	303.11
38	586.39	309.67
39	596.35	316.37
40	606.21	323.21
41	615.97	330.19
42	625.63	337.31
43	635.19	344.56
44	644.64	351.96
45	653.99	359.48
46	663.23	367.14
47	664.33	368.08

Circle Center At X = 121.4 ; Y = 1011.4 and Radius, 841.8
*** 2.412 ***

Failure Surface Specified By 43 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.00	171.43
2	182.99	171.83
3	194.98	172.45
4	206.95	173.28
5	218.90	174.33

6	230.84	175.59
7	242.75	177.07
8	254.63	178.76
9	266.47	180.66
10	278.29	182.77
11	290.06	185.10
12	301.79	187.63
13	313.47	190.38
14	325.10	193.33
15	336.68	196.50
16	348.19	199.87
17	359.65	203.44
18	371.04	207.23
19	382.35	211.21
20	393.60	215.40
21	404.77	219.79
22	415.86	224.37
23	426.86	229.16
24	437.78	234.14
25	448.60	239.32
26	459.34	244.69
27	469.97	250.25
28	480.50	256.01
29	490.93	261.95
30	501.24	268.07
31	511.45	274.38
32	521.54	280.88
33	531.52	287.55
34	541.37	294.40
35	551.10	301.43
36	560.70	308.62
37	570.17	316.00
38	579.50	323.53
39	588.70	331.24
40	597.76	339.11
41	606.68	347.14
42	615.45	355.33
43	620.43	360.14

Circle Center At X = 154.5 ; Y = 840.3 and Radius, 669.0

*** 2.414 ***

Failure Surface Specified By 46 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.00	171.43
2	182.92	172.80
3	194.82	174.33
4	206.71	176.01
5	218.57	177.84
6	230.40	179.82
7	242.21	181.95
8	253.99	184.23
9	265.74	186.66
10	277.46	189.23
11	289.15	191.96
12	300.80	194.84
13	312.41	197.86
14	323.99	201.03
15	335.52	204.35
16	347.01	207.82
17	358.45	211.43
18	369.85	215.18
19	381.20	219.08
20	392.49	223.13
21	403.74	227.32
22	414.93	231.65
23	426.07	236.12

24	437.14	240.73
25	448.16	245.49
26	459.12	250.38
27	470.01	255.42
28	480.84	260.59
29	491.60	265.90
30	502.29	271.34
31	512.92	276.92
32	523.47	282.64
33	533.95	288.49
34	544.35	294.47
35	554.68	300.58
36	564.92	306.83
37	575.09	313.20
38	585.18	319.71
39	595.18	326.34
40	605.09	333.09
41	614.92	339.98
42	624.66	346.98
43	634.32	354.12
44	643.88	361.37
45	653.34	368.74
46	654.91	370.00

Circle Center At X = 68.9 ; Y = 1109.3 and Radius, 943.4
*** 2.415 ***

Failure Surface Specified By 42 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	170.00	171.00
2	181.98	171.63
3	193.95	172.46
4	205.91	173.51
5	217.84	174.77
6	229.75	176.24
7	241.63	177.93
8	253.48	179.82
9	265.30	181.92
10	277.07	184.23
11	288.81	186.74
12	300.49	189.46
13	312.13	192.39
14	323.71	195.53
15	335.24	198.87
16	346.71	202.41
17	358.11	206.15
18	369.44	210.10
19	380.70	214.24
20	391.89	218.58
21	403.00	223.12
22	414.02	227.86
23	424.96	232.79
24	435.82	237.91
25	446.58	243.22
26	457.24	248.73
27	467.81	254.42
28	478.27	260.29
29	488.63	266.35
30	498.87	272.59
31	509.01	279.02
32	519.03	285.62
33	528.94	292.39
34	538.72	299.34
35	548.38	306.46
36	557.91	313.75
37	567.31	321.21
38	576.58	328.84

39	585.71	336.62
40	594.70	344.57
41	603.55	352.67
42	606.54	355.51

Circle Center At X = 140.6 ; Y = 849.4 and Radius, 679.0
*** 2.417 ***
Failure Surface Specified By 46 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	170.00	171.00
2	181.91	172.51
3	193.79	174.16
4	205.66	175.96
5	217.50	177.89
6	229.32	179.97
7	241.11	182.19
8	252.88	184.55
9	264.61	187.05
10	276.32	189.69
11	287.99	192.47
12	299.63	195.39
13	311.23	198.45
14	322.80	201.65
15	334.33	204.99
16	345.81	208.46
17	357.26	212.07
18	368.66	215.82
19	380.01	219.71
20	391.32	223.73
21	402.57	227.88
22	413.78	232.17
23	424.94	236.59
24	436.04	241.15
25	447.08	245.84
26	458.07	250.66
27	469.00	255.61
28	479.87	260.69
29	490.68	265.91
30	501.43	271.25
31	512.11	276.72
32	522.73	282.31
33	533.27	288.04
34	543.75	293.89
35	554.16	299.86
36	564.49	305.96
37	574.75	312.18
38	584.94	318.52
39	595.05	324.99
40	605.08	331.57
41	615.03	338.28
42	624.90	345.10
43	634.69	352.05
44	644.40	359.10
45	654.02	366.28
46	658.88	370.00

Circle Center At X = 49.8 ; Y = 1166.4 and Radius, 1002.7
*** 2.419 ***
Failure Surface Specified By 47 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	170.00	171.00
2	182.00	171.15
3	193.99	171.50
4	205.98	172.05
5	217.96	172.79
6	229.92	173.74

7	241.87	174.89
8	253.79	176.24
9	265.69	177.78
10	277.56	179.53
11	289.40	181.47
12	301.21	183.61
13	312.98	185.94
14	324.71	188.48
15	336.40	191.20
16	348.04	194.13
17	359.63	197.24
18	371.16	200.55
19	382.64	204.05
20	394.06	207.74
21	405.41	211.63
22	416.70	215.70
23	427.92	219.96
24	439.06	224.40
25	450.14	229.03
26	461.13	233.85
27	472.04	238.84
28	482.86	244.02
29	493.60	249.38
30	504.24	254.92
31	514.80	260.63
32	525.25	266.52
33	535.61	272.59
34	545.86	278.82
35	556.01	285.23
36	566.05	291.80
37	575.98	298.54
38	585.79	305.44
39	595.49	312.51
40	605.07	319.74
41	614.52	327.13
42	623.86	334.67
43	633.06	342.37
44	642.14	350.22
45	651.08	358.22
46	659.89	366.37
47	662.51	368.88

Circle Center At X = 167.1 ; Y = 890.1 and Radius, 719.1

*** 2.420 ***

Failure Surface Specified By 43 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.00	171.43
2	182.93	172.72
3	194.84	174.19
4	206.73	175.83
5	218.59	177.64
6	230.43	179.62
7	242.23	181.76
8	254.01	184.08
9	265.75	186.57
10	277.45	189.22
11	289.11	192.04
12	300.73	195.03
13	312.31	198.19
14	323.84	201.51
15	335.33	205.00
16	346.76	208.65
17	358.13	212.46
18	369.46	216.44
19	380.72	220.58
20	391.92	224.88

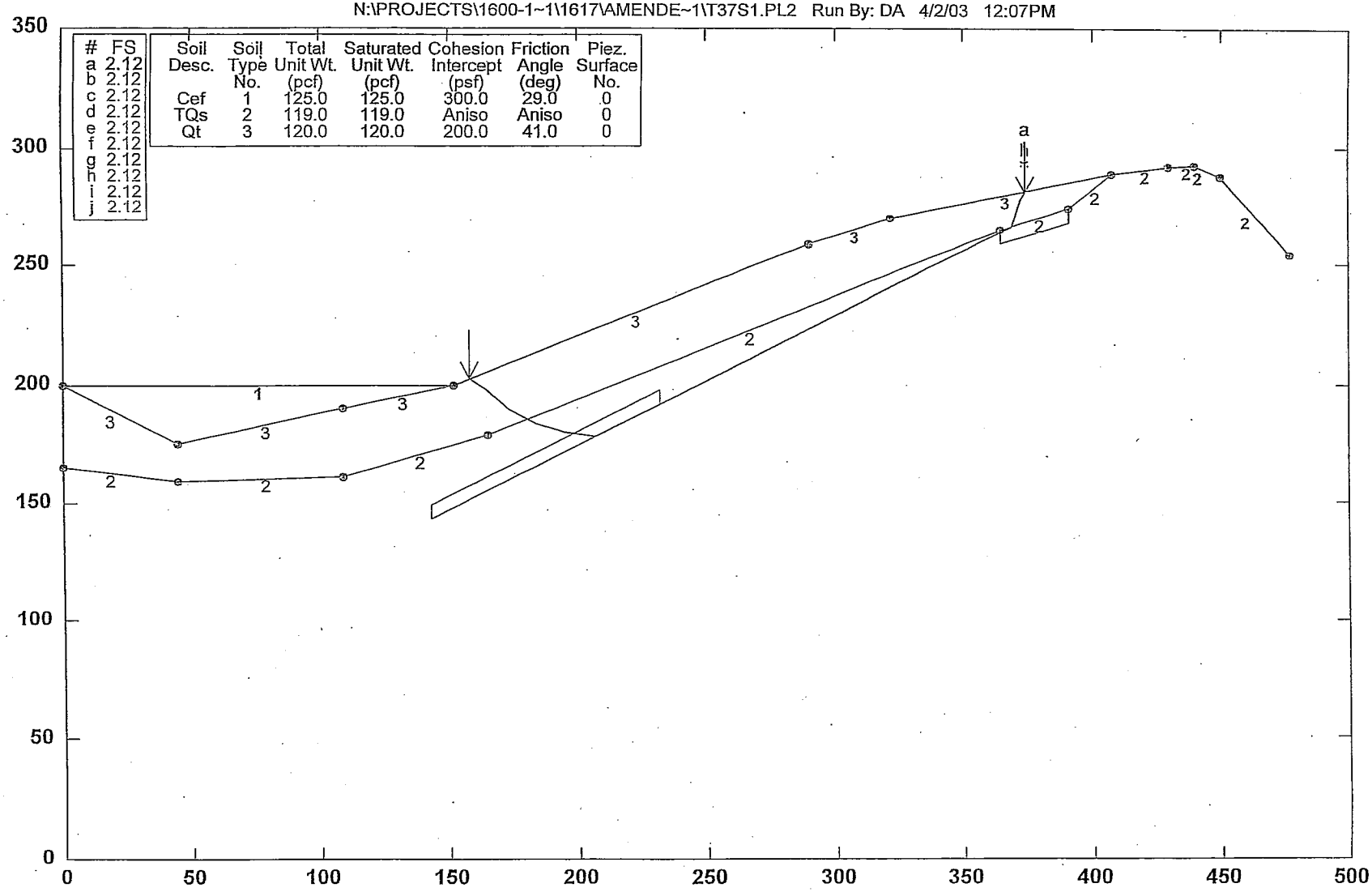
21	403.06	229.34
22	414.14	233.96
23	425.15	238.74
24	436.08	243.67
25	446.95	248.77
26	457.74	254.02
27	468.46	259.42
28	479.09	264.97
29	489.65	270.68
30	500.12	276.54
31	510.51	282.55
32	520.81	288.71
33	531.02	295.01
34	541.14	301.46
35	551.16	308.05
36	561.09	314.79
37	570.93	321.67
38	580.66	328.69
39	590.29	335.85
40	599.82	343.14
41	609.24	350.58
42	618.55	358.14
43	621.28	360.43

Circle Center At X = 86.6 ; Y = 1003.3 and Radius, 836.2

*** 2.422 ***

Amended VTT52584, 37-37' Nat slope w/ Qt-- Aniso, bed pl surface

N:\PROJECTS\1600-1~1\1617\AMENDE~1\T37S1.PL2 Run By: DA 4/2/03 12:07PM



#	FS
a	2.12
b	2.12
c	2.12
d	2.12
e	2.12
f	2.12
g	2.12
h	2.12
i	2.12
j	2.12

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0
Qt	3	120.0	120.0	200.0	41.0	0

PCSTABL5M/si FSmin=2.12

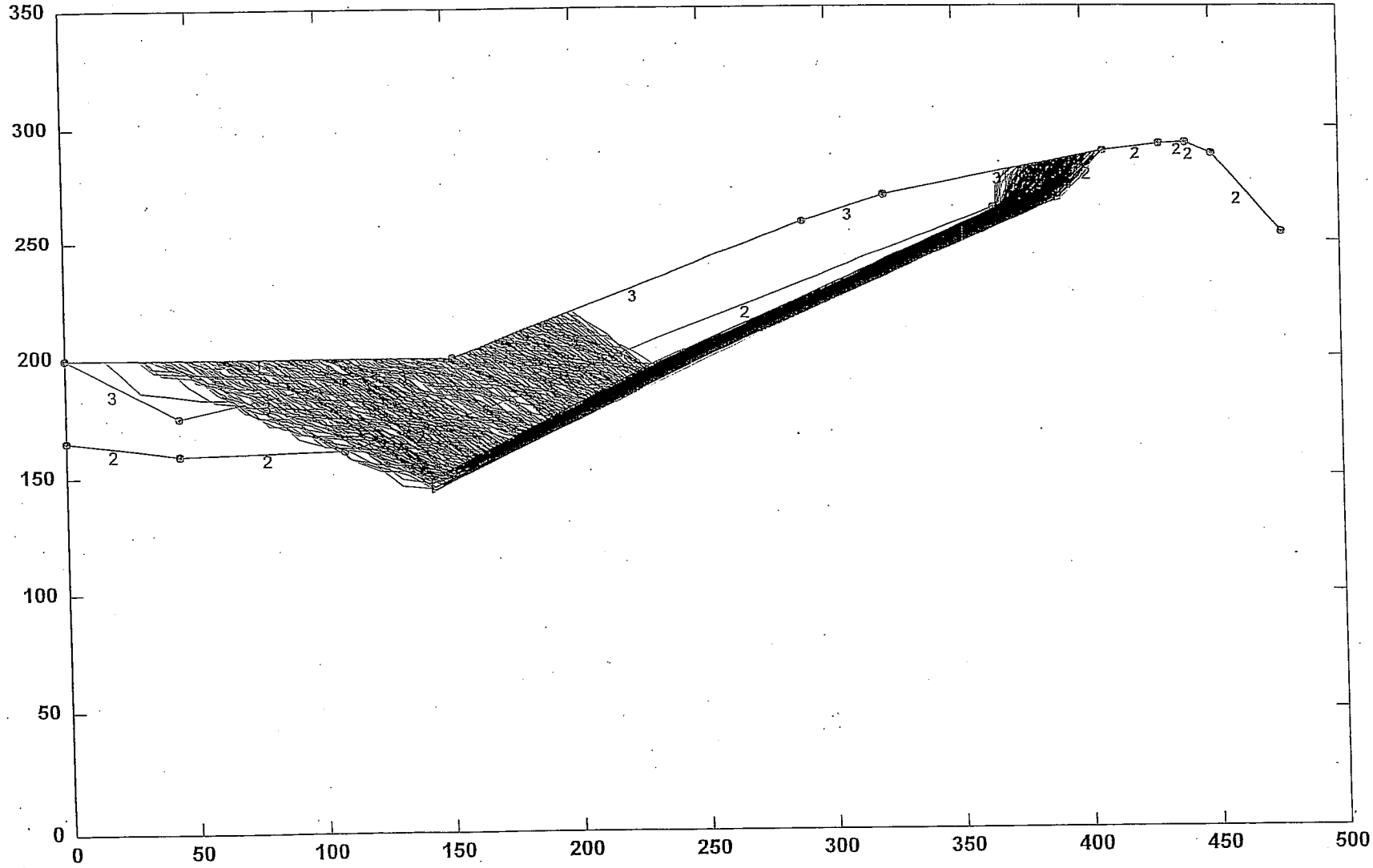
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

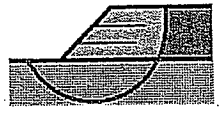
RUN No. - 14

Amended VTT52584, 37-37' Nat slope w/ Qt-- Aniso, bed pl surface

N:\PROJECTS\1600-1~1\1617\AMENDE~1\T37S1.PLT Run By: DA 4/2/03 12:08PM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/2/03
Time of Run: 12:08PM
Run By: DA
Input Data Filename: N:t37s1.in
Output Filename: N:t37s1.OUT
Unit: ENGLISH
Plotted Output Filename: N:t37s1.PLT
PROBLEM DESCRIPTION Amended VTT52584, 37-37' Nat slope
w/ Qt-- Aniso, bed pl surface

BOUNDARY COORDINATES
8 Top Boundaries
17 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	200.00	152.00	200.00	1
2	152.00	200.00	290.00	259.00	3
3	290.00	259.00	322.00	270.00	3
4	322.00	270.00	408.00	289.00	3
5	408.00	289.00	430.00	292.00	2
6	430.00	292.00	440.00	293.00	2
7	440.00	293.00	450.00	288.00	2
8	450.00	288.00	477.00	254.00	2
9	.00	200.00	45.00	175.00	3
10	45.00	175.00	109.00	190.00	3
11	109.00	190.00	152.00	200.00	3
12	.00	165.00	45.00	159.00	2
13	45.00	159.00	109.00	161.00	2
14	109.00	161.00	165.00	179.00	2
15	165.00	179.00	365.00	265.00	2
16	365.00	265.00	391.00	274.00	2
17	391.00	274.00	408.00	289.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0
3	120.0	120.0	200.0	41.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	28.0	410.0	40.5
2	30.0	347.0	22.0
3	90.0	410.0	40.5

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.
3000 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 12.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	143.00	146.00	232.00	195.00	6.00

2 365.00 262.00 391.00 271.00 6.00

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

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

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 2.122 ***

Individual data on the 13 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	6.5	2981.8	.0	.0	.0	.0	.0	.0	.0
2	8.9	14458.4	.0	.0	.0	.0	.0	.0	.0
3	6.8	18657.0	.0	.0	.0	.0	.0	.0	.0
4	3.5	11732.9	.0	.0	.0	.0	.0	.0	.0
5	11.6	47358.1	.0	.0	.0	.0	.0	.0	.0
6	11.9	59230.1	.0	.0	.0	.0	.0	.0	.0
7	82.9	400872.1	.0	.0	.0	.0	.0	.0	.0
8	32.0	124461.6	.0	.0	.0	.0	.0	.0	.0
9	43.0	115376.5	.0	.0	.0	.0	.0	.0	.0
10	4.0	7179.1	.0	.0	.0	.0	.0	.0	.0
11	.1	116.6	.0	.0	.0	.0	.0	.0	.0
12	3.7	3877.0	.0	.0	.0	.0	.0	.0	.0
13	1.9	402.9	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 2.122 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 2.122 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58

2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 2.122 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 2.122 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 2.122 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 2.122 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 2.122 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76

3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 2.122 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 2.122 ***

Amended VTT52584, 37-37' Nat slope Aniso, bed pl surface,

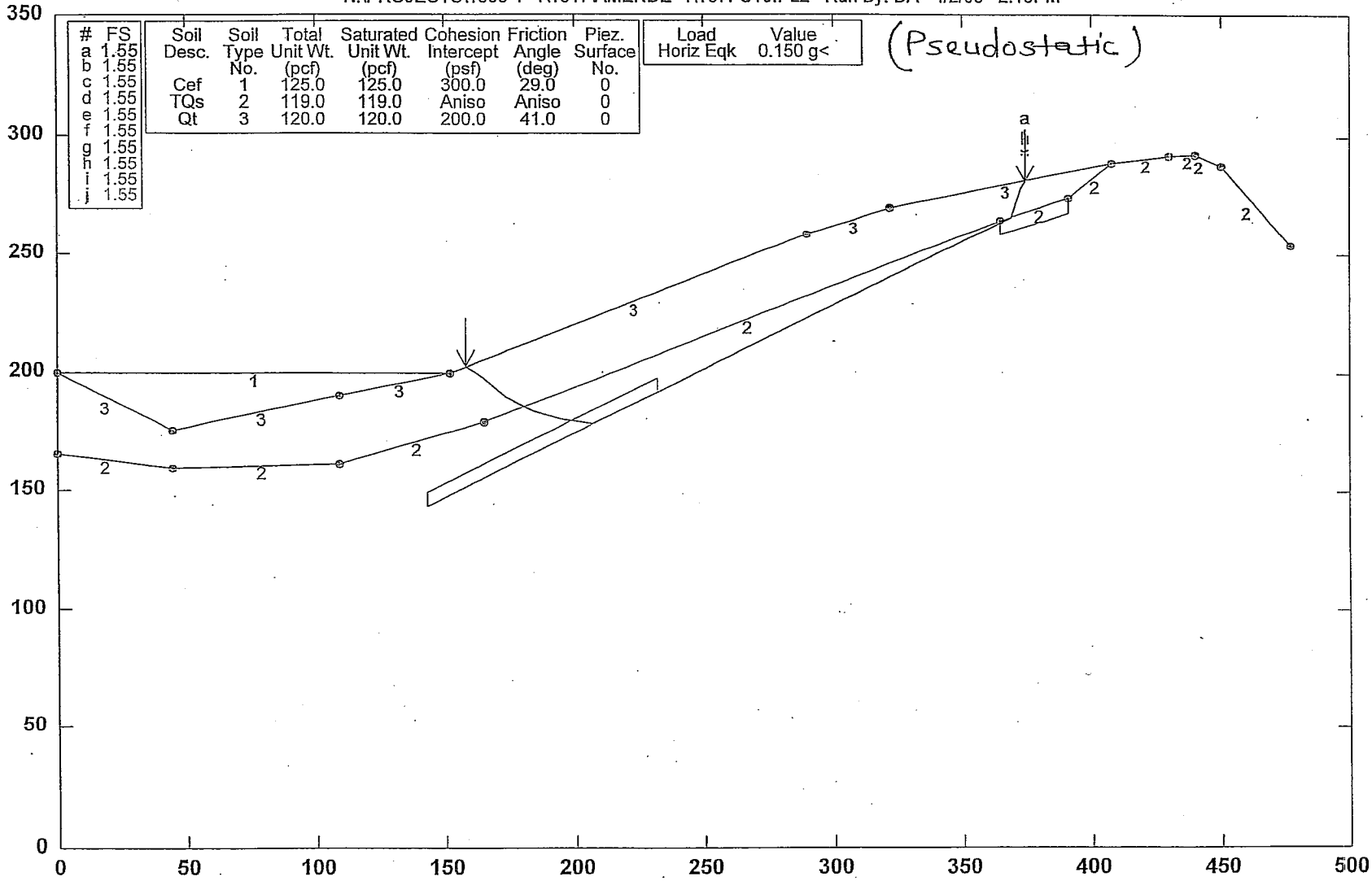
N:\PROJECTS\1600-1~1\1617\AMENDE~1\T37PS10.PL2 Run By: DA 4/2/03 2:18PM

(Pseudostatic)

#	FS
a	1.55
b	1.55
c	1.55
d	1.55
e	1.55
f	1.55
g	1.55
h	1.55
i	1.55
j	1.55

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0
Qt	3	120.0	120.0	200.0	41.0	0

Load	Value
Horiz Eqk	0.150 g<



PCSTABL5M/si FSmin=1.55

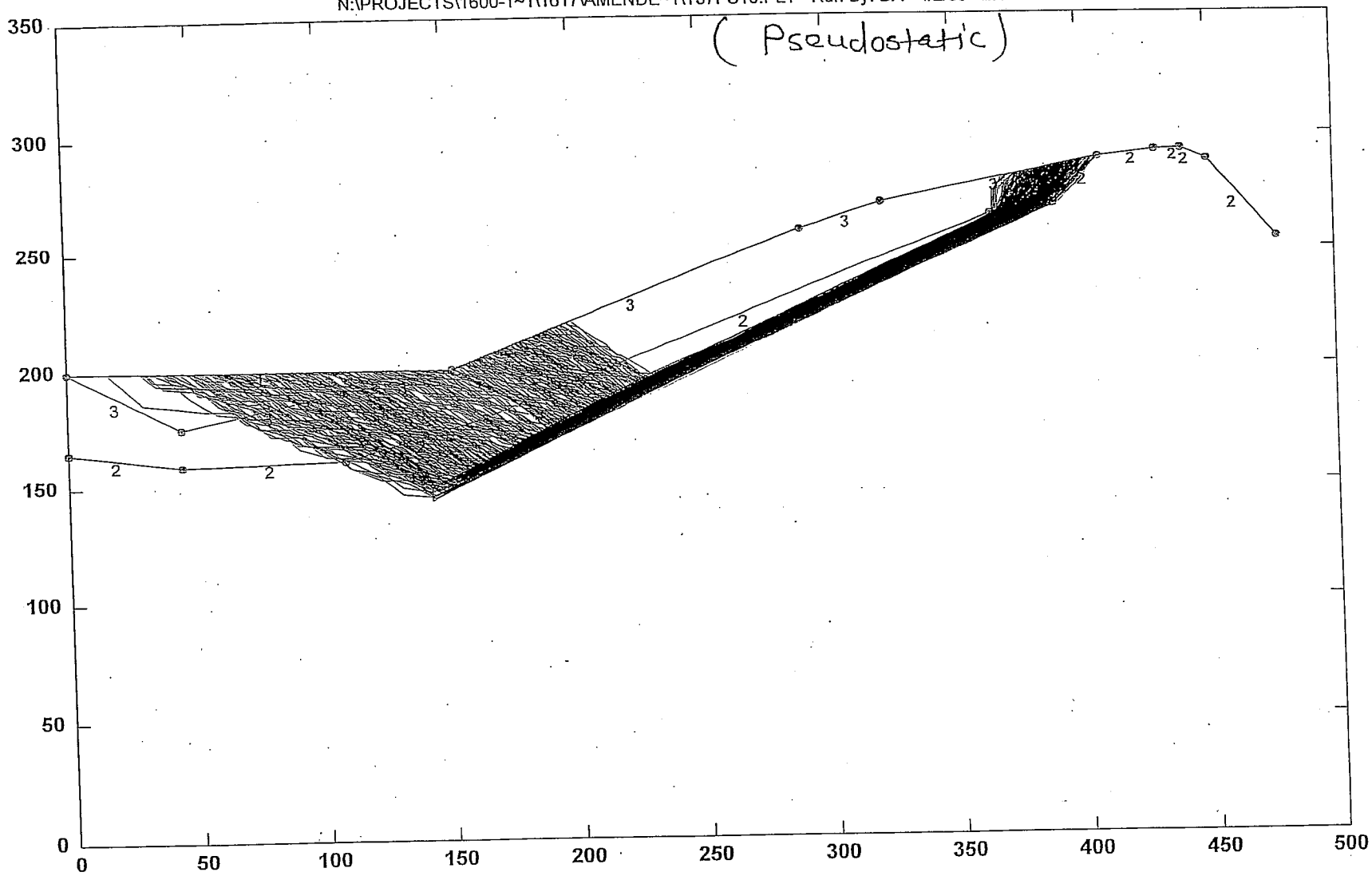
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

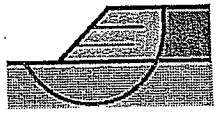
RUN NO. - 15

Amended VTT52584, 37-37' Nat slope Aniso, bed pl surface,

N:\PROJECTS\1600-1~1\1617\AMENDE~1\T37PS10.PLT Run By: DA 4/2/03 2:18PM



STED



```
                    ** PCSTABL5M **
                          by
                   Purdue University
            --Slope Stability Analysis--
         Simplified Janbu, Simplified Bishop
            or Spencer`s Method of Slices
 Run Date:                    4/2/03
 Time of Run:                 2:18PM
 Run By:                      DA
 Input Data Filename:         N:T37PS10.IN
 Output Filename:             N:T37PS10.OUT
 Unit:                        ENGLISH
 Plotted Output Filename:     N:T37PS10.PLT
 PROBLEM DESCRIPTION   Amended VTT52584, 37-37' Nat slope
                       Aniso, bed pl surface, Psuedostatic
 BOUNDARY COORDINATES
     8 Top   Boundaries
    17 Total Boundaries
 Boundary     X-Left      Y-Left     X-Right     Y-Right    Soil Type
    No.        (ft)        (ft)       (ft)        (ft)     Below Bnd
     1          .00      200.00     152.00      200.00        1
     2       152.00      200.00     290.00      259.00        3
     3       290.00      259.00     322.00      270.00        3
     4       322.00      270.00     408.00      289.00        3
     5       408.00      289.00     430.00      292.00        2
     6       430.00      292.00     440.00      293.00        2
     7       440.00      293.00     450.00      288.00        2
     8       450.00      288.00     477.00      254.00        2
     9          .00      200.00      45.00      175.00        3
    10        45.00      175.00     109.00      190.00        3
    11       109.00      190.00     152.00      200.00        3
    12          .00      165.00      45.00      159.00        2
    13        45.00      159.00     109.00      161.00        2
    14       109.00      161.00     165.00      179.00        2
    15       165.00      179.00     365.00      265.00        2
    16       365.00      265.00     391.00      274.00        2
    17       391.00      274.00     408.00      289.00        2
ISOTROPIC SOIL PARAMETERS
  3 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   125.0    125.0     300.0     29.0     .00        .0      0
   2   119.0    119.0     410.0     40.5     .00        .0      0
   3   120.0    120.0     200.0     41.0     .00        .0      0
ANISOTROPIC STRENGTH PARAMETERS
     1 soil type(s)
 Soil Type  2 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion     Friction
   Range       Direction Limit    Intercept      Angle
    No.            (deg)            (psf)        (deg)
     1             28.0             410.0        40.5
     2             30.0             347.0        22.0
     3             90.0             410.0        40.5
 A Horizontal Earthquake Loading Coefficient
 Of .150 Has Been Assigned
 A Vertical Earthquake Loading Coefficient
 Of .000 Has Been Assigned
 Cavitation Pressure =      .0 (psf)
 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.
3000 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 12.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	143.00	146.00	232.00	195.00	6.00
2	365.00	262.00	391.00	271.00	6.00

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

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

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 1.554 ***

Individual data on the 13 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	6.5	2981.8	.0	.0	.0	.0	447.3	.0	.0
2	8.9	14458.4	.0	.0	.0	.0	2168.8	.0	.0
3	6.8	18657.0	.0	.0	.0	.0	2798.6	.0	.0
4	3.5	11732.9	.0	.0	.0	.0	1759.9	.0	.0
5	11.6	47358.1	.0	.0	.0	.0	7103.7	.0	.0
6	11.9	59230.1	.0	.0	.0	.0	8884.5	.0	.0
7	82.9	400872.1	.0	.0	.0	.0	60130.8	.0	.0
8	32.0	124461.6	.0	.0	.0	.0	18669.2	.0	.0
9	43.0	115376.5	.0	.0	.0	.0	17306.5	.0	.0
10	4.0	7179.1	.0	.0	.0	.0	1076.9	.0	.0
11	.1	116.6	.0	.0	.0	.0	17.5	.0	.0
12	3.7	3877.0	.0	.0	.0	.0	581.5	.0	.0
13	1.9	402.9	.0	.0	.0	.0	60.4	.0	.0

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 1.554 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
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7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 1.554 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
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7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 1.554 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 1.554 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 1.554 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 1.554 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 1.554 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 1.554 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.02	202.58
2	164.55	197.76
3	173.46	189.71
4	183.67	183.42
5	195.23	180.19
6	207.09	178.39
7	369.04	266.21
8	372.78	277.61
9	374.64	281.63

*** 1.554 ***

Amended VTT52584, 37-37' Nat slope w/ Qt-- Aniso, bed pl surface

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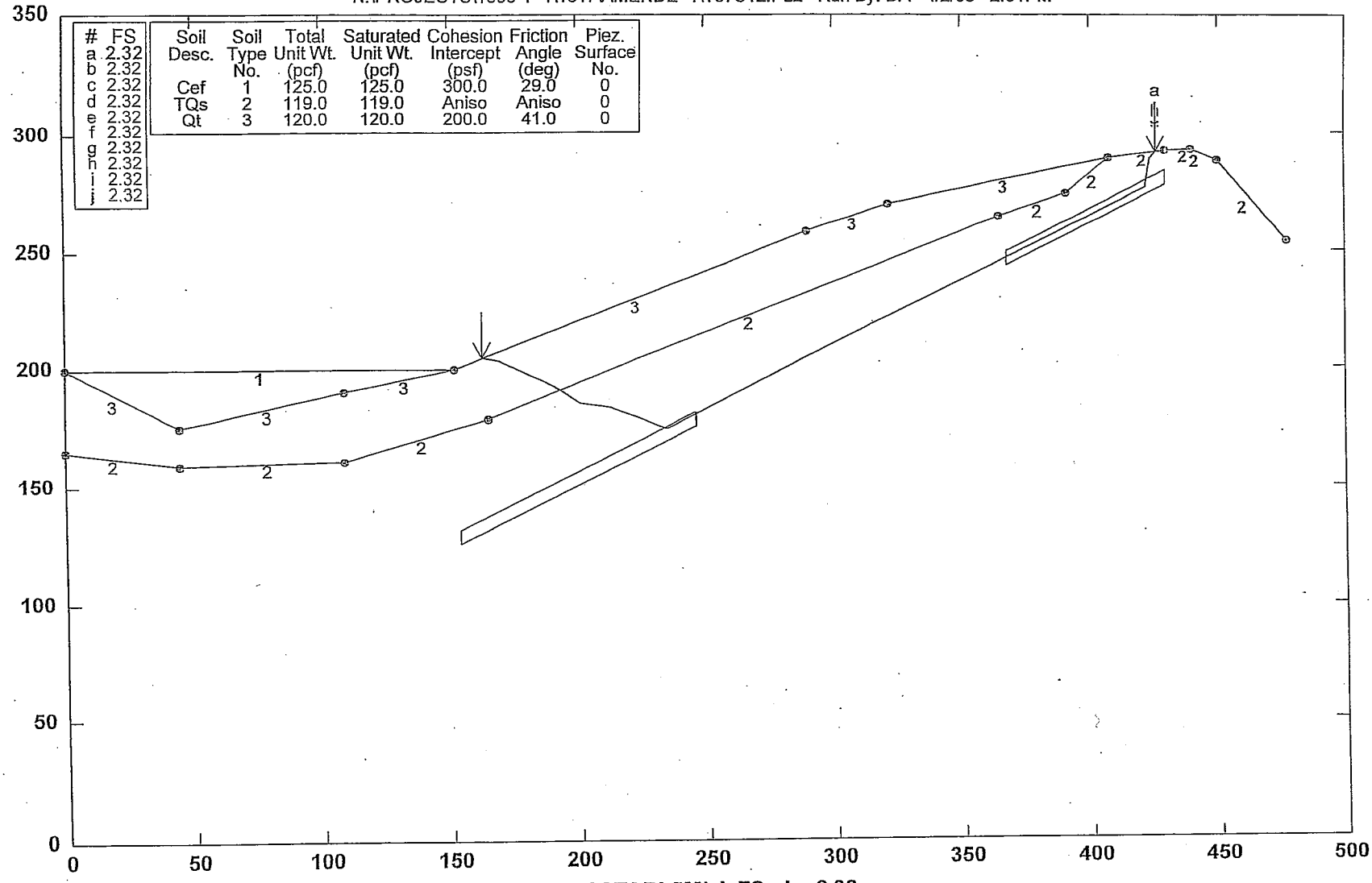


#	FS
a	2.32
b	2.32
c	2.32
d	2.32
e	2.32
f	2.32
g	2.32
h	2.32
i	2.32
j	2.32

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0
Qt	3	120.0	120.0	200.0	41.0	0

PCSTABL5M/si FSmin=2.32

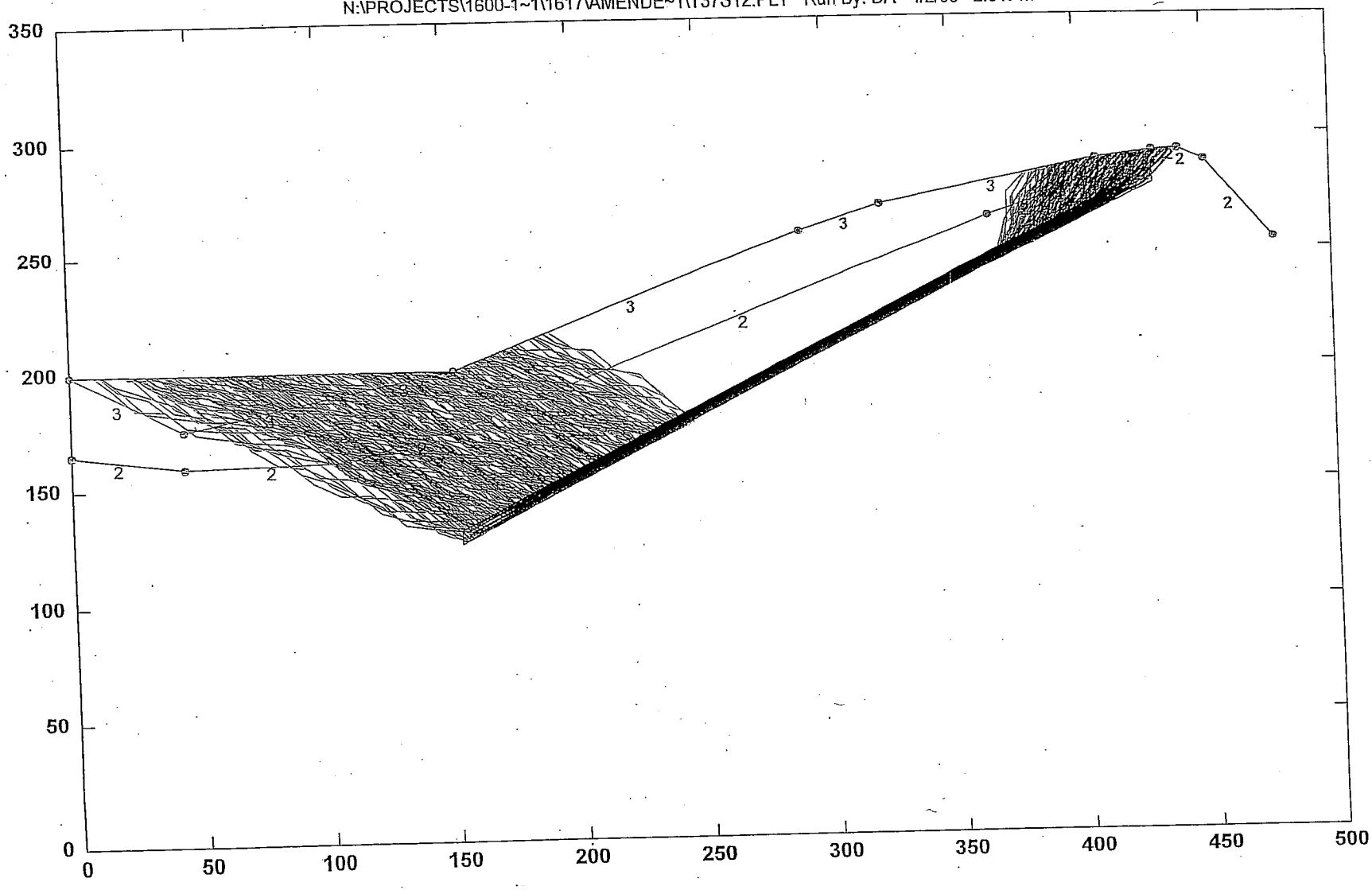
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

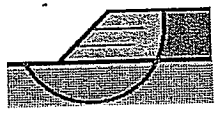
RUN NO. - 16

Amended VTT52584, 37-37' Nat slope w/ Qt-- Aniso, bed pl surface

N:\PROJECTS\1600-1~1\1617\AMENDE~1\T37S12.PLT Run By: DA 4/2/03 2:01PM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/2/03
Time of Run: 2:01PM
Run By: DA
Input Data Filename: N:T37S12.IN
Output Filename: N:T37S12.OUT
Unit: ENGLISH
Plotted Output Filename: N:T37S12.PLT
PROBLEM DESCRIPTION Amended VTT52584, 37-37' Nat slope
w/ Qt-- Aniso, bed pl surface

BOUNDARY COORDINATES
8 Top Boundaries
17 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	200.00	152.00	200.00	1
2	152.00	200.00	290.00	259.00	3
3	290.00	259.00	322.00	270.00	3
4	322.00	270.00	408.00	289.00	3
5	408.00	289.00	430.00	292.00	2
6	430.00	292.00	440.00	293.00	2
7	440.00	293.00	450.00	288.00	2
8	450.00	288.00	477.00	254.00	2
9	.00	200.00	45.00	175.00	3
10	45.00	175.00	109.00	190.00	3
11	109.00	190.00	152.00	200.00	3
12	.00	165.00	45.00	159.00	2
13	45.00	159.00	109.00	161.00	2
14	109.00	161.00	165.00	179.00	2
15	165.00	179.00	365.00	265.00	2
16	365.00	265.00	391.00	274.00	2
17	391.00	274.00	408.00	289.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0
3	120.0	120.0	200.0	41.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	28.0	410.0	40.5
2	30.0	347.0	22.0
3	90.0	410.0	40.5

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.
3000 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 12.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	154.00	128.00	246.00	179.00	6.00

2 368.00 247.00 430.00 281.00 6.00

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

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

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.96	204.69
2	169.43	203.25
3	180.30	198.17
4	190.92	192.59
5	200.74	185.69
6	212.61	183.93
7	223.70	179.33
8	234.88	174.97
9	422.23	276.94
10	424.17	288.78
11	426.53	291.53

*** 2.317 ***

Individual data on the 16 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	6.5	1630.0	.0	.0	.0	.0	.0	.0	.0
2	10.9	11827.7	.0	.0	.0	.0	.0	.0	.0
3	10.6	24200.9	.0	.0	.0	.0	.0	.0	.0
4	2.2	6542.3	.0	.0	.0	.0	.0	.0	.0
5	7.7	28307.2	.0	.0	.0	.0	.0	.0	.0
6	11.9	54787.0	.0	.0	.0	.0	.0	.0	.0
7	11.1	61828.4	.0	.0	.0	.0	.0	.0	.0
8	11.2	74661.8	.0	.0	.0	.0	.0	.0	.0
9	55.1	376972.6	.0	.0	.0	.0	.0	.0	.0
10	32.0	194323.4	.0	.0	.0	.0	.0	.0	.0
11	43.0	208882.2	.0	.0	.0	.0	.0	.0	.0
12	26.0	91628.6	.0	.0	.0	.0	.0	.0	.0
13	17.0	45724.8	.0	.0	.0	.0	.0	.0	.0
14	14.2	28627.8	.0	.0	.0	.0	.0	.0	.0
15	1.9	1897.5	.0	.0	.0	.0	.0	.0	.0
16	2.4	340.7	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.96	204.69
2	169.43	203.25
3	180.30	198.17
4	190.92	192.59
5	200.74	185.69
6	212.61	183.93
7	223.70	179.33
8	234.88	174.97
9	422.23	276.94
10	424.17	288.78
11	426.53	291.53

*** 2.317 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.96	204.69
2	169.43	203.25
3	180.30	198.17
4	190.92	192.59
5	200.74	185.69
6	212.61	183.93
7	223.70	179.33

8	234.88	174.97
9	422.23	276.94
10	424.17	288.78
11	426.53	291.53

*** 2.317 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.96	204.69
2	169.43	203.25
3	180.30	198.17
4	190.92	192.59
5	200.74	185.69
6	212.61	183.93
7	223.70	179.33
8	234.88	174.97
9	422.23	276.94
10	424.17	288.78
11	426.53	291.53

*** 2.317 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.96	204.69
2	169.43	203.25
3	180.30	198.17
4	190.92	192.59
5	200.74	185.69
6	212.61	183.93
7	223.70	179.33
8	234.88	174.97
9	422.23	276.94
10	424.17	288.78
11	426.53	291.53

*** 2.317 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.96	204.69
2	169.43	203.25
3	180.30	198.17
4	190.92	192.59
5	200.74	185.69
6	212.61	183.93
7	223.70	179.33
8	234.88	174.97
9	422.23	276.94
10	424.17	288.78
11	426.53	291.53

*** 2.317 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.96	204.69
2	169.43	203.25
3	180.30	198.17
4	190.92	192.59
5	200.74	185.69
6	212.61	183.93
7	223.70	179.33
8	234.88	174.97
9	422.23	276.94
10	424.17	288.78
11	426.53	291.53

*** 2.317 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.96	204.69
2	169.43	203.25
3	180.30	198.17
4	190.92	192.59
5	200.74	185.69
6	212.61	183.93
7	223.70	179.33
8	234.88	174.97
9	422.23	276.94
10	424.17	288.78
11	426.53	291.53

*** 2.317 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.96	204.69
2	169.43	203.25
3	180.30	198.17
4	190.92	192.59
5	200.74	185.69
6	212.61	183.93
7	223.70	179.33
8	234.88	174.97
9	422.23	276.94
10	424.17	288.78
11	426.53	291.53

*** 2.317 ***

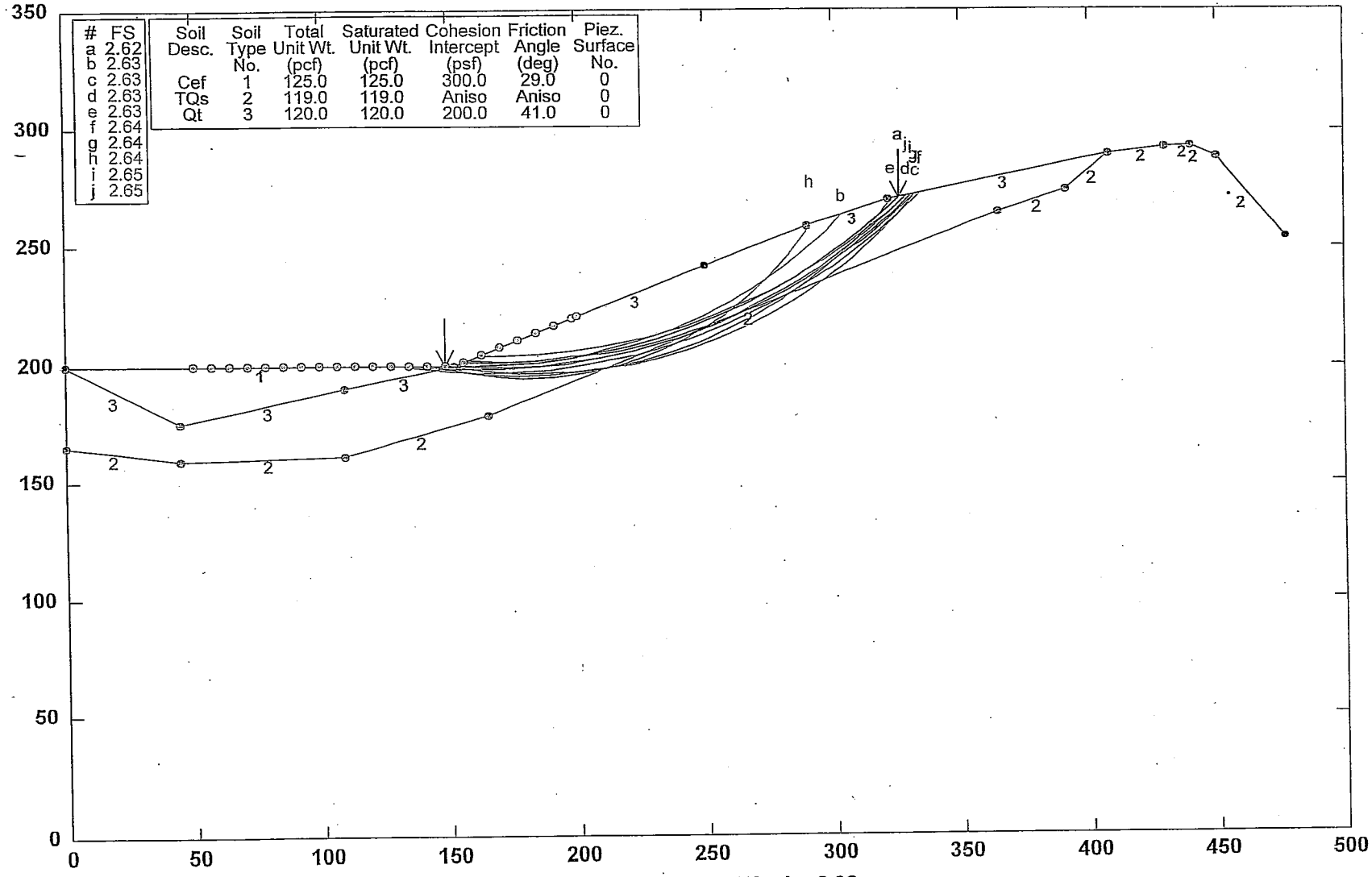
Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.96	204.69
2	169.43	203.25
3	180.30	198.17
4	190.92	192.59
5	200.74	185.69
6	212.61	183.93
7	223.70	179.33
8	234.88	174.97
9	422.23	276.94
10	424.17	288.78
11	426.53	291.53

*** 2.317 ***

Amended VTT52584, 37-37' Nat slope W/Qt Circular, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\T37S20.PL2 Run By: DA 4/2/03 2:06PM



#	FS
a	2.62
b	2.63
c	2.63
d	2.63
e	2.63
f	2.64
g	2.64
h	2.64
i	2.65
j	2.65

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0
Qt	3	120.0	120.0	200.0	41.0	0

PCSTABL5M/si FSmin=2.62

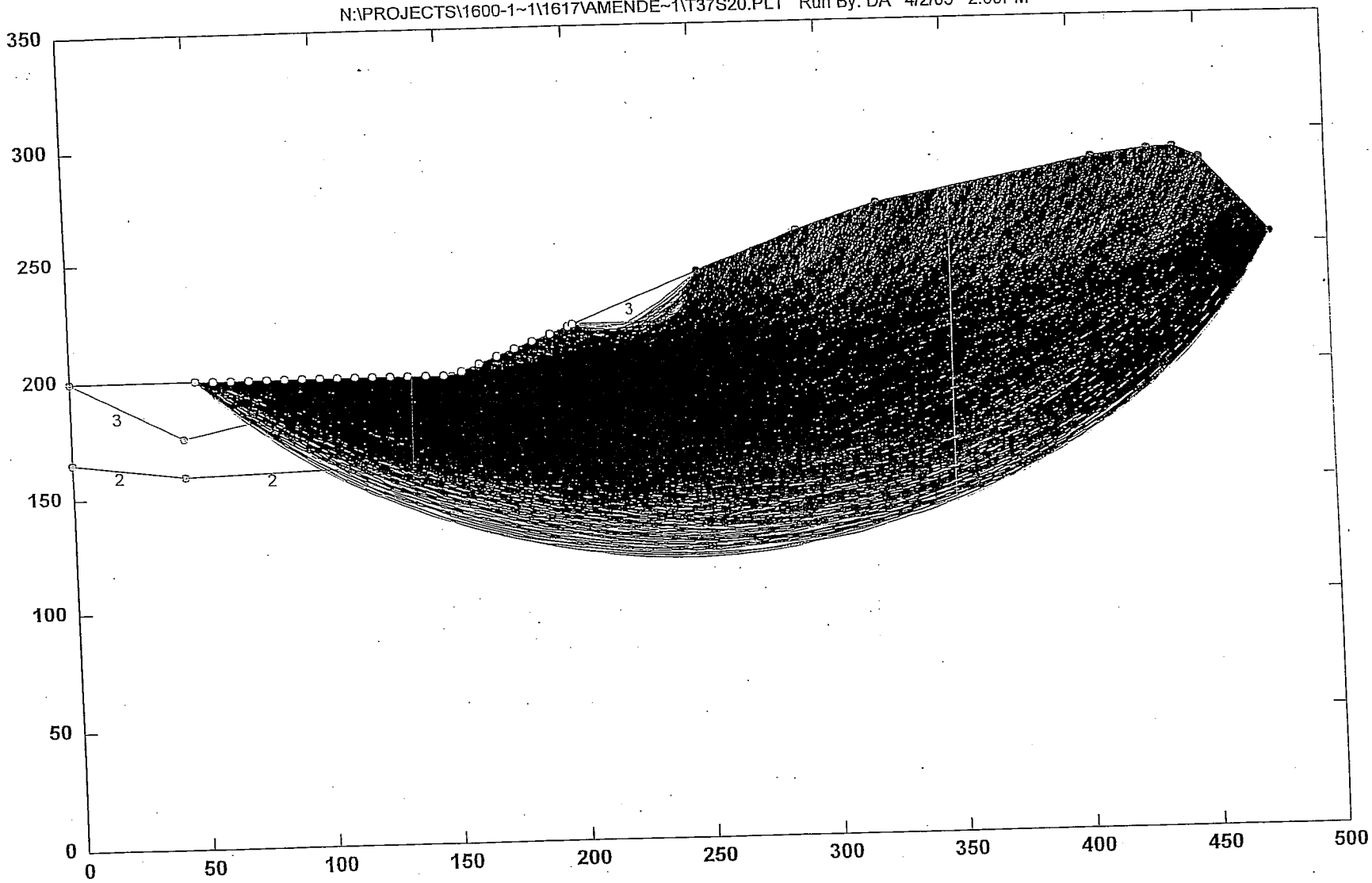
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

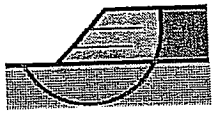
RUN No. 17

Amended VTT52584, 37-37' Nat slope W/Qt Circular, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\T37S20.PLT Run By: DA 4/2/03 2:09PM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/2/03
Time of Run: 2:09PM
Run By: DA
Input Data Filename: N:T37S20.IN
Output Filename: N:T37S20.OUT
Unit: ENGLISH
Plotted Output Filename: N:T37S20.PLT
PROBLEM DESCRIPTION Amended VTT52584, 37-37' Nat slope
W/Qt Circular, Static

BOUNDARY COORDINATES
8 Top Boundaries
17 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	200.00	152.00	200.00	1
2	152.00	200.00	290.00	259.00	3
3	290.00	259.00	322.00	270.00	3
4	322.00	270.00	408.00	289.00	3
5	408.00	289.00	430.00	292.00	2
6	430.00	292.00	440.00	293.00	2
7	440.00	293.00	450.00	288.00	2
8	450.00	288.00	477.00	254.00	2
9	.00	200.00	45.00	175.00	3
10	45.00	175.00	109.00	190.00	3
11	109.00	190.00	152.00	200.00	3
12	.00	165.00	45.00	159.00	2
13	45.00	159.00	109.00	161.00	2
14	109.00	161.00	165.00	179.00	2
15	165.00	179.00	365.00	265.00	2
16	365.00	265.00	391.00	274.00	2
17	391.00	274.00	408.00	289.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0
3	120.0	120.0	200.0	41.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	28.0	410.0	40.5
2	30.0	347.0	22.0
3	90.0	410.0	40.5

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
Janbus Empirical Coef. is being used for the case of c & phi both > 0
3000 Trial Surfaces Have Been Generated.
20 Surfaces Initiate From Each Of150 Points Equally Spaced
Along The Ground Surface Between X = 50.00 ft.
and X = 200.00 ft.
Each Surface Terminates Between X = 250.00 ft.
and X = 477.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = .00 ft.

12.00 ft. Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And .0 deg.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	148.66	200.00
2	160.66	199.72
3	172.65	200.06
4	184.61	201.03
5	196.50	202.62
6	208.30	204.84
7	219.96	207.67
8	231.46	211.10
9	242.76	215.13
10	253.84	219.75
11	264.66	224.94
12	275.19	230.69
13	285.41	236.98
14	295.28	243.80
15	304.79	251.12
16	313.90	258.93
17	322.59	267.21
18	326.08	270.90

*** 2.615 ***

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	3.0	13.6	.0	.0	.0	.0	.0	.0	.0
2	.3	2.9	.0	.0	.0	.0	.0	.0	.0
3	8.7	2110.3	.0	.0	.0	.0	.0	.0	.0
4	12.0	9179.1	.0	.0	.0	.0	.0	.0	.0
5	12.0	15559.9	.0	.0	.0	.0	.0	.0	.0
6	11.9	20919.9	.0	.0	.0	.0	.0	.0	.0
7	11.8	25215.5	.0	.0	.0	.0	.0	.0	.0
8	11.7	28421.7	.0	.0	.0	.0	.0	.0	.0
9	11.5	30532.8	.0	.0	.0	.0	.0	.0	.0
10	11.3	31562.1	.0	.0	.0	.0	.0	.0	.0
11	11.1	31541.8	.0	.0	.0	.0	.0	.0	.0
12	10.8	30522.2	.0	.0	.0	.0	.0	.0	.0
13	10.5	28571.7	.0	.0	.0	.0	.0	.0	.0
14	10.2	25775.0	.0	.0	.0	.0	.0	.0	.0
15	4.6	10717.8	.0	.0	.0	.0	.0	.0	.0
16	5.3	11374.5	.0	.0	.0	.0	.0	.0	.0
17	9.5	17100.7	.0	.0	.0	.0	.0	.0	.0
18	9.1	11612.7	.0	.0	.0	.0	.0	.0	.0
19	8.1	5654.5	.0	.0	.0	.0	.0	.0	.0
20	.6	221.1	.0	.0	.0	.0	.0	.0	.0
21	3.5	611.5	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	155.71	201.58
2	167.70	201.12
3	179.69	201.47
4	191.64	202.62
5	203.47	204.59
6	215.15	207.34
7	226.62	210.88

8	237.82	215.19
9	248.70	220.25
10	259.22	226.03
11	269.32	232.50
12	278.96	239.65
13	288.10	247.43
14	296.69	255.81
15	303.78	263.74

*** 2.627 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	156.71	202.01
2	168.70	201.48
3	180.70	201.62
4	192.67	202.41
5	204.58	203.87
6	216.40	205.99
7	228.07	208.76
8	239.58	212.16
9	250.88	216.21
10	261.93	220.87
11	272.72	226.13
12	283.19	231.99
13	293.33	238.41
14	303.09	245.39
15	312.45	252.90
16	321.38	260.91
17	329.86	269.41
18	332.44	272.31

*** 2.631 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	160.74	203.74
2	172.74	203.70
3	184.72	204.30
4	196.66	205.53
5	208.52	207.39
6	220.25	209.88
7	231.84	212.99
8	243.25	216.70
9	254.45	221.02
10	265.40	225.92
11	276.08	231.40
12	286.45	237.44
13	296.49	244.01
14	306.16	251.11
15	315.45	258.71
16	324.32	266.80
17	329.01	271.55

*** 2.631 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	141.61	200.00
2	153.41	197.81
3	165.33	196.42
4	177.32	195.85
5	189.31	196.10
6	201.27	197.16
7	213.12	199.04
8	224.82	201.72
9	236.30	205.18
10	247.53	209.43
11	258.44	214.42

12	268.98	220.15
13	279.11	226.58
14	288.78	233.69
15	297.94	241.44
16	306.56	249.80
17	314.58	258.72
18	321.98	268.17
19	323.44	270.32

*** 2.633 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	129.53	200.00
2	141.42	198.36
3	153.38	197.35
4	165.37	196.99
5	177.37	197.27
6	189.33	198.18
7	201.23	199.74
8	213.03	201.93
9	224.69	204.75
10	236.19	208.19
11	247.49	212.23
12	258.55	216.88
13	269.35	222.11
14	279.86	227.91
15	290.04	234.26
16	299.86	241.15
17	309.31	248.55
18	318.34	256.45
19	326.94	264.82
20	334.21	272.70

*** 2.637 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	150.67	200.00
2	162.53	198.13
3	174.48	197.05
4	186.47	196.76
5	198.46	197.26
6	210.39	198.55
7	222.21	200.62
8	233.87	203.47
9	245.31	207.08
10	256.49	211.44
11	267.36	216.52
12	277.87	222.32
13	287.98	228.79
14	297.63	235.91
15	306.80	243.66
16	315.43	251.99
17	323.50	260.88
18	330.96	270.27
19	332.36	272.29

*** 2.643 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	143.62	200.00
2	155.26	197.08
3	167.13	195.27
4	179.11	194.59
5	191.10	195.04
6	203.00	196.61
7	214.69	199.30

8	226.08	203.08
9	237.06	207.91
10	247.54	213.76
11	257.43	220.57
12	266.62	228.27
13	275.06	236.81
14	282.65	246.11
15	289.33	256.08
16	291.12	259.38

*** 2.645 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	150.67	200.00
2	162.65	199.35
3	174.65	199.36
4	186.64	200.03
5	198.56	201.36
6	210.40	203.34
7	222.10	205.97
8	233.65	209.25
9	245.00	213.15
10	256.11	217.68
11	266.96	222.80
12	277.51	228.52
13	287.73	234.81
14	297.58	241.66
15	307.05	249.04
16	316.09	256.92
17	324.69	265.30
18	330.80	271.94

*** 2.649 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	135.57	200.00
2	147.51	198.82
3	159.50	198.27
4	171.50	198.38
5	183.48	199.12
6	195.40	200.51
7	207.22	202.53
8	218.93	205.18
9	230.47	208.46
10	241.82	212.35
11	252.95	216.84
12	263.82	221.93
13	274.40	227.58
14	284.67	233.80
15	294.58	240.56
16	304.12	247.84
17	313.26	255.62
18	321.96	263.88
19	329.27	271.61

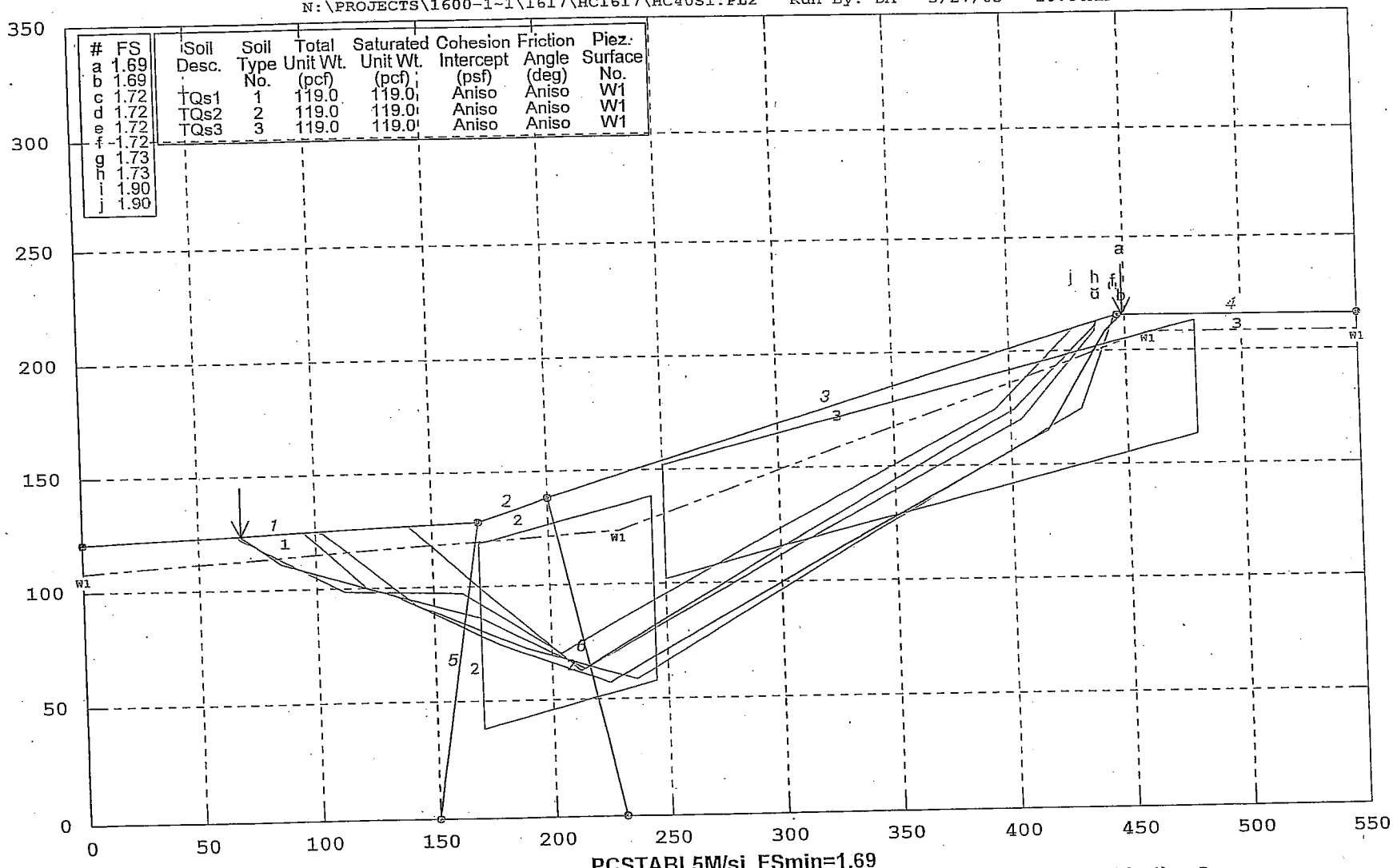
*** 2.652 ***

Hasley Canyon Cross Section 40-40' Cut Slope 12, 3:1, Static

N:\PROJECTS\1600-1-1\1617\HC1617\HC40S1.PL2 Run By: DA 3/27/03 10:06AM

#	FS
a	1.69
b	1.69
c	1.72
d	1.72
e	1.72
f	1.72
g	1.73
h	1.73
i	1.90
j	1.90

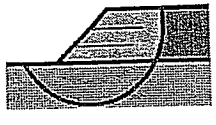
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs1	1	119.0	119.0	Aniso	Aniso	W1
TQs2	2	119.0	119.0	Aniso	Aniso	W1
TQs3	3	119.0	119.0	Aniso	Aniso	W1



PCSTABL5M/si FSmin=1.69

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

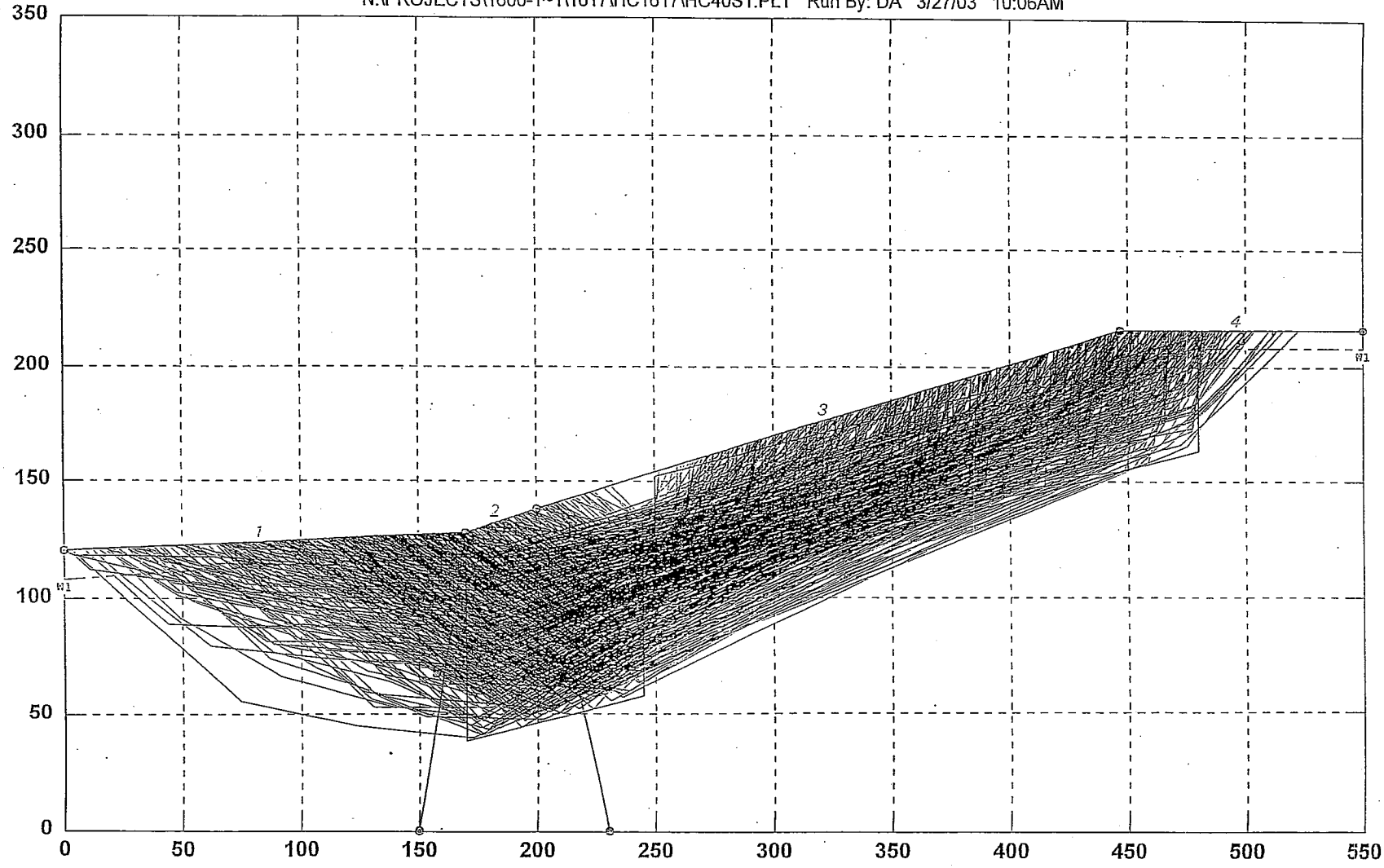
STED



RUN NO. 18

Hasley Canyon Cross Section 40-40' Cut Slope 12, 3:1, Static

N:\PROJECTS\1600-1~1\1617\HC1617\HC40S1.PLT Run By: DA 3/27/03 10:06AM



STED

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/27/03
Time of Run: 10:06AM
Run By: DA
Input Data Filename: N:hc40s1.in
Output Filename: N:hc40s1.OUT
Unit: ENGLISH
Plotted Output Filename: N:hc40s1.PLT
PROBLEM DESCRIPTION Hasley Canyon Cross Section 40-40'
Cut Slope 12, 3:1, Static

BOUNDARY COORDINATES
4 Top Boundaries
6 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	120.00	170.00	128.00	1
2	170.00	128.00	200.00	138.00	2
3	200.00	138.00	447.00	216.00	3
4	447.00	216.00	550.00	216.00	3
5	150.00	.00	170.00	128.00	2
6	200.00	138.00	230.00	.00	2

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	119.0	119.0	410.0	40.5	.00	.0	1
2	119.0	119.0	410.0	40.5	.00	.0	1
3	119.0	119.0	410.0	40.5	.00	.0	1

ANISOTROPIC STRENGTH PARAMETERS
3 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	-41.0	410.0	40.5
2	-39.0	200.0	17.4
3	90.0	410.0	40.5

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	-41.0	410.0	40.5
2	29.0	200.0	17.5
3	90.0	410.0	40.5

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	410.0	40.5
2	31.0	200.0	17.5
3	90.0	410.0	40.5

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 4 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	108.00

2	230.00	123.00
3	460.00	208.00
4	550.00	208.00

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
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 50.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	170.00	78.00	245.00	98.00	80.00
2	250.00	127.00	480.00	188.00	50.00

Factor Of Safety Calculation Has Gone Through Ten Iterations
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	190.67	134.89
2	213.28	125.81
3	295.02	122.32
4	295.92	168.29

Factor Of Safety For The Preceding Specified Surface = 21.148
Factor Of Safety Calculation Has Gone Through Ten Iterations
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	190.67	134.89
2	213.28	125.81
3	295.02	122.32
4	295.92	168.29

Factor Of Safety For The Preceding Specified Surface = 21.148
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	68.19	123.21
2	85.19	110.54
3	133.11	96.27
4	177.90	74.04
5	225.02	57.32
6	415.92	165.19
7	441.30	208.27
8	448.93	216.00

*** 1.690 ***
Individual data on the 17 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	13.3	8312.3	.0	.0	.0	.0	.0	.0	.0
2	3.7	5309.2	.0	435.4	.0	.0	.0	.0	.0
3	47.9	123923.1	.0	36469.3	.0	.0	.0	.0	.0
4	29.6	134161.3	.0	59185.4	.0	.0	.0	.0	.0
5	5.8	33190.0	.0	15732.2	.0	.0	.0	.0	.0
6	1.4	8314.1	.0	3983.7	.0	.0	.0	.0	.0
7	7.9	50116.2	.0	23800.0	.0	.0	.0	.0	.0
8	22.1	168841.3	.0	73313.6	.0	.0	.0	.0	.0
9	3.6	31584.4	.0	13355.5	.0	.0	.0	.0	.0
10	13.3	124366.3	.0	51915.9	.0	.0	.0	.0	.0

11	8.1	82806.4	.0	34085.5	.0	.0	.0	.0	.0
12	5.0	52144.0	.0	22842.8	.0	.0	.0	.0	.0
13	185.9	********	.0	*******	.0	.0	.0	.0	.0
14	20.0	64637.0	.0	30595.8	.0	.0	.0	.0	.0
15	5.4	6221.4	.0	.0	.0	.0	.0	.0	.0
16	5.7	2676.5	.0	.0	.0	.0	.0	.0	.0
17	1.9	225.3	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	68.19	123.21
2	85.19	110.54
3	133.11	96.27
4	177.90	74.04
5	225.02	57.32
6	415.92	165.19
7	441.30	208.27
8	448.93	216.00

*** 1.690 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	139.24	126.55
2	174.68	94.83
3	212.59	62.22
4	401.60	174.44
5	436.61	210.14
6	437.68	213.06

*** 1.717 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	139.24	126.55
2	174.68	94.83
3	212.59	62.22
4	401.60	174.44
5	436.61	210.14
6	437.68	213.06

*** 1.717 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	100.49	124.73
2	103.41	123.65
3	142.42	92.37
4	188.35	72.61
5	236.22	58.19
6	430.52	174.38
7	445.31	215.47

*** 1.721 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	100.49	124.73
2	103.41	123.65
3	142.42	92.37
4	188.35	72.61
5	236.22	58.19
6	430.52	174.38
7	445.31	215.47

*** 1.721 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	94.94	124.47
2	121.75	99.39

3	169.94	86.08
4	214.58	63.56
5	404.57	169.97
6	436.83	208.18
7	437.92	213.13

*** 1.726 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	94.94	124.47
2	121.75	99.39
3	169.94	86.08
4	214.58	63.56
5	404.57	169.97
6	436.83	208.18
7	437.92	213.13

*** 1.726 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	66.62	123.13
2	67.92	121.93
3	112.15	98.59
4	162.12	96.88
5	204.14	69.80
6	393.23	174.75
7	427.30	209.78

*** 1.901 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	66.62	123.13
2	67.92	121.93
3	112.15	98.59
4	162.12	96.88
5	204.14	69.80
6	393.23	174.75
7	427.30	209.78

*** 1.901 ***

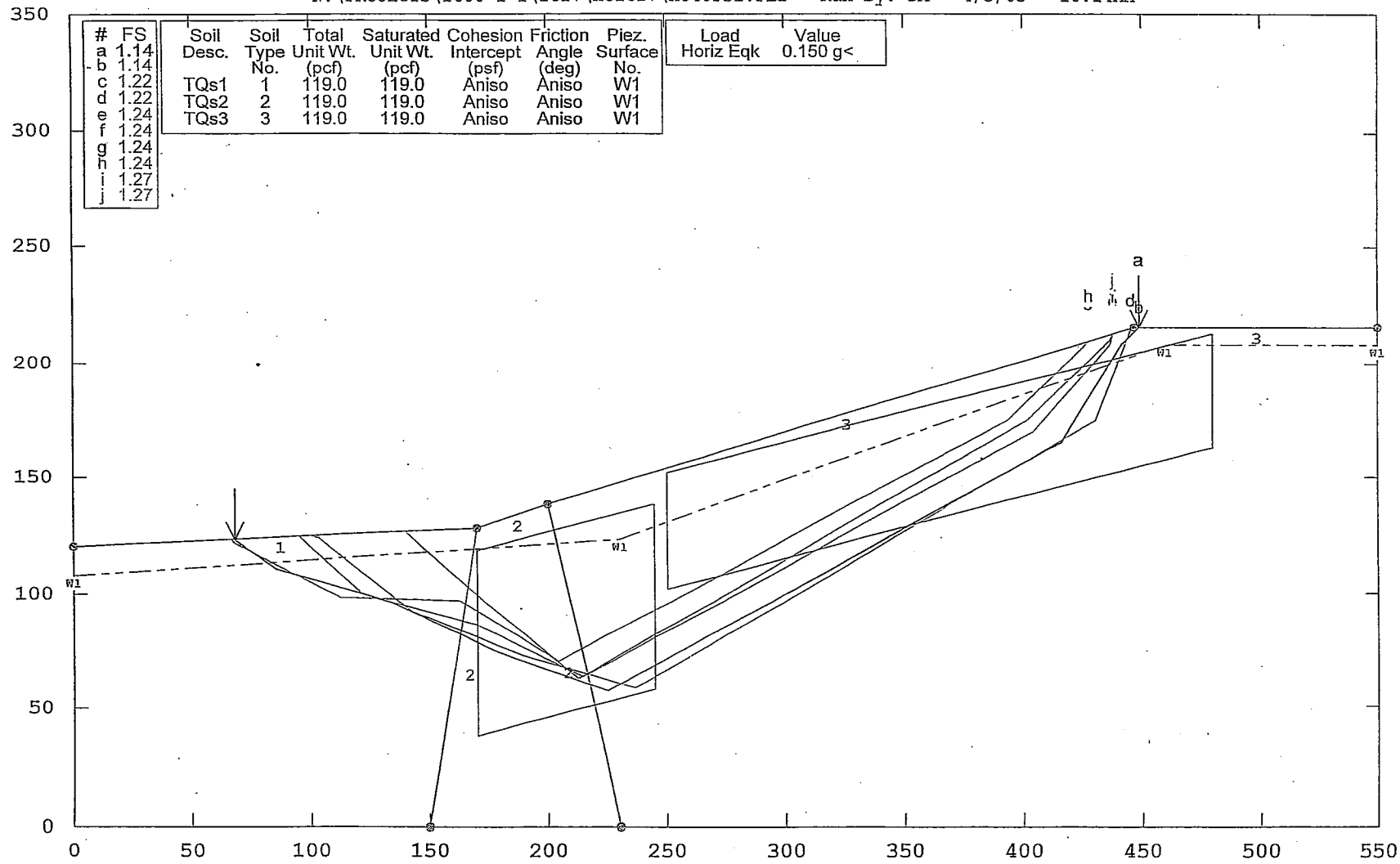
Hasley Canyon Cross Section 40-40' Cut Slope 12, 3:1, Psuedostatic

N:\PROJECTS\1600-1~1\1617\HC1617\HC40PS1.PL2 Run By: DA 4/3/03 10:14AM

#	FS
a	1.14
b	1.14
c	1.22
d	1.22
e	1.24
f	1.24
g	1.24
h	1.24
i	1.27
j	1.27

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs1	1	119.0	119.0	Aniso	Aniso	W1
TQs2	2	119.0	119.0	Aniso	Aniso	W1
TQs3	3	119.0	119.0	Aniso	Aniso	W1

Load	Value
Horiz Eqk	0.150 g<



PCSTABL5M/si FSmin=1.14

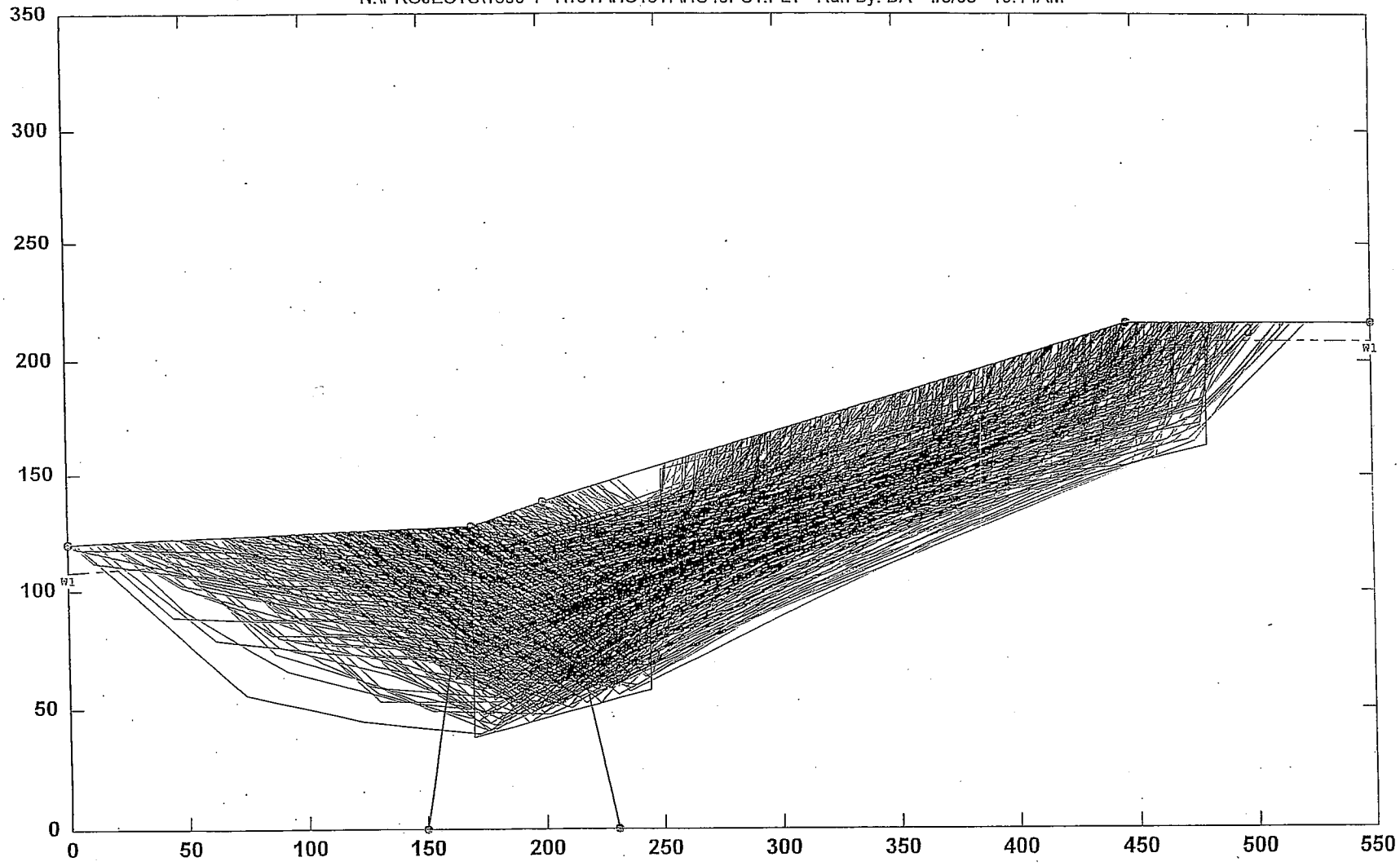
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

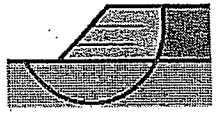
RUN NO. 19

Hasley Canyon Cross Section 40-40' Cut Slope 12, 3:1, Psuedostatic

N:\PROJECTS\1600-1~1\1617\HC1617\HC40PS1.PLT Run By: DA 4/3/03 10:14AM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/3/03
Time of Run: 10:14AM
Run By: DA
Input Data Filename: N:HC40PS1.IN
Output Filename: N:HC40PS1.OUT
Unit: ENGLISH
Plotted Output Filename: N:HC40PS1.PLT
PROBLEM DESCRIPTION Hasley Canyon Cross Section 40-40'
Cut Slope 12, 3:1, Psuedostatic

BOUNDARY COORDINATES
4 Top Boundaries
6 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	120.00	170.00	128.00	1
2	170.00	128.00	200.00	138.00	2
3	200.00	138.00	447.00	216.00	3
4	447.00	216.00	550.00	216.00	3
5	150.00	.00	170.00	128.00	2
6	200.00	138.00	230.00	.00	2

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	119.0	119.0	410.0	40.5	.00	.0	1
2	119.0	119.0	410.0	40.5	.00	.0	1
3	119.0	119.0	410.0	40.5	.00	.0	1

ANISOTROPIC STRENGTH PARAMETERS
3 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	-41.0	410.0	40.5
2	-39.0	200.0	17.4
3	90.0	410.0	40.5

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	-41.0	410.0	40.5
2	29.0	200.0	17.5
3	90.0	410.0	40.5

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	410.0	40.5
2	31.0	200.0	17.5
3	90.0	410.0	40.5

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 4 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	108.00

2	230.00	123.00
3	460.00	208.00
4	550.00	208.00

A Horizontal Earthquake Loading Coefficient
Of .150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of .000 Has Been Assigned
Cavitation Pressure = .0 (psf)
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.
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 50.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	170.00	78.00	245.00	98.00	80.00
2	250.00	127.00	480.00	188.00	50.00

Factor Of Safety Calculation Has Gone Through Ten Iterations
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	190.67	134.89
2	213.28	125.81
3	295.02	122.32
4	295.92	168.29

Factor Of Safety For The Preceding Specified Surface = 7.494
Factor Of Safety Calculation Has Gone Through Ten Iterations
The Trial Failure Surface In Question Is Defined
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	190.67	134.89
2	213.28	125.81
3	295.02	122.32
4	295.92	168.29

Factor Of Safety For The Preceding Specified Surface = 7.494
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	68.19	123.21
2	85.19	110.54
3	133.11	96.27
4	177.90	74.04
5	225.02	57.32
6	415.92	165.19
7	441.30	208.27
8	448.93	216.00

*** 1.143 ***
Individual data on the 17 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	13.3	8312.3	.0	.0	.0	.0	1246.8	.0	.0
2	3.7	5309.2	.0	435.4	.0	.0	796.4	.0	.0
3	47.9	123923.1	.0	36469.3	.0	.0	18588.5	.0	.0
4	29.6	134161.3	.0	59185.4	.0	.0	20124.2	.0	.0
5	5.8	33190.0	.0	15732.2	.0	.0	4978.5	.0	.0

6	1.4	8314.1	.0	3983.7	.0	.0	1247.1	.0	.0
7	7.9	50116.2	.0	23800.0	.0	.0	7517.4	.0	.0
8	22.1	168841.3	.0	73313.6	.0	.0	25326.2	.0	.0
9	3.6	31584.4	.0	13355.5	.0	.0	4737.7	.0	.0
10	13.3	124366.3	.0	51915.9	.0	.0	18654.9	.0	.0
11	8.1	82806.4	.0	34085.5	.0	.0	12421.0	.0	.0
12	5.0	52144.0	.0	22842.8	.0	.0	7821.6	.0	.0
13	185.9	********	.0	*******	.0	.0	*******	.0	.0
14	20.0	64637.0	.0	30595.8	.0	.0	9695.6	.0	.0
15	5.4	6221.4	.0	.0	.0	.0	933.2	.0	.0
16	5.7	2676.5	.0	.0	.0	.0	401.5	.0	.0
17	1.9	225.3	.0	.0	.0	.0	33.8	.0	.0

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	68.19	123.21
2	85.19	110.54
3	133.11	96.27
4	177.90	74.04
5	225.02	57.32
6	415.92	165.19
7	441.30	208.27
8	448.93	216.00

*** 1.143 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	100.49	124.73
2	103.41	123.65
3	142.42	92.37
4	188.35	72.61
5	236.22	58.19
6	430.52	174.38
7	445.31	215.47

*** 1.223 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	100.49	124.73
2	103.41	123.65
3	142.42	92.37
4	188.35	72.61
5	236.22	58.19
6	430.52	174.38
7	445.31	215.47

*** 1.223 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	94.94	124.47
2	121.75	99.39
3	169.94	86.08
4	214.58	63.56
5	404.57	169.97
6	436.83	208.18
7	437.92	213.13

*** 1.237 ***

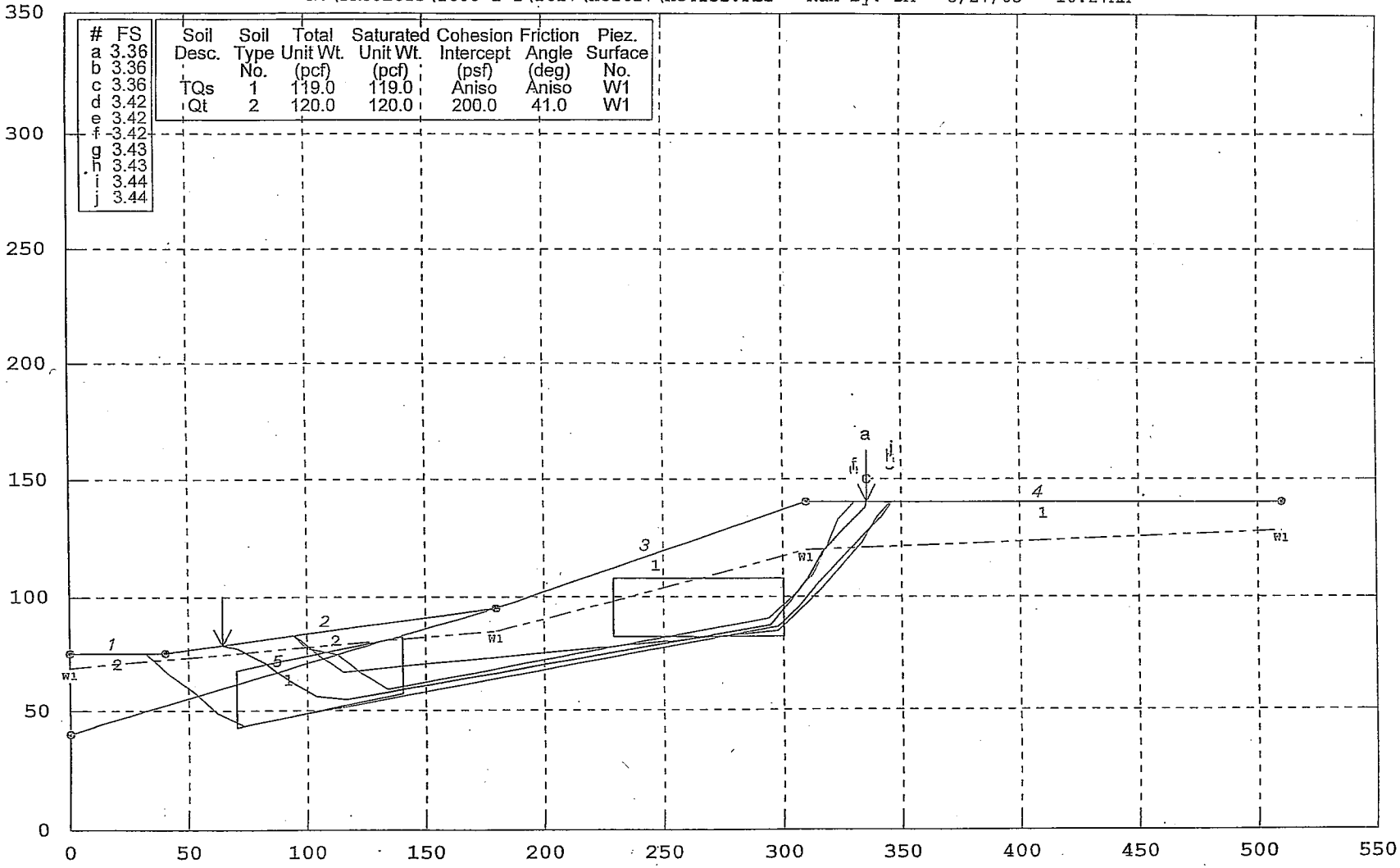
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	94.94	124.47
2	121.75	99.39
3	169.94	86.08
4	214.58	63.56
5	404.57	169.97
6	436.83	208.18

```
    7        437.92       213.13
      ***     1.237    ***
Failure Surface Specified By  7 Coordinate Points
  Point      X-Surf       Y-Surf
   No.        (ft)         (ft)
    1         66.62       123.13
    2         67.92       121.93
    3        112.15        98.59
    4        162.12        96.88
    5        204.14        69.80
    6        393.23       174.75
    7        427.30       209.78
      ***     1.240    ***
Failure Surface Specified By  7 Coordinate Points
  Point      X-Surf       Y-Surf
   No.        (ft)         (ft)
    1         66.62       123.13
    2         67.92       121.93
    3        112.15        98.59
    4        162.12        96.88
    5        204.14        69.80
    6        393.23       174.75
    7        427.30       209.78
      ***     1.240    ***
Failure Surface Specified By  6 Coordinate Points
  Point      X-Surf       Y-Surf
   No.        (ft)         (ft)
    1        139.24       126.55
    2        174.68        94.83
    3        212.59        62.22
    4        401.60       174.44
    5        436.61       210.14
    6        437.68       213.06
      ***     1.275    ***
Failure Surface Specified By  6 Coordinate Points
  Point      X-Surf       Y-Surf
   No.        (ft)         (ft)
    1        139.24       126.55
    2        174.68        94.83
    3        212.59        62.22
    4        401.60       174.44
    5        436.61       210.14
    6        437.68       213.06
      ***     1.275    ***
```

Hasley Canyon Cross Section 41-41' Cut Slope 10, 3:1, Static

N:\PROJECTS\1600-1~1\1617\HC1617\HC41S2.PL2 Run By: DA 3/27/03 10:27AM



#	FS
a	3.36
b	3.36
c	3.36
d	3.42
e	3.42
f	3.42
g	3.43
h	3.43
i	3.44
j	3.44

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs	1	119.0	119.0	Aniso	Aniso	W1
Qt	2	120.0	120.0	200.0	41.0	W1

PCSTABL5M/si FSmin=3.36

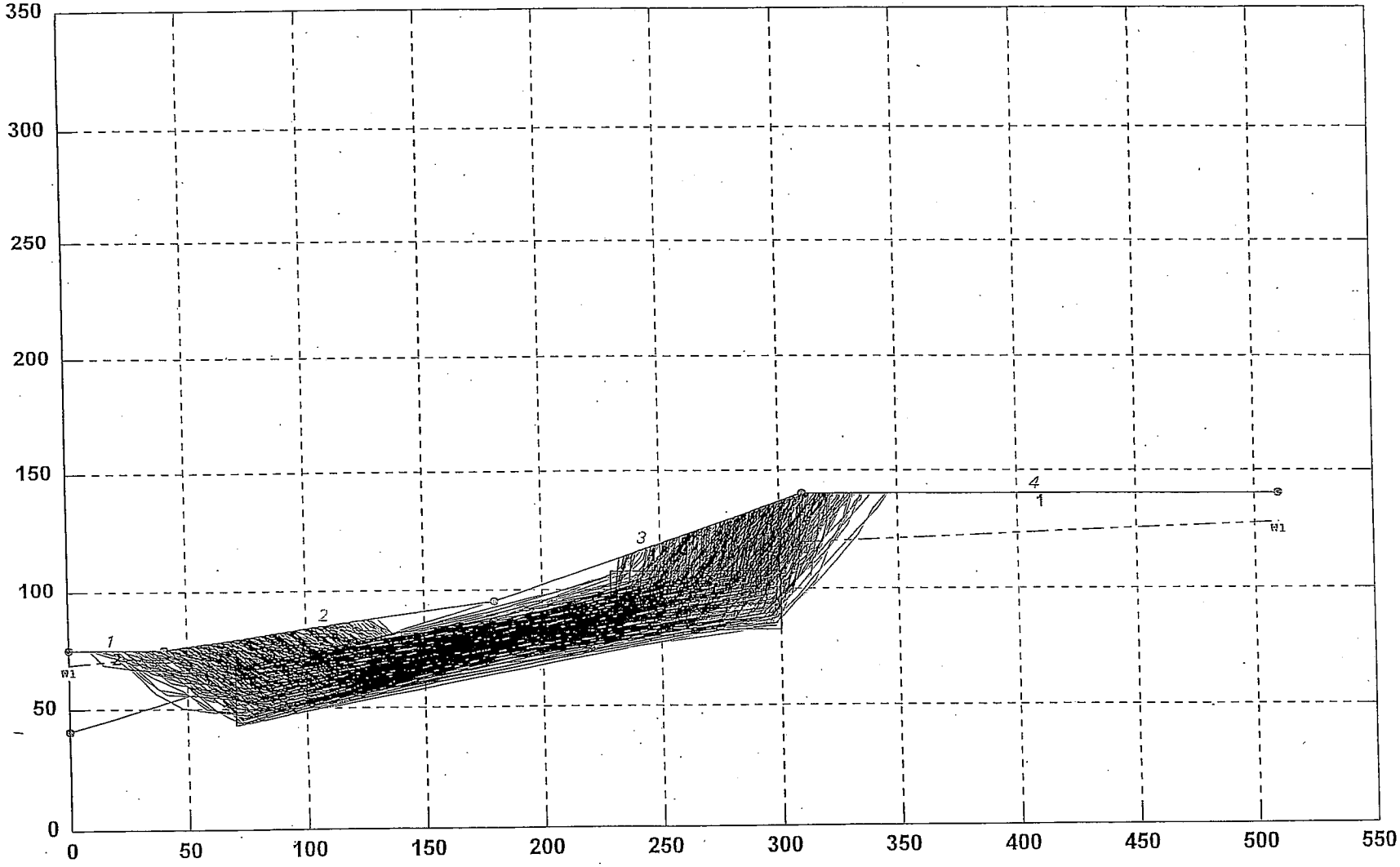
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

RUN No. - 20

Hasley Canyon Cross Section 41-41' Cut Slope 10, 3:1, Static

N:\PROJECTS\1600-1~1\1617\HC1617\HC41S2.PLT Run By: DA 3/27/03 10:27AM



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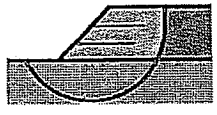

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                    ** PCSTABL5M **
                          by
                   Purdue University
             --Slope Stability Analysis--
          Simplified Janbu, Simplified Bishop
             or Spencer`s Method of Slices
Run Date:                  3/27/03
Time of Run:               10:27AM
Run By:                    DA
Input Data Filename:       N:hc41s2.in
Output Filename:           N:hc41s2.OUT
Unit:                      ENGLISH
Plotted Output Filename:   N:hc41s2.PLT
PROBLEM DESCRIPTION   Hasley Canyon Cross Section 41-41'
                      Cut Slope 10, 3:1, Static
BOUNDARY COORDINATES
    4 Top   Boundaries
    5 Total Boundaries
Boundary     X-Left     Y-Left    X-Right    Y-Right    Soil Type
   No.        (ft)       (ft)       (ft)       (ft)     Below Bnd
    1          .00      75.00      40.00      75.00        2
    2        40.00      75.00     180.00      95.00        2
    3       180.00      95.00     310.00     140.00        1
    4       310.00     140.00     510.00     140.00        1
    5          .00      40.00     180.00      95.00        1
ISOTROPIC SOIL PARAMETERS
  2 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   119.0    119.0     410.0     40.5     .00        .0      1
  2   120.0    120.0     200.0     41.0     .00        .0      1
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             27.5             410.0        40.5
    2             28.5             200.0        17.5
    3             90.0             410.0        40.5
1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water =  62.40
Piezometric Surface No.  1 Specified by  4 Coordinate Points
  Point      X-Water     Y-Water
   No.         (ft)        (ft)
    1          .00       69.00
    2       180.00       85.00
    3       310.00      120.00
    4       510.00      128.00
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.
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  13.0
Box        X-Left     Y-Left    X-Right    Y-Right      Height
No.         (ft)       (ft)       (ft)       (ft)        (ft)
 1         70.00      55.00     140.00      70.00      25.00
 2        229.00      95.00     300.00      95.00      25.00
Following Are Displayed The Ten Most Critical Of The Trial
      Failure Surfaces Examined.  They Are Ordered - Most Critical
      First.
```

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

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	64.21	78.46
2	71.04	77.08
3	82.34	70.64
4	92.73	62.83
5	104.01	56.37
6	116.94	55.02
7	294.33	87.54
8	302.85	97.36
9	310.29	108.01
10	316.82	119.26
11	325.66	128.79
12	334.86	137.98
13	335.39	140.00

*** 3.361 ***

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	6.8	966.1	.0	.0	.0	.0	.0	.0	.0
2	2.7	1063.4	.0	.0	.0	.0	.0	.0	.0
3	8.6	7585.3	.0	1750.1	.0	.0	.0	.0	.0
4	5.2	7916.8	.0	3167.8	.0	.0	.0	.0	.0
5	5.2	10839.7	.0	4949.7	.0	.0	.0	.0	.0
6	11.3	32028.8	.0	14659.8	.0	.0	.0	.0	.0
7	12.9	45334.1	.0	18682.4	.0	.0	.0	.0	.0
8	16.9	61760.1	.0	25181.8	.0	.0	.0	.0	.0
9	46.2	161378.3	.0	60069.8	.0	.0	.0	.0	.0
10	114.3	513263.8	.0	*******	.0	.0	.0	.0	.0
11	8.5	44213.4	.0	19186.2	.0	.0	.0	.0	.0
12	7.2	30879.5	.0	12468.2	.0	.0	.0	.0	.0
13	.3	1126.4	.0	390.6	.0	.0	.0	.0	.0
14	6.5	20479.1	.0	5273.9	.0	.0	.0	.0	.0
15	1.0	2354.8	.0	45.6	.0	.0	.0	.0	.0
16	7.9	14456.2	.0	.0	.0	.0	.0	.0	.0
17	9.2	7237.7	.0	.0	.0	.0	.0	.0	.0
18	.5	64.1	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	64.21	78.46
2	71.04	77.08
3	82.34	70.64
4	92.73	62.83
5	104.01	56.37
6	116.94	55.02
7	294.33	87.54
8	302.85	97.36
9	310.29	108.01
10	316.82	119.26
11	325.66	128.79
12	334.86	137.98
13	335.39	140.00

*** 3.361 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	64.21	78.46
2	71.04	77.08
3	82.34	70.64
4	92.73	62.83
5	104.01	56.37

6	116.94	55.02
7	294.33	87.54
8	302.85	97.36
9	310.29	108.01
10	316.82	119.26
11	325.66	128.79
12	334.86	137.98
13	335.39	140.00

*** 3.361 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	94.07	82.72
2	100.01	76.86
3	112.79	74.45
4	122.89	66.26
5	133.69	59.03
6	294.12	90.49
7	303.31	99.69
8	312.43	108.95
9	318.41	120.49
10	323.15	132.60
11	330.14	140.00

*** 3.419 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	94.07	82.72
2	100.01	76.86
3	112.79	74.45
4	122.89	66.26
5	133.69	59.03
6	294.12	90.49
7	303.31	99.69
8	312.43	108.95
9	318.41	120.49
10	323.15	132.60
11	330.14	140.00

*** 3.419 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	94.07	82.72
2	100.01	76.86
3	112.79	74.45
4	122.89	66.26
5	133.69	59.03
6	294.12	90.49
7	303.31	99.69
8	312.43	108.95
9	318.41	120.49
10	323.15	132.60
11	330.14	140.00

*** 3.419 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	95.23	82.89
2	104.88	74.23
3	115.66	66.96
4	297.60	84.76
5	306.75	94.00
6	315.90	103.23
7	324.32	113.14
8	333.11	122.72
9	339.80	133.86

10	345.48	140.00
***	3.435	***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	95.23	82.89
2	104.88	74.23
3	115.66	66.96
4	297.60	84.76
5	306.75	94.00
6	315.90	103.23
7	324.32	113.14
8	333.11	122.72
9	339.80	133.86
10	345.48	140.00
***	3.435	***

Failure Surface Specified By 13 Coordinate Points

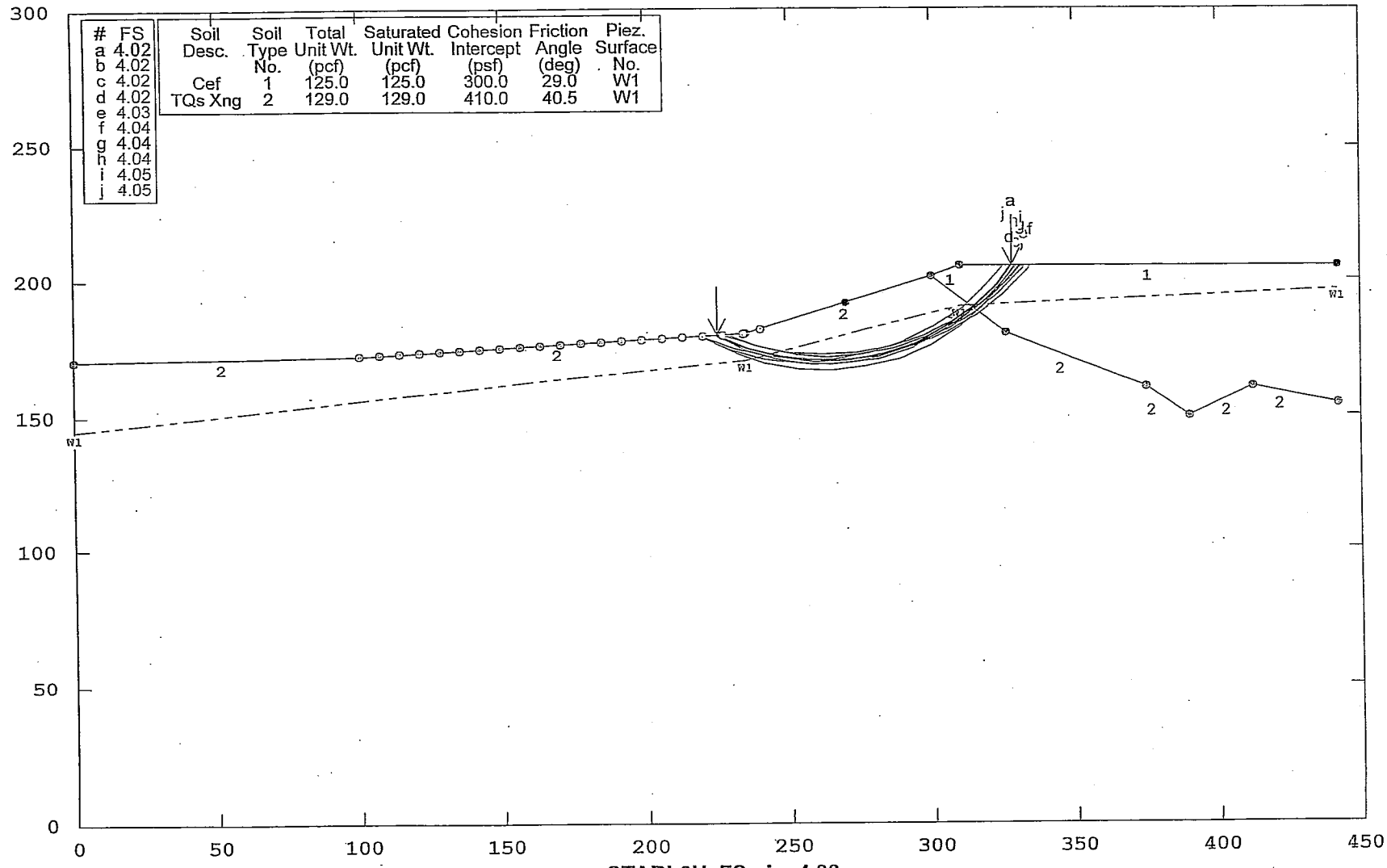
Point No.	X-Surf (ft)	Y-Surf (ft)
1	31.81	75.00
2	32.43	74.76
3	41.89	65.84
4	52.49	58.31
5	61.95	49.40
6	73.43	43.29
7	297.62	86.60
8	306.81	95.79
9	314.91	105.96
10	323.79	115.46
11	332.84	124.79
12	341.84	134.17
13	345.95	140.00
***	3.438	***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	31.81	75.00
2	32.43	74.76
3	41.89	65.84
4	52.49	58.31
5	61.95	49.40
6	73.43	43.29
7	297.62	86.60
8	306.81	95.79
9	314.91	105.96
10	323.79	115.46
11	332.84	124.79
12	341.84	134.17
13	345.95	140.00
***	3.438	***

T52584-Hasley Cyn-42-42', Cut Slope 33, Static

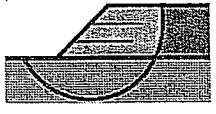
C:\03-161~1\HA42S10.PL2 Run By: DA 4/7/03 4:33PM



STABL6H FSmin=4.02

Safety Factors Are Calculated By The Modified Bishop Method

STED



RUN NO. 121

T52584-Hasley Cyn-42-42', Cut Slope 33, Static

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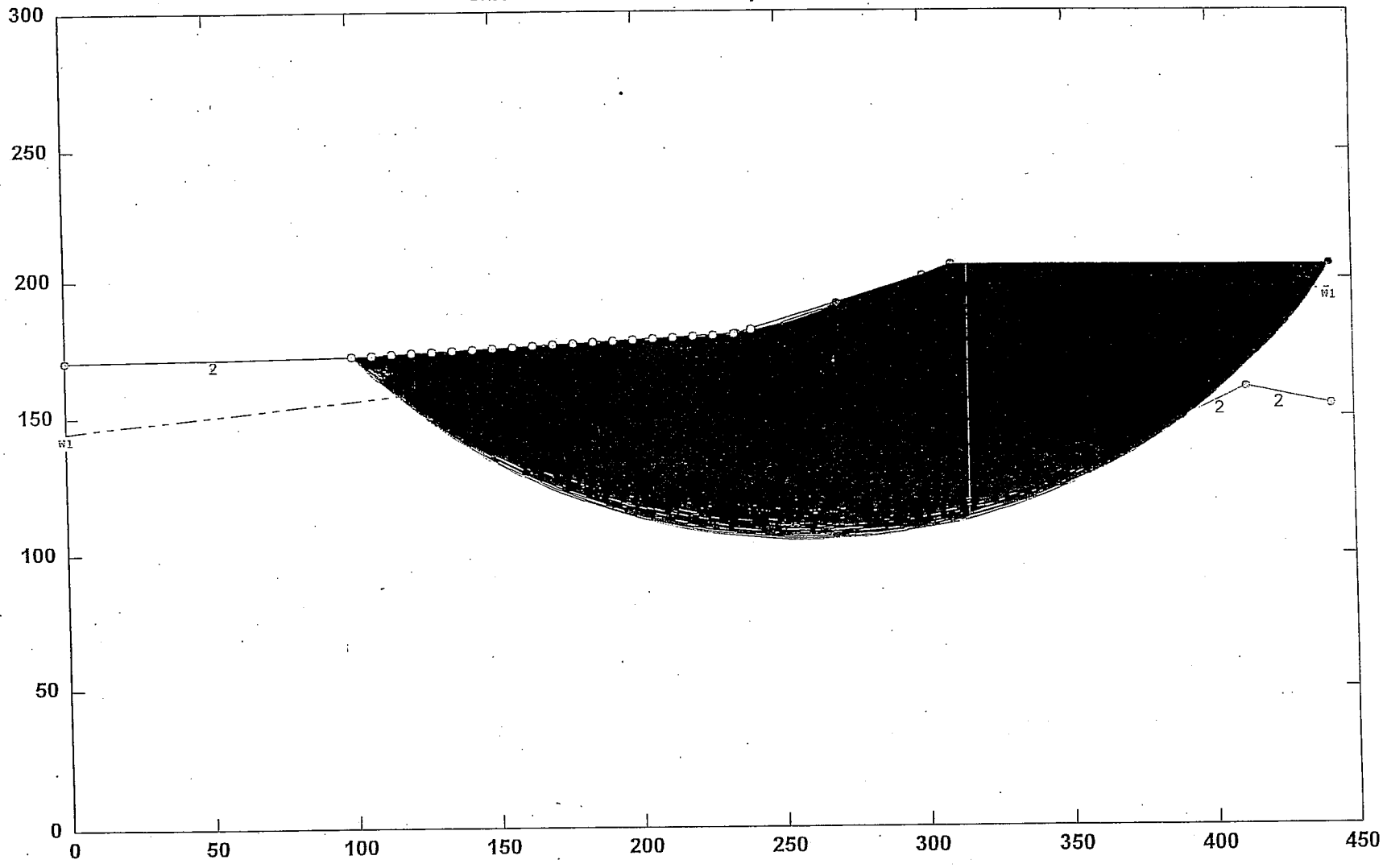

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                    ** STABL6H  **
                          by
                   Purdue University
             --Slope Stability Analysis--
          Simplified Janbu, Simplified Bishop
             or Spencer`s Method of Slices
Run Date:                    4/7/03
Time of Run:                 4:33PM
Run By:                      DA
Input Data Filename:         C:ha42s10.in
Output Filename:             C:ha42s10.OUT
Plotted Output Filename:     C:ha42s10.PLT
PROBLEM DESCRIPTION   T52584-Hasley Cyn-42-42', Cut Slope 33,
                      Static
BOUNDARY COORDINATES
    5 Top   Boundaries
   10 Total Boundaries
Boundary     X-Left      Y-Left      X-Right     Y-Right     Soil Type
   No.        (ft)        (ft)        (ft)        (ft)      Below Bnd
    1          .00      170.00      100.00      172.00         2
    2       100.00      172.00      235.00      180.00         2
    3       235.00      180.00      300.00      201.00         2
    4       300.00      201.00      310.00      205.00         1
    5       310.00      205.00      442.00      205.00         1
    6       300.00      201.00      326.00      180.00         2
    7       326.00      180.00      375.00      160.00         2
    8       375.00      160.00      390.00      150.00         2
    9       390.00      150.00      412.00      160.00         2
   10       412.00      160.00      442.00      154.00         2
ISOTROPIC SOIL PARAMETERS
  2 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   125.0    125.0     300.0    29.0     .00        .0      1
  2   129.0    129.0     410.0    40.5     .00        .0      1
1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water =  62.40
Piezometric Surface No.  1 Specified by  4 Coordinate Points
  Point      X-Water     Y-Water
   No.         (ft)        (ft)
    1          .00      145.00
    2       235.00      170.00
    3       310.00      190.00
    4       442.00      196.00
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
14000 Trial Surfaces Have Been Generated.
100 Surfaces Initiate From Each Of140 Points Equally Spaced
Along The Ground Surface Between  X = 100.00 ft.
                                  and  X = 240.00 ft.
Each Surface Terminates Between   X = 270.00 ft.
                                  and  X = 442.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is  Y =    .00 ft.
12.00 ft. Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And     .0 deg.
Following Are Displayed The Ten Most Critical Of The Trial
      Failure Surfaces Examined.  They Are Ordered - Most Critical
      First.
      * * Safety Factors Are Calculated By The Modified Bishop Method * *
      Failure Surface Specified By 11 Coordinate Points
        Point      X-Surf      Y-Surf
         No.        (ft)        (ft)
```

1	224.89	179.40
2	235.83	174.47
3	247.39	171.25
4	259.31	169.84
5	271.30	170.25
6	283.09	172.48
7	294.41	176.47
8	304.98	182.14
9	314.57	189.36
10	322.96	197.94
11	328.00	205.00

Circle Center At X = 262.6 ; Y = 248.5 and Radius, 78.7
*** 4.019 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	224.89	179.40
2	235.87	174.55
3	247.43	171.34
4	259.33	169.84
5	271.33	170.09
6	283.17	172.08
7	294.58	175.77
8	305.35	181.08
9	315.22	187.90
10	324.00	196.07
11	331.15	205.00

Circle Center At X = 263.6 ; Y = 252.1 and Radius, 82.4
*** 4.024 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	218.85	179.04
2	229.75	174.03
3	241.25	170.60
4	253.12	168.80
5	265.11	168.68
6	277.01	170.24
7	288.58	173.45
8	299.58	178.24
9	309.80	184.52
10	319.05	192.17
11	327.13	201.04
12	329.83	205.00

Circle Center At X = 260.0 ; Y = 254.2 and Radius, 85.6
*** 4.024 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	223.88	179.34
2	234.65	174.03
3	246.11	170.48
4	257.98	168.76
5	269.98	168.92
6	281.81	170.97
7	293.17	174.84
8	303.78	180.44
9	313.38	187.64
10	321.74	196.25
11	327.90	205.00

Circle Center At X = 262.9 ; Y = 245.0 and Radius, 76.4
*** 4.024 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	223.88	179.34

```
    2        234.94      174.68
    3        246.54      171.60
    4        258.45      170.14
    5        270.45      170.34
    6        282.31      172.20
    7        293.79      175.67
    8        304.69      180.69
    9        314.79      187.17
   10        323.90      194.99
   11        331.84      203.98
   12        332.52      205.00
Circle Center At X =  263.0 ; Y =  256.8  and Radius,   86.8
      ***     4.027   ***
Failure Surface Specified By 12 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
    1        224.89      179.40
    2        235.99      174.83
    3        247.59      171.78
    4        259.51      170.34
    5        271.50      170.50
    6        283.37      172.29
    7        294.89      175.65
    8        305.85      180.53
    9        316.05      186.85
   10        325.31      194.48
   11        333.46      203.29
   12        334.66      205.00
Circle Center At X =  264.3 ; Y =  259.1  and Radius,   88.9
      ***     4.043   ***
Failure Surface Specified By 11 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
    1        228.92      179.64
    2        240.10      175.27
    3        251.79      172.56
    4        263.74      171.55
    5        275.72      172.27
    6        287.47      174.70
    7        298.75      178.79
    8        309.33      184.47
    9        318.98      191.60
   10        327.50      200.05
   11        331.23      205.00
Circle Center At X =  264.8 ; Y =  254.9  and Radius,   83.3
      ***     4.043   ***
Failure Surface Specified By 12 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
    1        219.86      179.10
    2        230.35      173.28
    3        241.61      169.15
    4        253.39      166.81
    5        265.38      166.33
    6        277.30      167.70
    7        288.86      170.90
    8        299.79      175.86
    9        309.82      182.45
   10        318.71      190.51
   11        326.25      199.85
   12        329.22      205.00
Circle Center At X =  262.5 ; Y =  243.6  and Radius,   77.3
      ***     4.044   ***
Failure Surface Specified By 11 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
```

1	226.91	179.52
2	238.21	175.50
3	249.96	173.03
4	261.93	172.17
5	273.90	172.92
6	285.67	175.27
7	297.01	179.17
8	307.73	184.57
9	317.63	191.36
10	326.52	199.41
11	331.23	205.00

Circle Center At X = 262.4 ; Y = 261.3 and Radius, 89.2
*** 4.046 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	219.86	179.10
2	230.95	174.53
3	242.58	171.59
4	254.52	170.33
5	266.51	170.79
6	278.31	172.95
7	289.69	176.78
8	300.40	182.18
9	310.23	189.06
10	318.98	197.27
11	325.16	205.00

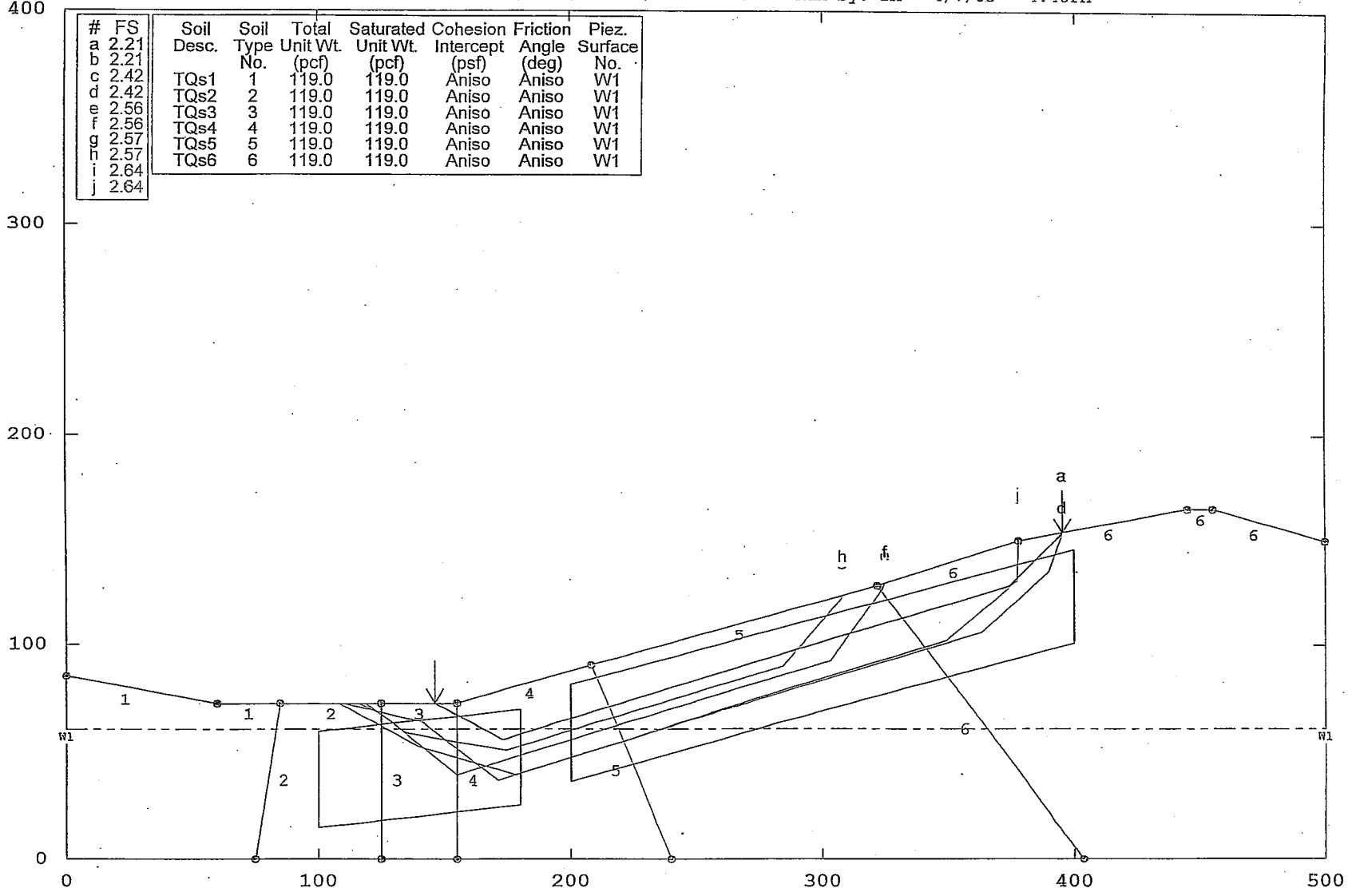
Circle Center At X = 257.3 ; Y = 254.2 and Radius, 84.0
*** 4.046 ***

Hasley Canyon Cross Section 47-47' Cut Slope 2, 3:1, static

N:\PROJECTS\1600-1~1\1617\HC1617\HC47S10.PL2 Run By: DA 4/7/03 4:48PM

#	FS
a	2.21
b	2.21
c	2.42
d	2.42
e	2.56
f	2.56
g	2.57
h	2.57
i	2.64
j	2.64

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs1	1	119.0	119.0	Aniso	Aniso	W1
TQs2	2	119.0	119.0	Aniso	Aniso	W1
TQs3	3	119.0	119.0	Aniso	Aniso	W1
TQs4	4	119.0	119.0	Aniso	Aniso	W1
TQs5	5	119.0	119.0	Aniso	Aniso	W1
TQs6	6	119.0	119.0	Aniso	Aniso	W1



PCSTABL5M/si FSmin=2.21

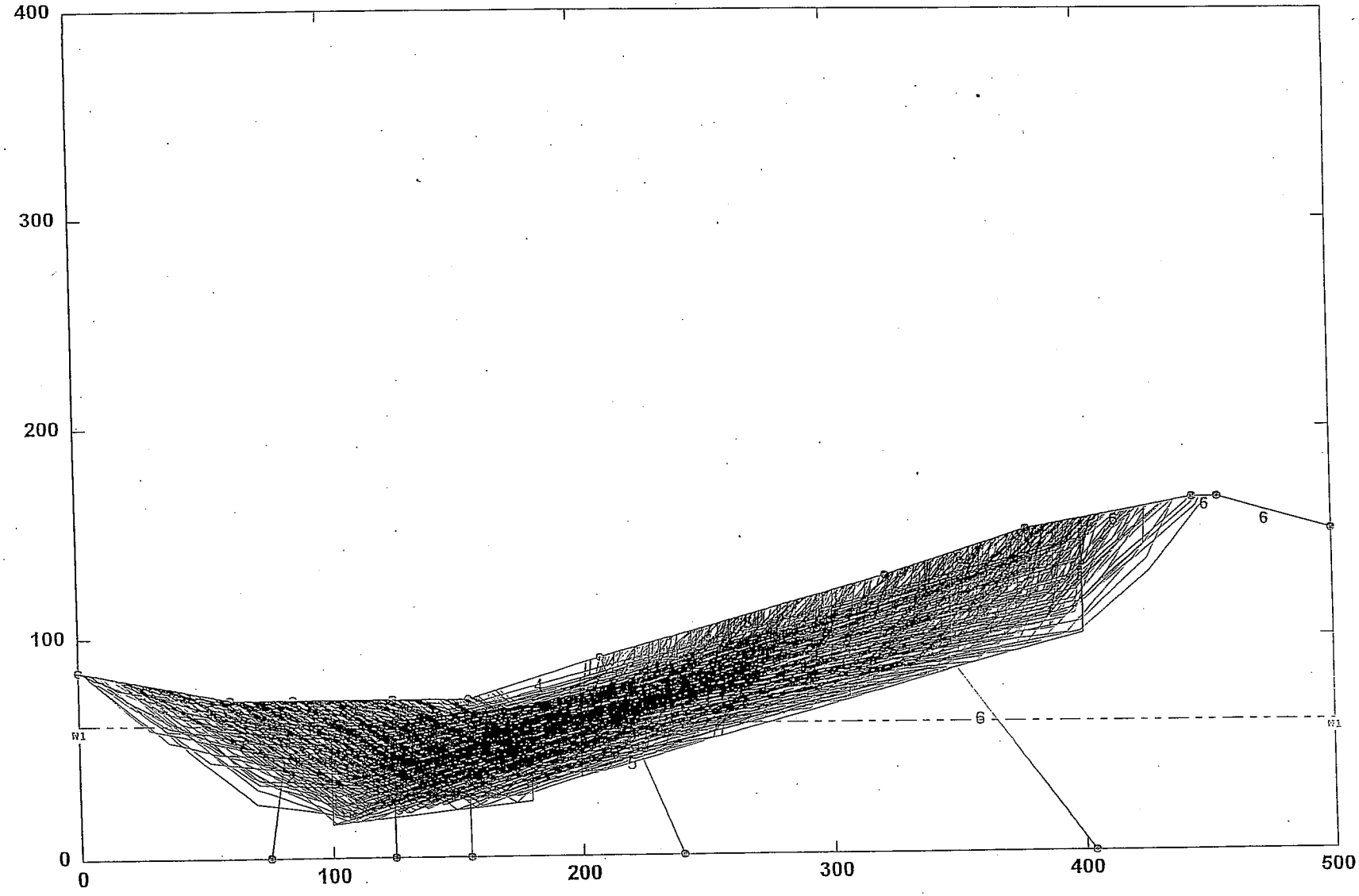
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

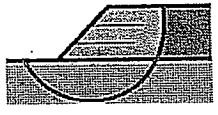
RUN NO. - 22

Hasley Canyon Cross Section 47-47' Cut Slope 2, 3:1, static

N:\PROJECTS\1600-1~1\1617\HC1617\HC47S10.PLT Run By: DA 4/7/03 4:48PM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/7/03
Time of Run: 4:48PM
Run By: DA
Input Data Filename: N:hc47s10.in
Output Filename: N:hc47s10.OUT
Unit: ENGLISH
Plotted Output Filename: N:hc47s10.PLT
PROBLEM DESCRIPTION Hasley Canyon Cross Section 47-47'
Cut Slope 2, 3:1, static

BOUNDARY COORDINATES
10 Top Boundaries
15 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	85.00	60.00	72.00	1
2	60.00	72.00	85.00	72.00	1
3	85.00	72.00	125.00	72.00	2
4	125.00	72.00	155.00	72.00	3
5	155.00	72.00	208.00	90.00	4
6	208.00	90.00	322.00	128.00	5
7	322.00	128.00	378.00	150.00	6
8	378.00	150.00	445.00	165.00	6
9	445.00	165.00	455.00	165.00	6
10	455.00	165.00	500.00	150.00	6
11	75.00	.00	85.00	72.00	2
12	124.90	.00	125.00	72.00	3
13	154.90	.00	155.00	72.00	4
14	208.00	90.00	240.00	.00	5
15	322.00	128.00	404.00	.00	6

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	119.0	119.0	.0	.0	.00	.0	1
2	119.0	119.0	.0	.0	.00	.0	1
3	119.0	119.0	.0	.0	.00	.0	1
4	119.0	119.0	.0	.0	.00	.0	1
5	119.0	119.0	.0	.0	.00	.0	1
6	119.0	119.0	.0	.0	.00	.0	1

ANISOTROPIC STRENGTH PARAMETERS
6 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	-25.5	410.0	40.5
2	-24.5	200.0	17.4
3	90.0	410.0	40.5

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	-20.0	410.0	40.5
2	-10.0	200.0	17.4
3	90.0	410.0	40.5

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	-10.0	410.0	40.5
2	10.0	200.0	17.4
3	90.0	410.0	40.5

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	10.0	410.0	40.5
2	20.0	200.0	17.4
3	90.0	410.0	40.5

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	19.5	410.0	40.5
2	20.5	200.0	17.4
3	90.0	410.0	40.5

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	27.5	410.0	40.5
2	28.5	200.0	17.4
3	90.0	410.0	40.5

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 2 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	60.00
2	500.00	60.00

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.
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 40.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	100.00	37.00	180.00	47.00	44.00
2	200.00	58.00	400.00	123.00	45.00

Factor Of Safety Calculation Has Gone Through Ten Iterations
The Trial Failure Surface In Question Is Defined
By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	90.44	72.00
2	92.99	71.20
3	121.62	43.27
4	225.82	48.66
5	227.32	88.63
6	227.86	96.62

Factor Of Safety For The Preceding Specified Surface = 19.054
Factor Of Safety Calculation Has Gone Through Ten Iterations
The Trial Failure Surface In Question Is Defined
By The Following 6 Coordinate Points

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

1	103.45	72.00
2	106.40	70.53
3	135.42	43.00
4	306.82	71.10
5	307.68	111.10
6	325.62	129.42

Factor Of Safety For The Preceding Specified Surface = 8.693
Factor Of Safety Calculation Has Gone Through Ten Iterations
The Trial Failure Surface In Question Is Defined
By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	90.44	72.00
2	92.99	71.20
3	121.62	43.27
4	225.82	48.66
5	227.32	88.63
6	227.86	96.62

Factor Of Safety For The Preceding Specified Surface = 19.054
Factor Of Safety Calculation Has Gone Through Ten Iterations
The Trial Failure Surface In Question Is Defined
By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	103.45	72.00
2	106.40	70.53
3	135.42	43.00
4	306.82	71.10
5	307.68	111.10
6	325.62	129.42

Factor Of Safety For The Preceding Specified Surface = 8.693
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	146.10	72.00
2	172.94	55.05
3	374.45	128.12
4	395.51	153.92

*** 2.214 ***
Individual data on the 12 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	8.9	2968.4	.0	.0	.0	.0	.0	.0	.0
2	.0	5.2	.0	.0	.0	.0	.0	.0	.0
3	10.1	12661.6	.0	.0	.0	.0	.0	.0	.0
4	7.8	17937.1	.0	1430.3	.0	.0	.0	.0	.0
5	13.6	37155.2	.0	2240.1	.0	.0	.0	.0	.0
6	21.4	57285.0	.0	.0	.0	.0	.0	.0	.0
7	7.0	18445.7	.0	.0	.0	.0	.0	.0	.0
8	107.0	260576.8	.0	.0	.0	.0	.0	.0	.0
9	9.8	22271.3	.0	.0	.0	.0	.0	.0	.0
10	42.6	100645.8	.0	.0	.0	.0	.0	.0	.0
11	3.5	8029.0	.0	.0	.0	.0	.0	.0	.0
12	17.5	18266.0	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	146.10	72.00
2	172.94	55.05
3	374.45	128.12

```
    4        395.51       153.92
      ***     2.214    ***
Failure Surface Specified By  6 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1        110.22        72.00
    2        141.46        63.23
    3        170.97        36.23
    4        362.88       105.63
    5        389.73       135.27
    6        395.78       153.98
      ***     2.416    ***
Failure Surface Specified By  6 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1        110.22        72.00
    2        141.46        63.23
    3        170.97        36.23
    4        362.88       105.63
    5        389.73       135.27
    6        395.78       153.98
      ***     2.416    ***
Failure Surface Specified By  6 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1        116.33        72.00
    2        125.62        66.11
    3        155.05        39.02
    4        303.16        91.90
    5        323.99       126.04
    6        324.91       129.14
      ***     2.564    ***
Failure Surface Specified By  6 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1        116.33        72.00
    2        125.62        66.11
    3        155.05        39.02
    4        303.16        91.90
    5        323.99       126.04
    6        324.91       129.14
      ***     2.564    ***
Failure Surface Specified By  6 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1        118.98        72.00
    2        135.30        57.83
    3        174.51        49.92
    4        284.61        89.25
    5        307.52       122.04
    6        308.33       123.44
      ***     2.567    ***
Failure Surface Specified By  6 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1        118.98        72.00
    2        135.30        57.83
    3        174.51        49.92
    4        284.61        89.25
    5        307.52       122.04
    6        308.33       123.44
      ***     2.567    ***
Failure Surface Specified By  6 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1        107.95        72.00
```

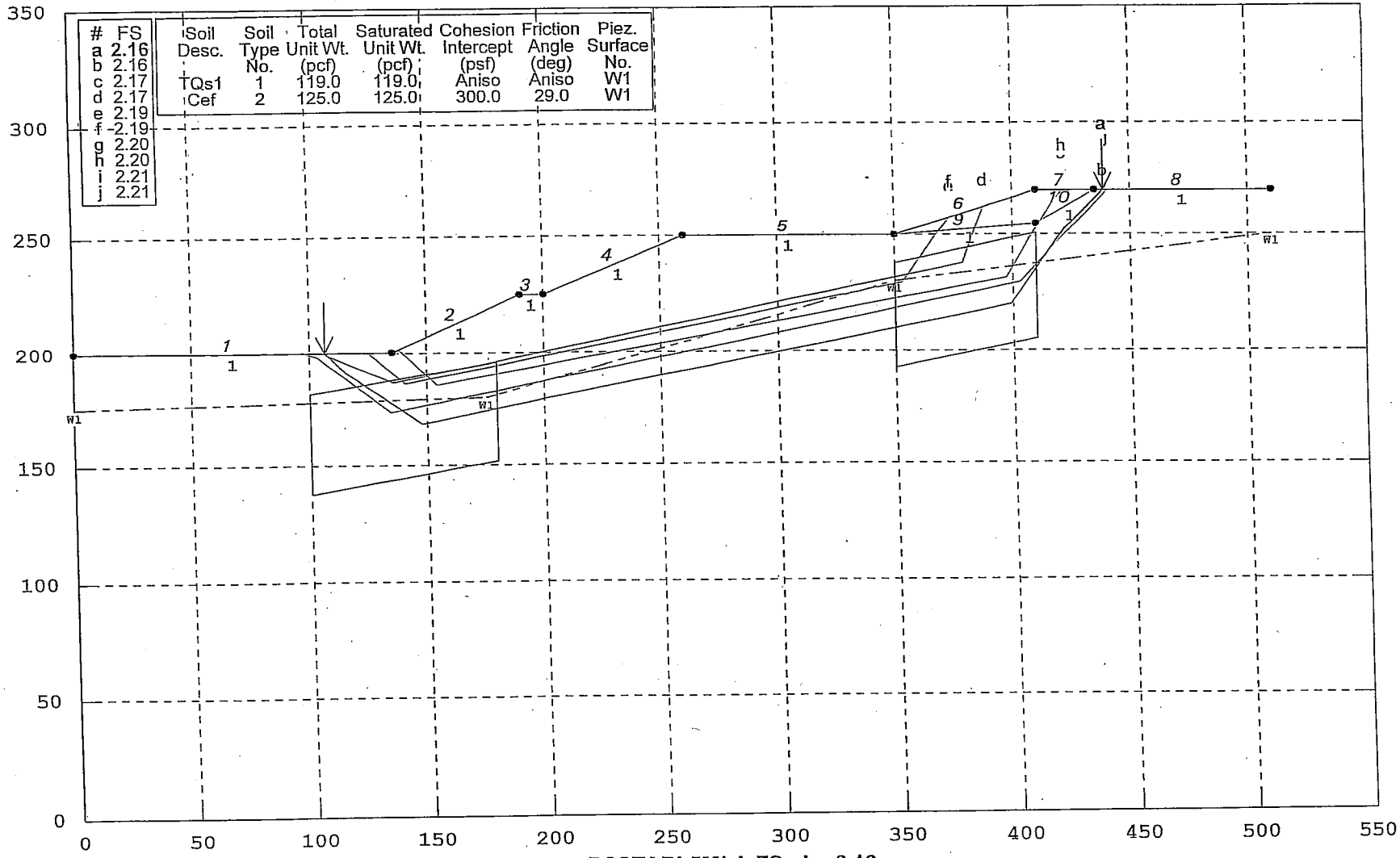
2	140.26	51.82
3	178.16	39.02
4	349.60	101.84
5	377.55	130.45
6	378.32	150.07
***	2.645	***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.95	72.00
2	140.26	51.82
3	178.16	39.02
4	349.60	101.84
5	377.55	130.45
6	378.32	150.07
***	2.645	***

Hasley Canyon Cross Section 50-50' Existing Cut Slope 2, 2:1, static

N:\PROJECTS\1600-1~1\1617\HC1617\HC50S11.PL2 Run By: DA 3/27/03 2:47PM



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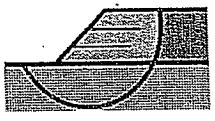
Safety Factors Are Calculated By The Modified Janbu Method

STED



RUN NO. - 23

Hasley Canyon Cross Section 50-50' Existing Cut Slope 2, 2:1, static

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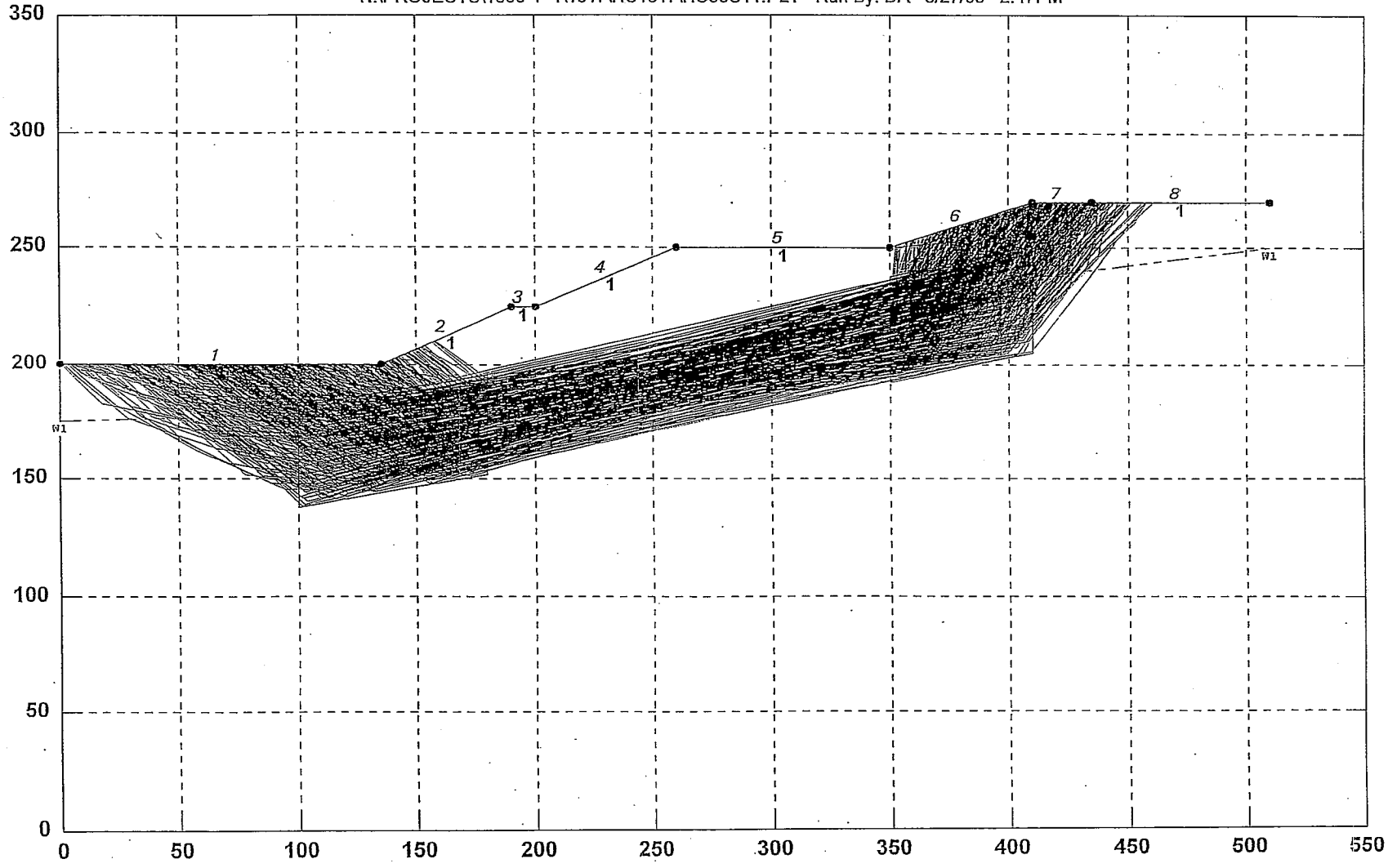


STED

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/27/03
Time of Run: 2:47PM
Run By: DA
Input Data Filename: N:HC50S11.IN
Output Filename: N:HC50S11.OUT
Unit: ENGLISH
Plotted Output Filename: N:HC50S11.PLT
PROBLEM DESCRIPTION Hasley Canyon Cross Section 50-50'
Existing Cut Slope 2, 2:1, static

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	.00	200.00	135.00	200.00	1
2	135.00	200.00	190.00	225.00	1
3	190.00	225.00	200.00	225.00	1
4	200.00	225.00	260.00	250.00	1
5	260.00	250.00	350.00	250.00	1
6	350.00	250.00	410.00	270.00	2
7	410.00	270.00	435.00	270.00	2
8	435.00	270.00	510.00	270.00	1
9	350.00	250.00	410.00	255.00	1
10	410.00	255.00	435.00	270.00	1

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	119.0	119.0	.0	.0	.00	.0	1
2	125.0	125.0	300.0	29.0	.00	.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	10.0	410.0	40.5
2	12.0	200.0	17.4
3	90.0	410.0	40.5

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 4 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	175.00
2	175.00	180.00
3	350.00	230.00
4	510.00	250.00

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
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 40.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	100.00	160.00	180.00	174.00	44.00

2	350.00	215.00	410.00	228.00	45.00

Factor Of Safety Calculation Has Gone Through Ten Iterations
The Trial Failure Surface In Question Is Defined
By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	147.03	205.47
2	175.87	183.22
3	396.80	203.56
4	396.89	243.56
5	404.34	268.11

Factor Of Safety For The Preceding Specified Surface = 9.616
Factor Of Safety Calculation Has Gone Through Ten Iterations
The Trial Failure Surface In Question Is Defined
By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	147.03	205.47
2	175.87	183.22
3	396.80	203.56
4	396.89	243.56
5	404.34	268.11

Factor Of Safety For The Preceding Specified Surface = 9.616
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	106.57	200.00
2	115.31	191.29
3	147.91	168.10
4	399.26	219.65
5	421.79	252.70
6	438.63	270.00

*** 2.164 ***

Individual data on the 15 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	8.7	4529.1	.0	.0	.0	.0	.0	.0	.0
2	17.6	31254.8	.0	.0	.0	.0	.0	.0	.0
3	2.1	5556.9	.0	128.1	.0	.0	.0	.0	.0
4	12.9	46441.3	.0	6272.3	.0	.0	.0	.0	.0
5	27.1	132660.0	.0	15066.4	.0	.0	.0	.0	.0
6	15.0	82814.6	.0	6386.9	.0	.0	.0	.0	.0
7	10.0	56215.9	.0	4875.8	.0	.0	.0	.0	.0
8	60.0	375295.7	.0	39633.5	.0	.0	.0	.0	.0
9	90.0	532086.6	.0	92811.3	.0	.0	.0	.0	.0
10	49.3	257462.1	.0	57540.1	.0	.0	.0	.0	.0
11	10.7	52880.0	.0	10982.4	.0	.0	.0	.0	.0
12	1.6	6353.2	.0	179.9	.0	.0	.0	.0	.0
13	10.2	30866.8	.0	.0	.0	.0	.0	.0	.0
14	13.2	16843.9	.0	.0	.0	.0	.0	.0	.0
15	3.6	806.7	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	106.57	200.00
2	115.31	191.29
3	147.91	168.10
4	399.26	219.65
5	421.79	252.70
6	438.63	270.00

*** 2.164 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	104.79	200.00
2	136.07	186.59
3	378.43	237.75
4	387.59	262.53

*** 2.166 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	104.79	200.00
2	136.07	186.59
3	378.43	237.75
4	387.59	262.53

*** 2.166 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.08	200.00
2	140.58	186.30
3	353.10	229.65
4	373.61	257.87

*** 2.192 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.08	200.00
2	140.58	186.30
3	353.10	229.65
4	373.61	257.87

*** 2.192 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	138.09	201.41
2	154.12	185.41
3	397.12	231.38
4	417.52	265.79
5	421.62	270.00

*** 2.198 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	138.09	201.41
2	154.12	185.41
3	397.12	231.38
4	417.52	265.79
5	421.62	270.00

*** 2.198 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	96.78	200.00
2	103.10	198.11
3	134.66	173.54
4	402.69	229.20
5	429.98	258.44
6	440.77	270.00

*** 2.211 ***

Failure Surface Specified By 6 Coordinate Points

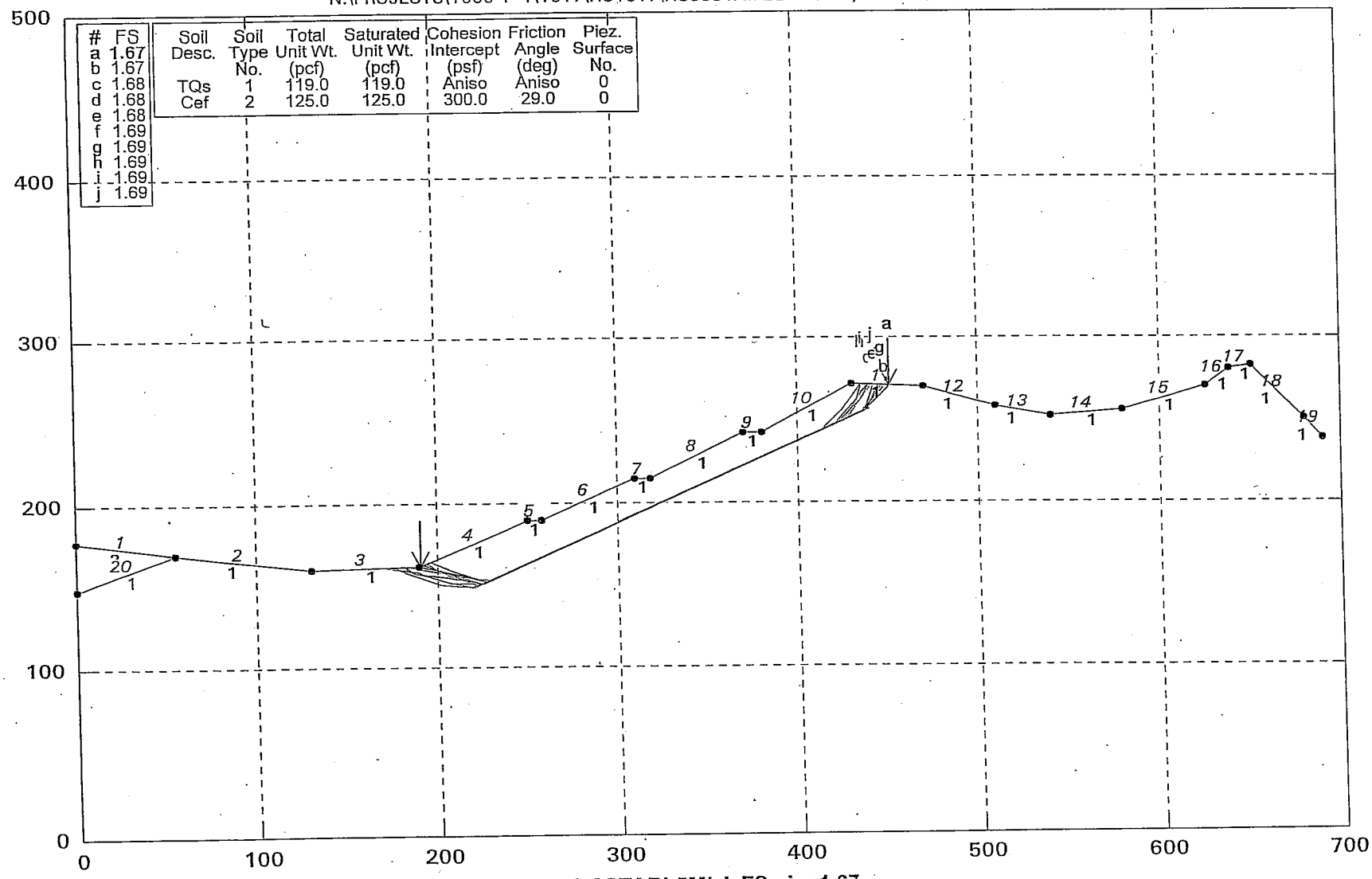
Point No.	X-Surf (ft)	Y-Surf (ft)
1	96.78	200.00
2	103.10	198.11

3	134.66	173.54
4	402.69	229.20
5	429.98	258.44
6	440.77	270.00

*** 2.211 ***

Hasley Canyon- Sec 53-53'- Cut Slope-` CS28- Static

N:\PROJECTS\1600-1~1\1617\HC1617\HC53S1A.PL2 Run By: DA 3/27/03 4:35PM



PCSTABL5M/si FSmin=1.67

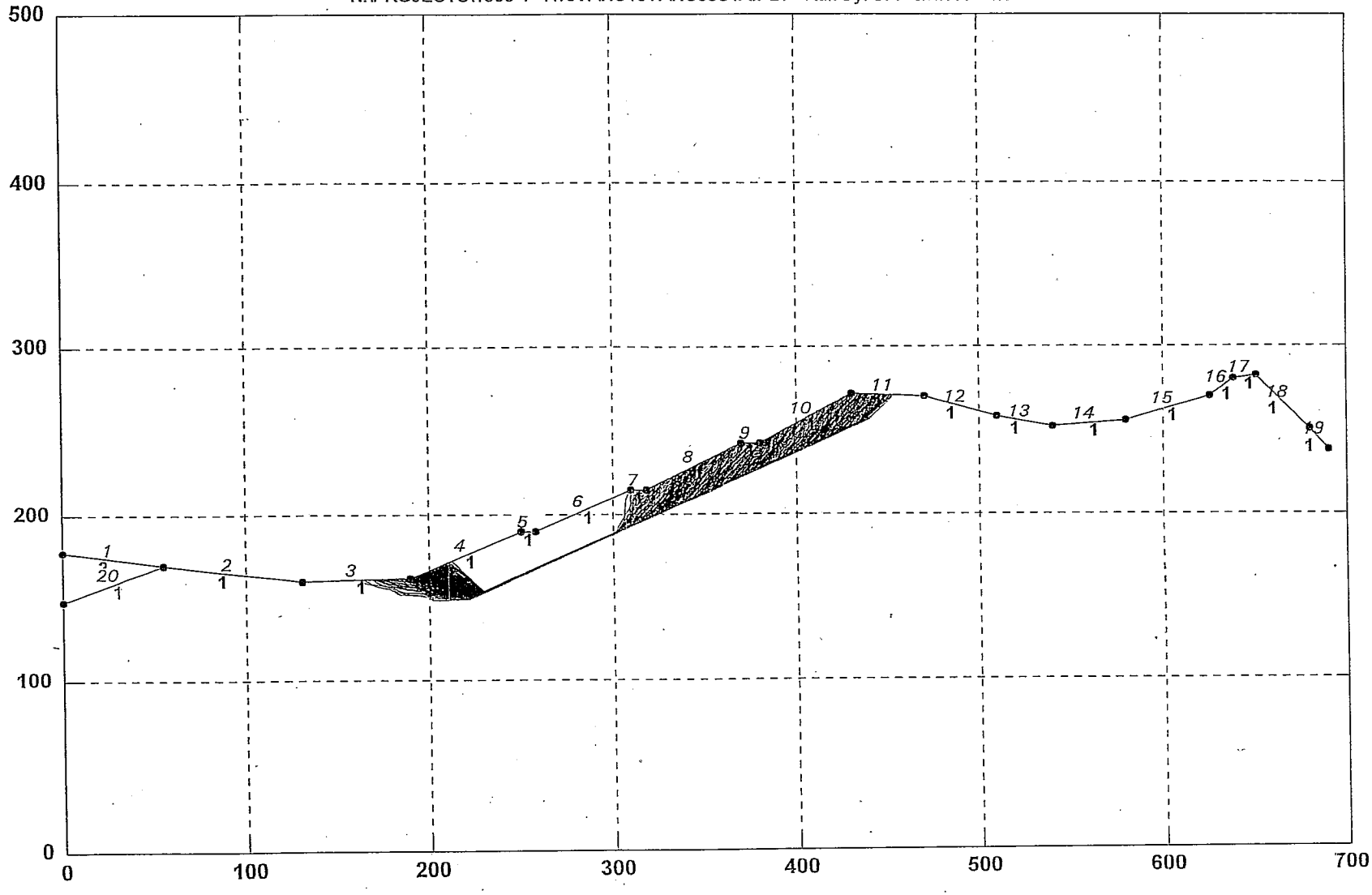
Safety Factors Are Calculated By The Modified Janbu Method

STED

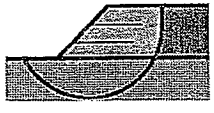
RUN NO. - 24

Hasley Canyon- Sec 53-53'- Cut Slope-` CS28- Static

N:\PROJECTS\1600-1~1\1617\HC1617\HC53S1A.PLT Run By: DA 3/27/03 4:35PM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/27/03
Time of Run: 4:35PM
Run By: DA
Input Data Filename: N:HC53S1A.
Output Filename: N:HC53S1A.OUT
Unit: ENGLISH
Plotted Output Filename: N:HC53S1A.PLT
PROBLEM DESCRIPTION Hasley Canyon- Sec 53-53'- Cut Slope-`
CS28- Static

BOUNDARY COORDINATES
19 Top Boundaries
20 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	178.00	55.00	170.00	2
2	55.00	170.00	130.00	160.00	1
3	130.00	160.00	190.00	162.00	1
4	190.00	162.00	250.00	190.00	1
5	250.00	190.00	258.00	190.00	1
6	258.00	190.00	310.00	215.00	1
7	310.00	215.00	318.00	215.00	1
8	318.00	215.00	370.00	242.00	1
9	370.00	242.00	380.00	242.00	1
10	380.00	242.00	430.00	272.00	1
11	430.00	272.00	470.00	270.00	1
12	470.00	270.00	510.00	258.00	1
13	510.00	258.00	540.00	252.00	1
14	540.00	252.00	580.00	255.00	1
15	580.00	255.00	625.00	270.00	1
16	625.00	270.00	638.00	280.00	1
17	638.00	280.00	650.00	282.00	1
18	650.00	282.00	680.00	250.00	1
19	680.00	250.00	690.00	238.00	1
20	.00	148.00	55.00	170.00	1

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	119.0	119.0	410.0	40.5	.00	.0	0
2	125.0	125.0	300.0	29.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	25.5	410.0	40.5
2	26.5	347.0	22.0
3	90.0	410.0	40.5

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
500 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 19.0

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

1	220.00	149.30	230.00	154.10	1.00
2	300.00	188.30	440.00	256.60	1.00

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

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

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	190.80	162.37
2	208.40	157.43
3	226.79	152.66
4	437.09	255.66
5	450.18	269.43
6	450.92	270.95

*** 1.670 ***

Individual data on the 12 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	17.6	13771.3	.0	.0	.0	.0	.0	.0	.0
2	18.4	43402.2	.0	.0	.0	.0	.0	.0	.0
3	23.2	72488.0	.0	.0	.0	.0	.0	.0	.0
4	8.0	22862.9	.0	.0	.0	.0	.0	.0	.0
5	52.0	135028.5	.0	.0	.0	.0	.0	.0	.0
6	8.0	18684.3	.0	.0	.0	.0	.0	.0	.0
7	52.0	114055.8	.0	.0	.0	.0	.0	.0	.0
8	10.0	19929.3	.0	.0	.0	.0	.0	.0	.0
9	50.0	101463.6	.0	.0	.0	.0	.0	.0	.0
10	7.1	15089.7	.0	.0	.0	.0	.0	.0	.0
11	13.1	13674.8	.0	.0	.0	.0	.0	.0	.0
12	.7	68.2	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	192.16	163.01
2	207.39	157.79
3	225.28	151.37
4	434.49	253.81
5	446.47	268.56
6	448.81	271.06

*** 1.675 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	193.07	163.43
2	210.37	155.76
3	229.28	153.88
4	421.94	247.72
5	434.89	261.63
6	440.24	271.49

*** 1.677 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	193.78	163.77
2	206.60	155.74
3	225.19	151.83
4	426.22	249.99
5	435.25	266.71
6	439.90	271.50

*** 1.682 ***

Failure Surface Specified By 6 Coordinate Points

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

1	177.13	161.57
2	184.00	157.43
3	201.83	150.86
4	220.76	149.18
5	437.12	254.75
6	442.39	271.38

*** 1.684 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	196.77	165.16
2	209.73	158.94
3	227.71	152.80
4	438.21	255.64
5	445.04	271.25

*** 1.687 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	161.82
2	186.63	161.23
3	205.30	157.69
4	222.82	150.34
5	437.05	255.57
6	446.89	271.16

*** 1.687 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	181.93	161.73
2	183.89	159.88
3	201.71	153.28
4	220.34	149.56
5	412.48	242.75
6	425.55	256.53
7	435.81	271.71

*** 1.688 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	182.14	161.74
2	186.92	157.68
3	205.71	154.87
4	224.39	151.42
5	420.78	247.66
6	432.61	262.53
7	435.32	271.73

*** 1.693 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.15	161.37
2	189.03	158.97
3	206.79	152.22
4	225.79	151.97
5	427.69	250.87
6	438.45	266.52
7	441.64	271.42

*** 1.693 ***

Hasley Canyon- Sec 53-53'- Cut Slope-` CS28

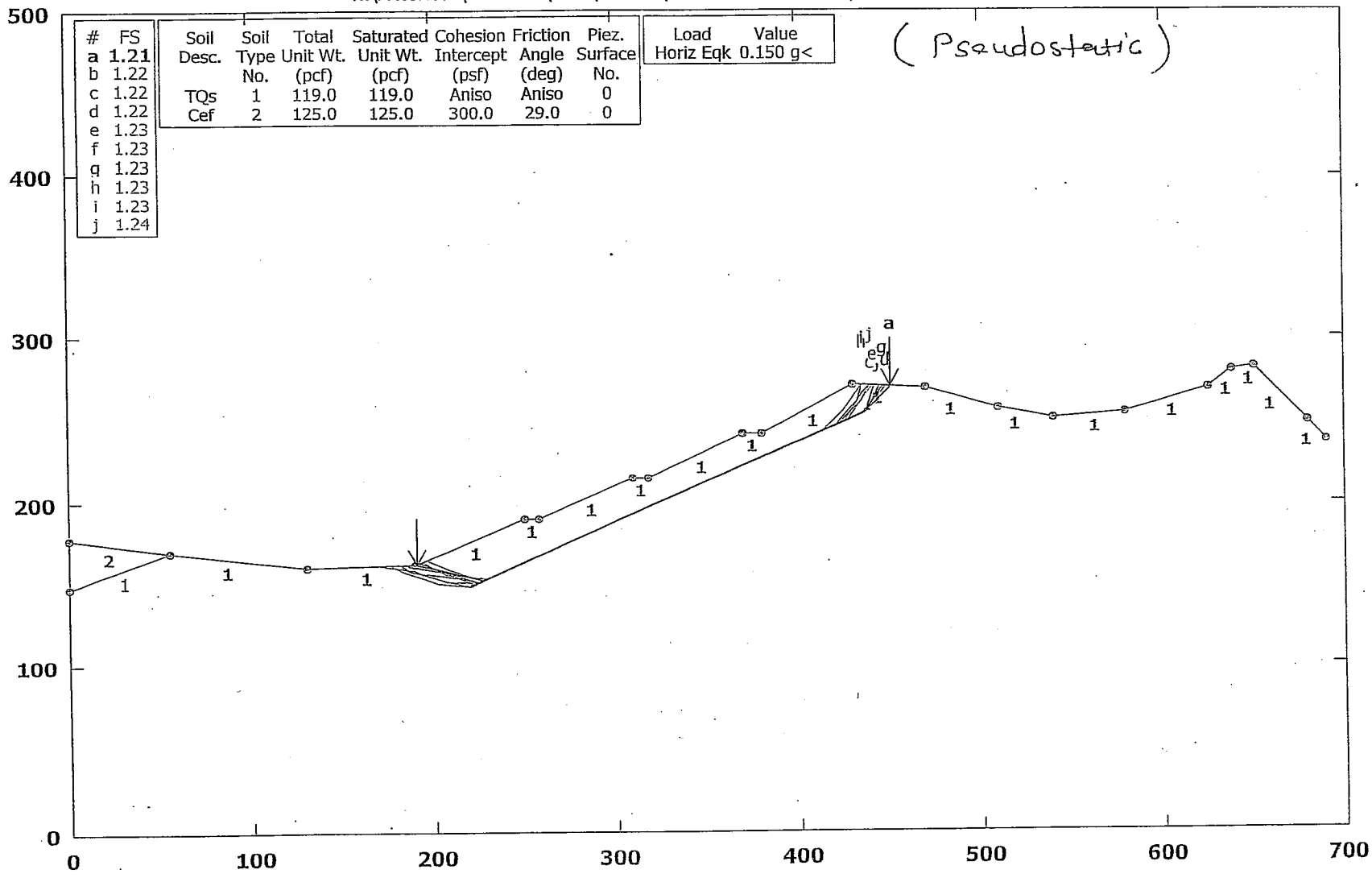
N:\PROJECTS\1600-1~1\1617\HC1617\HC53PS1A.PL2 Run By: DA 3/27/03 4:52PM

(Psaudostatic)

#	FS
a	1.21
b	1.22
c	1.22
d	1.22
e	1.23
f	1.23
g	1.23
h	1.23
i	1.23
j	1.24

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs	1	119.0	119.0	Aniso	Aniso	0
Cef	2	125.0	125.0	300.0	29.0	0

Load	Value
Horiz Eqk	0.150 g<



PCSTABL5M/si FSmin=1.21

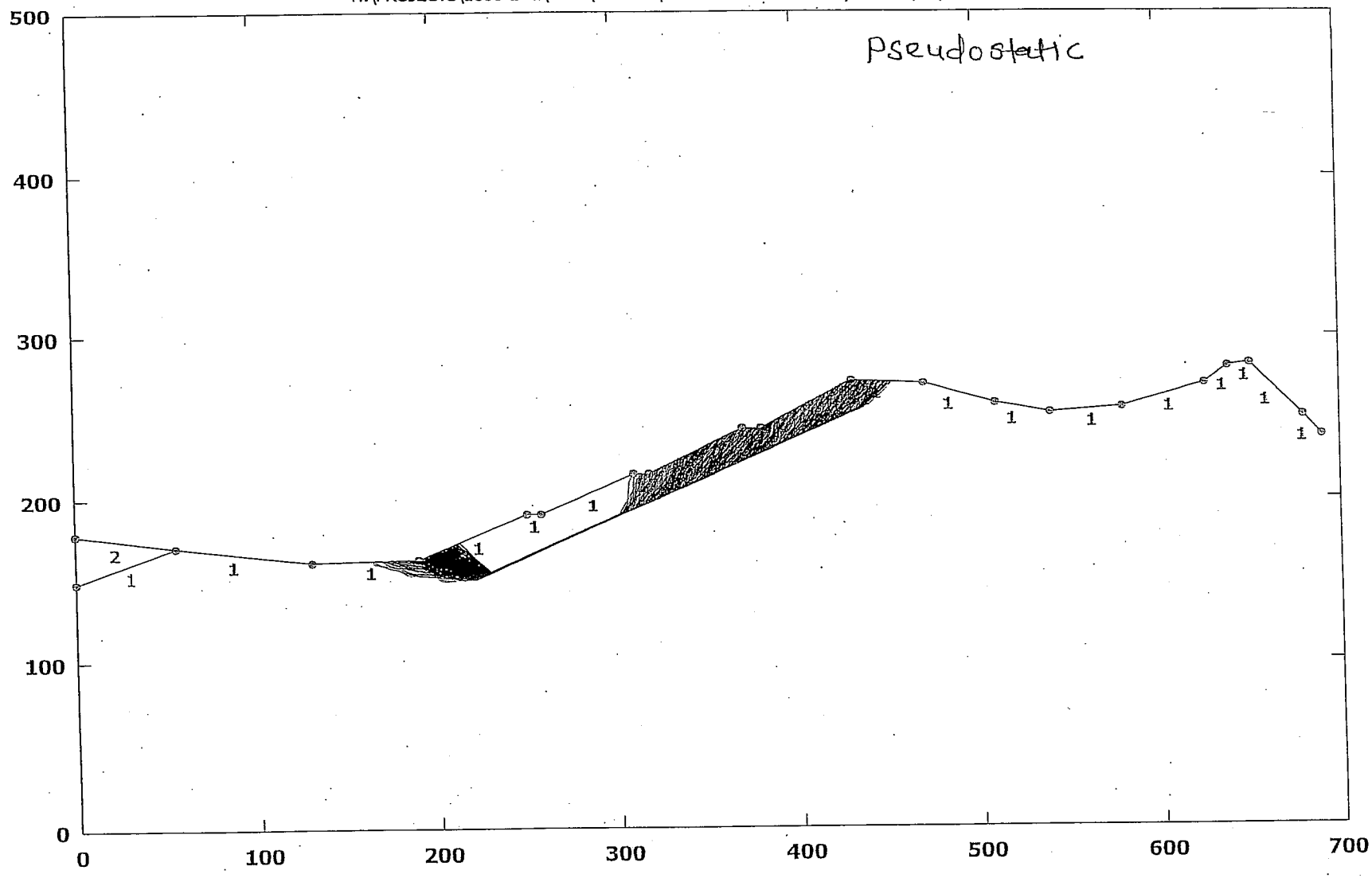
Safety Factors Are Calculated By The Modified Janbu Method

STED

RUN NO. - 25

Hasley Canyon- Sec 53-53'- Cut Slope-` CS28

N:\PROJECTS\1600-1~1\1617\HC1617\HC53PS1A.PLT Run By: DA 3/27/03 4:52PM



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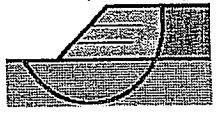

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/27/03
Time of Run: 4:52PM
Run By: DA
Input Data Filename: N:HC53PS1A.
Output Filename: N:HC53PS1A.OUT
Unit: ENGLISH
Plotted Output Filename: N:HC53PS1A.PLT
PROBLEM DESCRIPTION Hasley Canyon- Sec 53-53'- Cut Slope-`
CS28- Static

BOUNDARY COORDINATES
19 Top Boundaries
20 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	178.00	55.00	170.00	2
2	55.00	170.00	130.00	160.00	1
3	130.00	160.00	190.00	162.00	1
4	190.00	162.00	250.00	190.00	1
5	250.00	190.00	258.00	190.00	1
6	258.00	190.00	310.00	215.00	1
7	310.00	215.00	318.00	215.00	1
8	318.00	215.00	370.00	242.00	1
9	370.00	242.00	380.00	242.00	1
10	380.00	242.00	430.00	272.00	1
11	430.00	272.00	470.00	270.00	1
12	470.00	270.00	510.00	258.00	1
13	510.00	258.00	540.00	252.00	1
14	540.00	252.00	580.00	255.00	1
15	580.00	255.00	625.00	270.00	1
16	625.00	270.00	638.00	280.00	1
17	638.00	280.00	650.00	282.00	1
18	650.00	282.00	680.00	250.00	1
19	680.00	250.00	690.00	238.00	1
20	.00	148.00	55.00	170.00	1

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	119.0	119.0	410.0	40.5	.00	.0	0
2	125.0	125.0	300.0	29.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	25.5	410.0	40.5
2	26.5	347.0	22.0
3	90.0	410.0	40.5

A Horizontal Earthquake Loading Coefficient
Of .150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of .000 Has Been Assigned
Cavitation Pressure = .0 (psf)
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
500 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 19.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	220.00	149.30	230.00	154.10	1.00
2	300.00	188.30	440.00	256.60	1.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	190.80	162.37
2	208.40	157.43
3	226.79	152.66
4	437.09	255.66
5	450.18	269.43
6	450.92	270.95

*** 1.207 ***

Individual data on the 12 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	17.6	13771.3	.0	.0	.0	.0	2065.7	.0	.0
2	18.4	43402.2	.0	.0	.0	.0	6510.3	.0	.0
3	23.2	72488.0	.0	.0	.0	.0	10873.2	.0	.0
4	8.0	22862.9	.0	.0	.0	.0	3429.4	.0	.0
5	52.0	135028.5	.0	.0	.0	.0	20254.3	.0	.0
6	8.0	18684.3	.0	.0	.0	.0	2802.7	.0	.0
7	52.0	114055.8	.0	.0	.0	.0	17108.4	.0	.0
8	10.0	19929.3	.0	.0	.0	.0	2989.4	.0	.0
9	50.0	101463.6	.0	.0	.0	.0	15219.5	.0	.0
10	7.1	15089.7	.0	.0	.0	.0	2263.5	.0	.0
11	13.1	13674.8	.0	.0	.0	.0	2051.2	.0	.0
12	.7	68.2	.0	.0	.0	.0	10.2	.0	.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	177.13	161.57
2	184.00	157.43
3	201.83	150.86
4	220.76	149.18
5	437.12	254.75
6	442.39	271.38

*** 1.218 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	193.07	163.43
2	210.37	155.76
3	229.28	153.88
4	421.94	247.72
5	434.89	261.63
6	440.24	271.49

*** 1.218 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	192.16	163.01
2	207.39	157.79
3	225.28	151.37
4	434.49	253.81
5	446.47	268.56

```
    6          448.81       271.06
      ***       1.219    ***
Failure Surface Specified By  7 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1         171.15       161.37
    2         189.03       158.97
    3         206.79       152.22
    4         225.79       151.97
    5         427.69       250.87
    6         438.45       266.52
    7         441.64       271.42
      ***       1.227    ***
Failure Surface Specified By  5 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1         196.77       165.16
    2         209.73       158.94
    3         227.71       152.80
    4         438.21       255.64
    5         445.04       271.25
      ***       1.228    ***
Failure Surface Specified By  6 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1         184.63       161.82
    2         186.63       161.23
    3         205.30       157.69
    4         222.82       150.34
    5         437.05       255.57
    6         446.89       271.16
      ***       1.230    ***
Failure Surface Specified By  7 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1         181.93       161.73
    2         183.89       159.88
    3         201.71       153.28
    4         220.34       149.56
    5         412.48       242.75
    6         425.55       256.53
    7         435.81       271.71
      ***       1.232    ***
Failure Surface Specified By  7 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1         182.14       161.74
    2         186.92       157.68
    3         205.71       154.87
    4         224.39       151.42
    5         420.78       247.66
    6         432.61       262.53
    7         435.32       271.73
      ***       1.234    ***
Failure Surface Specified By  6 Coordinate Points
  Point       X-Surf       Y-Surf
   No.         (ft)         (ft)
    1         193.78       163.77
    2         206.60       155.74
    3         225.19       151.83
    4         426.22       249.99
    5         435.25       266.71
    6         439.90       271.50
      ***       1.235    ***
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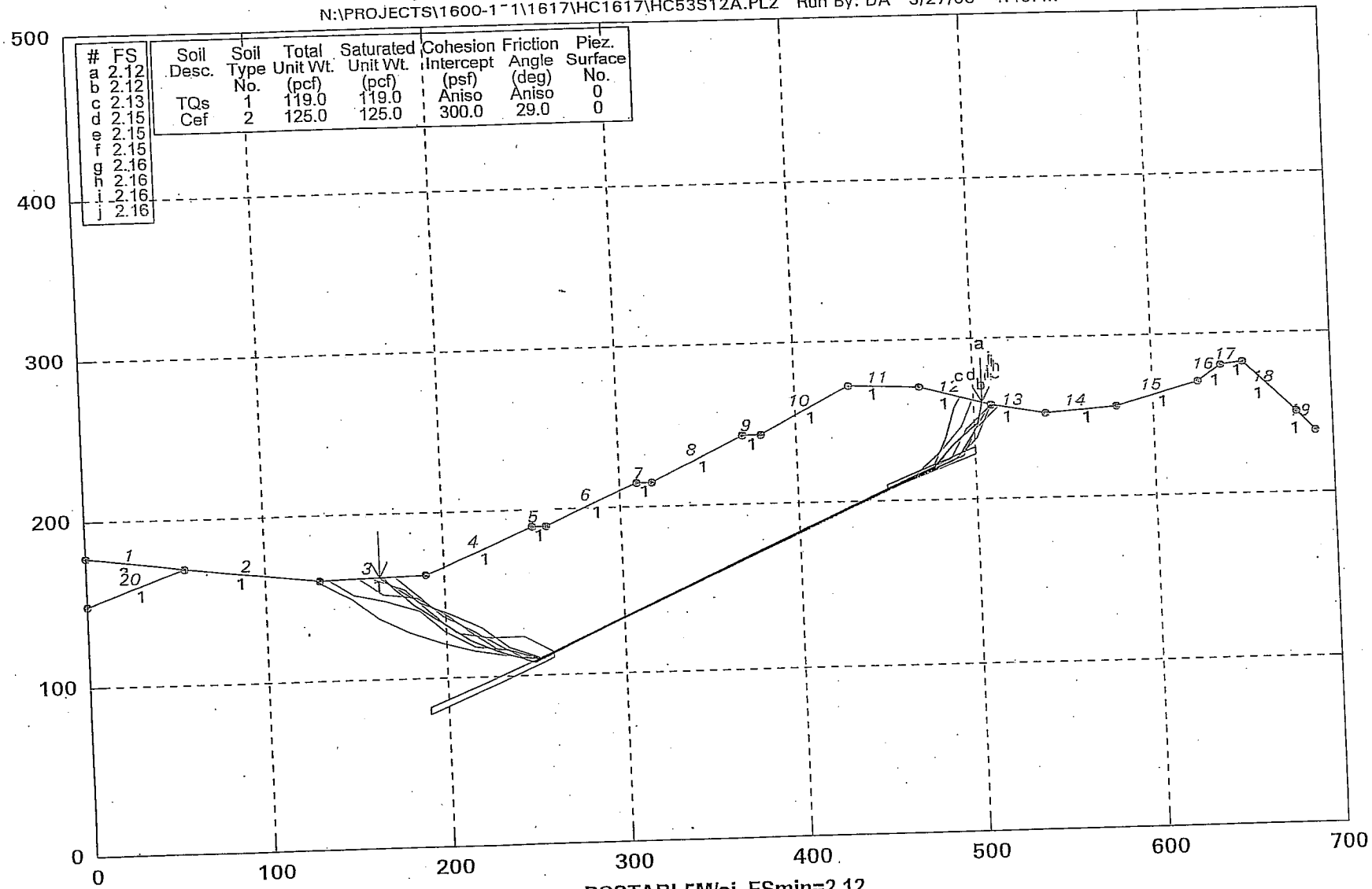
Hasley Canyon- Sec 53-53'- Cut Slope-` CS28- Static

N:\PROJECTS\1600-1~1\1617\HC1617\HC53S12A.PL2 Run By: DA 3/27/03 4:49PM



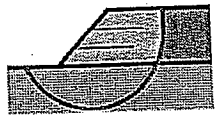
#	FS
a	2.12
b	2.12
c	2.13
d	2.15
e	2.15
f	2.15
g	2.16
h	2.16
i	2.16
j	2.16

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs	1	119.0	119.0	Aniso	Aniso	0
Cef	2	125.0	125.0	300.0	29.0	0

PCSTABL5M/si FSmin=2.12

Safety Factors Are Calculated By The Modified Janbu Method

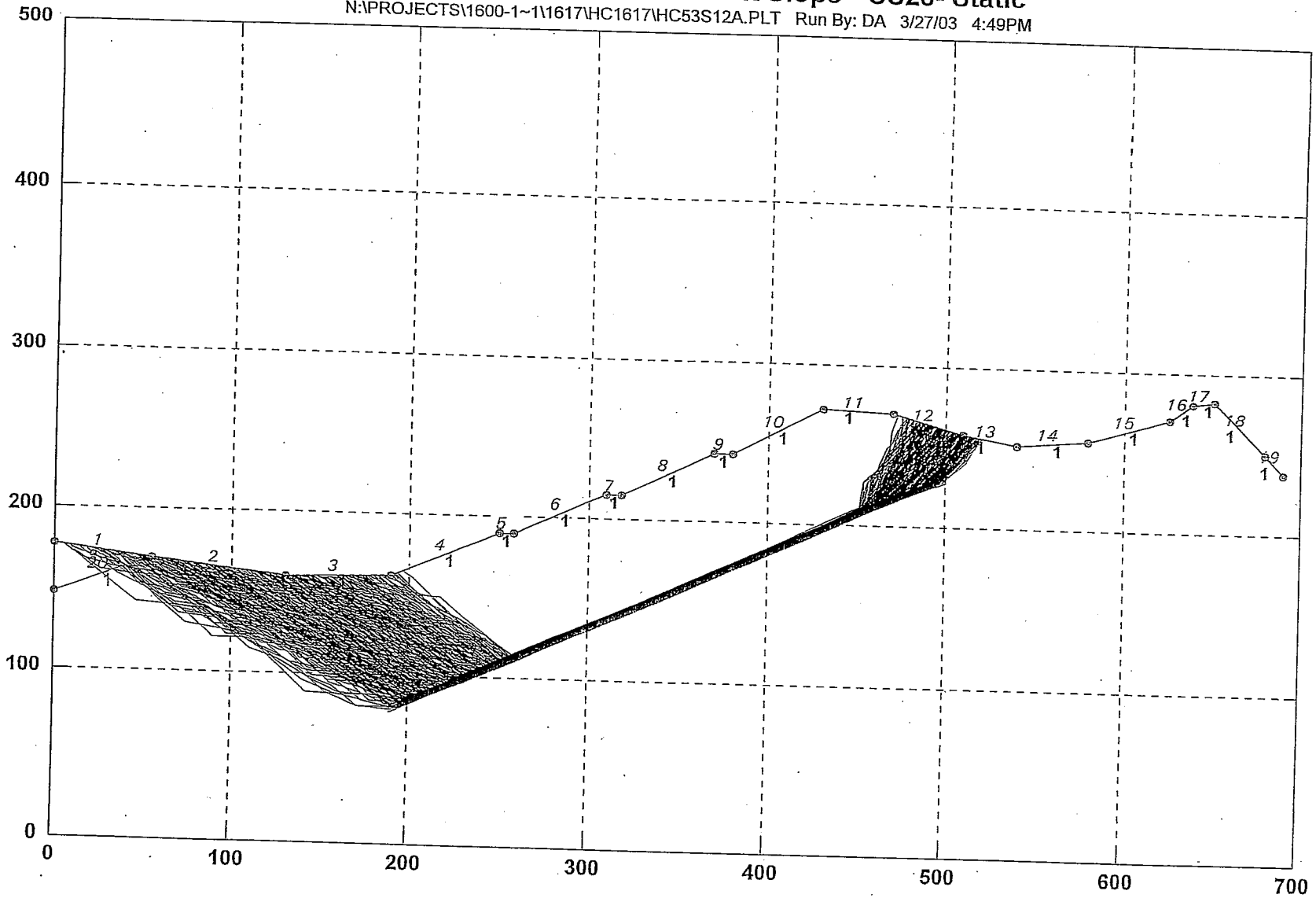
STED



RUN NO. 1 26

Hasley Canyon- Sec 53-53'- Cut Slope-` CS28- Static

N:\PROJECTS\1600-1~1\1617\HC1617\HC53S12A.PLT Run By: DA 3/27/03 4:49PM



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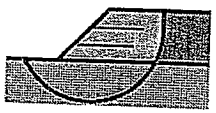


** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/27/03
Time of Run: 4:49PM
Run By: DA
Input Data Filename: N:HC53S12A.
Output Filename: N:HC53S12A.OUT
Unit: ENGLISH
Plotted Output Filename: N:HC53S12A.PLT
PROBLEM DESCRIPTION Hasley Canyon- Sec 53-53'- Cut Slope-`
CS28- Static

BOUNDARY COORDINATES
19 Top Boundaries
20 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	178.00	55.00	170.00	2
2	55.00	170.00	130.00	160.00	1
3	130.00	160.00	190.00	162.00	1
4	190.00	162.00	250.00	190.00	1
5	250.00	190.00	258.00	190.00	1
6	258.00	190.00	310.00	215.00	1
7	310.00	215.00	318.00	215.00	1
8	318.00	215.00	370.00	242.00	1
9	370.00	242.00	380.00	242.00	1
10	380.00	242.00	430.00	272.00	1
11	430.00	272.00	470.00	270.00	1
12	470.00	270.00	510.00	258.00	1
13	510.00	258.00	540.00	252.00	1
14	540.00	252.00	580.00	255.00	1
15	580.00	255.00	625.00	270.00	1
16	625.00	270.00	638.00	280.00	1
17	638.00	280.00	650.00	282.00	1
18	650.00	282.00	680.00	250.00	1
19	680.00	250.00	690.00	238.00	1
20	.00	148.00	55.00	170.00	1

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	119.0	119.0	410.0	40.5	.00	.0	0
2	125.0	125.0	300.0	29.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	25.5	410.0	40.5
2	26.5	347.0	22.0
3	90.0	410.0	40.5

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
500 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 19.0

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

1	190.00	80.00	260.00	112.00	4.00
2	450.00	208.00	500.00	230.00	4.00

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

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

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	164.00	161.13
2	169.14	157.00
3	183.00	144.01
4	198.10	132.48
5	213.72	121.67
6	231.07	113.92
7	249.19	108.21
8	475.95	219.27
9	488.41	233.61
10	501.84	247.06
11	504.48	259.66

*** 2.117 ***

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	5.1	1315.3	.0	.0	.0	.0	.0	.0	.0
2	13.9	18191.6	.0	.0	.0	.0	.0	.0	.0
3	7.0	17114.3	.0	.0	.0	.0	.0	.0	.0
4	8.1	27294.3	.0	.0	.0	.0	.0	.0	.0
5	15.6	78746.0	.0	.0	.0	.0	.0	.0	.0
6	17.3	122461.8	.0	.0	.0	.0	.0	.0	.0
7	18.1	160308.2	.0	.0	.0	.0	.0	.0	.0
8	.8	7798.4	.0	.0	.0	.0	.0	.0	.0
9	8.0	75620.2	.0	.0	.0	.0	.0	.0	.0
10	52.0	477959.7	.0	.0	.0	.0	.0	.0	.0
11	8.0	71444.3	.0	.0	.0	.0	.0	.0	.0
12	52.0	457004.5	.0	.0	.0	.0	.0	.0	.0
13	10.0	85882.7	.0	.0	.0	.0	.0	.0	.0
14	50.0	431239.0	.0	.0	.0	.0	.0	.0	.0
15	40.0	306721.7	.0	.0	.0	.0	.0	.0	.0
16	5.9	36312.2	.0	.0	.0	.0	.0	.0	.0
17	12.5	59186.7	.0	.0	.0	.0	.0	.0	.0
18	13.4	35348.3	.0	.0	.0	.0	.0	.0	.0
19	2.6	2105.4	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	164.00	161.13
2	169.14	157.00
3	183.00	144.01
4	198.10	132.48
5	213.72	121.67
6	231.07	113.92
7	249.19	108.21
8	475.95	219.27
9	488.41	233.61
10	501.84	247.06
11	504.48	259.66

*** 2.117 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	128.80	160.16
2	131.98	158.03
3	148.47	148.60

4	163.11	136.49
5	179.75	127.31
6	197.68	121.02
7	215.80	115.32
8	234.50	111.94
9	253.35	109.54
10	476.47	220.14
11	483.83	237.66
12	489.16	255.90
13	492.47	263.26

*** 2.132 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	165.54	161.18
2	170.33	157.05
3	185.46	145.55
4	203.02	138.30
5	219.95	129.68
6	234.37	117.30
7	252.03	110.31
8	466.84	215.98
9	479.99	229.69
10	492.30	244.17
11	499.12	261.27

*** 2.148 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	172.76	161.43
2	184.69	150.40
3	198.29	137.13
4	214.92	127.94
5	230.80	117.50
6	247.38	108.23
7	493.21	226.51
8	500.77	243.94
9	509.23	258.23

*** 2.149 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	172.76	161.43
2	184.69	150.40
3	198.29	137.13
4	214.92	127.94
5	230.80	117.50
6	247.38	108.23
7	493.21	226.51
8	500.77	243.94
9	509.23	258.23

*** 2.149 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	159.49	160.98
2	160.31	160.18
3	178.03	153.31
4	191.47	139.88
5	205.57	127.15
6	224.21	123.47
7	243.21	122.95
8	259.69	113.49
9	491.06	225.83
10	499.94	242.63
11	513.31	256.13

12	513.49	257.30

*** 2.156 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	159.49	160.98
2	160.31	160.18
3	178.03	153.31
4	191.47	139.88
5	205.57	127.15
6	224.21	123.47
7	243.21	122.95
8	259.69	113.49
9	491.06	225.83
10	499.94	242.63
11	513.31	256.13
12	513.49	257.30

*** 2.156 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	135.68	160.19
2	149.19	151.07
3	167.72	146.83
4	185.80	140.99
5	199.30	127.63
6	215.96	118.49
7	234.78	115.88
8	252.66	109.47
9	487.70	223.51
10	501.12	236.97
11	508.05	254.66
12	510.88	257.82

*** 2.162 ***

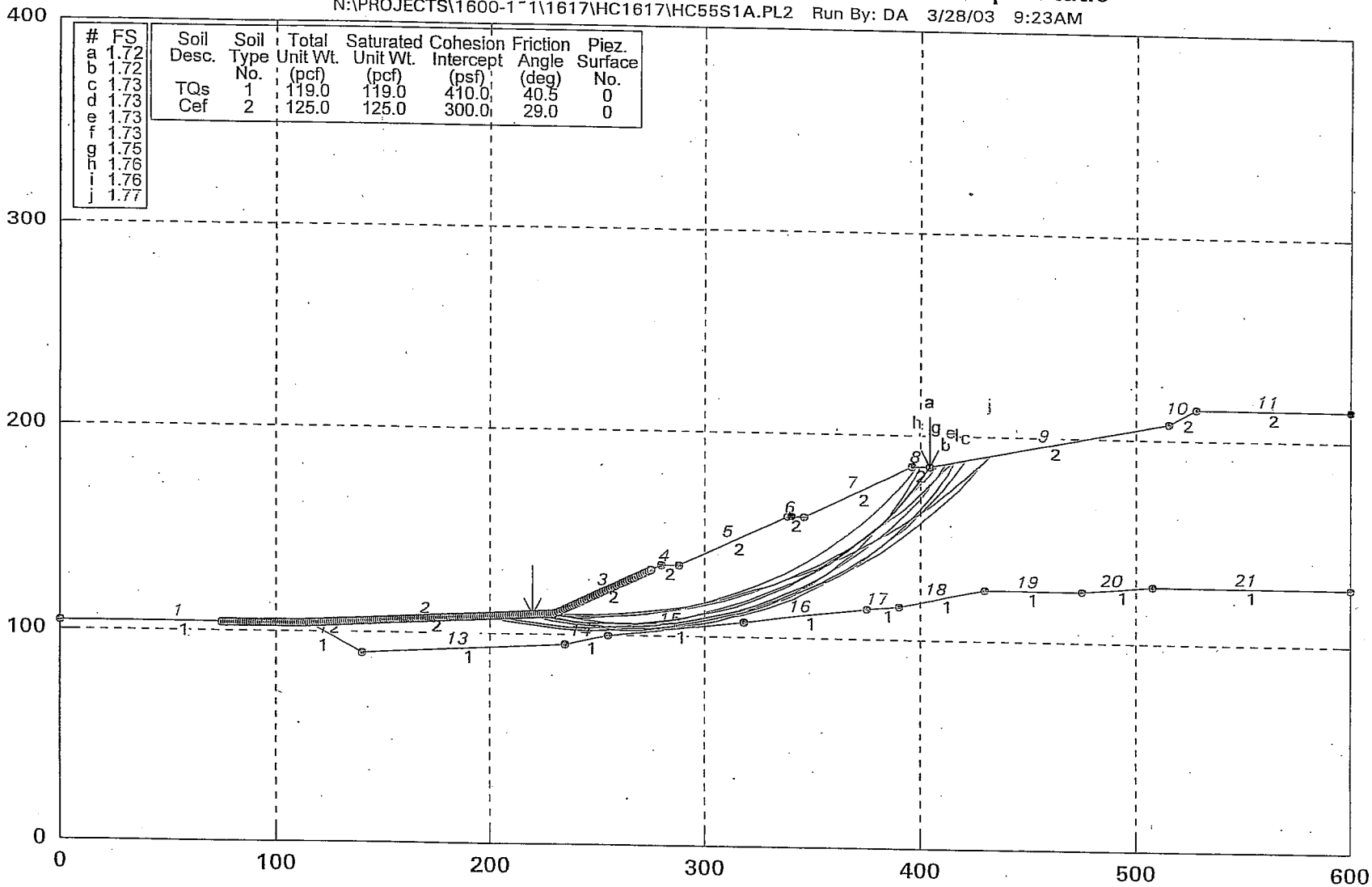
Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.39	160.75
2	165.34	150.62
3	184.19	148.26
4	200.24	138.10
5	214.63	125.69
6	230.36	115.03
7	247.79	107.47
8	486.47	225.28
9	495.34	242.09
10	507.79	256.43
11	509.38	258.19

*** 2.164 ***

T52584-HASLEY CANYON-Sec. 55 - Critical Fill Slope-Static

N:\PROJECTS\1600-1~1\1617\HC1617\HC55S1A.PL2 Run By: DA 3/28/03 9:23AM



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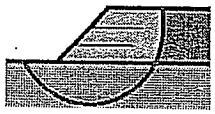
Safety Factors Are Calculated By The Modified Janbu Method

STED



RUN NO. 27

T52584-HASLEY CANYON-Sec. 55 - Critical Fill Slope-Static

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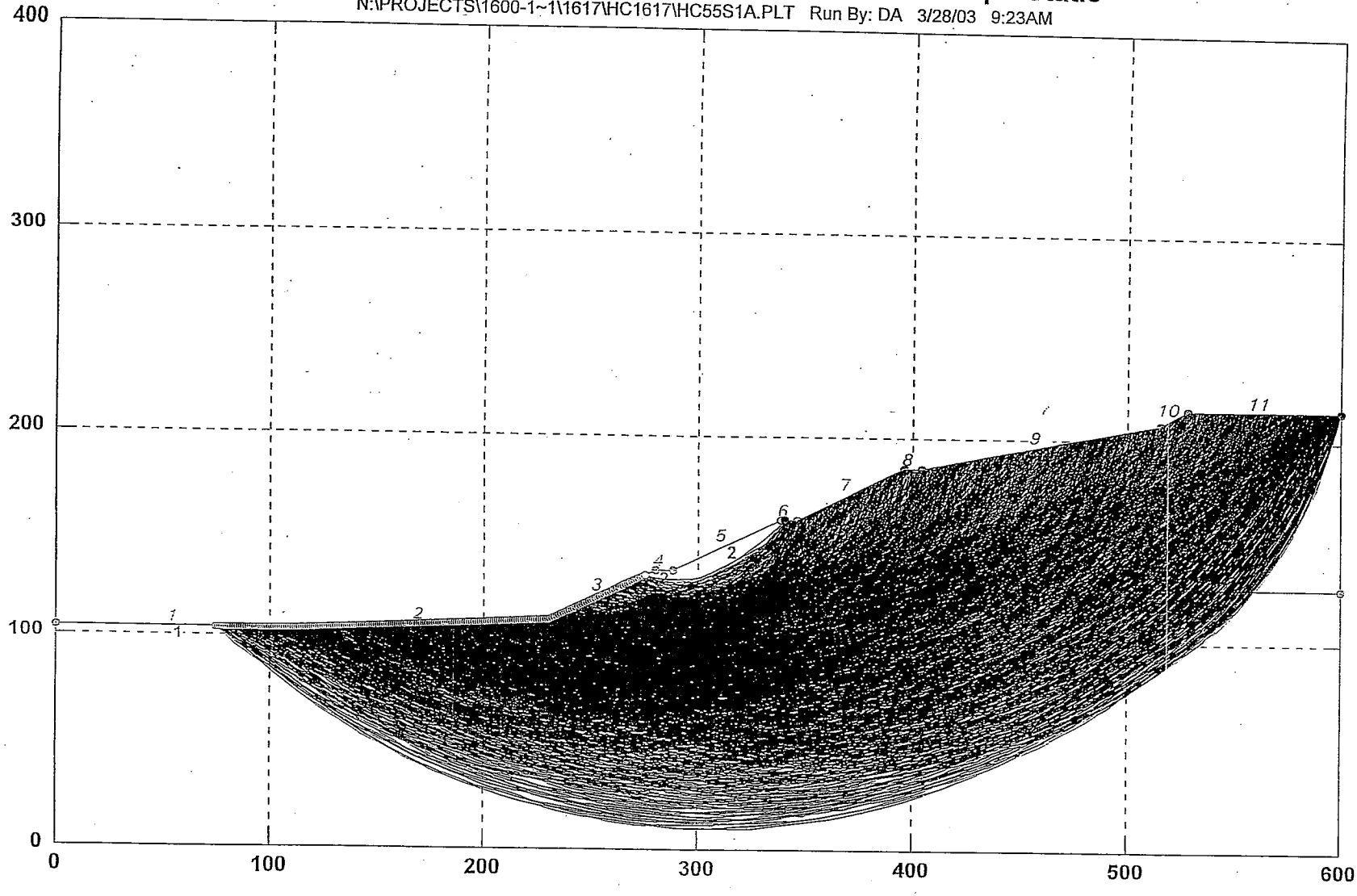


** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/28/03
Time of Run: 9:23AM
Run By: DA
Input Data Filename: N:HC55S1A.IN
Output Filename: N:HC55S1A.OUT
Unit: ENGLISH
Plotted Output Filename: N:HC55S1A.PLT
PROBLEM DESCRIPTION T52584-HASLEY CANYON-Sec. 55 - Critical Fill Slope-Static

BOUNDARY COORDINATES
11 Top Boundaries
21 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	104.00	115.00	104.00	1
2	115.00	104.00	230.00	110.00	2
3	230.00	110.00	280.00	135.00	2
4	280.00	135.00	288.00	135.00	2
5	288.00	135.00	338.00	160.00	2
6	338.00	160.00	346.00	160.00	2
7	346.00	160.00	396.00	185.00	2
8	396.00	185.00	404.00	185.00	2
9	404.00	185.00	515.00	208.00	2
10	515.00	208.00	528.00	215.00	2
11	528.00	215.00	600.00	215.00	2
12	115.00	104.00	140.00	90.00	1
13	140.00	90.00	235.00	95.00	1
14	235.00	95.00	255.00	100.00	1
15	255.00	100.00	318.00	107.00	1
16	318.00	107.00	375.00	115.00	1
17	375.00	115.00	390.00	116.00	1
18	390.00	116.00	430.00	125.00	1
19	430.00	125.00	475.00	125.00	1
20	475.00	125.00	508.00	128.00	1
21	508.00	128.00	600.00	128.00	1

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	119.0	119.0	410.0	40.5	.00	.0	0
2	125.0	125.0	300.0	29.0	.00	.0	0

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.
2000 Trial Surfaces Have Been Generated.
10 Surfaces Initiate From Each Of200 Points Equally Spaced Along The Ground Surface Between X = 75.00 ft.
and X = 275.00 ft.
Each Surface Terminates Between X = 340.00 ft.
and X = 600.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = .00 ft.
12.00 ft. Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And .0 deg.
Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	219.72	109.46
2	231.53	107.33
3	243.46	106.00
4	255.45	105.48
5	267.44	105.78
6	279.39	106.90
7	291.23	108.83
8	302.92	111.56
9	314.39	115.08
10	325.60	119.37
11	336.49	124.42
12	347.01	130.19
13	357.11	136.67
14	366.75	143.82
15	375.88	151.60
16	384.45	159.99
17	392.44	168.95
18	399.80	178.43
19	404.26	185.05

*** 1.718 ***

Individual data on the 25 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	10.3	1539.3	.0	.0	.0	.0	.0	.0	.0
2	1.5	558.8	.0	.0	.0	.0	.0	.0	.0
3	11.9	10563.9	.0	.0	.0	.0	.0	.0	.0
4	12.0	20961.2	.0	.0	.0	.0	.0	.0	.0
5	12.0	30124.6	.0	.0	.0	.0	.0	.0	.0
6	11.9	37882.2	.0	.0	.0	.0	.0	.0	.0
7	.6	2124.0	.0	.0	.0	.0	.0	.0	.0
8	8.0	27347.1	.0	.0	.0	.0	.0	.0	.0
9	3.2	11015.1	.0	.0	.0	.0	.0	.0	.0
10	11.7	42859.7	.0	.0	.0	.0	.0	.0	.0
11	11.5	45900.1	.0	.0	.0	.0	.0	.0	.0
12	11.2	47306.9	.0	.0	.0	.0	.0	.0	.0
13	10.9	47128.7	.0	.0	.0	.0	.0	.0	.0
14	1.5	6579.3	.0	.0	.0	.0	.0	.0	.0
15	8.0	32557.8	.0	.0	.0	.0	.0	.0	.0
16	1.0	3818.0	.0	.0	.0	.0	.0	.0	.0
17	10.1	37379.7	.0	.0	.0	.0	.0	.0	.0
18	9.6	33400.5	.0	.0	.0	.0	.0	.0	.0
19	9.1	28468.6	.0	.0	.0	.0	.0	.0	.0
20	8.6	22822.2	.0	.0	.0	.0	.0	.0	.0
21	8.0	16725.1	.0	.0	.0	.0	.0	.0	.0
22	3.6	5723.2	.0	.0	.0	.0	.0	.0	.0
23	3.8	4285.7	.0	.0	.0	.0	.0	.0	.0
24	4.2	1810.6	.0	.0	.0	.0	.0	.0	.0
25	.3	5.3	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	216.71	109.31
2	228.45	106.85
3	240.34	105.17
4	252.30	104.28
5	264.30	104.18
6	276.28	104.87
7	288.19	106.36
8	299.97	108.62
9	311.58	111.66
10	322.97	115.46

11	334.07	120.01
12	344.85	125.27
13	355.27	131.24
14	365.26	137.88
15	374.79	145.17
16	383.83	153.07
17	392.32	161.55
18	400.23	170.57
19	407.53	180.10
20	411.88	186.63

*** 1.720 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	226.76	109.83
2	238.57	107.69
3	250.49	106.31
4	262.47	105.70
5	274.47	105.87
6	286.43	106.80
7	298.31	108.51
8	310.06	110.97
9	321.62	114.18
10	332.95	118.14
11	344.00	122.81
12	354.73	128.18
13	365.09	134.23
14	375.04	140.94
15	384.54	148.27
16	393.55	156.20
17	402.03	164.69
18	409.94	173.71
19	417.26	183.22
20	420.79	188.48

*** 1.725 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	223.74	109.67
2	235.42	106.90
3	247.26	104.96
4	259.21	103.85
5	271.21	103.58
6	283.19	104.16
7	295.11	105.58
8	306.90	107.83
9	318.49	110.90
10	329.85	114.78
11	340.90	119.45
12	351.60	124.89
13	361.89	131.06
14	371.73	137.94
15	381.05	145.49
16	389.82	153.68
17	398.00	162.47
18	405.53	171.81
19	412.39	181.65
20	415.86	187.46

*** 1.725 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	225.75	109.78
2	237.73	109.01
3	249.73	108.89
4	261.72	109.43

5	273.66	110.62
6	285.51	112.46
7	297.25	114.95
8	308.84	118.07
9	320.24	121.82
10	331.42	126.19
11	342.34	131.16
12	352.97	136.72
13	363.29	142.85
14	373.25	149.54
15	382.84	156.75
16	392.02	164.49
17	400.76	172.71
18	409.04	181.39
19	413.87	187.05

*** 1.728 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	223.74	109.67
2	235.32	106.50
3	247.11	104.29
4	259.05	103.05
5	271.05	102.80
6	283.02	103.52
7	294.90	105.23
8	306.60	107.90
9	318.04	111.52
10	329.15	116.06
11	339.84	121.50
12	350.06	127.80
13	359.73	134.91
14	368.78	142.79
15	377.15	151.38
16	384.80	160.63
17	391.66	170.48
18	397.69	180.85
19	399.67	185.00

*** 1.732 ***

Failure Surface Specified By 21 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	200.63	108.47
2	212.42	106.22
3	224.32	104.68
4	236.29	103.85
5	248.29	103.72
6	260.27	104.31
7	272.20	105.61
8	284.03	107.61
9	295.73	110.31
10	307.24	113.70
11	318.53	117.76
12	329.56	122.49
13	340.29	127.86
14	350.68	133.85
15	360.70	140.46
16	370.32	147.64
17	379.48	155.39
18	388.18	163.66
19	396.36	172.43
20	404.02	181.67
21	406.90	185.60

*** 1.753 ***

Failure Surface Specified By 18 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	219.72	109.46
2	231.68	108.40
3	243.67	108.07
4	255.67	108.48
5	267.61	109.63
6	279.46	111.50
7	291.18	114.10
8	302.71	117.41
9	314.02	121.42
10	325.06	126.12
11	335.80	131.49
12	346.18	137.51
13	356.17	144.15
14	365.74	151.39
15	374.85	159.21
16	383.46	167.57
17	391.54	176.44
18	398.42	185.00

*** 1.757 ***

Failure Surface Specified By 21 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	224.75	109.73
2	236.75	109.44
3	248.74	109.67
4	260.72	110.44
5	272.65	111.72
6	284.51	113.53
7	296.29	115.85
8	307.95	118.68
9	319.47	122.03
10	330.84	125.87
11	342.03	130.21
12	353.01	135.04
13	363.78	140.34
14	374.30	146.10
15	384.57	152.32
16	394.54	158.99
17	404.22	166.08
18	413.58	173.60
19	422.60	181.51
20	431.27	189.81
21	432.27	190.86

*** 1.763 ***

Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	197.61	108.31
2	209.37	105.90
3	221.23	104.10
4	233.18	102.92
5	245.16	102.36
6	257.16	102.42
7	269.14	103.10
8	281.07	104.41
9	292.92	106.32
10	304.65	108.85
11	316.23	111.98
12	327.64	115.71
13	338.84	120.02
14	349.80	124.91
15	360.49	130.36
16	370.89	136.35
17	380.96	142.87
18	390.68	149.91

19	400.02	157.44
20	408.96	165.44
21	417.48	173.90
22	425.54	182.79
23	432.11	190.82

*** 1.768 ***

T52584-HASLEY CANYON-Sec. 55 - Critical Fill Slope-

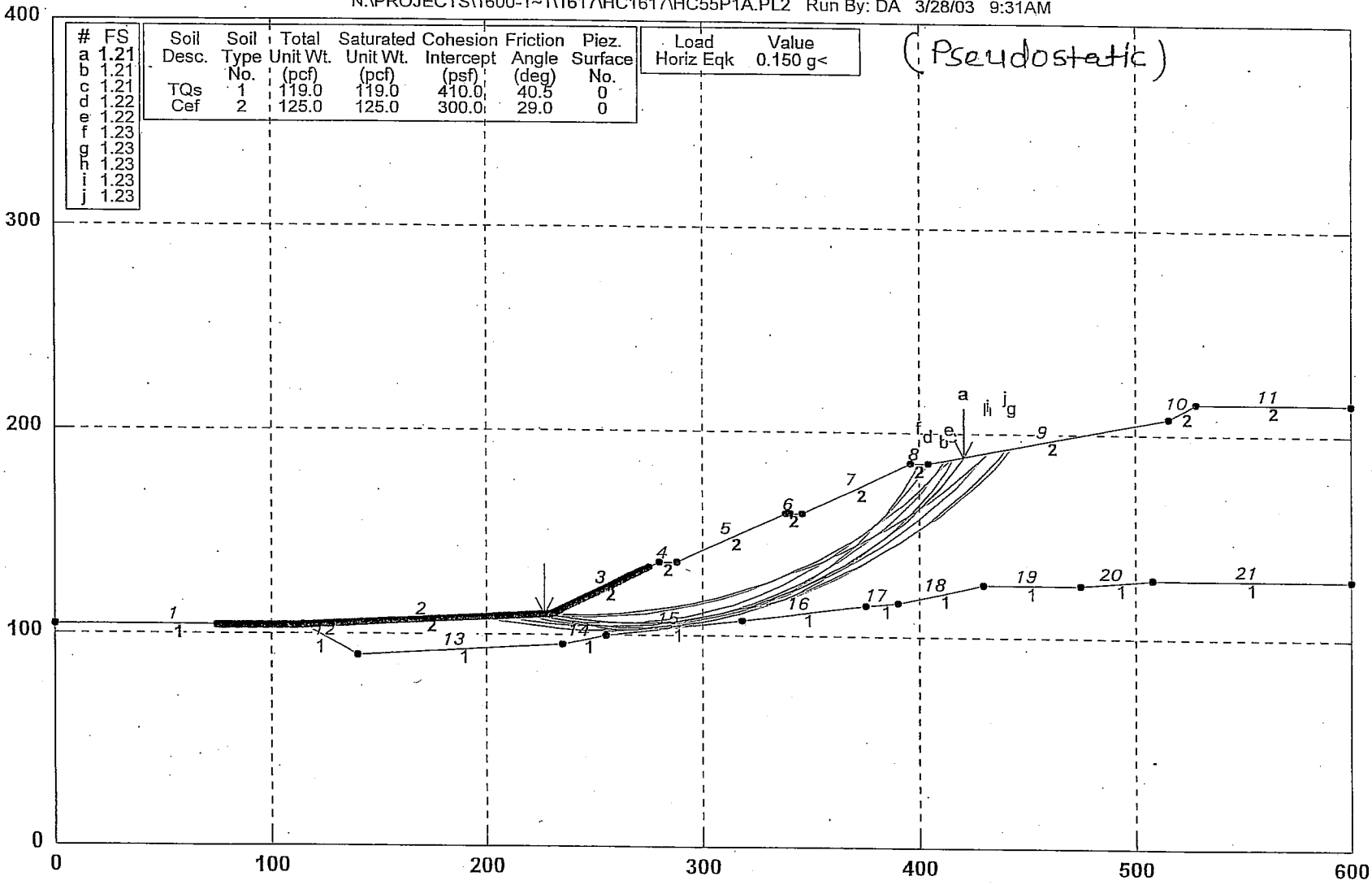
N:\PROJECTS\1600-1~1\1617\HC1617\HC55P1A.PL2 Run By: DA 3/28/03 9:31AM

(Pseudostatic)

#	FS
a	1.21
b	1.21
c	1.21
d	1.22
e	1.22
f	1.23
g	1.23
h	1.23
i	1.23
j	1.23

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs	1	119.0	119.0	410.0	40.5	0
Cef	2	125.0	125.0	300.0	29.0	0

Load	Value
Horiz Eqk	0.150 g<



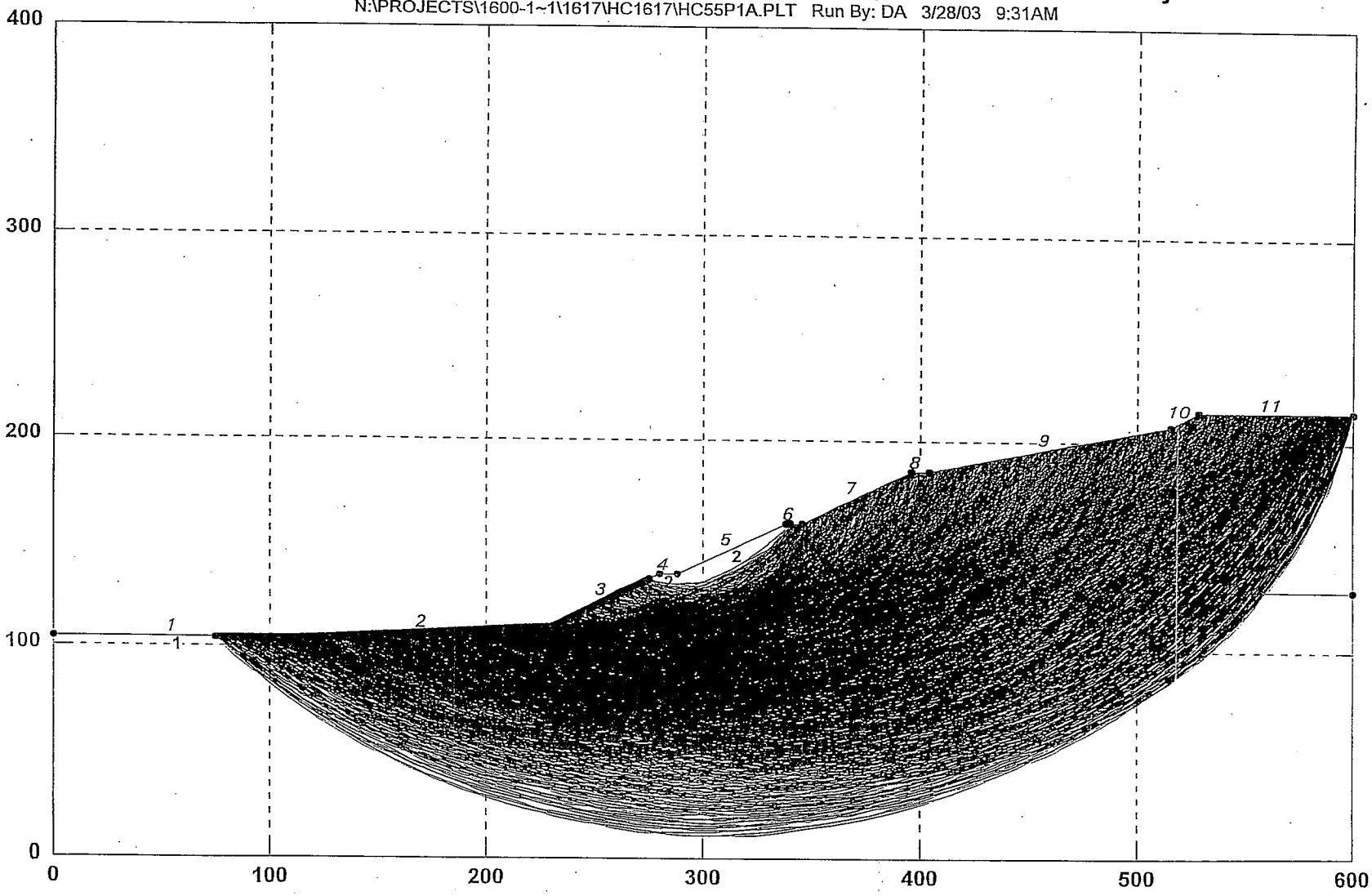
PCSTABL5M/si FSmin=1.21

Safety Factors Are Calculated By The Modified Janbu Method

RUN NO. - 28

T52584-HASLEY CANYON-Sec. 55 - Critical Fill Slope-Psuedostatic Analyses

N:\PROJECTS\1600-1~1\1617\HC1617\HC55P1A.PLT Run By: DA 3/28/03 9:31AM



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/28/03
Time of Run: 9:32AM
Run By: DA
Input Data Filename: N:HC55P1A.IN
Output Filename: N:HC55P1A.OUT
Unit: ENGLISH
Plotted Output Filename: N:HC55P1A.PLT
PROBLEM DESCRIPTION T52584-HASLEY CANYON-Sec. 55 - Critical Fill Slope-Psuedostatic Analyses

BOUNDARY COORDINATES
11 Top Boundaries
21 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	104.00	115.00	104.00	1
2	115.00	104.00	230.00	110.00	2
3	230.00	110.00	280.00	135.00	2
4	280.00	135.00	288.00	135.00	2
5	288.00	135.00	338.00	160.00	2
6	338.00	160.00	346.00	160.00	2
7	346.00	160.00	396.00	185.00	2
8	396.00	185.00	404.00	185.00	2
9	404.00	185.00	515.00	208.00	2
10	515.00	208.00	528.00	215.00	2
11	528.00	215.00	600.00	215.00	2
12	115.00	104.00	140.00	90.00	1
13	140.00	90.00	235.00	95.00	1
14	235.00	95.00	255.00	100.00	1
15	255.00	100.00	318.00	107.00	1
16	318.00	107.00	375.00	115.00	1
17	375.00	115.00	390.00	116.00	1
18	390.00	116.00	430.00	125.00	1
19	430.00	125.00	475.00	125.00	1
20	475.00	125.00	508.00	128.00	1
21	508.00	128.00	600.00	128.00	1

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	119.0	119.0	410.0	40.5	.00	.0	0
2	125.0	125.0	300.0	29.0	.00	.0	0

A Horizontal Earthquake Loading Coefficient
Of .150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of .000 Has Been Assigned
Cavitation Pressure = .0 (psf)
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
2000 Trial Surfaces Have Been Generated.
10 Surfaces Initiate From Each Of200 Points Equally Spaced
Along The Ground Surface Between X = 75.00 ft.
and X = 275.00 ft.
Each Surface Terminates Between X = 340.00 ft.
and X = 600.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = .00 ft.
12.00 ft. Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0

And .0 deg.
Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	226.76	109.83
2	238.57	107.69
3	250.49	106.31
4	262.47	105.70
5	274.47	105.87
6	286.43	106.80
7	298.31	108.51
8	310.06	110.97
9	321.62	114.18
10	332.95	118.14
11	344.00	122.81
12	354.73	128.18
13	365.09	134.23
14	375.04	140.94
15	384.54	148.27
16	393.55	156.20
17	402.03	164.69
18	409.94	173.71
19	417.26	183.22
20	420.79	188.48

*** 1.210 ***

Individual data on the 26 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	153.4	.0	.0	.0	.0	23.0	.0	.0
2	8.6	3935.7	.0	.0	.0	.0	590.4	.0	.0
3	11.9	15293.0	.0	.0	.0	.0	2294.0	.0	.0
4	12.0	25815.7	.0	.0	.0	.0	3872.4	.0	.0
5	12.0	35172.5	.0	.0	.0	.0	5275.9	.0	.0
6	5.5	19032.1	.0	.0	.0	.0	2854.8	.0	.0
7	6.4	22879.4	.0	.0	.0	.0	3431.9	.0	.0
8	1.6	5498.5	.0	.0	.0	.0	824.8	.0	.0
9	10.3	38428.3	.0	.0	.0	.0	5764.2	.0	.0
10	11.7	48965.7	.0	.0	.0	.0	7344.9	.0	.0
11	11.6	52520.7	.0	.0	.0	.0	7878.1	.0	.0
12	11.3	54503.9	.0	.0	.0	.0	8175.6	.0	.0
13	5.1	24961.5	.0	.0	.0	.0	3744.2	.0	.0
14	6.0	28855.2	.0	.0	.0	.0	4328.3	.0	.0
15	2.0	9163.9	.0	.0	.0	.0	1374.6	.0	.0
16	8.7	39497.8	.0	.0	.0	.0	5924.7	.0	.0
17	10.4	46302.4	.0	.0	.0	.0	6945.4	.0	.0
18	10.0	42847.7	.0	.0	.0	.0	6427.2	.0	.0
19	9.5	38339.6	.0	.0	.0	.0	5750.9	.0	.0
20	9.0	32973.4	.0	.0	.0	.0	4946.0	.0	.0
21	2.4	8254.4	.0	.0	.0	.0	1238.2	.0	.0
22	6.0	17579.1	.0	.0	.0	.0	2636.9	.0	.0
23	2.0	4725.7	.0	.0	.0	.0	708.9	.0	.0
24	5.9	11359.8	.0	.0	.0	.0	1704.0	.0	.0
25	7.3	7794.8	.0	.0	.0	.0	1169.2	.0	.0
26	3.5	998.2	.0	.0	.0	.0	149.7	.0	.0

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	216.71	109.31
2	228.45	106.85
3	240.34	105.17

4	252.30	104.28
5	264.30	104.18
6	276.28	104.87
7	288.19	106.36
8	299.97	108.62
9	311.58	111.66
10	322.97	115.46
11	334.07	120.01
12	344.85	125.27
13	355.27	131.24
14	365.26	137.88
15	374.79	145.17
16	383.83	153.07
17	392.32	161.55
18	400.23	170.57
19	407.53	180.10
20	411.88	186.63

*** 1.213 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	223.74	109.67
2	235.42	106.90
3	247.26	104.96
4	259.21	103.85
5	271.21	103.58
6	283.19	104.16
7	295.11	105.58
8	306.90	107.83
9	318.49	110.90
10	329.85	114.78
11	340.90	119.45
12	351.60	124.89
13	361.89	131.06
14	371.73	137.94
15	381.05	145.49
16	389.82	153.68
17	398.00	162.47
18	405.53	171.81
19	412.39	181.65
20	415.86	187.46

*** 1.214 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	219.72	109.46
2	231.53	107.33
3	243.46	106.00
4	255.45	105.48
5	267.44	105.78
6	279.39	106.90
7	291.23	108.83
8	302.92	111.56
9	314.39	115.08
10	325.60	119.37
11	336.49	124.42
12	347.01	130.19
13	357.11	136.67
14	366.75	143.82
15	375.88	151.60
16	384.45	159.99
17	392.44	168.95
18	399.80	178.43
19	404.26	185.05

*** 1.216 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	225.75	109.78
2	237.73	109.01
3	249.73	108.89
4	261.72	109.43
5	273.66	110.62
6	285.51	112.46
7	297.25	114.95
8	308.84	118.07
9	320.24	121.82
10	331.42	126.19
11	342.34	131.16
12	352.97	136.72
13	363.29	142.85
14	373.25	149.54
15	382.84	156.75
16	392.02	164.49
17	400.76	172.71
18	409.04	181.39
19	413.87	187.05

*** 1.218 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	223.74	109.67
2	235.32	106.50
3	247.11	104.29
4	259.05	103.05
5	271.05	102.80
6	283.02	103.52
7	294.90	105.23
8	306.60	107.90
9	318.04	111.52
10	329.15	116.06
11	339.84	121.50
12	350.06	127.80
13	359.73	134.91
14	368.78	142.79
15	377.15	151.38
16	384.80	160.63
17	391.66	170.48
18	397.69	180.85
19	399.67	185.00

*** 1.227 ***

Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	206.66	108.78
2	218.48	106.69
3	230.38	105.19
4	242.35	104.27
5	254.34	103.94
6	266.34	104.21
7	278.31	105.07
8	290.22	106.51
9	302.05	108.54
10	313.76	111.15
11	325.33	114.34
12	336.73	118.09
13	347.93	122.40
14	358.90	127.25
15	369.62	132.64
16	380.07	138.55
17	390.20	144.97
18	400.02	151.88

19	409.47	159.27
20	418.56	167.11
21	427.24	175.39
22	435.51	184.09
23	443.29	193.14

*** 1.231 ***

Failure Surface Specified By 21 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	224.75	109.73
2	236.75	109.44
3	248.74	109.67
4	260.72	110.44
5	272.65	111.72
6	284.51	113.53
7	296.29	115.85
8	307.95	118.68
9	319.47	122.03
10	330.84	125.87
11	342.03	130.21
12	353.01	135.04
13	363.78	140.34
14	374.30	146.10
15	384.57	152.32
16	394.54	158.99
17	404.22	166.08
18	413.58	173.60
19	422.60	181.51
20	431.27	189.81
21	432.27	190.86

*** 1.231 ***

Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	197.61	108.31
2	209.37	105.90
3	221.23	104.10
4	233.18	102.92
5	245.16	102.36
6	257.16	102.42
7	269.14	103.10
8	281.07	104.41
9	292.92	106.32
10	304.65	108.85
11	316.23	111.98
12	327.64	115.71
13	338.84	120.02
14	349.80	124.91
15	360.49	130.36
16	370.89	136.35
17	380.96	142.87
18	390.68	149.91
19	400.02	157.44
20	408.96	165.44
21	417.48	173.90
22	425.54	182.79
23	432.11	190.82

*** 1.233 ***

Failure Surface Specified By 24 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	199.62	108.42
2	211.37	105.95
3	223.22	104.09
4	235.16	102.83
5	247.14	102.17

6	259.14	102.12
7	271.12	102.69
8	283.07	103.86
9	294.94	105.63
10	306.70	108.00
11	318.33	110.97
12	329.79	114.52
13	341.06	118.65
14	352.10	123.34
15	362.89	128.59
16	373.40	134.38
17	383.61	140.69
18	393.48	147.52
19	402.99	154.83
20	412.12	162.62
21	420.84	170.86
22	429.14	179.53
23	436.98	188.61
24	439.97	192.45
***	1.234	***

Hasley Canyon- Sec 56-56'- Cut Slope-` CS30- Static

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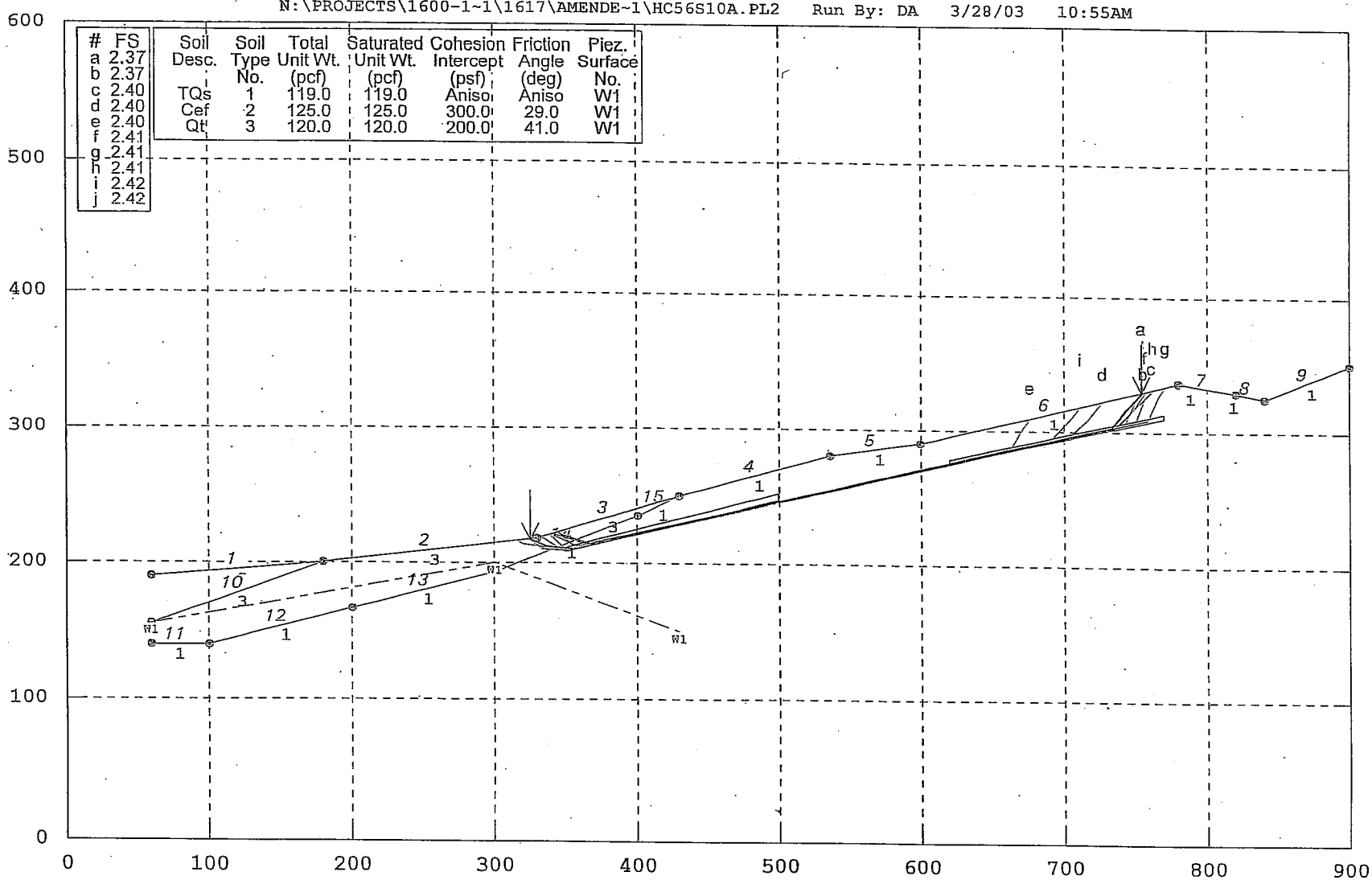
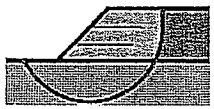


PCSTABL5M/si FSmin=2.37

Safety Factors Are Calculated By The Modified Janbu Method

STED



RUN No. 1-29

Hasley Canyon- Sec 56-56'- Cut Slope-` CS30- Static

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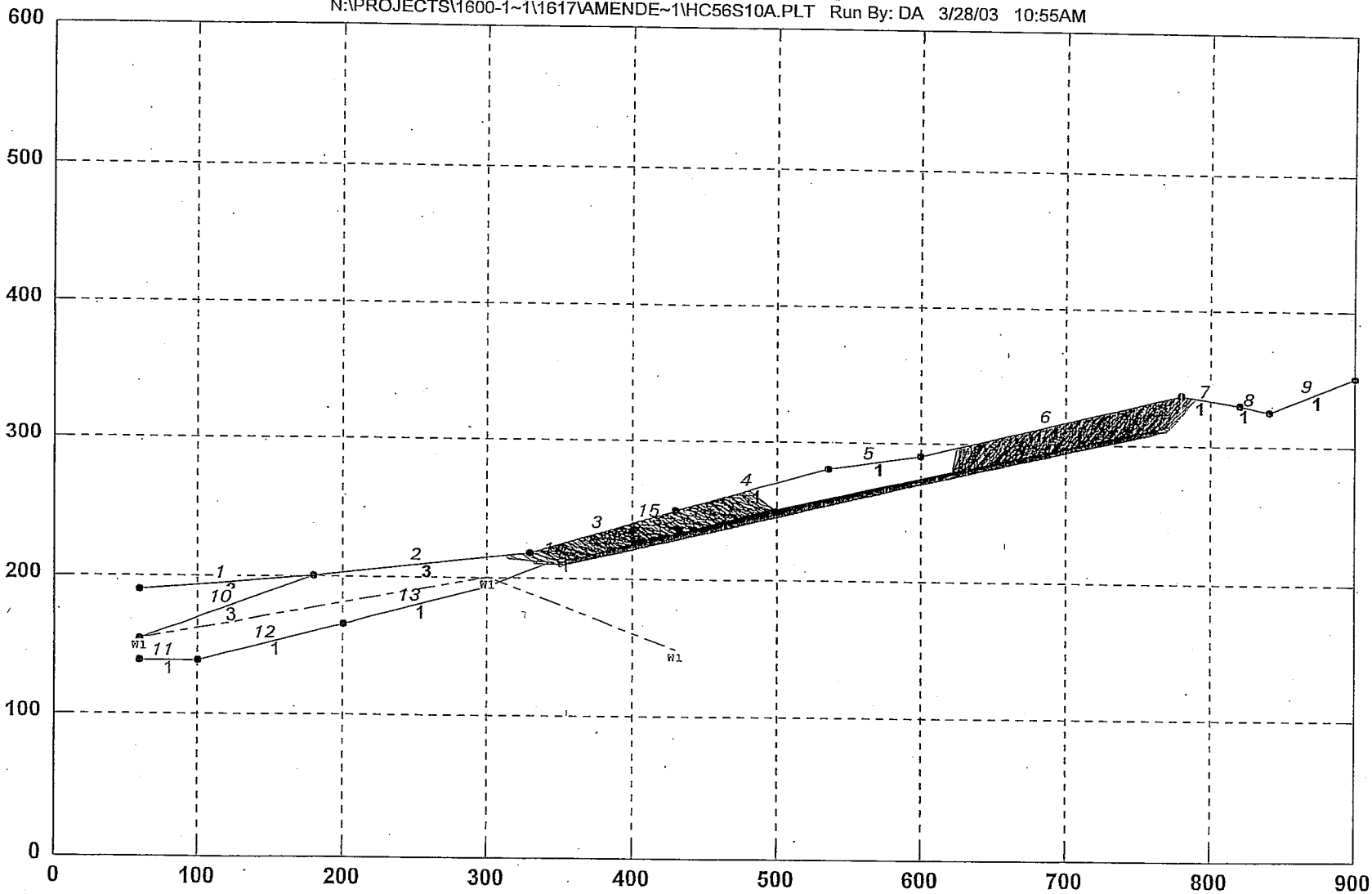


STED

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/28/03
Time of Run: 10:55AM
Run By: DA
Input Data Filename: N:HC56S10A.
Output Filename: N:HC56S10A.OUT
Unit: ENGLISH
Plotted Output Filename: N:HC56S10A.PLT
PROBLEM DESCRIPTION Hasley Canyon- Sec 56-56'- Cut Slope-`
CS30- Static

BOUNDARY COORDINATES
9 Top Boundaries
15 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	60.00	190.00	180.00	200.00	2
2	180.00	200.00	330.00	218.00	3
3	330.00	218.00	430.00	250.00	3
4	430.00	250.00	535.00	280.00	1
5	535.00	280.00	600.00	290.00	1
6	600.00	290.00	780.00	336.00	1
7	780.00	336.00	820.00	330.00	1
8	820.00	330.00	840.00	325.00	1
9	840.00	325.00	900.00	350.00	1
10	60.00	155.00	180.00	200.00	3
11	60.00	140.00	100.00	140.00	1
12	100.00	140.00	200.00	166.00	1
13	200.00	166.00	300.00	193.00	1
14	300.00	193.00	400.00	235.00	1
15	400.00	235.00	430.00	250.00	1

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	119.0	119.0	410.0	40.5	.00	.0	1
2	125.0	125.0	300.0	29.0	.00	.0	1
3	120.0	120.0	200.0	41.0	.00	.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	13.5	410.0	40.5
2	15.5	347.0	22.0
3	90.0	410.0	40.5

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 3 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	60.00	155.00
2	300.00	200.00
3	430.00	150.00

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
500 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 19.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	350.00	210.00	500.00	250.00	4.00
2	620.00	276.00	770.00	312.00	4.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	325.09	217.41
2	336.66	213.04
3	355.45	210.18
4	733.77	303.52
5	745.17	318.72
6	754.29	329.43

*** 2.365 ***

Individual data on the 11 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	4.9	719.2	.0	.0	.0	.0	.0	.0	.0
2	6.7	3813.4	.0	.0	.0	.0	.0	.0	.0
3	8.1	8763.0	.0	.0	.0	.0	.0	.0	.0
4	10.7	17193.2	.0	.0	.0	.0	.0	.0	.0
5	44.6	93642.4	.0	.0	.0	.0	.0	.0	.0
6	30.0	72658.2	.0	.0	.0	.0	.0	.0	.0
7	105.0	293328.8	.0	.0	.0	.0	.0	.0	.0
8	65.0	174067.7	.0	.0	.0	.0	.0	.0	.0
9	133.8	319585.5	.0	.0	.0	.0	.0	.0	.0
10	11.4	19691.4	.0	.0	.0	.0	.0	.0	.0
11	9.1	4547.8	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	324.00	217.28
2	334.92	210.18
3	353.91	209.42
4	731.65	301.96
5	742.95	317.24
6	755.12	329.64

*** 2.369 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	324.88	217.39
2	332.55	210.82
3	351.49	209.38
4	749.74	307.51
5	756.45	325.29
6	760.24	330.95

*** 2.397 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	315.66	216.28
2	320.58	213.57
3	339.45	211.41
4	358.45	211.08
5	702.21	294.56
6	715.21	308.41
7	726.83	322.41

*** 2.402 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	332.29	218.73
2	333.95	217.79
3	350.39	208.26
4	662.51	286.40
5	671.68	303.04
6	675.99	309.42

*** 2.405 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	344.07	222.50
2	357.90	210.53
3	733.59	302.01
4	746.99	315.48
5	756.13	329.90

*** 2.409 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	340.09	221.23
2	340.59	220.77
3	357.64	212.40
4	758.24	309.75
5	765.68	327.23
6	771.18	333.75

*** 2.413 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	338.99	220.88
2	350.54	209.48
3	734.14	302.55
4	747.50	316.05
5	760.43	329.98
6	761.15	331.18

*** 2.415 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	340.16	221.25
2	347.33	219.02
3	365.48	213.39
4	690.49	293.69
5	703.13	307.87
6	710.89	318.34

*** 2.416 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	344.80	222.74
2	350.68	219.43
3	368.96	214.25
4	741.72	305.21
5	749.11	322.72
6	755.23	329.67

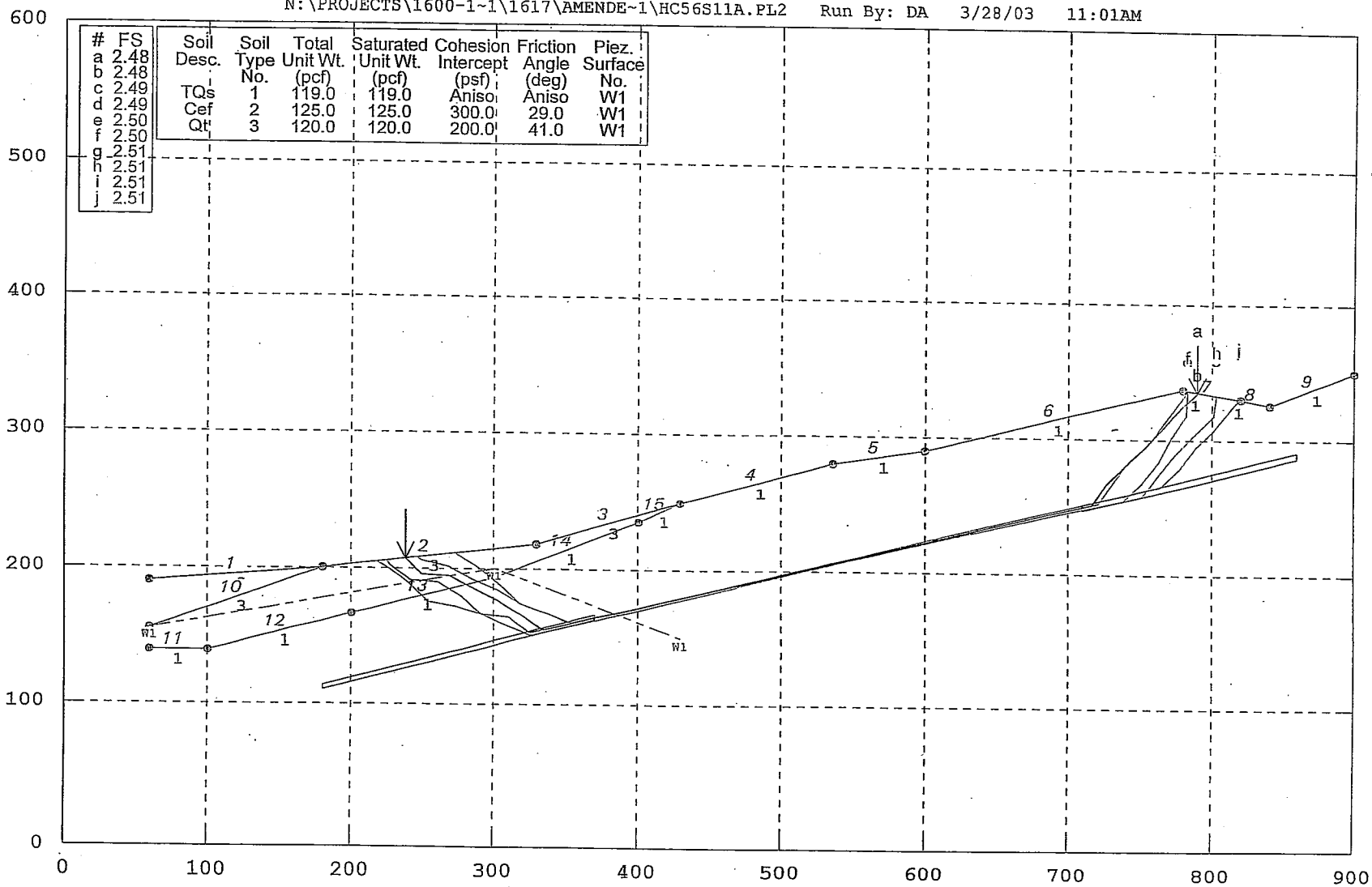
*** 2.419 ***

Hasley Canyon- Sec 56-56'- Cut Slope-` CS30- Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\HC56S11A.PL2 Run By: DA 3/28/03 11:01AM

#	FS
a	2.48
b	2.48
c	2.49
d	2.49
e	2.50
f	2.50
g	2.51
h	2.51
i	2.51
j	2.51

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs	1	119.0	119.0	Aniso	Aniso	W1
Cef	2	125.0	125.0	300.0	29.0	W1
Qt	3	120.0	120.0	200.0	41.0	W1



PCSTABL5M/si FSmin=2.48

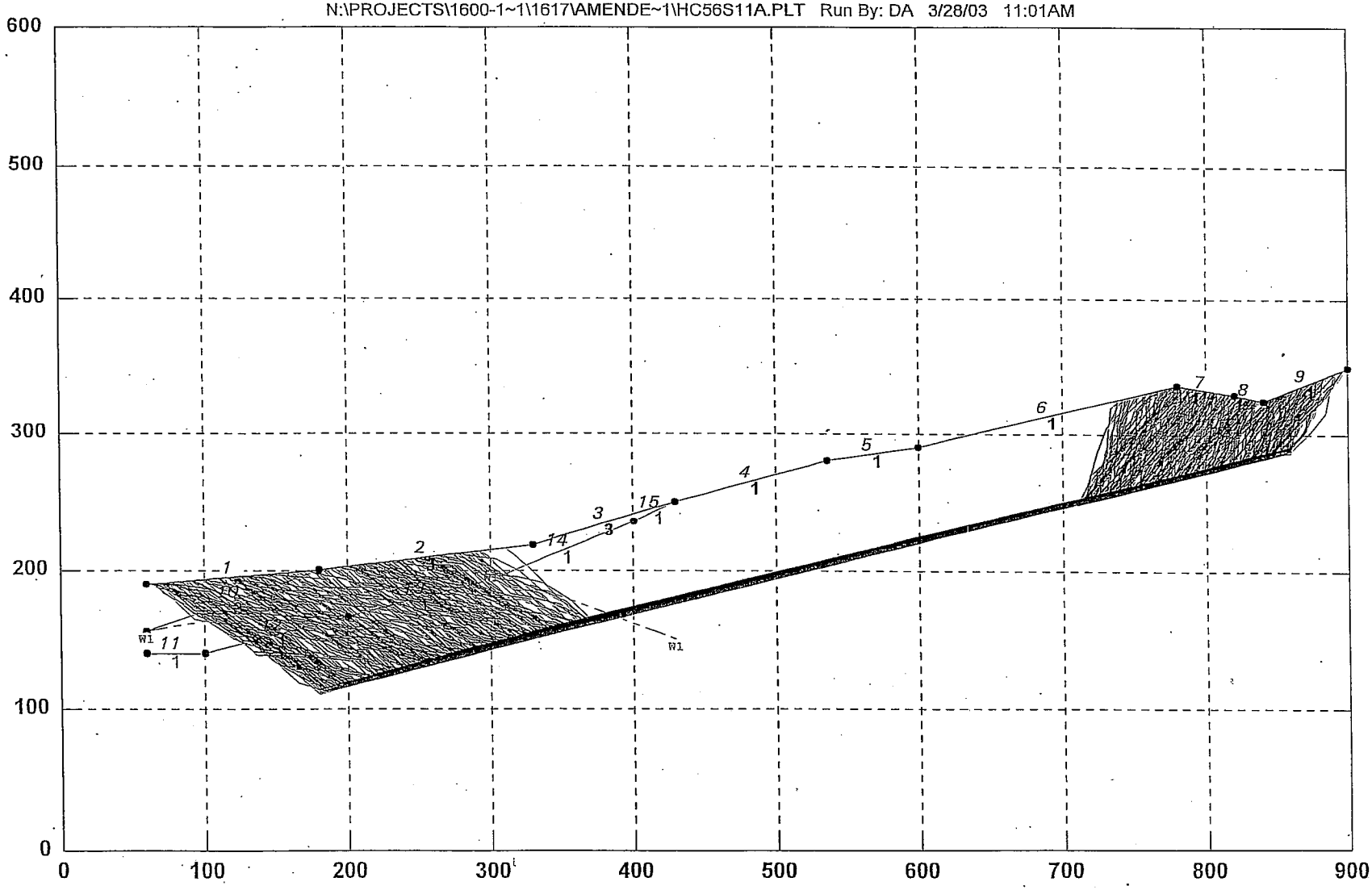
Safety Factors Are Calculated By The Modified Janbu Method

STED

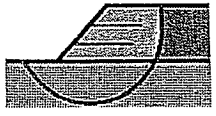
RUN NO. 130

Hasley Canyon- Sec 56-56'- Cut Slope-` CS30- Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\HC56S11A.PLT Run By: DA 3/28/03 11:01AM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/28/03
Time of Run: 11:01AM
Run By: DA
Input Data Filename: N:HC56S11A.
Output Filename: N:HC56S11A.OUT
Unit: ENGLISH
Plotted Output Filename: N:HC56S11A.PLT
PROBLEM DESCRIPTION Hasley Canyon- Sec 56-56'- Cut Slope-`
CS30- Static

BOUNDARY COORDINATES
9 Top Boundaries
15 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	60.00	190.00	180.00	200.00	2
2	180.00	200.00	330.00	218.00	3
3	330.00	218.00	430.00	250.00	3
4	430.00	250.00	535.00	280.00	1
5	535.00	280.00	600.00	290.00	1
6	600.00	290.00	780.00	336.00	1
7	780.00	336.00	820.00	330.00	1
8	820.00	330.00	840.00	325.00	1
9	840.00	325.00	900.00	350.00	1
10	60.00	155.00	180.00	200.00	3
11	60.00	140.00	100.00	140.00	1
12	100.00	140.00	200.00	166.00	1
13	200.00	166.00	300.00	193.00	1
14	300.00	193.00	400.00	235.00	1
15	400.00	235.00	430.00	250.00	1

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	119.0	119.0	410.0	40.5	.00	.0	1
2	125.0	125.0	300.0	29.0	.00	.0	1
3	120.0	120.0	200.0	41.0	.00	.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	13.5	410.0	40.5
2	15.5	347.0	22.0
3	90.0	410.0	40.5

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 3 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	60.00	155.00
2	300.00	200.00
3	430.00	150.00

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
500 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 19.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	180.00	112.00	370.00	165.00	4.00
2	710.00	250.00	860.00	289.00	4.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	238.38	207.01
2	250.12	195.41
3	269.09	194.42
4	285.63	185.07
5	302.73	176.79
6	318.80	166.66
7	334.27	155.62
8	716.58	251.55
9	727.20	267.31
10	739.89	281.44
11	753.25	294.95
12	766.64	308.44
13	778.93	322.92
14	789.61	334.56

*** 2.485 ***

Individual data on the 24 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	11.7	9157.2	.0	.0	.0	.0	.0	.0	.0
2	19.0	33317.4	.0	.0	.0	.0	.0	.0	.0
3	.3	574.1	.0	.0	.0	.0	.0	.0	.0
4	11.4	27874.4	.0	3448.8	.0	.0	.0	.0	.0
5	4.8	15074.3	.0	3554.3	.0	.0	.0	.0	.0
6	14.4	54951.7	.0	16711.9	.0	.0	.0	.0	.0
7	2.7	12110.4	.0	3899.6	.0	.0	.0	.0	.0
8	6.0	28667.4	.0	9434.3	.0	.0	.0	.0	.0
9	10.1	55731.9	.0	17339.7	.0	.0	.0	.0	.0
10	11.2	72997.6	.0	22444.7	.0	.0	.0	.0	.0
11	4.3	31326.0	.0	9339.1	.0	.0	.0	.0	.0
12	49.1	382738.6	.0	46087.0	.0	.0	.0	.0	.0
13	16.6	134189.7	.0	.0	.0	.0	.0	.0	.0
14	30.0	247561.0	.0	.0	.0	.0	.0	.0	.0
15	105.0	901959.9	.0	.0	.0	.0	.0	.0	.0
16	65.0	548088.7	.0	.0	.0	.0	.0	.0	.0
17	116.6	943032.2	.0	.0	.0	.0	.0	.0	.0
18	10.6	77981.3	.0	.0	.0	.0	.0	.0	.0
19	12.7	75146.2	.0	.0	.0	.0	.0	.0	.0
20	13.4	62431.9	.0	.0	.0	.0	.0	.0	.0
21	13.4	46474.1	.0	.0	.0	.0	.0	.0	.0
22	12.3	27035.9	.0	.0	.0	.0	.0	.0	.0
23	1.1	1567.9	.0	.0	.0	.0	.0	.0	.0
24	9.6	6816.1	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	238.38	207.01
2	250.12	195.41
3	269.09	194.42
4	285.63	185.07
5	302.73	176.79
6	318.80	166.66

7	334.27	155.62
8	716.58	251.55
9	727.20	267.31
10	739.89	281.44
11	753.25	294.95
12	766.64	308.44
13	778.93	322.92
14	789.61	334.56

*** 2.485 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	246.67	208.00
2	249.79	205.64
3	268.40	201.81
4	285.05	192.65
5	302.24	184.54
6	318.54	174.78
7	336.24	167.87
8	353.75	160.51
9	737.82	255.56
10	751.24	269.01
11	763.27	283.72
12	771.26	300.96
13	781.68	316.84
14	782.70	335.60

*** 2.488 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	246.67	208.00
2	249.79	205.64
3	268.40	201.81
4	285.05	192.65
5	302.24	184.54
6	318.54	174.78
7	336.24	167.87
8	353.75	160.51
9	737.82	255.56
10	751.24	269.01
11	763.27	283.72
12	771.26	300.96
13	781.68	316.84
14	782.70	335.60

*** 2.488 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	224.74	205.37
2	227.56	202.59
3	242.44	190.77
4	261.43	190.30
5	277.12	179.59
6	291.05	166.66
7	308.27	158.65
8	325.74	151.16
9	721.56	252.82
10	731.19	269.20
11	743.01	284.08
12	756.44	297.51
13	767.59	312.90
14	778.76	328.27
15	782.46	335.63

*** 2.496 ***

Failure Surface Specified By 15 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	224.74	205.37
2	227.56	202.59
3	242.44	190.77
4	261.43	190.30
5	277.12	179.59
6	291.05	166.66
7	308.27	158.65
8	325.74	151.16
9	721.56	252.82
10	731.19	269.20
11	743.01	284.08
12	756.44	297.51
13	767.59	312.90
14	778.76	328.27
15	782.46	335.63

*** 2.496 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	273.78	211.25
2	274.22	210.81
3	289.79	199.91
4	304.75	188.19
5	318.26	174.84
6	336.05	168.17
7	353.01	159.60
8	751.30	259.23
9	763.10	274.12
10	774.15	289.58
11	787.29	303.30
12	800.70	316.77
13	802.77	332.58

*** 2.510 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	273.78	211.25
2	274.22	210.81
3	289.79	199.91
4	304.75	188.19
5	318.26	174.84
6	336.05	168.17
7	353.01	159.60
8	751.30	259.23
9	763.10	274.12
10	774.15	289.58
11	787.29	303.30
12	800.70	316.77
13	802.77	332.58

*** 2.510 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	218.00	204.56
2	225.60	200.17
3	241.04	189.11
4	254.51	175.71
5	273.25	172.53
6	291.42	166.99
7	310.29	164.76
8	325.46	153.31
9	764.12	265.45
10	777.45	278.99
11	788.75	294.26
12	802.17	307.71

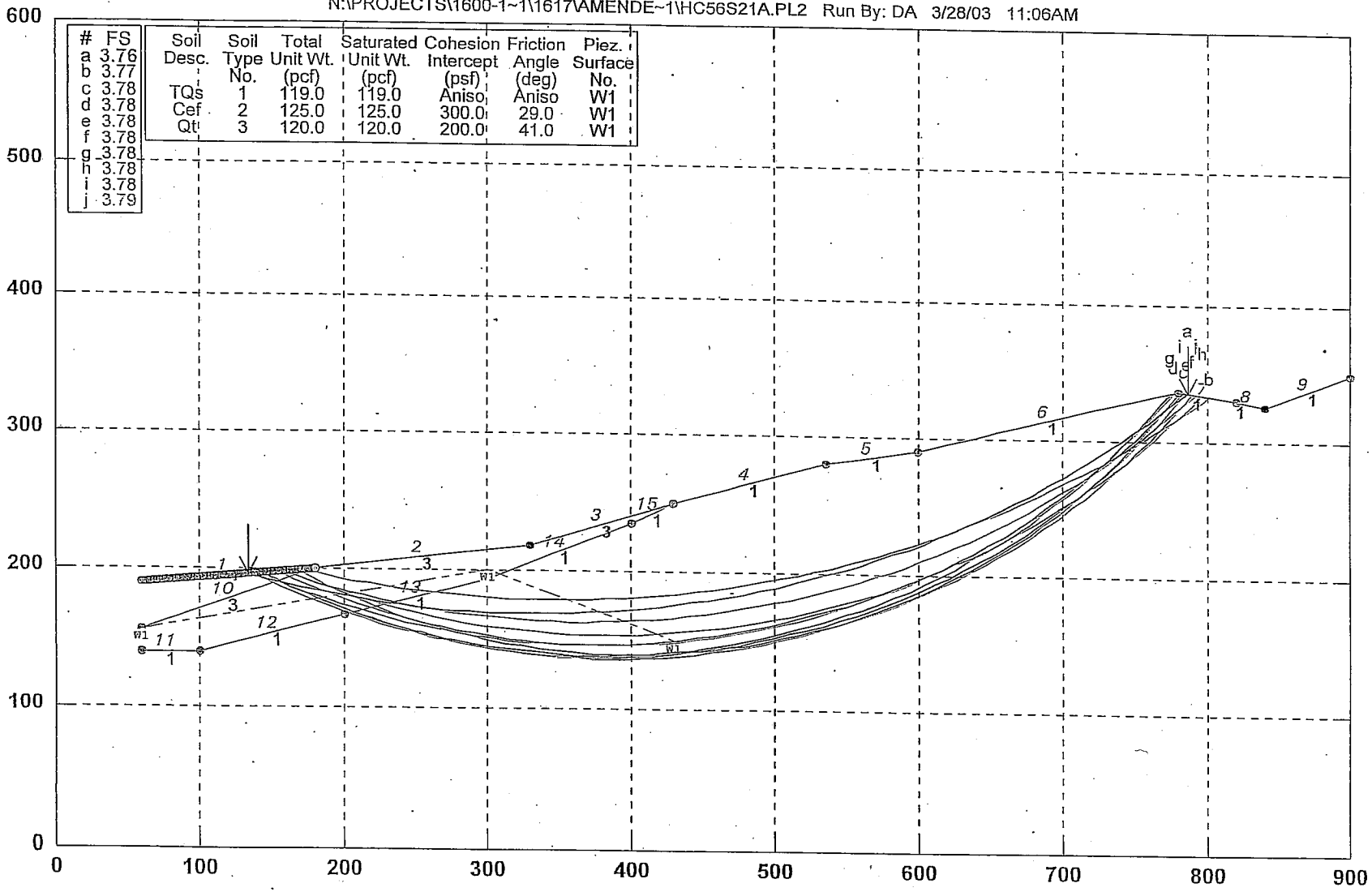
13	813.02	323.30
14	819.26	330.11
***	2.513	***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	218.00	204.56
2	225.60	200.17
3	241.04	189.11
4	254.51	175.71
5	273.25	172.53
6	291.42	166.99
7	310.29	164.76
8	325.46	153.31
9	764.12	265.45
10	777.45	278.99
11	788.75	294.26
12	802.17	307.71
13	813.02	323.30
14	819.26	330.11
***	2.513	***

Hasley Canyon- Sec 56-56'- Cut Slope-` CS30- Static

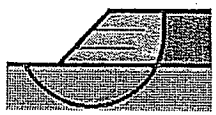
N:\PROJECTS\1600-1~1\1617\AMENDE~1\HC56S21A.PL2 Run By: DA 3/28/03 11:06AM



PCSTABL5M/si FSmin=3.76

Safety Factors Are Calculated By The Modified Janbu Method

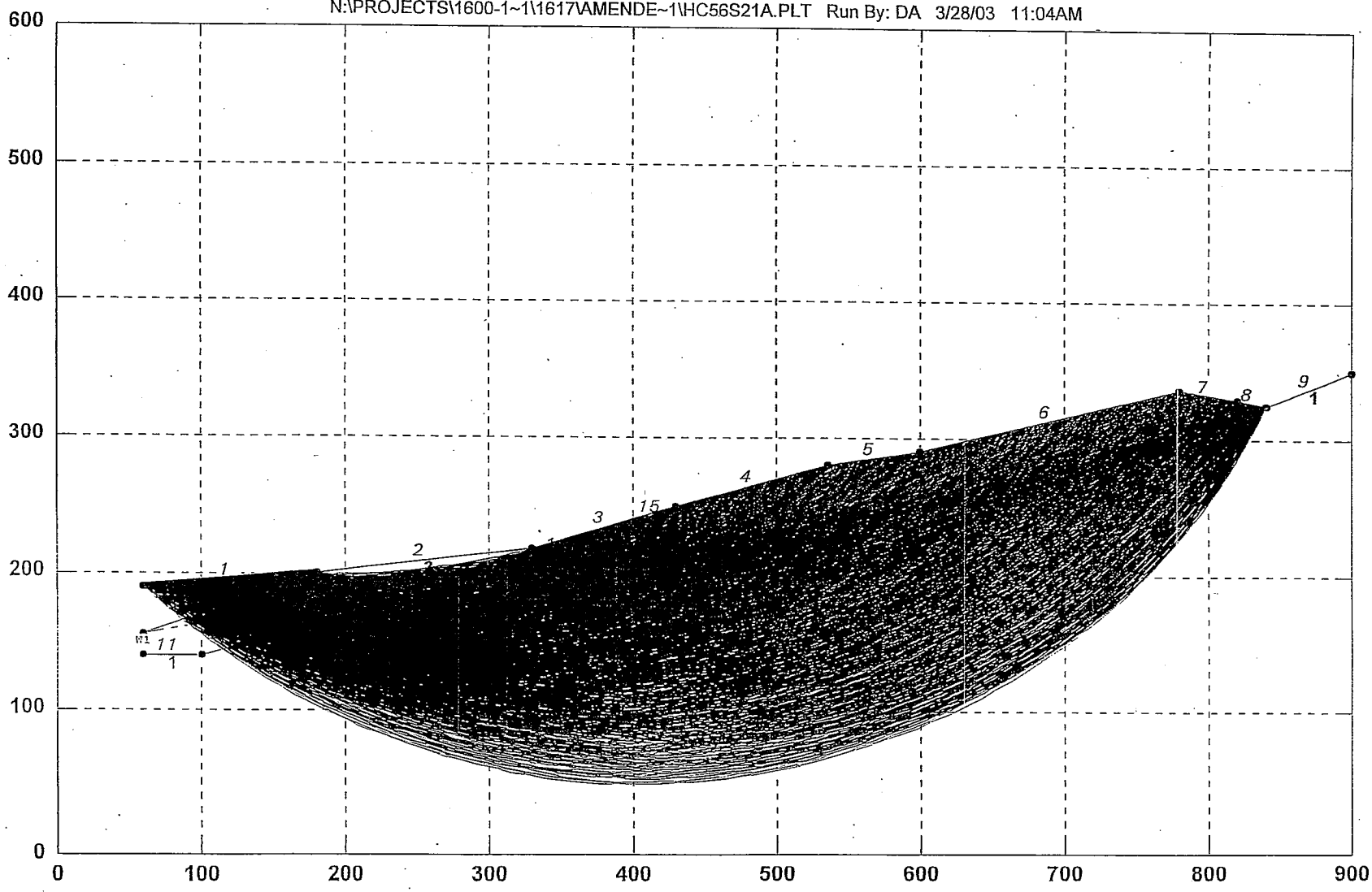
STED



RUN NO. 1 - 31

Hasley Canyon- Sec 56-56'- Cut Slope-` CS30- Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\HC56S21A.PLT Run By: DA 3/28/03 11:04AM



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/28/03
Time of Run: 11:06AM
Run By: DA
Input Data Filename: N:HC56S21A.
Output Filename: N:HC56S21A.OUT
Unit: ENGLISH
Plotted Output Filename: N:HC56S21A.PLT
PROBLEM DESCRIPTION Hasley Canyon- Sec 56-56'- Cut Slope-`
CS30- Static

BOUNDARY COORDINATES
9 Top Boundaries
15 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	60.00	190.00	180.00	200.00	2
2	180.00	200.00	330.00	218.00	3
3	330.00	218.00	430.00	250.00	3
4	430.00	250.00	535.00	280.00	1
5	535.00	280.00	600.00	290.00	1
6	600.00	290.00	780.00	336.00	1
7	780.00	336.00	820.00	330.00	1
8	820.00	330.00	840.00	325.00	1
9	840.00	325.00	900.00	350.00	1
10	60.00	155.00	180.00	200.00	3
11	60.00	140.00	100.00	140.00	1
12	100.00	140.00	200.00	166.00	1
13	200.00	166.00	300.00	193.00	1
14	300.00	193.00	400.00	235.00	1
15	400.00	235.00	430.00	250.00	1

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	119.0	119.0	410.0	40.5	.00	.0	1
2	125.0	125.0	300.0	29.0	.00	.0	1
3	120.0	120.0	200.0	41.0	.00	.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	13.5	410.0	40.5
2	15.5	347.0	22.0
3	90.0	410.0	40.5

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
Unit Weight of Water = 62.40
Piezometric Surface No. 1 Specified by 3 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	60.00	155.00
2	300.00	200.00
3	430.00	150.00

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
3000 Trial Surfaces Have Been Generated.
25 Surfaces Initiate From Each Of120 Points Equally Spaced
Along The Ground Surface Between X = 60.00 ft.

and X = 180.00 ft.
Each Surface Terminates Between X = 330.00 ft.
and X = 840.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = .00 ft.
12.00 ft. Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And .0 deg.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 59 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	133.61	196.13
2	145.17	192.89
3	156.78	189.85
4	168.43	187.00
5	180.14	184.35
6	191.88	181.90
7	203.67	179.65
8	215.49	177.60
9	227.35	175.76
10	239.24	174.11
11	251.15	172.66
12	263.09	171.42
13	275.04	170.38
14	287.01	169.55
15	299.00	168.91
16	310.99	168.48
17	322.99	168.26
18	334.99	168.24
19	346.98	168.42
20	358.98	168.81
21	370.96	169.39
22	382.94	170.19
23	394.90	171.18
24	406.84	172.38
25	418.75	173.78
26	430.65	175.39
27	442.51	177.19
28	454.34	179.20
29	466.14	181.41
30	477.89	183.81
31	489.61	186.42
32	501.27	189.23
33	512.89	192.23
34	524.46	195.43
35	535.97	198.82
36	547.42	202.42
37	558.80	206.20
38	570.13	210.18
39	581.38	214.35
40	592.56	218.71
41	603.66	223.25
42	614.69	227.99
43	625.63	232.91
44	636.49	238.02
45	647.26	243.31
46	657.94	248.79
47	668.52	254.44
48	679.01	260.28
49	689.40	266.29
50	699.68	272.47

51	709.85	278.83
52	719.92	285.36
53	729.88	292.07
54	739.71	298.94
55	749.44	305.97
56	759.04	313.17
57	768.51	320.53
58	777.86	328.06
59	786.27	335.06

*** 3.762 ***

Individual data on the 71 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	11.6	3036.0	.0	.0	.0	.0	.0	.0	.0
2	9.3	6796.9	.0	.0	.0	.0	.0	.0	.0
3	2.3	2205.4	.0	.0	.0	.0	.0	.0	.0
4	11.7	14460.1	.0	.0	.0	.0	.0	.0	.0
5	11.6	19289.4	.0	.0	.0	.0	.0	.0	.0
6	.1	255.9	.0	.0	.0	.0	.0	.0	.0
7	11.7	24801.4	.0	.0	.0	.0	.0	.0	.0
8	5.7	14080.0	.0	.0	.0	.0	.0	.0	.0
9	6.0	16126.6	.0	431.0	.0	.0	.0	.0	.0
10	11.8	35360.2	.0	3252.5	.0	.0	.0	.0	.0
11	11.9	40253.5	.0	6321.1	.0	.0	.0	.0	.0
12	5.8	21358.1	.0	4156.6	.0	.0	.0	.0	.0
13	6.1	23513.3	.0	5089.3	.0	.0	.0	.0	.0
14	11.9	49171.5	.0	12026.0	.0	.0	.0	.0	.0
15	11.9	53184.7	.0	14660.5	.0	.0	.0	.0	.0
16	12.0	56911.7	.0	17148.8	.0	.0	.0	.0	.0
17	12.0	60346.6	.0	19490.1	.0	.0	.0	.0	.0
18	12.0	63484.8	.0	21683.7	.0	.0	.0	.0	.0
19	1.0	5455.5	.0	1912.6	.0	.0	.0	.0	.0
20	8.7	48004.5	.0	15045.6	.0	.0	.0	.0	.0
21	2.3	12852.4	.0	3700.3	.0	.0	.0	.0	.0
22	12.0	68822.6	.0	17580.4	.0	.0	.0	.0	.0
23	7.0	41269.0	.0	8828.1	.0	.0	.0	.0	.0
24	5.0	30053.1	.0	5605.7	.0	.0	.0	.0	.0
25	12.0	76077.4	.0	11144.5	.0	.0	.0	.0	.0
26	12.0	81106.1	.0	7713.3	.0	.0	.0	.0	.0
27	12.0	85812.3	.0	4141.1	.0	.0	.0	.0	.0
28	7.3	54818.0	.0	711.6	.0	.0	.0	.0	.0
29	4.6	35373.4	.0	.0	.0	.0	.0	.0	.0
30	12.0	94239.0	.0	.0	.0	.0	.0	.0	.0
31	5.1	41420.2	.0	.0	.0	.0	.0	.0	.0
32	6.8	56529.2	.0	.0	.0	.0	.0	.0	.0
33	11.9	101313.5	.0	.0	.0	.0	.0	.0	.0
34	11.2	98590.3	.0	.0	.0	.0	.0	.0	.0
35	.6	5744.5	.0	.0	.0	.0	.0	.0	.0
36	11.9	106711.5	.0	.0	.0	.0	.0	.0	.0
37	11.8	108502.3	.0	.0	.0	.0	.0	.0	.0
38	11.8	109954.4	.0	.0	.0	.0	.0	.0	.0
39	11.8	111068.1	.0	.0	.0	.0	.0	.0	.0
40	11.7	111845.0	.0	.0	.0	.0	.0	.0	.0
41	11.7	112286.9	.0	.0	.0	.0	.0	.0	.0
42	11.6	112396.9	.0	.0	.0	.0	.0	.0	.0
43	11.6	112177.1	.0	.0	.0	.0	.0	.0	.0
44	10.5	102268.9	.0	.0	.0	.0	.0	.0	.0
45	1.0	9356.4	.0	.0	.0	.0	.0	.0	.0
46	11.5	109564.6	.0	.0	.0	.0	.0	.0	.0
47	11.4	106349.0	.0	.0	.0	.0	.0	.0	.0
48	11.3	102858.3	.0	.0	.0	.0	.0	.0	.0
49	11.3	99101.2	.0	.0	.0	.0	.0	.0	.0
50	11.2	95085.7	.0	.0	.0	.0	.0	.0	.0
51	7.4	61279.5	.0	.0	.0	.0	.0	.0	.0

52	3.7	29623.7	.0	.0	.0	.0	.0	.0	.0
53	11.0	87543.7	.0	.0	.0	.0	.0	.0	.0
54	10.9	84258.3	.0	.0	.0	.0	.0	.0	.0
55	10.9	80721.4	.0	.0	.0	.0	.0	.0	.0
56	10.8	76942.2	.0	.0	.0	.0	.0	.0	.0
57	10.7	72931.4	.0	.0	.0	.0	.0	.0	.0
58	10.6	68699.8	.0	.0	.0	.0	.0	.0	.0
59	10.5	64258.6	.0	.0	.0	.0	.0	.0	.0
60	10.4	59619.2	.0	.0	.0	.0	.0	.0	.0
61	10.3	54794.1	.0	.0	.0	.0	.0	.0	.0
62	10.2	49795.8	.0	.0	.0	.0	.0	.0	.0
63	10.1	44637.2	.0	.0	.0	.0	.0	.0	.0
64	10.0	39331.3	.0	.0	.0	.0	.0	.0	.0
65	9.8	33892.1	.0	.0	.0	.0	.0	.0	.0
66	9.7	28333.4	.0	.0	.0	.0	.0	.0	.0
67	9.6	22669.9	.0	.0	.0	.0	.0	.0	.0
68	9.5	16916.1	.0	.0	.0	.0	.0	.0	.0
69	9.3	11086.8	.0	.0	.0	.0	.0	.0	.0
70	2.1	1725.2	.0	.0	.0	.0	.0	.0	.0
71	6.3	2300.1	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 57 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	170.92	199.24
2	182.62	196.55
3	194.35	194.04
4	206.13	191.73
5	217.94	189.60
6	229.78	187.65
7	241.65	185.90
8	253.55	184.34
9	265.47	182.97
10	277.41	181.78
11	289.37	180.79
12	301.34	179.99
13	313.33	179.38
14	325.32	178.96
15	337.32	178.74
16	349.32	178.70
17	361.32	178.86
18	373.31	179.21
19	385.30	179.74
20	397.28	180.47
21	409.24	181.40
22	421.19	182.51
23	433.12	183.81
24	445.03	185.30
25	456.91	186.99
26	468.76	188.86
27	480.58	190.92
28	492.37	193.17
29	504.12	195.60
30	515.83	198.23
31	527.50	201.04
32	539.12	204.03
33	550.69	207.22
34	562.21	210.58
35	573.67	214.13
36	585.07	217.86
37	596.42	221.78
38	607.70	225.87
39	618.91	230.14
40	630.06	234.59
41	641.13	239.22
42	652.12	244.03
43	663.04	249.01

44	673.88	254.16
45	684.63	259.48
46	695.30	264.98
47	705.88	270.65
48	716.36	276.48
49	726.76	282.48
50	737.05	288.65
51	747.25	294.97
52	757.34	301.46
53	767.33	308.12
54	777.21	314.93
55	786.98	321.89
56	796.64	329.01
57	801.56	332.77

*** 3.771 ***

Failure Surface Specified By 60 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	141.68	196.81
2	152.61	191.86
3	163.66	187.16
4	174.80	182.70
5	186.03	178.49
6	197.36	174.54
7	208.78	170.83
8	220.27	167.37
9	231.83	164.17
10	243.47	161.23
11	255.16	158.54
12	266.91	156.12
13	278.72	153.95
14	290.57	152.05
15	302.45	150.41
16	314.37	149.03
17	326.32	147.91
18	338.29	147.06
19	350.28	146.48
20	362.27	146.16
21	374.27	146.10
22	386.27	146.31
23	398.26	146.79
24	410.24	147.53
25	422.20	148.54
26	434.13	149.81
27	446.03	151.34
28	457.89	153.13
29	469.72	155.19
30	481.49	157.51
31	493.21	160.09
32	504.87	162.93
33	516.46	166.02
34	527.99	169.37
35	539.43	172.97
36	550.80	176.83
37	562.07	180.94
38	573.26	185.29
39	584.34	189.89
40	595.32	194.74
41	606.19	199.82
42	616.94	205.15
43	627.57	210.71
44	638.08	216.51
45	648.46	222.53
46	658.70	228.79
47	668.80	235.27
48	678.75	241.97

49	688.56	248.89
50	698.21	256.02
51	707.69	263.37
52	717.02	270.92
53	726.17	278.68
54	735.15	286.64
55	743.96	294.79
56	752.58	303.14
57	761.01	311.68
58	769.25	320.40
59	777.30	329.30
60	782.74	335.59

*** 3.775 ***

Failure Surface Specified By 59 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	153.78	197.82
2	164.63	192.68
3	175.59	187.80
4	186.67	183.18
5	197.84	178.82
6	209.12	174.72
7	220.49	170.89
8	231.95	167.32
9	243.49	164.02
10	255.10	161.00
11	266.78	158.25
12	278.52	155.77
13	290.32	153.56
14	302.16	151.64
15	314.05	149.99
16	325.97	148.62
17	337.92	147.53
18	349.90	146.72
19	361.88	146.19
20	373.88	145.94
21	385.88	145.97
22	397.88	146.28
23	409.86	146.88
24	421.83	147.75
25	433.78	148.90
26	445.69	150.34
27	457.57	152.05
28	469.40	154.04
29	481.18	156.30
30	492.91	158.84
31	504.58	161.66
32	516.17	164.74
33	527.70	168.10
34	539.13	171.73
35	550.49	175.62
36	561.74	179.78
37	572.90	184.20
38	583.95	188.88
39	594.89	193.82
40	605.70	199.01
41	616.40	204.45
42	626.96	210.14
43	637.39	216.08
44	647.68	222.26
45	657.81	228.68
46	667.80	235.34
47	677.63	242.23
48	687.29	249.34
49	696.78	256.68
50	706.10	264.24

51	715.24	272.02
52	724.20	280.01
53	732.96	288.20
54	741.53	296.60
55	749.90	305.20
56	758.07	313.99
57	766.03	322.97
58	773.78	332.13
59	776.10	335.00

*** 3.776 ***

Failure Surface Specified By 61 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	136.64	196.39
2	147.34	190.96
3	158.17	185.78
4	169.11	180.86
5	180.16	176.18
6	191.32	171.77
7	202.58	167.61
8	213.93	163.72
9	225.36	160.08
10	236.88	156.72
11	248.48	153.62
12	260.14	150.78
13	271.86	148.22
14	283.64	145.93
15	295.47	143.92
16	307.34	142.17
17	319.25	140.70
18	331.19	139.51
19	343.16	138.59
20	355.14	137.95
21	367.13	137.59
22	379.13	137.50
23	391.13	137.69
24	403.12	138.16
25	415.10	138.91
26	427.06	139.93
27	438.99	141.23
28	450.88	142.80
29	462.74	144.65
30	474.55	146.77
31	486.31	149.16
32	498.01	151.82
33	509.65	154.76
34	521.21	157.96
35	532.70	161.43
36	544.10	165.16
37	555.42	169.15
38	566.64	173.41
39	577.76	177.92
40	588.77	182.69
41	599.67	187.71
42	610.45	192.99
43	621.10	198.51
44	631.63	204.27
45	642.02	210.28
46	652.26	216.52
47	662.36	223.00
48	672.31	229.71
49	682.10	236.65
50	691.73	243.81
51	701.19	251.20
52	710.48	258.80
53	719.58	266.61

54	728.51	274.63
55	737.25	282.86
56	745.79	291.28
57	754.14	299.90
58	762.29	308.72
59	770.23	317.71
60	777.96	326.89
61	784.71	335.29

*** 3.777 ***

Failure Surface Specified By 61 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	142.69	196.89
2	153.34	191.36
3	164.11	186.08
4	175.01	181.05
5	186.02	176.28
6	197.14	171.77
7	208.36	167.52
8	219.68	163.53
9	231.09	159.81
10	242.58	156.36
11	254.15	153.18
12	265.80	150.27
13	277.50	147.63
14	289.27	145.27
15	301.09	143.19
16	312.95	141.38
17	324.85	139.85
18	336.79	138.60
19	348.75	137.63
20	360.73	136.94
21	372.72	136.53
22	384.72	136.41
23	396.72	136.56
24	408.71	136.99
25	420.69	137.71
26	432.65	138.70
27	444.58	139.98
28	456.48	141.53
29	468.34	143.37
30	480.15	145.48
31	491.91	147.86
32	503.61	150.52
33	515.25	153.46
34	526.81	156.66
35	538.30	160.14
36	549.70	163.88
37	561.01	167.89
38	572.22	172.17
39	583.33	176.70
40	594.33	181.50
41	605.22	186.55
42	615.98	191.85
43	626.62	197.41
44	637.12	203.21
45	647.49	209.26
46	657.71	215.54
47	667.78	222.07
48	677.69	228.83
49	687.45	235.82
50	697.03	243.04
51	706.45	250.48
52	715.69	258.13
53	724.75	266.01
54	733.62	274.09

55	742.29	282.38
56	750.78	290.87
57	759.06	299.55
58	767.13	308.43
59	775.00	317.49
60	782.65	326.73
61	788.90	334.66

*** 3.779 ***

Failure Surface Specified By 60 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	142.69	196.89
2	153.36	191.39
3	164.15	186.16
4	175.07	181.18
5	186.11	176.46
6	197.25	172.02
7	208.50	167.84
8	219.85	163.93
9	231.28	160.29
10	242.80	156.94
11	254.40	153.86
12	266.07	151.05
13	277.80	148.53
14	289.59	146.29
15	301.43	144.34
16	313.31	142.67
17	325.23	141.29
18	337.18	140.19
19	349.16	139.38
20	361.15	138.86
21	373.14	138.62
22	385.14	138.68
23	397.14	139.02
24	409.12	139.65
25	421.09	140.57
26	433.03	141.77
27	444.93	143.26
28	456.80	145.04
29	468.62	147.10
30	480.39	149.44
31	492.10	152.07
32	503.74	154.98
33	515.31	158.16
34	526.80	161.62
35	538.21	165.36
36	549.52	169.37
37	560.73	173.65
38	571.83	178.20
39	582.82	183.01
40	593.70	188.09
41	604.45	193.42
42	615.06	199.02
43	625.54	204.86
44	635.88	210.96
45	646.07	217.30
46	656.10	223.88
47	665.97	230.71
48	675.67	237.77
49	685.21	245.06
50	694.56	252.57
51	703.73	260.31
52	712.72	268.27
53	721.50	276.44
54	730.09	284.82
55	738.48	293.40

56	746.66	302.18
57	754.62	311.16
58	762.37	320.32
59	769.90	329.67
60	773.47	334.33

*** 3.780 ***

Failure Surface Specified By 59 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.82	198.24
2	169.91	193.65
3	181.10	189.30
4	192.37	185.18
5	203.72	181.31
6	215.16	177.67
7	226.67	174.28
8	238.25	171.13
9	249.90	168.23
10	261.60	165.58
11	273.36	163.17
12	285.16	161.02
13	297.01	159.11
14	308.89	157.46
15	320.81	156.05
16	332.76	154.90
17	344.72	154.01
18	356.70	153.36
19	368.70	152.97
20	380.70	152.83
21	392.70	152.95
22	404.69	153.32
23	416.68	153.95
24	428.64	154.83
25	440.59	155.96
26	452.51	157.34
27	464.40	158.98
28	476.25	160.87
29	488.06	163.00
30	499.82	165.39
31	511.52	168.03
32	523.17	170.91
33	534.76	174.04
34	546.27	177.41
35	557.72	181.03
36	569.08	184.88
37	580.36	188.98
38	591.55	193.31
39	602.64	197.89
40	613.64	202.69
41	624.53	207.72
42	635.32	212.99
43	645.98	218.48
44	656.54	224.20
45	666.96	230.14
46	677.26	236.30
47	687.43	242.67
48	697.46	249.26
49	707.35	256.06
50	717.09	263.06
51	726.68	270.28
52	736.12	277.69
53	745.39	285.30
54	754.51	293.10
55	763.46	301.10
56	772.23	309.29
57	780.83	317.65

58	789.26	326.20
59	796.21	333.57

*** 3.784 ***

Failure Surface Specified By 59 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	166.89	198.91
2	177.45	193.21
3	188.15	187.77
4	198.98	182.61
5	209.94	177.73
6	221.03	173.13
7	232.22	168.80
8	243.52	164.77
9	254.92	161.02
10	266.41	157.56
11	277.99	154.40
12	289.64	151.53
13	301.36	148.96
14	313.14	146.68
15	324.98	144.71
16	336.86	143.03
17	348.78	141.66
18	360.74	140.59
19	372.71	139.82
20	384.70	139.36
21	396.70	139.20
22	408.70	139.35
23	420.69	139.80
24	432.67	140.56
25	444.62	141.62
26	456.54	142.98
27	468.43	144.64
28	480.27	146.61
29	492.05	148.87
30	503.77	151.43
31	515.43	154.29
32	527.01	157.45
33	538.50	160.89
34	549.90	164.63
35	561.21	168.66
36	572.41	172.97
37	583.49	177.56
38	594.46	182.43
39	605.30	187.58
40	616.00	193.01
41	626.57	198.70
42	636.98	204.66
43	647.24	210.88
44	657.34	217.36
45	667.28	224.10
46	677.03	231.08
47	686.61	238.31
48	696.00	245.78
49	705.20	253.48
50	714.20	261.42
51	723.00	269.58
52	731.59	277.97
53	739.96	286.56
54	748.11	295.37
55	756.03	304.38
56	763.73	313.59
57	771.18	322.99
58	778.40	332.58
59	780.76	335.89

*** 3.784 ***

Failure Surface Specified By 58 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	156.81	198.07
2	168.16	194.17
3	179.58	190.49
4	191.07	187.03
5	202.63	183.80
6	214.24	180.79
7	225.92	178.01
8	237.64	175.45
9	249.41	173.13
10	261.23	171.03
11	273.08	169.16
12	284.97	167.52
13	296.89	166.11
14	308.83	164.93
15	320.79	163.98
16	332.77	163.27
17	344.76	162.79
18	356.76	162.54
19	368.76	162.52
20	380.75	162.74
21	392.75	163.18
22	404.73	163.87
23	416.69	164.78
24	428.64	165.92
25	440.56	167.30
26	452.45	168.91
27	464.31	170.74
28	476.13	172.81
29	487.91	175.10
30	499.64	177.63
31	511.32	180.38
32	522.95	183.35
33	534.51	186.55
34	546.01	189.98
35	557.44	193.63
36	568.80	197.49
37	580.09	201.58
38	591.29	205.88
39	602.40	210.41
40	613.43	215.14
41	624.36	220.09
42	635.20	225.25
43	645.93	230.62
44	656.55	236.19
45	667.07	241.98
46	677.47	247.96
47	687.76	254.14
48	697.92	260.52
49	707.95	267.10
50	717.86	273.87
51	727.63	280.84
52	737.27	287.99
53	746.77	295.32
54	756.12	302.84
55	765.33	310.54
56	774.38	318.41
57	783.28	326.46
58	791.58	334.26

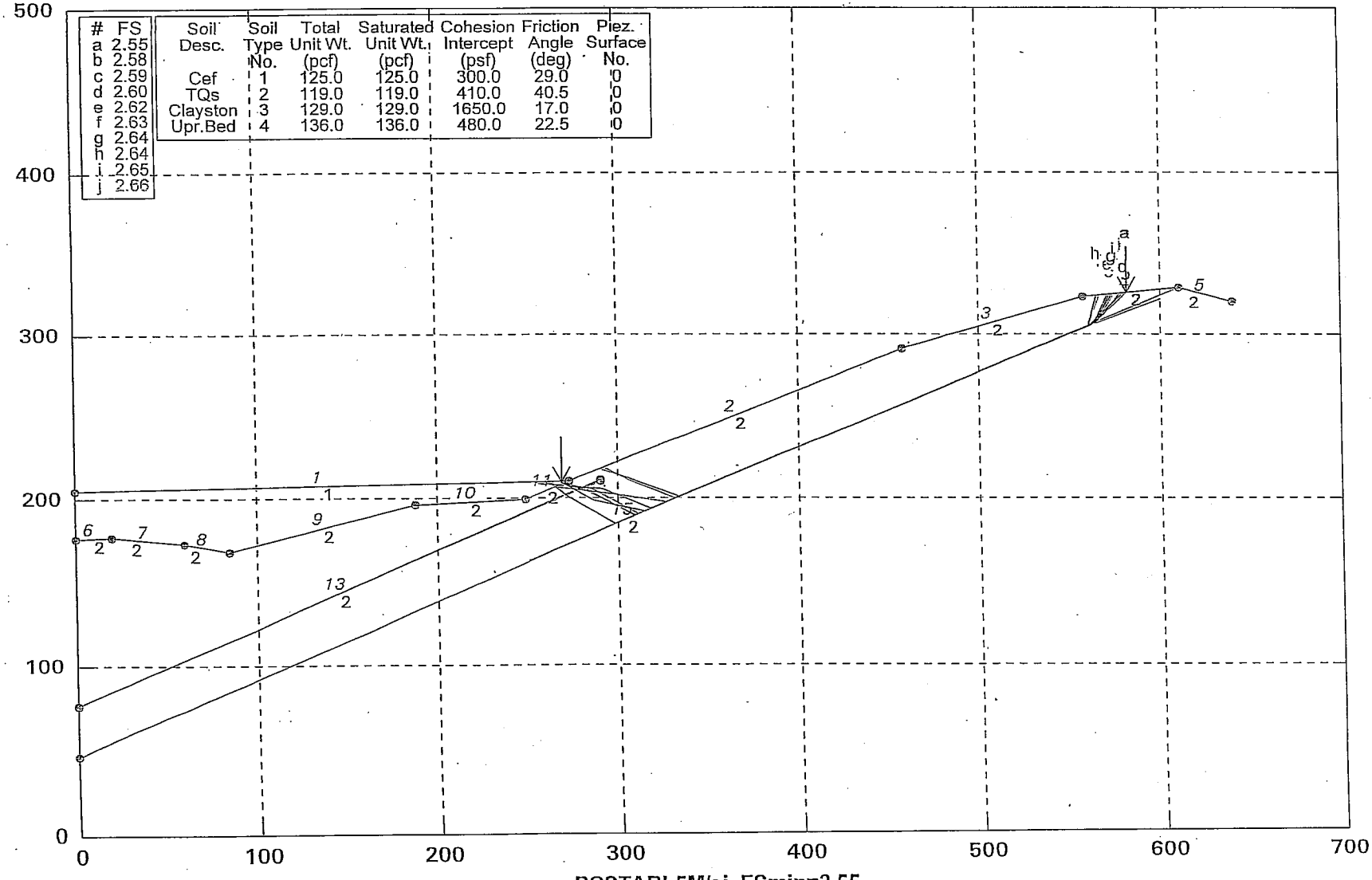
*** 3.785 ***

Hasley Canyon Cross Section 57-57'-Nat. Slope - Lower bed - Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\HC57S3.PL2 Run By: DA 3/31/03 9:28AM

#	FS
a	2.55
b	2.58
c	2.59
d	2.60
e	2.62
f	2.63
g	2.64
h	2.64
i	2.65
j	2.66

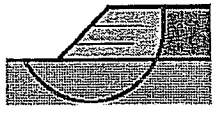
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	410.0	40.5	0
Clayston	3	129.0	129.0	1650.0	17.0	0
Upr.Bed	4	136.0	136.0	480.0	22.5	0



PCSTABL5M/si FSmin=2.55

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

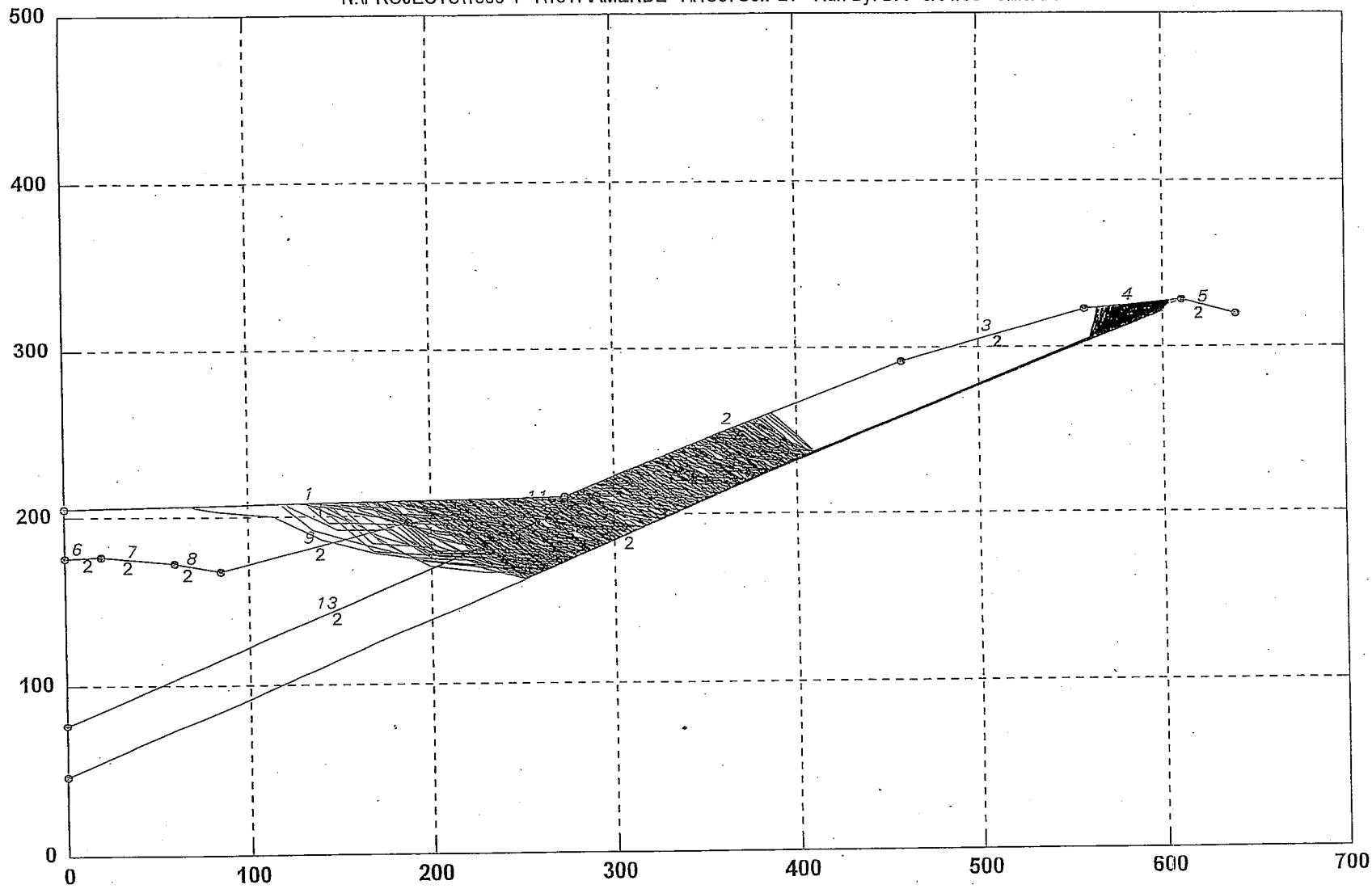
STED



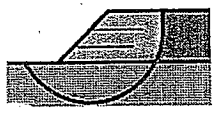
RUN NO. 132

Hasley Canyon Cross Section 57-57'-Nat. Slope - Lower bed - Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\HC57S3.PLT Run By: DA 3/31/03 9:28AM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 9:28AM
Run By: DA
Input Data Filename: N:hc57s3.
Output Filename: N:hc57s3.OUT
Unit: ENGLISH
Plotted Output Filename: N:hc57s3.PLT
PROBLEM DESCRIPTION Hasley Canyon Cross Section 57-57'-Nat.
Slope - Lower bed - Static

BOUNDARY COORDINATES
5 Top Boundaries
15 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	205.00	273.00	210.00	1
2	273.00	210.00	458.00	291.00	2
3	458.00	291.00	558.00	323.00	2
4	558.00	323.00	610.00	329.00	2
5	610.00	329.00	640.00	320.00	2
6	.00	176.00	20.00	177.00	2
7	20.00	177.00	60.00	173.00	2
8	60.00	173.00	85.00	168.00	2
9	85.00	168.00	188.00	196.00	2
10	188.00	196.00	249.00	199.00	2
11	249.00	199.00	273.00	210.00	2
12	.00	76.00	290.00	211.00	4
13	.00	75.80	290.00	210.80	2
14	.00	46.00	610.00	329.00	3
15	.00	45.50	610.00	328.50	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0
3	129.0	129.0	1650.0	17.0	.00	.0	0
4	136.0	136.0	480.0	22.5	.00	.0	0

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.
500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 30.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	250.00	162.00	410.00	236.30	.00
2	560.00	305.00	600.00	321.50	.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	269.13	209.93
2	286.07	198.44
3	315.46	192.40

4	562.36	305.97
5	581.30	325.69

*** 2.552 ***

Individual data on the 15 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	97.9	.0	.0	.0	.0	.0	.0	.0
2	2.4	535.8	.0	.0	.0	.0	.0	.0	.0
3	3.7	2086.4	.0	.0	.0	.0	.0	.0	.0
4	.2	144.1	.0	.0	.0	.0	.0	.0	.0
5	9.2	13344.2	.0	.0	.0	.0	.0	.0	.0
6	3.9	8679.0	.0	.0	.0	.0	.0	.0	.0
7	25.5	84834.1	.0	.0	.0	.0	.0	.0	.0
8	11.5	49425.8	.0	.0	.0	.0	.0	.0	.0
9	127.3	523254.8	.0	.0	.0	.0	.0	.0	.0
10	3.7	14770.0	.0	.0	.0	.0	.0	.0	.0
11	100.0	310286.4	.0	.0	.0	.0	.0	.0	.0
12	4.4	9508.4	.0	.0	.0	.0	.0	.0	.0
13	.7	1509.6	.0	.0	.0	.0	.0	.0	.0
14	.9	1698.3	.0	.0	.0	.0	.0	.0	.0
15	17.3	16553.7	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	267.61	209.90
2	283.14	203.87
3	309.56	189.66
4	561.28	305.53
5	581.26	325.68

*** 2.584 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	263.23	209.82
2	266.96	206.36
3	296.71	202.47
4	326.28	197.42
5	565.14	307.12
6	572.39	324.66

*** 2.594 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	290.34	217.59
2	306.26	212.25
3	334.09	201.05
4	560.22	305.09
5	580.19	325.56

*** 2.596 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	259.86	209.76
2	261.16	208.50
3	290.99	205.32
4	318.74	193.92
5	563.49	306.44
6	570.98	324.50

*** 2.618 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	261.48	209.79
2	272.79	200.08

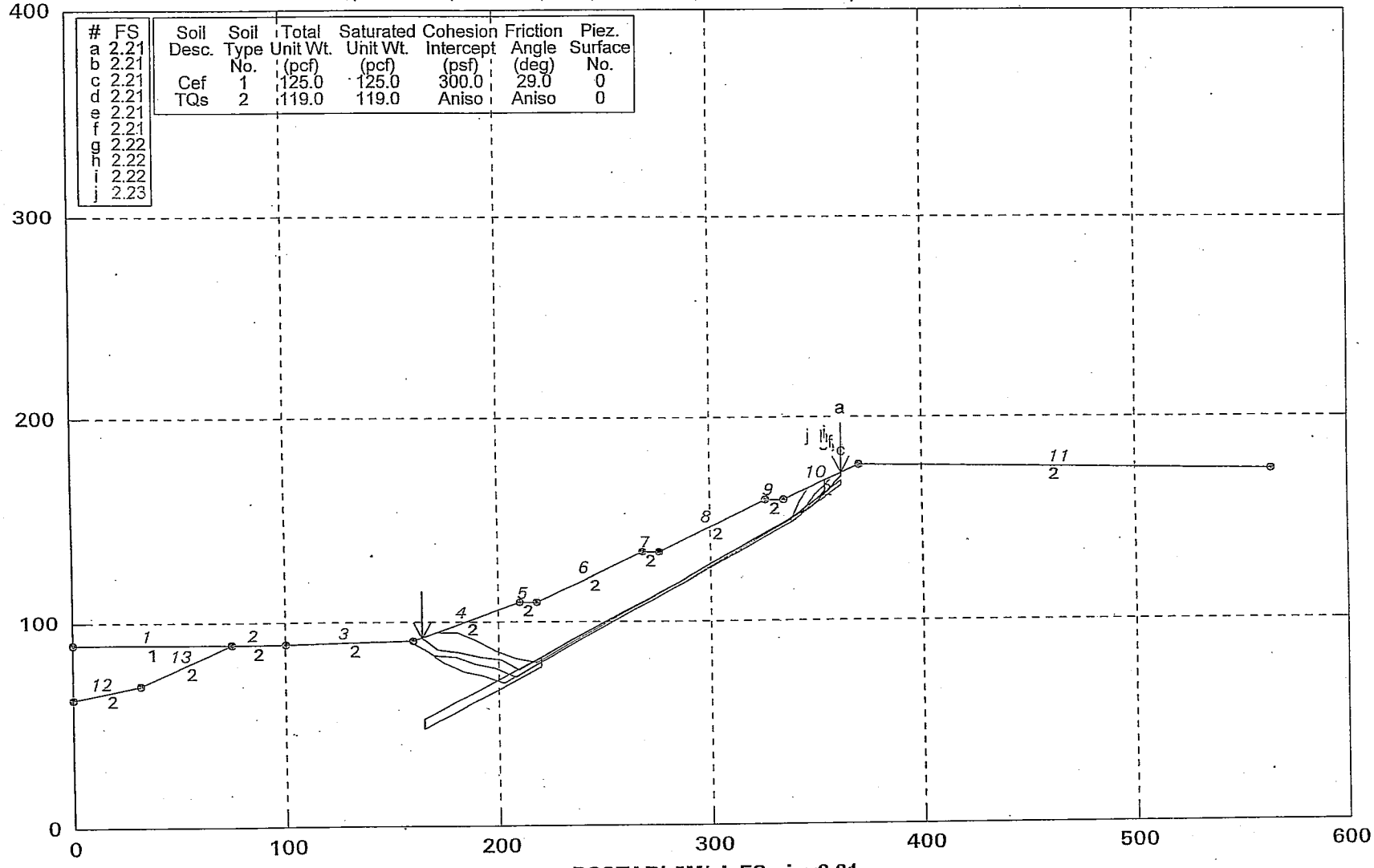
```
    3        298.43       184.49
    4        560.29       305.12
    5        566.28       323.96
      ***     2.628    ***
Failure Surface Specified By  5 Coordinate Points
  Point      X-Surf       Y-Surf
   No.        (ft)         (ft)
    1        262.20       209.80
    2        272.93       200.64
    3        298.12       184.34
    4        562.09       305.86
    5        573.80       324.82
      ***     2.641    ***
Failure Surface Specified By  6 Coordinate Points
  Point      X-Surf       Y-Surf
   No.        (ft)         (ft)
    1        254.49       209.66
    2        255.80       208.53
    3        285.67       205.80
    4        311.51       190.57
    5        560.05       305.02
    6        564.45       323.74
      ***     2.644    ***
Failure Surface Specified By  5 Coordinate Points
  Point      X-Surf       Y-Surf
   No.        (ft)         (ft)
    1        270.51       209.95
    2        283.42       205.14
    3        308.94       189.37
    4        564.87       307.01
    5        574.69       324.93
      ***     2.652    ***
Failure Surface Specified By  5 Coordinate Points
  Point      X-Surf       Y-Surf
   No.        (ft)         (ft)
    1        292.55       218.56
    2        303.99       211.79
    3        331.51       199.85
    4        565.05       307.08
    5        578.76       325.40
      ***     2.665    ***
```

Amended VTT52584 A-A' Bed Pl search CS-5

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TAS1.PL2 Run By: DA 3/28/03 12:11PM

#	FS
a	2.21
b	2.21
c	2.21
d	2.21
e	2.21
f	2.21
g	2.22
h	2.22
i	2.22
j	2.23

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0



PCSTABL5M/si FSmin=2.21

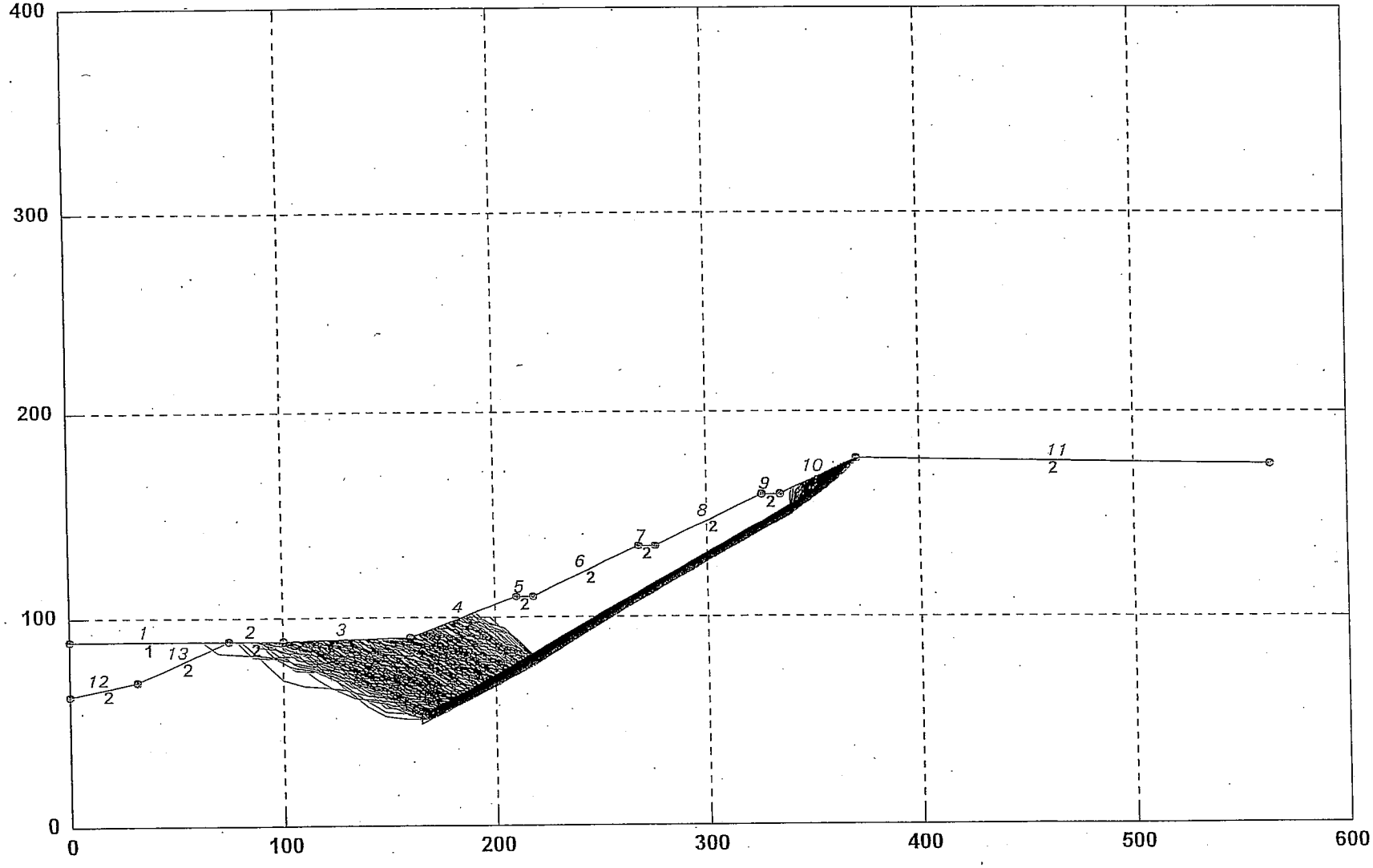
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

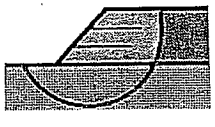
RUN NO. 33

Amended VTT52584 A-A' Bed Pl search CS-5

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TAS1.PLT Run By: DA 3/28/03 12:11PM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/28/03
Time of Run: 12:11PM
Run By: DA
Input Data Filename: N:tas1.in
Output Filename: N:tas1.OUT
Unit: ENGLISH
Plotted Output Filename: N:tas1.PLT
PROBLEM DESCRIPTION Amended VTT52584 A-A' Bed Pl search
CS-5

BOUNDARY COORDINATES
11 Top Boundaries
13 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	89.00	75.00	89.00	1
2	75.00	89.00	100.00	89.00	2
3	100.00	89.00	160.00	90.00	2
4	160.00	90.00	210.00	110.00	2
5	210.00	110.00	218.00	110.00	2
6	218.00	110.00	268.00	135.00	2
7	268.00	135.00	276.00	135.00	2
8	276.00	135.00	326.00	160.00	2
9	326.00	160.00	334.00	160.00	2
10	334.00	160.00	370.00	177.00	2
11	370.00	177.00	564.00	174.00	2
12	.00	62.00	32.00	69.00	2
13	32.00	69.00	75.00	89.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	410.0	40.5
2	31.0	347.0	22.0
3	90.0	410.0	40.5

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.
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 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	165.00	50.00	220.00	80.00	5.00
2	338.00	150.00	362.00	168.00	2.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	163.99	91.60
2	171.38	86.08
3	181.24	84.42
4	191.05	82.47
5	200.95	81.06
6	209.70	76.22
7	347.65	156.76
8	354.70	163.85
9	361.42	171.26
10	361.43	172.95

*** 2.208 ***

Individual data on the 15 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	7.4	3723.5	.0	.0	.0	.0	.0	.0	.0
2	9.9	13230.0	.0	.0	.0	.0	.0	.0	.0
3	9.8	19855.7	.0	.0	.0	.0	.0	.0	.0
4	9.9	26666.7	.0	.0	.0	.0	.0	.0	.0
5	8.7	30701.3	.0	.0	.0	.0	.0	.0	.0
6	.3	1210.4	.0	.0	.0	.0	.0	.0	.0
7	8.0	29768.4	.0	.0	.0	.0	.0	.0	.0
8	50.0	159681.4	.0	.0	.0	.0	.0	.0	.0
9	8.0	21329.6	.0	.0	.0	.0	.0	.0	.0
10	50.0	106938.7	.0	.0	.0	.0	.0	.0	.0
11	8.0	12890.8	.0	.0	.0	.0	.0	.0	.0
12	13.6	16962.3	.0	.0	.0	.0	.0	.0	.0
13	7.1	6552.0	.0	.0	.0	.0	.0	.0	.0
14	6.7	3037.7	.0	.0	.0	.0	.0	.0	.0
15	.0	1.1	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	163.99	91.60
2	171.38	86.08
3	181.24	84.42
4	191.05	82.47
5	200.95	81.06
6	209.70	76.22
7	347.65	156.76
8	354.70	163.85
9	361.42	171.26
10	361.43	172.95

*** 2.208 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	163.99	91.60
2	171.38	86.08
3	181.24	84.42
4	191.05	82.47
5	200.95	81.06
6	209.70	76.22
7	347.65	156.76
8	354.70	163.85
9	361.42	171.26
10	361.43	172.95

*** 2.208 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.60	94.64

2	180.83	94.17
3	189.88	89.92
4	198.80	85.41
5	208.05	81.60
6	217.89	79.82
7	343.44	154.08
8	349.26	162.22
9	356.28	169.33
10	356.40	170.58

*** 2.213 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.60	94.64
2	180.83	94.17
3	189.88	89.92
4	198.80	85.41
5	208.05	81.60
6	217.89	79.82
7	343.44	154.08
8	349.26	162.22
9	356.28	169.33
10	356.40	170.58

*** 2.213 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.60	94.64
2	180.83	94.17
3	189.88	89.92
4	198.80	85.41
5	208.05	81.60
6	217.89	79.82
7	343.44	154.08
8	349.26	162.22
9	356.28	169.33
10	356.40	170.58

*** 2.213 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	157.67	89.96
2	165.94	85.76
3	173.79	79.57
4	183.02	75.72
5	192.69	73.16
6	202.12	69.86
7	339.66	150.30
8	346.70	157.40
9	353.77	164.47
10	353.92	169.41

*** 2.224 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	157.67	89.96
2	165.94	85.76
3	173.79	79.57
4	183.02	75.72
5	192.69	73.16
6	202.12	69.86
7	339.66	150.30
8	346.70	157.40
9	353.77	164.47
10	353.92	169.41

*** 2.224 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	157.67	89.96
2	165.94	85.76
3	173.79	79.57
4	183.02	75.72
5	192.69	73.16
6	202.12	69.86
7	339.66	150.30
8	346.70	157.40
9	353.77	164.47
10	353.92	169.41

*** 2.224 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	157.91	89.97
2	161.22	88.39
3	169.88	83.38
4	179.86	82.83
5	188.98	78.74
6	198.82	76.91
7	207.97	72.88
8	338.03	150.37
9	341.75	159.66
10	346.36	165.84

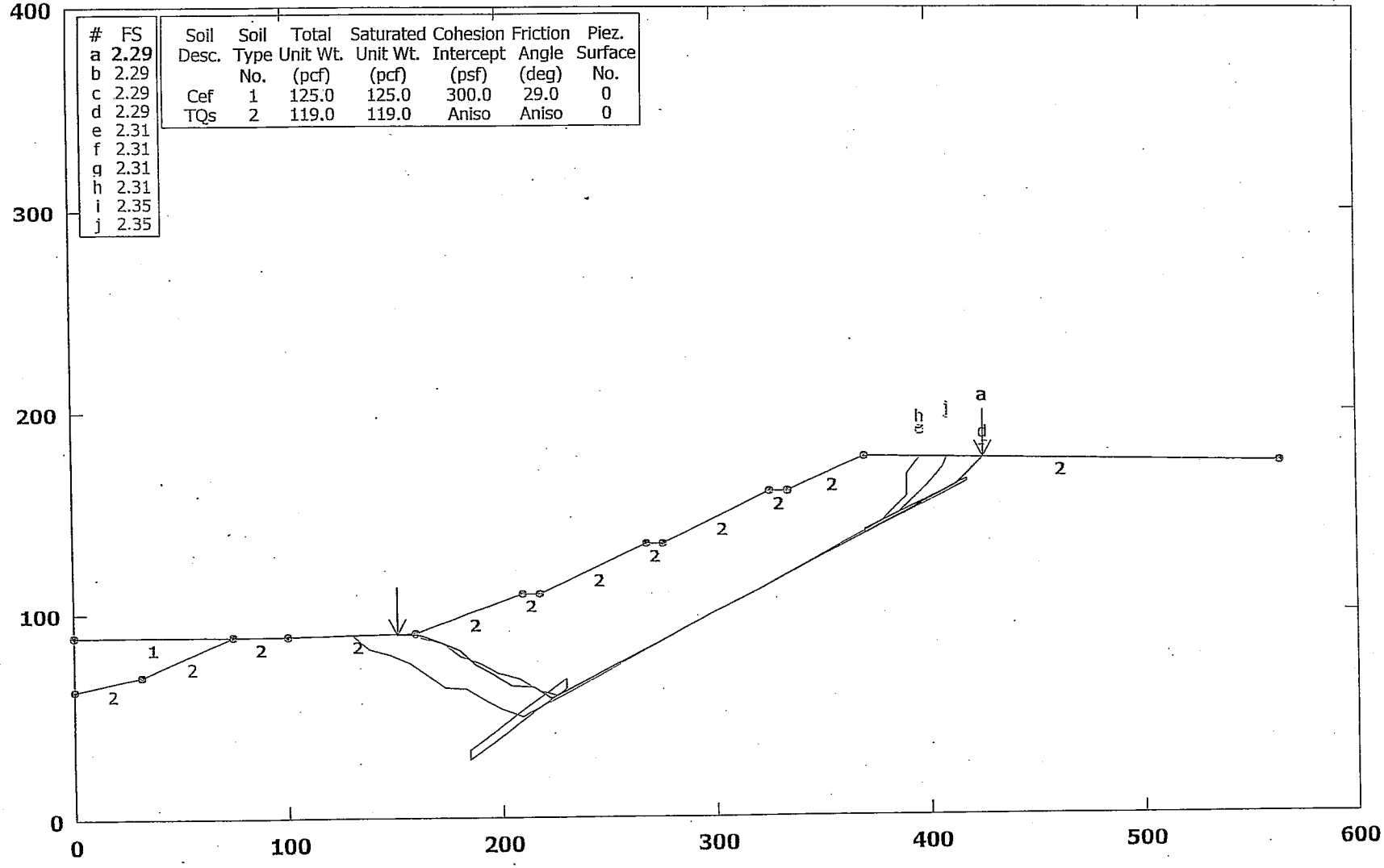
*** 2.231 ***

Amended VTT52584 A-A' Bed Pl search CS-5

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TAS11.PL2 Run By: DA 3/28/03 12:09PM

#	FS
a	2.29
b	2.29
c	2.29
d	2.29
e	2.31
f	2.31
g	2.31
h	2.31
i	2.35
j	2.35

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0



PCSTABL5M/si FSmin=2.29

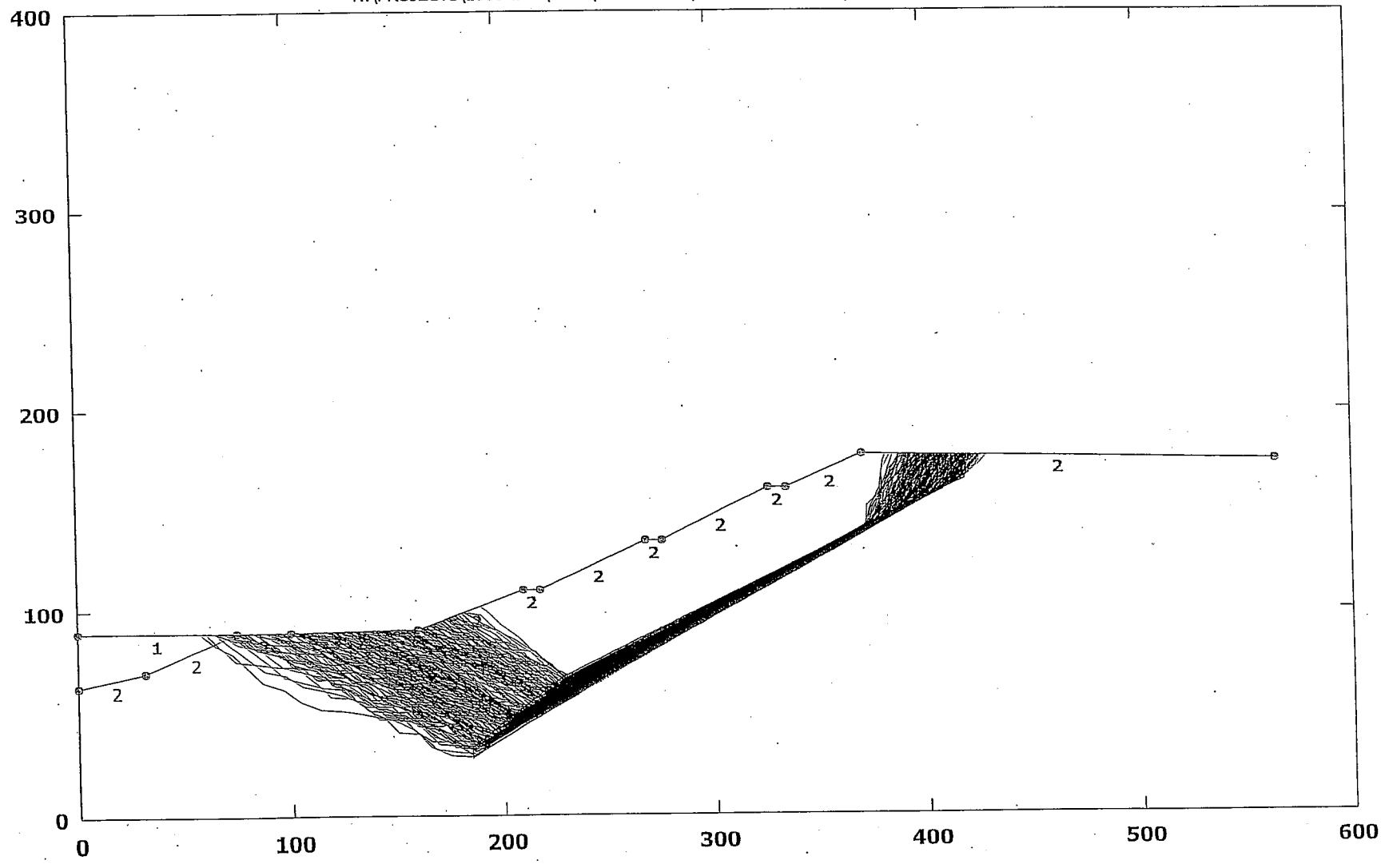
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

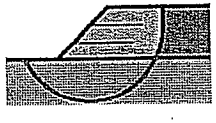
RUN NO. - 34

Amended VTT52584 A-A' Bed Pl search CS-5

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TAS11.PLT Run By: DA 3/28/03 12:09PM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/28/03
Time of Run: 12:09PM
Run By: DA
Input Data Filename: N:TAS11.IN
Output Filename: N:TAS11.OUT
Unit: ENGLISH
Plotted Output Filename: N:TAS11.PLT
PROBLEM DESCRIPTION Amended VTT52584 A-A' Bed Pl search
CS-5

BOUNDARY COORDINATES
11 Top Boundaries
13 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	89.00	75.00	89.00	1
2	75.00	89.00	100.00	89.00	2
3	100.00	89.00	160.00	90.00	2
4	160.00	90.00	210.00	110.00	2
5	210.00	110.00	218.00	110.00	2
6	218.00	110.00	268.00	135.00	2
7	268.00	135.00	276.00	135.00	2
8	276.00	135.00	326.00	160.00	2
9	326.00	160.00	334.00	160.00	2
10	334.00	160.00	370.00	177.00	2
11	370.00	177.00	564.00	174.00	2
12	.00	62.00	32.00	69.00	2
13	32.00	69.00	75.00	89.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	410.0	40.5
2	31.0	347.0	22.0
3	90.0	410.0	40.5

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.
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 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	185.00	30.00	230.00	65.00	5.00
2	370.00	140.00	418.00	165.00	2.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	151.76	89.86
2	152.04	89.75
3	162.03	89.47
4	171.45	86.10
5	180.42	81.68
6	187.61	74.74
7	196.11	69.46
8	204.78	64.48
9	214.75	63.68
10	222.81	57.77
11	412.84	163.11
12	419.91	170.18
13	425.65	176.14

*** 2.291 ***

Individual data on the 20 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	.3	1.9	.0	.0	.0	.0	.0	.0	.0
2	8.0	280.4	.0	.0	.0	.0	.0	.0	.0
3	2.0	220.4	.0	.0	.0	.0	.0	.0	.0
4	9.4	5506.5	.0	.0	.0	.0	.0	.0	.0
5	9.0	13329.8	.0	.0	.0	.0	.0	.0	.0
6	7.2	18325.2	.0	.0	.0	.0	.0	.0	.0
7	8.5	30987.7	.0	.0	.0	.0	.0	.0	.0
8	8.7	40442.7	.0	.0	.0	.0	.0	.0	.0
9	5.2	27759.7	.0	.0	.0	.0	.0	.0	.0
10	4.7	26064.6	.0	.0	.0	.0	.0	.0	.0
11	3.3	18385.4	.0	.0	.0	.0	.0	.0	.0
12	4.8	29589.6	.0	.0	.0	.0	.0	.0	.0
13	45.2	287209.4	.0	.0	.0	.0	.0	.0	.0
14	8.0	47567.4	.0	.0	.0	.0	.0	.0	.0
15	50.0	276019.8	.0	.0	.0	.0	.0	.0	.0
16	8.0	40758.9	.0	.0	.0	.0	.0	.0	.0
17	36.0	167583.3	.0	.0	.0	.0	.0	.0	.0
18	42.8	129668.1	.0	.0	.0	.0	.0	.0	.0
19	7.1	8108.5	.0	.0	.0	.0	.0	.0	.0
20	5.7	2064.4	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	151.76	89.86
2	152.04	89.75
3	162.03	89.47
4	171.45	86.10
5	180.42	81.68
6	187.61	74.74
7	196.11	69.46
8	204.78	64.48
9	214.75	63.68
10	222.81	57.77
11	412.84	163.11
12	419.91	170.18
13	425.65	176.14

*** 2.291 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	151.76	89.86
2	152.04	89.75
3	162.03	89.47
4	171.45	86.10

5	180.42	81.68
6	187.61	74.74
7	196.11	69.46
8	204.78	64.48
9	214.75	63.68
10	222.81	57.77
11	412.84	163.11
12	419.91	170.18
13	425.65	176.14

*** 2.291 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	151.76	89.86
2	152.04	89.75
3	162.03	89.47
4	171.45	86.10
5	180.42	81.68
6	187.61	74.74
7	196.11	69.46
8	204.78	64.48
9	214.75	63.68
10	222.81	57.77
11	412.84	163.11
12	419.91	170.18
13	425.65	176.14

*** 2.291 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	160.62	90.25
2	163.02	87.86
3	172.77	85.61
4	180.27	79.00
5	189.48	75.12
6	198.20	70.21
7	207.82	67.49
8	216.14	61.93
9	225.78	59.28
10	376.07	142.76
11	382.53	150.39
12	389.52	157.53
13	389.67	167.53
14	395.59	175.59
15	396.34	176.59

*** 2.305 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	160.62	90.25
2	163.02	87.86
3	172.77	85.61
4	180.27	79.00
5	189.48	75.12
6	198.20	70.21
7	207.82	67.49
8	216.14	61.93
9	225.78	59.28
10	376.07	142.76
11	382.53	150.39
12	389.52	157.53
13	389.67	167.53
14	395.59	175.59
15	396.34	176.59

*** 2.305 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	160.62	90.25
2	163.02	87.86
3	172.77	85.61
4	180.27	79.00
5	189.48	75.12
6	198.20	70.21
7	207.82	67.49
8	216.14	61.93
9	225.78	59.28
10	376.07	142.76
11	382.53	150.39
12	389.52	157.53
13	389.67	167.53
14	395.59	175.59
15	396.34	176.59

*** 2.305 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	160.62	90.25
2	163.02	87.86
3	172.77	85.61
4	180.27	79.00
5	189.48	75.12
6	198.20	70.21
7	207.82	67.49
8	216.14	61.93
9	225.78	59.28
10	376.07	142.76
11	382.53	150.39
12	389.52	157.53
13	389.67	167.53
14	395.59	175.59
15	396.34	176.59

*** 2.305 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	130.49	89.51
2	130.83	89.16
3	138.42	82.65
4	148.01	79.83
5	156.90	75.24
6	165.27	69.77
7	173.19	63.67
8	183.13	62.58
9	191.70	57.42
10	200.34	52.38
11	209.69	48.85
12	386.66	149.14
13	393.20	156.70
14	400.22	163.82
15	407.07	171.11
16	408.71	176.40

*** 2.346 ***

Failure Surface Specified By 16 Coordinate Points

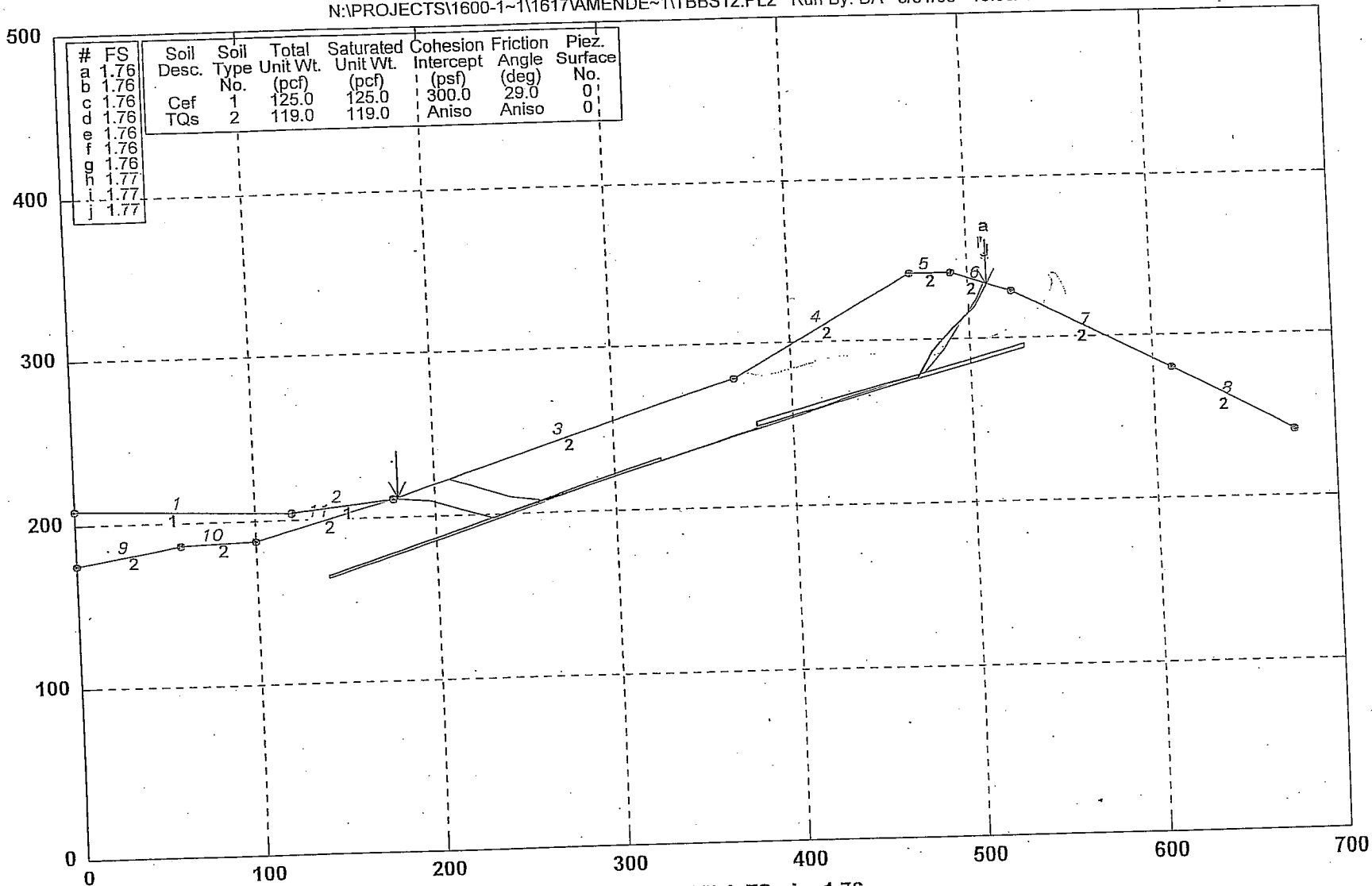
Point No.	X-Surf (ft)	Y-Surf (ft)
1	130.49	89.51
2	130.83	89.16
3	138.42	82.65
4	148.01	79.83
5	156.90	75.24
6	165.27	69.77

7	173.19	63.67
8	183.13	62.58
9	191.70	57.42
10	200.34	52.38
11	209.69	48.85
12	386.66	149.14
13	393.20	156.70
14	400.22	163.82
15	407.07	171.11
16	408.71	176.40

*** 2.346 ***

Amended VTT52584 B-B' Bed plane search daylight nat. slope

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TBBS12.PL2 Run By: DA 3/31/03 10:03AM



#	FS
a	1.76
b	1.76
c	1.76
d	1.76
e	1.76
f	1.76
g	1.76
h	1.77
i	1.77
j	1.77

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0

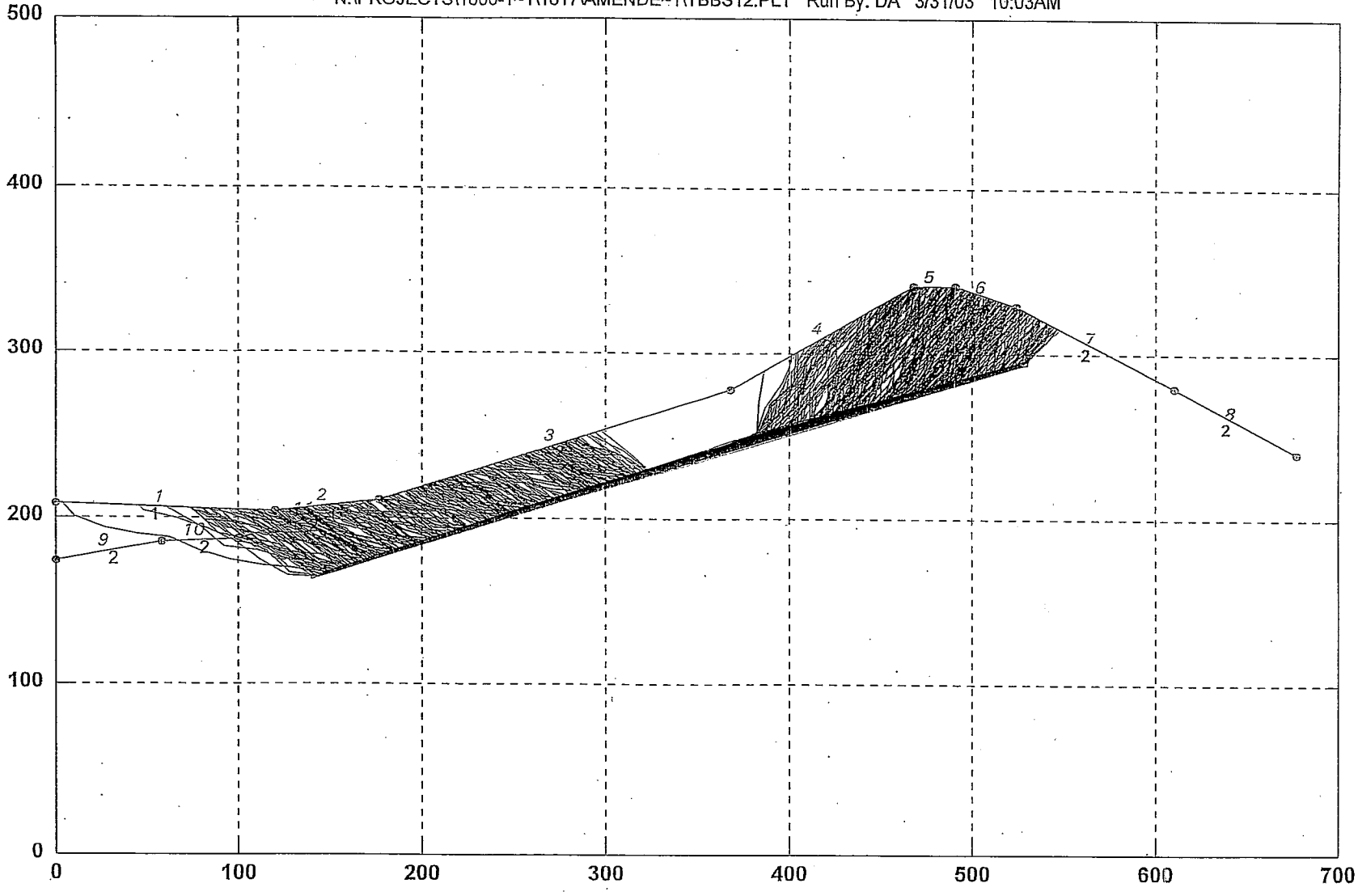
PCSTABL5M/si FSmin=1.76

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

RUN NO. - 35

Amended VTT52584 B-B' Bed plane search daylight nat. slope

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TBBS12.PLT Run By: DA 3/31/03 10:03AM



STED

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 10:03AM
Run By: DA
Input Data Filename: N:TBBS12.IN
Output Filename: N:TBBS12.OUT
Unit: ENGLISH
Plotted Output Filename: N:TBBS12.PLT
PROBLEM DESCRIPTION Amended VTT52584 B-B' Bed plane search
daylight nat. slope

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	.00	208.00	120.00	204.00	1
2	120.00	204.00	177.00	211.00	1
3	177.00	211.00	368.00	278.00	2
4	368.00	278.00	468.00	340.00	2
5	468.00	340.00	491.00	340.00	2
6	491.00	340.00	524.00	328.00	2
7	524.00	328.00	610.00	280.00	2
8	610.00	280.00	677.00	240.00	2
9	.00	175.00	58.00	186.00	2
10	58.00	186.00	100.00	188.00	2
11	100.00	188.00	177.00	211.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	16.0	410.0	40.5
2	19.0	347.0	22.0
3	90.0	410.0	40.5

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.
2500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 18.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	140.00	165.00	326.00	230.00	2.00
2	380.00	250.00	530.00	295.00	2.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 10 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	179.00	211.70
2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88
7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.758 ***

Individual data on the 12 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	.8	50.5	.0	.0	.0	.0	.0	.0	.0
2	17.9	10714.8	.0	.0	.0	.0	.0	.0	.0
3	16.9	30299.8	.0	.0	.0	.0	.0	.0	.0
4	17.3	55071.0	.0	.0	.0	.0	.0	.0	.0
5	136.1	544459.4	.0	.0	.0	.0	.0	.0	.0
6	100.0	589334.7	.0	.0	.0	.0	.0	.0	.0
7	2.7	20711.5	.0	.0	.0	.0	.0	.0	.0
8	8.6	56839.8	.0	.0	.0	.0	.0	.0	.0
9	11.6	56144.7	.0	.0	.0	.0	.0	.0	.0
10	.2	691.1	.0	.0	.0	.0	.0	.0	.0
11	12.5	37219.2	.0	.0	.0	.0	.0	.0	.0
12	6.7	6473.6	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.00	211.70
2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88
7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.758 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.00	211.70
2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88
7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.758 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.00	211.70
2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88

7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.758 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.00	211.70
2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88
7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.758 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.00	211.70
2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88
7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.758 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.00	211.70
2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88
7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.758 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	207.77	221.80
2	208.18	221.57
3	225.17	215.61
4	242.34	210.21
5	260.05	207.01
6	473.52	278.89
7	484.99	292.76
8	493.92	308.39
9	503.96	323.33
10	508.32	333.70

*** 1.775 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	207.77	221.80
2	208.18	221.57

3	225.17	215.61
4	242.34	210.21
5	260.05	207.01
6	473.52	278.89
7	484.99	292.76
8	493.92	308.39
9	503.96	323.33
10	508.32	333.70

*** 1.775 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	207.77	221.80
2	208.18	221.57
3	225.17	215.61
4	242.34	210.21
5	260.05	207.01
6	473.52	278.89
7	484.99	292.76
8	493.92	308.39
9	503.96	323.33
10	508.32	333.70

*** 1.775 ***

Amended VTT52584 B-B' Bed plane search daylight nat. slope,

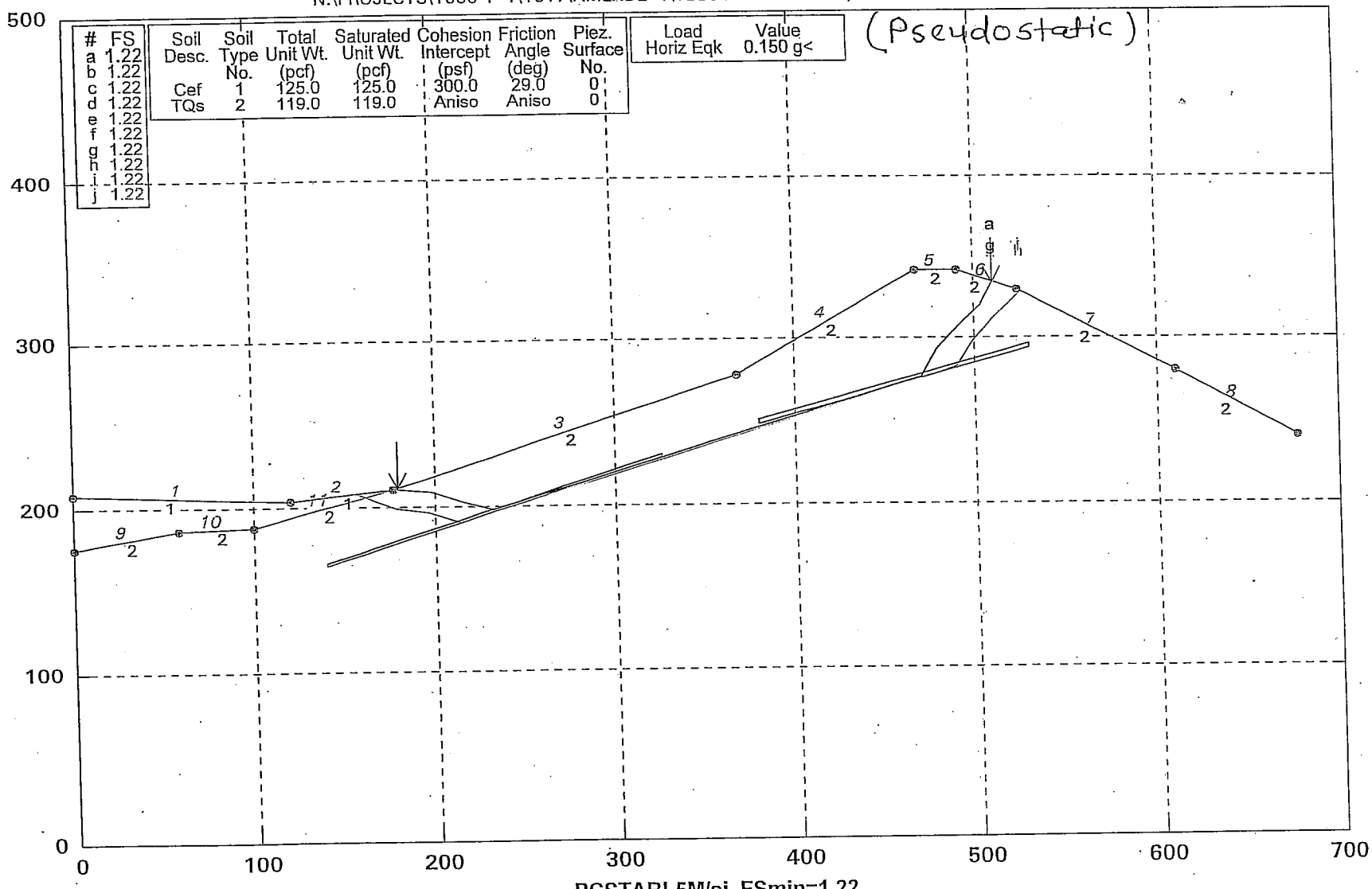
N:\PROJECTS\1600-1~1\1617\AMENDE~1\TBBS13.PL2 Run By: DA 3/31/03 10:06AM

(Pseudostatic)

#	FS
a	1.22
b	1.22
c	1.22
d	1.22
e	1.22
f	1.22
g	1.22
h	1.22
i	1.22
j	1.22

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0

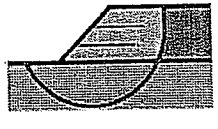
Load	Value
Horiz Eqk	0.150 g<



PCSTABL5M/si FSmin=1.22

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

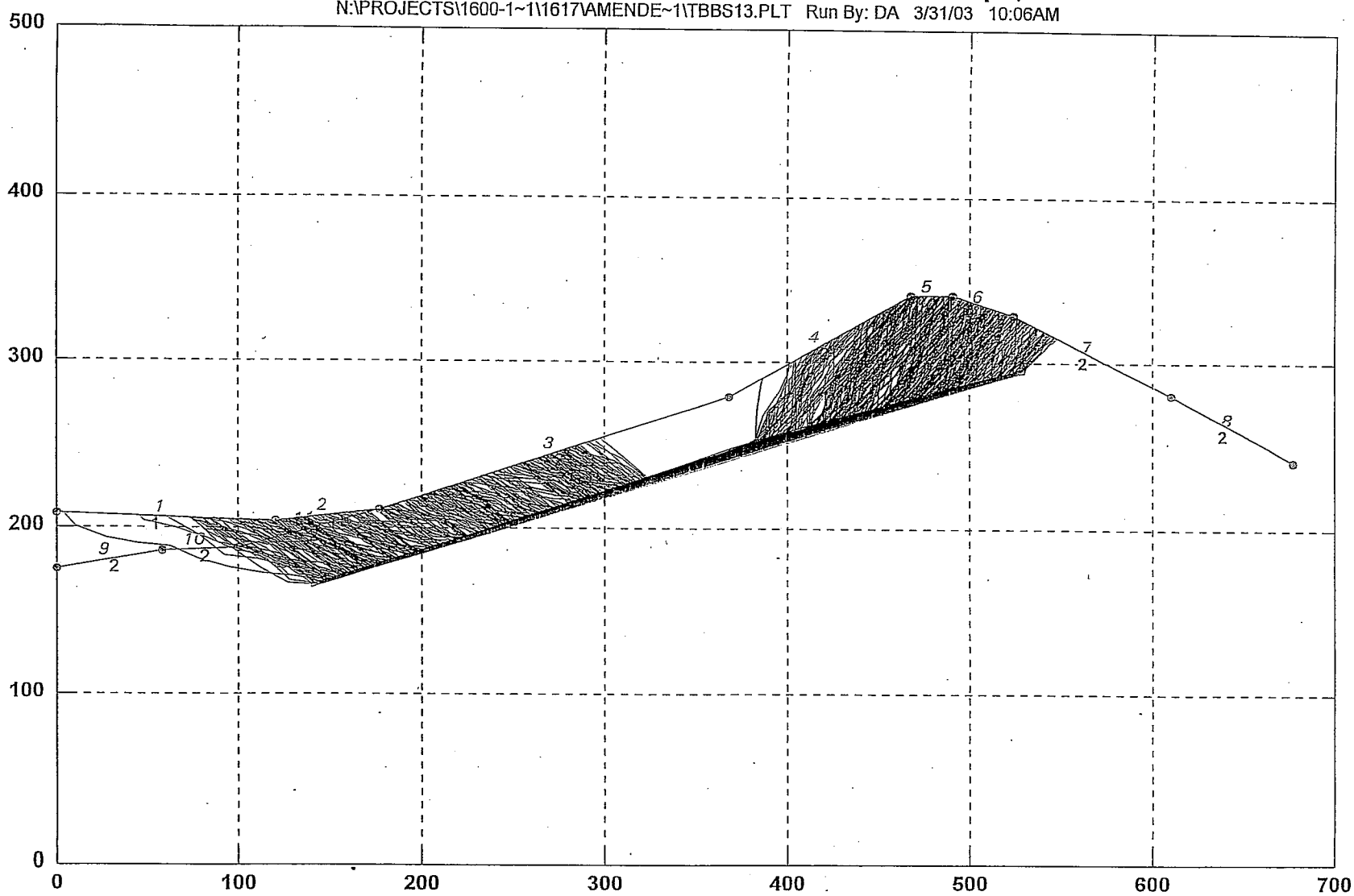
STED



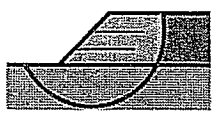
RUN NO. - 36

Amended VTT52584 B-B' Bed plane search daylight nat. slope, Psuedostatic

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TBBS13.PLT Run By: DA 3/31/03 10:06AM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 10:06AM
Run By: DA
Input Data Filename: N:TBBS13.IN
Output Filename: N:TBBS13.OUT
Unit: ENGLISH
Plotted Output Filename: N:TBBS13.PLT
PROBLEM DESCRIPTION Amended VTT52584 B-B' Bed plane search
daylight nat. slope, Psuedostatic

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	.00	208.00	120.00	204.00	1
2	120.00	204.00	177.00	211.00	1
3	177.00	211.00	368.00	278.00	2
4	368.00	278.00	468.00	340.00	2
5	468.00	340.00	491.00	340.00	2
6	491.00	340.00	524.00	328.00	2
7	524.00	328.00	610.00	280.00	2
8	610.00	280.00	677.00	240.00	2
9	.00	175.00	58.00	186.00	2
10	58.00	186.00	100.00	188.00	2
11	100.00	188.00	177.00	211.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	16.0	410.0	40.5
2	19.0	347.0	22.0
3	90.0	410.0	40.5

A Horizontal Earthquake Loading Coefficient
Of .150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of .000 Has Been Assigned
Cavitation Pressure = .0 (psf)
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.
2500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 18.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	140.00	165.00	326.00	230.00	2.00
2	380.00	250.00	530.00	295.00	2.00

Following Are Displayed The Ten Most Critical Of The Trial

Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.00	211.70
2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88
7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.223 ***

Individual data on the 12 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	.8	50.5	.0	.0	.0	.0	7.6	.0	.0
2	17.9	10714.8	.0	.0	.0	.0	1607.2	.0	.0
3	16.9	30299.8	.0	.0	.0	.0	4545.0	.0	.0
4	17.3	55071.0	.0	.0	.0	.0	8260.6	.0	.0
5	136.1	544459.4	.0	.0	.0	.0	81668.9	.0	.0
6	100.0	589334.7	.0	.0	.0	.0	88400.2	.0	.0
7	2.7	20711.5	.0	.0	.0	.0	3106.7	.0	.0
8	8.6	56839.8	.0	.0	.0	.0	8526.0	.0	.0
9	11.6	56144.7	.0	.0	.0	.0	8421.7	.0	.0
10	.2	691.1	.0	.0	.0	.0	103.7	.0	.0
11	12.5	37219.2	.0	.0	.0	.0	5582.9	.0	.0
12	6.7	6473.6	.0	.0	.0	.0	971.0	.0	.0

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.00	211.70
2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88
7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.223 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.00	211.70
2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88
7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.223 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.00	211.70

2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88
7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.223 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.00	211.70
2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88
7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.223 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.00	211.70
2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88
7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.223 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.00	211.70
2	179.80	210.93
3	197.73	209.28
4	214.58	202.95
5	231.90	198.05
6	470.74	276.88
7	479.39	292.67
8	491.17	306.27
9	503.72	319.18
10	510.44	332.93

*** 1.223 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	156.41	208.47
2	162.09	205.70
3	178.81	199.03
4	196.63	196.49
5	213.69	190.75
6	489.74	282.86
7	499.01	298.30
8	510.84	311.86
9	523.57	324.59
10	525.83	326.98

*** 1.224 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	156.41	208.47
2	162.09	205.70
3	178.81	199.03
4	196.63	196.49
5	213.69	190.75
6	489.74	282.86
7	499.01	298.30
8	510.84	311.86
9	523.57	324.59
10	525.83	326.98

*** 1.224 ***

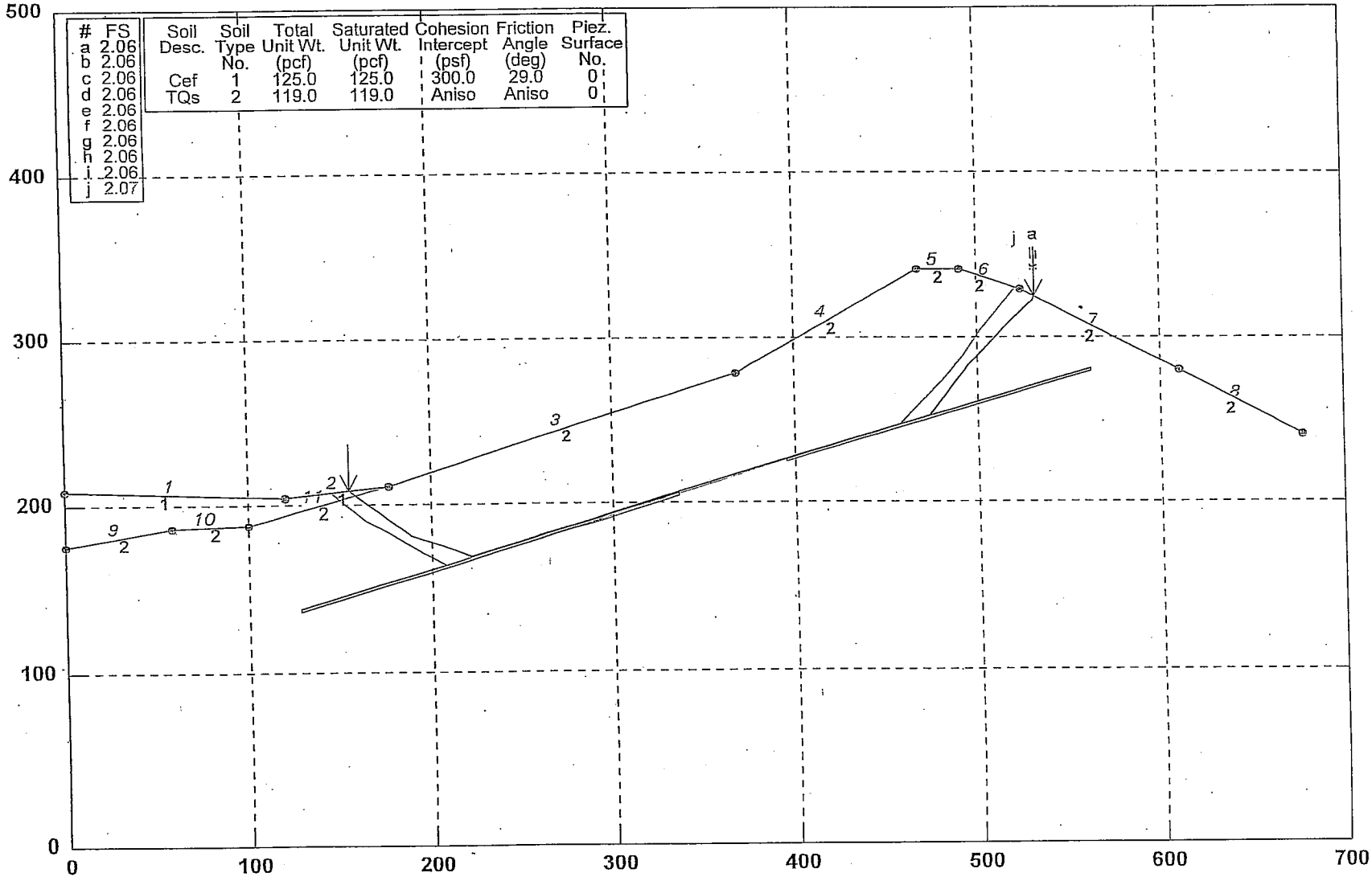
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	156.41	208.47
2	162.09	205.70
3	178.81	199.03
4	196.63	196.49
5	213.69	190.75
6	489.74	282.86
7	499.01	298.30
8	510.84	311.86
9	523.57	324.59
10	525.83	326.98

*** 1.224 ***

Amended VTT52584 B-B' Bed plane search daylight nat. slope, Static

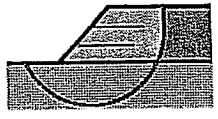
N:\PROJECTS\1600-1~1\1617\AMENDE~1\TBBS14.PL2 Run By: DA 3/31/03 10:10AM



PCSTABL5M/si FSmin=2.06

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

STED



RUN NO. - 37

Amended VTT52584 B-B' Bed plane search daylight nat. slope, Static

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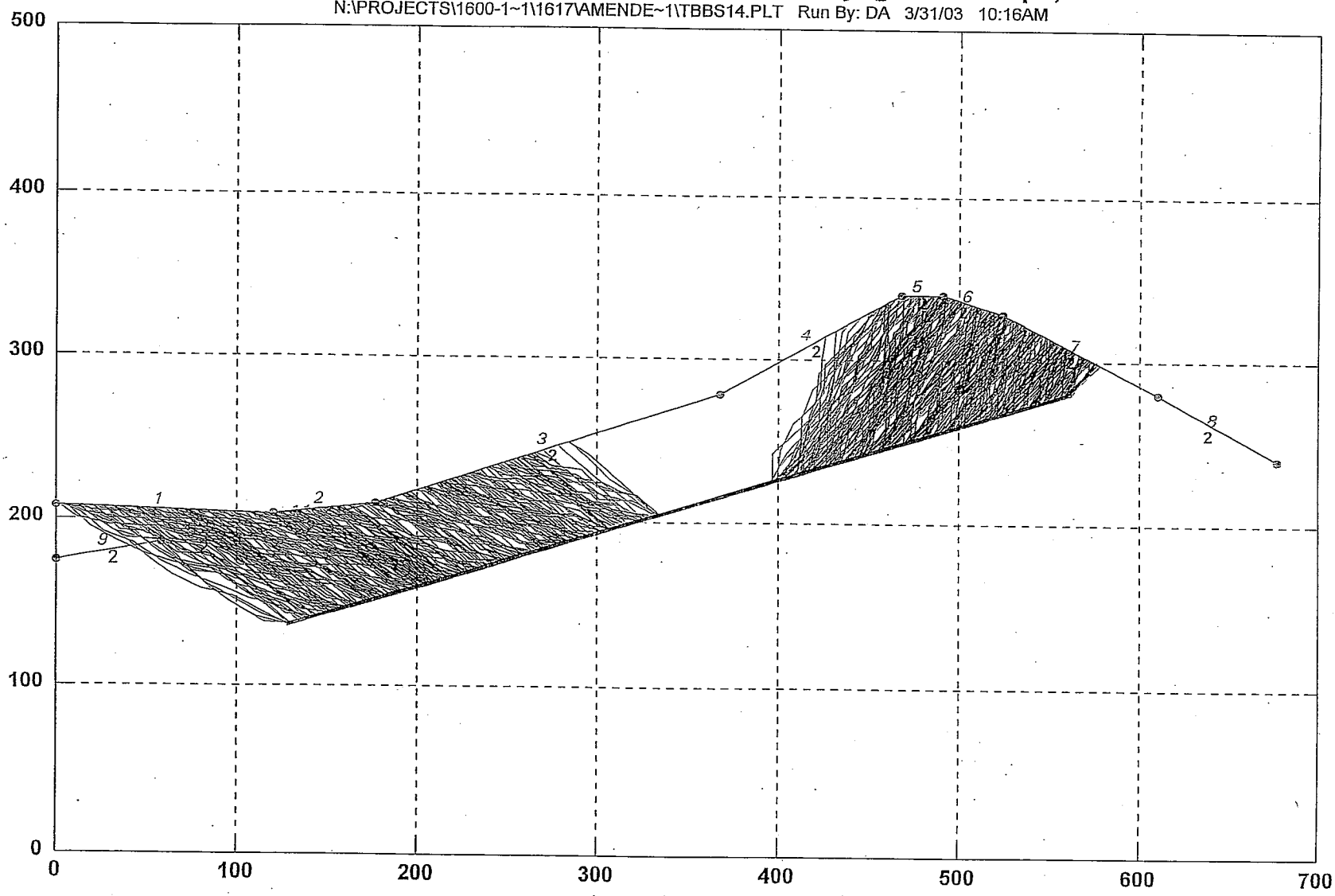

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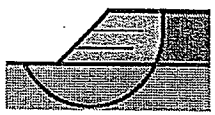

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 10:10AM
Run By: DA
Input Data Filename: N:TBBS14.IN
Output Filename: N:TBBS14.OUT
Unit: ENGLISH
Plotted Output Filename: N:TBBS14.PLT
PROBLEM DESCRIPTION Amended VTT52584 B-B' Bed plane search
daylight nat. slope, Static

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	.00	208.00	120.00	204.00	1
2	120.00	204.00	177.00	211.00	1
3	177.00	211.00	368.00	278.00	2
4	368.00	278.00	468.00	340.00	2
5	468.00	340.00	491.00	340.00	2
6	491.00	340.00	524.00	328.00	2
7	524.00	328.00	610.00	280.00	2
8	610.00	280.00	677.00	240.00	2
9	.00	175.00	58.00	186.00	2
10	58.00	186.00	100.00	188.00	2
11	100.00	188.00	177.00	211.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	16.0	410.0	40.5
2	19.0	347.0	22.0
3	90.0	410.0	40.5

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.
2500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 18.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	128.00	136.00	336.00	205.00	2.00
2	395.00	225.00	562.00	280.00	2.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 13 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	154.61	208.25
2	160.17	203.74
3	174.55	192.91
4	188.35	181.36
5	205.24	175.12
6	221.78	168.03
7	474.13	251.80
8	484.06	266.81
9	494.11	281.74
10	505.67	295.54
11	517.98	308.67
12	530.71	321.40
13	531.69	323.71

*** 2.058 ***

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	3.5	734.7	.0	.0	.0	.0	.0	.0	.0
2	2.0	1055.8	.0	.0	.0	.0	.0	.0	.0
3	14.4	19808.6	.0	.0	.0	.0	.0	.0	.0
4	2.5	5540.2	.0	.0	.0	.0	.0	.0	.0
5	11.4	36312.1	.0	.0	.0	.0	.0	.0	.0
6	16.9	79766.5	.0	.0	.0	.0	.0	.0	.0
7	16.5	102826.4	.0	.0	.0	.0	.0	.0	.0
8	146.2	********	.0	.0	.0	.0	.0	.0	.0
9	100.0	902426.4	.0	.0	.0	.0	.0	.0	.0
10	6.1	65054.1	.0	.0	.0	.0	.0	.0	.0
11	9.9	95372.5	.0	.0	.0	.0	.0	.0	.0
12	6.9	56198.9	.0	.0	.0	.0	.0	.0	.0
13	3.1	22236.8	.0	.0	.0	.0	.0	.0	.0
14	11.6	66178.8	.0	.0	.0	.0	.0	.0	.0
15	12.3	44434.2	.0	.0	.0	.0	.0	.0	.0
16	6.0	12469.7	.0	.0	.0	.0	.0	.0	.0
17	6.7	6457.8	.0	.0	.0	.0	.0	.0	.0
18	1.0	165.8	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	154.61	208.25
2	160.17	203.74
3	174.55	192.91
4	188.35	181.36
5	205.24	175.12
6	221.78	168.03
7	474.13	251.80
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10	505.67	295.54
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13	531.69	323.71

*** 2.058 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	154.61	208.25
2	160.17	203.74
3	174.55	192.91
4	188.35	181.36
5	205.24	175.12
6	221.78	168.03
7	474.13	251.80
8	484.06	266.81

9	494.11	281.74
10	505.67	295.54
11	517.98	308.67
12	530.71	321.40
13	531.69	323.71

*** 2.058 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	154.61	208.25
2	160.17	203.74
3	174.55	192.91
4	188.35	181.36
5	205.24	175.12
6	221.78	168.03
7	474.13	251.80
8	484.06	266.81
9	494.11	281.74
10	505.67	295.54
11	517.98	308.67
12	530.71	321.40
13	531.69	323.71

*** 2.058 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	154.61	208.25
2	160.17	203.74
3	174.55	192.91
4	188.35	181.36
5	205.24	175.12
6	221.78	168.03
7	474.13	251.80
8	484.06	266.81
9	494.11	281.74
10	505.67	295.54
11	517.98	308.67
12	530.71	321.40
13	531.69	323.71

*** 2.058 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	154.61	208.25
2	160.17	203.74
3	174.55	192.91
4	188.35	181.36
5	205.24	175.12
6	221.78	168.03
7	474.13	251.80
8	484.06	266.81
9	494.11	281.74
10	505.67	295.54
11	517.98	308.67
12	530.71	321.40
13	531.69	323.71

*** 2.058 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	154.61	208.25
2	160.17	203.74
3	174.55	192.91
4	188.35	181.36
5	205.24	175.12
6	221.78	168.03

7	474.13	251.80
8	484.06	266.81
9	494.11	281.74
10	505.67	295.54
11	517.98	308.67
12	530.71	321.40
13	531.69	323.71

*** 2.058 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	154.61	208.25
2	160.17	203.74
3	174.55	192.91
4	188.35	181.36
5	205.24	175.12
6	221.78	168.03
7	474.13	251.80
8	484.06	266.81
9	494.11	281.74
10	505.67	295.54
11	517.98	308.67
12	530.71	321.40
13	531.69	323.71

*** 2.058 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	154.61	208.25
2	160.17	203.74
3	174.55	192.91
4	188.35	181.36
5	205.24	175.12
6	221.78	168.03
7	474.13	251.80
8	484.06	266.81
9	494.11	281.74
10	505.67	295.54
11	517.98	308.67
12	530.71	321.40
13	531.69	323.71

*** 2.058 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.05	207.08
2	150.13	202.07
3	164.01	190.61
4	179.02	180.68
5	194.24	171.07
6	210.25	162.84
7	457.37	245.87
8	468.95	259.65
9	481.05	272.98
10	491.58	287.58
11	500.97	302.94
12	511.73	317.36
13	521.33	328.97

*** 2.066 ***

Amended VTT52584 B-B' Bed plane search daylight nat. slope

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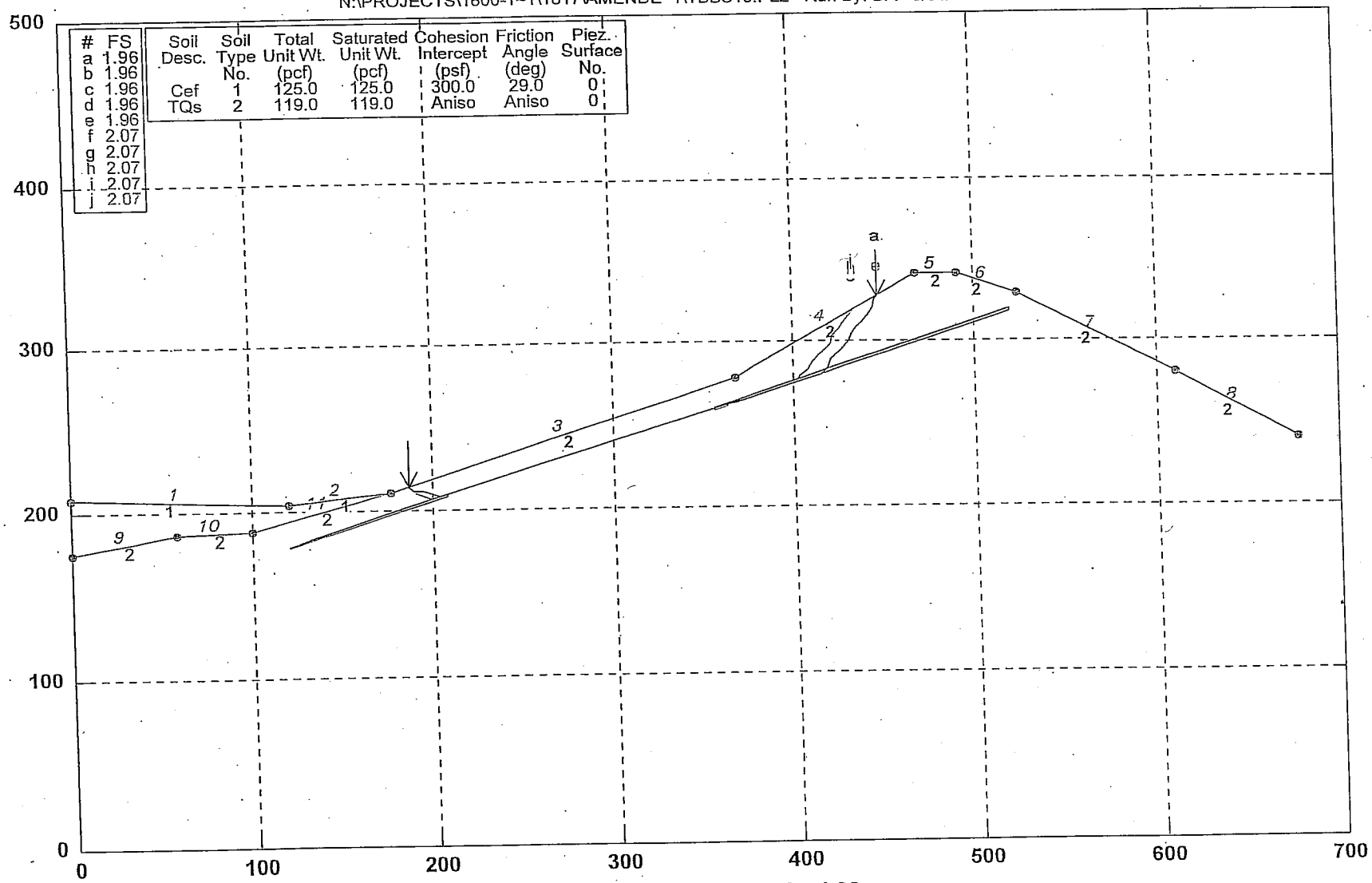


#	FS
a	1.96
b	1.96
c	1.96
d	1.96
e	1.96
f	2.07
g	2.07
h	2.07
i	2.07
j	2.07

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0

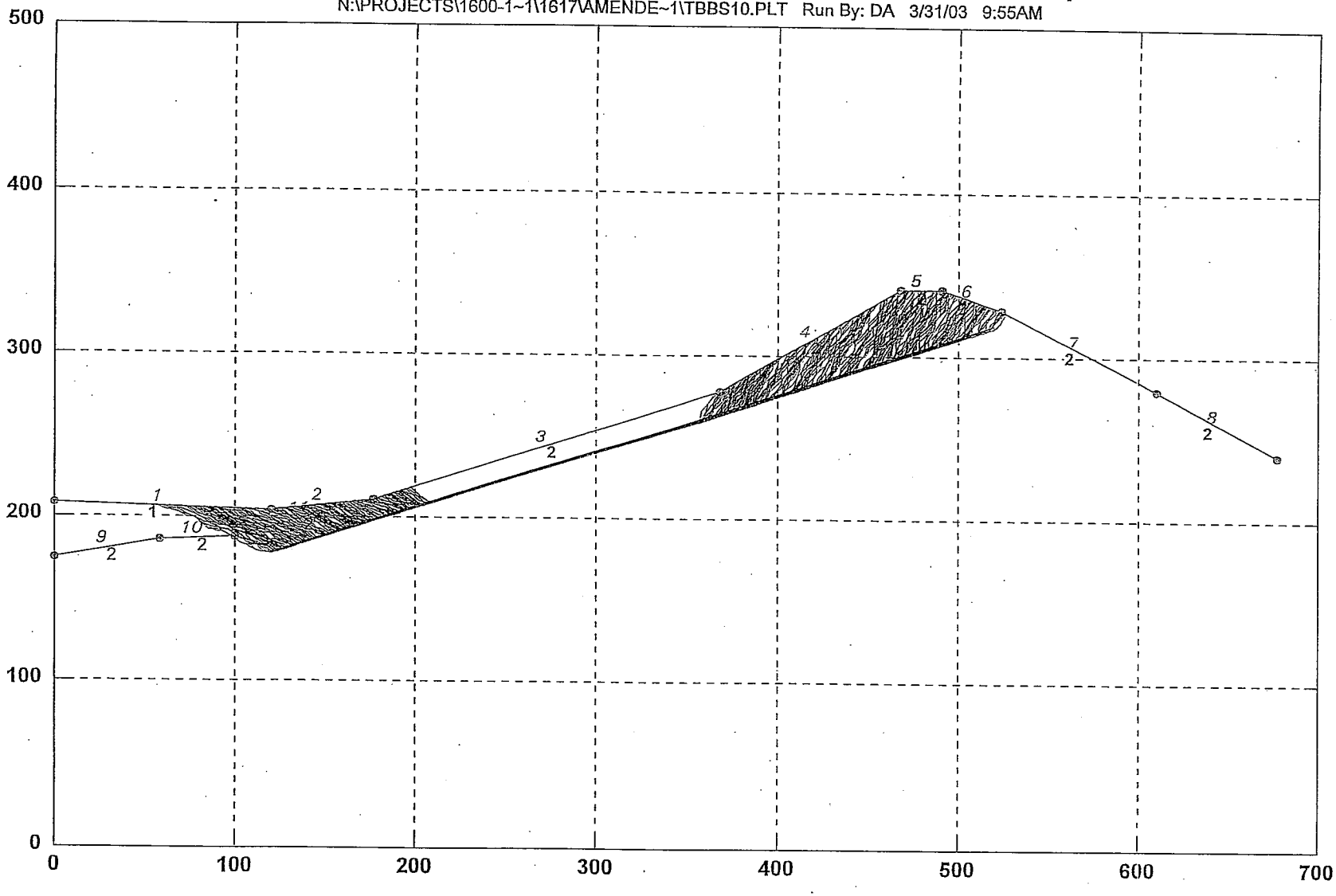
PCSTABL5M/si FSmin=1.96

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

RUN NO. 1 38

Amended VTT52584 B-B' Bed plane search daylight nat. slope

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TBBS10.PLT Run By: DA 3/31/03 9:55AM



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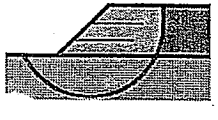

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 9:55AM
Run By: DA
Input Data Filename: N:TBBS10.IN
Output Filename: N:TBBS10.OUT
Unit: ENGLISH
Plotted Output Filename: N:TBBS10.PLT
PROBLEM DESCRIPTION Amended VTT52584 B-B' Bed plane search
daylight nat. slope

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	.00	208.00	120.00	204.00	1
2	120.00	204.00	177.00	211.00	1
3	177.00	211.00	368.00	278.00	2
4	368.00	278.00	468.00	340.00	2
5	468.00	340.00	491.00	340.00	2
6	491.00	340.00	524.00	328.00	2
7	524.00	328.00	610.00	280.00	2
8	610.00	280.00	677.00	240.00	2
9	.00	175.00	58.00	186.00	2
10	58.00	186.00	100.00	188.00	2
11	100.00	188.00	177.00	211.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	16.0	410.0	40.5
2	19.0	347.0	22.0
3	90.0	410.0	40.5

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.
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 5.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	120.00	178.00	208.00	209.00	1.00
2	356.00	260.00	520.00	318.00	2.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 18 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	186.90	214.47
2	189.71	211.94
3	194.68	211.39
4	199.34	209.58
5	204.11	208.06
6	415.29	280.10
7	418.61	283.84
8	420.26	288.56
9	423.79	292.10
10	427.31	295.64
11	430.74	299.28
12	432.31	304.03
13	435.24	308.08
14	438.63	311.75
15	441.94	315.50
16	444.65	319.70
17	445.37	324.65
18	446.88	326.90

*** 1.955 ***

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	2.8	588.7	.0	.0	.0	.0	.0	.0	.0
2	5.0	2758.6	.0	.0	.0	.0	.0	.0	.0
3	4.7	4178.9	.0	.0	.0	.0	.0	.0	.0
4	4.8	6152.8	.0	.0	.0	.0	.0	.0	.0
5	163.9	258254.2	.0	.0	.0	.0	.0	.0	.0
6	47.3	116075.0	.0	.0	.0	.0	.0	.0	.0
7	3.3	10425.5	.0	.0	.0	.0	.0	.0	.0
8	1.6	4642.5	.0	.0	.0	.0	.0	.0	.0
9	3.5	8894.7	.0	.0	.0	.0	.0	.0	.0
10	3.5	8309.1	.0	.0	.0	.0	.0	.0	.0
11	3.4	7506.7	.0	.0	.0	.0	.0	.0	.0
12	1.6	2927.0	.0	.0	.0	.0	.0	.0	.0
13	2.9	4446.6	.0	.0	.0	.0	.0	.0	.0
14	3.4	4369.8	.0	.0	.0	.0	.0	.0	.0
15	3.3	3623.9	.0	.0	.0	.0	.0	.0	.0
16	2.7	2285.5	.0	.0	.0	.0	.0	.0	.0
17	.7	302.8	.0	.0	.0	.0	.0	.0	.0
18	1.5	118.7	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.90	214.47
2	189.71	211.94
3	194.68	211.39
4	199.34	209.58
5	204.11	208.06
6	415.29	280.10
7	418.61	283.84
8	420.26	288.56
9	423.79	292.10
10	427.31	295.64
11	430.74	299.28
12	432.31	304.03
13	435.24	308.08
14	438.63	311.75
15	441.94	315.50
16	444.65	319.70
17	445.37	324.65
18	446.88	326.90

*** 1.955 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.90	214.47
2	189.71	211.94
3	194.68	211.39
4	199.34	209.58
5	204.11	208.06
6	415.29	280.10
7	418.61	283.84
8	420.26	288.56
9	423.79	292.10
10	427.31	295.64
11	430.74	299.28
12	432.31	304.03
13	435.24	308.08
14	438.63	311.75
15	441.94	315.50
16	444.65	319.70
17	445.37	324.65
18	446.88	326.90

*** 1.955 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.90	214.47
2	189.71	211.94
3	194.68	211.39
4	199.34	209.58
5	204.11	208.06
6	415.29	280.10
7	418.61	283.84
8	420.26	288.56
9	423.79	292.10
10	427.31	295.64
11	430.74	299.28
12	432.31	304.03
13	435.24	308.08
14	438.63	311.75
15	441.94	315.50
16	444.65	319.70
17	445.37	324.65
18	446.88	326.90

*** 1.955 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.90	214.47
2	189.71	211.94
3	194.68	211.39
4	199.34	209.58
5	204.11	208.06
6	415.29	280.10
7	418.61	283.84
8	420.26	288.56
9	423.79	292.10
10	427.31	295.64
11	430.74	299.28
12	432.31	304.03
13	435.24	308.08
14	438.63	311.75
15	441.94	315.50
16	444.65	319.70
17	445.37	324.65
18	446.88	326.90

*** 1.955 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.49	214.33
2	187.43	213.59
3	190.99	210.07
4	195.67	208.32
5	200.13	206.06
6	401.15	275.22
7	404.02	279.31
8	407.55	282.86
9	410.65	286.78
10	413.56	290.84
11	417.02	294.46
12	420.55	298.00
13	421.20	302.96
14	424.72	306.51
15	427.60	310.60
16	430.46	314.69
17	433.29	318.48

*** 2.068 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.49	214.33
2	187.43	213.59
3	190.99	210.07
4	195.67	208.32
5	200.13	206.06
6	401.15	275.22
7	404.02	279.31
8	407.55	282.86
9	410.65	286.78
10	413.56	290.84
11	417.02	294.46
12	420.55	298.00
13	421.20	302.96
14	424.72	306.51
15	427.60	310.60
16	430.46	314.69
17	433.29	318.48

*** 2.068 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.49	214.33
2	187.43	213.59
3	190.99	210.07
4	195.67	208.32
5	200.13	206.06
6	401.15	275.22
7	404.02	279.31
8	407.55	282.86
9	410.65	286.78
10	413.56	290.84
11	417.02	294.46
12	420.55	298.00
13	421.20	302.96
14	424.72	306.51
15	427.60	310.60
16	430.46	314.69
17	433.29	318.48

*** 2.068 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.49	214.33

2	187.43	213.59
3	190.99	210.07
4	195.67	208.32
5	200.13	206.06
6	401.15	275.22
7	404.02	279.31
8	407.55	282.86
9	410.65	286.78
10	413.56	290.84
11	417.02	294.46
12	420.55	298.00
13	421.20	302.96
14	424.72	306.51
15	427.60	310.60
16	430.46	314.69
17	433.29	318.48

*** 2.068 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.49	214.33
2	187.43	213.59
3	190.99	210.07
4	195.67	208.32
5	200.13	206.06
6	401.15	275.22
7	404.02	279.31
8	407.55	282.86
9	410.65	286.78
10	413.56	290.84
11	417.02	294.46
12	420.55	298.00
13	421.20	302.96
14	424.72	306.51
15	427.60	310.60
16	430.46	314.69
17	433.29	318.48

*** 2.068 ***

Amended VTT52584 B-B' Bed plane search daylight nat. slope

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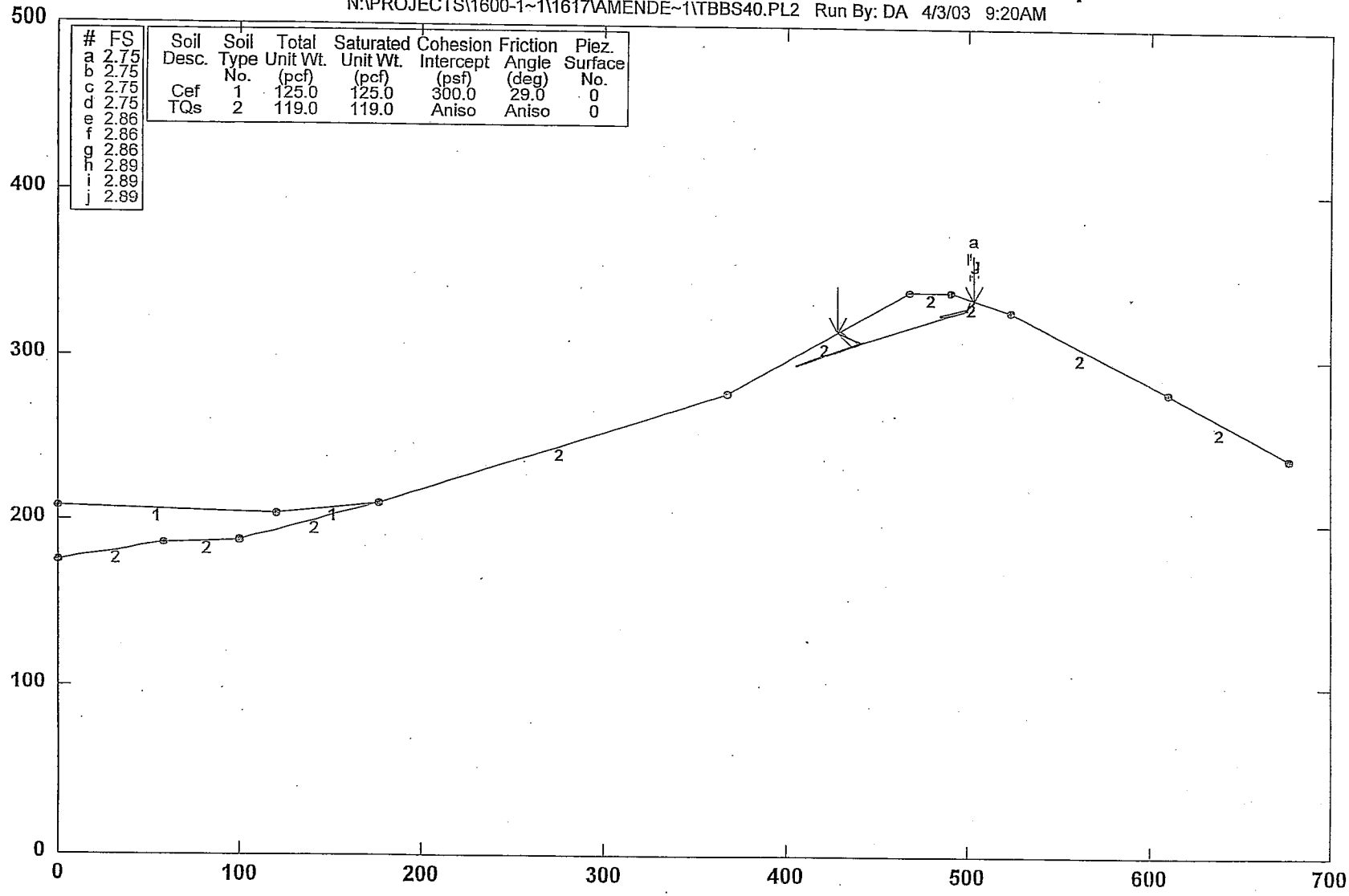

#	FS
a	2.75
b	2.75
c	2.75
d	2.75
e	2.86
f	2.86
g	2.86
h	2.89
i	2.89
j	2.89

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0

PCSTABL5M/si FSmin=2.75

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

STED

RUN NO. 139

Amended VTT52584 B-B' Bed plane search daylight nat. slope

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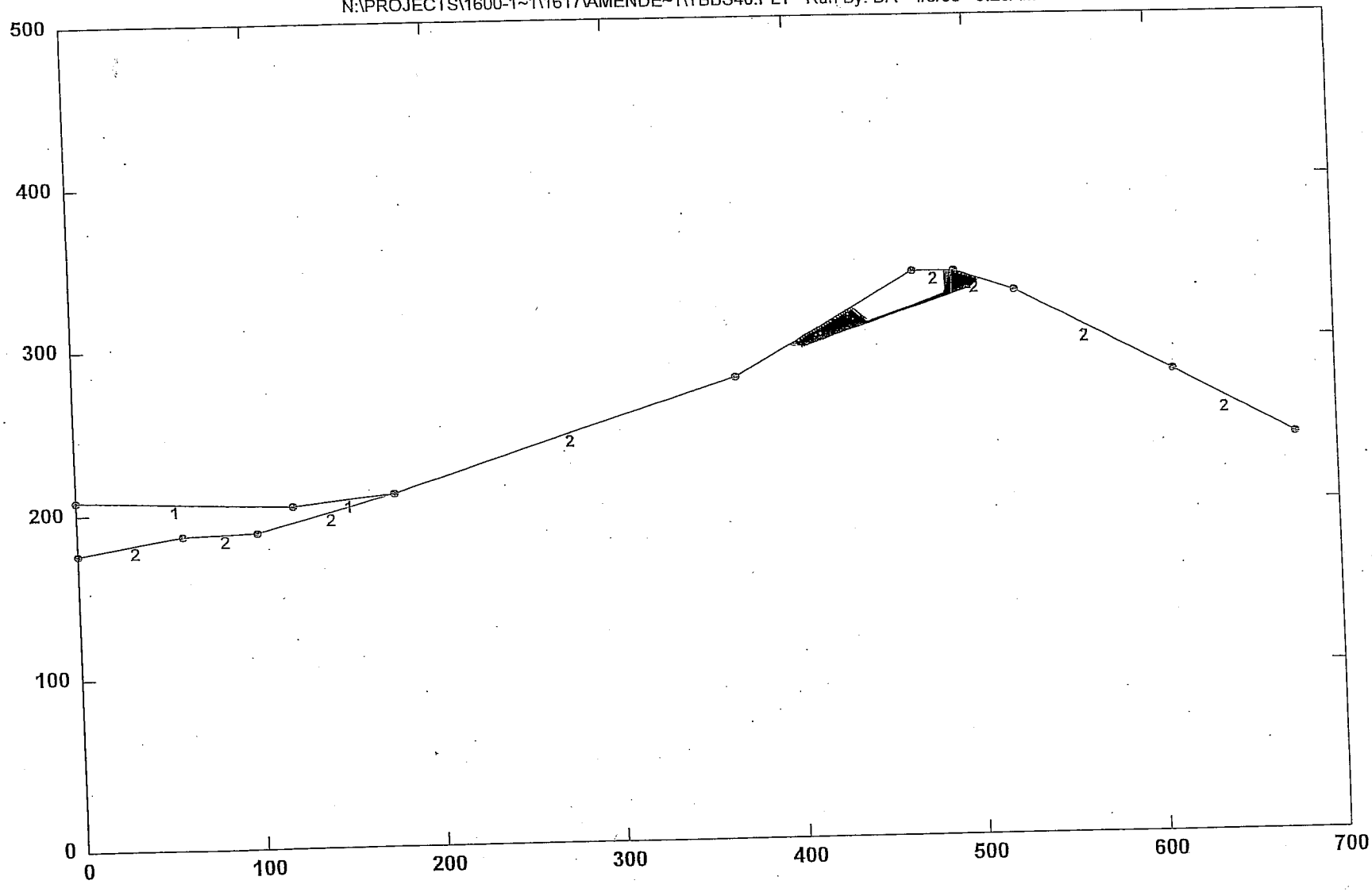
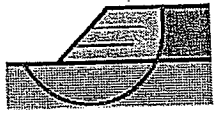


STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/3/03
Time of Run: 9:20AM
Run By: DA
Input Data Filename: N:TBBS40.IN
Output Filename: N:TBBS40.OUT
Unit: ENGLISH
Plotted Output Filename: N:TBBS40.PLT
PROBLEM DESCRIPTION Amended VTT52584 B-B' Bed plane search daylight nat. slope

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	.00	208.00	120.00	204.00	1
2	120.00	204.00	177.00	211.00	1
3	177.00	211.00	368.00	278.00	2
4	368.00	278.00	468.00	340.00	2
5	468.00	340.00	491.00	340.00	2
6	491.00	340.00	524.00	328.00	2
7	524.00	328.00	610.00	280.00	2
8	610.00	280.00	677.00	240.00	2
9	.00	175.00	58.00	186.00	2
10	58.00	186.00	100.00	188.00	2
11	100.00	188.00	177.00	211.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	16.0	410.0	40.5
2	19.0	347.0	22.0
3	90.0	410.0	40.5

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.
2500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 18.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	405.00	296.00	443.00	310.00	1.00
2	485.00	326.00	500.00	330.00	1.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 4 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	428.16	315.30
2	441.44	309.81
3	498.70	329.37
4	503.70	335.38

*** 2.753 ***

Individual data on the 5 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	13.3	10843.3	.0	.0	.0	.0	.0	.0	.0
2	26.6	55056.4	.0	.0	.0	.0	.0	.0	.0
3	23.0	47043.4	.0	.0	.0	.0	.0	.0	.0
4	7.7	9664.5	.0	.0	.0	.0	.0	.0	.0
5	5.0	2327.1	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	428.16	315.30
2	441.44	309.81
3	498.70	329.37
4	503.70	335.38

*** 2.753 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	428.16	315.30
2	441.44	309.81
3	498.70	329.37
4	503.70	335.38

*** 2.753 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	428.16	315.30
2	441.44	309.81
3	498.70	329.37
4	503.70	335.38

*** 2.753 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	428.23	315.34
2	435.77	307.82
3	499.54	329.42
4	503.99	335.27

*** 2.862 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	428.23	315.34
2	435.77	307.82
3	499.54	329.42
4	503.99	335.27

*** 2.862 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	428.23	315.34
2	435.77	307.82
3	499.54	329.42
4	503.99	335.27

*** 2.862 ***

Failure Surface Specified By 4 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	429.97	316.42
2	440.04	309.20
3	498.30	329.11
4	502.23	335.92
***	2.887	***

Failure Surface Specified By 4 Coordinate Points

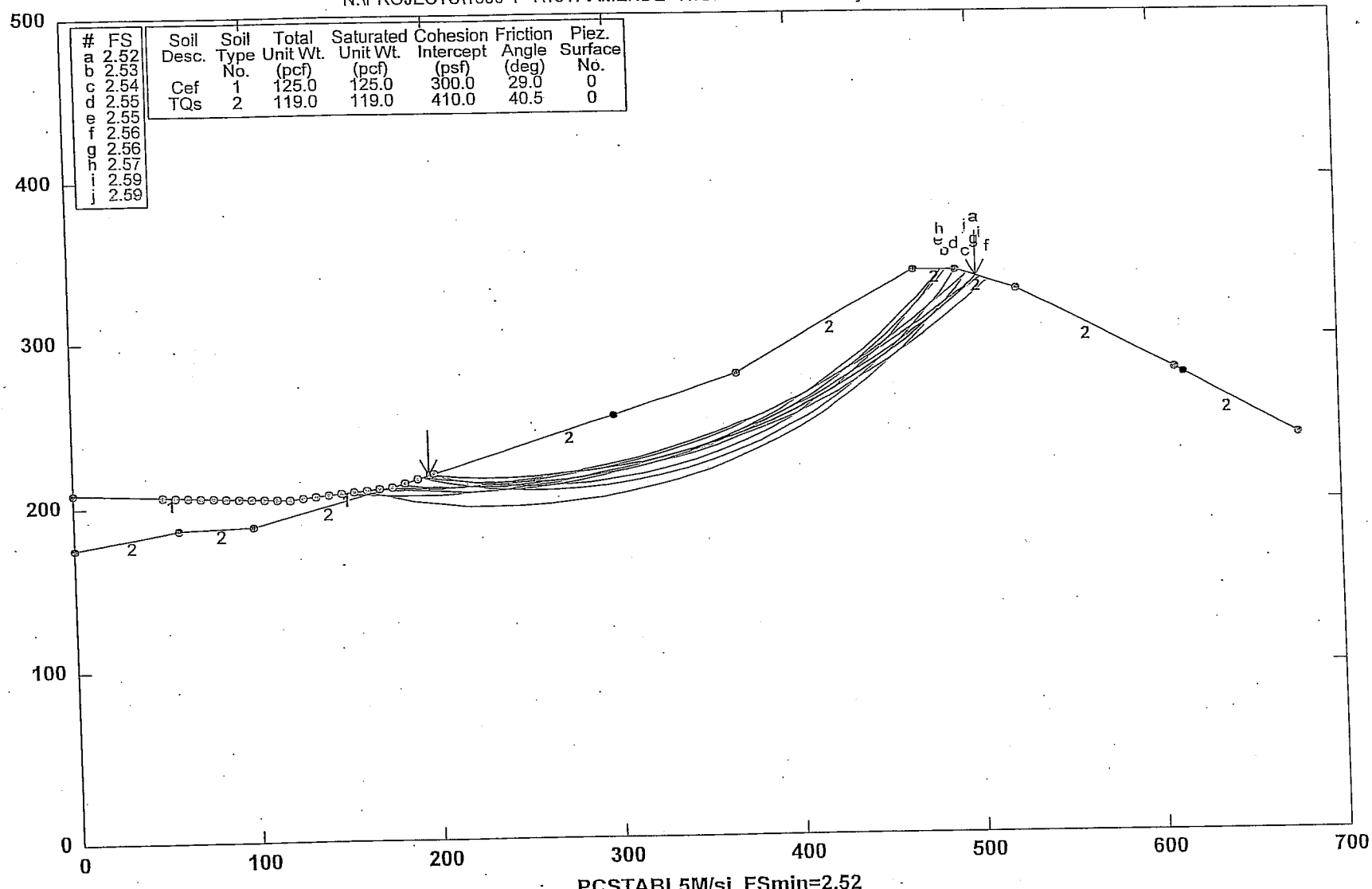
Point No.	X-Surf (ft)	Y-Surf (ft)
1	429.97	316.42
2	440.04	309.20
3	498.30	329.11
4	502.23	335.92
***	2.887	***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	429.97	316.42
2	440.04	309.20
3	498.30	329.11
4	502.23	335.92
***	2.887	***

Amended VTT52584 B-B', Circular search Nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TBBS50.PL2 Run By: DA 4/3/03 9:27AM



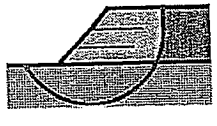
#	FS
a	2.52
b	2.53
c	2.54
d	2.55
e	2.55
f	2.56
g	2.56
h	2.57
i	2.59
j	2.59

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	410.0	40.5	0

PCSTABL5M/si FSmin=2.52

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

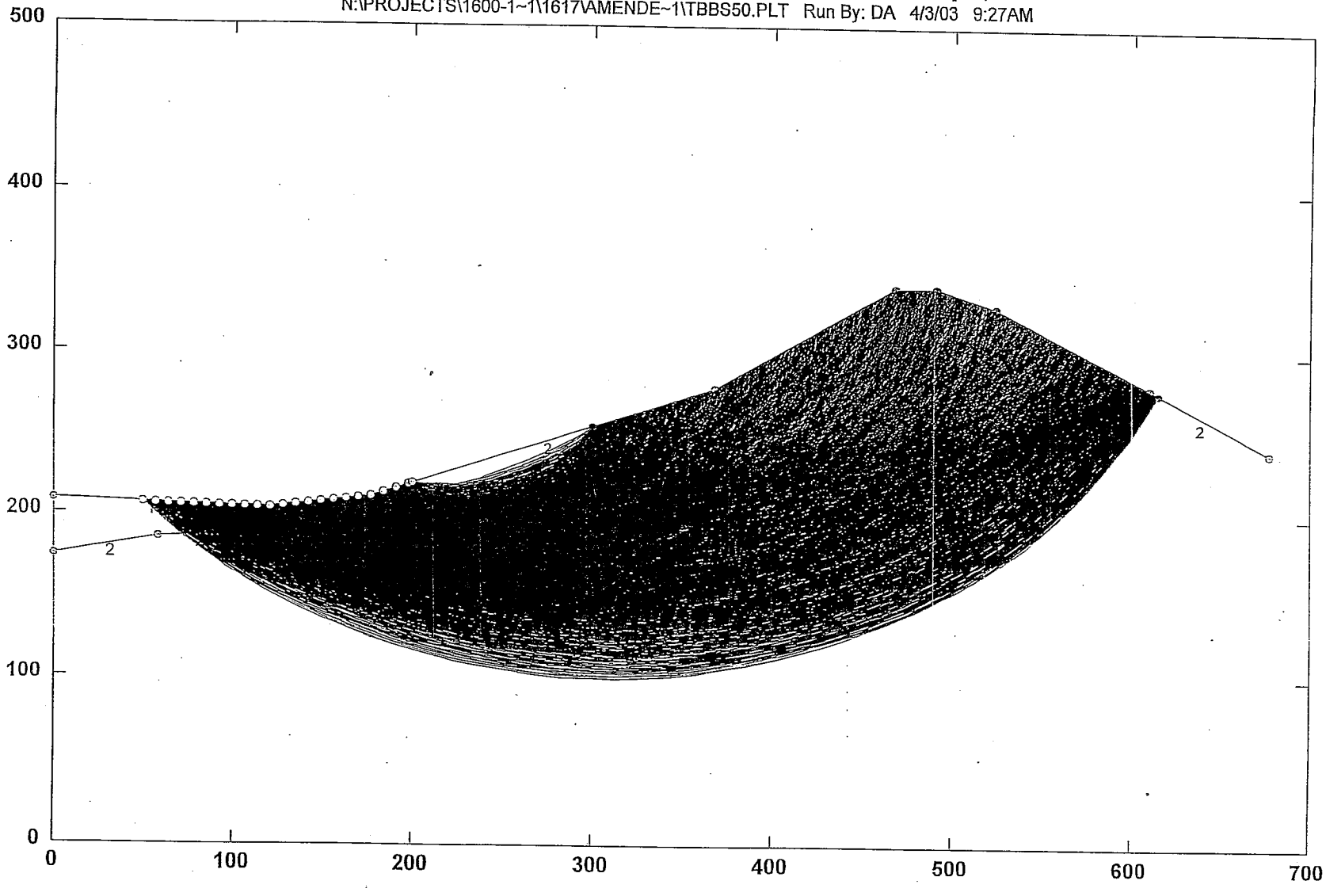
STED



RUN NO. - 40

Amended VTT52584 B-B', Circular search Nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TBBS50.PLT Run By: DA 4/3/03 9:27AM



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/3/03
Time of Run: 9:27AM
Run By: DA
Input Data Filename: N:TBBS50.IN
Output Filename: N:TBBS50.OUT
Unit: ENGLISH
Plotted Output Filename: N:TBBS50.PLT
PROBLEM DESCRIPTION Amended VTT52584 B-B', Circular search
Nat. slope, Static

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	.00	208.00	120.00	204.00	1
2	120.00	204.00	177.00	211.00	1
3	177.00	211.00	368.00	278.00	2
4	368.00	278.00	468.00	340.00	2
5	468.00	340.00	491.00	340.00	2
6	491.00	340.00	524.00	328.00	2
7	524.00	328.00	610.00	280.00	2
8	610.00	280.00	677.00	240.00	2
9	.00	175.00	58.00	186.00	2
10	58.00	186.00	100.00	188.00	2
11	100.00	188.00	177.00	211.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
Janbus Empirical Coef. is being used for the case of c & phi both > 0
3000 Trial Surfaces Have Been Generated.
20 Surfaces Initiate From Each Of150 Points Equally Spaced
Along The Ground Surface Between X = 50.00 ft.
and X = 200.00 ft.
Each Surface Terminates Between X = 300.00 ft.
and X = 615.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = .00 ft.
15.00 ft. Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And .0 deg.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 24 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	196.98	218.01
2	211.93	216.73
3	226.91	216.09
4	241.91	216.07
5	256.90	216.68
6	271.85	217.92

7	286.73	219.78
8	301.52	222.27
9	316.20	225.38
10	330.73	229.09
11	345.10	233.42
12	359.26	238.34
13	373.21	243.85
14	386.92	249.94
15	400.36	256.61
16	413.51	263.83
17	426.34	271.59
18	438.84	279.89
19	450.98	288.70
20	462.74	298.01
21	474.10	307.81
22	485.03	318.08
23	495.53	328.79
24	502.01	335.99

*** 2.515 ***

Individual data on the 26 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	14.9	5795.9	.0	.0	.0	.0	.0	.0	.0
2	15.0	16887.5	.0	.0	.0	.0	.0	.0	.0
3	15.0	26884.7	.0	.0	.0	.0	.0	.0	.0
4	15.0	35714.3	.0	.0	.0	.0	.0	.0	.0
5	14.9	43316.9	.0	.0	.0	.0	.0	.0	.0
6	14.9	49647.3	.0	.0	.0	.0	.0	.0	.0
7	14.8	54675.0	.0	.0	.0	.0	.0	.0	.0
8	14.7	58384.2	.0	.0	.0	.0	.0	.0	.0
9	14.5	60774.1	.0	.0	.0	.0	.0	.0	.0
10	14.4	61858.5	.0	.0	.0	.0	.0	.0	.0
11	14.2	61666.2	.0	.0	.0	.0	.0	.0	.0
12	8.7	37841.5	.0	.0	.0	.0	.0	.0	.0
13	5.2	22834.3	.0	.0	.0	.0	.0	.0	.0
14	13.7	62936.9	.0	.0	.0	.0	.0	.0	.0
15	13.4	64968.7	.0	.0	.0	.0	.0	.0	.0
16	13.1	65598.1	.0	.0	.0	.0	.0	.0	.0
17	12.8	64889.3	.0	.0	.0	.0	.0	.0	.0
18	12.5	62922.5	.0	.0	.0	.0	.0	.0	.0
19	12.1	59791.1	.0	.0	.0	.0	.0	.0	.0
20	11.8	55602.3	.0	.0	.0	.0	.0	.0	.0
21	5.3	23850.0	.0	.0	.0	.0	.0	.0	.0
22	6.1	25255.5	.0	.0	.0	.0	.0	.0	.0
23	10.9	35212.9	.0	.0	.0	.0	.0	.0	.0
24	6.0	13407.4	.0	.0	.0	.0	.0	.0	.0
25	4.5	6841.1	.0	.0	.0	.0	.0	.0	.0
26	6.5	3690.3	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 24 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	192.95	216.60
2	207.83	214.67
3	222.78	213.49
4	237.78	213.05
5	252.77	213.35
6	267.74	214.39
7	282.63	216.18
8	297.42	218.70
9	312.06	221.95
10	326.53	225.92
11	340.78	230.61
12	354.78	235.99
13	368.49	242.06

14	381.89	248.80
15	394.94	256.20
16	407.61	264.24
17	419.86	272.89
18	431.67	282.14
19	443.00	291.97
20	453.84	302.34
21	464.14	313.24
22	473.90	324.63
23	483.08	336.50
24	485.52	340.00

*** 2.533 ***

Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	174.83	210.73
2	189.82	210.21
3	204.82	210.24
4	219.81	210.80
5	234.77	211.90
6	249.68	213.53
7	264.53	215.70
8	279.28	218.41
9	293.93	221.64
10	308.45	225.40
11	322.83	229.68
12	337.04	234.47
13	351.07	239.77
14	364.90	245.57
15	378.52	251.87
16	391.90	258.65
17	405.02	265.91
18	417.88	273.64
19	430.45	281.82
20	442.72	290.45
21	454.67	299.52
22	466.29	309.01
23	477.55	318.91
24	488.46	329.21
25	496.95	337.84

*** 2.538 ***

Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	191.95	216.24
2	206.60	213.02
3	221.40	210.62
4	236.32	209.03
5	251.30	208.26
6	266.30	208.32
7	281.27	209.21
8	296.18	210.92
9	310.96	213.45
10	325.59	216.78
11	340.00	220.92
12	354.17	225.84
13	368.05	231.54
14	381.59	237.99
15	394.76	245.18
16	407.51	253.08
17	419.80	261.67
18	431.61	270.93
19	442.88	280.82
20	453.60	291.32
21	463.72	302.39
22	473.22	314.00

23	482.06	326.11
24	490.22	338.70
25	490.97	340.00

*** 2.548 ***

Failure Surface Specified By 24 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	196.98	218.01
2	211.67	214.99
3	226.51	212.81
4	241.46	211.49
5	256.45	211.03
6	271.44	211.43
7	286.39	212.69
8	301.24	214.80
9	315.95	217.76
10	330.46	221.56
11	344.73	226.19
12	358.71	231.62
13	372.35	237.85
14	385.62	244.85
15	398.46	252.60
16	410.84	261.07
17	422.72	270.24
18	434.04	280.07
19	444.79	290.54
20	454.91	301.60
21	464.39	313.23
22	473.18	325.38
23	481.27	338.02
24	482.38	340.00

*** 2.553 ***

Failure Surface Specified By 26 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.87	212.01
2	194.83	210.95
3	209.82	210.45
4	224.82	210.50
5	239.81	211.10
6	254.77	212.25
7	269.67	213.95
8	284.50	216.19
9	299.24	218.98
10	313.87	222.30
11	328.36	226.16
12	342.70	230.55
13	356.88	235.46
14	370.86	240.89
15	384.63	246.83
16	398.18	253.27
17	411.48	260.20
18	424.52	267.62
19	437.28	275.51
20	449.74	283.86
21	461.88	292.67
22	473.69	301.91
23	485.16	311.59
24	496.26	321.67
25	506.99	332.16
26	508.42	333.67

*** 2.557 ***

Failure Surface Specified By 26 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	164.77	209.50

2	179.76	209.21
3	194.76	209.40
4	209.75	210.07
5	224.70	211.22
6	239.61	212.85
7	254.47	214.95
8	269.24	217.52
9	283.93	220.57
10	298.52	224.08
11	312.98	228.05
12	327.31	232.49
13	341.49	237.38
14	355.51	242.72
15	369.34	248.50
16	382.99	254.73
17	396.43	261.39
18	409.66	268.47
19	422.65	275.97
20	435.39	283.88
21	447.87	292.20
22	460.09	300.91
23	472.02	310.00
24	483.65	319.47
25	494.97	329.31
26	502.14	335.95

*** 2.562 ***

Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	173.83	210.61
2	188.74	208.98
3	203.71	208.01
4	218.70	207.73
5	233.70	208.12
6	248.66	209.18
7	263.56	210.91
8	278.37	213.32
9	293.05	216.38
10	307.58	220.11
11	321.93	224.48
12	336.06	229.50
13	349.96	235.14
14	363.59	241.41
15	376.92	248.28
16	389.93	255.74
17	402.60	263.79
18	414.88	272.39
19	426.77	281.54
20	438.23	291.22
21	449.25	301.40
22	459.80	312.06
23	469.85	323.19
24	479.40	334.76
25	483.34	340.00

*** 2.571 ***

Failure Surface Specified By 28 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	146.64	207.27
2	161.61	206.23
3	176.60	205.67
4	191.60	205.61
5	206.59	206.05
6	221.56	206.98
7	236.50	208.40
8	251.37	210.31

9	266.18	212.71
10	280.90	215.59
11	295.52	218.96
12	310.02	222.81
13	324.38	227.13
14	338.59	231.92
15	352.64	237.18
16	366.51	242.90
17	380.18	249.07
18	393.64	255.69
19	406.88	262.75
20	419.87	270.24
21	432.62	278.15
22	445.09	286.48
23	457.29	295.21
24	469.19	304.34
25	480.78	313.86
26	492.05	323.76
27	503.00	334.02
28	504.18	335.21

*** 2.586 ***

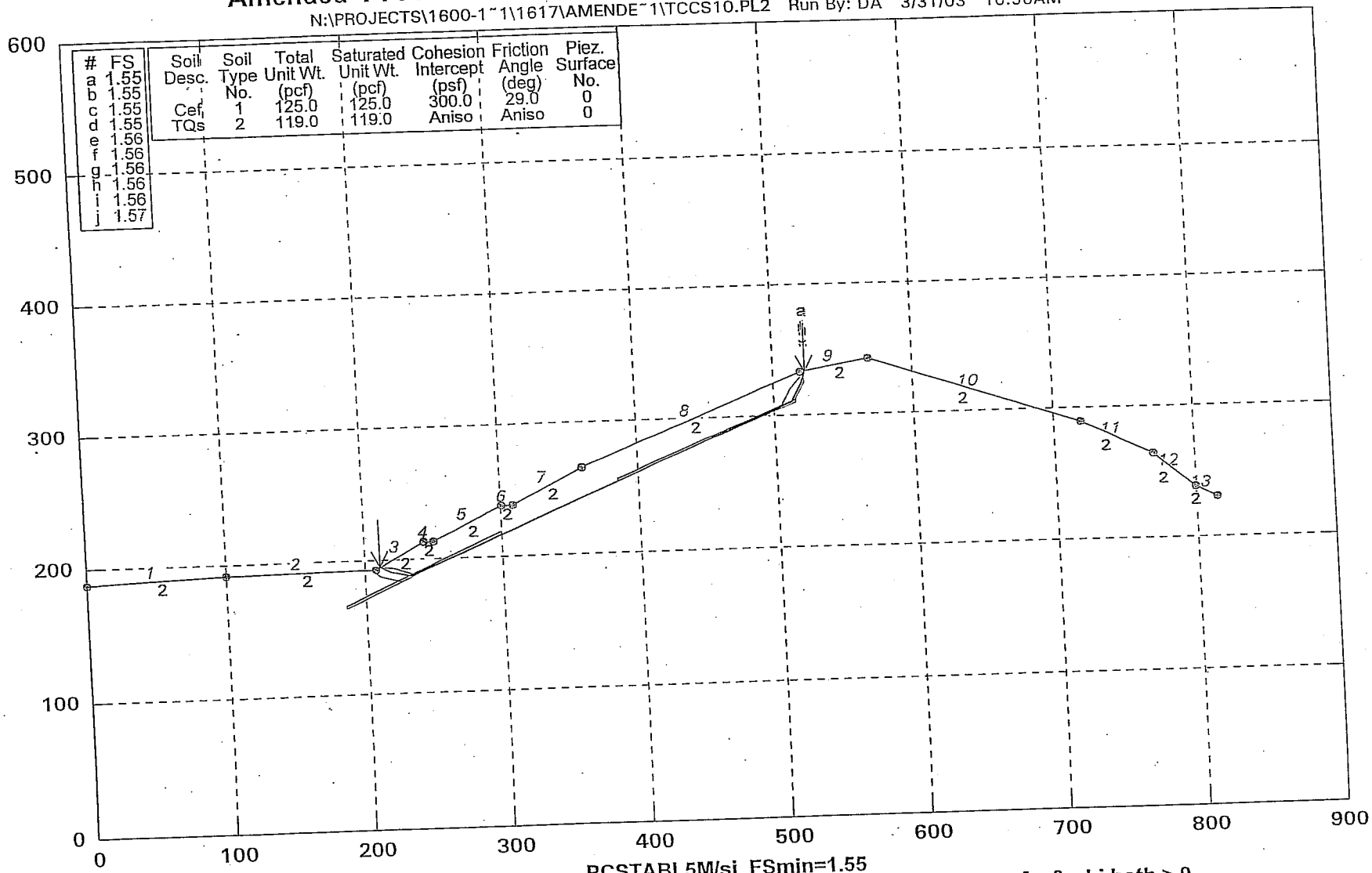
Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.73	208.76
2	173.32	205.28
3	188.06	202.52
4	202.92	200.46
5	217.86	199.13
6	232.85	198.53
7	247.85	198.64
8	262.82	199.49
9	277.74	201.05
10	292.57	203.33
11	307.27	206.33
12	321.80	210.03
13	336.14	214.43
14	350.25	219.51
15	364.10	225.28
16	377.66	231.70
17	390.88	238.77
18	403.76	246.48
19	416.24	254.79
20	428.31	263.70
21	439.93	273.18
22	451.09	283.21
23	461.74	293.77
24	471.87	304.83
25	481.46	316.37
26	490.48	328.35
27	496.93	337.84

*** 2.592 ***

Amended VTT52584 C-C' Bed plane search CS-6 and nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TCCS10.PL2 Run By: DA 3/31/03 10:56AM



PCSTABL5M/si FSmin=1.55

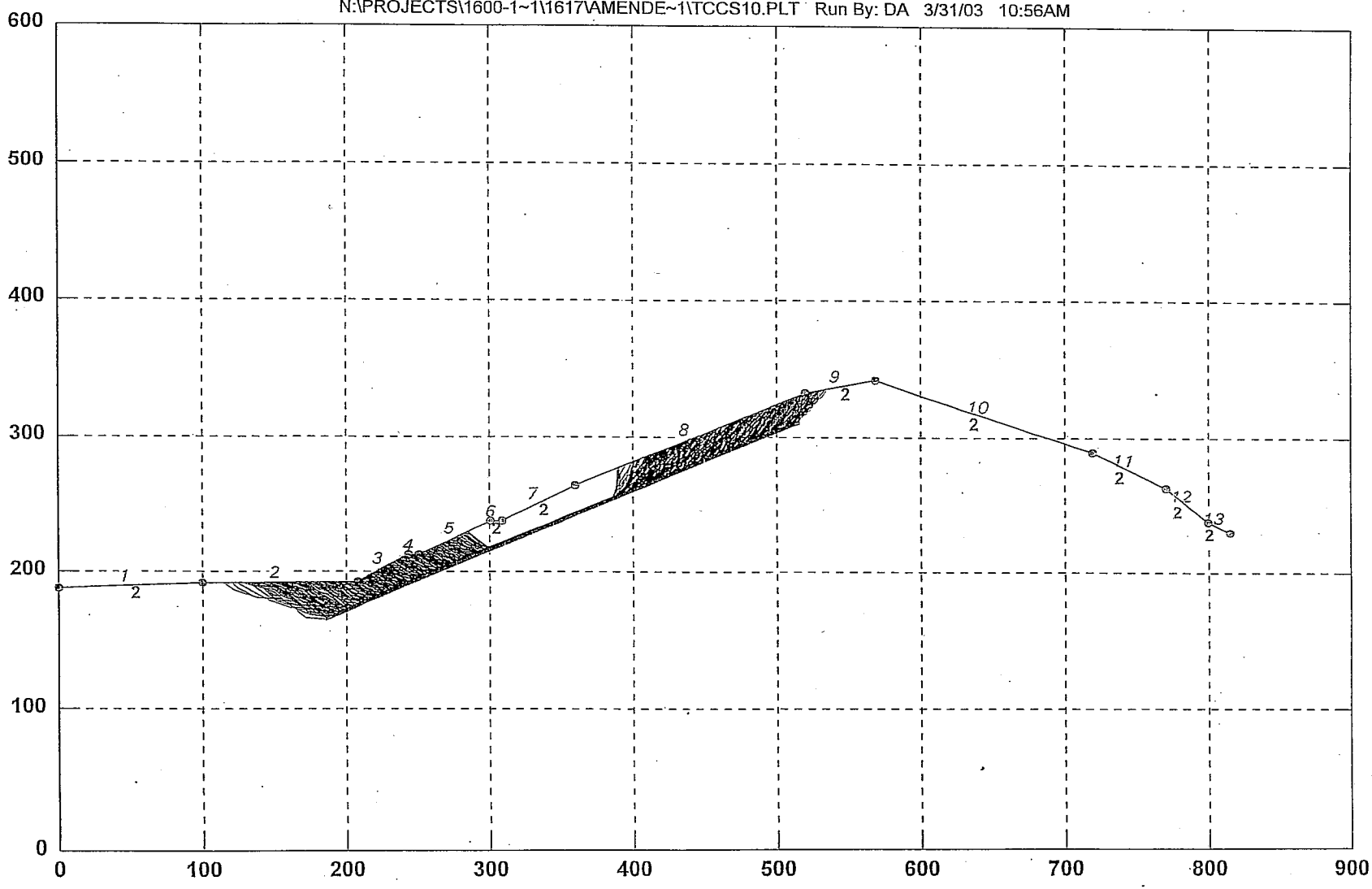
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

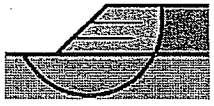
RUN No. 41

Amended VTT52584 C-C' Bed plane search CS-6 and nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TCCS10.PLT Run By: DA 3/31/03 10:56AM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 10:56AM
Run By: DA
Input Data Filename: N:TCCS10.IN
Output Filename: N:TCCS10.OUT
Unit: ENGLISH
Plotted Output Filename: N:TCCS10.PLT
PROBLEM DESCRIPTION Amended VTT52584 C-C' Bed plane search
CS-6 and nat. slope, Static

BOUNDARY COORDINATES
13 Top Boundaries
13 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	187.00	100.00	192.00	2
2	100.00	192.00	208.00	193.00	2
3	208.00	193.00	243.00	213.00	2
4	243.00	213.00	251.00	213.00	2
5	251.00	213.00	301.00	238.00	2
6	301.00	238.00	309.00	238.00	2
7	309.00	238.00	360.00	265.00	2
8	360.00	265.00	520.00	332.00	2
9	520.00	332.00	568.00	341.00	2
10	568.00	341.00	719.00	289.00	2
11	719.00	289.00	770.00	264.00	2
12	770.00	264.00	800.00	238.00	2
13	800.00	238.00	815.00	230.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	23.0	410.0	40.5
2	25.0	347.0	22.0
3	90.0	410.0	40.5

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.
2000 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	185.00	165.00	300.00	218.00	2.00
2	385.00	255.00	515.00	311.00	2.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.65	194.51
2	219.02	190.95
3	233.68	187.75
4	512.83	309.54
5	519.77	322.84
6	523.01	332.56

*** 1.549 ***

Individual data on the 11 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	8.4	4161.0	.0	.0	.0	.0	.0	.0	.0
2	14.7	24650.3	.0	.0	.0	.0	.0	.0	.0
3	9.3	22804.3	.0	.0	.0	.0	.0	.0	.0
4	8.0	18506.8	.0	.0	.0	.0	.0	.0	.0
5	50.0	114763.9	.0	.0	.0	.0	.0	.0	.0
6	8.0	18217.6	.0	.0	.0	.0	.0	.0	.0
7	51.0	119960.6	.0	.0	.0	.0	.0	.0	.0
8	152.8	378333.6	.0	.0	.0	.0	.0	.0	.0
9	6.9	11770.9	.0	.0	.0	.0	.0	.0	.0
10	.2	241.8	.0	.0	.0	.0	.0	.0	.0
11	3.0	1513.8	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.65	194.51
2	219.02	190.95
3	233.68	187.75
4	512.83	309.54
5	519.77	322.84
6	523.01	332.56

*** 1.549 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.65	194.51
2	219.02	190.95
3	233.68	187.75
4	512.83	309.54
5	519.77	322.84
6	523.01	332.56

*** 1.549 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.65	194.51
2	219.02	190.95
3	233.68	187.75
4	512.83	309.54
5	519.77	322.84
6	523.01	332.56

*** 1.549 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	204.77	192.97
2	211.36	187.13
3	225.90	183.45
4	503.79	305.75
5	511.43	318.66
6	520.95	330.25
7	522.84	332.53

*** 1.561 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	204.77	192.97
2	211.36	187.13
3	225.90	183.45
4	503.79	305.75
5	511.43	318.66
6	520.95	330.25
7	522.84	332.53

*** 1.561 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	204.77	192.97
2	211.36	187.13
3	225.90	183.45
4	503.79	305.75
5	511.43	318.66
6	520.95	330.25
7	522.84	332.53

*** 1.561 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	204.77	192.97
2	211.36	187.13
3	225.90	183.45
4	503.79	305.75
5	511.43	318.66
6	520.95	330.25
7	522.84	332.53

*** 1.561 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	204.77	192.97
2	211.36	187.13
3	225.90	183.45
4	503.79	305.75
5	511.43	318.66
6	520.95	330.25
7	522.84	332.53

*** 1.561 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.34	194.34
2	220.58	193.07
3	234.86	188.46
4	514.67	310.85
5	521.73	324.09
6	522.03	332.38

*** 1.571 ***

Amended VTT52584 C-C' Bed plane search CS-6 and nat. slope,

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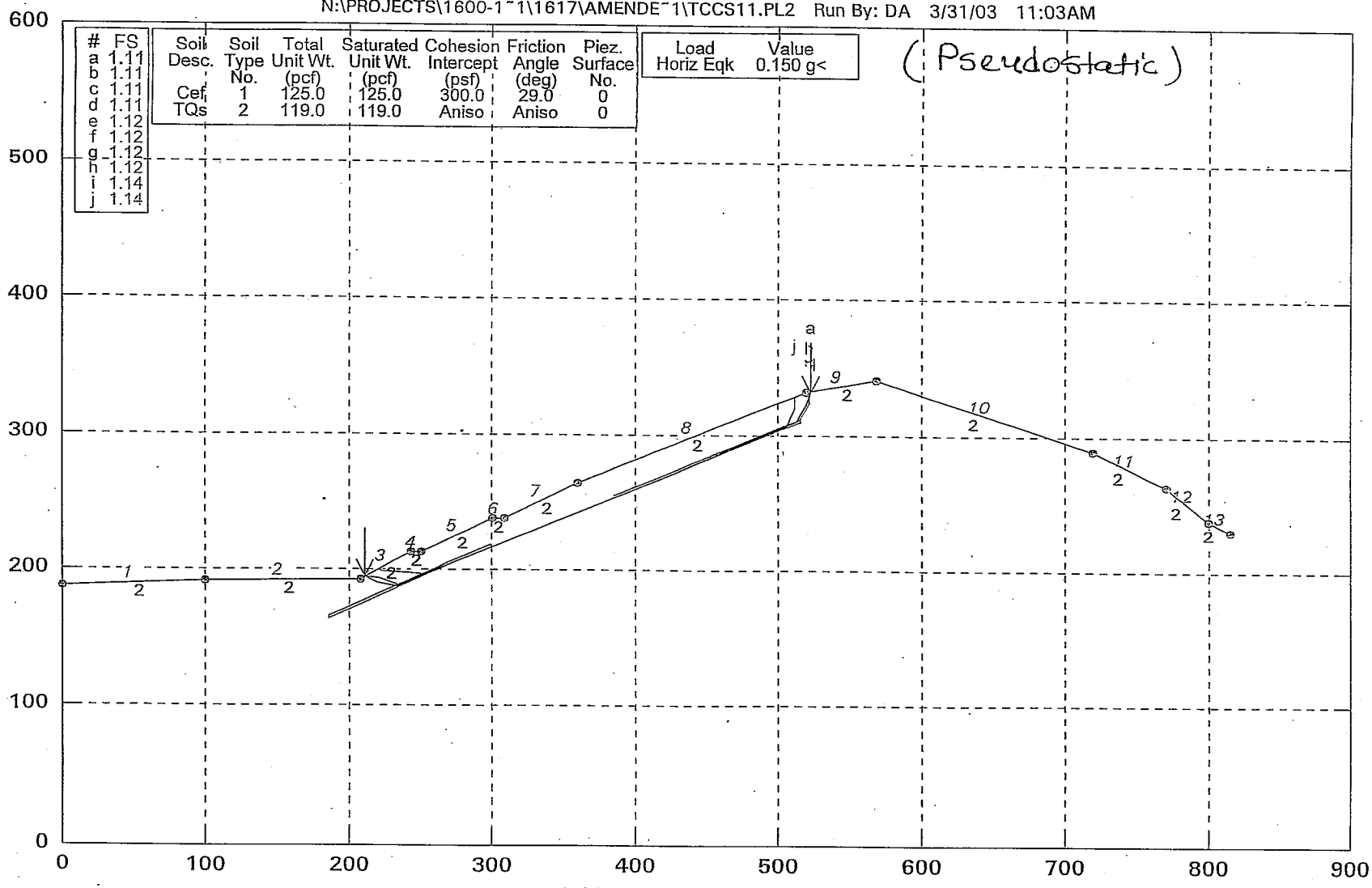


PCSTABL5M/si FSmin=1.11

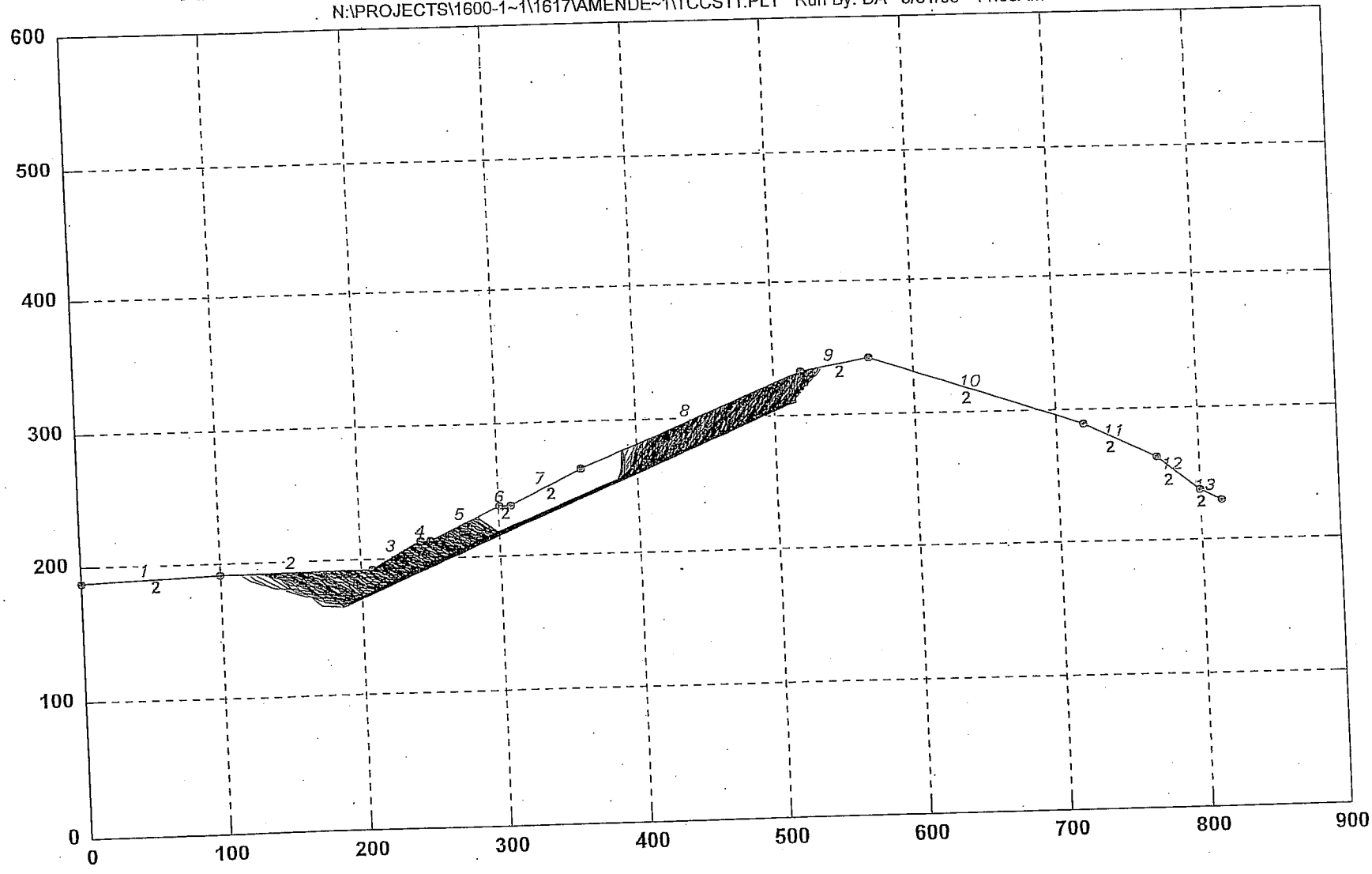
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

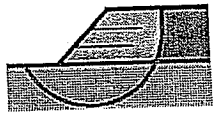
RUN NO. - 42

Amended VTT52584 C-C' Bed plane search CS-6 and nat. slope, Psuedostatic

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TCCS11.PLT Run By: DA 3/31/03 11:03AM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 11:03AM
Run By: DA
Input Data Filename: N:TCCS11.IN
Output Filename: N:TCCS11.OUT
Unit: ENGLISH
Plotted Output Filename: N:TCCS11.PLT
PROBLEM DESCRIPTION Amended VTT52584 C-C' Bed plane search
CS-6 and nat. slope, Psuedostatic

BOUNDARY COORDINATES
13 Top Boundaries
13 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	187.00	100.00	192.00	2
2	100.00	192.00	208.00	193.00	2
3	208.00	193.00	243.00	213.00	2
4	243.00	213.00	251.00	213.00	2
5	251.00	213.00	301.00	238.00	2
6	301.00	238.00	309.00	238.00	2
7	309.00	238.00	360.00	265.00	2
8	360.00	265.00	520.00	332.00	2
9	520.00	332.00	568.00	341.00	2
10	568.00	341.00	719.00	289.00	2
11	719.00	289.00	770.00	264.00	2
12	770.00	264.00	800.00	238.00	2
13	800.00	238.00	815.00	230.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	23.0	410.0	40.5
2	25.0	347.0	22.0
3	90.0	410.0	40.5

A Horizontal Earthquake Loading Coefficient
Of .150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of .000 Has Been Assigned
Cavitation Pressure = .0 (psf)
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.
2000 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	185.00	165.00	300.00	218.00	2.00

2 385.00 255.00 515.00 311.00 2.00

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

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

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.65	194.51
2	219.02	190.95
3	233.68	187.75
4	512.83	309.54
5	519.77	322.84
6	523.01	332.56

*** 1.109 ***

Individual data on the 11 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	8.4	4161.0	.0	.0	.0	.0	624.1	.0	.0
2	14.7	24650.3	.0	.0	.0	.0	3697.5	.0	.0
3	9.3	22804.3	.0	.0	.0	.0	3420.7	.0	.0
4	8.0	18506.8	.0	.0	.0	.0	2776.0	.0	.0
5	50.0	114763.9	.0	.0	.0	.0	17214.6	.0	.0
6	8.0	18217.6	.0	.0	.0	.0	2732.6	.0	.0
7	51.0	119960.6	.0	.0	.0	.0	17994.1	.0	.0
8	152.8	378333.6	.0	.0	.0	.0	56750.0	.0	.0
9	6.9	11770.9	.0	.0	.0	.0	1765.6	.0	.0
10	.2	241.8	.0	.0	.0	.0	36.3	.0	.0
11	3.0	1513.8	.0	.0	.0	.0	227.1	.0	.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.65	194.51
2	219.02	190.95
3	233.68	187.75
4	512.83	309.54
5	519.77	322.84
6	523.01	332.56

*** 1.109 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.65	194.51
2	219.02	190.95
3	233.68	187.75
4	512.83	309.54
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6	523.01	332.56

*** 1.109 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.65	194.51
2	219.02	190.95
3	233.68	187.75
4	512.83	309.54
5	519.77	322.84
6	523.01	332.56

*** 1.109 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.34	194.34
2	220.58	193.07

3	234.86	188.46
4	514.67	310.85
5	521.73	324.09
6	522.03	332.38

*** 1.122 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.34	194.34
2	220.58	193.07
3	234.86	188.46
4	514.67	310.85
5	521.73	324.09
6	522.03	332.38

*** 1.122 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.34	194.34
2	220.58	193.07
3	234.86	188.46
4	514.67	310.85
5	521.73	324.09
6	522.03	332.38

*** 1.122 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.34	194.34
2	220.58	193.07
3	234.86	188.46
4	514.67	310.85
5	521.73	324.09
6	522.03	332.38

*** 1.122 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	219.61	199.64
2	222.87	199.16
3	237.83	198.06
4	252.71	196.17
5	505.41	305.95
6	511.40	319.69
7	511.71	328.53

*** 1.138 ***

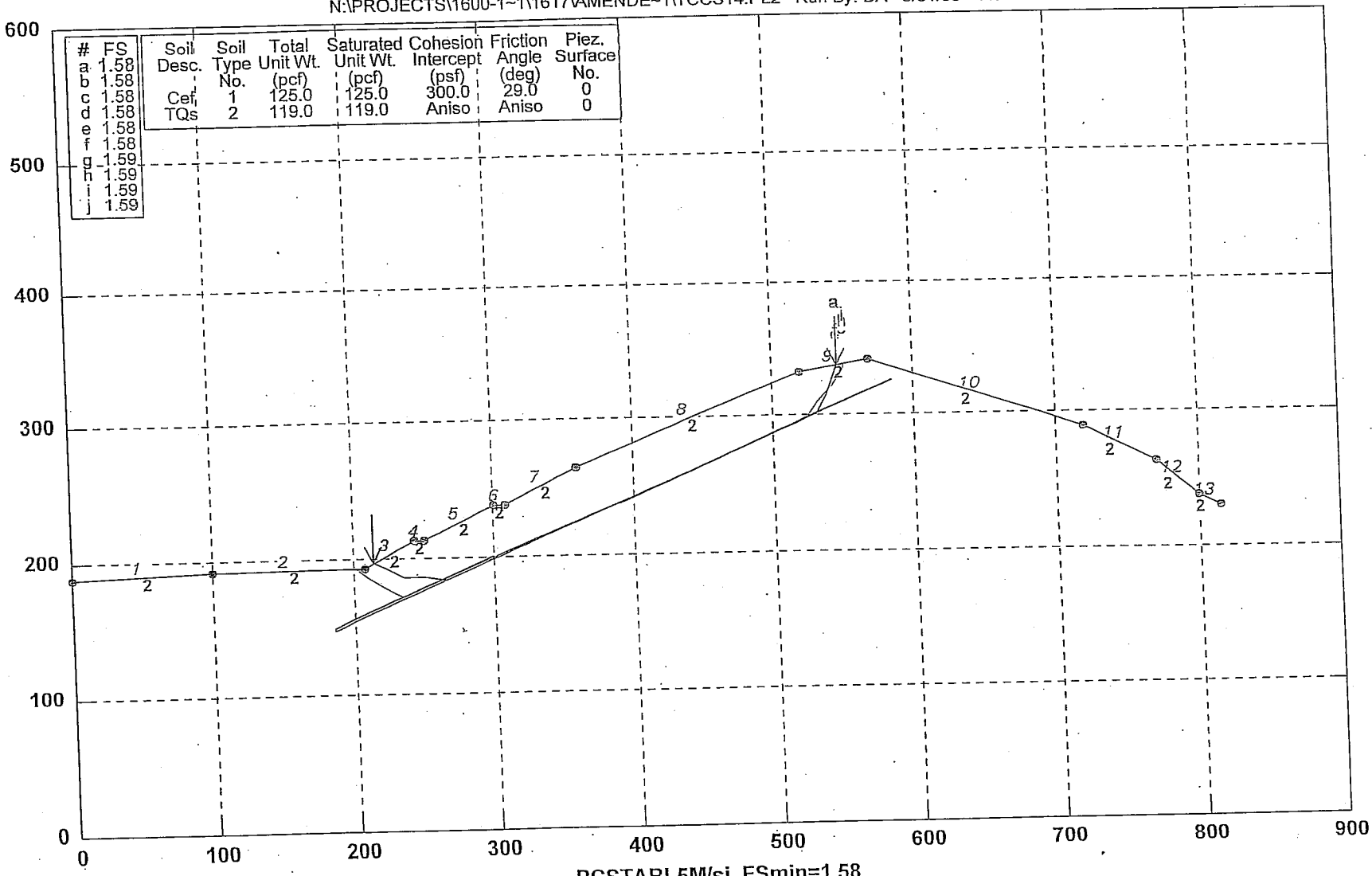
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	219.61	199.64
2	222.87	199.16
3	237.83	198.06
4	252.71	196.17
5	505.41	305.95
6	511.40	319.69
7	511.71	328.53

*** 1.138 ***

Amended VTT52584 C-C' Bed plane search CS-6 and nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TCCS14.PL2 Run By: DA 3/31/03 11:10AM



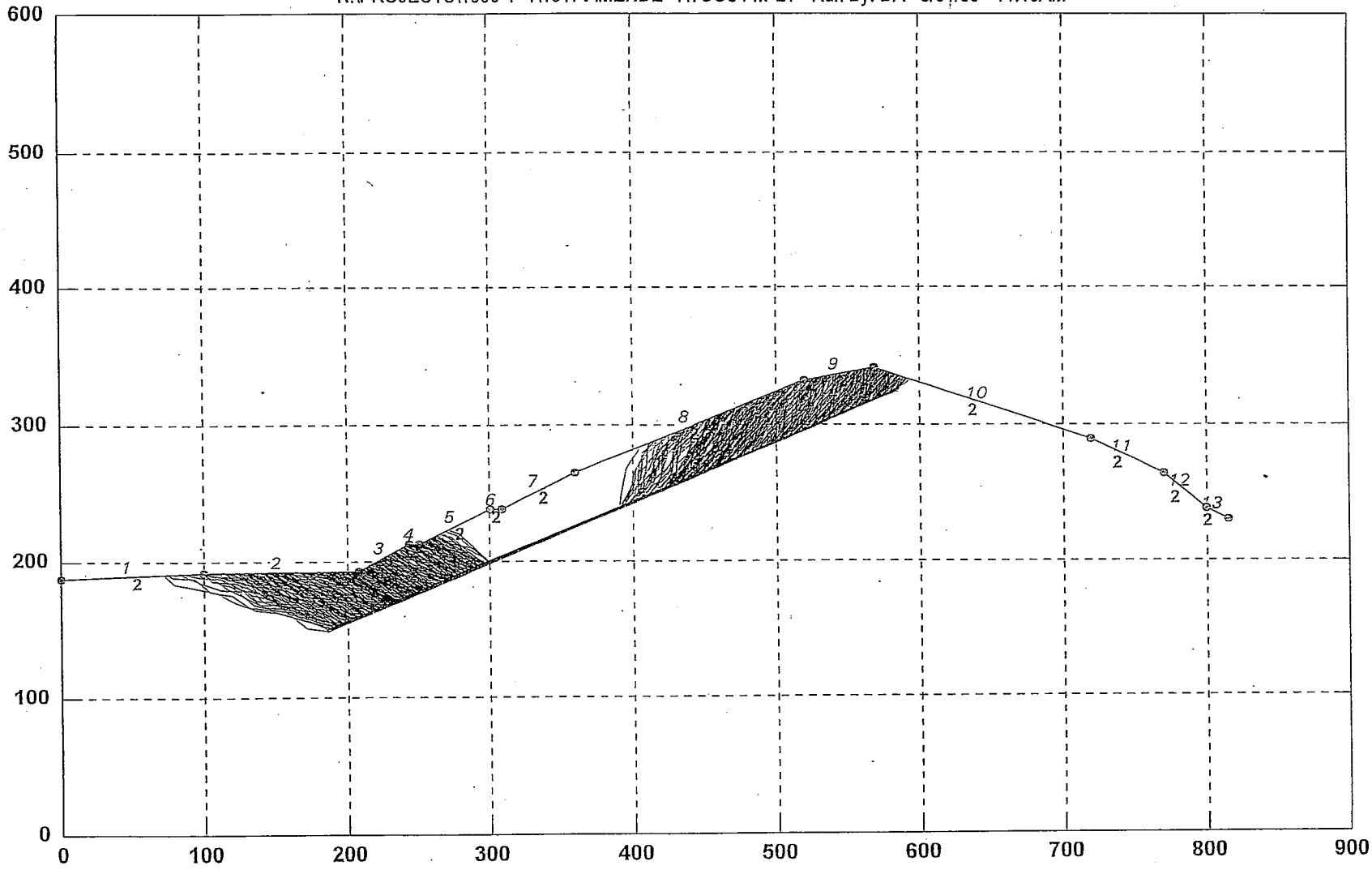
PCSTABL5M/si FSmin=1.58

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

RUN No. 143

Amended VTT52584 C-C' Bed plane search CS-6 and nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TCCS14.PLT Run By: DA 3/31/03 11:10AM



STED

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 11:10AM
Run By: DA
Input Data Filename: N:TCCS14.IN
Output Filename: N:TCCS14.OUT
Unit: ENGLISH
Plotted Output Filename: N:TCCS14.PLT
PROBLEM DESCRIPTION Amended VTT52584 C-C' Bed plane search
CS-6 and nat. slope, Static

BOUNDARY COORDINATES
13 Top Boundaries
13 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	187.00	100.00	192.00	2
2	100.00	192.00	208.00	193.00	2
3	208.00	193.00	243.00	213.00	2
4	243.00	213.00	251.00	213.00	2
5	251.00	213.00	301.00	238.00	2
6	301.00	238.00	309.00	238.00	2
7	309.00	238.00	360.00	265.00	2
8	360.00	265.00	520.00	332.00	2
9	520.00	332.00	568.00	341.00	2
10	568.00	341.00	719.00	289.00	2
11	719.00	289.00	770.00	264.00	2
12	770.00	264.00	800.00	238.00	2
13	800.00	238.00	815.00	230.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	23.0	410.0	40.5
2	25.0	347.0	22.0
3	90.0	410.0	40.5

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.
2000 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	185.00	148.00	300.00	200.00	2.00
2	390.00	238.00	585.00	325.00	1.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.22	196.55
2	222.60	192.71
3	235.65	185.31
4	250.65	185.10
5	265.60	183.87
6	531.14	300.59
7	538.21	313.82
8	543.16	327.98
9	546.43	336.96

*** 1.578 ***

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	8.4	4307.1	.0	.0	.0	.0	.0	.0	.0
2	13.1	24945.9	.0	.0	.0	.0	.0	.0	.0
3	7.3	22419.5	.0	.0	.0	.0	.0	.0	.0
4	7.7	25349.6	.0	.0	.0	.0	.0	.0	.0
5	.3	1160.0	.0	.0	.0	.0	.0	.0	.0
6	14.6	55906.7	.0	.0	.0	.0	.0	.0	.0
7	35.4	157985.5	.0	.0	.0	.0	.0	.0	.0
8	8.0	35047.1	.0	.0	.0	.0	.0	.0	.0
9	51.0	226659.5	.0	.0	.0	.0	.0	.0	.0
10	160.0	723007.5	.0	.0	.0	.0	.0	.0	.0
11	11.1	46287.1	.0	.0	.0	.0	.0	.0	.0
12	7.1	23152.1	.0	.0	.0	.0	.0	.0	.0
13	5.0	8833.2	.0	.0	.0	.0	.0	.0	.0
14	3.3	1625.7	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.22	196.55
2	222.60	192.71
3	235.65	185.31
4	250.65	185.10
5	265.60	183.87
6	531.14	300.59
7	538.21	313.82
8	543.16	327.98
9	546.43	336.96

*** 1.578 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.22	196.55
2	222.60	192.71
3	235.65	185.31
4	250.65	185.10
5	265.60	183.87
6	531.14	300.59
7	538.21	313.82
8	543.16	327.98
9	546.43	336.96

*** 1.578 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.22	196.55
2	222.60	192.71
3	235.65	185.31
4	250.65	185.10
5	265.60	183.87

6	531.14	300.59
7	538.21	313.82
8	543.16	327.98
9	546.43	336.96

*** 1.578 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.22	196.55
2	222.60	192.71
3	235.65	185.31
4	250.65	185.10
5	265.60	183.87
6	531.14	300.59
7	538.21	313.82
8	543.16	327.98
9	546.43	336.96

*** 1.578 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.22	196.55
2	222.60	192.71
3	235.65	185.31
4	250.65	185.10
5	265.60	183.87
6	531.14	300.59
7	538.21	313.82
8	543.16	327.98
9	546.43	336.96

*** 1.578 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	201.55	192.94
2	208.55	186.23
3	221.36	178.43
4	234.55	171.27
5	523.43	297.24
6	531.34	309.99
7	541.90	320.65
8	549.96	333.29
9	551.19	337.85

*** 1.593 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	201.55	192.94
2	208.55	186.23
3	221.36	178.43
4	234.55	171.27
5	523.43	297.24
6	531.34	309.99
7	541.90	320.65
8	549.96	333.29
9	551.19	337.85

*** 1.593 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	201.55	192.94
2	208.55	186.23
3	221.36	178.43
4	234.55	171.27
5	523.43	297.24
6	531.34	309.99

7	541.90	320.65
8	549.96	333.29
9	551.19	337.85
***	1.593	***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	201.55	192.94
2	208.55	186.23
3	221.36	178.43
4	234.55	171.27
5	523.43	297.24
6	531.34	309.99
7	541.90	320.65
8	549.96	333.29
9	551.19	337.85
***	1.593	***

Amended VTT52584 C-C' Bed plane search CS-6 and nat. slope, Static

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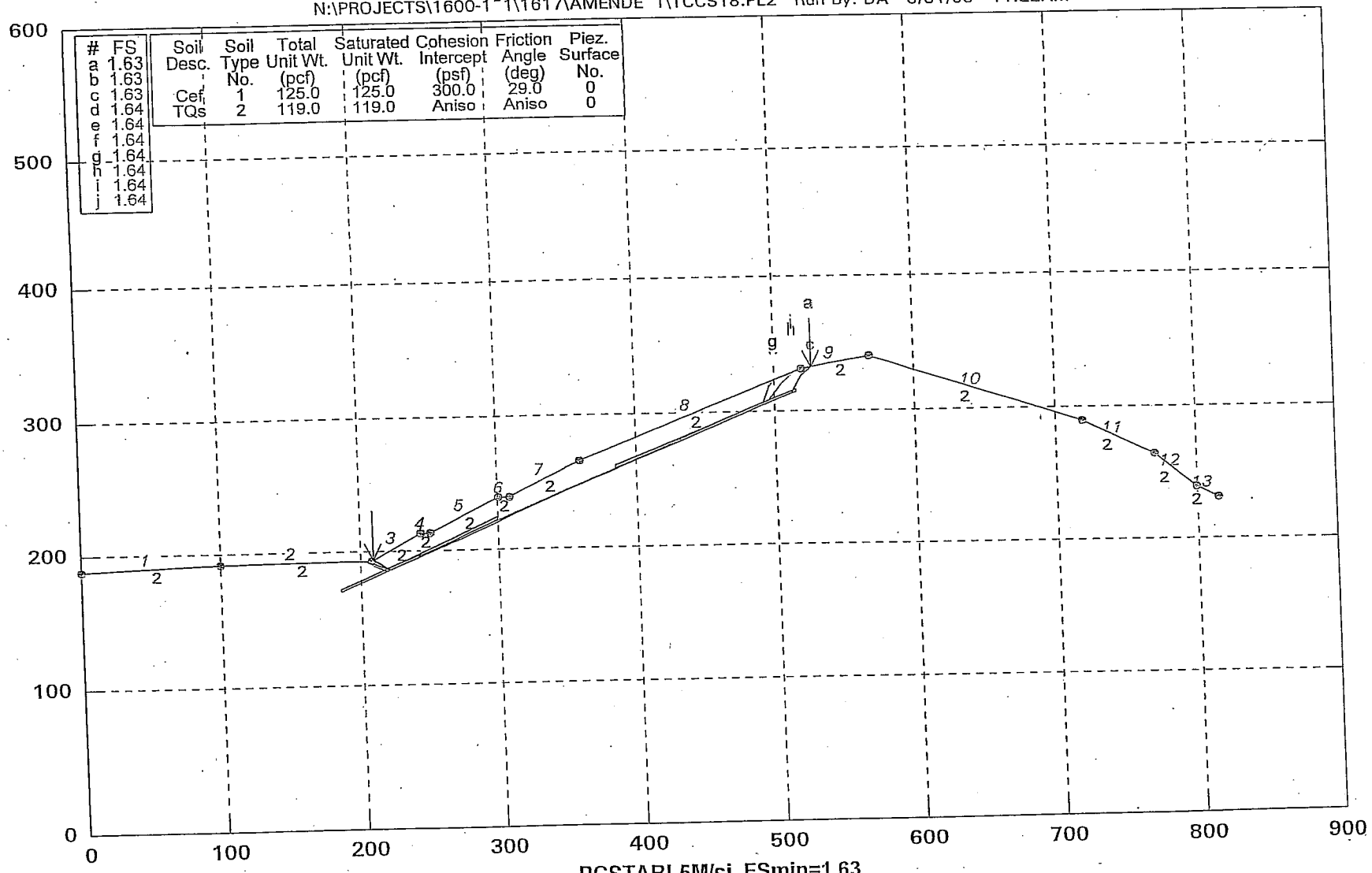


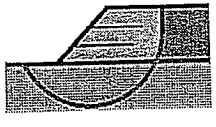
#	FS
a	1.63
b	1.63
c	1.63
d	1.64
e	1.64
f	1.64
g	1.64
h	1.64
i	1.64
j	1.64

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0

PCSTABL5M/si FSmin=1.63

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

STED



RUN No. - 44

Amended VTT52584 C-C' Bed plane search CS-6 and nat. slope, Static

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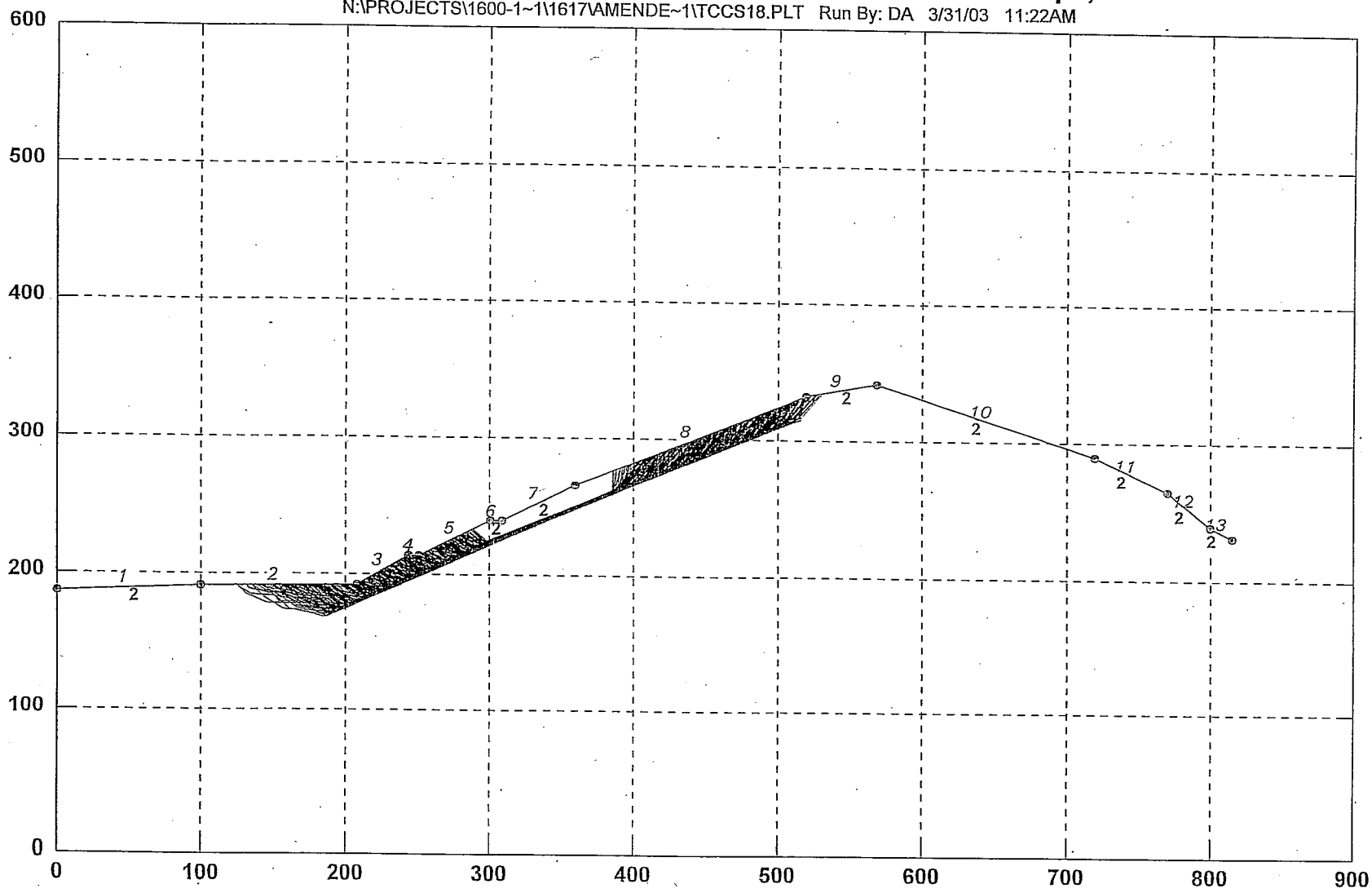

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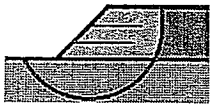


** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 11:22AM
Run By: DA
Input Data Filename: N:TCCS18.IN
Output Filename: N:TCCS18.OUT
Unit: ENGLISH
Plotted Output Filename: N:TCCS18.PLT
PROBLEM DESCRIPTION Amended VTT52584 C-C' Bed plane search
CS-6 and nat. slope, Static

BOUNDARY COORDINATES
13 Top Boundaries
13 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	187.00	100.00	192.00	2
2	100.00	192.00	208.00	193.00	2
3	208.00	193.00	243.00	213.00	2
4	243.00	213.00	251.00	213.00	2
5	251.00	213.00	301.00	238.00	2
6	301.00	238.00	309.00	238.00	2
7	309.00	238.00	360.00	265.00	2
8	360.00	265.00	520.00	332.00	2
9	520.00	332.00	568.00	341.00	2
10	568.00	341.00	719.00	289.00	2
11	719.00	289.00	770.00	264.00	2
12	770.00	264.00	800.00	238.00	2
13	800.00	238.00	815.00	230.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	23.0	410.0	40.5
2	25.0	347.0	22.0
3	90.0	410.0	40.5

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.
2000 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	185.00	170.00	300.00	223.00	2.00
2	385.00	260.00	515.00	316.00	2.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	209.17	193.67
2	221.21	185.75
3	511.95	314.04
4	520.04	326.67
5	526.60	333.24

*** 1.626 ***

Individual data on the 10 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	10607.5	.0	.0	.0	.0	.0	.0	.0
2	21.8	42058.0	.0	.0	.0	.0	.0	.0	.0
3	8.0	15111.7	.0	.0	.0	.0	.0	.0	.0
4	50.0	92682.5	.0	.0	.0	.0	.0	.0	.0
5	8.0	14546.7	.0	.0	.0	.0	.0	.0	.0
6	51.0	95664.4	.0	.0	.0	.0	.0	.0	.0
7	151.9	294723.5	.0	.0	.0	.0	.0	.0	.0
8	8.1	9573.2	.0	.0	.0	.0	.0	.0	.0
9	.0	22.5	.0	.0	.0	.0	.0	.0	.0
10	6.6	2086.0	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	209.17	193.67
2	221.21	185.75
3	511.95	314.04
4	520.04	326.67
5	526.60	333.24

*** 1.626 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	209.17	193.67
2	221.21	185.75
3	511.95	314.04
4	520.04	326.67
5	526.60	333.24

*** 1.626 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	203.41	192.96
2	205.34	191.03
3	219.53	186.15
4	490.74	304.73
5	496.05	318.76
6	500.58	323.87

*** 1.641 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	203.41	192.96
2	205.34	191.03
3	219.53	186.15
4	490.74	304.73
5	496.05	318.76
6	500.58	323.87

*** 1.641 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	203.41	192.96

2	205.34	191.03
3	219.53	186.15
4	490.74	304.73
5	496.05	318.76
6	500.58	323.87

*** 1.641 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	203.41	192.96
2	205.34	191.03
3	219.53	186.15
4	490.74	304.73
5	496.05	318.76
6	500.58	323.87

*** 1.641 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	202.65	192.95
2	205.32	190.30
3	219.30	184.87
4	496.58	308.29
5	504.94	320.74
6	512.99	329.07

*** 1.642 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	202.65	192.95
2	205.32	190.30
3	219.30	184.87
4	496.58	308.29
5	504.94	320.74
6	512.99	329.07

*** 1.642 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	202.65	192.95
2	205.32	190.30
3	219.30	184.87
4	496.58	308.29
5	504.94	320.74
6	512.99	329.07

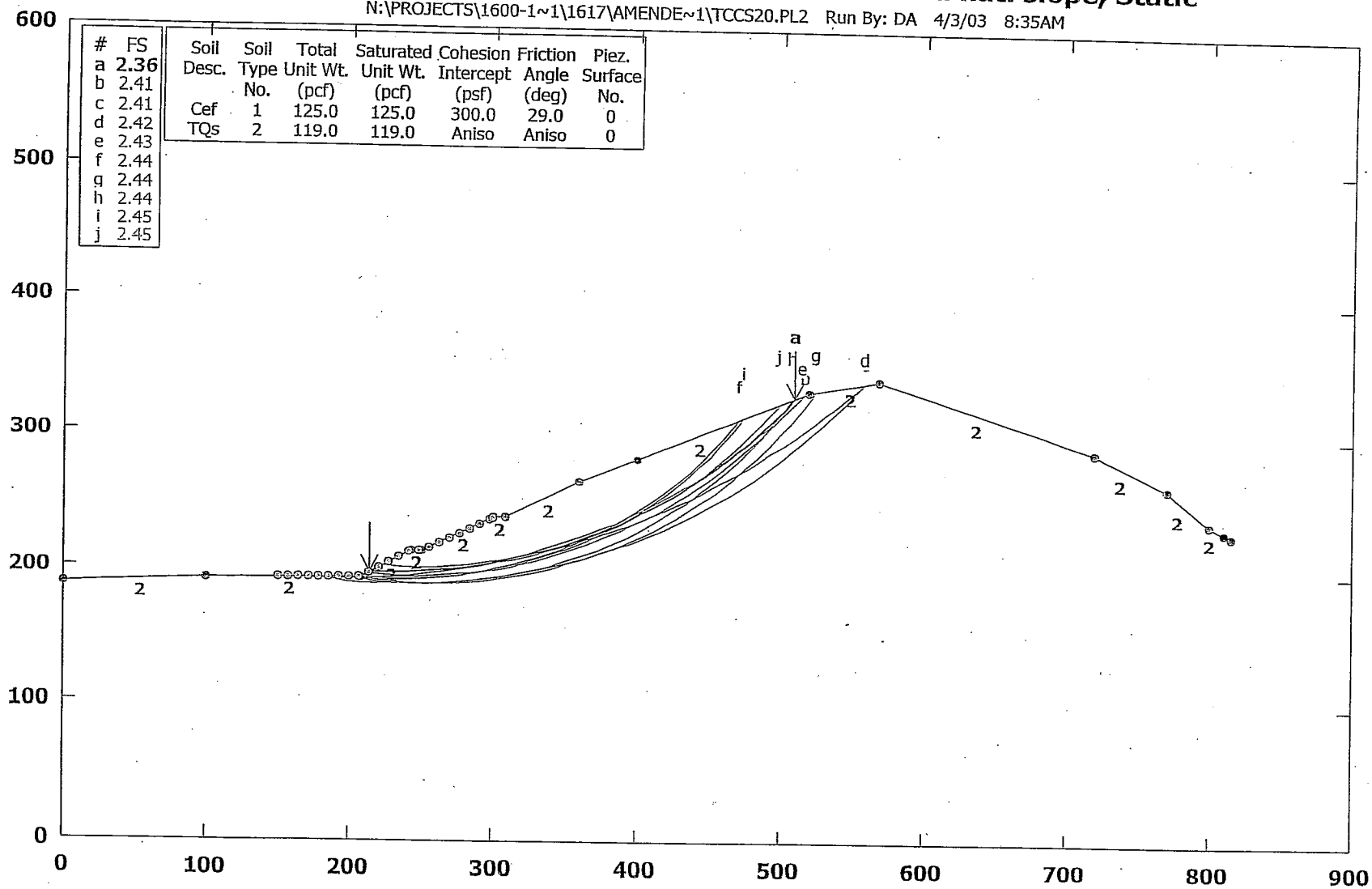
*** 1.642 ***

Amended VTT52584 C-C', Circular search CS-6 and nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TCCS20.PL2 Run By: DA 4/3/03 8:35AM

#	FS
a	2.36
b	2.41
c	2.41
d	2.42
e	2.43
f	2.44
g	2.44
h	2.44
i	2.45
j	2.45

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0



PCSTABL5M/si FSmin=2.36

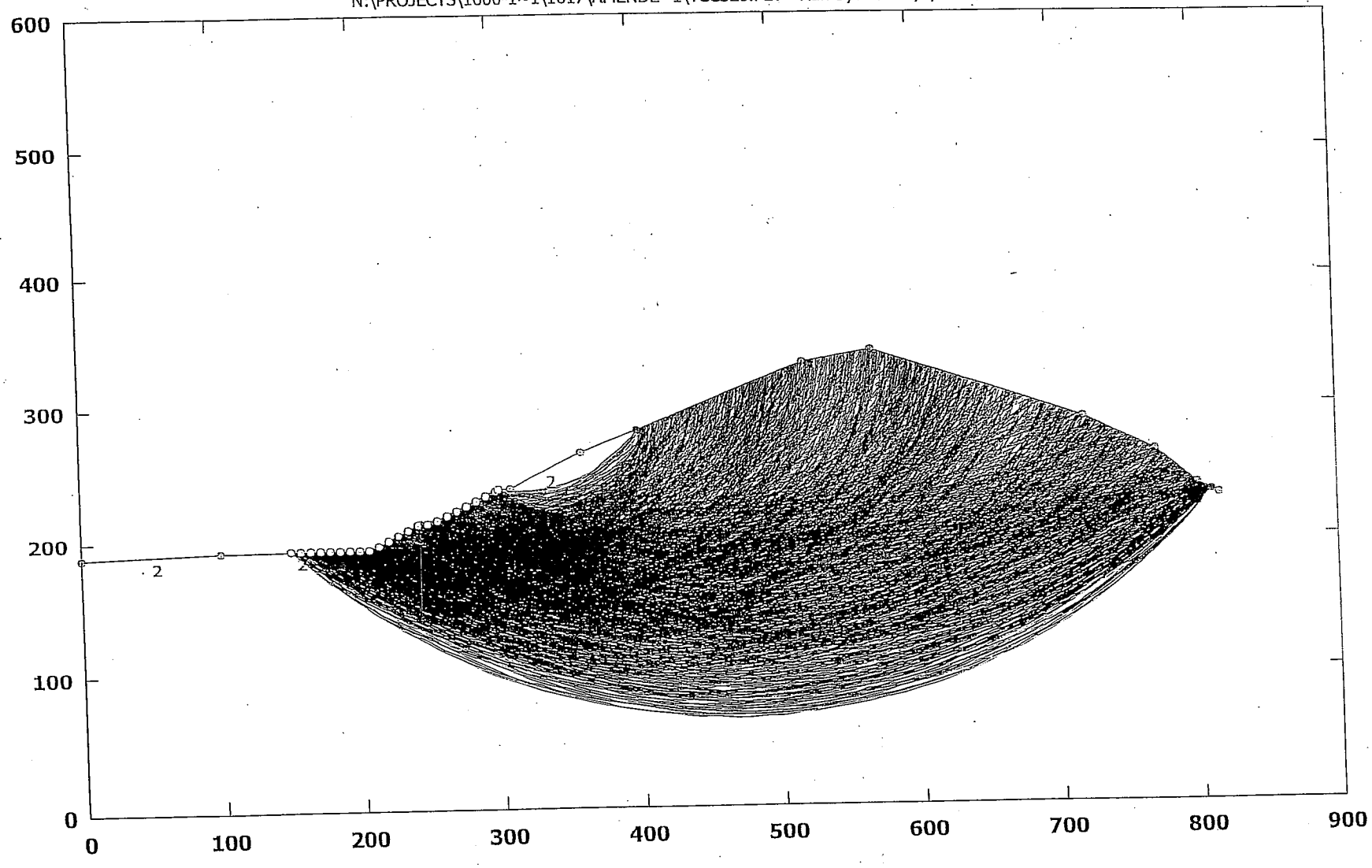
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

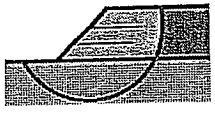
RUN No. - 45

Amended VTT52584 C-C', Circular search CS-6 and nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TCCS20.PLT Run By: DA 4/3/03 8:35AM



STED



```
                    ** PCSTABL5M **
                          by
                   Purdue University
             --Slope Stability Analysis--
          Simplified Janbu, Simplified Bishop
             or Spencer`s Method of Slices
 Run Date:                  4/3/03
 Time of Run:               8:35AM
 Run By:                    DA
 Input Data Filename:       N:TCCS20.IN
 Output Filename:           N:TCCS20.OUT
 Unit:                      ENGLISH
 Plotted Output Filename:   N:TCCS20.PLT
 PROBLEM DESCRIPTION   Amended VTT52584 C-C', Circular search
                       CS-6 and nat. slope, Static
 BOUNDARY COORDINATES
    13 Top   Boundaries
    13 Total Boundaries
```

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	187.00	100.00	192.00	2
2	100.00	192.00	208.00	193.00	2
3	208.00	193.00	243.00	213.00	2
4	243.00	213.00	251.00	213.00	2
5	251.00	213.00	301.00	238.00	2
6	301.00	238.00	309.00	238.00	2
7	309.00	238.00	360.00	265.00	2
8	360.00	265.00	520.00	332.00	2
9	520.00	332.00	568.00	341.00	2
10	568.00	341.00	719.00	289.00	2
11	719.00	289.00	770.00	264.00	2
12	770.00	264.00	800.00	238.00	2
13	800.00	238.00	815.00	230.00	2

```
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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	23.0	410.0	40.5
2	25.0	347.0	22.0
3	90.0	410.0	40.5

```
 A Critical Failure Surface Searching Method, Using A Random
 Technique For Generating Circular Surfaces, Has Been Specified.
 Janbus Empirical Coef. is being used for the case of  c & phi both > 0
1500 Trial Surfaces Have Been Generated.
  10 Surfaces Initiate From Each Of150 Points Equally Spaced
 Along The Ground Surface Between  X = 150.00 ft.
                              and  X = 300.00 ft.
 Each Surface Terminates Between   X = 400.00 ft.
                              and  X = 810.00 ft.
 Unless Further Limitations Were Imposed, The Minimum Elevation
 At Which A Surface Extends Is  Y =    .00 ft.
 12.00 ft. Line Segments Define Each Trial Failure Surface.
 Restrictions Have Been Imposed Upon The Angle Of Initiation.
 The Angle Has Been Restricted Between The Angles Of -45.0
 And     .0 deg.
 Following Are Displayed The Ten Most Critical Of The Trial
```

Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.43	196.67
2	226.43	196.58
3	238.43	196.87
4	250.41	197.54
5	262.36	198.58
6	274.28	200.01
7	286.14	201.81
8	297.94	203.99
9	309.67	206.54
10	321.31	209.46
11	332.85	212.75
12	344.28	216.41
13	355.59	220.42
14	366.76	224.79
15	377.79	229.51
16	388.67	234.58
17	399.38	240.00
18	409.91	245.75
19	420.26	251.83
20	430.40	258.23
21	440.34	264.96
22	450.06	271.99
23	459.56	279.33
24	468.81	286.97
25	477.82	294.90
26	486.57	303.11
27	495.06	311.59
28	503.28	320.34
29	509.79	327.72

*** 2.358 ***

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	12.0	4962.1	.0	.0	.0	.0	.0	.0	.0
2	12.0	14609.5	.0	.0	.0	.0	.0	.0	.0
3	4.6	7998.9	.0	.0	.0	.0	.0	.0	.0
4	7.4	13813.2	.0	.0	.0	.0	.0	.0	.0
5	.6	1087.9	.0	.0	.0	.0	.0	.0	.0
6	11.4	24004.8	.0	.0	.0	.0	.0	.0	.0
7	11.9	31707.6	.0	.0	.0	.0	.0	.0	.0
8	11.9	37684.9	.0	.0	.0	.0	.0	.0	.0
9	11.8	42997.0	.0	.0	.0	.0	.0	.0	.0
10	3.1	11978.9	.0	.0	.0	.0	.0	.0	.0
11	8.0	30914.4	.0	.0	.0	.0	.0	.0	.0
12	.7	2516.9	.0	.0	.0	.0	.0	.0	.0
13	11.6	46302.6	.0	.0	.0	.0	.0	.0	.0
14	11.5	50072.0	.0	.0	.0	.0	.0	.0	.0
15	11.4	53143.2	.0	.0	.0	.0	.0	.0	.0
16	11.3	55518.6	.0	.0	.0	.0	.0	.0	.0
17	4.4	22352.0	.0	.0	.0	.0	.0	.0	.0
18	6.8	34552.5	.0	.0	.0	.0	.0	.0	.0
19	11.0	56432.0	.0	.0	.0	.0	.0	.0	.0
20	10.9	55237.0	.0	.0	.0	.0	.0	.0	.0
21	10.7	53472.7	.0	.0	.0	.0	.0	.0	.0
22	10.5	51168.8	.0	.0	.0	.0	.0	.0	.0
23	10.3	48357.0	.0	.0	.0	.0	.0	.0	.0
24	10.1	45074.2	.0	.0	.0	.0	.0	.0	.0
25	9.9	41359.1	.0	.0	.0	.0	.0	.0	.0

26	9.7	37254.3	.0	.0	.0	.0	.0	.0	.0
27	9.5	32805.1	.0	.0	.0	.0	.0	.0	.0
28	9.3	28059.3	.0	.0	.0	.0	.0	.0	.0
29	9.0	23067.5	.0	.0	.0	.0	.0	.0	.0
30	8.8	17882.0	.0	.0	.0	.0	.0	.0	.0
31	8.5	12557.6	.0	.0	.0	.0	.0	.0	.0
32	8.2	7150.5	.0	.0	.0	.0	.0	.0	.0
33	6.5	1805.0	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 34 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	163.09	192.58
2	175.07	191.94
3	187.07	191.62
4	199.07	191.62
5	211.06	191.95
6	223.04	192.59
7	235.01	193.56
8	246.94	194.85
9	258.83	196.45
10	270.67	198.38
11	282.46	200.63
12	294.18	203.19
13	305.83	206.06
14	317.40	209.25
15	328.88	212.74
16	340.27	216.54
17	351.54	220.65
18	362.70	225.06
19	373.74	229.76
20	384.65	234.77
21	395.42	240.06
22	406.04	245.64
23	416.51	251.50
24	426.82	257.64
25	436.96	264.06
26	446.93	270.74
27	456.71	277.70
28	466.30	284.91
29	475.69	292.38
30	484.88	300.09
31	493.86	308.05
32	502.63	316.25
33	511.16	324.68
34	516.97	330.73

*** 2.411 ***

Failure Surface Specified By 37 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	173.15	192.68
2	185.05	191.09
3	196.99	189.85
4	208.95	188.94
5	220.94	188.38
6	232.94	188.15
7	244.93	188.27
8	256.93	188.73
9	268.90	189.53
10	280.85	190.66
11	292.75	192.14
12	304.62	193.96
13	316.42	196.11
14	328.16	198.60
15	339.82	201.42
16	351.40	204.57
17	362.89	208.05

18	374.27	211.85
19	385.54	215.97
20	396.69	220.42
21	407.70	225.18
22	418.58	230.25
23	429.30	235.63
24	439.88	241.31
25	450.28	247.28
26	460.51	253.56
27	470.56	260.12
28	480.42	266.96
29	490.07	274.08
30	499.53	281.47
31	508.77	289.13
32	517.78	297.05
33	526.57	305.22
34	535.12	313.64
35	543.43	322.30
36	551.49	331.19
37	558.35	339.19

*** 2.413 ***

Failure Surface Specified By 38 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	161.07	192.57
2	173.07	192.10
3	185.06	191.90
4	197.06	191.97
5	209.06	192.31
6	221.04	192.92
7	233.01	193.79
8	244.96	194.93
9	256.88	196.33
10	268.76	198.00
11	280.60	199.93
12	292.40	202.13
13	304.14	204.59
14	315.83	207.31
15	327.46	210.29
16	339.01	213.52
17	350.49	217.02
18	361.89	220.77
19	373.20	224.77
20	384.42	229.03
21	395.55	233.53
22	406.57	238.28
23	417.48	243.27
24	428.28	248.51
25	438.95	253.98
26	449.51	259.69
27	459.93	265.64
28	470.22	271.81
29	480.37	278.22
30	490.37	284.84
31	500.23	291.69
32	509.92	298.76
33	519.46	306.04
34	528.84	313.53
35	538.04	321.23
36	547.07	329.14
37	555.92	337.24
38	557.87	339.10

*** 2.419 ***

Failure Surface Specified By 32 Coordinate Points

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

1	187.25	192.81
2	199.21	191.81
3	211.19	191.19
4	223.19	190.96
5	235.19	191.12
6	247.18	191.66
7	259.14	192.59
8	271.07	193.90
9	282.95	195.60
10	294.76	197.68
11	306.51	200.14
12	318.17	202.98
13	329.73	206.19
14	341.18	209.78
15	352.51	213.73
16	363.71	218.04
17	374.77	222.72
18	385.66	227.74
19	396.39	233.12
20	406.94	238.84
21	417.30	244.89
22	427.46	251.28
23	437.41	257.99
24	447.14	265.01
25	456.63	272.35
26	465.88	279.99
27	474.89	287.93
28	483.63	296.15
29	492.10	304.64
30	500.30	313.41
31	508.21	322.44
32	513.99	329.48

*** 2.432 ***

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	204.36	192.97
2	216.33	192.09
3	228.32	191.69
4	240.32	191.78
5	252.31	192.35
6	264.26	193.40
7	276.17	194.93
8	288.00	196.95
9	299.73	199.44
10	311.36	202.40
11	322.86	205.83
12	334.22	209.71
13	345.40	214.06
14	356.40	218.85
15	367.20	224.08
16	377.78	229.74
17	388.13	235.83
18	398.22	242.32
19	408.04	249.22
20	417.57	256.51
21	426.80	264.18
22	435.71	272.21
23	444.30	280.60
24	452.53	289.32
25	460.41	298.37
26	467.92	307.74
27	470.54	311.29

*** 2.436 ***

Failure Surface Specified By 33 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	196.31	192.89
2	208.17	191.08
3	220.09	189.71
4	232.06	188.77
5	244.05	188.27
6	256.05	188.21
7	268.04	188.59
8	280.01	189.40
9	291.95	190.65
10	303.83	192.33
11	315.64	194.45
12	327.37	197.00
13	338.99	199.97
14	350.50	203.36
15	361.88	207.18
16	373.11	211.40
17	384.18	216.03
18	395.08	221.07
19	405.78	226.49
20	416.28	232.31
21	426.56	238.50
22	436.60	245.07
23	446.40	251.99
24	455.94	259.27
25	465.21	266.89
26	474.19	274.85
27	482.88	283.13
28	491.26	291.72
29	499.32	300.61
30	507.05	309.79
31	514.44	319.24
32	521.48	328.96
33	524.03	332.76

*** 2.441 ***

Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	195.30	192.88
2	207.17	191.13
3	219.10	189.84
4	231.07	189.00
5	243.07	188.61
6	255.07	188.69
7	267.06	189.22
8	279.02	190.21
9	290.93	191.65
10	302.78	193.55
11	314.55	195.90
12	326.22	198.69
13	337.77	201.93
14	349.19	205.60
15	360.47	209.71
16	371.58	214.25
17	382.51	219.20
18	393.24	224.57
19	403.76	230.35
20	414.05	236.52
21	424.10	243.07
22	433.89	250.01
23	443.41	257.32
24	452.65	264.98
25	461.58	272.99
26	470.21	281.33
27	478.51	290.00
28	486.47	298.98

29	494.08	308.25
30	501.34	317.81
31	507.66	326.83

*** 2.444 ***

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	212.42	195.52
2	224.37	194.47
3	236.36	193.91
4	248.36	193.87
5	260.35	194.34
6	272.31	195.31
7	284.22	196.80
8	296.05	198.78
9	307.79	201.27
10	319.41	204.25
11	330.90	207.72
12	342.23	211.68
13	353.38	216.11
14	364.34	221.01
15	375.07	226.37
16	385.57	232.19
17	395.81	238.44
18	405.78	245.12
19	415.45	252.22
20	424.82	259.72
21	433.86	267.61
22	442.56	275.88
23	450.89	284.51
24	458.86	293.49
25	466.43	302.80
26	473.61	312.41
27	473.76	312.64

*** 2.446 ***

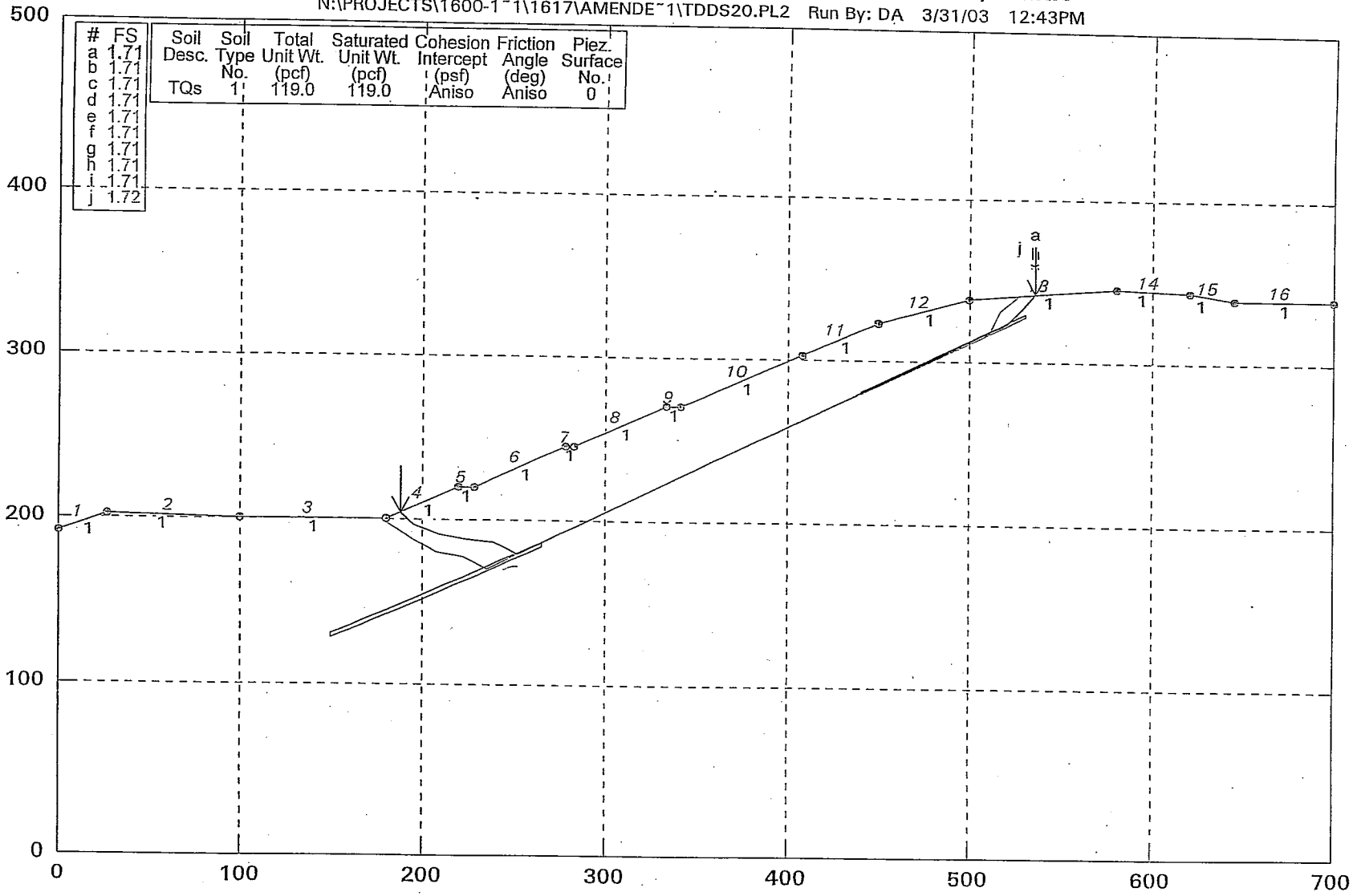
Failure Surface Specified By 28 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	223.49	201.85
2	235.47	201.15
3	247.47	200.90
4	259.47	201.10
5	271.45	201.75
6	283.40	202.86
7	295.29	204.42
8	307.13	206.43
9	318.87	208.89
10	330.52	211.78
11	342.04	215.12
12	353.44	218.89
13	364.68	223.08
14	375.75	227.70
15	386.65	232.74
16	397.34	238.18
17	407.82	244.03
18	418.07	250.26
19	428.08	256.88
20	437.84	263.87
21	447.32	271.23
22	456.51	278.94
23	465.41	286.99
24	474.00	295.37
25	482.26	304.08
26	490.19	313.08
27	497.77	322.39
28	498.11	322.83

*** 2.454 ***

Amended VTT52584 D-D' Bed plane search CS-7, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TDDS20.PL2 Run By: DA 3/31/03 12:43PM



PCSTABL5M/si FSmin=1.71

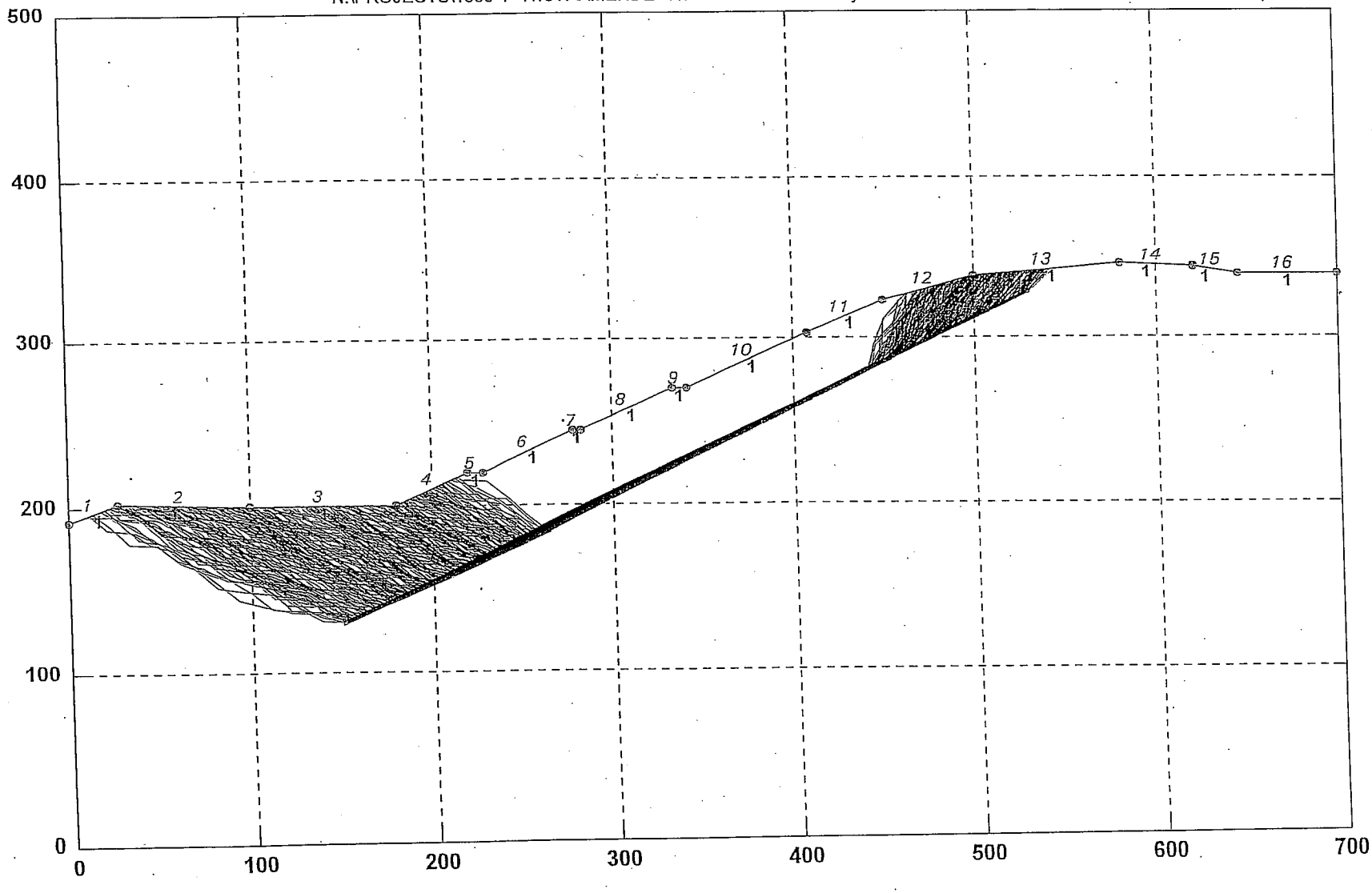
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

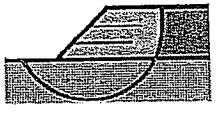
RUN No. - 46

Amended VTT52584 D-D' Bed plane search CS-7, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TDDS20.PLT Run By: DA 3/31/03 12:43PM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 12:43PM
Run By: DA
Input Data Filename: N:TDDS20.IN
Output Filename: N:TDDS20.OUT
Unit: ENGLISH
Plotted Output Filename: N:TDDS20.PLT
PROBLEM DESCRIPTION Amended VTT52584 D-D' Bed plane search
CS-7, Static

BOUNDARY COORDINATES
16 Top Boundaries
16 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	192.00	27.00	202.00	1
2	27.00	202.00	100.00	200.00	1
3	100.00	200.00	180.00	200.00	1
4	180.00	200.00	220.00	220.00	1
5	220.00	220.00	228.00	220.00	1
6	228.00	220.00	278.00	245.00	1
7	278.00	245.00	283.00	245.00	1
8	283.00	245.00	333.00	270.00	1
9	333.00	270.00	341.00	270.00	1
10	341.00	270.00	408.00	303.00	1
11	408.00	303.00	450.00	323.00	1
12	450.00	323.00	500.00	338.00	1
13	500.00	338.00	580.00	345.00	1
14	580.00	345.00	620.00	343.00	1
15	620.00	343.00	645.00	339.00	1
16	645.00	339.00	700.00	339.00	1

ISOTROPIC SOIL PARAMETERS
1 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	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	27.0	410.0	40.5
2	29.0	347.0	22.0
3	90.0	410.0	40.5

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.
2500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	150.00	130.00	265.00	185.00	2.00
2	440.00	280.00	530.00	328.00	2.00

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

First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12

*** 1.711 ***

Individual data on the 17 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	7.4	4892.5	.0	.0	.0	.0	.0	.0	.0
2	13.7	28579.6	.0	.0	.0	.0	.0	.0	.0
3	10.9	36003.2	.0	.0	.0	.0	.0	.0	.0
4	3.9	14625.0	.0	.0	.0	.0	.0	.0	.0
5	4.1	15757.9	.0	.0	.0	.0	.0	.0	.0
6	10.8	45865.9	.0	.0	.0	.0	.0	.0	.0
7	13.5	73300.7	.0	.0	.0	.0	.0	.0	.0
8	25.7	158815.1	.0	.0	.0	.0	.0	.0	.0
9	5.0	29795.8	.0	.0	.0	.0	.0	.0	.0
10	50.0	284656.0	.0	.0	.0	.0	.0	.0	.0
11	8.0	42651.4	.0	.0	.0	.0	.0	.0	.0
12	67.0	328549.6	.0	.0	.0	.0	.0	.0	.0
13	42.0	192444.7	.0	.0	.0	.0	.0	.0	.0
14	50.0	186565.6	.0	.0	.0	.0	.0	.0	.0
15	20.0	49917.0	.0	.0	.0	.0	.0	.0	.0
16	10.4	14355.6	.0	.0	.0	.0	.0	.0	.0
17	5.2	2047.3	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12

*** 1.711 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12

*** 1.711 ***

Failure Surface Specified By 9 Coordinate Points

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

1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12

*** 1.711 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12

*** 1.711 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12

*** 1.711 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12

*** 1.711 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12

*** 1.711 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99

2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12

*** 1.711 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	177.05	200.00
2	181.87	196.60
3	194.36	188.29
4	207.16	180.47
5	221.88	177.58
6	235.32	170.92
7	510.24	316.80
8	516.62	330.37
9	526.35	340.31

*** 1.722 ***

Amended VTT52584 D-D' Bed plane search CS-7,

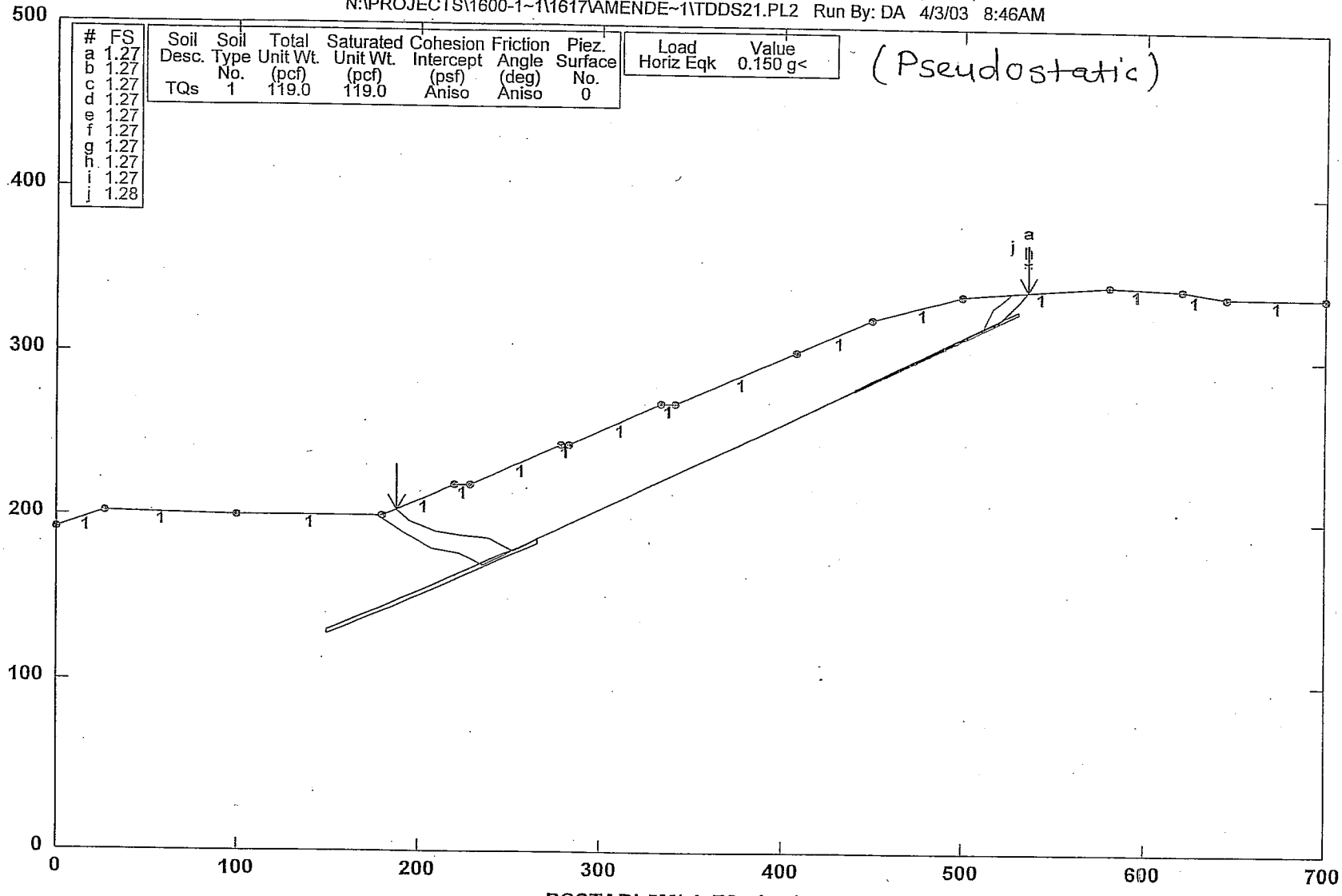
N:\PROJECTS\1600-1~1\1617\AMENDE~1\TDDS21.PL2 Run By: DA 4/3/03 8:46AM

(Pseudostatic)

#	FS
a	1.27
b	1.27
c	1.27
d	1.27
e	1.27
f	1.27
g	1.27
h	1.27
i	1.27
j	1.28

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs	1	119.0	119.0	Aniso	Aniso	0

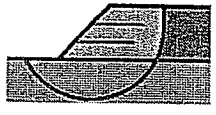
Load	Value
Horiz Eqk	0.150 g<



PCSTABL5M/si FSmin=1.27

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

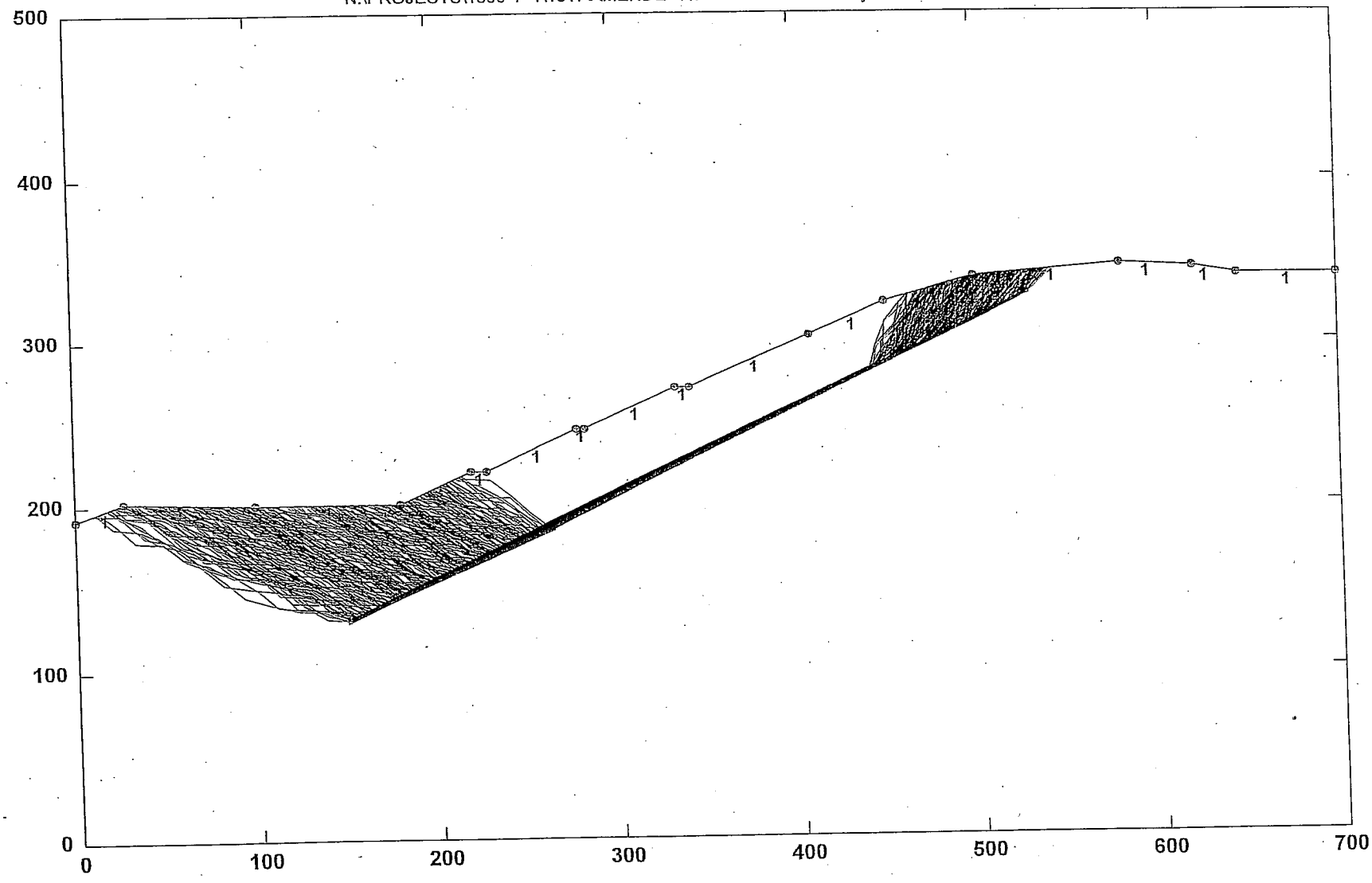
STED



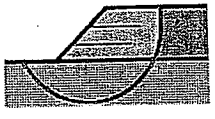
RUN NO. - 47

Amended VTT52584 D-D' Bed plane search CS-7, Psuedostatic

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TDDS21.PLT Run By: DA 4/3/03 8:46AM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/3/03
Time of Run: 8:46AM
Run By: DA
Input Data Filename: N:TDDS21.IN
Output Filename: N:TDDS21.OUT
Unit: ENGLISH
Plotted Output Filename: N:TDDS21.PLT
PROBLEM DESCRIPTION Amended VTT52584 D-D' Bed plane search
CS-7, Psuedostatic

BOUNDARY COORDINATES
16 Top Boundaries
16 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	192.00	27.00	202.00	1
2	27.00	202.00	100.00	200.00	1
3	100.00	200.00	180.00	200.00	1
4	180.00	200.00	220.00	220.00	1
5	220.00	220.00	228.00	220.00	1
6	228.00	220.00	278.00	245.00	1
7	278.00	245.00	283.00	245.00	1
8	283.00	245.00	333.00	270.00	1
9	333.00	270.00	341.00	270.00	1
10	341.00	270.00	408.00	303.00	1
11	408.00	303.00	450.00	323.00	1
12	450.00	323.00	500.00	338.00	1
13	500.00	338.00	580.00	345.00	1
14	580.00	345.00	620.00	343.00	1
15	620.00	343.00	645.00	339.00	1
16	645.00	339.00	700.00	339.00	1

ISOTROPIC SOIL PARAMETERS
1 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	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	27.0	410.0	40.5
2	29.0	347.0	22.0
3	90.0	410.0	40.5

A Horizontal Earthquake Loading Coefficient
Of .150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of .000 Has Been Assigned
Cavitation Pressure = .0 (psf)
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.
2500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box	X-Left	Y-Left	X-Right	Y-Right	Height

No.	(ft)	(ft)	(ft)	(ft)	(ft)
1	150.00	130.00	265.00	185.00	2.00
2	440.00	280.00	530.00	328.00	2.00

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

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

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12

*** 1.274 ***

Individual data on the 17 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	7.4	4892.5	.0	.0	.0	.0	733.9	.0	.0
2	13.7	28579.6	.0	.0	.0	.0	4286.9	.0	.0
3	10.9	36003.2	.0	.0	.0	.0	5400.5	.0	.0
4	3.9	14625.0	.0	.0	.0	.0	2193.8	.0	.0
5	4.1	15757.9	.0	.0	.0	.0	2363.7	.0	.0
6	10.8	45865.9	.0	.0	.0	.0	6879.9	.0	.0
7	13.5	73300.7	.0	.0	.0	.0	10995.1	.0	.0
8	25.7	158815.1	.0	.0	.0	.0	23822.3	.0	.0
9	5.0	29795.8	.0	.0	.0	.0	4469.4	.0	.0
10	50.0	284656.0	.0	.0	.0	.0	42698.4	.0	.0
11	8.0	42651.4	.0	.0	.0	.0	6397.7	.0	.0
12	67.0	328549.6	.0	.0	.0	.0	49282.4	.0	.0
13	42.0	192444.7	.0	.0	.0	.0	28866.7	.0	.0
14	50.0	186565.6	.0	.0	.0	.0	27984.8	.0	.0
15	20.0	49917.0	.0	.0	.0	.0	7487.6	.0	.0
16	10.4	14355.6	.0	.0	.0	.0	2153.3	.0	.0
17	5.2	2047.3	.0	.0	.0	.0	307.1	.0	.0

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12

*** 1.274 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03

9	535.62	341.12
***	1.274	***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12
***	1.274	***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12
***	1.274	***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12
***	1.274	***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12
***	1.274	***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12

*** 1.274 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.98	203.99
2	195.41	196.64
3	209.08	190.45
4	223.89	188.05
5	238.79	186.37
6	252.27	179.80
7	520.00	323.26
8	530.43	334.03
9	535.62	341.12

*** 1.274 ***

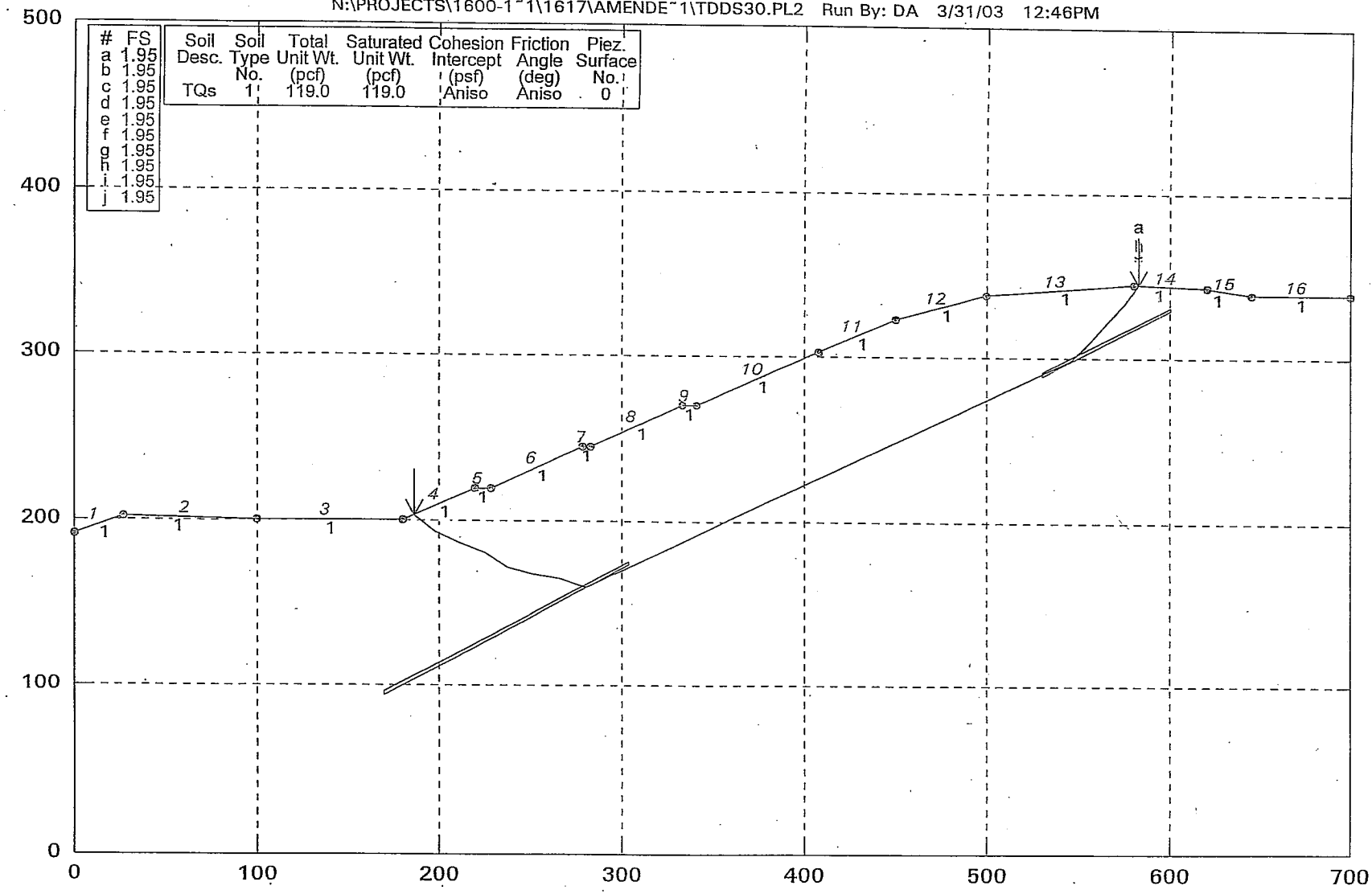
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	177.05	200.00
2	181.87	196.60
3	194.36	188.29
4	207.16	180.47
5	221.88	177.58
6	235.32	170.92
7	510.24	316.80
8	516.62	330.37
9	526.35	340.31

*** 1.284 ***

Amended VTT52584 D-D' Bed plane search CS-7, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TDDS30.PL2 Run By: DA 3/31/03 12:46PM



PCSTABL5M/si FSmin=1.95

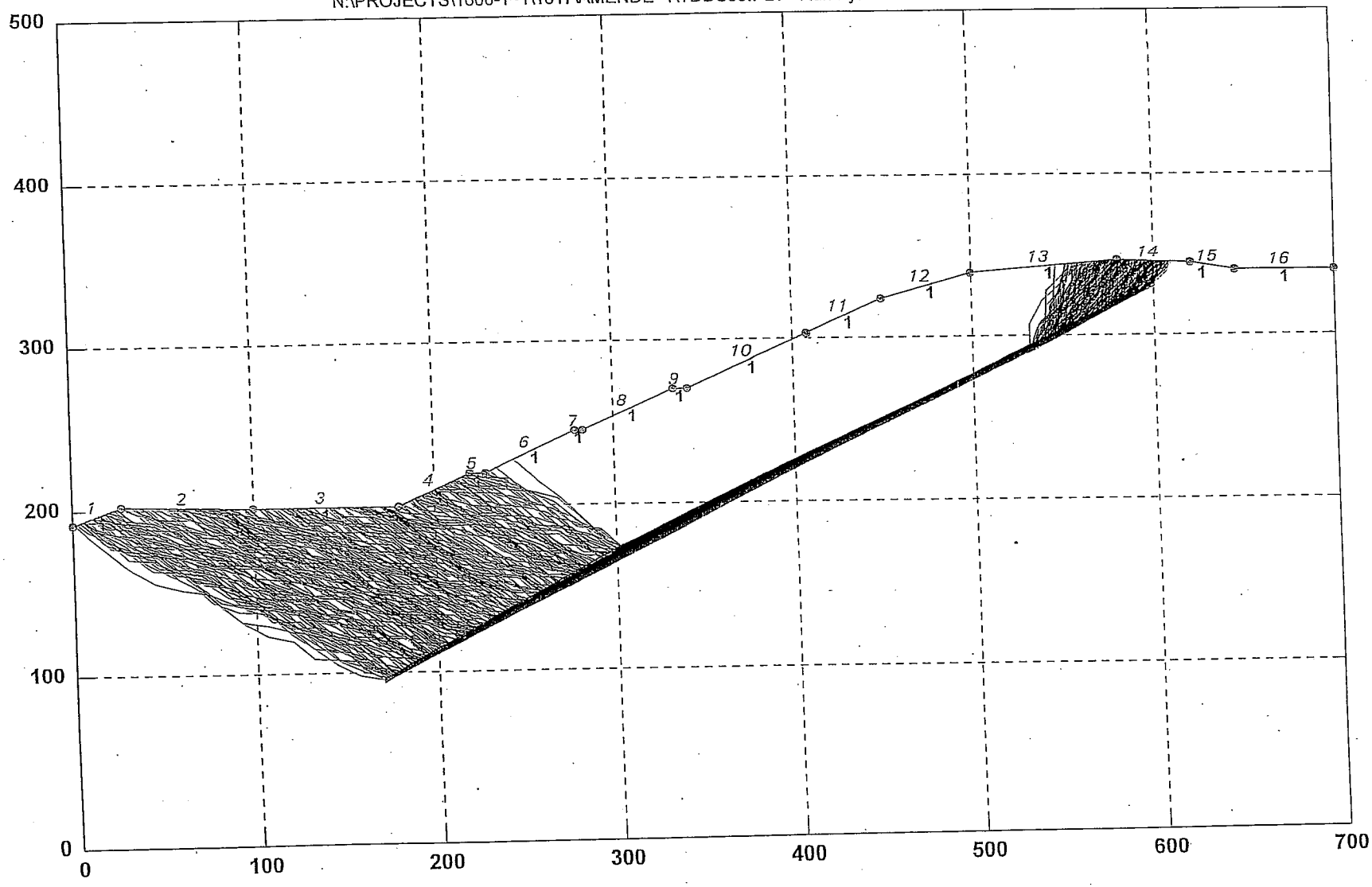
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

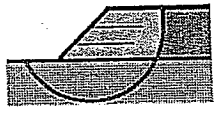
RUN NO. - 48

Amended VTT52584 D-D' Bed plane search CS-7, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TDDS30.PLT Run By: DA 3/31/03 12:46PM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 12:46PM
Run By: DA
Input Data Filename: N:TDDS30.IN
Output Filename: N:TDDS30.OUT
Unit: ENGLISH
Plotted Output Filename: N:TDDS30.PLT
PROBLEM DESCRIPTION Amended VTT52584 D-D' Bed plane search
CS-7, Static

BOUNDARY COORDINATES
16 Top Boundaries
16 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	192.00	27.00	202.00	1
2	27.00	202.00	100.00	200.00	1
3	100.00	200.00	180.00	200.00	1
4	180.00	200.00	220.00	220.00	1
5	220.00	220.00	228.00	220.00	1
6	228.00	220.00	278.00	245.00	1
7	278.00	245.00	283.00	245.00	1
8	283.00	245.00	333.00	270.00	1
9	333.00	270.00	341.00	270.00	1
10	341.00	270.00	408.00	303.00	1
11	408.00	303.00	450.00	323.00	1
12	450.00	323.00	500.00	338.00	1
13	500.00	338.00	580.00	345.00	1
14	580.00	345.00	620.00	343.00	1
15	620.00	343.00	645.00	339.00	1
16	645.00	339.00	700.00	339.00	1

ISOTROPIC SOIL PARAMETERS
1 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	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	27.0	410.0	40.5
2	29.0	347.0	22.0
3	90.0	410.0	40.5

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.
2500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	170.00	95.00	304.00	175.00	2.00
2	530.00	290.00	600.00	330.00	2.00

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

First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.25	203.12
2	197.47	193.60
3	210.98	187.09
4	224.70	181.03
5	236.71	172.04
6	251.17	168.06
7	265.95	165.46
8	279.95	160.08
9	545.56	298.25
10	555.96	309.07
11	564.84	321.15
12	574.75	332.42
13	582.99	344.85

*** 1.947 ***

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	11.2	10102.5	.0	.0	.0	.0	.0	.0	.0
2	13.5	35008.1	.0	.0	.0	.0	.0	.0	.0
3	9.0	35040.1	.0	.0	.0	.0	.0	.0	.0
4	4.7	21220.3	.0	.0	.0	.0	.0	.0	.0
5	3.3	15784.7	.0	.0	.0	.0	.0	.0	.0
6	8.7	48592.6	.0	.0	.0	.0	.0	.0	.0
7	14.5	99681.3	.0	.0	.0	.0	.0	.0	.0
8	14.8	120456.0	.0	.0	.0	.0	.0	.0	.0
9	12.1	113087.3	.0	.0	.0	.0	.0	.0	.0
10	1.9	19583.2	.0	.0	.0	.0	.0	.0	.0
11	3.1	30570.1	.0	.0	.0	.0	.0	.0	.0
12	50.0	492831.7	.0	.0	.0	.0	.0	.0	.0
13	8.0	76391.7	.0	.0	.0	.0	.0	.0	.0
14	67.0	615805.4	.0	.0	.0	.0	.0	.0	.0
15	42.0	376779.7	.0	.0	.0	.0	.0	.0	.0
16	50.0	410296.9	.0	.0	.0	.0	.0	.0	.0
17	45.6	290602.7	.0	.0	.0	.0	.0	.0	.0
18	10.4	47956.2	.0	.0	.0	.0	.0	.0	.0
19	8.9	29804.3	.0	.0	.0	.0	.0	.0	.0
20	9.9	20410.3	.0	.0	.0	.0	.0	.0	.0
21	5.3	5245.7	.0	.0	.0	.0	.0	.0	.0
22	3.0	827.7	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.25	203.12
2	197.47	193.60
3	210.98	187.09
4	224.70	181.03
5	236.71	172.04
6	251.17	168.06
7	265.95	165.46
8	279.95	160.08
9	545.56	298.25
10	555.96	309.07
11	564.84	321.15
12	574.75	332.42
13	582.99	344.85

*** 1.947 ***

Failure Surface Specified By 13 Coordinate Points

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

1	186.25	203.12
2	197.47	193.60
3	210.98	187.09
4	224.70	181.03
5	236.71	172.04
6	251.17	168.06
7	265.95	165.46
8	279.95	160.08
9	545.56	298.25
10	555.96	309.07
11	564.84	321.15
12	574.75	332.42
13	582.99	344.85

*** 1.947 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.25	203.12
2	197.47	193.60
3	210.98	187.09
4	224.70	181.03
5	236.71	172.04
6	251.17	168.06
7	265.95	165.46
8	279.95	160.08
9	545.56	298.25
10	555.96	309.07
11	564.84	321.15
12	574.75	332.42
13	582.99	344.85

*** 1.947 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.25	203.12
2	197.47	193.60
3	210.98	187.09
4	224.70	181.03
5	236.71	172.04
6	251.17	168.06
7	265.95	165.46
8	279.95	160.08
9	545.56	298.25
10	555.96	309.07
11	564.84	321.15
12	574.75	332.42
13	582.99	344.85

*** 1.947 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.25	203.12
2	197.47	193.60
3	210.98	187.09
4	224.70	181.03
5	236.71	172.04
6	251.17	168.06
7	265.95	165.46
8	279.95	160.08
9	545.56	298.25
10	555.96	309.07
11	564.84	321.15
12	574.75	332.42
13	582.99	344.85

*** 1.947 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.25	203.12
2	197.47	193.60
3	210.98	187.09
4	224.70	181.03
5	236.71	172.04
6	251.17	168.06
7	265.95	165.46
8	279.95	160.08
9	545.56	298.25
10	555.96	309.07
11	564.84	321.15
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*** 1.947 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.25	203.12
2	197.47	193.60
3	210.98	187.09
4	224.70	181.03
5	236.71	172.04
6	251.17	168.06
7	265.95	165.46
8	279.95	160.08
9	545.56	298.25
10	555.96	309.07
11	564.84	321.15
12	574.75	332.42
13	582.99	344.85

*** 1.947 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.25	203.12
2	197.47	193.60
3	210.98	187.09
4	224.70	181.03
5	236.71	172.04
6	251.17	168.06
7	265.95	165.46
8	279.95	160.08
9	545.56	298.25
10	555.96	309.07
11	564.84	321.15
12	574.75	332.42
13	582.99	344.85

*** 1.947 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	186.25	203.12
2	197.47	193.60
3	210.98	187.09
4	224.70	181.03
5	236.71	172.04
6	251.17	168.06
7	265.95	165.46
8	279.95	160.08
9	545.56	298.25
10	555.96	309.07
11	564.84	321.15
12	574.75	332.42
13	582.99	344.85

*** 1.947 ***

Amended VTT52584 D-D' Bed plane search CS-7, Static

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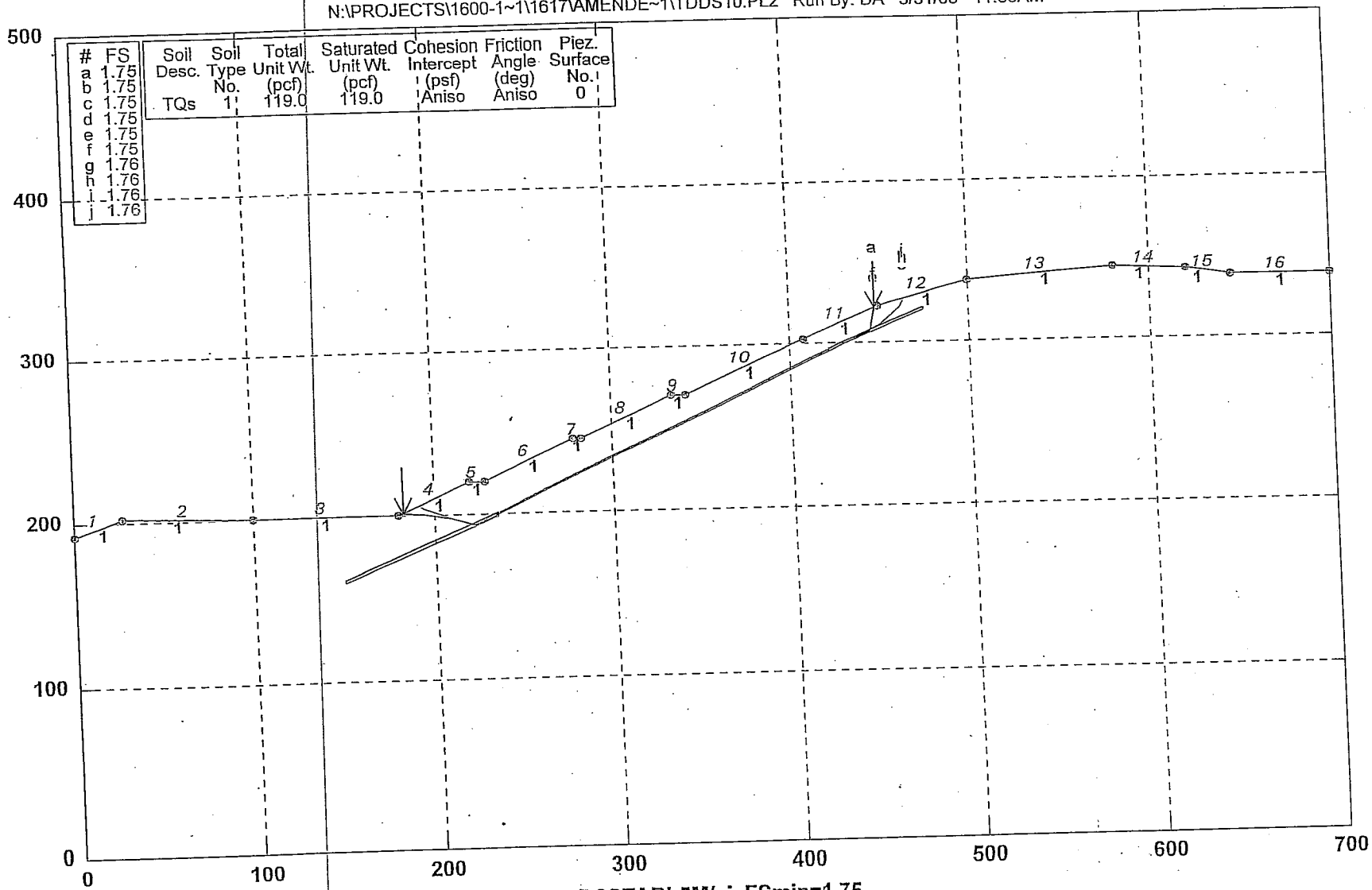

PCSTABL5M/si FSmin=1.75

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

RUN NO. - 49

Amended VTT52584 D-D' Bed plane search CS-7, Static

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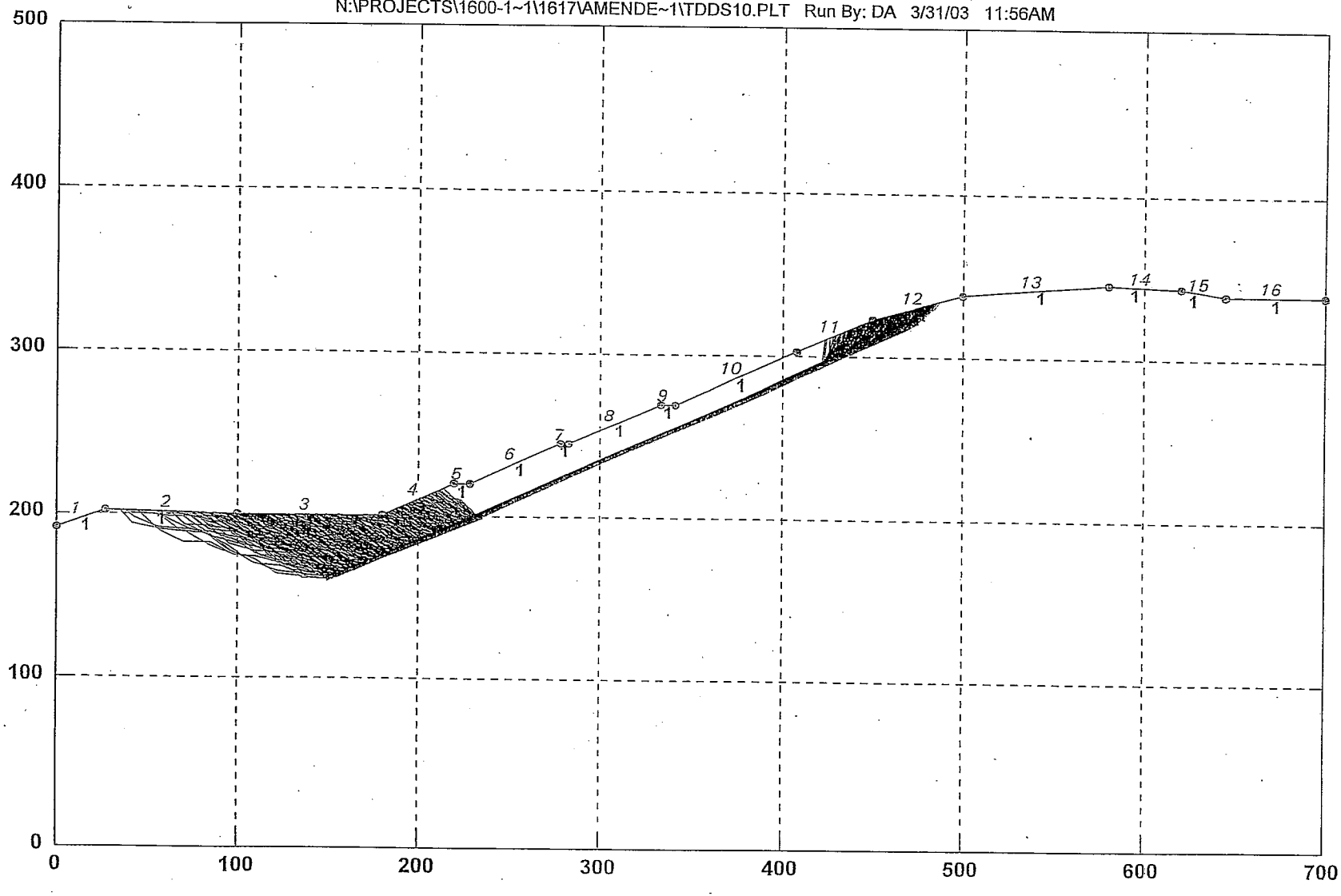

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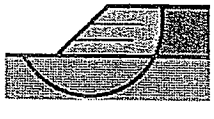

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 11:56AM
Run By: DA
Input Data Filename: N:TDDS10.IN
Output Filename: N:TDDS10.OUT
Unit: ENGLISH
Plotted Output Filename: N:TDDS10.PLT
PROBLEM DESCRIPTION Amended VTT52584 D-D' Bed plane search
CS-7, Static

BOUNDARY COORDINATES
16 Top Boundaries
16 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	192.00	27.00	202.00	1
2	27.00	202.00	100.00	200.00	1
3	100.00	200.00	180.00	200.00	1
4	180.00	200.00	220.00	220.00	1
5	220.00	220.00	228.00	220.00	1
6	228.00	220.00	278.00	245.00	1
7	278.00	245.00	283.00	245.00	1
8	283.00	245.00	333.00	270.00	1
9	333.00	270.00	341.00	270.00	1
10	341.00	270.00	408.00	303.00	1
11	408.00	303.00	450.00	323.00	1
12	450.00	323.00	500.00	338.00	1
13	500.00	338.00	580.00	345.00	1
14	580.00	345.00	620.00	343.00	1
15	620.00	343.00	645.00	339.00	1
16	645.00	339.00	700.00	339.00	

ISOTROPIC SOIL PARAMETERS
1 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	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	27.0	410.0	40.5
2	29.0	347.0	22.0
3	90.0	410.0	40.5

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.
2500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	150.00	160.00	235.00	200.00	2.00
2	422.00	296.00	475.00	321.00	2.00

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

First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	183.14	201.57
2	194.03	200.61
3	208.83	198.16
4	223.08	193.49
5	445.49	307.45
6	447.92	322.01

*** 1.749 ***

Individual data on the 12 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	10.9	4149.1	.0	.0	.0	.0	.0	.0	.0
2	14.8	19952.1	.0	.0	.0	.0	.0	.0	.0
3	11.2	27757.6	.0	.0	.0	.0	.0	.0	.0
4	3.1	9540.3	.0	.0	.0	.0	.0	.0	.0
5	4.9	14772.2	.0	.0	.0	.0	.0	.0	.0
6	50.0	140888.6	.0	.0	.0	.0	.0	.0	.0
7	5.0	13142.9	.0	.0	.0	.0	.0	.0	.0
8	50.0	121968.5	.0	.0	.0	.0	.0	.0	.0
9	8.0	17269.7	.0	.0	.0	.0	.0	.0	.0
10	67.0	122998.8	.0	.0	.0	.0	.0	.0	.0
11	37.5	62844.4	.0	.0	.0	.0	.0	.0	.0
12	2.4	1932.6	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	183.14	201.57
2	194.03	200.61
3	208.83	198.16
4	223.08	193.49
5	445.49	307.45
6	447.92	322.01

*** 1.749 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	183.14	201.57
2	194.03	200.61
3	208.83	198.16
4	223.08	193.49
5	445.49	307.45
6	447.92	322.01

*** 1.749 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	183.14	201.57
2	194.03	200.61
3	208.83	198.16
4	223.08	193.49
5	445.49	307.45
6	447.92	322.01

*** 1.749 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	183.14	201.57
2	194.03	200.61
3	208.83	198.16
4	223.08	193.49

5	445.49	307.45
6	447.92	322.01

*** 1.749 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	183.14	201.57
2	194.03	200.61
3	208.83	198.16
4	223.08	193.49
5	445.49	307.45
6	447.92	322.01

*** 1.749 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	191.97	205.98
2	193.86	204.25
3	207.60	198.22
4	221.71	193.15
5	451.89	311.07
6	461.84	322.29
7	464.35	327.30

*** 1.757 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	191.97	205.98
2	193.86	204.25
3	207.60	198.22
4	221.71	193.15
5	451.89	311.07
6	461.84	322.29
7	464.35	327.30

*** 1.757 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	191.97	205.98
2	193.86	204.25
3	207.60	198.22
4	221.71	193.15
5	451.89	311.07
6	461.84	322.29
7	464.35	327.30

*** 1.757 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	191.97	205.98
2	193.86	204.25
3	207.60	198.22
4	221.71	193.15
5	451.89	311.07
6	461.84	322.29
7	464.35	327.30

*** 1.757 ***

Amended VTT52584, D-D', Circular search,CS-7, Static

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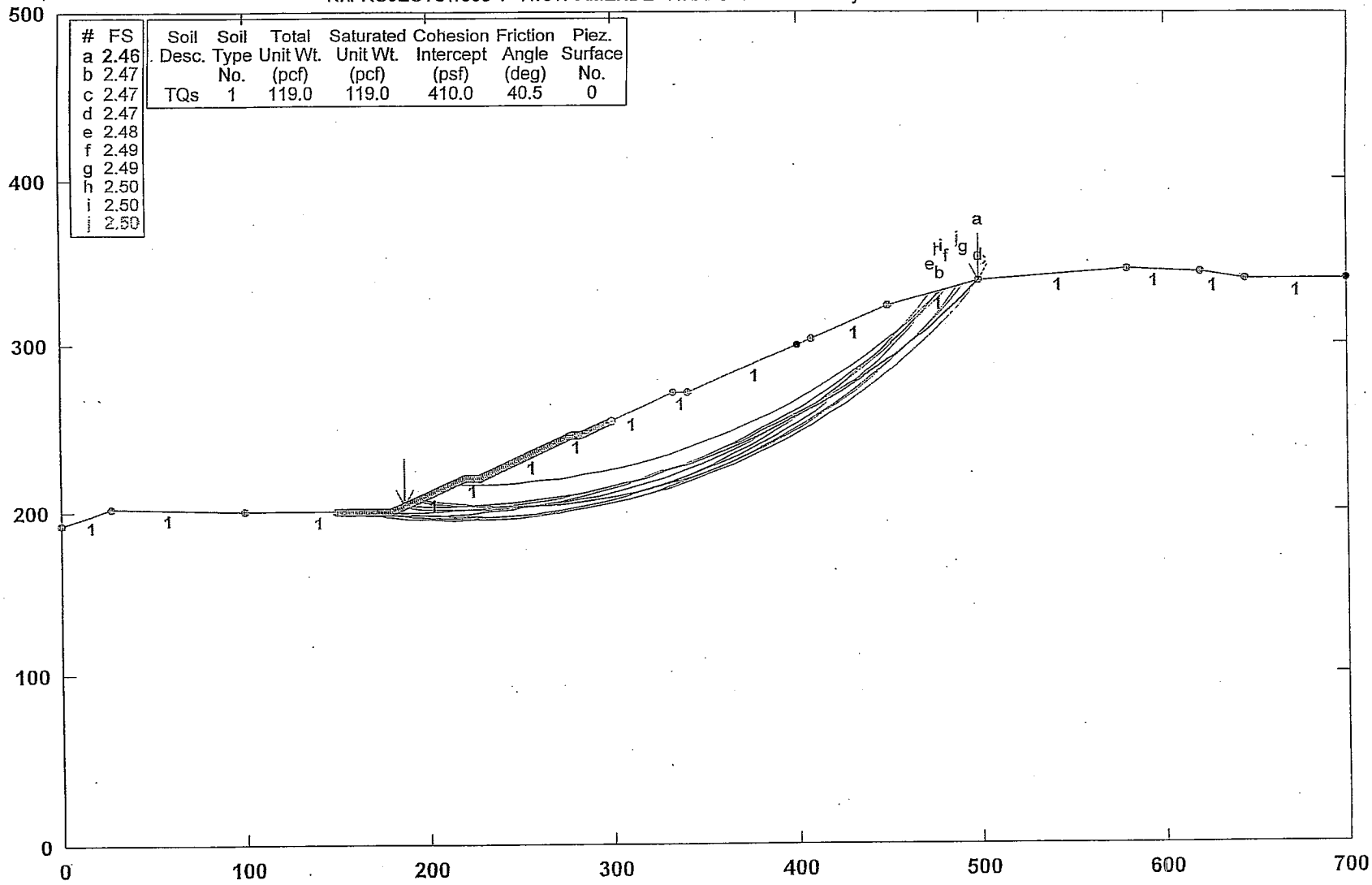


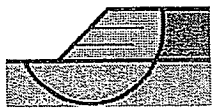
#	FS
a	2.46
b	2.47
c	2.47
d	2.47
e	2.48
f	2.49
g	2.49
h	2.50
i	2.50
j	2.50

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs	1	119.0	119.0	410.0	40.5	0

GSTABL7 FSmin=2.46

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

STED



RUN NO. 50

Amended VTT52584, D-D', Circular search,CS-7, Static

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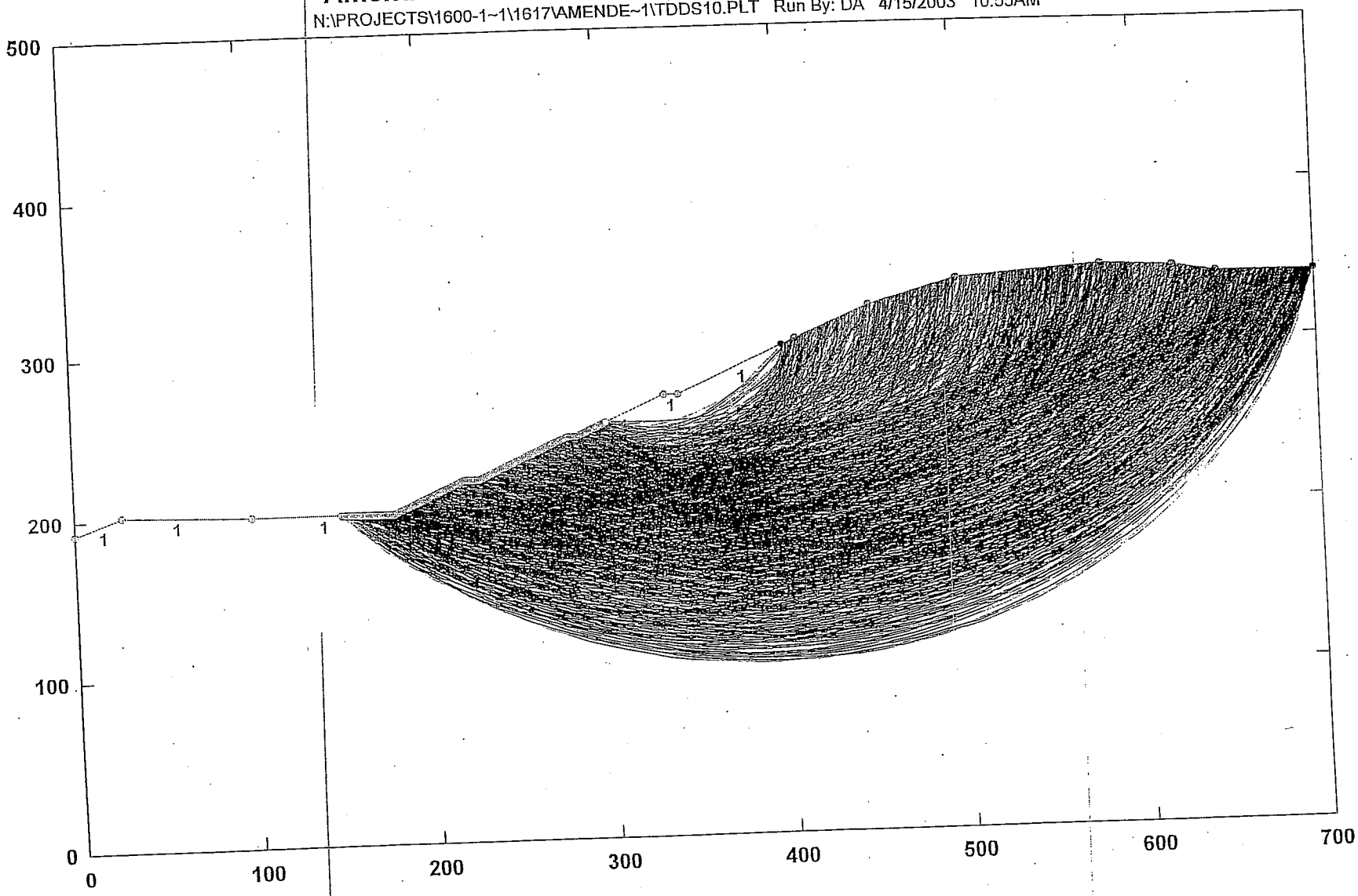

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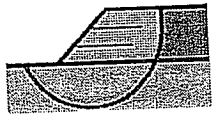


```
                 ***  GSTABL7  ***
      ** GSTABL7 by Garry H. Gregory, P.E. **
** Version 1.0, January 1996; Version 1.16, May 2000 **
             --Slope Stability Analysis--
           Simplified Janbu, Modified Bishop
             or Spencer`s Method of Slices
     (Based on STABL6-1986, by Purdue University)
Run Date:                    4/15/2003
Time of Run:                 10:55AM
Run By:                      DA
Input Data Filename:         N:tdds10.in
Output Filename:             N:tdds10.OUT
Unit System:                 English
Plotted Output Filename:     N:tdds10.PLT
PROBLEM DESCRIPTION   Amended VTT52584, D-D', Circular search,
                      CS-7, Static
BOUNDARY COORDINATES
   16 Top   Boundaries
   16 Total Boundaries
Boundary     X-Left      Y-Left     X-Right     Y-Right     Soil Type
   No.        (ft)        (ft)       (ft)        (ft)      Below Bnd
    1         0.00      192.00      27.00      202.00         1
    2        27.00      202.00     100.00      200.00         1
    3       100.00      200.00     180.00      200.00         1
    4       180.00      200.00     220.00      220.00         1
    5       220.00      220.00     228.00      220.00         1
    6       228.00      220.00     278.00      245.00         1
    7       278.00      245.00     283.00      245.00         1
    8       283.00      245.00     333.00      270.00         1
    9       333.00      270.00     341.00      270.00         1
   10       341.00      270.00     408.00      303.00         1
   11       408.00      303.00     450.00      323.00         1
   12       450.00      323.00     500.00      338.00         1
   13       500.00      338.00     580.00      345.00         1
   14       580.00      345.00     620.00      343.00         1
   15       620.00      343.00     645.00      339.00         1
   16       645.00      339.00     700.00      339.00         1
ISOTROPIC SOIL PARAMETERS
  1 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   119.0    119.0     410.0    40.5    0.00      0.0      0
 A Critical Failure Surface Searching Method, Using A Random
 Technique For Generating Circular Surfaces, Has Been Specified.
 Janbus Empirical Coef. is being used for the case of  c & phi both > 0
1500 Trial Surfaces Have Been Generated.
  10 Surfaces Initiate From Each Of150 Points Equally Spaced
 Along The Ground Surface Between  X = 150.00(ft)
                              and  X = 300.00(ft)
 Each Surface Terminates Between   X = 400.00(ft)
                              and  X = 700.00(ft)
 Unless Further Limitations Were Imposed, The Minimum Elevation
 At Which A Surface Extends Is  Y =  0.00(ft)
 12.00(ft) Line Segments Define Each Trial Failure Surface.
 Restrictions Have Been Imposed Upon The Angle Of Initiation.
 The Angle Has Been Restricted Between The Angles Of -45.0
 And   0.0 deg.
 Following Are Displayed The Ten Most Critical Of The Trial
       Failure Surfaces Examined.  They Are Ordered - Most Critical
       First.
       * * Safety Factors Are Calculated By The Simplified Janbu Method * *
       Failure Surface Specified By 31 Coordinate Points
         Point      X-Surf      Y-Surf
          No.        (ft)        (ft)
           1        187.25      203.62
           2        199.24      203.28
```

3	211.24	203.31
4	223.24	203.70
5	235.21	204.46
6	247.16	205.59
7	259.07	207.08
8	270.92	208.93
9	282.72	211.15
10	294.44	213.73
11	306.07	216.67
12	317.61	219.96
13	329.04	223.61
14	340.36	227.60
15	351.55	231.94
16	362.60	236.62
17	373.50	241.63
18	384.24	246.98
19	394.82	252.65
20	405.21	258.65
21	415.42	264.96
22	425.43	271.58
23	435.23	278.51
24	444.81	285.73
25	454.17	293.24
26	463.29	301.04
27	472.17	309.11
28	480.80	317.45
29	489.17	326.05
30	497.27	334.90
31	499.91	337.97

*** 2.462 ***

Individual data on the 38 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	4525.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	12.0	13320.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	8.8	14964.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	3.2	6300.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	4.8	9152.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	7.2	15085.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	11.9	30668.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	11.9	37159.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	11.9	43018.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	7.1	28323.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	4.7	19244.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.3	1143.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	11.4	48153.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	11.6	53203.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	11.5	56445.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	11.4	59019.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	4.0	21051.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	7.4	38269.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.6	3223.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	10.5	53601.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	11.1	57384.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	10.9	57337.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	10.7	56692.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	10.6	55472.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	10.4	53704.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	2.8	14206.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	7.4	37158.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	10.0	48405.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	9.8	45003.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	9.6	41204.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	5.2	20972.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	4.2	15896.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0

33	9.1	30920.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	8.9	24566.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	8.6	18142.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	8.4	11700.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	8.1	5295.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	2.6	359.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	185.24	202.62
2	197.19	201.62
3	209.18	201.06
4	221.18	200.94
5	233.18	201.27
6	245.15	202.04
7	257.09	203.25
8	268.97	204.90
9	280.79	206.99
10	292.52	209.52
11	304.15	212.48
12	315.66	215.87
13	327.04	219.68
14	338.27	223.91
15	349.34	228.55
16	360.23	233.59
17	370.92	239.04
18	381.41	244.87
19	391.67	251.09
20	401.69	257.69
21	411.47	264.65
22	420.98	271.97
23	430.21	279.64
24	439.15	287.64
25	447.79	295.96
26	456.12	304.60
27	464.12	313.54
28	471.79	322.78
29	478.56	331.57

*** 2.468 ***

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	161.07	200.00
2	173.07	199.54
3	185.06	199.40
4	197.06	199.61
5	209.05	200.14
6	221.02	201.01
7	232.96	202.20
8	244.86	203.73
9	256.72	205.59
10	268.52	207.78
11	280.25	210.29
12	291.91	213.13
13	303.49	216.29
14	314.97	219.77
15	326.35	223.57
16	337.63	227.68
17	348.78	232.11
18	359.81	236.84
19	370.70	241.87
20	381.45	247.21
21	392.05	252.84
22	402.48	258.76
23	412.75	264.97
24	422.84	271.47
25	432.75	278.24

26	442.46	285.28
27	451.98	292.59
28	461.29	300.16
29	470.39	307.99
30	479.26	316.07
31	487.91	324.38
32	496.33	332.94
33	501.12	338.10

*** 2.473 ***

Failure Surface Specified By 32 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.19	200.00
2	190.11	198.59
3	202.06	197.60
4	214.05	197.03
5	226.05	196.88
6	238.05	197.16
7	250.03	197.86
8	261.97	198.98
9	273.87	200.52
10	285.71	202.48
11	297.47	204.86
12	309.15	207.65
13	320.71	210.85
14	332.16	214.45
15	343.47	218.46
16	354.63	222.86
17	365.63	227.66
18	376.46	232.84
19	387.09	238.39
20	397.52	244.32
21	407.74	250.62
22	417.73	257.27
23	427.48	264.26
24	436.98	271.60
25	446.21	279.27
26	455.16	287.26
27	463.83	295.56
28	472.20	304.15
29	480.26	313.04
30	488.00	322.21
31	495.42	331.65
32	500.06	338.01

*** 2.474 ***

Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	167.11	200.00
2	178.99	198.31
3	190.93	197.07
4	202.91	196.30
5	214.90	195.99
6	226.90	196.14
7	238.89	196.75
8	250.84	197.82
9	262.74	199.35
10	274.57	201.34
11	286.32	203.78
12	297.97	206.67
13	309.50	210.01
14	320.88	213.79
15	332.12	218.01
16	343.18	222.65
17	354.06	227.72
18	364.74	233.20
19	375.19	239.09

20	385.42	245.37
21	395.39	252.05
22	405.10	259.10
23	414.53	266.52
24	423.66	274.30
25	432.49	282.43
26	441.00	290.89
27	449.18	299.67
28	457.02	308.76
29	464.50	318.14
30	471.61	327.80
31	473.05	329.91

*** 2.484 ***

Failure Surface Specified By 32 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	150.00	200.00
2	161.95	198.88
3	173.93	198.14
4	185.92	197.78
5	197.92	197.79
6	209.91	198.19
7	221.89	198.96
8	233.83	200.11
9	245.74	201.64
10	257.58	203.54
11	269.37	205.82
12	281.07	208.46
13	292.69	211.48
14	304.20	214.86
15	315.60	218.60
16	326.88	222.70
17	338.02	227.15
18	349.02	231.96
19	359.86	237.10
20	370.53	242.59
21	381.02	248.41
22	391.33	254.56
23	401.43	261.04
24	411.33	267.83
25	421.00	274.92
26	430.45	282.32
27	439.66	290.02
28	448.62	298.00
29	457.33	306.26
30	465.77	314.79
31	473.93	323.58
32	481.72	332.52

*** 2.491 ***

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	154.03	200.00
2	165.87	198.08
3	177.78	196.58
4	189.73	195.50
5	201.71	194.83
6	213.71	194.58
7	225.71	194.76
8	237.69	195.35
9	249.65	196.36
10	261.56	197.79
11	273.42	199.64
12	285.21	201.90
13	296.91	204.56
14	308.51	207.64
15	319.99	211.12

16	331.35	215.00
17	342.56	219.28
18	353.61	223.94
19	364.50	228.99
20	375.20	234.41
21	385.71	240.21
22	396.01	246.37
23	406.09	252.89
24	415.93	259.75
25	425.52	266.96
26	434.86	274.50
27	443.93	282.35
28	452.72	290.52
29	461.22	299.00
30	469.41	307.76
31	477.30	316.81
32	484.86	326.13
33	492.02	335.61

*** 2.493 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	193.29	206.64
2	205.16	204.89
3	217.10	203.65
4	229.07	202.91
5	241.07	202.68
6	253.07	202.96
7	265.04	203.74
8	276.97	205.03
9	288.84	206.83
10	300.62	209.12
11	312.29	211.92
12	323.83	215.20
13	335.22	218.97
14	346.44	223.22
15	357.48	227.94
16	368.30	233.13
17	378.89	238.76
18	389.24	244.84
19	399.31	251.36
20	409.11	258.29
21	418.60	265.63
22	427.77	273.37
23	436.61	281.49
24	445.09	289.98
25	453.21	298.82
26	460.94	307.99
27	468.28	317.49
28	475.21	327.28
29	477.84	331.35

*** 2.497 ***

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	212.42	216.21
2	224.42	216.12
3	236.41	216.44
4	248.39	217.18
5	260.33	218.33
6	272.23	219.90
7	284.07	221.87
8	295.83	224.26
9	307.50	227.05
10	319.06	230.25
11	330.51	233.84
12	341.83	237.83

13	353.00	242.21
14	364.02	246.97
15	374.86	252.11
16	385.52	257.63
17	395.98	263.51
18	406.23	269.74
19	416.26	276.34
20	426.05	283.27
21	435.60	290.54
22	444.89	298.13
23	453.91	306.05
24	462.65	314.27
25	471.11	322.79
26	479.26	331.59
27	479.47	331.84

*** 2.500 ***

Failure Surface Specified By 30 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	195.30	207.65
2	207.17	205.84
3	219.09	204.53
4	231.07	203.70
5	243.06	203.38
6	255.06	203.54
7	267.04	204.20
8	278.99	205.36
9	290.87	207.00
10	302.68	209.14
11	314.39	211.76
12	325.98	214.86
13	337.44	218.43
14	348.74	222.48
15	359.86	226.98
16	370.78	231.95
17	381.50	237.36
18	391.98	243.20
19	402.20	249.47
20	412.17	256.16
21	421.85	263.26
22	431.22	270.75
23	440.28	278.62
24	449.01	286.85
25	457.39	295.44
26	465.41	304.36
27	473.06	313.61
28	480.31	323.17
29	487.17	333.02
30	488.06	334.42

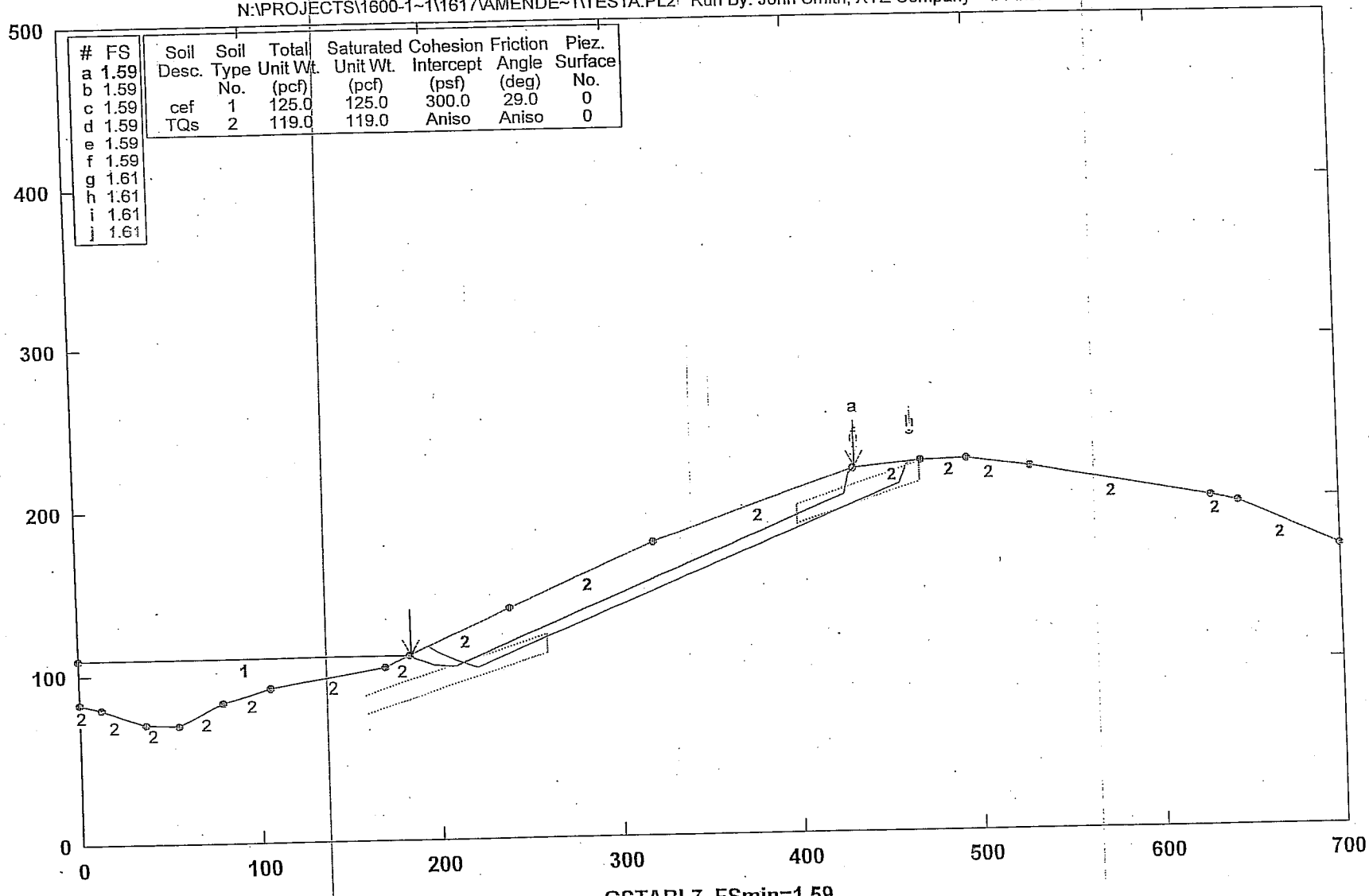
*** 2.500 ***

VTT52584-Sec.EE Nat Slope Ammended Map, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TES1A.PL2 Run By: John Smith, XYZ Company 4/14/2003 4:51PM

#	FS
a	1.59
b	1.59
c	1.59
d	1.59
e	1.59
f	1.59
g	1.61
h	1.61
i	1.61
j	1.61

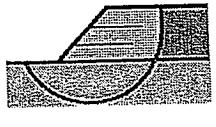
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0



GSTABL7 FSmin=1.59

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

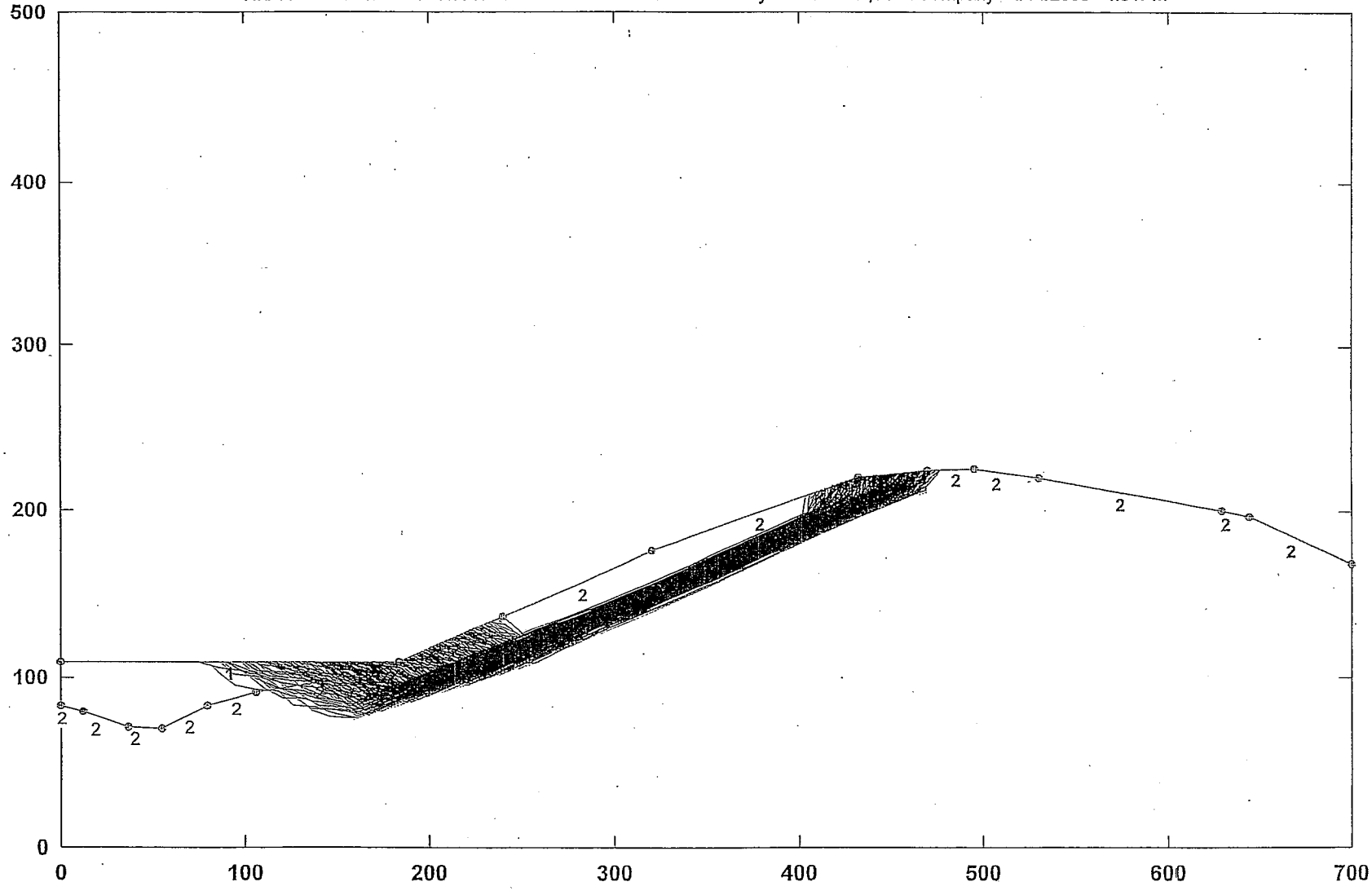
STED



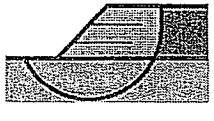
RUN NO. 151

VTT52584-Sec.EE Nat Slope Ammended Map, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TES1A.PLT Run By: John Smith, XYZ Company 4/14/2003 4:51PM



STED



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                 ***  GSTABL7  ***
      ** GSTABL7 by Garry H. Gregory, P.E. **
** Version 1.0, January 1996; Version 1.16, May 2000 **
              --Slope Stability Analysis--
            Simplified Janbu, Modified Bishop
              or Spencer`s Method of Slices
     (Based on STABL6-1986, by Purdue University)
Run Date:                    4/14/2003
Time of Run:                 4:51PM
Run By:                      John Smith, XYZ Company
Input Data Filename:         N:TES1A.
Output Filename:             N:TES1A.OUT
Unit System:                 English
Plotted Output Filename:     N:TES1A.PLT
PROBLEM DESCRIPTION    VTT52584-Sec.EE  Nat Slope
                       Ammended Map, Static

BOUNDARY COORDINATES
   10 Top   Boundaries
   17 Total Boundaries
Boundary     X-Left     Y-Left     X-Right    Y-Right    Soil Type
   No.        (ft)       (ft)       (ft)       (ft)     Below Bnd
    1         0.00      109.00     184.00     109.00        1
    2       184.00      109.00     240.00     137.00        2
    3       240.00      137.00     320.00     177.00        2
    4       320.00      177.00     432.00     220.00        2
    5       432.00      220.00     470.00     224.00        2
    6       470.00      224.00     495.00     225.00        2
    7       495.00      225.00     530.00     220.00        2
    8       530.00      220.00     629.00     200.00        2
    9       629.00      200.00     644.00     197.00        2
   10       644.00      197.00     700.00     170.00        2
   11         0.00       83.00      12.00      80.00        2
   12        12.00       80.00      37.00      70.00        2
   13        37.00       70.00      55.00      69.00        2
   14        55.00       69.00      80.00      83.00        2
   15        80.00       83.00     106.00      91.00        2
   16       106.00       91.00     170.00     102.00        2
   17       170.00      102.00     184.00     109.00        2
ISOTROPIC SOIL PARAMETERS
  2 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   125.0    125.0      300.0     29.0    0.00     0.0       0
  2   119.0    119.0      410.0     40.5    0.00     0.0       0
ANISOTROPIC STRENGTH PARAMETERS
    1 soil type(s)
 Soil Type  2 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise    Cohesion    Friction
   Range      Direction Limit    Intercept     Angle
   No.          (deg)              (psf)       (deg)
    1           24.0               410.0       40.5
    2           26.0               347.0       22.5
    3           90.0               410.0       40.5
 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.
2500 Trial Surfaces Have Been Generated.
 2 Boxes Specified For Generation Of Central Block Base
 Length Of Line Segments For Active And Passive Portions Of
 Sliding Block Is  12.0
 Box        X-Left     Y-Left     X-Right    Y-Right     Height
 No.         (ft)       (ft)       (ft)       (ft)        (ft)
  1         158.00      80.00     260.00     115.00      12.00
  2         401.00     192.00     469.00     217.00      12.00
```

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

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

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.61	109.31
2	186.32	107.64
3	197.40	103.05
4	209.39	102.52
5	426.86	204.19
6	429.80	215.82
7	433.02	220.11

*** 1.594 ***

Individual data on the 9 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	1.7	255.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	11.1	10006.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	12.0	22700.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	30.6	71645.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	80.0	204377.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	106.9	232762.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	2.9	2999.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	2.2	599.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	1.0	75.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.61	109.31
2	186.32	107.64
3	197.40	103.05
4	209.39	102.52
5	426.86	204.19
6	429.80	215.82
7	433.02	220.11

*** 1.594 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.61	109.31
2	186.32	107.64
3	197.40	103.05
4	209.39	102.52
5	426.86	204.19
6	429.80	215.82
7	433.02	220.11

*** 1.594 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.61	109.31
2	186.32	107.64
3	197.40	103.05
4	209.39	102.52
5	426.86	204.19
6	429.80	215.82
7	433.02	220.11

*** 1.594 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.61	109.31
2	186.32	107.64

3	197.40	103.05
4	209.39	102.52
5	426.86	204.19
6	429.80	215.82
7	433.02	220.11

*** 1.594 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.61	109.31
2	186.32	107.64
3	197.40	103.05
4	209.39	102.52
5	426.86	204.19
6	429.80	215.82
7	433.02	220.11

*** 1.594 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	194.59	114.30
2	199.84	111.30
3	210.32	105.45
4	221.79	101.93
5	457.71	209.98
6	462.18	221.12
7	464.46	223.42

*** 1.606 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	194.59	114.30
2	199.84	111.30
3	210.32	105.45
4	221.79	101.93
5	457.71	209.98
6	462.18	221.12
7	464.46	223.42

*** 1.606 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	194.59	114.30
2	199.84	111.30
3	210.32	105.45
4	221.79	101.93
5	457.71	209.98
6	462.18	221.12
7	464.46	223.42

*** 1.606 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	194.59	114.30
2	199.84	111.30
3	210.32	105.45
4	221.79	101.93
5	457.71	209.98
6	462.18	221.12
7	464.46	223.42

*** 1.606 ***

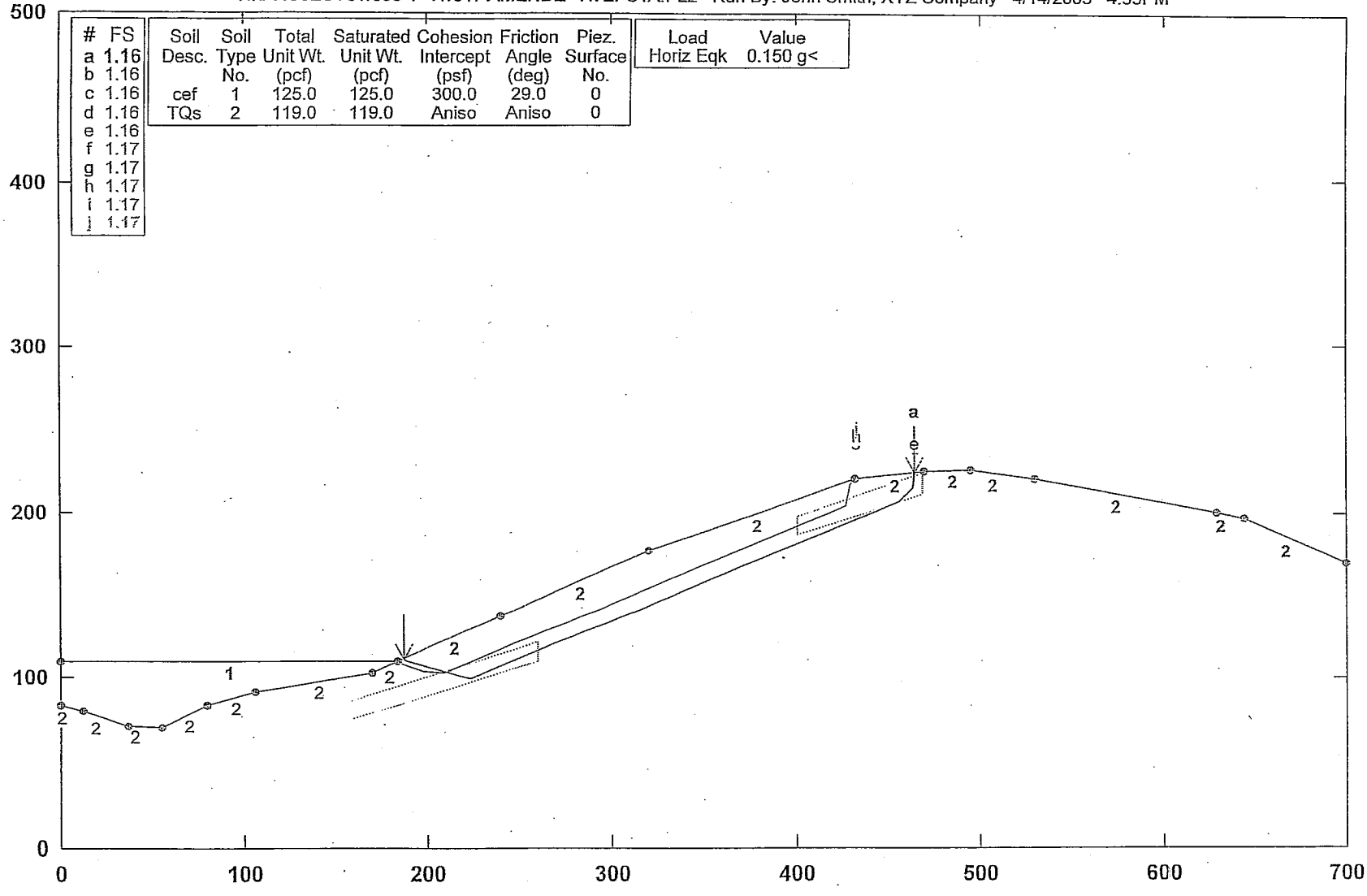
VTT52584-Sec.EE Nat Slope Ammended Map, Pseudostatic

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TEPS1A.PL2 Run By: John Smith, XYZ Company 4/14/2003 4:55PM

#	FS
a	1.16
b	1.16
c	1.16
d	1.16
e	1.16
f	1.17
g	1.17
h	1.17
i	1.17
j	1.17

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0

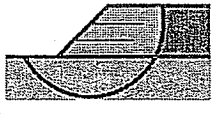
Load	Value
Horiz Eqk	0.150 g<



GSTABL7 FSmin=1.16

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

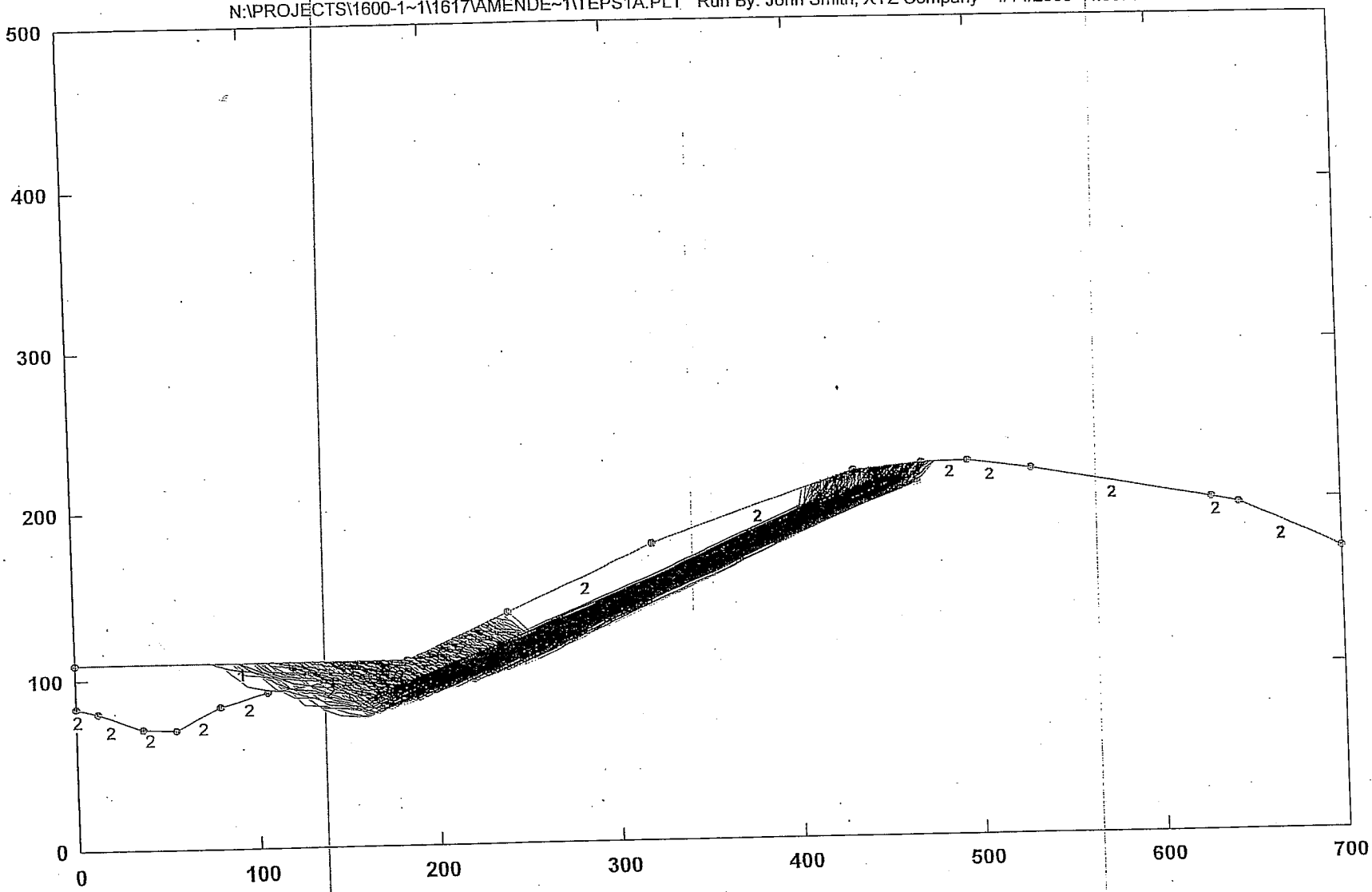
STED



RUN NO. - 52

VTT52584-Sec.EE Nat Slope Ammended Map, Pseudostatic

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TEPS1A.PLT Run By: John Smith, XYZ Company 4/14/2003 4:55PM



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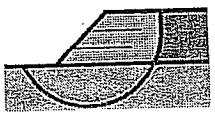


```
                    ***  GSTABL7  ***
        ** GSTABL7 by Garry H. Gregory, P.E. **
 ** Version 1.0, January 1996; Version 1.16, May 2000 **
              --Slope Stability Analysis--
            Simplified Janbu, Modified Bishop
              or Spencer`s Method of Slices
      (Based on STABL6-1986, by Purdue University)
 Run Date:                    4/14/2003
 Time of Run:                 4:55PM
 Run By:                      John Smith, XYZ Company
 Input Data Filename:         N:TEPS1A.
 Output Filename:             N:TEPS1A.OUT
 Unit System:                 English
 Plotted Output Filename:     N:TEPS1A.PLT
 PROBLEM DESCRIPTION    VTT52584-Sec.EE  Nat Slope
                        Ammended Map, Pseudostatic
 BOUNDARY COORDINATES
    10 Top   Boundaries
    17 Total Boundaries
```

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	109.00	184.00	109.00	1
2	184.00	109.00	240.00	137.00	2
3	240.00	137.00	320.00	177.00	2
4	320.00	177.00	432.00	220.00	2
5	432.00	220.00	470.00	224.00	2
6	470.00	224.00	495.00	225.00	2
7	495.00	225.00	530.00	220.00	2
8	530.00	220.00	629.00	200.00	2
9	629.00	200.00	644.00	197.00	2
10	644.00	197.00	700.00	170.00	2
11	0.00	83.00	12.00	80.00	2
12	12.00	80.00	37.00	70.00	2
13	37.00	70.00	55.00	69.00	2
14	55.00	69.00	80.00	83.00	2
15	80.00	83.00	106.00	91.00	2
16	106.00	91.00	170.00	102.00	2
17	170.00	102.00	184.00	109.00	2

```
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	125.0	125.0	300.0	29.0	0.00	0.0	0
2	119.0	119.0	410.0	40.5	0.00	0.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	24.0	410.0	40.5
2	26.0	347.0	22.5
3	90.0	410.0	40.5

```
 A Horizontal Earthquake Loading Coefficient
 Of0.150 Has Been Assigned
 A Vertical Earthquake Loading Coefficient
 Of0.000 Has Been Assigned
 Cavitation Pressure =     0.0(psf)
 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.
2500 Trial Surfaces Have Been Generated.
 2 Boxes Specified For Generation Of Central Block Base
 Length Of Line Segments For Active And Passive Portions Of
```

Sliding Block Is 12.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	158.00	80.00	260.00	115.00	12.00
2	401.00	192.00	469.00	217.00	12.00

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

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

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.10	110.55
2	188.65	109.01
3	200.21	105.81
4	211.76	102.55
5	223.04	98.45
6	455.61	206.10
7	464.05	214.64
8	464.31	223.40

*** 1.165 ***

Individual data on the 10 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	212.6	0.0	0.0	0.0	0.0	31.9	0.0	0.0
2	11.6	9362.6	0.0	0.0	0.0	0.0	1404.4	0.0	0.0
3	11.5	21731.2	0.0	0.0	0.0	0.0	3259.7	0.0	0.0
4	11.3	33824.6	0.0	0.0	0.0	0.0	5073.7	0.0	0.0
5	17.0	61323.4	0.0	0.0	0.0	0.0	9198.5	0.0	0.0
6	80.0	306387.7	0.0	0.0	0.0	0.0	45958.1	0.0	0.0
7	112.0	389851.1	0.0	0.0	0.0	0.0	58477.7	0.0	0.0
8	23.6	57915.4	0.0	0.0	0.0	0.0	8687.3	0.0	0.0
9	8.4	12605.6	0.0	0.0	0.0	0.0	1890.8	0.0	0.0
10	0.3	137.2	0.0	0.0	0.0	0.0	20.6	0.0	0.0

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.10	110.55
2	188.65	109.01
3	200.21	105.81
4	211.76	102.55
5	223.04	98.45
6	455.61	206.10
7	464.05	214.64
8	464.31	223.40

*** 1.165 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.10	110.55
2	188.65	109.01
3	200.21	105.81
4	211.76	102.55
5	223.04	98.45
6	455.61	206.10
7	464.05	214.64
8	464.31	223.40

*** 1.165 ***

Failure Surface Specified By 8 Coordinate Points

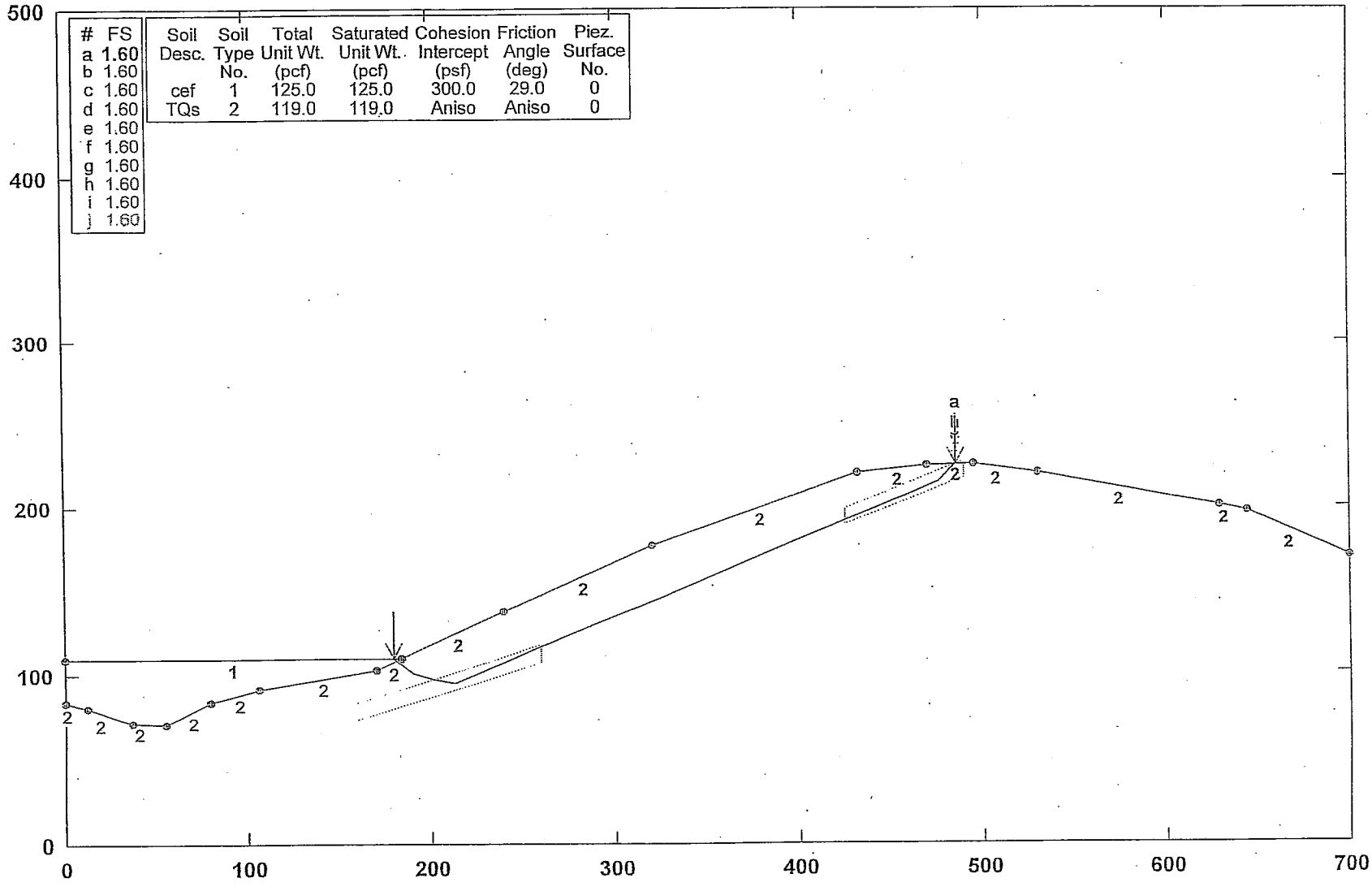
Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.10	110.55
2	188.65	109.01
3	200.21	105.81
4	211.76	102.55

```
     5        223.04       98.45
     6        455.61      206.10
     7        464.05      214.64
     8        464.31      223.40
       ***     1.165   ***
Failure Surface Specified By  8 Coordinate Points
  Point       X-Surf      Y-Surf
   No.         (ft)        (ft)
     1        187.10      110.55
     2        188.65      109.01
     3        200.21      105.81
     4        211.76      102.55
     5        223.04       98.45
     6        455.61      206.10
     7        464.05      214.64
     8        464.31      223.40
       ***     1.165   ***
Failure Surface Specified By  7 Coordinate Points
  Point       X-Surf      Y-Surf
   No.         (ft)        (ft)
     1        184.61      109.31
     2        186.32      107.64
     3        197.40      103.05
     4        209.39      102.52
     5        426.86      204.19
     6        429.80      215.82
     7        433.02      220.11
       ***     1.169   ***
Failure Surface Specified By  7 Coordinate Points
  Point       X-Surf      Y-Surf
   No.         (ft)        (ft)
     1        184.61      109.31
     2        186.32      107.64
     3        197.40      103.05
     4        209.39      102.52
     5        426.86      204.19
     6        429.80      215.82
     7        433.02      220.11
       ***     1.169   ***
Failure Surface Specified By  7 Coordinate Points
  Point       X-Surf      Y-Surf
   No.         (ft)        (ft)
     1        184.61      109.31
     2        186.32      107.64
     3        197.40      103.05
     4        209.39      102.52
     5        426.86      204.19
     6        429.80      215.82
     7        433.02      220.11
       ***     1.169   ***
Failure Surface Specified By  7 Coordinate Points
  Point       X-Surf      Y-Surf
   No.         (ft)        (ft)
     1        184.61      109.31
     2        186.32      107.64
     3        197.40      103.05
     4        209.39      102.52
     5        426.86      204.19
     6        429.80      215.82
     7        433.02      220.11
       ***     1.169   ***
Failure Surface Specified By  7 Coordinate Points
  Point       X-Surf      Y-Surf
   No.         (ft)        (ft)
     1        184.61      109.31
     2        186.32      107.64
     3        197.40      103.05
```

4	209.39	102.52
5	426.86	204.19
6	429.80	215.82
7	433.02	220.11
***	1.169	***

VTT52584-Sec.EE' Nat Slope Ammended Map, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TES2A.PL2 Run By: John Smith, XYZ Company 4/14/2003 5:00PM



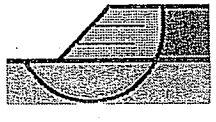
#	FS
a	1.60
b	1.60
c	1.60
d	1.60
e	1.60
f	1.60
g	1.60
h	1.60
i	1.60
j	1.60

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0

GSTABL7 FSmin=1.60

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

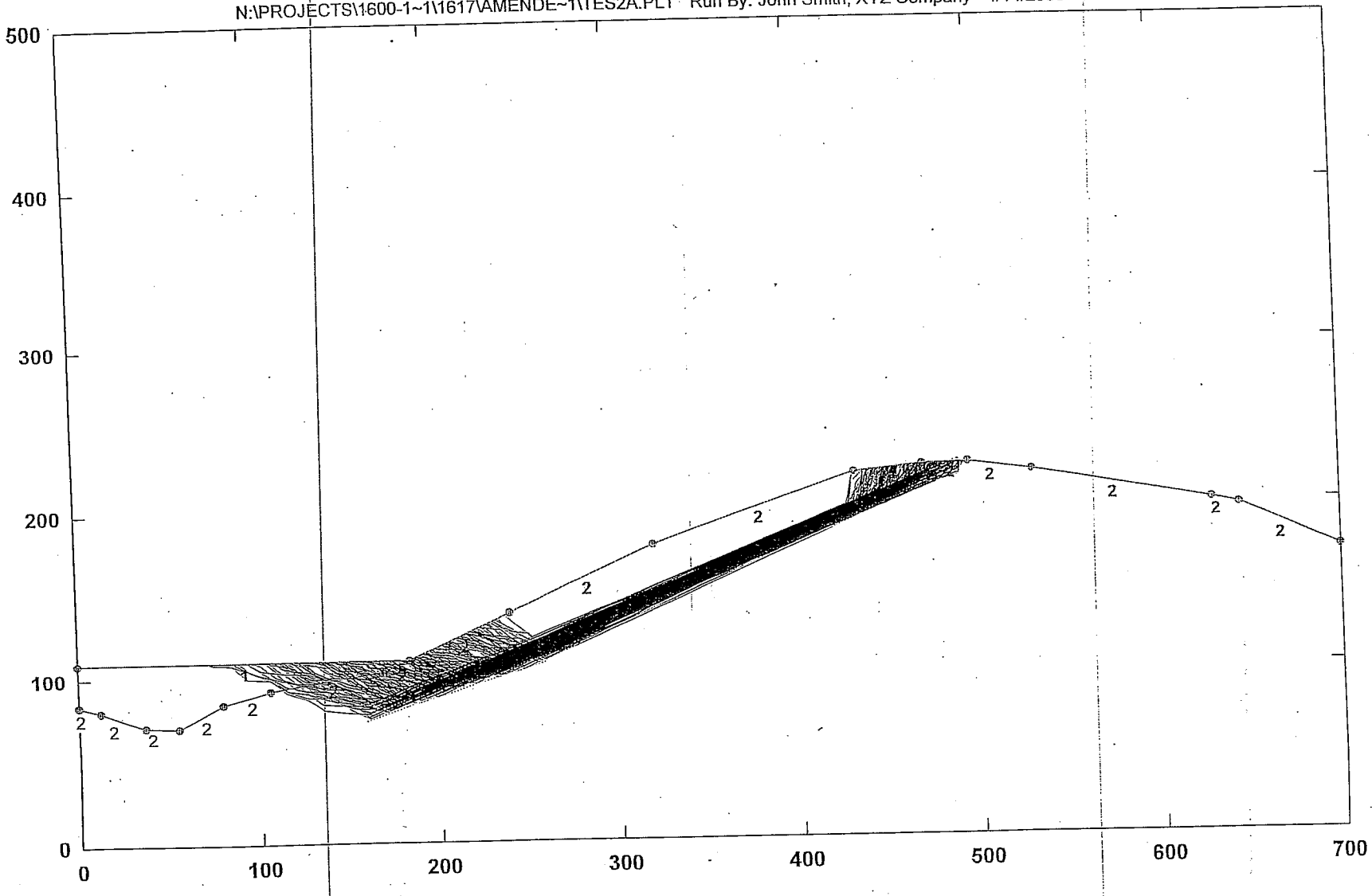
STED



RUN No. - 53

VTT52584-Sec.EE' Nat Slope Ammended Map, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TES2A.PLT Run By: John Smith, XYZ Company 4/14/2003 5:00PM



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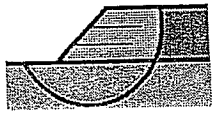

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                    ***  GSTABL7  ***
        ** GSTABL7 by Garry H. Gregory, P.E. **
** Version 1.0, January 1996; Version 1.16, May 2000 **
                --Slope Stability Analysis--
              Simplified Janbu, Modified Bishop
                or Spencer`s Method of Slices
       (Based on STABL6-1986, by Purdue University)
Run Date:                    4/14/2003
Time of Run:                 5:00PM
Run By:                      John Smith, XYZ Company
Input Data Filename:         N:TES2A.
Output Filename:             N:TES2A.OUT
Unit System:                 English
Plotted Output Filename:     N:TES2A.PLT
PROBLEM DESCRIPTION   VTT52584-Sec.EE' Nat Slope
                        Ammended Map, Static
BOUNDARY COORDINATES
   10 Top   Boundaries
   17 Total Boundaries
Boundary     X-Left      Y-Left     X-Right     Y-Right     Soil Type
   No.        (ft)        (ft)        (ft)        (ft)     Below Bnd
    1         0.00      109.00      184.00      109.00         1
    2       184.00      109.00      240.00      137.00         2
    3       240.00      137.00      320.00      177.00         2
    4       320.00      177.00      432.00      220.00         2
    5       432.00      220.00      470.00      224.00         2
    6       470.00      224.00      495.00      225.00         2
    7       495.00      225.00      530.00      220.00         2
    8       530.00      220.00      629.00      200.00         2
    9       629.00      200.00      644.00      197.00         2
   10       644.00      197.00      700.00      170.00         2
   11         0.00       83.00       12.00       80.00         2
   12        12.00       80.00       37.00       70.00         2
   13        37.00       70.00       55.00       69.00         2
   14        55.00       69.00       80.00       83.00         2
   15        80.00       83.00      106.00       91.00         2
   16       106.00       91.00      170.00      102.00         2
   17       170.00      102.00      184.00      109.00         2
ISOTROPIC SOIL PARAMETERS
  2 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   125.0    125.0     300.0     29.0    0.00       0.0      0
   2   119.0    119.0     410.0     40.5    0.00       0.0      0
ANISOTROPIC STRENGTH PARAMETERS
     1 soil type(s)
 Soil Type  2 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion      Friction
   Range       Direction Limit    Intercept       Angle
   No.            (deg)             (psf)         (deg)
    1             24.0              410.0         40.5
    2             26.0              347.0         22.5
    3             90.0              410.0         40.5
 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.
2500 Trial Surfaces Have Been Generated.
 2 Boxes Specified For Generation Of Central Block Base
 Length Of Line Segments For Active And Passive Portions Of
 Sliding Block Is  12.0
 Box         X-Left      Y-Left     X-Right     Y-Right      Height
 No.          (ft)        (ft)        (ft)        (ft)        (ft)
  1         158.00       77.00      260.00      112.00      10.00
  2         425.00      194.00      490.00      222.00      10.00
```

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.69	109.00
2	180.46	108.73
3	189.55	100.89
4	200.79	96.69
5	212.60	94.61
6	475.76	214.01
7	483.73	222.99
8	485.25	224.61

*** 1.598 ***

Individual data on the 13 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	0.8	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	1.1	102.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	2.4	669.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	5.5	4688.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	11.2	21120.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	11.8	34734.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	27.4	95610.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	80.0	302853.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	112.0	396565.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	38.0	86933.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	5.8	7824.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	8.0	5583.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	1.5	142.0	0.0	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	179.69	109.00
2	180.46	108.73
3	189.55	100.89
4	200.79	96.69
5	212.60	94.61
6	475.76	214.01
7	483.73	222.99
8	485.25	224.61

*** 1.598 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.69	109.00
2	180.46	108.73
3	189.55	100.89
4	200.79	96.69
5	212.60	94.61
6	475.76	214.01
7	483.73	222.99
8	485.25	224.61

*** 1.598 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.69	109.00
2	180.46	108.73
3	189.55	100.89
4	200.79	96.69
5	212.60	94.61
6	475.76	214.01

7	483.73	222.99
8	485.25	224.61

*** 1.598 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.69	109.00
2	180.46	108.73
3	189.55	100.89
4	200.79	96.69
5	212.60	94.61
6	475.76	214.01
7	483.73	222.99
8	485.25	224.61

*** 1.598 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.69	109.00
2	180.46	108.73
3	189.55	100.89
4	200.79	96.69
5	212.60	94.61
6	475.76	214.01
7	483.73	222.99
8	485.25	224.61

*** 1.598 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.69	109.00
2	180.46	108.73
3	189.55	100.89
4	200.79	96.69
5	212.60	94.61
6	475.76	214.01
7	483.73	222.99
8	485.25	224.61

*** 1.598 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.69	109.00
2	180.46	108.73
3	189.55	100.89
4	200.79	96.69
5	212.60	94.61
6	475.76	214.01
7	483.73	222.99
8	485.25	224.61

*** 1.598 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.69	109.00
2	180.46	108.73
3	189.55	100.89
4	200.79	96.69
5	212.60	94.61
6	475.76	214.01
7	483.73	222.99
8	485.25	224.61

*** 1.598 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.69	109.00
2	180.46	108.73
3	189.55	100.89
4	200.79	96.69
5	212.60	94.61
6	475.76	214.01
7	483.73	222.99
8	485.25	224.61

*** 1.598 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.69	109.00

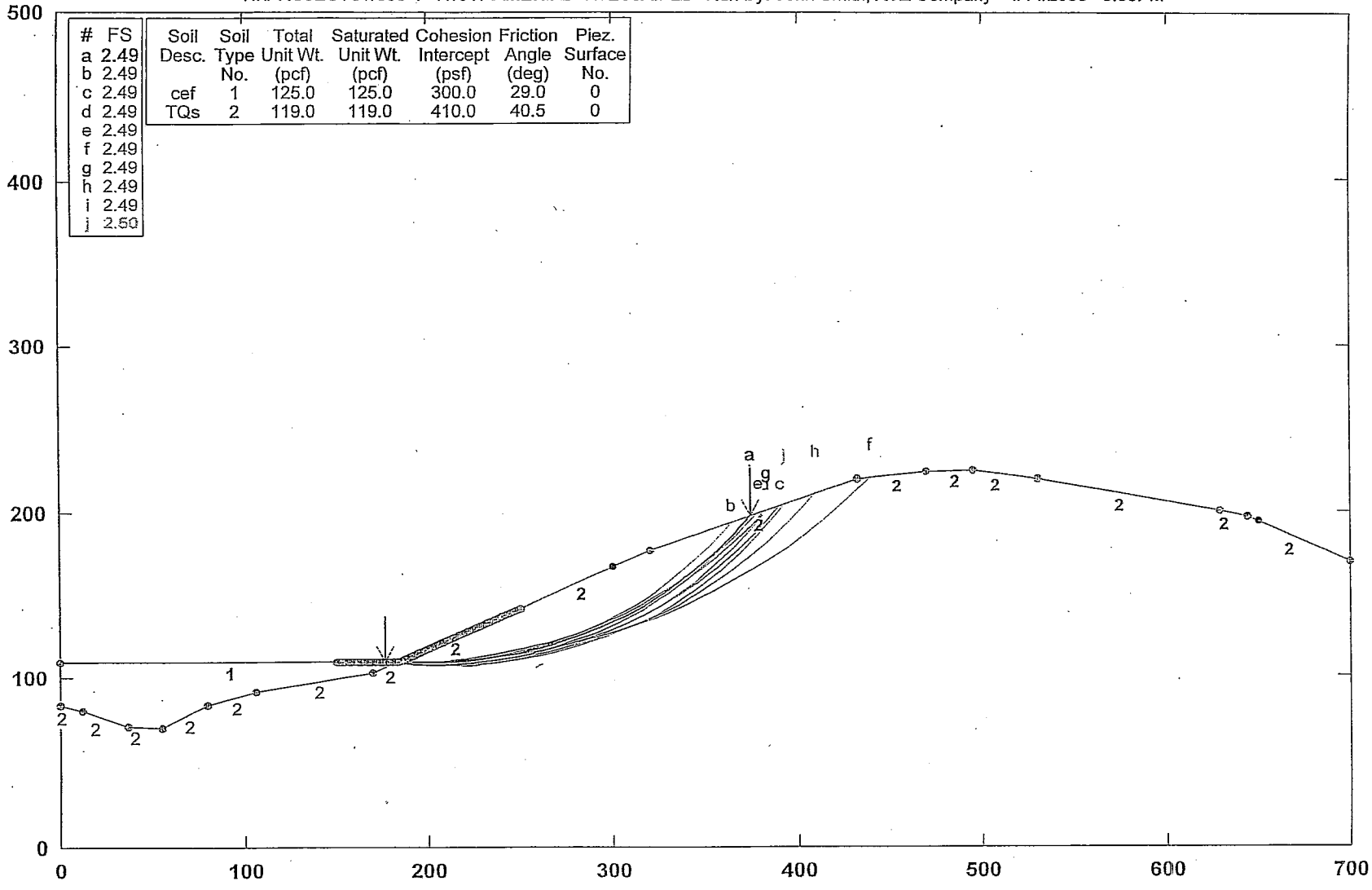
2	180.46	108.73
3	189.55	100.89
4	200.79	96.69
5	212.60	94.61
6	475.76	214.01
7	483.73	222.99
8	485.25	224.61
***	1.598	***

VTT52584-Sec.EE Nat Slope Ammended Map, Static, Circular

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TES3A.PL2 Run By: John Smith, XYZ Company 4/14/2003 5:05PM

#	FS
a	2.49
b	2.49
c	2.49
d	2.49
e	2.49
f	2.49
g	2.49
h	2.49
i	2.49
j	2.50

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	410.0	40.5	0



GSTABL7 FSmin=2.49

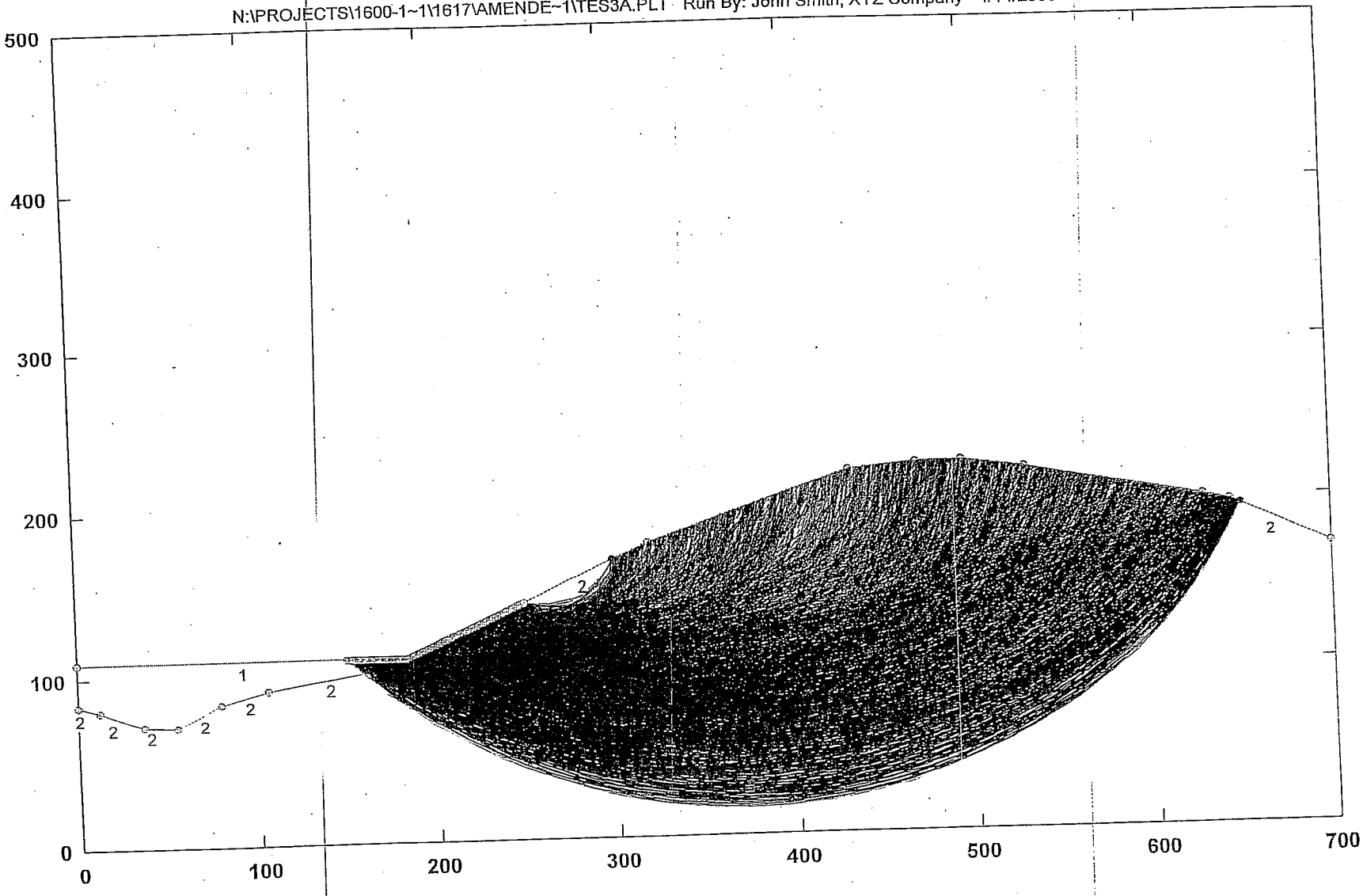
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

STED

RUN No. 54

VTT52584-Sec.EE Nat Slope Ammended Map, Static, Circular

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TES3A.PLT Run By: John Smith, XYZ Company 4/14/2003 5:05PM



STED

```
                    ***  GSTABL7  ***
        ** GSTABL7 by Garry H. Gregory, P.E. **
  ** Version 1.0, January 1996; Version 1.16, May 2000 **
              --Slope Stability Analysis--
            Simplified Janbu, Modified Bishop
              or Spencer`s Method of Slices
      (Based on STABL6-1986, by Purdue University)
 Run Date:                    4/14/2003
 Time of Run:                 5:05PM
 Run By:                      John Smith, XYZ Company
 Input Data Filename:         N:TES3A.
 Output Filename:             N:TES3A.OUT
 Unit System:                 English
 Plotted Output Filename:     N:TES3A.PLT
 PROBLEM DESCRIPTION   VTT52584-Sec.EE  Nat Slope
                       Ammended Map, Static, Circular
 BOUNDARY COORDINATES
    10 Top   Boundaries
    17 Total Boundaries
```

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	109.00	184.00	109.00	1
2	184.00	109.00	240.00	137.00	2
3	240.00	137.00	320.00	177.00	2
4	320.00	177.00	432.00	220.00	2
5	432.00	220.00	470.00	224.00	2
6	470.00	224.00	495.00	225.00	2
7	495.00	225.00	530.00	220.00	2
8	530.00	220.00	629.00	200.00	2
9	629.00	200.00	644.00	197.00	2
10	644.00	197.00	700.00	170.00	2
11	0.00	83.00	12.00	80.00	2
12	12.00	80.00	37.00	70.00	2
13	37.00	70.00	55.00	69.00	2
14	55.00	69.00	80.00	83.00	2
15	80.00	83.00	106.00	91.00	2
16	106.00	91.00	170.00	102.00	2
17	170.00	102.00	184.00	109.00	2

```
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	125.0	125.0	300.0	29.0	0.00	0.0	0
2	119.0	119.0	410.0	40.5	0.00	0.0	0

```
 A Critical Failure Surface Searching Method, Using A Random
 Technique For Generating Circular Surfaces, Has Been Specified.
 Janbus Empirical Coef. is being used for the case of  c & phi both > 0
3000 Trial Surfaces Have Been Generated.
  20 Surfaces Initiate From Each Of150 Points Equally Spaced
 Along The Ground Surface Between  X = 150.00(ft)
                              and  X = 250.00(ft)
 Each Surface Terminates Between   X = 300.00(ft)
                              and  X = 650.00(ft)
 Unless Further Limitations Were Imposed, The Minimum Elevation
 At Which A Surface Extends Is  Y =  0.00(ft)
 15.00(ft) Line Segments Define Each Trial Failure Surface.
 Restrictions Have Been Imposed Upon The Angle Of Initiation.
 The Angle Has Been Restricted Between The Angles Of -45.0
 And   0.0 deg.
 Following Are Displayed The Ten Most Critical Of The Trial
       Failure Surfaces Examined.  They Are Ordered - Most Critical
       First.
       * * Safety Factors Are Calculated By The Simplified Janbu Method * *
       Failure Surface Specified By 17 Coordinate Points
         Point      X-Surf      Y-Surf
          No.        (ft)        (ft)
```

1	176.85	109.00
2	191.82	108.19
3	206.82	108.39
4	221.77	109.61
5	236.61	111.83
6	251.26	115.04
7	265.66	119.24
8	279.75	124.40
9	293.45	130.50
10	306.71	137.50
11	319.47	145.39
12	331.67	154.12
13	343.25	163.65
14	354.17	173.94
15	364.36	184.95
16	373.79	196.61
17	374.78	198.03

*** 2.488 ***

Individual data on the 20 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	6.5	140.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.7	31.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	7.8	2378.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	15.0	14938.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	15.0	26950.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	14.8	36855.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	3.4	9666.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	11.3	34846.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	14.4	49848.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	14.1	52850.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	13.7	53576.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	13.3	52146.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	12.8	48739.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.5	1963.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	11.7	40689.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	11.6	34206.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	10.9	24965.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	10.2	15318.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	9.4	5676.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	1.0	61.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.19	109.00
2	193.17	108.27
3	208.17	108.62
4	223.10	110.05
5	237.89	112.56
6	252.46	116.13
7	266.73	120.73
8	280.64	126.36
9	294.10	132.98
10	307.05	140.55
11	319.42	149.03
12	331.14	158.39
13	342.16	168.56
14	352.42	179.51
15	361.86	191.17
16	363.67	193.77

*** 2.489 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	177.52	109.00

2	192.48	107.89
3	207.48	107.75
4	222.45	108.57
5	237.34	110.37
6	252.09	113.12
7	266.63	116.82
8	280.89	121.46
9	294.83	127.00
10	308.38	133.44
11	321.48	140.74
12	334.09	148.87
13	346.14	157.79
14	357.59	167.48
15	368.40	177.89
16	378.50	188.98
17	387.87	200.69
18	390.12	203.92

*** 2.490 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	174.83	109.00
2	189.82	108.34
3	204.82	108.62
4	219.77	109.83
5	234.61	111.97
6	249.30	115.02
7	263.76	118.99
8	277.95	123.85
9	291.81	129.59
10	305.29	136.18
11	318.33	143.59
12	330.88	151.81
13	342.90	160.79
14	354.33	170.50
15	365.13	180.90
16	375.27	191.96
17	382.61	201.04

*** 2.492 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	176.85	109.00
2	191.84	108.75
3	206.83	109.41
4	221.75	111.00
5	236.54	113.49
6	251.15	116.89
7	265.52	121.18
8	279.61	126.34
9	293.35	132.35
10	306.69	139.20
11	319.60	146.85
12	332.01	155.27
13	343.88	164.44
14	355.16	174.33
15	365.82	184.88
16	375.81	196.07
17	378.48	199.45

*** 2.493 ***

Failure Surface Specified By 21 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.23	109.11
2	199.23	109.06
3	214.22	109.70
4	229.16	111.02

5	244.02	113.02
6	258.78	115.71
7	273.40	119.07
8	287.85	123.10
9	302.10	127.78
10	316.12	133.12
11	329.88	139.09
12	343.35	145.69
13	356.50	152.90
14	369.31	160.70
15	381.75	169.09
16	393.79	178.03
17	405.41	187.52
18	416.58	197.53
19	427.27	208.05
20	437.48	219.04
21	438.91	220.73

*** 2.494 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	175.50	109.00
2	190.42	107.38
3	205.40	106.80
4	220.40	107.29
5	235.32	108.82
6	250.09	111.40
7	264.65	115.01
8	278.92	119.64
9	292.83	125.25
10	306.31	131.83
11	319.30	139.34
12	331.72	147.75
13	343.52	157.00
14	354.65	167.07
15	365.04	177.88
16	374.64	189.41
17	383.19	201.26

*** 2.494 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.19	109.00
2	193.15	107.96
3	208.15	107.79
4	223.13	108.50
5	238.05	110.09
6	252.85	112.54
7	267.48	115.85
8	281.89	120.01
9	296.04	125.00
10	309.86	130.82
11	323.33	137.42
12	336.39	144.81
13	348.99	152.94
14	361.10	161.79
15	372.67	171.34
16	383.66	181.55
17	394.04	192.37
18	403.77	203.79
19	409.49	211.36

*** 2.495 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	172.15	109.00
2	187.07	107.45

3	202.06	106.97
4	217.05	107.56
5	231.96	109.21
6	246.71	111.93
7	261.23	115.68
8	275.45	120.47
9	289.29	126.25
10	302.68	133.00
11	315.56	140.70
12	327.86	149.29
13	339.51	158.73
14	350.46	168.98
15	360.65	179.99
16	370.03	191.69
17	374.27	197.84

*** 2.495 ***

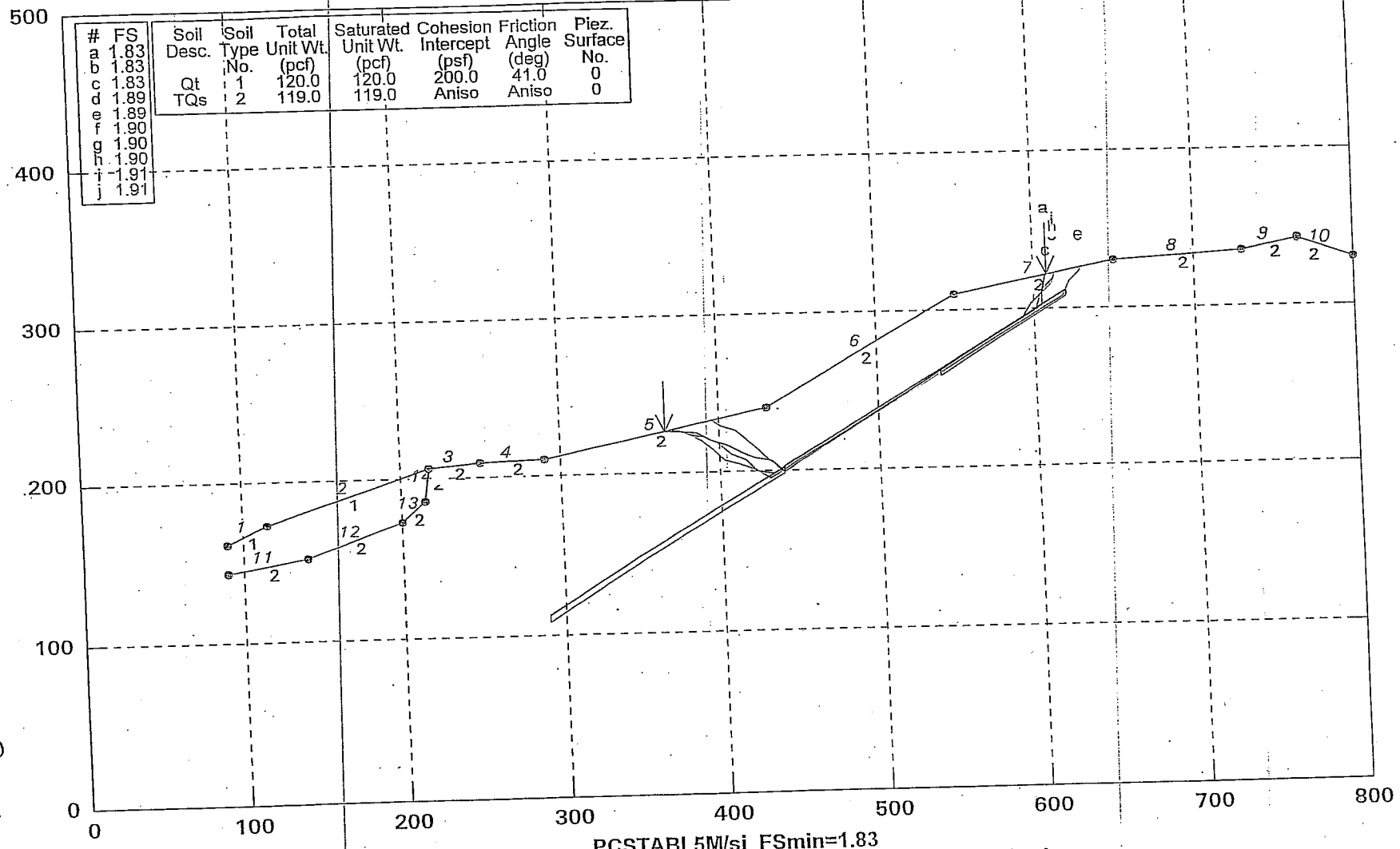
Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.19	109.00
2	193.09	107.30
3	208.08	106.63
4	223.07	106.99
5	238.01	108.38
6	252.81	110.79
7	267.42	114.21
8	281.75	118.62
9	295.75	124.01
10	309.35	130.34
11	322.48	137.60
12	335.08	145.74
13	347.09	154.72
14	358.46	164.51
15	369.13	175.05
16	379.05	186.30
17	388.18	198.21
18	392.59	204.87

*** 2.498 ***

Amended VTT52584 F-F' Bed plane search Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TFFS2.PL2 .Run By: DA 4/1/03 3:31PM



#	FS
a	1.83
b	1.83
c	1.83
d	1.89
e	1.89
f	1.90
g	1.90
h	1.90
i	1.91
j	1.91

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qt	1	120.0	120.0	200.0	41.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0

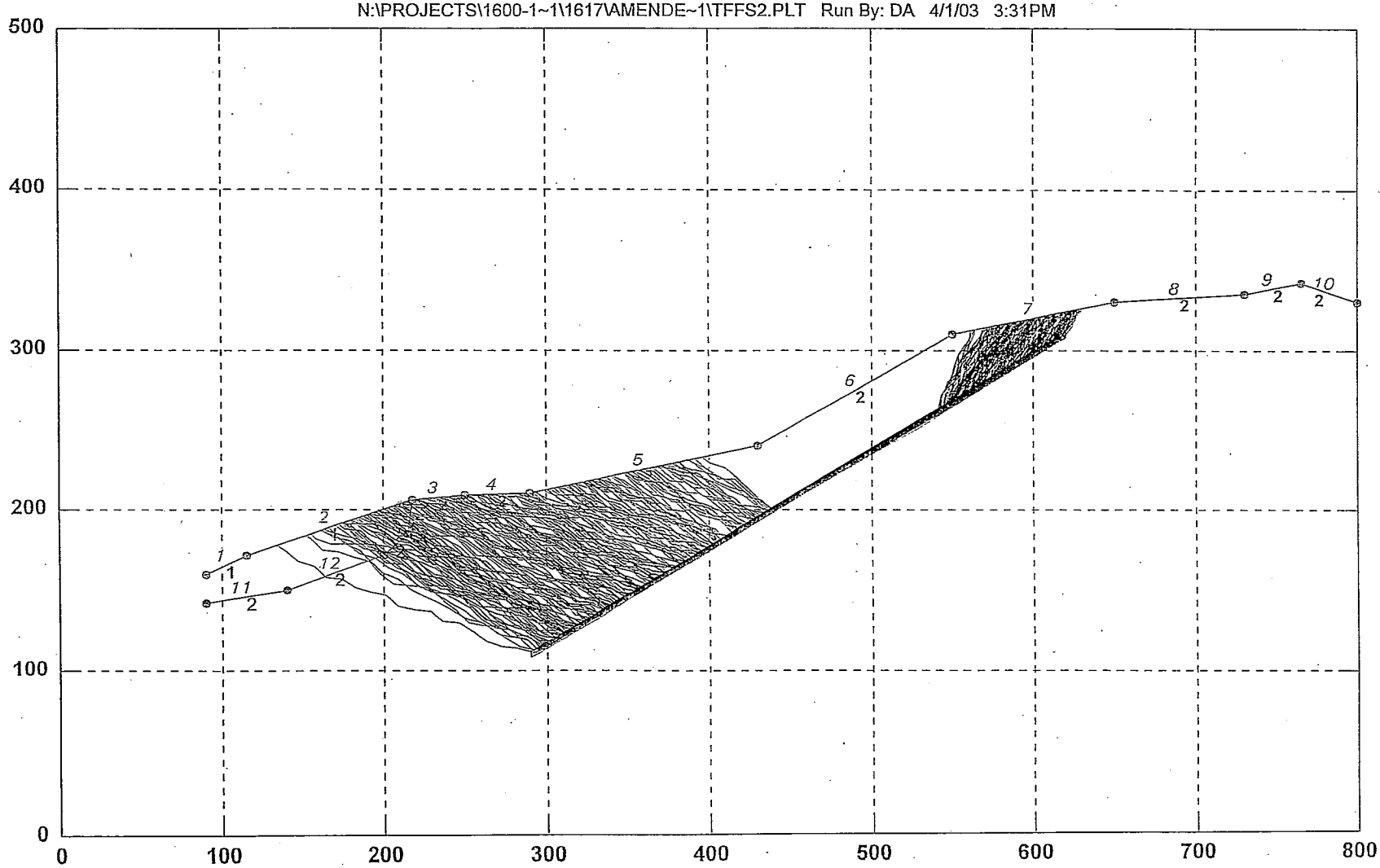
PCSTABL5M/si FSmin=1.83

Safety Factors Are Calculated By The Modified Janbu Method

RUN NO. 1 SS

Amended VTT52584 F-F' Bed plane search Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TFFS2.PLT Run By: DA 4/1/03 3:31PM



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 3:31PM
Run By: DA
Input Data Filename: N:TFFS2.IN
Output Filename: N:TFFS2.OUT
Unit: ENGLISH
Plotted Output Filename: N:TFFS2.PLT
PROBLEM DESCRIPTION Amended VTT52584 F-F' Bed plane search
Static

BOUNDARY COORDINATES
10 Top Boundaries
14 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	90.00	160.00	115.00	172.00	1
2	115.00	172.00	218.00	206.00	1
3	218.00	206.00	250.00	209.00	2
4	250.00	209.00	290.00	210.00	2
5	290.00	210.00	430.00	240.00	2
6	430.00	240.00	550.00	310.00	2
7	550.00	310.00	650.00	330.00	2
8	650.00	330.00	730.00	335.00	2
9	730.00	335.00	765.00	342.00	2
10	765.00	342.00	800.00	330.00	2
11	90.00	142.00	140.00	150.00	2
12	140.00	150.00	200.00	172.00	2
13	200.00	172.00	215.00	185.00	2
14	215.00	185.00	218.00	206.00	2

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	200.0	41.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	31.0	410.0	40.5
2	33.0	347.0	22.0
3	90.0	410.0	40.5

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	290.00	110.00	440.00	200.00	4.00
2	540.00	260.00	620.00	310.00	4.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	365.61	226.20
2	366.03	225.86
3	376.03	225.81
4	385.95	224.50
5	394.89	220.03
6	404.38	216.87
7	413.25	212.25
8	422.45	208.34
9	432.22	206.20
10	439.59	199.45
11	592.55	294.78
12	597.85	303.26
13	604.91	310.34
14	607.00	320.12
15	607.54	321.51

*** 1.834 ***

Individual data on the 16 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	.4	10.8	.0	.0	.0	.0	.0	.0	.0
2	10.0	1820.5	.0	.0	.0	.0	.0	.0	.0
3	9.9	5120.6	.0	.0	.0	.0	.0	.0	.0
4	8.9	9845.5	.0	.0	.0	.0	.0	.0	.0
5	9.5	16981.6	.0	.0	.0	.0	.0	.0	.0
6	8.9	22050.3	.0	.0	.0	.0	.0	.0	.0
7	9.2	29680.7	.0	.0	.0	.0	.0	.0	.0
8	7.6	28462.6	.0	.0	.0	.0	.0	.0	.0
9	2.2	9027.1	.0	.0	.0	.0	.0	.0	.0
10	7.4	35622.8	.0	.0	.0	.0	.0	.0	.0
11	110.4	577385.6	.0	.0	.0	.0	.0	.0	.0
12	42.6	165773.7	.0	.0	.0	.0	.0	.0	.0
13	5.3	12624.3	.0	.0	.0	.0	.0	.0	.0
14	7.1	11316.9	.0	.0	.0	.0	.0	.0	.0
15	2.1	1482.7	.0	.0	.0	.0	.0	.0	.0
16	.5	40.7	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	365.61	226.20
2	366.03	225.86
3	376.03	225.81
4	385.95	224.50
5	394.89	220.03
6	404.38	216.87
7	413.25	212.25
8	422.45	208.34
9	432.22	206.20
10	439.59	199.45
11	592.55	294.78
12	597.85	303.26
13	604.91	310.34
14	607.00	320.12
15	607.54	321.51

*** 1.834 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	365.61	226.20
2	366.03	225.86
3	376.03	225.81
4	385.95	224.50

5	394.89	220.03
6	404.38	216.87
7	413.25	212.25
8	422.45	208.34
9	432.22	206.20
10	439.59	199.45
11	592.55	294.78
12	597.85	303.26
13	604.91	310.34
14	607.00	320.12
15	607.54	321.51

*** 1.834 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	395.09	232.52
2	400.87	228.67
3	410.45	225.82
4	417.54	218.77
5	424.74	211.82
6	432.07	205.02
7	439.99	198.92
8	617.61	307.57
9	621.64	316.72
10	628.71	323.80
11	628.96	325.79

*** 1.889 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	395.09	232.52
2	400.87	228.67
3	410.45	225.82
4	417.54	218.77
5	424.74	211.82
6	432.07	205.02
7	439.99	198.92
8	617.61	307.57
9	621.64	316.72
10	628.71	323.80
11	628.96	325.79

*** 1.889 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	370.72	227.30
2	371.22	226.83
3	380.67	223.58
4	390.60	222.36
5	399.39	217.60
6	406.92	211.01
7	415.98	206.80
8	423.12	199.79
9	432.89	197.63
10	604.76	302.12
11	605.18	312.12
12	612.13	319.31
13	612.91	322.58

*** 1.897 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	370.72	227.30
2	371.22	226.83
3	380.67	223.58
4	390.60	222.36

5	399.39	217.60
6	406.92	211.01
7	415.98	206.80
8	423.12	199.79
9	432.89	197.63
10	604.76	302.12
11	605.18	312.12
12	612.13	319.31
13	612.91	322.58

*** 1.897 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	370.72	227.30
2	371.22	226.83
3	380.67	223.58
4	390.60	222.36
5	399.39	217.60
6	406.92	211.01
7	415.98	206.80
8	423.12	199.79
9	432.89	197.63
10	604.76	302.12
11	605.18	312.12
12	612.13	319.31
13	612.91	322.58

*** 1.897 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	369.46	227.03
2	370.16	226.52
3	380.00	224.77
4	389.01	220.42
5	396.28	213.56
6	403.37	206.50
7	412.97	203.71
8	422.50	200.68
9	430.73	194.99
10	601.26	299.32
11	603.69	309.03
12	610.76	316.10
13	613.01	322.60

*** 1.906 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	369.46	227.03
2	370.16	226.52
3	380.00	224.77
4	389.01	220.42
5	396.28	213.56
6	403.37	206.50
7	412.97	203.71
8	422.50	200.68
9	430.73	194.99
10	601.26	299.32
11	603.69	309.03
12	610.76	316.10
13	613.01	322.60

*** 1.906 ***

Amended VTT52584 F-F' Bed plane search

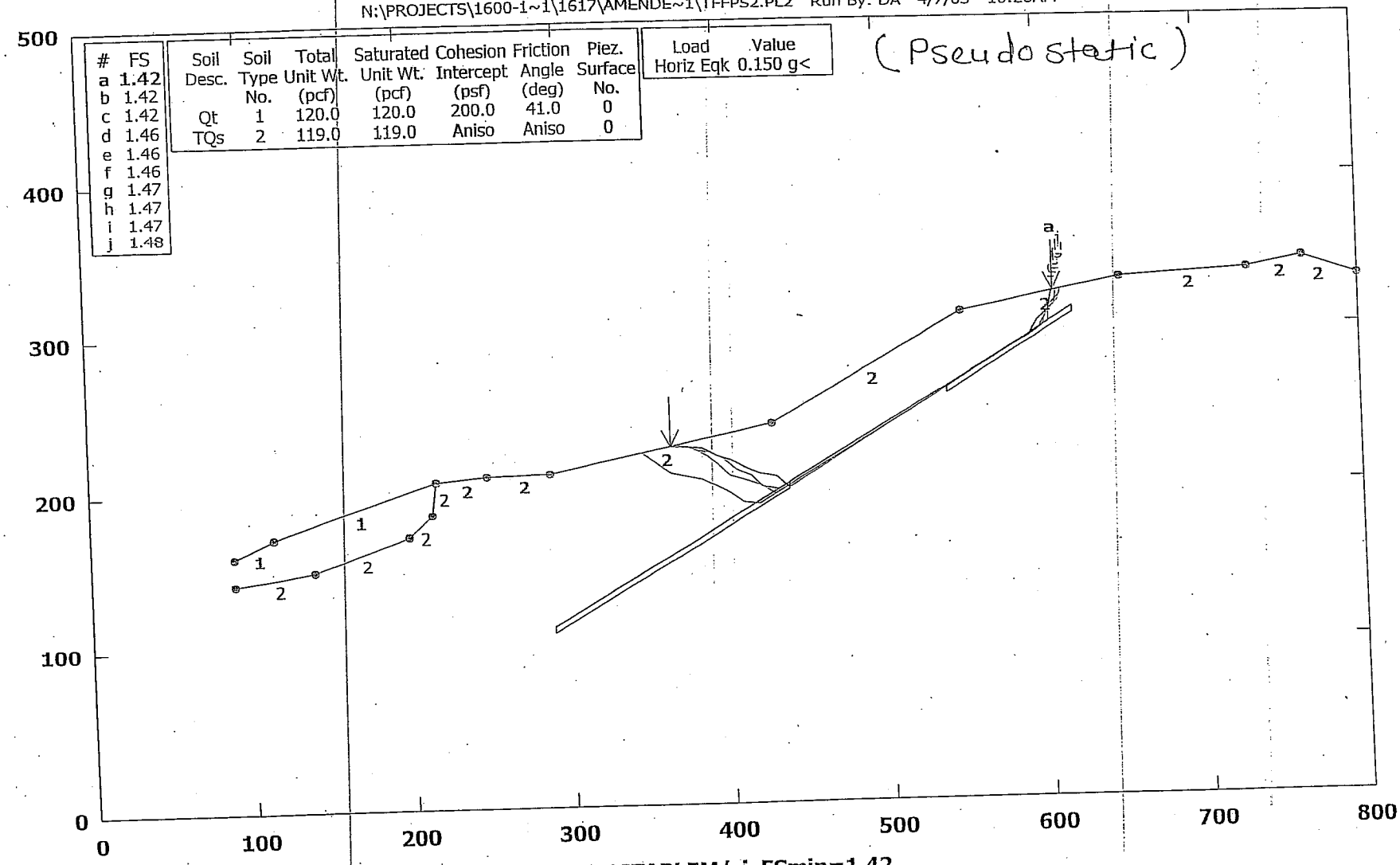
N:\PROJECTS\1600-1~1\1617\AMENDE~1\TFFPS2.PL2 Run By: DA 4/7/03 10:26AM

(Pseudo static)

#	FS
a	1.42
b	1.42
c	1.42
d	1.46
e	1.46
f	1.46
g	1.47
h	1.47
i	1.47
j	1.48

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qt	1	120.0	120.0	200.0	41.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0

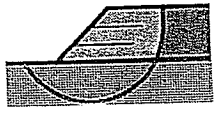
Load	Value
Horiz Eqk	0.150 g<



PCSTABL5M/si FSmin=1.42

Safety Factors Are Calculated By The Modified Janbu Method

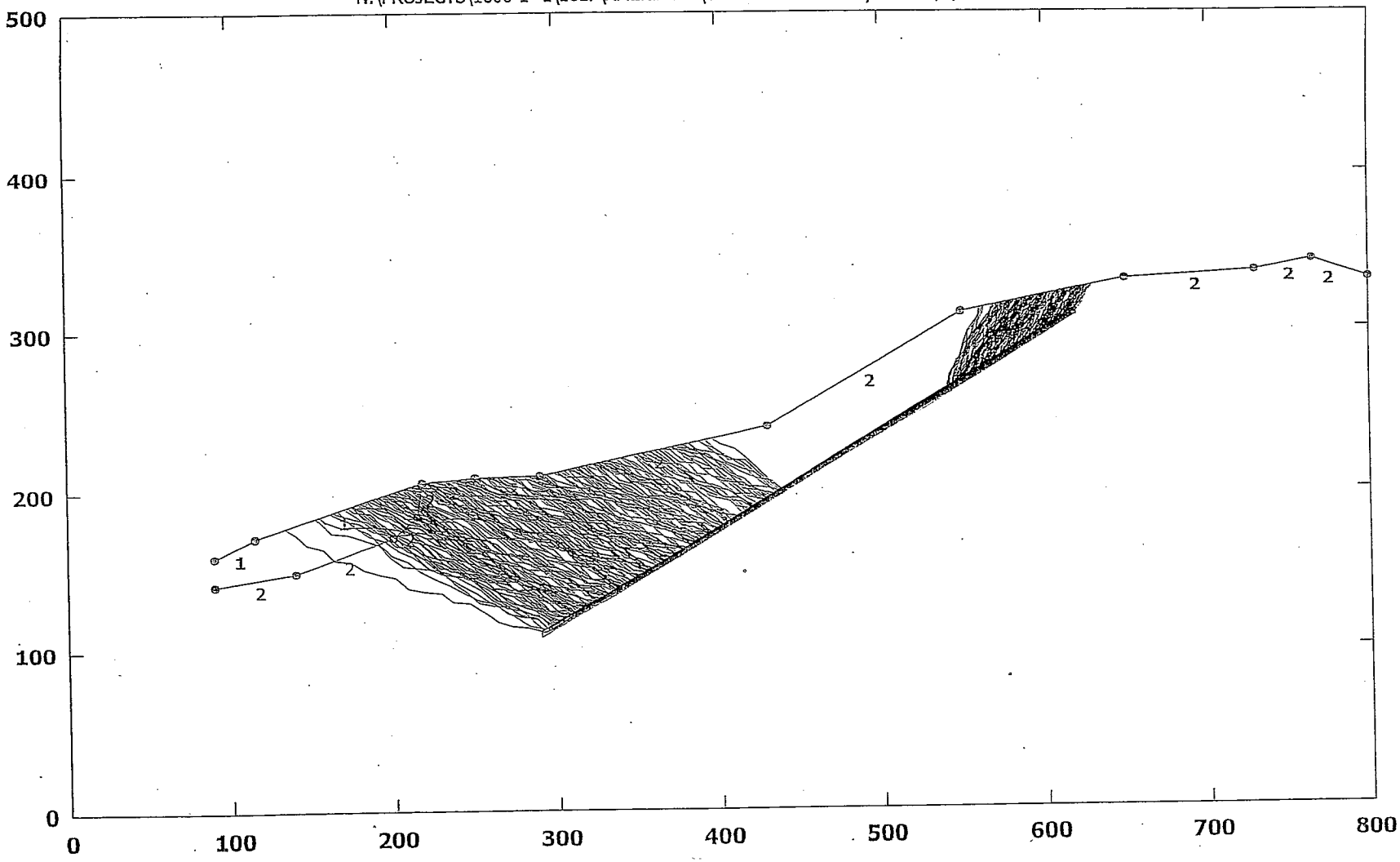
STED



RUN NO. 56

Amended VTT52584 F-F' Bed plane search

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TFFPS2.PLT Run By: DA 4/7/03 10:26AM



STED

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/7/03
Time of Run: 10:26AM
Run By: DA
Input Data Filename: N:TFFPS2.IN
Output Filename: N:TFFPS2.OUT
Unit: ENGLISH
Plotted Output Filename: N:TFFPS2.PLT
PROBLEM DESCRIPTION Amended VTT52584 F-F' Bed plane search
Static

BOUNDARY COORDINATES
10 Top Boundaries
14 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	90.00	160.00	115.00	172.00	1
2	115.00	172.00	218.00	206.00	1
3	218.00	206.00	250.00	209.00	2
4	250.00	209.00	290.00	210.00	2
5	290.00	210.00	430.00	240.00	2
6	430.00	240.00	550.00	310.00	2
7	550.00	310.00	650.00	330.00	2
8	650.00	330.00	730.00	335.00	2
9	730.00	335.00	765.00	342.00	2
10	765.00	342.00	800.00	330.00	2
11	90.00	142.00	140.00	150.00	2
12	140.00	150.00	200.00	172.00	2
13	200.00	172.00	215.00	185.00	2
14	215.00	185.00	218.00	206.00	2

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	200.0	41.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	31.0	410.0	40.5
2	33.0	347.0	22.0
3	90.0	410.0	40.5

A Horizontal Earthquake Loading Coefficient
Of .150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of .000 Has Been Assigned
Cavitation Pressure = .0 (psf)
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	290.00	110.00	440.00	200.00	4.00

2 540.00 260.00 620.00 310.00 4.00

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

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

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	365.61	226.20
2	366.03	225.86
3	376.03	225.81
4	385.95	224.50
5	394.89	220.03
6	404.38	216.87
7	413.25	212.25
8	422.45	208.34
9	432.22	206.20
10	439.59	199.45
11	592.55	294.78
12	597.85	303.26
13	604.91	310.34
14	607.00	320.12
15	607.54	321.51

*** 1.418 ***

Individual data on the 16 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	.4	10.8	.0	.0	.0	.0	1.6	.0	.0
2	10.0	1820.5	.0	.0	.0	.0	273.1	.0	.0
3	9.9	5120.6	.0	.0	.0	.0	768.1	.0	.0
4	8.9	9845.5	.0	.0	.0	.0	1476.8	.0	.0
5	9.5	16981.6	.0	.0	.0	.0	2547.2	.0	.0
6	8.9	22050.3	.0	.0	.0	.0	3307.5	.0	.0
7	9.2	29680.7	.0	.0	.0	.0	4452.1	.0	.0
8	7.6	28462.6	.0	.0	.0	.0	4269.4	.0	.0
9	2.2	9027.1	.0	.0	.0	.0	1354.1	.0	.0
10	7.4	35622.8	.0	.0	.0	.0	5343.4	.0	.0
11	110.4	577385.6	.0	.0	.0	.0	86607.8	.0	.0
12	42.6	165773.7	.0	.0	.0	.0	24866.1	.0	.0
13	5.3	12624.3	.0	.0	.0	.0	1893.6	.0	.0
14	7.1	11316.9	.0	.0	.0	.0	1697.5	.0	.0
15	2.1	1482.7	.0	.0	.0	.0	222.4	.0	.0
16	.5	40.7	.0	.0	.0	.0	6.1	.0	.0

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	365.61	226.20
2	366.03	225.86
3	376.03	225.81
4	385.95	224.50
5	394.89	220.03
6	404.38	216.87
7	413.25	212.25
8	422.45	208.34
9	432.22	206.20
10	439.59	199.45
11	592.55	294.78
12	597.85	303.26
13	604.91	310.34
14	607.00	320.12
15	607.54	321.51

*** 1.418 ***

Failure Surface Specified By 15 Coordinate Points

Point X-Surf Y-Surf

No.	(ft)	(ft)
1	365.61	226.20
2	366.03	225.86
3	376.03	225.81
4	385.95	224.50
5	394.89	220.03
6	404.38	216.87
7	413.25	212.25
8	422.45	208.34
9	432.22	206.20
10	439.59	199.45
11	592.55	294.78
12	597.85	303.26
13	604.91	310.34
14	607.00	320.12
15	607.54	321.51

*** 1.418 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	347.69	222.36
2	349.75	220.91
3	358.00	215.26
4	365.59	208.75
5	375.45	207.13
6	385.22	204.96
7	394.28	200.73
8	403.13	196.07
9	411.31	190.33
10	421.20	188.86
11	598.06	297.11
12	603.30	305.63
13	608.53	314.16
14	609.53	321.91

*** 1.460 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	347.69	222.36
2	349.75	220.91
3	358.00	215.26
4	365.59	208.75
5	375.45	207.13
6	385.22	204.96
7	394.28	200.73
8	403.13	196.07
9	411.31	190.33
10	421.20	188.86
11	598.06	297.11
12	603.30	305.63
13	608.53	314.16
14	609.53	321.91

*** 1.460 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	347.69	222.36
2	349.75	220.91
3	358.00	215.26
4	365.59	208.75
5	375.45	207.13
6	385.22	204.96
7	394.28	200.73
8	403.13	196.07
9	411.31	190.33
10	421.20	188.86

11	598.06	297.11
12	603.30	305.63
13	608.53	314.16
14	609.53	321.91

*** 1.460 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	370.72	227.30
2	371.22	226.83
3	380.67	223.58
4	390.60	222.36
5	399.39	217.60
6	406.92	211.01
7	415.98	206.80
8	423.12	199.79
9	432.89	197.63
10	604.76	302.12
11	605.18	312.12
12	612.13	319.31
13	612.91	322.58

*** 1.469 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	370.72	227.30
2	371.22	226.83
3	380.67	223.58
4	390.60	222.36
5	399.39	217.60
6	406.92	211.01
7	415.98	206.80
8	423.12	199.79
9	432.89	197.63
10	604.76	302.12
11	605.18	312.12
12	612.13	319.31
13	612.91	322.58

*** 1.469 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	370.72	227.30
2	371.22	226.83
3	380.67	223.58
4	390.60	222.36
5	399.39	217.60
6	406.92	211.01
7	415.98	206.80
8	423.12	199.79
9	432.89	197.63
10	604.76	302.12
11	605.18	312.12
12	612.13	319.31
13	612.91	322.58

*** 1.469 ***

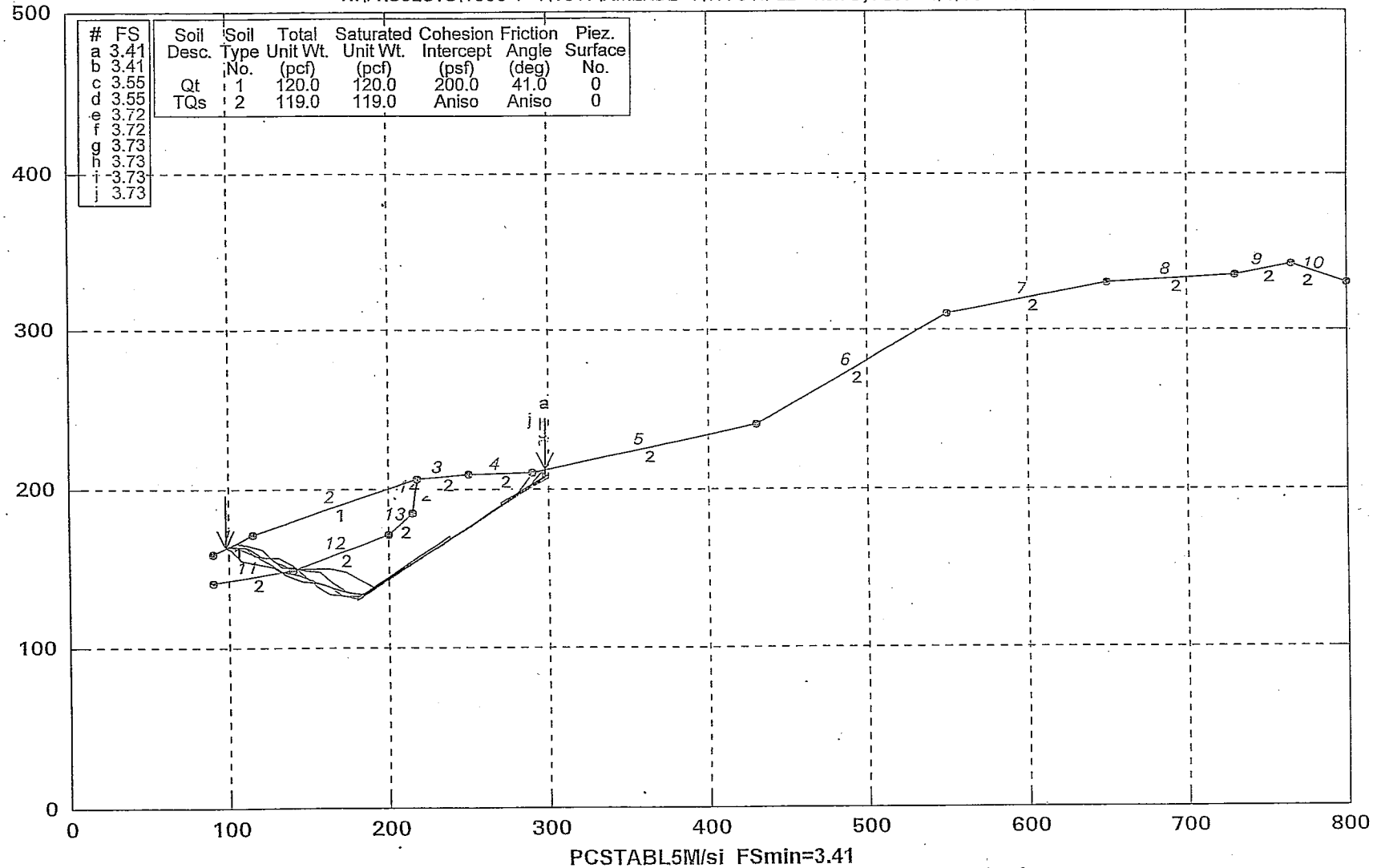
Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	369.46	227.03
2	370.16	226.52
3	380.00	224.77
4	389.01	220.42
5	396.28	213.56
6	403.37	206.50
7	412.97	203.71

8	422.50	200.68
9	430.73	194.99
10	601.26	299.32
11	603.69	309.03
12	610.76	316.10
13	613.01	322.60
***	1.477	***

Amended VTT52584 F-F' Bed plane search Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TFFS1.PL2 Run By: DA 4/1/03 3:27PM



PCSTABL5M/si FSmin=3.41

Safety Factors Are Calculated By The Modified Janbu Method

RUN No. - 57

Amended VTT52584 F-F' Bed plane search Static

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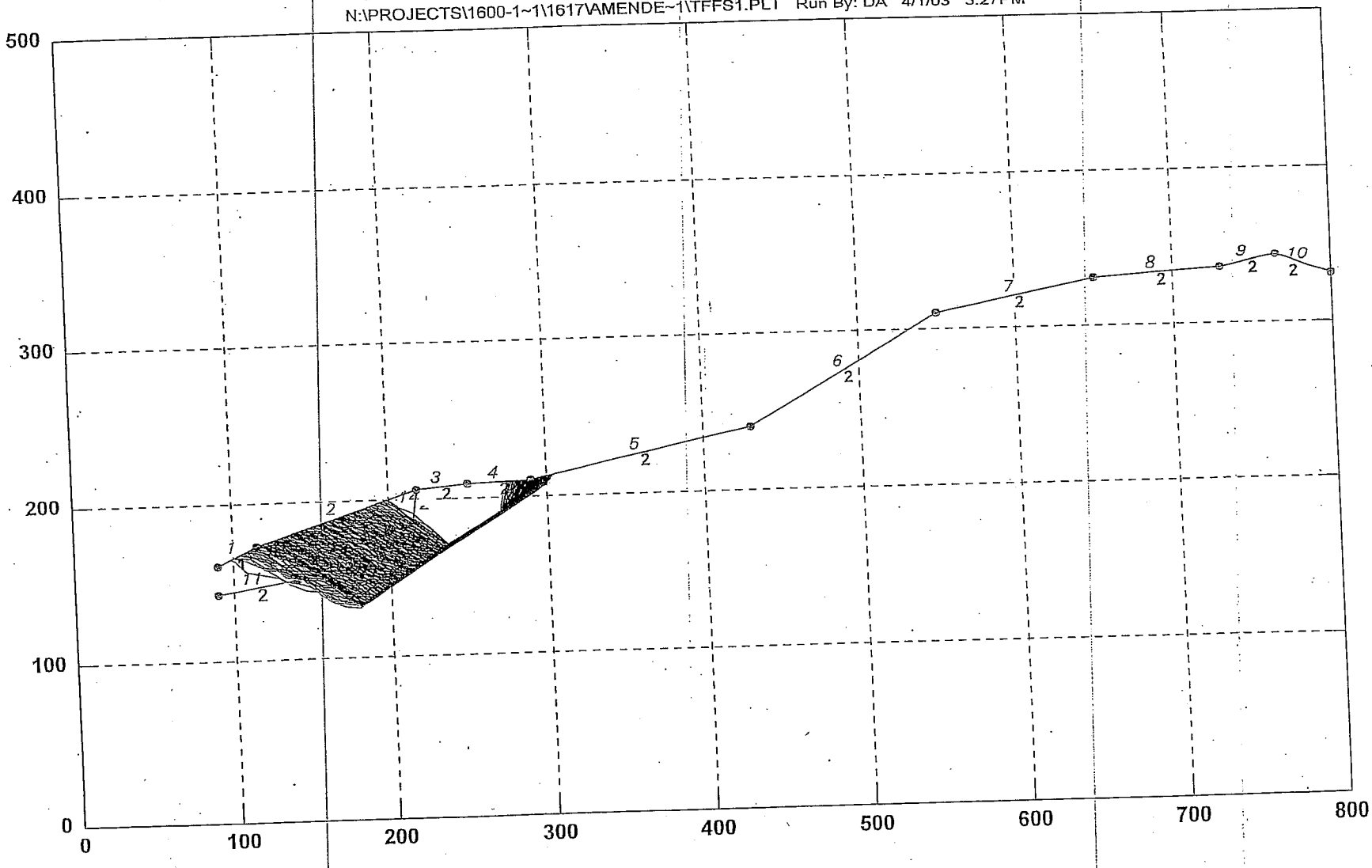

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                    ** PCSTABL5M **
                          by
                   Purdue University
             --Slope Stability Analysis--
          Simplified Janbu, Simplified Bishop
             or Spencer`s Method of Slices
Run Date:                    4/1/03
Time of Run:                 3:27PM
Run By:                      DA
Input Data Filename:         N:TFFS1.IN
Output Filename:             N:TFFS1.OUT
Unit:                        ENGLISH
Plotted Output Filename:     N:TFFS1.PLT
PROBLEM DESCRIPTION   Amended VTT52584 F-F' Bed plane search
                        Static
BOUNDARY COORDINATES
   10 Top   Boundaries
   14 Total Boundaries
```

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	90.00	160.00	115.00	172.00	1
2	115.00	172.00	218.00	206.00	1
3	218.00	206.00	250.00	209.00	2
4	250.00	209.00	290.00	210.00	2
5	290.00	210.00	430.00	240.00	2
6	430.00	240.00	550.00	310.00	2
7	550.00	310.00	650.00	330.00	2
8	650.00	330.00	730.00	335.00	2
9	730.00	335.00	765.00	342.00	2
10	765.00	342.00	800.00	330.00	2
11	90.00	142.00	140.00	150.00	2
12	140.00	150.00	200.00	172.00	2
13	200.00	172.00	215.00	185.00	2
14	215.00	185.00	218.00	206.00	2

```
ISOTROPIC SOIL PARAMETERS
  2 Type(s) of Soil
```

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	200.0	41.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	31.0	410.0	40.5
2	33.0	347.0	22.0
3	90.0	410.0	40.5

```
 A Critical Failure Surface Searching Method, Using A Random
 Technique For Generating Sliding Block Surfaces, Has Been
 Specified.
 500 Trial Surfaces Have Been Generated.
 2 Boxes Specified For Generation Of Central Block Base
 Length Of Line Segments For Active And Passive Portions Of
 Sliding Block Is  10.0
```

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	180.00	132.00	238.00	170.00	2.00
2	270.00	190.00	300.00	208.00	2.00

```
 Following Are Displayed The Ten Most Critical Of The Trial
       Failure Surfaces Examined.  They Are Ordered - Most Critical
       First.
       * * Safety Factors Are Calculated By The Modified Janbu Method * *
```

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	98.23	163.95
2	101.09	163.02
3	108.21	156.00
4	117.94	153.71
5	127.80	152.03
6	136.31	146.77
7	145.65	143.20
8	155.57	141.93
9	165.15	139.06
10	174.51	135.54
11	184.50	135.15
12	298.04	206.90
13	298.32	211.78

*** 3.415 ***

Individual data on the 20 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	2.9	393.8	.0	.0	.0	.0	.0	.0	.0
2	7.1	6428.8	.0	.0	.0	.0	.0	.0	.0
3	6.8	12358.8	.0	.0	.0	.0	.0	.0	.0
4	2.9	6509.7	.0	.0	.0	.0	.0	.0	.0
5	9.9	25703.3	.0	.0	.0	.0	.0	.0	.0
6	5.1	16342.7	.0	.0	.0	.0	.0	.0	.0
7	3.4	12475.9	.0	.0	.0	.0	.0	.0	.0
8	3.7	14859.2	.0	.0	.0	.0	.0	.0	.0
9	5.7	24986.0	.0	.0	.0	.0	.0	.0	.0
10	9.9	48910.0	.0	.0	.0	.0	.0	.0	.0
11	9.6	53256.0	.0	.0	.0	.0	.0	.0	.0
12	9.4	59080.8	.0	.0	.0	.0	.0	.0	.0
13	10.0	69197.1	.0	.0	.0	.0	.0	.0	.0
14	15.5	106417.0	.0	.0	.0	.0	.0	.0	.0
15	15.0	94698.9	.0	.0	.0	.0	.0	.0	.0
16	3.0	17927.9	.0	.0	.0	.0	.0	.0	.0
17	32.0	156396.0	.0	.0	.0	.0	.0	.0	.0
18	40.0	96726.6	.0	.0	.0	.0	.0	.0	.0
19	8.0	6219.2	.0	.0	.0	.0	.0	.0	.0
20	.3	80.5	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	98.23	163.95
2	101.09	163.02
3	108.21	156.00
4	117.94	153.71
5	127.80	152.03
6	136.31	146.77
7	145.65	143.20
8	155.57	141.93
9	165.15	139.06
10	174.51	135.54
11	184.50	135.15
12	298.04	206.90
13	298.32	211.78

*** 3.415 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	100.31	164.95
2	108.34	163.16
3	117.40	158.93
4	126.25	154.28

5	134.44	148.53
6	144.33	147.06
7	153.56	143.23
8	162.88	139.59
9	171.34	134.26
10	181.17	132.43
11	296.37	206.54
12	297.19	211.54

*** 3.546 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	100.31	164.95
2	108.34	163.16
3	117.40	158.93
4	126.25	154.28
5	134.44	148.53
6	144.33	147.06
7	153.56	143.23
8	162.88	139.59
9	171.34	134.26
10	181.17	132.43
11	296.37	206.54
12	297.19	211.54

*** 3.546 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	106.50	167.92
2	108.53	166.12
3	115.66	159.11
4	125.64	158.49
5	133.45	152.24
6	143.41	151.34
7	153.40	151.06
8	163.40	151.00
9	173.12	148.66
10	182.14	144.34
11	190.87	139.46
12	289.73	201.25
13	296.80	208.32
14	297.55	211.62

*** 3.716 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	106.50	167.92
2	108.53	166.12
3	115.66	159.11
4	125.64	158.49
5	133.45	152.24
6	143.41	151.34
7	153.40	151.06
8	163.40	151.00
9	173.12	148.66
10	182.14	144.34
11	190.87	139.46
12	289.73	201.25
13	296.80	208.32
14	297.55	211.62

*** 3.716 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	102.07	165.79
2	102.39	165.47

3	112.21	163.57
4	120.75	158.37
5	130.71	157.52
6	139.60	152.93
7	147.29	146.54
8	154.58	139.70
9	163.33	134.86
10	173.27	133.73
11	183.27	133.55
12	286.44	199.28
13	292.85	206.96
14	297.50	211.61

*** 3.731 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	102.07	165.79
2	102.39	165.47
3	112.21	163.57
4	120.75	158.37
5	130.71	157.52
6	139.60	152.93
7	147.29	146.54
8	154.58	139.70
9	163.33	134.86
10	173.27	133.73
11	183.27	133.55
12	286.44	199.28
13	292.85	206.96
14	297.50	211.61

*** 3.731 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	104.01	166.72
2	111.36	165.58
3	121.02	162.99
4	128.28	156.11
5	137.34	151.87
6	147.18	150.13
7	157.07	148.63
8	164.91	142.42
9	173.46	137.23
10	183.22	135.09
11	275.70	193.23
12	282.74	200.33
13	289.09	208.05
14	289.37	209.98

*** 3.734 ***

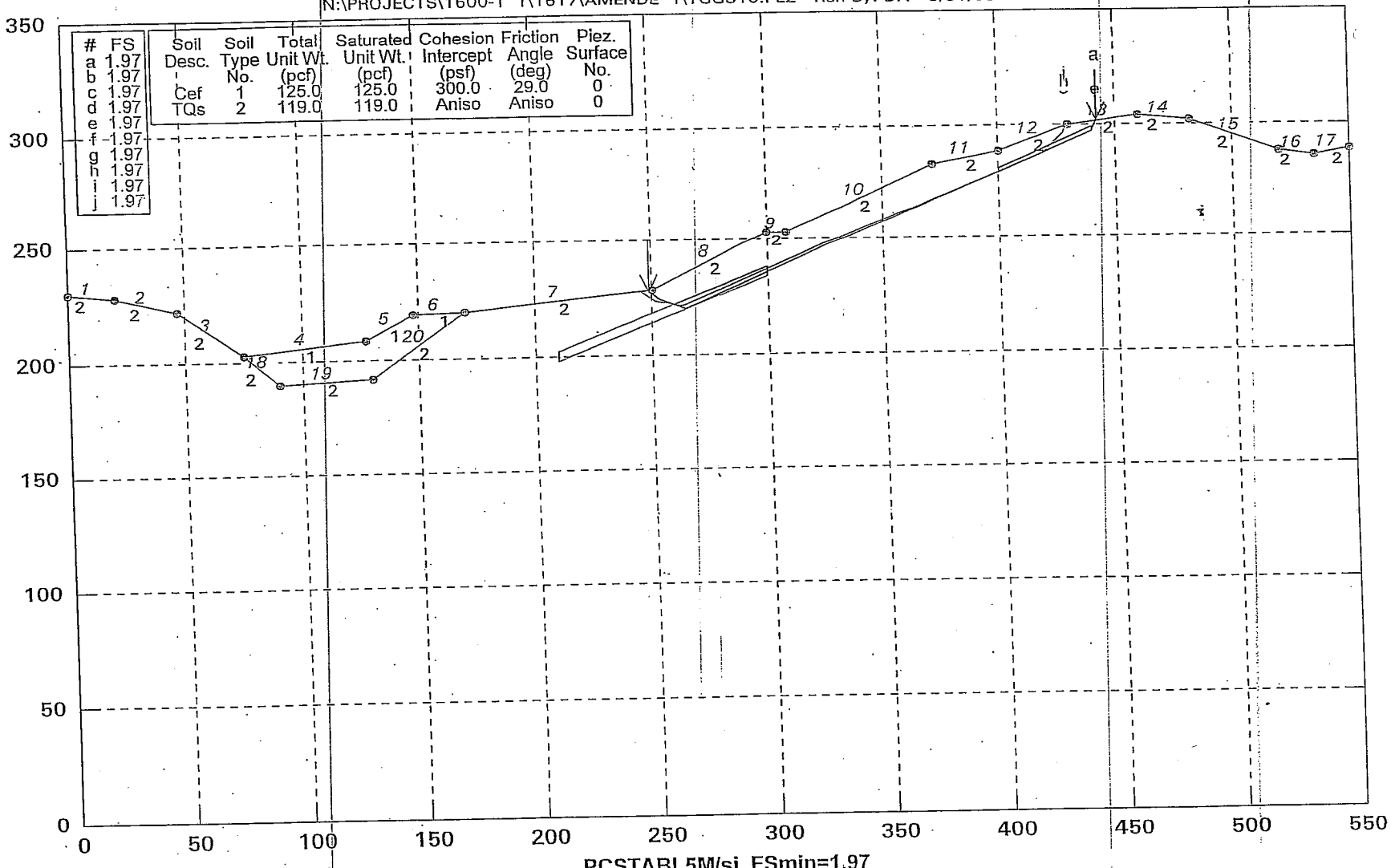
Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	104.01	166.72
2	111.36	165.58
3	121.02	162.99
4	128.28	156.11
5	137.34	151.87
6	147.18	150.13
7	157.07	148.63
8	164.91	142.42
9	173.46	137.23
10	183.22	135.09
11	275.70	193.23
12	282.74	200.33
13	289.09	208.05
14	289.37	209.98

*** 3.734 ***

Amended VTT52584 G-G' Bed plane search CS-25 and nat slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TGGS10.PL2 Run By: DA 3/31/03 3:34PM



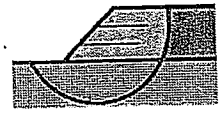
#	FS
a	1.97
b	1.97
c	1.97
d	1.97
e	1.97
f	1.97
g	1.97
h	1.97
i	1.97
j	1.97

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0

PCSTABL5M/si FSmin=1.97

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

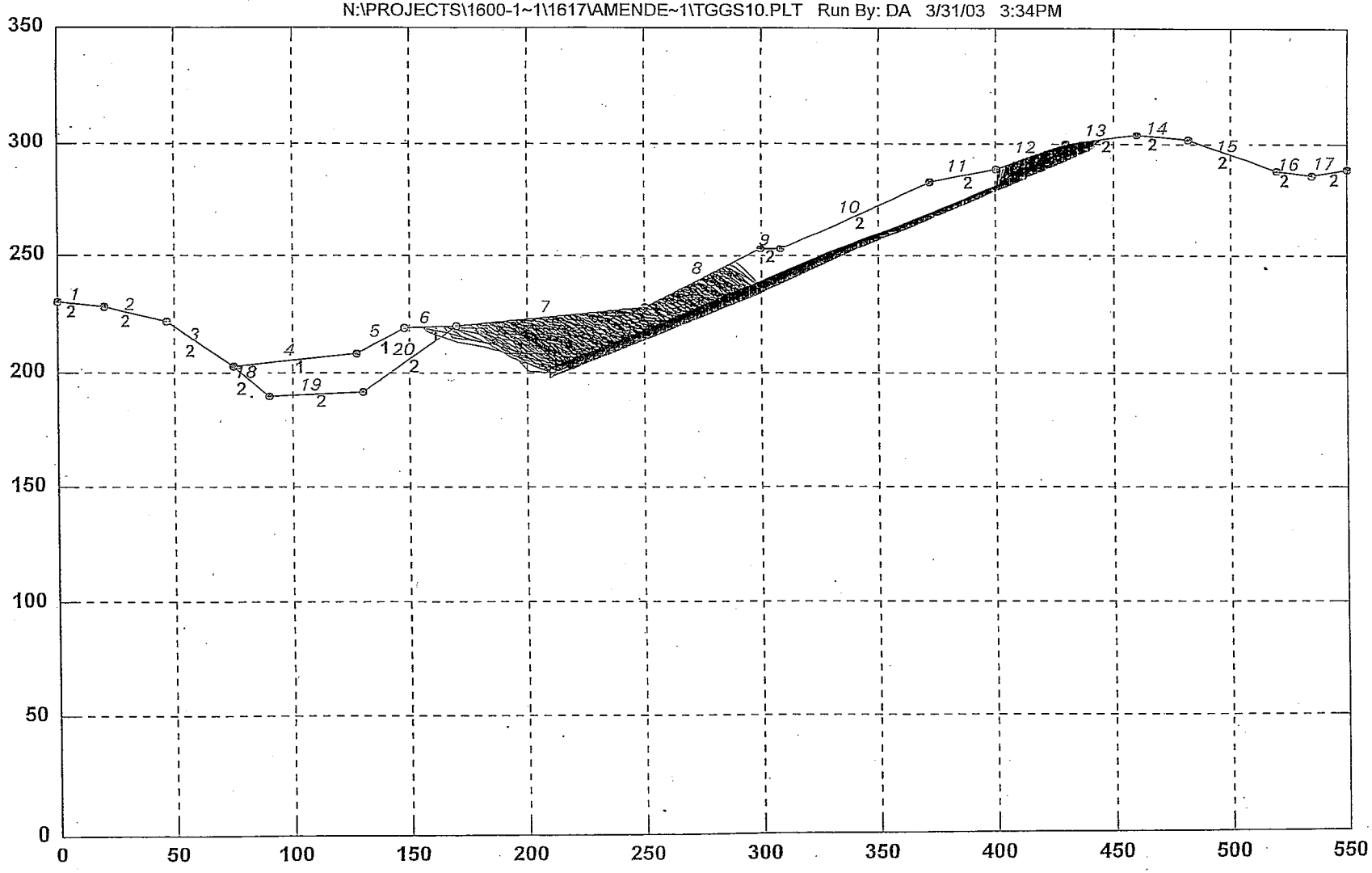
STED



RUN NO. 1 - 58

Amended VTT52584 G-G' Bed plane search CS-25 and nat slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TGGS10.PLT Run By: DA 3/31/03 3:34PM



STED

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 3:34PM
Run By: DA
Input Data Filename: N:TGGS10.IN
Output Filename: N:TGGS10.OUT
Unit: ENGLISH
Plotted Output Filename: N:TGGS10.PLT
PROBLEM DESCRIPTION Amended VTT52584 G-G' Bed plane search
CS-25 and nat slope, Static

BOUNDARY COORDINATES
17 Top Boundaries
20 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	230.00	20.00	228.00	2
2	20.00	228.00	47.00	222.00	2
3	47.00	222.00	75.00	203.00	2
4	75.00	203.00	127.00	208.00	1
5	127.00	208.00	148.00	219.00	1
6	148.00	219.00	170.00	220.00	1
7	170.00	220.00	250.00	228.00	2
8	250.00	228.00	300.00	253.00	2
9	300.00	253.00	308.00	253.00	2
10	308.00	253.00	372.00	283.00	2
11	372.00	283.00	400.00	289.00	2
12	400.00	289.00	430.00	300.00	2
13	430.00	300.00	460.00	304.00	2
14	460.00	304.00	482.00	302.00	2
15	482.00	302.00	520.00	288.00	2
16	520.00	288.00	535.00	286.00	2
17	535.00	286.00	550.00	289.00	2
18	75.00	203.00	90.00	190.00	2
19	90.00	190.00	130.00	192.00	2
20	130.00	192.00	170.00	220.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	22.0	410.0	40.5
2	24.0	347.0	22.0
3	90.0	410.0	40.5

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.
2500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 12.0

Box	X-Left	Y-Left	X-Right	Y-Right	Height

No.	(ft)	(ft)	(ft)	(ft)	(ft)
1	210.00	200.00	300.00	236.00	4.00
2	400.00	280.00	440.00	298.00	2.00

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

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

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.98	227.90
2	253.45	224.41
3	264.66	220.13
4	439.98	297.16
5	442.17	301.62

*** 1.970 ***

Individual data on the 10 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	1.0	54.3	.0	.0	.0	.0	.0	.0	.0
2	3.5	1276.0	.0	.0	.0	.0	.0	.0	.0
3	11.2	13682.7	.0	.0	.0	.0	.0	.0	.0
4	35.3	68437.8	.0	.0	.0	.0	.0	.0	.0
5	8.0	14839.8	.0	.0	.0	.0	.0	.0	.0
6	64.0	112488.0	.0	.0	.0	.0	.0	.0	.0
7	28.0	41843.3	.0	.0	.0	.0	.0	.0	.0
8	30.0	29687.0	.0	.0	.0	.0	.0	.0	.0
9	10.0	6765.6	.0	.0	.0	.0	.0	.0	.0
10	2.2	544.3	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.98	227.90
2	253.45	224.41
3	264.66	220.13
4	439.98	297.16
5	442.17	301.62

*** 1.970 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.98	227.90
2	253.45	224.41
3	264.66	220.13
4	439.98	297.16
5	442.17	301.62

*** 1.970 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.98	227.90
2	253.45	224.41
3	264.66	220.13
4	439.98	297.16
5	442.17	301.62

*** 1.970 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.98	227.90
2	253.45	224.41
3	264.66	220.13
4	439.98	297.16
5	442.17	301.62

*** 1.970 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	245.15	227.52
2	251.58	223.73
3	263.28	221.06
4	419.13	287.99
5	427.44	296.65
6	428.83	299.57

*** 1.974 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	245.15	227.52
2	251.58	223.73
3	263.28	221.06
4	419.13	287.99
5	427.44	296.65
6	428.83	299.57

*** 1.974 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	245.15	227.52
2	251.58	223.73
3	263.28	221.06
4	419.13	287.99
5	427.44	296.65
6	428.83	299.57

*** 1.974 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	245.15	227.52
2	251.58	223.73
3	263.28	221.06
4	419.13	287.99
5	427.44	296.65
6	428.83	299.57

*** 1.974 ***

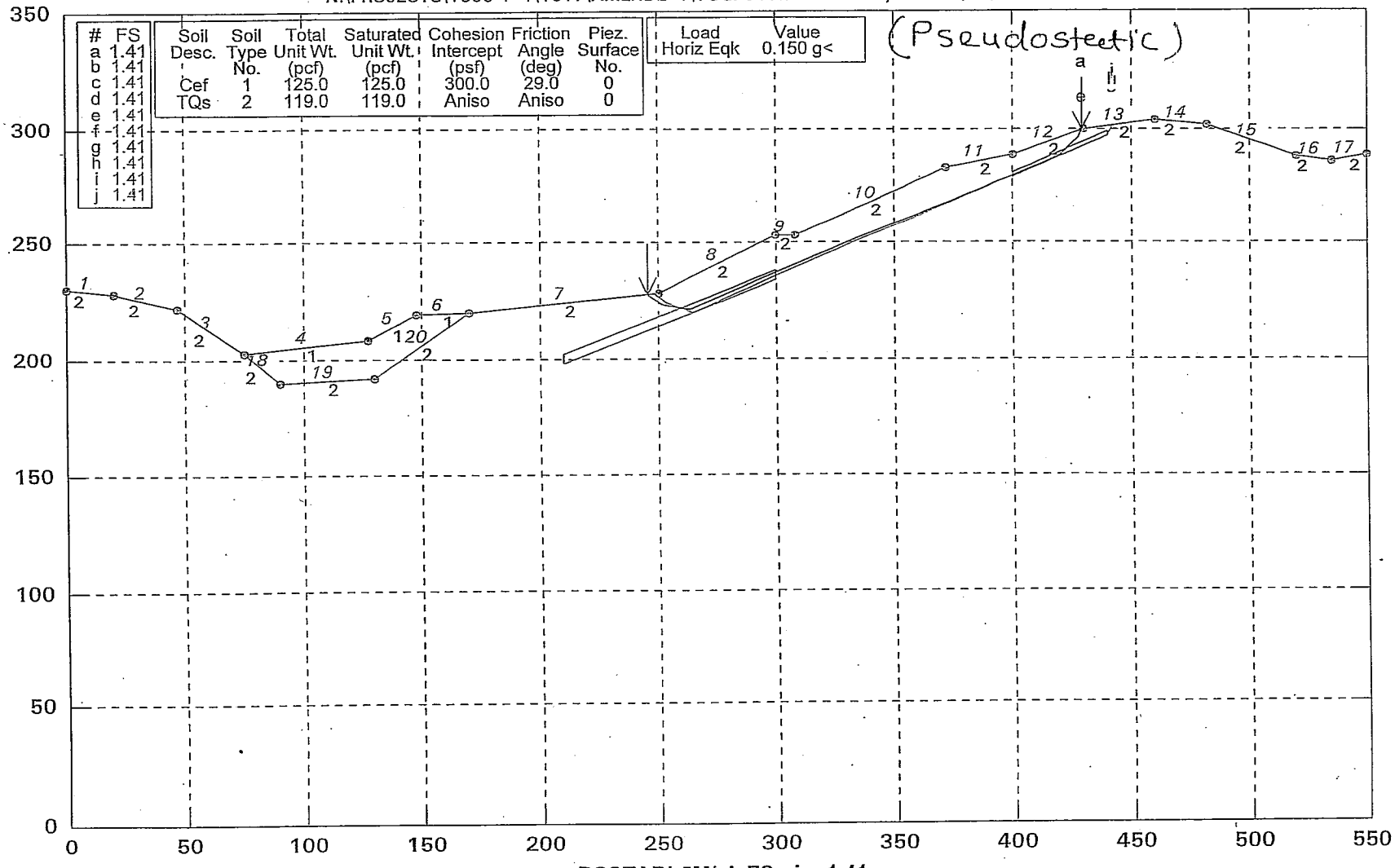
Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	245.15	227.52
2	251.58	223.73
3	263.28	221.06
4	419.13	287.99
5	427.44	296.65
6	428.83	299.57

*** 1.974 ***

Amended VTT52584 G-G' Bed plane search CS-25 and nat slope,

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TGGPS10.PL2 Run By: DA 3/31/03 4:02PM



PCSTABL5M/si FSmin=1.41

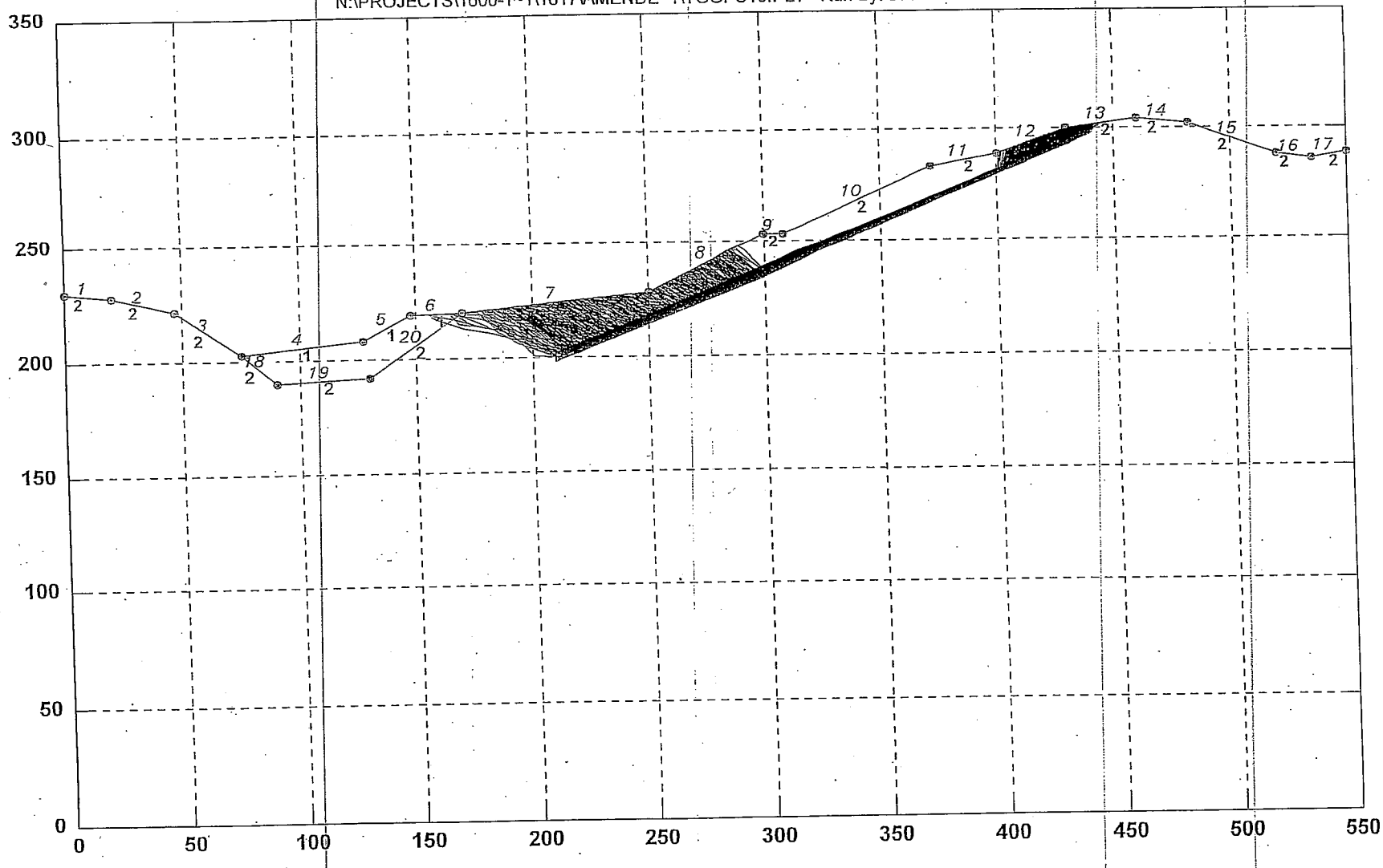
Safety Factors Are Calculated By The Modified Janbu Method for the case of c & phi both > 0

STED

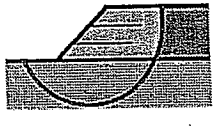
RUN NO. - 59

Amended VTT52584 G-G' Bed plane search CS-25 and nat slope, Psuedostatic

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TGGPS10.PLT Run By: DA 3/31/03 4:02PM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 4:02PM
Run By: DA
Input Data Filename: N:TGGPS10.IN
Output Filename: N:TGGPS10.OUT
Unit: ENGLISH
Plotted Output Filename: N:TGGPS10.PLT
PROBLEM DESCRIPTION Amended VTT52584 G-G' Bed plane search
CS-25 and nat slope, Psuedostatic

BOUNDARY COORDINATES
17 Top Boundaries
20 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	230.00	20.00	228.00	2
2	20.00	228.00	47.00	222.00	2
3	47.00	222.00	75.00	203.00	2
4	75.00	203.00	127.00	208.00	1
5	127.00	208.00	148.00	219.00	1
6	148.00	219.00	170.00	220.00	1
7	170.00	220.00	250.00	228.00	2
8	250.00	228.00	300.00	253.00	2
9	300.00	253.00	308.00	253.00	2
10	308.00	253.00	372.00	283.00	2
11	372.00	283.00	400.00	289.00	2
12	400.00	289.00	430.00	300.00	2
13	430.00	300.00	460.00	304.00	2
14	460.00	304.00	482.00	302.00	2
15	482.00	302.00	520.00	288.00	2
16	520.00	288.00	535.00	286.00	2
17	535.00	286.00	550.00	289.00	2
18	75.00	203.00	90.00	190.00	2
19	90.00	190.00	130.00	192.00	2
20	130.00	192.00	170.00	220.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	22.0	410.0	40.5
2	24.0	347.0	22.0
3	90.0	410.0	40.5

A Horizontal Earthquake Loading Coefficient
Of .150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of .000 Has Been Assigned
Cavitation Pressure = .0 (psf)
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.

2500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 12.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	210.00	200.00	300.00	236.00	4.00
2	400.00	280.00	440.00	298.00	2.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	245.15	227.52
2	251.58	223.73
3	263.28	221.06
4	419.13	287.99
5	427.44	296.65
6	428.83	299.57

*** 1.406 ***

Individual data on the 10 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	4.8	963.8	.0	.0	.0	.0	144.6	.0	.0
2	1.6	789.8	.0	.0	.0	.0	118.5	.0	.0
3	11.7	12977.6	.0	.0	.0	.0	1946.6	.0	.0
4	36.7	65018.1	.0	.0	.0	.0	9752.7	.0	.0
5	8.0	13761.6	.0	.0	.0	.0	2064.2	.0	.0
6	64.0	106578.1	.0	.0	.0	.0	15986.7	.0	.0
7	28.0	40775.9	.0	.0	.0	.0	6116.4	.0	.0
8	19.1	19630.8	.0	.0	.0	.0	2944.6	.0	.0
9	8.3	5161.8	.0	.0	.0	.0	774.3	.0	.0
10	1.4	200.0	.0	.0	.0	.0	30.0	.0	.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	245.15	227.52
2	251.58	223.73
3	263.28	221.06
4	419.13	287.99
5	427.44	296.65
6	428.83	299.57

*** 1.406 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	245.15	227.52
2	251.58	223.73
3	263.28	221.06
4	419.13	287.99
5	427.44	296.65
6	428.83	299.57

*** 1.406 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	245.15	227.52
2	251.58	223.73
3	263.28	221.06
4	419.13	287.99
5	427.44	296.65
6	428.83	299.57

*** 1.406 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	245.15	227.52
2	251.58	223.73
3	263.28	221.06
4	419.13	287.99
5	427.44	296.65
6	428.83	299.57

*** 1.406 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.98	227.90
2	253.45	224.41
3	264.66	220.13
4	439.98	297.16
5	442.17	301.62

*** 1.413 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.98	227.90
2	253.45	224.41
3	264.66	220.13
4	439.98	297.16
5	442.17	301.62

*** 1.413 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.98	227.90
2	253.45	224.41
3	264.66	220.13
4	439.98	297.16
5	442.17	301.62

*** 1.413 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.98	227.90
2	253.45	224.41
3	264.66	220.13
4	439.98	297.16
5	442.17	301.62

*** 1.413 ***

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.98	227.90
2	253.45	224.41
3	264.66	220.13
4	439.98	297.16
5	442.17	301.62

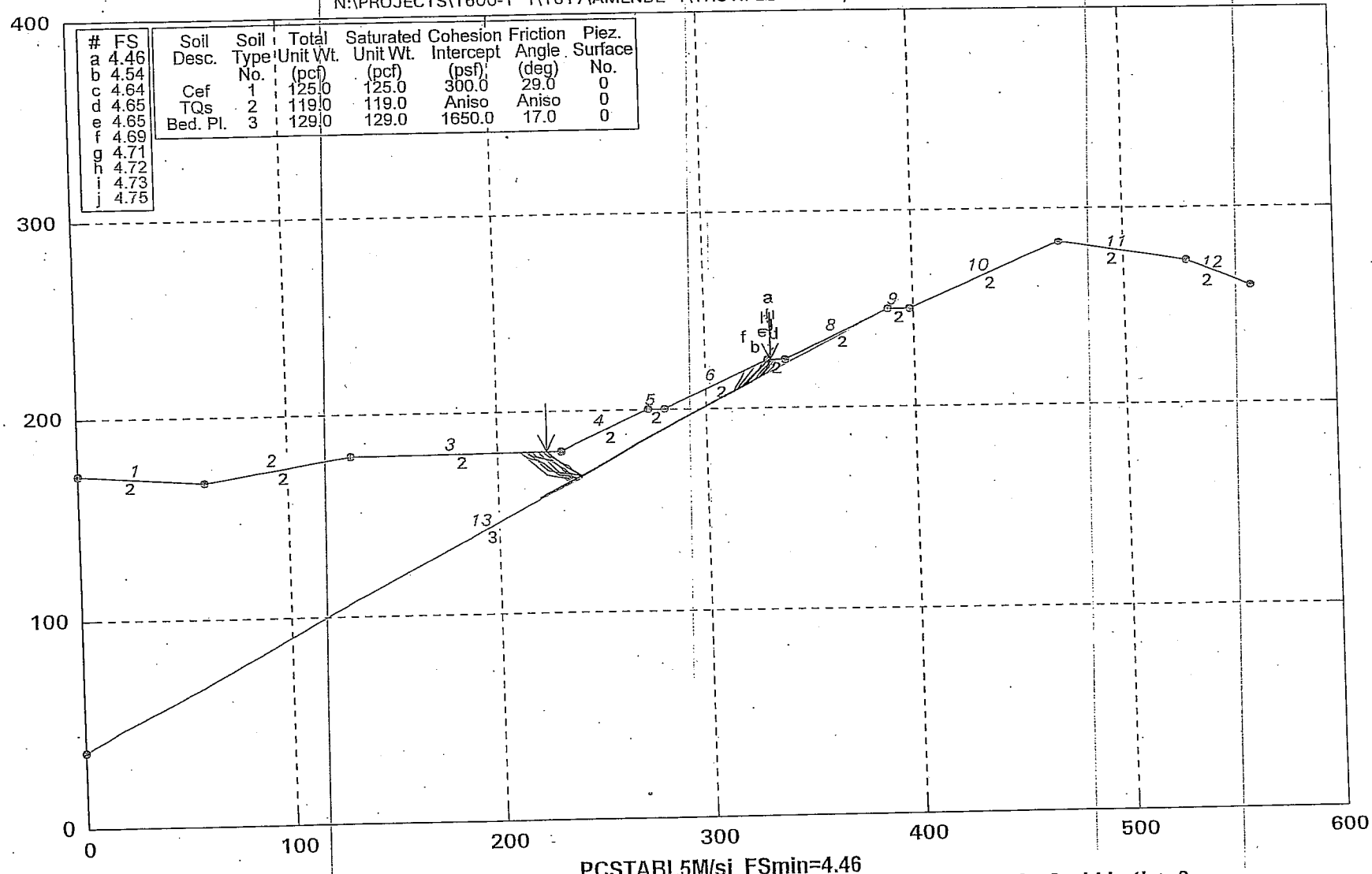
*** 1.413 ***

Amended VTT52584 H-H' Specifed Plane CS-26

N:\PROJECTS\1600-1~1\1617\AMENDE~1\THS1.PL2 Run By: DA 3/31/03 4:12PM

#	FS
a	4.46
b	4.54
c	4.64
d	4.65
e	4.65
f	4.69
g	4.71
h	4.72
i	4.73
j	4.75

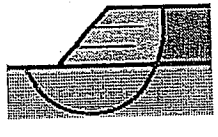
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0
Bed. Pl.	3	129.0	129.0	1650.0	17.0	0



PCSTABL5M/si FSmin=4.46

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

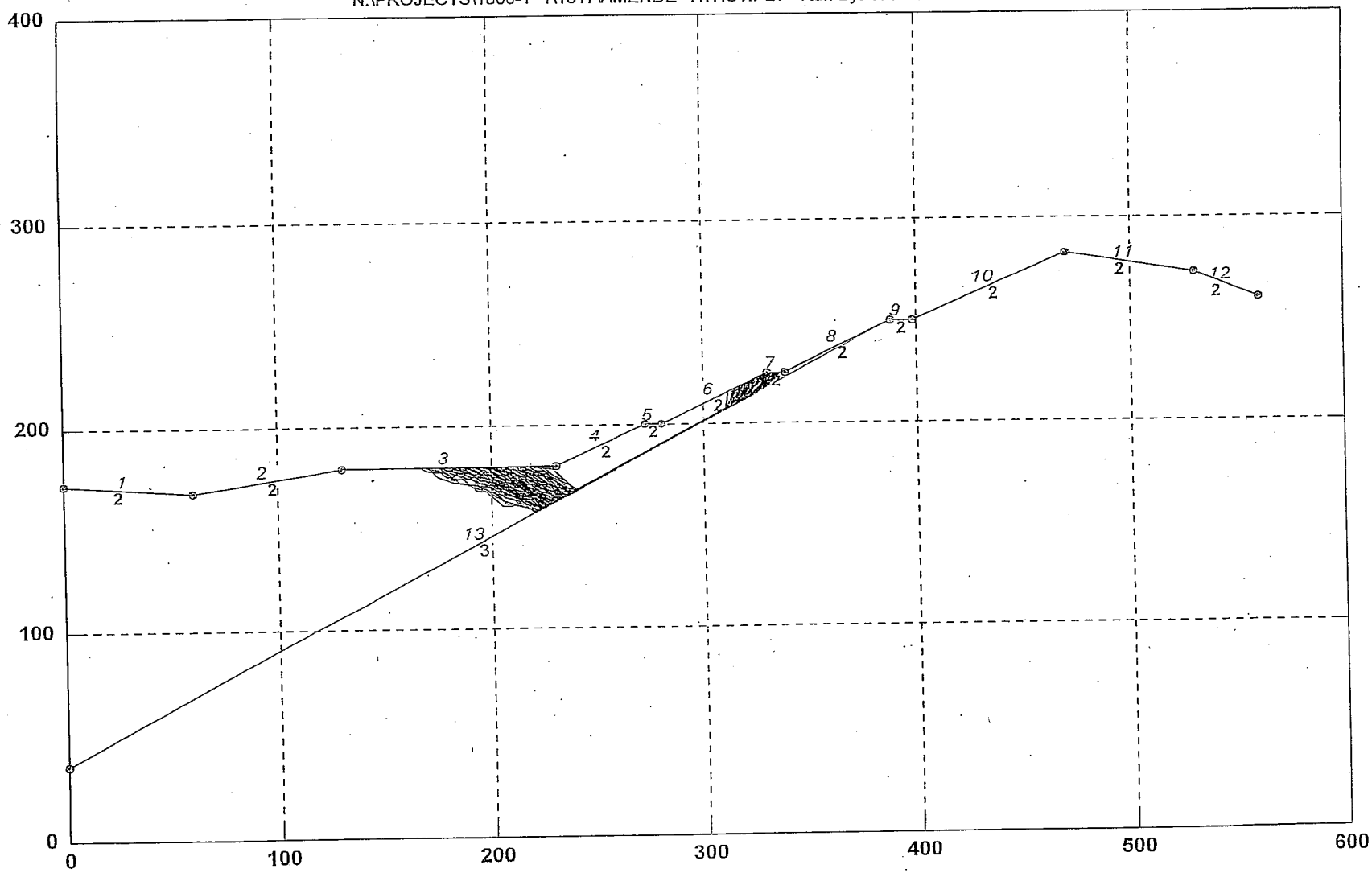
STED



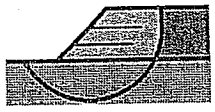
RUN NO. 60

Amended VTT52584 H-H' Specifed Plane CS-26

N:\PROJECTS\1600-1~1\1617\AMENDE~1\THS1.PLT Run By: DA 3/31/03 4:12PM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 3/31/03
Time of Run: 4:12PM
Run By: DA
Input Data Filename: N:ths1.in
Output Filename: N:ths1.OUT
Unit: ENGLISH
Plotted Output Filename: N:ths1.PLT
PROBLEM DESCRIPTION Amended VTT52584 H-H' Specifed Plane
CS-26

BOUNDARY COORDINATES
12 Top Boundaries
13 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	172.00	60.00	168.00	2
2	60.00	168.00	130.00	179.00	2
3	130.00	179.00	230.00	180.00	2
4	230.00	180.00	272.00	200.00	2
5	272.00	200.00	280.00	200.00	2
6	280.00	200.00	330.00	225.00	2
7	330.00	225.00	338.00	225.00	2
8	338.00	225.00	388.00	250.00	2
9	388.00	250.00	398.00	250.00	2
10	398.00	250.00	470.00	282.00	2
11	470.00	282.00	530.00	272.00	2
12	530.00	272.00	560.00	260.00	2
13	.00	35.00	388.00	250.00	3

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0
3	129.0	129.0	1650.0	17.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	28.0	347.0	22.0
2	30.0	1650.0	17.0
3	90.0	410.0	40.5

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 8.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	220.00	157.00	240.00	168.00	1.00
2	310.00	207.00	330.00	218.00	1.00

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

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

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	223.63	179.94
2	226.56	177.09
3	232.81	172.10
4	239.77	168.15
5	317.18	210.78
6	322.84	216.44
7	328.26	222.32
8	330.90	225.00

*** 4.462 ***

Individual data on the 11 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	501.9	.0	.0	.0	.0	.0	.0	.0
2	3.4	1748.3	.0	.0	.0	.0	.0	.0	.0
3	2.8	2492.7	.0	.0	.0	.0	.0	.0	.0
4	7.0	10653.7	.0	.0	.0	.0	.0	.0	.0
5	32.2	58685.6	.0	.0	.0	.0	.0	.0	.0
6	8.0	11326.7	.0	.0	.0	.0	.0	.0	.0
7	37.2	38728.4	.0	.0	.0	.0	.0	.0	.0
8	5.7	4304.5	.0	.0	.0	.0	.0	.0	.0
9	5.4	2188.6	.0	.0	.0	.0	.0	.0	.0
10	1.7	282.0	.0	.0	.0	.0	.0	.0	.0
11	.9	49.0	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	216.17	179.86
2	218.55	177.64
3	226.37	175.95
4	232.12	170.38
5	239.68	167.78
6	314.20	209.31
7	318.85	215.83
8	324.06	221.90
9	324.26	222.13

*** 4.537 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.60	179.81
2	214.83	177.44
3	222.24	174.41
4	228.22	169.11
5	235.44	165.66
6	321.68	213.01
7	327.13	218.87
8	332.72	224.59
9	333.05	225.00

*** 4.645 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	210.34	179.80
2	211.11	179.12
3	217.29	174.04
4	223.05	168.48
5	230.93	167.07
6	238.92	166.97
7	324.11	214.87
8	329.50	220.78

9	333.45	225.00

*** 4.649 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	218.59	179.89
2	218.85	179.64
3	224.77	174.26
4	230.46	168.64
5	238.38	167.52
6	319.08	212.33
7	324.57	218.15
8	327.47	223.74

*** 4.651 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.40	179.84
2	218.02	176.33
3	223.73	170.72
4	231.66	169.72
5	239.52	168.19
6	313.02	208.88
7	317.13	215.75
8	318.44	219.22

*** 4.691 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	221.41	179.91
2	226.56	176.63
3	233.80	173.21
4	239.54	167.65
5	327.35	216.37
6	330.12	223.88
7	330.89	225.00

*** 4.709 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	213.27	179.83
2	214.68	178.45
3	221.62	174.48
4	227.59	169.15
5	234.66	165.40
6	317.26	211.07
7	322.87	216.78
8	328.46	222.51
9	329.10	224.55

*** 4.725 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.42	179.84
2	216.88	177.71
3	224.53	175.36
4	231.54	171.50
5	237.46	166.12
6	327.80	216.45
7	333.41	222.16
8	333.51	225.00

*** 4.732 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	221.34	179.91

2	224.39	177.05
3	230.17	171.52
4	236.19	166.24
5	324.61	214.71
6	330.17	220.47
7	330.58	225.00
***	4.754	***

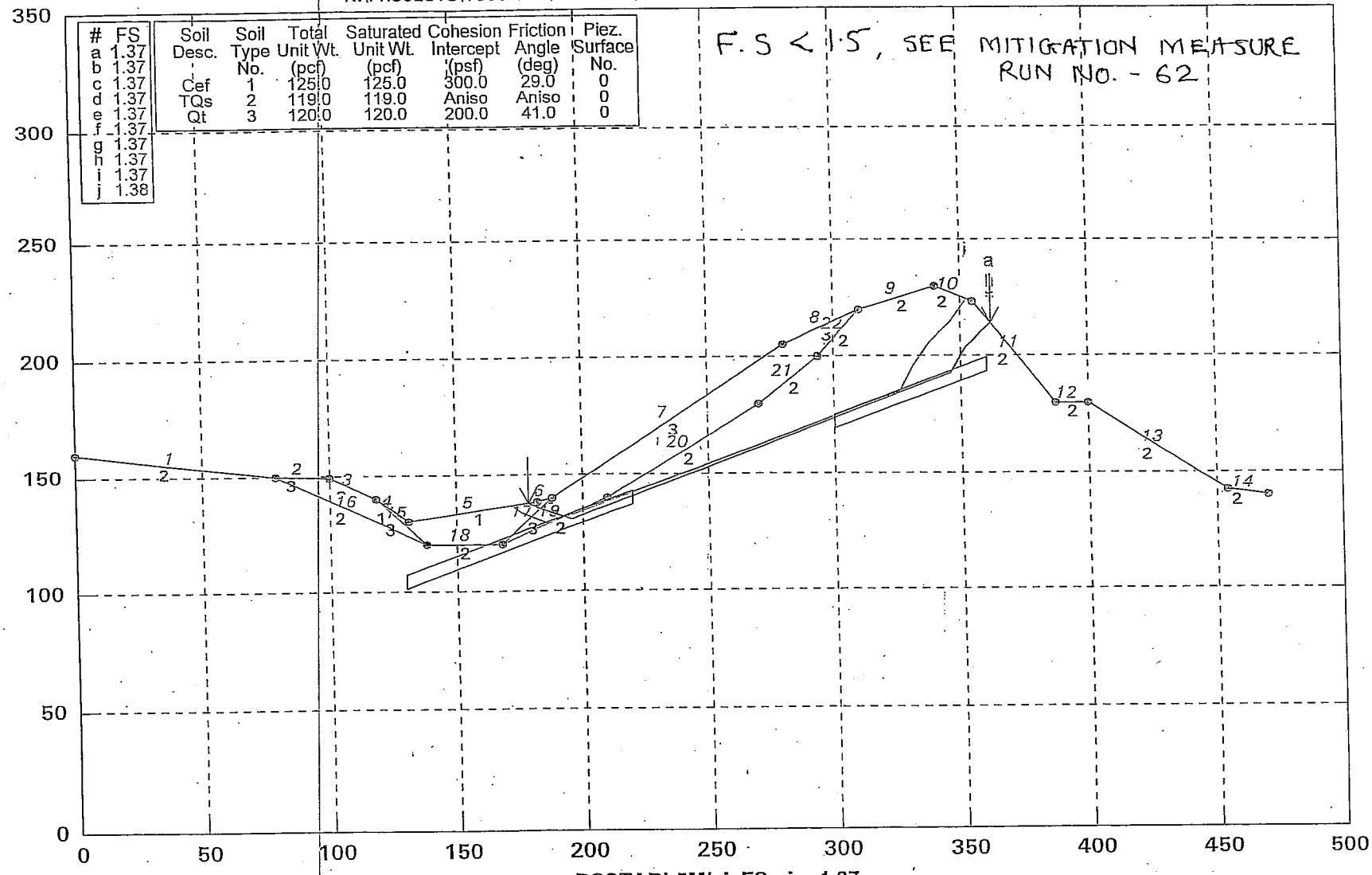
Amended VTT52584 I-I' steep nat slope w/ Qt-- Aniso

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TIS1.PL2 Run By: DA 4/1/03 8:20AM

#	FS
a	1.37
b	1.37
c	1.37
d	1.37
e	1.37
f	1.37
g	1.37
h	1.37
i	1.37
j	1.38

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0
Qt	3	120.0	120.0	200.0	41.0	0

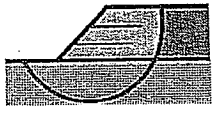
F.S < 1.5, SEE MITIGATION MEASURE RUN NO. - 62



PCSTABL5M/si FSmin=1.37

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

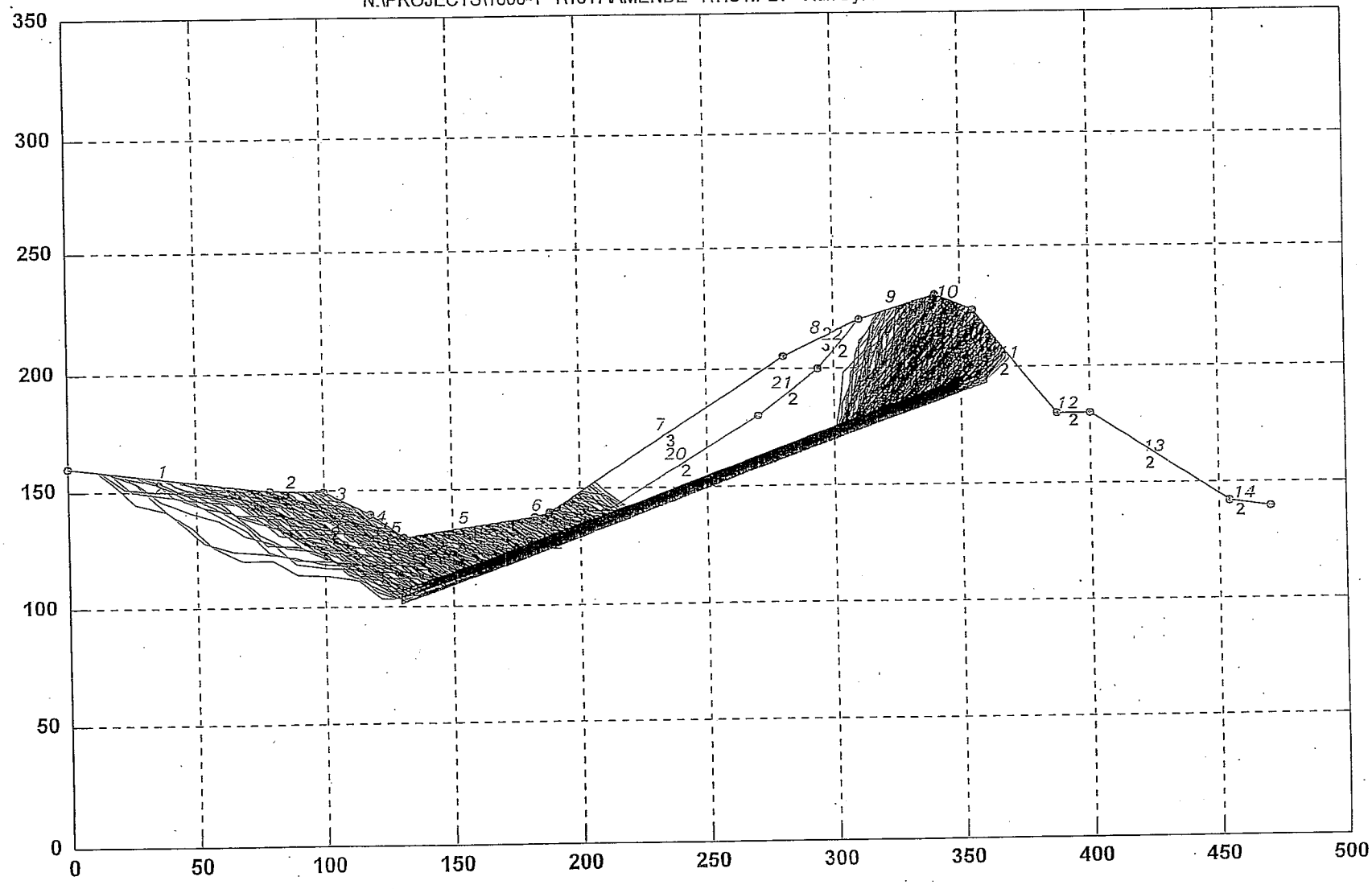
STED



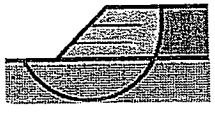
RUN No. - 61

Amended VTT52584 I-I' steep nat slope w/ and w/out Qt-- Aniso

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TIS1.PLT Run By: DA 4/1/03 8:20AM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 8:20AM
Run By: DA
Input Data Filename: N:tis1.in
Output Filename: N:tis1.OUT
Unit: ENGLISH
Plotted Output Filename: N:tis1.PLT
PROBLEM DESCRIPTION Amended VTT52584 I-I' steep nat slope
w/ and w/out Qt-- Aniso/Circular

BOUNDARY COORDINATES
14 Top Boundaries
22 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	160.00	79.00	150.00	2
2	79.00	150.00	100.00	149.00	3
3	100.00	149.00	118.00	140.00	3
4	118.00	140.00	131.00	130.00	1
5	131.00	130.00	182.00	138.00	1
6	182.00	138.00	188.00	140.00	1
7	188.00	140.00	280.00	205.00	3
8	280.00	205.00	310.00	220.00	3
9	310.00	220.00	340.00	230.00	2
10	340.00	230.00	355.00	223.00	2
11	355.00	223.00	387.00	180.00	2
12	387.00	180.00	400.00	180.00	2
13	400.00	180.00	454.00	142.00	2
14	454.00	142.00	470.00	140.00	2
15	118.00	140.00	138.00	120.00	3
16	79.00	150.00	138.00	120.00	2
17	168.00	120.00	188.00	140.00	3
18	138.00	120.00	168.00	120.00	2
19	168.00	120.00	210.00	140.00	2
20	210.00	140.00	270.00	180.00	2
21	270.00	180.00	294.00	200.00	2
22	294.00	200.00	310.00	220.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0
3	120.0	120.0	200.0	41.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	21.0	410.0	40.5
2	23.0	347.0	22.0
3	90.0	410.0	40.5

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.
3000 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 12.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	130.00	104.00	220.00	140.00	6.00
2	300.00	172.00	360.00	196.00	6.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.79	137.50
2	184.70	134.60
3	195.85	130.16
4	345.98	192.82
5	352.15	203.11
6	360.04	212.16
7	361.78	213.89

*** 1.368 ***

Individual data on the 17 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	416.9	.0	.0	.0	.0	.0	.0	.0
2	1.3	421.2	.0	.0	.0	.0	.0	.0	.0
3	1.4	646.6	.0	.0	.0	.0	.0	.0	.0
4	3.3	2197.4	.0	.0	.0	.0	.0	.0	.0
5	4.3	4693.1	.0	.0	.0	.0	.0	.0	.0
6	3.5	5703.9	.0	.0	.0	.0	.0	.0	.0
7	14.2	29554.1	.0	.0	.0	.0	.0	.0	.0
8	60.0	201999.0	.0	.0	.0	.0	.0	.0	.0
9	10.0	45714.6	.0	.0	.0	.0	.0	.0	.0
10	14.0	67330.8	.0	.0	.0	.0	.0	.0	.0
11	16.0	79175.5	.0	.0	.0	.0	.0	.0	.0
12	30.0	146132.5	.0	.0	.0	.0	.0	.0	.0
13	6.0	26341.7	.0	.0	.0	.0	.0	.0	.0
14	6.2	20432.7	.0	.0	.0	.0	.0	.0	.0
15	2.8	6408.9	.0	.0	.0	.0	.0	.0	.0
16	5.0	6206.5	.0	.0	.0	.0	.0	.0	.0
17	1.7	420.9	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.79	137.50
2	184.70	134.60
3	195.85	130.16
4	345.98	192.82
5	352.15	203.11
6	360.04	212.16
7	361.78	213.89

*** 1.368 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.79	137.50
2	184.70	134.60
3	195.85	130.16
4	345.98	192.82
5	352.15	203.11
6	360.04	212.16
7	361.78	213.89

*** 1.368 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.79	137.50
2	184.70	134.60
3	195.85	130.16
4	345.98	192.82
5	352.15	203.11
6	360.04	212.16
7	361.78	213.89

*** 1.368 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.79	137.50
2	184.70	134.60
3	195.85	130.16
4	345.98	192.82
5	352.15	203.11
6	360.04	212.16
7	361.78	213.89

*** 1.368 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.79	137.50
2	184.70	134.60
3	195.85	130.16
4	345.98	192.82
5	352.15	203.11
6	360.04	212.16
7	361.78	213.89

*** 1.368 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.79	137.50
2	184.70	134.60
3	195.85	130.16
4	345.98	192.82
5	352.15	203.11
6	360.04	212.16
7	361.78	213.89

*** 1.368 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.79	137.50
2	184.70	134.60
3	195.85	130.16
4	345.98	192.82
5	352.15	203.11
6	360.04	212.16
7	361.78	213.89

*** 1.368 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.79	137.50
2	184.70	134.60
3	195.85	130.16
4	345.98	192.82
5	352.15	203.11
6	360.04	212.16
7	361.78	213.89

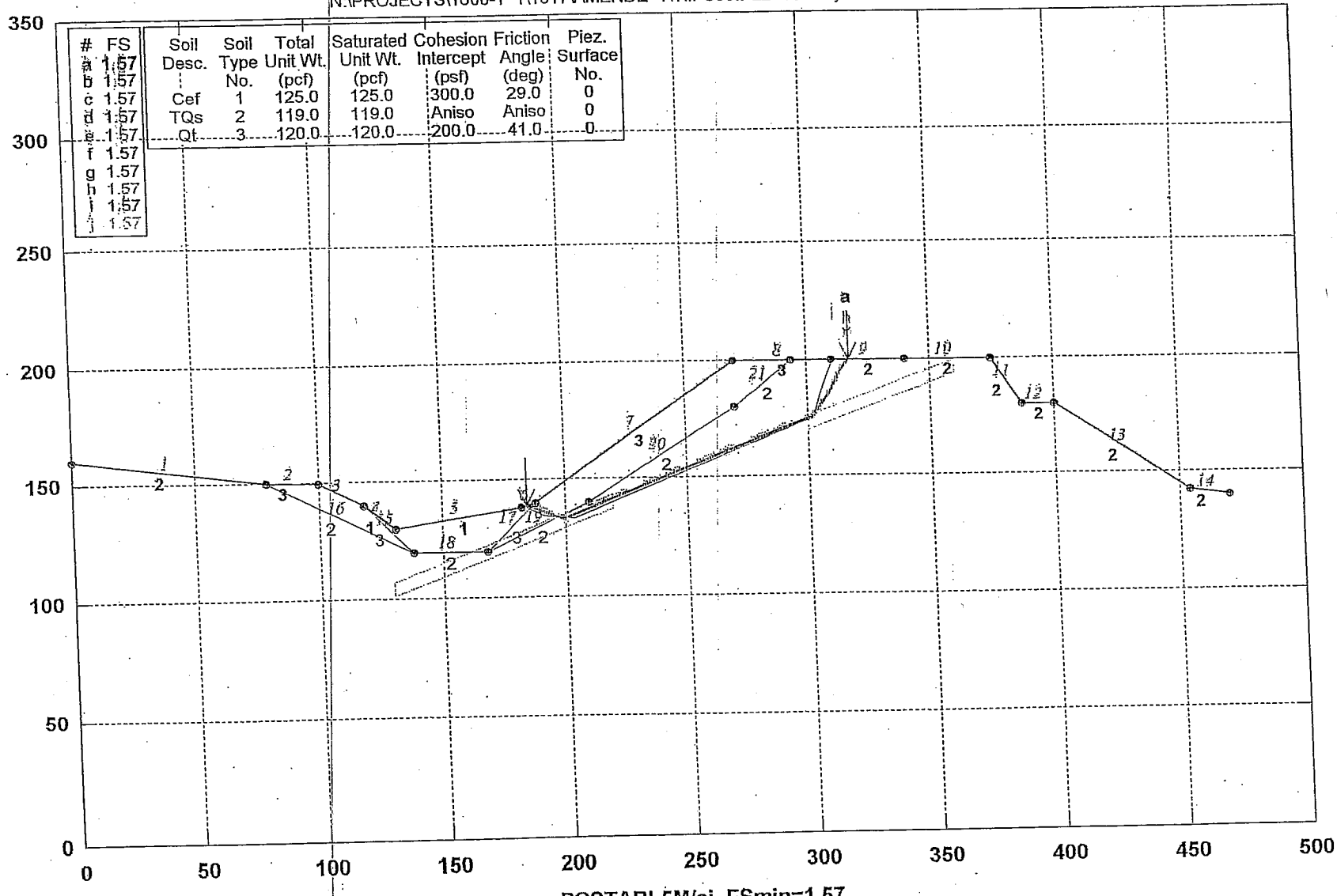
*** 1.368 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	172.38	136.49
2	175.43	133.65
3	186.40	128.79
4	325.85	184.95
5	331.58	195.50
6	337.81	205.75
7	346.12	214.41
8	352.25	224.28
***	1.380	***

Amended VTT52584 I-I' steep nat slope w/ and w/out Qt-- Aniso

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TIIPS90.PL2 Run By: DA 4/1/03 9:35AM



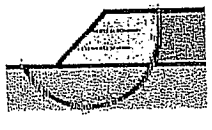
#	FS
a	1.57
b	1.57
c	1.57
d	1.57
e	1.57
f	1.57
g	1.57
h	1.57
i	1.57
j	1.57

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0
Qt	3	120.0	120.0	200.0	41.0	0

PCSTABL5M/si FSmin=1.57

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

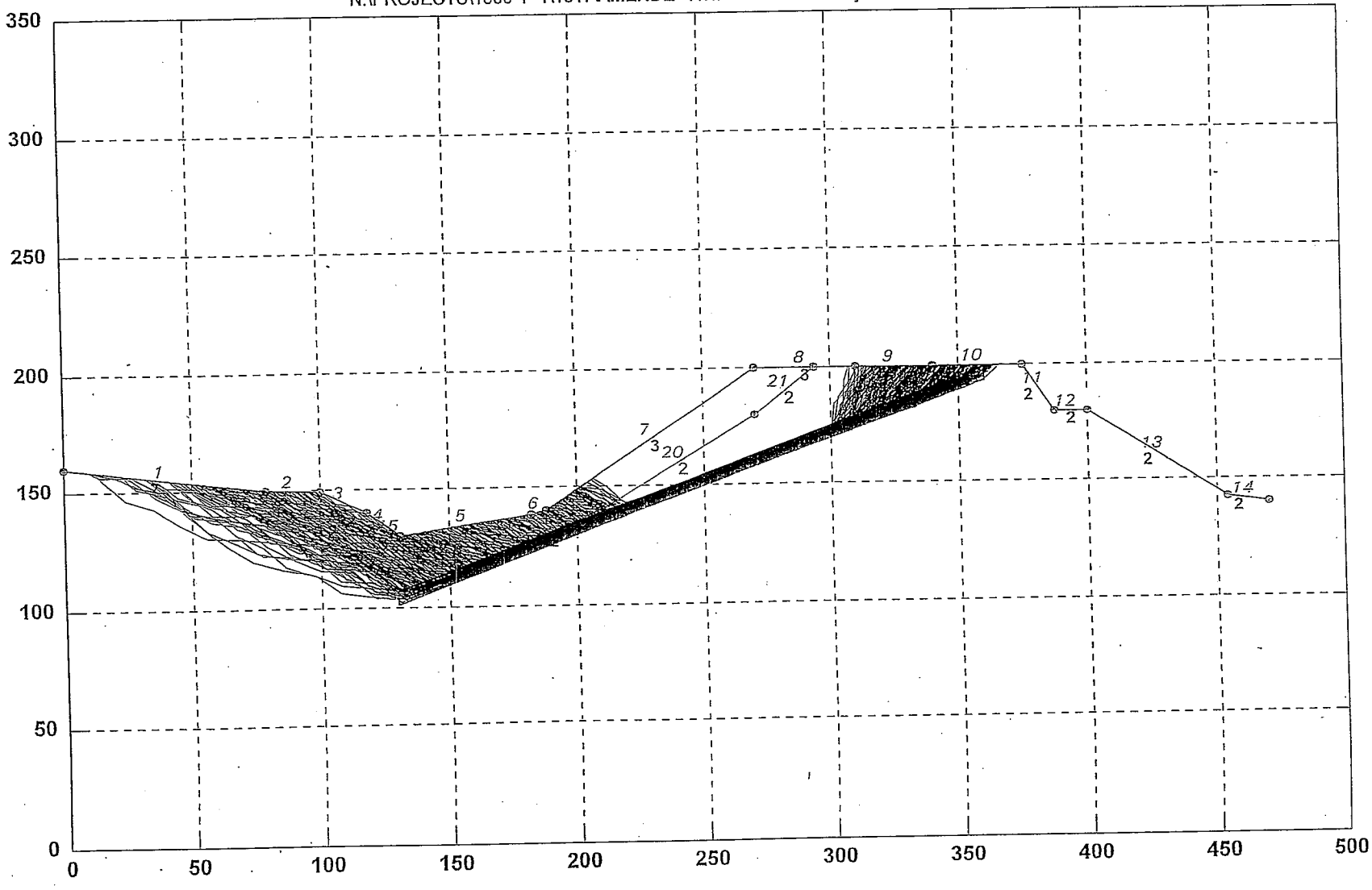
STED



RUN NO. 162

Amended VTT52584 I-I' steep nat slope After trimming, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TIIS90.PLT Run By: DA 4/1/03 8:33AM



STED

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 8:34AM
Run By: DA
Input Data Filename: N:TIIS90.IN
Output Filename: N:TIIS90.OUT
Unit: ENGLISH
Plotted Output Filename: N:TIIS90.PLT
PROBLEM DESCRIPTION Amended VTT52584 I-I' steep nat slope
After trimming, Static

BOUNDARY COORDINATES
14 Top Boundaries
21 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	160.00	79.00	150.00	2
2	79.00	150.00	100.00	149.00	3
3	100.00	149.00	118.00	140.00	3
4	118.00	140.00	131.00	130.00	1
5	131.00	130.00	182.00	138.00	1
6	182.00	138.00	188.00	140.00	1
7	188.00	140.00	270.00	200.00	3
8	270.00	200.00	310.00	200.00	3
9	310.00	200.00	340.00	200.00	2
10	340.00	200.00	375.00	200.00	2
11	375.00	200.00	387.00	180.00	2
12	387.00	180.00	400.00	180.00	2
13	400.00	180.00	454.00	142.00	2
14	454.00	142.00	470.00	140.00	2
15	118.00	140.00	138.00	120.00	3
16	79.00	150.00	138.00	120.00	2
17	168.00	120.00	188.00	140.00	3
18	138.00	120.00	168.00	120.00	2
19	168.00	120.00	210.00	140.00	2
20	210.00	140.00	270.00	180.00	2
21	270.00	180.00	294.00	200.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0
3	120.0	120.0	200.0	41.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	21.0	410.0	40.5
2	23.0	347.0	22.0
3	90.0	410.0	40.5

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.
3000 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 12.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	130.00	104.00	220.00	140.00	6.00
2	300.00	172.00	360.00	196.00	6.00

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

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

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.566 ***

Individual data on the 13 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	116.9	.0	.0	.0	.0	.0	.0	.0
2	1.8	441.0	.0	.0	.0	.0	.0	.0	.0
3	.0	3.9	.0	.0	.0	.0	.0	.0	.0
4	9.0	8368.4	.0	.0	.0	.0	.0	.0	.0
5	2.2	3696.5	.0	.0	.0	.0	.0	.0	.0
6	10.8	21935.8	.0	.0	.0	.0	.0	.0	.0
7	60.0	202769.2	.0	.0	.0	.0	.0	.0	.0
8	24.0	94097.1	.0	.0	.0	.0	.0	.0	.0
9	7.9	25001.8	.0	.0	.0	.0	.0	.0	.0
10	7.0	16636.8	.0	.0	.0	.0	.0	.0	.0
11	1.1	1761.3	.0	.0	.0	.0	.0	.0	.0
12	4.5	4587.2	.0	.0	.0	.0	.0	.0	.0
13	2.6	661.9	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.566 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.566 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96

4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.566 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.566 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.566 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.566 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.566 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	183.59	138.53
2	191.68	134.48
3	203.62	133.36
4	301.71	174.66
5	305.54	186.03
6	309.47	197.37
7	311.29	200.00

*** 1.568 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	183.59	138.53
2	191.68	134.48
3	203.62	133.36

4	301.71	174.66
5	305.54	186.03
6	309.47	197.37
7	311.29	200.00

*** 1.568 ***

Amended VTT52584 I-I' steep nat slope After slope trimming,

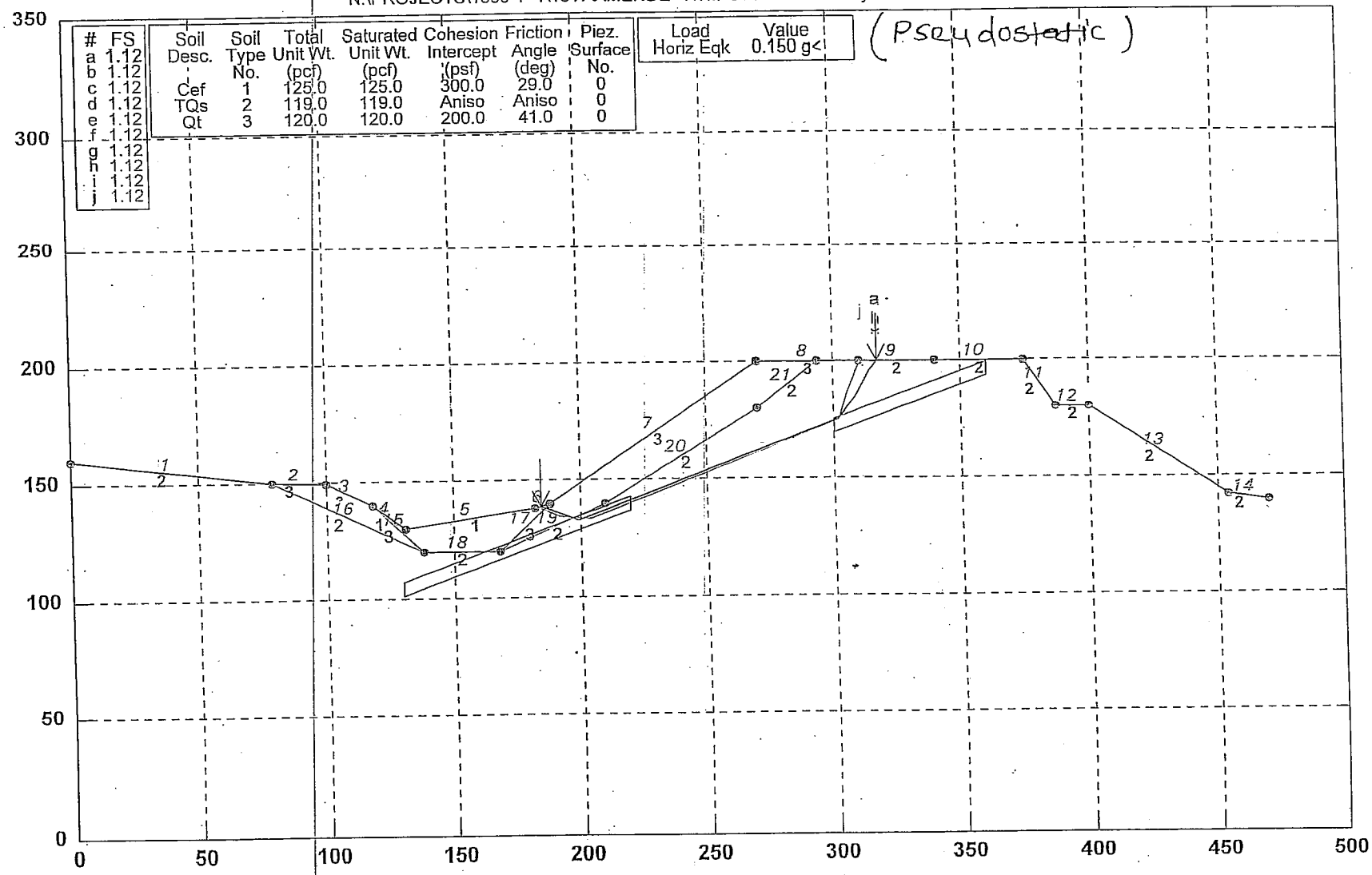
N:\PROJECTS\1600-1~1\1617\AMENDE~1\TIIPS91.PL2 Run By: DA 4/1/03 8:41AM

#	FS
a	1.12
b	1.12
c	1.12
d	1.12
e	1.12
f	1.12
g	1.12
h	1.12
i	1.12
j	1.12

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0
Qt	3	120.0	120.0	200.0	41.0	0

Load	Value
Horiz Eqk	0.150 g<

(Pseudostatic)



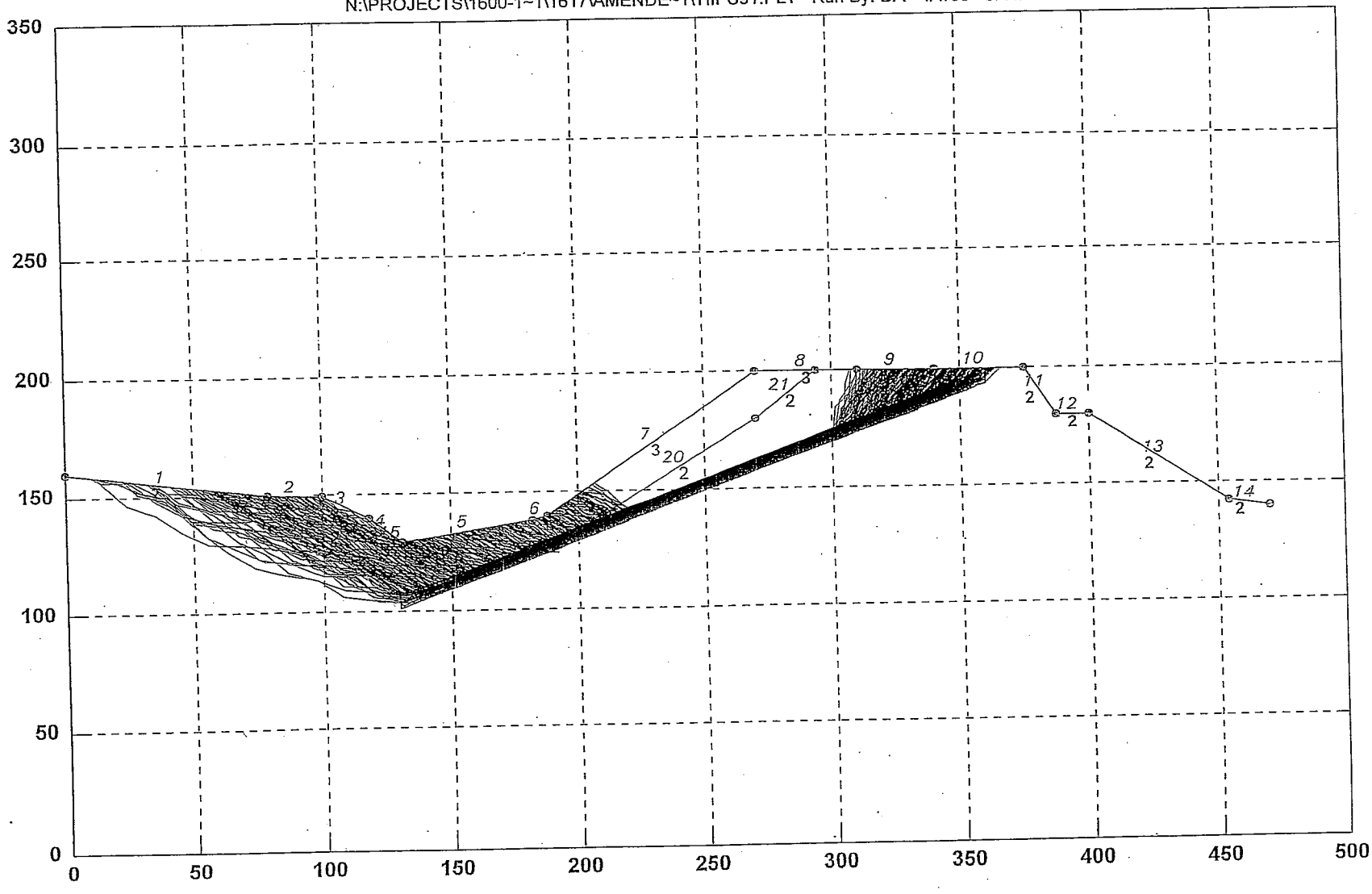
PCSTABL5M/si FSmin=1.12

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

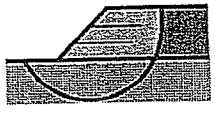
RUN NO. - 63

Amended VTT52584 I-I' steep nat slope After slope trimming, Psuedostatic

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TIIPS91.PLT Run By: DA 4/1/03 8:41AM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 8:42AM
Run By: DA
Input Data Filename: N:TIIPS91.IN
Output Filename: N:TIIPS91.OUT
Unit: ENGLISH
Plotted Output Filename: N:TIIPS91.PLT
PROBLEM DESCRIPTION Amended VTT52584 I-I' steep nat slope
After slope trimming, Psuedostatic

BOUNDARY COORDINATES
14 Top Boundaries
21 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	160.00	79.00	150.00	2
2	79.00	150.00	100.00	149.00	3
3	100.00	149.00	118.00	140.00	3
4	118.00	140.00	131.00	130.00	1
5	131.00	130.00	182.00	138.00	1
6	182.00	138.00	188.00	140.00	1
7	188.00	140.00	270.00	200.00	3
8	270.00	200.00	310.00	200.00	3
9	310.00	200.00	340.00	200.00	2
10	340.00	200.00	375.00	200.00	2
11	375.00	200.00	387.00	180.00	2
12	387.00	180.00	400.00	180.00	2
13	400.00	180.00	454.00	142.00	2
14	454.00	142.00	470.00	140.00	2
15	118.00	140.00	138.00	120.00	3
16	79.00	150.00	138.00	120.00	2
17	168.00	120.00	188.00	140.00	3
18	138.00	120.00	168.00	120.00	2
19	168.00	120.00	210.00	140.00	2
20	210.00	140.00	270.00	180.00	2
21	270.00	180.00	294.00	200.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0
3	120.0	120.0	200.0	41.0	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	21.0	410.0	40.5
2	23.0	347.0	22.0
3	90.0	410.0	40.5

A Horizontal Earthquake Loading Coefficient
Of .150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of .000 Has Been Assigned
Cavitation Pressure = .0 (psf)
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.
3000 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 12.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	130.00	104.00	220.00	140.00	6.00
2	300.00	172.00	360.00	196.00	6.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.121 ***

Individual data on the 13 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	116.9	.0	.0	.0	.0	17.5	.0	.0
2	1.8	441.0	.0	.0	.0	.0	66.1	.0	.0
3	.0	3.9	.0	.0	.0	.0	.6	.0	.0
4	9.0	8368.4	.0	.0	.0	.0	1255.3	.0	.0
5	2.2	3696.5	.0	.0	.0	.0	554.5	.0	.0
6	10.8	21935.8	.0	.0	.0	.0	3290.4	.0	.0
7	60.0	202769.2	.0	.0	.0	.0	30415.4	.0	.0
8	24.0	94097.1	.0	.0	.0	.0	14114.6	.0	.0
9	7.9	25001.8	.0	.0	.0	.0	3750.3	.0	.0
10	7.0	16636.8	.0	.0	.0	.0	2495.5	.0	.0
11	1.1	1761.3	.0	.0	.0	.0	264.2	.0	.0
12	4.5	4587.2	.0	.0	.0	.0	688.1	.0	.0
13	2.6	661.9	.0	.0	.0	.0	99.3	.0	.0

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.121 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.121 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.121 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.121 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.121 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.121 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.63	138.88
2	188.01	137.28
3	199.21	132.96
4	301.93	175.36
5	308.94	185.10
6	314.50	195.74
7	317.11	200.00

*** 1.121 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	183.59	138.53
2	191.68	134.48
3	203.62	133.36
4	301.71	174.66
5	305.54	186.03
6	309.47	197.37
7	311.29	200.00

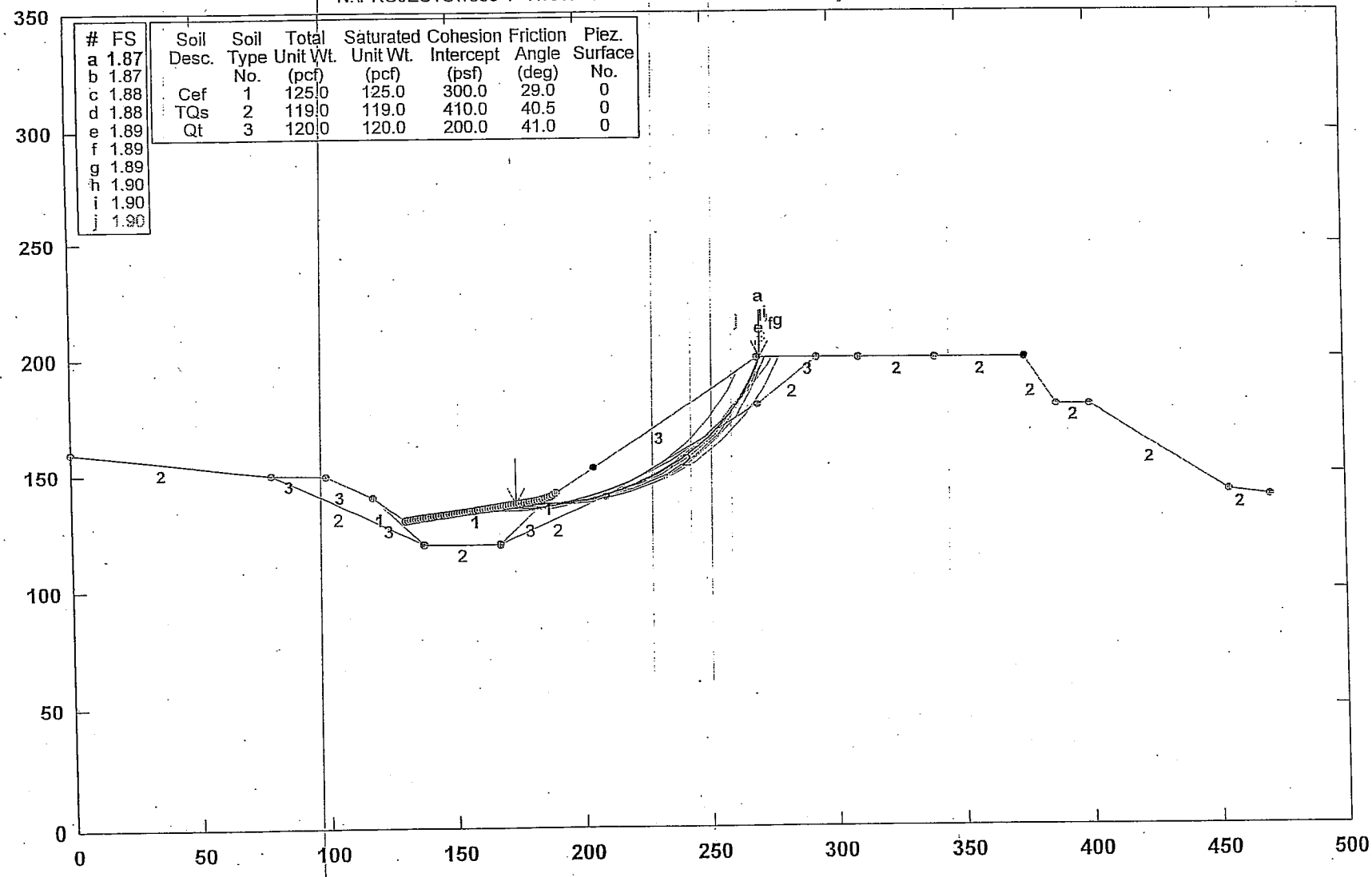
*** 1.121 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	183.59	138.53
2	191.68	134.48
3	203.62	133.36
4	301.71	174.66
5	305.54	186.03
6	309.47	197.37
7	311.29	200.00
***	1.121	***

Amended VTT52584, I-I', Steep Nat. SlopeAfter slope trimming, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TIIS92.PL2 Run By: DA 4/15/2003 11:32AM



#	FS
a	1.87
b	1.87
c	1.88
d	1.88
e	1.89
f	1.89
g	1.89
h	1.90
i	1.90
j	1.90

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	410.0	40.5	0
Qt	3	120.0	120.0	200.0	41.0	0

GSTABL7 FSmin=1.87

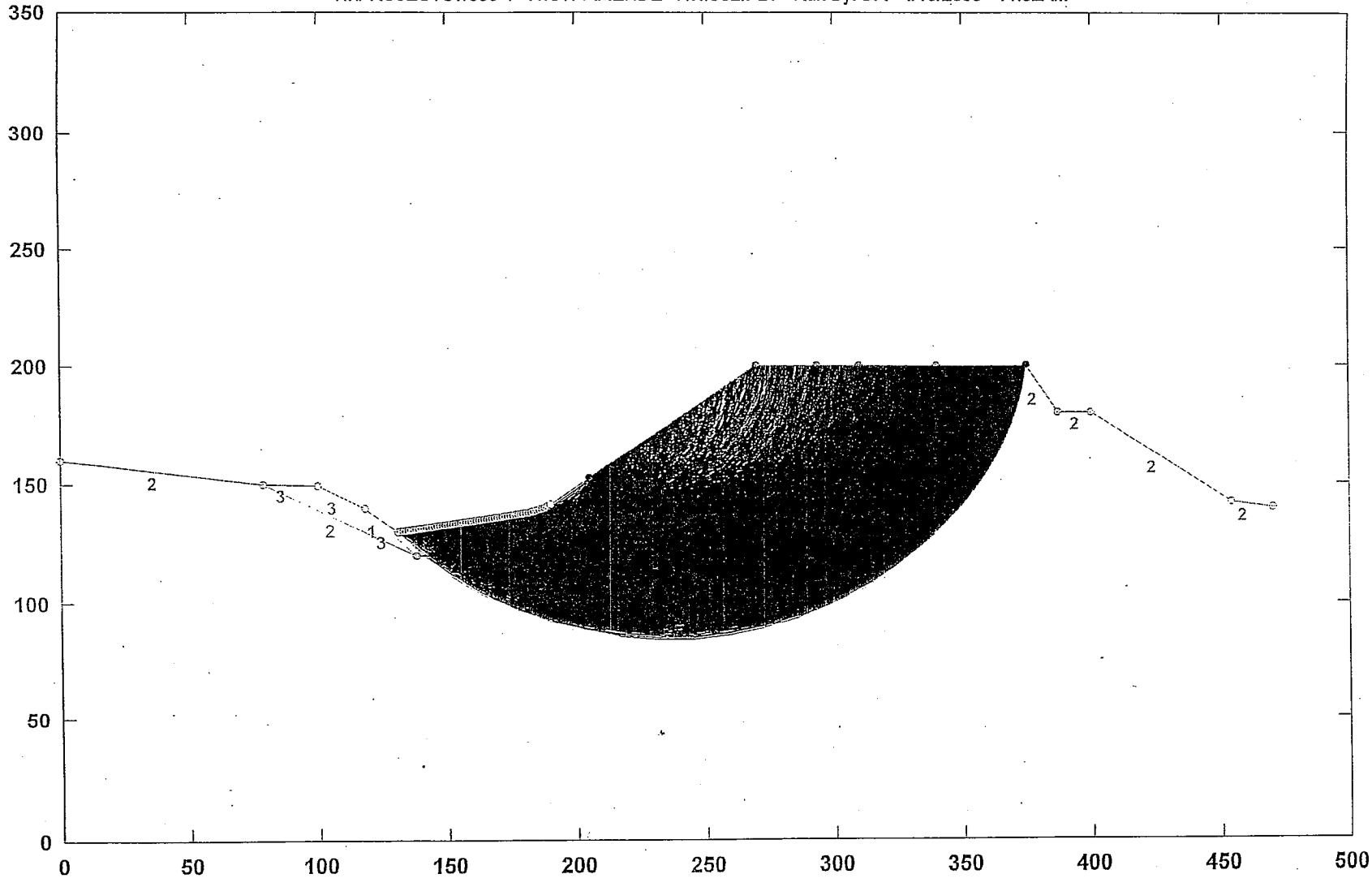
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

STED

RUN NO. - 64

Amended VTT52584, I-I', Steep Nat. SlopeAfter slope trimming, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TIIS92.PLT Run By: DA 4/15/2003 11:32AM



STED

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                    ***  GSTABL7  ***
        ** GSTABL7 by Garry H. Gregory, P.E. **
 ** Version 1.0, January 1996; Version 1.16, May 2000 **
              --Slope Stability Analysis--
            Simplified Janbu, Modified Bishop
              or Spencer`s Method of Slices
      (Based on STABL6-1986, by Purdue University)
 Run Date:                  4/15/2003
 Time of Run:               11:32AM
 Run By:                    DA
 Input Data Filename:       N:tiis92.in
 Output Filename:           N:tiis92.OUT
 Unit System:               English
 Plotted Output Filename:   N:tiis92.PLT
 PROBLEM DESCRIPTION   Amended VTT52584, I-I', Steep Nat. Slope
                       After slope trimming, Static
 BOUNDARY COORDINATES
    14 Top Boundaries
    21 Total Boundaries
```

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	160.00	79.00	150.00	2
2	79.00	150.00	100.00	149.00	3
3	100.00	149.00	118.00	140.00	3
4	118.00	140.00	131.00	130.00	1
5	131.00	130.00	182.00	138.00	1
6	182.00	138.00	188.00	140.00	1
7	188.00	140.00	270.00	200.00	3
8	270.00	200.00	310.00	200.00	3
9	310.00	200.00	340.00	200.00	2
10	340.00	200.00	375.00	200.00	2
11	375.00	200.00	387.00	180.00	2
12	387.00	180.00	400.00	180.00	2
13	400.00	180.00	454.00	142.00	2
14	454.00	142.00	470.00	140.00	2
15	118.00	140.00	138.00	120.00	3
16	79.00	150.00	138.00	120.00	2
17	168.00	120.00	188.00	140.00	3
18	138.00	120.00	168.00	120.00	2
19	168.00	120.00	210.00	140.00	2
20	210.00	140.00	270.00	180.00	2
21	270.00	180.00	294.00	200.00	2

```
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	125.0	125.0	300.0	29.0	0.00	0.0	0
2	119.0	119.0	410.0	40.5	0.00	0.0	0
3	120.0	120.0	200.0	41.0	0.00	0.0	0

```
 A Critical Failure Surface Searching Method, Using A Random
 Technique For Generating Circular Surfaces, Has Been Specified.
 Janbus Empirical Coef. is being used for the case of  c & phi both > 0
5900 Trial Surfaces Have Been Generated.
 100 Surfaces Initiate From Each Of 59 Points Equally Spaced
 Along The Ground Surface Between  X = 131.00(ft)
                                 and  X = 190.00(ft)
 Each Surface Terminates Between   X = 205.00(ft)
                                 and  X = 375.00(ft)
 Unless Further Limitations Were Imposed, The Minimum Elevation
 At Which A Surface Extends Is  Y =  0.00(ft)
 14.00(ft) Line Segments Define Each Trial Failure Surface.
 Restrictions Have Been Imposed Upon The Angle Of Initiation.
 The Angle Has Been Restricted Between The Angles Of -45.0
 And   0.0 deg.
 Following Are Displayed The Ten Most Critical Of The Trial
       Failure Surfaces Examined.  They Are Ordered - Most Critical
```

First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	174.74	136.86
2	188.74	136.66
3	202.61	138.55
4	216.05	142.49
5	228.74	148.39
6	240.41	156.12
7	250.80	165.51
8	259.66	176.35
9	266.81	188.39
10	271.53	200.00

*** 1.868 ***

Individual data on the 15 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	7.3	564.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	2.7	582.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	3.3	1106.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.7	320.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	13.9	13342.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	9.3	15823.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	4.1	8500.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	12.7	30018.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	11.7	30517.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	10.4	26553.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	3.0	7169.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	5.8	12256.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	7.1	10878.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	3.2	2496.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	1.5	344.2	0.0	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	177.79	137.34
2	191.79	137.06
3	205.66	138.99
4	219.05	143.08
5	231.63	149.22
6	243.09	157.26
7	253.13	167.01
8	261.52	178.22
9	268.04	190.61
10	271.22	200.00

*** 1.874 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	170.67	136.22
2	184.66	135.73
3	198.58	137.27
4	212.13	140.81
5	225.02	146.27
6	236.98	153.54
7	247.77	162.46
8	257.16	172.85
9	264.94	184.49
10	270.96	197.13
11	271.84	200.00

*** 1.882 ***

Failure Surface Specified By 11 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	167.62	135.74
2	181.62	135.33
3	195.53	136.86
4	209.10	140.30
5	222.06	145.59
6	234.17	152.63
7	245.18	161.27
8	254.88	171.36
9	263.09	182.70
10	269.66	195.07
11	271.45	200.00

*** 1.884 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.83	137.66
2	193.82	137.16
3	207.70	138.98
4	221.09	143.06
5	233.63	149.30
6	244.97	157.51
7	254.80	167.48
8	262.85	178.93
9	268.90	191.55
10	271.35	200.00

*** 1.888 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	156.43	133.99
2	170.43	133.94
3	184.35	135.42
4	198.03	138.40
5	211.30	142.86
6	224.01	148.73
7	236.00	155.96
8	247.13	164.45
9	257.27	174.10
10	266.30	184.80
11	274.11	196.42
12	275.99	200.00

*** 1.889 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.81	137.50
2	192.80	136.93
3	206.72	138.43
4	220.27	141.96
5	233.15	147.44
6	245.08	154.77
7	255.80	163.77
8	265.09	174.25
9	272.73	185.98
10	278.56	198.71
11	278.93	200.00

*** 1.895 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	175.76	137.02
2	189.72	136.03
3	203.67	137.28
4	217.24	140.73
5	230.08	146.30
6	241.88	153.84

7	252.33	163.16
8	261.16	174.02
9	268.15	186.15
10	273.12	199.24
11	273.28	200.00

*** 1.899 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	161.52	134.79
2	175.50	134.09
3	189.46	135.19
4	203.15	138.09
5	216.37	142.72
6	228.87	149.01
7	240.47	156.85
8	250.96	166.12
9	260.17	176.67
10	267.95	188.31
11	273.74	200.00

*** 1.901 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	165.59	135.43
2	179.58	135.16
3	193.47	136.94
4	206.94	140.75
5	219.71	146.49
6	231.50	154.03
7	242.06	163.23
8	251.16	173.87
9	258.59	185.73
10	262.41	194.44

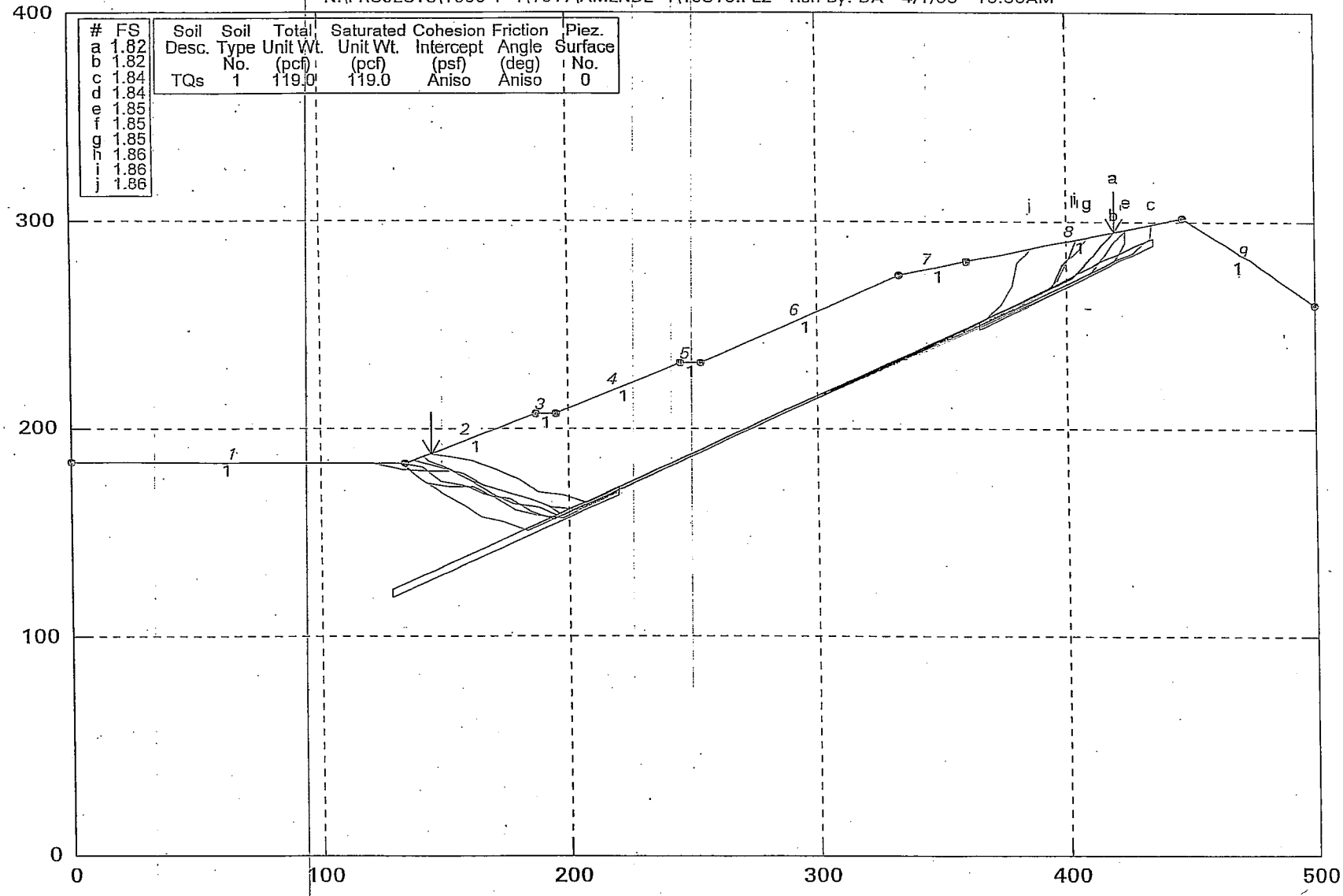
*** 1.902 ***

Amended VTT52584 J-J' Bed plane search CS-27, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TJS10.PL2 Run By: DA 4/1/03 10:30AM

#	FS
a	1.82
b	1.82
c	1.84
d	1.84
e	1.85
f	1.85
g	1.85
h	1.86
i	1.86
j	1.86

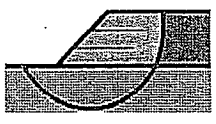
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs	1	119.0	119.0	Aniso	Aniso	0



PCSTABL5M/si FSmin=1.82

Safety Factors Are Calculated By The Modified Janbu Method

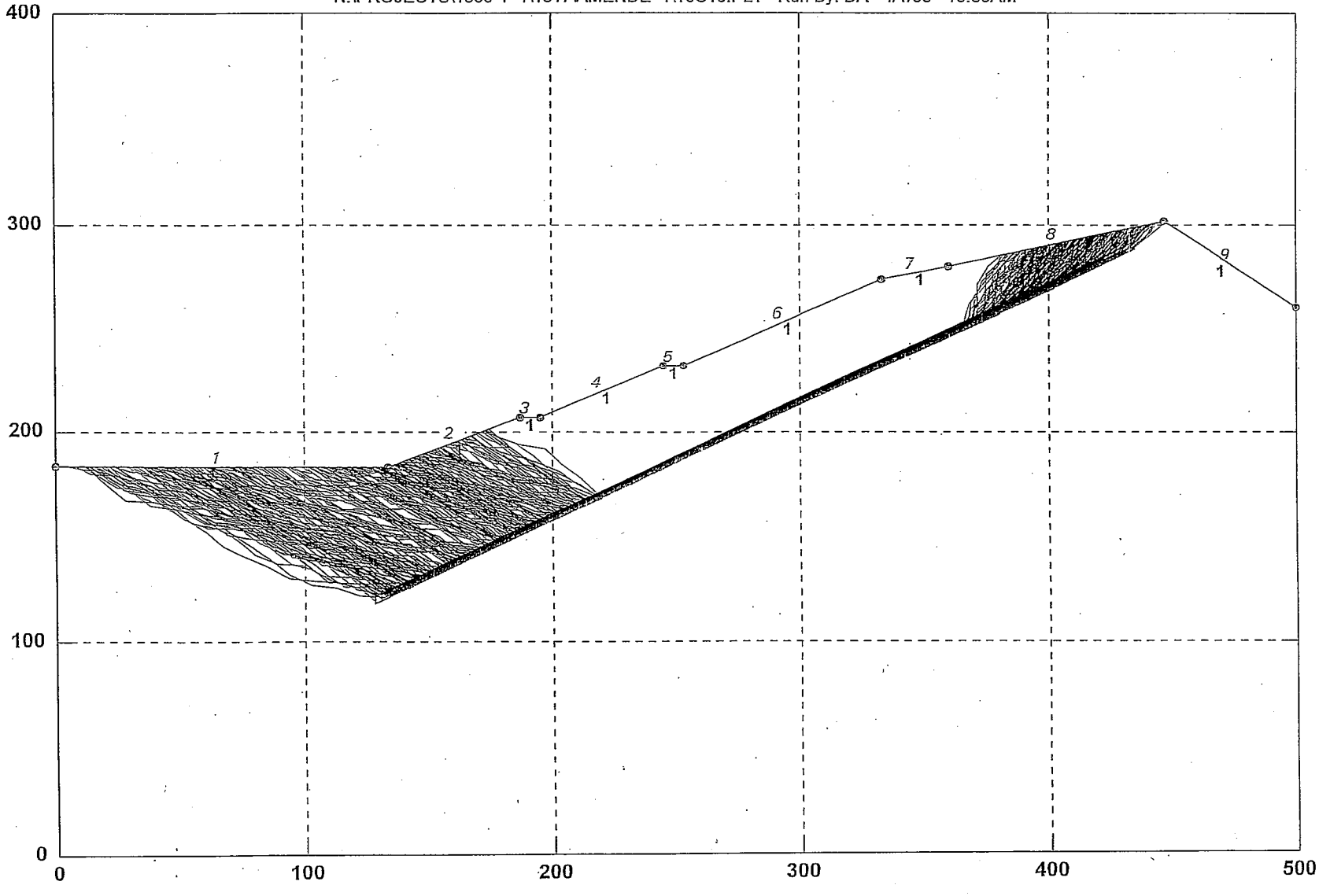
STED



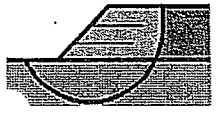
RUN NO. - 65

Amended VTT52584 J-J' Bed plane search CS-27, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TJS10.PLT Run By: DA 4/1/03 10:30AM



STED



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 10:30AM
Run By: DA
Input Data Filename: N:TJS10.IN
Output Filename: N:TJS10.OUT
Unit: ENGLISH
Plotted Output Filename: N:TJS10.PLT
PROBLEM DESCRIPTION Amended VTT52584 J-J' Bed plane search
CS-27, Static

BOUNDARY COORDINATES
9 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	184.00	134.00	183.00	1
2	134.00	183.00	187.00	207.00	1
3	187.00	207.00	195.00	207.00	1
4	195.00	207.00	245.00	232.00	1
5	245.00	232.00	253.00	232.00	1
6	253.00	232.00	333.00	274.00	1
7	333.00	274.00	360.00	280.00	1
8	360.00	280.00	447.00	302.00	1
9	447.00	302.00	500.00	260.00	1

ISOTROPIC SOIL PARAMETERS
1 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	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	28.0	410.0	40.5
2	30.0	347.0	22.0
3	90.0	410.0	40.5

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 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	128.00	120.00	220.00	170.00	4.00
2	365.00	250.00	435.00	290.00	4.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined: They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.23	187.63
2	151.76	186.40
3	161.52	184.23

4	170.58	180.00
5	179.43	175.34
6	187.62	169.60
7	197.51	168.13
8	206.74	164.29
9	402.32	272.23
10	408.84	279.81
11	414.49	288.07
12	419.36	295.01

*** 1.822 ***

Individual data on the 17 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	7.5	2078.5	.0	.0	.0	.0	.0	.0	.0
2	9.8	9220.2	.0	.0	.0	.0	.0	.0	.0
3	9.1	16606.3	.0	.0	.0	.0	.0	.0	.0
4	8.9	25168.5	.0	.0	.0	.0	.0	.0	.0
5	7.6	29361.6	.0	.0	.0	.0	.0	.0	.0
6	.6	2722.3	.0	.0	.0	.0	.0	.0	.0
7	7.4	33350.8	.0	.0	.0	.0	.0	.0	.0
8	2.5	11725.1	.0	.0	.0	.0	.0	.0	.0
9	9.2	48747.3	.0	.0	.0	.0	.0	.0	.0
10	38.3	216639.0	.0	.0	.0	.0	.0	.0	.0
11	8.0	42254.8	.0	.0	.0	.0	.0	.0	.0
12	80.0	391297.3	.0	.0	.0	.0	.0	.0	.0
13	27.0	114309.3	.0	.0	.0	.0	.0	.0	.0
14	42.3	124893.6	.0	.0	.0	.0	.0	.0	.0
15	6.5	12027.8	.0	.0	.0	.0	.0	.0	.0
16	5.6	6132.1	.0	.0	.0	.0	.0	.0	.0
17	4.9	1658.5	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.23	187.63
2	151.76	186.40
3	161.52	184.23
4	170.58	180.00
5	179.43	175.34
6	187.62	169.60
7	197.51	168.13
8	206.74	164.29
9	402.32	272.23
10	408.84	279.81
11	414.49	288.07
12	419.36	295.01

*** 1.822 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	132.45	183.01
2	140.80	181.48
3	147.87	174.41
4	157.63	172.20
5	166.76	168.13
6	176.55	166.08
7	184.64	160.21
8	193.83	156.26
9	427.08	284.31
10	433.74	291.76
11	434.61	298.87

*** 1.839 ***

Failure Surface Specified By 11 Coordinate Points

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

1	141.45	186.37
2	143.40	184.46
3	152.45	180.21
4	160.62	174.44
5	168.95	168.90
6	177.48	163.69
7	187.29	161.76
8	196.25	157.32
9	419.63	279.89
10	423.56	289.08
11	423.98	296.18

*** 1.840 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.27	183.02
2	132.88	182.57
3	139.99	175.53
4	147.95	169.48
5	156.10	163.69
6	164.17	157.79
7	173.79	155.05
8	182.87	150.85
9	408.90	273.16
10	414.35	281.54
11	419.31	290.22
12	424.29	296.26

*** 1.850 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.74	183.02
2	134.15	180.62
3	141.57	173.92
4	151.38	171.98
5	161.38	171.70
6	170.05	166.73
7	178.11	160.81
8	187.78	158.28
9	197.69	156.91
10	394.48	268.83
11	398.09	278.15
12	405.04	285.34
13	408.73	292.32

*** 1.850 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.74	183.02
2	134.15	180.62
3	141.57	173.92
4	151.38	171.98
5	161.38	171.70
6	170.05	166.73
7	178.11	160.81
8	187.78	158.28
9	197.69	156.91
10	394.48	268.83
11	398.09	278.15
12	405.04	285.34
13	408.73	292.32

*** 1.850 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	120.44	183.10

2	122.83	182.43
3	132.51	179.92
4	142.51	179.69
5	152.50	179.36
6	161.25	174.52
7	170.37	170.41
8	179.97	167.61
9	189.19	163.74
10	197.49	158.16
11	389.26	264.19
12	396.16	271.44
13	400.48	280.45
14	403.71	289.92
15	403.93	291.11

*** 1.855 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	120.44	183.10
2	122.83	182.43
3	132.51	179.92
4	142.51	179.69
5	152.50	179.36
6	161.25	174.52
7	170.37	170.41
8	179.97	167.61
9	189.19	163.74
10	197.49	158.16
11	389.26	264.19
12	396.16	271.44
13	400.48	280.45
14	403.71	289.92
15	403.93	291.11

*** 1.855 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	137.65	184.65
2	138.08	184.23
3	147.68	181.44
4	157.21	178.41
5	165.44	172.72
6	174.89	169.45
7	184.36	166.26
8	193.31	161.78
9	203.26	160.84
10	367.00	252.46
11	373.85	259.74
12	378.21	268.74
13	379.95	278.58
14	385.74	286.51

*** 1.856 ***

Amended VTT52584 J-J' Bed plane search CS-27,

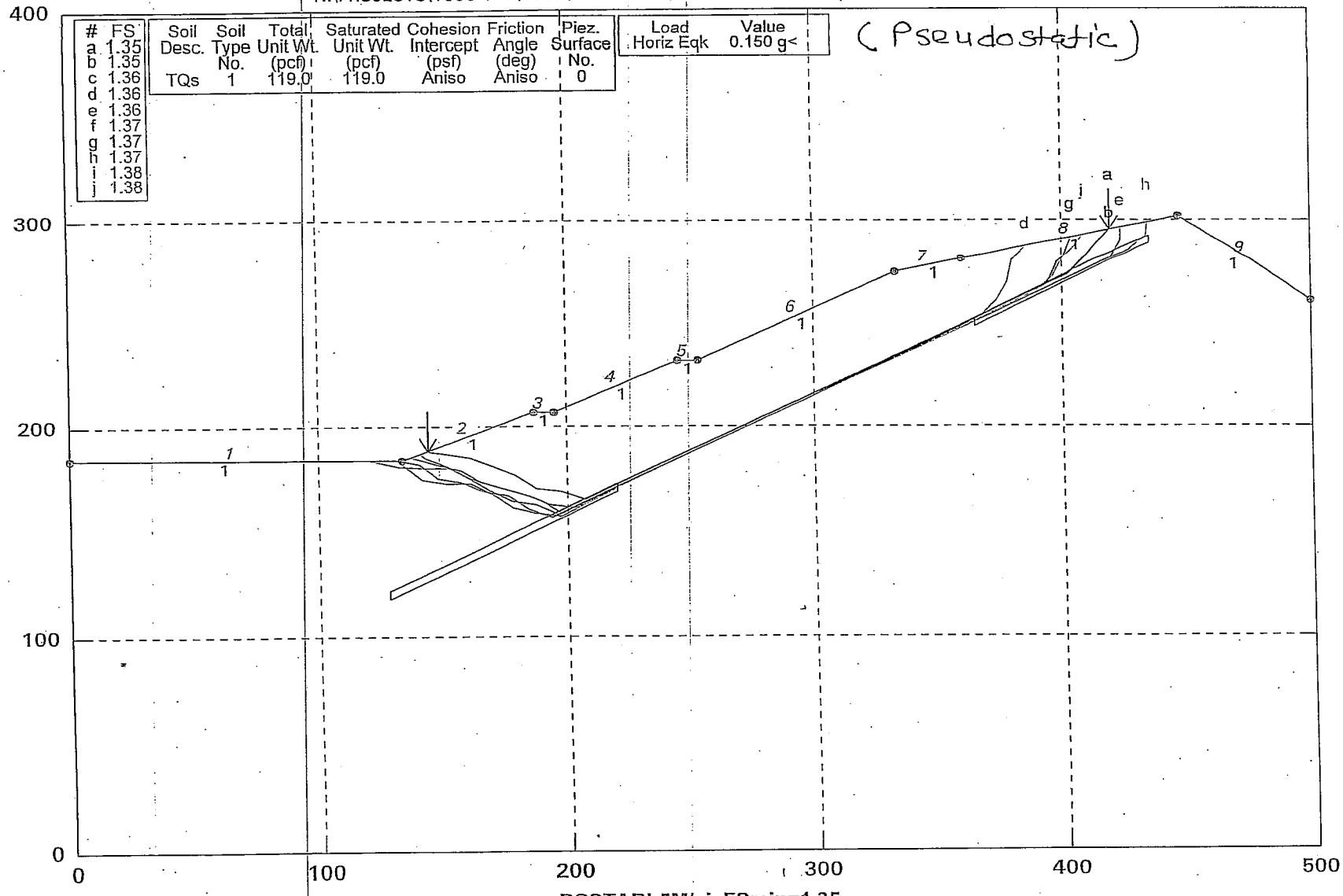
N:\PROJECTS\1600-1~1\1617\AMENDE~1\TJPS10.PL2 Run By: DA 4/1/03 10:51AM

#	FS
a	1.35
b	1.35
c	1.36
d	1.36
e	1.36
f	1.37
g	1.37
h	1.37
i	1.38
j	1.38

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs	1	119.0	119.0	Aniso	Aniso	0

Load	Value
Horiz Eqk	0.150 g<

(Pseudostatic)



PCSTABL5M/si FSmin=1.35

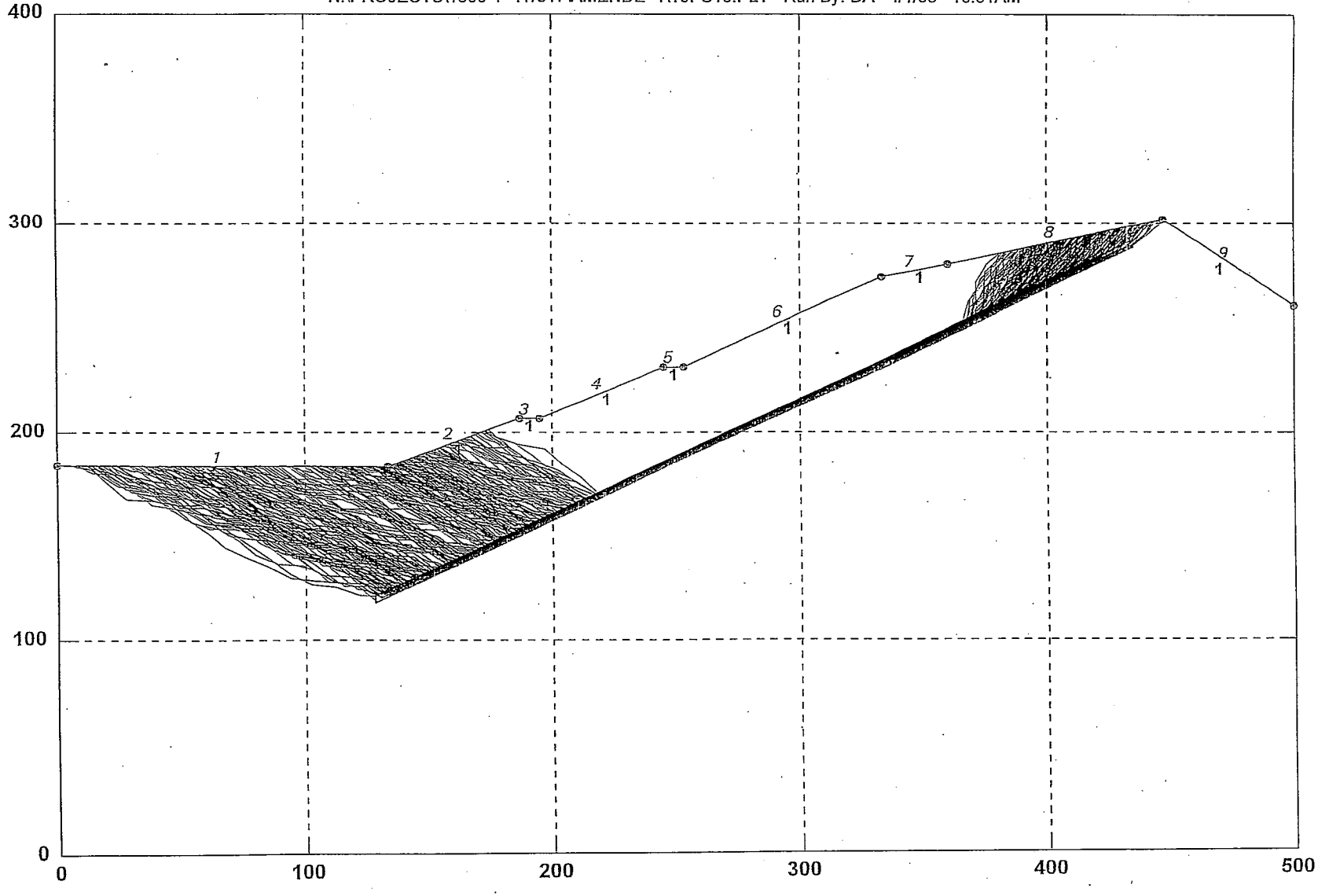
Safety Factors Are Calculated By The Modified Janbu Method

STED

RUN NO. - 66

Amended VTT52584 J-J' Bed plane search CS-27,

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TJPS10.PLT Run By: DA 4/1/03 10:51AM



STED

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 10:51AM
Run By: DA
Input Data Filename: N:TJPS10.IN
Output Filename: N:TJPS10.OUT
Unit: ENGLISH
Plotted Output Filename: N:TJPS10.PLT
PROBLEM DESCRIPTION Amended VTT52584 J-J' Bed plane search'
CS-27, Psuedostatic

BOUNDARY COORDINATES
9 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	184.00	134.00	183.00	1
2	134.00	183.00	187.00	207.00	1
3	187.00	207.00	195.00	207.00	1
4	195.00	207.00	245.00	232.00	1
5	245.00	232.00	253.00	232.00	1
6	253.00	232.00	333.00	274.00	1
7	333.00	274.00	360.00	280.00	1
8	360.00	280.00	447.00	302.00	1
9	447.00	302.00	500.00	260.00	1

ISOTROPIC SOIL PARAMETERS
1 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	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	28.0	410.0	40.5
2	30.0	347.0	22.0
3	90.0	410.0	40.5

A Horizontal Earthquake Loading Coefficient
Of .150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of .000 Has Been Assigned
Cavitation Pressure = .0 (psf)
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 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	128.00	120.00	220.00	170.00	4.00
2	365.00	250.00	435.00	290.00	4.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.23	187.63
2	151.76	186.40
3	161.52	184.23
4	170.58	180.00
5	179.43	175.34
6	187.62	169.60
7	197.51	168.13
8	206.74	164.29
9	402.32	272.23
10	408.84	279.81
11	414.49	288.07
12	419.36	295.01

*** 1.345 ***

Individual data on the 17 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	7.5	2078.5	.0	.0	.0	.0	311.8	.0	.0
2	9.8	9220.2	.0	.0	.0	.0	1383.0	.0	.0
3	9.1	16606.3	.0	.0	.0	.0	2491.0	.0	.0
4	8.9	25168.5	.0	.0	.0	.0	3775.3	.0	.0
5	7.6	29361.6	.0	.0	.0	.0	4404.2	.0	.0
6	.6	2722.3	.0	.0	.0	.0	408.3	.0	.0
7	7.4	33350.8	.0	.0	.0	.0	5002.6	.0	.0
8	2.5	11725.1	.0	.0	.0	.0	1758.8	.0	.0
9	9.2	48747.3	.0	.0	.0	.0	7312.1	.0	.0
10	38.3	216639.0	.0	.0	.0	.0	32495.9	.0	.0
11	8.0	42254.8	.0	.0	.0	.0	6338.2	.0	.0
12	80.0	391297.3	.0	.0	.0	.0	58694.6	.0	.0
13	27.0	114309.3	.0	.0	.0	.0	17146.4	.0	.0
14	42.3	124893.6	.0	.0	.0	.0	18734.0	.0	.0
15	6.5	12027.8	.0	.0	.0	.0	1804.2	.0	.0
16	5.6	6132.1	.0	.0	.0	.0	919.8	.0	.0
17	4.9	1658.5	.0	.0	.0	.0	248.8	.0	.0

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.23	187.63
2	151.76	186.40
3	161.52	184.23
4	170.58	180.00
5	179.43	175.34
6	187.62	169.60
7	197.51	168.13
8	206.74	164.29
9	402.32	272.23
10	408.84	279.81
11	414.49	288.07
12	419.36	295.01

*** 1.345 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	137.65	184.65
2	138.08	184.23
3	147.68	181.44
4	157.21	178.41
5	165.44	172.72
6	174.89	169.45
7	184.36	166.26
8	193.31	161.78
9	203.26	160.84
10	367.00	252.46

11	373.85	259.74
12	378.21	268.74
13	379.95	278.58
14	385.74	286.51

*** 1.361 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	137.65	184.65
2	138.08	184.23
3	147.68	181.44
4	157.21	178.41
5	165.44	172.72
6	174.89	169.45
7	184.36	166.26
8	193.31	161.78
9	203.26	160.84
10	367.00	252.46
11	373.85	259.74
12	378.21	268.74
13	379.95	278.58
14	385.74	286.51

*** 1.361 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	141.45	186.37
2	143.40	184.46
3	152.45	180.21
4	160.62	174.44
5	168.95	168.90
6	177.48	163.69
7	187.29	161.76
8	196.25	157.32
9	419.63	279.89
10	423.56	289.08
11	423.98	296.18

*** 1.364 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	120.44	183.10
2	122.83	182.43
3	132.51	179.92
4	142.51	179.69
5	152.50	179.36
6	161.25	174.52
7	170.37	170.41
8	179.97	167.61
9	189.19	163.74
10	197.49	158.16
11	389.26	264.19
12	396.16	271.44
13	400.48	280.45
14	403.71	289.92
15	403.93	291.11

*** 1.369 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	120.44	183.10
2	122.83	182.43
3	132.51	179.92
4	142.51	179.69
5	152.50	179.36
6	161.25	174.52

7	170.37	170.41
8	179.97	167.61
9	189.19	163.74
10	197.49	158.16
11	389.26	264.19
12	396.16	271.44
13	400.48	280.45
14	403.71	289.92
15	403.93	291.11

*** 1.369 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	132.45	183.01
2	140.80	181.48
3	147.87	174.41
4	157.63	172.20
5	166.76	168.13
6	176.55	166.08
7	184.64	160.21
8	193.83	156.26
9	427.08	284.31
10	433.74	291.76
11	434.61	298.87

*** 1.372 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.74	183.02
2	134.15	180.62
3	141.57	173.92
4	151.38	171.98
5	161.38	171.70
6	170.05	166.73
7	178.11	160.81
8	187.78	158.28
9	197.69	156.91
10	394.48	268.83
11	398.09	278.15
12	405.04	285.34
13	408.73	292.32

*** 1.378 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.74	183.02
2	134.15	180.62
3	141.57	173.92
4	151.38	171.98
5	161.38	171.70
6	170.05	166.73
7	178.11	160.81
8	187.78	158.28
9	197.69	156.91
10	394.48	268.83
11	398.09	278.15
12	405.04	285.34
13	408.73	292.32

*** 1.378 ***

Amended VTT52584 J-J' Bed plane search CS-27, Static

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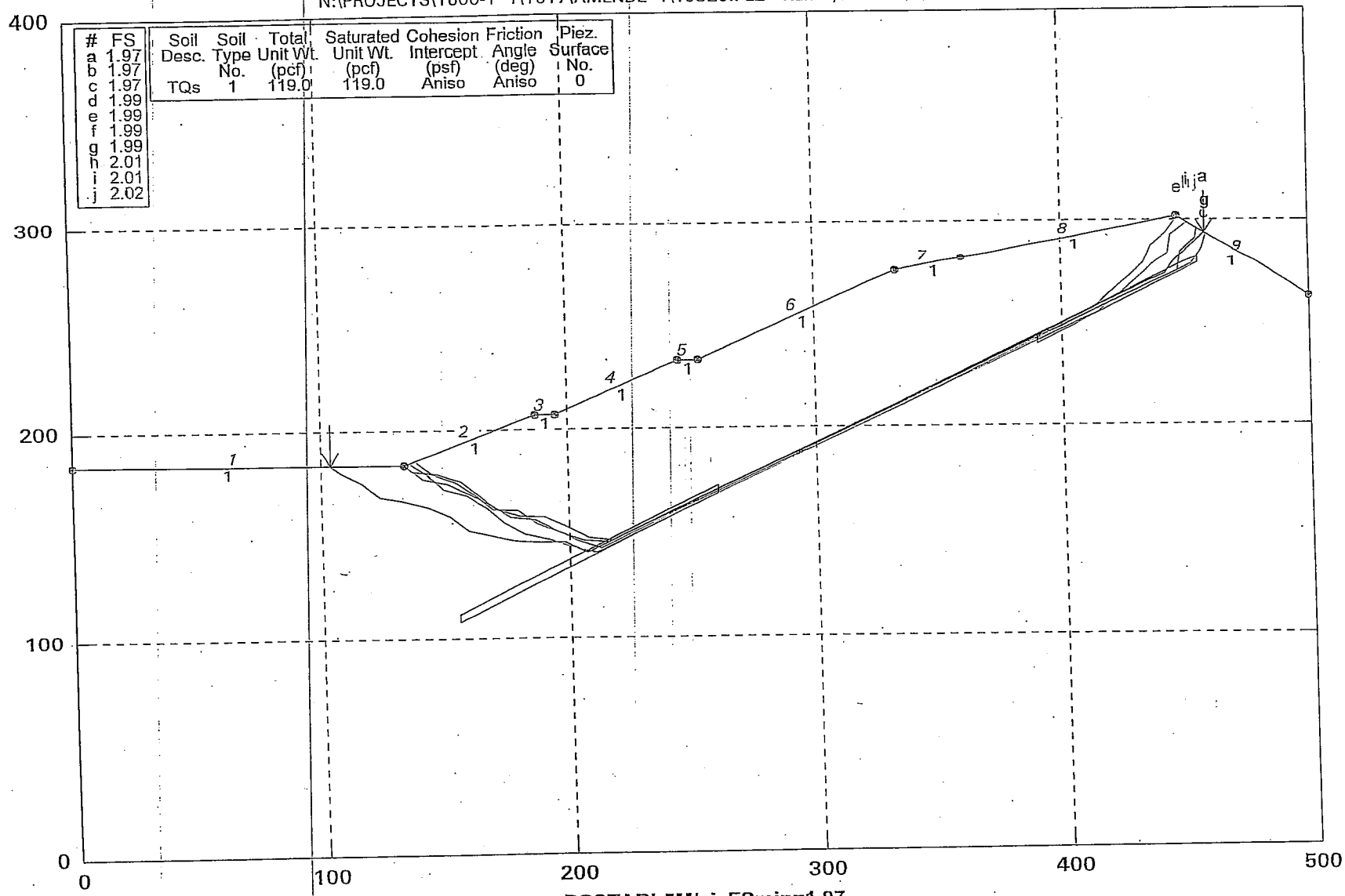

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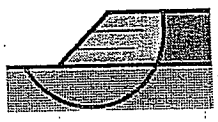
Safety Factors Are Calculated By The Modified Janbu Method

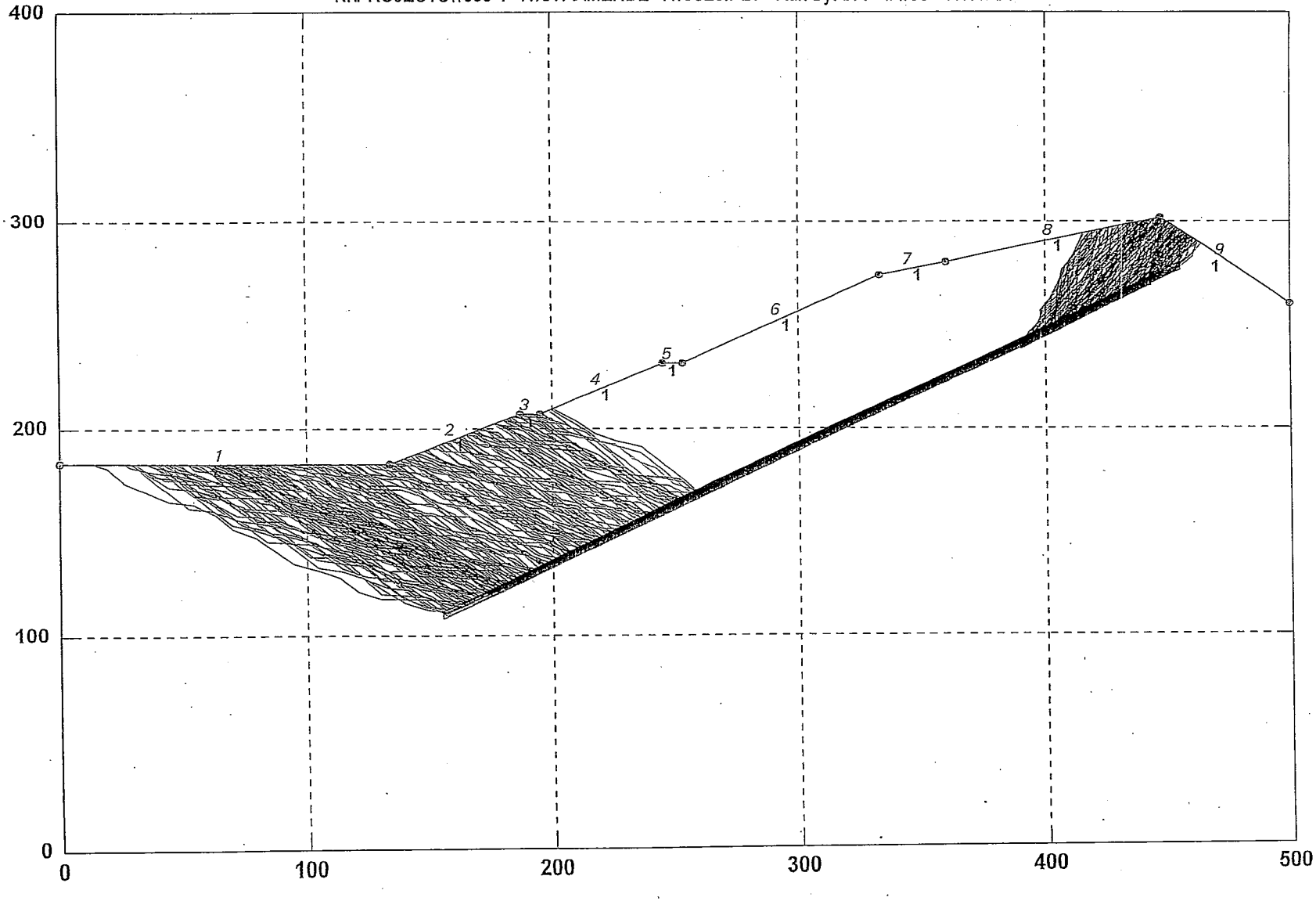
STED



RUN NO. - 67

Amended VTT52584 J-J' Bed plane search CS-27, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TJS20.PLT Run By: DA 4/1/03 10:39AM



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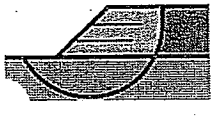


** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 10:39AM
Run By: DA
Input Data Filename: N:TJS20.IN
Output Filename: N:TJS20.OUT
Unit: ENGLISH
Plotted Output Filename: N:TJS20.PLT
PROBLEM DESCRIPTION Amended VTT52584 J-J' Bed plane search
CS-27, Static

BOUNDARY COORDINATES
9 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	184.00	134.00	183.00	1
2	134.00	183.00	187.00	207.00	1
3	187.00	207.00	195.00	207.00	1
4	195.00	207.00	245.00	232.00	1
5	245.00	232.00	253.00	232.00	1
6	253.00	232.00	333.00	274.00	1
7	333.00	274.00	360.00	280.00	1
8	360.00	280.00	447.00	302.00	1
9	447.00	302.00	500.00	260.00	1

ISOTROPIC SOIL PARAMETERS
1 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	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	-28.0	410.0	40.5
2	30.0	347.0	22.0
3	90.0	410.0	40.5

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 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	155.00	110.00	260.00	170.00	4.00
2	390.00	240.00	455.00	278.00	4.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	103.91	183.22
2	107.85	179.65
3	116.44	174.53

4	123.53	167.47
5	133.36	165.66
6	142.83	162.43
7	151.84	158.11
8	159.09	151.21
9	168.71	148.51
10	178.39	146.00
11	188.39	145.77
12	198.38	145.44
13	207.13	140.60
14	441.92	271.07
15	447.09	279.63
16	453.49	287.31
17	457.88	293.38

*** 1.974 ***

Individual data on the 24 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	3.9	831.8	.0	.0	.0	.0	.0	.0	.0
2	8.6	6207.5	.0	.0	.0	.0	.0	.0	.0
3	7.1	10204.7	.0	.0	.0	.0	.0	.0	.0
4	9.8	19284.1	.0	.0	.0	.0	.0	.0	.0
5	.6	1328.7	.0	.0	.0	.0	.0	.0	.0
6	8.8	22121.1	.0	.0	.0	.0	.0	.0	.0
7	9.0	30866.0	.0	.0	.0	.0	.0	.0	.0
8	7.2	32806.0	.0	.0	.0	.0	.0	.0	.0
9	9.6	53476.0	.0	.0	.0	.0	.0	.0	.0
10	9.7	61801.1	.0	.0	.0	.0	.0	.0	.0
11	8.6	60589.2	.0	.0	.0	.0	.0	.0	.0
12	1.4	10126.0	.0	.0	.0	.0	.0	.0	.0
13	6.6	48249.0	.0	.0	.0	.0	.0	.0	.0
14	3.4	25112.9	.0	.0	.0	.0	.0	.0	.0
15	8.7	70655.1	.0	.0	.0	.0	.0	.0	.0
16	37.9	321774.0	.0	.0	.0	.0	.0	.0	.0
17	8.0	64863.2	.0	.0	.0	.0	.0	.0	.0
18	80.0	615787.5	.0	.0	.0	.0	.0	.0	.0
19	27.0	189420.8	.0	.0	.0	.0	.0	.0	.0
20	81.9	409920.3	.0	.0	.0	.0	.0	.0	.0
21	5.1	15768.6	.0	.0	.0	.0	.0	.0	.0
22	.1	240.4	.0	.0	.0	.0	.0	.0	.0
23	6.4	12131.7	.0	.0	.0	.0	.0	.0	.0
24	4.4	2490.2	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	103.91	183.22
2	107.85	179.65
3	116.44	174.53
4	123.53	167.47
5	133.36	165.66
6	142.83	162.43
7	151.84	158.11
8	159.09	151.21
9	168.71	148.51
10	178.39	146.00
11	188.39	145.77
12	198.38	145.44
13	207.13	140.60
14	441.92	271.07
15	447.09	279.63
16	453.49	287.31
17	457.88	293.38

*** 1.974 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	103.91	183.22
2	107.85	179.65
3	116.44	174.53
4	123.53	167.47
5	133.36	165.66
6	142.83	162.43
7	151.84	158.11
8	159.09	151.21
9	168.71	148.51
10	178.39	146.00
11	188.39	145.77
12	198.38	145.44
13	207.13	140.60
14	441.92	271.07
15	447.09	279.63
16	453.49	287.31
17	457.88	293.38

*** 1.974 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	133.71	183.00
2	133.76	182.96
3	141.34	176.44
4	150.94	173.62
5	159.82	169.03
6	168.19	163.56
7	176.12	157.46
8	186.06	156.37
9	194.63	151.21
10	203.26	146.17
11	212.62	142.64
12	412.56	254.11
13	419.10	261.68
14	426.12	268.79
15	432.97	276.08
16	435.94	285.63
17	442.33	293.32
18	447.40	301.68

*** 1.989 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	133.71	183.00
2	133.76	182.96
3	141.34	176.44
4	150.94	173.62
5	159.82	169.03
6	168.19	163.56
7	176.12	157.46
8	186.06	156.37
9	194.63	151.21
10	203.26	146.17
11	212.62	142.64
12	412.56	254.11
13	419.10	261.68
14	426.12	268.79
15	432.97	276.08
16	435.94	285.63
17	442.33	293.32
18	447.40	301.68

*** 1.989 ***

Failure Surface Specified By 13 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	137.98	184.80
2	145.29	178.45
3	154.48	174.50
4	162.29	168.26
5	169.41	161.24
6	179.38	160.47
7	187.09	154.10
8	196.19	149.95
9	205.56	146.46
10	215.54	145.82
11	452.20	275.56
12	456.85	284.41
13	459.04	292.46

*** 1.993 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	137.98	184.80
2	145.29	178.45
3	154.48	174.50
4	162.29	168.26
5	169.41	161.24
6	179.38	160.47
7	187.09	154.10
8	196.19	149.95
9	205.56	146.46
10	215.54	145.82
11	452.20	275.56
12	456.85	284.41
13	459.04	292.46

*** 1.993 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	133.85	183.00
2	136.91	179.94
3	146.86	178.92
4	156.04	174.96
5	163.59	168.41
6	170.73	161.40
7	180.24	158.30
8	190.18	157.22
9	199.09	152.69
10	207.66	147.53
11	217.57	146.20
12	415.24	253.35
13	422.21	260.53
14	429.07	267.80
15	436.03	274.98
16	443.09	282.06
17	444.58	291.95
18	451.07	298.77

*** 2.006 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	133.85	183.00
2	136.91	179.94
3	146.86	178.92
4	156.04	174.96
5	163.59	168.41
6	170.73	161.40
7	180.24	158.30
8	190.18	157.22
9	199.09	152.69

10	207.66	147.53
11	217.57	146.20
12	415.24	253.35
13	422.21	260.53
14	429.07	267.80
15	436.03	274.98
16	443.09	282.06
17	444.58	291.95
18	451.07	298.77

*** 2.006 ***

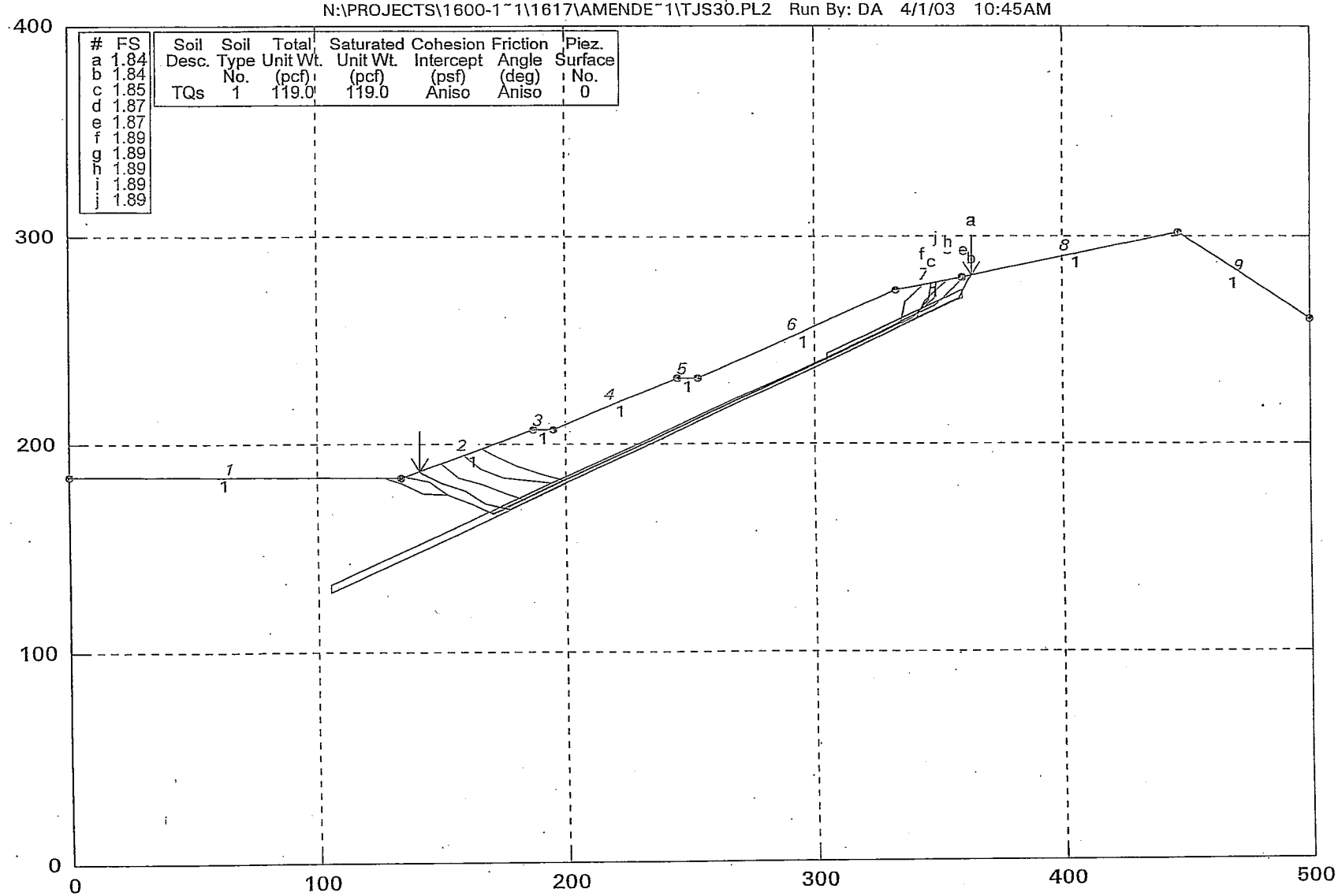
Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	136.17	183.98
2	142.29	178.55
3	149.41	171.52
4	158.70	167.83
5	166.59	161.69
6	173.78	154.74
7	182.01	149.07
8	191.73	146.71
9	201.14	143.33
10	210.80	140.73
11	446.60	272.52
12	448.04	282.42
13	454.66	289.90
14	455.24	295.47

*** 2.016 ***

Amended VTT52584 J-J' Bed plane search CS-27, Static

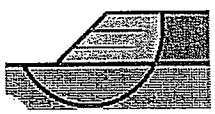
N:\PROJECTS\1600-1~1\1617\AMENDE~1\TJS30.PL2 Run By: DA 4/1/03 10:45AM



PCSTABL5M/si FSmin=1.84

Safety Factors Are Calculated By The Modified Janbu Method

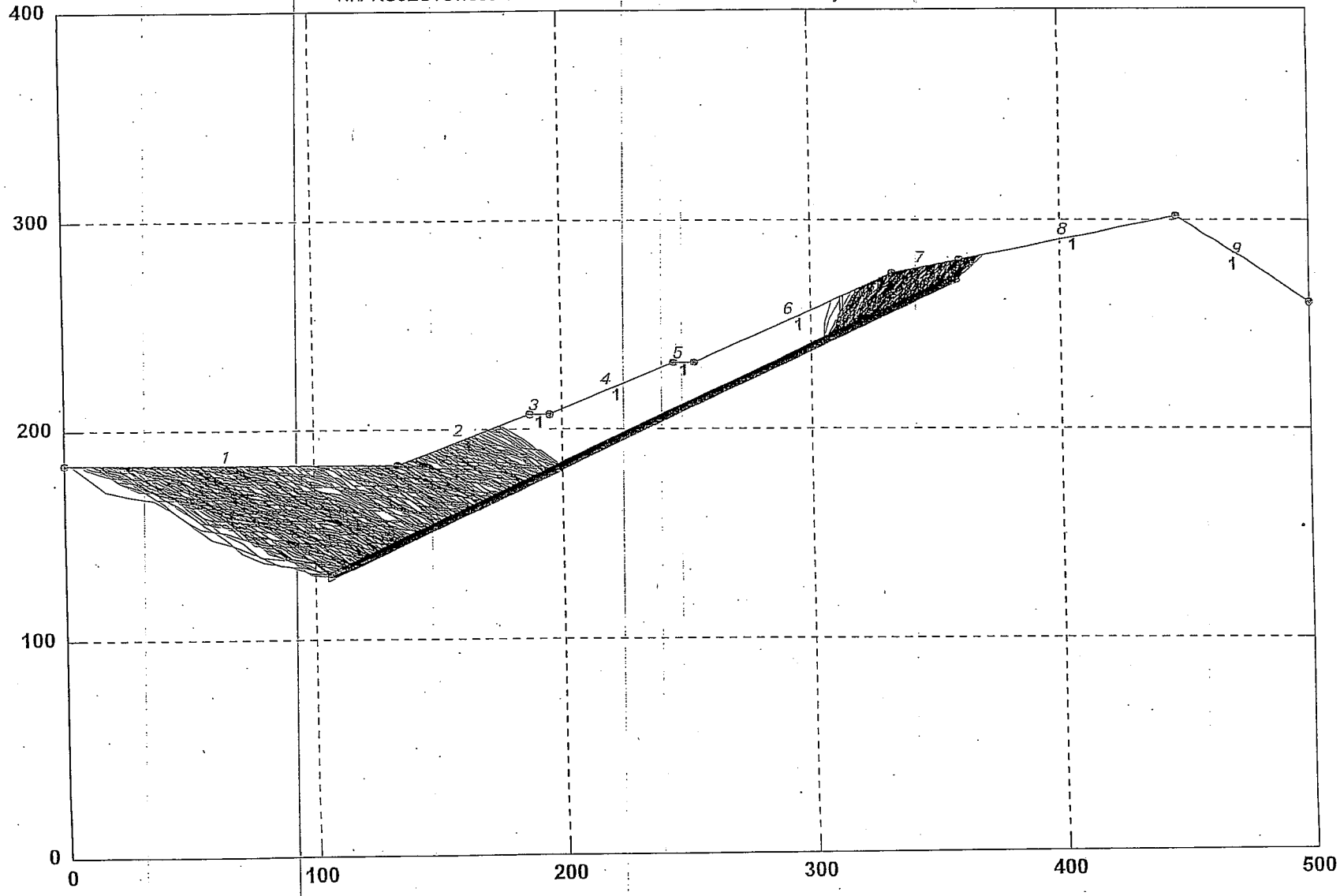
STED



RUN NO. - 68

Amended VTT52584 J-J' Bed plane search CS-27, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TJS30.PLT Run By: DA 4/1/03 10:45AM



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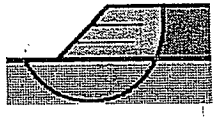


** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 10:45AM
Run By: DA
Input Data Filename: N:TJS30.IN
Output Filename: N:TJS30.OUT
Unit: ENGLISH
Plotted Output Filename: N:TJS30.PLT
PROBLEM DESCRIPTION Amended VTT52584 J-J' Bed plane search
CS-27, Static

BOUNDARY COORDINATES
9 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	184.00	134.00	183.00	1
2	134.00	183.00	187.00	207.00	1
3	187.00	207.00	195.00	207.00	1
4	195.00	207.00	245.00	232.00	1
5	245.00	232.00	253.00	232.00	1
6	253.00	232.00	333.00	274.00	1
7	333.00	274.00	360.00	280.00	1
8	360.00	280.00	447.00	302.00	1
9	447.00	302.00	500.00	260.00	1

ISOTROPIC SOIL PARAMETERS
1 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	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	28.0	410.0	40.5
2	30.0	347.0	22.0
3	90.0	410.0	40.5

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 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	105.00	130.00	200.00	182.00	4.00
2	305.00	242.00	360.00	272.00	4.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	140.99	186.17
2	141.75	185.80
3	150.29	180.58

4	159.49	176.67
5	167.54	170.74
6	177.26	168.42
7	358.52	269.79
8	362.37	279.02
9	363.55	280.90

*** 1.844 ***

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	.8	32.3	.0	.0	.0	.0	.0	.0	.0
2	8.5	5334.7	.0	.0	.0	.0	.0	.0	.0
3	9.2	15146.8	.0	.0	.0	.0	.0	.0	.0
4	8.0	21700.6	.0	.0	.0	.0	.0	.0	.0
5	9.7	35668.5	.0	.0	.0	.0	.0	.0	.0
6	9.7	38992.7	.0	.0	.0	.0	.0	.0	.0
7	8.0	29419.5	.0	.0	.0	.0	.0	.0	.0
8	50.0	161745.6	.0	.0	.0	.0	.0	.0	.0
9	8.0	22339.1	.0	.0	.0	.0	.0	.0	.0
10	80.0	189046.0	.0	.0	.0	.0	.0	.0	.0
11	25.5	43082.3	.0	.0	.0	.0	.0	.0	.0
12	1.5	1457.6	.0	.0	.0	.0	.0	.0	.0
13	2.4	1160.2	.0	.0	.0	.0	.0	.0	.0
14	1.2	111.5	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	140.99	186.17
2	141.75	185.80
3	150.29	180.58
4	159.49	176.67
5	167.54	170.74
6	177.26	168.42
7	358.52	269.79
8	362.37	279.02
9	363.55	280.90

*** 1.844 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	126.60	183.06
2	134.02	180.55
3	142.61	175.44
4	152.59	174.74
5	161.59	170.39
6	170.40	165.65
7	339.94	260.83
8	346.11	268.69
9	347.60	277.24

*** 1.854 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.73	194.20
2	165.60	187.40
3	174.71	183.28
4	184.58	181.68
5	194.52	180.56
6	348.74	266.46
7	355.70	273.65
8	360.44	280.11

*** 1.870 ***

Failure Surface Specified By 8 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	158.73	194.20
2	165.60	187.40
3	174.71	183.28
4	184.58	181.68
5	194.52	180.56
6	348.74	266.46
7	355.70	273.65
8	360.44	280.11

*** 1.870 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	135.10	183.50
2	144.71	181.14
3	152.72	175.15
4	161.67	170.70
5	170.77	166.56
6	334.99	257.96
7	336.57	267.84
8	343.44	275.11
9	343.59	276.35

*** 1.886 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	149.67	190.10
2	149.88	189.96
3	156.95	182.89
4	166.44	179.75
5	175.65	175.84
6	184.78	171.77
7	340.96	259.72
8	345.14	268.81
9	351.87	276.20
10	354.30	278.73

*** 1.887 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	149.67	190.10
2	149.88	189.96
3	156.95	182.89
4	166.44	179.75
5	175.65	175.84
6	184.78	171.77
7	340.96	259.72
8	345.14	268.81
9	351.87	276.20
10	354.30	278.73

*** 1.887 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	166.10	197.54
2	171.63	193.55
3	180.32	188.61
4	189.72	185.19
5	199.16	181.88
6	341.98	262.62
7	348.68	270.04
8	349.24	277.61

*** 1.888 ***

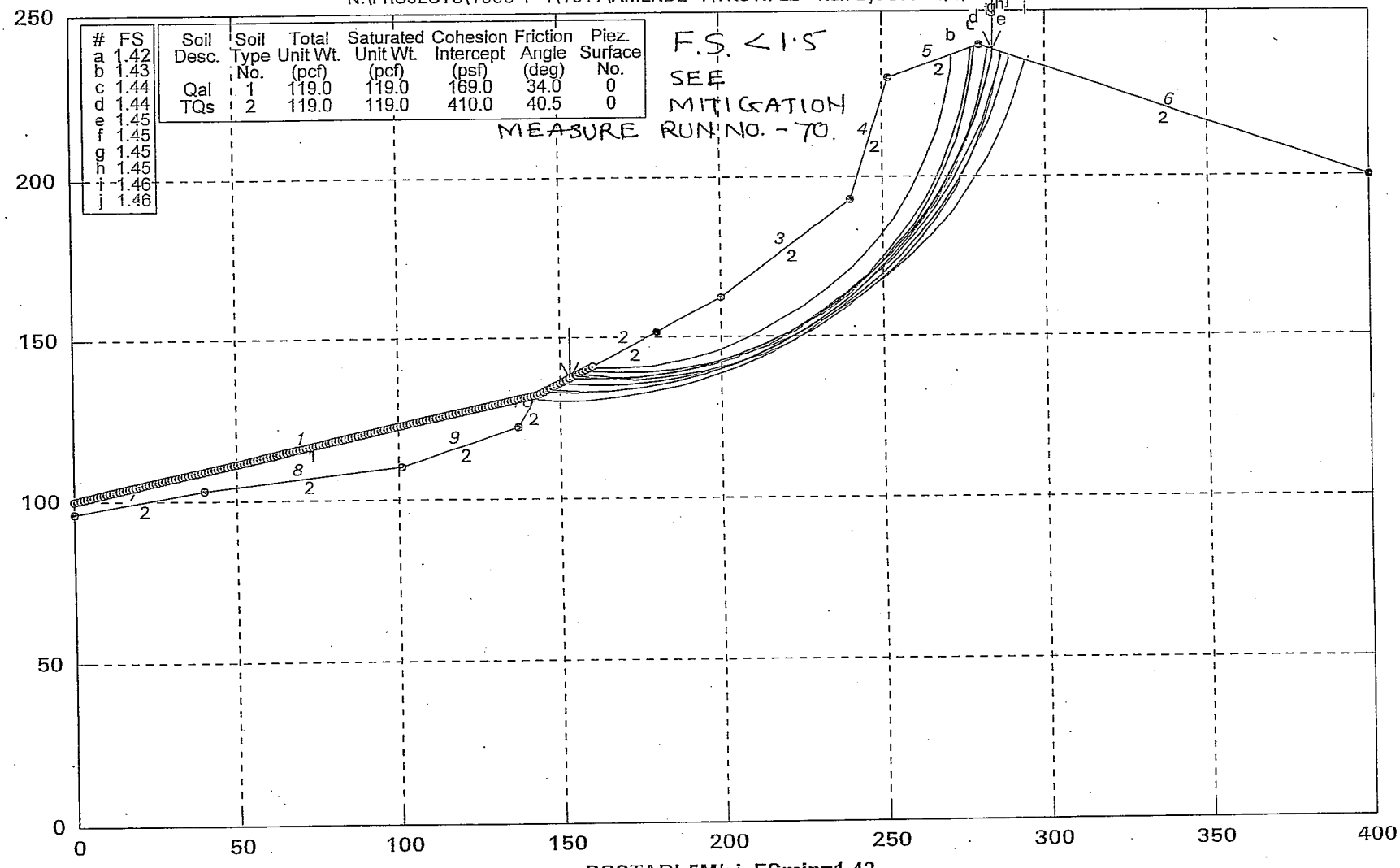
Failure Surface Specified By 8 Coordinate Points

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

1	166.10	197.54
2	171.63	193.55
3	180.32	188.61
4	189.72	185.19
5	199.16	181.88
6	341.98	262.62
7	348.68	270.04
8	349.24	277.61
***	1.888	***

Amended VTT52584 K-K' circular steep nat. sl. w/ neutral bedding

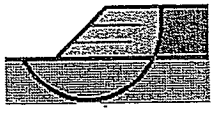
N:\PROJECTS\1600-1~1\1617\AMENDE~1\TKS1.PL2 Run By: DA 4/1/03 11:01AM



PCSTABL5M/si FSmin=1.42

Safety Factors Are Calculated By The Modified Janbu Method

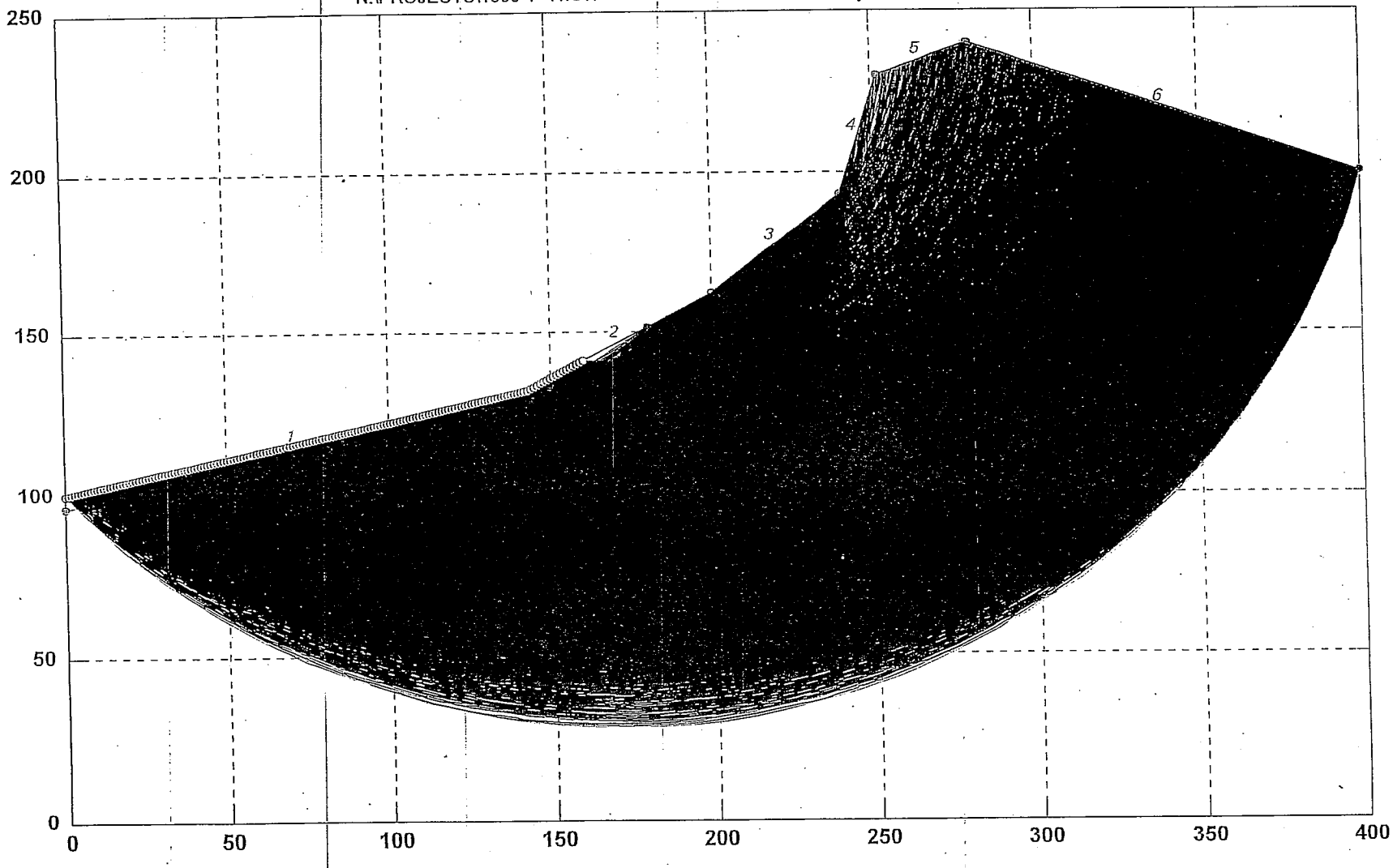
STED



RUN No. - 69

Amended VTT52584 K-K' circular steep nat. sl. w/ neutral bedding

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TKS1.PLT Run By: DA 4/1/03 11:01AM



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 11:01AM
Run By: DA
Input Data Filename: N:tks1.in
Output Filename: N:tks1.OUT
Unit: ENGLISH
Plotted Output Filename: N:tks1.PLT
PROBLEM DESCRIPTION Amended VTT52584 K-K' circular
steep nat. sl. w/ neutral bedding

BOUNDARY COORDINATES
6 Top Boundaries
10 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	100.00	143.00	132.00	1
2	143.00	132.00	200.00	162.00	2
3	200.00	162.00	240.00	193.00	2
4	240.00	193.00	252.00	230.00	2
5	252.00	230.00	280.00	240.00	2
6	280.00	240.00	400.00	200.00	2
7	.00	96.00	40.00	103.00	2
8	40.00	103.00	101.00	110.00	2
9	101.00	110.00	137.00	122.00	2
10	137.00	122.00	143.00	132.00	2

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	119.0	119.0	169.0	34.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
16000 Trial Surfaces Have Been Generated.
100 Surfaces Initiate From Each Of160 Points Equally Spaced
Along The Ground Surface Between X = .00 ft.
and X = 160.00 ft.
Each Surface Terminates Between X = 180.00 ft.
and X = 400.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = .00 ft.
10.00 ft. Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And .0 deg.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.96	137.24
2	162.95	136.83
3	172.94	137.24
4	182.87	138.46
5	192.66	140.47
6	202.26	143.28
7	211.60	146.85
8	220.62	151.17

9	229.25	156.21
10	237.46	161.93
11	245.17	168.30
12	252.33	175.27
13	258.91	182.81
14	264.86	190.85
15	270.13	199.34
16	274.70	208.24
17	278.53	217.48
18	281.60	226.99
19	283.88	236.73
20	284.16	238.61

*** 1.424 ***

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	10.0	3367.7	.0	.0	.0	.0	.0	.0	.0
2	10.0	9620.3	.0	.0	.0	.0	.0	.0	.0
3	9.9	14790.1	.0	.0	.0	.0	.0	.0	.0
4	9.8	18759.4	.0	.0	.0	.0	.0	.0	.0
5	7.3	16178.9	.0	.0	.0	.0	.0	.0	.0
6	2.3	5356.2	.0	.0	.0	.0	.0	.0	.0
7	9.3	24788.9	.0	.0	.0	.0	.0	.0	.0
8	9.0	27335.6	.0	.0	.0	.0	.0	.0	.0
9	8.6	28406.5	.0	.0	.0	.0	.0	.0	.0
10	8.2	28086.5	.0	.0	.0	.0	.0	.0	.0
11	2.5	8788.5	.0	.0	.0	.0	.0	.0	.0
12	5.2	21390.9	.0	.0	.0	.0	.0	.0	.0
13	6.8	38905.4	.0	.0	.0	.0	.0	.0	.0
14	.3	2181.1	.0	.0	.0	.0	.0	.0	.0
15	6.6	40905.3	.0	.0	.0	.0	.0	.0	.0
16	5.9	33044.0	.0	.0	.0	.0	.0	.0	.0
17	5.3	25377.9	.0	.0	.0	.0	.0	.0	.0
18	4.6	18205.7	.0	.0	.0	.0	.0	.0	.0
19	3.8	11819.2	.0	.0	.0	.0	.0	.0	.0
20	1.5	3499.8	.0	.0	.0	.0	.0	.0	.0
21	1.6	2889.2	.0	.0	.0	.0	.0	.0	.0
22	2.3	1965.2	.0	.0	.0	.0	.0	.0	.0
23	.3	33.3	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.99	140.42
2	168.99	140.37
3	178.96	141.25
4	188.79	143.05
5	198.42	145.75
6	207.76	149.33
7	216.72	153.76
8	225.24	159.00
9	233.24	165.00
10	240.64	171.72
11	247.39	179.10
12	253.43	187.07
13	258.71	195.56
14	263.18	204.51
15	266.80	213.83
16	269.54	223.45
17	271.38	233.28
18	271.73	237.05

*** 1.435 ***

Failure Surface Specified By 19 Coordinate Points

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

1	153.96	137.77
2	163.94	137.11
3	173.94	137.35
4	183.87	138.48
5	193.67	140.49
6	203.25	143.37
7	212.53	147.09
8	221.44	151.63
9	229.91	156.94
10	237.87	162.99
11	245.26	169.73
12	252.02	177.10
13	258.09	185.04
14	263.43	193.50
15	268.00	202.40
16	271.75	211.67
17	274.65	221.24
18	276.69	231.03
19	277.64	239.16

*** 1.442 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	154.97	138.30
2	164.94	137.49
3	174.94	137.59
4	184.88	138.60
5	194.70	140.51
6	204.30	143.30
7	213.62	146.95
8	222.56	151.42
9	231.05	156.69
10	239.04	162.71
11	246.45	169.43
12	253.21	176.80
13	259.28	184.75
14	264.60	193.21
15	269.14	202.12
16	272.84	211.41
17	275.69	221.00
18	277.66	230.80
19	278.60	239.50

*** 1.444 ***

Failure Surface Specified By 21 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.91	133.00
2	154.90	132.55
3	164.89	132.84
4	174.84	133.88
5	184.68	135.65
6	194.36	138.15
7	203.83	141.37
8	213.03	145.28
9	221.92	149.87
10	230.44	155.11
11	238.54	160.96
12	246.19	167.41
13	253.33	174.40
14	259.94	181.91
15	265.96	189.89
16	271.38	198.30
17	276.15	207.09
18	280.25	216.21
19	283.67	225.61
20	286.37	235.23

21	286.87	237.71

*** 1.445 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	149.94	135.65
2	159.91	134.90
3	169.91	134.98
4	179.87	135.89
5	189.71	137.63
6	199.38	140.19
7	208.80	143.55
8	217.90	147.69
9	226.63	152.57
10	234.92	158.16
11	242.72	164.42
12	249.96	171.32
13	256.60	178.79
14	262.60	186.80
15	267.90	195.27
16	272.48	204.16
17	276.30	213.41
18	279.34	222.93
19	281.56	232.68
20	282.48	239.17

*** 1.446 ***

Failure Surface Specified By 21 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.91	133.53
2	155.89	132.93
3	165.89	133.11
4	175.85	134.08
5	185.69	135.82
6	195.37	138.32
7	204.83	141.58
8	214.00	145.57
9	222.83	150.26
10	231.26	155.63
11	239.25	161.65
12	246.75	168.27
13	253.70	175.46
14	260.07	183.17
15	265.81	191.35
16	270.89	199.97
17	275.29	208.95
18	278.97	218.25
19	281.90	227.81
20	284.09	237.56
21	284.23	238.59

*** 1.447 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	153.96	137.77
2	163.92	136.82
3	173.92	136.71
4	183.89	137.46
5	193.76	139.05
6	203.46	141.47
7	212.92	144.71
8	222.08	148.74
9	230.85	153.54
10	239.19	159.06
11	247.02	165.27
12	254.30	172.13

13	260.98	179.58
14	266.99	187.56
15	272.30	196.04
16	276.88	204.93
17	280.68	214.18
18	283.68	223.72
19	285.86	233.47
20	286.46	237.85

*** 1.450 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	156.98	139.36
2	166.97	138.85
3	176.97	139.11
4	186.91	140.14
5	196.75	141.93
6	206.42	144.47
7	215.87	147.74
8	225.04	151.74
9	233.87	156.42
10	242.32	161.78
11	250.33	167.76
12	257.86	174.35
13	264.85	181.49
14	271.28	189.15
15	277.10	197.28
16	282.28	205.84
17	286.78	214.77
18	290.58	224.02
19	293.66	233.53
20	294.09	235.30

*** 1.458 ***

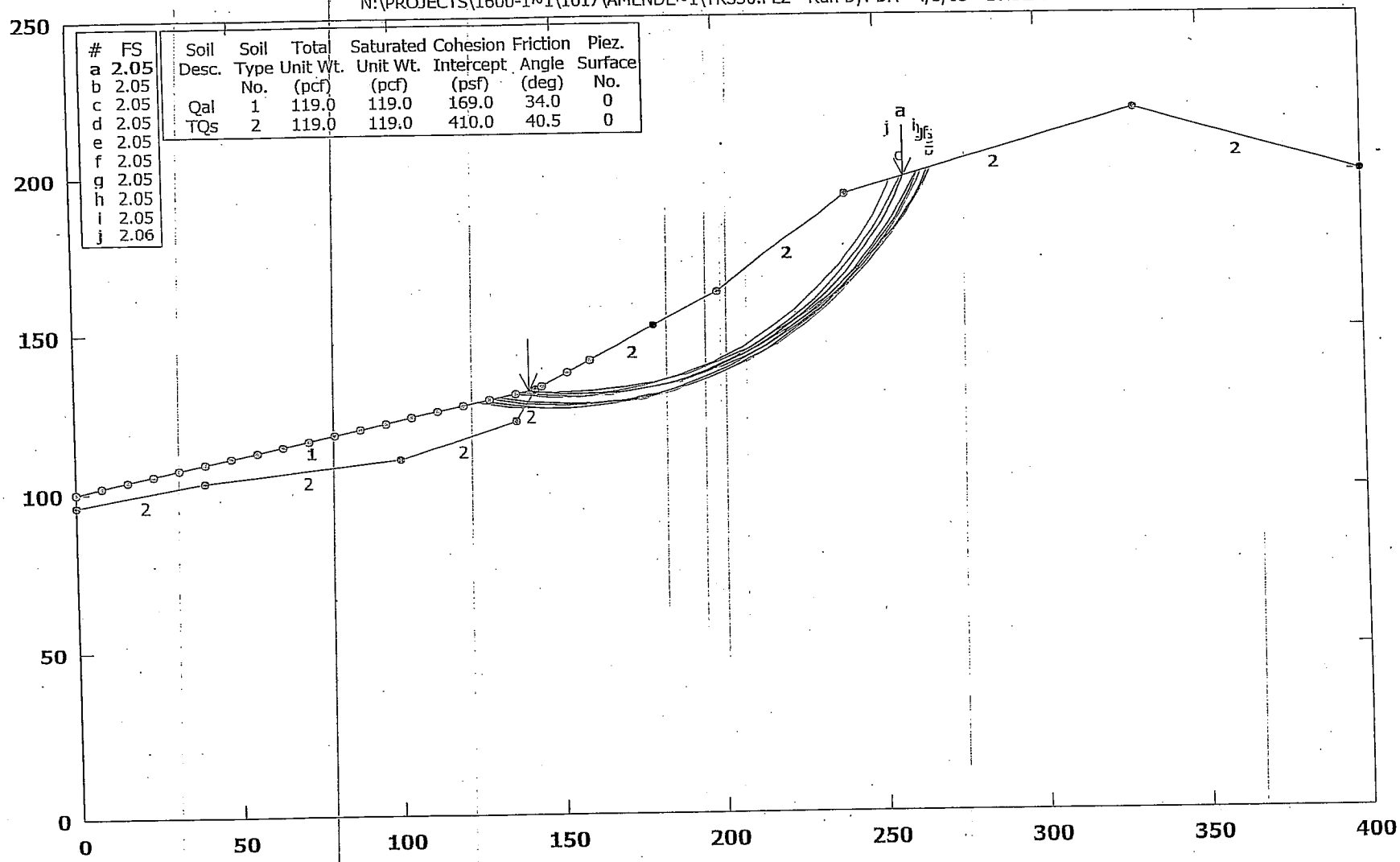
Failure Surface Specified By 22 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	137.86	130.85
2	147.84	130.20
3	157.84	130.25
4	167.81	131.01
5	177.70	132.47
6	187.47	134.63
7	197.06	137.47
8	206.42	140.98
9	215.51	145.15
10	224.29	149.94
11	232.70	155.35
12	240.71	161.33
13	248.28	167.87
14	255.37	174.92
15	261.94	182.46
16	267.96	190.44
17	273.40	198.83
18	278.24	207.58
19	282.45	216.66
20	286.00	226.00
21	288.89	235.58
22	289.20	236.93

*** 1.459 ***

Amended VTT52584 K-K' circular w/ neutral bedding w/3:1 slope trim

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TKS30.PL2 Run By: DA 4/3/03 10:32AM



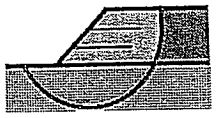
#	FS
a	2.05
b	2.05
c	2.05
d	2.05
e	2.05
f	2.05
g	2.05
h	2.05
i	2.05
j	2.06

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qal	1	119.0	119.0	169.0	34.0	0
TQs	2	119.0	119.0	410.0	40.5	0

PCSTABL5M/si FSmin=2.05

Safety Factors Are Calculated By The Modified Janbu Method

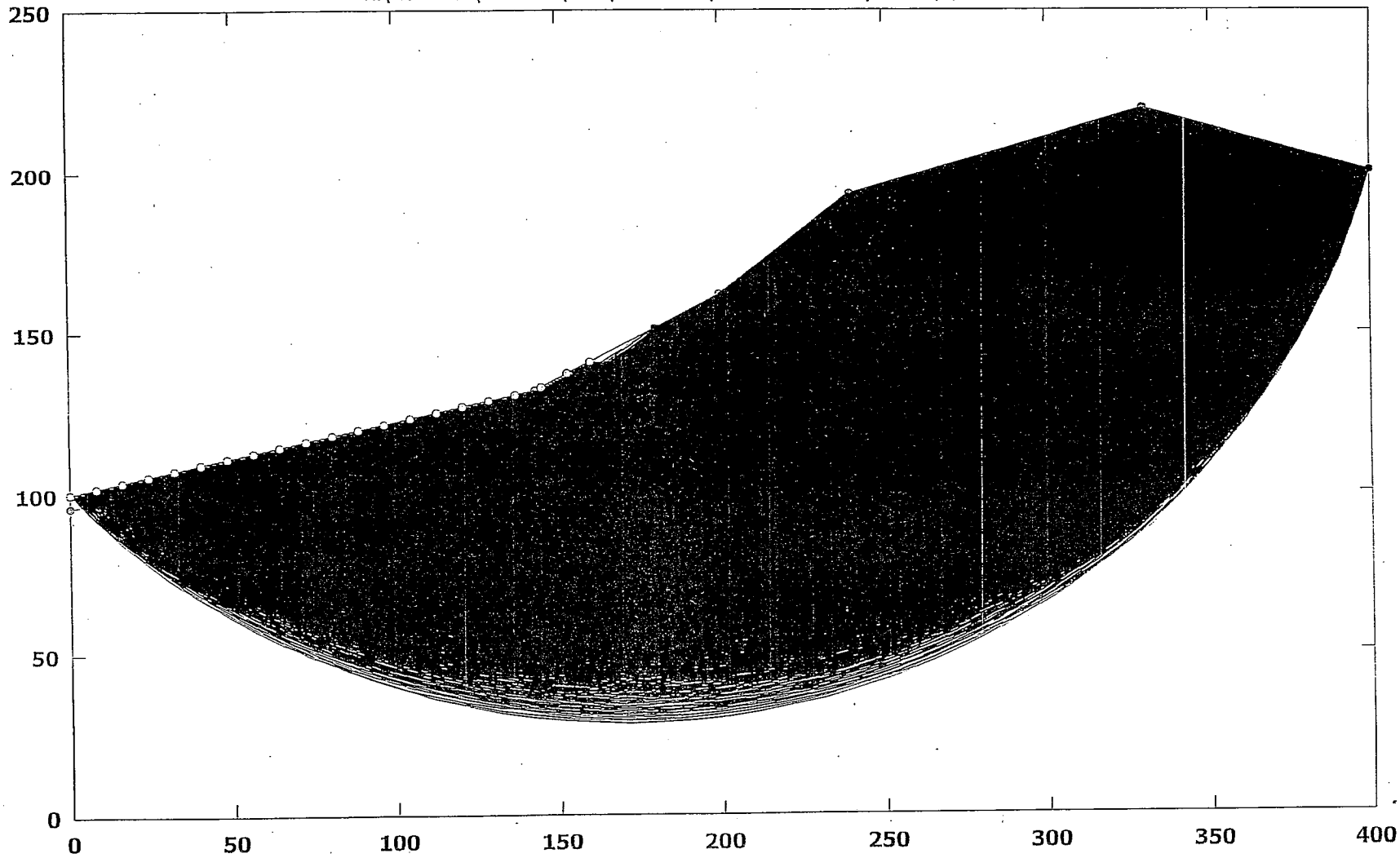
STED



RUN NO. - 70

Amended VTT52584 K-K' circular w/ neutral bedding w/3:1 slope trim

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TKS30.PLT Run By: DA 4/3/03 10:32AM



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/3/03
Time of Run: 10:32AM
Run By: DA
Input Data Filename: N:TKS30.IN
Output Filename: N:TKS30.OUT
Unit: ENGLISH
Plotted Output Filename: N:TKS30.PLT
PROBLEM DESCRIPTION Amended VTT52584 K-K' circular
w/ neutral bedding w/3:1 slope trim

BOUNDARY COORDINATES
5 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	100.00	143.00	132.00	1
2	143.00	132.00	200.00	162.00	2
3	200.00	162.00	240.00	193.00	2
4	240.00	193.00	330.00	220.00	2
5	330.00	220.00	400.00	200.00	2
6	.00	96.00	40.00	103.00	2
7	40.00	103.00	101.00	110.00	2
8	101.00	110.00	137.00	122.00	2
9	137.00	122.00	143.00	132.00	2

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	119.0	119.0	169.0	34.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
16000 Trial Surfaces Have Been Generated.
100 Surfaces Initiate From Each Of160 Points Equally Spaced
Along The Ground Surface Between X = .00 ft.
and X = 160.00 ft.
Each Surface Terminates Between X = 180.00 ft.
and X = 400.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = :00 ft.
10.00 ft. Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And .0 deg.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	140.88	131.53
2	150.82	130.43
3	160.82	130.26
4	170.79	131.00
5	180.65	132.65
6	190.32	135.21
7	199.72	138.63
8	208.76	142.91
9	217.37	148.00

10	225.47	153.86
11	233.00	160.43
12	239.90	167.67
13	246.11	175.51
14	251.57	183.89
15	256.24	192.73
16	258.68	198.60

*** 2.046 ***

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	1.7	58.8	.0	.0	.0	.0	.0	.0	.0
2	.4	30.4	.0	.0	.0	.0	.0	.0	.0
3	7.8	2973.8	.0	.0	.0	.0	.0	.0	.0
4	10.0	9997.5	.0	.0	.0	.0	.0	.0	.0
5	10.0	15872.3	.0	.0	.0	.0	.0	.0	.0
6	9.9	20416.4	.0	.0	.0	.0	.0	.0	.0
7	9.7	23509.8	.0	.0	.0	.0	.0	.0	.0
8	9.4	25105.8	.0	.0	.0	.0	.0	.0	.0
9	.3	783.1	.0	.0	.0	.0	.0	.0	.0
10	8.8	25584.1	.0	.0	.0	.0	.0	.0	.0
11	8.6	27319.6	.0	.0	.0	.0	.0	.0	.0
12	8.1	26691.9	.0	.0	.0	.0	.0	.0	.0
13	7.5	24670.1	.0	.0	.0	.0	.0	.0	.0
14	6.9	21511.0	.0	.0	.0	.0	.0	.0	.0
15	.1	289.0	.0	.0	.0	.0	.0	.0	.0
16	6.1	16186.6	.0	.0	.0	.0	.0	.0	.0
17	5.5	10363.6	.0	.0	.0	.0	.0	.0	.0
18	4.7	4921.2	.0	.0	.0	.0	.0	.0	.0
19	2.4	745.4	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	136.86	130.63
2	146.82	129.78
3	156.82	129.71
4	166.79	130.43
5	176.68	131.92
6	186.42	134.19
7	195.95	137.21
8	205.22	140.97
9	214.16	145.44
10	222.73	150.60
11	230.86	156.42
12	238.52	162.85
13	245.64	169.87
14	252.20	177.42
15	258.14	185.46
16	263.44	193.95
17	267.19	201.16

*** 2.046 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	136.86	130.63
2	146.80	129.58
3	156.80	129.42
4	166.77	130.15
5	176.64	131.76
6	186.33	134.24
7	195.76	137.56
8	204.86	141.71
9	213.56	146.64
10	221.78	152.33

11	229.47	158.72
12	236.57	165.77
13	243.01	173.42
14	248.75	181.61
15	253.74	190.28
16	257.41	198.22

*** 2.047 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	138.87	131.08
2	148.82	130.08
3	158.82	129.90
4	168.80	130.53
5	178.69	131.98
6	188.43	134.23
7	197.96	137.27
8	207.21	141.08
9	216.11	145.63
10	224.62	150.89
11	232.66	156.83
12	240.20	163.41
13	247.17	170.58
14	253.53	178.29
15	259.24	186.50
16	264.26	195.15
17	267.11	201.13

*** 2.047 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	140.88	131.53
2	150.87	131.02
3	160.86	131.30
4	170.81	132.34
5	180.64	134.15
6	190.31	136.72
7	199.75	140.03
8	208.90	144.06
9	217.71	148.79
10	226.13	154.18
11	234.11	160.21
12	241.59	166.84
13	248.54	174.03
14	254.92	181.74
15	260.68	189.91
16	265.78	198.51
17	267.07	201.12

*** 2.048 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.82	129.50
2	141.72	128.08
3	151.70	127.47
4	161.70	127.67
5	171.65	128.70
6	181.48	130.53
7	191.13	133.16
8	200.53	136.57
9	209.62	140.74
10	218.34	145.64
11	226.63	151.23
12	234.43	157.48
13	241.70	164.35
14	248.38	171.79

15	254.43	179.75
16	259.81	188.18
17	264.48	197.02
18	266.11	200.83

*** 2.049 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	129.81	129.05
2	139.70	127.53
3	149.67	126.84
4	159.67	126.98
5	169.62	127.94
6	179.46	129.73
7	189.12	132.32
8	198.53	135.70
9	207.63	139.86
10	216.35	144.75
11	224.64	150.35
12	232.43	156.61
13	239.68	163.50
14	246.33	170.97
15	252.35	178.96
16	257.67	187.42
17	262.29	196.29
18	263.91	200.17

*** 2.049 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	126.79	128.37
2	136.66	126.77
3	146.63	125.98
4	156.63	126.01
5	166.59	126.86
6	176.45	128.54
7	186.14	131.02
8	195.59	134.28
9	204.74	138.32
10	213.53	143.09
11	221.89	148.57
12	229.78	154.72
13	237.13	161.50
14	243.90	168.86
15	250.04	176.75
16	255.51	185.12
17	260.28	193.92
18	262.89	199.87

*** 2.052 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	124.78	127.92
2	134.67	126.45
3	144.65	125.78
4	154.65	125.90
5	164.61	126.82
6	174.46	128.53
7	184.14	131.02
8	193.60	134.28
9	202.76	138.28
10	211.58	143.00
11	219.99	148.40
12	227.95	154.46
13	235.40	161.13
14	242.29	168.38

15	248.58	176.15
16	254.23	184.40
17	259.21	193.08
18	262.33	199.70

*** 2.053 ***

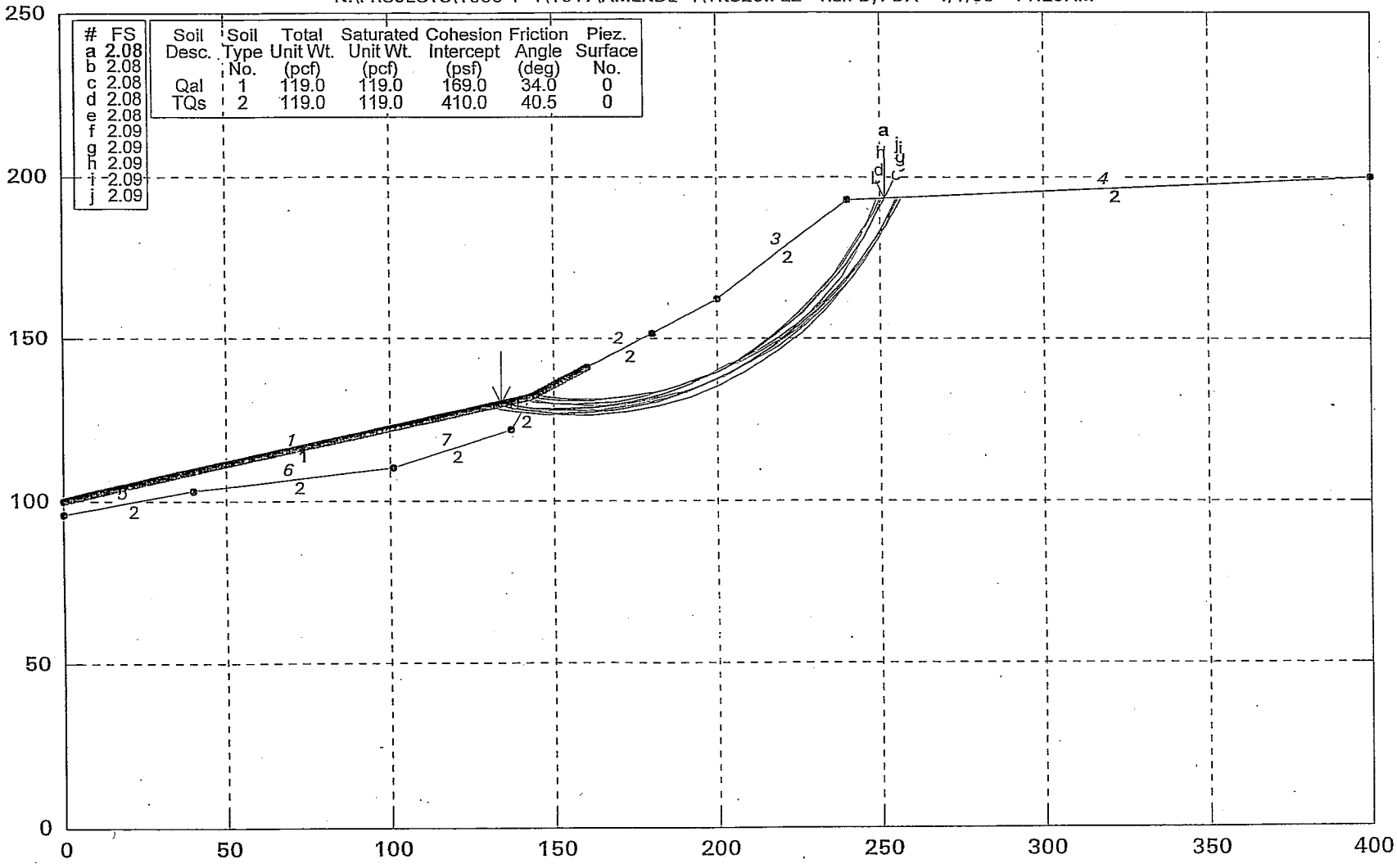
Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	139.87	131.30
2	149.84	130.50
3	159.84	130.62
4	169.79	131.64
5	179.60	133.58
6	189.19	136.40
7	198.49	140.09
8	207.41	144.61
9	215.88	149.92
10	223.83	155.99
11	231.19	162.76
12	237.90	170.18
13	243.90	178.17
14	249.15	186.68
15	253.60	195.64
16	254.23	197.27

*** 2.055 ***

Amended VTT52584 K-K' circular steep nat. sl. w/ neutral bedding

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TKS20.PL2 Run By: DA 4/1/03 11:29AM



PCSTABL5M/si FSmin=2.08

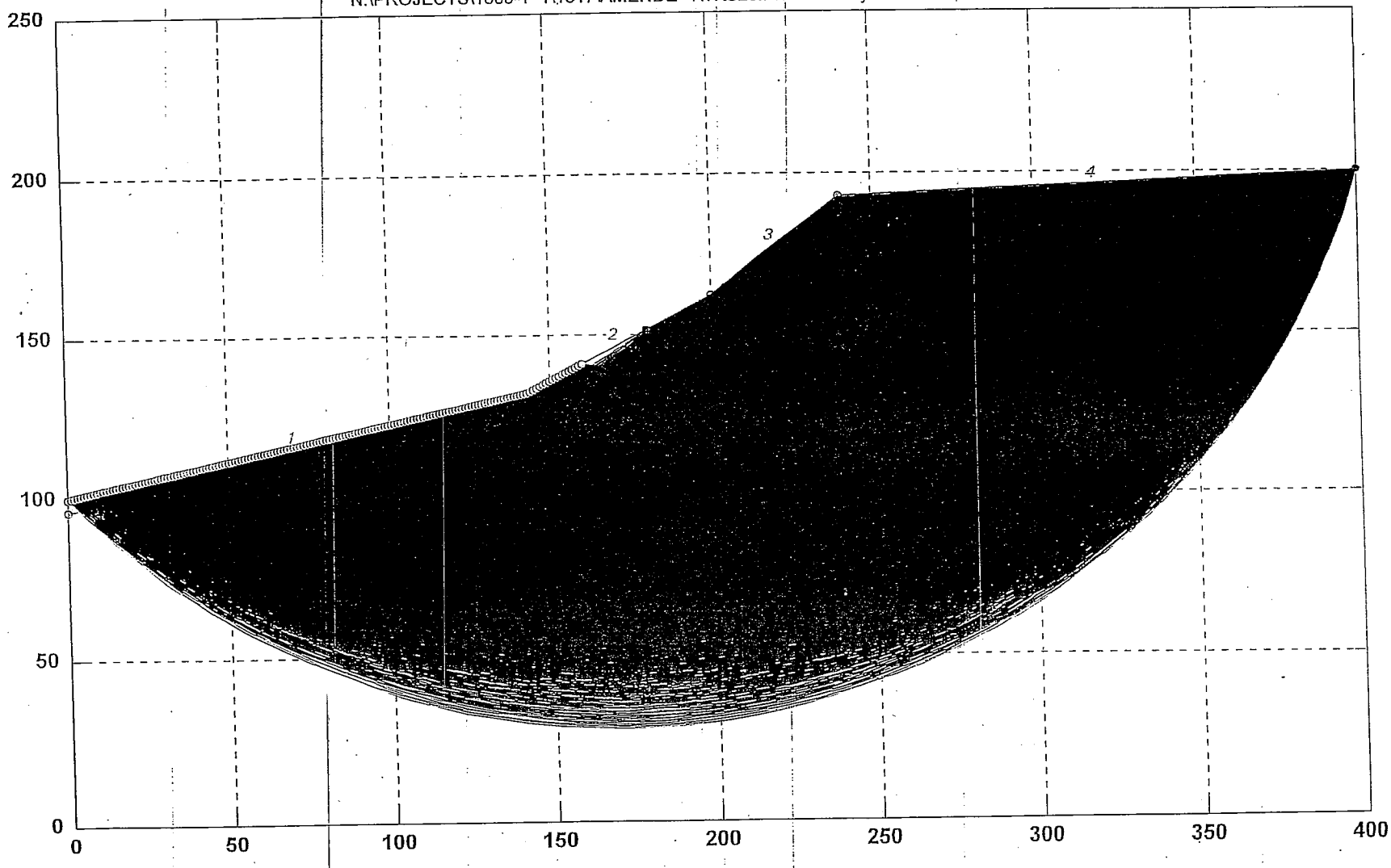
Safety Factors Are Calculated By The Modified Janbu Method

STED

RUN No. -71

Amended VTT52584 K-K' circular steep nat. sl. w/ neutral bedding

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TKS20.PLT Run By: DA 4/1/03 11:29AM



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 11:29AM
Run By: DA
Input Data Filename: N:TKS20.IN
Output Filename: N:TKS20.OUT
Unit: ENGLISH
Plotted Output Filename: N:TKS20.PLT
PROBLEM DESCRIPTION Amended VTT52584 K-K' circular
steep nat. sl. w/ neutral bedding

BOUNDARY COORDINATES
4 Top Boundaries
8 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	100.00	143.00	132.00	1
2	143.00	132.00	200.00	162.00	2
3	200.00	162.00	240.00	193.00	2
4	240.00	193.00	400.00	200.00	2
5	.00	96.00	40.00	103.00	2
6	40.00	103.00	101.00	110.00	2
7	101.00	110.00	137.00	122.00	2
8	137.00	122.00	143.00	132.00	2

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	119.0	119.0	169.0	34.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
16000 Trial Surfaces Have Been Generated.
100 Surfaces Initiate From Each Of160 Points Equally Spaced
Along The Ground Surface Between X = .00 ft.
and X = 160.00 ft.
Each Surface Terminates Between X = 180.00 ft.
and X = 400.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = .00 ft.
10.00 ft. Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And .0 deg.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	133.84	129.95
2	143.76	128.72
3	153.76	128.40
4	163.74	129.02
5	173.62	130.55
6	183.32	132.98
7	192.75	136.30
8	201.84	140.48
9	210.50	145.48
10	218.66	151.26

11	226.25	157.76
12	233.22	164.94
13	239.49	172.73
14	245.01	181.07
15	249.74	189.88
16	251.27	193.49

*** 2.078 ***

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	7.4	1128.7	.0	.0	.0	.0	.0	.0	.0
2	1.8	610.2	.0	.0	.0	.0	.0	.0	.0
3	.8	311.0	.0	.0	.0	.0	.0	.0	.0
4	10.0	7696.2	.0	.0	.0	.0	.0	.0	.0
5	10.0	13751.6	.0	.0	.0	.0	.0	.0	.0
6	9.9	18502.6	.0	.0	.0	.0	.0	.0	.0
7	9.7	21817.3	.0	.0	.0	.0	.0	.0	.0
8	9.4	23638.3	.0	.0	.0	.0	.0	.0	.0
9	7.2	19085.4	.0	.0	.0	.0	.0	.0	.0
10	1.8	4948.9	.0	.0	.0	.0	.0	.0	.0
11	8.7	24529.6	.0	.0	.0	.0	.0	.0	.0
12	8.2	24217.9	.0	.0	.0	.0	.0	.0	.0
13	7.6	22501.2	.0	.0	.0	.0	.0	.0	.0
14	7.0	19631.1	.0	.0	.0	.0	.0	.0	.0
15	6.3	15920.2	.0	.0	.0	.0	.0	.0	.0
16	.5	1202.7	.0	.0	.0	.0	.0	.0	.0
17	5.0	9435.1	.0	.0	.0	.0	.0	.0	.0
18	4.7	4420.4	.0	.0	.0	.0	.0	.0	.0
19	1.5	323.4	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	138.87	131.08
2	148.80	129.94
3	158.80	129.79
4	168.77	130.63
5	178.60	132.46
6	188.20	135.25
7	197.48	138.99
8	206.34	143.62
9	214.70	149.11
10	222.47	155.40
11	229.58	162.43
12	235.96	170.13
13	241.54	178.43
14	246.28	187.24
15	248.83	193.39

*** 2.082 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.82	129.50
2	141.69	127.89
3	151.67	127.19
4	161.67	127.41
5	171.60	128.53
6	181.40	130.56
7	190.96	133.48
8	200.22	137.25
9	209.10	141.86
10	217.52	147.26
11	225.41	153.40
12	232.70	160.24
13	239.34	167.71

14	245.27	175.76
15	250.45	184.32
16	254.81	193.32
17	254.94	193.65

*** 2.083 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.82	129.50
2	141.74	128.17
3	151.73	127.77
4	161.71	128.31
5	171.61	129.77
6	181.32	132.14
7	190.77	135.41
8	199.88	139.55
9	208.56	144.51
10	216.74	150.26
11	224.35	156.75
12	231.32	163.92
13	237.60	171.70
14	243.12	180.04
15	247.84	188.85
16	249.77	193.43

*** 2.084 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	141.89	131.75
2	151.85	130.90
3	161.85	130.95
4	171.81	131.90
5	181.64	133.74
6	191.26	136.45
7	200.60	140.02
8	209.58	144.42
9	218.13	149.60
10	226.18	155.54
11	233.67	162.17
12	240.52	169.45
13	246.70	177.32
14	252.14	185.70
15	256.37	193.72

*** 2.084 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	128.81	128.82
2	138.70	127.36
3	148.68	126.75
4	158.68	127.00
5	168.61	128.12
6	178.42	130.10
7	188.01	132.91
8	197.33	136.54
9	206.30	140.97
10	214.85	146.15
11	222.92	152.05
12	230.46	158.63
13	237.39	165.83
14	243.68	173.60
15	249.27	181.89
16	254.13	190.64
17	255.49	193.68

*** 2.085 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	133.84	129.95
2	143.72	128.43
3	153.70	127.82
4	163.70	128.11
5	173.63	129.30
6	183.41	131.38
7	192.96	134.34
8	202.20	138.15
9	211.07	142.79
10	219.47	148.20
11	227.36	154.35
12	234.65	161.19
13	241.30	168.66
14	247.24	176.71
15	252.43	185.25
16	256.58	193.73

*** 2.086 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	140.88	131.53
2	150.74	129.87
3	160.73	129.27
4	170.71	129.74
5	180.60	131.27
6	190.26	133.84
7	199.60	137.42
8	208.50	141.97
9	216.87	147.45
10	224.61	153.78
11	231.63	160.90
12	237.85	168.73
13	243.21	177.17
14	247.64	186.14
15	250.33	193.45

*** 2.086 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	143.90	132.47
2	153.85	131.48
3	163.85	131.42
4	173.81	132.30
5	183.65	134.11
6	193.27	136.83
7	202.59	140.45
8	211.53	144.92
9	220.02	150.21
10	227.97	156.28
11	235.32	163.06
12	241.99	170.51
13	247.94	178.54
14	253.11	187.10
15	256.30	193.71

*** 2.087 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	132.83	129.72
2	142.63	127.76
3	152.58	126.74
4	162.58	126.68
5	172.54	127.59
6	182.37	129.45

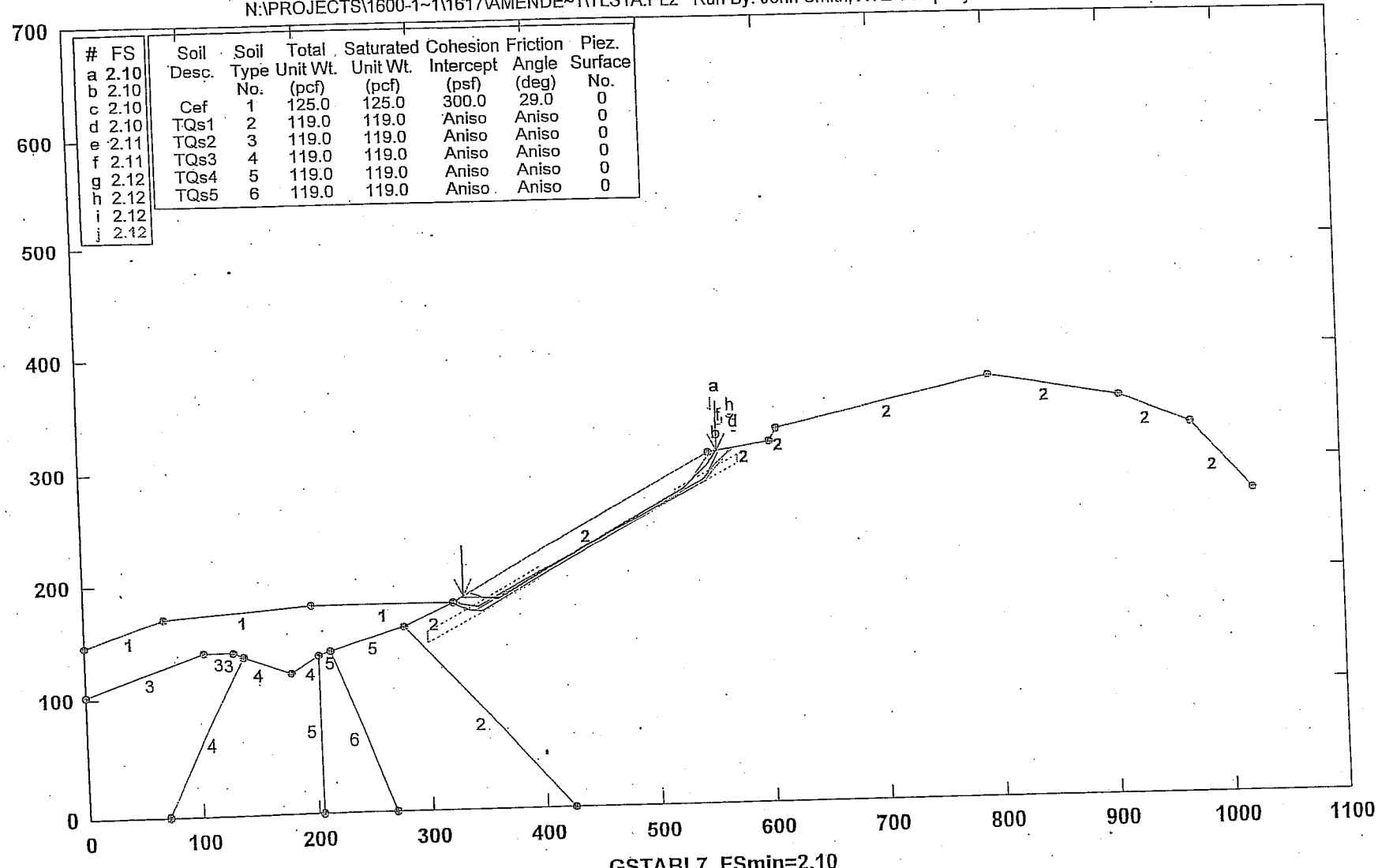
7	191.97	132.24
8	201.26	135.95
9	210.15	140.53
10	218.55	145.94
11	226.40	152.14
12	233.62	159.06
13	240.14	166.65
14	245.89	174.82
15	250.84	183.51
16	254.93	192.64
17	255.27	193.67
***	2.092	***

Amended VTT52584, L-L', 195' High Nat. Slope, Bed. Pln. Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TLS1A.PL2 Run By: John Smith, XYZ Company 4/15/2003 8:05AM

#	FS
a	2.10
b	2.10
c	2.10
d	2.10
e	2.11
f	2.11
g	2.12
h	2.12
i	2.12
j	2.12

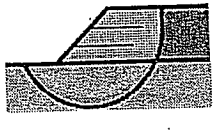
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs1	2	119.0	119.0	Aniso	Aniso	0
TQs2	3	119.0	119.0	Aniso	Aniso	0
TQs3	4	119.0	119.0	Aniso	Aniso	0
TQs4	5	119.0	119.0	Aniso	Aniso	0
TQs5	6	119.0	119.0	Aniso	Aniso	0



GSTABL7 FSmin=2.10

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

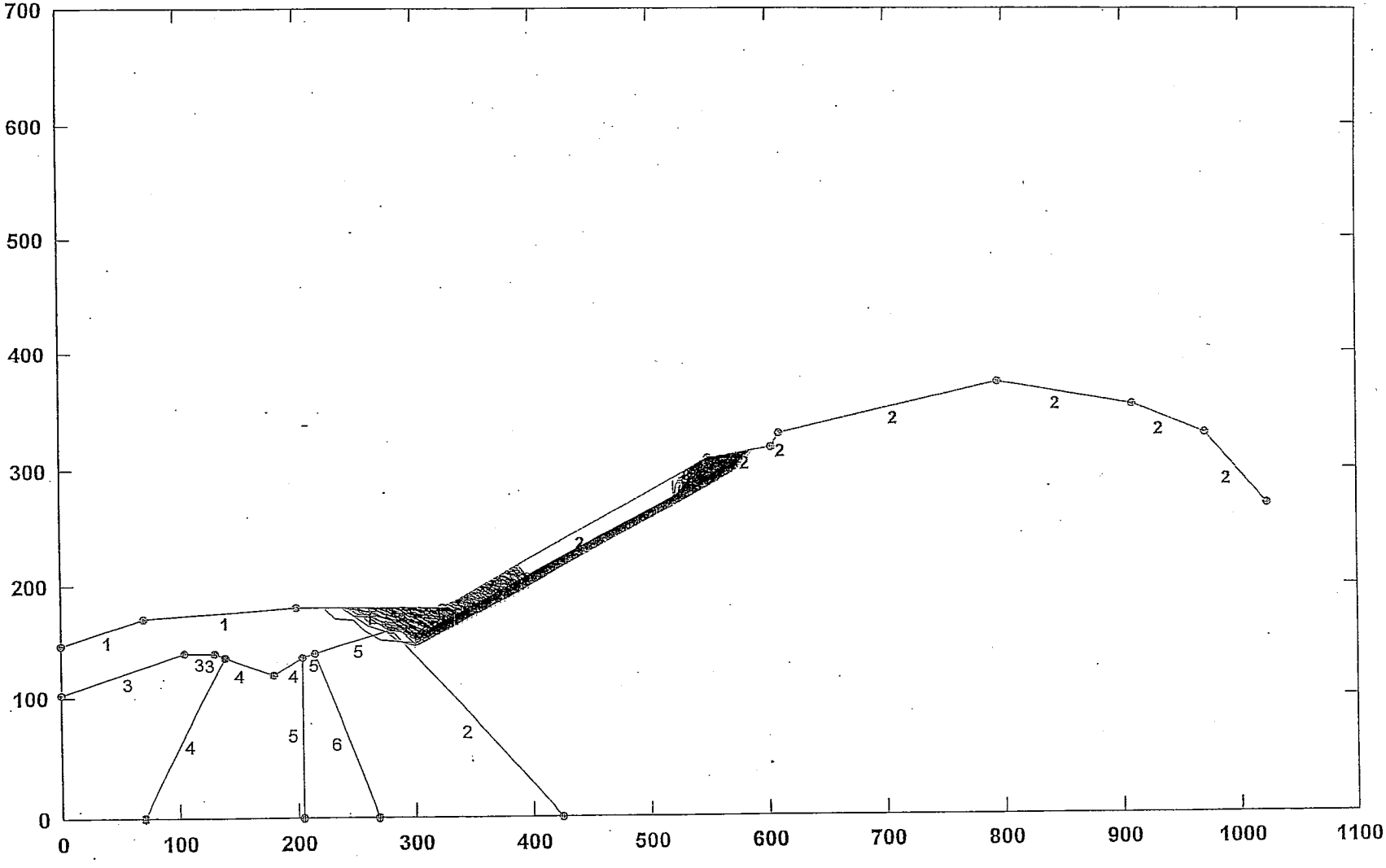
STED



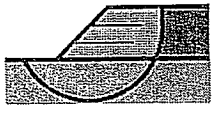
RUN NO. - 72

Amended VTT52584, L-L', 195' High Nat. Slope, Bed. Pln. Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TLS1A.PLT Run By: John Smith, XYZ Company 4/15/2003 8:05AM



STED



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                 ***  GSTABL7  ***
      ** GSTABL7 by Garry H. Gregory, P.E. **
** Version 1.0, January 1996; Version 1.16, May 2000 **
              --Slope Stability Analysis--
           Simplified Janbu, Modified Bishop
             or Spencer`s Method of Slices
     (Based on STABL6-1986, by Purdue University)
Run Date:                    4/15/2003
Time of Run:                 8:05AM
Run By:                      John Smith, XYZ Company
Input Data Filename:         N:tls1a.
Output Filename:             N:tls1a.OUT
Unit System:                 English
Plotted Output Filename:     N:tls1a.PLT
PROBLEM DESCRIPTION   Amended VTT52584, L-L', 195' High Nat.
                      Slope,  Bed. Pln. Static
```

BOUNDARY COORDINATES

10 Top Boundaries

22 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	146.00	70.00	170.00	1
2	70.00	170.00	200.00	180.00	1
3	200.00	180.00	324.00	180.00	1
4	324.00	180.00	550.00	310.00	2
5	550.00	310.00	604.00	318.00	2
6	604.00	318.00	610.00	330.00	2
7	610.00	330.00	795.00	373.00	2
8	795.00	373.00	909.00	354.00	2
9	909.00	354.00	970.00	330.00	2
10	970.00	330.00	1023.00	270.00	2
11	0.00	102.00	105.00	140.00	3
12	105.00	140.00	130.00	140.00	3
13	130.00	140.00	140.00	136.00	3
14	70.00	0.00	140.00	136.00	4
15	140.00	136.00	180.00	120.00	4
16	180.00	120.00	205.00	135.00	4
17	205.00	135.00	215.00	140.00	5
18	215.00	140.00	280.00	160.00	5
19	280.00	160.00	324.00	180.00	2
20	205.00	135.00	205.10	0.00	5
21	215.00	140.00	268.00	0.00	6
22	280.00	160.00	425.00	0.00	2

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	125.0	125.0	300.0	29.0	0.00	0.0	0
2	119.0	119.0	410.0	40.5	0.00	0.0	0
3	119.0	119.0	410.0	40.5	0.00	0.0	0
4	119.0	119.0	410.0	40.5	0.00	0.0	0
5	119.0	119.0	410.0	40.5	0.00	0.0	0
6	119.0	119.0	410.0	40.5	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

5 soil type(s)

Soil Type 2 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	410.0	40.5
2	31.0	410.0	40.5
3	90.0	410.0	40.5

Soil Type 3 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction	Counterclockwise	Cohesion	Friction

Range No.	Direction Limit (deg)	Intercept (psf)	Angle (deg)
1	-35.0	410.0	40.5
2	-33.0	410.0	40.5
3	90.0	410.0	40.5

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	-19.0	410.0	40.5
2	-17.0	410.0	40.5
3	90.0	410.0	40.5

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	21.0	410.0	40.5
2	23.0	410.0	40.5
3	90.0	410.0	40.5

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	25.0	410.0	40.5
2	27.0	410.0	40.5
3	90.0	410.0	40.5

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.
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	300.00	150.00	400.00	205.00	10.00
2	520.00	272.00	575.00	303.00	8.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	332.52	184.90
2	332.87	184.54
3	347.84	183.61
4	362.81	182.67
5	528.09	276.91
6	538.51	287.71
7	549.05	298.38
8	557.70	310.64
9	558.01	311.19

*** 2.099 ***

Individual data on the 9 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	0.4	11.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	15.0	9499.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	15.0	26513.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	165.3	394801.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0

5	10.4	22402.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	10.5	16780.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	1.0	1208.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	7.7	4936.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.3	9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	332.52	184.90
2	332.87	184.54
3	347.84	183.61
4	362.81	182.67
5	528.09	276.91
6	538.51	287.71
7	549.05	298.38
8	557.70	310.64
9	558.01	311.19

*** 2.099 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	324.08	180.05
2	333.82	173.60
3	348.77	172.40
4	547.55	283.73
5	556.58	295.71
6	566.79	306.70
7	572.75	313.37

*** 2.101 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	324.08	180.05
2	333.82	173.60
3	348.77	172.40
4	547.55	283.73
5	556.58	295.71
6	566.79	306.70
7	572.75	313.37

*** 2.101 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	326.16	181.25
2	329.91	178.76
3	344.65	175.94
4	537.87	278.41
5	548.45	289.04
6	555.44	302.31
7	560.61	311.57

*** 2.113 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	326.16	181.25
2	329.91	178.76
3	344.65	175.94
4	537.87	278.41
5	548.45	289.04
6	555.44	302.31
7	560.61	311.57

*** 2.113 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	338.33	188.25
2	350.14	184.26

3	365.13	183.75
4	546.88	285.96
5	555.55	298.20
6	566.15	308.81
7	570.35	313.01

*** 2.117 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	338.33	188.25
2	350.14	184.26
3	365.13	183.75
4	546.88	285.96
5	555.55	298.20
6	566.15	308.81
7	570.35	313.01

*** 2.117 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	321.07	180.00
2	327.61	177.32
3	341.94	172.88
4	524.02	272.49
5	534.44	283.28
6	542.78	295.75
7	551.01	308.29
8	553.13	310.46

*** 2.120 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	321.07	180.00
2	327.61	177.32
3	341.94	172.88
4	524.02	272.49
5	534.44	283.28
6	542.78	295.75
7	551.01	308.29
8	553.13	310.46

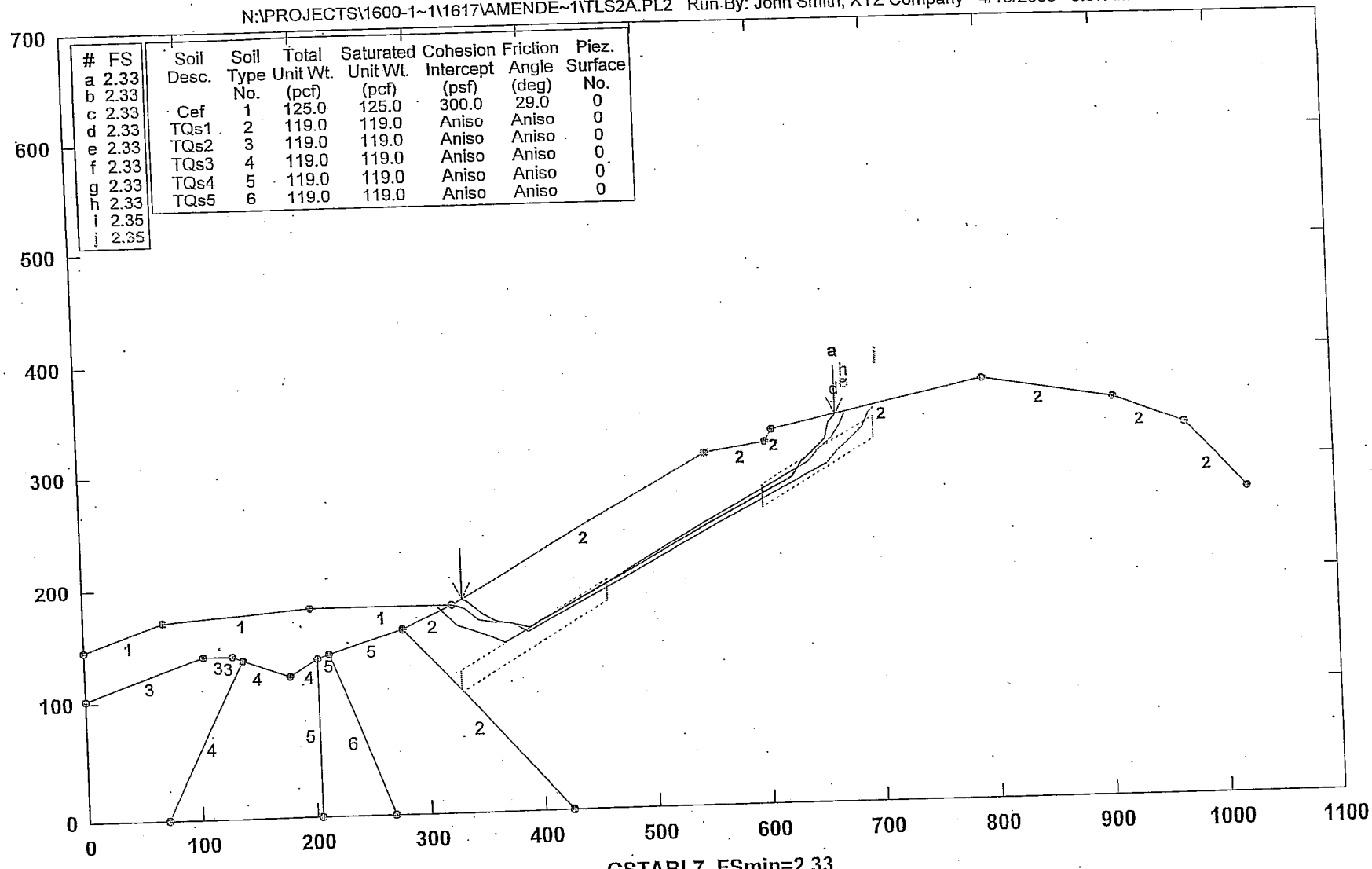
*** 2.120 ***

Amended VTT 52584, L-L' 195' High Nat. Slope, Bed. Pl. Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TLS2A.PL2 Run By: John Smith, XYZ Company 4/15/2003 8:07AM

#	FS
a	2.33
b	2.33
c	2.33
d	2.33
e	2.33
f	2.33
g	2.33
h	2.33
i	2.35
j	2.35

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs1	2	119.0	119.0	Aniso	Aniso	0
TQs2	3	119.0	119.0	Aniso	Aniso	0
TQs3	4	119.0	119.0	Aniso	Aniso	0
TQs4	5	119.0	119.0	Aniso	Aniso	0
TQs5	6	119.0	119.0	Aniso	Aniso	0



GSTABL7 FSmin=2.33

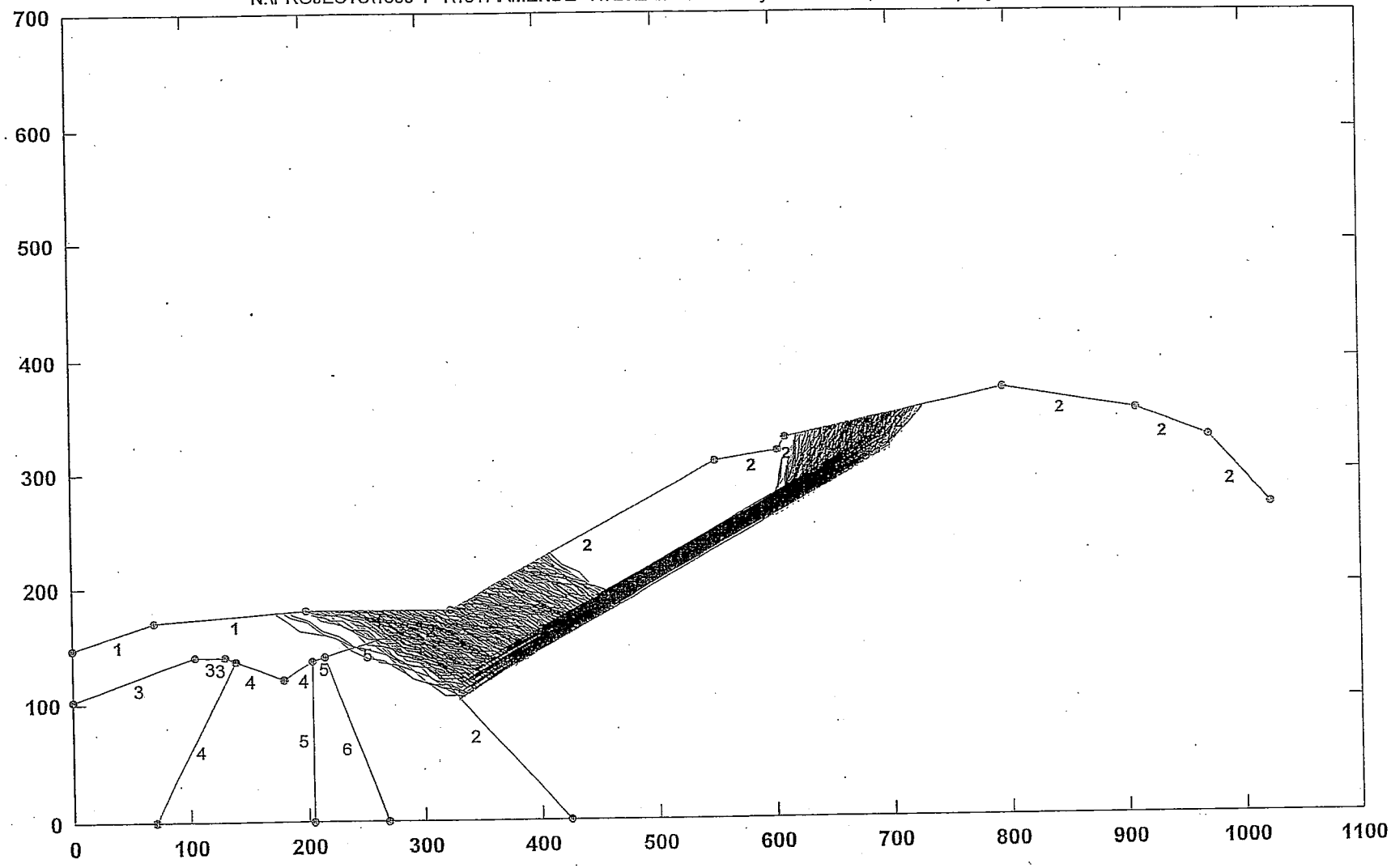
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

STED

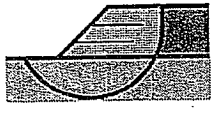
RUN No. 73

Amended VTT 52584, L-L' 195' High Nat. Slope, Bed. Pl. Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TLS2A.PLT Run By: John Smith, XYZ Company 4/15/2003 8:07AM



STED



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                    ***  GSTABL7  ***
        ** GSTABL7 by Garry H. Gregory, P.E. **
** Version 1.0, January 1996; Version 1.16, May 2000 **
              --Slope Stability Analysis--
            Simplified Janbu, Modified Bishop
              or Spencer`s Method of Slices
      (Based on STABL6-1986, by Purdue University)
Run Date:                    4/15/2003
Time of Run:                 8:07AM
Run By:                      John Smith, XYZ Company
Input Data Filename:         N:TLS2A.IN
Output Filename:             N:TLS2A.OUT
Unit System:                 English
Plotted Output Filename:     N:TLS2A.PLT
PROBLEM DESCRIPTION   Amended VTT 52584,  L-L' 195' High
                      Nat. Slope, Bed. Pl. Static

BOUNDARY COORDINATES
   10 Top   Boundaries
   22 Total Boundaries
```

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	146.00	70.00	170.00	1
2	70.00	170.00	200.00	180.00	1
3	200.00	180.00	324.00	180.00	1
4	324.00	180.00	550.00	310.00	2
5	550.00	310.00	604.00	318.00	2
6	604.00	318.00	610.00	330.00	2
7	610.00	330.00	795.00	373.00	2
8	795.00	373.00	909.00	354.00	2
9	909.00	354.00	970.00	330.00	2
10	970.00	330.00	1023.00	270.00	2
11	0.00	102.00	105.00	140.00	3
12	105.00	140.00	130.00	140.00	3
13	130.00	140.00	140.00	136.00	3
14	70.00	0.00	140.00	136.00	4
15	140.00	136.00	180.00	120.00	4
16	180.00	120.00	205.00	135.00	4
17	205.00	135.00	215.00	140.00	5
18	215.00	140.00	280.00	160.00	5
19	280.00	160.00	324.00	180.00	2
20	205.00	135.00	205.10	0.00	5
21	215.00	140.00	268.00	0.00	6
22	280.00	160.00	425.00	0.00	2

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	125.0	125.0	300.0	29.0	0.00	0.0	0
2	119.0	119.0	410.0	40.5	0.00	0.0	0
3	119.0	119.0	410.0	40.5	0.00	0.0	0
4	119.0	119.0	410.0	40.5	0.00	0.0	0
5	119.0	119.0	410.0	40.5	0.00	0.0	0
6	119.0	119.0	410.0	40.5	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
5 soil type(s)

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	410.0	40.5
2	31.0	410.0	40.5
3	90.0	410.0	40.5

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

Direction	Counterclockwise	Cohesion	Friction

Range No.	Direction Limit (deg)	Intercept (psf)	Angle (deg)
1	-35.0	410.0	40.5
2	-33.0	410.0	40.5
3	90.0	410.0	40.5

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	-19.0	410.0	40.5
2	-17.0	410.0	40.5
3	90.0	410.0	40.5

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	21.0	410.0	40.5
2	23.0	410.0	40.5
3	90.0	410.0	40.5

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	25.0	410.0	40.5
2	27.0	410.0	40.5
3	90.0	410.0	40.5

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.
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	330.00	112.00	460.00	190.00	20.00
2	600.00	270.00	700.00	330.00	20.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	332.84	185.09
2	338.09	182.52
3	349.44	172.71
4	361.97	164.46
5	376.88	162.89
6	391.22	158.46
7	626.34	286.27
8	634.82	298.64
9	645.16	309.50
10	655.73	320.15
11	659.77	334.59
12	666.40	343.11

*** 2.326 ***
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	5.2	1744.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0

2	11.3	18572.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	12.5	44205.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	14.9	75365.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	14.3	91856.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	158.8	1184970.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	54.0	350528.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	6.0	34444.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	16.3	97337.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	8.5	42710.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	10.3	40507.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	10.6	30905.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	4.0	6604.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	6.6	2749.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	332.84	185.09
2	338.09	182.52
3	349.44	172.71
4	361.97	164.46
5	376.88	162.89
6	391.22	158.46
7	626.34	286.27
8	634.82	298.64
9	645.16	309.50
10	655.73	320.15
11	659.77	334.59
12	666.40	343.11

*** 2.326 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	332.84	185.09
2	338.09	182.52
3	349.44	172.71
4	361.97	164.46
5	376.88	162.89
6	391.22	158.46
7	626.34	286.27
8	634.82	298.64
9	645.16	309.50
10	655.73	320.15
11	659.77	334.59
12	666.40	343.11

*** 2.326 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	332.84	185.09
2	338.09	182.52
3	349.44	172.71
4	361.97	164.46
5	376.88	162.89
6	391.22	158.46
7	626.34	286.27
8	634.82	298.64
9	645.16	309.50
10	655.73	320.15
11	659.77	334.59
12	666.40	343.11

*** 2.326 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	309.87	180.00
2	317.05	173.19
3	327.76	162.69

4	341.92	157.76
5	355.67	151.75
6	369.19	145.26
7	641.03	299.86
8	651.51	310.60
9	661.92	321.39
10	669.48	334.35
11	674.98	345.10

*** 2.329 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	309.87	180.00
2	317.05	173.19
3	327.76	162.69
4	341.92	157.76
5	355.67	151.75
6	369.19	145.26
7	641.03	299.86
8	651.51	310.60
9	661.92	321.39
10	669.48	334.35
11	674.98	345.10

*** 2.329 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	309.87	180.00
2	317.05	173.19
3	327.76	162.69
4	341.92	157.76
5	355.67	151.75
6	369.19	145.26
7	641.03	299.86
8	651.51	310.60
9	661.92	321.39
10	669.48	334.35
11	674.98	345.10

*** 2.329 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	309.87	180.00
2	317.05	173.19
3	327.76	162.69
4	341.92	157.76
5	355.67	151.75
6	369.19	145.26
7	641.03	299.86
8	651.51	310.60
9	661.92	321.39
10	669.48	334.35
11	674.98	345.10

*** 2.329 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	324.98	180.56
2	335.33	176.14
3	346.96	166.67
4	361.62	163.51
5	376.61	162.86
6	389.44	155.09
7	657.78	298.14
8	668.11	309.02
9	678.69	319.65
10	689.29	330.27

11	696.03	343.67
12	703.28	351.68
***	2.351	***

Failure Surface Specified By 12 Coordinate Points

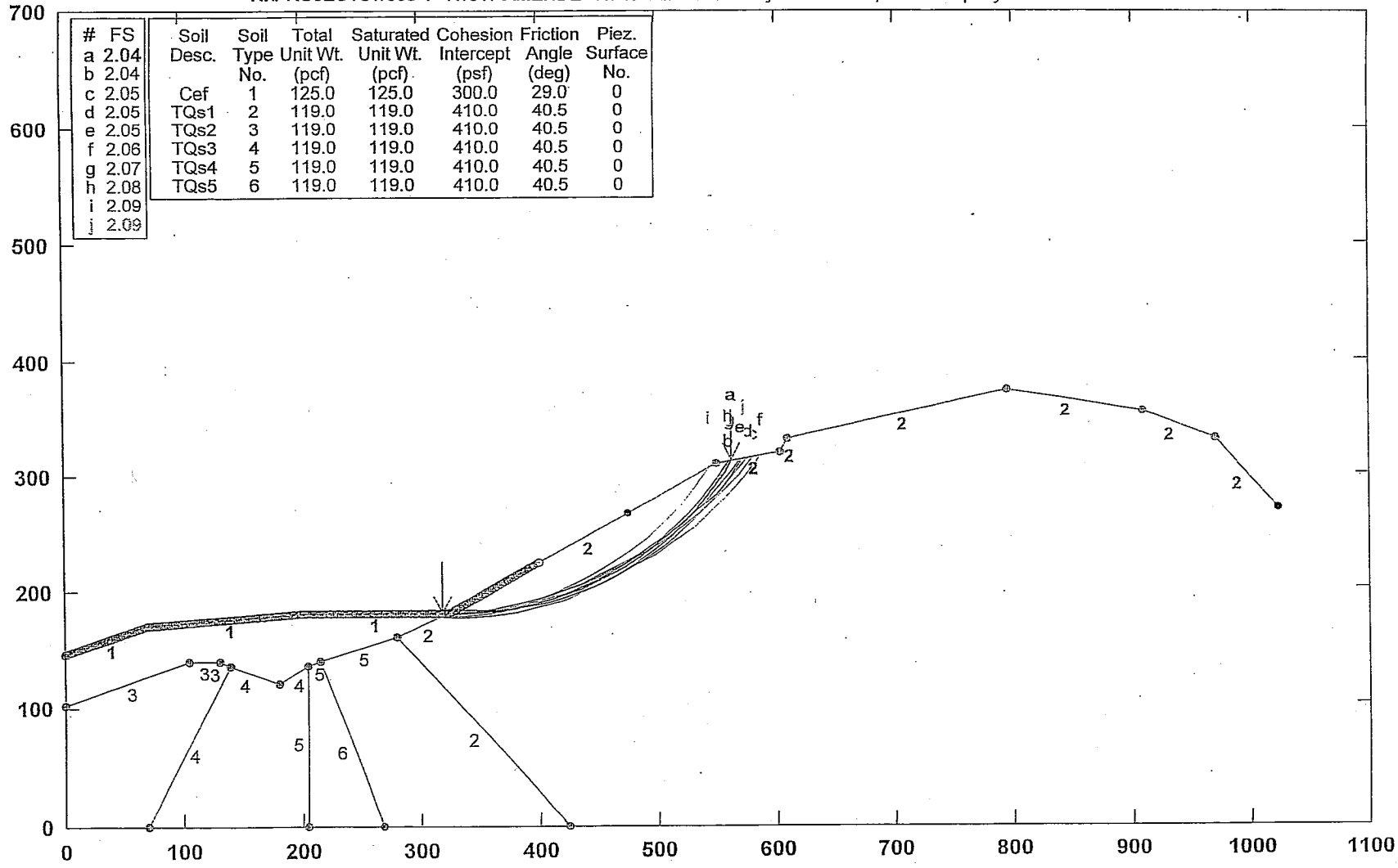
Point No.	X-Surf (ft)	Y-Surf (ft)
1	324.98	180.56
2	335.33	176.14
3	346.96	166.67
4	361.62	163.51
5	376.61	162.86
6	389.44	155.09
7	657.78	298.14
8	668.11	309.02
9	678.69	319.65
10	689.29	330.27
11	696.03	343.67
12	703.28	351.68
***	2.351	***

Amended VTT52584, Section L-L' 195' HighNatural Slope, Circular, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TLS4A.PL2 Run By: John Smith, XYZ Company 4/15/2003 8:43AM

#	FS
a	2.04
b	2.04
c	2.05
d	2.05
e	2.05
f	2.06
g	2.07
h	2.08
i	2.09
j	2.09

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs1	2	119.0	119.0	410.0	40.5	0
TQs2	3	119.0	119.0	410.0	40.5	0
TQs3	4	119.0	119.0	410.0	40.5	0
TQs4	5	119.0	119.0	410.0	40.5	0
TQs5	6	119.0	119.0	410.0	40.5	0



GSTABL7 FSmin=2.04

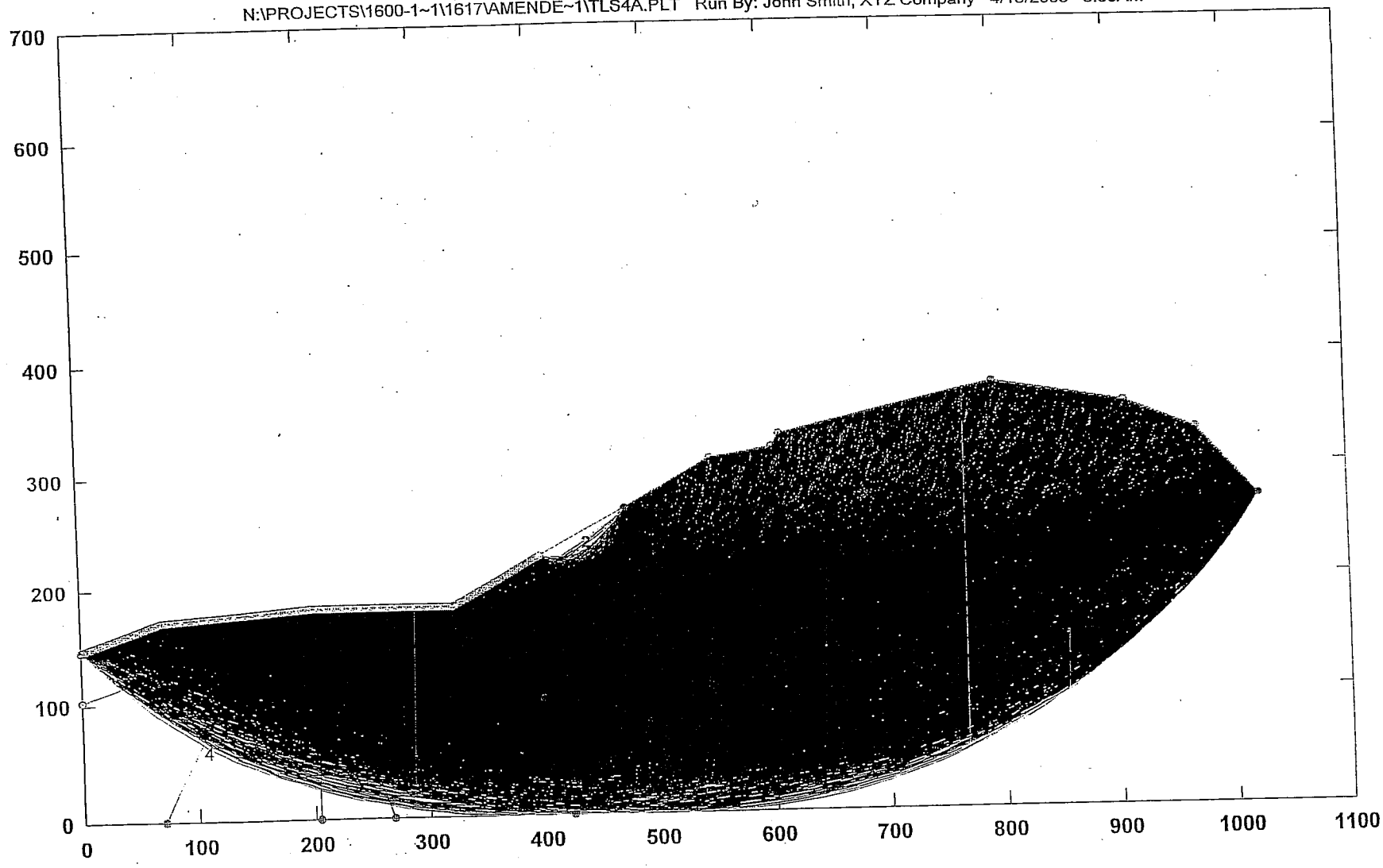
Safety Factors Are Calculated By The Modified Bishop Method

STED

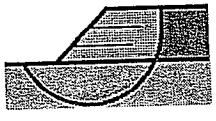
RUN NO. 74

Amended VTT52584, Section L-L' 195' HighNatural Slope, Circular, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TLS4A.PLT Run By: John Smith, XYZ Company 4/15/2003 8:36AM



STED



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                    ***  GSTABL7  ***
        ** GSTABL7 by Garry H. Gregory, P.E. **
** Version 1.0, January 1996; Version 1.16, May 2000 **
              --Slope Stability Analysis--
            Simplified Janbu, Modified Bishop
              or Spencer`s Method of Slices
      (Based on STABL6-1986, by Purdue University)
Run Date:                    4/15/2003
Time of Run:                 8:43AM
Run By:                      John Smith, XYZ Company
Input Data Filename:         N:TLS4A.
Output Filename:             N:TLS4A.OUT
Unit System:                 English
Plotted Output Filename:     N:TLS4A.PLT
PROBLEM DESCRIPTION   Amended VTT52584, Section L-L' 195' High
                      Natural Slope, Circular, Static
BOUNDARY COORDINATES
   10 Top   Boundaries
   22 Total Boundaries
```

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	146.00	70.00	170.00	1
2	70.00	170.00	200.00	180.00	1
3	200.00	180.00	324.00	180.00	1
4	324.00	180.00	550.00	310.00	2
5	550.00	310.00	604.00	318.00	2
6	604.00	318.00	610.00	330.00	2
7	610.00	330.00	795.00	373.00	2
8	795.00	373.00	909.00	354.00	2
9	909.00	354.00	970.00	330.00	2
10	970.00	330.00	1023.00	270.00	2
11	0.00	102.00	105.00	140.00	3
12	105.00	140.00	130.00	140.00	3
13	130.00	140.00	140.00	136.00	3
14	70.00	0.00	140.00	136.00	4
15	140.00	136.00	180.00	120.00	4
16	180.00	120.00	205.00	135.00	4
17	205.00	135.00	215.00	140.00	5
18	215.00	140.00	280.00	160.00	5
19	280.00	160.00	324.00	180.00	2
20	205.00	135.00	205.10	0.00	5
21	215.00	140.00	268.00	0.00	6
22	280.00	160.00	425.00	0.00	2

```
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	125.0	125.0	300.0	29.0	0.00	0.0	0
2	119.0	119.0	410.0	40.5	0.00	0.0	0
3	119.0	119.0	410.0	40.5	0.00	0.0	0
4	119.0	119.0	410.0	40.5	0.00	0.0	0
5	119.0	119.0	410.0	40.5	0.00	0.0	0
6	119.0	119.0	410.0	40.5	0.00	0.0	0

```
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
8000 Trial Surfaces Have Been Generated.
  20 Surfaces Initiate From Each Of400 Points Equally Spaced
Along The Ground Surface Between  X =   0.00(ft)
                              and  X = 400.00(ft)
Each Surface Terminates Between   X = 475.00(ft)
                              and  X =1023.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is  Y =  0.00(ft)
20.00(ft) Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
```

And 0.0 deg.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	318.80	180.00
2	338.80	179.85
3	358.75	181.17
4	378.55	183.97
5	398.10	188.23
6	417.27	193.92
7	435.97	201.02
8	454.09	209.48
9	471.53	219.26
10	488.21	230.31
11	504.02	242.56
12	518.88	255.94
13	532.71	270.39
14	545.43	285.83
15	556.97	302.16
16	562.82	311.90

Circle Center At X = 331.0 ; Y = 449.1 and Radius, 269.3
*** 2.036 ***

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	5.1	12.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	14.8	7664.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	20.0	32634.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	19.8	54470.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	19.5	71858.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	19.2	84553.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	18.7	92468.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	18.1	95676.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	17.4	94407.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	16.7	89040.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	15.8	80093.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	14.9	68212.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	13.8	54151.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	12.7	38754.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	4.6	10680.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	7.0	11020.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	5.9	3091.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	312.78	180.00
2	332.78	179.64
3	352.75	180.76
4	372.58	183.35
5	392.16	187.41
6	411.39	192.90
7	430.17	199.80
8	448.38	208.07
9	465.92	217.67
10	482.71	228.53
11	498.65	240.61
12	513.66	253.84
13	527.64	268.14
14	540.53	283.43
15	552.25	299.64

16	559.50	311.41

Circle Center At X = 327.8 ; Y = 449.2 and Radius, 269.6
*** 2.038 ***
Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	283.71	180.00
2	303.70	179.33
3	323.69	179.81
4	343.63	181.44
5	363.43	184.21
6	383.05	188.12
7	402.41	193.15
8	421.44	199.28
9	440.09	206.49
10	458.30	214.77
11	476.00	224.08
12	493.14	234.39
13	509.66	245.67
14	525.50	257.88
15	540.61	270.98
16	554.94	284.93
17	568.45	299.67
18	580.57	314.53

Circle Center At X = 305.4 ; Y = 527.0 and Radius, 347.7
*** 2.049 ***
Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	277.69	180.00
2	297.67	179.13
3	317.67	179.42
4	337.62	180.87
5	357.45	183.47
6	377.10	187.22
7	396.49	192.10
8	415.57	198.09
9	434.27	205.19
10	452.53	213.35
11	470.28	222.56
12	487.47	232.79
13	504.04	243.99
14	519.93	256.14
15	535.09	269.18
16	549.46	283.09
17	563.01	297.80
18	575.68	313.27
19	576.11	313.87

Circle Center At X = 302.7 ; Y = 523.9 and Radius, 344.8
*** 2.050 ***
Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	284.71	180.00
2	304.66	178.63
3	324.66	178.55
4	344.63	179.78
5	364.47	182.31
6	384.10	186.12
7	403.44	191.20
8	422.42	197.52
9	440.94	205.07
10	458.93	213.81
11	476.31	223.69
12	493.02	234.69
13	508.97	246.75
14	524.11	259.83

15	538.36	273.86
16	551.67	288.78
17	563.98	304.55
18	569.69	312.92

Circle Center At X = 315.9 ; Y = 485.2 and Radius, 306.7

*** 2.051 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	307.77	180.00
2	327.76	179.43
3	347.75	180.12
4	367.65	182.07
5	387.40	185.27
6	406.90	189.71
7	426.08	195.37
8	444.86	202.24
9	463.18	210.27
10	480.95	219.44
11	498.11	229.72
12	514.59	241.05
13	530.32	253.41
14	545.23	266.73
15	559.28	280.96
16	572.40	296.06
17	584.55	311.95
18	586.90	315.47

Circle Center At X = 326.9 ; Y = 495.9 and Radius, 316.5

*** 2.059 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	282.71	180.00
2	302.60	177.94
3	322.59	177.30
4	342.57	178.09
5	362.45	180.30
6	382.12	183.91
7	401.49	188.92
8	420.45	195.29
9	438.90	202.99
10	456.76	211.99
11	473.94	222.23
12	490.35	233.67
13	505.90	246.25
14	520.51	259.90
15	534.12	274.56
16	546.65	290.15
17	558.03	306.59
18	561.02	311.63

Circle Center At X = 321.6 ; Y = 457.8 and Radius, 280.5

*** 2.070 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	329.82	183.35
2	349.80	182.37
3	369.79	183.11
4	389.64	185.54
5	409.21	189.66
6	428.36	195.43
7	446.95	202.81
8	464.84	211.75
9	481.90	222.19
10	498.01	234.04
11	513.05	247.22
12	526.91	261.63

13	539.50	277.18
14	550.71	293.74
15	560.47	311.20
16	560.64	311.58

Circle Center At X = 351.2 ; Y = 416.7 and Radius, 234.3
*** 2.083 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	286.72	180.00
2	306.68	178.83
3	326.68	179.13
4	346.60	180.88
5	366.34	184.09
6	385.80	188.73
7	404.86	194.78
8	423.43	202.21
9	441.41	210.97
10	458.70	221.03
11	475.20	232.32
12	490.84	244.79
13	505.53	258.37
14	519.18	272.98
15	531.73	288.55
16	543.11	305.00
17	544.02	306.56

Circle Center At X = 312.7 ; Y = 452.2 and Radius, 273.5
*** 2.085 ***

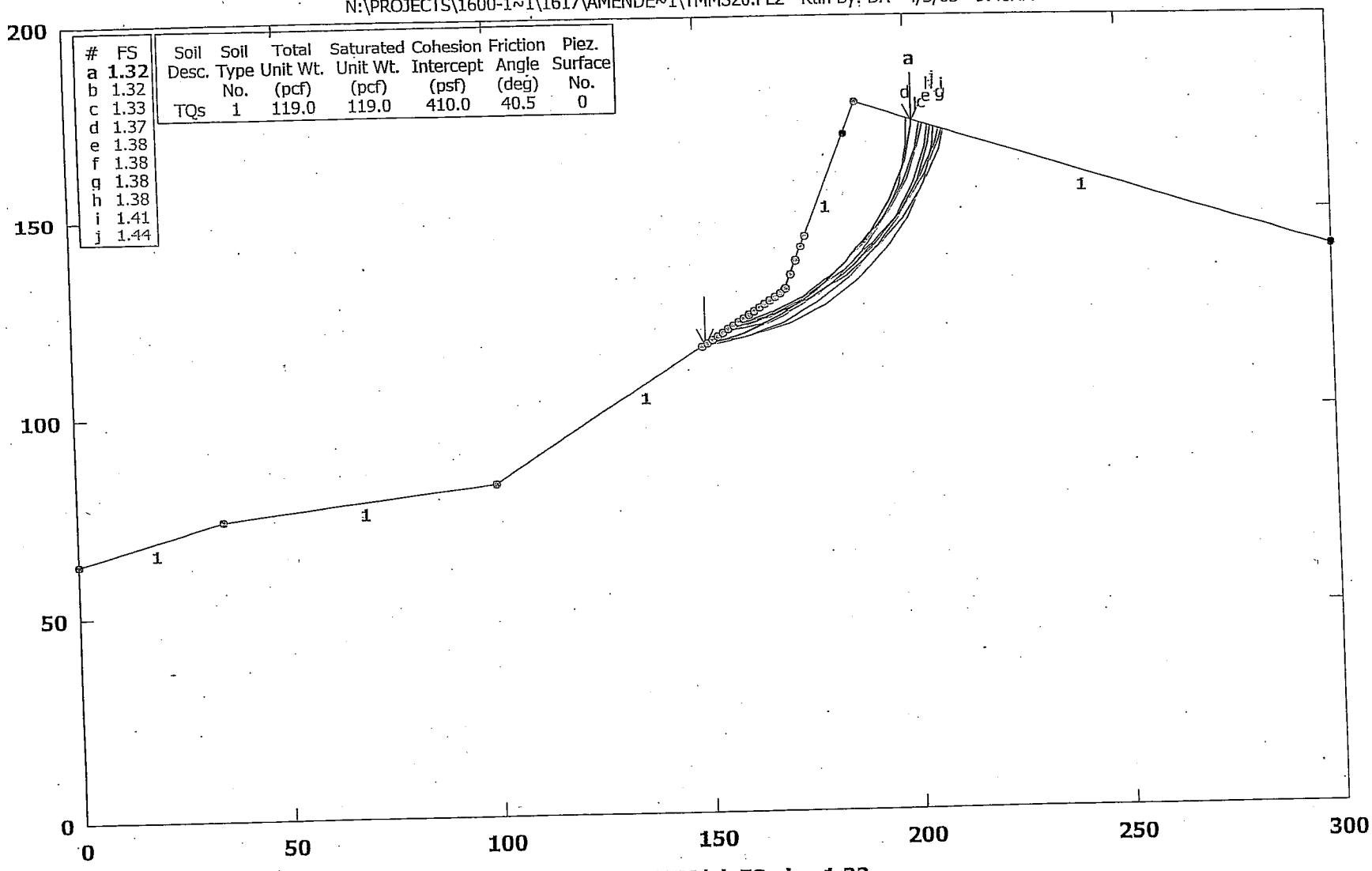
Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	280.70	180.00
2	300.53	177.37
3	320.49	176.13
4	340.49	176.29
5	360.43	177.85
6	380.21	180.80
7	399.73	185.12
8	418.91	190.81
9	437.64	197.82
10	455.83	206.12
11	473.40	215.68
12	490.26	226.45
13	506.32	238.36
14	521.51	251.38
15	535.75	265.42
16	548.97	280.42
17	561.11	296.32
18	572.11	313.02
19	572.27	313.30

Circle Center At X = 328.2 ; Y = 461:6 and Radius, 285.6
*** 2.087 ***

Amended VTT52584 M-M' Steep natural slope, Static, Upper area

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TMMS20.PL2 Run By: DA 4/3/03 9:40AM



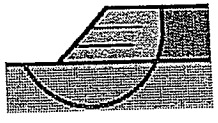
#	FS
a	1.32
b	1.32
c	1.33
d	1.37
e	1.38
f	1.38
g	1.38
h	1.38
i	1.41
j	1.44

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
TQs	1	119.0	119.0	410.0	40.5	0

PCSTABL5M/si FSmin=1.32

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

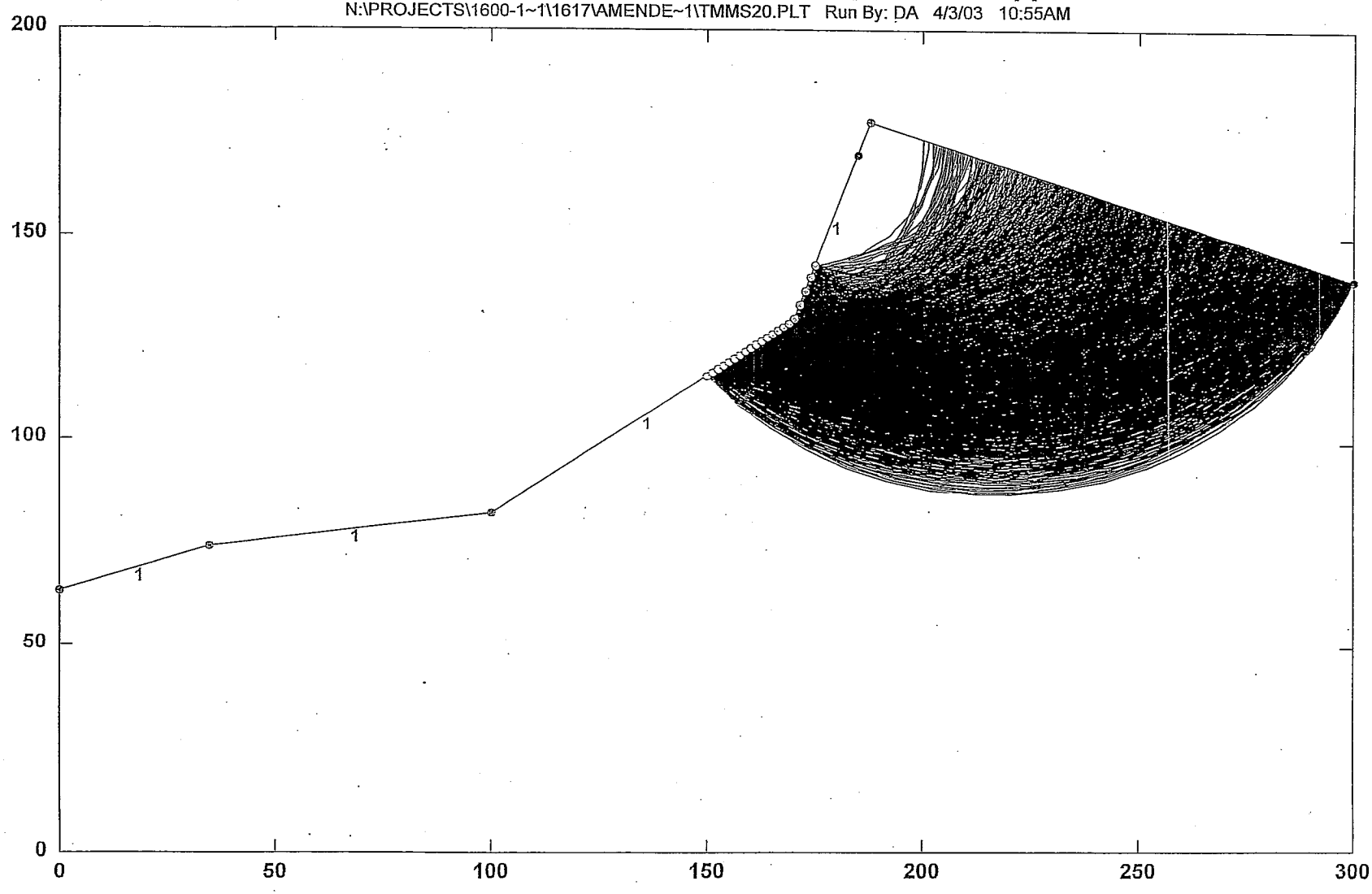
STED



RUN NO. - 75

Amended VTT52584 M-M' Steep natural slope, Static, Upper area

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TMMS20.PLT Run By: DA 4/3/03 10:55AM



STED

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/3/03
Time of Run: 10:53AM
Run By: DA
Input Data Filename: N:tmms20.in
Output Filename: N:tmms20.OUT
Unit: ENGLISH
Plotted Output Filename: N:tmms20.PLT
PROBLEM DESCRIPTION Amended VTT52584 M-M'
Steep natural slope, Static, Upper area

BOUNDARY COORDINATES
5 Top Boundaries
5 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	63.00	35.00	74.00	1
2	35.00	74.00	100.00	82.00	1
3	100.00	82.00	170.00	130.00	1
4	170.00	130.00	188.00	178.00	1
5	188.00	178.00	300.00	140.00	1

ISOTROPIC SOIL PARAMETERS
1 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	119.0	119.0	410.0	40.5	.00	.0	0

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
Janbus Empirical Coef. is being used for the case of c & phi both > 0
2400 Trial Surfaces Have Been Generated.
20 Surfaces Initiate From Each Of120 Points Equally Spaced
Along The Ground Surface Between X = 150.00 ft.
and X = 175.00 ft.
Each Surface Terminates Between X = 185.00 ft.
and X = 300.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = .00 ft.
10.00 ft. Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And 20.0 deg.
The Factor Of Safety For The Trial Failure Surface Defined
By The Coordinates Listed Below Is Misleading.
Failure Surface Defined By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	164.92	126.51
2	171.99	119.44
3	179.85	113.27
4	188.40	108.07
5	197.50	103.93
6	207.03	100.91
7	216.86	99.05
8	226.83	98.37
9	236.82	98.88
10	246.68	100.58
11	256.26	103.45
12	265.43	107.44
13	274.06	112.49
14	282.02	118.53
15	289.21	125.49

16	295.52	133.25
17	299.82	140.06

Factor Of Safety For The Preceding Specified Surface =*******
The Factor Of Safety For The Trial Failure Surface Defined
By The Coordinates Listed Below Is Misleading.
Failure Surface Defined By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	164.92	126.51
2	172.51	120.01
3	180.79	114.40
4	189.65	109.75
5	198.96	106.12
6	208.63	103.55
7	218.52	102.08
8	228.51	101.73
9	238.48	102.49
10	248.31	104.37
11	257.86	107.33
12	267.02	111.34
13	275.67	116.35
14	283.71	122.30
15	291.04	129.10
16	297.56	136.69
17	299.85	140.05

Factor Of Safety For The Preceding Specified Surface =*******
The Factor Of Safety For The Trial Failure Surface Defined
By The Coordinates Listed Below Is Misleading.
Failure Surface Defined By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	164.92	126.51
2	172.00	119.46
3	179.88	113.29
4	188.43	108.11
5	197.54	103.99
6	207.07	100.97
7	216.90	99.12
8	226.88	98.45
9	236.86	98.97
10	246.72	100.67
11	256.30	103.54
12	265.47	107.52
13	274.10	112.57
14	282.07	118.62
15	289.26	125.56
16	295.58	133.32
17	299.84	140.05

Factor Of Safety For The Preceding Specified Surface =*******
The Factor Of Safety For The Trial Failure Surface Defined
By The Coordinates Listed Below Is Misleading.
Failure Surface Defined By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	165.55	126.95
2	172.96	120.24
3	181.10	114.43
4	189.86	109.59
5	199.10	105.79
6	208.73	103.08
7	218.60	101.49
8	228.59	101.04
9	238.57	101.74
10	248.40	103.59
11	257.95	106.55
12	267.10	110.59

13	275.72	115.65
14	283.71	121.67
15	290.95	128.56
16	297.35	136.24
17	299.85	140.05

Factor Of Safety For The Preceding Specified Surface =*******
The Factor Of Safety For The Trial Failure Surface Defined
By The Coordinates Listed Below Is Misleading.
Failure Surface Defined By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	166.18	127.38
2	174.35	121.61
3	183.06	116.71
4	192.24	112.73
5	201.77	109.71
6	211.56	107.67
7	221.51	106.66
8	231.51	106.66
9	241.45	107.69
10	251.24	109.74
11	260.77	112.77
12	269.94	116.76
13	278.65	121.67
14	286.81	127.45
15	294.34	134.03
16	299.92	140.03

Factor Of Safety For The Preceding Specified Surface =*******
The Factor Of Safety For The Trial Failure Surface Defined
By The Coordinates Listed Below Is Misleading.
Failure Surface Defined By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	166.18	127.38
2	173.25	120.31
3	181.12	114.14
4	189.67	108.96
5	198.79	104.85
6	208.33	101.87
7	218.17	100.05
8	228.15	99.43
9	238.13	100.02
10	247.97	101.80
11	257.53	104.76
12	266.65	108.84
13	275.23	113.99
14	283.12	120.13
15	290.21	127.18
16	296.40	135.03
17	299.53	140.16

Factor Of Safety For The Preceding Specified Surface =-83.657
The Factor Of Safety For The Trial Failure Surface Defined
By The Coordinates Listed Below Is Misleading.
Failure Surface Defined By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	166.39	127.52
2	174.57	121.77
3	183.30	116.90
4	192.48	112.94
5	202.02	109.94
6	211.82	107.94
7	221.77	106.96
8	231.77	107.00
9	241.72	108.06
10	251.50	110.14

11	261.01	113.22
12	270.17	117.25
13	278.85	122.20
14	286.99	128.01
15	294.49	134.63
16	299.58	140.14

Factor Of Safety For The Preceding Specified Surface =*******
The Factor Of Safety For The Trial Failure Surface Defined
By The Coordinates Listed Below Is Misleading.
Failure Surface Defined By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	166.39	127.52
2	173.49	120.48
3	181.42	114.39
4	190.05	109.35
5	199.26	105.44
6	208.88	102.72
7	218.77	101.23
8	228.77	101.01
9	238.71	102.05
10	248.45	104.34
11	257.82	107.83
12	266.67	112.48
13	274.87	118.21
14	282.27	124.93
15	288.77	132.53
16	294.26	140.89
17	294.71	141.80

Factor Of Safety For The Preceding Specified Surface =*******
The Factor Of Safety For The Trial Failure Surface Defined
By The Coordinates Listed Below Is Misleading.
Failure Surface Defined By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	166.60	127.67
2	173.84	120.77
3	181.88	114.82
4	190.58	109.89
5	199.82	106.07
6	209.46	103.42
7	219.35	101.96
8	229.35	101.73
9	239.30	102.72
10	249.05	104.93
11	258.46	108.31
12	267.39	112.83
13	275.69	118.40
14	283.25	124.95
15	289.94	132.37
16	295.68	140.57
17	296.09	141.33

Factor Of Safety For The Preceding Specified Surface =*******
The Factor Of Safety For The Trial Failure Surface Defined
By The Coordinates Listed Below Is Misleading.
Failure Surface Defined By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	166.81	127.81
2	174.05	120.92
3	182.07	114.94
4	190.74	109.95
5	199.93	106.03
6	209.53	103.23
7	219.40	101.58
8	229.39	101.12

9	239.36	101.85
10	249.18	103.76
11	258.70	106.83
12	267.78	111.00
13	276.31	116.22
14	284.16	122.42
15	291.22	129.50
16	297.38	137.38
17	299.15	140.29

Factor Of Safety For The Preceding Specified Surface =-71.544
The Factor Of Safety For The Trial Failure Surface Defined
By The Coordinates Listed Below Is Misleading.
Failure Surface Defined By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	166.81	127.81
2	175.12	122.24
3	183.95	117.56
4	193.21	113.79
5	202.81	110.99
6	212.65	109.18
7	222.61	108.39
8	232.61	108.61
9	242.53	109.86
10	252.28	112.10
11	261.74	115.33
12	270.83	119.51
13	279.44	124.60
14	287.49	130.53
15	294.89	137.25
16	297.97	140.69

Factor Of Safety For The Preceding Specified Surface =*******
The Factor Of Safety For The Trial Failure Surface Defined
By The Coordinates Listed Below Is Misleading.
Failure Surface Defined By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	167.02	127.95
2	174.13	120.92
3	182.08	114.85
4	190.73	109.85
5	199.96	105.99
6	209.60	103.34
7	219.50	101.94
8	229.50	101.82
9	239.44	102.97
10	249.14	105.38
11	258.46	109.01
12	267.24	113.79
13	275.34	119.66
14	282.62	126.52
15	288.97	134.24
16	293.88	142.08

#################### SOME LINES SKIPPED ####################
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	150.63	116.72
2	160.18	119.70
3	169.17	124.07
4	177.40	129.75
5	184.69	136.60

6	190.86	144.46
7	195.79	153.17
8	199.35	162.51
9	201.47	172.28
10	201.54	173.41

*** 1.322 ***

Individual data on the 11 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	9.5	2027.0	.0	.0	.0	.0	.0	.0	.0
2	9.0	4775.0	.0	.0	.0	.0	.0	.0	.0
3	.8	530.0	.0	.0	.0	.0	.0	.0	.0
4	7.4	11157.4	.0	.0	.0	.0	.0	.0	.0
5	7.3	22783.3	.0	.0	.0	.0	.0	.0	.0
6	3.3	13748.9	.0	.0	.0	.0	.0	.0	.0
7	2.9	11879.7	.0	.0	.0	.0	.0	.0	.0
8	4.9	16044.5	.0	.0	.0	.0	.0	.0	.0
9	3.6	7170.1	.0	.0	.0	.0	.0	.0	.0
10	2.1	1611.8	.0	.0	.0	.0	.0	.0	.0
11	.1	4.8	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	154.41	119.31
2	163.89	122.49
3	172.79	127.06
4	180.89	132.92
5	188.02	139.93
6	194.00	147.94
7	198.71	156.77
8	202.03	166.20
9	203.28	172.82

*** 1.323 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	155.67	120.18
2	165.11	123.49
3	173.95	128.17
4	181.99	134.10
5	189.07	141.17
6	195.02	149.20
7	199.72	158.03
8	203.05	167.46
9	204.04	172.56

*** 1.325 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	154.62	119.46
2	164.33	121.86
3	173.42	126.02
4	181.59	131.80
5	188.54	138.98
6	194.04	147.34
7	197.90	156.56
8	199.98	166.34
9	200.16	173.87

*** 1.368 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	156.51	120.75
2	166.17	123.36

3	175.25	127.53
4	183.53	133.15
5	190.76	140.06
6	196.75	148.07
7	201.33	156.96
8	204.37	166.48
9	205.19	172.17

*** 1.375 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	157.77	121.62
2	167.25	124.81
3	176.18	129.31
4	184.38	135.03
5	191.69	141.86
6	197.95	149.65
7	203.05	158.26
8	206.87	167.50
9	207.83	171.27

*** 1.375 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	150.84	116.86
2	160.41	119.75
3	169.55	123.83
4	178.09	129.02
5	185.92	135.25
6	192.89	142.41
7	198.91	150.40
8	203.87	159.09
9	207.69	168.33
10	208.44	171.07

*** 1.376 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	150.00	116.29
2	159.77	118.41
3	169.11	121.99
4	177.79	126.95
5	185.63	133.16
6	192.43	140.49
7	198.04	148.77
8	202.33	157.80
9	205.21	167.38
10	205.85	171.94

*** 1.380 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	157.56	121.47
2	167.20	124.15
3	176.32	128.25
4	184.72	133.68
5	192.20	140.31
6	198.60	147.99
7	203.77	156.55
8	207.59	165.79
9	208.85	170.93

*** 1.414 ***

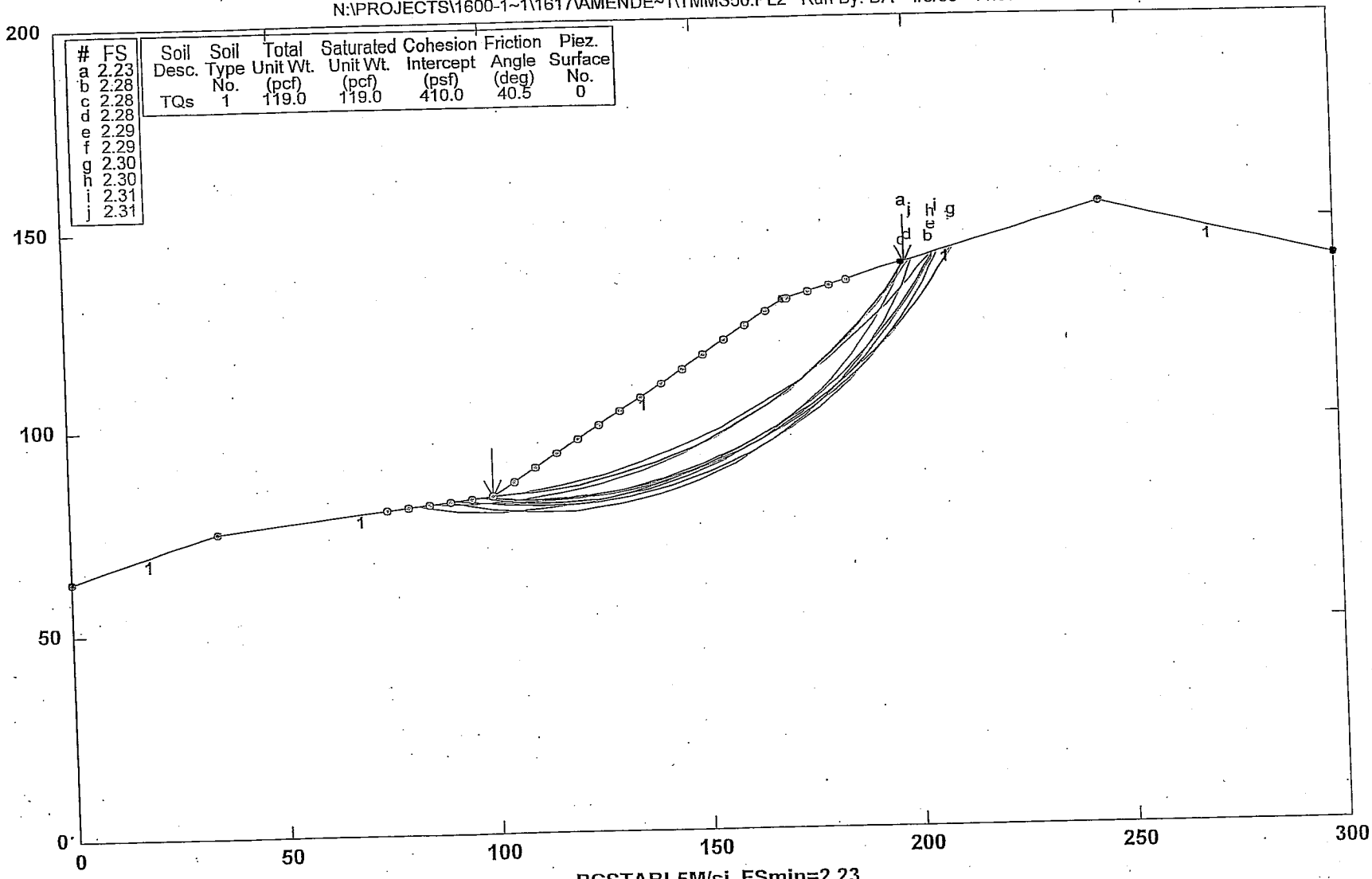
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	151.47	117.29

2	161.37	118.74
3	170.88	121.83
4	179.73	126.48
5	187.67	132.55
6	194.48	139.88
7	199.95	148.25
8	203.93	157.42
9	206.31	167.13
10	206.64	171.68
***	1.437	***

Amended VTT52584 M-M' After 3:1 slope trim upp. area, Static

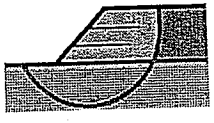
N:\PROJECTS\1600-1~1\1617\AMENDE~1\TMMS50.PL2 Run By: DA 4/3/03 11:05AM



PCSTABL5M/si FSmin=2.23

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

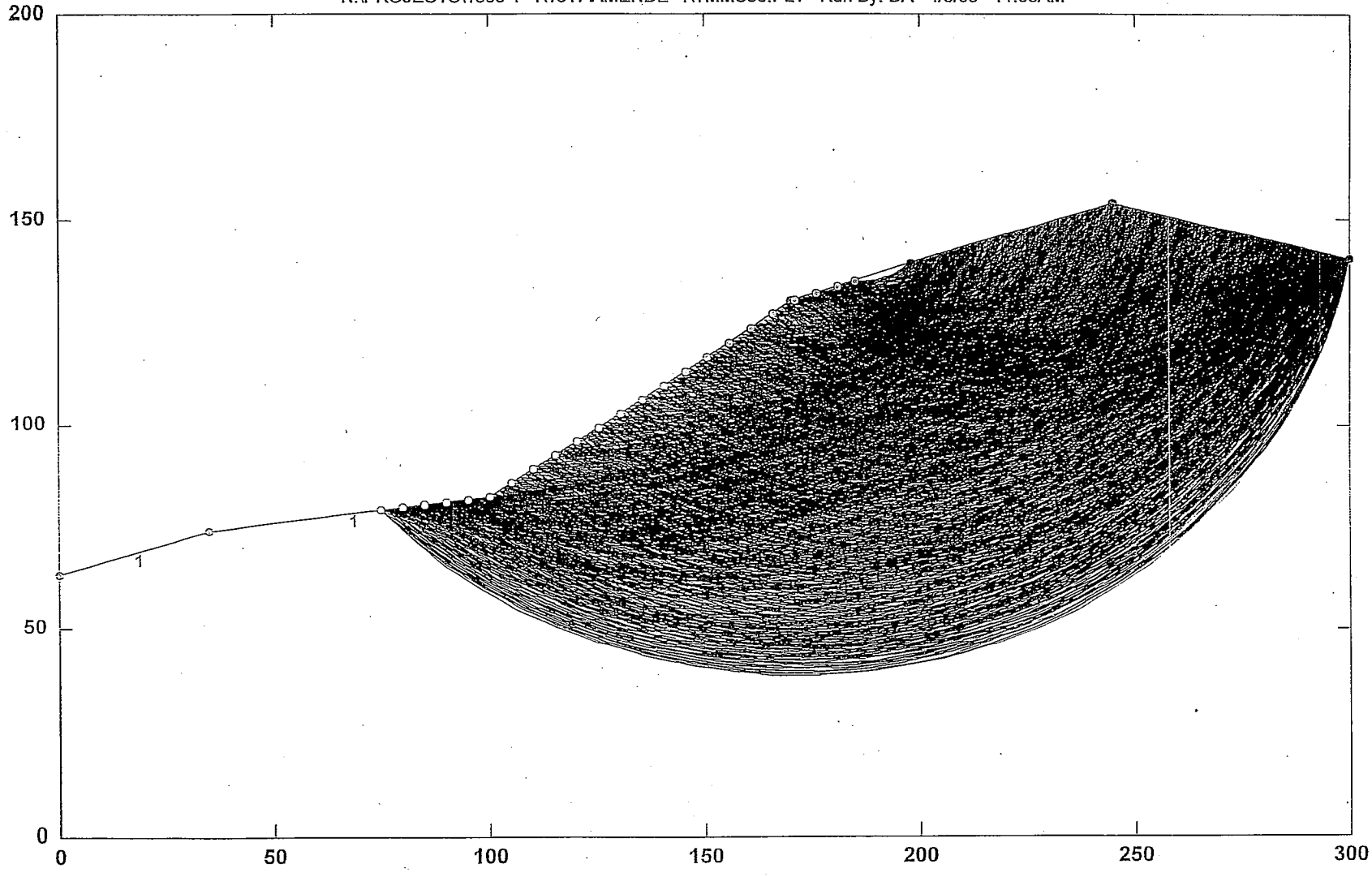
STED



RUN No. - 76

Amended VTT52584 M-M' After 3:1 slope trim upp. area, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TMMS50.PLT Run By: DA 4/3/03 11:05AM



STED

** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/3/03
Time of Run: 11:05AM
Run By: DA
Input Data Filename: N:TMMS50.IN
Output Filename: N:TMMS50.OUT
Unit: ENGLISH
Plotted Output Filename: N:TMMS50.PLT
PROBLEM DESCRIPTION Amended VTT52584 M-M'
After 3:1 slope trim upp. area, Static

BOUNDARY COORDINATES
5 Top Boundaries
5 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	63.00	35.00	74.00	1
2	35.00	74.00	100.00	82.00	1
3	100.00	82.00	170.00	130.00	1
4	170.00	130.00	245.00	154.00	1
5	245.00	154.00	300.00	140.00	1

ISOTROPIC SOIL PARAMETERS
1 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	119.0	119.0	410.0	40.5	.00	.0	0

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
Janbus Empirical Coef. is being used for the case of c & phi both > 0
2200 Trial Surfaces Have Been Generated.
20 Surfaces Initiate From Each Of110 Points Equally Spaced
Along The Ground Surface Between X = 75.00 ft.
and X = 185.00 ft.
Each Surface Terminates Between X = 198.00 ft.
and X = 300.00 ft.
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = .00 ft.
10.00 ft. Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And 10.0 deg.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.
* * Safety Factors Are Calculated By The Modified Janbu Method * *
Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	100.23	82.16
2	110.20	82.89
3	120.08	84.45
4	129.80	86.82
5	139.28	89.99
6	148.47	93.93
7	157.30	98.62
8	165.72	104.03
9	173.65	110.11
10	181.06	116.83
11	187.89	124.14
12	194.08	131.98
13	198.90	139.25

*** 2.229 ***

Individual data on the 13 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	10.0	3621.4	.0	.0	.0	.0	.0	.0	.0
2	9.9	10238.4	.0	.0	.0	.0	.0	.0	.0
3	9.7	15563.7	.0	.0	.0	.0	.0	.0	.0
4	9.5	19500.2	.0	.0	.0	.0	.0	.0	.0
5	9.2	22009.4	.0	.0	.0	.0	.0	.0	.0
6	8.8	23111.3	.0	.0	.0	.0	.0	.0	.0
7	8.4	22883.7	.0	.0	.0	.0	.0	.0	.0
8	4.3	11653.5	.0	.0	.0	.0	.0	.0	.0
9	3.7	9514.8	.0	.0	.0	.0	.0	.0	.0
10	7.4	16647.7	.0	.0	.0	.0	.0	.0	.0
11	6.8	11493.4	.0	.0	.0	.0	.0	.0	.0
12	6.2	6382.8	.0	.0	.0	.0	.0	.0	.0
13	4.8	1639.8	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	97.20	81.66
2	107.13	82.85
3	116.96	84.70
4	126.64	87.19
5	136.14	90.31
6	145.42	94.05
7	154.42	98.39
8	163.13	103.32
9	171.48	108.81
10	179.46	114.84
11	187.02	121.39
12	194.14	128.41
13	200.78	135.89
14	204.86	141.15

*** 2.275 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	97.20	81.66
2	107.12	80.37
3	117.12	80.18
4	127.07	81.10
5	136.87	83.12
6	146.38	86.21
7	155.49	90.33
8	164.09	95.44
9	172.07	101.46
10	179.34	108.33
11	185.80	115.96
12	191.38	124.26
13	196.00	133.13
14	198.30	139.06

*** 2.276 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	86.10	80.29
2	96.10	80.26
3	106.07	81.01
4	115.96	82.52
5	125.69	84.81
6	135.22	87.84
7	144.49	91.60
8	153.43	96.07

9	162.00	101.22
10	170.15	107.02
11	177.82	113.44
12	184.97	120.43
13	191.55	127.96
14	197.53	135.98
15	199.77	139.53

*** 2.283 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	98.21	81.78
2	108.18	80.96
3	118.18	81.11
4	128.11	82.22
5	137.90	84.29
6	147.44	87.29
7	156.64	91.20
8	165.42	95.99
9	173.70	101.59
10	181.40	107.98
11	188.44	115.08
12	194.77	122.82
13	200.32	131.14
14	205.03	139.96
15	205.63	141.40

*** 2.285 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	98.21	81.78
2	108.19	81.18
3	118.19	81.47
4	128.12	82.65
5	137.90	84.72
6	147.46	87.66
7	156.72	91.45
8	165.60	96.04
9	174.03	101.42
10	181.95	107.53
11	189.29	114.32
12	195.99	121.74
13	202.00	129.73
14	207.27	138.23
15	209.48	142.63

*** 2.293 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	91.15	80.91
2	101.13	80.29
3	111.13	80.49
4	121.07	81.50
5	130.91	83.32
6	140.56	85.94
7	149.96	89.34
8	159.06	93.50
9	167.78	98.38
10	176.08	103.96
11	183.89	110.21
12	191.17	117.06
13	197.87	124.49
14	203.93	132.45
15	209.32	140.87
16	210.42	142.93

*** 2.295 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	82.06	79.79
2	91.99	78.55
3	101.98	78.15
4	111.97	78.61
5	121.88	79.92
6	131.65	82.07
7	141.20	85.04
8	150.46	88.82
9	159.36	93.37
10	167.84	98.66
11	175.85	104.66
12	183.31	111.32
13	190.17	118.59
14	196.39	126.42
15	201.93	134.75
16	205.55	141.38

*** 2.303 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	93.17	81.16
2	103.07	79.76
3	113.06	79.33
4	123.04	79.87
5	132.93	81.39
6	142.62	83.86
7	152.02	87.27
8	161.04	91.58
9	169.60	96.74
10	177.62	102.72
11	185.02	109.45
12	191.72	116.87
13	197.67	124.91
14	202.81	133.49
15	206.72	141.75

*** 2.306 ***

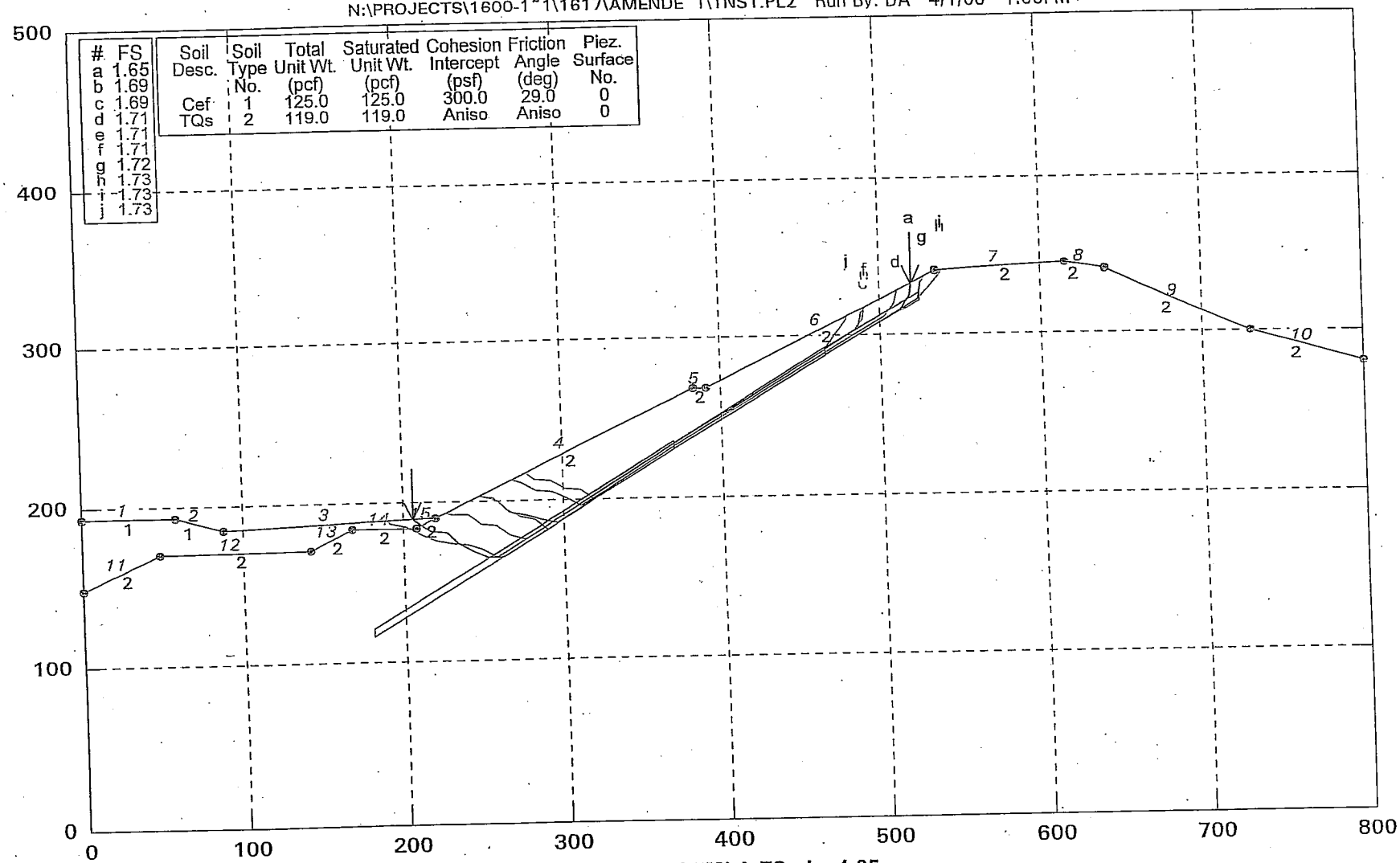
Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	90.14	80.79
2	99.95	78.83
3	109.91	77.94
4	119.90	78.13
5	129.82	79.39
6	139.55	81.71
7	148.97	85.06
8	157.98	89.41
9	166.47	94.69
10	174.34	100.86
11	181.50	107.84
12	187.87	115.55
13	193.38	123.90
14	197.95	132.79
15	200.66	139.81

*** 2.307 ***

Amended VTT52584 N-N' Bed plane search 150' high nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TNS1.PL2 Run By: DA 4/1/03 1:38PM



#	FS
a	1.65
b	1.69
c	1.69
d	1.71
e	1.71
f	1.71
g	1.72
h	1.73
i	1.73
j	1.73

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0

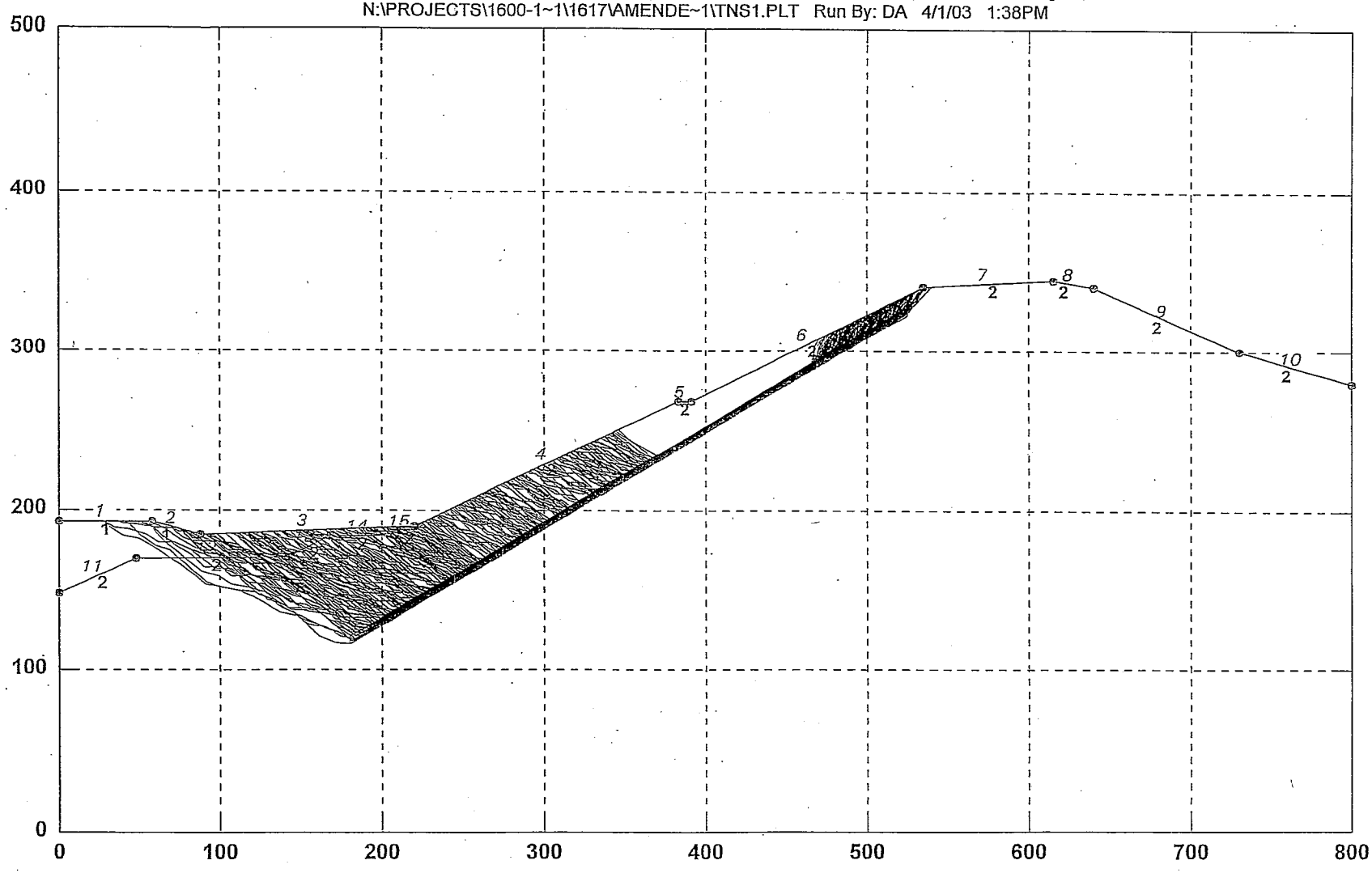
PCSTABL5M/si FSmin=1.65

Safety Factors Are Calculated By The Modified Janbu Method

RUN No. -77

Amended VTT52584 N-N' Bed plane search 150' high nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TNS1.PLT Run By: DA 4/1/03 1:38PM



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 1:38PM
Run By: DA
Input Data Filename: N:tns1.in
Output Filename: N:tns1.OUT
Unit: ENGLISH
Plotted Output Filename: N:tns1.PLT
PROBLEM DESCRIPTION Amended VTT52584 N-N' Bed plane search
150' high nat. slope, Static

BOUNDARY COORDINATES
10 Top Boundaries
15 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	193.00	58.00	193.00	1
2	58.00	193.00	88.00	185.00	1
3	88.00	185.00	220.00	190.00	1
4	220.00	190.00	383.00	268.00	2
5	383.00	268.00	391.00	268.00	2
6	391.00	268.00	535.00	340.00	2
7	535.00	340.00	615.00	344.00	2
8	615.00	344.00	640.00	340.00	2
9	640.00	340.00	730.00	300.00	2
10	730.00	300.00	800.00	280.00	2
11	.00	148.00	48.00	170.00	2
12	48.00	170.00	142.00	171.00	2
13	142.00	171.00	168.00	184.00	2
14	168.00	184.00	208.00	184.00	2
15	208.00	184.00	220.00	190.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	31.0	410.0	40.5
2	33.0	347.0	22.0
3	90.0	410.0	40.5

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	180.00	118.00	370.00	232.00	5.00
2	465.00	290.00	525.00	325.00	5.00

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

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

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	206.49	189.49
2	208.35	187.64
3	216.73	182.18
4	226.61	180.66
5	234.19	174.14
6	242.81	169.07
7	251.91	164.92
8	261.91	164.69
9	513.22	316.37
10	518.68	324.75
11	519.59	332.30

*** 1.654 ***

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	1.9	223.6	.0	.0	.0	.0	.0	.0	.0
2	3.0	1111.6	.0	.0	.0	.0	.0	.0	.0
3	5.4	3825.0	.0	.0	.0	.0	.0	.0	.0
4	3.3	3134.6	.0	.0	.0	.0	.0	.0	.0
5	6.6	8193.1	.0	.0	.0	.0	.0	.0	.0
6	7.6	15849.8	.0	.0	.0	.0	.0	.0	.0
7	8.6	27951.4	.0	.0	.0	.0	.0	.0	.0
8	9.1	39098.3	.0	.0	.0	.0	.0	.0	.0
9	10.0	50985.0	.0	.0	.0	.0	.0	.0	.0
10	121.1	544643.8	.0	.0	.0	.0	.0	.0	.0
11	8.0	26476.1	.0	.0	.0	.0	.0	.0	.0
12	122.2	277322.0	.0	.0	.0	.0	.0	.0	.0
13	5.5	6447.6	.0	.0	.0	.0	.0	.0	.0
14	.9	384.8	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	189.49	188.84
2	192.12	186.59
3	201.95	184.74
4	210.76	180.01
5	219.92	176.00
6	229.61	173.52
7	239.60	173.04
8	248.97	169.56
9	257.83	164.90
10	482.87	302.35
11	489.15	310.13
12	490.26	317.63

*** 1.693 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	189.49	188.84
2	192.12	186.59
3	201.95	184.74
4	210.76	180.01
5	219.92	176.00
6	229.61	173.52
7	239.60	173.04
8	248.97	169.56
9	257.83	164.90
10	482.87	302.35
11	489.15	310.13
12	490.26	317.63

*** 1.693 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	268.48	213.20
2	274.42	211.19
3	283.01	206.08
4	292.99	205.38
5	301.99	201.03
6	310.80	196.29
7	503.11	311.95
8	509.29	319.81
9	510.69	327.84

*** 1.709 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.25	203.52
2	249.36	202.76
3	258.97	199.99
4	266.44	193.34
5	276.23	191.32
6	285.72	188.17
7	295.54	186.25
8	486.46	304.46
9	487.80	314.37
10	491.10	318.05

*** 1.713 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.25	203.52
2	249.36	202.76
3	258.97	199.99
4	266.44	193.34
5	276.23	191.32
6	285.72	188.17
7	295.54	186.25
8	486.46	304.46
9	487.80	314.37
10	491.10	318.05

*** 1.713 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	247.19	203.01
2	256.27	201.63
3	264.11	195.43
4	272.66	190.24
5	282.43	188.09
6	290.34	181.98
7	524.19	322.98
8	525.93	332.83
9	527.55	336.27

*** 1.724 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	277.35	217.44
2	282.48	212.65
3	292.46	212.09
4	301.24	207.30
5	311.11	205.70
6	319.47	200.21
7	522.61	322.37
8	529.66	329.46

9	536.72	336.55
10	539.02	340.20

*** 1.725 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	277.35	217.44
2	282.48	212.65
3	292.46	212.09
4	301.24	207.30
5	311.11	205.70
6	319.47	200.21
7	522.61	322.37
8	529.66	329.46
9	536.72	336.55
10	539.02	340.20

*** 1.725 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	226.63	193.17
2	229.89	192.41
3	239.87	191.83
4	248.31	186.46
5	258.21	185.08
6	265.88	178.66
7	275.59	176.29
8	466.33	292.87
9	472.10	301.04
10	478.37	308.83
11	480.30	312.65

*** 1.734 ***

Amended VTT52584 N-N' Bed plane search 150' high nat. slope,

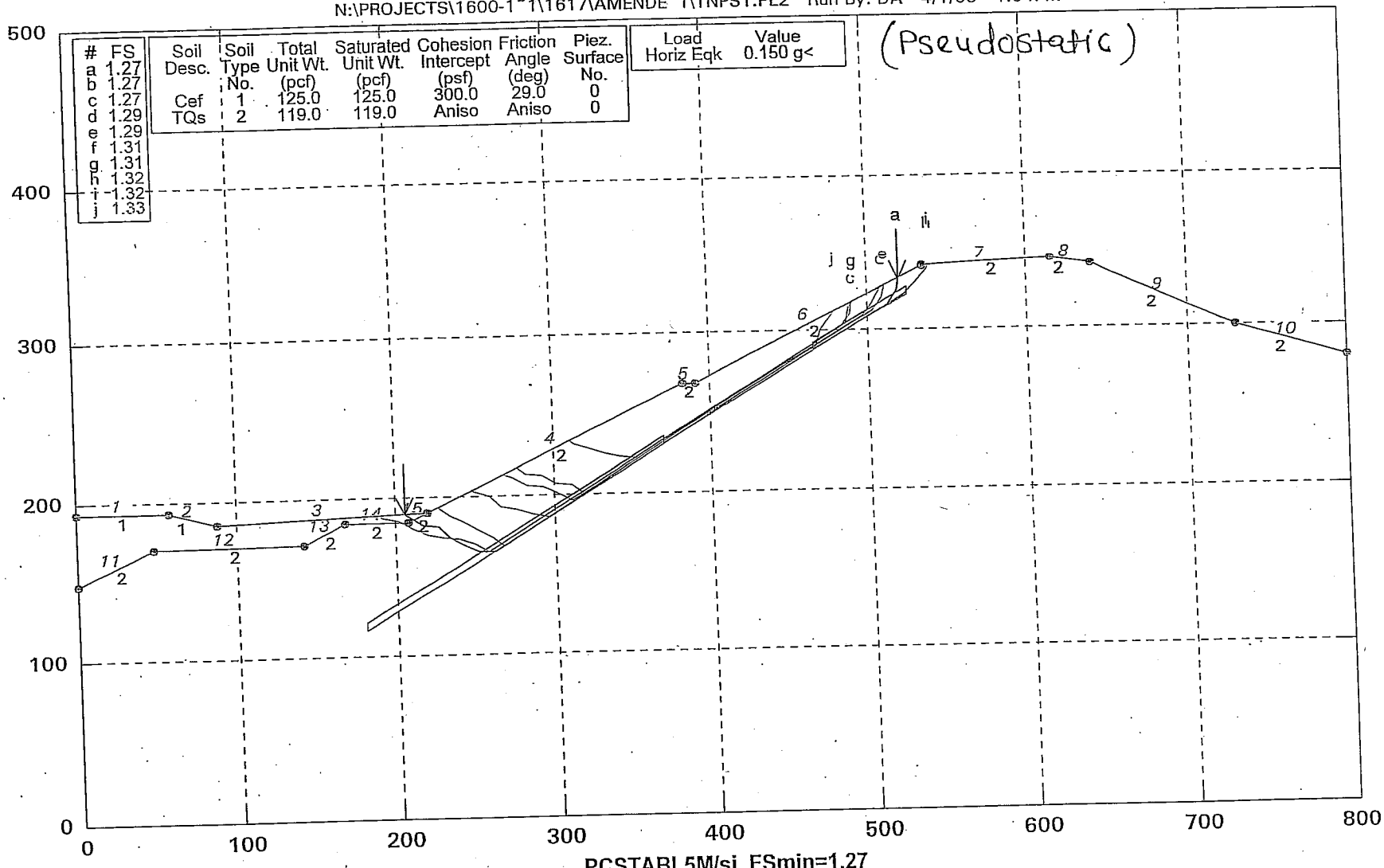
N:\PROJECTS\1600-1~1\1617\AMENDE~1\TNPS1.PL2 Run By: DA 4/1/03 1:54PM

(Pseudostatic)

#	FS
a	1.27
b	1.27
c	1.27
d	1.29
e	1.29
f	1.31
g	1.31
h	1.32
i	1.32
j	1.33

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	0
TQs	2	119.0	119.0	Aniso	Aniso	0

Load	Value
Horiz Eqk	0.150 g<



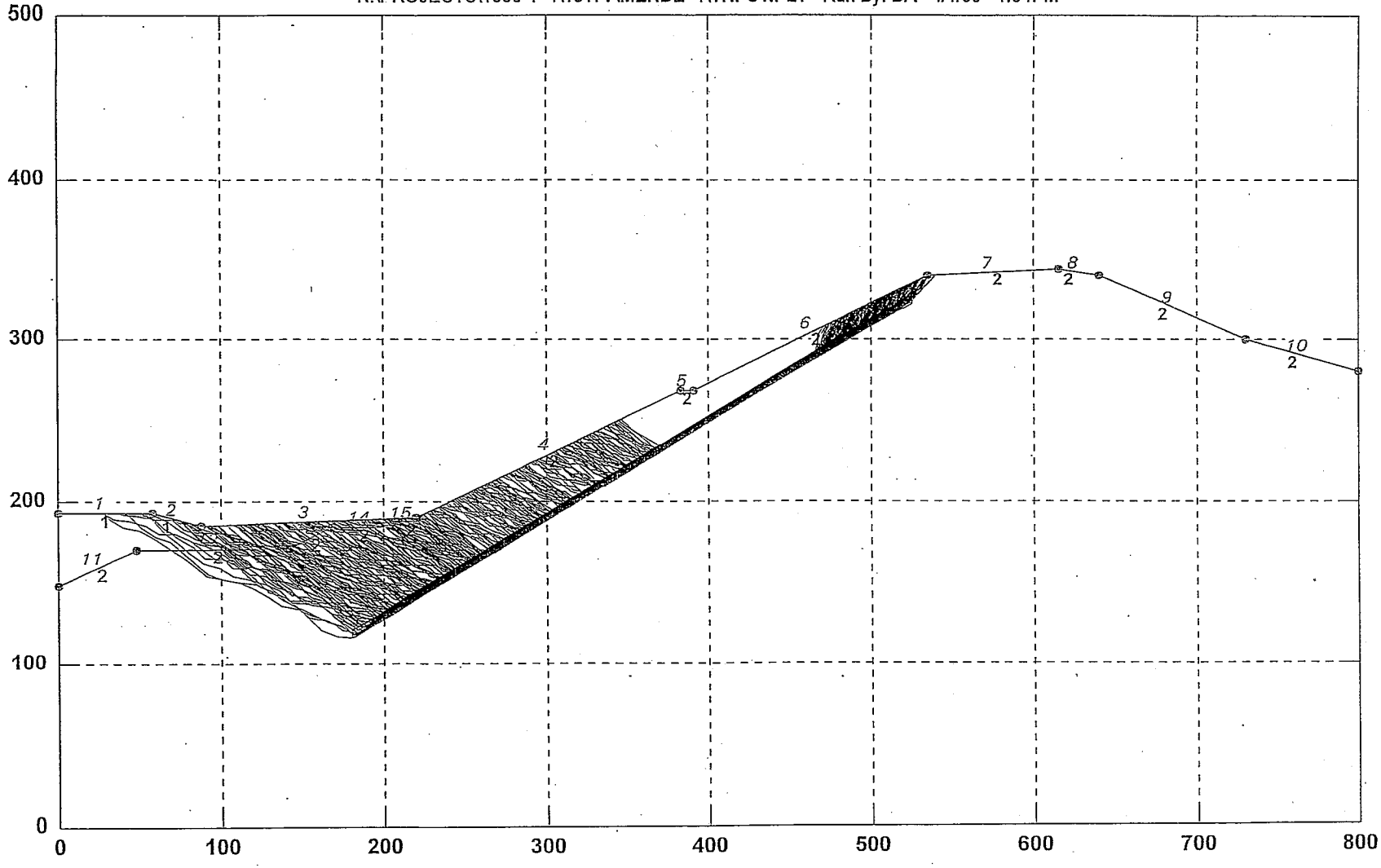
PCSTABL5M/si FSmin=1.27

Safety Factors Are Calculated By The Modified Janbu Method

RUN No. - 78

Amended VTT52584 N-N' Bed plane search 150' high nat. slope,

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TNPS1.PLT Run By: DA 4/1/03 1:54PM



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 1:54PM
Run By: DA
Input Data Filename: N:TNPS1.IN
Output Filename: N:TNPS1.OUT
Unit: ENGLISH
Plotted Output Filename: N:TNPS1.PLT
PROBLEM DESCRIPTION Amended VTT52584 N-N' Bed plane search
150' high nat. slope, Psuedostatic

BOUNDARY COORDINATES
10 Top Boundaries
15 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	193.00	58.00	193.00	1
2	58.00	193.00	88.00	185.00	1
3	88.00	185.00	220.00	190.00	1
4	220.00	190.00	383.00	268.00	2
5	383.00	268.00	391.00	268.00	2
6	391.00	268.00	535.00	340.00	2
7	535.00	340.00	615.00	344.00	2
8	615.00	344.00	640.00	340.00	2
9	640.00	340.00	730.00	300.00	2
10	730.00	300.00	800.00	280.00	2
11	.00	148.00	48.00	170.00	2
12	48.00	170.00	142.00	171.00	2
13	142.00	171.00	168.00	184.00	2
14	168.00	184.00	208.00	184.00	2
15	208.00	184.00	220.00	190.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	31.0	410.0	40.5
2	33.0	347.0	22.0
3	90.0	410.0	40.5

A Horizontal Earthquake Loading Coefficient
Of .150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of .000 Has Been Assigned
Cavitation Pressure = .0 (psf)
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
500 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 10.0

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

1	180.00	118.00	370.00	232.00	5.00
2	465.00	290.00	525.00	325.00	5.00

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

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

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	206.49	189.49
2	208.35	187.64
3	216.73	182.18
4	226.61	180.66
5	234.19	174.14
6	242.81	169.07
7	251.91	164.92
8	261.91	164.69
9	513.22	316.37
10	518.68	324.75
11	519.59	332.30

*** 1.271 ***

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	1.9	223.6	.0	.0	.0	.0	33.5	.0	.0
2	3.0	1111.6	.0	.0	.0	.0	166.7	.0	.0
3	5.4	3825.0	.0	.0	.0	.0	573.7	.0	.0
4	3.3	3134.6	.0	.0	.0	.0	470.2	.0	.0
5	6.6	8193.1	.0	.0	.0	.0	1229.0	.0	.0
6	7.6	15849.8	.0	.0	.0	.0	2377.5	.0	.0
7	8.6	27951.4	.0	.0	.0	.0	4192.7	.0	.0
8	9.1	39098.3	.0	.0	.0	.0	5864.7	.0	.0
9	10.0	50985.0	.0	.0	.0	.0	7647.8	.0	.0
10	121.1	544643.8	.0	.0	.0	.0	81696.6	.0	.0
11	8.0	26476.1	.0	.0	.0	.0	3971.4	.0	.0
12	122.2	277322.0	.0	.0	.0	.0	41598.3	.0	.0
13	5.5	6447.6	.0	.0	.0	.0	967.1	.0	.0
14	.9	384.8	.0	.0	.0	.0	57.7	.0	.0

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	189.49	188.84
2	192.12	186.59
3	201.95	184.74
4	210.76	180.01
5	219.92	176.00
6	229.61	173.52
7	239.60	173.04
8	248.97	169.56
9	257.83	164.90
10	482.87	302.35
11	489.15	310.13
12	490.26	317.63

*** 1.272 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	189.49	188.84
2	192.12	186.59
3	201.95	184.74
4	210.76	180.01
5	219.92	176.00
6	229.61	173.52
7	239.60	173.04

8	248.97	169.56
9	257.83	164.90
10	482.87	302.35
11	489.15	310.13
12	490.26	317.63

*** 1.272 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	309.95	233.04
2	313.21	231.25
3	322.64	227.94
4	332.18	224.94
5	342.02	223.16
6	351.94	221.89
7	496.77	309.15
8	503.14	316.86
9	508.10	325.54
10	509.13	327.07

*** 1.293 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	268.48	213.20
2	274.42	211.19
3	283.01	206.08
4	292.99	205.38
5	301.99	201.03
6	310.80	196.29
7	503.11	311.95
8	509.29	319.81
9	510.69	327.84

*** 1.295 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.25	203.52
2	249.36	202.76
3	258.97	199.99
4	266.44	193.34
5	276.23	191.32
6	285.72	188.17
7	295.54	186.25
8	486.46	304.46
9	487.80	314.37
10	491.10	318.05

*** 1.306 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	248.25	203.52
2	249.36	202.76
3	258.97	199.99
4	266.44	193.34
5	276.23	191.32
6	285.72	188.17
7	295.54	186.25
8	486.46	304.46
9	487.80	314.37
10	491.10	318.05

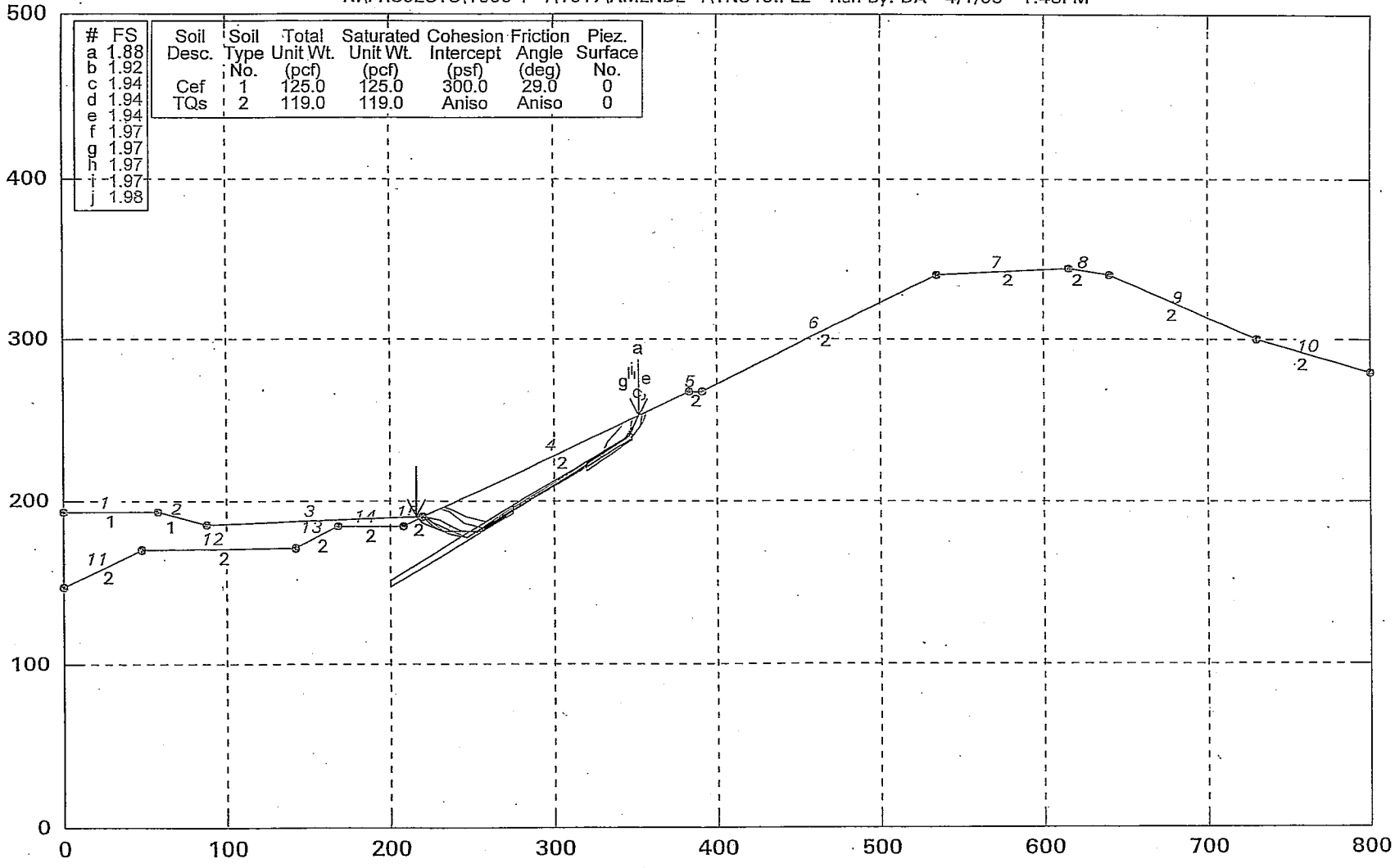
*** 1.306 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	277.35	217.44
2	282.48	212.65

Amended VTT52584 N-N' Bed plane search 150' high nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TNS40.PL2 Run By: DA 4/1/03 1:48PM



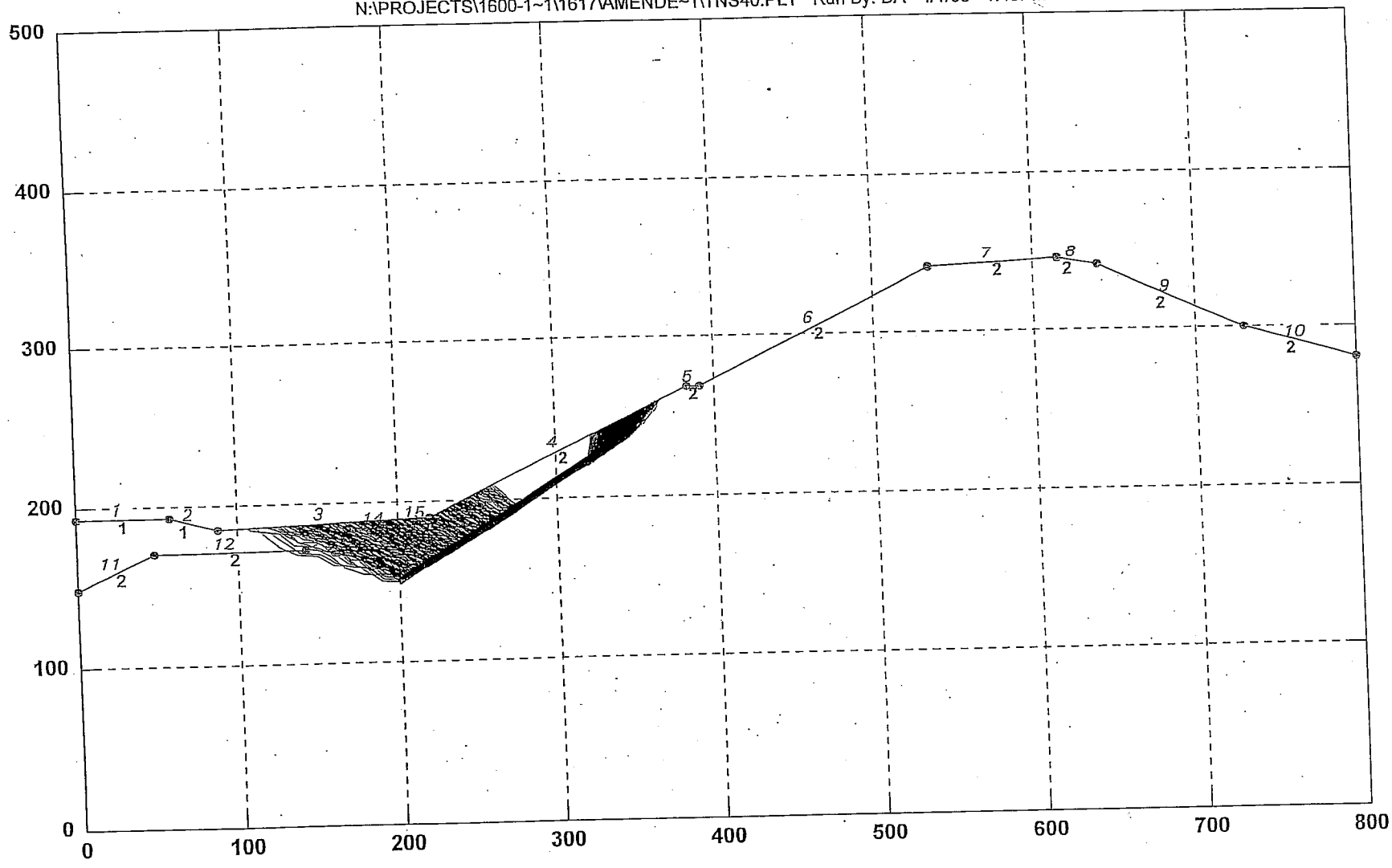
PCSTABL5M/si FSmin=1.88

Safety Factors Are Calculated By The Modified Janbu Method

RUN NO. - 79

Amended VTT52584 N-N' Bed plane search 150' high nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TNS40.PLT Run By: DA 4/1/03 1:48PM



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 1:48PM
Run By: DA
Input Data Filename: N:TNS40.IN
Output Filename: N:TNS40.OUT
Unit: ENGLISH
Plotted Output Filename: N:TNS40.PLT
PROBLEM DESCRIPTION Amended VTT52584 N-N' Bed plane search
150' high nat. slope, Static

BOUNDARY COORDINATES
10 Top Boundaries
15 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	193.00	58.00	193.00	1
2	58.00	193.00	88.00	185.00	1
3	88.00	185.00	220.00	190.00	1
4	220.00	190.00	383.00	268.00	2
5	383.00	268.00	391.00	268.00	2
6	391.00	268.00	535.00	340.00	2
7	535.00	340.00	615.00	344.00	2
8	615.00	344.00	640.00	340.00	2
9	640.00	340.00	730.00	300.00	2
10	730.00	300.00	800.00	280.00	2
11	.00	148.00	48.00	170.00	2
12	48.00	170.00	142.00	171.00	2
13	142.00	171.00	168.00	184.00	2
14	168.00	184.00	208.00	184.00	2
15	208.00	184.00	220.00	190.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	31.0	410.0	40.5
2	33.0	347.0	22.0
3	90.0	410.0	40.5

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
500 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 12.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	200.00	150.00	275.00	195.00	5.00
2	320.00	222.00	348.00	240.00	5.00

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

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

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	216.13	189.85
2	220.38	185.72
3	231.51	181.25
4	243.51	181.22
5	255.51	181.02
6	346.45	239.62
7	350.85	250.79
8	351.64	252.99

*** 1.885 ***

Individual data on the 9 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	1.2	93.4	.0	.0	.0	.0	.0	.0	.0
2	2.7	822.9	.0	.0	.0	.0	.0	.0	.0
3	.4	187.8	.0	.0	.0	.0	.0	.0	.0
4	11.1	12402.4	.0	.0	.0	.0	.0	.0	.0
5	12.0	24480.7	.0	.0	.0	.0	.0	.0	.0
6	12.0	32843.9	.0	.0	.0	.0	.0	.0	.0
7	90.9	199460.5	.0	.0	.0	.0	.0	.0	.0
8	4.4	3327.7	.0	.0	.0	.0	.0	.0	.0
9	.8	85.3	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	221.42	190.68
2	224.91	187.25
3	235.45	181.51
4	246.61	177.11
5	345.87	237.65
6	352.92	247.36
7	353.60	253.93

*** 1.919 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	219.71	189.99
2	225.13	185.25
3	235.51	179.23
4	247.35	177.24
5	339.58	235.57
6	347.96	244.15
7	350.96	252.67

*** 1.939 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	230.40	194.98
2	235.72	192.71
3	245.38	185.59
4	257.05	182.81
5	347.25	237.76
6	353.50	248.00
7	357.25	255.68

*** 1.940 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	230.40	194.98
2	235.72	192.71
3	245.38	185.59

4	257.05	182.81
5	347.25	237.76
6	353.50	248.00
7	357.25	255.68

*** 1.940 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	220.44	190.21
2	230.45	187.93
3	241.01	182.21
4	252.80	180.01
5	327.72	225.82
6	333.08	236.56
7	341.02	245.55
8	342.82	248.77

*** 1.966 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	220.44	190.21
2	230.45	187.93
3	241.01	182.21
4	252.80	180.01
5	327.72	225.82
6	333.08	236.56
7	341.02	245.55
8	342.82	248.77

*** 1.966 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	232.12	195.80
2	235.68	195.40
3	246.46	190.14
4	257.97	186.73
5	346.39	240.91
6	348.07	251.28

*** 1.974 ***

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	232.12	195.80
2	235.68	195.40
3	246.46	190.14
4	257.97	186.73
5	346.39	240.91
6	348.07	251.28

*** 1.974 ***

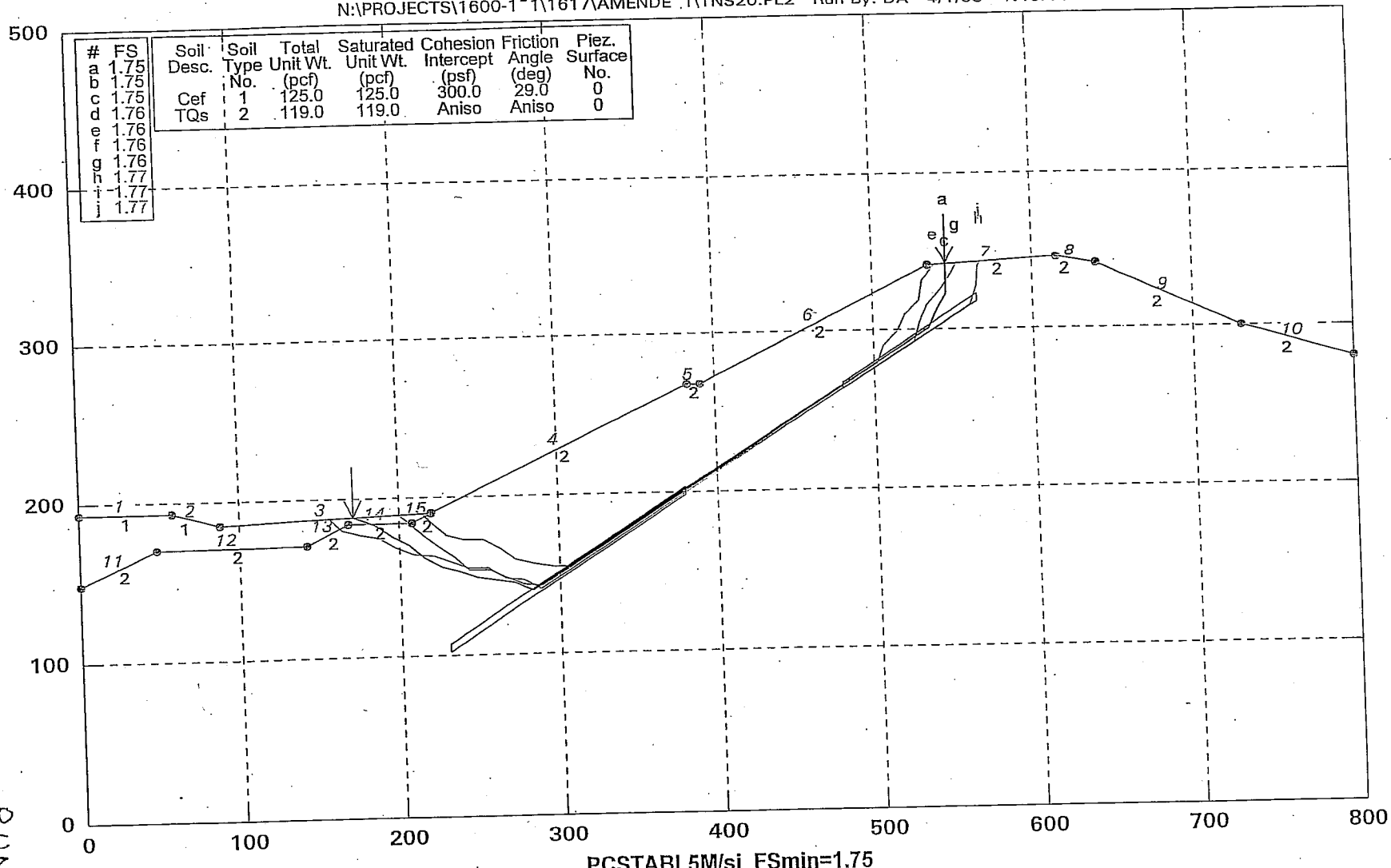
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	219.92	190.00
2	225.01	187.15
3	234.37	179.64
4	246.14	177.27
5	342.95	239.25
6	349.55	249.28
7	351.58	252.97

*** 1.978 ***

Amended VTT52584 N-N' Bed plane search 150' high nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TNS20.PL2 Run By: DA 4/1/03 1:40PM



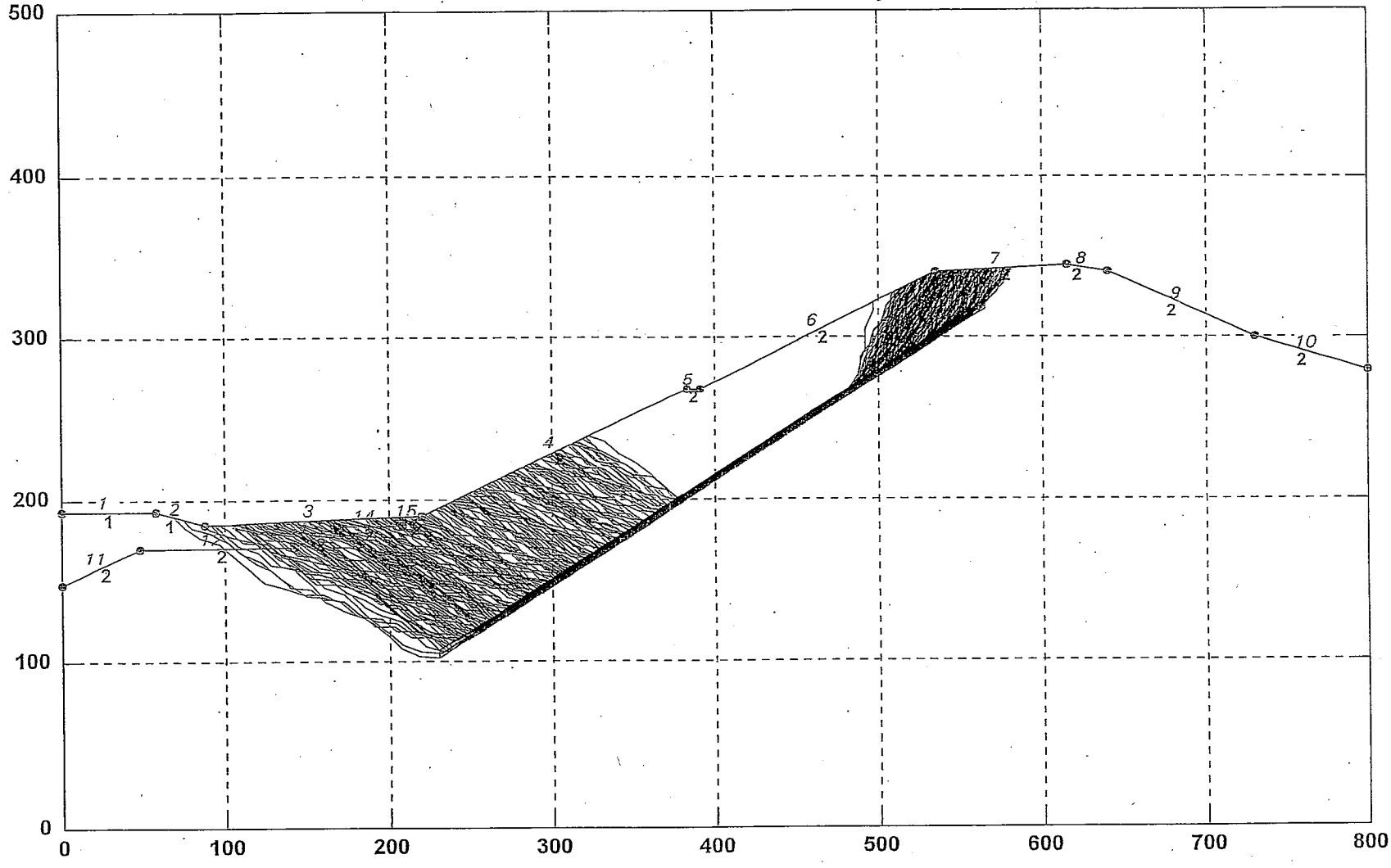
PCSTABL5M/si FSmin=1.75

Safety Factors Are Calculated By The Modified Janbu Method

RUN NO. - 80

Amended VTT52584 N-N' Bed plane search 150' high nat. slope, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TNS20.PLT Run By: DA 4/1/03 1:40PM



** PCSTABL5M **
by
Purdue University
--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 4/1/03
Time of Run: 1:40PM
Run By: DA
Input Data Filename: N:TNS20.IN
Output Filename: N:TNS20.OUT
Unit: ENGLISH
Plotted Output Filename: N:TNS20.PLT
PROBLEM DESCRIPTION Amended VTT52584 N-N' Bed plane search
150' high nat. slope, Static

BOUNDARY COORDINATES
10 Top Boundaries
15 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	193.00	58.00	193.00	1
2	58.00	193.00	88.00	185.00	1
3	88.00	185.00	220.00	190.00	1
4	220.00	190.00	383.00	268.00	2
5	383.00	268.00	391.00	268.00	2
6	391.00	268.00	535.00	340.00	2
7	535.00	340.00	615.00	344.00	2
8	615.00	344.00	640.00	340.00	2
9	640.00	340.00	730.00	300.00	2
10	730.00	300.00	800.00	280.00	2
11	.00	148.00	48.00	170.00	2
12	48.00	170.00	142.00	171.00	2
13	142.00	171.00	168.00	184.00	2
14	168.00	184.00	208.00	184.00	2
15	208.00	184.00	220.00	190.00	2

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	125.0	125.0	300.0	29.0	.00	.0	0
2	119.0	119.0	410.0	40.5	.00	.0	0

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

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	31.0	410.0	40.5
2	33.0	347.0	22.0
3	90.0	410.0	40.5

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
500 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 12.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	230.00	104.00	380.00	200.00	5.00
2	480.00	265.00	565.00	320.00	5.00

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

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

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.16	188.15
2	174.33	187.23
3	185.39	182.58
4	195.35	175.89
5	205.77	169.93
6	215.02	162.28
7	225.52	156.49
8	236.85	152.52
9	248.30	148.92
10	260.10	146.78
11	272.01	145.26
12	282.65	139.72
13	534.86	300.65
14	539.79	311.59
15	545.60	322.09
16	545.99	334.08
17	546.14	340.56

*** 1.752 ***

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	3.2	206.7	.0	.0	.0	.0	.0	.0	.0
2	7.7	2691.8	.0	.0	.0	.0	.0	.0	.0
3	3.4	2240.7	.0	.0	.0	.0	.0	.0	.0
4	10.0	11721.7	.0	.0	.0	.0	.0	.0	.0
5	10.4	20605.6	.0	.0	.0	.0	.0	.0	.0
6	2.2	5508.3	.0	.0	.0	.0	.0	.0	.0
7	7.0	20620.3	.0	.0	.0	.0	.0	.0	.0
8	5.0	17223.3	.0	.0	.0	.0	.0	.0	.0
9	5.5	21900.7	.0	.0	.0	.0	.0	.0	.0
10	11.3	55049.0	.0	.0	.0	.0	.0	.0	.0
11	11.4	68230.0	.0	.0	.0	.0	.0	.0	.0
12	11.8	82229.9	.0	.0	.0	.0	.0	.0	.0
13	11.9	93513.8	.0	.0	.0	.0	.0	.0	.0
14	10.6	94917.4	.0	.0	.0	.0	.0	.0	.0
15	100.3	862819.5	.0	.0	.0	.0	.0	.0	.0
16	8.0	58736.4	.0	.0	.0	.0	.0	.0	.0
17	143.9	842548.1	.0	.0	.0	.0	.0	.0	.0
18	.1	638.6	.0	.0	.0	.0	.0	.0	.0
19	4.8	19309.2	.0	.0	.0	.0	.0	.0	.0
20	5.8	16279.6	.0	.0	.0	.0	.0	.0	.0
21	.4	575.4	.0	.0	.0	.0	.0	.0	.0
22	.1	57.2	.0	.0	.0	.0	.0	.0	.0

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.16	188.15
2	174.33	187.23
3	185.39	182.58
4	195.35	175.89
5	205.77	169.93
6	215.02	162.28
7	225.52	156.49
8	236.85	152.52
9	248.30	148.92
10	260.10	146.78
11	272.01	145.26
12	282.65	139.72
13	534.86	300.65
14	539.79	311.59

15	545.60	322.09
16	545.99	334.08
17	546.14	340.56

*** 1.752 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	171.16	188.15
2	174.33	187.23
3	185.39	182.58
4	195.35	175.89
5	205.77	169.93
6	215.02	162.28
7	225.52	156.49
8	236.85	152.52
9	248.30	148.92
10	260.10	146.78
11	272.01	145.26
12	282.65	139.72
13	534.86	300.65
14	539.79	311.59
15	545.60	322.09
16	545.99	334.08
17	546.14	340.56

*** 1.752 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	213.70	189.76
2	219.74	183.73
3	228.65	175.69
4	240.42	173.37
5	252.42	173.03
6	262.83	167.06
7	272.50	159.96
8	284.11	156.92
9	295.99	155.29
10	307.99	155.20
11	502.07	278.89
12	506.41	290.08
13	514.75	298.71
14	520.36	309.32
15	528.80	317.84
16	530.68	329.69
17	537.97	339.23
18	538.82	340.19

*** 1.757 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	213.70	189.76
2	219.74	183.73
3	228.65	175.69
4	240.42	173.37
5	252.42	173.03
6	262.83	167.06
7	272.50	159.96
8	284.11	156.92
9	295.99	155.29
10	307.99	155.20
11	502.07	278.89
12	506.41	290.08
13	514.75	298.71
14	520.36	309.32
15	528.80	317.84
16	530.68	329.69

17	537.97	339.23
18	538.82	340.19

*** 1.757 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	200.34	189.26
2	206.06	184.18
3	214.58	175.73
4	224.46	168.92
5	234.04	161.69
6	243.31	154.07
7	255.30	153.70
8	266.22	148.71
9	277.07	143.59
10	289.06	143.12
11	525.71	292.69
12	529.27	304.15
13	533.81	315.25
14	542.15	323.89
15	548.82	333.86
16	553.45	340.92

*** 1.760 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	200.34	189.26
2	206.06	184.18
3	214.58	175.73
4	224.46	168.92
5	234.04	161.69
6	243.31	154.07
7	255.30	153.70
8	266.22	148.71
9	277.07	143.59
10	289.06	143.12
11	525.71	292.69
12	529.27	304.15
13	533.81	315.25
14	542.15	323.89
15	548.82	333.86
16	553.45	340.92

*** 1.760 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	155.85	187.57
2	163.78	179.75
3	175.46	177.00
4	187.29	174.98
5	197.50	168.68
6	208.71	164.40
7	220.61	162.87
8	232.11	159.42
9	243.34	155.19
10	255.33	154.73
11	265.50	148.37
12	277.44	147.18
13	287.96	141.40
14	561.28	315.48
15	565.01	326.89
16	565.70	338.87
17	568.49	341.67

*** 1.769 ***

Failure Surface Specified By 17 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	155.85	187.57
2	163.78	179.75
3	175.46	177.00
4	187.29	174.98
5	197.50	168.68
6	208.71	164.40
7	220.61	162.87
8	232.11	159.42
9	243.34	155.19
10	255.33	154.73
11	265.50	148.37
12	277.44	147.18
13	287.96	141.40
14	561.28	315.48
15	565.01	326.89
16	565.70	338.87
17	568.49	341.67

*** 1.769 ***

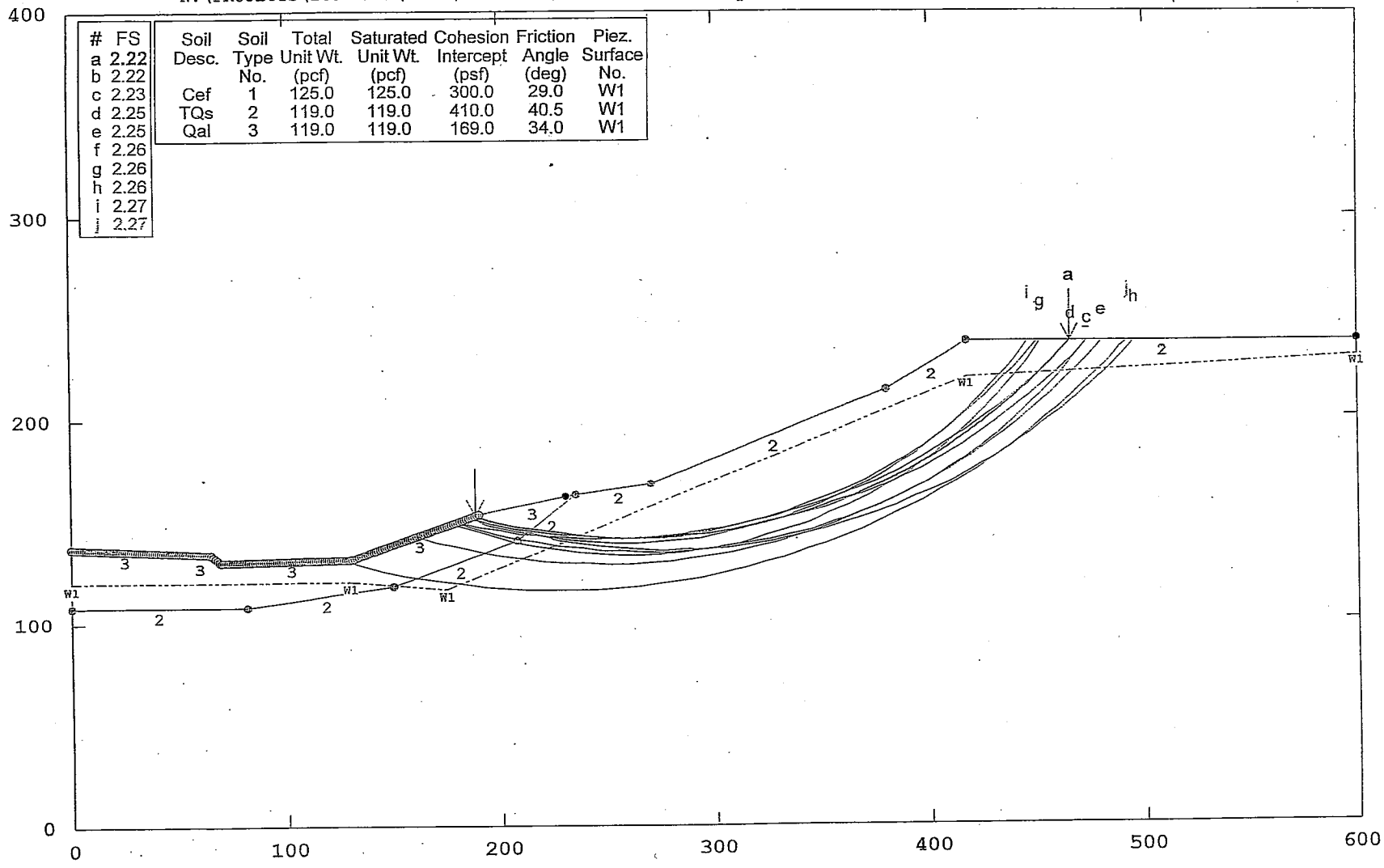
Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	155.85	187.57
2	163.78	179.75
3	175.46	177.00
4	187.29	174.98
5	197.50	168.68
6	208.71	164.40
7	220.61	162.87
8	232.11	159.42
9	243.34	155.19
10	255.33	154.73
11	265.50	148.37
12	277.44	147.18
13	287.96	141.40
14	561.28	315.48
15	565.01	326.89
16	565.70	338.87
17	568.49	341.67

*** 1.769 ***

Amended VTT52584 O-O', Natural Slope Circular, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TOS1A.PL2 Run By: John Smith, XYZ Company 4/15/2003 8:48AM



#	FS
a	2.22
b	2.22
c	2.23
d	2.25
e	2.25
f	2.26
g	2.26
h	2.26
i	2.27
j	2.27

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	125.0	300.0	29.0	W1
TQs	2	119.0	119.0	410.0	40.5	W1
Qal	3	119.0	119.0	169.0	34.0	W1

GSTABL7 FSmin=2.22

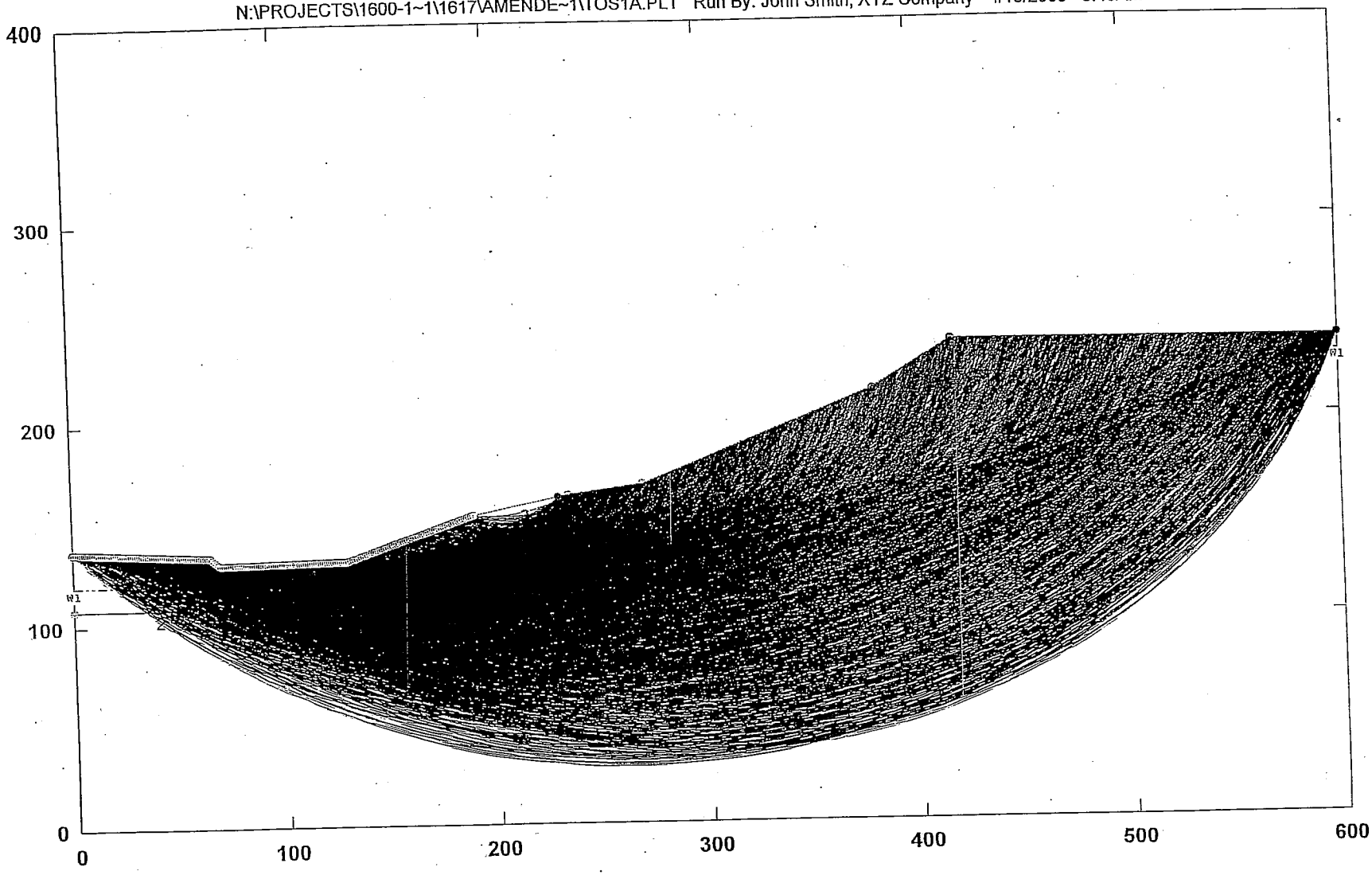
Safety Factors Are Calculated By The Modified Bishop Method

STED

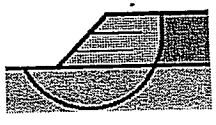
RUN NO. 1 - 8

Amended VTT52584 O-O', Natural Slope Circular, Static

N:\PROJECTS\1600-1~1\1617\AMENDE~1\TOS1A.PLT Run By: John Smith, XYZ Company 4/15/2003 8:48AM



STED



```
                    ***  GSTABL7  ***
        ** GSTABL7 by Garry H. Gregory, P.E. **
** Version 1.0, January 1996; Version 1.16, May 2000 **
              --Slope Stability Analysis--
            Simplified Janbu, Modified Bishop
              or Spencer`s Method of Slices
     (Based on STABL6-1986, by Purdue University)
Run Date:                    4/15/2003
Time of Run:                 8:48AM
Run By:                      John Smith, XYZ Company
Input Data Filename:         N:TOS1A.
Output Filename:             N:TOS1A.OUT
Unit System:                 English
Plotted Output Filename:     N:TOS1A.PLT
PROBLEM DESCRIPTION   Amended VTT52584 O-O', Natural Slope
                      Circular, Static
BOUNDARY COORDINATES
    9 Top   Boundaries
   13 Total Boundaries
Boundary     X-Left      Y-Left     X-Right     Y-Right     Soil Type
   No.        (ft)        (ft)        (ft)        (ft)     Below Bnd
    1         0.00      137.00       65.00      134.00         3
    2        65.00      134.00       70.00      130.00         3
    3        70.00      130.00      130.00      131.00         3
    4       130.00      131.00      190.00      153.00         3
    5       190.00      153.00      235.00      163.00         3
    6       235.00      163.00      270.00      168.00         2
    7       270.00      168.00      380.00      214.00         2
    8       380.00      214.00      418.00      238.00         2
    9       418.00      238.00      600.00      238.00         2
   10         0.00      108.00       82.00      108.00         2
   11        82.00      108.00      150.00      118.00         2
   12       150.00      118.00      208.00      140.00         2
   13       208.00      140.00      235.00      163.00         2
ISOTROPIC SOIL PARAMETERS
  3 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   125.0    125.0     300.0    29.0    0.00      0.0      1
   2   119.0    119.0     410.0    40.5    0.00      0.0      1
   3   119.0    119.0     169.0    34.0    0.00      0.0      1
 1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED
 Unit Weight of Water =  62.40
 Piezometric Surface No.  1 Specified by  5 Coordinate Points
   Point      X-Water     Y-Water
    No.        (ft)        (ft)
     1         0.00      120.00
     2       130.00      120.00
     3       175.00      116.00
     4       418.00      220.00
     5       600.00      230.00
 A Critical Failure Surface Searching Method, Using A Random
 Technique For Generating Circular Surfaces, Has Been Specified.
3800 Trial Surfaces Have Been Generated.
  20 Surfaces Initiate From Each Of190 Points Equally Spaced
 Along The Ground Surface Between  X =   0.00(ft)
                                 and  X = 190.00(ft)
 Each Surface Terminates Between   X = 230.00(ft)
                                 and  X = 600.00(ft)
 Unless Further Limitations Were Imposed, The Minimum Elevation
 At Which A Surface Extends Is  Y =  0.00(ft)
 10.00(ft) Line Segments Define Each Trial Failure Surface.
 Restrictions Have Been Imposed Upon The Angle Of Initiation.
 The Angle Has Been Restricted Between The Angles Of -45.0
 And   0.0 deg.
 Following Are Displayed The Ten Most Critical Of The Trial
```

Failure Surfaces Examined. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Failure Surface Specified By 32 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.99	152.26
2	197.62	149.56
3	207.34	147.23
4	217.15	145.28
5	227.03	143.70
6	236.95	142.50
7	246.92	141.69
8	256.91	141.26
9	266.91	141.21
10	276.91	141.55
11	286.88	142.27
12	296.82	143.37
13	306.71	144.85
14	316.53	146.71
15	326.28	148.95
16	335.93	151.56
17	345.48	154.54
18	354.90	157.88
19	364.19	161.58
20	373.34	165.63
21	382.31	170.04
22	391.12	174.78
23	399.73	179.86
24	408.14	185.27
25	416.34	190.99
26	424.32	197.03
27	432.05	203.36
28	439.54	209.99
29	446.77	216.90
30	453.72	224.09
31	460.40	231.53
32	465.77	238.00

Circle Center At X = 263.2 ; Y = 401.6 and Radius, 260.4
*** 2.219 ***

Individual data on the 39 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	2.0	155.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	7.6	2915.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	9.7	8536.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	7.4	9865.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	2.4	3776.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	9.9	18380.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	8.0	17929.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	1.9	4721.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	48.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	10.0	25967.1	0.0	1468.5	0.0	0.0	0.0	0.0	0.0
11	10.0	28465.0	0.0	4285.9	0.0	0.0	0.0	0.0	0.0
12	10.0	30475.5	0.0	6886.5	0.0	0.0	0.0	0.0	0.0
13	3.1	9747.2	0.0	2621.8	0.0	0.0	0.0	0.0	0.0
14	6.9	23019.6	0.0	6644.9	0.0	0.0	0.0	0.0	0.0
15	10.0	36873.5	0.0	11422.8	0.0	0.0	0.0	0.0	0.0
16	9.9	40591.7	0.0	13351.7	0.0	0.0	0.0	0.0	0.0
17	9.9	43747.5	0.0	15050.6	0.0	0.0	0.0	0.0	0.0
18	9.8	46328.6	0.0	16516.9	0.0	0.0	0.0	0.0	0.0
19	9.7	48327.8	0.0	17748.5	0.0	0.0	0.0	0.0	0.0
20	9.7	49742.8	0.0	18743.6	0.0	0.0	0.0	0.0	0.0
21	9.5	50577.1	0.0	19500.7	0.0	0.0	0.0	0.0	0.0
22	9.4	50839.4	0.0	20018.7	0.0	0.0	0.0	0.0	0.0

23	9.3	50542.6	0.0	20296.9	0.0	0.0	0.0	0.0	0.0
24	9.1	49705.6	0.0	20334.7	0.0	0.0	0.0	0.0	0.0
25	6.7	35955.8	0.0	14974.1	0.0	0.0	0.0	0.0	0.0
26	2.3	12464.1	0.0	5158.1	0.0	0.0	0.0	0.0	0.0
27	8.8	48010.9	0.0	19689.7	0.0	0.0	0.0	0.0	0.0
28	8.6	47585.8	0.0	19007.8	0.0	0.0	0.0	0.0	0.0
29	8.4	46608.7	0.0	18087.5	0.0	0.0	0.0	0.0	0.0
30	8.2	45113.5	0.0	16930.2	0.0	0.0	0.0	0.0	0.0
31	1.7	9039.4	0.0	3352.0	0.0	0.0	0.0	0.0	0.0
32	6.3	32599.1	0.0	12606.5	0.0	0.0	0.0	0.0	0.0
33	7.7	34803.5	0.0	12688.9	0.0	0.0	0.0	0.0	0.0
34	7.5	27907.6	0.0	8910.3	0.0	0.0	0.0	0.0	0.0
35	7.2	21116.1	0.0	4943.9	0.0	0.0	0.0	0.0	0.0
36	4.8	10604.6	0.0	1002.2	0.0	0.0	0.0	0.0	0.0
37	2.2	3886.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	6.7	8095.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	5.4	2064.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 34 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	187.99	152.26
2	197.36	148.76
3	206.86	145.64
4	216.48	142.93
5	226.21	140.62
6	236.03	138.72
7	245.92	137.22
8	255.86	136.14
9	265.84	135.48
10	275.83	135.23
11	285.83	135.40
12	295.82	135.98
13	305.77	136.98
14	315.66	138.40
15	325.50	140.22
16	335.24	142.46
17	344.89	145.09
18	354.42	148.13
19	363.81	151.56
20	373.05	155.38
21	382.13	159.58
22	391.02	164.16
23	399.71	169.10
24	408.19	174.40
25	416.44	180.05
26	424.45	186.04
27	432.21	192.35
28	439.69	198.99
29	446.89	205.93
30	453.79	213.16
31	460.39	220.68
32	466.67	228.46
33	472.62	236.50
34	473.63	238.00

Circle Center At X = 276.8 ; Y = 375.1 and Radius, 239.9

*** 2.223 ***

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.97	151.16
2	194.66	148.66
3	204.42	146.51
4	214.26	144.70
5	224.15	143.24
6	234.09	142.13
7	244.06	141.38
8	254.05	140.97

9	264.05	140.92
10	274.05	141.22
11	284.03	141.87
12	293.98	142.88
13	303.88	144.23
14	313.74	145.94
15	323.53	147.99
16	333.24	150.38
17	342.85	153.12
18	352.37	156.19
19	361.77	159.59
20	371.05	163.33
21	380.19	167.39
22	389.18	171.77
23	398.00	176.47
24	406.66	181.47
25	415.14	186.78
26	423.42	192.38
27	431.50	198.27
28	439.37	204.44
29	447.02	210.89
30	454.43	217.60
31	461.60	224.57
32	468.52	231.79
33	474.08	238.00

Circle Center At X = 260.5 ; Y = 424.3 and Radius, 283.4
*** 2.230 ***

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	179.95	149.31
2	189.69	147.07
3	199.51	145.17
4	209.39	143.60
5	219.31	142.38
6	229.27	141.50
7	239.26	140.96
8	249.26	140.77
9	259.26	140.92
10	269.24	141.41
11	279.21	142.25
12	289.14	143.43
13	299.02	144.95
14	308.85	146.81
15	318.60	149.01
16	328.28	151.54
17	337.86	154.40
18	347.34	157.60
19	356.70	161.11
20	365.93	164.95
21	375.03	169.10
22	383.98	173.56
23	392.77	178.33
24	401.39	183.40
25	409.83	188.76
26	418.08	194.41
27	426.13	200.34
28	433.98	206.54
29	441.60	213.01
30	449.00	219.74
31	456.16	226.72
32	463.08	233.94
33	466.70	238.00

Circle Center At X = 249.9 ; Y = 431.2 and Radius, 290.4
*** 2.247 ***

Failure Surface Specified By 37 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	160.85	142.31
2	170.43	139.45
3	180.10	136.91
4	189.86	134.70
5	199.68	132.82
6	209.56	131.28
7	219.48	130.06
8	229.44	129.18
9	239.43	128.64
10	249.43	128.43
11	259.43	128.56
12	269.42	129.02
13	279.38	129.83
14	289.32	130.96
15	299.21	132.43
16	309.05	134.23
17	318.82	136.37
18	328.51	138.83
19	338.11	141.61
20	347.62	144.72
21	357.01	148.14
22	366.29	151.88
23	375.43	155.93
24	384.43	160.28
25	393.28	164.94
26	401.97	169.89
27	410.49	175.13
28	418.83	180.65
29	426.97	186.45
30	434.92	192.53
31	442.65	198.86
32	450.17	205.45
33	457.47	212.30
34	464.53	219.38
35	471.34	226.70
36	477.91	234.24
37	480.96	238.00

Circle Center At X = 250.6 ; Y = 425.5 and Radius, 297.1
*** 2.254 ***

Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	185.98	151.53
2	195.62	148.87
3	205.36	146.60
4	215.18	144.74
5	225.08	143.28
6	235.02	142.22
7	245.00	141.57
8	255.00	141.33
9	265.00	141.50
10	274.98	142.07
11	284.93	143.06
12	294.83	144.45
13	304.67	146.24
14	314.43	148.43
15	324.09	151.02
16	333.63	154.00
17	343.05	157.37
18	352.32	161.11
19	361.43	165.24
20	370.36	169.73
21	379.11	174.59
22	387.64	179.79
23	395.96	185.35
24	404.05	191.23

25	411.88	197.44
26	419.46	203.97
27	426.76	210.80
28	433.78	217.92
29	440.50	225.33
30	446.92	233.00
31	450.76	238.00

Circle Center At X = 255.9 ; Y = 386.2 and Radius, 244.9

*** 2.255 ***

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	177.94	148.58
2	187.33	145.15
3	196.86	142.13
4	206.52	139.54
5	216.28	137.37
6	226.13	135.63
7	236.05	134.33
8	246.01	133.47
9	256.00	133.04
10	266.00	133.05
11	275.99	133.51
12	285.95	134.40
13	295.86	135.72
14	305.71	137.49
15	315.46	139.68
16	325.11	142.30
17	334.64	145.34
18	344.02	148.79
19	353.25	152.66
20	362.29	156.92
21	371.14	161.58
22	379.77	166.63
23	388.18	172.05
24	396.34	177.83
25	404.24	183.96
26	411.85	190.44
27	419.18	197.24
28	426.20	204.36
29	432.91	211.79
30	439.28	219.49
31	445.30	227.48
32	450.97	235.71
33	452.40	238.00

Circle Center At X = 260.7 ; Y = 360.6 and Radius, 227.6

*** 2.261 ***

Failure Surface Specified By 36 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.94	148.95
2	188.50	146.00
3	198.15	143.39
4	207.89	141.10
5	217.69	139.14
6	227.56	137.51
7	237.47	136.21
8	247.43	135.25
9	257.41	134.63
10	267.40	134.34
11	277.40	134.39
12	287.40	134.78
13	297.37	135.51
14	307.31	136.57
15	317.22	137.97
16	327.06	139.70
17	336.85	141.76

18	346.56	144.15
19	356.18	146.86
20	365.71	149.90
21	375.13	153.26
22	384.43	156.94
23	393.60	160.92
24	402.63	165.22
25	411.51	169.81
26	420.23	174.71
27	428.79	179.89
28	437.16	185.36
29	445.34	191.11
30	453.32	197.13
31	461.10	203.42
32	468.66	209.97
33	475.99	216.77
34	483.09	223.81
35	489.95	231.09
36	496.04	238.00

Circle Center At X = 270.9 ; Y = 430.6 and Radius, 296.3
*** 2.262 ***
Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	184.97	151.16
2	194.50	148.10
3	204.14	145.47
4	213.90	143.26
5	223.74	141.49
6	233.65	140.15
7	243.61	139.25
8	253.60	138.79
9	263.60	138.78
10	273.59	139.20
11	283.55	140.06
12	293.47	141.36
13	303.31	143.10
14	313.08	145.27
15	322.73	147.87
16	332.27	150.89
17	341.66	154.33
18	350.88	158.18
19	359.94	162.43
20	368.79	167.08
21	377.43	172.11
22	385.84	177.52
23	394.00	183.30
24	401.90	189.43
25	409.53	195.90
26	416.86	202.70
27	423.88	209.82
28	430.58	217.24
29	436.95	224.95
30	442.97	232.93
31	446.46	238.00

Circle Center At X = 259.0 ; Y = 365.5 and Radius, 226.7
*** 2.266 ***
Failure Surface Specified By 42 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.66	130.93
2	135.26	128.11
3	144.93	125.57
4	154.67	123.31
5	164.47	121.33
6	174.33	119.63
7	184.23	118.22

8	194.16	117.10
9	204.13	116.26
10	214.11	115.71
11	224.11	115.45
12	234.11	115.48
13	244.10	115.80
14	254.09	116.41
15	264.05	117.30
16	273.98	118.48
17	283.87	119.95
18	293.71	121.70
19	303.50	123.74
20	313.23	126.06
21	322.89	128.65
22	332.47	131.53
23	341.96	134.68
24	351.35	138.10
25	360.65	141.80
26	369.83	145.76
27	378.89	149.98
28	387.83	154.46
29	396.64	159.20
30	405.30	164.19
31	413.82	169.43
32	422.18	174.92
33	430.38	180.64
34	438.41	186.60
35	446.27	192.78
36	453.95	199.19
37	461.43	205.82
38	468.73	212.67
39	475.82	219.72
40	482.70	226.97
41	489.37	234.42
42	492.40	238.00

Circle Center At X = 228.1 ; Y = 461.7 and Radius, 346.2

*** 2.267 ***

ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
Geological And Geotechnical Consultants

GEOLOGIC AND GEOTECHNICAL REPORT – Addendum No. 4
Response to Los Angeles County Geologic and Soils Engineering Review Sheets dated January 27, 2003 and January 28, 2003

GEOLOGIC AND GEOTECHNICAL REPORT
Amended Vesting Tentative Tract map (dated April 15, 2003)
VTT 52584
Halsey Canyon
Castaic, California

VOLUME II OF II

Prepared for:

Hasley Canyon Land Company, LLC.
c/o Palmer Investments, Inc.
233 Wilshire Boulevard
Suite 800
Santa Monica, CA 90401

Job No: 03-1617-4
Dated April 16, 2003

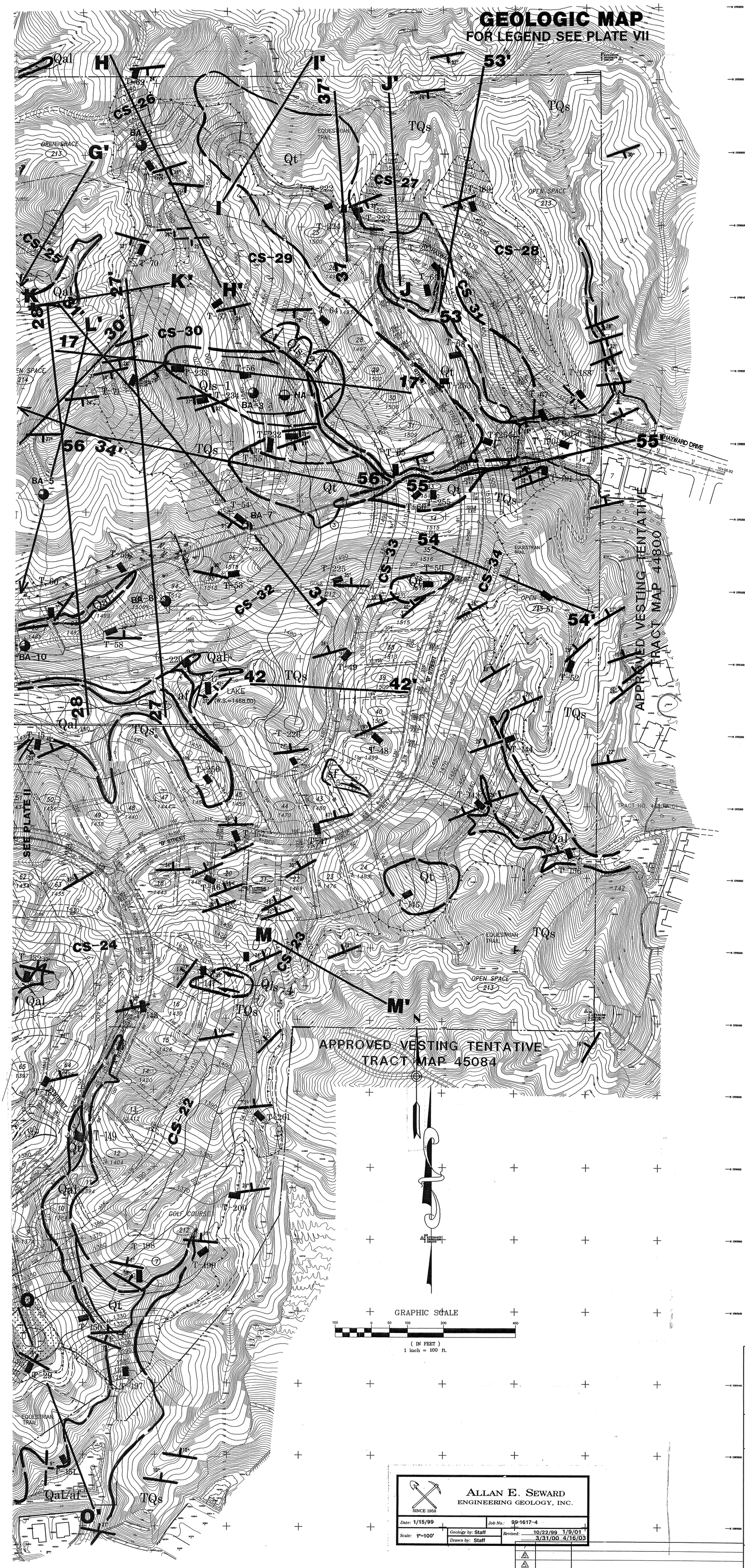
27825 Smyth Drive, Valencia, California 91355 661-294-0065 FAX 661-294-0833

Appendix D

PLATE I

GEOLOGIC MAP

FOR LEGEND SEE PLATE VII



ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
SINCE 1958

Date: 1/15/99	Job No.: 99-1617-4
Scale: 1"=100'	Geology by: Staff / Drawn by: Staff
	Revised: 10/22/99 1/9/01 3/31/00 4/16/03

NO.	DATE	REVISIONS
6		
5		
4		
3		
2		
1	4/15/03	AMMENDED V.T.T.M TO REFLECT GRADING CHANGES

Developer:
Palmer Investments, Inc.
233 WILSHIRE BOULEVARD, SUITE 800
SANTA MONICA, CA 90401
Ph. (310) 576-6700
Fax. (310) 576-0888

Owner:
Hasley Canyon Land Company, L.L.C.
233 WILSHIRE BOULEVARD, SUITE 800
SANTA MONICA, CA 90401
Ph. (310) 576-6700
Fax. (310) 576-0888

Legal Description:
PORTION OF THE NORTHWEST QUARTER OF SECTION 2 & THE NORTH EAST QUARTER OF SECTION 3, T4N, R17W, SBM IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA.

AMMENDED VESTING TENTATIVE TRACT MAP NO.

52584

IN THE UNINCORPORATED TERRITORY OF LOS ANGELES COUNTY
COUNTY CASE NO. 98-034 (5)

Prepared by:
PENCO ENGINEERING, INC.
Civil Engineering
Planning
Surveying
Construction Management
One Technology Park
Building J-725
Irvine, CA 92618
(949) 753-8111

CARLOS A. PINEDA DATE

SHEET 1 OF 1

PLATE II

GEOLOGIC MAP

FOR LEGEND SEE PLATE VII

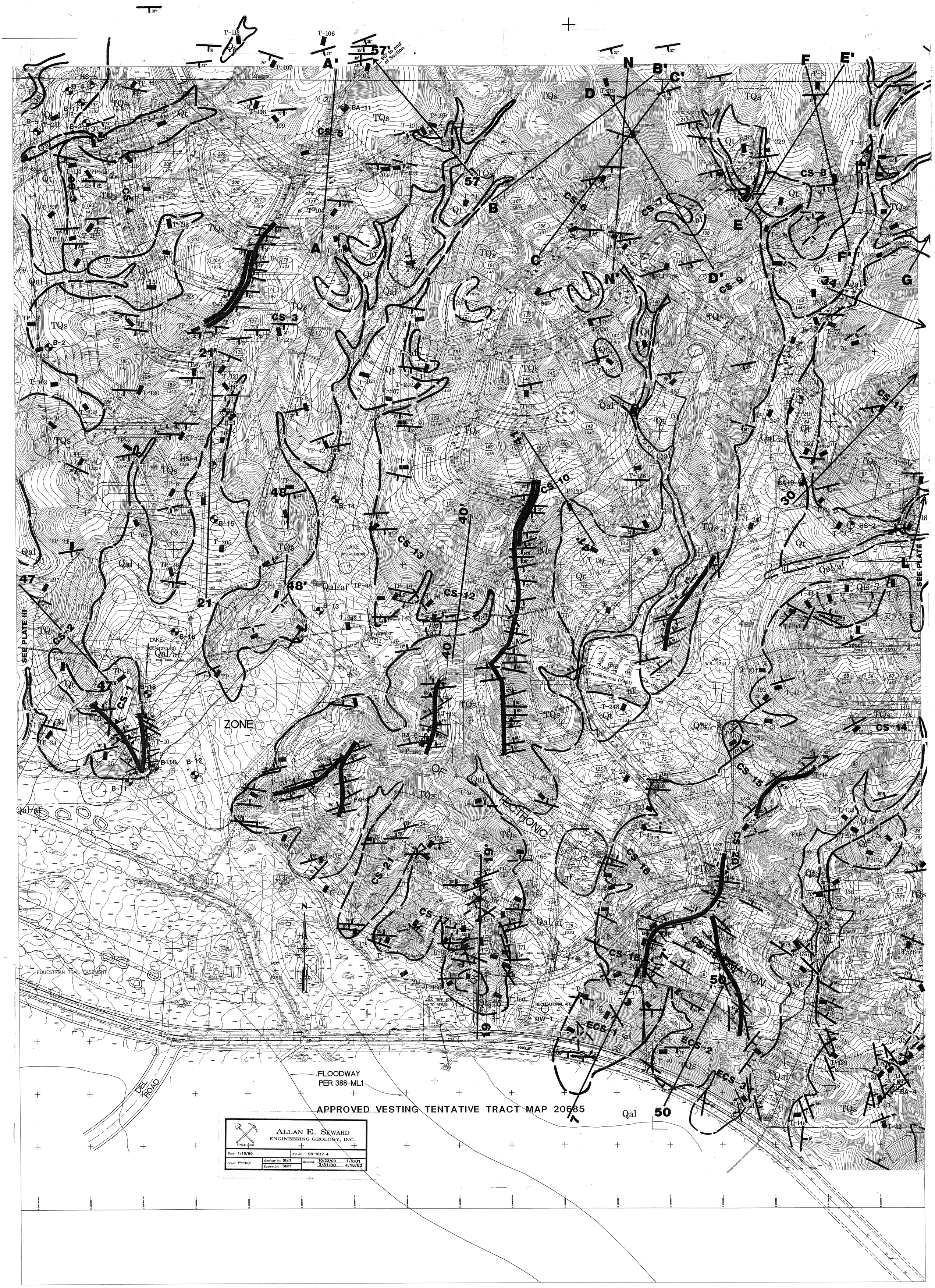
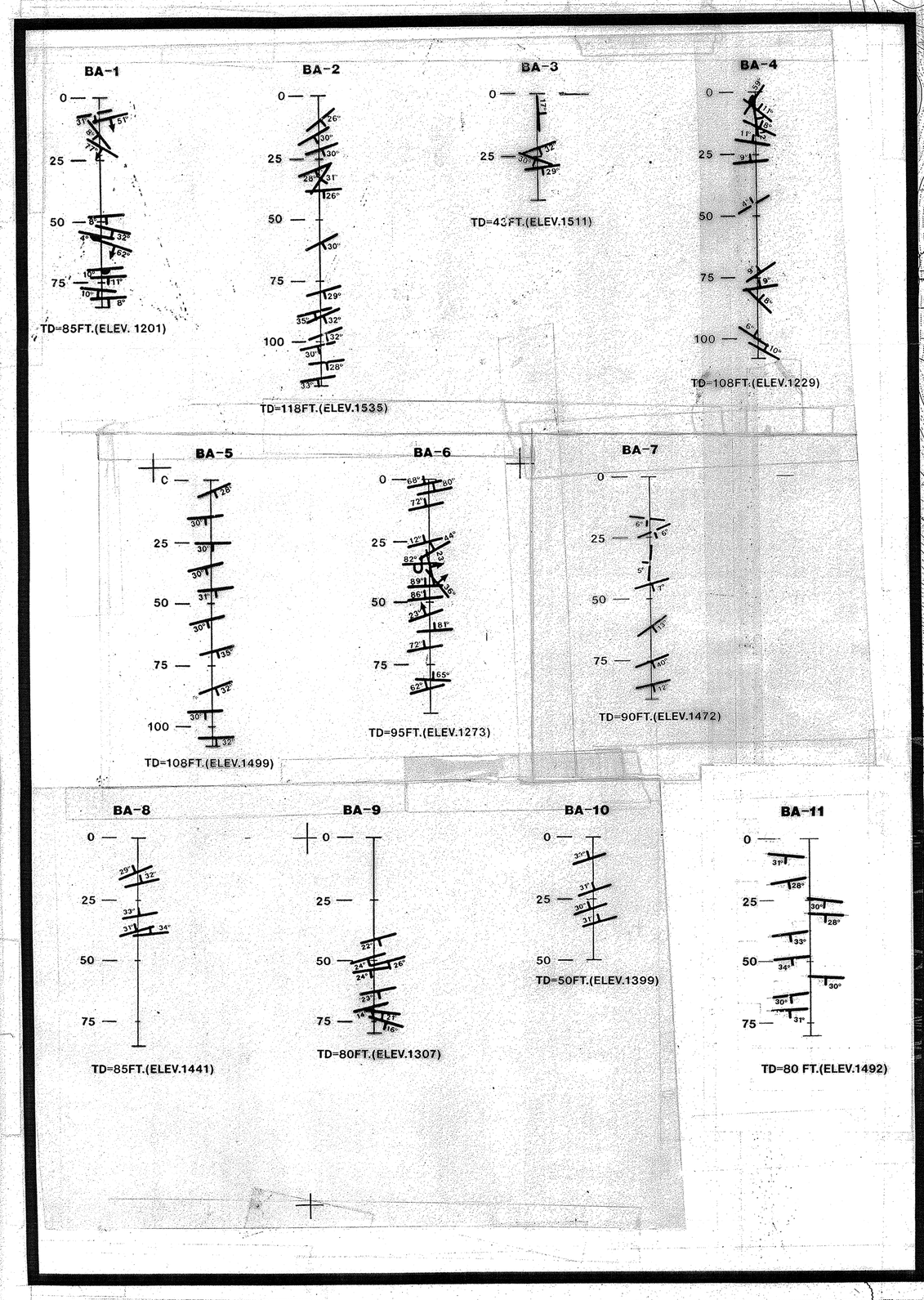
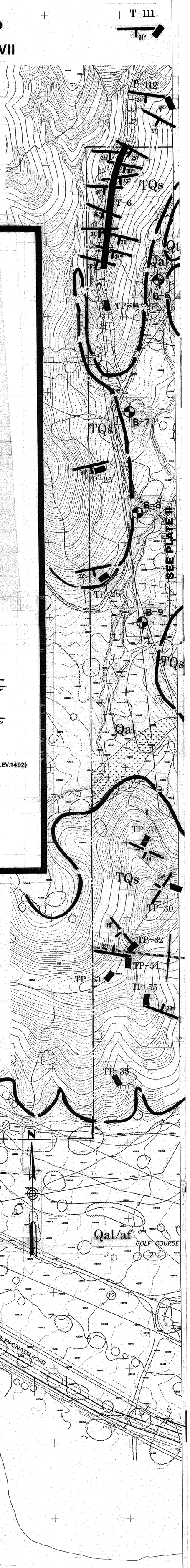


PLATE III

GEOLOGIC MAP

FOR LEGEND SEE PLATE VII





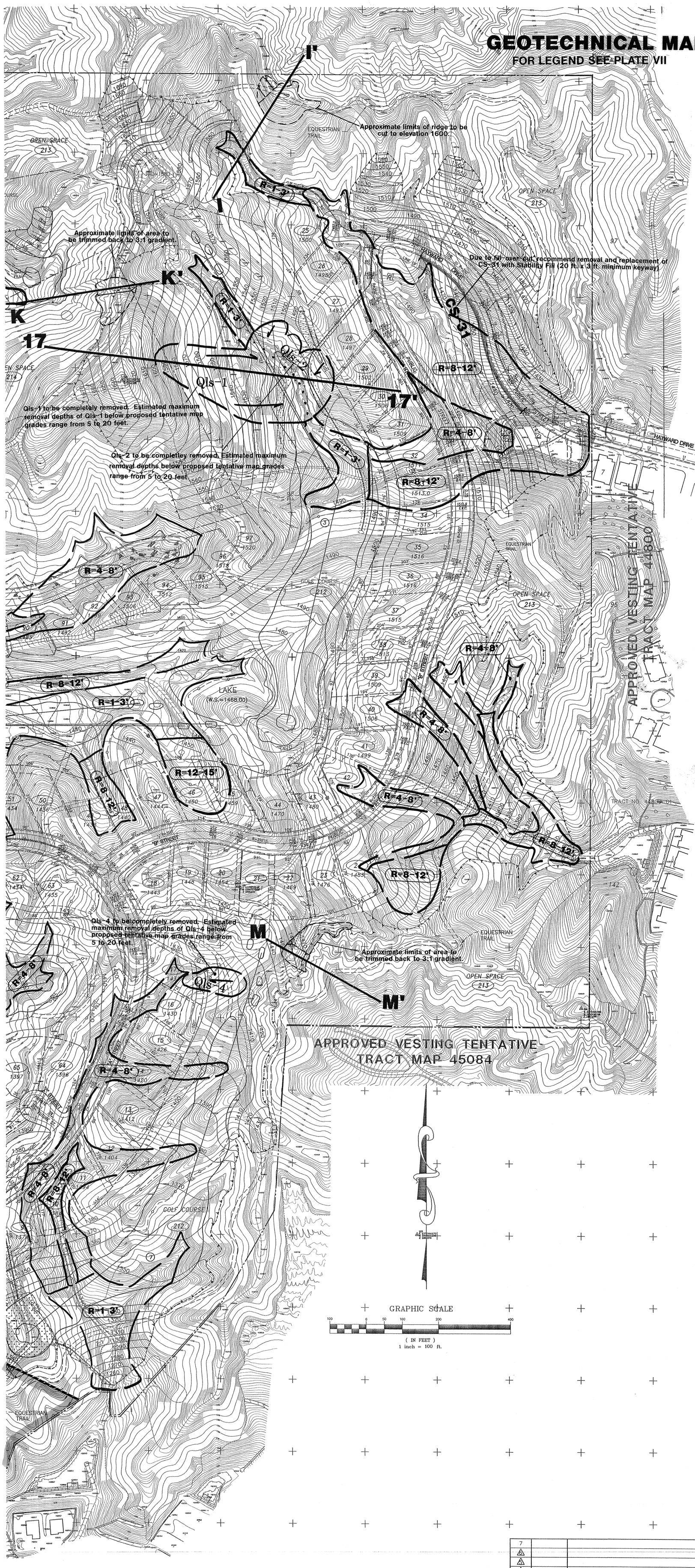
ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
SINCE 1958

Date: 1/15/99		Job No.: 98-1617-4	
Scale: 1"=100'	Geology by: Staff	Revised: 10/22/99	1/9/01
	Drawn by: Staff	3/31/00	4/16/03

GEOTECHNICAL MAP

FOR LEGEND SEE PLATE VII

PLATE IV



ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
SINCE 1958

Date: 4/16/03	Job No.: 03-1617-4
Scale: 1"=100'	Geology by: STAFF / Drawn by: MJD / Revised:

NO.	DATE	REVISIONS
7		
6		
5		
4		
3		
2		
1	4/15/03	AMMENDED V.T.T.M TO REFLECT GRADING CHANGES

Developer:
Palmer Investments, Inc.
233 WILSHIRE BOULEVARD, SUITE 800
SANTA MONICA, CA 90401
Ph. (310) 576-6700
Fax. (310) 576-0888

Owner:
Hasley Canyon Land Company, L.L.C.
233 WILSHIRE BOULEVARD, SUITE 800
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CARLOS A. PINEDA — DATE

SHEET 1 OF 1

GEOTECHNICAL MAP

PLATE V

FOR LEGEND SEE PLATE VII

ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
SINCE 1965

Date: 4/16/03 | Job No. 03-1617-4
Scale: 1"=100' | Geology by: STAFF | Drawn by: MJD | Revised:

GEOTECHNICAL MAP

FOR LEGEND SEE PLATE VII

PLATE VI

ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
SINCE 1958

Date: 4/16/03		Job No.: 03-1617-4
Scale: 1"=100'	Geology by: STAFF Drawn by: MJD	Revised:

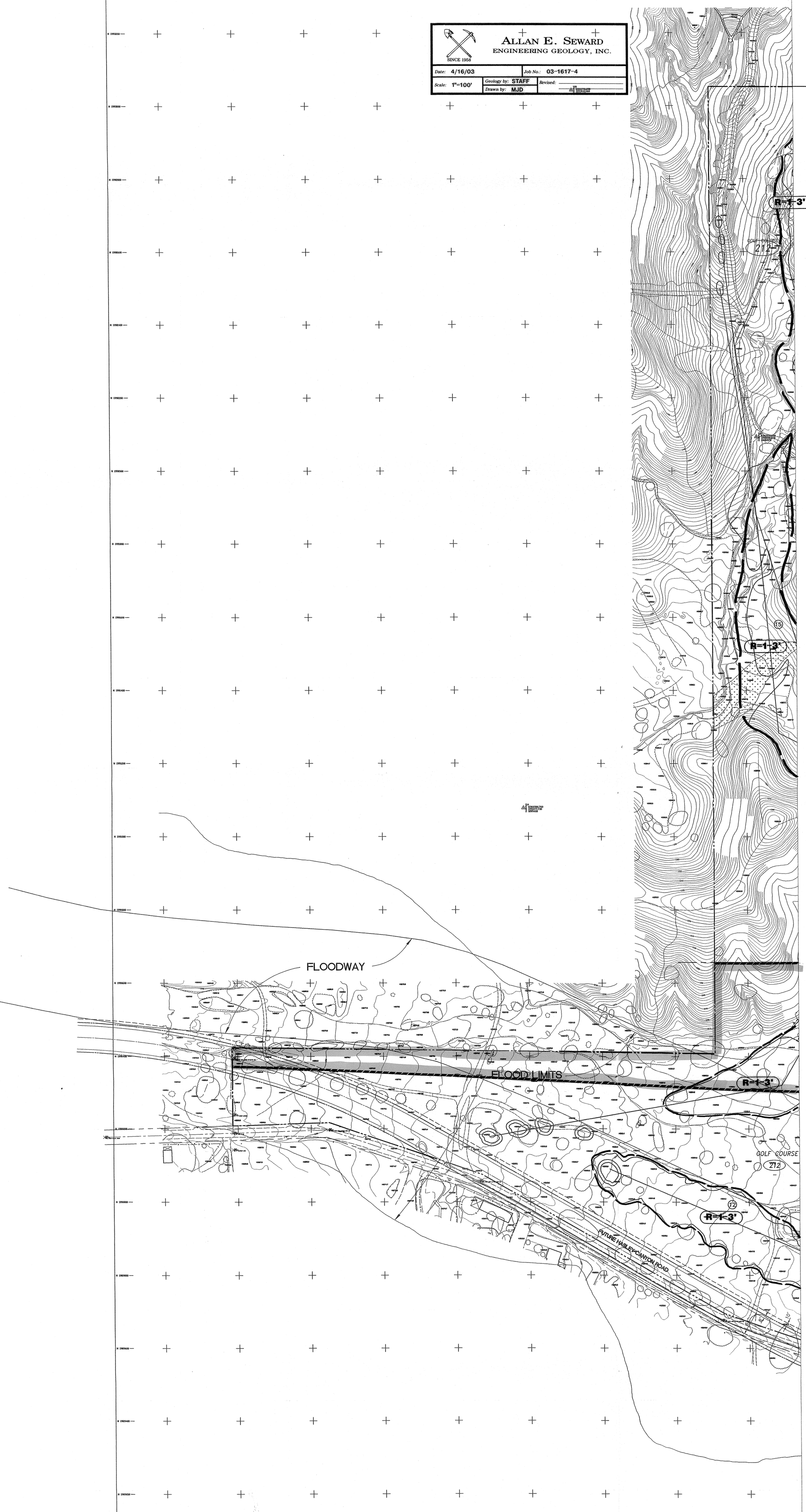


PLATE VII

GEOLOGIC/GEOTECHNICAL LEGEND

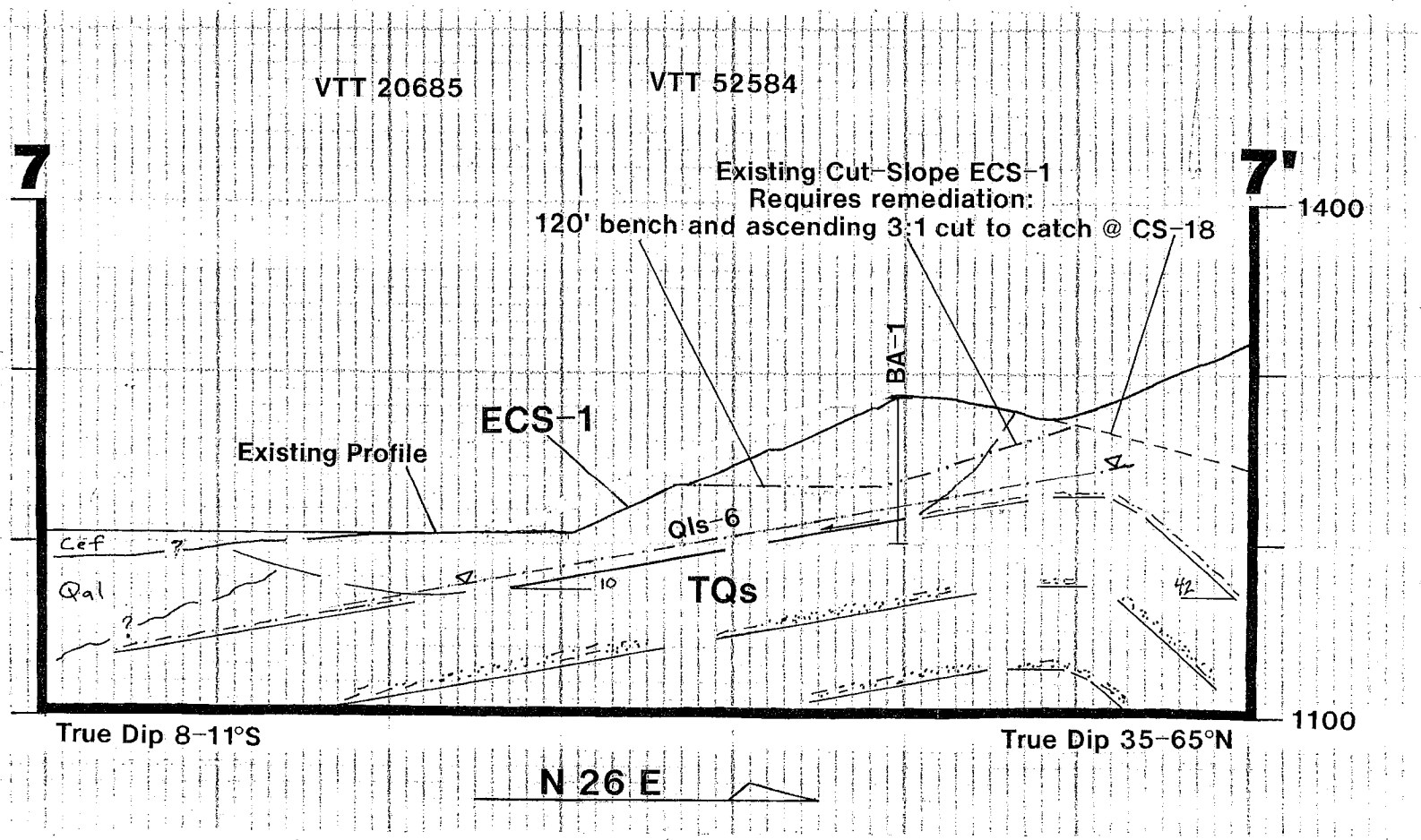
af	Artificial Fill	55° 55° 10°	Orientation of Fault; Shear; Slip Surface
Cef	Certified Engineered Fill		Approximate Location of Surface Trace of Axis of Syncline; Anticline; Dotted Where Inferred
Qal	Quaternary Alluvium	T-259	Approximate Location of Exploratory Trench
sf	Surficial Failure	TP-55	Approximate Location of Test Pit from AES Report dated 10/30/87
Qls-8	Quaternary Landslide	RW-1	Approximate Location of Rotary Wash Boring
Qt	Quaternary Terrace	BA-11	Approximate Location of Exploratory Bucket Auger Boring
TQs	Saugus Formation	HS-5	Approximate Location of Hollow Stem Auger Boring
35° 66° 85°	Orientation of Bedding; Approximate Bedding; Overturned Bedding	HA-1	Approximate Location of Hand Auger Boring
		B-18	Approximate Location of Exploratory Bucket Auger Boring from AES Report dated 10/30/87

12	Approximate Location of Existing Oil/Gas Well
CS-34	Proposed Cut-Slope with Designation
57 — 57'	Revised Cross Section
O — O'	New Cross Section (Letter Designation)
	Geologic Contact; Dotted Where Concealed
	Recommended Building Setback to be Shown as a Restricted Use Area on Final Map
R=12-15'	Recommended Removal Depth per Designated Area and Approximate Limits
	Proposed Stability Fill Showing Approximate Limits
	Recommended Impact Wall
ECS-3	Existing Cut-Slope

ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
SINCE 1958

Date: 1/15/99		Job No.: 98-1617-4	
Scale: N/A	Geology by: N/A	Revised: 10/22/99 4/16/03	
	Drawn by: Staff	3/31/00	

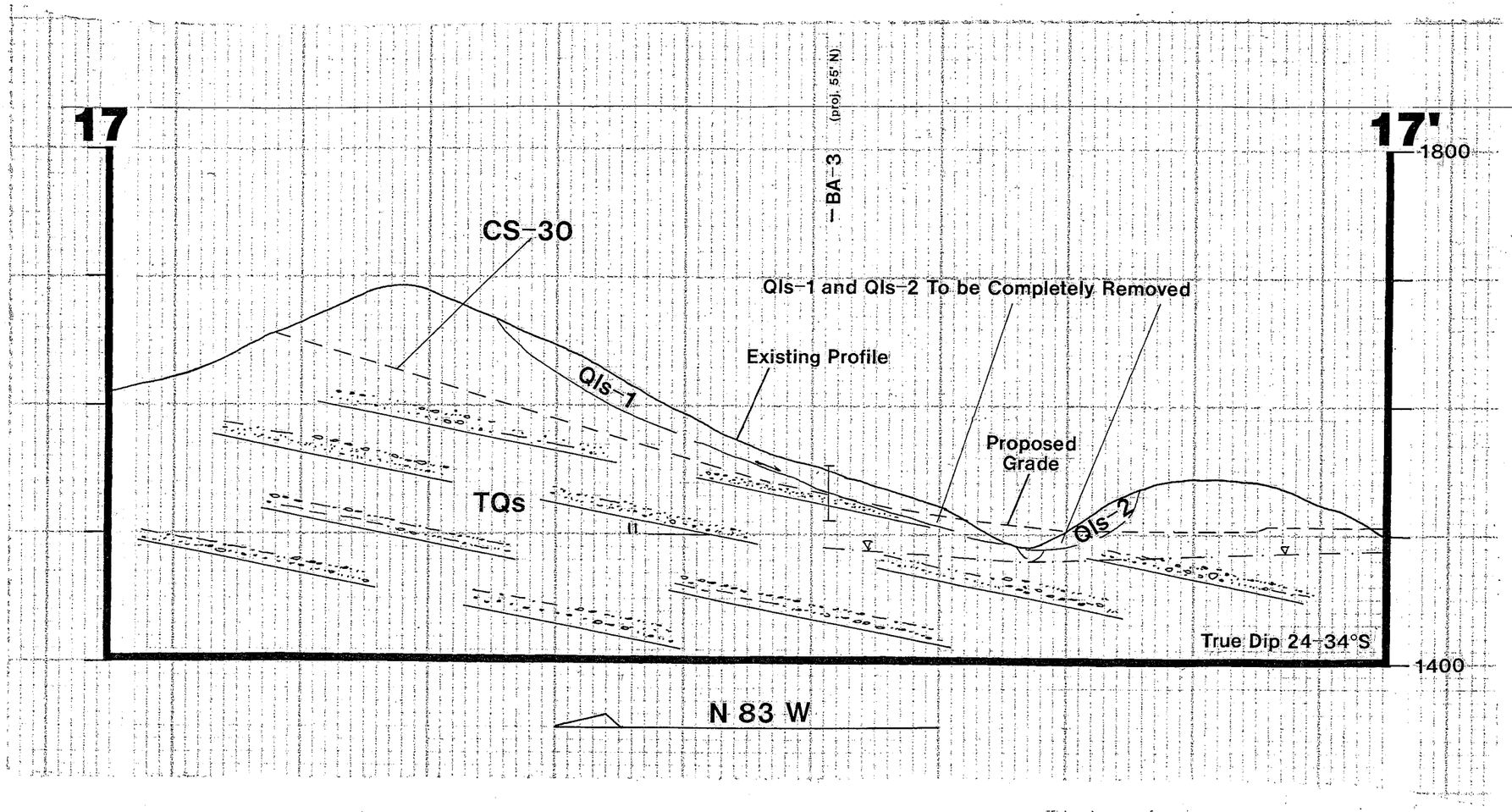
REVISED CROSS SECTION



ALLAN E. SEWARD
ENGINEERING GEOLOGY

JOB NUMBER: 03-1617-4	DATE: 4/16/03	
SCALE: 1"=100'		DRAWN BY: STAFF
		REVISED:

REVISED CROSS SECTION



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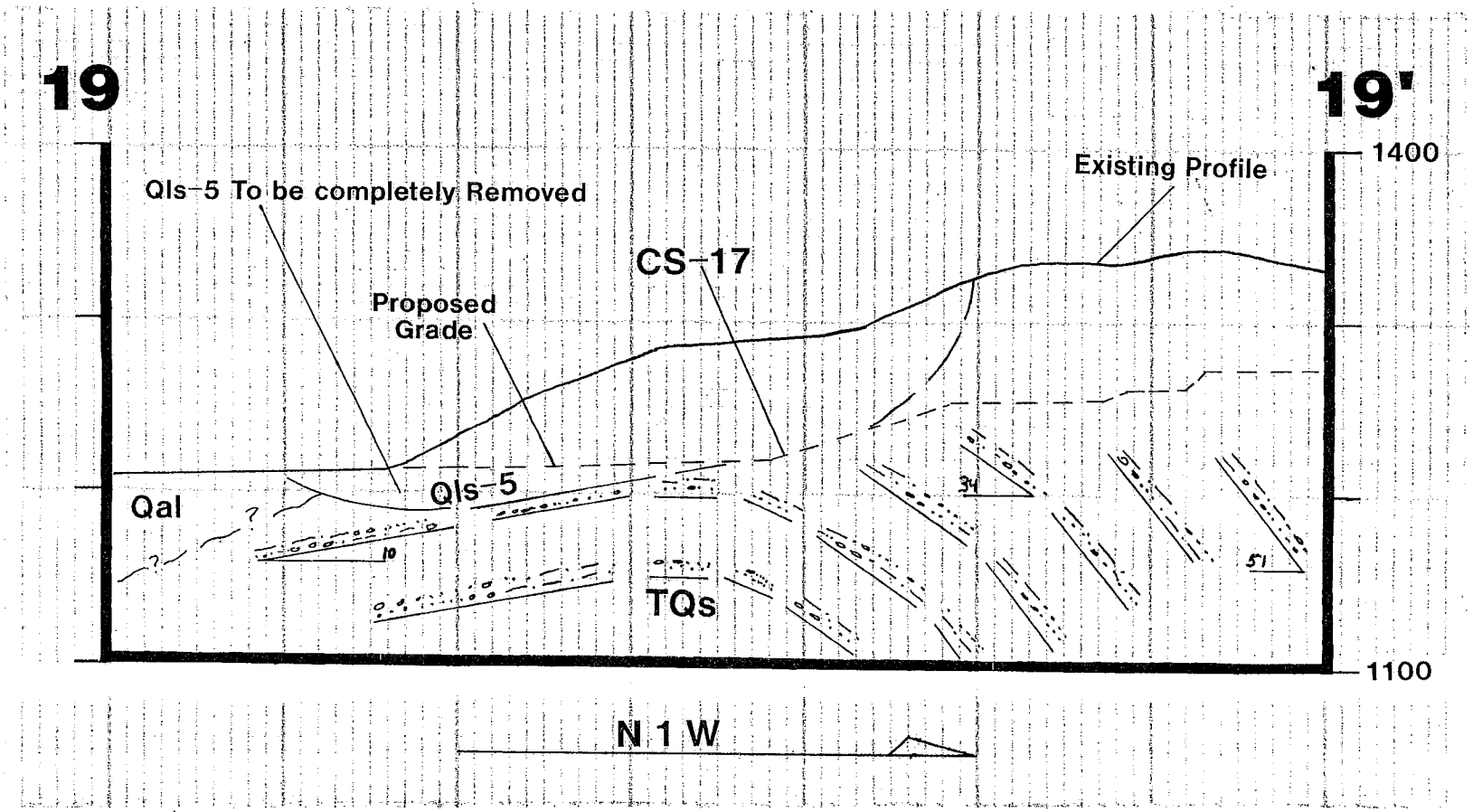

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		REVISED:

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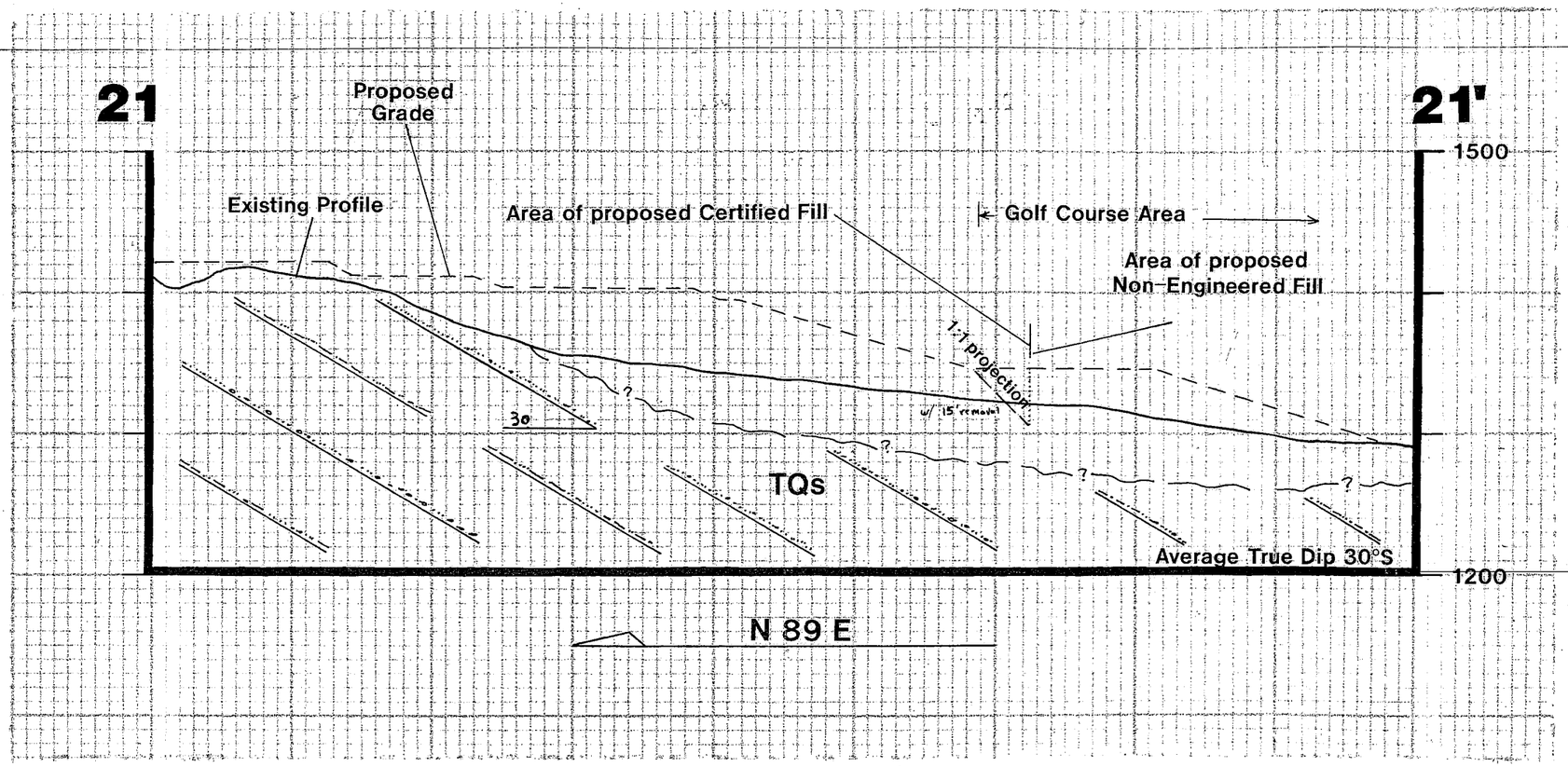

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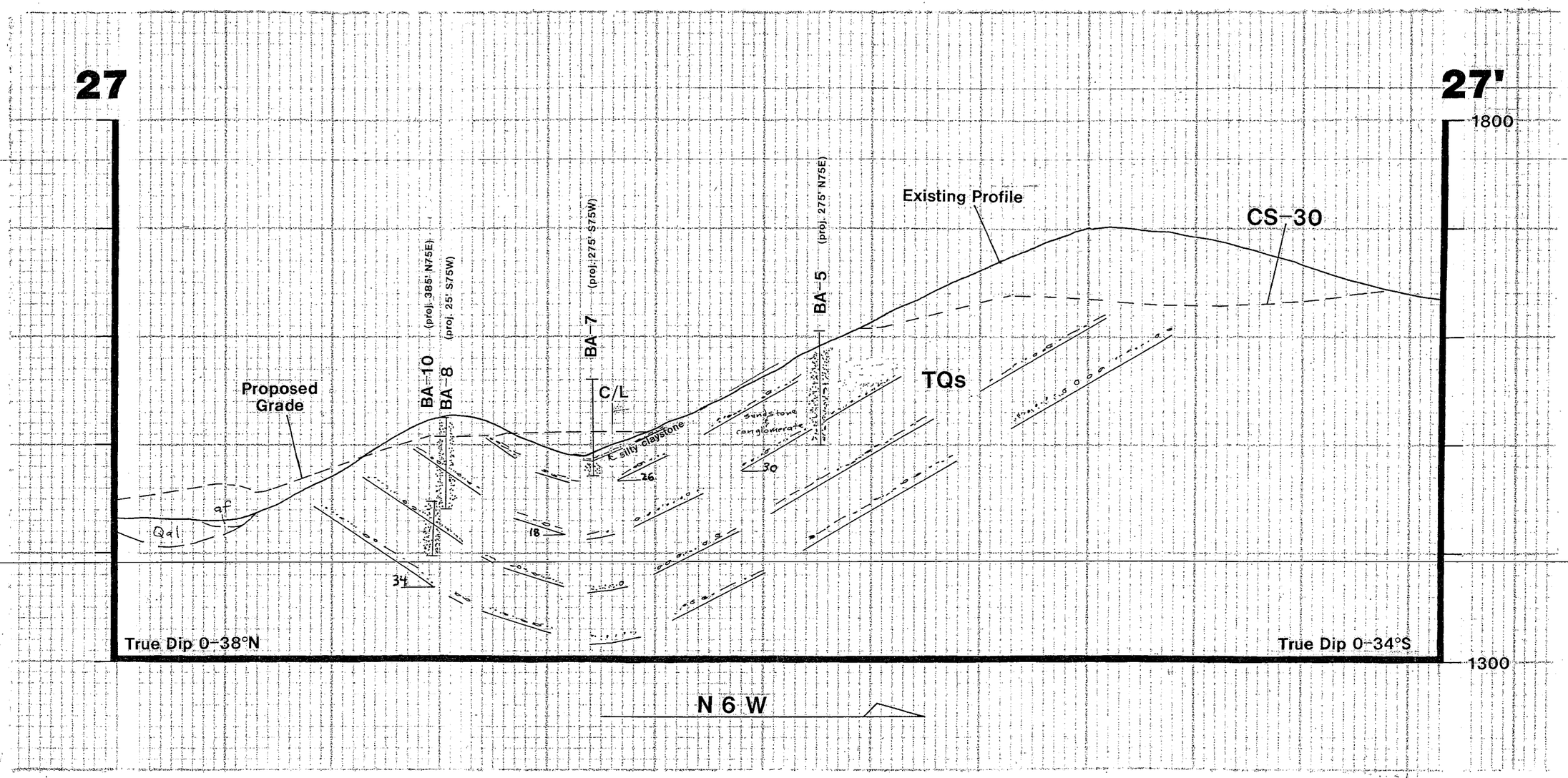

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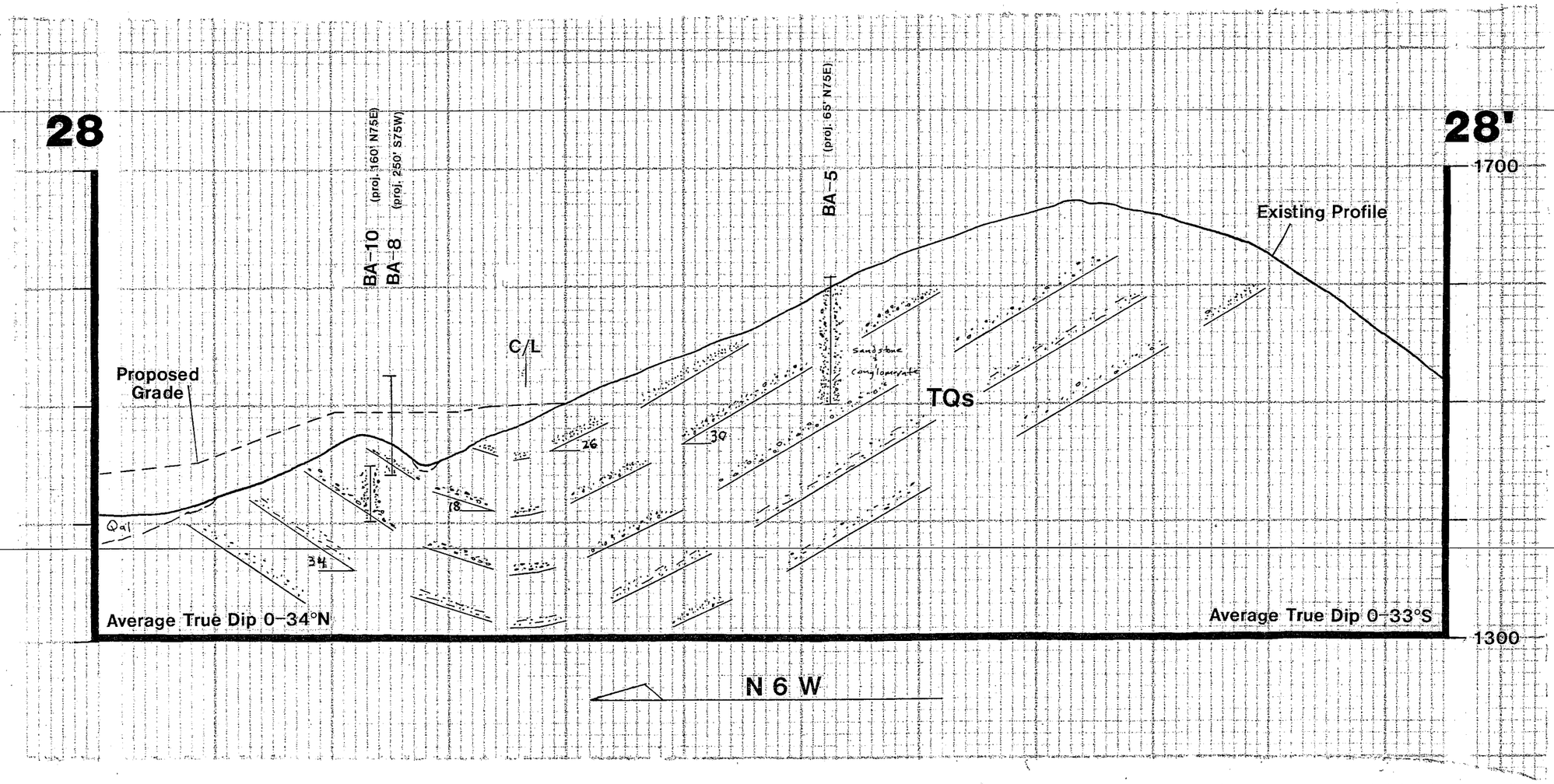

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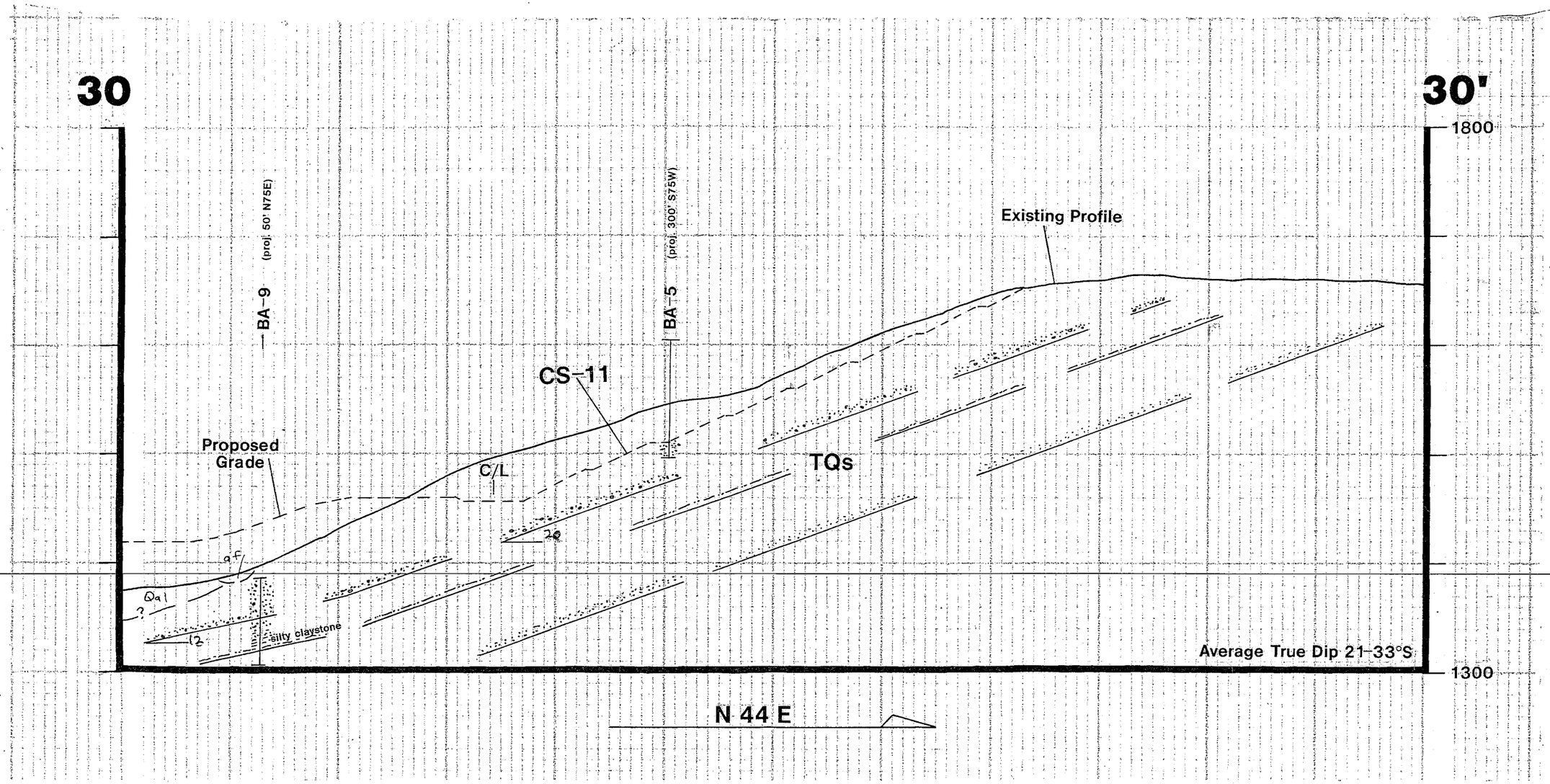

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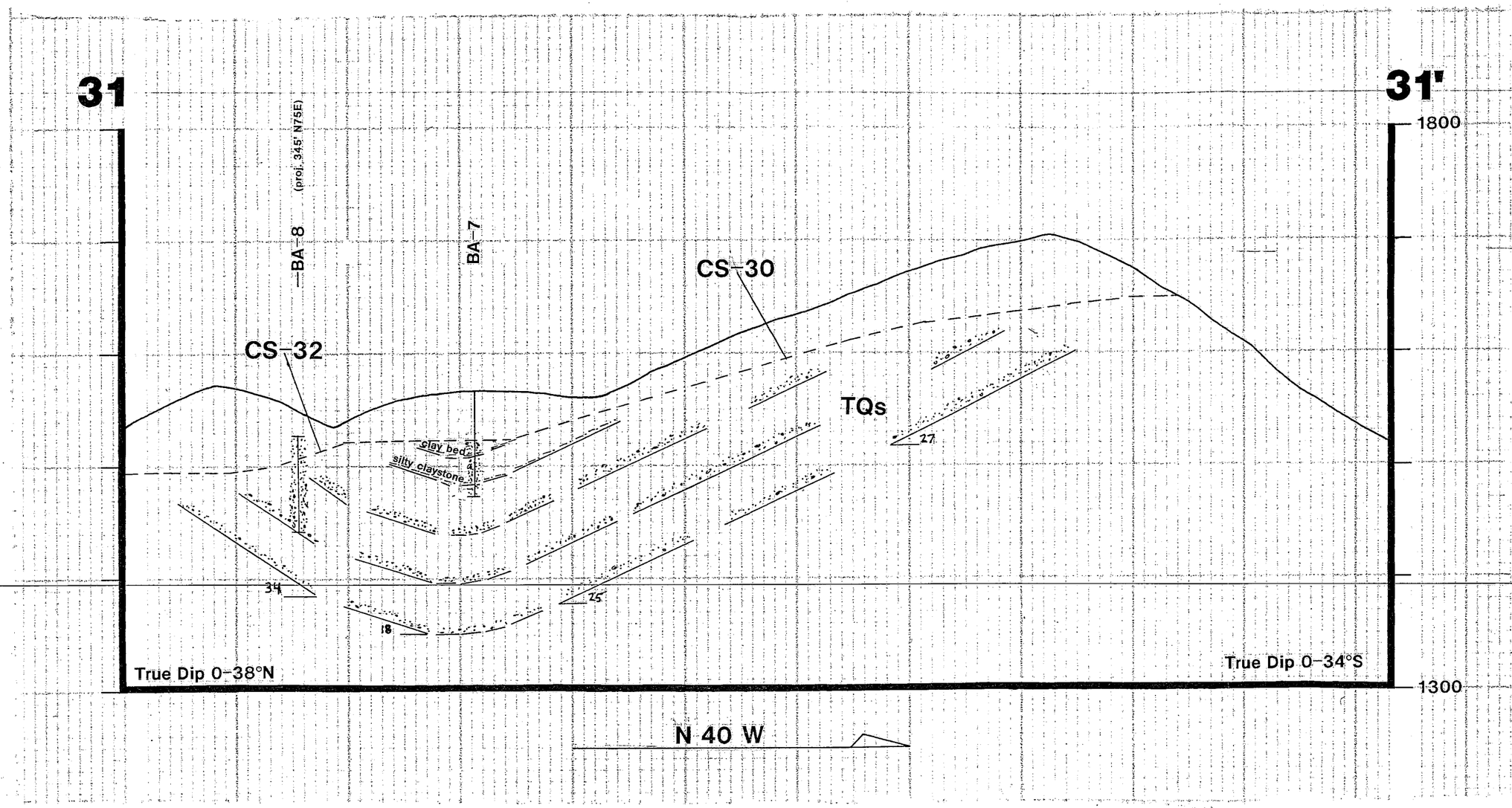

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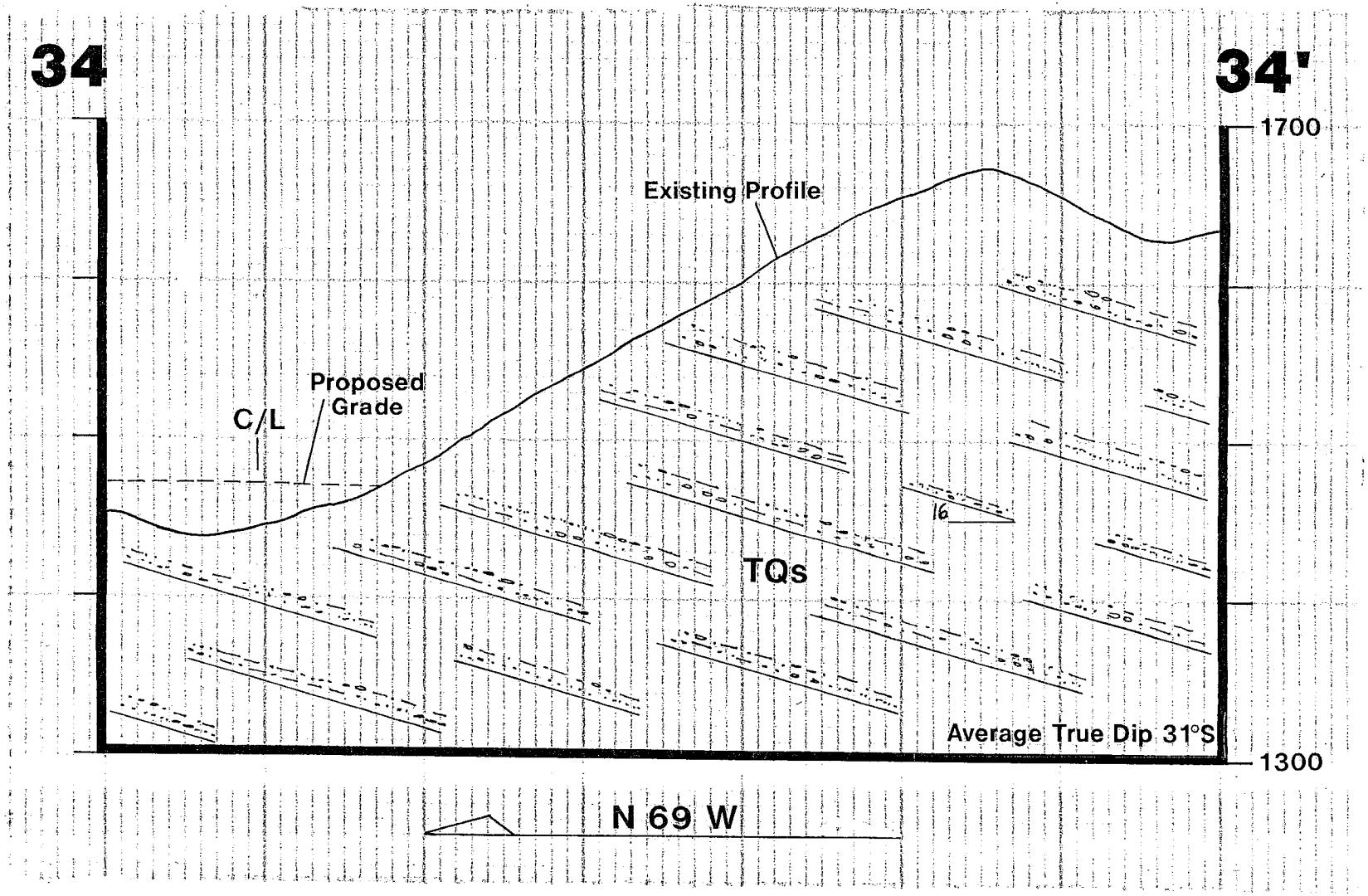

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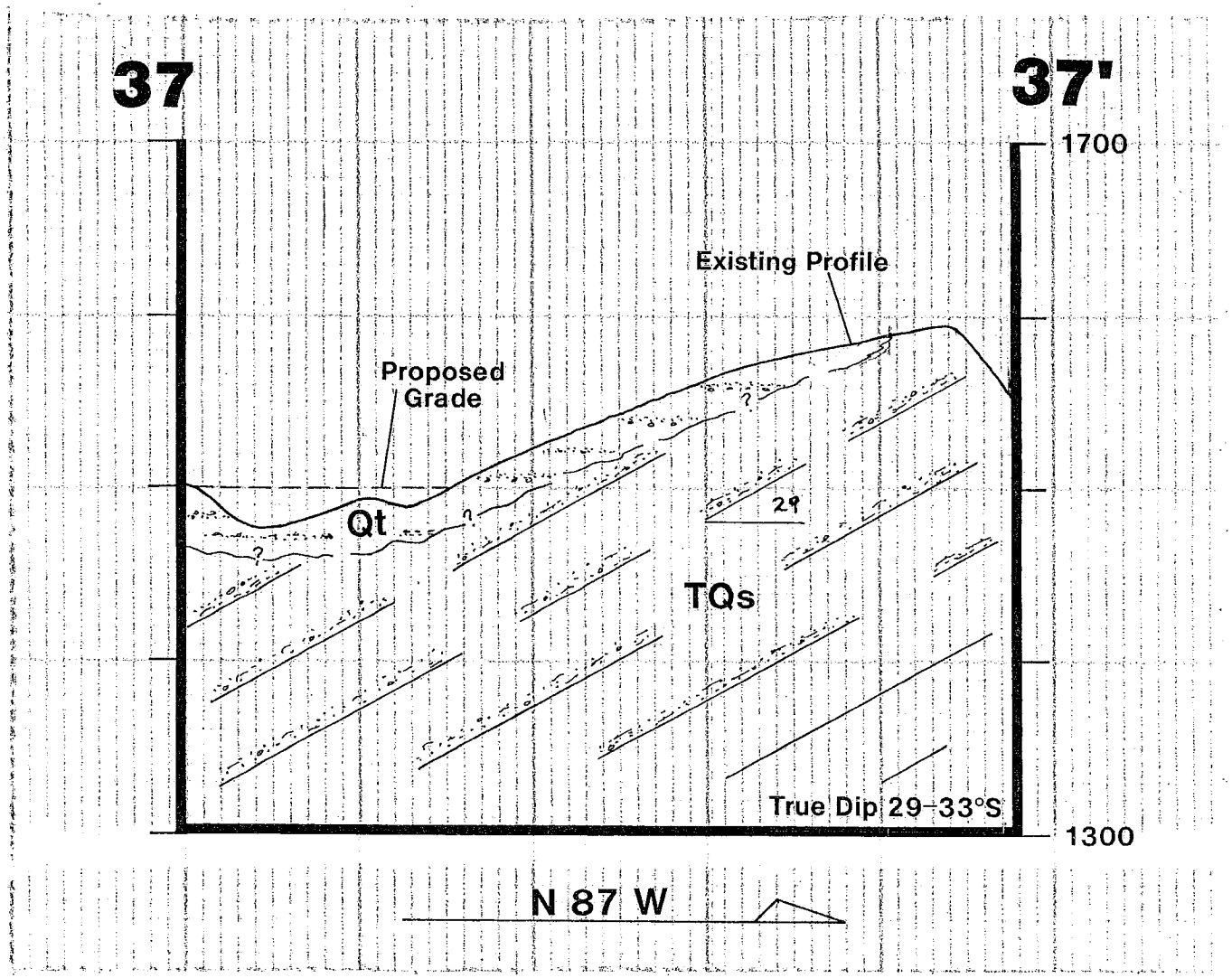

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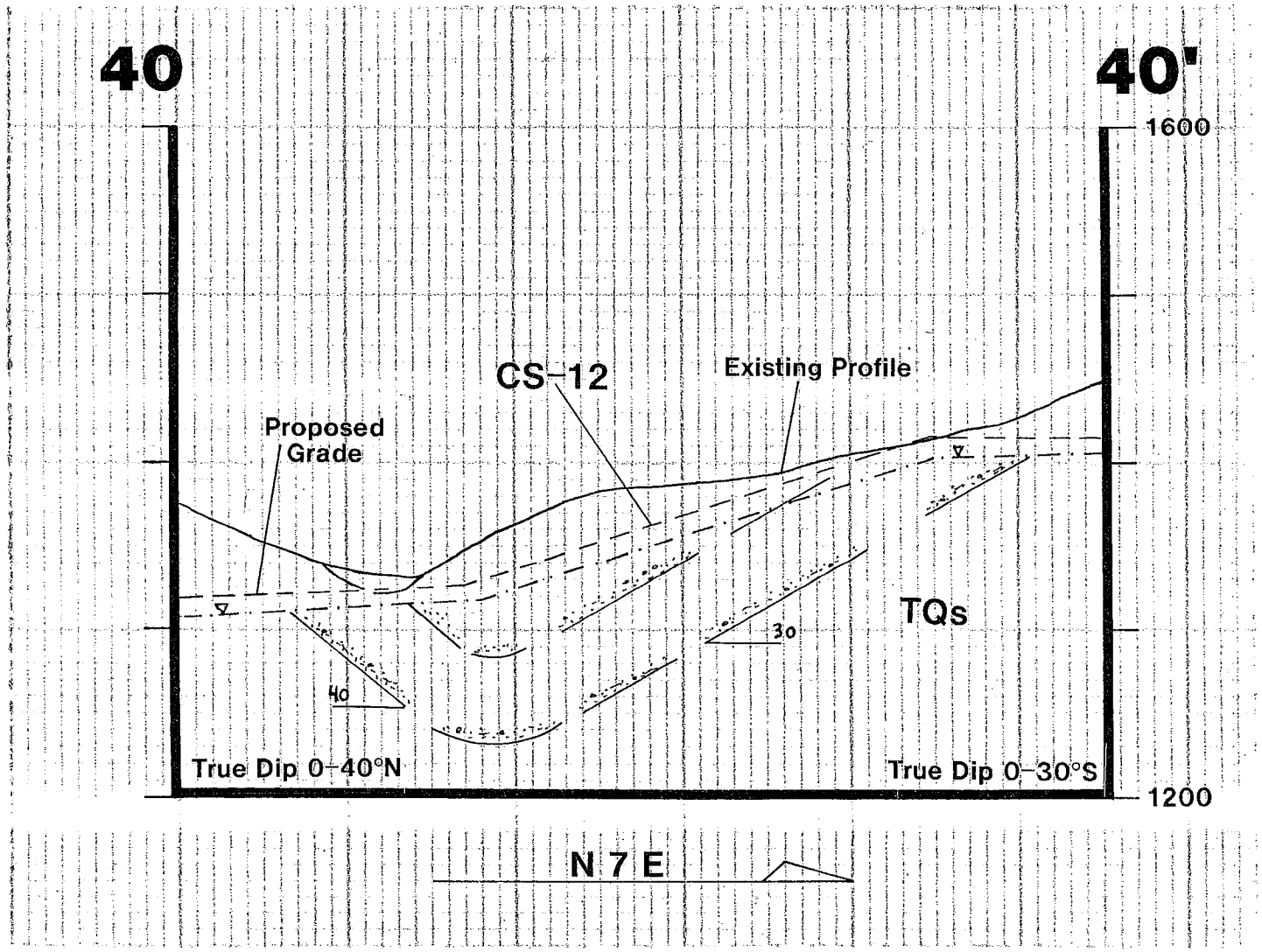

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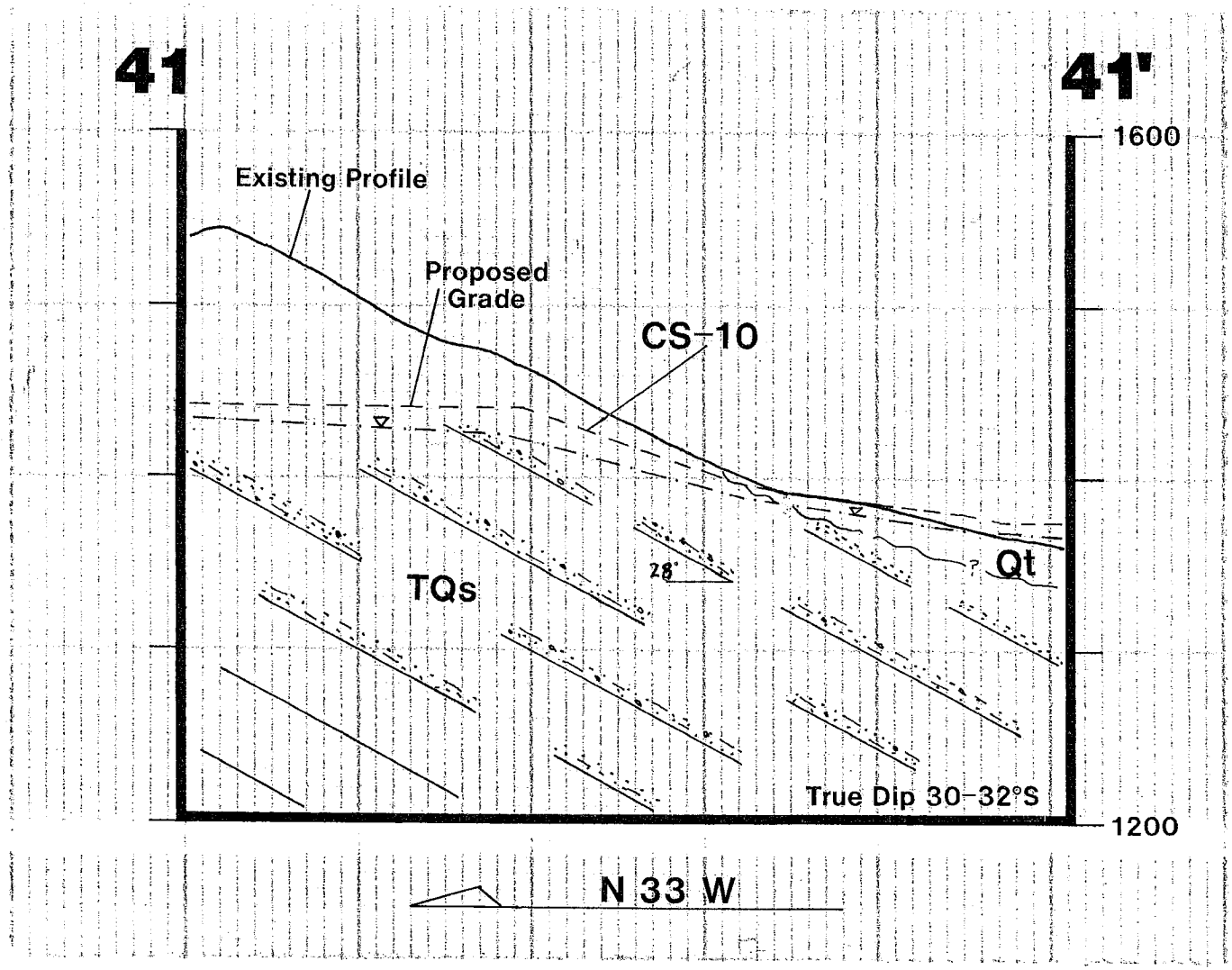

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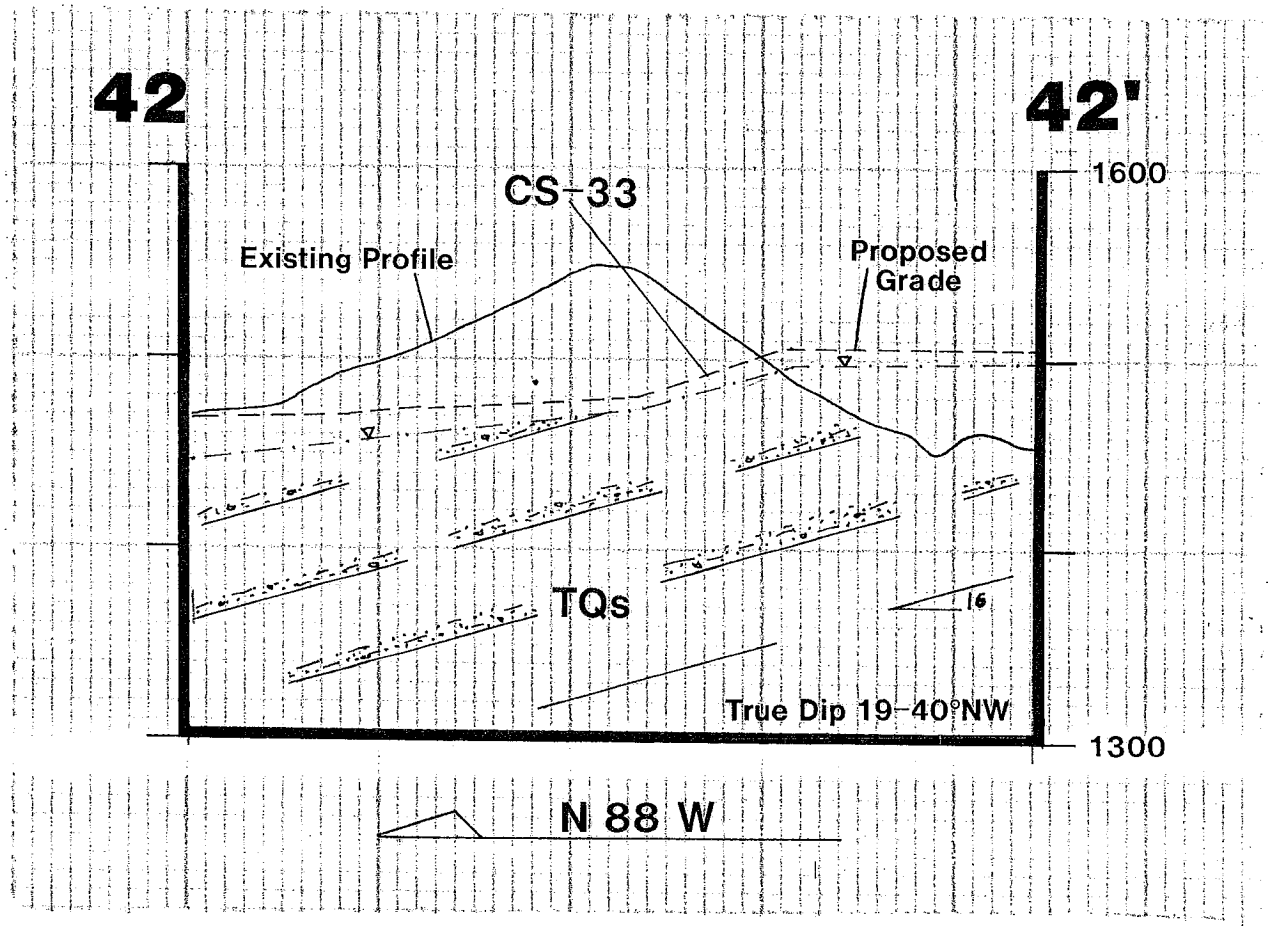

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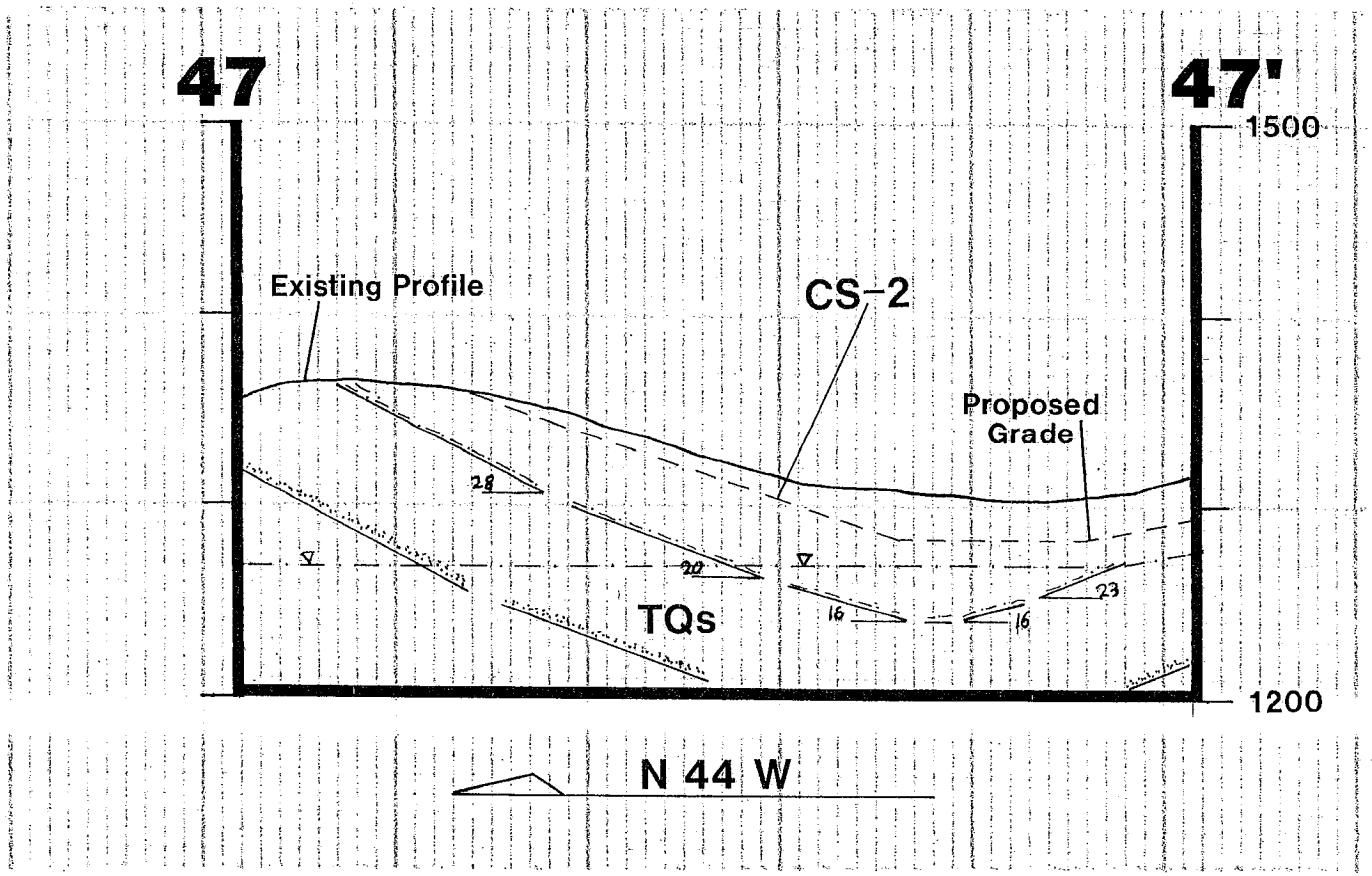

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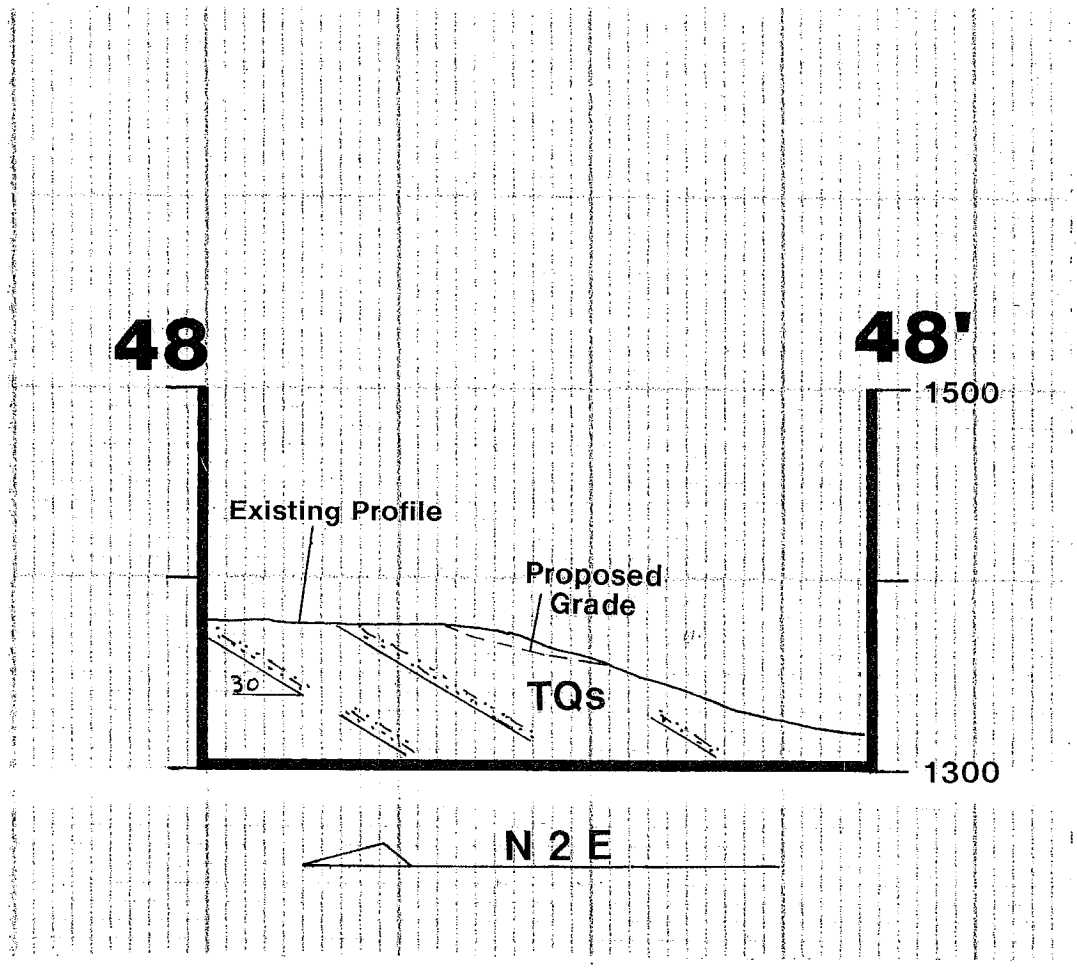

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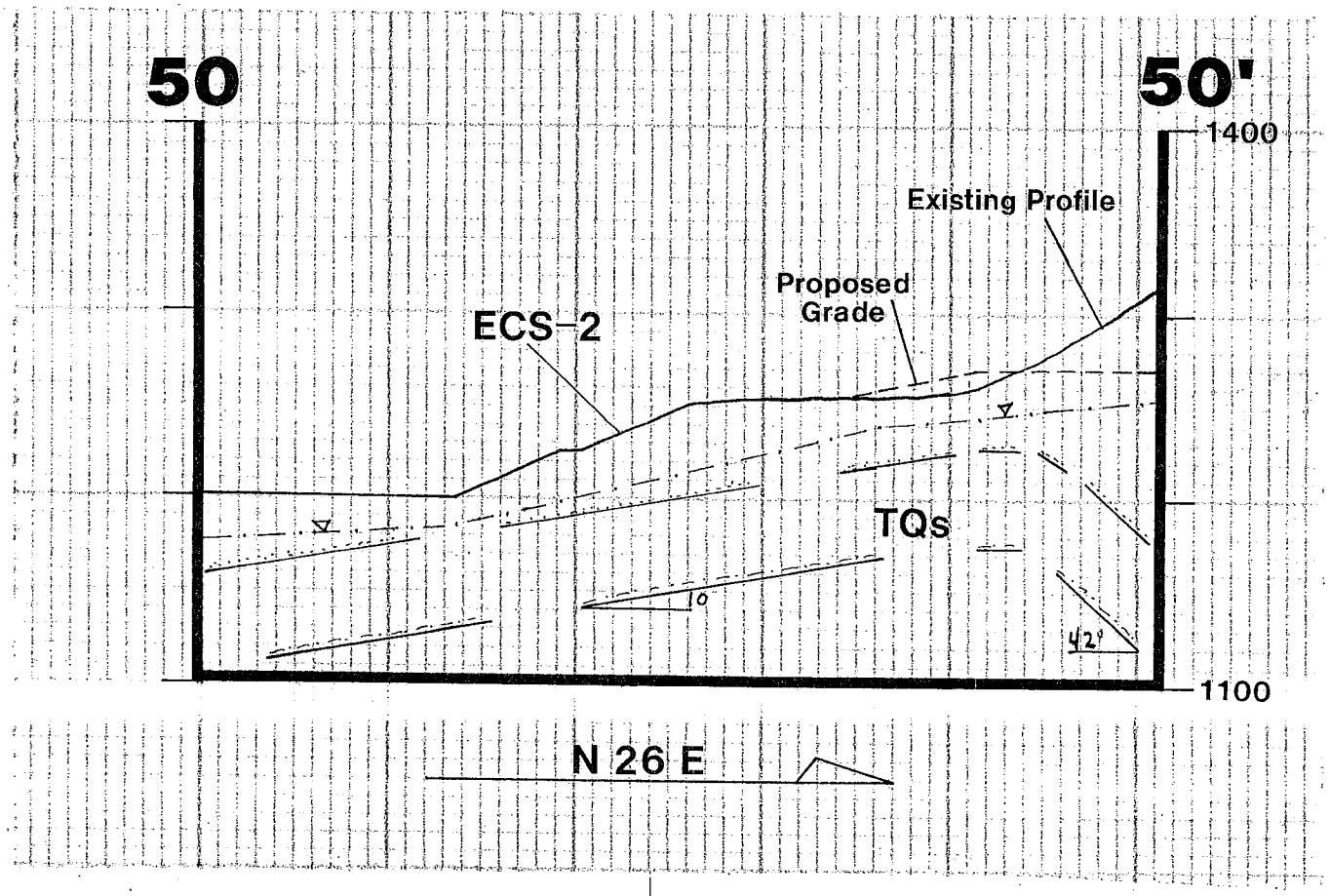

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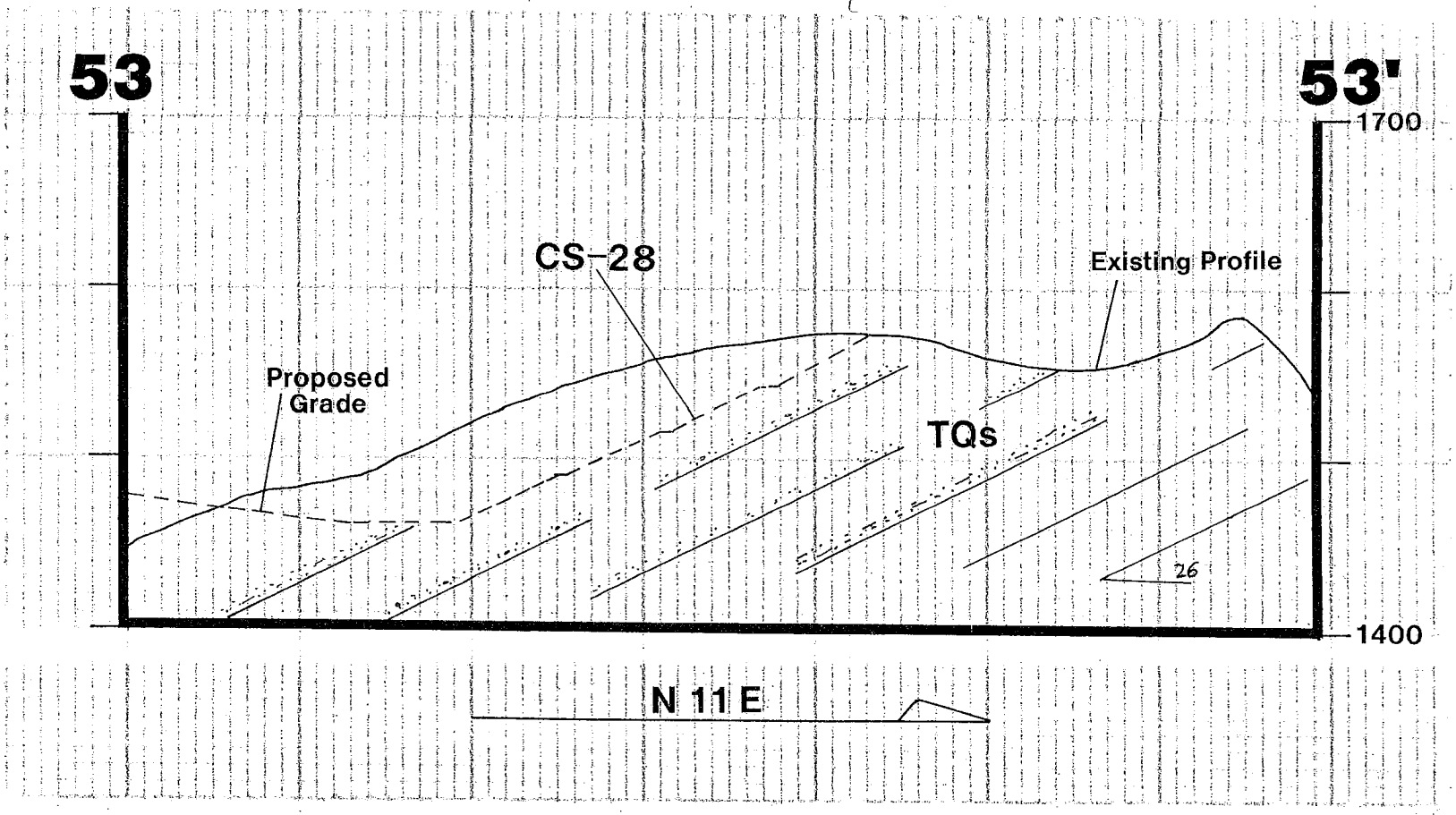

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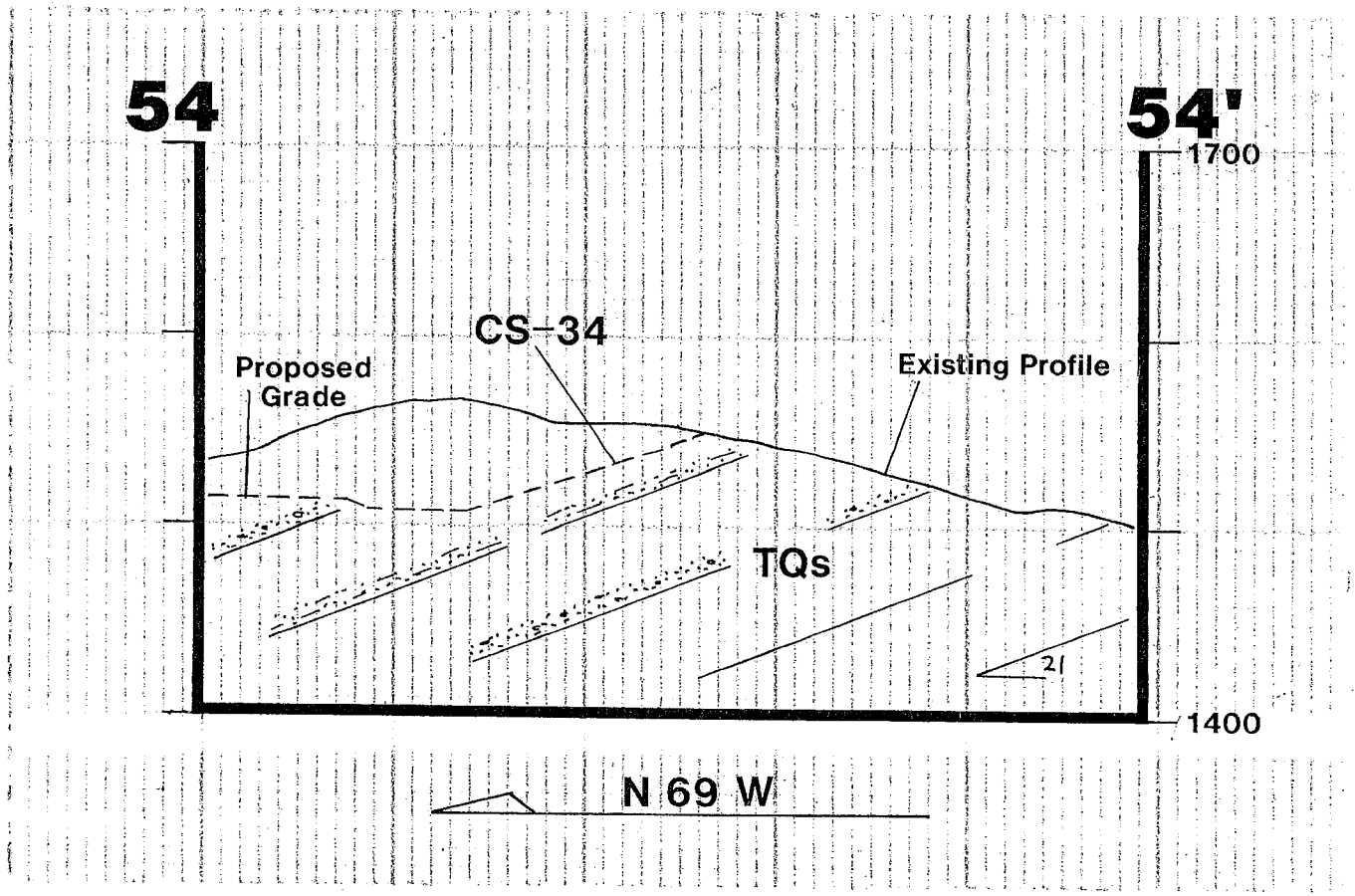

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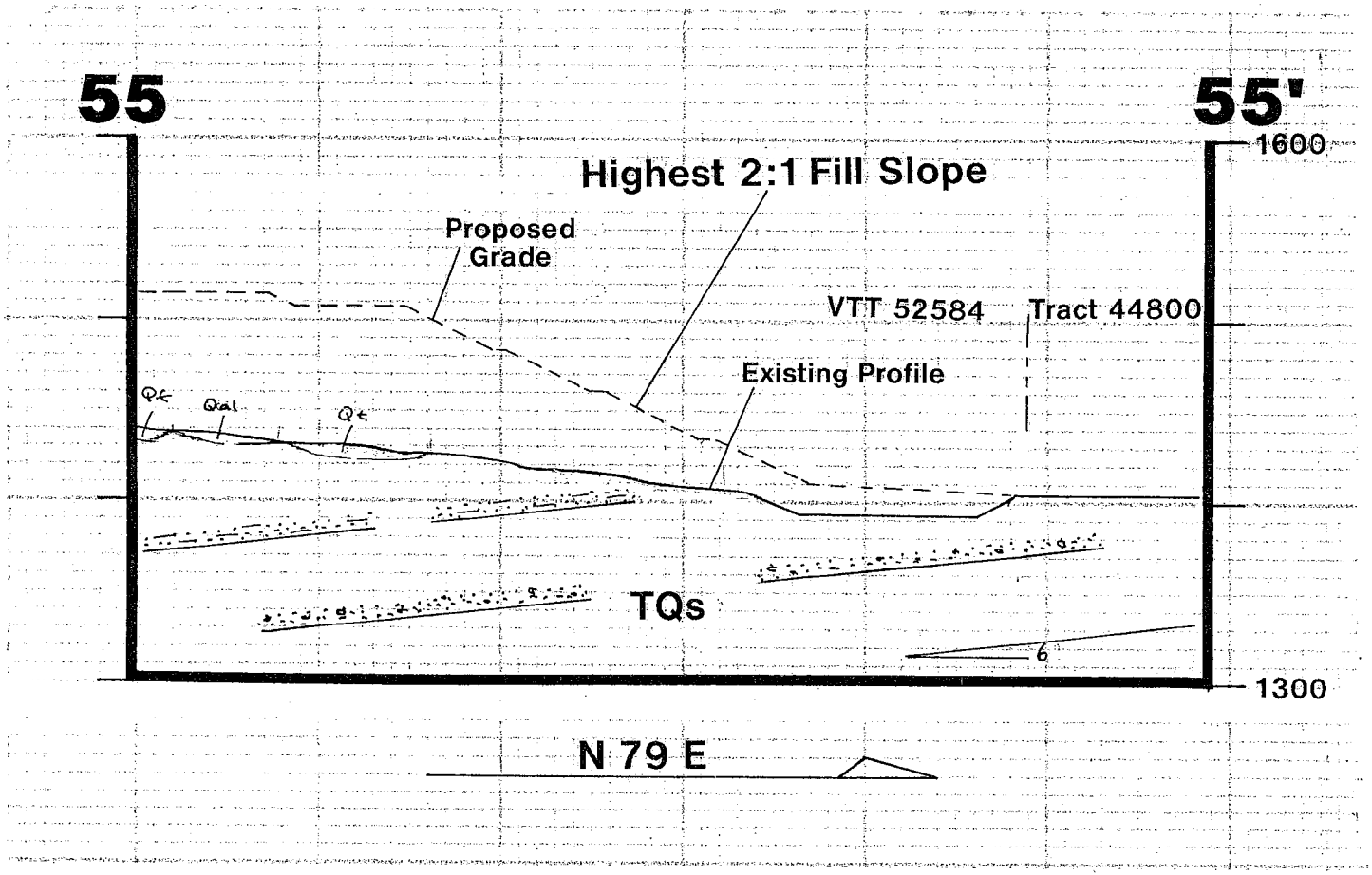

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ENGINEERING GEOLOGY

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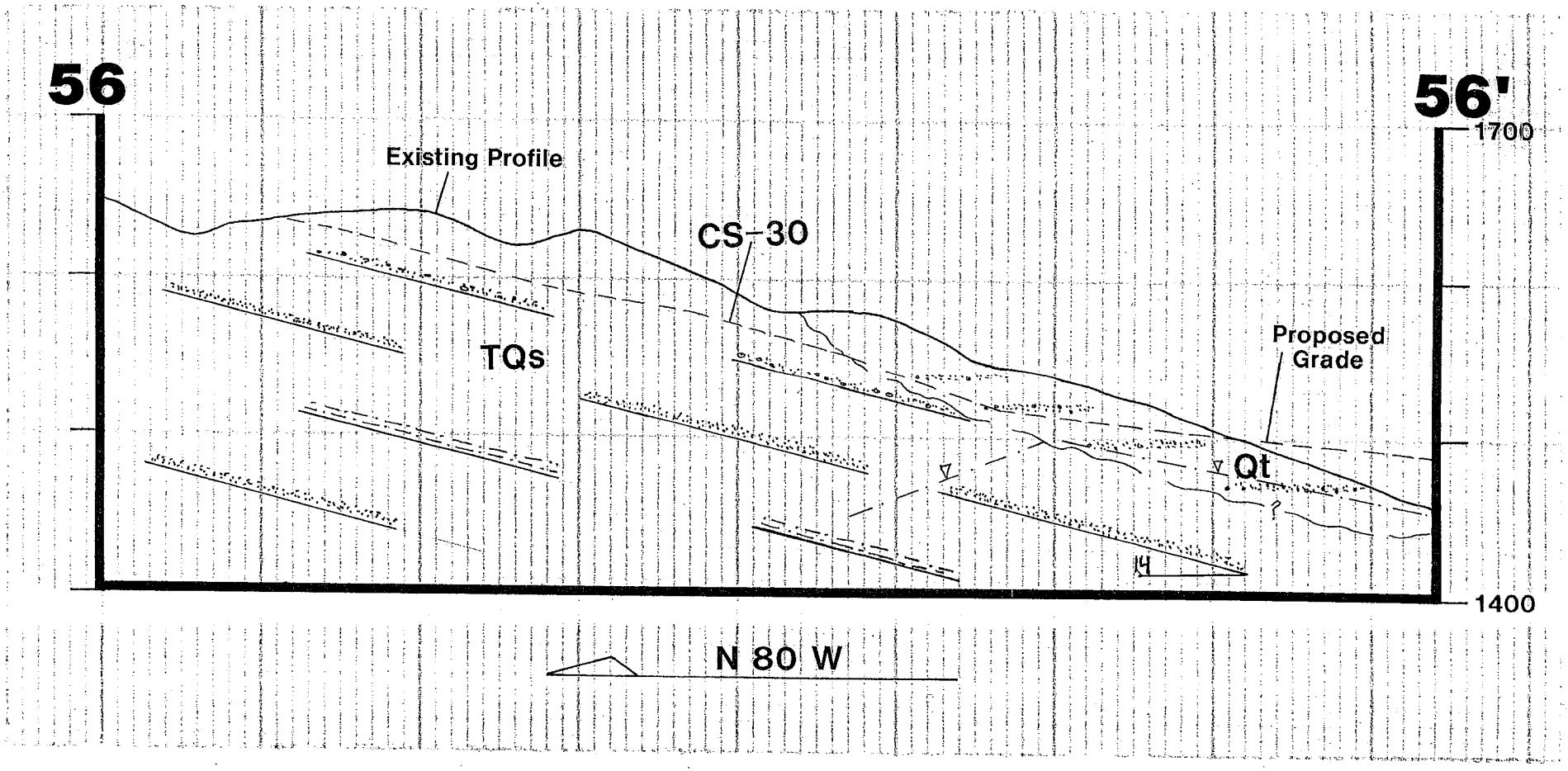

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ENGINEERING GEOLOGY

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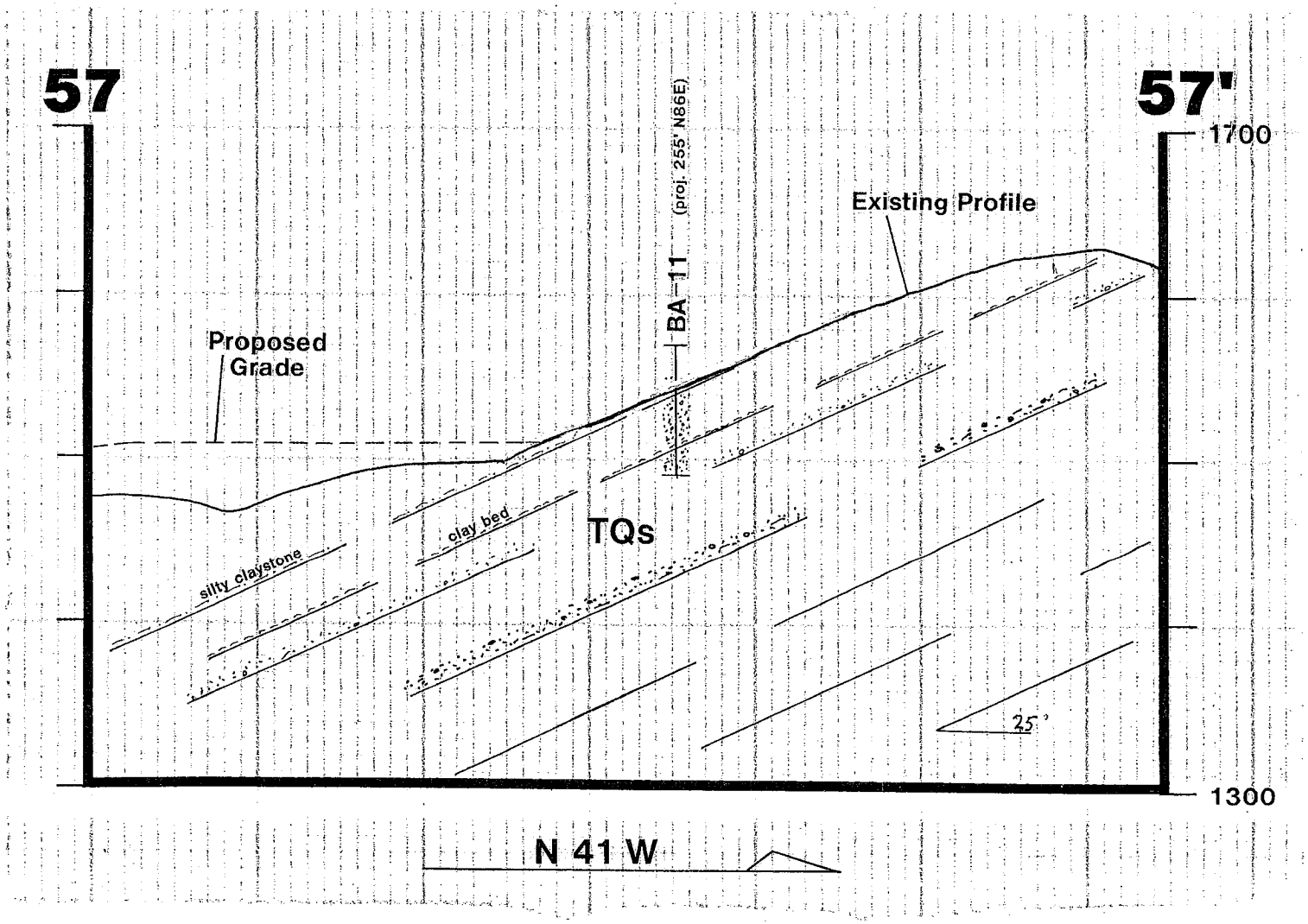

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ENGINEERING GEOLOGY

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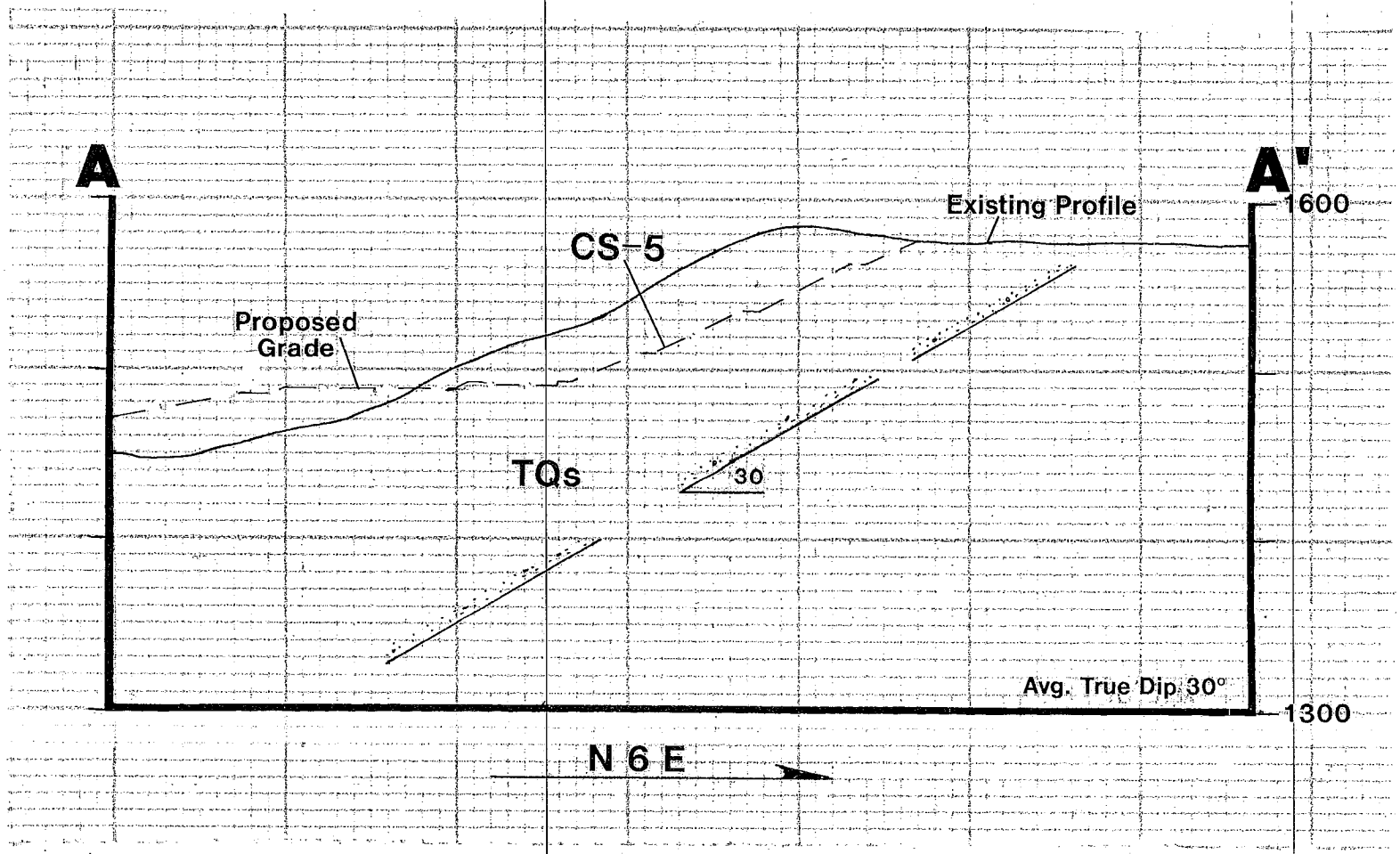

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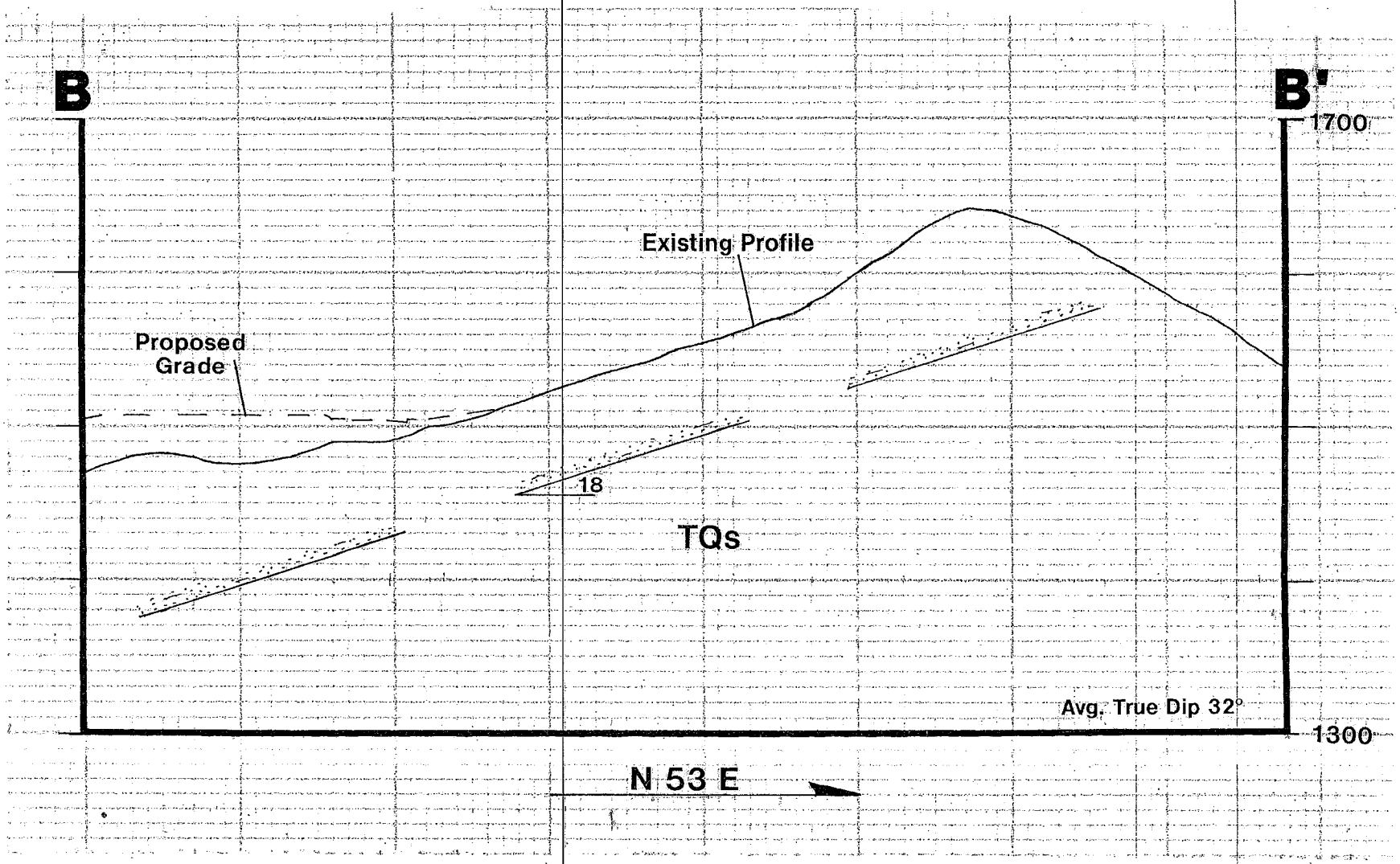

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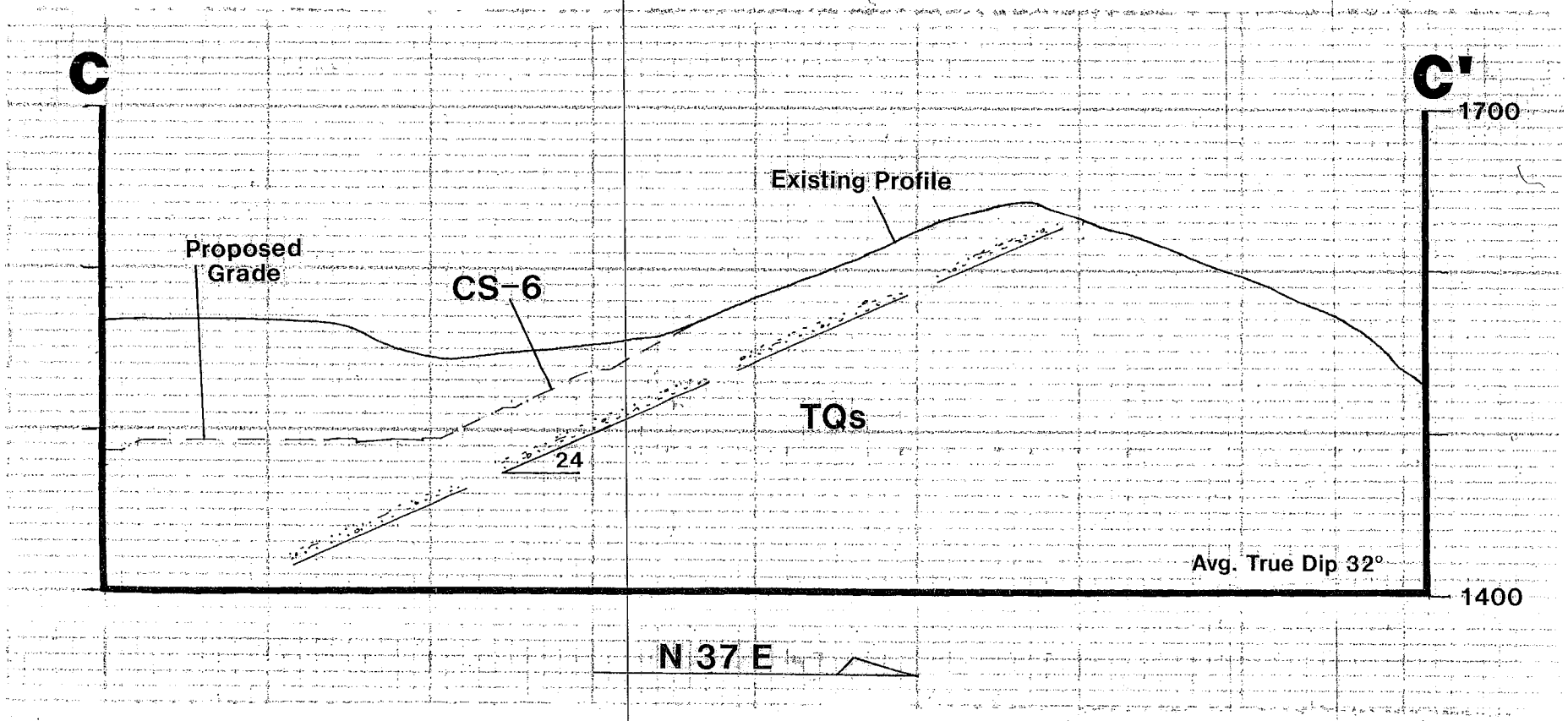

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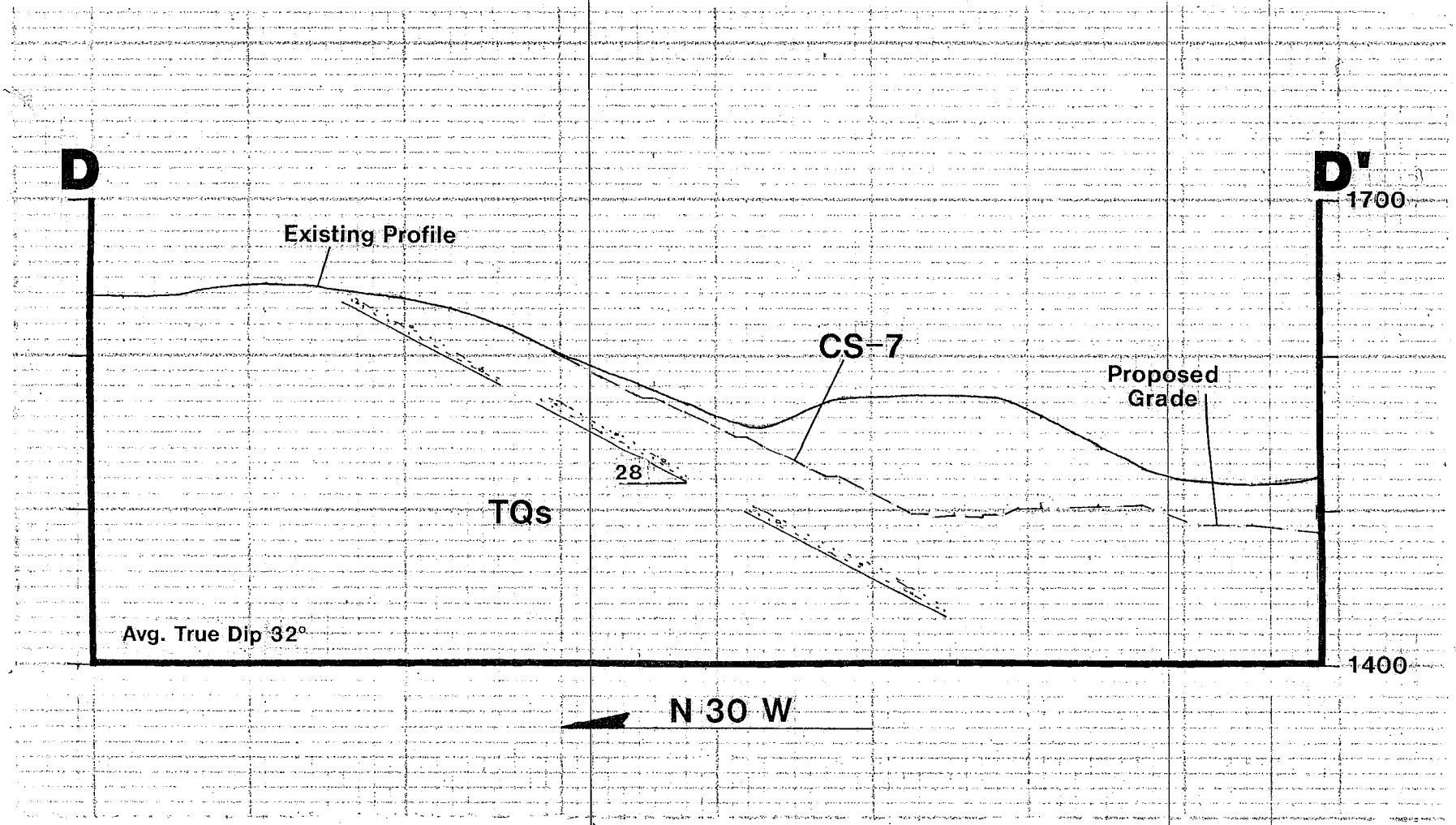

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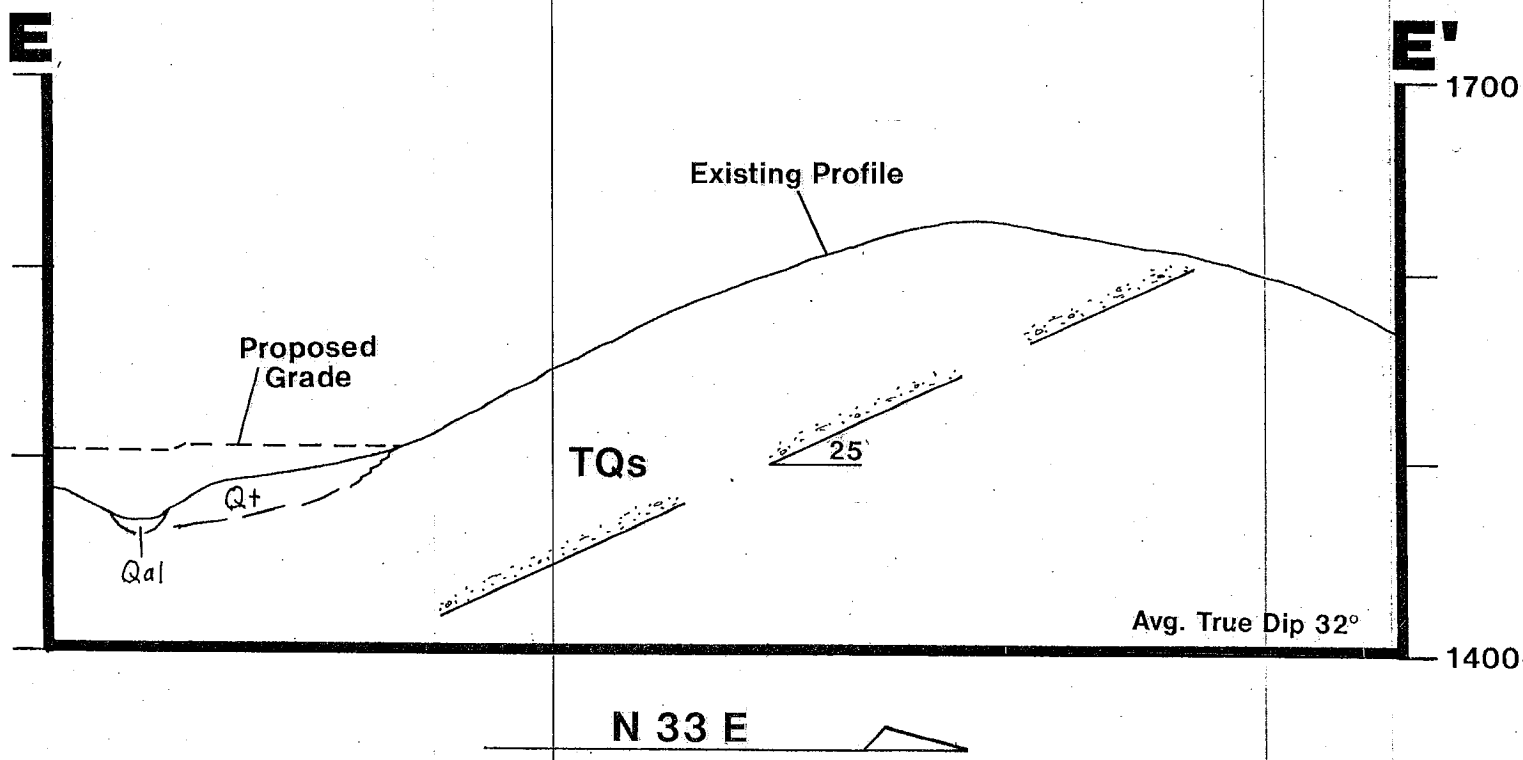

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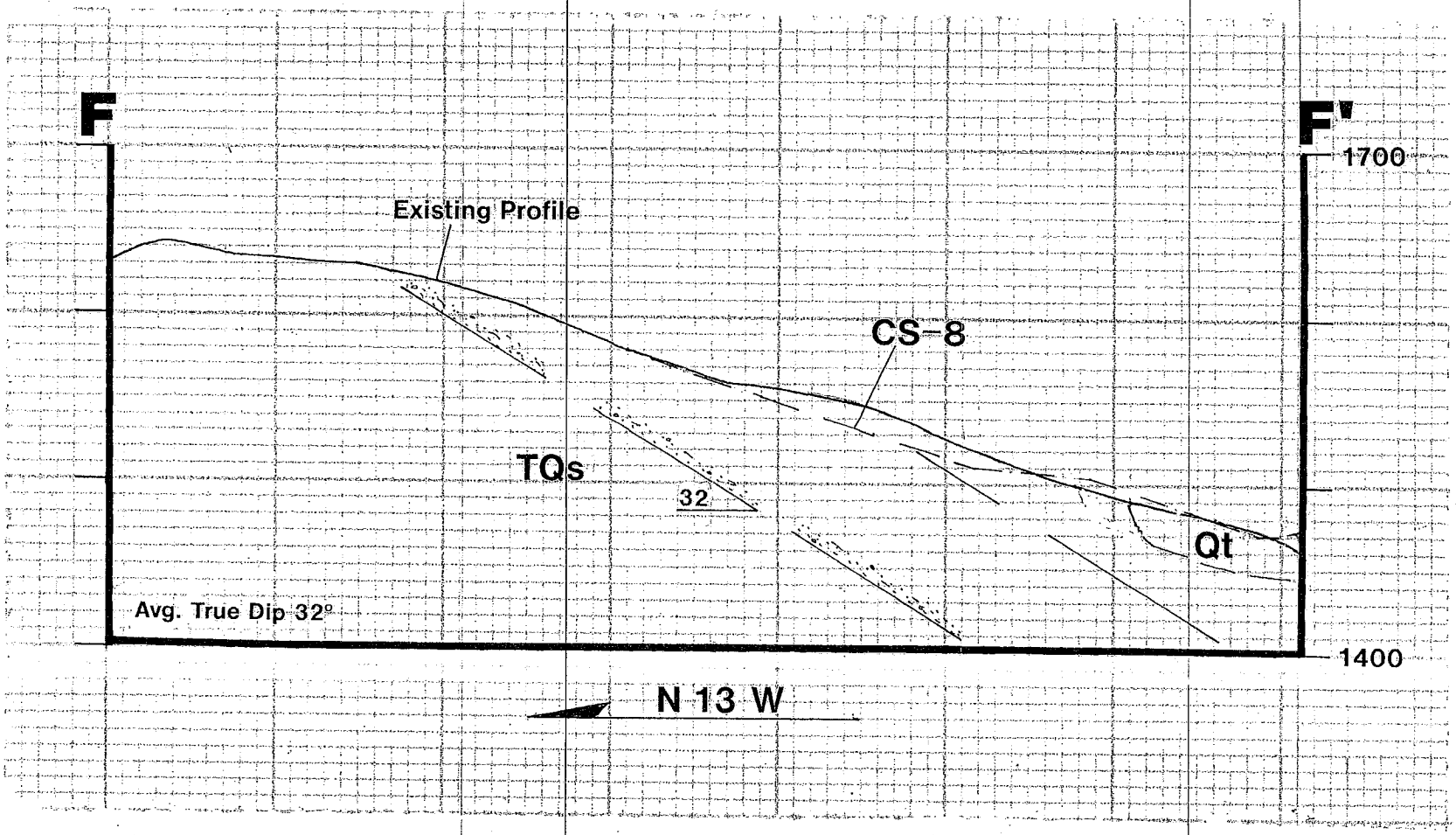

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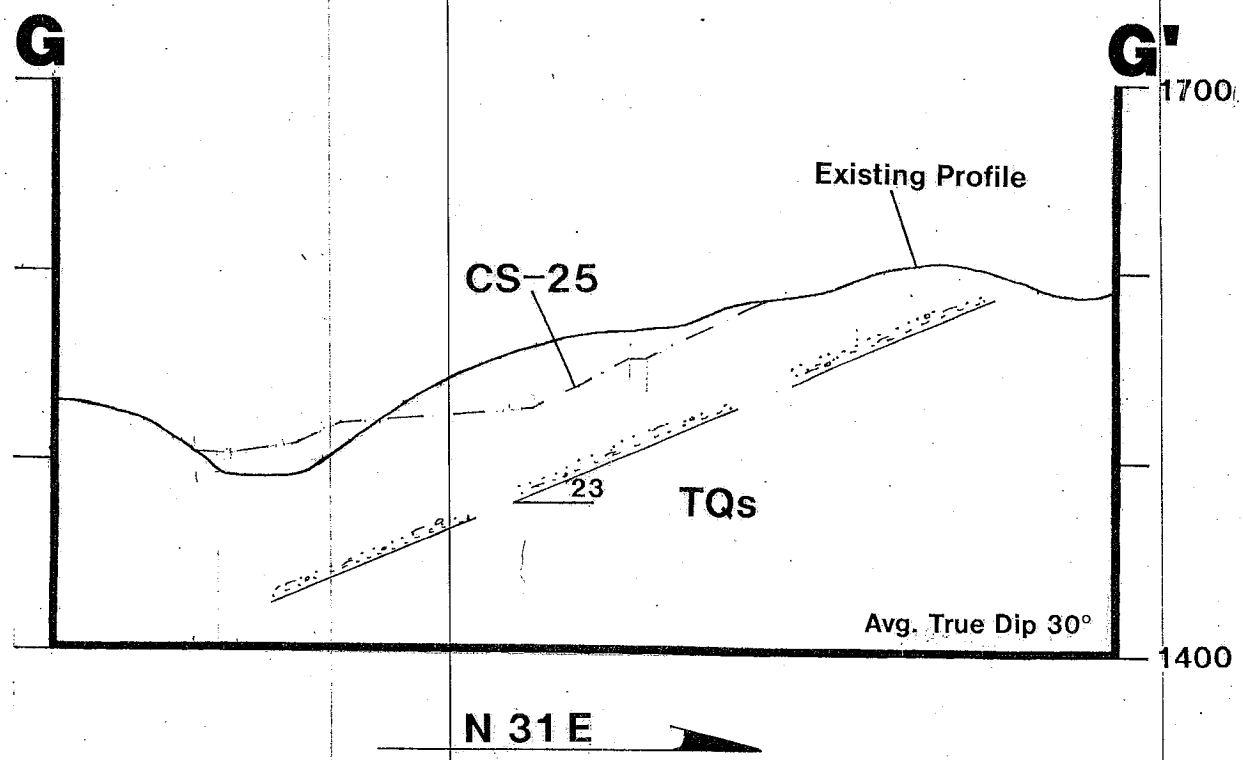

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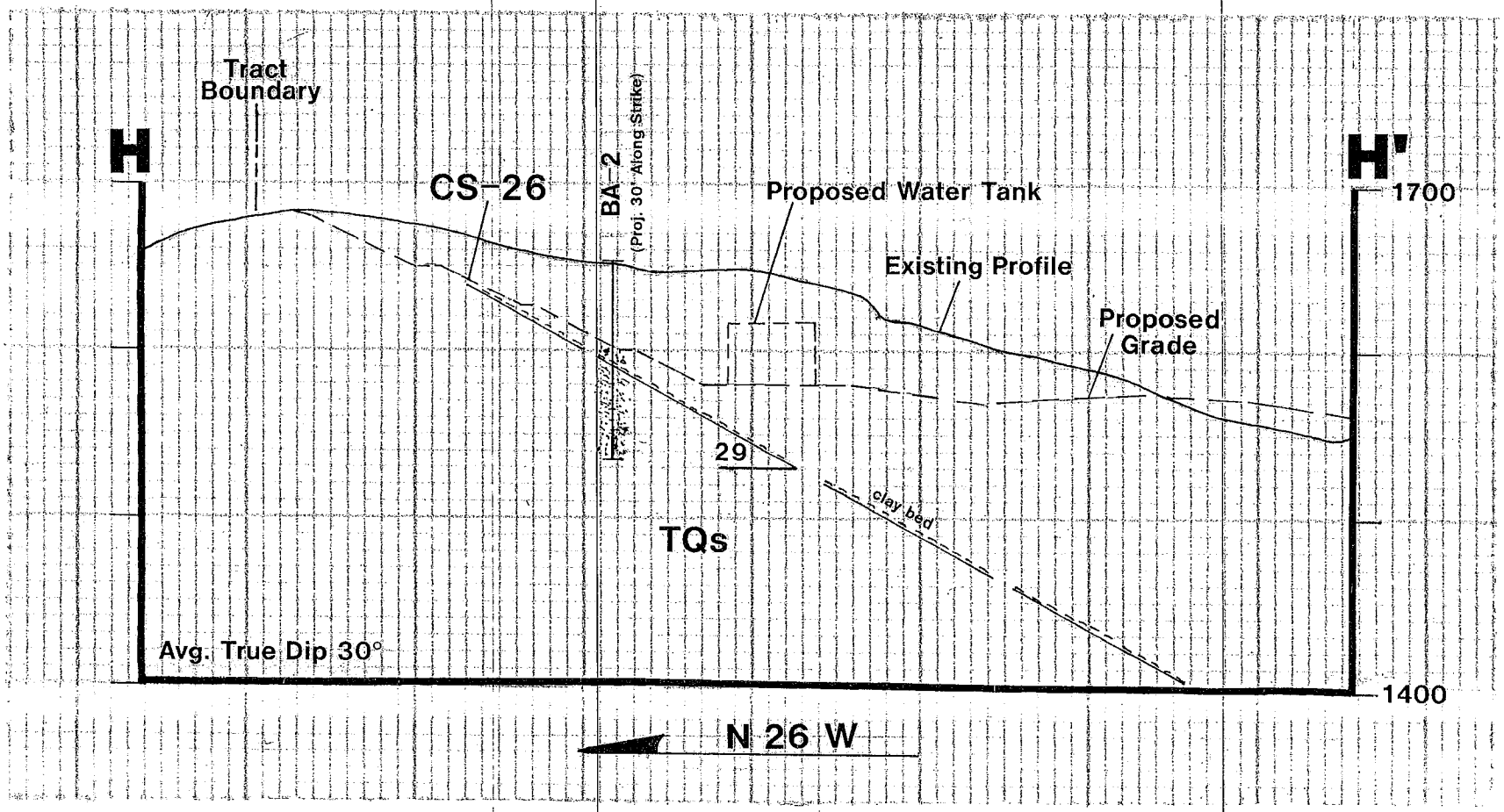

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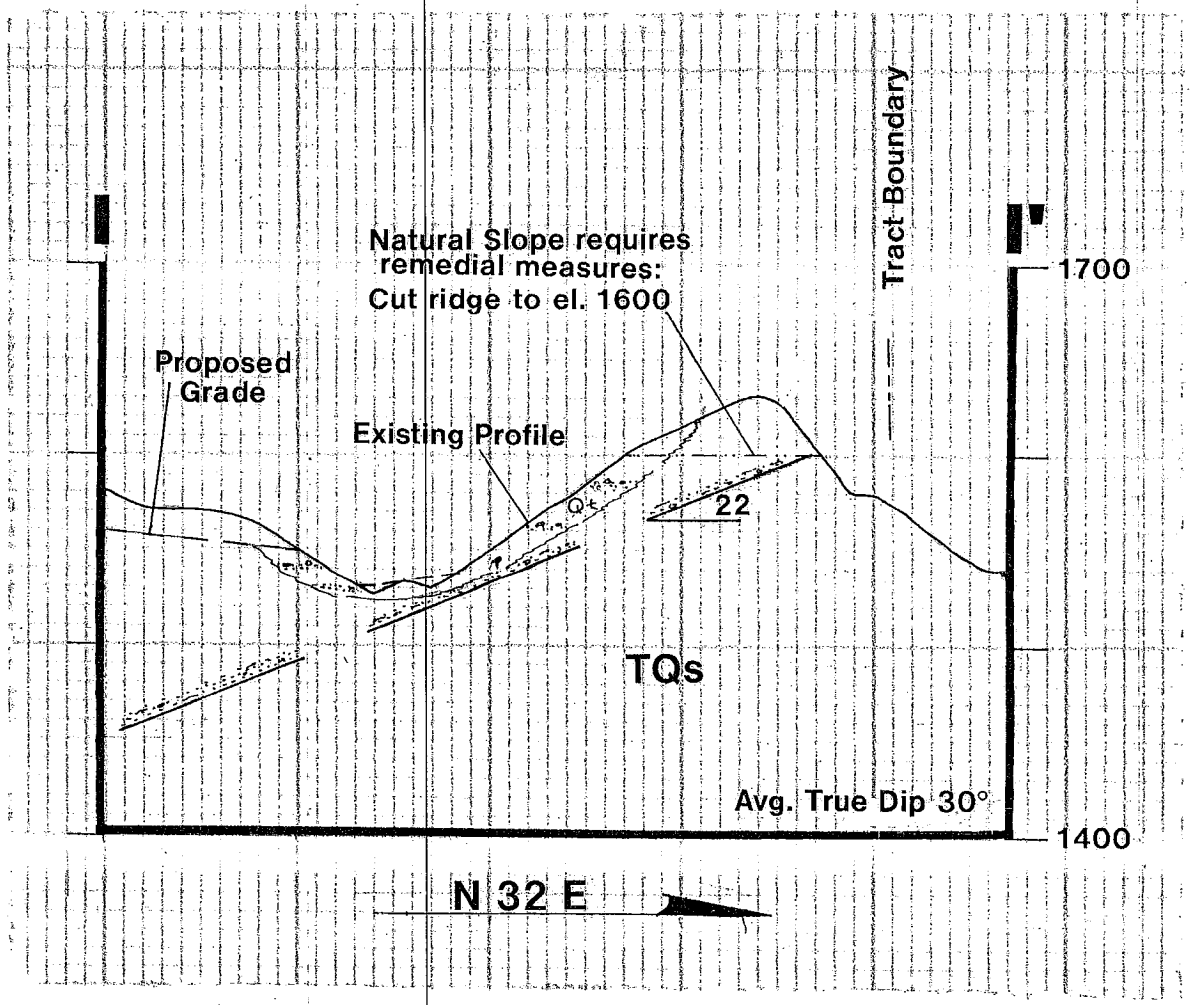
ENGINEERING GEOLOGY

JOB NUMBER: 03-1617-4	DATE: 4/16/03
SCALE: 1"=100'	DRAWN BY: STAFF
	REVISED:

NEW CROSS SECTION



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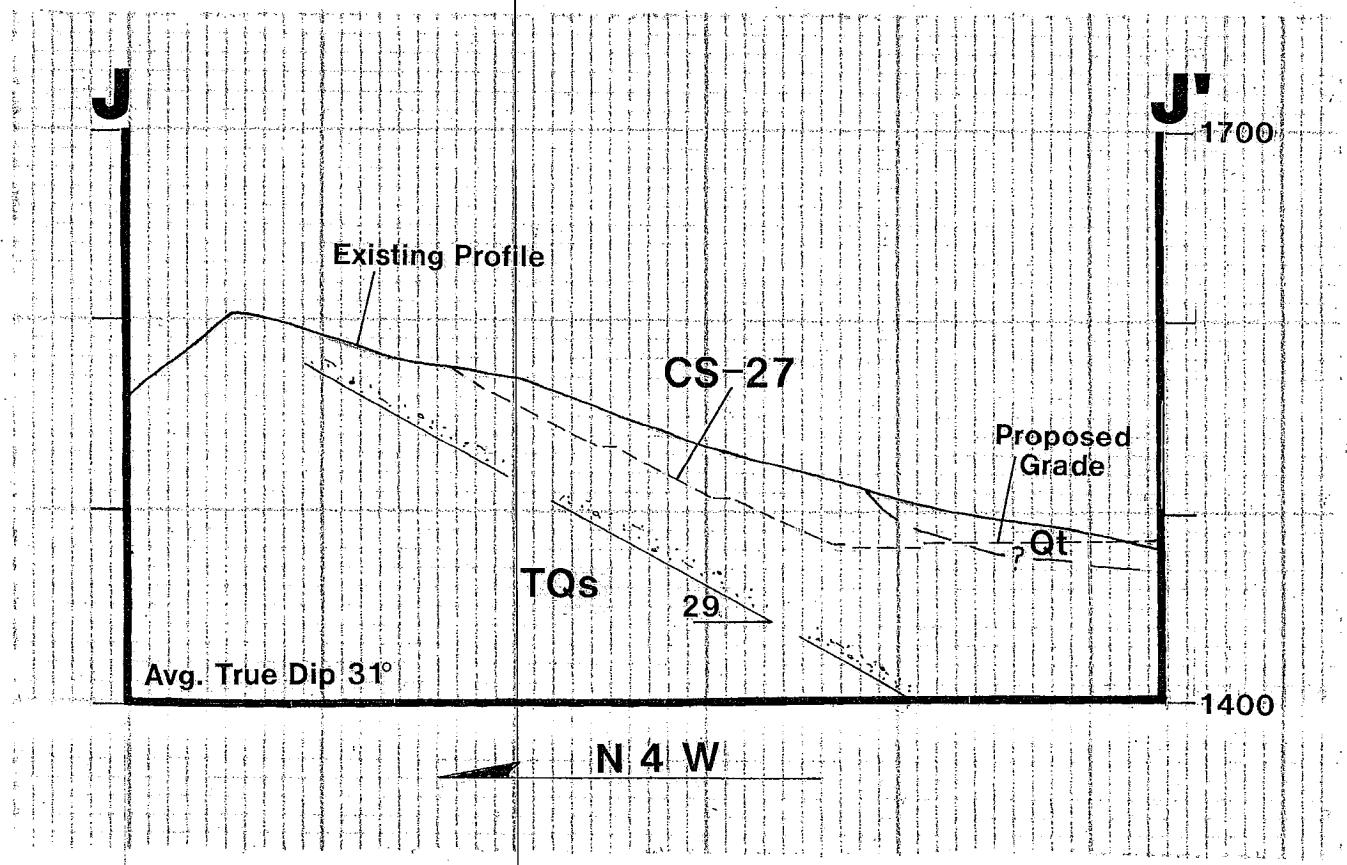
	REVISED:

NEW CROSS SECTION



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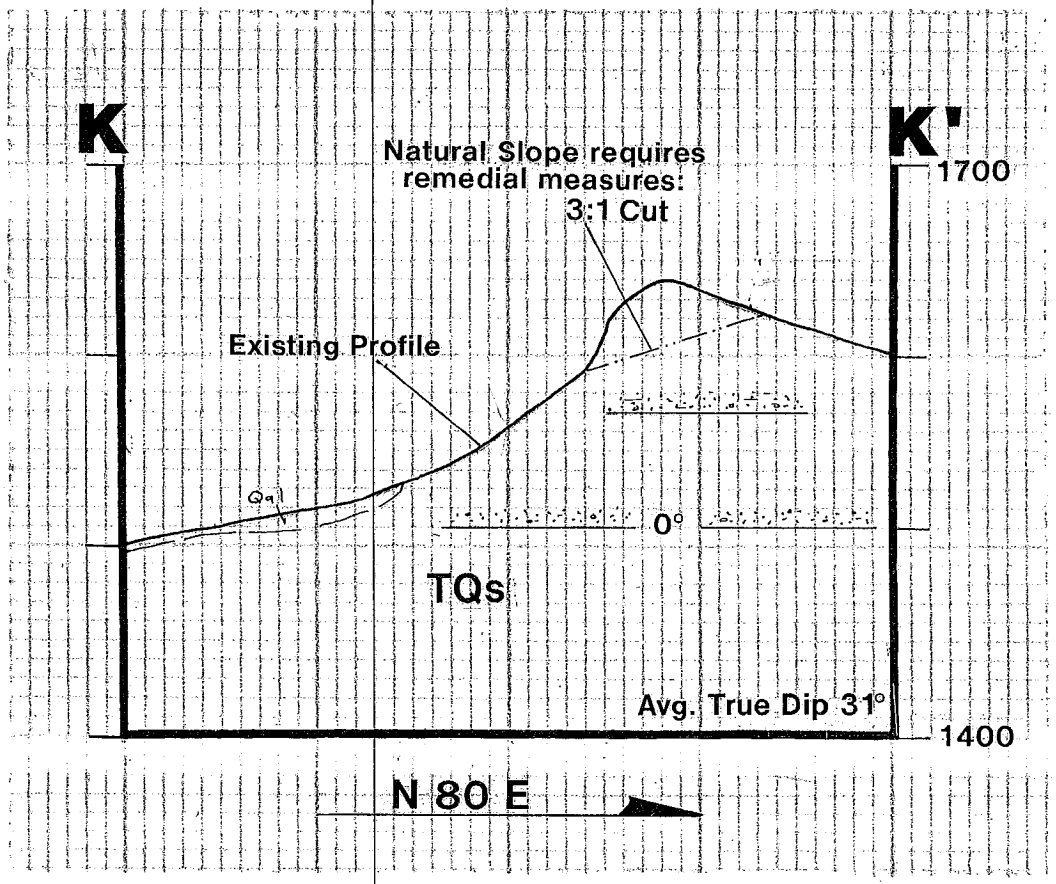
SCALE: 1"=100'		DRAWN BY: STAFF	
		REVISED:	

NEW CROSS SECTION



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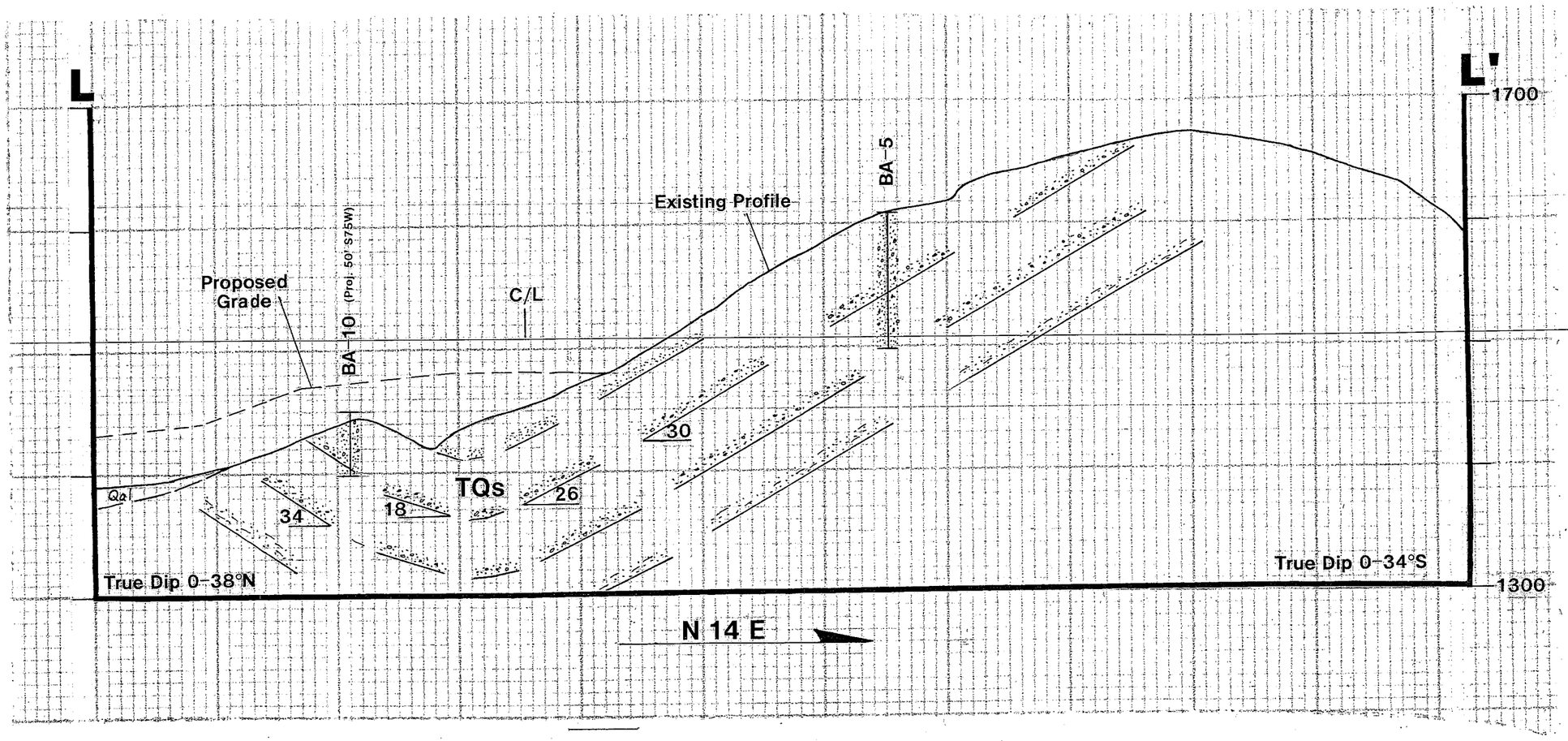
JOB NUMBER: 03-1617-4	DATE: 4/16/03	
SCALE: 1"=100'		DRAWN BY: STAFF
		REVISED:

NEW CROSS SECTION



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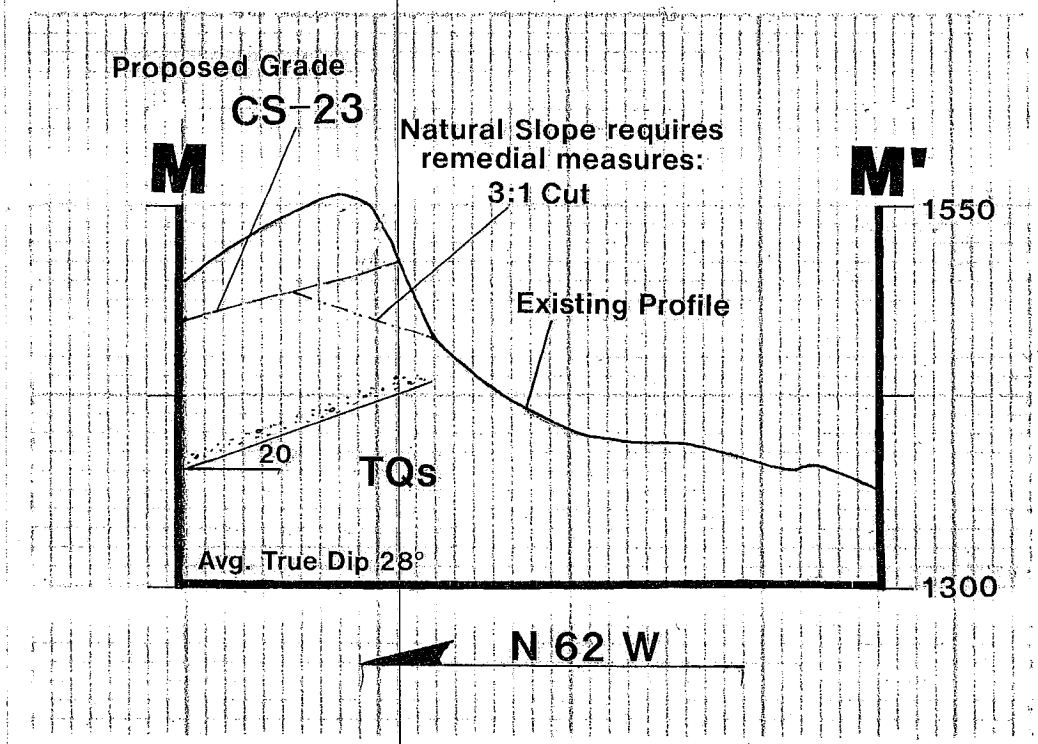
SINCE 1958

Date: 4/16/03		Job No.: 03-1617-4
Scale: 1"=100'	Geology by: STAFF Drawn by: STAFF	Revised:

NEW CROSS SECTION



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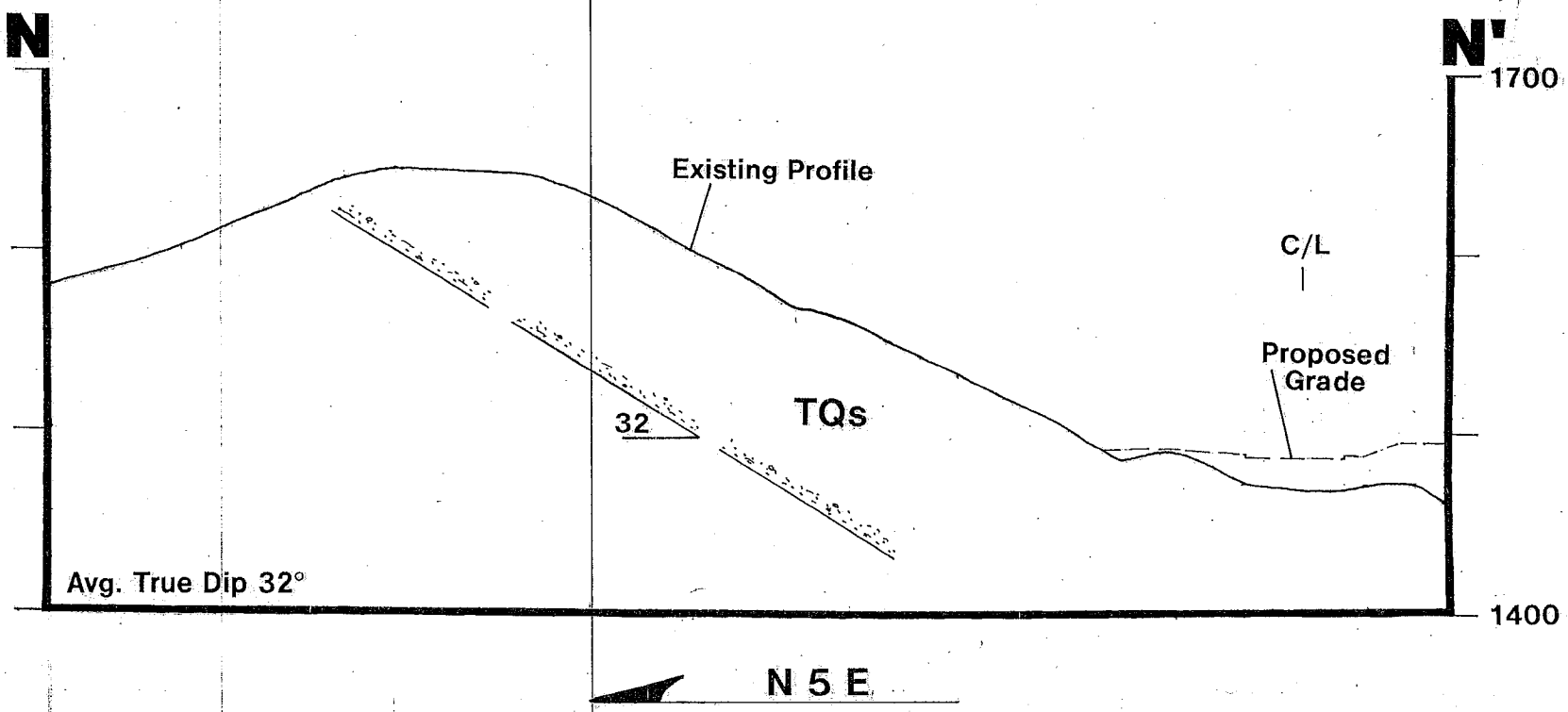
JOB NUMBER: 03-1617-4	DATE: 4/16/03
SCALE: 1"=100'	DRAWN BY: STAFF
	REVISED:

NEW CROSS SECTION



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JOB NUMBER: 03-1617-4	DATE: 4/16/03
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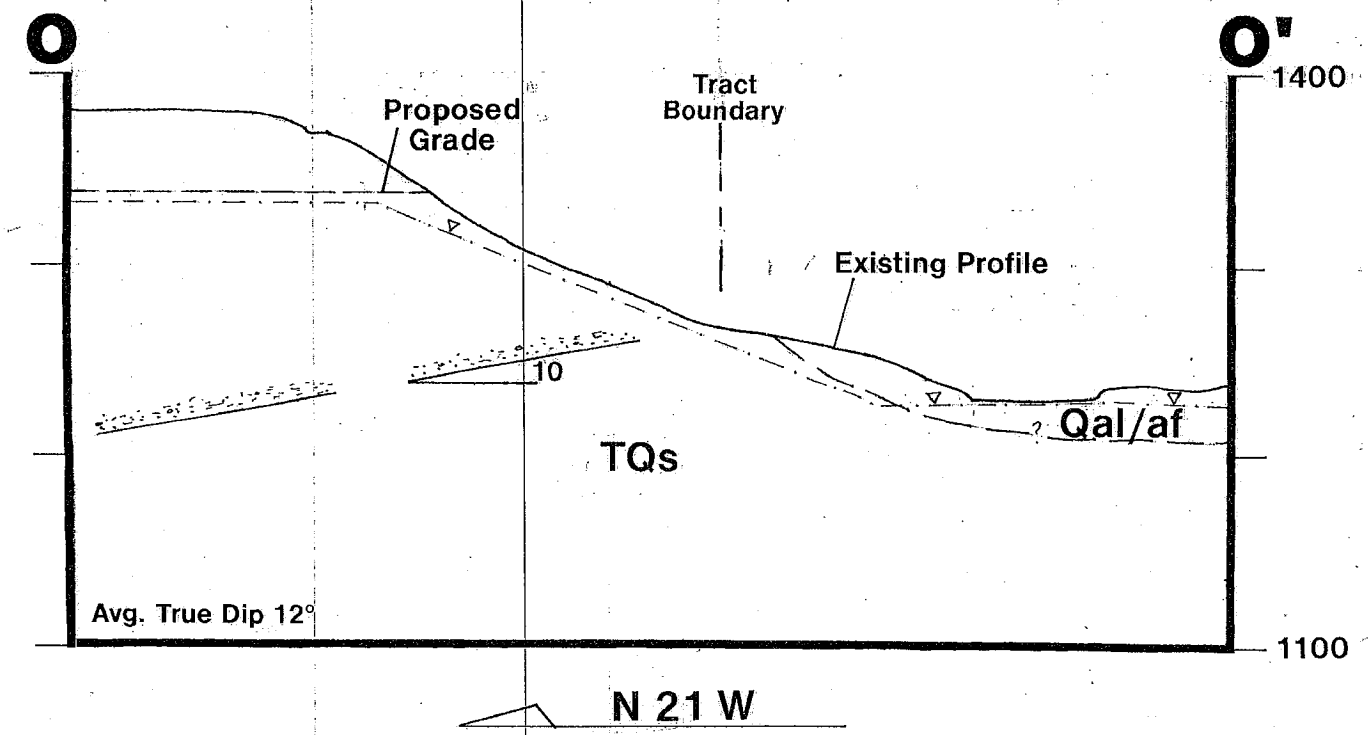
	REVISED:

NEW CROSS SECTION



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JOB NUMBER: 03-1617-4	DATE: 4/16/03	
SCALE: 1"=100'		DRAWN BY: STAFF
		REVISED: