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Groundwater ▼ Environmental ▼ Geotechnical ▼ Construction Materials Testing

Project No. CPGT-10-0024
July 12, 2010

**TO:** **PBS&J**
482 South Keller Road
Orlando, FL 32810
Attention: Mr. David Deans, P.E., BCEE

**SUBJECT:** **Geotechnical Investigation of Increment 1 Landfill Buildout**
Seminole Electric Generating Station
Palatka, Putnam County, Florida

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Dear Mr. Deans:

Andreyev Engineering Inc. has completed a geotechnical investigation for the proposed 30 acre Increment 1 landfill buildout located at the above referenced site. This report and the information contained are intended to address geotechnical assessment related items required for landfill design and construction.

We appreciate the opportunity to provide our services on the project and trust that this report is sufficient to address the geotechnical matters related to the project. Should you have any questions regarding this report, please feel free to contact the undersigned.

Sincerely,

**ANDREYEV ENGINEERING, INC.**

T. Scott Cavin, P.E.
Vice President

FL Registration No. 48125

cc: Seminole Electric Cooperative
FDEP - Jacksonville

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## 1.0 EXECUTIVE SUMMARY

Andreyev Engineering, Inc. (AEI) has performed a geotechnical engineering study to assess the geotechnical considerations for the proposed buildout of Increment 1 of the Seminole Electric Cooperative flue gas desulfurization (FGD) landfill at the Palatka generating facility in Putnam County, Florida. Increment 1 consists of approximately 30 acres of land located immediately south and east of the existing FGD landfill which has been utilized for disposal of FGD residue since the facility's inception. The buildout of Increment 1 will occur in the area of former test cells which were used for testing of various mixtures of fly ash with hardening agents (pozzocrete), as well as relatively undisturbed adjacent lands.

This study focused on the investigation of subsurface conditions in the subject area, followed by laboratory testing of natural soil properties and existing landfill materials. Engineering evaluations are presented addressing settlement potential, bearing capacity of foundation soils, stability of landfill slopes and groundwater considerations.

The investigation and assessment results presented herein demonstrate that the materials present in the test cell areas and on the active landfill slope consist of relatively dense, partially cemented materials which are in a stable condition and capable of supporting the intended landfilling. Soil conditions underlying the property consist of fine sands, slightly silty fine sands and deeper clays. No evidence of excessively loose soil conditions, organics or sinkhole activity was found during the soil explorations. Overall analyses of bearing capacity, settlement and slope stability are presented which support the proposed Increment 1 landfill height and slope conditions and verify that the proposed Increment 1 landfill buildout design meets the geotechnical constraints.

This study is intended to assist in design of the Increment 1 buildout and to address FDEP requirements regulating landfill design described in Chapter 62-701, Florida Administrative Code (FAC).

## 2.0 SITE LOCATION AND CONDITION

The site is located in Sections 5 and 6, Township 9 South, Range 27 East, Putnam County, Florida. It is approximately 3,000 feet east of Highway 19 and 0.5 miles west and north of the St. Johns River. An existing FGD landfill which is owned and operated by Seminole is located immediately north of the project area. The subject property consists of 30 acres and is also intended to be utilized as a disposal area.

Regionally, the site is located on an upland knoll and is surrounded on all sides by lower lying wetland systems. Nearby wetlands which are interconnected to the St. Johns River are located to the north and east and are at an elevation of approximately 25 ft-NGVD. Perched wetlands are located to the south and west and appear to be at elevations ranging from +50 to +70 ft-NGVD. A site vicinity map is shown superimposed on the USGS quadrangle map on the attached **Figure 1**.

This property has been the subject of geotechnical engineering studies in the past. Most recently, the waste materials of the existing landfill were characterized and a composite liner was designed and constructed on the existing landfill. Geotechnical reports associated with this work were prepared by Ardaman and Associates and were reviewed as part of this investigation.

## 3.0 PROJECT DESCRIPTION

The project will consist of buildout of the Increment 1 area immediately adjacent to the existing FGD landfill. The added area will be approximately 30 acres located immediately south and southeast of the existing landfill. Approximately 15 acres of the area consists of former test cells which are reported to contain process waste material from the FGD system, pozzocrete and other related waste materials. According to Seminole, the former test cells were lined prior to placement of the materials. The remaining 15 acres consists of land which does not contain waste materials, non virgin forested areas, and areas set aside for logistical support of the current FGD landfill operation, such as service roads, utility easements and other cleared land. An aerial photograph showing the existing FGD landfill, test cell areas and Increment 1 area on natural grade is shown on the attached **Figure 3**.

The Increment 1 buildout will extend up the south slope of the existing FGD landfill located immediately north of the Increment 1 project area. A composite liner currently exists at the top of the approximate +180 ft-NGVD level of the existing landfill, where landfilling will continue in the future to higher elevations. For the Increment 1 area, a new liner will be extended down the south slope of the existing FGD landfill and will encompass the entire footprint of the Increment 1 area. The proposed maximum landfill height for the Increment 1 buildout portion will be elevation +200 ft-NGVD.

## 4.0 PURPOSE AND SCOPE

The purpose of the geotechnical engineering study was to obtain additional information on the subsurface conditions at the site and to evaluate those conditions in accordance with Chapter 62-701, FAC. The following tasks were performed:

1. Investigated the waste materials in the test cells and the natural deeper subsurface conditions by drilling a series of Standard Penetration Test (SPT) borings. A total of six (6) borings were drilled to depths ranging from 50 to 75 feet.

2. Investigated the natural deep subsurface conditions within the Increment 1 footprint and outside the test cells by drilling four (4) SPT borings to depths ranging from 50 to 100 feet.

3. Investigated the waste materials in the existing FGD landfill's south slope by drilling three (3) SPT borings to depths ranging from 30 to 50 feet.

4. Conducted core drilling of hardened pozzocrete material and fly ash in the test cell areas and existing landfill material. A total of five (5) core samples were collected.

5. Conducted a series of engineering index property tests on the existing waste material and native subsurface materials, including:
    - Moisture content
    - Percent fines content
    - Atterberg Limits
    - Compressive Strength
    - Consolidation Tests
    - Remolded Hydraulic Conuctivity Test

6. Conducted an engineering evaluation of the collected field and laboratory test data, preparation of location plans, soil profiles, geologic cross sections through the soil boring alignments, presentation of subsurface conditions, and groundwater levels in elevation, ft-NGVD.

7. Conducted detailed geotechnical evaluations of foundation bearing capacity, localized and global slope stability, and immediate and long-term settlement under the FGD landfill. Evaluate any potential settlement impact of filling on the existing FGD landfill liner. These analyses were conducted using the soil parameters identified from the field exploration and laboratory testing.

8. Prepared recommendations for stabilization, general earthwork, site preparation and compaction of soils and materials prior to liner construction.

9. Prepared this geotechnical report presenting the results of the testing, assessment of conditions, and engineering evaluations in support of Increment 1 landfill design and construction.

## 5.0 S.C.S. SOIL SURVEY

The “Soil Survey of Putnam County, Florida” published by the U.S. Department of Agriculture Soil Conservation Service (S.C.S.) was reviewed. The shallow soil types identified at the site are as follows:

- Myakka fine sand (3), which is a nearly level, poorly drained sand. The seasonal high groundwater table is between 10 and 40 inches deep. Permeability is rapid in the surface layer, moderate or moderately rapid in the subsoil, and rapid in the substratum.

- Tavares fine sand (6), which is a nearly level, poorly drained sand. The seasonal high groundwater table is between 25 and 40 inches deep. Permeability is very rapid.

- St. Johns fine sand, depressional (27), which is a nearly level to gently sloping, poorly drained soils. The seasonal high groundwater table is between 10 and 30 inches at the ground surface. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil.

A copy of the SCS Soil Survey is provided in **Figure 2**.

## 6.0 PHOTOLINEAMENT STUDY AND SINKHOLE INVENTORY

Lineaments are defined as physical features of the earth’s surface which are oriented in linear arrangements. Photolineaments are lineaments which are identified using aerial photographs in combination with topographic maps. These surface features typically represent underlying fractures of the limestone bedrock and are represented by trough like depressions, ridges marked by significant vegetation changes or changes in soil colorations. The enhanced topographical surface characteristics of fractures in the underlying limestone are typically caused by increased surface recharge which causes solution of overlying strata.

Vertical fracturing in a carbonate aquifer system can occur from propagation of basement structures through the overlying carbonates in response to crustal flexing caused by earth tides (Blanchet, 1957). Surface lineaments have been long recognized as surface manifestations of underlying vertical to near-vertical zones of fracture concentrations (Lattman and Parizek, 1964). Surface lineaments are typically orthogonally oriented with angles between 45 and 55 degrees east and west of north. In a karst carbonate aquifer system, fracture zones can be enlarged by chemical dissolution.

In order to examine photolineaments existing within and in the vicinity of the subject property, AEI utilized an aerial photograph with a scale of 1"=2,000’ and a topographic map with a scale of 1"=2,000'. The photograph was inspected for soil colorations, natural drainage features, depression areas possibly indicating karst conditions and vegetation changes. In addition to the aerial photograph, a five foot contour topographic map was used to inspect the surface topography for depressions and sinks which may indicate surface subsidence caused by past karst activity.

Based on this analysis, there are no physical features which appear to represent potential fractures (photolineaments) within, and near, the subject site.

The Florida Geological Survey (FGS) Subsidence Incident Report database documenting sinkhole activity was reviewed and no new sinkholes in the vicinity of the subject property were identified. Based on this survey and the observed surficial topographic setting within the project area and immediate vicinity, the area has no reported sinkhole activity.

## 7.0 SITE SPECIFIC INVESTIGATION

A total of thirteen (13) SPT borings were drilled in the area of the Increment 1 buildout property. The locations of the borings are presented on the attached **Figure 4**.

### Natural Subsurface Conditions

Borings TB-1 through TB-6 were drilled in the former test cell areas and into the underlying natural soils, and TB-7 through TB-10 were drilled in the east portion of the project area in areas outside of the FGD landfill and test cell areas. Subsoils at the boring locations were found to be relatively consistent. The encountered soils generally consisted of fine sands and slightly silty fine sands starting at ground surface and extending to depths of approximately 40 to 60 feet, followed by sandy clay and clay soils extending to approximately 70 to 80 feet. Below these soils, the deeper borings encountered fine sands and silty fine sands containing shell material.

Based on the SPT-N values, the surficial sands and slightly silty sands were generally found to be in a loose to medium dense state, with some instances of dense conditions. The underlying sandy clays and clays were generally found to be in a stiff condition. A zone of soft clay was noted in the depth range of approximately 50 to 60 feet.

### Test Cell Material

The materials in the test cells were investigated by drilling six (6) SPT borings (TB-1 through TB-6) in the center of the test cells. Continuous split spoon sampling in the first 10 feet was conducted, followed by sampling at 5 foot intervals thereafter. In addition, core drilling was conducted at four (4) of the boring locations. The results of the drilling and coring indicated the presence of pozzocrete material of varying consistency, ranging from strongly cemented to weakly cemented and containing varying amounts of gypsum. Deposits of very weakly cemented fly ash were also encountered in a few locations. Based on the SPT-N values, all of the material was found to be in a medium dense to very dense state.

### Existing Landfill Slope

The materials in the existing FGD landfill's south slope were investigated by drilling three (3) SPT borings (TB-11 through TB-13) on the slope. The materials encountered consisted of alternating layers of pozzocrete material of varying composition and weakly cemented fly ash. The SPT-N values indicated the materials were in a medium dense to very dense state.

Results of the borings are presented in profile form on **Figure 5** along with the results of soil classification tests and groundwater level measurements indicated adjacent to the associated borings and at the tested depths. A generalized cross section depicting the existing FGD landfill, test cells and underlying natural soils is presented on **Figure 6**.

**Groundwater Conditions**

Measured Levels in Borings

The groundwater table was measured in the open boreholes at the location of borings TB-1, TB-9 and TB-10. The groundwater table depths were found to range from 8.0 to 10 feet below existing grade. Based on surface elevations at the borings, these depths translate to groundwater elevations ranging from +55 to +58.5 ft-NGVD.

On-Site Monitoring Wells

The most recent groundwater monitoring report for the facility (report dated April 12, 2010) was reviewed, which documents measured groundwater elevations in monitoring wells and nearby wetlands. Monitor wells which are closest to the Increment 1 buildout area are MW-100A, MW-100B and MW-41AR. An abandoned well, MW-41A is located near the project site, and measurements were available up to the time of abandonment in 2006. Well MW-210 is located adjacent to off-site wetlands. The report also describes the location of groundwater interceptor drains located along the west, north and east sides of the FGD landfill boundary. The interceptor drains and nearby wells are shown on the attached **Figure 7**.

The closest well to the interceptor drains is MW-100A and MW-100B, which is approximately 650 feet from the westernmost drain. The remaining wells range from approximately 1,000 to 2000 feet from the nearest drain. The interceptor drains are located on the downgradient side of the property, with the exception of the west drain, which extends up-slope towards the south. Due to the distance of wells MW-41A and MW-41AR from interceptor drains, and the upgradient locations, it is likely that these wells are outside the influence of the drains. The potential impact of the drains on MW-100A and 100B is inconclusive based on the reported information. The wetland monitoring well (MW-210) is located immediately adjacent to a drain; however, it is likely that the drain pipe invert is set above the wetland level in order to avoid wetland impacts. Therefore, the drain would not impact the well level for MW-210. The stormwater ponds located immediately west and south of the Increment 1 buildout area may be causing slightly elevated groundwater levels in wells MW-100A and MW-41AR due to impoundment of stored water.

The following recent monitoring well and boring measurements are provided.

| Well | Groundwater Depth (ft) | Groundwater Elevation (ft-NGVD) | Date of Reading |
|---|---|---|---|
| MW-100A | 23.9 | 62.14 | 8/25/2009 |
| MW-100B | 28.6 | 57.08 | 8/25/2009 |
| MW-41A (abandoned) | 15.3 | 69.49 | 11/15/2006 |
| MW-41AR | 11.4 | 70.92 | 8/13/2009 |
| MW-210 | 4.8 | 35.54 (wetland level) | 10/8/2008 |
| TB-1 | 23.5 | 58.5 | 3/18/2010 |
| TB-9 | 10.0 | 55.5 | 3/18/2010 |
| TB-10 | 8.0 | 55 | 3/18/2010 |

Groundwater Assessment

Based on the monitor wells and boring measurements, the surficial undisturbed groundwater table appears to range from approximately +35 ft-NGVD at the wetland boundary on the east side of the property to +70 ft-NGVD on the south and southwest side of the property. This indicates a rather pronounced groundwater gradient exists across the Increment 1 buildout area. The depth to the surficial groundwater table ranges from approximately 7.5 to 24 feet based on the borings and well measurements. In the lower areas of the Increment 1 buildout project site, along the eastern boundary, the seasonal high groundwater table is expected to rise to approximately 3 to 5 feet below ground surface. This will be a critical area with regard to landfill liner design and placement. In higher areas of the project area, the seasonal high groundwater table will be sufficiently deep and will not require special consideration, provided that the liner is placed at or near existing grade.

## 8.0 LABORATORY TESTING

A series of laboratory tests were conducted on the natural subsurface soils and on the landfill materials in the test cells. The tests included natural moisture content, percent fines passing the number 200 sieve, Atterberg Limits, and consolidation testing of soft clays. In addition, compressive strength tests and unit weight determinations were conducted on the weakly to highly cemented landfill materials obtained in the core samples.

### Moisture and -200 Tests

The percent moisture content and percent of fines passing the number 200 U.S. Standard sieve were conducted on selected soil samples. A total of five (5) tests were conducted on natural soils and nine (9) tests were conducted on landfill material. The results of the tests are shown adjacent to the soil profiles and at the tested depths of the soil profiles on **Figure 5** and are summarized on **Table 3**. The visual soil classification was reviewed and revised after the laboratory tests were completed.

### Atterberg Limit Tests

Atterberg Limit tests were conducted on soft clay strata for the purpose of determining the liquid limit, plastic limit and plasticity index of the selected soil samples. A total of two (2) Atterberg Limit tests were conducted. The results of the tests are shown adjacent to the soil profiles and at the tested depths of the soil profiles on **Figure 5**, and are summarized on **Table 3**. The test results indicate the sandy clays and clays have a low to moderate plasticity.

### Compressive Strength Tests on Landfill Material

A series of compressive strength tests were conducted on core samples collected in the test cells and existing FGD landfill areas. The purpose of conducting compressive strength tests was to obtain strength characteristics for use in calculating settlement potential and slope stability. The tests were conducted on the cemented pozzocrete and fly ash materials and the results are summarized on the attached **Tables 1 and 2**. The pozzocrete materials were found to have compressive strengths ranging from 5 to 19 pounds per square inch and the fly ash materials were found to have compressive strengths ranging from 42 to 204 pounds per square inch.

### Consolidation Tests on Soft Clays

Consolidation tests were conducted on the sandy clay and clay materials collected at borings TB-1 and TB-7 using a Shelby tube sampler. The purpose of conducting consolidation tests was to obtain consolidation parameters of the clayey soils for calculating the potential settlement of the Increment 1 landfill. The consolidation test results are summarized on **Table 3** and are shown in graphical form in **Attachment D**.

The consolidation test results indicate that the compressibility of sandy clay soil encountered at TB-1 is low with a $C_c$ value of 0.25. For the clay soil encountered at boring TB-7, the compressibility is moderate with a $C_c$ value of 0.55.

**Moisture Profile on Test Cell Materials**

Free standing groundwater was not found within the landfill materials in the test cells and existing landfill slope during the drilling program. In order to further assess the perching potential, a series of moisture content tests were conducted in these areas to assess changes in moisture with depth. The results of the moisture content profiling are presented below.

| Boring TB-1 | | Boring TB-11 | |
|---|---|---|---|
| **Depth** | **Moisture Content (%)** | **Depth** | **Moisture Content (%)** |
| 2 | 23 | 3 | 24 |
| 4 | 26 | 7 | 25 |
| 6 | 33 | 15 | 34 |
| 8 | 35 | 24 | 33 |
| 10 | 31 | 35 | 45 |

The results of the moisture contents indicate an increase in moisture with depth at both locations, with a more marked increase in the existing landfill slope than in the test cells. At the test cell location (TB-1), the moisture content stabilized in the depth range of 6 to 10 feet and did not represent saturated conditions. The lower near surface moisture is likely due to drying of the materials which are close to the surface.

**Hydraulic Conductivity Test on Re-molded Sample**

A laboratory permeability test was conducted on a remolded soil sample collected at the time of drilling. The test was conducted on samples collected at the location of boring TB-10 in the depth interval from 5 to 10 feet below existing ground surface. The test was conducted using a laboratory permeameter, utilizing the falling head method. The results of the test indicated a coefficient of saturated hydraulic conductivity of 25 feet per day.

## 9.0 GEOTECHNICAL ANALYSIS

### Bearing Capacity

Analysis of the foundation bearing capacity and subgrade settlement were based on a fill height of 200 ft-NGVD with side slopes of 3:1 (H:V), and an average fill density of 110 pounds per cubic foot. Based on ground surface elevations, the height of the landfill will be approximately 130 feet above natural grade.

The bearing capacity of the landfill is a function of the density of the soils and the depths of the material below the adjacent ground surface. Soil density can be defined by the Standard Penetration Test (SPT) N-value. Based on the assumptions stated above and on the data obtained from the borings, a net allowable foundation bearing pressure of 23,221 pounds per square foot was calculated. The net foundation load is estimated to be approximately 14,300 pounds per square foot, for a 130 foot high fill, which is well below the capacity of the foundation soils. The results of the evaluation are presented in **Attachment A.**

### Settlement

To evaluate the impact of potential total settlement due to the loads to be placed in the Increment 1 landfill, settlement calculations were conducted for the encountered subsurface conditions at individual boring locations. The total settlement of the soil column for each boring location was calculated using elastic settlement equations for the sand layers and consolidation settlement methods for cohesive material. The total settlement calculated for each boring location is summarized below:

| **Settlement Calculation Results** | |
|---|---|
| **Boring** | **Settlement (ft)** |
| TB-1 | 1.72 |
| TB-2 | 0.77 |
| TB-3 | 0.60 |
| TB-4 | 0.95 |
| TB-5 | 0.46 |
| TB-6 | 0.34 |
| TB-7 | 1.87 |
| TB-8 | 0.99 |
| TB-9 | 0.77 |
| TB-11 | 0.93 |
| TB-12 | 1.09 |
| TB-13 | 1.22 |

Settlement adjacent to the test cells was also evaluated, in order to assess differential settlement within and immediately adjacent to the cells. The following are the results and a comparison to total settlement within the test cells.

| Boring | Settlement within Test Cell (ft) | Settlement Adjacent to Test Cell (ft) | Difference (ft) |
|---|---|---|---|
| TB-1 | 1.72 | 1.97 | 0.25 |
| TB-3 | 0.60 | 0.85 | 0.25 |
| TB-5 | 0.46 | 0.66 | 0.20 |

The results of the evaluation are presented in **Attachment B** along with supporting references and additional information regarding assumptions.

Another focus of the potential settlement evaluation was on the edge of the liner for the existing FGD landfill. The existing FGD landfill liner has a bottom elevation of +182 ft-NGVD and an edge of liner elevation of approximately +185 ft-NGVD. The fill height associated with the Increment 1 buildout will be approximately 15 feet at the location of the existing liner. The potential settlement at the existing liner due to the buildout landfill weight was evaluated. The settlement at this location is estimated to be 0.37 feet.

Settlement will increase down the slope of the existing landfill as the buildout fill thickness increases. For comparison purposes, the following table shows anticipated settlement due to the buildout filling at various locations along the slope.

| Location | Maximum fill thickness (ft) | Estimated Settlement Due To Increment 1 Buildout (ft) |
|---|---|---|
| Edge of Existing Liner | 15 | 0.37 |
| Vicinity of Boring TB-11 | 65 | 0.93 |
| Vicinity of Boring TB-12 | 85 | 1.09 |
| Vicinity of Boring TB-13 | 105 | 1.22 |

These estimates assume the maximum buildout fill elevation of +200 ft-NGVD at all locations.

**Settlement Contouring**

The GMS computer model was utilized to import the coordinates of the settlement calculation points. The model allows generation of contour maps, color flood maps and 3-D surface maps using the imported data. The areas between data points are interpolated/extrapolated by the model. The model has several interpolative and smoothing methods to create the data sets for mapping. To minimize model related distortions and over-smoothing appearance of the data, we have selected a method that is relatively linear with minimal distortion or smoothing of the data.

The method used to grid the landfill area and to interpolate/extrapolate the data between the boring locations is the Natural Neighbor Method using a constant nodal function. Natural neighbor interpolation is based on the Thiessen polygon network of the scatter point set. The Thiessen polygon network can be constructed from the Delauney triangulation of a scatter point set. A Delauney triangulation is a TIN that has been constructed so that the Delauney criterion has been satisfied.

These generated contours are presented on the attached **Figure 8**, and may be used for liner design and adjustment of grading to ensure positive slope and drainage of leachate.

**Slope Stability**

The stability of the proposed Increment 1 buildout was evaluated along selected critical sections of the landfill profile. For each of the sections, the stability was analyzed for two scenarios. In the first scenario, the stability was analyzed to represent the case of during construction or immediately at the end-of-construction. The second scenario represents the long term stability of the landfill.

The end-of-construction stability analyses were performed as “Undrained Shear Strength Analysis” (USSA). The soft clay layer (Stratum 7 of Figure 5) was assumed to be have been consolidated under the landfill load of up to elevation +175 feet and the last lift between elevation +175 feet to +195 feet was assumed to be constructed rapidly and the clay layer remaining in an undrained condition.

The long term stability analyses were performed using “Effective Stress Stability Analysis”. The effective stress strength parameters for the various soil layers were assumed conservatively using the relationships presented in Terzaghi et al (1996). The effective stress strength parameters for the fly ash fill material (Stratum 1D) and the cemented pozzocrete material (Strata 1A thru 1C) were based on the recommendations of McLaren and DiGioia (1987) (“The Typical Engineering Properties of Fly Ash”, Robert J. McLaren and A. M. DiGioia, Proceedings of Geotechnical Practice for Waste Disposal, 1987, ASCE Geotechnical Publication No. 13).

The soil profile along the first slope cross section is generally based on borings TB-11, TB-13, TB-1, TB-4 and TB-6. The thicknesses of the deeper layers were assumed to be the same as those at deep boring TB-7. The soil profile along the second cross section is based on borings TB-12, TB-7 and TB-10. The new material to be placed in the Increment 1 area has been conservatively assumed to be weakly cemented fly ash (Stratum 1D). The following material unit weights and strength properties were used in the stability analyses.

| Material | Moist Density (pcf) | Saturated Density (pcf) | Strength Parameters |
|---|---|---|---|
| Fine Sand | 110 | 115 | c' = 0, □' = 28° |
| Soft Clay | 100 | 110 | $s_u$ (mob) = 1,500 psf (For USSA)<br>c' = 0, □' = 22° (For ESSA) |
| Stiff Clay | 110 | 120 | $s_u$ (mob) = 3,000 psf (For USSA)<br>c' = 0, □' = 25° (For ESSA) |
| Cemented Clay | 115 | 120 | c' = 500 (psf), □' = 25° |
| Weakly Cemented Pozzocrete | 80 | 85 | c' = 0, □' = 34° |
| Weakly Cemented Fly Ash | 75 | 80 | c' = 0, □' = 32° |

The stability of the slopes was analyzed using STABL for Windows. The soft clay layer (Stratum 7) is the weakest layer in the soil profile and the minimum factor of safety for the slopes was analyzed using sliding block failure surfaces through the soft clay layer. A critical failure surface searching method using a random technique for generating sliding block surfaces passing through the soft clay (Stratum 7) was used. The stability analyses were performed using Modified Janbu Method and the active and passive portions of the sliding surfaces were generated according to Rankine's theory.

The results of the stability analyses are presented in the plots and text outputs in **Attachment C**. The minimum factor of safety values for both sections are tabulated below:

| Slope Section | Minimum Factor of Safety | |
|---|---|---|
| | End of Construction (USSA) | Long Term (ESSA) |
| 1 | 1.51 | 1.58 |
| 2 | 1.49 | 1.66 |

The lowest resulting factor of safety of 1.49 is greater than 1.3, the usually recommended minimum factor of safety for permanent or sustained loading conditions. Thus, the landfill slopes are considered stable.

**Stormwater Retention**

A dry retention area will be placed to the east of the project area. Boring TB-10 was placed within the proposed retention area and boring TB-9 was placed adjacent to the retention area. The results of the borings indicate this area is underlain by fine sands and slightly silty fine sand extending to an average depth of 50 feet, followed by sandy clay and clay. The results of the laboratory permeability test indicated a coefficient of permeability of 25 ft/day. For purposes of conducting infiltration and recovery calculations, the following shallow aquifer parameters are recommended:

- Elevation of Confining Layer — 15 ft-NGVD
- Elevation of Seasonal High Groundwater Table — 58 ft-NGVD
- Horizontal Saturated Hydraulic Conductivity — 12 ft/day
- Vertical Unsaturated Hydraulic Conductivity — 6 ft/day
- Soil Storage Coefficient — 0.2

## 10.0 SUMMARY AND CONCLUSIONS

The results of the field and laboratory investigations indicate that the subsurface soils across the project area are relatively consistent from one location to the next and are in a relatively dense and stable condition for the purposes of landfill bearing, slope stability and settlement. The waste materials in the former test cells were of a similar consistency and were found to consist of highly densified and cemented pozzocrete and weakly cemented fly ash. The compressive strength of the fly ash was relatively low due to lack of cementation; however, in general the material was in a very dense state and is not expected to experience significant settlement or weak shear strength. The compressive strength of the cemented pozzocrete material was found to be relatively high and is also expected to withstand the anticipated loads without appreciable settlement. As such, the underlying natural soils are the primary potential component of settlement.

Placement of a liner over the test cell material and along the side slope of the existing FGD landfill is not expected to adversely affect the liner due to excessive settlement of the landfill material. This is provided that the liner is properly designed and constructed to account for anticipated settlement conditions. The settlement analysis results presented herein should be used as a guide for liner design and placement to withstand any such anticipated settlement.

Assessment of the groundwater conditions on the property indicate that special considerations such as dewatering and hydrostatic water pressure are not required as part of the liner design, provided that the liner is placed at or near ground surface, as is currently proposed. The groundwater assessment information provided herein should be used as a guide in establishing liner elevations.

# TABLES

**TABLE 1**

**SEMINOLE ELECTRIC COOPERATIVE**
**Palatka Generating Station Landfill**

**Results of Laboratory Testing of Core Samples**

| Boring | Depth (ft) | Stratum | Moisture Content (%) | -200 Fraction (%) | Unit Weight (pcf) | Compressive Strength (psi) | Dry Density (pcf) |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| TB-3 | 3 | 1A | 42 | 26 | 106 | 42 | 75 |
| TB-5 | 4 | 1A | 25 | --- | 116 | 140 | 93 |
| TB-12 | 5 | 1A | 24 | --- | 112 | 204 | 90 |
| TB-13 | 5 | 1D | 42 | 30 | 107 | 5 | 75 |
| TB-13 | 8 | 1D | 32 | 88 | 105 | 19 | 79 |

**TABLE 2**

**SEMINOLE ELECTRIC COOPERATIVE**
**Palatka Generating Station Landfill**

**Results of Laboratory Testing of Landfill Materials**

| Stratum | Description | Moisture Content (%) | Percent Passing No. 200 (%) | Unit Weight (pcf) | Dry Density (pcf) | Permeability (cm/sec) | Compressive Strength (psi) |
|---|---|---|---|---|---|---|---|
| 1A | Stongly Cemented Pozzocrete | 25-42 | 9-26 | 106-116 | 74-92 | 1.E-05 | 42-204 |
| 1B | Weakly Cemented Pozzocrete | 24-49 | 39 | 108 | 87 | 1.E-04 | --- |
| 1C | Weakly Cemented Pozzocrete Mixed with Gypsum | 34-45 | 42-49 | 104 | 78 | 1.E-04 | --- |
| 1D | Weakly Cemented Fly Ash | 24-33 | 81-93 | 105-107 | 75-80 | 1.E-03 | 5-19 |

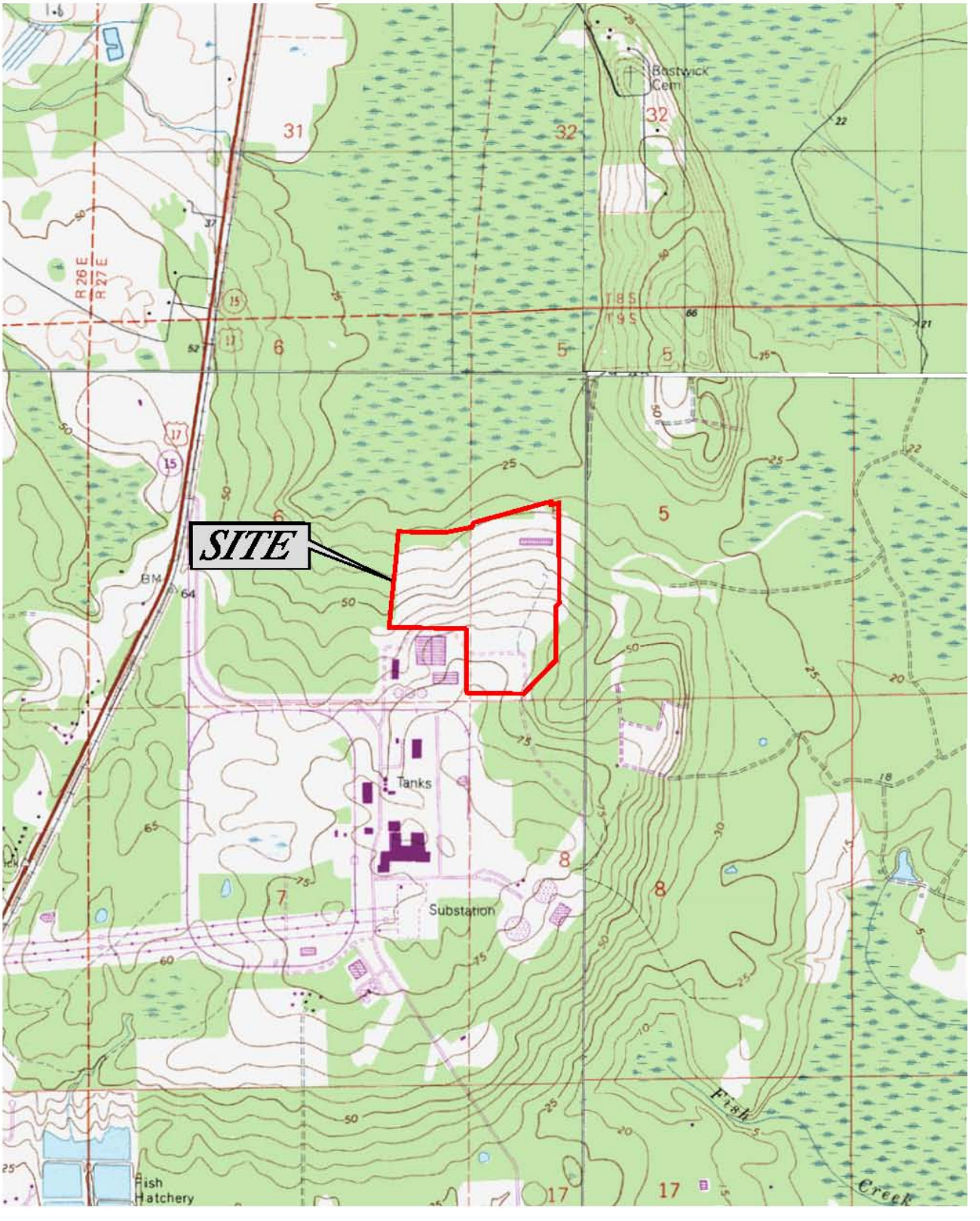
**TABLE 3**

**SEMINOLE ELECTRIC COOPERATIVE**
**Palatka Generating Station Landfill**

**Results of Laboratory Testing of Natural Soils**

| Stratum | Description | Moisture Content (%) | Percent Passing No. 200 (%) | Consolidation Tests | Atterberg Limit |
|---|---|---|---|---|---|
| 2 | Yellowish brown to light brown fine sand | 18 | 4.1 | | |
| 3 | Brown to orangish brown fine sand to slightly silty fine sand | 8.9 | 6.7 | | |
| 4 | Light gray to gray fine sand | | | | |
| 5 | Greenish gray silty fine sand with shell | | | | |
| 6 | Greenish gray to dark gray silty to sandy clay | 29 to 72 | 29 to 35 | | LL=38 PI=15<br>LL=45 PI=17 |
| 7 | Greenish gray to dark gray clay | 35 to 53 | 43 to 62 | $c_c$ = 0.55 | LL=52 PI=25<br>LL=45 PI=29 |
| 8 | Dark grayish brown to dark reddish brown slightly silty fine sand | 9.2 | 11 | $c_c$ = 0.25 | |
| 9 | Greenish gray fine sand with shell | | | | |
| 10 | Very dark gray fine sand | | | | |
| 11 | Greenish gray to dark gray fine sand to slightly silty fine sand | | | | |
| 12 | Light brown consolidated clay | | | | |

# FIGURES




REFERENCE:
U.S.G.S. PALATKA, FLA.
QUADRANGLE MAP
DATED 1968
REVISED 1992
SECTIONS 5 & 6
TOWNSHIP 9 SOUTH
RANGE 27 EAST

**Andreyev Engineering, Inc.**

| APPROXIMATE SCALE: | DATE: 07/09/10 | ENGINEER: SC |
|---|---|---|
| 1"=2000' | PN: CPGT-10-0024 | DRAWN BY: DLS |

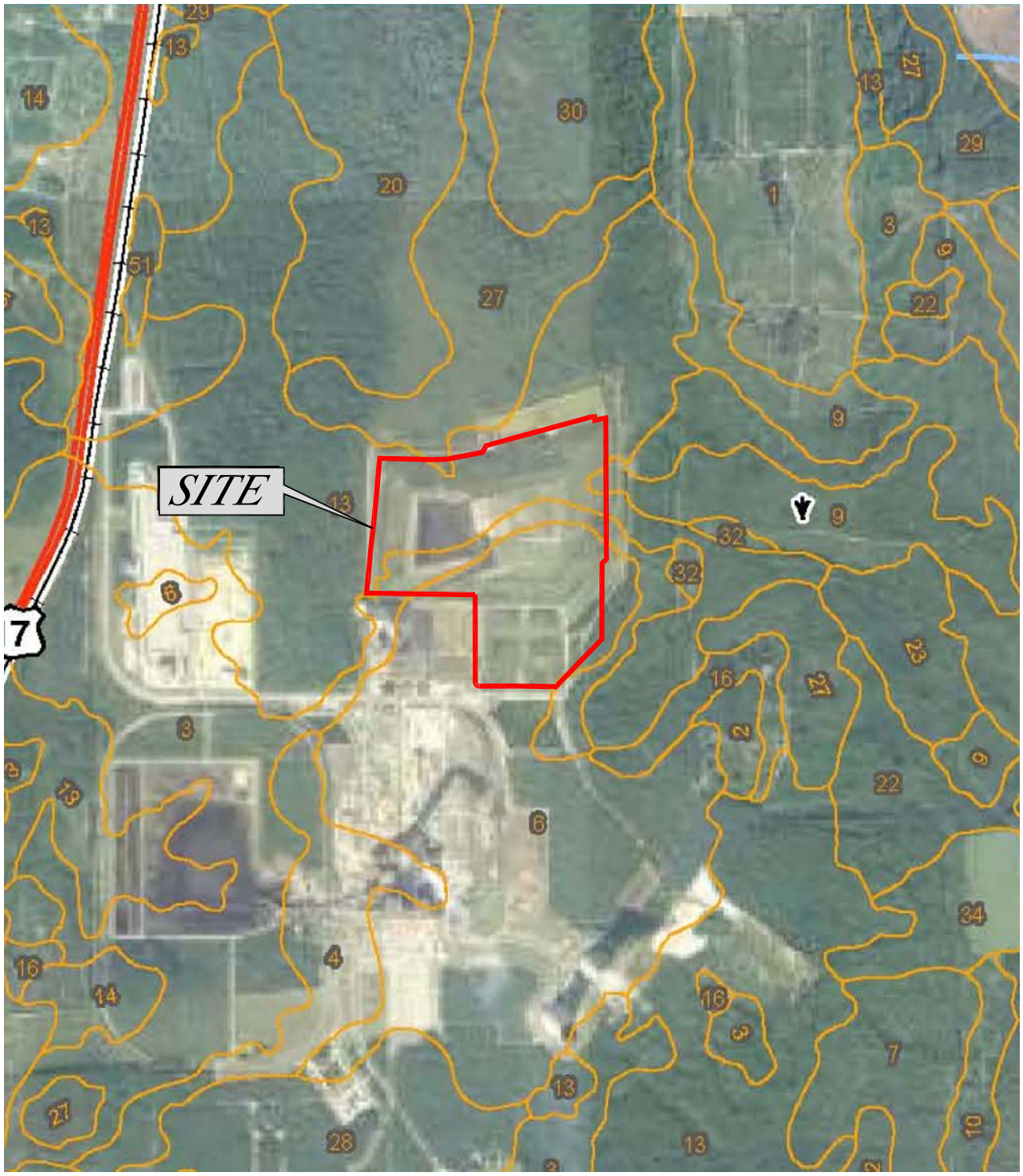
GEOTECHNICAL INVESTIGATION

**SEMINOLE ELECTRIC LANDFILL INCREMENT 1 BUILDOUT**

PUTNAM COUNTY, FL.

VICINITY MAP

FIGURE 1




REFERENCE:
WEB SOIL SURVEY

*LEGEND:*

| | |
|---|---|
| 3 | MYAKKA FINE SAND |
| 6 | TAVARES FINE SAND |
| 13 | ST. JOHNS FINE SAND, DEPRESSIONAL |
| 27 | SAMSULA MUCK |

**Andreyev Engineering, Inc.**

| | | |
|---|---|---|
| APPROXIMATE SCALE: 1"=1500' | DATE: 07/09/10 | ENGINEER: SC |
| | PN: CPGT-10-0024 | DRAWN BY: DLS |

GEOTECHNICAL INVESTIGATION

**SEMINOLE ELECTRIC LANDFILL INCREMENT 1 BUILDOUT**

PUTNAM COUNTY, FL.

SCS SOIL SURVEY

FIGURE 2


REFERENCE:
FDOT WEBSITE

LEGEND:

APPROXIMATE SUBJECT PROPERTY BOUNDARY

Andreyev Engineering, Inc.

GEOTECHNICAL INVESTIGATION

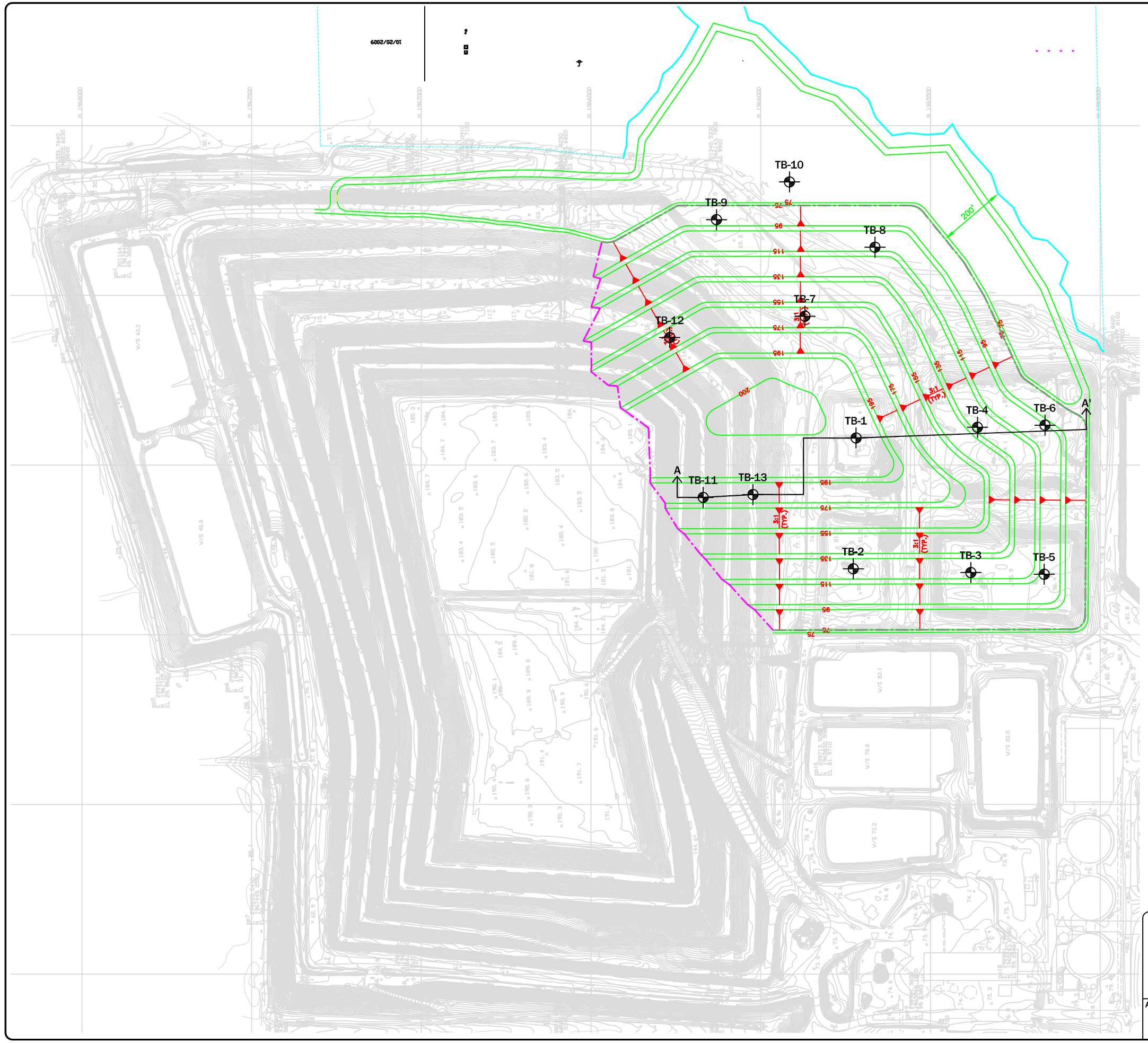
**SEMINOLE ELECTRIC LANDFILL INCREMENT 1 BUILDOUT**

PUTNAM COUNTY, FL.

2008 AERIAL PHOTOGRAPH

| APPROXIMATE SCALE: | DATE: 07/09/10 | ENGINEER: SC |
|---|---|---|
| 1"=500' | PN: CPGT-10-0024 | DRAWN BY: DLS |

FIGURE 3




NORTH

*LEGEND:*

APPROXIMATE LOCATION OF SPT BORING

A A' CROSS SECTION TRANSECT (SEE FIGURE 6)

0 75 150 300 600

SCALE IN FEET

**Andreyev Engineering, Inc.**

GEOTECHNICAL INVESTIGATION

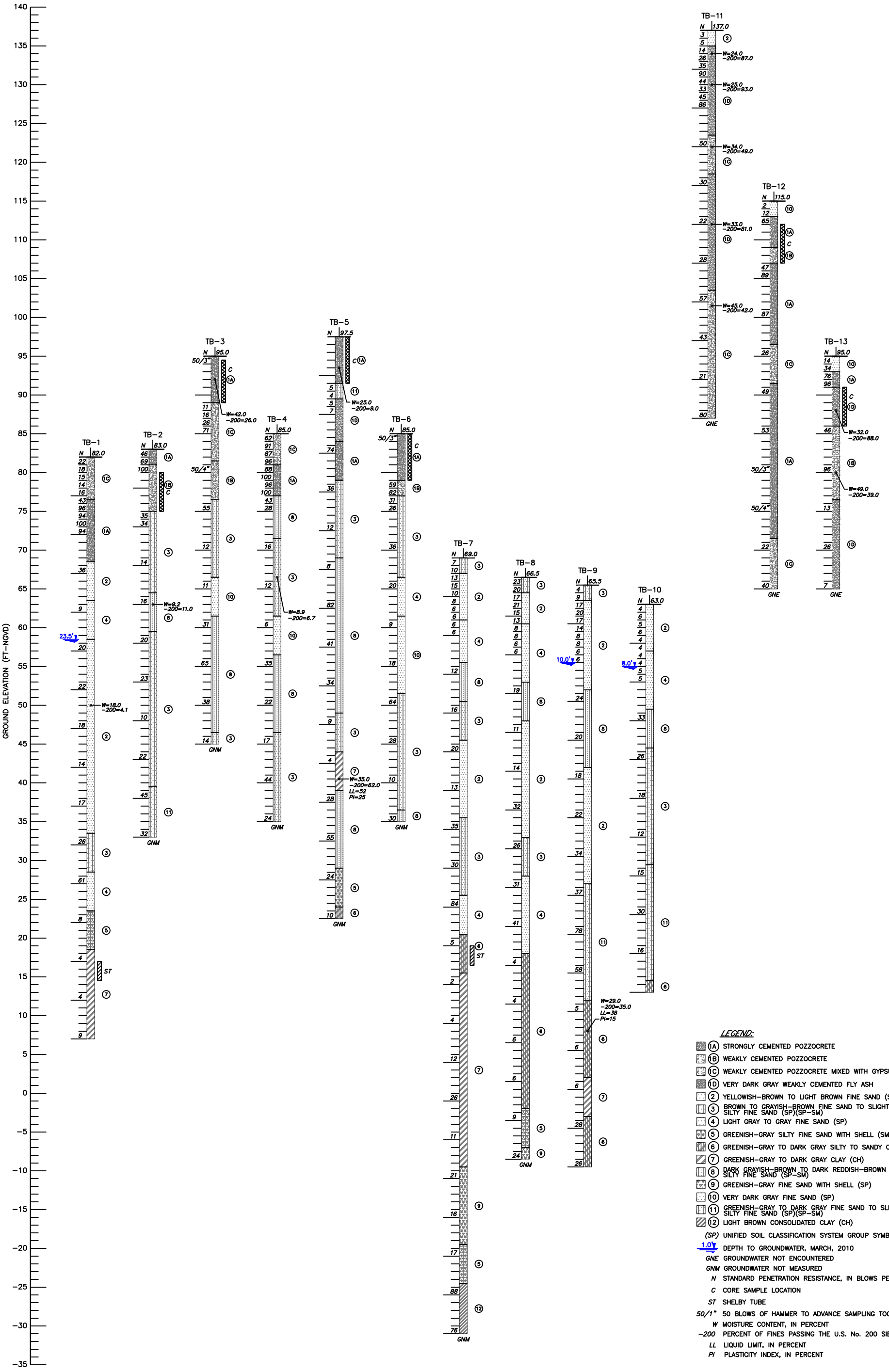
**SEMINOLE ELECTRIC LANDFILL INCREMENT 1 BUILDOUT**

PUTNAM COUNTY, FL.

BORING LOCATION PLAN

FIGURE 4

| APPROXIMATE SCALE: | DATE: 07/09/10 | ENGINEER: SC |
|---|---|---|
| 1"=300' | PN: CPGT-10-0024 | DRAWN BY: DLS |




*LEGEND:*

- (1A) STRONGLY CEMENTED POZZOCRETE
- (1B) WEAKLY CEMENTED POZZOCRETE
- (1C) WEAKLY CEMENTED POZZOCRETE MIXED WITH GYPSUM
- (1D) VERY DARK GRAY WEAKLY CEMENTED FLY ASH
- (2) YELLOWISH-BROWN TO LIGHT BROWN FINE SAND (SP)
- (3) BROWN TO GRAYISH-BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- (4) LIGHT GRAY TO GRAY FINE SAND (SP)
- (5) GREENISH-GRAY SILTY FINE SAND WITH SHELL (SM)
- (6) GREENISH-GRAY TO DARK GRAY SILTY TO SANDY CLAY (CL)
- (7) GREENISH-GRAY TO DARK GRAY CLAY (CH)
- (8) DARK GRAYISH-BROWN TO DARK REDDISH-BROWN SLIGHTLY SILTY FINE SAND (SP-SM)
- (9) GREENISH-GRAY FINE SAND WITH SHELL (SP)
- (10) VERY DARK GRAY FINE SAND (SP)
- (11) GREENISH-GRAY TO DARK GRAY FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- (12) LIGHT BROWN CONSOLIDATED CLAY (CH)
- *(SP)* UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL
- 1.0' DEPTH TO GROUNDWATER, MARCH, 2010
- *GNE* GROUNDWATER NOT ENCOUNTERED
- *GNM* GROUNDWATER NOT MEASURED
- *N* STANDARD PENETRATION RESISTANCE, IN BLOWS PER FOOT
- *C* CORE SAMPLE LOCATION
- *ST* SHELBY TUBE
- *50/1"* 50 BLOWS OF HAMMER TO ADVANCE SAMPLING TOOL 1 INCH
- *W* MOISTURE CONTENT, IN PERCENT
- *−200* PERCENT OF FINES PASSING THE U.S. No. 200 SIEVE
- *LL* LIQUID LIMIT, IN PERCENT
- *PI* PLASTICITY INDEX, IN PERCENT

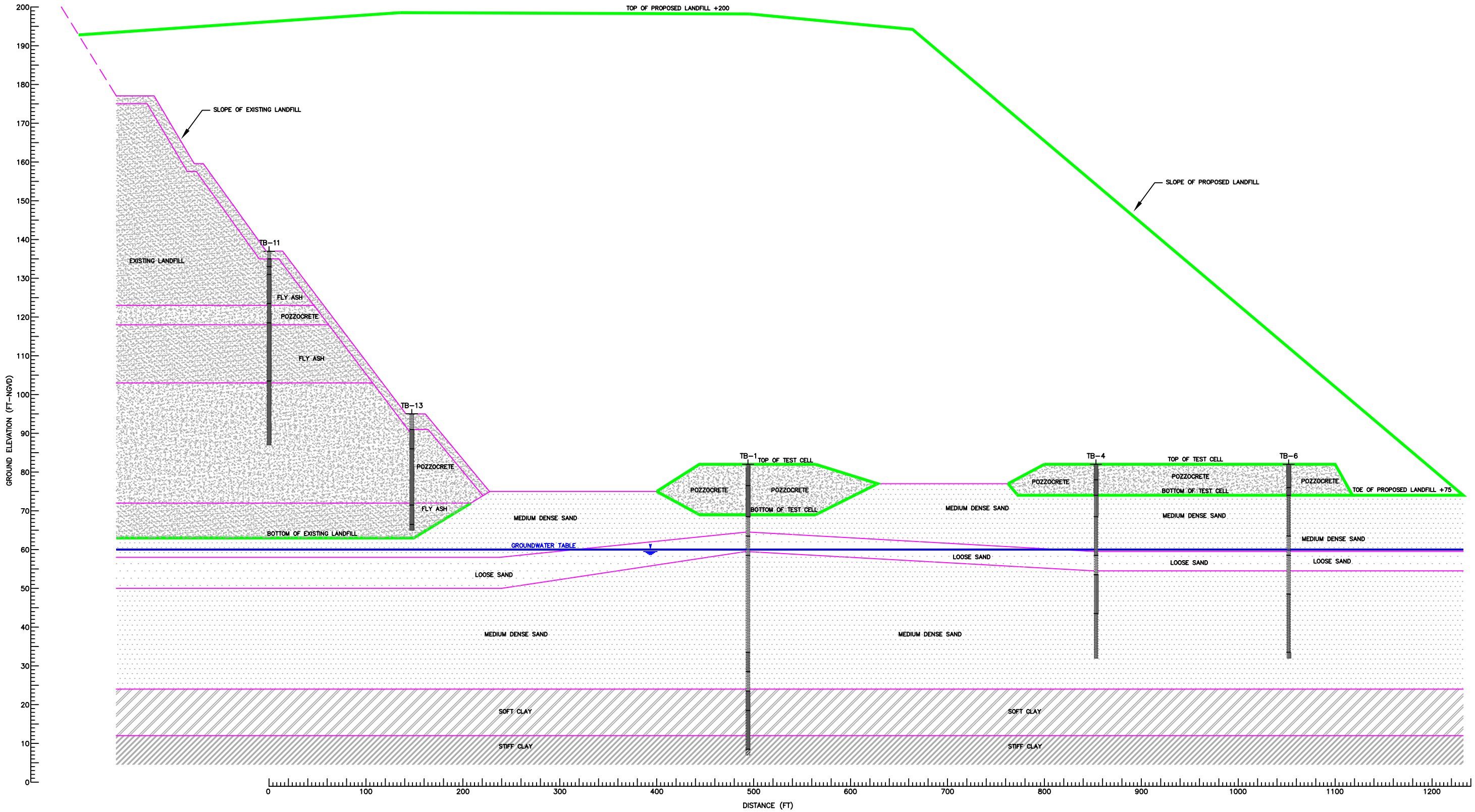
Andreyev Engineering, Inc.

APPROXIMATE SCALE: 1"=6' | DATE: 07/09/10 | ENGINEER: SC | PN: CPGT-10-0024 | DRAWN BY: DLS

GEOTECHNICAL INVESTIGATION
SEMINOLE ELECTRIC LANDFILL
INCREMENT 1 BUILDOUT
PUTNAM COUNTY, FL.

SOIL PROFILES

FIGURE 5




| | | | |
|---|---|---|---|
| Andreyev Engineering, Inc. | | | GEOTECHNICAL INVESTIGATION<br>**SEMINOLE ELECTRIC LANDFILL INCREMENT 1 BUILDOUT**<br>PUTNAM COUNTY, FL. |
| APPROXIMATE SCALE:<br>HORIZONTAL: 1"=100'<br>VERTICAL: 1"=25' | DATE: 07/09/10 | ENGINEER: SC | CROSS SECTION A–A' |
| | PN: CPGT-10-0024 | DRAWN BY: DLS | FIGURE 6 |

MW-210

MW-41AR

MW-41AR

MW-100A
MW-100B

TB-10
TB-9
TB-8
TB-7
TB-6
TB-5
TB-4
TB-3
TB-2
TB-1
TB-11
TB-12
TB-13

200'

0 75 150 300 600

SCALE IN FEET

NORTH

*LEGEND:*

- APPROXIMATE LOCATION OF SPT BORING
- LOCATION OF EXISTING MONITOR WELL
- APPROXIMATE LOCATION OF GROUNDWATER INTERCEPTOR DRAINS

**Andreyev Engineering, Inc.**

GEOTECHNICAL INVESTIGATION

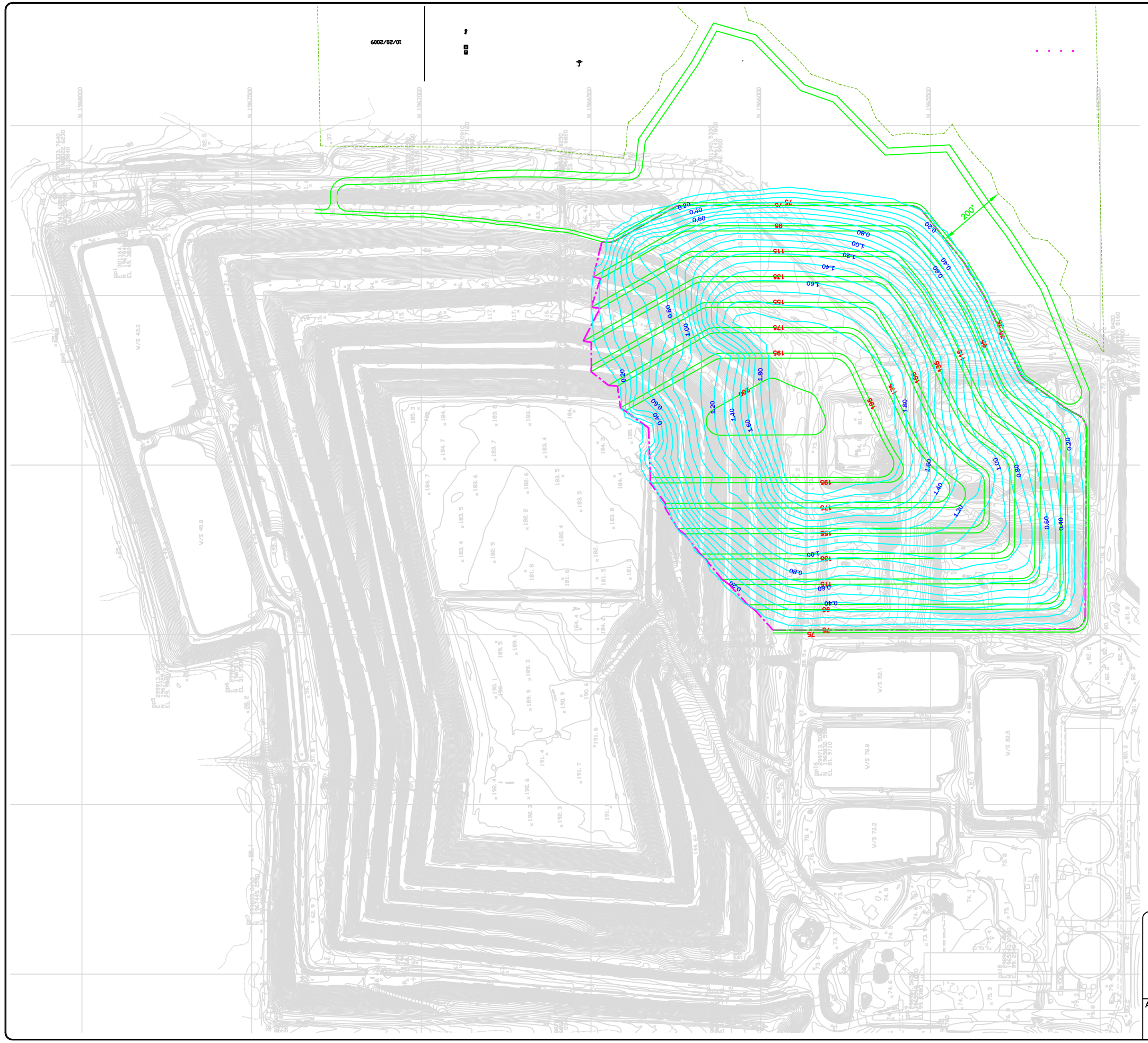
**SEMINOLE ELECTRIC LANDFILL INCREMENT 1 BUILDOUT**

PUTNAM COUNTY, FL.

MONITOR WELL LOCATION PLAN

FIGURE 7

| APPROXIMATE SCALE: | DATE: 07/09/10 | ENGINEER: SC |
|---|---|---|
| 1"=300' | PN: CPGT-10-0024 | DRAWN BY: DLS |




*LEGEND:*

0.2 SETTLEMENT CONTOUR (FEET)

0 75 150 300 600

SCALE IN FEET

**Andreyev Engineering, Inc.**

GEOTECHNICAL INVESTIGATION

**SEMINOLE ELECTRIC LANDFILL INCREMENT 1 BUILDOUT**

PUTNAM COUNTY, FL.

ESTIMATED SETTLEMENT CONTOURS

FIGURE 8

| APPROXIMATE SCALE: | DATE: 07/09/10 | ENGINEER: SC |
|---|---|---|
| 1"=300' | PN: CPGT-10-0024 | DRAWN BY: DLS |

# ATTACHMENT A

# BEARING CAPACITY ANALYSIS RESULTS

# BEARING CAPACITY ANALYSIS

**Enter soil characteristics**

| | | | |
|---|---|---|---|
| Cohesion, c = | 5 | psf | |
| Friction angle, $\phi$ = | 28 | degrees | **(whole degrees, <50, preferably)** |
| Unit weight, $\gamma$ = | 120 | pcf | |

The above entries yield the following factors:

| | | | |
|---|---|---|---|
| c' = | 3.33 | | |
| $\phi$' = | 19.5 | | |
| *$N_q$' = | 6.10 | **$N_q$' = | 7 |
| *$N_c$' = | 14.39 | **$N_c$' = | 17.3 |
| *$N_\gamma$' = | 5.03 | **$N_\gamma$' = | 4.7 |
| *$N_q$ = | 14.72 | **$N_q$ = | 18.1 |
| *$N_c$ = | 25.80 | **$N_c$ = | 31.2 |
| *$N_\gamma$ = | 16.72 | **$N_\gamma$ = | 15.5 |

*N factors from Eqs. 10-32,34,36. (Method 1)

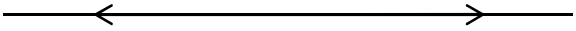
**N factors from fig. 10.7 & 10.8 (Method 2)

**Determine whether footing is a strip (length to width ratio >= 5); square; circular; or rectangular.**

**Enter St for strip, Sq for square, C for circular, or R for rectangular.**

**Enter here → sq**

**Footing shape is: square**



**Enter footing dimensions**

| | | |
|---|---|---|
| B = | 1150 | feet |
| Df = | 0 | inches |

**FOR LOCAL SHEAR FAILURE:**

**$q_u'$ = 23,221 psf** Method 1

**$q_u'$ = 21,695 psf** Method 2

**FOR GENERAL SHEAR FAILURE:**

**$q_u$ = 77,065 psf** Method 1

**$q_u$ = 71,503 psf** Method 2

Note: The above values for $q_u'$ and $q_u$ have been calculated by selective use of the following formulae.

$q_u' = c' N_c' + q N_q' + 0.5 \gamma B N_\gamma'$ (strip ftg.)

$q_u' = 1.3 c' N_c' + q N_q' + 0.4 \gamma B N_\gamma'$ (square ftg.)

$q_u' = 1.3 c' N_c' + q N_q' + 0.3 \gamma B N_\gamma$ (circular ftg.)

$q_u = c N_c + q N_q + 0.5 \gamma B N_\gamma$ (strip ftg.)

$q_u = 1.3 c N_c + q N_q + 0.4 \gamma B N_\gamma$ (square ftg.)

$q_u = 1.3 c N_c + q N_q + 0.3 \gamma B N_\gamma$ (circular ftg.)

**Terzaghi's Ultimate Bearing Capacity Equation**

**Reference: Principles of Geotechnical Engineering, Das, section 10 - 2**

# ATTACHMENT B

# SETTLEMENT ANALYSIS RESULTS

# SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-1** Elev 82 ft-NGVD

**Assumptions:**

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 200 | ft-NGVD | | | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | Es | 1.E+06 | lb/ft2 | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | | | |
| Test Cell | Thickness | 5 | ft | Es | 1.E+06 | lb/ft2 | | | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | | |
| | Thickness | 35 | ft | | | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | | |
| | Thickness | 5 | ft | | | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 | |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | | | |
| | Thickness | 10 | ft | | | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 12980 |
| Net Loading (delta sigma) | 12980 |

**Settlement of Test Cell Material**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 5 | 0.06 |

**Settlement of Med. Dense Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 35 | 0.79 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 5 | 0.23 |

**Settlement of Soft Clay Layer**

| | Primary | | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|
| Thickness | Eff Stress | Settlement | Thickness | Drainage | tp | Settlement | |
| (ft) | (psf) | (ft) | (ft) | (ft) | (years) | (ft) | |
| 10 | 3304 | 0.18 | 10 | 10 | 1.03 | 0.15 | |

**Settlement of Stiff Clay layer**

| Thickness | Eff Stress | Settlement |
|---|---|---|
| (ft) | (psf) | (ft) |
| 15 | 3849 | 0.31 |

## Total Settlements

| | |
|---|---|
| Landfill Material | 0.06 ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 1.01 ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.49 ft |
| Secondary Settlement of Soft Clay after 50 years | 0.15 ft |
| **Total** | **1.72 ft** |

# SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-2** Elev 83 ft-NGVD

**Assumptions:**

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 125 | ft-NGVD | | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | | |
| Test Cell | Thickness | 7 | ft | Es | 1.E+06 | lb/ft2 | | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | |
| | Thickness | 35 | ft | | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | |
| | Thickness | 0 | ft | | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | | |
| | Thickness | 10 | ft | | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 4620 |
| Net Loading (delta sigma) | 4620 |

**Settlement of Test Cell Material**

| Elastic Settlement | |
|---|---|
| Thickness (ft) | Settlement (ft) |
| 7 | 0.03 |

**Settlement of Med. Dense Sand**

| Elastic Settlement | |
|---|---|
| Thickness (ft) | Settlement (ft) |
| 35 | 0.28 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness (ft) | Settlement (ft) |
| 0 | 0.00 |

**Settlement of Soft Clay Layer**

| | | Primary | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|
| Thickness (ft) | Eff Stress (psf) | Settlement (ft) | Thickness (ft) | Drainage (ft) | tp (years) | Settlement (ft) | |
| 10 | 2974 | 0.13 | 10 | 10 | 1.03 | 0.15 | |

**Settlement of Stiff Clay layer**

| Thickness (ft) | Eff Stress (psf) | Settlement (ft) |
|---|---|---|
| 15 | 3519 | 0.18 |

**Total Settlements**

| | |
|---|---|
| Landfill Material | 0.03 ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 0.28 ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.30 ft |
| Secondary Settlement of Soft Clay after 50 years | 0.15 ft |
| **Total** | **0.77 ft** |

## SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-3** Elev 95 ft-NGVD

**Assumptions:**

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 125 | ft-NGVD | | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | | |
| Test Cell | Thickness | 18 | ft | Es | 1.E+06 | lb/ft2 | | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | |
| | Thickness | 31 | ft | | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | |
| | Thickness | 0 | ft | | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | | |
| | Thickness | 10 | ft | | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 3300 |
| Net Loading (delta sigma) | 3300 |

**Settlement of Test Cell Material**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 18 | 0.06 |

**Settlement of Med. Dense Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 31 | 0.18 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 0 | 0.00 |

**Settlement of Soft Clay Layer**

| | Primary | | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|
| Thickness | Eff Stress | Settlement | Thickness | Drainage | tp | Settlement | |
| (ft) | (psf) | (ft) | (ft) | (ft) | (years) | (ft) | |
| 10 | 3953.6 | 0.09 | 10 | 10 | 1.03 | 0.15 | |

**Settlement of Stiff Clay layer**

| Thickness | Eff Stress | Settlement |
|---|---|---|
| (ft) | (psf) | (ft) |
| 15 | 4498.6 | 0.12 |

**Total Settlements**

| | |
|---|---|
| Landfill Material | 0.06 ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 0.18 ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.21 ft |
| Secondary Settlement of Soft Clay after 50 years | 0.15 ft |
| **Total** | **0.60 ft** |

# SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-4** Elev 85 ft-NGVD

**Assumptions:**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 135 | ft-NGVD | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | |
| Test Cell | Thickness | 8 | ft | Es | 1.E+06 | lb/ft2 | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | |
| | Thickness | 38 | ft | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | |
| | Thickness | 5 | ft | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | |
| | Thickness | 10 | ft | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 5500 |
| Net Loading (delta sigma) | 5500 |

**Settlement of Test Cell Material**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 8 | 0.04 |

**Settlement of Med. Dense Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 38 | 0.36 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 5 | 0.10 |

**Settlement of Soft Clay Layer**

| | Primary | | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|
| Thickness | Eff Stress | Settlement | Thickness | Drainage | tp | Settlement | |
| (ft) | (psf) | (ft) | (ft) | (ft) | (years) | (ft) | |
| 10 | 3806.8 | 0.12 | 10 | 10 | 1.03 | 0.15 | |

**Settlement of Stiff Clay layer**

| Thickness | Eff Stress | Settlement |
|---|---|---|
| (ft) | (psf) | (ft) |
| 15 | 4351.8 | 0.17 |

## Total Settlements

| | |
|---|---|
| Landfill Material | 0.04 ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 0.46 ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.30 ft |
| Secondary Settlement of Soft Clay after 50 years | 0.15 ft |
| **Total** | **0.95 ft** |

# SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-5** Elev 97.5 ft-NGVD

**Assumptions:**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 110 | ft-NGVD | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | |
| Test Cell | Thickness | 18 | ft | Es | 5.E+05 | lb/ft2 | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | |
| | Thickness | 40 | ft | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | |
| | Thickness | 11 | ft | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 1375 |
| Net Loading (delta sigma) | 1375 |

**Settlement of Test Cell Material**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 18 | 0.05 |

**Settlement of Med. Dense Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 40 | 0.10 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 15 | 0.07 |

**Settlement of Soft Clay Layer**

| | Primary | | | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|---|
| Thickness | Eff Stress | Settlement | | Thickness | Drainage | tp | Settlement | |
| (ft) | (psf) | (ft) | | (ft) | (ft) | (years) | (ft) | |
| 11 | 6140.8 | 0.04 | | 11 | 10 | 1.03 | 0.16 | |

**Settlement of Stiff Clay layer**

| Thickness | Eff Stress | Settlement |
|---|---|---|
| (ft) | (psf) | (ft) |
| 15 | 6704.6 | 0.04 |

## Total Settlements

| | | |
|---|---|---|
| Landfill Material | 0.05 | ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 0.17 | ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.08 | ft |
| Secondary Settlement of Soft Clay after 50 years | 0.16 | ft |
| **Total** | **0.46** | **ft** |

# SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-6** Elev 85 ft-NGVD

**Assumptions:**

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 95 | ft-NGVD | | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | | |
| Test Cell | Thickness | 8 | ft | Es | 1.E+06 | lb/ft2 | | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | |
| | Thickness | 35 | ft | | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | |
| | Thickness | 5 | ft | | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | | |
| | Thickness | 10 | ft | | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 1100 |
| Net Loading (delta sigma) | 1100 |

**Settlement of Test Cell Material**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 8 | 0.01 |

**Settlement of Med. Dense Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 35 | 0.07 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 5 | 0.02 |

**Settlement of Soft Clay Layer**

| | Primary | | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|
| Thickness | Eff Stress | Settlement | Thickness | Drainage | tp | Settlement | |
| (ft) | (psf) | (ft) | (ft) | (ft) | (years) | (ft) | |
| 10 | 3634 | 0.05 | 10 | 10 | 1.03 | 0.15 | |

**Settlement of Stiff Clay layer**

| Thickness | Eff Stress | Settlement |
|---|---|---|
| (ft) | (psf) | (ft) |
| 15 | 4179 | 0.05 |

## Total Settlements

| | |
|---|---|
| Landfill Material | 0.01 ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 0.09 ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.10 ft |
| Secondary Settlement of Soft Clay after 50 years | 0.15 ft |
| **Total** | **0.34 ft** |

## SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-7** Elev 69 ft-NGVD

**Assumptions:**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 165 | ft-NGVD | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | |
| | Thickness | 0 | ft | Es | 1.E+06 | lb/ft2 | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | |
| | Thickness | 55 | ft | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | |
| | Thickness | 8 | ft | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | |
| | Thickness | 16 | ft | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | |
| | Thickness | 10 | ft | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 10560 |
| Net Loading (delta sigma) | 10560 |

**Settlement of Test Cell Material**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 0 | 0.00 |

**Settlement of Med. Dense Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 55 | 1.01 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 8 | 0.29 |

**Settlement of Soft Clay Layer**

| | Primary | | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|
| Thickness | Eff Stress | Settlement | Thickness | Drainage | tp | Settlement | |
| (ft) | (psf) | (ft) | (ft) | (ft) | (years) | (ft) | |
| 10 | 4236 | 0.15 | 10 | 10 | 1.03 | 0.15 | |

**Settlement of Stiff Clay layer**

| Thickness | Eff Stress | Settlement |
|---|---|---|
| (ft) | (psf) | (ft) |
| 16 | 4804.8 | 0.26 |

**Total Settlements**

| | |
|---|---|
| Landfill Material | 0.00 ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 1.30 ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.42 ft |
| Secondary Settlement of Soft Clay after 50 years | 0.15 ft |
| **Total** | **1.87 ft** |

# SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-8** Elev 66.5 ft-NGVD

**Assumptions:**

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 115 | ft-NGVD | | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | | |
| | Thickness | 0 | ft | Es | 1.E+06 | lb/ft2 | | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | |
| | Thickness | 42 | ft | | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | |
| | Thickness | 6 | ft | | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | | |
| | Thickness | 17 | ft | | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | | |
| | Thickness | 10 | ft | | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 5335 |
| Net Loading (delta sigma) | 5335 |

**Settlement of Test Cell Material**

| Elastic Settlement | |
|---|---|
| Thickness (ft) | Settlement (ft) |
| 0 | 0.00 |

| **Settlement of Med. Dense Sand** | |
|---|---|
| Elastic Settlement | |
| Thickness (ft) | Settlement (ft) |
| 42 | 0.39 |

| **Settlement of Loose Sand** | |
|---|---|
| Elastic Settlement | |
| Thickness (ft) | Settlement (ft) |
| 6 | 0.11 |

| **Settlement of Soft Clay Layer** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Primary | | Secondary for 50 years | | | |
| Thickness (ft) | Eff Stress (psf) | Settlement (ft) | Thickness (ft) | Drainage (ft) | tp (years) | Settlement (ft) | |
| 10 | 3267.2 | 0.13 | 10 | 10 | 1.03 | 0.15 | |

| **Settlement of Stiff Clay layer** | | |
|---|---|---|
| Thickness (ft) | Eff Stress (psf) | Settlement (ft) |
| 17 | 3859.8 | 0.21 |

## Total Settlements

| | |
|---|---|
| Landfill Material | 0.00 ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 0.50 ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.34 ft |
| Secondary Settlement of Soft Clay after 50 years | 0.15 ft |
| **Total** | **0.99 ft** |

# SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-9** Elev 65.5 ft-NGVD

**Assumptions:**

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 90 | ft-NGVD | | | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | | | |
| | Thickness | 0 | ft | Es | 1.E+06 | lb/ft2 | | | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | | |
| | Thickness | 44 | ft | | | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | | |
| | Thickness | 9 | ft | | | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 | |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 2695 |
| Net Loading (delta sigma) | 2695 |

**Settlement of Test Cell Material**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 0 | 0.00 |

**Settlement of Med. Dense Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 44 | 0.21 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 9 | 0.08 |

**Settlement of Soft Clay Layer**

| | Primary | | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|
| Thickness | Eff Stress | Settlement | Thickness | Drainage | tp | Settlement | |
| (ft) | (psf) | (ft) | (ft) | (ft) | (years) | (ft) | |
| 15 | 3806.4 | 0.16 | 15 | 10 | 1.03 | 0.22 | |

**Settlement of Stiff Clay layer**

| Thickness | Eff Stress | Settlement |
|---|---|---|
| (ft) | (psf) | (ft) |
| 15 | 4445.4 | 0.10 |

**Total Settlements**

| | | |
|---|---|---|
| Landfill Material | 0.00 | ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 0.29 | ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.26 | ft |
| Secondary Settlement of Soft Clay after 50 years | 0.22 | ft |
| **Total** | **0.77** | **ft** |

# SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-11** Elev 135 ft-NGVD

**Assumptions:**

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 200 | ft-NGVD | | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | | |
| Existing LF | Thickness | 80 | ft | Es | 2.E+06 | lb/ft2 | | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 1.E+06 | lb/ft2 | | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 1.E+06 | lb/ft2 | | | | | | | | | | |
| | Thickness | 35 | ft | | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 5.E+05 | lb/ft2 | | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 5.E+05 | lb/ft2 | | | | | | | | | | |
| | Thickness | 5 | ft | | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | | |
| | Thickness | 10 | ft | | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 7150 |
| Net Loading (delta sigma) | 7150 |

**Settlement of Existing Landfill Material**

| Elastic Settlement | |
|---|---|
| Thickness (ft) | Settlement (ft) |
| 80 | 0.29 |

**Settlement of Med. Dense Sand**

| Elastic Settlement | |
|---|---|
| Thickness (ft) | Settlement (ft) |
| 35 | 0.25 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness (ft) | Settlement (ft) |
| 5 | 0.07 |

**Settlement of Soft Clay Layer**

| | Primary | | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|
| Thickness (ft) | Eff Stress (psf) | Settlement (ft) | | Thickness (ft) | Drainage | tp (years) | Settlement (ft) |
| 10 | 11554 | 0.08 | | 10 | 10 | 1.03 | 0.15 |

**Settlement of Stiff Clay layer**

| Thickness (ft) | Eff Stress (psf) | Settlement (ft) |
|---|---|---|
| 15 | 12099 | 0.10 |

## Total Settlements

| | | |
|---|---|---|
| Landfill Material | 0.29 | ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 0.32 | ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.18 | ft |
| Secondary Settlement of Soft Clay after 50 years | 0.15 | ft |
| **Total** | **0.93** | **ft** |

## SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-12** Elev 115 ft-NGVD

**Assumptions:**

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 200 | ft-NGVD | | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | | |
| Existing LF | Thickness | 60 | ft | Es | 2.E+06 | lb/ft2 | | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 1.E+06 | lb/ft2 | | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 1.E+06 | lb/ft2 | | | | | | | | | | |
| | Thickness | 35 | ft | | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 5.E+05 | lb/ft2 | | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 5.E+05 | lb/ft2 | | | | | | | | | | |
| | Thickness | 5 | ft | | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | | |
| | Thickness | 10 | ft | | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 9350 |
| Net Loading (delta sigma) | 9350 |

**Settlement of Test Cell Material**

| Elastic Settlement | |
|---|---|
| Thickness (ft) | Settlement (ft) |
| 60 | 0.28 |

**Settlement of Med. Dense Sand**

| Elastic Settlement | |
|---|---|
| Thickness (ft) | Settlement (ft) |
| 35 | 0.33 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness (ft) | Settlement (ft) |
| 5 | 0.09 |

**Settlement of Soft Clay Layer**

| | Primary | | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|
| Thickness (ft) | Eff Stress (psf) | Settlement (ft) | | Thickness (ft) | Drainage (ft) | tp (years) | Settlement (ft) |
| 10 | 9354 | 0.10 | | 10 | 10 | 1.03 | 0.15 |

**Settlement of Stiff Clay layer**

| Thickness (ft) | Eff Stress (psf) | Settlement (ft) |
|---|---|---|
| 15 | 9899 | 0.14 |

### Total Settlements

| | | |
|---|---|---|
| Landfill Material | 0.28 | ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 0.42 | ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.24 | ft |
| Secondary Settlement of Soft Clay after 50 years | 0.15 | ft |
| **Total** | **1.09** | **ft** |

# SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-13** Elev 95 ft-NGVD

**Assumptions:**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 200 | ft-NGVD | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | |
| Existing LF | Thickness | 40 | ft | Es | 2.E+06 | lb/ft2 | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 1.E+06 | lb/ft2 | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 1.E+06 | lb/ft2 | | | | | | | | | |
| | Thickness | 35 | ft | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 5.E+05 | lb/ft2 | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 5.E+05 | lb/ft2 | | | | | | | | | |
| | Thickness | 5 | ft | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | |
| | Thickness | 10 | ft | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 11550 |
| Net Loading (delta sigma) | 11550 |

**Settlement of Existing Landfill Material**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 40 | 0.23 |

**Settlement of Med. Dense Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 35 | 0.40 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 5 | 0.12 |

**Settlement of Soft Clay Layer**

| | Primary | | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|
| Thickness | Eff Stress | Settlement | Thickness | Drainage | tp | Settlement |
| (ft) | (psf) | (ft) | (ft) | (ft) | (years) | (ft) |
| 10 | 7154 | 0.13 | 10 | 10 | 1.03 | 0.15 |

**Settlement of Stiff Clay layer**

| Thickness | Eff Stress | Settlement |
|---|---|---|
| (ft) | (psf) | (ft) |
| 15 | 7699 | 0.19 |

## Total Settlements

| | |
|---|---|
| Landfill Material | 0.23 ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 0.52 ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.32 ft |
| Secondary Settlement of Soft Clay after 50 years | 0.15 ft |
| **Total** | **1.22 ft** |

# SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-1** Elev 75 ft-NGVD
**Next to Cell**

**Assumptions:**

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 200 | ft-NGVD | | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | | |
| Test Cell | Thickness | 0 | ft | Es | 1.E+06 | lb/ft2 | | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | | | |
| | Thickness | 35 | ft | | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | | | |
| | Thickness | 10 | ft | | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | | |
| | Thickness | 10 | ft | | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 13750 |
| Net Loading (delta sigma) | 13750 |

**Settlement of Test Cell Material**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 0 | 0.00 |

**Settlement of Med. Dense San**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 35 | 0.84 |

**Settlement of Loose Sand**

| Elastic Settlement | | |
|---|---|---|
| Thickness | | Settlement |
| (ft) | | (ft) |
| 10 | | 0.48 |

**Settlement of Soft Clay Layer**

| | Primary | | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|
| Thickness | Eff Stress | | Settlement | Thickness | Drainage | tp | Settlement |
| (ft) | (psf) | | (ft) | (ft) | (ft) | (years) | (ft) |
| 10 | 3304 | | 0.19 | 10 | 10 | 1.03 | 0.15 |

**Settlement of Stiff Clay layer**

| Thickness | Eff Stress | Settlement |
|---|---|---|
| (ft) | (psf) | (ft) |
| 15 | 3849 | 0.32 |

## Total Settlements

| | |
|---|---|
| Landfill Material | 0.00 ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 1.31 ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.51 ft |
| Secondary Settlement of Soft Clay after 50 years | 0.15 ft |
| **Total** | **1.97 ft** |

# SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-3** Elev 80 ft-NGVD
**Next to Cell**

**Assumptions:**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 125 ft-NGVD | | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 pcf | | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 ft | | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 ft | | | | | | | | | | | | | |
| Test Cell | Thickness | 0 ft | Es | 1.E+06 lb/ft2 | | | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 pcf | Es | 576,000 lb/ft2 | | | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 pcf | Es | 576,000 lb/ft2 | | | | | | | | | | | |
| | Thickness | 31 ft | | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 pcf | Es | 288,000 lb/ft2 | | | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 pcf | Es | 288,000 lb/ft2 | | | | | | | | | | | |
| | Thickness | 5 ft | | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 pcf | w | 29 % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | |
| | Thickness | 15 ft | | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 pcf | w | 55 % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 | |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | |
| | Thickness | 10 ft | | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 4950 |
| Net Loading (delta sigma) | 4950 |

**Settlement of Test Cell Material**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 0 | 0.00 |

**Settlement of Med. Dense San**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 31 | 0.27 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 5 | 0.09 |

**Settlement of Soft Clay Layer**

| | Primary | | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|
| Thickness | Eff Stress | Settlement | Thickness | Drainage | tp | Settlement | |
| (ft) | (psf) | (ft) | (ft) | (ft) | (years) | (ft) | |
| 10 | 2523.6 | 0.14 | 10 | 10 | 1.03 | 0.15 | |

**Settlement of Stiff Clay layer**

| Thickness | Eff Stress | Settlement |
|---|---|---|
| (ft) | (psf) | (ft) |
| 15 | 3068.6 | 0.20 |

## Total Settlements

| | |
|---|---|
| Landfill Material | 0.00 ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 0.35 ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.34 ft |
| Secondary Settlement of Soft Clay after 50 years | 0.15 ft |
| **Total** | **0.85 ft** |

# SECI Landfill Expansion - Settlement Calculations

Bore Hole **TB-5** Elev 80 ft-NGVD
**Next to Cell**

**Assumptions:**

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 110 | ft-NGVD | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | |
| Test Cell | Thickness | 0 | ft | Es | 1.E+06 | lb/ft2 | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 576,000 | lb/ft2 | | | | | | | | |
| | Thickness | 40 | ft | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 288,000 | lb/ft2 | | | | | | | | |
| | Thickness | 20 | ft | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | |
| | Thickness | 11 | ft | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 3300 |
| Net Loading (delta sigma) | 3300 |

**Settlement of Test Cell Material**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 0 | 0.00 |

**Settlement of Med. Dense San**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 40 | 0.23 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness | Settlement |
| (ft) | (ft) |
| 20 | 0.23 |

**Settlement of Soft Clay Layer**

| | Primary | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|
| Thickness | Eff Stress | Settlement | Thickness | Drainage | tp | Settlement |
| (ft) | (psf) | (ft) | (ft) | (ft) | (years) | (ft) |
| 11 | 4710.8 | 0.10 | 11 | 10 | 1.03 | 0.00 |

**Settlement of Stiff Clay layer**

| Thickness | Eff Stress | Settlement |
|---|---|---|
| (ft) | (psf) | (ft) |
| 15 | 5274.6 | 0.10 |

**Total Settlements**

| | |
|---|---|
| Landfill Material | 0.00 ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 0.46 ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.20 ft |
| Secondary Settlement of Soft Clay after 50 years | 0.00 ft |
| **Total** | **0.66 ft** |

## SECI Landfill Expansion - Settlement Calculations

Bore Hole **Liner Edge** Elev 185 ft-NGVD
**Existing Landfill**

**Assumptions:**

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. Height of Landfill @ Elevation | 200 | ft-NGVD | | | | | | | | | | | | | | | | |
| | Unit Weight of Landfill Material | 110 | pcf | | | | | | | | | | | | | | | | |
| | Separation of Landfill Bottom from GWL | 5 | ft | | | | | | | | | | | | | | | | |
| | Assumed HGWL Elevation = | 60 | ft | | | | | | | | | | | | | | | | |
| Existing LF | Thickness | 120 | ft | Es | 2.E+06 | lb/ft2 | | | | | | | | | | | | | |
| Soils: | Med. Dense Sand, Unit wt above GWL | 115 | pcf | Es | 1.E+06 | lb/ft2 | | | | | | | | | | | | | |
| | Med. Dense Sand, Unit wt below GWL | 120 | pcf | Es | 1.E+06 | lb/ft2 | | | | | | | | | | | | | |
| | Thickness | 35 | ft | | | | | | | | | | | | | | | | |
| | Loose Sand, Unit wt above GWL | 110 | pcf | Es | 5.E+05 | lb/ft2 | | | | | | | | | | | | | |
| | Loose Sand, Unit wt below GWL | 115 | pcf | Es | 5.E+05 | lb/ft2 | | | | | | | | | | | | | |
| | Thickness | 5 | ft | | | | | | | | | | | | | | | | |
| | Stiff Clay, Unit weight below GWL | 110 | pcf | w | 29 | % | eo | 0.783 | Cc | 0.29 | Cr | 0.058 | | | | | | | |
| | Stiff Clay, OCR | 4 | | | | | | | | | | | | | | | | | |
| | Thickness | 15 | ft | | | | | | | | | | | | | | | | |
| | Soft Clay, Unit weight | 100 | pcf | w | 55 | % | eo | 1.474 | Cc | 0.55 | Cr | 0.11 | Cv | 0.3 | Ca | 0.022 | | | |
| | Soft Clay, OCR | 1.2 | | | | | | | | | | | | | | | | | |
| | Thickness | 10 | ft | | | | | | | | | | | | | | | | |

| | |
|---|---|
| Excavation to bottom of landfill | 0 |
| Landfill Load | 1650 |
| Net Loading (delta sigma) | 1650 |

**Settlement of Existing Landfill Material**

| Elastic Settlement | |
|---|---|
| Thickness (ft) | Settlement (ft) |
| 120 | 0.10 |

**Settlement of Med. Dense Sand**

| Elastic Settlement | |
|---|---|
| Thickness (ft) | Settlement (ft) |
| 35 | 0.06 |

**Settlement of Loose Sand**

| Elastic Settlement | |
|---|---|
| Thickness (ft) | Settlement (ft) |
| 5 | 0.02 |

**Settlement of Soft Clay Layer**

| | Primary | | | Secondary for 50 years | | | |
|---|---|---|---|---|---|---|---|
| Thickness (ft) | Eff Stress (psf) | Settlement (ft) | | Thickness (ft) | Drainage | tp (years) | Settlement (ft) |
| 10 | 15954 | 0.02 | | 10 | 10 | 1.03 | 0.15 |

**Settlement of Stiff Clay layer**

| Thickness (ft) | Eff Stress (psf) | Settlement (ft) |
|---|---|---|
| 15 | 16499 | 0.02 |

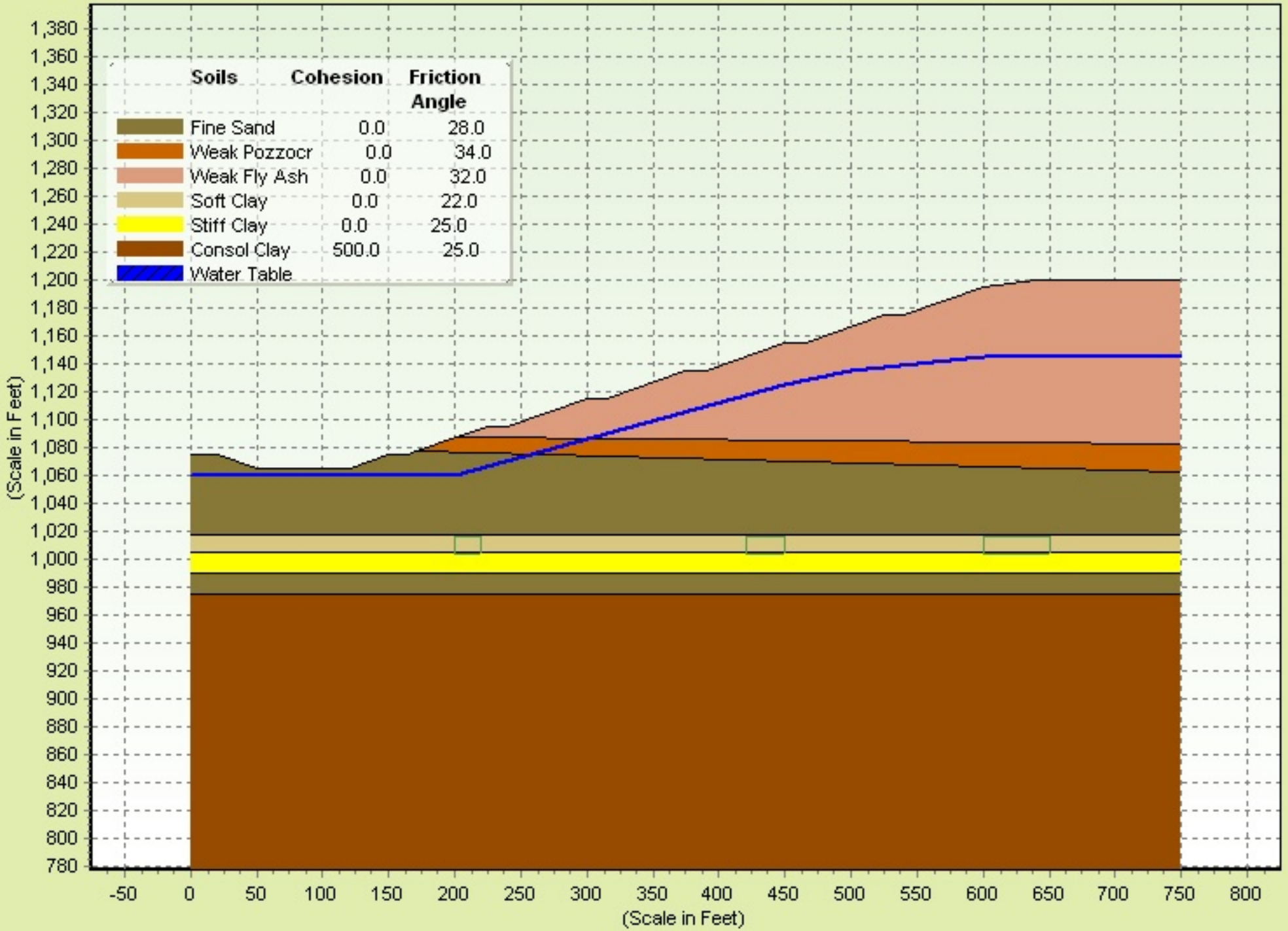
### Total Settlements

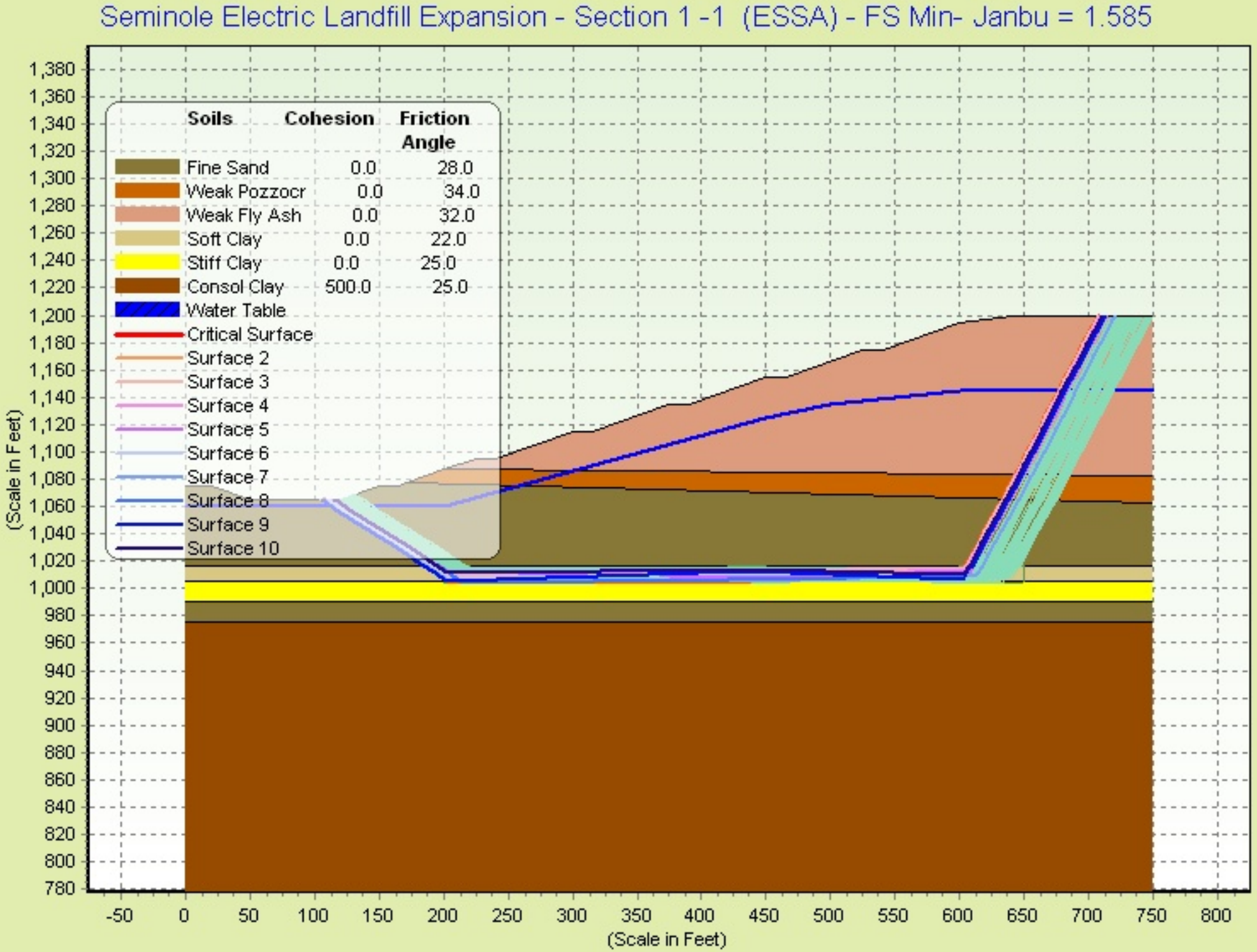
| | | |
|---|---|---|
| Landfill Material | 0.10 | ft |
| Elastic (Immediate) Settlement of Loose and Med Sand | 0.07 | ft |
| Primary Consolidation Settlement of Soft and Stiff Clay | 0.04 | ft |
| Secondary Settlement of Soft Clay after 50 years | 0.15 | ft |
| **Total** | **0.37** | **ft** |

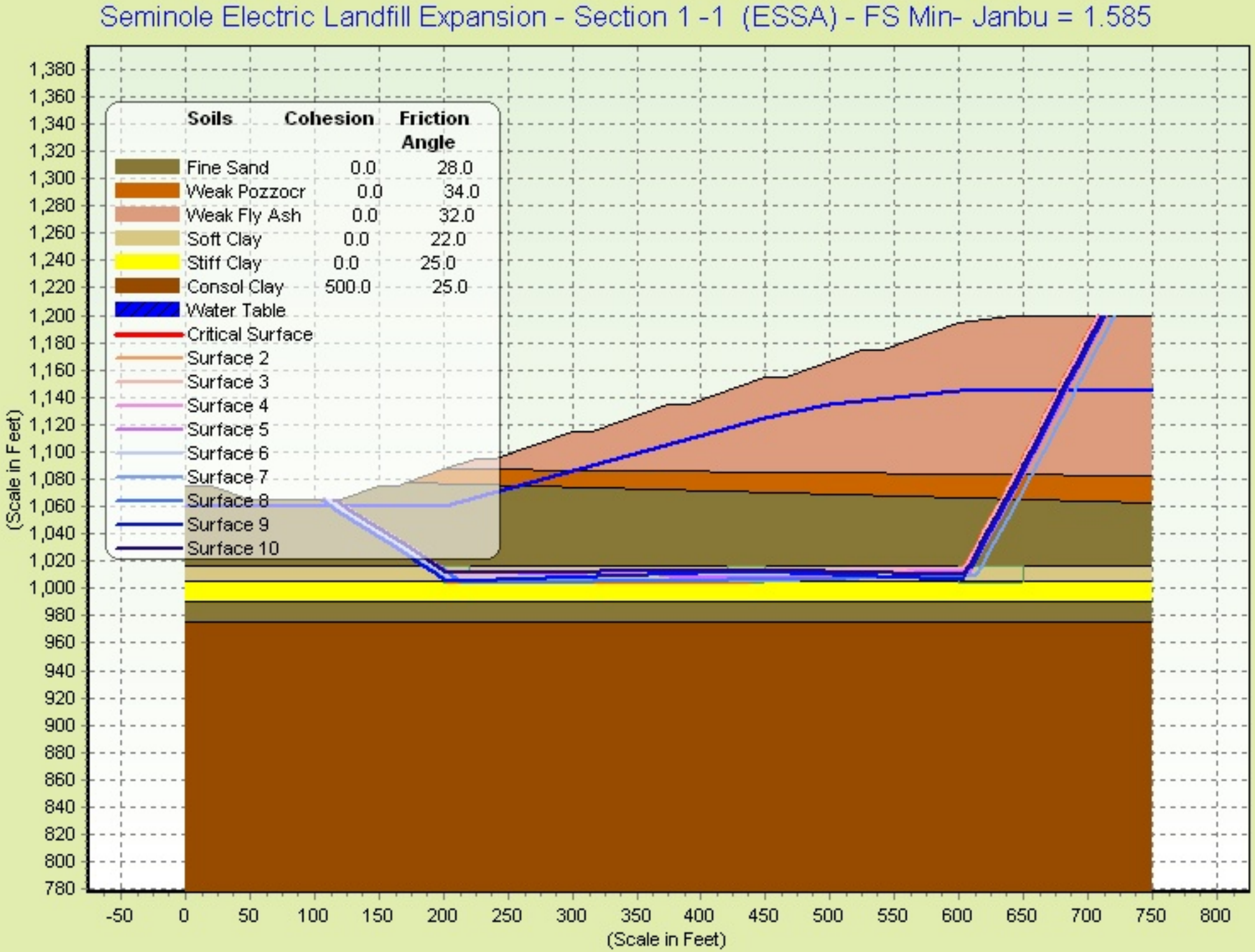
# ATTACHMENT C

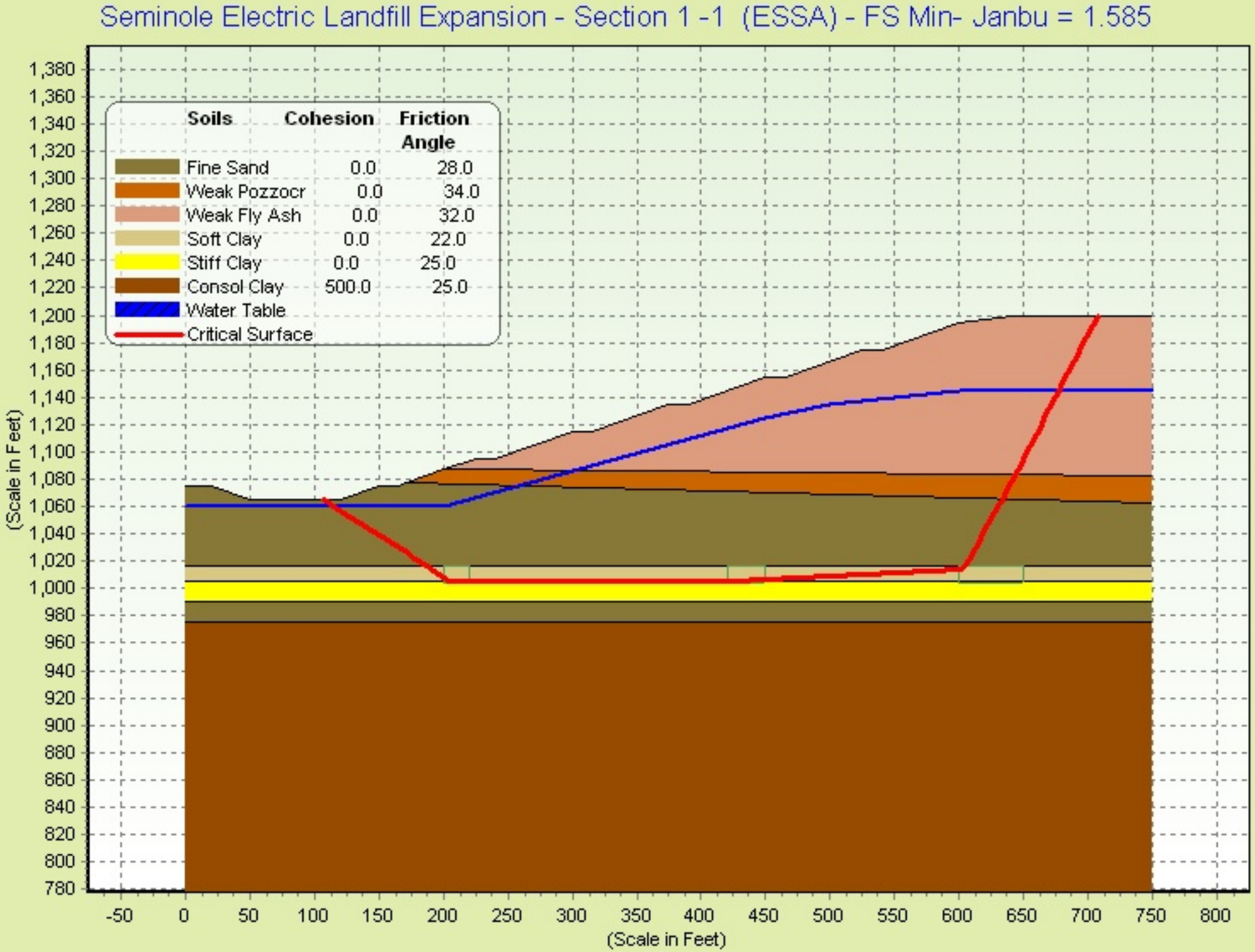
# SLOPE STABILITY ANALYSIS RESULTS

# Seminole Electric Landfill Expansion - Section 1 -1 (ESSA)




Seminole Electric Landfill Expansion - Section 1 -1 (ESSA) - FS Min- Janbu = 1.585
Soils
Cohesion
Friction Angle
Fine Sand 0.0 28.0
Weak Pozzocr 0.0 34.0
Weak Fly Ash 0.0 32.0
Soft Clay 0.0 22.0
Stiff Clay 0.0 25.0
Consol Clay 500.0 25.0
Water Table
Critical Surface
Surface 2
Surface 3
Surface 4
Surface 5
Surface 6
Surface 7
Surface 8
Surface 9
Surface 10
(Scale in Feet)
(Scale in Feet)


Seminole Electric Landfill Expansion - Section 1 -1 (ESSA) - FS Min- Janbu = 1.585
Soils
Cohesion
Friction Angle
Fine Sand 0.0 28.0
Weak Pozzocr 0.0 34.0
Weak Fly Ash 0.0 32.0
Soft Clay 0.0 22.0
Stiff Clay 0.0 25.0
Consol Clay 500.0 25.0
Water Table
Critical Surface
Surface 2
Surface 3
Surface 4
Surface 5
Surface 6
Surface 7
Surface 8
Surface 9
Surface 10
(Scale in Feet)
(Scale in Feet)


Seminole Electric Landfill Expansion - Section 1 -1 (ESSA) - FS Min- Janbu = 1.585
Soils
Cohesion
Friction Angle
Fine Sand 0.0 28.0
Weak Pozzocr 0.0 34.0
Weak Fly Ash 0.0 32.0
Soft Clay 0.0 22.0
Stiff Clay 0.0 25.0
Consol Clay 500.0 25.0
Water Table
Critical Surface
(Scale in Feet)
(Scale in Feet)

result.out
** STABL for WINDOWS **
by
Geotechnical Software Solutions

1

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 7/13/10
Time of Run: 16:30
Run By: Shawkat Ali
Input Data Filename: run.in
Output Filename: result.out
Unit: U.S.C.
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION Seminole Electric Landfill Expansion - S
ection 1 -1 (ESSA)

BOUNDARY COORDINATES

20 Top Boundaries
26 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|---|---|---|---|---|---|
| 1 | 0.00 | 1075.00 | 20.00 | 1075.00 | 1 |
| 2 | 20.00 | 1075.00 | 50.00 | 1065.00 | 1 |
| 3 | 50.00 | 1065.00 | 120.00 | 1065.00 | 1 |
| 4 | 120.00 | 1065.00 | 150.00 | 1075.00 | 1 |
| 5 | 150.00 | 1075.00 | 165.00 | 1075.00 | 1 |
| 6 | 165.00 | 1075.00 | 171.00 | 1077.00 | 1 |
| 7 | 171.00 | 1077.00 | 201.00 | 1087.00 | 5 |
| 8 | 201.00 | 1087.00 | 225.00 | 1095.00 | 6 |
| 9 | 225.00 | 1095.00 | 240.00 | 1095.00 | 6 |
| 10 | 240.00 | 1095.00 | 300.00 | 1115.00 | 6 |
| 11 | 300.00 | 1115.00 | 315.00 | 1115.00 | 6 |
| 12 | 315.00 | 1115.00 | 375.00 | 1135.00 | 6 |
| 13 | 375.00 | 1135.00 | 390.00 | 1135.00 | 6 |
| 14 | 390.00 | 1135.00 | 450.00 | 1155.00 | 6 |
| 15 | 450.00 | 1155.00 | 465.00 | 1155.00 | 6 |
| 16 | 465.00 | 1155.00 | 525.00 | 1175.00 | 6 |
| 17 | 525.00 | 1175.00 | 540.00 | 1175.00 | 6 |
| 18 | 540.00 | 1175.00 | 600.00 | 1195.00 | 6 |
| 19 | 600.00 | 1195.00 | 640.00 | 1200.00 | 6 |
| 20 | 640.00 | 1200.00 | 750.00 | 1200.00 | 6 |
| 21 | 201.00 | 1087.00 | 750.00 | 1082.00 | 5 |
| 22 | 171.00 | 1077.00 | 750.00 | 1062.00 | 1 |
| 23 | 0.00 | 1017.00 | 750.00 | 1017.00 | 2 |
| 24 | 0.00 | 1005.00 | 750.00 | 1005.00 | 3 |
| 25 | 0.00 | 990.00 | 750.00 | 990.00 | 1 |
| 26 | 0.00 | 975.00 | 750.00 | 975.00 | 4 |

1

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 | 110.0 | 115.0 | 0.0 | 28.0 | 0.00 | 0.0 | 1 |
| 2 | 100.0 | 110.0 | 0.0 | 22.0 | 0.00 | 0.0 | 1 |
| 3 | 110.0 | 120.0 | 0.0 | 25.0 | 0.00 | 0.0 | 1 |
| 4 | 115.0 | 120.0 | 500.0 | 25.0 | 0.00 | 0.0 | 1 |
| 5 | 80.0 | 85.0 | 0.0 | 34.0 | 0.00 | 0.0 | 1 |
| 6 | 75.0 | 80.0 | 0.0 | 32.0 | 0.00 | 0.0 | 1 |

1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 6 Coordinate Points

| Point No. | X-Water (ft) | Y-Water (ft) |
|---|---|---|
| 1 | 0.00 | 1060.00 |
| 2 | 200.00 | 1060.00 |
| 3 | 450.00 | 1125.00 |
| 4 | 500.00 | 1135.00 |
| 5 | 600.00 | 1145.00 |
| 6 | 750.00 | 1145.00 |

1

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

The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.

100 Trial Surfaces Have Been Generated.

3 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 10.0

| Box | X-Left | Y-Left | X-Right | Y-Right | Height |
|---|---|---|---|---|---|

| No. | (ft) | (ft) | (ft) | (ft) | (ft) |
|---|---|---|---|---|---|
| 1 | 200.00 | 1010.00 | 220.00 | 1010.00 | 12.00 |
| 2 | 420.00 | 1010.00 | 450.00 | 1010.00 | 12.00 |
| 3 | 600.00 | 1010.00 | 650.00 | 1010.00 | 12.00 |

**** ERROR - BK12 ****

1

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 40 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 107.06 | 1065.00 |
| 2 | 109.80 | 1063.35 |
| 3 | 118.37 | 1058.20 |
| 4 | 126.94 | 1053.05 |
| 5 | 135.51 | 1047.90 |
| 6 | 144.09 | 1042.75 |
| 7 | 152.66 | 1037.60 |
| 8 | 161.23 | 1032.45 |
| 9 | 169.80 | 1027.30 |
| 10 | 178.37 | 1022.15 |
| 11 | 186.94 | 1017.00 |
| 12 | 187.70 | 1016.49 |
| 13 | 195.99 | 1010.90 |
| 14 | 204.28 | 1005.31 |
| 15 | 424.91 | 1005.97 |
| 16 | 602.54 | 1013.89 |
| 17 | 604.64 | 1017.00 |
| 18 | 609.79 | 1025.57 |
| 19 | 614.94 | 1034.14 |
| 20 | 620.09 | 1042.71 |
| 21 | 625.24 | 1051.29 |
| 22 | 630.39 | 1059.86 |
| 23 | 633.49 | 1065.02 |
| 24 | 638.18 | 1073.85 |
| 25 | 642.88 | 1082.68 |
| 26 | 643.04 | 1082.97 |
| 27 | 647.88 | 1091.72 |
| 28 | 652.73 | 1100.47 |
| 29 | 657.58 | 1109.21 |
| 30 | 662.43 | 1117.96 |
| 31 | 667.28 | 1126.71 |
| 32 | 672.12 | 1135.45 |
| 33 | 676.97 | 1144.20 |
| 34 | 681.82 | 1152.94 |
| 35 | 686.67 | 1161.69 |
| 36 | 691.52 | 1170.44 |
| 37 | 696.36 | 1179.18 |
| 38 | 701.21 | 1187.93 |

| | | |
|---|---|---|
| 39 | 706.06 | 1196.67 |
| 40 | 707.90 | 1200.00 |

*** 1.585 ***

Individual data on the 62 slices

| Slice No. | Width (ft) | Weight (lbs) | Water Force Top (lbs) | Water Force Bot (lbs) | Force Norm (lbs) | Force Tan (lbs) | Earthquake Force Hor (lbs) | Earthquake Force Ver (lbs) | Surcharge Load (lbs) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.7 | 248.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2 | 5.6 | 2040.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3 | 3.0 | 1953.8 | 0.0 | 195.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4 | 1.6 | 1324.2 | 0.0 | 271.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 6.9 | 8583.6 | 0.0 | 2457.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6 | 8.6 | 17630.2 | 0.0 | 5942.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7 | 8.6 | 25401.2 | 0.0 | 9155.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8 | 5.9 | 22055.6 | 0.0 | 8190.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9 | 2.7 | 10987.1 | 0.0 | 4179.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10 | 8.6 | 38760.8 | 0.0 | 15583.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 11 | 3.8 | 18658.3 | 0.0 | 7872.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 12 | 4.8 | 25602.1 | 0.0 | 10924.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 13 | 1.2 | 6773.7 | 0.0 | 2885.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 14 | 7.4 | 44704.1 | 0.0 | 19125.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15 | 8.6 | 58464.7 | 0.0 | 25225.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 16 | 0.8 | 5493.7 | 0.0 | 2461.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 17 | 8.3 | 63988.0 | 0.0 | 28894.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 18 | 4.0 | 33411.0 | 0.0 | 15224.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 19 | 1.0 | 8576.9 | 0.0 | 3809.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20 | 3.3 | 28845.2 | 0.0 | 12980.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 21 | 20.7 | 190904.7 | 0.0 | 73198.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 22 | 15.0 | 142124.4 | 0.0 | 57154.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 23 | 16.8 | 163053.6 | 0.0 | 68295.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 24 | 43.2 | 450677.3 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 25 | 0.4 | 4014.0 | 0.0 | 1776.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 26 | 14.6 | 160726.9 | 0.0 | 72845.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 27 | 60.0 | 704196.6 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 28 | 15.0 | 187357.4 | 0.0 | 92091.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 29 | 34.9 | 451365.8 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30 | 25.1 | 341861.1 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 31 | 15.0 | 207822.0 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32 | 35.0 | 496083.6 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 33 | 25.0 | 369613.2 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 34 | 15.0 | 224887.6 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 35 | 60.0 | 932792.4 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 36 | 2.5 | 40976.2 | 0.0 | 20790.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 37 | 2.1 | 33548.7 | 0.0 | 30332.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 38 | 5.2 | 79095.6 | 0.0 | 77197.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 39 | 5.2 | 74245.6 | 0.0 | 71848.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 40 | 5.2 | 69395.4 | 0.0 | 66500.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 41 | 5.2 | 64545.4 | 0.0 | 61151.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 42 | 5.2 | 59695.3 | 0.0 | 55802.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 43 | 3.1 | 33597.7 | 0.0 | 31014.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 44 | 4.7 | 47882.9 | 0.0 | 47153.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 45 | 1.8 | 17643.0 | 0.0 | 16772.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 46 | 2.9 | 26883.3 | 0.0 | 24871.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 47 | 0.2 | 1436.8 | 0.0 | 1304.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 48 | 4.8 | 42358.2 | 0.0 | 35974.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 49 | 4.8 | 38966.6 | 0.0 | 30517.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50 | 4.8 | 35574.4 | 0.0 | 25060.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 51 | 4.8 | 32182.2 | 0.0 | 19602.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 52 | 4.8 | 28790.0 | 0.0 | 14144.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 53 | 4.8 | 25397.8 | 0.0 | 8687.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 54 | 4.8 | 22005.6 | 0.0 | 3229.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 55 | 0.4 | 1848.9 | 0.0 | 23.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 56 | 4.4 | 16852.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 57 | 4.8 | 15519.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 58 | 4.8 | 12339.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 59 | 4.8 | 9159.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 60 | 4.8 | 5979.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 61 | 4.8 | 2799.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 62 | 1.8 | 229.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Failure Surface Specified By 40 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 107.61 | 1065.00 |
| 2 | 110.35 | 1063.35 |
| 3 | 118.92 | 1058.20 |
| 4 | 127.49 | 1053.05 |
| 5 | 136.06 | 1047.90 |
| 6 | 144.63 | 1042.75 |
| 7 | 153.21 | 1037.60 |
| 8 | 161.78 | 1032.45 |
| 9 | 170.35 | 1027.30 |
| 10 | 178.92 | 1022.15 |
| 11 | 187.49 | 1017.00 |
| 12 | 188.38 | 1016.40 |
| 13 | 196.67 | 1010.81 |
| 14 | 204.96 | 1005.22 |
| 15 | 447.39 | 1006.64 |
| 16 | 605.88 | 1015.59 |
| 17 | 606.84 | 1017.00 |
| 18 | 611.99 | 1025.57 |
| 19 | 617.14 | 1034.14 |
| 20 | 622.29 | 1042.71 |
| 21 | 627.44 | 1051.29 |
| 22 | 632.59 | 1059.86 |
| 23 | 635.65 | 1064.96 |
| 24 | 640.35 | 1073.79 |
| 25 | 645.04 | 1082.62 |
| 26 | 645.22 | 1082.95 |
| 27 | 650.07 | 1091.70 |
| 28 | 654.92 | 1100.45 |
| 29 | 659.77 | 1109.19 |
| 30 | 664.61 | 1117.94 |
| 31 | 669.46 | 1126.69 |
| 32 | 674.31 | 1135.43 |
| 33 | 679.16 | 1144.18 |
| 34 | 684.01 | 1152.92 |
| 35 | 688.85 | 1161.67 |
| 36 | 693.70 | 1170.42 |
| 37 | 698.55 | 1179.16 |
| 38 | 703.40 | 1187.91 |
| 39 | 708.25 | 1196.66 |
| 40 | 710.10 | 1200.00 |

*** 1.589 ***

1

Failure Surface Specified By 39 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 109.38 | 1065.00 |
| 2 | 112.12 | 1063.35 |
| 3 | 120.69 | 1058.20 |
| 4 | 129.26 | 1053.05 |
| 5 | 137.83 | 1047.90 |
| 6 | 146.40 | 1042.75 |
| 7 | 154.98 | 1037.60 |
| 8 | 163.55 | 1032.45 |
| 9 | 172.12 | 1027.30 |
| 10 | 180.69 | 1022.15 |
| 11 | 189.26 | 1017.00 |
| 12 | 192.85 | 1014.58 |
| 13 | 201.14 | 1008.99 |
| 14 | 422.20 | 1012.34 |
| 15 | 603.86 | 1015.95 |
| 16 | 604.57 | 1017.00 |
| 17 | 609.72 | 1025.57 |
| 18 | 614.87 | 1034.14 |
| 19 | 620.02 | 1042.71 |
| 20 | 625.17 | 1051.29 |
| 21 | 630.32 | 1059.86 |
| 22 | 633.42 | 1065.02 |
| 23 | 638.12 | 1073.85 |
| 24 | 642.81 | 1082.68 |
| 25 | 642.97 | 1082.97 |
| 26 | 647.82 | 1091.72 |
| 27 | 652.67 | 1100.47 |
| 28 | 657.51 | 1109.21 |
| 29 | 662.36 | 1117.96 |
| 30 | 667.21 | 1126.71 |
| 31 | 672.06 | 1135.45 |
| 32 | 676.91 | 1144.20 |
| 33 | 681.75 | 1152.94 |
| 34 | 686.60 | 1161.69 |
| 35 | 691.45 | 1170.44 |
| 36 | 696.30 | 1179.18 |
| 37 | 701.15 | 1187.93 |
| 38 | 706.00 | 1196.68 |
| 39 | 707.84 | 1200.00 |

*** 1.598 ***

Failure Surface Specified By 38 Coordinate Points

| Point | X-Surf | Y-Surf |
|---|---|---|

| No. | (ft) | (ft) |
|---|---|---|
| 1 | 116.47 | 1065.00 |
| 2 | 119.21 | 1063.35 |
| 3 | 127.79 | 1058.20 |
| 4 | 136.36 | 1053.05 |
| 5 | 144.93 | 1047.90 |
| 6 | 153.50 | 1042.75 |
| 7 | 162.07 | 1037.60 |
| 8 | 170.64 | 1032.45 |
| 9 | 179.22 | 1027.30 |
| 10 | 187.79 | 1022.15 |
| 11 | 196.36 | 1017.00 |
| 12 | 203.40 | 1012.25 |
| 13 | 428.10 | 1009.43 |
| 14 | 604.50 | 1014.24 |
| 15 | 606.36 | 1017.00 |
| 16 | 611.51 | 1025.57 |
| 17 | 616.66 | 1034.14 |
| 18 | 621.81 | 1042.71 |
| 19 | 626.96 | 1051.29 |
| 20 | 632.11 | 1059.86 |
| 21 | 635.19 | 1064.97 |
| 22 | 639.88 | 1073.80 |
| 23 | 644.58 | 1082.63 |
| 24 | 644.75 | 1082.96 |
| 25 | 649.60 | 1091.70 |
| 26 | 654.44 | 1100.45 |
| 27 | 659.29 | 1109.20 |
| 28 | 664.14 | 1117.94 |
| 29 | 668.99 | 1126.69 |
| 30 | 673.84 | 1135.44 |
| 31 | 678.68 | 1144.18 |
| 32 | 683.53 | 1152.93 |
| 33 | 688.38 | 1161.67 |
| 34 | 693.23 | 1170.42 |
| 35 | 698.08 | 1179.17 |
| 36 | 702.93 | 1187.91 |
| 37 | 707.77 | 1196.66 |
| 38 | 709.62 | 1200.00 |

*** 1.610 ***

1

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 113.77 | 1065.00 |
| 2 | 116.51 | 1063.35 |
| 3 | 125.08 | 1058.20 |
| 4 | 133.65 | 1053.05 |
| 5 | 142.23 | 1047.90 |
| 6 | 150.80 | 1042.75 |
| 7 | 159.37 | 1037.60 |
| 8 | 167.94 | 1032.45 |
| 9 | 176.51 | 1027.30 |

| | | |
|---|---|---|
| 10 | 185.08 | 1022.15 |
| 11 | 193.66 | 1017.00 |
| 12 | 200.56 | 1012.34 |
| 13 | 434.44 | 1007.27 |
| 14 | 608.45 | 1013.41 |
| 15 | 610.87 | 1017.00 |
| 16 | 616.02 | 1025.57 |
| 17 | 621.17 | 1034.14 |
| 18 | 626.32 | 1042.71 |
| 19 | 631.47 | 1051.29 |
| 20 | 636.62 | 1059.86 |
| 21 | 639.62 | 1064.86 |
| 22 | 644.32 | 1073.69 |
| 23 | 649.01 | 1082.52 |
| 24 | 649.23 | 1082.92 |
| 25 | 654.07 | 1091.66 |
| 26 | 658.92 | 1100.41 |
| 27 | 663.77 | 1109.16 |
| 28 | 668.62 | 1117.90 |
| 29 | 673.47 | 1126.65 |
| 30 | 678.31 | 1135.40 |
| 31 | 683.16 | 1144.14 |
| 32 | 688.01 | 1152.89 |
| 33 | 692.86 | 1161.63 |
| 34 | 697.71 | 1170.38 |
| 35 | 702.55 | 1179.13 |
| 36 | 707.40 | 1187.87 |
| 37 | 712.25 | 1196.62 |
| 38 | 714.12 | 1200.00 |

*** 1.613 ***

Failure Surface Specified By 39 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 109.99 | 1065.00 |
| 2 | 112.73 | 1063.35 |
| 3 | 121.30 | 1058.20 |
| 4 | 129.88 | 1053.05 |
| 5 | 138.45 | 1047.90 |
| 6 | 147.02 | 1042.75 |
| 7 | 155.59 | 1037.60 |
| 8 | 164.16 | 1032.45 |
| 9 | 172.73 | 1027.30 |
| 10 | 181.31 | 1022.15 |
| 11 | 189.88 | 1017.00 |
| 12 | 196.51 | 1012.53 |
| 13 | 204.80 | 1006.94 |
| 14 | 420.93 | 1011.78 |
| 15 | 603.79 | 1009.77 |
| 16 | 608.67 | 1017.00 |
| 17 | 613.82 | 1025.57 |
| 18 | 618.97 | 1034.14 |
| 19 | 624.12 | 1042.71 |
| 20 | 629.27 | 1051.29 |
| 21 | 634.42 | 1059.86 |

| | | |
|---|---|---|
| 22 | 637.46 | 1064.92 |
| 23 | 642.15 | 1073.75 |
| 24 | 646.85 | 1082.57 |
| 25 | 647.04 | 1082.94 |
| 26 | 651.89 | 1091.68 |
| 27 | 656.73 | 1100.43 |
| 28 | 661.58 | 1109.18 |
| 29 | 666.43 | 1117.92 |
| 30 | 671.28 | 1126.67 |
| 31 | 676.13 | 1135.42 |
| 32 | 680.98 | 1144.16 |
| 33 | 685.82 | 1152.91 |
| 34 | 690.67 | 1161.65 |
| 35 | 695.52 | 1170.40 |
| 36 | 700.37 | 1179.15 |
| 37 | 705.22 | 1187.89 |
| 38 | 710.06 | 1196.64 |
| 39 | 711.93 | 1200.00 |

*** 1.622 ***

1

Failure Surface Specified By 39 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 106.28 | 1065.00 |
| 2 | 109.02 | 1063.35 |
| 3 | 117.59 | 1058.20 |
| 4 | 126.17 | 1053.05 |
| 5 | 134.74 | 1047.90 |
| 6 | 143.31 | 1042.75 |
| 7 | 151.88 | 1037.60 |
| 8 | 160.45 | 1032.45 |
| 9 | 169.02 | 1027.30 |
| 10 | 177.60 | 1022.15 |
| 11 | 186.17 | 1017.00 |
| 12 | 193.05 | 1012.35 |
| 13 | 201.34 | 1006.76 |
| 14 | 430.91 | 1004.97 |
| 15 | 613.24 | 1010.66 |
| 16 | 617.52 | 1017.00 |
| 17 | 622.67 | 1025.57 |
| 18 | 627.82 | 1034.14 |
| 19 | 632.97 | 1042.71 |
| 20 | 638.12 | 1051.29 |
| 21 | 643.27 | 1059.86 |
| 22 | 646.17 | 1064.69 |
| 23 | 650.87 | 1073.52 |
| 24 | 655.56 | 1082.35 |
| 25 | 655.83 | 1082.86 |
| 26 | 660.68 | 1091.60 |
| 27 | 665.53 | 1100.35 |
| 28 | 670.38 | 1109.10 |
| 29 | 675.23 | 1117.84 |
| 30 | 680.07 | 1126.59 |
| 31 | 684.92 | 1135.33 |

| | | |
|---|---|---|
| 32 | 689.77 | 1144.08 |
| 33 | 694.62 | 1152.83 |
| 34 | 699.47 | 1161.57 |
| 35 | 704.31 | 1170.32 |
| 36 | 709.16 | 1179.07 |
| 37 | 714.01 | 1187.81 |
| 38 | 718.86 | 1196.56 |
| 39 | 720.77 | 1200.00 |

*** 1.623 ***

Failure Surface Specified By 41 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 115.66 | 1065.00 |
| 2 | 118.40 | 1063.35 |
| 3 | 126.98 | 1058.20 |
| 4 | 135.55 | 1053.05 |
| 5 | 144.12 | 1047.90 |
| 6 | 152.69 | 1042.75 |
| 7 | 161.26 | 1037.60 |
| 8 | 169.83 | 1032.45 |
| 9 | 178.41 | 1027.30 |
| 10 | 186.98 | 1022.15 |
| 11 | 195.55 | 1017.00 |
| 12 | 196.76 | 1016.18 |
| 13 | 205.05 | 1010.59 |
| 14 | 213.34 | 1005.00 |
| 15 | 213.75 | 1004.74 |
| 16 | 420.44 | 1006.36 |
| 17 | 602.26 | 1009.47 |
| 18 | 607.34 | 1017.00 |
| 19 | 612.49 | 1025.57 |
| 20 | 617.64 | 1034.14 |
| 21 | 622.80 | 1042.71 |
| 22 | 627.95 | 1051.29 |
| 23 | 633.10 | 1059.86 |
| 24 | 636.15 | 1064.95 |
| 25 | 640.85 | 1073.78 |
| 26 | 645.54 | 1082.61 |
| 27 | 645.73 | 1082.95 |
| 28 | 650.57 | 1091.70 |
| 29 | 655.42 | 1100.44 |
| 30 | 660.27 | 1109.19 |
| 31 | 665.12 | 1117.93 |
| 32 | 669.97 | 1126.68 |
| 33 | 674.81 | 1135.43 |
| 34 | 679.66 | 1144.17 |
| 35 | 684.51 | 1152.92 |
| 36 | 689.36 | 1161.67 |
| 37 | 694.21 | 1170.41 |
| 38 | 699.05 | 1179.16 |
| 39 | 703.90 | 1187.90 |
| 40 | 708.75 | 1196.65 |
| 41 | 710.61 | 1200.00 |

*** 1.628 ***

1

Failure Surface Specified By 40 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 105.24 | 1065.00 |
| 2 | 107.98 | 1063.35 |
| 3 | 116.55 | 1058.20 |
| 4 | 125.12 | 1053.05 |
| 5 | 133.69 | 1047.90 |
| 6 | 142.26 | 1042.75 |
| 7 | 150.83 | 1037.60 |
| 8 | 159.41 | 1032.45 |
| 9 | 167.98 | 1027.30 |
| 10 | 176.55 | 1022.15 |
| 11 | 185.12 | 1017.00 |
| 12 | 193.34 | 1011.46 |
| 13 | 201.63 | 1005.87 |
| 14 | 436.14 | 1012.98 |
| 15 | 602.63 | 1006.50 |
| 16 | 608.22 | 1014.79 |
| 17 | 609.71 | 1017.00 |
| 18 | 614.86 | 1025.57 |
| 19 | 620.01 | 1034.14 |
| 20 | 625.16 | 1042.71 |
| 21 | 630.31 | 1051.29 |
| 22 | 635.46 | 1059.86 |
| 23 | 638.49 | 1064.89 |
| 24 | 643.18 | 1073.72 |
| 25 | 647.87 | 1082.55 |
| 26 | 648.08 | 1082.93 |
| 27 | 652.92 | 1091.67 |
| 28 | 657.77 | 1100.42 |
| 29 | 662.62 | 1109.17 |
| 30 | 667.47 | 1117.91 |
| 31 | 672.32 | 1126.66 |
| 32 | 677.17 | 1135.41 |
| 33 | 682.01 | 1144.15 |
| 34 | 686.86 | 1152.90 |
| 35 | 691.71 | 1161.64 |
| 36 | 696.56 | 1170.39 |
| 37 | 701.41 | 1179.14 |
| 38 | 706.25 | 1187.88 |
| 39 | 711.10 | 1196.63 |
| 40 | 712.97 | 1200.00 |

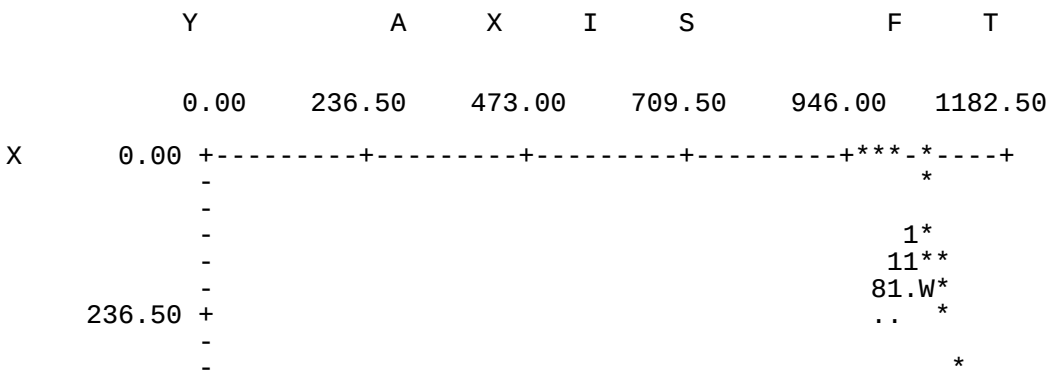
*** 1.629 ***

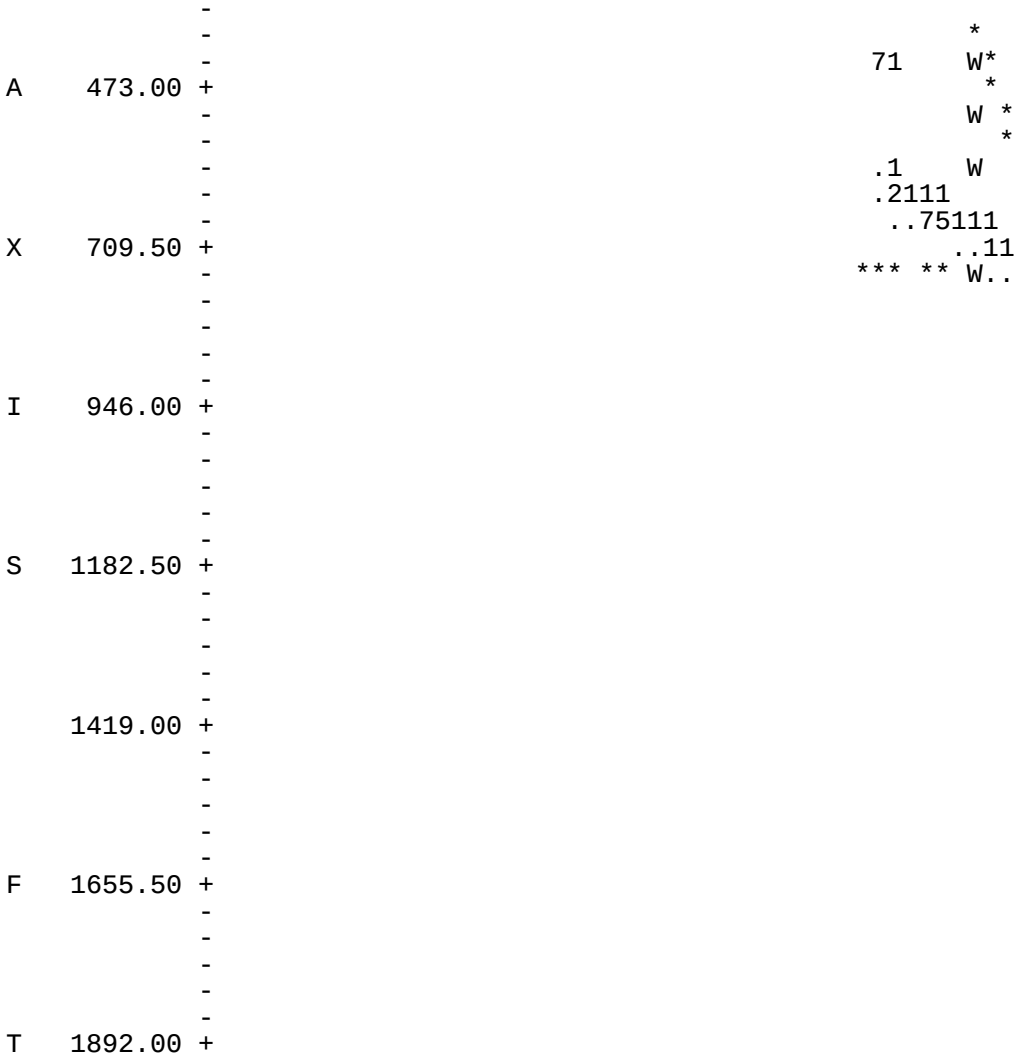
Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 115.31 | 1065.00 |
| 2 | 118.05 | 1063.35 |
| 3 | 126.62 | 1058.20 |
| 4 | 135.19 | 1053.05 |
| 5 | 143.76 | 1047.90 |
| 6 | 152.34 | 1042.75 |
| 7 | 160.91 | 1037.60 |
| 8 | 169.48 | 1032.45 |
| 9 | 178.05 | 1027.30 |
| 10 | 186.62 | 1022.15 |
| 11 | 195.19 | 1017.00 |
| 12 | 203.41 | 1011.46 |
| 13 | 441.55 | 1013.53 |
| 14 | 602.43 | 1010.12 |
| 15 | 607.07 | 1017.00 |
| 16 | 612.22 | 1025.57 |
| 17 | 617.37 | 1034.14 |
| 18 | 622.52 | 1042.71 |
| 19 | 627.67 | 1051.29 |
| 20 | 632.82 | 1059.86 |
| 21 | 635.88 | 1064.96 |
| 22 | 640.58 | 1073.79 |
| 23 | 645.27 | 1082.62 |
| 24 | 645.45 | 1082.95 |
| 25 | 650.30 | 1091.70 |
| 26 | 655.15 | 1100.44 |
| 27 | 659.99 | 1109.19 |
| 28 | 664.84 | 1117.94 |
| 29 | 669.69 | 1126.68 |
| 30 | 674.54 | 1135.43 |
| 31 | 679.39 | 1144.18 |
| 32 | 684.23 | 1152.92 |
| 33 | 689.08 | 1161.67 |
| 34 | 693.93 | 1170.41 |
| 35 | 698.78 | 1179.16 |
| 36 | 703.63 | 1187.91 |
| 37 | 708.47 | 1196.65 |
| 38 | 710.33 | 1200.00 |

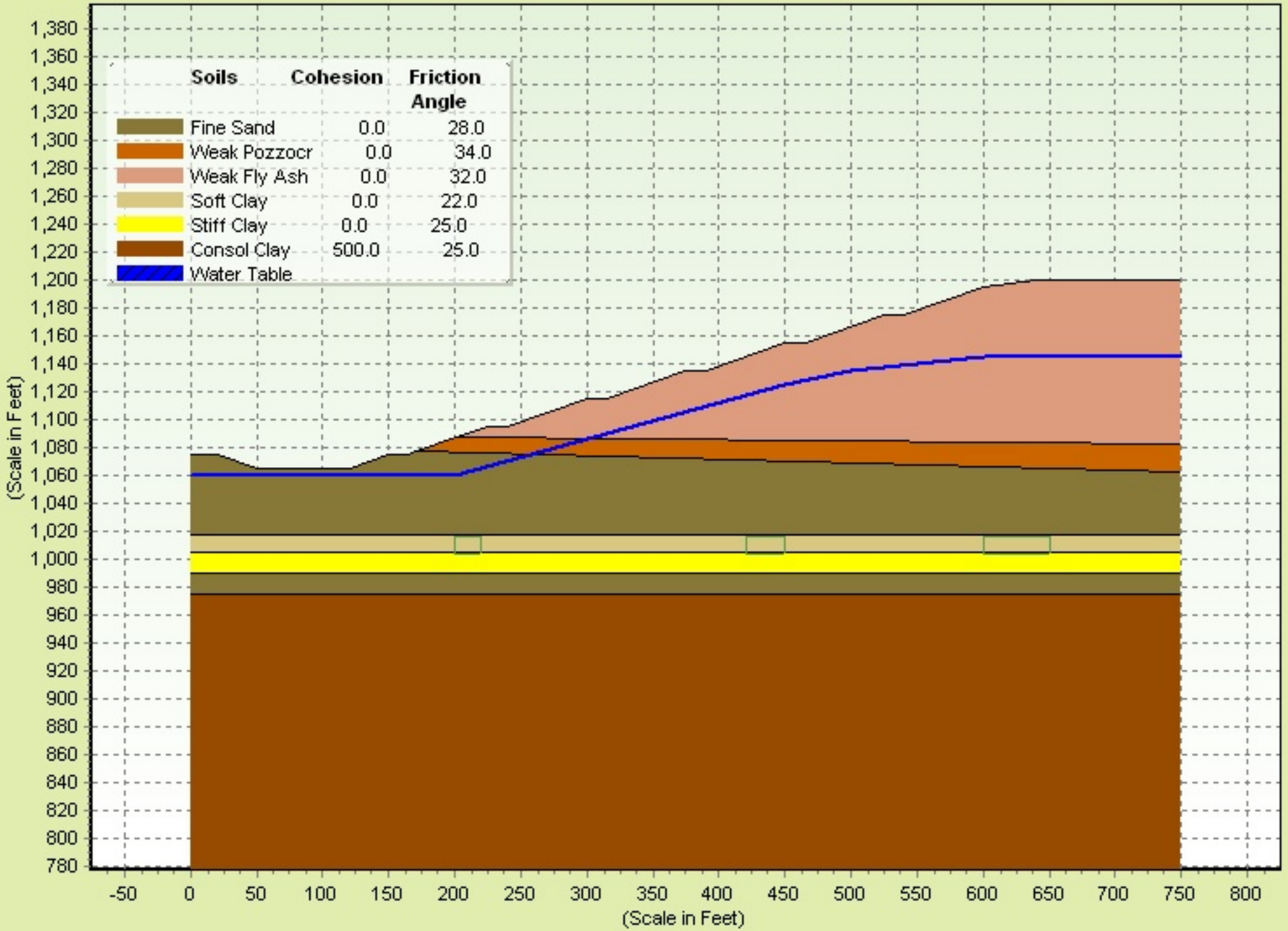
*** 1.630 ***

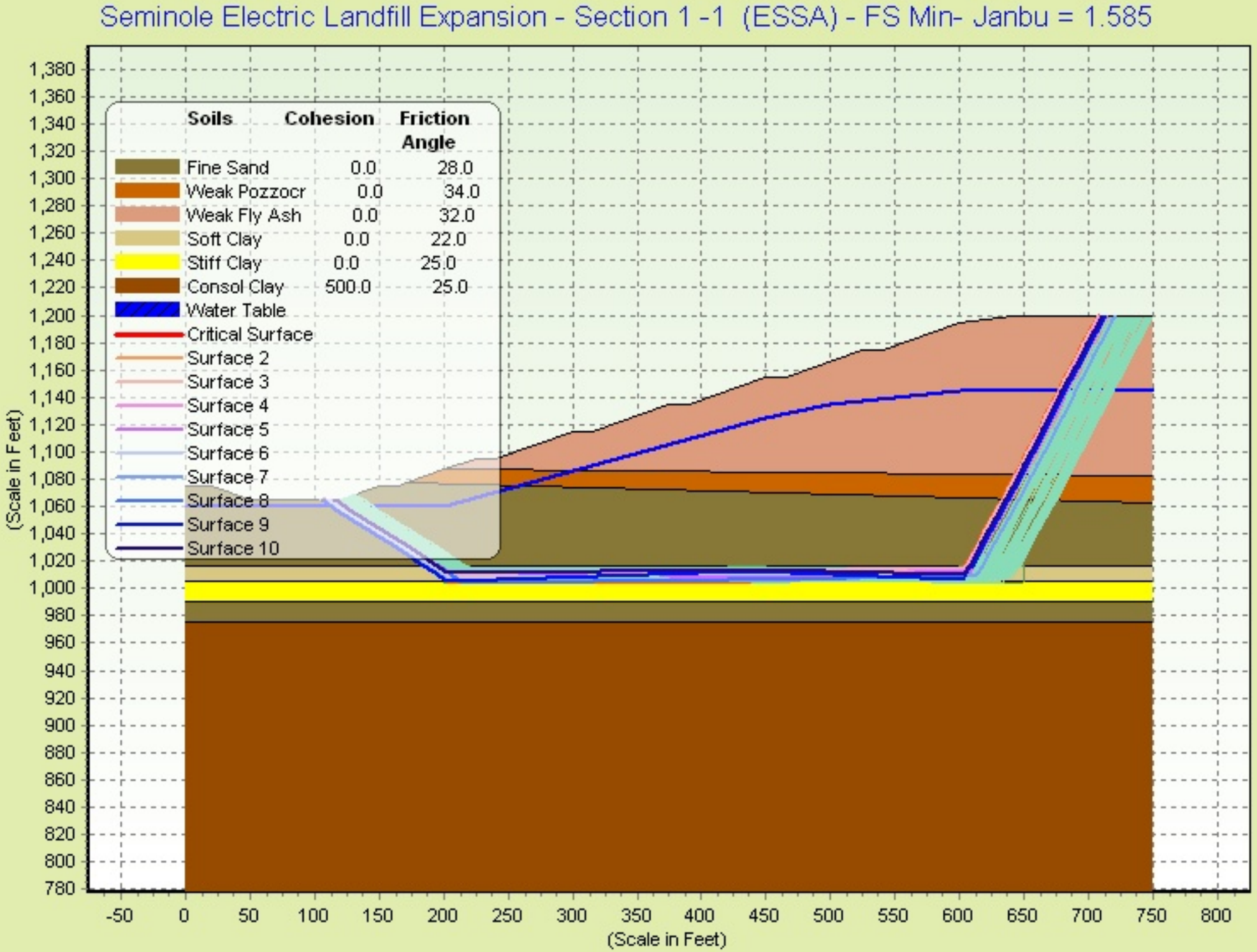
1

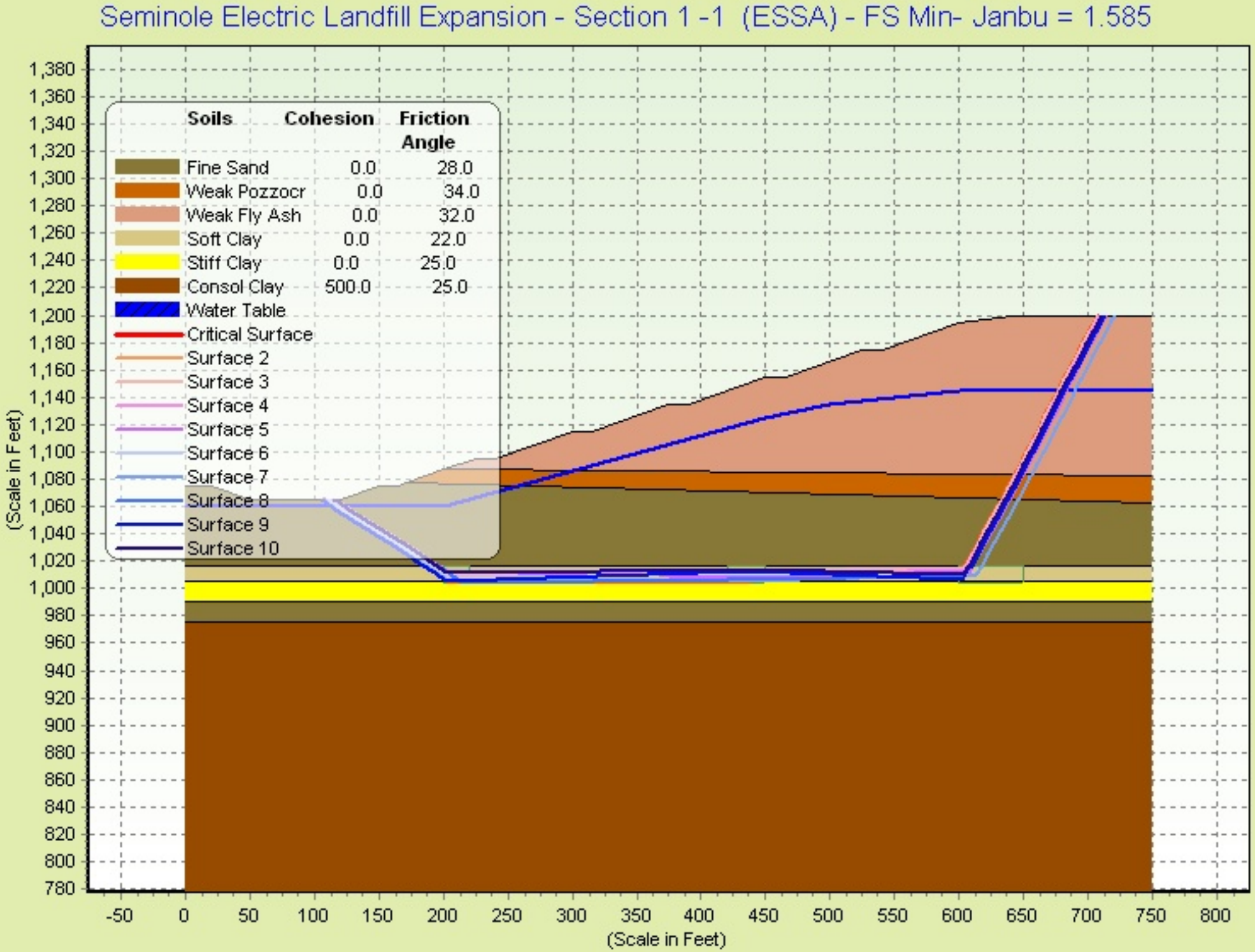


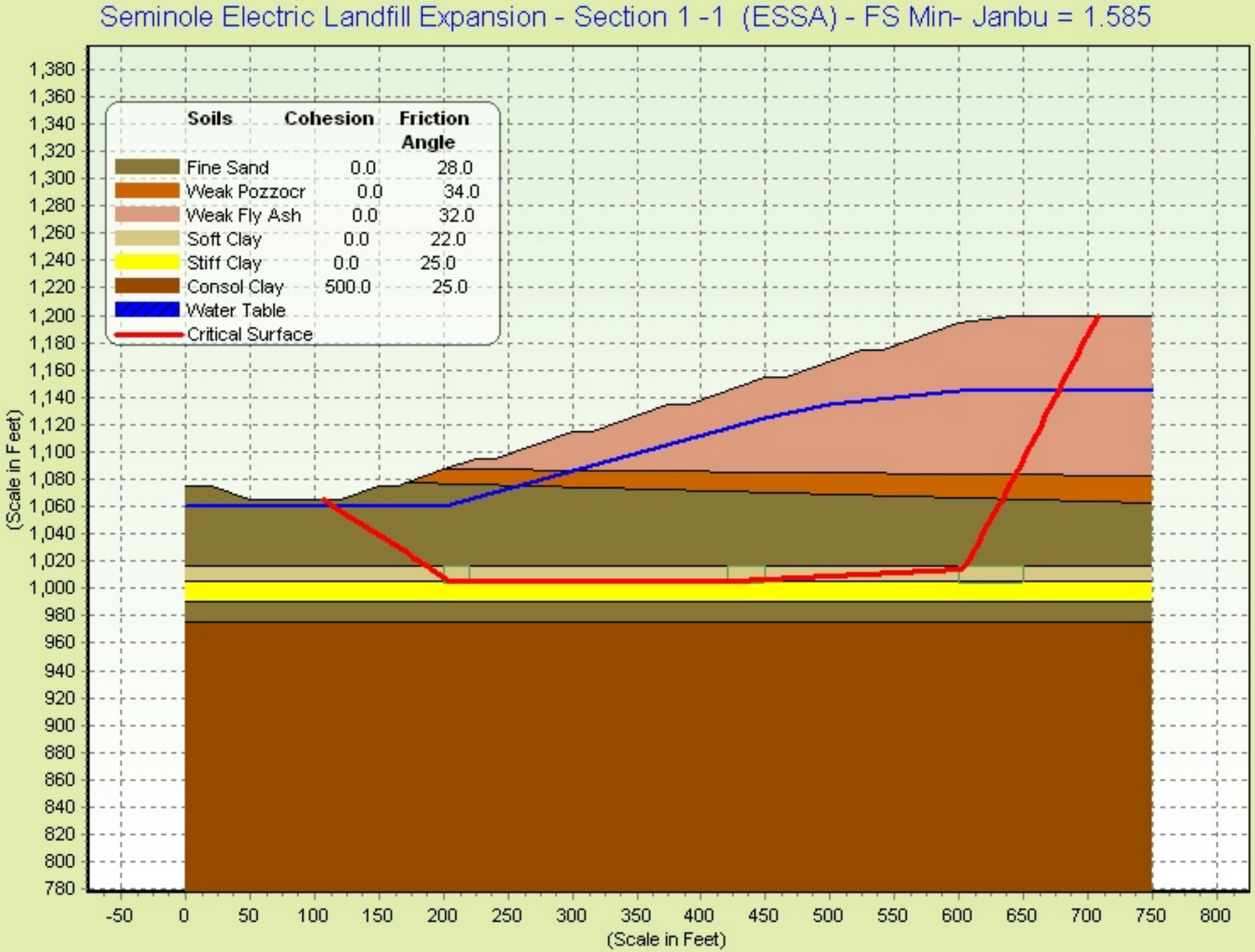

A 473.00
X 709.50
I 946.00
S 1182.50
1419.00
F 1655.50
T 1892.00
71
*** ** W..

# Seminole Electric Landfill Expansion - Section 1 -1 (ESSA)




Seminole Electric Landfill Expansion - Section 1 -1 (ESSA) - FS Min- Janbu = 1.585
Soils
Cohesion
Friction Angle
Fine Sand 0.0 28.0
Weak Pozzocr 0.0 34.0
Weak Fly Ash 0.0 32.0
Soft Clay 0.0 22.0
Stiff Clay 0.0 25.0
Consol Clay 500.0 25.0
Water Table
Critical Surface
Surface 2
Surface 3
Surface 4
Surface 5
Surface 6
Surface 7
Surface 8
Surface 9
Surface 10
(Scale in Feet)
(Scale in Feet)


Seminole Electric Landfill Expansion - Section 1 -1 (ESSA) - FS Min- Janbu = 1.585
Soils
Cohesion
Friction Angle
Fine Sand 0.0 28.0
Weak Pozzocr 0.0 34.0
Weak Fly Ash 0.0 32.0
Soft Clay 0.0 22.0
Stiff Clay 0.0 25.0
Consol Clay 500.0 25.0
Water Table
Critical Surface
Surface 2
Surface 3
Surface 4
Surface 5
Surface 6
Surface 7
Surface 8
Surface 9
Surface 10
(Scale in Feet)
(Scale in Feet)


Seminole Electric Landfill Expansion - Section 1 -1 (ESSA) - FS Min- Janbu = 1.585
Soils
Cohesion
Friction Angle
Fine Sand 0.0 28.0
Weak Pozzocr 0.0 34.0
Weak Fly Ash 0.0 32.0
Soft Clay 0.0 22.0
Stiff Clay 0.0 25.0
Consol Clay 500.0 25.0
Water Table
Critical Surface
(Scale in Feet)
(Scale in Feet)

result.out
** STABL for WINDOWS **
by
Geotechnical Software Solutions

1

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 7/13/10

Time of Run: 16:00
Run By: Shawkat Ali
Input Data Filename: run.in
Output Filename: result.out
Unit: U.S.C.
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION Seminole Electric Landfill Expansion - S
ection 1 -1 (USSA)

BOUNDARY COORDINATES

20 Top Boundaries
26 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|---|---|---|---|---|---|
| 1 | 0.00 | 1075.00 | 20.00 | 1075.00 | 1 |
| 2 | 20.00 | 1075.00 | 50.00 | 1065.00 | 1 |
| 3 | 50.00 | 1065.00 | 120.00 | 1065.00 | 1 |
| 4 | 120.00 | 1065.00 | 150.00 | 1075.00 | 1 |
| 5 | 150.00 | 1075.00 | 165.00 | 1075.00 | 1 |
| 6 | 165.00 | 1075.00 | 171.00 | 1077.00 | 1 |
| 7 | 171.00 | 1077.00 | 201.00 | 1087.00 | 5 |
| 8 | 201.00 | 1087.00 | 225.00 | 1095.00 | 6 |
| 9 | 225.00 | 1095.00 | 240.00 | 1095.00 | 6 |
| 10 | 240.00 | 1095.00 | 300.00 | 1115.00 | 6 |
| 11 | 300.00 | 1115.00 | 315.00 | 1115.00 | 6 |
| 12 | 315.00 | 1115.00 | 375.00 | 1135.00 | 6 |
| 13 | 375.00 | 1135.00 | 390.00 | 1135.00 | 6 |
| 14 | 390.00 | 1135.00 | 450.00 | 1155.00 | 6 |
| 15 | 450.00 | 1155.00 | 465.00 | 1155.00 | 6 |
| 16 | 465.00 | 1155.00 | 525.00 | 1175.00 | 6 |
| 17 | 525.00 | 1175.00 | 540.00 | 1175.00 | 6 |
| 18 | 540.00 | 1175.00 | 600.00 | 1195.00 | 6 |
| 19 | 600.00 | 1195.00 | 640.00 | 1200.00 | 6 |
| 20 | 640.00 | 1200.00 | 750.00 | 1200.00 | 6 |
| 21 | 201.00 | 1087.00 | 750.00 | 1082.00 | 5 |
| 22 | 171.00 | 1077.00 | 750.00 | 1062.00 | 1 |
| 23 | 0.00 | 1017.00 | 750.00 | 1017.00 | 2 |
| 24 | 0.00 | 1005.00 | 750.00 | 1005.00 | 3 |
| 25 | 0.00 | 990.00 | 750.00 | 990.00 | 1 |
| 26 | 0.00 | 975.00 | 750.00 | 975.00 | 4 |

1

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 | 110.0 | 115.0 | 0.0 | 28.0 | 0.00 | 0.0 | 1 |
| 2 | 100.0 | 110.0 | 1500.0 | 0.0 | 0.00 | 0.0 | 1 |
| 3 | 110.0 | 120.0 | 3000.0 | 0.0 | 0.00 | 0.0 | 1 |
| 4 | 115.0 | 120.0 | 500.0 | 25.0 | 0.00 | 0.0 | 1 |
| 5 | 80.0 | 85.0 | 0.0 | 34.0 | 0.00 | 0.0 | 1 |
| 6 | 75.0 | 80.0 | 0.0 | 32.0 | 0.00 | 0.0 | 1 |

1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 5 Coordinate Points

| Point No. | X-Water (ft) | Y-Water (ft) |
|---|---|---|
| 1 | 0.00 | 1060.00 |
| 2 | 300.00 | 1060.00 |
| 3 | 500.00 | 1060.00 |
| 4 | 650.00 | 1060.00 |
| 5 | 750.00 | 1060.00 |

1

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

The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.

200 Trial Surfaces Have Been Generated.

3 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 10.0

| Box | X-Left | Y-Left | X-Right | Y-Right | Height |
|---|---|---|---|---|---|

| No. | (ft) | (ft) | (ft) | (ft) | (ft) |
|---|---|---|---|---|---|
| 1 | 200.00 | 1010.00 | 220.00 | 1010.00 | 12.00 |
| 2 | 420.00 | 1010.00 | 450.00 | 1010.00 | 12.00 |
| 3 | 550.00 | 1010.00 | 570.00 | 1010.00 | 12.00 |

**** ERROR - BK12 ****

1

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 39 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 109.05 | 1065.00 |
| 2 | 111.79 | 1063.35 |
| 3 | 120.36 | 1058.20 |
| 4 | 128.93 | 1053.05 |
| 5 | 137.50 | 1047.90 |
| 6 | 146.07 | 1042.75 |
| 7 | 154.64 | 1037.60 |
| 8 | 163.22 | 1032.45 |
| 9 | 171.79 | 1027.30 |
| 10 | 180.36 | 1022.15 |
| 11 | 188.93 | 1017.00 |
| 12 | 193.00 | 1012.93 |
| 13 | 200.07 | 1005.86 |
| 14 | 433.84 | 1006.06 |
| 15 | 554.34 | 1009.70 |
| 16 | 561.41 | 1016.77 |
| 17 | 561.64 | 1017.00 |
| 18 | 566.79 | 1025.57 |
| 19 | 571.94 | 1034.14 |
| 20 | 577.09 | 1042.71 |
| 21 | 582.24 | 1051.29 |
| 22 | 587.39 | 1059.86 |
| 23 | 591.15 | 1066.12 |
| 24 | 595.85 | 1074.94 |
| 25 | 600.32 | 1083.36 |
| 26 | 605.17 | 1092.11 |
| 27 | 610.02 | 1100.86 |
| 28 | 614.87 | 1109.60 |
| 29 | 619.72 | 1118.35 |
| 30 | 624.57 | 1127.09 |
| 31 | 629.41 | 1135.84 |
| 32 | 634.26 | 1144.59 |
| 33 | 639.11 | 1153.33 |
| 34 | 643.96 | 1162.08 |
| 35 | 648.81 | 1170.83 |
| 36 | 653.65 | 1179.57 |
| 37 | 658.50 | 1188.32 |
| 38 | 663.35 | 1197.06 |

39 664.98 1200.00

*** 1.510 ***

Individual data on the 58 slices

| Slice No. | Width (ft) | Weight (lbs) | Water Force Top (lbs) | Water Force Bot (lbs) | Force Norm (lbs) | Force Tan (lbs) | Earthquake Force Hor (lbs) | Earthquake Force Ver (lbs) | Surcharge Load (lbs) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.7 | 248.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2 | 5.6 | 2040.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3 | 2.6 | 1687.7 | 0.0 | 151.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4 | 0.4 | 268.3 | 0.0 | 44.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 8.6 | 10483.5 | 0.0 | 2728.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6 | 8.6 | 18254.5 | 0.0 | 5942.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7 | 8.6 | 26025.5 | 0.0 | 9155.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8 | 3.9 | 14521.2 | 0.0 | 5268.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9 | 4.6 | 18879.9 | 0.0 | 7100.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10 | 8.6 | 38760.8 | 0.0 | 15583.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 11 | 1.8 | 8706.7 | 0.0 | 3647.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 12 | 6.0 | 31552.2 | 0.0 | 13288.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 13 | 0.8 | 4420.1 | 0.0 | 1860.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 14 | 8.6 | 51926.3 | 0.0 | 22011.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15 | 8.6 | 58905.5 | 0.0 | 25225.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 16 | 4.1 | 30774.1 | 0.0 | 16186.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 17 | 7.1 | 58782.5 | 0.0 | 31579.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 18 | 0.9 | 8148.2 | 0.0 | 3126.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 19 | 24.0 | 218553.2 | 0.0 | 81068.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20 | 15.0 | 140826.8 | 0.0 | 50651.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 21 | 60.0 | 606238.2 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 22 | 15.0 | 162292.3 | 0.0 | 50590.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 23 | 60.0 | 692100.1 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 24 | 15.0 | 183757.8 | 0.0 | 50528.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 25 | 43.8 | 559869.3 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 26 | 16.2 | 217671.6 | 0.0 | 54176.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 27 | 15.0 | 204078.7 | 0.0 | 49840.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 28 | 35.0 | 487869.7 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 29 | 25.0 | 364120.1 | 0.0 | 80474.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30 | 15.0 | 221916.2 | 0.0 | 47719.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 31 | 14.3 | 213898.6 | 0.0 | 45233.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32 | 7.1 | 104361.8 | 0.0 | 29180.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 33 | 0.2 | 3295.8 | 0.0 | 868.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 34 | 5.2 | 72133.4 | 0.0 | 24157.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 35 | 5.2 | 67697.8 | 0.0 | 18809.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 36 | 5.2 | 63262.1 | 0.0 | 13460.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 37 | 5.2 | 58826.6 | 0.0 | 8111.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 38 | 5.2 | 54390.9 | 0.0 | 2762.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 39 | 0.1 | 861.9 | 0.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 40 | 3.7 | 36096.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 41 | 4.7 | 43366.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 42 | 4.2 | 36043.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 43 | 0.3 | 2727.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 44 | 4.8 | 39126.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 45 | 4.8 | 36166.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 46 | 4.8 | 33207.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 47 | 4.8 | 30247.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 48 | 4.8 | 27287.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 49 | 4.8 | 24327.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50 | 4.8 | 21367.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 51 | 4.8 | 18407.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 52 | 0.9 | 3059.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 53 | 4.0 | 12315.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 54 | 4.8 | 12198.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 55 | 4.8 | 9018.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 56 | 4.8 | 5837.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 57 | 4.8 | 2657.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 58 | 1.6 | 179.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 112.69 | 1065.00 |
| 2 | 115.43 | 1063.35 |
| 3 | 124.00 | 1058.20 |
| 4 | 132.57 | 1053.05 |
| 5 | 141.14 | 1047.90 |
| 6 | 149.71 | 1042.75 |
| 7 | 158.29 | 1037.60 |
| 8 | 166.86 | 1032.45 |
| 9 | 175.43 | 1027.30 |
| 10 | 184.00 | 1022.15 |
| 11 | 192.57 | 1017.00 |
| 12 | 195.14 | 1014.43 |
| 13 | 202.21 | 1007.36 |
| 14 | 420.75 | 1005.56 |
| 15 | 568.74 | 1009.97 |
| 16 | 575.77 | 1017.00 |
| 17 | 580.92 | 1025.57 |
| 18 | 586.07 | 1034.14 |
| 19 | 591.22 | 1042.71 |
| 20 | 596.37 | 1051.29 |
| 21 | 601.52 | 1059.86 |
| 22 | 605.06 | 1065.75 |
| 23 | 609.76 | 1074.58 |
| 24 | 614.36 | 1083.24 |
| 25 | 619.21 | 1091.98 |
| 26 | 624.06 | 1100.73 |
| 27 | 628.90 | 1109.47 |
| 28 | 633.75 | 1118.22 |
| 29 | 638.60 | 1126.97 |
| 30 | 643.45 | 1135.71 |
| 31 | 648.30 | 1144.46 |
| 32 | 653.14 | 1153.21 |
| 33 | 657.99 | 1161.95 |
| 34 | 662.84 | 1170.70 |
| 35 | 667.69 | 1179.44 |
| 36 | 672.54 | 1188.19 |
| 37 | 677.38 | 1196.94 |
| 38 | 679.08 | 1200.00 |

*** 1.517 ***

1

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 111.22 | 1065.00 |
| 2 | 113.96 | 1063.35 |
| 3 | 122.53 | 1058.20 |
| 4 | 131.11 | 1053.05 |
| 5 | 139.68 | 1047.90 |
| 6 | 148.25 | 1042.75 |
| 7 | 156.82 | 1037.60 |
| 8 | 165.39 | 1032.45 |
| 9 | 173.96 | 1027.30 |
| 10 | 182.54 | 1022.15 |
| 11 | 191.11 | 1017.00 |
| 12 | 194.27 | 1013.83 |
| 13 | 201.34 | 1006.76 |
| 14 | 430.91 | 1004.97 |
| 15 | 555.30 | 1010.66 |
| 16 | 561.64 | 1017.00 |
| 17 | 566.79 | 1025.57 |
| 18 | 571.94 | 1034.14 |
| 19 | 577.09 | 1042.71 |
| 20 | 582.24 | 1051.29 |
| 21 | 587.39 | 1059.86 |
| 22 | 591.15 | 1066.12 |
| 23 | 595.84 | 1074.94 |
| 24 | 600.32 | 1083.36 |
| 25 | 605.17 | 1092.11 |
| 26 | 610.02 | 1100.86 |
| 27 | 614.86 | 1109.60 |
| 28 | 619.71 | 1118.35 |
| 29 | 624.56 | 1127.09 |
| 30 | 629.41 | 1135.84 |
| 31 | 634.26 | 1144.59 |
| 32 | 639.11 | 1153.33 |
| 33 | 643.95 | 1162.08 |
| 34 | 648.80 | 1170.83 |
| 35 | 653.65 | 1179.57 |
| 36 | 658.50 | 1188.32 |
| 37 | 663.35 | 1197.06 |
| 38 | 664.97 | 1200.00 |

*** 1.520 ***

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 112.70 | 1065.00 |
| 2 | 115.44 | 1063.35 |
| 3 | 124.01 | 1058.20 |
| 4 | 132.59 | 1053.05 |
| 5 | 141.16 | 1047.90 |
| 6 | 149.73 | 1042.75 |

| | | |
|---|---|---|
| 7 | 158.30 | 1037.60 |
| 8 | 166.87 | 1032.45 |
| 9 | 175.44 | 1027.30 |
| 10 | 184.02 | 1022.15 |
| 11 | 192.59 | 1017.00 |
| 12 | 197.21 | 1012.38 |
| 13 | 204.28 | 1005.31 |
| 14 | 424.91 | 1005.97 |
| 15 | 551.02 | 1013.89 |
| 16 | 554.13 | 1017.00 |
| 17 | 559.28 | 1025.57 |
| 18 | 564.43 | 1034.14 |
| 19 | 569.58 | 1042.71 |
| 20 | 574.73 | 1051.29 |
| 21 | 579.88 | 1059.86 |
| 22 | 583.75 | 1066.31 |
| 23 | 588.45 | 1075.14 |
| 24 | 592.86 | 1083.43 |
| 25 | 597.71 | 1092.18 |
| 26 | 602.55 | 1100.92 |
| 27 | 607.40 | 1109.67 |
| 28 | 612.25 | 1118.42 |
| 29 | 617.10 | 1127.16 |
| 30 | 621.95 | 1135.91 |
| 31 | 626.79 | 1144.65 |
| 32 | 631.64 | 1153.40 |
| 33 | 636.49 | 1162.15 |
| 34 | 641.34 | 1170.89 |
| 35 | 646.19 | 1179.64 |
| 36 | 651.03 | 1188.39 |
| 37 | 655.88 | 1197.13 |
| 38 | 657.47 | 1200.00 |

*** 1.524 ***

1

Failure Surface Specified By 39 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 114.13 | 1065.00 |
| 2 | 116.87 | 1063.35 |
| 3 | 125.44 | 1058.20 |
| 4 | 134.01 | 1053.05 |
| 5 | 142.58 | 1047.90 |
| 6 | 151.15 | 1042.75 |
| 7 | 159.73 | 1037.60 |
| 8 | 168.30 | 1032.45 |
| 9 | 176.87 | 1027.30 |
| 10 | 185.44 | 1022.15 |
| 11 | 194.01 | 1017.00 |
| 12 | 194.70 | 1016.32 |
| 13 | 201.77 | 1009.24 |
| 14 | 443.84 | 1005.78 |
| 15 | 562.39 | 1005.80 |
| 16 | 569.46 | 1012.88 |
| 17 | 573.59 | 1017.00 |

| | | |
|---|---|---|
| 18 | 578.74 | 1025.57 |
| 19 | 583.89 | 1034.14 |
| 20 | 589.04 | 1042.71 |
| 21 | 594.19 | 1051.29 |
| 22 | 599.34 | 1059.86 |
| 23 | 602.92 | 1065.81 |
| 24 | 607.61 | 1074.64 |
| 25 | 612.19 | 1083.26 |
| 26 | 617.04 | 1092.00 |
| 27 | 621.89 | 1100.75 |
| 28 | 626.74 | 1109.49 |
| 29 | 631.59 | 1118.24 |
| 30 | 636.43 | 1126.99 |
| 31 | 641.28 | 1135.73 |
| 32 | 646.13 | 1144.48 |
| 33 | 650.98 | 1153.22 |
| 34 | 655.83 | 1161.97 |
| 35 | 660.67 | 1170.72 |
| 36 | 665.52 | 1179.46 |
| 37 | 670.37 | 1188.21 |
| 38 | 675.22 | 1196.96 |
| 39 | 676.91 | 1200.00 |

*** 1.524 ***

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 114.72 | 1065.00 |
| 2 | 117.46 | 1063.35 |
| 3 | 126.03 | 1058.20 |
| 4 | 134.61 | 1053.05 |
| 5 | 143.18 | 1047.90 |
| 6 | 151.75 | 1042.75 |
| 7 | 160.32 | 1037.60 |
| 8 | 168.89 | 1032.45 |
| 9 | 177.46 | 1027.30 |
| 10 | 186.04 | 1022.15 |
| 11 | 194.61 | 1017.00 |
| 12 | 196.35 | 1015.25 |
| 13 | 203.42 | 1008.18 |
| 14 | 440.90 | 1005.53 |
| 15 | 564.97 | 1012.35 |
| 16 | 569.62 | 1017.00 |
| 17 | 574.77 | 1025.57 |
| 18 | 579.92 | 1034.14 |
| 19 | 585.07 | 1042.71 |
| 20 | 590.22 | 1051.29 |
| 21 | 595.37 | 1059.86 |
| 22 | 599.01 | 1065.91 |
| 23 | 603.70 | 1074.74 |
| 24 | 608.25 | 1083.29 |
| 25 | 613.10 | 1092.04 |
| 26 | 617.94 | 1100.78 |
| 27 | 622.79 | 1109.53 |
| 28 | 627.64 | 1118.28 |

| | | |
|---|---|---|
| 29 | 632.49 | 1127.02 |
| 30 | 637.34 | 1135.77 |
| 31 | 642.18 | 1144.51 |
| 32 | 647.03 | 1153.26 |
| 33 | 651.88 | 1162.01 |
| 34 | 656.73 | 1170.75 |
| 35 | 661.58 | 1179.50 |
| 36 | 666.43 | 1188.25 |
| 37 | 671.27 | 1196.99 |
| 38 | 672.94 | 1200.00 |

*** 1.525 ***

1

Failure Surface Specified By 39 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 109.54 | 1065.00 |
| 2 | 112.28 | 1063.35 |
| 3 | 120.86 | 1058.20 |
| 4 | 129.43 | 1053.05 |
| 5 | 138.00 | 1047.90 |
| 6 | 146.57 | 1042.75 |
| 7 | 155.14 | 1037.60 |
| 8 | 163.71 | 1032.45 |
| 9 | 172.29 | 1027.30 |
| 10 | 180.86 | 1022.15 |
| 11 | 189.43 | 1017.00 |
| 12 | 194.36 | 1012.07 |
| 13 | 201.43 | 1005.00 |
| 14 | 201.44 | 1004.99 |
| 15 | 445.18 | 1009.13 |
| 16 | 565.01 | 1010.64 |
| 17 | 571.37 | 1017.00 |
| 18 | 576.52 | 1025.57 |
| 19 | 581.67 | 1034.14 |
| 20 | 586.82 | 1042.71 |
| 21 | 591.97 | 1051.29 |
| 22 | 597.13 | 1059.86 |
| 23 | 600.74 | 1065.87 |
| 24 | 605.43 | 1074.70 |
| 25 | 609.99 | 1083.28 |
| 26 | 614.84 | 1092.02 |
| 27 | 619.69 | 1100.77 |
| 28 | 624.54 | 1109.51 |
| 29 | 629.38 | 1118.26 |
| 30 | 634.23 | 1127.01 |
| 31 | 639.08 | 1135.75 |
| 32 | 643.93 | 1144.50 |
| 33 | 648.78 | 1153.24 |
| 34 | 653.62 | 1161.99 |
| 35 | 658.47 | 1170.74 |
| 36 | 663.32 | 1179.48 |
| 37 | 668.17 | 1188.23 |
| 38 | 673.02 | 1196.98 |
| 39 | 674.69 | 1200.00 |

*** 1.525 ***

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 113.29 | 1065.00 |
| 2 | 116.03 | 1063.35 |
| 3 | 124.60 | 1058.20 |
| 4 | 133.18 | 1053.05 |
| 5 | 141.75 | 1047.90 |
| 6 | 150.32 | 1042.75 |
| 7 | 158.89 | 1037.60 |
| 8 | 167.46 | 1032.45 |
| 9 | 176.03 | 1027.30 |
| 10 | 184.61 | 1022.15 |
| 11 | 193.18 | 1017.00 |
| 12 | 197.89 | 1012.29 |
| 13 | 204.96 | 1005.22 |
| 14 | 447.39 | 1006.64 |
| 15 | 552.35 | 1015.59 |
| 16 | 553.76 | 1017.00 |
| 17 | 558.91 | 1025.57 |
| 18 | 564.07 | 1034.14 |
| 19 | 569.22 | 1042.71 |
| 20 | 574.37 | 1051.29 |
| 21 | 579.52 | 1059.86 |
| 22 | 583.40 | 1066.32 |
| 23 | 588.09 | 1075.15 |
| 24 | 592.50 | 1083.43 |
| 25 | 597.35 | 1092.18 |
| 26 | 602.19 | 1100.93 |
| 27 | 607.04 | 1109.67 |
| 28 | 611.89 | 1118.42 |
| 29 | 616.74 | 1127.17 |
| 30 | 621.59 | 1135.91 |
| 31 | 626.44 | 1144.66 |
| 32 | 631.28 | 1153.40 |
| 33 | 636.13 | 1162.15 |
| 34 | 640.98 | 1170.90 |
| 35 | 645.83 | 1179.64 |
| 36 | 650.68 | 1188.39 |
| 37 | 655.52 | 1197.14 |
| 38 | 657.11 | 1200.00 |

*** 1.526 ***

1

Failure Surface Specified By 38 Coordinate Points

| Point | X-Surf | Y-Surf |
|---|---|---|

| No. | (ft) | (ft) |
|---|---|---|
| 1 | 114.90 | 1065.00 |
| 2 | 117.64 | 1063.35 |
| 3 | 126.22 | 1058.20 |
| 4 | 134.79 | 1053.05 |
| 5 | 143.36 | 1047.90 |
| 6 | 151.93 | 1042.75 |
| 7 | 160.50 | 1037.60 |
| 8 | 169.07 | 1032.45 |
| 9 | 177.65 | 1027.30 |
| 10 | 186.22 | 1022.15 |
| 11 | 194.79 | 1017.00 |
| 12 | 196.96 | 1014.83 |
| 13 | 204.03 | 1007.76 |
| 14 | 438.92 | 1005.44 |
| 15 | 562.33 | 1015.72 |
| 16 | 563.61 | 1017.00 |
| 17 | 568.76 | 1025.57 |
| 18 | 573.91 | 1034.14 |
| 19 | 579.06 | 1042.71 |
| 20 | 584.21 | 1051.29 |
| 21 | 589.36 | 1059.86 |
| 22 | 593.09 | 1066.06 |
| 23 | 597.79 | 1074.89 |
| 24 | 602.28 | 1083.35 |
| 25 | 607.13 | 1092.09 |
| 26 | 611.98 | 1100.84 |
| 27 | 616.83 | 1109.58 |
| 28 | 621.67 | 1118.33 |
| 29 | 626.52 | 1127.08 |
| 30 | 631.37 | 1135.82 |
| 31 | 636.22 | 1144.57 |
| 32 | 641.07 | 1153.32 |
| 33 | 645.91 | 1162.06 |
| 34 | 650.76 | 1170.81 |
| 35 | 655.61 | 1179.55 |
| 36 | 660.46 | 1188.30 |
| 37 | 665.31 | 1197.05 |
| 38 | 666.94 | 1200.00 |

*** 1.527 ***

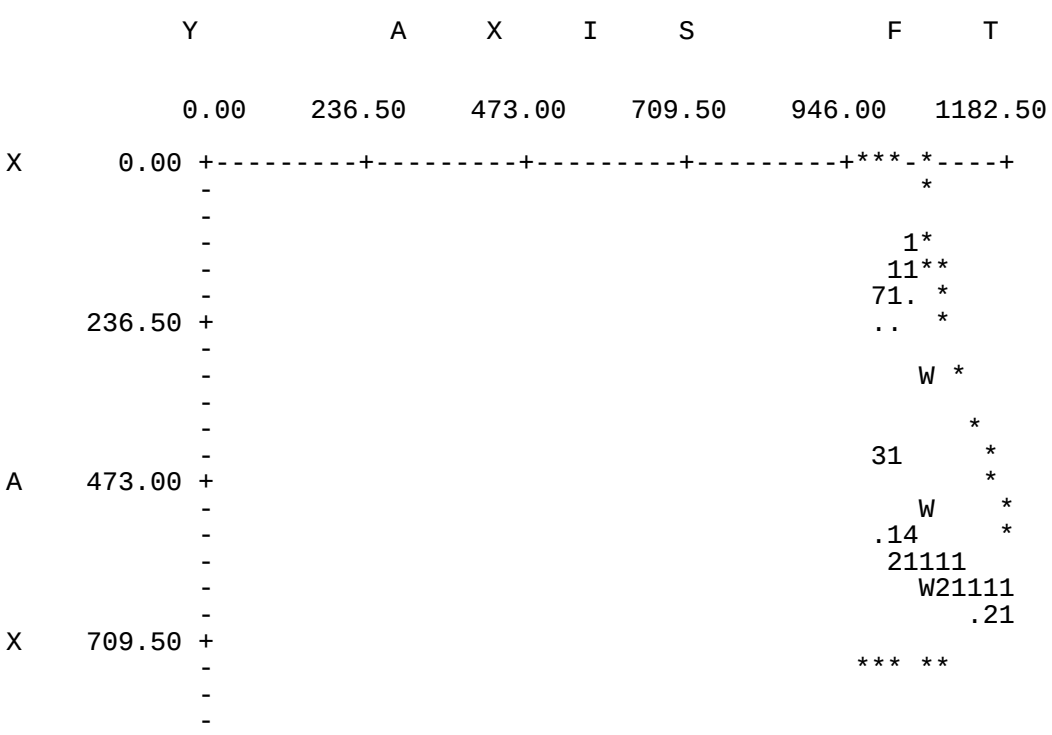
Failure Surface Specified By 38 Coordinate Points

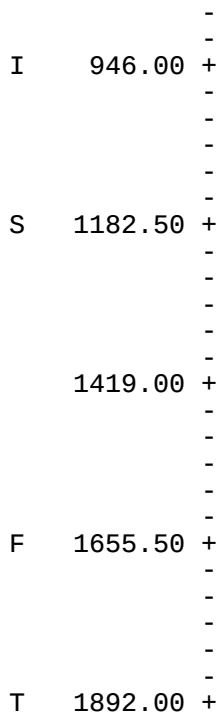
| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 117.75 | 1065.00 |
| 2 | 120.49 | 1063.35 |
| 3 | 129.07 | 1058.20 |
| 4 | 137.64 | 1053.05 |
| 5 | 146.21 | 1047.90 |
| 6 | 154.78 | 1042.75 |
| 7 | 163.35 | 1037.60 |
| 8 | 171.92 | 1032.45 |
| 9 | 180.50 | 1027.30 |
| 10 | 189.07 | 1022.15 |

| | | |
|---|---|---|
| 11 | 197.64 | 1017.00 |
| 12 | 202.40 | 1012.24 |
| 13 | 209.47 | 1005.17 |
| 14 | 441.71 | 1005.47 |
| 15 | 560.80 | 1010.62 |
| 16 | 567.19 | 1017.00 |
| 17 | 572.34 | 1025.57 |
| 18 | 577.49 | 1034.14 |
| 19 | 582.64 | 1042.71 |
| 20 | 587.79 | 1051.29 |
| 21 | 592.94 | 1059.86 |
| 22 | 596.61 | 1065.97 |
| 23 | 601.31 | 1074.80 |
| 24 | 605.83 | 1083.31 |
| 25 | 610.68 | 1092.06 |
| 26 | 615.53 | 1100.81 |
| 27 | 620.38 | 1109.55 |
| 28 | 625.22 | 1118.30 |
| 29 | 630.07 | 1127.04 |
| 30 | 634.92 | 1135.79 |
| 31 | 639.77 | 1144.54 |
| 32 | 644.62 | 1153.28 |
| 33 | 649.46 | 1162.03 |
| 34 | 654.31 | 1170.78 |
| 35 | 659.16 | 1179.52 |
| 36 | 664.01 | 1188.27 |
| 37 | 668.86 | 1197.01 |
| 38 | 670.51 | 1200.00 |

*** 1.527 ***

1

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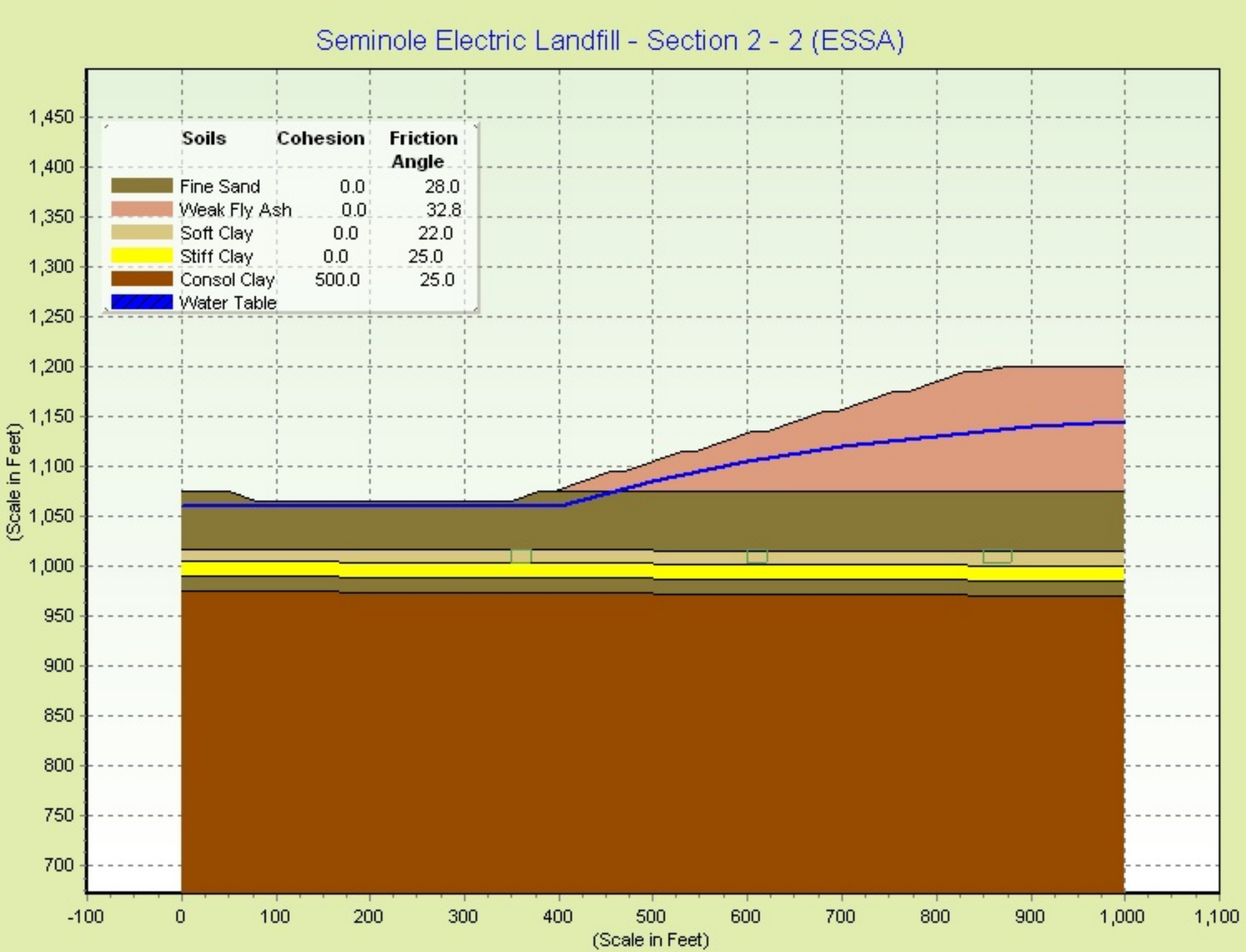
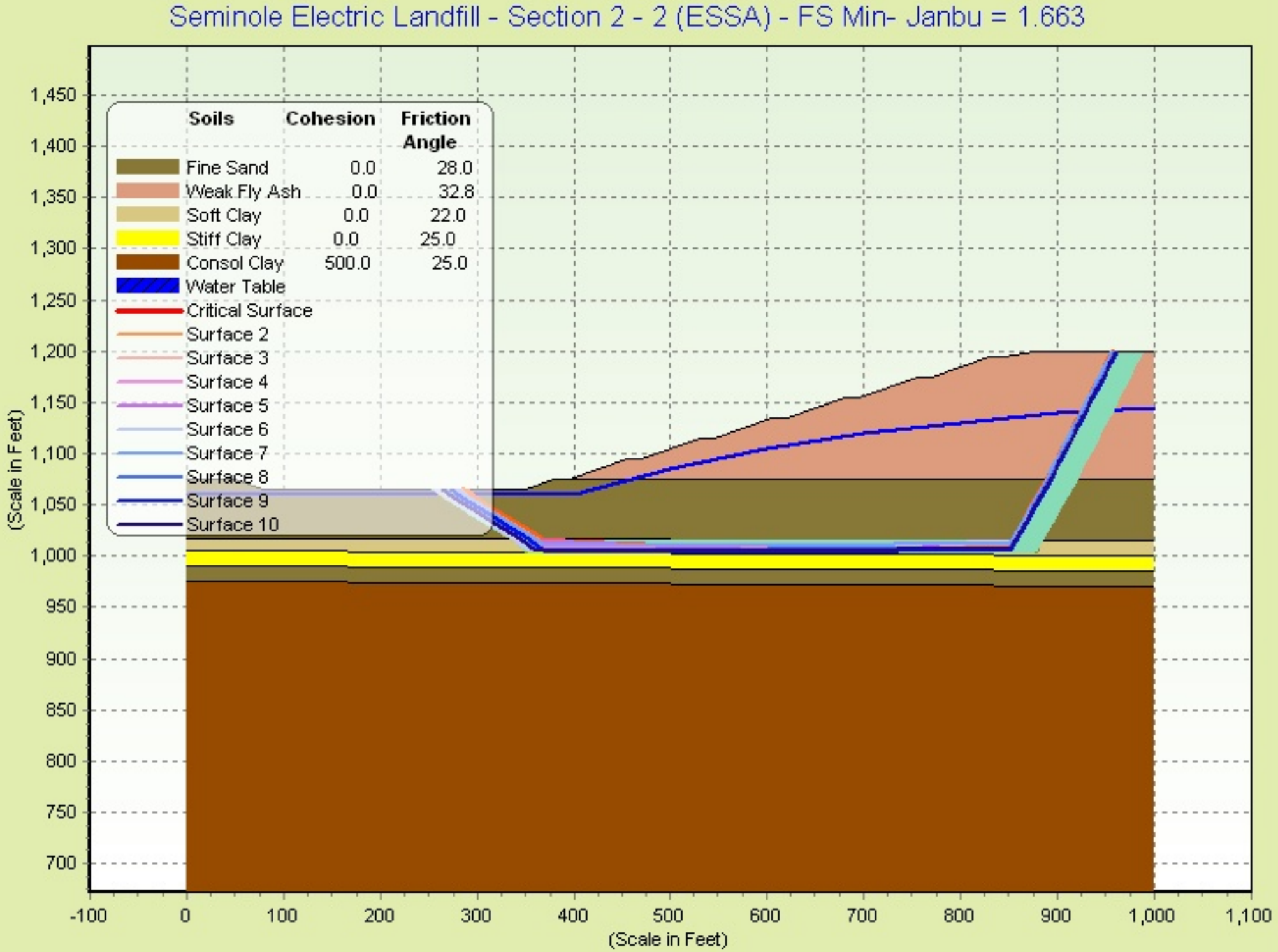
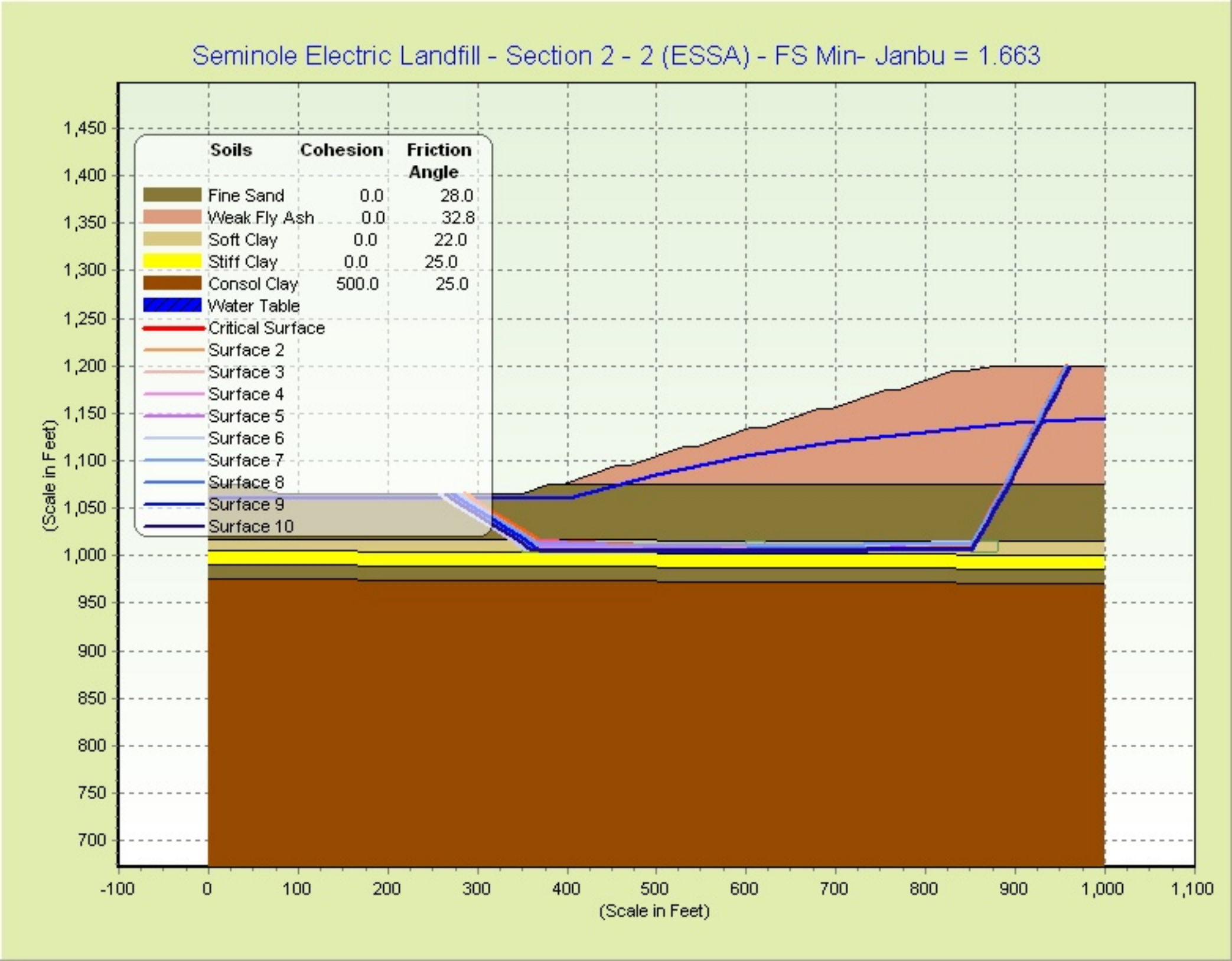
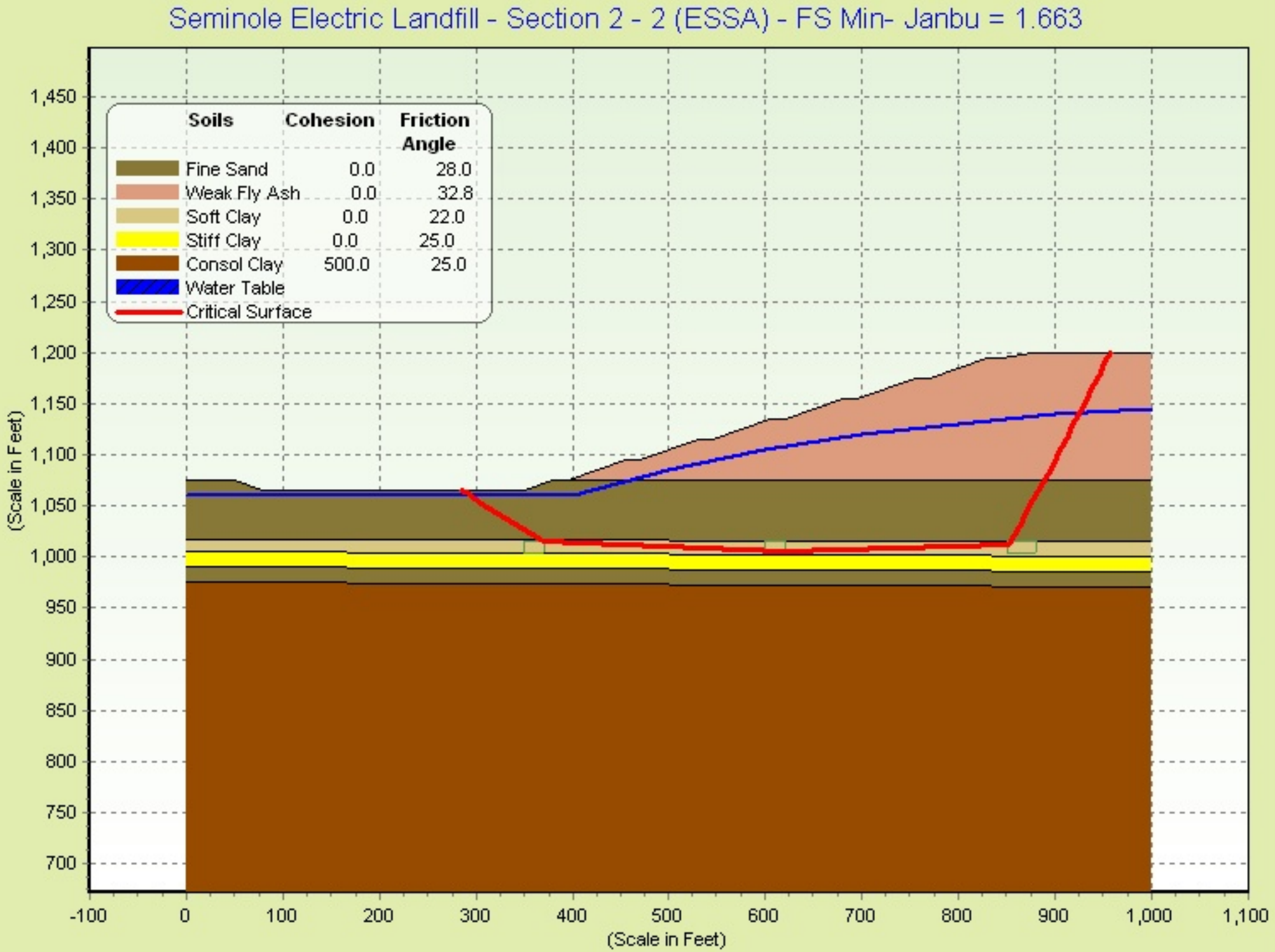
1419.00
F 1655.50
T 1892.00


Seminole Electric Landfill - Section 2 - 2 (ESSA)
Soils
Cohesion
Friction Angle
Fine Sand 0.0 28.0
Weak Fly Ash 0.0 32.8
Soft Clay 0.0 22.0
Stiff Clay 0.0 25.0
Consol Clay 500.0 25.0
Water Table
(Scale in Feet)
(Scale in Feet)
1,450
1,400
1,350
1,300
1,250
1,200
1,150
1,100
1,050
1,000
950
900
850
800
750
700
-100
0
100
200
300
400
500
600
700
800
900
1,000
1,100


Seminole Electric Landfill - Section 2 - 2 (ESSA) - FS Min- Janbu = 1.663
Soils
Cohesion
Friction Angle
Fine Sand 0.0 28.0
Weak Fly Ash 0.0 32.8
Soft Clay 0.0 22.0
Stiff Clay 0.0 25.0
Consol Clay 500.0 25.0
Water Table
Critical Surface
Surface 2
Surface 3
Surface 4
Surface 5
Surface 6
Surface 7
Surface 8
Surface 9
Surface 10
(Scale in Feet)
(Scale in Feet)
1,450
1,400
1,350
1,300
1,250
1,200
1,150
1,100
1,050
1,000
950
900
850
800
750
700
-100
0
100
200
300
400
500
600
700
800
900
1,000
1,100


Seminole Electric Landfill - Section 2 - 2 (ESSA) - FS Min- Janbu = 1.663
Soils
Cohesion
Friction Angle
Fine Sand 0.0 28.0
Weak Fly Ash 0.0 32.8
Soft Clay 0.0 22.0
Stiff Clay 0.0 25.0
Consol Clay 500.0 25.0
Water Table
Critical Surface
Surface 2
Surface 3
Surface 4
Surface 5
Surface 6
Surface 7
Surface 8
Surface 9
Surface 10
(Scale in Feet)
(Scale in Feet)
1,450
1,400
1,350
1,300
1,250
1,200
1,150
1,100
1,050
1,000
950
900
850
800
750
700
-100
0
100
200
300
400
500
600
700
800
900
1,000
1,100


Seminole Electric Landfill - Section 2 - 2 (ESSA) - FS Min- Janbu = 1.663
Soils
Cohesion
Friction Angle
Fine Sand 0.0 28.0
Weak Fly Ash 0.0 32.8
Soft Clay 0.0 22.0
Stiff Clay 0.0 25.0
Consol Clay 500.0 25.0
Water Table
Critical Surface
(Scale in Feet)
(Scale in Feet)
1,450
1,400
1,350
1,300
1,250
1,200
1,150
1,100
1,050
1,000
950
900
850
800
750
700
-100
0
100
200
300
400
500
600
700
800
900
1,000
1,100

result.out
** STABL for WINDOWS **
by
Geotechnical Software Solutions

1

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 7/13/10
Time of Run: 17:00
Run By: Shawkat Ali
Input Data Filename: run.in
Output Filename: result.out
Unit: U.S.C.
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION Seminole Electric Landfill - Section 2 - 2 (ESSA)

BOUNDARY COORDINATES

19 Top Boundaries
24 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|---|---|---|---|---|---|
| 1 | 0.00 | 1075.00 | 50.00 | 1075.00 | 1 |
| 2 | 50.00 | 1075.00 | 80.00 | 1065.00 | 1 |
| 3 | 80.00 | 1065.00 | 350.00 | 1065.00 | 1 |
| 4 | 350.00 | 1065.00 | 380.00 | 1075.00 | 1 |
| 5 | 380.00 | 1075.00 | 395.00 | 1075.00 | 1 |
| 6 | 395.00 | 1075.00 | 455.00 | 1095.00 | 6 |
| 7 | 455.00 | 1095.00 | 470.00 | 1095.00 | 6 |
| 8 | 470.00 | 1095.00 | 530.00 | 1115.00 | 6 |
| 9 | 530.00 | 1115.00 | 545.00 | 1115.00 | 6 |
| 10 | 545.00 | 1115.00 | 605.00 | 1135.00 | 6 |
| 11 | 605.00 | 1135.00 | 620.00 | 1135.00 | 6 |
| 12 | 620.00 | 1135.00 | 680.00 | 1155.00 | 6 |
| 13 | 680.00 | 1155.00 | 695.00 | 1155.00 | 6 |
| 14 | 695.00 | 1155.00 | 755.00 | 1175.00 | 6 |
| 15 | 755.00 | 1175.00 | 770.00 | 1175.00 | 6 |
| 16 | 770.00 | 1175.00 | 830.00 | 1195.00 | 6 |
| 17 | 830.00 | 1195.00 | 845.00 | 1195.00 | 6 |
| 18 | 845.00 | 1195.00 | 875.00 | 1200.00 | 6 |
| 19 | 875.00 | 1200.00 | 1000.00 | 1200.00 | 6 |
| 20 | 395.00 | 1075.00 | 1000.00 | 1075.00 | 1 |
| 21 | 0.00 | 1017.00 | 1000.00 | 1015.00 | 2 |
| 22 | 0.00 | 1005.00 | 1000.00 | 1000.00 | 3 |
| 23 | 0.00 | 990.00 | 1000.00 | 985.00 | 1 |
| 24 | 0.00 | 975.00 | 1000.00 | 970.00 | 4 |

1

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 | 110.0 | 115.0 | 0.0 | 28.0 | 0.00 | 0.0 | 1 |
| 2 | 100.0 | 110.0 | 0.0 | 22.0 | 0.00 | 0.0 | 1 |
| 3 | 110.0 | 120.0 | 0.0 | 25.0 | 0.00 | 0.0 | 1 |
| 4 | 115.0 | 120.0 | 500.0 | 25.0 | 0.00 | 0.0 | 1 |
| 5 | 80.0 | 85.0 | 0.0 | 34.0 | 0.00 | 0.0 | 1 |
| 6 | 75.0 | 80.0 | 0.0 | 32.8 | 0.00 | 0.0 | 1 |

1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 8 Coordinate Points

| Point No. | X-Water (ft) | Y-Water (ft) |
|---|---|---|
| 1 | 0.00 | 1060.00 |
| 2 | 400.00 | 1060.00 |
| 3 | 500.00 | 1085.00 |
| 4 | 600.00 | 1105.00 |
| 5 | 700.00 | 1120.00 |
| 6 | 800.00 | 1130.00 |
| 7 | 900.00 | 1140.00 |
| 8 | 1000.00 | 1145.00 |

1

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

The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.

200 Trial Surfaces Have Been Generated.

3 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 10.0

| Box | X-Left | Y-Left | X-Right | Y-Right | Height |
|---|---|---|---|---|---|

| No. | (ft) | (ft) | (ft) | (ft) | (ft) |
|---|---|---|---|---|---|
| 1 | 350.00 | 1010.00 | 370.00 | 1010.00 | 12.00 |
| 2 | 600.00 | 1010.00 | 620.00 | 1010.00 | 12.00 |
| 3 | 850.00 | 1010.00 | 880.00 | 1010.00 | 12.00 |

1

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 37 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 285.46 | 1065.00 |
| 2 | 289.42 | 1062.62 |
| 3 | 298.00 | 1057.47 |
| 4 | 306.57 | 1052.32 |
| 5 | 315.14 | 1047.17 |
| 6 | 323.71 | 1042.02 |
| 7 | 332.28 | 1036.87 |
| 8 | 340.85 | 1031.72 |
| 9 | 349.43 | 1026.57 |
| 10 | 358.00 | 1021.42 |
| 11 | 366.57 | 1016.27 |
| 12 | 369.18 | 1014.51 |
| 13 | 619.11 | 1004.71 |
| 14 | 851.60 | 1012.64 |
| 15 | 853.40 | 1015.29 |
| 16 | 858.55 | 1023.86 |
| 17 | 863.70 | 1032.44 |
| 18 | 868.85 | 1041.01 |
| 19 | 874.00 | 1049.58 |
| 20 | 879.15 | 1058.15 |
| 21 | 884.30 | 1066.72 |
| 22 | 889.27 | 1075.00 |
| 23 | 894.06 | 1083.78 |
| 24 | 898.84 | 1092.56 |
| 25 | 903.63 | 1101.34 |
| 26 | 908.42 | 1110.12 |
| 27 | 913.21 | 1118.90 |
| 28 | 917.99 | 1127.68 |
| 29 | 922.78 | 1136.46 |
| 30 | 927.57 | 1145.24 |
| 31 | 932.35 | 1154.02 |
| 32 | 937.14 | 1162.80 |
| 33 | 941.93 | 1171.58 |
| 34 | 946.71 | 1180.36 |
| 35 | 951.50 | 1189.14 |
| 36 | 956.29 | 1197.92 |
| 37 | 957.42 | 1200.00 |

*** 1.663 ***

Individual data on the 61 slices

| Slice No. | Width (ft) | Weight (lbs) | Water Force Top (lbs) | Water Force Bot (lbs) | Force Norm (lbs) | Force Tan (lbs) | Earthquake Force Hor (lbs) | Earthquake Force Ver (lbs) | Surcharge Load (lbs) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.0 | 518.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2 | 4.4 | 1770.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3 | 4.2 | 2928.4 | 0.0 | 387.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4 | 8.6 | 9746.9 | 0.0 | 3185.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 8.6 | 14823.8 | 0.0 | 6399.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6 | 8.6 | 19900.8 | 0.0 | 9613.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7 | 8.6 | 24977.8 | 0.0 | 12827.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8 | 8.6 | 30054.7 | 0.0 | 16041.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9 | 8.6 | 35131.7 | 0.0 | 19254.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10 | 0.6 | 2531.8 | 0.0 | 1403.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 11 | 8.0 | 38849.6 | 0.0 | 21065.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 12 | 8.6 | 49146.5 | 0.0 | 25682.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 13 | 2.6 | 16518.2 | 0.0 | 8760.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 14 | 10.8 | 72479.6 | 0.0 | 30885.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15 | 15.0 | 104281.2 | 0.0 | 43286.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 16 | 5.0 | 35289.0 | 0.0 | 14551.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 17 | 55.0 | 438007.1 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 18 | 5.0 | 44085.6 | 0.0 | 19192.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 19 | 10.0 | 88585.9 | 0.0 | 39699.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20 | 30.0 | 280324.9 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 21 | 30.0 | 307812.4 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 22 | 15.0 | 161319.4 | 0.0 | 77713.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 23 | 55.0 | 639515.8 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 24 | 5.0 | 62700.0 | 0.0 | 30884.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 25 | 14.1 | 178541.5 | 0.0 | 88749.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 26 | 0.9 | 11252.1 | 0.0 | 5653.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 27 | 60.0 | 800642.6 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 28 | 15.0 | 209725.2 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 29 | 5.0 | 70071.1 | 0.0 | 34654.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30 | 55.0 | 806904.9 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 31 | 15.0 | 228675.7 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32 | 30.0 | 466413.3 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 33 | 30.0 | 485995.9 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 34 | 15.0 | 247528.9 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 35 | 6.6 | 109018.1 | 0.0 | 50179.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 36 | 1.8 | 29390.5 | 0.0 | 24128.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 37 | 5.2 | 81431.1 | 0.0 | 72036.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 38 | 5.2 | 76700.0 | 0.0 | 67034.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 39 | 5.2 | 71968.9 | 0.0 | 62031.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 40 | 5.2 | 67237.9 | 0.0 | 57029.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 41 | 1.0 | 12542.8 | 0.0 | 10523.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 42 | 4.1 | 49856.5 | 0.0 | 41503.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 43 | 5.2 | 57342.9 | 0.0 | 47024.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 44 | 5.0 | 50566.4 | 0.0 | 40660.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 45 | 4.8 | 44725.0 | 0.0 | 37115.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 46 | 4.8 | 41375.2 | 0.0 | 31961.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 47 | 1.2 | 9481.7 | 0.0 | 6940.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 48 | 3.6 | 28544.9 | 0.0 | 19898.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 49 | 4.8 | 34671.5 | 0.0 | 21546.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50 | 4.8 | 31315.2 | 0.0 | 16223.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 51 | 4.8 | 27958.9 | 0.0 | 10900.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 52 | 4.8 | 24602.7 | 0.0 | 5578.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 53 | 2.6 | 12059.5 | 0.0 | 799.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 54 | 2.2 | 9207.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 55 | 4.8 | 18084.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 56 | 4.8 | 14932.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 57 | 4.8 | 11780.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 58 | 4.8 | 8628.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 59 | 4.8 | 5476.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 60 | 4.8 | 2323.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 61 | 1.1 | 88.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 280.10 | 1065.00 |
| 2 | 284.04 | 1062.63 |
| 3 | 292.61 | 1057.48 |
| 4 | 301.18 | 1052.33 |
| 5 | 309.75 | 1047.18 |
| 6 | 318.33 | 1042.03 |
| 7 | 326.90 | 1036.88 |
| 8 | 335.47 | 1031.73 |
| 9 | 344.04 | 1026.58 |
| 10 | 352.61 | 1021.43 |
| 11 | 361.18 | 1016.28 |
| 12 | 361.26 | 1016.23 |
| 13 | 369.55 | 1010.63 |
| 14 | 604.93 | 1005.25 |
| 15 | 851.36 | 1011.90 |
| 16 | 853.66 | 1015.29 |
| 17 | 858.81 | 1023.86 |
| 18 | 863.96 | 1032.44 |
| 19 | 869.11 | 1041.01 |
| 20 | 874.26 | 1049.58 |
| 21 | 879.41 | 1058.15 |
| 22 | 884.56 | 1066.72 |
| 23 | 889.53 | 1075.00 |
| 24 | 894.32 | 1083.78 |
| 25 | 899.11 | 1092.56 |
| 26 | 903.89 | 1101.34 |
| 27 | 908.68 | 1110.12 |
| 28 | 913.47 | 1118.90 |
| 29 | 918.25 | 1127.68 |
| 30 | 923.04 | 1136.46 |
| 31 | 927.83 | 1145.24 |
| 32 | 932.61 | 1154.02 |
| 33 | 937.40 | 1162.80 |
| 34 | 942.19 | 1171.58 |
| 35 | 946.97 | 1180.36 |
| 36 | 951.76 | 1189.14 |
| 37 | 956.55 | 1197.92 |
| 38 | 957.68 | 1200.00 |

*** 1.665 ***

1

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 256.94 | 1065.00 |
| 2 | 260.80 | 1062.68 |
| 3 | 269.37 | 1057.53 |
| 4 | 277.94 | 1052.38 |
| 5 | 286.52 | 1047.23 |
| 6 | 295.09 | 1042.08 |
| 7 | 303.66 | 1036.93 |
| 8 | 312.23 | 1031.78 |
| 9 | 320.80 | 1026.62 |
| 10 | 329.37 | 1021.47 |
| 11 | 337.95 | 1016.32 |
| 12 | 345.99 | 1010.90 |
| 13 | 354.28 | 1005.31 |
| 14 | 603.27 | 1005.97 |
| 15 | 851.52 | 1013.89 |
| 16 | 852.47 | 1015.30 |
| 17 | 857.62 | 1023.87 |
| 18 | 862.77 | 1032.44 |
| 19 | 867.92 | 1041.01 |
| 20 | 873.07 | 1049.58 |
| 21 | 878.22 | 1058.15 |
| 22 | 883.37 | 1066.72 |
| 23 | 888.35 | 1075.00 |
| 24 | 893.13 | 1083.78 |
| 25 | 897.92 | 1092.56 |
| 26 | 902.71 | 1101.34 |
| 27 | 907.49 | 1110.12 |
| 28 | 912.28 | 1118.90 |
| 29 | 917.07 | 1127.68 |
| 30 | 921.85 | 1136.46 |
| 31 | 926.64 | 1145.24 |
| 32 | 931.43 | 1154.02 |
| 33 | 936.21 | 1162.80 |
| 34 | 941.00 | 1171.58 |
| 35 | 945.79 | 1180.36 |
| 36 | 950.58 | 1189.14 |
| 37 | 955.36 | 1197.92 |
| 38 | 956.50 | 1200.00 |

*** 1.669 ***

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 275.44 | 1065.00 |
| 2 | 279.36 | 1062.64 |
| 3 | 287.94 | 1057.49 |
| 4 | 296.51 | 1052.34 |
| 5 | 305.08 | 1047.19 |
| 6 | 313.65 | 1042.04 |
| 7 | 322.22 | 1036.89 |
| 8 | 330.79 | 1031.74 |

| | | |
|---|---|---|
| 9 | 339.37 | 1026.59 |
| 10 | 347.94 | 1021.44 |
| 11 | 356.51 | 1016.29 |
| 12 | 360.21 | 1013.79 |
| 13 | 368.50 | 1008.20 |
| 14 | 605.87 | 1008.15 |
| 15 | 853.13 | 1013.82 |
| 16 | 854.13 | 1015.29 |
| 17 | 859.28 | 1023.86 |
| 18 | 864.43 | 1032.44 |
| 19 | 869.58 | 1041.01 |
| 20 | 874.73 | 1049.58 |
| 21 | 879.88 | 1058.15 |
| 22 | 885.03 | 1066.72 |
| 23 | 890.01 | 1075.00 |
| 24 | 894.79 | 1083.78 |
| 25 | 899.58 | 1092.56 |
| 26 | 904.37 | 1101.34 |
| 27 | 909.15 | 1110.12 |
| 28 | 913.94 | 1118.90 |
| 29 | 918.73 | 1127.68 |
| 30 | 923.51 | 1136.46 |
| 31 | 928.30 | 1145.24 |
| 32 | 933.09 | 1154.02 |
| 33 | 937.88 | 1162.80 |
| 34 | 942.66 | 1171.58 |
| 35 | 947.45 | 1180.36 |
| 36 | 952.24 | 1189.14 |
| 37 | 957.02 | 1197.92 |
| 38 | 958.16 | 1200.00 |

*** 1.671 ***

1

Failure Surface Specified By 37 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 275.01 | 1065.00 |
| 2 | 278.93 | 1062.64 |
| 3 | 287.50 | 1057.49 |
| 4 | 296.07 | 1052.34 |
| 5 | 304.65 | 1047.19 |
| 6 | 313.22 | 1042.04 |
| 7 | 321.79 | 1036.89 |
| 8 | 330.36 | 1031.74 |
| 9 | 338.93 | 1026.59 |
| 10 | 347.50 | 1021.44 |
| 11 | 356.08 | 1016.29 |
| 12 | 356.98 | 1015.68 |
| 13 | 613.65 | 1006.05 |
| 14 | 856.75 | 1015.27 |
| 15 | 856.76 | 1015.29 |
| 16 | 861.92 | 1023.86 |
| 17 | 867.07 | 1032.43 |
| 18 | 872.22 | 1041.00 |
| 19 | 877.37 | 1049.57 |

| | | |
|---|---|---|
| 20 | 882.52 | 1058.14 |
| 21 | 887.67 | 1066.72 |
| 22 | 892.64 | 1075.00 |
| 23 | 897.43 | 1083.78 |
| 24 | 902.22 | 1092.56 |
| 25 | 907.01 | 1101.34 |
| 26 | 911.79 | 1110.12 |
| 27 | 916.58 | 1118.90 |
| 28 | 921.37 | 1127.68 |
| 29 | 926.15 | 1136.46 |
| 30 | 930.94 | 1145.24 |
| 31 | 935.73 | 1154.02 |
| 32 | 940.51 | 1162.80 |
| 33 | 945.30 | 1171.58 |
| 34 | 950.09 | 1180.36 |
| 35 | 954.87 | 1189.14 |
| 36 | 959.66 | 1197.92 |
| 37 | 960.80 | 1200.00 |

*** 1.674 ***

Failure Surface Specified By 37 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 257.48 | 1065.00 |
| 2 | 261.35 | 1062.68 |
| 3 | 269.92 | 1057.53 |
| 4 | 278.49 | 1052.38 |
| 5 | 287.07 | 1047.23 |
| 6 | 295.64 | 1042.07 |
| 7 | 304.21 | 1036.92 |
| 8 | 312.78 | 1031.77 |
| 9 | 321.35 | 1026.62 |
| 10 | 329.92 | 1021.47 |
| 11 | 338.50 | 1016.32 |
| 12 | 346.67 | 1010.81 |
| 13 | 354.96 | 1005.22 |
| 14 | 618.26 | 1006.64 |
| 15 | 853.53 | 1015.59 |
| 16 | 858.68 | 1024.16 |
| 17 | 863.83 | 1032.73 |
| 18 | 868.98 | 1041.30 |
| 19 | 874.13 | 1049.88 |
| 20 | 879.28 | 1058.45 |
| 21 | 884.43 | 1067.02 |
| 22 | 889.23 | 1075.00 |
| 23 | 894.02 | 1083.78 |
| 24 | 898.80 | 1092.56 |
| 25 | 903.59 | 1101.34 |
| 26 | 908.38 | 1110.12 |
| 27 | 913.16 | 1118.90 |
| 28 | 917.95 | 1127.68 |
| 29 | 922.74 | 1136.46 |
| 30 | 927.52 | 1145.24 |
| 31 | 932.31 | 1154.02 |
| 32 | 937.10 | 1162.80 |

| | | |
|---|---|---|
| 33 | 941.88 | 1171.58 |
| 34 | 946.67 | 1180.36 |
| 35 | 951.46 | 1189.14 |
| 36 | 956.25 | 1197.92 |
| 37 | 957.38 | 1200.00 |

*** 1.675 ***

1

Failure Surface Specified By 37 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 279.02 | 1065.00 |
| 2 | 282.96 | 1062.63 |
| 3 | 291.53 | 1057.48 |
| 4 | 300.11 | 1052.33 |
| 5 | 308.68 | 1047.18 |
| 6 | 317.25 | 1042.03 |
| 7 | 325.82 | 1036.88 |
| 8 | 334.39 | 1031.73 |
| 9 | 342.96 | 1026.58 |
| 10 | 351.54 | 1021.43 |
| 11 | 360.11 | 1016.28 |
| 12 | 366.88 | 1011.71 |
| 13 | 610.91 | 1010.36 |
| 14 | 851.45 | 1013.82 |
| 15 | 852.45 | 1015.30 |
| 16 | 857.60 | 1023.87 |
| 17 | 862.75 | 1032.44 |
| 18 | 867.90 | 1041.01 |
| 19 | 873.05 | 1049.58 |
| 20 | 878.20 | 1058.15 |
| 21 | 883.35 | 1066.73 |
| 22 | 888.32 | 1075.00 |
| 23 | 893.11 | 1083.78 |
| 24 | 897.90 | 1092.56 |
| 25 | 902.68 | 1101.34 |
| 26 | 907.47 | 1110.12 |
| 27 | 912.26 | 1118.90 |
| 28 | 917.04 | 1127.68 |
| 29 | 921.83 | 1136.46 |
| 30 | 926.62 | 1145.24 |
| 31 | 931.40 | 1154.02 |
| 32 | 936.19 | 1162.80 |
| 33 | 940.98 | 1171.58 |
| 34 | 945.76 | 1180.36 |
| 35 | 950.55 | 1189.14 |
| 36 | 955.34 | 1197.92 |
| 37 | 956.47 | 1200.00 |

*** 1.676 ***

Failure Surface Specified By 39 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 265.56 | 1065.00 |
| 2 | 269.45 | 1062.66 |
| 3 | 278.03 | 1057.51 |
| 4 | 286.60 | 1052.36 |
| 5 | 295.17 | 1047.21 |
| 6 | 303.74 | 1042.06 |
| 7 | 312.31 | 1036.91 |
| 8 | 320.88 | 1031.76 |
| 9 | 329.46 | 1026.61 |
| 10 | 338.03 | 1021.46 |
| 11 | 346.60 | 1016.31 |
| 12 | 347.17 | 1015.92 |
| 13 | 355.46 | 1010.33 |
| 14 | 363.75 | 1004.74 |
| 15 | 600.30 | 1006.36 |
| 16 | 851.36 | 1009.47 |
| 17 | 855.28 | 1015.29 |
| 18 | 860.44 | 1023.86 |
| 19 | 865.59 | 1032.43 |
| 20 | 870.74 | 1041.00 |
| 21 | 875.89 | 1049.58 |
| 22 | 881.04 | 1058.15 |
| 23 | 886.19 | 1066.72 |
| 24 | 891.16 | 1075.00 |
| 25 | 895.95 | 1083.78 |
| 26 | 900.74 | 1092.56 |
| 27 | 905.52 | 1101.34 |
| 28 | 910.31 | 1110.12 |
| 29 | 915.10 | 1118.90 |
| 30 | 919.88 | 1127.68 |
| 31 | 924.67 | 1136.46 |
| 32 | 929.46 | 1145.24 |
| 33 | 934.24 | 1154.02 |
| 34 | 939.03 | 1162.80 |
| 35 | 943.82 | 1171.58 |
| 36 | 948.61 | 1180.36 |
| 37 | 953.39 | 1189.14 |
| 38 | 958.18 | 1197.92 |
| 39 | 959.32 | 1200.00 |

*** 1.679 ***

1

Failure Surface Specified By 39 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 272.32 | 1065.00 |
| 2 | 276.23 | 1062.65 |
| 3 | 284.80 | 1057.50 |
| 4 | 293.38 | 1052.35 |

| | | |
|---|---|---|
| 5 | 301.95 | 1047.20 |
| 6 | 310.52 | 1042.05 |
| 7 | 319.09 | 1036.89 |
| 8 | 327.66 | 1031.74 |
| 9 | 336.23 | 1026.59 |
| 10 | 344.81 | 1021.44 |
| 11 | 353.38 | 1016.29 |
| 12 | 361.24 | 1010.99 |
| 13 | 369.53 | 1005.40 |
| 14 | 618.75 | 1004.01 |
| 15 | 852.04 | 1006.83 |
| 16 | 857.63 | 1015.12 |
| 17 | 857.74 | 1015.28 |
| 18 | 862.89 | 1023.86 |
| 19 | 868.04 | 1032.43 |
| 20 | 873.19 | 1041.00 |
| 21 | 878.34 | 1049.57 |
| 22 | 883.50 | 1058.14 |
| 23 | 888.65 | 1066.71 |
| 24 | 893.62 | 1075.00 |
| 25 | 898.41 | 1083.78 |
| 26 | 903.20 | 1092.56 |
| 27 | 907.98 | 1101.34 |
| 28 | 912.77 | 1110.12 |
| 29 | 917.56 | 1118.90 |
| 30 | 922.35 | 1127.68 |
| 31 | 927.13 | 1136.46 |
| 32 | 931.92 | 1145.24 |
| 33 | 936.71 | 1154.02 |
| 34 | 941.49 | 1162.80 |
| 35 | 946.28 | 1171.58 |
| 36 | 951.07 | 1180.36 |
| 37 | 955.85 | 1189.14 |
| 38 | 960.64 | 1197.92 |
| 39 | 961.78 | 1200.00 |

*** 1.680 ***

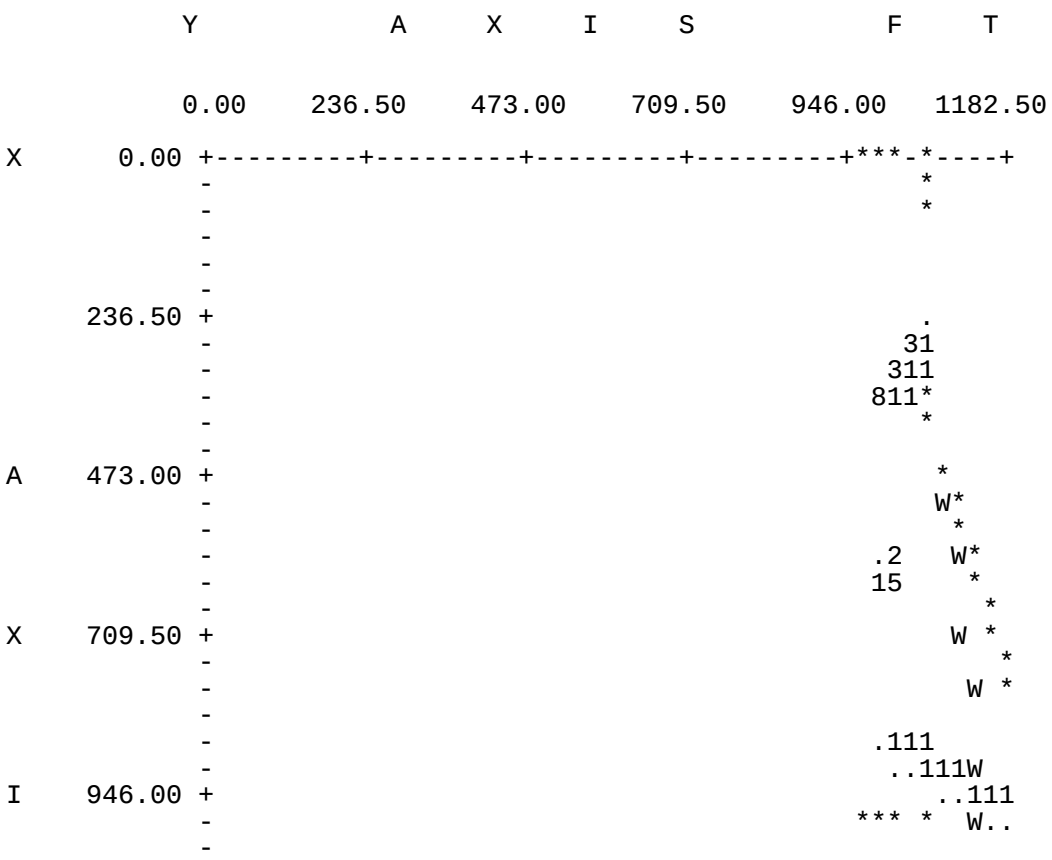
Failure Surface Specified By 38 Coordinate Points

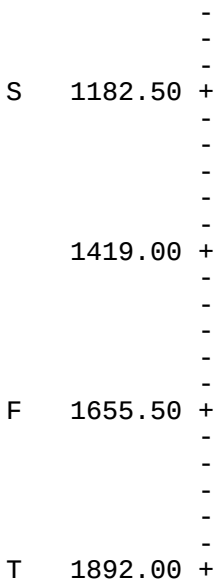
| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 263.34 | 1065.00 |
| 2 | 267.22 | 1062.66 |
| 3 | 275.80 | 1057.51 |
| 4 | 284.37 | 1052.36 |
| 5 | 292.94 | 1047.21 |
| 6 | 301.51 | 1042.06 |
| 7 | 310.08 | 1036.91 |
| 8 | 318.65 | 1031.76 |
| 9 | 327.23 | 1026.61 |
| 10 | 335.80 | 1021.46 |
| 11 | 344.37 | 1016.31 |
| 12 | 351.89 | 1011.24 |
| 13 | 360.18 | 1005.65 |
| 14 | 618.87 | 1005.00 |
| 15 | 852.02 | 1008.45 |

| | | |
|---|---|---|
| 16 | 856.63 | 1015.29 |
| 17 | 861.78 | 1023.86 |
| 18 | 866.93 | 1032.43 |
| 19 | 872.08 | 1041.00 |
| 20 | 877.23 | 1049.57 |
| 21 | 882.38 | 1058.15 |
| 22 | 887.53 | 1066.72 |
| 23 | 892.51 | 1075.00 |
| 24 | 897.30 | 1083.78 |
| 25 | 902.08 | 1092.56 |
| 26 | 906.87 | 1101.34 |
| 27 | 911.66 | 1110.12 |
| 28 | 916.45 | 1118.90 |
| 29 | 921.23 | 1127.68 |
| 30 | 926.02 | 1136.46 |
| 31 | 930.81 | 1145.24 |
| 32 | 935.59 | 1154.02 |
| 33 | 940.38 | 1162.80 |
| 34 | 945.17 | 1171.58 |
| 35 | 949.95 | 1180.36 |
| 36 | 954.74 | 1189.14 |
| 37 | 959.53 | 1197.92 |
| 38 | 960.66 | 1200.00 |

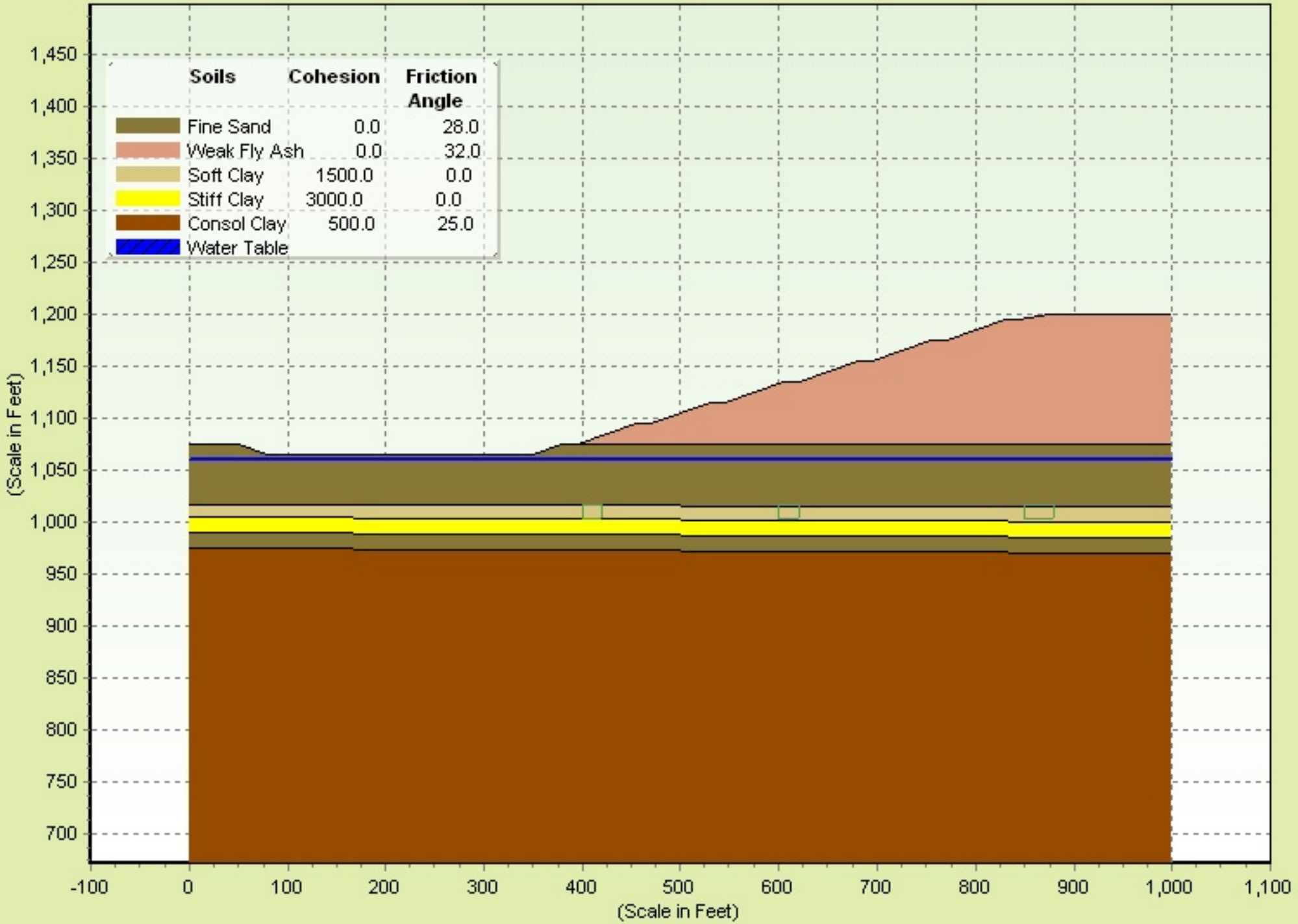
*** 1.681 ***

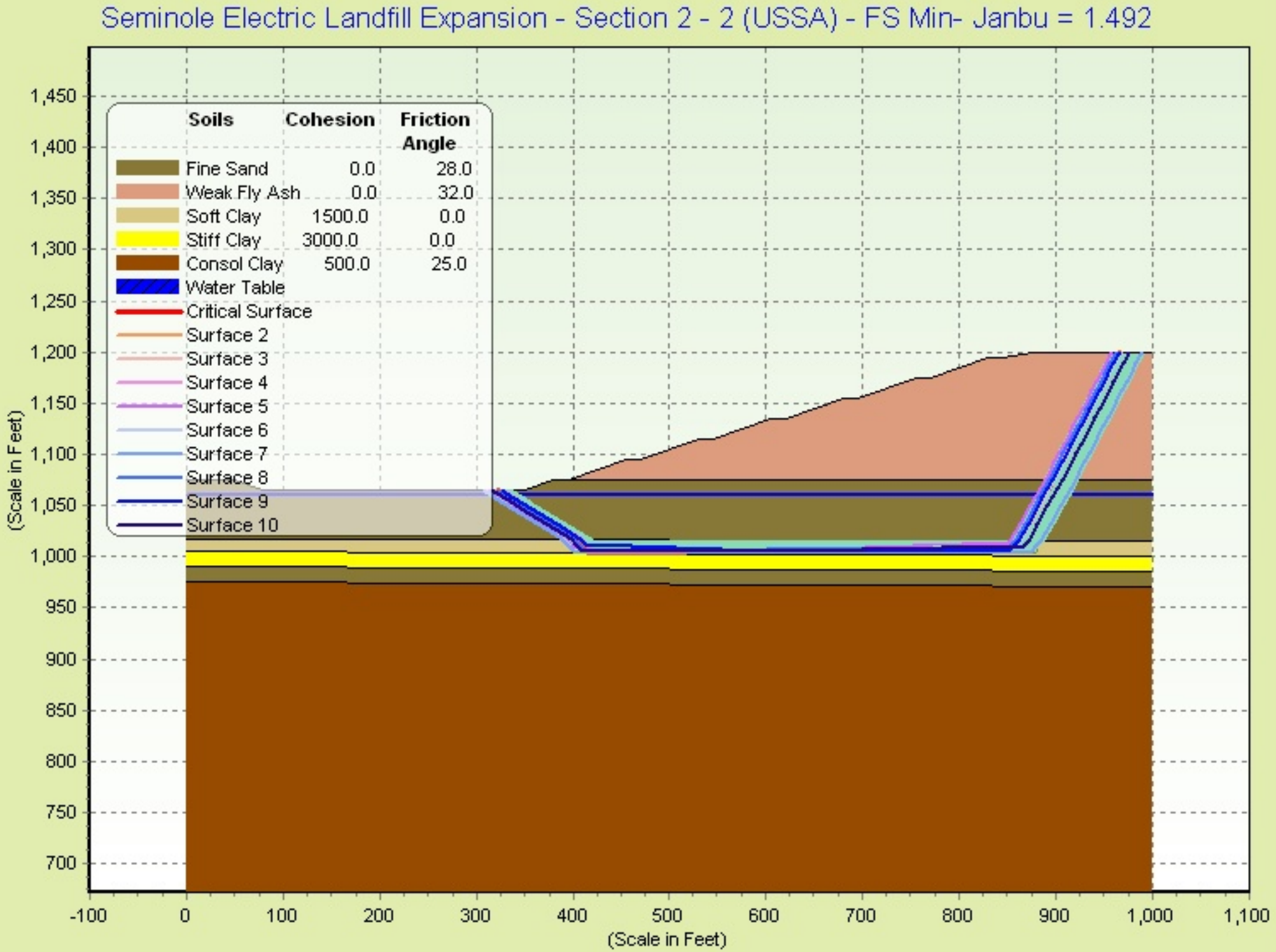
1

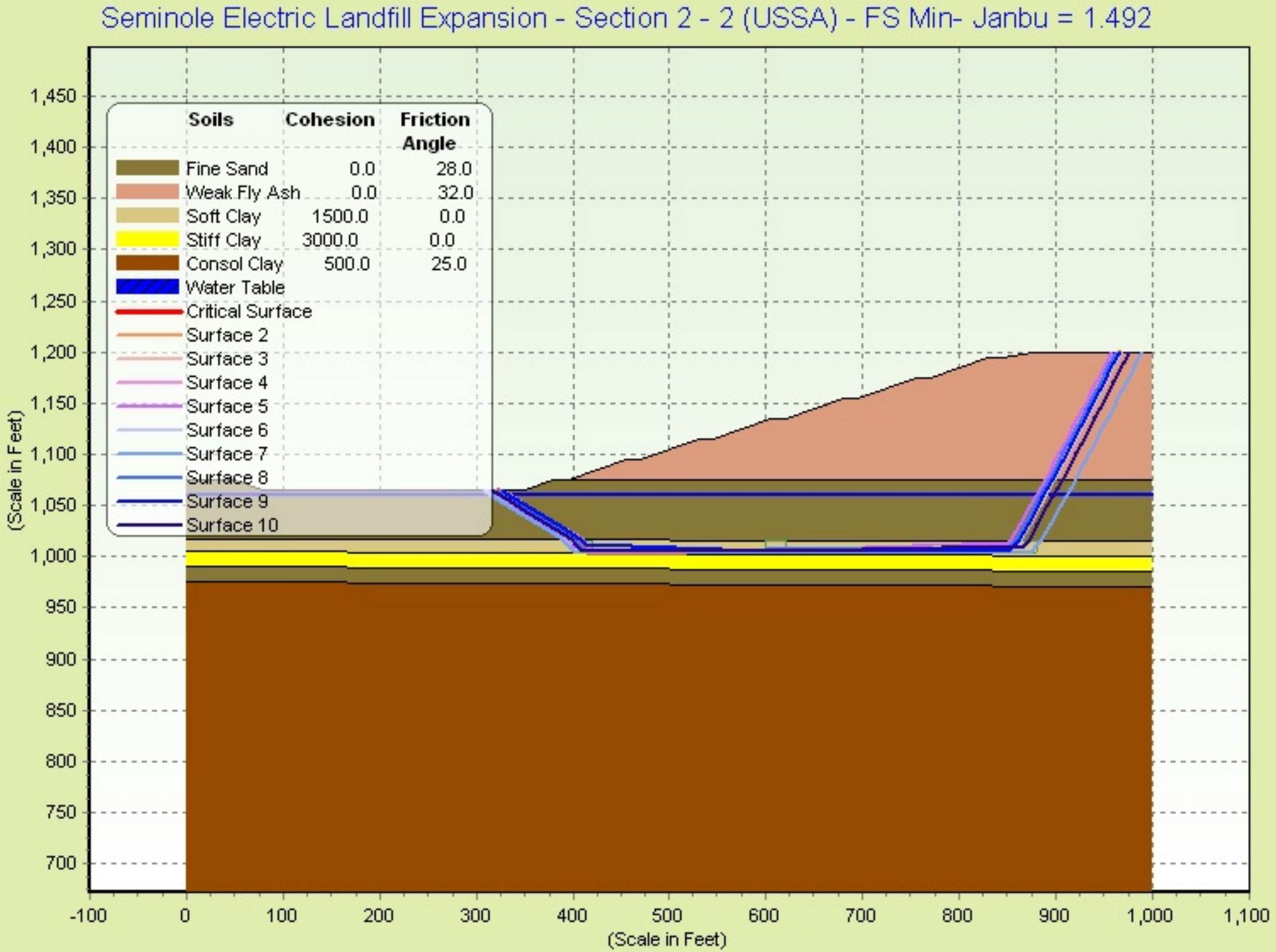


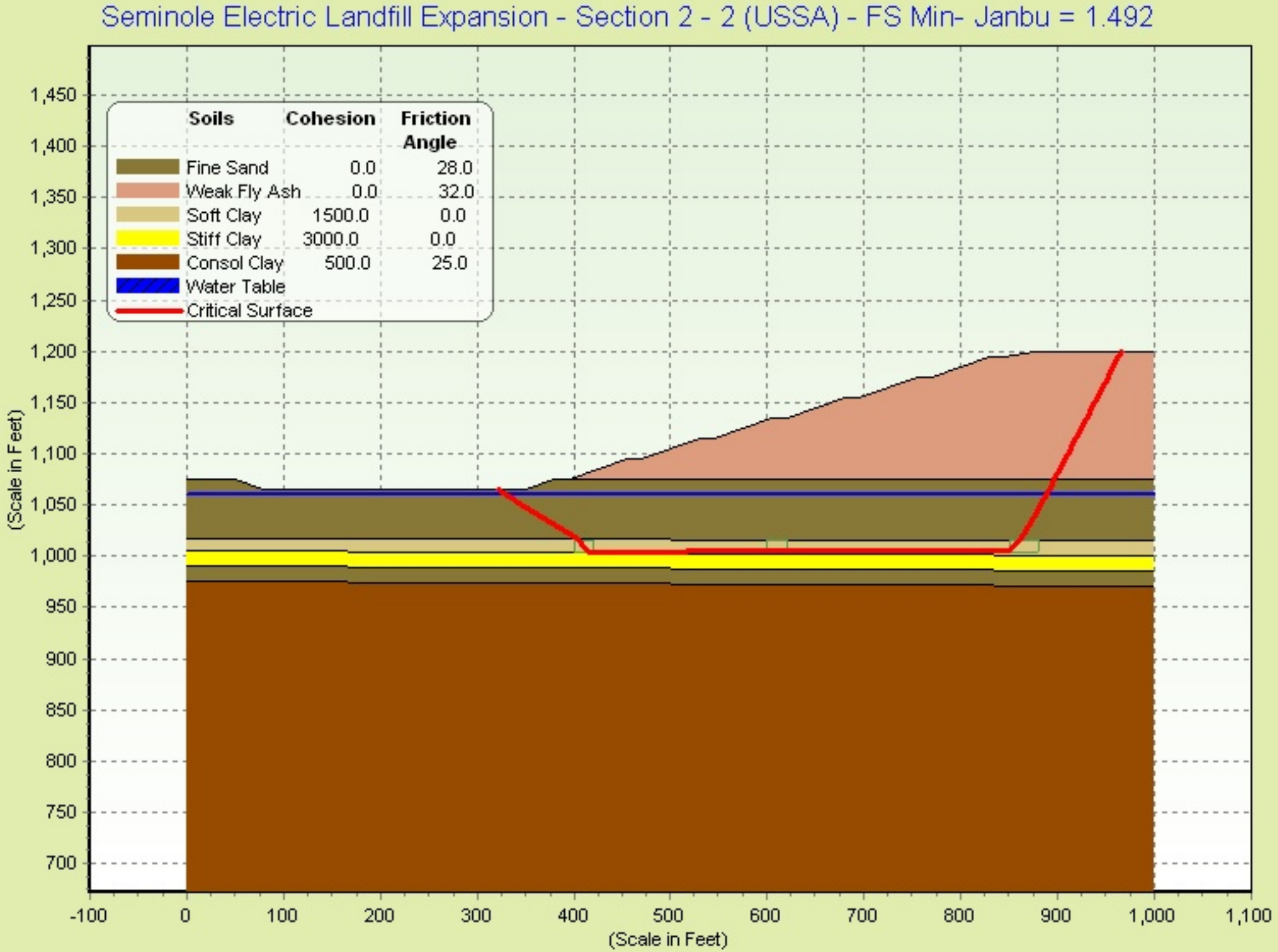

S
1182.50
1419.00
F
1655.50
T
1892.00

# Seminole Electric Landfill Expansion - Section 2 - 2 (USSA)




Seminole Electric Landfill Expansion - Section 2 - 2 (USSA) - FS Min- Janbu = 1.492
Soils
Cohesion
Friction Angle
Fine Sand 0.0 28.0
Weak Fly Ash 0.0 32.0
Soft Clay 1500.0 0.0
Stiff Clay 3000.0 0.0
Consol Clay 500.0 25.0
Water Table
Critical Surface
Surface 2
Surface 3
Surface 4
Surface 5
Surface 6
Surface 7
Surface 8
Surface 9
Surface 10
(Scale in Feet)
1,450
1,400
1,350
1,300
1,250
1,200
1,150
1,100
1,050
1,000
950
900
850
800
750
700
-100
0
100
200
300
400
500
600
700
800
900
1,000
1,100
(Scale in Feet)


Seminole Electric Landfill Expansion - Section 2 - 2 (USSA) - FS Min- Janbu = 1.492
Soils
Cohesion
Friction Angle
Fine Sand 0.0 28.0
Weak Fly Ash 0.0 32.0
Soft Clay 1500.0 0.0
Stiff Clay 3000.0 0.0
Consol Clay 500.0 25.0
Water Table
Critical Surface
Surface 2
Surface 3
Surface 4
Surface 5
Surface 6
Surface 7
Surface 8
Surface 9
Surface 10
(Scale in Feet)
(Scale in Feet)
1,450
1,400
1,350
1,300
1,250
1,200
1,150
1,100
1,050
1,000
950
900
850
800
750
700
-100
0
100
200
300
400
500
600
700
800
900
1,000
1,100


Seminole Electric Landfill Expansion - Section 2 - 2 (USSA) - FS Min- Janbu = 1.492
Soils
Cohesion
Friction Angle
Fine Sand 0.0 28.0
Weak Fly Ash 0.0 32.0
Soft Clay 1500.0 0.0
Stiff Clay 3000.0 0.0
Consol Clay 500.0 25.0
Water Table
Critical Surface
(Scale in Feet)
(Scale in Feet)
1,450
1,400
1,350
1,300
1,250
1,200
1,150
1,100
1,050
1,000
950
900
850
800
750
700
-100
0
100
200
300
400
500
600
700
800
900
1,000
1,100

result.out
** STABL for WINDOWS **
by
Geotechnical Software Solutions

1

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer`s Method of Slices

Run Date: 7/13/10
Time of Run: 16:45
Run By: Shawkat Ali
Input Data Filename: run.in
Output Filename: result.out
Unit: U.S.C.
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION Seminole Electric Landfill Expansion - S
ection 2 - 2 (USSA)

BOUNDARY COORDINATES

19 Top Boundaries
24 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|---|---|---|---|---|---|
| 1 | 0.00 | 1075.00 | 50.00 | 1075.00 | 1 |
| 2 | 50.00 | 1075.00 | 80.00 | 1065.00 | 1 |
| 3 | 80.00 | 1065.00 | 350.00 | 1065.00 | 1 |
| 4 | 350.00 | 1065.00 | 380.00 | 1075.00 | 1 |
| 5 | 380.00 | 1075.00 | 395.00 | 1075.00 | 1 |
| 6 | 395.00 | 1075.00 | 455.00 | 1095.00 | 6 |
| 7 | 455.00 | 1095.00 | 470.00 | 1095.00 | 6 |
| 8 | 470.00 | 1095.00 | 530.00 | 1115.00 | 6 |
| 9 | 530.00 | 1115.00 | 545.00 | 1115.00 | 6 |
| 10 | 545.00 | 1115.00 | 605.00 | 1135.00 | 6 |
| 11 | 605.00 | 1135.00 | 620.00 | 1135.00 | 6 |
| 12 | 620.00 | 1135.00 | 680.00 | 1155.00 | 6 |
| 13 | 680.00 | 1155.00 | 695.00 | 1155.00 | 6 |
| 14 | 695.00 | 1155.00 | 755.00 | 1175.00 | 6 |
| 15 | 755.00 | 1175.00 | 770.00 | 1175.00 | 6 |
| 16 | 770.00 | 1175.00 | 830.00 | 1195.00 | 6 |
| 17 | 830.00 | 1195.00 | 845.00 | 1195.00 | 6 |
| 18 | 845.00 | 1195.00 | 875.00 | 1200.00 | 6 |
| 19 | 875.00 | 1200.00 | 1000.00 | 1200.00 | 6 |
| 20 | 395.00 | 1075.00 | 1000.00 | 1075.00 | 1 |
| 21 | 0.00 | 1017.00 | 1000.00 | 1015.00 | 2 |
| 22 | 0.00 | 1005.00 | 1000.00 | 1000.00 | 3 |
| 23 | 0.00 | 990.00 | 1000.00 | 985.00 | 1 |
| 24 | 0.00 | 975.00 | 1000.00 | 970.00 | 4 |

1

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 | 110.0 | 115.0 | 0.0 | 28.0 | 0.00 | 0.0 | 1 |
| 2 | 100.0 | 110.0 | 1500.0 | 0.0 | 0.00 | 0.0 | 1 |
| 3 | 110.0 | 120.0 | 3000.0 | 0.0 | 0.00 | 0.0 | 1 |
| 4 | 115.0 | 120.0 | 500.0 | 25.0 | 0.00 | 0.0 | 1 |
| 5 | 80.0 | 85.0 | 0.0 | 34.0 | 0.00 | 0.0 | 1 |
| 6 | 75.0 | 80.0 | 0.0 | 32.0 | 0.00 | 0.0 | 1 |

1

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 | 0.00 | 1060.00 |
| 2 | 1000.00 | 1060.00 |

1

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

The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.

200 Trial Surfaces Have Been Generated.

3 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 10.0

| Box No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Height (ft) |
|---|---|---|---|---|---|
| 1 | 400.00 | 1010.00 | 420.00 | 1010.00 | 12.00 |
| 2 | 600.00 | 1010.00 | 620.00 | 1010.00 | 12.00 |
| 3 | 850.00 | 1010.00 | 880.00 | 1010.00 | 12.00 |

**** ERROR - BK12 ****

1

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 39 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 322.37 | 1065.00 |
| 2 | 326.45 | 1062.55 |
| 3 | 335.02 | 1057.40 |
| 4 | 343.59 | 1052.25 |
| 5 | 352.17 | 1047.10 |
| 6 | 360.74 | 1041.94 |
| 7 | 369.31 | 1036.79 |
| 8 | 377.88 | 1031.64 |
| 9 | 386.45 | 1026.49 |
| 10 | 395.02 | 1021.34 |
| 11 | 403.60 | 1016.19 |
| 12 | 408.23 | 1011.56 |
| 13 | 415.30 | 1004.49 |
| 14 | 618.20 | 1004.60 |
| 15 | 850.74 | 1005.08 |
| 16 | 857.81 | 1012.16 |
| 17 | 860.94 | 1015.28 |
| 18 | 866.09 | 1023.85 |
| 19 | 871.24 | 1032.42 |
| 20 | 876.39 | 1040.99 |
| 21 | 881.54 | 1049.56 |
| 22 | 886.69 | 1058.14 |
| 23 | 891.84 | 1066.71 |
| 24 | 896.82 | 1075.00 |
| 25 | 901.67 | 1083.75 |
| 26 | 906.52 | 1092.49 |
| 27 | 911.36 | 1101.24 |
| 28 | 916.21 | 1109.98 |
| 29 | 921.06 | 1118.73 |
| 30 | 925.91 | 1127.48 |
| 31 | 930.76 | 1136.22 |
| 32 | 935.60 | 1144.97 |
| 33 | 940.45 | 1153.72 |
| 34 | 945.30 | 1162.46 |
| 35 | 950.15 | 1171.21 |
| 36 | 955.00 | 1179.95 |
| 37 | 959.85 | 1188.70 |
| 38 | 964.69 | 1197.45 |
| 39 | 966.11 | 1200.00 |

*** 1.492 ***

Individual data on the 56 slices

| Slice No. | Width (ft) | Weight (lbs) | Water Force Top (lbs) | Water Force Bot (lbs) | Force Norm (lbs) | Force Tan (lbs) | Earthquake Force Hor (lbs) | Earthquake Force Ver (lbs) | Surcharge Load (lbs) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.1 | 551.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2 | 4.2 | 1737.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3 | 4.3 | 3032.7 | 0.0 | 410.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4 | 8.6 | 9819.9 | 0.0 | 3231.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 6.4 | 10653.6 | 0.0 | 4513.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6 | 2.2 | 4329.3 | 0.0 | 1932.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7 | 8.6 | 22001.5 | 0.0 | 9659.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8 | 8.6 | 29772.6 | 0.0 | 12873.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9 | 8.6 | 37543.6 | 0.0 | 16087.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10 | 2.1 | 10479.8 | 0.0 | 4472.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 11 | 6.5 | 34071.4 | 0.0 | 14828.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 12 | 8.5 | 49562.8 | 0.0 | 22446.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 13 | 0.0 | 147.7 | 0.0 | 68.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 14 | 8.6 | 55711.1 | 0.0 | 25728.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15 | 4.6 | 33412.9 | 0.0 | 18848.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 16 | 7.1 | 56605.8 | 0.0 | 32431.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 17 | 39.7 | 356442.6 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 18 | 15.0 | 142093.1 | 0.0 | 51933.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 19 | 60.0 | 613263.6 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20 | 15.0 | 164538.8 | 0.0 | 51895.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 21 | 60.0 | 703046.7 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 22 | 13.2 | 164585.1 | 0.0 | 45646.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 23 | 1.8 | 22399.1 | 0.0 | 6211.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 24 | 60.0 | 792501.9 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 25 | 15.0 | 209251.7 | 0.0 | 51720.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 26 | 60.0 | 881511.8 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 27 | 15.0 | 231504.2 | 0.0 | 51573.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 28 | 60.0 | 970521.8 | 0.0 | ******* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 29 | 15.0 | 253756.8 | 0.0 | 51426.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30 | 5.7 | 97333.2 | 0.0 | 19678.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 31 | 7.1 | 117671.4 | 0.0 | 32060.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32 | 3.1 | 50410.9 | 0.0 | 12753.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 33 | 5.2 | 79993.5 | 0.0 | 25232.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 34 | 5.2 | 75248.1 | 0.0 | 19883.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 35 | 3.8 | 51985.3 | 0.0 | 11147.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 36 | 1.4 | 18505.3 | 0.0 | 3387.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 37 | 5.2 | 65502.2 | 0.0 | 9185.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 38 | 5.2 | 60425.3 | 0.0 | 3837.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 39 | 1.1 | 12465.2 | 0.0 | 126.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 40 | 4.0 | 42950.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 41 | 5.0 | 48981.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 42 | 4.8 | 43860.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 43 | 4.8 | 40680.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 44 | 4.8 | 37500.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 45 | 4.8 | 34320.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 46 | 4.8 | 31140.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 47 | 4.8 | 27959.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 48 | 4.8 | 24779.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 49 | 4.8 | 21599.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50 | 4.8 | 18419.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 51 | 4.8 | 15239.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 52 | 4.8 | 12058.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 53 | 4.8 | 8878.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 54 | 4.8 | 5698.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 55 | 4.8 | 2518.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 56 | 1.4 | 135.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 318.41 | 1065.00 |
| 2 | 322.48 | 1062.55 |
| 3 | 331.05 | 1057.40 |
| 4 | 339.62 | 1052.25 |
| 5 | 348.20 | 1047.10 |
| 6 | 356.77 | 1041.95 |
| 7 | 365.34 | 1036.80 |
| 8 | 373.91 | 1031.65 |
| 9 | 382.48 | 1026.50 |
| 10 | 391.05 | 1021.35 |
| 11 | 399.63 | 1016.20 |
| 12 | 403.11 | 1012.72 |
| 13 | 410.18 | 1005.65 |
| 14 | 618.87 | 1005.00 |
| 15 | 852.02 | 1008.45 |
| 16 | 858.85 | 1015.28 |
| 17 | 864.00 | 1023.85 |
| 18 | 869.15 | 1032.43 |
| 19 | 874.30 | 1041.00 |
| 20 | 879.45 | 1049.57 |
| 21 | 884.60 | 1058.14 |
| 22 | 889.75 | 1066.71 |
| 23 | 894.73 | 1075.00 |
| 24 | 899.58 | 1083.75 |
| 25 | 904.43 | 1092.49 |
| 26 | 909.28 | 1101.24 |
| 27 | 914.13 | 1109.98 |
| 28 | 918.97 | 1118.73 |
| 29 | 923.82 | 1127.48 |
| 30 | 928.67 | 1136.22 |
| 31 | 933.52 | 1144.97 |
| 32 | 938.37 | 1153.72 |
| 33 | 943.21 | 1162.46 |
| 34 | 948.06 | 1171.21 |
| 35 | 952.91 | 1179.95 |
| 36 | 957.76 | 1188.70 |
| 37 | 962.61 | 1197.45 |
| 38 | 964.02 | 1200.00 |

*** 1.495 ***

1

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 310.70 | 1065.00 |
| 2 | 314.75 | 1062.57 |

| | | |
|---|---|---|
| 3 | 323.32 | 1057.42 |
| 4 | 331.89 | 1052.27 |
| 5 | 340.46 | 1047.12 |
| 6 | 349.03 | 1041.97 |
| 7 | 357.60 | 1036.82 |
| 8 | 366.18 | 1031.67 |
| 9 | 374.75 | 1026.52 |
| 10 | 383.32 | 1021.37 |
| 11 | 391.89 | 1016.22 |
| 12 | 394.27 | 1013.83 |
| 13 | 401.34 | 1006.76 |
| 14 | 607.27 | 1004.97 |
| 15 | 857.94 | 1010.66 |
| 16 | 862.56 | 1015.27 |
| 17 | 867.71 | 1023.85 |
| 18 | 872.86 | 1032.42 |
| 19 | 878.01 | 1040.99 |
| 20 | 883.16 | 1049.56 |
| 21 | 888.31 | 1058.13 |
| 22 | 893.46 | 1066.70 |
| 23 | 898.45 | 1075.00 |
| 24 | 903.30 | 1083.75 |
| 25 | 908.14 | 1092.49 |
| 26 | 912.99 | 1101.24 |
| 27 | 917.84 | 1109.98 |
| 28 | 922.69 | 1118.73 |
| 29 | 927.54 | 1127.48 |
| 30 | 932.38 | 1136.22 |
| 31 | 937.23 | 1144.97 |
| 32 | 942.08 | 1153.72 |
| 33 | 946.93 | 1162.46 |
| 34 | 951.78 | 1171.21 |
| 35 | 956.62 | 1179.95 |
| 36 | 961.47 | 1188.70 |
| 37 | 966.32 | 1197.45 |
| 38 | 967.74 | 1200.00 |

*** 1.498 ***

Failure Surface Specified By 39 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 327.50 | 1065.00 |
| 2 | 331.60 | 1062.54 |
| 3 | 340.17 | 1057.39 |
| 4 | 348.74 | 1052.24 |
| 5 | 357.31 | 1047.08 |
| 6 | 365.89 | 1041.93 |
| 7 | 374.46 | 1036.78 |
| 8 | 383.03 | 1031.63 |
| 9 | 391.60 | 1026.48 |
| 10 | 400.17 | 1021.33 |
| 11 | 408.74 | 1016.18 |
| 12 | 412.46 | 1012.47 |
| 13 | 419.53 | 1005.40 |
| 14 | 618.75 | 1004.01 |

| | | |
|---|---|---|
| 15 | 852.04 | 1006.83 |
| 16 | 859.11 | 1013.90 |
| 17 | 860.49 | 1015.28 |
| 18 | 865.64 | 1023.85 |
| 19 | 870.79 | 1032.42 |
| 20 | 875.94 | 1040.99 |
| 21 | 881.09 | 1049.57 |
| 22 | 886.24 | 1058.14 |
| 23 | 891.39 | 1066.71 |
| 24 | 896.37 | 1075.00 |
| 25 | 901.22 | 1083.75 |
| 26 | 906.07 | 1092.49 |
| 27 | 910.92 | 1101.24 |
| 28 | 915.77 | 1109.98 |
| 29 | 920.61 | 1118.73 |
| 30 | 925.46 | 1127.48 |
| 31 | 930.31 | 1136.22 |
| 32 | 935.16 | 1144.97 |
| 33 | 940.01 | 1153.72 |
| 34 | 944.85 | 1162.46 |
| 35 | 949.70 | 1171.21 |
| 36 | 954.55 | 1179.95 |
| 37 | 959.40 | 1188.70 |
| 38 | 964.25 | 1197.45 |
| 39 | 965.66 | 1200.00 |

*** 1.499 ***

1

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 312.18 | 1065.00 |
| 2 | 316.23 | 1062.57 |
| 3 | 324.80 | 1057.42 |
| 4 | 333.37 | 1052.27 |
| 5 | 341.94 | 1047.12 |
| 6 | 350.52 | 1041.97 |
| 7 | 359.09 | 1036.81 |
| 8 | 367.66 | 1031.66 |
| 9 | 376.23 | 1026.51 |
| 10 | 384.80 | 1021.36 |
| 11 | 393.37 | 1016.21 |
| 12 | 397.21 | 1012.38 |
| 13 | 404.28 | 1005.31 |
| 14 | 603.27 | 1005.97 |
| 15 | 851.52 | 1013.89 |
| 16 | 852.93 | 1015.29 |
| 17 | 858.08 | 1023.87 |
| 18 | 863.23 | 1032.44 |
| 19 | 868.38 | 1041.01 |
| 20 | 873.53 | 1049.58 |
| 21 | 878.68 | 1058.15 |
| 22 | 883.83 | 1066.72 |
| 23 | 888.80 | 1075.00 |
| 24 | 893.65 | 1083.75 |

| | | |
|---|---|---|
| 25 | 898.50 | 1092.49 |
| 26 | 903.35 | 1101.24 |
| 27 | 908.19 | 1109.98 |
| 28 | 913.04 | 1118.73 |
| 29 | 917.89 | 1127.48 |
| 30 | 922.74 | 1136.22 |
| 31 | 927.59 | 1144.97 |
| 32 | 932.43 | 1153.72 |
| 33 | 937.28 | 1162.46 |
| 34 | 942.13 | 1171.21 |
| 35 | 946.98 | 1179.95 |
| 36 | 951.83 | 1188.70 |
| 37 | 956.68 | 1197.45 |
| 38 | 958.09 | 1200.00 |

*** 1.499 ***

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 308.53 | 1065.00 |
| 2 | 312.57 | 1062.57 |
| 3 | 321.14 | 1057.42 |
| 4 | 329.71 | 1052.27 |
| 5 | 338.28 | 1047.12 |
| 6 | 346.85 | 1041.97 |
| 7 | 355.42 | 1036.82 |
| 8 | 364.00 | 1031.67 |
| 9 | 372.57 | 1026.52 |
| 10 | 381.14 | 1021.37 |
| 11 | 389.71 | 1016.22 |
| 12 | 393.00 | 1012.93 |
| 13 | 400.07 | 1005.86 |
| 14 | 609.23 | 1006.06 |
| 15 | 856.51 | 1009.70 |
| 16 | 862.09 | 1015.28 |
| 17 | 867.24 | 1023.85 |
| 18 | 872.39 | 1032.42 |
| 19 | 877.54 | 1040.99 |
| 20 | 882.69 | 1049.56 |
| 21 | 887.84 | 1058.13 |
| 22 | 892.99 | 1066.71 |
| 23 | 897.98 | 1075.00 |
| 24 | 902.82 | 1083.75 |
| 25 | 907.67 | 1092.49 |
| 26 | 912.52 | 1101.24 |
| 27 | 917.37 | 1109.98 |
| 28 | 922.22 | 1118.73 |
| 29 | 927.06 | 1127.48 |
| 30 | 931.91 | 1136.22 |
| 31 | 936.76 | 1144.97 |
| 32 | 941.61 | 1153.72 |
| 33 | 946.46 | 1162.46 |
| 34 | 951.30 | 1171.21 |
| 35 | 956.15 | 1179.95 |
| 36 | 961.00 | 1188.70 |

| | | |
|---|---|---|
| 37 | 965.85 | 1197.45 |
| 38 | 967.26 | 1200.00 |

*** 1.500 ***

1

Failure Surface Specified By 39 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 308.08 | 1065.00 |
| 2 | 312.12 | 1062.57 |
| 3 | 320.69 | 1057.42 |
| 4 | 329.26 | 1052.27 |
| 5 | 337.83 | 1047.12 |
| 6 | 346.41 | 1041.97 |
| 7 | 354.98 | 1036.82 |
| 8 | 363.55 | 1031.67 |
| 9 | 372.12 | 1026.52 |
| 10 | 380.69 | 1021.37 |
| 11 | 389.26 | 1016.22 |
| 12 | 393.39 | 1012.10 |
| 13 | 400.46 | 1005.02 |
| 14 | 604.71 | 1004.15 |
| 15 | 873.33 | 1004.44 |
| 16 | 880.40 | 1011.51 |
| 17 | 884.12 | 1015.23 |
| 18 | 889.27 | 1023.80 |
| 19 | 894.42 | 1032.38 |
| 20 | 899.57 | 1040.95 |
| 21 | 904.72 | 1049.52 |
| 22 | 909.87 | 1058.09 |
| 23 | 915.02 | 1066.66 |
| 24 | 920.03 | 1075.00 |
| 25 | 924.88 | 1083.75 |
| 26 | 929.73 | 1092.49 |
| 27 | 934.57 | 1101.24 |
| 28 | 939.42 | 1109.98 |
| 29 | 944.27 | 1118.73 |
| 30 | 949.12 | 1127.48 |
| 31 | 953.97 | 1136.22 |
| 32 | 958.82 | 1144.97 |
| 33 | 963.66 | 1153.72 |
| 34 | 968.51 | 1162.46 |
| 35 | 973.36 | 1171.21 |
| 36 | 978.21 | 1179.95 |
| 37 | 983.06 | 1188.70 |
| 38 | 987.90 | 1197.45 |
| 39 | 989.32 | 1200.00 |

*** 1.503 ***

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 321.07 | 1065.00 |
| 2 | 325.15 | 1062.55 |
| 3 | 333.72 | 1057.40 |
| 4 | 342.29 | 1052.25 |
| 5 | 350.86 | 1047.10 |
| 6 | 359.43 | 1041.95 |
| 7 | 368.01 | 1036.80 |
| 8 | 376.58 | 1031.65 |
| 9 | 385.15 | 1026.50 |
| 10 | 393.72 | 1021.35 |
| 11 | 402.29 | 1016.20 |
| 12 | 406.68 | 1011.81 |
| 13 | 413.75 | 1004.74 |
| 14 | 600.30 | 1006.36 |
| 15 | 851.36 | 1009.47 |
| 16 | 857.18 | 1015.29 |
| 17 | 862.33 | 1023.86 |
| 18 | 867.48 | 1032.43 |
| 19 | 872.63 | 1041.00 |
| 20 | 877.78 | 1049.57 |
| 21 | 882.93 | 1058.14 |
| 22 | 888.08 | 1066.72 |
| 23 | 893.06 | 1075.00 |
| 24 | 897.90 | 1083.75 |
| 25 | 902.75 | 1092.49 |
| 26 | 907.60 | 1101.24 |
| 27 | 912.45 | 1109.98 |
| 28 | 917.30 | 1118.73 |
| 29 | 922.14 | 1127.48 |
| 30 | 926.99 | 1136.22 |
| 31 | 931.84 | 1144.97 |
| 32 | 936.69 | 1153.72 |
| 33 | 941.54 | 1162.46 |
| 34 | 946.38 | 1171.21 |
| 35 | 951.23 | 1179.95 |
| 36 | 956.08 | 1188.70 |
| 37 | 960.93 | 1197.45 |
| 38 | 962.34 | 1200.00 |

*** 1.506 ***

1

Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 327.10 | 1065.00 |
| 2 | 331.20 | 1062.54 |
| 3 | 339.77 | 1057.39 |
| 4 | 348.34 | 1052.24 |
| 5 | 356.91 | 1047.09 |
| 6 | 365.49 | 1041.94 |

| | | |
|---|---|---|
| 7 | 374.06 | 1036.78 |
| 8 | 382.63 | 1031.63 |
| 9 | 391.20 | 1026.48 |
| 10 | 399.77 | 1021.33 |
| 11 | 408.34 | 1016.18 |
| 12 | 412.79 | 1011.74 |
| 13 | 600.35 | 1005.34 |
| 14 | 850.79 | 1005.29 |
| 15 | 857.86 | 1012.36 |
| 16 | 860.78 | 1015.28 |
| 17 | 865.93 | 1023.85 |
| 18 | 871.08 | 1032.42 |
| 19 | 876.23 | 1040.99 |
| 20 | 881.38 | 1049.57 |
| 21 | 886.53 | 1058.14 |
| 22 | 891.68 | 1066.71 |
| 23 | 896.66 | 1075.00 |
| 24 | 901.51 | 1083.75 |
| 25 | 906.36 | 1092.49 |
| 26 | 911.21 | 1101.24 |
| 27 | 916.05 | 1109.98 |
| 28 | 920.90 | 1118.73 |
| 29 | 925.75 | 1127.48 |
| 30 | 930.60 | 1136.22 |
| 31 | 935.45 | 1144.97 |
| 32 | 940.29 | 1153.72 |
| 33 | 945.14 | 1162.46 |
| 34 | 949.99 | 1171.21 |
| 35 | 954.84 | 1179.95 |
| 36 | 959.69 | 1188.70 |
| 37 | 964.54 | 1197.45 |
| 38 | 965.95 | 1200.00 |

*** 1.513 ***

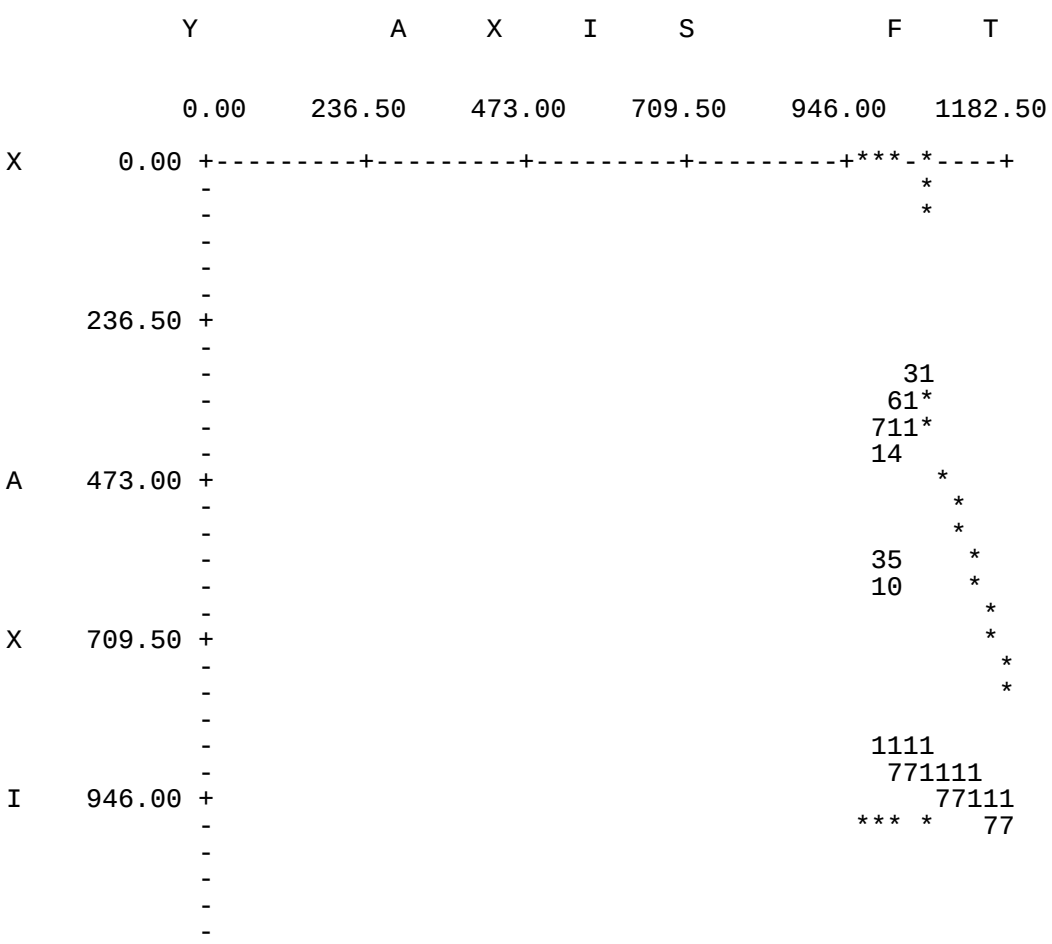
Failure Surface Specified By 38 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|---|---|---|
| 1 | 317.22 | 1065.00 |
| 2 | 321.29 | 1062.56 |
| 3 | 329.86 | 1057.41 |
| 4 | 338.43 | 1052.26 |
| 5 | 347.01 | 1047.11 |
| 6 | 355.58 | 1041.96 |
| 7 | 364.15 | 1036.80 |
| 8 | 372.72 | 1031.65 |
| 9 | 381.29 | 1026.50 |
| 10 | 389.86 | 1021.35 |
| 11 | 398.44 | 1016.20 |
| 12 | 402.40 | 1012.24 |
| 13 | 409.47 | 1005.17 |
| 14 | 614.48 | 1005.47 |
| 15 | 866.20 | 1010.62 |
| 16 | 870.84 | 1015.26 |
| 17 | 875.99 | 1023.83 |
| 18 | 881.15 | 1032.40 |

| | | |
|---|---|---|
| 19 | 886.30 | 1040.97 |
| 20 | 891.45 | 1049.54 |
| 21 | 896.60 | 1058.12 |
| 22 | 901.75 | 1066.69 |
| 23 | 906.74 | 1075.00 |
| 24 | 911.59 | 1083.75 |
| 25 | 916.44 | 1092.49 |
| 26 | 921.29 | 1101.24 |
| 27 | 926.13 | 1109.98 |
| 28 | 930.98 | 1118.73 |
| 29 | 935.83 | 1127.48 |
| 30 | 940.68 | 1136.22 |
| 31 | 945.53 | 1144.97 |
| 32 | 950.37 | 1153.72 |
| 33 | 955.22 | 1162.46 |
| 34 | 960.07 | 1171.21 |
| 35 | 964.92 | 1179.95 |
| 36 | 969.77 | 1188.70 |
| 37 | 974.61 | 1197.45 |
| 38 | 976.03 | 1200.00 |

*** 1.514 ***

1



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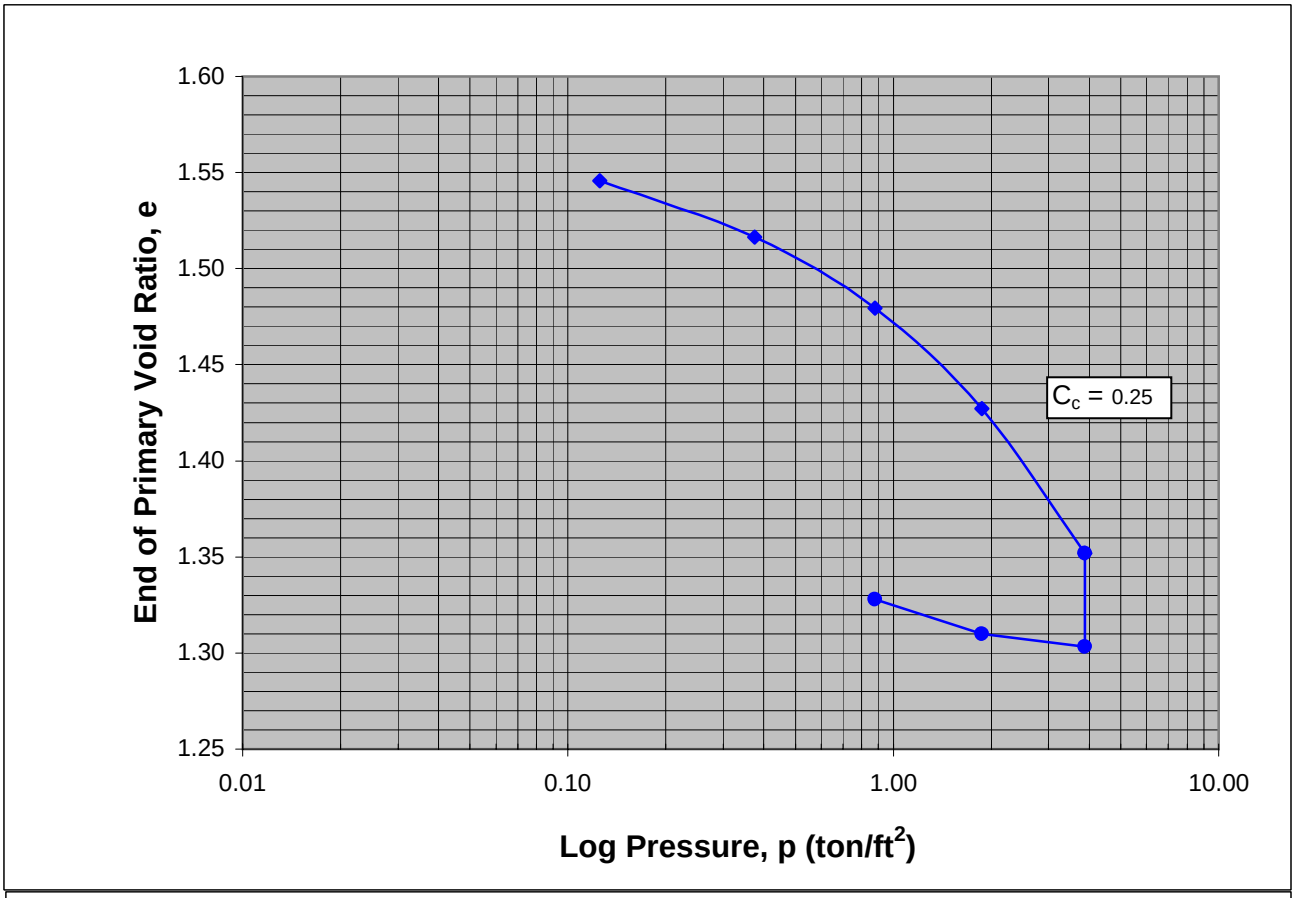
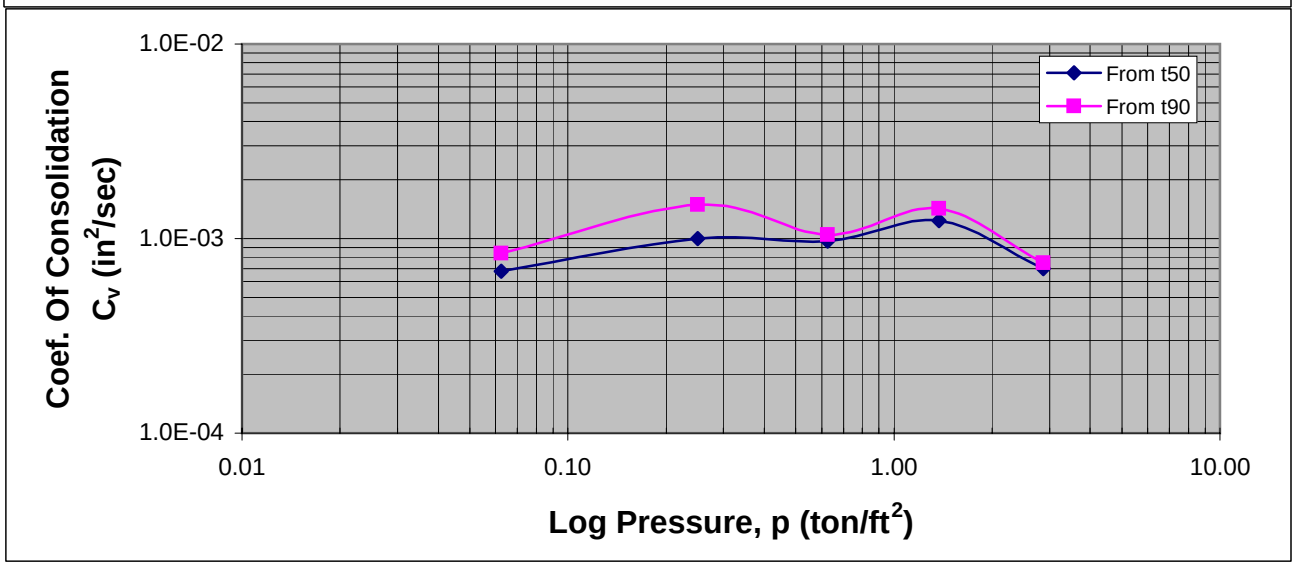
            -
            -
            -
            -
            -
    1419.00 +
            -
            -
            -
            -
            -
F   1655.50 +
            -
            -
            -
            -
            -
T   1892.00 +
```

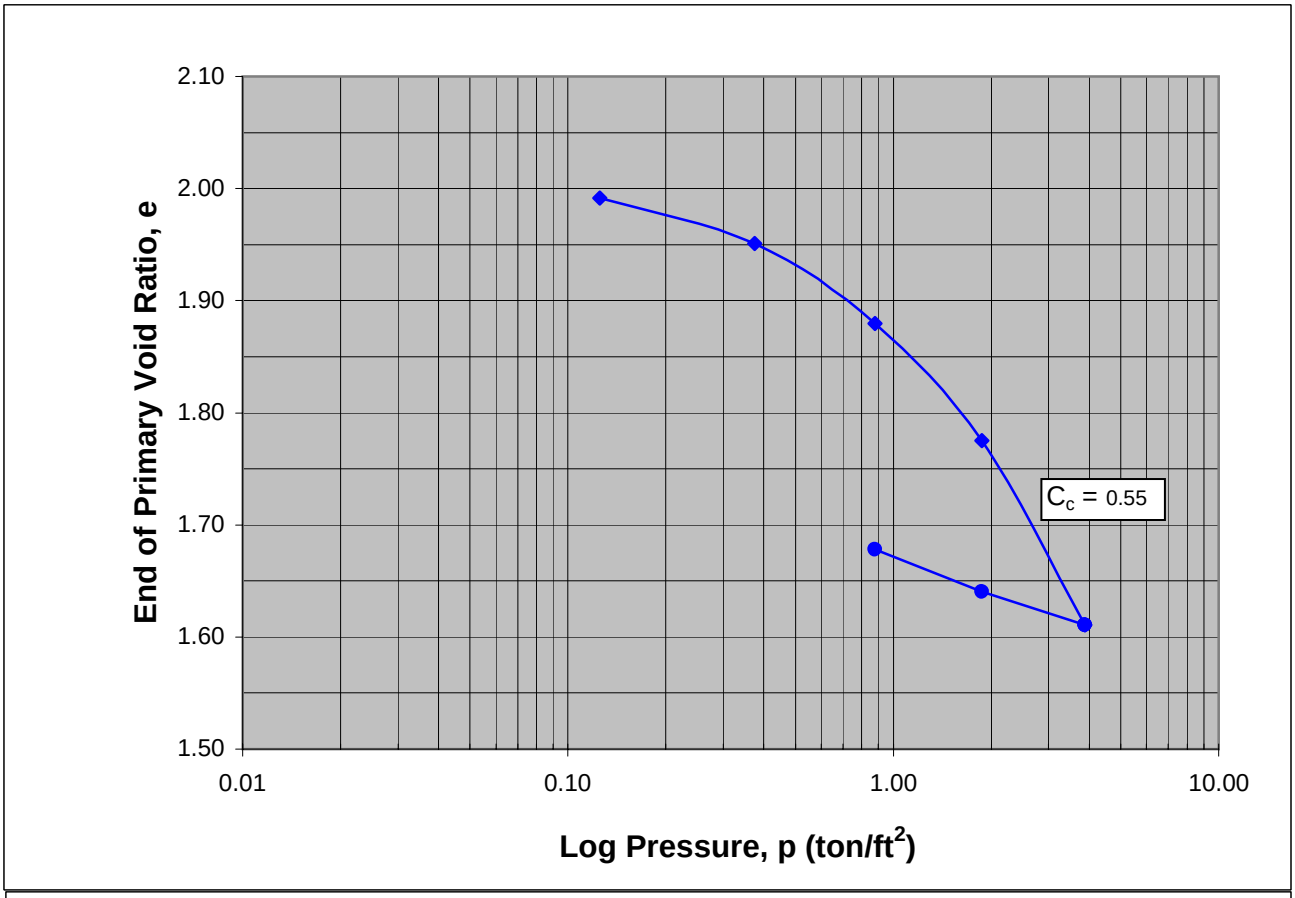
# ATTACHMENT D

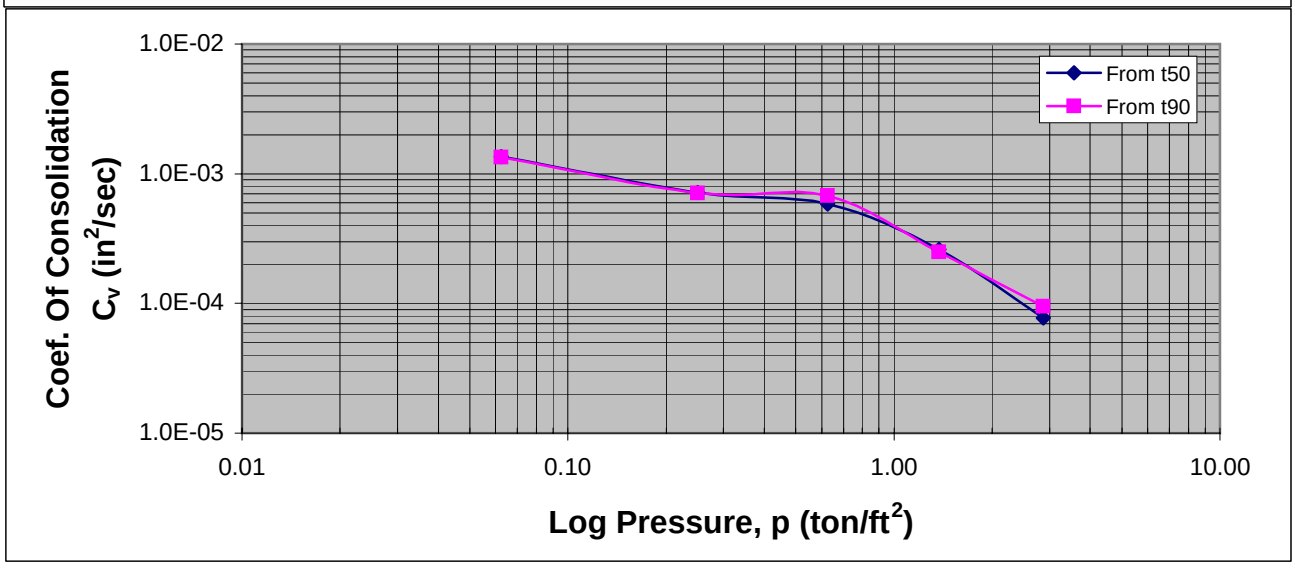
# CONSOLIDATION TEST RESULTS




**e - log p and $C_v$ - log p Relationship of Seminole Electric Landfill Sample B-1, 70' - 72.5**
**(Clayey Fine Sand, Wini = 52.9%, -200 = 43%, LL = 45, PI = 29)**




**e - log p and $C_v$ - log p Relationship of Seminole Electric Landfill Sample B-7, 50' - 52.5**
**(Clayey Fine Sand, Wini = 71.9%, -200 = 29%, LL = 45, PI = 17)**