Slope Stability Analyses

NTE Connecticut, LLC

Killingly Energy Center Project

Project No. 116572

September 2019

Rev 0

Slope Stability Analyses

prepared for

NTE Connecticut, LLC
Killingly Energy Center Project

Windham County, Connecticut

Project No. 116572

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prepared by

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1.0 Purpose:

This design package includes the evaluation of proposed slopes at the Killingly Energy Center site. It includes the evaluation of 3 representative slope configurations along the northern and northwestern edges of the site, consisting of the following sections:

Section B – 2:1 (H:V) slope
Section C – 10.5 ft tall Mechanically Stabilized Earth (MSE) retaining wall above a 2:1 (H:V) slope
Section D – 21 ft tall Mechanically Stabilized Earth (MSE) retaining wall above a 2:1 (H:V) slope.

The evaluation includes slope stability analyses for each configuration to determine the factor of safety against slope failure. For the slopes with MSE retaining walls, geogrid slope reinforcement was required to provide a minimum factor of safety of 1.5.

2.0 Grading:

Construction at the Killingly Energy Center site consists of the power plant and ancillary equipment (power island) on Tract One, North of Lake Road. The existing grade in the vicinity of the proposed slopes is on the order of El. 270 to 295 feet. The proposed finished grade in the plant site generally ranges from about El. 316 to El. 318 feet, requiring a maximum of 36 feet of fill. In order to provide adequate plan area for construction of the plant facilities, the slopes along the northern and northwestern sides of the site will be constructed to 2:1 (H:V), and where required, MSE retaining walls will be constructed at the top of the slopes in order to make finished grade. Initial site work includes stripping topsoil, forest litter and subsoil prior to placing new fill to raise the site to final grade. The natural ground continues to slope downward to the north and northwest to the Quinebaug River.

Compacted Granular Fill will be used to construct the slopes. Compacted granular fill will be produced by processing rock excavated for site grading with glacial till to meet the grain size requirements noted below. Compacted Granular Fill will be placed in maximum 12-in. thick lifts and compacted to at least 95 percent of the maximum dry density determined by ASTM D1557. Compacted Granular Fill will be free of organic material, environmental contaminants, snow, ice, frozen soil, or other unsuitable material, and be well graded within the following limits:

U.S. Standard Sieve Size	Percent Finer by Weight
6 in.	100
No. 4	30-80
No. 40	10-50
No. 200	0-8

The geotechnical report provides the following strength parameters for the proposed materials at the site. The slopes will conservatively be modelled with Compacted Granular Fill and Medium Dense Glacial Till, although Dense to Very Dense Glacial Till, Weathered Bedrock and Bedrock may be encountered at varying depths.

Soil/Rock Type	Comp. Granular Fill	Med. Dense Glacial Till	Dense to V. Dense Glacial Till	Weathered Bedrock	Bedrock
Total Unit Weight (pcf)	130	130	135	130	150
Effective Unit Weight (pcf) BGW	68	68	73	68	88
Friction Angle (degrees)	34 (2)	36	38	36	0
Shear Strength (psf)	0	0	0	0	--
Soil Modulus, k (pcf) AGW (1)	90	90	250	225	--
Soil Modulus, k (pcf) BGW (1)	60	60	140	125	--
Rock Mass Modulus, Em (psi)	--	--	--	--	375,000
RQD (%)	--	--	--	--	13
UCS (psi)	--	--	--	--	6,300
Ultimate Side Friction (tsf)	0.75	1	2	2	10
Ultimate End Bearing (tsf)	3	5	10	10	30

Notes:
1. AGW indicates above groundwater; BGW indicates below groundwater.
2. The friction angle for compacted granular fill may be increased to 36 degrees for materials compacted to at least 95% of the maximum dry density determined by ASTM D1557.

Excerpts from the Haley & Aldrich geotechnical report are included in Attachment 1.

As stated in Note 2, the friction angle for the compacted granular fill will be 36 degrees based on the required compaction effort. Although the layers are considered separately in the analyses, the material properties for both the compacted granular fill and the underlying medium dense glacial till are the same.

The granular nature of the materials requires that a long term steady state stability analysis be performed. No end of construction or rapid drawdown conditions are present. However, a seismic analysis is considered.

3.0 Proposed Sections:

Locations of Cross Sections and borings/test pits are shown on Sketch SKC004 and the Cross Sections are shown on Sketch SKC005. Section B is at a location where a 2:1 (H:V) slope fit within the site plan and no retaining wall is required. The maximum wall height of approximately 21 feet occurs along Wall 1 near Section D. An intermediate wall height of 10.5 feet occurs at Section C and will also be evaluated for stability. Wall profiles along the northern edge of the site are shown on Dwg CG406. A preliminary Slope Stabilization Detail is also shown on CG406 but after this analysis is performed results will supersede those shown. Applicable drawings are included in Attachment 2.

The design by the Subcontractor's Wall Design Engineer will consider the internal and external stability of the reinforced and retained soil mass of the MSE retaining walls, including sliding, overturning, bearing capacity and reinforcement pullout. Per specification, the minimum reinforcement length in the MSE wall reinforcement zone extends 0.7 H behind the wall. In order for the slope stability analyses to account for global stability, the MSE walls were modelled as soil with a friction angle of 36 degrees and an added 1,500 psf cohesion. This forces the critical failure surface to extend behind the walls, representing global stability.

Cross sections shown on Drawing SKC005:

- Section B represents a typical 2:1 (H:V) fill slope. The slope extends approximately 36 feet vertically and 72 feet horizontally where it ties into the natural ground and slopes more gently to the river. There is no retaining wall required at this location. Maximum fill thickness for this section is approximately 30 feet near the crest of the slope.

- Section C is located in an area with total fill thickness up to approximately 30 feet. This section includes an MSE wall, approximately 10.5 feet high, sitting at the top of a 2:1 (H:V) slope. The MSE wall height in this area is representative of average conditions along the top of the north slope. The 2:1 (H:V) slope below the base of the wall extends approximately 54 feet horizontally and 27 feet vertically. This section cuts through a corner of a detention basin at the base of the slope and a short 3:1 (H:V) berm. It is assumed that this basin is full of water and establishes the piezometric line in this area. From that point, the ground falls away at a flatter slope down to the river.

  The reinforced zone of the MSE retaining wall is assumed to be the minimum length allowed by the specifications, which is 0.7 x H = 7 feet. The critical failure surface is forced to pass behind the reinforced zone and facing of the MSE wall in the program by adding 1,500 psf cohesion to the strength of the MSE reinforced zone.

- Section D is located in an area with total fill thickness up to approximately 37 feet. This section includes an MSE wall, approximately 21 feet high, sitting at the top of a 2:1 (H:V) slope. The MSE wall height in this area is representative of the maximum wall height along the top of the north slope. The 2:1 (H:V) slope below the base of the wall extends approximately 32 feet horizontally and 16 feet vertically where it flattens out and ties into the natural ground line.

  The reinforced zone of the MSE retaining wall is assumed to be the minimum length allowed by the specifications, which is 0.7 x H = 14 feet. The critical failure surface is forced to pass behind the reinforced zone and facing of the MSE wall in the program by adding 1,500 psf cohesion to the strength of the MSE reinforced zone.

The nearest borings and/or test pits to each cross section were used to estimate groundwater levels for each cross section. Borings and/or test pits near the upper areas of the slopes generally showed groundwater at Elevations ranging from 275 to 290 feet. Borings and/or test pits near the toe of the slopes generally indicated relatively shallow groundwater at Elevations ranging from about 270 to 280 feet. The ground surface was shown on the cross sections, delineating the compacted granular fill from the in situ glacial till, although the strength and unit weight are the same. Again, the forest litter and subsoil will be stripped prior to placement of the compacted granular fill. Subsoil was modelled beyond the toe of slope at Section B where no fill is to be placed.

4.0 Stability Analyses:

A minimum factor of safety of 1.5 is required for long term steady state conditions and 1.1 for the seismic condition.

A 250 psf surcharge is considered beginning at the top of the slope and extending 30 feet back from the crest. This surcharge is considered to model construction loading and traffic along the adjacent roadway.

The UTEXAS 4 computer program was used to evaluate the factor of safety against slope instability for the representative cross sections. The program uses Spencer's Method of slices to calculate the factor of safety on multiple circular shear surfaces. Spencer's Method fully satisfies static equilibrium including both vertical and horizontal force equilibrium and moment equilibrium for each slice. The user inputs a starting circle and the program uses that starting point to establish a search grid for the most critical shear surface. The search mode is begun by inputting the coordinates for the center of a circle and either a point for all circles to pass through, a radius for all circles to use or a line for all circles to be tangent with. The program establishes a grid for circle centers and checks the factor of safety for each of the circles using the initial mode (point, radius or tangent line). The program continues with a new grid each time a minimum factor of safety is found, and after finding the critical circle for the starting mode, continues the search with each mode until an overall critical shear surface is found.

Seismic conditions were modelled using a pseudo-static analysis. This analysis conservatively applies a constant horizontal force to each portion of the material above the critical shear surface equal to its weight times the ground acceleration. For this analysis, the peak ground acceleration adjusted for Site Class D (pga_m=0.136) was, again conservatively, used for the seismic coefficient. The output from the seismic hazard tool used to determine the pga_m is included in Attachment 3.

In order to improve the overall stability of the 2:1 (H:V) slopes supporting the new MSE retaining walls, slope reinforcement is required. For this design, the Mirafi 5XT geogrid was selected as the reinforcement. Calculations for determining the Long Term Design Strength (LTDS) and pullout capacity are included in Attachment 4. A line of points with longitudinal forces equal to the calculated pullout capacity are entered into UTEXAS 4 for each line of reinforcement and the program distributes the correct forces between slices to determine the factor of safety against slope failure for a reinforced slope.

5.0 Results:

The factor of safety against slope failure for Section B is 1.5. The minimum factor of safety for a slope with granular material (friction angle only, no cohesion) always tends to be a very shallow failure surface indicative of an infinite slope. In order to evaluate a deeper failure surface, the minimum weight of material considered in this analysis was 5,000 lbs. This prevents the program from finding a very thin, failure surface, and in this case the critical failure surface is still only on the order of 2 feet deep. Infinite slope calculations are included for comparison in the results for Section B and are included in Attachment 5, along with figures showing the input values, resulting critical shear surface, and the UTEXAS4 output.

The factor of safety against slope failure for Section C without geogrid reinforcement is approximately 1.2, less than the design factor of safety of 1.5. In order to increase the factor of safety of the slope beneath the wall, geogrid reinforcement is incorporated beginning at the base of the wall and continuing below the wall at 2 feet vertical intervals until a satisfactory factor of safety (1.5) is achieved. In order to meet the factor of safety requirement, 4 layers of Mirafi 5XT geogrid, spaced 2 feet vertically beginning at the base of the wall and extending 20 feet into the slope are required. The results for Section C are included in Attachment 6, including figures showing the input values, resulting critical shear surface, and the UTEXAS4 output.

The factor of safety against slope failure for Section D without geogrid reinforcement is approximately 1.2, less than the design factor of safety of 1.5. In order to increase the factor of safety of the slope beneath the wall, geogrid reinforcement is incorporated beginning at the base of the wall and continuing

below the wall at 2 feet vertical intervals until a satisfactory factor of safety (1.5) is achieved. In order to meet the factor of safety requirement, 5 layers of Mirafi 5XT geogrid, spaced 2 feet vertically beginning at the base of the wall and extending 30 feet into the slope is required. The results for Section D are included in Attachment 7, including figures showing the input values, resulting critical shear surface, and the UTEXAS4 output.

A summary of the results of the stability analyses are shown in the following table:

SECTION	MSE Wall Height	Geogrid Reinforcement	Static Factor of Safety	Seismic Factor of Safety
B	None	None	1.5	1.1
C	10.5 feet	None	1.2	
C	10.5 feet	4 layers @2 ft; L=20 ft	1.6	1.2
D	21	None	1.2	
D	21	5 layers @2 ft; L=30 ft	1.5	1.2

As indicated in the above table, the proposed configurations are all stable (FoS greater than 1.0) without additional reinforcement. The 2:1 (H:V) slope at Section B meets the required minimum factor of safety (1.5) but Sections C and D fall short of the minimum required. In order to meet the proposed factor of safety for the sections with MSE retaining walls above the 2:1 (H:V) slopes, geogrid reinforcement is required within the underlying 2:1 (H:V) slopes for Sections C and D as shown on the attached sketches.

The UTEXAS4 output includes a Caution for several instances:

***** CAUTION ***** Some of the Forces Between Slices Act at Points
Above the Surface of the Slope or Below the Shear Surface -
Either a Tension Crack may be Needed or the SOLUTION MAY NOT
BE A VALID SOLUTION

For the majority of these cases (all non-seismic cases), the side force for the slice that triggers the caution message is zero, so clearly this caution can be ignored.

For the seismic cases, where the side force was found to be slightly above or below the slice location, the side forces are quite small. The recommendation to add a tension crack was not successful in bringing the side forces within the prescribed limits, but actually resulted in a slightly higher factor of safety than the analysis without a tension crack. The small discrepancy in the location of the side forces for the bottom slices (near the exit point) are not considered significant and the results are considered to be valid.

Attachment 1

Excerpts from Haley & Aldrich Geotechnical Report

portion and wetlands in the southern portion. Grades slope down from about El. 350 in the southwestern portion of the tract to about El. 306 in the northeastern portion.

1.5 PROPOSED CONSTRUCTION

The power plant and ancillary equipment (power island) are planned on Tract One. The finished grade will generally range from about El. 316 to El. 318, except at the plant switchyard (Area 23), where proposed finish grade is about El. 322, and at the administration/warehouse building (Area 12), air cooled heat exchanger (Area 17), and fuel gas yard (Area 22) where proposed finished grade ranges from about El. 318 to El. 320. Cuts up to 26 ft are planned in the southern portion of the tract, and fills up to 33 ft are planned in the northern and western portion of the tract. Cuts up to 5 ft are anticipated in the proposed stormwater management areas along the western edge of the site near the wetlands, where the proposed site grades slope down from southeast to northwest from El. 318 to El. 274, at an approximately 2.5H:1V slope. Fills up to 24 ft are planned along the south portion of the tract where proposed grades will slope from approximately El. 320 to 356 at an approximately 2.6H:1V slope.

The Tract Two area will be regraded to proposed finish grades ranging from about El. 310 to El. 322, from north to south. A 290-ft long, L-shaped retaining wall with a maximum height of about 25 ft is planned along the southwestern portion. Two stormwater management areas are planned to the north, where proposed elevations slope down from El. 310 to El. 304 from south to north at an approximately 2H:1V slope.

Proposed new structures and site development layout are shown on Figure 2.

1.6 LIMITATIONS

This report has been prepared for specific application to the project as it is planned at this time for the exclusive use of the project design team in connection with the geotechnical aspects of the project. In the event that changes in the nature, design, or location of structures are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing. The analyses and recommendations are based in part upon data obtained from referenced explorations. The nature and extent of variations between the explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

The scope of our work did not include an assessment of the presence of oil or hazardous materials at the site, the characterization of excavated soil or groundwater that may be generated as a result of planned construction activity, or evaluation of the need to prevent migration of contaminated vapors into the building.

The planned construction will be supported on or in the soil or rock. Recommendations presented in this report for foundation and floor drainage, moisture protection, and waterproofing address only the conventional geotechnical engineering related aspects of design and construction and are not intended to provide an environment that would prohibit growth of mold or other biological pollutants. Our work scope did not include the development of criteria or procedures to minimize the risk of mold or other biological pollutant growth in or near structures. Additionally, evaluation of dynamic loads on foundations was beyond the scope of our services.

4.2.6 Structures Bearing on Multiple Subgrades

Structures which bear on more than one subgrade material type should be designed using the lowest applicable bearing pressure to reduce the potential for differential settlement. Provide cushions of ¾-in. Crushed Stone at foundation transitions from bedrock to soil support as described above.

4.2.7 Foundation Concrete

Results of recent sulfate testing on soil (water soluble sulfate concentrations less than 48 mg/kg) indicate that sulfate resistant concrete is not required for concrete features (footings/foundations, ducts, etc.) in contact with the glacial till stratum.

4.2.8 Alternate Foundation Type

It is understood that some structures may be supported on drilled shaft foundations to improve resistance to lateral loading and overturning moments. The table shown below provides parameters for the design of drilled shaft foundations, including ultimate end bearing and side friction values for design of axial loading, and recommended criteria for determination of lateral shaft capacity (using LPILE). Soil parameters include soil type, unit weight, friction angle, and modulus for each soil stratum encountered. Rock parameters include RQD, UCS, rock mass modulus, ultimate unit side resistance, and ultimate unit end bearing pressure. We recommend using a "strong rock" model for LPILE analysis, thus coefficient Krm (used for modeling "soft rock") is not included in this report. Krm shall be determined by the LPILE designer if they decide to use an alternate modeling method.

Soil/Rock Type	Comp. Granular Fill	Med. Dense Glacial Till	Dense to V. Dense Glacial Till	Weathered Bedrock	Bedrock
Total Unit Weight (pcf)	130	130	135	130	150
Effective Unit Weight (pcf) BGW	68	68	73	68	88
Friction Angle (degrees)	34 [2]	36	38	36	0
Shear Strength (psf)	0	0	0	0	--
Soil Modulus, k (pcf) AGW [1]	90	90	250	225	--
Soil Modulus, k (pcf) BGW [1]	60	60	140	125	--
Rock Mass Modulus, Em (psi)	--	--	--	--	375,000
RQD (%)	--	--	--	--	13
UCS (psi)	--	--	--	--	6,300
Ultimate Side Friction (tsf)	0.75	1	2	2	10
Ultimate End Bearing (tsf)	3	5	10	10	30

Notes:

1. AGW indicates above groundwater; BGW indicates below groundwater.
2. The friction angle for compacted granular fill may be increased to 36 degrees for materials compacted to at least 95 percent of the maximum dry density determined by ASTM D1557.

Note the UCS values on the above table are for use as input for the LPILE program for lateral design only, and substantially higher strengths may be encountered during excavation and construction of drilled shafts.

5. Site Development Recommendations

5.1 RETAINING WALLS

Foundation design criteria apply to the site retaining walls, with the exception that walls should be designed with no passive resistance.

It is anticipated that bedrock will be encountered in the cut for the proposed retaining wall in the southwest corner of Tract Two. If so, a rock slope may be feasible for the lower portion of the retaining wall. Due to limited space behind the wall near the cemetery, a permanent soil nail wall appears feasible in soil and weathered bedrock.

Mechanically stabilized earth walls generally appear feasible for the retaining walls planned for fill areas on the northwestern corner of the site.

We recommend that swales be constructed behind retaining walls using low permeability materials to divert surface water runoff laterally away from the walls. Storm water structures and pipes at the tops of retaining walls should be watertight (such as fused HDPE) to prevent storm water from infiltrating behind walls.

5.2 SLOPES

Cut slopes up to 26 ft and fill slopes up to about 33 ft are proposed. Proposed site grading shown on Figure 2 indicates slopes constructed at 2H:1V or flatter.

Permanent cut and fill slopes in soil or highly weathered bedrock should be 2H:1V, or flatter (particularly for north facing slopes). Seepage blankets (minimum 2 ft thickness of 2-in. size Crushed Stone) should be placed over portions of cut slopes in soil or highly weathered rock extending below groundwater. Remaining slope areas should be vegetated when possible for erosion protection.

Permanent bedrock cut slopes should be no steeper than 1H:6V (although current plans show rock cuts at 2H:1V). Rock reinforcement (grouted steel dowels) may be required on portions of rock cuts. The need for rock reinforcement should be determined during construction. Steep rock cuts of 5 ft or higher should have a minimum 10 ft. wide fall zone at the bottom.

Drainage swales are recommended at the bases of cut slopes.

We recommend that storm water structures and pipes at the tops of fill slopes be watertight (such as fused HDPE) to prevent storm water from infiltrating into the earth slopes.

5.3 IMPOUNDMENT EARTH STRUCTURES

Earth impoundments are planned for stormwater management. Slopes should be 3H:1V or flatter for wet slopes. Steeper wet slopes (up to 2H:1V) should be protected with a minimum 12-in. thickness of 2-in. Crushed Stone. The tops of impoundments should be a minimum of 5 ft wide, or wider if vehicular access is needed. Impoundments may be constructed using low-permeable fill. Penetrations through earth structures should be sealed with clay.

6.4 BACKFILL MATERIALS

6.4.1 Compacted Granular Fill

Compacted Granular Fill is recommended for the following areas:

- to replace unsuitable soil under footings, floor slabs, and mats in fill areas
- as grade raise fill beneath foundations and floor slabs
- to support floor slabs in fill areas
- to provide drainage against foundation walls or retaining walls
- where fill is placed to construct north facing slopes.

Compacted Granular Fill should be placed in maximum 12-in. thick lifts and compacted to at least 95 percent of the maximum dry density determined by ASTM D1557. In confined areas, the lift thickness should be reduced to 6-in. maximum. Compaction equipment in confined areas may consist of hand-guided vibratory equipment or mechanical tampers.

Compacted Granular Fill should consist of sandy gravel or gravelly sand, free of organic material, environmental contaminants, snow, ice, frozen soil, or other unsuitable material, and be well-graded within the following limits:

U.S. Standard Sieve Size	Percent Finer by Weight
6 in. (1)	100
No. 4	30-80
No. 40	10-50
No. 200	0-8

(1) Use a maximum 3-in. size for fill placed within 6 in. of concrete slabs or footings, and within 3 ft of foundation walls.

6.4.2 ¾-in. Size Crushed Stone

Crushed stone (3/4-in. size) is recommended for the following areas:

- Underdrains at mat foundations, equipment pads, tanks, and floor slabs in cut areas
- surrounding the drain pipes for foundation walls and retaining walls
- surrounding the drain pipes for pavement underdrains
- site underdrains
- footing bearing surface protection (minimum 6 in. thick on geotextile filter).

Crushed stone for these uses should consist of No. 6 crushed stone (¾-in. size) in accordance with Connecticut Department of Transportation Form 817, M.01.01.

Crushed stone should be separated from surrounding soil using a geotextile filter.

6.4.9 Compaction

Recommended compaction requirements are as follow:

Location	Minimum Compaction Requirements
Beneath and around footings, under slabs	95%
Fill slopes and under site retaining walls	95%
Parking, roadways	92% up to 3 ft below finished grade 95% in the upper 3 ft
Landscaped areas	90%

Minimum compaction requirements refer to percentages of the maximum dry density determined in accordance with ASTM D1557C.

6.5 *USE OF ON-SITE EXCAVATED SOIL AND ROCK*

6.5.1 Soils

Excavation will be in topsoil, subsoil, potentially fill soils locally, glacial till, or bedrock. Topsoil may be reused as topsoil, subject to meeting nutrient requirements, and as Common Fill in landscaped areas.

The subsoil is not suitable for re-use as Compacted Granular Fill due to its high silt content. Subsoil may be reused in landscaped areas as Common Fill or where at least 3 ft below pavements.

Fill, if encountered, will need to be evaluated on a case by case basis for reuse.

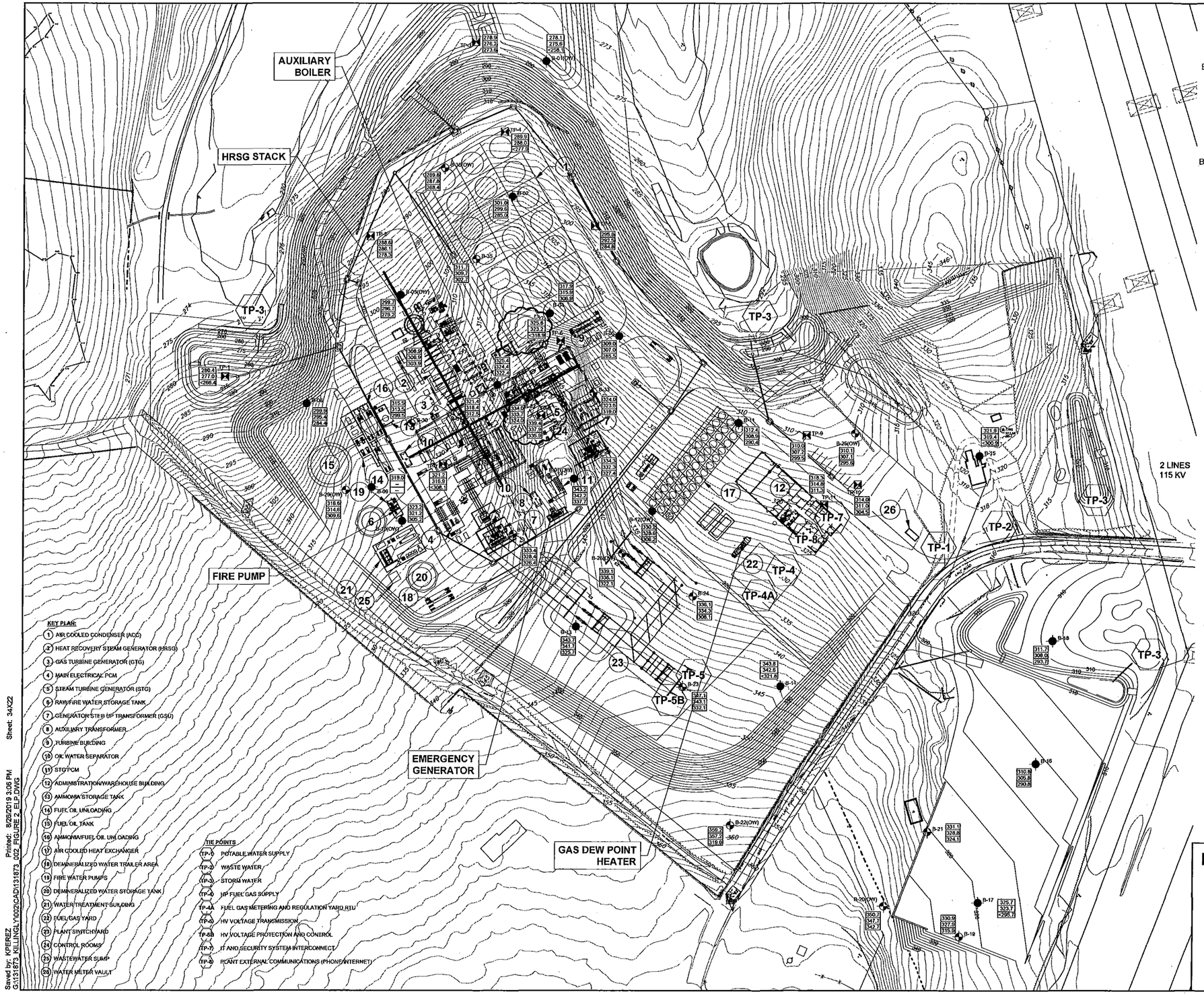
Although the Glacial Till may not meet the specifications for Compacted Granular Fill, it may be technically feasible from a geotechnical perspective to use it as such during favorable weather and where free-draining material is not required, provided it can be placed to the specified degree of compaction and cobbles and boulders are removed prior to reuse. The Glacial Till will be difficult to impossible to reuse if it becomes wet. As such, careful moisture control will be required to achieve satisfactory compaction. Wet materials will need to be dried, blended with other materials, or amended with lime stabilization prior to placement and compaction, which can result in delays particularly during relatively cold or wet weather. Rainfall or melting snow can readily saturate stockpiled soils. Providing drainage away from and/or covering a stockpile can help limit this potential problem. The Glacial Till will require considerable drying time if left in an unprotected stockpile for an extended period of time. Screening and removal of oversized materials (i.e., 2/3 the lift thickness) will be necessary. Where Glacial Till is placed in fills exceeding 5 ft, the material will require placement dry of its optimum moisture content to limit the potential for post-placement settlement.

TABLE I
SUMMARY OF SUBSURFACE EXPLORATIONS
KILLINGLY ENERGY CENTER
KILLINGLY, CONNECTICUT

EXPLORATION NO.		APPROX. GROUND SURFACE ELEVATION (FT)	TOTAL DEPTH (FT)	THICKNESS OF STRATA (FT)				DEPTH TO BEDROCK (FT)		WATER LEVEL (FT)		
				FOREST MAT / TOPSOIL	SUBSOIL	GLACIAL TILL	WEATHERED BEDROCK	DEPTH[2]	ELEV.[2]	DEPTH	ELEV.	DATE
2019 Test Borings												
B-19	(R)	330.9	20.2	0.5	2.5	12.0	5.2	15.0	315.9	--	--	
B-20(OW)	(C)	350.7	61.0	0.3	2.7	5.0	--	8.0	342.7	--	--	7/2/2019
B-21	(R)	331.1	15.4	0.3	2.0	4.7	8.4	7.0	324.1	6.0	325.1	6/28/2019
B-22(OW)	(R)	359.2	40.2	0.5	1.5	38.2	--	40.2	319.0	18.8	340.4	7/2/2019
B-23	(C)	347.1	30.0	0.5	3.5	13.0	2.0	15.0	332.1	--	--	
B-24	(C)	336.1	41.0	1.8	2.2	26.0	6.0	30.0	306.1	12.4	323.7	6/18/2019
B-25(OW)	(R)	310.1	14.5	0.5	2.5	11.5	--	14.5	295.6	--	--	7/2/2019
B-26(OW)	(C)	339.1	27.0	0.5	2.5	14.0	--	17.0	322.1	9.0	330.1	7/2/2019
B-27	(C)	333.4	22.0	0.5	4.5	2.0	--	7.0	326.4	--	--	
B-28	(C)	334.3	23.0	0.3	1.7	4.9	1.1	6.9	327.4	4.8	329.5	6/19/2019
B-29(OW)	(R)	316.6	8.0	0.3	1.7	5.0	1.0	7.0	309.6	--	--	7/2/2019
B-30	(R)	315.5	16.0	0.2	1.8	14.0	--	16.0	299.5	--	--	
B-31	(C)	321.4	30.0	0.3	2.7	5.9	1.1	8.9	312.5	5.0	316.4	6/26/2019
B-32	(C)	334.0	33.0	0.3	1.7	8.0	3.0	10.0	324.0	--	--	
B-33	(C)	324.0	10.0	0.5	1.5	3.0	1.2	3.8	320.2	--	--	
B-34	(R)	308.9	5.0	0.3	1.7	3.0	--	5.0	303.9	--	--	
B-35	(R)	311.7	9.4	0.3	1.7	7.4	0.4	9.0	302.7	--	--	
B-36(OW)	(R)	289.8	21.4	0.3	1.7	19.4	--	21.4	268.4	13.6	276.2	7/2/2019
2019 Test Pits												
TP-1		280.4	12.0	0.8	2.6	>8.6	--	--	<268.4	10.5	269.9	6/14/2019
TP-2		288.6	12.0	0.8	1.7	7.8	1.7	10.3	278.3	--	--	
TP-3	(R)	278.9	10.7	1.0	1.7	2.6	5.4	5.3	273.6	--	--	
TP-4		289.9	12.0	0.3	1.6	>10.1		--	<277.9	--	--	
TP-5	(R)	295.8	11.0	1.0	2.3	7.7	--	11.0	284.8	10.8	285.0	6/13/2019
TP-6	(R)	325.6	6.7	0.3	2.1	4.3	--	6.7	<308.1	--	--	
TP-7		320.1	12.0	0.7	3.6	>7.7	--	--	<309.2	--	--	
TP-8	(R)	339.4	3.5	0.5	1.0	2.0	--	3.5	335.9	--	--	
TP-9	(R)	310.0	10.5	1.0	1.8	7.7	--	10.5	299.5	--	--	
TP-10	(R)	314.0	9.5	1.3	1.7	6.5	--	9.5	304.5	--	--	
TP-11	(R)	318.3	7.5	1.0	2.5	3.5	0.5	7.0	311.3	--	--	
Previous Test Borings												
B-01(OW)		278.1	20.0	1.5	1.0	>17.5	--	--	< 258.1	7.3	270.9	5/27/2016
B-02		301.0	21.0	0.8	0.6	14.6	--	16.0	285.0	11.0	290.0	5/27/2016
B-03(OW)		299.7	26.0	0.4	2.6	17.5	--	20.5	279.2	20.3	279.4	5/27/2016
B-04		317.9	16.0	0.5	1.5	9.0	--	11.0	306.9	8.4	309.5	5/27/2016
B-05		309.0	28.5	0.5	1.5	21.5	--	23.5	285.5	8.0	301.0	5/27/2016
B-06		325.4	8.0	0.5	0.5	2.0	--	3.0	322.4	--	--	
B-07(OW)		343.2	10.5	0.4	0.6	4.5	--	5.5	337.7	--	--	
B-08		299.9	20.5	0.7	3.8	11.0	--	15.5	284.4	--	--	
B-09		319.0	--	--	--	--	--	--	--	--	--	
B-10(OW)		323.2	22.4	0.5	1.5	13.0	3.0	15.0	308.2	14.6	308.6	5/27/2016
B-11		312.4	28.0	1.5	2.0	18.5	--	22.0	290.4	NM	NM	
B-12(OW)		330.2	29.0	0.6	1.0	22.4	--	24.0	306.2	9.0	321.2	5/31/2016
B-13		343.7	28.0	0.6	1.4	16.0	--	18.0	325.7	NM	NM	
B-14		343.8	22.0	0.7	0.5	17.8	>3.0	19.0	324.8	18.3	325.5	5/27/2016
B-15		321.9	21.0	1.2	1.3	>18.5	--	--	<300.9	--	--	
B-16		310.8	25.0	0.6	4.4	15.0	--	20.0	290.8	4.5	306.3	5/27/2016
B-17		325.7	30.0	2.0	--	>28.0	--	--	<295.7	--	--	--
B-18		311.7	30.0	0.7	3.0	14.3	--	18.0	293.7	7.4	304.3	5/24/2016

NOTES:

1. ">" indicates greater than.
   "--" indicates not encountered or not known.
   "(C)" indicates bedrock coring performed.
   "(R)" indicates boring terminated at practical refusal of augers or split spoon sampler, although deeper drilling may have been possible.
   "(NM)" indicates "not measured".
2. Bedrock depth and elevation includes weathered bedrock.
3. Strata thicknesses were interpreted from the boring logs, and actual strata change levels may vary.
4. Elevations of explorations are in feet and reference North American Vertical Datum of 1988 (NAVD 88).
5. Refer to test boring logs for detailed soil descriptions.
6. Groundwater levels in test borings (without observation wells) were measured shortly after drilling and may not reflect stabilized groundwater.



KEY PLAN:

1. AIR COOLED CONDENSER (ACC)
2. HEAT RECOVERY STEAM GENERATOR (HRSG)
3. GAS TURBINE GENERATOR (GTG)
4. MAIN ELECTRICAL PCM
5. STEAM TURBINE GENERATOR (STG)
6. RAW/FIRE WATER STORAGE TANK
7. GENERATOR STEP UP TRANSFORMER (GSU)
8. AUXILIARY TRANSFORMER
9. TURBINE BUILDING
10. OIL WATER SEPARATOR
11. STG PCM
12. ADMINISTRATION/WAREHOUSE BUILDING
13. AMMONIA STORAGE TANK
14. FUEL OIL UNLOADING
15. FUEL OIL TANK
16. AMMONIA/FUEL OIL UNLOADING
17. AIR COOLED HEAT EXCHANGER
18. DEMINERALIZED WATER TRAILER AREA
19. FIRE WATER PUMPS
20. DEMINERALIZED WATER STORAGE TANK
21. WATER TREATMENT BUILDING
22. FUEL GAS YARD
23. PLANT SWITCHYARD
24. CONTROL ROOMS
25. WASTEWATER SUMP
26. WATER METER VAULT

TIE POINTS

- (TP-1) POTABLE WATER SUPPLY
- (TP-2) WASTE WATER
- (TP-3) STORM WATER
- (TP-4) HP FUEL GAS SUPPLY
- (TP-4A) FUEL GAS METERING AND REGULATION YARD RTU
- (TP-5) HV VOLTAGE TRANSMISSION
- (TP-5B) HV VOLTAGE PROTECTION AND CONTROL
- (TP-7) IT AND SECURITY SYSTEM INTERCONNECT
- (TP-8) PLANT EXTERNAL COMMUNICATIONS (PHONE/INTERNET)

LEGEND

- B-20(OW) — DESIGNATION AND LOCATION OF TEST BORING DRILLED FOR HALEY & ALDRICH BY NEW ENGLAND BORING CONTRACTORS ON 17 JUNE THROUGH 2 JULY 2019.
- TP1 — DESIGNATION AND LOCATION OF TEST PIT EXCAVATED FOR HALEY & ALDRICH BY NEW ENGLAND BORING CONTRACTORS ON 13 THROUGH 14 JUNE 2019.
- B-01(OW) — DESIGNATION AND LOCATION OF TEST BORING DRILLED FOR HALEY & ALDRICH BY NYEG DRILLING LLC ON 23 MAY THROUGH 14 JUNE 2016.
- SHEAR WAVE VELOCITY TRANSECTS
- APPROXIMATE LOCATION OF BOULDER / BEDROCK OUTCROPS
- "(OW)" DENOTES OBSERVATION WELL
- 321.9 — GROUND SURFACE EL.
- 319.4 — TOP OF GLACIAL TILL EL.
- <300.9 — TOP OF BEDROCK EL.

NOTES

1. BASE PLAN TAKEN FROM CAD DRAWING TITLED "TOPOGRAPHIC SURVEY OF LAND OFF LAKE ROAD, KILLINGLY, CT", PREPARED BY NORTHERN SURVEY CONSULTING LLC, DATED 17 JULY 2019.
2. PROPOSED CONSTRUCTION TAKEN FROM DRAWING NO. EX-CS-03-B TITLED "PROPOSED SITE ARRANGEMENT", PREPARED BY BURNS & MCDONNELL, DATED 12 JULY 2019.
3. ELEVATIONS ARE IN FEET AND REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

N

0 80 160 320
SCALE IN FEET

HALEY ALDRICH

KILLINGLY ENERGY CENTER
KILLINGLY, CONNECTICUT

SUBSURFACE EXPLORATION LOCATION PLAN

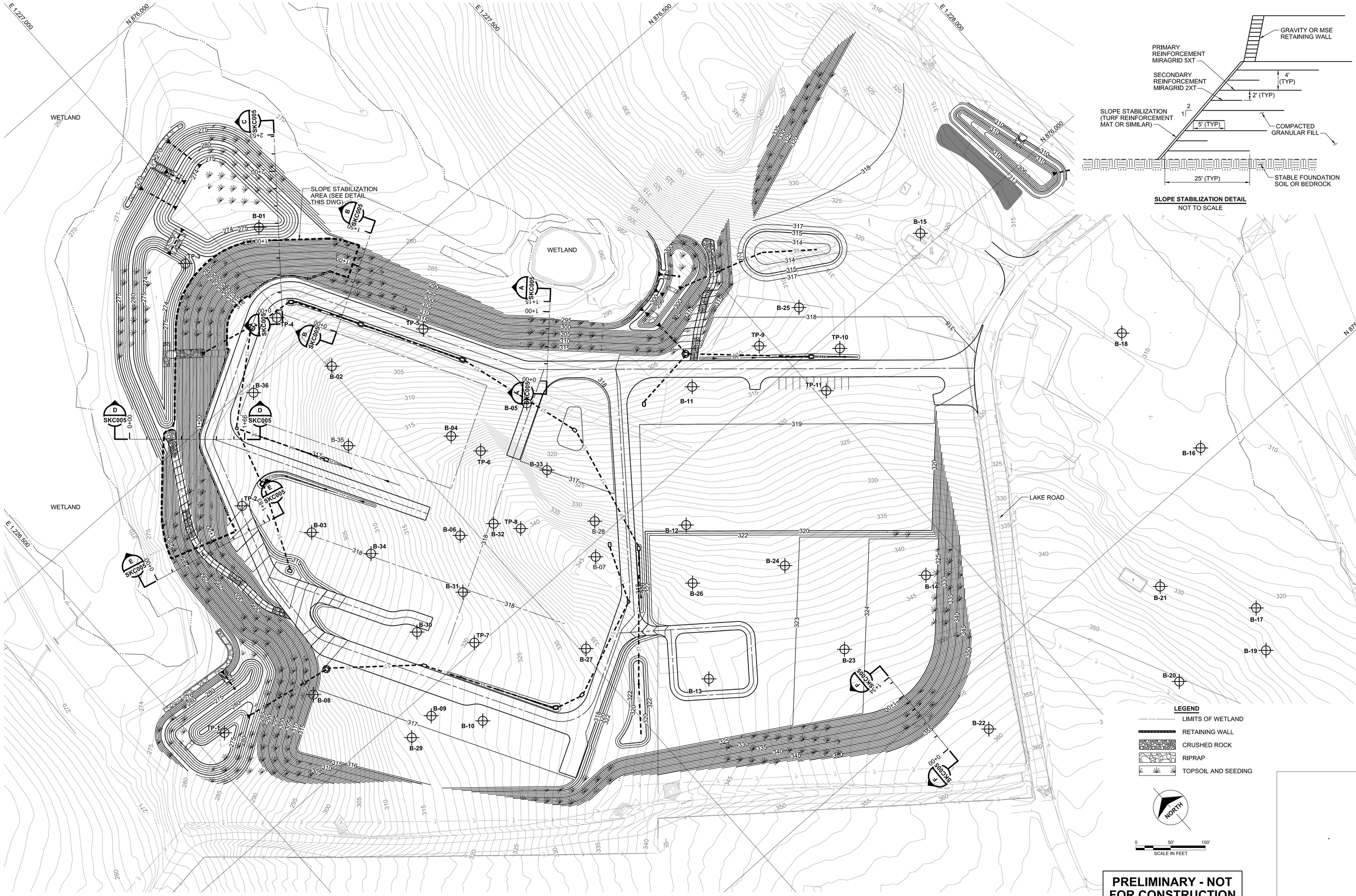
SCALE: AS SHOWN
AUGUST 2019

FIGURE 2

Saved by: KFEREZ
G:\131873_KILLINGLY\002\CAD\131873_002_FIGURE 2_ELP.DWG
Printed: 8/26/2019 3:06 PM
Sheet: 34X22

Attachment 2

Drawings



PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
A				WORKING

no.	date	by	ckd	description

BURNS McDONNELL

9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400

designed: K. ENGHOLM
detailed: S. NICHOLS

KILLINGLY ENERGY CENTER
1X1 COMBINED CYCLE - MHPS
WINDHAM COUNTY, CONNECTICUT

NTE CONNECTICUT, LLC
GEOTECH SECTIONS PLAN

project: 116572
contract: -
drawing: SKC004 — rev. A
sheet 1 of 1 sheets
file 116572_SKC004.dgn

8/21/2019 sknichols

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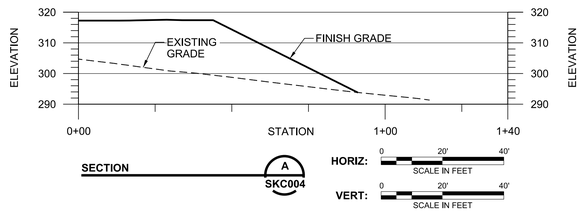
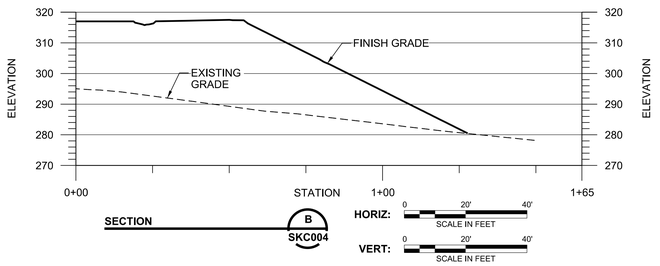
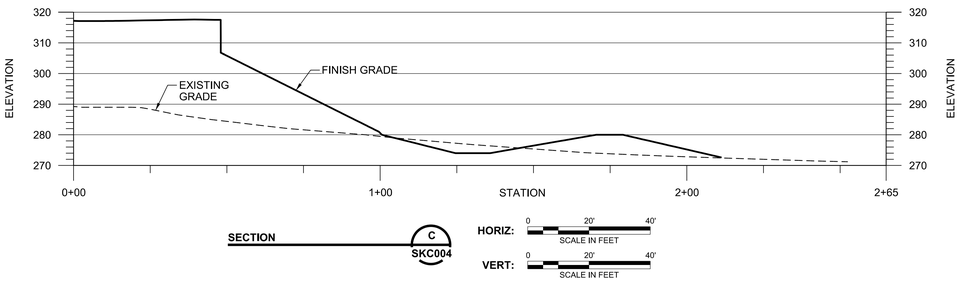
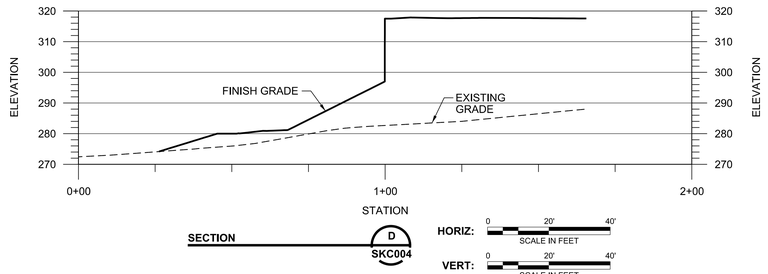
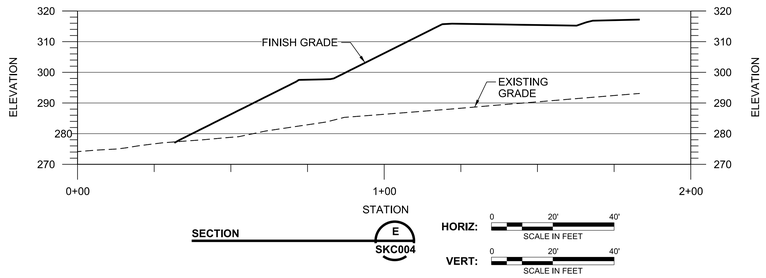
Scale For Microfilming
Millimeters
Inches

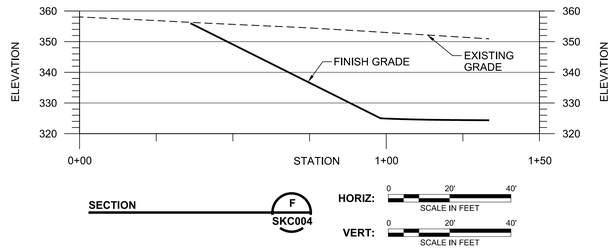












Millimeters

Inches

Scale For Microfilming

no.	date	by	ckd	description
A				WORKING

no.	date	by	ckd	description

PRELIMINARY - NOT FOR CONSTRUCTION

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400

designed K. ENGHOLM | detailed S. NICHOLS

KILLINGLY ENERGY CENTER
1X1 COMBINED CYCLE - MHPS
WINDHAM COUNTY, CONNECTICUT

NTE CONNECTICUT, LLC
GEOTECH SECTIONS

project 116572 | contract -

drawing SKC005 — rev. A

sheet 1 of 1 sheets

file 116572_SKC005.dgn

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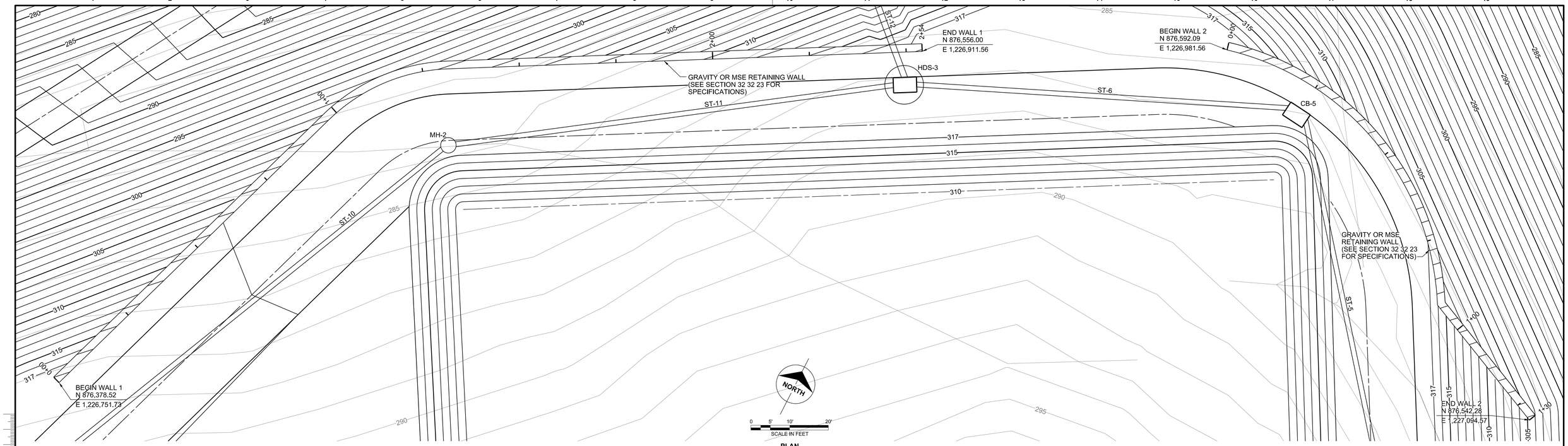
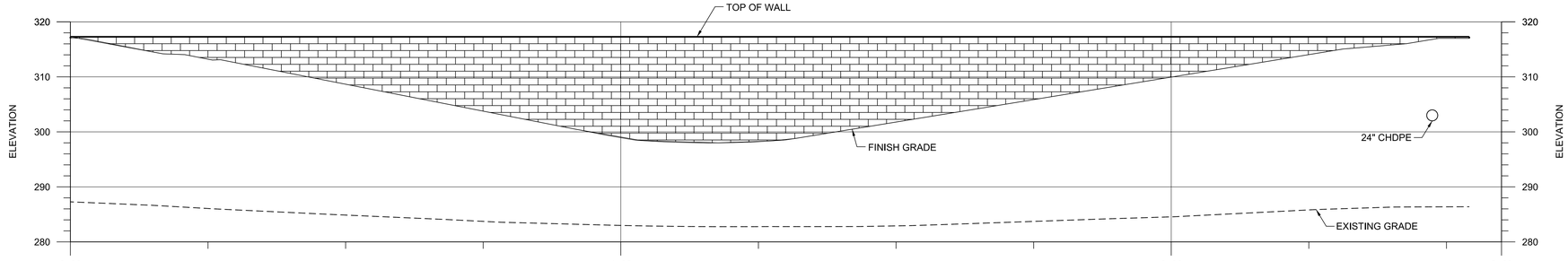
8/21/2019 sknichols



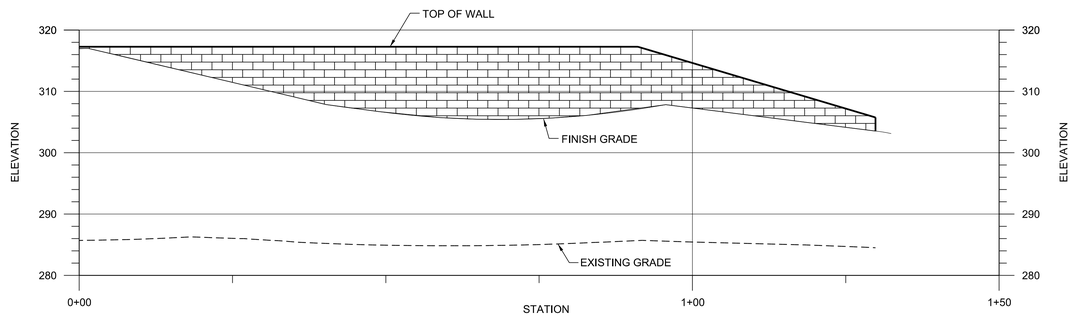
PLAN



WALL 1 PROFILE

HORIZ: 0 5' 10' 20' SCALE IN FEET

VERT: 0 5' 10' 20' SCALE IN FEET



WALL 2 PROFILE

HORIZ: 0 5' 10' 20' SCALE IN FEET

VERT: 0 5' 10' 20' SCALE IN FEET

NOTES:

1. SEE SWPCP DWG CG220 FOR MANHOLE, CATCH BASINS, AND STORM SEWER DETAILS.

FOR BID - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
0	07/26/19	KJE	RLS	INITIAL ISSUE

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400

designed K. ENGHOLM | detailed S. NICHOLS

KILLINGLY ENERGY CENTER
1X1 COMBINED CYCLE - MHPS
WINDHAM COUNTY, CONNECTICUT

NTE CONNECTICUT, LLC
WALL PROFILE
SHEET 1

project 116572 | contract 5.8110

drawing **CG406** – rev. **0**

sheet 1 of 1 sheets

file 116572_CG406.dgn

Millimeters
Inches
Scale For Microfilming

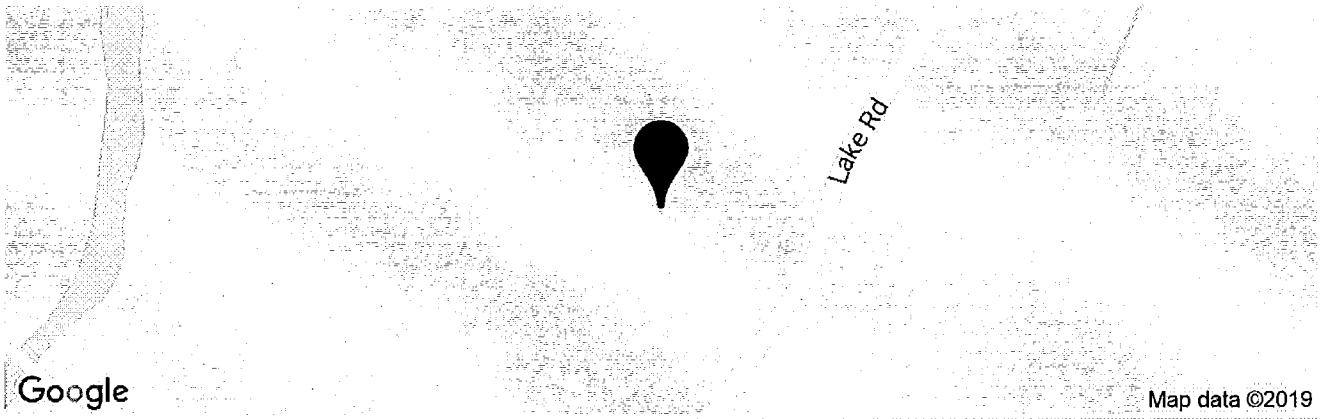
Attachment 3

Seismic Design Parameters (pga_m)

OSHPD

Killingly Energy Center

Latitude, Longitude: 41.859834, -71.917337



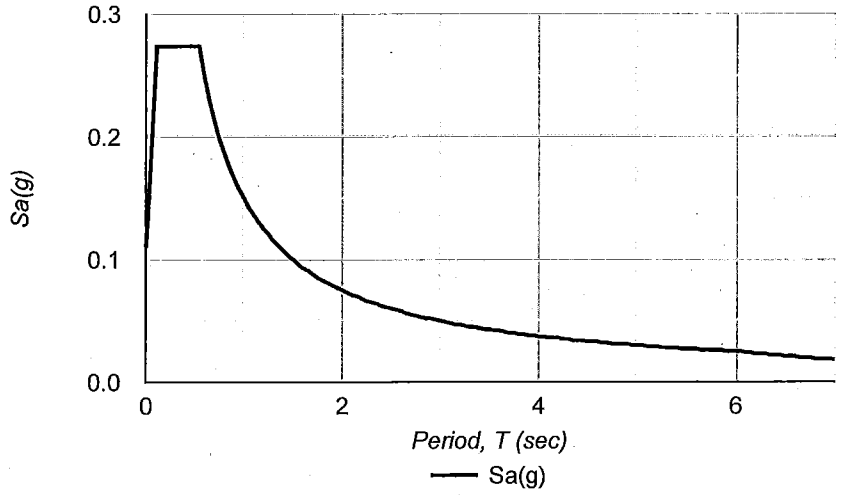
Date	9/20/2019, 1:49:18 PM
Design Code Reference Document	IBC-2015
Risk Category	III
Site Class	D - Stiff Soil ←

Type	Value	Description
S_S	0.171	MCE_R ground motion. (for 0.2 second period)
S_1	0.062	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.274	Site-modified spectral acceleration value
S_{M1}	0.15	Site-modified spectral acceleration value
S_{DS}	0.183	Numeric seismic design value at 0.2 second SA
S_{D1}	0.1	Numeric seismic design value at 1.0 second SA

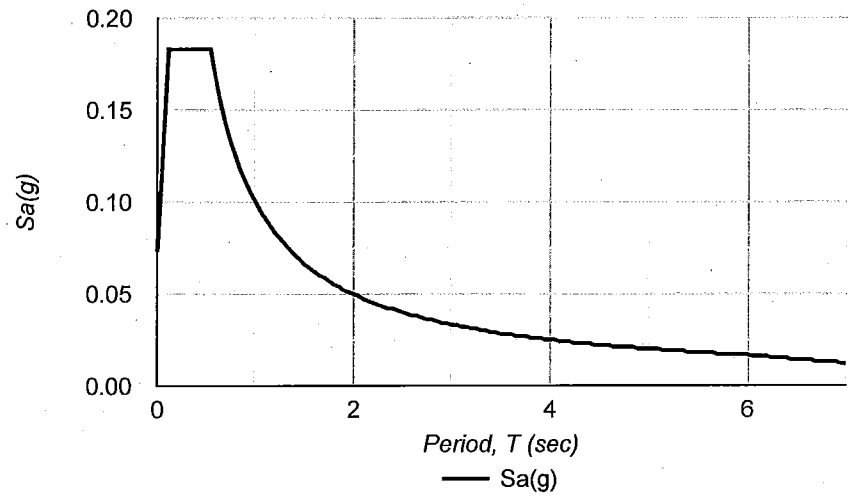
Type	Value	Description
SDC	B	Seismic design category
F_a	1.6	Site amplification factor at 0.2 second
F_v	2.4	Site amplification factor at 1.0 second
PGA	0.085	MCE_G peak ground acceleration
F_{PGA}	1.6	Site amplification factor at PGA
PGA_M	0.136	Site modified peak ground acceleration ←
T_L	6	Long-period transition period in seconds
SsRT	0.171	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.191	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.062	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.069	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.6	Factored deterministic acceleration value. (Peak Ground Acceleration)

Type	Value	Description
C_{RS}	0.899	Mapped value of the risk coefficient at short periods
C_{R1}	0.897	Mapped value of the risk coefficient at a period of 1 s

MCER Response Spectrum



Design Response Spectrum



DISCLAIMER

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Attachment 4

Geogrid Pullout Capacity Calculations

BURNS McDONNELL

030215 Form GCO-29

Client NTE Killingly Page 1 of

Project 116152 Date Made By D. RETZ

Killingly Slope Stability Checked By HAWKINS

Preliminary Final

Geogrid:

Mirafi 5XT:

Ultimate Tensile Strength = 4700 lbs/ft

Reduction Factors

RF_{CREEP} = 1.45

$RF_{INSTALLATION\ DAMAGE}$ = 1.4 (For compacted granular fill (GW/SW))

$RF_{DURABILITY}$ = 1.15

$$LTDS = T_{ULT}\left(\frac{1}{RF_{ID} \times RF_{CR} \times RF_{D}}\right) = 4700\frac{lbs}{ft}\left(\frac{1}{1.45 \times 1.4 \times 1.15}\right)$$

$$= 2013\ lbs/ft \Rightarrow \underline{Say\ 2{,}000\ lbs/ft}$$

$$Pullout(f) = 2(L)(\sigma_N)(\tan\phi)(C_i)$$

L = Length

σ_N = Normal Stress = γH = 130H

ϕ = Soil Friction angle

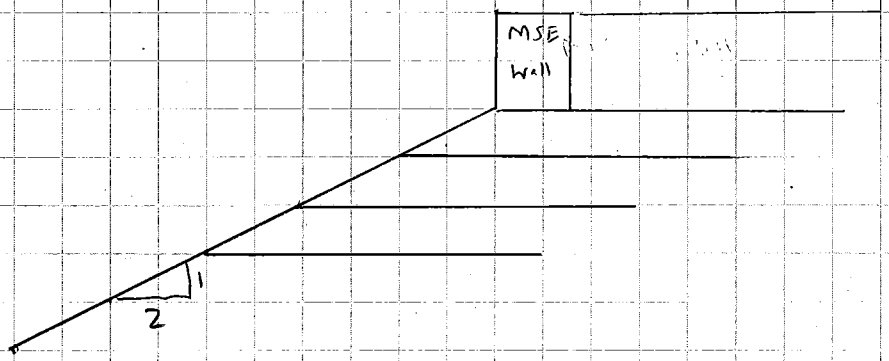
C_i = Soil Interaction Coefficient = 0.8

Determine minimum depth in the slope (H) to provide pullout resistance equal to the LTDS with 1 ft of embedment

$$2{,}000\ lbs = (2 \times 1\ ft \times 130\ pcf)(H)(\tan 36^\circ)(0.8)$$

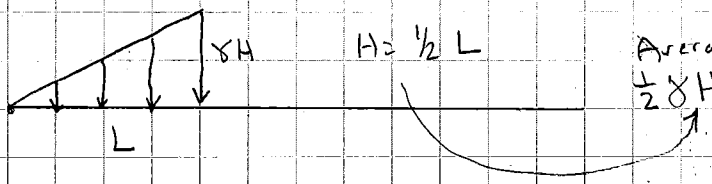
$H \approx 13$ ft

So once geogrid is 13 feet below grade, full LTDS is developed in 1 ft



At face of slope $H = 0$ and $\sigma_N = 0$, so $F = 0$

Pullout increases with distance from face



Average σ_N over length L is

$\frac{1}{2}\gamma H = \frac{1}{2}\gamma(\frac{1}{2})L$

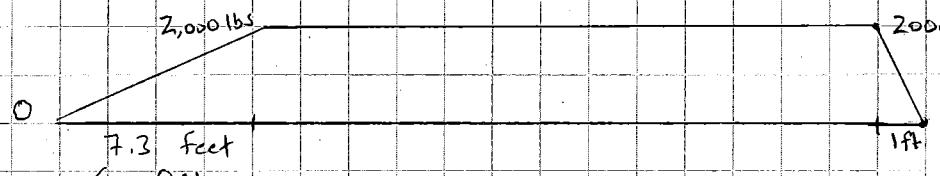
$= (\frac{1}{4})(\gamma)(L)$

$$\text{Pullout} = 3{,}000 \text{ lbs} = 2(L)(\tfrac{1}{4})(\gamma)(L)(\tan\phi)(C_i) = 2(L)(\tfrac{1}{4})(130)(L)(\tan 36^\circ)(0.8)$$

$$L = 7.3 \text{ ft}$$

For reinforcement tension in UTEXAS4:

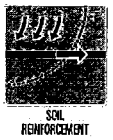
- End point at face of slope $T = 0$
- At 8 feet from face of slope $T = 2{,}000$
- Any point where geogrid is 13ft below grade, $T = 2{,}000$ beginning 1 foot from end point
- Where grid extends a minimum of 2 ft below MSE wall $T = 2{,}000$



Reinforcement Longitudinal Force Profile

TENCATE
Mirafi®

TENCATE GEOSYNTHETICS
Americas



Miragrid® 5XT

Miragrid® 5XT geogrid is composed of high molecular weight, high tenacity polyester multifilament yarns woven in tension and finished with a PVC coating. Miragrid® 5XT geogrid is inert to biological degradation and resistant to naturally encountered chemicals, alkalis, and acids.

Miragrid® 5XT geogrid is used as soil reinforcement in MSE structures such as; segmental retaining walls, precast modular block walls, wire faced walls, geosynthetic wrapped faced walls and steepened slopes. Miragrid® 5XT is also used in MSE stabilized platforms for voids bridging, embankments on soft soils, landfill veneer stability, reducing differential settlement and for foundation seismic stability.

TenCate Geosynthetics Americas is accredited by Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP).

Mechanical Properties	Test Method	Unit	Machine Direction Value
Tensile Strength @ Ultimate (MARV[1])	ASTM D6637 (Method B)	lbs/ft (kN/m)	4700 (68.6)
Tensile Strength @ 5% strain (MARV[1])	ASTM D6637 (Method B)	lbs/ft (kN/m)	1740 (25.4)
Creep Rupture Strength[2]	ASTM D5262/D6992	lbs/ft (kN/m)	3241 (47.3)
Long Term Design Strength[3]		lbs/ft (kN/m)	2806 (40.9)

[1] Minimum Average Roll Values (MARV) shown above are based on QC Testing per a defined lot not to exceed 12 months. Testing Frequency follows ASTM D4354, Table 1.
[2] 75-year design life based on NTPEP Report REGEO-2011-01-001 and REGEO-2015-01-002.
[3] Long Term Design Strength for sand, silt, clay. RF_{CR} = 1.45; RF_{ID} = 1.05; RF_{D} = 1.1 (Installation damage reduction factor for other soils available upon request).

Physical Properties	Unit	Roll Characteristic
Mass/Unit Area (ASTM D5261)	oz/yd² (g/m²)	9.3 (315)
Roll Dimensions[4] (width x length)	ft (m)	6 x 300 (1.8 x 91) 12 x 150 (3.6 x 46) 12 X 1000 (3.6 x 305)
Roll Area	yd² (m²)	200 (167) 200 (167) 1333 (1114)
Estimated Roll Weight	lbs (kg)	135 (61) 135 (61) 831 (376)

[4] Special order roll lengths are available upon request.

Miragrid® 5XT and Tensile Strength direction are continuously printed in white on the edge of the roll.

365 South Holland Drive
Pendergrass, GA 30567

Tel 706 693 2226
Tel 888 795 0808

Fax 706 693 4400
www.tencate.com

FGS000531
ETQR26

GAI-LAP-25-97

Attachment 5

Section B – 2:1 (H:V) Slope
Long Term Steady State and Seismic

Cross Section and Input
Results
UTEXAS4 Output

B-02 @ Approx x = -47
GW @ EL 290
Grade @ EL 301

Use B-01 for GW EL at
Toe of slope = 271 ft

250psf surcharge 0-30ft from crest of slope

-47,317

55,317

-47,301

-47,290

0,295

320
310
300
290
280
270

ELEVATION

Compacted Granular Fill
$\gamma = 130$ pcf $\phi = 36°$

FINISH GRADE

EXISTING GRADE

Forest Litter / Subsoil to be removed / replaced with Compacted Granular Fill (Same Properties)

Glacial Till
$\gamma = 130$ pcf
$\phi = 36°$

128,280.5

128,277.5

128,271

Subsoil $\gamma =$ $\phi =$

192,271

192,268

192,264

0+00 STATION 1+00 1+65

SECTION B SKC004

HORIZ: 0 20' 40' SCALE IN FEET

VERT: 0 20' 40' SCALE IN FEET

BURNS McDONNELL

030215 Form GCO-29

Client NTE Killingly Page ____ of ____

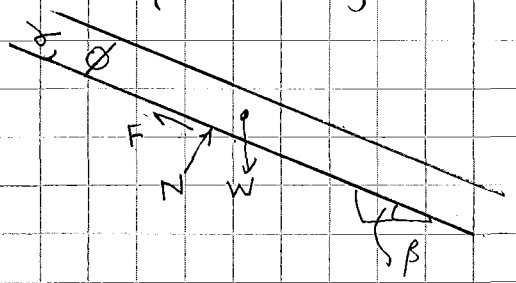
Project 116152 Date ____ Made By DWR

Slope Stability Checked By Hawkins

Infinite Slope Analysis Preliminary ____ Final ____

Shallow surface failures are typically the controlling mode for slope stability of granular soils. As indicated in the analyses for Section B, the search mode for the 2:1 slope resulted in the critical failure surface being found at very shallow depth.

Infinite slope analyses looks at the forces on a shallow layer of soil, and represents the minimum factor of safety for a given slope and material:

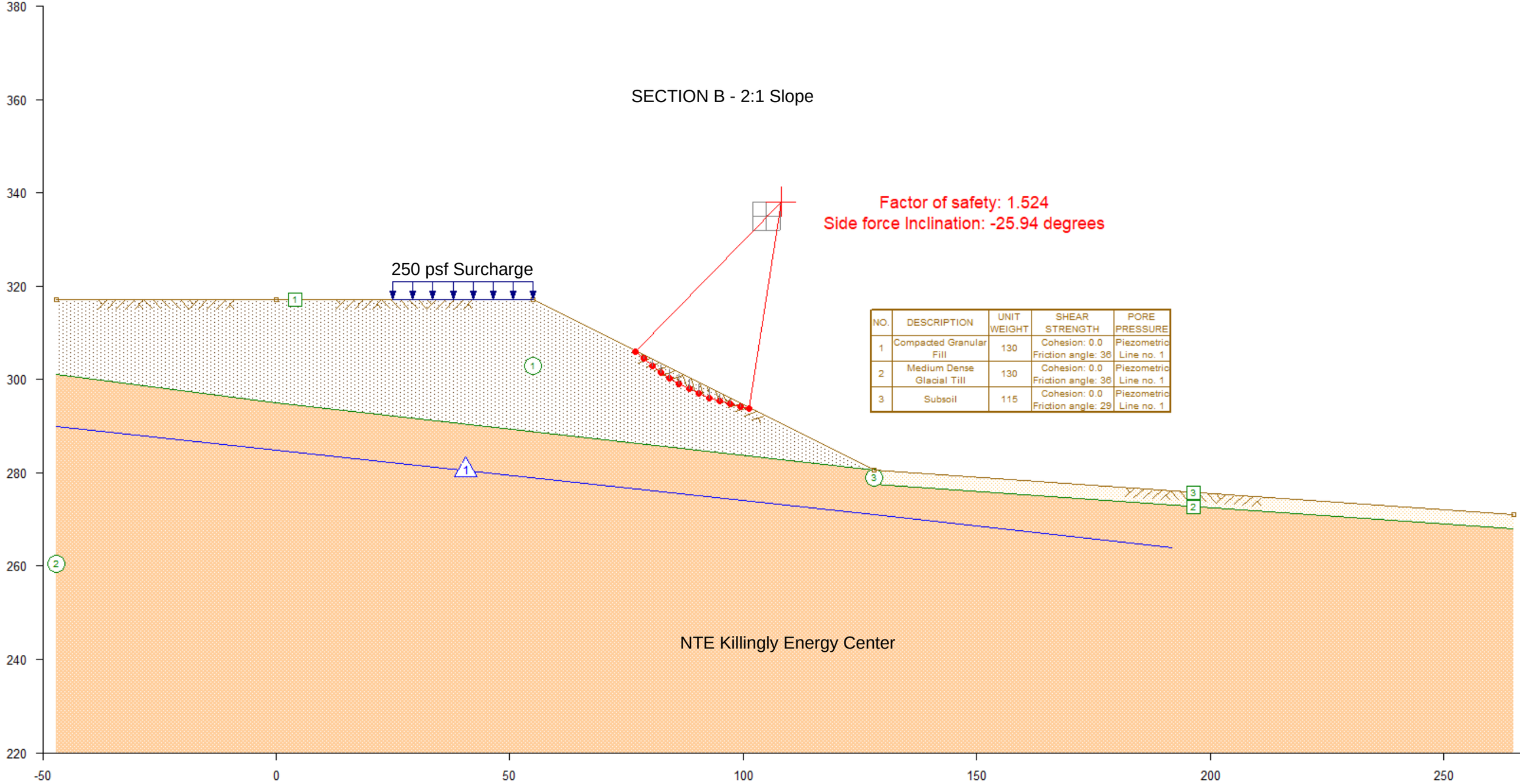


$\beta = 2{:}1 = 26.5^\circ$

The resulting equation reduces down to:

$$F.S. = \frac{\tan\phi}{\tan\beta} = \frac{\tan 36^\circ}{\tan 26.5^\circ} = 1.45$$

This is the minimum factor of safety possible. For shear surfaces deeper than a few inches the factor of safety will be higher.


SECTION B - 2:1 Slope
Factor of safety: 1.524
Side force Inclination: -25.94 degrees
250 psf Surcharge
NO. | DESCRIPTION | UNIT WEIGHT | SHEAR STRENGTH | PORE PRESSURE
1 | Compacted Granular Fill | 130 | Cohesion: 0.0 Friction angle: 36 | Piezometric Line no. 1
2 | Medium Dense Glacial Till | 130 | Cohesion: 0.0 Friction angle: 36 | Piezometric Line no. 1
3 | Subsoil | 115 | Cohesion: 0.0 Friction angle: 29 | Piezometric Line no. 1
NTE Killingly Energy Center
380
360
340
320
300
280
260
240
220
-50
0
50
100
150
200
250

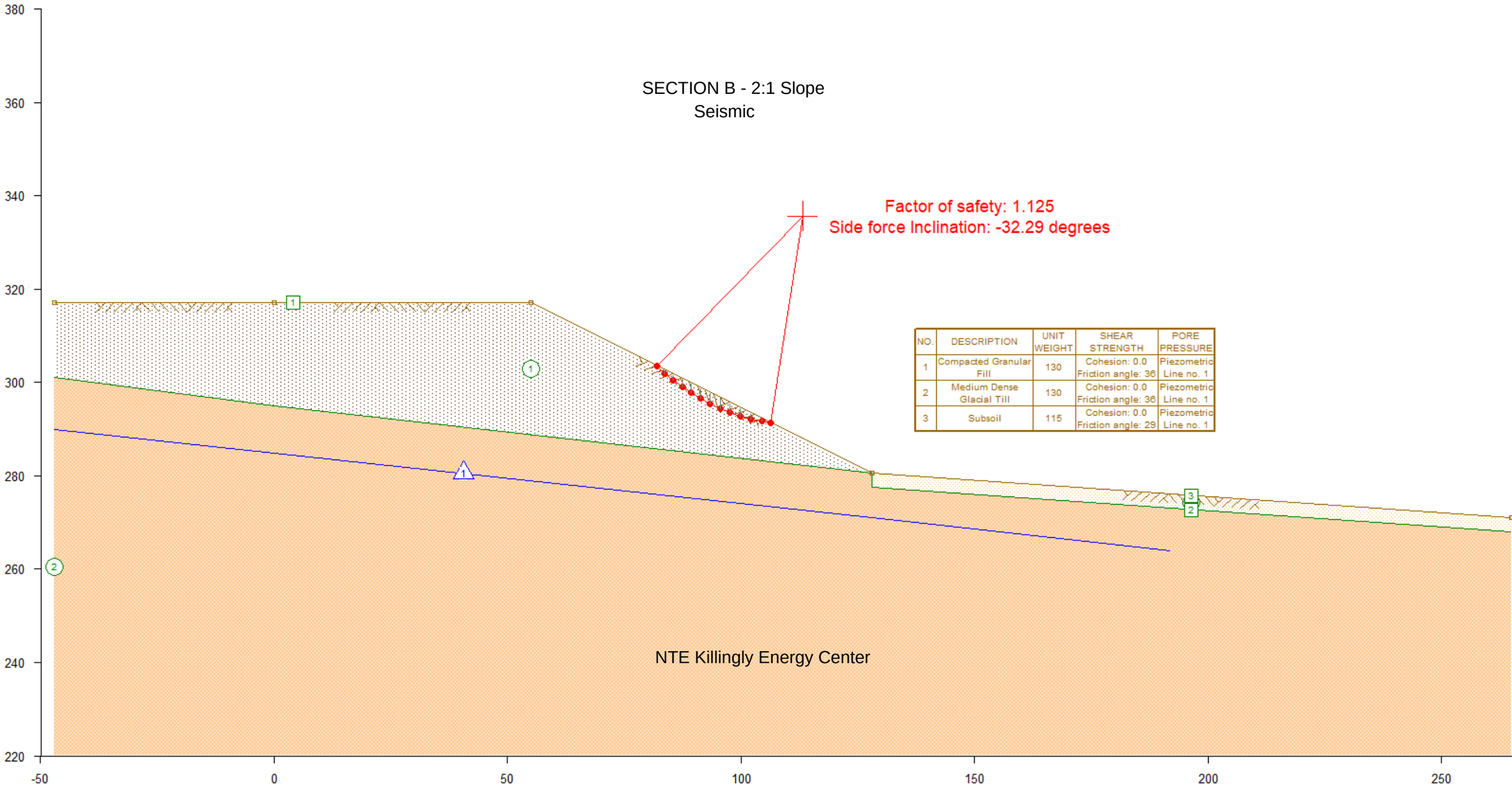

SECTION B - 2:1 Slope
Seismic
Factor of safety: 1.125
Side force Inclination: -32.29 degrees
NO. | DESCRIPTION | UNIT WEIGHT | SHEAR STRENGTH | PORE PRESSURE
1 | Compacted Granular Fill | 130 | Cohesion: 0.0 Friction angle: 36 | Piezometric Line no. 1
2 | Medium Dense Glacial Till | 130 | Cohesion: 0.0 Friction angle: 36 | Piezometric Line no. 1
3 | Subsoil | 115 | Cohesion: 0.0 Friction angle: 29 | Piezometric Line no. 1
NTE Killingly Energy Center
380
360
340
320
300
280
260
240
220
-50
0
50
100
150
200
250

TABLE NO. 1
COMPUTER PROGRAM DESIGNATION: UTEXAS4
Originally Coded By Stephen G. Wright
Version No. 4.1.0.5 - Last Revision Date: 10/29/2008


```
*****************************************************************
* RESULTS OF COMPUTATIONS PERFORMED USING THIS SOFTWARE         *
* SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS THEY HAVE       *
* BEEN VERIFIED BY INDEPENDENT ANALYSES, EXPERIMENTAL DATA      *
* OR FIELD EXPERIENCE. THE USER SHOULD UNDERSTAND THE ALGORITHMS *
* AND ANALYTICAL PROCEDURES USED IN THIS SOFTWARE AND MUST HAVE  *
* READ ALL DOCUMENTATION FOR THIS SOFTWARE BEFORE ATTEMPTING     *
* TO USE IT.  NEITHER SHINOAK SOFTWARE NOR STEPHEN G. WRIGHT     *
* MAKE OR ASSUME LIABILITY FOR ANY WARRANTIES, EXPRESSED OR      *
* IMPLIED, CONCERNING THE ACCURACY, RELIABILITY, USEFULNESS      *
* OR ADAPTABILITY OF THIS SOFTWARE.                             *
*****************************************************************
```

UTEXAS4 S/N:04000 - Version: 4.1.0.5 - Latest Revision: 10/29/2008
Licensed for use by: Jason Walker, Burns & McDonnell
Time and date of run: Mon Sep 23 10:35:02 2019
Name of input data file: Z:\Clients\ENR\NTECT\116572_Killingly\Design\GeoTech\Working\Dsgn\Slope Stability\NTE Killingly Temp Folder\Section B.dat

NTE Killingly Northern 2:1 Slope- Profile B
#116152

TABLE NO. 3
****
* NEW PROFILE LINE DATA *
****

----- Profile Line No. 1 - Material Type (Number): 1 -----

Description: Compacted Granular Fill

Point	X	Y
1	-47.00	317.00
2	55.00	317.00
3	128.00	280.50

----- Profile Line No. 2 - Material Type (Number): 2 -----

Description: Top of Glacial Till - Subsoil Stripped

Point	X	Y
1	-47.00	301.00
2	0.00	295.00
3	128.00	280.50
4	128.00	277.50
5	265.00	268.00

----- Profile Line No. 3 - Material Type (Number): 3 -----

Description: Top of Subsoil

Point	X	Y
1	128.00	277.50
2	128.00	280.50
3	265.00	271.00

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NTE Killingly Northern 2:1 Slope- Profile B
#116152

TABLE NO. 4
****
* NEW MATERIAL PROPERTY DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

DATA FOR MATERIAL NUMBER 1

Description: Compacted Granular Fill

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

DATA FOR MATERIAL NUMBER 2

Description: Medium Dense Glacial Till

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

DATA FOR MATERIAL NUMBER 3

Description: Subsoil

Constant unit weight of soil (material): 115.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 29.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

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NTE Killingly Northern 2:1 Slope- Profile B
#116152

TABLE NO. 6
****
* NEW PIEZOMETRIC LINE DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

--- Piezometric Line Number 1 ---

Description: Piezometric Line
Unit weight of fluid (water): 62.4

Point	X	Y
1	-47.00	290.00
2	128.00	271.00
3	192.00	264.00

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Name of input data file: Z:\Clients\ENR\NTECT\116572_Killingly\Design\GeoTech\Working\Dsgn\Slope Stability\NTE Killingly Temp Folder\Section B.dat

NTE Killingly Northern 2:1 Slope- Profile B
#116152

TABLE NO. 11
****
* NEW DISTRIBUTED LOAD DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

Point	X	Y	Normal Pressure	Shear Stress
1	25.00	317.00	250.0	0.0
2	55.00	317.00	250.0	0.0

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Name of input data file: Z:\Clients\ENR\NTECT\116572_Killingly\Design\GeoTech\Working\Dsgn\Slope Stability\NTE Killingly Temp Folder\Section B.dat

NTE Killingly Northern 2:1 Slope- Profile B
#116152

TABLE NO. 16
****
* NEW ANALYSIS/COMPUTATION DATA *
****

Starting Center Coordinate for Search at -
X: 105.00
Y: 335.00

Required accuracy for critical center
(= minimum spacing between grid points): 0.100

Critical shear surface not allowed to pass below Y: 0.00
For the initial mode of search all circles have the same (constant) radius -
Radius:
Minimum weight required for computations to be performed: 5000

The following represent default values or values that were prevously defined:
Subtended angle for slice subdivision: 3.00(degrees)
There is no crack.
There is no water in a crack.
Conventional (single-stage) computations will be performed.
Seismic coefficient: 0.000
Unit weight of water (or other fluid) in crack: 62.4
Automatic search output will be in long form.
Search will be continued after the initial mode to find a most critical circle.
Maximum number of trial grids for a given search mode: 50
No restrictions exist on the lateral extent of the search.
No shear surfaces other than the most critical will be saved for display later.
Neither slope face was explicitly designated for analysis.
Standard sign convention used for direction of shear stress on shear surface.
Procedure of Analysis: Spencer

Iteration limit: 100
Force imbalance: 1.000000e-005 (fraction of total weight)
Moment imbalance: 1.000000e-005 (fraction of moment due to total weight)
Initial trial factor of safety: 3.000
Initial trial side force inclination: 17.189 (degrees)
Minimum (most negative) side force inclination allowed in Spencer's procedure: -10.00
↟
UTEXAS4 S/N:04000 - Version: 4.1.0.5 - Latest Revision: 10/29/2008
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Time and date of run: Mon Sep 23 10:35:02 2019
Name of input data file: Z:\Clients\ENR\NTECT\116572_Killingly\Design\GeoTech\Working\Dsgn\Slope Stability\NTE Killingly Temp Folder\Section B.dat

NTE Killingly Northern 2:1 Slope- Profile B
#116152

TABLE NO. 26
****
* NEW, COMPUTED SLOPE GEOMETRY DATA *
****

These slope geometry were generated from the Profile Lines.

Point	X	Y
1	-47.00	317.00
2	0.00	317.00
3	55.00	317.00
4	128.00	280.50
5	265.00	271.00

Search will be conducted for RIGHT face of slope

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NTE Killingly Northern 2:1 Slope- Profile B
#116152

TABLE NO. 31
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles with a Given, Constant Radius ------
------ Radius: 45.00

Center Coordinates X	Y	Radius	1-Stage Factor of Safety	Side Force Inclination (degrees)	Iterations	Messages
102.00	332.00	45.00	1.842	-23.397	5	
105.00	332.00	45.00	1.787	-23.812	5	
108.00	332.00	45.00	1.733	-24.223	6	
102.00	335.00	45.00	1.733	-24.223	6	
105.00	335.00	45.00	1.682	-24.631	6	
108.00	335.00	45.00	1.632	-25.034	6	
102.00	338.00	45.00	1.632	-25.034	6	
105.00	338.00	45.00	1.584	-25.423	6	
108.00	338.00	45.00	1.537	-25.827	7	
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -						
111.00	335.00	45.00	1.584	-25.423	7	
111.00	338.00	45.00	Center rejected as follows:			UTEXAS ERROR NUMBER 9100 Total weight of soil (all slices) is less than the acceptable minimum weight for stage number 1. Total weight of all slices: 2.05458e+003 Minimum acceptable weight: 5.00000e+003
105.00	341.00	45.00	Center rejected as follows:			UTEXAS ERROR NUMBER 9100 Total weight of soil (all slices) is less than the acceptable minimum weight for stage number 1. Total weight of all slices: 2.05458e+003 Minimum acceptable weight: 5.00000e+003
108.00	341.00	45.00	Center rejected as follows:			UTEXAS NOTICE NUMBER 8060

Circle does not intersect the slope.

111.00 341.00 45.00 Center rejected as follows: UTEXAS NOTICE NUMBER 8060
Circle does not intersect the slope.

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

107.50	337.50	45.00	1.560	-25.634	7
108.00	337.50	45.00	1.553	-25.688	7
108.50	337.50	45.00	1.545	-25.766	7
107.50	338.00	45.00	1.545	-25.766	7
108.50	338.00	45.00	1.529	-25.895	7
107.50	338.50	45.00	1.529	-25.895	7

108.00 338.50 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the acceptable minimum
weight for stage number 1. Total weight of all slices: 4.81921e+003
Minimum acceptable weight: 5.00000e+003

108.50 338.50 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the acceptable minimum
weight for stage number 1. Total weight of all slices: 4.05745e+003
Minimum acceptable weight: 5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

109.00	337.50	45.00	1.537	-25.827	7

109.00 338.00 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the acceptable minimum
weight for stage number 1. Total weight of all slices: 4.81921e+003
Minimum acceptable weight: 5.00000e+003

109.00 338.50 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the acceptable minimum
weight for stage number 1. Total weight of all slices: 3.34154e+003
Minimum acceptable weight: 5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

108.20	337.70	45.00	1.543	-25.777	7
108.50	337.70	45.00	1.539	-25.806	7
108.80	337.70	45.00	1.534	-25.862	7
108.20	338.00	45.00	1.534	-25.862	7
108.80	338.00	45.00	1.525	-25.931	7
108.20	338.30	45.00	1.525	-25.931	7

108.50 338.30 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the acceptable minimum
weight for stage number 1. Total weight of all slices: 4.66364e+003
Minimum acceptable weight: 5.00000e+003

108.80 338.30 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the acceptable minimum

weight for stage number 1. Total weight of all
slices: 4.20631e+003
Minimum acceptable weight: 5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    107.90   338.00   45.00   1.539   -25.806   7
    107.90   338.30   45.00   1.529   -25.895   7
    107.90   338.60   45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.66364e+003
Minimum acceptable weight: 5.00000e+003

    108.20   338.60   45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.20631e+003
Minimum acceptable weight: 5.00000e+003

    108.50   338.60   45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 3.76632e+003
Minimum acceptable weight: 5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    108.10   338.20   45.00   1.529   -25.895   7
    108.20   338.20   45.00   1.528   -25.902   7
    108.30   338.20   45.00   1.526   -25.907   7
    108.10   338.30   45.00   1.526   -25.907   7
    108.30   338.30   45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.97625e+003
Minimum acceptable weight: 5.00000e+003

    108.10   338.40   45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.97625e+003
Minimum acceptable weight: 5.00000e+003

    108.20   338.40   45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.81921e+003
Minimum acceptable weight: 5.00000e+003

    108.30   338.40   45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.66364e+003

Minimum acceptable weight: 5.00000e+003

----- Critical Circle After the Current Mode of Search -----
X: 108.20 Y: 338.30 Radius: 45.000
Factor of safety: 1.525 Side force inclination: -25.931

****
CAUTION - THE FACTOR OF SAFETY COULD NOT BE COMPUTED
FOR SOME OF THE GRID POINTS AROUND THE MINIMUM
****

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NTE Killingly Northern 2:1 Slope- Profile B
#116152

TABLE NO. 30
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles Tangent to a Given Horizontal Line ------
------ Tangent line elevation, Y: 293.30

Center Coordinates			1-Stage Factor of Safety	Side Force Inclination (degrees)	Iterations	Messages
X	Y	Radius				
105.20	335.30	42.00	1.568	-25.554	7	
108.20	335.30	42.00	Center rejected as follows:			UTEXAS ERROR NUMBER 9100 Total weight of soil (all slices) is less than the acceptable minimum weight for stage number 1. Total weight of all slices: 3.90930e+003 Minimum acceptable weight: 5.00000e+003
111.20	335.30	42.00	Center rejected as follows:			UTEXAS ERROR NUMBER 9100 Total weight of soil (all slices) is less than the acceptable minimum weight for stage number 1. Total weight of all slices: 5.42617e+002 Minimum acceptable weight: 5.00000e+003
105.20	338.30	45.00	1.571	-25.532	7	
111.20	338.30	45.00	Center rejected as follows:			UTEXAS ERROR NUMBER 9100 Total weight of soil (all slices) is less than the acceptable minimum weight for stage number 1. Total weight of all slices: 1.18513e+003 Minimum acceptable weight: 5.00000e+003
105.20	341.30	48.00	1.574	-25.514	7	
108.20	341.30	48.00	1.530	-25.890	7	
111.20	341.30	48.00	Center rejected as follows:			UTEXAS ERROR NUMBER 9100

Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 2.00946e+003
Minimum acceptable weight: 5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
107.70 337.80 44.50 1.532 -25.882 7
108.20 337.80 44.50 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.92010e+003
Minimum acceptable weight: 5.00000e+003

108.70 337.80 44.50 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.15628e+003
Minimum acceptable weight: 5.00000e+003

107.70 338.30 45.00 1.533 -25.875 7
108.70 338.30 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.35714e+003
Minimum acceptable weight: 5.00000e+003

107.70 338.80 45.50 1.533 -25.868 7
108.20 338.80 45.50 1.526 -25.916 7
108.70 338.80 45.50 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.56223e+003
Minimum acceptable weight: 5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
107.90 338.00 44.70 1.529 -25.898 7
108.20 338.00 44.70 1.524 -25.940 7
108.50 338.00 44.70 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.53925e+003
Minimum acceptable weight: 5.00000e+003

107.90 338.30 45.00 1.529 -25.895 7
108.50 338.30 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.66364e+003
Minimum acceptable weight: 5.00000e+003

107.90 338.60 45.30 1.530 -25.892 7
108.20 338.60 45.30 1.526 -25.922 7

```
    108.50    338.60     45.30 Center rejected as follows:      UTEXAS ERROR NUMBER 9100
                                                                Total weight of soil (all slices) is less than the
acceptable minimum
                                                                weight for stage number 1.  Total weight of all
slices:    4.78953e+003
                                                                Minimum acceptable weight:    5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    107.90    337.70     44.40   1.528    -25.900         7
    108.20    337.70     44.40 Center rejected as follows:      UTEXAS ERROR NUMBER 9100
                                                                Total weight of soil (all slices) is less than the
acceptable minimum
                                                                weight for stage number 1.  Total weight of all
slices:    4.87767e+003
                                                                Minimum acceptable weight:    5.00000e+003

    108.50    337.70     44.40 Center rejected as follows:      UTEXAS ERROR NUMBER 9100
                                                                Total weight of soil (all slices) is less than the
acceptable minimum
                                                                weight for stage number 1.  Total weight of all
slices:    4.41638e+003
                                                                Minimum acceptable weight:    5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    108.10    337.90     44.60   1.526    -25.920         7
    108.20    337.90     44.60 Center rejected as follows:      UTEXAS ERROR NUMBER 9100
                                                                Total weight of soil (all slices) is less than the
acceptable minimum
                                                                weight for stage number 1.  Total weight of all
slices:    4.96269e+003
                                                                Minimum acceptable weight:    5.00000e+003

    108.30    337.90     44.60 Center rejected as follows:      UTEXAS ERROR NUMBER 9100
                                                                Total weight of soil (all slices) is less than the
acceptable minimum
                                                                weight for stage number 1.  Total weight of all
slices:    4.80637e+003
                                                                Minimum acceptable weight:    5.00000e+003

    108.10    338.00     44.70   1.526    -25.917         7
    108.30    338.00     44.70 Center rejected as follows:      UTEXAS ERROR NUMBER 9100
                                                                Total weight of soil (all slices) is less than the
acceptable minimum
                                                                weight for stage number 1.  Total weight of all
slices:    4.84859e+003
                                                                Minimum acceptable weight:    5.00000e+003

    108.10    338.10     44.80   1.526    -25.914         7
    108.20    338.10     44.80   1.525    -25.937         7
    108.30    338.10     44.80 Center rejected as follows:      UTEXAS ERROR NUMBER 9100
                                                                Total weight of soil (all slices) is less than the
acceptable minimum
                                                                weight for stage number 1.  Total weight of all
slices:    4.89098e+003
                                                                Minimum acceptable weight:    5.00000e+003

----- Critical Circle After the Current Mode of Search -----
X: 108.20     Y: 338.00     Radius: 44.700
Factor of safety: 1.524     Side force inclination: -25.940
```

****
CAUTION - THE FACTOR OF SAFETY COULD NOT BE COMPUTED
FOR SOME OF THE GRID POINTS AROUND THE MINIMUM
****

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TABLE NO. 33
****
* 1-STAGE FINAL CRITICAL CIRCLE INFORMATION *
****

CAUTION - THE FACTOR OF SAFETY COULD NOT BE COMPUTED
FOR SOME OF THE GRID POINTS AROUND THE MINIMUM
X Coordinate of Center 108.20
Y Coordinate of Center 338.00
Radius 44.70
Factor of Safety 1.524
Side Force Inclination (degrees) . . . . . -25.94
Number of Circles Tried 81
Number of Circles F Calculated for 47
Time Required for Search (seconds) 0.2

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TABLE NO. 43
****
* Coordinate, Weight, Strength and Pore Water Pressure *
* Information for Individual Slices for Conventional *
* Computations or First Stage of Multi-Stage Computations. *
* (Information is for the critical shear surface in the *
* case of an automatic search.) *
****

Slice No.	X	Y	Slice Weight	Matl. No.	Cohesion	Friction Angle	Pore Pressure
	76.98	306.01					
1	77.84	305.22	82	1	0.0	36.00	0.0
	78.70	304.42					
2	79.59	303.67	241	1	0.0	36.00	0.0
	80.49	302.92					
3	81.43	302.22	381	1	0.0	36.00	0.0
	82.37	301.52					
4	83.34	300.87	496	1	0.0	36.00	0.0

	84.31	300.22					
5	85.32	299.62	581	1	0.0	36.00	0.0
	86.32	299.02					
6	87.36	298.47	632	1	0.0	36.00	0.0
	88.39	297.93					
7	89.45	297.44	645	1	0.0	36.00	0.0
	90.52	296.95					
8	91.60	296.51	618	1	0.0	36.00	0.0
	92.69	296.08					
9	93.80	295.70	548	1	0.0	36.00	0.0
	94.90	295.32					
10	96.03	295.00	433	1	0.0	36.00	0.0
	97.16	294.69					
11	98.30	294.43	274	1	0.0	36.00	0.0
	99.44	294.17					
12	100.39	294.00	76	1	0.0	36.00	0.0
	101.34	293.83					

No water in crack.

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TABLE NO. 44

```
**********************************************************
* Seismic Forces and Forces Due to Distributed Loads for *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations.               *
* (Information is for the critical shear surface in the  *
* case of an automatic search.)                          *
**********************************************************
```

There are no seismic forces or forces due to distributed loads
for the current shear surface

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TABLE NO. 47

```
************************************************************
*  Information for the Iterative Solution for the Factor of  *
*  Safety and Side Force Inclination by Spencer's Procedure  *
************************************************************
```

Allowable force imbalance for convergence: 5.0054e-002
Allowable moment imbalance for convergence: 4

Trial	Trial

Iter-ation	Factor of Safety	Side Force Inclination (degrees)	Force Imbalance (lbs.)	Moment Imbalance (ft.-lbs.)	Delta-F	Delta Theta (degrees)
1	3.00000	-17.1887	-1.071e+003	3.338e+005		
First-order corrections to F and Theta					-2.8587	-4.8583
Reduced values - Deltas were too large					-0.5000	-0.8497
2	2.50000	-18.0385	-8.480e+002	2.644e+005		
First-order corrections to F and Theta					-1.5981	-3.1905
Reduced values - Deltas were too large					-0.5000	-0.9982
3	2.00000	-19.0367	-5.190e+002	1.619e+005		
First-order corrections to F and Theta					-0.6359	-2.7952
Reduced values - Deltas were too large					-0.5000	-2.1980
4	1.50000	-21.2347	2.433e+001	-7.164e+003		
First-order corrections to F and Theta					0.0258	-5.6300
Reduced values - Deltas were too large					0.0131	-2.8648
5	1.51312	-24.0995	1.198e+001	-3.543e+003		
First-order corrections to F and Theta					0.0116	-2.0820
Second-order corrections to F and Theta					0.0113	-1.8644
6	1.52438	-25.9639	-4.276e-003	-7.147e-001		
First-order corrections to F and Theta					-0.0000	0.0242
Second-order corrections to F and Theta					-0.0000	0.0242
7	1.52434	-25.9397	-7.924e-009	2.504e-006		
First-order corrections to F and Theta					-0.0000	-0.0000

↟

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TABLE NO. 55
****
* Check of Computations by Spencer's Procedure (Results are for the *
* critical shear surface in the case of an automatic search.) *
****

Summation of Horizontal Forces: 1.10382e-013

Summation of Vertical Forces: 3.33261e-013

Summation of Moments: -6.53824e-011

Mohr Coulomb Shear Force/Shear Strength Check Summation: 1.94849e-013

***** CAUTION ***** Some of the Forces Between Slices Act at Points
Above the Surface of the Slope or Below the Shear Surface -
Either a Tension Crack may be Needed or the SOLUTION MAY NOT
BE A VALID SOLUTION

↟

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TABLE NO. 58
****
* Final Results for Stresses Along the Shear Surface *
* (Results are for the critical shear surface in the case of a search.) *
****

SPENCER'S PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY
Factor of Safety: 1.524 Side Force Inclination: -25.94

Slice No.	X-Center	Y-Center	Total Normal Stress	Effective Normal Stress	Shear Stress
1	77.84	305.22	28.6	28.6	13.7
2	79.59	303.67	85.4	85.4	40.7
3	81.43	302.22	136.5	136.5	65.1
4	83.34	300.87	180.4	180.4	86.0
5	85.32	299.62	215.2	215.2	102.6
6	87.36	298.47	239.1	239.1	114.0
7	89.45	297.44	250.2	250.2	119.3
8	91.60	296.51	246.4	246.4	117.5
9	93.80	295.70	225.5	225.5	107.5
10	96.03	295.00	184.9	184.9	88.1
11	98.30	294.43	121.8	121.8	58.1
12	100.39	294.00	42.5	42.5	20.2

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TABLE NO. 59
****
* Final Results for Side Forces and Stresses Between Slices *
* (Results are for the critical shear surface in the case of a search.) *
****

Slice No.	X-Right	Side Force	Y-Coord. of Side Force Location	Fraction of Height	Sigma at Top	Sigma at Bottom
1	78.70	25	304.80	0.516	33.1	27.3
2	80.49	85	303.43	0.383	17.3	98.2

Section B.OUT

3	82.37	163	302.16	0.357	11.8	151.1
4	84.31	238	300.96	0.348	8.6	192.8
5	86.32	295	299.81	0.342	6.2	222.9
6	88.39	323	298.73	0.340	4.5	240.3
7	90.52	315	297.72	0.338	3.6	243.1
8	92.69	269	296.78	0.339	3.8	229.2
9	94.90	194	295.92	0.344	6.2	195.7
10	97.16	104	295.13	0.363	13.3	138.0
11	99.44	27	294.46	0.479	34.4	44.4
12	101.34	0	293.83	1.000	0.0	0.0

Read end-of-file on input while looking for another command word.
End of input data assumed - normal termination.

TABLE NO. 1
COMPUTER PROGRAM DESIGNATION: UTEXAS4
Originally Coded By Stephen G. Wright
Version No. 4.1.0.5 - Last Revision Date: 10/29/2008

****
* RESULTS OF COMPUTATIONS PERFORMED USING THIS SOFTWARE *
* SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS THEY HAVE *
* BEEN VERIFIED BY INDEPENDENT ANALYSES, EXPERIMENTAL DATA *
* OR FIELD EXPERIENCE. THE USER SHOULD UNDERSTAND THE ALGORITHMS *
* AND ANALYTICAL PROCEDURES USED IN THIS SOFTWARE AND MUST HAVE *
* READ ALL DOCUMENTATION FOR THIS SOFTWARE BEFORE ATTEMPTING *
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* MAKE OR ASSUME LIABILITY FOR ANY WARRANTIES, EXPRESSED OR *
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TABLE NO. 3
****
* NEW PROFILE LINE DATA *
****

----- Profile Line No. 1 - Material Type (Number): 1 -----

Description: Compacted Granular Fill

Point	X	Y
1	-47.00	317.00
2	55.00	317.00
3	128.00	280.50

----- Profile Line No. 2 - Material Type (Number): 2 -----

Description: Top of Glacial Till - Subsoil Stripped

Point	X	Y
1	-47.00	301.00
2	0.00	295.00
3	128.00	280.50
4	128.00	277.50
5	265.00	268.00

----- Profile Line No. 3 - Material Type (Number): 3 -----

Description: Top of Subsoil

Point	X	Y
1	128.00	277.50
2	128.00	280.50
3	265.00	271.00

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TABLE NO. 4
****
* NEW MATERIAL PROPERTY DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

---------- DATA FOR MATERIAL NUMBER 1 ----------

Description: Compacted Granular Fill

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

---------- DATA FOR MATERIAL NUMBER 2 ----------

Description: Medium Dense Glacial Till

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

---------- DATA FOR MATERIAL NUMBER 3 ----------

Description: Subsoil

Constant unit weight of soil (material): 115.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 29.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

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TABLE NO. 6
****
* NEW PIEZOMETRIC LINE DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

--- Piezometric Line Number 1 ---

Description: Piezometric Line
Unit weight of fluid (water): 62.4

Point	X	Y
1	-47.00	290.00
2	128.00	271.00
3	192.00	264.00

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TABLE NO. 16
****
* NEW ANALYSIS/COMPUTATION DATA *
****

Starting Center Coordinate for Search at -
X: 110.00
Y: 335.00

Required accuracy for critical center
(= minimum spacing between grid points): 0.100

Critical shear surface not allowed to pass below Y: 0.00
For the initial mode of search all circles have the same (constant) radius -
Radius:
Minimum weight required for computations to be performed: 5000

Seismic coefficient: 0.136
Seismic force acts at center of gravity.

The following represent default values or values that were prevously defined:
Subtended angle for slice subdivision: 3.00(degrees)
There is no crack.
There is no water in a crack.
Conventional (single-stage) computations will be performed.
Unit weight of water (or other fluid) in crack: 62.4
Automatic search output will be in long form.
Search will be continued after the initial mode to find a most critical circle.
Maximum number of trial grids for a given search mode: 50
No restrictions exist on the lateral extent of the search.
No shear surfaces other than the most critical will be saved for display later.
Neither slope face was explicitly designated for analysis.
Standard sign convention used for direction of shear stress on shear surface.
Procedure of Analysis: Spencer

Iteration limit: 100
Force imbalance: 1.000000e-005 (fraction of total weight)
Moment imbalance: 1.000000e-005 (fraction of moment due to total weight)
Initial trial factor of safety: 3.000
Initial trial side force inclination: 17.189 (degrees)
Minimum (most negative) side force inclination allowed in Spencer's procedure: -10.00

TABLE NO. 26
****
* NEW, COMPUTED SLOPE GEOMETRY DATA *
****

These slope geometry were generated from the Profile Lines.

Point	X	Y
1	-47.00	317.00
2	0.00	317.00
3	55.00	317.00
4	128.00	280.50
5	265.00	271.00

Search will be conducted for RIGHT face of slope

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TABLE NO. 31
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles with a Given, Constant Radius ------
------ Radius: 45.00

Center Coordinates X	Y	Radius	1-Stage Factor of Safety	Side Force Inclination (degrees)	Iterations	Messages
107.00	332.00	45.00	1.316	-30.261	8	
110.00	332.00	45.00	1.273	-30.717	8	
113.00	332.00	45.00	1.230	-31.178	8	
107.00	335.00	45.00	1.230	-31.178	8	
110.00	335.00	45.00	1.189	-31.608	9	
113.00	335.00	45.00	1.149	-32.030	9	
107.00	338.00	45.00	1.149	-32.030	9	
110.00	338.00	45.00	Center rejected as follows:			UTEXAS ERROR NUMBER 9100 Total weight of soil (all slices) is less than the acceptable minimum weight for stage number 1. Total weight of all slices: 3.34154e+003 Minimum acceptable weight: 5.00000e+003
113.00	338.00	45.00	Center rejected as follows:			UTEXAS ERROR NUMBER 9100 Total weight of soil (all slices) is less than the acceptable minimum weight for stage number 1. Total weight of all slices: 2.28993e+002 Minimum acceptable weight: 5.00000e+003
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -						
116.00	332.00	45.00	Center rejected as follows:			UTEXAS ERROR NUMBER 9280 The side force inclination fell outside the range of values allowed. The minimum value allowed is: -8.00000e+001 degrees. The maximum value allowed is: 1.00000e+001 degrees.
116.00	335.00	45.00	Center rejected as follows:			UTEXAS ERROR NUMBER 9100 Total weight of soil (all slices) is less than the acceptable minimum weight for stage number 1. Total weight of all slices: 3.34154e+003 Minimum acceptable weight: 5.00000e+003
116.00	338.00	45.00	Center rejected as follows:			UTEXAS NOTICE NUMBER 8060 Circle does not intersect the slope.
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -						
112.50	334.50	45.00	1.169	-31.835	9	
113.00	334.50	45.00	1.163	-31.887	9	
113.50	334.50	45.00	1.156	-31.980	9	

```
    112.50    335.00     45.00   1.156    -31.980         9
    113.50    335.00     45.00   1.143    -32.120         9
    112.50    335.50     45.00   1.143    -32.120         9
    113.00    335.50     45.00   1.136    -32.180         9
    113.50    335.50     45.00   1.130    -32.249        20
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    114.00    335.00     45.00 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -8.00000e+001
degrees.
                                                                The maximum value allowed is:    1.00000e+001
degrees.

    114.00    335.50     45.00 Center rejected as follows:      UTEXAS ERROR NUMBER 9100
                                                                Total weight of soil (all slices) is less than the
acceptable minimum
                                                                weight for stage number 1.  Total weight of all
slices:    4.81921e+003
                                                                Minimum acceptable weight:    5.00000e+003

    113.00    336.00     45.00 Center rejected as follows:      UTEXAS ERROR NUMBER 9100
                                                                Total weight of soil (all slices) is less than the
acceptable minimum
                                                                weight for stage number 1.  Total weight of all
slices:    4.81921e+003
                                                                Minimum acceptable weight:    5.00000e+003

    113.50    336.00     45.00 Center rejected as follows:      UTEXAS ERROR NUMBER 9100
                                                                Total weight of soil (all slices) is less than the
acceptable minimum
                                                                weight for stage number 1.  Total weight of all
slices:    4.05745e+003
                                                                Minimum acceptable weight:    5.00000e+003

    114.00    336.00     45.00 Center rejected as follows:      UTEXAS ERROR NUMBER 9100
                                                                Total weight of soil (all slices) is less than the
acceptable minimum
                                                                weight for stage number 1.  Total weight of all
slices:    3.34154e+003
                                                                Minimum acceptable weight:    5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    113.20    335.20     45.00   1.142    -32.129         9
    113.50    335.20     45.00   1.138    -32.153        10
    113.80    335.20     45.00 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -8.00000e+001
degrees.
                                                                The maximum value allowed is:    1.00000e+001
degrees.

    113.20    335.50     45.00   1.134    -32.220        10
    113.80    335.50     45.00 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -8.00000e+001
degrees.
```

The maximum value allowed is: 1.00000e+001
degrees.

113.20 335.80 45.00 1.126 -32.282 10
113.50 335.80 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.66364e+003
Minimum acceptable weight: 5.00000e+003

113.80 335.80 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.20631e+003
Minimum acceptable weight: 5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
112.90 335.50 45.00 1.138 -32.153 9
112.90 335.80 45.00 1.130 -32.249 10
112.90 336.10 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.66364e+003
Minimum acceptable weight: 5.00000e+003

113.20 336.10 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.20631e+003
Minimum acceptable weight: 5.00000e+003

113.50 336.10 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 3.76632e+003
Minimum acceptable weight: 5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
113.10 335.70 45.00 1.130 -32.249 10
113.20 335.70 45.00 1.129 -32.252 9
113.30 335.70 45.00 1.127 -32.252 11
113.10 335.80 45.00 1.127 -32.252 10
113.30 335.80 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.97625e+003
Minimum acceptable weight: 5.00000e+003

113.10 335.90 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum
weight for stage number 1. Total weight of all
slices: 4.97625e+003

Minimum acceptable weight: 5.00000e+003

113.20 335.90 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the acceptable minimum
weight for stage number 1. Total weight of all slices: 4.81921e+003
Minimum acceptable weight: 5.00000e+003

113.30 335.90 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the acceptable minimum
weight for stage number 1. Total weight of all slices: 4.66364e+003
Minimum acceptable weight: 5.00000e+003

----- Critical Circle After the Current Mode of Search -----
X: 113.20 Y: 335.80 Radius: 45.000
Factor of safety: 1.126 Side force inclination: -32.282

****
CAUTION - THE FACTOR OF SAFETY COULD NOT BE COMPUTED
FOR SOME OF THE GRID POINTS AROUND THE MINIMUM
****

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NTE Killingly Northern 2:1 Slope- Profile B
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TABLE NO. 30
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles Tangent to a Given Horizontal Line ------
------ Tangent line elevation, Y: 290.80

Center Coordinates			1-Stage Factor of Safety	Side Force Inclination (degrees)	Iterations	Messages
X	Y	Radius				
110.20	332.80	42.00	1.163	-31.887	9	
113.20	332.80	42.00	Center rejected as follows:			UTEXAS ERROR NUMBER 9100 Total weight of soil (all slices) is less than the acceptable minimum weight for stage number 1. Total weight of all slices: 3.90930e+003 Minimum acceptable weight: 5.00000e+003
116.20	332.80	42.00	Center rejected as follows:			UTEXAS ERROR NUMBER 9100 Total weight of soil (all slices) is less than the acceptable minimum weight for stage number 1. Total weight of all

slices: 5.42617e+002
                                                    Minimum acceptable weight: 5.00000e+003

  110.20 335.80 45.00 1.165 -31.866 9
  116.20 335.80 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
                                                    Total weight of soil (all slices) is less than the
acceptable minimum
                                                    weight for stage number 1. Total weight of all
slices: 1.18513e+003
                                                    Minimum acceptable weight: 5.00000e+003

  110.20 338.80 48.00 1.168 -31.850 9
  113.20 338.80 48.00 1.131 -32.246 11
  116.20 338.80 48.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
                                                    Total weight of soil (all slices) is less than the
acceptable minimum
                                                    weight for stage number 1. Total weight of all
slices: 2.00946e+003
                                                    Minimum acceptable weight: 5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
  112.70 335.30 44.50 1.132 -32.240 10
  113.20 335.30 44.50 Center rejected as follows: UTEXAS ERROR NUMBER 9100
                                                    Total weight of soil (all slices) is less than the
acceptable minimum
                                                    weight for stage number 1. Total weight of all
slices: 4.92010e+003
                                                    Minimum acceptable weight: 5.00000e+003

  113.70 335.30 44.50 Center rejected as follows: UTEXAS ERROR NUMBER 9100
                                                    Total weight of soil (all slices) is less than the
acceptable minimum
                                                    weight for stage number 1. Total weight of all
slices: 4.15628e+003
                                                    Minimum acceptable weight: 5.00000e+003

  112.70 335.80 45.00 1.132 -32.234 9
  113.70 335.80 45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
                                                    Total weight of soil (all slices) is less than the
acceptable minimum
                                                    weight for stage number 1. Total weight of all
slices: 4.35714e+003
                                                    Minimum acceptable weight: 5.00000e+003

  112.70 336.30 45.50 1.133 -32.226 9
  113.20 336.30 45.50 1.127 -32.263 10
  113.70 336.30 45.50 Center rejected as follows: UTEXAS ERROR NUMBER 9100
                                                    Total weight of soil (all slices) is less than the
acceptable minimum
                                                    weight for stage number 1. Total weight of all
slices: 4.56223e+003
                                                    Minimum acceptable weight: 5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
  112.90 335.50 44.70 1.129 -32.251 10
  113.20 335.50 44.70 1.125 -32.293 20
  113.50 335.50 44.70 Center rejected as follows: UTEXAS ERROR NUMBER 9100
                                                    Total weight of soil (all slices) is less than the
acceptable minimum

weight for stage number 1. Total weight of all
slices: 4.53925e+003

Minimum acceptable weight: 5.00000e+003

    112.90   335.80   45.00   1.130   -32.249   10
    113.50   335.80   45.00 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum

weight for stage number 1. Total weight of all
slices: 4.66364e+003

Minimum acceptable weight: 5.00000e+003

    112.90   336.10   45.30   1.130   -32.248   9
    113.20   336.10   45.30   1.127   -32.271   10
    113.50   336.10   45.30 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum

weight for stage number 1. Total weight of all
slices: 4.78953e+003

Minimum acceptable weight: 5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    112.90   335.20   44.40   1.129   -32.251   9
    113.20   335.20   44.40 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum

weight for stage number 1. Total weight of all
slices: 4.87767e+003

Minimum acceptable weight: 5.00000e+003

    113.50   335.20   44.40 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum

weight for stage number 1. Total weight of all
slices: 4.41638e+003

Minimum acceptable weight: 5.00000e+003

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    113.10   335.40   44.60   1.127   -32.268   11
    113.20   335.40   44.60 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum

weight for stage number 1. Total weight of all
slices: 4.96269e+003

Minimum acceptable weight: 5.00000e+003

    113.30   335.40   44.60 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum

weight for stage number 1. Total weight of all
slices: 4.80637e+003

Minimum acceptable weight: 5.00000e+003

    113.10   335.50   44.70   1.127   -32.264   10
    113.30   335.50   44.70 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the
acceptable minimum

weight for stage number 1. Total weight of all
slices: 4.84859e+003

Minimum acceptable weight: 5.00000e+003

113.10 335.60 44.80 1.127 -32.260 10
113.20 335.60 44.80 1.126 -32.290 14
113.30 335.60 44.80 Center rejected as follows: UTEXAS ERROR NUMBER 9100
Total weight of soil (all slices) is less than the acceptable minimum
weight for stage number 1. Total weight of all slices: 4.89098e+003
Minimum acceptable weight: 5.00000e+003

----- Critical Circle After the Current Mode of Search -----
X: 113.20 Y: 335.50 Radius: 44.700
Factor of safety: 1.125 Side force inclination: -32.293

****
CAUTION - THE FACTOR OF SAFETY COULD NOT BE COMPUTED
FOR SOME OF THE GRID POINTS AROUND THE MINIMUM
****

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TABLE NO. 33
****
* 1-STAGE FINAL CRITICAL CIRCLE INFORMATION *
****

CAUTION - THE FACTOR OF SAFETY COULD NOT BE COMPUTED
FOR SOME OF THE GRID POINTS AROUND THE MINIMUM
X Coordinate of Center 113.20
Y Coordinate of Center 335.50
Radius 44.70
Factor of Safety 1.125
Side Force Inclination (degrees) . . . . . -32.29
Number of Circles Tried 81
Number of Circles F Calculated for 43
Time Required for Search (seconds) 0.3

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TABLE NO. 43
****
* Coordinate, Weight, Strength and Pore Water Pressure *
* Information for Individual Slices for Conventional *
* Computations or First Stage of Multi-Stage Computations. *

```
* (Information is for the critical shear surface in the    *
* case of an automatic search.)                             *
************************************************************
```

Slice No.	X	Y	Slice Weight	Matl. No.	Cohesion	Friction Angle	Pore Pressure
	81.98	303.51					
1	82.84	302.72	82	1	0.0	36.00	0.0
	83.70	301.92					
2	84.59	301.17	241	1	0.0	36.00	0.0
	85.49	300.42					
3	86.43	299.72	381	1	0.0	36.00	0.0
	87.37	299.02					
4	88.34	298.37	496	1	0.0	36.00	0.0
	89.31	297.72					
5	90.32	297.12	581	1	0.0	36.00	0.0
	91.32	296.52					
6	92.36	295.97	632	1	0.0	36.00	0.0
	93.39	295.43					
7	94.45	294.94	645	1	0.0	36.00	0.0
	95.52	294.45					
8	96.60	294.01	618	1	0.0	36.00	0.0
	97.69	293.58					
9	98.80	293.20	548	1	0.0	36.00	0.0
	99.90	292.82					
10	101.03	292.50	433	1	0.0	36.00	0.0
	102.16	292.19					
11	103.30	291.93	274	1	0.0	36.00	0.0
	104.44	291.67					
12	105.39	291.50	76	1	0.0	36.00	0.0
	106.34	291.33					

No water in crack.

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TABLE NO. 44

```
************************************************************
* Seismic Forces and Forces Due to Distributed Loads for *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations.               *
* (Information is for the critical shear surface in the  *
* case of an automatic search.)                          *
************************************************************
```

Slices No.	X	Seismic Force	Y for Seismic Force	FORCES DUE TO DISTRIBUTED LOADS Normal Force	Shear Force	X	Y
1	82.84	11	302.90	0	0	82.84	303.08
2	84.59	33	301.69	0	0	84.59	302.20

3	86.43	52	300.50	0	0	86.43	301.28
4	88.34	67	299.35	0	0	88.34	300.33
5	90.32	79	298.23	0	0	90.32	299.34
6	92.36	86	297.15	0	0	92.36	298.32
7	94.45	88	296.11	0	0	94.45	297.27
8	96.60	84	295.11	0	0	96.60	296.20
9	98.80	74	294.15	0	0	98.80	295.10
10	101.03	59	293.24	0	0	101.03	293.98
11	103.30	37	292.39	0	0	103.30	292.85
12	105.39	10	291.65	0	0	105.39	291.81

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TABLE NO. 47
****
* Information for the Iterative Solution for the Factor of *
* Safety and Side Force Inclination by Spencer's Procedure *
****
Allowable force imbalance for convergence: 5.0054e-002
Allowable moment imbalance for convergence: 5

Iteration	Trial Factor of Safety	Trial Side Force Inclination (degrees)	Force Imbalance (lbs.)	Moment Imbalance (ft.-lbs.)	Delta-F	Delta Theta (degrees)
1	3.00000	-17.1887	-1.738e+003	5.405e+005		
First-order corrections to F and Theta					-5.6086	-270.3614
Reduced values - Deltas were too large					-0.0594	-2.8648
2	2.94057	-20.0535	-1.722e+003	5.348e+005		
First-order corrections to F and Theta					-4.6945	-2.3021
Reduced values - Deltas were too large					-0.5000	-0.2452
3	2.44057	-20.2987	-1.502e+003	4.665e+005		
First-order corrections to F and Theta					-2.8544	-2.3741
Reduced values - Deltas were too large					-0.5000	-0.4159
4	1.94057	-20.7146	-1.173e+003	3.644e+005		
First-order corrections to F and Theta					-1.4316	-2.5451
Reduced values - Deltas were too large					-0.5000	-0.8889
5	1.44057	-21.6035	-6.238e+002	1.940e+005		
First-order corrections to F and Theta					-0.4271	-3.2215
Reduced values - Deltas were too large					-0.3798	-2.8648
6	1.06075	-24.4683	1.453e+002	-4.400e+004		
First-order corrections to F and Theta					-0.3912	262.1271
Reduced values - Deltas were too large					-0.0043	2.8648
7	1.05647	-21.6035	1.443e+002	-4.363e+004		
First-order corrections to F and Theta					0.1046	-32.6666

```
Reduced values - Deltas were too large .............    0.0092    -2.8648

   8   1.06564   -24.4683   1.318e+002  -3.982e+004
First-order corrections to F and Theta .............    0.2709  -135.9356
Reduced values - Deltas were too large .............    0.0057    -2.8648

   9   1.07135   -27.3331   1.294e+002  -3.908e+004
First-order corrections to F and Theta .............    0.0033    24.0599
Reduced values - Deltas were too large .............    0.0004     2.8648

  10   1.07174   -24.4683   1.151e+002  -3.467e+004
First-order corrections to F and Theta .............    0.1170   -47.3520
Reduced values - Deltas were too large .............    0.0071    -2.8648

  11   1.07882   -27.3331   1.084e+002  -3.264e+004
First-order corrections to F and Theta .............   -0.3654   241.5427
Reduced values - Deltas were too large .............   -0.0043     2.8648

  12   1.07448   -24.4683   1.076e+002  -3.238e+004
First-order corrections to F and Theta .............    0.0966   -36.6858
Reduced values - Deltas were too large .............    0.0075    -2.8648

  13   1.08203   -27.3331   9.943e+001  -2.990e+004
First-order corrections to F and Theta .............    0.1747   -84.9188
Reduced values - Deltas were too large .............    0.0059    -2.8648

  14   1.08792   -30.1978   9.649e+001  -2.901e+004
First-order corrections to F and Theta .............   -0.0081    23.7282
Reduced values - Deltas were too large .............   -0.0010     2.8648

  15   1.08694   -27.3331   8.581e+001  -2.574e+004
First-order corrections to F and Theta .............    0.0750   -27.7822
Reduced values - Deltas were too large .............    0.0077    -2.8648

  16   1.09468   -30.1978   7.719e+001  -2.316e+004
First-order corrections to F and Theta .............    0.0556   -16.9837
Reduced values - Deltas were too large .............    0.0094    -2.8648

  17   1.10405   -33.0626   6.431e+001  -1.933e+004
First-order corrections to F and Theta .............    0.0147     4.1875
Reduced values - Deltas were too large .............    0.0100     2.8648

  18   1.11410   -30.1978   2.317e+001  -6.798e+003
First-order corrections to F and Theta .............    0.0126    -2.9248
Reduced values - Deltas were too large .............    0.0124    -2.8648

  19   1.12648   -33.0626   2.681e-001  -1.645e+002
First-order corrections to F and Theta .............   -0.0010     0.7634
Second-order corrections to F and Theta ............   -0.0010     0.7693

  20   1.12549   -32.2933  -1.121e-003   3.014e-001
First-order corrections to F and Theta .............   -0.0000     0.0003
```

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TABLE NO. 55
****
* Check of Computations by Spencer's Procedure (Results are for the *
* critical shear surface in the case of an automatic search.)   *
****

Summation of Horizontal Forces: 1.94081e-013

Summation of Vertical Forces: 2.39697e-013

Summation of Moments: 1.16276e-006

Mohr Coulomb Shear Force/Shear Strength Check Summation: 2.46553e-013

***** CAUTION ***** Some of the Forces Between Slices Act at Points
Above the Surface of the Slope or Below the Shear Surface -
Either a Tension Crack may be Needed or the SOLUTION MAY NOT
BE A VALID SOLUTION

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TABLE NO. 58
****
* Final Results for Stresses Along the Shear Surface   *
* (Results are for the critical shear surface in the case of a search.) *
****

SPENCER'S PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY
Factor of Safety: 1.125   Side Force Inclination: -32.29

Slice No.	X-Center	Y-Center	Total Normal Stress	Effective Normal Stress	Shear Stress
1	82.84	302.72	24.5	24.5	15.8
2	84.59	301.17	74.0	74.0	47.8
3	86.43	299.72	120.0	120.0	77.5
4	88.34	298.37	161.0	161.0	103.9
5	90.32	297.12	195.1	195.1	125.9
6	92.36	295.97	220.4	220.4	142.3
7	94.45	294.94	234.7	234.7	151.5
8	96.60	294.01	235.5	235.5	152.0
9	98.80	293.20	220.0	220.0	142.0
10	101.03	292.50	184.5	184.5	119.1
11	103.30	291.93	124.6	124.6	80.4
12	105.39	291.50	44.5	44.5	28.8

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TABLE NO. 59

****
* Final Results for Side Forces and Stresses Between Slices *
* (Results are for the critical shear surface in the case of a search.) *
****

---------- VALUES AT RIGHT SIDE OF SLICE ----------

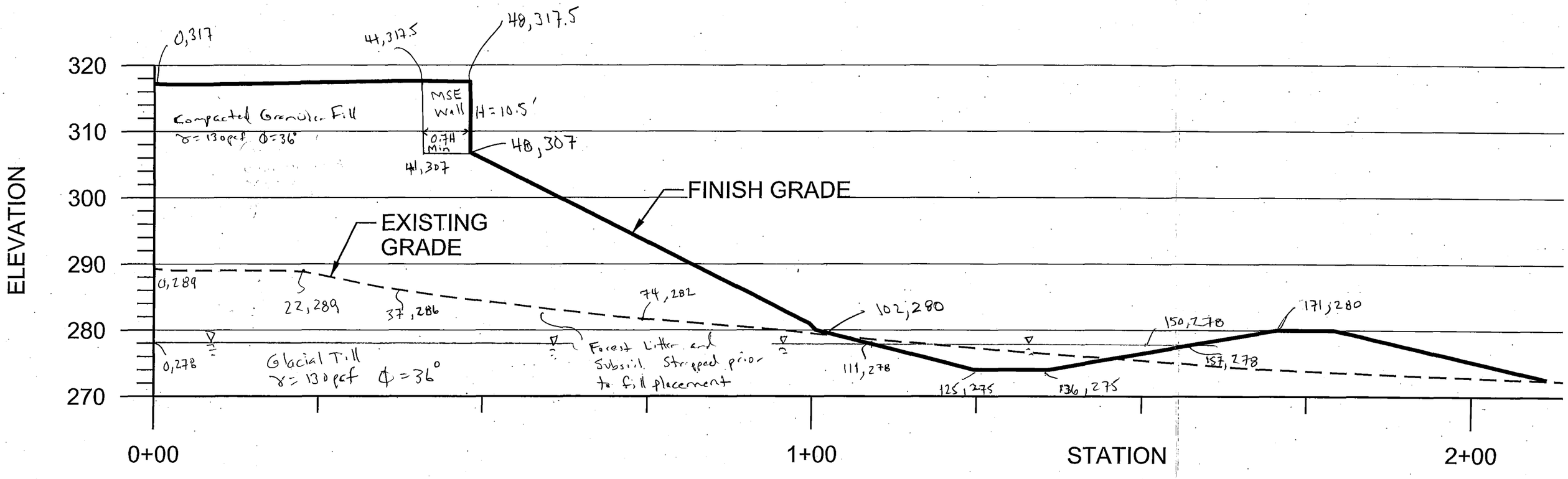
Slice No.	X-Right	Side Force	Y-Coord. of Side Force Location	Fraction of Height	Sigma at Top	Sigma at Bottom
1	83.70	27	302.26	0.466	25.0	37.6
2	85.49	95	300.96	0.405	26.0	95.2
3	87.37	184	299.73	0.393	30.8	142.4
4	89.31	273	298.54	0.388	35.2	181.6
5	91.32	343	297.41	0.385	38.6	211.6
6	93.39	381	296.34	0.383	40.7	230.4
7	95.52	377	295.33	0.384	41.8	235.7
8	97.69	327	294.38	0.386	42.3	224.1
9	99.90	240	293.51	0.395	43.8	191.1
10	102.16	131	292.71	0.428	50.7	128.7
11	104.44	35	292.05	0.617	81.3	14.3
12	106.34	-0	291.33	1.000	0.0	0.0

Read end-of-file on input while looking for another command word.
End of input data assumed - normal termination.

Attachment 6

Section C
Long Term Steady State with and without Geogrid Reinforcement and Seismic

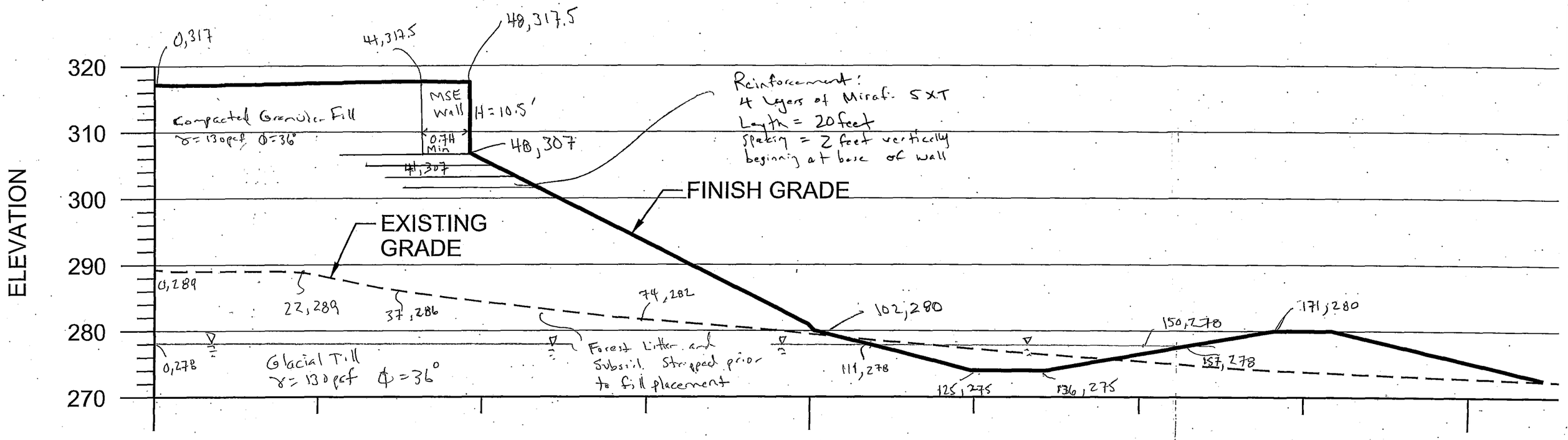
Cross Section and Input
Results
UTEXAS4 Output



SECTION C **SKC004**

HORIZ: 0 20' 40' SCALE IN FEET

VERT: 0 20' 40' SCALE IN FEET



SECTION C

SKC004

HORIZ: 0 20' 40' SCALE IN FEET

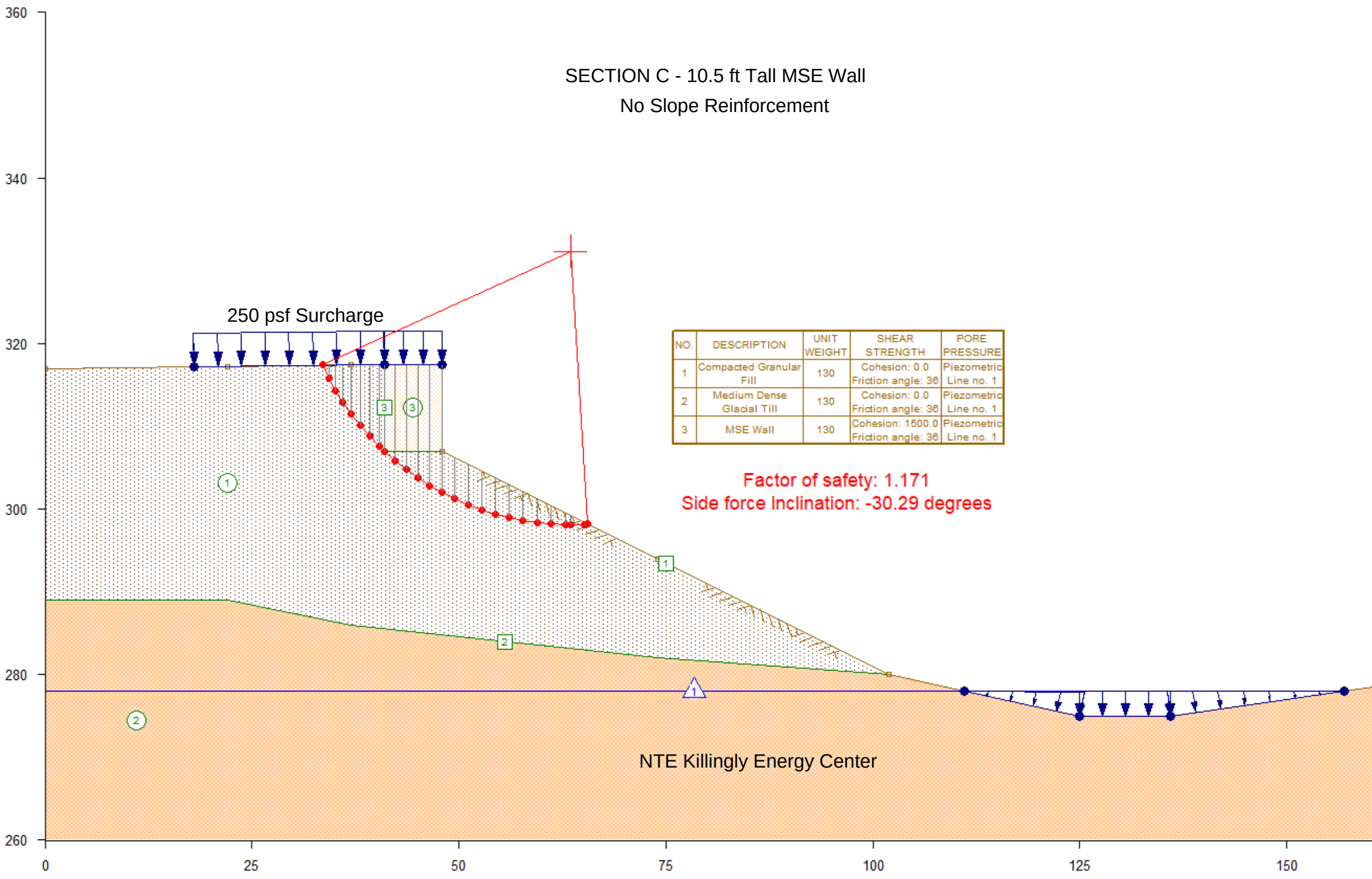
VERT: 0 20' 40' SCALE IN FEET

Boring B-01 near the toe of the slope Groundwater at EL 271 feet. Increase groundwater level for design to reflect the detention pond impacts.

Near top of slope, Test Pit TP-04 did not encounter groundwater to EL 277.9feet (bottom of test pit). TP-04 is on the cross-section line. Boring B-02 and B-3L encountered groundwater at EL 290 and 276, respectively. Use groundwater measurement in TP-04 for analyses.

SECTION C - 10.5 ft Tall MSE Wall

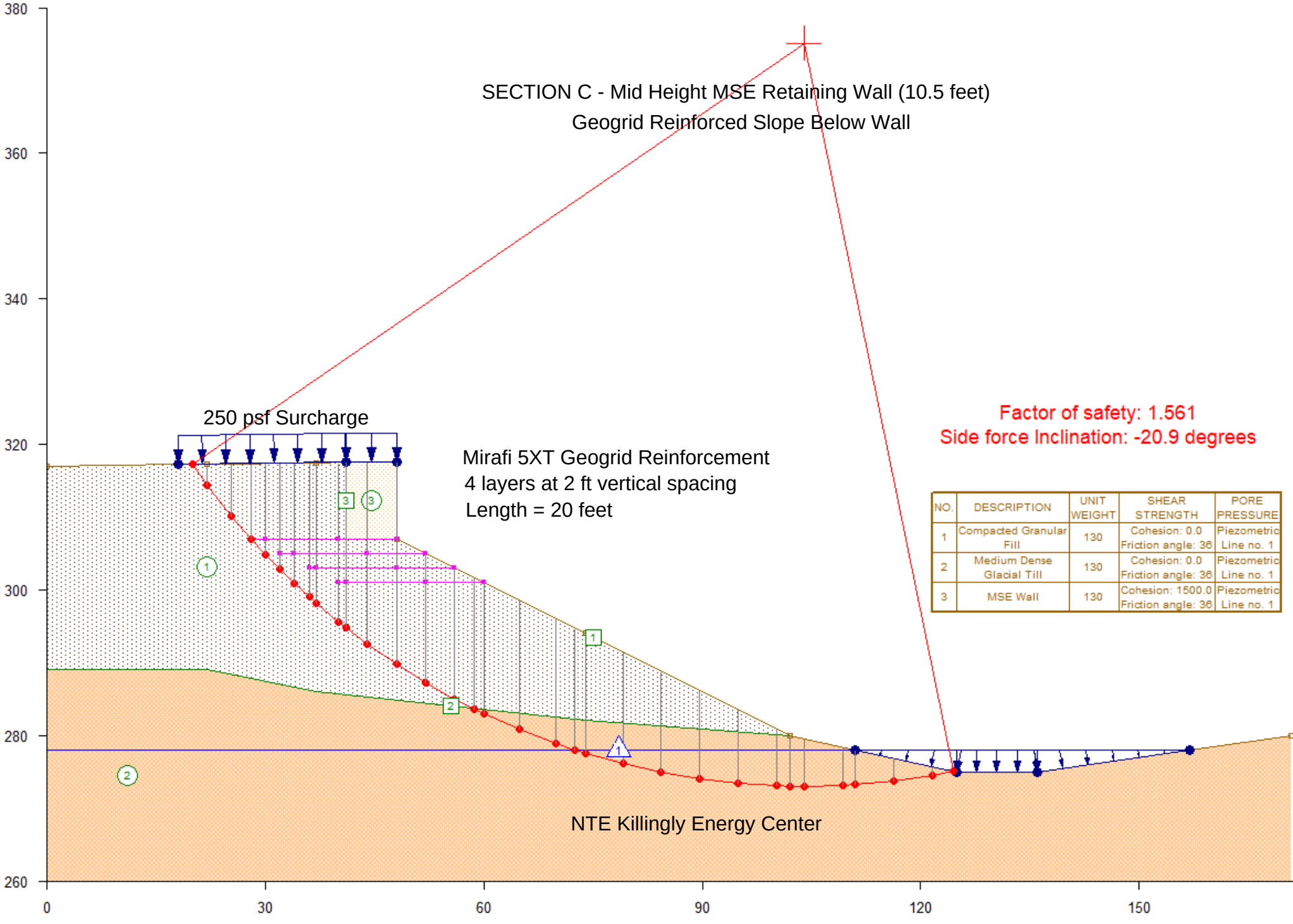
No Slope Reinforcement



NO.	DESCRIPTION	UNIT WEIGHT	SHEAR STRENGTH	PORE PRESSURE
1	Compacted Granular Fill	130	Cohesion: 0.0 Friction angle: 36	Piezometric Line no. 1
2	Medium Dense Glacial Till	130	Cohesion: 0.0 Friction angle: 36	Piezometric Line no. 1
3	MSE Wall	130	Cohesion: 1500.0 Friction angle: 36	Piezometric Line no. 1

Factor of safety: 1.171

Side force Inclination: -30.29 degrees



NO.	DESCRIPTION	UNIT WEIGHT	SHEAR STRENGTH	PORE PRESSURE
1	Compacted Granular Fill	130	Cohesion: 0.0 Friction angle: 36	Piezometric Line no. 1
2	Medium Dense Glacial Till	130	Cohesion: 0.0 Friction angle: 36	Piezometric Line no. 1
3	MSE Wall	130	Cohesion: 1500.0 Friction angle: 36	Piezometric Line no. 1

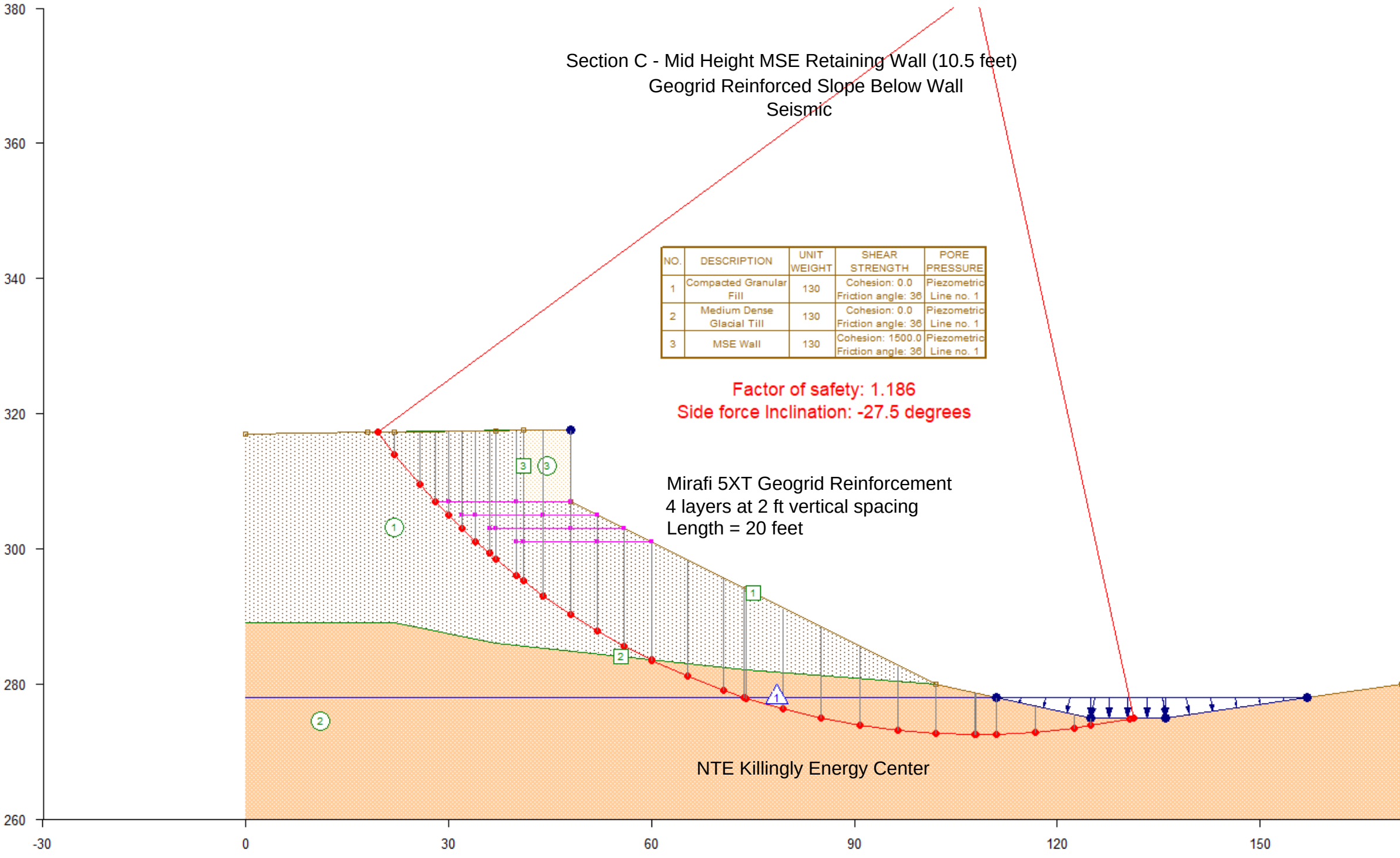

Section C - Mid Height MSE Retaining Wall (10.5 feet)
Geogrid Reinforced Slope Below Wall
Seismic
NO. | DESCRIPTION | UNIT WEIGHT | SHEAR STRENGTH | PORE PRESSURE
1 | Compacted Granular Fill | 130 | Cohesion: 0.0 Friction angle: 36 | Piezometric Line no. 1
2 | Medium Dense Glacial Till | 130 | Cohesion: 0.0 Friction angle: 36 | Piezometric Line no. 1
3 | MSE Wall | 130 | Cohesion: 1500.0 Friction angle: 36 | Piezometric Line no. 1
Factor of safety: 1.186
Side force Inclination: -27.5 degrees
Mirafi 5XT Geogrid Reinforcement
4 layers at 2 ft vertical spacing
Length = 20 feet
NTE Killingly Energy Center
380
360
340
320
300
280
260
-30
0
30
60
90
120
150

TABLE NO. 1
COMPUTER PROGRAM DESIGNATION: UTEXAS4
Originally Coded By Stephen G. Wright
Version No. 4.1.0.5 - Last Revision Date: 10/29/2008


```
*****************************************************************
* RESULTS OF COMPUTATIONS PERFORMED USING THIS SOFTWARE         *
* SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS THEY HAVE       *
* BEEN VERIFIED BY INDEPENDENT ANALYSES, EXPERIMENTAL DATA      *
* OR FIELD EXPERIENCE. THE USER SHOULD UNDERSTAND THE ALGORITHMS *
* AND ANALYTICAL PROCEDURES USED IN THIS SOFTWARE AND MUST HAVE  *
* READ ALL DOCUMENTATION FOR THIS SOFTWARE BEFORE ATTEMPTING     *
* TO USE IT.  NEITHER SHINOAK SOFTWARE NOR STEPHEN G. WRIGHT     *
* MAKE OR ASSUME LIABILITY FOR ANY WARRANTIES, EXPRESSED OR      *
* IMPLIED, CONCERNING THE ACCURACY, RELIABILITY, USEFULNESS      *
* OR ADAPTABILITY OF THIS SOFTWARE.                             *
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```

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Time and date of run: Tue Sep 24 07:57:40 2019
Name of input data file: Z:\Clients\ENR\NTECT\116572_Killingly\Design\GeoTech\Working\Dsgn\Slope Stability\NTE Killingly Temp Folder\Section C - Wall.dat

NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - No reinforcement
#116152

TABLE NO. 3
```
************************
* NEW PROFILE LINE DATA *
************************
```

----- Profile Line No. 1 - Material Type (Number): 1 -----

Description: Compacted Granular Fill

Point	X	Y
1	0.00	317.00
2	18.00	317.20
3	41.00	317.50
4	41.00	307.00
5	48.00	307.00
6	102.00	280.00

----- Profile Line No. 2 - Material Type (Number): 2 -----

Description: Top of Glacial Till - Subsoil Stripped

Point	X	Y
1	0.00	289.00
2	22.00	289.00
3	37.00	286.00
4	74.00	282.00
5	102.00	280.00
6	111.00	278.00

7	125.00	275.00
8	136.00	275.00
9	157.00	278.00
10	171.00	280.00

----- Profile Line No. 3 - Material Type (Number): 3 -----

Description: MSE Wall

Point	X	Y
1	41.00	307.00
2	41.00	317.50
3	48.00	317.50
4	48.00	307.00

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - No reinforcement
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TABLE NO. 4
****
* NEW MATERIAL PROPERTY DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

---------- DATA FOR MATERIAL NUMBER 1 ----------

Description: Compacted Granular Fill

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

---------- DATA FOR MATERIAL NUMBER 2 ----------

Description: Medium Dense Glacial Till

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1

Negative pore water pressures are NOT allowed - set to zero.

---------- DATA FOR MATERIAL NUMBER 3 ----------

Description: MSE Wall

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 1500.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

TABLE NO. 6
****
* NEW PIEZOMETRIC LINE DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

---------- Piezometric Line Number 1 ----------

Description: Piezometric Line
Unit weight of fluid (water): 62.4

Point	X	Y
1	0.00	278.00
2	157.00	278.00

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - No reinforcement
#116152

TABLE NO. 11
****
* NEW DISTRIBUTED LOAD DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

Point	X	Y	Normal Pressure	Shear Stress
1	18.00	317.20	250.0	0.0

2	41.00	317.50	250.0	0.0
3	48.00	317.50	250.0	0.0
4	48.00	317.50	0.0	0.0
5	111.00	278.00	0.0	0.0
6	125.00	275.00	187.2	0.0
7	136.00	275.00	187.2	0.0
8	157.00	278.00	0.0	0.0

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - No reinforcement
#116152

TABLE NO. 16
****
* NEW ANALYSIS/COMPUTATION DATA *
****

Starting Center Coordinate for Search at -
X: 64.00
Y: 332.00

Required accuracy for critical center
(= minimum spacing between grid points): 0.100

Critical shear surface not allowed to pass below Y: 0.00

For the initial mode of search circles pass through the fixed
point at - X: 41.00, Y: 307.00

The following represent default values or values that were prevously defined:
Subtended angle for slice subdivision: 3.00(degrees)
There is no crack.
There is no water in a crack.
Conventional (single-stage) computations will be performed.
Seismic coefficient: 0.000
Unit weight of water (or other fluid) in crack: 62.4
Automatic search output will be in long form.
Search will be continued after the initial mode to find a most critical circle.
Maximum number of trial grids for a given search mode: 50
No restrictions exist on the lateral extent of the search.
No shear surfaces other than the most critical will be saved for display later.
Neither slope face was explicitly designated for analysis.
Standard sign convention used for direction of shear stress on shear surface.
Procedure of Analysis: Spencer

Iteration limit: 100
Force imbalance: 1.000000e-005 (fraction of total weight)
Moment imbalance: 1.000000e-005 (fraction of moment due to total weight)
Minimum weight required for computations to be performed: 100
Initial trial factor of safety: 3.000
Initial trial side force inclination: 17.189 (degrees)
Minimum (most negative) side force inclination allowed in Spencer's procedure: -10.00

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - No reinforcement
#116152

TABLE NO. 26
****
* NEW, COMPUTED SLOPE GEOMETRY DATA *
****

These slope geometry were generated from the Profile Lines.

Point	X	Y
1	0.00	317.00
2	18.00	317.20
3	22.00	317.25
4	37.00	317.45
5	41.00	317.50
6	48.00	317.50
7	48.00	307.00
8	74.00	294.00
9	102.00	280.00
10	111.00	278.00
11	125.00	275.00
12	136.00	275.00
13	157.00	278.00
14	171.00	280.00

Search will be conducted for RIGHT face of slope

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - No reinforcement
#116152

TABLE NO. 29
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles Through a Fixed Point ------
------ Fixed point at - X: 41.00 Y: 307.00

Center Coordinates			1-Stage Factor of Safety	Side Force Inclination (degrees)		
X	Y	Radius			Iterations	Messages
61.00	329.00	29.73	1.175	-30.700	43	

64.00	329.00	31.83	1.180	-29.993	9
67.00	329.00	34.06	1.217	-29.513	9
61.00	332.00	32.02	1.193	-30.864	9
64.00	332.00	33.97	1.172	-30.249	29
67.00	332.00	36.07	1.186	-29.769	9
61.00	335.00	34.41	1.227	-30.796	9
64.00	335.00	36.24	1.182	-30.377	9
67.00	335.00	38.21	1.175	-29.915	10

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

63.50	331.50	33.26	1.172	-30.315	34
64.00	331.50	33.60	1.172	-30.219	28
64.50	331.50	33.95	1.173	-30.126	17
63.50	332.00	33.63	1.172	-30.345	38
64.50	332.00	34.31	1.172	-30.157	24
63.50	332.50	34.01	1.173	-30.375	40
64.00	332.50	34.34	1.172	-30.280	36
64.50	332.50	34.68	1.172	-30.186	28

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

63.50	331.00	32.90	1.171	-30.283	32
64.00	331.00	33.24	1.172	-30.184	22
64.50	331.00	33.59	1.174	-30.089	10

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

63.00	330.50	32.19	1.172	-30.350	34
63.50	330.50	32.53	1.172	-30.246	26
64.00	330.50	32.88	1.173	-30.145	13
63.00	331.00	32.56	1.172	-30.384	38
63.00	331.50	32.93	1.173	-30.413	40

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

63.20	330.70	32.47	1.172	-30.323	34
63.50	330.70	32.68	1.172	-30.262	30
63.80	330.70	32.89	1.172	-30.201	22
63.20	331.00	32.69	1.172	-30.344	36
63.80	331.00	33.10	1.172	-30.224	26
63.20	331.30	32.91	1.172	-30.362	36
63.50	331.30	33.12	1.172	-30.303	35
63.80	331.30	33.32	1.172	-30.244	28

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

63.40	330.90	32.76	1.171	-30.297	32
63.50	330.90	32.82	1.172	-30.276	32
63.60	330.90	32.89	1.172	-30.256	30
63.40	331.00	32.83	1.171	-30.304	34
63.60	331.00	32.97	1.172	-30.263	30
63.40	331.10	32.90	1.171	-30.310	34
63.50	331.10	32.97	1.171	-30.290	32
63.60	331.10	33.04	1.172	-30.270	30

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

63.40	331.20	32.98	1.172	-30.317	34
63.50	331.20	33.04	1.171	-30.297	34
63.60	331.20	33.11	1.171	-30.277	32

----- Critical Circle After the Current Mode of Search -----
X: 63.50 Y: 331.10 Radius: 32.971
Factor of safety: 1.171 Side force inclination: -30.290

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - No reinforcement
#116152

TABLE NO. 30
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles Tangent to a Given Horizontal Line ------
------ Tangent line elevation, Y: 298.13

Center Coordinates X	Y	Radius	1-Stage Factor of Safety	Side Force Inclination (degrees)	Iterations	Messages
60.50	328.10	29.97	1.276	-28.816	9	
63.50	328.10	29.97	1.266	-31.688	10	
66.50	328.10	29.97	Center rejected as follows:			UTEXAS ERROR NUMBER 9270 Solution did not converge in iteration limit of 100 iterations Failed to converge during stage 1 computations
60.50	331.10	32.97	1.339	-27.974	8	
66.50	331.10	32.97	1.484	-34.560	10	
60.50	334.10	35.97	1.403	-27.168	8	
63.50	334.10	35.97	1.235	-29.322	9	
66.50	334.10	35.97	1.325	-33.150	10	
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -						
63.00	330.60	32.47	1.188	-30.043	13	
63.50	330.60	32.47	1.184	-30.548	24	
64.00	330.60	32.47	1.218	-31.199	10	
63.00	331.10	32.97	1.198	-29.878	10	
64.00	331.10	32.97	1.204	-30.946	11	
63.00	331.60	33.47	1.209	-29.718	10	
63.50	331.60	33.47	1.182	-30.121	23	
64.00	331.60	33.47	1.190	-30.686	25	
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -						
63.20	330.80	32.67	1.181	-30.142	21	
63.50	330.80	32.67	1.179	-30.445	30	
63.80	330.80	32.67	1.198	-30.835	15	
63.20	331.10	32.97	1.188	-30.042	17	
63.80	331.10	32.97	1.190	-30.680	23	
63.20	331.40	33.27	1.194	-29.942	12	
63.50	331.40	33.27	1.178	-30.189	28	
63.80	331.40	33.27	1.183	-30.524	30	
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -						
63.40	331.00	32.87	1.175	-30.241	30	
63.50	331.00	32.87	1.174	-30.342	32	
63.60	331.00	32.87	1.180	-30.471	30	
63.40	331.10	32.97	1.177	-30.207	28	
63.60	331.10	32.97	1.177	-30.419	30	
63.40	331.20	33.07	1.179	-30.173	26	
63.50	331.20	33.07	1.174	-30.256	32	
63.60	331.20	33.07	1.175	-30.367	32	

----- Critical Circle After the Current Mode of Search -----
X: 63.50 Y: 331.10 Radius: 32.971
Factor of safety: 1.171 Side force inclination: -30.290
↟

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - No reinforcement
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TABLE NO. 33
****
* 1-STAGE FINAL CRITICAL CIRCLE INFORMATION *
****
X Coordinate of Center 63.50
Y Coordinate of Center 331.10
Radius 32.97
Factor of Safety 1.171
Side Force Inclination (degrees) . . . . . -30.29
Number of Circles Tried 76
Number of Circles F Calculated for 75
Time Required for Search (seconds) 0.1

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - No reinforcement
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TABLE NO. 43
****
* Coordinate, Weight, Strength and Pore Water Pressure *
* Information for Individual Slices for Conventional *
* Computations or First Stage of Multi-Stage Computations. *
* (Information is for the critical shear surface in the *
* case of an automatic search.) *
****

Slice No.	X	Y	Slice Weight	Matl. No.	Cohesion	Friction Angle	Pore Pressure
	33.51	317.40					
1	33.89	316.63	77	1	0.0	36.00	0.0
	34.27	315.85					
2	34.69	315.10	253	1	0.0	36.00	0.0
	35.11	314.34					
3	35.56	313.61	455	1	0.0	36.00	0.0
	36.02	312.88					
4	36.51	312.18	669	1	0.0	36.00	0.0
	37.00	311.48					
5	37.53	310.80	919	1	0.0	36.00	0.0
	38.06	310.12					
6	38.63	309.47	1178	1	0.0	36.00	0.0
	39.20	308.82					
7	39.80	308.20	1447	1	0.0	36.00	0.0
	40.39	307.58					
8	40.70	307.29	803	1	0.0	36.00	0.0
	41.00	307.00					

9	41.65	306.43	1860	1	0.0	36.00	0.0
	42.29	305.86					
10	42.97	305.32	2138	1	0.0	36.00	0.0
	43.64	304.78					
11	44.34	304.28	2414	1	0.0	36.00	0.0
	45.05	303.78					
12	45.77	303.31	2684	1	0.0	36.00	0.0
	46.50	302.85					
13	47.25	302.42	2935	1	0.0	36.00	0.0
	48.00	302.00					
14	48.77	301.61	1004	1	0.0	36.00	0.0
	49.54	301.23					
15	50.34	300.88	1018	1	0.0	36.00	0.0
	51.13	300.54					
16	51.93	300.24	1008	1	0.0	36.00	0.0
	52.74	299.93					
17	53.57	299.67	972	1	0.0	36.00	0.0
	54.39	299.41					
18	55.22	299.20	910	1	0.0	36.00	0.0
	56.06	298.98					
19	56.91	298.81	822	1	0.0	36.00	0.0
	57.75	298.63					
20	58.60	298.51	708	1	0.0	36.00	0.0
	59.46	298.38					
21	60.32	298.29	569	1	0.0	36.00	0.0
	61.18	298.21					
22	62.04	298.17	405	1	0.0	36.00	0.0
	62.90	298.13					
23	63.20	298.13	99	1	0.0	36.00	0.0
	63.50	298.13					
24	64.36	298.15	150	1	0.0	36.00	0.0
	65.23	298.17					
25	65.42	298.19	5	1	0.0	36.00	0.0
	65.61	298.20					

No water in crack.

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - No reinforcement
#116152

TABLE NO. 44

```
**********************************************************
* Seismic Forces and Forces Due to Distributed Loads for *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations.               *
* (Information is for the critical shear surface in the  *
* case of an automatic search.)                          *
**********************************************************
```

				FORCES DUE TO DISTRIBUTED LOADS			
Slices No.	X	Seismic Force	Y for Seismic Force	Normal Force	Shear Force	X	Y

1	33.89	0	317.02	190	0	33.89	317.41
2	34.69	0	316.26	210	0	34.69	317.42
3	35.56	0	315.52	229	0	35.56	317.43
4	36.51	0	314.81	245	0	36.51	317.44
5	37.53	0	314.13	266	0	37.53	317.45
6	38.63	0	313.47	283	0	38.63	317.47
7	39.80	0	312.84	300	0	39.80	317.48
8	40.70	0	312.39	151	0	40.70	317.50
9	41.65	0	311.96	323	0	41.65	317.50
10	42.97	0	311.41	338	0	42.97	317.50
11	44.34	0	310.89	351	0	44.34	317.50
12	45.77	0	310.41	364	0	45.77	317.50
13	47.25	0	309.96	374	0	47.25	317.50
14	48.77	0	304.11	0	0	48.77	306.61
15	50.34	0	303.36	0	0	50.34	305.83
16	51.93	0	302.63	0	0	51.93	305.03
17	53.57	0	301.95	0	0	53.57	304.22
18	55.22	0	301.29	0	0	55.22	303.39
19	56.91	0	300.68	0	0	56.91	302.55
20	58.60	0	300.10	0	0	58.60	301.70
21	60.32	0	299.57	0	0	60.32	300.84
22	62.04	0	299.08	0	0	62.04	299.98
23	63.20	0	298.77	0	0	63.20	299.40
24	64.36	0	298.49	0	0	64.36	298.82
25	65.42	0	298.24	0	0	65.42	298.29

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TABLE NO. 47
****
* Information for the Iterative Solution for the Factor of *
* Safety and Side Force Inclination by Spencer's Procedure *
****
Allowable force imbalance for convergence: 2.5502e-001
Allowable moment imbalance for convergence: 12

Iter-ation	Trial Factor of Safety	Trial Side Force Inclination (degrees)	Force Imbalance (lbs.)	Moment Imbalance (ft.-lbs.)	Delta-F	Delta Theta (degrees)
1	3.00000	-17.1887	-1.028e+004	3.146e+006		
First-order corrections to F and Theta					-4.5035	-1.4211
Reduced values - Deltas were too large					-0.5000	-0.1578
2	2.50000	-17.3465	-8.934e+003	2.733e+006		
First-order corrections to F and Theta					-2.7942	-1.6291
Reduced values - Deltas were too large					-0.5000	-0.2915
3	2.00000	-17.6380	-6.979e+003	2.136e+006		
First-order corrections to F and Theta					-1.4507	-2.0102

```
Reduced values - Deltas were too large .............   -0.5000    -0.6928

   4   1.50000   -18.3308  -3.869e+003   1.188e+006
First-order corrections to F and Theta .............   -0.4726    -3.0491
Reduced values - Deltas were too large .............   -0.4441    -2.8648

   5   1.05592   -21.1956   1.165e+003  -3.388e+005
First-order corrections to F and Theta .............   -0.0947    44.8860
Reduced values - Deltas were too large .............   -0.0060     2.8648

   6   1.04988   -18.3308   1.098e+003  -3.188e+005
First-order corrections to F and Theta .............    0.9881  -262.6892
Reduced values - Deltas were too large .............    0.0108    -2.8648

   7   1.06066   -21.1956   1.092e+003  -3.168e+005
First-order corrections to F and Theta .............   -0.1855    68.2123
Reduced values - Deltas were too large .............   -0.0078     2.8648

   8   1.05286   -18.3308   1.053e+003  -3.051e+005
First-order corrections to F and Theta .............    0.5891  -149.5031
Reduced values - Deltas were too large .............    0.0113    -2.8648

   9   1.06415   -21.1956   1.038e+003  -3.007e+005
First-order corrections to F and Theta .............   -0.3448   110.2641
Reduced values - Deltas were too large .............   -0.0090     2.8648

  10   1.05519   -18.3308   1.018e+003  -2.945e+005
First-order corrections to F and Theta .............    0.4558  -112.0122
Reduced values - Deltas were too large .............    0.0117    -2.8648

  11   1.06685   -21.1956   9.973e+002  -2.884e+005
First-order corrections to F and Theta .............   -0.7147   209.1536
Reduced values - Deltas were too large .............   -0.0098     2.8648

  12   1.05706   -18.3308   9.898e+002  -2.860e+005
First-order corrections to F and Theta .............    0.3886   -93.3180
Reduced values - Deltas were too large .............    0.0119    -2.8648

  13   1.06899   -21.1956   9.648e+002  -2.786e+005
First-order corrections to F and Theta .............   -2.6121   719.2788
Reduced values - Deltas were too large .............   -0.0104     2.8648

  14   1.05859   -18.3308   9.669e+002  -2.790e+005
First-order corrections to F and Theta .............    0.3481   -82.1393
Reduced values - Deltas were too large .............    0.0121    -2.8648

  15   1.07073   -21.1956   9.385e+002  -2.707e+005
First-order corrections to F and Theta .............    2.8070  -739.5434
Reduced values - Deltas were too large .............    0.0109    -2.8648

  16   1.08161   -24.0604   9.414e+002  -2.714e+005
First-order corrections to F and Theta .............   -0.1397    49.9759
Reduced values - Deltas were too large .............   -0.0080     2.8648

  17   1.07360   -21.1956   8.953e+002  -2.577e+005
First-order corrections to F and Theta .............    0.6910  -170.7595
Reduced values - Deltas were too large .............    0.0116    -2.8648

  18   1.08519   -24.0604   8.866e+002  -2.551e+005
```

```
First-order corrections to F and Theta ............   -0.3350    98.2380
Reduced values - Deltas were too large ............   -0.0098     2.8648

  19   1.07542   -21.1956   8.679e+002  -2.495e+005
First-order corrections to F and Theta ............    0.4815  -114.8076
Reduced values - Deltas were too large ............    0.0120    -2.8648

  20   1.08744   -24.0604   8.524e+002  -2.450e+005
First-order corrections to F and Theta ............   -0.9272   246.5114
Reduced values - Deltas were too large ............   -0.0108     2.8648

  21   1.07666   -21.1956   8.494e+002  -2.439e+005
First-order corrections to F and Theta ............    0.4029   -93.9564
Reduced values - Deltas were too large ............    0.0123    -2.8648

  22   1.08894   -24.0604   8.295e+002  -2.382e+005
First-order corrections to F and Theta ............   91.4999-22974.1521
Reduced values - Deltas were too large ............    0.0114    -2.8648

  23   1.10035   -26.9252   8.371e+002  -2.402e+005
First-order corrections to F and Theta ............   -0.0870    32.5523
Reduced values - Deltas were too large ............   -0.0077     2.8648

  24   1.09269   -24.0604   7.729e+002  -2.214e+005
First-order corrections to F and Theta ............    0.4398   -98.1195
Reduced values - Deltas were too large ............    0.0128    -2.8648

  25   1.10554   -26.9252   7.575e+002  -2.170e+005
First-order corrections to F and Theta ............   -5.4492  1277.3850
Reduced values - Deltas were too large ............   -0.0122     2.8648

  26   1.09331   -24.0604   7.636e+002  -2.186e+005
First-order corrections to F and Theta ............    0.3842   -84.2873
Reduced values - Deltas were too large ............    0.0131    -2.8648

  27   1.10637   -26.9252   7.447e+002  -2.132e+005
First-order corrections to F and Theta ............    1.1159  -248.2289
Reduced values - Deltas were too large ............    0.0129    -2.8648

  28   1.11925   -29.7900   7.450e+002  -2.132e+005
First-order corrections to F and Theta ............   -0.0028    10.7317
Reduced values - Deltas were too large ............   -0.0008     2.8648

  29   1.11850   -26.9252   5.616e+002  -1.597e+005
First-order corrections to F and Theta ............    0.0955   -13.7163
Reduced values - Deltas were too large ............    0.0199    -2.8648

  30   1.13844   -29.7900   4.512e+002  -1.289e+005
First-order corrections to F and Theta ............    0.0363    -1.3805
Second-order corrections to F and Theta ...........    0.0330    -0.4956

  31   1.17147   -30.2856  -2.921e-001   8.976e+001
First-order corrections to F and Theta ............   -0.0000    -0.0045
Second-order corrections to F and Theta ...........   -0.0000    -0.0045

  32   1.17147   -30.2901   5.884e-009  -1.162e-006
First-order corrections to F and Theta ............    0.0000    -0.0000
```

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TABLE NO. 55
****
* Check of Computations by Spencer's Procedure (Results are for the *
* critical shear surface in the case of an automatic search.)   *
****

Summation of Horizontal Forces: 2.30151e-012

Summation of Vertical Forces: 1.54496e-012

Summation of Moments: 3.39420e-010

Mohr Coulomb Shear Force/Shear Strength Check Summation: 1.78842e-012

***** CAUTION ***** Some of the Forces Between Slices Act at Points
Above the Surface of the Slope or Below the Shear Surface -
Either a Tension Crack may be Needed or the SOLUTION MAY NOT
BE A VALID SOLUTION

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TABLE NO. 58
****
* Final Results for Stresses Along the Shear Surface   *
* (Results are for the critical shear surface in the case of a search.) *
****

SPENCER'S PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY
Factor of Safety: 1.171   Side Force Inclination: -30.29

Slice No.	X-Center	Y-Center	Total Normal Stress	Effective Normal Stress	Shear Stress
1	33.89	316.63	112.7	112.7	69.9
2	34.69	315.10	195.9	195.9	121.5
3	35.56	313.61	290.6	290.6	180.3
4	36.51	312.18	395.6	395.6	245.3
5	37.53	310.80	510.8	510.8	316.8
6	38.63	309.47	636.6	636.6	394.8
7	39.80	308.20	772.2	772.2	478.9
8	40.70	307.29	879.3	879.3	545.3
9	41.65	306.43	991.2	991.2	614.7

10	42.97	305.32	1148.3	1148.3	712.2
11	44.34	304.28	1314.4	1314.4	815.2
12	45.77	303.31	1489.6	1489.6	923.9
13	47.25	302.42	1673.9	1673.9	1038.2
14	48.77	301.61	524.5	524.5	325.3
15	50.34	300.88	553.4	553.4	343.2
16	51.93	300.24	572.5	572.5	355.1
17	53.57	299.67	580.0	580.0	359.7
18	55.22	299.20	573.5	573.5	355.7
19	56.91	298.81	550.2	550.2	341.2
20	58.60	298.51	506.8	506.8	314.3
21	60.32	298.29	438.8	438.8	272.1
22	62.04	298.17	340.0	340.0	210.9
23	63.20	298.13	254.1	254.1	157.6
24	64.36	298.15	143.0	143.0	88.7
25	65.42	298.19	24.3	24.3	15.1

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - No reinforcement
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TABLE NO. 59

****
* Final Results for Side Forces and Stresses Between Slices *
* (Results are for the critical shear surface in the case of a search.) *
****

---------- VALUES AT RIGHT SIDE OF SLICE ----------

Slice No.	X-Right	Side Force	Y-Coord. of Side Force Location	Fraction of Height	Sigma at Top	Sigma at Bottom
1	34.27	144	316.42	0.365	15.1	144.1
2	35.11	372	315.29	0.308	-16.1	224.4
3	36.02	676	314.14	0.276	-43.8	300.1
4	37.00	1041	313.00	0.254	-71.6	373.1
5	38.06	1460	311.86	0.236	-100.2	443.8
6	39.20	1907	310.73	0.221	-128.5	508.9
7	40.39	2356	309.63	0.207	-155.4	565.9
8	41.00	2566	309.11	0.201	-167.5	589.6
9	42.29	2960	308.05	0.188	-190.9	629.9
10	43.64	3277	307.03	0.177	-208.3	653.2
11	45.05	3478	306.08	0.168	-217.4	655.0
12	46.50	3522	305.20	0.160	-215.3	630.5
13	48.00	3367	304.43	0.157	-163.4	730.6
14	49.54	3253	303.61	0.477	484.1	639.8
15	51.13	3066	302.83	0.467	433.9	647.3
16	52.74	2803	302.08	0.458	384.1	647.0
17	54.39	2467	301.38	0.448	334.8	635.2
18	56.06	2067	300.74	0.440	286.3	608.1
19	57.75	1618	300.15	0.433	239.2	561.6
20	59.46	1147	299.62	0.428	194.5	490.5
21	61.18	691	299.15	0.429	154.9	387.1

22	62.90	300	298.77	0.449	127.3	238.6
23	63.50	192	298.68	0.492	140.7	155.1
24	65.23	7	298.30	0.575	43.0	16.2
25	65.61	-0	298.20	1.000	0.0	0.0

Read end-of-file on input while looking for another command word.
End of input data assumed - normal termination.

TABLE NO. 1
COMPUTER PROGRAM DESIGNATION: UTEXAS4
Originally Coded By Stephen G. Wright
Version No. 4.1.0.5 - Last Revision Date: 10/29/2008


```
*****************************************************************
* RESULTS OF COMPUTATIONS PERFORMED USING THIS SOFTWARE         *
* SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS THEY HAVE       *
* BEEN VERIFIED BY INDEPENDENT ANALYSES, EXPERIMENTAL DATA      *
* OR FIELD EXPERIENCE. THE USER SHOULD UNDERSTAND THE ALGORITHMS *
* AND ANALYTICAL PROCEDURES USED IN THIS SOFTWARE AND MUST HAVE  *
* READ ALL DOCUMENTATION FOR THIS SOFTWARE BEFORE ATTEMPTING     *
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```

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - With reinforcement
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TABLE NO. 3
```
************************
* NEW PROFILE LINE DATA *
************************
```

----- Profile Line No. 1 - Material Type (Number): 1 -----

Description: Compacted Granular Fill

Point	X	Y
1	0.00	317.00
2	18.00	317.20
3	41.00	317.50
4	41.00	307.00
5	48.00	307.00
6	102.00	280.00

----- Profile Line No. 2 - Material Type (Number): 2 -----

Description: Top of Glacial Till - Subsoil Stripped

Point	X	Y
1	0.00	289.00
2	22.00	289.00
3	37.00	286.00
4	74.00	282.00
5	102.00	280.00
6	111.00	278.00

7	125.00	275.00
8	136.00	275.00
9	157.00	278.00
10	171.00	280.00

----- Profile Line No. 3 - Material Type (Number): 3 -----

Description: MSE Wall

Point	X	Y
1	41.00	307.00
2	41.00	317.50
3	48.00	317.50
4	48.00	307.00

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TABLE NO. 4
****
* NEW MATERIAL PROPERTY DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

---------- DATA FOR MATERIAL NUMBER 1 ----------

Description: Compacted Granular Fill

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

---------- DATA FOR MATERIAL NUMBER 2 ----------

Description: Medium Dense Glacial Till

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1

Negative pore water pressures are NOT allowed - set to zero.

---------- DATA FOR MATERIAL NUMBER 3 ----------

Description: MSE Wall

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 1500.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

TABLE NO. 6
****
* NEW PIEZOMETRIC LINE DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

---------- Piezometric Line Number 1 ----------

Description: Piezometric Line
Unit weight of fluid (water): 62.4

Point	X	Y
1	0.00	278.00
2	157.00	278.00

TABLE NO. 15
****
* NEW REINFORCEMENT LINE DATA *
****

_____ Reinforcement Line: 1 _____
Maximum rotation angle: 0.00 degrees
Option 1 - Reinforcement forces are applied to base and

sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	28.00	307.00	0	0
2	30.00	307.00	2000	0
3	40.00	307.00	2000	0
4	48.00	307.00	0	0

_____ Reinforcement Line: 2 _____

Maximum rotation angle: 0.00 degrees

Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	32.00	305.00	0	0
2	34.00	305.00	2000	0
3	44.00	305.00	2000	0
4	52.00	305.00	0	0

_____ Reinforcement Line: 3 _____

Maximum rotation angle: 0.00 degrees

Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	36.00	303.00	0	0
2	37.00	303.00	2000	0
3	48.00	303.00	2000	0
4	56.00	303.00	0	0

_____ Reinforcement Line: 4 _____

Maximum rotation angle: 0.00 degrees

Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	40.00	301.00	0	0
2	41.00	301.00	2000	0
3	52.00	301.00	2000	0
4	60.00	301.00	0	0

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TABLE NO. 11

****

* NEW DISTRIBUTED LOAD DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *

****

Point	X	Y	Normal Pressure	Shear Stress
1	18.00	317.20	250.0	0.0
2	41.00	317.50	250.0	0.0

3	48.00	317.50	250.0	0.0
4	48.00	317.50	0.0	0.0
5	111.00	278.00	0.0	0.0
6	125.00	275.00	187.2	0.0
7	136.00	275.00	187.2	0.0
8	157.00	278.00	0.0	0.0

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TABLE NO. 16
****
* NEW ANALYSIS/COMPUTATION DATA *
****

Starting Center Coordinate for Search at -
X: 104.00
Y: 375.00

Required accuracy for critical center
(= minimum spacing between grid points): 0.100

Critical shear surface not allowed to pass below Y: 0.00

For the initial mode of search circles pass through the fixed
point at - X: 41.00, Y: 307.00

The following represent default values or values that were prevously defined:
Subtended angle for slice subdivision: 3.00(degrees)
There is no crack.
There is no water in a crack.
Conventional (single-stage) computations will be performed.
Seismic coefficient: 0.000
Unit weight of water (or other fluid) in crack: 62.4
Automatic search output will be in long form.
Search will be continued after the initial mode to find a most critical circle.
Maximum number of trial grids for a given search mode: 50
No restrictions exist on the lateral extent of the search.
No shear surfaces other than the most critical will be saved for display later.
Neither slope face was explicitly designated for analysis.
Standard sign convention used for direction of shear stress on shear surface.
Procedure of Analysis: Spencer

Iteration limit: 100
Force imbalance: 1.000000e-005 (fraction of total weight)
Moment imbalance: 1.000000e-005 (fraction of moment due to total weight)
Minimum weight required for computations to be performed: 100
Initial trial factor of safety: 3.000
Initial trial side force inclination: 17.189 (degrees)
Minimum (most negative) side force inclination allowed in Spencer's procedure: -10.00

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TABLE NO. 26
****
* NEW, COMPUTED SLOPE GEOMETRY DATA *
****

These slope geometry were generated from the Profile Lines.

Point	X	Y
1	0.00	317.00
2	18.00	317.20
3	22.00	317.25
4	37.00	317.45
5	41.00	317.50
6	48.00	317.50
7	48.00	307.00
8	74.00	294.00
9	102.00	280.00
10	111.00	278.00
11	125.00	275.00
12	136.00	275.00
13	157.00	278.00
14	171.00	280.00

Search will be conducted for RIGHT face of slope

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TABLE NO. 29
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles Through a Fixed Point ------
------ Fixed point at - X: 41.00   Y: 307.00

Center Coordinates			1-Stage Factor of Safety	Side Force Inclination (degrees)	Iterations	Messages
X	Y	Radius				
101.00	372.00	88.46	1.735	-20.484	5	
104.00	372.00	90.52	1.698	-20.955	5	

107.00	372.00	92.63	1.674	-21.473	5
101.00	375.00	90.69	1.765	-20.185	5
104.00	375.00	92.70	1.720	-20.586	5
107.00	375.00	94.76	1.687	-21.101	5
101.00	378.00	92.96	1.801	-19.970	5
104.00	378.00	94.92	1.747	-20.252	5
107.00	378.00	96.94	1.706	-20.708	5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
104.00	369.00	88.39	1.681	-21.324	5
107.00	369.00	90.55	1.673	-21.727	5
110.00	369.00	92.76	1.667	-21.858	5
110.00	372.00	94.79	1.675	-21.750	5
110.00	375.00	96.88	1.679	-21.498	5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
107.00	366.00	88.53	1.675	-21.923	5
110.00	366.00	90.79	1.660	-21.746	5
113.00	366.00	93.09	1.666	-20.533	5
113.00	369.00	95.02	1.660	-21.173	5
113.00	372.00	97.00	1.663	-21.493	5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
107.00	363.00	86.56	1.666	-22.054	5
110.00	363.00	88.87	1.656	-21.427	5
113.00	363.00	91.21	1.682	-19.687	5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
107.00	360.00	84.65	1.660	-21.940	5
110.00	360.00	87.01	1.658	-20.905	5
113.00	360.00	89.40	1.712	-18.602	5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
109.50	362.50	88.16	1.656	-21.527	5
110.00	362.50	88.55	1.656	-21.358	5
110.50	362.50	88.94	1.657	-21.166	5
109.50	363.00	88.48	1.657	-21.588	5
110.50	363.00	89.25	1.656	-21.250	5
109.50	363.50	88.79	1.657	-21.645	5
110.00	363.50	89.18	1.657	-21.492	5
110.50	363.50	89.57	1.656	-21.322	5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
109.50	362.00	87.85	1.656	-21.461	5
110.00	362.00	88.24	1.656	-21.285	5
110.50	362.00	88.63	1.657	-21.073	5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
109.50	361.50	87.54	1.656	-21.392	5
110.00	361.50	87.93	1.656	-21.206	5
110.50	361.50	88.32	1.658	-20.969	5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
109.00	361.00	86.83	1.656	-21.494	5
109.50	361.00	87.23	1.656	-21.318	5
110.00	361.00	87.62	1.657	-21.116	5
109.00	361.50	87.14	1.656	-21.559	5
109.00	362.00	87.46	1.657	-21.622	5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
109.00	360.50	86.52	1.656	-21.424	5
109.50	360.50	86.92	1.656	-21.240	5
110.00	360.50	87.31	1.657	-21.015	5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
108.50	360.00	85.82	1.656	-21.525	5
109.00	360.00	86.21	1.656	-21.349	5
109.50	360.00	86.61	1.656	-21.153	5
108.50	360.50	86.13	1.656	-21.591	5

```
    108.50    361.00     86.44   1.657    -21.653         5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    108.50    359.50     85.51   1.656    -21.453         5
    109.00    359.50     85.91   1.656    -21.269         5
    109.50    359.50     86.30   1.657    -21.055         5
    108.50    360.00     85.82   1.656    -21.525         5
    109.50    360.00     86.61   1.656    -21.153         5
    108.50    360.50     86.13   1.656    -21.591         5
    109.00    360.50     86.52   1.656    -21.424         5
    109.50    360.50     86.92   1.656    -21.240         5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    108.70    359.70     85.79   1.656    -21.411         5
    109.00    359.70     86.03   1.656    -21.301         5
    109.30    359.70     86.27   1.656    -21.184         5
    108.70    360.00     85.98   1.656    -21.456         5
    109.30    360.00     86.45   1.656    -21.236         5
    108.70    360.30     86.16   1.656    -21.499         5
    109.00    360.30     86.40   1.656    -21.394         5
    109.30    360.30     86.64   1.656    -21.284         5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    108.90    359.90     86.07   1.656    -21.370         5
    109.00    359.90     86.15   1.656    -21.333         5
    109.10    359.90     86.23   1.656    -21.296         5
    108.90    360.00     86.14   1.656    -21.385         5
    109.10    360.00     86.29   1.656    -21.312         5
    108.90    360.10     86.20   1.656    -21.400         5
    109.00    360.10     86.28   1.656    -21.364         5
    109.10    360.10     86.36   1.656    -21.327         5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    108.80    359.80     85.93   1.656    -21.391         5
    108.90    359.80     86.01   1.656    -21.354         5
    109.00    359.80     86.09   1.656    -21.317         5
    108.80    359.90     86.00   1.656    -21.406         5
    108.80    360.00     86.06   1.656    -21.421         5
----- Critical Circle After the Current Mode of Search -----
X: 108.90     Y: 359.90     Radius: 86.075
Factor of safety: 1.656     Side force inclination: -21.370
```



```
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TABLE NO. 30
************************************************
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
************************************************

------ Output for Circles Tangent to a Given Horizontal Line ------
------ Tangent line elevation, Y: 273.83

                                1-Stage
Center Coordinates              Factor  Side Force
                                  of    Inclination
     X         Y       Radius   Safety   (degrees)   Iterations          Messages
```

```
    105.90    356.90     83.07   1.655    -20.908         5
    108.90    356.90     83.07   1.738    -19.724         5
    111.90    356.90     83.07   1.957      0.813        14
    105.90    359.90     86.07   1.651    -20.458         5
    111.90    359.90     86.07   1.836    -15.934         5
    105.90    362.90     89.07   1.653    -20.018         5
    108.90    362.90     89.07   1.654    -20.754         5
    111.90    362.90     89.07   1.742    -19.580         5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    102.90    356.90     83.07   1.656    -20.180         5
    102.90    359.90     86.07   1.619    -20.334         5
    102.90    362.90     89.07   1.621    -20.074         5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     99.90    356.90     83.07   1.617    -20.417         5
     99.90    359.90     86.07   1.593    -20.688         6
     99.90    362.90     89.07   1.581    -20.877         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     96.90    359.90     86.07   1.592    -21.129         6
     96.90    362.90     89.07   1.592    -21.227         6
     96.90    365.90     92.07   1.611    -21.024         5
     99.90    365.90     92.07   1.578    -21.003         6
    102.90    365.90     92.07   1.587    -20.469         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     96.90    368.90     95.07   1.632    -20.742         5
     99.90    368.90     95.07   1.576    -21.153         6
    102.90    368.90     95.07   1.575    -20.657         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    105.90    365.90     92.07   1.636    -19.878         5
    105.90    368.90     95.07   1.616    -19.890         5
     99.90    371.90     98.07   1.594    -20.952         6
    102.90    371.90     98.07   1.570    -20.805         6
    105.90    371.90     98.07   1.587    -20.184         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     99.90    374.90    101.07   1.616    -20.666         5
    102.90    374.90    101.07   1.563    -21.036         6
    105.90    374.90    101.07   1.574    -20.378         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     99.90    377.90    104.07   1.639    -20.372         5
    102.90    377.90    104.07   1.581    -20.855         6
    105.90    377.90    104.07   1.566    -20.546         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    102.40    374.40    100.57   1.568    -21.032         6
    102.90    374.40    100.57   1.564    -20.998         6
    103.40    374.40    100.57   1.565    -20.883         6
    102.40    374.90    101.07   1.571    -21.001         6
    103.40    374.90    101.07   1.564    -20.921         6
    102.40    375.40    101.57   1.574    -20.969         6
    102.90    375.40    101.57   1.565    -21.013         6
    103.40    375.40    101.57   1.563    -20.959         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    102.60    374.60    100.77   1.565    -21.037         6
    102.90    374.60    100.77   1.563    -21.013         6
    103.20    374.60    100.77   1.564    -20.945         6
    102.60    374.90    101.07   1.567    -21.018         6
    103.20    374.90    101.07   1.563    -20.967         6
    102.60    375.20    101.37   1.569    -21.000         6
    102.90    375.20    101.37   1.564    -21.026         6
    103.20    375.20    101.37   1.563    -20.990         6
```

```
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    103.50    374.90    101.07   1.564    -20.898         6
    103.50    375.20    101.37   1.564    -20.921         6
    102.90    375.50    101.67   1.566    -21.007         6
    103.20    375.50    101.67   1.562    -21.013         6
    103.50    375.50    101.67   1.563    -20.944         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    102.90    375.80    101.97   1.568    -20.988         6
    103.20    375.80    101.97   1.563    -21.014         6
    103.50    375.80    101.97   1.562    -20.967         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    103.10    375.40    101.57   1.562    -21.028         6
    103.20    375.40    101.57   1.562    -21.005         6
    103.30    375.40    101.57   1.563    -20.982         6
    103.10    375.50    101.67   1.563    -21.024         6
    103.30    375.50    101.67   1.562    -20.990         6
    103.10    375.60    101.77   1.563    -21.018         6
    103.20    375.60    101.77   1.562    -21.020         6
    103.30    375.60    101.77   1.562    -20.997         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    103.10    375.70    101.87   1.564    -21.012         6
    103.20    375.70    101.87   1.562    -21.020         6
    103.30    375.70    101.87   1.562    -21.005         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    103.40    375.60    101.77   1.562    -20.975         6
    103.40    375.70    101.87   1.562    -20.982         6
    103.30    375.80    101.97   1.562    -21.013         6
    103.40    375.80    101.97   1.562    -20.990         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    103.20    375.90    102.07   1.564    -21.008         6
    103.30    375.90    102.07   1.562    -21.016         6
    103.40    375.90    102.07   1.562    -20.997         6
----- Critical Circle After the Current Mode of Search -----
X: 103.30     Y: 375.80     Radius: 101.975
Factor of safety: 1.562     Side force inclination: -21.013
```



```
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TABLE NO. 31
************************************************
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
************************************************

------ Output for Circles with a Given, Constant Radius ------
------ Radius: 101.97

                                1-Stage
Center Coordinates              Factor  Side Force
                                  of    Inclination
     X         Y       Radius   Safety   (degrees)   Iterations          Messages

    100.30    372.80    101.97   1.655    -19.664         5
```

```
    103.30    372.80    101.97   1.606    -20.011         5
    106.30    372.80    101.97   1.575    -19.986         6
    100.30    375.80    101.97   1.615    -20.644         5
    106.30    375.80    101.97   1.574    -20.344         6
    100.30    378.80    101.97   1.579    -20.806         6
    103.30    378.80    101.97   1.591    -20.057         6
    106.30    378.80    101.97   1.657    -19.143         5
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    102.80    375.30    101.97   1.576    -20.878         6
    103.30    375.30    101.97   1.568    -20.920         6
    103.80    375.30    101.97   1.561    -20.938         6
    102.80    375.80    101.97   1.569    -20.980         6
    103.80    375.80    101.97   1.563    -20.897         6
    102.80    376.30    101.97   1.563    -21.058         6
    103.30    376.30    101.97   1.564    -20.946         6
    103.80    376.30    101.97   1.566    -20.827         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    103.30    374.80    101.97   1.574    -20.797         6
    103.80    374.80    101.97   1.567    -20.838         6
    104.30    374.80    101.97   1.561    -20.838         6
    104.30    375.30    101.97   1.562    -20.822         6
    104.30    375.80    101.97   1.565    -20.777         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    103.80    374.30    101.97   1.574    -20.687         6
    104.30    374.30    101.97   1.566    -20.720         6
    104.80    374.30    101.97   1.562    -20.695         6
    104.80    374.80    101.97   1.563    -20.722         6
    104.80    375.30    101.97   1.564    -20.703         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    104.00    374.50    101.97   1.568    -20.767         6
    104.30    374.50    101.97   1.563    -20.788         6
    104.60    374.50    101.97   1.562    -20.759         6
    104.00    374.80    101.97   1.563    -20.854         6
    104.60    374.80    101.97   1.562    -20.769         6
    104.00    375.10    101.97   1.561    -20.901         6
    104.30    375.10    101.97   1.562    -20.832         6
    104.60    375.10    101.97   1.563    -20.762         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    103.70    374.80    101.97   1.568    -20.830         6
    103.70    375.10    101.97   1.564    -20.906         6
    103.70    375.40    101.97   1.561    -20.955         6
    104.00    375.40    101.97   1.562    -20.886         6
    104.30    375.40    101.97   1.563    -20.815         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    103.90    375.00    101.97   1.562    -20.898         6
    104.00    375.00    101.97   1.561    -20.903         6
    104.10    375.00    101.97   1.561    -20.881         6
    103.90    375.10    101.97   1.561    -20.922         6
    104.10    375.10    101.97   1.561    -20.878         6
    103.90    375.20    101.97   1.561    -20.920         6
    104.00    375.20    101.97   1.561    -20.897         6
    104.10    375.20    101.97   1.562    -20.874         6
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
    103.90    374.90    101.97   1.564    -20.872         6
    104.00    374.90    101.97   1.562    -20.880         6
    104.10    374.90    101.97   1.561    -20.883         6
----- Critical Circle After the Current Mode of Search -----
X: 104.00     Y: 375.00     Radius: 101.975
Factor of safety: 1.561     Side force inclination: -20.903
```

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TABLE NO. 33

* 1-STAGE FINAL CRITICAL CIRCLE INFORMATION *

X Coordinate of Center 104.00
Y Coordinate of Center 375.00
Radius 101.97
Factor of Safety 1.561
Side Force Inclination (degrees) . . . . . -20.90
Number of Circles Tried 206
Number of Circles F Calculated for 206
Time Required for Search (seconds) 0.2

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TABLE NO. 43

* Coordinate, Weight, Strength and Pore Water Pressure *
* Information for Individual Slices for Conventional *
* Computations or First Stage of Multi-Stage Computations. *
* (Information is for the critical shear surface in the *
* case of an automatic search.) *

Slice No.	X	Y	Slice Weight	Matl. No.	Cohesion	Friction Angle	Pore Pressure
	19.97	317.23					
1	20.99	315.80	379	1	0.0	36.00	0.0
	22.00	314.38					
2	23.64	312.28	2134	1	0.0	36.00	0.0
	25.28	310.17					
3	26.64	308.59	3079	1	0.0	36.00	0.0
	28.00	307.01					
4	28.00	307.00	11	1	0.0	36.00	0.0
	28.01	307.00					
5	29.00	305.92	2959	1	0.0	36.00	0.0
	30.00	304.84					
6	31.00	303.81	3525	1	0.0	36.00	0.0
	32.00	302.79					
7	33.00	301.82	4051	1	0.0	36.00	0.0
	34.00	300.85					
8	35.00	299.93	4549	1	0.0	36.00	0.0

	36.00	299.01					
9	36.50	298.57	2454	1	0.0	36.00	0.0
	37.00	298.12					
10	38.50	296.87	8034	1	0.0	36.00	0.0
	40.00	295.61					
11	40.50	295.21	2897	1	0.0	36.00	0.0
	41.00	294.81					
12	42.50	293.68	9290	1	0.0	36.00	0.0
	44.00	292.55					
13	46.00	291.16	13696	1	0.0	36.00	0.0
	48.00	289.78					
14	50.00	288.53	9085	1	0.0	36.00	0.0
	52.00	287.28					
15	54.00	286.15	9280	1	0.0	36.00	0.0
	56.00	285.03					
16	57.33	284.34	6228	1	0.0	36.00	0.0
	58.66	283.66					
17	59.33	283.33	3129	2	0.0	36.00	0.0
	60.00	283.01					
18	62.44	281.92	11320	2	0.0	36.00	0.0
	64.87	280.83					
19	67.37	279.87	11300	2	0.0	36.00	0.0
	69.86	278.91					
20	71.20	278.46	5908	2	0.0	36.00	0.0
	72.54	278.00					
21	73.27	277.77	3152	2	0.0	36.00	14.4
	74.00	277.54					
22	76.57	276.82	10625	2	0.0	36.00	73.6
	79.14	276.10					
23	81.75	275.52	9894	2	0.0	36.00	154.8
	84.35	274.94					
24	86.98	274.49	8908	2	0.0	36.00	219.0
	89.62	274.05					
25	92.27	273.74	7672	2	0.0	36.00	266.0
	94.92	273.43					
26	97.58	273.26	6196	2	0.0	36.00	295.6
	100.25	273.09					
27	101.12	273.07	1679	2	0.0	36.00	307.6
	102.00	273.05					
28	103.00	273.04	1753	2	0.0	36.00	309.8
	104.00	273.03					
29	106.67	273.10	4071	2	0.0	36.00	306.0
	109.34	273.17					
30	110.17	273.22	1074	2	0.0	36.00	298.5
	111.00	273.27					
31	113.66	273.52	2703	2	0.0	36.00	279.6
	116.31	273.77					
32	118.96	274.16	1464	2	0.0	36.00	239.4
	121.60	274.56					
33	123.05	274.83	222	2	0.0	36.00	197.7
	124.50	275.11					

No water in crack.

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - With reinforcement
#116152

TABLE NO. 44
****
* Seismic Forces and Forces Due to Distributed Loads for *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations. *
* (Information is for the critical shear surface in the *
* case of an automatic search.) *
****

Slices No.	X	Seismic Force	Y for Seismic Force	FORCES DUE TO DISTRIBUTED LOADS Normal Force	Shear Force	X	Y
1	20.99	0	316.52	507	0	20.99	317.24
2	23.64	0	314.77	821	0	23.64	317.27
3	26.64	0	312.95	679	0	26.64	317.31
4	28.00	0	312.17	2	0	28.00	317.33
5	29.00	0	311.63	498	0	29.00	317.34
6	31.00	0	310.59	500	0	31.00	317.37
7	33.00	0	309.61	500	0	33.00	317.40
8	35.00	0	308.67	500	0	35.00	317.42
9	36.50	0	308.00	250	0	36.50	317.44
10	38.50	0	307.17	750	0	38.50	317.47
11	40.50	0	306.35	250	0	40.50	317.49
12	42.50	0	305.59	750	0	42.50	317.50
13	46.00	0	304.33	1000	0	46.00	317.50
14	50.00	0	297.26	0	0	50.00	306.00
15	54.00	0	295.08	0	0	54.00	304.00
16	57.33	0	293.34	0	0	57.33	302.33
17	59.33	0	292.33	0	0	59.33	301.33
18	62.44	0	290.85	0	0	62.44	299.78
19	67.37	0	288.59	0	0	67.37	297.32
20	71.20	0	286.93	0	0	71.20	295.40
21	73.27	0	286.07	0	0	73.27	294.37
22	76.57	0	284.77	0	0	76.57	292.71
23	81.75	0	282.82	0	0	81.75	290.13
24	86.98	0	281.00	0	0	86.98	287.51
25	92.27	0	279.30	0	0	92.27	284.87
26	97.58	0	277.74	0	0	97.58	282.21
27	101.12	0	276.75	0	0	101.12	280.44
28	103.00	0	276.41	0	0	103.00	279.78
29	106.67	0	276.03	0	0	106.67	278.96
30	110.17	0	275.70	0	0	110.17	278.18
31	113.66	0	275.47	193	0	114.54	277.24
32	118.96	0	275.23	575	0	119.25	276.23
33	123.05	0	275.12	478	0	123.11	275.41

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TABLE NO. 45

****
* Forces Due to Internal Soil Reinforcement for *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations. *
* (Information is for the critical shear surface in the *
* case of an automatic search.) *
****

Slice No.	X	Horizontal Force on Side	Vertical Force on Side	Y-Coordinate of Force	Horizontal Force on Base	Vertical Force on Base
	19.97					
1	Left:	0	0	317.23	0	0
1	Right:	0	0	314.38	0	0
	22.00					
2	Left:	0	0	314.38	0	0
2	Right:	0	0	310.17	0	0
	25.28					
3	Left:	0	0	310.17	0	0
3	Right:	0	0	307.01	0	0
	28.00					
4	Left:	0	0	307.01	0	0
4	Right:	0	0	307.00	0	0
	28.01					
5	Left:	0	0	307.00	-8	0
5	Right:	2000	0	307.00	0	0
	30.00					
6	Left:	-2000	0	307.00	0	0
6	Right:	2000	0	307.00	0	0
	32.00					
7	Left:	-2000	0	307.00	0	0
7	Right:	4000	0	306.00	0	0
	34.00					
8	Left:	-4000	0	306.00	0	0
8	Right:	4000	0	306.00	0	0
	36.00					
9	Left:	-4000	0	306.00	0	0
9	Right:	6000	0	305.00	0	0
	37.00					
10	Left:	-6000	0	305.00	0	0
10	Right:	6000	0	305.00	0	0
	40.00					
11	Left:	-6000	0	305.00	0	0
11	Right:	7750	0	303.90	0	0
	41.00					
12	Left:	-7750	0	303.90	0	0
12	Right:	7000	0	303.57	0	0
	44.00					
13	Left:	-7000	0	303.57	0	0
13	Right:	5000	0	302.60	0	0
	48.00					
14	Left:	-5000	0	302.60	0	0
14	Right:	3000	0	301.67	0	0
	52.00					
15	Left:	-3000	0	301.67	0	0

15	Right:	1000	0	301.00	0	0
	56.00					
16	Left:	-1000	0	301.00	0	0
16	Right:	334	0	301.00	0	0
	58.66					
17	Left:	-334	0	301.00	0	0
17	Right:	0	0	283.01	0	0
	60.00					
18	Left:	0	0	283.01	0	0
18	Right:	0	0	280.83	0	0
	64.87					
19	Left:	0	0	280.83	0	0
19	Right:	0	0	278.91	0	0
	69.86					
20	Left:	0	0	278.91	0	0
20	Right:	0	0	278.00	0	0
	72.54					
21	Left:	0	0	278.00	0	0
21	Right:	0	0	277.54	0	0
	74.00					
22	Left:	0	0	277.54	0	0
22	Right:	0	0	276.10	0	0
	79.14					
23	Left:	0	0	276.10	0	0
23	Right:	0	0	274.94	0	0
	84.35					
24	Left:	0	0	274.94	0	0
24	Right:	0	0	274.05	0	0
	89.62					
25	Left:	0	0	274.05	0	0
25	Right:	0	0	273.43	0	0
	94.92					
26	Left:	0	0	273.43	0	0
26	Right:	0	0	273.09	0	0
	100.25					
27	Left:	0	0	273.09	0	0
27	Right:	0	0	273.05	0	0
	102.00					
28	Left:	0	0	273.05	0	0
28	Right:	0	0	273.03	0	0
	104.00					
29	Left:	0	0	273.03	0	0
29	Right:	0	0	273.17	0	0
	109.34					
30	Left:	0	0	273.17	0	0
30	Right:	0	0	273.27	0	0
	111.00					
31	Left:	0	0	273.27	0	0
31	Right:	0	0	273.77	0	0
	116.31					
32	Left:	0	0	273.77	0	0
32	Right:	0	0	274.56	0	0
	121.60					
33	Left:	0	0	274.56	0	0
33	Right:	0	0	275.11	0	0
	124.50					

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - With reinforcement
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TABLE NO. 46
****
* Forces Due to Internal Soil Reinforcement for *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations. *
* (Information is for the critical shear surface in the *
* case of an automatic search.) *
****

Slice No.	Horizontal Force	Vertical Force	Moment about Center of Slice Base	Resultant Force	Angle (degs.)
1	0	0	0.0000e+000	0	0.00
2	0	0	0.0000e+000	0	0.00
3	0	0	0.0000e+000	0	0.00
4	0	0	0.0000e+000	0	0.00
5	1992	0	-2.1541e+003	1992	0.00
6	0	0	0.0000e+000	0	0.00
7	2000	0	-6.3675e+003	2000	0.00
8	0	0	0.0000e+000	0	0.00
9	2000	0	-8.8673e+003	2000	0.00
10	0	0	0.0000e+000	0	0.00
11	1750	0	-8.6292e+003	1750	0.00
12	-750	0	9.9903e+003	750	180.00
13	-2000	0	2.9677e+004	2000	180.00
14	-2000	0	3.0942e+004	2000	180.00
15	-2000	0	3.1691e+004	2000	180.00
16	-666	0	1.1089e+004	666	180.00
17	-334	0	5.9057e+003	334	180.00
18	0	0	0.0000e+000	0	0.00
19	0	0	0.0000e+000	0	0.00
20	0	0	0.0000e+000	0	0.00
21	0	0	0.0000e+000	0	0.00
22	0	0	0.0000e+000	0	0.00
23	0	0	0.0000e+000	0	0.00
24	0	0	0.0000e+000	0	0.00
25	0	0	0.0000e+000	0	0.00
26	0	0	0.0000e+000	0	0.00
27	0	0	0.0000e+000	0	0.00
28	0	0	0.0000e+000	0	0.00
29	0	0	0.0000e+000	0	0.00
30	0	0	0.0000e+000	0	0.00
31	0	0	0.0000e+000	0	0.00
32	0	0	0.0000e+000	0	0.00
33	0	0	0.0000e+000	0	0.00

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TABLE NO. 47
****
* Information for the Iterative Solution for the Factor of *
* Safety and Side Force Inclination by Spencer's Procedure *
****
Allowable force imbalance for convergence: 2
Allowable moment imbalance for convergence: 109

Iter-ation	Trial Factor of Safety	Trial Side Force Inclination (degrees)	Force Imbalance (lbs.)	Moment Imbalance (ft.-lbs.)	Delta-F	Delta Theta (degrees)
1	3.00000	-17.1887	-3.661e+004	1.075e+007		
First-order corrections to F and Theta					-2.7447	-2.0490
Reduced values - Deltas were too large					-0.5000	-0.3733
2	2.50000	-17.5620	-2.867e+004	8.421e+006		
First-order corrections to F and Theta					-1.5088	-2.0460
Reduced values - Deltas were too large					-0.5000	-0.6780
3	2.00000	-18.2400	-1.690e+004	4.974e+006		
First-order corrections to F and Theta					-0.5719	-1.9319
Reduced values - Deltas were too large					-0.5000	-1.6891
4	1.50000	-19.9292	2.729e+003	-7.673e+005		
First-order corrections to F and Theta					0.0595	-1.0602
Second-order corrections to F and Theta					0.0610	-0.9762
5	1.56101	-20.9053	-3.433e+000	9.439e+002		
First-order corrections to F and Theta					-0.0001	0.0020
Second-order corrections to F and Theta					-0.0001	0.0020
6	1.56092	-20.9033	7.555e-009	-1.814e-006		
First-order corrections to F and Theta					0.0000	-0.0000

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - With reinforcement
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TABLE NO. 55
****
* Check of Computations by Spencer's Procedure (Results are for the *
* critical shear surface in the case of an automatic search.) *
****

Summation of Horizontal Forces: 1.52130e-011

Summation of Vertical Forces: 1.70855e-011

Summation of Moments: 1.03914e-009

Mohr Coulomb Shear Force/Shear Strength Check Summation: 8.90864e-012

***** CAUTION ***** Some of the Forces Between Slices Act at Points
Above the Surface of the Slope or Below the Shear Surface -
Either a Tension Crack may be Needed or the SOLUTION MAY NOT
BE A VALID SOLUTION

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TABLE NO. 58
****
* Final Results for Stresses Along the Shear Surface *
* (Results are for the critical shear surface in the case of a search.) *
****

SPENCER'S PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY
Factor of Safety: 1.561 Side Force Inclination: -20.90

Slice No.	X-Center	Y-Center	Total Normal Stress	Effective Normal Stress	Shear Stress
1	20.99	315.80	216.6	216.6	100.8
2	23.64	312.28	470.9	470.9	219.2
3	26.64	308.59	764.2	764.2	355.7
4	28.00	307.00	899.3	899.3	418.6
5	29.00	305.92	776.1	776.1	361.2
6	31.00	303.81	1189.3	1189.3	553.5
7	33.00	301.82	1150.7	1150.7	535.6
8	35.00	299.93	1575.9	1575.9	733.5
9	36.50	298.57	1234.4	1234.4	574.5
10	38.50	296.87	1909.7	1909.7	888.9
11	40.50	295.21	1655.0	1655.0	770.4
12	42.50	293.68	2352.7	2352.7	1095.1
13	46.00	291.16	2744.1	2744.1	1277.3
14	50.00	288.53	1821.9	1821.9	848.0
15	54.00	286.15	1932.8	1932.8	899.6
16	57.33	284.34	1934.4	1934.4	900.4
17	59.33	283.33	1972.0	1972.0	917.9
18	62.44	281.92	1934.2	1934.2	900.3
19	67.37	279.87	1974.7	1974.7	919.1
20	71.20	278.46	1984.4	1984.4	923.6
21	73.27	277.77	1978.9	1964.5	914.4
22	76.57	276.82	1947.9	1874.3	872.4
23	81.75	275.52	1865.6	1710.8	796.3
24	86.98	274.49	1729.9	1511.0	703.3
25	92.27	273.74	1536.0	1270.1	591.2
26	97.58	273.26	1278.0	982.4	457.2
27	101.12	273.07	1072.2	764.6	355.9

28	103.00	273.04	990.8	681.0	317.0
29	106.67	273.10	880.7	574.7	267.5
30	110.17	273.22	758.2	459.7	214.0
31	113.66	273.52	653.8	374.2	174.2
32	118.96	274.16	478.3	238.9	111.2
33	123.05	274.83	299.4	101.7	47.3

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NTE Killingly Northern 2:1 Slope- Profile C with MSE Wall - With reinforcement
#116152

TABLE NO. 59

****
* Final Results for Side Forces and Stresses Between Slices *
* (Results are for the critical shear surface in the case of a search.) *
****

---------- VALUES AT RIGHT SIDE OF SLICE ----------

Slice No.	X-Right	Side Force	Y-Coord. of Side Force Location	Fraction of Height	Sigma at Top	Sigma at Bottom
1	22.00	448	315.44	0.368	30.6	260.7
2	25.28	1810	312.31	0.300	-47.7	522.5
3	28.00	3373	309.81	0.272	-113.0	723.5
4	28.01	3378	309.81	0.272	-113.2	724.1
5	30.00	6544	307.71	0.230	-303.6	1280.2
6	32.00	7976	306.33	0.243	-277.6	1298.7
7	34.00	11368	304.94	0.247	-331.0	1613.4
8	36.00	12905	303.64	0.251	-322.7	1631.2
9	37.00	15601	303.02	0.253	-361.3	1869.8
10	40.00	17899	301.17	0.254	-362.5	1891.1
11	41.00	20361	300.55	0.253	-404.7	2081.6
12	44.00	21755	298.51	0.239	-460.9	2089.7
13	48.00	22274	295.40	0.203	-461.4	2313.2
14	52.00	21373	292.58	0.299	-230.6	2484.1
15	56.00	20038	289.74	0.262	-445.2	2528.4
16	58.66	19597	288.23	0.254	-486.0	2519.0
17	60.00	19301	287.46	0.247	-516.3	2520.4
18	64.87	19110	285.64	0.271	-373.7	2387.2
19	69.86	18264	283.96	0.294	-231.9	2220.4
20	72.54	17548	283.14	0.307	-152.2	2111.8
21	74.00	17096	282.72	0.315	-107.9	2048.2
22	79.14	15289	281.34	0.342	46.3	1817.4
23	84.35	13176	280.12	0.373	212.9	1559.6
24	89.62	10863	279.10	0.416	413.4	1257.4
25	94.92	8517	278.27	0.478	685.0	889.1
26	100.25	6369	277.58	0.576	1113.3	415.9
27	102.00	5758	277.35	0.619	1325.7	221.2
28	104.00	5101	277.09	0.623	1268.0	191.3
29	109.34	3441	276.49	0.639	1133.7	101.5
30	111.00	2978	276.32	0.644	1097.0	78.4
31	116.31	1590	275.85	0.674	983.5	-22.0

32	121.60	431	275.46	0.771	901.9	-215.5
33	124.50	-0	275.11	0.000	0.0	0.0

Read end-of-file on input while looking for another command word.
End of input data assumed - normal termination.

TABLE NO. 1
COMPUTER PROGRAM DESIGNATION: UTEXAS4
Originally Coded By Stephen G. Wright
Version No. 4.1.0.5 - Last Revision Date: 10/29/2008

****
* RESULTS OF COMPUTATIONS PERFORMED USING THIS SOFTWARE *
* SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS THEY HAVE *
* BEEN VERIFIED BY INDEPENDENT ANALYSES, EXPERIMENTAL DATA *
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TABLE NO. 3
****
* NEW PROFILE LINE DATA *
****

----- Profile Line No. 1 - Material Type (Number): 1 -----

Description: Compacted Granular Fill

Point	X	Y
1	0.00	317.00
2	18.00	317.20
3	41.00	317.50
4	41.00	307.00
5	48.00	307.00
6	102.00	280.00

----- Profile Line No. 2 - Material Type (Number): 2 -----

Description: Top of Glacial Till - Subsoil Stripped

Point	X	Y
1	0.00	289.00
2	22.00	289.00
3	37.00	286.00
4	74.00	282.00
5	102.00	280.00
6	111.00	278.00

7	125.00	275.00
8	136.00	275.00
9	157.00	278.00
10	171.00	280.00

----- Profile Line No. 3 - Material Type (Number): 3 -----

Description: MSE Wall

Point	X	Y
1	41.00	307.00
2	41.00	317.50
3	48.00	317.50
4	48.00	307.00

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TABLE NO. 4
****
* NEW MATERIAL PROPERTY DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

---------- DATA FOR MATERIAL NUMBER 1 ----------

Description: Compacted Granular Fill

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

---------- DATA FOR MATERIAL NUMBER 2 ----------

Description: Medium Dense Glacial Till

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1

Negative pore water pressures are NOT allowed - set to zero.

------------------ DATA FOR MATERIAL NUMBER 3 ------------------
---
Description: MSE Wall

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 1500.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.
↟
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TABLE NO. 6
****
* NEW PIEZOMETRIC LINE DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

--------------- Piezometric Line Number 1 ---------------

Description: Piezometric Line
Unit weight of fluid (water): 62.4

Point	X	Y
1	0.00	278.00
2	157.00	278.00

↟
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TABLE NO. 15
****
* NEW REINFORCEMENT LINE DATA *
****

_____ Reinforcement Line: 1 _____
Maximum rotation angle: 0.00 degrees
Option 1 - Reinforcement forces are applied to base and

sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	28.00	307.00	0	0
2	30.00	307.00	2000	0
3	40.00	307.00	2000	0
4	48.00	307.00	0	0

_____ Reinforcement Line: 2 _____

Maximum rotation angle: 0.00 degrees

Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	32.00	305.00	0	0
2	34.00	305.00	2000	0
3	44.00	305.00	2000	0
4	52.00	305.00	0	0

_____ Reinforcement Line: 3 _____

Maximum rotation angle: 0.00 degrees

Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	36.00	303.00	0	0
2	37.00	303.00	2000	0
3	48.00	303.00	2000	0
4	56.00	303.00	0	0

_____ Reinforcement Line: 4 _____

Maximum rotation angle: 0.00 degrees

Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	40.00	301.00	0	0
2	41.00	301.00	2000	0
3	52.00	301.00	2000	0
4	60.00	301.00	0	0

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TABLE NO. 11

****

* NEW DISTRIBUTED LOAD DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *

****

Point	X	Y	Normal Pressure	Shear Stress
1	48.00	317.50	0.0	0.0
2	111.00	278.00	0.0	0.0

3	125.00	275.00	187.2	0.0
4	136.00	275.00	187.2	0.0
5	157.00	278.00	0.0	0.0

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TABLE NO. 16
****
* NEW ANALYSIS/COMPUTATION DATA *
****

Starting Center Coordinate for Search at -
X: 104.00
Y: 375.00

Required accuracy for critical center
(= minimum spacing between grid points): 0.100

Critical shear surface not allowed to pass below Y: 0.00
For the initial mode of search all circles have the same (constant) radius -
Radius:
Seismic coefficient: 0.136
Seismic force acts at center of gravity.

Depth of crack: 0.000

The following represent default values or values that were prevously defined:
Subtended angle for slice subdivision: 3.00(degrees)
There is no water in a crack.
Conventional (single-stage) computations will be performed.
Unit weight of water (or other fluid) in crack: 62.4
Automatic search output will be in long form.
Search will be continued after the initial mode to find a most critical circle.
Maximum number of trial grids for a given search mode: 50
No restrictions exist on the lateral extent of the search.
No shear surfaces other than the most critical will be saved for display later.
Neither slope face was explicitly designated for analysis.
Standard sign convention used for direction of shear stress on shear surface.
Procedure of Analysis: Spencer

Iteration limit: 100
Force imbalance: 1.000000e-005 (fraction of total weight)
Moment imbalance: 1.000000e-005 (fraction of moment due to total weight)
Minimum weight required for computations to be performed: 100
Initial trial factor of safety: 3.000
Initial trial side force inclination: 17.189 (degrees)
Minimum (most negative) side force inclination allowed in Spencer's procedure: -10.00

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TABLE NO. 26
****
* NEW, COMPUTED SLOPE GEOMETRY DATA *
****

These slope geometry were generated from the Profile Lines.

Point	X	Y
1	0.00	317.00
2	18.00	317.20
3	22.00	317.25
4	37.00	317.45
5	41.00	317.50
6	48.00	317.50
7	48.00	307.00
8	74.00	294.00
9	102.00	280.00
10	111.00	278.00
11	125.00	275.00
12	136.00	275.00
13	157.00	278.00
14	171.00	280.00

Search will be conducted for RIGHT face of slope

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TABLE NO. 31
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles with a Given, Constant Radius ------
------ Radius: 110.00

Center Coordinates X	Center Coordinates Y	Radius	1-Stage Factor of Safety	Side Force Inclination (degrees)	Iterations	Messages
101.00	372.00	110.00	Center rejected as follows:			UTEXAS ERROR NUMBER 4700 X = 157.74 is out of range of piezometric line coordinates for piezometric line no. 1. Cannot compute pore water pressures.

Minimum X for piezometric line = 0.00, Maximum X = 157.00

This error occurred for slice 44 - material number 2.

Center of base of slice is at X = 157.74, Y = 277.77

104.00 372.00 110.00 Center rejected as follows: UTEXAS ERROR NUMBER 4700
X = 159.49 is out of range of piezometric line coordinates for

piezometric line no. 1. Cannot compute pore water pressures.

Minimum X for piezometric line = 0.00, Maximum X = 157.00

This error occurred for slice 42 - material number 2.

Center of base of slice is at X = 159.49, Y = 277.06

107.00 372.00 110.00 Center rejected as follows: UTEXAS ERROR NUMBER 4700
X = 159.53 is out of range of piezometric line coordinates for

piezometric line no. 1. Cannot compute pore water pressures.

Minimum X for piezometric line = 0.00, Maximum X = 157.00

This error occurred for slice 41 - material number 2.

Center of base of slice is at X = 159.53, Y = 275.40

101.00 375.00 110.00 1.343 -22.426 6
104.00 375.00 110.00 1.326 -21.485 6
107.00 375.00 110.00 Center rejected as follows: UTEXAS ERROR NUMBER 4700
X = 158.28 is out of range of piezometric line coordinates for

piezometric line no. 1. Cannot compute pore water pressures.

Minimum X for piezometric line = 0.00, Maximum X = 157.00

This error occurred for slice 40 - material number 2.

Center of base of slice is at X = 158.28, Y = 277.69

101.00 378.00 110.00 1.300 -25.238 7
104.00 378.00 110.00 1.276 -24.395 6
107.00 378.00 110.00 1.257 -23.364 7
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
110.00 375.00 110.00 Center rejected as follows: UTEXAS ERROR NUMBER 4700
X = 159.57 is out of range of piezometric line coordinates for

piezometric line no. 1. Cannot compute pore water pressures.

Minimum X for piezometric line = 0.00, Maximum X = 157.00

This error occurred for slice 40 - material number 2.

Center of base of slice is at X = 159.57, Y =

276.84

110.00	378.00	110.00	1.244	-22.193	6
104.00	381.00	110.00	1.240	-27.176	7
107.00	381.00	110.00	1.211	-26.614	7
110.00	381.00	110.00	1.193	-25.697	7

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

113.00	378.00	110.00	Center rejected as follows:		

UTEXAS ERROR NUMBER 4700
X = 158.32 is out of range of piezometric line coordinates for piezometric line no. 1. Cannot compute pore water pressures.
Minimum X for piezometric line = 0.00, Maximum X = 157.00
This error occurred for slice 40 - material number 2.
Center of base of slice is at X = 158.32, Y = 277.78

113.00	381.00	110.00	1.211	-24.193	7
107.00	384.00	110.00	1.191	-28.137	8
110.00	384.00	110.00	1.203	-27.610	8
113.00	384.00	110.00	1.254	-27.305	8

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

104.00	384.00	110.00	1.221	-28.486	8
104.00	387.00	110.00	1.213	-27.992	8
107.00	387.00	110.00	1.230	-27.541	8
110.00	387.00	110.00	1.299	-27.694	8

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

106.50	383.50	110.00	1.194	-28.139	8
107.00	383.50	110.00	1.189	-28.077	8
107.50	383.50	110.00	1.189	-27.986	8
106.50	384.00	110.00	1.191	-28.223	8
107.50	384.00	110.00	1.192	-28.045	8
106.50	384.50	110.00	1.194	-28.238	8
107.00	384.50	110.00	1.195	-28.151	8
107.50	384.50	110.00	1.196	-28.062	8

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

106.50	383.00	110.00	1.197	-27.989	8
107.00	383.00	110.00	1.192	-27.918	8
107.50	383.00	110.00	1.187	-27.842	8

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

107.00	382.50	110.00	1.196	-27.674	8
107.50	382.50	110.00	1.191	-27.587	8
108.00	382.50	110.00	1.186	-27.497	8
108.00	383.00	110.00	1.187	-27.733	8
108.00	383.50	110.00	1.190	-27.888	8

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

107.50	382.00	110.00	1.195	-27.273	8
108.00	382.00	110.00	1.191	-27.174	8
108.50	382.00	110.00	1.186	-27.068	8
108.50	382.50	110.00	1.187	-27.369	8
108.50	383.00	110.00	1.188	-27.618	8

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

107.70	382.20	110.00	1.192	-27.368	8
108.00	382.20	110.00	1.189	-27.310	8
108.30	382.20	110.00	1.186	-27.249	8
107.70	382.50	110.00	1.189	-27.552	8
108.30	382.50	110.00	1.186	-27.421	8

107.70	382.80	110.00	1.186	-27.715	8
108.00	382.80	110.00	1.186	-27.647	8
108.30	382.80	110.00	1.187	-27.575	8

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

107.90	382.40	110.00	1.188	-27.456	8
108.00	382.40	110.00	1.187	-27.437	8
108.10	382.40	110.00	1.186	-27.418	8
107.90	382.50	110.00	1.187	-27.515	8
108.10	382.50	110.00	1.186	-27.472	8
107.90	382.60	110.00	1.186	-27.572	8
108.00	382.60	110.00	1.186	-27.548	8
108.10	382.60	110.00	1.186	-27.524	8

----- Critical Circle After the Current Mode of Search -----
X: 108.00 Y: 382.50 Radius: 110.000
Factor of safety: 1.186 Side force inclination: -27.497

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TABLE NO. 30
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles Tangent to a Given Horizontal Line ------
------ Tangent line elevation, Y: 272.50

Center Coordinates			1-Stage Factor of Safety	Side Force Inclination (degrees)	Iterations	Messages
X	Y	Radius				
105.00	379.50	107.00	1.207	-27.860	8	
108.00	379.50	107.00	1.191	-27.281	8	
111.00	379.50	107.00	1.207	-26.471	7	
105.00	382.50	110.00	1.217	-27.964	8	
111.00	382.50	110.00	1.195	-26.680	7	
105.00	385.50	113.00	1.228	-28.066	8	
108.00	385.50	113.00	1.196	-27.619	8	
111.00	385.50	113.00	1.189	-26.880	7	

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

107.50	382.00	109.50	1.189	-27.567	8
108.00	382.00	109.50	1.187	-27.462	8
108.50	382.00	109.50	1.188	-27.333	8
107.50	382.50	110.00	1.191	-27.587	8
108.50	382.50	110.00	1.187	-27.369	8
107.50	383.00	110.50	1.193	-27.608	8
108.00	383.00	110.50	1.187	-27.518	8
108.50	383.00	110.50	1.186	-27.405	8

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

107.70	382.20	109.70	1.188	-27.539	8
108.00	382.20	109.70	1.186	-27.476	8
108.30	382.20	109.70	1.187	-27.399	8

107.70	382.50	110.00	1.189	-27.552	8
108.30	382.50	110.00	1.186	-27.421	8
107.70	382.80	110.30	1.190	-27.564	8
108.00	382.80	110.30	1.187	-27.509	8
108.30	382.80	110.30	1.186	-27.442	8

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

107.90	382.40	109.90	1.186	-27.511	8
108.00	382.40	109.90	1.186	-27.490	8
108.10	382.40	109.90	1.186	-27.465	8
107.90	382.50	110.00	1.187	-27.515	8
108.10	382.50	110.00	1.186	-27.472	8
107.90	382.60	110.10	1.187	-27.519	8
108.00	382.60	110.10	1.186	-27.501	8
108.10	382.60	110.10	1.186	-27.479	8

----- Critical Circle After the Current Mode of Search -----
X: 108.00 Y: 382.50 Radius: 110.000
Factor of safety: 1.186 Side force inclination: -27.497

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TABLE NO. 33

* 1-STAGE FINAL CRITICAL CIRCLE INFORMATION *	
X Coordinate of Center	108.00
Y Coordinate of Center	382.50
Radius	110.00
Factor of Safety	1.186
Side Force Inclination (degrees)	-27.50
Number of Circles Tried	92
Number of Circles F Calculated for	86
Time Required for Search (seconds)	0.2

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TABLE NO. 43

* Coordinate, Weight, Strength and Pore Water Pressure *
* Information for Individual Slices for Conventional *
* Computations or First Stage of Multi-Stage Computations. *
* (Information is for the critical shear surface in the *
* case of an automatic search.) *

Slice	Slice	Matl.	Friction	Pore

No.	X	Y	Weight	No.	Cohesion	Angle	Pressure
	19.47	317.22					
1	20.73	315.57	550	1	0.0	36.00	0.0
	22.00	313.91					
2	23.85	311.71	2682	1	0.0	36.00	0.0
	25.71	309.51					
3	26.85	308.25	2701	1	0.0	36.00	0.0
	28.00	307.00					
4	28.00	307.00	2	1	0.0	36.00	0.0
	28.00	307.00					
5	29.00	305.97	2955	1	0.0	36.00	0.0
	30.00	304.94					
6	31.00	303.96	3487	1	0.0	36.00	0.0
	32.00	302.98					
7	33.00	302.04	3991	1	0.0	36.00	0.0
	34.00	301.11					
8	35.00	300.22	4471	1	0.0	36.00	0.0
	36.00	299.34					
9	36.50	298.91	2409	1	0.0	36.00	0.0
	37.00	298.48					
10	38.50	297.26	7881	1	0.0	36.00	0.0
	40.00	296.04					
11	40.50	295.65	2840	1	0.0	36.00	0.0
	41.00	295.26					
12	42.50	294.15	9108	1	0.0	36.00	0.0
	44.00	293.03					
13	46.00	291.67	13432	1	0.0	36.00	0.0
	48.00	290.30					
14	50.00	289.06	8807	1	0.0	36.00	0.0
	52.00	287.82					
15	54.00	286.69	8999	1	0.0	36.00	0.0
	56.00	285.57					
16	58.00	284.55	9076	1	0.0	36.00	0.0
	60.00	283.53					
17	60.02	283.52	71	1	0.0	36.00	0.0
	60.03	283.51					
18	62.65	282.32	11833	2	0.0	36.00	0.0
	65.28	281.14					
19	67.96	280.09	11807	2	0.0	36.00	0.0
	70.64	279.04					
20	72.15	278.52	6423	2	0.0	36.00	0.0
	73.65	278.00					
21	73.83	277.94	729	2	0.0	36.00	3.5
	74.00	277.89					
22	76.76	277.07	11163	2	0.0	36.00	58.1
	79.52	276.25					
23	82.32	275.58	10382	2	0.0	36.00	151.1
	85.12	274.91					
24	87.95	274.38	9307	2	0.0	36.00	225.9
	90.78	273.86					
25	93.64	273.48	7943	2	0.0	36.00	282.1
	96.49	273.10					
26	99.25	272.88	6080	2	0.0	36.00	319.3
	102.00	272.66					
27	104.88	272.58	5073	2	0.0	36.00	338.1
	107.76	272.50					
28	107.88	272.50	196	2	0.0	36.00	343.2
	108.00	272.50					
29	109.50	272.52	2267	2	0.0	36.00	341.9

	111.00	272.54					
30	113.88	272.69	3506	2	0.0	36.00	331.0
	116.75	272.85					
31	119.61	273.15	2234	2	0.0	36.00	302.5
	122.48	273.46					
32	123.74	273.64	535	2	0.0	36.00	272.1
	125.00	273.82					
33	127.83	274.34	485	2	0.0	36.00	228.3
	130.66	274.86					
34	130.99	274.93	6	2	0.0	36.00	191.6
	131.32	275.00					

No water in crack.

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NTE Killingly Northern 2:1 Slope- Profile C with Geogrid Rein MSE Wall - Seis
#116152

TABLE NO. 44

****
* Seismic Forces and Forces Due to Distributed Loads for *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations. *
* (Information is for the critical shear surface in the *
* case of an automatic search.) *
****

Slices No.	X	Seismic Force	Y for Seismic Force	FORCES DUE TO DISTRIBUTED LOADS Normal Force	Shear Force	X	Y
1	20.73	75	316.40	0	0	20.73	317.24
2	23.85	365	314.49	0	0	23.85	317.28
3	26.85	367	312.79	0	0	26.85	317.32
4	28.00	0	312.17	0	0	28.00	317.33
5	29.00	402	311.66	0	0	29.00	317.34
6	31.00	474	310.66	0	0	31.00	317.37
7	33.00	543	309.72	0	0	33.00	317.40
8	35.00	608	308.82	0	0	35.00	317.42
9	36.50	328	308.18	0	0	36.50	317.44
10	38.50	1072	307.36	0	0	38.50	317.47
11	40.50	386	306.57	0	0	40.50	317.49
12	42.50	1239	305.82	0	0	42.50	317.50
13	46.00	1827	304.58	0	0	46.00	317.50
14	50.00	1198	297.53	0	0	50.00	306.00
15	54.00	1224	295.35	0	0	54.00	304.00
16	58.00	1234	293.27	0	0	58.00	302.00
17	60.02	10	292.25	0	0	60.02	300.99
18	62.65	1609	291.00	0	0	62.65	299.67
19	67.96	1606	288.55	0	0	67.96	297.02
20	72.15	874	286.72	0	0	72.15	294.93
21	73.83	99	286.02	0	0	73.83	294.09
22	76.76	1518	284.84	0	0	76.76	292.62

23	82.32	1412	282.71	0	0	82.32	289.84
24	87.95	1266	280.70	0	0	87.95	287.02
25	93.64	1080	278.83	0	0	93.64	284.18
26	99.25	827	277.13	0	0	99.25	281.38
27	104.88	690	275.97	0	0	104.88	279.36
28	107.88	27	275.60	0	0	107.88	278.69
29	109.50	308	275.43	0	0	109.50	278.33
30	113.88	477	275.04	226	0	114.83	277.18
31	119.61	304	274.65	675	0	119.93	276.09
32	123.74	73	274.45	439	0	123.78	275.26
33	127.83	66	274.67	1060	0	127.83	275.00
34	130.99	1	274.97	122	0	130.99	275.00

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NTE Killingly Northern 2:1 Slope- Profile C with Geogrid Rein MSE Wall - Seis
#116152

TABLE NO. 45

```
*********************************************************
* Forces Due to Internal Soil Reinforcement for         *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations.              *
* (Information is for the critical shear surface in the  *
* case of an automatic search.)                         *
*********************************************************
```

Slice No.	X	Horizontal Force on Side	Vertical Force on Side	Y-Coordinate of Force	Horizontal Force on Base	Vertical Force on Base
	19.47					
1	Left:	0	0	317.22	0	0
1	Right:	0	0	313.91	0	0
	22.00					
2	Left:	0	0	313.91	0	0
2	Right:	0	0	309.51	0	0
	25.71					
3	Left:	0	0	309.51	0	0
3	Right:	0	0	307.00	0	0
	28.00					
4	Left:	0	0	307.00	0	0
4	Right:	0	0	307.00	0	0
	28.00					
5	Left:	0	0	307.00	-2	0
5	Right:	2000	0	307.00	0	0
	30.00					
6	Left:	-2000	0	307.00	0	0
6	Right:	2000	0	307.00	0	0
	32.00					
7	Left:	-2000	0	307.00	0	0
7	Right:	4000	0	306.00	0	0
	34.00					
8	Left:	-4000	0	306.00	0	0
8	Right:	4000	0	306.00	0	0

	36.00					
9	Left:	-4000	0	306.00	0	0
9	Right:	6000	0	305.00	0	0
	37.00					
10	Left:	-6000	0	305.00	0	0
10	Right:	6000	0	305.00	0	0
	40.00					
11	Left:	-6000	0	305.00	0	0
11	Right:	7750	0	303.90	0	0
	41.00					
12	Left:	-7750	0	303.90	0	0
12	Right:	7000	0	303.57	0	0
	44.00					
13	Left:	-7000	0	303.57	0	0
13	Right:	5000	0	302.60	0	0
	48.00					
14	Left:	-5000	0	302.60	0	0
14	Right:	3000	0	301.67	0	0
	52.00					
15	Left:	-3000	0	301.67	0	0
15	Right:	1000	0	301.00	0	0
	56.00					
16	Left:	-1000	0	301.00	0	0
16	Right:	0	0	283.53	0	0
	60.00					
17	Left:	0	0	283.53	0	0
17	Right:	0	0	283.51	0	0
	60.03					
18	Left:	0	0	283.51	0	0
18	Right:	0	0	281.14	0	0
	65.28					
19	Left:	0	0	281.14	0	0
19	Right:	0	0	279.04	0	0
	70.64					
20	Left:	0	0	279.04	0	0
20	Right:	0	0	278.00	0	0
	73.65					
21	Left:	0	0	278.00	0	0
21	Right:	0	0	277.89	0	0
	74.00					
22	Left:	0	0	277.89	0	0
22	Right:	0	0	276.25	0	0
	79.52					
23	Left:	0	0	276.25	0	0
23	Right:	0	0	274.91	0	0
	85.12					
24	Left:	0	0	274.91	0	0
24	Right:	0	0	273.86	0	0
	90.78					
25	Left:	0	0	273.86	0	0
25	Right:	0	0	273.10	0	0
	96.49					
26	Left:	0	0	273.10	0	0
26	Right:	0	0	272.66	0	0
	102.00					
27	Left:	0	0	272.66	0	0
27	Right:	0	0	272.50	0	0
	107.76					
28	Left:	0	0	272.50	0	0

28 Right:	0	0	272.50	0	0	108.00
29 Left:	0	0	272.50	0	0	
29 Right:	0	0	272.54	0	0	111.00
30 Left:	0	0	272.54	0	0	
30 Right:	0	0	272.85	0	0	116.75
31 Left:	0	0	272.85	0	0	
31 Right:	0	0	273.46	0	0	122.48
32 Left:	0	0	273.46	0	0	
32 Right:	0	0	273.82	0	0	125.00
33 Left:	0	0	273.82	0	0	
33 Right:	0	0	274.86	0	0	130.66
34 Left:	0	0	274.86	0	0	
34 Right:	0	0	275.00	0	0	131.32

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NTE Killingly Northern 2:1 Slope- Profile C with Geogrid Rein MSE Wall - Seis #116152

TABLE NO. 46

```
*********************************************************
* Forces Due to Internal Soil Reinforcement for         *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations.              *
* (Information is for the critical shear surface in the  *
* case of an automatic search.)                         *
*********************************************************
```

Slice No.	Horizontal Force	Vertical Force	Moment about Center of Slice Base	Resultant Force	Angle (degs.)
1	0	0	0.0000e+000	0	0.00
2	0	0	0.0000e+000	0	0.00
3	0	0	0.0000e+000	0	0.00
4	0	0	0.0000e+000	0	0.00
5	1998	0	-2.0613e+003	1998	0.00
6	0	0	0.0000e+000	0	0.00
7	2000	0	-5.9115e+003	2000	0.00
8	0	0	0.0000e+000	0	0.00
9	2000	0	-8.1803e+003	2000	0.00
10	0	0	0.0000e+000	0	0.00
11	1750	0	-7.8668e+003	1750	0.00
12	-750	0	9.6398e+003	750	180.00
13	-2000	0	2.8661e+004	2000	180.00
14	-2000	0	2.9874e+004	2000	180.00
15	-2000	0	3.0611e+004	2000	180.00
16	-1000	0	1.6454e+004	1000	180.00

17	0	0	0.0000e+000	0	0.00
18	0	0	0.0000e+000	0	0.00
19	0	0	0.0000e+000	0	0.00
20	0	0	0.0000e+000	0	0.00
21	0	0	0.0000e+000	0	0.00
22	0	0	0.0000e+000	0	0.00
23	0	0	0.0000e+000	0	0.00
24	0	0	0.0000e+000	0	0.00
25	0	0	0.0000e+000	0	0.00
26	0	0	0.0000e+000	0	0.00
27	0	0	0.0000e+000	0	0.00
28	0	0	0.0000e+000	0	0.00
29	0	0	0.0000e+000	0	0.00
30	0	0	0.0000e+000	0	0.00
31	0	0	0.0000e+000	0	0.00
32	0	0	0.0000e+000	0	0.00
33	0	0	0.0000e+000	0	0.00
34	0	0	0.0000e+000	0	0.00

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NTE Killingly Northern 2:1 Slope- Profile C with Geogrid Rein MSE Wall - Seis
#116152

TABLE NO. 47
****
* Information for the Iterative Solution for the Factor of *
* Safety and Side Force Inclination by Spencer's Procedure *
****
Allowable force imbalance for convergence: 2
Allowable moment imbalance for convergence: 111

Iter-ation	Trial Factor of Safety	Trial Side Force Inclination (degrees)	Force Imbalance (lbs.)	Moment Imbalance (ft.-lbs.)	Delta-F	Delta Theta (degrees)
1	3.00000	-17.1887	-5.606e+004	1.657e+007		
First-order corrections to F and Theta					-4.6464	-5.3714
Reduced values - Deltas were too large					-0.5000	-0.5780
2	2.50000	-17.7667	-4.889e+004	1.446e+007		
First-order corrections to F and Theta					-2.8579	-5.2715
Reduced values - Deltas were too large					-0.5000	-0.9223
3	2.00000	-18.6890	-3.830e+004	1.134e+007		
First-order corrections to F and Theta					-1.4535	-5.1310
Reduced values - Deltas were too large					-0.5000	-1.7650
4	1.50000	-20.4541	-2.077e+004	6.186e+006		
First-order corrections to F and Theta					-0.4375	-4.9105
Reduced values - Deltas were too large					-0.2552	-2.8648
5	1.24479	-23.3189	-5.803e+003	1.775e+006		
First-order corrections to F and Theta					-0.0699	-3.7126

Reduced values - Deltas were too large ..... -0.0540 -2.8648

6 1.19084 -26.1836 -9.085e+002 2.938e+005
First-order corrections to F and Theta ..... -0.0056 -1.2953
Second-order corrections to F and Theta ..... -0.0051 -1.3106

7 1.18570 -27.4943 1.640e+000 -3.968e+002
First-order corrections to F and Theta ..... 0.0000 -0.0025
Second-order corrections to F and Theta ..... 0.0000 -0.0025

8 1.18574 -27.4968 6.297e-010 -6.180e-007
First-order corrections to F and Theta ..... -0.0000 0.0000

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NTE Killingly Northern 2:1 Slope- Profile C with Geogrid Rein MSE Wall - Seis
#116152

TABLE NO. 55
****
* Check of Computations by Spencer's Procedure (Results are for the *
* critical shear surface in the case of an automatic search.) *
****

Summation of Horizontal Forces: 1.74795e-011

Summation of Vertical Forces: 1.59564e-011

Summation of Moments: 1.06871e-009

Mohr Coulomb Shear Force/Shear Strength Check Summation: 9.58283e-012

***** CAUTION ***** Some of the Forces Between Slices Act at Points
Above the Surface of the Slope or Below the Shear Surface -
Either a Tension Crack may be Needed or the SOLUTION MAY NOT
BE A VALID SOLUTION

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NTE Killingly Northern 2:1 Slope- Profile C with Geogrid Rein MSE Wall - Seis
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TABLE NO. 58
****
* Final Results for Stresses Along the Shear Surface *
* (Results are for the critical shear surface in the case of a search.) *
****

SPENCER'S PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY
Factor of Safety: 1.186 Side Force Inclination: -27.50

-------- VALUES AT CENTER OF BASE OF SLICE --------

Slice No.	X-Center	Y-Center	Total Normal Stress	Effective Normal Stress	Shear Stress
1	20.73	315.57	93.4	93.4	57.2
2	23.85	311.71	331.5	331.5	203.1
3	26.85	308.25	570.2	570.2	349.4
4	28.00	307.00	663.1	663.1	406.3
5	29.00	305.97	461.2	461.2	282.6
6	31.00	303.96	904.1	904.1	554.0
7	33.00	302.04	767.7	767.7	470.4
8	35.00	300.22	1231.7	1231.7	754.7
9	36.50	298.91	725.6	725.6	444.6
10	38.50	297.26	1520.9	1520.9	931.9
11	40.50	295.65	1106.5	1106.5	678.0
12	42.50	294.15	1940.0	1940.0	1188.7
13	46.00	291.67	2324.0	2324.0	1424.0
14	50.00	289.06	1665.7	1665.7	1020.6
15	54.00	286.69	1781.1	1781.1	1091.4
16	58.00	284.55	1777.3	1777.3	1089.0
17	60.02	283.52	1715.5	1715.5	1051.2
18	62.65	282.32	1755.3	1755.3	1075.5
19	67.96	280.09	1819.6	1819.6	1115.0
20	72.15	278.52	1849.2	1849.2	1133.1
21	73.83	277.94	1854.3	1850.7	1134.0
22	76.76	277.07	1839.6	1781.4	1091.5
23	82.32	275.58	1780.0	1628.9	998.1
24	87.95	274.38	1661.7	1435.8	879.8
25	93.64	273.48	1475.9	1193.8	731.5
26	99.25	272.88	1218.0	898.7	550.7
27	104.88	272.58	1005.1	667.0	408.7
28	107.88	272.50	936.4	593.2	363.5
29	109.50	272.52	886.8	544.9	333.9
30	113.88	272.69	794.2	463.1	283.8
31	119.61	273.15	667.8	365.3	223.8
32	123.74	273.64	532.6	260.5	159.6
33	127.83	274.34	355.7	127.4	78.0
34	130.99	274.93	249.4	57.9	35.5

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TABLE NO. 59

****
* Final Results for Side Forces and Stresses Between Slices *
* (Results are for the critical shear surface in the case of a search.) *
****

-------------- VALUES AT RIGHT SIDE OF SLICE --------------

Slice	Side	Y-Coord. of Side Force	Fraction of	Sigma at	Sigma at

No.	X-Right	Force	Location	Height	Top	Bottom
1	22.00	269	315.17	0.376	18.2	124.6
2	25.71	1478	311.97	0.316	-17.0	353.5
3	28.00	2600	310.15	0.305	-37.6	484.1
4	28.00	2601	310.15	0.305	-37.6	484.2
5	30.00	5742	307.96	0.244	-221.0	1041.3
6	32.00	7027	306.79	0.265	-177.4	1042.7
7	34.00	10446	305.46	0.267	-227.8	1364.9
8	36.00	11894	304.34	0.276	-199.6	1365.6
9	37.00	14717	303.68	0.274	-243.7	1620.3
10	40.00	16967	302.09	0.282	-214.3	1617.6
11	41.00	19581	301.44	0.278	-258.8	1820.7
12	44.00	20975	299.71	0.273	-276.3	1797.3
13	48.00	21512	297.19	0.253	-103.0	1842.1
14	52.00	20668	294.32	0.378	286.9	1847.6
15	56.00	19398	291.50	0.340	42.3	1931.8
16	60.00	18843	289.25	0.328	-31.3	1944.2
17	60.03	18846	289.24	0.328	-30.3	1943.6
18	65.28	18998	287.30	0.358	142.7	1813.9
19	70.64	18369	285.54	0.391	336.3	1621.9
20	73.65	17671	284.67	0.413	461.1	1477.2
21	74.00	17576	284.58	0.415	476.5	1458.7
22	79.52	15886	283.19	0.463	731.4	1148.9
23	85.12	13876	281.99	0.523	1035.6	783.3
24	90.78	11653	280.98	0.606	1440.6	318.5
25	96.49	9414	280.13	0.728	2051.3	-320.5
26	102.00	7532	279.25	0.897	3080.6	-1259.3
27	107.76	5843	278.19	0.915	2908.9	-1242.6
28	108.00	5773	278.15	0.916	2904.8	-1244.0
29	111.00	4951	277.60	0.927	2863.1	-1254.3
30	116.75	3319	276.66	0.972	2881.0	-1378.4
31	122.48	1600	276.02	Above	3671.3	-2309.3
32	125.00	905	275.95	Above	6010.1	-4647.7
33	130.66	65	275.10	Above	3392.6	-2573.6
34	131.32	-0	275.00	0.000	0.0	0.0

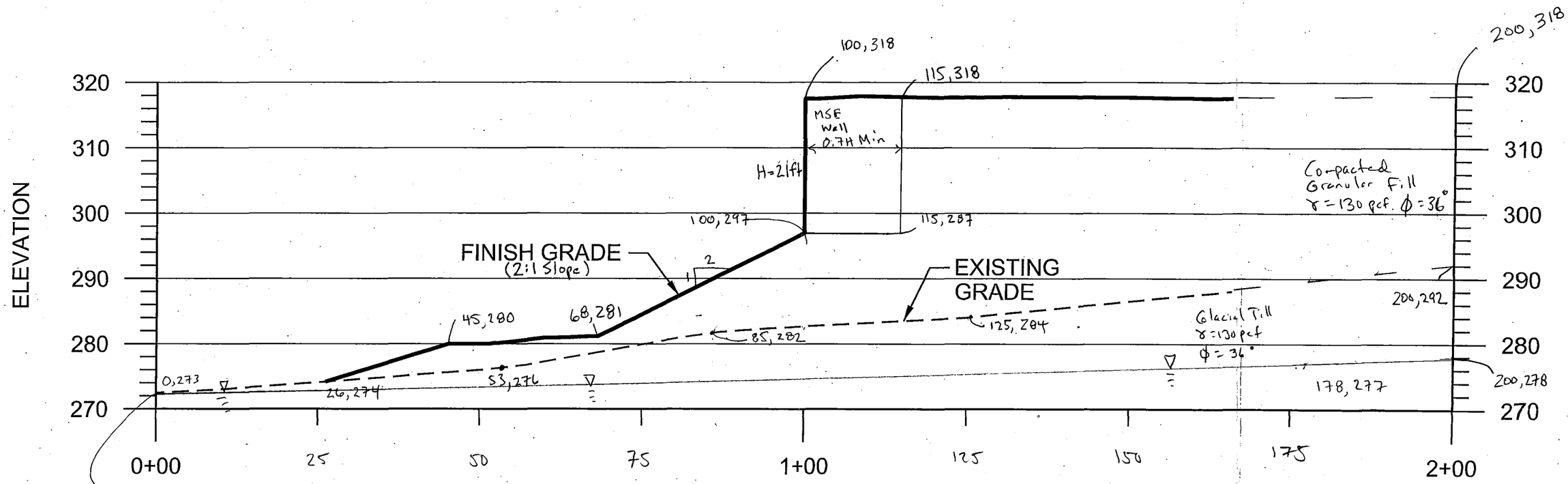
Read end-of-file on input while looking for another command word.
End of input data assumed - normal termination.

Attachment 7

Section D
Long Term Steady State with and without Geogrid Reinforcement and Seismic

Cross Section and Input
Results
UTEXAS4 Output

B-36 approx station 178
GW @ 276.2



Wetland at toe of slope. Assume Groundwater at grade

SECTION D

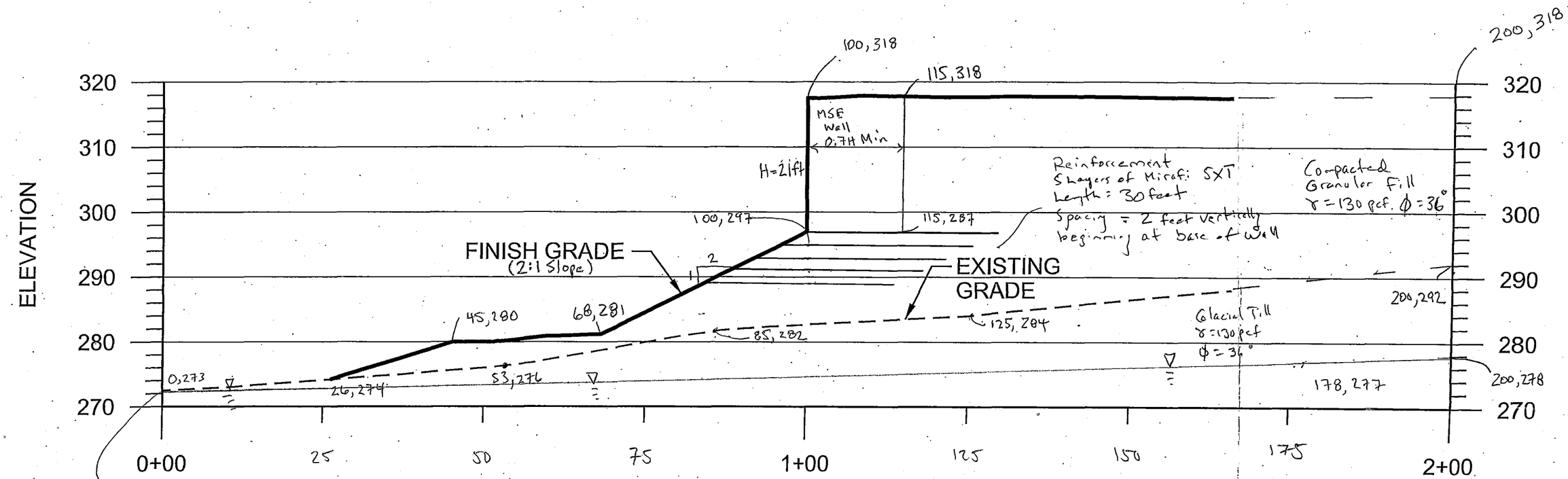
SKC004

HORIZ: 0 20' 40' SCALE IN FEET

VERT: 0 20' 40' SCALE IN FEET

1" = 16 ft

B-36 approx station 178
GW @ 276.2



SECTION D **SKC004**

HORIZ: 0 20' 40' SCALE IN FEET

VERT: 0 20' 40' SCALE IN FEET

1" = 16 ft

SECTION D - Max Height MSE Retaining Wall (21 feet)
No Slope Reinforcement

NO.	DESCRIPTION	UNIT WEIGHT	SHEAR STRENGTH	PORE PRESSURE
1	Compacted Granular Fill	130	Cohesion: 0.0 Friction angle: 36	Piezometric Line no. 1
2	Medium Dense Glacial Till	130	Cohesion: 0.0 Friction angle: 36	Piezometric Line no. 1
3	MSE Wall	130	Cohesion: 1500.0 Friction angle: 36	Piezometric Line no. 1

250 psf Surcharge

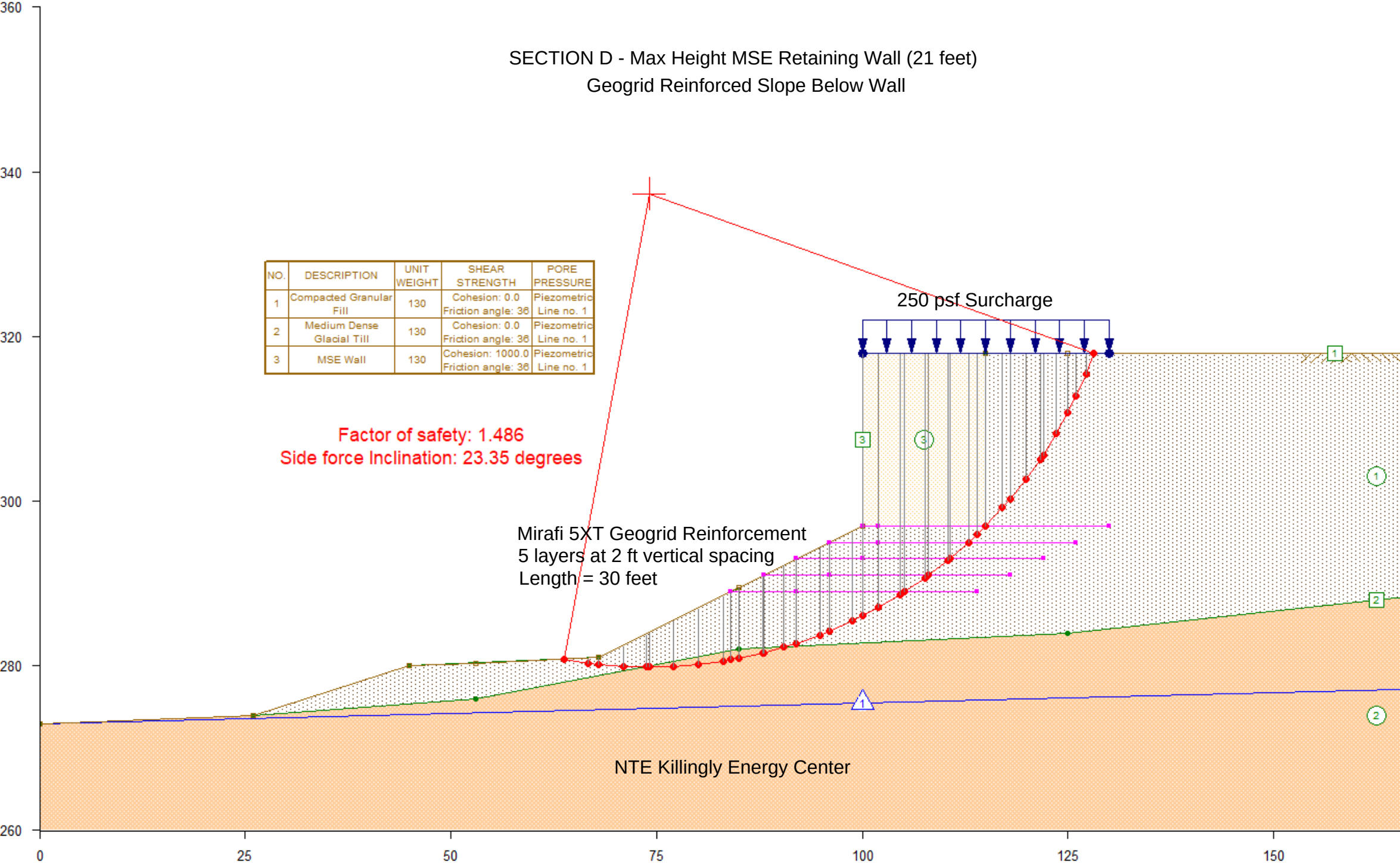
Factor of safety: 1.230
Side force Inclination: 29.45 degrees

Killingly Energy Center

360
340
320
300
280
260
0
25
50
75
100
125
150

SECTION D - Max Height MSE Retaining Wall (21 feet)
Geogrid Reinforced Slope Below Wall

NO.	DESCRIPTION	UNIT WEIGHT	SHEAR STRENGTH	PORE PRESSURE
1	Compacted Granular Fill	130	Cohesion: 0.0 Friction angle: 36	Piezometric Line no. 1
2	Medium Dense Glacial Till	130	Cohesion: 0.0 Friction angle: 36	Piezometric Line no. 1
3	MSE Wall	130	Cohesion: 1000.0 Friction angle: 36	Piezometric Line no. 1



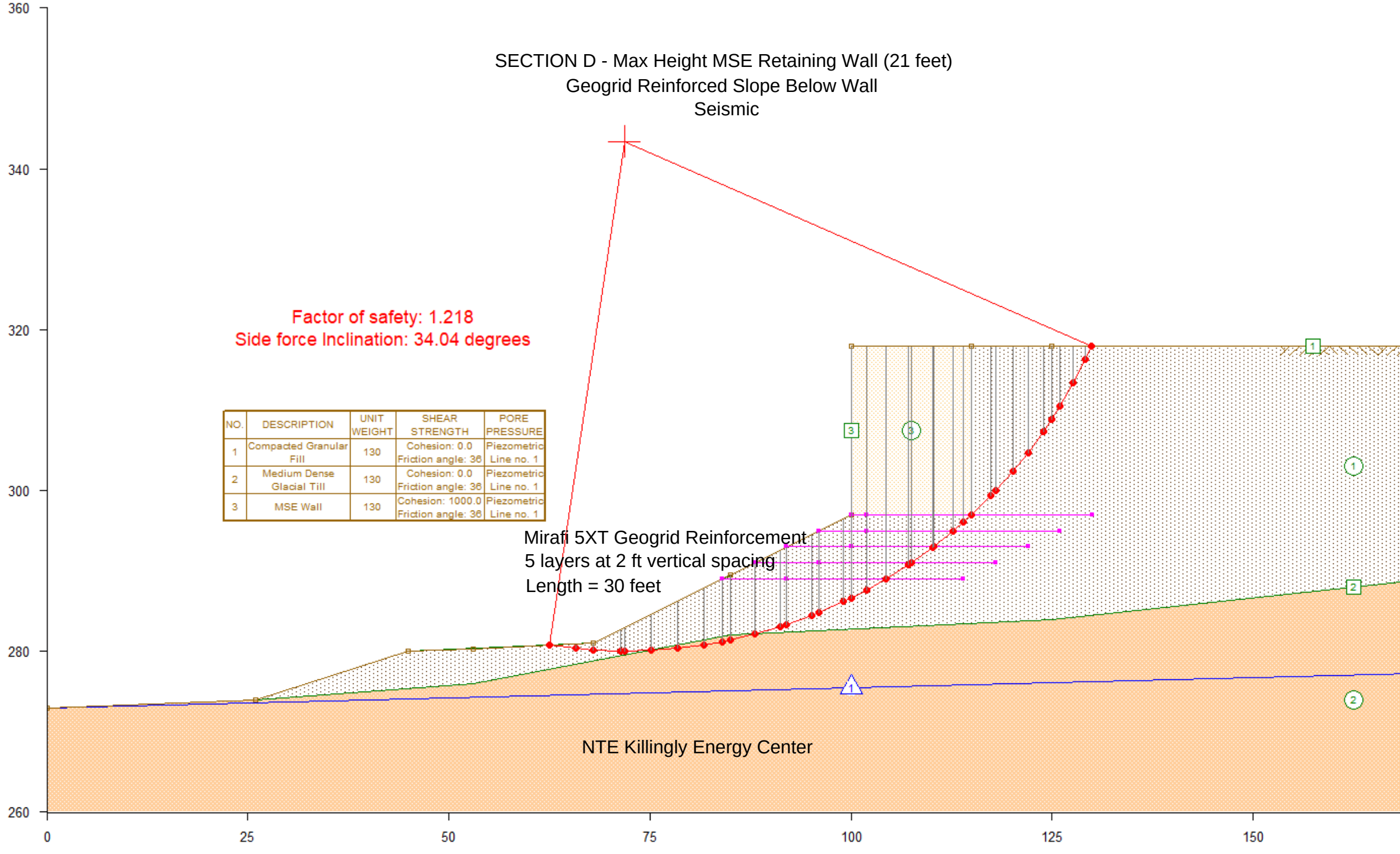

SECTION D - Max Height MSE Retaining Wall (21 feet)
Geogrid Reinforced Slope Below Wall
Seismic
Factor of safety: 1.218
Side force Inclination: 34.04 degrees
NO. | DESCRIPTION | UNIT WEIGHT | SHEAR STRENGTH | PORE PRESSURE
1 | Compacted Granular Fill | 130 | Cohesion: 0.0 Friction angle: 36 | Piezometric Line no. 1
2 | Medium Dense Glacial Till | 130 | Cohesion: 0.0 Friction angle: 36 | Piezometric Line no. 1
3 | MSE Wall | 130 | Cohesion: 1000.0 Friction angle: 36 | Piezometric Line no. 1
Mirafi 5XT Geogrid Reinforcement
5 layers at 2 ft vertical spacing
Length = 30 feet
NTE Killingly Energy Center
360
340
320
300
280
260
0
25
50
75
100
125
150

TABLE NO. 1
COMPUTER PROGRAM DESIGNATION: UTEXAS4
Originally Coded By Stephen G. Wright
Version No. 4.1.0.5 - Last Revision Date: 10/29/2008


```
*****************************************************************
* RESULTS OF COMPUTATIONS PERFORMED USING THIS SOFTWARE         *
* SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS THEY HAVE       *
* BEEN VERIFIED BY INDEPENDENT ANALYSES, EXPERIMENTAL DATA      *
* OR FIELD EXPERIENCE. THE USER SHOULD UNDERSTAND THE ALGORITHMS *
* AND ANALYTICAL PROCEDURES USED IN THIS SOFTWARE AND MUST HAVE  *
* READ ALL DOCUMENTATION FOR THIS SOFTWARE BEFORE ATTEMPTING     *
* TO USE IT.  NEITHER SHINOAK SOFTWARE NOR STEPHEN G. WRIGHT     *
* MAKE OR ASSUME LIABILITY FOR ANY WARRANTIES, EXPRESSED OR      *
* IMPLIED, CONCERNING THE ACCURACY, RELIABILITY, USEFULNESS      *
* OR ADAPTABILITY OF THIS SOFTWARE.                             *
*****************************************************************
```

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NTE Killingly Northern 2:1 Slope- Profile D with MSE Wall - No Reinforcement
#116152

TABLE NO. 3
```
************************
* NEW PROFILE LINE DATA *
************************
```

----- Profile Line No. 1 - Material Type (Number): 1 -----

Description: Compacted Granular Fill

Point	X	Y
1	26.00	274.00
2	45.00	280.00
3	68.00	281.00
4	100.00	297.00
5	115.00	297.00
6	115.00	318.00
7	200.00	318.00

----- Profile Line No. 2 - Material Type (Number): 2 -----

Description: Top of Glacial Till - Subsoil Stripped

Point	X	Y
1	0.00	273.00
2	26.00	274.00
3	53.00	276.00
4	85.00	282.00
5	125.00	284.00

6	200.00	292.00

----- Profile Line No. 3 - Material Type (Number): 3 -----

Description: MSE Wall

Point	X	Y
1	100.00	297.00
2	100.00	318.00
3	115.00	318.00
4	115.00	297.00

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TABLE NO. 4
****
* NEW MATERIAL PROPERTY DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

------------------ DATA FOR MATERIAL NUMBER 1 ------------------
---
Description: Compacted Granular Fill

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

------------------ DATA FOR MATERIAL NUMBER 2 ------------------
---
Description: Medium Dense Glacial Till

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

------------------- DATA FOR MATERIAL NUMBER 3 -------------------

Description: MSE Wall

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 1500.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

TABLE NO. 6

****

* NEW PIEZOMETRIC LINE DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *

****

--------------- Piezometric Line Number 1 ---------------

Description: Piezometric Line
Unit weight of fluid (water): 62.4

Point	X	Y
1	0.00	273.00
2	200.00	278.00

TABLE NO. 11

****

* NEW DISTRIBUTED LOAD DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *

****

Point	X	Y	Normal Pressure	Shear Stress
1	100.00	318.00	250.0	0.0
2	130.00	318.00	250.0	0.0

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#116152

TABLE NO. 16
****
* NEW ANALYSIS/COMPUTATION DATA *
****

Starting Center Coordinate for Search at -
X: 74.00
Y: 340.00

Required accuracy for critical center
(= minimum spacing between grid points): 0.100

Critical shear surface not allowed to pass below Y: 0.00

For the initial mode of search circles pass through the fixed
point at - X: 115.00, Y: 297.00

The following represent default values or values that were prevously defined:
Subtended angle for slice subdivision: 3.00(degrees)
There is no crack.
There is no water in a crack.
Conventional (single-stage) computations will be performed.
Seismic coefficient: 0.000
Unit weight of water (or other fluid) in crack: 62.4
Automatic search output will be in long form.
Search will be continued after the initial mode to find a most critical circle.
Maximum number of trial grids for a given search mode: 50
No restrictions exist on the lateral extent of the search.
No shear surfaces other than the most critical will be saved for display later.
Neither slope face was explicitly designated for analysis.
Standard sign convention used for direction of shear stress on shear surface.
Procedure of Analysis: Spencer

Iteration limit: 100
Force imbalance: 1.000000e-005 (fraction of total weight)
Moment imbalance: 1.000000e-005 (fraction of moment due to total weight)
Minimum weight required for computations to be performed: 100
Initial trial factor of safety: 3.000
Initial trial side force inclination: 17.189 (degrees)
Minimum (most negative) side force inclination allowed in Spencer's procedure: -10.00
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NTE Killingly Northern 2:1 Slope- Profile D with MSE Wall - No Reinforcement
#116152

TABLE NO. 26
****
* NEW, COMPUTED SLOPE GEOMETRY DATA *
****

These slope geometry were generated from the Profile Lines.

Point	X	Y
1	0.00	273.00
2	26.00	274.00
3	45.00	280.00
4	53.00	280.35
5	68.00	281.00
6	85.00	289.50
7	100.00	297.00
8	100.00	318.00
9	115.00	318.00
10	125.00	318.00
11	200.00	318.00

Search will be conducted for LEFT face of slope

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NTE Killingly Northern 2:1 Slope- Profile D with MSE Wall - No Reinforcement
#116152

TABLE NO. 29
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles Through a Fixed Point ------
------ Fixed point at - X: 115.00 Y: 297.00

Center Coordinates			1-Stage Factor of Safety	Side Force Inclination (degrees)	Iterations	Messages
X	Y	Radius				
71.00	337.00	59.46	1.307	26.218	8	
74.00	337.00	57.28	1.240	28.976	9	
77.00	337.00	55.17	1.236	29.632	9	
71.00	340.00	61.52	1.271	27.274	9	
74.00	340.00	59.41	1.231	29.442	9	
77.00	340.00	57.38	1.240	29.765	9	
71.00	343.00	63.66	1.246	28.266	9	
74.00	343.00	61.62	1.233	29.501	9	
77.00	343.00	59.67	1.252	29.642	9	
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -						
73.50	339.50	59.40	1.233	29.215	9	
74.00	339.50	59.05	1.231	29.399	9	
74.50	339.50	58.71	1.231	29.474	9	

73.50	340.00	59.76	1.232	29.298	9
74.50	340.00	59.07	1.231	29.496	9
73.50	340.50	60.12	1.231	29.365	9
74.00	340.50	59.78	1.230	29.468	9
74.50	340.50	59.43	1.231	29.518	9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
73.50	341.00	60.48	1.230	29.419	9
74.00	341.00	60.14	1.231	29.488	9
74.50	341.00	59.80	1.232	29.538	9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
73.00	340.50	60.47	1.234	29.142	9
73.00	341.00	60.83	1.232	29.235	9
73.00	341.50	61.19	1.231	29.312	9
73.50	341.50	60.85	1.230	29.455	9
74.00	341.50	60.51	1.231	29.506	9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
73.00	342.00	61.55	1.230	29.377	9
73.50	342.00	61.21	1.230	29.475	9
74.00	342.00	60.88	1.231	29.522	9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
73.20	341.20	60.83	1.231	29.349	9
73.50	341.20	60.63	1.230	29.436	9
73.80	341.20	60.42	1.230	29.476	9
73.20	341.50	61.05	1.230	29.385	9
73.80	341.50	60.64	1.230	29.487	9
73.20	341.80	61.27	1.230	29.416	9
73.50	341.80	61.07	1.230	29.468	9
73.80	341.80	60.86	1.231	29.497	9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
73.40	341.40	60.84	1.230	29.430	9
73.50	341.40	60.78	1.230	29.450	9
73.60	341.40	60.71	1.230	29.464	9
73.40	341.50	60.92	1.230	29.437	9
73.60	341.50	60.78	1.230	29.467	9
73.40	341.60	60.99	1.230	29.445	9
73.50	341.60	60.92	1.230	29.460	9
73.60	341.60	60.85	1.230	29.471	9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
73.30	341.50	60.98	1.230	29.414	9
73.30	341.60	61.06	1.230	29.423	9
73.30	341.70	61.13	1.230	29.431	9
73.40	341.70	61.06	1.230	29.451	9
73.50	341.70	60.99	1.230	29.464	9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
73.30	341.80	61.20	1.230	29.439	9
73.40	341.80	61.14	1.230	29.456	9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
73.20	341.70	61.20	1.230	29.406	9
73.20	341.90	61.35	1.230	29.424	9
73.30	341.90	61.28	1.230	29.445	9
73.40	341.90	61.21	1.230	29.461	9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
73.20	342.00	61.42	1.230	29.432	9
73.30	342.00	61.35	1.230	29.451	9
73.40	342.00	61.28	1.230	29.465	9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -					
73.20	342.10	61.49	1.230	29.439	9
73.30	342.10	61.42	1.230	29.456	9
73.40	342.10	61.36	1.230	29.469	9

```
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     73.10    342.00     61.49   1.230     29.407         9
     73.10    342.10     61.56   1.230     29.417         9
     73.10    342.20     61.63   1.230     29.425         9
     73.20    342.20     61.57   1.230     29.446         9
     73.30    342.20     61.50   1.230     29.462         9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     73.10    342.30     61.71   1.230     29.433         9
     73.20    342.30     61.64   1.230     29.452         9
     73.30    342.30     61.57   1.230     29.466         9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     73.10    342.40     61.78   1.230     29.440         9
     73.20    342.40     61.71   1.230     29.457         9
     73.30    342.40     61.64   1.230     29.470         9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     73.00    342.30     61.77   1.230     29.408         9
     73.00    342.40     61.85   1.230     29.417         9
     73.00    342.50     61.92   1.230     29.425         9
     73.10    342.50     61.85   1.230     29.446         9
     73.20    342.50     61.79   1.230     29.462         9
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     73.00    342.60     61.99   1.230     29.433         9
     73.10    342.60     61.93   1.230     29.452         9
     73.20    342.60     61.86   1.230     29.466         9
----- Critical Circle After the Current Mode of Search -----
X: 73.10     Y: 342.50     Radius: 61.854
Factor of safety: 1.230     Side force inclination: 29.446
```



```
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#116152

TABLE NO. 30
************************************************
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
************************************************

------ Output for Circles Tangent to a Given Horizontal Line ------
------ Tangent line elevation, Y: 280.65

                                1-Stage
Center Coordinates              Factor  Side Force
                                  of    Inclination
     X         Y       Radius   Safety   (degrees)   Iterations          Messages

     70.10    339.50     58.85   1.266     31.441        10
     73.10    339.50     58.85   1.234     30.058        10
     76.10    339.50     58.85   1.288     28.558         9
     70.10    342.50     61.85   1.248     30.969        10
     76.10    342.50     61.85   1.327     27.879         9
     70.10    345.50     64.85   1.238     30.369        10
     73.10    345.50     64.85   1.268     28.709         9
     76.10    345.50     64.85   1.365     27.297         8
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
```

72.60	342.00	61.35	1.231	29.809	9
73.10	342.00	61.35	1.230	29.552	9
73.60	342.00	61.35	1.239	29.313	9
72.60	342.50	61.85	1.231	29.704	9
73.60	342.50	61.85	1.245	29.179	9
72.60	343.00	62.35	1.230	29.599	9
73.10	343.00	62.35	1.236	29.326	9
73.60	343.00	62.35	1.252	29.049	9

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

72.80	342.20	61.55	1.230	29.665	9
73.10	342.20	61.55	1.230	29.509	9
73.40	342.20	61.55	1.235	29.373	9
72.80	342.50	61.85	1.230	29.602	9
73.40	342.50	61.85	1.239	29.291	9
72.80	342.80	62.15	1.230	29.538	9
73.10	342.80	62.15	1.233	29.380	9
73.40	342.80	62.15	1.243	29.212	9

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

73.00	342.40	61.75	1.230	29.519	9
73.10	342.40	61.75	1.230	29.467	9
73.20	342.40	61.75	1.232	29.422	9
73.00	342.50	61.85	1.230	29.498	9
73.20	342.50	61.85	1.233	29.405	9
73.00	342.60	61.95	1.230	29.477	9
73.10	342.60	61.95	1.231	29.429	9
73.20	342.60	61.95	1.234	29.378	9

----- Critical Circle After the Current Mode of Search -----
X: 73.10 Y: 342.50 Radius: 61.854
Factor of safety: 1.230 Side force inclination: 29.446

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NTE Killingly Northern 2:1 Slope- Profile D with MSE Wall - No Reinforcement
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TABLE NO. 33
****
* 1-STAGE FINAL CRITICAL CIRCLE INFORMATION *
****
X Coordinate of Center 73.10
Y Coordinate of Center 342.50
Radius 61.85
Factor of Safety 1.230
Side Force Inclination (degrees) 29.45
Number of Circles Tried 112
Number of Circles F Calculated for 112
Time Required for Search (seconds) 0.1

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NTE Killingly Northern 2:1 Slope- Profile D with MSE Wall - No Reinforcement

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TABLE NO. 43

```
**********************************************************
* Coordinate, Weight, Strength and Pore Water Pressure     *
* Information for Individual Slices for Conventional       *
* Computations or First Stage of Multi-Stage Computations. *
* (Information is for the critical shear surface in the    *
* case of an automatic search.)                            *
**********************************************************
```

Slice No.	X	Y	Slice Weight	Matl. No.	Cohesion	Friction Angle	Pore Pressure
	66.94	280.95					
1	67.47	280.91	10	1	0.0	36.00	0.0
	68.00	280.86					
2	69.62	280.77	438	1	0.0	36.00	0.0
	71.23	280.67					
3	72.17	280.66	588	1	0.0	36.00	0.0
	73.10	280.65					
4	74.72	280.69	1545	1	0.0	36.00	0.0
	76.34	280.73					
5	77.95	280.86	2148	1	0.0	36.00	0.0
	79.57	280.99					
6	79.59	280.99	39	1	0.0	36.00	0.0
	79.62	280.99					
7	81.22	281.20	2674	2	0.0	36.00	0.0
	82.83	281.42					
8	83.91	281.61	2075	2	0.0	36.00	0.0
	85.00	281.80					
9	85.63	281.93	1293	2	0.0	36.00	0.0
	86.26	282.06					
10	87.83	282.45	3462	1	0.0	36.00	0.0
	89.41	282.83					
11	90.96	283.30	3698	1	0.0	36.00	0.0
	92.51	283.77					
12	94.03	284.32	3841	1	0.0	36.00	0.0
	95.55	284.87					
13	97.05	285.49	3893	1	0.0	36.00	0.0
	98.54	286.12					
14	99.27	286.46	1931	1	0.0	36.00	0.0
	100.00	286.80					
15	101.44	287.54	11395	1	0.0	36.00	0.0
	102.88	288.29					
16	104.28	289.10	10506	1	0.0	36.00	0.0
	105.67	289.92					
17	107.03	290.81	9570	1	0.0	36.00	0.0
	108.38	291.70					
18	109.69	292.65	8602	1	0.0	36.00	0.0
	110.99	293.61					
19	112.25	294.64	7613	1	0.0	36.00	0.0
	113.50	295.66					
20	114.25	296.33	4228	1	0.0	36.00	0.0
	115.00	297.00					
21	116.16	298.13	6003	1	0.0	36.00	0.0
	117.32	299.26					
22	118.43	300.44	5028	1	0.0	36.00	0.0
	119.53	301.63					
23	120.56	302.87	4082	1	0.0	36.00	0.0

	121.60	304.11					
24	122.57	305.41	3179	1	0.0	36.00	0.0
	123.54	306.71					
25	124.27	307.78	1934	1	0.0	36.00	0.0
	125.00	308.85					
26	125.84	310.23	1706	1	0.0	36.00	0.0
	126.69	311.61					
27	127.46	313.04	996	1	0.0	36.00	0.0
	128.23	314.46					
28	128.93	315.92	376	1	0.0	36.00	0.0
	129.62	317.38					
29	129.76	317.69	11	1	0.0	36.00	0.0
	129.89	318.00					

No water in crack.

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TABLE NO. 44

```
*******************************************************
* Seismic Forces and Forces Due to Distributed Loads for *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations.              *
* (Information is for the critical shear surface in the  *
* case of an automatic search.)                         *
*******************************************************
```

			FORCES DUE TO DISTRIBUTED LOADS				
Slices No.	X	Seismic Force	Y for Seismic Force	Normal Force	Shear Force	X	Y
1	67.47	0	280.94	0	0	67.47	280.98
2	69.62	0	281.29	0	0	69.62	281.81
3	72.17	0	281.87	0	0	72.17	283.08
4	74.72	0	282.52	0	0	74.72	284.36
5	77.95	0	283.42	0	0	77.95	285.98
6	79.59	0	283.89	0	0	79.59	286.80
7	81.22	0	284.41	0	0	81.22	287.61
8	83.91	0	285.28	0	0	83.91	288.96
9	85.63	0	285.87	0	0	85.63	289.82
10	87.83	0	286.68	0	0	87.83	290.92
11	90.96	0	287.89	0	0	90.96	292.48
12	94.03	0	289.17	0	0	94.03	294.02
13	97.05	0	290.51	0	0	97.05	295.52
14	99.27	0	291.55	0	0	99.27	296.64
15	101.44	0	302.77	720	0	101.44	318.00
16	104.28	0	303.55	699	0	104.28	318.00
17	107.03	0	304.40	677	0	107.03	318.00
18	109.69	0	305.33	653	0	109.69	318.00
19	112.25	0	306.32	627	0	112.25	318.00
20	114.25	0	307.17	375	0	114.25	318.00

21	116.16	0	308.06	581	0	116.16	318.00
22	118.43	0	309.22	551	0	118.43	318.00
23	120.56	0	310.44	519	0	120.56	318.00
24	122.57	0	311.71	486	0	122.57	318.00
25	124.27	0	312.89	364	0	124.27	318.00
26	125.84	0	314.12	422	0	125.84	318.00
27	127.46	0	315.52	386	0	127.46	318.00
28	128.93	0	316.96	348	0	128.93	318.00
29	129.76	0	317.85	67	0	129.76	318.00

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TABLE NO. 47

```
************************************************************
*  Information for the Iterative Solution for the Factor of  *
*  Safety and Side Force Inclination by Spencer's Procedure  *
************************************************************
```

Allowable force imbalance for convergence: 1
Allowable moment imbalance for convergence: 108

Iteration	Trial Factor of Safety	Trial Side Force Inclination (degrees)	Force Imbalance (lbs.)	Moment Imbalance (ft.-lbs.)	Delta-F	Delta Theta (degrees)
1	3.00000	17.1887	3.643e+004	-9.128e+006		
First-order corrections to F and Theta					-4.2247	0.7233
Reduced values - Deltas were too large					-0.5000	0.0856
2	2.50000	17.2743	3.132e+004	-7.853e+006		
First-order corrections to F and Theta					-2.5868	0.8562
Reduced values - Deltas were too large					-0.5000	0.1655
3	2.00000	17.4398	2.390e+004	-5.999e+006		
First-order corrections to F and Theta					-1.3069	1.1256
Reduced values - Deltas were too large					-0.5000	0.4307
4	1.50000	17.8705	1.203e+004	-3.050e+006		
First-order corrections to F and Theta					-0.3846	2.0523
Second-order corrections to F and Theta					-0.3099	5.8859
Reduced values - Deltas were too large					-0.1508	2.8648
5	1.34915	20.7353	6.583e+003	-1.626e+006		
First-order corrections to F and Theta					-0.1658	2.4490
Second-order corrections to F and Theta					-0.1348	6.2148
Reduced values - Deltas were too large					-0.0621	2.8648
6	1.28703	23.6001	3.709e+003	-8.879e+005		
First-order corrections to F and Theta					-0.0790	2.3853
Second-order corrections to F and Theta					-0.0625	4.9911
Reduced values - Deltas were too large					-0.0359	2.8648

```
   7   1.25117    26.4649   1.644e+003  -3.803e+005
First-order corrections to F and Theta ............   -0.0283     1.8148
Second-order corrections to F and Theta ...........   -0.0222     2.8499

   8   1.22893    29.3148  -9.425e+000   6.503e+002
First-order corrections to F and Theta ............    0.0008     0.1319
Second-order corrections to F and Theta ...........    0.0008     0.1311

   9   1.22972    29.4459  -1.949e-004   2.160e-002
First-order corrections to F and Theta ............    0.0000     0.0000
```


```
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```


```
TABLE NO. 55
**********************************************************************
* Check of Computations by Spencer's Procedure (Results are for the *
* critical shear surface in the case of an automatic search.)       *
**********************************************************************

Summation of Horizontal Forces: 8.18295e-012

Summation of Vertical Forces: 6.68743e-012

Summation of Moments: -6.42365e-009

Mohr Coulomb Shear Force/Shear Strength Check Summation: 6.32354e-012
```


```
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```


```
TABLE NO. 58
**************************************************************************
* Final Results for Stresses Along the Shear Surface                     *
* (Results are for the critical shear surface in the case of a search.) *
**************************************************************************

SPENCER'S PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY
Factor of Safety: 1.230     Side Force Inclination:  29.45

       -------- VALUES AT CENTER OF BASE OF SLICE --------
                                 Total     Effective
Slice                            Normal     Normal       Shear
  No.    X-Center   Y-Center     Stress     Stress       Stress

   1        67.47     280.91       16.6       16.6         9.8
   2        69.62     280.77      225.4      225.4       133.2
```

3	72.17	280.66	485.3	485.3	286.7
4	74.72	280.69	684.9	684.9	404.6
5	77.95	280.86	878.4	878.4	518.9
6	79.59	280.99	957.6	957.6	565.8
7	81.22	281.20	1016.4	1016.4	600.5
8	83.91	281.61	1095.9	1095.9	647.5
9	85.63	281.93	1131.7	1131.7	668.7
10	87.83	282.45	1158.9	1158.9	684.7
11	90.96	283.30	1175.3	1175.3	694.4
12	94.03	284.32	1165.0	1165.0	688.3
13	97.05	285.49	1132.1	1132.1	668.9
14	99.27	286.46	1096.7	1096.7	647.9
15	101.44	287.54	3334.7	3334.7	1970.2
16	104.28	289.10	2987.8	2987.8	1765.2
17	107.03	290.81	2656.6	2656.6	1569.6
18	109.69	292.65	2340.7	2340.7	1382.9
19	112.25	294.64	2040.0	2040.0	1205.2
20	114.25	296.33	1808.1	1808.1	1068.3
21	116.16	298.13	1585.0	1585.0	936.4
22	118.43	300.44	1324.8	1324.8	782.7
23	120.56	302.87	1081.2	1081.2	638.8
24	122.57	305.41	854.6	854.6	504.9
25	124.27	307.78	666.4	666.4	393.7
26	125.84	310.23	493.1	493.1	291.3
27	127.46	313.04	319.9	319.9	189.0
28	128.93	315.92	168.1	168.1	99.3
29	129.76	317.69	87.7	87.7	51.8

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TABLE NO. 59

****
* Final Results for Side Forces and Stresses Between Slices *
* (Results are for the critical shear surface in the case of a search.) *
****

---------- VALUES AT RIGHT SIDE OF SLICE ----------

Slice No.	X-Right	Side Force	Y-Coord. of Side Force Location	Fraction of Height	Sigma at Top	Sigma at Bottom
1	68.00	14	281.20	Above	1054.7	-887.2
2	71.23	555	281.71	0.534	300.1	198.0
3	73.10	1186	281.93	0.441	229.6	481.6
4	76.34	2623	282.58	0.416	253.9	775.7
5	79.57	4291	283.38	0.412	305.8	983.2
6	79.62	4319	283.39	0.412	306.7	986.1
7	82.83	6036	284.32	0.415	369.5	1132.8
8	85.00	7165	285.02	0.419	414.7	1206.5
9	86.26	7795	285.46	0.421	441.7	1241.1
10	89.41	9241	286.62	0.427	511.3	1303.4

11	92.51	10451	287.89	0.434	581.1	1338.2
12	95.55	11393	289.24	0.442	649.8	1352.2
13	98.54	12056	290.68	0.449	716.4	1352.3
14	100.00	12283	291.41	0.452	-342.7	1376.3
15	102.88	13111	292.74	0.150	-422.7	1191.3
16	105.67	13178	294.30	0.156	-434.9	1252.2
17	108.38	12637	296.01	0.164	-425.1	1261.8
18	110.99	11632	297.84	0.173	-399.0	1229.7
19	113.50	10299	299.76	0.183	-361.3	1164.3
20	115.00	9363	300.99	0.190	-333.9	1110.4
21	117.32	7757	303.03	0.201	-285.3	1006.0
22	119.53	6125	305.13	0.214	-233.8	885.4
23	121.60	4562	307.27	0.228	-181.5	753.7
24	123.54	3145	309.46	0.244	-130.5	615.5
25	125.00	2162	311.23	0.260	-90.4	501.9
26	126.69	1163	313.45	0.288	-43.2	360.3
27	128.23	452	315.66	0.339	4.1	218.2
28	129.62	46	317.62	0.376	16.8	113.3
29	129.89	0	318.00	1.000	0.0	0.0

Read end-of-file on input while looking for another command word.
End of input data assumed - normal termination.

TABLE NO. 1
COMPUTER PROGRAM DESIGNATION: UTEXAS4
Originally Coded By Stephen G. Wright
Version No. 4.1.0.5 - Last Revision Date: 10/29/2008


```
**************************************************************
* RESULTS OF COMPUTATIONS PERFORMED USING THIS SOFTWARE      *
* SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS THEY HAVE    *
* BEEN VERIFIED BY INDEPENDENT ANALYSES, EXPERIMENTAL DATA   *
* OR FIELD EXPERIENCE. THE USER SHOULD UNDERSTAND THE ALGORITHMS *
* AND ANALYTICAL PROCEDURES USED IN THIS SOFTWARE AND MUST HAVE  *
* READ ALL DOCUMENTATION FOR THIS SOFTWARE BEFORE ATTEMPTING     *
* TO USE IT.  NEITHER SHINOAK SOFTWARE NOR STEPHEN G. WRIGHT     *
* MAKE OR ASSUME LIABILITY FOR ANY WARRANTIES, EXPRESSED OR      *
* IMPLIED, CONCERNING THE ACCURACY, RELIABILITY, USEFULNESS      *
* OR ADAPTABILITY OF THIS SOFTWARE.                          *
**************************************************************
```

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TABLE NO. 3
```
************************
* NEW PROFILE LINE DATA *
************************
```

----- Profile Line No. 1 - Material Type (Number): 1 -----

Description: Compacted Granular Fill

Point	X	Y
1	26.00	274.00
2	45.00	280.00
3	68.00	281.00
4	100.00	297.00
5	115.00	297.00
6	115.00	318.00
7	200.00	318.00

----- Profile Line No. 2 - Material Type (Number): 2 -----

Description: Top of Glacial Till - Subsoil Stripped

Point	X	Y
1	0.00	273.00
2	26.00	274.00
3	53.00	276.00
4	85.00	282.00
5	125.00	284.00

6	200.00	292.00

----- Profile Line No. 3 - Material Type (Number): 3 -----

Description: MSE Wall

Point	X	Y
1	100.00	297.00
2	100.00	318.00
3	115.00	318.00
4	115.00	297.00

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TABLE NO. 4
****
* NEW MATERIAL PROPERTY DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

------------------ DATA FOR MATERIAL NUMBER 1 ------------------
---
Description: Compacted Granular Fill

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

------------------ DATA FOR MATERIAL NUMBER 2 ------------------
---
Description: Medium Dense Glacial Till

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

------------------- DATA FOR MATERIAL NUMBER 3 -------------------

Description: MSE Wall

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 1000.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

TABLE NO. 6
****
* NEW PIEZOMETRIC LINE DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

--------------- Piezometric Line Number 1 ---------------

Description: Piezometric Line
Unit weight of fluid (water): 62.4

Point	X	Y
1	0.00	273.00
2	200.00	278.00

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TABLE NO. 15
****
* NEW REINFORCEMENT LINE DATA *
****

_____ Reinforcement Line: 1 _____
Maximum rotation angle: 0.00 degrees
Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force

Point	X	Y	Longitudinal Force	Transverse Force
1	100.00	297.00	0	0
2	102.00	297.00	2000	0
3	130.00	297.00	2000	0

_____ Reinforcement Line: 2 _____
Maximum rotation angle: 0.00 degrees
Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	96.00	295.00	0	0
2	102.00	295.00	2000	0
3	126.00	295.00	2000	0

_____ Reinforcement Line: 3 _____
Maximum rotation angle: 0.00 degrees
Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	92.00	293.00	0	0
2	100.00	293.00	2000	0
3	122.00	293.00	2000	0

_____ Reinforcement Line: 4 _____
Maximum rotation angle: 0.00 degrees
Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	88.00	291.00	0	0
2	96.00	291.00	2000	0
3	118.00	291.00	2000	0

_____ Reinforcement Line: 5 _____
Maximum rotation angle: 0.00 degrees
Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	84.00	289.00	0	0
2	92.00	289.00	2000	0
3	114.00	289.00	2000	0

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TABLE NO. 11
****
* NEW DISTRIBUTED LOAD DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

Point	X	Y	Normal Pressure	Shear Stress

1	100.00	318.00	250.0	0.0
2	130.00	318.00	250.0	0.0

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TABLE NO. 16
****
* NEW ANALYSIS/COMPUTATION DATA *
****

Starting Center Coordinate for Search at -
X: 74.00
Y: 340.00

Required accuracy for critical center
(= minimum spacing between grid points): 0.100

Critical shear surface not allowed to pass below Y: 0.00

For the initial mode of search circles pass through the fixed
point at - X: 115.00, Y: 297.00

Depth of crack: 0.000

The following represent default values or values that were prevously defined:
Subtended angle for slice subdivision: 3.00(degrees)
There is no water in a crack.
Conventional (single-stage) computations will be performed.
Seismic coefficient: 0.000
Unit weight of water (or other fluid) in crack: 62.4
Automatic search output will be in long form.
Search will be continued after the initial mode to find a most critical circle.
Maximum number of trial grids for a given search mode: 50
No restrictions exist on the lateral extent of the search.
No shear surfaces other than the most critical will be saved for display later.
Neither slope face was explicitly designated for analysis.
Standard sign convention used for direction of shear stress on shear surface.
Procedure of Analysis: Spencer

Iteration limit: 100
Force imbalance: 1.000000e-005 (fraction of total weight)
Moment imbalance: 1.000000e-005 (fraction of moment due to total weight)
Minimum weight required for computations to be performed: 100
Initial trial factor of safety: 3.000
Initial trial side force inclination: 17.189 (degrees)
Minimum (most negative) side force inclination allowed in Spencer's procedure: -10.00

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TABLE NO. 26
****
* NEW, COMPUTED SLOPE GEOMETRY DATA *
****

These slope geometry were generated from the Profile Lines.

Point	X	Y
1	0.00	273.00
2	26.00	274.00
3	45.00	280.00
4	53.00	280.35
5	68.00	281.00
6	85.00	289.50
7	100.00	297.00
8	100.00	318.00
9	115.00	318.00
10	125.00	318.00
11	200.00	318.00

Search will be conducted for LEFT face of slope

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TABLE NO. 29
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles Through a Fixed Point ------
------ Fixed point at - X: 115.00 Y: 297.00

Center Coordinates			1-Stage Factor of Safety	Side Force Inclination (degrees)		
X	Y	Radius			Iterations	Messages
71.00	337.00	59.46	1.532	22.151	6	
74.00	337.00	57.28	1.486	23.316	7	
77.00	337.00	55.17	1.513	23.342	7	
71.00	340.00	61.52	1.507	22.657	7	
74.00	340.00	59.41	1.492	23.385	7	
77.00	340.00	57.38	1.533	23.275	7	
71.00	343.00	63.66	1.495	23.020	7	

```
     74.00    343.00     61.62   1.510     23.210         7
     77.00    343.00     59.67   1.564     22.889         7
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     71.00    334.00     57.49   1.570     21.540         6
     74.00    334.00     55.23   1.497     22.995         7
     77.00    334.00     53.04   1.500     23.352         7
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     73.50    336.50     57.29   1.490     23.149         7
     74.00    336.50     56.93   1.487     23.279         7
     74.50    336.50     56.57   1.486     23.362         7
     73.50    337.00     57.64   1.489     23.201         7
     74.50    337.00     56.92   1.487     23.382         7
     73.50    337.50     57.99   1.487     23.247         7
     74.00    337.50     57.63   1.486     23.344         7
     74.50    337.50     57.28   1.487     23.396         7
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     73.50    338.00     58.34   1.487     23.286         7
     74.00    338.00     57.98   1.486     23.366         7
     74.50    338.00     57.63   1.489     23.401         7
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     73.70    337.20     57.63   1.487     23.269         7
     74.00    337.20     57.42   1.486     23.328         7
     74.30    337.20     57.21   1.486     23.369         7
     73.70    337.50     57.84   1.487     23.292         7
     74.30    337.50     57.42   1.487     23.380         7
     73.70    337.80     58.05   1.486     23.312         7
     74.00    337.80     57.84   1.486     23.357         7
     74.30    337.80     57.63   1.487     23.389         7
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     73.90    337.40     57.63   1.486     23.323         7
     74.00    337.40     57.56   1.486     23.339         7
     74.10    337.40     57.49   1.486     23.353         7
     73.90    337.50     57.70   1.486     23.329         7
     74.10    337.50     57.56   1.486     23.357         7
     73.90    337.60     57.77   1.486     23.334         7
     74.00    337.60     57.70   1.486     23.349         7
     74.10    337.60     57.63   1.486     23.361         7
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     74.00    337.30     57.49   1.486     23.334         7
     74.10    337.30     57.42   1.486     23.348         7
     74.20    337.30     57.35   1.486     23.361         7
     74.20    337.40     57.42   1.486     23.365         7
     74.20    337.50     57.49   1.486     23.369         7
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     74.10    337.20     57.35   1.486     23.343         7
     74.20    337.20     57.28   1.486     23.357         7
----- Critical Circle After the Current Mode of Search -----
X: 74.10     Y: 337.30     Radius: 57.419
Factor of safety: 1.486     Side force inclination: 23.348
♠
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```

TABLE NO. 30
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles Tangent to a Given Horizontal Line ------
------ Tangent line elevation, Y: 279.88

Center Coordinates			1-Stage Factor of Safety	Side Force Inclination (degrees)	Iterations	Messages
X	Y	Radius				
71.10	334.30	54.42	1.537	24.723	7	
74.10	334.30	54.42	1.492	23.796	7	
77.10	334.30	54.42	1.531	22.555	7	
71.10	337.30	57.42	1.511	24.419	7	
77.10	337.30	57.42	1.565	21.780	6	
71.10	340.30	60.42	1.498	23.957	7	
74.10	340.30	60.42	1.516	22.682	7	
77.10	340.30	60.42	1.604	20.973	7	
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -						
73.60	336.80	56.92	1.488	23.607	7	
74.10	336.80	56.92	1.487	23.427	7	
74.60	336.80	56.92	1.493	23.215	7	
73.60	337.30	57.42	1.487	23.528	7	
74.60	337.30	57.42	1.498	23.114	7	
73.60	337.80	57.92	1.487	23.448	7	
74.10	337.80	57.92	1.491	23.244	7	
74.60	337.80	57.92	1.502	23.014	7	
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -						
73.80	337.00	57.12	1.487	23.503	7	
74.10	337.00	57.12	1.486	23.396	7	
74.40	337.00	57.12	1.490	23.269	7	
73.80	337.30	57.42	1.487	23.456	7	
74.40	337.30	57.42	1.493	23.207	7	
73.80	337.60	57.72	1.487	23.408	7	
74.10	337.60	57.72	1.489	23.286	7	
74.40	337.60	57.72	1.496	23.145	7	
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -						
74.00	337.20	57.32	1.486	23.400	7	
74.10	337.20	57.32	1.486	23.364	7	
74.20	337.20	57.32	1.487	23.322	7	
74.00	337.30	57.42	1.486	23.384	7	
74.20	337.30	57.42	1.488	23.301	7	
74.00	337.40	57.52	1.486	23.368	7	
74.10	337.40	57.52	1.487	23.328	7	
74.20	337.40	57.52	1.489	23.280	7	

----- Critical Circle After the Current Mode of Search -----
X: 74.10 Y: 337.30 Radius: 57.419
Factor of safety: 1.486 Side force inclination: 23.348

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TABLE NO. 33
****
* 1-STAGE FINAL CRITICAL CIRCLE INFORMATION *
****
X Coordinate of Center 74.10
Y Coordinate of Center 337.30
Radius 57.42
Factor of Safety 1.486
Side Force Inclination (degrees) 23.35
Number of Circles Tried 78
Number of Circles F Calculated for 78
Time Required for Search (seconds) 0.1

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TABLE NO. 43
****
* Coordinate, Weight, Strength and Pore Water Pressure *
* Information for Individual Slices for Conventional *
* Computations or First Stage of Multi-Stage Computations. *
* (Information is for the critical shear surface in the *
* case of an automatic search.) *
****

Slice No.	X	Y	Slice Weight	Matl. No.	Cohesion	Friction Angle	Pore Pressure
	63.78	280.82					
1	65.26	280.59	114	1	0.0	36.00	0.0
	66.75	280.35					
2	67.37	280.28	113	1	0.0	36.00	0.0
	68.00	280.21					
3	69.50	280.09	648	1	0.0	36.00	0.0
	71.00	279.97					
4	72.35	279.92	1146	1	0.0	36.00	0.0
	73.71	279.88					
5	73.90	279.88	208	2	0.0	36.00	0.0
	74.10	279.88					
6	75.60	279.92	1907	2	0.0	36.00	0.0
	77.11	279.96					
7	78.60	280.08	2425	2	0.0	36.00	0.0
	80.10	280.20					
8	81.59	280.39	2869	2	0.0	36.00	0.0
	83.08	280.59					
9	83.54	280.66	967	2	0.0	36.00	0.0
	84.00	280.74					
10	84.50	280.83	1094	2	0.0	36.00	0.0
	85.00	280.93					
11	86.47	281.25	3429	2	0.0	36.00	0.0
	87.94	281.57					
12	87.97	281.58	79	2	0.0	36.00	0.0

	88.00	281.59					
13	89.25	281.93	3159	2	0.0	36.00	0.0
	90.51	282.28					
14	91.25	282.51	1964	1	0.0	36.00	0.0
	92.00	282.74					
15	93.42	283.25	3849	1	0.0	36.00	0.0
	94.83	283.75					
16	95.42	283.99	1629	1	0.0	36.00	0.0
	96.00	284.22					
17	97.37	284.83	3878	1	0.0	36.00	0.0
	98.75	285.44					
18	99.37	285.75	1781	1	0.0	36.00	0.0
	100.00	286.05					
19	101.00	286.59	8168	1	0.0	36.00	0.0
	102.00	287.12					
20	103.29	287.88	10134	1	0.0	36.00	0.0
	104.59	288.64					
21	104.87	288.82	2125	1	0.0	36.00	0.0
	105.15	289.00					
22	106.39	289.85	9096	1	0.0	36.00	0.0
	107.63	290.69					
23	107.85	290.85	1501	1	0.0	36.00	0.0
	108.06	291.00					
24	109.25	291.92	8058	1	0.0	36.00	0.0
	110.44	292.84					
25	110.53	292.92	633	1	0.0	36.00	0.0
	110.63	293.00					
26	111.76	293.99	7082	1	0.0	36.00	0.0
	112.90	294.97					
27	112.91	294.99	90	1	0.0	36.00	0.0
	112.93	295.00					
28	113.46	295.50	3135	1	0.0	36.00	0.0
	114.00	296.01					
29	114.50	296.50	2794	1	0.0	36.00	0.0
	115.00	297.00					
30	116.03	298.10	5312	1	0.0	36.00	0.0
	117.05	299.20					
31	117.53	299.74	2247	1	0.0	36.00	0.0
	118.00	300.29					
32	118.94	301.46	4034	1	0.0	36.00	0.0
	119.88	302.64					
33	120.75	303.86	3219	1	0.0	36.00	0.0
	121.63	305.08					
34	121.81	305.36	611	1	0.0	36.00	0.0
	122.00	305.64					
35	122.80	306.91	2294	1	0.0	36.00	0.0
	123.59	308.19					
36	124.30	309.46	1564	1	0.0	36.00	0.0
	125.00	310.73					
37	125.50	311.73	815	1	0.0	36.00	0.0
	126.00	312.74					
38	126.61	314.11	614	1	0.0	36.00	0.0
	127.21	315.49					
39	127.70	316.74	157	1	0.0	36.00	0.0
	128.18	318.00					

No water in crack.

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TABLE NO. 44

```
**********************************************************
* Seismic Forces and Forces Due to Distributed Loads for *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations.               *
* (Information is for the critical shear surface in the  *
* case of an automatic search.)                          *
**********************************************************
```

Slices No.	X	Seismic Force	Y for Seismic Force	Normal Force	Shear Force	X	Y
				FORCES DUE TO DISTRIBUTED LOADS			
1	65.26	0	280.73	0	0	65.26	280.88
2	67.37	0	280.63	0	0	67.37	280.97
3	69.50	0	280.92	0	0	69.50	281.75
4	72.35	0	281.55	0	0	72.35	283.18
5	73.90	0	281.92	0	0	73.90	283.95
6	75.60	0	282.36	0	0	75.60	284.80
7	78.60	0	283.19	0	0	78.60	286.30
8	81.59	0	284.09	0	0	81.59	287.80
9	83.54	0	284.72	0	0	83.54	288.77
10	84.50	0	285.04	0	0	84.50	289.25
11	86.47	0	285.74	0	0	86.47	290.23
12	87.97	0	286.28	0	0	87.97	290.98
13	89.25	0	286.78	0	0	89.25	291.63
14	91.25	0	287.57	0	0	91.25	292.63
15	93.42	0	288.48	0	0	93.42	293.71
16	95.42	0	289.35	0	0	95.42	294.71
17	97.37	0	290.26	0	0	97.37	295.69
18	99.37	0	291.22	0	0	99.37	296.69
19	101.00	0	302.29	500	0	101.00	318.00
20	103.29	0	302.94	647	0	103.29	318.00
21	104.87	0	303.41	140	0	104.87	318.00
22	106.39	0	303.92	621	0	106.39	318.00
23	107.85	0	304.42	106	0	107.85	318.00
24	109.25	0	304.96	594	0	109.25	318.00
25	110.53	0	305.46	49	0	110.53	318.00
26	111.76	0	305.99	567	0	111.76	318.00
27	112.91	0	306.49	7	0	112.91	318.00
28	113.46	0	306.75	268	0	113.46	318.00
29	114.50	0	307.25	250	0	114.50	318.00
30	116.03	0	308.05	513	0	116.03	318.00
31	117.53	0	308.87	237	0	117.53	318.00
32	118.94	0	309.73	469	0	118.94	318.00
33	120.75	0	310.93	438	0	120.75	318.00
34	121.81	0	311.68	93	0	121.81	318.00
35	122.80	0	312.46	398	0	122.80	318.00
36	124.30	0	313.73	352	0	124.30	318.00
37	125.50	0	314.87	250	0	125.50	318.00

38	126.61	0	316.06	304	0	126.61	318.00
39	127.70	0	317.37	241	0	127.70	318.00

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TABLE NO. 45

****
* Forces Due to Internal Soil Reinforcement for *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations. *
* (Information is for the critical shear surface in the *
* case of an automatic search.) *
****

Slice No.	X	Horizontal Force on Side	Vertical Force on Side	Y-Coordinate of Force	Horizontal Force on Base	Vertical Force on Base
	63.78					
1	Left:	0	0	280.82	0	0
1	Right:	0	0	280.35	0	0
	66.75					
2	Left:	0	0	280.35	0	0
2	Right:	0	0	280.21	0	0
	68.00					
3	Left:	0	0	280.21	0	0
3	Right:	0	0	279.97	0	0
	71.00					
4	Left:	0	0	279.97	0	0
4	Right:	0	0	279.88	0	0
	73.71					
5	Left:	0	0	279.88	0	0
5	Right:	0	0	279.88	0	0
	74.10					
6	Left:	0	0	279.88	0	0
6	Right:	0	0	279.96	0	0
	77.11					
7	Left:	0	0	279.96	0	0
7	Right:	0	0	280.20	0	0
	80.10					
8	Left:	0	0	280.20	0	0
8	Right:	0	0	280.59	0	0
	83.08					
9	Left:	0	0	280.59	0	0
9	Right:	0	0	280.74	0	0
	84.00					
10	Left:	0	0	280.74	0	0
10	Right:	250	0	289.00	0	0
	85.00					
11	Left:	-250	0	289.00	0	0
11	Right:	984	0	289.00	0	0
	87.94					

12 Left:	-984	0	289.00	0	0	88.00
12 Right:	1000	0	289.00	0	0	90.51
13 Left:	-1000	0	289.00	0	0	90.51
13 Right:	2253	0	289.56	0	0	92.00
14 Left:	-2253	0	289.56	0	0	92.00
14 Right:	3000	0	289.67	0	0	94.83
15 Left:	-3000	0	289.67	0	0	94.83
15 Right:	4415	0	290.41	0	0	96.00
16 Left:	-4415	0	290.41	0	0	96.00
16 Right:	5000	0	290.60	0	0	98.75
17 Left:	-5000	0	290.60	0	0	98.75
17 Right:	6603	0	291.46	0	0	100.00
18 Left:	-6603	0	291.46	0	0	100.00
18 Right:	7333	0	291.73	0	0	102.00
19 Left:	-7333	0	291.73	0	0	102.00
19 Right:	10000	0	293.00	0	0	104.59
20 Left:	-10000	0	293.00	0	0	104.59
20 Right:	10000	0	293.00	0	0	105.15
21 Left:	-10000	0	293.00	0	0	105.15
21 Right:	8000	0	294.00	2000	0	107.63
22 Left:	-8000	0	294.00	0	0	107.63
22 Right:	8000	0	294.00	0	0	108.06
23 Left:	-8000	0	294.00	0	0	108.06
23 Right:	6000	0	295.00	2000	0	110.44
24 Left:	-6000	0	295.00	0	0	110.44
24 Right:	6000	0	295.00	0	0	110.63
25 Left:	-6000	0	295.00	0	0	110.63
25 Right:	4000	0	296.00	2000	0	112.90
26 Left:	-4000	0	296.00	0	0	112.90
26 Right:	4000	0	296.00	0	0	112.93
27 Left:	-4000	0	296.00	0	0	112.93
27 Right:	2000	0	297.00	2000	0	114.00
28 Left:	-2000	0	297.00	0	0	114.00
28 Right:	2000	0	297.00	0	0	115.00
29 Left:	-2000	0	297.00	0	0	115.00
29 Right:	0	0	297.00	2000	0	117.05
30 Left:	0	0	297.00	0	0	117.05
30 Right:	0	0	299.20	0	0	
31 Left:	0	0	299.20	0	0	
31 Right:	0	0	300.29	0	0	

	118.00					
32	Left:	0	0	300.29	0	0
32	Right:	0	0	302.64	0	0
	119.88					
33	Left:	0	0	302.64	0	0
33	Right:	0	0	305.08	0	0
	121.63					
34	Left:	0	0	305.08	0	0
34	Right:	0	0	305.64	0	0
	122.00					
35	Left:	0	0	305.64	0	0
35	Right:	0	0	308.19	0	0
	123.59					
36	Left:	0	0	308.19	0	0
36	Right:	0	0	310.73	0	0
	125.00					
37	Left:	0	0	310.73	0	0
37	Right:	0	0	312.74	0	0
	126.00					
38	Left:	0	0	312.74	0	0
38	Right:	0	0	315.49	0	0
	127.21					
39	Left:	0	0	315.49	0	0
39	Right:	0	0	318.00	0	0
	128.18					

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TABLE NO. 46

```
**********************************************************
* Forces Due to Internal Soil Reinforcement for          *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations.               *
* (Information is for the critical shear surface in the  *
* case of an automatic search.)                          *
**********************************************************
```

Slice No.	Horizontal Force	Vertical Force	Moment about Center of Slice Base	Resultant Force	Angle (degs.)
1	0	0	0.0000e+000	0	0.00
2	0	0	0.0000e+000	0	0.00
3	0	0	0.0000e+000	0	0.00
4	0	0	0.0000e+000	0	0.00
5	0	0	0.0000e+000	0	0.00
6	0	0	0.0000e+000	0	0.00
7	0	0	0.0000e+000	0	0.00
8	0	0	0.0000e+000	0	0.00
9	0	0	0.0000e+000	0	0.00
10	250	0	-2.0417e+003	250	0.00
11	734	0	-5.6880e+003	734	0.00

12	16	0	-1.1967e+002	16	0.00
13	1253	0	-1.0113e+004	1253	0.00
14	747	0	-5.5922e+003	747	0.00
15	1415	0	-1.2387e+004	1415	0.00
16	585	0	-4.6839e+003	585	0.00
17	1603	0	-1.4926e+004	1603	0.00
18	730	0	-6.1319e+003	730	0.00
19	2667	0	-2.6440e+004	2667	0.00
20	0	0	0.0000e+000	0	0.00
21	0	0	0.0000e+000	0	0.00
22	0	0	0.0000e+000	0	0.00
23	0	0	0.0000e+000	0	0.00
24	0	0	0.0000e+000	0	0.00
25	0	0	0.0000e+000	0	0.00
26	0	0	0.0000e+000	0	0.00
27	0	0	0.0000e+000	0	0.00
28	0	0	0.0000e+000	0	0.00
29	0	0	0.0000e+000	0	0.00
30	0	0	0.0000e+000	0	0.00
31	0	0	0.0000e+000	0	0.00
32	0	0	0.0000e+000	0	0.00
33	0	0	0.0000e+000	0	0.00
34	0	0	0.0000e+000	0	0.00
35	0	0	0.0000e+000	0	0.00
36	0	0	0.0000e+000	0	0.00
37	0	0	0.0000e+000	0	0.00
38	0	0	0.0000e+000	0	0.00
39	0	0	0.0000e+000	0	0.00

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TABLE NO. 47

```
************************************************************
*  Information for the Iterative Solution for the Factor of  *
*  Safety and Side Force Inclination by Spencer's Procedure  *
************************************************************
```

Allowable force imbalance for convergence: 1
Allowable moment imbalance for convergence: 109

Iter-ation	Trial Factor of Safety	Trial Side Force Inclination (degrees)	Force Imbalance (lbs.)	Moment Imbalance (ft.-lbs.)	Delta-F	Delta Theta (degrees)
1	3.00000	17.1887	2.758e+004	-6.880e+006		
First-order corrections to F and Theta					-3.0198	0.5850
Reduced values - Deltas were too large					-0.5000	0.0969
2	2.50000	17.2856	2.218e+004	-5.535e+006		
First-order corrections to F and Theta					-1.7261	0.7299
Reduced values - Deltas were too large					-0.5000	0.2114

```
   3   2.00000    17.4970   1.430e+004  -3.579e+006
First-order corrections to F and Theta ............   -0.7320     1.0665
Reduced values - Deltas were too large ............   -0.5000     0.7285

   4   1.50000    18.2255   1.618e+003  -4.489e+005
First-order corrections to F and Theta ............   -0.0269     3.4871
Reduced values - Deltas were too large ............   -0.0221     2.8648

   5   1.47793    21.0903   2.488e+002  -8.286e+004
First-order corrections to F and Theta ............    0.0069     2.1197
Second-order corrections to F and Theta ...........    0.0081     2.2482

   6   1.48605    23.3385  -8.021e-001   7.222e+001
First-order corrections to F and Theta ............    0.0001     0.0098
Second-order corrections to F and Theta ...........    0.0001     0.0098

   7   1.48614    23.3483  -2.864e-008   1.444e-006
First-order corrections to F and Theta ............    0.0000     0.0000
```



```
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TABLE NO. 55
**********************************************************************
* Check of Computations by Spencer's Procedure (Results are for the *
* critical shear surface in the case of an automatic search.)       *
**********************************************************************

Summation of Horizontal Forces: 1.44444e-011

Summation of Vertical Forces: 8.81620e-012

Summation of Moments: -1.49956e-009

Mohr Coulomb Shear Force/Shear Strength Check Summation: 4.94599e-012

***** CAUTION ***** Some of the Forces Between Slices Act at Points
Above the Surface of the Slope or Below the Shear Surface -
Either a Tension Crack may be Needed or the SOLUTION MAY NOT
BE A VALID SOLUTION
```



```
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TABLE NO. 58
**********************************************************************
* Final Results for Stresses Along the Shear Surface                 *
```

* (Results are for the critical shear surface in the case of a search.) *
****

SPENCER'S PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY
Factor of Safety: 1.486 Side Force Inclination: 23.35

Slice No.	X-Center	Y-Center	Total Normal Stress	Effective Normal Stress	Shear Stress
1	65.26	280.59	59.6	59.6	29.1
2	67.37	280.28	132.4	132.4	64.7
3	69.50	280.09	302.4	302.4	147.9
4	72.35	279.92	555.6	555.6	271.6
5	73.90	279.88	673.3	673.3	329.2
6	75.60	279.92	780.3	780.3	381.5
7	78.60	280.08	939.3	939.3	459.2
8	81.59	280.39	1057.5	1057.5	517.0
9	83.54	280.66	1118.1	1118.1	546.6
10	84.50	280.83	1254.1	1254.1	613.1
11	86.47	281.25	1286.1	1286.1	628.7
12	87.97	281.58	1306.6	1306.6	638.8
13	89.25	281.93	1418.1	1418.1	693.3
14	91.25	282.51	1421.4	1421.4	694.9
15	93.42	283.25	1409.3	1409.3	689.0
16	95.42	283.99	1391.0	1391.0	680.0
17	97.37	284.83	1389.0	1389.0	679.0
18	99.37	285.75	1349.6	1349.6	659.8
19	101.00	286.59	3843.8	3843.8	1879.2
20	103.29	287.88	3125.5	3125.5	1528.0
21	104.87	288.82	2944.2	2944.2	1439.4
22	106.39	289.85	2762.6	2762.6	1350.6
23	107.85	290.85	2593.2	2593.2	1267.8
24	109.25	291.92	2423.8	2423.8	1184.9
25	110.53	292.92	2272.6	2272.6	1111.0
26	111.76	293.99	2121.4	2121.4	1037.1
27	112.91	294.99	1984.7	1984.7	970.3
28	113.46	295.50	1916.9	1916.9	937.1
29	114.50	296.50	1790.2	1790.2	875.2
30	116.03	298.10	1599.8	1599.8	782.1
31	117.53	299.74	1415.5	1415.5	692.0
32	118.94	301.46	1236.4	1236.4	604.4
33	120.75	303.86	1007.2	1007.2	492.4
34	121.81	305.36	874.8	874.8	427.7
35	122.80	306.91	747.0	747.0	365.2
36	124.30	309.46	555.6	555.6	271.6
37	125.50	311.73	403.4	403.4	197.2
38	126.61	314.11	262.8	262.8	128.5
39	127.70	316.74	129.6	129.6	63.4

TABLE NO. 59

****

* Final Results for Side Forces and Stresses Between Slices *
* (Results are for the critical shear surface in the case of a search.) *

****

---------- VALUES AT RIGHT SIDE OF SLICE ----------

Slice No.	X-Right	Side Force	Y-Coord. of Side Force Location	Fraction of Height	Sigma at Top	Sigma at Bottom
1	66.75	124	281.23	Above	1319.6	-934.0
2	68.00	234	281.20	Above	1483.1	-942.5
3	71.00	796	281.25	0.507	300.0	276.8
4	73.71	1648	281.43	0.390	129.5	632.4
5	74.10	1789	281.47	0.381	113.7	674.4
6	77.11	2971	281.89	0.346	36.4	939.1
7	80.10	4229	282.46	0.330	-12.8	1145.5
8	83.08	5455	283.13	0.320	-50.4	1309.9
9	84.00	5815	283.36	0.318	-61.0	1353.9
10	85.00	6504	283.85	0.341	30.9	1361.8
11	87.94	8406	285.12	0.378	217.9	1425.1
12	88.00	8445	285.15	0.378	220.9	1427.0
13	90.51	10644	286.49	0.422	522.1	1436.7
14	92.00	11863	287.20	0.435	647.2	1476.6
15	94.83	13977	288.70	0.464	943.3	1464.0
16	96.00	14771	289.28	0.470	1029.0	1487.5
17	98.75	16705	290.86	0.496	1365.5	1440.2
18	100.00	17498	291.54	0.501	-349.2	1847.4
19	102.00	20055	293.15	0.195	-493.4	1685.8
20	104.59	19158	294.54	0.201	-476.3	1674.6
21	105.15	18896	294.86	0.202	-470.8	1667.2
22	107.63	17463	296.39	0.209	-438.9	1613.1
23	108.06	17178	296.67	0.210	-432.4	1600.6
24	110.44	15385	298.31	0.217	-390.9	1513.8
25	110.63	15226	298.45	0.218	-387.2	1505.5
26	112.90	13231	300.17	0.226	-340.1	1395.1
27	112.93	13203	300.20	0.226	-339.4	1393.5
28	114.00	12189	301.07	0.230	-315.1	1332.9
29	115.00	11211	301.92	0.234	-291.4	1271.8
30	117.05	9134	303.77	0.244	-240.3	1132.3
31	118.00	8160	304.69	0.248	-215.6	1061.7
32	119.88	6233	306.62	0.259	-165.6	910.6
33	121.63	4492	308.59	0.272	-117.7	756.3
34	122.00	4136	309.04	0.275	-107.1	721.4
35	123.59	2694	311.05	0.292	-63.1	567.2
36	125.00	1574	313.01	0.313	-23.8	421.1
37	126.00	905	314.54	0.342	8.4	307.6
38	127.21	288	316.54	0.417	53.0	157.6
39	128.18	0	318.00	1.000	0.0	0.0

Read end-of-file on input while looking for another command word.
End of input data assumed - normal termination.

TABLE NO. 1
COMPUTER PROGRAM DESIGNATION: UTEXAS4
Originally Coded By Stephen G. Wright
Version No. 4.1.0.5 - Last Revision Date: 10/29/2008


```
*****************************************************************
* RESULTS OF COMPUTATIONS PERFORMED USING THIS SOFTWARE         *
* SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS THEY HAVE       *
* BEEN VERIFIED BY INDEPENDENT ANALYSES, EXPERIMENTAL DATA      *
* OR FIELD EXPERIENCE. THE USER SHOULD UNDERSTAND THE ALGORITHMS *
* AND ANALYTICAL PROCEDURES USED IN THIS SOFTWARE AND MUST HAVE  *
* READ ALL DOCUMENTATION FOR THIS SOFTWARE BEFORE ATTEMPTING     *
* TO USE IT.  NEITHER SHINOAK SOFTWARE NOR STEPHEN G. WRIGHT     *
* MAKE OR ASSUME LIABILITY FOR ANY WARRANTIES, EXPRESSED OR      *
* IMPLIED, CONCERNING THE ACCURACY, RELIABILITY, USEFULNESS      *
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*****************************************************************
```

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TABLE NO. 3
```
************************
* NEW PROFILE LINE DATA *
************************
```

----- Profile Line No. 1 - Material Type (Number): 1 -----

Description: Compacted Granular Fill

Point	X	Y
1	26.00	274.00
2	45.00	280.00
3	68.00	281.00
4	100.00	297.00
5	115.00	297.00
6	115.00	318.00
7	200.00	318.00

----- Profile Line No. 2 - Material Type (Number): 2 -----

Description: Top of Glacial Till - Subsoil Stripped

Point	X	Y
1	0.00	273.00
2	26.00	274.00
3	53.00	276.00
4	85.00	282.00
5	125.00	284.00

6	200.00	292.00

----- Profile Line No. 3 - Material Type (Number): 3 -----

Description: MSE Wall

Point	X	Y
1	100.00	297.00
2	100.00	318.00
3	115.00	318.00
4	115.00	297.00

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TABLE NO. 4
****
* NEW MATERIAL PROPERTY DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

------------------ DATA FOR MATERIAL NUMBER 1 ------------------
---
Description: Compacted Granular Fill

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

------------------ DATA FOR MATERIAL NUMBER 2 ------------------
---
Description: Medium Dense Glacial Till

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 0.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

------------------- DATA FOR MATERIAL NUMBER 3 -------------------

Description: MSE Wall

Constant unit weight of soil (material): 130.0

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
Cohesion - - - - - - - - 1000.0
Friction angle - - - - - 36.00 (degrees)

Pore water pressures are defined by a piezometric line.
Piezometric line number: 1
Negative pore water pressures are NOT allowed - set to zero.

TABLE NO. 6
****
* NEW PIEZOMETRIC LINE DATA - CONVENTIONAL/FIRST-STAGE COMPUTATIONS *
****

--------------- Piezometric Line Number 1 ---------------

Description: Piezometric Line
Unit weight of fluid (water): 62.4

Point	X	Y
1	0.00	273.00
2	200.00	278.00

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TABLE NO. 15
****
* NEW REINFORCEMENT LINE DATA *
****

_____ Reinforcement Line: 1 _____
Maximum rotation angle: 0.00 degrees
Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force

1	100.00	297.00	0	0
2	102.00	297.00	2000	0
3	130.00	297.00	2000	0

_____ Reinforcement Line: 2 _____
Maximum rotation angle: 0.00 degrees
Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	96.00	295.00	0	0
2	102.00	295.00	2000	0
3	126.00	295.00	2000	0

_____ Reinforcement Line: 3 _____
Maximum rotation angle: 0.00 degrees
Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	92.00	293.00	0	0
2	100.00	293.00	2000	0
3	122.00	293.00	2000	0

_____ Reinforcement Line: 4 _____
Maximum rotation angle: 0.00 degrees
Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	88.00	291.00	0	0
2	96.00	291.00	2000	0
3	118.00	291.00	2000	0

_____ Reinforcement Line: 5 _____
Maximum rotation angle: 0.00 degrees
Option 1 - Reinforcement forces are applied to base and sides of slices.

Point	X	Y	Longitudinal Force	Transverse Force
1	84.00	289.00	0	0
2	92.00	289.00	2000	0
3	114.00	289.00	2000	0

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TABLE NO. 16
****
* NEW ANALYSIS/COMPUTATION DATA *
****

Starting Center Coordinate for Search at -

Required accuracy for critical center
(= minimum spacing between grid points): 0.100

Critical shear surface not allowed to pass below Y: 0.00

For the initial mode of search circles pass through the fixed
point at - X: 115.00, Y: 297.00

Seismic coefficient: 0.136
Seismic force acts at center of gravity.

Depth of crack: 0.000

The following represent default values or values that were prevously defined:
Subtended angle for slice subdivision: 3.00(degrees)
There is no water in a crack.
Conventional (single-stage) computations will be performed.
Unit weight of water (or other fluid) in crack: 62.4
Automatic search output will be in long form.
Search will be continued after the initial mode to find a most critical circle.
Maximum number of trial grids for a given search mode: 50
No restrictions exist on the lateral extent of the search.
No shear surfaces other than the most critical will be saved for display later.
Neither slope face was explicitly designated for analysis.
Standard sign convention used for direction of shear stress on shear surface.
Procedure of Analysis: Spencer

Iteration limit: 100
Force imbalance: 1.000000e-005 (fraction of total weight)
Moment imbalance: 1.000000e-005 (fraction of moment due to total weight)
Minimum weight required for computations to be performed: 100
Initial trial factor of safety: 3.000
Initial trial side force inclination: 17.189 (degrees)
Minimum (most negative) side force inclination allowed in Spencer's procedure: -10.00

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TABLE NO. 26
****
* NEW, COMPUTED SLOPE GEOMETRY DATA *
****

These slope geometry were generated from the Profile Lines.

Point	X	Y
1	0.00	273.00
2	26.00	274.00

3	45.00	280.00
4	53.00	280.35
5	68.00	281.00
6	85.00	289.50
7	100.00	297.00
8	100.00	318.00
9	115.00	318.00
10	125.00	318.00
11	200.00	318.00

Search will be conducted for LEFT face of slope

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TABLE NO. 29
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles Through a Fixed Point ------
------ Fixed point at - X: 115.00 Y: 297.00

Center Coordinates X	Y	Radius	1-Stage Factor of Safety	Side Force Inclination (degrees)	Iterations	Messages
71.00	337.00	59.46	1.264	29.956	9	
74.00	337.00	57.28	Center rejected as follows:			UTEXAS ERROR NUMBER 9270 Solution did not converge in iteration limit of 100 iterations Failed to converge during stage 1 computations
77.00	337.00	55.17	1.249	34.377	11	
71.00	340.00	61.52	1.238	31.543	11	
74.00	340.00	59.41	1.225	34.263	93	
77.00	340.00	57.38	1.258	34.749	11	
71.00	343.00	63.66	Center rejected as follows:			UTEXAS ERROR NUMBER 9270 Solution did not converge in iteration limit of 100 iterations Failed to converge during stage 1 computations
74.00	343.00	61.62	1.232	34.651	12	
77.00	343.00	59.67	1.271	35.015	11	
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -						
73.50	339.50	59.40	Center rejected as follows:			UTEXAS ERROR NUMBER 9280 The side force inclination fell outside the range of values allowed. The minimum value allowed is: -1.00000e+001 degrees. The maximum value allowed is: 8.00000e+001 degrees.

```
     74.00    339.50     59.05 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     74.50    339.50     58.71   1.228     34.285        12
     73.50    340.00     59.76   1.222     34.073        17
     74.50    340.00     59.07   1.229     34.355        12
     73.50    340.50     60.12 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     74.00    340.50     59.78   1.226     34.336        13
     74.50    340.50     59.43   1.230     34.424        12
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     73.00    339.50     59.75   1.222     33.569        33
     73.00    340.00     60.11 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     73.00    340.50     60.47 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     73.20    339.70     59.75   1.222     33.797        33
     73.50    339.70     59.54   1.222     33.992        81
     73.80    339.70     59.34 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     73.20    340.00     59.97   1.221     33.894        33
     73.80    340.00     59.55   1.223     34.203        89
     73.20    340.30     60.18   1.221     33.984        81
     73.50    340.30     59.98 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     73.80    340.30     59.77 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     72.90    340.00     60.18   1.222     33.669        77
     72.90    340.30     60.39 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations
```

```
     72.90    340.60     60.61   1.221     33.875        79
     73.20    340.60     60.40   1.221     34.069        83
     73.50    340.60     60.19 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     72.60    340.30     60.60 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.60    340.60     60.82   1.221     33.638        77
     72.60    340.90     61.03   1.220     33.747        31
     72.90    340.90     60.82   1.220     33.970        81
     73.20    340.90     60.62 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     72.60    341.20     61.25 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.90    341.20     61.04   1.220     34.058        33
     73.20    341.20     60.83 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     72.60    341.50     61.47   1.219     33.949        81
     72.90    341.50     61.26 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     73.20    341.50     61.05 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     72.30    341.20     61.46   1.220     33.600        31
```

```
     72.30    341.50     61.67 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.30    341.80     61.89 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.60    341.80     61.68   1.219     34.041        83
     72.90    341.80     61.48 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     72.30    342.10     62.11 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     72.60    342.10     61.90   1.219     34.127        33
     72.90    342.10     61.70 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     72.30    342.40     62.33   1.219     34.018        31
     72.60    342.40     62.12   1.219     34.210        89
     72.90    342.40     61.92 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     72.00    342.10     62.31 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     72.00    342.40     62.53   1.219     33.783        81
     72.00    342.70     62.75   1.218     33.889        83
```

```
     72.30    342.70     62.54 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.60    342.70     62.34 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     71.70    342.40     62.74 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     71.70    342.70     62.96   1.219     33.626        81
     71.70    343.00     63.17 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.00    343.00     62.97   1.218     33.988        85
     72.30    343.00     62.76 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     71.50    342.50     62.95 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.00    342.50     62.60 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     72.50    342.50     62.26 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.
```

```
     71.50    343.00     63.31   1.219     33.551        31
     72.50    343.00     62.63   1.219     34.308        37
     71.50    343.50     63.67 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.00    343.50     63.33 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     72.50    343.50     63.00 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     71.70    342.70     62.96   1.219     33.626        81
     72.00    342.70     62.75   1.218     33.889        83
     72.30    342.70     62.54 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     71.70    343.00     63.17 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.30    343.00     62.76 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     71.70    343.30     63.39 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.00    343.30     63.19 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations
```

```
     72.30    343.30     62.98   1.218     34.276        93
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     71.90    342.90     62.96   1.218     33.876        83
     72.00    342.90     62.90 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                               The side force inclination fell outside the range
of values allowed.
                                                               The minimum value allowed is:   -1.00000e+001
degrees.
                                                               The maximum value allowed is:    8.00000e+001
degrees.

     72.10    342.90     62.83   1.218     34.030        31
     71.90    343.00     63.04 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                               Solution did not converge in iteration limit of
100  iterations
                                                               Failed to converge during stage 1 computations

     72.10    343.00     62.90 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                               The side force inclination fell outside the range
of values allowed.
                                                               The minimum value allowed is:   -1.00000e+001
degrees.
                                                               The maximum value allowed is:    8.00000e+001
degrees.

     71.90    343.10     63.11 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                               The side force inclination fell outside the range
of values allowed.
                                                               The minimum value allowed is:   -1.00000e+001
degrees.
                                                               The maximum value allowed is:    8.00000e+001
degrees.

     72.00    343.10     63.04 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                               The side force inclination fell outside the range
of values allowed.
                                                               The minimum value allowed is:   -1.00000e+001
degrees.
                                                               The maximum value allowed is:    8.00000e+001
degrees.

     72.10    343.10     62.97   1.218     34.092        87
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     72.20    343.00     62.83 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                               The side force inclination fell outside the range
of values allowed.
                                                               The minimum value allowed is:   -1.00000e+001
degrees.
                                                               The maximum value allowed is:    8.00000e+001
degrees.

     72.20    343.10     62.91 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                               The side force inclination fell outside the range
of values allowed.
                                                               The minimum value allowed is:   -1.00000e+001
degrees.
                                                               The maximum value allowed is:    8.00000e+001
degrees.
```

```
     72.00    343.20     63.11   1.218     34.052        31
     72.10    343.20     63.05 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.20    343.20     62.98 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     71.90    343.20     63.18   1.218     33.977        85
     71.90    343.30     63.26 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.10    343.30     63.12   1.218     34.152        89
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     71.80    343.10     63.18 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     71.80    343.20     63.25 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     71.80    343.30     63.32   1.218     33.932        85
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     71.70    343.20     63.32   1.218     33.814        83
     71.70    343.40     63.47   1.218     33.885        85
     71.80    343.40     63.40 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     71.90    343.40     63.33   1.218     34.041        31
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     72.00    343.40     63.26 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
```

The maximum value allowed is: 8.00000e+001
degrees.

71.80 343.50 63.47 Center rejected as follows: UTEXAS ERROR NUMBER 9280
The side force inclination fell outside the range
of values allowed.
The minimum value allowed is: -1.00000e+001
degrees.
The maximum value allowed is: 8.00000e+001
degrees.

71.90 343.50 63.40 Center rejected as follows: UTEXAS ERROR NUMBER 9280
The side force inclination fell outside the range
of values allowed.
The minimum value allowed is: -1.00000e+001
degrees.
The maximum value allowed is: 8.00000e+001
degrees.

----- Critical Circle After the Current Mode of Search -----
X: 71.90 Y: 343.40 Radius: 63.329
Factor of safety: 1.218 Side force inclination: 34.041

****
CAUTION - THE FACTOR OF SAFETY COULD NOT BE COMPUTED
FOR SOME OF THE GRID POINTS AROUND THE MINIMUM
****

UTEXAS4 S/N:04000 - Version: 4.1.0.5 - Latest Revision: 10/29/2008
Licensed for use by: Jason Walker, Burns & McDonnell
Time and date of run: Tue Sep 24 07:57:40 2019
Name of input data file: Z:\Clients\ENR\NTECT\116572_Killingly\Design\GeoTech\Working\Dsgn\Slope Stability\NTE Killingly Temp Folder\Section D - Wall - Geogrid Reinforced - Seismic.dat

NTE Killingly Northern 2:1 Slope- Profile D with Geogrid Rein MSE Wall Seis
#116152

TABLE NO. 30
****
* OUTPUT FOR TYPE 1 AUTOMATIC SEARCH WITH CIRCLES *
****

------ Output for Circles Tangent to a Given Horizontal Line ------
------ Tangent line elevation, Y: 280.07

Center Coordinates			1-Stage Factor of Safety	Side Force Inclination (degrees)	Iterations	Messages
X	Y	Radius				
68.90	340.40	60.33	1.275	36.031	11	
71.90	340.40	60.33	1.229	34.483	12	
74.90	340.40	60.33	1.253	33.464	10	
68.90	343.40	63.33	1.249	35.497	11	
74.90	343.40	63.33	1.270	33.292	10	
68.90	346.40	66.33	1.232	34.983	12	
71.90	346.40	66.33	1.234	33.827	10	
74.90	346.40	66.33	1.287	33.128	10	

- - - - - - New 9-Point Grid (only new points calculated) - - - - - -

```
     71.40    342.90     62.83 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     71.90    342.90     62.83 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.40    342.90     62.83   1.223     33.950        13
     71.40    343.40     63.33 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     72.40    343.40     63.33   1.226     33.914        12
     71.40    343.90     63.83 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     71.90    343.90     63.83 Center rejected as follows:      UTEXAS ERROR NUMBER 9270
                                                                Solution did not converge in iteration limit of
100  iterations
                                                                Failed to converge during stage 1 computations

     72.40    343.90     63.83   1.228     33.878        12
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     71.60    343.10     63.03 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     71.90    343.10     63.03 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.20    343.10     63.03   1.221     33.987        43
     71.60    343.40     63.33 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.
```

```
     72.20    343.40     63.33   1.222     33.965        14
     71.60    343.70     63.63 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     71.90    343.70     63.63 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.20    343.70     63.63   1.224     33.943        13
- - - - - - New 9-Point Grid (only new points calculated) - - - - - -
     71.80    343.30     63.23   1.219     34.100        91
     71.90    343.30     63.23 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.00    343.30     63.23   1.219     34.023        91
     71.80    343.40     63.33 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.00    343.40     63.33   1.219     34.016        17
     71.80    343.50     63.43   1.218     34.070        89
     71.90    343.50     63.43 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

     72.00    343.50     63.43 Center rejected as follows:      UTEXAS ERROR NUMBER 9280
                                                                The side force inclination fell outside the range
of values allowed.
                                                                The minimum value allowed is:   -1.00000e+001
degrees.
                                                                The maximum value allowed is:    8.00000e+001
degrees.

----- Critical Circle After the Current Mode of Search -----
X: 71.90     Y: 343.40     Radius: 63.329
Factor of safety: 1.218     Side force inclination: 34.041
```

****
CAUTION - THE FACTOR OF SAFETY COULD NOT BE COMPUTED
FOR SOME OF THE GRID POINTS AROUND THE MINIMUM
****

UTEXAS4 S/N:04000 - Version: 4.1.0.5 - Latest Revision: 10/29/2008
Licensed for use by: Jason Walker, Burns & McDonnell
Time and date of run: Tue Sep 24 07:57:40 2019
Name of input data file: Z:\Clients\ENR\NTECT\116572_Killingly\Design\GeoTech\Working\Dsgn\Slope Stability\NTE Killingly Temp Folder\Section D - Wall - Geogrid Reinforced - Seismic.dat

NTE Killingly Northern 2:1 Slope- Profile D with Geogrid Rein MSE Wall Seis
#116152

TABLE NO. 33
****
* 1-STAGE FINAL CRITICAL CIRCLE INFORMATION *
****

CAUTION - THE FACTOR OF SAFETY COULD NOT BE COMPUTED
FOR SOME OF THE GRID POINTS AROUND THE MINIMUM
X Coordinate of Center 71.90
Y Coordinate of Center 343.40
Radius 63.33
Factor of Safety 1.218
Side Force Inclination (degrees) 34.04
Number of Circles Tried 139
Number of Circles F Calculated for 68
Time Required for Search (seconds) 1.0

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NTE Killingly Northern 2:1 Slope- Profile D with Geogrid Rein MSE Wall Seis
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TABLE NO. 43
****
* Coordinate, Weight, Strength and Pore Water Pressure *
* Information for Individual Slices for Conventional *
* Computations or First Stage of Multi-Stage Computations. *
* (Information is for the critical shear surface in the *
* case of an automatic search.) *
****

Slice No.	X	Y	Slice Weight	Matl. No.	Cohesion	Friction Angle	Pore Pressure
	62.56	280.76					
1	64.21	280.56	117	1	0.0	36.00	0.0
	65.85	280.36					
2	66.93	280.28	189	1	0.0	36.00	0.0
	68.00	280.19					
3	69.66	280.13	731	1	0.0	36.00	0.0
	71.31	280.07					
4	71.61	280.07	208	1	0.0	36.00	0.0

	71.90	280.07					
5	73.53	280.11	1547	1	0.0	36.00	0.0
	75.16	280.15					
6	76.81	280.28	2201	2	0.0	36.00	0.0
	78.46	280.41					
7	80.11	280.63	2747	2	0.0	36.00	0.0
	81.75	280.84					
8	82.88	281.04	2162	2	0.0	36.00	0.0
	84.00	281.24					
9	84.50	281.34	1028	2	0.0	36.00	0.0
	85.00	281.44					
10	86.50	281.80	3288	2	0.0	36.00	0.0
	87.99	282.15					
11	88.00	282.15	9	1	0.0	36.00	0.0
	88.00	282.15					
12	89.59	282.61	3799	1	0.0	36.00	0.0
	91.18	283.08					
13	91.59	283.21	1017	1	0.0	36.00	0.0
	92.00	283.35					
14	93.56	283.91	3996	1	0.0	36.00	0.0
	95.12	284.48					
15	95.56	284.66	1164	1	0.0	36.00	0.0
	96.00	284.84					
16	97.52	285.51	4041	1	0.0	36.00	0.0
	99.03	286.18					
17	99.52	286.41	1302	1	0.0	36.00	0.0
	100.00	286.65					
18	101.00	287.16	8017	1	0.0	36.00	0.0
	102.00	287.68					
19	103.16	288.34	8954	1	0.0	36.00	0.0
	104.32	289.00					
20	105.72	289.89	10243	1	0.0	36.00	0.0
	107.13	290.77					
21	107.29	290.89	1195	1	0.0	36.00	0.0
	107.46	291.00					
22	108.81	291.97	9116	1	0.0	36.00	0.0
	110.16	292.93					
23	110.20	292.97	287	1	0.0	36.00	0.0
	110.25	293.00					
24	111.49	294.00	7786	1	0.0	36.00	0.0
	112.74	295.00					
25	113.37	295.55	3674	1	0.0	36.00	0.0
	114.00	296.09					
26	114.50	296.55	2789	1	0.0	36.00	0.0
	115.00	297.00					
27	116.18	298.16	6111	1	0.0	36.00	0.0
	117.37	299.32					
28	117.68	299.65	1505	1	0.0	36.00	0.0
	118.00	299.98					
29	119.10	301.22	4821	1	0.0	36.00	0.0
	120.21	302.45					
30	121.10	303.56	3362	1	0.0	36.00	0.0
	122.00	304.66					
31	122.98	306.00	3055	1	0.0	36.00	0.0
	123.96	307.34					
32	124.48	308.11	1338	1	0.0	36.00	0.0
	125.00	308.89					
33	125.50	309.68	1081	1	0.0	36.00	0.0
	126.00	310.48					

34	126.82	311.92	1304	1	0.0	36.00	0.0
	127.65	313.36					
35	128.40	314.84	615	1	0.0	36.00	0.0
	129.14	316.31					
36	129.53	317.16	84	1	0.0	36.00	0.0
	129.91	318.00					

No water in crack.

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NTE Killingly Northern 2:1 Slope- Profile D with Geogrid Rein MSE Wall Seis
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TABLE NO. 44

```
**********************************************************
* Seismic Forces and Forces Due to Distributed Loads for *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations.               *
* (Information is for the critical shear surface in the  *
* case of an automatic search.)                          *
**********************************************************
```

FORCES DUE TO DISTRIBUTED LOADS

Slices No.	X	Seismic Force	Y for Seismic Force	Normal Force	Shear Force	X	Y
1	64.21	-16	280.70	0	0	64.21	280.84
2	66.93	-26	280.61	0	0	66.93	280.95
3	69.66	-99	280.98	0	0	69.66	281.83
4	71.61	-28	281.44	0	0	71.61	282.80
5	73.53	-210	281.94	0	0	73.53	283.76
6	76.81	-299	282.84	0	0	76.81	285.41
7	80.11	-374	283.84	0	0	80.11	287.05
8	82.88	-294	284.74	0	0	82.88	288.44
9	84.50	-140	285.29	0	0	84.50	289.25
10	86.50	-447	286.02	0	0	86.50	290.25
11	88.00	-1	286.57	0	0	88.00	291.00
12	89.59	-517	287.21	0	0	89.59	291.80
13	91.59	-138	288.00	0	0	91.59	292.80
14	93.56	-543	288.85	0	0	93.56	293.78
15	95.56	-158	289.72	0	0	95.56	294.78
16	97.52	-550	290.63	0	0	97.52	295.76
17	99.52	-177	291.58	0	0	99.52	296.76
18	101.00	-1090	302.58	0	0	101.00	318.00
19	103.16	-1218	303.17	0	0	103.16	318.00
20	105.72	-1393	303.94	0	0	105.72	318.00
21	107.29	-163	304.44	0	0	107.29	318.00
22	108.81	-1240	304.98	0	0	108.81	318.00
23	110.20	-39	305.48	0	0	110.20	318.00
24	111.49	-1059	306.00	0	0	111.49	318.00
25	113.37	-500	306.77	0	0	113.37	318.00
26	114.50	-379	307.27	0	0	114.50	318.00
27	116.18	-831	308.08	0	0	116.18	318.00

28	117.68	-205	308.82	0	0	117.68	318.00
29	119.10	-656	309.61	0	0	119.10	318.00
30	121.10	-457	310.78	0	0	121.10	318.00
31	122.98	-416	312.00	0	0	122.98	318.00
32	124.48	-182	313.06	0	0	124.48	318.00
33	125.50	-147	313.84	0	0	125.50	318.00
34	126.82	-177	314.96	0	0	126.82	318.00
35	128.40	-84	316.42	0	0	128.40	318.00
36	129.53	-11	317.58	0	0	129.53	318.00

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NTE Killingly Northern 2:1 Slope- Profile D with Geogrid Rein MSE Wall Seis
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TABLE NO. 45

```
*********************************************************
* Forces Due to Internal Soil Reinforcement for         *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations.              *
* (Information is for the critical shear surface in the  *
* case of an automatic search.)                         *
*********************************************************
```

Slice No.	X	Horizontal Force on Side	Vertical Force on Side	Y-Coordinate of Force	Horizontal Force on Base	Vertical Force on Base
	62.56					
1 Left:		0	0	280.76	0	0
1 Right:		0	0	280.36	0	0
	65.85					
2 Left:		0	0	280.36	0	0
2 Right:		0	0	280.19	0	0
	68.00					
3 Left:		0	0	280.19	0	0
3 Right:		0	0	280.07	0	0
	71.31					
4 Left:		0	0	280.07	0	0
4 Right:		0	0	280.07	0	0
	71.90					
5 Left:		0	0	280.07	0	0
5 Right:		0	0	280.15	0	0
	75.16					
6 Left:		0	0	280.15	0	0
6 Right:		0	0	280.41	0	0
	78.46					
7 Left:		0	0	280.41	0	0
7 Right:		0	0	280.84	0	0
	81.75					
8 Left:		0	0	280.84	0	0
8 Right:		0	0	281.24	0	0
	84.00					
9 Left:		0	0	281.24	0	0
9 Right:		250	0	289.00	0	0

	85.00					
10	Left:	-250	0	289.00	0	0
10	Right:	998	0	289.00	0	0
	87.99					
11	Left:	-998	0	289.00	0	0
11	Right:	1000	0	289.00	0	0
	88.00					
12	Left:	-1000	0	289.00	0	0
12	Right:	2592	0	289.61	0	0
	91.18					
13	Left:	-2592	0	289.61	0	0
13	Right:	3000	0	289.67	0	0
	92.00					
14	Left:	-3000	0	289.67	0	0
14	Right:	4558	0	290.46	0	0
	95.12					
15	Left:	-4558	0	290.46	0	0
15	Right:	5000	0	290.60	0	0
	96.00					
16	Left:	-5000	0	290.60	0	0
16	Right:	6769	0	291.53	0	0
	99.03					
17	Left:	-6769	0	291.53	0	0
17	Right:	7333	0	291.73	0	0
	100.00					
18	Left:	-7333	0	291.73	0	0
18	Right:	10000	0	293.00	0	0
	102.00					
19	Left:	-10000	0	293.00	0	0
19	Right:	8000	0	294.00	2000	0
	104.32					
20	Left:	-8000	0	294.00	0	0
20	Right:	8000	0	294.00	0	0
	107.13					
21	Left:	-8000	0	294.00	0	0
21	Right:	6000	0	295.00	2000	0
	107.46					
22	Left:	-6000	0	295.00	0	0
22	Right:	6000	0	295.00	0	0
	110.16					
23	Left:	-6000	0	295.00	0	0
23	Right:	4000	0	296.00	2000	0
	110.25					
24	Left:	-4000	0	296.00	0	0
24	Right:	2000	0	297.00	2000	0
	112.74					
25	Left:	-2000	0	297.00	0	0
25	Right:	2000	0	297.00	0	0
	114.00					
26	Left:	-2000	0	297.00	0	0
26	Right:	0	0	297.00	2000	0
	115.00					
27	Left:	0	0	297.00	0	0
27	Right:	0	0	299.32	0	0
	117.37					
28	Left:	0	0	299.32	0	0
28	Right:	0	0	299.98	0	0
	118.00					
29	Left:	0	0	299.98	0	0

29 Right:	0	0	302.45	0	0	120.21
30 Left:	0	0	302.45	0	0	
30 Right:	0	0	304.66	0	0	122.00
31 Left:	0	0	304.66	0	0	
31 Right:	0	0	307.34	0	0	123.96
32 Left:	0	0	307.34	0	0	
32 Right:	0	0	308.89	0	0	125.00
33 Left:	0	0	308.89	0	0	
33 Right:	0	0	310.48	0	0	126.00
34 Left:	0	0	310.48	0	0	
34 Right:	0	0	313.36	0	0	127.65
35 Left:	0	0	313.36	0	0	
35 Right:	0	0	316.31	0	0	129.14
36 Left:	0	0	316.31	0	0	
36 Right:	0	0	318.00	0	0	129.91

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TABLE NO. 46

****
* Forces Due to Internal Soil Reinforcement for *
* Individual Slices for Conventional Computations or the *
* First Stage of Multi-Stage Computations. *
* (Information is for the critical shear surface in the *
* case of an automatic search.) *
****

Slice No.	Horizontal Force	Vertical Force	Moment about Center of Slice Base	Resultant Force	Angle (degs.)
1	0	0	0.0000e+000	0	0.00
2	0	0	0.0000e+000	0	0.00
3	0	0	0.0000e+000	0	0.00
4	0	0	0.0000e+000	0	0.00
5	0	0	0.0000e+000	0	0.00
6	0	0	0.0000e+000	0	0.00
7	0	0	0.0000e+000	0	0.00
8	0	0	0.0000e+000	0	0.00
9	250	0	-1.9152e+003	250	0.00
10	748	0	-5.3897e+003	748	0.00
11	2	0	-1.3302e+001	2	0.00
12	1592	0	-1.1755e+004	1592	0.00
13	408	0	-2.7715e+003	408	0.00

14	1558	0	-1.2598e+004	1558	0.00
15	442	0	-3.2472e+003	442	0.00
16	1769	0	-1.5275e+004	1769	0.00
17	565	0	-4.3655e+003	565	0.00
18	2667	0	-2.4896e+004	2667	0.00
19	0	0	0.0000e+000	0	0.00
20	0	0	0.0000e+000	0	0.00
21	0	0	0.0000e+000	0	0.00
22	0	0	0.0000e+000	0	0.00
23	0	0	0.0000e+000	0	0.00
24	0	0	0.0000e+000	0	0.00
25	0	0	0.0000e+000	0	0.00
26	0	0	0.0000e+000	0	0.00
27	0	0	0.0000e+000	0	0.00
28	0	0	0.0000e+000	0	0.00
29	0	0	0.0000e+000	0	0.00
30	0	0	0.0000e+000	0	0.00
31	0	0	0.0000e+000	0	0.00
32	0	0	0.0000e+000	0	0.00
33	0	0	0.0000e+000	0	0.00
34	0	0	0.0000e+000	0	0.00
35	0	0	0.0000e+000	0	0.00
36	0	0	0.0000e+000	0	0.00

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TABLE NO. 47

```
************************************************************
*  Information for the Iterative Solution for the Factor of  *
*  Safety and Side Force Inclination by Spencer's Procedure  *
************************************************************
```

Allowable force imbalance for convergence: 1
Allowable moment imbalance for convergence: 110

Iteration	Trial Factor of Safety	Trial Side Force Inclination (degrees)	Force Imbalance (lbs.)	Moment Imbalance (ft.-lbs.)	Delta-F	Delta Theta (degrees)
1	3.00000	17.1887	3.654e+004	-9.213e+006		
First-order corrections to F and Theta					-4.5124	1.3345
Reduced values - Deltas were too large					-0.5000	0.1479
2	2.50000	17.3366	3.174e+004	-8.010e+006		
First-order corrections to F and Theta					-2.7857	1.5316
Reduced values - Deltas were too large					-0.5000	0.2749
3	2.00000	17.6115	2.475e+004	-6.259e+006		
First-order corrections to F and Theta					-1.4325	1.9233
Reduced values - Deltas were too large					-0.5000	0.6713
4	1.50000	18.2828	1.351e+004	-3.461e+006		

```
First-order corrections to F and Theta ............   -0.4515     3.1607
Reduced values - Deltas were too large ............   -0.4092     2.8648

   5   1.09081    21.1476  -3.117e+003   5.837e+005
First-order corrections to F and Theta ............   -0.5486  -132.6336
Reduced values - Deltas were too large ............   -0.0118    -2.8648

   6   1.07896    18.2828  -3.074e+003   5.762e+005
First-order corrections to F and Theta ............   -0.8469  -212.0872
Reduced values - Deltas were too large ............   -0.0114    -2.8648

   7   1.06752    15.4180  -3.053e+003   5.730e+005
First-order corrections to F and Theta ............   -1.4931  -387.5558
Reduced values - Deltas were too large ............   -0.0110    -2.8648

   8   1.05649    12.5532  -3.048e+003   5.727e+005
First-order corrections to F and Theta ............   -4.7825 -1282.7598
Reduced values - Deltas were too large ............   -0.0107    -2.8648

   9   1.04581     9.6885  -3.057e+003   5.749e+005
First-order corrections to F and Theta ............    4.3282  1194.3113
Reduced values - Deltas were too large ............    0.0104     2.8648

  10   1.05619    12.5532  -3.064e+003   5.768e+005
First-order corrections to F and Theta ............   -3.7830 -1017.8054
Reduced values - Deltas were too large ............   -0.0106    -2.8648

  11   1.04554     9.6885  -3.071e+003   5.787e+005
First-order corrections to F and Theta ............    5.2613  1455.1416
Reduced values - Deltas were too large ............    0.0104     2.8648

  12   1.05590    12.5532  -3.079e+003   5.808e+005
First-order corrections to F and Theta ............   -3.1419  -847.9016
Reduced values - Deltas were too large ............   -0.0106    -2.8648

  13   1.04528     9.6885  -3.084e+003   5.823e+005
First-order corrections to F and Theta ............    6.6584  1845.6911
Reduced values - Deltas were too large ............    0.0103     2.8648

  14   1.05562    12.5532  -3.094e+003   5.847e+005
First-order corrections to F and Theta ............   -2.6961  -729.7760
Reduced values - Deltas were too large ............   -0.0106    -2.8648

  15   1.04504     9.6885  -3.097e+003   5.858e+005
First-order corrections to F and Theta ............    8.9770  2493.9239
Reduced values - Deltas were too large ............    0.0103     2.8648

  16   1.05535    12.5532  -3.108e+003   5.884e+005
First-order corrections to F and Theta ............   -2.3685  -642.9620
Reduced values - Deltas were too large ............   -0.0106    -2.8648

  17   1.04479     9.6885  -3.110e+003   5.892e+005
First-order corrections to F and Theta ............   13.5717  3778.5631
Reduced values - Deltas were too large ............    0.0103     2.8648

  18   1.05508    12.5532  -3.122e+003   5.920e+005
First-order corrections to F and Theta ............   -2.1177  -576.5239
Reduced values - Deltas were too large ............   -0.0105    -2.8648
```

```
  19   1.04456     9.6885  -3.122e+003   5.925e+005
First-order corrections to F and Theta ............   27.0004  7533.2453
Reduced values - Deltas were too large ............    0.0103     2.8648

  20   1.05483    12.5532  -3.136e+003   5.955e+005
First-order corrections to F and Theta ............   -1.9197  -524.0870
Reduced values - Deltas were too large ............   -0.0105    -2.8648

  21   1.04434     9.6885  -3.134e+003   5.957e+005
First-order corrections to F and Theta ............ 6.921e+002 1.935e+005
Reduced values - Deltas were too large ............    0.5000     2.8648

  22   1.54434    12.5532   1.544e+004  -4.255e+006
First-order corrections to F and Theta ............   -0.5443     4.1280
Reduced values - Deltas were too large ............   -0.3778     2.8648

  23   1.16657    15.4180   1.788e+003  -6.493e+005
First-order corrections to F and Theta ............    0.0125    13.6779
Reduced values - Deltas were too large ............    0.0026     2.8648

  24   1.16919    18.2828   1.398e+003  -5.120e+005
First-order corrections to F and Theta ............    0.0190    12.3497
Reduced values - Deltas were too large ............    0.0044     2.8648

  25   1.17360    21.1476   1.055e+003  -3.910e+005
First-order corrections to F and Theta ............    0.0232    10.7646
Reduced values - Deltas were too large ............    0.0062     2.8648

  26   1.17977    24.0124   7.514e+002  -2.837e+005
First-order corrections to F and Theta ............    0.0247     8.8875
Reduced values - Deltas were too large ............    0.0080     2.8648

  27   1.18775    26.8772   4.815e+002  -1.879e+005
First-order corrections to F and Theta ............    0.0231     6.6994
Reduced values - Deltas were too large ............    0.0099     2.8648

  28   1.19764    29.7420   2.419e+002  -1.019e+005
First-order corrections to F and Theta ............    0.0178     4.2050
Reduced values - Deltas were too large ............    0.0121     2.8648

  29   1.20973    32.6068   3.600e+001  -2.526e+004
First-order corrections to F and Theta ............    0.0079     1.4470
Second-order corrections to F and Theta ...........    0.0080     1.4304

  30   1.21770    34.0372  -5.430e-001   4.555e+001
First-order corrections to F and Theta ............    0.0000     0.0041
Second-order corrections to F and Theta ...........    0.0000     0.0041

  31   1.21773    34.0413  -9.831e-009   8.456e-007
First-order corrections to F and Theta ............    0.0000     0.0000
```

TABLE NO. 55
****
* Check of Computations by Spencer's Procedure (Results are for the *
* critical shear surface in the case of an automatic search.)   *
****

Summation of Horizontal Forces: 1.40439e-011

Summation of Vertical Forces: 1.14836e-011

Summation of Moments: 4.98891e-010

Mohr Coulomb Shear Force/Shear Strength Check Summation: 7.10276e-012

***** CAUTION ***** Some of the Forces Between Slices Act at Points
Above the Surface of the Slope or Below the Shear Surface -
Either a Tension Crack may be Needed or the SOLUTION MAY NOT
BE A VALID SOLUTION

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Time and date of run: Tue Sep 24 07:57:40 2019
Name of input data file: Z:\Clients\ENR\NTECT\116572_Killingly\Design\GeoTech\Working\Dsgn\Slope Stability\NTE Killingly Temp Folder\Section D - Wall - Geogrid Reinforced - Seismic.dat

NTE Killingly Northern 2:1 Slope- Profile D with Geogrid Rein MSE Wall Seis
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TABLE NO. 58
****
* Final Results for Stresses Along the Shear Surface   *
* (Results are for the critical shear surface in the case of a search.) *
****

SPENCER'S PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY
Factor of Safety: 1.218   Side Force Inclination: 34.04

Slice No.	X-Center	Y-Center	Total Normal Stress	Effective Normal Stress	Shear Stress
1	64.21	280.56	73.1	73.1	43.6
2	66.93	280.28	161.0	161.0	96.1
3	69.66	280.13	362.8	362.8	216.5
4	71.61	280.07	545.5	545.5	325.5
5	73.53	280.11	684.7	684.7	408.5
6	76.81	280.28	869.0	869.0	518.4
7	80.11	280.63	994.1	994.1	593.1
8	82.88	281.04	1064.0	1064.0	634.8
9	84.50	281.34	1289.5	1289.5	769.4
10	86.50	281.80	1298.8	1298.8	774.9
11	88.00	282.15	1302.9	1302.9	777.4
12	89.59	282.61	1469.8	1469.8	877.0
13	91.59	283.21	1450.2	1450.2	865.2
14	93.56	283.91	1417.4	1417.4	845.7
15	95.56	284.66	1381.6	1381.6	824.3
16	97.52	285.51	1383.2	1383.2	825.3

17	99.52	286.41	1331.3	1331.3	794.3
18	101.00	287.16	3617.7	3617.7	2158.5
19	103.16	288.34	2654.1	2654.1	1583.5
20	105.72	289.89	2369.0	2369.0	1413.4
21	107.29	290.89	2200.9	2200.9	1313.1
22	108.81	291.97	2035.5	2035.5	1214.4
23	110.20	292.97	1890.7	1890.7	1128.0
24	111.49	294.00	1752.7	1752.7	1045.7
25	113.37	295.55	1559.9	1559.9	930.7
26	114.50	296.55	1444.4	1444.4	861.8
27	116.18	298.16	1271.4	1271.4	758.6
28	117.68	299.65	1123.5	1123.5	670.3
29	119.10	301.22	980.7	980.7	585.1
30	121.10	303.56	786.4	786.4	469.2
31	122.98	306.00	606.8	606.8	362.1
32	124.48	308.11	468.2	468.2	279.4
33	125.50	309.68	374.8	374.8	223.6
34	126.82	311.92	255.0	255.0	152.1
35	128.40	314.84	120.0	120.0	71.6
36	129.53	317.16	29.3	29.3	17.5

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NTE Killingly Northern 2:1 Slope- Profile D with Geogrid Rein MSE Wall Seis
#116152

TABLE NO. 59

****
* Final Results for Side Forces and Stresses Between Slices *
* (Results are for the critical shear surface in the case of a search.) *
****

---------- VALUES AT RIGHT SIDE OF SLICE ----------

Slice No.	X-Right	Side Force	Y-Coord. of Side Force Location	Fraction of Height	Sigma at Top	Sigma at Bottom
1	65.85	189	281.66	Above	3530.0	-2954.9
2	68.00	441	281.89	Above	4769.1	-3866.6
3	71.31	1238	282.19	0.820	1159.3	-365.3
4	71.90	1436	282.24	0.752	1037.9	-211.5
5	75.16	2719	282.75	0.585	770.4	248.1
6	78.46	4156	283.52	0.534	711.4	472.0
7	81.75	5543	284.48	0.517	718.6	587.3
8	84.00	6402	285.23	0.514	740.7	626.1
9	85.00	7147	285.69	0.528	856.1	613.6
10	87.99	9197	287.08	0.557	1157.1	565.9
11	88.00	9202	287.08	0.557	1157.8	565.8
12	91.18	12225	288.79	0.600	1705.3	424.3
13	92.00	12936	289.22	0.608	1829.7	390.8
14	95.12	15399	291.08	0.655	2443.6	88.7
15	96.00	16028	291.60	0.665	2603.2	10.2
16	99.03	18280	293.59	0.717	3375.1	-444.8
17	100.00	18922	294.21	0.731	132.9	1370.8

18	102.00	21515	295.09	0.244	-314.4	1490.5
19	104.32	20260	296.05	0.243	-314.0	1471.8
20	107.13	18295	297.41	0.244	-299.1	1412.6
21	107.46	18029	297.59	0.244	-296.4	1403.0
22	110.16	15733	299.13	0.247	-269.3	1309.5
23	110.25	15653	299.18	0.247	-268.3	1305.9
24	112.74	13294	300.78	0.251	-235.8	1193.7
25	114.00	12051	301.65	0.254	-217.5	1129.0
26	115.00	11048	302.38	0.256	-202.2	1074.1
27	117.37	8656	304.21	0.262	-164.2	932.1
28	118.00	8024	304.73	0.264	-153.8	891.7
29	120.21	5867	306.66	0.271	-117.1	742.5
30	122.00	4231	308.37	0.278	-87.7	613.4
31	123.96	2626	310.39	0.287	-57.1	465.2
32	125.00	1880	311.56	0.294	-40.8	382.8
33	126.00	1254	312.76	0.303	-24.9	301.2
34	127.65	458	314.89	0.330	-1.8	165.1
35	129.14	57	317.00	0.406	12.3	44.0
36	129.91	-0	318.00	1.000	0.0	0.0

Read end-of-file on input while looking for another command word.
End of input data assumed - normal termination.