



February 3, 2021

B & H Investments Properties, LLC  
110 West Jennings Lane  
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Attention: Kevin Deppe                      EMAIL: [Crimsonridgeutah.kevin@gmail.com](mailto:Crimsonridgeutah.kevin@gmail.com)  
                 Steve Fenton                      EMAIL: [Crimsonridgeutah.steven@gmail.com](mailto:Crimsonridgeutah.steven@gmail.com)

Subject:            Site Grading and Rockery Recommendations  
                         The Reserve at Crimson Ridge - Phases 2A, 2B and 2C  
                         5129 East Whispering Pines Lane  
                         Eden, Utah  
                         Project No. 1200541

Gentlemen:

Applied Geotechnical Engineering Consultants, Inc. (AGEC) is providing geotechnical engineering consultation services for The Reserve at Crimson Ridge Subdivision Phases 2A, 2B and 2C to be located at 5129 East Whispering Pines Lane in Eden, Utah.

## PREVIOUS STUDIES

The following geologic and geotechnical studies have been conducted for the development.

Geologic Hazards Evaluation, Crimson Ridge Phase 2 Subdivision, Western Geologic & Environmental, LLC, report dated May 15, 2020.

Geotechnical Investigation, Crimson Ridge Phase 2 Subdivision, Christensen Geotechnical Project No. 227-001, report dated May 26, 2020.

Geotechnical Investigation, Crimson Ridge Phases 2 and 3, AGECE Project No. 1200541, report dated September 15, 2020.

Percolation Testing, Crimson Ridge Phases 2 and 3, AGECE Project No. 1200541-A, letter dated November 9, 2020.

Skyline Drive Grading Recommendations, Crimson Ridge Phases 2 and 3, AGECE Project No. 1200541-B, letter dated November 13, 2020 revised December 14, 2020.

## PROPOSED CONSTRUCTION

We understand that much of the site grading will occur along proposed roadways. The site grading will include unretained cut and fill slopes and areas where rockeries will be constructed in areas of cut and fill.

Proposed site grading plans dated February 1, 2021 were provided by Gardner Engineering. We evaluated several cross sections of the proposed site grading as described below:

**Profile A-A'** - located at approximate Station 1 + 25 (see Figure 1). The profile consists of a proposed rockery (fill condition) up to 8 feet tall with Skyline Drive above (see Figure 1a). A natural drainage extends near the toe of the rockery. The ground surface below the rockery will consist of a 3 horizontal to 1 vertical fill slope down to the natural grade and the toe of the drainage slope.

**Profile B-B'** - located at approximate Station 3 + 25 (see Figure 1). The profile consists of a proposed rockery (cut condition) up to approximately 9 feet tall with Skyline Drive below (see Figure 1b). The ground surface above the proposed rockery slopes down and toward the top of the proposed rockery at approximately 2.7 horizontal to 1 vertical and flatter.

**Profile C-C'** - located at approximate Station 4 + 00 (see Figure 1). The profile consists of a proposed fill slope along the downhill side of Skyline Drive (see Figure 1c). Up to approximately 4 feet of site grading fill is planned for the area. The fill slope is planned to have a slope of approximately 3 horizontal to 1 vertical. The ground surface below the fill area slopes down and away from Skyline Drive at approximately 3.8 horizontal to 1 vertical. A rockery (cut condition) is planned for the uphill side of Skyline Drive. The rockery is planned to be up to 9½ feet tall. The ground surface above the proposed rockery slopes down and toward the top of the proposed rockery at approximately 3½ horizontal to 1 vertical and flatter.

**Profile D-D'** - located at approximate Station 18 + 25 (see Figure 2). This area is a natural drainage that is planned to be filled for roadway and utility crossings. A culvert is planned to be installed along the bottom of the drainage. The uphill side of the crossing will have a rockery approximately 8 feet tall with the pavement above (see Figure 2a). The downhill side of the crossing will have a rockery approximately 8 feet high. The ground surface below the wall will consist of a 3 horizontal to 1 vertical fill slope down to the natural grade.

**Profile E-E'** - located along the west side of Morning Side Lane near the entrance to the development (See Figure 3). A rockery (cut condition) is planned for the uphill side of Morning Side Lane (see Figure 3a). The rockery is planned to be up to 8 feet tall. The ground surface above the proposed rockery slopes down and toward the top of the proposed rockery at approximately 5 horizontal to 1 vertical and flatter. The ground surface below the rockery is relatively flat pavement areas.

## **SUBSURFACE CONDITIONS**

Subsurface conditions along the west portion of Skyline Drive were investigated with Test Pits TP-1 and TP-2. The soil encountered consists of clay, sand and gravel. Some fat clay was encountered in Test Pit TP-2. We have assumed clay for Profiles A, B, C, and D and clayey sand for Profile E.

Based on information presented in the above referenced geotechnical reports and correspondence and our experience in the area, we have assumed the following soil strength parameters for the materials indicated:

Material	Unit Weight, pcf	Internal Friction Angle, degrees	Cohesion, psf
Natural Fat Clay	120	20	200
Natural Clayey Gravel	120	36	100
Natural Clayey/Silty Sand	120	34	50
On-Site Grading Fill	120	28	100
Imported Granular Fill	130	36	0
Rockery	140	40	1000

We should observe excavations at the time of construction to determine if soil conditions encountered in excavations are similar to what is assumed.

## **SLOPE STABILITY**

Slope stability analysis was performed for the proposed rockeries and cross sections described above. The analysis included static and seismic (pseudo static) conditions. The peak ground acceleration used represents a seismic event with a 2 percent probability of exceedance in a 50-year time period. The seismic coefficient used in the analysis was based on a percent of the peak horizontal ground acceleration as indicated in the published literature for approximately 6 inches of ground deformation.

Results of the slope stability analysis for each slope profile described above indicate the long-term stability of each configuration will have safety factors greater than 1.5 and 1.0 under static and seismic conditions, respectively. Results of the analysis are included in the appendix.

## **ROCKERY RECOMMENDATIONS**

Based on our observations at the site and the proposed construction, the following comments and recommendations are given:

1. Expected Performance

Rockeries are flexible and will experience movement over time as rocks move and settle. Long-term maintenance of the rockeries may be required. Localized areas may require adjustment over time to improve rock interlocking. Erosion of soil or other material may occur through joints in the rockeries. Material that erodes or sloughs out of joints should be replaced.

The client and owner should understand and be willing to accept the expected performance of the rockeries.

2. Subgrade Preparation

Vegetation, topsoil, organic material, unsuitable fill and other deleterious material should be removed from below the area of the proposed rockery prior to beginning rockery construction. The natural soil should be exposed below the proposed rockeries.

3. Fill Placement

The excavation for rockeries to be constructed in cut areas should be extended approximately ½ foot beyond the back-of-rock line. If excavation extends beyond this, the void spaces should be filled with free-draining gravel containing less than 5 percent passing the No. 200 Sieve.

4. Geogrid Reinforcement

Geogrid reinforcement should be placed behind rockeries constructed in fill areas such as Profiles A and D. The reinforcement should consist of Miragrid 3XT or equivalent. The reinforcement should be placed every 2 feet of rockery height and extend at least 6 feet behind the rockery.

5. Rock Placement

Rocks should be placed so that the average slope of the face of the rockeries is ½ horizontal to 1 vertical or flatter.

Rocks should be placed so they have rock to rock contact and good interlocking with each other. Rocks should be placed so that the space between rocks is minimized. Smaller rocks may be used to chink gaps between larger rocks provided they are not used to provide structural support. Care should be taken to avoid stacking rocks on top of each other creating a vertical column.

6. Rock Size and Embedment

Rocks used to construct the rockeries should be at least 3 feet in size. Rocks used in the lower portion should be at least 4 feet in size. The rock size refers to the dimension from the face of the rockery back into the slope. Rocks should be angular and have flat surfaces. The base row of rocks should be embedded at least 1 foot.

7. Rock Quality  
Rocks should be durable and not have significant cracks or signs of weathering. Rocks should be angular in shape.
  
8. Drainage  
Good surface drainage should be provided around the rockery to direct run off away from the rockery face. The face of the slopes above and below rockeries should be protected from erosion by revegetation or other methods.

An approximately ½-foot width of free-draining gravel should be placed behind the rocks in order to facilitate proper drainage. A filter fabric should be placed between the cut slope and free-draining gravel. A perforated drain pipe should be placed at the base and behind the rockery face. The free-draining gravel should connect to the drain pipe. The drain pipe should be sloped to drain. Topsoil, organics, unsuitable fill and other deleterious material should be removed from below proposed fill areas prior to placement of site grading fill.

#### **FILL MATERIALS, PLACEMENT AND COMPACTION**

Fill placed below and within the reinforced portion behind the rockeries should consist of non-expansive granular soil meeting the soil strength criteria used in the analysis and as described above. This would consist of non-expansive granular soil with less than 35 percent passing the No. 200 Sieve and have a maximum particle size of 4 inches. The on-site soils may be considered for fill in other areas of the project.

Fill placed on slopes steeper than 5 horizontal to 1 vertical for construction of rockeries, construction of Skyline Drive and the unretained fill slopes should be keyed or benched into the existing slope. A key or bench should be provided for every 2 feet of vertical rise.

Fill placed below roadways, in conjunction with rockery construction and site-grading fill, should be placed in lifts, have a moisture content within 2 percent of optimum and compacted to at least 92 percent of the maximum dry density as determined by ASTM D 1557. Fill placed for the project should be frequently tested for compaction.

#### **CONSTRUCTION OBSERVATIONS**

AGEC can continue to provide consultation services during the design phase and contractor selection if requested. A preconstruction meeting should be held with the owner, design team, geotechnical engineer and contractor to review the site grading, material sources and suitability, construction methods and schedule for observations and testing. An engineer from AGEC should be involved during excavation and construction of the rockery to determine whether the rockery construction follows the recommendations provided and determine if the design should be modified based on soil conditions encountered during construction.

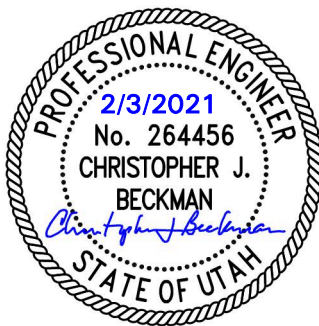
## LIMITATIONS

This letter has been prepared in accordance with generally accepted geotechnical engineering practices in the area for the use of the client. The information included in the letter is based on our understanding of the proposed construction, subsurface conditions encountered during the geotechnical study and our experience in the area.

If you have any questions or we can be of further service, please call.

Sincerely,

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.



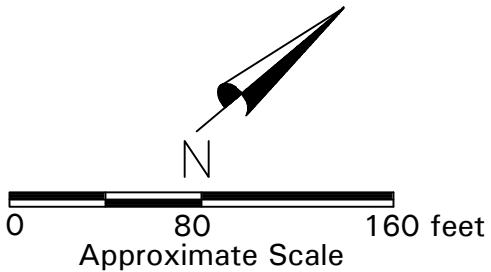
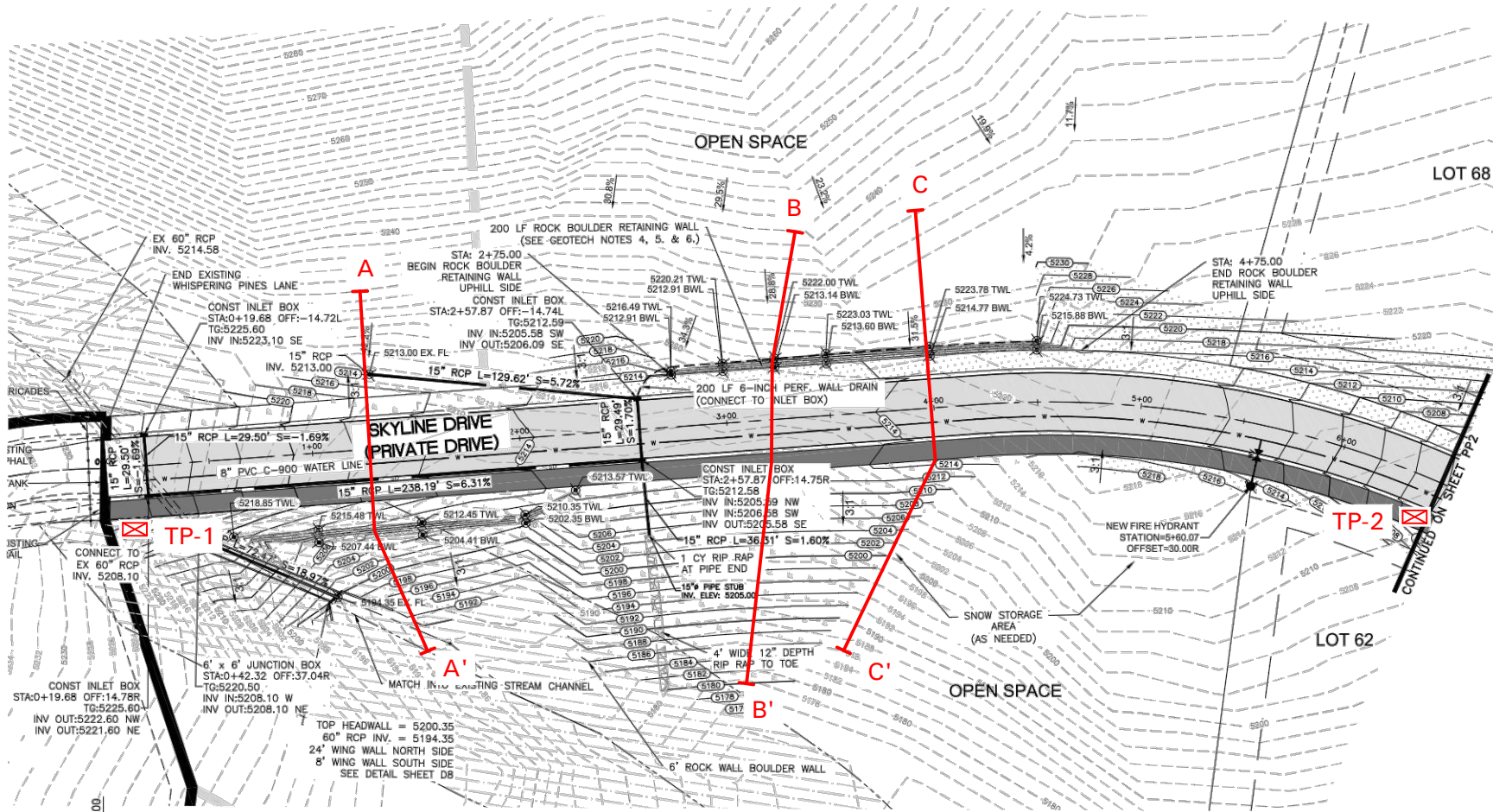
Christopher J. Beckman, P.E.

Reviewed by DRH, P.E., P.G.

CJB/bw

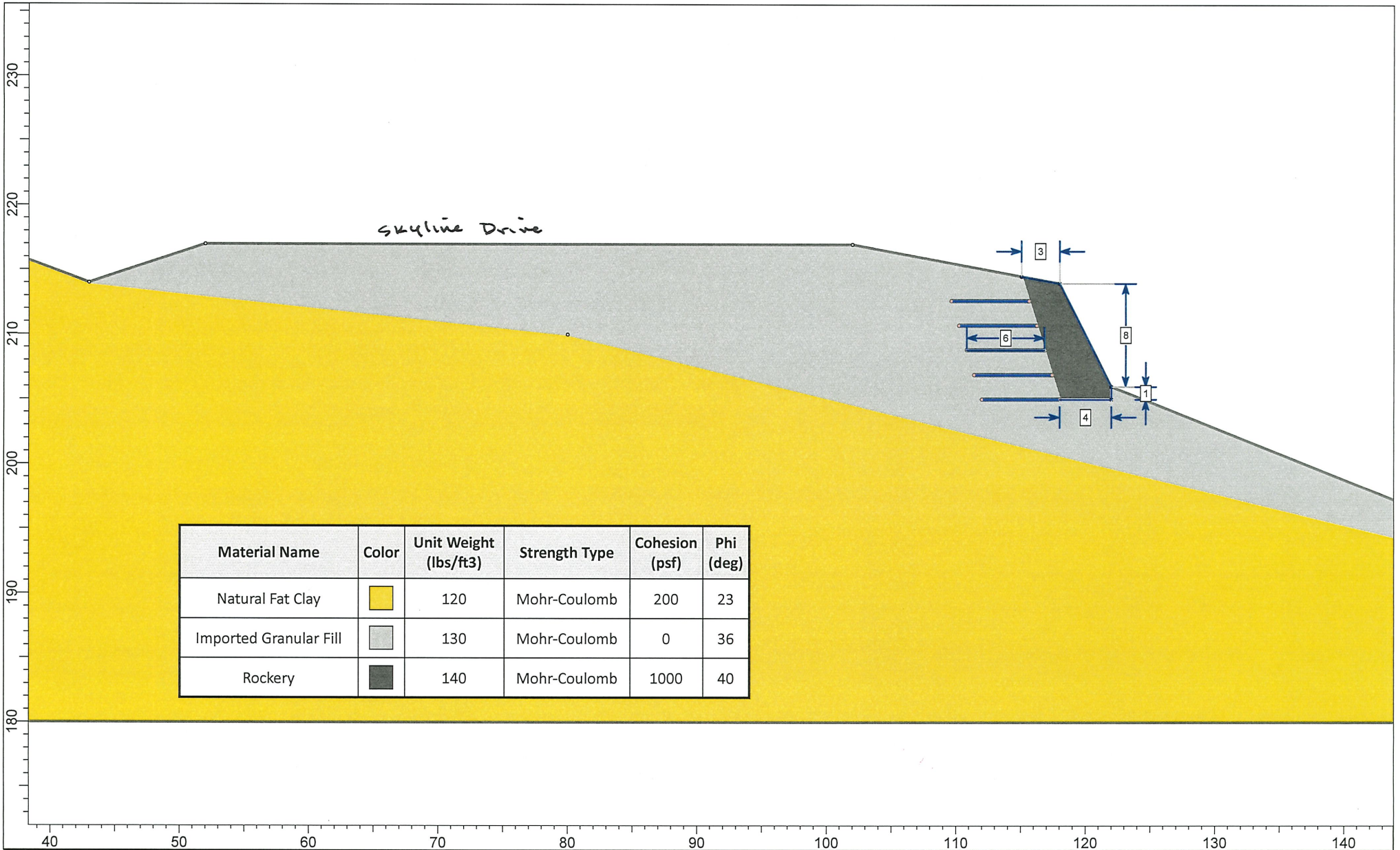
Enclosures

cc: Wes Stewart, Gardner Engineering, EMAIL: [wes@gecivil.com](mailto:wes@gecivil.com)



**SITE GRADING AND ROCKERY RECOMMENDATIONS  
THE RESERVE AT CRIMSON RIDGE  
5129 EAST WHISPERING PINES LANE  
EDEN, UTAH**

NOTE: Base site plan provided by Gardner Engineering from Sheet PP1.

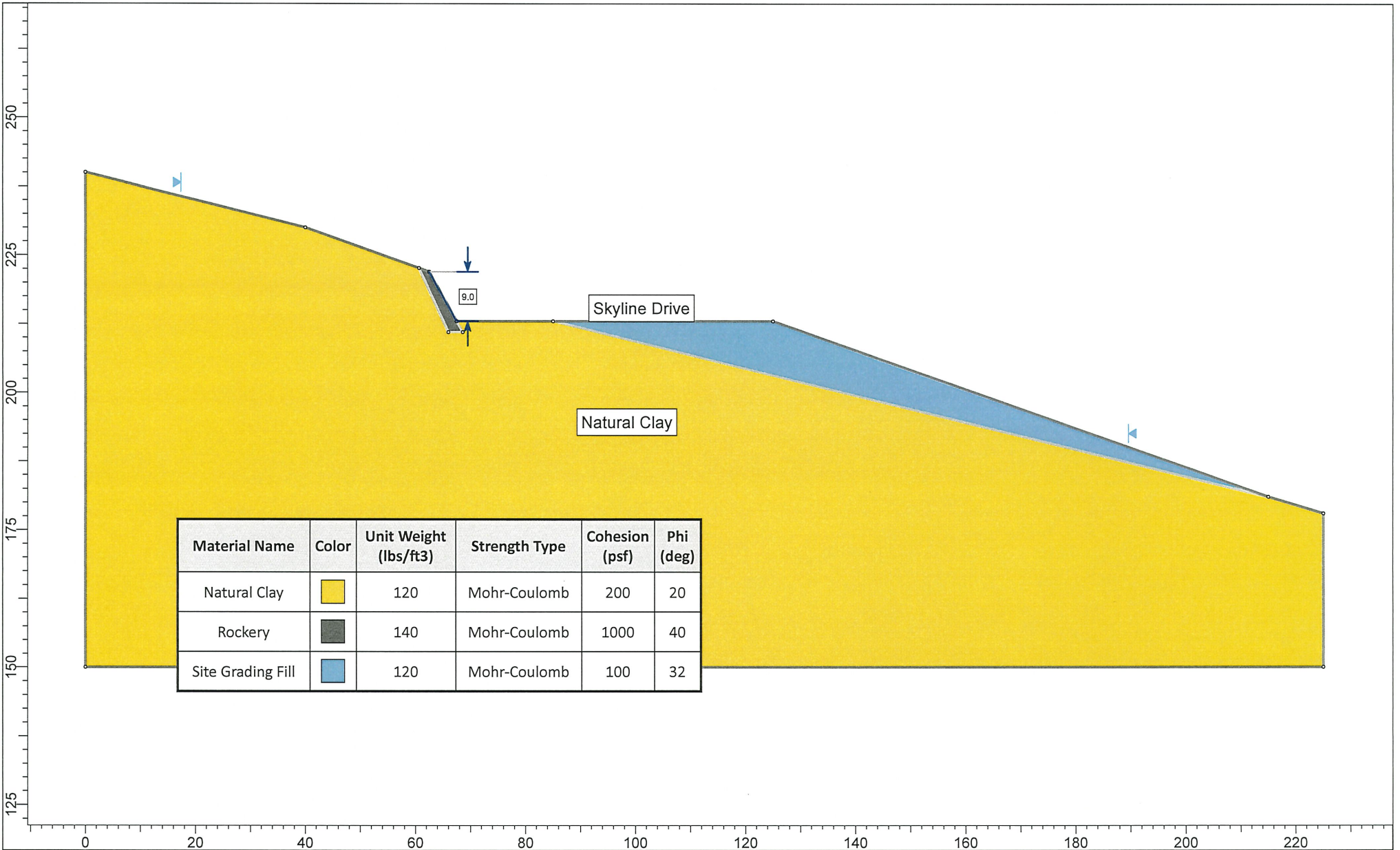


	<i>Project</i> 1200541 Crimson Ridge			
	<i>Analysis Description</i> Profile A-A' near Station 1+25			
	<i>Drawn By</i> CJB	<i>Scale</i> 1:123	<i>Company</i> AGECE	
	<i>Date</i>	<i>File Name</i> Profile A-A' 5' geogrid.slm		

SLIDE 8.011

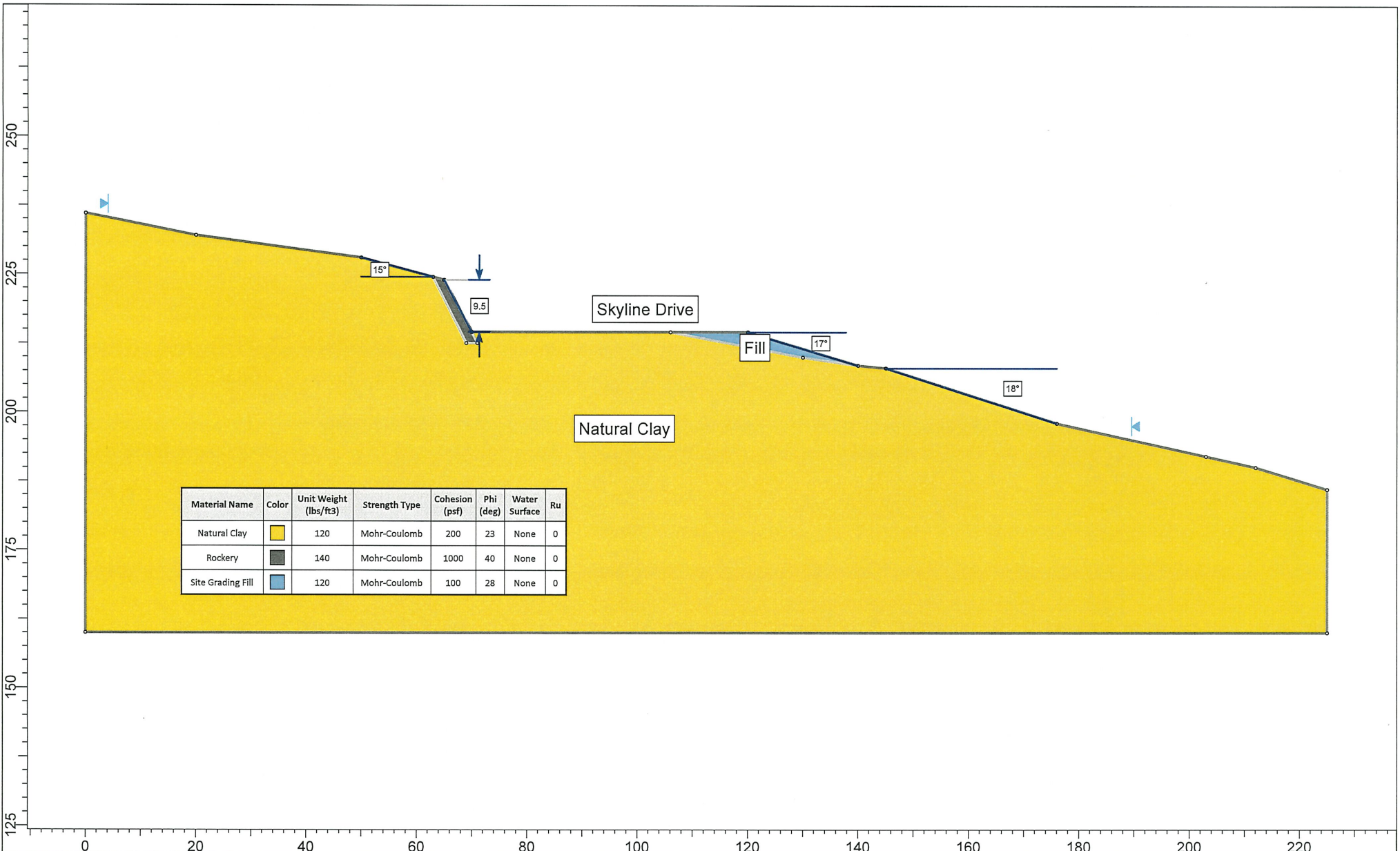
FIGURE 1 a





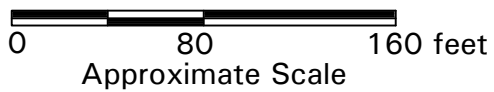
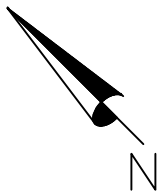
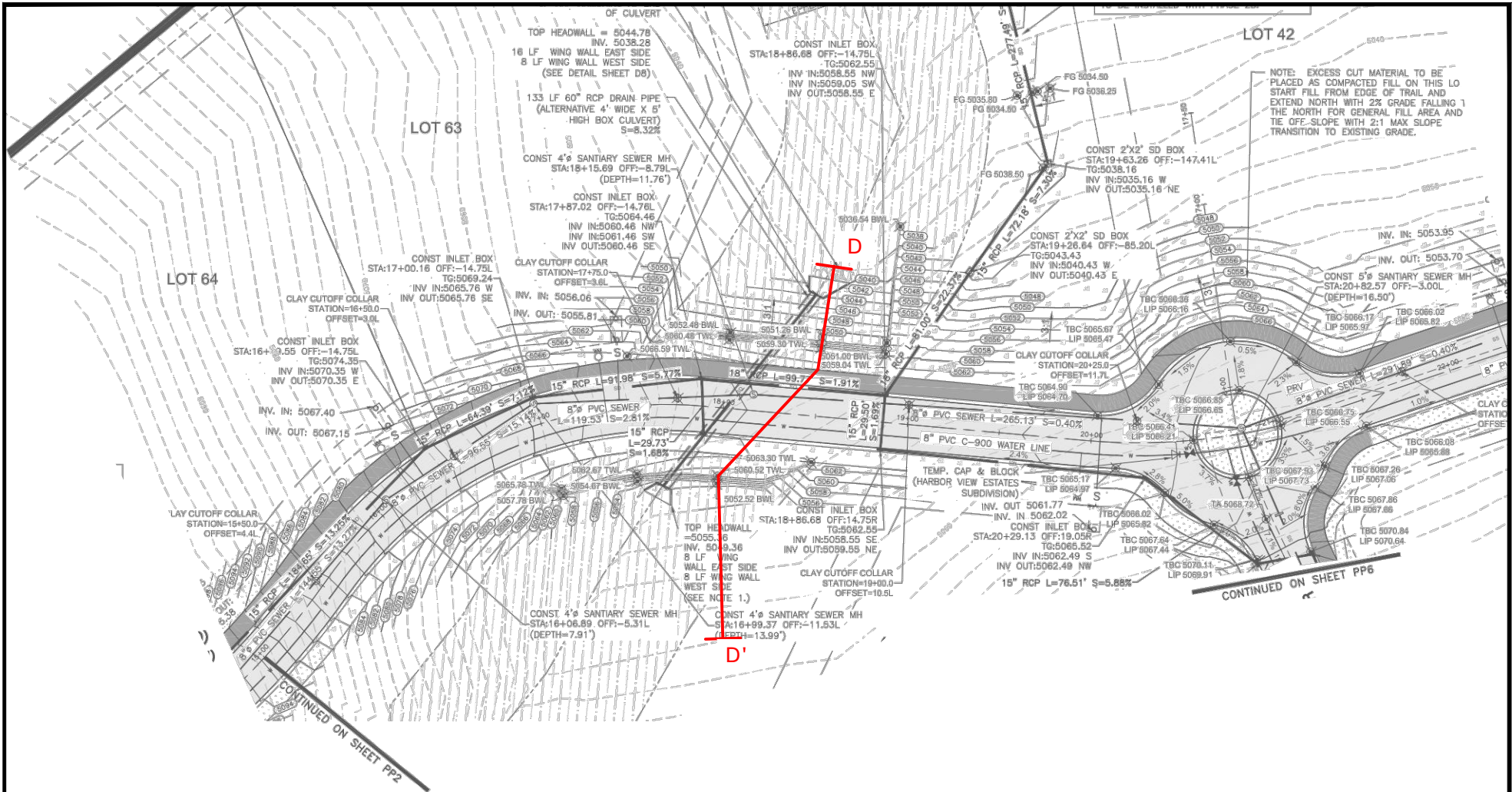
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	Analysis Description			Profile B-B' Sta. 3+25				
	Drawn By		CJB	Scale		1:289	Company	AGEC
	Date			File Name		Profile B-B'.slmd		

FIGURE 1 b

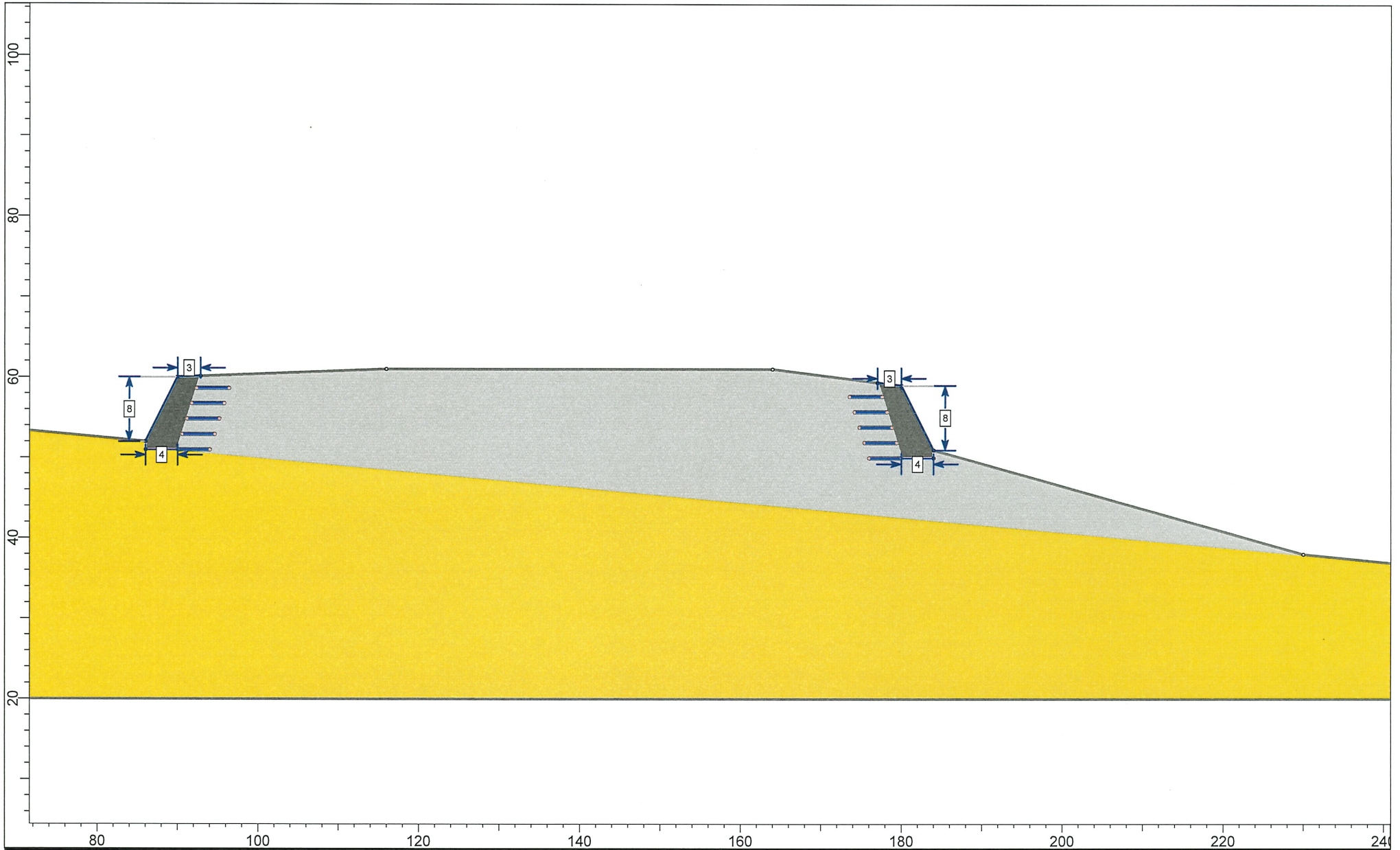


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	Analysis Description			Profile C-C' Sta 4+00		
	Drawn By	CJB	Scale	1:289	Company	AGEC
	Date		File Name	Profile C-C'.slmd		

FIGURE 1c



SITE GRADING AND ROCKERY RECOMMENDATIONS  
 THE RESERVE AT CRIMSON RIDGE  
 5129 EAST WHISPERING PINES LANE  
 EDEN, UTAH

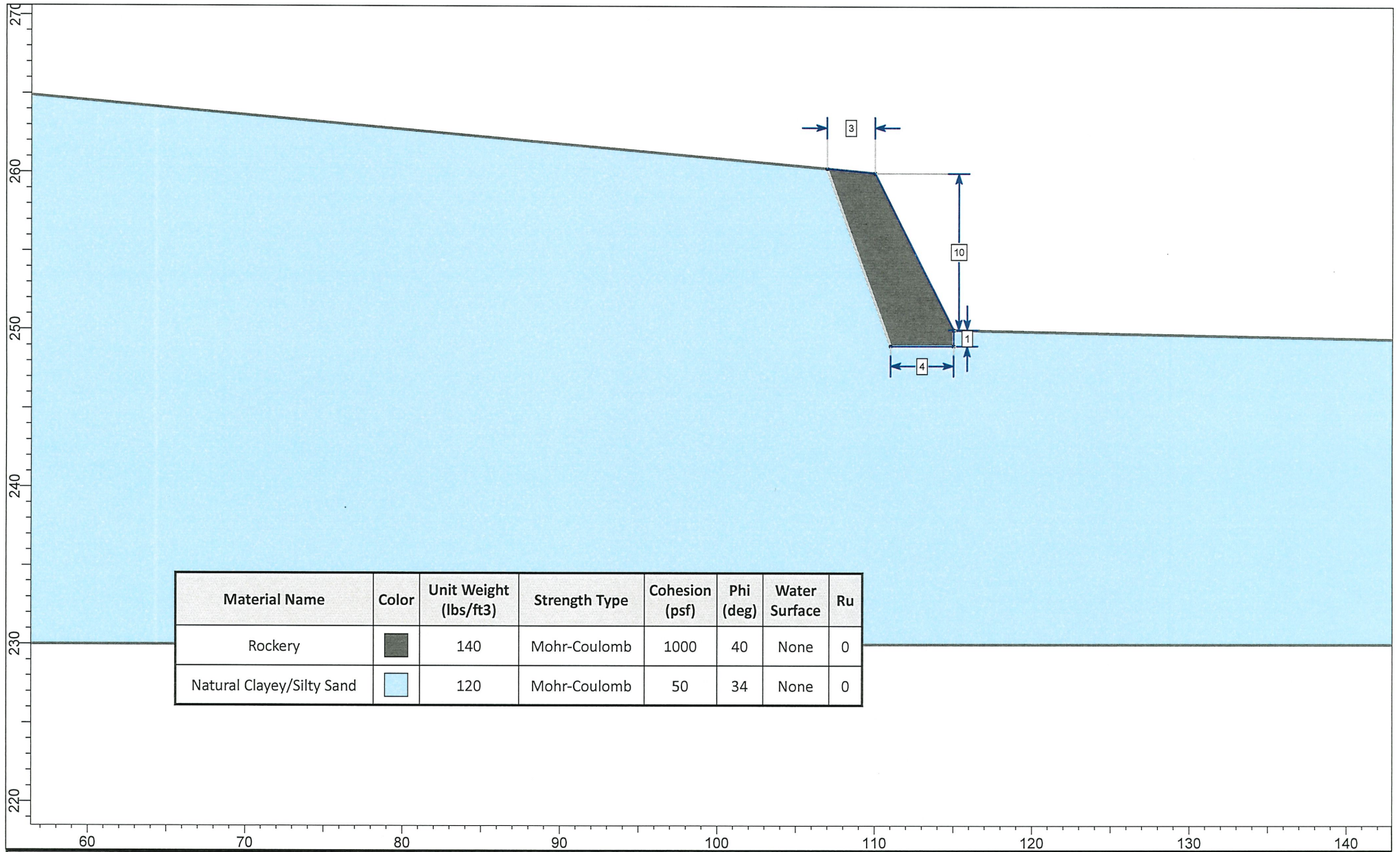


SLIDE 8.011


Project		1200541 Crimson Ridge	
Analysis Description		Profile D-D'	
Drawn By	CJB	Scale	1:197
Date		Company	AGEC
		File Name	Profile D-D'.slmd

FIGURE 2a





Material Name	Color	Unit Weight (lbs/ft <sup>3</sup> )	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Rockery		140	Mohr-Coulomb	1000	40	None	0
Natural Clayey/Silty Sand		120	Mohr-Coulomb	50	34	None	0

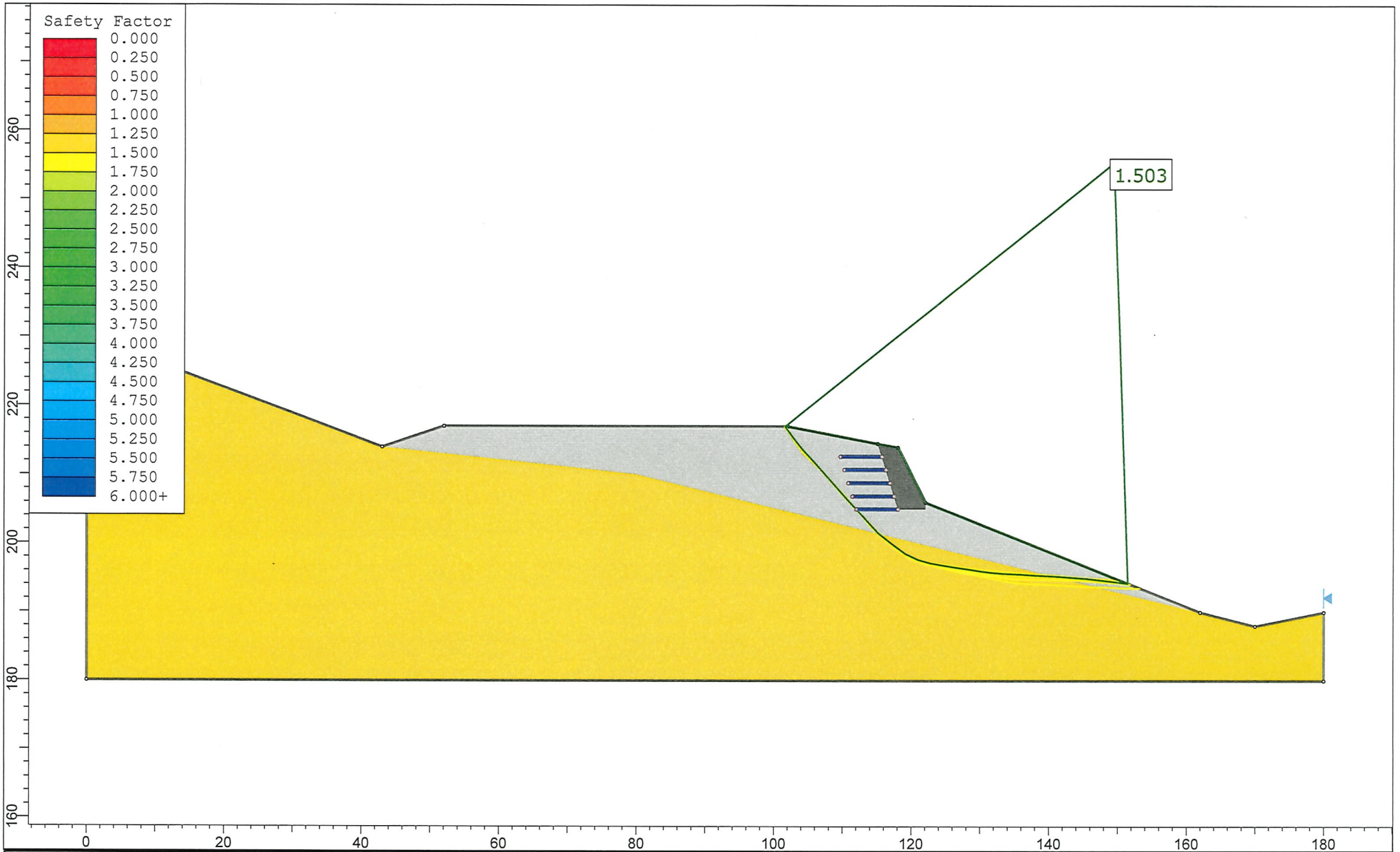
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	Analysis Description						
	Profile E-E'						
Drawn By			Scale		Company		
CJB			1:101		AGEC		
Date					File Name		
					Profile E-E'.slmd		


SLIDE 8.011

FIGURE 3a

APPENDIX  
STABILITY ANALYSIS

Project No. 1200541B



	<i>Project</i>			1200541 Crimson Ridge	
	<i>Analysis Description</i>			Profile A-A' near Station 1+25	
	<i>Drawn By</i>	CJB	<i>Scale</i>	1:231	<i>Company</i>
	<i>Date</i>		<i>File Name</i>	Profile A-A' 5' geogrid.slm	
	<small>SLIDEINTERPRET 8.011</small>				



## Slide Analysis Information

### Profile A-A' 5' geogrid

#### Project Summary

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File Name: Profile A-A' 5' geogrid.slmd  
 Slide Modeler Version: 8.011  
 Compute Time: 00h:00m:04.451s  
 Project Title: 1200541 Crimson Ridge  
 Analysis: Profile A-A' near Station 1+25  
 Author: CJB  
 Company: AGECE

#### General Settings

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Units of Measurement: Imperial Units  
 Time Units: days  
 Permeability Units: feet/second  
 Data Output: Standard  
 Failure Direction: Left to Right

#### Analysis Options

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Slices Type: Vertical

##### Analysis Methods Used

Spencer

Number of slices: 50  
 Tolerance: 0.005  
 Maximum number of iterations: 75  
 Check malpha < 0.2: Yes  
 Create Interslice boundaries at intersections with water tables and piezos: Yes  
 Initial trial value of FS: 1  
 Steffensen Iteration: Yes

#### Groundwater Analysis

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Groundwater Method: Water Surfaces  
 Pore Fluid Unit Weight [lbs/ft<sup>3</sup>]: 62.4  
 Use negative pore pressure cutoff: Yes  
 Maximum negative pore pressure [psf]: 0  
 Advanced Groundwater Method: None

#### Random Numbers

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Pseudo-random Seed: 10116  
 Random Number Generation Method: Park and Miller v.3




#### Surface Options

Search Method: Auto Refine Search  
 Divisions along slope: 20  
 Circles per division: 10  
 Number of iterations: 10  
 Divisions to use in next iteration: 50%  
 Number of vertices per surface: 12  
 Minimum Elevation: Not Defined  
 Minimum Depth: Not Defined  
 Minimum Area: Not Defined  
 Minimum Weight: Not Defined

### Seismic Loading

Advanced seismic analysis: No  
 Staged pseudostatic analysis: No

### Materials

Property	Natural Fat Clay	Imported Granular Fill	Rockery
Color			
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft <sup>3</sup> ]	120	130	140
Cohesion [psf]	200	0	1000
Friction Angle [°]	23	36	40
Water Surface	None	None	None
Ru Value	0	0	0

### Support

#### Geogrid

Support Type: GeoTextile  
 Force Application: Active  
 Force Orientation: Parallel to Reinforcement  
 Anchorage: None  
 Shear Strength Model: Linear  
 Use External Loads for Strength: yes  
 Strip Coverage: 100 percent  
 Tensile Strength: 1300 lb/ft  
 Pullout Strength Adhesion: 0 psf  
 Pullout Strength Friction Angle: 24 degrees

### Global Minimums

Method: spencer

<b>FS</b>	<b>1.503230</b>
Axis Location:	149.355, 255.464
Left Slip Surface Endpoint:	101.628, 217.000
Right Slip Surface Endpoint:	151.490, 194.204
Resisting Moment:	1.5883e+06 lb-ft
Driving Moment:	1.05659e+06 lb-ft
Resisting Horizontal Force:	22244.9 lb
Driving Horizontal Force:	14798 lb
Total Slice Area:	311.32 ft <sup>2</sup>
Surface Horizontal Width:	49.8618 ft
Surface Average Height:	6.24365 ft

**Global Minimum Coordinates**

**Method: spencer**

X	Y
101.628	217
102.898	215.274
104.167	213.711
105.445	212.287
106.724	210.849
107.816	209.643
108.907	208.4
110.028	207.121
111.181	205.874
112.584	204.376
113.987	202.83
115.233	201.463
117.182	199.947
119.131	198.512
120.95	197.648
122.768	197.155
124.592	196.827
126.417	196.545
128.24	196.261
130.063	196
131.61	195.807
133.156	195.658
134.515	195.598
135.931	195.531
137.94	195.416
139.95	195.317
141.617	195.215
143.285	195.102
145.489	194.923
147.692	194.668
149.591	194.45
151.49	194.204

**Valid/Invalid Surfaces**

**Method: spencer**

Number of Valid Surfaces: 11859  
 Number of Invalid Surfaces: 7152

**Error Codes:**

Error Code -105 reported for 1303 surfaces

Error Code -106 reported for 4897 surfaces  
 Error Code -108 reported for 807 surfaces  
 Error Code -111 reported for 13 surfaces  
 Error Code -123 reported for 113 surfaces  
 Error Code -124 reported for 1 surface  
 Error Code -1000 reported for 18 surfaces

**Error Codes**

The following errors were encountered during the computation:

- 105 = More than two surface / slope intersections with no valid slip surface.
- 106 = Average slice width is less than 0.0001 \* (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
- 108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
- 111 = safety factor equation did not converge
- 123 = Surface radius equal or less than the internal cutoff of 0.01.
- 124 = A slice has a width less than the minimum acceptable value.
- 1000 = No valid slip surface is generated

**Slice Data**

Global Minimum Query (spencer) - Safety Factor: 1.50323

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	1.27014	132.544	-53.644	Imported Granular Fill	0	36	24.9652	37.5284	51.6533	0	51.6533	85.5697	85.5697
2	1.2684	365.648	-50.9466	Imported Granular Fill	0	36	73.064	109.832	151.17	0	151.17	241.225	241.225
3	1.27844	576.815	-48.0931	Imported Granular Fill	0	36	121.108	182.053	250.575	0	250.575	385.519	385.519
4	1.27864	774.628	-48.3552	Imported Granular Fill	0	36	161.782	243.196	334.73	0	334.73	516.663	516.663
5	1.09173	817.182	-47.8387	Imported Granular Fill	0	36	201.917	303.527	417.77	0	417.77	640.755	640.755
6	1.09191	961.796	-48.6998	Imported Granular Fill	0	36	233.634	351.206	483.394	0	483.394	749.332	749.332
7	1.12088	1140.57	-48.7662	Imported Granular Fill	0	36	269.544	405.187	557.692	0	557.692	865.223	865.223
8	1.15256	1329.85	-47.2606	Imported Granular Fill	0	36	314.746	473.135	651.214	0	651.214	991.83	991.83
9	1.40319	1825.31	-46.8637	Imported Granular Fill	0	36	357.555	537.487	739.788	0	739.788	1121.39	1121.39
10	1.40341	2054.92	-47.783	Imported Granular Fill	0	36	395.409	594.391	818.108	0	818.108	1253.92	1253.92
11	1.24577	2019.92	-47.6406	Imported Granular Fill	0	36	439.071	660.025	908.448	0	908.448	1389.98	1389.98
12	0.106466	181.626	-37.8787	Imported Granular Fill	0	36	550.299	827.226	1138.58	0	1138.58	1566.65	1566.65
13	0.921277	1620.61	-37.8787	Natural Fat Clay	200	23	471.955	709.457	1200.21	0	1200.21	1567.33	1567.33
14	0.921277	1707.91	-37.8787	Natural Fat Clay	200	23	490.727	737.675	1266.68	0	1266.68	1648.41	1648.41
15	0.974227	1895.19	-36.3805	Natural Fat Clay	200	23	517.678	778.189	1362.13	0	1362.13	1743.52	1743.52
16	0.974227	1811.64	-36.3805	Natural Fat Clay	200	23	500.341	752.127	1300.73	0	1300.73	1669.35	1669.35
17	0.90953	1516.3	-25.406	Natural Fat Clay	200	23	518.937	780.082	1366.59	0	1366.59	1613.07	1613.07
18	0.90953	1333.83	-25.406	Natural Fat Clay	200	23	472.28	709.945	1201.36	0	1201.36	1425.68	1425.68
19	0.908878	1140.49	-15.1534	Natural Fat	200	23	468.751	704.641	1188.86	0	1188.86	1315.8	1315.8

20	0.908878	997.543	-15.1534	Natural Fat Clay	200	23	427.309	642.343	1042.09	0	1042.09	1157.82	1157.82
21	0.912471	979.062	-10.2002	Natural Fat Clay	200	23	442.321	664.91	1095.26	0	1095.26	1174.85	1174.85
22	0.912471	955.775	-10.2002	Natural Fat Clay	200	23	435.174	654.166	1069.95	0	1069.95	1148.25	1148.25
23	0.912161	930.913	-8.79143	Natural Fat Clay	200	23	433.843	652.166	1065.24	0	1065.24	1132.33	1132.33
24	0.912161	905.118	-8.79143	Natural Fat Clay	200	23	425.782	640.049	1036.69	0	1036.69	1102.54	1102.54
25	0.91159	878.847	-8.8664	Natural Fat Clay	200	23	417.426	627.487	1007.1	0	1007.1	1072.21	1072.21
26	0.91159	853.218	-8.8664	Natural Fat Clay	200	23	409.419	615.451	978.741	0	978.741	1042.61	1042.61
27	0.911593	826.933	-8.12663	Natural Fat Clay	200	23	404.226	607.644	960.35	0	960.35	1018.07	1018.07
28	0.911593	799.988	-8.12663	Natural Fat Clay	200	23	395.729	594.872	930.26	0	930.26	986.769	986.769
29	0.773215	656.787	-7.11724	Natural Fat Clay	200	23	391.617	588.691	915.699	0	915.699	964.597	964.597
30	0.773215	636.115	-7.11724	Natural Fat Clay	200	23	383.833	576.99	888.132	0	888.132	936.058	936.058
31	0.77312	614.348	-5.50802	Natural Fat Clay	200	23	381.856	574.018	881.131	0	881.131	917.953	917.953
32	0.77312	591.642	-5.50802	Natural Fat Clay	200	23	373.126	560.894	850.214	0	850.214	886.195	886.195
33	1.35878	979.041	-2.54146	Natural Fat Clay	200	23	370.982	557.671	842.616	0	842.616	859.082	859.082
34	1.41597	933.683	-2.70128	Natural Fat Clay	200	23	351.507	528.396	773.654	0	773.654	790.239	790.239
35	1.00477	609.771	-3.28458	Natural Fat Clay	200	23	333.334	501.077	709.293	0	709.293	728.423	728.423
36	1.00477	566.688	-3.28458	Natural Fat Clay	200	23	320.212	481.353	662.826	0	662.826	681.203	681.203
37	1.00477	523.095	-2.80441	Natural Fat Clay	200	23	308.393	463.585	620.968	0	620.968	636.075	636.075
38	1.00477	478.995	-2.80441	Natural Fat Clay	200	23	294.876	443.266	573.098	0	573.098	587.543	587.543
39	0.334318	149.683	-3.52131	Natural Fat Clay	200	23	283.99	426.902	534.547	0	534.547	552.023	552.023
40	1.33318	548.4	-3.52131	Imported Granular Fill	0	36	232.65	349.726	481.356	0	481.356	495.672	495.672
41	0.833968	303.554	-3.85784	Imported Granular Fill	0	36	204.596	307.555	423.313	0	423.313	437.109	437.109
42	0.833968	273.485	-3.85784	Imported Granular Fill	0	36	184.329	277.089	381.381	0	381.381	393.811	393.811
43	1.10179	316.286	-4.63567	Imported Granular Fill	0	36	159.089	239.147	329.158	0	329.158	342.057	342.057
44	1.10179	265.957	-4.63567	Imported Granular Fill	0	36	133.774	201.093	276.78	0	276.78	287.627	287.627
45	1.1018	218.385	-6.61705	Imported Granular Fill	0	36	106.03	159.387	219.378	0	219.378	231.678	231.678
46	1.1018	173.566	-6.61705	Imported Granular Fill	0	36	84.2692	126.676	174.356	0	174.356	184.131	184.131
47	0.949411	113.549	-6.55639	Imported Granular Fill	0	36	64.047	96.2773	132.515	0	132.515	139.876	139.876
48	0.949411	80.1445	-6.55639	Imported Granular Fill	0	36	45.2055	67.9542	93.5308	0	93.5308	98.7264	98.7264
49	0.949411	47.5818	-7.36712	Imported Granular Fill	0	36	26.4602	39.7757	54.7465	0	54.7465	58.1677	58.1677
50	0.949411	15.8606	-7.36712	Imported Granular Fill	0	36	8.81422	13.2498	18.2368	0	18.2368	19.3764	19.3764

### Interslice Data

Global Minimum Query (spencer) - Safety Factor: 1.50323

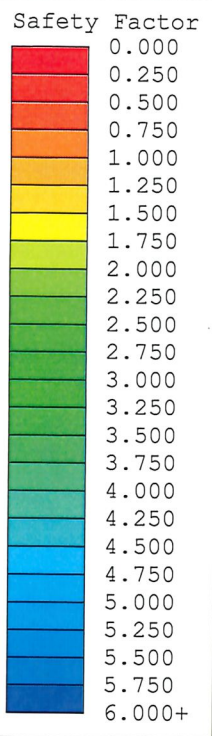
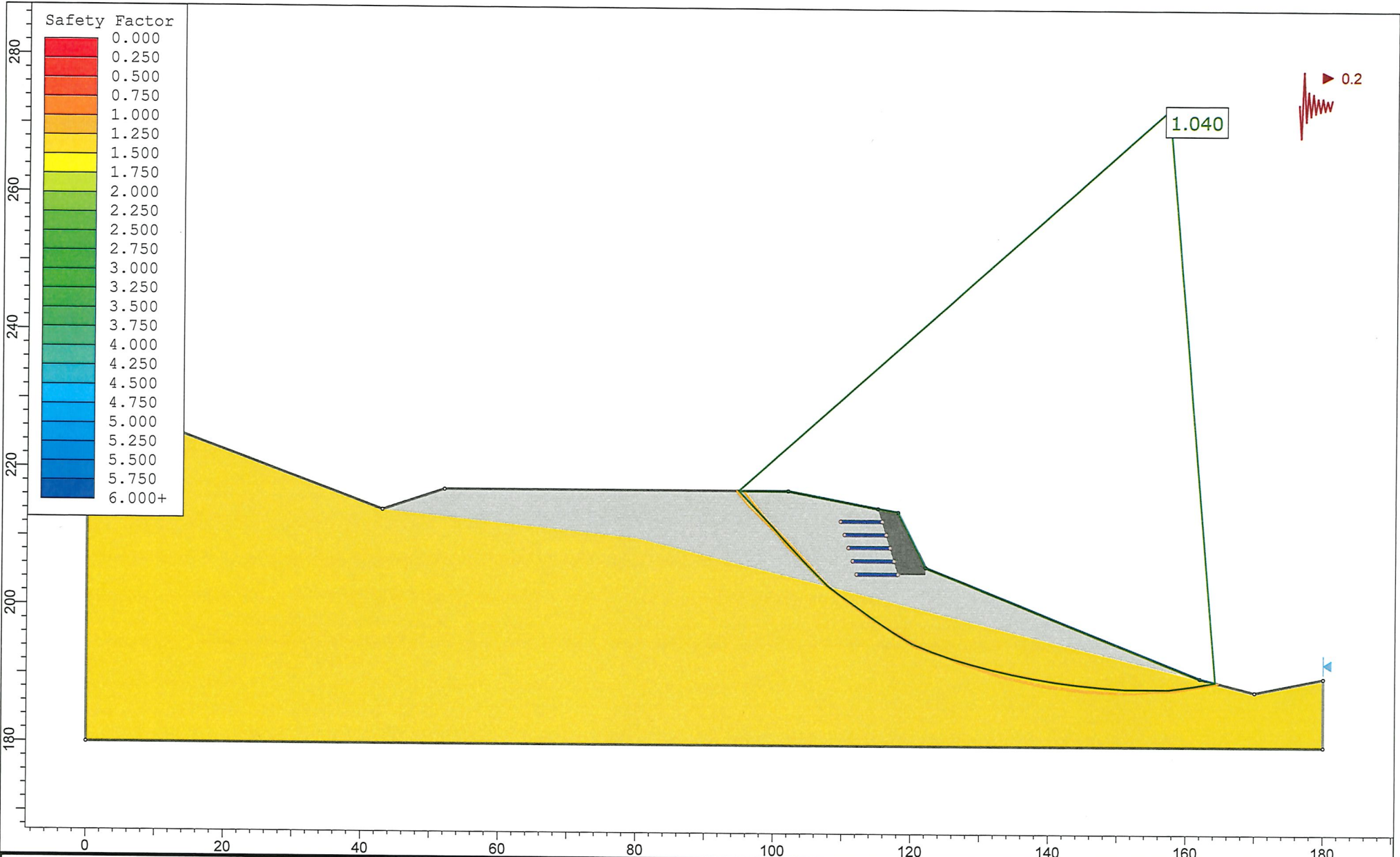
Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	101.628	217	0	0	0
2	102.898	215.274	57.4212	23.8507	22.5562
3	104.167	213.711	201.081	83.5218	22.5562
4	105.445	212.287	403.194	167.472	22.5562
5	106.724	210.849	677.641	281.467	22.5562
6	107.816	209.643	960.883	399.116	22.5562
7	108.907	208.4	1306.58	542.705	22.5562
8	110.028	207.121	1717.65	713.451	22.5563
9	111.181	205.874	2167.14	900.153	22.5563
10	112.584	204.376	2773.31	1151.93	22.5562
11	113.987	202.83	3483.86	1447.07	22.5562
12	115.233	201.463	4178.02	1735.4	22.5562
13	115.34	201.381	4213.73	1750.23	22.5562
14	116.261	200.664	4639.05	1926.89	22.5562
15	117.182	199.947	5094.71	2116.16	22.5562
16	118.156	199.23	5568.04	2312.76	22.5562
17	119.131	198.512	6014.19	2498.08	22.5563
18	120.04	198.08	6132.56	2547.24	22.5562
19	120.95	197.648	6221.98	2584.39	22.5563
20	121.859	197.402	6088.57	2528.97	22.5562
21	122.768	197.155	5956.7	2474.2	22.5562
22	123.68	196.991	5732.92	2381.25	22.5563
23	124.592	196.827	5511.5	2289.28	22.5563
24	125.505	196.686	5266.03	2187.32	22.5562
25	126.417	196.545	5023.9	2086.75	22.5563
26	127.328	196.403	4786.59	1988.17	22.5562
27	128.24	196.261	4552.54	1890.96	22.5562
28	129.152	196.13	4309.06	1789.83	22.5563
29	130.063	196	4069.41	1690.29	22.5563
30	130.836	195.904	3855.01	1601.23	22.5562
31	131.61	195.807	3643.97	1513.57	22.5562
32	132.383	195.733	3414.43	1418.23	22.5562
33	133.156	195.658	3189.35	1324.74	22.5562
34	134.515	195.598	2736.08	1136.47	22.5563
35	135.931	195.531	2290.04	951.199	22.5562
36	136.935	195.473	1996.01	829.072	22.5563
37	137.94	195.416	1712.49	711.307	22.5562
38	138.945	195.366	1433.19	595.295	22.5562
39	139.95	195.317	1165.11	483.946	22.5563
40	140.284	195.297	1081.17	449.078	22.5562
41	141.617	195.215	810.491	336.649	22.5563
42	142.451	195.158	663.67	275.665	22.5563
43	143.285	195.102	531.392	220.721	22.5562
44	144.387	195.013	385.515	160.129	22.5562
45	145.489	194.923	262.851	109.179	22.5563
46	146.59	194.796	174.066	72.3008	22.5563
47	147.692	194.668	103.503	42.9913	22.5562
48	148.642	194.559	57.1553	23.7403	22.5563
49	149.591	194.45	24.4425	10.1525	22.5562
50	150.541	194.327	6.0411	2.50926	22.5563
51	151.49	194.204	0	0	0

Entity Information

Group: Group 1 

Shared Entities

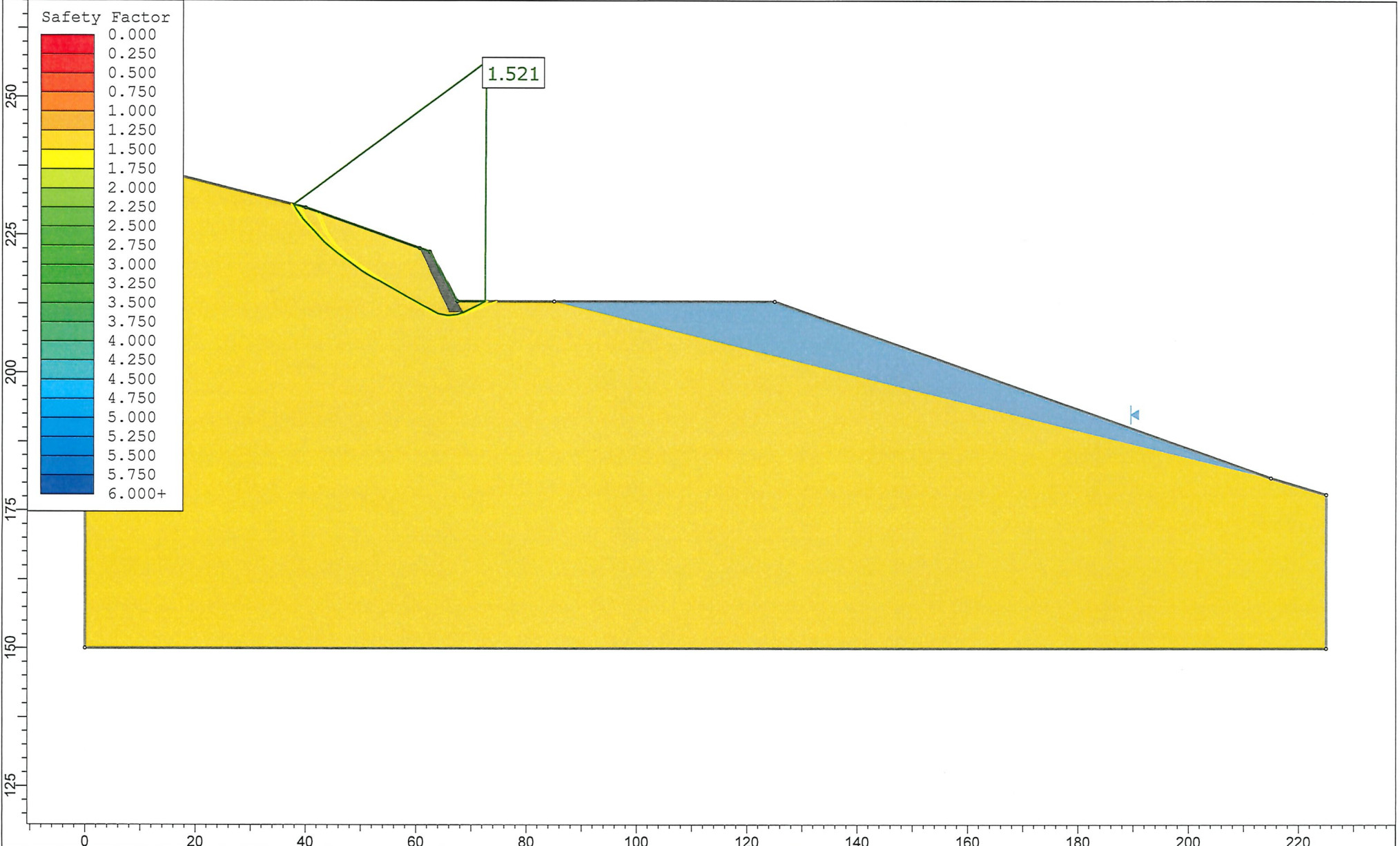
Type	Coordinates	
External Boundary	X	Y
	0	230
	0	180
	180	180
	180	190
	170	188
	162	190
	122	206
	118	214
	115.054	214.532
	102	217
	52	217
	43	214
Material Boundary	X	Y
	43	214
	80	210
Material Boundary	X	Y
	115.054	214.532
	118	205
	122	205
	122	206




SLIDEINTERPRET 8.011

Project		1200541 Crimson Ridge	
Analysis Description		Profile A-A' near Station 1+25	
Drawn By	CJB	Scale	1:232
Company		AGEC	
Date		File Name	Profile A-A' 5' geogrid seismic.slmd





	<i>Project</i> 1200541 Crimson Ridge		
	<i>Analysis Description</i> Profile B-B' Sta 3+75		
	<i>Drawn By</i> CJB	<i>Scale</i> 1:289	<i>Company</i> AGECE
	<i>Date</i>	<i>File Name</i> Profile B-B'.slmd	

## Slide Analysis Information

### Profile B-B'

#### Project Summary

---

File Name: Profile B-B'.slmd  
 Last saved with Slide version: 8.011  
 Project Title: 1200541 Crimson Ridge  
 Analysis: Profile B-B' Sta. 3+25  
 Author: CJB  
 Company: AGECE

#### General Settings

---

Units of Measurement: Imperial Units  
 Time Units: days  
 Permeability Units: feet/second  
 Data Output: Standard  
 Failure Direction: Left to Right

#### Analysis Options

---

Slices Type: Vertical

**Analysis Methods Used**

Spencer

Number of slices: 50  
 Tolerance: 0.005  
 Maximum number of iterations: 75  
 Check malpha < 0.2: Yes  
 Create Interslice boundaries at intersections with water tables and piezos: Yes  
 Initial trial value of FS: 1  
 Steffensen Iteration: Yes

#### Groundwater Analysis

---

Groundwater Method: Water Surfaces  
 Pore Fluid Unit Weight [lbs/ft3]: 62.4  
 Use negative pore pressure cutoff: Yes  
 Maximum negative pore pressure [psf]: 0  
 Advanced Groundwater Method: None

## Random Numbers

Pseudo-random Seed: 10116  
 Random Number Generation Method: Park and Miller v.3




## Surface Options

Search Method: Auto Refine Search  
 Divisions along slope: 20  
 Circles per division: 10  
 Number of iterations: 10  
 Divisions to use in next iteration: 50%  
 Number of vertices per surface: 12  
 Minimum Elevation: Not Defined  
 Minimum Depth: Not Defined  
 Minimum Area: Not Defined  
 Minimum Weight: Not Defined

## Seismic Loading

Advanced seismic analysis: No  
 Staged pseudostatic analysis: No

## Materials

Property	Natural Clay	Rockery	Site Grading Fill
Color			
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft <sup>3</sup> ]	120	140	120
Cohesion [psf]	200	1000	100
Friction Angle [°]	20	40	32
Water Surface	None	None	None
Ru Value	0	0	0

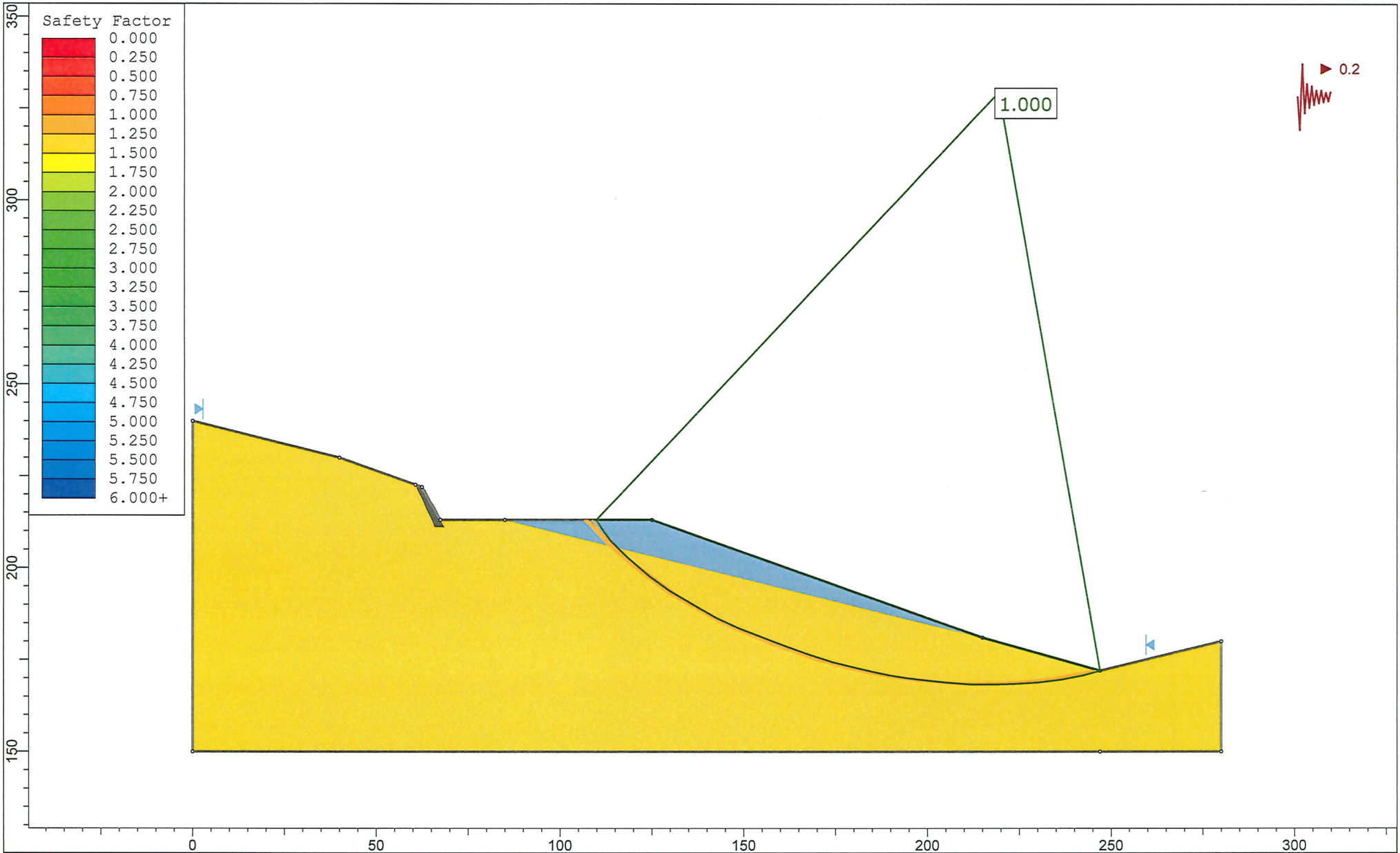
## Entity Information

Group: Group 1 

Shared Entities

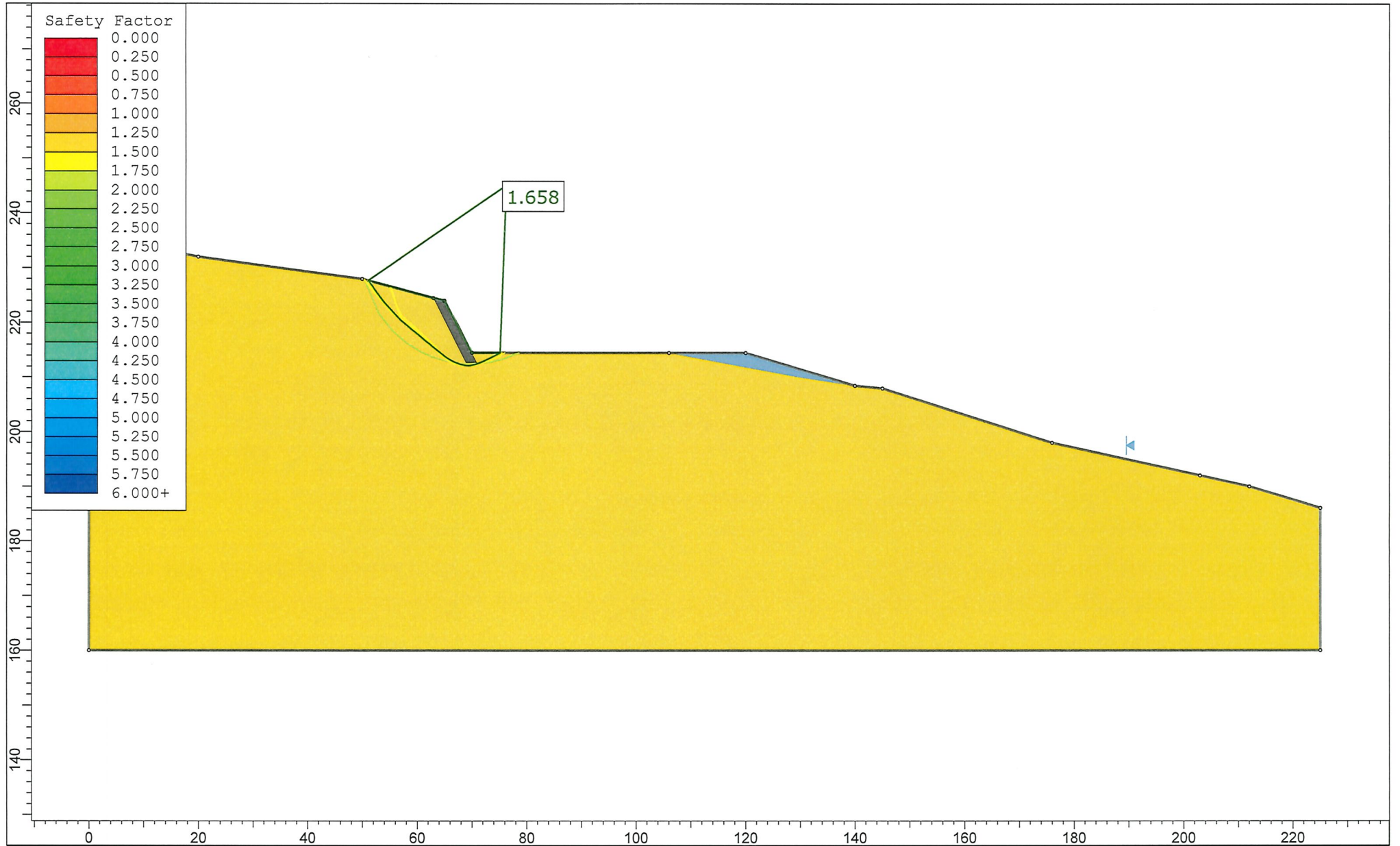


Type	Coordinates	
	X	Y
External Boundary	0	150
	225	150
	225	178
	215	181
	125	213
	85	213
	67.5	213
	62.5	222
	60.6582	222.655
	40	230
	0	240
Material Boundary	60.6582	222.655
	66	211
	68.604	211
	67.5	213
Material Boundary	85	213
	215	181



SLIDEINTERPRET 8.011

<i>Project</i>		1200541 Crimson Ridge	
<i>Analysis Description</i>		Profile B-B' Sta. 3+25	
<i>Drawn By</i>	CJB	<i>Scale</i>	1:434
<i>Company</i>	AGEC		
<i>Date</i>		<i>File Name</i>	Profile B-B' seismic.slm.d



SLIDEINTERPRET 8.011

<i>Project</i>		1200541 Crimson Ridge	
<i>Analysis Description</i>		Profile C-C' Sta 4+00	
<i>Drawn By</i>	CJB	<i>Scale</i>	1:289
<i>Company</i>	AGEC		
<i>Date</i>		<i>File Name</i>	Profile C-C'.slmd

## Slide Analysis Information

### Profile C-C'

#### Project Summary

---

File Name: Profile C-C'.slmd  
 Slide Modeler Version: 8.011  
 Compute Time: 00h:00m:05.306s  
 Project Title: 1200541.Crimson Ridge  
 Analysis: Profile C-C' Sta 4+00  
 Author: CJB  
 Company: AGECE

#### General Settings

---

Units of Measurement: Imperial Units  
 Time Units: days  
 Permeability Units: feet/second  
 Data Output: Standard  
 Failure Direction: Left to Right

#### Analysis Options

---

Slices Type: Vertical

##### Analysis Methods Used

Spencer

Number of slices: 50  
 Tolerance: 0.005  
 Maximum number of iterations: 75  
 Check malpha < 0.2: Yes  
 Create Interslice boundaries at intersections with water tables and piezos: Yes  
 Initial trial value of FS: 1  
 Steffensen Iteration: Yes

#### Groundwater Analysis

---

Groundwater Method: Water Surfaces  
 Pore Fluid Unit Weight [lbs/ft3]: 62.4  
 Use negative pore pressure cutoff: Yes  
 Maximum negative pore pressure [psf]: 0  
 Advanced Groundwater Method: None

#### Random Numbers

---

Pseudo-random Seed: 10116  
 Random Number Generation Method: Park and Miller v.3

#### Surface Options




---

Search Method: Auto Refine Search  
 Divisions along slope: 20  
 Circles per division: 10  
 Number of iterations: 10  
 Divisions to use in next iteration: 50%  
 Number of vertices per surface: 12  
 Minimum Elevation: Not Defined  
 Minimum Depth: Not Defined  
 Minimum Area: Not Defined  
 Minimum Weight: Not Defined

**Seismic Loading**

Advanced seismic analysis: No  
 Staged pseudostatic analysis: No

**Materials**

Property	Natural Clay	Rockery	Site Grading Fill
Color			
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	120	140	120
Cohesion [psf]	200	1000	100
Friction Angle [°]	23	40	28
Water Surface	None	None	None
Ru Value	0	0	0

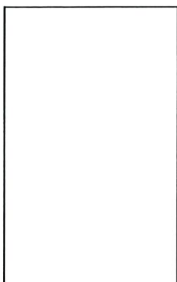
**Global Minimums**

**Method: spencer**

**FS 1.658260**  
 Axis Location: 76.365, 245.116  
 Left Slip Surface Endpoint: 51.168, 227.686  
 Right Slip Surface Endpoint: 75.191, 214.500  
 Resisting Moment: 379369 lb-ft  
 Driving Moment: 228776 lb-ft  
 Resisting Horizontal Force: 9804.64 lb  
 Driving Horizontal Force: 5912.62 lb  
 Total Slice Area: 120.318 ft2  
 Surface Horizontal Width: 24.0229 ft  
 Surface Average Height: 5.00847 ft

**Global Minimum Coordinates**

**Method: spencer**





X	Y
51.1677	227.686
51.901	226.601
52.4711	225.766
53.0413	225.004
53.5186	224.365
53.9958	223.727
54.6325	223.02
55.2852	222.308
56.2937	221.234
57.0032	220.483
57.5549	220.011
58.1066	219.545
58.9852	218.808
59.6387	218.272
60.2922	217.737
60.9456	217.201
61.5991	216.665
62.2526	216.13
62.9061	215.594
63.5596	215.058
64.213	214.522
64.8665	214.015
65.4048	213.606
66.0324	213.201
66.66	212.866
67.9153	212.363
68.8793	212.176
69.8434	212.175
70.9082	212.466
71.8372	212.829
72.6823	213.233
73.5184	213.636
74.3545	214.066
75.1906	214.5

## Valid/Invalid Surfaces

### Method: spencer

Number of Valid Surfaces: 10401  
 Number of Invalid Surfaces: 8608

#### Error Codes:

Error Code -105 reported for 4043 surfaces  
 Error Code -106 reported for 2710 surfaces  
 Error Code -108 reported for 1825 surfaces  
 Error Code -1000 reported for 30 surfaces

#### Error Codes

The following errors were encountered during the computation:

- 105 = More than two surface / slope intersections with no valid slip surface.
- 106 = Average slice width is less than 0.0001 \* (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
- 108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
- 1000 = No valid slip surface is generated

## Slice Data

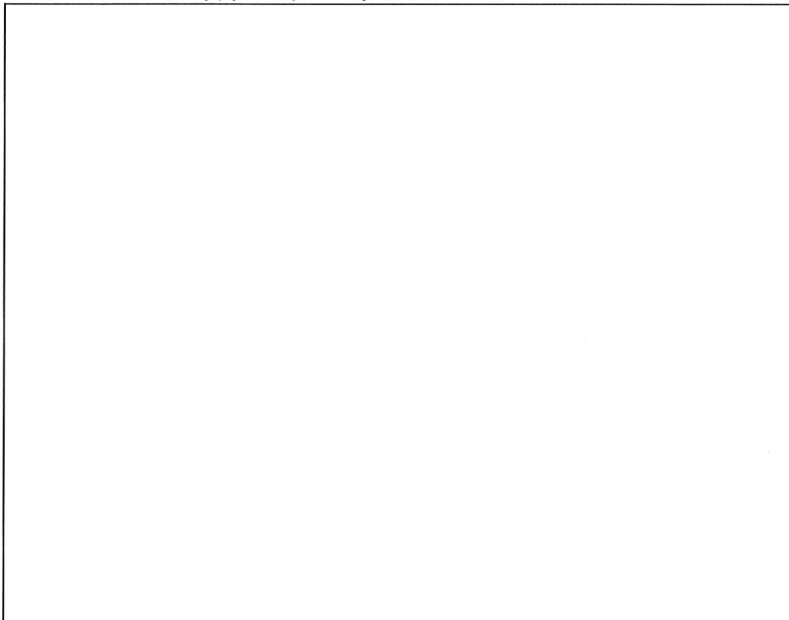
## Global Minimum Query (spencer) - Safety Factor: 1.65826

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.366627	9.75723	-55.9373	Natural Clay	200	23	104.204	172.797	-64.087	0	-64.087	90.037	90.037
2	0.366627	29.2717	-55.9373	Natural Clay	200	23	111.908	185.573	-33.9885	0	-33.9885	131.531	131.531
3	0.570138	83.9988	-55.6676	Natural Clay	200	23	121.944	202.214	5.21674	0	5.21674	183.762	183.762
4	0.570179	128.152	-53.2186	Natural Clay	200	23	136.064	225.629	60.3782	0	60.3782	242.382	242.382
5	0.477283	139.321	-53.2186	Natural Clay	200	23	146.251	242.523	100.178	0	100.178	295.809	295.809
6	0.477283	168.527	-53.2186	Natural Clay	200	23	155.536	257.919	136.448	0	136.448	344.498	344.498
7	0.636617	264.725	-47.9998	Natural Clay	200	23	173.282	287.346	205.775	0	205.775	398.222	398.222
8	0.65276	313.426	-47.4924	Natural Clay	200	23	184.711	306.299	250.425	0	250.425	451.949	451.949
9	0.504234	270.469	-46.7853	Natural Clay	200	23	195.3	323.859	291.795	0	291.795	499.662	499.662
10	0.504234	294.728	-46.7853	Natural Clay	200	23	203.35	337.207	323.239	0	323.239	539.673	539.673
11	0.354741	221.845	-46.6426	Natural Clay	200	23	210.472	349.018	351.063	0	351.063	573.963	573.963
12	0.354741	233.772	-46.6426	Natural Clay	200	23	216.108	358.364	373.081	0	373.081	601.95	601.95
13	0.551701	383.531	-40.5153	Natural Clay	200	23	235.122	389.893	447.359	0	447.359	648.281	648.281
14	0.551699	404.737	-40.2027	Natural Clay	200	23	242.777	402.587	477.265	0	477.265	682.447	682.447
15	0.43932	337.264	-39.9901	Natural Clay	200	23	249.463	413.674	503.385	0	503.385	712.636	712.636
16	0.43932	350.455	-39.9901	Natural Clay	200	23	254.952	422.776	524.827	0	524.827	738.682	738.682
17	0.653477	545.211	-39.3444	Natural Clay	200	23	263.173	436.409	556.946	0	556.946	772.691	772.691
18	0.653477	573.423	-39.3444	Natural Clay	200	23	271.126	449.598	588.017	0	588.017	810.282	810.282
19	0.653475	601.634	-39.3444	Natural Clay	200	23	279.08	462.787	619.087	0	619.087	847.873	847.873
20	0.653475	629.847	-39.3444	Natural Clay	200	23	287.033	475.976	650.157	0	650.157	885.463	885.463
21	0.653475	658.059	-39.3444	Natural Clay	200	23	294.986	489.164	681.229	0	681.229	923.054	923.054
22	0.653475	686.272	-39.3444	Natural Clay	200	23	302.94	502.353	712.299	0	712.299	960.644	960.644
23	0.326744	354.734	-39.3444	Natural Clay	200	23	309.475	513.19	737.829	0	737.829	991.532	991.532
24	0.326744	365.606	-39.3444	Natural Clay	200	23	315.604	523.354	761.774	0	761.774	1020.5	1020.5
25	0.653489	764.321	-39.3444	Natural Clay	200	23	324.938	538.832	798.238	0	798.238	1064.62	1064.62
26	0.326744	398.437	-37.8265	Natural Clay	200	23	338.995	562.142	853.153	0	853.153	1116.36	1116.36
27	0.326744	408.918	-37.8265	Natural Clay	200	23	345.012	572.12	876.66	0	876.66	1144.53	1144.53
28	0.538239	677.246	-37.2353	Natural Clay	200	23	348.226	577.449	889.214	0	889.214	1153.87	1153.87
29	0.627621	740.094	-32.8526	Natural Clay	200	23	346.858	575.18	883.868	0	883.868	1107.85	1107.85
30	0.627621	678.917	-28.033	Natural Clay	200	23	341.367	566.076	862.422	0	862.422	1044.18	1044.18
31	0.418414	415.757	-21.8618	Natural	200	23	339.76	563.41	856.139	0	856.139	992.459	992.459

				Clay									
32	0.418414	384.621	-21.8618	Natural Clay	200	23	323.181	535.918	791.373	0	791.373	921.041	921.041
33	0.418414	353.484	-21.8618	Natural Clay	200	23	306.602	508.426	726.607	0	726.607	849.622	849.622
34	0.48204	365.747	-10.9729	Natural Clay	200	23	312.941	518.938	751.372	0	751.372	812.048	812.048
35	0.48204	318.64	-10.9729	Natural Clay	200	23	288.651	478.658	656.478	0	656.478	712.444	712.444
36	0.48204	266.223	-0.0276259	Natural Clay	200	23	285.182	472.906	642.926	0	642.926	643.063	643.063
37	0.48204	204.72	-0.0276259	Natural Clay	200	23	249.632	413.955	504.045	0	504.045	504.166	504.166
38	0.532399	165.596	15.2805	Natural Clay	200	23	249.17	413.188	502.239	0	502.239	434.165	434.165
39	0.532399	142.195	15.2805	Natural Clay	200	23	234.393	388.685	444.512	0	444.512	380.475	380.475
40	0.0908692	22.1504	21.3247	Natural Clay	200	23	242.042	401.369	474.395	0	474.395	379.906	379.906
41	0.419057	96.368	21.3247	Natural Clay	200	23	236.954	392.931	454.518	0	454.518	362.016	362.016
42	0.419057	88.1415	21.3247	Natural Clay	200	23	229.714	380.926	426.236	0	426.236	336.559	336.559
43	0.422565	79.6164	25.5219	Natural Clay	200	23	233.649	387.451	441.608	0	441.608	330.053	330.053
44	0.422565	69.3861	25.5219	Natural Clay	200	23	224.028	371.496	404.019	0	404.019	297.059	297.059
45	0.418052	58.5224	25.7686	Natural Clay	200	23	215.105	356.7	369.163	0	369.163	265.322	265.322
46	0.418052	48.3982	25.7686	Natural Clay	200	23	205.435	340.664	331.383	0	331.383	232.211	232.211
47	0.41805	37.9495	27.1886	Natural Clay	200	23	199.121	330.194	306.718	0	306.718	204.434	204.434
48	0.41805	27.1767	27.1886	Natural Clay	200	23	188.537	312.644	265.371	0	265.371	168.524	168.524
49	0.41805	16.3428	27.4524	Natural Clay	200	23	178.494	295.989	226.137	0	226.137	133.408	133.408
50	0.41805	5.44758	27.4524	Natural Clay	200	23	167.732	278.144	184.095	0	184.095	96.9564	96.9564

**Interslice Data**

Global Minimum Query (spencer) - Safety Factor: 1.65826



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	51.1677	227.686	0	0	0
2	51.5343	227.143	-72.9562	-23.2484	17.6751
3	51.901	226.601	-132.416	-42.1959	17.6751
4	52.4711	225.766	-197.586	-62.9631	17.6751
5	53.0413	225.004	-229.117	-73.0109	17.6751
6	53.5186	224.365	-234.964	-74.8741	17.6751
7	53.9958	223.727	-222.087	-70.7706	17.6751
8	54.6325	223.02	-186.912	-59.5619	17.6751
9	55.2852	222.308	-129.139	-41.1516	17.6751
10	55.7895	221.771	-71.0167	-22.6303	17.6751
11	56.2937	221.234	-0.0779145	-0.0248284	17.6751
12	56.6484	220.859	57.1486	18.2111	17.6751
13	57.0032	220.483	120.648	38.4458	17.675
14	57.5549	220.011	201.839	64.3185	17.6751
15	58.1066	219.545	290.432	92.5495	17.6751
16	58.5459	219.177	366.337	116.738	17.6751
17	58.9852	218.808	447.732	142.675	17.6751
18	59.6387	218.272	574.116	182.949	17.6751
19	60.2922	217.737	711.947	226.87	17.6751
20	60.9456	217.201	861.226	274.44	17.6751
21	61.5991	216.665	1021.95	325.657	17.6751
22	62.2526	216.13	1194.13	380.522	17.675
23	62.9061	215.594	1377.75	439.035	17.675
24	63.2328	215.326	1474.26	469.791	17.6751
25	63.5596	215.058	1575.19	501.953	17.6751
26	64.213	214.522	1790.48	570.557	17.6751
27	64.5398	214.269	1896.15	604.231	17.6751
28	64.8665	214.015	2005.82	639.178	17.6751
29	65.4048	213.606	2182.14	695.365	17.6751
30	66.0324	213.201	2322.67	740.146	17.6751
31	66.66	212.866	2396.62	763.711	17.6751
32	67.0784	212.699	2398.18	764.21	17.6751
33	67.4968	212.531	2395.81	763.454	17.6751
34	67.9153	212.363	2389.51	761.445	17.6751
35	68.3973	212.269	2308.88	735.752	17.6751
36	68.8793	212.176	2231.09	710.965	17.6751
37	69.3614	212.176	2093.77	667.206	17.6751
38	69.8434	212.175	1973.56	628.898	17.6751
39	70.3758	212.321	1767.85	563.346	17.6751
40	70.9082	212.466	1578.4	502.976	17.6751
41	70.9991	212.502	1539.58	490.605	17.6751
42	71.4181	212.665	1365.92	435.268	17.6751
43	71.8372	212.829	1199.93	382.373	17.6751
44	72.2598	213.031	1012.1	322.519	17.6752
45	72.6823	213.233	835.927	266.378	17.6751
46	73.1004	213.434	671.5	213.982	17.6751
47	73.5184	213.636	518.74	165.303	17.6751
48	73.9365	213.851	369.632	117.788	17.6751
49	74.3545	214.066	233.827	74.5119	17.6751
50	74.7726	214.283	110.095	35.083	17.6751
51	75.1906	214.5	0	0	0

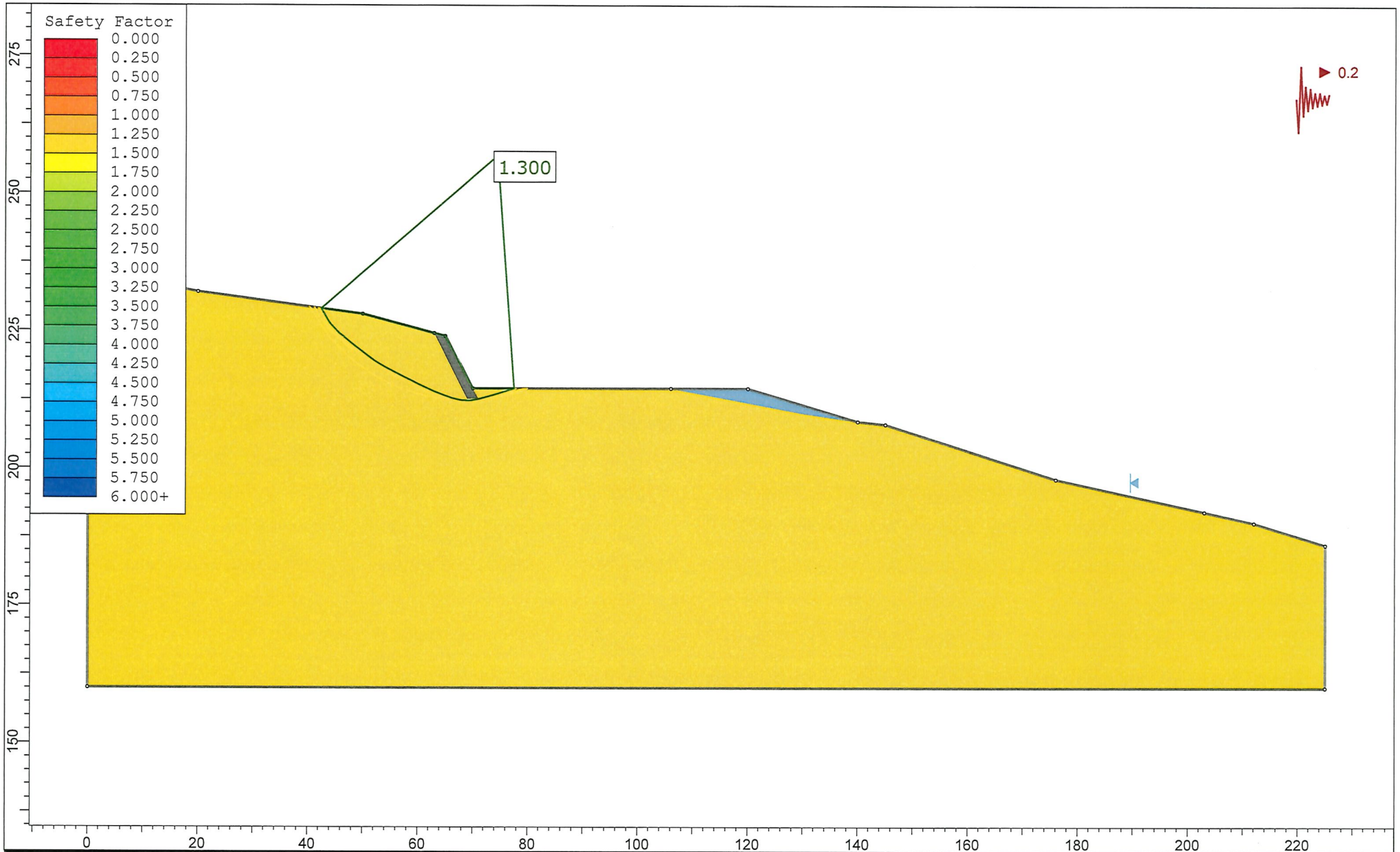
### Entity Information


Group: Group 1 

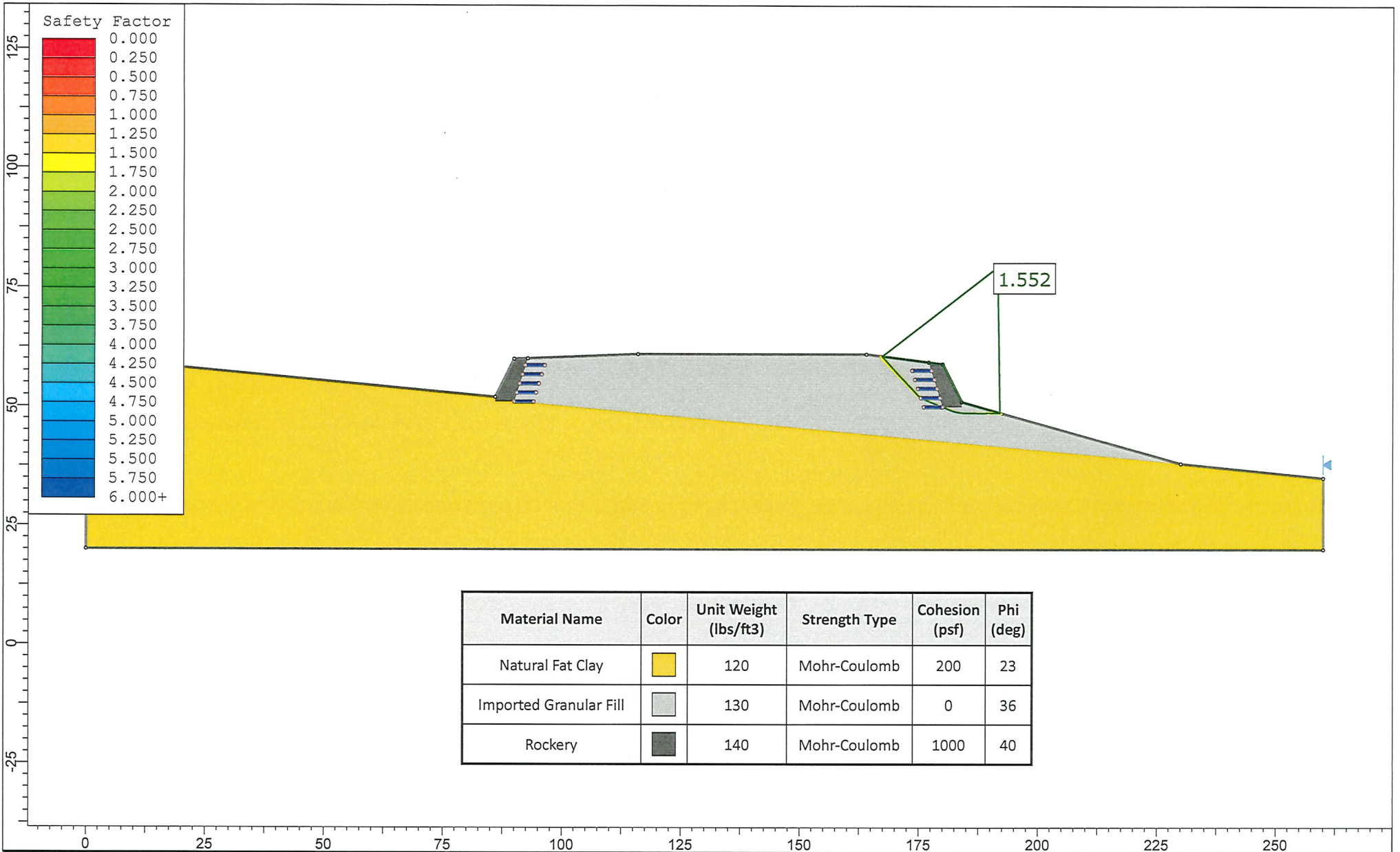
Shared Entities




Type	Coordinates																																		
External Boundary	<table border="1"> <thead> <tr> <th>X</th> <th>Y</th> </tr> </thead> <tbody> <tr><td>0</td><td>160</td></tr> <tr><td>225</td><td>160</td></tr> <tr><td>225</td><td>186</td></tr> <tr><td>212</td><td>190</td></tr> <tr><td>203</td><td>192</td></tr> <tr><td>176</td><td>198</td></tr> <tr><td>145</td><td>208</td></tr> <tr><td>140</td><td>208.5</td></tr> <tr><td>120</td><td>214.5</td></tr> <tr><td>106</td><td>214.5</td></tr> <tr><td>70</td><td>214.5</td></tr> <tr><td>65</td><td>224</td></tr> <tr><td>63</td><td>224.5</td></tr> <tr><td>50</td><td>228</td></tr> <tr><td>20</td><td>232</td></tr> <tr><td>0</td><td>236</td></tr> </tbody> </table>	X	Y	0	160	225	160	225	186	212	190	203	192	176	198	145	208	140	208.5	120	214.5	106	214.5	70	214.5	65	224	63	224.5	50	228	20	232	0	236
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	<i>Project</i> 1200541 Crimson Ridge			
	<i>Analysis Description</i> Profile C-C' Sta 4+00			
	<i>Drawn By</i> CJB	<i>Scale</i> 1:289	<i>Company</i> AGECE	
	<i>Date</i>	<i>File Name</i> Profile C-C' seismic.slmd		



Material Name	Color	Unit Weight (lbs/ft <sup>3</sup> )	Strength Type	Cohesion (psf)	Phi (deg)
Natural Fat Clay		120	Mohr-Coulomb	200	23
Imported Granular Fill		130	Mohr-Coulomb	0	36
Rockery		140	Mohr-Coulomb	1000	40

	Project				
	1200541 Crimson Ridge				
	Analysis Description				
	Profile D-D'				
Drawn By	CJB	Scale	1:334	Company	AGEC
Date				File Name	Profile D-D'.slmd

## Slide Analysis Information

### Profile D-D'

#### Project Summary

---

File Name: Profile D-D'.slmd  
 Slide Modeler Version: 8.011  
 Compute Time: 00h:00m:05.845s  
 Project Title: 1200541Crimson Ridge  
 Analysis: Profile A near Station 3+25  
 Author: CJB  
 Company: AGECE

#### General Settings

---

Units of Measurement: Imperial Units  
 Time Units: days  
 Permeability Units: feet/second  
 Data Output: Standard  
 Failure Direction: Left to Right

#### Analysis Options

---

Slices Type: Vertical

##### Analysis Methods Used

Spencer

Number of slices: 50  
 Tolerance: 0.005  
 Maximum number of iterations: 75  
 Check malpha < 0.2: Yes  
 Create Interslice boundaries at intersections with water tables and piezos: Yes  
 Initial trial value of FS: 1  
 Steffensen Iteration: Yes

#### Groundwater Analysis

---

Groundwater Method: Water Surfaces  
 Pore Fluid Unit Weight [lbs/ft<sup>3</sup>]: 62.4  
 Use negative pore pressure cutoff: Yes  
 Maximum negative pore pressure [psf]: 0  
 Advanced Groundwater Method: None

#### Random Numbers

---

Pseudo-random Seed: 10116  
 Random Number Generation Method: Park and Miller v.3

#### Surface Options

---






Search Method: Auto Refine Search  
 Divisions along slope: 20  
 Circles per division: 10  
 Number of iterations: 10  
 Divisions to use in next iteration: 50%  
 Number of vertices per surface: 12  
 Minimum Elevation: Not Defined  
 Minimum Depth: Not Defined  
 Minimum Area: Not Defined  
 Minimum Weight: Not Defined

### Seismic Loading

Advanced seismic analysis: No  
 Staged pseudostatic analysis: No

### Materials

Property	Natural Fat Clay	Imported Granular Fill	Rockery
Color			
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft <sup>3</sup> ]	120	130	140
Cohesion [psf]	200	0	1000
Friction Angle [°]	23	36	40
Water Surface	None	None	None
Ru Value	0	0	0

### Support

#### Geogrid

Support Type: GeoTextile  
 Force Application: Active  
 Force Orientation: Bisector of Parallel and Tangent  
 Anchorage: None  
 Shear Strength Model: Linear  
 Use External Loads for Strength: yes  
 Strip Coverage: 100 percent  
 Tensile Strength: 1300 lb/ft  
 Pullout Strength Adhesion: 0 psf  
 Pullout Strength Friction Angle: 32 degrees

### Global Minimums

Method: spencer

<b>FS</b>	<b>1.551530</b>
Axis Location:	191.557, 79.383
Left Slip Surface Endpoint:	167.330, 60.584
Right Slip Surface Endpoint:	192.060, 48.722
Resisting Moment:	289922 lb-ft
Driving Moment:	186862 lb-ft
Resisting Horizontal Force:	8128.38 lb
Driving Horizontal Force:	5238.93 lb
Active Support Moment:	-20.3623 lb-ft
Active Horizontal Support Force:	-0.653465 lb
Total Slice Area:	102.38 ft <sup>2</sup>
Surface Horizontal Width:	24.73 ft
Surface Average Height:	4.1399 ft

### Global Minimum Coordinates

#### Method: spencer

X	Y
167.33	60.5837
167.787	60.0719
168.243	59.5658
169.155	58.5562
169.981	57.6284
170.916	56.5965
171.554	55.9293
172.086	55.3557
172.682	54.7291
173.574	53.77
174.475	52.8244
175.314	51.9501
175.951	51.6488
176.589	51.3651
177.226	51.0882
177.864	50.8113
179.131	50.3291
180.399	49.8487
181.033	49.5896
181.693	49.3067
182.368	49.0523
183.046	48.8485
184.131	48.7201
185.212	48.7204
186.1	48.7115
186.988	48.7025
188.353	48.7055
189.176	48.7
189.897	48.7114
190.618	48.7287
191.339	48.7254
192.06	48.7221

### Valid/Invalid Surfaces

#### Method: spencer

Number of Valid Surfaces: 12815  
 Number of Invalid Surfaces: 6198

#### Error Codes:

Error Code -105 reported for 1760 surfaces  
 Error Code -106 reported for 3490 surfaces  
 Error Code -108 reported for 930 surfaces  
 Error Code -111 reported for 14 surfaces  
 Error Code -124 reported for 3 surfaces  
 Error Code -1000 reported for 1 surface

**Error Codes**

The following errors were encountered during the computation:

- 105 = More than two surface / slope intersections with no valid slip surface.
- 106 = Average slice width is less than 0.0001 \* (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
- 108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
- 111 = safety factor equation did not converge
- 124 = A slice has a width less than the minimum acceptable value.
- 1000 = No valid slip surface is generated

**Slice Data**

Global Minimum Query (spencer) - Safety Factor: 1.55153

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.456264	13.4883	-48.2855	Imported Granular Fill	0	36	7.48622	11.6151	15.9868	0	15.9868	24.3848	24.3848
2	0.456295	40.2979	-47.9638	Imported Granular Fill	0	36	22.5124	34.9286	48.0751	0	48.0751	73.0459	73.0459
3	0.456274	66.8944	-47.8897	Imported Granular Fill	0	36	37.4287	58.0718	79.9289	0	79.9289	121.337	121.337
4	0.456274	93.453	-47.8897	Imported Granular Fill	0	36	52.2888	81.1277	111.663	0	111.663	169.511	169.511
5	0.412676	107.594	-48.3438	Imported Granular Fill	0	36	65.9446	102.315	140.825	0	140.825	214.953	214.953
6	0.412676	129.713	-48.3438	Imported Granular Fill	0	36	79.5015	123.349	169.776	0	169.776	259.144	259.144
7	0.467807	173.489	-47.8008	Imported Granular Fill	0	36	94.849	147.161	202.55	0	202.55	307.156	307.156
8	0.467807	201.309	-47.8008	Imported Granular Fill	0	36	110.059	170.76	235.031	0	235.031	356.412	356.412
9	0.637823	317.793	-46.2901	Imported Granular Fill	0	36	131.357	203.805	280.513	0	280.513	417.923	417.923
10	0.53161	302.7	-47.1792	Imported Granular Fill	0	36	147.473	228.809	314.929	0	314.929	474.07	474.07
11	0.596525	380.734	-46.4086	Imported Granular Fill	0	36	167.873	260.46	358.494	0	358.494	534.831	534.831
12	0.44599	312.943	-47.075	Imported Granular Fill	0	36	182.114	282.556	388.906	0	388.906	584.713	584.713
13	0.44599	337.513	-47.075	Imported Granular Fill	0	36	196.413	304.74	419.439	0	419.439	630.619	630.619
14	0.450437	365.479	-46.3865	Imported Granular Fill	0	36	213.505	331.259	455.939	0	455.939	680.036	680.036
15	0.450437	389.867	-46.3865	Imported Granular Fill	0	36	227.751	353.363	486.363	0	486.363	725.413	725.413
16	0.419496	384.934	-46.1821	Imported Granular Fill	0	36	242.436	376.147	517.721	0	517.721	770.374	770.374
17	0.419496	405.915	-46.1821	Imported Granular Fill	0	36	255.651	396.65	545.941	0	545.941	812.365	812.365
18	0.637345	641.832	-25.3035	Imported Granular Fill	0	36	385.482	598.087	823.196	0	823.196	1005.44	1005.44
19	0.637345	659.467	-23.994	Imported Granular Fill	0	36	404.803	628.064	864.456	0	864.456	1044.63	1044.63
20	0.637356	676.505	-23.4833	Imported	0	36	418.842	649.846	894.437	0	894.437	1076.41	1076.41

21	0.637356	701.841	-23.4833	Granular Fill	0	36	434.528	674.184	927.935	0	927.935	1116.72	1116.72
22	0.633949	725.239	-20.8227	Imported Granular Fill	0	36	472.195	732.625	1008.37	0	1008.37	1187.96	1187.96
23	0.633949	750.897	-20.8227	Imported Granular Fill	0	36	488.901	758.544	1044.05	0	1044.05	1229.98	1229.98
24	0.633949	776.518	-20.7511	Imported Granular Fill	0	36	506.197	785.38	1080.98	0	1080.98	1272.77	1272.77
25	0.633949	778.629	-20.7511	Imported Granular Fill	0	36	507.593	787.546	1083.96	0	1083.96	1276.28	1276.28
26	0.633936	694.762	-22.227	Imported Granular Fill	0	36	441.731	685.359	943.315	0	943.315	1123.83	1123.83
27	0.659333	626.447	-23.2266	Imported Granular Fill	0	36	376.548	584.225	804.118	0	804.118	965.713	965.713
28	0.675597	539.234	-20.6336	Imported Granular Fill	0	36	330.505	512.789	705.794	0	705.794	830.244	830.244
29	0.677407	432.538	-16.7426	Imported Granular Fill	0	36	282.642	438.527	603.581	0	603.581	688.607	688.607
30	0.542507	263.198	-6.7491	Imported Granular Fill	0	36	257.579	399.641	550.058	0	550.058	580.541	580.541
31	0.542507	186.087	-6.7491	Imported Granular Fill	0	36	182.114	282.555	388.903	0	388.903	410.455	410.455
32	0.540922	152.346	0.0179825	Imported Granular Fill	0	36	171.805	266.56	366.888	0	366.888	366.834	366.834
33	0.540922	141.585	0.0179825	Imported Granular Fill	0	36	159.668	247.73	340.971	0	340.971	340.921	340.921
34	0.443969	108.3	-0.579145	Imported Granular Fill	0	36	146.882	227.892	313.666	0	313.666	315.15	315.15
35	0.443969	101.317	-0.579145	Imported Granular Fill	0	36	137.411	213.198	293.442	0	293.442	294.831	294.831
36	0.443969	94.3345	-0.579145	Imported Granular Fill	0	36	127.941	198.505	273.219	0	273.219	274.512	274.512
37	0.443969	87.352	-0.579145	Imported Granular Fill	0	36	118.471	183.812	252.996	0	252.996	254.193	254.193
38	0.454929	82.0993	0.126697	Imported Granular Fill	0	36	110.349	171.21	235.652	0	235.652	235.408	235.408
39	0.454929	74.4363	0.126697	Imported Granular Fill	0	36	100.05	155.23	213.656	0	213.656	213.434	213.434
40	0.454929	66.7732	0.126697	Imported Granular Fill	0	36	89.7495	139.249	191.66	0	191.66	191.462	191.462
41	0.411463	53.8912	-0.381508	Imported Granular Fill	0	36	79.2031	122.886	169.138	0	169.138	169.665	169.665
42	0.411463	47.8178	-0.381508	Imported Granular Fill	0	36	70.2771	109.037	150.076	0	150.076	150.544	150.544
43	0.360522	36.7161	0.904447	Imported Granular Fill	0	36	63.3548	98.2968	135.294	0	135.294	134.294	134.294
44	0.360522	31.6741	0.904447	Imported Granular Fill	0	36	54.6547	84.7984	116.715	0	116.715	115.852	115.852
45	0.360524	26.5626	1.37679	Imported Granular Fill	0	36	46.3233	71.872	98.9234	0	98.9234	97.8101	97.8101
46	0.360524	21.3812	1.37679	Imported Granular Fill	0	36	37.2873	57.8524	79.6271	0	79.6271	78.7309	78.7309
47	0.360517	16.4414	-0.262941	Imported Granular Fill	0	36	27.6494	42.8989	59.0454	0	59.0454	59.1723	59.1723
48	0.360517	11.7438	-0.262941	Imported Granular Fill	0	36	19.7496	30.6421	42.1751	0	42.1751	42.2657	42.2657
49	0.360517	7.04631	-0.262941	Imported Granular Fill	0	36	11.8498	18.3853	25.3051	0	25.3051	25.3595	25.3595
50	0.360517	2.34877	-0.262941	Imported Granular Fill	0	36	3.96599	6.15335	8.46936	0	8.46936	8.48756	8.48756

**Interslice Data**

Global Minimum Query (spencer) - Safety Factor: 1.55153

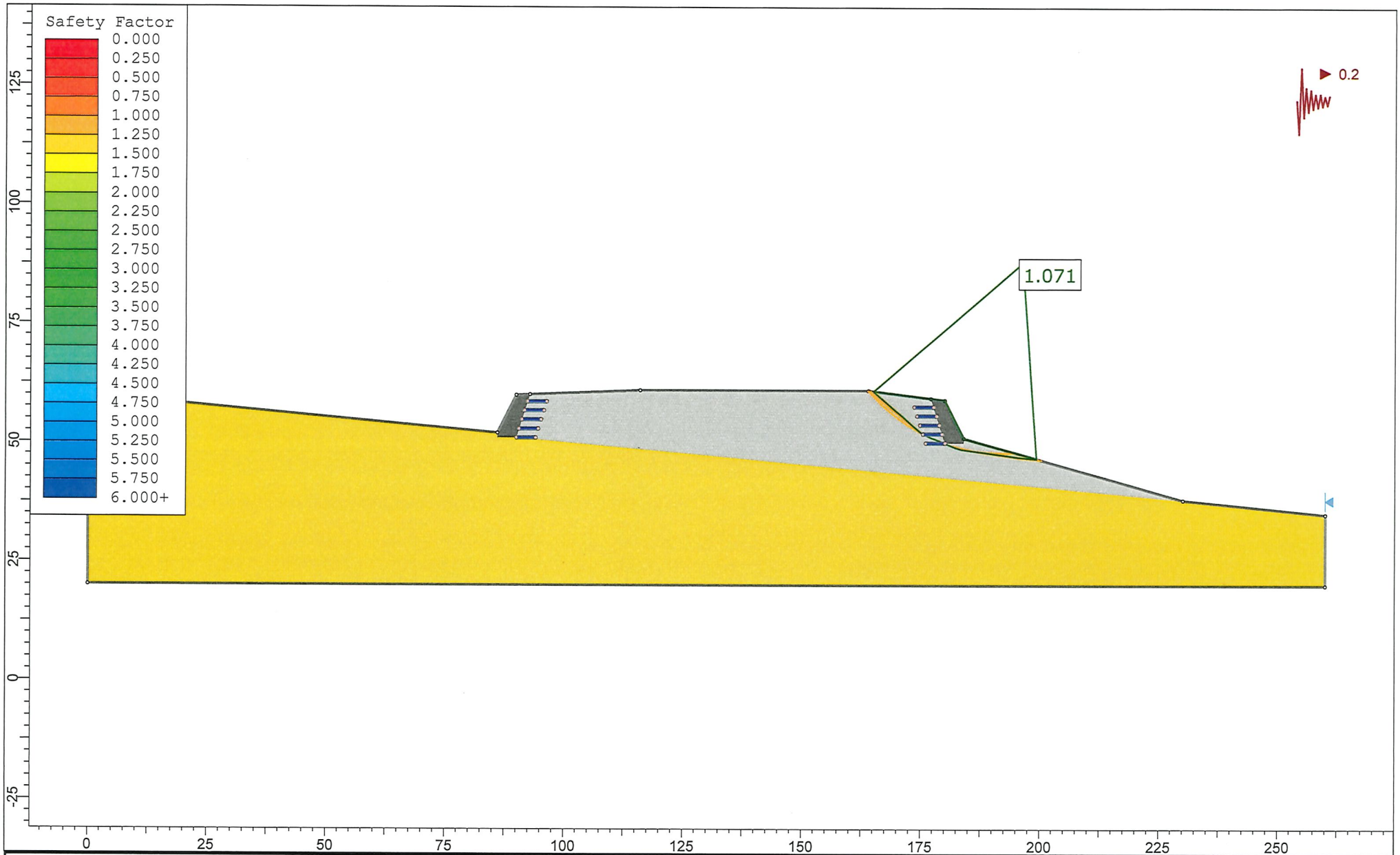
Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	167.33	60.5837	0	0	0
2	167.787	60.0719	4.76698	2.36236	26.3615
3	168.243	59.5658	18.8267	9.32987	26.3614
4	168.699	59.061	42.0959	20.8613	26.3615
5	169.155	58.5562	74.6036	36.9711	26.3615
6	169.568	58.0923	112.717	55.8588	26.3615
7	169.981	57.6284	158.666	78.6296	26.3615
8	170.449	57.1125	218.797	108.429	26.3616
9	170.916	56.5965	288.571	143.006	26.3615
10	171.554	55.9293	391.95	194.237	26.3614
11	172.086	55.3557	494.216	244.917	26.3615
12	172.682	54.7291	618.708	306.611	26.3615
13	173.128	54.2495	723.975	358.778	26.3615
14	173.574	53.77	837.507	415.041	26.3615
15	174.025	53.2972	956.897	474.206	26.3615
16	174.475	52.8244	1084.25	537.32	26.3616
17	174.895	52.3873	1208.89	599.084	26.3614
18	175.314	51.9501	1340.31	664.214	26.3615
19	175.951	51.6488	1342.12	665.108	26.3614
20	176.589	51.3651	1329.35	658.781	26.3615
21	177.226	51.0882	1310.07	649.23	26.3616
22	177.864	50.8113	1290.08	639.32	26.3615
23	178.497	50.5702	1233.85	611.455	26.3615
24	179.131	50.3291	1175.63	582.604	26.3615
25	179.765	50.0889	1114.38	552.247	26.3614
26	180.399	49.8487	1052.85	521.758	26.3615
27	181.033	49.5896	1017.19	504.086	26.3615
28	181.693	49.3067	996.446	493.806	26.3615
29	182.368	49.0523	952.706	472.13	26.3615
30	183.046	48.8485	884.24	438.2	26.3615
31	183.588	48.7843	779.816	386.451	26.3615
32	184.131	48.7201	705.986	349.863	26.3615
33	184.672	48.7203	612.991	303.778	26.3615
34	185.212	48.7204	526.564	260.948	26.3615
35	185.656	48.7159	462.761	229.329	26.3615
36	186.1	48.7115	403.071	199.749	26.3615
37	186.544	48.707	347.495	172.207	26.3615
38	186.988	48.7025	296.032	146.704	26.3615
39	187.443	48.7035	245.594	121.708	26.3614
40	187.898	48.7045	199.864	99.0459	26.3615
41	188.353	48.7055	158.841	78.7164	26.3615
42	188.765	48.7028	126.715	62.796	26.3616
43	189.176	48.7	98.2101	48.6697	26.3615
44	189.537	48.7057	74.5992	36.9689	26.3615
45	189.897	48.7114	54.2307	26.8749	26.3615
46	190.258	48.7201	36.6728	18.1738	26.3615
47	190.618	48.7287	22.5398	11.17	26.3615
48	190.979	48.7271	12.6694	6.27853	26.3615
49	191.339	48.7254	5.61909	2.78463	26.3615
50	191.7	48.7238	1.3889	0.688294	26.3615
51	192.06	48.7221	0	0	0


**Entity Information**

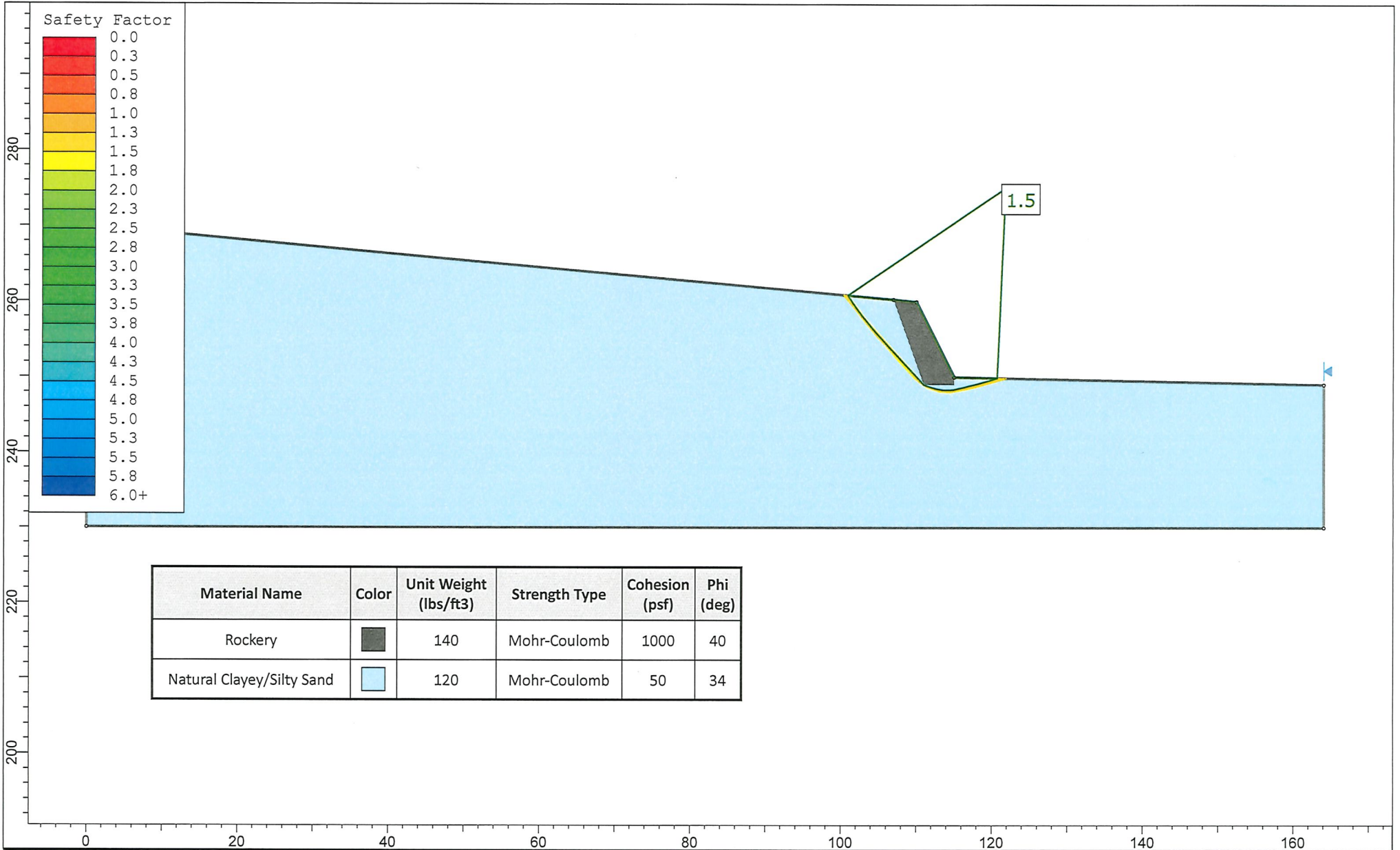
Group: Group 1 


Shared Entities

Type	Coordinates	
	X	Y
External Boundary	0	60
	0	20
	260	20
	260	35
	230	38
	184	51
	180	59
	177.064	59.367
	164	61
	116	61
	92.8536	60.1098
	90	60
	86	52
Material Boundary	86	52
	86	51
	90	51
	92.8536	60.1098
Material Boundary	177.064	59.367
	180	50
	184	50
	184	51
Material Boundary	90	51
	230	38



	<i>Project</i> 1200541 Crimson Ridge		
	<i>Analysis Description</i> Profile D_D'		
	<i>Drawn By</i> CJB	<i>Scale</i> 1:334	<i>Company</i> AGECE
	<i>Date</i>	<i>File Name</i> Profile D-D' seismic.slmd	



	<i>Project</i> 1200541 Crimson Ridge				
	<i>Analysis Description</i> Profile E-E'				
	<i>Drawn By</i> CJB		<i>Scale</i> 1:211		<i>Company</i> AGECE
	<i>Date</i>			<i>File Name</i> Profile E-E'.slmd	



## Slide Analysis Information

### Profile E-E'

#### Project Summary

---

File Name: Profile E-E'.slmd  
 Slide Modeler Version: 8.011  
 Compute Time: 00h:00m:05.622s  
 Project Title: 1200541 Crimson Ridge  
 Analysis: Profile E-E'  
 Author: CJB  
 Company: AGECE

#### General Settings

---

Units of Measurement: Imperial Units  
 Time Units: days  
 Permeability Units: feet/second  
 Data Output: Standard  
 Failure Direction: Left to Right

#### Analysis Options

---

Slices Type: Vertical

##### Analysis Methods Used

Spencer

Number of slices: 50  
 Tolerance: 0.005  
 Maximum number of iterations: 75  
 Check  $m\alpha < 0.2$ : Yes  
 Create Interslice boundaries at intersections with water tables and piezos: Yes  
 Initial trial value of FS: 1  
 Steffensen Iteration: Yes

#### Groundwater Analysis

---

Groundwater Method: Water Surfaces  
 Pore Fluid Unit Weight [lbs/ft<sup>3</sup>]: 62.4  
 Use negative pore pressure cutoff: Yes  
 Maximum negative pore pressure [psf]: 0  
 Advanced Groundwater Method: None

#### Random Numbers

---

Pseudo-random Seed: 10116  
 Random Number Generation Method: Park and Miller v.3



## Surface Options

Search Method: Auto Refine Search  
 Divisions along slope: 20  
 Circles per division: 10  
 Number of iterations: 10  
 Divisions to use in next iteration: 50%  
 Number of vertices per surface: 12  
 Minimum Elevation: Not Defined  
 Minimum Depth: Not Defined  
 Minimum Area: Not Defined  
 Minimum Weight: Not Defined

## Seismic Loading

Advanced seismic analysis: No  
 Staged pseudostatic analysis: No

## Materials

Property	Rockery	Natural Clayey/Silty Sand
Color		
Strength Type	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft <sup>3</sup> ]	140	120
Cohesion [psf]	1000	50
Friction Angle [°]	40	34
Water Surface	None	None
Ru Value	0	0

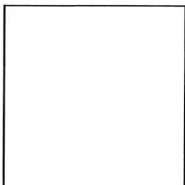
## Global Minimums

### Method: spencer

FS **1.466330**  
 Axis Location: 121.768, 275.152  
 Left Slip Surface Endpoint: 100.916, 260.840  
 Right Slip Surface Endpoint: 120.706, 249.884  
 Resisting Moment: 219346 lb-ft  
 Driving Moment: 149588 lb-ft  
 Resisting Horizontal Force: 6738.88 lb  
 Driving Horizontal Force: 4595.74 lb  
 Total Slice Area: 84.9116 ft<sup>2</sup>  
 Surface Horizontal Width: 19.7904 ft  
 Surface Average Height: 4.29054 ft

## Global Minimum Coordinates

### Method: spencer



X	Y
100.916	260.84
101.461	259.98
101.796	259.49
102.131	259.018
102.467	258.546
102.802	258.121
103.377	257.403
103.924	256.72
104.561	255.979
105.197	255.244
105.741	254.632
106.375	253.95
107.107	253.163
107.839	252.375
108.571	251.588
109.302	250.801
110.152	249.894
111.002	249.001
111.834	248.663
112.666	248.429
113.425	248.294
114.226	248.249
114.931	248.319
115.636	248.489
116.308	248.657
116.916	248.811
117.562	248.976
118.209	249.14
119.041	249.374
119.874	249.619
120.706	249.884

## Valid/Invalid Surfaces

### Method: spencer

Number of Valid Surfaces: 8620

Number of Invalid Surfaces: 10391

#### Error Codes:

Error Code -105 reported for 5327 surfaces

Error Code -106 reported for 4249 surfaces

Error Code -108 reported for 637 surfaces

Error Code -111 reported for 27 surfaces

Error Code -123 reported for 141 surfaces

Error Code -1000 reported for 10 surfaces

#### Error Codes

The following errors were encountered during the computation:

-105 = More than two surface / slope intersections with no valid slip surface.

-106 = Average slice width is less than  $0.0001 * (\text{maximum horizontal extent of soil region})$ . This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.

-108 = Total driving moment or total driving force  $< 0.1$ . This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).

-111 = safety factor equation did not converge

-123 = Surface radius equal or less than the internal cutoff of 0.01.

-1000 = No valid slip surface is generated

## Slice Data

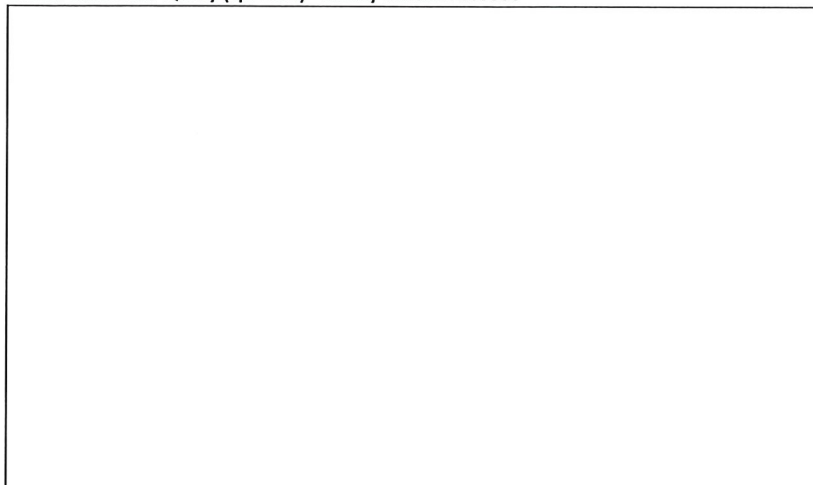
Global Minimum Query (spencer) - Safety Factor: 1.46633

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.544825	26.4909	-57.64	Natural Clayey/Silty Sand	50	34	36.4036	53.3798	5.0107	0	5.0107	62.4623	62.4623
2	0.335318	41.8548	-55.6168	Natural Clayey/Silty Sand	50	34	53.6083	78.6075	42.4123	0	42.4123	120.755	120.755
3	0.335318	59.9909	-54.625	Natural Clayey/Silty Sand	50	34	66.2649	97.1662	69.9268	0	69.9268	163.257	163.257
4	0.335325	77.7715	-54.625	Natural Clayey/Silty Sand	50	34	77.8321	114.127	95.073	0	95.073	204.695	204.695
5	0.335325	94.601	-51.7307	Natural Clayey/Silty Sand	50	34	93.586	137.228	129.321	0	129.321	247.952	247.952
6	0.574948	198.78	-51.3083	Natural Clayey/Silty Sand	50	34	109.237	160.177	163.344	0	163.344	299.735	299.735
7	0.54725	231.866	-51.3083	Natural Clayey/Silty Sand	50	34	127.558	187.042	203.172	0	203.172	362.438	362.438
8	0.318129	153.399	-49.3282	Natural Clayey/Silty Sand	50	34	146.595	214.956	244.558	0	244.558	415.16	415.16
9	0.318129	166.43	-49.3282	Natural Clayey/Silty Sand	50	34	156.633	229.675	266.38	0	266.38	448.663	448.663
10	0.31811	179.403	-49.1379	Natural Clayey/Silty Sand	50	34	167.221	245.201	289.397	0	289.397	482.701	482.701
11	0.31811	192.338	-49.1379	Natural Clayey/Silty Sand	50	34	177.225	259.87	311.144	0	311.144	516.012	516.012
12	0.543766	358.168	-48.3501	Natural Clayey/Silty Sand	50	34	193.335	283.493	346.168	0	346.168	563.545	563.545
13	0.317065	225.477	-47.0897	Natural Clayey/Silty Sand	50	34	211.293	309.825	385.207	0	385.207	612.503	612.503
14	0.317065	237.36	-47.0897	Natural Clayey/Silty Sand	50	34	220.903	323.916	406.096	0	406.096	643.73	643.73
15	0.365978	288.75	-47.0897	Natural Clayey/Silty Sand	50	34	231.254	339.094	428.6	0	428.6	677.369	677.369
16	0.365978	305.194	-47.0897	Natural Clayey/Silty Sand	50	34	242.775	355.988	453.646	0	453.646	714.809	714.809
17	0.365966	326.929	-47.0897	Natural Clayey/Silty Sand	50	34	258.011	378.33	486.768	0	486.768	764.321	764.321
18	0.365966	349.897	-47.0897	Natural Clayey/Silty Sand	50	34	274.105	401.928	521.755	0	521.755	816.62	816.62
19	0.365972	372.872	-47.0897	Natural Clayey/Silty Sand	50	34	290.199	425.527	556.741	0	556.741	868.919	868.919
20	0.365972	395.842	-47.0897	Natural Clayey/Silty Sand	50	34	306.292	449.125	591.727	0	591.727	921.218	921.218
21	0.365978	418.818	-47.0897	Natural Clayey/Silty Sand	50	34	322.386	472.724	626.715	0	626.715	973.518	973.518
22	0.365978	441.788	-47.0897	Natural Clayey/Silty Sand	50	34	338.48	496.324	661.702	0	661.702	1025.82	1025.82
23	0.424815	541.522	-46.8499	Natural Clayey/Silty Sand	50	34	357.42	524.095	702.874	0	702.874	1084.15	1084.15
24	0.424815	569.193	-46.8499	Natural Clayey/Silty Sand	50	34	374.202	548.703	739.358	0	739.358	1138.54	1138.54
25	0.849449	1105.26	-46.4371	Natural Clayey/Silty Sand	50	34	367.058	538.228	723.829	0	723.829	1109.78	1109.78
26	0.416063	503.985	-22.0787	Natural Clayey/Silty Sand	50	34	515.456	755.828	1046.43	0	1046.43	1255.52	1255.52
27	0.416063	463.941	-22.0787	Natural Clayey/Silty Sand	50	34	477.295	699.872	963.476	0	963.476	1157.08	1157.08
28	0.416045	422.591	-15.7229	Natural Clayey/Silty Sand	50	34	485.222	711.495	980.708	0	980.708	1117.31	1117.31
29	0.416045	379.972	-15.7229	Natural Clayey/Silty Sand	50	34	440.035	645.237	882.475	0	882.475	1006.35	1006.35

				Silty Sand									
30	0.379434	308.481	-10.0786	Natural Clayey/ Silty Sand	50	34	435.094	637.991	871.732	0	871.732	949.066	949.066
31	0.379434	271.24	-10.0786	Natural Clayey/ Silty Sand	50	34	387.302	567.912	767.835	0	767.835	836.675	836.675
32	0.400533	244.757	-3.27499	Natural Clayey/ Silty Sand	50	34	380.573	558.045	753.208	0	753.208	774.985	774.985
33	0.400533	200.94	-3.27499	Natural Clayey/ Silty Sand	50	34	319.993	469.216	621.514	0	621.514	639.825	639.825
34	0.352472	139.407	5.73629	Natural Clayey/ Silty Sand	50	34	314.514	461.182	609.602	0	609.602	578.008	578.008
35	0.352472	103.123	5.73629	Natural Clayey/ Silty Sand	50	34	245.04	359.31	458.571	0	458.571	433.956	433.956
36	0.352474	71.2595	13.5041	Natural Clayey/ Silty Sand	50	34	224.066	328.555	412.976	0	412.976	359.165	359.165
37	0.352474	65.3205	13.5041	Natural Clayey/ Silty Sand	50	34	209.96	307.871	382.311	0	382.311	331.887	331.887
38	0.335985	58.5804	14.0476	Natural Clayey/ Silty Sand	50	34	204.007	299.142	369.369	0	369.369	318.324	318.324
39	0.335985	54.9145	14.0476	Natural Clayey/ Silty Sand	50	34	194.713	285.513	349.163	0	349.163	300.444	300.444
40	0.304076	46.5168	14.2636	Natural Clayey/ Silty Sand	50	34	186.987	274.184	332.365	0	332.365	284.829	284.829
41	0.304076	43.4697	14.2636	Natural Clayey/ Silty Sand	50	34	178.39	261.578	313.677	0	313.677	268.326	268.326
42	0.323272	42.872	14.2636	Natural Clayey/ Silty Sand	50	34	169.521	248.573	294.397	0	294.397	251.302	251.302
43	0.323272	39.428	14.2636	Natural Clayey/ Silty Sand	50	34	160.381	235.171	274.528	0	274.528	233.756	233.756
44	0.32327	35.9839	14.2636	Natural Clayey/ Silty Sand	50	34	151.241	221.769	254.658	0	254.658	216.21	216.21
45	0.32327	32.5399	14.2636	Natural Clayey/ Silty Sand	50	34	142.101	208.367	234.789	0	234.789	198.664	198.664
46	0.416272	36.5551	15.6707	Natural Clayey/ Silty Sand	50	34	136.609	200.314	222.85	0	222.85	184.526	184.526
47	0.416272	30.2973	15.6707	Natural Clayey/ Silty Sand	50	34	123.085	180.483	193.448	0	193.448	158.919	158.919
48	0.416275	23.8861	16.452	Natural Clayey/ Silty Sand	50	34	111.802	163.939	168.922	0	168.922	135.907	135.907
49	0.416275	17.3212	16.452	Natural Clayey/ Silty Sand	50	34	97.2159	142.551	137.212	0	137.212	108.504	108.504
50	0.832544	14.0386	17.5969	Natural Clayey/ Silty Sand	50	34	76.7974	112.61	92.8238	0	92.8238	68.4668	68.4668

**Interslice Data**

Global Minimum Query (spencer) - Safety Factor: 1.46633



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	100.916	260.84	0	0	0
2	101.461	259.98	-15.5253	-7.54038	25.9051
3	101.796	259.49	-12.7179	-6.17689	25.9051
4	102.131	259.018	-1.91314	-0.929181	25.9051
5	102.467	258.546	16.8893	8.20284	25.905
6	102.802	258.121	40.477	19.659	25.9051
7	103.377	257.403	94.9309	46.1064	25.9051
8	103.924	256.72	163.949	79.6275	25.9051
9	104.242	256.349	207.855	100.952	25.9051
10	104.561	255.979	256.647	124.649	25.905
11	104.879	255.611	309.871	150.5	25.9052
12	105.197	255.244	367.911	178.688	25.905
13	105.741	254.632	474.423	230.42	25.9051
14	106.058	254.291	538.815	261.694	25.9051
15	106.375	253.95	607.286	294.949	25.9051
16	106.741	253.556	691.391	335.797	25.9051
17	107.107	253.163	781.139	379.387	25.9051
18	107.473	252.769	878.349	426.6	25.9051
19	107.839	252.375	983.442	477.642	25.9051
20	108.205	251.982	1096.42	532.514	25.9051
21	108.571	251.588	1217.28	591.215	25.9052
22	108.937	251.194	1346.03	653.747	25.9052
23	109.302	250.801	1482.67	720.107	25.905
24	109.727	250.347	1649.35	801.064	25.9051
25	110.152	249.894	1825.44	886.589	25.9052
26	111.002	249.001	2160.15	1049.15	25.9051
27	111.418	248.832	2122.29	1030.76	25.9051
28	111.834	248.663	2086.3	1013.28	25.905
29	112.25	248.546	1999.29	971.024	25.9051
30	112.666	248.429	1919.58	932.307	25.905
31	113.045	248.362	1813.28	880.679	25.9051
32	113.425	248.294	1718.1	834.456	25.9052
33	113.825	248.271	1582.94	768.806	25.905
34	114.226	248.249	1469.01	713.476	25.9051
35	114.578	248.284	1336.57	649.151	25.9051
36	114.931	248.319	1233.96	599.316	25.9052
37	115.283	248.404	1120.03	543.98	25.9051
38	115.636	248.489	1013.66	492.319	25.9051
39	115.972	248.573	914.065	443.947	25.9051
40	116.308	248.657	819.292	397.917	25.9051
41	116.612	248.734	736.741	357.823	25.9051
42	116.916	248.811	658.249	319.701	25.9051
43	117.239	248.894	579.253	281.334	25.9051
44	117.562	248.976	504.845	245.195	25.9051
45	117.886	249.058	435.025	211.285	25.9051
46	118.209	249.14	369.793	179.602	25.905
47	118.625	249.257	286.902	139.344	25.9052
48	119.041	249.374	213.074	103.487	25.9052
49	119.458	249.497	145.769	70.7975	25.905
50	119.874	249.619	88.4329	42.9505	25.9051
51	120.706	249.884	0	0	0

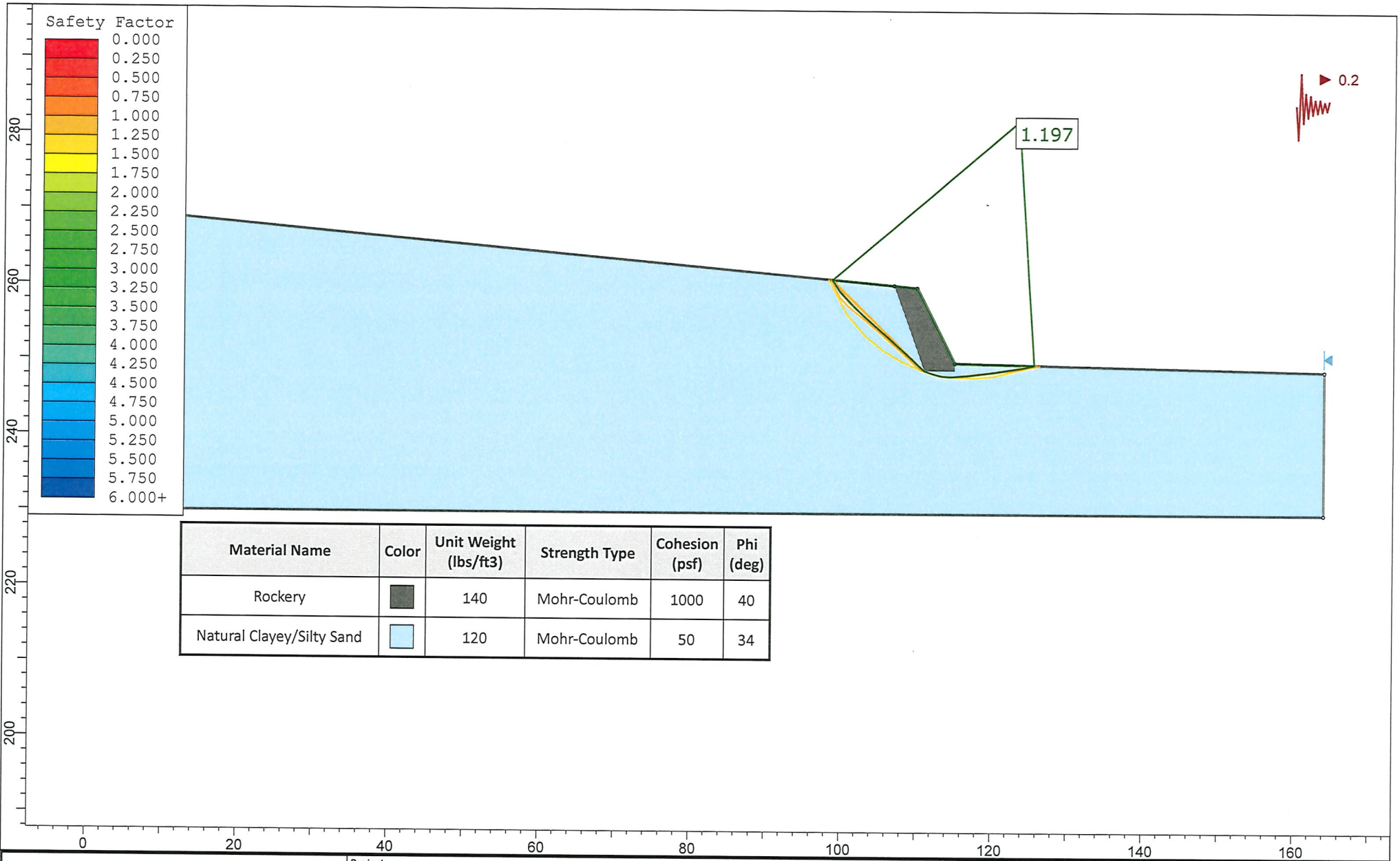
**Entity Information**

Group: Group 1 


Shared Entities



Type	Coordinates	
	X	Y
External Boundary	0	270
	0	230
	164	230
	164	249
	115	250
	110	260
	106.955	260.292
Material Boundary	106.955	260.292
	111	249
	115	249
	115	250



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Rockery	■	140	Mohr-Coulomb	1000	40
Natural Clayey/Silty Sand	■	120	Mohr-Coulomb	50	34

	Project				
	1200541 Crimson Ridge				
	Analysis Description				
	Profile E-E'				
Drawn By		Scale		Company	
CJB		1:211		AGEC	
Date			File Name		
			Profile E-E' seismic.slmd		