

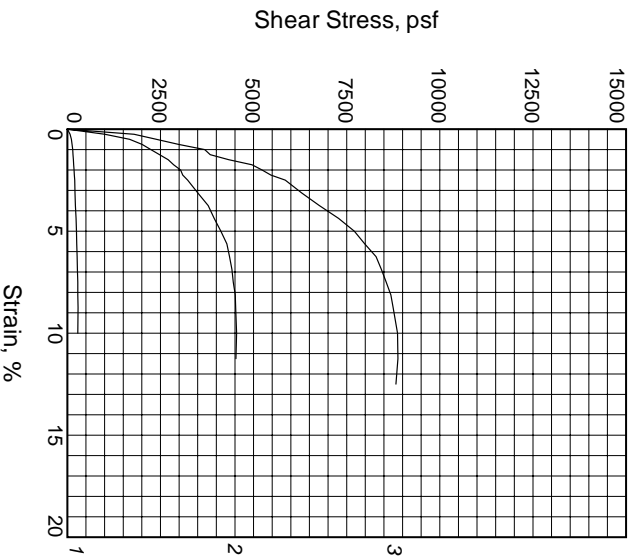
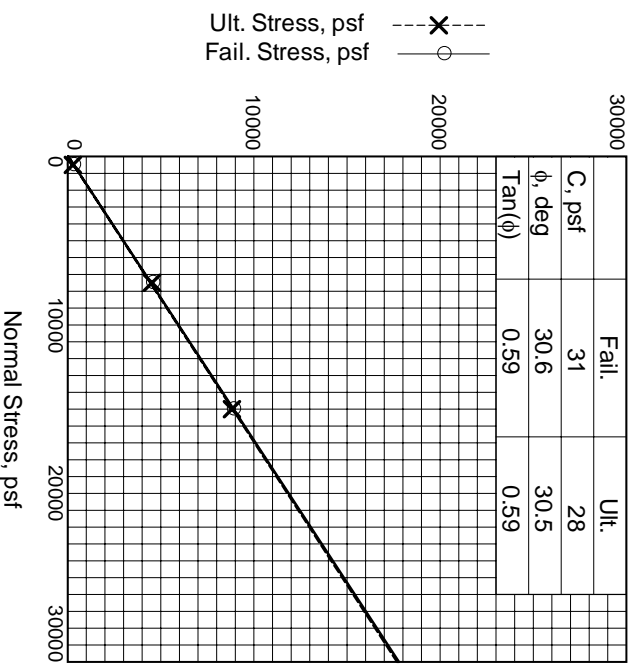
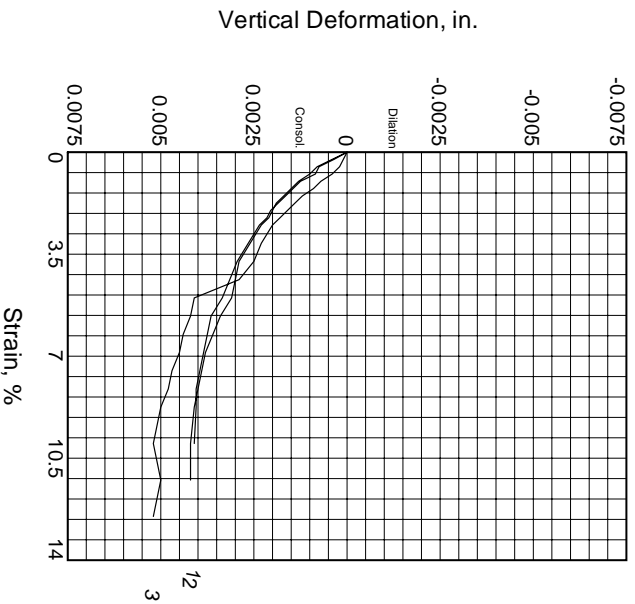
Sample No.	1	2	3	
Initial	Water Content, %	23.8	24.3	24.5
	Dry Density, pcf	90.8	92.3	92.1
	Saturation, %	74.4	78.6	79.0
	Void Ratio	0.8707	0.8405	0.8437
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	0.98	0.98
At Test	Water Content, %	27.9	28.3	27.3
	Dry Density, pcf	91.0	93.4	93.6
	Saturation, %	87.4	94.1	91.5
	Void Ratio	0.8670	0.8187	0.8132
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	0.97	0.96
Normal Stress, psf	500	5000	10000	
Fail. Stress, psf	293	1496	3256	
Strain, %	1.6	2.8	5.0	
Ult. Stress, psf	176	1261	2787	
Strain, %	6.0	18.0	12.0	
Strain rate, in./min.	0.003	0.003	0.003	

Sample Type: ASTM D3080
Description: Light Olive Brown lean clay
LL= 47 PL= 25 PI= 22
Assumed Specific Gravity= 2.72
Remarks: Recompacted sample. Tested with water in box.

Client: Civil Environmental Consultants, Inc.
Project: Dunn Landfill 151-336 SA
Location: Sample #1 Brown Clay SW Slope Cell 1
Proj. No.: 848 **Date Sampled:** 5-6-15

DIRECT SHEAR TEST REPORT
 RSA Geolab
 Union, New Jersey

Figure _____



Sample No.	1	2	3
Water Content, %	11.3	11.2	11.3
Dry Density, pcf	116.7	116.9	116.8
Saturation, %	64.7	64.1	64.5
Void Ratio	0.4872	0.4851	0.4863
Side Length, in.	4.00	4.00	4.00
Height, in.	1.00	1.00	1.00
Water Content, %	17.1	15.1	15.7
Dry Density, pcf	117.2	118.0	118.1
Saturation, %	98.7	89.4	92.8
Void Ratio	0.4810	0.4707	0.4700
Side Length, in.	4.00	4.00	4.00
Height, in.	1.00	0.99	0.99
Normal Stress, psf	500	7500	15000
Fail. Stress, psf	288	4545	8874
Strain, %	8.8	10.0	11.3
Ult. Stress, psf	279	4527	8820
Strain, %	10.0	11.3	12.5
Strain rate, in./min.	0.008	0.008	0.008

Sample Type: ASTM D3080

Description: Grayish Brown poorly graded sand with silt

LL= NV

PI= NP

Assumed Specific Gravity= 2.78

Remarks: Recompacted sample (92% MDD, +2% OMC of ASTM D1557). Tested with water in box. Consolidate/Saturate 1 hr.

Figure _____

Client: Civil Environmental Consultants, Inc.

Project: Dunn C & D Facility - Phase 6C

Sample Number: Subgrade-1

Proj. No.: 848

Date Sampled: 9-1-20

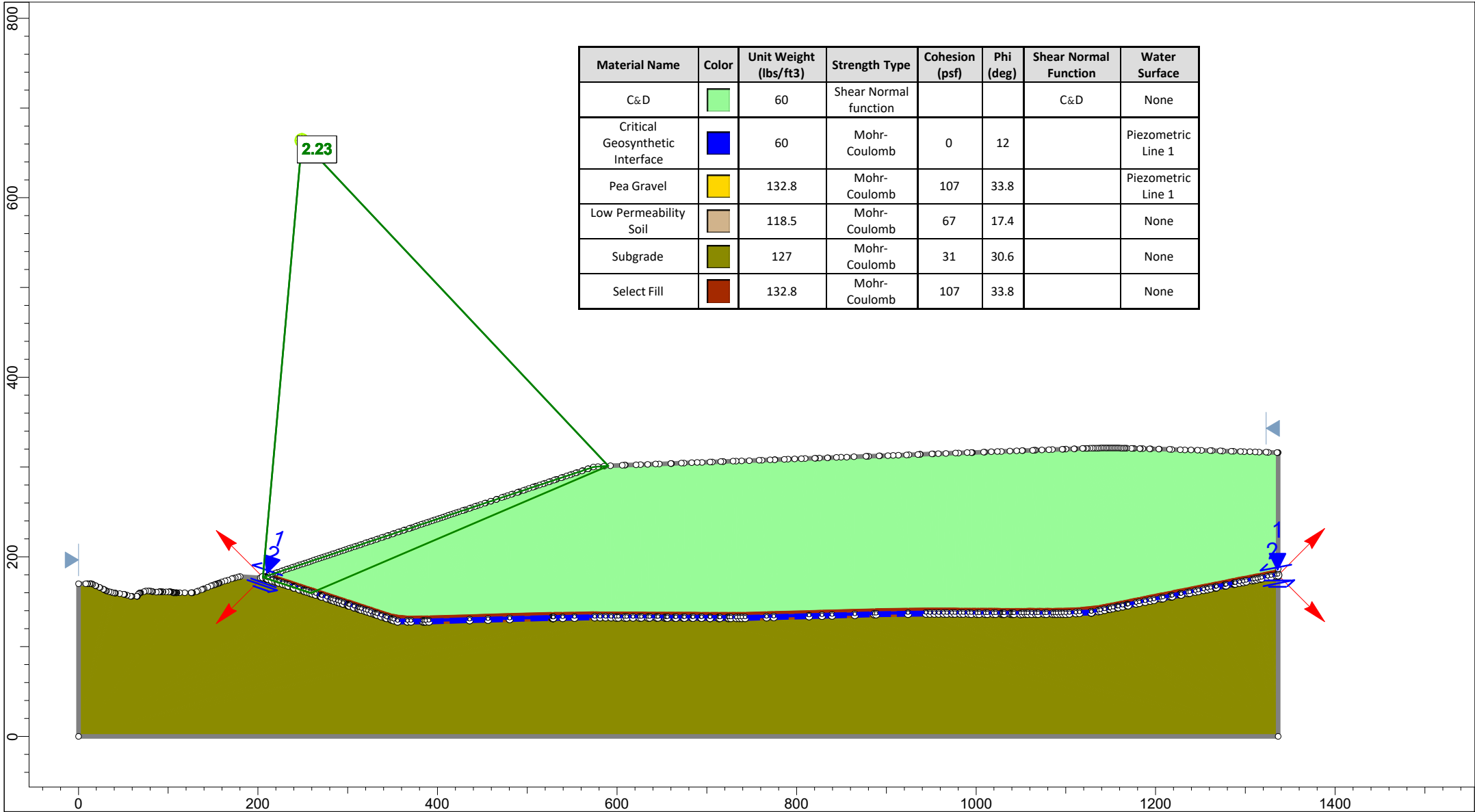
DIRECT SHEAR TEST REPORT

RSA Geolab
Union, New Jersey

Tested By: M/IED

Checked By: KP

**“FAILURE ALONG THE LINER SYSTEM” ANALYSIS RESULTS
SLIDE OUTPUT**



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
C&D	Green	60	Shear Normal function			C&D	None
Critical Geosynthetic Interface	Blue	60	Mohr-Coulomb	0	12		Piezometric Line 1
Pea Gravel	Yellow	132.8	Mohr-Coulomb	107	33.8		Piezometric Line 1
Low Permeability Soil	Tan	118.5	Mohr-Coulomb	67	17.4		None
Subgrade	Olive	127	Mohr-Coulomb	31	30.6		None
Select Fill	Red	132.8	Mohr-Coulomb	107	33.8		None



Project		1511877 S.A. Dunn Application	
Project: 182-442 S.A. Dunn Permit Renewal/Modification		1511877 S.A. Dunn Application	
Group	Analysis Description	Scenario	Section A - Liner System Failure - Static.slim
Drawn By	Created By: ZLM	Checked By: TDM	Company: Civil & Environmental Consultants, Inc.
Date	Created Date: 1/6/2022 12/10/2015 12:09:38 PM	Checked Date: 1/9/2022	File Name: Civil & Environmental Consultants, Inc. Section A - Liner System Failure - Static.slim

Slide Analysis Information

151-877 S.A. Dunn C&D Landfill

Project Summary

Slide Modeler Version:	9.02
Compute Time:	00h:00m:07.778s
Author:	DVS
Company:	Civil & Environmental Consultants, Inc.
Date Created:	12/10/2015, 12:09:38 PM

General Settings

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

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	GLE/Morgenstern-Price with interslice force function (Half Sine)
Number of slices:	25
Tolerance:	0.005
Maximum number of iterations:	50
Check malpha < 0.2:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft ³]:	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


Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [deg]:	135
Left Projection Angle (End Angle) [deg]:	225
Right Projection Angle (Start Angle) [deg]:	45
Right Projection Angle (End Angle) [deg]:	-45
Minimum Elevation:	Not Defined
Minimum Depth [ft]:	10
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Materials

C&D

Color	
Strength Type	Shear Normal function
Unit Weight [lbs/ft ³]	60
Water Surface	None
Ru Value	0

Pea Gravel

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	Piezometric Line 1
Hu Value	1


Low Permeability Soil

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	118.5
Cohesion [psf]	67
Friction Angle [deg]	17.4
Water Surface	None
Ru Value	0

Subgrade

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	127
Cohesion [psf]	31
Friction Angle [deg]	30.6
Water Surface	None
Ru Value	0

Select Fill

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	None
Ru Value	0

Shear Normal Functions

Name: C&D	
Effective Normal (psf)	Shear (psf)
0	0
2000	1400
10000	6169

Global Minimums

Method: gle/morgenstern-price

FS	2.232740
Axis Location:	248.948, 663.787
Left Slip Surface Endpoint:	205.613, 177.382
Right Slip Surface Endpoint:	590.273, 301.245
Resisting Moment:	1.31324e+08 lb-ft
Driving Moment:	5.88172e+07 lb-ft
Resisting Horizontal Force:	258557 lb
Driving Horizontal Force:	115802 lb
Total Slice Area:	7504.33 ft ²
Surface Horizontal Width:	384.66 ft
Surface Average Height:	19.509 ft

Global Minimum Coordinates**Method: gle/morgenstern-price**

X	Y
205.613	177.382
209.644	175.98
209.889	175.899
211.024	175.525
215.647	174
219.457	172.752
221.753	172
223.198	171.524
227.818	170
231.167	168.903
233.014	168.298
233.924	168
239.731	166.085
239.989	166
246.075	164
250.846	162.432
252.16	162
254.731	161.155
258.246	160
259.228	159.677
590.273	301.245

Global Minimum Support Data

No Supports Present

Slice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.23274

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	4.03156	707.296	-19.1755	Critical Geosynthetic Interface	0	12	11.2445	25.1061	180.502	62.3875	118.115	176.592	114.204
2	0.244676	89.5922	-18.2502	Critical Geosynthetic Interface	0	12	30.2225	67.4789	379.851	62.3875	317.463	369.885	307.497
3	1.135	484.546	-18.2501	Critical Geosynthetic Interface	0	12	36.33	81.1155	444.006	62.3875	381.619	432.026	369.639
4	4.6233	3146.26	-18.2501	Critical Geosynthetic Interface	0	12	62.0914	138.634	714.608	62.3875	652.221	694.133	631.746
5	3.80952	3745.51	-18.1362	Critical Geosynthetic Interface	0	12	93.4892	208.737	1044.42	62.3875	982.029	1013.79	951.407
6	2.29643	2540.04	-18.1362	Critical Geosynthetic Interface	0	12	106.927	238.741	1185.57	62.3875	1123.19	1150.55	1088.16
7	1.44433	1704.71	-18.2501	Critical Geosynthetic Interface	0	12	115.198	257.208	1272.45	62.3875	1210.07	1234.47	1172.08
8	4.62081	6010.87	-18.2501	Critical Geosynthetic Interface	0	12	128.761	287.489	1414.92	62.3875	1352.53	1372.46	1310.07
9	3.34887	4886.43	-18.1367	Critical Geosynthetic Interface	0	12	146.78	327.722	1604.2	62.3875	1541.81	1556.12	1493.73
10	1.84666	2884.76	-18.1367	Critical Geosynthetic Interface	0	12	158.729	354.401	1729.71	62.3875	1667.32	1677.72	1615.33
11	0.910228	1471.66	-18.1367	Critical Geosynthetic Interface	0	12	165.131	368.695	1796.96	62.3875	1734.58	1742.87	1680.49
12	5.80643	10163.3	-18.2501	Critical Geosynthetic Interface	0	12	181.078	404.3	1964.47	62.3875	1902.08	1904.76	1842.37
13	0.258707	484.041	-18.2501	Critical Geosynthetic Interface	0	12	195.568	436.652	2116.67	62.3875	2054.29	2052.18	1989.8
14	6.08554	12152.8	-18.193	Critical Geosynthetic Interface	0	12	210.921	470.931	2277.93	62.3875	2215.55	2208.62	2146.23
15	4.77149	10557.4	-18.1934	Critical Geosynthetic Interface	0	12	237.718	530.763	2559.44	62.3875	2497.05	2481.31	2418.93
16	1.31391	3065.94	-18.1934	Critical Geosynthetic Interface	0	12	253	564.884	2719.96	62.3875	2657.57	2636.81	2574.42
17	2.57085	6197.3	-18.1926	Critical Geosynthetic Interface	0	12	262.87	586.921	2823.64	62.3875	2761.25	2737.25	2674.86
18	3.51483	8897.64	-18.1926	Critical Geosynthetic Interface	0	12	278.487	621.788	2987.67	62.3875	2925.28	2896.15	2833.76
19	0.981947	2573.45	-18.1937	Critical Geosynthetic Interface	0	12	290.133	647.791	3110.01	62.3875	3047.62	3014.65	2952.26
20	2.64445	6769.73	23.1535	Pea Gravel	107	33.8	744.775	1662.89	2324.17	0	2324.17	2642.66	2642.66
21	6.61127	15067	23.1535	Select Fill	107	33.8	669.317	1494.41	2072.49	0	2072.49	2358.72	2358.72
22	80.4473	148877	23.1535	C&D	0	34.992	514.69	1149.17	1641.67	0	1641.67	1861.77	1861.77
23	80.4473	112249	23.1535	C&D	1.13687e-13	34.992	370.329	826.849	1181.22	0	1181.22	1339.58	1339.58
24	80.4473	75619	23.1535	C&D	0	34.992	246.437	550.23	786.044	0	786.044	891.43	891.43
25	80.4473	36902.1	23.1535	C&D	5.68434e-14	34.992	123.241	275.166	393.094	0	393.094	445.797	445.797

Interslice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.23274

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	205.613	177.382	0	0	0
2	209.644	175.98	298.408	4.64061	0.890948
3	209.889	175.899	336.452	5.54966	0.944988
4	211.024	175.525	543.874	11.3507	1.19559
5	215.647	174	1920.46	74.2655	2.21456
6	219.457	172.752	3579.92	190.801	3.05084
7	221.753	172	4717.31	292.902	3.55298
8	223.198	171.524	5489.77	371.166	3.86791
9	227.818	170	8240.83	702.136	4.86996
10	231.167	168.903	10492.2	1026.95	5.59016
11	233.014	168.298	11831.7	1240.38	5.98476
12	233.924	168	12517.8	1355.14	6.17861
13	239.731	166.085	17330.8	2251.83	7.4031
14	239.989	166	17562	2298.72	7.45715
15	246.075	164	23401.7	3587.01	8.71447
16	250.846	162.432	28549.9	4869.81	9.67989
17	252.16	162	30057	5268.65	9.94229
18	254.731	161.155	33118.6	6109.05	10.4513
19	258.246	160	37548.7	7392.07	11.1372
20	259.228	159.677	38837.4	7779.26	11.3266
21	261.872	160.808	38179	7998.35	11.8321
22	268.484	163.635	36745.6	8526.49	13.0638
23	348.931	198.038	21683.1	9433.09	23.5111
24	429.378	232.44	10845.3	4955.24	24.5558
25	509.826	266.843	3633.19	1048.24	16.0938
26	590.273	301.245	0	0	0

Discharge Sections

Entity Information

Piezoline

X	Y
207.158	177.844
209.644	176.98
209.656	176.976
209.673	176.97
209.701	176.961
209.754	176.943
209.889	176.899
211.024	176.525
215.647	175
219.457	173.752
221.753	173
223.198	172.524
227.818	171
231.167	169.903
233.924	169
239.731	167.085

239.989	167
240.158	166.945
246.075	165
250.846	163.432
252.16	163
254.731	162.155
258.246	161
260.564	160.238
264.331	159
269.78	157.209
270.417	157
270.828	156.865
276.502	155
281.239	153.443
282.588	153
284.878	152.247
288.673	151
288.694	150.994
291.145	150.188
294.759	149
294.789	148.99
294.817	148.991
300.025	147.273
300.849	147
300.936	147
301.55	146.798
306.97	145
307.021	145
311.682	143.462
313.072	143
313.082	143
315.185	142.306
319.144	141
321.59	140.197
325.229	139
329.426	137.608
331.256	137
332.629	136.549
337.335	135
341.828	133.529
343.443	133
348.164	131.439
349.492	131
351.137	130.45
355.479	129
366.611	128.944
370.513	128.931
383.965	128.994
385.43	129
387.113	129.048
390.516	129.144
435.781	130.424
456.235	131

480.527	131.667
527.675	132.968
528.433	132.989
528.846	133
528.936	133
528.97	133
529.059	133.001
539.5	133.043
552.72	133.294
575.143	133.619
581.119	133.601
587.25	133.583
593.541	133.565
599.129	133.534
601.589	133.521
608.463	133.488
610.709	133.476
617.792	133.441
625.205	133.405
627.114	133.395
634.744	133.358
636.43	133.349
644.276	133.311
645.74	133.303
653.801	133.264
655.043	133.257
656.126	133.253
664.642	133.216
665.551	133.212
674.288	133.174
675.074	133.171
684.022	133.132
684.619	133.13
693.779	133.09
694.187	133.088
703.562	133.048
703.773	133.047
713.368	133.005
713.392	133.005
714.64	133
723.812	132.994
724.625	132.995
726.778	132.991
732.863	132.987
736.095	132.991
738.943	132.989
742.604	133
766.537	133.668
774.739	133.898
814.017	135
828.404	135.395
839.649	135.705
864.839	136.398

886.554	137
888.573	137.057
924.259	137.663
944.12	137.919
948.68	137.898
953.418	137.877
958.343	137.854
963.659	137.828
967.433	137.811
972.95	137.784
976.521	137.768
982.239	137.739
985.607	137.724
991.527	137.694
994.615	137.677
1000.75	137.646
1003.63	137.631
1009.99	137.599
1012.66	137.584
1019.23	137.551
1021.71	137.539
1028.5	137.505
1029.69	137.499
1030.85	137.495
1031.4	137.492
1038.35	137.463
1040.11	137.456
1041.2	137.452
1042.28	137.45
1049.3	137.42
1052.16	137.449
1055.45	137.483
1057.69	137.531
1062.15	137.526
1066.68	137.507
1069.19	137.568
1075.92	137.51
1078.47	137.582
1085.16	137.513
1087.7	137.49
1090.05	137.577
1093.69	137.552
1096.62	137.674
1099.96	137.645
1103.91	137.833
1111.1	138.173
1115.26	138.472
1128.34	138.992
1128.36	138.993
1128.54	139
1136.54	140.583
1138.64	141
1143.2	141.914

1148.64	143
1149.35	143.143
1152.53	143.786
1157.39	144.767
1158.54	145
1163.34	145.967
1168.47	147
1168.88	147.082
1169.38	147.184
1178.4	149
1181.82	149.688
1188.33	151
1194.13	152.167
1198.27	153
1206.33	154.622
1208.21	155
1216.89	156.747
1218.14	157
1218.36	157.045
1228.05	159
1228.06	159.001
1228.08	159.005
1228.4	159.083
1236.03	160.624
1237.89	161
1244.19	162.271
1247.8	163
1253.54	164.159
1257.71	165
1261.5	165.765
1266.92	166.86
1267.34	166.946
1267.61	167
1277.37	168.971
1277.52	169
1278.54	169.207
1287.42	171
1288.05	171.126
1288.73	171.264
1293.48	172.185
1297.69	173
1300.81	173.606
1308	175
1310.03	175.394
1312.81	175.933
1315.92	176.536
1318.32	177
1324.86	178.267
1328.64	179
1334.83	180.2
1336.61	180.546

Block Search Polyline

X	Y
205.613	177.382
209.644	175.98
209.656	175.976
209.673	175.97
209.701	175.961
209.754	175.943
209.889	175.899
211.024	175.525
215.647	174
219.457	172.752
221.753	172
223.198	171.524
227.818	170
231.167	168.903
233.924	168
239.731	166.085
239.989	166
240.158	165.945
246.075	164
250.846	162.432
252.16	162
254.731	161.155
258.246	160
260.564	159.238
264.331	158
269.78	156.209
270.417	156
270.828	155.865
276.502	154
281.239	152.443
282.588	152
284.878	151.247
288.673	150
288.694	149.994
291.145	149.188
294.759	148
294.789	147.99
294.817	147.991
300.025	146.273
300.849	146
300.936	146
301.55	145.798
306.97	144
307.021	144
311.682	142.462
313.072	142
313.082	142
315.185	141.306
319.144	140
321.59	139.197
325.229	138

329.426	136.608
331.256	136
332.629	135.549
337.335	134
341.828	132.529
343.443	132
348.164	130.439
349.492	130
351.137	129.45
355.479	128
366.611	127.944
370.513	127.931
383.965	127.994
385.43	128
387.113	128.048
390.516	128.144
435.781	129.424
456.235	130
480.527	130.667
527.675	131.968
528.433	131.989
528.846	132
528.936	132
528.97	132
529.059	132.001
539.5	132.043
552.72	132.294
575.143	132.619
581.119	132.601
587.25	132.583
593.541	132.565
599.129	132.534
601.589	132.521
608.463	132.488
610.709	132.476
617.792	132.441
625.205	132.405
627.114	132.395
634.744	132.358
636.43	132.349
644.276	132.311
645.74	132.303
653.801	132.264
655.043	132.257
656.126	132.253
664.642	132.216
665.551	132.212
674.288	132.174
675.074	132.171
684.022	132.132
684.619	132.13
693.779	132.09
694.187	132.088

703.562	132.048
703.773	132.047
713.368	132.005
713.392	132.005
714.64	132
723.812	131.994
724.625	131.995
726.778	131.991
732.863	131.987
736.095	131.991
738.943	131.989
742.604	132
766.537	132.668
774.739	132.898
814.017	134
828.404	134.395
839.649	134.705
864.839	135.398
886.554	136
888.573	136.057
924.259	136.663
944.12	136.919
948.68	136.898
953.418	136.877
958.343	136.854
963.659	136.828
967.433	136.811
972.95	136.784
976.521	136.768
982.239	136.739
985.607	136.724
991.527	136.694
994.615	136.677
1000.75	136.646
1003.63	136.631
1009.99	136.599
1012.66	136.584
1019.23	136.551
1021.71	136.539
1028.5	136.505
1029.69	136.499
1030.85	136.495
1031.4	136.492
1038.35	136.463
1040.11	136.456
1041.2	136.452
1042.28	136.45
1049.3	136.42
1052.16	136.449
1055.45	136.483
1057.69	136.531
1062.15	136.526
1066.68	136.507

1069.19	136.568
1075.92	136.51
1078.47	136.582
1085.16	136.513
1087.7	136.49
1090.05	136.577
1093.69	136.552
1096.62	136.674
1099.96	136.645
1103.91	136.833
1111.1	137.173
1115.26	137.472
1128.34	137.992
1128.36	137.993
1128.54	138
1136.54	139.583
1138.64	140
1143.2	140.914
1148.64	142
1149.35	142.143
1152.53	142.786
1157.39	143.767
1158.54	144
1163.34	144.967
1168.47	146
1168.88	146.082
1169.38	146.184
1178.4	148
1181.82	148.688
1188.33	150
1194.13	151.167
1198.27	152
1206.33	153.622
1208.21	154
1216.89	155.747
1218.14	156
1218.36	156.045
1228.05	158
1228.06	158.001
1228.08	158.005
1228.4	158.083
1236.03	159.624
1237.89	160
1244.19	161.271
1247.8	162
1253.54	163.159
1257.71	164
1261.5	164.765
1266.92	165.86
1267.34	165.946
1267.61	166
1277.37	167.971
1277.52	168

1278.54	168.207
1287.42	170
1288.05	170.126
1288.73	170.264
1293.48	171.185
1297.69	172
1300.81	172.606
1308	174
1310.03	174.394
1312.81	174.933
1315.92	175.536
1318.32	176
1324.86	177.267
1328.64	178
1334.83	179.2
1336.61	179.546

External Boundary

	X	Y
0		170
0		0
1336.61		0
1336.61		177.546
1336.61		179.546
1336.61		180.546
1336.61		181.546
1336.61		186.546
1336.61		316.096
1336		316.115
1335.3		316.135
1325.6		316.421
1323.06		316.496
1315.25		316.726
1310.87		316.855
1304.93		317.03
1298.73		317.212
1294.66		317.332
1286.65		317.568
1284.42		317.634
1274.63		317.923
1272		318
1262.91		318.268
1260.99		318.324
1251.2		318.613
1246.79		318.743
1239.42		318.96
1232.47		319.165
1227.56		319.309
1218.04		319.59
1215.62		319.661
1204.11		320
1203.6		320.015

1194.6	320.266
1193.29	320.302
1185.64	320.515
1183.11	320.585
1182.42	320.604
1175.98	320.783
1174.59	320.814
1173.12	320.841
1167.94	320.981
1166.28	321.002
1165.04	321.034
1163.06	321.079
1161.3	321.092
1159.43	321.127
1157.67	321.154
1155.99	321.174
1154.16	321.179
1152.52	321.192
1150.91	321.199
1149.06	321.196
1147.46	321.198
1145.85	321.194
1144.21	321.184
1142.36	321.173
1140.67	321.157
1138.9	321.134
1137.03	321.105
1135.23	321.085
1133.24	321.046
1131.08	320.997
1129.38	320.97
1127.03	320.908
1124.38	320.829
1122.89	320.798
1119.95	320.7
1118.67	320.668
1109.8	320.35
1109.09	320.328
1100.04	320
1096.88	319.885
1096.03	319.854
1085.1	319.456
1081.1	319.31
1073.4	319.03
1066.29	318.771
1064.86	318.717
1062.97	318.643
1052.18	318.254
1051.41	318.223
1045.12	318
1037.57	317.725
1028.17	317.383
1023.72	317.221

1017.01	316.976
1009.52	316.704
1008.28	316.657
996.063	316.213
995.361	316.186
994.822	316.164
990.2	316
980.627	315.651
977.216	315.527
966.37	315.132
957.811	314.821
951.951	314.607
950.897	314.568
937.869	314.094
937.565	314.082
937.331	314.073
935.278	314
925.128	313.63
922.402	313.531
913.375	313.202
907.52	312.989
901.711	312.778
892.78	312.452
891.981	312.423
880.356	312
878.221	311.922
877.459	311.895
863.902	311.401
855.95	311.111
849.484	310.876
844.499	310.694
834.968	310.347
834.362	310.325
825.434	310
821.354	309.851
820.258	309.812
809.633	309.425
805.404	309.271
797.969	309
790.641	308.733
786.363	308.577
775.969	308.199
775.619	308.186
770.512	308
761.583	307.675
758.397	307.559
747.249	307.153
738.908	306.849
732.814	306.627
729.246	306.497
718.278	306.098
718.107	306.092
715.59	306

706.219	305.659
703.734	305.568
694.724	305.24
689.186	305.038
683.216	304.821
674.618	304.508
671.696	304.402
660.668	304
660.102	303.979
659.927	303.973
647.125	303.507
642.972	303.356
634.19	303.036
626.089	302.741
621.298	302.566
609.277	302.129
608.447	302.098
605.746	302
592.729	301.43
585.533	300.889
578.85	300.522
573.694	300
567.931	298.081
567.688	298
567.55	297.954
561.688	296
560.864	295.725
555.688	294
553.874	293.396
549.687	292
547.513	291.275
543.686	290
539.572	288.629
537.686	288
532.56	286.292
531.685	286
529.672	285.329
525.684	284
523.962	283.426
519.684	282
517.638	281.318
513.683	280
509.776	278.698
507.683	278
506.199	277.506
501.681	276
497.772	274.697
495.681	274
491.005	272.442
489.68	272
489.09	271.803
483.679	270
482.242	269.521

477.679	268
474.189	266.837
471.678	266
466.109	264.144
465.678	264
465.484	263.935
459.677	262
459.258	261.86
453.676	260
452.686	259.67
447.676	258
444.164	256.829
441.675	256
437.62	254.648
435.675	254
431.086	252.47
429.675	252
427.788	251.371
423.674	250
420.757	249.028
417.674	248
414.581	246.969
411.673	246
408.486	244.938
405.673	244
402.391	242.906
399.673	242
396.296	240.874
393.672	240
390.201	238.843
387.672	238
384.105	236.811
381.671	236
378.01	234.78
375.671	234
372.05	232.793
369.671	232
368.183	231.504
363.67	230
362.091	229.474
357.67	228
355.998	227.443
351.669	226
349.905	225.412
345.669	224
343.812	223.381
339.669	222
337.719	221.35
333.668	220
331.626	219.319
327.668	218
325.533	217.288
321.667	216

319.439	215.257
315.667	214
313.346	213.226
309.667	212
307.252	211.195
303.666	210
301.159	209.164
297.666	208
295.065	207.133
291.665	206
288.971	205.102
285.665	204
282.877	203.071
279.665	202
276.783	201.04
273.664	200
270.689	199.008
267.664	198
264.594	196.977
261.663	196
258.5	194.946
255.663	194
252.405	192.914
249.662	192
246.31	190.883
243.662	190
240.215	188.851
237.662	188
234.12	186.82
231.661	186
228.017	184.785
225.662	184
221.802	182.716
219.651	182
216.161	180.832
214.953	180.427
213.677	180
210.543	178.955
208.652	178.325
207.677	178
207.158	177.844
205.613	177.382
202.523	176.456
180.07	178
177.959	177.46
174.783	176.639
172.407	176
170.772	175.495
166.382	174
163.292	173.078
159.725	172
157.032	170.826
156.661	170.683

155.94	170.468
154.715	170
153.182	169.408
152.867	169.312
152.014	169.08
151.049	168.783
148.832	168
147.535	167.52
143.965	166
140.022	164.477
138.788	164
137.479	163.509
133.373	162
131.589	161.309
127.185	160
126.959	159.997
126.25	159.995
125.762	159.993
125.68	159.993
118.478	159.969
112.757	159.986
109.707	159.993
109.569	159.993
109.105	159.994
108.997	159.995
108.065	159.997
107.64	159.997
107.166	160
106.378	160.046
106.193	160.053
106.103	160.054
105.8	160.084
105.495	160.108
104.805	160.417
103.221	160.987
102.599	161.033
102.009	161.037
101.614	161.072
101.055	161.048
100.711	161.052
97.7835	161.058
94.3084	161.041
93.8975	161.022
91.9539	161.147
91.63	161.143
91.4102	161.082
90.2817	161.024
89.9486	161.022
89.707	160.951
86.7014	160.813
82.7048	161.264
82.458	161.296
81.3882	161.545

81.1637	161.594
79.2738	162
77.816	162
75.0666	162
72.9864	161.282
69.3934	160
68.7416	159.768
68.2736	159.597
68.1192	159.514
67.9386	159.38
67.3686	159.119
66.5713	158
65.7493	156.136
65.6836	156
65.5752	156
65.3068	156
65.0401	156
59.6261	156
59.182	156
58.1295	156
54.3138	157.2
51.6407	158
50.8258	158.181
50.3907	158.236
45.9965	158.999
41.4109	159.593
40.813	159.676
40.1879	159.755
38.4792	160
36.2697	160.68
34.0018	161.233
31.409	162
30.6648	162.367
29.2396	163.187
28.1824	163.779
27.7683	164
24.1653	165.56
23.3051	166
19.6494	167.648
18.9426	168
15.9722	169.385
14.4129	170
14.1982	170
12.8502	170
12.4376	170
10.2755	170
9.92074	170
8.21815	170

Material Boundary

	X	Y
202.523	176.456	

209.644	173.98
209.656	173.976
209.673	173.97
209.701	173.961
209.754	173.943
209.889	173.899
211.024	173.525
215.647	172
219.457	170.752
221.753	170
223.198	169.524
227.818	168
231.167	166.903
233.924	166
239.731	164.085
239.989	164
240.158	163.945
246.075	162
250.846	160.432
252.16	160
254.731	159.155
258.246	158
260.564	157.238
264.331	156
269.78	154.209
270.417	154
270.828	153.865
276.502	152
281.239	150.443
282.588	150
284.878	149.247
288.673	148
288.694	147.994
291.145	147.188
294.759	146
294.789	145.99
294.817	145.991
300.025	144.273
300.849	144
300.936	144
301.55	143.798
306.97	142
307.021	142
311.682	140.462
313.072	140
313.082	140
315.185	139.306
319.144	138
321.59	137.197
325.229	136
329.426	134.608
331.256	134
332.629	133.549

337.335	132
341.828	130.529
343.443	130
348.164	128.439
349.492	128
351.137	127.45
355.479	126
366.611	125.944
370.513	125.931
383.965	125.994
385.43	126
387.113	126.048
390.516	126.144
435.781	127.424
456.235	128
480.527	128.667
527.675	129.968
528.433	129.989
528.846	130
528.936	130
528.97	130
529.059	130.001
539.5	130.043
552.72	130.294
575.143	130.619
581.119	130.601
587.25	130.583
593.541	130.565
599.129	130.534
601.589	130.521
608.463	130.488
610.709	130.476
617.792	130.441
625.205	130.405
627.114	130.395
634.744	130.358
636.43	130.349
644.276	130.311
645.74	130.303
653.801	130.264
655.043	130.257
656.126	130.253
664.642	130.216
665.551	130.212
674.288	130.174
675.074	130.171
684.022	130.132
684.619	130.13
693.779	130.09
694.187	130.088
703.562	130.048
703.773	130.047
713.368	130.005

713.392	130.005
714.64	130
723.812	129.994
724.625	129.995
726.778	129.991
732.863	129.987
736.095	129.991
738.943	129.989
742.604	130
766.537	130.668
774.739	130.898
814.017	132
828.404	132.395
839.649	132.705
864.839	133.398
886.554	134
888.573	134.057
924.259	134.663
944.12	134.919
948.68	134.898
953.418	134.877
958.343	134.854
963.659	134.828
967.433	134.811
972.95	134.784
976.521	134.768
982.239	134.739
985.607	134.724
991.527	134.694
994.615	134.677
1000.75	134.646
1003.63	134.631
1009.99	134.599
1012.66	134.584
1019.23	134.551
1021.71	134.539
1028.5	134.505
1029.69	134.499
1030.85	134.495
1031.4	134.492
1038.35	134.463
1040.11	134.456
1041.2	134.452
1042.28	134.45
1049.3	134.42
1052.16	134.449
1055.45	134.483
1057.69	134.531
1062.15	134.526
1066.68	134.507
1069.19	134.568
1075.92	134.51
1078.47	134.582

1085.16	134.513
1087.7	134.49
1090.05	134.577
1093.69	134.552
1096.62	134.674
1099.96	134.645
1103.91	134.833
1111.1	135.173
1115.26	135.472
1128.34	135.992
1128.36	135.993
1128.54	136
1136.54	137.583
1138.64	138
1143.2	138.914
1148.64	140
1149.35	140.143
1152.53	140.786
1157.39	141.767
1158.54	142
1163.34	142.967
1168.47	144
1168.88	144.082
1169.38	144.184
1178.4	146
1181.82	146.688
1188.33	148
1194.13	149.167
1198.27	150
1206.33	151.622
1208.21	152
1216.89	153.747
1218.14	154
1218.36	154.045
1228.05	156
1228.06	156.001
1228.08	156.005
1228.4	156.083
1236.03	157.624
1237.89	158
1244.19	159.271
1247.8	160
1253.54	161.159
1257.71	162
1261.5	162.765
1266.92	163.86
1267.34	163.946
1267.61	164
1277.37	165.971
1277.52	166
1278.54	166.207
1287.42	168
1288.05	168.126

1288.73	168.264
1293.48	169.185
1297.69	170
1300.81	170.606
1308	172
1310.03	172.394
1312.81	172.933
1315.92	173.536
1318.32	174
1324.86	175.267
1328.64	176
1334.83	177.2
1336.61	177.546

Material Boundary

	X	Y
205.613		177.382
209.644		175.98
209.656		175.976
209.673		175.97
209.701		175.961
209.754		175.943
209.889		175.899
211.024		175.525
215.647		174
219.457		172.752
221.753		172
223.198		171.524
227.818		170
231.167		168.903
233.924		168
239.731		166.085
239.989		166
240.158		165.945
246.075		164
250.846		162.432
252.16		162
254.731		161.155
258.246		160
260.564		159.238
264.331		158
269.78		156.209
270.417		156
270.828		155.865
276.502		154
281.239		152.443
282.588		152
284.878		151.247
288.673		150
288.694		149.994
291.145		149.188
294.759		148

294.789	147.99
294.817	147.991
300.025	146.273
300.849	146
300.936	146
301.55	145.798
306.97	144
307.021	144
311.682	142.462
313.072	142
313.082	142
315.185	141.306
319.144	140
321.59	139.197
325.229	138
329.426	136.608
331.256	136
332.629	135.549
337.335	134
341.828	132.529
343.443	132
348.164	130.439
349.492	130
351.137	129.45
355.479	128
366.611	127.944
370.513	127.931
383.965	127.994
385.43	128
387.113	128.048
390.516	128.144
435.781	129.424
456.235	130
480.527	130.667
527.675	131.968
528.433	131.989
528.846	132
528.936	132
528.97	132
529.059	132.001
539.5	132.043
552.72	132.294
575.143	132.619
581.119	132.601
587.25	132.583
593.541	132.565
599.129	132.534
601.589	132.521
608.463	132.488
610.709	132.476
617.792	132.441
625.205	132.405
627.114	132.395

634.744	132.358
636.43	132.349
644.276	132.311
645.74	132.303
653.801	132.264
655.043	132.257
656.126	132.253
664.642	132.216
665.551	132.212
674.288	132.174
675.074	132.171
684.022	132.132
684.619	132.13
693.779	132.09
694.187	132.088
703.562	132.048
703.773	132.047
713.368	132.005
713.392	132.005
714.64	132
723.812	131.994
724.625	131.995
726.778	131.991
732.863	131.987
736.095	131.991
738.943	131.989
742.604	132
766.537	132.668
774.739	132.898
814.017	134
828.404	134.395
839.649	134.705
864.839	135.398
886.554	136
888.573	136.057
924.259	136.663
944.12	136.919
948.68	136.898
953.418	136.877
958.343	136.854
963.659	136.828
967.433	136.811
972.95	136.784
976.521	136.768
982.239	136.739
985.607	136.724
991.527	136.694
994.615	136.677
1000.75	136.646
1003.63	136.631
1009.99	136.599
1012.66	136.584
1019.23	136.551

1021.71	136.539
1028.5	136.505
1029.69	136.499
1030.85	136.495
1031.4	136.492
1038.35	136.463
1040.11	136.456
1041.2	136.452
1042.28	136.45
1049.3	136.42
1052.16	136.449
1055.45	136.483
1057.69	136.531
1062.15	136.526
1066.68	136.507
1069.19	136.568
1075.92	136.51
1078.47	136.582
1085.16	136.513
1087.7	136.49
1090.05	136.577
1093.69	136.552
1096.62	136.674
1099.96	136.645
1103.91	136.833
1111.1	137.173
1115.26	137.472
1128.34	137.992
1128.36	137.993
1128.54	138
1136.54	139.583
1138.64	140
1143.2	140.914
1148.64	142
1149.35	142.143
1152.53	142.786
1157.39	143.767
1158.54	144
1163.34	144.967
1168.47	146
1168.88	146.082
1169.38	146.184
1178.4	148
1181.82	148.688
1188.33	150
1194.13	151.167
1198.27	152
1206.33	153.622
1208.21	154
1216.89	155.747
1218.14	156
1218.36	156.045
1228.05	158

1228.06	158.001
1228.08	158.005
1228.4	158.083
1236.03	159.624
1237.89	160
1244.19	161.271
1247.8	162
1253.54	163.159
1257.71	164
1261.5	164.765
1266.92	165.86
1267.34	165.946
1267.61	166
1277.37	167.971
1277.52	168
1278.54	168.207
1287.42	170
1288.05	170.126
1288.73	170.264
1293.48	171.185
1297.69	172
1300.81	172.606
1308	174
1310.03	174.394
1312.81	174.933
1315.92	175.536
1318.32	176
1324.86	177.267
1328.64	178
1334.83	179.2
1336.61	179.546

Material Boundary

	X	Y
208.652		178.325
209.644		177.98
209.656		177.976
209.673		177.97
209.701		177.961
209.754		177.943
209.889		177.899
211.024		177.525
215.647		176
219.457		174.752
221.753		174
223.198		173.524
227.818		172
231.167		170.903
233.924		170
239.731		168.085
239.989		168
240.158		167.945

246.075	166
250.846	164.432
252.16	164
254.731	163.155
258.246	162
260.564	161.238
264.331	160
269.78	158.209
270.417	158
270.828	157.865
276.502	156
281.239	154.443
282.588	154
284.878	153.247
288.673	152
288.694	151.994
291.145	151.188
294.759	150
294.789	149.99
294.817	149.991
300.025	148.273
300.849	148
300.936	148
301.55	147.798
306.97	146
307.021	146
311.682	144.462
313.072	144
313.082	144
315.185	143.306
319.144	142
321.59	141.197
325.229	140
329.426	138.608
331.256	138
332.629	137.549
337.335	136
341.828	134.529
343.443	134
348.164	132.439
349.492	132
351.137	131.45
355.479	130
366.611	129.944
370.513	129.931
383.965	129.994
385.43	130
387.113	130.048
390.516	130.144
435.781	131.424
456.235	132
480.527	132.667
527.675	133.968

528.433	133.989
528.846	134
528.936	134
528.97	134
529.059	134.001
539.5	134.043
552.72	134.294
575.143	134.619
581.119	134.601
587.25	134.583
593.541	134.565
599.129	134.534
601.589	134.521
608.463	134.488
610.709	134.476
617.792	134.441
625.205	134.405
627.114	134.395
634.744	134.358
636.43	134.349
644.276	134.311
645.74	134.303
653.801	134.264
655.043	134.257
656.126	134.253
664.642	134.216
665.551	134.212
674.288	134.174
675.074	134.171
684.022	134.132
684.619	134.13
693.779	134.09
694.187	134.088
703.562	134.048
703.773	134.047
713.368	134.005
713.392	134.005
714.64	134
723.812	133.994
724.625	133.995
726.778	133.991
732.863	133.987
736.095	133.991
738.943	133.989
742.604	134
766.537	134.668
774.739	134.898
814.017	136
828.404	136.395
839.649	136.705
864.839	137.398
886.554	138
888.573	138.057

924.259	138.663
944.12	138.919
948.68	138.898
953.418	138.877
958.343	138.854
963.659	138.828
967.433	138.811
972.95	138.784
976.521	138.768
982.239	138.739
985.607	138.724
991.527	138.694
994.615	138.677
1000.75	138.646
1003.63	138.631
1009.99	138.599
1012.66	138.584
1019.23	138.551
1021.71	138.539
1028.5	138.505
1029.69	138.499
1030.85	138.495
1031.4	138.492
1038.35	138.463
1040.11	138.456
1041.2	138.452
1042.28	138.45
1049.3	138.42
1052.16	138.449
1055.45	138.483
1057.69	138.531
1062.15	138.526
1066.68	138.507
1069.19	138.568
1075.92	138.51
1078.47	138.582
1085.16	138.513
1087.7	138.49
1090.05	138.577
1093.69	138.552
1096.62	138.674
1099.96	138.645
1103.91	138.833
1111.1	139.173
1115.26	139.472
1128.34	139.992
1128.36	139.993
1128.54	140
1136.54	141.583
1138.64	142
1143.2	142.914
1148.64	144
1149.35	144.143

1152.53	144.786
1157.39	145.767
1158.54	146
1163.34	146.967
1168.47	148
1168.88	148.082
1169.38	148.184
1178.4	150
1181.82	150.688
1188.33	152
1194.13	153.167
1198.27	154
1206.33	155.622
1208.21	156
1216.89	157.747
1218.14	158
1218.36	158.045
1228.05	160
1228.06	160.001
1228.08	160.005
1228.4	160.083
1236.03	161.624
1237.89	162
1244.19	163.271
1247.8	164
1253.54	165.159
1257.71	166
1261.5	166.765
1266.92	167.86
1267.34	167.946
1267.61	168
1277.37	169.971
1277.52	170
1278.54	170.207
1287.42	172
1288.05	172.126
1288.73	172.264
1293.48	173.185
1297.69	174
1300.81	174.606
1308	176
1310.03	176.394
1312.81	176.933
1315.92	177.536
1318.32	178
1324.86	179.267
1328.64	180
1334.83	181.2
1336.61	181.546

Material Boundary

X	Y
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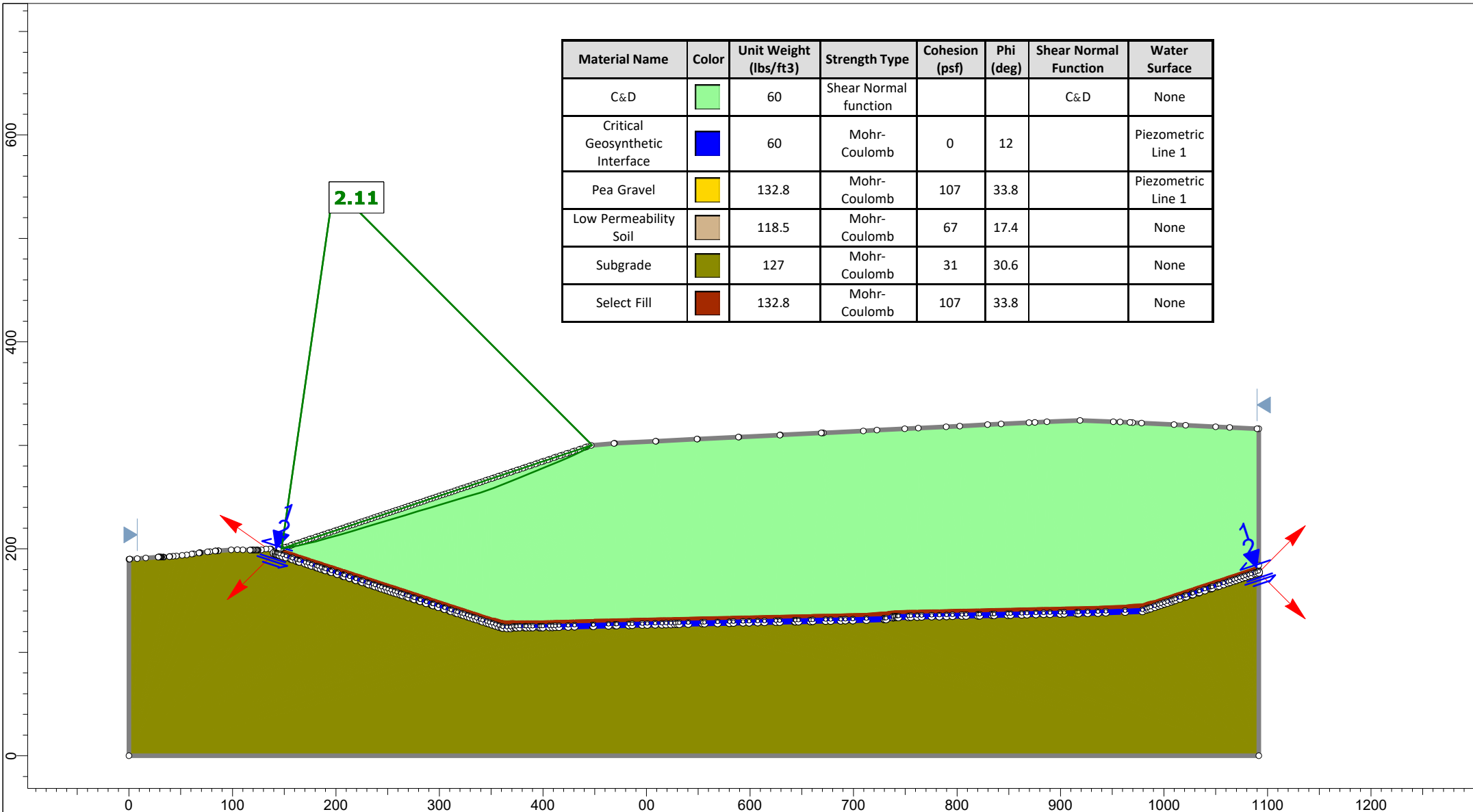
216.161	180.832
219.457	179.752
221.753	179
223.198	178.524
227.818	177
231.167	175.903
233.924	175
239.731	173.085
239.989	173
240.158	172.945
246.075	171
250.846	169.432
252.16	169
254.731	168.155
258.246	167
260.564	166.238
264.331	165
269.78	163.209
270.417	163
270.828	162.865
276.502	161
281.239	159.443
282.588	159
284.878	158.247
288.673	157
288.694	156.994
291.145	156.188
294.759	155
294.789	154.99
294.817	154.991
300.025	153.273
300.849	153
300.936	153
301.55	152.798
306.97	151
307.021	151
311.682	149.462
313.072	149
313.082	149
315.185	148.306
319.144	147
321.59	146.197
325.229	145
329.426	143.608
331.256	143
332.629	142.549
337.335	141
341.828	139.529
343.443	139
348.164	137.439
349.492	137
351.137	136.45
355.479	135

366.611	134.944
370.513	134.931
383.965	134.994
385.43	135
387.113	135.048
390.516	135.144
435.781	136.424
456.235	137
480.527	137.667
527.675	138.968
528.433	138.989
528.846	139
528.936	139
528.97	139
529.059	139.001
539.5	139.043
552.72	139.294
575.143	139.619
581.119	139.601
587.25	139.583
593.541	139.565
599.129	139.534
601.589	139.521
608.463	139.488
610.709	139.476
617.792	139.441
625.205	139.405
627.114	139.395
634.744	139.358
636.43	139.349
644.276	139.311
645.74	139.303
653.801	139.264
655.043	139.257
656.126	139.253
664.642	139.216
665.551	139.212
674.288	139.174
675.074	139.171
684.022	139.132
684.619	139.13
693.779	139.09
694.187	139.088
703.562	139.048
703.773	139.047
713.368	139.005
713.392	139.005
714.64	139
723.812	138.994
724.625	138.995
726.778	138.991
732.863	138.987
736.095	138.991

738.943	138.989
742.604	139
766.537	139.668
774.739	139.898
814.017	141
828.404	141.395
839.649	141.705
864.839	142.398
886.554	143
888.573	143.057
924.259	143.663
944.12	143.919
948.68	143.898
953.418	143.877
958.343	143.854
963.659	143.828
967.433	143.811
972.95	143.784
976.521	143.768
982.239	143.739
985.607	143.724
991.527	143.694
994.615	143.677
1000.75	143.646
1003.63	143.631
1009.99	143.599
1012.66	143.584
1019.23	143.551
1021.71	143.539
1028.5	143.505
1029.69	143.499
1030.85	143.495
1031.4	143.492
1038.35	143.463
1040.11	143.456
1041.2	143.452
1042.28	143.45
1049.3	143.42
1052.16	143.449
1055.45	143.483
1057.69	143.531
1062.15	143.526
1066.68	143.507
1069.19	143.568
1075.92	143.51
1078.47	143.582
1085.16	143.513
1087.7	143.49
1090.05	143.577
1093.69	143.552
1096.62	143.674
1099.96	143.645
1103.91	143.833


1111.1	144.173
1115.26	144.472
1128.34	144.992
1128.36	144.993
1128.54	145
1136.54	146.583
1138.64	147
1143.2	147.914
1148.64	149
1149.35	149.143
1152.53	149.786
1157.39	150.767
1158.54	151
1163.34	151.967
1168.47	153
1168.88	153.082
1169.38	153.184
1178.4	155
1181.82	155.688
1188.33	157
1194.13	158.167
1198.27	159
1206.33	160.622
1208.21	161
1216.89	162.747
1218.14	163
1218.36	163.045
1228.05	165
1228.06	165.001
1228.08	165.005
1228.4	165.083
1236.03	166.624
1237.89	167
1244.19	168.271
1247.8	169
1253.54	170.159
1257.71	171
1261.5	171.765
1266.92	172.86
1267.34	172.946
1267.61	173
1277.37	174.971
1277.52	175
1278.54	175.207
1287.42	177
1288.05	177.126
1288.73	177.264
1293.48	178.185
1297.69	179
1300.81	179.606
1308	181
1310.03	181.394
1312.81	181.933

1315.92	182.536
1318.32	183
1324.86	184.267
1328.64	185
1334.83	186.2
1336.61	186.546



Material Name	Color	Unit Weight (lbs/ft ³)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
C&D	Light Green	60	Shear Normal function			C&D	None
Critical Geosynthetic Interface	Blue	60	Mohr-Coulomb	0	12		Piezometric Line 1
Pea Gravel	Yellow	132.8	Mohr-Coulomb	107	33.8		Piezometric Line 1
Low Permeability Soil	Tan	118.5	Mohr-Coulomb	67	17.4		None
Subgrade	Olive Green	127	Mohr-Coulomb	31	30.6		None
Select Fill	Red	132.8	Mohr-Coulomb	107	33.8		None

2.11

	Project: 182-442 S.A. Dunn Permit Renewal & Modification at 182-442 S.A. Dunn Footprint Modification		Scenario: Section B - Liner System Failure - Static.slim	
	Analysis Description: Section B - Liner System Failure - Static.slim		Company: Civil & Environmental Consultants, Inc.	
	Created By: ZLM		Checked By: TDM	
	Created Date: 1/6/2022 9:26:18 AM		Checked Date: 1/9/2022 11:46:34 AM	
File Name: Section B - Liner System Failure - Static.slim				

Slide Analysis Information

182-442 S.A. Dunn Footprint Modification

Project Summary

Slide Modeler Version:	9.02
Compute Time:	00h:01m:02.400s
Author:	DVS
Company:	Civil & Environmental Consultants, Inc.
Date Created:	9/26/2018, 11:46:34 AM

General Settings

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

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	GLE/Morgenstern-Price with interslice force function (Half Sine)
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


Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [deg]:	145
Left Projection Angle (End Angle) [deg]:	225
Right Projection Angle (Start Angle) [deg]:	45
Right Projection Angle (End Angle) [deg]:	-45
Minimum Elevation:	Not Defined
Minimum Depth [ft]:	10
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Materials

C&D

Color	
Strength Type	Shear Normal function
Unit Weight [lbs/ft ³]	60
Water Surface	None
Ru Value	0

Pea Gravel

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	Piezometric Line 1
Hu Value	1

Low Permeability Soil

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	118.5
Cohesion [psf]	67
Friction Angle [deg]	17.4
Water Surface	None
Ru Value	0

Subgrade

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	127
Cohesion [psf]	31
Friction Angle [deg]	30.6
Water Surface	None
Ru Value	0

Select Fill

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	None
Ru Value	0

Shear Normal Functions

Name: C&D	
Effective Normal (psf)	Shear (psf)
0	0
2000	1400
10000	6169

Global Minimums

Method: gle/morgenstern-price

FS	2.113600
Axis Location:	197.817, 550.186
Left Slip Surface Endpoint:	147.568, 200.339
Right Slip Surface Endpoint:	447.545, 300.078
Resisting Moment:	2.54486e+07 lb-ft
Driving Moment:	1.20404e+07 lb-ft
Resisting Horizontal Force:	73975.5 lb
Driving Horizontal Force:	34999.8 lb
Total Slice Area:	1954.51 ft ²
Surface Horizontal Width:	299.977 ft
Surface Average Height:	6.51554 ft

Global Minimum Coordinates**Method: gle/morgenstern-price**

X	Y
147.568	200.339
162.865	202.972
171.562	205.007
180.259	207.09
192.005	210.324
203.752	213.559
215.424	217.061
228.35	220.939
241.136	224.775
253.923	228.611
266.834	232.485
279.693	236.343
291.467	239.876
303.242	243.408
315.106	246.968
326.97	250.527
339.595	254.315
352.22	258.751
365.479	264.047
378.628	269.339
387.437	272.884
395.143	275.999
402.848	279.115
416.372	284.61
423.745	287.846
431.119	291.32
439.335	295.238
447.545	300.078

Global Minimum Support Data

No Supports Present

Slice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.1136

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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]
12	5.099182	125.652	9.766512	C&D2	3.55271e-152	34.992	7.746832	16.37372	3.3912	02	3.3912	4.72452	4.72452
	5.099182	376.9572	9.766512	C&D2	02	34.992	3.34452	49.34092	70.48692	02	70.48692	74.5052	74.5052
32	5.099182	628.2612	9.766512	C&D2	02	34.992	39.09852	82.63852	118.0552	02	118.0552	124.7852	124.7852
42	8.696792	1510.852	13.17232	C&D2	1.42109e-142	34.992	54.12762	114.4042	163.4342	02	163.4342	176.102	176.102
52	4.34842	921.1052	13.46762	C&D2	.84217e-142	34.992	66.08252	139.672	199.5312	02	199.5312	15.3572	15.3572
62	4.34842	1027.442	13.46762	C&D2	02	34.992	73.87542	156.1432	3.062	02	3.062	40.7532	40.7532
72	5.873242	1519.442	15.39442	C&D2	02	34.992	79.77762	168.6182	40.882	02	40.882	62.8482	62.8482
82	5.873242	1639.212	15.39442	C&D2	.84217e-142	34.992	86.2032	182.1992	60.2842	02	60.2842	84.0192	84.0192
92	5.87352	1759.072	15.39442	C&D2	02	34.992	92.642	195.8042	79.7212	02	79.7212	305.2 92	305.2 92
102	5.87352	1878.862	15.39442	C&D2	.84217e-142	34.992	99.08592	09.4282	99.1832	02	99.1832	326.4652	326.4652
112	5.83592	1960.242	16.70062	C&D2	02	34.992	102.8142	17.3082	310.442	02	310.442	341.2872	341.2872
12	5.83592	028.052	16.70062	C&D2	.84217e-142	34.992	106.4172	4.9242	321.32	02	321.32	353.2482	353.2482
132	6.462762	325.032	16.70062	C&D2	02	34.992	110.2072	32.9342	332.7642	02	332.7642	365.8292	365.8292
142	6.462762	408.192	16.70062	C&D2	02	34.992	114.1812	41.3332	344.7612	02	344.7612	379.0182	379.0182
152	6.393432	464.192	16.70062	C&D2	02	34.992	118.12	49.6632	356.662	02	356.662	392.1012	392.1012
162	6.393432	545.582	16.70062	C&D2	02	34.992	12 .0292	57.9212	368.462	02	368.462	405.0712	405.0712
172	6.393432	626.972	16.70062	C&D2	02	34.992	125.92	66.1492	380.212	02	380.212	417.992	417.992
182	6.393432	708.362	16.70062	C&D2	02	34.992	129.7982	74.342	391.9172	02	391.9172	430.862	430.862
192	6.45552	817.232	16.70062	C&D2	02	34.992	133.6762	82.5372	403.6242	02	403.6242	443.732	443.732
02	6.45552	900.212	16.70062	C&D2	02	34.992	137.552	90.732	415.3282	02	415.3282	456.5972	456.5972
12	6.42942	970.962	16.70062	C&D2	5.68434e-142	34.992	141.42	98.862	426.9462	02	426.9462	469.3692	469.3692
	6.42942	3053.272	16.70062	C&D2	5.68434e-142	34.992	145.2172	306.9312	438.4732	02	438.4732	482.042	482.042
32	5.887132	867.942	16.70062	C&D2	5.68434e-142	34.992	148.852	314.6142	449.4492	02	449.4492	494.1092	494.1092
42	5.887132	936.952	16.70062	C&D2	5.68434e-142	34.992	152.3062	321.9152	459.8782	02	459.8782	505.5742	505.5742
52	5.887132	3005.962	16.70062	C&D2	5.68434e-142	34.992	155.742	329.172	470.2452	02	470.2452	516.9712	516.9712
62	5.887132	3074.972	16.70062	C&D2	5.68434e-142	34.992	159.152	336.3842	480.5492	02	480.5492	528.2992	528.2992
72	5.932	3168.312	16.70062	C&D2	02	34.992	162.5562	343.5782	490.8262	02	490.8262	539.5972	539.5972
82	5.932	3238.382	16.70062	C&D2	02	34.992	165.9512	350.7532	501.0752	02	501.0752	550.8652	550.8652
92	5.932	3308.462	16.70062	C&D2	5.68434e-142	34.992	169.3232	357.8812	511.2592	02	511.2592	562.062	562.062
302	5.932	3378.532	16.70062	C&D2	5.68434e-142	34.992	172.6732	364.962	521.3742	02	521.3742	573.1812	573.1812
312	6.312	3671.892	16.70062	C&D2	5.68434e-142	34.992	176.1092	372.2 32	531.7462	02	531.7462	584.5832	584.5832
32	6.312	3751.232	16.70062	C&D2	02	34.992	179.6272	379.6592	542.3692	02	542.3692	596.262	596.262
332	6.312742	3769.492	19.36082	C&D2	5.68434e-142	34.992	174.4352	368.6862	526.6942	02	526.6942	587.9892	587.9892
342	6.312742	3726.032	19.36082	C&D2	02	34.992	172.2982	364.1682	520.242	02	520.242	580.7832	580.7832
352	4.419432	554.532	1.77162	C&D2	5.68434e-142	34.992	163.92	346.4652	494.952	02	494.952	560.42	560.42
362	4.419432	476.972	1.77162	C&D2	5.68434e-142	34.992	158.9932	336.0472	480.0682	02	480.0682	543.5692	543.5692
372	4.419432	399.412	1.77162	C&D2	02	34.992	154.0772	325.6582	465.2 72	02	465.2 72	526.7642	526.7642
382	4.383092	301.32	1.92152	C&D2	5.68434e-142	34.992	148.8312	314.5692	449.3842	02	449.3842	509.2792	509.2792
392	4.383092	1.532	1.92152	C&D2	02	34.992	143.7662	303.8642	434.092	02	434.092	491.9462	491.9462

402	4.383092	141.742	1.92152	C&D2	02	34.992	138.7082	93.1742	418.8212	02	418.8212	474.642	474.642
412	4.404662	071.892	1.92152	C&D2	02	34.992	133.6442	82.472	403.532	02	403.532	457.3132	457.3132
42	4.404662	1991.312	1.92152	C&D2	5.68434e-142	34.992	128.5712	71.7482	388.2112	02	388.2112	439.9532	439.9532
432	7.705452	3286.412	.01512	C&D2	02	34.992	121.3632	56.512	366.4462	02	366.4462	415.5172	415.5172
442	7.705452	3033.042	.01512	C&D2	.84217e-142	34.992	112.2532	37.2572	338.9382	02	338.9382	384.3262	384.3262
452	6.76202	450.2	.11382	C&D2	.84217e-142	34.992	103.482	18.7152	312.452	02	312.452	354.4982	354.4982
462	6.76202	49.572	.11382	C&D2	02	34.992	95.2342	01.2872	87.5542	02	87.5542	326.2512	326.2512
472	7.373292	171.32	3.69282	C&D2	.84217e-142	34.992	83.47462	176.432	52.0452	02	52.0452	88.6762	88.6762
482	7.373652	1774.092	5.2 952	C&D2	.84217e-142	34.992	67.70492	143.1012	04.432	02	04.432	36.332	36.332
492	8.215592	1434.982	5.49562	C&D2	1.42109e-142	34.992	49.35042	104.3072	149.012	02	149.012	172.5442	172.5442
502	8.210012	619.252	30.5202	C&D2	7.10543e-152	34.992	0.73952	43.8352	62.62142	02	62.62142	74.84782	74.84782

Interslice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.1136

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
12	147.5682	00.3392	02	02	02
	152.6672	01.2172	18.97192	0.4217012	1.273342
32	157.7662	02.0942	76.14242	3.380112	.54182
42	162.8652	02.972	171.8942	11.41892	3.800572
52	171.562	05.0072	309.9812	32.09692	5.911612
62	175.912	06.0492	389.552	47.4472	6.944392
72	180.2592	07.092	478.5032	66.89552	7.958462
82	186.132	08.7072	557.5162	91.2372	9.294042
92	192.0052	10.3242	642.892	120.1432	10.58532
102	197.8792	11.942	734.6482	153.8362	11.82692
112	03.752	13.5592	832.7882	192.4852	13.01442
12	09.5882	15.312	889.2482	3.9652	14.13642
132	15.4242	17.0612	947.6872	57.4342	15.19742
142	1.8872	192	1014.712	96.6692	16.2972
152	8.352	0.9392	1084.142	337.9872	17.3152
162	34.7432	.8572	1155.212	380.6732	18.23852
172	41.1362	4.7752	12 8.62	424.8872	19.07662
182	47.532	6.6932	1304.382	470.32	19.82782
192	53.9232	8.6112	1382.462	516.6282	0.49082
02	60.3792	30.5482	1463.672	563.8912	1.06962
12	66.8342	32.4852	1547.2	611.242	1.55692
	73.2642	34.4142	1632.772	658.042	1.95052
32	79.6932	36.3432	1720.62	704.0112	.25252
42	85.582	38.1092	1803.082	744.9532	.44832
52	91.4672	39.8762	1887.452	784.3882	.56682
62	97.3552	41.642	1973.732	821.9112	.60812
72	303.242	43.4082	061.892	857.1052	.57212
82	309.1742	45.1882	152.632	889.7862	.45772
92	315.1062	46.9682	45.272	919.2412	.26482
302	321.0382	48.7482	339.782	945.0332	1.99372
312	326.972	50.5272	436.172	966.7312	1.64442
32	333.2832	52.4212	540.772	984.8462	1.1872
332	339.5952	54.3152	647.462	997.3432	0.642
342	345.9082	56.5332	580.312	939.6682	0.012
352	352.2	58.7512	513.982	879.9682	19.29162
362	356.642	60.5172	364.782	802.1772	18.73792
372	361.0592	62.282	0.072	727.472	18.14292
382	365.4792	64.0472	079.842	656.0612	17.50732
392	369.862	65.8112	1939.52	586.9552	16.83752
402	374.2452	67.5752	1803.952	521.6782	16.1292
412	378.6282	69.3392	1673.162	460.342	15.38342
42	383.0332	71.1112	1546.532	402.7562	14.59712
432	387.4372	72.8842	1424.72	349.2872	13.7752
442	395.1432	75.9992	1218.172	64.6282	12.2562
452	402.8482	79.1152	1027.152	192.9882	10.64112
462	409.612	81.862	868.3732	139.9132	9.152882
472	416.372	84.612	72 .2492	96.45342	7.606612
482	423.7452	87.8462	52 .2 62	53.64342	5.864892
492	431.1192	91.32	311.1852	.18182	4.077252
502	439.3352	95.2382	132.8292	4.750072	.048072
512	447.5452	300.0782	02	02	02

Discharge Sections

Entity Information

Piezoline

X	Y
140.028	196.713

141.766	196.149
142.289	195.994
143.045	195.769
144.237	195.414
145.518	195
148.459	194.052
151.716	193
156.612	191.418
157.903	191
161.952	189.689
164.08	189
164.758	188.78
170.247	187
172.895	186.14
176.403	185
181.024	183.497
182.529	183
185.376	182.065
188.619	181
189.923	180.575
194.757	179
195.648	178.71
200.895	177
201.373	176.844
207.034	175
207.098	174.979
207.993	174.687
212.823	173.114
213.172	173
218.549	171.248
219.311	171
224.274	169.383
225.449	169
230	167.518
231.588	167
235.725	165.651
237.722	165
241.444	163.784
243.846	163
247.162	161.917
249.97	161
252.88	160.05
256.093	159
258.598	158.182
262.216	157
264.316	156.314
268.34	155
270.035	154.446
274.463	153
275.754	152.578
280.585	151
281.473	150.71
286.71	149

287.186	148.844
292.824	147
292.886	146.98
293.74	146.7
298.583	145.115
298.935	145
304.279	143.251
305.047	143
309.976	141.387
311.159	141
315.674	139.523
317.272	139
321.371	137.659
323.386	137
327.069	135.795
329.5	135
332.77	133.931
335.619	133
339.508	131.716
341.678	131
345.692	129.704
347.866	129
350.959	127.992
354.006	127
357.278	125.924
360.089	125
361.133	124.745
365.215	124.477
368.707	124.493
371.484	125
373.654	125.03
374.386	125.08
377.631	125.239
382.427	125.316
383.677	125.244
387.287	125.197
390.059	125.187
396.735	125.233
398.019	125.268
399.749	125.314
406.24	125.429
409.208	125.512
411.915	125.585
415.53	125.683
424.48	125.93
430.485	126.131
448.199	126.599
448.732	126.618
463.334	127
470.097	127.145
471.17	127.168
483.106	127.425
486.086	127.487

495.863	127.696
500.697	127.797
508.409	127.961
515.014	128.097
518.981	128.181
523.614	128.281
527.447	128.363
529.69	128.406
531.66	128.441
540.373	128.637
554.05	128.953
556.089	129
568.694	129.288
580.167	129.531
584.066	129.617
593.259	129.813
599.175	129.945
607.386	130.128
614.024	130.271
624.97	130.517
628.615	130.596
643.158	130.917
643.782	130.931
646.896	131
658.497	131.248
660.64	131.294
673.082	131.561
677.922	131.665
687.656	131.874
692.236	131.971
699.35	132.123
712.535	132.48
729.855	132.992
730.239	132.992
731.42	133
738.245	134.694
739.951	135
740.007	135.001
741.701	135.015
742.332	135.017
743.317	135.019
753.154	135.287
755.462	135.336
761.566	135.471
765.71	135.559
775.589	135.763
783.012	135.917
790.009	136.066
795.683	136.184
804.848	136.379
808.664	136.459
820.13	136.704
821.971	136.743

833.961	137
835.574	137.035
835.855	137.041
849.047	137.327
851.677	137.384
862.588	137.62
867.593	137.729
876.198	137.915
883.605	138.076
889.878	138.211
899.713	138.425
903.628	138.509
915.919	138.776
917.449	138.809
926.274	139
936.214	139.29
943.717	139.589
962.389	140.22
979.061	141
983.234	142.38
985.11	143
987.287	143.719
991.16	145
994.524	146.112
997.209	147
1000.33	148.033
1003.26	149
1007.19	150.301
1009.31	151
1011.14	151.607
1015.36	153
1020.26	154.621
1021.41	155
1027.04	156.861
1027.46	157
1027.82	157.12
1033.5	159
1034.29	159.258
1039.55	161
1044.85	162.749
1045.6	163
1046.49	163.294
1051.65	165
1053.18	165.503
1057.7	167
1061.67	168.313
1063.75	169
1067.3	170.173
1069.8	171
1072.91	172.028
1075.85	173
1078.52	173.882
1081.9	175

1084.13	175.737
1087.95	177
1089.74	177.591
1091.61	178.21

Block Search Polyline

X	Y
140.028	195.713
141.766	195.149
142.289	194.994
143.045	194.769
144.237	194.414
145.518	194
148.459	193.052
151.716	192
156.612	190.418
157.903	190
161.952	188.689
164.08	188
164.758	187.78
170.247	186
172.895	185.14
176.403	184
181.024	182.497
182.529	182
185.376	181.065
188.619	180
189.923	179.575
194.757	178
195.648	177.71
200.895	176
201.373	175.844
207.034	174
207.098	173.979
207.993	173.687
212.823	172.114
213.172	172
218.549	170.248
219.311	170
224.274	168.383
225.449	168
230	166.518
231.588	166
235.725	164.651
237.722	164
241.444	162.784
243.846	162
247.162	160.917
249.97	160
252.88	159.05
256.093	158
258.598	157.182

262.216	156
264.316	155.314
268.34	154
270.035	153.446
274.463	152
275.754	151.578
280.585	150
281.473	149.71
286.71	148
287.186	147.844
292.824	146
292.886	145.98
293.74	145.7
298.583	144.115
298.935	144
304.279	142.251
305.047	142
309.976	140.387
311.159	140
315.674	138.523
317.272	138
321.371	136.659
323.386	136
327.069	134.795
329.5	134
332.77	132.931
335.619	132
339.508	130.716
341.678	130
345.692	128.704
347.866	128
350.959	126.992
354.006	126
357.278	124.924
360.089	124
361.133	123.745
365.215	123.477
368.707	123.493
371.484	124
373.654	124.03
374.386	124.08
377.631	124.239
382.427	124.316
383.677	124.244
387.287	124.197
390.059	124.187
396.735	124.233
398.019	124.268
399.749	124.314
406.24	124.429
409.208	124.512
411.915	124.585
415.53	124.683

424.48	124.93
430.485	125.131
448.199	125.599
448.732	125.618
463.334	126
470.097	126.145
471.17	126.168
483.106	126.425
486.086	126.487
495.863	126.696
500.697	126.797
508.409	126.961
515.014	127.097
518.981	127.181
523.614	127.281
527.447	127.363
529.69	127.406
531.66	127.441
540.373	127.637
554.05	127.953
556.089	128
568.694	128.288
580.167	128.531
584.066	128.617
593.259	128.813
599.175	128.945
607.386	129.128
614.024	129.271
624.97	129.517
628.615	129.596
643.158	129.917
643.782	129.931
646.896	130
658.497	130.248
660.64	130.294
673.082	130.561
677.922	130.665
687.656	130.874
692.236	130.971
699.35	131.123
712.535	131.48
729.855	131.992
730.239	131.992
731.42	132
738.245	133.694
739.951	134
740.007	134.001
741.701	134.015
742.332	134.017
743.317	134.019
753.154	134.287
755.462	134.336
761.566	134.471

765.71	134.559
775.589	134.763
783.012	134.917
790.009	135.066
795.683	135.184
804.848	135.379
808.664	135.459
820.13	135.704
821.971	135.743
833.961	136
835.574	136.035
835.855	136.041
849.047	136.327
851.677	136.384
862.588	136.62
867.593	136.729
876.198	136.915
883.605	137.076
889.878	137.211
899.713	137.425
903.628	137.509
915.919	137.776
917.449	137.809
926.274	138
936.214	138.29
943.717	138.589
962.389	139.22
979.061	140
983.234	141.38
985.11	142
987.287	142.719
991.16	144
994.524	145.112
997.209	146
1000.33	147.033
1003.26	148
1007.19	149.301
1009.31	150
1011.14	150.607
1015.36	152
1020.26	153.621
1021.41	154
1027.04	155.861
1027.46	156
1027.82	156.12
1033.5	158
1034.29	158.258
1039.55	160
1044.85	161.749
1045.6	162
1046.49	162.294
1051.65	164
1053.18	164.503

1057.7	166
1061.67	167.313
1063.75	168
1067.3	169.173
1069.8	170
1072.91	171.028
1075.85	172
1078.52	172.882
1081.9	174
1084.13	174.737
1087.95	176
1089.74	176.591
1091.61	177.21

External Boundary

	X	Y
0		189.907
0		0
1091.61		0
1091.61		175.21
1091.61		177.21
1091.61		178.21
1091.61		179.21
1091.61		184.21
1091.61		315.915
1089.91		316
1063.4		317.322
1049.79		318
1020.8		319.445
1009.68		320
978.207		321.569
969.56		322
967.034		322.1
957.494		322.477
951.058		322.728
918.857		324
886.821		322.699
875.264		322.234
869.428		322
842.625		320.66
829.419		320
802.655		318.662
789.411		318
762.684		316.664
749.402		316
722.713		314.666
709.393		314
671.066		312.084
669.384		312
668.793		311.97
629.376		310
628.822		309.972

589.367	308
588.85	307.974
549.358	306
548.879	305.976
509.349	304
508.907	303.978
469.34	302
468.527	301.928
446.661	300
442.399	298.58
440.658	298
436.441	296.595
434.656	296
430.483	294.609
428.654	294
424.525	292.624
422.652	292
418.566	290.639
416.65	290
412.608	288.653
410.647	288
406.65	286.668
404.645	286
400.692	284.683
398.643	284
394.734	282.697
392.641	282
388.775	280.712
386.639	280
382.817	278.727
380.636	278
376.859	276.741
374.634	276
370.9	274.756
368.632	274
364.942	272.77
362.63	272
358.984	270.785
356.628	270
353.025	268.8
350.625	268
347.067	266.814
344.623	266
341.108	264.829
338.621	264
335.15	262.843
332.619	262
329.191	260.858
326.617	260
323.233	258.872
320.614	258
317.274	256.887
314.612	256

311.316	254.902
308.61	254
305.357	252.916
302.608	252
299.398	250.931
296.606	250
293.44	248.945
290.603	248
287.481	246.96
284.601	246
281.522	244.974
278.599	244
275.563	242.989
272.597	242
269.605	241.003
266.595	240
263.646	239.017
260.592	238
257.687	237.032
254.59	236
251.728	235.046
248.588	234
245.769	233.061
242.586	232
239.81	231.075
236.583	230
233.851	229.09
230.581	228
227.892	227.104
224.579	226
221.933	225.118
218.577	224
215.974	223.133
212.575	222
210.015	221.147
206.572	220
204.056	219.162
200.57	218
198.097	217.176
194.568	216
192.138	215.19
188.566	214
186.179	213.205
182.564	212
180.22	211.219
176.561	210
174.261	209.233
170.559	208
168.301	207.248
164.557	206
162.342	205.262
158.555	204
156.383	203.276

152.553	202
150.424	201.291
147.568	200.339
146.55	200
144.336	199.263
140.538	198
140.028	197.831
137.04	199.831
136.822	199.82
136.281	199.806
132.588	199.709
128.132	198.907
124.832	198.717
124.43	198.72
123.832	198.73
123.354	198.751
122.743	198.757
121.425	198.812
120.213	198.857
119.938	198.854
119.584	198.87
118.385	198.849
117.235	198.834
117.034	198.833
110.132	198.987
104.818	199.102
98.8143	198.859
86.6552	198.181
86.5428	198.179
84.1379	198
83.868	197.986
83.5647	197.967
83.3869	197.961
78.0277	197.266
75.9286	197.019
68.8572	196.138
68.697	196.118
67.841	196.002
67.8254	196.002
67.6997	196
62.2082	195.148
60.6701	194.935
55.9212	194
51.5095	193.601
45.8245	193.113
42.7715	192.86
39.5414	192.548
39.0396	192.503
33.5804	192
33.3498	191.999
33.0358	191.998
31.7133	191.995
31.057	191.995

30.8982	191.995
30.4475	191.994
29.8506	191.994
29.6366	191.993
29.391	191.993
29.3226	191.993
28.622	191.994
28.542	191.993
28.3605	191.993
28.2555	191.993
16.346	191.138
8.05554	190.53
0.998983	190.005
0.686216	190

Material Boundary

	X	Y
140.028	197.831	
140.028	197.713	
140.028	196.713	
140.028	195.713	
140.028	193.713	
141.766	193.149	
142.289	192.994	
143.045	192.769	
144.237	192.414	
145.518	192	
148.459	191.052	
151.716	190	
156.612	188.418	
157.903	188	
161.952	186.689	
164.08	186	
164.758	185.78	
170.247	184	
172.895	183.14	
176.403	182	
181.024	180.497	
182.529	180	
185.376	179.065	
188.619	178	
189.923	177.575	
194.757	176	
195.648	175.71	
200.895	174	
201.373	173.844	
207.034	172	
207.098	171.979	
207.993	171.687	
212.823	170.114	
213.172	170	
218.549	168.248	

219.311	168
224.274	166.383
225.449	166
230	164.518
231.588	164
235.725	162.651
237.722	162
241.444	160.784
243.846	160
247.162	158.917
249.97	158
252.88	157.05
256.093	156
258.598	155.182
262.216	154
264.316	153.314
268.34	152
270.035	151.446
274.463	150
275.754	149.578
280.585	148
281.473	147.71
286.71	146
287.186	145.844
292.824	144
292.886	143.98
293.74	143.7
298.583	142.115
298.935	142
304.279	140.251
305.047	140
309.976	138.387
311.159	138
315.674	136.523
317.272	136
321.371	134.659
323.386	134
327.069	132.795
329.5	132
332.77	130.931
335.619	130
339.508	128.716
341.678	128
345.692	126.704
347.866	126
350.959	124.992
354.006	124
357.278	122.924
360.089	122
361.133	121.745
365.215	121.477
368.707	121.493
371.484	122

373.654	122.03
374.386	122.08
377.631	122.239
382.427	122.316
383.677	122.244
387.287	122.197
390.059	122.187
396.735	122.233
398.019	122.268
399.749	122.314
406.24	122.429
409.208	122.512
411.915	122.585
415.53	122.683
424.48	122.93
430.485	123.131
448.199	123.599
448.732	123.618
463.334	124
470.097	124.145
471.17	124.168
483.106	124.425
486.086	124.487
495.863	124.696
500.697	124.797
508.409	124.961
515.014	125.097
518.981	125.181
523.614	125.281
527.447	125.363
529.69	125.406
531.66	125.441
540.373	125.637
554.05	125.953
556.089	126
568.694	126.288
580.167	126.531
584.066	126.617
593.259	126.813
599.175	126.945
607.386	127.128
614.024	127.271
624.97	127.517
628.615	127.596
643.158	127.917
643.782	127.931
646.896	128
658.497	128.248
660.64	128.294
673.082	128.561
677.922	128.665
687.656	128.874
692.236	128.971

699.35	129.123
712.535	129.48
729.855	129.992
730.239	129.992
731.42	130
738.245	131.694
739.951	132
740.007	132.001
741.701	132.015
742.332	132.017
743.317	132.019
753.154	132.287
755.462	132.336
761.566	132.471
765.71	132.559
775.589	132.763
783.012	132.917
790.009	133.066
795.683	133.184
804.848	133.379
808.664	133.459
820.13	133.704
821.971	133.743
833.961	134
835.574	134.035
835.855	134.041
849.047	134.327
851.677	134.384
862.588	134.62
867.593	134.729
876.198	134.915
883.605	135.076
889.878	135.211
899.713	135.425
903.628	135.509
915.919	135.776
917.449	135.809
926.274	136
936.214	136.29
943.717	136.589
962.389	137.22
979.061	138
983.234	139.38
985.11	140
987.287	140.719
991.16	142
994.524	143.112
997.209	144
1000.33	145.033
1003.26	146
1007.19	147.301
1009.31	148
1011.14	148.607

1015.36	150
1020.26	151.621
1021.41	152
1027.04	153.861
1027.46	154
1027.82	154.12
1033.5	156
1034.29	156.258
1039.55	158
1044.85	159.749
1045.6	160
1046.49	160.294
1051.65	162
1053.18	162.503
1057.7	164
1061.67	165.313
1063.75	166
1067.3	167.173
1069.8	168
1072.91	169.028
1075.85	170
1078.52	170.882
1081.9	172
1084.13	172.737
1087.95	174
1089.74	174.591
1091.61	175.21

Material Boundary

	X	Y
140.028		195.713
141.766		195.149
142.289		194.994
143.045		194.769
144.237		194.414
145.518		194
148.459		193.052
151.716		192
156.612		190.418
157.903		190
161.952		188.689
164.08		188
164.758		187.78
170.247		186
172.895		185.14
176.403		184
181.024		182.497
182.529		182
185.376		181.065
188.619		180
189.923		179.575
194.757		178

195.648	177.71
200.895	176
201.373	175.844
207.034	174
207.098	173.979
207.993	173.687
212.823	172.114
213.172	172
218.549	170.248
219.311	170
224.274	168.383
225.449	168
230	166.518
231.588	166
235.725	164.651
237.722	164
241.444	162.784
243.846	162
247.162	160.917
249.97	160
252.88	159.05
256.093	158
258.598	157.182
262.216	156
264.316	155.314
268.34	154
270.035	153.446
274.463	152
275.754	151.578
280.585	150
281.473	149.71
286.71	148
287.186	147.844
292.824	146
292.886	145.98
293.74	145.7
298.583	144.115
298.935	144
304.279	142.251
305.047	142
309.976	140.387
311.159	140
315.674	138.523
317.272	138
321.371	136.659
323.386	136
327.069	134.795
329.5	134
332.77	132.931
335.619	132
339.508	130.716
341.678	130
345.692	128.704

347.866	128
350.959	126.992
354.006	126
357.278	124.924
360.089	124
361.133	123.745
365.215	123.477
368.707	123.493
371.484	124
373.654	124.03
374.386	124.08
377.631	124.239
382.427	124.316
383.677	124.244
387.287	124.197
390.059	124.187
396.735	124.233
398.019	124.268
399.749	124.314
406.24	124.429
409.208	124.512
411.915	124.585
415.53	124.683
424.48	124.93
430.485	125.131
448.199	125.599
448.732	125.618
463.334	126
470.097	126.145
471.17	126.168
483.106	126.425
486.086	126.487
495.863	126.696
500.697	126.797
508.409	126.961
515.014	127.097
518.981	127.181
523.614	127.281
527.447	127.363
529.69	127.406
531.66	127.441
540.373	127.637
554.05	127.953
556.089	128
568.694	128.288
580.167	128.531
584.066	128.617
593.259	128.813
599.175	128.945
607.386	129.128
614.024	129.271
624.97	129.517
628.615	129.596

643.158	129.917
643.782	129.931
646.896	130
658.497	130.248
660.64	130.294
673.082	130.561
677.922	130.665
687.656	130.874
692.236	130.971
699.35	131.123
712.535	131.48
729.855	131.992
730.239	131.992
731.42	132
738.245	133.694
739.951	134
740.007	134.001
741.701	134.015
742.332	134.017
743.317	134.019
753.154	134.287
755.462	134.336
761.566	134.471
765.71	134.559
775.589	134.763
783.012	134.917
790.009	135.066
795.683	135.184
804.848	135.379
808.664	135.459
820.13	135.704
821.971	135.743
833.961	136
835.574	136.035
835.855	136.041
849.047	136.327
851.677	136.384
862.588	136.62
867.593	136.729
876.198	136.915
883.605	137.076
889.878	137.211
899.713	137.425
903.628	137.509
915.919	137.776
917.449	137.809
926.274	138
936.214	138.29
943.717	138.589
962.389	139.22
979.061	140
983.234	141.38
985.11	142

987.287	142.719
991.16	144
994.524	145.112
997.209	146
1000.33	147.033
1003.26	148
1007.19	149.301
1009.31	150
1011.14	150.607
1015.36	152
1020.26	153.621
1021.41	154
1027.04	155.861
1027.46	156
1027.82	156.12
1033.5	158
1034.29	158.258
1039.55	160
1044.85	161.749
1045.6	162
1046.49	162.294
1051.65	164
1053.18	164.503
1057.7	166
1061.67	167.313
1063.75	168
1067.3	169.173
1069.8	170
1072.91	171.028
1075.85	172
1078.52	172.882
1081.9	174
1084.13	174.737
1087.95	176
1089.74	176.591
1091.61	177.21

Material Boundary

	X	Y
140.028		197.713
141.766		197.149
142.289		196.994
143.045		196.769
144.237		196.414
145.518		196
148.459		195.052
151.716		194
156.612		192.418
157.903		192
161.952		190.689
164.08		190
164.758		189.78

170.247	188
172.895	187.14
176.403	186
181.024	184.497
182.529	184
185.376	183.065
188.619	182
189.923	181.575
194.757	180
195.648	179.71
200.895	178
201.373	177.844
207.034	176
207.098	175.979
207.993	175.687
212.823	174.114
213.172	174
218.549	172.248
219.311	172
224.274	170.383
225.449	170
230	168.518
231.588	168
235.725	166.651
237.722	166
241.444	164.784
243.846	164
247.162	162.917
249.97	162
252.88	161.05
256.093	160
258.598	159.182
262.216	158
264.316	157.314
268.34	156
270.035	155.446
274.463	154
275.754	153.578
280.585	152
281.473	151.71
286.71	150
287.186	149.844
292.824	148
292.886	147.98
293.74	147.7
298.583	146.115
298.935	146
304.279	144.251
305.047	144
309.976	142.387
311.159	142
315.674	140.523
317.272	140

321.371	138.659
323.386	138
327.069	136.795
329.5	136
332.77	134.931
335.619	134
339.508	132.716
341.678	132
345.692	130.704
347.866	130
350.959	128.992
354.006	128
357.278	126.924
360.089	126
361.133	125.745
365.215	125.477
368.707	125.493
371.484	126
373.654	126.03
374.386	126.08
377.631	126.239
382.427	126.316
383.677	126.244
387.287	126.197
390.059	126.187
396.735	126.233
398.019	126.268
399.749	126.314
406.24	126.429
409.208	126.512
411.915	126.585
415.53	126.683
424.48	126.93
430.485	127.131
448.199	127.599
448.732	127.618
463.334	128
470.097	128.145
471.17	128.168
483.106	128.425
486.086	128.487
495.863	128.696
500.697	128.797
508.409	128.961
515.014	129.097
518.981	129.181
523.614	129.281
527.447	129.363
529.69	129.406
531.66	129.441
540.373	129.637
554.05	129.953
556.089	130

568.694	130.288
580.167	130.531
584.066	130.617
593.259	130.813
599.175	130.945
607.386	131.128
614.024	131.271
624.97	131.517
628.615	131.596
643.158	131.917
643.782	131.931
646.896	132
658.497	132.248
660.64	132.294
673.082	132.561
677.922	132.665
687.656	132.874
692.236	132.971
699.35	133.123
712.535	133.48
729.855	133.992
730.239	133.992
731.42	134
738.245	135.694
739.951	136
740.007	136.001
741.701	136.015
742.332	136.017
743.317	136.019
753.154	136.287
755.462	136.336
761.566	136.471
765.71	136.559
775.589	136.763
783.012	136.917
790.009	137.066
795.683	137.184
804.848	137.379
808.664	137.459
820.13	137.704
821.971	137.743
833.961	138
835.574	138.035
835.855	138.041
849.047	138.327
851.677	138.384
862.588	138.62
867.593	138.729
876.198	138.915
883.605	139.076
889.878	139.211
899.713	139.425
903.628	139.509

915.919	139.776
917.449	139.809
926.274	140
936.214	140.29
943.717	140.589
962.389	141.22
979.061	142
983.234	143.38
985.11	144
987.287	144.719
991.16	146
994.524	147.112
997.209	148
1000.33	149.033
1003.26	150
1007.19	151.301
1009.31	152
1011.14	152.607
1015.36	154
1020.26	155.621
1021.41	156
1027.04	157.861
1027.46	158
1027.82	158.12
1033.5	160
1034.29	160.258
1039.55	162
1044.85	163.749
1045.6	164
1046.49	164.294
1051.65	166
1053.18	166.503
1057.7	168
1061.67	169.313
1063.75	170
1067.3	171.173
1069.8	172
1072.91	173.028
1075.85	174
1078.52	174.882
1081.9	176
1084.13	176.737
1087.95	178
1089.74	178.591
1091.61	179.21

Material Boundary

	X	Y
147.568	200.339	
148.459	200.052	
151.716	199	
156.612	197.418	

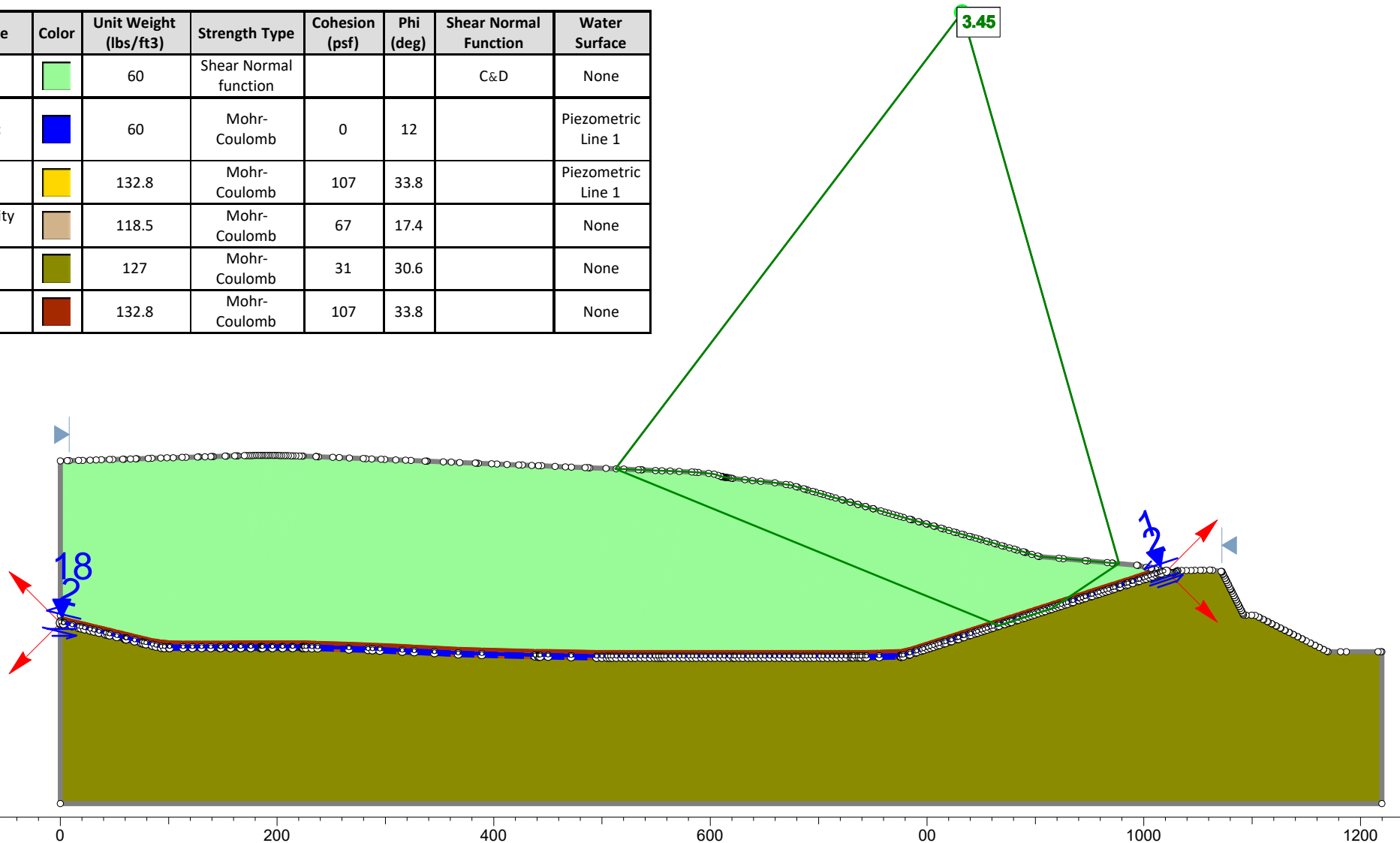
157.903	197
161.952	195.689
164.08	195
164.758	194.78
170.247	193
172.895	192.14
176.403	191
181.024	189.497
182.529	189
185.376	188.065
188.619	187
189.923	186.575
194.757	185
195.648	184.71
200.895	183
201.373	182.844
207.034	181
207.098	180.979
207.993	180.687
212.823	179.114
213.172	179
218.549	177.248
219.311	177
224.274	175.383
225.449	175
230	173.518
231.588	173
235.725	171.651
237.722	171
241.444	169.784
243.846	169
247.162	167.917
249.97	167
252.88	166.05
256.093	165
258.598	164.182
262.216	163
264.316	162.314
268.34	161
270.035	160.446
274.463	159
275.754	158.578
280.585	157
281.473	156.71
286.71	155
287.186	154.844
292.824	153
292.886	152.98
293.74	152.7
298.583	151.115
298.935	151
304.279	149.251
305.047	149

309.976	147.387
311.159	147
315.674	145.523
317.272	145
321.371	143.659
323.386	143
327.069	141.795
329.5	141
332.77	139.931
335.619	139
339.508	137.716
341.678	137
345.692	135.704
347.866	135
350.959	133.992
354.006	133
357.278	131.924
360.089	131
361.133	130.745
365.215	130.477
368.707	130.493
371.484	131
373.654	131.03
374.386	131.08
377.631	131.239
382.427	131.316
383.677	131.244
387.287	131.197
390.059	131.187
396.735	131.233
398.019	131.268
399.749	131.314
406.24	131.429
409.208	131.512
411.915	131.585
415.53	131.683
424.48	131.93
430.485	132.131
448.199	132.599
448.732	132.618
463.334	133
470.097	133.145
471.17	133.168
483.106	133.425
486.086	133.487
495.863	133.696
500.697	133.797
508.409	133.961
515.014	134.097
518.981	134.181
523.614	134.281
527.447	134.363
529.69	134.406

531.66	134.441
540.373	134.637
554.05	134.953
556.089	135
568.694	135.288
580.167	135.531
584.066	135.617
593.259	135.813
599.175	135.945
607.386	136.128
614.024	136.271
624.97	136.517
628.615	136.596
643.158	136.917
643.782	136.931
646.896	137
658.497	137.248
660.64	137.294
673.082	137.561
677.922	137.665
687.656	137.874
692.236	137.971
699.35	138.123
712.535	138.48
729.855	138.992
730.239	138.992
731.42	139
738.245	140.694
739.951	141
740.007	141.001
741.701	141.015
742.332	141.017
743.317	141.019
753.154	141.287
755.462	141.336
761.566	141.471
765.71	141.559
775.589	141.763
783.012	141.917
790.009	142.066
795.683	142.184
804.848	142.379
808.664	142.459
820.13	142.704
821.971	142.743
833.961	143
835.574	143.035
835.855	143.041
849.047	143.327
851.677	143.384
862.588	143.62
867.593	143.729
876.198	143.915

883.605	144.076
889.878	144.211
899.713	144.425
903.628	144.509
915.919	144.776
917.449	144.809
926.274	145
936.214	145.29
943.717	145.589
962.389	146.22
979.061	147
983.234	148.38
985.11	149
987.287	149.719
991.16	151
994.524	152.112
997.209	153
1000.33	154.033
1003.26	155
1007.19	156.301
1009.31	157
1011.14	157.607
1015.36	159
1020.26	160.621
1021.41	161
1027.04	162.861
1027.46	163
1027.82	163.12
1033.5	165
1034.29	165.258
1039.55	167
1044.85	168.749
1045.6	169
1046.49	169.294
1051.65	171
1053.18	171.503
1057.7	173
1061.67	174.313
1063.75	175
1067.3	176.173
1069.8	177
1072.91	178.028
1075.85	179
1078.52	179.882
1081.9	181
1084.13	181.737
1087.95	183
1089.74	183.591
1091.61	184.21

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
C&D		60	Shear Normal function			C&D	None
Critical Geosynthetic Interface		60	Mohr-Coulomb	0	12		Piezometric Line 1
Pea Gravel		132.8	Mohr-Coulomb	107	33.8		Piezometric Line 1
Low Permeability Soil		118.5	Mohr-Coulomb	67	17.4		None
Subgrade		127	Mohr-Coulomb	31	30.6		None
Select Fill		132.8	Mohr-Coulomb	107	33.8		None



SLIDEINTERPRET 9.020

Project		Project: 182-442 S.A. Dunn Permit Renewal/Modification Application - C&D Landfill	
Group		Analysis Description: Section C - Liner System Failure - Static.slim	
Scenario		Section C - Liner System Failure - Static.slim	
Drawn By	Created By: ZLM	Checked By: TDM	Company: Civil & Environmental Consultants, Inc.
Date	Created Date: 1/6/2022 12/10/2015 12:09:38 PM	Date: 1/9/2022	File Name: Section C - Liner System Failure - Static.slim

Slide Analysis Information

151-877 S.A. Dunn C&D Landfill

Project Summary

Slide Modeler Version:	9.02
Compute Time:	00h:00m:27.573s
Author:	DVS
Company:	Civil & Environmental Consultants, Inc.
Date Created:	12/10/2015, 12:09:38 PM

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	
	GLE/Morgenstern-Price with interslice force function (Half Sine)
Number of slices:	25
Tolerance:	0.005
Maximum number of iterations:	50
Check malpha < 0.2:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft ³]:	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


Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [deg]:	135
Left Projection Angle (End Angle) [deg]:	225
Right Projection Angle (Start Angle) [deg]:	45
Right Projection Angle (End Angle) [deg]:	-45
Minimum Elevation:	Not Defined
Minimum Depth [ft]:	10
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading


Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Materials


C&D

Color	
Strength Type	Shear Normal function
Unit Weight [lbs/ft ³]	60
Water Surface	None
Ru Value	0


Pea Gravel

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	Piezometric Line 1
Hu Value	1


Low Permeability Soil

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	118.5
Cohesion [psf]	67
Friction Angle [deg]	17.4
Water Surface	None
Ru Value	0

Subgrade

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	127
Cohesion [psf]	31
Friction Angle [deg]	30.6
Water Surface	None
Ru Value	0

Select Fill

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	None
Ru Value	0

Shear Normal Functions

Name: C&D	
Effective Normal (psf)	Shear (psf)
0	0
2000	1400
10000	6169

Global Minimums

Method: gle/morgenstern-price

FS	3.454840
Axis Location:	832.254, 729.972
Left Slip Surface Endpoint:	512.397, 308.861
Right Slip Surface Endpoint:	977.228, 221.421
Resisting Moment:	4.05641e+08 lb-ft
Driving Moment:	1.17412e+08 lb-ft
Resisting Horizontal Force:	724937 lb
Driving Horizontal Force:	209832 lb
Total Slice Area:	20844.5 ft ²
Surface Horizontal Width:	464.831 ft
Surface Average Height:	44.8433 ft

Global Minimum Coordinates**Method: gle/morgenstern-price**

X	Y
512.397	308.861
866.244	164.328
871.45	166
871.897	166.144
875.09	167.169
877.36	167.898
877.677	168
882.814	169.649
883.717	169.94
888.684	171.536
889.992	171.956
893.812	173.184
896.291	173.981
899.174	174.907
902.626	176.015
906.046	177.114
908.81	178
912.925	179.322
915.037	180
977.228	221.421

Global Minimum Support Data

No Supports Present

Slice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 3.45484

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	114.751	139592	-22.2183	C&D	0	34.992	220.184	760.702	1086.71	0	1086.71	1176.65	1176.65
2	114.751	349421	-22.2183	C&D	207.75	30.8002	520.892	1799.6	2670.33	0	2670.33	2883.1	2883.1
3	114.751	456382	-22.2183	C&D	207.75	30.8002	682.503	2357.94	3606.95	0	3606.95	3885.73	3885.73
4	6.85248	31545.5	-22.2183	Select Fill	107	33.8	866.318	2992.99	4311.04	0	4311.04	4664.9	4664.9
5	2.74099	13412.7	-22.2183	Pea Gravel	107	33.8	919.718	3177.48	4586.65	0	4586.65	4962.32	4962.32
6	5.20644	25413.9	17.8069	Critical Geosynthetic Interface	0	12	340.082	1174.93	5590.01	62.3886	5527.62	5480.77	5418.38
7	0.446836	2135.06	17.8069	Critical Geosynthetic Interface	0	12	332.389	1148.35	5464.94	62.3886	5402.56	5358.18	5295.79
8	3.19268	15043.3	17.8069	Critical Geosynthetic Interface	0	12	327.439	1131.25	5384.49	62.3886	5322.1	5279.32	5216.93
9	2.27087	10473.6	17.8069	Critical Geosynthetic Interface	0	12	320.009	1105.58	5263.76	62.3886	5201.37	5160.97	5098.58
10	0.316289	1443.85	17.8069	Critical Geosynthetic Interface	0	12	316.495	1093.44	5206.6	62.3886	5144.21	5104.94	5042.55
11	5.13751	22942.1	17.7921	Critical Geosynthetic Interface	0	12	309.074	1067.8	5086.04	62.4345	5023.61	4986.86	4924.42
12	0.90324	3934.01	17.8914	Critical Geosynthetic Interface	0	12	301.015	1039.96	4955.07	62.4345	4892.64	4857.9	4795.46
13	4.96635	21098.3	17.8108	Critical Geosynthetic Interface	0	12	292.954	1012.11	4823.99	62.377	4761.61	4729.87	4667.5
14	1.30852	5409.11	17.7922	Critical Geosynthetic Interface	0	12	284.447	982.72	4685.71	62.377	4623.33	4594.42	4532.05
15	3.82002	15429.4	17.8239	Critical Geosynthetic Interface	0	12	277.493	958.694	4572.65	62.3495	4510.3	4483.43	4421.08
16	2.47911	9724.16	17.8235	Critical Geosynthetic Interface	0	12	268.898	929	4432.9	62.2858	4370.61	4346.44	4284.16
17	2.883	11023.7	17.7972	Critical Geosynthetic Interface	0	12	261.608	903.813	4314.38	62.278	4252.1	4230.4	4168.12
18	3.45107	12796.2	17.8055	Critical Geosynthetic Interface	0	12	253.113	874.464	4176.33	62.2979	4114.03	4095.04	4032.74
19	3.42058	12289.7	17.8181	Critical Geosynthetic Interface	0	12	244.629	845.154	4038.41	62.278	3976.13	3959.78	3897.51
20	2.76401	9715.39	17.7667	Critical Geosynthetic Interface	0	12	238.641	824.465	3941.13	62.3219	3878.81	3864.67	3802.35
21	4.11483	14114	17.8069	Critical Geosynthetic Interface	0	12	232.195	802.198	3836.43	62.3886	3774.05	3761.85	3699.46
22	2.11186	7081.12	17.8069	Critical Geosynthetic Interface	0	12	226.339	781.965	3741.24	62.3886	3678.86	3668.55	3606.16
23	5.80016	18110.4	33.6643	Pea Gravel	107	33.8	843.347	2913.63	4192.49	0	4192.49	3630.81	3630.81
24	14.5004	34908.3	33.6643	Select Fill	107	33.8	644.635	2227.11	3166.98	0	3166.98	2737.64	2737.64
25	41.8909	39713.4	33.6643	C&D	1.13687e-13	34.992	239.103	826.061	1180.09	0	1180.09	1020.84	1020.84

Interslice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 3.45484

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	512.397	308.861	0	0	0
2	627.148	261.99	25669.9	4570.36	10.0954
3	741.899	215.118	91060.1	23152.8	14.2657
4	856.65	168.246	181806	33644.1	10.4843
5	863.503	165.447	187936	33223.5	10.0252
6	866.244	164.328	190550	33034.6	9.8353
7	871.45	166	179432	29913.3	9.4648
8	871.897	166.144	178499	29654.1	9.43242
9	875.09	167.169	171932	27842.2	9.19847
10	877.36	167.898	167366	26595.9	9.0293
11	877.677	168	166736	26425.1	9.0056
12	882.814	169.649	156763	23747.2	8.61394
13	883.717	169.94	155047	23293.4	8.5439
14	888.684	171.536	145895	20901.5	8.15295
15	889.992	171.956	143555	20298.7	8.04828
16	893.812	173.184	136879	18601.3	7.73886
17	896.291	173.981	132679	17550.2	7.53509
18	899.174	174.907	127931	16377.7	7.29531
19	902.626	176.015	122429	15041.6	7.00425
20	906.046	177.114	117152	13786.5	6.71172
21	908.81	178	113002	12819.9	6.47244
22	912.925	179.322	106976	11454.5	6.11168
23	915.037	180	103961	10788.2	5.92447
24	920.837	183.863	82873.3	7839.28	5.40373
25	935.337	193.521	42940.7	3050.61	4.0636
26	977.228	221.421	0	0	0

Discharge Sections

Entity Information

Piezoline

X	Y
0	167.667
2.61045	167.033
2.74827	167
2.93545	166.955
10.984	165
16.9104	163.561
19.2198	163
22.3549	162.239
27.4555	161
31.2131	160.088
35.6913	159
41.768	157.524
43.927	157
45.5183	156.614
52.1628	155
59.8261	153.139
59.8924	153.123
60.4145	153
60.8582	152.895
60.9162	152.881

68.6396	151
75.206	149.4
76.8497	149
79.0691	148.459
85.0598	147
88.4071	146.185
93.2699	145
96.1305	144.964
100.713	144.947
101.016	144.941
113.425	144.821
121.918	144.822
130.421	144.823
138.934	144.824
147.456	144.825
148.142	144.848
156.777	144.849
157.383	144.866
166.104	144.867
166.646	144.881
175.435	144.882
175.924	144.893
184.77	144.893
185.454	144.904
186.03	144.91
186.471	144.91
195.39	144.911
195.828	144.911
204.75	144.912
205.185	144.912
214.11	144.912
214.542	144.912
223.469	144.913
223.899	144.913
224.328	144.913
224.757	144.913
226.606	144.875
232.206	144.736
237.619	144.555
266.437	143.593
284.194	143
288.023	142.82
294.955	142.494
315.577	141.526
326.764	141
345.352	140.109
367.261	139
389.122	138.384
438.282	137
441.106	136.989
441.813	136.988
442.992	136.982
450.152	136.954

471.589	136.475
495.112	136.041
499.816	136.042
504.522	136.042
507.015	136.043
509.52	136.047
513.255	136.047
518.191	136.045
521.934	136.044
526.857	136.043
530.609	136.042
535.521	136.04
539.492	136.044
544.41	136.042
548.376	136.045
551.45	136.051
554.115	136.053
556.005	136.053
558.664	136.055
563.412	136.057
566.946	136.064
571.737	136.066
575.242	136.073
580.075	136.075
583.551	136.082
586.977	136.088
591.874	136.09
595.541	136.09
600.448	136.093
604.107	136.093
609.025	136.095
612.675	136.095
617.604	136.097
621.244	136.097
622.641	136.096
626.431	136.093
629.889	136.087
634.698	136.083
638.19	136.076
641.731	136.07
646.478	136.066
650.054	136.06
654.753	136.056
659.419	136.052
663.75	136.06
668.432	136.056
672.746	136.063
677.444	136.06
680.743	136.07
685.469	136.067
688.752	136.077
692.299	136.081
695.852	136.075

701.119	136.075
703.992	136.063
708.239	136.071
712.549	136.079
716.654	136.084
721.014	136.092
725.057	136.098
729.467	136.106
730.766	136.109
732.057	136.112
735.706	136.117
737.361	136.116
738.906	136.115
742.564	136.12
743.989	136.118
755.732	136.35
775.632	136.895
775.782	136.895
775.919	136.894
776.153	136.893
778.05	137
783.506	138.753
784.276	139
789.286	140.609
790.503	141
794.831	142.39
796.73	143
800.37	144.169
802.957	145
805.905	145.947
809.183	147
811.435	147.723
815.41	149
816.957	149.497
821.637	151
822.473	151.269
827.863	153
827.984	153.039
828.909	153.336
833.494	154.808
834.09	155
838.998	156.577
840.317	157
844.497	158.343
846.543	159
849.989	160.107
852.77	161
855.476	161.869
858.997	163
860.956	163.629
865.223	165
866.43	165.387
871.45	167

871.897	167.144
875.09	168.169
877.36	168.898
877.677	169
882.821	170.652
883.903	171
888.276	172.404
890.13	173
893.723	174.154
896.357	175
899.164	175.902
902.583	177
906.152	178.146
908.81	179
912.925	180.322
915.037	181
918.41	182.083
921.263	183
923.888	183.843
927.49	185
929.36	185.601
933.717	187
934.825	187.356
939.944	189
940.292	189.112
943.235	190.057
945.863	190.901
946.17	191
951.208	192.618
952.397	193
956.633	194.361
958.624	195
962.07	196.107
964.85	197
967.5	197.851
971.077	199
972.917	199.591
977.304	201
978.32	201.326
983.53	203
983.726	203.063
985.426	203.609
989.318	204.859
989.757	205
994.64	206.568
995.984	207
999.949	208.274
1002.21	209
1005.61	210.122
1008.27	211
1011.51	212.172
1013.9	213
1014.76	213.314

1016.17	213.831
1018.57	214.636

Block Search Polyline

X	Y
0	166.667
2.61045	166.033
2.74827	166
2.93545	165.955
10.984	164
16.9104	162.561
19.2198	162
22.3549	161.239
27.4555	160
31.2131	159.088
35.6913	158
41.768	156.524
43.927	156
45.5183	155.614
52.1628	154
59.8261	152.139
59.8924	152.123
60.4145	152
60.8582	151.895
60.9162	151.881
68.6396	150
75.206	148.4
76.8497	148
79.0691	147.459
85.0598	146
88.4071	145.185
93.2699	144
96.1305	143.964
100.713	143.947
101.016	143.941
113.425	143.821
121.918	143.822
130.421	143.823
138.934	143.824
147.456	143.825
148.142	143.848
156.777	143.849
157.383	143.866
166.104	143.867
166.646	143.881
175.435	143.882
175.924	143.893
184.77	143.893
185.454	143.904
186.03	143.91
186.471	143.91
195.39	143.911

195.828	143.911
204.75	143.912
205.185	143.912
214.11	143.912
214.542	143.912
223.469	143.913
223.899	143.913
224.328	143.913
224.757	143.913
226.606	143.875
232.206	143.736
237.619	143.555
266.437	142.593
284.194	142
288.023	141.82
294.955	141.494
315.577	140.526
326.764	140
345.352	139.109
367.261	138
389.122	137.384
438.282	136
441.106	135.989
441.813	135.988
442.992	135.982
450.152	135.954
471.589	135.475
495.112	135.041
499.816	135.042
504.522	135.042
507.015	135.043
509.52	135.047
513.255	135.047
518.191	135.045
521.934	135.044
526.857	135.043
530.609	135.042
535.521	135.04
539.492	135.044
544.41	135.042
548.376	135.045
551.45	135.051
554.115	135.053
556.005	135.053
558.664	135.055
563.412	135.057
566.946	135.064
571.737	135.066
575.242	135.073
580.075	135.075
583.551	135.082
586.977	135.088
591.874	135.09

595.541	135.09
600.448	135.093
604.107	135.093
609.025	135.095
612.675	135.095
617.604	135.097
621.244	135.097
622.641	135.096
626.431	135.093
629.889	135.087
634.698	135.083
638.19	135.076
641.731	135.07
646.478	135.066
650.054	135.06
654.753	135.056
659.419	135.052
663.75	135.06
668.432	135.056
672.746	135.063
677.444	135.06
680.743	135.07
685.469	135.067
688.752	135.077
692.299	135.081
695.852	135.075
701.119	135.075
703.992	135.063
708.239	135.071
712.549	135.079
716.654	135.084
721.014	135.092
725.057	135.098
729.467	135.106
730.766	135.109
732.057	135.112
735.706	135.117
737.361	135.116
738.906	135.115
742.564	135.12
743.989	135.118
755.732	135.35
775.632	135.895
775.782	135.895
775.919	135.894
776.153	135.893
778.05	136
783.506	137.753
784.276	138
789.286	139.609
790.503	140
794.831	141.39
796.73	142

800.37	143.169
802.957	144
805.905	144.947
809.183	146
811.435	146.723
815.41	148
816.957	148.497
821.637	150
822.473	150.269
827.863	152
827.984	152.039
828.909	152.336
833.494	153.808
834.09	154
838.998	155.577
840.317	156
844.497	157.343
846.543	158
849.989	159.107
852.77	160
855.476	160.869
858.997	162
860.956	162.629
865.223	164
866.43	164.387
871.45	166
871.897	166.144
875.09	167.169
877.36	167.898
877.677	168
882.821	169.652
883.903	170
888.276	171.404
890.13	172
893.723	173.154
896.357	174
899.164	174.902
902.583	176
906.152	177.146
908.81	178
912.925	179.322
915.037	180
918.41	181.083
921.263	182
923.888	182.843
927.49	184
929.36	184.601
933.717	186
934.825	186.356
939.944	188
940.292	188.112
943.235	189.057
945.863	189.901

946.17	190
951.208	191.618
952.397	192
956.633	193.361
958.624	194
962.07	195.107
964.85	196
967.5	196.851
971.077	198
972.917	198.591
977.304	200
978.32	200.326
983.53	202
983.726	202.063
985.426	202.609
989.318	203.859
989.757	204
994.64	205.568
995.984	206
999.949	207.274
1002.21	208
1005.61	209.122
1008.27	210
1011.51	211.172
1013.9	212
1014.76	212.314
1016.17	212.831
1020.86	214.406

External Boundary

	X	Y
0		316.109
0		173.667
0		168.667
0		167.667
0		166.667
0		164.667
0		0
1219.81		0
1219.81		140
1218.71		140
1216.08		140
1186.91		140
1181.65		140
1169.98		140
1168.96		140.51
1165.98		142
1165.94		142.022
1161.98		144
1161.87		144.052
1157.97		146
1157.81		146.083

1153.97	148
1153.74	148.113
1149.97	150
1146.3	151.832
1145.96	152
1142.35	153.804
1141.96	154
1138.41	155.775
1137.96	156
1134.46	157.746
1133.96	158
1130.52	159.716
1129.95	160
1126.58	161.687
1125.95	162
1122.63	163.658
1121.95	164
1118.69	165.628
1117.94	166
1114.74	167.599
1113.94	168
1110.8	169.569
1109.94	170
1106.86	171.539
1105.93	172
1102.91	173.513
1099.52	173.859
1094.52	173.86
1092.03	174
1091.53	174.999
1091.03	176
1090.13	177.801
1090.03	178
1089.94	178.171
1089.03	180
1088.12	181.822
1088.03	182
1087.11	183.832
1087.03	184
1086.11	185.84
1086.03	186
1085.11	187.848
1085.03	188
1084.1	189.856
1084.03	190
1083.1	191.864
1083.03	192
1082.1	193.874
1082.03	194
1081.09	195.885
1081.03	196
1080.32	197.424
1080.04	198

1079.89	198.297
1079.04	200
1078.08	201.905
1078.04	202
1077.98	202.109
1077.04	204
1076.2	205.676
1076.04	206
1075.05	207.97
1075.04	208
1075.02	208.038
1074.04	210
1073.25	211.588
1073.04	212
1072.31	213.453
1072.04	214
1071.94	214.206
1071.32	214.159
1063.42	215.257
1060.85	215.402
1055.24	215.305
1052.25	215.254
1047.24	215.167
1043.65	215.105
1039.23	215.029
1035.05	214.956
1031.23	214.89
1031.21	214.89
1031.2	214.89
1030.1	214.34
1029.41	214
1028.1	213.348
1027.2	212.901
1026.1	212.904
1025.2	212.906
1024.29	213.363
1024.06	213.481
1023.02	214
1021.42	214.349
1021.42	214.349
1020.86	214.406
1018.57	214.636
1018.35	214.657
1016.17	214.831
1016.17	214.831
1014.12	215.298
1011.03	216
1007.6	216.78
1006.66	216.994
1002.24	218
994.715	219.711
993.444	220
971.061	221.961

970.626	222
966.337	222.38
948.029	224
946.173	224.161
925.668	226
921.667	226.352
903.558	228
902.15	228.407
896.627	230
890.917	231.686
889.857	232
888.805	232.302
882.886	234
880.441	234.701
875.91	236
870.915	237.432
868.933	238
863.881	239.448
861.956	240
856.849	241.464
854.979	242
849.816	243.48
848.002	244
844.816	244.913
841.024	246
838.911	246.606
834.049	248
831.937	248.605
827.072	250
824.844	250.639
820.092	252
815.118	253.427
813.119	254
807.03	255.746
806.142	256
799.957	257.773
799.166	258
792.927	259.789
792.189	260
785.902	261.802
785.213	262
784	262.348
778.236	264
774.987	264.932
771.259	266
767.956	266.946
764.278	268
760.966	268.949
757.298	270
750.551	271.933
750.317	272
750.187	272.037
743.335	274

743.061	274.079
736.354	276
736.025	276.094
729.373	278
728.994	278.109
722.393	280
721.65	280.213
715.413	282
711.155	283.22
708.431	284
704.082	285.246
701.451	286
697.045	287.263
694.47	288
689.688	289.37
687.491	290
686.287	290.345
680.51	292
679.092	292.406
673.53	294
669.841	294.53
659.621	296
646.437	297.28
639.023	298
631.875	298.773
620.523	300
619.315	300.188
617.055	300.54
615.53	300.777
614.431	300.948
613.602	301.077
612.954	301.178
612.434	301.259
612.007	301.326
611.651	301.381
611.349	301.428
610.968	301.547
610.518	301.688
609.978	301.857
609.52	302
607.088	302.81
603.517	304
598.461	304.667
588.88	305.484
585.658	305.81
582.821	306
571.381	306.465
562.784	306.814
555.284	307.119
549.352	307.36
536.852	307.868
535.963	307.904
533.597	308

520.061	308.55
513.256	308.826
503.601	309.219
488.514	309.832
487.129	309.888
484.372	310
471.823	310.51
466.201	310.738
456.663	311.126
444.195	311.632
441.407	311.746
435.148	312
426.585	312.348
423.112	312.489
412.237	312.931
403.018	313.305
398.046	313.507
385.924	314
383.861	314.084
382.932	314.122
368.722	314.699
360.927	315.016
353.446	315.32
338.63	315.922
338.031	315.946
336.699	316
323.645	316.53
318.615	316.735
309.688	317.097
299.451	317.513
296.058	317.651
287.475	318
282.072	318.219
279.631	318.319
266.885	318.837
257.515	319.217
251.553	319.46
238.25	320
236.354	320.077
236.173	320.083
235.965	320.089
224.14	320.551
222.969	320.58
220.62	320.668
217.402	320.78
214.627	320.868
213.003	320.9
210.498	320.971
208.258	321.027
206.459	321.054
204.401	321.099
202.505	321.134
200.731	321.162

198.84	321.182
197.16	321.202
195.55	321.217
193.625	321.229
192.069	321.238
190.542	321.241
189.025	321.24
187.104	321.244
185.592	321.237
184.055	321.226
182.47	321.208
180.586	321.204
178.955	321.18
177.231	321.148
175.401	321.135
173.584	321.095
171.608	321.044
169.885	321.023
163.988	320.857
162.472	320.831
161.042	320.799
153.258	320.573
152.168	320.544
141.311	320.227
139.934	320.187
138.971	320.159
133.511	320
127.85	319.835
126.697	319.801
116.045	319.491
112.503	319.388
104.328	319.15
98.4359	318.978
92.6962	318.811
84.4928	318.572
81.1502	318.474
70.6725	318.169
69.6887	318.14
64.8782	318
58.8789	317.825
57.7947	317.794
48.471	317.522
45.4995	317.435
38.0244	317.217
33.1503	317.075
27.539	316.912
20.747	316.714
17.0146	316.605
8.28898	316.351
6.451	316.297

Material Boundary

	X	Y
0		164.667
2.61045		164.033
2.74827		164
2.93545		163.955
10.984		162
16.9104		160.561
19.2198		160
22.3549		159.239
27.4555		158
31.2131		157.088
35.6913		156
41.768		154.524
43.927		154
45.5183		153.614
52.1628		152
59.8261		150.139
59.8924		150.123
60.4145		150
60.8582		149.895
60.9162		149.881
68.6396		148
75.206		146.4
76.8497		146
79.0691		145.459
85.0598		144
88.4071		143.185
93.2699		142
96.1305		141.964
100.713		141.947
101.016		141.941
113.425		141.821
121.918		141.822
130.421		141.823
138.934		141.824
147.456		141.825
148.142		141.848
156.777		141.849
157.383		141.866
166.104		141.867
166.646		141.881
175.435		141.882
175.924		141.893
184.77		141.893
185.454		141.904
186.03		141.91
186.471		141.91
195.39		141.911
195.828		141.911
204.75		141.912
205.185		141.912
214.11		141.912
214.542		141.912

223.469	141.913
223.899	141.913
224.328	141.913
224.757	141.913
226.606	141.875
232.206	141.736
237.619	141.555
266.437	140.593
284.194	140
288.023	139.82
294.955	139.494
315.577	138.526
326.764	138
345.352	137.109
367.261	136
389.122	135.384
438.282	134
441.106	133.989
441.813	133.988
442.992	133.982
450.152	133.954
471.589	133.475
495.112	133.041
499.816	133.042
504.522	133.042
507.015	133.043
509.52	133.047
513.255	133.047
518.191	133.045
521.934	133.044
526.857	133.043
530.609	133.042
535.521	133.04
539.492	133.044
544.41	133.042
548.376	133.045
551.45	133.051
554.115	133.053
556.005	133.053
558.664	133.055
563.412	133.057
566.946	133.064
571.737	133.066
575.242	133.073
580.075	133.075
583.551	133.082
586.977	133.088
591.874	133.09
595.541	133.09
600.448	133.093
604.107	133.093
609.025	133.095
612.675	133.095

617.604	133.097
621.244	133.097
622.641	133.096
626.431	133.093
629.889	133.087
634.698	133.083
638.19	133.076
641.731	133.07
646.478	133.066
650.054	133.06
654.753	133.056
659.419	133.052
663.75	133.06
668.432	133.056
672.746	133.063
677.444	133.06
680.743	133.07
685.469	133.067
688.752	133.077
692.299	133.081
695.852	133.075
701.119	133.075
703.992	133.063
708.239	133.071
712.549	133.079
716.654	133.084
721.014	133.092
725.057	133.098
729.467	133.106
730.766	133.109
732.057	133.112
735.706	133.117
737.361	133.116
738.906	133.115
742.564	133.12
743.989	133.118
755.732	133.35
775.632	133.895
775.782	133.895
775.919	133.894
776.153	133.893
778.05	134
783.506	135.753
784.276	136
789.286	137.609
790.503	138
794.831	139.39
796.73	140
800.37	141.169
802.957	142
805.905	142.947
809.183	144
811.435	144.723

815.41	146
816.957	146.497
821.637	148
822.473	148.269
827.863	150
827.984	150.039
828.909	150.336
833.494	151.808
834.09	152
838.998	153.577
840.317	154
844.497	155.343
846.543	156
849.989	157.107
852.77	158
855.476	158.869
858.997	160
860.956	160.629
865.223	162
866.43	162.387
871.45	164
871.897	164.144
875.09	165.169
877.36	165.898
877.677	166
882.821	167.652
883.903	168
888.276	169.404
890.13	170
893.723	171.154
896.357	172
899.164	172.902
902.583	174
906.152	175.146
908.81	176
912.925	177.322
915.037	178
918.41	179.083
921.263	180
923.888	180.843
927.49	182
929.36	182.601
933.717	184
934.825	184.356
939.944	186
940.292	186.112
943.235	187.057
945.863	187.901
946.17	188
951.208	189.618
952.397	190
956.633	191.361
958.624	192

962.07	193.107
964.85	194
967.5	194.851
971.077	196
972.917	196.591
977.304	198
978.32	198.326
983.53	200
983.726	200.063
985.426	200.609
989.318	201.859
989.757	202
994.64	203.568
995.984	204
999.949	205.274
1002.21	206
1005.61	207.122
1008.27	208
1011.51	209.172
1013.9	210
1014.76	210.314
1016.17	210.831
1024.06	213.481

Material Boundary

	X	Y
0		166.667
2.61045		166.033
2.74827		166
2.93545		165.955
10.984		164
16.9104		162.561
19.2198		162
22.3549		161.239
27.4555		160
31.2131		159.088
35.6913		158
41.768		156.524
43.927		156
45.5183		155.614
52.1628		154
59.8261		152.139
59.8924		152.123
60.4145		152
60.8582		151.895
60.9162		151.881
68.6396		150
75.206		148.4
76.8497		148
79.0691		147.459
85.0598		146
88.4071		145.185

93.2699	144
96.1305	143.964
100.713	143.947
101.016	143.941
113.425	143.821
121.918	143.822
130.421	143.823
138.934	143.824
147.456	143.825
148.142	143.848
156.777	143.849
157.383	143.866
166.104	143.867
166.646	143.881
175.435	143.882
175.924	143.893
184.77	143.893
185.454	143.904
186.03	143.91
186.471	143.91
195.39	143.911
195.828	143.911
204.75	143.912
205.185	143.912
214.11	143.912
214.542	143.912
223.469	143.913
223.899	143.913
224.328	143.913
224.757	143.913
226.606	143.875
232.206	143.736
237.619	143.555
266.437	142.593
284.194	142
288.023	141.82
294.955	141.494
315.577	140.526
326.764	140
345.352	139.109
367.261	138
389.122	137.384
438.282	136
441.106	135.989
441.813	135.988
442.992	135.982
450.152	135.954
471.589	135.475
495.112	135.041
499.816	135.042
504.522	135.042
507.015	135.043
509.52	135.047

513.255	135.047
518.191	135.045
521.934	135.044
526.857	135.043
530.609	135.042
535.521	135.04
539.492	135.044
544.41	135.042
548.376	135.045
551.45	135.051
554.115	135.053
556.005	135.053
558.664	135.055
563.412	135.057
566.946	135.064
571.737	135.066
575.242	135.073
580.075	135.075
583.551	135.082
586.977	135.088
591.874	135.09
595.541	135.09
600.448	135.093
604.107	135.093
609.025	135.095
612.675	135.095
617.604	135.097
621.244	135.097
622.641	135.096
626.431	135.093
629.889	135.087
634.698	135.083
638.19	135.076
641.731	135.07
646.478	135.066
650.054	135.06
654.753	135.056
659.419	135.052
663.75	135.06
668.432	135.056
672.746	135.063
677.444	135.06
680.743	135.07
685.469	135.067
688.752	135.077
692.299	135.081
695.852	135.075
701.119	135.075
703.992	135.063
708.239	135.071
712.549	135.079
716.654	135.084
721.014	135.092

725.057	135.098
729.467	135.106
730.766	135.109
732.057	135.112
735.706	135.117
737.361	135.116
738.906	135.115
742.564	135.12
743.989	135.118
755.732	135.35
775.632	135.895
775.782	135.895
775.919	135.894
776.153	135.893
778.05	136
783.506	137.753
784.276	138
789.286	139.609
790.503	140
794.831	141.39
796.73	142
800.37	143.169
802.957	144
805.905	144.947
809.183	146
811.435	146.723
815.41	148
816.957	148.497
821.637	150
822.473	150.269
827.863	152
827.984	152.039
828.909	152.336
833.494	153.808
834.09	154
838.998	155.577
840.317	156
844.497	157.343
846.543	158
849.989	159.107
852.77	160
855.476	160.869
858.997	162
860.956	162.629
865.223	164
866.43	164.387
871.45	166
871.897	166.144
875.09	167.169
877.36	167.898
877.677	168
882.821	169.652
883.903	170

888.276	171.404
890.13	172
893.723	173.154
896.357	174
899.164	174.902
902.583	176
906.152	177.146
908.81	178
912.925	179.322
915.037	180
918.41	181.083
921.263	182
923.888	182.843
927.49	184
929.36	184.601
933.717	186
934.825	186.356
939.944	188
940.292	188.112
943.235	189.057
945.863	189.901
946.17	190
951.208	191.618
952.397	192
956.633	193.361
958.624	194
962.07	195.107
964.85	196
967.5	196.851
971.077	198
972.917	198.591
977.304	200
978.32	200.326
983.53	202
983.726	202.063
985.426	202.609
989.318	203.859
989.757	204
994.64	205.568
995.984	206
999.949	207.274
1002.21	208
1005.61	209.122
1008.27	210
1011.51	211.172
1013.9	212
1014.76	212.314
1016.17	212.831
1020.86	214.406

Material Boundary

X	Y
---	---

0	168.667
2.61045	168.033
2.74827	168
2.93545	167.955
10.984	166
16.9104	164.561
19.2198	164
22.3549	163.239
27.4555	162
31.2131	161.088
35.6913	160
41.768	158.524
43.927	158
45.5183	157.614
52.1628	156
59.8261	154.139
59.8924	154.123
60.4145	154
60.8582	153.895
60.9162	153.881
68.6396	152
75.206	150.4
76.8497	150
79.0691	149.459
85.0598	148
88.4071	147.185
93.2699	146
96.1305	145.964
100.713	145.947
101.016	145.941
113.425	145.821
121.918	145.822
130.421	145.823
138.934	145.824
147.456	145.825
148.142	145.848
156.777	145.849
157.383	145.866
166.104	145.867
166.646	145.881
175.435	145.882
175.924	145.893
184.77	145.893
185.454	145.904
186.03	145.91
186.471	145.91
195.39	145.911
195.828	145.911
204.75	145.912
205.185	145.912
214.11	145.912
214.542	145.912
223.469	145.913

223.899	145.913
224.328	145.913
224.757	145.913
226.606	145.875
232.206	145.736
237.619	145.555
266.437	144.593
284.194	144
288.023	143.82
294.955	143.494
315.577	142.526
326.764	142
345.352	141.109
367.261	140
389.122	139.384
438.282	138
441.106	137.989
441.813	137.988
442.992	137.982
450.152	137.954
471.589	137.475
495.112	137.041
499.816	137.042
504.522	137.042
507.015	137.043
509.52	137.047
513.255	137.047
518.191	137.045
521.934	137.044
526.857	137.043
530.609	137.042
535.521	137.04
539.492	137.044
544.41	137.042
548.376	137.045
551.45	137.051
554.115	137.053
556.005	137.053
558.664	137.055
563.412	137.057
566.946	137.064
571.737	137.066
575.242	137.073
580.075	137.075
583.551	137.082
586.977	137.088
591.874	137.09
595.541	137.09
600.448	137.093
604.107	137.093
609.025	137.095
612.675	137.095
617.604	137.097

621.244	137.097
622.641	137.096
626.431	137.093
629.889	137.087
634.698	137.083
638.19	137.076
641.731	137.07
646.478	137.066
650.054	137.06
654.753	137.056
659.419	137.052
663.75	137.06
668.432	137.056
672.746	137.063
677.444	137.06
680.743	137.07
685.469	137.067
688.752	137.077
692.299	137.081
695.852	137.075
701.119	137.075
703.992	137.063
708.239	137.071
712.549	137.079
716.654	137.084
721.014	137.092
725.057	137.098
729.467	137.106
730.766	137.109
732.057	137.112
735.706	137.117
737.361	137.116
738.906	137.115
742.564	137.12
743.989	137.118
755.732	137.35
775.632	137.895
775.782	137.895
775.919	137.894
776.153	137.893
778.05	138
783.506	139.753
784.276	140
789.286	141.609
790.503	142
794.831	143.39
796.73	144
800.37	145.169
802.957	146
805.905	146.947
809.183	148
811.435	148.723
815.41	150

816.957	150.497
821.637	152
822.473	152.269
827.863	154
827.984	154.039
828.909	154.336
833.494	155.808
834.09	156
838.998	157.577
840.317	158
844.497	159.343
846.543	160
849.989	161.107
852.77	162
855.476	162.869
858.997	164
860.956	164.629
865.223	166
866.43	166.387
871.45	168
871.897	168.144
875.09	169.169
877.36	169.898
877.677	170
882.821	171.652
883.903	172
888.276	173.404
890.13	174
893.723	175.154
896.357	176
899.164	176.902
902.583	178
906.152	179.146
908.81	180
912.925	181.322
915.037	182
918.41	183.083
921.263	184
923.888	184.843
927.49	186
929.36	186.601
933.717	188
934.825	188.356
939.944	190
940.292	190.112
943.235	191.057
945.863	191.901
946.17	192
951.208	193.618
952.397	194
956.633	195.361
958.624	196
962.07	197.107

964.85	198
967.5	198.851
971.077	200
972.917	200.591
977.304	202
978.32	202.326
983.53	204
983.726	204.063
985.426	204.609
989.318	205.859
989.757	206
994.64	207.568
995.984	208
999.949	209.274
1002.21	210
1005.61	211.122
1008.27	212
1011.51	213.172
1013.9	214
1014.76	214.314
1016.17	214.831
1016.17	214.831

Material Boundary







	X	Y
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2.61045		173.033
2.74827		173
2.93545		172.955
10.984		171
16.9104		169.561
19.2198		169
22.3549		168.239
27.4555		167
31.2131		166.088
35.6913		165
41.768		163.524
43.927		163
45.5183		162.614
52.1628		161
59.8261		159.139
59.8924		159.123
60.4145		159
60.8582		158.895
60.9162		158.881
68.6396		157
75.206		155.4
76.8497		155
79.0691		154.459
85.0598		153
88.4071		152.185
93.2699		151

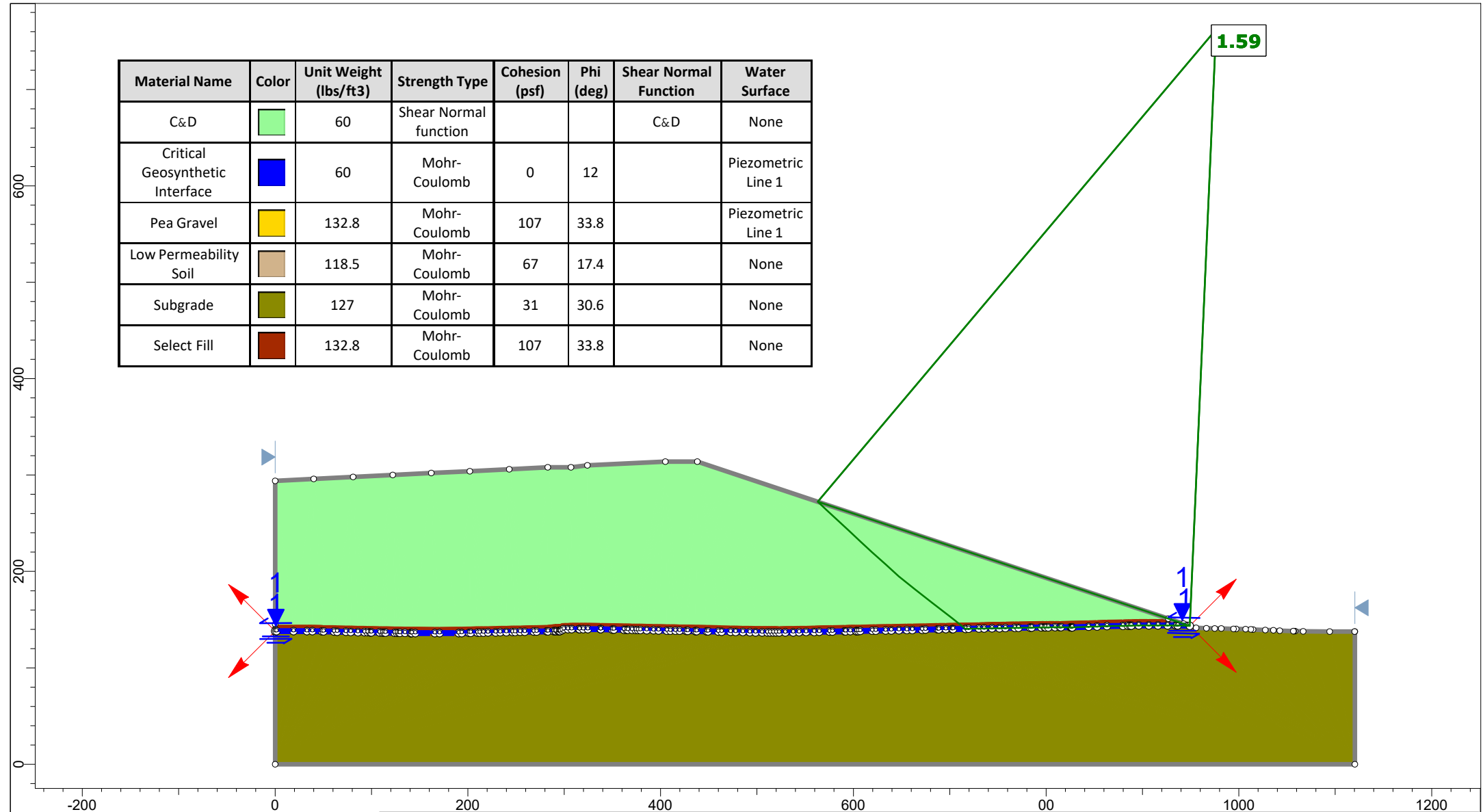
96.1305	150.964
100.713	150.947
101.016	150.941
113.425	150.821
121.918	150.822
130.421	150.823
138.934	150.824
147.456	150.825
148.142	150.848
156.777	150.849
157.383	150.866
166.104	150.867
166.646	150.881
175.435	150.882
175.924	150.893
184.77	150.893
185.454	150.904
186.03	150.91
186.471	150.91
195.39	150.911
195.828	150.911
204.75	150.912
205.185	150.912
214.11	150.912
214.542	150.912
223.469	150.913
223.899	150.913
224.328	150.913
224.757	150.913
226.606	150.875
232.206	150.736
237.619	150.555
266.437	149.593
284.194	149
288.023	148.82
294.955	148.494
315.577	147.526
326.764	147
345.352	146.109
367.261	145
389.122	144.384
438.282	143
441.106	142.989
441.813	142.988
442.992	142.982
450.152	142.954
471.589	142.475
495.112	142.041
499.816	142.042
504.522	142.042
507.015	142.043
509.52	142.047
513.255	142.047

518.191	142.045
521.934	142.044
526.857	142.043
530.609	142.042
535.521	142.04
539.492	142.044
544.41	142.042
548.376	142.045
551.45	142.051
554.115	142.053
556.005	142.053
558.664	142.055
563.412	142.057
566.946	142.064
571.737	142.066
575.242	142.073
580.075	142.075
583.551	142.082
586.977	142.088
591.874	142.09
595.541	142.09
600.448	142.093
604.107	142.093
609.025	142.095
612.675	142.095
617.604	142.097
621.244	142.097
622.641	142.096
626.431	142.093
629.889	142.087
634.698	142.083
638.19	142.076
641.731	142.07
646.478	142.066
650.054	142.06
654.753	142.056
659.419	142.052
663.75	142.06
668.432	142.056
672.746	142.063
677.444	142.06
680.743	142.07
685.469	142.067
688.752	142.077
692.299	142.081
695.852	142.075
701.119	142.075
703.992	142.063
708.239	142.071
712.549	142.079
716.654	142.084
721.014	142.092
725.057	142.098

729.467	142.106
730.766	142.109
732.057	142.112
735.706	142.117
737.361	142.116
738.906	142.115
742.564	142.12
743.989	142.118
755.732	142.35
775.632	142.895
775.782	142.895
775.919	142.894
776.153	142.893
778.05	143
783.506	144.753
784.276	145
789.286	146.609
790.503	147
794.831	148.39
796.73	149
800.37	150.169
802.957	151
805.905	151.947
809.183	153
811.435	153.723
815.41	155
816.957	155.497
821.637	157
822.473	157.269
827.863	159
827.984	159.039
828.909	159.336
833.494	160.808
834.09	161
838.998	162.577
840.317	163
844.497	164.343
846.543	165
849.989	166.107
852.77	167
855.476	167.869
858.997	169
860.956	169.629
865.223	171
866.43	171.387
871.45	173
871.897	173.144
875.09	174.169
877.36	174.898
877.677	175
882.821	176.652
883.903	177
888.276	178.404

890.13	179
893.723	180.154
896.357	181
899.164	181.902
902.583	183
906.152	184.146
908.81	185
912.925	186.322
915.037	187
918.41	188.083
921.263	189
923.888	189.843
927.49	191
929.36	191.601
933.717	193
934.825	193.356
939.944	195
940.292	195.112
943.235	196.057
945.863	196.901
946.17	197
951.208	198.618
952.397	199
956.633	200.361
958.624	201
962.07	202.107
964.85	203
967.5	203.851
971.077	205
972.917	205.591
977.304	207
978.32	207.326
983.53	209
983.726	209.063
985.426	209.609
989.318	210.859
989.757	211
994.64	212.568
995.984	213
999.949	214.274
1002.21	215
1005.61	216.122
1007.6	216.78

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
C&D		60	Shear Normal function			C&D	None
Critical Geosynthetic Interface		60	Mohr-Coulomb	0	12		Piezometric Line 1
Pea Gravel		132.8	Mohr-Coulomb	107	33.8		Piezometric Line 1
Low Permeability Soil		118.5	Mohr-Coulomb	67	17.4		None
Subgrade		127	Mohr-Coulomb	31	30.6		None
Select Fill		132.8	Mohr-Coulomb	107	33.8		None



SLIDEINTERPRET 9.020

Project Project: 182-442 S.A. Dunn Permit Renewal/Modification Application		Scenario Section D - Liner System Failure - Static.slim	
Analysis Description Section D - Liner System Failure - Static.slim		Company Civil & Environmental Consultants, Inc.	
Created By: ZLM	Checked By: TDM	File Name Section D - Liner System Failure - Static.slim	
Created Date: 1/6/2022 7/28/2021 10:59:59 AM	Checked Date: 1/9/2022		

Slide Analysis Information

Project Summary

Slide Modeler Version:	9.02
Compute Time:	00h:01m:15.701s
Date Created:	7/28/2021, 10:59:59 AM

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	
	GLE/Morgenstern-Price with interslice force function (Half Sine)
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 ³]:	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


Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [deg]:	135
Left Projection Angle (End Angle) [deg]:	225
Right Projection Angle (Start Angle) [deg]:	45
Right Projection Angle (End Angle) [deg]:	-45
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

C&D

Color	
Strength Type	Shear Normal function
Unit Weight [lbs/ft3]	60
Water Surface	None
Ru Value	0

Pea Gravel

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	Piezometric Line 1
Hu Value	1

Low Permeability Soil

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	118.5
Cohesion [psf]	67
Friction Angle [deg]	17.4
Water Surface	None
Ru Value	0

Subgrade

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	127
Cohesion [psf]	31
Friction Angle [deg]	30.6
Water Surface	None
Ru Value	0

Select Fill

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	None
Ru Value	0

Shear Normal Functions

Name: C&D	
Effective Normal (psf)	Shear (psf)
0	0
2000	1400
10000	6169

Global Minimums

Method: gle/morgenstern-price

FS	1.593580
Axis Location:	976.252, 762.037
Left Slip Surface Endpoint:	563.089, 272.295
Right Slip Surface Endpoint:	949.110, 143.595
Resisting Moment:	2.45034e+08 lb-ft
Driving Moment:	1.53763e+08 lb-ft
Resisting Horizontal Force:	331061 lb
Driving Horizontal Force:	207747 lb
Total Slice Area:	15902.6 ft ²
Surface Horizontal Width:	386.021 ft
Surface Average Height:	41.1961 ft

Global Minimum Coordinates

Method: gle/morgenstern-price

X	Y
563.089	272.295
571.792	263.964
583.672	253.002
595.552	242.103
607.431	231.043
619.311	219.862
633.633	207.054
647.158	194.959
664.03	181.155
680.902	167.952
702.728	151.196
716.446	140.415
719.644	140.479
730.199	140.692
735.69	140.803
743.977	140.971
751.655	141.126
757.696	141.248
767.54	141.447
771.355	141.524
783.347	141.766
784.957	141.799
794.928	142
798.336	142.012
799.584	142.015
802.272	142.026
809.313	142.051
814.19	142.061
815.343	142.056
825.43	142
826.105	141.999
826.795	142
826.896	142
844.081	142.65
852.85	142.878
863.067	143.224
879.695	143.615
884.698	143.759
887.025	143.821
888.251	143.845
896.082	144
906.423	144.035
915.996	144.06
925.977	144.029
934.42	144
936.1	143.954
936.549	143.941
949.11	143.595

Global Minimum Support Data

No Supports Present

Slice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.59358

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	8.70261	1417.37	-43.7481	C&D	0	34.992	49.8794	79.4868	113.553	0	113.553	161.299	161.299
2	11.8797	6364.92	-42.7	C&D	0	34.992	163.447	260.466	372.094	0	372.094	522.918	522.918
3	11.8798	11333.2	-42.5355	C&D	5.68434e-14	34.992	286.583	456.693	652.422	0	652.422	915.354	915.354
4	11.8799	16336.3	-42.9535	C&D	0	34.992	404.168	644.074	920.105	0	920.105	1296.38	1296.38
5	11.8799	21439.8	-43.2633	C&D	1.13687e-13	34.992	519.887	828.482	1183.55	0	1183.55	1672.84	1672.84
6	14.3219	32400.1	-41.8054	C&D	0	34.992	653.955	1042.13	1488.75	0	1488.75	2073.57	2073.57
7	13.5253	36935.3	-41.8044	C&D	0	34.992	778.417	1240.47	1772.1	0	1772.1	2468.19	2468.19
8	16.8717	54053.2	-39.2896	C&D	207.75	30.8002	927.691	1478.35	2131.43	0	2131.43	2890.45	2890.45
9	16.8718	62028.8	-38.0449	C&D	207.75	30.8002	1056.41	1683.48	2475.54	0	2475.54	3302.23	3302.23
10	21.8264	91413.2	-37.5139	C&D	207.75	30.8002	1190.31	1896.86	2833.48	0	2833.48	3747.3	3747.3
11	5.03409	22859.5	-38.1654	C&D	207.75	30.8002	1268.52	2021.49	3042.56	0	3042.56	4039.55	4039.55
12	6.20235	30239.4	-38.1654	Select Fill	107	33.8	1431.4	2281.05	3247.56	0	3247.56	4372.56	4372.56
13	1.24047	6444.15	-38.1654	Pea Gravel	107	33.8	1523.22	2427.38	3466.15	0	3466.15	4663.32	4663.32
14	1.24047	6576.24	-38.1654	Pea Gravel	107	33.8	1542.37	2457.89	3542.91	31.1895	3511.72	4755.12	4723.94
15	3.19866	17019.1	1.15722	Critical Geosynthetic Interface	0	12	730.738	1164.49	5540.88	62.3895	5478.49	5526.12	5463.73
16	10.5551	54620.5	1.15722	Critical Geosynthetic Interface	0	12	713.777	1137.46	5413.73	62.3895	5351.34	5399.31	5336.92
17	5.49021	27476.4	1.15722	Critical Geosynthetic Interface	0	12	693.545	1105.22	5262.04	62.3895	5199.65	5248.03	5185.64
18	8.28755	40264.7	1.15722	Critical Geosynthetic Interface	0	12	675.692	1076.77	5128.19	62.3895	5065.8	5114.54	5052.15
19	7.67752	36000.6	1.15722	Critical Geosynthetic Interface	0	12	654.526	1043.04	4969.5	62.3895	4907.11	4956.28	4893.89
20	6.041	27447.7	1.15722	Critical Geosynthetic Interface	0	12	635.927	1013.4	4830.09	62.3895	4767.7	4817.24	4754.85
21	9.84447	43070.1	1.15722	Critical Geosynthetic Interface	0	12	613.91	978.314	4665	62.3895	4602.61	4652.6	4590.21
22	3.81517	16138.7	1.15722	Critical Geosynthetic Interface	0	12	594.642	947.609	4520.55	62.3895	4458.16	4508.54	4446.15
23	11.9913	48714.3	1.15722	Critical Geosynthetic Interface	0	12	571.877	911.332	4349.87	62.3895	4287.48	4338.32	4275.93
24	1.60986	6307.74	1.15722	Critical Geosynthetic Interface	0	12	552.033	879.709	4201.09	62.3895	4138.7	4189.94	4127.55
25	9.97162	37845.6	1.15722	Critical Geosynthetic Interface	0	12	534.864	852.348	4072.37	62.3895	4009.98	4061.56	3999.17
26	3.40817	12457.2	0.204137	Critical Geosynthetic Interface	0	12	510.636	813.74	3890.75	62.3895	3828.36	3888.93	3826.54
27	1.24758	4501.38	0.125349	Critical Geosynthetic Interface	0	12	503.695	802.678	3838.7	62.3895	3776.31	3837.59	3775.2

28	2.68835	9592.84	0.238314	Critical Geosynthetic Interface	12	498.616	794.585	3800.63	62.3895	3738.24	3798.55	3736.16
29	7.04047	24429.8	0.203264	Critical Geosynthetic Interface	12	484.559	772.183	3695.23	62.3895	3632.84	3693.51	3631.12
30	4.87714	16336.8	0.113922	Critical Geosynthetic Interface	12	467.1	744.362	3564.34	62.3895	3501.95	3563.41	3501.02
31	1.15297	3792.35	-0.239823	Critical Geosynthetic Interface	12	457.073	728.382	3489.16	62.3895	3426.77	3491.07	3428.68
32	10.0876	32064.4	-0.317514	Critical Geosynthetic Interface	12	441.006	702.778	3368.7	62.3895	3306.31	3371.14	3308.75
33	0.675026	2074.11	-0.0457245	Critical Geosynthetic Interface	12	426.817	680.167	3262.32	62.3895	3199.93	3262.66	3200.27
34	0.68978	2110.03	0.0374701	Critical Geosynthetic Interface	12	425.143	677.5	3249.77	62.3872	3187.39	3249.5	3187.11
35	0.100717	307.294	0.0395942	Critical Geosynthetic Interface	12	424.008	675.69	3241.26	62.3895	3178.87	3240.96	3178.57
36	17.1855	49127.2	2.16691	Critical Geosynthetic Interface	12	402.83	641.942	3082.46	62.3664	3020.1	3067.22	3004.86
37	8.76831	22558.6	1.48686	Critical Geosynthetic Interface	12	358.032	570.553	2746.63	62.3895	2684.24	2737.33	2674.94
38	10.2174	24170.7	1.93867	Critical Geosynthetic Interface	12	328.219	523.044	2523.12	62.3895	2460.73	2512.01	2449.62
39	16.6274	34502.3	1.34699	Critical Geosynthetic Interface	12	283.664	452.041	2189.08	62.3895	2126.69	2182.41	2120.02
40	5.00303	9218.74	1.6504	Critical Geosynthetic Interface	12	249.779	398.043	1935.04	62.3895	1872.65	1927.84	1865.45
41	2.32748	4103.65	1.524	Critical Geosynthetic Interface	12	237.875	379.073	1845.79	62.3895	1783.4	1839.46	1777.07
42	1.22624	2115.26	1.13275	Critical Geosynthetic Interface	12	231.747	369.307	1799.84	62.3895	1737.45	1795.26	1732.87
43	7.83115	12757.1	1.13404	Critical Geosynthetic Interface	12	217.744	346.993	1694.86	62.3895	1632.47	1690.55	1628.16
44	10.341	14907.2	0.194502	Critical Geosynthetic Interface	12	189.653	302.228	1484.26	62.3895	1421.87	1483.62	1421.23
45	9.57219	11875.1	0.149724	Critical Geosynthetic Interface	12	160.967	256.514	1269.19	62.3895	1206.8	1268.77	1206.38
46	9.98167	10432.9	-0.180702	Critical Geosynthetic Interface	12	133.225	212.305	1061.21	62.3895	998.82	1061.63	999.24
47	8.44311	6590.33	-0.194337	Critical Geosynthetic Interface	12	96.7708	154.212	787.901	62.3895	725.512	788.23	725.84
48	1.67995	944.881	-1.58113	Critical Geosynthetic Interface	12	66.8645	106.554	563.686	62.3895	501.297	565.532	503.142
49	0.449087	233.174	-1.58092	Critical Geosynthetic Interface	12	61.0517	97.2908	520.106	62.3895	457.717	521.791	459.402
50	12.5608	3203.62	-1.58108	Critical Geosynthetic Interface	12	25.6986	40.9528	255.058	62.3895	192.668	255.767	193.378

Interslice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.59358

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	563.089	272.295	0	0	0
2	571.792	263.964	511.855	13.6512	1.52772
3	583.672	253.002	2649.14	166.458	3.59544
4	595.552	242.103	6355.54	625.467	5.62054
5	607.431	231.043	11730.6	1561.01	7.57991
6	619.311	219.862	18787.2	3127.85	9.45238
7	633.633	207.054	28488.8	5831.05	11.5675
8	647.158	194.959	39393.7	9383.7	13.3983
9	664.03	181.155	53164.7	14670.1	15.4261
10	680.902	167.952	68025.6	20984.3	17.1438
11	702.728	151.196	89524.2	30606.6	18.8746
12	707.762	147.239	95176.2	33129.9	19.1925
13	713.965	142.365	102129	36249.2	19.5416
14	715.205	141.39	103619	36908.7	19.6057
15	716.446	140.415	105160	37586.3	19.6679
16	719.644	140.479	102464	36929.3	19.8198
17	730.199	140.692	93776	34559.8	20.2306
18	735.69	140.803	89384.7	33223.4	20.3896
19	743.977	140.971	82926.4	31101.1	20.5583
20	751.655	141.126	77130.5	29049.7	20.6379
21	757.696	141.248	72699.4	27396.5	20.6487
22	767.54	141.447	65728.1	24664.1	20.5683
23	771.355	141.524	63111.1	23602	20.5046
24	783.347	141.766	55199.9	20294.2	20.1859
25	784.957	141.799	54174.5	19856.7	20.1295
26	794.928	142	48020.8	17201.8	19.7083
27	798.336	142.012	46233.2	16405	19.5363
28	799.584	142.015	45594.3	16118.6	19.4696
29	802.272	142.026	44211.4	15499.7	19.3197
30	809.313	142.051	40707.5	13925.4	18.885
31	814.19	142.061	38394.8	12883	18.5487
32	815.343	142.056	37884.7	12650.2	18.4648
33	825.43	142	33624.3	10708	17.6646
34	826.105	141.999	33338	10579.7	17.6067
35	826.795	142	33043.2	10448.3	17.547
36	826.896	142	33000.3	10429.2	17.5383
37	844.081	142.65	24073	6844.52	15.8717
38	852.85	142.878	20308.6	5401.29	14.8936
39	863.067	143.224	16082.4	3905.83	13.6508
40	879.695	143.615	10509.9	2120.53	11.4071
41	884.698	143.759	8981.32	1694.24	10.6828
42	887.025	143.821	8313.37	1516.58	10.3386
43	888.251	143.845	7985.55	1430.42	10.1555
44	896.082	144	6017.62	948.641	8.9586
45	906.423	144.035	4004.31	513.795	7.3117
46	915.996	144.06	2431.75	244.01	5.73007
47	925.977	144.029	1135.34	80.0807	4.03465
48	934.42	144	340.853	15.321	2.57366
49	936.1	143.954	254.663	10.143	2.28083
50	936.549	143.941	233.691	8.98758	2.20247
51	949.11	143.595	0	0	0

Discharge Sections

Entity Information

Piezoline

X	Y
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0	139.001
1.53185	139.006
19.0865	139.06
32.9178	139.02
38.6457	139
48.7796	138.793
50.2602	138.763
61.0905	138.542
64.3705	138.476
73.4615	138.291
78.5505	138.189
85.9551	138.041
92.8528	137.903
95.9447	137.841
98.6483	137.789
99.8304	137.766
108.36	137.6
111.481	137.539
113.16	137.508
114.657	137.481
124.023	137.298
126.413	137.276
128.483	137.258
129.604	137.259
134.88	137.144
140.608	137.001
140.666	137
141.88	136.996
145.396	136.987
165.76	136.931
170.639	136.942
190.43	137
193.662	137.091
201.413	137.308
202.91	137.31
209.905	137.483
212.256	137.486
216.044	137.533
220.799	137.61
228.74	137.769
233.581	137.864
240.055	137.994
246.29	138.116
249.014	138.178
254.334	138.284
259.083	138.368
268.35	138.553
271.397	138.613
282.09	138.827
283.248	138.85
289.114	139
290.561	139
291.004	139

293.847	139
294.079	139
294.897	139
295.735	139
297.392	139.908
299.475	141
303.779	141.026
307.699	141.048
315.325	141.101
315.77	141.098
319.666	141.08
324.496	141.067
337.748	141
337.798	140.999
337.804	140.999
350.01	140.752
351.514	140.722
361.883	140.513
364.794	140.454
366.105	140.426
370.416	140.331
374.199	140.251
376.444	140.207
378.978	140.155
385.656	140.023
392.593	139.886
397.761	139.784
406.485	139.612
410.085	139.541
415.321	139.473
419.58	139.44
426.773	139.263
428.072	139.263
436.007	139.041
437.46	139
447.762	138.797
449.164	138.77
459.994	138.557
463.353	138.491
472.562	138.31
477.849	138.206
485.368	138.058
492.661	137.915
498.42	137.801
505.285	137.698
510.764	137.64
513.847	137.638
516.909	137.636
519.953	137.634
522.978	137.632
529.387	137.687
537.506	137.8
543.814	137.927

550.999	138.073
559.479	138.244
564.556	138.346
575.229	138.562
578.177	138.622
591.066	138.882
591.862	138.898
596.908	139
602.692	139.157
603.345	139.157
604.986	139.174
607.15	139.207
619.626	139.459
623.304	139.533
633.498	139.739
639.412	139.859
647.335	140.019
655.475	140.183
661.139	140.297
671.492	140.507
674.909	140.576
687.464	140.829
688.645	140.853
695.918	141
702.465	141.132
703.518	141.154
716.362	141.413
719.644	141.479
730.199	141.692
735.69	141.803
743.977	141.971
751.655	142.126
757.696	142.248
767.54	142.447
771.355	142.524
783.347	142.766
784.957	142.799
794.928	143
798.336	143.012
799.584	143.015
802.272	143.026
809.313	143.051
814.19	143.061
815.343	143.056
825.43	143
826.105	142.999
826.168	142.999
826.795	143
826.896	143
826.916	143
844.081	143.65
852.85	143.878
863.067	144.224

879.695	144.615
884.698	144.759
887.025	144.821
888.251	144.845
896.082	145
906.423	145.035
915.996	145.06
925.977	145.029
934.42	145
936.1	144.954
936.549	144.941
945.84	144.685

Block Search Polyline

X	Y
0	138.001
1.53185	138.006
19.0865	138.06
32.9178	138.02
38.6457	138
48.7796	137.793
50.2602	137.763
61.0905	137.542
64.3705	137.476
73.4615	137.291
78.5505	137.189
85.9551	137.041
92.8528	136.903
95.9447	136.841
98.6483	136.789
99.8304	136.766
108.36	136.6
111.481	136.539
113.16	136.508
114.657	136.481
124.023	136.298
126.413	136.276
128.483	136.258
129.604	136.259
134.88	136.144
140.608	136.001
140.666	136
141.88	135.996
145.396	135.987
165.76	135.931
170.639	135.942
190.43	136
193.662	136.091
201.413	136.308
202.91	136.31
209.905	136.483
212.256	136.486

216.044	136.533
220.799	136.61
228.74	136.769
233.581	136.864
240.055	136.994
246.29	137.116
249.014	137.178
254.334	137.284
259.083	137.368
268.35	137.553
271.397	137.613
282.09	137.827
283.248	137.85
289.114	138
290.561	138
291.004	138
293.847	138
294.079	138
294.897	138
295.735	138
297.392	138.908
299.475	140
303.779	140.026
307.699	140.048
315.325	140.101
315.77	140.098
319.666	140.08
324.496	140.067
337.748	140
337.798	139.999
337.804	139.999
350.01	139.752
351.514	139.722
361.883	139.513
364.794	139.454
366.105	139.426
370.416	139.331
374.199	139.251
376.444	139.207
378.978	139.155
385.656	139.023
392.593	138.886
397.761	138.784
406.485	138.612
410.085	138.541
415.321	138.473
419.58	138.44
426.773	138.263
428.072	138.263
436.007	138.041
437.46	138
447.762	137.797
449.164	137.77

459.994	137.557
463.353	137.491
472.562	137.31
477.849	137.206
485.368	137.058
492.661	136.915
498.42	136.801
505.285	136.698
510.764	136.64
513.847	136.638
516.909	136.636
519.953	136.634
522.978	136.632
529.387	136.687
537.506	136.8
543.814	136.927
550.999	137.073
559.479	137.244
564.556	137.346
575.229	137.562
578.177	137.622
591.066	137.882
591.862	137.898
596.908	138
602.692	138.157
603.345	138.157
604.986	138.174
607.15	138.207
619.626	138.459
623.304	138.533
633.498	138.739
639.412	138.859
647.335	139.019
655.475	139.183
661.139	139.297
671.492	139.507
674.909	139.576
687.464	139.829
688.645	139.853
695.918	140
702.465	140.132
703.518	140.154
716.362	140.413
719.644	140.479
730.199	140.692
735.69	140.803
743.977	140.971
751.655	141.126
757.696	141.248
767.54	141.447
771.355	141.524
783.347	141.766
784.957	141.799

794.928	142
798.336	142.012
799.584	142.015
802.272	142.026
809.313	142.051
814.19	142.061
815.343	142.056
825.43	142
826.105	141.999
826.168	141.999
826.795	142
826.896	142
826.916	142
844.081	142.65
852.85	142.878
863.067	143.224
879.695	143.615
884.698	143.759
887.025	143.821
888.251	143.845
896.082	144
906.423	144.035
915.996	144.06
925.977	144.029
934.42	144
936.1	143.954
936.549	143.941
949.11	143.595

External Boundary

X	Y
0	294
0	145.001
0	140.001
0	139.001
0	138.001
0	136.001
0	0
1120.27	0
1120.27	137.664
1120.15	137.662
1094.2	137.627
1066.59	137.768
1058.38	138
1056.96	138.055
1056.39	138.077
1042.28	138.625
1035.7	138.881
1027.44	139.202
1014.7	139.696
1012.45	139.784
1006.89	140
997.074	140.271
994.462	140.343
981.639	140.697
974.953	140.881
966.333	141.119
955.65	141.414
949.11	143.595
945.84	144.685
942.57	145.775
926.821	151.026
438	314
405	314
324	310
307	308
283	308
243	306
202	304
162	302
122	300
81	298
40	296

Material Boundary

X	Y
0	136.001
1.53185	136.006
19.0865	136.06
32.9178	136.02
38.6457	136
48.7796	135.793

50.2602	135.763
61.0905	135.542
64.3705	135.476
73.4615	135.291
78.5505	135.189
85.9551	135.041
92.8528	134.903
95.9447	134.841
98.6483	134.789
99.8304	134.766
108.36	134.6
111.481	134.539
113.16	134.508
114.657	134.481
124.023	134.298
126.413	134.276
128.483	134.258
129.604	134.259
134.88	134.144
140.608	134.001
140.666	134
141.88	133.996
145.396	133.987
165.76	133.931
170.639	133.942
190.43	134
193.662	134.091
201.413	134.308
202.91	134.31
209.905	134.483
212.256	134.486
216.044	134.533
220.799	134.61
228.74	134.769
233.581	134.864
240.055	134.994
246.29	135.116
249.014	135.178
254.334	135.284
259.083	135.368
268.35	135.553
271.397	135.613
282.09	135.827
283.248	135.85
289.114	136
290.561	136
291.004	136
293.847	136
294.079	136
294.897	136
295.735	136
297.392	136.908
299.475	138

303.779	138.026
307.699	138.048
315.325	138.101
315.77	138.098
319.666	138.08
324.496	138.067
337.748	138
337.798	137.999
337.804	137.999
350.01	137.752
351.514	137.722
361.883	137.513
364.794	137.454
366.105	137.426
370.416	137.331
374.199	137.251
376.444	137.207
378.978	137.155
385.656	137.023
392.593	136.886
397.761	136.784
406.485	136.612
410.085	136.541
415.321	136.473
419.58	136.44
426.773	136.263
428.072	136.263
436.007	136.041
437.46	136
447.762	135.797
449.164	135.77
459.994	135.557
463.353	135.491
472.562	135.31
477.849	135.206
485.368	135.058
492.661	134.915
498.42	134.801
505.285	134.698
510.764	134.64
513.847	134.638
516.909	134.636
519.953	134.634
522.978	134.632
529.387	134.687
537.506	134.8
543.814	134.927
550.999	135.073
559.479	135.244
564.556	135.346
575.229	135.562
578.177	135.622
591.066	135.882

591.862	135.898
596.908	136
602.692	136.157
603.345	136.157
604.986	136.174
607.15	136.207
619.626	136.459
623.304	136.533
633.498	136.739
639.412	136.859
647.335	137.019
655.475	137.183
661.139	137.297
671.492	137.507
674.909	137.576
687.464	137.829
688.645	137.853
695.918	138
702.465	138.132
703.518	138.154
716.362	138.413
719.644	138.479
730.199	138.692
735.69	138.803
743.977	138.971
751.655	139.126
757.696	139.248
767.54	139.447
771.355	139.524
783.347	139.766
784.957	139.799
794.928	140
798.336	140.012
799.584	140.015
802.272	140.026
809.313	140.051
814.19	140.061
815.343	140.056
825.43	140
826.105	139.999
826.168	139.999
826.795	140
826.896	140
826.916	140
844.081	140.65
852.85	140.878
863.067	141.224
879.695	141.615
884.698	141.759
887.025	141.821
888.251	141.845
896.082	142
906.423	142.035

915.996	142.06
925.977	142.029
934.42	142
936.1	141.954
936.549	141.941
951.154	141.538
955.65	141.414

Material Boundary

	X	Y
0	138.001	
1.53185	138.006	
19.0865	138.06	
32.9178	138.02	
38.6457	138	
48.7796	137.793	
50.2602	137.763	
61.0905	137.542	
64.3705	137.476	
73.4615	137.291	
78.5505	137.189	
85.9551	137.041	
92.8528	136.903	
95.9447	136.841	
98.6483	136.789	
99.8304	136.766	
108.36	136.6	
111.481	136.539	
113.16	136.508	
114.657	136.481	
124.023	136.298	
126.413	136.276	
128.483	136.258	
129.604	136.259	
134.88	136.144	
140.608	136.001	
140.666	136	
141.88	135.996	
145.396	135.987	
165.76	135.931	
170.639	135.942	
190.43	136	
193.662	136.091	
201.413	136.308	
202.91	136.31	
209.905	136.483	
212.256	136.486	
216.044	136.533	
220.799	136.61	
228.74	136.769	
233.581	136.864	
240.055	136.994	

246.29	137.116
249.014	137.178
254.334	137.284
259.083	137.368
268.35	137.553
271.397	137.613
282.09	137.827
283.248	137.85
289.114	138
290.561	138
291.004	138
293.847	138
294.079	138
294.897	138
295.735	138
297.392	138.908
299.475	140
303.779	140.026
307.699	140.048
315.325	140.101
315.77	140.098
319.666	140.08
324.496	140.067
337.748	140
337.798	139.999
337.804	139.999
350.01	139.752
351.514	139.722
361.883	139.513
364.794	139.454
366.105	139.426
370.416	139.331
374.199	139.251
376.444	139.207
378.978	139.155
385.656	139.023
392.593	138.886
397.761	138.784
406.485	138.612
410.085	138.541
415.321	138.473
419.58	138.44
426.773	138.263
428.072	138.263
436.007	138.041
437.46	138
447.762	137.797
449.164	137.77
459.994	137.557
463.353	137.491
472.562	137.31
477.849	137.206
485.368	137.058

492.661	136.915
498.42	136.801
505.285	136.698
510.764	136.64
513.847	136.638
516.909	136.636
519.953	136.634
522.978	136.632
529.387	136.687
537.506	136.8
543.814	136.927
550.999	137.073
559.479	137.244
564.556	137.346
575.229	137.562
578.177	137.622
591.066	137.882
591.862	137.898
596.908	138
602.692	138.157
603.345	138.157
604.986	138.174
607.15	138.207
619.626	138.459
623.304	138.533
633.498	138.739
639.412	138.859
647.335	139.019
655.475	139.183
661.139	139.297
671.492	139.507
674.909	139.576
687.464	139.829
688.645	139.853
695.918	140
702.465	140.132
703.518	140.154
716.362	140.413
719.644	140.479
730.199	140.692
735.69	140.803
743.977	140.971
751.655	141.126
757.696	141.248
767.54	141.447
771.355	141.524
783.347	141.766
784.957	141.799
794.928	142
798.336	142.012
799.584	142.015
802.272	142.026
809.313	142.051

814.19	142.061
815.343	142.056
825.43	142
826.105	141.999
826.168	141.999
826.795	142
826.896	142
826.916	142
844.081	142.65
852.85	142.878
863.067	143.224
879.695	143.615
884.698	143.759
887.025	143.821
888.251	143.845
896.082	144
906.423	144.035
915.996	144.06
925.977	144.029
934.42	144
936.1	143.954
936.549	143.941
949.11	143.595

Material Boundary

	X	Y
0		140.001
1.53185		140.006
19.0865		140.06
32.9178		140.02
38.6457		140
48.7796		139.793
50.2602		139.763
61.0905		139.542
64.3705		139.476
73.4615		139.291
78.5505		139.189
85.9551		139.041
92.8528		138.903
95.9447		138.841
98.6483		138.789
99.8304		138.766
108.36		138.6
111.481		138.539
113.16		138.508
114.657		138.481
124.023		138.298
126.413		138.276
128.483		138.258
129.604		138.259
134.88		138.144
140.608		138.001

140.666	138
141.88	137.996
145.396	137.987
165.76	137.931
170.639	137.942
190.43	138
193.662	138.091
201.413	138.308
202.91	138.31
209.905	138.483
212.256	138.486
216.044	138.533
220.799	138.61
228.74	138.769
233.581	138.864
240.055	138.994
246.29	139.116
249.014	139.178
254.334	139.284
259.083	139.368
268.35	139.553
271.397	139.613
282.09	139.827
283.248	139.85
289.114	140
290.561	140
291.004	140
293.847	140
294.079	140
294.897	140
295.735	140
297.392	140.908
299.475	142
303.779	142.026
307.699	142.048
315.325	142.101
315.77	142.098
319.666	142.08
324.496	142.067
337.748	142
337.798	141.999
337.804	141.999
350.01	141.752
351.514	141.722
361.883	141.513
364.794	141.454
366.105	141.426
370.416	141.331
374.199	141.251
376.444	141.207
378.978	141.155
385.656	141.023
392.593	140.886

397.761	140.784
406.485	140.612
410.085	140.541
415.321	140.473
419.58	140.44
426.773	140.263
428.072	140.263
436.007	140.041
437.46	140
447.762	139.797
449.164	139.77
459.994	139.557
463.353	139.491
472.562	139.31
477.849	139.206
485.368	139.058
492.661	138.915
498.42	138.801
505.285	138.698
510.764	138.64
513.847	138.638
516.909	138.636
519.953	138.634
522.978	138.632
529.387	138.687
537.506	138.8
543.814	138.927
550.999	139.073
559.479	139.244
564.556	139.346
575.229	139.562
578.177	139.622
591.066	139.882
591.862	139.898
596.908	140
602.692	140.157
603.345	140.157
604.986	140.174
607.15	140.207
619.626	140.459
623.304	140.533
633.498	140.739
639.412	140.859
647.335	141.019
655.475	141.183
661.139	141.297
671.492	141.507
674.909	141.576
687.464	141.829
688.645	141.853
695.918	142
702.465	142.132
703.518	142.154

716.362	142.413
719.644	142.479
730.199	142.692
735.69	142.803
743.977	142.971
751.655	143.126
757.696	143.248
767.54	143.447
771.355	143.524
783.347	143.766
784.957	143.799
794.928	144
798.336	144.012
799.584	144.015
802.272	144.026
809.313	144.051
814.19	144.061
815.343	144.056
825.43	144
826.105	143.999
826.168	143.999
826.795	144
826.896	144
826.916	144
844.081	144.65
852.85	144.878
863.067	145.224
879.695	145.615
884.698	145.759
887.025	145.821
888.251	145.845
896.082	146
906.423	146.035
915.996	146.06
925.977	146.029
934.42	146
936.1	145.954
936.549	145.941
942.57	145.775

Material Boundary

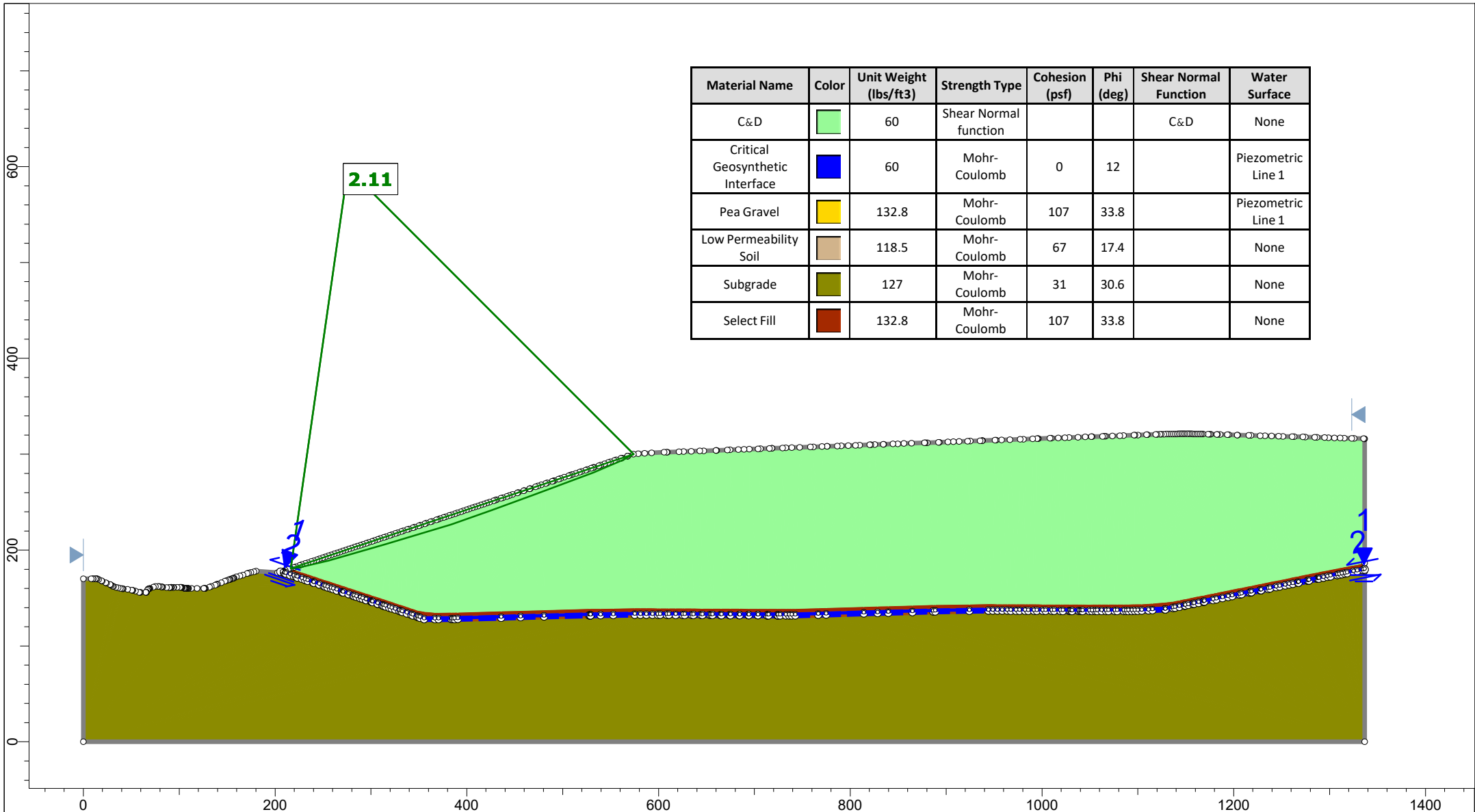
	X	Y
0		145.001
1.53185		145.006
19.0865		145.06
32.9178		145.02
38.6457		145
48.7796		144.793
50.2602		144.763
61.0905		144.542
64.3705		144.476
73.4615		144.291

78.5505	144.189
85.9551	144.041
92.8528	143.903
95.9447	143.841
98.6483	143.789
99.8304	143.766
108.36	143.6
111.481	143.539
113.16	143.508
114.657	143.481
124.023	143.298
126.413	143.276
128.483	143.258
129.604	143.259
134.88	143.144
140.608	143.001
140.666	143
141.88	142.996
145.396	142.987
165.76	142.931
170.639	142.942
190.43	143
193.662	143.091
201.413	143.308
202.91	143.31
209.905	143.483
212.256	143.486
216.044	143.533
220.799	143.61
228.74	143.769
233.581	143.864
240.055	143.994
246.29	144.116
249.014	144.178
254.334	144.284
259.083	144.368
268.35	144.553
271.397	144.613
282.09	144.827
283.248	144.85
289.114	145
290.561	145
291.004	145
293.847	145
294.079	145
294.897	145
295.735	145
297.392	145.908
299.475	147
303.779	147.026
307.699	147.048
315.325	147.101
315.77	147.098

319.666	147.08
324.496	147.067
337.748	147
337.798	146.999
337.804	146.999
350.01	146.752
351.514	146.722
361.883	146.513
364.794	146.454
366.105	146.426
370.416	146.331
374.199	146.251
376.444	146.207
378.978	146.155
385.656	146.023
392.593	145.886
397.761	145.784
406.485	145.612
410.085	145.541
415.321	145.473
419.58	145.44
426.773	145.263
428.072	145.263
436.007	145.041
437.46	145
447.762	144.797
449.164	144.77
459.994	144.557
463.353	144.491
472.562	144.31
477.849	144.206
485.368	144.058
492.661	143.915
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578.177	144.622
591.066	144.882
591.862	144.898
596.908	145
602.692	145.157
603.345	145.157

604.986	145.174
607.15	145.207
619.626	145.459
623.304	145.533
633.498	145.739
639.412	145.859
647.335	146.019
655.475	146.183
661.139	146.297
671.492	146.507
674.909	146.576
687.464	146.829
688.645	146.853
695.918	147
702.465	147.132
703.518	147.154
716.362	147.413
719.644	147.479
730.199	147.692
735.69	147.803
743.977	147.971
751.655	148.126
757.696	148.248
767.54	148.447
771.355	148.524
783.347	148.766
784.957	148.799
794.928	149
798.336	149.012
799.584	149.015
802.272	149.026
809.313	149.051
814.19	149.061
815.343	149.056
825.43	149
826.105	148.999
826.168	148.999
826.795	149
826.896	149
826.916	149
844.081	149.65
852.85	149.878
863.067	150.224
879.695	150.615
884.698	150.759
887.025	150.821
888.251	150.845
896.082	151
906.423	151.035
915.996	151.06
925.977	151.029
926.821	151.026

**“FAILURE IN THE WASTE” ANALYSIS
SLIDE OUTPUT**



Material Name	Color	Unit Weight (lbs/ft ³)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
C&D	Light Green	60	Shear Normal function			C&D	None
Critical Geosynthetic Interface	Blue	60	Mohr-Coulomb	0	12		Piezometric Line 1
Pea Gravel	Yellow	132.8	Mohr-Coulomb	107	33.8		Piezometric Line 1
Low Permeability Soil	Tan	118.5	Mohr-Coulomb	67	17.4		None
Subgrade	Olive Green	127	Mohr-Coulomb	31	30.6		None
Select Fill	Red	132.8	Mohr-Coulomb	107	33.8		None

2.11



Project		Project: 182-442 S.A. Dunn Permit Renewal/Modification Application Landfill	
Analysis Description		Section A - Waste Failure - Static.slim	
Scenario		Section A - Waste Failure - Static.slim	
Drawn By:	ZLM	Checked By:	TDM
Company		Civil & Environmental Consultants, Inc.	
File Name		Section A - Waste Failure - Static.slim	
Created Date:	1/6/2022 12/10/2015 12:09:38 PM	Checked Date:	1/9/2022

Slide Analysis Information

151-877 S.A. Dunn C&D Landfill

Project Summary

Slide Modeler Version:	9.02
Compute Time:	00h:02m:41.832s
Author:	DVS
Company:	Civil & Environmental Consultants, Inc.
Date Created:	12/10/2015, 12:09:38 PM

General Settings

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

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	GLE/Morgenstern-Price with interslice force function (Half Sine)
Number of slices:	25
Tolerance:	0.005
Maximum number of iterations:	50
Check malpha < 0.2:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft ³]:	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:	Cuckoo Search
Initial # of Surface Vertices:	8
Maximum Iterations:	500
Number of Nests:	50
Minimum Elevation:	Not Defined
Minimum Depth [ft]:	10
Minimum Area:	Not Defined
Minimum Weight:	Not Defined
Convex Surfaces Only:	Enabled

Seismic Loading

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Materials

C&D

Color	
Strength Type	Shear Normal function
Unit Weight [lbs/ft ³]	60
Water Surface	None
Ru Value	0

Pea Gravel

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	Piezometric Line 1
Hu Value	1

Low Permeability Soil

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	118.5
Cohesion [psf]	67
Friction Angle [deg]	17.4
Water Surface	None
Ru Value	0

Subgrade

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	127
Cohesion [psf]	31
Friction Angle [deg]	30.6
Water Surface	None
Ru Value	0

Select Fill

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	None
Ru Value	0

Shear Normal Functions

Name: C&D	
Effective Normal (psf)	Shear (psf)
0	0
2000	1400
10000	6169

Global Minimums

Method: gle/morgenstern-price

FS	2.107740
Axis Location:	275.908, 598.340
Left Slip Surface Endpoint:	216.161, 180.832
Right Slip Surface Endpoint:	574.067, 300.038
Resisting Moment:	3.72527e+07 lb-ft
Driving Moment:	1.76742e+07 lb-ft
Resisting Horizontal Force:	91263.9 lb
Driving Horizontal Force:	43299.4 lb
Total Slice Area:	2412.97 ft ²
Surface Horizontal Width:	357.905 ft
Surface Average Height:	6.74193 ft

Global Minimum Coordinates**Method: gle/morgenstern-price**

X	Y
216.161	180.832
226.395	182.086
255.839	189.12
314.574	205.802
383.622	226.65
426.331	241.851
470.777	257.9
531.909	280.939
563.542	294.293
574.067	300.038

Global Minimum Support Data

No Supports Present

Slice Data**Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.10774**

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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]
16	10.23356	3.9796	.987926	C&D6	06	34.9926	20.8246	43.89286	2.7046	06	2.7046	5.25656	5.25656
26	14.72186	2520.6	13.4356	C&D6	06	34.9926	53.11046	111.9436	159.9196	06	159.9196	172.6076	172.6076
36	14.72186	3748.576	13.4356	C&D6	06	34.9926	79.3746	167.3016	239.0026	06	239.0026	257.9646	257.9646
46	14.68386	4670.036	15.85586	C&D6	2.84217e-146	34.9926	97.6 26	205.846	294.06	06	294.06	321.8046	321.8046
5	14.68386	5307.6	15.85586	C&D6	06	34.9926	111.2116	234.4046	334.8636	06	334.8636	36 .4496	36 .4496
	14.68386	5945.286	15.85586	C&D6	5.68434e-146	34.9926	124.7696	262.9816	375.6876	06	375.6876	411.1256	411.1256
76	14.68386	582.916	15.85586	C&D6	06	34.9926	138.316	291.5356	416.4796	06	416.4796	455.7646	455.7646
86	13.8096	70.36	16.8016	C&D6	06	34.9926	147.696	311.3056	444.7216	06	444.7216	489.316	489.316
96	13.8096	7029.296	16.8016	C&D6	5.68434e-146	34.9926	155.616	327.9986	468.5686	06	468.5686	515.5556	515.5556
10	13.8096	7388.286	16.8016	C&D6	06	34.9926	163.4856	344.5836	492.2626	06	492.2626	541.6246	541.6246
116	13.8096	7747.26	16.8016	C&D6	5.68434e-146	34.9926	171.296	361.0476	515.7816	06	515.7816	567.5016	567.5016
126	13.8096	8106.256	16.8016	C&D6	5.68434e-146	34.9926	179.0426	377.3756	539.1076	06	539.1076	593.1676	593.1676
136	14.23646	8404.346	19.59186	C&D6	06	34.9926	174.1826	367.1316	524.4736	06	524.4736	586.4686	586.4686
146	14.23646	8129.386	19.59186	C&D6	5.68434e-146	34.9926	168.2336	354.5916	506.5596	06	506.5596	56 .436	56 .436
15	14.23646	7854.426	19.59186	C&D6	06	34.9926	162.3396	342.1686	488.8126	06	488.8126	546.5926	546.5926
16	14.81546	7847.896	19.85396	C&D6	5.68434e-146	34.9926	155.2536	327.2336	467.4756	06	467.4756	523.5356	523.5356
176	14.81546	7482.086	19.85396	C&D6	5.68434e-146	34.9926	147.9246	311.786	445.4096	06	445.4096	498.8226	498.8226
186	14.81546	7116.186	19.85396	C&D6	06	34.9926	140.6526	296.4586	423.5116	06	423.5116	474.2986	474.2986
196	15.2836	846.776	20.64986	C&D6	06	34.9926	130.156	274.336	391.9096	06	391.9096	440.9616	440.9616
20	15.2836	236.196	20.64986	C&D6	06	34.9926	118.6826	250.156	357.3576	06	357.3576	402.0856	402.0856
216	15.2836	5625.456	20.64986	C&D6	06	34.9926	107.2256	226.0026	322.86	06	322.86	363.276	363.276
226	15.2836	5014.826	20.64986	C&D6	2.84217e-146	34.9926	95.77136	201.8616	288.3736	06	288.3736	324.46	324.46
236	15.816	4206.96	22.88846	C&D6	2.84217e-146	34.9926	76.52326	161.2916	230.416	06	230.416	262.7226	262.7226
246	15.816	2872.856	22.88846	C&D6	1.42109e-146	34.9926	52.54256	110.746	158.2086	06	158.2086	180.3916	180.3916
25	10.5246	760.5316	28.62516	C&D6	06	34.9926	20.26856	42.72086	1.02976	06	1.02976	72.0926	72.0926

Interslice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.10774

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
16	216.1616	180.8326	06	06	06
26	226.3956	182.086	134.776	3.893386	1.65476
36	241.1176	185.6036	355.3836	24.87016	4.00316
46	255.8396	189.126	85.0936	75.29596	.271986
56	270.5226	193.296	894.8346	132.3486	8.413186
	285.206	197.4616	1133.676	207.9676	10.39516
76	299.896	201.6316	1401.636	302.6756	12.1856
86	314.5746	205.8026	1698.686	415.9436	13.75896
96	328.3836	209.9726	1886.976	506.3876	15.0226
106	342.1936	214.1416	2085.36	00.4136	16.06216
116	356.0026	218.3116	2293.786	95.5936	16.876
126	369.8126	222.486	2512.16	789.156	17.43936
136	383.6226	226.656	2740.426	878.0496	17.76586
146	397.8586	231.7176	256 .26	826.2096	17.846
156	412.0946	236.7846	2398.056	763.7156	17.6 536
16	426.3316	241.8516	2235.736	93.1436	17.2256
176	441.146	247.2016	2038.436	03.6	16.4946
186	455.9616	252.556	1850.436	512.9256	15.4936
196	470.7776	257.96	1671.686	423.9246	14.22986
206	486.06	263.6	1406.526	316.1356	12.6 756
216	501.3436	269.4196	1164.746	223.516	10.86286
226	516.626	275.1796	946.36	147.2276	8.843286
236	531.9096	280.9396	751.1916	87.49186	.643356
246	547.726	287.616	424.726	31.34476	4.220776
256	563.5426	294.2936	200.5696	5.958656	1.701686
26	574.0676	300.0386	06	06	06

Discharge Sections

Entity Information

Piezoline

	X	Y
207.158		177.844
209.644		176.98
209.656		176.976
209.673		176.97
209.701		176.961
209.754		176.943
209.889		176.899
211.024		176.525
215.647		175
219.457		173.752
221.753		173
223.198		172.524
227.818		171
231.167		169.903
233.924		169
239.731		167.085
239.989		167
240.158		166.945
246.075		165
250.846		163.432

252.16	163
254.731	162.155
258.246	161
260.564	160.238
264.331	159
269.78	157.209
270.417	157
270.828	156.865
276.502	155
281.239	153.443
282.588	153
284.878	152.247
288.673	151
288.694	150.994
291.145	150.188
294.759	149
294.789	148.99
294.817	148.991
300.025	147.273
300.849	147
300.936	147
301.55	146.798
306.97	145
307.021	145
311.682	143.462
313.072	143
313.082	143
315.185	142.306
319.144	141
321.59	140.197
325.229	139
329.426	137.608
331.256	137
332.629	136.549
337.335	135
341.828	133.529
343.443	133
348.164	131.439
349.492	131
351.137	130.45
355.479	129
366.611	128.944
370.513	128.931
383.965	128.994
385.43	129
387.113	129.048
390.516	129.144
435.781	130.424
456.235	131
480.527	131.667
527.675	132.968
528.433	132.989
528.846	133

528.936	133
528.97	133
529.059	133.001
539.5	133.043
552.72	133.294
575.143	133.619
581.119	133.601
587.25	133.583
593.541	133.565
599.129	133.534
601.589	133.521
608.463	133.488
610.709	133.476
617.792	133.441
625.205	133.405
627.114	133.395
634.744	133.358
636.43	133.349
644.276	133.311
645.74	133.303
653.801	133.264
655.043	133.257
656.126	133.253
664.642	133.216
665.551	133.212
674.288	133.174
675.074	133.171
684.022	133.132
684.619	133.13
693.779	133.09
694.187	133.088
703.562	133.048
703.773	133.047
713.368	133.005
713.392	133.005
714.64	133
723.812	132.994
724.625	132.995
726.778	132.991
732.863	132.987
736.095	132.991
738.943	132.989
742.604	133
766.537	133.668
774.739	133.898
814.017	135
828.404	135.395
839.649	135.705
864.839	136.398
886.554	137
888.573	137.057
924.259	137.663
944.12	137.919

948.68	137.898
953.418	137.877
958.343	137.854
963.659	137.828
967.433	137.811
972.95	137.784
976.521	137.768
982.239	137.739
985.607	137.724
991.527	137.694
994.615	137.677
1000.75	137.646
1003.63	137.631
1009.99	137.599
1012.66	137.584
1019.23	137.551
1021.71	137.539
1028.5	137.505
1029.69	137.499
1030.85	137.495
1031.4	137.492
1038.35	137.463
1040.11	137.456
1041.2	137.452
1042.28	137.45
1049.3	137.42
1052.16	137.449
1055.45	137.483
1057.69	137.531
1062.15	137.526
1066.68	137.507
1069.19	137.568
1075.92	137.51
1078.47	137.582
1085.16	137.513
1087.7	137.49
1090.05	137.577
1093.69	137.552
1096.62	137.674
1099.96	137.645
1103.91	137.833
1111.1	138.173
1115.26	138.472
1128.34	138.992
1128.36	138.993
1128.54	139
1136.54	140.583
1138.64	141
1143.2	141.914
1148.64	143
1149.35	143.143
1152.53	143.786
1157.39	144.767

1158.54	145
1163.34	145.967
1168.47	147
1168.88	147.082
1169.38	147.184
1178.4	149
1181.82	149.688
1188.33	151
1194.13	152.167
1198.27	153
1206.33	154.622
1208.21	155
1216.89	156.747
1218.14	157
1218.36	157.045
1228.05	159
1228.06	159.001
1228.08	159.005
1228.4	159.083
1236.03	160.624
1237.89	161
1244.19	162.271
1247.8	163
1253.54	164.159
1257.71	165
1261.5	165.765
1266.92	166.86
1267.34	166.946
1267.61	167
1277.37	168.971
1277.52	169
1278.54	169.207
1287.42	171
1288.05	171.126
1288.73	171.264
1293.48	172.185
1297.69	173
1300.81	173.606
1308	175
1310.03	175.394
1312.81	175.933
1315.92	176.536
1318.32	177
1324.86	178.267
1328.64	179
1334.83	180.2
1336.61	180.546

External Boundary

	X	Y
0		170
0		0

1336.61	0
1336.61	177.546
1336.61	179.546
1336.61	180.546
1336.61	181.546
1336.61	186.546
1336.61	316.096
1336	316.115
1335.3	316.135
1325.6	316.421
1323.06	316.496
1315.25	316.726
1310.87	316.855
1304.93	317.03
1298.73	317.212
1294.66	317.332
1286.65	317.568
1284.42	317.634
1274.63	317.923
1272	318
1262.91	318.268
1260.99	318.324
1251.2	318.613
1246.79	318.743
1239.42	318.96
1232.47	319.165
1227.56	319.309
1218.04	319.59
1215.62	319.661
1204.11	320
1203.6	320.015
1194.6	320.266
1193.29	320.302
1185.64	320.515
1183.11	320.585
1182.42	320.604
1175.98	320.783
1174.59	320.814
1173.12	320.841
1167.94	320.981
1166.28	321.002
1165.04	321.034
1163.06	321.079
1161.3	321.092
1159.43	321.127
1157.67	321.154
1155.99	321.174
1154.16	321.179
1152.52	321.192
1150.91	321.199
1149.06	321.196
1147.46	321.198
1145.85	321.194

1144.21	321.184
1142.36	321.173
1140.67	321.157
1138.9	321.134
1137.03	321.105
1135.23	321.085
1133.24	321.046
1131.08	320.997
1129.38	320.97
1127.03	320.908
1124.38	320.829
1122.89	320.798
1119.95	320.7
1118.67	320.668
1109.8	320.35
1109.09	320.328
1100.04	320
1096.88	319.885
1096.03	319.854
1085.1	319.456
1081.1	319.31
1073.4	319.03
1066.29	318.771
1064.86	318.717
1062.97	318.643
1052.18	318.254
1051.41	318.223
1045.12	318
1037.57	317.725
1028.17	317.383
1023.72	317.221
1017.01	316.976
1009.52	316.704
1008.28	316.657
996.063	316.213
995.361	316.186
994.822	316.164
990.2	316
980.627	315.651
977.216	315.527
966.37	315.132
957.811	314.821
951.951	314.607
950.897	314.568
937.869	314.094
937.565	314.082
937.331	314.073
935.278	314
925.128	313.63
922.402	313.531
913.375	313.202
907.52	312.989
901.711	312.778

892.78	312.452
891.981	312.423
880.356	312
878.221	311.922
877.459	311.895
863.902	311.401
855.95	311.111
849.484	310.876
844.499	310.694
834.968	310.347
834.362	310.325
825.434	310
821.354	309.851
820.258	309.812
809.633	309.425
805.404	309.271
797.969	309
790.641	308.733
786.363	308.577
775.969	308.199
775.619	308.186
770.512	308
761.583	307.675
758.397	307.559
747.249	307.153
738.908	306.849
732.814	306.627
729.246	306.497
718.278	306.098
718.107	306.092
715.59	306
706.219	305.659
703.734	305.568
694.724	305.24
689.186	305.038
683.216	304.821
674.618	304.508
671.696	304.402
660.668	304
660.102	303.979
659.927	303.973
647.125	303.507
642.972	303.356
634.19	303.036
626.089	302.741
621.298	302.566
609.277	302.129
608.447	302.098
605.746	302
592.729	301.43
585.533	300.889
578.85	300.522
573.694	300

567.931	298.081
567.688	298
567.55	297.954
561.688	296
560.864	295.725
555.688	294
553.874	293.396
549.687	292
547.513	291.275
543.686	290
539.572	288.629
537.686	288
532.56	286.292
531.685	286
529.672	285.329
525.684	284
523.962	283.426
519.684	282
517.638	281.318
513.683	280
509.776	278.698
507.683	278
506.199	277.506
501.681	276
497.772	274.697
495.681	274
491.005	272.442
489.68	272
489.09	271.803
483.679	270
482.242	269.521
477.679	268
474.189	266.837
471.678	266
466.109	264.144
465.678	264
465.484	263.935
459.677	262
459.258	261.86
453.676	260
452.686	259.67
447.676	258
444.164	256.829
441.675	256
437.62	254.648
435.675	254
431.086	252.47
429.675	252
427.788	251.371
423.674	250
420.757	249.028
417.674	248
414.581	246.969

411.673	246
408.486	244.938
405.673	244
402.391	242.906
399.673	242
396.296	240.874
393.672	240
390.201	238.843
387.672	238
384.105	236.811
381.671	236
378.01	234.78
375.671	234
372.05	232.793
369.671	232
368.183	231.504
363.67	230
362.091	229.474
357.67	228
355.998	227.443
351.669	226
349.905	225.412
345.669	224
343.812	223.381
339.669	222
337.719	221.35
333.668	220
331.626	219.319
327.668	218
325.533	217.288
321.667	216
319.439	215.257
315.667	214
313.346	213.226
309.667	212
307.252	211.195
303.666	210
301.159	209.164
297.666	208
295.065	207.133
291.665	206
288.971	205.102
285.665	204
282.877	203.071
279.665	202
276.783	201.04
273.664	200
270.689	199.008
267.664	198
264.594	196.977
261.663	196
258.5	194.946
255.663	194

252.405	192.914
249.662	192
246.31	190.883
243.662	190
240.215	188.851
237.662	188
234.12	186.82
231.661	186
228.017	184.785
225.662	184
221.802	182.716
219.651	182
216.161	180.832
214.953	180.427
213.677	180
210.543	178.955
208.652	178.325
207.677	178
207.158	177.844
205.613	177.382
202.523	176.456
180.07	178
177.959	177.46
174.783	176.639
172.407	176
170.772	175.495
166.382	174
163.292	173.078
159.725	172
157.032	170.826
156.661	170.683
155.94	170.468
154.715	170
153.182	169.408
152.867	169.312
152.014	169.08
151.049	168.783
148.832	168
147.535	167.52
143.965	166
140.022	164.477
138.788	164
137.479	163.509
133.373	162
131.589	161.309
127.185	160
126.959	159.997
126.25	159.995
125.762	159.993
125.68	159.993
118.478	159.969
112.757	159.986
109.707	159.993

109.569	159.993
109.105	159.994
108.997	159.995
108.065	159.997
107.64	159.997
107.166	160
106.378	160.046
106.193	160.053
106.103	160.054
105.8	160.084
105.495	160.108
104.805	160.417
103.221	160.987
102.599	161.033
102.009	161.037
101.614	161.072
101.055	161.048
100.711	161.052
97.7835	161.058
94.3084	161.041
93.8975	161.022
91.9539	161.147
91.63	161.143
91.4102	161.082
90.2817	161.024
89.9486	161.022
89.707	160.951
86.7014	160.813
82.7048	161.264
82.458	161.296
81.3882	161.545
81.1637	161.594
79.2738	162
77.816	162
75.0666	162
72.9864	161.282
69.3934	160
68.7416	159.768
68.2736	159.597
68.1192	159.514
67.9386	159.38
67.3686	159.119
66.5713	158
65.7493	156.136
65.6836	156
65.5752	156
65.3068	156
65.0401	156
59.6261	156
59.182	156
58.1295	156
54.3138	157.2
51.6407	158

50.8258	158.181
50.3907	158.236
45.9965	158.999
41.4109	159.593
40.813	159.676
40.1879	159.755
38.4792	160
36.2697	160.68
34.0018	161.233
31.409	162
30.6648	162.367
29.2396	163.187
28.1824	163.779
27.7683	164
24.1653	165.56
23.3051	166
19.6494	167.648
18.9426	168
15.9722	169.385
14.4129	170
14.1982	170
12.8502	170
12.4376	170
10.2755	170
9.92074	170
8.21815	170

Material Boundary

	X	Y
202.523		176.456
209.644		173.98
209.656		173.976
209.673		173.97
209.701		173.961
209.754		173.943
209.889		173.899
211.024		173.525
215.647		172
219.457		170.752
221.753		170
223.198		169.524
227.818		168
231.167		166.903
233.924		166
239.731		164.085
239.989		164
240.158		163.945
246.075		162
250.846		160.432
252.16		160
254.731		159.155
258.246		158

260.564	157.238
264.331	156
269.78	154.209
270.417	154
270.828	153.865
276.502	152
281.239	150.443
282.588	150
284.878	149.247
288.673	148
288.694	147.994
291.145	147.188
294.759	146
294.789	145.99
294.817	145.991
300.025	144.273
300.849	144
300.936	144
301.55	143.798
306.97	142
307.021	142
311.682	140.462
313.072	140
313.082	140
315.185	139.306
319.144	138
321.59	137.197
325.229	136
329.426	134.608
331.256	134
332.629	133.549
337.335	132
341.828	130.529
343.443	130
348.164	128.439
349.492	128
351.137	127.45
355.479	126
366.611	125.944
370.513	125.931
383.965	125.994
385.43	126
387.113	126.048
390.516	126.144
435.781	127.424
456.235	128
480.527	128.667
527.675	129.968
528.433	129.989
528.846	130
528.936	130
528.97	130
529.059	130.001

539.5	130.043
552.72	130.294
575.143	130.619
581.119	130.601
587.25	130.583
593.541	130.565
599.129	130.534
601.589	130.521
608.463	130.488
610.709	130.476
617.792	130.441
625.205	130.405
627.114	130.395
634.744	130.358
636.43	130.349
644.276	130.311
645.74	130.303
653.801	130.264
655.043	130.257
656.126	130.253
664.642	130.216
665.551	130.212
674.288	130.174
675.074	130.171
684.022	130.132
684.619	130.13
693.779	130.09
694.187	130.088
703.562	130.048
703.773	130.047
713.368	130.005
713.392	130.005
714.64	130
723.812	129.994
724.625	129.995
726.778	129.991
732.863	129.987
736.095	129.991
738.943	129.989
742.604	130
766.537	130.668
774.739	130.898
814.017	132
828.404	132.395
839.649	132.705
864.839	133.398
886.554	134
888.573	134.057
924.259	134.663
944.12	134.919
948.68	134.898
953.418	134.877
958.343	134.854

963.659	134.828
967.433	134.811
972.95	134.784
976.521	134.768
982.239	134.739
985.607	134.724
991.527	134.694
994.615	134.677
1000.75	134.646
1003.63	134.631
1009.99	134.599
1012.66	134.584
1019.23	134.551
1021.71	134.539
1028.5	134.505
1029.69	134.499
1030.85	134.495
1031.4	134.492
1038.35	134.463
1040.11	134.456
1041.2	134.452
1042.28	134.45
1049.3	134.42
1052.16	134.449
1055.45	134.483
1057.69	134.531
1062.15	134.526
1066.68	134.507
1069.19	134.568
1075.92	134.51
1078.47	134.582
1085.16	134.513
1087.7	134.49
1090.05	134.577
1093.69	134.552
1096.62	134.674
1099.96	134.645
1103.91	134.833
1111.1	135.173
1115.26	135.472
1128.34	135.992
1128.36	135.993
1128.54	136
1136.54	137.583
1138.64	138
1143.2	138.914
1148.64	140
1149.35	140.143
1152.53	140.786
1157.39	141.767
1158.54	142
1163.34	142.967
1168.47	144

1168.88	144.082
1169.38	144.184
1178.4	146
1181.82	146.688
1188.33	148
1194.13	149.167
1198.27	150
1206.33	151.622
1208.21	152
1216.89	153.747
1218.14	154
1218.36	154.045
1228.05	156
1228.06	156.001
1228.08	156.005
1228.4	156.083
1236.03	157.624
1237.89	158
1244.19	159.271
1247.8	160
1253.54	161.159
1257.71	162
1261.5	162.765
1266.92	163.86
1267.34	163.946
1267.61	164
1277.37	165.971
1277.52	166
1278.54	166.207
1287.42	168
1288.05	168.126
1288.73	168.264
1293.48	169.185
1297.69	170
1300.81	170.606
1308	172
1310.03	172.394
1312.81	172.933
1315.92	173.536
1318.32	174
1324.86	175.267
1328.64	176
1334.83	177.2
1336.61	177.546

Material Boundary

	X	Y
205.613		177.382
209.644		175.98
209.656		175.976
209.673		175.97
209.701		175.961

209.754	175.943
209.889	175.899
211.024	175.525
215.647	174
219.457	172.752
221.753	172
223.198	171.524
227.818	170
231.167	168.903
233.924	168
239.731	166.085
239.989	166
240.158	165.945
246.075	164
250.846	162.432
252.16	162
254.731	161.155
258.246	160
260.564	159.238
264.331	158
269.78	156.209
270.417	156
270.828	155.865
276.502	154
281.239	152.443
282.588	152
284.878	151.247
288.673	150
288.694	149.994
291.145	149.188
294.759	148
294.789	147.99
294.817	147.991
300.025	146.273
300.849	146
300.936	146
301.55	145.798
306.97	144
307.021	144
311.682	142.462
313.072	142
313.082	142
315.185	141.306
319.144	140
321.59	139.197
325.229	138
329.426	136.608
331.256	136
332.629	135.549
337.335	134
341.828	132.529
343.443	132
348.164	130.439

349.492	130
351.137	129.45
355.479	128
366.611	127.944
370.513	127.931
383.965	127.994
385.43	128
387.113	128.048
390.516	128.144
435.781	129.424
456.235	130
480.527	130.667
527.675	131.968
528.433	131.989
528.846	132
528.936	132
528.97	132
529.059	132.001
539.5	132.043
552.72	132.294
575.143	132.619
581.119	132.601
587.25	132.583
593.541	132.565
599.129	132.534
601.589	132.521
608.463	132.488
610.709	132.476
617.792	132.441
625.205	132.405
627.114	132.395
634.744	132.358
636.43	132.349
644.276	132.311
645.74	132.303
653.801	132.264
655.043	132.257
656.126	132.253
664.642	132.216
665.551	132.212
674.288	132.174
675.074	132.171
684.022	132.132
684.619	132.13
693.779	132.09
694.187	132.088
703.562	132.048
703.773	132.047
713.368	132.005
713.392	132.005
714.64	132
723.812	131.994
724.625	131.995

726.778	131.991
732.863	131.987
736.095	131.991
738.943	131.989
742.604	132
766.537	132.668
774.739	132.898
814.017	134
828.404	134.395
839.649	134.705
864.839	135.398
886.554	136
888.573	136.057
924.259	136.663
944.12	136.919
948.68	136.898
953.418	136.877
958.343	136.854
963.659	136.828
967.433	136.811
972.95	136.784
976.521	136.768
982.239	136.739
985.607	136.724
991.527	136.694
994.615	136.677
1000.75	136.646
1003.63	136.631
1009.99	136.599
1012.66	136.584
1019.23	136.551
1021.71	136.539
1028.5	136.505
1029.69	136.499
1030.85	136.495
1031.4	136.492
1038.35	136.463
1040.11	136.456
1041.2	136.452
1042.28	136.45
1049.3	136.42
1052.16	136.449
1055.45	136.483
1057.69	136.531
1062.15	136.526
1066.68	136.507
1069.19	136.568
1075.92	136.51
1078.47	136.582
1085.16	136.513
1087.7	136.49
1090.05	136.577
1093.69	136.552

1096.62	136.674
1099.96	136.645
1103.91	136.833
1111.1	137.173
1115.26	137.472
1128.34	137.992
1128.36	137.993
1128.54	138
1136.54	139.583
1138.64	140
1143.2	140.914
1148.64	142
1149.35	142.143
1152.53	142.786
1157.39	143.767
1158.54	144
1163.34	144.967
1168.47	146
1168.88	146.082
1169.38	146.184
1178.4	148
1181.82	148.688
1188.33	150
1194.13	151.167
1198.27	152
1206.33	153.622
1208.21	154
1216.89	155.747
1218.14	156
1218.36	156.045
1228.05	158
1228.06	158.001
1228.08	158.005
1228.4	158.083
1236.03	159.624
1237.89	160
1244.19	161.271
1247.8	162
1253.54	163.159
1257.71	164
1261.5	164.765
1266.92	165.86
1267.34	165.946
1267.61	166
1277.37	167.971
1277.52	168
1278.54	168.207
1287.42	170
1288.05	170.126
1288.73	170.264
1293.48	171.185
1297.69	172
1300.81	172.606

1308	174
1310.03	174.394
1312.81	174.933
1315.92	175.536
1318.32	176
1324.86	177.267
1328.64	178
1334.83	179.2
1336.61	179.546

Material Boundary

	X	Y
208.652		178.325
209.644		177.98
209.656		177.976
209.673		177.97
209.701		177.961
209.754		177.943
209.889		177.899
211.024		177.525
215.647		176
219.457		174.752
221.753		174
223.198		173.524
227.818		172
231.167		170.903
233.924		170
239.731		168.085
239.989		168
240.158		167.945
246.075		166
250.846		164.432
252.16		164
254.731		163.155
258.246		162
260.564		161.238
264.331		160
269.78		158.209
270.417		158
270.828		157.865
276.502		156
281.239		154.443
282.588		154
284.878		153.247
288.673		152
288.694		151.994
291.145		151.188
294.759		150
294.789		149.99
294.817		149.991
300.025		148.273
300.849		148

300.936	148
301.55	147.798
306.97	146
307.021	146
311.682	144.462
313.072	144
313.082	144
315.185	143.306
319.144	142
321.59	141.197
325.229	140
329.426	138.608
331.256	138
332.629	137.549
337.335	136
341.828	134.529
343.443	134
348.164	132.439
349.492	132
351.137	131.45
355.479	130
366.611	129.944
370.513	129.931
383.965	129.994
385.43	130
387.113	130.048
390.516	130.144
435.781	131.424
456.235	132
480.527	132.667
527.675	133.968
528.433	133.989
528.846	134
528.936	134
528.97	134
529.059	134.001
539.5	134.043
552.72	134.294
575.143	134.619
581.119	134.601
587.25	134.583
593.541	134.565
599.129	134.534
601.589	134.521
608.463	134.488
610.709	134.476
617.792	134.441
625.205	134.405
627.114	134.395
634.744	134.358
636.43	134.349
644.276	134.311
645.74	134.303

653.801	134.264
655.043	134.257
656.126	134.253
664.642	134.216
665.551	134.212
674.288	134.174
675.074	134.171
684.022	134.132
684.619	134.13
693.779	134.09
694.187	134.088
703.562	134.048
703.773	134.047
713.368	134.005
713.392	134.005
714.64	134
723.812	133.994
724.625	133.995
726.778	133.991
732.863	133.987
736.095	133.991
738.943	133.989
742.604	134
766.537	134.668
774.739	134.898
814.017	136
828.404	136.395
839.649	136.705
864.839	137.398
886.554	138
888.573	138.057
924.259	138.663
944.12	138.919
948.68	138.898
953.418	138.877
958.343	138.854
963.659	138.828
967.433	138.811
972.95	138.784
976.521	138.768
982.239	138.739
985.607	138.724
991.527	138.694
994.615	138.677
1000.75	138.646
1003.63	138.631
1009.99	138.599
1012.66	138.584
1019.23	138.551
1021.71	138.539
1028.5	138.505
1029.69	138.499
1030.85	138.495

1031.4	138.492
1038.35	138.463
1040.11	138.456
1041.2	138.452
1042.28	138.45
1049.3	138.42
1052.16	138.449
1055.45	138.483
1057.69	138.531
1062.15	138.526
1066.68	138.507
1069.19	138.568
1075.92	138.51
1078.47	138.582
1085.16	138.513
1087.7	138.49
1090.05	138.577
1093.69	138.552
1096.62	138.674
1099.96	138.645
1103.91	138.833
1111.1	139.173
1115.26	139.472
1128.34	139.992
1128.36	139.993
1128.54	140
1136.54	141.583
1138.64	142
1143.2	142.914
1148.64	144
1149.35	144.143
1152.53	144.786
1157.39	145.767
1158.54	146
1163.34	146.967
1168.47	148
1168.88	148.082
1169.38	148.184
1178.4	150
1181.82	150.688
1188.33	152
1194.13	153.167
1198.27	154
1206.33	155.622
1208.21	156
1216.89	157.747
1218.14	158
1218.36	158.045
1228.05	160
1228.06	160.001
1228.08	160.005
1228.4	160.083
1236.03	161.624

1237.89	162
1244.19	163.271
1247.8	164
1253.54	165.159
1257.71	166
1261.5	166.765
1266.92	167.86
1267.34	167.946
1267.61	168
1277.37	169.971
1277.52	170
1278.54	170.207
1287.42	172
1288.05	172.126
1288.73	172.264
1293.48	173.185
1297.69	174
1300.81	174.606
1308	176
1310.03	176.394
1312.81	176.933
1315.92	177.536
1318.32	178
1324.86	179.267
1328.64	180
1334.83	181.2
1336.61	181.546

Material Boundary

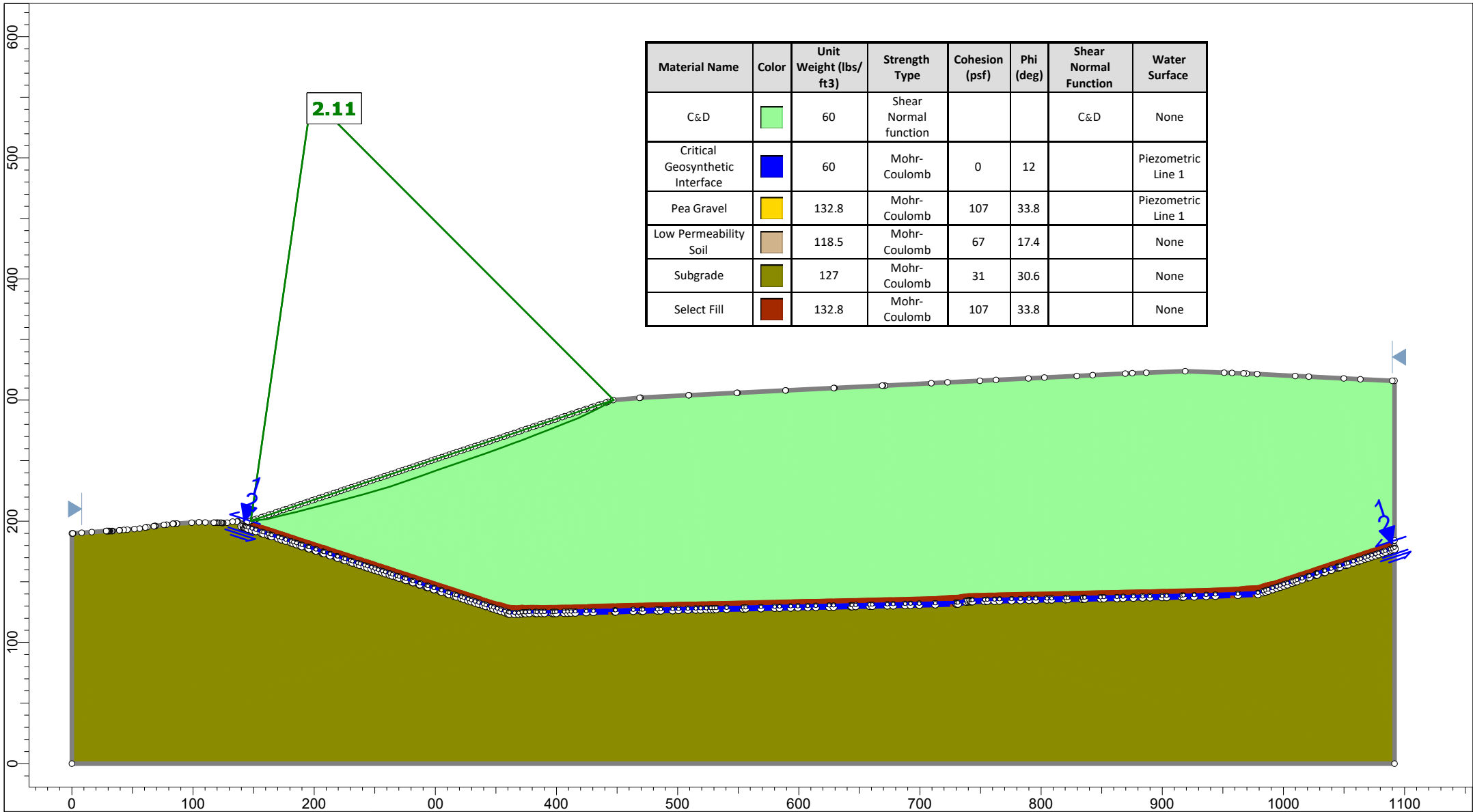
	X	Y
216.161		180.832
219.457		179.752
221.753		179
223.198		178.524
227.818		177
231.167		175.903
233.924		175
239.731		173.085
239.989		173
240.158		172.945
246.075		171
250.846		169.432
252.16		169
254.731		168.155
258.246		167
260.564		166.238
264.331		165
269.78		163.209
270.417		163
270.828		162.865
276.502		161
281.239		159.443

282.588	159
284.878	158.247
288.673	157
288.694	156.994
291.145	156.188
294.759	155
294.789	154.99
294.817	154.991
300.025	153.273
300.849	153
300.936	153
301.55	152.798
306.97	151
307.021	151
311.682	149.462
313.072	149
313.082	149
315.185	148.306
319.144	147
321.59	146.197
325.229	145
329.426	143.608
331.256	143
332.629	142.549
337.335	141
341.828	139.529
343.443	139
348.164	137.439
349.492	137
351.137	136.45
355.479	135
366.611	134.944
370.513	134.931
383.965	134.994
385.43	135
387.113	135.048
390.516	135.144
435.781	136.424
456.235	137
480.527	137.667
527.675	138.968
528.433	138.989
528.846	139
528.936	139
528.97	139
529.059	139.001
539.5	139.043
552.72	139.294
575.143	139.619
581.119	139.601
587.25	139.583
593.541	139.565
599.129	139.534

601.589	139.521
608.463	139.488
610.709	139.476
617.792	139.441
625.205	139.405
627.114	139.395
634.744	139.358
636.43	139.349
644.276	139.311
645.74	139.303
653.801	139.264
655.043	139.257
656.126	139.253
664.642	139.216
665.551	139.212
674.288	139.174
675.074	139.171
684.022	139.132
684.619	139.13
693.779	139.09
694.187	139.088
703.562	139.048
703.773	139.047
713.368	139.005
713.392	139.005
714.64	139
723.812	138.994
724.625	138.995
726.778	138.991
732.863	138.987
736.095	138.991
738.943	138.989
742.604	139
766.537	139.668
774.739	139.898
814.017	141
828.404	141.395
839.649	141.705
864.839	142.398
886.554	143
888.573	143.057
924.259	143.663
944.12	143.919
948.68	143.898
953.418	143.877
958.343	143.854
963.659	143.828
967.433	143.811
972.95	143.784
976.521	143.768
982.239	143.739
985.607	143.724
991.527	143.694

994.615	143.677
1000.75	143.646
1003.63	143.631
1009.99	143.599
1012.66	143.584
1019.23	143.551
1021.71	143.539
1028.5	143.505
1029.69	143.499
1030.85	143.495
1031.4	143.492
1038.35	143.463
1040.11	143.456
1041.2	143.452
1042.28	143.45
1049.3	143.42
1052.16	143.449
1055.45	143.483
1057.69	143.531
1062.15	143.526
1066.68	143.507
1069.19	143.568
1075.92	143.51
1078.47	143.582
1085.16	143.513
1087.7	143.49
1090.05	143.577
1093.69	143.552
1096.62	143.674
1099.96	143.645
1103.91	143.833
1111.1	144.173
1115.26	144.472
1128.34	144.992
1128.36	144.993
1128.54	145
1136.54	146.583
1138.64	147
1143.2	147.914
1148.64	149
1149.35	149.143
1152.53	149.786
1157.39	150.767
1158.54	151
1163.34	151.967
1168.47	153
1168.88	153.082
1169.38	153.184
1178.4	155
1181.82	155.688
1188.33	157
1194.13	158.167
1198.27	159

1206.33	160.622
1208.21	161
1216.89	162.747
1218.14	163
1218.36	163.045
1228.05	165
1228.06	165.001
1228.08	165.005
1228.4	165.083
1236.03	166.624
1237.89	167
1244.19	168.271
1247.8	169
1253.54	170.159
1257.71	171
1261.5	171.765
1266.92	172.86
1267.34	172.946
1267.61	173
1277.37	174.971
1277.52	175
1278.54	175.207
1287.42	177
1288.05	177.126
1288.73	177.264
1293.48	178.185
1297.69	179
1300.81	179.606
1308	181
1310.03	181.394
1312.81	181.933
1315.92	182.536
1318.32	183
1324.86	184.267
1328.64	185
1334.83	186.2
1336.61	186.546



Material Name	Color	Unit Weight (lbs/ft ³)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
C&D	Green	60	Shear Normal function			C&D	None
Critical Geosynthetic Interface	Blue	60	Mohr-Coulomb	0	12		Piezometric Line 1
Pea Gravel	Yellow	132.8	Mohr-Coulomb	107	33.8		Piezometric Line 1
Low Permeability Soil	Tan	118.5	Mohr-Coulomb	67	17.4		None
Subgrade	Olive	127	Mohr-Coulomb	31	30.6		None
Select Fill	Red	132.8	Mohr-Coulomb	107	33.8		None

2.11



SLIDEINTERPRET 9.020

Project		Project: 182-442 S.A. Dunn Permit Renewal & 182-442 S.A. Dunn Footprint Modification	
Analysis Description	Section B - Waste Failure - Static.slim	Scenario	Section B - Waste Failure - Static.slim
Drawn By	Created By: ZLM	Checked By	TDM
Created Date	1/6/2022 9/26/2018, 11:46:34 AM	Checked Date	1/9/2022
		Company	Civil & Environmental Consultants, Inc.
		File Name	Civil & Environmental Consultants, Inc. Section B - Waste Failure - Static.slim

Slide Analysis Information

182-442 S.A. Dunn Footprint Modification

Project Summary

Slide Modeler Version:	9.02
Compute Time:	00h:02m:20.9s
Author:	DVS
Company:	Civil & Environmental Consultants, Inc.
Date Created:	9/26/2018, 11:46:34 AM

General Settings

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

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	GLE/Morgenstern-Price with interslice force function (Half Sine)
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 ³]:	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:	Cuckoo Search
Initial # of Surface Vertices:	8
Maximum Iterations:	500
Number of Nests:	50
Minimum Elevation:	Not Defined
Minimum Depth [ft]:	10
Minimum Area:	Not Defined
Minimum Weight:	Not Defined
Convex Surfaces Only:	Enabled

Seismic Loading

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Materials

C&D

Color	
Strength Type	Shear Normal function
Unit Weight [lbs/ft ³]	60
Water Surface	None
Ru Value	0

Pea Gravel

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	Piezometric Line 1
Hu Value	1

Low Permeability Soil

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	118.5
Cohesion [psf]	67
Friction Angle [deg]	17.4
Water Surface	None
Ru Value	0

Subgrade

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	127
Cohesion [psf]	31
Friction Angle [deg]	30.6
Water Surface	None
Ru Value	0

Select Fill

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	None
Ru Value	0

Shear Normal Functions

Name: C&D	
Effective Normal (psf)	Shear (psf)
0	0
2000	1400
10000	6169

Global Minimums

Method: gle/morgenstern-price

FS	2.113860
Axis Location:	197.723, 549.947
Left Slip Surface Endpoint:	147.568, 200.339
Right Slip Surface Endpoint:	447.316, 300.058
Resisting Moment:	2.77194e+07 lb-ft
Driving Moment:	1.31135e+07 lb-ft
Resisting Horizontal Force:	80411.7 lb
Driving Horizontal Force:	38041.2 lb
Total Slice Area:	2124.53 ft ²
Surface Horizontal Width:	299.748 ft
Surface Average Height:	7.08771 ft

Global Minimum Coordinates**Method: gle/morgenstern-price**

X	Y
147.568	200.339
161.452	201.965
175.251	205.252
186.089	207.834
196.926	210.67
207.764	213.523
218.601	216.376
229.358	219.207
240.125	222.085
251.348	225.367
262.523	228.635
275.611	233.16
288.699	237.69
301.787	242.238
314.876	246.786
327.964	251.336
341.052	255.886
355.595	261.061
363.674	264.089
371.754	267.117
383.632	271.7
395.506	276.283
406.616	280.729
417.763	285.19
425.311	288.784
432.86	292.379
440.088	296.205
447.316	300.058

Global Minimum Support Data

No Supports Present

Slice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.11386

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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]
13	6.942313	12.4423	6.679983	C&D3	5.5271e-153	4.9923	14.43543	0.51453	43.59223	03	43.59223	45.28283	45.28283
23	6.942313	937.3243	6.679983	C&D3	1.42109e-143	4.9923	43.66273	92.29683	131.853	03	131.853	136.9663	136.9663
	4.599743	888.3523	13.39873	C&D3	03	4.9923	60.0243	126.883	181.2613	03	181.2613	195.5593	195.5593
43	4.599743	1008.953	13.39873	C&D3	03	4.9923	68.3 753	144.4563	206.3663	03	206.3663	222.6453	222.6453
53	4.599743	1129.553	13.39873	C&D3	03	4.9923	76.68813	162.1083	231.5843	03	231.5843	249.8513	249.8513
63	5.418713	1485.383	13.39873	C&D3	2.84217e-143	4.9923	85.82263	181.4173	259.1683	03	259.1683	279.6123	279.6123
73	5.418713	1652.753	13.39873	C&D3	03	4.9923	95.74623	202.3943	289.1353	03	289.1353	11.943	11.943
83	5.418723	1799.443	14.66463	C&D3	2.84217e-143	4.9923	103.353	218.4673	12.0953	03	12.0953	9.143	9.143
93	5.418723	1925.453	14.66463	C&D3	03	4.9923	110.7773	234.1673	4.5243	03	4.5243	63.513	63.513
103	5.418743	2050.13	14.74813	C&D3	2.84217e-143	4.9923	118.043	249.5273	56.4673	03	56.4673	87.5413	87.5413
113	5.418743	2173.373	14.74813	C&D3	03	4.9923	125.3223	264.9143	78.4493	03	78.4493	411.4393	411.4393
123	5.418743	2296.63	14.74823	C&D3	03	4.9923	132.6053	280.3093	400.4413	03	400.4413	435.3483	435.3483
13	5.418743	2419.93	14.74823	C&D3	5.68434e-143	4.9923	139.8893	295.7053	422.4353	03	422.4353	459.263	459.263
143	5.378483	2523.813	14.74823	C&D3	5.68434e-143	4.9923	147.1413	11.0363	444.3 73	03	444.3 73	483.0723	483.0723
153	5.378483	2645.253	14.74823	C&D3	03	4.9923	154.3593	26.293	466.13	03	466.13	506.7673	506.7673
163	5.383 73	2765.793	14.96223	C&D3	03	4.9923	160.9713	40.273	486.13	03	486.13	529.1183	529.1183
173	5.383 73	2880.53	14.96223	C&D3	5.68434e-143	4.9923	167.73	54.5583	506.5123	03	506.5123	551.3 63	551.3 63
183	5.611553	100.883	16.30153	C&D3	5.68434e-143	4.9923	170.5453	60.5093	515.0143	03	515.0143	564.893	564.893
193	5.611553	177.93	16.30153	C&D3	03	4.9923	174.7353	69.3663	527.6663	03	527.6663	578.7673	578.7673
203	5.587283	240.673	16.30153	C&D3	03	4.9923	178.893	78.1543	540.223	03	540.223	592.5373	592.5373
213	5.587283	17.023	16.30153	C&D3	03	4.9923	183.0163	86.8713	552.673	03	552.673	606.1963	606.1963
223	6.54413	913.673	19.0723	C&D3	5.68434e-143	4.9923	177.9283	76.1153	537.3073	03	537.3073	598.8243	598.8243
23	6.54413	881.483	19.0723	C&D3	03	4.9923	176.2113	72.4863	532.123	03	532.123	593.0463	593.0463
243	6.54413	848.813	19.0913	C&D3	03	4.9923	174.4393	68.743	526.7723	03	526.7723	587.1473	587.1473
253	6.54413	815.663	19.0913	C&D3	5.68434e-143	4.9923	172.6993	65.0613	521.5163	03	521.5163	581.2893	581.2893
263	6.544123	780.773	19.16123	C&D3	5.68434e-143	4.9923	170.7363	60.913	515.593	03	515.593	574.9173	574.9173
273	6.544123	744.113	19.16123	C&D3	03	4.9923	168.863	56.953	509.93	03	509.93	568.6093	568.6093
283	6.544123	707.453	19.1613	C&D3	03	4.9923	167.0043	53.023	504.3183	03	504.3183	562.3483	562.3483
293	6.544123	670.793	19.1613	C&D3	03	4.9923	165.1593	49.1243	498.7493	03	498.7493	556.1383	556.1383
03	6.544123	63 .923	19.16963	C&D3	03	4.9923	163.3043	45.2023	493.1453	03	493.1453	549.9173	549.9173
13	6.544123	596.843	19.16963	C&D3	03	4.9923	161.473	41.3 13	487.6163	03	487.6163	543.753	543.753
23	6.544123	559.763	19.16963	C&D3	03	4.9923	159.6583	7.4943	482.1343	03	482.1343	537.6383	537.6383
	6.544123	522.683	19.16963	C&D3	03	4.9923	157.8593	.6923	476.7043	03	476.7043	531.5823	531.5823
43	4.847523	2579.693	19.58973	C&D3	03	4.9923	155.1683	28.003	468.5753	03	468.5753	523.7963	523.7963
53	4.847523	2547.73	19.58973	C&D3	5.68434e-143	4.9923	153.1823	23.8063	462.5813	03	462.5813	517.0963	517.0963
63	4.847523	2515.763	19.58973	C&D3	5.68434e-143	4.9923	151.2083	19.63	456.6183	03	456.6183	510.43	510.43
73	8.079483	4085.093	20.54383	C&D3	03	4.9923	145.6713	07.9283	439.8973	03	439.8973	494.4883	494.4883
83	8.079483	922.363	20.54383	C&D3	5.68434e-143	4.9923	139.9053	295.7393	422.4843	03	422.4843	474.9153	474.9153
93	5.939123	2767.813	21.0973	C&D3	5.68434e-143	4.9923	13 .5683	282.343	403.3473	03	403.3473	454.8793	454.8793
403	5.939123	2656.483	21.0973	C&D3	03	4.9923	128.2943	271.1963	87.4223	03	87.4223	436.923	436.923
413	5.937243	2544.163	21.10683	C&D3	03	4.9923	123.013	260.0253	71.4653	03	71.4653	418.9473	418.9473

423	5.937243	2432.53	21.10683	C&D3	2.84217e-143	4.9923	117.7353	248.8753	55.5363	03	55.5363	400.983	400.983
43	5.554873	2161.623	21.813	C&D3	2.84217e-143	4.9923	111.2243	235.113	5.8763	03	5.8763	80.3853	80.3853
443	5.554873	2037.643	21.813	C&D3	2.84217e-143	4.9923	105.013	221.983	17.1183	03	17.1183	59.1423	59.1423
453	5.573653	1919.93	21.813	C&D3	2.84217e-143	4.9923	98.7823	208.8123	298.303	03	298.303	7.83	7.83
463	5.573653	1795.113	21.813	C&D3	03	4.9923	92.5293	195.5943	279.423	03	279.423	16.4483	16.4483
473	7.548163	2102.123	25.46413	C&D3	03	4.9923	77.93423	164.7423	235.3453	03	235.3453	272.4583	272.4583
483	7.548163	1613.293	25.46413	C&D3	1.42109e-143	4.9923	60.15253	127.1543	181.6493	03	181.6493	210.2943	210.2943
493	7.228093	1003.383	27.89543	C&D3	03	4.9923	8.63253	81.66383	116.6623	03	116.6623	137.113	137.113
503	7.228093	79.6193	28.0583	C&D3	.55271e-153	4.9923	14.70493	1.0843	44.40573	03	44.40573	52.24353	52.24353

Interslice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.11386

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
13	147.5683	200.3 93	03	03	03
23	154.513	201.1523	64.77573	1.926813	1.703813
	161.4523	201.9653	260.7023	15.46863	.39563
43	166.0523	203.0613	8.23	26.64183	4.504193
53	170.6523	204.1573	426.4313	41.80443	5.5993
63	175.2513	205.2523	525.4443	61.5103	6.676853
73	180.673	206.543	655.9793	91.26613	7.920693
83	186.0893	207.8343	801.6093	128.8563	9.131993
93	191.5083	209.2523	919.1043	167.1363	10.30643
103	196.9263	210.673	1045.043	211.4743	11.43993
113	202.3453	212.0963	1176.23	261.3823	12.52873
123	207.7643	213.523	1315.513	17.5173	13.56963
13	213.183	214.9493	1462.883	79.9543	14.55973
143	218.6013	216.3763	1618.353	448.6993	15.49643
153	223.983	217.7913	1780.663	523.1073	16.3713
163	229.3583	219.2073	1950.943	603.5253	17.18953
173	234.7423	220.6463	2118.23	686.2173	17.95043
183	240.1253	222.0853	2292.493	773.8123	18.65173
193	245.7373	223.7263	2404.373	842.8593	19.3183
203	251.3483	225.3673	25193	912.763	19.91813
213	256.9353	227.0013	2635.843	982.7873	20.44823
223	262.523	228.6353	2755.383	1052.783	20.91093
23	269.0673	230.8973	2704.123	1057.93	21.3663
243	275.6113	23 1.63	2653.353	1057.43	21.7283
253	282.1553	235.4253	2601.823	1050.973	21.99563
263	288.6993	237.693	2550.83	1039.353	22.1693
273	295.243	239.9643	2495.743	1020.93	22.2483
283	01.7873	242.2383	2441.3	997.8893	22.23243
293	08.3 13	244.5123	2387.443	970.53	22.12253
03	14.8763	246.7863	23 4.183	939.1963	21.91823
13	21.423	249.0613	2280.993	904.0143	21.61973
23	27.9643	251.3 63	2228.43	865.5563	21.22723
	4.5083	253.6113	2176.43	824.1783	20.74113
43	41.0523	255.8863	2124.993	780.2443	20.1623
53	45.93	257.6113	2068.843	739.6753	19.67363
63	50.7473	259.3 63	2013.413	698.583	19.13493
73	55.5953	261.0613	1958.693	657.1443	18.54673
83	63.6743	264.0893	1803.743	567.2573	17.45783
93	71.7543	267.1173	1654.93	481.9523	16.23673
403	77.693	269.4083	1524.013	415.7163	15.25783
413	83.6323	271.73	1398.263	54.1473	14.21283
423	89.5693	273.9913	1277.3	297.3593	13.10523
43	95.5063	276.283	1161.53	245.5783	11.9383
443	401.0613	278.5063	1032.773	196.93	10.79583
453	406.6163	280.7293	911.23	154.2623	9.608813
463	412.193	282.9593	796.4573	117.2853	8.377083
473	417.763	285.193	688.9773	85.92873	7.109183
483	425.3113	288.7843	431.3143	40.34143	5.343413
493	432.863	292.3793	232.4413	14.35523	.534013
503	440.0883	296.2053	65.3023	2.022283	1.773783
513	447.3163	00.0583	03	03	03

Discharge Sections

Entity Information

Piezoline

X	Y
140.028	196.713

141.766	196.149
142.289	195.994
143.045	195.769
144.237	195.414
145.518	195
148.459	194.052
151.716	193
156.612	191.418
157.903	191
161.952	189.689
164.08	189
164.758	188.78
170.247	187
172.895	186.14
176.403	185
181.024	183.497
182.529	183
185.376	182.065
188.619	181
189.923	180.575
194.757	179
195.648	178.71
200.895	177
201.373	176.844
207.034	175
207.098	174.979
207.993	174.687
212.823	173.114
213.172	173
218.549	171.248
219.311	171
224.274	169.383
225.449	169
230	167.518
231.588	167
235.725	165.651
237.722	165
241.444	163.784
243.846	163
247.162	161.917
249.97	161
252.88	160.05
256.093	159
258.598	158.182
262.216	157
264.316	156.314
268.34	155
270.035	154.446
274.463	153
275.754	152.578
280.585	151
281.473	150.71
286.71	149

287.186	148.844
292.824	147
292.886	146.98
293.74	146.7
298.583	145.115
298.935	145
304.279	143.251
305.047	143
309.976	141.387
311.159	141
315.674	139.523
317.272	139
321.371	137.659
323.386	137
327.069	135.795
329.5	135
332.77	133.931
335.619	133
339.508	131.716
341.678	131
345.692	129.704
347.866	129
350.959	127.992
354.006	127
357.278	125.924
360.089	125
361.133	124.745
365.215	124.477
368.707	124.493
371.484	125
373.654	125.03
374.386	125.08
377.631	125.239
382.427	125.316
383.677	125.244
387.287	125.197
390.059	125.187
396.735	125.233
398.019	125.268
399.749	125.314
406.24	125.429
409.208	125.512
411.915	125.585
415.53	125.683
424.48	125.93
430.485	126.131
448.199	126.599
448.732	126.618
463.334	127
470.097	127.145
471.17	127.168
483.106	127.425
486.086	127.487

495.863	127.696
500.697	127.797
508.409	127.961
515.014	128.097
518.981	128.181
523.614	128.281
527.447	128.363
529.69	128.406
531.66	128.441
540.373	128.637
554.05	128.953
556.089	129
568.694	129.288
580.167	129.531
584.066	129.617
593.259	129.813
599.175	129.945
607.386	130.128
614.024	130.271
624.97	130.517
628.615	130.596
643.158	130.917
643.782	130.931
646.896	131
658.497	131.248
660.64	131.294
673.082	131.561
677.922	131.665
687.656	131.874
692.236	131.971
699.35	132.123
712.535	132.48
729.855	132.992
730.239	132.992
731.42	133
738.245	134.694
739.951	135
740.007	135.001
741.701	135.015
742.332	135.017
743.317	135.019
753.154	135.287
755.462	135.336
761.566	135.471
765.71	135.559
775.589	135.763
783.012	135.917
790.009	136.066
795.683	136.184
804.848	136.379
808.664	136.459
820.13	136.704
821.971	136.743

833.961	137
835.574	137.035
835.855	137.041
849.047	137.327
851.677	137.384
862.588	137.62
867.593	137.729
876.198	137.915
883.605	138.076
889.878	138.211
899.713	138.425
903.628	138.509
915.919	138.776
917.449	138.809
926.274	139
936.214	139.29
943.717	139.589
962.389	140.22
979.061	141
983.234	142.38
985.11	143
987.287	143.719
991.16	145
994.524	146.112
997.209	147
1000.33	148.033
1003.26	149
1007.19	150.301
1009.31	151
1011.14	151.607
1015.36	153
1020.26	154.621
1021.41	155
1027.04	156.861
1027.46	157
1027.82	157.12
1033.5	159
1034.29	159.258
1039.55	161
1044.85	162.749
1045.6	163
1046.49	163.294
1051.65	165
1053.18	165.503
1057.7	167
1061.67	168.313
1063.75	169
1067.3	170.173
1069.8	171
1072.91	172.028
1075.85	173
1078.52	173.882
1081.9	175

1084.13	175.737
1087.95	177
1089.74	177.591
1091.61	178.21

External Boundary

X	Y
0	189.907
0	0
1091.61	0
1091.61	175.21
1091.61	177.21
1091.61	178.21
1091.61	179.21
1091.61	184.21
1091.61	315.915
1089.91	316
1063.4	317.322
1049.79	318
1020.8	319.445
1009.68	320
978.207	321.569
969.56	322
967.034	322.1
957.494	322.477
951.058	322.728
918.857	324
886.821	322.699
875.264	322.234
869.428	322
842.625	320.66
829.419	320
802.655	318.662
789.411	318
762.684	316.664
749.402	316
722.713	314.666
709.393	314
671.066	312.084
669.384	312
668.793	311.97
629.376	310
628.822	309.972
589.367	308
588.85	307.974
549.358	306
548.879	305.976
509.349	304
508.907	303.978
469.34	302
468.527	301.928
446.661	300

442.399	298.58
440.658	298
436.441	296.595
434.656	296
430.483	294.609
428.654	294
424.525	292.624
422.652	292
418.566	290.639
416.65	290
412.608	288.653
410.647	288
406.65	286.668
404.645	286
400.692	284.683
398.643	284
394.734	282.697
392.641	282
388.775	280.712
386.639	280
382.817	278.727
380.636	278
376.859	276.741
374.634	276
370.9	274.756
368.632	274
364.942	272.77
362.63	272
358.984	270.785
356.628	270
353.025	268.8
350.625	268
347.067	266.814
344.623	266
341.108	264.829
338.621	264
335.15	262.843
332.619	262
329.191	260.858
326.617	260
323.233	258.872
320.614	258
317.274	256.887
314.612	256
311.316	254.902
308.61	254
305.357	252.916
302.608	252
299.398	250.931
296.606	250
293.44	248.945
290.603	248
287.481	246.96

284.601	246
281.522	244.974
278.599	244
275.563	242.989
272.597	242
269.605	241.003
266.595	240
263.646	239.017
260.592	238
257.687	237.032
254.59	236
251.728	235.046
248.588	234
245.769	233.061
242.586	232
239.81	231.075
236.583	230
233.851	229.09
230.581	228
227.892	227.104
224.579	226
221.933	225.118
218.577	224
215.974	223.133
212.575	222
210.015	221.147
206.572	220
204.056	219.162
200.57	218
198.097	217.176
194.568	216
192.138	215.19
188.566	214
186.179	213.205
182.564	212
180.22	211.219
176.561	210
174.261	209.233
170.559	208
168.301	207.248
164.557	206
162.342	205.262
158.555	204
156.383	203.276
152.553	202
150.424	201.291
147.568	200.339
146.55	200
144.336	199.263
140.538	198
140.028	197.831
137.04	199.831
136.822	199.82

136.281	199.806
132.588	199.709
128.132	198.907
124.832	198.717
124.43	198.72
123.832	198.73
123.354	198.751
122.743	198.757
121.425	198.812
120.213	198.857
119.938	198.854
119.584	198.87
118.385	198.849
117.235	198.834
117.034	198.833
110.132	198.987
104.818	199.102
98.8143	198.859
86.6552	198.181
86.5428	198.179
84.1379	198
83.868	197.986
83.5647	197.967
83.3869	197.961
78.0277	197.266
75.9286	197.019
68.8572	196.138
68.697	196.118
67.841	196.002
67.8254	196.002
67.6997	196
62.2082	195.148
60.6701	194.935
55.9212	194
51.5095	193.601
45.8245	193.113
42.7715	192.86
39.5414	192.548
39.0396	192.503
33.5804	192
33.3498	191.999
33.0358	191.998
31.7133	191.995
31.057	191.995
30.8982	191.995
30.4475	191.994
29.8506	191.994
29.6366	191.993
29.391	191.993
29.3226	191.993
28.622	191.994
28.542	191.993
28.3605	191.993

28.2555	191.993
16.346	191.138
8.05554	190.53
0.998983	190.005
0.686216	190

Material Boundary

X	Y
140.028	197.831
140.028	197.713
140.028	196.713
140.028	195.713
140.028	193.713
141.766	193.149
142.289	192.994
143.045	192.769
144.237	192.414
145.518	192
148.459	191.052
151.716	190
156.612	188.418
157.903	188
161.952	186.689
164.08	186
164.758	185.78
170.247	184
172.895	183.14
176.403	182
181.024	180.497
182.529	180
185.376	179.065
188.619	178
189.923	177.575
194.757	176
195.648	175.71
200.895	174
201.373	173.844
207.034	172
207.098	171.979
207.993	171.687
212.823	170.114
213.172	170
218.549	168.248
219.311	168
224.274	166.383
225.449	166
230	164.518
231.588	164
235.725	162.651
237.722	162
241.444	160.784
243.846	160

247.162	158.917
249.97	158
252.88	157.05
256.093	156
258.598	155.182
262.216	154
264.316	153.314
268.34	152
270.035	151.446
274.463	150
275.754	149.578
280.585	148
281.473	147.71
286.71	146
287.186	145.844
292.824	144
292.886	143.98
293.74	143.7
298.583	142.115
298.935	142
304.279	140.251
305.047	140
309.976	138.387
311.159	138
315.674	136.523
317.272	136
321.371	134.659
323.386	134
327.069	132.795
329.5	132
332.77	130.931
335.619	130
339.508	128.716
341.678	128
345.692	126.704
347.866	126
350.959	124.992
354.006	124
357.278	122.924
360.089	122
361.133	121.745
365.215	121.477
368.707	121.493
371.484	122
373.654	122.03
374.386	122.08
377.631	122.239
382.427	122.316
383.677	122.244
387.287	122.197
390.059	122.187
396.735	122.233
398.019	122.268

399.749	122.314
406.24	122.429
409.208	122.512
411.915	122.585
415.53	122.683
424.48	122.93
430.485	123.131
448.199	123.599
448.732	123.618
463.334	124
470.097	124.145
471.17	124.168
483.106	124.425
486.086	124.487
495.863	124.696
500.697	124.797
508.409	124.961
515.014	125.097
518.981	125.181
523.614	125.281
527.447	125.363
529.69	125.406
531.66	125.441
540.373	125.637
554.05	125.953
556.089	126
568.694	126.288
580.167	126.531
584.066	126.617
593.259	126.813
599.175	126.945
607.386	127.128
614.024	127.271
624.97	127.517
628.615	127.596
643.158	127.917
643.782	127.931
646.896	128
658.497	128.248
660.64	128.294
673.082	128.561
677.922	128.665
687.656	128.874
692.236	128.971
699.35	129.123
712.535	129.48
729.855	129.992
730.239	129.992
731.42	130
738.245	131.694
739.951	132
740.007	132.001
741.701	132.015

742.332	132.017
743.317	132.019
753.154	132.287
755.462	132.336
761.566	132.471
765.71	132.559
775.589	132.763
783.012	132.917
790.009	133.066
795.683	133.184
804.848	133.379
808.664	133.459
820.13	133.704
821.971	133.743
833.961	134
835.574	134.035
835.855	134.041
849.047	134.327
851.677	134.384
862.588	134.62
867.593	134.729
876.198	134.915
883.605	135.076
889.878	135.211
899.713	135.425
903.628	135.509
915.919	135.776
917.449	135.809
926.274	136
936.214	136.29
943.717	136.589
962.389	137.22
979.061	138
983.234	139.38
985.11	140
987.287	140.719
991.16	142
994.524	143.112
997.209	144
1000.33	145.033
1003.26	146
1007.19	147.301
1009.31	148
1011.14	148.607
1015.36	150
1020.26	151.621
1021.41	152
1027.04	153.861
1027.46	154
1027.82	154.12
1033.5	156
1034.29	156.258
1039.55	158

1044.85	159.749
1045.6	160
1046.49	160.294
1051.65	162
1053.18	162.503
1057.7	164
1061.67	165.313
1063.75	166
1067.3	167.173
1069.8	168
1072.91	169.028
1075.85	170
1078.52	170.882
1081.9	172
1084.13	172.737
1087.95	174
1089.74	174.591
1091.61	175.21

Material Boundary

	X	Y
140.028		195.713
141.766		195.149
142.289		194.994
143.045		194.769
144.237		194.414
145.518		194
148.459		193.052
151.716		192
156.612		190.418
157.903		190
161.952		188.689
164.08		188
164.758		187.78
170.247		186
172.895		185.14
176.403		184
181.024		182.497
182.529		182
185.376		181.065
188.619		180
189.923		179.575
194.757		178
195.648		177.71
200.895		176
201.373		175.844
207.034		174
207.098		173.979
207.993		173.687
212.823		172.114
213.172		172
218.549		170.248

219.311	170
224.274	168.383
225.449	168
230	166.518
231.588	166
235.725	164.651
237.722	164
241.444	162.784
243.846	162
247.162	160.917
249.97	160
252.88	159.05
256.093	158
258.598	157.182
262.216	156
264.316	155.314
268.34	154
270.035	153.446
274.463	152
275.754	151.578
280.585	150
281.473	149.71
286.71	148
287.186	147.844
292.824	146
292.886	145.98
293.74	145.7
298.583	144.115
298.935	144
304.279	142.251
305.047	142
309.976	140.387
311.159	140
315.674	138.523
317.272	138
321.371	136.659
323.386	136
327.069	134.795
329.5	134
332.77	132.931
335.619	132
339.508	130.716
341.678	130
345.692	128.704
347.866	128
350.959	126.992
354.006	126
357.278	124.924
360.089	124
361.133	123.745
365.215	123.477
368.707	123.493
371.484	124

373.654	124.03
374.386	124.08
377.631	124.239
382.427	124.316
383.677	124.244
387.287	124.197
390.059	124.187
396.735	124.233
398.019	124.268
399.749	124.314
406.24	124.429
409.208	124.512
411.915	124.585
415.53	124.683
424.48	124.93
430.485	125.131
448.199	125.599
448.732	125.618
463.334	126
470.097	126.145
471.17	126.168
483.106	126.425
486.086	126.487
495.863	126.696
500.697	126.797
508.409	126.961
515.014	127.097
518.981	127.181
523.614	127.281
527.447	127.363
529.69	127.406
531.66	127.441
540.373	127.637
554.05	127.953
556.089	128
568.694	128.288
580.167	128.531
584.066	128.617
593.259	128.813
599.175	128.945
607.386	129.128
614.024	129.271
624.97	129.517
628.615	129.596
643.158	129.917
643.782	129.931
646.896	130
658.497	130.248
660.64	130.294
673.082	130.561
677.922	130.665
687.656	130.874
692.236	130.971

699.35	131.123
712.535	131.48
729.855	131.992
730.239	131.992
731.42	132
738.245	133.694
739.951	134
740.007	134.001
741.701	134.015
742.332	134.017
743.317	134.019
753.154	134.287
755.462	134.336
761.566	134.471
765.71	134.559
775.589	134.763
783.012	134.917
790.009	135.066
795.683	135.184
804.848	135.379
808.664	135.459
820.13	135.704
821.971	135.743
833.961	136
835.574	136.035
835.855	136.041
849.047	136.327
851.677	136.384
862.588	136.62
867.593	136.729
876.198	136.915
883.605	137.076
889.878	137.211
899.713	137.425
903.628	137.509
915.919	137.776
917.449	137.809
926.274	138
936.214	138.29
943.717	138.589
962.389	139.22
979.061	140
983.234	141.38
985.11	142
987.287	142.719
991.16	144
994.524	145.112
997.209	146
1000.33	147.033
1003.26	148
1007.19	149.301
1009.31	150
1011.14	150.607

1015.36	152
1020.26	153.621
1021.41	154
1027.04	155.861
1027.46	156
1027.82	156.12
1033.5	158
1034.29	158.258
1039.55	160
1044.85	161.749
1045.6	162
1046.49	162.294
1051.65	164
1053.18	164.503
1057.7	166
1061.67	167.313
1063.75	168
1067.3	169.173
1069.8	170
1072.91	171.028
1075.85	172
1078.52	172.882
1081.9	174
1084.13	174.737
1087.95	176
1089.74	176.591
1091.61	177.21

Material Boundary

	X	Y
140.028		197.713
141.766		197.149
142.289		196.994
143.045		196.769
144.237		196.414
145.518		196
148.459		195.052
151.716		194
156.612		192.418
157.903		192
161.952		190.689
164.08		190
164.758		189.78
170.247		188
172.895		187.14
176.403		186
181.024		184.497
182.529		184
185.376		183.065
188.619		182
189.923		181.575
194.757		180

195.648	179.71
200.895	178
201.373	177.844
207.034	176
207.098	175.979
207.993	175.687
212.823	174.114
213.172	174
218.549	172.248
219.311	172
224.274	170.383
225.449	170
230	168.518
231.588	168
235.725	166.651
237.722	166
241.444	164.784
243.846	164
247.162	162.917
249.97	162
252.88	161.05
256.093	160
258.598	159.182
262.216	158
264.316	157.314
268.34	156
270.035	155.446
274.463	154
275.754	153.578
280.585	152
281.473	151.71
286.71	150
287.186	149.844
292.824	148
292.886	147.98
293.74	147.7
298.583	146.115
298.935	146
304.279	144.251
305.047	144
309.976	142.387
311.159	142
315.674	140.523
317.272	140
321.371	138.659
323.386	138
327.069	136.795
329.5	136
332.77	134.931
335.619	134
339.508	132.716
341.678	132
345.692	130.704

347.866	130
350.959	128.992
354.006	128
357.278	126.924
360.089	126
361.133	125.745
365.215	125.477
368.707	125.493
371.484	126
373.654	126.03
374.386	126.08
377.631	126.239
382.427	126.316
383.677	126.244
387.287	126.197
390.059	126.187
396.735	126.233
398.019	126.268
399.749	126.314
406.24	126.429
409.208	126.512
411.915	126.585
415.53	126.683
424.48	126.93
430.485	127.131
448.199	127.599
448.732	127.618
463.334	128
470.097	128.145
471.17	128.168
483.106	128.425
486.086	128.487
495.863	128.696
500.697	128.797
508.409	128.961
515.014	129.097
518.981	129.181
523.614	129.281
527.447	129.363
529.69	129.406
531.66	129.441
540.373	129.637
554.05	129.953
556.089	130
568.694	130.288
580.167	130.531
584.066	130.617
593.259	130.813
599.175	130.945
607.386	131.128
614.024	131.271
624.97	131.517
628.615	131.596

643.158	131.917
643.782	131.931
646.896	132
658.497	132.248
660.64	132.294
673.082	132.561
677.922	132.665
687.656	132.874
692.236	132.971
699.35	133.123
712.535	133.48
729.855	133.992
730.239	133.992
731.42	134
738.245	135.694
739.951	136
740.007	136.001
741.701	136.015
742.332	136.017
743.317	136.019
753.154	136.287
755.462	136.336
761.566	136.471
765.71	136.559
775.589	136.763
783.012	136.917
790.009	137.066
795.683	137.184
804.848	137.379
808.664	137.459
820.13	137.704
821.971	137.743
833.961	138
835.574	138.035
835.855	138.041
849.047	138.327
851.677	138.384
862.588	138.62
867.593	138.729
876.198	138.915
883.605	139.076
889.878	139.211
899.713	139.425
903.628	139.509
915.919	139.776
917.449	139.809
926.274	140
936.214	140.29
943.717	140.589
962.389	141.22
979.061	142
983.234	143.38
985.11	144

987.287	144.719
991.16	146
994.524	147.112
997.209	148
1000.33	149.033
1003.26	150
1007.19	151.301
1009.31	152
1011.14	152.607
1015.36	154
1020.26	155.621
1021.41	156
1027.04	157.861
1027.46	158
1027.82	158.12
1033.5	160
1034.29	160.258
1039.55	162
1044.85	163.749
1045.6	164
1046.49	164.294
1051.65	166
1053.18	166.503
1057.7	168
1061.67	169.313
1063.75	170
1067.3	171.173
1069.8	172
1072.91	173.028
1075.85	174
1078.52	174.882
1081.9	176
1084.13	176.737
1087.95	178
1089.74	178.591
1091.61	179.21

Material Boundary

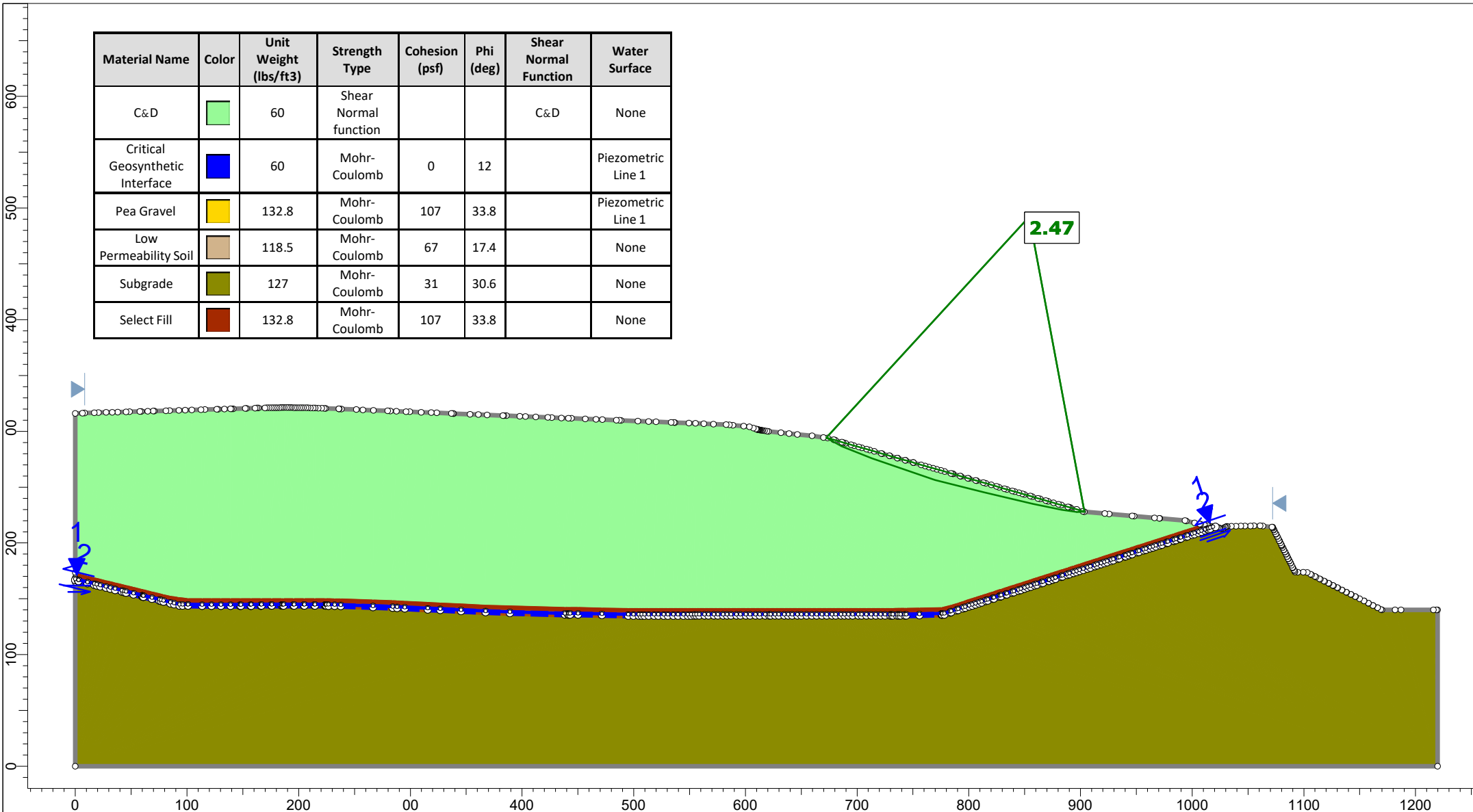
	X	Y
147.568		200.339
148.459		200.052
151.716		199
156.612		197.418
157.903		197
161.952		195.689
164.08		195
164.758		194.78
170.247		193
172.895		192.14
176.403		191
181.024		189.497
182.529		189

185.376	188.065
188.619	187
189.923	186.575
194.757	185
195.648	184.71
200.895	183
201.373	182.844
207.034	181
207.098	180.979
207.993	180.687
212.823	179.114
213.172	179
218.549	177.248
219.311	177
224.274	175.383
225.449	175
230	173.518
231.588	173
235.725	171.651
237.722	171
241.444	169.784
243.846	169
247.162	167.917
249.97	167
252.88	166.05
256.093	165
258.598	164.182
262.216	163
264.316	162.314
268.34	161
270.035	160.446
274.463	159
275.754	158.578
280.585	157
281.473	156.71
286.71	155
287.186	154.844
292.824	153
292.886	152.98
293.74	152.7
298.583	151.115
298.935	151
304.279	149.251
305.047	149
309.976	147.387
311.159	147
315.674	145.523
317.272	145
321.371	143.659
323.386	143
327.069	141.795
329.5	141
332.77	139.931

335.619	139
339.508	137.716
341.678	137
345.692	135.704
347.866	135
350.959	133.992
354.006	133
357.278	131.924
360.089	131
361.133	130.745
365.215	130.477
368.707	130.493
371.484	131
373.654	131.03
374.386	131.08
377.631	131.239
382.427	131.316
383.677	131.244
387.287	131.197
390.059	131.187
396.735	131.233
398.019	131.268
399.749	131.314
406.24	131.429
409.208	131.512
411.915	131.585
415.53	131.683
424.48	131.93
430.485	132.131
448.199	132.599
448.732	132.618
463.334	133
470.097	133.145
471.17	133.168
483.106	133.425
486.086	133.487
495.863	133.696
500.697	133.797
508.409	133.961
515.014	134.097
518.981	134.181
523.614	134.281
527.447	134.363
529.69	134.406
531.66	134.441
540.373	134.637
554.05	134.953
556.089	135
568.694	135.288
580.167	135.531
584.066	135.617
593.259	135.813
599.175	135.945

607.386	136.128
614.024	136.271
624.97	136.517
628.615	136.596
643.158	136.917
643.782	136.931
646.896	137
658.497	137.248
660.64	137.294
673.082	137.561
677.922	137.665
687.656	137.874
692.236	137.971
699.35	138.123
712.535	138.48
729.855	138.992
730.239	138.992
731.42	139
738.245	140.694
739.951	141
740.007	141.001
741.701	141.015
742.332	141.017
743.317	141.019
753.154	141.287
755.462	141.336
761.566	141.471
765.71	141.559
775.589	141.763
783.012	141.917
790.009	142.066
795.683	142.184
804.848	142.379
808.664	142.459
820.13	142.704
821.971	142.743
833.961	143
835.574	143.035
835.855	143.041
849.047	143.327
851.677	143.384
862.588	143.62
867.593	143.729
876.198	143.915
883.605	144.076
889.878	144.211
899.713	144.425
903.628	144.509
915.919	144.776
917.449	144.809
926.274	145
936.214	145.29
943.717	145.589

962.389	146.22
979.061	147
983.234	148.38
985.11	149
987.287	149.719
991.16	151
994.524	152.112
997.209	153
1000.33	154.033
1003.26	155
1007.19	156.301
1009.31	157
1011.14	157.607
1015.36	159
1020.26	160.621
1021.41	161
1027.04	162.861
1027.46	163
1027.82	163.12
1033.5	165
1034.29	165.258
1039.55	167
1044.85	168.749
1045.6	169
1046.49	169.294
1051.65	171
1053.18	171.503
1057.7	173
1061.67	174.313
1063.75	175
1067.3	176.173
1069.8	177
1072.91	178.028
1075.85	179
1078.52	179.882
1081.9	181
1084.13	181.737
1087.95	183
1089.74	183.591
1091.61	184.21



Material Name	Color	Unit Weight (lbs/ft ³)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
C&D		60	Shear Normal function			C&D	None
Critical Geosynthetic Interface		60	Mohr-Coulomb	0	12		Piezometric Line 1
Pea Gravel		132.8	Mohr-Coulomb	107	33.8		Piezometric Line 1
Low Permeability Soil		118.5	Mohr-Coulomb	67	17.4		None
Subgrade		127	Mohr-Coulomb	31	30.6		None
Select Fill		132.8	Mohr-Coulomb	107	33.8		None

2.47

	Project: 182-442 S.A. Dunn Permit Renewal/151-877 S.A. Application Landfill		Scenario: Section C - Waste Failure - Static.slim
	Analysis Description: Section C - Waste Failure - Static.slim		Company: Civil & Environmental Consultants, Inc.
	Drawn By: ZLM	Checked By: TDM	File Name: Section C - Waste Failure - Static.slim
	Created Date: 1/6/2022 12/10/2015 12:09:38 PM		Checked Date: 1/9/2022

Slide Analysis Information

151-877 S.A. Dunn C&D Landfill

Project Summary

Slide Modeler Version:	9.02
Author:	DVS
Company:	Civil & Environmental Consultants, Inc.
Date Created:	12/10/2015, 12:09:38 PM

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	
	GLE/Morgenstern-Price with interslice force function (Half Sine)
Number of slices:	25
Tolerance:	0.005
Maximum number of iterations:	50
Check malpha < 0.2:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft ³]:	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:	Cuckoo Search
Initial # of Surface Vertices:	8
Maximum Iterations:	500
Number of Nests:	50
Minimum Elevation:	Not Defined
Minimum Depth [ft]:	10
Minimum Area:	Not Defined
Minimum Weight:	Not Defined
Convex Surfaces Only:	Enabled

Seismic Loading

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Materials

C&D

Color	
Strength Type	Shear Normal function
Unit Weight [lbs/ft ³]	60
Water Surface	None
Ru Value	0

Pea Gravel

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	Piezometric Line 1
Hu Value	1

Low Permeability Soil

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	118.5
Cohesion [psf]	67
Friction Angle [deg]	17.4
Water Surface	None
Ru Value	0

Subgrade

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	127
Cohesion [psf]	31
Friction Angle [deg]	30.6
Water Surface	None
Ru Value	0

Select Fill

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	None
Ru Value	0

Shear Normal Functions

Name: C&D	
Effective Normal (psf)	Shear (psf)
0	0
2000	1400
10000	6169

Global Minimums

Method: gle/morgenstern-price

FS	2.465880
Axis Location:	854.137, 492.252
Left Slip Surface Endpoint:	672.388, 294.164
Right Slip Surface Endpoint:	903.558, 228.000
Resisting Moment:	1.58619e+07 lb-ft
Driving Moment:	6.43272e+06 lb-ft
Resisting Horizontal Force:	60717.8 lb
Driving Horizontal Force:	24623.7 lb
Total Slice Area:	1562.16 ft ²
Surface Horizontal Width:	231.17 ft
Surface Average Height:	6.75764 ft

Global Minimum Coordinates**Method: gle/morgenstern-price**

X	Y
672.388	294.164
686.128	286.674
713.291	275.828
769.624	256.468
813.452	245.421
857.301	234.967
883.064	229.664
896.804	227.713
903.558	228

Global Minimum Support Data

No Supports Present

Slice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.46588

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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]
12	6.86992	427.7832	- 8.59572	C&D2	02	34.992	15.19412	37.46682	53.5242	02	53.5242	61.80662	61.80662
	6.86992	1165.652	- 8.59572	C&D2	02	34.992	40.9882	101.072	144.392	02	144.392	166.7332	166.7332
32	9.05432	96.12	- 1.76692	C&D2	02	34.992	63.52462	156.6442	3.7762	02	3.7762	49.1412	49.1412
42	9.05432	850.912	- 1.76692	C&D2	02	34.992	78.3992	193.3232	76.1762	02	76.1762	307.4812	307.4812
52	9.05432	3405.752	- 1.76692	C&D2	.84217e-142	34.992	93.15052	9.6982	328.142	02	328.142	365.3352	365.3352
62	9.38892	3970.482	-18.9662	C&D2	02	34.992	106.8352	63.4432	376.3482	02	376.3482	413.0642	413.0642
72	9.38892	4272.72	-18.9662	C&D2	02	34.992	114.7862	83.0482	404.3542	02	404.3542	443.802	443.802
82	9.38892	4574.992	-18.9662	C&D2	02	34.992	12.7912	302.7872	432.5532	02	432.5532	474.7512	474.7512
92	9.38892	4877.42	-18.9662	C&D2	5.68434e-142	34.992	130.872	32.7142	461.02	02	461.02	505.9962	505.9962
102	9.38892	5179.852	-18.9662	C&D2	5.68434e-142	34.992	139.0462	342.8712	489.8152	02	489.8152	537.62	537.62
112	9.38892	5482.182	-18.9662	C&D2	02	34.992	147.3282	363.292	518.9892	02	518.9892	569.62	569.62
12	8.765452	5179.692	-14.1482	C&D2	02	34.992	157.5332	388.4572	554.9392	02	554.9392	594.652	594.652
132	8.765452	5020.252	-14.1482	C&D2	5.68434e-142	34.992	153.1062	377.5412	539.3452	02	539.3452	577.9392	577.9392
142	8.765452	4860.82	-14.1482	C&D2	-5.68434e-142	34.992	148.612	366.462	523.5132	02	523.5132	560.9752	560.9752
152	8.765452	4701.272	-14.1482	C&D2	02	34.992	144.0482	355.2042	507.4352	02	507.4352	543.7462	543.7462
162	8.765452	4541.762	-14.1482	C&D2	02	34.992	139.4162	343.782	491.1182	02	491.1182	526.262	526.262
172	10.96242	5405.962	-13.4092	C&D2	02	34.992	133.942	330.2812	471.832	02	471.832	503.762	503.762
182	10.96242	5058.292	-13.4092	C&D2	5.68434e-142	34.992	125.4152	309.2582	441.7972	02	441.7972	471.6972	471.6972
192	10.96242	4710.172	-13.4092	C&D2	02	34.992	116.7772	87.9592	411.372	02	411.372	439.212	439.212
02	10.96242	4362.32	-13.4092	C&D2	02	34.992	108.0692	66.4842	380.6912	02	380.6912	406.4552	406.4552
12	8.587562	3102.152	-11.63012	C&D2	02	34.992	99.40632	45.1242	350.1782	02	350.1782	370.6382	370.6382
	8.587562	744.432	-11.63012	C&D2	- .84217e-142	34.992	87.65552	16.1482	308.782	02	308.782	326.8242	326.8242
32	8.587562	386.72	-11.63012	C&D2	02	34.992	75.94692	187.2762	67.5372	02	67.5372	83.1682	83.1682
42	13.73982	699.242	-8.081072	C&D2	.84217e-142	34.992	54.5282	134.462	192.0852	02	192.0852	199.8272	199.8272
52	6.754612	453.0692	.429962	C&D2	7.10543e-152	34.992	19.48242	48.04132	68.63042	02	68.63042	67.80362	67.80362

Interslice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.46588

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
12	672.3882	94.1642	02	02	02
	679.2582	90.4192	96.05862	3.176462	1.893962
32	686.1282	86.6742	355.1912	3.38862	3.767372
42	695.182	83.0592	589.052	63.69342	6.171362
52	704.2372	79.4432	877.6692	130.5752	8.46212
62	713.2912	75.8282	12 0.592	8.462	10.60152
72	72 .682	72.6012	1431.832	320.7172	12.62532
82	732.0692	69.3752	1658.792	426.5882	14.42 12
92	741.4582	66.1482	1901.582	544.1642	15.9692
102	750.8472	62.92	160.352	670.8042	17.24992
112	760.2362	59.6952	435.282	803.1612	18.25272
12	769.6242	56.4682	726.582	937.2 42	18.96972
132	778.392	54.2592	571.882	904.5362	19.37692
142	787.1552	52.0492	421.52	858.8772	19.52882
152	795.9212	49.842	75.582	802.462	19.42472
162	804.6862	47.632	134.12	737.5442	19.0652
172	813.452	45.4212	1997.2	666.3792	18.45162
182	824.4142	42.8072	1761.982	549.9012	17.33282
192	835.3762	40.1942	1541.732	437.2582	15.83412
02	846.3392	37.582	1336.652	332.632	13.97452
12	857.3012	34.9672	1146.862	39.2142	11.78192
	865.8892	33.1992	912.1152	158.4862	9.857112
32	874.4762	31.432	705.1162	96.29572	7.776612
42	883.0642	9.6642	525.7682	51.27292	5.569872
52	896.8042	7.7132	151.2712	4.918532	1.86232
62	903.5582	82	02	02	02

Discharge Sections

Entity Information

Piezoline

X	Y
0	167.667
2.61045	167.033
2.74827	167
2.93545	166.955
10.984	165
16.9104	163.561
19.2198	163
22.3549	162.239
27.4555	161
31.2131	160.088
35.6913	159
41.768	157.524
43.927	157
45.5183	156.614
52.1628	155
59.8261	153.139
59.8924	153.123
60.4145	153
60.8582	152.895
60.9162	152.881

68.6396	151
75.206	149.4
76.8497	149
79.0691	148.459
85.0598	147
88.4071	146.185
93.2699	145
96.1305	144.964
100.713	144.947
101.016	144.941
113.425	144.821
121.918	144.822
130.421	144.823
138.934	144.824
147.456	144.825
148.142	144.848
156.777	144.849
157.383	144.866
166.104	144.867
166.646	144.881
175.435	144.882
175.924	144.893
184.77	144.893
185.454	144.904
186.03	144.91
186.471	144.91
195.39	144.911
195.828	144.911
204.75	144.912
205.185	144.912
214.11	144.912
214.542	144.912
223.469	144.913
223.899	144.913
224.328	144.913
224.757	144.913
226.606	144.875
232.206	144.736
237.619	144.555
266.437	143.593
284.194	143
288.023	142.82
294.955	142.494
315.577	141.526
326.764	141
345.352	140.109
367.261	139
389.122	138.384
438.282	137
441.106	136.989
441.813	136.988
442.992	136.982
450.152	136.954

471.589	136.475
495.112	136.041
499.816	136.042
504.522	136.042
507.015	136.043
509.52	136.047
513.255	136.047
518.191	136.045
521.934	136.044
526.857	136.043
530.609	136.042
535.521	136.04
539.492	136.044
544.41	136.042
548.376	136.045
551.45	136.051
554.115	136.053
556.005	136.053
558.664	136.055
563.412	136.057
566.946	136.064
571.737	136.066
575.242	136.073
580.075	136.075
583.551	136.082
586.977	136.088
591.874	136.09
595.541	136.09
600.448	136.093
604.107	136.093
609.025	136.095
612.675	136.095
617.604	136.097
621.244	136.097
622.641	136.096
626.431	136.093
629.889	136.087
634.698	136.083
638.19	136.076
641.731	136.07
646.478	136.066
650.054	136.06
654.753	136.056
659.419	136.052
663.75	136.06
668.432	136.056
672.746	136.063
677.444	136.06
680.743	136.07
685.469	136.067
688.752	136.077
692.299	136.081
695.852	136.075

701.119	136.075
703.992	136.063
708.239	136.071
712.549	136.079
716.654	136.084
721.014	136.092
725.057	136.098
729.467	136.106
730.766	136.109
732.057	136.112
735.706	136.117
737.361	136.116
738.906	136.115
742.564	136.12
743.989	136.118
755.732	136.35
775.632	136.895
775.782	136.895
775.919	136.894
776.153	136.893
778.05	137
783.506	138.753
784.276	139
789.286	140.609
790.503	141
794.831	142.39
796.73	143
800.37	144.169
802.957	145
805.905	145.947
809.183	147
811.435	147.723
815.41	149
816.957	149.497
821.637	151
822.473	151.269
827.863	153
827.984	153.039
828.909	153.336
833.494	154.808
834.09	155
838.998	156.577
840.317	157
844.497	158.343
846.543	159
849.989	160.107
852.77	161
855.476	161.869
858.997	163
860.956	163.629
865.223	165
866.43	165.387
871.45	167

871.897	167.144
875.09	168.169
877.36	168.898
877.677	169
882.821	170.652
883.903	171
888.276	172.404
890.13	173
893.723	174.154
896.357	175
899.164	175.902
902.583	177
906.152	178.146
908.81	179
912.925	180.322
915.037	181
918.41	182.083
921.263	183
923.888	183.843
927.49	185
929.36	185.601
933.717	187
934.825	187.356
939.944	189
940.292	189.112
943.235	190.057
945.863	190.901
946.17	191
951.208	192.618
952.397	193
956.633	194.361
958.624	195
962.07	196.107
964.85	197
967.5	197.851
971.077	199
972.917	199.591
977.304	201
978.32	201.326
983.53	203
983.726	203.063
985.426	203.609
989.318	204.859
989.757	205
994.64	206.568
995.984	207
999.949	208.274
1002.21	209
1005.61	210.122
1008.27	211
1011.51	212.172
1013.9	213
1014.76	213.314

1016.17	213.831
1018.57	214.636

External Boundary

	X	Y
0		316.109
0		173.667
0		168.667
0		167.667
0		166.667
0		164.667
0		0
1219.81		0
1219.81		140
1218.71		140
1216.08		140
1186.91		140
1181.65		140
1169.98		140
1168.96		140.51
1165.98		142
1165.94		142.022
1161.98		144
1161.87		144.052
1157.97		146
1157.81		146.083
1153.97		148
1153.74		148.113
1149.97		150
1146.3		151.832
1145.96		152
1142.35		153.804
1141.96		154
1138.41		155.775
1137.96		156
1134.46		157.746
1133.96		158
1130.52		159.716
1129.95		160
1126.58		161.687
1125.95		162
1122.63		163.658
1121.95		164
1118.69		165.628
1117.94		166
1114.74		167.599
1113.94		168
1110.8		169.569
1109.94		170
1106.86		171.539
1105.93		172
1102.91		173.513

1099.52	173.859
1094.52	173.86
1092.03	174
1091.53	174.999
1091.03	176
1090.13	177.801
1090.03	178
1089.94	178.171
1089.03	180
1088.12	181.822
1088.03	182
1087.11	183.832
1087.03	184
1086.11	185.84
1086.03	186
1085.11	187.848
1085.03	188
1084.1	189.856
1084.03	190
1083.1	191.864
1083.03	192
1082.1	193.874
1082.03	194
1081.09	195.885
1081.03	196
1080.32	197.424
1080.04	198
1079.89	198.297
1079.04	200
1078.08	201.905
1078.04	202
1077.98	202.109
1077.04	204
1076.2	205.676
1076.04	206
1075.05	207.97
1075.04	208
1075.02	208.038
1074.04	210
1073.25	211.588
1073.04	212
1072.31	213.453
1072.04	214
1071.94	214.206
1071.32	214.159
1063.42	215.257
1060.85	215.402
1055.24	215.305
1052.25	215.254
1047.24	215.167
1043.65	215.105
1039.23	215.029
1035.05	214.956

1031.23	214.89
1031.21	214.89
1031.2	214.89
1030.1	214.34
1029.41	214
1028.1	213.348
1027.2	212.901
1026.1	212.904
1025.2	212.906
1024.29	213.363
1024.06	213.481
1023.02	214
1021.42	214.349
1021.42	214.349
1020.86	214.406
1018.57	214.636
1018.35	214.657
1016.17	214.831
1016.17	214.831
1014.12	215.298
1011.03	216
1007.6	216.78
1006.66	216.994
1002.24	218
994.715	219.711
993.444	220
971.061	221.961
970.626	222
966.337	222.38
948.029	224
946.173	224.161
925.668	226
921.667	226.352
903.558	228
902.15	228.407
896.627	230
890.917	231.686
889.857	232
888.805	232.302
882.886	234
880.441	234.701
875.91	236
870.915	237.432
868.933	238
863.881	239.448
861.956	240
856.849	241.464
854.979	242
849.816	243.48
848.002	244
844.816	244.913
841.024	246
838.911	246.606

834.049	248
831.937	248.605
827.072	250
824.844	250.639
820.092	252
815.118	253.427
813.119	254
807.03	255.746
806.142	256
799.957	257.773
799.166	258
792.927	259.789
792.189	260
785.902	261.802
785.213	262
784	262.348
778.236	264
774.987	264.932
771.259	266
767.956	266.946
764.278	268
760.966	268.949
757.298	270
750.551	271.933
750.317	272
750.187	272.037
743.335	274
743.061	274.079
736.354	276
736.025	276.094
729.373	278
728.994	278.109
722.393	280
721.65	280.213
715.413	282
711.155	283.22
708.431	284
704.082	285.246
701.451	286
697.045	287.263
694.47	288
689.688	289.37
687.491	290
686.287	290.345
680.51	292
679.092	292.406
673.53	294
669.841	294.53
659.621	296
646.437	297.28
639.023	298
631.875	298.773
620.523	300

619.315	300.188
617.055	300.54
615.53	300.777
614.431	300.948
613.602	301.077
612.954	301.178
612.434	301.259
612.007	301.326
611.651	301.381
611.349	301.428
610.968	301.547
610.518	301.688
609.978	301.857
609.52	302
607.088	302.81
603.517	304
598.461	304.667
588.88	305.484
585.658	305.81
582.821	306
571.381	306.465
562.784	306.814
555.284	307.119
549.352	307.36
536.852	307.868
535.963	307.904
533.597	308
520.061	308.55
513.256	308.826
503.601	309.219
488.514	309.832
487.129	309.888
484.372	310
471.823	310.51
466.201	310.738
456.663	311.126
444.195	311.632
441.407	311.746
435.148	312
426.585	312.348
423.112	312.489
412.237	312.931
403.018	313.305
398.046	313.507
385.924	314
383.861	314.084
382.932	314.122
368.722	314.699
360.927	315.016
353.446	315.32
338.63	315.922
338.031	315.946
336.699	316

323.645	316.53
318.615	316.735
309.688	317.097
299.451	317.513
296.058	317.651
287.475	318
282.072	318.219
279.631	318.319
266.885	318.837
257.515	319.217
251.553	319.46
238.25	320
236.354	320.077
236.173	320.083
235.965	320.089
224.14	320.551
222.969	320.58
220.62	320.668
217.402	320.78
214.627	320.868
213.003	320.9
210.498	320.971
208.258	321.027
206.459	321.054
204.401	321.099
202.505	321.134
200.731	321.162
198.84	321.182
197.16	321.202
195.55	321.217
193.625	321.229
192.069	321.238
190.542	321.241
189.025	321.24
187.104	321.244
185.592	321.237
184.055	321.226
182.47	321.208
180.586	321.204
178.955	321.18
177.231	321.148
175.401	321.135
173.584	321.095
171.608	321.044
169.885	321.023
163.988	320.857
162.472	320.831
161.042	320.799
153.258	320.573
152.168	320.544
141.311	320.227
139.934	320.187
138.971	320.159

133.511	320
127.85	319.835
126.697	319.801
116.045	319.491
112.503	319.388
104.328	319.15
98.4359	318.978
92.6962	318.811
84.4928	318.572
81.1502	318.474
70.6725	318.169
69.6887	318.14
64.8782	318
58.8789	317.825
57.7947	317.794
48.471	317.522
45.4995	317.435
38.0244	317.217
33.1503	317.075
27.539	316.912
20.747	316.714
17.0146	316.605
8.28898	316.351
6.451	316.297

Material Boundary

	X	Y
0		164.667
2.61045		164.033
2.74827		164
2.93545		163.955
10.984		162
16.9104		160.561
19.2198		160
22.3549		159.239
27.4555		158
31.2131		157.088
35.6913		156
41.768		154.524
43.927		154
45.5183		153.614
52.1628		152
59.8261		150.139
59.8924		150.123
60.4145		150
60.8582		149.895
60.9162		149.881
68.6396		148
75.206		146.4
76.8497		146
79.0691		145.459
85.0598		144

88.4071	143.185
93.2699	142
96.1305	141.964
100.713	141.947
101.016	141.941
113.425	141.821
121.918	141.822
130.421	141.823
138.934	141.824
147.456	141.825
148.142	141.848
156.777	141.849
157.383	141.866
166.104	141.867
166.646	141.881
175.435	141.882
175.924	141.893
184.77	141.893
185.454	141.904
186.03	141.91
186.471	141.91
195.39	141.911
195.828	141.911
204.75	141.912
205.185	141.912
214.11	141.912
214.542	141.912
223.469	141.913
223.899	141.913
224.328	141.913
224.757	141.913
226.606	141.875
232.206	141.736
237.619	141.555
266.437	140.593
284.194	140
288.023	139.82
294.955	139.494
315.577	138.526
326.764	138
345.352	137.109
367.261	136
389.122	135.384
438.282	134
441.106	133.989
441.813	133.988
442.992	133.982
450.152	133.954
471.589	133.475
495.112	133.041
499.816	133.042
504.522	133.042
507.015	133.043

509.52	133.047
513.255	133.047
518.191	133.045
521.934	133.044
526.857	133.043
530.609	133.042
535.521	133.04
539.492	133.044
544.41	133.042
548.376	133.045
551.45	133.051
554.115	133.053
556.005	133.053
558.664	133.055
563.412	133.057
566.946	133.064
571.737	133.066
575.242	133.073
580.075	133.075
583.551	133.082
586.977	133.088
591.874	133.09
595.541	133.09
600.448	133.093
604.107	133.093
609.025	133.095
612.675	133.095
617.604	133.097
621.244	133.097
622.641	133.096
626.431	133.093
629.889	133.087
634.698	133.083
638.19	133.076
641.731	133.07
646.478	133.066
650.054	133.06
654.753	133.056
659.419	133.052
663.75	133.06
668.432	133.056
672.746	133.063
677.444	133.06
680.743	133.07
685.469	133.067
688.752	133.077
692.299	133.081
695.852	133.075
701.119	133.075
703.992	133.063
708.239	133.071
712.549	133.079
716.654	133.084

721.014	133.092
725.057	133.098
729.467	133.106
730.766	133.109
732.057	133.112
735.706	133.117
737.361	133.116
738.906	133.115
742.564	133.12
743.989	133.118
755.732	133.35
775.632	133.895
775.782	133.895
775.919	133.894
776.153	133.893
778.05	134
783.506	135.753
784.276	136
789.286	137.609
790.503	138
794.831	139.39
796.73	140
800.37	141.169
802.957	142
805.905	142.947
809.183	144
811.435	144.723
815.41	146
816.957	146.497
821.637	148
822.473	148.269
827.863	150
827.984	150.039
828.909	150.336
833.494	151.808
834.09	152
838.998	153.577
840.317	154
844.497	155.343
846.543	156
849.989	157.107
852.77	158
855.476	158.869
858.997	160
860.956	160.629
865.223	162
866.43	162.387
871.45	164
871.897	164.144
875.09	165.169
877.36	165.898
877.677	166
882.821	167.652

883.903	168
888.276	169.404
890.13	170
893.723	171.154
896.357	172
899.164	172.902
902.583	174
906.152	175.146
908.81	176
912.925	177.322
915.037	178
918.41	179.083
921.263	180
923.888	180.843
927.49	182
929.36	182.601
933.717	184
934.825	184.356
939.944	186
940.292	186.112
943.235	187.057
945.863	187.901
946.17	188
951.208	189.618
952.397	190
956.633	191.361
958.624	192
962.07	193.107
964.85	194
967.5	194.851
971.077	196
972.917	196.591
977.304	198
978.32	198.326
983.53	200
983.726	200.063
985.426	200.609
989.318	201.859
989.757	202
994.64	203.568
995.984	204
999.949	205.274
1002.21	206
1005.61	207.122
1008.27	208
1011.51	209.172
1013.9	210
1014.76	210.314
1016.17	210.831
1024.06	213.481

Material Boundary

X	Y
0	166.667
2.61045	166.033
2.74827	166
2.93545	165.955
10.984	164
16.9104	162.561
19.2198	162
22.3549	161.239
27.4555	160
31.2131	159.088
35.6913	158
41.768	156.524
43.927	156
45.5183	155.614
52.1628	154
59.8261	152.139
59.8924	152.123
60.4145	152
60.8582	151.895
60.9162	151.881
68.6396	150
75.206	148.4
76.8497	148
79.0691	147.459
85.0598	146
88.4071	145.185
93.2699	144
96.1305	143.964
100.713	143.947
101.016	143.941
113.425	143.821
121.918	143.822
130.421	143.823
138.934	143.824
147.456	143.825
148.142	143.848
156.777	143.849
157.383	143.866
166.104	143.867
166.646	143.881
175.435	143.882
175.924	143.893
184.77	143.893
185.454	143.904
186.03	143.91
186.471	143.91
195.39	143.911
195.828	143.911
204.75	143.912
205.185	143.912
214.11	143.912
214.542	143.912

223.469	143.913
223.899	143.913
224.328	143.913
224.757	143.913
226.606	143.875
232.206	143.736
237.619	143.555
266.437	142.593
284.194	142
288.023	141.82
294.955	141.494
315.577	140.526
326.764	140
345.352	139.109
367.261	138
389.122	137.384
438.282	136
441.106	135.989
441.813	135.988
442.992	135.982
450.152	135.954
471.589	135.475
495.112	135.041
499.816	135.042
504.522	135.042
507.015	135.043
509.52	135.047
513.255	135.047
518.191	135.045
521.934	135.044
526.857	135.043
530.609	135.042
535.521	135.04
539.492	135.044
544.41	135.042
548.376	135.045
551.45	135.051
554.115	135.053
556.005	135.053
558.664	135.055
563.412	135.057
566.946	135.064
571.737	135.066
575.242	135.073
580.075	135.075
583.551	135.082
586.977	135.088
591.874	135.09
595.541	135.09
600.448	135.093
604.107	135.093
609.025	135.095
612.675	135.095

617.604	135.097
621.244	135.097
622.641	135.096
626.431	135.093
629.889	135.087
634.698	135.083
638.19	135.076
641.731	135.07
646.478	135.066
650.054	135.06
654.753	135.056
659.419	135.052
663.75	135.06
668.432	135.056
672.746	135.063
677.444	135.06
680.743	135.07
685.469	135.067
688.752	135.077
692.299	135.081
695.852	135.075
701.119	135.075
703.992	135.063
708.239	135.071
712.549	135.079
716.654	135.084
721.014	135.092
725.057	135.098
729.467	135.106
730.766	135.109
732.057	135.112
735.706	135.117
737.361	135.116
738.906	135.115
742.564	135.12
743.989	135.118
755.732	135.35
775.632	135.895
775.782	135.895
775.919	135.894
776.153	135.893
778.05	136
783.506	137.753
784.276	138
789.286	139.609
790.503	140
794.831	141.39
796.73	142
800.37	143.169
802.957	144
805.905	144.947
809.183	146
811.435	146.723

815.41	148
816.957	148.497
821.637	150
822.473	150.269
827.863	152
827.984	152.039
828.909	152.336
833.494	153.808
834.09	154
838.998	155.577
840.317	156
844.497	157.343
846.543	158
849.989	159.107
852.77	160
855.476	160.869
858.997	162
860.956	162.629
865.223	164
866.43	164.387
871.45	166
871.897	166.144
875.09	167.169
877.36	167.898
877.677	168
882.821	169.652
883.903	170
888.276	171.404
890.13	172
893.723	173.154
896.357	174
899.164	174.902
902.583	176
906.152	177.146
908.81	178
912.925	179.322
915.037	180
918.41	181.083
921.263	182
923.888	182.843
927.49	184
929.36	184.601
933.717	186
934.825	186.356
939.944	188
940.292	188.112
943.235	189.057
945.863	189.901
946.17	190
951.208	191.618
952.397	192
956.633	193.361
958.624	194

962.07	195.107
964.85	196
967.5	196.851
971.077	198
972.917	198.591
977.304	200
978.32	200.326
983.53	202
983.726	202.063
985.426	202.609
989.318	203.859
989.757	204
994.64	205.568
995.984	206
999.949	207.274
1002.21	208
1005.61	209.122
1008.27	210
1011.51	211.172
1013.9	212
1014.76	212.314
1016.17	212.831
1020.86	214.406

Material Boundary

	X	Y
0		168.667
2.61045		168.033
2.74827		168
2.93545		167.955
10.984		166
16.9104		164.561
19.2198		164
22.3549		163.239
27.4555		162
31.2131		161.088
35.6913		160
41.768		158.524
43.927		158
45.5183		157.614
52.1628		156
59.8261		154.139
59.8924		154.123
60.4145		154
60.8582		153.895
60.9162		153.881
68.6396		152
75.206		150.4
76.8497		150
79.0691		149.459
85.0598		148
88.4071		147.185

93.2699	146
96.1305	145.964
100.713	145.947
101.016	145.941
113.425	145.821
121.918	145.822
130.421	145.823
138.934	145.824
147.456	145.825
148.142	145.848
156.777	145.849
157.383	145.866
166.104	145.867
166.646	145.881
175.435	145.882
175.924	145.893
184.77	145.893
185.454	145.904
186.03	145.91
186.471	145.91
195.39	145.911
195.828	145.911
204.75	145.912
205.185	145.912
214.11	145.912
214.542	145.912
223.469	145.913
223.899	145.913
224.328	145.913
224.757	145.913
226.606	145.875
232.206	145.736
237.619	145.555
266.437	144.593
284.194	144
288.023	143.82
294.955	143.494
315.577	142.526
326.764	142
345.352	141.109
367.261	140
389.122	139.384
438.282	138
441.106	137.989
441.813	137.988
442.992	137.982
450.152	137.954
471.589	137.475
495.112	137.041
499.816	137.042
504.522	137.042
507.015	137.043
509.52	137.047

513.255	137.047
518.191	137.045
521.934	137.044
526.857	137.043
530.609	137.042
535.521	137.04
539.492	137.044
544.41	137.042
548.376	137.045
551.45	137.051
554.115	137.053
556.005	137.053
558.664	137.055
563.412	137.057
566.946	137.064
571.737	137.066
575.242	137.073
580.075	137.075
583.551	137.082
586.977	137.088
591.874	137.09
595.541	137.09
600.448	137.093
604.107	137.093
609.025	137.095
612.675	137.095
617.604	137.097
621.244	137.097
622.641	137.096
626.431	137.093
629.889	137.087
634.698	137.083
638.19	137.076
641.731	137.07
646.478	137.066
650.054	137.06
654.753	137.056
659.419	137.052
663.75	137.06
668.432	137.056
672.746	137.063
677.444	137.06
680.743	137.07
685.469	137.067
688.752	137.077
692.299	137.081
695.852	137.075
701.119	137.075
703.992	137.063
708.239	137.071
712.549	137.079
716.654	137.084
721.014	137.092

725.057	137.098
729.467	137.106
730.766	137.109
732.057	137.112
735.706	137.117
737.361	137.116
738.906	137.115
742.564	137.12
743.989	137.118
755.732	137.35
775.632	137.895
775.782	137.895
775.919	137.894
776.153	137.893
778.05	138
783.506	139.753
784.276	140
789.286	141.609
790.503	142
794.831	143.39
796.73	144
800.37	145.169
802.957	146
805.905	146.947
809.183	148
811.435	148.723
815.41	150
816.957	150.497
821.637	152
822.473	152.269
827.863	154
827.984	154.039
828.909	154.336
833.494	155.808
834.09	156
838.998	157.577
840.317	158
844.497	159.343
846.543	160
849.989	161.107
852.77	162
855.476	162.869
858.997	164
860.956	164.629
865.223	166
866.43	166.387
871.45	168
871.897	168.144
875.09	169.169
877.36	169.898
877.677	170
882.821	171.652
883.903	172

888.276	173.404
890.13	174
893.723	175.154
896.357	176
899.164	176.902
902.583	178
906.152	179.146
908.81	180
912.925	181.322
915.037	182
918.41	183.083
921.263	184
923.888	184.843
927.49	186
929.36	186.601
933.717	188
934.825	188.356
939.944	190
940.292	190.112
943.235	191.057
945.863	191.901
946.17	192
951.208	193.618
952.397	194
956.633	195.361
958.624	196
962.07	197.107
964.85	198
967.5	198.851
971.077	200
972.917	200.591
977.304	202
978.32	202.326
983.53	204
983.726	204.063
985.426	204.609
989.318	205.859
989.757	206
994.64	207.568
995.984	208
999.949	209.274
1002.21	210
1005.61	211.122
1008.27	212
1011.51	213.172
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1014.76	214.314
1016.17	214.831
1016.17	214.831

Material Boundary

X	Y
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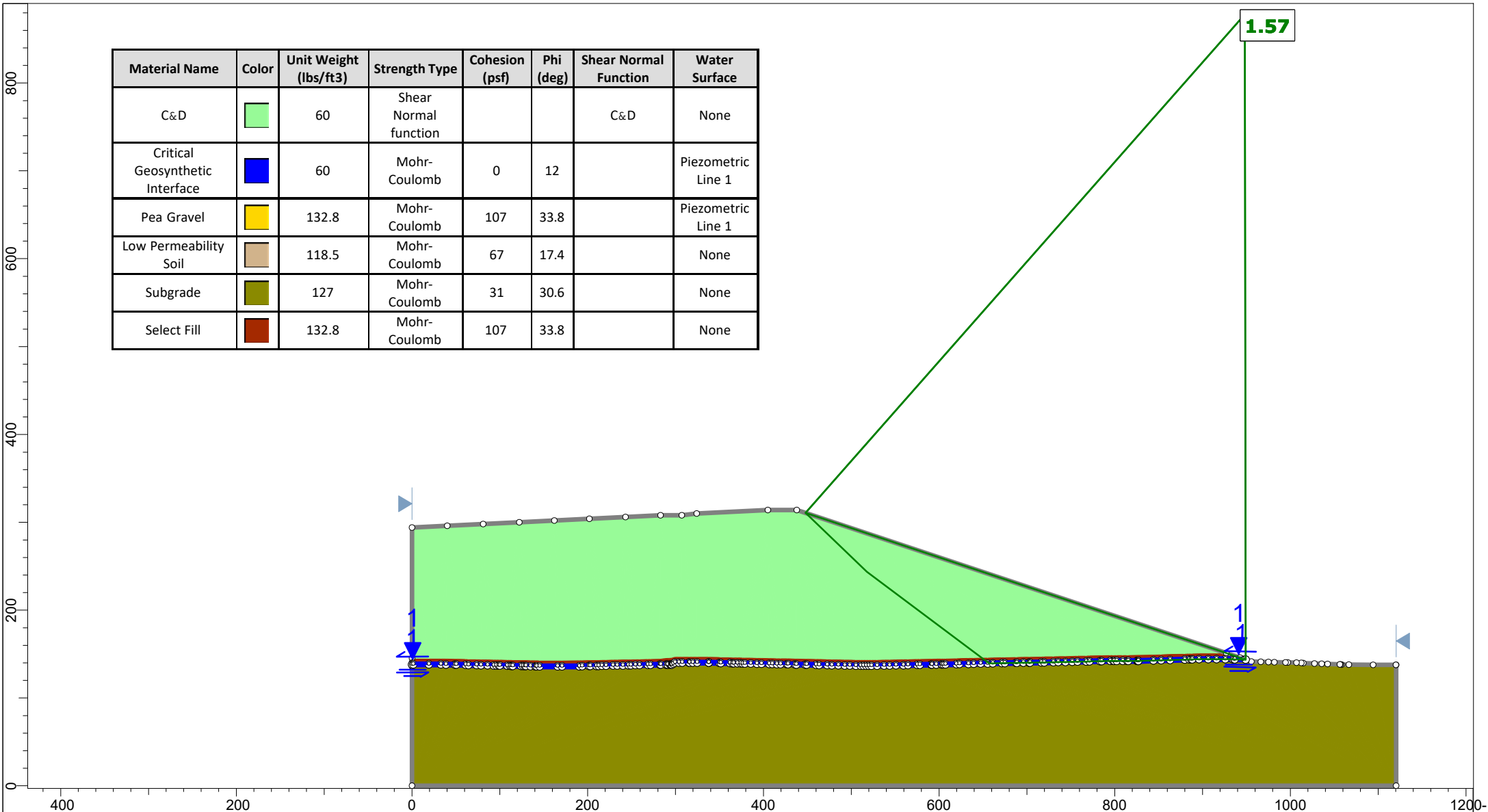
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2.61045	173.033
2.74827	173
2.93545	172.955
10.984	171
16.9104	169.561
19.2198	169
22.3549	168.239
27.4555	167
31.2131	166.088
35.6913	165
41.768	163.524
43.927	163
45.5183	162.614
52.1628	161
59.8261	159.139
59.8924	159.123
60.4145	159
60.8582	158.895
60.9162	158.881
68.6396	157
75.206	155.4
76.8497	155
79.0691	154.459
85.0598	153
88.4071	152.185
93.2699	151
96.1305	150.964
100.713	150.947
101.016	150.941
113.425	150.821
121.918	150.822
130.421	150.823
138.934	150.824
147.456	150.825
148.142	150.848
156.777	150.849
157.383	150.866
166.104	150.867
166.646	150.881
175.435	150.882
175.924	150.893
184.77	150.893
185.454	150.904
186.03	150.91
186.471	150.91
195.39	150.911
195.828	150.911
204.75	150.912
205.185	150.912
214.11	150.912
214.542	150.912
223.469	150.913

223.899	150.913
224.328	150.913
224.757	150.913
226.606	150.875
232.206	150.736
237.619	150.555
266.437	149.593
284.194	149
288.023	148.82
294.955	148.494
315.577	147.526
326.764	147
345.352	146.109
367.261	145
389.122	144.384
438.282	143
441.106	142.989
441.813	142.988
442.992	142.982
450.152	142.954
471.589	142.475
495.112	142.041
499.816	142.042
504.522	142.042
507.015	142.043
509.52	142.047
513.255	142.047
518.191	142.045
521.934	142.044
526.857	142.043
530.609	142.042
535.521	142.04
539.492	142.044
544.41	142.042
548.376	142.045
551.45	142.051
554.115	142.053
556.005	142.053
558.664	142.055
563.412	142.057
566.946	142.064
571.737	142.066
575.242	142.073
580.075	142.075
583.551	142.082
586.977	142.088
591.874	142.09
595.541	142.09
600.448	142.093
604.107	142.093
609.025	142.095
612.675	142.095
617.604	142.097


621.244	142.097
622.641	142.096
626.431	142.093
629.889	142.087
634.698	142.083
638.19	142.076
641.731	142.07
646.478	142.066
650.054	142.06
654.753	142.056
659.419	142.052
663.75	142.06
668.432	142.056
672.746	142.063
677.444	142.06
680.743	142.07
685.469	142.067
688.752	142.077
692.299	142.081
695.852	142.075
701.119	142.075
703.992	142.063
708.239	142.071
712.549	142.079
716.654	142.084
721.014	142.092
725.057	142.098
729.467	142.106
730.766	142.109
732.057	142.112
735.706	142.117
737.361	142.116
738.906	142.115
742.564	142.12
743.989	142.118
755.732	142.35
775.632	142.895
775.782	142.895
775.919	142.894
776.153	142.893
778.05	143
783.506	144.753
784.276	145
789.286	146.609
790.503	147
794.831	148.39
796.73	149
800.37	150.169
802.957	151
805.905	151.947
809.183	153
811.435	153.723
815.41	155

816.957	155.497
821.637	157
822.473	157.269
827.863	159
827.984	159.039
828.909	159.336
833.494	160.808
834.09	161
838.998	162.577
840.317	163
844.497	164.343
846.543	165
849.989	166.107
852.77	167
855.476	167.869
858.997	169
860.956	169.629
865.223	171
866.43	171.387
871.45	173
871.897	173.144
875.09	174.169
877.36	174.898
877.677	175
882.821	176.652
883.903	177
888.276	178.404
890.13	179
893.723	180.154
896.357	181
899.164	181.902
902.583	183
906.152	184.146
908.81	185
912.925	186.322
915.037	187
918.41	188.083
921.263	189
923.888	189.843
927.49	191
929.36	191.601
933.717	193
934.825	193.356
939.944	195
940.292	195.112
943.235	196.057
945.863	196.901
946.17	197
951.208	198.618
952.397	199
956.633	200.361
958.624	201
962.07	202.107

964.85	203
967.5	203.851
971.077	205
972.917	205.591
977.304	207
978.32	207.326
983.53	209
983.726	209.063
985.426	209.609
989.318	210.859
989.757	211
994.64	212.568
995.984	213
999.949	214.274
1002.21	215
1005.61	216.122
1007.6	216.78



Material Name	Color	Unit Weight (lbs/ft ³)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
C&D	■	60	Shear Normal function			C&D	None
Critical Geosynthetic Interface	■	60	Mohr-Coulomb	0	12		Piezometric Line 1
Pea Gravel	■	132.8	Mohr-Coulomb	107	33.8		Piezometric Line 1
Low Permeability Soil	■	118.5	Mohr-Coulomb	67	17.4		None
Subgrade	■	127	Mohr-Coulomb	31	30.6		None
Select Fill	■	132.8	Mohr-Coulomb	107	33.8		None

	Project: 182-442 S.A. Dunn Permit Renewal SLIDE Model Interactive Slope Stability Program		Scenario: Section D - Waste Failure - Static.slim	
	Analysis Description: Section D - Waste Failure - Static Failure		Company: Civil & Environmental Consultants, Inc.	
	Drawn By: ZLM	Checked By: TDM	File Name: Section D - Waste Failure - Static.slim	
	Created Date: 1/6/2022 7/28/2021	Checked Date: 1/9/2022		

Slide Analysis Information

SLIDE - An Interactive Slope Stability Program

Project Summary

Slide Modeler Version:	9.02
Compute Time:	00h:03m:48.910s
Date Created:	7/28/2021, 10:59:59 AM

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	
	GLE/Morgenstern-Price with interslice force function (Half Sine)
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 ³]:	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:	Cuckoo Search
Initial # of Surface Vertices:	8
Maximum Iterations:	500
Number of Nests:	50
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined
Convex Surfaces Only:	Enabled

Seismic Loading

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Materials

C&D

Color	
Strength Type	Shear Normal function
Unit Weight [lbs/ft ³]	60
Water Surface	None
Ru Value	0

Pea Gravel

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	Piezometric Line 1
Hu Value	1

Low Permeability Soil

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	118.5
Cohesion [psf]	67
Friction Angle [deg]	17.4
Water Surface	None
Ru Value	0

Subgrade

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	127
Cohesion [psf]	31
Friction Angle [deg]	30.6
Water Surface	None
Ru Value	0

Select Fill

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	None
Ru Value	0

Shear Normal Functions

Name: C&D	
Effective Normal (psf)	Shear (psf)
0	0
2000	1400
10000	6169

Global Minimums

Method: gle/morgenstern-price

FS	1.566460
Axis Location:	947.968, 878.110
Left Slip Surface Endpoint:	447.946, 310.684
Right Slip Surface Endpoint:	949.110, 143.595
Resisting Moment:	4.79817e+08 lb-ft
Driving Moment:	3.06307e+08 lb-ft
Resisting Horizontal Force:	550323 lb
Driving Horizontal Force:	351317 lb
Total Slice Area:	26373.1 ft ²
Surface Horizontal Width:	501.164 ft
Surface Average Height:	52.6236 ft

Global Minimum Coordinates

Method: gle/morgenstern-price

X	Y
447.946	310.684
517.688	243.622
656.827	139.279
661.139	139.297
671.492	139.507
674.909	139.576
687.464	139.829
688.645	139.853
695.918	140
702.465	140.132
703.518	140.154
716.362	140.413
719.644	140.479
730.199	140.692
735.69	140.803
743.977	140.971
751.655	141.126
757.696	141.248
767.54	141.447
771.355	141.524
783.347	141.766
784.957	141.799
794.928	142
798.336	142.012
799.584	142.015
802.272	142.026
809.313	142.051
814.19	142.061
815.343	142.056
825.43	142
826.105	141.999
826.795	142
826.896	142
844.081	142.65
852.85	142.878
863.067	143.224
879.695	143.615
884.698	143.759
887.025	143.821
888.251	143.845
896.082	144
906.423	144.035
915.996	144.06
925.977	144.029
934.42	144
936.1	143.954
936.549	143.941
949.11	143.595

Global Minimum Support Data

No Supports Present

Slice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.56646

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	69.7417	91660.3	-43.8776	C&D	1.13687e-13	34.992	387.212	606.552	866.503	0	866.503	1238.83	1238.83
2	130.139	553704	-36.8671	C&D	207.75	30.8002	1242.12	1945.73	2915.46	0	2915.46	3846.95	3846.95
3	6.49247	39889.8	-36.8671	Select Fill	107	33.8	1845.45	2890.82	4158.42	0	4158.42	5542.37	5542.37
4	1.29849	8387.97	-36.8671	Pea Gravel	107	33.8	1939.53	3038.19	4378.56	0	4378.56	5833.05	5833.05
5	1.20975	7937.66	-36.8671	Pea Gravel	107	33.8	1958.79	3068.36	4452.69	29.0571	4423.64	5921.63	5892.57
6	4.3116	28324	0.249143	Critical Geosynthetic Interface	0	12	920.011	1441.16	6840.37	60.2571	6780.11	6836.36	6776.11
7	10.3537	66452	1.15722	Critical Geosynthetic Interface	0	12	909.758	1425.1	6766.93	62.3895	6704.54	6748.56	6686.17
8	3.41639	21428.1	1.15722	Critical Geosynthetic Interface	0	12	891.871	1397.08	6635.13	62.3895	6572.74	6617.11	6554.72
9	12.5555	76622.9	1.15722	Critical Geosynthetic Interface	0	12	870.632	1363.81	6478.62	62.3895	6416.23	6461.03	6398.64
10	1.18099	7035.16	1.15722	Critical Geosynthetic Interface	0	12	852.093	1334.77	6342	62.3895	6279.61	6324.78	6262.39
11	7.27292	42672.5	1.15722	Critical Geosynthetic Interface	0	12	840.487	1316.59	6256.44	62.3895	6194.05	6239.46	6177.07
12	6.54642	37450.2	1.15722	Critical Geosynthetic Interface	0	12	821.279	1286.5	6114.91	62.3895	6052.52	6098.32	6035.93
13	1.0537	5942.98	1.15722	Critical Geosynthetic Interface	0	12	810.598	1269.77	6036.17	62.3895	5973.78	6019.8	5957.41
14	12.8437	70546.4	1.15722	Critical Geosynthetic Interface	0	12	790.77	1238.71	5890.04	62.3895	5827.65	5874.06	5811.67
15	3.28235	17467.4	1.15722	Critical Geosynthetic Interface	0	12	767.482	1202.23	5718.43	62.3895	5656.04	5702.92	5640.53
16	10.5551	54620.5	1.15722	Critical Geosynthetic Interface	0	12	747.15	1170.38	5568.59	62.3895	5506.2	5553.5	5491.11
17	5.49021	27476.4	1.15722	Critical Geosynthetic Interface	0	12	723.293	1133.01	5392.81	62.3895	5330.42	5378.19	5315.81
18	8.28755	40264.7	1.15722	Critical Geosynthetic Interface	0	12	702.533	1100.49	5239.8	62.3895	5177.41	5225.61	5163.22
19	7.67752	36000.6	1.15722	Critical Geosynthetic Interface	0	12	678.211	1062.39	5060.56	62.3895	4998.18	5046.87	4984.48
20	6.041	27447.7	1.15722	Critical Geosynthetic Interface	0	12	657.099	1029.32	4904.98	62.3895	4842.59	4891.7	4829.31
21	9.84447	43070.1	1.15722	Critical Geosynthetic Interface	0	12	632.416	990.654	4723.05	62.3895	4660.66	4710.27	4647.88
22	3.81517	16138.7	1.15722	Critical Geosynthetic Interface	0	12	611.036	957.163	4565.49	62.3895	4503.11	4553.15	4490.76

23	11.9913	48714.3	1.15722	Critical Geosynthetic Interface	12	586.094	918.093	4381.68	62.3895	4319.29	4369.84	4307.45
24	1.60986	6307.74	1.15722	Critical Geosynthetic Interface	12	564.53	884.314	4222.76	62.3895	4160.37	4211.35	4148.96
25	9.97162	37845.6	1.15722	Critical Geosynthetic Interface	12	546.069	855.395	4086.71	62.3895	4024.32	4075.68	4013.29
26	3.40817	12457.2	0.204137	Critical Geosynthetic Interface	12	520.696	815.65	3899.73	62.3895	3837.34	3897.87	3835.48
27	1.24758	4501.38	0.125349	Critical Geosynthetic Interface	12	513.359	804.157	3845.65	62.3895	3783.26	3844.52	3782.13
28	2.68835	9592.84	0.238314	Critical Geosynthetic Interface	12	507.919	795.635	3805.57	62.3895	3743.18	3803.46	3741.07
29	7.04047	24429.8	0.203264	Critical Geosynthetic Interface	12	493.092	772.409	3696.29	62.3895	3633.9	3694.54	3632.15
30	4.87714	16336.8	0.113922	Critical Geosynthetic Interface	12	474.788	743.736	3561.38	62.3895	3499	3560.44	3498.05
31	1.15297	3792.35	-0.239823	Critical Geosynthetic Interface	12	464.45	727.543	3485.21	62.3895	3422.82	3487.16	3424.77
32	10.0876	32064.4	-0.317514	Critical Geosynthetic Interface	12	447.737	701.362	3362.04	62.3895	3299.65	3364.52	3302.13
33	0.675026	2074.11	-0.0457245	Critical Geosynthetic Interface	12	432.884	678.095	3252.57	62.3895	3190.18	3252.92	3190.53
34	0.68978	2110.03	0.0374701	Critical Geosynthetic Interface	12	431.119	675.33	3239.57	62.3872	3177.18	3239.29	3176.9
35	0.100717	307.294	0.0395942	Critical Geosynthetic Interface	12	429.941	673.486	3230.89	62.3895	3168.5	3230.59	3168.2
36	17.1855	49127.2	2.16691	Critical Geosynthetic Interface	12	407.38	638.144	3064.6	62.3664	3002.23	3049.18	2986.82
37	8.76831	22558.6	1.48686	Critical Geosynthetic Interface	12	361.851	566.825	2729.09	62.3895	2666.7	2719.7	2657.31
38	10.2174	24170.7	1.93867	Critical Geosynthetic Interface	12	331.477	519.245	2505.25	62.3895	2442.86	2494.03	2431.64
39	16.6274	34502.3	1.34699	Critical Geosynthetic Interface	12	286.595	448.939	2174.48	62.3895	2112.09	2167.74	2105.35
40	5.00303	9218.74	1.6504	Critical Geosynthetic Interface	12	252.398	395.372	1922.47	62.3895	1860.08	1915.2	1852.81
41	2.32748	4103.65	1.524	Critical Geosynthetic Interface	12	240.438	376.637	1834.33	62.3895	1771.94	1827.93	1765.54
42	1.22624	2115.26	1.13275	Critical Geosynthetic Interface	12	234.322	367.056	1789.25	62.3895	1726.86	1784.62	1722.23
43	7.83115	12757.1	1.13404	Critical Geosynthetic Interface	12	220.231	344.983	1685.41	62.3895	1623.02	1681.05	1618.66
44	10.341	14907.2	0.194502	Critical Geosynthetic Interface	12	192.039	300.821	1477.64	62.3895	1415.25	1476.99	1414.6
45	9.57219	11875.1	0.149724	Critical Geosynthetic Interface	12	163.136	255.546	1264.64	62.3895	1202.25	1264.21	1201.82
46	9.98167	10432.9	-0.180702	Critical Geosynthetic Interface	12	135.168	211.735	1058.52	62.3895	996.135	1058.95	996.561
47	8.44311	6590.33	-0.194337	Critical Geosynthetic Interface	12	98.2796	153.951	786.672	62.3895	724.283	787.005	724.616

48	1.67995	944.881	-1.58113	Critical Geosynthetic Interface	12	67.9583	106.454	563.218	62.3895	500.828	565.094	502.704
49	0.449087	233.174	-1.58092	Critical Geosynthetic Interface	12	62.0571	97.2099	519.726	62.3895	457.336	521.438	459.049
50	12.5608	3203.62	-1.58108	Critical Geosynthetic Interface	12	26.1362	40.9413	255.004	62.3895	192.614	255.725	193.335

Interslice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.56646

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	447.946	310.684	0	0	0
2	517.688	243.622	31096.6	5246	9.57564
3	647.826	146.029	153935	58263.8	20.7315
4	654.319	141.16	162197	62161.8	20.9693
5	655.617	140.186	163941	62973.8	21.013
6	656.827	139.279	165610	63746.2	21.0526
7	661.139	139.297	161514	62596.3	21.1843
8	671.492	139.507	150677	59177.6	21.4422
9	674.909	139.576	147171	57999.3	21.5091
10	687.464	139.829	134594	53500.5	21.6776
11	688.645	139.853	133436	53066	21.6872
12	695.918	140	126402	50358.7	21.7224
13	702.465	140.132	120216	47885.8	21.7189
14	703.518	140.154	119233	47485.5	21.7153
15	716.362	140.413	107546	42584.4	21.6018
16	719.644	140.479	104647	41332	21.5523
17	730.199	140.692	95571	37332.5	21.3369
18	735.69	140.803	91000.7	35280.1	21.1908
19	743.977	140.971	84299.6	32235.4	20.9264
20	751.655	141.126	78306.3	29487.1	20.6344
21	757.696	141.248	73737.1	27383	20.373
22	767.54	141.447	66570.4	24081.5	19.8873
23	771.355	141.524	63886.7	22848.9	19.6794
24	783.347	141.766	55795.3	19162.7	18.9549
25	784.957	141.799	54749	18690.8	18.8494
26	794.928	142	48479.1	15895.7	18.1537
27	798.336	142.012	46656.6	15069	17.8993
28	799.584	142.015	46005.5	14774.3	17.804
29	802.272	142.026	44597.1	14142.7	17.5949
30	809.313	142.051	41032.2	12562.8	17.023
31	814.19	142.061	38681.4	11536	16.6062
32	815.343	142.056	38162.6	11308.1	16.5053
33	825.43	142	33832.7	9435.55	15.5832
34	826.105	141.999	33542.1	9314.05	15.519
35	826.795	142	33243.2	9189.88	15.4531
36	826.896	142	33199.7	9171.83	15.4435
37	844.081	142.65	24203.9	5900.63	13.7008
38	852.85	142.878	20409	4614.61	12.7407
39	863.067	143.224	16154.8	3305.98	11.5655
40	879.695	143.615	10538	1769.99	9.53455
41	884.698	143.759	8997.78	1408.6	8.89742
42	887.025	143.821	8324.42	1258.55	8.59731
43	888.251	143.845	7993.62	1185.85	8.43826
44	896.082	144	6007.2	781.08	7.40826
45	906.423	144.035	3968.91	418.135	6.01407
46	915.996	144.06	2375.27	195.055	4.69454
47	925.977	144.029	1059.01	60.9757	3.29534
48	934.42	144	251.524	9.21572	2.09835
49	936.1	143.954	163.442	5.30522	1.85913
50	936.549	143.941	142.007	4.45068	1.79513
51	949.11	143.595	0	0	0

Discharge Sections

Entity Information

Piezoline

	X	Y
0		139.001
1.53185		139.006
19.0865		139.06
32.9178		139.02
38.6457		139
48.7796		138.793
50.2602		138.763
61.0905		138.542
64.3705		138.476
73.4615		138.291
78.5505		138.189
85.9551		138.041
92.8528		137.903
95.9447		137.841
98.6483		137.789
99.8304		137.766
108.36		137.6
111.481		137.539
113.16		137.508
114.657		137.481
124.023		137.298
126.413		137.276
128.483		137.258
129.604		137.259
134.88		137.144
140.608		137.001
140.666		137
141.88		136.996
145.396		136.987
165.76		136.931
170.639		136.942
190.43		137
193.662		137.091
201.413		137.308
202.91		137.31
209.905		137.483
212.256		137.486
216.044		137.533
220.799		137.61
228.74		137.769
233.581		137.864

240.055	137.994
246.29	138.116
249.014	138.178
254.334	138.284
259.083	138.368
268.35	138.553
271.397	138.613
282.09	138.827
283.248	138.85
289.114	139
290.561	139
291.004	139
293.847	139
294.079	139
294.897	139
295.735	139
297.392	139.908
299.475	141
303.779	141.026
307.699	141.048
315.325	141.101
315.77	141.098
319.666	141.08
324.496	141.067
337.748	141
337.798	140.999
337.804	140.999
350.01	140.752
351.514	140.722
361.883	140.513
364.794	140.454
366.105	140.426
370.416	140.331
374.199	140.251
376.444	140.207
378.978	140.155
385.656	140.023
392.593	139.886
397.761	139.784
406.485	139.612
410.085	139.541
415.321	139.473
419.58	139.44
426.773	139.263
428.072	139.263
436.007	139.041
437.46	139
447.762	138.797
449.164	138.77
459.994	138.557
463.353	138.491
472.562	138.31
477.849	138.206

485.368	138.058
492.661	137.915
498.42	137.801
505.285	137.698
510.764	137.64
513.847	137.638
516.909	137.636
519.953	137.634
522.978	137.632
529.387	137.687
537.506	137.8
543.814	137.927
550.999	138.073
559.479	138.244
564.556	138.346
575.229	138.562
578.177	138.622
591.066	138.882
591.862	138.898
596.908	139
602.692	139.157
603.345	139.157
604.986	139.174
607.15	139.207
619.626	139.459
623.304	139.533
633.498	139.739
639.412	139.859
647.335	140.019
655.475	140.183
661.139	140.297
671.492	140.507
674.909	140.576
687.464	140.829
688.645	140.853
695.918	141
702.465	141.132
703.518	141.154
716.362	141.413
719.644	141.479
730.199	141.692
735.69	141.803
743.977	141.971
751.655	142.126
757.696	142.248
767.54	142.447
771.355	142.524
783.347	142.766
784.957	142.799
794.928	143
798.336	143.012
799.584	143.015
802.272	143.026

809.313	143.051
814.19	143.061
815.343	143.056
825.43	143
826.105	142.999
826.168	142.999
826.795	143
826.896	143
826.916	143
844.081	143.65
852.85	143.878
863.067	144.224
879.695	144.615
884.698	144.759
887.025	144.821
888.251	144.845
896.082	145
906.423	145.035
915.996	145.06
925.977	145.029
934.42	145
936.1	144.954
936.549	144.941
945.84	144.685

External Boundary

X	Y
0	294
0	145.001
0	140.001
0	139.001
0	138.001
0	136.001
0	0
1120.27	0
1120.27	137.664
1120.15	137.662
1094.2	137.627
1066.59	137.768
1058.38	138
1056.96	138.055
1056.39	138.077
1042.28	138.625
1035.7	138.881
1027.44	139.202
1014.7	139.696
1012.45	139.784
1006.89	140
997.074	140.271
994.462	140.343
981.639	140.697
974.953	140.881
966.333	141.119
955.65	141.414
949.11	143.595
945.84	144.685
942.57	145.775
926.821	151.026
438	314
405	314
324	310
307	308
283	308
243	306
202	304
162	302
122	300
81	298
40	296

Material Boundary

X	Y
0	136.001
1.53185	136.006
19.0865	136.06
32.9178	136.02
38.6457	136
48.7796	135.793

50.2602	135.763
61.0905	135.542
64.3705	135.476
73.4615	135.291
78.5505	135.189
85.9551	135.041
92.8528	134.903
95.9447	134.841
98.6483	134.789
99.8304	134.766
108.36	134.6
111.481	134.539
113.16	134.508
114.657	134.481
124.023	134.298
126.413	134.276
128.483	134.258
129.604	134.259
134.88	134.144
140.608	134.001
140.666	134
141.88	133.996
145.396	133.987
165.76	133.931
170.639	133.942
190.43	134
193.662	134.091
201.413	134.308
202.91	134.31
209.905	134.483
212.256	134.486
216.044	134.533
220.799	134.61
228.74	134.769
233.581	134.864
240.055	134.994
246.29	135.116
249.014	135.178
254.334	135.284
259.083	135.368
268.35	135.553
271.397	135.613
282.09	135.827
283.248	135.85
289.114	136
290.561	136
291.004	136
293.847	136
294.079	136
294.897	136
295.735	136
297.392	136.908
299.475	138

303.779	138.026
307.699	138.048
315.325	138.101
315.77	138.098
319.666	138.08
324.496	138.067
337.748	138
337.798	137.999
337.804	137.999
350.01	137.752
351.514	137.722
361.883	137.513
364.794	137.454
366.105	137.426
370.416	137.331
374.199	137.251
376.444	137.207
378.978	137.155
385.656	137.023
392.593	136.886
397.761	136.784
406.485	136.612
410.085	136.541
415.321	136.473
419.58	136.44
426.773	136.263
428.072	136.263
436.007	136.041
437.46	136
447.762	135.797
449.164	135.77
459.994	135.557
463.353	135.491
472.562	135.31
477.849	135.206
485.368	135.058
492.661	134.915
498.42	134.801
505.285	134.698
510.764	134.64
513.847	134.638
516.909	134.636
519.953	134.634
522.978	134.632
529.387	134.687
537.506	134.8
543.814	134.927
550.999	135.073
559.479	135.244
564.556	135.346
575.229	135.562
578.177	135.622
591.066	135.882

591.862	135.898
596.908	136
602.692	136.157
603.345	136.157
604.986	136.174
607.15	136.207
619.626	136.459
623.304	136.533
633.498	136.739
639.412	136.859
647.335	137.019
655.475	137.183
661.139	137.297
671.492	137.507
674.909	137.576
687.464	137.829
688.645	137.853
695.918	138
702.465	138.132
703.518	138.154
716.362	138.413
719.644	138.479
730.199	138.692
735.69	138.803
743.977	138.971
751.655	139.126
757.696	139.248
767.54	139.447
771.355	139.524
783.347	139.766
784.957	139.799
794.928	140
798.336	140.012
799.584	140.015
802.272	140.026
809.313	140.051
814.19	140.061
815.343	140.056
825.43	140
826.105	139.999
826.168	139.999
826.795	140
826.896	140
826.916	140
844.081	140.65
852.85	140.878
863.067	141.224
879.695	141.615
884.698	141.759
887.025	141.821
888.251	141.845
896.082	142
906.423	142.035

915.996	142.06
925.977	142.029
934.42	142
936.1	141.954
936.549	141.941
951.154	141.538
955.65	141.414

Material Boundary

	X	Y
0	138.001	
1.53185	138.006	
19.0865	138.06	
32.9178	138.02	
38.6457	138	
48.7796	137.793	
50.2602	137.763	
61.0905	137.542	
64.3705	137.476	
73.4615	137.291	
78.5505	137.189	
85.9551	137.041	
92.8528	136.903	
95.9447	136.841	
98.6483	136.789	
99.8304	136.766	
108.36	136.6	
111.481	136.539	
113.16	136.508	
114.657	136.481	
124.023	136.298	
126.413	136.276	
128.483	136.258	
129.604	136.259	
134.88	136.144	
140.608	136.001	
140.666	136	
141.88	135.996	
145.396	135.987	
165.76	135.931	
170.639	135.942	
190.43	136	
193.662	136.091	
201.413	136.308	
202.91	136.31	
209.905	136.483	
212.256	136.486	
216.044	136.533	
220.799	136.61	
228.74	136.769	
233.581	136.864	
240.055	136.994	

246.29	137.116
249.014	137.178
254.334	137.284
259.083	137.368
268.35	137.553
271.397	137.613
282.09	137.827
283.248	137.85
289.114	138
290.561	138
291.004	138
293.847	138
294.079	138
294.897	138
295.735	138
297.392	138.908
299.475	140
303.779	140.026
307.699	140.048
315.325	140.101
315.77	140.098
319.666	140.08
324.496	140.067
337.748	140
337.798	139.999
337.804	139.999
350.01	139.752
351.514	139.722
361.883	139.513
364.794	139.454
366.105	139.426
370.416	139.331
374.199	139.251
376.444	139.207
378.978	139.155
385.656	139.023
392.593	138.886
397.761	138.784
406.485	138.612
410.085	138.541
415.321	138.473
419.58	138.44
426.773	138.263
428.072	138.263
436.007	138.041
437.46	138
447.762	137.797
449.164	137.77
459.994	137.557
463.353	137.491
472.562	137.31
477.849	137.206
485.368	137.058

492.661	136.915
498.42	136.801
505.285	136.698
510.764	136.64
513.847	136.638
516.909	136.636
519.953	136.634
522.978	136.632
529.387	136.687
537.506	136.8
543.814	136.927
550.999	137.073
559.479	137.244
564.556	137.346
575.229	137.562
578.177	137.622
591.066	137.882
591.862	137.898
596.908	138
602.692	138.157
603.345	138.157
604.986	138.174
607.15	138.207
619.626	138.459
623.304	138.533
633.498	138.739
639.412	138.859
647.335	139.019
655.475	139.183
661.139	139.297
671.492	139.507
674.909	139.576
687.464	139.829
688.645	139.853
695.918	140
702.465	140.132
703.518	140.154
716.362	140.413
719.644	140.479
730.199	140.692
735.69	140.803
743.977	140.971
751.655	141.126
757.696	141.248
767.54	141.447
771.355	141.524
783.347	141.766
784.957	141.799
794.928	142
798.336	142.012
799.584	142.015
802.272	142.026
809.313	142.051

814.19	142.061
815.343	142.056
825.43	142
826.105	141.999
826.168	141.999
826.795	142
826.896	142
826.916	142
844.081	142.65
852.85	142.878
863.067	143.224
879.695	143.615
884.698	143.759
887.025	143.821
888.251	143.845
896.082	144
906.423	144.035
915.996	144.06
925.977	144.029
934.42	144
936.1	143.954
936.549	143.941
949.11	143.595

Material Boundary

	X	Y
0	140.001	
1.53185	140.006	
19.0865	140.06	
32.9178	140.02	
38.6457	140	
48.7796	139.793	
50.2602	139.763	
61.0905	139.542	
64.3705	139.476	
73.4615	139.291	
78.5505	139.189	
85.9551	139.041	
92.8528	138.903	
95.9447	138.841	
98.6483	138.789	
99.8304	138.766	
108.36	138.6	
111.481	138.539	
113.16	138.508	
114.657	138.481	
124.023	138.298	
126.413	138.276	
128.483	138.258	
129.604	138.259	
134.88	138.144	
140.608	138.001	

140.666	138
141.88	137.996
145.396	137.987
165.76	137.931
170.639	137.942
190.43	138
193.662	138.091
201.413	138.308
202.91	138.31
209.905	138.483
212.256	138.486
216.044	138.533
220.799	138.61
228.74	138.769
233.581	138.864
240.055	138.994
246.29	139.116
249.014	139.178
254.334	139.284
259.083	139.368
268.35	139.553
271.397	139.613
282.09	139.827
283.248	139.85
289.114	140
290.561	140
291.004	140
293.847	140
294.079	140
294.897	140
295.735	140
297.392	140.908
299.475	142
303.779	142.026
307.699	142.048
315.325	142.101
315.77	142.098
319.666	142.08
324.496	142.067
337.748	142
337.798	141.999
337.804	141.999
350.01	141.752
351.514	141.722
361.883	141.513
364.794	141.454
366.105	141.426
370.416	141.331
374.199	141.251
376.444	141.207
378.978	141.155
385.656	141.023
392.593	140.886

397.761	140.784
406.485	140.612
410.085	140.541
415.321	140.473
419.58	140.44
426.773	140.263
428.072	140.263
436.007	140.041
437.46	140
447.762	139.797
449.164	139.77
459.994	139.557
463.353	139.491
472.562	139.31
477.849	139.206
485.368	139.058
492.661	138.915
498.42	138.801
505.285	138.698
510.764	138.64
513.847	138.638
516.909	138.636
519.953	138.634
522.978	138.632
529.387	138.687
537.506	138.8
543.814	138.927
550.999	139.073
559.479	139.244
564.556	139.346
575.229	139.562
578.177	139.622
591.066	139.882
591.862	139.898
596.908	140
602.692	140.157
603.345	140.157
604.986	140.174
607.15	140.207
619.626	140.459
623.304	140.533
633.498	140.739
639.412	140.859
647.335	141.019
655.475	141.183
661.139	141.297
671.492	141.507
674.909	141.576
687.464	141.829
688.645	141.853
695.918	142
702.465	142.132
703.518	142.154

716.362	142.413
719.644	142.479
730.199	142.692
735.69	142.803
743.977	142.971
751.655	143.126
757.696	143.248
767.54	143.447
771.355	143.524
783.347	143.766
784.957	143.799
794.928	144
798.336	144.012
799.584	144.015
802.272	144.026
809.313	144.051
814.19	144.061
815.343	144.056
825.43	144
826.105	143.999
826.168	143.999
826.795	144
826.896	144
826.916	144
844.081	144.65
852.85	144.878
863.067	145.224
879.695	145.615
884.698	145.759
887.025	145.821
888.251	145.845
896.082	146
906.423	146.035
915.996	146.06
925.977	146.029
934.42	146
936.1	145.954
936.549	145.941
942.57	145.775

Material Boundary

	X	Y
0		145.001
1.53185		145.006
19.0865		145.06
32.9178		145.02
38.6457		145
48.7796		144.793
50.2602		144.763
61.0905		144.542
64.3705		144.476
73.4615		144.291

78.5505	144.189
85.9551	144.041
92.8528	143.903
95.9447	143.841
98.6483	143.789
99.8304	143.766
108.36	143.6
111.481	143.539
113.16	143.508
114.657	143.481
124.023	143.298
126.413	143.276
128.483	143.258
129.604	143.259
134.88	143.144
140.608	143.001
140.666	143
141.88	142.996
145.396	142.987
165.76	142.931
170.639	142.942
190.43	143
193.662	143.091
201.413	143.308
202.91	143.31
209.905	143.483
212.256	143.486
216.044	143.533
220.799	143.61
228.74	143.769
233.581	143.864
240.055	143.994
246.29	144.116
249.014	144.178
254.334	144.284
259.083	144.368
268.35	144.553
271.397	144.613
282.09	144.827
283.248	144.85
289.114	145
290.561	145
291.004	145
293.847	145
294.079	145
294.897	145
295.735	145
297.392	145.908
299.475	147
303.779	147.026
307.699	147.048
315.325	147.101
315.77	147.098

319.666	147.08
324.496	147.067
337.748	147
337.798	146.999
337.804	146.999
350.01	146.752
351.514	146.722
361.883	146.513
364.794	146.454
366.105	146.426
370.416	146.331
374.199	146.251
376.444	146.207
378.978	146.155
385.656	146.023
392.593	145.886
397.761	145.784
406.485	145.612
410.085	145.541
415.321	145.473
419.58	145.44
426.773	145.263
428.072	145.263
436.007	145.041
437.46	145
447.762	144.797
449.164	144.77
459.994	144.557
463.353	144.491
472.562	144.31
477.849	144.206
485.368	144.058
492.661	143.915
498.42	143.801
505.285	143.698
510.764	143.64
513.847	143.638
516.909	143.636
519.953	143.634
522.978	143.632
529.387	143.687
537.506	143.8
543.814	143.927
550.999	144.073
559.479	144.244
564.556	144.346
575.229	144.562
578.177	144.622
591.066	144.882
591.862	144.898
596.908	145
602.692	145.157
603.345	145.157

604.986	145.174
607.15	145.207
619.626	145.459
623.304	145.533
633.498	145.739
639.412	145.859
647.335	146.019
655.475	146.183
661.139	146.297
671.492	146.507
674.909	146.576
687.464	146.829
688.645	146.853
695.918	147
702.465	147.132
703.518	147.154
716.362	147.413
719.644	147.479
730.199	147.692
735.69	147.803
743.977	147.971
751.655	148.126
757.696	148.248
767.54	148.447
771.355	148.524
783.347	148.766
784.957	148.799
794.928	149
798.336	149.012
799.584	149.015
802.272	149.026
809.313	149.051
814.19	149.061
815.343	149.056
825.43	149
826.105	148.999
826.168	148.999
826.795	149
826.896	149
826.916	149
844.081	149.65
852.85	149.878
863.067	150.224
879.695	150.615
884.698	150.759
887.025	150.821
888.251	150.845
896.082	151
906.423	151.035
915.996	151.06
925.977	151.029
926.821	151.026

**CALCULATION BRIEF
SEISMIC SLOPE STABILITY**



Civil & Environmental Consultants, Inc.

PROJECT S.A. Dunn C&D Landfill

PROJECT NO. 182-442

Permit Renewal/Modification Application

PAGE 1 OF 3

Seismic Slope Stability Evaluation

MADE BY ZLM

DATE 1/6/2022

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CALCULATION BRIEF

**S.A. DUNN C&D LANDFILL
PERMIT RENEWAL/MODIFICATION APPLICATION
SEISMIC SLOPE STABILITY**

OBJECTIVE: Evaluate the final and interim (i.e., during waste placement) slope configurations with respect to seismic slope stability at the S.A. Dunn Landfill (Dunn). This evaluation will incorporate the recent operational sequencing modification, addition of the northern mechanically stabilized earth (MSE) wall, and minor revisions to the permitted final grading configuration. The analyses will encompass failure surfaces within the construction and demolition (C&D) waste mass and base liner system. Static Slope Stability Calculations are included under a separate calculation brief.

METHODOLOGY: Utilize the same stability cross-sections and shear strengths as determined in reference number (Ref. No.) 1 to estimate the slope stability under seismic conditions. Use SLIDE slope stability software (Ref. No. 2) to evaluate slope stability by means of a pseudo-static seismic slope stability analysis. Use the methodology described in (Ref No. 3) to determine the pseudo-static factor of safety (FS) for each slope stability cross-section. Perform a seismic deformation analysis if necessary.

- REFERENCES:**
1. "S.A. Dunn C&D Landfill; Permit Renewal/Modification Application; Static Slope Stability Evaluation" (This Permit Application), Civil Environmental Consultants, Inc., prepared January 2022.
 2. Rocscience, Inc. (2021) "SLIDE," Version 9.020.
 3. United States Environmental Protection Agency, RCRA Subtitle D (258) Seismic Design Guidance for Municipal Solid Waste Landfill Facilities, EPA/600/R-95/051, April 1995.
 4. ASCE 7 Hazard Tool, Seismic Hazard Report, generated July 28, 2021.
 5. "Seismic Response of Municipal Solid Waste Landfills", S. Singh.
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Civil & Environmental Consultants, Inc.

PROJECT S.A. Dunn C&D Landfill

PROJECT NO. 182-442

Permit Renewal/Modification Application

PAGE 2 OF 3

Seismic Slope Stability Evaluation

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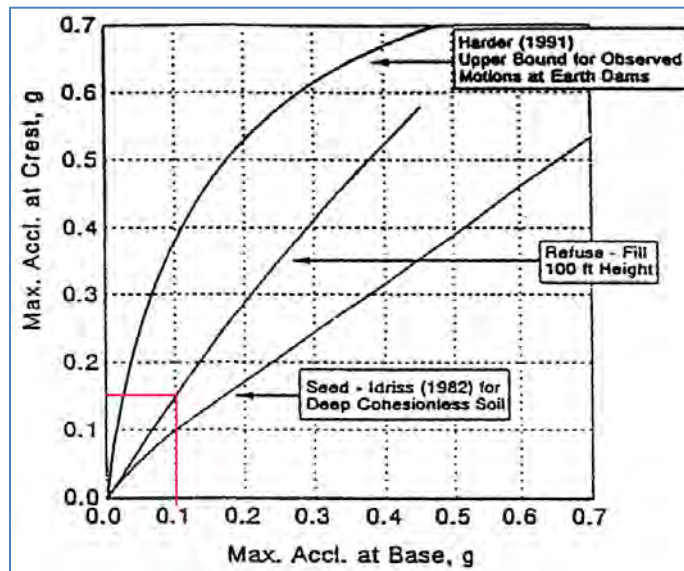
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PSEUDO-STATIC SEISMIC EVALUATION

The same critical cross-sections investigated in the static slope stability analysis were examined in the pseudo-static seismic slope stability analysis in accordance with the procedure outlined in Ref. No. 3. The same shear strength properties for the waste and soil components were used for the pseudo-static analysis. Per the results of the static evaluation, the minimum large-displacement interface shear strength of 12 degrees (°) was used to model the liner system interface along the entire liner system. Per Ref. No. 4, the Maximum Horizontal Acceleration (MHA) with a 10 percent chance of occurring in 250 years is approximately 0.105g. The output Ref. No. 4 has been attached to this calculation brief.

To account for acceleration amplification during a seismic event from the free field PGA through the waste mass, the Refuse-Fill 100 ft Height curve presented on the following figure was used from Ref. No. 5. This resulted in an amplified PGA/design PGA of 0.15g.



A maximum value for the seismic coefficient (k_s) was determined in accordance with Ref. No. 3 as follows. Per Ref. No. 3 the maximum value of the seismic coefficient for use in evaluating the pseudo-static slope stability of the base liner system is equal to one half of a_{max} .

$$k_s = \frac{a_{max}}{2} = \frac{0.15}{2} = 0.075g$$

In accordance with Ref. No. 3, a pseudo-static slope stability analysis was modeled in SLIDE using a seismic coefficient of 0.075g. Similar analyses that were analyzed in Ref. No. 1 were also analyzed under



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PROJECT S.A. Dunn C&D Landfill

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Seismic Slope Stability Evaluation

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Seismic conditions. The slope stability analyses are attached to this calculation brief, and are summarized as follows:

Table 1 – “Failure along the Liner System” Pseudo-Static Analysis Results

Cross-Section	Failure Location	FS
A	Liner System	1.72
B	Liner System	1.75
C	Liner System	2.55
D (Interim)	Liner System	1.18

Table 2 – “Failure in the Waste” Pseudo-Static Analysis Results

A	C&D Waste Mass	1.68
B	C&D Waste Mass	1.68
C	C&D Waste Mass	1.91
D (Interim)	C&D Waste Mass	1.16

Per §363-4.3(d)(1)(i) of the New York State solid waste regulations, the minimum acceptable pseudo-static FS is 1.0 using large-displacement interface shear strength properties. As shown, the pseudo-static FS are all greater than 1.0. As such, it is not necessary to perform further seismic deformation analysis, and the interim and final grading configuration at Dunn is considered stable relative to the peak ground acceleration of 0.15g.

CONCLUSIONS: The calculated FSs indicate that the interim and overall grading configuration at Dunn Landfill will be stable under seismic conditions ($FS \geq 1.0$), for the assumptions and conditions modeled, as described above.

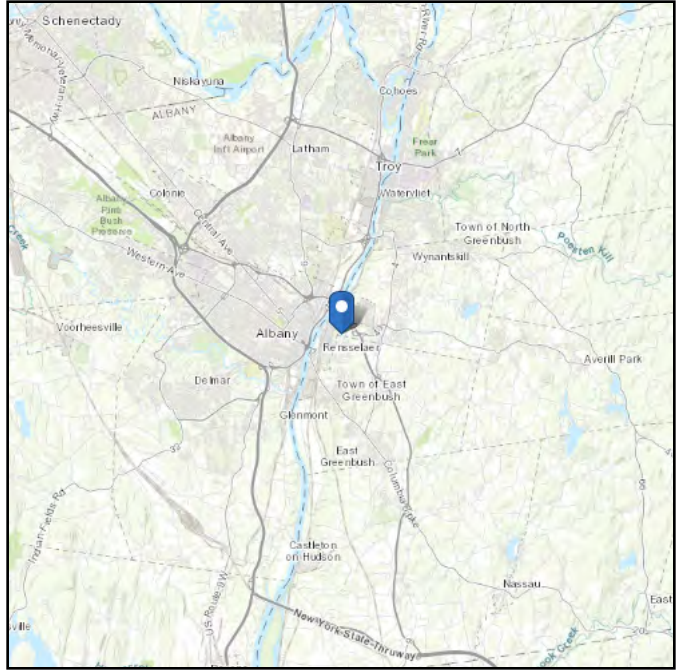
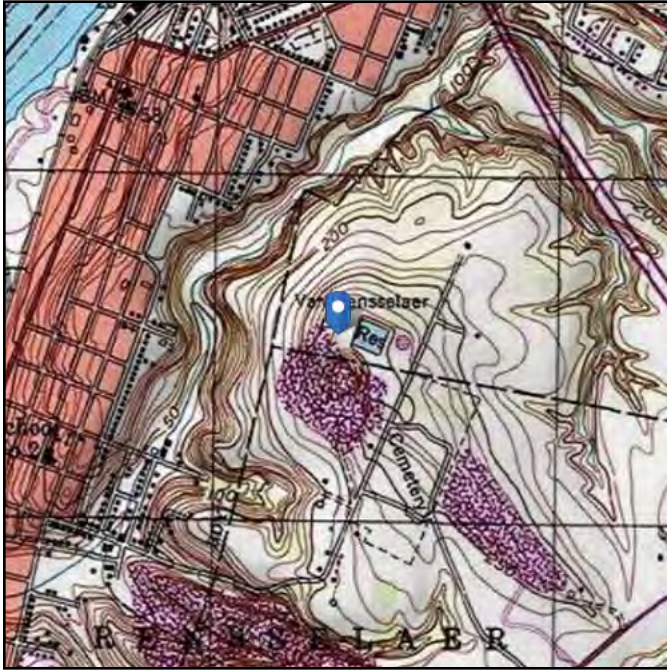
**ASCE 7 SEISMIC HAZARD TOOL
PEAK GROUND ACCELERATION**

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-16
Risk Category: IV
Soil Class: D - Default (see
Section 11.4.3)

Elevation: 292.65 ft (NAVD 88)
Latitude: 42.650107
Longitude: -73.726494

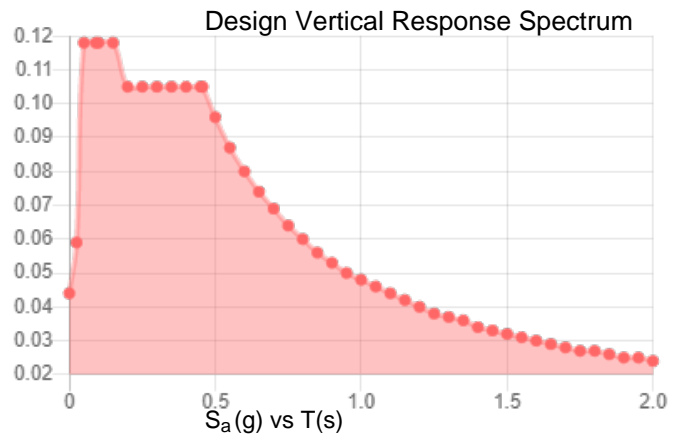
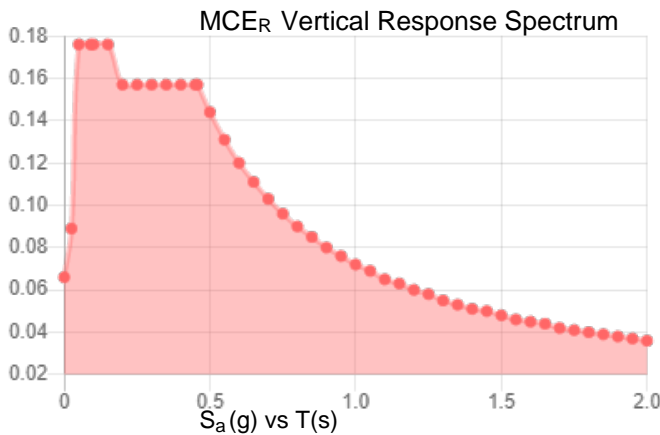
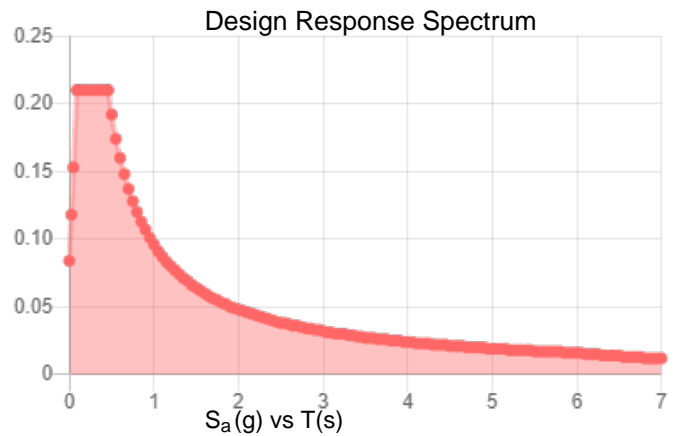
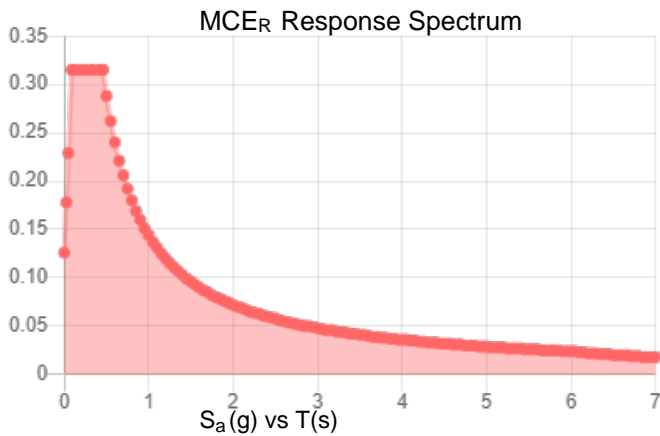


Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_s :	0.197	S_{D1} :	0.096
S_1 :	0.06	T_L :	6
F_a :	1.6	PGA :	0.105
F_v :	2.4	PGA _M :	0.167
S_{MS} :	0.315	F_{PGA} :	1.59
S_{M1} :	0.144	I_e :	1.5
S_{DS} :	0.21	C_v :	0.7

Seismic Design Category C



Data Accessed:

Thu Jul 29 2021

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

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**UNITED STATES GEOLOGIC SURVEY
TECHNICAL Q&A**

Earthquake Hazards 201 - Technical Q&A

- [What is %g?](#)
 - [What is acceleration? peak acceleration? peak ground acceleration \(PGA\)?](#)
 - [What is spectral acceleration \(SA\)?](#)
 - [What is probability of exceedence \(PE\)?](#)
 - [What is the relationship between peak ground acceleration \(PGA\) and "effective peak acceleration" \(Aa\), or between peak ground velocity \(PGV\) and "effective peak velocity" \(Av\) as these parameters appear on building code maps?](#)
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 - [The seismic hazard map is for ground motions having a 2% probability of exceedance in 50 years. Are those values the same as those for 10% in 250?](#)
 - [I am trying to calculate the ground motion effect for a certain location in California. I obtained the design spectrum acceleration from your site, but I would like to identify the soil type of this location - how can I get that?](#)
 - [What is a distance metric? Why is the choice of distance metric important in probability assessments? What distance should I use?](#)
-

What is %g?

[See %g in the Earthquake Glossary.](#)

What is acceleration? peak acceleration? peak ground acceleration (PGA)?

[See acceleration in the Earthquake Glossary.](#)

What is spectral acceleration (SA)?

PGA (peak acceleration) is what is experienced by a particle on the ground, and SA is approximately what is experienced by a building, as modeled by a particle mass on a massless vertical rod having the same natural period of vibration as the building.

The mass on the rod behaves about like a simple harmonic oscillator (SHO). If one "drives" the mass-rod system at its base, using the seismic record, and assuming a certain damping to the mass-rod system, one will get a record of the particle motion which basically "feels" only the components of ground motion with periods near the natural period of this SHO. If we look at this particle seismic record we can identify the maximum displacement. If we take the derivative (rate of change) of the displacement record with respect to time we can get the velocity record. The maximum velocity can likewise be determined. Similarly for response acceleration (rate of change of velocity) also called response spectral acceleration, or simply spectral acceleration, SA (or S_a).

PGA is a good index to hazard for short buildings, up to about 7 stories. To be a good index, means that if you plot some measure of demand placed on a building, like inter story displacement or base shear, against PGA, for a number of different buildings for a number of different earthquakes, you will get a strong correlation.

PGA is a natural simple design parameter since it can be related to a force and for simple design one can design a building to resist a certain horizontal force. PGV, peak ground velocity, is a good index to hazard to taller buildings. However, it is not clear how to relate velocity to force in order to design a taller building.

SA would also be a good index to hazard to buildings, but ought to be more closely related to the building behavior than peak ground motion parameters. Design might also be easier, but the relation to design force is likely to be more complicated than with PGA, because the value of the period comes into the picture.

PGA, PGV, or SA are only approximately related to building demand/design because the building is not a simple oscillator, but has overtones of vibration, each of which imparts maximum demand to different parts of the structure, each part of which may have its own weaknesses. Duration also plays a role in damage, and some argue that duration-related damage is not well-represented by response parameters.

On the other hand, some authors have shown that non-linear response of a certain structure is only weakly dependent on the magnitude and distance of the causative earthquake, so that non-linear response is related to linear response (SA) by a simple scalar (multiplying factor). This is not so for peak ground parameters, and this fact argues that SA ought to be significantly better as an index to demand/design than peak ground motion parameters.

There is no particular significance to the relative size of PGA, SA (0.2), and SA (1.0). On the average, these roughly correlate, with a factor that depends on period. While PGA may reflect what a person might feel standing on the ground in an earthquake, I don't believe it is correct to state that SA reflects what one might "feel" if one is in a building. In taller buildings, short period ground motions are felt only weakly, and long-period motions tend not to be felt as forces, but rather disorientation and dizziness.

What is probability of exceedence (PE)?

For any given site on the map, the computer calculates the ground motion effect (peak acceleration) at the site for all the earthquake locations and magnitudes believed possible in the vicinity of the site. Each of these magnitude-location pairs is believed to happen at some average probability per year. Small ground motions are relatively likely, large ground motions are very unlikely. Beginning with the largest ground motions and proceeding to smaller, we add up probabilities until we arrive at a total probability corresponding to a given probability, P , in a particular period of time, T .

The probability P comes from ground motions larger than the ground motion at which we stopped adding. The corresponding ground motion (peak acceleration) is said to have a P probability of exceedence (PE) in T years. The map contours the ground motions corresponding to this probability at all the sites in a grid covering the U.S. Thus the maps are not actually probability maps, but rather ground motion hazard maps at a given level of probability. In the future we are likely to post maps which are probability maps. They will show the probability of exceedence for some constant ground motion. For instance, one such map may show the probability of a ground motion exceeding 0.20 g in 50 years.

What is the relationship between peak ground acceleration (PGA) and "effective peak acceleration" (Aa), or between peak ground velocity (PGV) and "effective peak velocity" (Av) as these parameters appear on building code maps?

Aa and Av have no clear physical definition, as such. Rather, they are building code constructs, adopted by the staff that produced the Applied Technology Council (1978) (ATC-3) seismic provisions. Maps for Aa and Av were derived by ATC project staff from a draft of the Algermissen and Perkins (1976) probabilistic peak acceleration map (and other maps) in order to provide for design ground motions for use in model building codes. Many aspects of that ATC-3 report have been adopted by the current (in use in 1997) national model building codes, except for the new NEHRP provisions.

This process is explained in the ATC-3 document referenced below, (p 297-302). Here are some excerpts from that document:

- p. 297. "At the present time, the best workable tool for describing the design ground shaking is a smoothed elastic response spectrum for single degree-of-freedom systems...
- p. 298. "In developing the design provisions, two parameters were used to characterize the intensity of design ground shaking. These parameters are called the Effective Peak Acceleration (EPA), Aa, and the Effective Peak Velocity (EPV), Av. These parameters do not at present have precise definitions in physical terms but their significance may be understood from the following paragraphs.
- "To best understand the meaning of EPA and EPV, they should be considered as normalizing factors for construction of smoothed elastic response spectra for ground motions of normal duration. The EPA is proportional to spectral ordinates for periods in the range of 0.1 to 0.5 seconds, while the EPV is proportional to spectral ordinates at a period of about 1 second . . . The constant of proportionality (for a 5 percent damping spectrum) is set at a standard value of 2.5 in both cases.
- "...The EPA and EPV thus obtained are related to peak ground acceleration and peak ground velocity but are not necessarily the same as or even proportional to peak acceleration and velocity. When very high frequencies are present in the ground motion, the EPA may be significantly less than the peak acceleration. This is consistent with the observation that chopping off the spectrum computed from that motion, except at periods much shorter than those of interest in ordinary building practice has very little effect upon the response spectrum computed from that motion, except at periods much shorter than those of interest in ordinary building practice. . . On the other hand, the EPV

will generally be greater than the peak velocity at large distances from a major earthquake..."

- p. 299. "Thus the EPA and EPV for a motion may be either greater or smaller than the peak acceleration and velocity, although generally the EPA will be smaller than peak acceleration while the EPV will be larger than the peak velocity.
- "...For purposes of computing the lateral force coefficient in Sec. 4.2, EPA and EPV are replaced by dimensionless coefficients A_a and A_v respectively. A_a is numerically equal to EPA when EPA is expressed as a decimal fraction of the acceleration of gravity..."

Now, examination of the tripartite diagram of the response spectrum for the 1940 El Centro earthquake (p. 274, Newmark and Rosenblueth, Fundamentals of Earthquake Engineering) verifies that taking response acceleration at .05 percent damping, at periods between 0.1 and 0.5 sec, and dividing by a number between 2 and 3 would approximate peak acceleration for that earthquake. Thus, in this case, effective peak acceleration in this period range is nearly numerically equal to actual peak acceleration.

However, since the response acceleration spectrum is asymptotic to peak acceleration for very short periods, some people have assumed that effective peak acceleration is 2.5 times less than true peak acceleration. This would only be true if one continued to divide response accelerations by 2.5 for periods much shorter than 0.1 sec. But EPA is only defined for periods longer than 0.1 sec.

Effective peak acceleration could be some factor lower than peak acceleration for those earthquakes for which the peak accelerations occur as short-period spikes. This is precisely what effective peak acceleration is designed to do.

On the other hand, the ATC-3 report map limits EPA to 0.4 g even where probabilistic peak accelerations may go to 1.0 g, or larger. THUS EPA IN THE ATC-3 REPORT MAP may be a factor of 2.5 less than than probabilistic peak acceleration for locations where the probabilistic peak acceleration is around 1.0 g.

The following paragraphs describe how the A_a , and A_v maps in the ATC code were constructed.

The USGS 1976 probabilistic ground motion map was considered. Thirteen seismologists were invited to smooth the probabilistic peak acceleration map, taking into account other regional maps and their own regional knowledge. A final map was drawn based upon those smoothing's. Ground motions were truncated at 40 % g in areas where probabilistic values

could run from 40 to greater than 80 % g. This resulted in an Aa map, representing a design basis for buildings having short natural periods. Aa was called "Effective Peak Acceleration."

An attenuation function for peak velocity was "draped" over the Aa map in order to produce a spatial broadening of the lower values of Aa. The broadened areas were denominated Av for "Effective Peak Velocity-Related Acceleration" for design for longer-period buildings, and a separate map drawn for this parameter.

Note that, in practice, the Aa and Av maps were obtained from a PGA map and NOT by applying the 2.5 factors to response spectra.

Note also, that if one examines the ratio of the SA(0.2) value to the PGA value at individual locations in the new USGS national probabilistic hazard maps, the value of the ratio is generally less than 2.5.

Sources of Information:

Algermissen, S.T., and Perkins, David M., 1976, A probabilistic estimate of maximum acceleration in rock in the contiguous United States, U.S. Geological Survey Open-File Report OF 76-416, 45 p.

Applied Technology Council, 1978, Tentative provisions for the development of seismic regulations for buildings, ATC-3-06 (NBS SP-510) U.S Government Printing Office, Washington, 505 p.

What is percent damping?

In our question about response acceleration, we used a simple physical model a particle mass on a mass-less vertical rod to explain natural period. For this ideal model, if the mass is very briefly set into motion, the system will remain in oscillation indefinitely. In a real system, the rod has stiffness which not only contributes to the natural period (the stiffer the rod, the shorter the period of oscillation), but also dissipates energy as it bends. As a result, the oscillation steadily decreases in size, until the mass-rod system is at rest again. This decrease in size of oscillation we call damping. We say the oscillation has damped out.

When the damping is small, the oscillation takes a long time to damp out. When the damping is large enough, there is no oscillation and the mass-rod system takes a long time to return to vertical. Critical damping is the least value of damping for which the damping prevents oscillation. Any particular damping value we can express as a percentage of the critical damping value. Because spectral accelerations are used to represent the effect of earthquake ground motions on buildings, the damping used in the calculation of spectral acceleration

should correspond to the damping typically experienced in buildings for which earthquake design is used. The building codes assume that 5 percent of critical damping is a reasonable value to approximate the damping of buildings for which earthquake-resistant design is intended. Hence, the spectral accelerations given in the seismic hazard maps are also 5 percent of critical damping.

Why do you decluster the earthquake catalog to develop the Seismic Hazard maps?

The primary reason for declustering is to get the best possible estimate for the rate of mainshocks. Also, the methodology requires a catalog of independent events (Poisson model), and declustering helps to achieve independence.

Damage from the earthquake has to be repaired, regardless of how the earthquake is labeled. Some argue that these aftershocks should be counted. This observation suggests that a better way to handle earthquake sequences than declustering would be to explicitly model the clustered events in the probability model. This step could represent a future refinement. The other side of the coin is that these secondary events aren't going to occur without the mainshock. Any potential inclusion of foreshocks and aftershocks into the earthquake probability forecast ought to make clear that they occur in a brief time window near the mainshock, and do not affect the earthquake-free periods except trivially. That is, the probability of no earthquakes with $M > 5$ in a few-year period is or should be virtually unaffected by the declustering process. Also, in the USA experience, aftershock damage has tended to be a small proportion of mainshock damage.

How do I use the seismic hazard maps?

The maps come in three different probability levels and four different ground motion parameters, peak acceleration and spectral acceleration at 0.2, 0.3, and 1.0 sec. (These values are mapped for a given geologic site condition. Other site conditions may increase or decrease the hazard. Also, other things being equal, older buildings are more vulnerable than new ones.)

The maps can be used to determine (a) the relative probability of a given critical level of earthquake ground motion from one part of the country to another; (b) the relative demand on structures from one part of the country to another, at a given probability level. In addition, building codes use one or more of these maps to determine the resistance required by buildings to resist damaging levels of ground motion.

The different levels of probability are those of interest in the protection of buildings against earthquake ground motion. The ground motion parameters are proportional to the hazard faced by a particular kind of building.

Peak acceleration is a measure of the maximum force experienced by a small mass located at the surface of the ground during an earthquake. It is an index to hazard for short stiff structures.

Spectral acceleration is a measure of the maximum force experienced by a mass on top of a rod having a particular natural vibration period. Short buildings, say, less than 7 stories, have short natural periods, say, 0.2-0.6 sec. Tall buildings have long natural periods, say 0.7 sec or longer. A earthquake strong motion record is made up of varying amounts of energy at different periods. A building natural period indicates what spectral part of an earthquake ground-motion time history has the capacity to put energy into the building. Periods much shorter than the natural period of the building or much longer than the natural period do not have much capability of damaging the building. Thus, a map of a probabilistic spectral value at a particular period thus becomes an index to the relative damage hazard to buildings of that period as a function of geographic location.

Choose a ground motion parameter according to the above principles. For many purposes, peak acceleration is a suitable and understandable parameter. Choose a probability value according to the chance you want to take. One can now select a map and look at the relative hazard from one part of the country to another.

If one wants to estimate the probability of exceedance for a particular level of ground motion, one can plot the ground motion values for the three given probabilities, using log-log graph paper and interpolate, or, to a limited extent, extrapolate for the desired probability level. Conversely, one can make the same plot to estimate the level of ground motion corresponding to a given level of probability different from those mapped.

If one wants to estimate the probabilistic value of spectral acceleration for a period between the periods listed, one could use the method reported in the Open File Report 95-596, USGS Spectral Response Maps and Their Use in Seismic Design Forces in Building Codes. (This report can be downloaded from the web-site.) The report explains how to construct a design spectrum in a manner similar to that done in building codes, using a long-period and a short-period probabilistic spectral ordinate of the sort found in the maps. Given the spectrum, a design value at a given spectral period other than the map periods can be obtained.

What if we need to know about total rates of earthquakes with $M > 5$ including aftershocks

Aftershocks and other dependent-event issues are not really addressable at this web site given our modeling assumptions, with one exception. The current National Seismic Hazard model (and this web site) explicitly deals with clustered events in the New Madrid Seismic Zone and gives this clustered-model branch 50% weight in the logic-tree. Even in the NMSZ case, however, only mainshocks are clustered, whereas NMSZ aftershocks are omitted. We are performing research on aftershock-related damage, but how aftershocks should influence the hazard model is currently unresolved.

The seismic hazard map values show ground motions that have a probability of being exceeded in 50 years of 10, 5 and 2 percent. What is the probability of their being exceeded in one year (the annual probability of exceedance)?

Let $r = 0.10, 0.05, \text{ or } 0.02$, respectively. The approximate annual probability of exceedance is the ratio, $r^*/50$, where $r^* = r(1+0.5r)$. (To get the annual probability in percent, multiply by 100.) The inverse of the annual probability of exceedance is known as the "return period," which is the average number of years it takes to get an exceedance.

Example: What is the annual probability of exceedance of the ground motion that has a 10 percent probability of exceedance in 50 years?

Answer: Let $r = 0.10$. The approximate annual probability of exceedance is about $0.10(1.05)/50 = 0.0021$. The calculated return period is 476 years, with the true answer less than half a percent smaller.

The same approximation can be used for $r = 0.20$, with the true answer about one percent smaller. When r is 0.50, the true answer is about 10 percent smaller.

Example: Suppose a particular ground motion has a 10 percent probability of being exceeded in 50 years. What is the probability it will be exceeded in 500 years? Is it $(500/50)^{10} = 100$ percent?

Answer: No. We are going to solve this by equating two approximations:

$r_1^*/T_1 = r_2^*/T_2$. Solving for r_2^* , and letting $T_1=50$ and $T_2=500$,
 $r_2^* = r_1^*(500/50) = .0021(500) = 1.05$.

Take half this value = 0.525. $r_2 = 1.05/(1.525) = 0.69$.

Stop now. Don't try to refine this result.

The true answer is about ten percent smaller, 0.63. For r_2^* less than 1.0 the approximation gets much better quickly.

For $r_2^* = 0.50$, the error is less than 1 percent.

For $r_2^* = 0.70$, the error is about 4 percent.

For $r_2^* = 1.00$, the error is about 10 percent.

Caution is urged for values of r_2^* larger than 1.0, but it is interesting to note that for $r_2^* = 2.44$, the estimate is only about 17 percent too large. This suggests that, keeping the error in mind, useful numbers can be calculated.

Here is an unusual, but useful example. Evidently, r_2^* is the number of times the reference ground motion is expected to be exceeded in T_2 years. Suppose someone tells you that a particular event has a 95 percent probability of occurring in time T . For $r_2 = 0.95$, one would expect the calculated r_2 to be about 20% too high. Therefore, let calculated $r_2 = 1.15$.

The previous calculations suggest the equation,

$$r_{2\text{calc}} = r_2^*/(1 + 0.5r_2^*)$$

$$\text{Find } r_2^*.r_2^* = 1.15/(1 - 0.5 \times 1.15) = 1.15/0.425 = 2.7$$

This implies that for the probability statement to be true, the event ought to happen on the average 2.5 to 3.0 times over a time duration = T . If history does not support this conclusion, the probability statement may not be credible.

The seismic hazard map is for ground motions having a 2% probability of exceedance in 50 years. Are those values the same as those for 10% in 250?

Yes, basically. This conclusion will be illustrated by using an approximate rule-of-thumb for calculating Return Period (RP).

A typical seismic hazard map may have the title, "Ground motions having 90 percent probability of not being exceeded in 50 years." The 90 percent is a "non-exceedance probability"; the 50 years is an "exposure time." An equivalent alternative title for the same map would be, "Ground motions having 10 percent probability of being exceeded in 50 years." A typical shorthand to describe these ground motions is to say that they are 475-year return-

period ground motions. This means the same as saying that these ground motions have an annual probability of occurrence of 1/475 per year. "Return period" is thus just the inverse of the annual probability of occurrence (of getting an exceedance of that ground motion).

To get an approximate value of the return period, RP, given the exposure time, T, and exceedance probability, $r = 1 - \text{non-exceedance probability, NEP}$, (expressed as a decimal, rather than a percent), calculate:

$RP = T / r^*$ Where $r^* = r(1 + 0.5r)$. r^* is an approximation to the value $-\log_e(\text{NEP})$.

In the above case, where $r = 0.10$, $r^* = 0.105$ which is approximately $-\log_e(0.90) = 0.10536$

Thus, approximately, when $r = 0.10$, $RP = T / 0.105$

Consider the following table:

				Rule of Thumb		Exact
NEP	T	r	r*	Calculation	RP	RP
0.90	50	0.10	0.105	50/0.105	476.2	474.6
0.90	100	0.10	0.105	100/0.105	952.4	949.1
0.90	250	0.10	0.105	250/0.105	2381.0	2372.8

In this table, the exceedance probability is constant for different exposure times. Compare the results of the above table with those shown below, all for the same exposure time, with differing exceedance probabilities.

				Rule of Thumb		Exact
NEP	T	r	r*	Calculation	RP	RP
0.90	50	0.10	0.105	50/0.105	476.2	474.6
0.95	50	0.05	0.05125	50/0.05125	975.6	974.8
0.98	50	0.02	0.0202	50/0.0202	2475.2	2475.9

Comparison of the last entry in each table allows us to see that ground motion values having a 2% probability of exceedance in 50 years should be approximately the same as those having 10% probability of being exceeded in 250 years: The annual exceedance probabilities differ by about 4%. Corresponding ground motions should differ by 2% or less in the EUS and 1 percent or less in the WUS, based upon typical relations between ground motion and return period.

I am trying to calculate the ground motion effect for a certain location in California. I obtained the design spectrum acceleration from your site, but I would like to identify the soil type of this location - how can I get that?

You can't find that information at our site.

We don't know any site that has a map of site conditions by National Earthquake Hazard Reduction Program (NEHRP) Building Code category. There is a map of some kind of generalized site condition created by the California Division of Mines and Geology (CDMG). The map is statewide, largely based on surface geology, and can be seen at the web site of the CDMG. It does not have latitude and longitude lines, but if you click on it, it will blow up to give you more detail, in case you can make correlations with geographic features. There is no advice on how to convert the theme into particular NEHRP site categories.

For sites in the Los Angeles area, there are at least three papers in the following publication that will give you either generalized geologic site condition or estimated shear wave velocity for sites in the San Fernando Valley, and other areas in Los Angeles. Look for papers with author/coauthor J.C. Tinsley. This is older work and may not necessarily be more accurate than the CDMG state map for estimating geologic site response.

References

- Ziony, J.I., ed, 1985, Evaluating earthquake hazards in the Los Angeles region--an earth-science perspective, U.S. Geological Survey Professional Paper 1360, US Gov't Printing Office, Washington, 505 p.
- C. J. Wills, et al.; A Site-Conditions Map for California Based on Geology and Shear-Wave Velocity, BSSA, Bulletin Seismological Society of America, December 2000, Vol. 90 Number 6, Part B Supplement, pp. S187-S208. In general, someone using the code is expected either to get the geologic site condition from the local county officials or to have a geotechnical engineer visit the site.

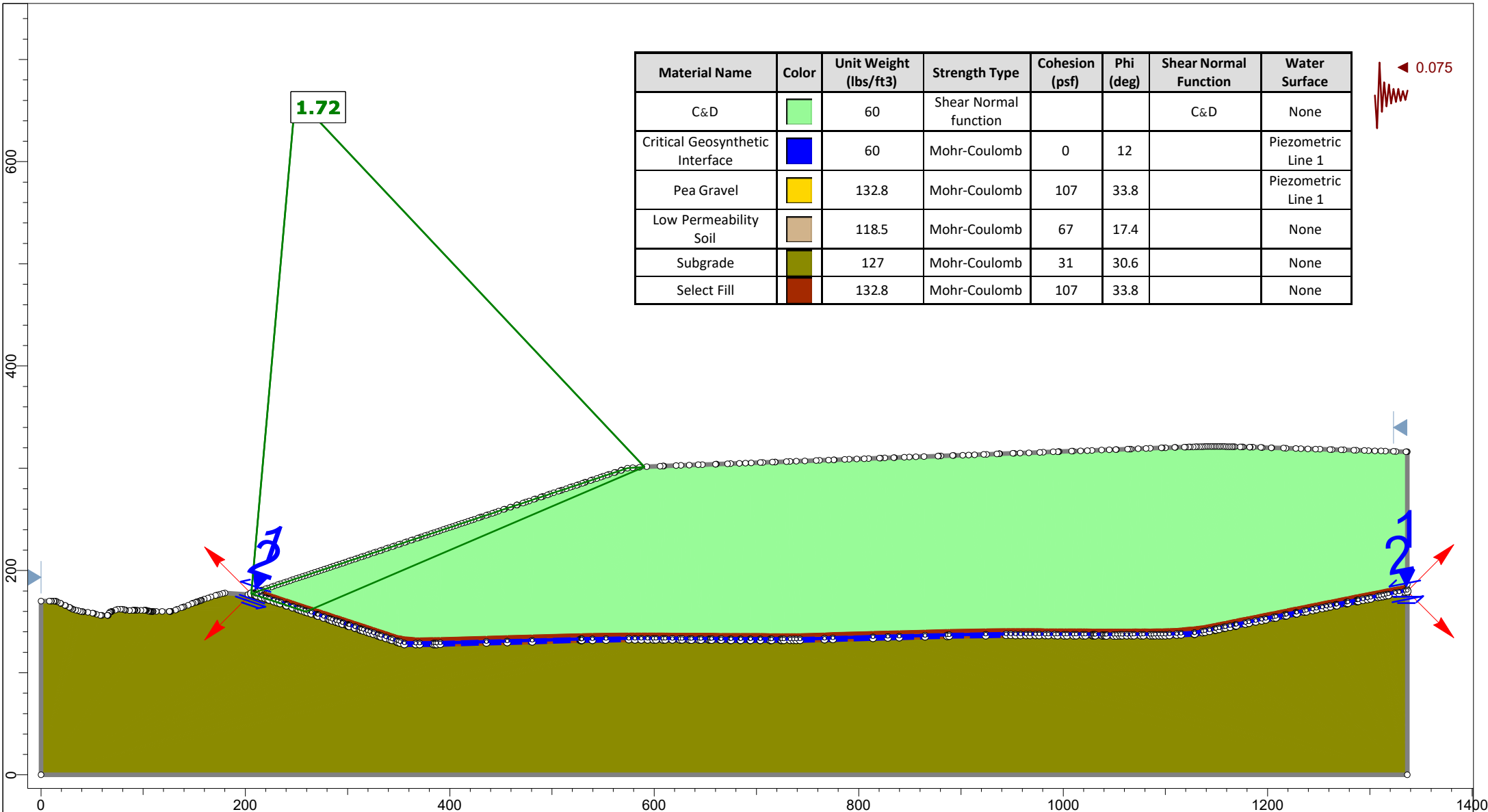
What is a distance metric? Why is the choice of distance metric important in probability assessments? What distance should I use?

For earthquakes, there are several ways to measure how far away it is. The one we use here is the epicentral distance or the distance of the nearest point of the projection of the fault to the Earth surface, technically called R_{jb} . Even if the earthquake source is very deep, more than 50 km deep, it could still have a small epicentral distance, like 5 km. Frequencies of such sources are included in the map if they are within 50 km epicentral distance.

Several cities in the western U.S. have experienced significant damage from earthquakes with hypocentral depth greater than 50 km. These earthquakes represent a major part of the seismic hazard in the Puget Sound region of Washington. If the probability assessment used a cutoff distance of 50 km, for example, and used hypocentral distance rather than epicentral, these deep Puget Sound earthquakes would be omitted, thereby yielding a much lower value for the probability forecast. Another example where distance metric can be important is at sites over dipping faults. The distance reported at this web site is $R_{jb} = 0$, whereas another analysis might use another distance metric which produces a value of $R = 10$ km, for example, for the same site and fault. Thus, if you want to know the probability that a nearby dipping fault may rupture in the next few years, you could input a very small value of Maximum distance, like 1 or 2 km, to get a report of this probability.

This distance (in km not miles) is something you can control. If you are interested only in very close earthquakes, you could make this a small number like 10 or 20 km. If you are interested in big events that might be far away, you could make this number large, like 200 or 500 km. The report will tell you rates of small events as well as large, so you should expect a high rate of M5 earthquakes within 200 km or 500 km of your favorite site, for example. Most of these small events would not be felt. If an M8 event is possible within 200 km of your site, it would probably be felt even at this large of a distance.

**“FAILURE ALONG THE LINER SYSTEM” PSUEDO-STATIC ANALYSIS RESULTS
SLIDE OUTPUT**



Material Name	Color	Unit Weight (lbs/ft ³)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
C&D	Green	60	Shear Normal function			C&D	None
Critical Geosynthetic Interface	Blue	60	Mohr-Coulomb	0	12		Piezometric Line 1
Pea Gravel	Yellow	132.8	Mohr-Coulomb	107	33.8		Piezometric Line 1
Low Permeability Soil	Tan	118.5	Mohr-Coulomb	67	17.4		None
Subgrade	Olive	127	Mohr-Coulomb	31	30.6		None
Select Fill	Red	132.8	Mohr-Coulomb	107	33.8		None



Project		Project: 182-442 S.A. Dunn Permit Renewal/Module 15.18775 A. Application Landfill	
Analysis Description		Section A - Liner System Failure - Seismic	
Scenario		Section A - Liner System Failure - Seismic.slim	
Created By: ZLM	Checked By: TDM	Company: Civil & Environmental Consultants, Inc.	
Created Date: 1/6/2022 12/10/2015 12:09:38 PM	Checked Date: 1/9/2022	File Name: Section A - Liner System Failure - Seismic.slim	

Slide Analysis Information

151-877 S.A. Dunn C&D Landfill

Project Summary

Slide Modeler Version:	9.02
Compute Time:	00h:00m:07.824s
Author:	DVS
Company:	Civil & Environmental Consultants, Inc.
Date Created:	12/10/2015, 12:09:38 PM

General Settings

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

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	GLE/Morgenstern-Price with interslice force function (Half Sine)
Number of slices:	25
Tolerance:	0.005
Maximum number of iterations:	50
Check malpha < 0.2:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft ³]:	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


Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [deg]:	135
Left Projection Angle (End Angle) [deg]:	225
Right Projection Angle (Start Angle) [deg]:	45
Right Projection Angle (End Angle) [deg]:	-45
Minimum Elevation:	Not Defined
Minimum Depth [ft]:	10
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.075

Materials

C&D

Color	
Strength Type	Shear Normal function
Unit Weight [lbs/ft ³]	60
Water Surface	None
Ru Value	0

Pea Gravel

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	Piezometric Line 1
Hu Value	1

Low Permeability Soil

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	118.5
Cohesion [psf]	67
Friction Angle [deg]	17.4
Water Surface	None
Ru Value	0

Subgrade

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	127
Cohesion [psf]	31
Friction Angle [deg]	30.6
Water Surface	None
Ru Value	0

Select Fill

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	None
Ru Value	0

Shear Normal Functions

Name: C&D	
Effective Normal (psf)	Shear (psf)
0	0
2000	1400
10000	6169

Global Minimums

Method: gle/morgenstern-price

FS	1.718690
Axis Location:	248.948, 663.787
Left Slip Surface Endpoint:	205.613, 177.382
Right Slip Surface Endpoint:	590.273, 301.245
Resisting Moment:	1.27074e+08 lb-ft
Driving Moment:	7.39367e+07 lb-ft
Resisting Horizontal Force:	250093 lb
Driving Horizontal Force:	145514 lb
Total Slice Area:	7504.33 ft ²
Surface Horizontal Width:	384.66 ft
Surface Average Height:	19.509 ft

Global Minimum Coordinates**Method: gle/morgenstern-price**

X	Y
205.613	177.382
209.644	175.98
209.889	175.899
211.024	175.525
215.647	174
219.457	172.752
221.753	172
223.198	171.524
227.818	170
231.167	168.903
233.014	168.298
233.924	168
239.731	166.085
239.989	166
246.075	164
250.846	162.432
252.16	162
254.731	161.155
258.246	160
259.228	159.677
590.273	301.245

Global Minimum Support Data

No Supports Present

Slice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.71869

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	4.03156	707.296	-19.1755	Critical Geosynthetic Interface	0	12	14.7724	25.3891	181.834	62.3875	119.447	176.697	114.309
2	0.244676	89.5922	-18.2502	Critical Geosynthetic Interface	0	12	39.6949	68.2233	383.353	62.3875	320.965	370.263	307.876
3	1.135	484.546	-18.2501	Critical Geosynthetic Interface	0	12	47.7275	82.0287	448.302	62.3875	385.915	432.564	370.176
4	4.6233	3146.26	-18.2501	Critical Geosynthetic Interface	0	12	81.6517	140.334	722.609	62.3875	660.222	695.684	633.297
5	3.80952	3745.51	-18.1362	Critical Geosynthetic Interface	0	12	123.1	211.57	1057.75	62.3875	995.36	1017.43	955.039
6	2.29643	2540.04	-18.1362	Critical Geosynthetic Interface	0	12	140.954	242.256	1202.11	62.3875	1139.73	1155.95	1093.56
7	1.44433	1704.71	-18.2501	Critical Geosynthetic Interface	0	12	151.98	261.207	1291.27	62.3875	1228.88	1241.16	1178.77
8	4.62081	6010.87	-18.2501	Critical Geosynthetic Interface	0	12	170.071	292.3	1437.55	62.3875	1375.16	1381.47	1319.08
9	3.34887	4886.43	-18.1367	Critical Geosynthetic Interface	0	12	194.134	333.657	1632.12	62.3875	1569.73	1568.53	1506.14
10	1.84666	2884.76	-18.1367	Critical Geosynthetic Interface	0	12	210.138	361.162	1761.52	62.3875	1699.13	1692.69	1630.3
11	0.910228	1471.66	-18.1367	Critical Geosynthetic Interface	0	12	218.723	375.917	1830.94	62.3875	1768.55	1759.29	1696.9
12	5.80643	10163.3	-18.2501	Critical Geosynthetic Interface	0	12	240.182	412.798	2004.46	62.3875	1942.07	1925.26	1862.87
13	0.258707	484.041	-18.2501	Critical Geosynthetic Interface	0	12	259.682	446.312	2162.12	62.3875	2099.74	2076.49	2014.11
14	6.08554	12152.8	-18.193	Critical Geosynthetic Interface	0	12	280.369	481.868	2329.4	62.3875	2267.02	2237.26	2174.87
15	4.77149	10557.4	-18.1934	Critical Geosynthetic Interface	0	12	316.587	544.115	2622.24	62.3875	2559.85	2518.19	2455.8
16	1.31391	3065.94	-18.1934	Critical Geosynthetic Interface	0	12	337.284	579.687	2789.6	62.3875	2727.21	2678.75	2616.36
17	2.57085	6197.3	-18.1926	Critical Geosynthetic Interface	0	12	350.67	602.693	2897.84	62.3875	2835.45	2782.59	2720.2
18	3.51483	8897.64	-18.1926	Critical Geosynthetic Interface	0	12	371.873	639.134	3069.27	62.3875	3006.88	2947.06	2884.67
19	0.981947	2573.45	-18.1937	Critical Geosynthetic Interface	0	12	387.702	666.34	3197.27	62.3875	3134.88	3069.85	3007.46
20	2.64445	6769.73	23.1535	Pea Gravel	107	33.8	940.455	1616.35	2254.63	0	2254.63	2656.81	2656.81
21	6.61127	15067	23.1535	Select Fill	107	33.8	845.801	1453.67	2011.63	0	2011.63	2373.33	2373.33
22	80.4473	148877	23.1535	C&D	0	34.992	646.76	1111.58	1587.97	0	1587.97	1864.55	1864.55
23	80.4473	112249	23.1535	C&D	1.13687e-13	34.992	461.433	793.061	1132.94	0	1132.94	1330.27	1330.27
24	80.4473	75619	23.1535	C&D	0	34.992	306.368	526.552	752.217	0	752.217	883.232	883.232
25	80.4473	36902.1	23.1535	C&D	0	34.992	154.014	264.703	378.148	0	378.148	444.011	444.011

Interslice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.71869

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	205.613	177.382	0	0	0
2	209.644	175.98	261.61	5.00839	1.09676
3	209.889	175.899	295.561	6.00163	1.16328
4	211.024	175.525	481.332	12.3665	1.47173
5	215.647	174	1725.6	82.1484	2.72555
6	219.457	172.752	3234.84	212.246	3.75394
7	221.753	172	4273.18	326.631	4.37104
8	223.198	171.524	4980.46	414.536	4.7579
9	227.818	170	7508.19	787.524	5.98778
10	231.167	168.903	9584.06	1154.8	6.87055
11	233.014	168.298	10822.4	1396.72	7.35384
12	233.924	168	11457.6	1526.95	7.59106
13	239.731	166.085	15931.8	2548.36	9.08772
14	239.989	166	16147.3	2601.9	9.15369
15	246.075	164	21605.8	4076.92	10.6858
16	250.846	162.432	26441	5552.18	11.8589
17	252.16	162	27860.1	6011.95	12.1772
18	254.731	161.155	30747.7	6982.22	12.7938
19	258.246	160	34936.6	8467.01	13.6232
20	259.228	159.677	36157.2	8915.84	13.852
21	261.872	160.808	35593.9	9179.72	14.4615
22	268.484	163.635	34384.3	9822.07	15.9423
23	348.931	198.038	20767.3	11122.2	28.1719
24	429.378	232.44	10599.8	5962.11	29.3566
25	509.826	266.843	3767.24	1338.06	19.5542
26	590.273	301.245	0	0	0

Discharge Sections

Entity Information

Piezoline

	X	Y
207.158		177.844
209.644		176.98
209.656		176.976
209.673		176.97
209.701		176.961
209.754		176.943
209.889		176.899
211.024		176.525
215.647		175
219.457		173.752
221.753		173
223.198		172.524
227.818		171
231.167		169.903
233.924		169
239.731		167.085

239.989	167
240.158	166.945
246.075	165
250.846	163.432
252.16	163
254.731	162.155
258.246	161
260.564	160.238
264.331	159
269.78	157.209
270.417	157
270.828	156.865
276.502	155
281.239	153.443
282.588	153
284.878	152.247
288.673	151
288.694	150.994
291.145	150.188
294.759	149
294.789	148.99
294.817	148.991
300.025	147.273
300.849	147
300.936	147
301.55	146.798
306.97	145
307.021	145
311.682	143.462
313.072	143
313.082	143
315.185	142.306
319.144	141
321.59	140.197
325.229	139
329.426	137.608
331.256	137
332.629	136.549
337.335	135
341.828	133.529
343.443	133
348.164	131.439
349.492	131
351.137	130.45
355.479	129
366.611	128.944
370.513	128.931
383.965	128.994
385.43	129
387.113	129.048
390.516	129.144
435.781	130.424
456.235	131

480.527	131.667
527.675	132.968
528.433	132.989
528.846	133
528.936	133
528.97	133
529.059	133.001
539.5	133.043
552.72	133.294
575.143	133.619
581.119	133.601
587.25	133.583
593.541	133.565
599.129	133.534
601.589	133.521
608.463	133.488
610.709	133.476
617.792	133.441
625.205	133.405
627.114	133.395
634.744	133.358
636.43	133.349
644.276	133.311
645.74	133.303
653.801	133.264
655.043	133.257
656.126	133.253
664.642	133.216
665.551	133.212
674.288	133.174
675.074	133.171
684.022	133.132
684.619	133.13
693.779	133.09
694.187	133.088
703.562	133.048
703.773	133.047
713.368	133.005
713.392	133.005
714.64	133
723.812	132.994
724.625	132.995
726.778	132.991
732.863	132.987
736.095	132.991
738.943	132.989
742.604	133
766.537	133.668
774.739	133.898
814.017	135
828.404	135.395
839.649	135.705
864.839	136.398

886.554	137
888.573	137.057
924.259	137.663
944.12	137.919
948.68	137.898
953.418	137.877
958.343	137.854
963.659	137.828
967.433	137.811
972.95	137.784
976.521	137.768
982.239	137.739
985.607	137.724
991.527	137.694
994.615	137.677
1000.75	137.646
1003.63	137.631
1009.99	137.599
1012.66	137.584
1019.23	137.551
1021.71	137.539
1028.5	137.505
1029.69	137.499
1030.85	137.495
1031.4	137.492
1038.35	137.463
1040.11	137.456
1041.2	137.452
1042.28	137.45
1049.3	137.42
1052.16	137.449
1055.45	137.483
1057.69	137.531
1062.15	137.526
1066.68	137.507
1069.19	137.568
1075.92	137.51
1078.47	137.582
1085.16	137.513
1087.7	137.49
1090.05	137.577
1093.69	137.552
1096.62	137.674
1099.96	137.645
1103.91	137.833
1111.1	138.173
1115.26	138.472
1128.34	138.992
1128.36	138.993
1128.54	139
1136.54	140.583
1138.64	141
1143.2	141.914

1148.64	143
1149.35	143.143
1152.53	143.786
1157.39	144.767
1158.54	145
1163.34	145.967
1168.47	147
1168.88	147.082
1169.38	147.184
1178.4	149
1181.82	149.688
1188.33	151
1194.13	152.167
1198.27	153
1206.33	154.622
1208.21	155
1216.89	156.747
1218.14	157
1218.36	157.045
1228.05	159
1228.06	159.001
1228.08	159.005
1228.4	159.083
1236.03	160.624
1237.89	161
1244.19	162.271
1247.8	163
1253.54	164.159
1257.71	165
1261.5	165.765
1266.92	166.86
1267.34	166.946
1267.61	167
1277.37	168.971
1277.52	169
1278.54	169.207
1287.42	171
1288.05	171.126
1288.73	171.264
1293.48	172.185
1297.69	173
1300.81	173.606
1308	175
1310.03	175.394
1312.81	175.933
1315.92	176.536
1318.32	177
1324.86	178.267
1328.64	179
1334.83	180.2
1336.61	180.546

Block Search Polyline

X	Y
205.613	177.382
209.644	175.98
209.656	175.976
209.673	175.97
209.701	175.961
209.754	175.943
209.889	175.899
211.024	175.525
215.647	174
219.457	172.752
221.753	172
223.198	171.524
227.818	170
231.167	168.903
233.924	168
239.731	166.085
239.989	166
240.158	165.945
246.075	164
250.846	162.432
252.16	162
254.731	161.155
258.246	160
260.564	159.238
264.331	158
269.78	156.209
270.417	156
270.828	155.865
276.502	154
281.239	152.443
282.588	152
284.878	151.247
288.673	150
288.694	149.994
291.145	149.188
294.759	148
294.789	147.99
294.817	147.991
300.025	146.273
300.849	146
300.936	146
301.55	145.798
306.97	144
307.021	144
311.682	142.462
313.072	142
313.082	142
315.185	141.306
319.144	140
321.59	139.197
325.229	138

329.426	136.608
331.256	136
332.629	135.549
337.335	134
341.828	132.529
343.443	132
348.164	130.439
349.492	130
351.137	129.45
355.479	128
366.611	127.944
370.513	127.931
383.965	127.994
385.43	128
387.113	128.048
390.516	128.144
435.781	129.424
456.235	130
480.527	130.667
527.675	131.968
528.433	131.989
528.846	132
528.936	132
528.97	132
529.059	132.001
539.5	132.043
552.72	132.294
575.143	132.619
581.119	132.601
587.25	132.583
593.541	132.565
599.129	132.534
601.589	132.521
608.463	132.488
610.709	132.476
617.792	132.441
625.205	132.405
627.114	132.395
634.744	132.358
636.43	132.349
644.276	132.311
645.74	132.303
653.801	132.264
655.043	132.257
656.126	132.253
664.642	132.216
665.551	132.212
674.288	132.174
675.074	132.171
684.022	132.132
684.619	132.13
693.779	132.09
694.187	132.088

703.562	132.048
703.773	132.047
713.368	132.005
713.392	132.005
714.64	132
723.812	131.994
724.625	131.995
726.778	131.991
732.863	131.987
736.095	131.991
738.943	131.989
742.604	132
766.537	132.668
774.739	132.898
814.017	134
828.404	134.395
839.649	134.705
864.839	135.398
886.554	136
888.573	136.057
924.259	136.663
944.12	136.919
948.68	136.898
953.418	136.877
958.343	136.854
963.659	136.828
967.433	136.811
972.95	136.784
976.521	136.768
982.239	136.739
985.607	136.724
991.527	136.694
994.615	136.677
1000.75	136.646
1003.63	136.631
1009.99	136.599
1012.66	136.584
1019.23	136.551
1021.71	136.539
1028.5	136.505
1029.69	136.499
1030.85	136.495
1031.4	136.492
1038.35	136.463
1040.11	136.456
1041.2	136.452
1042.28	136.45
1049.3	136.42
1052.16	136.449
1055.45	136.483
1057.69	136.531
1062.15	136.526
1066.68	136.507

1069.19	136.568
1075.92	136.51
1078.47	136.582
1085.16	136.513
1087.7	136.49
1090.05	136.577
1093.69	136.552
1096.62	136.674
1099.96	136.645
1103.91	136.833
1111.1	137.173
1115.26	137.472
1128.34	137.992
1128.36	137.993
1128.54	138
1136.54	139.583
1138.64	140
1143.2	140.914
1148.64	142
1149.35	142.143
1152.53	142.786
1157.39	143.767
1158.54	144
1163.34	144.967
1168.47	146
1168.88	146.082
1169.38	146.184
1178.4	148
1181.82	148.688
1188.33	150
1194.13	151.167
1198.27	152
1206.33	153.622
1208.21	154
1216.89	155.747
1218.14	156
1218.36	156.045
1228.05	158
1228.06	158.001
1228.08	158.005
1228.4	158.083
1236.03	159.624
1237.89	160
1244.19	161.271
1247.8	162
1253.54	163.159
1257.71	164
1261.5	164.765
1266.92	165.86
1267.34	165.946
1267.61	166
1277.37	167.971
1277.52	168

1278.54	168.207
1287.42	170
1288.05	170.126
1288.73	170.264
1293.48	171.185
1297.69	172
1300.81	172.606
1308	174
1310.03	174.394
1312.81	174.933
1315.92	175.536
1318.32	176
1324.86	177.267
1328.64	178
1334.83	179.2
1336.61	179.546

External Boundary

	X	Y
0		170
0		0
1336.61		0
1336.61		177.546
1336.61		179.546
1336.61		180.546
1336.61		181.546
1336.61		186.546
1336.61		316.096
1336		316.115
1335.3		316.135
1325.6		316.421
1323.06		316.496
1315.25		316.726
1310.87		316.855
1304.93		317.03
1298.73		317.212
1294.66		317.332
1286.65		317.568
1284.42		317.634
1274.63		317.923
1272		318
1262.91		318.268
1260.99		318.324
1251.2		318.613
1246.79		318.743
1239.42		318.96
1232.47		319.165
1227.56		319.309
1218.04		319.59
1215.62		319.661
1204.11		320
1203.6		320.015

1194.6	320.266
1193.29	320.302
1185.64	320.515
1183.11	320.585
1182.42	320.604
1175.98	320.783
1174.59	320.814
1173.12	320.841
1167.94	320.981
1166.28	321.002
1165.04	321.034
1163.06	321.079
1161.3	321.092
1159.43	321.127
1157.67	321.154
1155.99	321.174
1154.16	321.179
1152.52	321.192
1150.91	321.199
1149.06	321.196
1147.46	321.198
1145.85	321.194
1144.21	321.184
1142.36	321.173
1140.67	321.157
1138.9	321.134
1137.03	321.105
1135.23	321.085
1133.24	321.046
1131.08	320.997
1129.38	320.97
1127.03	320.908
1124.38	320.829
1122.89	320.798
1119.95	320.7
1118.67	320.668
1109.8	320.35
1109.09	320.328
1100.04	320
1096.88	319.885
1096.03	319.854
1085.1	319.456
1081.1	319.31
1073.4	319.03
1066.29	318.771
1064.86	318.717
1062.97	318.643
1052.18	318.254
1051.41	318.223
1045.12	318
1037.57	317.725
1028.17	317.383
1023.72	317.221

1017.01	316.976
1009.52	316.704
1008.28	316.657
996.063	316.213
995.361	316.186
994.822	316.164
990.2	316
980.627	315.651
977.216	315.527
966.37	315.132
957.811	314.821
951.951	314.607
950.897	314.568
937.869	314.094
937.565	314.082
937.331	314.073
935.278	314
925.128	313.63
922.402	313.531
913.375	313.202
907.52	312.989
901.711	312.778
892.78	312.452
891.981	312.423
880.356	312
878.221	311.922
877.459	311.895
863.902	311.401
855.95	311.111
849.484	310.876
844.499	310.694
834.968	310.347
834.362	310.325
825.434	310
821.354	309.851
820.258	309.812
809.633	309.425
805.404	309.271
797.969	309
790.641	308.733
786.363	308.577
775.969	308.199
775.619	308.186
770.512	308
761.583	307.675
758.397	307.559
747.249	307.153
738.908	306.849
732.814	306.627
729.246	306.497
718.278	306.098
718.107	306.092
715.59	306

706.219	305.659
703.734	305.568
694.724	305.24
689.186	305.038
683.216	304.821
674.618	304.508
671.696	304.402
660.668	304
660.102	303.979
659.927	303.973
647.125	303.507
642.972	303.356
634.19	303.036
626.089	302.741
621.298	302.566
609.277	302.129
608.447	302.098
605.746	302
592.729	301.43
585.533	300.889
578.85	300.522
573.694	300
567.931	298.081
567.688	298
567.55	297.954
561.688	296
560.864	295.725
555.688	294
553.874	293.396
549.687	292
547.513	291.275
543.686	290
539.572	288.629
537.686	288
532.56	286.292
531.685	286
529.672	285.329
525.684	284
523.962	283.426
519.684	282
517.638	281.318
513.683	280
509.776	278.698
507.683	278
506.199	277.506
501.681	276
497.772	274.697
495.681	274
491.005	272.442
489.68	272
489.09	271.803
483.679	270
482.242	269.521

477.679	268
474.189	266.837
471.678	266
466.109	264.144
465.678	264
465.484	263.935
459.677	262
459.258	261.86
453.676	260
452.686	259.67
447.676	258
444.164	256.829
441.675	256
437.62	254.648
435.675	254
431.086	252.47
429.675	252
427.788	251.371
423.674	250
420.757	249.028
417.674	248
414.581	246.969
411.673	246
408.486	244.938
405.673	244
402.391	242.906
399.673	242
396.296	240.874
393.672	240
390.201	238.843
387.672	238
384.105	236.811
381.671	236
378.01	234.78
375.671	234
372.05	232.793
369.671	232
368.183	231.504
363.67	230
362.091	229.474
357.67	228
355.998	227.443
351.669	226
349.905	225.412
345.669	224
343.812	223.381
339.669	222
337.719	221.35
333.668	220
331.626	219.319
327.668	218
325.533	217.288
321.667	216

319.439	215.257
315.667	214
313.346	213.226
309.667	212
307.252	211.195
303.666	210
301.159	209.164
297.666	208
295.065	207.133
291.665	206
288.971	205.102
285.665	204
282.877	203.071
279.665	202
276.783	201.04
273.664	200
270.689	199.008
267.664	198
264.594	196.977
261.663	196
258.5	194.946
255.663	194
252.405	192.914
249.662	192
246.31	190.883
243.662	190
240.215	188.851
237.662	188
234.12	186.82
231.661	186
228.017	184.785
225.662	184
221.802	182.716
219.651	182
216.161	180.832
214.953	180.427
213.677	180
210.543	178.955
208.652	178.325
207.677	178
207.158	177.844
205.613	177.382
202.523	176.456
180.07	178
177.959	177.46
174.783	176.639
172.407	176
170.772	175.495
166.382	174
163.292	173.078
159.725	172
157.032	170.826
156.661	170.683

155.94	170.468
154.715	170
153.182	169.408
152.867	169.312
152.014	169.08
151.049	168.783
148.832	168
147.535	167.52
143.965	166
140.022	164.477
138.788	164
137.479	163.509
133.373	162
131.589	161.309
127.185	160
126.959	159.997
126.25	159.995
125.762	159.993
125.68	159.993
118.478	159.969
112.757	159.986
109.707	159.993
109.569	159.993
109.105	159.994
108.997	159.995
108.065	159.997
107.64	159.997
107.166	160
106.378	160.046
106.193	160.053
106.103	160.054
105.8	160.084
105.495	160.108
104.805	160.417
103.221	160.987
102.599	161.033
102.009	161.037
101.614	161.072
101.055	161.048
100.711	161.052
97.7835	161.058
94.3084	161.041
93.8975	161.022
91.9539	161.147
91.63	161.143
91.4102	161.082
90.2817	161.024
89.9486	161.022
89.707	160.951
86.7014	160.813
82.7048	161.264
82.458	161.296
81.3882	161.545

81.1637	161.594
79.2738	162
77.816	162
75.0666	162
72.9864	161.282
69.3934	160
68.7416	159.768
68.2736	159.597
68.1192	159.514
67.9386	159.38
67.3686	159.119
66.5713	158
65.7493	156.136
65.6836	156
65.5752	156
65.3068	156
65.0401	156
59.6261	156
59.182	156
58.1295	156
54.3138	157.2
51.6407	158
50.8258	158.181
50.3907	158.236
45.9965	158.999
41.4109	159.593
40.813	159.676
40.1879	159.755
38.4792	160
36.2697	160.68
34.0018	161.233
31.409	162
30.6648	162.367
29.2396	163.187
28.1824	163.779
27.7683	164
24.1653	165.56
23.3051	166
19.6494	167.648
18.9426	168
15.9722	169.385
14.4129	170
14.1982	170
12.8502	170
12.4376	170
10.2755	170
9.92074	170
8.21815	170

Material Boundary

	X	Y
202.523	176.456	

209.644	173.98
209.656	173.976
209.673	173.97
209.701	173.961
209.754	173.943
209.889	173.899
211.024	173.525
215.647	172
219.457	170.752
221.753	170
223.198	169.524
227.818	168
231.167	166.903
233.924	166
239.731	164.085
239.989	164
240.158	163.945
246.075	162
250.846	160.432
252.16	160
254.731	159.155
258.246	158
260.564	157.238
264.331	156
269.78	154.209
270.417	154
270.828	153.865
276.502	152
281.239	150.443
282.588	150
284.878	149.247
288.673	148
288.694	147.994
291.145	147.188
294.759	146
294.789	145.99
294.817	145.991
300.025	144.273
300.849	144
300.936	144
301.55	143.798
306.97	142
307.021	142
311.682	140.462
313.072	140
313.082	140
315.185	139.306
319.144	138
321.59	137.197
325.229	136
329.426	134.608
331.256	134
332.629	133.549

337.335	132
341.828	130.529
343.443	130
348.164	128.439
349.492	128
351.137	127.45
355.479	126
366.611	125.944
370.513	125.931
383.965	125.994
385.43	126
387.113	126.048
390.516	126.144
435.781	127.424
456.235	128
480.527	128.667
527.675	129.968
528.433	129.989
528.846	130
528.936	130
528.97	130
529.059	130.001
539.5	130.043
552.72	130.294
575.143	130.619
581.119	130.601
587.25	130.583
593.541	130.565
599.129	130.534
601.589	130.521
608.463	130.488
610.709	130.476
617.792	130.441
625.205	130.405
627.114	130.395
634.744	130.358
636.43	130.349
644.276	130.311
645.74	130.303
653.801	130.264
655.043	130.257
656.126	130.253
664.642	130.216
665.551	130.212
674.288	130.174
675.074	130.171
684.022	130.132
684.619	130.13
693.779	130.09
694.187	130.088
703.562	130.048
703.773	130.047
713.368	130.005

713.392	130.005
714.64	130
723.812	129.994
724.625	129.995
726.778	129.991
732.863	129.987
736.095	129.991
738.943	129.989
742.604	130
766.537	130.668
774.739	130.898
814.017	132
828.404	132.395
839.649	132.705
864.839	133.398
886.554	134
888.573	134.057
924.259	134.663
944.12	134.919
948.68	134.898
953.418	134.877
958.343	134.854
963.659	134.828
967.433	134.811
972.95	134.784
976.521	134.768
982.239	134.739
985.607	134.724
991.527	134.694
994.615	134.677
1000.75	134.646
1003.63	134.631
1009.99	134.599
1012.66	134.584
1019.23	134.551
1021.71	134.539
1028.5	134.505
1029.69	134.499
1030.85	134.495
1031.4	134.492
1038.35	134.463
1040.11	134.456
1041.2	134.452
1042.28	134.45
1049.3	134.42
1052.16	134.449
1055.45	134.483
1057.69	134.531
1062.15	134.526
1066.68	134.507
1069.19	134.568
1075.92	134.51
1078.47	134.582

1085.16	134.513
1087.7	134.49
1090.05	134.577
1093.69	134.552
1096.62	134.674
1099.96	134.645
1103.91	134.833
1111.1	135.173
1115.26	135.472
1128.34	135.992
1128.36	135.993
1128.54	136
1136.54	137.583
1138.64	138
1143.2	138.914
1148.64	140
1149.35	140.143
1152.53	140.786
1157.39	141.767
1158.54	142
1163.34	142.967
1168.47	144
1168.88	144.082
1169.38	144.184
1178.4	146
1181.82	146.688
1188.33	148
1194.13	149.167
1198.27	150
1206.33	151.622
1208.21	152
1216.89	153.747
1218.14	154
1218.36	154.045
1228.05	156
1228.06	156.001
1228.08	156.005
1228.4	156.083
1236.03	157.624
1237.89	158
1244.19	159.271
1247.8	160
1253.54	161.159
1257.71	162
1261.5	162.765
1266.92	163.86
1267.34	163.946
1267.61	164
1277.37	165.971
1277.52	166
1278.54	166.207
1287.42	168
1288.05	168.126

1288.73	168.264
1293.48	169.185
1297.69	170
1300.81	170.606
1308	172
1310.03	172.394
1312.81	172.933
1315.92	173.536
1318.32	174
1324.86	175.267
1328.64	176
1334.83	177.2
1336.61	177.546

Material Boundary

	X	Y
205.613		177.382
209.644		175.98
209.656		175.976
209.673		175.97
209.701		175.961
209.754		175.943
209.889		175.899
211.024		175.525
215.647		174
219.457		172.752
221.753		172
223.198		171.524
227.818		170
231.167		168.903
233.924		168
239.731		166.085
239.989		166
240.158		165.945
246.075		164
250.846		162.432
252.16		162
254.731		161.155
258.246		160
260.564		159.238
264.331		158
269.78		156.209
270.417		156
270.828		155.865
276.502		154
281.239		152.443
282.588		152
284.878		151.247
288.673		150
288.694		149.994
291.145		149.188
294.759		148

294.789	147.99
294.817	147.991
300.025	146.273
300.849	146
300.936	146
301.55	145.798
306.97	144
307.021	144
311.682	142.462
313.072	142
313.082	142
315.185	141.306
319.144	140
321.59	139.197
325.229	138
329.426	136.608
331.256	136
332.629	135.549
337.335	134
341.828	132.529
343.443	132
348.164	130.439
349.492	130
351.137	129.45
355.479	128
366.611	127.944
370.513	127.931
383.965	127.994
385.43	128
387.113	128.048
390.516	128.144
435.781	129.424
456.235	130
480.527	130.667
527.675	131.968
528.433	131.989
528.846	132
528.936	132
528.97	132
529.059	132.001
539.5	132.043
552.72	132.294
575.143	132.619
581.119	132.601
587.25	132.583
593.541	132.565
599.129	132.534
601.589	132.521
608.463	132.488
610.709	132.476
617.792	132.441
625.205	132.405
627.114	132.395

634.744	132.358
636.43	132.349
644.276	132.311
645.74	132.303
653.801	132.264
655.043	132.257
656.126	132.253
664.642	132.216
665.551	132.212
674.288	132.174
675.074	132.171
684.022	132.132
684.619	132.13
693.779	132.09
694.187	132.088
703.562	132.048
703.773	132.047
713.368	132.005
713.392	132.005
714.64	132
723.812	131.994
724.625	131.995
726.778	131.991
732.863	131.987
736.095	131.991
738.943	131.989
742.604	132
766.537	132.668
774.739	132.898
814.017	134
828.404	134.395
839.649	134.705
864.839	135.398
886.554	136
888.573	136.057
924.259	136.663
944.12	136.919
948.68	136.898
953.418	136.877
958.343	136.854
963.659	136.828
967.433	136.811
972.95	136.784
976.521	136.768
982.239	136.739
985.607	136.724
991.527	136.694
994.615	136.677
1000.75	136.646
1003.63	136.631
1009.99	136.599
1012.66	136.584
1019.23	136.551

1021.71	136.539
1028.5	136.505
1029.69	136.499
1030.85	136.495
1031.4	136.492
1038.35	136.463
1040.11	136.456
1041.2	136.452
1042.28	136.45
1049.3	136.42
1052.16	136.449
1055.45	136.483
1057.69	136.531
1062.15	136.526
1066.68	136.507
1069.19	136.568
1075.92	136.51
1078.47	136.582
1085.16	136.513
1087.7	136.49
1090.05	136.577
1093.69	136.552
1096.62	136.674
1099.96	136.645
1103.91	136.833
1111.1	137.173
1115.26	137.472
1128.34	137.992
1128.36	137.993
1128.54	138
1136.54	139.583
1138.64	140
1143.2	140.914
1148.64	142
1149.35	142.143
1152.53	142.786
1157.39	143.767
1158.54	144
1163.34	144.967
1168.47	146
1168.88	146.082
1169.38	146.184
1178.4	148
1181.82	148.688
1188.33	150
1194.13	151.167
1198.27	152
1206.33	153.622
1208.21	154
1216.89	155.747
1218.14	156
1218.36	156.045
1228.05	158

1228.06	158.001
1228.08	158.005
1228.4	158.083
1236.03	159.624
1237.89	160
1244.19	161.271
1247.8	162
1253.54	163.159
1257.71	164
1261.5	164.765
1266.92	165.86
1267.34	165.946
1267.61	166
1277.37	167.971
1277.52	168
1278.54	168.207
1287.42	170
1288.05	170.126
1288.73	170.264
1293.48	171.185
1297.69	172
1300.81	172.606
1308	174
1310.03	174.394
1312.81	174.933
1315.92	175.536
1318.32	176
1324.86	177.267
1328.64	178
1334.83	179.2
1336.61	179.546

Material Boundary

	X	Y
208.652		178.325
209.644		177.98
209.656		177.976
209.673		177.97
209.701		177.961
209.754		177.943
209.889		177.899
211.024		177.525
215.647		176
219.457		174.752
221.753		174
223.198		173.524
227.818		172
231.167		170.903
233.924		170
239.731		168.085
239.989		168
240.158		167.945

246.075	166
250.846	164.432
252.16	164
254.731	163.155
258.246	162
260.564	161.238
264.331	160
269.78	158.209
270.417	158
270.828	157.865
276.502	156
281.239	154.443
282.588	154
284.878	153.247
288.673	152
288.694	151.994
291.145	151.188
294.759	150
294.789	149.99
294.817	149.991
300.025	148.273
300.849	148
300.936	148
301.55	147.798
306.97	146
307.021	146
311.682	144.462
313.072	144
313.082	144
315.185	143.306
319.144	142
321.59	141.197
325.229	140
329.426	138.608
331.256	138
332.629	137.549
337.335	136
341.828	134.529
343.443	134
348.164	132.439
349.492	132
351.137	131.45
355.479	130
366.611	129.944
370.513	129.931
383.965	129.994
385.43	130
387.113	130.048
390.516	130.144
435.781	131.424
456.235	132
480.527	132.667
527.675	133.968

528.433	133.989
528.846	134
528.936	134
528.97	134
529.059	134.001
539.5	134.043
552.72	134.294
575.143	134.619
581.119	134.601
587.25	134.583
593.541	134.565
599.129	134.534
601.589	134.521
608.463	134.488
610.709	134.476
617.792	134.441
625.205	134.405
627.114	134.395
634.744	134.358
636.43	134.349
644.276	134.311
645.74	134.303
653.801	134.264
655.043	134.257
656.126	134.253
664.642	134.216
665.551	134.212
674.288	134.174
675.074	134.171
684.022	134.132
684.619	134.13
693.779	134.09
694.187	134.088
703.562	134.048
703.773	134.047
713.368	134.005
713.392	134.005
714.64	134
723.812	133.994
724.625	133.995
726.778	133.991
732.863	133.987
736.095	133.991
738.943	133.989
742.604	134
766.537	134.668
774.739	134.898
814.017	136
828.404	136.395
839.649	136.705
864.839	137.398
886.554	138
888.573	138.057

924.259	138.663
944.12	138.919
948.68	138.898
953.418	138.877
958.343	138.854
963.659	138.828
967.433	138.811
972.95	138.784
976.521	138.768
982.239	138.739
985.607	138.724
991.527	138.694
994.615	138.677
1000.75	138.646
1003.63	138.631
1009.99	138.599
1012.66	138.584
1019.23	138.551
1021.71	138.539
1028.5	138.505
1029.69	138.499
1030.85	138.495
1031.4	138.492
1038.35	138.463
1040.11	138.456
1041.2	138.452
1042.28	138.45
1049.3	138.42
1052.16	138.449
1055.45	138.483
1057.69	138.531
1062.15	138.526
1066.68	138.507
1069.19	138.568
1075.92	138.51
1078.47	138.582
1085.16	138.513
1087.7	138.49
1090.05	138.577
1093.69	138.552
1096.62	138.674
1099.96	138.645
1103.91	138.833
1111.1	139.173
1115.26	139.472
1128.34	139.992
1128.36	139.993
1128.54	140
1136.54	141.583
1138.64	142
1143.2	142.914
1148.64	144
1149.35	144.143

1152.53	144.786
1157.39	145.767
1158.54	146
1163.34	146.967
1168.47	148
1168.88	148.082
1169.38	148.184
1178.4	150
1181.82	150.688
1188.33	152
1194.13	153.167
1198.27	154
1206.33	155.622
1208.21	156
1216.89	157.747
1218.14	158
1218.36	158.045
1228.05	160
1228.06	160.001
1228.08	160.005
1228.4	160.083
1236.03	161.624
1237.89	162
1244.19	163.271
1247.8	164
1253.54	165.159
1257.71	166
1261.5	166.765
1266.92	167.86
1267.34	167.946
1267.61	168
1277.37	169.971
1277.52	170
1278.54	170.207
1287.42	172
1288.05	172.126
1288.73	172.264
1293.48	173.185
1297.69	174
1300.81	174.606
1308	176
1310.03	176.394
1312.81	176.933
1315.92	177.536
1318.32	178
1324.86	179.267
1328.64	180
1334.83	181.2
1336.61	181.546

Material Boundary

X	Y
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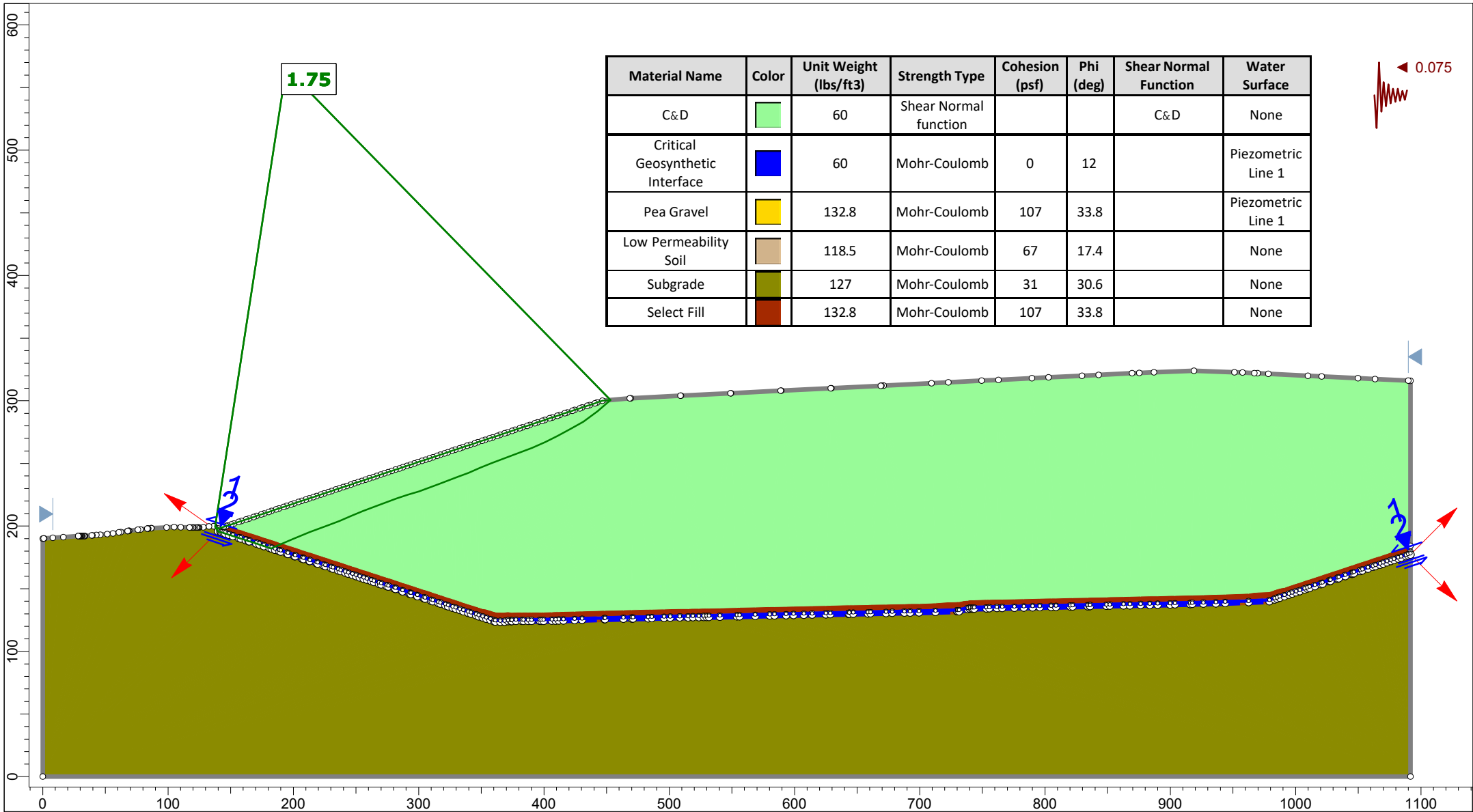
216.161	180.832
219.457	179.752
221.753	179
223.198	178.524
227.818	177
231.167	175.903
233.924	175
239.731	173.085
239.989	173
240.158	172.945
246.075	171
250.846	169.432
252.16	169
254.731	168.155
258.246	167
260.564	166.238
264.331	165
269.78	163.209
270.417	163
270.828	162.865
276.502	161
281.239	159.443
282.588	159
284.878	158.247
288.673	157
288.694	156.994
291.145	156.188
294.759	155
294.789	154.99
294.817	154.991
300.025	153.273
300.849	153
300.936	153
301.55	152.798
306.97	151
307.021	151
311.682	149.462
313.072	149
313.082	149
315.185	148.306
319.144	147
321.59	146.197
325.229	145
329.426	143.608
331.256	143
332.629	142.549
337.335	141
341.828	139.529
343.443	139
348.164	137.439
349.492	137
351.137	136.45
355.479	135

366.611	134.944
370.513	134.931
383.965	134.994
385.43	135
387.113	135.048
390.516	135.144
435.781	136.424
456.235	137
480.527	137.667
527.675	138.968
528.433	138.989
528.846	139
528.936	139
528.97	139
529.059	139.001
539.5	139.043
552.72	139.294
575.143	139.619
581.119	139.601
587.25	139.583
593.541	139.565
599.129	139.534
601.589	139.521
608.463	139.488
610.709	139.476
617.792	139.441
625.205	139.405
627.114	139.395
634.744	139.358
636.43	139.349
644.276	139.311
645.74	139.303
653.801	139.264
655.043	139.257
656.126	139.253
664.642	139.216
665.551	139.212
674.288	139.174
675.074	139.171
684.022	139.132
684.619	139.13
693.779	139.09
694.187	139.088
703.562	139.048
703.773	139.047
713.368	139.005
713.392	139.005
714.64	139
723.812	138.994
724.625	138.995
726.778	138.991
732.863	138.987
736.095	138.991

738.943	138.989
742.604	139
766.537	139.668
774.739	139.898
814.017	141
828.404	141.395
839.649	141.705
864.839	142.398
886.554	143
888.573	143.057
924.259	143.663
944.12	143.919
948.68	143.898
953.418	143.877
958.343	143.854
963.659	143.828
967.433	143.811
972.95	143.784
976.521	143.768
982.239	143.739
985.607	143.724
991.527	143.694
994.615	143.677
1000.75	143.646
1003.63	143.631
1009.99	143.599
1012.66	143.584
1019.23	143.551
1021.71	143.539
1028.5	143.505
1029.69	143.499
1030.85	143.495
1031.4	143.492
1038.35	143.463
1040.11	143.456
1041.2	143.452
1042.28	143.45
1049.3	143.42
1052.16	143.449
1055.45	143.483
1057.69	143.531
1062.15	143.526
1066.68	143.507
1069.19	143.568
1075.92	143.51
1078.47	143.582
1085.16	143.513
1087.7	143.49
1090.05	143.577
1093.69	143.552
1096.62	143.674
1099.96	143.645
1103.91	143.833

1111.1	144.173
1115.26	144.472
1128.34	144.992
1128.36	144.993
1128.54	145
1136.54	146.583
1138.64	147
1143.2	147.914
1148.64	149
1149.35	149.143
1152.53	149.786
1157.39	150.767
1158.54	151
1163.34	151.967
1168.47	153
1168.88	153.082
1169.38	153.184
1178.4	155
1181.82	155.688
1188.33	157
1194.13	158.167
1198.27	159
1206.33	160.622
1208.21	161
1216.89	162.747
1218.14	163
1218.36	163.045
1228.05	165
1228.06	165.001
1228.08	165.005
1228.4	165.083
1236.03	166.624
1237.89	167
1244.19	168.271
1247.8	169
1253.54	170.159
1257.71	171
1261.5	171.765
1266.92	172.86
1267.34	172.946
1267.61	173
1277.37	174.971
1277.52	175
1278.54	175.207
1287.42	177
1288.05	177.126
1288.73	177.264
1293.48	178.185
1297.69	179
1300.81	179.606
1308	181
1310.03	181.394
1312.81	181.933

1315.92	182.536
1318.32	183
1324.86	184.267
1328.64	185
1334.83	186.2
1336.61	186.546



Material Name	Color	Unit Weight (lbs/ft ³)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
C&D	Light Green	60	Shear Normal function			C&D	None
Critical Geosynthetic Interface	Blue	60	Mohr-Coulomb	0	12		Piezometric Line 1
Pea Gravel	Yellow	132.8	Mohr-Coulomb	107	33.8		Piezometric Line 1
Low Permeability Soil	Tan	118.5	Mohr-Coulomb	67	17.4		None
Subgrade	Olive	127	Mohr-Coulomb	31	30.6		None
Select Fill	Brown	132.8	Mohr-Coulomb	107	33.8		None



SLIDEINTERPRET 9.020

Project		182-442 S.A. Dunn Footprint Modification	
Group	Analysis Description	Scenario	
Section B - Liner System Failure - Seismic	Section B - Liner System Failure - Seismic	Section B - Liner System Failure - Seismic.slim	
Drawn By	Checked By: TDM	Company	Civil & Environmental Consultants, Inc.
Date	9/26/2018, Checked Date: 1/9/2022	File Name	Section B - Liner System Failure - Seismic.slim

Slide Analysis Information

182-442 S.A. Dunn Footprint Modification

Project Summary

Slide Modeler Version:	9.02
Compute Time:	00h:00m:38.652s
Author:	DVS
Company:	Civil & Environmental Consultants, Inc.
Date Created:	9/26/2018, 11:46:34 AM

General Settings

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

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	GLE/Morgenstern-Price with interslice force function (Half Sine)
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


Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [deg]:	145
Left Projection Angle (End Angle) [deg]:	225
Right Projection Angle (Start Angle) [deg]:	45
Right Projection Angle (End Angle) [deg]:	-45
Minimum Elevation:	Not Defined
Minimum Depth [ft]:	10
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading


Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.075

Materials


C&D

Color	
Strength Type	Shear Normal function
Unit Weight [lbs/ft ³]	60
Water Surface	None
Ru Value	0


Pea Gravel

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	Piezometric Line 1
Hu Value	1


Low Permeability Soil

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	118.5
Cohesion [psf]	67
Friction Angle [deg]	17.4
Water Surface	None
Ru Value	0

Subgrade

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	127
Cohesion [psf]	31
Friction Angle [deg]	30.6
Water Surface	None
Ru Value	0

Select Fill

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	None
Ru Value	0

Shear Normal Functions

Name: C&D	
Effective Normal (psf)	Shear (psf)
0	0
2000	1400
10000	6169

Global Minimums

Method: gle/morgenstern-price

FS	1.747240
Axis Location:	194.226, 565.588
Left Slip Surface Endpoint:	137.483, 199.535
Right Slip Surface Endpoint:	453.022, 300.561
Resisting Moment:	8.42381e+07 lb-ft
Driving Moment:	4.82121e+07 lb-ft
Resisting Horizontal Force:	220102 lb
Driving Horizontal Force:	125971 lb
Total Slice Area:	6420.12 ft ²
Surface Horizontal Width:	315.54 ft
Surface Average Height:	20.3465 ft

Global Minimum Coordinates

Method: gle/morgenstern-price

X	Y
137.483	199.535
140.028	195.713
141.766	195.149
142.289	194.994
143.045	194.769
144.237	194.414
145.518	194
148.459	193.052
151.716	192
156.612	190.418
157.903	190
161.952	188.689
164.08	188
164.758	187.78
170.247	186
172.895	185.14
176.403	184
181.024	182.497
182.268	182.086
186.43	184.031
199.749	189.79
213.001	195.058
227.651	200.543
236.876	204.076
246.101	208.033
255.329	211.849
264.557	215.343
273.486	218.654
282.417	221.951
291.349	224.951
300.282	227.654
315.77	233.378
331.259	239.327
339.742	242.429
348.933	246.381
358.047	250.047
367.16	253.629
379.275	258.089
390.468	262.306
401.108	267.049
410.912	271.965
421.204	277.543
431.496	283.32
442.8	291.714
453.022	300.561

Global Minimum Support Data

No Supports Present

Slice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.74724

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	2.54541	342.449	-56.3368	Subgrade	31	30.6	134.741	235.425	345.664	0	345.664	143.347	143.347
2	1.73757	620.427	-17.9725	Critical Geosynthetic Interface	0	12	38.8325	67.8497	381.598	62.3898	319.208	369.001	306.611
3	0.522929	237.787	-16.551	Critical Geosynthetic Interface	0	12	51.315	89.6597	484.206	62.3898	421.816	468.956	406.567
4	0.756555	384.503	-16.551	Critical Geosynthetic Interface	0	12	58.2833	101.835	541.486	62.3898	479.096	524.165	461.775
5	1.19178	702.8	-16.551	Critical Geosynthetic Interface	0	12	68.9459	120.465	629.132	62.3898	566.742	608.643	546.253
6	1.28149	891.117	-17.9236	Critical Geosynthetic Interface	0	12	83.2439	145.447	746.665	62.3898	684.275	719.74	657.35
7	2.9402	2565.99	-17.8782	Critical Geosynthetic Interface	0	12	107.012	186.976	942.04	62.3898	879.65	907.521	845.131
8	3.25728	3350.96	-17.8921	Critical Geosynthetic Interface	0	12	128.875	225.176	1121.76	62.3898	1059.37	1080.15	1017.76
9	4.89629	5823.09	-17.9103	Critical Geosynthetic Interface	0	12	152.424	266.322	1315.34	62.3898	1252.95	1266.07	1203.68
10	1.29095	1692.61	-17.9242	Critical Geosynthetic Interface	0	12	170.659	298.183	1465.23	62.3898	1402.84	1410.03	1347.64
11	4.04873	5734.51	-17.9425	Critical Geosynthetic Interface	0	12	186.754	326.304	1597.53	62.3898	1535.14	1537.06	1474.67
12	2.12828	3273.55	-17.9381	Critical Geosynthetic Interface	0	12	205.636	359.296	1752.75	62.3898	1690.36	1686.18	1623.79
13	0.677532	1079.6	-17.9564	Critical Geosynthetic Interface	0	12	214.358	374.534	1824.43	62.3898	1762.04	1754.96	1692.57
14	5.48926	9414.47	-17.9703	Critical Geosynthetic Interface	0	12	233.83	408.558	1984.5	62.3898	1922.11	1908.65	1846.26
15	2.64813	4966.9	-17.9887	Critical Geosynthetic Interface	0	12	259.982	454.251	2199.47	62.3898	2137.08	2115.06	2052.67
16	3.50846	7006.98	-18.0026	Critical Geosynthetic Interface	0	12	280.226	489.622	2365.88	62.3898	2303.49	2274.81	2212.42
17	4.62083	9970.51	-18.0211	Critical Geosynthetic Interface	0	12	307.504	537.284	2590.11	62.3898	2527.72	2490.07	2427.68
18	1.24348	2827.38	-18.2716	Critical Geosynthetic Interface	0	12	328.176	573.403	2760.04	62.3898	2697.65	2651.68	2589.29
19	1.25629	2835.51	25.0479	Pea Gravel	107	33.8	796.897	1392.37	1951.24	31.1743	1920.07	2323.65	2292.48
20	1.25692	2732.72	25.0479	Pea Gravel	107	33.8	780.643	1363.97	1877.64	0	1877.64	2242.46	2242.46
21	1.64861	3426.32	25.0479	Select Fill	107	33.8	749.17	1308.98	1795.5	0	1795.5	2145.61	2145.61
22	4.85632	9106.1	23.3839	Select Fill	107	33.8	695.463	1215.14	1655.32	0	1655.32	1956.04	1956.04
23	8.46271	14397.9	23.3839	C&D	0	34.992	602.07	1051.96	1502.8	0	1502.8	1763.14	1763.14
24	6.62619	11021.9	21.677	C&D	0	34.992	596.764	1042.69	1489.56	0	1489.56	1726.76	1726.76
25	6.62619	10852.5	21.677	C&D	0	34.992	584.041	1020.46	1457.8	0	1457.8	1689.95	1689.95
26	7.32498	11837.2	20.5251	C&D	0	34.992	581.712	1016.39	1451.99	0	1451.99	1669.77	1669.77
27	7.32498	11704.6	20.5251	C&D	0	34.992	571.73	998.95	1427.07	0	1427.07	1641.11	1641.11
28	9.22499	14530	20.9582	C&D	1.13687e-13	34.992	556.123	971.681	1388.12	0	1388.12	1601.13	1601.13

29	9.22512	14158.5	23.2182	C&D	1.13687e-13	34.992	519.454	907.61	1296.59	0	1296.59	1519.42	1519.42
30	9.22759	13712.6	22.4669	C&D	1.13687e-13	34.992	504.259	881.061	1258.66	0	1258.66	1467.19	1467.19
31	9.22796	13391.9	20.7374	C&D	0	34.992	502.009	877.13	1253.05	0	1253.05	1443.11	1443.11
32	8.9298	12757.1	20.3443	C&D	0	34.992	493.83	862.839	1232.63	0	1232.63	1415.73	1415.73
33	8.93074	12582.5	20.2614	C&D	0	34.992	484.507	846.55	1209.35	0	1209.35	1388.21	1388.21
34	8.93174	12491.6	18.5657	C&D	1.13687e-13	34.992	491.574	858.898	1227	0	1227	1392.11	1392.11
35	8.93269	12559.8	16.8356	C&D	0	34.992	505.761	883.686	1262.41	0	1262.41	1415.45	1415.45
36	15.4881	21642.7	20.2819	C&D	1.13687e-13	34.992	471.189	823.281	1176.12	0	1176.12	1350.25	1350.25
37	7.74464	10599.8	21.0121	C&D	0	34.992	453.287	792.002	1131.43	0	1131.43	1305.54	1305.54
38	7.74464	10416.6	21.0121	C&D	0	34.992	443.993	775.763	1108.23	0	1108.23	1278.77	1278.77
39	8.48253	11238.6	20.0878	C&D	1.13687e-13	34.992	442.466	773.095	1104.42	0	1104.42	1266.23	1266.23
40	9.19141	11856.7	23.2654	C&D	0	34.992	409.247	715.053	1021.5	0	1021.5	1197.46	1197.46
41	9.11376	11341.4	21.9112	C&D	1.13687e-13	34.992	402.669	703.56	1005.09	0	1005.09	1167.05	1167.05
42	9.1138	11020.4	21.4565	C&D	1.13687e-13	34.992	393.748	687.973	982.819	0	982.819	1137.57	1137.57
43	12.115	14297.7	20.2093	C&D	0	34.992	391.027	683.218	976.026	0	976.026	1119.97	1119.97
44	11.1927	12903.5	20.645	C&D	0	34.992	379.959	663.879	948.399	0	948.399	1091.56	1091.56
45	10.6402	11728.7	24.0252	C&D	0	34.992	349.584	610.808	872.58	0	872.58	1028.41	1028.41
46	9.80354	9969.11	26.6315	C&D	1.13687e-13	34.992	315.302	550.908	787.011	0	787.011	945.12	945.12
47	10.2924	9293.37	28.458	C&D	5.68434e-14	34.992	277.629	485.084	692.976	0	692.976	843.453	843.453
48	10.2916	7904.36	29.3061	C&D	5.68434e-14	34.992	237.667	415.262	593.231	0	593.231	726.637	726.637
49	11.3039	6316.37	36.5982	C&D	0	34.992	164.493	287.408	410.583	0	410.583	532.738	532.738
50	10.2225	2326.99	40.8727	C&D	0	34.992	66.1861	115.643	165.205	0	165.205	222.482	222.482

Interslice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.74724

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	137.483	199.535	0	0	0
2	140.028	195.713	1638.42	22.4291	0.7843
3	141.766	195.149	1874.45	43.1682	1.31928
4	142.289	194.994	1958.7	50.6119	1.48017
5	143.045	194.769	2095.7	62.6685	1.71283
6	144.237	194.414	2347.98	85.2352	2.07901
7	145.518	194	2697.31	116.458	2.47224
8	148.459	193.052	3712.95	218.762	3.37189
9	151.716	192	5061.02	386.155	4.3632
10	156.612	190.418	7452.04	762.123	5.83936
11	157.903	190	8157.24	889.79	6.2252
12	161.952	188.689	10577.7	1378.41	7.42454
13	164.08	188	11977.4	1693.52	8.04787
14	164.758	187.78	12442.3	1802.97	8.24514
15	170.247	186	16553	2865.64	9.82165
16	172.895	185.14	18760.2	3499.71	10.567
17	176.403	184	21915.3	4473.84	11.538
18	181.024	182.497	26482.1	6009.56	12.7855
19	182.268	182.086	27811.2	6479.51	13.1149
20	183.524	182.673	27454.1	6563.18	13.4448
21	184.781	183.261	27127.5	6649.04	13.7719
22	186.43	184.031	26722.3	6760	14.1964
23	191.286	186.131	25940.7	7153.09	15.4161
24	199.749	189.79	24456.8	7676.13	17.4252
25	206.375	192.424	23661.2	8096.15	18.8894
26	213.001	195.058	22877.7	8441.53	20.2533
27	220.326	197.8	22269.1	8835.39	21.641
28	227.651	200.543	21665.6	9151.93	22.9
29	236.876	204.076	20801.3	9392.3	24.3003
30	246.101	208.033	19400.4	9250.6	25.493
31	255.329	211.849	18222.1	9076.64	26.4784
32	264.557	215.343	17472.3	9001.67	27.2574
33	273.486	218.654	16844	8886.8	27.8159
34	282.417	221.951	16240.4	8702	28.1835
35	291.349	224.951	16013.2	8644.31	28.3612
36	300.282	227.654	16176.8	8728.23	28.3492
37	315.77	233.378	15119.7	7998.31	27.8788
38	323.514	236.352	14469.5	7509.47	27.4287
39	331.259	239.327	13830.1	6996.48	26.8343
40	339.742	242.429	13314.4	6498.7	26.0168
41	348.933	246.381	12149.9	5648.39	24.9333
42	358.047	250.047	11284.7	4943.2	23.6556
43	367.16	253.629	10526.2	4290.41	22.1755
44	379.275	258.089	9838.41	3561.19	19.8986
45	390.468	262.306	9123.92	2875.18	17.491
46	401.108	267.049	7825.32	2089.05	14.9471
47	410.912	271.965	6299.77	1385.45	12.4031
48	421.204	277.543	4594.43	773.199	9.55282
49	431.496	283.32	3020.6	347.065	6.55451
50	442.8	291.714	959.662	52.6747	3.14174
51	453.022	300.561	0	0	0

Discharge Sections

Entity Information

Piezoline

X	Y
140.028	196.713

141.766	196.149
142.289	195.994
143.045	195.769
144.237	195.414
145.518	195
148.459	194.052
151.716	193
156.612	191.418
157.903	191
161.952	189.689
164.08	189
164.758	188.78
170.247	187
172.895	186.14
176.403	185
181.024	183.497
182.529	183
185.376	182.065
188.619	181
189.923	180.575
194.757	179
195.648	178.71
200.895	177
201.373	176.844
207.034	175
207.098	174.979
207.993	174.687
212.823	173.114
213.172	173
218.549	171.248
219.311	171
224.274	169.383
225.449	169
230	167.518
231.588	167
235.725	165.651
237.722	165
241.444	163.784
243.846	163
247.162	161.917
249.97	161
252.88	160.05
256.093	159
258.598	158.182
262.216	157
264.316	156.314
268.34	155
270.035	154.446
274.463	153
275.754	152.578
280.585	151
281.473	150.71
286.71	149

287.186	148.844
292.824	147
292.886	146.98
293.74	146.7
298.583	145.115
298.935	145
304.279	143.251
305.047	143
309.976	141.387
311.159	141
315.674	139.523
317.272	139
321.371	137.659
323.386	137
327.069	135.795
329.5	135
332.77	133.931
335.619	133
339.508	131.716
341.678	131
345.692	129.704
347.866	129
350.959	127.992
354.006	127
357.278	125.924
360.089	125
361.133	124.745
365.215	124.477
368.707	124.493
371.484	125
373.654	125.03
374.386	125.08
377.631	125.239
382.427	125.316
383.677	125.244
387.287	125.197
390.059	125.187
396.735	125.233
398.019	125.268
399.749	125.314
406.24	125.429
409.208	125.512
411.915	125.585
415.53	125.683
424.48	125.93
430.485	126.131
448.199	126.599
448.732	126.618
463.334	127
470.097	127.145
471.17	127.168
483.106	127.425
486.086	127.487

495.863	127.696
500.697	127.797
508.409	127.961
515.014	128.097
518.981	128.181
523.614	128.281
527.447	128.363
529.69	128.406
531.66	128.441
540.373	128.637
554.05	128.953
556.089	129
568.694	129.288
580.167	129.531
584.066	129.617
593.259	129.813
599.175	129.945
607.386	130.128
614.024	130.271
624.97	130.517
628.615	130.596
643.158	130.917
643.782	130.931
646.896	131
658.497	131.248
660.64	131.294
673.082	131.561
677.922	131.665
687.656	131.874
692.236	131.971
699.35	132.123
712.535	132.48
729.855	132.992
730.239	132.992
731.42	133
738.245	134.694
739.951	135
740.007	135.001
741.701	135.015
742.332	135.017
743.317	135.019
753.154	135.287
755.462	135.336
761.566	135.471
765.71	135.559
775.589	135.763
783.012	135.917
790.009	136.066
795.683	136.184
804.848	136.379
808.664	136.459
820.13	136.704
821.971	136.743

833.961	137
835.574	137.035
835.855	137.041
849.047	137.327
851.677	137.384
862.588	137.62
867.593	137.729
876.198	137.915
883.605	138.076
889.878	138.211
899.713	138.425
903.628	138.509
915.919	138.776
917.449	138.809
926.274	139
936.214	139.29
943.717	139.589
962.389	140.22
979.061	141
983.234	142.38
985.11	143
987.287	143.719
991.16	145
994.524	146.112
997.209	147
1000.33	148.033
1003.26	149
1007.19	150.301
1009.31	151
1011.14	151.607
1015.36	153
1020.26	154.621
1021.41	155
1027.04	156.861
1027.46	157
1027.82	157.12
1033.5	159
1034.29	159.258
1039.55	161
1044.85	162.749
1045.6	163
1046.49	163.294
1051.65	165
1053.18	165.503
1057.7	167
1061.67	168.313
1063.75	169
1067.3	170.173
1069.8	171
1072.91	172.028
1075.85	173
1078.52	173.882
1081.9	175

1084.13	175.737
1087.95	177
1089.74	177.591
1091.61	178.21

Block Search Polyline

X	Y
140.028	195.713
141.766	195.149
142.289	194.994
143.045	194.769
144.237	194.414
145.518	194
148.459	193.052
151.716	192
156.612	190.418
157.903	190
161.952	188.689
164.08	188
164.758	187.78
170.247	186
172.895	185.14
176.403	184
181.024	182.497
182.529	182
185.376	181.065
188.619	180
189.923	179.575
194.757	178
195.648	177.71
200.895	176
201.373	175.844
207.034	174
207.098	173.979
207.993	173.687
212.823	172.114
213.172	172
218.549	170.248
219.311	170
224.274	168.383
225.449	168
230	166.518
231.588	166
235.725	164.651
237.722	164
241.444	162.784
243.846	162
247.162	160.917
249.97	160
252.88	159.05
256.093	158
258.598	157.182

262.216	156
264.316	155.314
268.34	154
270.035	153.446
274.463	152
275.754	151.578
280.585	150
281.473	149.71
286.71	148
287.186	147.844
292.824	146
292.886	145.98
293.74	145.7
298.583	144.115
298.935	144
304.279	142.251
305.047	142
309.976	140.387
311.159	140
315.674	138.523
317.272	138
321.371	136.659
323.386	136
327.069	134.795
329.5	134
332.77	132.931
335.619	132
339.508	130.716
341.678	130
345.692	128.704
347.866	128
350.959	126.992
354.006	126
357.278	124.924
360.089	124
361.133	123.745
365.215	123.477
368.707	123.493
371.484	124
373.654	124.03
374.386	124.08
377.631	124.239
382.427	124.316
383.677	124.244
387.287	124.197
390.059	124.187
396.735	124.233
398.019	124.268
399.749	124.314
406.24	124.429
409.208	124.512
411.915	124.585
415.53	124.683

424.48	124.93
430.485	125.131
448.199	125.599
448.732	125.618
463.334	126
470.097	126.145
471.17	126.168
483.106	126.425
486.086	126.487
495.863	126.696
500.697	126.797
508.409	126.961
515.014	127.097
518.981	127.181
523.614	127.281
527.447	127.363
529.69	127.406
531.66	127.441
540.373	127.637
554.05	127.953
556.089	128
568.694	128.288
580.167	128.531
584.066	128.617
593.259	128.813
599.175	128.945
607.386	129.128
614.024	129.271
624.97	129.517
628.615	129.596
643.158	129.917
643.782	129.931
646.896	130
658.497	130.248
660.64	130.294
673.082	130.561
677.922	130.665
687.656	130.874
692.236	130.971
699.35	131.123
712.535	131.48
729.855	131.992
730.239	131.992
731.42	132
738.245	133.694
739.951	134
740.007	134.001
741.701	134.015
742.332	134.017
743.317	134.019
753.154	134.287
755.462	134.336
761.566	134.471

765.71	134.559
775.589	134.763
783.012	134.917
790.009	135.066
795.683	135.184
804.848	135.379
808.664	135.459
820.13	135.704
821.971	135.743
833.961	136
835.574	136.035
835.855	136.041
849.047	136.327
851.677	136.384
862.588	136.62
867.593	136.729
876.198	136.915
883.605	137.076
889.878	137.211
899.713	137.425
903.628	137.509
915.919	137.776
917.449	137.809
926.274	138
936.214	138.29
943.717	138.589
962.389	139.22
979.061	140
983.234	141.38
985.11	142
987.287	142.719
991.16	144
994.524	145.112
997.209	146
1000.33	147.033
1003.26	148
1007.19	149.301
1009.31	150
1011.14	150.607
1015.36	152
1020.26	153.621
1021.41	154
1027.04	155.861
1027.46	156
1027.82	156.12
1033.5	158
1034.29	158.258
1039.55	160
1044.85	161.749
1045.6	162
1046.49	162.294
1051.65	164
1053.18	164.503

1057.7	166
1061.67	167.313
1063.75	168
1067.3	169.173
1069.8	170
1072.91	171.028
1075.85	172
1078.52	172.882
1081.9	174
1084.13	174.737
1087.95	176
1089.74	176.591
1091.61	177.21

External Boundary

	X	Y
0		189.907
0		0
1091.61		0
1091.61		175.21
1091.61		177.21
1091.61		178.21
1091.61		179.21
1091.61		184.21
1091.61		315.915
1089.91		316
1063.4		317.322
1049.79		318
1020.8		319.445
1009.68		320
978.207		321.569
969.56		322
967.034		322.1
957.494		322.477
951.058		322.728
918.857		324
886.821		322.699
875.264		322.234
869.428		322
842.625		320.66
829.419		320
802.655		318.662
789.411		318
762.684		316.664
749.402		316
722.713		314.666
709.393		314
671.066		312.084
669.384		312
668.793		311.97
629.376		310
628.822		309.972

589.367	308
588.85	307.974
549.358	306
548.879	305.976
509.349	304
508.907	303.978
469.34	302
468.527	301.928
446.661	300
442.399	298.58
440.658	298
436.441	296.595
434.656	296
430.483	294.609
428.654	294
424.525	292.624
422.652	292
418.566	290.639
416.65	290
412.608	288.653
410.647	288
406.65	286.668
404.645	286
400.692	284.683
398.643	284
394.734	282.697
392.641	282
388.775	280.712
386.639	280
382.817	278.727
380.636	278
376.859	276.741
374.634	276
370.9	274.756
368.632	274
364.942	272.77
362.63	272
358.984	270.785
356.628	270
353.025	268.8
350.625	268
347.067	266.814
344.623	266
341.108	264.829
338.621	264
335.15	262.843
332.619	262
329.191	260.858
326.617	260
323.233	258.872
320.614	258
317.274	256.887
314.612	256

311.316	254.902
308.61	254
305.357	252.916
302.608	252
299.398	250.931
296.606	250
293.44	248.945
290.603	248
287.481	246.96
284.601	246
281.522	244.974
278.599	244
275.563	242.989
272.597	242
269.605	241.003
266.595	240
263.646	239.017
260.592	238
257.687	237.032
254.59	236
251.728	235.046
248.588	234
245.769	233.061
242.586	232
239.81	231.075
236.583	230
233.851	229.09
230.581	228
227.892	227.104
224.579	226
221.933	225.118
218.577	224
215.974	223.133
212.575	222
210.015	221.147
206.572	220
204.056	219.162
200.57	218
198.097	217.176
194.568	216
192.138	215.19
188.566	214
186.179	213.205
182.564	212
180.22	211.219
176.561	210
174.261	209.233
170.559	208
168.301	207.248
164.557	206
162.342	205.262
158.555	204
156.383	203.276

152.553	202
150.424	201.291
147.568	200.339
146.55	200
144.336	199.263
140.538	198
140.028	197.831
137.04	199.831
136.822	199.82
136.281	199.806
132.588	199.709
128.132	198.907
124.832	198.717
124.43	198.72
123.832	198.73
123.354	198.751
122.743	198.757
121.425	198.812
120.213	198.857
119.938	198.854
119.584	198.87
118.385	198.849
117.235	198.834
117.034	198.833
110.132	198.987
104.818	199.102
98.8143	198.859
86.6552	198.181
86.5428	198.179
84.1379	198
83.868	197.986
83.5647	197.967
83.3869	197.961
78.0277	197.266
75.9286	197.019
68.8572	196.138
68.697	196.118
67.841	196.002
67.8254	196.002
67.6997	196
62.2082	195.148
60.6701	194.935
55.9212	194
51.5095	193.601
45.8245	193.113
42.7715	192.86
39.5414	192.548
39.0396	192.503
33.5804	192
33.3498	191.999
33.0358	191.998
31.7133	191.995
31.057	191.995

30.8982	191.995
30.4475	191.994
29.8506	191.994
29.6366	191.993
29.391	191.993
29.3226	191.993
28.622	191.994
28.542	191.993
28.3605	191.993
28.2555	191.993
16.346	191.138
8.05554	190.53
0.998983	190.005
0.686216	190

Material Boundary

	X	Y
140.028	197.831	
140.028	197.713	
140.028	196.713	
140.028	195.713	
140.028	193.713	
141.766	193.149	
142.289	192.994	
143.045	192.769	
144.237	192.414	
145.518	192	
148.459	191.052	
151.716	190	
156.612	188.418	
157.903	188	
161.952	186.689	
164.08	186	
164.758	185.78	
170.247	184	
172.895	183.14	
176.403	182	
181.024	180.497	
182.529	180	
185.376	179.065	
188.619	178	
189.923	177.575	
194.757	176	
195.648	175.71	
200.895	174	
201.373	173.844	
207.034	172	
207.098	171.979	
207.993	171.687	
212.823	170.114	
213.172	170	
218.549	168.248	

219.311	168
224.274	166.383
225.449	166
230	164.518
231.588	164
235.725	162.651
237.722	162
241.444	160.784
243.846	160
247.162	158.917
249.97	158
252.88	157.05
256.093	156
258.598	155.182
262.216	154
264.316	153.314
268.34	152
270.035	151.446
274.463	150
275.754	149.578
280.585	148
281.473	147.71
286.71	146
287.186	145.844
292.824	144
292.886	143.98
293.74	143.7
298.583	142.115
298.935	142
304.279	140.251
305.047	140
309.976	138.387
311.159	138
315.674	136.523
317.272	136
321.371	134.659
323.386	134
327.069	132.795
329.5	132
332.77	130.931
335.619	130
339.508	128.716
341.678	128
345.692	126.704
347.866	126
350.959	124.992
354.006	124
357.278	122.924
360.089	122
361.133	121.745
365.215	121.477
368.707	121.493
371.484	122

373.654	122.03
374.386	122.08
377.631	122.239
382.427	122.316
383.677	122.244
387.287	122.197
390.059	122.187
396.735	122.233
398.019	122.268
399.749	122.314
406.24	122.429
409.208	122.512
411.915	122.585
415.53	122.683
424.48	122.93
430.485	123.131
448.199	123.599
448.732	123.618
463.334	124
470.097	124.145
471.17	124.168
483.106	124.425
486.086	124.487
495.863	124.696
500.697	124.797
508.409	124.961
515.014	125.097
518.981	125.181
523.614	125.281
527.447	125.363
529.69	125.406
531.66	125.441
540.373	125.637
554.05	125.953
556.089	126
568.694	126.288
580.167	126.531
584.066	126.617
593.259	126.813
599.175	126.945
607.386	127.128
614.024	127.271
624.97	127.517
628.615	127.596
643.158	127.917
643.782	127.931
646.896	128
658.497	128.248
660.64	128.294
673.082	128.561
677.922	128.665
687.656	128.874
692.236	128.971

699.35	129.123
712.535	129.48
729.855	129.992
730.239	129.992
731.42	130
738.245	131.694
739.951	132
740.007	132.001
741.701	132.015
742.332	132.017
743.317	132.019
753.154	132.287
755.462	132.336
761.566	132.471
765.71	132.559
775.589	132.763
783.012	132.917
790.009	133.066
795.683	133.184
804.848	133.379
808.664	133.459
820.13	133.704
821.971	133.743
833.961	134
835.574	134.035
835.855	134.041
849.047	134.327
851.677	134.384
862.588	134.62
867.593	134.729
876.198	134.915
883.605	135.076
889.878	135.211
899.713	135.425
903.628	135.509
915.919	135.776
917.449	135.809
926.274	136
936.214	136.29
943.717	136.589
962.389	137.22
979.061	138
983.234	139.38
985.11	140
987.287	140.719
991.16	142
994.524	143.112
997.209	144
1000.33	145.033
1003.26	146
1007.19	147.301
1009.31	148
1011.14	148.607

1015.36	150
1020.26	151.621
1021.41	152
1027.04	153.861
1027.46	154
1027.82	154.12
1033.5	156
1034.29	156.258
1039.55	158
1044.85	159.749
1045.6	160
1046.49	160.294
1051.65	162
1053.18	162.503
1057.7	164
1061.67	165.313
1063.75	166
1067.3	167.173
1069.8	168
1072.91	169.028
1075.85	170
1078.52	170.882
1081.9	172
1084.13	172.737
1087.95	174
1089.74	174.591
1091.61	175.21

Material Boundary

	X	Y
140.028		195.713
141.766		195.149
142.289		194.994
143.045		194.769
144.237		194.414
145.518		194
148.459		193.052
151.716		192
156.612		190.418
157.903		190
161.952		188.689
164.08		188
164.758		187.78
170.247		186
172.895		185.14
176.403		184
181.024		182.497
182.529		182
185.376		181.065
188.619		180
189.923		179.575
194.757		178

195.648	177.71
200.895	176
201.373	175.844
207.034	174
207.098	173.979
207.993	173.687
212.823	172.114
213.172	172
218.549	170.248
219.311	170
224.274	168.383
225.449	168
230	166.518
231.588	166
235.725	164.651
237.722	164
241.444	162.784
243.846	162
247.162	160.917
249.97	160
252.88	159.05
256.093	158
258.598	157.182
262.216	156
264.316	155.314
268.34	154
270.035	153.446
274.463	152
275.754	151.578
280.585	150
281.473	149.71
286.71	148
287.186	147.844
292.824	146
292.886	145.98
293.74	145.7
298.583	144.115
298.935	144
304.279	142.251
305.047	142
309.976	140.387
311.159	140
315.674	138.523
317.272	138
321.371	136.659
323.386	136
327.069	134.795
329.5	134
332.77	132.931
335.619	132
339.508	130.716
341.678	130
345.692	128.704

347.866	128
350.959	126.992
354.006	126
357.278	124.924
360.089	124
361.133	123.745
365.215	123.477
368.707	123.493
371.484	124
373.654	124.03
374.386	124.08
377.631	124.239
382.427	124.316
383.677	124.244
387.287	124.197
390.059	124.187
396.735	124.233
398.019	124.268
399.749	124.314
406.24	124.429
409.208	124.512
411.915	124.585
415.53	124.683
424.48	124.93
430.485	125.131
448.199	125.599
448.732	125.618
463.334	126
470.097	126.145
471.17	126.168
483.106	126.425
486.086	126.487
495.863	126.696
500.697	126.797
508.409	126.961
515.014	127.097
518.981	127.181
523.614	127.281
527.447	127.363
529.69	127.406
531.66	127.441
540.373	127.637
554.05	127.953
556.089	128
568.694	128.288
580.167	128.531
584.066	128.617
593.259	128.813
599.175	128.945
607.386	129.128
614.024	129.271
624.97	129.517
628.615	129.596

643.158	129.917
643.782	129.931
646.896	130
658.497	130.248
660.64	130.294
673.082	130.561
677.922	130.665
687.656	130.874
692.236	130.971
699.35	131.123
712.535	131.48
729.855	131.992
730.239	131.992
731.42	132
738.245	133.694
739.951	134
740.007	134.001
741.701	134.015
742.332	134.017
743.317	134.019
753.154	134.287
755.462	134.336
761.566	134.471
765.71	134.559
775.589	134.763
783.012	134.917
790.009	135.066
795.683	135.184
804.848	135.379
808.664	135.459
820.13	135.704
821.971	135.743
833.961	136
835.574	136.035
835.855	136.041
849.047	136.327
851.677	136.384
862.588	136.62
867.593	136.729
876.198	136.915
883.605	137.076
889.878	137.211
899.713	137.425
903.628	137.509
915.919	137.776
917.449	137.809
926.274	138
936.214	138.29
943.717	138.589
962.389	139.22
979.061	140
983.234	141.38
985.11	142

987.287	142.719
991.16	144
994.524	145.112
997.209	146
1000.33	147.033
1003.26	148
1007.19	149.301
1009.31	150
1011.14	150.607
1015.36	152
1020.26	153.621
1021.41	154
1027.04	155.861
1027.46	156
1027.82	156.12
1033.5	158
1034.29	158.258
1039.55	160
1044.85	161.749
1045.6	162
1046.49	162.294
1051.65	164
1053.18	164.503
1057.7	166
1061.67	167.313
1063.75	168
1067.3	169.173
1069.8	170
1072.91	171.028
1075.85	172
1078.52	172.882
1081.9	174
1084.13	174.737
1087.95	176
1089.74	176.591
1091.61	177.21

Material Boundary

	X	Y
140.028		197.713
141.766		197.149
142.289		196.994
143.045		196.769
144.237		196.414
145.518		196
148.459		195.052
151.716		194
156.612		192.418
157.903		192
161.952		190.689
164.08		190
164.758		189.78

170.247	188
172.895	187.14
176.403	186
181.024	184.497
182.529	184
185.376	183.065
188.619	182
189.923	181.575
194.757	180
195.648	179.71
200.895	178
201.373	177.844
207.034	176
207.098	175.979
207.993	175.687
212.823	174.114
213.172	174
218.549	172.248
219.311	172
224.274	170.383
225.449	170
230	168.518
231.588	168
235.725	166.651
237.722	166
241.444	164.784
243.846	164
247.162	162.917
249.97	162
252.88	161.05
256.093	160
258.598	159.182
262.216	158
264.316	157.314
268.34	156
270.035	155.446
274.463	154
275.754	153.578
280.585	152
281.473	151.71
286.71	150
287.186	149.844
292.824	148
292.886	147.98
293.74	147.7
298.583	146.115
298.935	146
304.279	144.251
305.047	144
309.976	142.387
311.159	142
315.674	140.523
317.272	140

321.371	138.659
323.386	138
327.069	136.795
329.5	136
332.77	134.931
335.619	134
339.508	132.716
341.678	132
345.692	130.704
347.866	130
350.959	128.992
354.006	128
357.278	126.924
360.089	126
361.133	125.745
365.215	125.477
368.707	125.493
371.484	126
373.654	126.03
374.386	126.08
377.631	126.239
382.427	126.316
383.677	126.244
387.287	126.197
390.059	126.187
396.735	126.233
398.019	126.268
399.749	126.314
406.24	126.429
409.208	126.512
411.915	126.585
415.53	126.683
424.48	126.93
430.485	127.131
448.199	127.599
448.732	127.618
463.334	128
470.097	128.145
471.17	128.168
483.106	128.425
486.086	128.487
495.863	128.696
500.697	128.797
508.409	128.961
515.014	129.097
518.981	129.181
523.614	129.281
527.447	129.363
529.69	129.406
531.66	129.441
540.373	129.637
554.05	129.953
556.089	130

568.694	130.288
580.167	130.531
584.066	130.617
593.259	130.813
599.175	130.945
607.386	131.128
614.024	131.271
624.97	131.517
628.615	131.596
643.158	131.917
643.782	131.931
646.896	132
658.497	132.248
660.64	132.294
673.082	132.561
677.922	132.665
687.656	132.874
692.236	132.971
699.35	133.123
712.535	133.48
729.855	133.992
730.239	133.992
731.42	134
738.245	135.694
739.951	136
740.007	136.001
741.701	136.015
742.332	136.017
743.317	136.019
753.154	136.287
755.462	136.336
761.566	136.471
765.71	136.559
775.589	136.763
783.012	136.917
790.009	137.066
795.683	137.184
804.848	137.379
808.664	137.459
820.13	137.704
821.971	137.743
833.961	138
835.574	138.035
835.855	138.041
849.047	138.327
851.677	138.384
862.588	138.62
867.593	138.729
876.198	138.915
883.605	139.076
889.878	139.211
899.713	139.425
903.628	139.509

915.919	139.776
917.449	139.809
926.274	140
936.214	140.29
943.717	140.589
962.389	141.22
979.061	142
983.234	143.38
985.11	144
987.287	144.719
991.16	146
994.524	147.112
997.209	148
1000.33	149.033
1003.26	150
1007.19	151.301
1009.31	152
1011.14	152.607
1015.36	154
1020.26	155.621
1021.41	156
1027.04	157.861
1027.46	158
1027.82	158.12
1033.5	160
1034.29	160.258
1039.55	162
1044.85	163.749
1045.6	164
1046.49	164.294
1051.65	166
1053.18	166.503
1057.7	168
1061.67	169.313
1063.75	170
1067.3	171.173
1069.8	172
1072.91	173.028
1075.85	174
1078.52	174.882
1081.9	176
1084.13	176.737
1087.95	178
1089.74	178.591
1091.61	179.21

Material Boundary







	X	Y
147.568		200.339
148.459		200.052
151.716		199
156.612		197.418

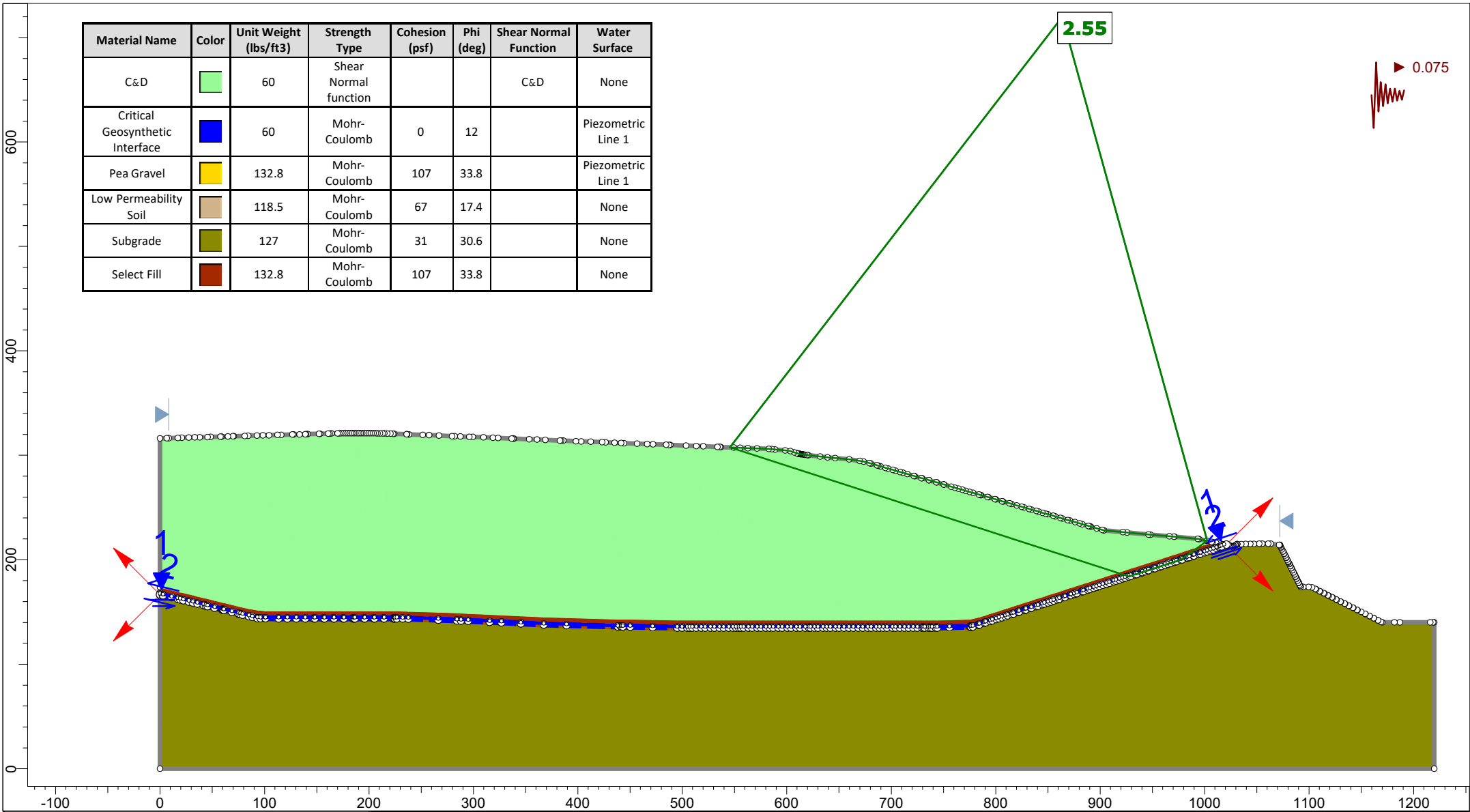
157.903	197
161.952	195.689
164.08	195
164.758	194.78
170.247	193
172.895	192.14
176.403	191
181.024	189.497
182.529	189
185.376	188.065
188.619	187
189.923	186.575
194.757	185
195.648	184.71
200.895	183
201.373	182.844
207.034	181
207.098	180.979
207.993	180.687
212.823	179.114
213.172	179
218.549	177.248
219.311	177
224.274	175.383
225.449	175
230	173.518
231.588	173
235.725	171.651
237.722	171
241.444	169.784
243.846	169
247.162	167.917
249.97	167
252.88	166.05
256.093	165
258.598	164.182
262.216	163
264.316	162.314
268.34	161
270.035	160.446
274.463	159
275.754	158.578
280.585	157
281.473	156.71
286.71	155
287.186	154.844
292.824	153
292.886	152.98
293.74	152.7
298.583	151.115
298.935	151
304.279	149.251
305.047	149

309.976	147.387
311.159	147
315.674	145.523
317.272	145
321.371	143.659
323.386	143
327.069	141.795
329.5	141
332.77	139.931
335.619	139
339.508	137.716
341.678	137
345.692	135.704
347.866	135
350.959	133.992
354.006	133
357.278	131.924
360.089	131
361.133	130.745
365.215	130.477
368.707	130.493
371.484	131
373.654	131.03
374.386	131.08
377.631	131.239
382.427	131.316
383.677	131.244
387.287	131.197
390.059	131.187
396.735	131.233
398.019	131.268
399.749	131.314
406.24	131.429
409.208	131.512
411.915	131.585
415.53	131.683
424.48	131.93
430.485	132.131
448.199	132.599
448.732	132.618
463.334	133
470.097	133.145
471.17	133.168
483.106	133.425
486.086	133.487
495.863	133.696
500.697	133.797
508.409	133.961
515.014	134.097
518.981	134.181
523.614	134.281
527.447	134.363
529.69	134.406

531.66	134.441
540.373	134.637
554.05	134.953
556.089	135
568.694	135.288
580.167	135.531
584.066	135.617
593.259	135.813
599.175	135.945
607.386	136.128
614.024	136.271
624.97	136.517
628.615	136.596
643.158	136.917
643.782	136.931
646.896	137
658.497	137.248
660.64	137.294
673.082	137.561
677.922	137.665
687.656	137.874
692.236	137.971
699.35	138.123
712.535	138.48
729.855	138.992
730.239	138.992
731.42	139
738.245	140.694
739.951	141
740.007	141.001
741.701	141.015
742.332	141.017
743.317	141.019
753.154	141.287
755.462	141.336
761.566	141.471
765.71	141.559
775.589	141.763
783.012	141.917
790.009	142.066
795.683	142.184
804.848	142.379
808.664	142.459
820.13	142.704
821.971	142.743
833.961	143
835.574	143.035
835.855	143.041
849.047	143.327
851.677	143.384
862.588	143.62
867.593	143.729
876.198	143.915

883.605	144.076
889.878	144.211
899.713	144.425
903.628	144.509
915.919	144.776
917.449	144.809
926.274	145
936.214	145.29
943.717	145.589
962.389	146.22
979.061	147
983.234	148.38
985.11	149
987.287	149.719
991.16	151
994.524	152.112
997.209	153
1000.33	154.033
1003.26	155
1007.19	156.301
1009.31	157
1011.14	157.607
1015.36	159
1020.26	160.621
1021.41	161
1027.04	162.861
1027.46	163
1027.82	163.12
1033.5	165
1034.29	165.258
1039.55	167
1044.85	168.749
1045.6	169
1046.49	169.294
1051.65	171
1053.18	171.503
1057.7	173
1061.67	174.313
1063.75	175
1067.3	176.173
1069.8	177
1072.91	178.028
1075.85	179
1078.52	179.882
1081.9	181
1084.13	181.737
1087.95	183
1089.74	183.591
1091.61	184.21

Material Name	Color	Unit Weight (lbs/ft ³)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
C&D		60	Shear Normal function			C&D	None
Critical Geosynthetic Interface		60	Mohr-Coulomb	0	12		Piezometric Line 1
Pea Gravel		132.8	Mohr-Coulomb	107	33.8		Piezometric Line 1
Low Permeability Soil		118.5	Mohr-Coulomb	67	17.4		None
Subgrade		127	Mohr-Coulomb	31	30.6		None
Select Fill		132.8	Mohr-Coulomb	107	33.8		None



Project		Project: 182-442 S.A. Dunn Permit Renewal/MSD-8775-A. Application Landfill	
Analysis Description		Section C - Liner System Failure - Seismic	
Scenario		Section C - Liner System Failure - Seismic.slim	
Created By: ZLM		Checked By: TDM	
Company		Civil & Environmental Consultants, Inc.	
File Name		Section C - Liner System Failure - Seismic.slim	
Created Date: 1/6/2022 12/10/2015 12:09:38 PM		Checked Date: 1/9/2022	

Slide Analysis Information

151-877 S.A. Dunn C&D Landfill

Project Summary

Slide Modeler Version:	9.02
Compute Time:	00h:00m:31.533s
Author:	DVS
Company:	Civil & Environmental Consultants, Inc.
Date Created:	12/10/2015, 12:09:38 PM

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	
	GLE/Morgenstern-Price with interslice force function (Half Sine)
Number of slices:	25
Tolerance:	0.005
Maximum number of iterations:	50
Check malpha < 0.2:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft ³]:	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


Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [deg]:	135
Left Projection Angle (End Angle) [deg]:	225
Right Projection Angle (Start Angle) [deg]:	45
Right Projection Angle (End Angle) [deg]:	-45
Minimum Elevation:	Not Defined
Minimum Depth [ft]:	10
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading


Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.075

Materials


C&D

Color	
Strength Type	Shear Normal function
Unit Weight [lbs/ft ³]	60
Water Surface	None
Ru Value	0


Pea Gravel

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	Piezometric Line 1
Hu Value	1


Low Permeability Soil

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	118.5
Cohesion [psf]	67
Friction Angle [deg]	17.4
Water Surface	None
Ru Value	0

Subgrade

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	127
Cohesion [psf]	31
Friction Angle [deg]	30.6
Water Surface	None
Ru Value	0

Select Fill

Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft ³]	132.8
Cohesion [psf]	107
Friction Angle [deg]	33.8
Water Surface	None
Ru Value	0

Shear Normal Functions

Name: C&D	
Effective Normal (psf)	Shear (psf)
0	0
2000	1400
10000	6169

Global Minimums

Method: gle/morgenstern-price

FS	2.547550
Axis Location:	863.552, 719.524
Left Slip Surface Endpoint:	545.611, 307.512
Right Slip Surface Endpoint:	1002.397, 217.964
Resisting Moment:	2.28694e+08 lb-ft
Driving Moment:	8.97701e+07 lb-ft
Resisting Horizontal Force:	438281 lb
Driving Horizontal Force:	172040 lb
Total Slice Area:	12114.2 ft ²
Surface Horizontal Width:	456.786 ft
Surface Average Height:	26.5205 ft

Global Minimum Coordinates**Method: gle/morgenstern-price**

X	Y
545.611	307.512
927.308	183.941
929.36	184.601
929.897	184.774
934.779	186.344
940.013	188.023
940.251	188.099
943.148	189.033
945.739	189.861
946.212	190.017
951.217	191.621
952.42	192.01
956.69	193.379
958.44	193.944
962.048	195.1
964.881	196.013
967.433	196.83
971.161	198.029
972.894	198.585
977.304	200
1002.4	217.964

Global Minimum Support Data

No Supports Present

Slice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.54755

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	185.422	215307	-17.9388	C&D	1.13687e-13	34.992	280.352	714.21	1020.3	0	1020.3	1111.06	1111.06
2	185.422	373402	-17.9388	C&D	2.27374e-13	34.992	500.504	1275.06	1821.52	0	1821.52	1983.55	1983.55
3	7.75268	20145.2	-17.9388	Select Fill	107	33.8	691.233	1760.95	2470.64	0	2470.64	2694.42	2694.42
4	3.10107	9085.17	-17.9388	Pea Gravel	107	33.8	772.13	1967.04	2778.49	0	2778.49	3028.46	3028.46
5	2.05237	6155.05	17.8069	Critical Geosynthetic Interface	0	12	284.762	725.445	3475.34	62.3886	3412.95	3383.87	3321.48
6	0.536672	1592.32	17.9047	Critical Geosynthetic Interface	0	12	281.422	716.937	3435.28	62.3571	3372.92	3344.36	3282
7	4.8826	14159.8	17.8231	Critical Geosynthetic Interface	0	12	273.989	698	3346.12	62.278	3283.84	3258.03	3195.75
8	5.23426	14527	17.7918	Critical Geosynthetic Interface	0	12	260.405	663.396	3183.31	62.2781	3121.03	3099.74	3037.47
9	0.237284	642.585	17.5862	Critical Geosynthetic Interface	0	12	252.865	644.186	3093.01	62.3572	3030.66	3012.87	2950.51
10	2.89697	7732.84	17.8704	Critical Geosynthetic Interface	0	12	249.075	634.53	3047.51	62.278	2985.23	2967.2	2904.92
11	2.59123	6741.46	17.7359	Critical Geosynthetic Interface	0	12	241.663	615.649	2958.68	62.278	2896.4	2881.39	2819.11
12	0.473451	1213.87	18.1735	Critical Geosynthetic Interface	0	12	238.143	606.682	2916.49	62.2841	2854.2	2838.31	2776.03
13	5.0048	12495.3	17.7742	Critical Geosynthetic Interface	0	12	230.539	587.309	2825.35	62.278	2763.07	2751.44	2689.17
14	1.20265	2910.91	17.9328	Critical Geosynthetic Interface	0	12	222.635	567.173	2730.63	62.2853	2668.34	2658.58	2596.29
15	4.2705	10049.1	17.7743	Critical Geosynthetic Interface	0	12	215.409	548.766	2644.03	62.278	2581.75	2574.97	2512.7
16	1.7501	3988.73	17.8862	Critical Geosynthetic Interface	0	12	207.775	529.317	2552.52	62.2783	2490.24	2485.46	2423.19
17	3.60731	7984.08	17.7686	Critical Geosynthetic Interface	0	12	200.838	511.645	2469.38	62.278	2407.1	2405.02	2342.74
18	2.83306	6046.18	17.8557	Critical Geosynthetic Interface	0	12	192.737	491.006	2372.28	62.278	2310	2310.19	2247.91
19	2.55243	5278.41	17.7438	Critical Geosynthetic Interface	0	12	185.872	473.518	2290.02	62.2917	2227.73	2230.54	2168.25
20	3.72748	7420.68	17.8428	Critical Geosynthetic Interface	0	12	178.079	453.664	2196.63	62.3083	2134.32	2139.31	2077
21	1.73354	3334.66	17.7589	Critical Geosynthetic Interface	0	12	171.234	436.227	2114.57	62.278	2052.29	2059.72	1997.45
22	4.40941	8150.58	17.7955	Critical Geosynthetic Interface	0	12	163.7	417.033	2024.34	62.3583	1961.99	1971.8	1909.44
23	5.06727	8105.06	35.5984	Pea Gravel	107	33.8	628.439	1600.98	2231.69	0	2231.69	1781.8	1781.8
24	12.6682	11608.4	35.5984	Select Fill	107	33.8	370.167	943.02	1248.83	0	1248.83	983.832	983.832
25	7.3576	1531.98	35.5984	C&D	2.84217e-14	34.992	72.8567	185.606	265.152	0	265.152	212.994	212.994

Interslice Data

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.54755

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	545.611	307.512	0	0	0
2	731.032	247.484	25411.7	9292.28	20.0859
3	916.454	187.455	69955.1	14900.9	12.0247
4	924.206	184.945	72308.1	14157.1	11.0777
5	927.308	183.941	73384.5	13850.8	10.6884
6	929.36	184.601	70970.7	13061	10.4277
7	929.897	184.774	70343.4	12858.4	10.359
8	934.779	186.344	64814.9	11110.7	9.72721
9	940.013	188.023	59194.3	9412.72	9.03518
10	940.251	188.099	58949.9	9340.4	9.00346
11	943.148	189.033	55961.8	8477.36	8.61395
12	945.739	189.861	53389.2	7752.47	8.26199
13	946.212	190.017	52914.2	7622.53	8.19732
14	951.217	191.621	48164.6	6347.35	7.50744
15	952.42	192.01	47052.4	6060.93	7.33999
16	956.69	193.379	43266.5	5113.6	6.74043
17	958.44	193.944	41760.4	4752.52	6.49258
18	962.048	195.1	38780.1	4060.94	5.97806
19	964.881	196.013	36522.5	3562.22	5.57072
20	967.433	196.83	34573.6	3147.31	5.20142
21	971.161	198.029	31830.8	2593.77	4.65852
22	972.894	198.585	30610	2357.83	4.40469
23	977.304	200	27634.4	1813.93	3.75552
24	982.371	203.628	16962.1	890.165	3.00411
25	995.039	212.697	1817.77	35.1449	1.10762
26	1002.4	217.964	0	0	0

Discharge Sections

Entity Information

Piezoline

	X	Y
0		167.667
2.61045		167.033
2.74827		167
2.93545		166.955
10.984		165
16.9104		163.561
19.2198		163
22.3549		162.239
27.4555		161
31.2131		160.088
35.6913		159
41.768		157.524
43.927		157
45.5183		156.614
52.1628		155
59.8261		153.139

59.8924	153.123
60.4145	153
60.8582	152.895
60.9162	152.881
68.6396	151
75.206	149.4
76.8497	149
79.0691	148.459
85.0598	147
88.4071	146.185
93.2699	145
96.1305	144.964
100.713	144.947
101.016	144.941
113.425	144.821
121.918	144.822
130.421	144.823
138.934	144.824
147.456	144.825
148.142	144.848
156.777	144.849
157.383	144.866
166.104	144.867
166.646	144.881
175.435	144.882
175.924	144.893
184.77	144.893
185.454	144.904
186.03	144.91
186.471	144.91
195.39	144.911
195.828	144.911
204.75	144.912
205.185	144.912
214.11	144.912
214.542	144.912
223.469	144.913
223.899	144.913
224.328	144.913
224.757	144.913
226.606	144.875
232.206	144.736
237.619	144.555
266.437	143.593
284.194	143
288.023	142.82
294.955	142.494
315.577	141.526
326.764	141
345.352	140.109
367.261	139
389.122	138.384
438.282	137

441.106	136.989
441.813	136.988
442.992	136.982
450.152	136.954
471.589	136.475
495.112	136.041
499.816	136.042
504.522	136.042
507.015	136.043
509.52	136.047
513.255	136.047
518.191	136.045
521.934	136.044
526.857	136.043
530.609	136.042
535.521	136.04
539.492	136.044
544.41	136.042
548.376	136.045
551.45	136.051
554.115	136.053
556.005	136.053
558.664	136.055
563.412	136.057
566.946	136.064
571.737	136.066
575.242	136.073
580.075	136.075
583.551	136.082
586.977	136.088
591.874	136.09
595.541	136.09
600.448	136.093
604.107	136.093
609.025	136.095
612.675	136.095
617.604	136.097
621.244	136.097
622.641	136.096
626.431	136.093
629.889	136.087
634.698	136.083
638.19	136.076
641.731	136.07
646.478	136.066
650.054	136.06
654.753	136.056
659.419	136.052
663.75	136.06
668.432	136.056
672.746	136.063
677.444	136.06
680.743	136.07

685.469	136.067
688.752	136.077
692.299	136.081
695.852	136.075
701.119	136.075
703.992	136.063
708.239	136.071
712.549	136.079
716.654	136.084
721.014	136.092
725.057	136.098
729.467	136.106
730.766	136.109
732.057	136.112
735.706	136.117
737.361	136.116
738.906	136.115
742.564	136.12
743.989	136.118
755.732	136.35
775.632	136.895
775.782	136.895
775.919	136.894
776.153	136.893
778.05	137
783.506	138.753
784.276	139
789.286	140.609
790.503	141
794.831	142.39
796.73	143
800.37	144.169
802.957	145
805.905	145.947
809.183	147
811.435	147.723
815.41	149
816.957	149.497
821.637	151
822.473	151.269
827.863	153
827.984	153.039
828.909	153.336
833.494	154.808
834.09	155
838.998	156.577
840.317	157
844.497	158.343
846.543	159
849.989	160.107
852.77	161
855.476	161.869
858.997	163

860.956	163.629
865.223	165
866.43	165.387
871.45	167
871.897	167.144
875.09	168.169
877.36	168.898
877.677	169
882.821	170.652
883.903	171
888.276	172.404
890.13	173
893.723	174.154
896.357	175
899.164	175.902
902.583	177
906.152	178.146
908.81	179
912.925	180.322
915.037	181
918.41	182.083
921.263	183
923.888	183.843
927.49	185
929.36	185.601
933.717	187
934.825	187.356
939.944	189
940.292	189.112
943.235	190.057
945.863	190.901
946.17	191
951.208	192.618
952.397	193
956.633	194.361
958.624	195
962.07	196.107
964.85	197
967.5	197.851
971.077	199
972.917	199.591
977.304	201
978.32	201.326
983.53	203
983.726	203.063
985.426	203.609
989.318	204.859
989.757	205
994.64	206.568
995.984	207
999.949	208.274
1002.21	209
1005.61	210.122

1008.27	211
1011.51	212.172
1013.9	213
1014.76	213.314
1016.17	213.831
1018.57	214.636

Block Search Polyline

	X	Y
0		166.667
2.61045		166.033
2.74827		166
2.93545		165.955
10.984		164
16.9104		162.561
19.2198		162
22.3549		161.239
27.4555		160
31.2131		159.088
35.6913		158
41.768		156.524
43.927		156
45.5183		155.614
52.1628		154
59.8261		152.139
59.8924		152.123
60.4145		152
60.8582		151.895
60.9162		151.881
68.6396		150
75.206		148.4
76.8497		148
79.0691		147.459
85.0598		146
88.4071		145.185
93.2699		144
96.1305		143.964
100.713		143.947
101.016		143.941
113.425		143.821
121.918		143.822
130.421		143.823
138.934		143.824
147.456		143.825
148.142		143.848
156.777		143.849
157.383		143.866
166.104		143.867
166.646		143.881
175.435		143.882
175.924		143.893
184.77		143.893

185.454	143.904
186.03	143.91
186.471	143.91
195.39	143.911
195.828	143.911
204.75	143.912
205.185	143.912
214.11	143.912
214.542	143.912
223.469	143.913
223.899	143.913
224.328	143.913
224.757	143.913
226.606	143.875
232.206	143.736
237.619	143.555
266.437	142.593
284.194	142
288.023	141.82
294.955	141.494
315.577	140.526
326.764	140
345.352	139.109
367.261	138
389.122	137.384
438.282	136
441.106	135.989
441.813	135.988
442.992	135.982
450.152	135.954
471.589	135.475
495.112	135.041
499.816	135.042
504.522	135.042
507.015	135.043
509.52	135.047
513.255	135.047
518.191	135.045
521.934	135.044
526.857	135.043
530.609	135.042
535.521	135.04
539.492	135.044
544.41	135.042
548.376	135.045
551.45	135.051
554.115	135.053
556.005	135.053
558.664	135.055
563.412	135.057
566.946	135.064
571.737	135.066
575.242	135.073

580.075	135.075
583.551	135.082
586.977	135.088
591.874	135.09
595.541	135.09
600.448	135.093
604.107	135.093
609.025	135.095
612.675	135.095
617.604	135.097
621.244	135.097
622.641	135.096
626.431	135.093
629.889	135.087
634.698	135.083
638.19	135.076
641.731	135.07
646.478	135.066
650.054	135.06
654.753	135.056
659.419	135.052
663.75	135.06
668.432	135.056
672.746	135.063
677.444	135.06
680.743	135.07
685.469	135.067
688.752	135.077
692.299	135.081
695.852	135.075
701.119	135.075
703.992	135.063
708.239	135.071
712.549	135.079
716.654	135.084
721.014	135.092
725.057	135.098
729.467	135.106
730.766	135.109
732.057	135.112
735.706	135.117
737.361	135.116
738.906	135.115
742.564	135.12
743.989	135.118
755.732	135.35
775.632	135.895
775.782	135.895
775.919	135.894
776.153	135.893
778.05	136
783.506	137.753
784.276	138

789.286	139.609
790.503	140
794.831	141.39
796.73	142
800.37	143.169
802.957	144
805.905	144.947
809.183	146
811.435	146.723
815.41	148
816.957	148.497
821.637	150
822.473	150.269
827.863	152
827.984	152.039
828.909	152.336
833.494	153.808
834.09	154
838.998	155.577
840.317	156
844.497	157.343
846.543	158
849.989	159.107
852.77	160
855.476	160.869
858.997	162
860.956	162.629
865.223	164
866.43	164.387
871.45	166
871.897	166.144
875.09	167.169
877.36	167.898
877.677	168
882.821	169.652
883.903	170
888.276	171.404
890.13	172
893.723	173.154
896.357	174
899.164	174.902
902.583	176
906.152	177.146
908.81	178
912.925	179.322
915.037	180
918.41	181.083
921.263	182
923.888	182.843
927.49	184
929.36	184.601
933.717	186
934.825	186.356

939.944	188
940.292	188.112
943.235	189.057
945.863	189.901
946.17	190
951.208	191.618
952.397	192
956.633	193.361
958.624	194
962.07	195.107
964.85	196
967.5	196.851
971.077	198
972.917	198.591
977.304	200
978.32	200.326
983.53	202
983.726	202.063
985.426	202.609
989.318	203.859
989.757	204
994.64	205.568
995.984	206
999.949	207.274
1002.21	208
1005.61	209.122
1008.27	210
1011.51	211.172
1013.9	212
1014.76	212.314
1016.17	212.831
1020.86	214.406

External Boundary

	X	Y
0		316.109
0		173.667
0		168.667
0		167.667
0		166.667
0		164.667
0		0
1219.81		0
1219.81		140
1218.71		140
1216.08		140
1186.91		140
1181.65		140
1169.98		140
1168.96		140.51
1165.98		142
1165.94		142.022

1161.98	144
1161.87	144.052
1157.97	146
1157.81	146.083
1153.97	148
1153.74	148.113
1149.97	150
1146.3	151.832
1145.96	152
1142.35	153.804
1141.96	154
1138.41	155.775
1137.96	156
1134.46	157.746
1133.96	158
1130.52	159.716
1129.95	160
1126.58	161.687
1125.95	162
1122.63	163.658
1121.95	164
1118.69	165.628
1117.94	166
1114.74	167.599
1113.94	168
1110.8	169.569
1109.94	170
1106.86	171.539
1105.93	172
1102.91	173.513
1099.52	173.859
1094.52	173.86
1092.03	174
1091.53	174.999
1091.03	176
1090.13	177.801
1090.03	178
1089.94	178.171
1089.03	180
1088.12	181.822
1088.03	182
1087.11	183.832
1087.03	184
1086.11	185.84
1086.03	186
1085.11	187.848
1085.03	188
1084.1	189.856
1084.03	190
1083.1	191.864
1083.03	192
1082.1	193.874
1082.03	194

1081.09	195.885
1081.03	196
1080.32	197.424
1080.04	198
1079.89	198.297
1079.04	200
1078.08	201.905
1078.04	202
1077.98	202.109
1077.04	204
1076.2	205.676
1076.04	206
1075.05	207.97
1075.04	208
1075.02	208.038
1074.04	210
1073.25	211.588
1073.04	212
1072.31	213.453
1072.04	214
1071.94	214.206
1071.32	214.159
1063.42	215.257
1060.85	215.402
1055.24	215.305
1052.25	215.254
1047.24	215.167
1043.65	215.105
1039.23	215.029
1035.05	214.956
1031.23	214.89
1031.21	214.89
1031.2	214.89
1030.1	214.34
1029.41	214
1028.1	213.348
1027.2	212.901
1026.1	212.904
1025.2	212.906
1024.29	213.363
1024.06	213.481
1023.02	214
1021.42	214.349
1021.42	214.349
1020.86	214.406
1018.57	214.636
1018.35	214.657
1016.17	214.831
1016.17	214.831
1014.12	215.298
1011.03	216
1007.6	216.78
1006.66	216.994

1002.24	218
994.715	219.711
993.444	220
971.061	221.961
970.626	222
966.337	222.38
948.029	224
946.173	224.161
925.668	226
921.667	226.352
903.558	228
902.15	228.407
896.627	230
890.917	231.686
889.857	232
888.805	232.302
882.886	234
880.441	234.701
875.91	236
870.915	237.432
868.933	238
863.881	239.448
861.956	240
856.849	241.464
854.979	242
849.816	243.48
848.002	244
844.816	244.913
841.024	246
838.911	246.606
834.049	248
831.937	248.605
827.072	250
824.844	250.639
820.092	252
815.118	253.427
813.119	254
807.03	255.746
806.142	256
799.957	257.773
799.166	258
792.927	259.789
792.189	260
785.902	261.802
785.213	262
784	262.348
778.236	264
774.987	264.932
771.259	266
767.956	266.946
764.278	268
760.966	268.949
757.298	270

750.551	271.933
750.317	272
750.187	272.037
743.335	274
743.061	274.079
736.354	276
736.025	276.094
729.373	278
728.994	278.109
722.393	280
721.65	280.213
715.413	282
711.155	283.22
708.431	284
704.082	285.246
701.451	286
697.045	287.263
694.47	288
689.688	289.37
687.491	290
686.287	290.345
680.51	292
679.092	292.406
673.53	294
669.841	294.53
659.621	296
646.437	297.28
639.023	298
631.875	298.773
620.523	300
619.315	300.188
617.055	300.54
615.53	300.777
614.431	300.948
613.602	301.077
612.954	301.178
612.434	301.259
612.007	301.326
611.651	301.381
611.349	301.428
610.968	301.547
610.518	301.688
609.978	301.857
609.52	302
607.088	302.81
603.517	304
598.461	304.667
588.88	305.484
585.658	305.81
582.821	306
571.381	306.465
562.784	306.814
555.284	307.119

549.352	307.36
536.852	307.868
535.963	307.904
533.597	308
520.061	308.55
513.256	308.826
503.601	309.219
488.514	309.832
487.129	309.888
484.372	310
471.823	310.51
466.201	310.738
456.663	311.126
444.195	311.632
441.407	311.746
435.148	312
426.585	312.348
423.112	312.489
412.237	312.931
403.018	313.305
398.046	313.507
385.924	314
383.861	314.084
382.932	314.122
368.722	314.699
360.927	315.016
353.446	315.32
338.63	315.922
338.031	315.946
336.699	316
323.645	316.53
318.615	316.735
309.688	317.097
299.451	317.513
296.058	317.651
287.475	318
282.072	318.219
279.631	318.319
266.885	318.837
257.515	319.217
251.553	319.46
238.25	320
236.354	320.077
236.173	320.083
235.965	320.089
224.14	320.551
222.969	320.58
220.62	320.668
217.402	320.78
214.627	320.868
213.003	320.9
210.498	320.971
208.258	321.027

206.459	321.054
204.401	321.099
202.505	321.134
200.731	321.162
198.84	321.182
197.16	321.202
195.55	321.217
193.625	321.229
192.069	321.238
190.542	321.241
189.025	321.24
187.104	321.244
185.592	321.237
184.055	321.226
182.47	321.208
180.586	321.204
178.955	321.18
177.231	321.148
175.401	321.135
173.584	321.095
171.608	321.044
169.885	321.023
163.988	320.857
162.472	320.831
161.042	320.799
153.258	320.573
152.168	320.544
141.311	320.227
139.934	320.187
138.971	320.159
133.511	320
127.85	319.835
126.697	319.801
116.045	319.491
112.503	319.388
104.328	319.15
98.4359	318.978
92.6962	318.811
84.4928	318.572
81.1502	318.474
70.6725	318.169
69.6887	318.14
64.8782	318
58.8789	317.825
57.7947	317.794
48.471	317.522
45.4995	317.435
38.0244	317.217
33.1503	317.075
27.539	316.912
20.747	316.714
17.0146	316.605
8.28898	316.351

6.451	316.297
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Material Boundary

	X	Y
0		164.667
2.61045		164.033
2.74827		164
2.93545		163.955
10.984		162
16.9104		160.561
19.2198		160
22.3549		159.239
27.4555		158
31.2131		157.088
35.6913		156
41.768		154.524
43.927		154
45.5183		153.614
52.1628		152
59.8261		150.139
59.8924		150.123
60.4145		150
60.8582		149.895
60.9162		149.881
68.6396		148
75.206		146.4
76.8497		146
79.0691		145.459
85.0598		144
88.4071		143.185
93.2699		142
96.1305		141.964
100.713		141.947
101.016		141.941
113.425		141.821
121.918		141.822
130.421		141.823
138.934		141.824
147.456		141.825
148.142		141.848
156.777		141.849
157.383		141.866
166.104		141.867
166.646		141.881
175.435		141.882
175.924		141.893
184.77		141.893
185.454		141.904
186.03		141.91
186.471		141.91
195.39		141.911
195.828		141.911

204.75	141.912
205.185	141.912
214.11	141.912
214.542	141.912
223.469	141.913
223.899	141.913
224.328	141.913
224.757	141.913
226.606	141.875
232.206	141.736
237.619	141.555
266.437	140.593
284.194	140
288.023	139.82
294.955	139.494
315.577	138.526
326.764	138
345.352	137.109
367.261	136
389.122	135.384
438.282	134
441.106	133.989
441.813	133.988
442.992	133.982
450.152	133.954
471.589	133.475
495.112	133.041
499.816	133.042
504.522	133.042
507.015	133.043
509.52	133.047
513.255	133.047
518.191	133.045
521.934	133.044
526.857	133.043
530.609	133.042
535.521	133.04
539.492	133.044
544.41	133.042
548.376	133.045
551.45	133.051
554.115	133.053
556.005	133.053
558.664	133.055
563.412	133.057
566.946	133.064
571.737	133.066
575.242	133.073
580.075	133.075
583.551	133.082
586.977	133.088
591.874	133.09
595.541	133.09

600.448	133.093
604.107	133.093
609.025	133.095
612.675	133.095
617.604	133.097
621.244	133.097
622.641	133.096
626.431	133.093
629.889	133.087
634.698	133.083
638.19	133.076
641.731	133.07
646.478	133.066
650.054	133.06
654.753	133.056
659.419	133.052
663.75	133.06
668.432	133.056
672.746	133.063
677.444	133.06
680.743	133.07
685.469	133.067
688.752	133.077
692.299	133.081
695.852	133.075
701.119	133.075
703.992	133.063
708.239	133.071
712.549	133.079
716.654	133.084
721.014	133.092
725.057	133.098
729.467	133.106
730.766	133.109
732.057	133.112
735.706	133.117
737.361	133.116
738.906	133.115
742.564	133.12
743.989	133.118
755.732	133.35
775.632	133.895
775.782	133.895
775.919	133.894
776.153	133.893
778.05	134
783.506	135.753
784.276	136
789.286	137.609
790.503	138
794.831	139.39
796.73	140
800.37	141.169

802.957	142
805.905	142.947
809.183	144
811.435	144.723
815.41	146
816.957	146.497
821.637	148
822.473	148.269
827.863	150
827.984	150.039
828.909	150.336
833.494	151.808
834.09	152
838.998	153.577
840.317	154
844.497	155.343
846.543	156
849.989	157.107
852.77	158
855.476	158.869
858.997	160
860.956	160.629
865.223	162
866.43	162.387
871.45	164
871.897	164.144
875.09	165.169
877.36	165.898
877.677	166
882.821	167.652
883.903	168
888.276	169.404
890.13	170
893.723	171.154
896.357	172
899.164	172.902
902.583	174
906.152	175.146
908.81	176
912.925	177.322
915.037	178
918.41	179.083
921.263	180
923.888	180.843
927.49	182
929.36	182.601
933.717	184
934.825	184.356
939.944	186
940.292	186.112
943.235	187.057
945.863	187.901
946.17	188

951.208	189.618
952.397	190
956.633	191.361
958.624	192
962.07	193.107
964.85	194
967.5	194.851
971.077	196
972.917	196.591
977.304	198
978.32	198.326
983.53	200
983.726	200.063
985.426	200.609
989.318	201.859
989.757	202
994.64	203.568
995.984	204
999.949	205.274
1002.21	206
1005.61	207.122
1008.27	208
1011.51	209.172
1013.9	210
1014.76	210.314
1016.17	210.831
1024.06	213.481

Material Boundary

	X	Y
0		166.667
2.61045		166.033
2.74827		166
2.93545		165.955
10.984		164
16.9104		162.561
19.2198		162
22.3549		161.239
27.4555		160
31.2131		159.088
35.6913		158
41.768		156.524
43.927		156
45.5183		155.614
52.1628		154
59.8261		152.139
59.8924		152.123
60.4145		152
60.8582		151.895
60.9162		151.881
68.6396		150
75.206		148.4

76.8497	148
79.0691	147.459
85.0598	146
88.4071	145.185
93.2699	144
96.1305	143.964
100.713	143.947
101.016	143.941
113.425	143.821
121.918	143.822
130.421	143.823
138.934	143.824
147.456	143.825
148.142	143.848
156.777	143.849
157.383	143.866
166.104	143.867
166.646	143.881
175.435	143.882
175.924	143.893
184.77	143.893
185.454	143.904
186.03	143.91
186.471	143.91
195.39	143.911
195.828	143.911
204.75	143.912
205.185	143.912
214.11	143.912
214.542	143.912
223.469	143.913
223.899	143.913
224.328	143.913
224.757	143.913
226.606	143.875
232.206	143.736
237.619	143.555
266.437	142.593
284.194	142
288.023	141.82
294.955	141.494
315.577	140.526
326.764	140
345.352	139.109
367.261	138
389.122	137.384
438.282	136
441.106	135.989
441.813	135.988
442.992	135.982
450.152	135.954
471.589	135.475
495.112	135.041

499.816	135.042
504.522	135.042
507.015	135.043
509.52	135.047
513.255	135.047
518.191	135.045
521.934	135.044
526.857	135.043
530.609	135.042
535.521	135.04
539.492	135.044
544.41	135.042
548.376	135.045
551.45	135.051
554.115	135.053
556.005	135.053
558.664	135.055
563.412	135.057
566.946	135.064
571.737	135.066
575.242	135.073
580.075	135.075
583.551	135.082
586.977	135.088
591.874	135.09
595.541	135.09
600.448	135.093
604.107	135.093
609.025	135.095
612.675	135.095
617.604	135.097
621.244	135.097
622.641	135.096
626.431	135.093
629.889	135.087
634.698	135.083
638.19	135.076
641.731	135.07
646.478	135.066
650.054	135.06
654.753	135.056
659.419	135.052
663.75	135.06
668.432	135.056
672.746	135.063
677.444	135.06
680.743	135.07
685.469	135.067
688.752	135.077
692.299	135.081
695.852	135.075
701.119	135.075
703.992	135.063

708.239	135.071
712.549	135.079
716.654	135.084
721.014	135.092
725.057	135.098
729.467	135.106
730.766	135.109
732.057	135.112
735.706	135.117
737.361	135.116
738.906	135.115
742.564	135.12
743.989	135.118
755.732	135.35
775.632	135.895
775.782	135.895
775.919	135.894
776.153	135.893
778.05	136
783.506	137.753
784.276	138
789.286	139.609
790.503	140
794.831	141.39
796.73	142
800.37	143.169
802.957	144
805.905	144.947
809.183	146
811.435	146.723
815.41	148
816.957	148.497
821.637	150
822.473	150.269
827.863	152
827.984	152.039
828.909	152.336
833.494	153.808
834.09	154
838.998	155.577
840.317	156
844.497	157.343
846.543	158
849.989	159.107
852.77	160
855.476	160.869
858.997	162
860.956	162.629
865.223	164
866.43	164.387
871.45	166
871.897	166.144
875.09	167.169

877.36	167.898
877.677	168
882.821	169.652
883.903	170
888.276	171.404
890.13	172
893.723	173.154
896.357	174
899.164	174.902
902.583	176
906.152	177.146
908.81	178
912.925	179.322
915.037	180
918.41	181.083
921.263	182
923.888	182.843
927.49	184
929.36	184.601
933.717	186
934.825	186.356
939.944	188
940.292	188.112
943.235	189.057
945.863	189.901
946.17	190
951.208	191.618
952.397	192
956.633	193.361
958.624	194
962.07	195.107
964.85	196
967.5	196.851
971.077	198
972.917	198.591
977.304	200
978.32	200.326
983.53	202
983.726	202.063
985.426	202.609
989.318	203.859
989.757	204
994.64	205.568
995.984	206
999.949	207.274
1002.21	208
1005.61	209.122
1008.27	210
1011.51	211.172
1013.9	212
1014.76	212.314
1016.17	212.831
1020.86	214.406

Material Boundary

	X	Y
0		168.667
2.61045		168.033
2.74827		168
2.93545		167.955
10.984		166
16.9104		164.561
19.2198		164
22.3549		163.239
27.4555		162
31.2131		161.088
35.6913		160
41.768		158.524
43.927		158
45.5183		157.614
52.1628		156
59.8261		154.139
59.8924		154.123
60.4145		154
60.8582		153.895
60.9162		153.881
68.6396		152
75.206		150.4
76.8497		150
79.0691		149.459
85.0598		148
88.4071		147.185
93.2699		146
96.1305		145.964
100.713		145.947
101.016		145.941
113.425		145.821
121.918		145.822
130.421		145.823
138.934		145.824
147.456		145.825
148.142		145.848
156.777		145.849
157.383		145.866
166.104		145.867
166.646		145.881
175.435		145.882
175.924		145.893
184.77		145.893
185.454		145.904
186.03		145.91
186.471		145.91
195.39		145.911
195.828		145.911
204.75		145.912

205.185	145.912
214.11	145.912
214.542	145.912
223.469	145.913
223.899	145.913
224.328	145.913
224.757	145.913
226.606	145.875
232.206	145.736
237.619	145.555
266.437	144.593
284.194	144
288.023	143.82
294.955	143.494
315.577	142.526
326.764	142
345.352	141.109
367.261	140
389.122	139.384
438.282	138
441.106	137.989
441.813	137.988
442.992	137.982
450.152	137.954
471.589	137.475
495.112	137.041
499.816	137.042
504.522	137.042
507.015	137.043
509.52	137.047
513.255	137.047
518.191	137.045
521.934	137.044
526.857	137.043
530.609	137.042
535.521	137.04
539.492	137.044
544.41	137.042
548.376	137.045
551.45	137.051
554.115	137.053
556.005	137.053
558.664	137.055
563.412	137.057
566.946	137.064
571.737	137.066
575.242	137.073
580.075	137.075
583.551	137.082
586.977	137.088
591.874	137.09
595.541	137.09
600.448	137.093

604.107	137.093
609.025	137.095
612.675	137.095
617.604	137.097
621.244	137.097
622.641	137.096
626.431	137.093
629.889	137.087
634.698	137.083
638.19	137.076
641.731	137.07
646.478	137.066
650.054	137.06
654.753	137.056
659.419	137.052
663.75	137.06
668.432	137.056
672.746	137.063
677.444	137.06
680.743	137.07
685.469	137.067
688.752	137.077
692.299	137.081
695.852	137.075
701.119	137.075
703.992	137.063
708.239	137.071
712.549	137.079
716.654	137.084
721.014	137.092
725.057	137.098
729.467	137.106
730.766	137.109
732.057	137.112
735.706	137.117
737.361	137.116
738.906	137.115
742.564	137.12
743.989	137.118
755.732	137.35
775.632	137.895
775.782	137.895
775.919	137.894
776.153	137.893
778.05	138
783.506	139.753
784.276	140
789.286	141.609
790.503	142
794.831	143.39
796.73	144
800.37	145.169
802.957	146

805.905	146.947
809.183	148
811.435	148.723
815.41	150
816.957	150.497
821.637	152
822.473	152.269
827.863	154
827.984	154.039
828.909	154.336
833.494	155.808
834.09	156
838.998	157.577
840.317	158
844.497	159.343
846.543	160
849.989	161.107
852.77	162
855.476	162.869
858.997	164
860.956	164.629
865.223	166
866.43	166.387
871.45	168
871.897	168.144
875.09	169.169
877.36	169.898
877.677	170
882.821	171.652
883.903	172
888.276	173.404
890.13	174
893.723	175.154
896.357	176
899.164	176.902
902.583	178
906.152	179.146
908.81	180
912.925	181.322
915.037	182
918.41	183.083
921.263	184
923.888	184.843
927.49	186
929.36	186.601
933.717	188
934.825	188.356
939.944	190
940.292	190.112
943.235	191.057
945.863	191.901
946.17	192
951.208	193.618

952.397	194
956.633	195.361
958.624	196
962.07	197.107
964.85	198
967.5	198.851
971.077	200
972.917	200.591
977.304	202
978.32	202.326
983.53	204
983.726	204.063
985.426	204.609
989.318	205.859
989.757	206
994.64	207.568
995.984	208
999.949	209.274
1002.21	210
1005.61	211.122
1008.27	212
1011.51	213.172
1013.9	214
1014.76	214.314
1016.17	214.831
1016.17	214.831

Material Boundary

	X	Y
0		173.667
2.61045		173.033
2.74827		173
2.93545		172.955
10.984		171
16.9104		169.561
19.2198		169
22.3549		168.239
27.4555		167
31.2131		166.088
35.6913		165
41.768		163.524
43.927		163
45.5183		162.614
52.1628		161
59.8261		159.139
59.8924		159.123
60.4145		159
60.8582		158.895
60.9162		158.881
68.6396		157
75.206		155.4
76.8497		155