

M: 7.5

GW: 0.0'

C-11		C-13		C-16		C-18		C-21		C-23		C-25		C-28		C-30		C-32		C-34		C-37		C-39	
S (ft)	0.31	S (ft)	0.05	S (ft)	0.23	S (ft)	0.33	S (ft)	0.06	S (ft)	0.23	S (ft)	0.18	S (ft)	0.15	S (ft)	0.17	S (ft)	0.06	S (ft)	0.20	S (ft)	0.14	S (ft)	0.04
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a
3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	0.88	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a
6.25	n.a	6.25	n.a	6.25	0.99	6.25	0.57	6.25	n.a	6.25	1.16	6.25	1.30	6.25	n.a	6.25	0.68	6.25	n.a	6.25	0.80	6.25	n.a	6.25	n.a
8.75	n.a	8.75	1.41	8.75	1.17	8.75	n.a	8.75	n.a	8.75	1.03	8.75	0.91	8.75	0.69	8.75	1.73	8.75	1.10	8.75	n.a	8.75	0.86	8.75	n.a
11.25	0.55	11.25	2.00	11.25	0.72	11.25	0.98	11.25	1.14	11.25	1.31	11.25	2.00	11.25	n.a	11.25	2.00	11.25	2.00	11.25	n.a	11.25	2.00	11.25	1.27
13.75	n.a	13.75	2.00	13.75	1.10	13.75	1.90	13.75	2.00	13.75	2.12	13.75	0.98	13.75	n.a	13.75	2.00	13.75	2.00	13.75	0.95	13.75	2.00	13.75	2.00
16.25	0.57	16.25	2.00	16.25	1.60	16.25	1.99	16.25	2.00	16.25	2.02	16.25	2.00	16.25	1.54	16.25	1.73	16.25	1.12	16.25	2.00	16.25	2.00	16.25	2.00
18.75	2.00	18.75	2.00	18.75	1.67	18.75	1.21	18.75	2.00	18.75	0.87	18.75	1.37	18.75	1.57	18.75	2.11	18.75	2.00	18.75	2.00	18.75	2.00	18.75	1.63
21.25	2.00	21.25	2.00	21.25	2.00	21.25	0.94	21.25	1.46	21.25	2.11	21.25	2.00	21.25	1.74	21.25	1.83	21.25	2.00	21.25	2.00	21.25	2.09	21.25	2.00
23.75	2.00	23.75	2.00	23.75	2.00	23.75	1.62	23.75	1.86	23.75	2.00	23.75	1.21	23.75	2.00	23.75	2.03	23.75	1.47	23.75	2.00	23.75	1.13	23.75	1.59
26.25	2.00	26.25	1.58	26.25	2.00	26.25	2.00	26.25	1.87	26.25	2.00	26.25	1.28	26.25	2.00	26.25	2.00	26.25	1.41	26.25	2.00	26.25	1.34	26.25	2.00
28.75	2.00	28.75	2.00	28.75	2.00	28.75	2.00	28.75	1.77	28.75	1.58	28.75	1.78	28.75	2.00	28.75	2.00	28.75	2.00	28.75	1.85	28.75	2.00	28.75	2.00
31.25	2.00	31.25	1.55	31.25	2.00	31.25	2.00	31.25	2.00	31.25	2.00	31.25	2.00	31.25	1.59	31.25	2.00	31.25	2.00	31.25	2.00	31.25	1.35	31.25	2.00
33.75	2.00	33.75	1.68	33.75	2.00	33.75	2.00	33.75	1.76	33.75	2.00	33.75	2.00	33.75	2.00	33.75	1.15	33.75	2.00	33.75	2.00	33.75	2.00	33.75	2.00
		36.25	2.00	36.25	2.00	36.25	2.01	36.25	1.58	36.25	2.00	36.25	2.00	36.25	1.33	36.25	2.00	36.25	2.00	36.25	1.08	36.25	2.00	36	

Figure D-11

M: 7.5

GW: 0.0'

C-11		C-13		C-16		C-18		C-21		C-23		C-25		C-28		C-30		C-32		C-34		C-37		C-39	
S (ft)	0.31	S (ft)	0.05	S (ft)	0.22	S (ft)	0.33	S (ft)	0.06	S (ft)	0.23	S (ft)	0.18	S (ft)	0.15	S (ft)	0.17	S (ft)	0.06	S (ft)	0.19	S (ft)	0.13	S (ft)	0.04
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a
3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	0.89	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a
6.25	n.a	6.25	n.a	6.25	0.99	6.25	0.58	6.25	n.a	6.25	1.17	6.25	1.31	6.25	n.a	6.25	0.68	6.25	n.a	6.25	0.80	6.25	n.a	6.25	n.a
8.75	n.a	8.75	1.43	8.75	1.18	8.75	n.a	8.75	n.a	8.75	1.04	8.75	0.92	8.75	0.70	8.75	1.74	8.75	1.11	8.75	n.a	8.75	0.87	8.75	n.a
11.25	0.56	11.25	2.00	11.25	0.72	11.25	0.99	11.25	1.15	11.25	1.33	11.25	2.00	11.25	n.a	11.25	2.00	11.25	2.00	11.25	n.a	11.25	2.00	11.25	1.28
13.75	n.a	13.75	2.00	13.75	1.11	13.75	1.92	13.75	2.00	13.75	2.14	13.75	0.99	13.75	n.a	13.75	2.00	13.75	2.00	13.75	0.96	13.75	2.02	13.75	2.00
16.25	0.57	16.25	2.00	16.25	1.62	16.25	2.02	16.25	2.00	16.25	2.05	16.25	2.00	16.25	1.56	16.25	1.76	16.25	1.14	16.25	2.00	16.25	2.00	16.25	2.00
18.75	2.00	18.75	2.00	18.75	1.70	18.75	1.23	18.75	2.00	18.75	0.89	18.75	1.40	18.75	1.59	18.75	2.14	18.75	2.00	18.75	2.00	18.75	2.00	18.75	1.65
21.25	2.00	21.25	2.00	21.25	2.00	21.25	0.96	21.25	1.49	21.25	2.14	21.25	2.00	21.25	1.77	21.25	1.86	21.25	2.00	21.25	2.00	21.25	2.13	21.25	2.00
23.75	2.00	23.75	2.00	23.75	2.00	23.75	1.65	23.75	1.89	23.75	2.00	23.75	1.23	23.75	2.00	23.75	2.07	23.75	1.49	23.75	2.00	23.75	1.15	23.75	1.62
26.25	2.00	26.25	1.61	26.25	2.00	26.25	2.00	26.25	1.91	26.25	2.00	26.25	1.30	26.25	2.00	26.25	2.00	26.25	1.43	26.25	2.00	26.25	1.37	26.25	2.00
28.75	2.00	28.75	2.00	28.75	2.00	28.75	2.00	28.75	1.80	28.75	1.61	28.75	1.82	28.75	2.00	28.75	2.00	28.75	2.00	28.75	1.89	28.75	2.00	28.75	2.00
31.25	2.00	31.25	1.58	31.25	2.00	31.25	1.65	31.25	2.00	31.25	2.00	31.25	2.00	31.25	1.63	31.25	2.00	31.25	2.00	31.25	2.00	31.25	1.38	31.25	2.00
33.75	2.00	33.75	1.72	33.75	2.00	33.75	2.00	33.75	1.80	33.75	2.00	33.75	2.00	33.75	2.00	33.75	1.18	33.75	2.00	33.75	2.00	33.75	2.00	33.75	2.00
		36.25	2.00	36.25	2.00	36.25	2.06	36.25	1.61	36.25	2.00	36.25	2.00	36.25	1.36	36.25	2.00	36.25	2.00	36.25	1.11	36.25	2.00	36	

Figure D-12

M: 7.5

GW: 0.0'

C-11		C-13		C-16		C-18		C-21		C-23		C-25		C-28		C-30		C-32		C-34		C-37		C-39	
S (ft)	0.31	S (ft)	0.05	S (ft)	0.22	S (ft)	0.33	S (ft)	0.06	S (ft)	0.23	S (ft)	0.18	S (ft)	0.15	S (ft)	0.17	S (ft)	0.06	S (ft)	0.19	S (ft)	0.13	S (ft)	0.04
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a
3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	0.89	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a
6.25	n.a	6.25	n.a	6.25	1.00	6.25	0.58	6.25	n.a	6.25	1.18	6.25	1.31	6.25	n.a	6.25	0.69	6.25	n.a	6.25	0.81	6.25	n.a	6.25	n.a
8.75	n.a	8.75	1.44	8.75	1.19	8.75	n.a	8.75	n.a	8.75	1.04	8.75	0.92	8.75	0.71	8.75	1.76	8.75	1.12	8.75	n.a	8.75	0.87	8.75	n.a
11.25	0.56	11.25	2.00	11.25	0.73	11.25	1.00	11.25	1.16	11.25	1.34	11.25	2.00	11.25	n.a	11.25	2.00	11.25	2.00	11.25	n.a	11.25	2.00	11.25	1.29
13.75	n.a	13.75	2.00	13.75	1.12	13.75	1.94	13.75	2.00	13.75	2.17	13.75	1.00	13.75	n.a	13.75	2.00	13.75	2.00	13.75	0.97	13.75	2.04	13.75	2.00
16.25	0.58	16.25	2.00	16.25	1.64	16.25	2.04	16.25	2.00	16.25	2.07	16.25	2.00	16.25	1.58	16.25	1.78	16.25	1.15	16.25	2.00	16.25	2.00	16.25	2.00
18.75	2.00	18.75	2.00	18.75	1.72	18.75	1.24	18.75	2.00	18.75	0.90	18.75	1.41	18.75	1.61	18.75	2.17	18.75	2.00	18.75	2.00	18.75	2.00	18.75	1.68
21.25	2.00	21.25	2.00	21.25	2.00	21.25	0.97	21.25	1.51	21.25	2.17	21.25	2.00	21.25	1.80	21.25	1.88	21.25	2.00	21.25	2.00	21.25	2.16	21.25	2.00
23.75	2.00	23.75	2.00	23.75	2.00	23.75	1.68	23.75	1.92	23.75	2.00	23.75	1.25	23.75	2.00	23.75	2.10	23.75	1.52	23.75	2.00	23.75	1.17	23.75	1.64
26.25	2.00	26.25	1.63	26.25	2.00	26.25	2.00	26.25	1.94	26.25	2.00	26.25	1.32	26.25	2.00	26.25	2.00	26.25	1.46	26.25	2.00	26.25	1.39	26.25	2.00
28.75	2.00	28.75	2.00	28.75	2.00	28.75	2.00	28.75	1.83	28.75	1.64	28.75	1.85	28.75	2.00	28.75	2.00	28.75	2.00	28.75	1.92	28.75	2.00	28.75	2.00
31.25	2.00	31.25	1.61	31.25	2.00	31.25	2.00	31.25	2.00	31.25	2.00	31.25	2.00	31.25	1.66	31.25	2.00	31.25	2.00	31.25	2.00	31.25	1.40	31.25	2.00
33.75	2.00	33.75	1.75	33.75	2.00	33.75	2.00	33.75	1.83	33.75	2.00	33.75	2.00	33.75	2.00	33.75	1.20	33.75	2.00	33.75	2.00	33.75	2.00	33.75	2.00
		36.25	2.00	36.25	2.00	36.25	2.10	36.25	1.64	36.25	2.00	36.25	2.00	36.25	1.39	36.25	2.00	36.25	2.00	36.25	1.13	36.25	2.00	36.25	2.00
		38.75	2.00																			38.75	2.00		
		41.25	2.00																			41.25	2.00		

Figure D-13

M: 7.5

GW: 0.0'

C-11		C-13		C-16		C-18		C-21		C-23		C-25		C-28		C-30		C-32		C-34		C-37		C-39	
S (ft)	0.31	S (ft)	0.05	S (ft)	0.18	S (ft)	0.30	S (ft)	0.06	S (ft)	0.22	S (ft)	0.15	S (ft)	0.15	S (ft)	0.16	S (ft)	0.06	S (ft)	0.19	S (ft)	0.13	S (ft)	0.04
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a	1.25	n.a
3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	0.89	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a	3.75	n.a
6.25	n.a	6.25	n.a	6.25	1.00	6.25	0.58	6.25	n.a	6.25	1.18	6.25	1.32	6.25	n.a	6.25	0.69	6.25	n.a	6.25	0.81	6.25	n.a	6.25	n.a
8.75	n.a	8.75	1.45	8.75	1.20	8.75	n.a	8.75	n.a	8.75	1.05	8.75	0.93	8.75	0.71	8.75	1.77	8.75	1.12	8.75	n.a	8.75	0.88	8.75	n.a
11.25	0.56	11.25	2.00	11.25	0.73	11.25	1.01	11.25	1.17	11.25	1.35	11.25	2.00	11.25	n.a	11.25	2.00	11.25	2.00	11.25	n.a	11.25	2.00	11.25	1.30
13.75	n.a	13.75	2.00	13.75	1.13	13.75	1.96	13.75	2.00	13.75	2.08	13.75	1.01	13.75	n.a	13.75	2.00	13.75	2.00	13.75	0.98	13.75	2.06	13.75	2.00
16.25	0.59	16.25	2.00	16.25	1.66	16.25	2.06	16.25	2.00	16.25	2.09	16.25	2.00	16.25	1.59	16.25	1.80	16.25	1.16	16.25	2.00	16.25	2.00	16.25	2.00
18.75	2.00	18.75	2.00	18.75	1.74	18.75	1.25	18.75	2.00	18.75	0.91	18.75	1.43	18.75	1.63	18.75	2.19	18.75	2.00	18.75	2.00	18.75	2.00	18.75	1.69
21.25	2.00	21.25	2.00	21.25	2.00	21.25	0.98	21.25	1.53	21.25	2.20	21.25	2.00	21.25	1.82	21.25	1.90	21.25	2.00	21.25	2.00	21.25	2.18	21.25	2.00
23.75	2.00	23.75	2.00	23.75	2.00	23.75	1.70	23.75	1.94	23.75	2.00	23.75	1.26	23.75	2.00	23.75	2.12	23.75	1.53	23.75	2.00	23.75	1.18	23.75	1.66
26.25	2.00	26.25	1.66	26.25	2.00	26.25	2.00	26.25	1.96	26.25	2.00	26.25	1.34	26.25	2.00	26.25	2.00	26.25	1.48	26.25	2.00	26.25	1.41	26.25	2.00
28.75	2.00	28.75	2.00	28.75	2.00	28.75	2.00	28.75	1.86	28.75	1.66	28.75	1.88	28.75	2.00	28.75	2.00	28.75	2.00	28.75	1.95	28.75	2.00	28.75	2.00
31.25	2.00	31.25	1.64	31.25	2.00	31.25	1.70	31.25	2.00	31.25	2.00	31.25	2.00	31.25	1.68	31.25	2.00	31.25	2.00	31.25	2.00	31.25	1.42	31.25	2.00
33.75	2.00	33.75	1.77	33.75	2.00	33.75	2.00	33.75	1.86	33.75	2.00	33.75	2.00	33.75	2.00	33.75	1.22	33.75	2.00	33.75	2.00	33.75	2.00	33.75	2.00
		36.25	2.00	36.25	2.00	36.25	2.13	36.25	1.67	36.25	2.00	36.25	2.00	36.25	1.41	36.25	2.00	36.25	2.00	36.25	1.15	36.25	2.00	36	

Figure D-14

Ameren Missouri: Labadie UWL

Liquefaction Analysis

Borings As Are, 0' Ash

PGA: 2% probability of exceedence in 50 yrs: 0.1792

M: 7.5

GW: 0.0'

Old Borings

<----->

New Borings

----->

B-4		B-5		B-6		B-7		B-8		B-10		B-13		B-14		B-26	
LDI (ft)	2.64	LDI (ft)	4.14	LDI (ft)	2.29	LDI (ft)	7.42	LDI (ft)	6.11	LDI (ft)	2.74	LDI (ft)	6.38	LDI (ft)	5.09	LDI (ft)	4.71
S (ft)	0.23	S (ft)	0.44	S (ft)	0.35	S (ft)	0.87	S (ft)	0.60	S (ft)	0.34	S (ft)	0.71	S (ft)	0.55	S (ft)	0.59
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	0.59	2.50	n.a.	2.50	n.a.	2.50	0.48	2.50	n.a.
5.00	n.a.	5.00	n.a.	5.00	0.81	5.00	n.a.	5.00	0.61	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.
7.50	n.a.	7.50	n.a.	7.50	1.86	7.50	n.a.	7.50	0.90	8.00	0.47	7.50	n.a.	7.50	n.a.	7.50	n.a.
10.00	2.00	10.00	0.85	10.00	0.85	10.00	n.a.	10.00	0.70	11.00	0.69	10.00	n.a.	10.00	n.a.	10.00	0.87
15.00	1.28	15.00	0.70	15.00	0.76	15.00	0.70	15.00	0.56	14.00	0.80	15.00	0.62	15.00	0.64	15.00	2.00
20.00	0.47	20.00	0.58	20.00	0.47	20.00	0.58	20.00	0.42	20.00	1.38	20.00	0.64	20.00	1.66	20.00	0.95
25.00	1.31	25.00	0.58			25.00	0.54			25.00	1.84	25.00	0.59	25.00	0.65	25.00	1.56
						30.00	2.00			30.00	2.10	30.00	0.83	30.00	0.83	30.00	0.83
						35.00	2.00			35.00	1.48	35.00	0.71	35.00	2.07	35.00	0.45
						40.00	2.00					40.00	1.76			40.00	0.68
						45.00	2.00					45.00	2.00			45.00	1.21
						50.00	2.00					50.00	2.00				
						60.00	1.72										
						70.00	1.50										
						80.00	0.87										
						90.00	2.00										
						100.00	0.80										
Average	1.24	Average	0.93	Average	0.87	Average	1.24	Average	0.60	Average	1.09	Average	1.09	Average	1.00	Average	1.04
Risk	Low	Risk	High	Risk	High	Risk	Low	Risk	High	Risk	Moderate	Risk	Moderate	Risk	Moderate	Risk	Moderate

Figure D-15

B-50		B-52		B-54		B-56		B-58		B-72		B-92		B-100		B-101	
LDI (ft)	2.66	LDI (ft)	1.34	LDI (ft)	8.24	LDI (ft)	3.03	LDI (ft)	2.79	LDI (ft)	5.07	LDI (ft)	6.00	LDI (ft)	8.71	LDI (ft)	9.06
S (ft)	0.28	S (ft)	0.18	S (ft)	0.51	S (ft)	0.51	S (ft)	0.39	S (ft)	0.55	S (ft)	0.58	S (ft)	1.24	S (ft)	1.00
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.
5.00	n.a.	5.00	n.a.	5.00	0.33	5.00	n.a.	5.00	n.a.	5.00	?	5.00	n.a.	5.00	n.a.	5.00	n.a.
7.50	n.a.	7.50	n.a.	7.50	0.53	7.50	0.91	7.50	n.a.	7.50	0.63	7.50	0.59	7.50	0.75	7.50	0.60
10.00	0.61	10.00	0.64	10.00	0.61	11.00	0.76	10.00	0.43	10.00	0.59	10.00	0.68	10.00	1.20	10.00	0.44
15.00	2.00	15.00	1.82	15.00	0.58	15.00	2.00	15.00	0.78	15.00	0.73	15.00	1.75	14.00	0.51	15.00	0.70
20.00	2.00	20.00	2.00	20.00	0.62	20.00	1.20	20.00	1.06	20.00	0.95	20.00	1.61	16.00	0.94	20.00	0.70
25.00	0.59	25.00	1.25	25.00	0.65	25.00	0.70	25.00	1.18	25.00	0.59	22.50	2.00	20.00	2.00	25.00	0.65
27.50	0.99	30.00	1.04	30.00	2.00	30.00	0.76	30.00	1.13	30.00	2.00	25.00	2.00	25.00	0.94	30.00	0.91
30.00	2.00	35.00	2.00	35.00	2.00	35.00	1.15	35.00	2.07	35.00	1.29	30.00	1.28	32.00	0.67	35.00	2.00
35.00	1.29					40.00	2.00					35.00	0.60	35.00	0.71	40.00	0.63
40.00	2.00					45.00	1.09					40.00	0.52	40.00	1.05	45.00	0.77
45.00	2.00					50.00	1.03					45.00	1.09	45.00	2.15	50.00	2.00
50.00	2.00													50.00	1.26		
														60.00	0.72		
														70.00	0.91		
														80.00	1.01		
														90.00	1.31		
Average	1.35	Average	1.41	Average	0.70	Average	1.12	Average	1.09	Average	0.93	Average	1.03	Average	1.00	Average	0.84
Risk	Low	Risk	Low	Risk	High	Risk	Moderate	Risk	Moderate	Risk	High	Risk	Moderate	Risk	High	Risk	High

Figure D-15

B-115		B-127		B-141		B-153		B-154		B-176		B-188		B-200		B-202	
LDI (ft)	3.68	LDI (ft)	4.07	LDI (ft)	2.63	LDI (ft)	5.94	LDI (ft)	3.58	LDI (ft)	1.57	LDI (ft)	3.59	LDI (ft)	17.58	LDI (ft)	2.10
S (ft)	0.49	S (ft)	0.62	S (ft)	0.47	S (ft)	0.54	S (ft)	0.59	S (ft)	0.20	S (ft)	0.55	S (ft)	1.89	S (ft)	0.26
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.
5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.
7.50	n.a.	7.50	n.a.	7.50	0.67	7.50	?	7.50	0.51	7.50	n.a.	7.50	n.a.	7.50	0.59	7.50	n.a.
10.00	n.a.	10.00	0.74	10.00	0.71	10.00	?	10.00	0.80	10.00	n.a.	10.00	0.80	10.00	n.a.	10.00	?
15.00	n.a.	15.00	0.80	15.00	0.78	15.00	1.25	15.00	0.97	15.00	n.a.	15.00	0.78	15.00	0.27	15.00	0.97
20.00	1.06	20.00	0.73	20.00	2.00	20.00	2.00	20.00	0.86	20.00	1.20	20.00	1.06	20.00	0.67	20.00	1.95
25.00	0.78	25.00	0.78	25.00	1.05	25.00	2.00	25.00	0.94	25.00	2.00	25.00	0.86	25.00	0.83	25.00	0.59
30.00	1.13	30.00	0.69	30.00	0.83	30.00	0.52	30.00	1.01	30.00	2.14	30.00	0.52	30.00	0.57	30.00	1.14
35.00	0.60	35.00	1.48	35.00	0.93	35.00	0.60	35.00	0.71	35.00	1.09	35.00	0.93	35.00	0.50	35.00	1.16
40.00	0.74					40.00	0.58	40.00	0.88	40.00	0.69			40.00	0.58		
45.00	2.00					45.00	1.21			45.00	n.a.			45.00	0.48		
										50.00	2.00			50.00	0.40		
														60.00	0.96		
Average	1.21	Average	1.01	Average	1.01	Average	1.07	Average	0.91	Average	1.57	Average	0.98	Average	0.63	Average	1.29
Risk	Low	Risk	Moderate	Risk	Moderate	Risk	Moderate	Risk	High	Risk	Low	Risk	High	Risk	High	Risk	Low

Figure D-15

Ameren Missouri: Labadie UWL

Liquefaction Analysis

Borings As Are

PGA: 2% probability of exceedence in 50 yrs: 0.1792

With 10.4' Ash (100-yr flood)

M: 7.5

GW: 0.0' (100 yr)

Old Borings

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New Borings

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B-4		B-5		B-6		B-7		B-8		B-10		B-13		B-14		B-26	
LDI (ft)	2.50	LDI (ft)	2.39	LDI (ft)	1.39	LDI (ft)	2.30	LDI (ft)	2.08	LDI (ft)	1.62	LDI (ft)	1.32	LDI (ft)	0.38	LDI (ft)	1.53
S (ft)	0.20	S (ft)	0.29	S (ft)	0.14	S (ft)	0.38	S (ft)	0.32	S (ft)	0.16	S (ft)	0.24	S (ft)	0.14	S (ft)	0.19
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	1.25	2.50	n.a.	2.50	n.a.	2.50	1.02	2.50	n.a.
5.00	n.a.	5.00	n.a.	5.00	1.56	5.00	n.a.	5.00	1.18	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.
7.50	n.a.	7.50	n.a.	7.50	2.00	7.50	n.a.	7.50	1.63	8.00	0.85	7.50	n.a.	7.50	n.a.	7.50	n.a.
10.00	2.00	10.00	1.46	10.00	1.46	10.00	n.a.	10.00	1.20	11.00	1.16	10.00	n.a.	10.00	n.a.	10.00	1.49
15.00	2.04	15.00	1.11	15.00	1.21	15.00	1.11	15.00	0.90	14.00	1.29	15.00	0.99	15.00	1.01	15.00	2.00
20.00	0.71	20.00	0.87	20.00	0.71	20.00	0.87	20.00	0.64	20.00	2.07	20.00	0.96	20.00	2.00	20.00	1.44
25.00	1.89	25.00	0.84			25.00	0.77			25.00	2.00	25.00	0.85	25.00	0.93	25.00	2.00
						30.00	2.00			30.00	2.00	30.00	1.16	30.00	1.16	30.00	1.16
						35.00	2.00			35.00	2.02	35.00	0.97	35.00	2.00	35.00	0.62
						40.00	2.00					40.00	2.00			40.00	0.91
						45.00	2.00					45.00	2.00			45.00	1.59
						50.00	2.00					50.00	2.00				
						60.00	2.16										
						70.00	1.84										
						80.00	1.05										
						90.00	2.00										
						100.00	0.92										
Inv Avg	1.58	Inv Avg	1.29	Inv Avg	1.32	Inv Avg	1.49	Inv Avg	1.04	Inv Avg	1.55	Inv Avg	1.39	Inv Avg	1.41	Inv Avg	1.36
Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Moderate	Risk	Low	Risk	Low	Risk	Low	Risk	Low

Figure D-16

B-50		B-52		B-54		B-56		B-58		B-72		B-92		B-100		B-101	
LDI (ft)	1.00	LDI (ft)	0.12	LDI (ft)	2.13	LDI (ft)	0.32	LDI (ft)	2.01	LDI (ft)	1.17	LDI (ft)	2.18	LDI (ft)	2.39	LDI (ft)	2.92
S (ft)	0.12	S (ft)	0.04	S (ft)	0.50	S (ft)	0.10	S (ft)	0.20	S (ft)	0.19	S (ft)	0.23	S (ft)	0.44	S (ft)	0.40
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.
5.00	n.a.	5.00	n.a.	5.00	0.64	5.00	n.a.	5.00	n.a.	5.00	?	5.00	n.a.	5.00	n.a.	5.00	n.a.
7.50	n.a.	7.50	n.a.	7.50	0.96	7.50	1.65	7.50	n.a.	7.50	1.15	7.50	1.07	7.50	1.36	7.50	1.09
10.00	1.05	10.00	1.10	10.00	1.05	11.00	1.29	10.00	0.73	10.00	1.01	10.00	1.18	10.00	2.07	10.00	0.76
15.00	2.00	15.00	2.00	15.00	0.92	15.00	2.00	15.00	1.23	15.00	1.17	15.00	2.00	14.00	0.82	15.00	1.11
20.00	2.00	20.00	2.00	20.00	0.93	20.00	1.81	20.00	1.60	20.00	1.44	20.00	2.00	16.00	1.48	20.00	1.06
25.00	0.85	25.00	1.81	25.00	0.93	25.00	1.01	25.00	1.71	25.00	0.85	22.50	2.00	20.00	2.00	25.00	0.93
27.50	1.41	30.00	1.45	30.00	2.00	30.00	1.06	30.00	1.59	30.00	2.00	25.00	2.00	25.00	1.37	30.00	1.28
30.00	2.00	35.00	2.00	35.00	2.00	35.00	1.56	35.00	2.00	35.00	1.77	30.00	1.80	32.00	0.93	35.00	2.00
35.00	1.77					40.00	2.00					35.00	0.82	35.00	0.97	40.00	0.84
40.00	2.00					45.00	1.43					40.00	0.69	40.00	1.41	45.00	1.01
45.00	2.00					50.00	1.33					45.00	1.43	45.00	2.00	50.00	2.00
50.00	2.00													50.00	1.63		
														60.00	0.91		
														70.00	1.13		
														80.00	1.22		
														90.00	1.54		
Inv Avg	1.64	Inv Avg	1.75	Inv Avg	1.09	Inv Avg	1.51	Inv Avg	1.50	Inv Avg	1.35	Inv Avg	1.38	Inv Avg	1.34	Inv Avg	1.19
Risk	Low	Risk	Low	Risk	Moderate	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Moderate

Figure D-16

B-115		B-127		B-141		B-153		B-154		B-176		B-188		B-200		B-202	
LDI (ft)	1.04	LDI (ft)	0.35	LDI (ft)	0.30	LDI (ft)	2.92	LDI (ft)	0.61	LDI (ft)	0.17	LDI (ft)	1.33	LDI (ft)	8.35	LDI (ft)	0.84
S (ft)	0.14	S (ft)	0.11	S (ft)	0.09	S (ft)	0.26	S (ft)	0.19	S (ft)	0.06	S (ft)	0.16	S (ft)	0.99	S (ft)	0.10
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.
5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.
7.50	n.a.	7.50	n.a.	7.50	1.22	7.50	?	7.50	0.93	7.50	n.a.	7.50	n.a.	7.50	1.08	7.50	n.a.
10.00	n.a.	10.00	1.27	10.00	1.22	10.00	?	10.00	1.38	10.00	n.a.	10.00	1.37	10.00	n.a.	10.00	?
15.00	n.a.	15.00	1.28	15.00	1.23	15.00	1.99	15.00	1.55	15.00	n.a.	15.00	1.23	15.00	0.43	15.00	1.54
20.00	1.60	20.00	1.10	20.00	2.00	20.00	2.00	20.00	1.30	20.00	1.81	20.00	1.60	20.00	1.02	20.00	2.00
25.00	1.12	25.00	1.12	25.00	1.52	25.00	2.00	25.00	1.37	25.00	2.00	25.00	1.24	25.00	1.19	25.00	0.85
30.00	1.59	30.00	0.97	30.00	1.16	30.00	0.73	30.00	1.42	30.00	2.00	30.00	0.73	30.00	0.80	30.00	1.60
35.00	0.82	35.00	2.02	35.00	1.27	35.00	0.82	35.00	0.97	35.00	1.48	35.00	1.27	35.00	0.68	35.00	1.58
40.00	0.99					40.00	0.78	40.00	1.17	40.00	0.93			40.00	0.78		
45.00	2.00					45.00	1.59			45.00	n.a.			45.00	0.63		
										50.00	2.00			50.00	0.51		
														60.00	1.20		
Inv Avg	1.49	Inv Avg	1.41	Inv Avg	1.44	Inv Avg	1.37	Inv Avg	1.33	Inv Avg	1.76	Inv Avg	1.36	Inv Avg	0.87	Inv Avg	1.61
Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	High	Risk	Low

Figure D-16

Ameren Missouri: Labadie UWL

Liquefaction Analysis

PGA: 2% probability of exceedence in 50 yrs: 0.1792

With 20' Ash (top of embankment)

M: 7.5

GW: 0.0'

Old Borings

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New Borings

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B-4		B-5		B-6		B-7		B-8		B-10		B-13		B-14		B-26	
LDI (ft)	2.50	LDI (ft)	0.28	LDI (ft)	1.32	LDI (ft)	0.62	LDI (ft)	1.43	LDI (ft)	0.20	LDI (ft)	0.27	LDI (ft)	0.17	LDI (ft)	1.36
S (ft)	0.20	S (ft)	0.11	S (ft)	0.12	S (ft)	0.23	S (ft)	0.18	S (ft)	0.08	S (ft)	0.10	S (ft)	0.06	S (ft)	0.14
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	1.36	2.50	n.a.	2.50	n.a.	2.50	1.11	2.50	n.a.
5.00	n.a.	5.00	n.a.	5.00	1.77	5.00	n.a.	5.00	1.34	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.
7.50	n.a.	7.50	n.a.	7.50	2.00	7.50	n.a.	7.50	1.88	8.00	0.98	7.50	n.a.	7.50	n.a.	7.50	n.a.
10.00	2.00	10.00	1.72	10.00	1.72	10.00	n.a.	10.00	1.40	11.00	1.37	10.00	n.a.	10.00	n.a.	10.00	1.74
15.00	2.00	15.00	1.32	15.00	1.44	15.00	1.32	15.00	1.07	14.00	1.53	15.00	1.18	15.00	1.21	15.00	2.00
20.00	0.85	20.00	1.04	20.00	0.85	20.00	1.04	20.00	0.77	20.00	2.00	20.00	1.15	20.00	2.00	20.00	1.72
25.00	2.00	25.00	1.01			25.00	0.93			25.00	2.00	25.00	1.02	25.00	1.12	25.00	2.00
						30.00	2.00			30.00	2.00	30.00	1.39	30.00	1.39	30.00	1.39
						35.00	2.00			35.00	2.00	35.00	1.17	35.00	2.00	35.00	0.74
						40.00	2.00					40.00	2.00			40.00	1.09
						45.00	2.00					45.00	2.00			45.00	1.89
						50.00	2.00					50.00	2.00				
						60.00	2.00										
						70.00	2.12										
						80.00	1.19										
						90.00	2.00										
						100.00	1.01										
Inv Avg	1.68	Inv Avg	1.46	Inv Avg	1.50	Inv Avg	1.60	Inv Avg	1.21	Inv Avg	1.67	Inv Avg	1.54	Inv Avg	1.54	Inv Avg	1.53
Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low

Figure D-17

B-50		B-52		B-54		B-56		B-58		B-72		B-92		B-100		B-101	
LDI (ft)	0.13	LDI (ft)	1.52	LDI (ft)	1.53	LDI (ft)	0.14	LDI (ft)	1.92	LDI (ft)	0.21	LDI (ft)	1.34	LDI (ft)	0.66	LDI (ft)	2.19
S (ft)	0.05	S (ft)	0.26	S (ft)	0.26	S (ft)	0.04	S (ft)	0.18	S (ft)	0.08	S (ft)	0.16	S (ft)	0.23	S (ft)	0.27
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.
5.00	n.a.	5.00	n.a.	5.00	0.72	5.00	n.a.	5.00	n.a.	5.00	?	5.00	n.a.	5.00	n.a.	5.00	n.a.
7.50	n.a.	7.50	n.a.	7.50	1.11	7.50	1.91	7.50	n.a.	7.50	1.33	7.50	1.24	7.50	1.57	7.50	1.26
10.00	1.23	10.00	2.00	10.00	1.23	11.00	1.52	10.00	0.86	10.00	1.19	10.00	1.38	10.00	2.00	10.00	0.90
15.00	2.00	15.00	2.00	15.00	1.10	15.00	2.00	15.00	1.47	15.00	1.39	15.00	2.00	14.00	0.98	15.00	1.32
20.00	2.00	20.00	2.00	20.00	1.12	20.00	2.17	20.00	1.92	20.00	1.72	20.00	2.00	16.00	1.76	20.00	1.27
25.00	1.02	25.00	2.00	25.00	1.12	25.00	1.21	25.00	2.05	25.00	1.02	22.50	2.00	20.00	2.00	25.00	1.12
27.50	1.69	30.00	2.00	30.00	2.00	30.00	1.27	30.00	1.90	30.00	2.00	25.00	2.00	25.00	1.64	30.00	1.53
30.00	2.00	35.00	2.00	35.00	2.00	35.00	1.87	35.00	2.00	35.00	2.11	30.00	2.16	32.00	1.12	35.00	2.00
35.00	2.11					40.00	2.00					35.00	0.98	35.00	1.17	40.00	1.00
40.00	2.00					45.00	1.70					40.00	0.83	40.00	1.68	45.00	1.20
45.00	2.00					50.00	1.58					45.00	1.70	45.00	2.00	50.00	2.00
50.00	2.00													50.00	1.92		
														60.00	1.06		
														70.00	1.30		
														80.00	1.38		
														90.00	1.72		
Inv Avg	1.77	Inv Avg	2.00	Inv Avg	1.23	Inv Avg	1.71	Inv Avg	1.67	Inv Avg	1.54	Inv Avg	1.54	Inv Avg	1.51	Inv Avg	1.36
Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low

Figure D-17

B-115		B-127		B-141		B-153		B-154		B-176		B-188		B-200		B-202	
LDI (ft)	0.16	LDI (ft)	0.17	LDI (ft)	0.15	LDI (ft)	1.41	LDI (ft)	0.20	LDI (ft)	0.07	LDI (ft)	1.12	LDI (ft)	6.68	LDI (ft)	0.09
S (ft)	0.07	S (ft)	0.06	S (ft)	0.05	S (ft)	0.21	S (ft)	0.07	S (ft)	0.02	S (ft)	0.12	S (ft)	0.91	S (ft)	0.03
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.
5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.
7.50	n.a.	7.50	n.a.	7.50	1.41	7.50	?	7.50	1.07	7.50	n.a.	7.50	n.a.	7.50	1.24	7.50	n.a.
10.00	n.a.	10.00	1.49	10.00	1.43	10.00	?	10.00	1.62	10.00	n.a.	10.00	1.60	10.00	n.a.	10.00	?
15.00	n.a.	15.00	1.52	15.00	1.47	15.00	2.00	15.00	1.85	15.00	n.a.	15.00	1.47	15.00	0.51	15.00	1.83
20.00	1.92	20.00	1.32	20.00	2.00	20.00	2.00	20.00	1.55	20.00	2.17	20.00	1.92	20.00	1.22	20.00	2.00
25.00	1.35	25.00	1.35	25.00	1.83	25.00	2.00	25.00	1.64	25.00	2.00	25.00	1.48	25.00	1.44	25.00	1.03
30.00	1.90	30.00	1.16	30.00	1.39	30.00	0.87	30.00	1.70	30.00	2.00	30.00	0.87	30.00	0.96	30.00	1.92
35.00	0.98	35.00	2.00	35.00	1.52	35.00	0.98	35.00	1.17	35.00	1.77	35.00	1.52	35.00	0.82	35.00	1.89
40.00	1.18					40.00	0.92	40.00	1.40	40.00	1.10			40.00	0.92		
45.00	2.00					45.00	1.89			45.00	n.a.			45.00	0.74		
										50.00	2.00			50.00	0.61		
														60.00	1.41		
Inv Avg	1.65	Inv Avg	1.58	Inv Avg	1.63	Inv Avg	1.51	Inv Avg	1.54	Inv Avg	1.87	Inv Avg	1.55	Inv Avg	1.01	Inv Avg	1.78
Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Moderate	Risk	Low

Figure D-17

Ameren Missouri: Labadie UWL

Liquefaction Analysis

Borings As Are

PGA: 2% probability of exceedence in 50 yrs: 0.1792

With 100' Ash (design height)

M: 7.5

GW: 0.0'

Old Borings

<----->

New Borings

----->

B-4		B-5		B-6		B-7		B-8		B-10		B-13		B-14		B-26	
LDI (ft)	0.01	LDI (ft)	0.01	LDI (ft)	0.00	LDI (ft)	0.30	LDI (ft)	0.01	LDI (ft)	0.00	LDI (ft)	0.00	LDI (ft)	0.00	LDI (ft)	0.01
S (ft)	0.00	S (ft)	0.00	S (ft)	0.00	S (ft)	0.11	S (ft)	0.00	S (ft)	0.00	S (ft)	0.00	S (ft)	0.00	S (ft)	0.01
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	2.13	2.50	n.a.	2.50	n.a.	2.50	1.74	2.50	n.a.
5.00	n.a.	5.00	n.a.	5.00	2.00	5.00	n.a.	5.00	2.18	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.
7.50	n.a.	7.50	n.a.	7.50	2.00	7.50	n.a.	7.50	2.00	8.00	1.66	7.50	n.a.	7.50	n.a.	7.50	n.a.
10.00	2.00	10.00	2.00	10.00	2.00	10.00	n.a.	10.00	2.00	11.00	2.00	10.00	n.a.	10.00	n.a.	10.00	2.00
15.00	2.00	15.00	2.00	15.00	2.00	15.00	2.00	15.00	1.89	14.00	2.00	15.00	2.09	15.00	2.13	15.00	2.00
20.00	1.53	20.00	1.87	20.00	1.53	20.00	1.87	20.00	1.37	20.00	2.00	20.00	2.06	20.00	2.00	20.00	2.00
25.00	2.00	25.00	1.82			25.00	1.67			25.00	2.00	25.00	1.82	25.00	2.01	25.00	2.00
						30.00	2.00			30.00	2.00	30.00	2.00	30.00	2.00	30.00	2.00
						35.00	2.00			35.00	2.00	35.00	2.02	35.00	2.00	35.00	1.28
						40.00	2.00					40.00	2.00			40.00	1.84
						45.00	2.00					45.00	2.00			45.00	2.00
						50.00	2.00					50.00	2.00				
						60.00	2.00										
						70.00	2.00										
						80.00	1.37										
						90.00	2.00										
						100.00	0.95										
Inv Avg	1.92	Inv Avg	1.95	Inv Avg	1.90	Inv Avg	1.80	Inv Avg	1.88	Inv Avg	1.96	Inv Avg	2.00	Inv Avg	1.98	Inv Avg	1.89
Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low

Figure D-18

B-50		B-52		B-54		B-56		B-58		B-72		B-92		B-100		B-101	
LDI (ft)	0.00	LDI (ft)	0.00	LDI (ft)	0.02	LDI (ft)	0.00	LDI (ft)	0.01	LDI (ft)	0.00	LDI (ft)	0.02	LDI (ft)	0.20	LDI (ft)	0.01
S (ft)	0.00	S (ft)	0.00	S (ft)	0.01	S (ft)	0.00	S (ft)	0.00	S (ft)	0.00	S (ft)	0.01	S (ft)	0.06	S (ft)	0.01
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.
5.00	n.a.	5.00	n.a.	5.00	1.17	5.00	n.a.	5.00	n.a.	5.00	?	5.00	n.a.	5.00	n.a.	5.00	n.a.
7.50	n.a.	7.50	n.a.	7.50	1.86	7.50	2.00	7.50	n.a.	7.50	2.00	7.50	2.08	7.50	2.00	7.50	2.12
10.00	2.11	10.00	2.00	10.00	2.12	11.00	2.00	10.00	1.47	10.00	2.04	10.00	2.00	10.00	2.00	10.00	1.54
15.00	2.00	15.00	2.00	15.00	1.94	15.00	2.00	15.00	2.00	15.00	2.00	15.00	2.00	14.00	1.72	15.00	2.00
20.00	2.00	20.00	2.00	20.00	2.01	20.00	2.00	20.00	2.00	20.00	2.00	20.00	2.00	16.00	2.00	20.00	2.00
25.00	1.82	25.00	2.00	25.00	2.01	25.00	2.17	25.00	2.00	25.00	1.82	22.50	2.00	20.00	2.00	25.00	2.01
27.50	2.00	30.00	2.00	30.00	2.00	30.00	2.00	30.00	2.00	30.00	2.00	25.00	2.00	25.00	2.00	30.00	2.00
30.00	2.00	35.00	2.00	35.00	2.00	35.00	2.00	35.00	2.00	35.00	2.00	30.00	2.00	32.00	1.97	35.00	2.00
35.00	2.00					40.00	2.00					35.00	1.70	35.00	2.02	40.00	1.69
40.00	2.00					45.00	2.00					40.00	1.39	40.00	2.00	45.00	1.96
45.00	2.00					50.00	2.00					45.00	2.00	45.00	2.00	50.00	2.00
50.00	2.00													50.00	2.00		
														60.00	1.51		
														70.00	1.67		
														80.00	1.60		
														90.00	1.79		
Inv Avg	1.99	Inv Avg	2.00	Inv Avg	1.85	Inv Avg	2.01	Inv Avg	1.92	Inv Avg	1.98	Inv Avg	1.91	Inv Avg	1.88	Inv Avg	1.93
Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low

Figure D-18

B-115		B-127		B-141		B-153		B-154		B-176		B-188		B-200		B-202	
LDI (ft)	0.01	LDI (ft)	0.00	LDI (ft)	0.00	LDI (ft)	0.02	LDI (ft)	0.00	LDI (ft)	0.00	LDI (ft)	0.01	LDI (ft)	3.79	LDI (ft)	0.00
S (ft)	0.00	S (ft)	0.00	S (ft)	0.00	S (ft)	0.01	S (ft)	0.00	S (ft)	0.00	S (ft)	0.00	S (ft)	0.55	S (ft)	0.00
Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.	Depth	F.S.
2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.	2.50	n.a.
5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.	5.00	n.a.
7.50	n.a.	7.50	n.a.	7.50	2.00	7.50	?	7.50	1.80	7.50	n.a.	7.50	n.a.	7.50	2.08	7.50	n.a.
10.00	n.a.	10.00	2.00	10.00	2.00	10.00	?	10.00	2.00	10.00	n.a.	10.00	2.00	10.00	n.a.	10.00	?
15.00	n.a.	15.00	2.00	15.00	2.00	15.00	2.00	15.00	2.00	15.00	n.a.	15.00	2.00	15.00	0.91	15.00	2.00
20.00	2.00	20.00	2.00	20.00	2.00	20.00	2.00	20.00	2.00	20.00	2.00	20.00	2.00	20.00	2.18	20.00	2.00
25.00	2.00	25.00	2.00	25.00	2.00	25.00	2.00	25.00	2.00	25.00	2.00	25.00	2.00	25.00	2.00	25.00	1.84
30.00	2.00	30.00	2.05	30.00	2.00	30.00	1.55	30.00	2.00	30.00	2.00	30.00	1.55	30.00	1.70	30.00	2.00
35.00	1.70	35.00	2.00	35.00	2.00	35.00	1.70	35.00	2.02	35.00	2.00	35.00	2.00	35.00	1.42	35.00	2.00
40.00	1.99					40.00	1.56	40.00	2.00	40.00	1.86			40.00	1.56		
45.00	2.00					45.00	2.00			45.00	n.a.			45.00	1.21		
										50.00	2.00			50.00	0.95		
														60.00	2.01		
Inv Avg	1.97	Inv Avg	2.01	Inv Avg	2.00	Inv Avg	1.85	Inv Avg	1.98	Inv Avg	1.99	Inv Avg	1.94	Inv Avg	1.56	Inv Avg	1.98
Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low	Risk	Low

Figure D-18

Appendix E

RESULTS OF SLOPE STABILITY ANALYSES
Revised August 2013

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Table E-1
Ameren Missouri Labadie UWL
SOIL & MATERIAL PROPERTIES USED IN STABILITY ANALYSES

Material Description		Undrained Properties			Effective or Drained Prop.			C-U (EQ) Properties			Liquefied Prop.	
		Unit Weight γ , pcf	Shear Strength c, psf	Friction Angle ϕ , deg.	Unit Weight γ , pcf	Shear Strength c', psf	Friction Angle ϕ' , deg.	Unit Weight γ , pcf	Shear Strength c, psf	Friction Angle ϕ , deg.	Unit Weight γ , pcf	Shear Strength c, psf
Upper, Nominal Compacted CCP		112	1	35	112	1	35	112	300	22		
Lower, Nominal Compacted CCP		90	1	35	90	1	35	90	300	22		
General Berm Fill		120	1000	0	120	1	30					
Compacted Clay Liner - Berm		115	600	0	115	1	25	115	1	25		
Compacted Clay Liner - Base		115	600	0	115	1	25	115	1	21		
Leachate Collection Layer (Clean gravel)		120	1	28	120	1	28					
Intermediate Cover					120	80	28.4					
Natural Strata												
Silty Clay (CL-ML)	Section A-A'	116	1100	0	116	150	24	116	100	17		
	Section E-E'	115	900	0	115	25	23					
Fine Sand w/ Silt (SM)	Section B-B'	118	1	23	118	1	23				118	210
Sandy Silt/Silty Sand (SM-ML)	Section D-D'	125	1100	0	125	300	22	125	300	13		
Clay (CL)	Section B-B'	117	1200	0	117	200	24	117	200	15		
Med. Plastic Clay (CL-CH)	Section C-C'	116	1000	0	116	450	18	116	490	11		
	Section D-D'	116	900	0	116	400	18	116	400	11		
	Section E-E'	114	900	0	114	75	16					
Clay, Silt & Sand (CL-ML-SM)	Section C-C'	126	800	0	126	300	22	126	300	13		
Sand with Silt (SP-SM)	Section A-A'	124	1	30	124	1	30				116	280
	Section B-B'	124	1	31	124	1	31				124	870
	Section C-C'	124	1	30	124	1	30				124	420
	Section D-D'	124	1	30	124	1	30				125	210
	Section E-E'	124	1	31	124	1	31				124	1100
Poorly Graded Sand (SP)	Sec. A-A', B-B'	126	1	35	126	1	35				124	870
	Section C-C'	126	1	35	126	1	35				120	980
	Section D-D'	126	1	35	126	1	35				126	1100
	Section E-E'	125	1	33	125	1	33					
Sand & Silt (SP-ML)	Section E-E'	122	1	27	122	1	27				122	500

Table E-1
Ameren Missouri Labadie UWL
SOIL & MATERIAL PROPERTIES USED IN STABILITY ANALYSES

Material Description		Undrained Properties			Effective or Drained Prop.			C-U (EQ) Properties			Liquefied Prop.	
		Unit Weight γ , pcf	Shear Strength c, psf	Friction Angle ϕ , deg.	Unit Weight γ , pcf	Shear Strength c', psf	Friction Angle ϕ' , deg.	Unit Weight γ , pcf	Shear Strength c, psf	Friction Angle ϕ , deg.	Unit Weight γ , pcf	Shear Strength c, psf
Sand w/ Gravel (SP/SP-GP)	All	127	1	37	127	1	37					
Lower Sand & Gravel (SP-GP)	All but E-E'	127	1	39	127	1	39					
	Section E-E'	130	1	28	130	1	28					
Lower Gravel with Sand (GP-SP)	Section E-E'	135	1	35	135	1	35					
Notes: 1. Shear strength properties of natural soil strata based upon laboratory tests (for near-surface soils) and <i>in-situ</i> tests (Standard Penetration Tests of static cone penetrometer tests (CPT). Tests results are presented in <i>Detailed Site Investigation (DSI) Report</i> - Appendix 2. 2. A nominal cohesion (c') of 1 psf is used for cohesionless soils to prevent the random search routine from creating superficial failure surfaces. 3. Consolidated-undrained (C-U) shear strength properties are used for fine-grain soils in seismic (EQ) analyses to account for rapid, undrained loading. 4. Properties of natural soil strata vary from section to section based upon closest <i>in-situ</i> tests or available laboratory tests. 5. "Upper, nominal compacted CCP" refers to non-ponded CCP which may be used for later filling of the landfill, which may be placed at a higher unit weight (112 pcf) compared to the ponded CCP (90 or 93 pcf). A higher unit weight was used after the initial filling of the cell with ponded CCP, but the much greater shear strengths of the cemented, non-ponded CCP that were measured in the lab were not used; therefore, the analyses are conservative.												

Table E-2
Ameren Missouri Labadie UWL
RESULTS OF SLOPE STABILITY ANALYSES

Minimum Factors of Safety (FS) for Permanent Berms

Type of Failure	Height of CCP Fill	Shear Strength Properties	Sections (see Figure E-1)					Required Minimum
			A-A'	B-B'	C-C'	D-D'	E-E'	
Global, circular	Initial	Undrained	3.19	2.69	2.39	2.95	2.44	1.5
		Drained	2.07	2.39	2.14	2.70	1.47	1.5
Global, circular with liquefaction		Undrained	1.76	1.90	1.98	1.86	2.09	1.1
Global, circular	Full	Drained	2.07	2.15	2.14	2.27	1.46	1.5
Global, circular with liquefaction		Undrained	1.48	1.13	1.32	1.35	1.72	1.1

Yield Acceleration for Seismic (Pseudo-Static) FS = 1 for Permanent Berms

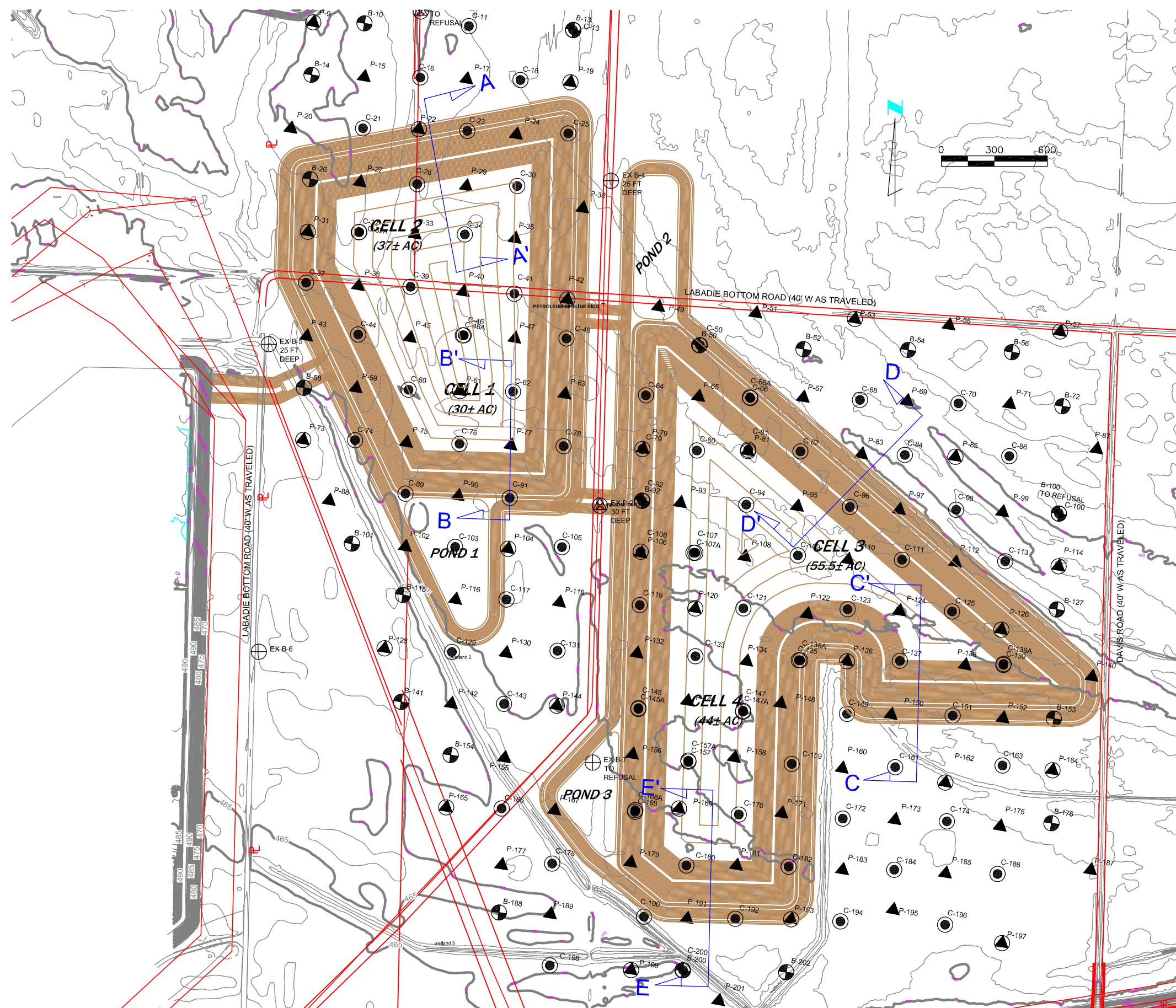
Type of Failure	Height of CCP Fill	Shear Strength Properties	Sections (see Figure E-1)				
			A-A'	B-B'	C-C'	D-D'	E-E'
Global, circular	Initial	Undrained	0.22	0.21	0.28	0.27	0.27
	Full		0.17	0.13	0.15	0.15	0.16

Analyses of Slope Failure Along Composite Clay Interface for Permanent Berms

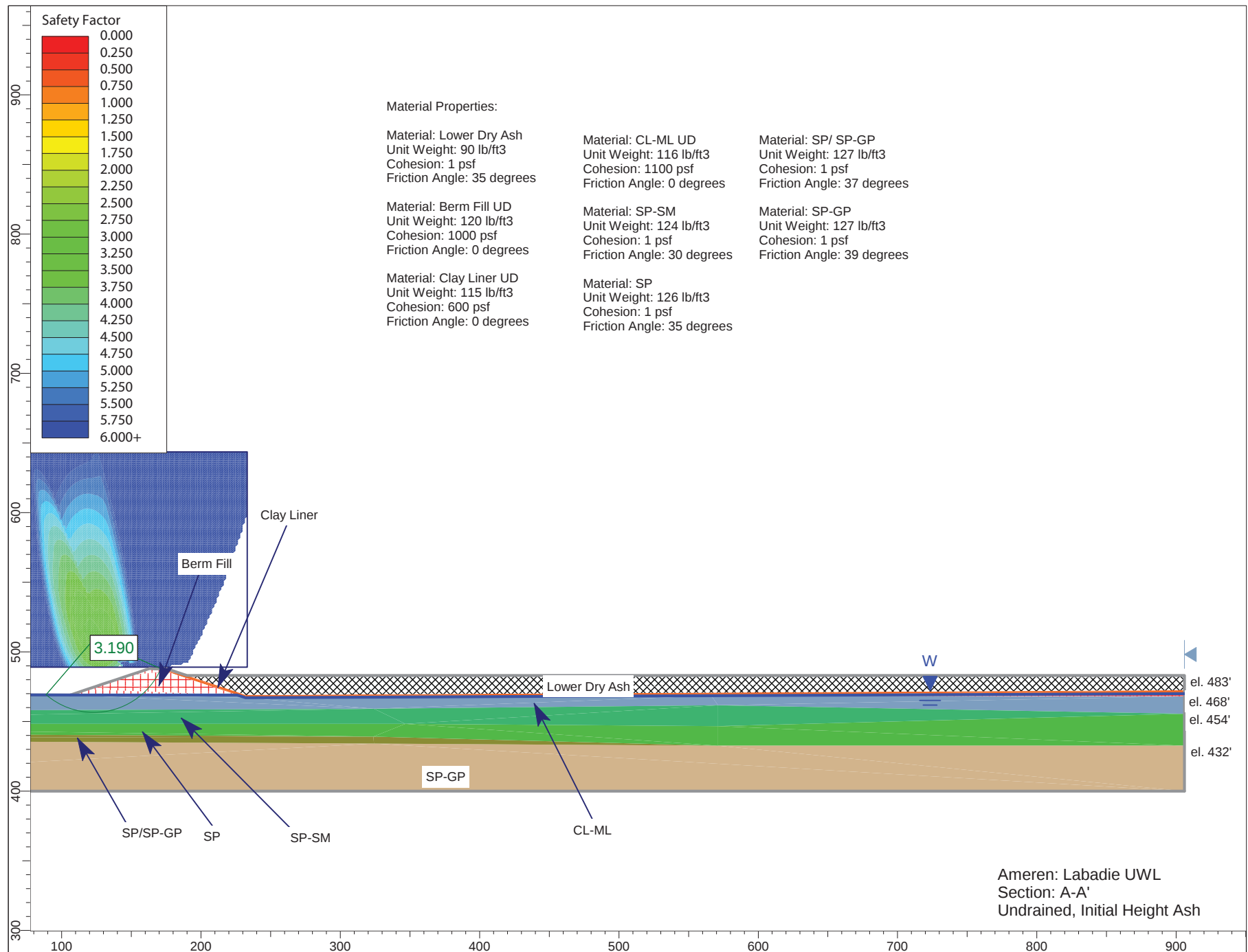
Type of Failure	Height of CCP Fill	Shear Strength Properties	Minimum FS	Yield Acceleration
Sliding Block Along Clay Liner	Full	Drained	1.76	0.13g

Analyses of Slope Failure for Temporary CCP Berm

Type of Failure	Height of CCP Fill	Shear Strength Properties	Minimum FS	Yield Acceleration
Global, circular	Full	Drained	1.91	—
Sliding Block Along Clay Liner			1.59	0.06



Ameren Missouri Labadie UWL
LOCATIONS OF CROSS-SECTIONS FOR
STABILITY ANALYSES



Slide Analysis Information

Document Name

File Name: Section AA Partial Undrained.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML UD
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 1100 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary
-310.816 456.500
324.184 459.061
571.184 461.561

906.000	455.500
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Material Boundary

346.669	448.252
571.184	446.561
906.000	455.500

Material Boundary

-310.816	442.454
323.787	439.064
571.184	432.561

Material Boundary

-310.816	437.454
324.184	434.061

Material Boundary

324.184	434.061
571.184	432.561

Material Boundary

190.000	483.000
232.000	469.000
566.246	468.488
906.000	467.967

Material Boundary

106.184	469.061
225.991	469.003
232.000	469.000

Material Boundary

-310.816	448.252
346.669	448.252

Material Boundary

571.184	432.561
906.000	432.561

Material Boundary

232.000	469.000
906.000	472.524

Material Boundary

175.000	488.000
175.000	486.000
225.991	469.003
232.000	467.000
566.246	468.488
906.000	470.000

External Boundary

200.000	483.000
196.315	483.000
190.000	483.000
187.789	483.737
184.000	485.000

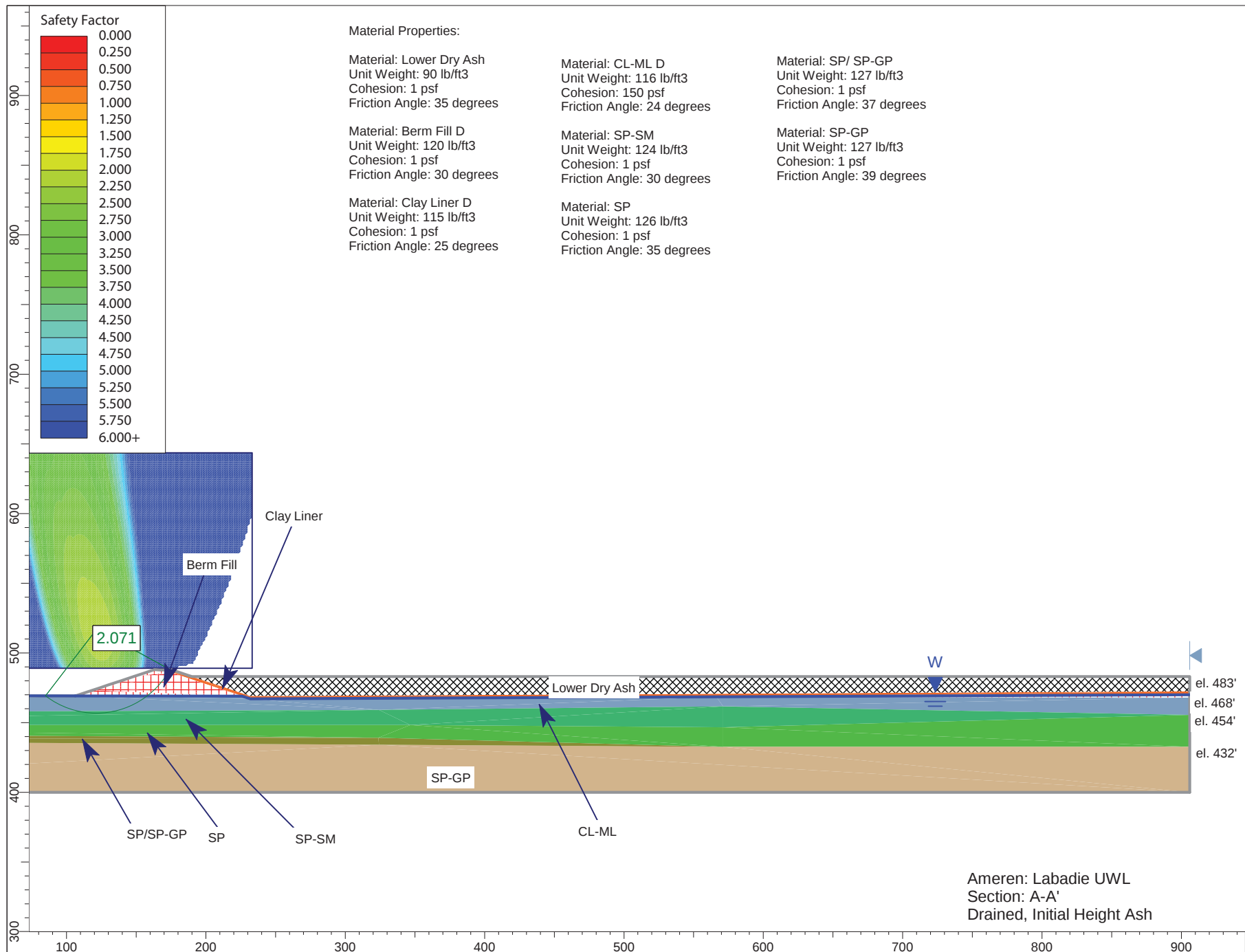
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154.000	485.000
148.473	483.158
139.000	480.000
129.527	476.842
124.000	475.000
118.473	473.158
106.184	469.061
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906.000	432.561
906.000	455.500
906.000	467.967
906.000	470.000
906.000	472.524
906.000	483.000

Water Table

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106.184	469.061
225.991	469.003
232.000	467.000
906.000	470.000

Search Grid

63.910	489.052
233.238	489.052
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63.910	643.611



Slide Analysis Information

Document Name

File Name: Section AA Partial Drained.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner D
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML D
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 150 psf
Friction Angle: 24 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary
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324.184 459.061
571.184 461.561

906.000	455.500
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Material Boundary

346.669	448.252
571.184	446.561
906.000	455.500

Material Boundary

-310.816	442.454
323.787	439.064
571.184	432.561

Material Boundary

-310.816	437.454
324.184	434.061

Material Boundary

324.184	434.061
571.184	432.561

Material Boundary

190.000	483.000
232.000	469.000
566.246	468.488
906.000	467.967

Material Boundary

106.184	469.061
225.991	469.003
232.000	469.000

Material Boundary

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346.669	448.252

Material Boundary

571.184	432.561
906.000	432.561

Material Boundary

232.000	469.000
906.000	472.524

Material Boundary

175.000	488.000
175.000	486.000
225.991	469.003
232.000	467.000
566.246	468.488
906.000	470.000

External Boundary

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196.315	483.000
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187.789	483.737
184.000	485.000

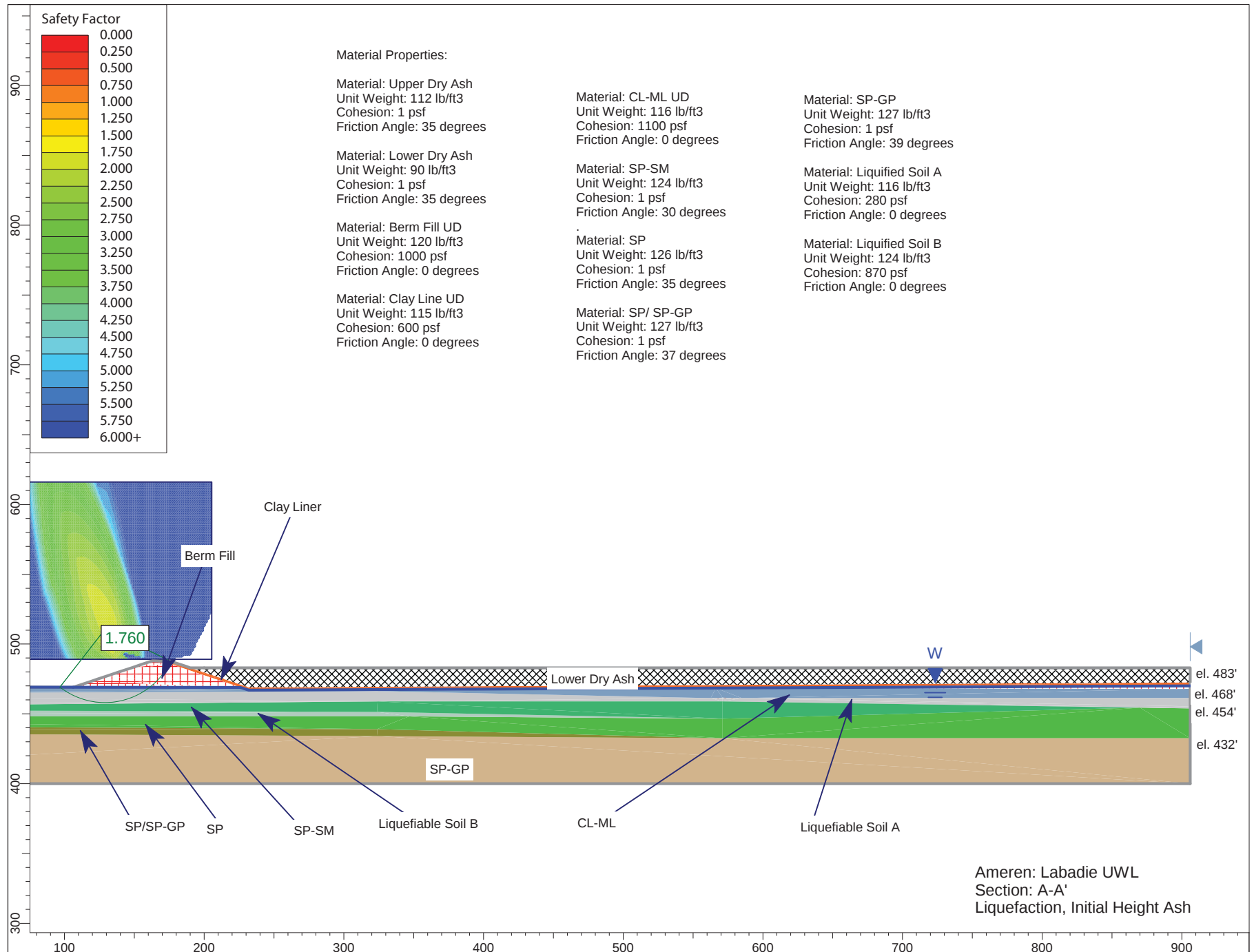
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Water Table

-310.816	469.954
106.184	469.061
225.991	469.003
232.000	467.000
906.000	470.000

Search Grid

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63.910	643.611



Slide Analysis Information

Document Name

File Name: Section AA Partial Liquefaction.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML UD
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 1100 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table

Custom Hu value: 1

Material: Liquified Soil A

Strength Type: Mohr-Coulomb

Unit Weight: 116 lb/ft³

Cohesion: 280 psf

Friction Angle: 0 degrees

Water Surface: Water Table

Custom Hu value: 1

Material: Liquified Soil B

Strength Type: Mohr-Coulomb

Unit Weight: 124 lb/ft³

Cohesion: 870 psf

Friction Angle: 0 degrees

Water Surface: Water Table

Custom Hu value: 1

List of All Coordinates

Material Boundary

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Material Boundary

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Material Boundary

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571.184 432.561

Material Boundary

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Material Boundary

324.184 434.061

571.184 432.561

Material Boundary

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Material Boundary

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225.991 469.003

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Material Boundary

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Material Boundary

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Material Boundary

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Material Boundary

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175.000	486.000
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566.246	468.488
906.000	470.000

Material Boundary

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Material Boundary

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Material Boundary

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External Boundary

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175.000	488.000
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169.000	487.681
166.789	487.798
163.000	488.000
157.316	486.105
154.000	485.000

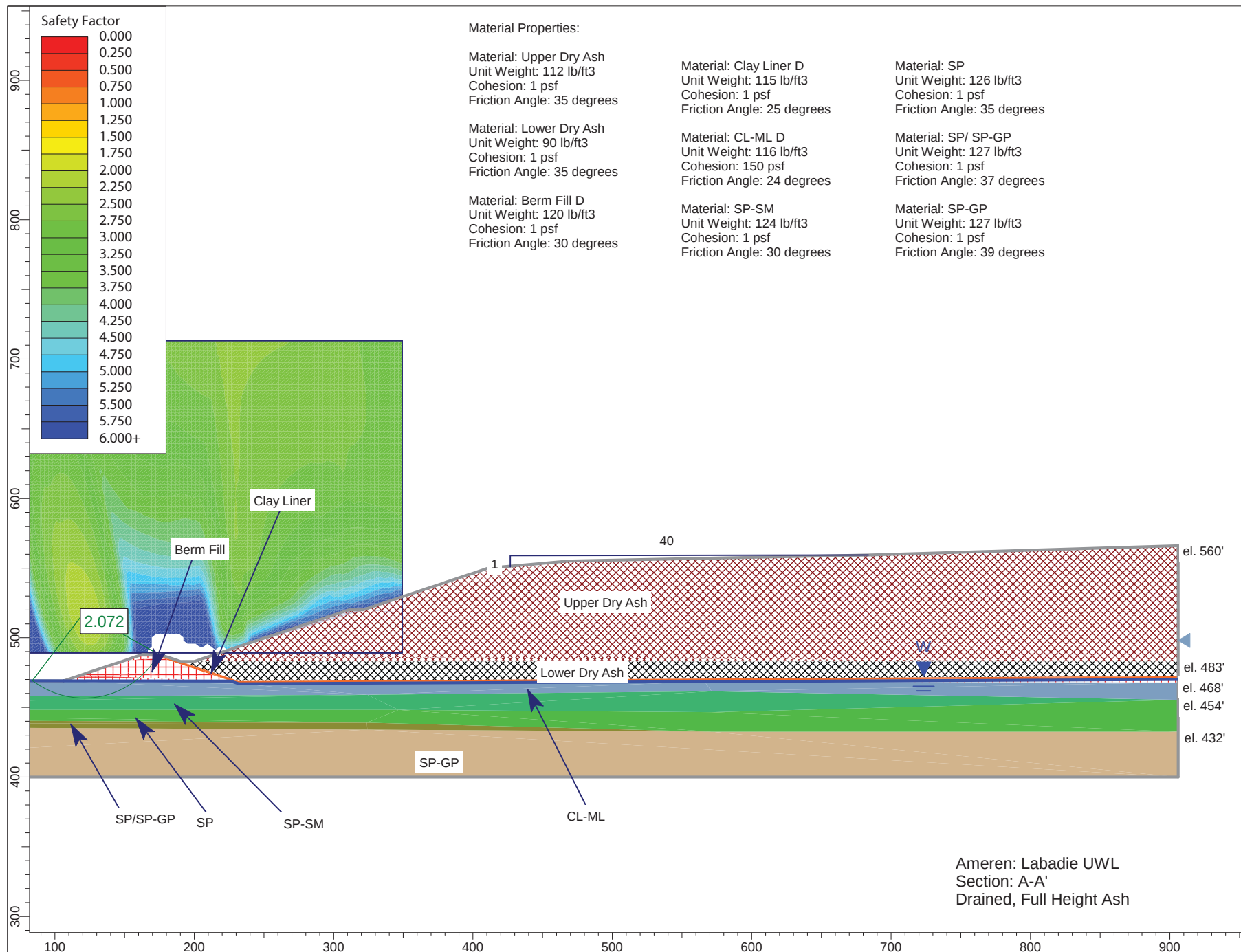
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106.184	469.061
-310.816	469.954
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-310.816	437.454
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906.000	432.561
906.000	454.000
906.000	455.500
906.000	461.253
906.000	467.967
906.000	470.000
906.000	472.524
906.000	483.000

Water Table

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225.991	469.003
232.000	467.000
906.000	470.000

Search Grid

63.910	489.052
205.437	489.052
205.437	616.049
63.910	616.049



Slide Analysis Information

Document Name

File Name: Section AA Full Drained.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D

Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner D

Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML D

Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 150 psf
Friction Angle: 24 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM

Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP

Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP

Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP

Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table

Custom Hu value: 1

List of All Coordinates

Material Boundary

-310.816	456.500
324.184	459.061
571.184	461.561
906.000	455.500

Material Boundary

346.669	448.252
571.184	446.561
906.000	455.500

Material Boundary

-310.816	442.454
323.787	439.064
571.184	432.561

Material Boundary

-310.816	437.454
324.184	434.061

Material Boundary

324.184	434.061
571.184	432.561

Material Boundary

190.000	483.000
232.000	469.000
566.246	468.488
906.000	467.967

Material Boundary

106.184	469.061
225.991	469.003
232.000	469.000

Material Boundary

200.000	483.000
906.000	483.000

Material Boundary

-310.816	448.252
346.669	448.252

Material Boundary

571.184	432.561
906.000	432.561

Material Boundary

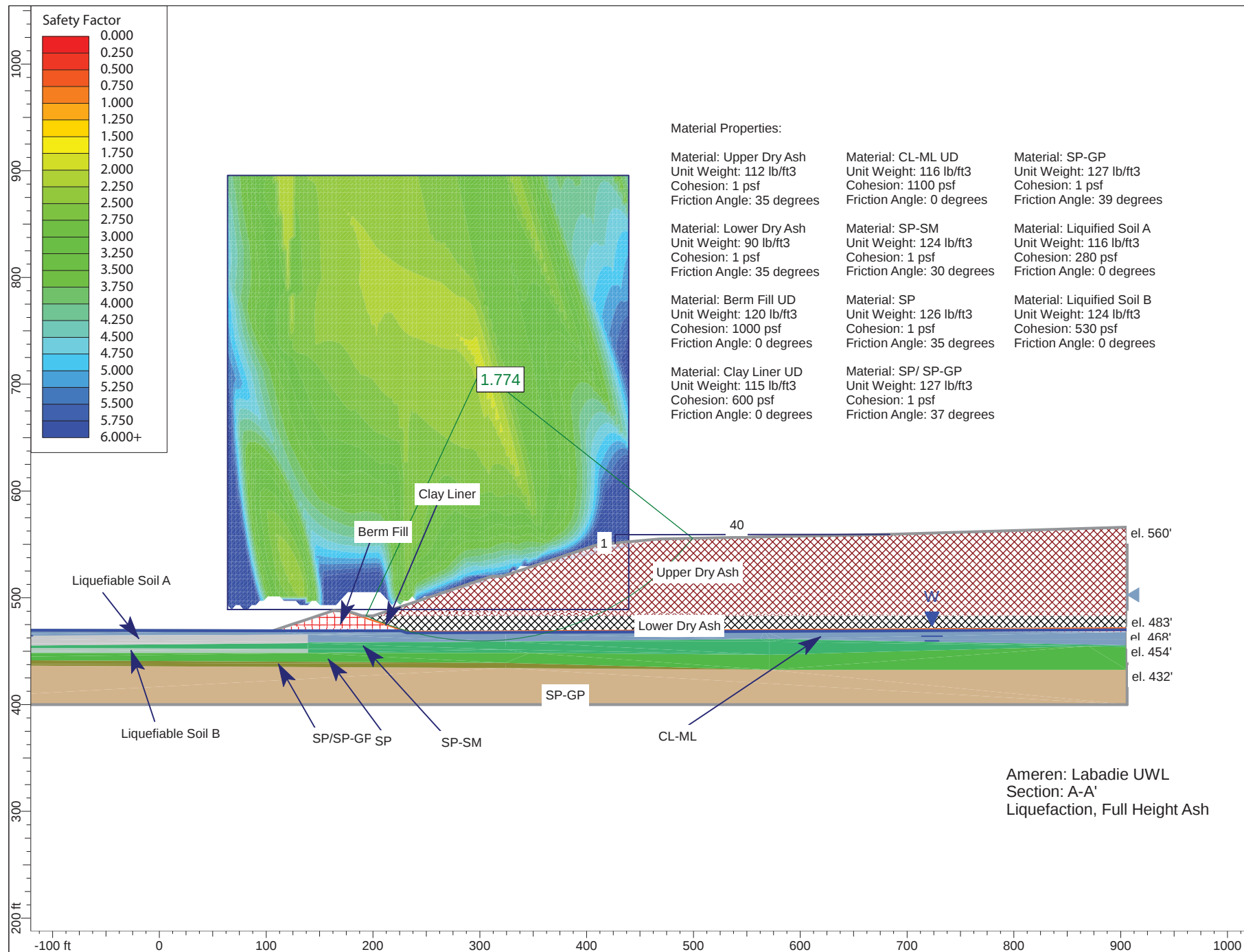
232.000	469.000
906.000	472.524

Material Boundary

175.000	488.000
175.000	486.000
225.991	469.003
232.000	467.000
566.246	468.488
906.000	470.000

External Boundary

906.000	566.071
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468.434	555.000
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411.000	550.000
398.805	545.935
396.000	545.000
391.110	543.370
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375.110	538.037
366.000	535.000
359.899	532.966
351.000	530.000
344.696	527.899
336.000	525.000
321.203	520.068
321.000	520.000
320.919	520.000
311.000	520.000
310.751	519.917
296.000	515.000
294.928	514.643
281.000	510.000
271.864	506.955
266.000	505.000
256.681	501.894
251.000	500.000
241.544	496.848
236.000	495.000
226.527	491.842
221.000	490.000
211.527	486.842
206.000	485.000
203.789	484.263
200.000	483.000
196.315	483.000
190.000	483.000
187.789	483.737
184.000	485.000
178.316	486.895
175.000	488.000
170.579	487.765
169.000	487.681
166.789	487.798
163.000	488.000
157.316	486.105
154.000	485.000
148.473	483.158



Slide Analysis Information

Document Name

File Name: Section AA Full Liquefaction trial.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML UD
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 1100 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table

Custom Hu value: 1

Material: Liquified Soil A

Strength Type: Mohr-Coulomb

Unit Weight: 116 lb/ft³

Cohesion: 280 psf

Friction Angle: 0 degrees

Water Surface: Water Table

Custom Hu value: 1

Material: Liquified Soil B

Strength Type: Mohr-Coulomb

Unit Weight: 124 lb/ft³

Cohesion: 530 psf

Friction Angle: 0 degrees

Water Surface: Water Table

Custom Hu value: 1

Global Minimums

Method: bishop simplified

FS: 1.811420

Center: 300.529, 712.645

Radius: 253.398

Left Slip Surface Endpoint: 193.412, 483.000

Right Slip Surface Endpoint: 499.410, 555.620

Resisting Moment=1.55445e+008 lb-ft

Driving Moment=8.58143e+007 lb-ft

Method: spencer

FS: 1.773810

Center: 300.529, 712.645

Radius: 253.398

Left Slip Surface Endpoint: 193.412, 483.000

Right Slip Surface Endpoint: 499.410, 555.620

Resisting Moment=1.52218e+008 lb-ft

Driving Moment=8.58143e+007 lb-ft

Resisting Horizontal Force=541013 lb

Driving Horizontal Force=305001 lb

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 32432

Number of Invalid Surfaces: 79779

Error Codes:

Error Code -103 reported for 78856 surfaces

Error Code -107 reported for 51 surfaces

Error Code -109 reported for 1 surface

Error Code -112 reported for 871 surfaces

Method: spencer

Number of Valid Surfaces: 32149

Number of Invalid Surfaces: 80062

Error Codes:

Error Code -103 reported for 78856 surfaces

Error Code -107 reported for 51 surfaces
Error Code -108 reported for 103 surfaces
Error Code -109 reported for 1 surface
Error Code -111 reported for 68 surfaces
Error Code -112 reported for 983 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.

-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.

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

-109 = Soiltype for slice base not located. This error should occur very rarely, if at all. It may occur if a very low number of slices is combined with certain soil geometries, such that the midpoint of a slice base is actually outside the soil region, even though the slip surface is wholly within the soil region.

-111 = safety factor equation did not converge

-112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi)/F)$ < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

List of All Coordinates

Search Grid

63.910	489.052
439.495	489.052
439.495	895.584
63.910	895.584

Material Boundary

-310.816	456.500
----------	---------

139.040	458.315
324.184	459.061
562.692	461.315
571.184	461.561
584.957	461.312
906.000	455.500

Material Boundary

346.669	448.252
571.184	446.561
869.969	454.538
906.000	455.500

Material Boundary

-310.816	442.454
323.787	439.064
571.184	432.561

Material Boundary

-310.816	437.454
324.184	434.061

Material Boundary

324.184	434.061
571.184	432.561

Material Boundary

190.000	483.000
232.000	469.000
566.246	468.488
906.000	467.967

Material Boundary

106.184	469.061
225.991	469.003
232.000	469.000

Material Boundary

200.000	483.000
906.000	483.000

Material Boundary

-310.816	448.252
139.066	448.252
346.669	448.252

Material Boundary

571.184	432.561
906.000	432.561

Material Boundary

232.000	469.000
906.000	472.524

Material Boundary

175.000	488.000
---------	---------

175.000	486.000
225.991	469.003
232.000	467.000
566.246	468.488
906.000	470.000

Material Boundary

-310.816	463.753
139.040	465.524
324.184	466.253
562.692	461.315
571.184	461.315
584.957	461.312
906.000	461.253

Material Boundary

-310.816	453.702
139.066	452.141
323.787	451.500
571.184	446.561

Material Boundary

-310.816	453.708
139.040	457.457
324.184	459.000
571.184	459.000
869.969	454.538
906.000	454.000

Material Boundary

139.040	457.457
139.040	458.315
139.040	465.524

Material Boundary

139.066	448.252
139.066	452.141

External Boundary

906.000	566.071
683.709	559.305
468.434	555.000
440.357	552.556
411.000	550.000
398.805	545.935
396.000	545.000
391.110	543.370
381.000	540.000
375.110	538.037
366.000	535.000
359.899	532.966
351.000	530.000
344.696	527.899
336.000	525.000
321.203	520.068
321.000	520.000

320.919	520.000
311.000	520.000
310.751	519.917
296.000	515.000
294.928	514.643
281.000	510.000
271.864	506.955
266.000	505.000
256.681	501.894
251.000	500.000
241.544	496.848
236.000	495.000
226.527	491.842
221.000	490.000
211.527	486.842
206.000	485.000
203.789	484.263
200.000	483.000
196.315	483.000
190.000	483.000
187.789	483.737
184.000	485.000
178.316	486.895
175.000	488.000
170.579	487.765
169.000	487.681
166.789	487.798
163.000	488.000
157.316	486.105
154.000	485.000
148.473	483.158
139.000	480.000
129.527	476.842
124.000	475.000
118.473	473.158
106.184	469.061
-310.816	469.954
-310.816	463.753
-310.816	456.500
-310.816	453.708
-310.816	453.702
-310.816	448.252
-310.816	442.454
-310.816	437.454
-310.816	400.000
906.000	400.000
906.000	432.561
906.000	454.000
906.000	455.500
906.000	461.253
906.000	467.967
906.000	470.000
906.000	472.524
906.000	483.000

Water Table

-310.816	469.954
106.184	469.061
225.991	469.003
232.000	467.000
906.000	470.000

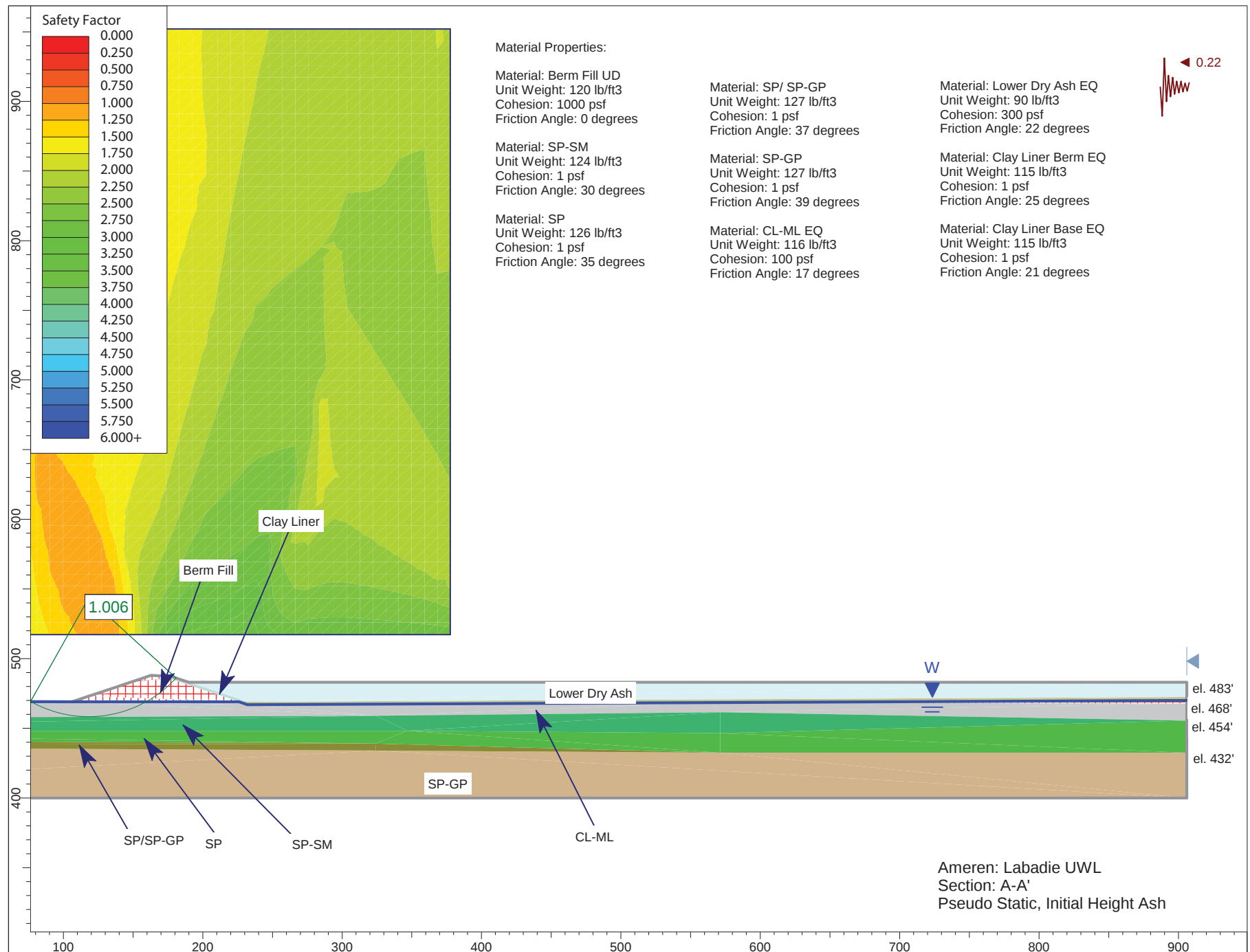
139.000	480.000
129.527	476.842
124.000	475.000
118.473	473.158
106.184	469.061
-310.816	469.954
-310.816	456.500
-310.816	448.252
-310.816	442.454
-310.816	437.454
-310.816	400.000
906.000	400.000
906.000	432.561
906.000	455.500
906.000	467.967
906.000	470.000
906.000	472.524
906.000	483.000

Water Table

-310.816	469.954
106.184	469.061
225.991	469.003
232.000	467.000
906.000	470.000

Search Grid

63.910	489.052
349.264	489.052
349.264	713.194
63.910	713.194



Slide Analysis Information

Document Name

File Name: Section AA Partial Psuedo Static.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Enabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.22

Material Properties

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM

Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP

Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP

Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP

Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML EQ

Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 100 psf
Friction Angle: 17 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash EQ

Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Berm EQ

Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Base EQ

Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³

Cohesion: 1 psf
Friction Angle: 21 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary

-310.816	456.500
324.184	459.061
571.184	461.561
906.000	455.500

Material Boundary

346.669	448.252
571.184	446.561
906.000	455.500

Material Boundary

-310.816	442.454
323.787	439.064
571.184	432.561

Material Boundary

-310.816	437.454
324.184	434.061

Material Boundary

324.184	434.061
571.184	432.561

Material Boundary

190.000	483.000
232.000	469.000
566.246	468.488
906.000	467.967

Material Boundary

106.184	469.061
225.991	469.003
232.000	469.000

Material Boundary

-310.816	448.252
346.669	448.252

Material Boundary

571.184	432.561
906.000	432.561

Material Boundary

232.000	469.000
906.000	472.524

Material Boundary

175.000	488.000
175.000	486.000

225.991	469.003
232.000	467.000
566.246	468.488
906.000	470.000

External Boundary

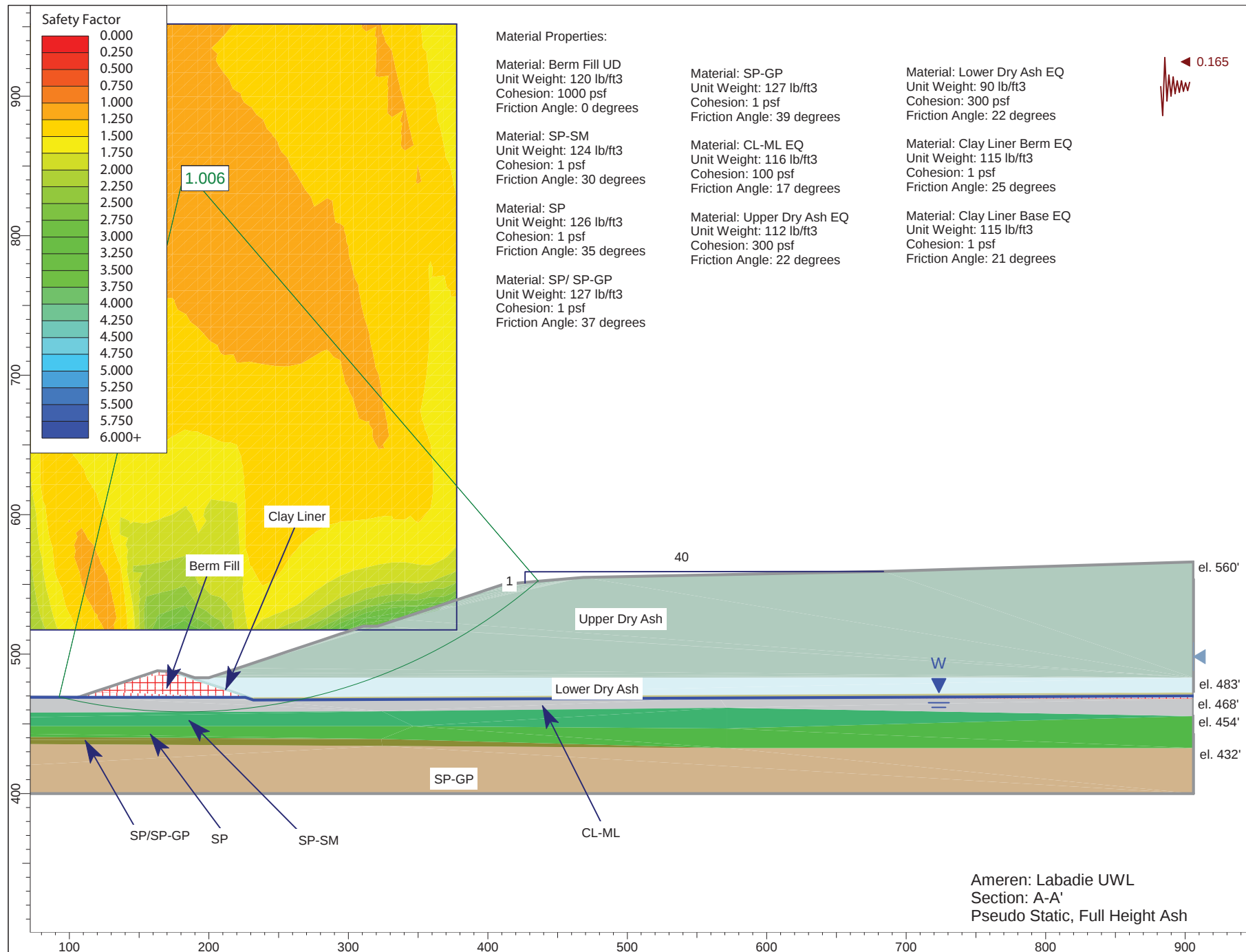
200.000	483.000
196.315	483.000
190.000	483.000
187.789	483.737
184.000	485.000
178.316	486.895
175.000	488.000
170.579	487.765
169.000	487.681
166.789	487.798
163.000	488.000
157.316	486.105
154.000	485.000
148.473	483.158
139.000	480.000
129.527	476.842
124.000	475.000
118.473	473.158
106.184	469.061
-310.816	469.954
-310.816	456.500
-310.816	448.252
-310.816	442.454
-310.816	437.454
-310.816	400.000
906.000	400.000
906.000	432.561
906.000	455.500
906.000	467.967
906.000	470.000
906.000	472.524
906.000	483.000

Water Table

-310.816	469.954
106.184	469.061
225.991	469.003
232.000	467.000
906.000	470.000

Search Grid

-85.861	517.280
377.618	517.280
377.618	951.877
-85.861	951.877



Slide Analysis Information

Document Name

File Name: Section AA Full Psuedo Statics.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Enabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.165

Material Properties

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM

Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft3
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP

Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft3
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP

Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft3
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP

Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft3
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML EQ

Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft3
Cohesion: 100 psf
Friction Angle: 17 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Upper Dry Ash EQ

Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft3
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash EQ

Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft3
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Berm EQ

Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft3

Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Base EQ
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 21 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary

-310.816	456.500
324.184	459.061
571.184	461.561
906.000	455.500

Material Boundary

346.669	448.252
571.184	446.561
906.000	455.500

Material Boundary

-310.816	442.454
323.787	439.064
571.184	432.561

Material Boundary

-310.816	437.454
324.184	434.061

Material Boundary

324.184	434.061
571.184	432.561

Material Boundary

190.000	483.000
232.000	469.000
566.246	468.488
906.000	467.967

Material Boundary

106.184	469.061
225.991	469.003
232.000	469.000

Material Boundary

200.000	483.000
906.000	483.000

Material Boundary

-310.816	448.252
346.669	448.252

Material Boundary

571.184	432.561
906.000	432.561

Material Boundary

232.000	469.000
906.000	472.524

Material Boundary

175.000	488.000
175.000	486.000
225.991	469.003
232.000	467.000
566.246	468.488
906.000	470.000

External Boundary

906.000	566.071
683.709	559.305
468.434	555.000
440.357	552.556
411.000	550.000
398.805	545.935
396.000	545.000
391.110	543.370
381.000	540.000
375.110	538.037
366.000	535.000
359.899	532.966
351.000	530.000
344.696	527.899
336.000	525.000
321.203	520.068
321.000	520.000
320.919	520.000
311.000	520.000
310.751	519.917
296.000	515.000
294.928	514.643
281.000	510.000
271.864	506.955
266.000	505.000
256.681	501.894
251.000	500.000
241.544	496.848
236.000	495.000
226.527	491.842
221.000	490.000
211.527	486.842
206.000	485.000
203.789	484.263
200.000	483.000
196.315	483.000
190.000	483.000
187.789	483.737
184.000	485.000

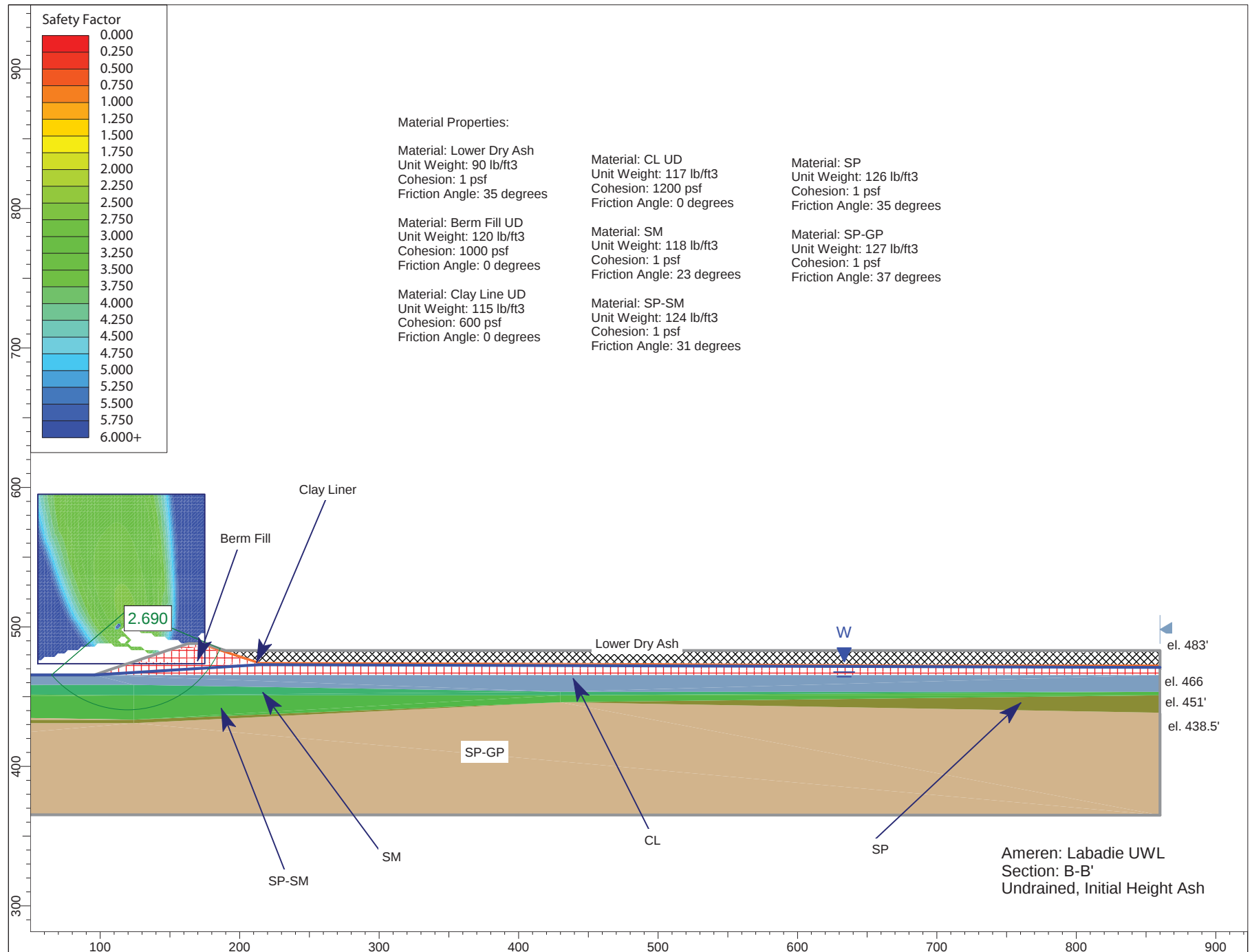
178.316	486.895
175.000	488.000
170.579	487.765
169.000	487.681
166.789	487.798
163.000	488.000
157.316	486.105
154.000	485.000
148.473	483.158
139.000	480.000
129.527	476.842
124.000	475.000
118.473	473.158
106.184	469.061
-310.816	469.954
-310.816	456.500
-310.816	448.252
-310.816	442.454
-310.816	437.454
-310.816	400.000
906.000	400.000
906.000	432.561
906.000	455.500
906.000	467.967
906.000	470.000
906.000	472.524
906.000	483.000

Water Table

-310.816	469.954
106.184	469.061
225.991	469.003
232.000	467.000
906.000	470.000

Search Grid

-85.861	517.280
377.618	517.280
377.618	951.877
-85.861	951.877



Slide Analysis Information

Document Name

File Name: Section BB Partial UnDrained.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL UD
Strength Type: Mohr-Coulomb
Unit Weight: 117 lb/ft³
Cohesion: 1200 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM
Strength Type: Mohr-Coulomb
Unit Weight: 118 lb/ft³
Cohesion: 1 psf
Friction Angle: 23 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary
-650.000 458.500
124.000 458.500
430.000 453.500

860.010	453.500
---------	---------

Material Boundary

-650.000	456.000
124.000	451.000
430.000	451.000
860.010	453.500

Material Boundary

-650.000	446.000
124.000	433.500
430.000	446.000
860.009	450.998

Material Boundary

-650.000	433.500
124.000	433.500

Material Boundary

-650.000	431.000
124.000	431.000
430.000	446.000
860.008	438.502

Material Boundary

190.000	483.000
214.462	474.846
491.000	474.000
671.000	473.000
860.012	473.000

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
214.462	472.846
214.462	474.846

Material Boundary

214.462	472.846
860.011	471.000

Material Boundary

95.732	465.577
860.011	465.591

External Boundary

-650.000	365.500
860.000	365.000
860.008	438.502
860.009	450.998
860.010	453.500
860.010	453.500
860.011	465.591
860.011	471.000

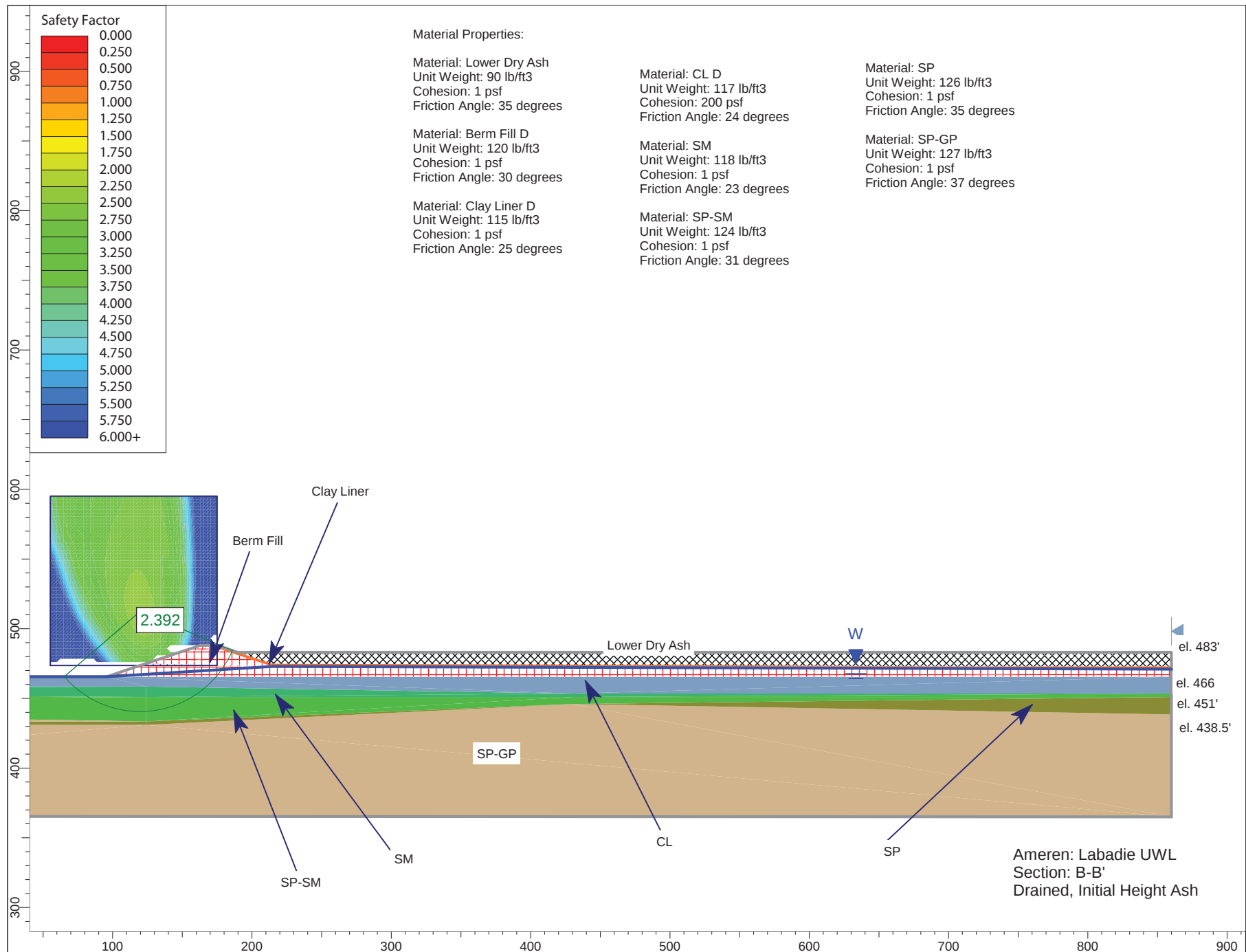
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860.013	482.998
200.000	483.000
196.100	483.000
190.000	483.000
187.654	483.782
184.000	485.000
180.474	486.175
175.000	488.000
170.055	487.977
169.000	487.972
166.542	487.983
163.000	488.000
159.335	486.778
154.000	485.000
147.892	482.964
139.000	480.000
132.892	477.964
124.000	475.000
117.892	472.964
95.732	465.577
-650.000	465.500
-650.000	458.500
-650.000	456.000
-650.000	446.000
-650.000	433.500
-650.000	431.000

Water Table

-650.000	465.500
95.732	465.577
214.462	472.846
860.011	471.000

Search Grid

55.187	473.638
174.969	473.638
174.969	595.079
55.187	595.079



Slide Analysis Information

Document Name

File Name: Section BB Partial Drained.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner D
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL D
Strength Type: Mohr-Coulomb
Unit Weight: 117 lb/ft³
Cohesion: 200 psf
Friction Angle: 24 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM
Strength Type: Mohr-Coulomb
Unit Weight: 118 lb/ft³
Cohesion: 1 psf
Friction Angle: 23 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary
-650.000 458.500
124.000 458.500
430.000 453.500

860.010	453.500
---------	---------

Material Boundary

-650.000	456.000
124.000	451.000
430.000	451.000
860.010	453.500

Material Boundary

-650.000	446.000
124.000	433.500
430.000	446.000
860.009	450.998

Material Boundary

-650.000	433.500
124.000	433.500

Material Boundary

-650.000	431.000
124.000	431.000
430.000	446.000
860.008	438.502

Material Boundary

190.000	483.000
214.462	474.846
491.000	474.000
671.000	473.000
860.012	473.000

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
214.462	472.846
214.462	474.846

Material Boundary

214.462	472.846
860.011	471.000

Material Boundary

95.732	465.577
860.011	465.591

External Boundary

-650.000	365.500
860.000	365.000
860.008	438.502
860.009	450.998
860.010	453.500
860.010	453.500
860.011	465.591
860.011	471.000

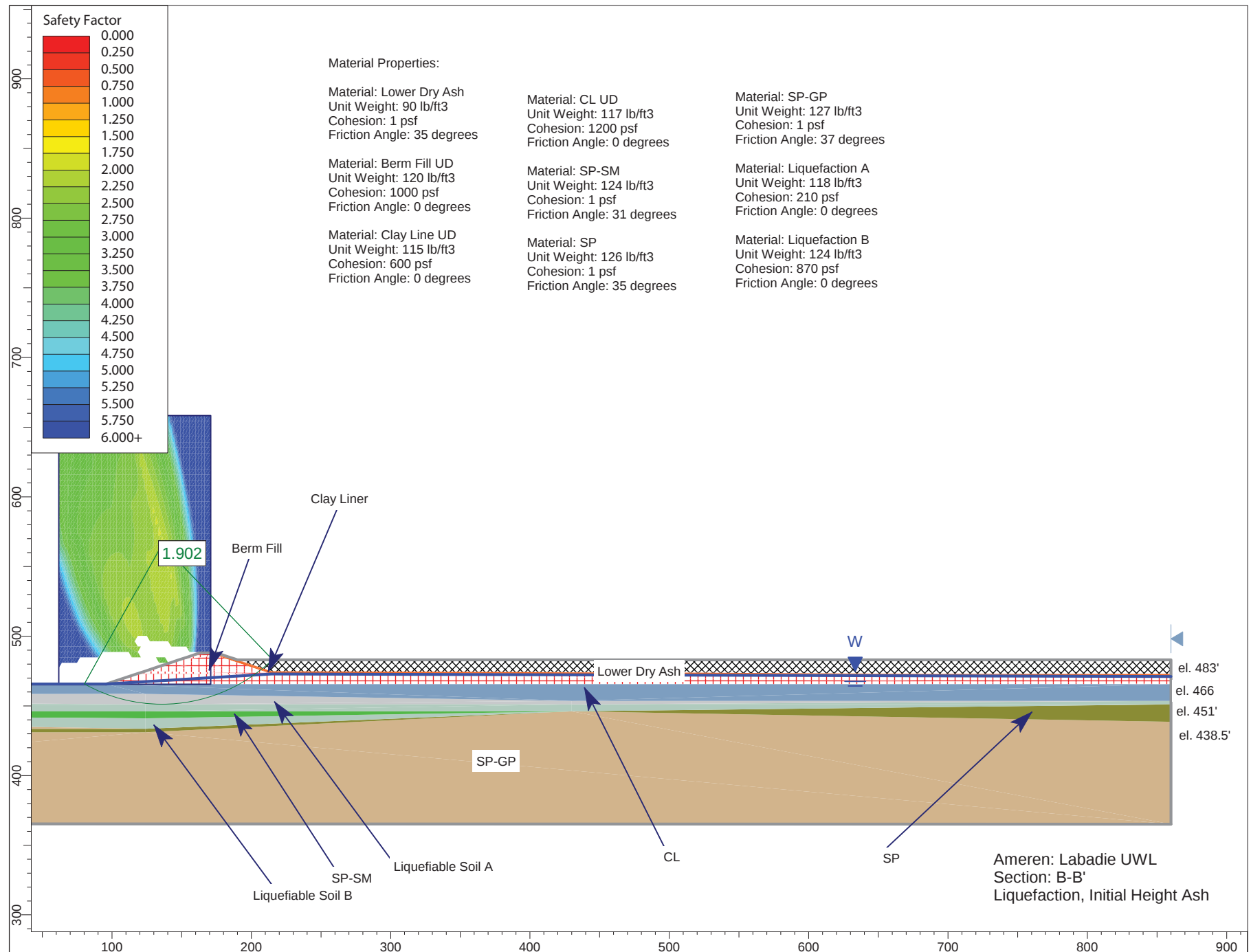
860.012	473.000
860.013	482.998
200.000	483.000
196.100	483.000
190.000	483.000
187.654	483.782
184.000	485.000
180.474	486.175
175.000	488.000
170.055	487.977
169.000	487.972
166.542	487.983
163.000	488.000
159.335	486.778
154.000	485.000
147.892	482.964
139.000	480.000
132.892	477.964
124.000	475.000
117.892	472.964
95.732	465.577
-650.000	465.500
-650.000	458.500
-650.000	456.000
-650.000	446.000
-650.000	433.500
-650.000	431.000

Water Table

-650.000	465.500
95.732	465.577
214.462	472.846
860.011	471.000

Search Grid

55.187	473.638
174.969	473.638
174.969	595.079
55.187	595.079



Slide Analysis Information

Document Name

File Name: Section BB Partial Liquefaction.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL UD
Strength Type: Mohr-Coulomb
Unit Weight: 117 lb/ft³
Cohesion: 1200 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Liquefaction A
Strength Type: Mohr-Coulomb
Unit Weight: 118 lb/ft³
Cohesion: 210 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Liquefaction B
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 870 psf
Friction Angle: 0 degrees
Water Surface: Water Table

Custom Hu value: 1

List of All Coordinates

Material Boundary

-650.000	458.500
124.000	458.500
430.000	453.500
860.010	453.500

Material Boundary

-650.000	456.000
124.000	451.000
430.000	451.000
860.010	453.500

Material Boundary

-650.000	446.000
124.000	433.500

Material Boundary

-650.000	433.500
124.000	433.500

Material Boundary

-650.000	431.000
124.000	431.000
430.000	446.000
860.008	438.502

Material Boundary

190.000	483.000
214.462	474.846
491.000	474.000
671.000	473.000
860.012	473.000

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
214.462	472.846
214.462	474.846

Material Boundary

214.462	472.846
860.011	471.000

Material Boundary

95.732	465.577
860.011	465.591

Material Boundary

-650.000	446.000
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124.000	446.000
430.000	446.000
124.000	441.000
-650.000	446.000

Material Boundary

124.000	433.500
430.000	446.000

Material Boundary

430.000	446.000
860.009	450.998

External Boundary

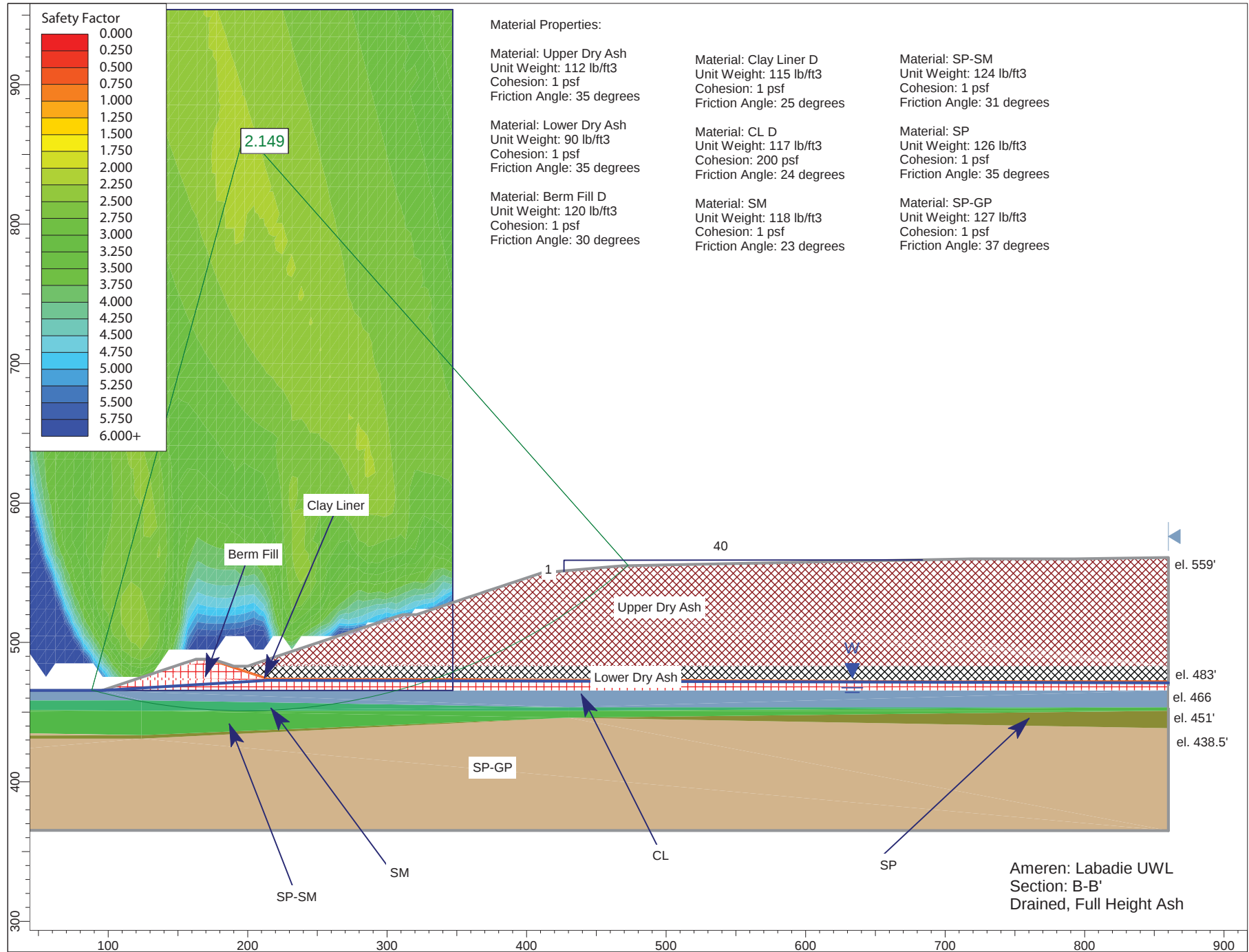
-650.000	365.500
860.000	365.000
860.008	438.502
860.009	450.998
860.010	453.500
860.010	453.500
860.011	465.591
860.011	471.000
860.012	473.000
860.013	482.998
200.000	483.000
196.100	483.000
190.000	483.000
187.654	483.782
184.000	485.000
180.474	486.175
175.000	488.000
170.055	487.977
169.000	487.972
166.542	487.983
163.000	488.000
159.335	486.778
154.000	485.000
147.892	482.964
139.000	480.000
132.892	477.964
124.000	475.000
117.892	472.964
95.732	465.577
-650.000	465.500
-650.000	458.500
-650.000	456.000
-650.000	446.000
-650.000	433.500
-650.000	431.000

Water Table

-650.000	465.500
95.732	465.577
214.462	472.846
860.011	471.000

Search Grid

61.845	465.568
170.821	465.568
170.821	658.343
61.845	658.343



Slide Analysis Information

Document Name

File Name: Section BB Full Drained.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner D
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL D
Strength Type: Mohr-Coulomb
Unit Weight: 117 lb/ft³
Cohesion: 200 psf
Friction Angle: 24 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM
Strength Type: Mohr-Coulomb
Unit Weight: 118 lb/ft³
Cohesion: 1 psf
Friction Angle: 23 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table

Custom Hu value: 1

List of All Coordinates

Material Boundary

-650.000	458.500
124.000	458.500
430.000	453.500
860.010	453.500

Material Boundary

-650.000	456.000
124.000	451.000
430.000	451.000
860.010	453.500

Material Boundary

-650.000	446.000
124.000	433.500
430.000	446.000
860.009	450.998

Material Boundary

-650.000	433.500
124.000	433.500

Material Boundary

-650.000	431.000
124.000	431.000
430.000	446.000
860.008	438.502

Material Boundary

190.000	483.000
214.462	474.846
491.000	474.000
671.000	473.000
860.012	473.000

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
214.462	472.846
214.462	474.846

Material Boundary

214.462	472.846
860.011	471.000

Material Boundary

95.732	465.577
860.011	465.591

Material Boundary

200.000	483.000
860.013	482.998

External Boundary

-650.000	365.500
860.000	365.000
860.008	438.502
860.009	450.998
860.010	453.500
860.010	453.500
860.011	465.591
860.011	471.000
860.012	473.000
860.013	482.998
860.021	560.896
792.394	560.000
718.434	560.000
500.172	555.635
468.434	555.000
461.429	554.390
411.000	550.000
401.743	546.914
396.000	545.000
386.646	541.882
381.000	540.000
371.552	536.851
366.000	535.000
356.462	531.821
351.000	530.000
341.374	526.791
336.000	525.000
329.925	522.975
321.000	520.000
315.050	520.000
311.000	520.000
302.030	517.010
296.000	515.000
286.965	511.988
281.000	510.000
271.903	506.968
266.000	505.000
256.842	501.947
251.000	500.000
245.235	498.078
236.000	495.000
230.209	493.070
221.000	490.000
215.184	488.061
206.000	485.000
203.665	484.222
200.000	483.000
196.100	483.000
190.000	483.000
187.654	483.782
184.000	485.000

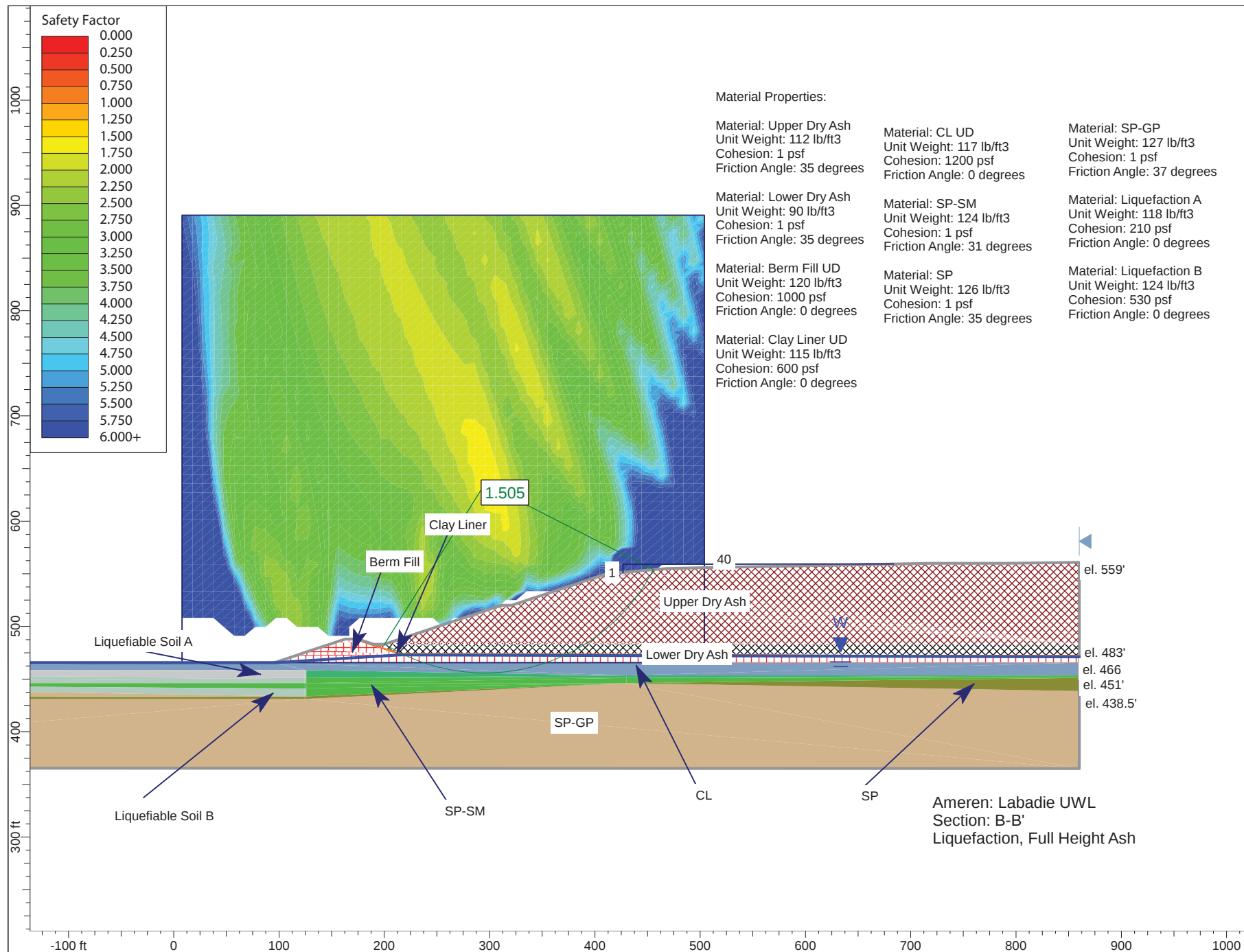
180.474	486.175
175.000	488.000
170.055	487.977
169.000	487.972
166.542	487.983
163.000	488.000
159.335	486.778
154.000	485.000
147.892	482.964
139.000	480.000
132.892	477.964
124.000	475.000
117.892	472.964
95.732	465.577
-650.000	465.500
-650.000	458.500
-650.000	456.000
-650.000	446.000
-650.000	433.500
-650.000	431.000

Water Table

-650.000	465.500
95.732	465.577
214.462	472.846
860.011	471.000

Search Grid

7.917	465.568
347.082	465.568
347.082	953.907
7.917	953.907



Slide Analysis Information

Document Name

File Name: Section BB Full Liquefaction trial.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL UD
Strength Type: Mohr-Coulomb
Unit Weight: 117 lb/ft³
Cohesion: 1200 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM
Strength Type: Mohr-Coulomb
Unit Weight: 118 lb/ft³
Cohesion: 1 psf
Friction Angle: 23 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table

Custom Hu value: 1

Material: Liquefaction A

Strength Type: Mohr-Coulomb

Unit Weight: 118 lb/ft³

Cohesion: 210 psf

Friction Angle: 0 degrees

Water Surface: Water Table

Custom Hu value: 1

Material: Liquefaction B

Strength Type: Mohr-Coulomb

Unit Weight: 124 lb/ft³

Cohesion: 530 psf

Friction Angle: 0 degrees

Water Surface: Water Table

Custom Hu value: 1

Global Minimums

Method: bishop simplified

FS: 1.532100

Center: 295.619, 635.567

Radius: 179.968

Left Slip Surface Endpoint: 200.106, 483.035

Right Slip Surface Endpoint: 456.000, 553.918

Resisting Moment=8.14133e+007 lb-ft

Driving Moment=5.31383e+007 lb-ft

Method: spencer

FS: 1.505100

Center: 295.619, 635.567

Radius: 179.968

Left Slip Surface Endpoint: 200.106, 483.035

Right Slip Surface Endpoint: 456.000, 553.918

Resisting Moment=7.99786e+007 lb-ft

Driving Moment=5.31383e+007 lb-ft

Resisting Horizontal Force=380450 lb

Driving Horizontal Force=252774 lb

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 9942

Number of Invalid Surfaces: 18669

Error Codes:

Error Code -103 reported for 18028 surfaces

Error Code -107 reported for 36 surfaces

Error Code -112 reported for 605 surfaces

Method: spencer

Number of Valid Surfaces: 9748

Number of Invalid Surfaces: 18863

Error Codes:

Error Code -103 reported for 18028 surfaces

Error Code -107 reported for 36 surfaces

Error Code -108 reported for 107 surfaces
Error Code -111 reported for 44 surfaces
Error Code -112 reported for 648 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.

-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.

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

-111 = safety factor equation did not converge

-112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi)/F)$ < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

List of All Coordinates

Search Grid

7.917	465.568
503.956	465.568
503.956	890.564
7.917	890.564

Material Boundary

-650.000	458.500
124.000	458.500
125.993	458.467
430.000	453.500
860.010	453.500

Material Boundary

-650.000	456.000
124.000	451.000
125.993	451.000
430.000	451.000

860.010	453.500
---------	---------

Material Boundary

-650.000	446.000
124.000	433.500

Material Boundary

-650.000	433.500
124.000	433.500

Material Boundary

-650.000	431.000
124.000	431.000
430.000	446.000
860.008	438.502

Material Boundary

190.000	483.000
214.462	474.846
491.000	474.000
671.000	473.000
860.012	473.000

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
214.462	472.846
214.462	474.846

Material Boundary

214.462	472.846
860.011	471.000

Material Boundary

95.732	465.577
860.011	465.591

Material Boundary

200.000	483.000
860.013	482.998

Material Boundary

-650.000	446.000
124.000	446.000
125.993	446.000
430.000	446.000
126.006	441.033
124.000	441.000
-650.000	446.000

Material Boundary

124.000	433.500
126.006	433.582

430.000	446.000
---------	---------

Material Boundary

430.000	446.000
860.009	450.998

Material Boundary

125.993	446.000
125.993	451.000
125.993	458.467

Material Boundary

126.006	433.582
126.006	441.033

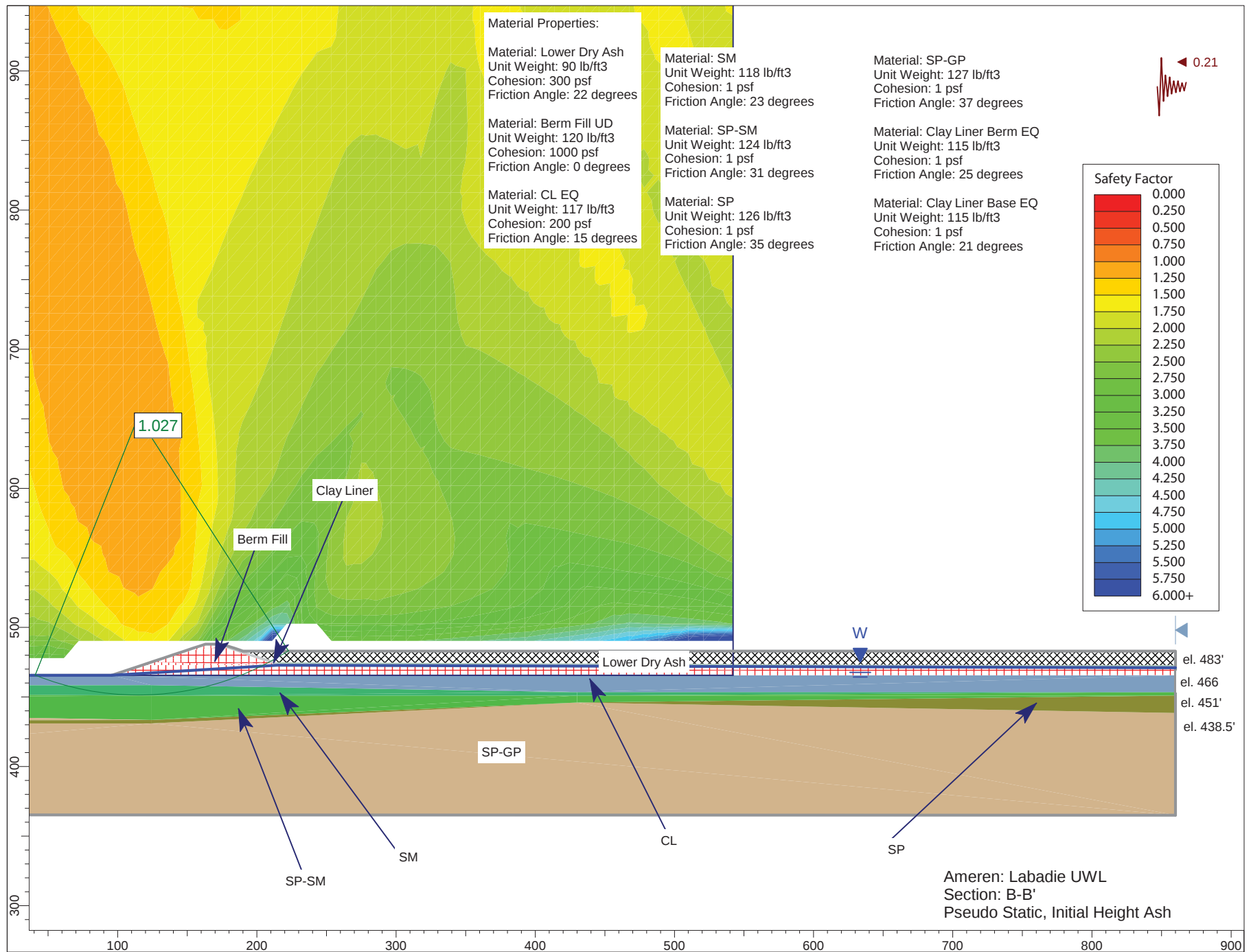
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-650.000	365.500
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860.008	438.502
860.009	450.998
860.010	453.500
860.010	453.500
860.011	465.591
860.011	471.000
860.012	473.000
860.013	482.998
860.021	560.896
792.394	560.000
718.434	560.000
500.172	555.635
468.434	555.000
461.429	554.390
411.000	550.000
401.743	546.914
396.000	545.000
386.646	541.882
381.000	540.000
371.552	536.851
366.000	535.000
356.462	531.821
351.000	530.000
341.374	526.791
336.000	525.000
329.925	522.975
321.000	520.000
315.050	520.000
311.000	520.000
302.030	517.010
296.000	515.000
286.965	511.988
281.000	510.000
271.903	506.968
266.000	505.000
256.842	501.947
251.000	500.000
245.235	498.078

236.000	495.000
230.209	493.070
221.000	490.000
215.184	488.061
206.000	485.000
203.665	484.222
200.000	483.000
196.100	483.000
190.000	483.000
187.654	483.782
184.000	485.000
180.474	486.175
175.000	488.000
170.055	487.977
169.000	487.972
166.542	487.983
163.000	488.000
159.335	486.778
154.000	485.000
147.892	482.964
139.000	480.000
132.892	477.964
124.000	475.000
117.892	472.964
95.732	465.577
-650.000	465.500
-650.000	458.500
-650.000	456.000
-650.000	446.000
-650.000	433.500
-650.000	431.000

Water Table

-650.000	465.500
95.732	465.577
214.462	472.846
860.011	471.000



Slide Analysis Information

Document Name

File Name: Section BB Partial Pseudo Static.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.21

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD

Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL EQ

Strength Type: Mohr-Coulomb
Unit Weight: 117 lb/ft³
Cohesion: 200 psf
Friction Angle: 15 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM

Strength Type: Mohr-Coulomb
Unit Weight: 118 lb/ft³
Cohesion: 1 psf
Friction Angle: 23 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM

Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP

Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP

Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Berm EQ

Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Base EQ

Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³

Cohesion: 1 psf
Friction Angle: 21 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary

-650.000	458.500
124.000	458.500
430.000	453.500
860.010	453.500

Material Boundary

-650.000	456.000
124.000	451.000
430.000	451.000
860.010	453.500

Material Boundary

-650.000	446.000
124.000	433.500
430.000	446.000
860.009	450.998

Material Boundary

-650.000	433.500
124.000	433.500

Material Boundary

-650.000	431.000
124.000	431.000
430.000	446.000
860.008	438.502

Material Boundary

190.000	483.000
214.462	474.846
491.000	474.000
671.000	473.000
860.012	473.000

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
214.462	472.846
214.462	474.846

Material Boundary

214.462	472.846
860.011	471.000

Material Boundary

95.732	465.577
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860.011	465.591
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External Boundary

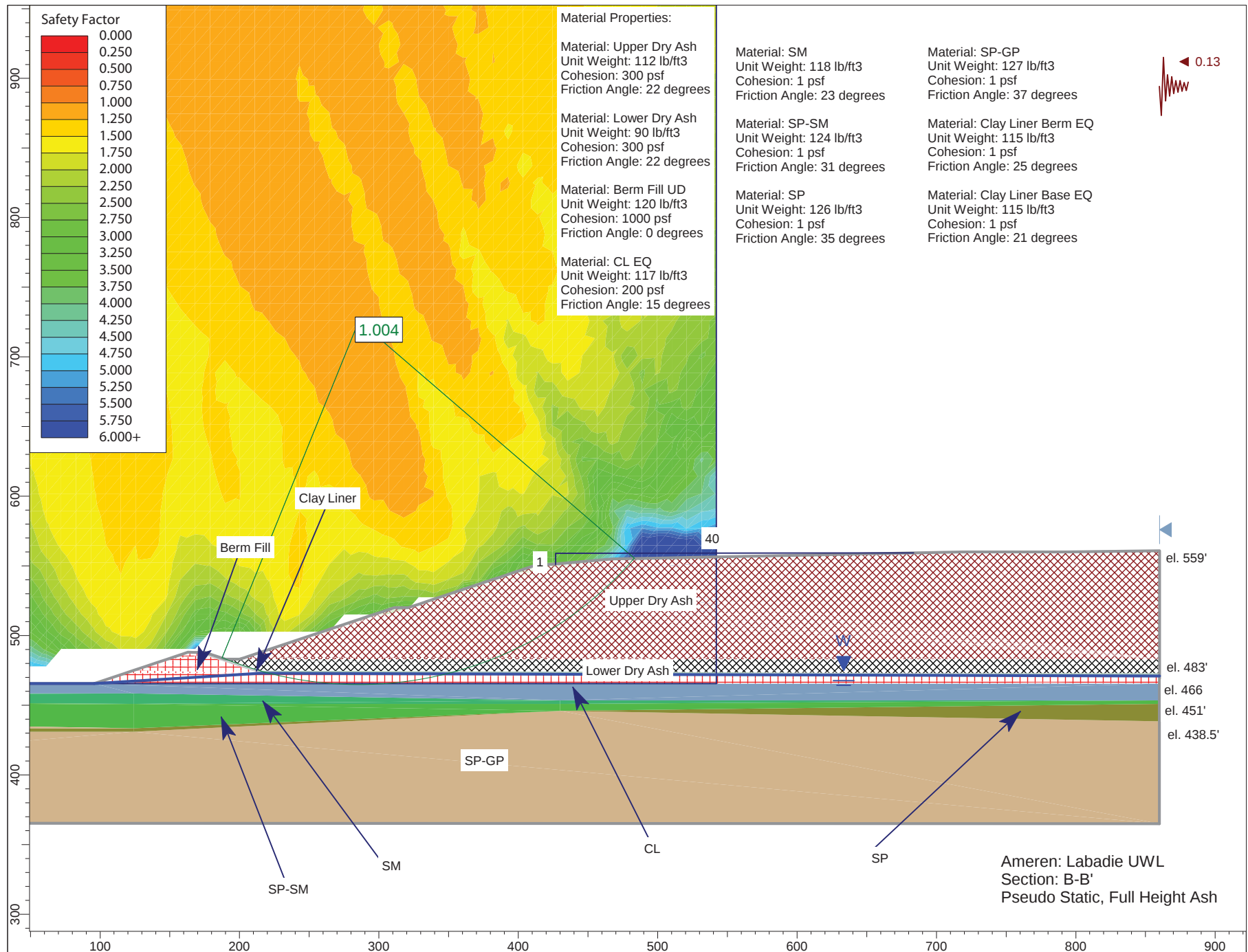
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860.000	365.000
860.008	438.502
860.009	450.998
860.010	453.500
860.010	453.500
860.011	465.591
860.011	471.000
860.012	473.000
860.013	482.998
200.000	483.000
196.100	483.000
190.000	483.000
187.654	483.782
184.000	485.000
180.474	486.175
175.000	488.000
170.055	487.977
169.000	487.972
166.542	487.983
163.000	488.000
159.335	486.778
154.000	485.000
147.892	482.964
139.000	480.000
132.892	477.964
124.000	475.000
117.892	472.964
95.732	465.577
-650.000	465.500
-650.000	458.500
-650.000	456.000
-650.000	446.000
-650.000	433.500
-650.000	431.000

Water Table

-650.000	465.500
95.732	465.577
214.462	472.846
860.011	471.000

Search Grid

7.917	465.568
542.160	465.568
542.160	1085.206
7.917	1085.206



Slide Analysis Information

Document Name

File Name: Section BB Full Pseudo Static.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.13

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash

Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL EQ
Strength Type: Mohr-Coulomb
Unit Weight: 117 lb/ft³
Cohesion: 200 psf
Friction Angle: 15 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM
Strength Type: Mohr-Coulomb
Unit Weight: 118 lb/ft³
Cohesion: 1 psf
Friction Angle: 23 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Berm EQ
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³

Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Base EQ
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 21 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary

-650.000	458.500
124.000	458.500
430.000	453.500
860.010	453.500

Material Boundary

-650.000	456.000
124.000	451.000
430.000	451.000
860.010	453.500

Material Boundary

-650.000	446.000
124.000	433.500
430.000	446.000
860.009	450.998

Material Boundary

-650.000	433.500
124.000	433.500

Material Boundary

-650.000	431.000
124.000	431.000
430.000	446.000
860.008	438.502

Material Boundary

190.000	483.000
214.462	474.846
491.000	474.000
671.000	473.000
860.012	473.000

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
214.462	472.846

214.462	474.846
---------	---------

Material Boundary

214.462	472.846
860.011	471.000

Material Boundary

95.732	465.577
860.011	465.591

Material Boundary

200.000	483.000
860.013	482.998

External Boundary

-650.000	365.500
860.000	365.000
860.008	438.502
860.009	450.998
860.010	453.500
860.010	453.500
860.011	465.591
860.011	471.000
860.012	473.000
860.013	482.998
860.021	560.896
792.394	560.000
718.434	560.000
500.172	555.635
468.434	555.000
461.429	554.390
411.000	550.000
401.743	546.914
396.000	545.000
386.646	541.882
381.000	540.000
371.552	536.851
366.000	535.000
356.462	531.821
351.000	530.000
341.374	526.791
336.000	525.000
329.925	522.975
321.000	520.000
315.050	520.000
311.000	520.000
302.030	517.010
296.000	515.000
286.965	511.988
281.000	510.000
271.903	506.968
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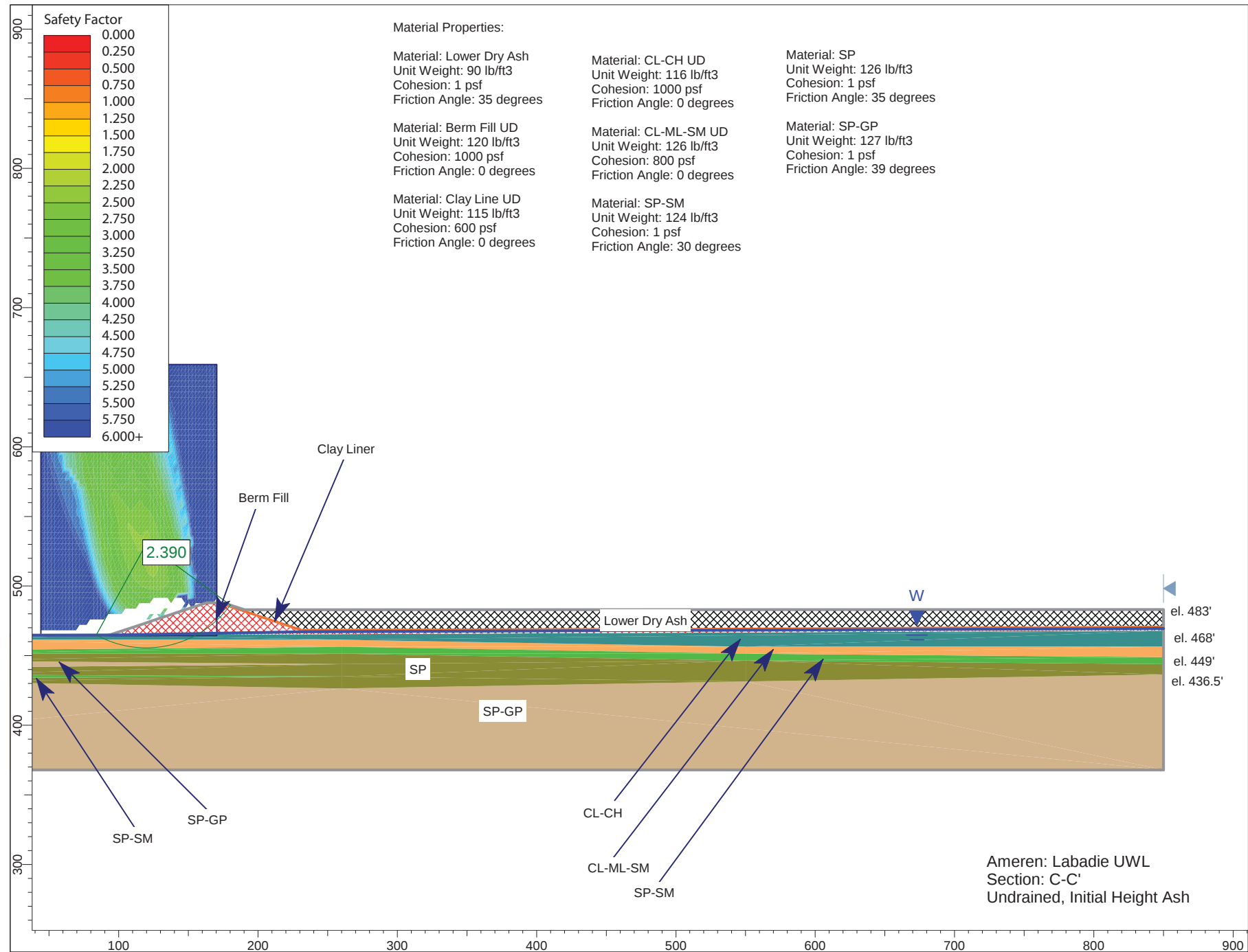
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187.654	483.782
184.000	485.000
180.474	486.175
175.000	488.000
170.055	487.977
169.000	487.972
166.542	487.983
163.000	488.000
159.335	486.778
154.000	485.000
147.892	482.964
139.000	480.000
132.892	477.964
124.000	475.000
117.892	472.964
95.732	465.577
-650.000	465.500
-650.000	458.500
-650.000	456.000
-650.000	446.000
-650.000	433.500
-650.000	431.000

Water Table

-650.000	465.500
95.732	465.577
214.462	472.846
860.011	471.000

Search Grid

7.917	465.568
542.160	465.568
542.160	1085.206
7.917	1085.206



Slide Analysis Information

Document Name

File Name: section CC partial undrained.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: 4

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH UD
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML-SM UD
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 800 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary
93.161 464.720
850.000 468.000

Material Boundary

190.000	483.000
231.496	469.168
540.000	470.000
740.000	471.000
850.000	471.550

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
231.496	467.168
231.496	469.168

Material Boundary

231.496	467.168
850.000	469.550

Material Boundary

-330.000	461.500
-30.000	461.500
260.000	461.500
550.000	456.500
850.000	456.500

Material Boundary

-330.000	456.500
-30.000	454.000
260.000	456.500
550.000	451.500
850.000	449.000

Material Boundary

-330.000	449.000
-30.000	451.500
260.000	451.500
550.000	446.500
850.000	444.000

Material Boundary

-330.000	444.000
-30.000	446.500
260.000	444.000
-30.000	441.500
-330.000	444.000

Material Boundary

-330.000	431.500
-30.000	434.000
260.000	435.000
-30.000	436.500
-330.000	439.000

Material Boundary

-330.000	429.000
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-30.000	431.500
260.000	426.500
550.000	431.500
850.000	436.500

External Boundary

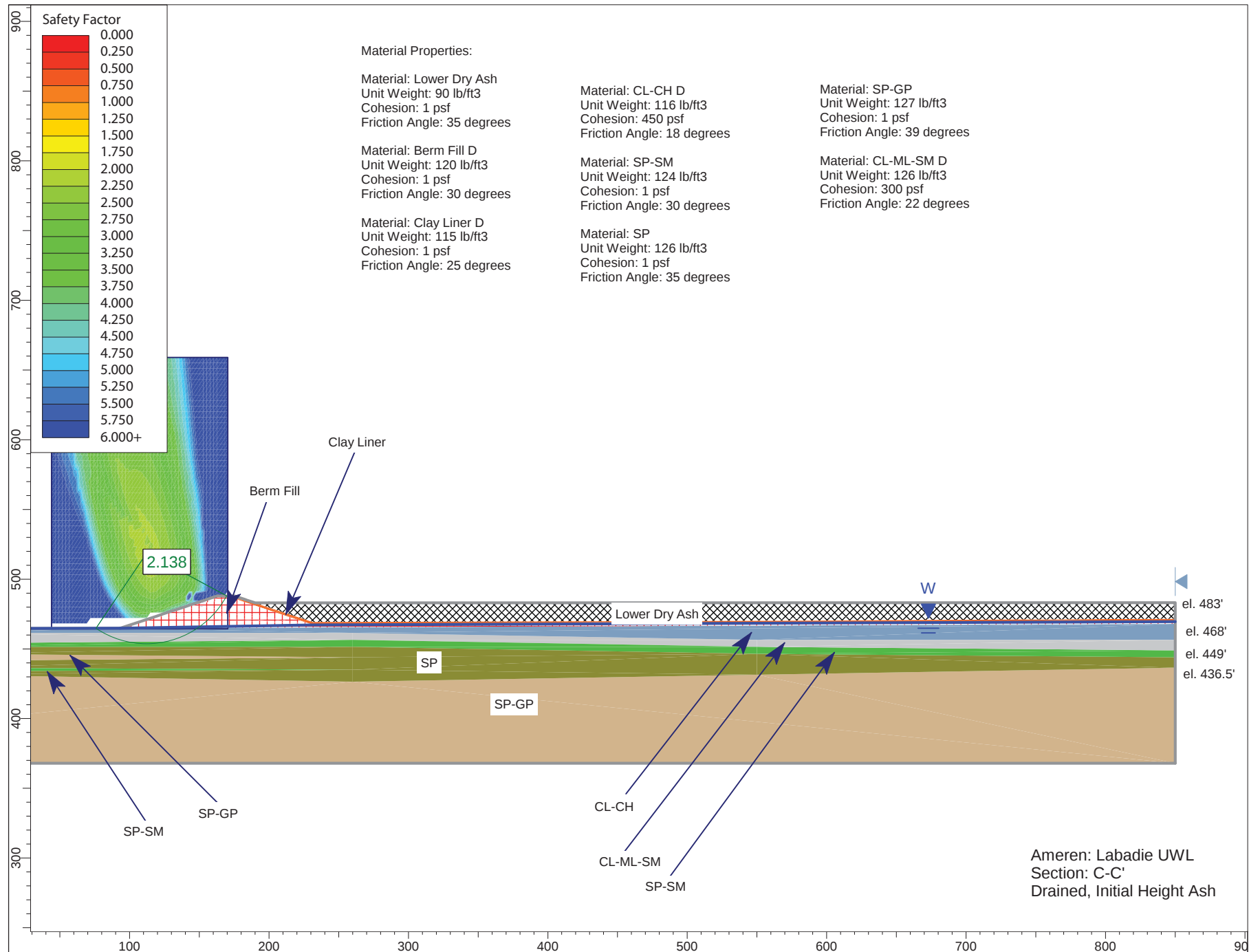
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183.073	485.309
175.000	488.000
174.160	487.986
172.299	487.955
169.000	487.901
168.082	487.916
163.000	488.000
157.036	486.012
154.000	485.000
144.060	481.687
139.000	480.000
129.060	476.687
124.000	475.000
118.940	473.313
93.161	464.720
-330.000	464.000
-330.000	461.500
-330.000	456.500
-330.000	449.000
-330.000	444.000
-330.000	439.000
-330.000	431.500
-330.000	429.000
-330.000	368.000
850.000	368.000
850.000	436.500
850.000	444.000
850.000	449.000
850.000	456.500
850.000	468.000
850.000	469.550
850.000	471.550
850.000	483.098

Water Table

-330.000	464.000
93.161	464.720
231.496	467.168
850.000	469.550

Search Grid

44.084	464.321
170.428	464.321
170.428	659.049
44.084	659.049



Slide Analysis Information

Document Name

File Name: section CC partial drained.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: 4

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner D
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH D
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 450 psf
Friction Angle: 18 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML-SM D
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary
93.161 464.720
850.000 468.000

Material Boundary

190.000	483.000
231.496	469.168
540.000	470.000
740.000	471.000
850.000	471.550

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
231.496	467.168
231.496	469.168

Material Boundary

231.496	467.168
850.000	469.550

Material Boundary

-330.000	461.500
-30.000	461.500
260.000	461.500
550.000	456.500
850.000	456.500

Material Boundary

-330.000	456.500
-30.000	454.000
260.000	456.500
550.000	451.500
850.000	449.000

Material Boundary

-330.000	449.000
-30.000	451.500
260.000	451.500
550.000	446.500
850.000	444.000

Material Boundary

-330.000	444.000
-30.000	446.500
260.000	444.000
-30.000	441.500
-330.000	444.000

Material Boundary

-330.000	431.500
-30.000	434.000
260.000	435.000
-30.000	436.500
-330.000	439.000

Material Boundary

-330.000	429.000
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260.000	426.500
550.000	431.500
850.000	436.500

External Boundary

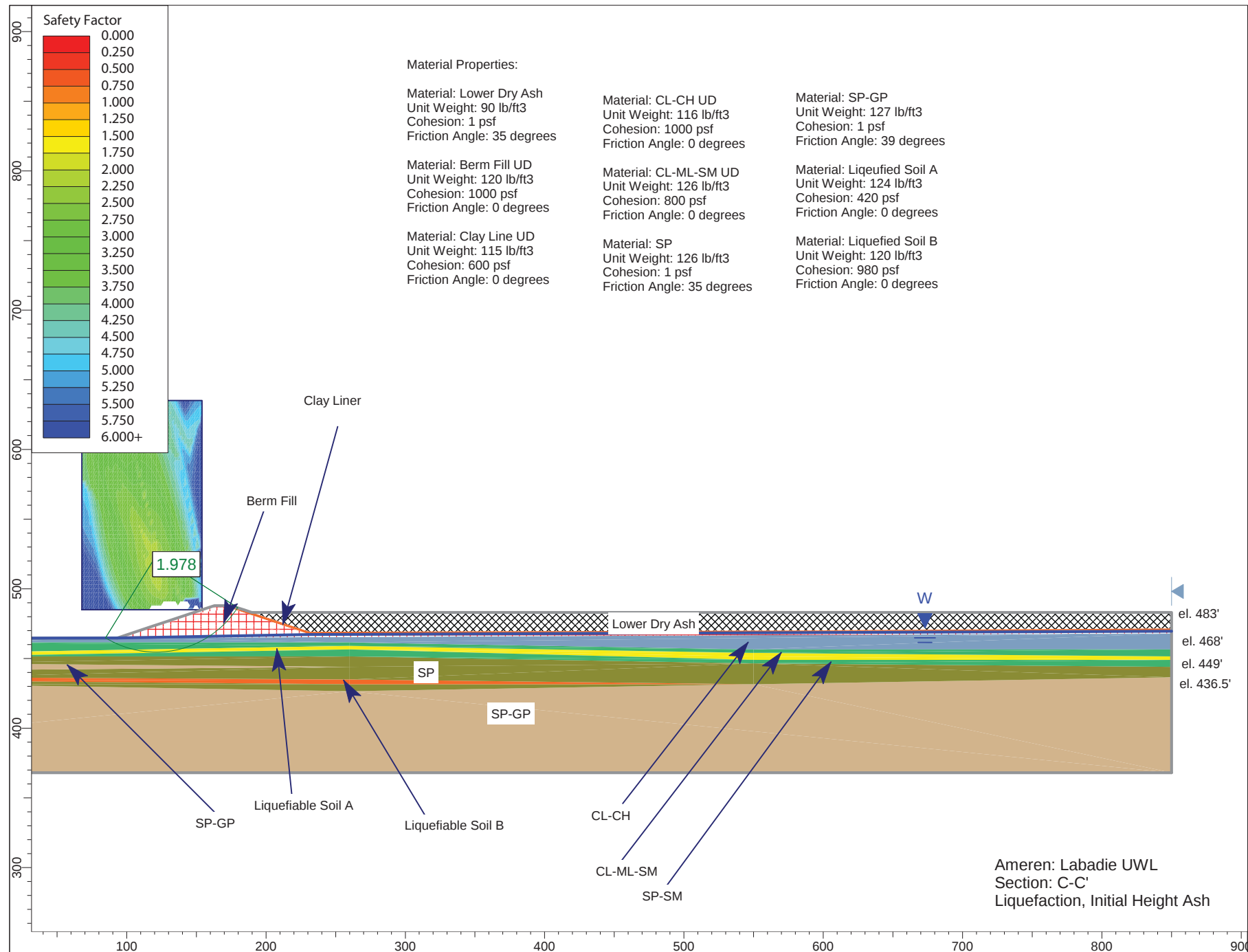
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190.000	483.000
189.375	483.208
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183.073	485.309
175.000	488.000
174.160	487.986
172.299	487.955
169.000	487.901
168.082	487.916
163.000	488.000
157.036	486.012
154.000	485.000
144.060	481.687
139.000	480.000
129.060	476.687
124.000	475.000
118.940	473.313
93.161	464.720
-330.000	464.000
-330.000	461.500
-330.000	456.500
-330.000	449.000
-330.000	444.000
-330.000	439.000
-330.000	431.500
-330.000	429.000
-330.000	368.000
850.000	368.000
850.000	436.500
850.000	444.000
850.000	449.000
850.000	456.500
850.000	468.000
850.000	469.550
850.000	471.550
850.000	483.098

Water Table

-330.000	464.000
93.161	464.720
231.496	467.168
850.000	469.550

Search Grid

44.084	464.321
170.428	464.321
170.428	659.049
44.084	659.049



Slide Analysis Information

Document Name

File Name: section CC partial liquefaction.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: 4

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH UD
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML-SM UD
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 800 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Liquefied Soil A
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 420 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Liquefied Soil B
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 980 psf
Friction Angle: 0 degrees
Water Surface: Water Table

Custom Hu value: 1

List of All Coordinates

Material Boundary

93.161	464.720
850.000	468.000

Material Boundary

190.000	483.000
231.496	469.168
540.000	470.000
740.000	471.000
850.000	471.550

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
231.496	467.168
231.496	469.168

Material Boundary

231.496	467.168
850.000	469.550

Material Boundary

-330.000	461.500
-30.000	461.500
260.000	461.500
550.000	456.500
850.000	456.500

Material Boundary

-330.000	456.500
-30.000	454.000
260.000	456.500
550.000	451.500
850.000	449.000

Material Boundary

-330.000	449.000
-30.000	451.500
260.000	451.500
550.000	446.500
850.000	444.000

Material Boundary

-330.000	444.000
-30.000	446.500
260.000	444.000
-30.000	441.500
-330.000	444.000

Material Boundary

-330.000	431.500
-30.000	434.000
260.000	435.000
-30.000	436.500
-330.000	439.000

Material Boundary

-330.000	429.000
-30.000	431.500
260.000	426.500
550.000	431.500
850.000	436.500

Material Boundary

-30.000	454.000
260.000	459.000
550.000	454.000
850.000	451.500

Material Boundary

-30.000	451.500
260.000	456.500
550.000	449.000
850.000	449.000

Material Boundary

-30.000	434.000
260.000	431.500
550.000	431.500
260.000	435.000

External Boundary

200.000	483.000
198.942	483.000
190.000	483.000
189.375	483.208
184.000	485.000
183.073	485.309
175.000	488.000
174.160	487.986
172.299	487.955
169.000	487.901
168.082	487.916
163.000	488.000
157.036	486.012
154.000	485.000
144.060	481.687
139.000	480.000
129.060	476.687
124.000	475.000
118.940	473.313
93.161	464.720
-330.000	464.000
-330.000	461.500
-330.000	456.500

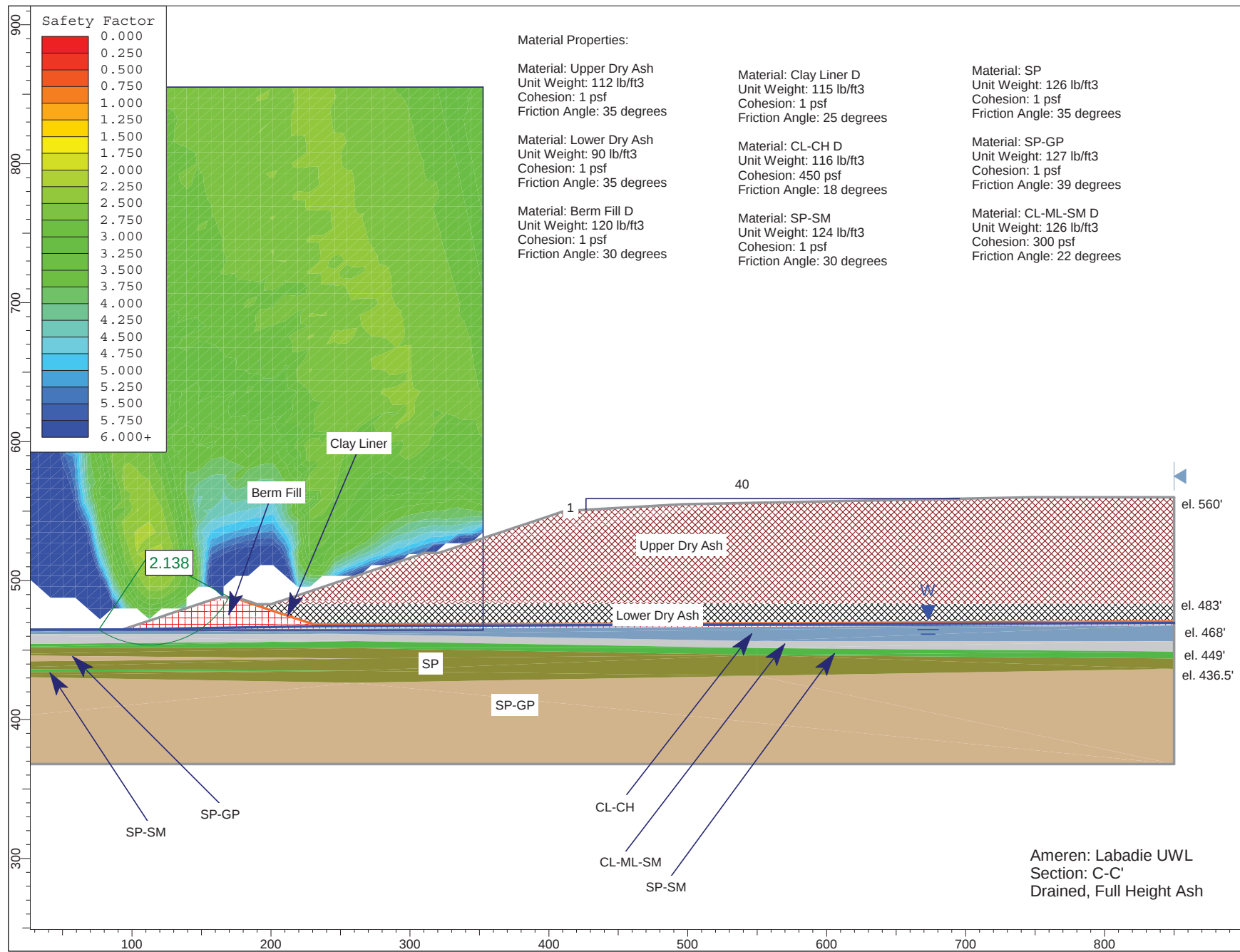
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-330.000	444.000
-330.000	439.000
-330.000	431.500
-330.000	429.000
-330.000	368.000
850.000	368.000
850.000	436.500
850.000	444.000
850.000	449.000
850.000	451.500
850.000	456.500
850.000	468.000
850.000	469.550
850.000	471.550
850.000	483.098

Water Table

-330.000	464.000
93.161	464.720
231.496	467.168
850.000	469.550

Search Grid

67.775	485.025
154.000	485.025
154.000	635.158
67.775	635.158



Slide Analysis Information

Document Name

File Name: section CC full drained.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: 4

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner D
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH D
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 450 psf
Friction Angle: 18 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML-SM D
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table

Custom Hu value: 1

List of All Coordinates

Material Boundary

93.161	464.720
850.000	468.000

Material Boundary

190.000	483.000
231.496	469.168
540.000	470.000
740.000	471.000
850.000	471.550

Material Boundary

200.000	483.000
850.000	483.098

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
231.496	467.168
231.496	469.168

Material Boundary

231.496	467.168
850.000	469.550

Material Boundary

-330.000	461.500
-30.000	461.500
260.000	461.500
550.000	456.500
850.000	456.500

Material Boundary

-330.000	456.500
-30.000	454.000
260.000	456.500
550.000	451.500
850.000	449.000

Material Boundary

-330.000	449.000
-30.000	451.500
260.000	451.500
550.000	446.500
850.000	444.000

Material Boundary

-330.000	444.000
-30.000	446.500

260.000	444.000
-30.000	441.500
-330.000	444.000

Material Boundary

-330.000	431.500
-30.000	434.000
260.000	435.000
-30.000	436.500
-330.000	439.000

Material Boundary

-330.000	429.000
-30.000	431.500
260.000	426.500
550.000	431.500
850.000	436.500

External Boundary

850.000	560.000
746.465	560.000
531.296	555.697
496.414	555.000
428.162	551.003
411.000	550.000
410.785	549.928
396.000	545.000
394.686	544.562
381.000	540.000
378.604	539.201
366.000	535.000
357.068	532.023
351.000	530.000
337.385	525.462
336.000	525.000
321.299	520.100
321.000	520.000
316.824	520.000
311.000	520.000
310.590	519.863
296.000	515.000
294.508	514.503
281.000	510.000
278.441	509.147
266.000	505.000
256.165	501.722
251.000	500.000
249.169	499.390
236.000	495.000
234.321	494.440
221.000	490.000
207.609	485.536
206.000	485.000
205.359	484.786
200.000	483.000
198.942	483.000

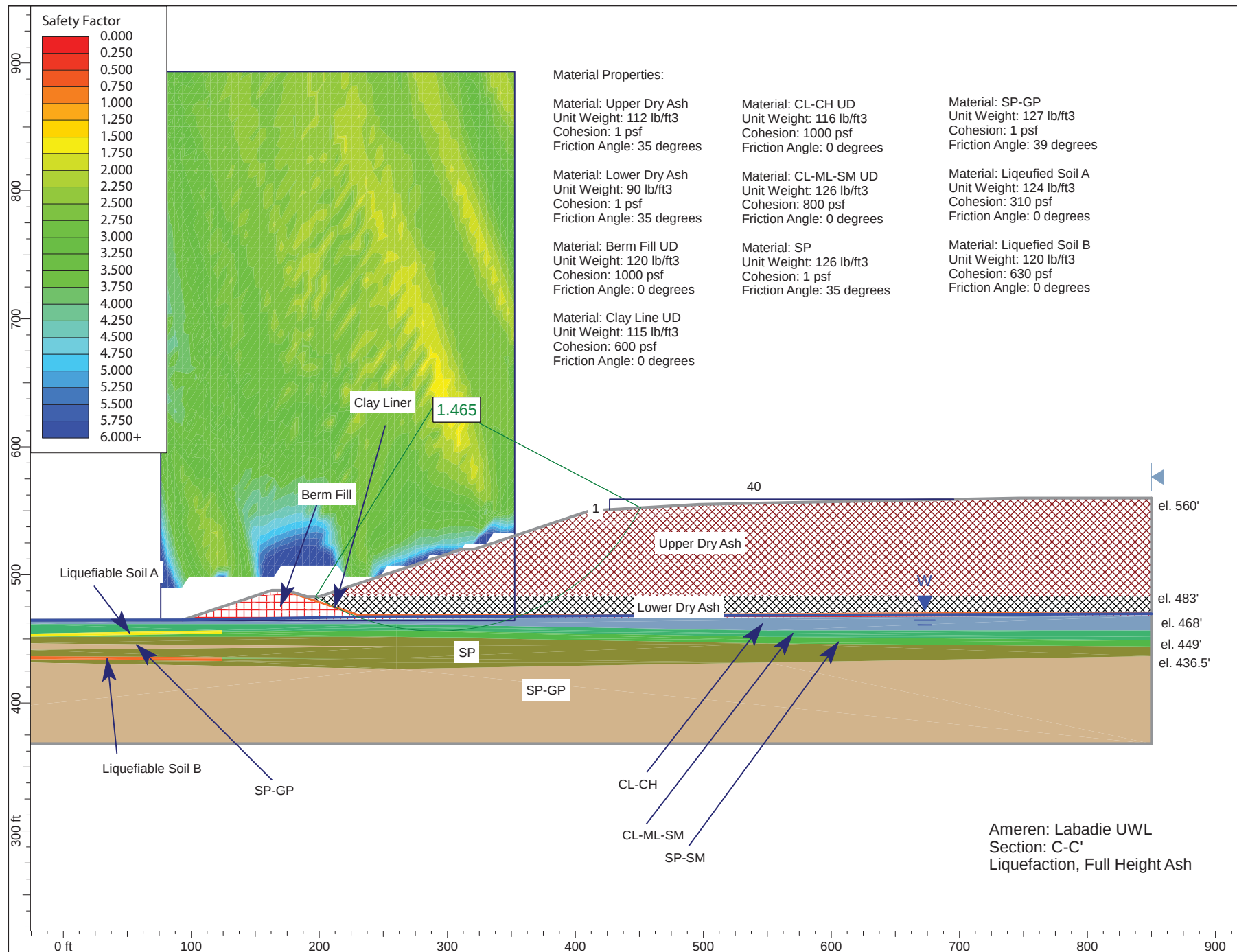
190.000	483.000
189.375	483.208
184.000	485.000
183.073	485.309
175.000	488.000
174.160	487.986
172.299	487.955
169.000	487.901
168.082	487.916
163.000	488.000
157.036	486.012
154.000	485.000
144.060	481.687
139.000	480.000
129.060	476.687
124.000	475.000
118.940	473.313
93.161	464.720
-330.000	464.000
-330.000	461.500
-330.000	456.500
-330.000	449.000
-330.000	444.000
-330.000	439.000
-330.000	431.500
-330.000	429.000
-330.000	368.000
850.000	368.000
850.000	436.500
850.000	444.000
850.000	449.000
850.000	456.500
850.000	468.000
850.000	469.550
850.000	471.550
850.000	483.098

Water Table

-330.000	464.000
93.161	464.720
231.496	467.168
850.000	469.550

Search Grid

-92.049	464.321
352.646	464.321
352.646	855.143
-92.049	855.143



Slide Analysis Information

Document Name

File Name: section CC full liquefaction trial.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: 4

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH UD
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML-SM UD
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 800 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table

Custom Hu value: 1

Material: Liquefied Soil A

Strength Type: Mohr-Coulomb

Unit Weight: 124 lb/ft³

Cohesion: 310 psf

Friction Angle: 0 degrees

Water Surface: Water Table

Custom Hu value: 1

Material: Liquefied Soil B

Strength Type: Mohr-Coulomb

Unit Weight: 120 lb/ft³

Cohesion: 630 psf

Friction Angle: 0 degrees

Water Surface: Water Table

Custom Hu value: 1

Global Minimums

Method: bishop simplified

FS: 1.502530

Center: 291.823, 635.908

Radius: 179.900

Left Slip Surface Endpoint: 197.044, 483.000

Right Slip Surface Endpoint: 451.140, 552.349

Resisting Moment=7.78283e+007 lb-ft

Driving Moment=5.1798e+007 lb-ft

Method: spencer

FS: 1.465350

Center: 291.823, 635.908

Radius: 179.900

Left Slip Surface Endpoint: 197.044, 483.000

Right Slip Surface Endpoint: 451.140, 552.349

Resisting Moment=7.59023e+007 lb-ft

Driving Moment=5.1798e+007 lb-ft

Resisting Horizontal Force=359889 lb

Driving Horizontal Force=245599 lb

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 9611

Number of Invalid Surfaces: 19000

Error Codes:

Error Code -103 reported for 18463 surfaces

Error Code -107 reported for 17 surfaces

Error Code -112 reported for 520 surfaces

Method: spencer

Number of Valid Surfaces: 9529

Number of Invalid Surfaces: 19082

Error Codes:

Error Code -103 reported for 18463 surfaces

Error Code -107 reported for 17 surfaces

Error Code -108 reported for 39 surfaces
Error Code -111 reported for 14 surfaces
Error Code -112 reported for 549 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.

-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.

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

-111 = safety factor equation did not converge

-112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi)/F)$ < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

List of All Coordinates

Search Grid

76.179	464.321
352.646	464.321
352.646	893.287
76.179	893.287

Material Boundary

93.161	464.720
850.000	468.000

Material Boundary

190.000	483.000
231.496	469.168
540.000	470.000
740.000	471.000
850.000	471.550

Material Boundary

200.000	483.000
850.000	483.098

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
231.496	467.168
231.496	469.168

Material Boundary

231.496	467.168
850.000	469.550

Material Boundary

-330.000	461.500
-30.000	461.500
260.000	461.500
550.000	456.500
850.000	456.500

Material Boundary

-330.000	456.500
-30.000	454.000
124.000	455.328
260.000	456.500
550.000	451.500
850.000	449.000

Material Boundary

-330.000	449.000
-30.000	451.500
260.000	451.500
550.000	446.500
850.000	444.000

Material Boundary

-330.000	444.000
-30.000	446.500
260.000	444.000
-30.000	441.500
-330.000	444.000

Material Boundary

-330.000	431.500
-30.000	434.000
124.060	434.531
260.000	435.000
124.060	435.703
-30.000	436.500
-330.000	439.000

Material Boundary

-330.000	429.000
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-30.000	431.500
260.000	426.500
550.000	431.500
850.000	436.500

Material Boundary

-30.000	454.000
124.000	456.655
260.000	459.000
550.000	454.000
850.000	451.500

Material Boundary

-30.000	451.500
124.000	454.155
260.000	456.500
550.000	449.000
850.000	449.000

Material Boundary

-30.000	434.000
124.060	432.672
260.000	431.500
550.000	431.500
260.000	435.000

Material Boundary

124.000	454.155
124.000	455.328
124.000	456.655

Material Boundary

124.060	432.672
124.060	434.531
124.060	435.703

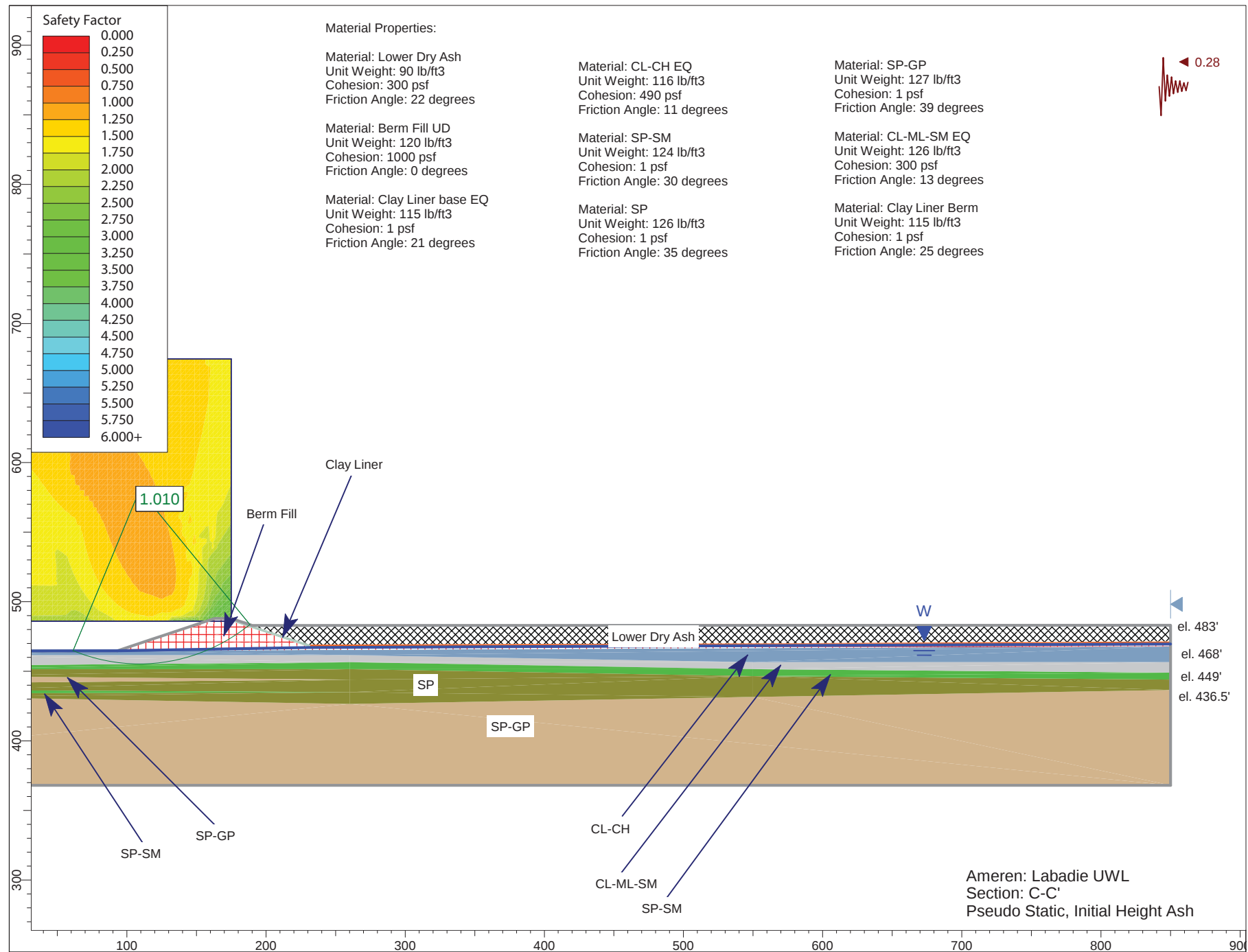
External Boundary

850.000	560.000
746.465	560.000
531.296	555.697
496.414	555.000
428.162	551.003
411.000	550.000
410.785	549.928
396.000	545.000
394.686	544.562
381.000	540.000
378.604	539.201
366.000	535.000
357.068	532.023
351.000	530.000
337.385	525.462
336.000	525.000
321.299	520.100
321.000	520.000
316.824	520.000

311.000	520.000
310.590	519.863
296.000	515.000
294.508	514.503
281.000	510.000
278.441	509.147
266.000	505.000
256.165	501.722
251.000	500.000
249.169	499.390
236.000	495.000
234.321	494.440
221.000	490.000
207.609	485.536
206.000	485.000
205.359	484.786
200.000	483.000
198.942	483.000
190.000	483.000
189.375	483.208
184.000	485.000
183.073	485.309
175.000	488.000
174.160	487.986
172.299	487.955
169.000	487.901
168.082	487.916
163.000	488.000
157.036	486.012
154.000	485.000
144.060	481.687
139.000	480.000
129.060	476.687
124.000	475.000
118.940	473.313
93.161	464.720
-330.000	464.000
-330.000	461.500
-330.000	456.500
-330.000	449.000
-330.000	444.000
-330.000	439.000
-330.000	431.500
-330.000	429.000
-330.000	368.000
850.000	368.000
850.000	436.500
850.000	444.000
850.000	449.000
850.000	451.500
850.000	456.500
850.000	468.000
850.000	469.550
850.000	471.550
850.000	483.098

Water Table

-330.000	464.000
93.161	464.720
231.496	467.168
850.000	469.550



Slide Analysis Information

Document Name

File Name: section CC Partial pseudo static.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: 4

Loading

Seismic Load Coefficient (Horizontal): 0.28

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD

Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner base EQ
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 21 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH EQ
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 490 psf
Friction Angle: 11 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML-SM EQ
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 300 psf
Friction Angle: 13 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Berm
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³

Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary

93.161	464.720
850.000	468.000

Material Boundary

190.000	483.000
231.496	469.168
540.000	470.000
740.000	471.000
850.000	471.550

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
231.496	467.168
231.496	469.168

Material Boundary

231.496	467.168
850.000	469.550

Material Boundary

-330.000	461.500
-30.000	461.500
260.000	461.500
550.000	456.500
850.000	456.500

Material Boundary

-330.000	456.500
-30.000	454.000
260.000	456.500
550.000	451.500
850.000	449.000

Material Boundary

-330.000	449.000
-30.000	451.500
260.000	451.500
550.000	446.500
850.000	444.000

Material Boundary

-330.000	444.000
-30.000	446.500
260.000	444.000
-30.000	441.500

-330.000	444.000
----------	---------

Material Boundary

-330.000	431.500
-30.000	434.000
260.000	435.000
-30.000	436.500
-330.000	439.000

Material Boundary

-330.000	429.000
-30.000	431.500
260.000	426.500
550.000	431.500
850.000	436.500

External Boundary

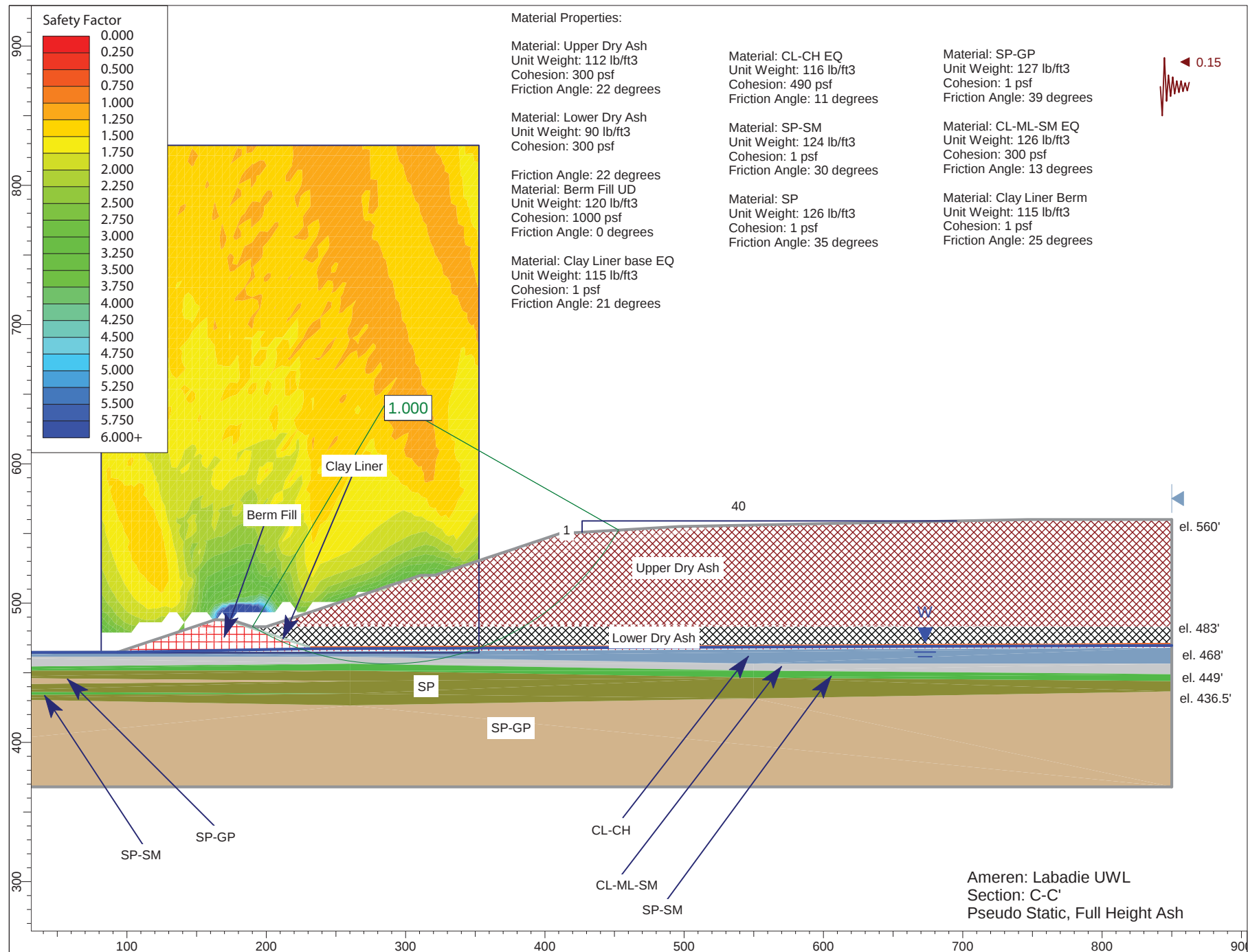
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174.160	487.986
172.299	487.955
169.000	487.901
168.082	487.916
163.000	488.000
157.036	486.012
154.000	485.000
144.060	481.687
139.000	480.000
129.060	476.687
124.000	475.000
118.940	473.313
93.161	464.720
-330.000	464.000
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-330.000	456.500
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-330.000	431.500
-330.000	429.000
-330.000	368.000
850.000	368.000
850.000	436.500
850.000	444.000
850.000	449.000
850.000	456.500
850.000	468.000
850.000	469.550
850.000	471.550
850.000	483.098

Water Table

-330.000	464.000
93.161	464.720
231.496	467.168
850.000	469.550

Search Grid

10.389	486.000
175.000	486.000
175.000	674.579
10.389	674.579



Slide Analysis Information

Document Name

File Name: section CC full pseudo static.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: 4

Loading

Seismic Load Coefficient (Horizontal): 0.15

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash

Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft3
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft3
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner base EQ
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft3
Cohesion: 1 psf
Friction Angle: 21 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH EQ
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft3
Cohesion: 490 psf
Friction Angle: 11 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft3
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft3
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft3
Cohesion: 1 psf
Friction Angle: 39 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML-SM EQ
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft3

Cohesion: 300 psf
Friction Angle: 13 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Berm
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary

93.161	464.720
850.000	468.000

Material Boundary

190.000	483.000
231.496	469.168
540.000	470.000
740.000	471.000
850.000	471.550

Material Boundary

200.000	483.000
850.000	483.098

Material Boundary

175.000	486.000
175.000	488.000

Material Boundary

175.000	486.000
231.496	467.168
231.496	469.168

Material Boundary

231.496	467.168
850.000	469.550

Material Boundary

-330.000	461.500
-30.000	461.500
260.000	461.500
550.000	456.500
850.000	456.500

Material Boundary

-330.000	456.500
-30.000	454.000
260.000	456.500
550.000	451.500
850.000	449.000

Material Boundary

-330.000	449.000
-30.000	451.500
260.000	451.500
550.000	446.500
850.000	444.000

Material Boundary

-330.000	444.000
-30.000	446.500
260.000	444.000
-30.000	441.500
-330.000	444.000

Material Boundary

-330.000	431.500
-30.000	434.000
260.000	435.000
-30.000	436.500
-330.000	439.000

Material Boundary

-330.000	429.000
-30.000	431.500
260.000	426.500
550.000	431.500
850.000	436.500

External Boundary

850.000	560.000
746.465	560.000
531.296	555.697
496.414	555.000
428.162	551.003
411.000	550.000
410.785	549.928
396.000	545.000
394.686	544.562
381.000	540.000
378.604	539.201
366.000	535.000
357.068	532.023
351.000	530.000
337.385	525.462
336.000	525.000
321.299	520.100
321.000	520.000
316.824	520.000
311.000	520.000
310.590	519.863
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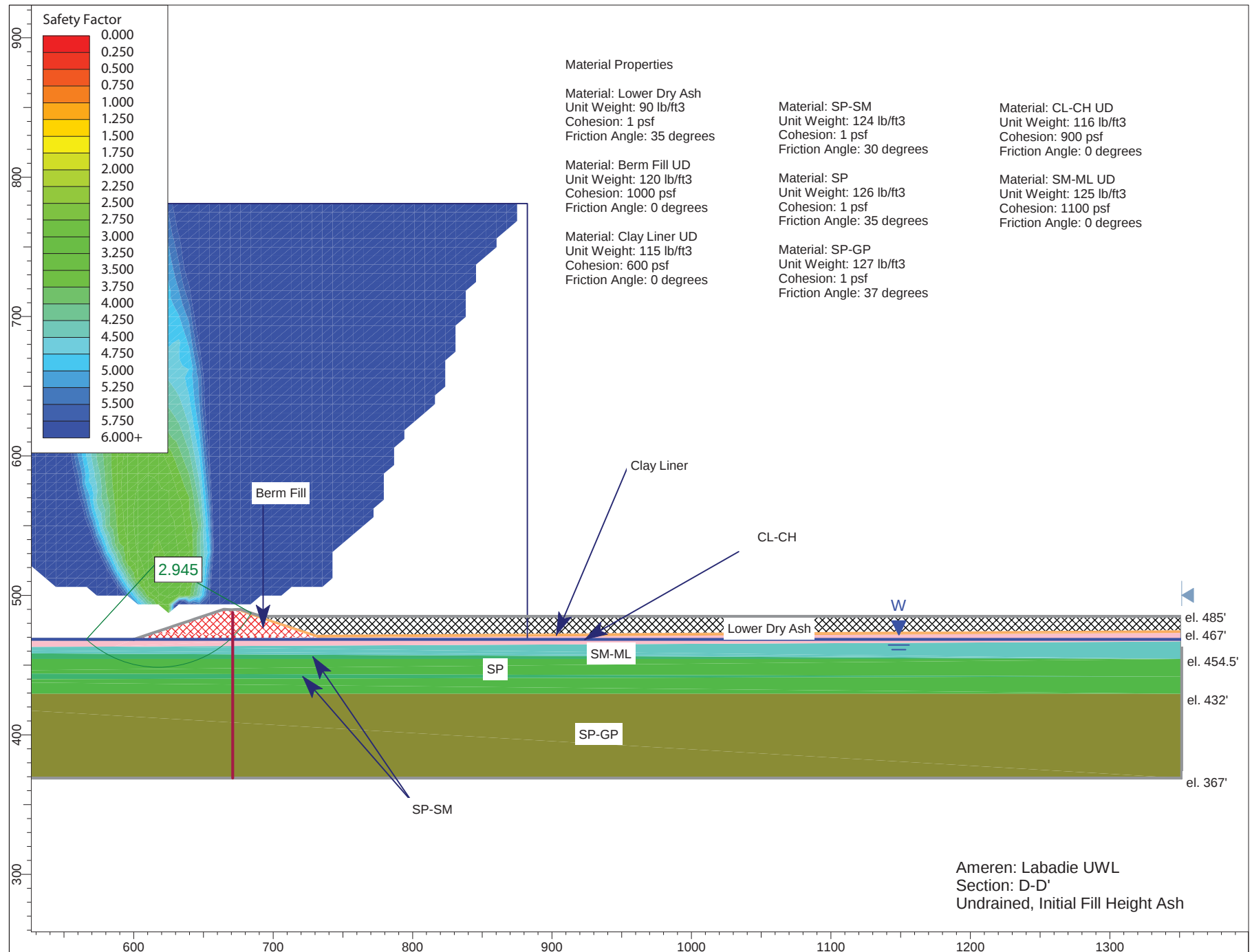
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206.000	485.000
205.359	484.786
200.000	483.000
198.942	483.000
190.000	483.000
189.375	483.208
184.000	485.000
183.073	485.309
175.000	488.000
174.160	487.986
172.299	487.955
169.000	487.901
168.082	487.916
163.000	488.000
157.036	486.012
154.000	485.000
144.060	481.687
139.000	480.000
129.060	476.687
124.000	475.000
118.940	473.313
93.161	464.720
-330.000	464.000
-330.000	461.500
-330.000	456.500
-330.000	449.000
-330.000	444.000
-330.000	439.000
-330.000	431.500
-330.000	429.000
-330.000	368.000
850.000	368.000
850.000	436.500
850.000	444.000
850.000	449.000
850.000	456.500
850.000	468.000
850.000	469.550
850.000	471.550
850.000	483.098

Water Table

-330.000	464.000
93.161	464.720
231.496	467.168
850.000	469.550

Search Grid

81.576	464.321
352.646	464.321
352.646	828.742
81.576	828.742



Slide Analysis Information

Document Name

File Name: Section DD Partial UnDrained 10192012.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH UD
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 900 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM-ML UD
Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³
Cohesion: 1100 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary
691.524 485.008
731.239 471.770
966.524 473.008

1151.524	474.008
1351.524	475.008

Material Boundary

676.524	488.008
676.524	490.008

Material Boundary

676.524	488.008
731.239	469.770
731.239	471.770

Material Boundary

731.239	469.770
1351.524	473.008

Material Boundary

89.000	459.500
280.000	457.000
320.000	462.000
586.149	463.291
1351.524	467.002

Material Boundary

1351.524	454.500
320.000	459.500
280.000	457.000
320.000	454.500
1351.524	454.500

Material Boundary

89.000	432.000
280.000	432.000
320.000	429.500
1351.524	429.500

Material Boundary

0.000	432.000
89.000	432.000

Material Boundary

0.000	459.500
89.000	459.500

Material Boundary

0.000	454.500
280.000	457.000

Material Boundary

320.000	462.000
1351.524	454.500

Material Boundary

600.000	468.500
731.239	469.770

Material Boundary

280.000	442.000
330.000	444.500
1351.524	441.973
330.000	439.500
280.000	442.000

External Boundary

-0.000	469.008
0.000	459.500
0.000	454.500
0.000	432.000
-0.000	369.008
1351.524	369.008
1351.524	429.500
1351.524	441.973
1351.524	454.500
1351.524	467.002
1351.524	473.008
1351.524	475.008
1351.524	484.949
701.524	485.008
696.092	485.008
691.524	485.008
688.265	486.094
685.524	487.008
680.635	488.637
676.524	490.008
671.846	489.835
670.524	489.787
667.488	489.899
665.657	489.966
664.524	490.008
660.789	488.763
655.524	487.008
643.630	483.043
640.524	482.008
628.630	478.043
625.524	477.008
613.630	473.043
600.000	468.500

Water Table

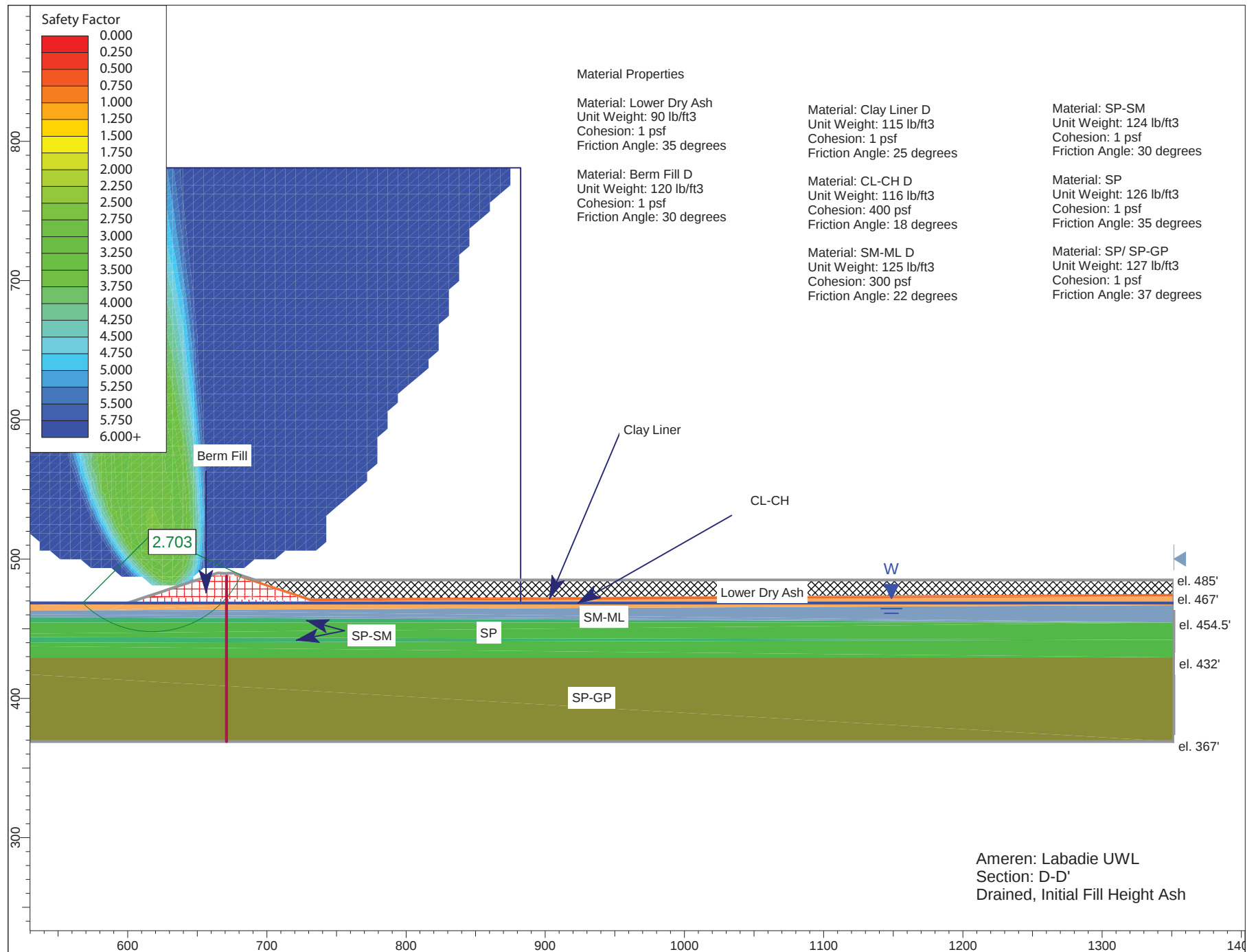
-0.000	469.008
600.000	468.500
1351.524	468.500

Focus/Block Search Line

671.059	369.008
671.059	487.731

Search Grid

514.811	468.572
882.239	468.572
882.239	781.073
514.811	781.073



Slide Analysis Information

Document Name

File Name: Section DD Partial Drained 10192012.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner D
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH D
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 400 psf
Friction Angle: 18 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM-ML D
Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary
691.524 485.008
731.239 471.770
966.524 473.008

1151.524	474.008
1351.524	475.008

Material Boundary

676.524	488.008
676.524	490.008

Material Boundary

676.524	488.008
731.239	469.770
731.239	471.770

Material Boundary

731.239	469.770
1351.524	473.008

Material Boundary

89.000	459.500
280.000	457.000
320.000	462.000
586.149	463.291
1351.524	467.002

Material Boundary

1351.524	454.500
320.000	459.500
280.000	457.000
320.000	454.500
1351.524	454.500

Material Boundary

89.000	432.000
280.000	432.000
320.000	429.500
1351.524	429.500

Material Boundary

0.000	432.000
89.000	432.000

Material Boundary

0.000	459.500
89.000	459.500

Material Boundary

0.000	454.500
280.000	457.000

Material Boundary

320.000	462.000
1351.524	454.500

Material Boundary

600.000	468.500
731.239	469.770

Material Boundary

280.000	442.000
320.000	444.500
1351.524	442.037
330.000	439.500
280.000	442.000

External Boundary

-0.000	469.008
0.000	459.500
0.000	454.500
0.000	432.000
-0.000	369.008
1351.524	369.008
1351.524	429.500
1351.524	442.037
1351.524	454.500
1351.524	467.002
1351.524	473.008
1351.524	475.008
1351.524	484.949
701.524	485.008
696.092	485.008
691.524	485.008
688.265	486.094
685.524	487.008
680.635	488.637
676.524	490.008
671.846	489.835
670.524	489.787
667.488	489.899
665.657	489.966
664.524	490.008
660.789	488.763
655.524	487.008
643.630	483.043
640.524	482.008
628.630	478.043
625.524	477.008
613.630	473.043
600.000	468.500

Water Table

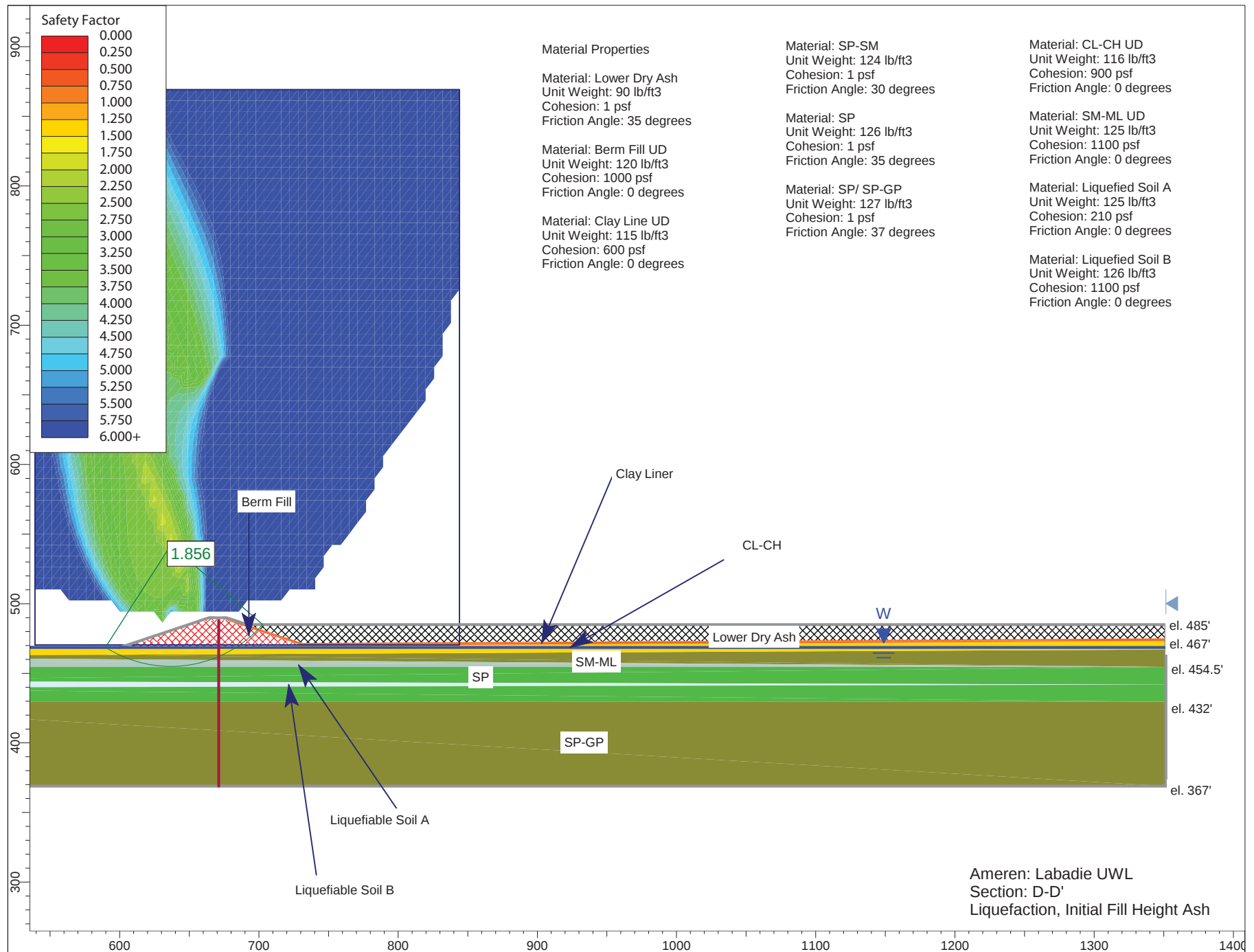
-0.000	469.008
600.000	468.500
1351.524	468.500

Focus/Block Search Line

671.059	369.008
671.059	487.731

Search Grid

514.811	468.572
882.239	468.572
882.239	781.073
514.811	781.073



Slide Analysis Information

Document Name

File Name: Section DD Partial liquefaction10192012.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH UD
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 900 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM-ML UD
Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³
Cohesion: 1100 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Liquefied Soil A
Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³
Cohesion: 210 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Liquefied Soil B
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1100 psf
Friction Angle: 0 degrees
Water Surface: Water Table

Custom Hu value: 1

List of All Coordinates

Material Boundary

691.524	485.008
731.239	471.770
966.524	473.008
1151.524	474.008
1351.524	475.008

Material Boundary

676.524	488.008
676.524	490.008

Material Boundary

676.524	488.008
731.239	469.770
731.239	471.770

Material Boundary

600.000	468.500
731.239	469.770
1351.524	473.008

Material Boundary

0.000	459.500
89.000	459.500
280.000	457.000
320.000	462.000
586.149	463.291
1351.524	467.002

Material Boundary

1351.524	454.500
320.000	459.500
280.000	457.000
320.000	454.500
1351.524	454.500

Material Boundary

0.000	432.000
89.000	432.000
280.000	432.000
320.000	429.500
1351.524	429.500

Material Boundary

0.000	454.500
280.000	457.000

Material Boundary

320.000	462.000
1351.524	454.500

Material Boundary

280.000	442.000
330.000	444.500
1351.524	441.903
330.000	439.500
280.000	442.000

External Boundary

-0.000	469.008
0.000	459.500
0.000	454.500
0.000	432.000
-0.000	369.008
1351.524	369.008
1351.524	429.500
1351.524	441.903
1351.524	454.500
1351.524	467.002
1351.524	473.008
1351.524	475.008
1351.524	484.949
701.524	485.008
696.092	485.008
691.524	485.008
688.265	486.094
685.524	487.008
680.635	488.637
676.524	490.008
671.846	489.835
670.524	489.787
667.488	489.899
665.657	489.966
664.524	490.008
660.789	488.763
655.524	487.008
643.630	483.043
640.524	482.008
628.630	478.043
625.524	477.008
613.630	473.043
600.000	468.500

Water Table

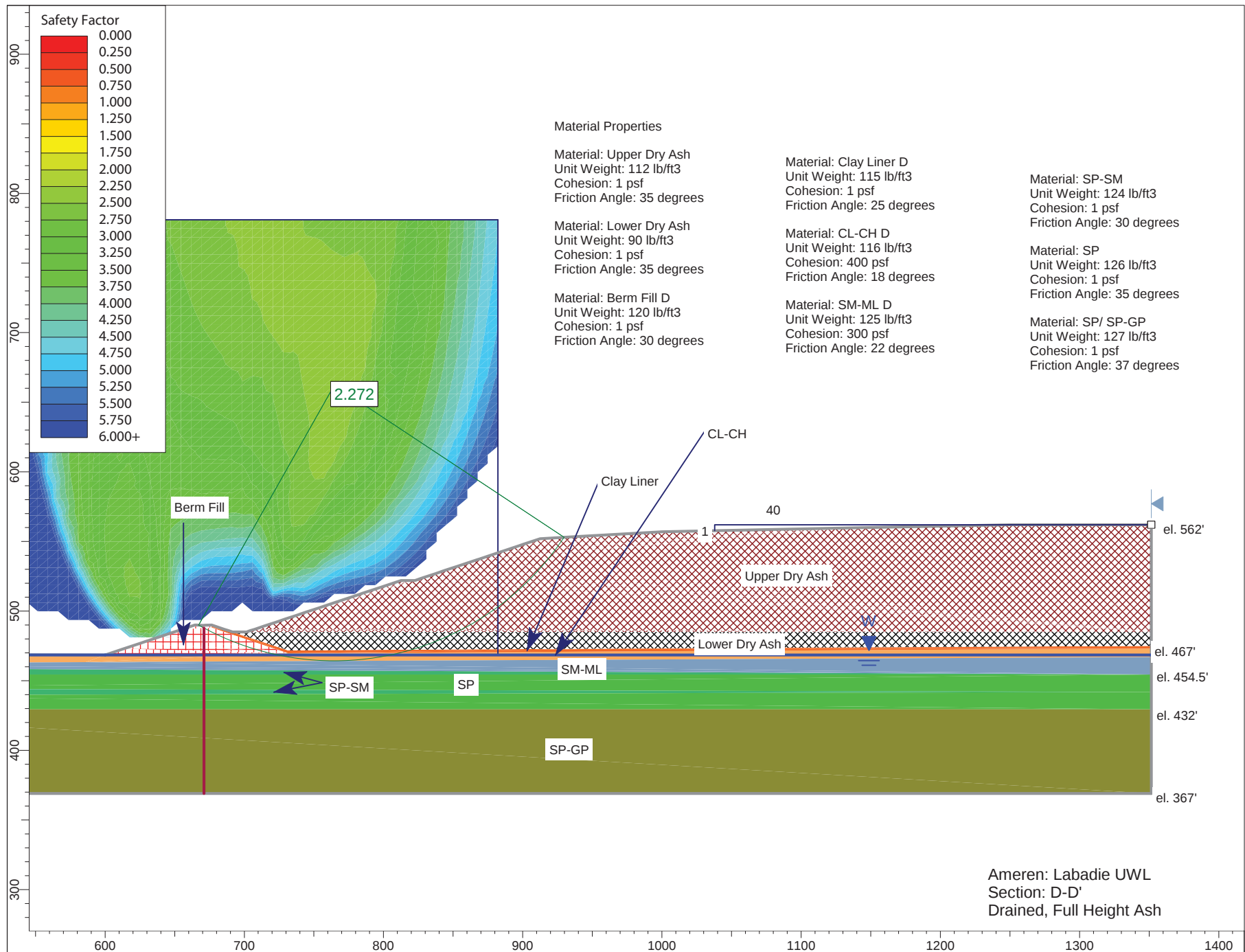
-0.000	469.008
600.000	468.500
1351.524	468.500

Focus/Block Search Line

671.059	369.008
671.059	487.731

Search Grid

539.169	470.359
844.124	470.359
844.124	869.204
539.169	869.204



Slide Analysis Information

Document Name

File Name: Section DD Full Drained 10192012.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner D
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH D
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 400 psf
Friction Angle: 18 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM-ML D
Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table

Custom Hu value: 1

List of All Coordinates

Material Boundary

691.524	485.008
731.239	471.770
966.524	473.008
1151.524	474.008
1351.524	475.008

Material Boundary

676.524	488.008
676.524	490.008

Material Boundary

676.524	488.008
731.239	469.770
731.239	471.770

Material Boundary

731.239	469.770
1351.524	473.008

Material Boundary

701.524	485.008
1351.524	484.949

Material Boundary

89.000	459.500
280.000	457.000
320.000	462.000
586.149	463.291
1351.524	467.002

Material Boundary

1351.524	454.500
320.000	459.500
280.000	457.000
320.000	454.500
1351.524	454.500

Material Boundary

89.000	432.000
280.000	432.000
320.000	429.500
1351.524	429.500

Material Boundary

0.000	432.000
89.000	432.000

Material Boundary

0.000	459.500
89.000	459.500

Material Boundary

0.000	454.500
280.000	457.000

Material Boundary

320.000	462.000
1351.524	454.500

Material Boundary

600.000	468.500
731.239	469.770

Material Boundary

280.000	442.000
330.000	444.500
1351.524	441.961
330.000	439.500
280.000	442.000

External Boundary

-0.000	469.008
0.000	459.500
0.000	454.500
0.000	432.000
-0.000	369.008
1351.524	369.008
1351.524	429.500
1351.524	441.961
1351.524	454.500
1351.524	467.002
1351.524	473.008
1351.524	475.008
1351.524	484.949
1351.524	562.008
1250.221	562.008
1135.274	559.709
1000.182	557.008
935.839	553.357
912.524	552.008
900.658	548.053
897.524	547.008
884.510	542.670
882.524	542.008
868.376	537.292
867.524	537.008
866.146	536.549
852.524	532.008
843.872	529.124
837.524	527.008
827.732	523.744
822.524	522.008
815.418	522.008
812.524	522.008
800.863	518.121
797.524	517.008
784.760	512.753

782.524	512.008
768.670	507.390
767.524	507.008
765.715	506.405
752.524	502.008
744.442	499.314
737.524	497.008
729.376	494.292
722.524	492.008
714.376	489.292
707.524	487.008
704.265	485.922
701.524	485.008
696.092	485.008
691.524	485.008
688.265	486.094
685.524	487.008
680.635	488.637
676.524	490.008
671.846	489.835
670.524	489.787
667.488	489.899
665.657	489.966
664.524	490.008
660.789	488.763
655.524	487.008
643.630	483.043
640.524	482.008
628.630	478.043
625.524	477.008
613.630	473.043
600.000	468.500

Water Table

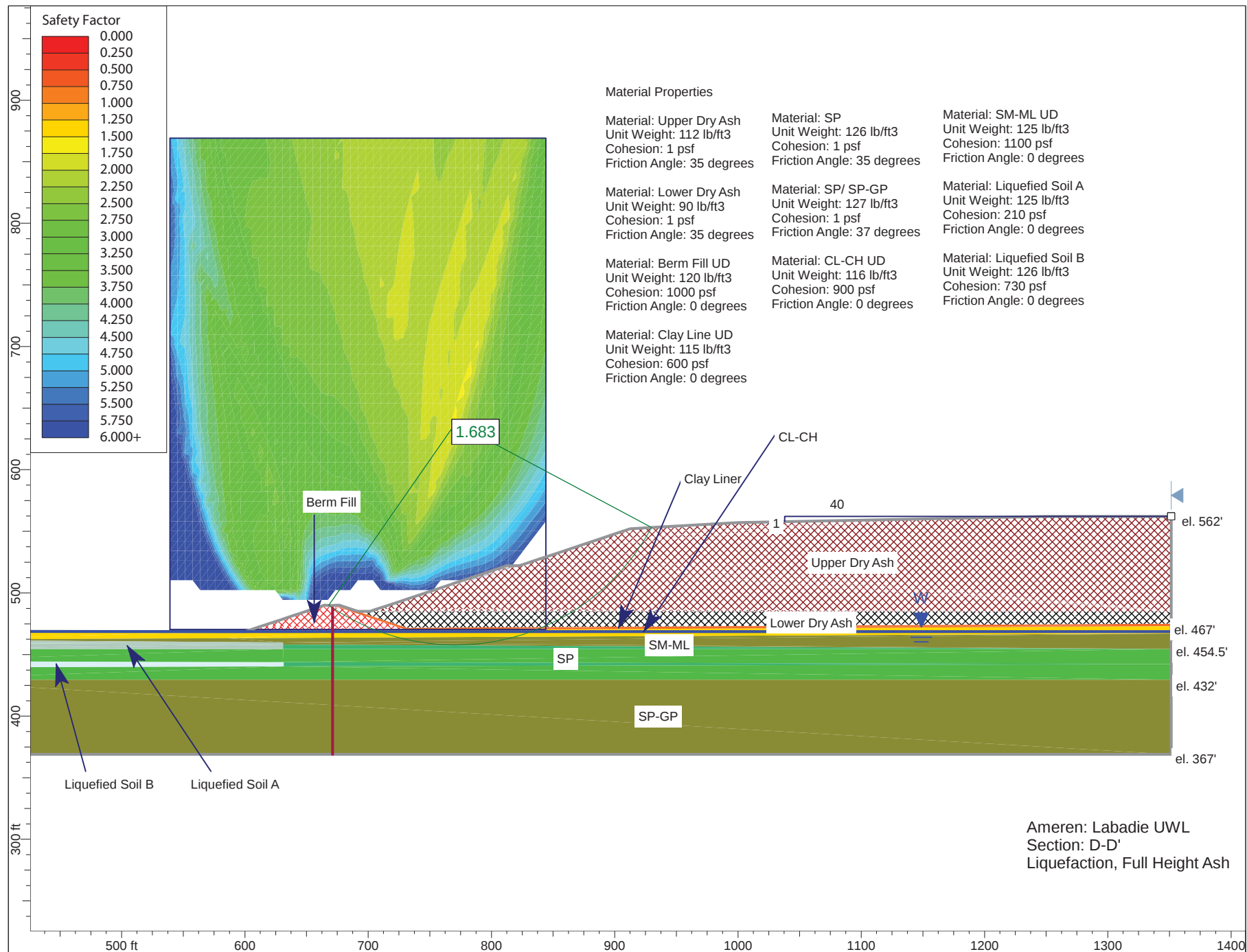
-0.000	469.008
600.000	468.500
1351.524	468.500

Focus/Block Search Line

671.059	369.008
671.059	487.731

Search Grid

514.811	468.572
882.239	468.572
882.239	781.073
514.811	781.073



Slide Analysis Information

Document Name

File Name: Section DD Full liquefaction10192012 trial.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH UD
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 900 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM-ML UD
Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³
Cohesion: 1100 psf
Friction Angle: 0 degrees
Water Surface: Water Table

Custom Hu value: 1

Material: Liquefied Soil A

Strength Type: Mohr-Coulomb

Unit Weight: 125 lb/ft³

Cohesion: 210 psf

Friction Angle: 0 degrees

Water Surface: Water Table

Custom Hu value: 1

Material: Liquefied Soil B

Strength Type: Mohr-Coulomb

Unit Weight: 126 lb/ft³

Cohesion: 730 psf

Friction Angle: 0 degrees

Water Surface: Water Table

Custom Hu value: 1

Global Minimums

Method: bishop simplified

FS: 1.729460

Center: 783.133, 677.758

Radius: 220.615

Left Slip Surface Endpoint: 667.461, 489.899

Right Slip Surface Endpoint: 966.504, 555.097

Resisting Moment=1.19849e+008 lb-ft

Driving Moment=6.92989e+007 lb-ft

Method: spencer

FS: 1.683230

Center: 770.935, 637.874

Radius: 180.327

Left Slip Surface Endpoint: 667.897, 489.883

Right Slip Surface Endpoint: 930.052, 553.022

Resisting Moment=7.82576e+007 lb-ft

Driving Moment=4.64926e+007 lb-ft

Resisting Horizontal Force=373621 lb

Driving Horizontal Force=221967 lb

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 20901

Number of Invalid Surfaces: 7710

Error Codes:

Error Code -103 reported for 6371 surfaces

Error Code -107 reported for 8 surfaces

Error Code -112 reported for 1288 surfaces

Error Code -118 reported for 43 surfaces

Method: spencer

Number of Valid Surfaces: 20847

Number of Invalid Surfaces: 7764

Error Codes:

Error Code -103 reported for 6371 surfaces

Error Code -107 reported for 8 surfaces
Error Code -108 reported for 12 surfaces
Error Code -111 reported for 10 surfaces
Error Code -112 reported for 1320 surfaces
Error Code -118 reported for 43 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.

-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.

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

-111 = safety factor equation did not converge

-112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi)/F)$ < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

-118 = Surface does not pass through the search focus

List of All Coordinates

Search Grid

539.169	470.359
844.124	470.359
844.124	869.204
539.169	869.204

Material Boundary

691.524	485.008
731.239	471.770
966.524	473.008
1151.524	474.008
1351.524	475.008

Material Boundary

676.524	488.008
676.524	490.008

Material Boundary

676.524	488.008
731.239	469.770
731.239	471.770

Material Boundary

600.000	468.500
731.239	469.770
1351.524	473.008

Material Boundary

701.524	485.008
1351.524	484.949

Material Boundary

0.000	459.500
89.000	459.500
280.000	457.000
320.000	462.000
586.149	463.291
1351.524	467.002

Material Boundary

1351.524	454.500
630.976	457.993
320.000	459.500
280.000	457.000
320.000	454.500
630.976	454.500
1351.524	454.500

Material Boundary

0.000	432.000
89.000	432.000
280.000	432.000
320.000	429.500
1351.524	429.500

Material Boundary

0.000	454.500
280.000	457.000

Material Boundary

320.000	462.000
630.976	459.739
1351.524	454.500

Material Boundary

280.000	442.000
320.000	444.500
631.373	443.790
1351.524	442.149
631.373	440.300

320.000	439.500
280.000	442.000

Material Boundary

630.976	454.500
630.976	457.993
630.976	459.739

Material Boundary

631.373	440.300
631.373	443.790

External Boundary

-0.000	469.008
0.000	459.500
0.000	454.500
0.000	432.000
-0.000	369.008
1351.524	369.008
1351.524	429.500
1351.524	442.149
1351.524	454.500
1351.524	467.002
1351.524	473.008
1351.524	475.008
1351.524	484.949
1351.524	562.008
1250.221	562.008
1135.274	559.709
1000.182	557.008
935.839	553.357
912.524	552.008
900.658	548.053
897.524	547.008
884.510	542.670
882.524	542.008
868.376	537.292
867.524	537.008
866.146	536.549
852.524	532.008
843.872	529.124
837.524	527.008
827.732	523.744
822.524	522.008
815.418	522.008
812.524	522.008
800.863	518.121
797.524	517.008
784.760	512.753
782.524	512.008
768.670	507.390
767.524	507.008
765.715	506.405
752.524	502.008
744.442	499.314
737.524	497.008

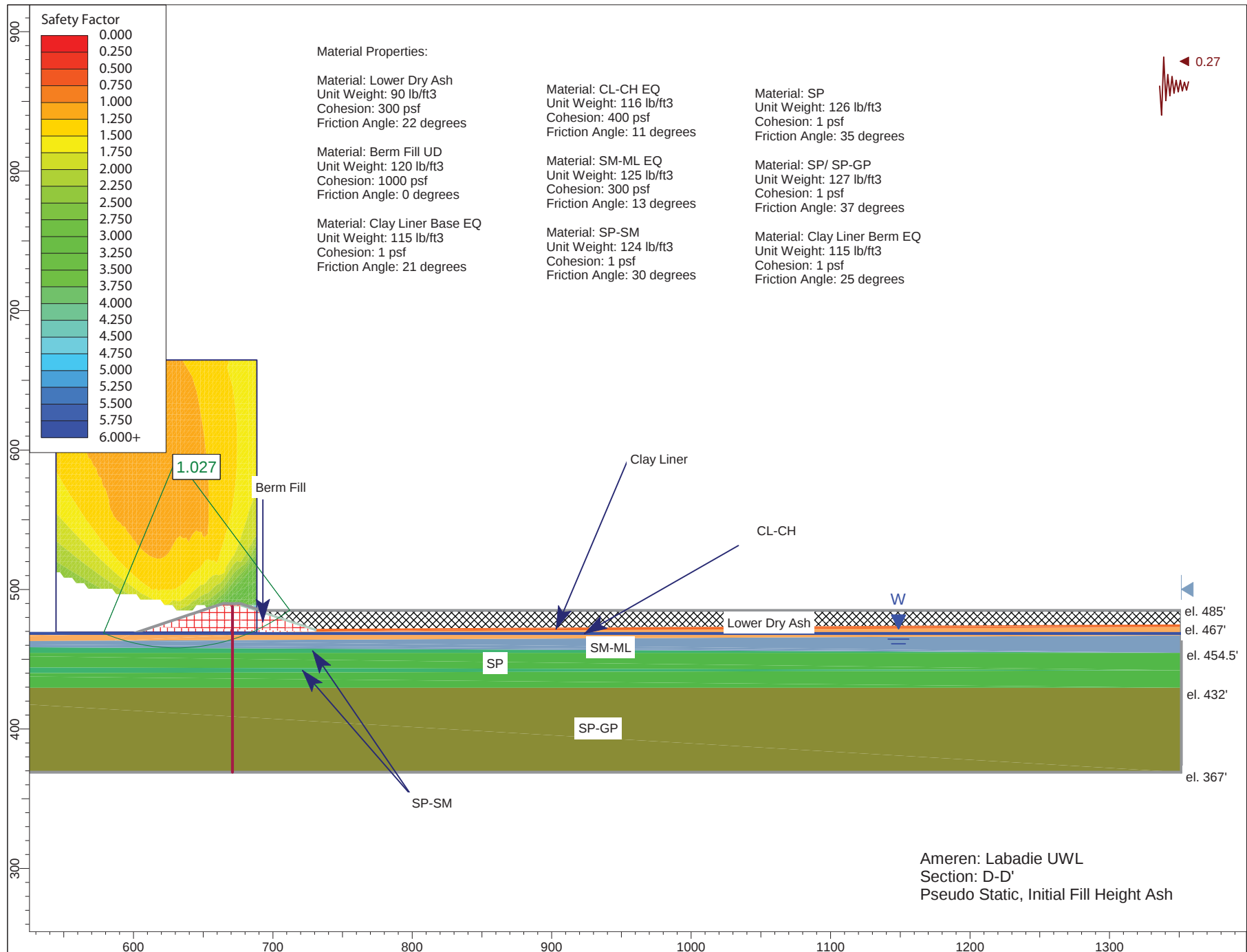
729.376	494.292
722.524	492.008
714.376	489.292
707.524	487.008
704.265	485.922
701.524	485.008
696.092	485.008
691.524	485.008
688.265	486.094
685.524	487.008
680.635	488.637
676.524	490.008
671.846	489.835
670.524	489.787
667.488	489.899
665.657	489.966
664.524	490.008
660.789	488.763
655.524	487.008
643.630	483.043
640.524	482.008
628.630	478.043
625.524	477.008
613.630	473.043
600.000	468.500

Water Table

-0.000	469.008
600.000	468.500
1351.524	468.500

Focus/Block Search Line

671.059	369.008
671.059	487.731



Slide Analysis Information

Document Name

File Name: Section DD Partial Pseudo Static 10192012.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.27

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD

Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Base EQ
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 21 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH EQ
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft³
Cohesion: 400 psf
Friction Angle: 11 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM-ML EQ
Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³
Cohesion: 300 psf
Friction Angle: 13 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³
Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Berm EQ
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³

Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary

691.524	485.008
731.239	471.770
966.524	473.008
1151.524	474.008
1351.524	475.008

Material Boundary

676.524	488.008
676.524	490.008

Material Boundary

676.524	488.008
731.239	469.770
731.239	471.770

Material Boundary

600.000	468.500
731.239	469.770
1351.524	473.008

Material Boundary

0.000	459.500
89.000	459.500
280.000	457.000
320.000	462.000
586.149	463.291
1351.524	467.002

Material Boundary

1351.524	454.500
320.000	459.500
280.000	457.000
320.000	454.500
1351.524	454.500

Material Boundary

0.000	432.000
89.000	432.000
280.000	432.000
320.000	429.500
1351.524	429.500

Material Boundary

0.000	454.500
280.000	457.000

Material Boundary

320.000	462.000
1351.524	454.500

Material Boundary

280.000	442.000
320.000	444.500
1351.524	442.088
320.000	439.500
280.000	442.000

External Boundary

-0.000	469.008
0.000	459.500
0.000	454.500
0.000	432.000
-0.000	369.008
1351.524	369.008
1351.524	429.500
1351.524	442.088
1351.524	454.500
1351.524	467.002
1351.524	473.008
1351.524	475.008
1351.524	484.949
701.524	485.008
696.092	485.008
691.524	485.008
688.265	486.094
685.524	487.008
680.635	488.637
676.524	490.008
671.846	489.835
670.524	489.787
667.488	489.899
665.657	489.966
664.524	490.008
660.789	488.763
655.524	487.008
643.630	483.043
640.524	482.008
628.630	478.043
625.524	477.008
613.630	473.043
600.000	468.500

Water Table

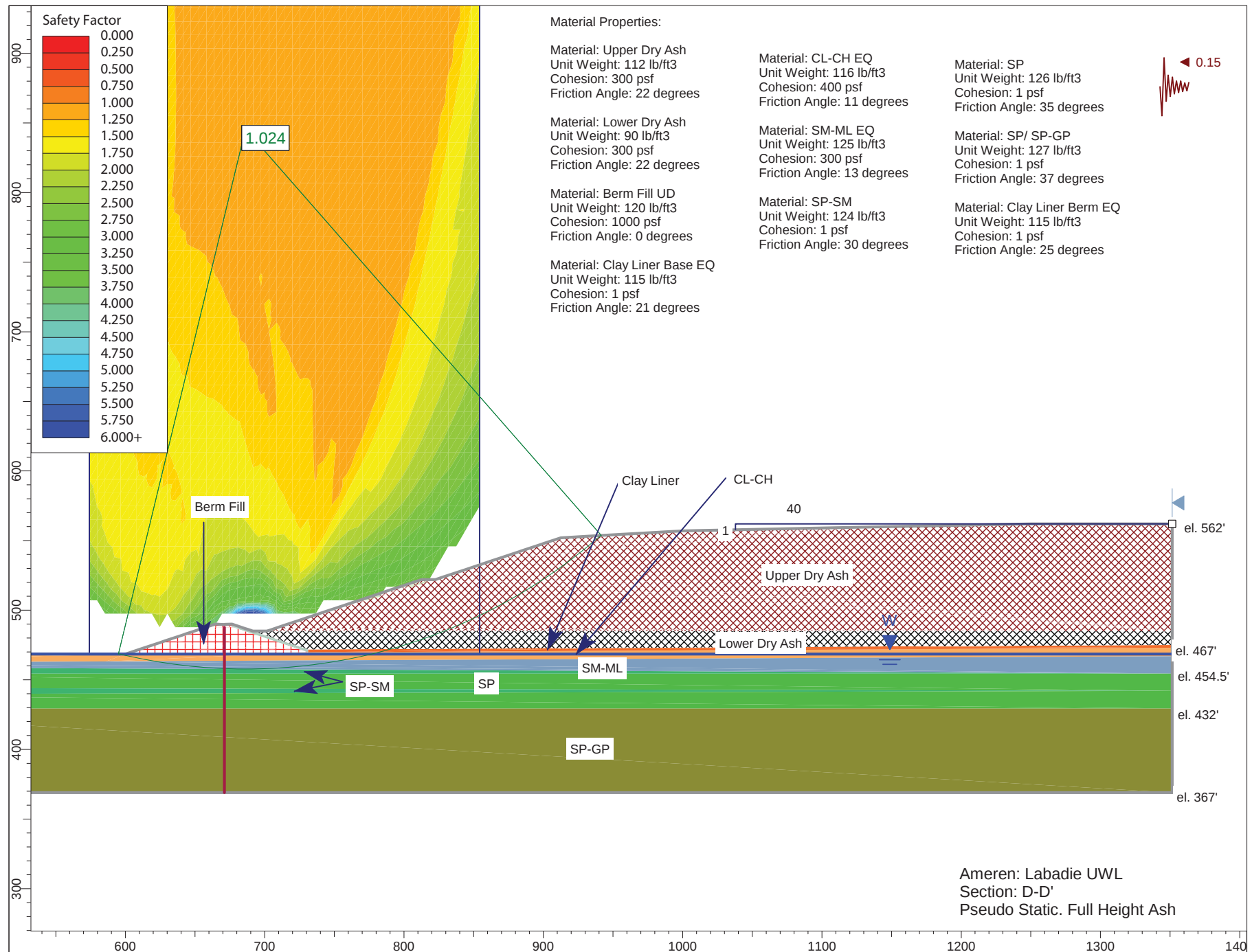
-0.000	469.008
600.000	468.500
1351.524	468.500

Focus/Block Search Line

671.059	369.008
671.059	487.731

Search Grid

544.464	469.356
688.483	469.356
688.483	664.586
544.464	664.586



Slide Analysis Information

Document Name

File Name: Section DD Full Pseudo Static 10182012.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.15

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash

Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft3
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft3
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Base EQ
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft3
Cohesion: 1 psf
Friction Angle: 21 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH EQ
Strength Type: Mohr-Coulomb
Unit Weight: 116 lb/ft3
Cohesion: 400 psf
Friction Angle: 11 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM-ML EQ
Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft3
Cohesion: 300 psf
Friction Angle: 13 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft3
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft3
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP/ SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft3

Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Berm EQ
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

List of All Coordinates

Material Boundary

691.524	485.008
731.239	471.770
966.524	473.008
1151.524	474.008
1351.524	475.008

Material Boundary

676.524	488.008
676.524	490.008

Material Boundary

676.524	488.008
731.239	469.770
731.239	471.770

Material Boundary

600.000	468.500
731.239	469.770
1351.524	473.008

Material Boundary

701.524	485.008
1351.524	484.949

Material Boundary

0.000	459.500
89.000	459.500
280.000	457.000
320.000	462.000
586.149	463.291
1351.524	467.002

Material Boundary

1351.524	454.500
320.000	459.500
280.000	457.000
320.000	454.500
1351.524	454.500

Material Boundary

0.000	432.000
-------	---------

89.000	432.000
280.000	432.000
320.000	429.500
1351.524	429.500

Material Boundary

0.000	454.500
280.000	457.000

Material Boundary

320.000	462.000
1351.524	454.500

Material Boundary

280.000	442.000
320.000	444.500
1351.524	442.119
320.000	439.500
280.000	442.000

External Boundary

-0.000	469.008
0.000	459.500
0.000	454.500
0.000	432.000
-0.000	369.008
1351.524	369.008
1351.524	429.500
1351.524	442.119
1351.524	454.500
1351.524	467.002
1351.524	473.008
1351.524	475.008
1351.524	484.949
1351.524	562.008
1250.221	562.008
1135.274	559.709
1000.182	557.008
935.839	553.357
912.524	552.008
900.658	548.053
897.524	547.008
884.510	542.670
882.524	542.008
868.376	537.292
867.524	537.008
866.146	536.549
852.524	532.008
843.872	529.124
837.524	527.008
827.732	523.744
822.524	522.008
815.418	522.008
812.524	522.008
800.863	518.121
797.524	517.008
784.760	512.753

782.524	512.008
768.670	507.390
767.524	507.008
765.715	506.405
752.524	502.008
744.442	499.314
737.524	497.008
729.376	494.292
722.524	492.008
714.376	489.292
707.524	487.008
704.265	485.922
701.524	485.008
696.092	485.008
691.524	485.008
688.265	486.094
685.524	487.008
680.635	488.637
676.524	490.008
671.846	489.835
670.524	489.787
667.488	489.899
665.657	489.966
664.524	490.008
660.789	488.763
655.524	487.008
643.630	483.043
640.524	482.008
628.630	478.043
625.524	477.008
613.630	473.043
600.000	468.500

Water Table

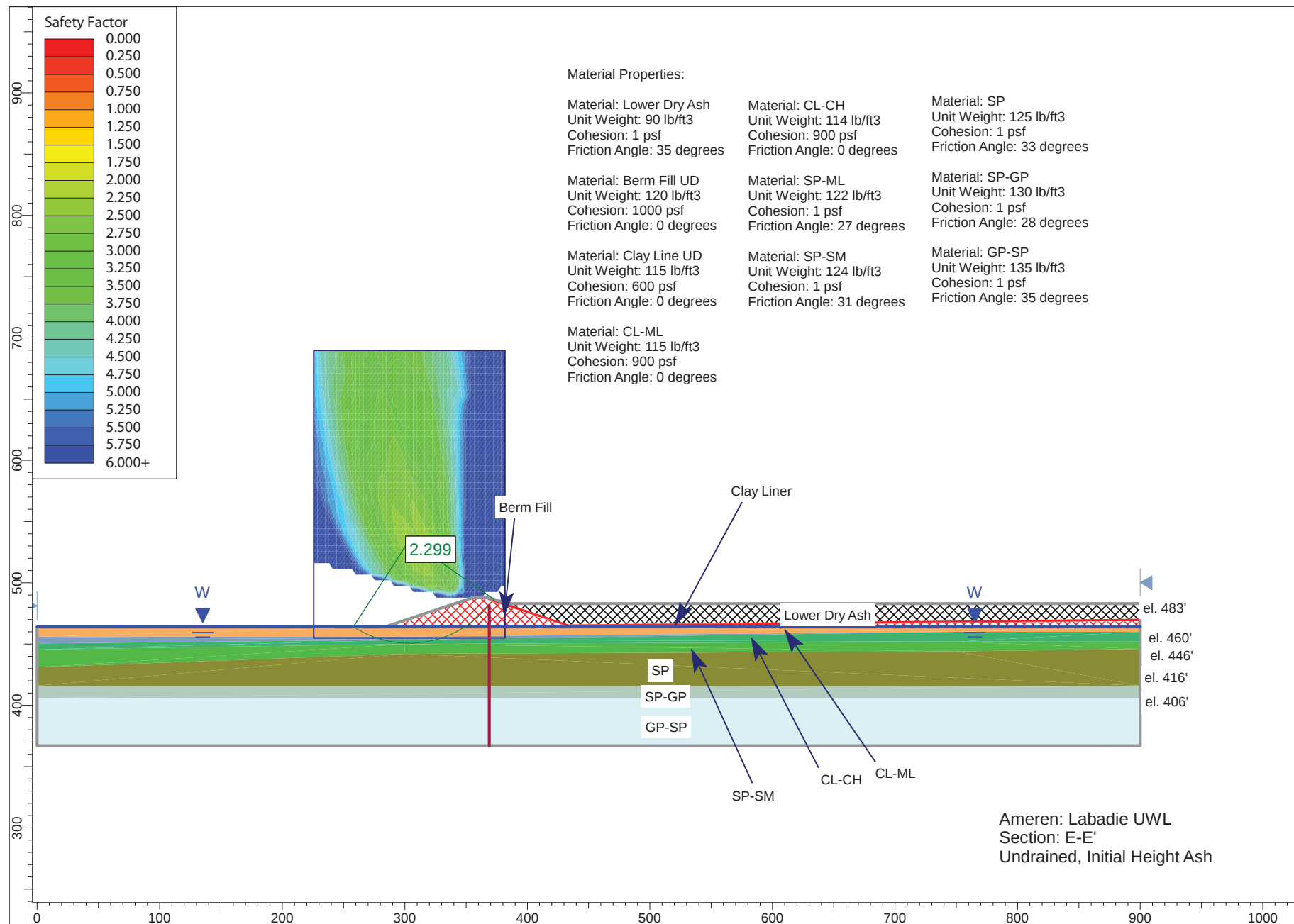
-0.000	469.008
600.000	468.500
1351.524	468.500

Focus/Block Search Line

671.059	369.008
671.059	487.731

Search Grid

574.112	468.500
854.236	468.500
854.236	951.794
574.112	951.794



Slide Analysis Information

Document Name

File Name: Section EE Partial Undrained 7292013.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
GLE/Morgenstern-Price with interslice force function: Half Sine
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 900 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH
Strength Type: Mohr-Coulomb
Unit Weight: 114 lb/ft³
Cohesion: 900 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-ML
Strength Type: Mohr-Coulomb
Unit Weight: 122 lb/ft³
Cohesion: 1 psf
Friction Angle: 27 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³
Cohesion: 1 psf
Friction Angle: 33 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 130 lb/ft³
Cohesion: 1 psf
Friction Angle: 28 degrees
Water Surface: Water Table

Custom Hu value: 1

Material: GP-SP

Strength Type: Mohr-Coulomb

Unit Weight: 135 lb/ft³

Cohesion: 1 psf

Friction Angle: 35 degrees

Water Surface: Water Table

Custom Hu value: 1

Global Minimums

Method: spencer

FS: 2.299110

Center: 303.681, 534.874

Radius: 84.338

Left Slip Surface Endpoint: 257.966, 464.000

Right Slip Surface Endpoint: 372.770, 486.504

Resisting Moment=9.51331e+006 lb-ft

Driving Moment=4.13782e+006 lb-ft

Resisting Horizontal Force=99308.2 lb

Driving Horizontal Force=43194.2 lb

Method: gle/morgenstern-price

FS: 2.311290

Center: 303.681, 534.874

Radius: 84.338

Left Slip Surface Endpoint: 257.966, 464.000

Right Slip Surface Endpoint: 372.770, 486.504

Resisting Moment=9.5637e+006 lb-ft

Driving Moment=4.13782e+006 lb-ft

Resisting Horizontal Force=99899.2 lb

Driving Horizontal Force=43222.3 lb

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 18509

Number of Invalid Surfaces: 10102

Error Codes:

Error Code -103 reported for 6978 surfaces

Error Code -107 reported for 606 surfaces

Error Code -108 reported for 111 surfaces

Error Code -111 reported for 2 surfaces

Error Code -112 reported for 2405 surfaces

Method: gle/morgenstern-price

Number of Valid Surfaces: 18503

Number of Invalid Surfaces: 10108

Error Codes:

Error Code -103 reported for 6978 surfaces

Error Code -107 reported for 606 surfaces

Error Code -108 reported for 117 surfaces

Error Code -111 reported for 2 surfaces

Error Code -112 reported for 2405 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.

-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.

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

-111 = safety factor equation did not converge

-112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi)/F)$ < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

List of All Coordinates

Search Grid

225.631	455.071
381.730	455.071
381.730	689.787
225.631	689.787

Material Boundary

384.053	482.998
433.806	466.000
900.000	470.650

Material Boundary

367.800	486.000
367.800	488.000

Material Boundary

367.800	486.000
433.806	464.000
433.806	466.000

Material Boundary

433.806	464.000
---------	---------

900.000	468.650
---------	---------

Material Boundary

283.800	464.000
433.806	464.000
900.000	464.000

Material Boundary

0.000	456.000
300.000	456.000
750.000	460.000
900.000	460.000

Material Boundary

0.000	450.500
300.000	453.500
750.000	460.000

Material Boundary

0.000	445.500
300.000	450.000
750.000	452.000
900.000	452.000

Material Boundary

0.000	431.000
300.000	442.000
750.000	444.000
900.000	446.000

Material Boundary

0.000	416.000
900.000	416.000

Material Boundary

0.000	406.000
900.000	406.000

External Boundary

0.000	464.000
0.000	456.000
0.000	450.500
0.000	445.500
0.000	431.000
0.000	416.000
0.000	406.000
0.000	367.000
900.000	367.000
900.000	406.000
900.000	416.000
900.000	446.000
900.000	452.000
900.000	460.000
900.000	464.000
900.000	468.650
900.000	470.650

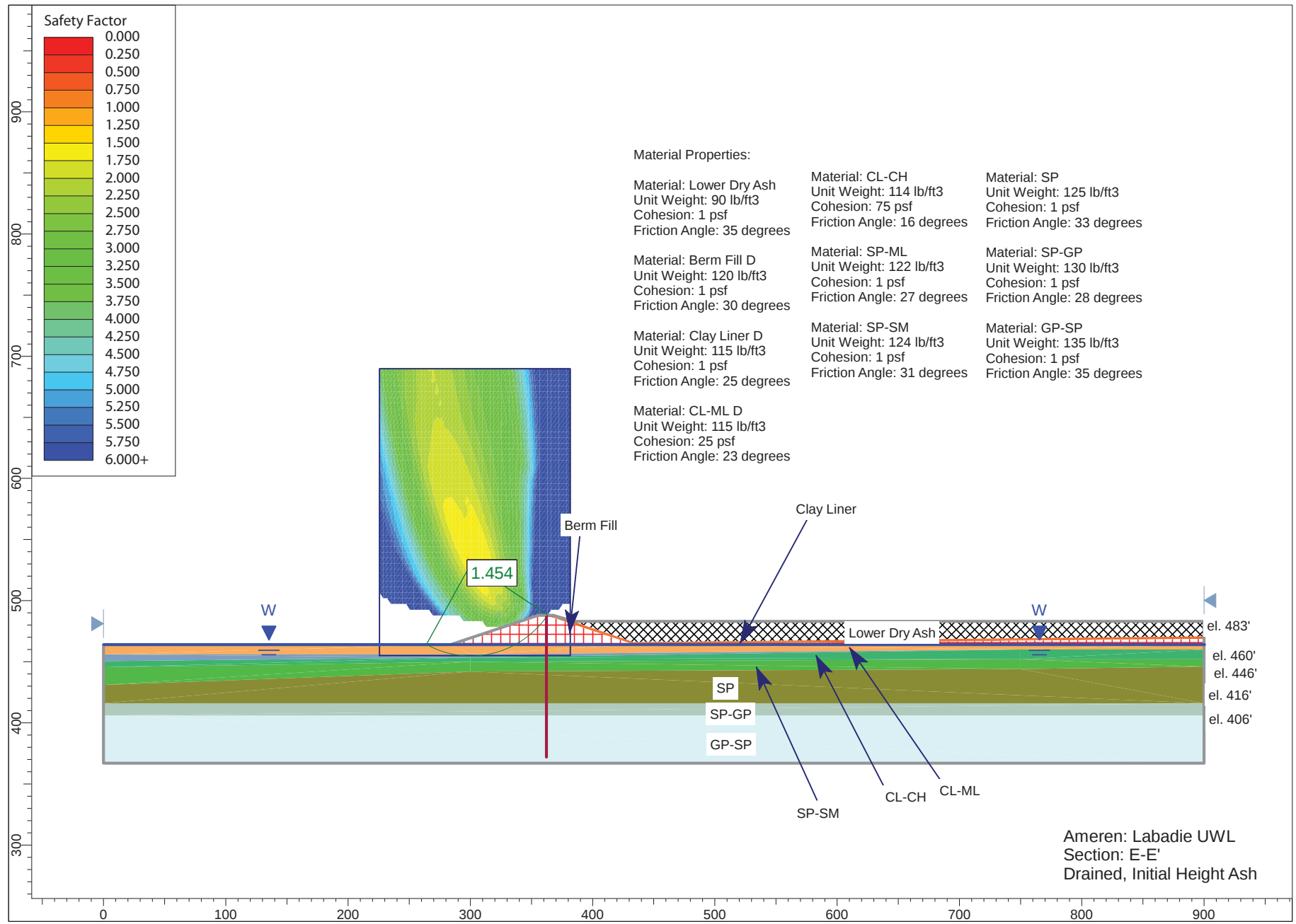
900.000	483.000
384.053	482.998
380.635	484.137
367.800	488.000
355.800	488.000
283.800	464.000

Water Table

0.104	464.000
433.910	464.000
900.104	464.000

Focus/Block Search Line

368.937	367.000
368.937	481.446



Slide Analysis Information

Document Name

File Name: Section EE Partial Drained 7292013.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
GLE/Morgenstern-Price with interslice force function: Half Sine
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner D
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML D
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 25 psf
Friction Angle: 23 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH
Strength Type: Mohr-Coulomb
Unit Weight: 114 lb/ft³
Cohesion: 75 psf
Friction Angle: 16 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-ML
Strength Type: Mohr-Coulomb
Unit Weight: 122 lb/ft³
Cohesion: 1 psf
Friction Angle: 27 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³
Cohesion: 1 psf
Friction Angle: 33 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 130 lb/ft³
Cohesion: 1 psf
Friction Angle: 28 degrees
Water Surface: Water Table

Custom Hu value: 1

Material: GP-SP

Strength Type: Mohr-Coulomb

Unit Weight: 135 lb/ft³

Cohesion: 1 psf

Friction Angle: 35 degrees

Water Surface: Water Table

Custom Hu value: 1

Global Minimums

Method: spencer

FS: 1.453920

Center: 300.559, 530.180

Radius: 75.618

Left Slip Surface Endpoint: 263.976, 464.000

Right Slip Surface Endpoint: 363.319, 488.000

Resisting Moment=4.03455e+006 lb-ft

Driving Moment=2.77495e+006 lb-ft

Resisting Horizontal Force=47488.2 lb

Driving Horizontal Force=32662.1 lb

Method: gle/morgenstern-price

FS: 1.445600

Center: 300.559, 530.180

Radius: 75.618

Left Slip Surface Endpoint: 263.976, 464.000

Right Slip Surface Endpoint: 363.319, 488.000

Resisting Moment=4.01147e+006 lb-ft

Driving Moment=2.77495e+006 lb-ft

Resisting Horizontal Force=47287.9 lb

Driving Horizontal Force=32711.5 lb

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 20636

Number of Invalid Surfaces: 7975

Error Codes:

Error Code -103 reported for 4828 surfaces

Error Code -107 reported for 624 surfaces

Error Code -108 reported for 97 surfaces

Error Code -111 reported for 8 surfaces

Error Code -112 reported for 2418 surfaces

Method: gle/morgenstern-price

Number of Valid Surfaces: 20645

Number of Invalid Surfaces: 7966

Error Codes:

Error Code -103 reported for 4828 surfaces

Error Code -107 reported for 624 surfaces

Error Code -108 reported for 96 surfaces

Error Code -111 reported for 5 surfaces

Error Code -112 reported for 2413 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.

-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.

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

-111 = safety factor equation did not converge

-112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi)/F)$ < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

List of All Coordinates

Search Grid

225.631	455.071
381.730	455.071
381.730	689.787
225.631	689.787

Material Boundary

384.047	483.000
433.806	466.000
900.000	470.650

Material Boundary

367.800	486.000
367.800	488.000

Material Boundary

367.800	486.000
433.806	464.000
433.806	466.000

Material Boundary

433.806	464.000
---------	---------

900.000	468.650
---------	---------

Material Boundary

283.800	464.000
433.806	464.000
900.000	464.000

Material Boundary

0.000	456.000
300.000	456.000
750.000	460.000
900.000	460.000

Material Boundary

0.000	450.500
300.000	453.500
750.000	460.000

Material Boundary

0.000	445.500
300.000	450.000
750.000	452.000
900.000	452.000

Material Boundary

0.000	431.000
300.000	442.000
750.000	444.000
900.000	446.000

Material Boundary

0.000	416.000
900.000	416.000

Material Boundary

0.000	406.000
900.000	406.000

External Boundary

0.000	464.000
0.000	456.000
0.000	450.500
0.000	445.500
0.000	431.000
0.000	416.000
0.000	406.000
0.000	367.000
900.000	367.000
900.000	406.000
900.000	416.000
900.000	446.000
900.000	452.000
900.000	460.000
900.000	464.000
900.000	468.650
900.000	470.650

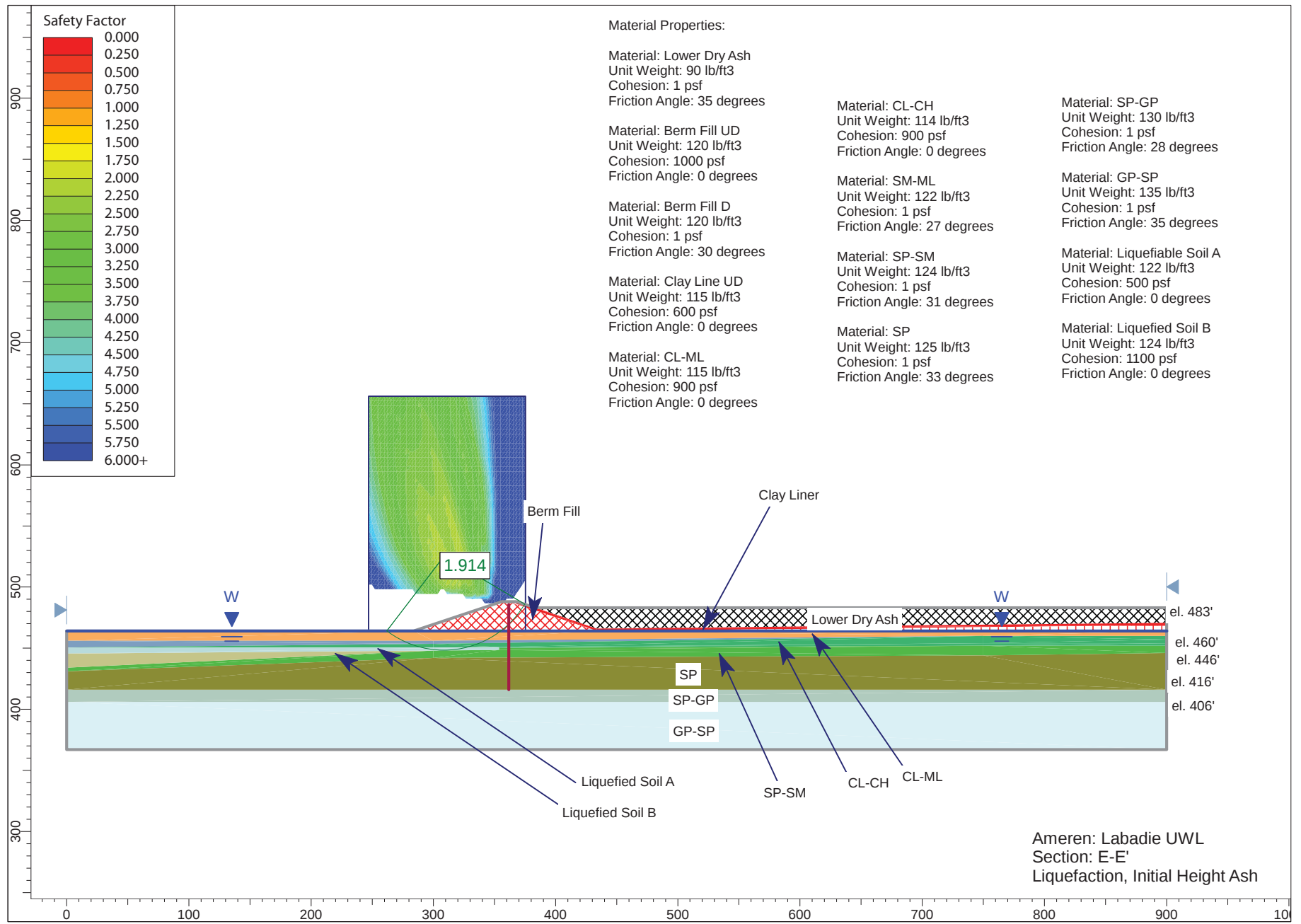
900.000	483.000
384.047	483.000
380.635	484.137
367.800	488.000
355.800	488.000
283.800	464.000

Water Table

0.425	464.000
434.231	464.000
900.425	464.000

Focus/Block Search Line

362.308	372.087
362.308	486.533



Slide Analysis Information

Document Name

File Name: Section EE Partial Liquefaction 7292013.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
GLE/Morgenstern-Price with interslice force function: Half Sine
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 900 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH
Strength Type: Mohr-Coulomb
Unit Weight: 114 lb/ft³
Cohesion: 900 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM-ML
Strength Type: Mohr-Coulomb
Unit Weight: 122 lb/ft³
Cohesion: 1 psf
Friction Angle: 27 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³
Cohesion: 1 psf
Friction Angle: 33 degrees
Water Surface: Water Table

Custom Hu value: 1

Material: SP-GP

Strength Type: Mohr-Coulomb

Unit Weight: 130 lb/ft³

Cohesion: 1 psf

Friction Angle: 28 degrees

Water Surface: Water Table

Custom Hu value: 1

Material: GP-SP

Strength Type: Mohr-Coulomb

Unit Weight: 135 lb/ft³

Cohesion: 1 psf

Friction Angle: 35 degrees

Water Surface: Water Table

Custom Hu value: 1

Material: Liquefiable Soil A

Strength Type: Mohr-Coulomb

Unit Weight: 122 lb/ft³

Cohesion: 500 psf

Friction Angle: 0 degrees

Water Surface: Water Table

Custom Hu value: 1

Material: Liquefied Soil B

Strength Type: Mohr-Coulomb

Unit Weight: 124 lb/ft³

Cohesion: 1100 psf

Friction Angle: 0 degrees

Water Surface: Water Table

Custom Hu value: 1

Global Minimums

Method: spencer

FS: 1.914130

Center: 308.703, 525.238

Radius: 77.096

Left Slip Surface Endpoint: 261.867, 464.000

Right Slip Surface Endpoint: 374.972, 485.842

Resisting Moment=7.87829e+006 lb-ft

Driving Moment=4.11586e+006 lb-ft

Resisting Horizontal Force=86716.9 lb

Driving Horizontal Force=45303.5 lb

Method: gle/morgenstern-price

FS: 1.914420

Center: 308.703, 525.238

Radius: 77.096

Left Slip Surface Endpoint: 261.867, 464.000

Right Slip Surface Endpoint: 374.972, 485.842

Resisting Moment=7.87947e+006 lb-ft

Driving Moment=4.11586e+006 lb-ft

Resisting Horizontal Force=86713.3 lb

Driving Horizontal Force=45294.9 lb

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 23000

Number of Invalid Surfaces: 5611

Error Codes:

Error Code -103 reported for 580 surfaces

Error Code -107 reported for 688 surfaces

Error Code -108 reported for 241 surfaces

Error Code -111 reported for 65 surfaces

Error Code -112 reported for 4037 surfaces

Method: gle/morgenstern-price

Number of Valid Surfaces: 22997

Number of Invalid Surfaces: 5614

Error Codes:

Error Code -103 reported for 580 surfaces

Error Code -107 reported for 688 surfaces

Error Code -108 reported for 245 surfaces

Error Code -111 reported for 65 surfaces

Error Code -112 reported for 4036 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.

-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.

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

-111 = safety factor equation did not converge

-112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi))/F$ < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

List of All Coordinates

Search Grid

247.102	463.651
375.437	463.651
375.437	656.111
247.102	656.111

Material Boundary

384.049	483.000
433.806	466.000
900.000	470.650

Material Boundary

367.800	486.000
367.800	488.000

Material Boundary

367.800	486.000
433.806	464.000
433.806	466.000

Material Boundary

433.806	464.000
900.000	468.650

Material Boundary

283.800	464.000
433.806	464.000
900.000	464.000

Material Boundary

0.000	456.000
300.000	456.000
750.000	460.000
900.000	460.000

Material Boundary

0.000	450.500
300.000	453.500
750.000	460.000

Material Boundary

0.000	445.500
300.000	450.000
353.785	450.239
750.000	452.000
900.000	452.000

Material Boundary

0.000	431.000
300.000	442.000
750.000	444.000
900.000	446.000

Material Boundary

0.000	416.000
900.000	416.000

Material Boundary

0.000	406.000
900.000	406.000

Material Boundary

0.000	450.500
300.073	450.500
353.785	450.918
750.000	454.000
900.000	457.000

Material Boundary

750.000	452.000
900.000	454.000

Material Boundary

0.000	445.500
300.000	448.000
353.785	448.478
750.000	452.000

Material Boundary

0.000	434.000
300.000	448.000

Material Boundary

353.785	448.478
353.785	450.239
353.785	450.918

External Boundary

0.000	464.000
0.000	456.000
0.000	450.500
0.000	445.500
0.000	434.000
0.000	431.000
0.000	416.000
0.000	406.000
0.000	367.000
900.000	367.000
900.000	406.000
900.000	416.000
900.000	446.000
900.000	452.000
900.000	454.000
900.000	457.000
900.000	460.000
900.000	464.000
900.000	468.650

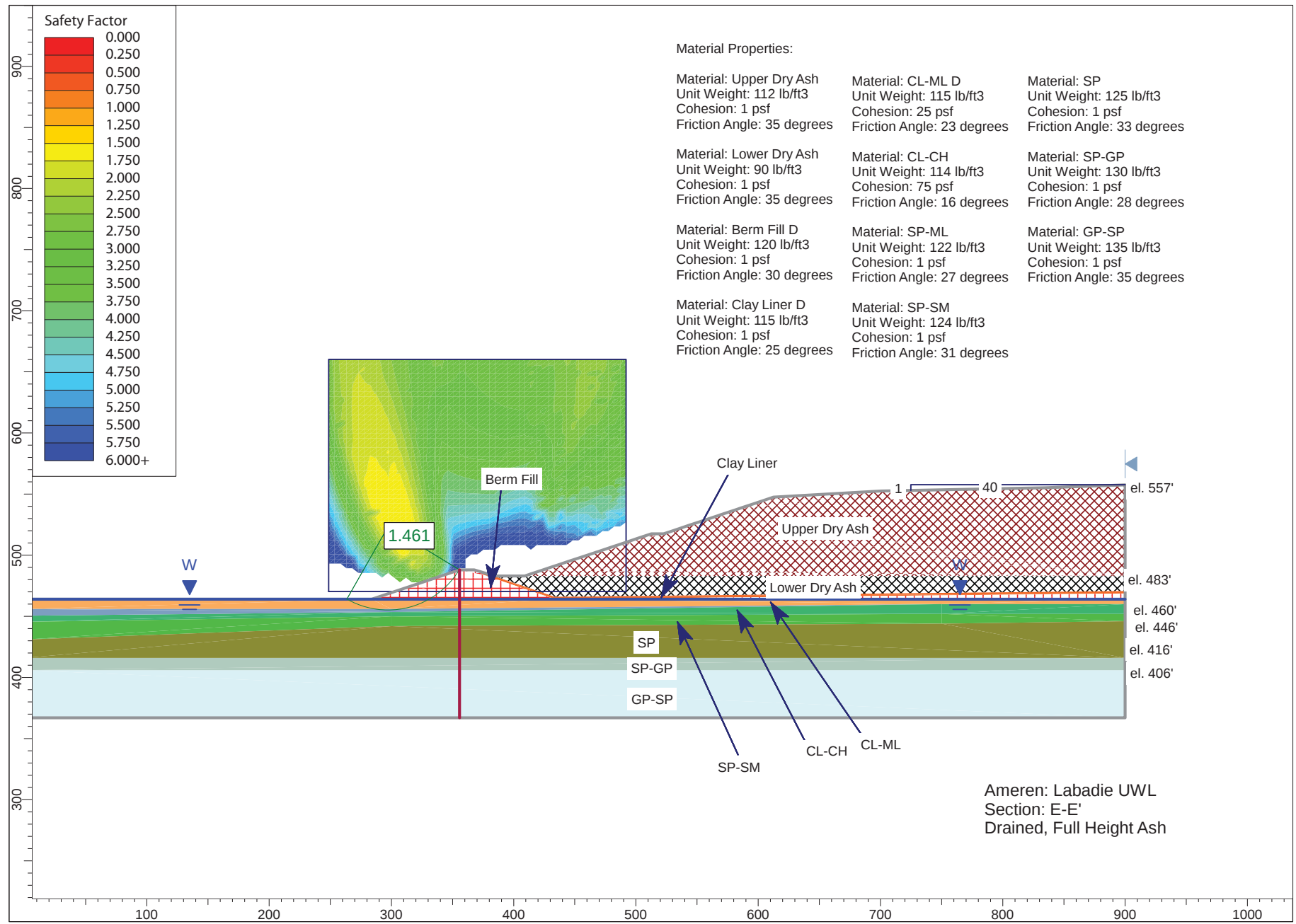
900.000	470.650
900.000	483.000
384.049	483.000
380.635	484.137
367.800	488.000
355.800	488.000
283.800	464.000

Water Table

0.189	464.000
433.995	464.000
900.189	464.000

Focus/Block Search Line

361.650	416.000
361.650	485.800



Slide Analysis Information

Document Name

File Name: Section EE Full Drained 7292013.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
GLE/Morgenstern-Price with interslice force function: Half Sine
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner D
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML D
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 25 psf
Friction Angle: 23 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH
Strength Type: Mohr-Coulomb
Unit Weight: 114 lb/ft³
Cohesion: 75 psf
Friction Angle: 16 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-ML
Strength Type: Mohr-Coulomb
Unit Weight: 122 lb/ft³
Cohesion: 1 psf
Friction Angle: 27 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³
Cohesion: 1 psf
Friction Angle: 33 degrees
Water Surface: Water Table

Custom Hu value: 1

Material: SP-GP

Strength Type: Mohr-Coulomb

Unit Weight: 130 lb/ft³

Cohesion: 1 psf

Friction Angle: 28 degrees

Water Surface: Water Table

Custom Hu value: 1

Material: GP-SP

Strength Type: Mohr-Coulomb

Unit Weight: 135 lb/ft³

Cohesion: 1 psf

Friction Angle: 35 degrees

Water Surface: Water Table

Custom Hu value: 1

Global Minimums

Method: spencer

FS: 1.461290

Center: 297.304, 523.511

Radius: 68.431

Left Slip Surface Endpoint: 263.522, 464.000

Right Slip Surface Endpoint: 355.800, 488.000

Resisting Moment=3.01894e+006 lb-ft

Driving Moment=2.06594e+006 lb-ft

Resisting Horizontal Force=39146.3 lb

Driving Horizontal Force=26788.8 lb

Method: gle/morgenstern-price

FS: 1.453250

Center: 297.304, 523.511

Radius: 68.431

Left Slip Surface Endpoint: 263.522, 464.000

Right Slip Surface Endpoint: 355.800, 488.000

Resisting Moment=3.00233e+006 lb-ft

Driving Moment=2.06594e+006 lb-ft

Resisting Horizontal Force=38979.9 lb

Driving Horizontal Force=26822.5 lb

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 19364

Number of Invalid Surfaces: 9247

Error Codes:

Error Code -101 reported for 243 surfaces

Error Code -103 reported for 5972 surfaces

Error Code -107 reported for 289 surfaces

Error Code -108 reported for 66 surfaces

Error Code -111 reported for 65 surfaces

Error Code -112 reported for 2612 surfaces

Method: gle/morgenstern-price

Number of Valid Surfaces: 19428
Number of Invalid Surfaces: 9183
Error Codes:
Error Code -101 reported for 243 surfaces
Error Code -103 reported for 5972 surfaces
Error Code -107 reported for 289 surfaces
Error Code -108 reported for 35 surfaces
Error Code -111 reported for 56 surfaces
Error Code -112 reported for 2588 surfaces

Error Codes

The following errors were encountered during the computation:

-101 = Only one (or zero)
surface / slope intersections.

-103 = Two surface / slope intersections,
but one or more surface / nonslope external polygon
intersections lie between them. This usually occurs
when the slip surface extends past the bottom of the
soil region, but may also occur on a benched
slope model with two sets of Slope Limits.

-107 = Total driving moment or
total driving force is negative. This will occur
if the wrong failure direction is specified,
or if high external or anchor loads are applied
against the failure direction.

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

-111 = safety factor equation did not converge

-112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi)/F)$
< 0.2 for the final iteration of the safety factor calculation. This screens out
some slip surfaces which may not be valid in the context of the analysis, in
particular, deep seated slip surfaces with many high negative base angle
slices in the passive zone.

List of All Coordinates

Search Grid

248.639	470.329
491.964	470.329
491.964	660.264
248.639	660.264

Material Boundary

384.014	483.011
433.806	466.000

900.000 470.650

Material Boundary

367.800 488.000
376.524 483.508

Material Boundary

376.524 483.508
433.806 464.000
433.806 466.000

Material Boundary

409.030 483.010
900.000 483.000

Material Boundary

433.806 464.000
900.000 468.650

Material Boundary

283.800 464.000
433.806 464.000
900.000 464.000

Material Boundary

0.000 456.000
300.000 456.000
750.000 460.000
900.000 460.000

Material Boundary

0.000 450.500
300.000 453.500
750.000 460.000

Material Boundary

0.000 445.500
300.000 450.000
750.000 452.000
900.000 452.000

Material Boundary

0.000 431.000
300.000 442.000
750.000 444.000
900.000 446.000

Material Boundary

0.000 416.000
900.000 416.000

Material Boundary

0.000 406.000
900.000 406.000

External Boundary

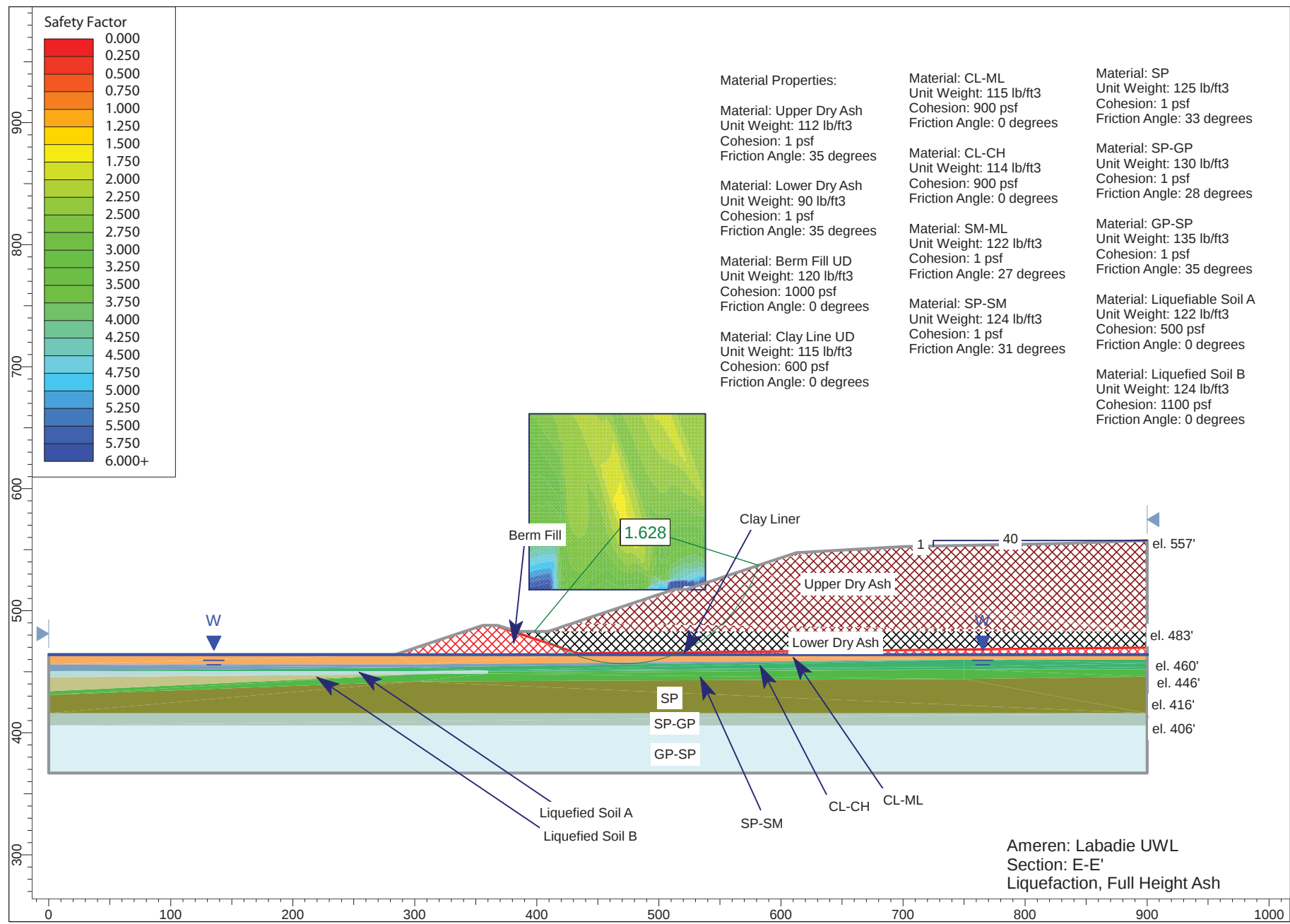
0.000	464.000
0.000	456.000
0.000	450.500
0.000	445.500
0.000	431.000
0.000	416.000
0.000	406.000
0.000	367.000
900.000	367.000
900.000	406.000
900.000	416.000
900.000	446.000
900.000	452.000
900.000	460.000
900.000	464.000
900.000	468.650
900.000	470.650
900.000	483.000
900.000	557.508
835.274	555.209
700.182	552.508
635.839	548.857
612.524	547.508
600.658	543.553
597.524	542.508
584.510	538.170
582.524	537.508
568.376	532.792
567.524	532.508
566.146	532.049
552.524	527.508
543.872	524.624
537.524	522.508
527.732	519.244
522.524	517.508
515.418	517.508
512.524	517.508
500.863	513.621
497.524	512.508
484.760	508.253
482.524	507.508
468.670	502.890
467.524	502.508
465.715	501.905
452.524	497.508
444.442	494.814
437.524	492.508
429.376	489.792
422.524	487.508
414.376	484.792
409.030	483.010
384.014	483.011
380.635	484.137
367.800	488.000
355.800	488.000
283.800	464.000

Water Table

-0.000	464.000
433.805	464.000
900.000	464.000

Focus/Block Search Line

355.800	367.000
355.800	488.000



Slide Analysis Information

Document Name

File Name: Section EE Full Liquefaction 7292013.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
GLE/Morgenstern-Price with interslice force function: Half Sine
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees

Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill UD
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Line UD
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 600 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 900 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH
Strength Type: Mohr-Coulomb
Unit Weight: 114 lb/ft³
Cohesion: 900 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM-ML
Strength Type: Mohr-Coulomb
Unit Weight: 122 lb/ft³
Cohesion: 1 psf
Friction Angle: 27 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³
Cohesion: 1 psf
Friction Angle: 33 degrees
Water Surface: Water Table

Custom Hu value: 1

Material: SP-GP

Strength Type: Mohr-Coulomb
Unit Weight: 130 lb/ft³
Cohesion: 1 psf
Friction Angle: 28 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: GP-SP

Strength Type: Mohr-Coulomb
Unit Weight: 135 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Liquefiable Soil A

Strength Type: Mohr-Coulomb
Unit Weight: 122 lb/ft³
Cohesion: 500 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Liquefied Soil B

Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1100 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Global Minimums

Method: spencer

FS: 1.627860
Center: 471.644, 571.976
Radius: 115.560
Left Slip Surface Endpoint: 397.890, 483.012
Right Slip Surface Endpoint: 581.876, 537.292
Resisting Moment=3.03045e+007 lb-ft
Driving Moment=1.86161e+007 lb-ft
Resisting Horizontal Force=217947 lb
Driving Horizontal Force=133886 lb

Method: gle/morgenstern-price

FS: 1.601280
Center: 471.644, 571.976
Radius: 115.560
Left Slip Surface Endpoint: 397.890, 483.012
Right Slip Surface Endpoint: 581.876, 537.292
Resisting Moment=2.98097e+007 lb-ft
Driving Moment=1.86161e+007 lb-ft
Resisting Horizontal Force=214284 lb

Driving Horizontal Force=133820 lb

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 11768

Number of Invalid Surfaces: 16843

Error Codes:

Error Code -103 reported for 16622 surfaces

Error Code -107 reported for 2 surfaces

Error Code -108 reported for 24 surfaces

Error Code -111 reported for 28 surfaces

Error Code -112 reported for 167 surfaces

Method: gle/morgenstern-price

Number of Valid Surfaces: 11771

Number of Invalid Surfaces: 16840

Error Codes:

Error Code -103 reported for 16622 surfaces

Error Code -107 reported for 2 surfaces

Error Code -108 reported for 23 surfaces

Error Code -111 reported for 26 surfaces

Error Code -112 reported for 167 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.

-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.

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

-111 = safety factor equation did not converge

-112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi)/F)$ < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

List of All Coordinates

Search Grid

393.664	517.152
538.071	517.152
538.071	661.427
393.664	661.427

Material Boundary

384.047	483.000
433.806	466.000
900.000	470.650

Material Boundary

367.800	486.000
367.800	488.000

Material Boundary

367.800	486.000
433.806	464.000
433.806	466.000

Material Boundary

409.064	483.021
900.000	483.000

Material Boundary

433.806	464.000
900.000	468.650

Material Boundary

283.800	464.000
433.806	464.000
900.000	464.000

Material Boundary

0.000	456.000
300.000	456.000
750.000	460.000
900.000	460.000

Material Boundary

0.000	450.500
300.000	453.500
750.000	460.000

Material Boundary

0.000	445.500
300.000	450.000
360.037	450.267
750.000	452.000
900.000	452.000

Material Boundary

0.000	431.000
300.000	442.000
750.000	444.000
900.000	446.000

Material Boundary

0.000	416.000
900.000	416.000

Material Boundary

0.000	406.000
900.000	406.000

Material Boundary

0.000	450.500
300.073	450.500
360.037	450.966
750.000	454.000
900.000	457.000

Material Boundary

750.000	452.000
900.000	454.000

Material Boundary

0.000	445.500
300.000	448.000
360.037	448.534
750.000	452.000

Material Boundary

0.000	434.000
300.000	448.000

Material Boundary

360.037	448.534
360.037	450.267
360.037	450.966

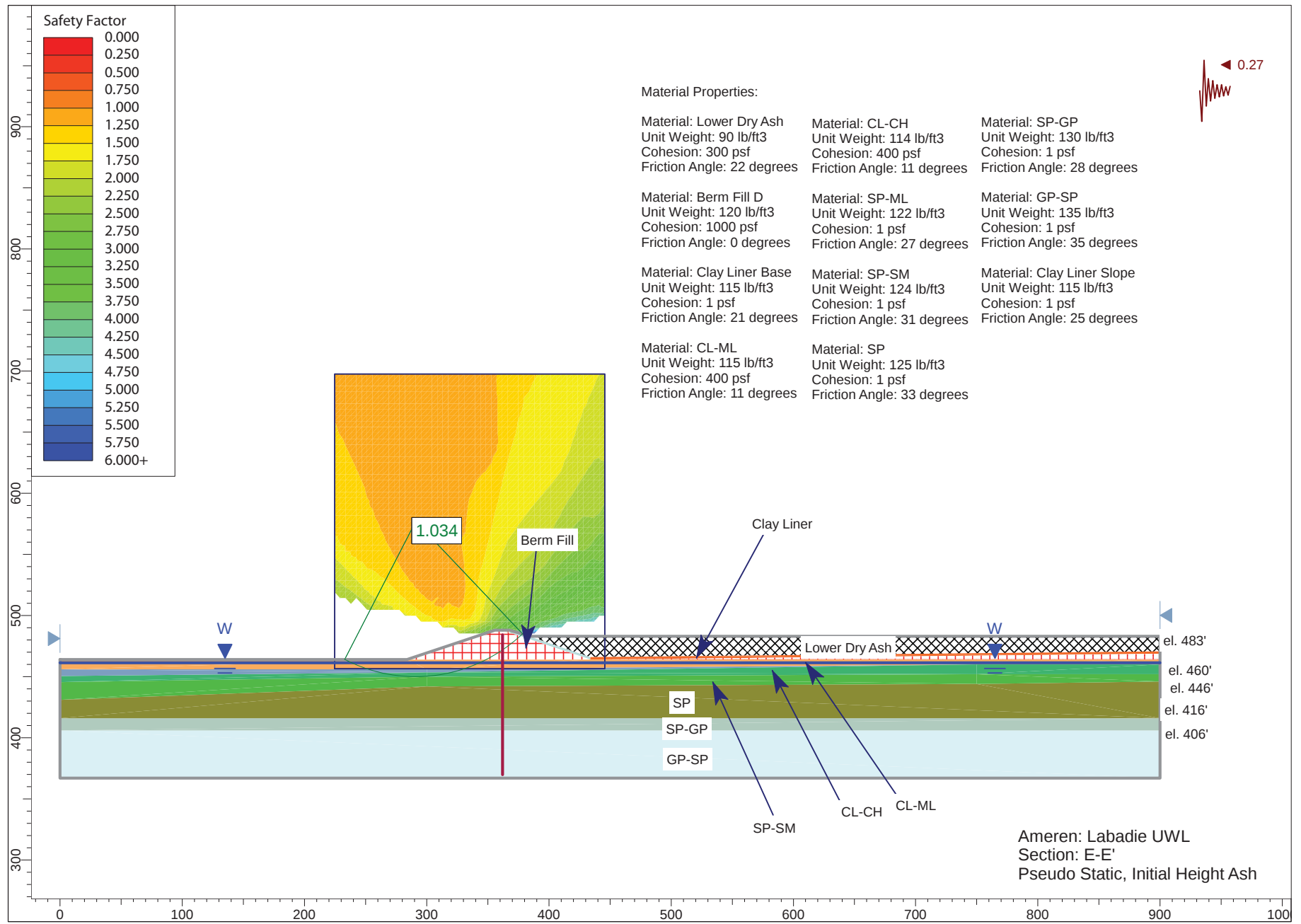
External Boundary

0.000	464.000
0.000	456.000
0.000	450.500
0.000	445.500
0.000	434.000
0.000	431.000
0.000	416.000
0.000	406.000
0.000	367.000
900.000	367.000
900.000	406.000
900.000	416.000
900.000	446.000
900.000	452.000
900.000	454.000

900.000	457.000
900.000	460.000
900.000	464.000
900.000	468.650
900.000	470.650
900.000	483.000
900.000	557.508
835.274	555.209
700.182	552.508
635.839	548.857
612.524	547.508
600.658	543.553
597.524	542.508
584.510	538.170
582.524	537.508
568.376	532.792
567.524	532.508
566.146	532.049
552.524	527.508
543.872	524.624
537.524	522.508
527.732	519.244
522.524	517.508
515.418	517.508
512.524	517.508
500.863	513.621
497.524	512.508
484.760	508.253
482.524	507.508
468.670	502.890
467.524	502.508
465.715	501.905
452.524	497.508
444.442	494.814
437.524	492.508
429.376	489.792
422.524	487.508
414.376	484.792
409.064	483.021
384.047	483.000
380.635	484.137
367.800	488.000
355.800	488.000
283.800	464.000

Water Table

0.444	464.000
434.250	464.000
900.444	464.000



Slide Analysis Information

Document Name

File Name: Section EE Partial Pseudo Static 7292013.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
GLE/Morgenstern-Price with interslice force function: Half Sine
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.27

Material Properties

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D

Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Base

Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 21 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML

Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 400 psf
Friction Angle: 11 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH

Strength Type: Mohr-Coulomb
Unit Weight: 114 lb/ft³
Cohesion: 400 psf
Friction Angle: 11 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-ML

Strength Type: Mohr-Coulomb
Unit Weight: 122 lb/ft³
Cohesion: 1 psf
Friction Angle: 27 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM

Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP

Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³
Cohesion: 1 psf
Friction Angle: 33 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP

Strength Type: Mohr-Coulomb
Unit Weight: 130 lb/ft³

Cohesion: 1 psf
Friction Angle: 28 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: GP-SP
Strength Type: Mohr-Coulomb
Unit Weight: 135 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Slope
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Global Minimums

Method: spencer
FS: 1.033930
Center: 290.995, 577.017
Radius: 127.100
Left Slip Surface Endpoint: 232.844, 464.000
Right Slip Surface Endpoint: 378.455, 484.794
Resisting Moment=1.47209e+007 lb-ft
Driving Moment=1.42378e+007 lb-ft
Resisting Horizontal Force=106694 lb
Driving Horizontal Force=103193 lb

Method: gle/morgenstern-price
FS: 1.031440
Center: 313.086, 538.437
Radius: 84.504
Left Slip Surface Endpoint: 273.085, 464.000
Right Slip Surface Endpoint: 378.395, 484.812
Resisting Moment=7.71979e+006 lb-ft
Driving Moment=7.48444e+006 lb-ft
Resisting Horizontal Force=82375 lb
Driving Horizontal Force=79863.7 lb

Valid / Invalid Surfaces

Method: spencer
Number of Valid Surfaces: 20608
Number of Invalid Surfaces: 8003
Error Codes:
Error Code -103 reported for 4592 surfaces
Error Code -108 reported for 82 surfaces
Error Code -111 reported for 186 surfaces
Error Code -112 reported for 3143 surfaces

Method: gle/morgenstern-price

Number of Valid Surfaces: 20649
Number of Invalid Surfaces: 7962
Error Codes:
Error Code -103 reported for 4592 surfaces
Error Code -108 reported for 80 surfaces
Error Code -111 reported for 147 surfaces
Error Code -112 reported for 3143 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections,
but one or more surface / nonslope external polygon
intersections lie between them. This usually occurs
when the slip surface extends past the bottom of the
soil region, but may also occur on a benched
slope model with two sets of Slope Limits.

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

-111 = safety factor equation did not converge

-112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi)/F)$
 < 0.2 for the final iteration of the safety factor calculation. This screens out
some slip surfaces which may not be valid in the context of the analysis, in
particular, deep seated slip surfaces with many high negative base angle
slices in the passive zone.

List of All Coordinates

Search Grid

224.722	456.455
445.632	456.455
445.632	697.579
224.722	697.579

Material Boundary

383.980	483.023
433.806	466.000
900.000	470.650

Material Boundary

367.800	486.000
367.800	488.000

Material Boundary

367.800	486.000
433.806	464.000
433.806	466.000

Material Boundary

433.806	464.000
900.000	468.650

Material Boundary

283.800	464.000
433.806	464.000
900.000	464.000

Material Boundary

0.000	456.000
300.000	456.000
750.000	460.000
900.000	460.000

Material Boundary

0.000	450.500
300.000	453.500
750.000	460.000

Material Boundary

0.000	445.500
300.000	450.000
750.000	452.000
900.000	452.000

Material Boundary

0.000	431.000
300.000	442.000
750.000	444.000
900.000	446.000

Material Boundary

0.000	416.000
900.000	416.000

Material Boundary

0.000	406.000
900.000	406.000

External Boundary

0.000	464.000
0.000	456.000
0.000	450.500
0.000	445.500
0.000	431.000
0.000	416.000
0.000	406.000
0.000	367.000
900.000	367.000
900.000	406.000
900.000	416.000
900.000	446.000
900.000	452.000
900.000	460.000
900.000	464.000
900.000	468.650
900.000	470.650

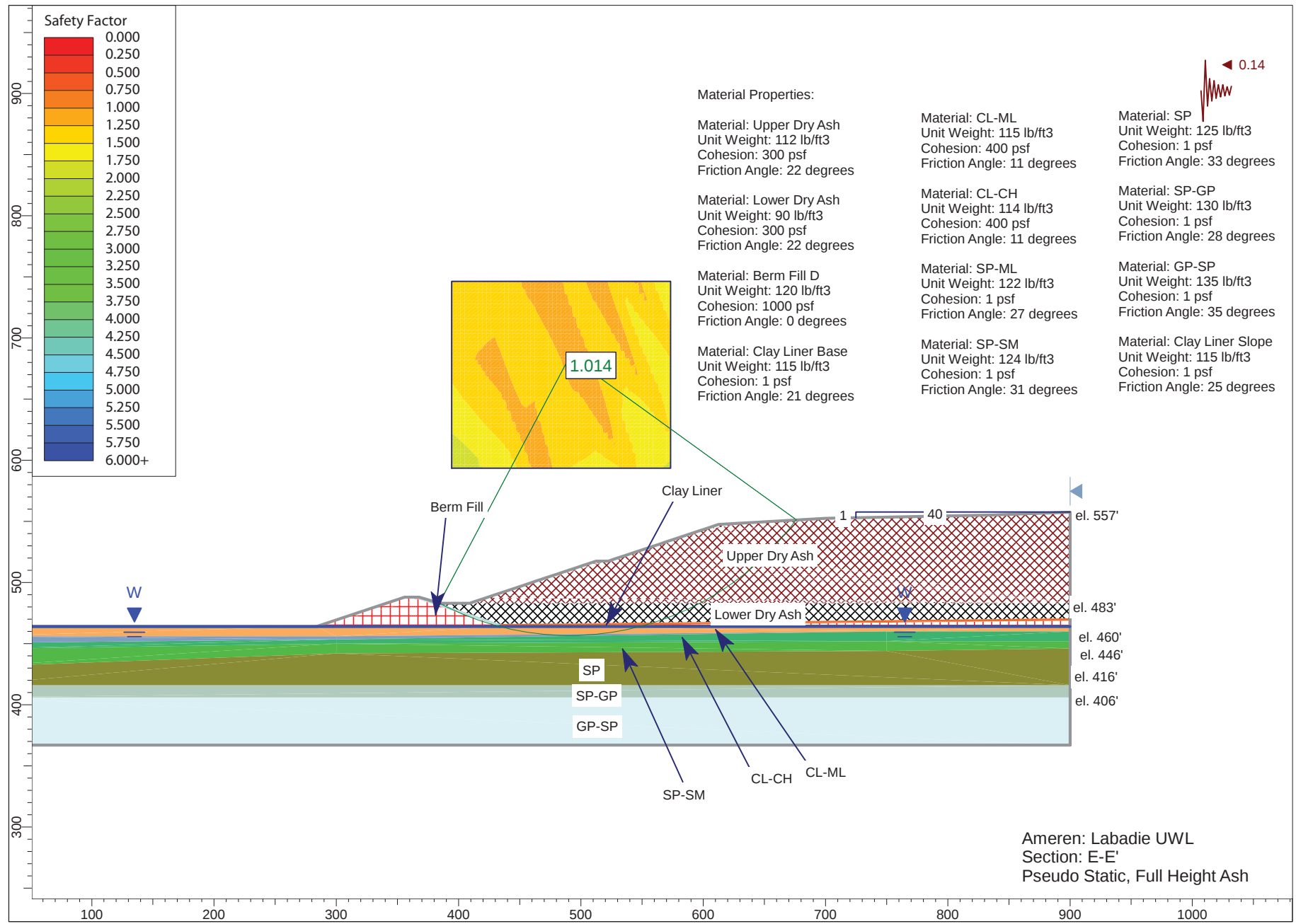
900.000	483.000
383.980	483.023
380.635	484.137
367.800	488.000
355.800	488.000
283.800	464.000

Water Table

0.000	461.305
433.806	461.305
900.000	461.305

Focus/Block Search Line

362.051	369.772
362.051	484.218



Slide Analysis Information

Document Name

File Name: Section EE Full Pseudo Static 7292013.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
GLE/Morgenstern-Price with interslice force function: Half Sine
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.14

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash

Strength Type: Mohr-Coulomb
Unit Weight: 90 lb/ft³
Cohesion: 300 psf
Friction Angle: 22 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D

Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1000 psf
Friction Angle: 0 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Base

Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 21 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-ML

Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 400 psf
Friction Angle: 11 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL-CH

Strength Type: Mohr-Coulomb
Unit Weight: 114 lb/ft³
Cohesion: 400 psf
Friction Angle: 11 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-ML

Strength Type: Mohr-Coulomb
Unit Weight: 122 lb/ft³
Cohesion: 1 psf
Friction Angle: 27 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM

Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP

Strength Type: Mohr-Coulomb
Unit Weight: 125 lb/ft³

Cohesion: 1 psf
Friction Angle: 33 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 130 lb/ft³
Cohesion: 1 psf
Friction Angle: 28 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: GP-SP
Strength Type: Mohr-Coulomb
Unit Weight: 135 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner Slope
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Global Minimums

Method: spencer
FS: 1.014230
Center: 491.009, 685.181
Radius: 228.702
Left Slip Surface Endpoint: 384.103, 483.004
Right Slip Surface Endpoint: 676.323, 551.154
Resisting Moment=1.06578e+008 lb-ft
Driving Moment=1.05083e+008 lb-ft
Resisting Horizontal Force=422533 lb
Driving Horizontal Force=416604 lb

Method: gle/morgenstern-price
FS: 1.007860
Center: 491.009, 685.181
Radius: 228.702
Left Slip Surface Endpoint: 384.103, 483.004
Right Slip Surface Endpoint: 676.323, 551.154
Resisting Moment=1.05909e+008 lb-ft
Driving Moment=1.05083e+008 lb-ft
Resisting Horizontal Force=420603 lb
Driving Horizontal Force=417321 lb

Valid / Invalid Surfaces

Method: spencer
Number of Valid Surfaces: 16193

Number of Invalid Surfaces: 12418
Error Codes:
Error Code -103 reported for 12394 surfaces
Error Code -109 reported for 1 surface
Error Code -111 reported for 23 surfaces

Method: gle/morgenstern-price
Number of Valid Surfaces: 16216
Number of Invalid Surfaces: 12395
Error Codes:
Error Code -103 reported for 12394 surfaces
Error Code -109 reported for 1 surface

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.

-109 = Soiltype for slice base not located. This error should occur very rarely, if at all. It may occur if a very low number of slices is combined with certain soil geometries, such that the midpoint of a slice base is actually outside the soil region, even though the slip surface is wholly within the soil region.

-111 = safety factor equation did not converge

List of All Coordinates

Search Grid

394.284	593.514
573.404	593.514
573.404	746.293
394.284	746.293

Material Boundary

384.035	483.004
433.806	466.000
900.000	470.650

Material Boundary

367.800	486.000
367.800	488.000

Material Boundary

367.800	486.000
433.806	464.000
433.806	466.000

Material Boundary

409.010	483.003
900.000	483.000

Material Boundary

433.806	464.000
900.000	468.650

Material Boundary

283.800	464.000
433.806	464.000
900.000	464.000

Material Boundary

0.000	456.000
300.000	456.000
750.000	460.000
900.000	460.000

Material Boundary

0.000	450.500
300.000	453.500
750.000	460.000

Material Boundary

0.000	445.500
300.000	450.000
750.000	452.000
900.000	452.000

Material Boundary

0.000	431.000
300.000	442.000
750.000	444.000
900.000	446.000

Material Boundary

0.000	416.000
900.000	416.000

Material Boundary

0.000	406.000
900.000	406.000

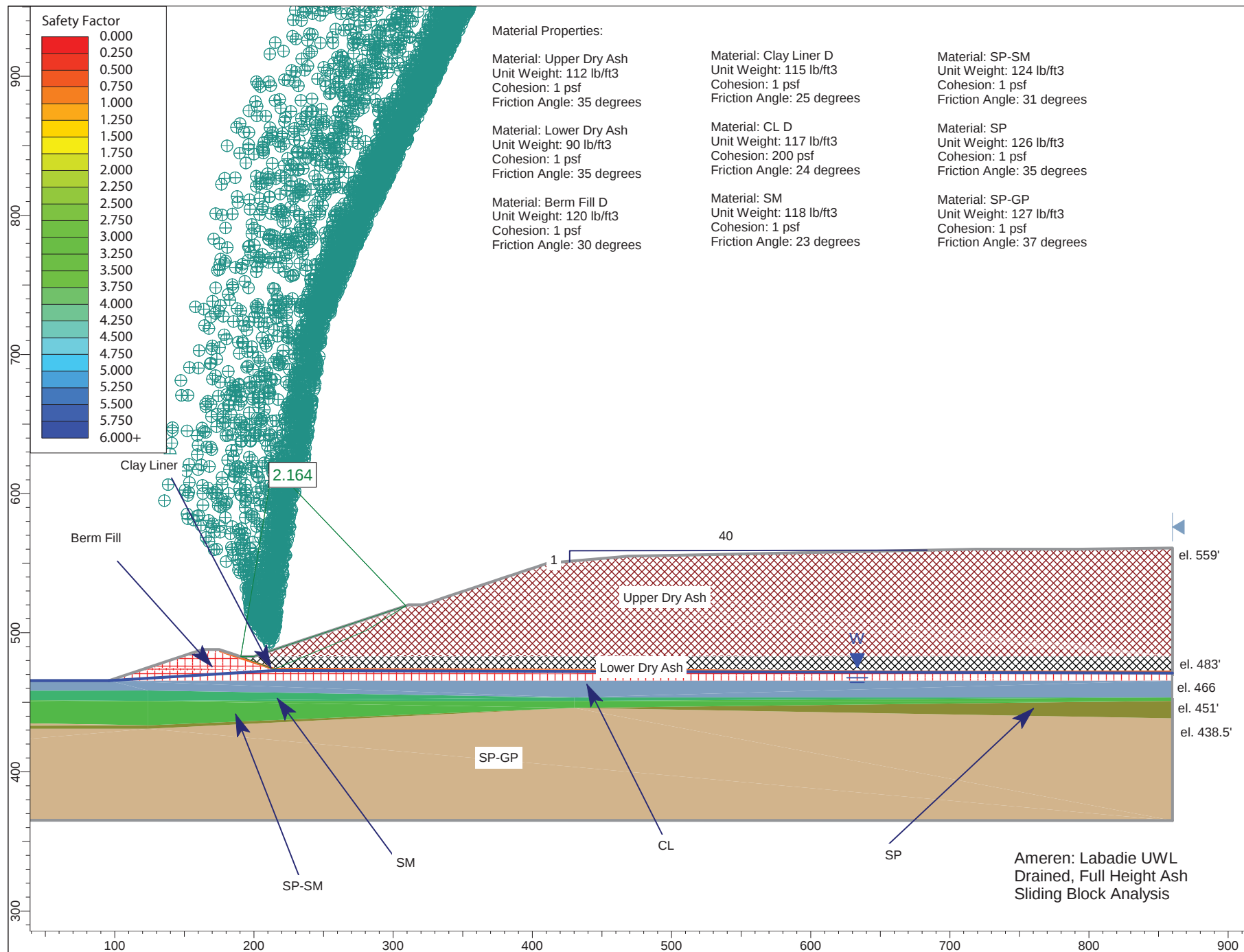
External Boundary

0.000	464.000
0.000	456.000
0.000	450.500
0.000	445.500
0.000	431.000
0.000	416.000
0.000	406.000
0.000	367.000
900.000	367.000
900.000	406.000
900.000	416.000
900.000	446.000

900.000	452.000
900.000	460.000
900.000	464.000
900.000	468.650
900.000	470.650
900.000	483.000
900.000	557.508
835.274	555.209
700.182	552.508
635.839	548.857
612.524	547.508
600.658	543.553
597.524	542.508
584.510	538.170
582.524	537.508
568.376	532.792
567.524	532.508
566.146	532.049
552.524	527.508
543.872	524.624
537.524	522.508
527.732	519.244
522.524	517.508
515.418	517.508
512.524	517.508
500.863	513.621
497.524	512.508
484.760	508.253
482.524	507.508
468.670	502.890
467.524	502.508
465.715	501.905
452.524	497.508
444.442	494.814
437.524	492.508
429.376	489.792
422.524	487.508
414.376	484.792
409.010	483.003
384.035	483.004
380.635	484.137
367.800	488.000
355.800	488.000
283.800	464.000

Water Table

-0.089	464.000
433.717	464.000
899.911	464.000



Slide Analysis Information

Document Name

File Name: Section BB Full Drained Sliding Block.sli

Project Settings

Project Title: SLIDE - An Interactive Slope Stability Program
Failure Direction: Right to Left
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft³
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Bishop simplified
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Non-Circular Block Search
Number of Surfaces: 5000
Pseudo-Random Surfaces: Enabled
Convex Surfaces Only: Disabled
Left Projection Angle (Start Angle): 95
Left Projection Angle (End Angle): 265
Right Projection Angle (Start Angle): -85
Right Projection Angle (End Angle): 85
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Upper Dry Ash
Strength Type: Mohr-Coulomb
Unit Weight: 112 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Lower Dry Ash
Strength Type: Mohr-Coulomb

Unit Weight: 90 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Berm Fill D
Strength Type: Mohr-Coulomb
Unit Weight: 120 lb/ft³
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: Clay Liner D
Strength Type: Mohr-Coulomb
Unit Weight: 115 lb/ft³
Cohesion: 1 psf
Friction Angle: 25 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: CL D
Strength Type: Mohr-Coulomb
Unit Weight: 117 lb/ft³
Cohesion: 200 psf
Friction Angle: 24 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SM
Strength Type: Mohr-Coulomb
Unit Weight: 118 lb/ft³
Cohesion: 1 psf
Friction Angle: 23 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-SM
Strength Type: Mohr-Coulomb
Unit Weight: 124 lb/ft³
Cohesion: 1 psf
Friction Angle: 31 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP
Strength Type: Mohr-Coulomb
Unit Weight: 126 lb/ft³
Cohesion: 1 psf
Friction Angle: 35 degrees
Water Surface: Water Table
Custom Hu value: 1

Material: SP-GP
Strength Type: Mohr-Coulomb
Unit Weight: 127 lb/ft³

Cohesion: 1 psf
Friction Angle: 37 degrees
Water Surface: Water Table
Custom Hu value: 1

Global Minimums

Method: bishop simplified

FS: 2.164490

Axis Location: 213.470, 619.831

Left Slip Surface Endpoint: 190.547, 483.000

Right Slip Surface Endpoint: 309.181, 519.394

Resisting Moment=9.52735e+006 lb-ft

Driving Moment=4.40166e+006 lb-ft

Method: spencer

FS: 2.254100

Axis Location: 239.420, 780.724

Left Slip Surface Endpoint: 173.044, 487.991

Right Slip Surface Endpoint: 433.781, 551.983

Resisting Moment=5.67719e+007 lb-ft

Driving Moment=2.51861e+007 lb-ft

Resisting Horizontal Force=186672 lb

Driving Horizontal Force=82814.3 lb

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 3852

Number of Invalid Surfaces: 1148

Error Codes:

Error Code -105 reported for 154 surfaces

Error Code -107 reported for 1 surface

Error Code -108 reported for 81 surfaces

Error Code -111 reported for 22 surfaces

Error Code -112 reported for 890 surfaces

Method: spencer

Number of Valid Surfaces: 3424

Number of Invalid Surfaces: 1576

Error Codes:

Error Code -105 reported for 154 surfaces

Error Code -107 reported for 1 surface

Error Code -108 reported for 289 surfaces

Error Code -111 reported for 214 surfaces

Error Code -112 reported for 918 surfaces

Error Codes

The following errors were encountered during the computation:

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

-107 = Total driving moment or total driving force is negative. This will occur

if the wrong failure direction is specified,
or if high external or anchor loads are applied
against the failure direction.

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

-111 = safety factor equation did not converge

-112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi)/F)$
< 0.2 for the final iteration of the safety factor calculation. This screens out
some slip surfaces which may not be valid in the context of the analysis, in
particular, deep seated slip surfaces with many high negative base angle
slices in the passive zone.

List of All Coordinates

Material Boundary

-650.000	458.500
124.000	458.500
430.000	453.500
860.010	453.500

Material Boundary

-650.000	456.000
124.000	451.000
430.000	451.000
860.010	453.500

Material Boundary

-650.000	446.000
124.000	433.500
430.000	446.000
860.009	450.998

Material Boundary

-650.000	433.500
124.000	433.500

Material Boundary

-650.000	431.000
124.000	431.000
430.000	446.000
860.008	438.502

Material Boundary

190.000	483.000
214.462	474.846
491.000	474.000
671.000	473.000
860.012	473.000