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APPENDIX A

STRUCTURE DATA ORIENTATION

Structure Orientation Data

Appendix A

Extracted from Digital Outcrop Model

Software: **CloudCompare**

No.	Dip	Dip Direction	Radius	X center	Y center	Z center	Nx	Ny	Nz
1	54	37	2.4141	32.821	94.200	239.885	0.496	0.646	0.581
2	68	15	0.5136	31.616	95.745	238.792	0.255	0.898	0.359
3	25	22	0.2142	42.918	79.438	244.611	0.163	0.392	0.905
4	16	59	0.2774	49.392	76.920	237.603	0.243	0.142	0.960
5	44	38	0.3357	31.192	95.429	240.694	0.440	0.548	0.712
6	9	273	0.6350	30.143	95.519	240.772	-0.169	0.012	0.985
7	65	69	0.4335	37.287	87.918	239.400	0.847	0.324	0.422
8	22	15	2.1943	34.285	95.549	237.747	0.101	0.362	0.927
9	29	222	0.3237	31.064	95.444	239.076	-0.336	-0.362	0.869
10	15	46	0.2113	48.888	77.473	237.663	0.196	0.185	0.963
11	39	56	0.5242	36.186	92.563	239.678	0.534	0.353	0.768
12	21	223	7.1057	45.212	81.949	237.883	-0.252	-0.269	0.930
13	28	46	0.5623	45.326	81.035	237.851	0.341	0.328	0.881
14	89	76	0.2856	37.806	85.375	243.072	0.972	0.235	0.017
15	58	23	0.3726	46.855	76.227	242.655	0.333	0.783	0.525
16	21	36	0.4082	42.746	83.366	237.763	0.215	0.295	0.931
17	16	49	0.3764	46.552	79.858	237.779	0.221	0.187	0.957
18	47	50	4.9070	39.576	86.276	238.542	0.573	0.464	0.676
19	29	74	0.5210	37.594	89.598	238.005	0.478	0.129	0.869
20	83	29	0.3367	45.274	77.716	243.284	0.486	0.867	0.106
21	54	76	3.8141	52.407	66.705	238.102	0.795	0.186	0.578
22	33	16	1.2393	33.940	94.985	238.050	0.160	0.535	0.830
23	17	38	0.6533	44.235	82.246	237.793	0.186	0.235	0.954
24	42	38	1.2654	34.137	93.616	239.652	0.424	0.528	0.735
25	12	37	0.4279	39.947	87.138	237.834	0.134	0.175	0.975
26	76	59	1.9486	47.691	75.378	241.753	0.840	0.494	0.226
27	10	87	0.1201	49.097	71.126	242.616	0.178	0.009	0.984
28	28	47	0.2389	42.568	79.666	244.599	0.350	0.326	0.878
29	24	54	0.2334	30.900	95.458	240.783	0.333	0.236	0.913
30	33	54	0.4631	47.865	78.511	237.697	0.450	0.317	0.835
31	4	38	0.2795	29.518	96.535	239.620	0.051	0.065	0.997
32	70	80	4.6550	52.906	59.212	241.072	0.928	0.156	0.338
33	34	265	0.9505	51.982	64.677	239.027	-0.561	-0.049	0.827
34	50	47	1.8305	54.105	56.746	239.683	0.568	0.523	0.635
35	11	62	0.3996	52.015	70.096	237.615	0.175	0.090	0.980
36	20	243	1.5154	55.006	61.389	237.689	-0.315	-0.154	0.937
37	12	72	1.0135	55.313	59.421	237.623	0.214	0.068	0.974
38	88	231	0.3178	47.723	74.984	242.158	0.781	0.624	-0.034
39	78	2	0.2038	31.098	95.617	239.079	0.051	0.979	0.200

No.	Dip	Dip Direction	Radius	X center	Y center	Z center	Nx	Ny	Nz
40	13	101	0.6958	31.003	95.555	238.944	0.229	-0.048	0.972
41	25	83	0.5362	50.937	73.018	237.575	0.434	0.051	0.900
42	47	16	1.6812	35.821	93.788	238.945	0.213	0.707	0.675
43	13	89	0.2533	40.787	86.172	237.815	0.237	0.001	0.971
44	7	71	0.3833	45.815	80.705	237.802	0.129	0.043	0.991
45	67	99	1.1181	37.079	92.879	238.260	0.911	-0.149	0.384
46	29	175	0.1676	49.026	71.215	242.534	0.042	-0.493	0.869
47	41	179	0.1369	31.359	95.488	240.674	0.008	-0.663	0.748
48	6	85	0.3292	47.053	79.403	237.734	0.110	0.008	0.994
49	14	60	0.4082	41.723	84.838	237.850	0.214	0.122	0.969
50	27	66	0.3191	38.741	88.386	237.884	0.426	0.187	0.885
51	14	84	0.1904	30.309	95.742	240.770	0.257	0.026	0.966
52	11	218	1.5759	37.974	89.754	237.951	-0.123	-0.152	0.981
53	17	253	2.9550	51.384	72.970	237.670	-0.287	-0.087	0.954
54	21	263	0.4148	38.943	88.423	237.853	-0.363	-0.044	0.931
55	16	313	0.1888	42.786	79.348	245.043	-0.207	0.200	0.958
56	7	326	0.3162	45.041	81.700	237.740	-0.073	0.108	0.991
57	40	47	2.9432	31.404	96.409	238.389	0.482	0.444	0.755
58	3	337	0.5991	53.994	63.091	237.640	-0.022	0.054	0.998
59	42	4	0.5668	35.043	92.910	239.887	0.053	0.678	0.734
60	81	54	0.3443	47.459	75.532	242.938	0.802	0.580	0.146
61	41	23	0.7704	36.714	94.434	238.127	0.260	0.603	0.754
62	55	19	0.5940	31.216	95.833	238.848	0.270	0.780	0.564
63	39	40	0.4938	47.114	79.015	237.843	0.413	0.487	0.769
64	78	54	0.2437	49.228	71.098	242.460	0.801	0.562	0.208
65	39	8	0.4220	33.155	93.857	239.922	0.096	0.633	0.768
66	41	86	0.2846	49.613	72.333	239.688	0.656	0.040	0.753
67	51	0	0.9916	34.900	94.383	238.404	0.009	0.778	0.628
68	83	211	1.1232	39.924	84.665	241.613	0.520	0.847	-0.114
69	56	26	0.2384	45.145	77.692	243.577	0.373	0.746	0.552
70	50	18	1.2450	30.056	97.583	238.283	0.250	0.733	0.633
71	57	54	0.8705	51.144	67.585	241.384	0.692	0.487	0.533
72	40	42	0.3557	32.249	94.117	240.518	0.439	0.472	0.765
73	38	30	0.3782	48.382	77.969	237.667	0.314	0.539	0.782
74	37	38	0.1808	44.933	77.710	243.698	0.382	0.482	0.788
75	47	49	0.6437	43.614	78.458	244.818	0.561	0.480	0.675
76	54	35	0.3164	46.249	77.153	242.204	0.467	0.661	0.588
77	74	50	0.7204	52.200	59.991	242.600	0.748	0.610	0.263
78	43	35	0.2688	51.245	66.991	241.826	0.393	0.561	0.728
79	59	70	1.5455	50.485	72.381	238.298	0.812	0.290	0.506
80	53	73	0.4129	53.474	56.894	240.237	0.772	0.225	0.594
81	77	66	0.7515	31.714	94.957	240.400	0.896	0.389	0.213
82	35	73	1.0056	53.201	64.330	237.822	0.560	0.165	0.812

No.	Dip	Dip Direction	Radius	X center	Y center	Z center	Nx	Ny	Nz
83	89	62	0.4907	50.636	67.957	242.951	0.885	0.465	0.007
84	39	67	0.9280	51.424	71.081	237.724	0.581	0.244	0.776
85	57	68	2.1103	49.675	74.746	238.506	0.784	0.309	0.539
86	62	61	1.3124	53.228	55.628	241.752	0.780	0.416	0.467
87	31	80	0.7647	50.553	74.114	237.770	0.508	0.088	0.857
88	55	62	0.5321	52.919	54.413	244.285	0.728	0.381	0.570
89	47	79	1.2878	36.770	93.239	238.854	0.726	0.130	0.676
90	50	75	1.0430	36.208	88.126	242.302	0.745	0.188	0.640
91	55	69	0.4960	41.291	84.100	238.489	0.772	0.286	0.567
92	48	83	0.2225	29.938	96.046	240.518	0.748	0.092	0.657
93	59	71	0.9238	37.178	89.949	238.301	0.816	0.268	0.512
94	57	343	0.5259	37.453	85.516	243.347	-0.239	0.806	0.541
95	58	60	0.6258	49.561	69.938	242.858	0.739	0.417	0.529
96	34	69	3.0343	54.588	59.422	237.986	0.535	0.204	0.820
97	53	100	0.1664	42.624	79.392	245.072	0.793	-0.153	0.589
98	57	99	0.4410	49.399	72.213	240.695	0.828	-0.145	0.541
99	30	120	0.1982	39.679	84.924	239.495	0.444	-0.260	0.857
100	47	171	0.1955	42.584	79.384	244.862	0.112	-0.734	0.670
101	55	302	0.1765	36.330	89.195	242.196	-0.695	0.444	0.565
102	49	338	0.1960	30.132	95.830	240.562	-0.275	0.704	0.655
103	88	128	0.1480	49.056	71.183	242.423	-0.785	0.619	-0.027
104	39	342	0.2487	29.733	96.023	240.635	-0.193	0.605	0.772
105	58	358	0.2144	31.408	95.609	239.124	-0.020	0.855	0.519
106	63	27	1.2001	36.911	85.668	243.422	0.415	0.797	0.440
107	72	21	1.9861	38.524	85.119	242.893	0.351	0.889	0.293
108	86	1	0.4059	37.478	85.500	243.075	0.034	0.998	0.053
109	89	21	0.6269	38.604	85.289	241.510	0.367	0.930	0.003
110	76	74	0.5877	51.801	61.806	242.556	0.937	0.264	0.229
111	68	21	0.8242	39.692	84.796	240.120	0.347	0.864	0.364
112	73	9	0.1751	44.008	79.539	241.403	0.160	0.948	0.277
113	64	13	0.3522	44.696	79.805	240.046	0.213	0.879	0.427
114	82	18	0.7228	44.609	77.751	243.978	0.320	0.939	0.124
115	66	13	0.2186	43.748	79.662	241.872	0.211	0.896	0.391
116	63	28	0.6900	30.039	96.150	239.589	0.420	0.788	0.450
117	86	21	0.9924	30.315	95.935	240.242	0.370	0.926	0.068
118	83	3	0.5921	30.151	95.870	240.384	0.060	0.992	0.113
119	64	21	1.2296	33.415	94.468	238.748	0.326	0.845	0.424
120	79	5	0.1672	46.865	76.163	242.886	0.086	0.980	0.181
121	78	29	0.7120	46.985	76.413	241.821	0.484	0.851	0.204
122	88	0	0.1770	47.596	75.355	243.063	0.012	1.000	0.026
123	83	1	0.1951	49.048	71.332	242.483	0.033	0.992	0.119
124	78	22	0.3340	48.318	74.092	242.499	0.372	0.909	0.191
125	68	19	0.5498	42.644	79.600	244.731	0.304	0.878	0.369

No.	Dip	Dip Direction	Radius	X center	Y center	Z center	Nx	Ny	Nz
126	80	8	0.7108	34.691	92.668	240.429	0.139	0.975	0.173
127	74	49	0.5161	32.381	94.985	239.279	0.736	0.625	0.261
128	64	41	1.5439	45.333	79.566	239.670	0.603	0.675	0.425
129	61	47	4.5259	46.784	78.624	238.785	0.646	0.600	0.472
130	77	31	0.2702	44.145	79.416	241.434	0.508	0.835	0.212
131	66	37	1.0221	48.021	75.249	241.101	0.560	0.727	0.397
132	71	46	5.3012	45.673	77.771	241.912	0.692	0.651	0.311
133	69	52	4.5776	42.926	80.894	241.873	0.745	0.562	0.358
134	60	54	1.3208	35.800	92.007	240.335	0.708	0.504	0.495
135	83	52	0.6182	36.018	91.177	241.047	0.789	0.604	0.116
136	84	47	3.1764	40.877	83.760	241.180	0.737	0.669	0.098
137	82	30	0.6063	37.812	84.992	244.001	0.508	0.852	0.122
138	74	39	3.1588	42.990	82.423	238.962	0.617	0.741	0.265
139	76	52	0.5127	53.039	54.885	243.000	0.769	0.593	0.238
140	66	54	0.4537	37.831	85.195	243.472	0.747	0.530	0.401
141	78	54	1.7838	38.214	86.066	240.218	0.794	0.574	0.200
142	61	55	2.4132	37.058	86.546	241.883	0.725	0.490	0.483
143	61	344	0.2214	30.585	95.675	240.780	-0.240	0.847	0.474
144	72	43	0.8968	39.911	84.256	243.500	0.657	0.693	0.297
145	68	45	1.2597	49.689	71.576	240.640	0.662	0.653	0.368
146	77	42	0.5304	30.633	95.855	239.266	0.660	0.717	0.224
147	65	63	1.2803	40.919	82.773	243.752	0.820	0.402	0.407
148	60	73	0.6395	53.277	61.361	239.096	0.839	0.244	0.486
149	65	79	2.4257	51.934	63.152	241.264	0.893	0.173	0.415
150	65	78	3.3721	53.706	60.365	238.752	0.890	0.180	0.420
151	81	78	4.5868	52.005	66.122	239.798	0.968	0.201	0.153
152	60	72	0.5551	52.751	61.160	240.200	0.827	0.266	0.496
153	72	67	2.9151	49.106	73.732	240.469	0.879	0.366	0.307
154	82	81	1.5016	48.993	72.529	241.975	0.983	0.139	0.123
155	70	66	0.4717	47.133	75.970	242.662	0.863	0.374	0.341
156	69	66	4.4721	50.521	69.682	240.823	0.862	0.368	0.347
157	64	71	0.6350	48.920	76.420	238.354	0.859	0.280	0.429
158	74	79	2.6996	36.770	88.935	240.510	0.950	0.176	0.259
159	73	82	2.2531	36.694	91.081	239.158	0.949	0.127	0.288
160	82	73	0.2029	38.000	86.282	240.439	0.951	0.284	0.125
161	79	239	0.3514	49.129	71.147	242.856	0.847	0.500	-0.181
162	66	86	0.4192	49.863	72.362	239.315	0.917	0.049	0.395
163	89	82	1.5214	52.737	56.149	243.640	0.991	0.136	0.012
164	86	86	0.1713	43.019	79.370	244.529	0.996	0.069	0.064
165	84	259	0.7837	51.301	63.602	242.690	0.977	0.186	-0.103
166	82	65	0.5792	44.982	80.713	238.541	0.900	0.414	0.135
167	80	116	0.4815	51.422	64.621	242.330	0.882	-0.440	0.168
168	70	105	1.1678	51.768	64.942	241.565	0.909	-0.257	0.328

No.	Dip	Dip Direction	Radius	X center	Y center	Z center	Nx	Ny	Nz
169	84	93	0.5463	51.941	65.470	241.099	0.993	-0.068	0.099
170	68	92	0.4523	52.913	54.804	244.143	0.932	-0.038	0.361
171	67	125	0.3166	37.760	86.109	240.536	0.748	-0.540	0.386
172	87	234	0.4971	48.476	73.871	242.924	0.817	0.575	-0.036
173	86	233	0.4793	40.466	84.235	242.104	0.801	0.596	-0.055
174	71	222	0.1200	31.331	95.626	240.618	-0.636	-0.704	0.315
175	88	213	0.7969	31.302	95.546	239.963	0.558	0.829	-0.032
176	88	239	0.2965	29.487	96.475	239.850	0.860	0.510	-0.019
177	83	217	0.2429	47.407	75.676	242.602	0.607	0.785	-0.121
178	84	241	0.4826	52.986	54.852	243.486	0.871	0.481	-0.100
179	77	244	0.4460	47.610	75.144	242.850	0.885	0.414	-0.212
180	76	240	0.4780	32.165	95.305	238.799	0.849	0.477	-0.227
181	68	290	0.2774	37.541	84.946	244.355	0.877	-0.320	-0.359
182	80	283	0.2144	47.490	75.481	242.590	0.959	-0.224	-0.171
183	86	280	0.4972	49.554	72.318	240.218	0.979	-0.190	-0.069
184	79	285	0.4696	51.746	65.305	242.617	0.949	-0.260	-0.176
185	79	307	0.5377	51.488	64.670	242.773	0.785	-0.592	-0.182
186	87	340	0.2359	40.007	84.898	239.424	-0.338	0.940	0.037
187	68	356	0.8887	51.801	65.336	242.070	-0.055	0.928	0.368
188	43	41	1.5856	52.001	66.071	239.892	0.452	0.518	0.726
189	72	134	0.6577	52.255	60.371	241.965	0.676	-0.674	0.300
190	71	63	1.5608	51.235	68.597	240.105	0.853	0.420	0.311
191	49	297	1.8859	51.682	64.350	241.736	-0.679	0.347	0.647
192	72	78	1.0672	53.388	60.053	239.664	0.937	0.186	0.297
193	65	80	1.1157	52.708	62.042	240.123	0.900	0.155	0.408
194	72	59	1.2770	50.762	67.951	242.172	0.826	0.479	0.297
195	82	87	1.3286	50.923	69.736	239.608	0.990	0.037	0.136
196	33	131	0.9965	50.695	68.404	241.636	0.416	-0.371	0.830
197	55	95	1.4356	49.489	74.481	239.036	0.822	-0.086	0.563
198	67	69	0.8968	49.365	73.744	239.790	0.864	0.322	0.388
199	72	74	0.9189	51.954	62.008	241.878	0.920	0.257	0.296
200	89	50	0.8472	52.856	57.333	241.915	0.768	0.640	0.005
201	72	42	1.0188	53.809	58.319	239.250	0.645	0.703	0.301
202	56	173	0.7867	52.800	60.836	240.489	0.088	-0.826	0.556
203	78	79	0.9603	52.643	59.137	242.051	0.964	0.178	0.199
204	58	80	0.4602	52.309	63.504	240.293	0.844	0.147	0.516
205	68	119	0.9734	52.886	56.421	242.261	0.807	-0.458	0.374
206	67	76	0.7151	50.139	70.064	241.148	0.899	0.215	0.381
207	46	132	0.7662	49.070	72.983	241.183	0.539	-0.487	0.688
208	63	40	1.2272	47.956	74.969	241.602	0.583	0.676	0.450
209	49	80	1.1340	48.415	76.304	239.282	0.751	0.126	0.648
210	55	100	1.0279	43.833	80.062	241.146	0.811	-0.150	0.565
211	57	62	1.3837	48.068	76.547	239.612	0.753	0.384	0.535

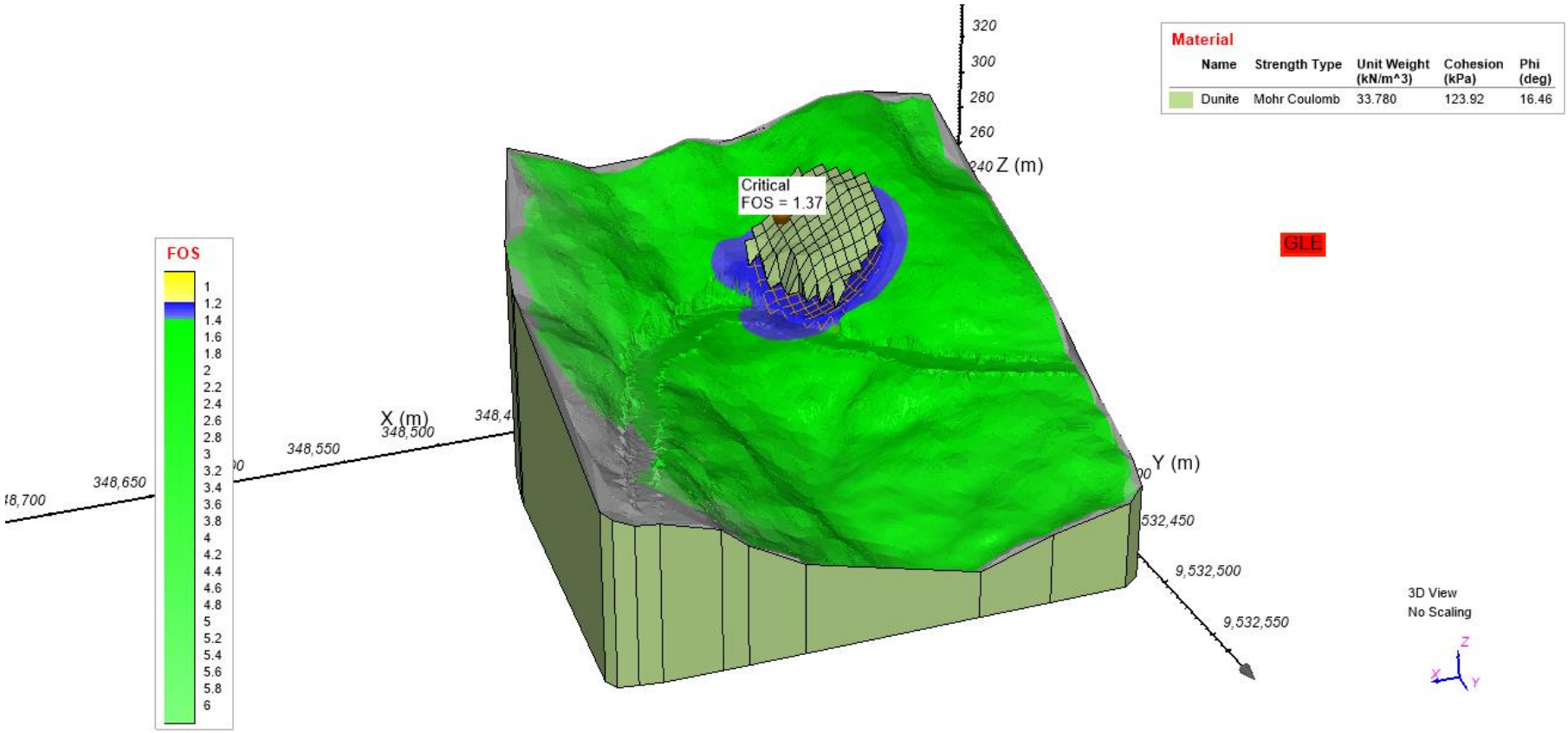
No.	Dip	Dip Direction	Radius	X center	Y center	Z center	Nx	Ny	Nz
212	78	31	0.8253	44.600	80.717	239.310	0.507	0.838	0.199
213	69	49	1.2437	42.896	82.263	239.843	0.707	0.613	0.352
214	83	48	0.7754	43.764	79.873	241.425	0.742	0.661	0.110
215	68	38	0.8109	46.977	77.480	239.980	0.580	0.731	0.359
216	73	5	0.8377	47.003	76.495	241.728	0.091	0.952	0.292
217	78	72	0.8312	44.728	79.582	240.297	0.932	0.301	0.203
218	65	55	0.4852	45.451	77.953	241.753	0.750	0.515	0.414
219	48	21	0.8110	47.029	78.557	238.470	0.277	0.700	0.659
220	49	48	1.1493	38.185	86.714	239.351	0.569	0.504	0.650
221	40	130	0.7582	41.550	82.269	242.791	0.496	-0.422	0.759
222	53	92	0.7180	44.663	78.525	242.665	0.801	-0.032	0.598
223	54	141	0.7272	37.343	86.295	241.663	0.511	-0.635	0.579
224	77	54	0.6953	41.764	81.723	243.097	0.798	0.560	0.223
225	50	200	1.2628	40.810	83.458	242.883	-0.267	-0.722	0.638
226	63	41	0.9653	42.769	81.224	241.665	0.590	0.670	0.451
227	79	84	1.4502	36.541	87.558	241.964	0.977	0.098	0.190
228	73	69	1.3807	34.904	93.503	239.401	0.896	0.343	0.280
229	52	55	0.9815	36.132	93.376	239.186	0.655	0.450	0.607
230	79	189	0.7505	36.401	92.290	239.386	-0.165	-0.970	0.178
231	49	166	1.1099	39.940	84.986	239.328	0.181	-0.739	0.648
232	75	42	0.9253	42.441	82.757	239.413	0.650	0.719	0.246
233	85	41	1.1129	40.446	84.204	240.843	0.658	0.749	0.084
234	58	55	1.0759	41.643	81.400	243.962	0.704	0.477	0.526
235	57	7	0.8072	38.181	85.167	242.987	0.111	0.833	0.541
236	57	123	1.1798	36.925	89.789	239.256	0.703	-0.462	0.540
237	85	56	0.8980	37.782	86.714	240.162	0.834	0.546	0.082
238	78	59	1.2756	42.089	81.298	242.860	0.843	0.499	0.202
239	80	21	1.3358	40.050	84.415	241.198	0.366	0.915	0.172
240	67	63	0.9113	38.280	85.575	240.980	0.825	0.420	0.379
241	23	299	1.3685	42.894	80.335	242.817	-0.354	0.197	0.914
242	88	234	1.3703	45.559	79.955	238.734	-0.815	-0.579	0.020
243	65	40	1.0308	40.456	85.249	238.424	0.595	0.689	0.414
244	17	68	1.4970	40.062	84.867	239.273	0.277	0.109	0.955
245	77	83	1.0654	37.270	88.239	239.276	0.968	0.119	0.219
246	69	27	1.1002	47.366	77.421	239.577	0.433	0.831	0.349
247	85	58	0.6574	47.221	78.242	238.654	0.849	0.522	0.084
248	67	48	1.2211	42.769	82.026	240.409	0.692	0.616	0.376
249	74	111	1.1648	36.726	88.891	241.000	0.895	-0.352	0.274
250	67	61	1.3150	50.231	70.953	240.327	0.815	0.438	0.379
251	78	115	2.0937	49.558	72.425	240.292	0.888	-0.417	0.192
252	62	45	0.6312	47.076	78.467	238.533	0.636	0.617	0.464
253	75	41	1.0225	45.432	78.394	240.854	0.638	0.728	0.251
254	66	74	1.8007	52.307	65.482	239.019	0.884	0.251	0.394

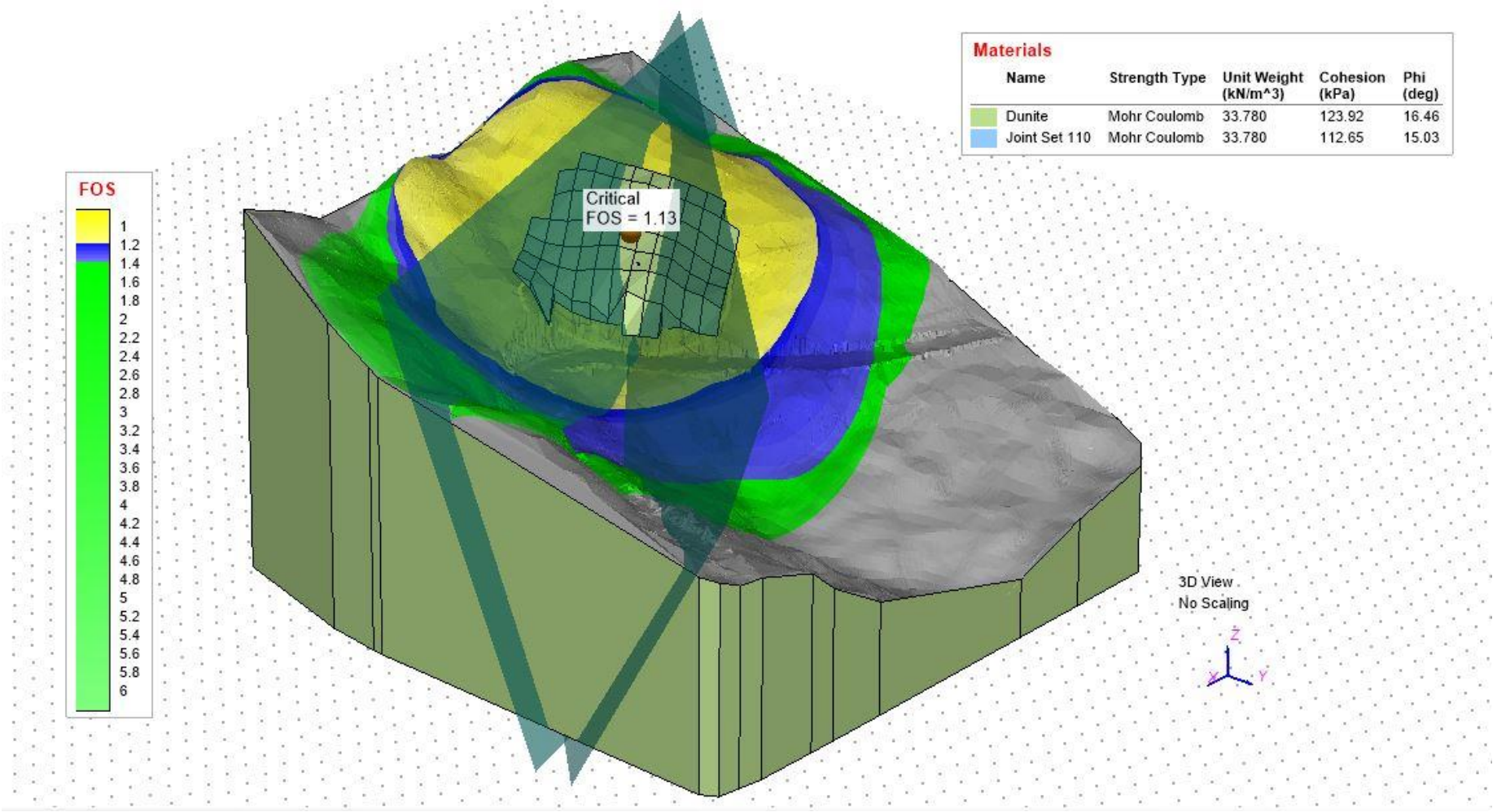
No.	Dip	Dip Direction	Radius	X center	Y center	Z center	Nx	Ny	Nz
255	23	45	1.3880	53.006	62.956	238.639	0.286	0.281	0.916
256	64	79	0.9284	52.648	63.178	239.722	0.884	0.164	0.438
257	61	345	0.5592	37.352	85.568	243.179	-0.215	0.852	0.478
258	72	46	1.2404	42.934	81.295	241.180	0.693	0.657	0.297
259	63	53	0.6528	44.003	81.071	239.714	0.714	0.533	0.453
260	60	104	0.8148	36.785	89.493	239.985	0.843	-0.212	0.494
261	78	23	1.2899	31.216	95.699	239.232	0.392	0.898	0.201
262	51	160	0.8963	38.392	85.261	242.692	0.266	-0.741	0.616
263	89	200	1.2237	38.094	85.501	242.120	-0.349	-0.937	0.013
264	78	55	0.8661	53.952	60.663	238.251	0.810	0.553	0.193
265	67	79	0.6875	53.570	60.945	238.782	0.908	0.173	0.382

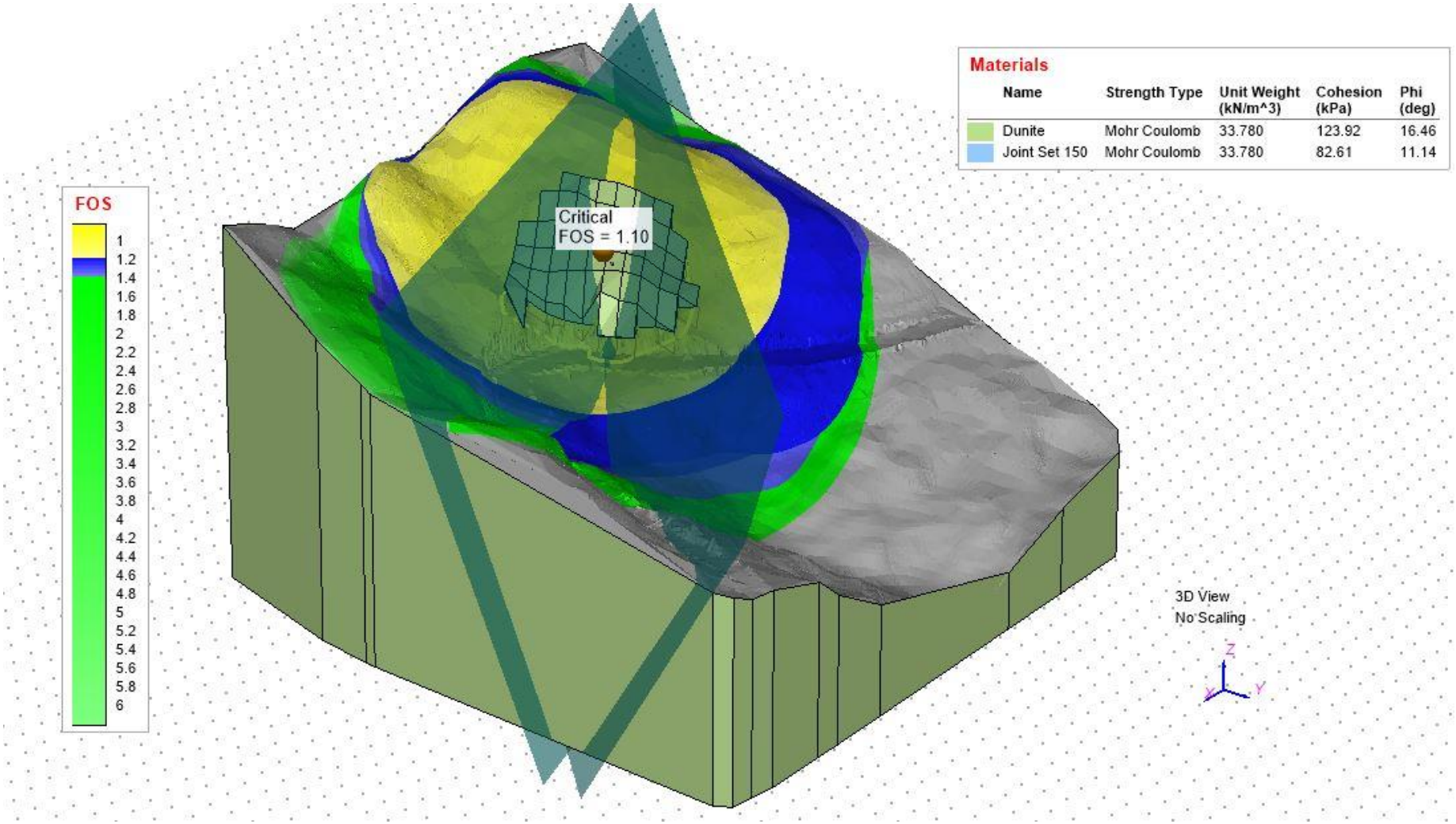
APPENDIX B

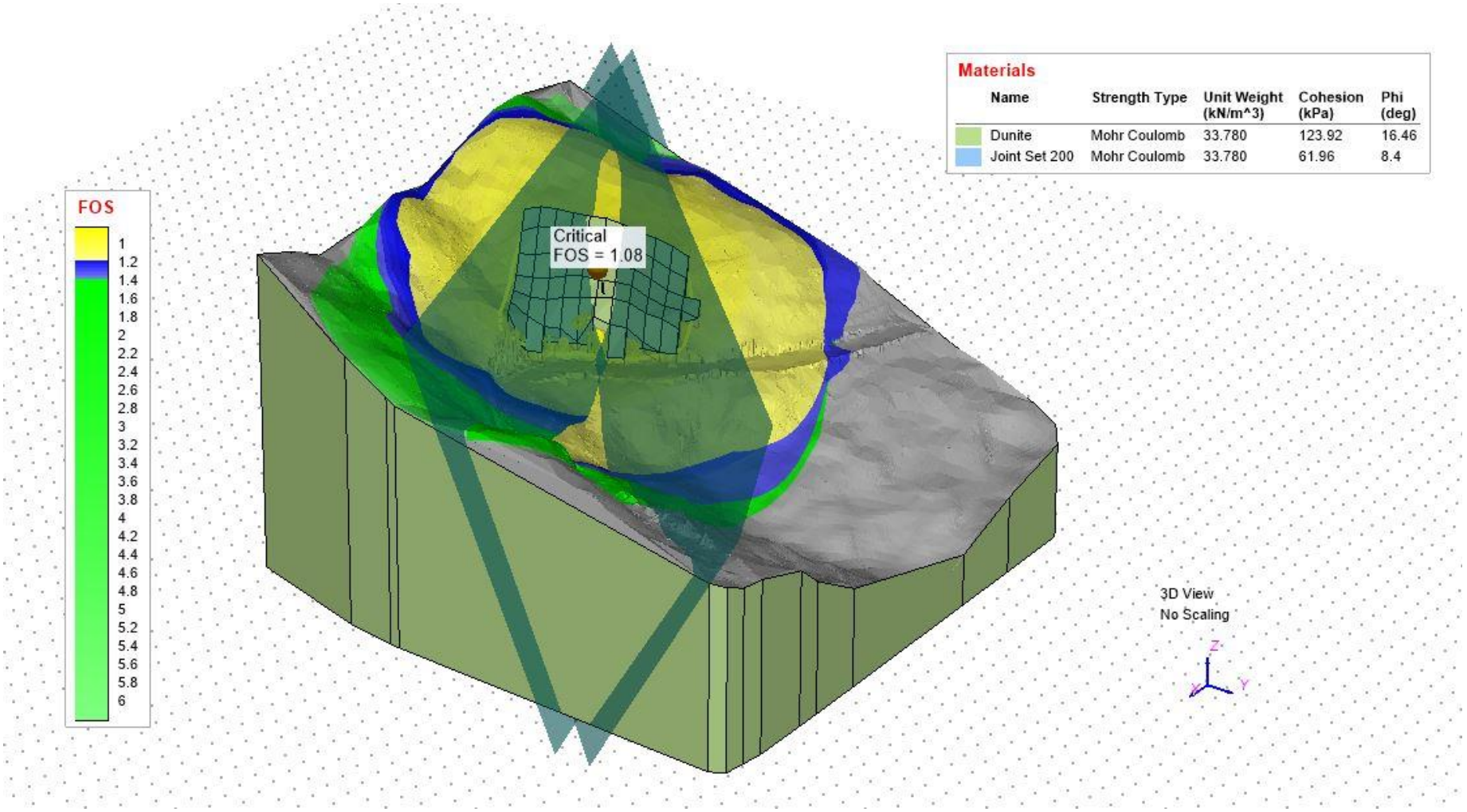
LE ANALYSIS RESULT

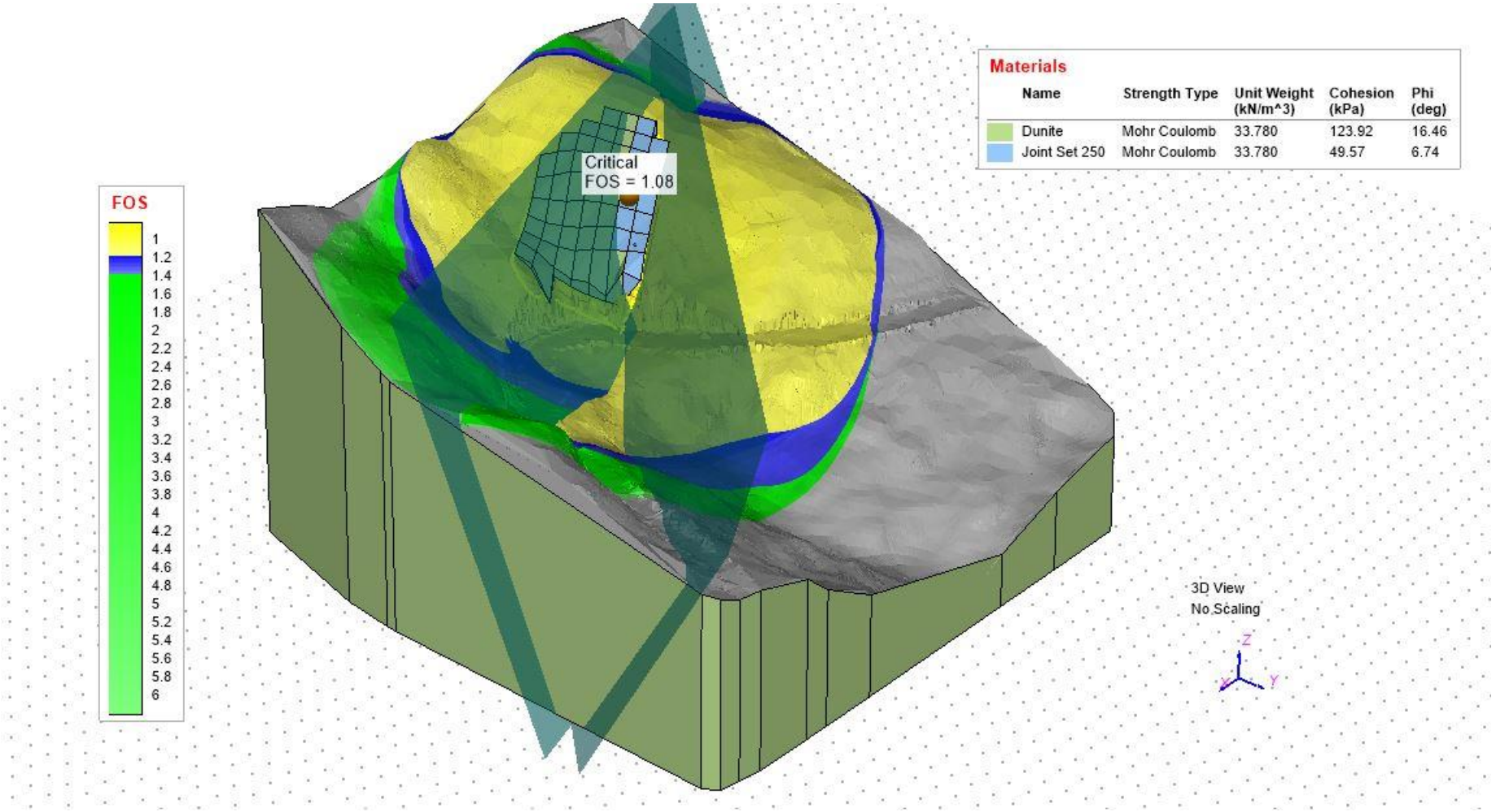
Reduction Ratio	Cohesion	Fr.Ang	FS	Status	Percentage	Remarks
1.00	123.92	16.46	1.35	SAFE	100%	Orientation and Wedge Not Included
1.10	112.65	15.03	1.13	SAFE	16%	
1.50	82.61	11.14	1.10	CRITICAL	19%	
2.00	61.96	8.40	1.08	CRITICAL	20%	
2.50	49.57	6.74	1.08	CRITICAL	20%	
3.00	41.31	5.62	1.07	CRITICAL	21%	
3.15	39.34	5.36	1.05	CRITICAL	22%	
3.30	37.55	5.12	1.01	CRITICAL	25%	
3.45	35.92	4.89	0.99	FAILURE	27%	
3.50	35.41	4.83	0.98	FAILURE	27%	

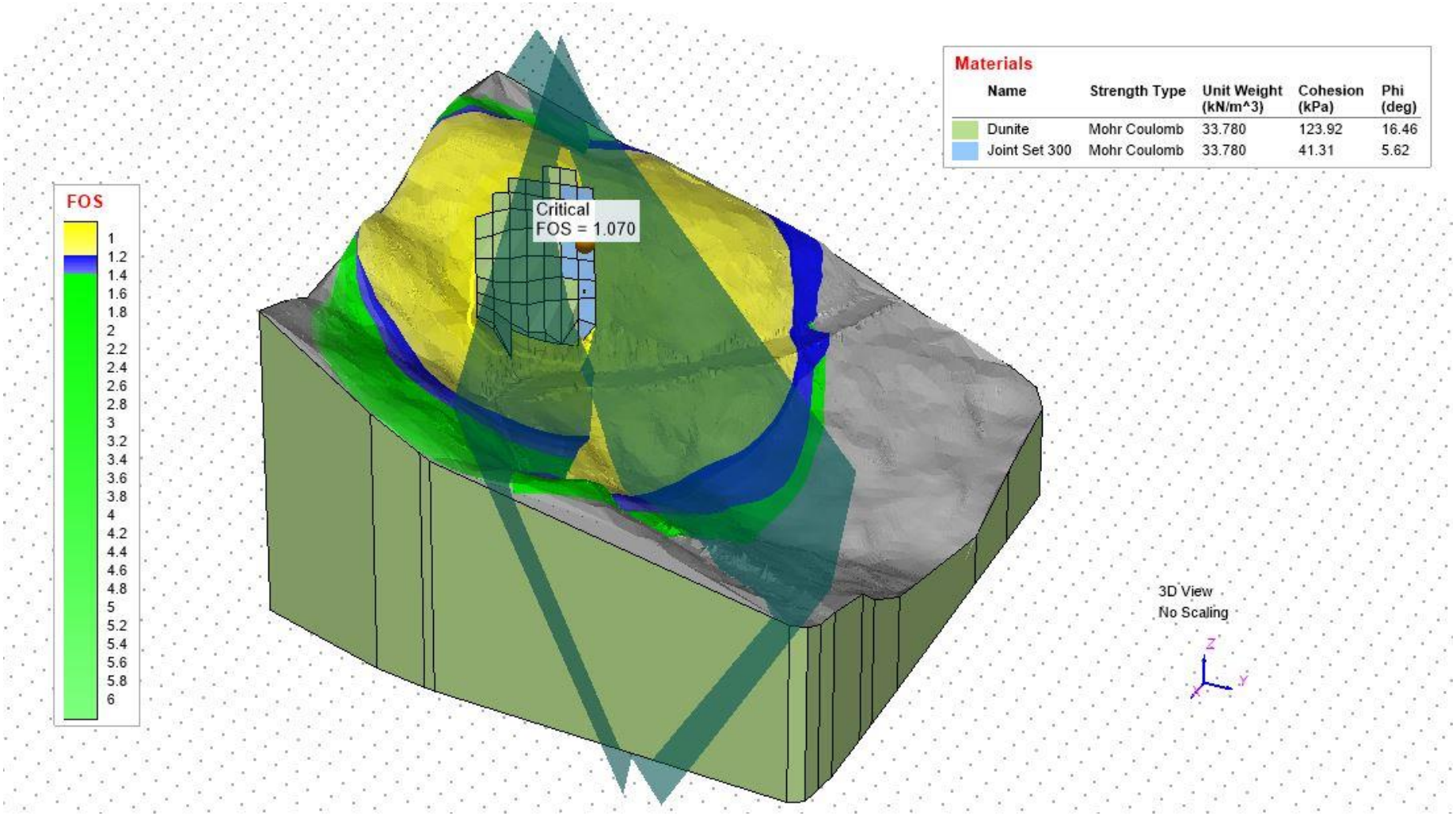

Material
Name
Strength Type
Unit Weight (kN/m^3)
Cohesion (kPa)
Phi (deg)
Dunite
Mohr Coulomb
33.780
123.92
16.46
320
300
280
260
240 Z (m)
Critical
FOS = 1.37
GLE
FOS
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
5
5.2
5.4
5.6
5.8
6
X (m)
348,650
348,550
348,500
Y (m)
532,450
9,532,500
9,532,550
3D View
No Scaling
Z
X
Y

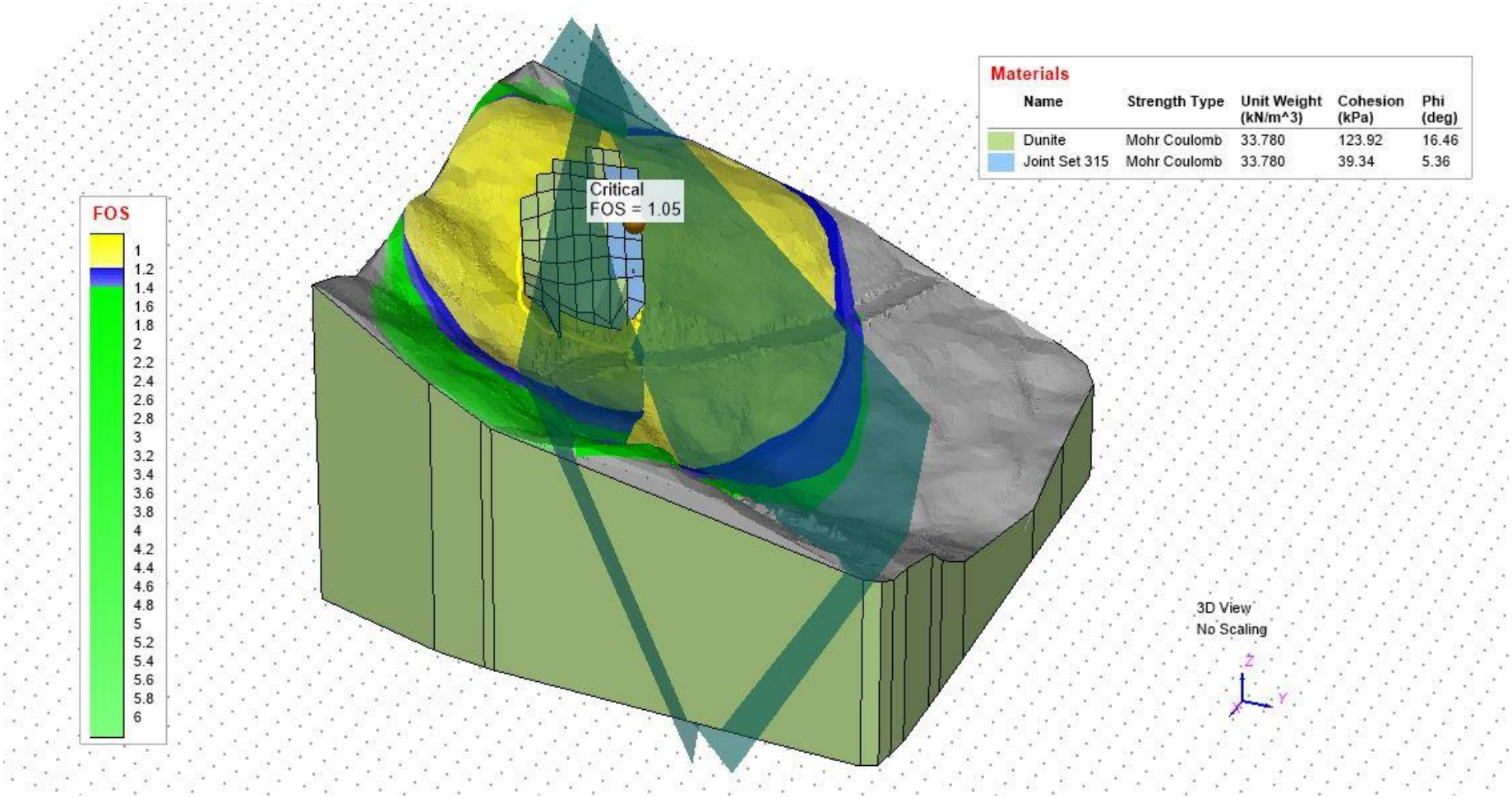

Materials
Name
Strength Type
Unit Weight (kN/m^3)
Cohesion (kPa)
Phi (deg)
Dunite
Mohr Coulomb
33.780
123.92
16.46
Joint Set 110
Mohr Coulomb
33.780
112.65
15.03
FOS
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
5
5.2
5.4
5.6
5.8
6
Critical
FOS = 1.13
3D View
No Scaling
Z
X
Y

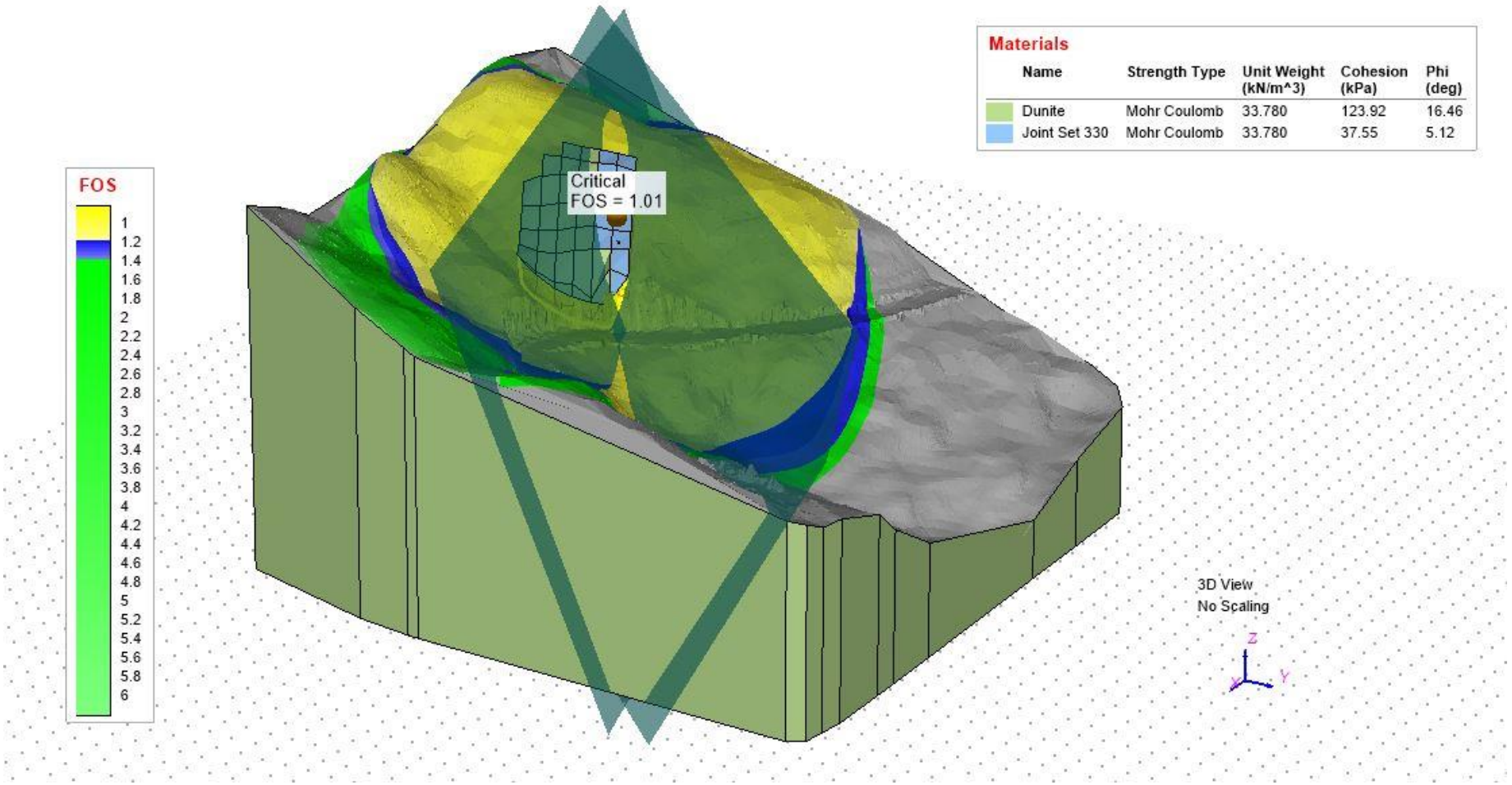

Materials
Name
Strength Type
Unit Weight (kN/m^3)
Cohesion (kPa)
Phi (deg)
Dunite
Mohr Coulomb
33.780
123.92
16.46
Joint Set 150
Mohr Coulomb
33.780
82.61
11.14
FOS
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
5
5.2
5.4
5.6
5.8
6
Critical
FOS = 1.10
3D View
No Scaling
Z
Y
X

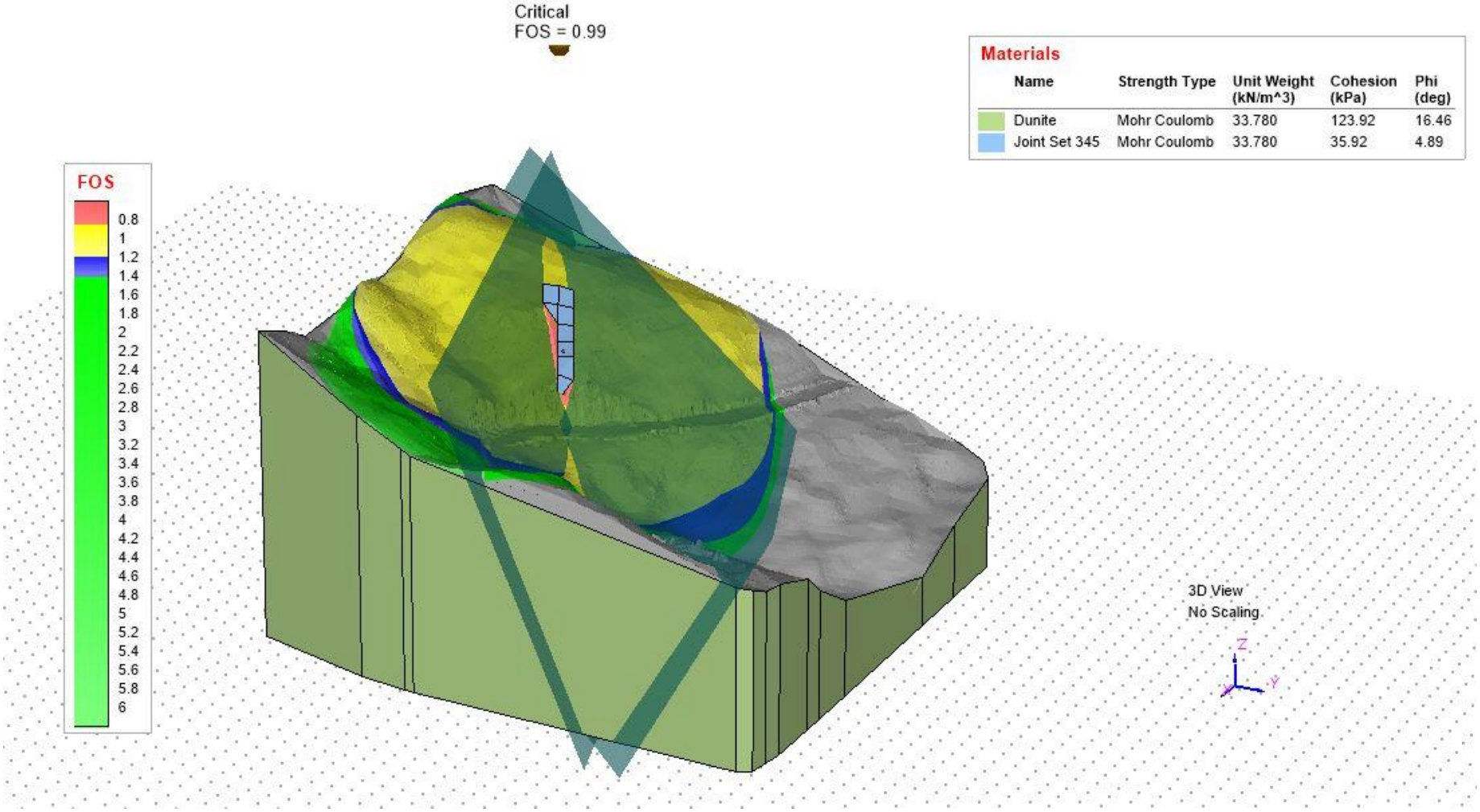

Materials
Name
Strength Type
Unit Weight (kN/m^3)
Cohesion (kPa)
Phi (deg)
Dunite
Mohr Coulomb
33.780
123.92
16.46
Joint Set 200
Mohr Coulomb
33.780
61.96
8.4
FOS
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
5
5.2
5.4
5.6
5.8
6
Critical
FOS = 1.08
3D View
No Scaling
Z
Y

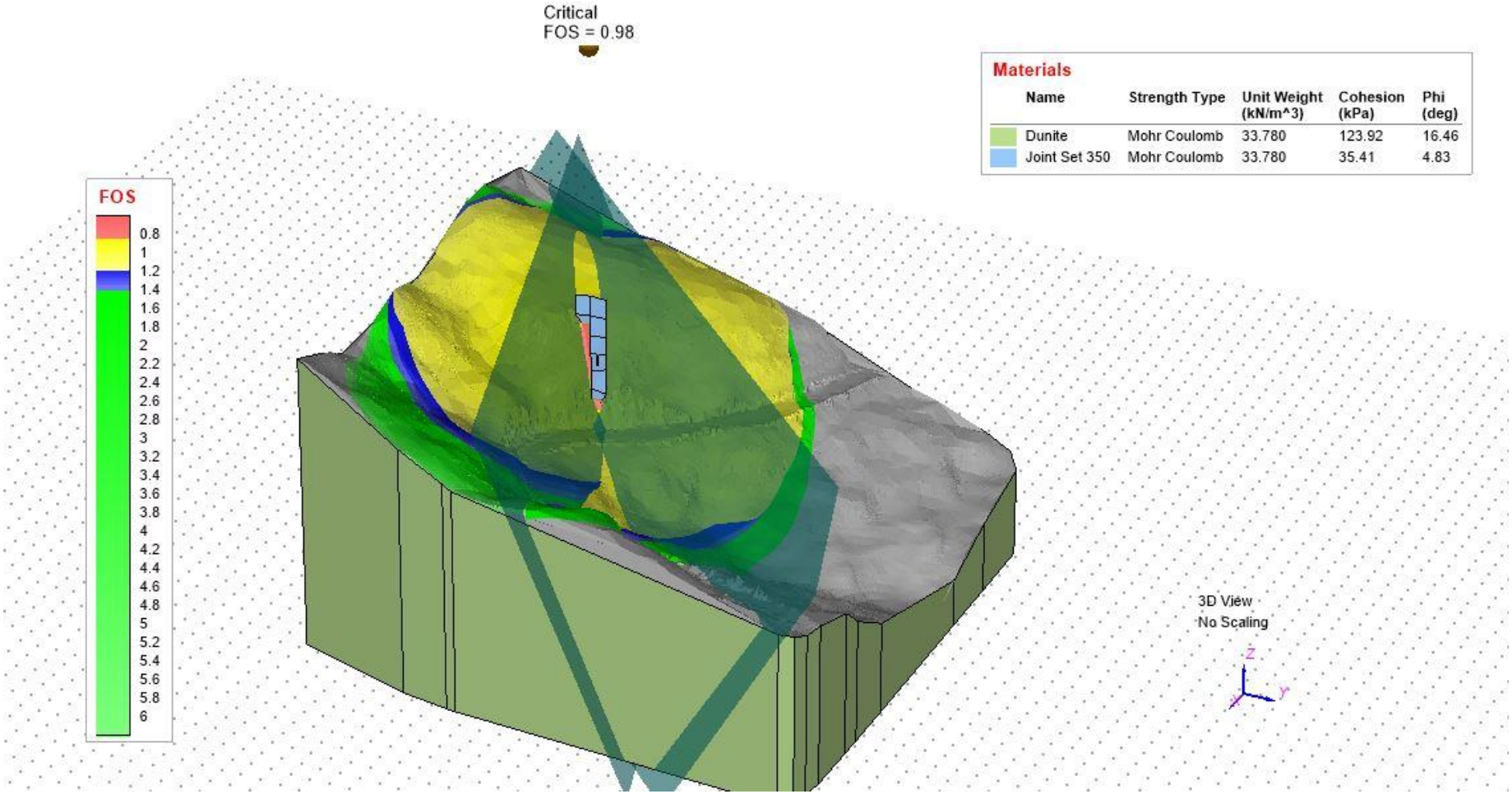

Materials
Name
Strength Type
Unit Weight (kN/m^3)
Cohesion (kPa)
Phi (deg)
Dunite
Mohr Coulomb
33.780
123.92
16.46
Joint Set 250
Mohr Coulomb
33.780
49.57
6.74
Critical
FOS = 1.08
FOS
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
5
5.2
5.4
5.6
5.8
6
3D View
No Scaling
Z
Y


Materials
Name
Strength Type
Unit Weight (kN/m^3)
Cohesion (kPa)
Phi (deg)
Dunite
Mohr Coulomb
33.780
123.92
16.46
Joint Set 300
Mohr Coulomb
33.780
41.31
5.62
FOS
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
5
5.2
5.4
5.6
5.8
6
Critical
FOS = 1.070
3D View
No Scaling
Z
Y


Materials
Name
Strength Type
Unit Weight (kN/m^3)
Cohesion (kPa)
Phi (deg)
Dunite
Mohr Coulomb
33.780
123.92
16.46
Joint Set 315
Mohr Coulomb
33.780
39.34
5.36
FOS
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
5
5.2
5.4
5.6
5.8
6
Critical
FOS = 1.05
3D View
No Scaling
Z
Y
X


Materials
Name
Strength Type
Unit Weight (kN/m^3)
Cohesion (kPa)
Phi (deg)
Dunite
Mohr Coulomb
33.780
123.92
16.46
Joint Set 330
Mohr Coulomb
33.780
37.55
5.12
FOS
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
5
5.2
5.4
5.6
5.8
6
Critical
FOS = 1.01
3D View
No Scaling
Z
Y


Critical
FOS = 0.99
Materials
Name
Strength Type
Unit Weight (kN/m^3)
Cohesion (kPa)
Phi (deg)
Dunite
Mohr Coulomb
33.780
123.92
16.46
Joint Set 345
Mohr Coulomb
33.780
35.92
4.89
FOS
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
5
5.2
5.4
5.6
5.8
6
3D View
No Scaling
Z
Y


Critical
FOS = 0.98
Materials
Name | Strength Type | Unit Weight (kN/m^3) | Cohesion (kPa) | Phi (deg)
Dunite | Mohr Coulomb | 33.780 | 123.92 | 16.46
Joint Set 350 | Mohr Coulomb | 33.780 | 35.41 | 4.83
FOS
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
5
5.2
5.4
5.6
5.8
6
3D View
No Scaling
Z
Y
X

APPENDIX C

THESIS CONSULTATION SHEET

Lampiran B 10

Kartu Konsultasi Tugas Akhir

JUDUL: THREE-DIMENSIONAL SLOPE STABILITY ANALYSIS AND VOLUMETRIC ESTIMATION OF SLOPE FAILURE

(Konsultasi minimal 8 kali)

TANGGAL	MATERI KONSULTASI	PARAF DOSEN
27/12/2021	BAB I • Problems Statement ⇒ perbaikan formulasi BAB II • Jenis longsoran ⇒ general condition • Sifat fisik dan mekanis rinci • Penambahan persamaan	
04/01/2022	BAB I • Research Stages perbaikan BAB II • penambahan skema kelongsoran • Persamaan gen. condition falure modes • Pembahasan Density dan Mohr-Coulomb • 2.4 Dibagi ke dalam sub@ BAB	
12/01/2022	BAB II • Perbaikan referensi • Penambahan penjelasan • Penulisan	
22/02/2022	BAB III • Flowchart • Konsultasi Data.	
7/03/2022	BAB III Konsultasi Data	

TANGGAL	MATERI KONSULTASI	PARAF DOSEN
23/03/22	BAB III - Penulisan - Format gambar	
28/03/22	BAB IV - Perbaikan tabel BAB V - Perbaikan rekomendasi	
6/4/22	BAB III - Flowchart BAB IV - Gambar	