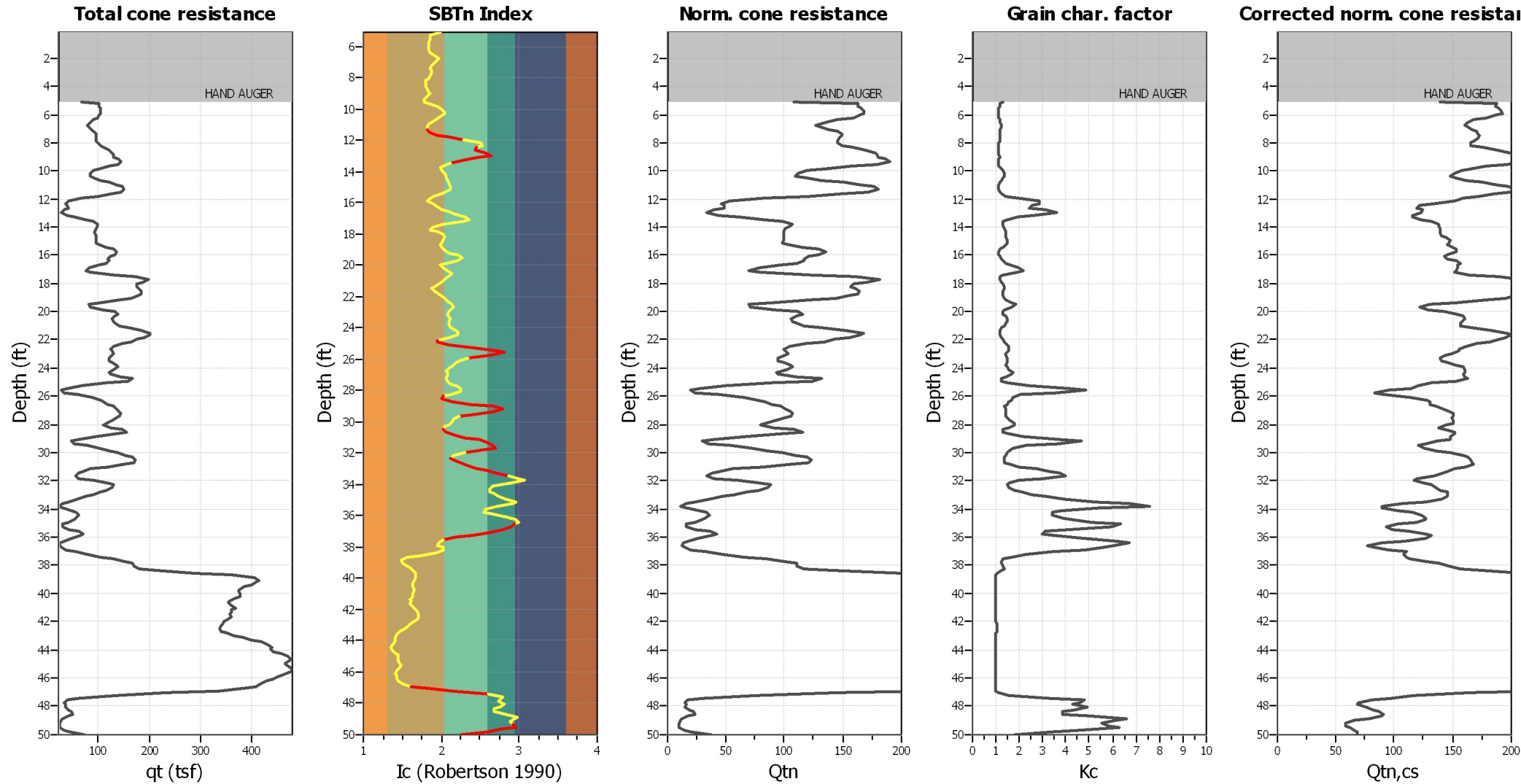


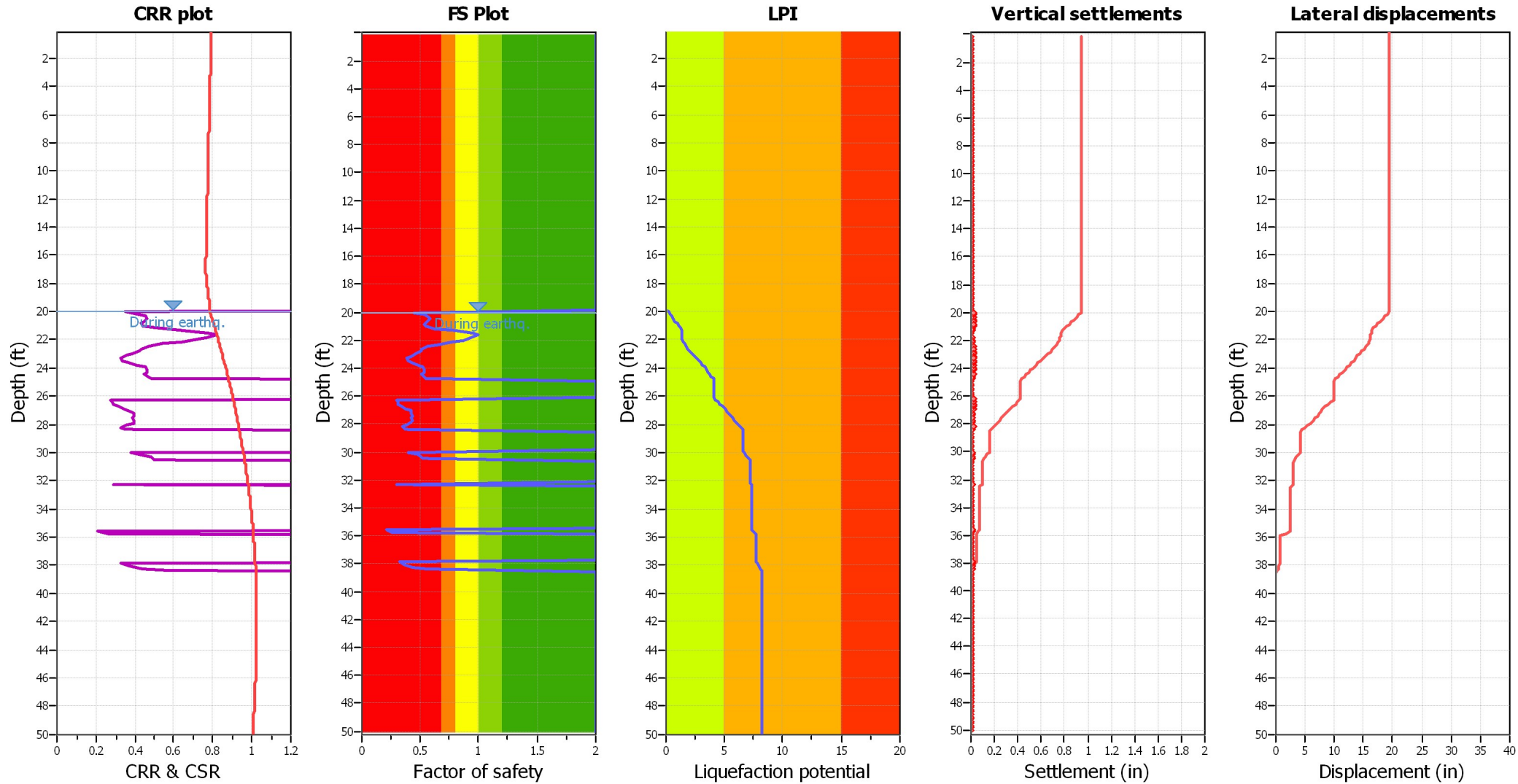
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K _o applied:	Yes
Earthquake magnitude M _w :	7.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.10	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K ₀ applied:	Yes
Earthquake magnitude M _w :	7.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.10	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

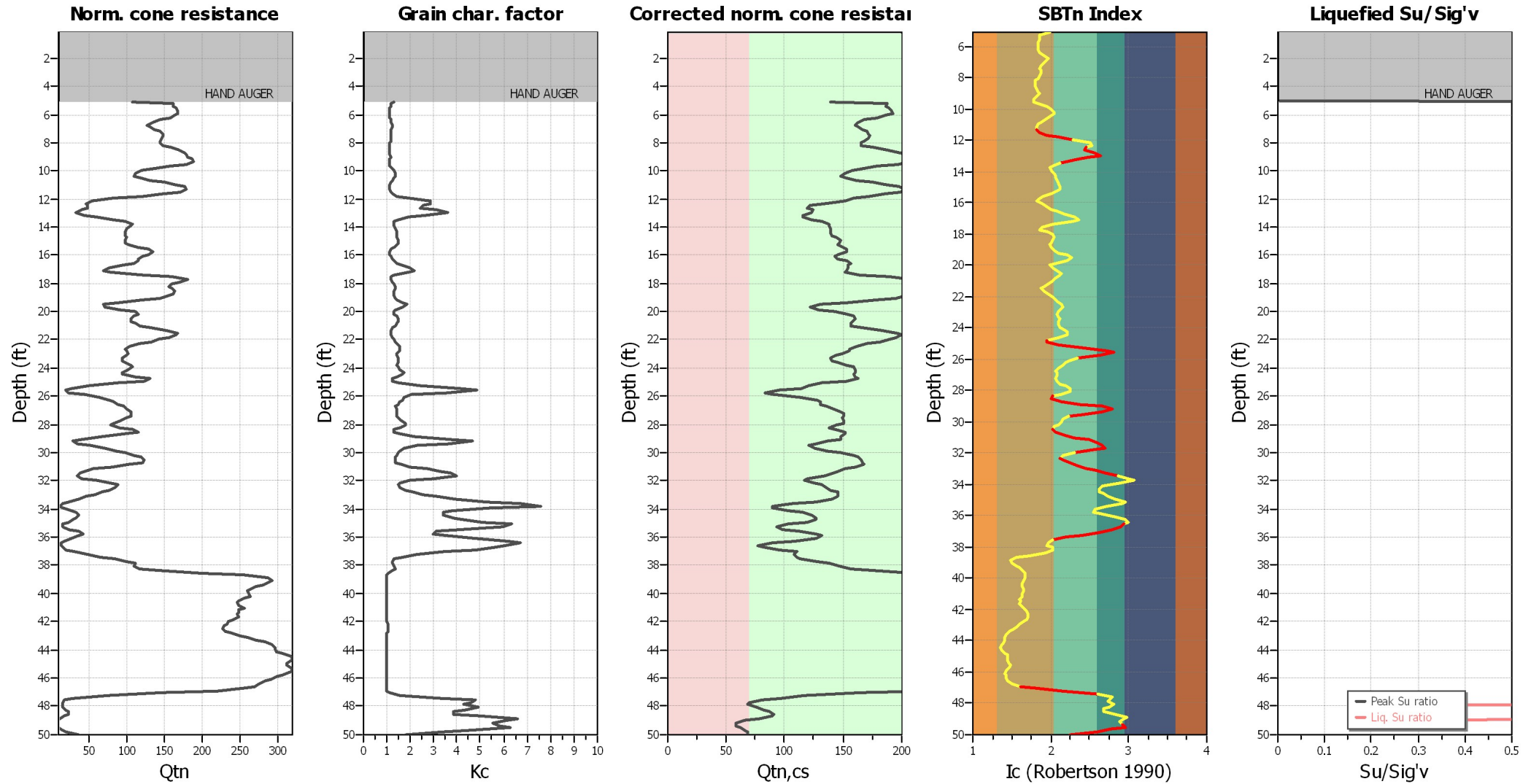
F.S. color scheme

Red	Almost certain it will liquefy
Orange	Very likely to liquefy
Yellow	Liquefaction and no liq. are equally likely
Light Green	Unlike to liquefy
Dark Green	Almost certain it will not liquefy

LPI color scheme

Red	Very high risk
Orange	High risk
Yellow	Low risk

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K _g applied:	Yes
Earthquake magnitude M _w :	7.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.10	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

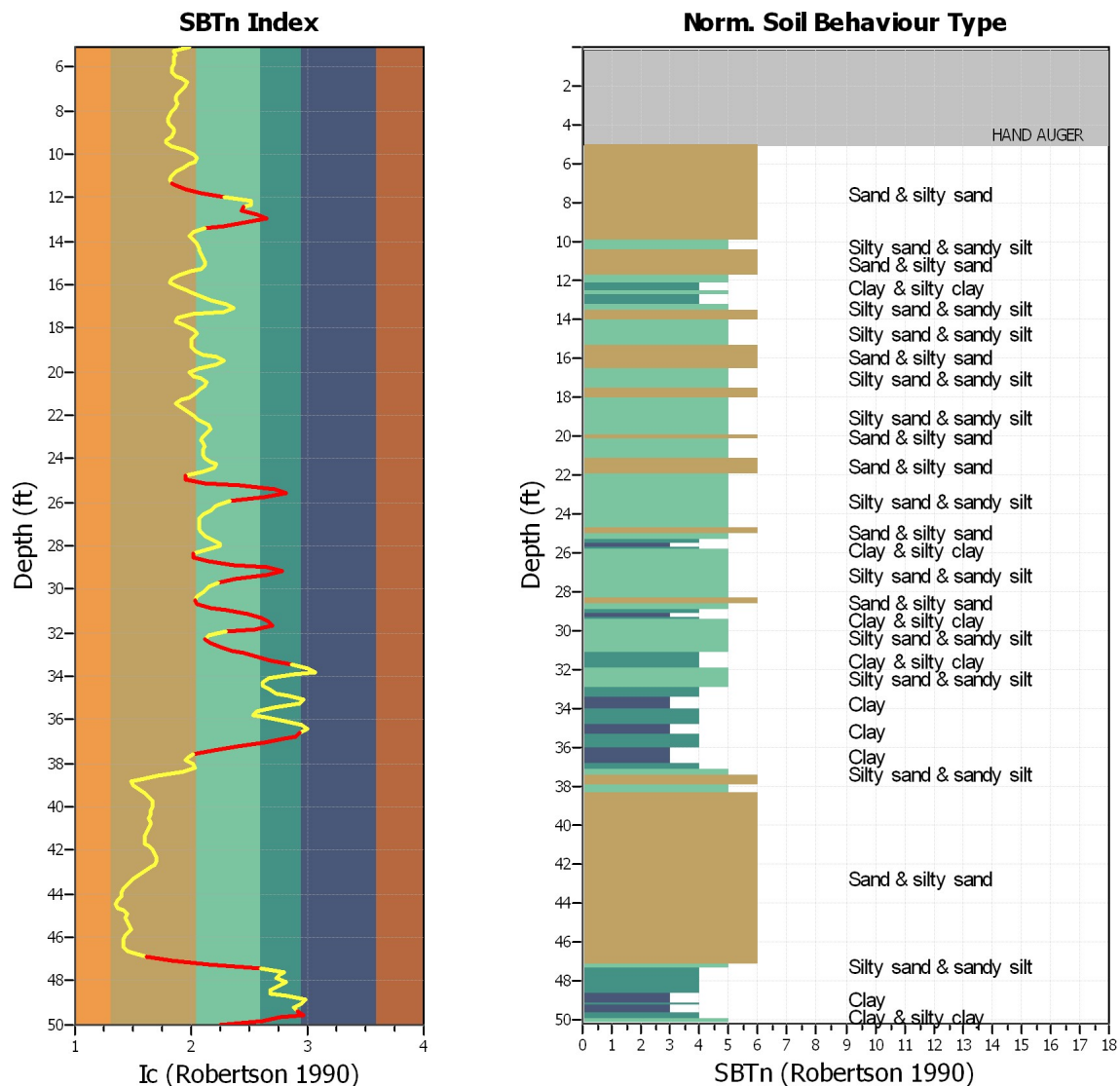
TRANSITION LAYER DETECTION ALGORITHM REPORT

Summary Details & Plots

Short description

The software will delete data when the cone is in transition from either clay to sand or vice-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between $1.80 < I_c < 3.0$) and a rate of change of I_c . Transitions typically occur when the rate of change of I_c is fast (i.e. ΔI_c is small).

The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties

I_c minimum check value:	1.70
I_c maximum check value:	3.00
I_c change ratio value:	0.0250
Minimum number of points in layer:	3

General statistics

Total points in CPT file:	305
Total points excluded:	65
Exclusion percentage:	21.31%
Number of layers detected:	13

:: Field input data ::

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
1	0.16	-9999.00	-9999.00	-9999.00	N/A	120.90
2	0.33	-9999.00	-9999.00	-9999.00	N/A	120.90
3	0.49	-9999.00	-9999.00	-9999.00	N/A	120.90
4	0.66	-9999.00	-9999.00	-9999.00	N/A	120.90
5	0.82	-9999.00	-9999.00	-9999.00	N/A	120.90
6	0.98	-9999.00	-9999.00	-9999.00	N/A	120.90
7	1.15	-9999.00	-9999.00	-9999.00	N/A	120.90
8	1.31	-9999.00	-9999.00	-9999.00	N/A	120.90
9	1.48	-9999.00	-9999.00	-9999.00	N/A	120.90
10	1.64	-9999.00	-9999.00	-9999.00	N/A	120.90
11	1.80	-9999.00	-9999.00	-9999.00	N/A	120.90
12	1.97	-9999.00	-9999.00	-9999.00	N/A	120.90
13	2.13	-9999.00	-9999.00	-9999.00	N/A	120.90
14	2.30	-9999.00	-9999.00	-9999.00	N/A	120.90
15	2.46	-9999.00	-9999.00	-9999.00	N/A	120.90
16	2.62	-9999.00	-9999.00	-9999.00	N/A	120.90
17	2.79	-9999.00	-9999.00	-9999.00	N/A	120.90
18	2.95	-9999.00	-9999.00	-9999.00	N/A	120.90
19	3.12	-9999.00	-9999.00	-9999.00	N/A	120.90
20	3.28	-9999.00	-9999.00	-9999.00	N/A	120.90
21	3.44	-9999.00	-9999.00	-9999.00	N/A	120.90
22	3.61	-9999.00	-9999.00	-9999.00	N/A	120.90
23	3.77	-9999.00	-9999.00	-9999.00	N/A	120.90
24	3.94	-9999.00	-9999.00	-9999.00	N/A	120.90
25	4.10	-9999.00	-9999.00	-9999.00	N/A	120.90
26	4.27	-9999.00	-9999.00	-9999.00	N/A	120.90
27	4.43	-9999.00	-9999.00	-9999.00	N/A	120.90
28	4.59	-9999.00	-9999.00	-9999.00	N/A	120.90
29	4.76	-9999.00	-9999.00	-9999.00	N/A	120.90
30	4.92	-9999.00	-9999.00	-9999.00	N/A	120.90
31	5.09	103.37	1.44	0.63	12.46	120.20
32	5.25	100.48	1.41	0.56	9.41	124.10
33	5.41	100.61	1.40	0.54	9.43	124.08
34	5.58	102.69	1.43	0.50	9.23	124.15
35	5.74	105.64	1.43	0.50	9.04	124.29
36	5.91	106.96	1.46	0.43	9.14	124.40
37	6.07	102.72	1.50	0.40	8.83	123.71
38	6.23	98.67	1.06	0.38	8.78	123.02
39	6.40	95.54	1.15	0.36	9.53	122.28
40	6.56	77.20	1.24	2.21	10.85	122.42
41	6.73	80.55	1.21	1.67	12.08	122.50
42	6.89	80.18	1.26	1.39	11.63	122.61
43	7.05	84.72	1.26	1.15	10.91	122.76
44	7.22	93.02	1.23	0.95	9.96	122.80
45	7.38	96.37	1.21	0.79	9.48	122.95
46	7.55	97.38	1.28	0.68	9.61	123.20
47	7.71	96.46	1.34	0.61	9.85	123.37
48	7.87	96.30	1.29	0.54	9.60	123.05

:: Field input data :: (continued)

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
49	8.04	98.18	1.11	0.52	9.02	122.62
50	8.20	102.08	1.11	0.47	8.31	122.49
51	8.37	110.56	1.18	0.40	8.12	123.41
52	8.53	121.16	1.47	0.32	8.14	124.75
53	8.69	130.62	1.74	0.29	8.66	126.08
54	8.86	128.80	1.97	0.25	9.12	126.80
55	9.02	128.31	1.98	0.16	9.35	127.20
56	9.19	135.90	2.03	0.14	8.67	127.21
57	9.35	148.96	1.88	0.09	7.76	126.76
58	9.51	144.81	1.55	0.04	7.70	125.89
59	9.68	117.25	1.48	-0.05	8.88	124.99
60	9.84	98.67	1.50	0.45	11.42	124.60
61	10.01	86.44	1.58	0.23	13.31	124.32
62	10.17	83.80	1.49	0.13	14.10	123.95
63	10.33	83.10	1.36	-0.05	13.92	123.59
64	10.50	84.60	1.38	-0.14	12.72	123.86
65	10.66	106.10	1.53	-0.27	11.25	124.66
66	10.83	122.32	1.64	-0.32	9.79	125.66
67	10.99	135.69	1.79	-0.36	8.94	126.56
68	11.15	149.17	1.97	-0.41	8.59	127.36
69	11.32	154.18	2.12	-0.43	8.74	127.89
70	11.48	147.02	2.18	-0.49	9.52	127.98
71	11.65	131.42	2.14	-0.56	11.54	127.69
72	11.81	99.75	2.15	-0.61	15.52	126.99
73	11.98	64.54	2.09	-0.70	22.19	125.42
74	12.14	38.18	1.60	-0.76	31.20	123.18
75	12.30	27.22	1.29	-0.70	31.65	120.87
76	12.47	47.25	0.92	-0.56	28.51	120.18
77	12.63	46.08	1.18	-0.68	27.68	120.00
78	12.80	29.98	1.19	-0.14	33.75	119.68
79	12.96	24.15	1.00	-0.20	37.70	118.87
80	13.12	31.76	0.99	-0.13	29.41	119.37
81	13.29	58.03	1.10	-0.14	21.89	120.72
82	13.45	71.64	1.22	-0.25	16.16	122.20
83	13.62	95.32	1.31	-0.31	13.56	123.20
84	13.78	104.41	1.38	-0.40	12.56	123.85
85	13.94	98.15	1.46	-0.43	13.26	124.20
86	14.11	91.42	1.53	-0.50	14.33	124.51
87	14.27	94.74	1.62	-0.54	14.90	124.71
88	14.44	94.40	1.60	-0.59	14.95	124.79
89	14.60	93.08	1.58	-0.61	15.24	125.07
90	14.76	96.46	1.80	-0.63	15.70	125.59
91	14.93	97.63	1.94	-0.65	16.43	126.15
92	15.09	93.85	2.00	-0.67	16.42	126.11
93	15.26	96.76	1.76	-0.72	15.12	125.98
94	15.42	114.25	1.74	-0.72	13.05	126.19
95	15.58	132.18	1.94	-0.72	10.20	125.58
96	15.75	142.23	1.12	-0.74	8.86	125.06

:: Field input data :: (continued)

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
97	15.91	136.15	1.33	-0.76	8.53	123.96
98	16.08	116.95	1.38	0.25	10.17	124.65
99	16.24	119.22	1.59	0.09	11.85	125.64
100	16.40	123.09	2.01	-0.04	13.14	126.86
101	16.57	119.10	2.27	-0.20	15.10	127.66
102	16.73	102.97	2.36	-0.29	18.07	127.66
103	16.90	81.22	2.31	-0.40	22.76	127.34
104	17.06	63.68	2.43	-0.43	25.00	126.99
105	17.22	79.93	2.26	-0.41	21.97	127.38
106	17.39	113.91	2.36	-0.40	13.49	128.57
107	17.55	205.60	2.54	-0.34	10.13	129.90
108	17.72	199.92	2.97	-0.41	9.46	131.29
109	17.88	184.44	3.61	-0.49	11.59	132.29
110	18.04	173.81	4.07	-0.54	13.55	132.94
111	18.21	168.86	4.18	-0.56	14.22	133.25
112	18.37	178.82	4.16	-0.58	13.77	133.31
113	18.54	188.92	4.07	-0.61	13.11	133.23
114	18.70	184.99	3.93	-0.65	12.73	132.80
115	18.86	175.71	3.49	-0.68	13.05	132.47
116	19.03	170.12	3.69	-0.68	14.03	132.07
117	19.19	148.59	3.58	-0.79	15.88	130.96
118	19.36	105.95	2.45	-0.92	19.54	128.52
119	19.52	60.24	1.67	-1.01	21.65	125.76
120	19.69	81.38	1.60	-0.32	19.51	124.76
121	19.85	113.32	1.67	-0.43	14.75	125.66
122	20.01	135.53	1.85	-0.50	12.70	127.01
123	20.18	146.29	2.28	-0.58	13.53	128.46
124	20.34	131.17	2.85	-0.65	15.48	129.37
125	20.51	120.82	2.88	-0.70	16.83	129.64
126	20.67	129.63	2.69	-0.67	16.21	129.38
127	20.83	136.15	2.52	-0.74	14.96	129.07
128	21.00	136.27	2.44	-0.79	13.83	129.00
129	21.16	150.59	2.50	-0.79	12.33	129.53
130	21.33	183.76	2.79	-0.74	10.64	130.53
131	21.49	213.01	3.14	-0.77	9.76	131.35
132	21.65	208.61	3.19	-0.81	10.79	132.13
133	21.82	178.32	3.85	-0.88	11.99	132.21
134	21.98	179.55	3.46	-0.86	13.54	132.25
135	22.15	168.00	3.50	-0.74	14.11	131.66
136	22.31	146.44	3.21	-1.03	15.51	130.84
137	22.47	126.53	2.73	-1.12	17.18	130.08
138	22.64	119.22	2.92	-1.13	17.66	129.55
139	22.80	127.08	2.74	-1.17	17.02	129.50
140	22.97	135.87	2.60	-1.19	15.71	128.79
141	23.13	125.73	2.12	-1.24	15.37	128.11
142	23.29	118.08	2.13	-1.32	15.92	127.64
143	23.46	116.98	2.28	-1.37	16.36	127.90
144	23.62	124.63	2.36	-1.39	16.03	128.53

:: Field input data :: (continued)

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
145	23.79	137.53	2.61	-1.48	15.69	129.34
146	23.95	141.92	2.95	-1.55	16.26	130.07
147	24.11	132.65	3.14	-1.67	17.69	130.29
148	24.28	118.88	3.02	-1.78	19.65	130.38
149	24.44	114.52	3.28	-1.84	19.08	130.20
150	24.61	137.35	2.87	-1.89	15.71	130.29
151	24.77	177.86	2.69	-1.91	11.68	129.62
152	24.93	186.43	2.11	-2.05	11.61	128.57
153	25.10	109.48	1.97	-2.20	16.06	127.03
154	25.26	55.05	1.98	-2.31	27.29	124.95
155	25.43	41.59	1.50	-2.48	41.45	122.24
156	25.59	23.65	1.02	-2.41	46.52	118.40
157	25.75	22.30	0.44	-2.23	36.87	116.97
158	25.92	57.23	0.84	-1.95	23.90	120.20
159	26.08	100.30	1.70	-2.05	20.04	124.61
160	26.25	104.60	2.26	-2.20	18.93	126.79
161	26.41	104.75	2.16	-2.27	17.74	127.19
162	26.57	123.55	1.89	-2.43	16.02	127.09
163	26.74	128.07	2.03	-2.41	14.81	127.54
164	26.90	134.80	2.37	-2.45	15.02	128.41
165	27.07	139.80	2.59	-2.50	15.00	129.17
166	27.23	147.18	2.68	-2.52	14.92	129.37
167	27.40	141.92	2.54	-2.54	15.28	129.52
168	27.56	136.88	2.76	-2.56	16.21	129.48
169	27.72	129.67	2.75	-2.61	18.59	129.87
170	27.89	112.59	3.20	-2.65	20.78	129.78
171	28.05	104.91	2.92	-2.68	20.85	129.16
172	28.22	116.73	2.13	-2.61	17.05	128.45
173	28.38	151.38	2.17	-2.68	13.38	128.45
174	28.54	172.06	2.53	-2.83	13.31	129.41
175	28.71	143.86	2.92	-2.93	17.15	130.03
176	28.87	92.65	3.22	-2.97	25.23	129.34
177	29.04	55.05	2.70	-3.03	38.24	127.73
178	29.20	35.14	2.37	-2.97	45.01	125.79
179	29.36	49.33	1.89	-2.79	37.83	125.21
180	29.53	76.25	1.87	-2.76	26.02	125.84
181	29.69	108.04	2.14	-2.86	20.16	127.09
182	29.86	123.71	2.38	-2.90	17.56	128.56
183	30.02	139.68	2.82	-2.93	16.73	129.83
184	30.18	151.11	3.21	-2.95	15.67	130.85
185	30.35	170.40	3.29	-2.97	14.39	131.13
186	30.51	175.62	2.94	-2.99	13.88	131.24
187	30.68	167.08	3.26	-2.99	14.53	131.57
188	30.84	165.48	3.75	-3.01	17.96	132.03
189	31.00	119.25	4.02	-3.06	22.81	131.19
190	31.17	73.85	2.85	-3.17	30.15	129.54
191	31.33	64.39	2.59	-3.10	35.02	128.28
192	31.50	70.99	3.10	-1.39	38.43	127.44

:: Field input data :: (continued)

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
193	31.66	47.37	2.27	-2.11	40.14	126.35
194	31.82	46.66	1.73	-1.96	32.70	125.26
195	31.99	94.71	1.85	-1.78	22.75	126.00
196	32.15	126.72	2.17	-1.98	17.56	127.31
197	32.32	129.85	2.27	-2.04	16.36	128.07
198	32.48	129.27	2.32	-2.11	17.80	128.76
199	32.64	119.47	2.90	-2.12	20.58	129.22
200	32.81	100.67	2.96	-2.20	24.46	129.67
201	32.97	93.36	3.16	-2.14	28.55	129.36
202	33.14	76.74	2.96	-2.21	33.38	128.81
203	33.30	58.43	2.79	-2.27	39.87	127.42
204	33.46	43.74	2.25	-2.29	49.46	124.89
205	33.63	23.32	1.33	-2.27	58.10	121.39
206	33.79	20.77	0.87	-2.14	63.46	117.83
207	33.96	22.42	0.80	-2.11	50.68	118.49
208	34.12	45.06	1.32	-2.02	38.72	122.16
209	34.28	71.73	2.12	-2.09	36.24	124.54
210	34.45	51.58	2.07	-2.14	36.07	125.79
211	34.61	57.94	2.19	-1.78	39.52	125.94
212	34.78	58.31	2.42	-1.91	41.95	125.62
213	34.94	39.53	1.94	-1.96	47.91	124.12
214	35.10	28.08	1.36	-1.91	55.84	121.05
215	35.27	23.93	0.88	-1.76	53.65	119.44
216	35.43	36.25	1.16	-1.53	41.28	121.33
217	35.60	66.54	1.87	-1.21	33.81	124.59
218	35.76	78.95	2.38	-1.35	32.54	126.83
219	35.93	67.46	2.71	-1.46	37.10	127.05
220	36.09	44.94	2.34	-1.57	46.18	125.53
221	36.25	30.04	1.62	-1.57	55.10	122.31
222	36.42	25.19	0.87	-1.44	58.16	118.55
223	36.58	22.92	0.65	-1.32	54.16	116.10
224	36.75	27.25	0.75	-1.21	51.55	117.43
225	36.91	34.40	1.22	-1.19	45.81	120.53
226	37.07	49.52	1.69	-1.08	36.68	124.28
227	37.24	83.68	2.42	-1.17	26.10	125.05
228	37.40	102.79	1.18	-1.22	18.92	125.76
229	37.57	128.93	1.69	-1.22	13.62	125.49
230	37.73	157.77	1.88	0.04	12.11	127.08
231	37.89	170.15	2.02	-0.14	11.78	128.44
232	38.06	173.47	2.62	-0.29	13.51	130.00
233	38.22	160.85	3.41	-0.40	13.69	131.24
234	38.39	204.19	3.31	-0.32	11.35	132.25
235	38.55	276.04	3.39	-0.13	6.47	132.47
236	38.71	384.17	2.74	-0.13	3.79	132.65
237	38.88	414.03	2.86	-0.13	2.54	132.73
238	39.04	417.32	3.13	-0.09	2.81	133.52
239	39.21	410.35	3.66	-0.11	3.61	134.52
240	39.37	398.61	4.32	-0.13	4.32	135.12

:: Field input data :: (continued)

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
241	39.53	389.12	4.18	-0.14	5.03	135.51
242	39.70	370.72	4.46	-0.16	5.44	135.57
243	39.86	370.23	4.54	-0.16	5.65	135.69
244	40.03	381.10	4.42	-0.18	5.47	135.59
245	40.19	379.20	4.25	-0.16	5.13	135.22
246	40.35	371.55	3.88	-0.20	5.07	134.73
247	40.52	352.47	3.71	-0.23	4.98	134.09
248	40.68	344.95	3.39	-0.27	5.21	134.26
249	40.85	364.88	4.16	-0.29	5.16	134.39
250	41.01	365.93	3.86	-0.41	4.91	134.49
251	41.17	373.11	3.44	-0.67	4.77	133.86
252	41.34	335.02	3.30	-0.90	4.36	133.38
253	41.50	372.56	3.18	-0.99	4.46	133.35
254	41.67	363.07	3.43	-1.10	4.36	133.38
255	41.83	345.90	3.30	-1.19	4.91	133.62
256	41.99	340.37	3.62	-1.28	5.42	133.97
257	42.16	347.22	4.00	-1.42	5.94	134.49
258	42.32	341.54	4.12	-1.51	6.15	134.60
259	42.49	332.69	3.82	-1.59	6.16	134.41
260	42.65	335.73	3.75	-1.67	5.77	134.15
261	42.81	352.69	3.66	-1.76	5.16	133.94
262	42.98	365.19	3.39	-1.84	4.43	133.66
263	43.14	380.83	3.20	-1.95	3.62	133.18
264	43.31	399.84	2.87	-2.00	2.94	132.84
265	43.47	416.67	2.84	-2.04	2.39	132.67
266	43.64	436.33	2.86	-2.07	1.88	132.26
267	43.80	439.47	2.33	-2.11	1.66	132.11
268	43.96	436.86	2.63	-2.18	1.57	131.91
269	44.13	435.01	2.66	-2.32	1.49	131.92
270	44.29	453.57	2.31	-2.48	1.09	131.60
271	44.46	475.93	2.23	-2.54	0.91	131.78
272	44.62	481.37	2.76	-2.63	1.20	132.55
273	44.78	467.08	3.09	-2.83	1.66	133.32
274	44.95	465.40	3.14	-2.85	2.12	133.90
275	45.11	462.32	3.55	-2.95	2.02	133.77
276	45.28	471.45	2.91	-2.79	2.18	134.35
277	45.44	491.85	3.86	-0.79	2.31	134.66
278	45.60	471.42	3.98	3.40	2.68	135.10
279	45.77	456.64	3.62	-0.38	2.44	134.18
280	45.93	448.19	2.61	-3.19	1.99	133.03
281	46.10	442.14	2.56	-3.19	1.72	132.11
282	46.26	424.57	2.64	-3.26	1.80	131.83
283	46.42	417.11	2.38	-3.33	1.83	131.42
284	46.59	408.60	2.21	-3.40	2.10	131.57
285	46.75	399.26	2.83	-3.40	2.92	132.02
286	46.92	350.14	3.00	-3.47	4.60	132.15
287	47.08	255.31	2.75	-3.53	8.75	130.77
288	47.24	99.35	2.25	-2.12	17.29	127.98

:: Field input data :: (continued)

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
289	47.41	48.26	1.58	-1.44	35.42	123.59
290	47.57	33.54	0.89	0.32	45.89	119.21
291	47.74	32.90	0.55	0.94	44.56	116.25
292	47.90	36.53	0.65	1.17	42.36	116.31
293	48.06	38.98	0.87	1.55	46.86	117.78
294	48.23	29.86	1.04	2.76	42.79	119.63
295	48.39	56.71	1.20	3.76	39.54	121.28
296	48.56	60.09	1.46	3.40	39.26	122.04
297	48.72	36.62	1.38	2.93	47.43	121.19
298	48.88	26.36	1.03	2.76	57.34	118.25
299	49.05	25.28	0.48	2.72	54.93	115.05
300	49.21	28.60	0.42	2.76	50.79	112.37
301	49.38	23.59	0.46	2.72	52.88	112.44
302	49.54	22.55	0.51	2.79	55.74	113.64
303	49.70	28.48	0.67	2.95	43.88	115.43
304	49.87	51.02	0.70	3.17	35.85	116.74
305	50.03	82.48	0.70	3.06	20.97	118.09

Abbreviations

Depth:	Depth from free surface, at which CPT was performed (ft)
q _c :	Measured cone resistance (tsf)
f _s :	Sleeve friction resistance (tsf)
u:	Pore pressure (tsf)
Fines content:	Percentage of fines in soil (%)
Unit weight:	Bulk soil unit weight (pcf)

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data ::

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
1	0.16	0.01	0.00	0.01	1.00	0.716	0.90	0.791	1.00	1.00	2.000	No
2	0.33	0.02	0.00	0.02	1.00	0.715	0.90	0.791	1.00	1.00	2.000	No
3	0.49	0.03	0.00	0.03	1.00	0.715	0.90	0.791	1.00	1.00	2.000	No
4	0.66	0.04	0.00	0.04	1.00	0.715	0.90	0.791	1.00	1.00	2.000	No
5	0.82	0.05	0.00	0.05	1.00	0.715	0.90	0.791	1.00	1.00	2.000	No
6	0.98	0.06	0.00	0.06	1.00	0.715	0.90	0.790	1.00	1.00	2.000	No
7	1.15	0.07	0.00	0.07	1.00	0.714	0.90	0.790	1.00	1.00	2.000	No
8	1.31	0.08	0.00	0.08	1.00	0.714	0.90	0.790	1.00	1.00	2.000	No
9	1.48	0.09	0.00	0.09	1.00	0.714	0.90	0.790	1.00	1.00	2.000	No
10	1.64	0.10	0.00	0.10	1.00	0.714	0.90	0.789	1.00	1.00	2.000	No
11	1.80	0.11	0.00	0.11	1.00	0.713	0.90	0.789	1.00	1.00	2.000	No
12	1.97	0.12	0.00	0.12	1.00	0.713	0.90	0.789	1.00	1.00	2.000	No
13	2.13	0.13	0.00	0.13	1.00	0.713	0.90	0.788	1.00	1.00	2.000	No
14	2.30	0.14	0.00	0.14	1.00	0.713	0.90	0.788	1.00	1.00	2.000	No
15	2.46	0.15	0.00	0.15	1.00	0.712	0.90	0.788	1.00	1.00	2.000	No
16	2.62	0.16	0.00	0.16	1.00	0.712	0.90	0.788	1.00	1.00	2.000	No
17	2.79	0.17	0.00	0.17	1.00	0.712	0.90	0.787	1.00	1.00	2.000	No
18	2.95	0.18	0.00	0.18	1.00	0.711	0.90	0.787	1.00	1.00	2.000	No
19	3.12	0.19	0.00	0.19	0.99	0.711	0.90	0.787	1.00	1.00	2.000	No
20	3.28	0.20	0.00	0.20	0.99	0.711	0.90	0.786	1.00	1.00	2.000	No
21	3.44	0.21	0.00	0.21	0.99	0.711	0.90	0.786	1.00	1.00	2.000	No
22	3.61	0.22	0.00	0.22	0.99	0.710	0.90	0.786	1.00	1.00	2.000	No
23	3.77	0.23	0.00	0.23	0.99	0.710	0.90	0.785	1.00	1.00	2.000	No
24	3.94	0.24	0.00	0.24	0.99	0.710	0.90	0.785	1.00	1.00	2.000	No
25	4.10	0.25	0.00	0.25	0.99	0.710	0.90	0.785	1.00	1.00	2.000	No
26	4.27	0.26	0.00	0.26	0.99	0.709	0.90	0.784	1.00	1.00	2.000	No
27	4.43	0.27	0.00	0.27	0.99	0.709	0.90	0.784	1.00	1.00	2.000	No
28	4.59	0.28	0.00	0.28	0.99	0.709	0.90	0.784	1.00	1.00	2.000	No
29	4.76	0.29	0.00	0.29	0.99	0.708	0.90	0.784	1.00	1.00	2.000	No
30	4.92	0.30	0.00	0.30	0.99	0.708	0.90	0.783	1.00	1.00	2.000	No
31	5.09	0.31	0.00	0.31	0.99	0.708	0.90	0.783	1.00	1.00	2.000	No
32	5.25	0.32	0.00	0.32	0.99	0.708	0.90	0.783	1.00	1.00	2.000	No
33	5.41	0.33	0.00	0.33	0.99	0.707	0.90	0.782	1.00	1.00	2.000	No
34	5.58	0.34	0.00	0.34	0.99	0.707	0.90	0.782	1.00	1.00	2.000	No
35	5.74	0.35	0.00	0.35	0.99	0.707	0.90	0.782	1.00	1.00	2.000	No
36	5.91	0.36	0.00	0.36	0.99	0.707	0.90	0.781	1.00	1.00	2.000	No
37	6.07	0.37	0.00	0.37	0.99	0.706	0.90	0.781	1.00	1.00	2.000	No
38	6.23	0.38	0.00	0.38	0.99	0.706	0.90	0.781	1.00	1.00	2.000	No
39	6.40	0.39	0.00	0.39	0.99	0.706	0.90	0.781	1.00	1.00	2.000	No
40	6.56	0.40	0.00	0.40	0.99	0.705	0.90	0.780	1.00	1.00	2.000	No
41	6.73	0.41	0.00	0.41	0.99	0.705	0.90	0.780	1.00	1.00	2.000	No
42	6.89	0.42	0.00	0.42	0.99	0.705	0.90	0.780	1.00	1.00	2.000	No
43	7.05	0.43	0.00	0.43	0.99	0.705	0.90	0.779	1.00	1.00	2.000	No
44	7.22	0.44	0.00	0.44	0.99	0.704	0.90	0.779	1.00	1.00	2.000	No
45	7.38	0.45	0.00	0.45	0.98	0.704	0.90	0.779	1.00	1.00	2.000	No
46	7.55	0.46	0.00	0.46	0.98	0.704	0.90	0.779	1.00	1.00	2.000	No
47	7.71	0.47	0.00	0.47	0.98	0.704	0.90	0.778	1.00	1.00	2.000	No
48	7.87	0.48	0.00	0.48	0.98	0.703	0.90	0.778	1.00	1.00	2.000	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
49	8.04	0.49	0.00	0.49	0.98	0.703	0.90	0.778	1.00	1.00	2.000	No
50	8.20	0.50	0.00	0.50	0.98	0.703	0.90	0.777	1.00	1.00	2.000	No
51	8.37	0.51	0.00	0.51	0.98	0.703	0.90	0.777	1.00	1.00	2.000	No
52	8.53	0.52	0.00	0.52	0.98	0.702	0.90	0.777	1.00	1.00	2.000	No
53	8.69	0.53	0.00	0.53	0.98	0.702	0.90	0.777	1.00	1.00	2.000	No
54	8.86	0.54	0.00	0.54	0.98	0.702	0.90	0.776	1.00	1.00	2.000	No
55	9.02	0.55	0.00	0.55	0.98	0.702	0.90	0.776	1.00	1.00	2.000	No
56	9.19	0.56	0.00	0.56	0.98	0.701	0.90	0.776	1.00	1.00	2.000	No
57	9.35	0.57	0.00	0.57	0.98	0.701	0.90	0.775	1.00	1.00	2.000	No
58	9.51	0.58	0.00	0.58	0.98	0.701	0.90	0.775	1.00	1.00	2.000	No
59	9.68	0.59	0.00	0.59	0.98	0.701	0.90	0.775	1.00	1.00	2.000	No
60	9.84	0.60	0.00	0.60	0.98	0.700	0.90	0.775	1.00	1.00	2.000	No
61	10.01	0.61	0.00	0.61	0.98	0.700	0.90	0.774	1.00	1.00	2.000	No
62	10.17	0.62	0.00	0.62	0.98	0.700	0.90	0.774	1.00	1.00	2.000	No
63	10.33	0.63	0.00	0.63	0.98	0.700	0.90	0.774	1.00	1.00	2.000	No
64	10.50	0.64	0.00	0.64	0.98	0.699	0.90	0.773	1.00	1.00	2.000	No
65	10.66	0.65	0.00	0.65	0.98	0.699	0.90	0.773	1.00	1.00	2.000	No
66	10.83	0.66	0.00	0.66	0.98	0.699	0.90	0.773	1.00	1.00	2.000	No
67	10.99	0.67	0.00	0.67	0.98	0.699	0.90	0.773	1.00	1.00	2.000	No
68	11.15	0.68	0.00	0.68	0.98	0.698	0.90	0.772	1.00	1.00	2.000	No
69	11.32	0.70	0.00	0.70	0.98	0.698	0.90	0.772	1.00	1.00	2.000	No
70	11.48	0.71	0.00	0.71	0.98	0.698	0.90	0.772	1.00	1.00	2.000	Yes
71	11.65	0.72	0.00	0.72	0.98	0.698	0.90	0.772	1.00	1.00	2.000	Yes
72	11.81	0.73	0.00	0.73	0.98	0.697	0.90	0.771	1.00	1.00	2.000	Yes
73	11.98	0.74	0.00	0.74	0.97	0.697	0.90	0.771	1.00	1.00	2.000	Yes
74	12.14	0.75	0.00	0.75	0.97	0.697	0.90	0.771	1.00	1.00	2.000	Yes
75	12.30	0.76	0.00	0.76	0.97	0.697	0.90	0.770	1.00	1.00	2.000	No
76	12.47	0.77	0.00	0.77	0.97	0.696	0.90	0.770	1.00	1.00	2.000	No
77	12.63	0.78	0.00	0.78	0.97	0.696	0.90	0.770	1.00	1.00	2.000	Yes
78	12.80	0.79	0.00	0.79	0.97	0.696	0.90	0.770	1.00	1.00	2.000	Yes
79	12.96	0.80	0.00	0.80	0.97	0.696	0.90	0.769	1.00	1.00	2.000	Yes
80	13.12	0.81	0.00	0.81	0.97	0.695	0.90	0.769	1.00	1.00	2.000	Yes
81	13.29	0.82	0.00	0.82	0.97	0.695	0.90	0.769	1.00	1.00	2.000	Yes
82	13.45	0.83	0.00	0.83	0.97	0.695	0.90	0.769	1.00	1.00	2.000	Yes
83	13.62	0.84	0.00	0.84	0.97	0.695	0.90	0.768	1.00	1.00	2.000	Yes
84	13.78	0.85	0.00	0.85	0.97	0.694	0.90	0.768	1.00	1.00	2.000	No
85	13.94	0.86	0.00	0.86	0.97	0.694	0.90	0.768	1.00	1.00	2.000	No
86	14.11	0.87	0.00	0.87	0.97	0.694	0.90	0.767	1.00	1.00	2.000	No
87	14.27	0.88	0.00	0.88	0.97	0.694	0.90	0.767	1.00	1.00	2.000	No
88	14.44	0.89	0.00	0.89	0.97	0.693	0.90	0.767	1.00	1.00	2.000	No
89	14.60	0.90	0.00	0.90	0.97	0.693	0.90	0.767	1.00	1.00	2.000	No
90	14.76	0.91	0.00	0.91	0.97	0.693	0.90	0.766	1.00	1.00	2.000	No
91	14.93	0.92	0.00	0.92	0.97	0.693	0.90	0.766	1.00	1.00	2.000	No
92	15.09	0.93	0.00	0.93	0.97	0.692	0.90	0.766	1.00	1.00	2.000	No
93	15.26	0.94	0.00	0.94	0.97	0.692	0.90	0.766	1.00	1.00	2.000	No
94	15.42	0.95	0.00	0.95	0.97	0.692	0.90	0.765	1.00	1.00	2.000	No
95	15.58	0.96	0.00	0.96	0.97	0.692	0.90	0.765	1.00	1.00	2.000	No
96	15.75	0.97	0.00	0.97	0.97	0.691	0.90	0.765	1.00	1.00	2.000	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
97	15.91	0.98	0.00	0.98	0.97	0.691	0.90	0.764	1.00	1.00	2.000	No
98	16.08	0.99	0.00	0.99	0.97	0.691	0.90	0.764	1.00	1.00	2.000	No
99	16.24	1.00	0.00	1.00	0.97	0.691	0.90	0.764	1.00	1.00	2.000	No
100	16.40	1.01	0.00	1.01	0.97	0.690	0.90	0.764	1.00	1.00	2.000	No
101	16.57	1.02	0.00	1.02	0.97	0.690	0.90	0.763	1.00	1.00	2.000	No
102	16.73	1.03	0.00	1.03	0.96	0.690	0.90	0.763	1.00	1.00	2.000	No
103	16.90	1.04	0.00	1.04	0.96	0.690	0.90	0.763	1.00	1.00	2.000	No
104	17.06	1.05	0.00	1.05	0.96	0.689	0.90	0.762	1.00	1.00	2.000	No
105	17.22	1.06	0.00	1.06	0.96	0.689	0.90	0.762	1.00	1.00	2.000	No
106	17.39	1.07	0.00	1.07	0.96	0.689	0.90	0.762	1.00	1.00	2.000	No
107	17.55	1.08	0.00	1.08	0.96	0.688	0.90	0.761	0.99	1.00	2.000	No
108	17.72	1.09	0.00	1.09	0.96	0.688	0.90	0.761	0.99	1.00	2.000	No
109	17.88	1.11	0.00	1.11	0.96	0.688	0.90	0.761	0.99	1.00	2.000	No
110	18.04	1.12	0.00	1.12	0.96	0.688	0.90	0.761	0.99	1.00	2.000	No
111	18.21	1.13	0.00	1.13	0.96	0.687	0.90	0.760	0.99	1.00	2.000	No
112	18.37	1.14	0.00	1.14	0.96	0.687	0.90	0.760	0.98	1.00	2.000	No
113	18.54	1.15	0.00	1.15	0.96	0.687	0.90	0.760	0.98	1.00	2.000	No
114	18.70	1.16	0.00	1.16	0.96	0.687	0.90	0.759	0.98	1.00	2.000	No
115	18.86	1.17	0.00	1.17	0.96	0.686	0.90	0.759	0.98	1.00	2.000	No
116	19.03	1.18	0.00	1.18	0.96	0.686	0.90	0.759	0.97	1.00	2.000	No
117	19.19	1.19	0.00	1.19	0.96	0.686	0.90	0.758	0.97	1.00	2.000	No
118	19.36	1.20	0.00	1.20	0.96	0.685	0.90	0.758	0.97	1.00	2.000	No
119	19.52	1.21	0.00	1.21	0.96	0.685	0.90	0.758	0.97	1.00	2.000	No
120	19.69	1.22	0.00	1.22	0.96	0.685	0.90	0.757	0.97	1.00	2.000	No
121	19.85	1.23	0.00	1.23	0.96	0.684	0.90	0.757	0.97	1.00	2.000	No
122	20.01	1.24	0.00	1.24	0.96	0.684	0.90	0.757	0.96	1.00	0.786	No
123	20.18	1.25	0.01	1.25	0.96	0.687	0.90	0.760	0.96	1.00	0.789	No
124	20.34	1.27	0.01	1.25	0.96	0.689	0.90	0.762	0.96	1.00	0.793	No
125	20.51	1.28	0.02	1.26	0.96	0.692	0.90	0.765	0.96	1.00	0.797	No
126	20.67	1.29	0.02	1.27	0.96	0.694	0.90	0.768	0.96	1.00	0.800	No
127	20.83	1.30	0.03	1.27	0.95	0.697	0.90	0.770	0.96	1.00	0.804	No
128	21.00	1.31	0.03	1.28	0.95	0.699	0.90	0.773	0.96	1.00	0.807	No
129	21.16	1.32	0.04	1.28	0.95	0.701	0.90	0.776	0.96	1.00	0.811	No
130	21.33	1.33	0.04	1.29	0.95	0.704	0.90	0.778	0.96	1.00	0.814	No
131	21.49	1.34	0.05	1.29	0.95	0.706	0.90	0.781	0.95	1.00	0.818	No
132	21.65	1.35	0.05	1.30	0.95	0.708	0.90	0.783	0.95	1.00	0.821	No
133	21.82	1.36	0.06	1.30	0.95	0.710	0.90	0.786	0.95	1.00	0.824	No
134	21.98	1.37	0.06	1.31	0.95	0.712	0.90	0.788	0.95	1.00	0.828	No
135	22.15	1.38	0.07	1.32	0.95	0.715	0.90	0.790	0.95	1.00	0.831	No
136	22.31	1.39	0.07	1.32	0.95	0.717	0.90	0.793	0.95	1.00	0.834	No
137	22.47	1.40	0.08	1.33	0.95	0.719	0.90	0.795	0.95	1.00	0.838	No
138	22.64	1.42	0.08	1.33	0.95	0.721	0.90	0.797	0.95	1.00	0.841	No
139	22.80	1.43	0.09	1.34	0.95	0.723	0.90	0.800	0.95	1.00	0.844	No
140	22.97	1.44	0.09	1.34	0.95	0.725	0.90	0.802	0.95	1.00	0.847	No
141	23.13	1.45	0.10	1.35	0.95	0.727	0.90	0.804	0.95	1.00	0.850	No
142	23.29	1.46	0.10	1.35	0.95	0.729	0.90	0.806	0.94	1.00	0.853	No
143	23.46	1.47	0.11	1.36	0.95	0.731	0.90	0.808	0.94	1.00	0.856	No
144	23.62	1.48	0.11	1.37	0.95	0.733	0.90	0.810	0.94	1.00	0.859	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
145	23.79	1.49	0.12	1.37	0.95	0.735	0.90	0.813	0.94	1.00	0.862	No
146	23.95	1.50	0.12	1.38	0.95	0.736	0.90	0.815	0.94	1.00	0.865	No
147	24.11	1.51	0.13	1.38	0.94	0.738	0.90	0.817	0.94	1.00	0.868	No
148	24.28	1.52	0.13	1.39	0.94	0.740	0.90	0.819	0.94	1.00	0.871	No
149	24.44	1.53	0.14	1.39	0.94	0.742	0.90	0.821	0.94	1.00	0.874	No
150	24.61	1.54	0.14	1.40	0.94	0.744	0.90	0.823	0.94	1.00	0.877	No
151	24.77	1.55	0.15	1.40	0.94	0.745	0.90	0.824	0.94	1.00	0.880	No
152	24.93	1.56	0.15	1.41	0.94	0.747	0.90	0.826	0.94	1.00	2.000	Yes
153	25.10	1.57	0.16	1.42	0.94	0.749	0.90	0.828	0.94	1.00	2.000	Yes
154	25.26	1.58	0.16	1.42	0.94	0.751	0.90	0.830	0.93	1.00	2.000	Yes
155	25.43	1.59	0.17	1.43	0.94	0.752	0.90	0.832	0.93	1.00	2.000	Yes
156	25.59	1.60	0.17	1.43	0.94	0.754	0.90	0.834	0.93	1.00	2.000	Yes
157	25.75	1.61	0.18	1.43	0.94	0.756	0.90	0.836	0.93	1.00	2.000	Yes
158	25.92	1.62	0.18	1.44	0.94	0.757	0.90	0.837	0.93	1.00	2.000	Yes
159	26.08	1.63	0.19	1.44	0.94	0.759	0.90	0.839	0.93	1.00	2.000	Yes
160	26.25	1.64	0.19	1.45	0.94	0.760	0.90	0.841	0.93	1.00	0.904	No
161	26.41	1.65	0.20	1.45	0.94	0.762	0.90	0.842	0.93	1.00	0.906	No
162	26.57	1.67	0.21	1.46	0.94	0.763	0.90	0.844	0.93	1.00	0.909	No
163	26.74	1.68	0.21	1.47	0.94	0.765	0.90	0.846	0.93	1.00	0.912	No
164	26.90	1.69	0.22	1.47	0.93	0.766	0.90	0.847	0.93	1.00	0.914	No
165	27.07	1.70	0.22	1.48	0.93	0.768	0.90	0.849	0.93	1.00	0.916	No
166	27.23	1.71	0.23	1.48	0.93	0.769	0.90	0.850	0.93	1.00	0.919	No
167	27.40	1.72	0.23	1.49	0.93	0.770	0.90	0.852	0.92	1.00	0.921	No
168	27.56	1.73	0.24	1.49	0.93	0.772	0.90	0.853	0.92	1.00	0.924	No
169	27.72	1.74	0.24	1.50	0.93	0.773	0.90	0.855	0.92	1.00	0.926	No
170	27.89	1.75	0.25	1.50	0.93	0.774	0.90	0.856	0.92	1.00	0.928	No
171	28.05	1.76	0.25	1.51	0.93	0.775	0.90	0.858	0.92	1.00	0.931	No
172	28.22	1.77	0.26	1.51	0.93	0.777	0.90	0.859	0.92	1.00	0.933	No
173	28.38	1.78	0.26	1.52	0.93	0.778	0.90	0.860	0.92	1.00	0.935	No
174	28.54	1.79	0.27	1.53	0.93	0.779	0.90	0.862	0.92	1.00	2.000	Yes
175	28.71	1.80	0.27	1.53	0.93	0.780	0.90	0.863	0.92	1.00	2.000	Yes
176	28.87	1.81	0.28	1.54	0.93	0.781	0.90	0.864	0.92	1.00	2.000	Yes
177	29.04	1.82	0.28	1.54	0.93	0.783	0.90	0.866	0.92	1.00	2.000	Yes
178	29.20	1.83	0.29	1.55	0.92	0.784	0.90	0.867	0.92	1.00	2.000	Yes
179	29.36	1.84	0.29	1.55	0.92	0.785	0.90	0.868	0.92	1.00	2.000	Yes
180	29.53	1.85	0.30	1.56	0.92	0.786	0.90	0.869	0.91	1.00	2.000	Yes
181	29.69	1.87	0.30	1.56	0.92	0.787	0.90	0.870	0.91	1.00	2.000	Yes
182	29.86	1.88	0.31	1.57	0.92	0.788	0.90	0.871	0.91	1.00	2.000	Yes
183	30.02	1.89	0.31	1.57	0.92	0.789	0.90	0.873	0.91	1.00	0.956	No
184	30.18	1.90	0.32	1.58	0.92	0.790	0.90	0.874	0.91	1.00	0.958	No
185	30.35	1.91	0.32	1.58	0.92	0.791	0.90	0.875	0.91	1.00	0.960	No
186	30.51	1.92	0.33	1.59	0.92	0.792	0.90	0.876	0.91	1.00	0.962	No
187	30.68	1.93	0.33	1.60	0.92	0.793	0.90	0.877	0.91	1.00	2.000	Yes
188	30.84	1.94	0.34	1.60	0.92	0.793	0.90	0.877	0.91	1.00	2.000	Yes
189	31.00	1.95	0.34	1.61	0.92	0.794	0.90	0.878	0.91	1.00	2.000	Yes
190	31.17	1.96	0.35	1.61	0.91	0.795	0.90	0.879	0.91	1.00	2.000	Yes
191	31.33	1.97	0.35	1.62	0.91	0.796	0.90	0.880	0.91	1.00	2.000	Yes
192	31.50	1.98	0.36	1.62	0.91	0.797	0.90	0.881	0.91	1.00	2.000	Yes

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
193	31.66	1.99	0.36	1.63	0.91	0.797	0.90	0.882	0.91	1.00	2.000	Yes
194	31.82	2.00	0.37	1.63	0.91	0.798	0.90	0.883	0.90	1.00	2.000	Yes
195	31.99	2.01	0.37	1.64	0.91	0.799	0.90	0.884	0.90	1.00	2.000	Yes
196	32.15	2.02	0.38	1.64	0.91	0.800	0.90	0.884	0.90	1.00	2.000	Yes
197	32.32	2.03	0.38	1.65	0.91	0.800	0.90	0.885	0.90	1.00	0.980	No
198	32.48	2.05	0.39	1.66	0.91	0.801	0.90	0.886	0.90	1.00	2.000	Yes
199	32.64	2.06	0.39	1.66	0.91	0.802	0.90	0.887	0.90	1.00	2.000	Yes
200	32.81	2.07	0.40	1.67	0.90	0.802	0.90	0.887	0.90	1.00	2.000	Yes
201	32.97	2.08	0.40	1.67	0.90	0.803	0.90	0.888	0.90	1.00	2.000	Yes
202	33.14	2.09	0.41	1.68	0.90	0.803	0.90	0.888	0.90	1.00	2.000	Yes
203	33.30	2.10	0.41	1.68	0.90	0.804	0.90	0.889	0.90	1.00	2.000	Yes
204	33.46	2.11	0.42	1.69	0.90	0.804	0.90	0.890	0.90	1.00	2.000	Yes
205	33.63	2.12	0.43	1.69	0.90	0.805	0.90	0.890	0.90	1.00	2.000	Yes
206	33.79	2.13	0.43	1.70	0.90	0.806	0.90	0.891	0.90	1.00	0.993	No
207	33.96	2.14	0.44	1.70	0.90	0.806	0.90	0.891	0.90	1.00	0.994	No
208	34.12	2.15	0.44	1.71	0.90	0.807	0.90	0.892	0.90	1.00	0.996	No
209	34.28	2.16	0.45	1.71	0.90	0.807	0.90	0.893	0.90	1.00	0.997	No
210	34.45	2.17	0.45	1.72	0.89	0.807	0.90	0.893	0.89	1.00	0.998	No
211	34.61	2.18	0.46	1.72	0.89	0.808	0.90	0.893	0.89	1.00	0.999	No
212	34.78	2.19	0.46	1.73	0.89	0.808	0.90	0.894	0.89	1.00	1.000	No
213	34.94	2.20	0.47	1.73	0.89	0.808	0.90	0.894	0.89	1.00	1.002	No
214	35.10	2.21	0.47	1.74	0.89	0.809	0.90	0.895	0.89	1.00	1.003	No
215	35.27	2.22	0.48	1.74	0.89	0.809	0.90	0.895	0.89	1.00	1.004	No
216	35.43	2.23	0.48	1.75	0.89	0.810	0.90	0.895	0.89	1.00	1.005	No
217	35.60	2.24	0.49	1.75	0.89	0.810	0.90	0.896	0.89	1.00	1.006	No
218	35.76	2.25	0.49	1.76	0.89	0.810	0.90	0.896	0.89	1.00	1.007	No
219	35.93	2.26	0.50	1.76	0.88	0.810	0.90	0.896	0.89	1.00	1.008	No
220	36.09	2.27	0.50	1.77	0.88	0.810	0.90	0.896	0.89	1.00	1.009	No
221	36.25	2.28	0.51	1.77	0.88	0.811	0.90	0.897	0.89	1.00	1.010	No
222	36.42	2.29	0.51	1.78	0.88	0.811	0.90	0.897	0.89	1.00	1.010	No
223	36.58	2.30	0.52	1.78	0.88	0.811	0.90	0.897	0.89	1.00	1.011	No
224	36.75	2.31	0.52	1.79	0.88	0.811	0.90	0.897	0.89	1.00	2.000	Yes
225	36.91	2.32	0.53	1.79	0.88	0.811	0.90	0.897	0.89	1.00	2.000	Yes
226	37.07	2.33	0.53	1.80	0.88	0.811	0.90	0.898	0.89	1.00	2.000	Yes
227	37.24	2.34	0.54	1.80	0.87	0.812	0.90	0.898	0.88	1.00	2.000	Yes
228	37.40	2.35	0.54	1.81	0.87	0.812	0.90	0.898	0.88	1.00	2.000	Yes
229	37.57	2.36	0.55	1.81	0.87	0.812	0.90	0.898	0.88	1.00	2.000	Yes
230	37.73	2.37	0.55	1.82	0.87	0.812	0.90	0.898	0.88	1.00	2.000	Yes
231	37.89	2.38	0.56	1.82	0.87	0.812	0.90	0.898	0.88	1.00	1.017	No
232	38.06	2.39	0.56	1.83	0.87	0.811	0.90	0.897	0.88	1.00	1.018	No
233	38.22	2.40	0.57	1.83	0.87	0.811	0.90	0.897	0.88	1.00	1.018	No
234	38.39	2.41	0.57	1.84	0.86	0.811	0.90	0.897	0.88	1.00	1.019	No
235	38.55	2.42	0.58	1.85	0.86	0.811	0.90	0.897	0.88	1.00	1.019	No
236	38.71	2.43	0.58	1.85	0.86	0.811	0.90	0.897	0.88	1.00	1.020	No
237	38.88	2.45	0.59	1.86	0.86	0.811	0.90	0.897	0.88	1.00	1.020	No
238	39.04	2.46	0.59	1.86	0.86	0.810	0.90	0.896	0.88	1.00	1.021	No
239	39.21	2.47	0.60	1.87	0.86	0.810	0.90	0.896	0.88	1.00	1.021	No
240	39.37	2.48	0.60	1.87	0.86	0.810	0.90	0.896	0.88	1.00	1.022	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
241	39.53	2.49	0.61	1.88	0.86	0.810	0.90	0.895	0.88	1.00	1.022	No
242	39.70	2.50	0.61	1.89	0.85	0.809	0.90	0.895	0.88	1.00	1.022	No
243	39.86	2.51	0.62	1.89	0.85	0.809	0.90	0.895	0.87	1.00	1.023	No
244	40.03	2.52	0.62	1.90	0.85	0.809	0.90	0.894	0.87	1.00	1.023	No
245	40.19	2.53	0.63	1.90	0.85	0.808	0.90	0.894	0.87	1.00	1.023	No
246	40.35	2.55	0.64	1.91	0.85	0.808	0.90	0.893	0.87	1.00	1.023	No
247	40.52	2.56	0.64	1.92	0.85	0.807	0.90	0.893	0.87	1.00	1.024	No
248	40.68	2.57	0.65	1.92	0.84	0.807	0.90	0.893	0.87	1.00	1.024	No
249	40.85	2.58	0.65	1.93	0.84	0.807	0.90	0.892	0.87	1.00	1.024	No
250	41.01	2.59	0.66	1.93	0.84	0.806	0.90	0.892	0.87	1.00	1.024	No
251	41.17	2.60	0.66	1.94	0.84	0.806	0.90	0.891	0.87	1.00	1.024	No
252	41.34	2.61	0.67	1.95	0.84	0.805	0.90	0.890	0.87	1.00	1.024	No
253	41.50	2.62	0.67	1.95	0.84	0.805	0.90	0.890	0.87	1.00	1.024	No
254	41.67	2.63	0.68	1.96	0.84	0.804	0.90	0.889	0.87	1.00	1.025	No
255	41.83	2.64	0.68	1.96	0.83	0.804	0.90	0.889	0.87	1.00	1.025	No
256	41.99	2.66	0.69	1.97	0.83	0.803	0.90	0.888	0.87	1.00	1.025	No
257	42.16	2.67	0.69	1.97	0.83	0.802	0.90	0.888	0.87	1.00	1.025	No
258	42.32	2.68	0.70	1.98	0.83	0.802	0.90	0.887	0.87	1.00	1.024	No
259	42.49	2.69	0.70	1.99	0.83	0.801	0.90	0.886	0.87	1.00	1.024	No
260	42.65	2.70	0.71	1.99	0.83	0.801	0.90	0.886	0.86	1.00	1.024	No
261	42.81	2.71	0.71	2.00	0.83	0.800	0.90	0.885	0.86	1.00	1.024	No
262	42.98	2.72	0.72	2.00	0.82	0.799	0.90	0.884	0.86	1.00	1.024	No
263	43.14	2.73	0.72	2.01	0.82	0.799	0.90	0.883	0.86	1.00	1.024	No
264	43.31	2.74	0.73	2.02	0.82	0.798	0.90	0.883	0.86	1.00	1.024	No
265	43.47	2.75	0.73	2.02	0.82	0.797	0.90	0.882	0.86	1.00	1.024	No
266	43.64	2.76	0.74	2.03	0.82	0.797	0.90	0.881	0.86	1.00	1.023	No
267	43.80	2.78	0.74	2.03	0.82	0.796	0.90	0.880	0.86	1.00	1.023	No
268	43.96	2.79	0.75	2.04	0.81	0.795	0.90	0.880	0.86	1.00	1.023	No
269	44.13	2.80	0.75	2.04	0.81	0.795	0.90	0.879	0.86	1.00	1.023	No
270	44.29	2.81	0.76	2.05	0.81	0.794	0.90	0.878	0.86	1.00	1.022	No
271	44.46	2.82	0.76	2.06	0.81	0.793	0.90	0.877	0.86	1.00	1.022	No
272	44.62	2.83	0.77	2.06	0.81	0.792	0.90	0.876	0.86	1.00	1.022	No
273	44.78	2.84	0.77	2.07	0.81	0.792	0.90	0.876	0.86	1.00	1.021	No
274	44.95	2.85	0.78	2.07	0.80	0.791	0.90	0.875	0.86	1.00	1.021	No
275	45.11	2.86	0.78	2.08	0.80	0.790	0.90	0.874	0.86	1.00	1.021	No
276	45.28	2.87	0.79	2.08	0.80	0.789	0.90	0.873	0.86	1.00	1.020	No
277	45.44	2.88	0.79	2.09	0.80	0.788	0.90	0.872	0.85	1.00	1.020	No
278	45.60	2.90	0.80	2.10	0.80	0.788	0.90	0.871	0.85	1.00	1.019	No
279	45.77	2.91	0.80	2.10	0.80	0.787	0.90	0.870	0.85	1.00	1.019	No
280	45.93	2.92	0.81	2.11	0.79	0.786	0.90	0.869	0.85	1.00	1.018	No
281	46.10	2.93	0.81	2.11	0.79	0.785	0.90	0.868	0.85	1.00	1.018	No
282	46.26	2.94	0.82	2.12	0.79	0.784	0.90	0.867	0.85	1.00	1.017	No
283	46.42	2.95	0.82	2.13	0.79	0.783	0.90	0.866	0.85	1.00	1.017	No
284	46.59	2.96	0.83	2.13	0.79	0.782	0.90	0.865	0.85	1.00	1.016	No
285	46.75	2.97	0.83	2.14	0.79	0.781	0.90	0.864	0.85	1.00	1.016	No
286	46.92	2.98	0.84	2.14	0.78	0.781	0.90	0.863	0.85	1.00	1.015	No
287	47.08	2.99	0.84	2.15	0.78	0.780	0.90	0.862	0.85	1.00	2.000	Yes
288	47.24	3.00	0.85	2.15	0.78	0.779	0.90	0.861	0.85	1.00	2.000	Yes

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
289	47.41	3.01	0.86	2.16	0.78	0.778	0.90	0.860	0.85	1.00	2.000	Yes
290	47.57	3.02	0.86	2.16	0.78	0.777	0.90	0.859	0.85	1.00	2.000	Yes
291	47.74	3.03	0.87	2.17	0.78	0.776	0.90	0.858	0.85	1.00	1.012	No
292	47.90	3.04	0.87	2.17	0.77	0.775	0.90	0.858	0.85	1.00	1.012	No
293	48.06	3.05	0.88	2.18	0.77	0.775	0.90	0.857	0.85	1.00	1.011	No
294	48.23	3.06	0.88	2.18	0.77	0.774	0.90	0.856	0.85	1.00	1.011	No
295	48.39	3.07	0.89	2.19	0.77	0.773	0.90	0.855	0.85	1.00	1.010	No
296	48.56	3.08	0.89	2.19	0.77	0.772	0.90	0.854	0.85	1.00	1.009	No
297	48.72	3.09	0.90	2.20	0.77	0.771	0.90	0.853	0.85	1.00	1.009	No
298	48.88	3.10	0.90	2.20	0.76	0.770	0.90	0.852	0.85	1.00	1.008	No
299	49.05	3.11	0.91	2.20	0.76	0.769	0.90	0.851	0.84	1.00	1.007	No
300	49.21	3.12	0.91	2.21	0.76	0.768	0.90	0.850	0.84	1.00	1.007	No
301	49.38	3.13	0.92	2.21	0.76	0.768	0.90	0.849	0.84	1.00	1.006	No
302	49.54	3.14	0.92	2.22	0.76	0.767	0.90	0.848	0.84	1.00	2.000	Yes
303	49.70	3.15	0.93	2.22	0.76	0.766	0.90	0.847	0.84	1.00	2.000	Yes
304	49.87	3.16	0.93	2.23	0.75	0.765	0.90	0.846	0.84	1.00	2.000	Yes
305	50.03	3.17	0.94	2.23	0.75	0.764	0.90	0.845	0.84	1.00	2.000	Yes

Abbreviations

Depth:	Depth from free surface, at which CPT was performed (ft)
σ_v :	Total overburden pressure at test point (tsf)
u_0 :	Water pressure at test point (tsf)
σ_v' :	Effective overburden pressure based on GWT during earthquake (tsf)
r_d :	Nonlinear shear mass factor
CSR:	Cyclic Stress Ratio
MSF:	Magnitude Scaling Factor
CSR _{eq} :	CSR adjusted for M=7.5
K_σ :	Effective overburden stress factor
CSR*:	CSR fully adjusted

:: Cyclic Resistance Ratio (CRR) calculation data ::

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
1	0.16	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
2	0.33	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
3	0.49	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
4	0.66	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
5	0.82	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
6	0.98	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
7	1.15	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
8	1.31	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
9	1.48	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
10	1.64	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
11	1.80	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
12	1.97	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
13	2.13	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
14	2.30	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
15	2.46	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
16	2.62	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
17	2.79	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
18	2.95	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
19	3.12	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
20	3.28	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
21	3.44	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
22	3.61	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
23	3.77	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
24	3.94	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
25	4.10	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
26	4.27	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
27	4.43	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
28	4.59	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
29	4.76	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
30	4.92	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
31	5.09	67.96	1.98	1.41	0.63	108.69	1.28	138.78	4.000	No	No	2.00
32	5.25	101.49	1.86	1.40	0.58	162.56	1.15	187.25	4.000	No	No	2.00
33	5.41	101.27	1.86	1.40	0.58	162.17	1.15	186.90	4.000	No	No	2.00
34	5.58	102.99	1.85	1.39	0.58	164.92	1.15	188.87	4.000	No	No	2.00
35	5.74	105.10	1.84	1.37	0.58	168.30	1.14	191.61	4.000	No	No	2.00
36	5.91	105.11	1.85	1.40	0.58	168.30	1.14	192.25	4.000	No	No	2.00
37	6.07	102.79	1.83	1.31	0.57	164.55	1.13	186.12	4.000	No	No	2.00
38	6.23	98.98	1.83	1.25	0.57	158.42	1.13	178.93	4.000	No	No	2.00
39	6.40	90.48	1.86	1.28	0.59	144.75	1.16	167.39	4.000	No	No	2.00
40	6.56	84.45	1.92	1.43	0.61	135.04	1.21	163.02	4.000	No	No	2.00
41	6.73	79.34	1.97	1.57	0.62	126.81	1.26	159.74	4.000	No	No	2.00
42	6.89	81.84	1.95	1.53	0.62	130.81	1.24	162.17	4.000	No	No	2.00
43	7.05	85.99	1.92	1.46	0.61	137.47	1.21	166.24	4.000	No	No	2.00
44	7.22	91.38	1.88	1.35	0.59	144.75	1.17	169.66	4.000	No	No	2.00
45	7.38	95.60	1.86	1.30	0.58	148.46	1.15	171.41	4.000	No	No	2.00
46	7.55	96.75	1.87	1.32	0.59	148.58	1.16	172.25	4.000	No	No	2.00
47	7.71	96.72	1.88	1.36	0.59	147.11	1.17	171.84	4.000	No	No	2.00
48	7.87	96.99	1.87	1.29	0.59	145.20	1.16	168.26	4.000	No	No	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
49	8.04	98.86	1.84	1.19	0.58	145.03	1.14	165.04	4.000	No	No	2.00
50	8.20	103.61	1.81	1.10	0.56	148.86	1.11	165.68	4.000	No	No	2.00
51	8.37	111.27	1.80	1.13	0.56	157.72	1.11	174.54	4.000	No	No	2.00
52	8.53	120.78	1.80	1.22	0.56	169.39	1.11	187.58	4.000	No	No	2.00
53	8.69	126.86	1.82	1.37	0.57	177.10	1.13	199.29	4.000	No	No	2.00
54	8.86	129.25	1.85	1.47	0.58	179.38	1.14	204.74	4.000	No	No	2.00
55	9.02	131.01	1.86	1.53	0.58	180.28	1.15	207.29	4.000	No	No	2.00
56	9.19	137.73	1.83	1.43	0.57	186.12	1.13	209.48	4.000	No	No	2.00
57	9.35	143.22	1.78	1.28	0.55	189.66	1.09	207.57	4.000	No	No	2.00
58	9.51	137.01	1.78	1.20	0.55	179.46	1.09	196.03	4.000	No	No	2.00
59	9.68	120.25	1.83	1.27	0.57	157.78	1.13	178.74	4.000	No	No	2.00
60	9.84	100.79	1.94	1.52	0.61	133.86	1.23	164.77	4.000	No	No	2.00
61	10.01	89.64	2.01	1.71	0.64	119.49	1.32	157.43	4.000	No	No	2.00
62	10.17	84.45	2.04	1.76	0.65	111.97	1.36	152.11	4.000	No	No	2.00
63	10.33	83.83	2.04	1.69	0.65	109.84	1.35	148.16	4.000	No	No	2.00
64	10.50	91.26	1.99	1.57	0.63	117.42	1.29	151.35	4.000	No	No	2.00
65	10.66	104.34	1.93	1.46	0.61	131.63	1.22	161.04	4.000	No	No	2.00
66	10.83	121.37	1.87	1.37	0.59	150.17	1.17	175.09	4.000	No	No	2.00
67	10.99	135.72	1.84	1.34	0.58	165.42	1.14	187.78	4.000	No	No	2.00
68	11.15	146.34	1.82	1.35	0.57	176.38	1.12	198.00	4.000	No	No	2.00
69	11.32	150.12	1.83	1.40	0.57	179.58	1.13	202.57	4.000	No	No	2.00
70	11.48	144.20	1.86	1.50	0.58	171.89	1.16	198.66	4.000	Yes	No	2.00
71	11.65	126.06	1.95	1.72	0.62	150.72	1.24	186.25	4.000	Yes	No	2.00
72	11.81	98.56	2.09	2.17	0.67	119.03	1.44	171.09	4.000	Yes	No	2.00
73	11.98	67.48	2.29	2.92	0.75	82.70	1.92	158.84	4.000	Yes	No	2.00
74	12.14	43.30	2.51	3.90	0.83	53.75	2.83	151.98	4.000	Yes	No	2.00
75	12.30	37.54	2.52	3.45	0.84	46.01	2.88	132.47	4.000	No	No	2.00
76	12.47	40.17	2.45	2.87	0.81	48.34	2.53	122.28	4.000	No	No	2.00
77	12.63	41.10	2.43	2.72	0.80	48.84	2.44	119.26	4.000	Yes	No	2.00
78	12.80	33.40	2.57	3.44	0.85	39.71	3.13	124.23	4.000	Yes	No	2.00
79	12.96	28.63	2.65	3.80	0.88	33.83	3.63	122.72	4.000	Yes	Yes	2.00
80	13.12	37.98	2.47	2.77	0.82	43.89	2.63	115.26	4.000	Yes	No	2.00
81	13.29	53.81	2.28	2.08	0.75	60.80	1.89	115.18	4.000	Yes	No	2.00
82	13.45	74.99	2.11	1.63	0.68	82.97	1.48	122.49	4.000	Yes	No	2.00
83	13.62	90.45	2.02	1.45	0.65	98.63	1.33	131.22	4.000	Yes	No	2.00
84	13.78	99.29	1.99	1.40	0.63	107.16	1.28	137.35	4.000	No	No	2.00
85	13.94	97.99	2.01	1.50	0.64	105.16	1.31	138.28	4.000	No	No	2.00
86	14.11	94.76	2.05	1.64	0.66	101.19	1.37	138.70	4.000	No	No	2.00
87	14.27	93.51	2.07	1.71	0.66	99.20	1.40	139.09	4.000	No	No	2.00
88	14.44	94.06	2.07	1.72	0.66	99.03	1.40	139.12	4.000	No	No	2.00
89	14.60	94.64	2.08	1.77	0.67	98.92	1.42	140.57	4.000	No	No	2.00
90	14.76	95.71	2.10	1.87	0.67	99.38	1.45	143.91	4.000	No	No	2.00
91	14.93	95.97	2.12	2.01	0.68	99.01	1.49	147.77	4.000	No	No	2.00
92	15.09	96.07	2.12	2.00	0.68	98.34	1.49	146.76	4.000	No	No	2.00
93	15.26	101.61	2.08	1.82	0.67	103.07	1.41	145.81	4.000	No	No	2.00
94	15.42	114.39	2.00	1.60	0.64	114.94	1.30	149.98	4.000	No	No	2.00
95	15.58	129.54	1.89	1.24	0.60	128.85	1.18	152.20	4.000	No	No	2.00
96	15.75	136.84	1.83	1.08	0.57	135.04	1.13	152.88	4.000	No	No	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
97	15.91	131.77	1.82	0.98	0.57	129.15	1.12	144.74	4.000	No	No	2.00
98	16.08	124.10	1.89	1.16	0.60	121.08	1.18	142.89	4.000	No	No	2.00
99	16.24	119.75	1.96	1.40	0.62	116.24	1.25	145.24	4.000	No	No	2.00
100	16.40	120.47	2.01	1.64	0.64	116.28	1.31	152.26	4.000	No	No	2.00
101	16.57	115.05	2.08	1.94	0.67	110.37	1.41	156.00	4.000	No	No	2.00
102	16.73	101.09	2.17	2.31	0.70	96.28	1.60	154.14	4.000	No	No	2.00
103	16.90	82.62	2.31	2.90	0.75	78.01	1.97	153.66	4.000	No	No	2.00
104	17.06	74.94	2.36	3.16	0.78	70.13	2.17	152.52	4.000	No	No	2.00
105	17.22	85.83	2.29	2.77	0.75	79.86	1.90	151.87	4.000	No	No	2.00
106	17.39	133.14	2.02	1.81	0.64	123.68	1.33	164.09	4.000	No	No	2.00
107	17.55	173.14	1.89	1.52	0.59	160.30	1.18	188.96	4.000	No	No	2.00
108	17.72	196.65	1.86	1.56	0.58	181.19	1.15	209.06	4.000	No	No	2.00
109	17.88	186.05	1.95	1.92	0.62	170.13	1.24	210.61	4.000	No	No	2.00
110	18.04	175.70	2.02	2.27	0.65	159.38	1.33	211.94	4.000	No	No	2.00
111	18.21	173.82	2.05	2.40	0.65	156.58	1.36	213.66	4.000	No	No	2.00
112	18.37	178.86	2.03	2.33	0.65	160.19	1.34	214.79	4.000	No	No	2.00
113	18.54	184.23	2.01	2.21	0.64	164.13	1.31	214.68	4.000	No	No	2.00
114	18.70	183.20	1.99	2.10	0.63	162.29	1.29	209.26	4.000	No	No	2.00
115	18.86	176.93	2.00	2.11	0.64	155.70	1.31	203.20	4.000	No	No	2.00
116	19.03	164.80	2.04	2.19	0.65	143.88	1.35	194.91	4.000	No	No	2.00
117	19.19	141.54	2.10	2.31	0.68	122.34	1.46	178.46	4.000	No	No	2.00
118	19.36	104.91	2.22	2.48	0.72	89.37	1.71	152.57	4.000	No	No	2.00
119	19.52	82.51	2.28	2.35	0.74	69.41	1.87	130.13	4.000	No	No	2.00
120	19.69	84.97	2.22	1.97	0.72	71.29	1.70	121.55	4.000	No	No	2.00
121	19.85	110.07	2.06	1.57	0.66	92.91	1.39	129.48	4.000	No	No	2.00
122	20.01	131.71	1.99	1.48	0.63	111.28	1.29	143.34	0.354	No	No	0.45
123	20.18	137.66	2.02	1.71	0.65	115.80	1.33	153.90	0.419	No	No	0.53
124	20.34	132.75	2.09	2.03	0.67	110.83	1.44	159.07	0.454	No	No	0.57
125	20.51	127.20	2.13	2.23	0.69	105.51	1.52	160.19	0.462	No	No	0.58
126	20.67	128.86	2.11	2.11	0.68	106.72	1.48	157.87	0.446	No	No	0.56
127	20.83	134.01	2.07	1.92	0.66	111.02	1.41	156.01	0.433	No	No	0.54
128	21.00	140.99	2.03	1.78	0.65	116.85	1.34	157.04	0.440	No	No	0.55
129	21.16	156.86	1.98	1.66	0.63	130.28	1.27	165.56	0.502	No	No	0.62
130	21.33	182.44	1.91	1.55	0.60	152.04	1.20	182.25	0.643	No	No	0.79
131	21.49	201.78	1.87	1.52	0.59	168.29	1.16	196.04	0.781	No	No	0.95
132	21.65	199.97	1.92	1.71	0.61	165.77	1.20	199.72	0.821	No	No	1.00
133	21.82	188.81	1.96	1.87	0.62	155.45	1.26	195.17	0.771	No	No	0.94
134	21.98	175.28	2.02	2.07	0.65	143.14	1.33	190.29	0.721	No	No	0.87
135	22.15	164.65	2.04	2.08	0.65	133.79	1.36	181.77	0.639	No	No	0.77
136	22.31	146.98	2.09	2.16	0.67	118.48	1.44	170.23	0.539	No	No	0.65
137	22.47	130.71	2.14	2.28	0.69	104.45	1.54	160.92	0.468	No	No	0.56
138	22.64	124.26	2.16	2.27	0.70	98.81	1.57	155.42	0.429	No	No	0.51
139	22.80	127.37	2.14	2.18	0.69	101.20	1.53	154.89	0.426	No	No	0.50
140	22.97	129.54	2.10	1.94	0.67	103.04	1.45	149.26	0.389	No	No	0.46
141	23.13	126.54	2.09	1.82	0.67	100.45	1.43	143.52	0.355	No	No	0.42
142	23.29	120.24	2.10	1.83	0.68	94.97	1.46	138.80	0.329	No	No	0.39
143	23.46	119.88	2.12	1.91	0.68	94.28	1.49	140.36	0.337	No	No	0.39
144	23.62	126.36	2.11	1.94	0.68	99.27	1.47	145.75	0.368	No	No	0.43

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
145	23.79	134.67	2.10	1.98	0.67	105.70	1.45	153.01	0.413	No	No	0.48
146	23.95	137.34	2.11	2.13	0.68	107.32	1.48	159.05	0.454	No	No	0.52
147	24.11	131.13	2.16	2.34	0.70	101.65	1.58	160.09	0.462	No	No	0.53
148	24.28	121.99	2.22	2.61	0.72	93.64	1.72	160.65	0.466	No	No	0.53
149	24.44	123.56	2.20	2.51	0.71	94.74	1.67	158.53	0.451	No	No	0.52
150	24.61	143.22	2.10	2.08	0.67	110.92	1.45	160.70	0.466	No	No	0.53
151	24.77	167.19	1.95	1.54	0.62	131.38	1.24	163.15	0.484	No	No	0.55
152	24.93	157.89	1.95	1.44	0.62	123.74	1.24	153.30	4.000	Yes	No	2.00
153	25.10	116.96	2.11	1.75	0.68	89.53	1.47	131.62	4.000	Yes	No	2.00
154	25.26	68.67	2.42	2.71	0.80	50.13	2.40	120.41	4.000	Yes	No	2.00
155	25.43	40.06	2.72	3.90	0.91	27.72	4.13	114.56	4.000	Yes	Yes	2.00
156	25.59	29.15	2.81	3.58	0.95	19.58	4.86	95.23	4.000	Yes	Yes	2.00
157	25.75	34.36	2.63	2.35	0.88	23.70	3.52	83.41	4.000	Yes	Yes	2.00
158	25.92	59.91	2.34	1.70	0.77	43.53	2.07	90.19	4.000	Yes	No	2.00
159	26.08	87.35	2.23	1.87	0.73	64.65	1.75	112.86	4.000	Yes	No	2.00
160	26.25	103.19	2.20	2.01	0.71	76.69	1.66	127.45	0.273	No	No	0.30
161	26.41	110.93	2.16	1.92	0.70	82.68	1.58	130.48	0.287	No	No	0.32
162	26.57	118.76	2.11	1.73	0.68	88.96	1.47	130.56	0.287	No	No	0.32
163	26.74	128.77	2.07	1.65	0.66	96.82	1.40	135.22	0.310	No	No	0.34
164	26.90	134.19	2.07	1.76	0.67	100.59	1.41	141.73	0.345	No	No	0.38
165	27.07	140.56	2.07	1.83	0.66	105.17	1.41	148.03	0.382	No	No	0.42
166	27.23	142.93	2.07	1.84	0.66	106.74	1.40	149.75	0.392	No	No	0.43
167	27.40	141.96	2.08	1.90	0.67	105.56	1.42	150.29	0.396	No	No	0.43
168	27.56	136.12	2.11	2.00	0.68	100.50	1.48	148.66	0.386	No	No	0.42
169	27.72	126.34	2.19	2.33	0.71	92.04	1.64	150.71	0.398	No	No	0.43
170	27.89	115.69	2.25	2.59	0.73	83.22	1.80	150.08	0.394	No	No	0.42
171	28.05	111.37	2.25	2.51	0.73	79.83	1.81	144.42	0.360	No	No	0.39
172	28.22	124.30	2.14	1.96	0.69	90.40	1.53	138.50	0.327	No	No	0.35
173	28.38	146.68	2.02	1.57	0.64	108.48	1.32	143.32	0.354	No	No	0.38
174	28.54	155.73	2.01	1.65	0.64	115.02	1.32	151.53	4.000	Yes	No	2.00
175	28.71	136.15	2.14	2.15	0.69	98.33	1.54	151.34	4.000	Yes	No	2.00
176	28.87	97.14	2.37	3.09	0.78	67.38	2.20	147.99	4.000	Yes	No	2.00
177	29.04	60.90	2.66	4.68	0.89	39.97	3.70	147.81	4.000	Yes	Yes	2.00
178	29.20	46.46	2.78	5.20	0.94	29.56	4.64	137.18	4.000	Yes	Yes	2.00
179	29.36	53.53	2.65	3.95	0.88	34.80	3.64	126.80	4.000	Yes	Yes	2.00
180	29.53	77.83	2.39	2.59	0.79	52.98	2.27	120.47	4.000	Yes	No	2.00
181	29.69	102.63	2.23	2.11	0.73	71.74	1.75	125.87	4.000	Yes	No	2.00
182	29.86	123.77	2.16	2.00	0.70	87.58	1.57	137.19	4.000	Yes	No	2.00
183	30.02	138.12	2.13	2.06	0.69	98.03	1.51	148.20	0.383	No	No	0.40
184	30.18	153.69	2.10	2.05	0.67	109.54	1.45	158.44	0.450	No	No	0.47
185	30.35	165.67	2.05	1.92	0.66	118.68	1.37	163.04	0.483	No	No	0.50
186	30.51	170.99	2.03	1.87	0.65	122.59	1.35	165.07	0.498	No	No	0.52
187	30.68	169.35	2.06	1.98	0.66	120.68	1.38	166.70	4.000	Yes	No	2.00
188	30.84	150.56	2.17	2.48	0.70	105.00	1.59	167.31	4.000	Yes	No	2.00
189	31.00	119.48	2.31	3.01	0.75	81.02	1.97	159.90	4.000	Yes	No	2.00
190	31.17	85.79	2.49	3.76	0.82	55.98	2.71	151.60	4.000	Yes	No	2.00
191	31.33	69.71	2.59	4.21	0.86	44.35	3.28	145.66	4.000	Yes	No	2.00
192	31.50	60.88	2.66	4.51	0.89	38.03	3.72	141.62	4.000	Yes	Yes	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
193	31.66	54.98	2.69	4.47	0.90	33.93	3.95	134.14	4.000	Yes	Yes	2.00
194	31.82	62.89	2.54	3.20	0.84	39.85	3.00	119.64	4.000	Yes	No	2.00
195	31.99	89.34	2.31	2.20	0.75	59.32	1.97	116.79	4.000	Yes	No	2.00
196	32.15	117.07	2.16	1.82	0.70	79.95	1.57	125.24	4.000	Yes	No	2.00
197	32.32	128.58	2.12	1.78	0.68	88.32	1.49	131.45	0.291	No	No	0.30
198	32.48	126.17	2.16	2.01	0.70	85.76	1.58	135.73	4.000	Yes	No	2.00
199	32.64	116.44	2.25	2.38	0.73	77.74	1.79	138.99	4.000	Yes	No	2.00
200	32.81	104.47	2.35	2.94	0.77	68.18	2.12	144.75	4.000	Yes	No	2.00
201	32.97	90.23	2.45	3.43	0.81	57.52	2.53	145.71	4.000	Yes	No	2.00
202	33.14	76.14	2.56	4.01	0.85	47.29	3.08	145.82	4.000	Yes	No	2.00
203	33.30	59.60	2.69	4.64	0.90	35.79	3.92	140.17	4.000	Yes	Yes	2.00
204	33.46	41.80	2.86	5.36	0.96	23.91	5.31	126.84	4.000	Yes	Yes	2.00
205	33.63	29.24	2.99	5.47	1.00	16.02	6.68	107.04	4.000	Yes	Yes	2.00
206	33.79	22.14	3.07	5.00	1.00	11.79	7.58	89.35	4.000	No	Yes	2.00
207	33.96	29.39	2.88	3.66	0.97	16.22	5.49	89.12	4.000	No	Yes	2.00
208	34.12	46.37	2.67	3.20	0.89	27.29	3.76	102.64	4.000	No	Yes	2.00
209	34.28	56.09	2.62	3.41	0.87	33.49	3.44	115.14	4.000	No	Yes	2.00
210	34.45	60.39	2.61	3.65	0.87	36.08	3.42	123.27	4.000	No	Yes	2.00
211	34.61	55.92	2.68	4.14	0.90	32.80	3.87	126.88	4.000	No	Yes	2.00
212	34.78	51.90	2.73	4.39	0.91	30.00	4.20	126.09	4.000	No	Yes	2.00
213	34.94	41.95	2.83	4.80	0.95	23.46	5.07	118.93	4.000	No	Yes	2.00
214	35.10	30.49	2.96	4.94	1.00	16.27	6.31	102.71	4.000	No	Yes	2.00
215	35.27	29.40	2.93	4.17	0.99	15.67	5.96	93.39	4.000	No	Yes	2.00
216	35.43	42.22	2.72	3.26	0.91	23.95	4.11	98.42	4.000	No	Yes	2.00
217	35.60	60.56	2.57	3.09	0.85	35.83	3.14	112.36	0.212	No	No	0.21
218	35.76	70.96	2.54	3.38	0.84	42.33	2.98	126.27	0.267	No	No	0.27
219	35.93	63.76	2.64	4.03	0.88	37.10	3.55	131.68	4.000	No	Yes	2.00
220	36.09	47.46	2.80	4.92	0.94	26.31	4.81	126.60	4.000	No	Yes	2.00
221	36.25	33.37	2.95	5.18	1.00	17.55	6.19	108.66	4.000	No	Yes	2.00
222	36.42	26.03	3.00	4.41	1.00	13.36	6.69	89.36	4.000	No	Yes	2.00
223	36.58	25.10	2.93	3.32	0.99	12.84	6.04	77.56	4.000	No	Yes	2.00
224	36.75	28.17	2.89	3.38	0.98	14.65	5.63	82.45	4.000	Yes	Yes	2.00
225	36.91	37.04	2.80	3.51	0.94	20.00	4.76	95.13	4.000	Yes	Yes	2.00
226	37.07	55.85	2.63	3.32	0.88	31.81	3.49	111.18	4.000	Yes	Yes	2.00
227	37.24	78.65	2.39	2.31	0.79	47.45	2.28	108.25	4.000	Yes	No	2.00
228	37.40	105.12	2.20	1.71	0.71	66.34	1.66	110.20	4.000	Yes	No	2.00
229	37.57	129.82	2.02	1.24	0.65	85.08	1.33	113.43	4.000	Yes	No	2.00
230	37.73	152.28	1.97	1.24	0.63	101.03	1.26	127.40	4.000	Yes	No	2.00
231	37.89	167.13	1.96	1.32	0.62	111.12	1.25	138.49	0.327	No	No	0.32
232	38.06	168.15	2.02	1.62	0.65	110.10	1.33	146.20	0.371	No	No	0.36
233	38.22	179.50	2.03	1.76	0.65	117.23	1.34	156.75	0.438	No	No	0.43
234	38.39	213.69	1.94	1.60	0.61	142.19	1.23	174.60	0.575	No	No	0.56
235	38.55	288.13	1.72	1.10	0.53	201.09	1.05	211.22	4.000	No	No	2.00
236	38.71	358.08	1.56	0.84	0.50	254.14	1.00	254.14	4.000	No	No	2.00
237	38.88	405.17	1.48	0.72	0.50	287.33	1.00	287.33	4.000	No	No	2.00
238	39.04	413.90	1.50	0.78	0.50	293.09	1.00	293.09	4.000	No	No	2.00
239	39.21	408.76	1.55	0.91	0.50	288.96	1.00	288.96	4.000	No	No	2.00
240	39.37	399.36	1.60	1.02	0.50	281.82	1.00	281.82	4.000	No	No	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
241	39.53	386.15	1.64	1.13	0.50	271.99	1.00	271.99	4.000	No	No	2.00
242	39.70	376.69	1.66	1.17	0.51	263.51	1.01	266.78	4.000	No	No	2.00
243	39.86	374.01	1.67	1.21	0.51	260.52	1.02	265.87	4.000	No	No	2.00
244	40.03	376.84	1.66	1.18	0.51	262.66	1.01	266.22	4.000	No	No	2.00
245	40.19	377.28	1.65	1.12	0.50	263.64	1.00	263.72	4.000	No	No	2.00
246	40.35	367.74	1.64	1.08	0.50	256.72	1.00	256.14	4.000	No	No	2.00
247	40.52	356.32	1.64	1.03	0.50	248.45	1.00	248.45	4.000	No	No	2.00
248	40.68	354.10	1.65	1.07	0.50	245.91	1.00	246.77	4.000	No	No	2.00
249	40.85	358.58	1.65	1.07	0.50	248.83	1.00	249.15	4.000	No	No	2.00
250	41.01	367.97	1.63	1.05	0.50	255.43	1.00	255.43	4.000	No	No	2.00
251	41.17	358.01	1.62	1.00	0.50	248.08	1.00	248.08	4.000	No	No	2.00
252	41.34	360.22	1.60	0.93	0.50	249.24	1.00	249.24	4.000	No	No	2.00
253	41.50	356.87	1.61	0.93	0.50	246.53	1.00	246.53	4.000	No	No	2.00
254	41.67	360.49	1.60	0.92	0.50	248.68	1.00	248.68	4.000	No	No	2.00
255	41.83	349.76	1.63	0.99	0.50	240.85	1.00	240.85	4.000	No	No	2.00
256	41.99	344.48	1.66	1.07	0.51	235.59	1.01	238.32	4.000	No	No	2.00
257	42.16	343.02	1.69	1.15	0.52	232.63	1.03	239.93	4.000	No	No	2.00
258	42.32	340.46	1.70	1.18	0.52	229.89	1.04	238.87	4.000	No	No	2.00
259	42.49	336.63	1.70	1.17	0.52	226.89	1.04	235.83	4.000	No	No	2.00
260	42.65	340.35	1.68	1.11	0.52	230.21	1.03	236.01	4.000	No	No	2.00
261	42.81	351.18	1.65	1.03	0.50	239.19	1.00	239.53	4.000	No	No	2.00
262	42.98	366.21	1.60	0.94	0.50	249.61	1.00	249.61	4.000	No	No	2.00
263	43.14	381.93	1.55	0.83	0.50	260.01	1.00	260.01	4.000	No	No	2.00
264	43.31	399.08	1.51	0.75	0.50	271.38	1.00	271.38	4.000	No	No	2.00
265	43.47	417.58	1.47	0.69	0.50	283.64	1.00	283.64	4.000	No	No	2.00
266	43.64	430.79	1.43	0.62	0.50	292.25	1.00	292.25	4.000	No	No	2.00
267	43.80	437.52	1.41	0.60	0.50	296.42	1.00	296.42	4.000	No	No	2.00
268	43.96	437.08	1.40	0.58	0.50	295.69	1.00	295.69	4.000	No	No	2.00
269	44.13	441.78	1.40	0.58	0.50	298.47	1.00	298.47	4.000	No	No	2.00
270	44.29	454.80	1.36	0.53	0.50	306.89	1.00	306.89	4.000	No	No	2.00
271	44.46	470.25	1.35	0.52	0.50	316.93	1.00	316.93	4.000	No	No	2.00
272	44.62	474.75	1.37	0.57	0.50	319.53	1.00	319.53	4.000	No	No	2.00
273	44.78	471.24	1.41	0.64	0.50	316.70	1.00	316.70	4.000	No	No	2.00
274	44.95	464.89	1.45	0.71	0.50	311.96	1.00	311.96	4.000	No	No	2.00
275	45.11	466.35	1.44	0.69	0.50	312.49	1.00	312.49	4.000	No	No	2.00
276	45.28	475.18	1.45	0.73	0.50	317.98	1.00	317.98	4.000	No	No	2.00
277	45.44	478.24	1.46	0.75	0.50	319.59	1.00	319.59	4.000	No	No	2.00
278	45.60	473.31	1.49	0.81	0.50	315.82	1.00	315.82	4.000	No	No	2.00
279	45.77	458.75	1.47	0.75	0.50	305.60	1.00	305.60	4.000	No	No	2.00
280	45.93	448.96	1.44	0.66	0.50	298.62	1.00	298.62	4.000	No	No	2.00
281	46.10	438.25	1.42	0.60	0.50	291.05	1.00	291.05	4.000	No	No	2.00
282	46.26	427.89	1.42	0.59	0.50	283.74	1.00	283.74	4.000	No	No	2.00
283	46.42	416.71	1.42	0.58	0.50	275.89	1.00	275.89	4.000	No	No	2.00
284	46.59	408.27	1.45	0.61	0.50	269.90	1.00	269.90	4.000	No	No	2.00
285	46.75	385.95	1.51	0.70	0.50	254.69	1.00	254.69	4.000	No	No	2.00
286	46.92	334.85	1.61	0.86	0.50	220.41	1.00	220.41	4.000	No	No	2.00
287	47.08	234.89	1.83	1.15	0.57	146.13	1.13	164.91	4.000	Yes	No	2.00
288	47.24	134.27	2.15	1.67	0.69	75.77	1.55	117.32	4.000	Yes	No	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
289	47.41	60.37	2.60	2.74	0.87	29.22	3.34	97.47	4.000	Yes	Yes	2.00
290	47.57	38.23	2.80	2.86	0.94	16.97	4.77	80.91	4.000	Yes	Yes	2.00
291	47.74	34.33	2.77	2.23	0.93	15.15	4.57	69.30	4.000	No	Yes	2.00
292	47.90	36.15	2.74	2.08	0.92	16.17	4.26	68.88	4.000	No	Yes	2.00
293	48.06	35.15	2.82	2.65	0.95	15.31	4.91	75.21	4.000	No	Yes	2.00
294	48.23	41.89	2.74	2.66	0.92	18.85	4.32	81.44	4.000	No	Yes	2.00
295	48.39	48.93	2.68	2.68	0.90	22.59	3.87	87.45	4.000	No	Yes	2.00
296	48.56	51.19	2.68	2.79	0.90	23.68	3.83	90.80	4.000	No	Yes	2.00
297	48.72	41.07	2.82	3.39	0.95	17.91	5.00	89.52	4.000	No	Yes	2.00
298	48.88	29.46	2.98	3.65	1.00	11.98	6.56	78.53	4.000	No	Yes	2.00
299	49.05	26.79	2.95	2.71	1.00	10.75	6.16	66.29	4.000	No	Yes	2.00
300	49.21	25.86	2.88	1.98	0.97	10.50	5.51	57.87	4.000	No	Yes	2.00
301	49.38	24.95	2.91	2.11	0.99	9.97	5.84	58.17	4.000	No	Yes	2.00
302	49.54	24.91	2.96	2.49	1.00	9.82	6.29	61.81	4.000	Yes	Yes	2.00
303	49.70	34.06	2.76	2.02	0.93	14.67	4.48	65.67	4.000	Yes	Yes	2.00
304	49.87	43.55	2.61	1.70	0.87	19.99	3.39	67.74	4.000	Yes	Yes	2.00
305	50.03	72.04	2.26	1.02	0.74	37.61	1.82	68.41	4.000	Yes	No	2.00

Abbreviations

Depth:	Depth from free surface, at which CPT was performed (ft)
q _t :	Total cone resistance
I _c :	Soil behavior type index
Fr:	Normalized friction ratio (%)
n:	Stress exponent
Q _{tn} :	Normalized cone resistance
K _c :	Cone resistance correction factor due to fines
Q _{tn,cs} :	Normalized and adjusted cone resistance
CRR _{7.5} :	Cyclic resistance ratio for M _w =7.5
FS:	Factor of safety against soil liquefaction

:: Liquefaction Potential Index calculation data ::

Depth (ft)	FS	F _L	w _z	d _z	LPI	Depth (ft)	FS	F _L	w _z	d _z	LPI
0.16	2.00	0.00	0.00	0.00	0.00	0.33	2.00	0.00	0.00	0.00	0.00
0.49	2.00	0.00	0.00	0.00	0.00	0.66	2.00	0.00	0.00	0.00	0.00
0.82	2.00	0.00	0.00	0.00	0.00	0.98	2.00	0.00	0.00	0.00	0.00
1.15	2.00	0.00	0.00	0.00	0.00	1.31	2.00	0.00	0.00	0.00	0.00
1.48	2.00	0.00	0.00	0.00	0.00	1.64	2.00	0.00	0.00	0.00	0.00
1.80	2.00	0.00	0.00	0.00	0.00	1.97	2.00	0.00	0.00	0.00	0.00
2.13	2.00	0.00	0.00	0.00	0.00	2.30	2.00	0.00	0.00	0.00	0.00
2.46	2.00	0.00	0.00	0.00	0.00	2.62	2.00	0.00	0.00	0.00	0.00
2.79	2.00	0.00	0.00	0.00	0.00	2.95	2.00	0.00	0.00	0.00	0.00
3.12	2.00	0.00	0.00	0.00	0.00	3.28	2.00	0.00	0.00	0.00	0.00
3.44	2.00	0.00	0.00	0.00	0.00	3.61	2.00	0.00	0.00	0.00	0.00
3.77	2.00	0.00	0.00	0.00	0.00	3.94	2.00	0.00	0.00	0.00	0.00
4.10	2.00	0.00	0.00	0.00	0.00	4.27	2.00	0.00	0.00	0.00	0.00
4.43	2.00	0.00	0.00	0.00	0.00	4.59	2.00	0.00	0.00	0.00	0.00
4.76	2.00	0.00	0.00	0.00	0.00	4.92	2.00	0.00	0.00	0.00	0.00
5.09	2.00	0.00	9.22	0.16	0.00	5.25	2.00	0.00	9.20	0.16	0.00
5.41	2.00	0.00	9.17	0.16	0.00	5.58	2.00	0.00	9.15	0.16	0.00
5.74	2.00	0.00	9.12	0.16	0.00	5.91	2.00	0.00	9.10	0.16	0.00
6.07	2.00	0.00	9.07	0.16	0.00	6.23	2.00	0.00	9.05	0.16	0.00
6.40	2.00	0.00	9.02	0.16	0.00	6.56	2.00	0.00	9.00	0.16	0.00
6.73	2.00	0.00	8.97	0.16	0.00	6.89	2.00	0.00	8.95	0.16	0.00
7.05	2.00	0.00	8.92	0.16	0.00	7.22	2.00	0.00	8.90	0.16	0.00
7.38	2.00	0.00	8.87	0.16	0.00	7.55	2.00	0.00	8.85	0.16	0.00
7.71	2.00	0.00	8.82	0.16	0.00	7.87	2.00	0.00	8.80	0.16	0.00
8.04	2.00	0.00	8.77	0.16	0.00	8.20	2.00	0.00	8.75	0.16	0.00
8.37	2.00	0.00	8.72	0.16	0.00	8.53	2.00	0.00	8.70	0.16	0.00
8.69	2.00	0.00	8.67	0.16	0.00	8.86	2.00	0.00	8.65	0.16	0.00
9.02	2.00	0.00	8.62	0.16	0.00	9.19	2.00	0.00	8.60	0.16	0.00
9.35	2.00	0.00	8.57	0.16	0.00	9.51	2.00	0.00	8.55	0.16	0.00
9.68	2.00	0.00	8.52	0.16	0.00	9.84	2.00	0.00	8.50	0.16	0.00
10.01	2.00	0.00	8.47	0.16	0.00	10.17	2.00	0.00	8.45	0.16	0.00
10.33	2.00	0.00	8.42	0.16	0.00	10.50	2.00	0.00	8.40	0.16	0.00
10.66	2.00	0.00	8.37	0.16	0.00	10.83	2.00	0.00	8.35	0.16	0.00
10.99	2.00	0.00	8.32	0.16	0.00	11.15	2.00	0.00	8.30	0.16	0.00
11.32	2.00	0.00	8.27	0.16	0.00	11.48	2.00	0.00	8.25	0.16	0.00
11.65	2.00	0.00	8.22	0.16	0.00	11.81	2.00	0.00	8.20	0.16	0.00
11.98	2.00	0.00	8.17	0.16	0.00	12.14	2.00	0.00	8.15	0.16	0.00
12.30	2.00	0.00	8.12	0.16	0.00	12.47	2.00	0.00	8.10	0.16	0.00
12.63	2.00	0.00	8.07	0.16	0.00	12.80	2.00	0.00	8.05	0.16	0.00
12.96	2.00	0.00	8.02	0.16	0.00	13.12	2.00	0.00	8.00	0.16	0.00
13.29	2.00	0.00	7.97	0.16	0.00	13.45	2.00	0.00	7.95	0.16	0.00
13.62	2.00	0.00	7.92	0.16	0.00	13.78	2.00	0.00	7.90	0.16	0.00
13.94	2.00	0.00	7.87	0.16	0.00	14.11	2.00	0.00	7.85	0.16	0.00
14.27	2.00	0.00	7.82	0.16	0.00	14.44	2.00	0.00	7.80	0.16	0.00
14.60	2.00	0.00	7.77	0.16	0.00	14.76	2.00	0.00	7.75	0.16	0.00
14.93	2.00	0.00	7.72	0.16	0.00	15.09	2.00	0.00	7.70	0.16	0.00
15.26	2.00	0.00	7.67	0.16	0.00	15.42	2.00	0.00	7.65	0.16	0.00
15.58	2.00	0.00	7.62	0.16	0.00	15.75	2.00	0.00	7.60	0.16	0.00

:: Liquefaction Potential Index calculation data :: (continued)

Depth (ft)	FS	F _L	w _z	d _z	LPI	Depth (ft)	FS	F _L	w _z	d _z	LPI
15.91	2.00	0.00	7.57	0.16	0.00	16.08	2.00	0.00	7.55	0.16	0.00
16.24	2.00	0.00	7.52	0.16	0.00	16.40	2.00	0.00	7.50	0.16	0.00
16.57	2.00	0.00	7.47	0.16	0.00	16.73	2.00	0.00	7.45	0.16	0.00
16.90	2.00	0.00	7.42	0.16	0.00	17.06	2.00	0.00	7.40	0.16	0.00
17.22	2.00	0.00	7.37	0.16	0.00	17.39	2.00	0.00	7.35	0.16	0.00
17.55	2.00	0.00	7.32	0.16	0.00	17.72	2.00	0.00	7.30	0.16	0.00
17.88	2.00	0.00	7.27	0.16	0.00	18.04	2.00	0.00	7.25	0.16	0.00
18.21	2.00	0.00	7.22	0.16	0.00	18.37	2.00	0.00	7.20	0.16	0.00
18.54	2.00	0.00	7.17	0.16	0.00	18.70	2.00	0.00	7.15	0.16	0.00
18.86	2.00	0.00	7.12	0.16	0.00	19.03	2.00	0.00	7.10	0.16	0.00
19.19	2.00	0.00	7.07	0.16	0.00	19.36	2.00	0.00	7.05	0.16	0.00
19.52	2.00	0.00	7.02	0.16	0.00	19.69	2.00	0.00	7.00	0.16	0.00
19.85	2.00	0.00	6.97	0.16	0.00	20.01	0.45	0.55	6.95	0.16	0.19
20.18	0.53	0.47	6.92	0.16	0.16	20.34	0.57	0.43	6.90	0.16	0.15
20.51	0.58	0.42	6.87	0.16	0.14	20.67	0.56	0.44	6.85	0.16	0.15
20.83	0.54	0.46	6.82	0.16	0.16	21.00	0.55	0.45	6.80	0.16	0.15
21.16	0.62	0.38	6.77	0.16	0.13	21.33	0.79	0.21	6.75	0.16	0.07
21.49	0.95	0.05	6.72	0.16	0.02	21.65	1.00	0.00	6.70	0.16	0.00
21.82	0.94	0.06	6.67	0.16	0.02	21.98	0.87	0.13	6.65	0.16	0.04
22.15	0.77	0.23	6.62	0.16	0.08	22.31	0.65	0.35	6.60	0.16	0.12
22.47	0.56	0.44	6.57	0.16	0.15	22.64	0.51	0.49	6.55	0.16	0.16
22.80	0.50	0.50	6.52	0.16	0.16	22.97	0.46	0.54	6.50	0.16	0.18
23.13	0.42	0.58	6.47	0.16	0.19	23.29	0.39	0.61	6.45	0.16	0.20
23.46	0.39	0.61	6.42	0.16	0.19	23.62	0.43	0.57	6.40	0.16	0.18
23.79	0.48	0.52	6.37	0.16	0.17	23.95	0.52	0.48	6.35	0.16	0.15
24.11	0.53	0.47	6.32	0.16	0.15	24.28	0.53	0.47	6.30	0.16	0.15
24.44	0.52	0.48	6.27	0.16	0.15	24.61	0.53	0.47	6.25	0.16	0.15
24.77	0.55	0.45	6.22	0.16	0.14	24.93	2.00	0.00	6.20	0.16	0.00
25.10	2.00	0.00	6.17	0.16	0.00	25.26	2.00	0.00	6.15	0.16	0.00
25.43	2.00	0.00	6.12	0.16	0.00	25.59	2.00	0.00	6.10	0.16	0.00
25.75	2.00	0.00	6.07	0.16	0.00	25.92	2.00	0.00	6.05	0.16	0.00
26.08	2.00	0.00	6.02	0.16	0.00	26.25	0.30	0.70	6.00	0.16	0.21
26.41	0.32	0.68	5.97	0.16	0.20	26.57	0.32	0.68	5.95	0.16	0.20
26.74	0.34	0.66	5.92	0.16	0.20	26.90	0.38	0.62	5.90	0.16	0.18
27.07	0.42	0.58	5.87	0.16	0.17	27.23	0.43	0.57	5.85	0.16	0.17
27.40	0.43	0.57	5.82	0.16	0.17	27.56	0.42	0.58	5.80	0.16	0.17
27.72	0.43	0.57	5.77	0.16	0.16	27.89	0.42	0.58	5.75	0.16	0.17
28.05	0.39	0.61	5.72	0.16	0.18	28.22	0.35	0.65	5.70	0.16	0.19
28.38	0.38	0.62	5.67	0.16	0.18	28.54	2.00	0.00	5.65	0.16	0.00
28.71	2.00	0.00	5.62	0.16	0.00	28.87	2.00	0.00	5.60	0.16	0.00
29.04	2.00	0.00	5.57	0.16	0.00	29.20	2.00	0.00	5.55	0.16	0.00
29.36	2.00	0.00	5.52	0.16	0.00	29.53	2.00	0.00	5.50	0.16	0.00
29.69	2.00	0.00	5.47	0.16	0.00	29.86	2.00	0.00	5.45	0.16	0.00
30.02	0.40	0.60	5.42	0.16	0.16	30.18	0.47	0.53	5.40	0.16	0.14
30.35	0.50	0.50	5.37	0.16	0.13	30.51	0.52	0.48	5.35	0.16	0.13
30.68	2.00	0.00	5.32	0.16	0.00	30.84	2.00	0.00	5.30	0.16	0.00
31.00	2.00	0.00	5.27	0.16	0.00	31.17	2.00	0.00	5.25	0.16	0.00
31.33	2.00	0.00	5.22	0.16	0.00	31.50	2.00	0.00	5.20	0.16	0.00

:: Liquefaction Potential Index calculation data :: (continued)

Depth (ft)	FS	F _L	w _z	d _z	LPI	Depth (ft)	FS	F _L	w _z	d _z	LPI
31.66	2.00	0.00	5.17	0.16	0.00	31.82	2.00	0.00	5.15	0.16	0.00
31.99	2.00	0.00	5.12	0.16	0.00	32.15	2.00	0.00	5.10	0.16	0.00
32.32	0.30	0.70	5.07	0.16	0.18	32.48	2.00	0.00	5.05	0.16	0.00
32.64	2.00	0.00	5.02	0.16	0.00	32.81	2.00	0.00	5.00	0.16	0.00
32.97	2.00	0.00	4.97	0.16	0.00	33.14	2.00	0.00	4.95	0.16	0.00
33.30	2.00	0.00	4.92	0.16	0.00	33.46	2.00	0.00	4.90	0.16	0.00
33.63	2.00	0.00	4.87	0.16	0.00	33.79	2.00	0.00	4.85	0.16	0.00
33.96	2.00	0.00	4.82	0.16	0.00	34.12	2.00	0.00	4.80	0.16	0.00
34.28	2.00	0.00	4.77	0.16	0.00	34.45	2.00	0.00	4.75	0.16	0.00
34.61	2.00	0.00	4.72	0.16	0.00	34.78	2.00	0.00	4.70	0.16	0.00
34.94	2.00	0.00	4.67	0.16	0.00	35.10	2.00	0.00	4.65	0.16	0.00
35.27	2.00	0.00	4.62	0.16	0.00	35.43	2.00	0.00	4.60	0.16	0.00
35.60	0.21	0.79	4.57	0.16	0.18	35.76	0.27	0.73	4.55	0.16	0.17
35.93	2.00	0.00	4.52	0.16	0.00	36.09	2.00	0.00	4.50	0.16	0.00
36.25	2.00	0.00	4.47	0.16	0.00	36.42	2.00	0.00	4.45	0.16	0.00
36.58	2.00	0.00	4.42	0.16	0.00	36.75	2.00	0.00	4.40	0.16	0.00
36.91	2.00	0.00	4.37	0.16	0.00	37.07	2.00	0.00	4.35	0.16	0.00
37.24	2.00	0.00	4.32	0.16	0.00	37.40	2.00	0.00	4.30	0.16	0.00
37.57	2.00	0.00	4.27	0.16	0.00	37.73	2.00	0.00	4.25	0.16	0.00
37.89	0.32	0.68	4.22	0.16	0.14	38.06	0.36	0.64	4.20	0.16	0.13
38.22	0.43	0.57	4.17	0.16	0.12	38.39	0.56	0.44	4.15	0.16	0.09
38.55	2.00	0.00	4.12	0.16	0.00	38.71	2.00	0.00	4.10	0.16	0.00
38.88	2.00	0.00	4.07	0.16	0.00	39.04	2.00	0.00	4.05	0.16	0.00
39.21	2.00	0.00	4.02	0.16	0.00	39.37	2.00	0.00	4.00	0.16	0.00
39.53	2.00	0.00	3.97	0.16	0.00	39.70	2.00	0.00	3.95	0.16	0.00
39.86	2.00	0.00	3.92	0.16	0.00	40.03	2.00	0.00	3.90	0.16	0.00
40.19	2.00	0.00	3.87	0.16	0.00	40.35	2.00	0.00	3.85	0.16	0.00
40.52	2.00	0.00	3.82	0.16	0.00	40.68	2.00	0.00	3.80	0.16	0.00
40.85	2.00	0.00	3.77	0.16	0.00	41.01	2.00	0.00	3.75	0.16	0.00
41.17	2.00	0.00	3.72	0.16	0.00	41.34	2.00	0.00	3.70	0.16	0.00
41.50	2.00	0.00	3.67	0.16	0.00	41.67	2.00	0.00	3.65	0.16	0.00
41.83	2.00	0.00	3.62	0.16	0.00	41.99	2.00	0.00	3.60	0.16	0.00
42.16	2.00	0.00	3.57	0.16	0.00	42.32	2.00	0.00	3.55	0.16	0.00
42.49	2.00	0.00	3.52	0.16	0.00	42.65	2.00	0.00	3.50	0.16	0.00
42.81	2.00	0.00	3.47	0.16	0.00	42.98	2.00	0.00	3.45	0.16	0.00
43.14	2.00	0.00	3.42	0.16	0.00	43.31	2.00	0.00	3.40	0.16	0.00
43.47	2.00	0.00	3.37	0.16	0.00	43.64	2.00	0.00	3.35	0.16	0.00
43.80	2.00	0.00	3.32	0.16	0.00	43.96	2.00	0.00	3.30	0.16	0.00
44.13	2.00	0.00	3.27	0.16	0.00	44.29	2.00	0.00	3.25	0.16	0.00
44.46	2.00	0.00	3.22	0.16	0.00	44.62	2.00	0.00	3.20	0.16	0.00
44.78	2.00	0.00	3.17	0.16	0.00	44.95	2.00	0.00	3.15	0.16	0.00
45.11	2.00	0.00	3.12	0.16	0.00	45.28	2.00	0.00	3.10	0.16	0.00
45.44	2.00	0.00	3.07	0.16	0.00	45.60	2.00	0.00	3.05	0.16	0.00
45.77	2.00	0.00	3.02	0.16	0.00	45.93	2.00	0.00	3.00	0.16	0.00
46.10	2.00	0.00	2.97	0.16	0.00	46.26	2.00	0.00	2.95	0.16	0.00
46.42	2.00	0.00	2.92	0.16	0.00	46.59	2.00	0.00	2.90	0.16	0.00
46.75	2.00	0.00	2.87	0.16	0.00	46.92	2.00	0.00	2.85	0.16	0.00
47.08	2.00	0.00	2.82	0.16	0.00	47.24	2.00	0.00	2.80	0.16	0.00

:: Liquefaction Potential Index calculation data :: (continued)

Depth (ft)	FS	F _L	w _z	d _z	LPI	Depth (ft)	FS	F _L	w _z	d _z	LPI
47.41	2.00	0.00	2.77	0.16	0.00	47.57	2.00	0.00	2.75	0.16	0.00
47.74	2.00	0.00	2.72	0.16	0.00	47.90	2.00	0.00	2.70	0.16	0.00
48.06	2.00	0.00	2.67	0.16	0.00	48.23	2.00	0.00	2.65	0.16	0.00
48.39	2.00	0.00	2.62	0.16	0.00	48.56	2.00	0.00	2.60	0.16	0.00
48.72	2.00	0.00	2.57	0.16	0.00	48.88	2.00	0.00	2.55	0.16	0.00
49.05	2.00	0.00	2.52	0.16	0.00	49.21	2.00	0.00	2.50	0.16	0.00
49.38	2.00	0.00	2.47	0.16	0.00	49.54	2.00	0.00	2.45	0.16	0.00
49.70	2.00	0.00	2.42	0.16	0.00	49.87	2.00	0.00	2.40	0.16	0.00
50.03	2.00	0.00	2.37	0.16	0.00						

Overall liquefaction potential: 8.16

LPI = 0.00 - Liquefaction risk very low

LPI between 0.00 and 5.00 - Liquefaction risk low

LPI between 5.00 and 15.00 - Liquefaction risk high

LPI > 15.00 - Liquefaction risk very high

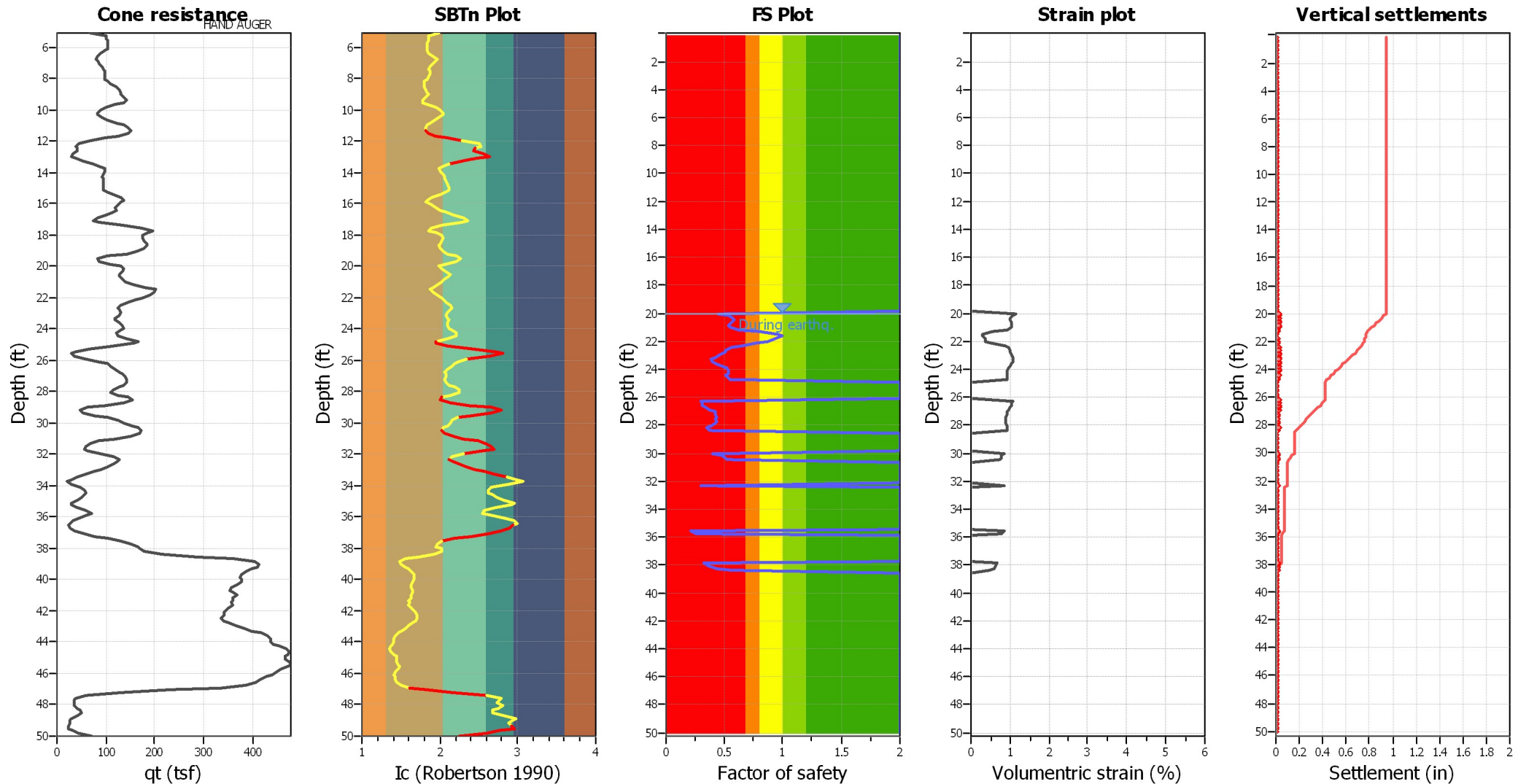
Abbreviations

FS: Calculated factor of safety for test point

F_L: 1 - FSw_z: Function value of the extend of soil liquefaction according to depthd_z: Layer thickness (ft)

LPI: Liquefaction potential index value for test point

Estimation of post-earthquake settlements



Abbreviations

- qc: Total cone resistance (cone resistance q_c corrected for pore water effects)
- Ic: Soil Behaviour Type Index
- FS: Calculated Factor of Safety against liquefaction
- Volumetric strain: Post-liquefaction volumetric strain

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
20.01	143.34	0.45	1.16	0.67	0.02	20.18	153.90	0.53	1.09	0.66	0.02
20.34	159.07	0.57	1.02	0.66	0.02	20.51	160.19	0.58	1.01	0.66	0.02
20.67	157.87	0.56	1.03	0.66	0.02	20.83	156.01	0.54	1.06	0.65	0.02
21.00	157.04	0.55	1.05	0.65	0.02	21.16	165.56	0.62	0.95	0.65	0.02
21.33	182.25	0.79	0.55	0.64	0.01	21.49	196.04	0.95	0.30	0.64	0.01
21.65	199.72	1.00	0.30	0.64	0.01	21.82	195.17	0.94	0.37	0.64	0.01
21.98	190.29	0.87	0.38	0.63	0.01	22.15	181.77	0.77	0.54	0.63	0.01
22.31	170.23	0.65	0.88	0.63	0.02	22.47	160.92	0.56	0.95	0.63	0.02
22.64	155.42	0.51	1.01	0.62	0.02	22.80	154.89	0.50	1.01	0.62	0.02
22.97	149.26	0.46	1.04	0.62	0.02	23.13	143.52	0.42	1.07	0.61	0.02
23.29	138.80	0.39	1.09	0.61	0.02	23.46	140.36	0.39	1.08	0.61	0.02
23.62	145.75	0.43	1.04	0.61	0.02	23.79	153.01	0.48	1.00	0.60	0.02
23.95	159.05	0.52	0.96	0.60	0.02	24.11	160.09	0.53	0.95	0.60	0.02
24.28	160.65	0.53	0.94	0.60	0.02	24.44	158.53	0.52	0.95	0.59	0.02
24.61	160.70	0.53	0.93	0.59	0.02	24.77	163.15	0.55	0.92	0.59	0.02
24.93	153.30	2.00	0.00	0.58	0.00	25.10	131.62	2.00	0.00	0.58	0.00
25.26	120.41	2.00	0.00	0.58	0.00	25.43	114.56	2.00	0.00	0.58	0.00
25.59	95.23	2.00	0.00	0.57	0.00	25.75	83.41	2.00	0.00	0.57	0.00
25.92	90.19	2.00	0.00	0.57	0.00	26.08	112.86	2.00	0.00	0.57	0.00
26.25	127.45	0.30	1.08	0.56	0.02	26.41	130.48	0.32	1.05	0.56	0.02
26.57	130.56	0.32	1.05	0.56	0.02	26.74	135.22	0.34	1.01	0.55	0.02
26.90	141.73	0.38	0.97	0.55	0.02	27.07	148.03	0.42	0.93	0.55	0.02
27.23	149.75	0.43	0.92	0.55	0.02	27.40	150.29	0.43	0.91	0.54	0.02
27.56	148.66	0.42	0.91	0.54	0.02	27.72	150.71	0.43	0.90	0.54	0.02
27.89	150.08	0.42	0.90	0.54	0.02	28.05	144.42	0.39	0.92	0.53	0.02
28.22	138.50	0.35	0.95	0.53	0.02	28.38	143.32	0.38	0.92	0.53	0.02
28.54	151.53	2.00	0.00	0.52	0.00	28.71	151.34	2.00	0.00	0.52	0.00
28.87	147.99	2.00	0.00	0.52	0.00	29.04	147.81	2.00	0.00	0.52	0.00
29.20	137.18	2.00	0.00	0.51	0.00	29.36	126.80	2.00	0.00	0.51	0.00
29.53	120.47	2.00	0.00	0.51	0.00	29.69	125.87	2.00	0.00	0.51	0.00
29.86	137.19	2.00	0.00	0.50	0.00	30.02	148.20	0.40	0.85	0.50	0.02
30.18	158.44	0.47	0.80	0.50	0.02	30.35	163.04	0.50	0.77	0.49	0.02
30.51	165.07	0.52	0.76	0.49	0.01	30.68	166.70	2.00	0.00	0.49	0.00
30.84	167.31	2.00	0.00	0.49	0.00	31.00	159.90	2.00	0.00	0.48	0.00
31.17	151.60	2.00	0.00	0.48	0.00	31.33	145.66	2.00	0.00	0.48	0.00
31.50	141.62	2.00	0.00	0.48	0.00	31.66	134.14	2.00	0.00	0.47	0.00
31.82	119.64	2.00	0.00	0.47	0.00	31.99	116.79	2.00	0.00	0.47	0.00
32.15	125.24	2.00	0.00	0.46	0.00	32.32	131.45	0.30	0.86	0.46	0.02
32.48	135.73	2.00	0.00	0.46	0.00	32.64	138.99	2.00	0.00	0.46	0.00
32.81	144.75	2.00	0.00	0.45	0.00	32.97	145.71	2.00	0.00	0.45	0.00
33.14	145.82	2.00	0.00	0.45	0.00	33.30	140.17	2.00	0.00	0.44	0.00
33.46	126.84	2.00	0.00	0.44	0.00	33.63	107.04	2.00	0.00	0.44	0.00
33.79	89.35	2.00	0.00	0.44	0.00	33.96	89.12	2.00	0.00	0.43	0.00
34.12	102.64	2.00	0.00	0.43	0.00	34.28	115.14	2.00	0.00	0.43	0.00
34.45	123.27	2.00	0.00	0.43	0.00	34.61	126.88	2.00	0.00	0.42	0.00
34.78	126.09	2.00	0.00	0.42	0.00	34.94	118.93	2.00	0.00	0.42	0.00
35.10	102.71	2.00	0.00	0.41	0.00	35.27	93.39	2.00	0.00	0.41	0.00
35.43	98.42	2.00	0.00	0.41	0.00	35.60	112.36	0.21	0.86	0.41	0.02

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
35.76	126.27	0.27	0.78	0.40	0.02	35.93	131.68	2.00	0.00	0.40	0.00
36.09	126.60	2.00	0.00	0.40	0.00	36.25	108.66	2.00	0.00	0.40	0.00
36.42	89.36	2.00	0.00	0.39	0.00	36.58	77.56	2.00	0.00	0.39	0.00
36.75	82.45	2.00	0.00	0.39	0.00	36.91	95.13	2.00	0.00	0.38	0.00
37.07	111.18	2.00	0.00	0.38	0.00	37.24	108.25	2.00	0.00	0.38	0.00
37.40	110.20	2.00	0.00	0.38	0.00	37.57	113.43	2.00	0.00	0.37	0.00
37.73	127.40	2.00	0.00	0.37	0.00	37.89	138.49	0.32	0.66	0.37	0.01
38.06	146.20	0.36	0.63	0.37	0.01	38.22	156.75	0.43	0.59	0.36	0.01
38.39	174.60	0.56	0.49	0.36	0.01	38.55	211.22	2.00	0.00	0.36	0.00
38.71	254.14	2.00	0.00	0.35	0.00	38.88	287.33	2.00	0.00	0.35	0.00
39.04	293.09	2.00	0.00	0.35	0.00	39.21	288.96	2.00	0.00	0.35	0.00
39.37	281.82	2.00	0.00	0.34	0.00	39.53	271.99	2.00	0.00	0.34	0.00
39.70	266.78	2.00	0.00	0.34	0.00	39.86	265.87	2.00	0.00	0.34	0.00
40.03	266.22	2.00	0.00	0.33	0.00	40.19	263.72	2.00	0.00	0.33	0.00
40.35	256.14	2.00	0.00	0.33	0.00	40.52	248.45	2.00	0.00	0.32	0.00
40.68	246.77	2.00	0.00	0.32	0.00	40.85	249.15	2.00	0.00	0.32	0.00
41.01	255.43	2.00	0.00	0.32	0.00	41.17	248.08	2.00	0.00	0.31	0.00
41.34	249.24	2.00	0.00	0.31	0.00	41.50	246.53	2.00	0.00	0.31	0.00
41.67	248.68	2.00	0.00	0.31	0.00	41.83	240.85	2.00	0.00	0.30	0.00
41.99	238.32	2.00	0.00	0.30	0.00	42.16	239.93	2.00	0.00	0.30	0.00
42.32	238.87	2.00	0.00	0.29	0.00	42.49	235.83	2.00	0.00	0.29	0.00
42.65	236.01	2.00	0.00	0.29	0.00	42.81	239.53	2.00	0.00	0.29	0.00
42.98	249.61	2.00	0.00	0.28	0.00	43.14	260.01	2.00	0.00	0.28	0.00
43.31	271.38	2.00	0.00	0.28	0.00	43.47	283.64	2.00	0.00	0.28	0.00
43.64	292.25	2.00	0.00	0.27	0.00	43.80	296.42	2.00	0.00	0.27	0.00
43.96	295.69	2.00	0.00	0.27	0.00	44.13	298.47	2.00	0.00	0.26	0.00
44.29	306.89	2.00	0.00	0.26	0.00	44.46	316.93	2.00	0.00	0.26	0.00
44.62	319.53	2.00	0.00	0.26	0.00	44.78	316.70	2.00	0.00	0.25	0.00
44.95	311.96	2.00	0.00	0.25	0.00	45.11	312.49	2.00	0.00	0.25	0.00
45.28	317.98	2.00	0.00	0.25	0.00	45.44	319.59	2.00	0.00	0.24	0.00
45.60	315.82	2.00	0.00	0.24	0.00	45.77	305.60	2.00	0.00	0.24	0.00
45.93	298.62	2.00	0.00	0.23	0.00	46.10	291.05	2.00	0.00	0.23	0.00
46.26	283.74	2.00	0.00	0.23	0.00	46.42	275.89	2.00	0.00	0.23	0.00
46.59	269.90	2.00	0.00	0.22	0.00	46.75	254.69	2.00	0.00	0.22	0.00
46.92	220.41	2.00	0.00	0.22	0.00	47.08	164.91	2.00	0.00	0.22	0.00
47.24	117.32	2.00	0.00	0.21	0.00	47.41	97.47	2.00	0.00	0.21	0.00
47.57	80.91	2.00	0.00	0.21	0.00	47.74	69.30	2.00	0.00	0.20	0.00
47.90	68.88	2.00	0.00	0.20	0.00	48.06	75.21	2.00	0.00	0.20	0.00
48.23	81.44	2.00	0.00	0.20	0.00	48.39	87.45	2.00	0.00	0.19	0.00
48.56	90.80	2.00	0.00	0.19	0.00	48.72	89.52	2.00	0.00	0.19	0.00
48.88	78.53	2.00	0.00	0.19	0.00	49.05	66.29	2.00	0.00	0.18	0.00
49.21	57.87	2.00	0.00	0.18	0.00	49.38	58.17	2.00	0.00	0.18	0.00
49.54	61.81	2.00	0.00	0.17	0.00	49.70	65.67	2.00	0.00	0.17	0.00
49.87	67.74	2.00	0.00	0.17	0.00	50.03	68.41	2.00	0.00	0.17	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

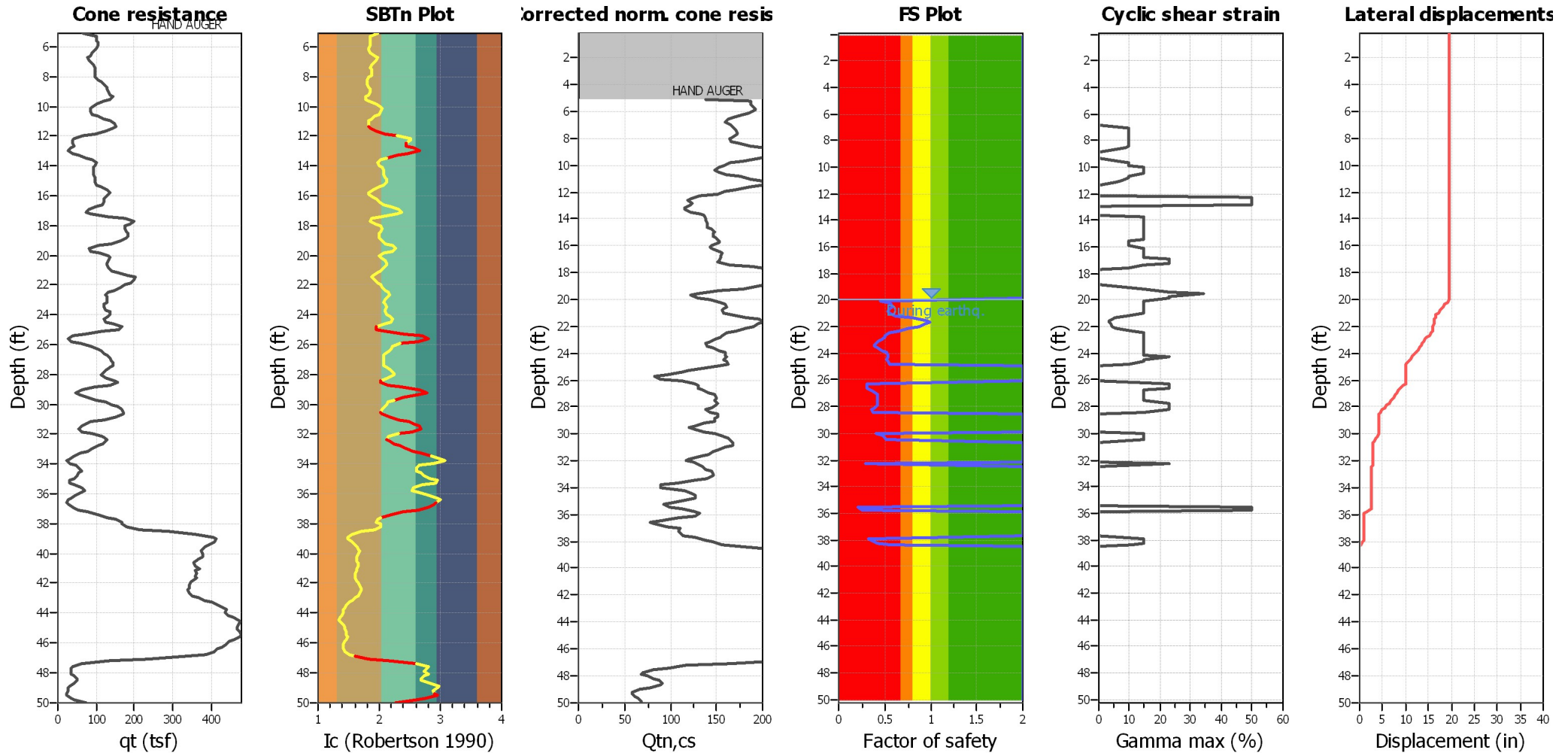
Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
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Total estimated settlement: 0.95**Abbreviations**

$Q_{tn,cs}$:	Equivalent clean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumetric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

Estimation of post-earthquake lateral Displacements

Geometric parameters: Gently sloping ground without free face (Slope 1.90 %)



Abbreviations

q_t : Total cone resistance (cone resistance q_c corrected for pore water effects)

I_c : Soil Behaviour Type Index

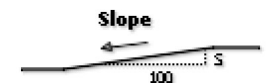
$Q_{tn,cs}$: Equivalent clean sand normalized CPT total cone resistance

F.S.: Factor of safety

γ_{max} : Maximum cyclic shear strain

LDI: Lateral displacement index

Surface condition



:: Lateral displacement index calculation ::

Depth (ft)	q _t (tsf)	Q _{tn}	R _f (%)	Q _{tn,cs}	FS	D _r	Gamma _{max} (%)	Lat. disp. (in)
20.01	131.71	111.28	1.47	143.34	0.45	70.53	14.50	0.40
20.18	137.66	115.80	1.69	153.90	0.53	71.84	14.50	0.40
20.34	132.75	110.83	2.01	159.07	0.57	70.39	14.50	0.40
20.51	127.20	105.51	2.20	160.19	0.58	68.77	14.50	0.39
20.67	128.86	106.72	2.09	157.87	0.56	69.15	14.50	0.39
20.83	134.01	111.02	1.90	156.01	0.54	70.45	14.50	0.39
21.00	140.99	116.85	1.76	157.04	0.55	72.14	14.50	0.39
21.16	156.86	130.28	1.64	165.56	0.62	75.73	8.72	0.23
21.33	182.44	152.04	1.54	182.25	0.79	80.83	5.26	0.14
21.49	201.78	168.29	1.51	196.04	0.95	84.18	3.54	0.09
21.65	199.97	165.77	1.70	199.72	1.00	83.68	3.22	0.09
21.82	188.81	155.45	1.85	195.17	0.94	81.56	3.70	0.10
21.98	175.28	143.14	2.06	190.29	0.87	78.84	4.29	0.11
22.15	164.65	133.79	2.06	181.77	0.77	76.61	5.57	0.15
22.31	146.98	118.48	2.14	170.23	0.65	72.60	11.32	0.29
22.47	130.71	104.45	2.26	160.92	0.56	68.44	14.50	0.37
22.64	124.26	98.81	2.25	155.42	0.51	66.61	14.50	0.37
22.80	127.37	101.20	2.16	154.89	0.50	67.39	14.50	0.37
22.97	129.54	103.04	1.92	149.26	0.46	67.99	14.50	0.37
23.13	126.54	100.45	1.80	143.52	0.42	67.15	14.50	0.37
23.29	120.24	94.97	1.81	138.80	0.39	65.30	14.50	0.37
23.46	119.88	94.28	1.88	140.36	0.39	65.06	14.50	0.37
23.62	126.36	99.27	1.91	145.75	0.43	66.76	14.50	0.36
23.79	134.67	105.70	1.96	153.01	0.48	68.83	14.50	0.36
23.95	137.34	107.32	2.11	159.05	0.52	69.33	14.50	0.36
24.11	131.13	101.65	2.32	160.09	0.53	67.54	14.50	0.36
24.28	121.99	93.64	2.58	160.65	0.53	64.83	22.70	0.56
24.44	123.56	94.74	2.48	158.53	0.52	65.22	14.50	0.36
24.61	143.22	110.92	2.06	160.70	0.53	70.42	14.50	0.35
24.77	167.19	131.38	1.53	163.15	0.55	76.01	10.00	0.24
24.93	157.89	123.74	1.43	153.30	2.00	74.03	0.00	0.00
25.10	116.96	89.53	1.73	131.62	2.00	63.35	0.00	0.00
25.26	68.67	50.13	2.64	120.41	2.00	44.21	0.00	0.00
25.43	40.06	27.72	3.75	114.56	2.00	24.65	0.00	0.00
25.59	29.15	19.58	3.38	95.23	2.00	13.18	0.00	0.00
25.75	34.36	23.70	2.24	83.41	2.00	19.48	0.00	0.00
25.92	59.91	43.53	1.66	90.19	2.00	39.55	0.00	0.00
26.08	87.35	64.65	1.83	112.86	2.00	52.61	0.00	0.00
26.25	103.19	76.69	1.98	127.45	0.30	58.24	22.70	0.53
26.41	110.93	82.68	1.90	130.48	0.32	60.72	22.70	0.53
26.57	118.76	88.96	1.71	130.56	0.32	63.14	22.70	0.52
26.74	128.77	96.82	1.63	135.22	0.34	65.93	14.50	0.33
26.90	134.19	100.59	1.74	141.73	0.38	67.20	14.50	0.33
27.07	140.56	105.17	1.81	148.03	0.42	68.66	14.50	0.33
27.23	142.93	106.74	1.82	149.75	0.43	69.15	14.50	0.33
27.40	141.96	105.56	1.87	150.29	0.43	68.79	14.50	0.33
27.56	136.12	100.50	1.97	148.66	0.42	67.17	14.50	0.32
27.72	126.34	92.04	2.30	150.71	0.43	64.26	22.70	0.50

:: Estimation of post-earthquake lateral Displacements :: (continued)

Depth (ft)	q _t (tsf)	Q _{tn}	R _f (%)	Q _{tn,cs}	FS	D _r	Gamma _{max} (%)	Lat. disp. (in)
27.89	115.69	83.22	2.55	150.08	0.42	60.94	22.70	0.50
28.05	111.37	79.83	2.47	144.42	0.39	59.56	22.70	0.50
28.22	124.30	90.40	1.93	138.50	0.35	63.67	22.70	0.50
28.38	146.68	108.48	1.55	143.32	0.38	69.69	14.50	0.32
28.54	155.73	115.02	1.63	151.53	2.00	71.62	0.00	0.00
28.71	136.15	98.33	2.12	151.34	2.00	66.44	0.00	0.00
28.87	97.14	67.38	3.04	147.99	2.00	53.97	0.00	0.00
29.04	60.90	39.97	4.54	147.81	2.00	36.73	0.00	0.00
29.20	46.46	29.56	4.99	137.18	2.00	26.78	0.00	0.00
29.36	53.53	34.80	3.82	126.80	2.00	32.16	0.00	0.00
29.53	77.83	52.98	2.53	120.47	2.00	46.03	0.00	0.00
29.69	102.63	71.74	2.07	125.87	2.00	56.04	0.00	0.00
29.86	123.77	87.58	1.97	137.19	2.00	62.62	0.00	0.00
30.02	138.12	98.03	2.03	148.20	0.40	66.34	14.50	0.30
30.18	153.69	109.54	2.02	158.44	0.47	70.01	14.50	0.30
30.35	165.67	118.68	1.90	163.04	0.50	72.65	14.50	0.30
30.51	170.99	122.59	1.85	165.07	0.52	73.72	14.50	0.29
30.68	169.35	120.68	1.96	166.70	2.00	73.20	0.00	0.00
30.84	150.56	105.00	2.44	167.31	2.00	68.61	0.00	0.00
31.00	119.48	81.02	2.97	159.90	2.00	60.05	0.00	0.00
31.17	85.79	55.98	3.68	151.60	2.00	47.85	0.00	0.00
31.33	69.71	44.35	4.09	145.66	2.00	40.16	0.00	0.00
31.50	60.88	38.03	4.36	141.62	2.00	35.09	0.00	0.00
31.66	54.98	33.93	4.30	134.14	2.00	31.33	0.00	0.00
31.82	62.89	39.85	3.10	119.64	2.00	36.63	0.00	0.00
31.99	89.34	59.32	2.15	116.79	2.00	49.76	0.00	0.00
32.15	117.07	79.95	1.79	125.24	2.00	59.61	0.00	0.00
32.32	128.58	88.32	1.75	131.45	0.30	62.90	22.70	0.43
32.48	126.17	85.76	1.98	135.73	2.00	61.93	0.00	0.00
32.64	116.44	77.74	2.34	138.99	2.00	58.69	0.00	0.00
32.81	104.47	68.18	2.88	144.75	2.00	54.36	0.00	0.00
32.97	90.23	57.52	3.36	145.71	2.00	48.74	0.00	0.00
33.14	76.14	47.29	3.90	145.82	2.00	42.29	0.00	0.00
33.30	59.60	35.79	4.48	140.17	2.00	33.09	0.00	0.00
33.46	41.80	23.91	5.09	126.84	2.00	19.77	0.00	0.00
33.63	29.24	16.02	5.08	107.04	2.00	6.56	0.00	0.00
33.79	22.14	11.79	4.52	89.35	2.00	0.00	0.00	0.00
33.96	29.39	16.22	3.39	89.12	2.00	6.97	0.00	0.00
34.12	46.37	27.29	3.05	102.64	2.00	24.13	0.00	0.00
34.28	56.09	33.49	3.27	115.14	2.00	30.89	0.00	0.00
34.45	60.39	36.08	3.52	123.27	2.00	33.35	0.00	0.00
34.61	55.92	32.80	3.98	126.88	2.00	30.20	0.00	0.00
34.78	51.90	30.00	4.21	126.09	2.00	27.26	0.00	0.00
34.94	41.95	23.46	4.55	118.93	2.00	19.14	0.00	0.00
35.10	30.49	16.27	4.58	102.71	2.00	7.07	0.00	0.00
35.27	29.40	15.67	3.86	93.39	2.00	5.83	0.00	0.00
35.43	42.22	23.95	3.08	98.42	2.00	19.82	0.00	0.00
35.60	60.56	35.83	2.98	112.36	0.21	33.12	50.00	0.84

:: Estimation of post-earthquake lateral Displacements :: (continued)

Depth (ft)	q _t (tsf)	Q _{tn}	R _f (%)	Q _{tn,cs}	FS	D _r	Gamma _{max} (%)	Lat. disp. (in)
35.76	70.96	42.33	3.27	126.27	0.27	38.62	50.00	0.83
35.93	63.76	37.10	3.89	131.68	2.00	34.27	0.00	0.00
36.09	47.46	26.31	4.69	126.60	2.00	22.93	0.00	0.00
36.25	33.37	17.55	4.83	108.66	2.00	9.56	0.00	0.00
36.42	26.03	13.36	4.02	89.36	2.00	0.55	0.00	0.00
36.58	25.10	12.84	3.02	77.56	2.00	0.00	0.00	0.00
36.75	28.17	14.65	3.10	82.45	2.00	3.61	0.00	0.00
36.91	37.04	20.00	3.29	95.13	2.00	13.87	0.00	0.00
37.07	55.85	31.81	3.18	111.18	2.00	29.19	0.00	0.00
37.24	78.65	47.45	2.24	108.25	2.00	42.40	0.00	0.00
37.40	105.12	66.34	1.67	110.20	2.00	53.46	0.00	0.00
37.57	129.82	85.08	1.22	113.43	2.00	61.67	0.00	0.00
37.73	152.28	101.03	1.22	127.40	2.00	67.34	0.00	0.00
37.89	167.13	111.12	1.30	138.49	0.32	70.48	14.50	0.22
38.06	168.15	110.10	1.60	146.20	0.36	70.18	14.50	0.22
38.22	179.50	117.23	1.74	156.75	0.43	72.25	14.50	0.22
38.39	213.69	142.19	1.58	174.60	0.56	78.62	10.58	0.16
38.55	288.13	201.09	1.09	211.22	2.00	90.06	0.00	0.00
38.71	358.08	254.14	0.84	254.14	2.00	97.78	0.00	0.00
38.88	405.17	287.33	0.72	287.33	2.00	100.00	0.00	0.00
39.04	413.90	293.09	0.78	293.09	2.00	100.00	0.00	0.00
39.21	408.76	288.96	0.91	288.96	2.00	100.00	0.00	0.00
39.37	399.36	281.82	1.01	281.82	2.00	100.00	0.00	0.00
39.53	386.15	271.99	1.12	271.99	2.00	100.00	0.00	0.00
39.70	376.69	263.51	1.17	266.78	2.00	98.98	0.00	0.00
39.86	374.01	260.52	1.20	265.87	2.00	98.60	0.00	0.00
40.03	376.84	262.66	1.17	266.22	2.00	98.87	0.00	0.00
40.19	377.28	263.64	1.11	263.72	2.00	99.00	0.00	0.00
40.35	367.74	256.72	1.07	256.14	2.00	98.12	0.00	0.00
40.52	356.32	248.45	1.03	248.45	2.00	97.04	0.00	0.00
40.68	354.10	245.91	1.06	246.77	2.00	96.70	0.00	0.00
40.85	358.58	248.83	1.06	249.15	2.00	97.09	0.00	0.00
41.01	367.97	255.43	1.04	255.43	2.00	97.95	0.00	0.00
41.17	358.01	248.08	0.99	248.08	2.00	96.99	0.00	0.00
41.34	360.22	249.24	0.92	249.24	2.00	97.14	0.00	0.00
41.50	356.87	246.53	0.93	246.53	2.00	96.78	0.00	0.00
41.67	360.49	248.68	0.92	248.68	2.00	97.07	0.00	0.00
41.83	349.76	240.85	0.99	240.85	2.00	96.01	0.00	0.00
41.99	344.48	235.59	1.06	238.32	2.00	95.28	0.00	0.00
42.16	343.02	232.63	1.14	239.93	2.00	94.87	0.00	0.00
42.32	340.46	229.89	1.17	238.87	2.00	94.48	0.00	0.00
42.49	336.63	226.89	1.16	235.83	2.00	94.04	0.00	0.00
42.65	340.35	230.21	1.10	236.01	2.00	94.52	0.00	0.00
42.81	351.18	239.19	1.02	239.53	2.00	95.78	0.00	0.00
42.98	366.21	249.61	0.93	249.61	2.00	97.19	0.00	0.00
43.14	381.93	260.01	0.83	260.01	2.00	98.54	0.00	0.00
43.31	399.08	271.38	0.74	271.38	2.00	99.95	0.00	0.00
43.47	417.58	283.64	0.68	283.64	2.00	100.00	0.00	0.00

:: Estimation of post-earthquake lateral Displacements :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	R_f (%)	$Q_{tn,cs}$	FS	D_r	Gamma_{max} (%)	Lat. disp. (in)
43.64	430.79	292.25	0.62	292.25	2.00	100.00	0.00	0.00
43.80	437.52	296.42	0.60	296.42	2.00	100.00	0.00	0.00
43.96	437.08	295.69	0.58	295.69	2.00	100.00	0.00	0.00
44.13	441.78	298.47	0.57	298.47	2.00	100.00	0.00	0.00
44.29	454.80	306.89	0.53	306.89	2.00	100.00	0.00	0.00
44.46	470.25	316.93	0.52	316.93	2.00	100.00	0.00	0.00
44.62	474.75	319.53	0.57	319.53	2.00	100.00	0.00	0.00
44.78	471.24	316.70	0.64	316.70	2.00	100.00	0.00	0.00
44.95	464.89	311.96	0.70	311.96	2.00	100.00	0.00	0.00
45.11	466.35	312.49	0.69	312.49	2.00	100.00	0.00	0.00
45.28	475.18	317.98	0.72	317.98	2.00	100.00	0.00	0.00
45.44	478.24	319.59	0.75	319.59	2.00	100.00	0.00	0.00
45.60	473.31	315.82	0.81	315.82	2.00	100.00	0.00	0.00
45.77	458.75	305.60	0.74	305.60	2.00	100.00	0.00	0.00
45.93	448.96	298.62	0.65	298.62	2.00	100.00	0.00	0.00
46.10	438.25	291.05	0.59	291.05	2.00	100.00	0.00	0.00
46.26	427.89	283.74	0.59	283.74	2.00	100.00	0.00	0.00
46.42	416.71	275.89	0.58	275.89	2.00	100.00	0.00	0.00
46.59	408.27	269.90	0.61	269.90	2.00	99.77	0.00	0.00
46.75	385.95	254.69	0.70	254.69	2.00	97.86	0.00	0.00
46.92	334.85	220.41	0.86	220.41	2.00	93.08	0.00	0.00
47.08	234.89	146.13	1.14	164.91	2.00	79.52	0.00	0.00
47.24	134.27	75.77	1.64	117.32	2.00	57.84	0.00	0.00
47.41	60.37	29.22	2.61	97.47	2.00	26.40	0.00	0.00
47.57	38.23	16.97	2.63	80.91	2.00	8.45	0.00	0.00
47.74	34.33	15.15	2.03	69.30	2.00	4.71	0.00	0.00
47.90	36.15	16.17	1.91	68.88	2.00	6.86	0.00	0.00
48.06	35.15	15.31	2.42	75.21	2.00	5.05	0.00	0.00
48.23	41.89	18.85	2.47	81.44	2.00	11.92	0.00	0.00
48.39	48.93	22.59	2.52	87.45	2.00	17.89	0.00	0.00
48.56	51.19	23.68	2.63	90.80	2.00	19.45	0.00	0.00
48.72	41.07	17.91	3.14	89.52	2.00	10.24	0.00	0.00
48.88	29.46	11.98	3.27	78.53	2.00	0.00	0.00	0.00
49.05	26.79	10.75	2.40	66.29	2.00	0.00	0.00	0.00
49.21	25.86	10.50	1.74	57.87	2.00	0.00	0.00	0.00
49.38	24.95	9.97	1.84	58.17	2.00	0.00	0.00	0.00
49.54	24.91	9.82	2.18	61.81	2.00	0.00	0.00	0.00
49.70	34.06	14.67	1.83	65.67	2.00	3.65	0.00	0.00
49.87	43.55	19.99	1.58	67.74	2.00	13.86	0.00	0.00
50.03	72.04	37.61	0.97	68.41	2.00	34.72	0.00	0.00

Total estimated displacement: 19.48**Abbreviations**

q_t :	Total cone resistance
Q_{tn} :	Adjusted cone resistance to an effective overburden stress of 1 atm
R_f :	Friction ration
$Q_{tn,cs}$:	Adjusted and corrected cone resistance due to fines
FS:	Calculated factor of safety against liquefaction
D_r :	Calculated relative density
Gamma_{max} :	Calculated maximum cyclic shear strain
Lat. disp.:	Lateral displacement

:: Strength loss calculation (Robertson (2009)) ::

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
0.16	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
0.33	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
0.49	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
0.66	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
0.82	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
0.98	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
1.15	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
1.31	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
1.48	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
1.64	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
1.80	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
1.97	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
2.13	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
2.30	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
2.46	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
2.62	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
2.79	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
2.95	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
3.12	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
3.28	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
3.44	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
3.61	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
3.77	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
3.94	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
4.10	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
4.27	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
4.43	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
4.59	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
4.76	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
4.92	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
5.09	67.96	108.69	1.28	138.78	1.98	0.84	0.84
5.25	101.49	162.56	1.15	187.25	1.86	0.90	0.90
5.41	101.27	162.17	1.15	186.90	1.86	0.90	0.90
5.58	102.99	164.92	1.15	188.87	1.85	0.90	0.90
5.74	105.10	168.30	1.14	191.61	1.84	0.90	0.90
5.91	105.11	168.30	1.14	192.25	1.85	0.90	0.90
6.07	102.79	164.55	1.13	186.12	1.83	0.90	0.90
6.23	98.98	158.42	1.13	178.93	1.83	0.89	0.89
6.40	90.48	144.75	1.16	167.39	1.86	0.88	0.88
6.56	84.45	135.04	1.21	163.02	1.92	0.87	0.87
6.73	79.34	126.81	1.26	159.74	1.97	0.86	0.86
6.89	81.84	130.81	1.24	162.17	1.95	0.87	0.87
7.05	85.99	137.47	1.21	166.24	1.92	0.87	0.87
7.22	91.38	144.75	1.17	169.66	1.88	0.88	0.88
7.38	95.60	148.46	1.15	171.41	1.86	0.88	0.88
7.55	96.75	148.58	1.16	172.25	1.87	0.88	0.88
7.71	96.72	147.11	1.17	171.84	1.88	0.88	0.88
7.87	96.99	145.20	1.16	168.26	1.87	0.88	0.88

:: Strength loss calculation (Robertson (2009)) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
8.04	98.86	145.03	1.14	165.04	1.84	0.88	0.88
8.20	103.61	148.86	1.11	165.68	1.81	0.88	0.88
8.37	111.27	157.72	1.11	174.54	1.80	0.89	0.89
8.53	120.78	169.39	1.11	187.58	1.80	0.90	0.90
8.69	126.86	177.10	1.13	199.29	1.82	0.91	0.91
8.86	129.25	179.38	1.14	204.74	1.85	0.91	0.91
9.02	131.01	180.28	1.15	207.29	1.86	0.91	0.91
9.19	137.73	186.12	1.13	209.48	1.83	0.92	0.92
9.35	143.22	189.66	1.09	207.57	1.78	0.92	0.92
9.51	137.01	179.46	1.09	196.03	1.78	0.91	0.91
9.68	120.25	157.78	1.13	178.74	1.83	0.89	0.89
9.84	100.79	133.86	1.23	164.77	1.94	0.87	0.87
10.01	89.64	119.49	1.32	157.43	2.01	0.85	0.85
10.17	84.45	111.97	1.36	152.11	2.04	0.84	0.84
10.33	83.83	109.84	1.35	148.16	2.04	0.84	0.84
10.50	91.26	117.42	1.29	151.35	1.99	0.85	0.85
10.66	104.34	131.63	1.22	161.04	1.93	0.87	0.87
10.83	121.37	150.17	1.17	175.09	1.87	0.89	0.89
10.99	135.72	165.42	1.14	187.78	1.84	0.90	0.90
11.15	146.34	176.38	1.12	198.00	1.82	0.91	0.91
11.32	150.12	179.58	1.13	202.57	1.83	0.91	0.91
11.48	144.20	171.89	1.16	198.66	1.86	0.91	0.91
11.65	126.06	150.72	1.24	186.25	1.95	0.89	0.89
11.81	98.56	119.03	1.44	171.09	2.09	0.85	0.85
11.98	67.48	82.70	1.92	158.84	2.29	0.80	0.80
12.14	43.30	53.75	2.83	151.98	2.51	0.74	0.74
12.30	37.54	46.01	2.88	132.47	2.52	0.72	0.72
12.47	40.17	48.34	2.53	122.28	2.45	0.73	0.73
12.63	41.10	48.84	2.44	119.26	2.43	0.73	0.73
12.80	33.40	39.71	3.13	124.23	2.57	0.71	0.71
12.96	28.63	33.83	3.63	122.72	2.65	2.33	2.33
13.12	37.98	43.89	2.63	115.26	2.47	0.72	0.72
13.29	53.81	60.80	1.89	115.18	2.28	0.76	0.76
13.45	74.99	82.97	1.48	122.49	2.11	0.80	0.80
13.62	90.45	98.63	1.33	131.22	2.02	0.83	0.83
13.78	99.29	107.16	1.28	137.35	1.99	0.84	0.84
13.94	97.99	105.16	1.31	138.28	2.01	0.83	0.83
14.11	94.76	101.19	1.37	138.70	2.05	0.83	0.83
14.27	93.51	99.20	1.40	139.09	2.07	0.83	0.83
14.44	94.06	99.03	1.40	139.12	2.07	0.83	0.83
14.60	94.64	98.92	1.42	140.57	2.08	0.83	0.83
14.76	95.71	99.38	1.45	143.91	2.10	0.83	0.83
14.93	95.97	99.01	1.49	147.77	2.12	0.83	0.83
15.09	96.07	98.34	1.49	146.76	2.12	0.82	0.82
15.26	101.61	103.07	1.41	145.81	2.08	0.83	0.83
15.42	114.39	114.94	1.30	149.98	2.00	0.85	0.85
15.58	129.54	128.85	1.18	152.20	1.89	0.86	0.86
15.75	136.84	135.04	1.13	152.88	1.83	0.87	0.87

:: Strength loss calculation (Robertson (2009)) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
15.91	131.77	129.15	1.12	144.74	1.82	0.86	0.86
16.08	124.10	121.08	1.18	142.89	1.89	0.85	0.85
16.24	119.75	116.24	1.25	145.24	1.96	0.85	0.85
16.40	120.47	116.28	1.31	152.26	2.01	0.85	0.85
16.57	115.05	110.37	1.41	156.00	2.08	0.84	0.84
16.73	101.09	96.28	1.60	154.14	2.17	0.82	0.82
16.90	82.62	78.01	1.97	153.66	2.31	0.79	0.79
17.06	74.94	70.13	2.17	152.52	2.36	0.78	0.78
17.22	85.83	79.86	1.90	151.87	2.29	0.80	0.80
17.39	133.14	123.68	1.33	164.09	2.02	0.86	0.86
17.55	173.14	160.30	1.18	188.96	1.89	0.90	0.90
17.72	196.65	181.19	1.15	209.06	1.86	0.91	0.91
17.88	186.05	170.13	1.24	210.61	1.95	0.90	0.90
18.04	175.70	159.38	1.33	211.94	2.02	0.89	0.89
18.21	173.82	156.58	1.36	213.66	2.05	0.89	0.89
18.37	178.86	160.19	1.34	214.79	2.03	0.90	0.90
18.54	184.23	164.13	1.31	214.68	2.01	0.90	0.90
18.70	183.20	162.29	1.29	209.26	1.99	0.90	0.90
18.86	176.93	155.70	1.31	203.20	2.00	0.89	0.89
19.03	164.80	143.88	1.35	194.91	2.04	0.88	0.88
19.19	141.54	122.34	1.46	178.46	2.10	0.86	0.86
19.36	104.91	89.37	1.71	152.57	2.22	0.81	0.81
19.52	82.51	69.41	1.87	130.13	2.28	0.78	0.78
19.69	84.97	71.29	1.70	121.55	2.22	0.78	0.78
19.85	110.07	92.91	1.39	129.48	2.06	0.82	0.82
20.01	131.71	111.28	1.29	143.34	1.99	0.84	0.84
20.18	137.66	115.80	1.33	153.90	2.02	0.85	0.85
20.34	132.75	110.83	1.44	159.07	2.09	0.84	0.84
20.51	127.20	105.51	1.52	160.19	2.13	0.83	0.83
20.67	128.86	106.72	1.48	157.87	2.11	0.84	0.84
20.83	134.01	111.02	1.41	156.01	2.07	0.84	0.84
21.00	140.99	116.85	1.34	157.04	2.03	0.85	0.85
21.16	156.86	130.28	1.27	165.56	1.98	0.87	0.87
21.33	182.44	152.04	1.20	182.25	1.91	0.89	0.89
21.49	201.78	168.29	1.16	196.04	1.87	0.90	0.90
21.65	199.97	165.77	1.20	199.72	1.92	0.90	0.90
21.82	188.81	155.45	1.26	195.17	1.96	0.89	0.89
21.98	175.28	143.14	1.33	190.29	2.02	0.88	0.88
22.15	164.65	133.79	1.36	181.77	2.04	0.87	0.87
22.31	146.98	118.48	1.44	170.23	2.09	0.85	0.85
22.47	130.71	104.45	1.54	160.92	2.14	0.83	0.83
22.64	124.26	98.81	1.57	155.42	2.16	0.83	0.83
22.80	127.37	101.20	1.53	154.89	2.14	0.83	0.83
22.97	129.54	103.04	1.45	149.26	2.10	0.83	0.83
23.13	126.54	100.45	1.43	143.52	2.09	0.83	0.83
23.29	120.24	94.97	1.46	138.80	2.10	0.82	0.82
23.46	119.88	94.28	1.49	140.36	2.12	0.82	0.82
23.62	126.36	99.27	1.47	145.75	2.11	0.83	0.83

:: Strength loss calculation (Robertson (2009)) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
23.79	134.67	105.70	1.45	153.01	2.10	0.84	0.84
23.95	137.34	107.32	1.48	159.05	2.11	0.84	0.84
24.11	131.13	101.65	1.58	160.09	2.16	0.83	0.83
24.28	121.99	93.64	1.72	160.65	2.22	0.82	0.82
24.44	123.56	94.74	1.67	158.53	2.20	0.82	0.82
24.61	143.22	110.92	1.45	160.70	2.10	0.84	0.84
24.77	167.19	131.38	1.24	163.15	1.95	0.87	0.87
24.93	157.89	123.74	1.24	153.30	1.95	0.86	0.86
25.10	116.96	89.53	1.47	131.62	2.11	0.81	0.81
25.26	68.67	50.13	2.40	120.41	2.42	0.73	0.73
25.43	40.06	27.72	4.13	114.56	2.72	1.80	1.80
25.59	29.15	19.58	4.86	95.23	2.81	1.28	1.28
25.75	34.36	23.70	3.52	83.41	2.63	1.52	1.52
25.92	59.91	43.53	2.07	90.19	2.34	0.72	0.72
26.08	87.35	64.65	1.75	112.86	2.23	0.77	0.77
26.25	103.19	76.69	1.66	127.45	2.20	0.79	0.79
26.41	110.93	82.68	1.58	130.48	2.16	0.80	0.80
26.57	118.76	88.96	1.47	130.56	2.11	0.81	0.81
26.74	128.77	96.82	1.40	135.22	2.07	0.82	0.82
26.90	134.19	100.59	1.41	141.73	2.07	0.83	0.83
27.07	140.56	105.17	1.41	148.03	2.07	0.83	0.83
27.23	142.93	106.74	1.40	149.75	2.07	0.84	0.84
27.40	141.96	105.56	1.42	150.29	2.08	0.83	0.83
27.56	136.12	100.50	1.48	148.66	2.11	0.83	0.83
27.72	126.34	92.04	1.64	150.71	2.19	0.82	0.82
27.89	115.69	83.22	1.80	150.08	2.25	0.80	0.80
28.05	111.37	79.83	1.81	144.42	2.25	0.80	0.80
28.22	124.30	90.40	1.53	138.50	2.14	0.81	0.81
28.38	146.68	108.48	1.32	143.32	2.02	0.84	0.84
28.54	155.73	115.02	1.32	151.53	2.01	0.85	0.85
28.71	136.15	98.33	1.54	151.34	2.14	0.82	0.82
28.87	97.14	67.38	2.20	147.99	2.37	0.77	0.77
29.04	60.90	39.97	3.70	147.81	2.66	2.55	2.55
29.20	46.46	29.56	4.64	137.18	2.78	1.92	1.92
29.36	53.53	34.80	3.64	126.80	2.65	2.22	2.22
29.53	77.83	52.98	2.27	120.47	2.39	0.74	0.74
29.69	102.63	71.74	1.75	125.87	2.23	0.78	0.78
29.86	123.77	87.58	1.57	137.19	2.16	0.81	0.81
30.02	138.12	98.03	1.51	148.20	2.13	0.82	0.82
30.18	153.69	109.54	1.45	158.44	2.10	0.84	0.84
30.35	165.67	118.68	1.37	163.04	2.05	0.85	0.85
30.51	170.99	122.59	1.35	165.07	2.03	0.86	0.86
30.68	169.35	120.68	1.38	166.70	2.06	0.85	0.85
30.84	150.56	105.00	1.59	167.31	2.17	0.83	0.83
31.00	119.48	81.02	1.97	159.90	2.31	0.80	0.80
31.17	85.79	55.98	2.71	151.60	2.49	0.75	0.75
31.33	69.71	44.35	3.28	145.66	2.59	0.72	0.72
31.50	60.88	38.03	3.72	141.62	2.66	2.42	2.42

:: Strength loss calculation (Robertson (2009)) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
31.66	54.98	33.93	3.95	134.14	2.69	2.17	2.17
31.82	62.89	39.85	3.00	119.64	2.54	0.71	0.71
31.99	89.34	59.32	1.97	116.79	2.31	0.76	0.76
32.15	117.07	79.95	1.57	125.24	2.16	0.80	0.80
32.32	128.58	88.32	1.49	131.45	2.12	0.81	0.81
32.48	126.17	85.76	1.58	135.73	2.16	0.81	0.81
32.64	116.44	77.74	1.79	138.99	2.25	0.79	0.79
32.81	104.47	68.18	2.12	144.75	2.35	0.77	0.77
32.97	90.23	57.52	2.53	145.71	2.45	0.75	0.75
33.14	76.14	47.29	3.08	145.82	2.56	0.73	0.73
33.30	59.60	35.79	3.92	140.17	2.69	2.28	2.28
33.46	41.80	23.91	5.31	126.84	2.86	1.57	1.57
33.63	29.24	16.02	6.68	107.04	2.99	1.07	1.07
33.79	22.14	11.79	7.58	89.35	3.07	0.79	0.79
33.96	29.39	16.22	5.49	89.12	2.88	1.07	1.07
34.12	46.37	27.29	3.76	102.64	2.67	1.73	1.73
34.28	56.09	33.49	3.44	115.14	2.62	2.10	2.10
34.45	60.39	36.08	3.42	123.27	2.61	2.26	2.26
34.61	55.92	32.80	3.87	126.88	2.68	2.08	2.08
34.78	51.90	30.00	4.20	126.09	2.73	1.92	1.92
34.94	41.95	23.46	5.07	118.93	2.83	1.53	1.53
35.10	30.49	16.27	6.31	102.71	2.96	1.08	1.08
35.27	29.40	15.67	5.96	93.39	2.93	1.04	1.04
35.43	42.22	23.95	4.11	98.42	2.72	1.53	1.53
35.60	60.56	35.83	3.14	112.36	2.57	0.69	0.69
35.76	70.96	42.33	2.98	126.27	2.54	0.71	0.71
35.93	63.76	37.10	3.55	131.68	2.64	2.33	2.33
36.09	47.46	26.31	4.81	126.60	2.80	1.70	1.70
36.25	33.37	17.55	6.19	108.66	2.95	1.17	1.17
36.42	26.03	13.36	6.69	89.36	3.00	0.89	0.89
36.58	25.10	12.84	6.04	77.56	2.93	0.85	0.85
36.75	28.17	14.65	5.63	82.45	2.89	0.97	0.97
36.91	37.04	20.00	4.76	95.13	2.80	1.29	1.29
37.07	55.85	31.81	3.49	111.18	2.63	1.99	1.99
37.24	78.65	47.45	2.28	108.25	2.39	0.73	0.73
37.40	105.12	66.34	1.66	110.20	2.20	0.77	0.77
37.57	129.82	85.08	1.33	113.43	2.02	0.80	0.80
37.73	152.28	101.03	1.26	127.40	1.97	0.83	0.83
37.89	167.13	111.12	1.25	138.49	1.96	0.84	0.84
38.06	168.15	110.10	1.33	146.20	2.02	0.84	0.84
38.22	179.50	117.23	1.34	156.75	2.03	0.85	0.85
38.39	213.69	142.19	1.23	174.60	1.94	0.88	0.88
38.55	288.13	201.09	1.05	211.22	1.72	0.93	0.93
38.71	358.08	254.14	1.00	254.14	1.56	0.97	0.97
38.88	405.17	287.33	1.00	287.33	1.48	0.99	0.99
39.04	413.90	293.09	1.00	293.09	1.50	0.99	0.99
39.21	408.76	288.96	1.00	288.96	1.55	0.99	0.99
39.37	399.36	281.82	1.00	281.82	1.60	0.98	0.98

:: Strength loss calculation (Robertson (2009)) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
39.53	386.15	271.99	1.00	271.99	1.64	0.98	0.98
39.70	376.69	263.51	1.01	266.78	1.66	0.97	0.97
39.86	374.01	260.52	1.02	265.87	1.67	0.97	0.97
40.03	376.84	262.66	1.01	266.22	1.66	0.97	0.97
40.19	377.28	263.64	1.00	263.72	1.65	0.97	0.97
40.35	367.74	256.72	1.00	256.14	1.64	0.97	0.97
40.52	356.32	248.45	1.00	248.45	1.64	0.96	0.96
40.68	354.10	245.91	1.00	246.77	1.65	0.96	0.96
40.85	358.58	248.83	1.00	249.15	1.65	0.96	0.96
41.01	367.97	255.43	1.00	255.43	1.63	0.97	0.97
41.17	358.01	248.08	1.00	248.08	1.62	0.96	0.96
41.34	360.22	249.24	1.00	249.24	1.60	0.96	0.96
41.50	356.87	246.53	1.00	246.53	1.61	0.96	0.96
41.67	360.49	248.68	1.00	248.68	1.60	0.96	0.96
41.83	349.76	240.85	1.00	240.85	1.63	0.96	0.96
41.99	344.48	235.59	1.01	238.32	1.66	0.96	0.96
42.16	343.02	232.63	1.03	239.93	1.69	0.95	0.95
42.32	340.46	229.89	1.04	238.87	1.70	0.95	0.95
42.49	336.63	226.89	1.04	235.83	1.70	0.95	0.95
42.65	340.35	230.21	1.03	236.01	1.68	0.95	0.95
42.81	351.18	239.19	1.00	239.53	1.65	0.96	0.96
42.98	366.21	249.61	1.00	249.61	1.60	0.96	0.96
43.14	381.93	260.01	1.00	260.01	1.55	0.97	0.97
43.31	399.08	271.38	1.00	271.38	1.51	0.98	0.98
43.47	417.58	283.64	1.00	283.64	1.47	0.99	0.99
43.64	430.79	292.25	1.00	292.25	1.43	0.99	0.99
43.80	437.52	296.42	1.00	296.42	1.41	0.99	0.99
43.96	437.08	295.69	1.00	295.69	1.40	0.99	0.99
44.13	441.78	298.47	1.00	298.47	1.40	0.99	0.99
44.29	454.80	306.89	1.00	306.89	1.36	1.00	1.00
44.46	470.25	316.93	1.00	316.93	1.35	1.00	1.00
44.62	474.75	319.53	1.00	319.53	1.37	1.01	1.01
44.78	471.24	316.70	1.00	316.70	1.41	1.00	1.00
44.95	464.89	311.96	1.00	311.96	1.45	1.00	1.00
45.11	466.35	312.49	1.00	312.49	1.44	1.00	1.00
45.28	475.18	317.98	1.00	317.98	1.45	1.00	1.00
45.44	478.24	319.59	1.00	319.59	1.46	1.01	1.01
45.60	473.31	315.82	1.00	315.82	1.49	1.00	1.00
45.77	458.75	305.60	1.00	305.60	1.47	1.00	1.00
45.93	448.96	298.62	1.00	298.62	1.44	0.99	0.99
46.10	438.25	291.05	1.00	291.05	1.42	0.99	0.99
46.26	427.89	283.74	1.00	283.74	1.42	0.99	0.99
46.42	416.71	275.89	1.00	275.89	1.42	0.98	0.98
46.59	408.27	269.90	1.00	269.90	1.45	0.98	0.98
46.75	385.95	254.69	1.00	254.69	1.51	0.97	0.97
46.92	334.85	220.41	1.00	220.41	1.61	0.94	0.94
47.08	234.89	146.13	1.13	164.91	1.83	0.88	0.88
47.24	134.27	75.77	1.55	117.32	2.15	0.79	0.79

:: Strength loss calculation (Robertson (2009)) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
47.41	60.37	29.22	3.34	97.47	2.60	1.77	1.77
47.57	38.23	16.97	4.77	80.91	2.80	1.08	1.08
47.74	34.33	15.15	4.57	69.30	2.77	0.26	0.96
47.90	36.15	16.17	4.26	68.88	2.74	0.30	1.02
48.06	35.15	15.31	4.91	75.21	2.82	0.98	0.98
48.23	41.89	18.85	4.32	81.44	2.74	1.19	1.19
48.39	48.93	22.59	3.87	87.45	2.68	1.40	1.40
48.56	51.19	23.68	3.83	90.80	2.68	1.46	1.46
48.72	41.07	17.91	5.00	89.52	2.82	1.15	1.15
48.88	29.46	11.98	6.56	78.53	2.98	0.80	0.80
49.05	26.79	10.75	6.16	66.29	2.95	0.22	0.72
49.21	25.86	10.50	5.51	57.87	2.88	0.19	0.69
49.38	24.95	9.97	5.84	58.17	2.91	0.21	0.66
49.54	24.91	9.82	6.29	61.81	2.96	0.23	0.65
49.70	34.06	14.67	4.48	65.67	2.76	0.30	0.93
49.87	43.55	19.99	3.39	67.74	2.61	0.31	1.21
50.03	72.04	37.61	1.82	68.41	2.26	0.18	0.70

Abbreviations

q_t :	Total cone resistance
K_c :	Cone resistance correction factor due to fines
$Q_{tn,cs}$:	Adjusted and corrected cone resistance due to fines
I_c :	Soil behavior type index
$S_{u(liq)}/\sigma'_v$:	Calculated liquefied undrained strength ratio
$S_{u(peak)}/\sigma'_v$:	Calculated peak undrained strength ratio

LIQUEFACTION ANALYSIS REPORT

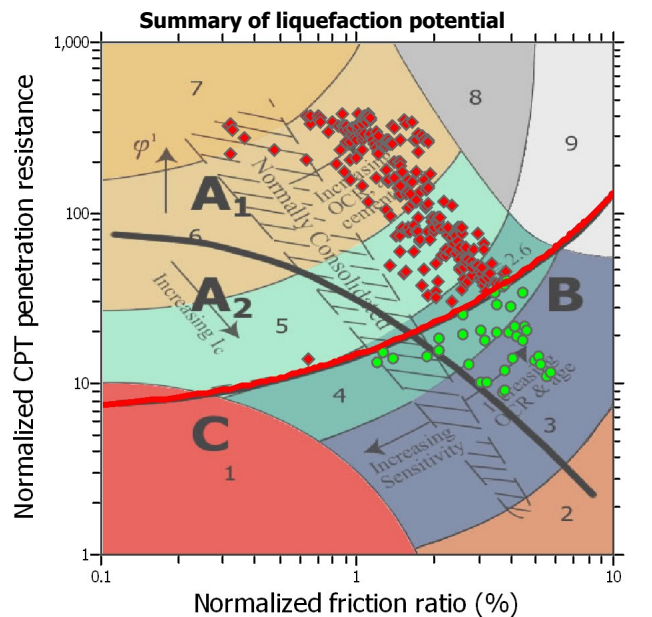
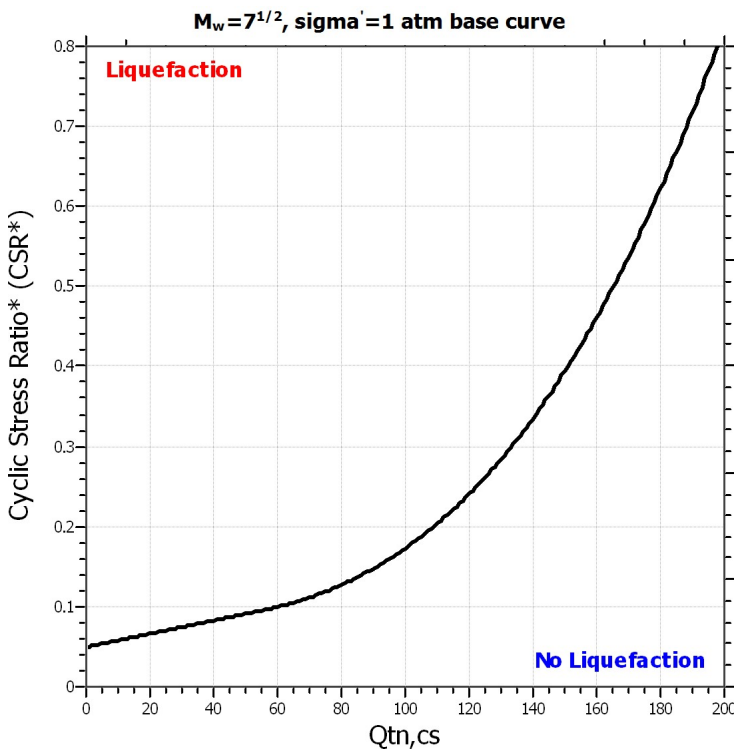
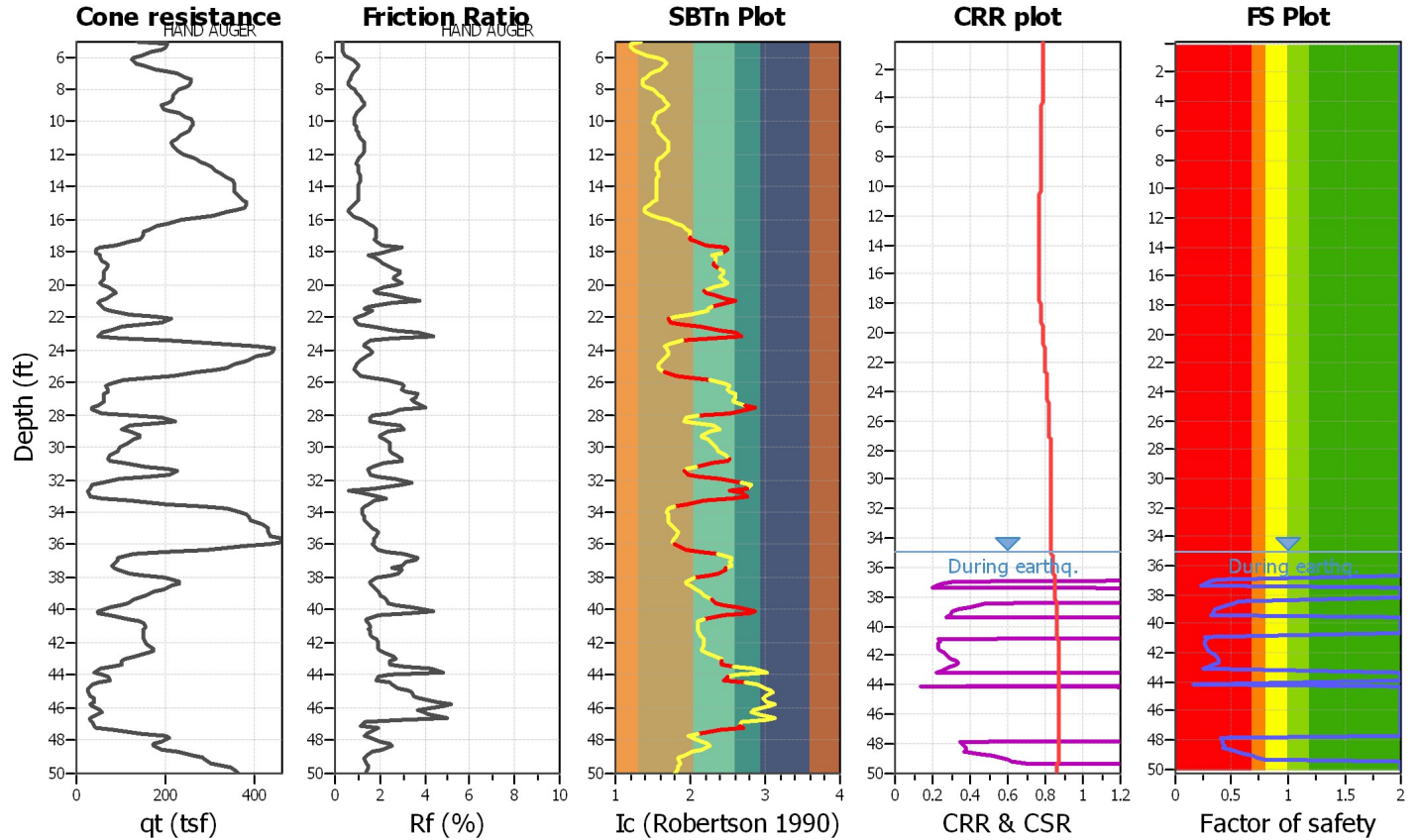
Project title : 14-108 Aqua Del Vista

Location : Coachella - NCEER 2001 Methods

CPT file : 075C08

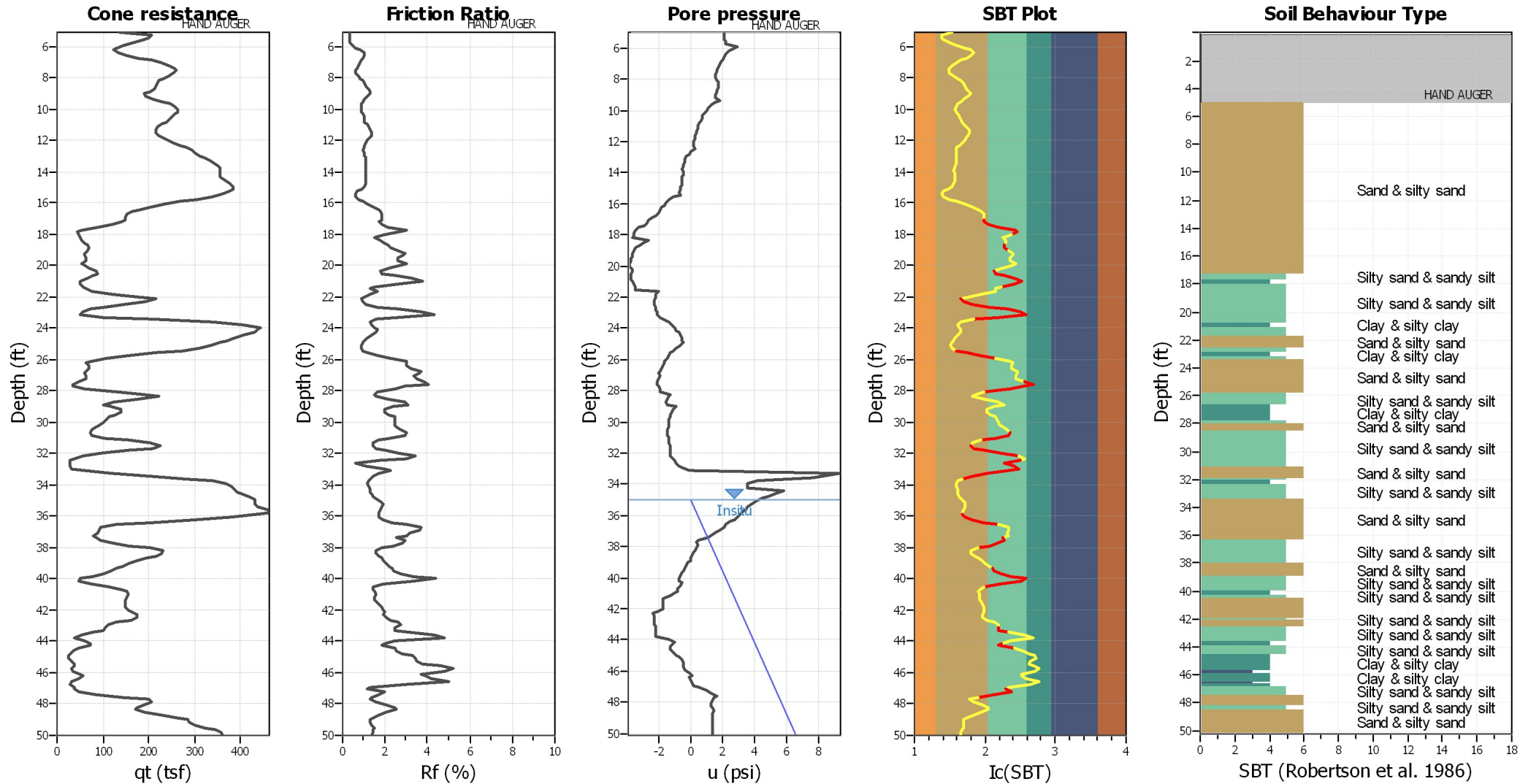
Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	35.00 ft	Use fill:	No	Clay like behavior	
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	35.00 ft	Fill height:	N/A	applied:	Sands only
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w :	7.80	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	1.10	Unit weight calculation:	Based on SBT	K_0 applied:	Yes	MSF method:	Method based



Zone A₁: Cyclic liquefaction likely depending on size and duration of cyclic loading
 Zone A₂: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
 Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
 Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



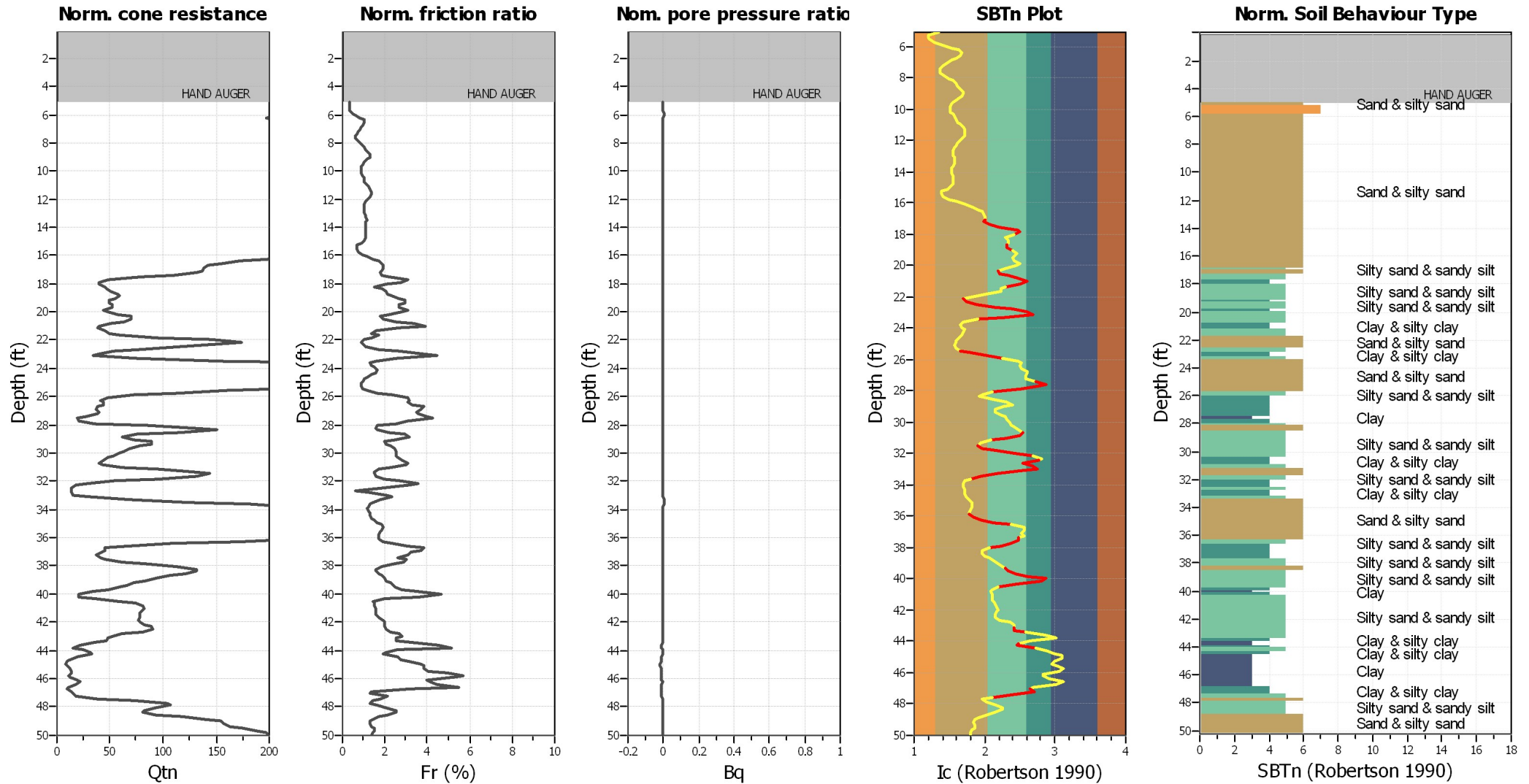
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	35.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K ₀ applied:	Yes
Earthquake magnitude M _w :	7.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.10	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

CPT basic interpretation plots (normalized)



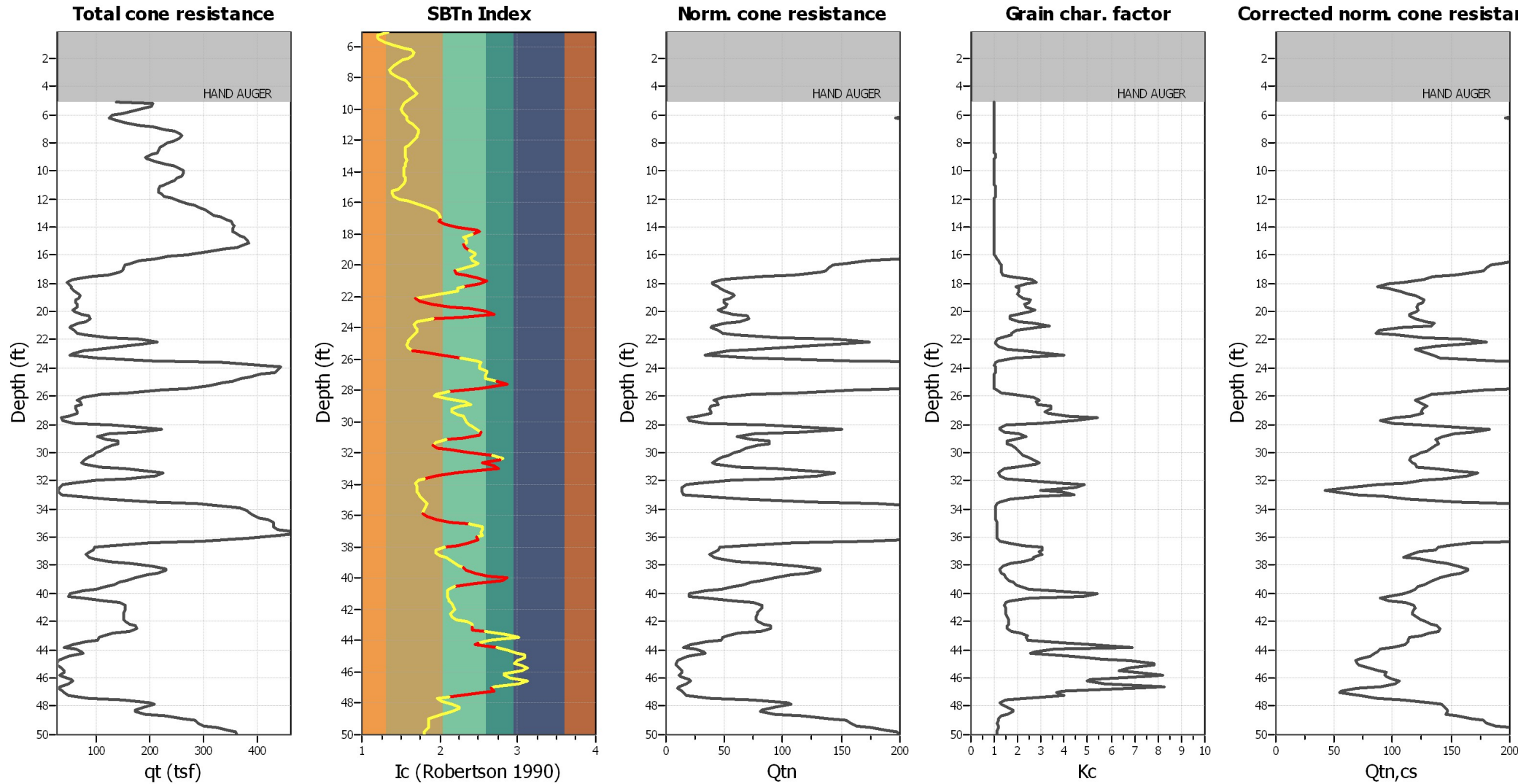
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	35.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K _o applied:	Yes
Earthquake magnitude M _w :	7.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.10	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

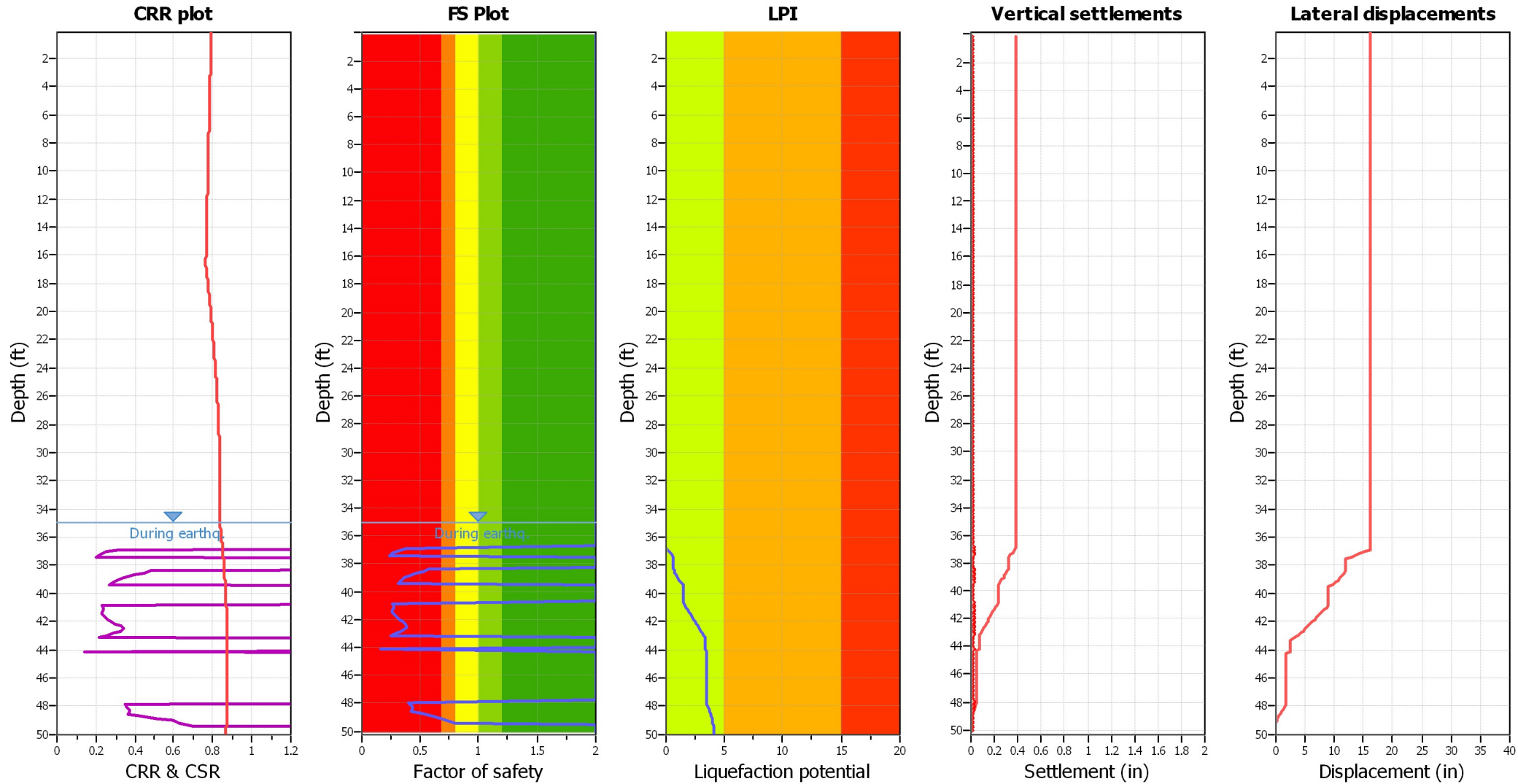
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	35.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K _a applied:	Yes
Earthquake magnitude M _w :	7.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.10	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (earthq.):	35.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K ₀ applied:	Yes
Earthquake magnitude M _w :	7.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.10	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Fill height:	N/A	Limit depth:	N/A

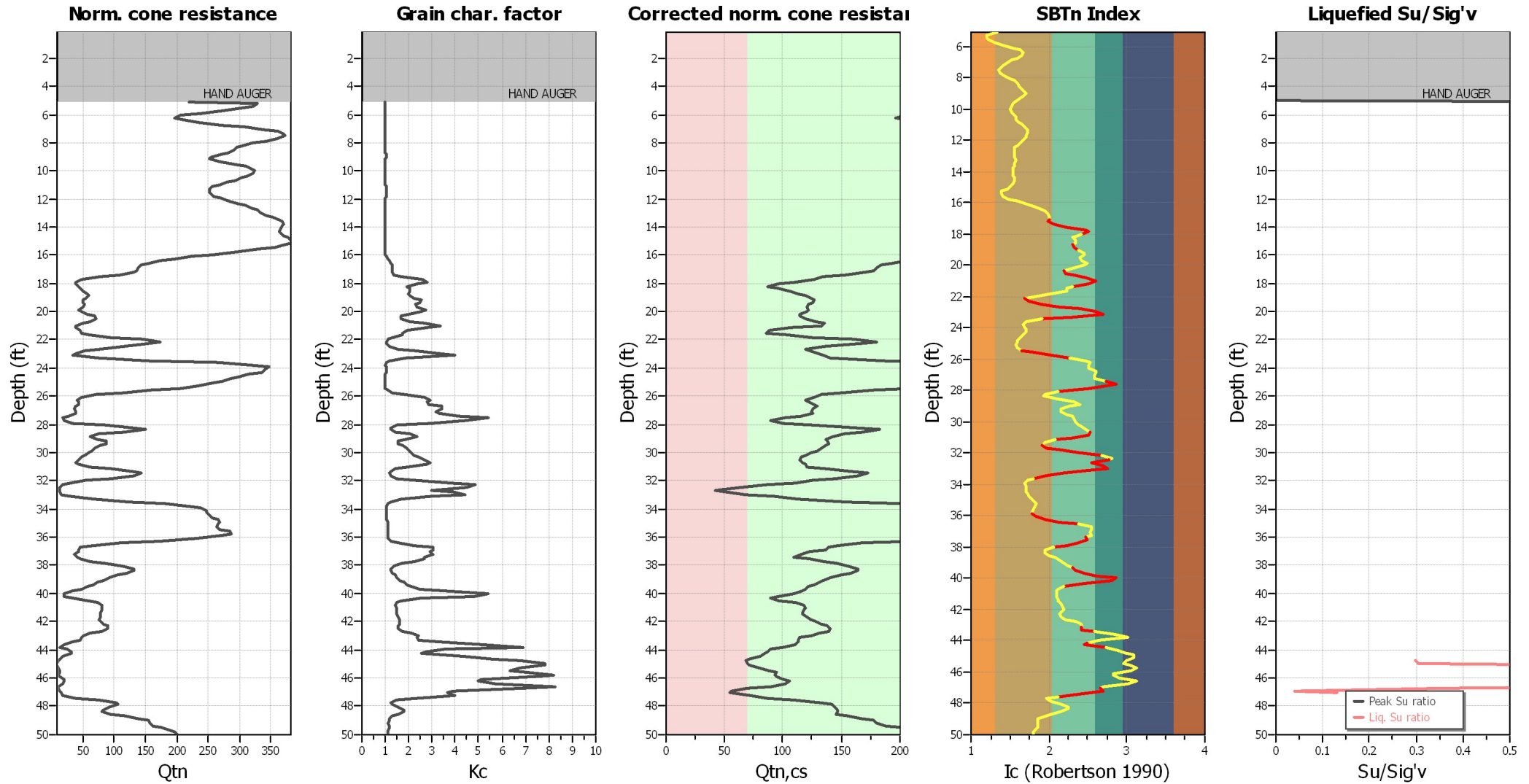
F.S. color scheme

Red	Almost certain it will liquefy
Orange	Very likely to liquefy
Yellow	Liquefaction and no liq. are equally likely
Green	Unlike to liquefy
Dark Green	Almost certain it will not liquefy

LPI color scheme

Red	Very high risk
Orange	High risk
Yellow	Low risk

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	35.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on I_c value	I_c cut-off value:	2.60	K_g applied:	Yes
Earthquake magnitude M_w :	7.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.10	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Fill height:	N/A	Limit depth:	N/A

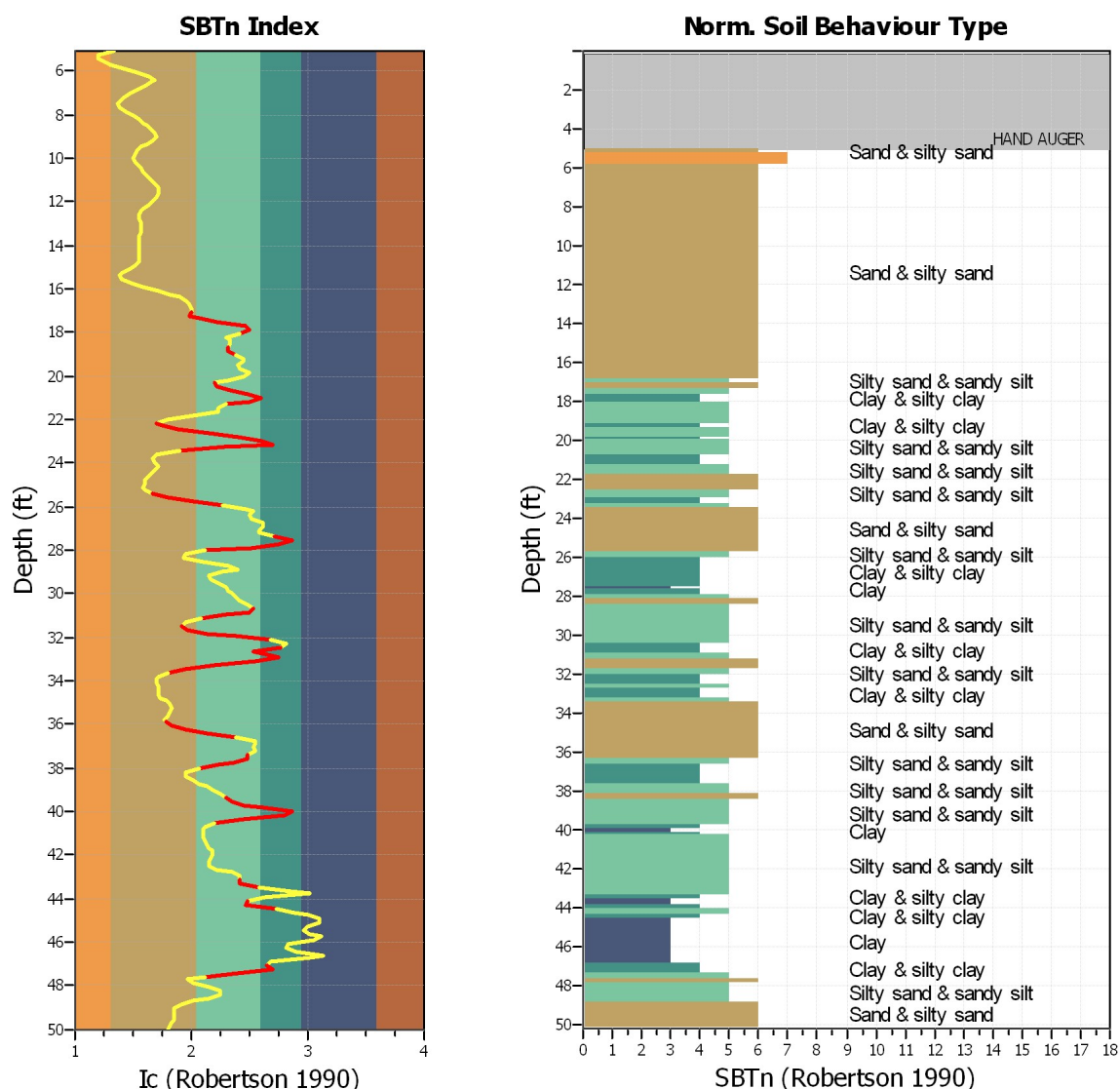
TRANSITION LAYER DETECTION ALGORITHM REPORT

Summary Details & Plots

Short description

The software will delete data when the cone is in transition from either clay to sand or vice-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between $1.80 < I_c < 3.0$) and a rate of change of I_c . Transitions typically occur when the rate of change of I_c is fast (i.e. ΔI_c is small).

The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties

I_c minimum check value:	1.70
I_c maximum check value:	3.00
I_c change ratio value:	0.0300
Minimum number of points in layer:	3

General statistics

Total points in CPT file:	305
Total points excluded:	84
Exclusion percentage:	27.54%
Number of layers detected:	20

:: Field input data ::

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
1	0.16	-9999.00	-9999.00	-9999.00	N/A	120.90
2	0.33	-9999.00	-9999.00	-9999.00	N/A	120.90
3	0.49	-9999.00	-9999.00	-9999.00	N/A	120.90
4	0.66	-9999.00	-9999.00	-9999.00	N/A	120.90
5	0.82	-9999.00	-9999.00	-9999.00	N/A	120.90
6	0.98	-9999.00	-9999.00	-9999.00	N/A	120.90
7	1.15	-9999.00	-9999.00	-9999.00	N/A	120.90
8	1.31	-9999.00	-9999.00	-9999.00	N/A	120.90
9	1.48	-9999.00	-9999.00	-9999.00	N/A	120.90
10	1.64	-9999.00	-9999.00	-9999.00	N/A	120.90
11	1.80	-9999.00	-9999.00	-9999.00	N/A	120.90
12	1.97	-9999.00	-9999.00	-9999.00	N/A	120.90
13	2.13	-9999.00	-9999.00	-9999.00	N/A	120.90
14	2.30	-9999.00	-9999.00	-9999.00	N/A	120.90
15	2.46	-9999.00	-9999.00	-9999.00	N/A	120.90
16	2.62	-9999.00	-9999.00	-9999.00	N/A	120.90
17	2.79	-9999.00	-9999.00	-9999.00	N/A	120.90
18	2.95	-9999.00	-9999.00	-9999.00	N/A	120.90
19	3.12	-9999.00	-9999.00	-9999.00	N/A	120.90
20	3.28	-9999.00	-9999.00	-9999.00	N/A	120.90
21	3.44	-9999.00	-9999.00	-9999.00	N/A	120.90
22	3.61	-9999.00	-9999.00	-9999.00	N/A	120.90
23	3.77	-9999.00	-9999.00	-9999.00	N/A	120.90
24	3.94	-9999.00	-9999.00	-9999.00	N/A	120.90
25	4.10	-9999.00	-9999.00	-9999.00	N/A	120.90
26	4.27	-9999.00	-9999.00	-9999.00	N/A	120.90
27	4.43	-9999.00	-9999.00	-9999.00	N/A	120.90
28	4.59	-9999.00	-9999.00	-9999.00	N/A	120.90
29	4.76	-9999.00	-9999.00	-9999.00	N/A	120.90
30	4.92	-9999.00	-9999.00	-9999.00	N/A	120.90
31	5.09	204.77	0.62	2.09	0.82	116.22
32	5.25	207.48	0.69	2.09	0.00	120.24
33	5.41	203.45	0.68	2.11	0.00	119.90
34	5.58	191.96	0.54	2.14	0.00	119.59
35	5.74	174.76	0.65	2.16	0.37	119.22
36	5.91	141.98	0.65	2.93	1.71	119.74
37	6.07	124.20	0.77	2.56	3.44	120.60
38	6.23	120.45	1.01	2.32	4.99	122.24
39	6.40	128.56	1.30	2.21	5.68	124.14
40	6.56	145.95	1.61	2.09	5.33	125.83
41	6.73	178.79	1.81	1.98	4.35	127.00
42	6.89	207.14	1.84	1.89	3.22	127.65
43	7.05	229.81	1.82	1.78	2.33	127.84
44	7.22	246.40	1.76	1.71	1.68	127.86
45	7.38	260.31	1.72	1.66	1.24	127.65
46	7.55	262.22	1.60	1.59	1.06	127.42
47	7.71	255.55	1.58	1.51	1.25	127.40
48	7.87	245.20	1.73	1.55	1.87	127.81

:: Field input data :: (continued)

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
49	8.04	231.53	1.96	1.66	2.81	128.49
50	8.20	220.04	2.19	1.73	3.65	129.03
51	8.37	217.12	2.27	1.69	4.20	129.42
52	8.53	218.44	2.35	1.69	4.68	129.84
53	8.69	214.02	2.62	1.62	5.29	130.24
54	8.86	204.10	2.73	1.59	5.91	130.26
55	9.02	189.81	2.49	1.55	6.20	129.67
56	9.19	180.60	2.15	1.50	5.55	129.04
57	9.35	213.62	2.09	1.84	4.66	128.97
58	9.51	233.53	2.27	1.51	3.78	129.37
59	9.68	248.86	2.29	1.30	3.38	129.71
60	9.84	257.58	2.26	1.12	3.05	129.82
61	10.01	264.80	2.27	0.97	2.95	129.93
62	10.17	264.40	2.34	0.85	3.15	130.19
63	10.33	257.95	2.52	0.72	3.55	130.46
64	10.50	252.63	2.58	0.67	3.93	130.56
65	10.66	245.48	2.50	0.58	4.15	130.42
66	10.83	239.24	2.44	0.52	4.51	130.28
67	10.99	226.68	2.53	0.45	5.17	130.44
68	11.15	216.57	2.77	0.40	5.94	130.73
69	11.32	212.49	2.86	0.36	6.45	131.06
70	11.48	217.06	2.95	0.36	6.56	131.21
71	11.65	219.43	2.94	0.29	6.45	131.35
72	11.81	226.03	2.97	0.23	6.09	131.39
73	11.98	238.69	2.90	0.20	5.46	131.35
74	12.14	254.57	2.74	0.16	4.79	131.39
75	12.30	270.14	2.85	0.13	4.18	131.44
76	12.47	282.83	2.79	0.22	3.80	131.65
77	12.63	295.12	2.85	0.00	3.62	131.94
78	12.80	302.80	3.08	-0.14	3.63	132.37
79	12.96	308.79	3.23	-0.25	3.73	132.86
80	13.12	318.04	3.41	-0.34	3.85	133.49
81	13.29	334.07	3.83	-0.36	3.88	134.04
82	13.45	343.93	3.92	-0.43	3.81	134.43
83	13.62	353.49	3.88	-0.49	3.63	134.48
84	13.78	356.16	3.83	-0.52	3.48	134.42
85	13.94	356.34	3.77	-0.49	3.45	134.37
86	14.11	355.97	3.80	-0.50	3.49	134.34
87	14.27	352.13	3.79	-0.56	3.54	134.39
88	14.44	357.20	3.85	-0.54	3.59	134.58
89	14.60	367.22	4.06	-0.58	3.57	134.85
90	14.76	375.63	4.14	-0.59	3.50	135.10
91	14.93	385.99	4.18	-0.63	3.01	134.63
92	15.09	386.11	3.22	-0.68	2.36	133.67
93	15.26	379.63	2.71	-0.74	1.52	131.92
94	15.42	363.71	2.08	-0.68	1.33	130.90
95	15.58	343.13	2.27	-1.12	1.58	130.26
96	15.75	309.71	2.26	-1.40	2.67	130.45

:: Field input data :: (continued)

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
97	15.91	265.48	2.48	-1.59	4.21	130.65
98	16.08	233.68	2.77	-1.69	6.36	131.12
99	16.24	205.17	3.14	-1.82	8.48	131.33
100	16.40	181.03	3.11	-1.93	10.49	131.17
101	16.57	159.16	2.97	-2.05	11.83	130.66
102	16.73	151.60	2.82	-2.21	12.71	130.24
103	16.90	147.79	2.80	-2.41	12.97	130.03
104	17.06	148.77	2.80	-2.66	12.92	129.78
105	17.22	147.11	2.56	-2.79	12.72	129.07
106	17.39	134.55	2.13	-2.93	14.81	127.75
107	17.55	78.27	1.94	-3.26	19.45	125.82
108	17.72	50.75	1.58	-3.46	29.44	123.68
109	17.88	35.26	1.41	-3.57	30.73	120.92
110	18.04	49.98	0.61	-3.60	27.15	119.09
111	18.21	53.45	0.77	-3.71	22.40	117.93
112	18.37	51.52	0.91	-2.63	23.76	119.70
113	18.54	57.11	1.20	-3.03	23.85	121.51
114	18.70	69.79	1.46	-3.28	22.98	123.03
115	18.86	73.76	1.57	-3.47	23.32	123.93
116	19.03	65.43	1.69	-3.60	25.91	124.34
117	19.19	56.89	1.84	-3.71	28.56	124.38
118	19.36	58.43	1.74	-3.71	28.27	124.31
119	19.52	66.94	1.62	-3.78	26.48	124.11
120	19.69	66.17	1.62	-3.80	26.78	124.05
121	19.85	56.58	1.72	-3.85	30.53	123.77
122	20.01	43.68	1.65	-3.84	28.47	123.82
123	20.18	78.12	1.53	-3.69	23.24	123.79
124	20.34	91.02	1.42	-3.71	18.73	124.11
125	20.51	88.90	1.56	-3.76	19.30	124.83
126	20.67	83.16	1.96	-3.74	23.47	125.89
127	20.83	67.40	2.37	-3.74	29.86	126.00
128	21.00	45.43	2.06	-3.69	35.57	124.93
129	21.16	44.21	1.52	-3.55	30.80	121.77
130	21.33	61.90	0.33	-3.44	22.56	119.28
131	21.49	69.00	0.80	-3.46	20.19	119.07
132	21.65	59.07	1.38	-2.07	20.10	122.51
133	21.82	100.54	1.59	-2.20	13.26	125.47
134	21.98	203.18	1.88	-2.20	8.22	127.55
135	22.15	236.26	2.17	-2.29	6.07	128.06
136	22.31	203.64	1.66	-2.27	7.04	127.41
137	22.47	140.60	1.58	-2.27	10.14	125.85
138	22.64	96.12	1.55	-2.25	17.18	125.39
139	22.80	68.78	1.95	-2.21	26.30	125.61
140	22.97	56.52	2.33	-2.16	35.47	125.40
141	23.13	42.02	1.94	-2.09	40.09	125.43
142	23.29	50.66	2.22	-1.95	21.66	128.50
143	23.46	216.17	3.58	-1.59	10.53	131.81
144	23.62	349.28	3.86	-1.39	6.15	135.46

:: Field input data :: (continued)

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
145	23.79	451.73	6.02	-1.19	5.42	137.28
146	23.95	420.82	6.70	-0.99	5.84	137.28
147	24.11	460.20	7.67	-0.92	6.33	137.28
148	24.28	436.09	7.01	-0.74	6.14	137.28
149	24.44	399.90	5.52	-0.63	5.63	137.28
150	24.61	384.20	4.35	-0.59	4.90	135.92
151	24.77	374.83	3.85	-0.52	4.43	134.71
152	24.93	357.05	3.57	-0.49	4.23	133.71
153	25.10	335.27	3.00	-0.70	4.06	132.54
154	25.26	317.36	2.49	-0.90	4.24	131.44
155	25.43	278.38	2.52	-1.08	5.37	130.68
156	25.59	218.04	2.53	-1.26	8.29	130.21
157	25.75	155.26	2.56	-1.37	13.43	129.63
158	25.92	105.98	2.70	-1.51	21.07	128.30
159	26.08	62.39	2.15	-1.62	29.57	126.74
160	26.25	55.97	1.92	-1.66	32.08	125.41
161	26.41	75.78	1.85	-1.75	30.75	125.93
162	26.57	76.28	2.44	-1.84	31.49	126.63
163	26.74	60.30	2.49	-1.95	35.93	126.46
164	26.90	50.23	1.99	-2.02	35.86	126.13
165	27.07	73.57	2.16	-1.89	34.15	126.14
166	27.23	69.49	2.40	-2.05	34.90	126.24
167	27.40	47.92	2.11	-2.09	41.79	124.14
168	27.56	26.14	0.99	-2.12	49.96	121.21
169	27.72	28.81	1.02	-2.00	43.55	119.46
170	27.89	53.54	1.17	-1.91	31.42	123.00
171	28.05	95.44	2.19	-1.91	16.22	127.63
172	28.22	237.55	3.01	-1.30	11.79	131.06
173	28.38	245.88	3.71	-1.39	11.06	132.78
174	28.54	183.82	4.02	-1.48	15.79	132.65
175	28.71	100.88	3.66	-1.55	23.39	131.29
176	28.87	82.30	3.01	-1.48	26.63	129.93
177	29.04	122.23	2.77	-0.94	21.51	129.59
178	29.20	151.51	2.78	-1.10	17.54	129.86
179	29.36	147.27	2.85	-1.21	17.66	129.98
180	29.53	123.95	2.90	-1.28	19.88	129.75
181	29.69	112.34	2.79	-1.31	22.38	129.30
182	29.86	105.92	2.65	-1.35	23.45	128.72
183	30.02	101.47	2.44	-1.35	24.32	128.11
184	30.18	93.11	2.30	-1.39	25.54	127.30
185	30.35	81.99	2.06	-1.42	27.24	126.63
186	30.51	78.09	2.04	-1.44	29.66	126.26
187	30.68	71.11	2.17	-1.46	32.22	126.36
188	30.84	67.52	2.29	-1.49	31.02	126.88
189	31.00	92.37	2.36	-1.37	22.48	127.86
190	31.17	158.94	2.35	-1.35	15.42	129.60
191	31.33	210.79	3.14	-1.35	11.51	131.21
192	31.50	239.52	3.43	-1.26	10.70	132.23

:: Field input data :: (continued)

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
193	31.66	225.48	3.34	-1.26	11.99	132.06
194	31.82	162.26	3.15	-1.28	16.73	131.00
195	31.99	89.58	2.91	-1.31	25.90	128.55
196	32.15	47.61	1.80	-1.31	39.46	124.95
197	32.32	32.78	1.10	-1.19	46.48	119.94
198	32.48	31.83	0.47	-1.06	43.79	113.90
199	32.64	25.16	0.02	-0.92	32.46	105.43
200	32.81	28.08	0.02	-0.77	39.81	109.69
201	32.97	29.46	0.88	-0.52	43.24	115.54
202	33.14	40.95	1.03	-0.13	32.61	122.42
203	33.30	108.71	2.13	9.29	18.79	127.30
204	33.46	211.72	3.06	8.21	11.66	131.28
205	33.63	296.93	3.78	7.67	8.12	133.52
206	33.79	347.28	4.09	4.16	6.55	134.79
207	33.96	376.62	4.38	3.55	6.02	135.49
208	34.12	383.10	4.66	3.53	6.12	136.13
209	34.28	386.02	5.13	3.53	6.42	136.59
210	34.45	387.71	5.25	5.83	6.41	136.83
211	34.61	402.70	5.06	5.24	6.54	137.28
212	34.78	418.76	6.18	4.79	6.86	137.28
213	34.94	437.72	7.22	4.43	7.67	137.28
214	35.10	435.97	8.04	4.12	8.44	137.28
215	35.27	416.52	8.23	3.80	8.77	137.28
216	35.43	437.90	8.14	3.58	8.59	137.28
217	35.60	459.16	8.24	3.44	7.95	137.28
218	35.76	481.31	8.32	3.30	7.58	137.28
219	35.93	448.81	7.31	3.12	7.76	137.28
220	36.09	385.03	6.57	2.90	8.84	137.28
221	36.25	304.27	5.78	2.68	11.51	136.72
222	36.42	191.63	4.42	2.48	17.00	134.42
223	36.58	103.40	3.72	2.16	25.49	132.18
224	36.75	94.15	3.70	2.09	33.14	130.65
225	36.91	88.50	3.22	1.85	33.17	130.28
226	37.07	97.53	3.27	1.64	31.91	128.72
227	37.24	79.65	1.88	1.39	33.15	127.34
228	37.40	61.19	2.03	1.06	29.62	126.73
229	37.57	113.51	2.56	0.43	30.01	128.80
230	37.73	107.36	3.71	0.32	25.37	130.98
231	37.89	145.70	3.98	0.40	20.26	132.45
232	38.06	220.99	3.81	0.38	14.66	132.90
233	38.22	240.78	3.48	0.23	11.79	132.84
234	38.39	229.04	3.42	0.13	11.79	132.80
235	38.55	219.89	3.75	0.07	13.26	132.78
236	38.71	194.36	3.70	0.02	14.98	132.47
237	38.88	171.75	3.30	-0.05	16.77	131.71
238	39.04	154.64	3.08	-0.16	18.62	131.13
239	39.21	142.75	3.26	-0.32	20.69	130.78
240	39.37	129.24	3.13	-0.40	22.37	130.25

:: Field input data :: (continued)

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
241	39.53	118.97	2.68	-0.49	24.15	129.45
242	39.70	104.72	2.61	-0.59	28.29	128.82
243	39.86	76.71	2.86	-0.70	36.50	127.70
244	40.03	45.56	2.21	-0.79	49.99	125.62
245	40.19	28.57	1.55	-0.77	45.99	123.31
246	40.35	71.30	1.13	-0.52	28.69	123.59
247	40.52	125.67	1.71	-0.63	18.72	125.45
248	40.68	147.42	2.08	-0.83	16.30	127.59
249	40.85	151.41	2.35	-0.86	15.65	128.57
250	41.01	161.55	2.40	-0.99	16.02	128.96
251	41.17	150.71	2.44	-1.33	15.97	128.78
252	41.34	148.10	2.20	-1.76	16.36	128.59
253	41.50	149.91	2.27	-1.73	16.60	128.74
254	41.67	150.49	2.59	-1.71	17.42	129.38
255	41.83	149.88	2.83	-1.73	18.37	130.05
256	41.99	150.74	3.01	-1.76	18.54	130.61
257	42.16	162.14	3.17	-2.09	18.14	131.17
258	42.32	172.73	3.40	-2.39	17.20	131.75
259	42.49	186.07	3.55	-2.34	17.55	132.13
260	42.65	166.77	3.67	-2.32	19.64	132.07
261	42.81	132.15	3.61	-2.31	24.35	131.09
262	42.98	92.03	2.89	-2.31	27.23	129.84
263	43.14	109.73	2.55	-2.20	26.97	128.48
264	43.31	110.40	2.24	-2.21	27.40	128.22
265	43.47	84.02	2.69	-2.21	34.64	127.66
266	43.64	47.98	2.54	-2.25	48.61	126.33
267	43.80	33.08	1.85	-2.23	59.40	123.83
268	43.96	36.56	1.24	-1.42	37.28	123.19
269	44.13	110.68	1.38	-1.03	30.20	123.30
270	44.29	70.53	1.64	-1.21	28.87	122.97
271	44.46	41.32	1.03	-1.28	42.33	120.86
272	44.62	31.67	0.85	-1.26	51.25	117.97
273	44.78	31.36	0.76	-1.10	58.58	116.77
274	44.95	22.82	0.78	-0.97	64.90	116.91
275	45.11	22.61	0.99	-0.76	64.97	117.36
276	45.28	32.90	0.90	-0.59	58.59	119.86
277	45.44	43.78	1.58	-0.47	55.87	121.92
278	45.60	39.20	1.88	-0.47	59.99	123.16
279	45.77	30.66	1.74	-0.43	66.91	122.55
280	45.93	27.22	1.42	-0.34	62.08	123.11
281	46.10	51.27	2.07	-0.13	47.90	124.77
282	46.26	78.06	2.33	0.04	47.09	125.88
283	46.42	39.38	2.21	-0.13	52.06	124.86
284	46.59	27.83	1.51	-0.05	67.40	121.90
285	46.75	26.54	0.95	0.07	59.31	117.39
286	46.92	33.85	0.11	0.18	39.98	113.51
287	47.08	49.80	0.35	0.49	37.82	113.28
288	47.24	31.27	0.89	1.03	40.38	118.91

:: Field input data :: (continued)

Point ID	Depth (ft)	q _c (tsf)	f _s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
289	47.41	57.78	1.49	1.30	26.23	123.91
290	47.57	166.80	2.02	1.59	16.15	127.68
291	47.74	217.25	2.63	1.46	12.12	130.01
292	47.90	214.21	2.98	1.37	13.56	131.87
293	48.06	191.20	4.09	1.28	17.34	132.99
294	48.23	163.43	4.58	1.22	20.60	133.49
295	48.39	165.45	4.18	1.37	20.88	133.56
296	48.56	188.59	4.23	1.40	17.35	133.17
297	48.72	221.64	3.48	1.37	13.44	133.39
298	48.88	275.73	3.85	1.37	10.65	133.46
299	49.05	289.28	3.82	1.35	9.34	133.65
300	49.21	287.32	3.48	1.35	9.24	133.88
301	49.38	292.66	4.13	1.33	9.39	134.63
302	49.54	322.43	4.90	1.33	9.33	135.82
303	49.70	358.28	5.32	1.37	8.79	136.42
304	49.87	360.09	5.00	1.35	8.32	136.55
305	50.03	364.73	5.00	1.35	8.01	136.43

Abbreviations

Depth:	Depth from free surface, at which CPT was performed (ft)
q _c :	Measured cone resistance (tsf)
f _s :	Sleeve friction resistance (tsf)
u:	Pore pressure (tsf)
Fines content:	Percentage of fines in soil (%)
Unit weight:	Bulk soil unit weight (pcf)

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data ::

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
1	0.16	0.01	0.00	0.01	1.00	0.716	0.90	0.791	1.00	1.00	2.000	No
2	0.33	0.02	0.00	0.02	1.00	0.715	0.90	0.791	1.00	1.00	2.000	No
3	0.49	0.03	0.00	0.03	1.00	0.715	0.90	0.791	1.00	1.00	2.000	No
4	0.66	0.04	0.00	0.04	1.00	0.715	0.90	0.791	1.00	1.00	2.000	No
5	0.82	0.05	0.00	0.05	1.00	0.715	0.90	0.791	1.00	1.00	2.000	No
6	0.98	0.06	0.00	0.06	1.00	0.715	0.90	0.790	1.00	1.00	2.000	No
7	1.15	0.07	0.00	0.07	1.00	0.714	0.90	0.790	1.00	1.00	2.000	No
8	1.31	0.08	0.00	0.08	1.00	0.714	0.90	0.790	1.00	1.00	2.000	No
9	1.48	0.09	0.00	0.09	1.00	0.714	0.90	0.790	1.00	1.00	2.000	No
10	1.64	0.10	0.00	0.10	1.00	0.714	0.90	0.789	1.00	1.00	2.000	No
11	1.80	0.11	0.00	0.11	1.00	0.713	0.90	0.789	1.00	1.00	2.000	No
12	1.97	0.12	0.00	0.12	1.00	0.713	0.90	0.789	1.00	1.00	2.000	No
13	2.13	0.13	0.00	0.13	1.00	0.713	0.90	0.788	1.00	1.00	2.000	No
14	2.30	0.14	0.00	0.14	1.00	0.713	0.90	0.788	1.00	1.00	2.000	No
15	2.46	0.15	0.00	0.15	1.00	0.712	0.90	0.788	1.00	1.00	2.000	No
16	2.62	0.16	0.00	0.16	1.00	0.712	0.90	0.788	1.00	1.00	2.000	No
17	2.79	0.17	0.00	0.17	1.00	0.712	0.90	0.787	1.00	1.00	2.000	No
18	2.95	0.18	0.00	0.18	1.00	0.711	0.90	0.787	1.00	1.00	2.000	No
19	3.12	0.19	0.00	0.19	0.99	0.711	0.90	0.787	1.00	1.00	2.000	No
20	3.28	0.20	0.00	0.20	0.99	0.711	0.90	0.786	1.00	1.00	2.000	No
21	3.44	0.21	0.00	0.21	0.99	0.711	0.90	0.786	1.00	1.00	2.000	No
22	3.61	0.22	0.00	0.22	0.99	0.710	0.90	0.786	1.00	1.00	2.000	No
23	3.77	0.23	0.00	0.23	0.99	0.710	0.90	0.785	1.00	1.00	2.000	No
24	3.94	0.24	0.00	0.24	0.99	0.710	0.90	0.785	1.00	1.00	2.000	No
25	4.10	0.25	0.00	0.25	0.99	0.710	0.90	0.785	1.00	1.00	2.000	No
26	4.27	0.26	0.00	0.26	0.99	0.709	0.90	0.784	1.00	1.00	2.000	No
27	4.43	0.27	0.00	0.27	0.99	0.709	0.90	0.784	1.00	1.00	2.000	No
28	4.59	0.28	0.00	0.28	0.99	0.709	0.90	0.784	1.00	1.00	2.000	No
29	4.76	0.29	0.00	0.29	0.99	0.708	0.90	0.784	1.00	1.00	2.000	No
30	4.92	0.30	0.00	0.30	0.99	0.708	0.90	0.783	1.00	1.00	2.000	No
31	5.09	0.31	0.00	0.31	0.99	0.708	0.90	0.783	1.00	1.00	2.000	No
32	5.25	0.32	0.00	0.32	0.99	0.708	0.90	0.783	1.00	1.00	2.000	No
33	5.41	0.33	0.00	0.33	0.99	0.707	0.90	0.782	1.00	1.00	2.000	No
34	5.58	0.34	0.00	0.34	0.99	0.707	0.90	0.782	1.00	1.00	2.000	No
35	5.74	0.35	0.00	0.35	0.99	0.707	0.90	0.782	1.00	1.00	2.000	No
36	5.91	0.36	0.00	0.36	0.99	0.707	0.90	0.781	1.00	1.00	2.000	No
37	6.07	0.37	0.00	0.37	0.99	0.706	0.90	0.781	1.00	1.00	2.000	No
38	6.23	0.38	0.00	0.38	0.99	0.706	0.90	0.781	1.00	1.00	2.000	No
39	6.40	0.39	0.00	0.39	0.99	0.706	0.90	0.781	1.00	1.00	2.000	No
40	6.56	0.40	0.00	0.40	0.99	0.705	0.90	0.780	1.00	1.00	2.000	No
41	6.73	0.41	0.00	0.41	0.99	0.705	0.90	0.780	1.00	1.00	2.000	No
42	6.89	0.42	0.00	0.42	0.99	0.705	0.90	0.780	1.00	1.00	2.000	No
43	7.05	0.43	0.00	0.43	0.99	0.705	0.90	0.779	1.00	1.00	2.000	No
44	7.22	0.44	0.00	0.44	0.99	0.704	0.90	0.779	1.00	1.00	2.000	No
45	7.38	0.45	0.00	0.45	0.98	0.704	0.90	0.779	1.00	1.00	2.000	No
46	7.55	0.46	0.00	0.46	0.98	0.704	0.90	0.779	1.00	1.00	2.000	No
47	7.71	0.47	0.00	0.47	0.98	0.704	0.90	0.778	1.00	1.00	2.000	No
48	7.87	0.48	0.00	0.48	0.98	0.703	0.90	0.778	1.00	1.00	2.000	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
49	8.04	0.49	0.00	0.49	0.98	0.703	0.90	0.778	1.00	1.00	2.000	No
50	8.20	0.50	0.00	0.50	0.98	0.703	0.90	0.777	1.00	1.00	2.000	No
51	8.37	0.51	0.00	0.51	0.98	0.703	0.90	0.777	1.00	1.00	2.000	No
52	8.53	0.52	0.00	0.52	0.98	0.702	0.90	0.777	1.00	1.00	2.000	No
53	8.69	0.53	0.00	0.53	0.98	0.702	0.90	0.777	1.00	1.00	2.000	No
54	8.86	0.54	0.00	0.54	0.98	0.702	0.90	0.776	1.00	1.00	2.000	No
55	9.02	0.55	0.00	0.55	0.98	0.702	0.90	0.776	1.00	1.00	2.000	No
56	9.19	0.57	0.00	0.57	0.98	0.701	0.90	0.776	1.00	1.00	2.000	No
57	9.35	0.58	0.00	0.58	0.98	0.701	0.90	0.775	1.00	1.00	2.000	No
58	9.51	0.59	0.00	0.59	0.98	0.701	0.90	0.775	1.00	1.00	2.000	No
59	9.68	0.60	0.00	0.60	0.98	0.701	0.90	0.775	1.00	1.00	2.000	No
60	9.84	0.61	0.00	0.61	0.98	0.700	0.90	0.775	1.00	1.00	2.000	No
61	10.01	0.62	0.00	0.62	0.98	0.700	0.90	0.774	1.00	1.00	2.000	No
62	10.17	0.63	0.00	0.63	0.98	0.700	0.90	0.774	1.00	1.00	2.000	No
63	10.33	0.64	0.00	0.64	0.98	0.700	0.90	0.774	1.00	1.00	2.000	No
64	10.50	0.65	0.00	0.65	0.98	0.699	0.90	0.773	1.00	1.00	2.000	No
65	10.66	0.66	0.00	0.66	0.98	0.699	0.90	0.773	1.00	1.00	2.000	No
66	10.83	0.67	0.00	0.67	0.98	0.699	0.90	0.773	1.00	1.00	2.000	No
67	10.99	0.68	0.00	0.68	0.98	0.699	0.90	0.773	1.00	1.00	2.000	No
68	11.15	0.69	0.00	0.69	0.98	0.698	0.90	0.772	1.00	1.00	2.000	No
69	11.32	0.70	0.00	0.70	0.98	0.698	0.90	0.772	1.00	1.00	2.000	No
70	11.48	0.71	0.00	0.71	0.98	0.698	0.90	0.772	1.00	1.00	2.000	No
71	11.65	0.73	0.00	0.73	0.98	0.698	0.90	0.772	1.00	1.00	2.000	No
72	11.81	0.74	0.00	0.74	0.98	0.697	0.90	0.771	1.00	1.00	2.000	No
73	11.98	0.75	0.00	0.75	0.97	0.697	0.90	0.771	1.00	1.00	2.000	No
74	12.14	0.76	0.00	0.76	0.97	0.697	0.90	0.771	1.00	1.00	2.000	No
75	12.30	0.77	0.00	0.77	0.97	0.697	0.90	0.770	1.00	1.00	2.000	No
76	12.47	0.78	0.00	0.78	0.97	0.696	0.90	0.770	1.00	1.00	2.000	No
77	12.63	0.79	0.00	0.79	0.97	0.696	0.90	0.770	1.00	1.00	2.000	No
78	12.80	0.80	0.00	0.80	0.97	0.696	0.90	0.770	1.00	1.00	2.000	No
79	12.96	0.81	0.00	0.81	0.97	0.696	0.90	0.769	1.00	1.00	2.000	No
80	13.12	0.82	0.00	0.82	0.97	0.695	0.90	0.769	1.00	1.00	2.000	No
81	13.29	0.83	0.00	0.83	0.97	0.695	0.90	0.769	1.00	1.00	2.000	No
82	13.45	0.84	0.00	0.84	0.97	0.695	0.90	0.769	1.00	1.00	2.000	No
83	13.62	0.86	0.00	0.86	0.97	0.695	0.90	0.768	1.00	1.00	2.000	No
84	13.78	0.87	0.00	0.87	0.97	0.694	0.90	0.768	1.00	1.00	2.000	No
85	13.94	0.88	0.00	0.88	0.97	0.694	0.90	0.768	1.00	1.00	2.000	No
86	14.11	0.89	0.00	0.89	0.97	0.694	0.90	0.767	1.00	1.00	2.000	No
87	14.27	0.90	0.00	0.90	0.97	0.694	0.90	0.767	1.00	1.00	2.000	No
88	14.44	0.91	0.00	0.91	0.97	0.693	0.90	0.767	1.00	1.00	2.000	No
89	14.60	0.92	0.00	0.92	0.97	0.693	0.90	0.767	1.00	1.00	2.000	No
90	14.76	0.93	0.00	0.93	0.97	0.693	0.90	0.766	1.00	1.00	2.000	No
91	14.93	0.94	0.00	0.94	0.97	0.693	0.90	0.766	1.00	1.00	2.000	No
92	15.09	0.96	0.00	0.96	0.97	0.692	0.90	0.766	1.00	1.00	2.000	No
93	15.26	0.97	0.00	0.97	0.97	0.692	0.90	0.766	1.00	1.00	2.000	No
94	15.42	0.98	0.00	0.98	0.97	0.692	0.90	0.765	1.00	1.00	2.000	No
95	15.58	0.99	0.00	0.99	0.97	0.692	0.90	0.765	1.00	1.00	2.000	No
96	15.75	1.00	0.00	1.00	0.97	0.691	0.90	0.765	1.00	1.00	2.000	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
97	15.91	1.01	0.00	1.01	0.97	0.691	0.90	0.764	1.00	1.00	2.000	No
98	16.08	1.02	0.00	1.02	0.97	0.691	0.90	0.764	1.00	1.00	2.000	No
99	16.24	1.03	0.00	1.03	0.97	0.691	0.90	0.764	1.00	1.00	2.000	No
100	16.40	1.04	0.00	1.04	0.97	0.690	0.90	0.764	1.00	1.00	2.000	No
101	16.57	1.05	0.00	1.05	0.97	0.690	0.90	0.763	1.00	1.00	2.000	No
102	16.73	1.06	0.00	1.06	0.96	0.690	0.90	0.763	1.00	1.00	2.000	No
103	16.90	1.07	0.00	1.07	0.96	0.690	0.90	0.763	1.00	1.00	2.000	No
104	17.06	1.08	0.00	1.08	0.96	0.689	0.90	0.762	0.99	1.00	2.000	No
105	17.22	1.09	0.00	1.09	0.96	0.689	0.90	0.762	0.99	1.00	2.000	Yes
106	17.39	1.11	0.00	1.11	0.96	0.689	0.90	0.762	0.99	1.00	2.000	Yes
107	17.55	1.12	0.00	1.12	0.96	0.688	0.90	0.761	0.99	1.00	2.000	Yes
108	17.72	1.13	0.00	1.13	0.96	0.688	0.90	0.761	0.99	1.00	2.000	Yes
109	17.88	1.14	0.00	1.14	0.96	0.688	0.90	0.761	0.98	1.00	2.000	Yes
110	18.04	1.15	0.00	1.15	0.96	0.688	0.90	0.761	0.98	1.00	2.000	Yes
111	18.21	1.15	0.00	1.15	0.96	0.687	0.90	0.760	0.98	1.00	2.000	Yes
112	18.37	1.16	0.00	1.16	0.96	0.687	0.90	0.760	0.98	1.00	2.000	No
113	18.54	1.17	0.00	1.17	0.96	0.687	0.90	0.760	0.98	1.00	2.000	No
114	18.70	1.18	0.00	1.18	0.96	0.687	0.90	0.759	0.97	1.00	2.000	No
115	18.86	1.19	0.00	1.19	0.96	0.686	0.90	0.759	0.97	1.00	2.000	Yes
116	19.03	1.21	0.00	1.21	0.96	0.686	0.90	0.759	0.97	1.00	2.000	Yes
117	19.19	1.22	0.00	1.22	0.96	0.686	0.90	0.758	0.97	1.00	2.000	Yes
118	19.36	1.23	0.00	1.23	0.96	0.685	0.90	0.758	0.97	1.00	2.000	No
119	19.52	1.24	0.00	1.24	0.96	0.685	0.90	0.758	0.96	1.00	2.000	No
120	19.69	1.25	0.00	1.25	0.96	0.685	0.90	0.757	0.96	1.00	2.000	No
121	19.85	1.26	0.00	1.26	0.96	0.684	0.90	0.757	0.96	1.00	2.000	No
122	20.01	1.27	0.00	1.27	0.96	0.684	0.90	0.757	0.96	1.00	2.000	No
123	20.18	1.28	0.00	1.28	0.96	0.684	0.90	0.756	0.96	1.00	2.000	No
124	20.34	1.29	0.00	1.29	0.96	0.684	0.90	0.756	0.96	1.00	2.000	No
125	20.51	1.30	0.00	1.30	0.96	0.683	0.90	0.756	0.95	1.00	2.000	Yes
126	20.67	1.31	0.00	1.31	0.96	0.683	0.90	0.755	0.95	1.00	2.000	Yes
127	20.83	1.32	0.00	1.32	0.95	0.683	0.90	0.755	0.95	1.00	2.000	Yes
128	21.00	1.33	0.00	1.33	0.95	0.682	0.90	0.755	0.95	1.00	2.000	Yes
129	21.16	1.34	0.00	1.34	0.95	0.682	0.90	0.754	0.95	1.00	2.000	Yes
130	21.33	1.35	0.00	1.35	0.95	0.682	0.90	0.754	0.95	1.00	2.000	Yes
131	21.49	1.36	0.00	1.36	0.95	0.681	0.90	0.754	0.94	1.00	2.000	Yes
132	21.65	1.37	0.00	1.37	0.95	0.681	0.90	0.753	0.94	1.00	2.000	No
133	21.82	1.38	0.00	1.38	0.95	0.681	0.90	0.753	0.94	1.00	2.000	No
134	21.98	1.39	0.00	1.39	0.95	0.680	0.90	0.752	0.94	1.00	2.000	No
135	22.15	1.40	0.00	1.40	0.95	0.680	0.90	0.752	0.94	1.00	2.000	No
136	22.31	1.41	0.00	1.41	0.95	0.680	0.90	0.752	0.94	1.00	2.000	Yes
137	22.47	1.42	0.00	1.42	0.95	0.679	0.90	0.751	0.93	1.00	2.000	Yes
138	22.64	1.43	0.00	1.43	0.95	0.679	0.90	0.751	0.93	1.00	2.000	Yes
139	22.80	1.44	0.00	1.44	0.95	0.679	0.90	0.751	0.93	1.00	2.000	Yes
140	22.97	1.45	0.00	1.45	0.95	0.678	0.90	0.750	0.93	1.00	2.000	Yes
141	23.13	1.46	0.00	1.46	0.95	0.678	0.90	0.750	0.93	1.00	2.000	Yes
142	23.29	1.47	0.00	1.47	0.95	0.677	0.90	0.749	0.93	1.00	2.000	Yes
143	23.46	1.48	0.00	1.48	0.95	0.677	0.90	0.749	0.93	1.00	2.000	Yes
144	23.62	1.49	0.00	1.49	0.95	0.677	0.90	0.748	0.92	1.00	2.000	Yes

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
145	23.79	1.50	0.00	1.50	0.95	0.676	0.90	0.748	0.92	1.00	2.000	No
146	23.95	1.52	0.00	1.52	0.95	0.676	0.90	0.748	0.92	1.00	2.000	No
147	24.11	1.53	0.00	1.53	0.94	0.676	0.90	0.747	0.92	1.00	2.000	No
148	24.28	1.54	0.00	1.54	0.94	0.675	0.90	0.747	0.92	1.00	2.000	No
149	24.44	1.55	0.00	1.55	0.94	0.675	0.90	0.746	0.92	1.00	2.000	No
150	24.61	1.56	0.00	1.56	0.94	0.674	0.90	0.746	0.91	1.00	2.000	No
151	24.77	1.57	0.00	1.57	0.94	0.674	0.90	0.745	0.91	1.00	2.000	No
152	24.93	1.58	0.00	1.58	0.94	0.674	0.90	0.745	0.91	1.00	2.000	No
153	25.10	1.59	0.00	1.59	0.94	0.673	0.90	0.745	0.91	1.00	2.000	No
154	25.26	1.60	0.00	1.60	0.94	0.673	0.90	0.744	0.91	1.00	2.000	No
155	25.43	1.61	0.00	1.61	0.94	0.672	0.90	0.744	0.91	1.00	2.000	No
156	25.59	1.63	0.00	1.63	0.94	0.672	0.90	0.743	0.91	1.00	2.000	Yes
157	25.75	1.64	0.00	1.64	0.94	0.671	0.90	0.743	0.90	1.00	2.000	Yes
158	25.92	1.65	0.00	1.65	0.94	0.671	0.90	0.742	0.90	1.00	2.000	Yes
159	26.08	1.66	0.00	1.66	0.94	0.671	0.90	0.742	0.90	1.00	2.000	Yes
160	26.25	1.67	0.00	1.67	0.94	0.670	0.90	0.741	0.90	1.00	2.000	No
161	26.41	1.68	0.00	1.68	0.94	0.670	0.90	0.741	0.90	1.00	2.000	No
162	26.57	1.69	0.00	1.69	0.94	0.669	0.90	0.740	0.90	1.00	2.000	No
163	26.74	1.70	0.00	1.70	0.94	0.669	0.90	0.740	0.90	1.00	2.000	No
164	26.90	1.71	0.00	1.71	0.93	0.668	0.90	0.739	0.90	1.00	2.000	No
165	27.07	1.72	0.00	1.72	0.93	0.668	0.90	0.739	0.89	1.00	2.000	No
166	27.23	1.73	0.00	1.73	0.93	0.667	0.90	0.738	0.89	1.00	2.000	No
167	27.40	1.74	0.00	1.74	0.93	0.667	0.90	0.738	0.89	1.00	2.000	No
168	27.56	1.75	0.00	1.75	0.93	0.666	0.90	0.737	0.89	1.00	2.000	Yes
169	27.72	1.76	0.00	1.76	0.93	0.666	0.90	0.736	0.89	1.00	2.000	Yes
170	27.89	1.77	0.00	1.77	0.93	0.665	0.90	0.736	0.89	1.00	2.000	Yes
171	28.05	1.78	0.00	1.78	0.93	0.665	0.90	0.735	0.89	1.00	2.000	Yes
172	28.22	1.79	0.00	1.79	0.93	0.664	0.90	0.735	0.89	1.00	2.000	Yes
173	28.38	1.80	0.00	1.80	0.93	0.664	0.90	0.734	0.88	1.00	2.000	No
174	28.54	1.81	0.00	1.81	0.93	0.663	0.90	0.734	0.88	1.00	2.000	No
175	28.71	1.82	0.00	1.82	0.93	0.663	0.90	0.733	0.88	1.00	2.000	No
176	28.87	1.83	0.00	1.83	0.93	0.662	0.90	0.732	0.88	1.00	2.000	No
177	29.04	1.84	0.00	1.84	0.93	0.662	0.90	0.732	0.88	1.00	2.000	No
178	29.20	1.86	0.00	1.86	0.92	0.661	0.90	0.731	0.88	1.00	2.000	No
179	29.36	1.87	0.00	1.87	0.92	0.660	0.90	0.730	0.88	1.00	2.000	No
180	29.53	1.88	0.00	1.88	0.92	0.660	0.90	0.730	0.88	1.00	2.000	No
181	29.69	1.89	0.00	1.89	0.92	0.659	0.90	0.729	0.88	1.00	2.000	No
182	29.86	1.90	0.00	1.90	0.92	0.659	0.90	0.729	0.87	1.00	2.000	No
183	30.02	1.91	0.00	1.91	0.92	0.658	0.90	0.728	0.87	1.00	2.000	No
184	30.18	1.92	0.00	1.92	0.92	0.658	0.90	0.727	0.87	1.00	2.000	No
185	30.35	1.93	0.00	1.93	0.92	0.657	0.90	0.727	0.87	1.00	2.000	No
186	30.51	1.94	0.00	1.94	0.92	0.656	0.90	0.726	0.87	1.00	2.000	No
187	30.68	1.95	0.00	1.95	0.92	0.656	0.90	0.725	0.87	1.00	2.000	No
188	30.84	1.96	0.00	1.96	0.92	0.655	0.90	0.725	0.87	1.00	2.000	Yes
189	31.00	1.97	0.00	1.97	0.92	0.654	0.90	0.724	0.87	1.00	2.000	Yes
190	31.17	1.98	0.00	1.98	0.91	0.654	0.90	0.723	0.87	1.00	2.000	Yes
191	31.33	1.99	0.00	1.99	0.91	0.653	0.90	0.722	0.86	1.00	2.000	Yes
192	31.50	2.00	0.00	2.00	0.91	0.653	0.90	0.722	0.86	1.00	2.000	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
193	31.66	2.01	0.00	2.01	0.91	0.652	0.90	0.721	0.86	1.00	2.000	Yes
194	31.82	2.02	0.00	2.02	0.91	0.651	0.90	0.720	0.86	1.00	2.000	Yes
195	31.99	2.03	0.00	2.03	0.91	0.651	0.90	0.719	0.86	1.00	2.000	Yes
196	32.15	2.05	0.00	2.05	0.91	0.650	0.90	0.719	0.86	1.00	2.000	Yes
197	32.32	2.05	0.00	2.05	0.91	0.649	0.90	0.718	0.86	1.00	2.000	Yes
198	32.48	2.06	0.00	2.06	0.91	0.648	0.90	0.717	0.86	1.00	2.000	No
199	32.64	2.07	0.00	2.07	0.91	0.648	0.90	0.716	0.86	1.00	2.000	Yes
200	32.81	2.08	0.00	2.08	0.90	0.647	0.90	0.716	0.86	1.00	2.000	Yes
201	32.97	2.09	0.00	2.09	0.90	0.646	0.90	0.715	0.85	1.00	2.000	Yes
202	33.14	2.10	0.00	2.10	0.90	0.646	0.90	0.714	0.85	1.00	2.000	Yes
203	33.30	2.11	0.00	2.11	0.90	0.645	0.90	0.713	0.85	1.00	2.000	Yes
204	33.46	2.12	0.00	2.12	0.90	0.644	0.90	0.712	0.85	1.00	2.000	Yes
205	33.63	2.13	0.00	2.13	0.90	0.643	0.90	0.712	0.85	1.00	2.000	Yes
206	33.79	2.14	0.00	2.14	0.90	0.643	0.90	0.711	0.85	1.00	2.000	Yes
207	33.96	2.16	0.00	2.16	0.90	0.642	0.90	0.710	0.85	1.00	2.000	No
208	34.12	2.17	0.00	2.17	0.90	0.641	0.90	0.709	0.85	1.00	2.000	No
209	34.28	2.18	0.00	2.18	0.90	0.640	0.90	0.708	0.85	1.00	2.000	No
210	34.45	2.19	0.00	2.19	0.89	0.639	0.90	0.707	0.85	1.00	2.000	No
211	34.61	2.20	0.00	2.20	0.89	0.639	0.90	0.706	0.85	1.00	2.000	No
212	34.78	2.21	0.00	2.21	0.89	0.638	0.90	0.706	0.84	1.00	2.000	No
213	34.94	2.22	0.00	2.22	0.89	0.637	0.90	0.705	0.84	1.00	2.000	No
214	35.10	2.23	0.00	2.23	0.89	0.637	0.90	0.705	0.84	1.00	0.837	No
215	35.27	2.25	0.01	2.24	0.89	0.638	0.90	0.705	0.84	1.00	0.838	No
216	35.43	2.26	0.01	2.24	0.89	0.638	0.90	0.706	0.84	1.00	0.839	No
217	35.60	2.27	0.02	2.25	0.89	0.639	0.90	0.707	0.84	1.00	0.841	No
218	35.76	2.28	0.02	2.26	0.89	0.640	0.90	0.707	0.84	1.00	0.842	No
219	35.93	2.29	0.03	2.26	0.88	0.640	0.90	0.708	0.84	1.00	0.843	No
220	36.09	2.30	0.03	2.27	0.88	0.641	0.90	0.709	0.84	1.00	2.000	Yes
221	36.25	2.31	0.04	2.27	0.88	0.641	0.90	0.709	0.84	1.00	2.000	Yes
222	36.42	2.32	0.04	2.28	0.88	0.642	0.90	0.710	0.84	1.00	2.000	Yes
223	36.58	2.34	0.05	2.29	0.88	0.642	0.90	0.710	0.84	1.00	2.000	Yes
224	36.75	2.35	0.05	2.29	0.88	0.643	0.90	0.711	0.84	1.00	2.000	Yes
225	36.91	2.36	0.06	2.30	0.88	0.643	0.90	0.711	0.84	1.00	0.850	No
226	37.07	2.37	0.06	2.30	0.88	0.643	0.90	0.712	0.84	1.00	0.851	No
227	37.24	2.38	0.07	2.31	0.87	0.644	0.90	0.712	0.84	1.00	0.852	No
228	37.40	2.39	0.07	2.31	0.87	0.644	0.90	0.713	0.84	1.00	0.853	No
229	37.57	2.40	0.08	2.32	0.87	0.645	0.90	0.713	0.83	1.00	2.000	Yes
230	37.73	2.41	0.09	2.32	0.87	0.645	0.90	0.713	0.83	1.00	2.000	Yes
231	37.89	2.42	0.09	2.33	0.87	0.645	0.90	0.714	0.83	1.00	2.000	Yes
232	38.06	2.43	0.10	2.34	0.87	0.646	0.90	0.714	0.83	1.00	2.000	Yes
233	38.22	2.44	0.10	2.34	0.87	0.646	0.90	0.714	0.83	1.00	2.000	Yes
234	38.39	2.45	0.11	2.35	0.86	0.646	0.90	0.715	0.83	1.00	0.858	No
235	38.55	2.46	0.11	2.35	0.86	0.646	0.90	0.715	0.83	1.00	0.859	No
236	38.71	2.47	0.12	2.36	0.86	0.647	0.90	0.715	0.83	1.00	0.860	No
237	38.88	2.49	0.12	2.36	0.86	0.647	0.90	0.715	0.83	1.00	0.861	No
238	39.04	2.50	0.13	2.37	0.86	0.647	0.90	0.716	0.83	1.00	0.862	No
239	39.21	2.51	0.13	2.38	0.86	0.647	0.90	0.716	0.83	1.00	0.862	No
240	39.37	2.52	0.14	2.38	0.86	0.647	0.90	0.716	0.83	1.00	0.863	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
241	39.53	2.53	0.14	2.39	0.86	0.648	0.90	0.716	0.83	1.00	2.000	Yes
242	39.70	2.54	0.15	2.39	0.85	0.648	0.90	0.716	0.83	1.00	2.000	Yes
243	39.86	2.55	0.15	2.40	0.85	0.648	0.90	0.717	0.83	1.00	2.000	Yes
244	40.03	2.56	0.16	2.40	0.85	0.648	0.90	0.717	0.83	1.00	2.000	Yes
245	40.19	2.57	0.16	2.41	0.85	0.648	0.90	0.717	0.83	1.00	2.000	Yes
246	40.35	2.58	0.17	2.41	0.85	0.648	0.90	0.717	0.83	1.00	2.000	Yes
247	40.52	2.59	0.17	2.42	0.85	0.648	0.90	0.717	0.83	1.00	2.000	Yes
248	40.68	2.60	0.18	2.42	0.84	0.648	0.90	0.717	0.83	1.00	2.000	Yes
249	40.85	2.61	0.18	2.43	0.84	0.648	0.90	0.717	0.83	1.00	0.868	No
250	41.01	2.62	0.19	2.43	0.84	0.648	0.90	0.717	0.83	1.00	0.869	No
251	41.17	2.63	0.19	2.44	0.84	0.648	0.90	0.717	0.83	1.00	0.869	No
252	41.34	2.64	0.20	2.44	0.84	0.648	0.90	0.717	0.82	1.00	0.869	No
253	41.50	2.65	0.20	2.45	0.84	0.648	0.90	0.717	0.82	1.00	0.870	No
254	41.67	2.66	0.21	2.46	0.84	0.648	0.90	0.717	0.82	1.00	0.870	No
255	41.83	2.67	0.21	2.46	0.83	0.648	0.90	0.717	0.82	1.00	0.871	No
256	41.99	2.69	0.22	2.47	0.83	0.648	0.90	0.717	0.82	1.00	0.871	No
257	42.16	2.70	0.22	2.47	0.83	0.648	0.90	0.717	0.82	1.00	0.871	No
258	42.32	2.71	0.23	2.48	0.83	0.648	0.90	0.717	0.82	1.00	0.872	No
259	42.49	2.72	0.23	2.48	0.83	0.648	0.90	0.717	0.82	1.00	0.872	No
260	42.65	2.73	0.24	2.49	0.83	0.648	0.90	0.716	0.82	1.00	0.872	No
261	42.81	2.74	0.24	2.50	0.83	0.648	0.90	0.716	0.82	1.00	0.872	No
262	42.98	2.75	0.25	2.50	0.82	0.647	0.90	0.716	0.82	1.00	0.873	No
263	43.14	2.76	0.25	2.51	0.82	0.647	0.90	0.716	0.82	1.00	0.873	No
264	43.31	2.77	0.26	2.51	0.82	0.647	0.90	0.716	0.82	1.00	2.000	Yes
265	43.47	2.78	0.26	2.52	0.82	0.647	0.90	0.715	0.82	1.00	2.000	Yes
266	43.64	2.79	0.27	2.52	0.82	0.647	0.90	0.715	0.82	1.00	2.000	Yes
267	43.80	2.80	0.27	2.53	0.82	0.646	0.90	0.715	0.82	1.00	0.873	No
268	43.96	2.81	0.28	2.53	0.81	0.646	0.90	0.715	0.82	1.00	0.874	No
269	44.13	2.82	0.28	2.54	0.81	0.646	0.90	0.714	0.82	1.00	0.874	No
270	44.29	2.83	0.29	2.54	0.81	0.646	0.90	0.714	0.82	1.00	2.000	Yes
271	44.46	2.84	0.30	2.55	0.81	0.645	0.90	0.714	0.82	1.00	2.000	Yes
272	44.62	2.85	0.30	2.55	0.81	0.645	0.90	0.714	0.82	1.00	2.000	Yes
273	44.78	2.86	0.31	2.56	0.81	0.645	0.90	0.713	0.82	1.00	0.874	No
274	44.95	2.87	0.31	2.56	0.80	0.645	0.90	0.713	0.82	1.00	0.874	No
275	45.11	2.88	0.32	2.57	0.80	0.644	0.90	0.713	0.82	1.00	0.874	No
276	45.28	2.89	0.32	2.57	0.80	0.644	0.90	0.712	0.82	1.00	0.874	No
277	45.44	2.90	0.33	2.57	0.80	0.644	0.90	0.712	0.82	1.00	0.874	No
278	45.60	2.91	0.33	2.58	0.80	0.643	0.90	0.712	0.81	1.00	0.873	No
279	45.77	2.92	0.34	2.58	0.80	0.643	0.90	0.711	0.81	1.00	0.873	No
280	45.93	2.93	0.34	2.59	0.79	0.643	0.90	0.711	0.81	1.00	0.873	No
281	46.10	2.94	0.35	2.59	0.79	0.642	0.90	0.710	0.81	1.00	0.873	No
282	46.26	2.95	0.35	2.60	0.79	0.642	0.90	0.710	0.81	1.00	0.873	No
283	46.42	2.96	0.36	2.60	0.79	0.642	0.90	0.710	0.81	1.00	0.873	No
284	46.59	2.97	0.36	2.61	0.79	0.641	0.90	0.709	0.81	1.00	0.873	No
285	46.75	2.98	0.37	2.61	0.79	0.641	0.90	0.709	0.81	1.00	0.873	No
286	46.92	2.99	0.37	2.62	0.78	0.640	0.90	0.708	0.81	1.00	0.872	No
287	47.08	3.00	0.38	2.62	0.78	0.640	0.90	0.708	0.81	1.00	0.872	No
288	47.24	3.01	0.38	2.63	0.78	0.640	0.90	0.707	0.81	1.00	2.000	Yes

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR _{eq}	K_σ	User FS	CSR*	Belongs to transition
289	47.41	3.02	0.39	2.63	0.78	0.639	0.90	0.707	0.81	1.00	2.000	Yes
290	47.57	3.03	0.39	2.64	0.78	0.639	0.90	0.706	0.81	1.00	2.000	Yes
291	47.74	3.04	0.40	2.64	0.78	0.638	0.90	0.706	0.81	1.00	2.000	Yes
292	47.90	3.05	0.40	2.65	0.77	0.638	0.90	0.705	0.81	1.00	0.871	No
293	48.06	3.06	0.41	2.65	0.77	0.637	0.90	0.705	0.81	1.00	0.871	No
294	48.23	3.07	0.41	2.66	0.77	0.637	0.90	0.704	0.81	1.00	0.870	No
295	48.39	3.08	0.42	2.67	0.77	0.636	0.90	0.704	0.81	1.00	0.870	No
296	48.56	3.10	0.42	2.67	0.77	0.636	0.90	0.703	0.81	1.00	0.870	No
297	48.72	3.11	0.43	2.68	0.77	0.635	0.90	0.702	0.81	1.00	0.870	No
298	48.88	3.12	0.43	2.68	0.76	0.635	0.90	0.702	0.81	1.00	0.869	No
299	49.05	3.13	0.44	2.69	0.76	0.634	0.90	0.701	0.81	1.00	0.869	No
300	49.21	3.14	0.44	2.70	0.76	0.633	0.90	0.701	0.81	1.00	0.869	No
301	49.38	3.15	0.45	2.70	0.76	0.633	0.90	0.700	0.81	1.00	0.868	No
302	49.54	3.16	0.45	2.71	0.76	0.632	0.90	0.699	0.81	1.00	0.868	No
303	49.70	3.17	0.46	2.71	0.76	0.632	0.90	0.699	0.81	1.00	0.868	No
304	49.87	3.18	0.46	2.72	0.75	0.631	0.90	0.698	0.80	1.00	0.867	No
305	50.03	3.19	0.47	2.73	0.75	0.631	0.90	0.697	0.80	1.00	0.867	No

Abbreviations

Depth:	Depth from free surface, at which CPT was performed (ft)
σ_v :	Total overburden pressure at test point (tsf)
u_0 :	Water pressure at test point (tsf)
σ_v' :	Effective overburden pressure based on GWT during earthquake (tsf)
r_d :	Nonlinear shear mass factor
CSR:	Cyclic Stress Ratio
MSF:	Magnitude Scaling Factor
CSR _{eq} :	CSR adjusted for M=7.5
K_σ :	Effective overburden stress factor
CSR*:	CSR fully adjusted

:: Cyclic Resistance Ratio (CRR) calculation data ::

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
1	0.16	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
2	0.33	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
3	0.49	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
4	0.66	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
5	0.82	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
6	0.98	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
7	1.15	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
8	1.31	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
9	1.48	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
10	1.64	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
11	1.80	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
12	1.97	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
13	2.13	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
14	2.30	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
15	2.46	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
16	2.62	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
17	2.79	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
18	2.95	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
19	3.12	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
20	3.28	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
21	3.44	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
22	3.61	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
23	3.77	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
24	3.94	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
25	4.10	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
26	4.27	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
27	4.43	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
28	4.59	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
29	4.76	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
30	4.92	0.00	N/A	0.00	1.00	-1.00	1.00	N/A	4.000	No	No	2.00
31	5.09	137.44	1.34	0.32	0.50	220.32	1.00	220.32	4.000	No	No	2.00
32	5.25	205.26	1.20	0.32	0.50	329.28	1.00	329.28	4.000	No	No	2.00
33	5.41	200.99	1.20	0.32	0.50	322.40	1.00	322.40	4.000	No	No	2.00
34	5.58	190.09	1.23	0.33	0.50	304.86	1.00	304.86	4.000	No	No	2.00
35	5.74	169.60	1.30	0.36	0.50	271.93	1.00	271.93	4.000	No	No	2.00
36	5.91	147.02	1.42	0.47	0.50	235.63	1.00	235.63	4.000	No	No	2.00
37	6.07	128.91	1.54	0.63	0.50	206.53	1.00	206.53	4.000	No	No	2.00
38	6.23	124.44	1.64	0.83	0.50	196.68	1.00	196.68	4.000	No	No	2.00
39	6.40	131.69	1.68	1.00	0.51	208.31	1.02	212.84	4.000	No	No	2.00
40	6.56	151.13	1.66	1.04	0.51	234.27	1.01	236.18	4.000	No	No	2.00
41	6.73	177.32	1.60	0.99	0.50	269.60	1.00	269.60	4.000	No	No	2.00
42	6.89	205.27	1.53	0.89	0.50	308.24	1.00	308.24	4.000	No	No	2.00
43	7.05	227.81	1.46	0.79	0.50	337.91	1.00	337.91	4.000	No	No	2.00
44	7.22	245.53	1.41	0.72	0.50	359.85	1.00	359.85	4.000	No	No	2.00
45	7.38	256.33	1.38	0.66	0.50	371.29	1.00	371.29	4.000	No	No	2.00
46	7.55	259.38	1.36	0.63	0.50	371.40	1.00	371.40	4.000	No	No	2.00
47	7.71	254.35	1.38	0.65	0.50	360.09	1.00	360.09	4.000	No	No	2.00
48	7.87	244.12	1.43	0.72	0.50	341.77	1.00	341.77	4.000	No	No	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
49	8.04	232.28	1.50	0.85	0.50	321.64	1.00	321.64	4.000	No	No	2.00
50	8.20	222.92	1.56	0.96	0.50	305.37	1.00	305.37	4.000	No	No	2.00
51	8.37	218.56	1.59	1.04	0.50	296.24	1.00	296.24	4.000	No	No	2.00
52	8.53	216.55	1.62	1.12	0.50	290.50	1.00	290.50	4.000	No	No	2.00
53	8.69	212.21	1.65	1.21	0.51	282.93	1.01	284.77	4.000	No	No	2.00
54	8.86	202.67	1.69	1.29	0.52	269.73	1.03	277.95	4.000	No	No	2.00
55	9.02	191.53	1.70	1.29	0.52	253.26	1.04	263.61	4.000	No	No	2.00
56	9.19	194.70	1.67	1.16	0.51	252.76	1.02	256.95	4.000	No	No	2.00
57	9.35	209.27	1.62	1.04	0.50	267.37	1.00	267.37	4.000	No	No	2.00
58	9.51	232.03	1.56	0.96	0.50	293.81	1.00	293.81	4.000	No	No	2.00
59	9.68	246.68	1.54	0.92	0.50	309.60	1.00	309.60	4.000	No	No	2.00
60	9.84	257.10	1.51	0.89	0.50	319.86	1.00	319.86	4.000	No	No	2.00
61	10.01	262.27	1.51	0.88	0.50	323.48	1.00	323.48	4.000	No	No	2.00
62	10.17	262.40	1.52	0.91	0.50	320.85	1.00	320.85	4.000	No	No	2.00
63	10.33	258.34	1.55	0.96	0.50	313.21	1.00	313.21	4.000	No	No	2.00
64	10.50	252.03	1.57	1.01	0.50	303.01	1.00	303.01	4.000	No	No	2.00
65	10.66	245.79	1.59	1.02	0.50	293.08	1.00	293.08	4.000	No	No	2.00
66	10.83	237.14	1.61	1.05	0.50	280.46	1.00	280.46	4.000	No	No	2.00
67	10.99	227.50	1.65	1.14	0.50	267.26	1.00	267.72	4.000	No	No	2.00
68	11.15	218.59	1.69	1.25	0.52	256.48	1.03	264.53	4.000	No	No	2.00
69	11.32	215.38	1.72	1.33	0.53	251.73	1.05	264.22	4.000	No	No	2.00
70	11.48	216.33	1.72	1.35	0.53	251.04	1.05	264.49	4.000	No	No	2.00
71	11.65	220.84	1.72	1.34	0.53	254.03	1.05	266.62	4.000	No	No	2.00
72	11.81	228.05	1.70	1.29	0.52	259.63	1.04	269.25	4.000	No	No	2.00
73	11.98	239.77	1.66	1.20	0.51	269.72	1.01	273.26	4.000	No	No	2.00
74	12.14	254.47	1.63	1.12	0.50	283.32	1.00	283.32	4.000	No	No	2.00
75	12.30	269.18	1.59	1.04	0.50	297.63	1.00	297.63	4.000	No	No	2.00
76	12.47	282.70	1.57	1.00	0.50	310.43	1.00	310.43	4.000	No	No	2.00
77	12.63	293.58	1.55	0.99	0.50	320.19	1.00	320.19	4.000	No	No	2.00
78	12.80	302.23	1.55	1.01	0.50	327.40	1.00	327.40	4.000	No	No	2.00
79	12.96	309.87	1.56	1.05	0.50	333.42	1.00	333.42	4.000	No	No	2.00
80	13.12	320.30	1.57	1.09	0.50	342.35	1.00	342.35	4.000	No	No	2.00
81	13.29	332.01	1.57	1.12	0.50	352.55	1.00	352.55	4.000	No	No	2.00
82	13.45	343.82	1.57	1.13	0.50	362.72	1.00	362.72	4.000	No	No	2.00
83	13.62	351.19	1.55	1.11	0.50	368.10	1.00	368.10	4.000	No	No	2.00
84	13.78	355.32	1.54	1.08	0.50	370.06	1.00	370.06	4.000	No	No	2.00
85	13.94	356.15	1.54	1.07	0.50	368.58	1.00	368.58	4.000	No	No	2.00
86	14.11	354.81	1.54	1.07	0.50	364.89	1.00	364.89	4.000	No	No	2.00
87	14.27	355.09	1.55	1.08	0.50	362.93	1.00	362.93	4.000	No	No	2.00
88	14.44	358.84	1.55	1.09	0.50	364.53	1.00	364.53	4.000	No	No	2.00
89	14.60	366.68	1.55	1.10	0.50	370.26	1.00	370.26	4.000	No	No	2.00
90	14.76	376.27	1.55	1.10	0.50	377.70	1.00	377.70	4.000	No	No	2.00
91	14.93	382.57	1.51	1.01	0.50	381.77	1.00	381.77	4.000	No	No	2.00
92	15.09	383.90	1.47	0.88	0.50	380.89	1.00	380.89	4.000	No	No	2.00
93	15.26	376.47	1.40	0.71	0.50	371.40	1.00	371.40	4.000	No	No	2.00
94	15.42	362.14	1.38	0.65	0.50	355.24	1.00	355.24	4.000	No	No	2.00
95	15.58	338.83	1.40	0.65	0.50	330.50	1.00	330.50	4.000	No	No	2.00
96	15.75	306.09	1.49	0.77	0.50	296.85	1.00	296.85	4.000	No	No	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
97	15.91	269.60	1.59	0.93	0.50	259.95	1.00	259.95	4.000	No	No	2.00
98	16.08	234.75	1.71	1.20	0.53	225.25	1.05	235.73	4.000	No	No	2.00
99	16.24	206.60	1.82	1.46	0.57	197.22	1.12	220.66	4.000	No	No	2.00
100	16.40	181.76	1.90	1.70	0.60	172.45	1.19	205.66	4.000	No	No	2.00
101	16.57	163.90	1.96	1.82	0.62	154.46	1.25	192.84	4.000	No	No	2.00
102	16.73	152.82	1.99	1.89	0.63	143.03	1.29	184.34	4.000	No	No	2.00
103	16.90	149.35	2.00	1.89	0.64	138.87	1.30	180.67	4.000	No	No	2.00
104	17.06	147.85	2.00	1.85	0.64	136.59	1.30	177.36	4.000	No	No	2.00
105	17.22	143.44	1.99	1.75	0.63	131.67	1.29	169.74	4.000	Yes	No	2.00
106	17.39	119.93	2.07	1.86	0.66	109.12	1.40	152.41	4.000	Yes	No	2.00
107	17.55	87.81	2.21	2.17	0.72	78.89	1.70	134.14	4.000	Yes	No	2.00
108	17.72	54.71	2.47	3.07	0.82	48.15	2.63	126.64	4.000	Yes	No	2.00
109	17.88	45.28	2.50	2.72	0.83	39.35	2.77	109.17	4.000	Yes	No	2.00
110	18.04	46.18	2.42	2.06	0.80	39.96	2.39	95.39	4.000	Yes	No	2.00
111	18.21	51.60	2.30	1.52	0.75	44.65	1.94	86.54	4.000	Yes	No	2.00
112	18.37	53.98	2.33	1.82	0.76	46.39	2.06	95.50	4.000	No	No	2.00
113	18.54	59.43	2.34	2.04	0.76	50.83	2.07	105.06	4.000	No	No	2.00
114	18.70	66.84	2.31	2.15	0.76	56.97	1.99	113.31	4.000	No	No	2.00
115	18.86	69.61	2.32	2.30	0.76	58.96	2.02	119.02	4.000	Yes	No	2.00
116	19.03	65.31	2.39	2.65	0.78	54.70	2.26	123.76	4.000	Yes	No	2.00
117	19.19	60.20	2.45	2.97	0.81	49.83	2.53	126.32	4.000	Yes	No	2.00
118	19.36	60.70	2.44	2.91	0.81	49.93	2.50	125.00	4.000	No	No	2.00
119	19.52	63.79	2.40	2.65	0.79	52.30	2.32	121.30	4.000	No	No	2.00
120	19.69	63.18	2.41	2.67	0.79	51.42	2.35	120.78	4.000	No	No	2.00
121	19.85	55.42	2.50	3.07	0.83	44.43	2.75	122.23	4.000	No	No	2.00
122	20.01	59.41	2.45	2.81	0.81	47.53	2.52	119.99	4.000	No	No	2.00
123	20.18	70.89	2.32	2.20	0.76	57.06	2.01	114.79	4.000	No	No	2.00
124	20.34	85.96	2.19	1.77	0.71	69.65	1.65	114.76	4.000	No	No	2.00
125	20.51	87.64	2.21	1.91	0.72	70.53	1.69	119.16	4.000	Yes	No	2.00
126	20.67	79.77	2.33	2.50	0.76	63.13	2.03	128.35	4.000	Yes	No	2.00
127	20.83	65.28	2.48	3.33	0.82	50.50	2.68	135.16	4.000	Yes	No	2.00
128	21.00	52.29	2.60	3.89	0.87	39.56	3.35	132.69	4.000	Yes	Yes	2.00
129	21.16	50.46	2.50	2.65	0.83	38.23	2.78	106.36	4.000	Yes	No	2.00
130	21.33	58.32	2.30	1.55	0.75	44.89	1.95	87.62	4.000	Yes	No	2.00
131	21.49	63.28	2.24	1.35	0.73	48.84	1.76	85.80	4.000	Yes	No	2.00
132	21.65	76.17	2.23	1.68	0.73	58.69	1.75	102.70	4.000	No	No	2.00
133	21.82	120.90	2.01	1.35	0.64	95.37	1.32	125.44	4.000	No	No	2.00
134	21.98	179.96	1.80	1.05	0.56	144.87	1.11	160.80	4.000	No	No	2.00
135	22.15	214.33	1.70	0.89	0.52	173.97	1.04	180.29	4.000	No	No	2.00
136	22.31	193.47	1.75	0.94	0.54	155.46	1.07	166.36	4.000	Yes	No	2.00
137	22.47	146.75	1.89	1.10	0.60	115.33	1.18	135.99	4.000	Yes	No	2.00
138	22.64	101.80	2.14	1.68	0.69	77.03	1.54	118.71	4.000	Yes	No	2.00
139	22.80	73.77	2.40	2.68	0.79	53.62	2.30	123.41	4.000	Yes	No	2.00
140	22.97	55.74	2.60	3.81	0.87	39.05	3.34	130.44	4.000	Yes	Yes	2.00
141	23.13	49.70	2.69	4.48	0.90	34.10	3.95	134.59	4.000	Yes	Yes	2.00
142	23.29	102.92	2.28	2.54	0.74	75.07	1.88	140.78	4.000	Yes	No	2.00
143	23.46	205.35	1.91	1.58	0.60	157.35	1.19	187.93	4.000	Yes	No	2.00
144	23.62	339.04	1.70	1.33	0.52	266.41	1.04	276.77	4.000	Yes	No	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
145	23.79	407.26	1.66	1.36	0.51	320.68	1.01	324.47	4.000	No	No	2.00
146	23.95	444.24	1.69	1.53	0.52	347.47	1.03	357.14	4.000	No	No	2.00
147	24.11	439.02	1.71	1.63	0.53	340.81	1.05	356.34	4.000	No	No	2.00
148	24.28	432.05	1.70	1.56	0.52	334.56	1.04	347.49	4.000	No	No	2.00
149	24.44	406.72	1.67	1.39	0.51	314.92	1.02	321.18	4.000	No	No	2.00
150	24.61	386.30	1.63	1.19	0.50	299.43	1.00	299.43	4.000	No	No	2.00
151	24.77	372.02	1.60	1.06	0.50	287.29	1.00	287.29	4.000	No	No	2.00
152	24.93	355.71	1.59	0.98	0.50	273.68	1.00	273.68	4.000	No	No	2.00
153	25.10	336.55	1.58	0.90	0.50	257.98	1.00	257.98	4.000	No	No	2.00
154	25.26	310.32	1.59	0.86	0.50	236.97	1.00	236.97	4.000	No	No	2.00
155	25.43	271.24	1.66	0.93	0.51	205.64	1.01	207.66	4.000	No	No	2.00
156	25.59	217.21	1.81	1.18	0.56	159.93	1.11	177.93	4.000	Yes	No	2.00
157	25.75	159.74	2.02	1.64	0.64	112.87	1.32	149.38	4.000	Yes	No	2.00
158	25.92	107.86	2.26	2.32	0.74	72.48	1.83	132.43	4.000	Yes	No	2.00
159	26.08	74.76	2.47	3.08	0.82	47.86	2.64	126.56	4.000	Yes	No	2.00
160	26.25	64.69	2.53	3.13	0.84	40.66	2.93	119.09	4.000	No	No	2.00
161	26.41	69.32	2.50	3.06	0.83	43.63	2.78	121.15	4.000	No	No	2.00
162	26.57	70.76	2.52	3.27	0.83	44.20	2.86	126.43	4.000	No	No	2.00
163	26.74	62.24	2.61	3.81	0.87	37.90	3.40	128.83	4.000	No	Yes	2.00
164	26.90	61.34	2.61	3.71	0.87	37.14	3.39	125.92	4.000	No	Yes	2.00
165	27.07	64.40	2.58	3.48	0.86	39.09	3.18	124.21	4.000	No	No	2.00
166	27.23	63.63	2.59	3.59	0.86	38.29	3.27	125.21	4.000	No	No	2.00
167	27.40	47.82	2.72	3.98	0.91	27.65	4.18	115.60	4.000	No	Yes	2.00
168	27.56	34.26	2.87	4.22	0.97	18.89	5.38	101.65	4.000	Yes	Yes	2.00
169	27.72	36.13	2.76	3.09	0.93	20.29	4.43	89.88	4.000	Yes	Yes	2.00
170	27.89	59.24	2.52	2.54	0.83	35.37	2.85	100.90	4.000	Yes	No	2.00
171	28.05	128.82	2.11	1.67	0.68	84.28	1.48	124.70	4.000	Yes	No	2.00
172	28.22	192.93	1.96	1.55	0.62	130.34	1.25	162.49	4.000	Yes	No	2.00
173	28.38	222.40	1.93	1.62	0.61	150.74	1.22	183.23	4.000	No	No	2.00
174	28.54	176.84	2.10	2.17	0.68	115.03	1.45	167.22	4.000	No	No	2.00
175	28.71	122.31	2.32	2.96	0.76	75.29	2.03	152.53	4.000	No	No	2.00
176	28.87	101.78	2.41	3.15	0.79	61.12	2.33	142.70	4.000	No	No	2.00
177	29.04	118.66	2.27	2.44	0.74	73.14	1.86	136.25	4.000	No	No	2.00
178	29.20	140.32	2.16	2.02	0.70	88.51	1.56	138.49	4.000	No	No	2.00
179	29.36	140.89	2.16	2.04	0.70	88.44	1.57	139.12	4.000	No	No	2.00
180	29.53	127.84	2.23	2.26	0.72	78.66	1.73	136.29	4.000	No	No	2.00
181	29.69	114.05	2.30	2.48	0.75	68.69	1.94	133.01	4.000	No	No	2.00
182	29.86	106.56	2.32	2.51	0.76	63.42	2.03	128.80	4.000	No	No	2.00
183	30.02	100.15	2.35	2.51	0.77	58.98	2.11	124.48	4.000	No	No	2.00
184	30.18	92.17	2.38	2.51	0.78	53.58	2.23	119.28	4.000	No	No	2.00
185	30.35	84.38	2.42	2.59	0.80	48.28	2.40	115.68	4.000	No	No	2.00
186	30.51	77.04	2.48	2.78	0.82	43.22	2.65	114.70	4.000	No	No	2.00
187	30.68	72.22	2.53	3.08	0.84	39.73	2.95	117.02	4.000	No	No	2.00
188	30.84	76.98	2.51	3.03	0.83	42.49	2.81	119.26	4.000	Yes	No	2.00
189	31.00	106.26	2.30	2.24	0.75	61.78	1.94	120.16	4.000	Yes	No	2.00
190	31.17	154.01	2.09	1.72	0.67	94.36	1.43	135.11	4.000	Yes	No	2.00
191	31.33	203.06	1.95	1.48	0.62	128.67	1.23	158.85	4.000	Yes	No	2.00
192	31.50	225.24	1.91	1.48	0.60	143.51	1.20	172.34	4.000	No	No	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
193	31.66	209.07	1.96	1.60	0.62	131.02	1.26	164.49	4.000	Yes	No	2.00
194	31.82	159.09	2.13	2.00	0.69	95.07	1.51	143.74	4.000	Yes	No	2.00
195	31.99	99.80	2.39	2.68	0.78	55.30	2.26	125.09	4.000	Yes	No	2.00
196	32.15	56.64	2.68	3.55	0.90	28.56	3.86	110.28	4.000	Yes	Yes	2.00
197	32.32	37.39	2.81	3.17	0.95	17.83	4.86	86.58	4.000	Yes	Yes	2.00
198	32.48	29.91	2.76	1.90	0.93	14.16	4.46	63.19	4.000	No	Yes	2.00
199	32.64	28.34	2.54	0.64	0.84	14.09	2.97	41.90	4.000	Yes	No	2.00
200	32.81	27.56	2.69	1.20	0.90	13.09	3.91	51.17	4.000	Yes	Yes	2.00
201	32.97	32.82	2.75	2.09	0.92	15.48	4.39	67.87	4.000	Yes	Yes	2.00
202	33.14	59.75	2.54	2.33	0.84	30.53	2.99	91.34	4.000	Yes	No	2.00
203	33.30	120.54	2.19	1.75	0.71	68.47	1.65	113.11	4.000	Yes	No	2.00
204	33.46	205.91	1.95	1.47	0.62	125.19	1.24	155.37	4.000	Yes	No	2.00
205	33.63	285.41	1.80	1.29	0.56	180.63	1.11	199.87	4.000	Yes	No	2.00
206	33.79	340.35	1.72	1.21	0.53	219.52	1.05	231.23	4.000	Yes	No	2.00
207	33.96	369.05	1.69	1.19	0.52	239.33	1.03	247.51	4.000	No	No	2.00
208	34.12	381.96	1.70	1.24	0.52	246.70	1.04	256.07	4.000	No	No	2.00
209	34.28	385.67	1.72	1.31	0.53	247.34	1.05	259.40	4.000	No	No	2.00
210	34.45	392.21	1.72	1.32	0.53	250.92	1.05	263.03	4.000	No	No	2.00
211	34.61	403.13	1.72	1.37	0.53	256.75	1.05	270.32	4.000	No	No	2.00
212	34.78	419.80	1.74	1.47	0.54	265.48	1.06	282.41	4.000	No	No	2.00
213	34.94	430.88	1.78	1.67	0.55	268.72	1.09	293.25	4.000	No	No	2.00
214	35.10	430.13	1.81	1.83	0.57	264.96	1.12	296.14	4.000	No	No	2.00
215	35.27	430.19	1.83	1.90	0.57	263.45	1.13	297.45	4.000	No	No	2.00
216	35.43	437.91	1.82	1.88	0.57	268.41	1.12	301.35	4.000	No	No	2.00
217	35.60	459.51	1.79	1.80	0.56	283.67	1.10	312.28	4.000	No	No	2.00
218	35.76	463.14	1.77	1.73	0.55	286.96	1.09	312.27	4.000	No	No	2.00
219	35.93	438.43	1.78	1.70	0.55	270.47	1.09	295.99	4.000	No	No	2.00
220	36.09	379.41	1.83	1.74	0.57	230.14	1.13	260.39	4.000	Yes	No	2.00
221	36.25	293.68	1.95	1.92	0.62	171.82	1.23	212.14	4.000	Yes	No	2.00
222	36.42	199.80	2.14	2.35	0.69	109.87	1.53	168.02	4.000	Yes	No	2.00
223	36.58	129.76	2.38	3.10	0.78	65.99	2.22	146.62	4.000	Yes	No	2.00
224	36.75	95.38	2.55	3.81	0.85	45.66	3.06	139.48	4.000	Yes	No	2.00
225	36.91	93.42	2.55	3.73	0.85	44.59	3.06	136.37	0.316	No	No	0.37
226	37.07	88.58	2.53	3.24	0.84	42.47	2.91	123.55	0.255	No	No	0.30
227	37.24	79.48	2.55	3.11	0.85	37.61	3.06	114.92	0.221	No	No	0.26
228	37.40	84.80	2.48	2.62	0.82	41.06	2.65	108.79	0.200	No	No	0.23
229	37.57	94.03	2.48	3.02	0.82	45.44	2.69	122.40	4.000	Yes	No	2.00
230	37.73	122.20	2.37	2.85	0.78	61.29	2.21	135.46	4.000	Yes	No	2.00
231	37.89	158.02	2.24	2.46	0.73	82.80	1.76	145.96	4.000	Yes	No	2.00
232	38.06	202.49	2.06	1.88	0.66	112.07	1.39	155.58	4.000	Yes	No	2.00
233	38.22	230.27	1.96	1.57	0.62	131.52	1.25	163.97	4.000	Yes	No	2.00
234	38.39	229.91	1.96	1.56	0.62	131.10	1.25	163.44	0.486	No	No	0.57
235	38.55	214.43	2.01	1.71	0.64	119.96	1.32	157.75	0.445	No	No	0.52
236	38.71	195.33	2.07	1.86	0.66	106.97	1.41	150.42	0.397	No	No	0.46
237	38.88	173.58	2.13	1.96	0.69	93.04	1.51	140.91	0.340	No	No	0.40
238	39.04	156.38	2.19	2.09	0.71	82.08	1.64	134.61	0.307	No	No	0.36
239	39.21	142.21	2.25	2.26	0.73	73.02	1.80	131.15	0.290	No	No	0.34
240	39.37	130.31	2.30	2.37	0.75	65.73	1.94	127.25	0.272	No	No	0.31

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
241	39.53	117.64	2.34	2.44	0.77	58.25	2.09	121.99	4.000	Yes	No	2.00
242	39.70	100.12	2.45	2.78	0.81	47.75	2.51	119.69	4.000	Yes	No	2.00
243	39.86	75.65	2.62	3.50	0.87	33.79	3.47	117.28	4.000	Yes	Yes	2.00
244	40.03	50.27	2.87	4.63	0.97	20.39	5.39	109.81	4.000	Yes	Yes	2.00
245	40.19	48.47	2.80	3.55	0.94	19.99	4.78	95.61	4.000	Yes	Yes	2.00
246	40.35	75.17	2.45	2.02	0.81	35.17	2.55	89.66	4.000	Yes	No	2.00
247	40.52	114.79	2.19	1.46	0.71	58.94	1.65	97.09	4.000	Yes	No	2.00
248	40.68	141.49	2.12	1.47	0.68	74.62	1.48	110.78	4.000	Yes	No	2.00
249	40.85	153.45	2.09	1.51	0.67	81.46	1.44	117.72	0.232	No	No	0.27
250	41.01	154.54	2.11	1.58	0.68	81.60	1.47	119.76	0.240	No	No	0.28
251	41.17	153.43	2.11	1.56	0.68	80.92	1.46	118.52	0.235	No	No	0.27
252	41.34	149.55	2.12	1.57	0.68	78.40	1.49	116.67	0.228	No	No	0.26
253	41.50	149.48	2.13	1.60	0.69	78.04	1.50	117.32	0.230	No	No	0.26
254	41.67	150.07	2.15	1.74	0.70	77.58	1.56	120.75	0.244	No	No	0.28
255	41.83	150.35	2.18	1.90	0.71	76.87	1.62	124.67	0.260	No	No	0.30
256	41.99	154.23	2.19	1.98	0.71	78.62	1.63	128.48	0.277	No	No	0.32
257	42.16	161.84	2.17	2.01	0.70	82.76	1.61	132.90	0.298	No	No	0.34
258	42.32	173.61	2.14	1.98	0.69	89.58	1.54	138.15	0.325	No	No	0.37
259	42.49	175.16	2.16	2.05	0.70	89.92	1.57	140.76	0.339	No	No	0.39
260	42.65	161.63	2.22	2.27	0.72	81.04	1.71	138.95	0.330	No	No	0.38
261	42.81	130.28	2.35	2.66	0.77	62.26	2.11	131.55	0.292	No	No	0.33
262	42.98	111.27	2.42	2.78	0.80	51.66	2.40	123.74	0.256	No	No	0.29
263	43.14	104.02	2.41	2.53	0.79	48.22	2.37	114.23	0.219	No	No	0.25
264	43.31	101.35	2.42	2.53	0.80	46.70	2.41	112.69	4.000	Yes	No	2.00
265	43.47	80.77	2.59	3.19	0.86	34.97	3.24	113.22	4.000	Yes	No	2.00
266	43.64	54.99	2.84	4.52	0.96	21.44	5.18	110.96	4.000	Yes	Yes	2.00
267	43.80	39.18	3.01	5.17	1.00	14.39	6.90	99.26	4.000	No	Yes	2.00
268	43.96	60.08	2.64	2.61	0.88	25.10	3.57	89.67	4.000	No	Yes	2.00
269	44.13	72.57	2.49	2.04	0.82	32.07	2.71	87.04	0.141	No	No	0.16
270	44.29	74.16	2.46	1.89	0.81	33.08	2.57	84.96	4.000	Yes	No	2.00
271	44.46	47.82	2.73	2.60	0.92	18.98	4.26	80.77	4.000	Yes	Yes	2.00
272	44.62	34.77	2.89	2.75	0.98	12.78	5.58	71.32	4.000	Yes	Yes	2.00
273	44.78	28.60	3.00	3.09	1.00	10.07	6.76	68.07	4.000	No	Yes	2.00
274	44.95	25.58	3.09	3.70	1.00	8.87	7.83	69.42	4.000	No	Yes	2.00
275	45.11	26.10	3.09	3.83	1.00	9.05	7.84	70.96	4.000	No	Yes	2.00
276	45.28	33.09	3.00	3.82	1.00	11.75	6.76	79.45	4.000	No	Yes	2.00
277	45.44	38.62	2.96	4.07	1.00	13.87	6.32	87.62	4.000	No	Yes	2.00
278	45.60	37.87	3.02	4.96	1.00	13.55	6.99	94.80	4.000	No	Yes	2.00
279	45.77	32.35	3.12	5.71	1.00	11.39	8.17	93.09	4.000	No	Yes	2.00
280	45.93	36.38	3.05	5.21	1.00	12.92	7.35	94.89	4.000	No	Yes	2.00
281	46.10	52.18	2.83	3.94	0.95	19.76	5.07	100.14	4.000	No	Yes	2.00
282	46.26	56.24	2.82	4.13	0.95	21.44	4.95	106.07	4.000	No	Yes	2.00
283	46.42	48.42	2.90	4.43	0.98	17.76	5.71	101.36	4.000	No	Yes	2.00
284	46.59	31.25	3.13	5.50	1.00	10.84	8.26	89.51	4.000	No	Yes	2.00
285	46.75	29.41	3.01	3.24	1.00	10.11	6.88	69.55	4.000	No	Yes	2.00
286	46.92	36.73	2.69	1.39	0.90	14.10	3.93	55.44	4.000	No	Yes	2.00
287	47.08	38.31	2.65	1.27	0.88	14.95	3.64	54.46	4.000	No	Yes	2.00
288	47.24	46.30	2.70	2.10	0.90	17.99	3.99	71.69	4.000	Yes	Yes	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q _t (tsf)	I _c	Fr (%)	n	Q _{tn}	K _c	Q _{tn,cs}	CRR _{7.5}	Belongs to trans. layer	Clay-like behaviour	FS
289	47.41	85.30	2.40	1.78	0.79	37.91	2.29	86.98	4.000	Yes	No	2.00
290	47.57	147.30	2.11	1.42	0.68	73.27	1.48	108.09	4.000	Yes	No	2.00
291	47.74	199.44	1.97	1.29	0.63	104.66	1.26	132.03	4.000	Yes	No	2.00
292	47.90	207.57	2.02	1.58	0.65	106.83	1.33	142.14	0.347	No	No	0.40
293	48.06	189.63	2.15	2.08	0.69	93.09	1.55	144.43	0.360	No	No	0.41
294	48.23	173.38	2.25	2.52	0.73	81.99	1.79	146.71	0.374	No	No	0.43
295	48.39	172.51	2.25	2.56	0.73	81.21	1.81	147.12	0.376	No	No	0.43
296	48.56	191.91	2.15	2.10	0.69	93.77	1.55	145.55	0.367	No	No	0.42
297	48.72	228.67	2.02	1.71	0.64	117.18	1.32	155.18	0.428	No	No	0.49
298	48.88	262.24	1.91	1.43	0.60	139.64	1.20	167.41	0.516	No	No	0.59
299	49.05	284.13	1.86	1.32	0.58	154.23	1.15	177.27	0.598	No	No	0.69
300	49.21	289.77	1.85	1.33	0.58	157.37	1.15	180.31	0.625	No	No	0.72
301	49.38	300.82	1.86	1.40	0.58	162.85	1.15	187.45	0.693	No	No	0.80
302	49.54	324.48	1.85	1.49	0.58	175.71	1.15	201.91	4.000	No	No	2.00
303	49.70	346.95	1.83	1.48	0.57	189.38	1.13	213.96	4.000	No	No	2.00
304	49.87	359.51	1.81	1.43	0.56	197.57	1.11	219.97	4.000	No	No	2.00
305	50.03	363.20	1.79	1.39	0.56	200.39	1.10	221.01	4.000	No	No	2.00

Abbreviations

Depth:	Depth from free surface, at which CPT was performed (ft)
q _t :	Total cone resistance
I _c :	Soil behavior type index
Fr:	Normalized friction ratio (%)
n:	Stress exponent
Q _{tn} :	Normalized cone resistance
K _c :	Cone resistance correction factor due to fines
Q _{tn,cs} :	Normalized and adjusted cone resistance
CRR _{7.5} :	Cyclic resistance ratio for M _w =7.5
FS:	Factor of safety against soil liquefaction

:: Liquefaction Potential Index calculation data ::

Depth (ft)	FS	F _L	w _z	d _z	LPI	Depth (ft)	FS	F _L	w _z	d _z	LPI
0.16	2.00	0.00	0.00	0.00	0.00	0.33	2.00	0.00	0.00	0.00	0.00
0.49	2.00	0.00	0.00	0.00	0.00	0.66	2.00	0.00	0.00	0.00	0.00
0.82	2.00	0.00	0.00	0.00	0.00	0.98	2.00	0.00	0.00	0.00	0.00
1.15	2.00	0.00	0.00	0.00	0.00	1.31	2.00	0.00	0.00	0.00	0.00
1.48	2.00	0.00	0.00	0.00	0.00	1.64	2.00	0.00	0.00	0.00	0.00
1.80	2.00	0.00	0.00	0.00	0.00	1.97	2.00	0.00	0.00	0.00	0.00
2.13	2.00	0.00	0.00	0.00	0.00	2.30	2.00	0.00	0.00	0.00	0.00
2.46	2.00	0.00	0.00	0.00	0.00	2.62	2.00	0.00	0.00	0.00	0.00
2.79	2.00	0.00	0.00	0.00	0.00	2.95	2.00	0.00	0.00	0.00	0.00
3.12	2.00	0.00	0.00	0.00	0.00	3.28	2.00	0.00	0.00	0.00	0.00
3.44	2.00	0.00	0.00	0.00	0.00	3.61	2.00	0.00	0.00	0.00	0.00
3.77	2.00	0.00	0.00	0.00	0.00	3.94	2.00	0.00	0.00	0.00	0.00
4.10	2.00	0.00	0.00	0.00	0.00	4.27	2.00	0.00	0.00	0.00	0.00
4.43	2.00	0.00	0.00	0.00	0.00	4.59	2.00	0.00	0.00	0.00	0.00
4.76	2.00	0.00	0.00	0.00	0.00	4.92	2.00	0.00	0.00	0.00	0.00
5.09	2.00	0.00	9.22	0.16	0.00	5.25	2.00	0.00	9.20	0.16	0.00
5.41	2.00	0.00	9.17	0.16	0.00	5.58	2.00	0.00	9.15	0.16	0.00
5.74	2.00	0.00	9.12	0.16	0.00	5.91	2.00	0.00	9.10	0.16	0.00
6.07	2.00	0.00	9.07	0.16	0.00	6.23	2.00	0.00	9.05	0.16	0.00
6.40	2.00	0.00	9.02	0.16	0.00	6.56	2.00	0.00	9.00	0.16	0.00
6.73	2.00	0.00	8.97	0.16	0.00	6.89	2.00	0.00	8.95	0.16	0.00
7.05	2.00	0.00	8.92	0.16	0.00	7.22	2.00	0.00	8.90	0.16	0.00
7.38	2.00	0.00	8.87	0.16	0.00	7.55	2.00	0.00	8.85	0.16	0.00
7.71	2.00	0.00	8.82	0.16	0.00	7.87	2.00	0.00	8.80	0.16	0.00
8.04	2.00	0.00	8.77	0.16	0.00	8.20	2.00	0.00	8.75	0.16	0.00
8.37	2.00	0.00	8.72	0.16	0.00	8.53	2.00	0.00	8.70	0.16	0.00
8.69	2.00	0.00	8.67	0.16	0.00	8.86	2.00	0.00	8.65	0.16	0.00
9.02	2.00	0.00	8.62	0.16	0.00	9.19	2.00	0.00	8.60	0.16	0.00
9.35	2.00	0.00	8.57	0.16	0.00	9.51	2.00	0.00	8.55	0.16	0.00
9.68	2.00	0.00	8.52	0.16	0.00	9.84	2.00	0.00	8.50	0.16	0.00
10.01	2.00	0.00	8.47	0.16	0.00	10.17	2.00	0.00	8.45	0.16	0.00
10.33	2.00	0.00	8.42	0.16	0.00	10.50	2.00	0.00	8.40	0.16	0.00
10.66	2.00	0.00	8.37	0.16	0.00	10.83	2.00	0.00	8.35	0.16	0.00
10.99	2.00	0.00	8.32	0.16	0.00	11.15	2.00	0.00	8.30	0.16	0.00
11.32	2.00	0.00	8.27	0.16	0.00	11.48	2.00	0.00	8.25	0.16	0.00
11.65	2.00	0.00	8.22	0.16	0.00	11.81	2.00	0.00	8.20	0.16	0.00
11.98	2.00	0.00	8.17	0.16	0.00	12.14	2.00	0.00	8.15	0.16	0.00
12.30	2.00	0.00	8.12	0.16	0.00	12.47	2.00	0.00	8.10	0.16	0.00
12.63	2.00	0.00	8.07	0.16	0.00	12.80	2.00	0.00	8.05	0.16	0.00
12.96	2.00	0.00	8.02	0.16	0.00	13.12	2.00	0.00	8.00	0.16	0.00
13.29	2.00	0.00	7.97	0.16	0.00	13.45	2.00	0.00	7.95	0.16	0.00
13.62	2.00	0.00	7.92	0.16	0.00	13.78	2.00	0.00	7.90	0.16	0.00
13.94	2.00	0.00	7.87	0.16	0.00	14.11	2.00	0.00	7.85	0.16	0.00
14.27	2.00	0.00	7.82	0.16	0.00	14.44	2.00	0.00	7.80	0.16	0.00
14.60	2.00	0.00	7.77	0.16	0.00	14.76	2.00	0.00	7.75	0.16	0.00
14.93	2.00	0.00	7.72	0.16	0.00	15.09	2.00	0.00	7.70	0.16	0.00
15.26	2.00	0.00	7.67	0.16	0.00	15.42	2.00	0.00	7.65	0.16	0.00
15.58	2.00	0.00	7.62	0.16	0.00	15.75	2.00	0.00	7.60	0.16	0.00

:: Liquefaction Potential Index calculation data :: (continued)

Depth (ft)	FS	F _L	w _z	d _z	LPI	Depth (ft)	FS	F _L	w _z	d _z	LPI
15.91	2.00	0.00	7.57	0.16	0.00	16.08	2.00	0.00	7.55	0.16	0.00
16.24	2.00	0.00	7.52	0.16	0.00	16.40	2.00	0.00	7.50	0.16	0.00
16.57	2.00	0.00	7.47	0.16	0.00	16.73	2.00	0.00	7.45	0.16	0.00
16.90	2.00	0.00	7.42	0.16	0.00	17.06	2.00	0.00	7.40	0.16	0.00
17.22	2.00	0.00	7.37	0.16	0.00	17.39	2.00	0.00	7.35	0.16	0.00
17.55	2.00	0.00	7.32	0.16	0.00	17.72	2.00	0.00	7.30	0.16	0.00
17.88	2.00	0.00	7.27	0.16	0.00	18.04	2.00	0.00	7.25	0.16	0.00
18.21	2.00	0.00	7.22	0.16	0.00	18.37	2.00	0.00	7.20	0.16	0.00
18.54	2.00	0.00	7.17	0.16	0.00	18.70	2.00	0.00	7.15	0.16	0.00
18.86	2.00	0.00	7.12	0.16	0.00	19.03	2.00	0.00	7.10	0.16	0.00
19.19	2.00	0.00	7.07	0.16	0.00	19.36	2.00	0.00	7.05	0.16	0.00
19.52	2.00	0.00	7.02	0.16	0.00	19.69	2.00	0.00	7.00	0.16	0.00
19.85	2.00	0.00	6.97	0.16	0.00	20.01	2.00	0.00	6.95	0.16	0.00
20.18	2.00	0.00	6.92	0.16	0.00	20.34	2.00	0.00	6.90	0.16	0.00
20.51	2.00	0.00	6.87	0.16	0.00	20.67	2.00	0.00	6.85	0.16	0.00
20.83	2.00	0.00	6.82	0.16	0.00	21.00	2.00	0.00	6.80	0.16	0.00
21.16	2.00	0.00	6.77	0.16	0.00	21.33	2.00	0.00	6.75	0.16	0.00
21.49	2.00	0.00	6.72	0.16	0.00	21.65	2.00	0.00	6.70	0.16	0.00
21.82	2.00	0.00	6.67	0.16	0.00	21.98	2.00	0.00	6.65	0.16	0.00
22.15	2.00	0.00	6.62	0.16	0.00	22.31	2.00	0.00	6.60	0.16	0.00
22.47	2.00	0.00	6.57	0.16	0.00	22.64	2.00	0.00	6.55	0.16	0.00
22.80	2.00	0.00	6.52	0.16	0.00	22.97	2.00	0.00	6.50	0.16	0.00
23.13	2.00	0.00	6.47	0.16	0.00	23.29	2.00	0.00	6.45	0.16	0.00
23.46	2.00	0.00	6.42	0.16	0.00	23.62	2.00	0.00	6.40	0.16	0.00
23.79	2.00	0.00	6.37	0.16	0.00	23.95	2.00	0.00	6.35	0.16	0.00
24.11	2.00	0.00	6.32	0.16	0.00	24.28	2.00	0.00	6.30	0.16	0.00
24.44	2.00	0.00	6.27	0.16	0.00	24.61	2.00	0.00	6.25	0.16	0.00
24.77	2.00	0.00	6.22	0.16	0.00	24.93	2.00	0.00	6.20	0.16	0.00
25.10	2.00	0.00	6.17	0.16	0.00	25.26	2.00	0.00	6.15	0.16	0.00
25.43	2.00	0.00	6.12	0.16	0.00	25.59	2.00	0.00	6.10	0.16	0.00
25.75	2.00	0.00	6.07	0.16	0.00	25.92	2.00	0.00	6.05	0.16	0.00
26.08	2.00	0.00	6.02	0.16	0.00	26.25	2.00	0.00	6.00	0.16	0.00
26.41	2.00	0.00	5.97	0.16	0.00	26.57	2.00	0.00	5.95	0.16	0.00
26.74	2.00	0.00	5.92	0.16	0.00	26.90	2.00	0.00	5.90	0.16	0.00
27.07	2.00	0.00	5.87	0.16	0.00	27.23	2.00	0.00	5.85	0.16	0.00
27.40	2.00	0.00	5.82	0.16	0.00	27.56	2.00	0.00	5.80	0.16	0.00
27.72	2.00	0.00	5.77	0.16	0.00	27.89	2.00	0.00	5.75	0.16	0.00
28.05	2.00	0.00	5.72	0.16	0.00	28.22	2.00	0.00	5.70	0.16	0.00
28.38	2.00	0.00	5.67	0.16	0.00	28.54	2.00	0.00	5.65	0.16	0.00
28.71	2.00	0.00	5.62	0.16	0.00	28.87	2.00	0.00	5.60	0.16	0.00
29.04	2.00	0.00	5.57	0.16	0.00	29.20	2.00	0.00	5.55	0.16	0.00
29.36	2.00	0.00	5.52	0.16	0.00	29.53	2.00	0.00	5.50	0.16	0.00
29.69	2.00	0.00	5.47	0.16	0.00	29.86	2.00	0.00	5.45	0.16	0.00
30.02	2.00	0.00	5.42	0.16	0.00	30.18	2.00	0.00	5.40	0.16	0.00
30.35	2.00	0.00	5.37	0.16	0.00	30.51	2.00	0.00	5.35	0.16	0.00
30.68	2.00	0.00	5.32	0.16	0.00	30.84	2.00	0.00	5.30	0.16	0.00
31.00	2.00	0.00	5.27	0.16	0.00	31.17	2.00	0.00	5.25	0.16	0.00
31.33	2.00	0.00	5.22	0.16	0.00	31.50	2.00	0.00	5.20	0.16	0.00

:: Liquefaction Potential Index calculation data :: (continued)

Depth (ft)	FS	F _L	w _z	d _z	LPI	Depth (ft)	FS	F _L	w _z	d _z	LPI
31.66	2.00	0.00	5.17	0.16	0.00	31.82	2.00	0.00	5.15	0.16	0.00
31.99	2.00	0.00	5.12	0.16	0.00	32.15	2.00	0.00	5.10	0.16	0.00
32.32	2.00	0.00	5.07	0.16	0.00	32.48	2.00	0.00	5.05	0.16	0.00
32.64	2.00	0.00	5.02	0.16	0.00	32.81	2.00	0.00	5.00	0.16	0.00
32.97	2.00	0.00	4.97	0.16	0.00	33.14	2.00	0.00	4.95	0.16	0.00
33.30	2.00	0.00	4.92	0.16	0.00	33.46	2.00	0.00	4.90	0.16	0.00
33.63	2.00	0.00	4.87	0.16	0.00	33.79	2.00	0.00	4.85	0.16	0.00
33.96	2.00	0.00	4.82	0.16	0.00	34.12	2.00	0.00	4.80	0.16	0.00
34.28	2.00	0.00	4.77	0.16	0.00	34.45	2.00	0.00	4.75	0.16	0.00
34.61	2.00	0.00	4.72	0.16	0.00	34.78	2.00	0.00	4.70	0.16	0.00
34.94	2.00	0.00	4.67	0.16	0.00	35.10	2.00	0.00	4.65	0.16	0.00
35.27	2.00	0.00	4.62	0.16	0.00	35.43	2.00	0.00	4.60	0.16	0.00
35.60	2.00	0.00	4.57	0.16	0.00	35.76	2.00	0.00	4.55	0.16	0.00
35.93	2.00	0.00	4.52	0.16	0.00	36.09	2.00	0.00	4.50	0.16	0.00
36.25	2.00	0.00	4.47	0.16	0.00	36.42	2.00	0.00	4.45	0.16	0.00
36.58	2.00	0.00	4.42	0.16	0.00	36.75	2.00	0.00	4.40	0.16	0.00
36.91	0.37	0.63	4.37	0.16	0.14	37.07	0.30	0.70	4.35	0.16	0.15
37.24	0.26	0.74	4.32	0.16	0.16	37.40	0.23	0.77	4.30	0.16	0.16
37.57	2.00	0.00	4.27	0.16	0.00	37.73	2.00	0.00	4.25	0.16	0.00
37.89	2.00	0.00	4.22	0.16	0.00	38.06	2.00	0.00	4.20	0.16	0.00
38.22	2.00	0.00	4.17	0.16	0.00	38.39	0.57	0.43	4.15	0.16	0.09
38.55	0.52	0.48	4.12	0.16	0.10	38.71	0.46	0.54	4.10	0.16	0.11
38.88	0.40	0.60	4.07	0.16	0.12	39.04	0.36	0.64	4.05	0.16	0.13
39.21	0.34	0.66	4.02	0.16	0.13	39.37	0.31	0.69	4.00	0.16	0.14
39.53	2.00	0.00	3.97	0.16	0.00	39.70	2.00	0.00	3.95	0.16	0.00
39.86	2.00	0.00	3.92	0.16	0.00	40.03	2.00	0.00	3.90	0.16	0.00
40.19	2.00	0.00	3.87	0.16	0.00	40.35	2.00	0.00	3.85	0.16	0.00
40.52	2.00	0.00	3.82	0.16	0.00	40.68	2.00	0.00	3.80	0.16	0.00
40.85	0.27	0.73	3.77	0.16	0.14	41.01	0.28	0.72	3.75	0.16	0.14
41.17	0.27	0.73	3.72	0.16	0.14	41.34	0.26	0.74	3.70	0.16	0.14
41.50	0.26	0.74	3.67	0.16	0.14	41.67	0.28	0.72	3.65	0.16	0.13
41.83	0.30	0.70	3.62	0.16	0.13	41.99	0.32	0.68	3.60	0.16	0.12
42.16	0.34	0.66	3.57	0.16	0.12	42.32	0.37	0.63	3.55	0.16	0.11
42.49	0.39	0.61	3.52	0.16	0.11	42.65	0.38	0.62	3.50	0.16	0.11
42.81	0.33	0.67	3.47	0.16	0.12	42.98	0.29	0.71	3.45	0.16	0.12
43.14	0.25	0.75	3.42	0.16	0.13	43.31	2.00	0.00	3.40	0.16	0.00
43.47	2.00	0.00	3.37	0.16	0.00	43.64	2.00	0.00	3.35	0.16	0.00
43.80	2.00	0.00	3.32	0.16	0.00	43.96	2.00	0.00	3.30	0.16	0.00
44.13	0.16	0.84	3.27	0.16	0.14	44.29	2.00	0.00	3.25	0.16	0.00
44.46	2.00	0.00	3.22	0.16	0.00	44.62	2.00	0.00	3.20	0.16	0.00
44.78	2.00	0.00	3.17	0.16	0.00	44.95	2.00	0.00	3.15	0.16	0.00
45.11	2.00	0.00	3.12	0.16	0.00	45.28	2.00	0.00	3.10	0.16	0.00
45.44	2.00	0.00	3.07	0.16	0.00	45.60	2.00	0.00	3.05	0.16	0.00
45.77	2.00	0.00	3.02	0.16	0.00	45.93	2.00	0.00	3.00	0.16	0.00
46.10	2.00	0.00	2.97	0.16	0.00	46.26	2.00	0.00	2.95	0.16	0.00
46.42	2.00	0.00	2.92	0.16	0.00	46.59	2.00	0.00	2.90	0.16	0.00
46.75	2.00	0.00	2.87	0.16	0.00	46.92	2.00	0.00	2.85	0.16	0.00
47.08	2.00	0.00	2.82	0.16	0.00	47.24	2.00	0.00	2.80	0.16	0.00

:: Liquefaction Potential Index calculation data :: (continued)

Depth (ft)	FS	F _L	w _z	d _z	LPI	Depth (ft)	FS	F _L	w _z	d _z	LPI
47.41	2.00	0.00	2.77	0.16	0.00	47.57	2.00	0.00	2.75	0.16	0.00
47.74	2.00	0.00	2.72	0.16	0.00	47.90	0.40	0.60	2.70	0.16	0.08
48.06	0.41	0.59	2.67	0.16	0.08	48.23	0.43	0.57	2.65	0.16	0.08
48.39	0.43	0.57	2.62	0.16	0.07	48.56	0.42	0.58	2.60	0.16	0.08
48.72	0.49	0.51	2.57	0.16	0.07	48.88	0.59	0.41	2.55	0.16	0.05
49.05	0.69	0.31	2.52	0.16	0.04	49.21	0.72	0.28	2.50	0.16	0.04
49.38	0.80	0.20	2.47	0.16	0.03	49.54	2.00	0.00	2.45	0.16	0.00
49.70	2.00	0.00	2.42	0.16	0.00	49.87	2.00	0.00	2.40	0.16	0.00
50.03	2.00	0.00	2.37	0.16	0.00						

Overall liquefaction potential: 4.05

LPI = 0.00 - Liquefaction risk very low

LPI between 0.00 and 5.00 - Liquefaction risk low

LPI between 5.00 and 15.00 - Liquefaction risk high

LPI > 15.00 - Liquefaction risk very high

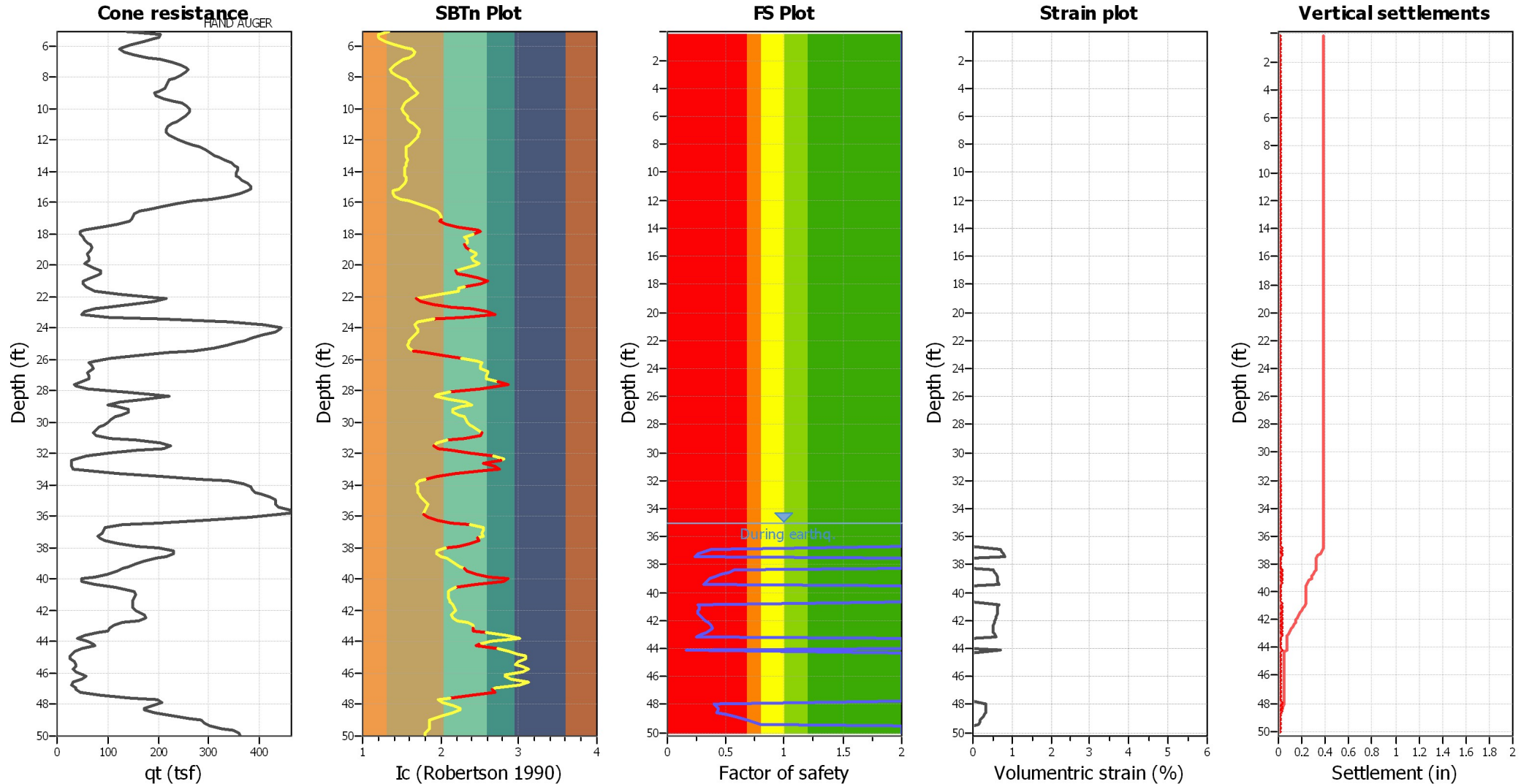
Abbreviations

FS: Calculated factor of safety for test point

F_L: 1 - FSw_z: Function value of the extend of soil liquefaction according to depthd_z: Layer thickness (ft)

LPI: Liquefaction potential index value for test point

Estimation of post-earthquake settlements



Abbreviations

- qc: Total cone resistance (cone resistance q_c corrected for pore water effects)
- Ic: Soil Behaviour Type Index
- FS: Calculated Factor of Safety against liquefaction
- Volumetric strain: Post-liquefaction volumetric strain

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
35.10	296.14	2.00	0.00	0.41	0.00	35.27	297.45	2.00	0.00	0.41	0.00
35.43	301.35	2.00	0.00	0.41	0.00	35.60	312.28	2.00	0.00	0.41	0.00
35.76	312.27	2.00	0.00	0.40	0.00	35.93	295.99	2.00	0.00	0.40	0.00
36.09	260.39	2.00	0.00	0.40	0.00	36.25	212.14	2.00	0.00	0.40	0.00
36.42	168.02	2.00	0.00	0.39	0.00	36.58	146.62	2.00	0.00	0.39	0.00
36.75	139.48	2.00	0.00	0.39	0.00	36.91	136.37	0.37	0.70	0.38	0.01
37.07	123.55	0.30	0.75	0.38	0.01	37.24	114.92	0.26	0.79	0.38	0.02
37.40	108.79	0.23	0.82	0.38	0.02	37.57	122.40	2.00	0.00	0.37	0.00
37.73	135.46	2.00	0.00	0.37	0.00	37.89	145.96	2.00	0.00	0.37	0.00
38.06	155.58	2.00	0.00	0.37	0.00	38.22	163.97	2.00	0.00	0.36	0.00
38.39	163.44	0.57	0.54	0.36	0.01	38.55	157.75	0.52	0.57	0.36	0.01
38.71	150.42	0.46	0.59	0.35	0.01	38.88	140.91	0.40	0.62	0.35	0.01
39.04	134.61	0.36	0.64	0.35	0.01	39.21	131.15	0.34	0.65	0.35	0.01
39.37	127.25	0.31	0.66	0.34	0.01	39.53	121.99	2.00	0.00	0.34	0.00
39.70	119.69	2.00	0.00	0.34	0.00	39.86	117.28	2.00	0.00	0.34	0.00
40.03	109.81	2.00	0.00	0.33	0.00	40.19	95.61	2.00	0.00	0.33	0.00
40.35	89.66	2.00	0.00	0.33	0.00	40.52	97.09	2.00	0.00	0.32	0.00
40.68	110.78	2.00	0.00	0.32	0.00	40.85	117.72	0.27	0.65	0.32	0.01
41.01	119.76	0.28	0.64	0.32	0.01	41.17	118.52	0.27	0.64	0.31	0.01
41.34	116.67	0.26	0.64	0.31	0.01	41.50	117.32	0.26	0.63	0.31	0.01
41.67	120.75	0.28	0.61	0.31	0.01	41.83	124.67	0.30	0.59	0.30	0.01
41.99	128.48	0.32	0.57	0.30	0.01	42.16	132.90	0.34	0.55	0.30	0.01
42.32	138.15	0.37	0.53	0.29	0.01	42.49	140.76	0.39	0.52	0.29	0.01
42.65	138.95	0.38	0.52	0.29	0.01	42.81	131.55	0.33	0.53	0.29	0.01
42.98	123.74	0.29	0.56	0.28	0.01	43.14	114.23	0.25	0.59	0.28	0.01
43.31	112.69	2.00	0.00	0.28	0.00	43.47	113.22	2.00	0.00	0.28	0.00
43.64	110.96	2.00	0.00	0.27	0.00	43.80	99.26	2.00	0.00	0.27	0.00
43.96	89.67	2.00	0.00	0.27	0.00	44.13	87.04	0.16	0.69	0.26	0.01
44.29	84.96	2.00	0.00	0.26	0.00	44.46	80.77	2.00	0.00	0.26	0.00
44.62	71.32	2.00	0.00	0.26	0.00	44.78	68.07	2.00	0.00	0.25	0.00
44.95	69.42	2.00	0.00	0.25	0.00	45.11	70.96	2.00	0.00	0.25	0.00
45.28	79.45	2.00	0.00	0.25	0.00	45.44	87.62	2.00	0.00	0.24	0.00
45.60	94.80	2.00	0.00	0.24	0.00	45.77	93.09	2.00	0.00	0.24	0.00
45.93	94.89	2.00	0.00	0.23	0.00	46.10	100.14	2.00	0.00	0.23	0.00
46.26	106.07	2.00	0.00	0.23	0.00	46.42	101.36	2.00	0.00	0.23	0.00
46.59	89.51	2.00	0.00	0.22	0.00	46.75	69.55	2.00	0.00	0.22	0.00
46.92	55.44	2.00	0.00	0.22	0.00	47.08	54.46	2.00	0.00	0.22	0.00
47.24	71.69	2.00	0.00	0.21	0.00	47.41	86.98	2.00	0.00	0.21	0.00
47.57	108.09	2.00	0.00	0.21	0.00	47.74	132.03	2.00	0.00	0.20	0.00
47.90	142.14	0.40	0.35	0.20	0.01	48.06	144.43	0.41	0.34	0.20	0.01
48.23	146.71	0.43	0.33	0.20	0.01	48.39	147.12	0.43	0.33	0.19	0.01
48.56	145.55	0.42	0.33	0.19	0.01	48.72	155.18	0.49	0.31	0.19	0.01
48.88	167.41	0.59	0.27	0.19	0.01	49.05	177.27	0.69	0.20	0.18	0.00
49.21	180.31	0.72	0.19	0.18	0.00	49.38	187.45	0.80	0.14	0.18	0.00
49.54	201.91	2.00	0.00	0.17	0.00	49.70	213.96	2.00	0.00	0.17	0.00
49.87	219.97	2.00	0.00	0.17	0.00	50.03	221.01	2.00	0.00	0.17	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

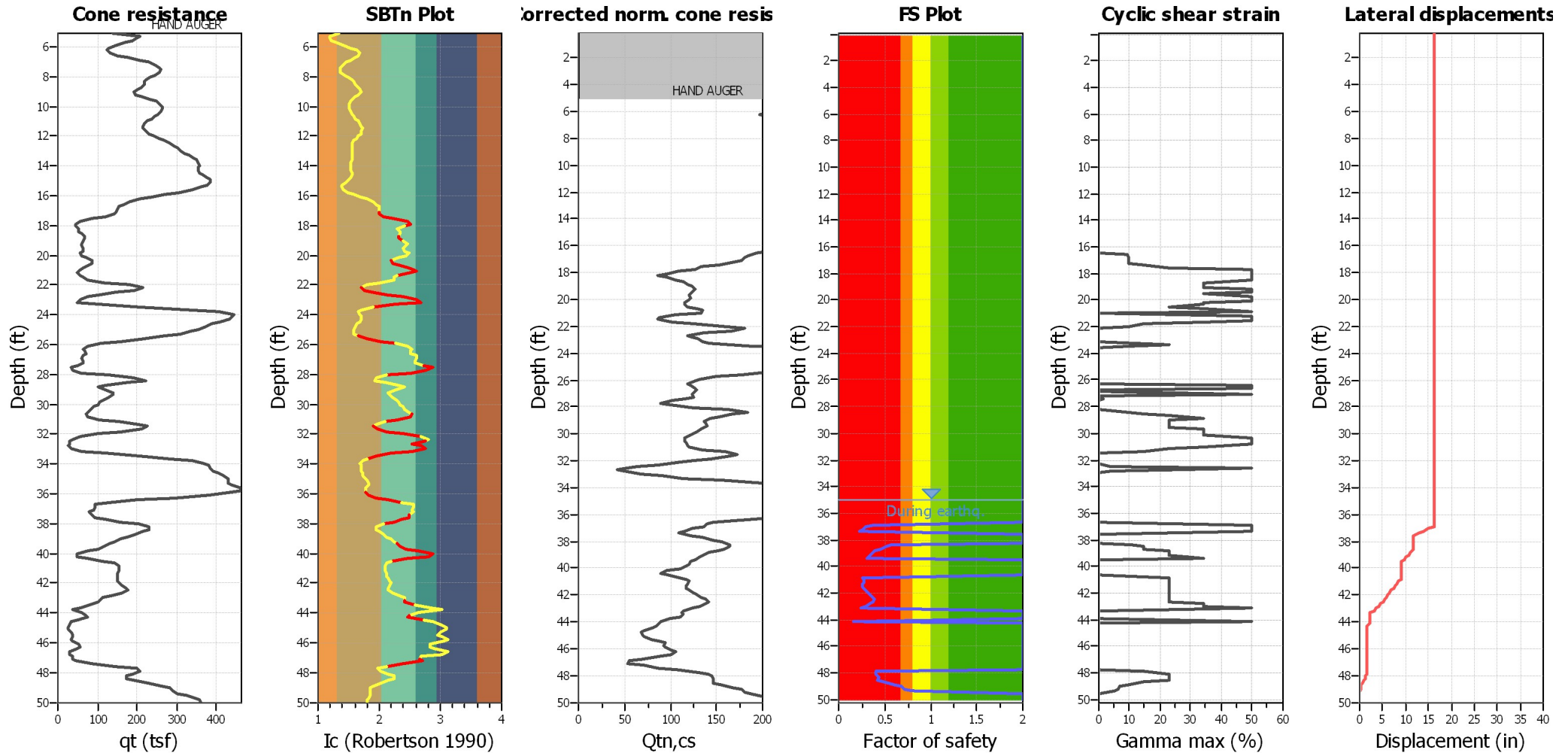
Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
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Total estimated settlement: 0.39**Abbreviations**

$Q_{tn,cs}$:	Equivalent clean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumetric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

Estimation of post-earthquake lateral Displacements

Geometric parameters: Gently sloping ground without free face (Slope 2.70 %)



Abbreviations

q_t : Total cone resistance (cone resistance q_c corrected for pore water effects)

I_c : Soil Behaviour Type Index

$Q_{tn,cs}$: Equivalent clean sand normalized CPT total cone resistance

F.S.: Factor of safety

γ_{max} : Maximum cyclic shear strain

LDI: Lateral displacement index

Surface condition



:: Lateral displacement index calculation ::

Depth (ft)	q _t (tsf)	Q _{tn}	R _f (%)	Q _{tn,cs}	FS	D _r	Gamma _{max} (%)	Lat. disp. (in)
35.10	430.13	264.96	1.82	296.14	2.00	99.16	0.00	0.00
35.27	430.19	263.45	1.89	297.45	2.00	98.97	0.00	0.00
35.43	437.91	268.41	1.87	301.35	2.00	99.59	0.00	0.00
35.60	459.51	283.67	1.79	312.28	2.00	100.00	0.00	0.00
35.76	463.14	286.96	1.72	312.27	2.00	100.00	0.00	0.00
35.93	438.43	270.47	1.69	295.99	2.00	99.84	0.00	0.00
36.09	379.41	230.14	1.73	260.39	2.00	94.51	0.00	0.00
36.25	293.68	171.82	1.90	212.14	2.00	84.87	0.00	0.00
36.42	199.80	109.87	2.32	168.02	2.00	70.11	0.00	0.00
36.58	129.76	65.99	3.04	146.62	2.00	53.28	0.00	0.00
36.75	95.38	45.66	3.72	139.48	2.00	41.12	0.00	0.00
36.91	93.42	44.59	3.63	136.37	0.37	40.34	50.00	1.10
37.07	88.58	42.47	3.15	123.55	0.30	38.74	50.00	1.09
37.24	79.48	37.61	3.01	114.92	0.26	34.72	50.00	1.08
37.40	84.80	41.06	2.54	108.79	0.23	37.62	50.00	1.08
37.57	94.03	45.44	2.94	122.40	2.00	40.97	0.00	0.00
37.73	122.20	61.29	2.79	135.46	2.00	50.84	0.00	0.00
37.89	158.02	82.80	2.42	145.96	2.00	60.77	0.00	0.00
38.06	202.49	112.07	1.85	155.58	2.00	70.76	0.00	0.00
38.22	230.27	131.52	1.55	163.97	2.00	76.04	0.00	0.00
38.39	229.91	131.10	1.54	163.44	0.57	75.94	10.51	0.22
38.55	214.43	119.96	1.69	157.75	0.52	73.01	14.50	0.30
38.71	195.33	106.97	1.83	150.42	0.46	69.23	14.50	0.29
38.88	173.58	93.04	1.93	140.91	0.40	64.62	22.70	0.46
39.04	156.38	82.08	2.05	134.61	0.36	60.48	22.70	0.45
39.21	142.21	73.02	2.22	131.15	0.34	56.62	22.70	0.45
39.37	130.31	65.73	2.32	127.25	0.31	53.15	34.10	0.67
39.53	117.64	58.25	2.39	121.99	2.00	49.16	0.00	0.00
39.70	100.12	47.75	2.71	119.69	2.00	42.61	0.00	0.00
39.86	75.65	33.79	3.38	117.28	2.00	31.18	0.00	0.00
40.03	50.27	20.39	4.39	109.81	2.00	14.51	0.00	0.00
40.19	48.47	19.99	3.36	95.61	2.00	13.86	0.00	0.00
40.35	75.17	35.17	1.95	89.66	2.00	32.51	0.00	0.00
40.52	114.79	58.94	1.43	97.09	2.00	49.55	0.00	0.00
40.68	141.49	74.62	1.45	110.78	2.00	57.34	0.00	0.00
40.85	153.45	81.46	1.48	117.72	0.27	60.23	22.70	0.41
41.01	154.54	81.60	1.55	119.76	0.28	60.29	22.70	0.41
41.17	153.43	80.92	1.53	118.52	0.27	60.01	22.70	0.41
41.34	149.55	78.40	1.54	116.67	0.26	58.97	22.70	0.40
41.50	149.48	78.04	1.57	117.32	0.26	58.82	22.70	0.40
41.67	150.07	77.58	1.71	120.75	0.28	58.62	22.70	0.40
41.83	150.35	76.87	1.87	124.67	0.30	58.32	22.70	0.39
41.99	154.23	78.62	1.95	128.48	0.32	59.06	22.70	0.39
42.16	161.84	82.76	1.97	132.90	0.34	60.76	22.70	0.39
42.32	173.61	89.58	1.94	138.15	0.37	63.37	22.70	0.38
42.49	175.16	89.92	2.02	140.76	0.39	63.49	22.70	0.38
42.65	161.63	81.04	2.24	138.95	0.38	60.06	22.70	0.37
42.81	130.28	62.26	2.60	131.55	0.33	51.36	34.10	0.56

:: Estimation of post-earthquake lateral Displacements :: (continued)

Depth (ft)	q _t (tsf)	Q _{tn}	R _f (%)	Q _{tn,cs}	FS	D _r	Gamma _{max} (%)	Lat. disp. (in)
42.98	111.27	51.66	2.71	123.74	0.29	45.20	34.10	0.55
43.14	104.02	48.22	2.46	114.23	0.25	42.92	50.00	0.80
43.31	101.35	46.70	2.46	112.69	2.00	41.87	0.00	0.00
43.47	80.77	34.97	3.08	113.22	2.00	32.32	0.00	0.00
43.64	54.99	21.44	4.29	110.96	2.00	16.17	0.00	0.00
43.80	39.18	14.39	4.80	99.26	2.00	3.02	0.00	0.00
43.96	60.08	25.10	2.48	89.67	2.00	21.37	0.00	0.00
44.13	72.57	32.07	1.96	87.04	0.16	29.47	50.00	0.76
44.29	74.16	33.08	1.82	84.96	2.00	30.48	0.00	0.00
44.46	47.82	18.98	2.45	80.77	2.00	12.15	0.00	0.00
44.62	34.77	12.78	2.53	71.32	2.00	0.00	0.00	0.00
44.78	28.60	10.07	2.78	68.07	2.00	0.00	0.00	0.00
44.95	25.58	8.87	3.29	69.42	2.00	0.00	0.00	0.00
45.11	26.10	9.05	3.41	70.96	2.00	0.00	0.00	0.00
45.28	33.09	11.75	3.49	79.45	2.00	0.00	0.00	0.00
45.44	38.62	13.87	3.76	87.62	2.00	1.81	0.00	0.00
45.60	37.87	13.55	4.57	94.80	2.00	1.04	0.00	0.00
45.77	32.35	11.39	5.19	93.09	2.00	0.00	0.00	0.00
45.93	36.38	12.92	4.79	94.89	2.00	0.00	0.00	0.00
46.10	52.18	19.76	3.72	100.14	2.00	13.48	0.00	0.00
46.26	56.24	21.44	3.92	106.07	2.00	16.18	0.00	0.00
46.42	48.42	17.76	4.16	101.36	2.00	9.96	0.00	0.00
46.59	31.25	10.84	4.98	89.51	2.00	0.00	0.00	0.00
46.75	29.41	10.11	2.91	69.55	2.00	0.00	0.00	0.00
46.92	36.73	14.10	1.27	55.44	2.00	2.34	0.00	0.00
47.08	38.31	14.95	1.17	54.46	2.00	4.27	0.00	0.00
47.24	46.30	17.99	1.96	71.69	2.00	10.38	0.00	0.00
47.41	85.30	37.91	1.72	86.98	2.00	34.99	0.00	0.00
47.57	147.30	73.27	1.39	108.09	2.00	56.73	0.00	0.00
47.74	199.44	104.66	1.27	132.03	2.00	68.50	0.00	0.00
47.90	207.57	106.83	1.56	142.14	0.40	69.18	14.50	0.17
48.06	189.63	93.09	2.05	144.43	0.41	64.64	22.70	0.26
48.23	173.38	81.99	2.47	146.71	0.43	60.45	22.70	0.25
48.39	172.51	81.21	2.51	147.12	0.43	60.13	22.70	0.25
48.56	191.91	93.77	2.06	145.55	0.42	64.88	22.70	0.25
48.72	228.67	117.18	1.68	155.18	0.49	72.23	14.50	0.16
48.88	262.24	139.64	1.42	167.41	0.59	78.02	9.51	0.10
49.05	284.13	154.23	1.31	177.27	0.69	81.30	7.01	0.07
49.21	289.77	157.37	1.31	180.31	0.72	81.97	6.38	0.07
49.38	300.82	162.85	1.39	187.45	0.80	83.10	5.15	0.05
49.54	324.48	175.71	1.47	201.91	2.00	85.60	0.00	0.00
49.70	346.95	189.38	1.46	213.96	2.00	88.08	0.00	0.00
49.87	359.51	197.57	1.42	219.97	2.00	89.47	0.00	0.00
50.03	363.20	200.39	1.38	221.01	2.00	89.94	0.00	0.00

:: Estimation of post-earthquake lateral Displacements :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	R_f (%)	$Q_{tn,cs}$	FS	D_r	Gamma_{max} (%)	Lat. disp. (in)
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Total estimated displacement: 16.20**Abbreviations**

q_t :	Total cone resistance
Q_{tn} :	Adjusted cone resistance to an effective overburden stress of 1 atm
R_f :	Friction ration
$Q_{tn,cs}$:	Adjusted and corrected cone resistance due to fines
FS:	Calculated factor of safety against liquefaction
D_r :	Calculated relative density
Gamma_{max} :	Calculated maximum cyclic shear strain
Lat. disp.:	Lateral displacement

:: Strength loss calculation (Robertson (2009)) ::

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
0.16	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
0.33	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
0.49	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
0.66	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
0.82	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
0.98	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
1.15	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
1.31	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
1.48	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
1.64	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
1.80	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
1.97	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
2.13	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
2.30	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
2.46	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
2.62	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
2.79	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
2.95	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
3.12	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
3.28	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
3.44	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
3.61	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
3.77	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
3.94	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
4.10	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
4.27	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
4.43	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
4.59	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
4.76	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
4.92	0.00	-1.00	1.00	-1.00	-1.00	N/A	N/A
5.09	137.44	220.32	1.00	220.32	1.34	0.94	0.94
5.25	205.26	329.28	1.00	329.28	1.20	1.01	1.01
5.41	200.99	322.40	1.00	322.40	1.20	1.01	1.01
5.58	190.09	304.86	1.00	304.86	1.23	1.00	1.00
5.74	169.60	271.93	1.00	271.93	1.30	0.98	0.98
5.91	147.02	235.63	1.00	235.63	1.42	0.96	0.96
6.07	128.91	206.53	1.00	206.53	1.54	0.93	0.93
6.23	124.44	196.68	1.00	196.68	1.64	0.93	0.93
6.40	131.69	208.31	1.02	212.84	1.68	0.94	0.94
6.56	151.13	234.27	1.01	236.18	1.66	0.95	0.95
6.73	177.32	269.60	1.00	269.60	1.60	0.98	0.98
6.89	205.27	308.24	1.00	308.24	1.53	1.00	1.00
7.05	227.81	337.91	1.00	337.91	1.46	1.01	1.01
7.22	245.53	359.85	1.00	359.85	1.41	1.03	1.03
7.38	256.33	371.29	1.00	371.29	1.38	1.03	1.03
7.55	259.38	371.40	1.00	371.40	1.36	1.03	1.03
7.71	254.35	360.09	1.00	360.09	1.38	1.03	1.03
7.87	244.12	341.77	1.00	341.77	1.43	1.02	1.02

:: Strength loss calculation (Robertson (2009)) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
8.04	232.28	321.64	1.00	321.64	1.50	1.01	1.01
8.20	222.92	305.37	1.00	305.37	1.56	1.00	1.00
8.37	218.56	296.24	1.00	296.24	1.59	0.99	0.99
8.53	216.55	290.50	1.00	290.50	1.62	0.99	0.99
8.69	212.21	282.93	1.01	284.77	1.65	0.99	0.99
8.86	202.67	269.73	1.03	277.95	1.69	0.98	0.98
9.02	191.53	253.26	1.04	263.61	1.70	0.97	0.97
9.19	194.70	252.76	1.02	256.95	1.67	0.97	0.97
9.35	209.27	267.37	1.00	267.37	1.62	0.98	0.98
9.51	232.03	293.81	1.00	293.81	1.56	0.99	0.99
9.68	246.68	309.60	1.00	309.60	1.54	1.00	1.00
9.84	257.10	319.86	1.00	319.86	1.51	1.01	1.01
10.01	262.27	323.48	1.00	323.48	1.51	1.01	1.01
10.17	262.40	320.85	1.00	320.85	1.52	1.01	1.01
10.33	258.34	313.21	1.00	313.21	1.55	1.00	1.00
10.50	252.03	303.01	1.00	303.01	1.57	1.00	1.00
10.66	245.79	293.08	1.00	293.08	1.59	0.99	0.99
10.83	237.14	280.46	1.00	280.46	1.61	0.98	0.98
10.99	227.50	267.26	1.00	267.72	1.65	0.98	0.98
11.15	218.59	256.48	1.03	264.53	1.69	0.97	0.97
11.32	215.38	251.73	1.05	264.22	1.72	0.97	0.97
11.48	216.33	251.04	1.05	264.49	1.72	0.97	0.97
11.65	220.84	254.03	1.05	266.62	1.72	0.97	0.97
11.81	228.05	259.63	1.04	269.25	1.70	0.97	0.97
11.98	239.77	269.72	1.01	273.26	1.66	0.98	0.98
12.14	254.47	283.32	1.00	283.32	1.63	0.99	0.99
12.30	269.18	297.63	1.00	297.63	1.59	0.99	0.99
12.47	282.70	310.43	1.00	310.43	1.57	1.00	1.00
12.63	293.58	320.19	1.00	320.19	1.55	1.01	1.01
12.80	302.23	327.40	1.00	327.40	1.55	1.01	1.01
12.96	309.87	333.42	1.00	333.42	1.56	1.01	1.01
13.12	320.30	342.35	1.00	342.35	1.57	1.02	1.02
13.29	332.01	352.55	1.00	352.55	1.57	1.02	1.02
13.45	343.82	362.72	1.00	362.72	1.57	1.03	1.03
13.62	351.19	368.10	1.00	368.10	1.55	1.03	1.03
13.78	355.32	370.06	1.00	370.06	1.54	1.03	1.03
13.94	356.15	368.58	1.00	368.58	1.54	1.03	1.03
14.11	354.81	364.89	1.00	364.89	1.54	1.03	1.03
14.27	355.09	362.93	1.00	362.93	1.55	1.03	1.03
14.44	358.84	364.53	1.00	364.53	1.55	1.03	1.03
14.60	366.68	370.26	1.00	370.26	1.55	1.03	1.03
14.76	376.27	377.70	1.00	377.70	1.55	1.03	1.03
14.93	382.57	381.77	1.00	381.77	1.51	1.04	1.04
15.09	383.90	380.89	1.00	380.89	1.47	1.04	1.04
15.26	376.47	371.40	1.00	371.40	1.40	1.03	1.03
15.42	362.14	355.24	1.00	355.24	1.38	1.02	1.02
15.58	338.83	330.50	1.00	330.50	1.40	1.01	1.01
15.75	306.09	296.85	1.00	296.85	1.49	0.99	0.99

:: Strength loss calculation (Robertson (2009)) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
15.91	269.60	259.95	1.00	259.95	1.59	0.97	0.97
16.08	234.75	225.25	1.05	235.73	1.71	0.95	0.95
16.24	206.60	197.22	1.12	220.66	1.82	0.93	0.93
16.40	181.76	172.45	1.19	205.66	1.90	0.91	0.91
16.57	163.90	154.46	1.25	192.84	1.96	0.89	0.89
16.73	152.82	143.03	1.29	184.34	1.99	0.88	0.88
16.90	149.35	138.87	1.30	180.67	2.00	0.87	0.87
17.06	147.85	136.59	1.30	177.36	2.00	0.87	0.87
17.22	143.44	131.67	1.29	169.74	1.99	0.87	0.87
17.39	119.93	109.12	1.40	152.41	2.07	0.84	0.84
17.55	87.81	78.89	1.70	134.14	2.21	0.79	0.79
17.72	54.71	48.15	2.63	126.64	2.47	0.73	0.73
17.88	45.28	39.35	2.77	109.17	2.50	0.70	0.70
18.04	46.18	39.96	2.39	95.39	2.42	0.71	0.71
18.21	51.60	44.65	1.94	86.54	2.30	0.72	0.72
18.37	53.98	46.39	2.06	95.50	2.33	0.72	0.72
18.54	59.43	50.83	2.07	105.06	2.34	0.74	0.74
18.70	66.84	56.97	1.99	113.31	2.31	0.75	0.75
18.86	69.61	58.96	2.02	119.02	2.32	0.76	0.76
19.03	65.31	54.70	2.26	123.76	2.39	0.75	0.75
19.19	60.20	49.83	2.53	126.32	2.45	0.73	0.73
19.36	60.70	49.93	2.50	125.00	2.44	0.73	0.73
19.52	63.79	52.30	2.32	121.30	2.40	0.74	0.74
19.69	63.18	51.42	2.35	120.78	2.41	0.74	0.74
19.85	55.42	44.43	2.75	122.23	2.50	0.72	0.72
20.01	59.41	47.53	2.52	119.99	2.45	0.73	0.73
20.18	70.89	57.06	2.01	114.79	2.32	0.75	0.75
20.34	85.96	69.65	1.65	114.76	2.19	0.78	0.78
20.51	87.64	70.53	1.69	119.16	2.21	0.78	0.78
20.67	79.77	63.13	2.03	128.35	2.33	0.76	0.76
20.83	65.28	50.50	2.68	135.16	2.48	0.74	0.74
21.00	52.29	39.56	3.35	132.69	2.60	2.56	2.56
21.16	50.46	38.23	2.78	106.36	2.50	0.70	0.70
21.33	58.32	44.89	1.95	87.62	2.30	0.72	0.72
21.49	63.28	48.84	1.76	85.80	2.24	0.73	0.73
21.65	76.17	58.69	1.75	102.70	2.23	0.76	0.76
21.82	120.90	95.37	1.32	125.44	2.01	0.82	0.82
21.98	179.96	144.87	1.11	160.80	1.80	0.88	0.88
22.15	214.33	173.97	1.04	180.29	1.70	0.91	0.91
22.31	193.47	155.46	1.07	166.36	1.75	0.89	0.89
22.47	146.75	115.33	1.18	135.99	1.89	0.85	0.85
22.64	101.80	77.03	1.54	118.71	2.14	0.79	0.79
22.80	73.77	53.62	2.30	123.41	2.40	0.74	0.74
22.97	55.74	39.05	3.34	130.44	2.60	2.50	2.50
23.13	49.70	34.10	3.95	134.59	2.69	2.20	2.20
23.29	102.92	75.07	1.88	140.78	2.28	0.79	0.79
23.46	205.35	157.35	1.19	187.93	1.91	0.89	0.89
23.62	339.04	266.41	1.04	276.77	1.70	0.98	0.98

:: Strength loss calculation (Robertson (2009)) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
23.79	407.26	320.68	1.01	324.47	1.66	1.01	1.01
23.95	444.24	347.47	1.03	357.14	1.69	1.02	1.02
24.11	439.02	340.81	1.05	356.34	1.71	1.02	1.02
24.28	432.05	334.56	1.04	347.49	1.70	1.01	1.01
24.44	406.72	314.92	1.02	321.18	1.67	1.00	1.00
24.61	386.30	299.43	1.00	299.43	1.63	0.99	0.99
24.77	372.02	287.29	1.00	287.29	1.60	0.99	0.99
24.93	355.71	273.68	1.00	273.68	1.59	0.98	0.98
25.10	336.55	257.98	1.00	257.98	1.58	0.97	0.97
25.26	310.32	236.97	1.00	236.97	1.59	0.96	0.96
25.43	271.24	205.64	1.01	207.66	1.66	0.93	0.93
25.59	217.21	159.93	1.11	177.93	1.81	0.90	0.90
25.75	159.74	112.87	1.32	149.38	2.02	0.84	0.84
25.92	107.86	72.48	1.83	132.43	2.26	0.78	0.78
26.08	74.76	47.86	2.64	126.56	2.47	0.73	0.73
26.25	64.69	40.66	2.93	119.09	2.53	0.71	0.71
26.41	69.32	43.63	2.78	121.15	2.50	0.72	0.72
26.57	70.76	44.20	2.86	126.43	2.52	0.72	0.72
26.74	62.24	37.90	3.40	128.83	2.61	2.38	2.38
26.90	61.34	37.14	3.39	125.92	2.61	2.33	2.33
27.07	64.40	39.09	3.18	124.21	2.58	0.70	0.70
27.23	63.63	38.29	3.27	125.21	2.59	0.70	0.70
27.40	47.82	27.65	4.18	115.60	2.72	1.77	1.77
27.56	34.26	18.89	5.38	101.65	2.87	1.24	1.24
27.72	36.13	20.29	4.43	89.88	2.76	1.30	1.30
27.89	59.24	35.37	2.85	100.90	2.52	0.69	0.69
28.05	128.82	84.28	1.48	124.70	2.11	0.80	0.80
28.22	192.93	130.34	1.25	162.49	1.96	0.87	0.87
28.38	222.40	150.74	1.22	183.23	1.93	0.89	0.89
28.54	176.84	115.03	1.45	167.22	2.10	0.85	0.85
28.71	122.31	75.29	2.03	152.53	2.32	0.79	0.79
28.87	101.78	61.12	2.33	142.70	2.41	0.76	0.76
29.04	118.66	73.14	1.86	136.25	2.27	0.78	0.78
29.20	140.32	88.51	1.56	138.49	2.16	0.81	0.81
29.36	140.89	88.44	1.57	139.12	2.16	0.81	0.81
29.53	127.84	78.66	1.73	136.29	2.23	0.79	0.79
29.69	114.05	68.69	1.94	133.01	2.30	0.78	0.78
29.86	106.56	63.42	2.03	128.80	2.32	0.77	0.77
30.02	100.15	58.98	2.11	124.48	2.35	0.76	0.76
30.18	92.17	53.58	2.23	119.28	2.38	0.74	0.74
30.35	84.38	48.28	2.40	115.68	2.42	0.73	0.73
30.51	77.04	43.22	2.65	114.70	2.48	0.72	0.72
30.68	72.22	39.73	2.95	117.02	2.53	0.71	0.71
30.84	76.98	42.49	2.81	119.26	2.51	0.71	0.71
31.00	106.26	61.78	1.94	120.16	2.30	0.76	0.76
31.17	154.01	94.36	1.43	135.11	2.09	0.82	0.82
31.33	203.06	128.67	1.23	158.85	1.95	0.86	0.86
31.50	225.24	143.51	1.20	172.34	1.91	0.88	0.88

:: Strength loss calculation (Robertson (2009)) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
31.66	209.07	131.02	1.26	164.49	1.96	0.87	0.87
31.82	159.09	95.07	1.51	143.74	2.13	0.82	0.82
31.99	99.80	55.30	2.26	125.09	2.39	0.75	0.75
32.15	56.64	28.56	3.86	110.28	2.68	1.78	1.78
32.32	37.39	17.83	4.86	86.58	2.81	1.15	1.15
32.48	29.91	14.16	4.46	63.19	2.76	0.23	0.90
32.64	28.34	14.09	2.97	41.90	2.54	0.05	0.58
32.81	27.56	13.09	3.91	51.17	2.69	0.01	0.82
32.97	32.82	15.48	4.39	67.87	2.75	0.42	0.98
33.14	59.75	30.53	2.99	91.34	2.54	0.67	0.67
33.30	120.54	68.47	1.65	113.11	2.19	0.78	0.78
33.46	205.91	125.19	1.24	155.37	1.95	0.86	0.86
33.63	285.41	180.63	1.11	199.87	1.80	0.91	0.91
33.79	340.35	219.52	1.05	231.23	1.72	0.94	0.94
33.96	369.05	239.33	1.03	247.51	1.69	0.96	0.96
34.12	381.96	246.70	1.04	256.07	1.70	0.96	0.96
34.28	385.67	247.34	1.05	259.40	1.72	0.96	0.96
34.45	392.21	250.92	1.05	263.03	1.72	0.97	0.97
34.61	403.13	256.75	1.05	270.32	1.72	0.97	0.97
34.78	419.80	265.48	1.06	282.41	1.74	0.97	0.97
34.94	430.88	268.72	1.09	293.25	1.78	0.98	0.98
35.10	430.13	264.96	1.12	296.14	1.81	0.97	0.97
35.27	430.19	263.45	1.13	297.45	1.83	0.97	0.97
35.43	437.91	268.41	1.12	301.35	1.82	0.98	0.98
35.60	459.51	283.67	1.10	312.28	1.79	0.99	0.99
35.76	463.14	286.96	1.09	312.27	1.77	0.99	0.99
35.93	438.43	270.47	1.09	295.99	1.78	0.98	0.98
36.09	379.41	230.14	1.13	260.39	1.83	0.95	0.95
36.25	293.68	171.82	1.23	212.14	1.95	0.91	0.91
36.42	199.80	109.87	1.53	168.02	2.14	0.84	0.84
36.58	129.76	65.99	2.22	146.62	2.38	0.77	0.77
36.75	95.38	45.66	3.06	139.48	2.55	0.72	0.72
36.91	93.42	44.59	3.06	136.37	2.55	0.72	0.72
37.07	88.58	42.47	2.91	123.55	2.53	0.71	0.71
37.24	79.48	37.61	3.06	114.92	2.55	0.70	0.70
37.40	84.80	41.06	2.65	108.79	2.48	0.71	0.71
37.57	94.03	45.44	2.69	122.40	2.48	0.72	0.72
37.73	122.20	61.29	2.21	135.46	2.37	0.76	0.76
37.89	158.02	82.80	1.76	145.96	2.24	0.80	0.80
38.06	202.49	112.07	1.39	155.58	2.06	0.84	0.84
38.22	230.27	131.52	1.25	163.97	1.96	0.87	0.87
38.39	229.91	131.10	1.25	163.44	1.96	0.87	0.87
38.55	214.43	119.96	1.32	157.75	2.01	0.85	0.85
38.71	195.33	106.97	1.41	150.42	2.07	0.84	0.84
38.88	173.58	93.04	1.51	140.91	2.13	0.82	0.82
39.04	156.38	82.08	1.64	134.61	2.19	0.80	0.80
39.21	142.21	73.02	1.80	131.15	2.25	0.78	0.78
39.37	130.31	65.73	1.94	127.25	2.30	0.77	0.77

:: Strength loss calculation (Robertson (2009)) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
39.53	117.64	58.25	2.09	121.99	2.34	0.75	0.75
39.70	100.12	47.75	2.51	119.69	2.45	0.73	0.73
39.86	75.65	33.79	3.47	117.28	2.62	2.03	2.03
40.03	50.27	20.39	5.39	109.81	2.87	1.32	1.32
40.19	48.47	19.99	4.78	95.61	2.80	1.27	1.27
40.35	75.17	35.17	2.55	89.66	2.45	0.69	0.69
40.52	114.79	58.94	1.65	97.09	2.19	0.76	0.76
40.68	141.49	74.62	1.48	110.78	2.12	0.79	0.79
40.85	153.45	81.46	1.44	117.72	2.09	0.80	0.80
41.01	154.54	81.60	1.47	119.76	2.11	0.80	0.80
41.17	153.43	80.92	1.46	118.52	2.11	0.80	0.80
41.34	149.55	78.40	1.49	116.67	2.12	0.79	0.79
41.50	149.48	78.04	1.50	117.32	2.13	0.79	0.79
41.67	150.07	77.58	1.56	120.75	2.15	0.79	0.79
41.83	150.35	76.87	1.62	124.67	2.18	0.79	0.79
41.99	154.23	78.62	1.63	128.48	2.19	0.79	0.79
42.16	161.84	82.76	1.61	132.90	2.17	0.80	0.80
42.32	173.61	89.58	1.54	138.15	2.14	0.81	0.81
42.49	175.16	89.92	1.57	140.76	2.16	0.81	0.81
42.65	161.63	81.04	1.71	138.95	2.22	0.80	0.80
42.81	130.28	62.26	2.11	131.55	2.35	0.76	0.76
42.98	111.27	51.66	2.40	123.74	2.42	0.74	0.74
43.14	104.02	48.22	2.37	114.23	2.41	0.73	0.73
43.31	101.35	46.70	2.41	112.69	2.42	0.73	0.73
43.47	80.77	34.97	3.24	113.22	2.59	0.69	0.69
43.64	54.99	21.44	5.18	110.96	2.84	1.38	1.38
43.80	39.18	14.39	6.90	99.26	3.01	0.96	0.96
43.96	60.08	25.10	3.57	89.67	2.64	1.51	1.51
44.13	72.57	32.07	2.71	87.04	2.49	0.68	0.68
44.29	74.16	33.08	2.57	84.96	2.46	0.68	0.68
44.46	47.82	18.98	4.26	80.77	2.73	1.18	1.18
44.62	34.77	12.78	5.58	71.32	2.89	0.83	0.83
44.78	28.60	10.07	6.76	68.07	3.00	0.30	0.67
44.95	25.58	8.87	7.83	69.42	3.09	0.30	0.59
45.11	26.10	9.05	7.84	70.96	3.09	0.60	0.60
45.28	33.09	11.75	6.76	79.45	3.00	0.78	0.78
45.44	38.62	13.87	6.32	87.62	2.96	0.92	0.92
45.60	37.87	13.55	6.99	94.80	3.02	0.90	0.90
45.77	32.35	11.39	8.17	93.09	3.12	0.76	0.76
45.93	36.38	12.92	7.35	94.89	3.05	0.86	0.86
46.10	52.18	19.76	5.07	100.14	2.83	1.27	1.27
46.26	56.24	21.44	4.95	106.07	2.82	1.37	1.37
46.42	48.42	17.76	5.71	101.36	2.90	1.16	1.16
46.59	31.25	10.84	8.26	89.51	3.13	0.72	0.72
46.75	29.41	10.11	6.88	69.55	3.01	0.36	0.67
46.92	36.73	14.10	3.93	55.44	2.69	0.04	0.86
47.08	38.31	14.95	3.64	54.46	2.65	0.13	0.90
47.24	46.30	17.99	3.99	71.69	2.70	1.10	1.10

:: Strength loss calculation (Robertson (2009) :: (continued))

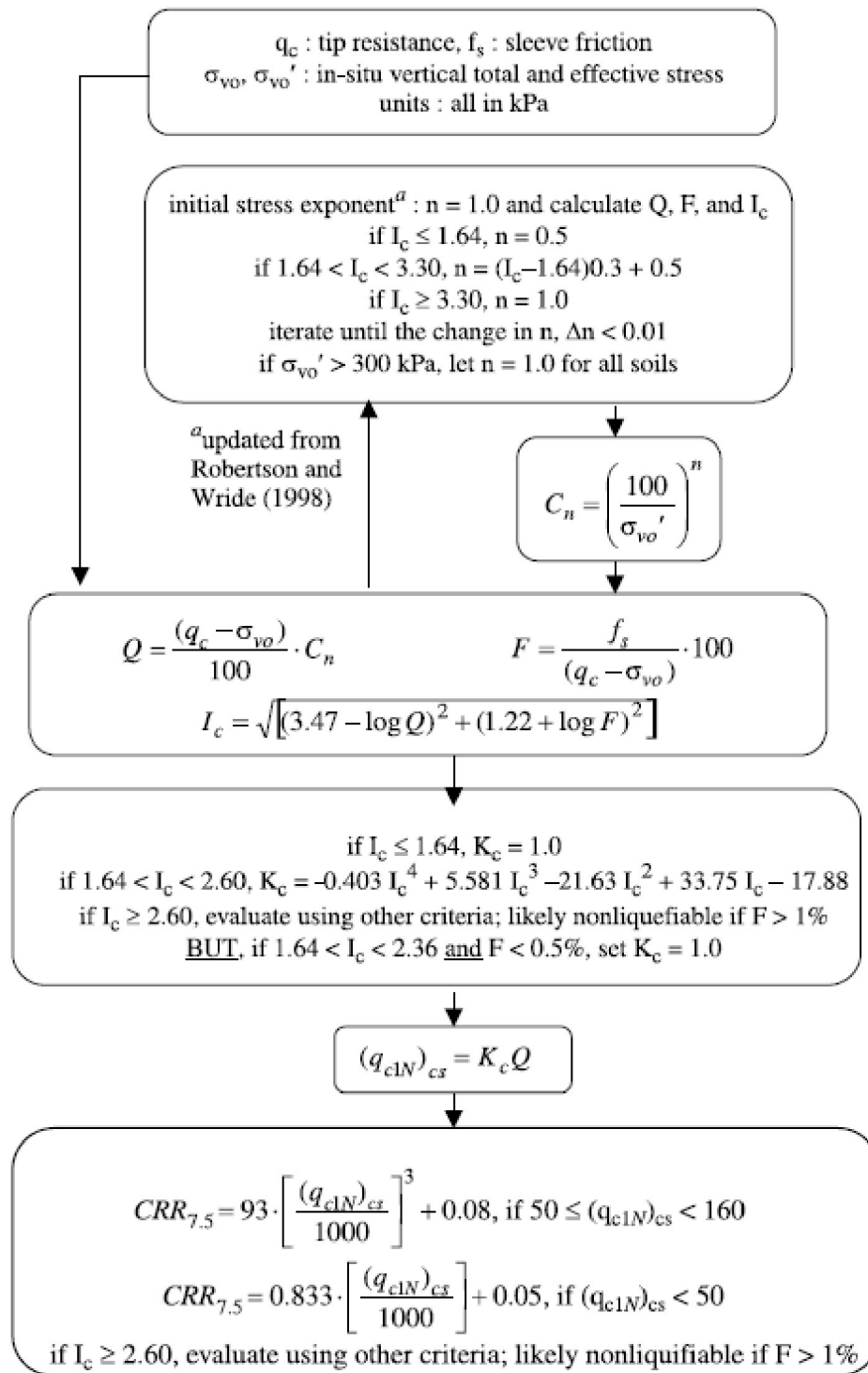
Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
47.41	85.30	37.91	2.29	86.98	2.40	0.70	0.70
47.57	147.30	73.27	1.48	108.09	2.11	0.78	0.78
47.74	199.44	104.66	1.26	132.03	1.97	0.83	0.83
47.90	207.57	106.83	1.33	142.14	2.02	0.84	0.84
48.06	189.63	93.09	1.55	144.43	2.15	0.82	0.82
48.23	173.38	81.99	1.79	146.71	2.25	0.80	0.80
48.39	172.51	81.21	1.81	147.12	2.25	0.80	0.80
48.56	191.91	93.77	1.55	145.55	2.15	0.82	0.82
48.72	228.67	117.18	1.32	155.18	2.02	0.85	0.85
48.88	262.24	139.64	1.20	167.41	1.91	0.88	0.88
49.05	284.13	154.23	1.15	177.27	1.86	0.89	0.89
49.21	289.77	157.37	1.15	180.31	1.85	0.89	0.89
49.38	300.82	162.85	1.15	187.45	1.86	0.90	0.90
49.54	324.48	175.71	1.15	201.91	1.85	0.91	0.91
49.70	346.95	189.38	1.13	213.96	1.83	0.92	0.92
49.87	359.51	197.57	1.11	219.97	1.81	0.93	0.93
50.03	363.20	200.39	1.10	221.01	1.79	0.93	0.93

Abbreviations

q_t :	Total cone resistance
K_c :	Cone resistance correction factor due to fines
$Q_{tn,cs}$:	Adjusted and corrected cone resistance due to fines
I_c :	Soil behavior type index
$S_{u(liq)}/\sigma'_v$:	Calculated liquefied undrained strength ratio
$S_{u(peak)}/\sigma'_v$:	Calculated peak undrained strength ratio

Procedure for the evaluation of soil liquefaction resistance, NCEER (1998)

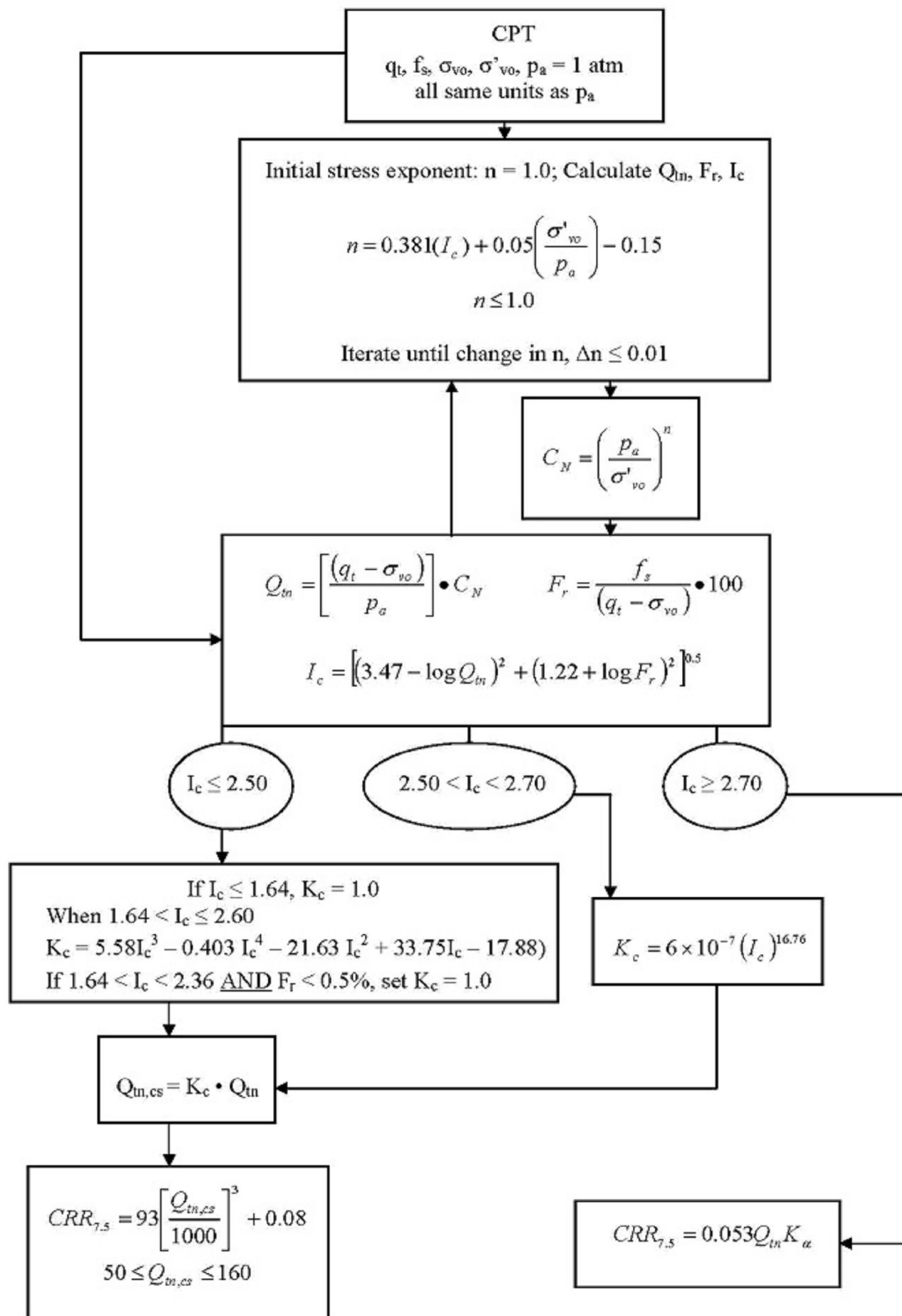
Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. The procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart¹:



¹ "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

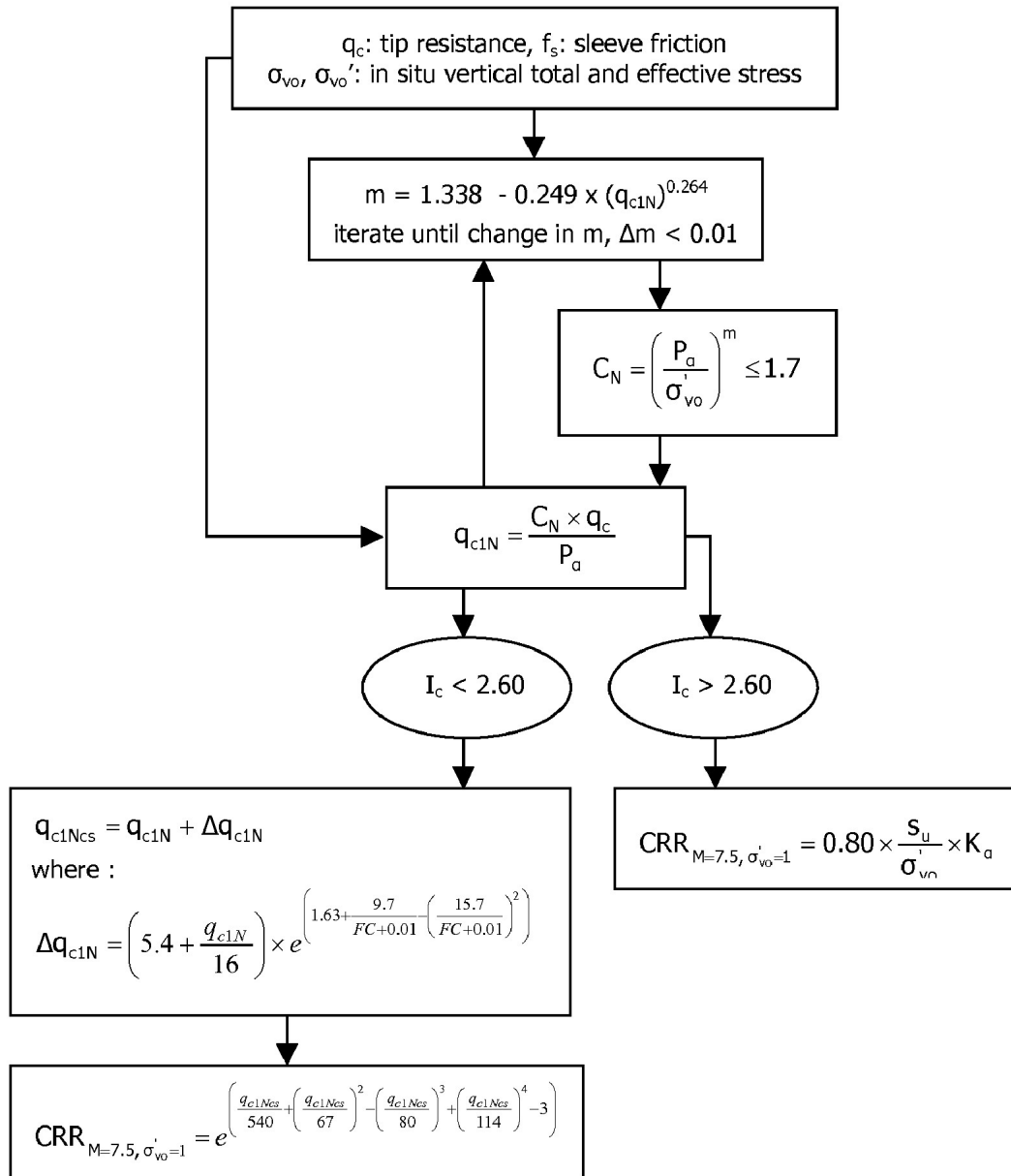
Procedure for the evaluation of soil liquefaction resistance (all soils), Robertson (2010)

Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. This procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart¹:

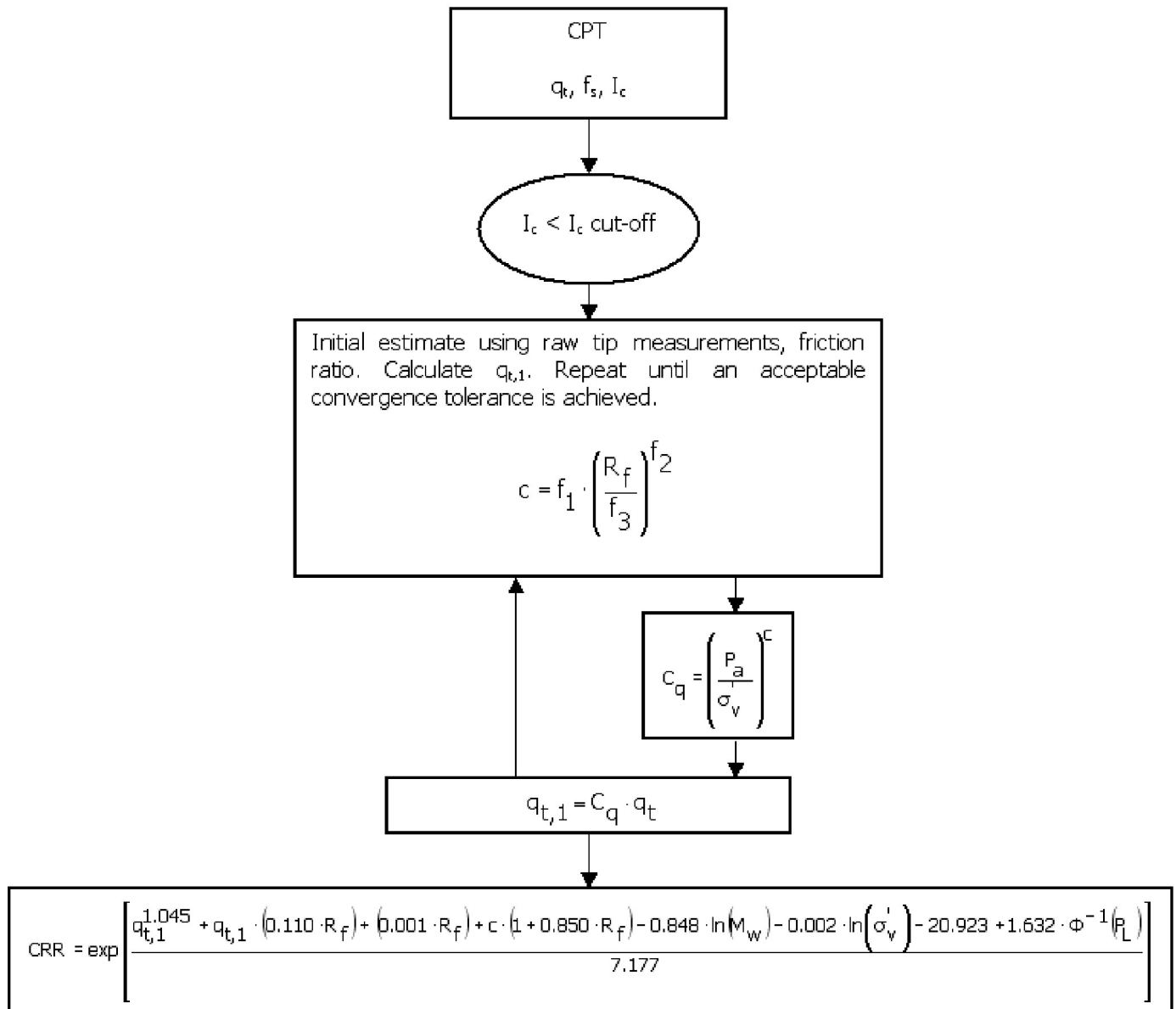


¹ P.K. Robertson, 2009. "Performance based earthquake design using the CPT", Keynote Lecture, International Conference on Performance-based Design in Earthquake Geotechnical Engineering – from case history to practice, IS-Tokyo, June 2009

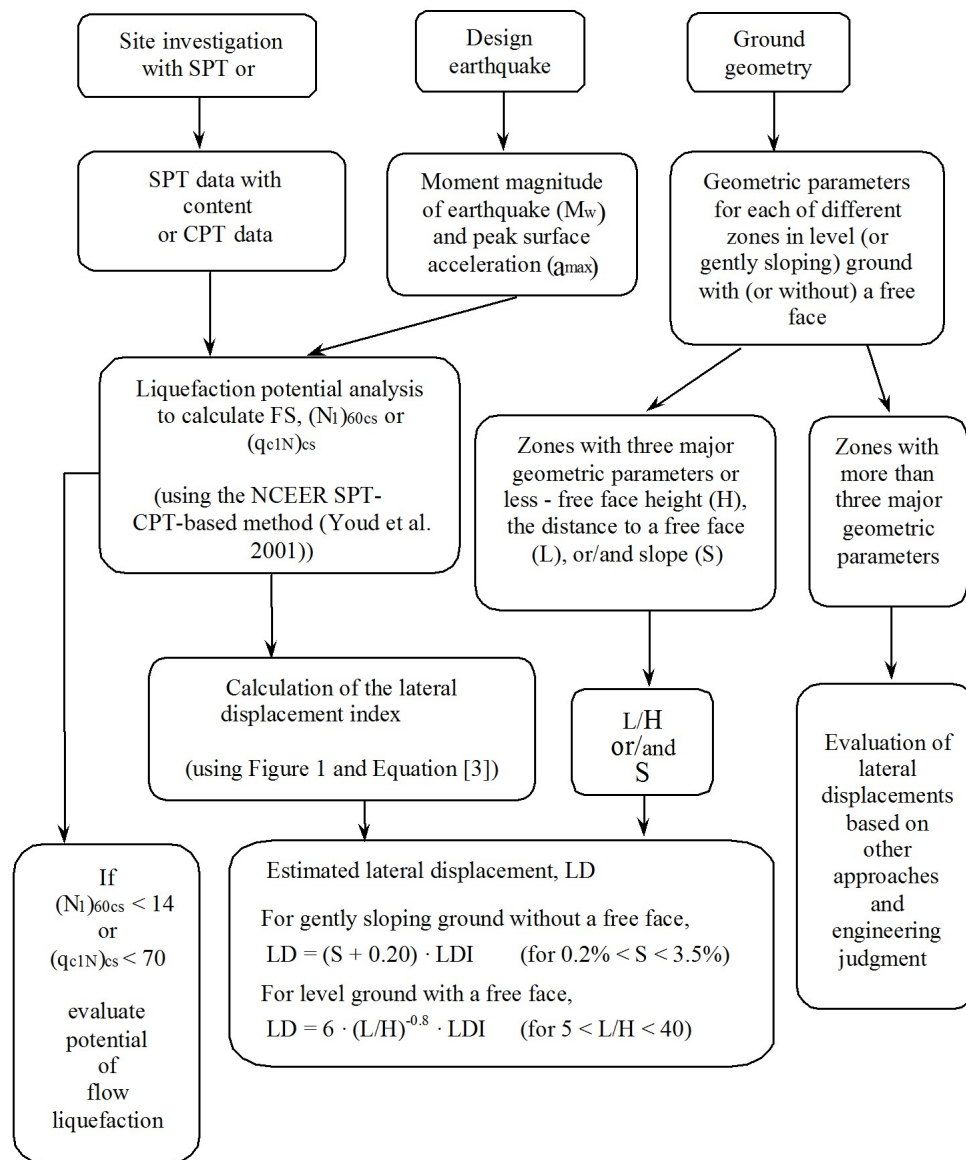
Procedure for the evaluation of soil liquefaction resistance, Idriss & Boulanger (2008)



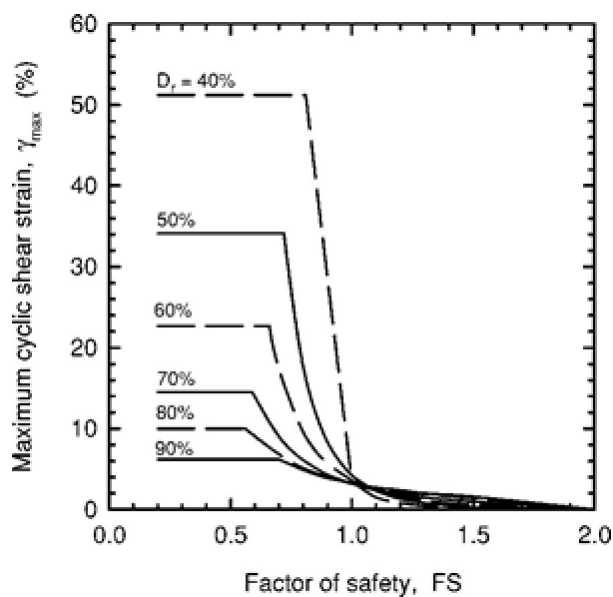
Procedure for the evaluation of soil liquefaction resistance (sandy soils), Moss et al. (2006)



Procedure for the evaluation of liquefaction-induced lateral spreading displacements



¹ Flow chart illustrating major steps in estimating liquefaction-induced lateral spreading displacements using the proposed approach



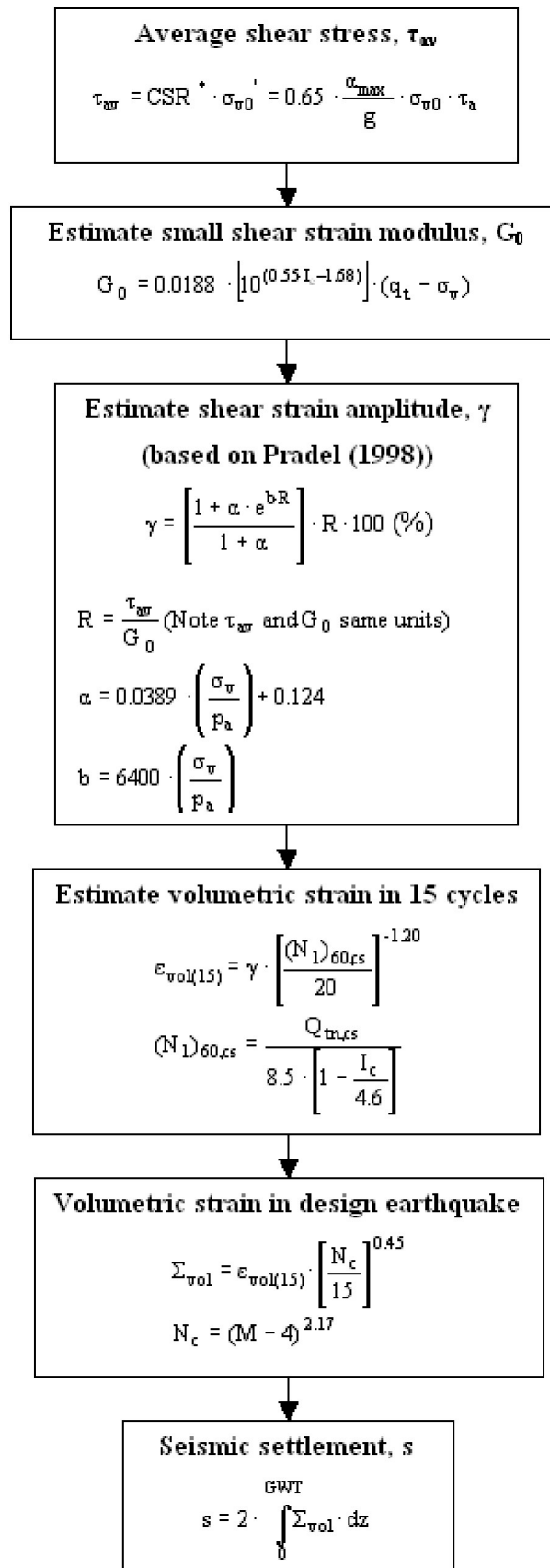
¹ Figure 1

$$LDI = \int_0^{Z_{\max}} \gamma_{\max} dz$$

¹ Equation [3]

¹ "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

Procedure for the estimation of seismic induced settlements in dry sands



Robertson, P.K. and Lisheng, S., 2010, "Estimation of seismic compression in dry soils using the CPT" FIFTH INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN GEOTECHNICAL EARTHQUAKE ENGINEERING AND SOIL DYNAMICS, Symposium in honor of professor I. M. Idriss, San Diego, CA

Liquefaction Potential Index (LPI) calculation procedure

Calculation of the Liquefaction Potential Index (LPI) is used to interpret the liquefaction assessment calculations in terms of severity over depth. The calculation procedure is based on the methodology developed by Iwasaki (1982) and is adopted by AFPS.

To estimate the severity of liquefaction extent at a given site, LPI is calculated based on the following equation:

$$LPI = \int_0^{20} (10 - 0,5z) \times F_L \times d_z$$

where:

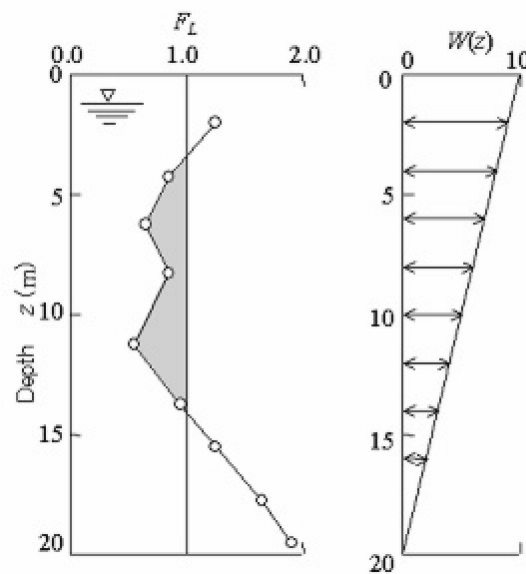
$F_L = 1 - F.S.$ when F.S. less than 1

$F_L = 0$ when F.S. greater than 1

z depth of measurement in meters

Values of LPI range between zero (0) when no test point is characterized as liquefiable and 100 when all points are characterized as susceptible to liquefaction. Iwasaki proposed four (4) discrete categories based on the numeric value of LPI:

- $LPI = 0$: Liquefaction risk is very low
- $0 < LPI \leq 5$: Liquefaction risk is low
- $5 < LPI \leq 15$: Liquefaction risk is high
- $LPI > 15$: Liquefaction risk is very high



Graphical presentation of the LPI calculation procedure

References

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- Zhang, G., Robertson. P.K., Brachman, R., 2002, Estimating Liquefaction Induced Ground Settlements from the CPT, Canadian Geotechnical Journal, 39: pp 1168-1180
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- I. M. Idriss and R. W. Boulanger, Soil liquefaction during earthquakes, Earthquake Engineering Research Institute MNO-12



Design Maps Detailed Report

ASCE 7-10 Standard (33.70522°N, 116.15675°W)

Site Class D – “Stiff Soil”, Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_s) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From [Figure 22-1](#) ^[1]

$$S_s = 2.629 \text{ g}$$

From [Figure 22-2](#) ^[2]

$$S_1 = 1.280 \text{ g}$$

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
Any profile with more than 10 ft of soil having the characteristics: • Plasticity index $PI > 20$, • Moisture content $w \geq 40\%$, and • Undrained shear strength $\bar{s}_u < 500$ psf			
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk-Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4-1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_s \leq 0.25$	$S_s = 0.50$	$S_s = 0.75$	$S_s = 1.00$	$S_s \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_s

For Site Class = D and $S_s = 2.629$ g, $F_a = 1.000$

Table 11.4-2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1-s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_1

For Site Class = D and $S_1 = 1.280$ g, $F_v = 1.500$

Equation (11.4-1):

$$S_{MS} = F_a S_s = 1.000 \times 2.629 = 2.629 \text{ g}$$

Equation (11.4-2):

$$S_{M1} = F_v S_1 = 1.500 \times 1.280 = 1.919 \text{ g}$$

Section 11.4.4 — Design Spectral Acceleration Parameters

Equation (11.4-3):

$$S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 2.629 = 1.752 \text{ g}$$

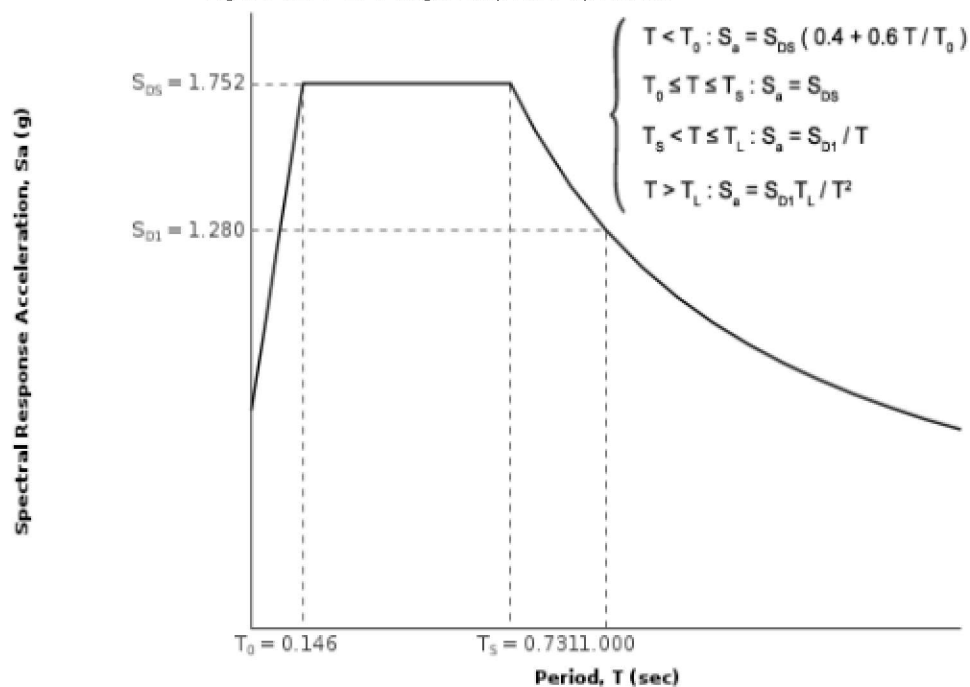
Equation (11.4-4):

$$S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 1.919 = 1.280 \text{ g}$$

Section 11.4.5 — Design Response Spectrum

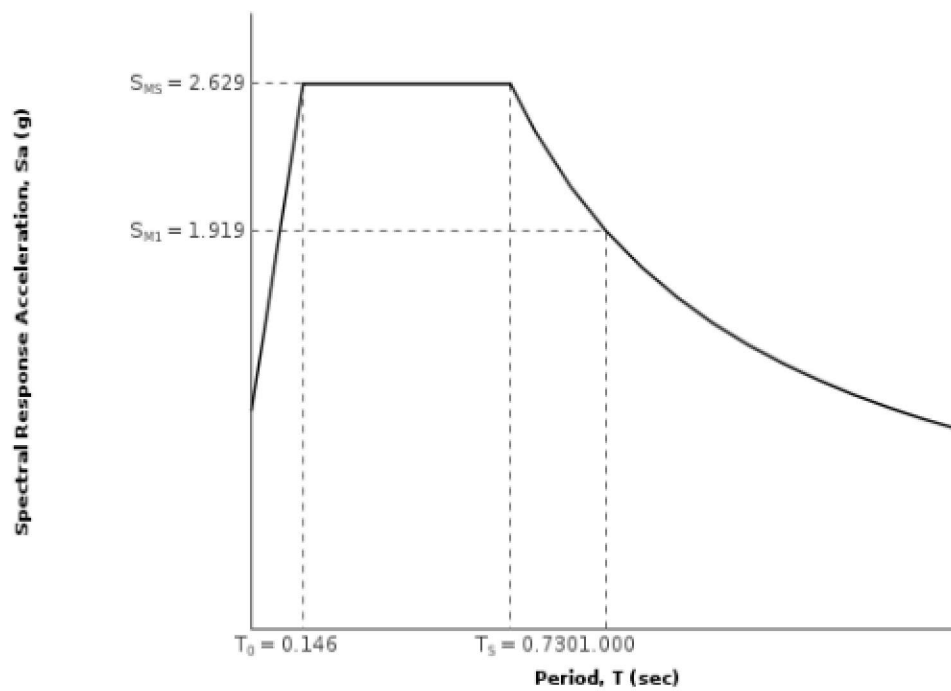
From [Figure 22-12](#) ^[3] $T_L = 8 \text{ seconds}$

Figure 11.4-1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From [Figure 22-7](#) ^[4]

$$PGA = 1.015$$

Equation (11.8-1):

$$PGA_M = F_{PGA}PGA = 1.000 \times 1.015 = 1.015 \text{ g}$$

Table 11.8-1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of PGA

For Site Class = D and PGA = 1.015 g, $F_{PGA} = 1.000$

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From [Figure 22-17](#) ^[5]

$$C_{RS} = 0.958$$

From [Figure 22-18](#) ^[6]

$$C_{R1} = 0.932$$

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \leq S_{DS} < 0.33g$	B	B	C
$0.33g \leq S_{DS} < 0.50g$	C	C	D
$0.50g \leq S_{DS}$	D	D	D

For Risk Category = I and $S_{DS} = 1.752 g$, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \leq S_{D1} < 0.133g$	B	B	C
$0.133g \leq S_{D1} < 0.20g$	C	C	D
$0.20g \leq S_{D1}$	D	D	D

For Risk Category = I and $S_{D1} = 1.280 g$, Seismic Design Category = D

Note: When S_1 is greater than or equal to $0.75g$, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category $\equiv$ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. Figure 22-1: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. Figure 22-2: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. Figure 22-12: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. Figure 22-7: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. Figure 22-17: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. Figure 22-18: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

Design Maps Summary Report

User-Specified Input

Report Title Aqua Del Vista
Wed May 6, 2015 22:02:08 UTC

Building Code Reference Document ASCE 7-10 Standard
(which utilizes USGS hazard data available in 2008)

Site Coordinates 33.70522°N, 116.15675°W

Site Soil Classification Site Class D – “Stiff Soil”

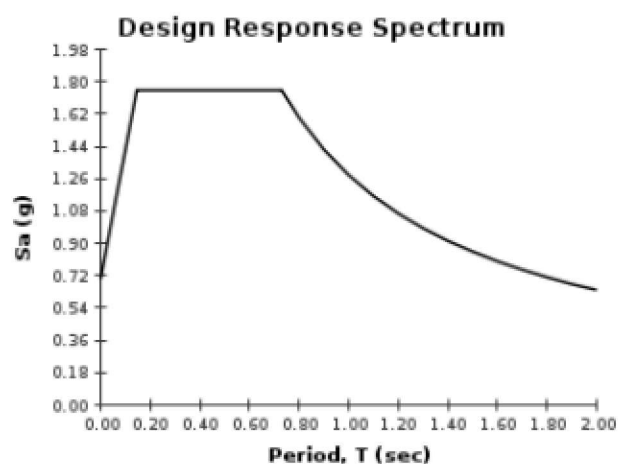
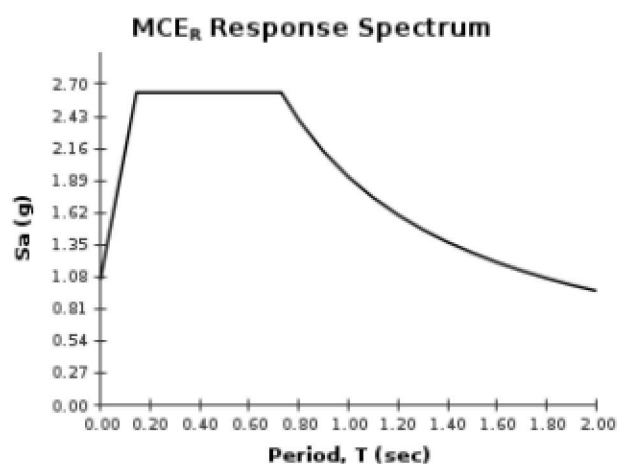
Risk Category I/II/III



USGS-Provided Output

$S_s = 2.629 \text{ g}$	$S_{MS} = 2.629 \text{ g}$	$S_{DS} = 1.752 \text{ g}$
$S_1 = 1.280 \text{ g}$	$S_{M1} = 1.919 \text{ g}$	$S_{D1} = 1.280 \text{ g}$

For information on how the S_s and S_1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the “2009 NEHRP” building code reference document.



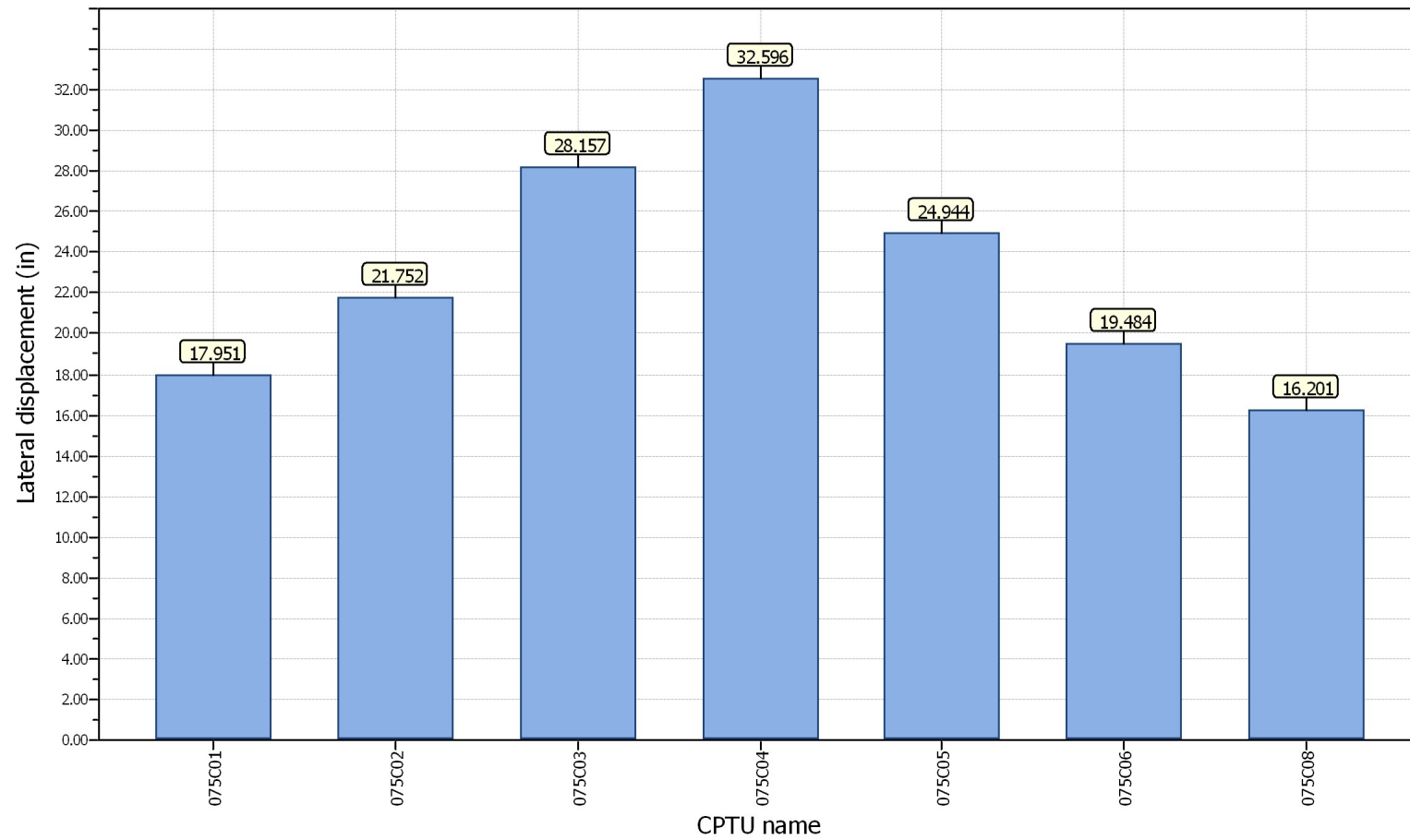
For PGA_M , T_L , C_{RS} , and C_{R1} values, please [view the detailed report](#).

Although this information is a product of the U.S. Geological Survey, we provide no warranty, expressed or implied, as to the accuracy of the data contained therein. This tool is not a substitute for technical subject-matter knowledge.

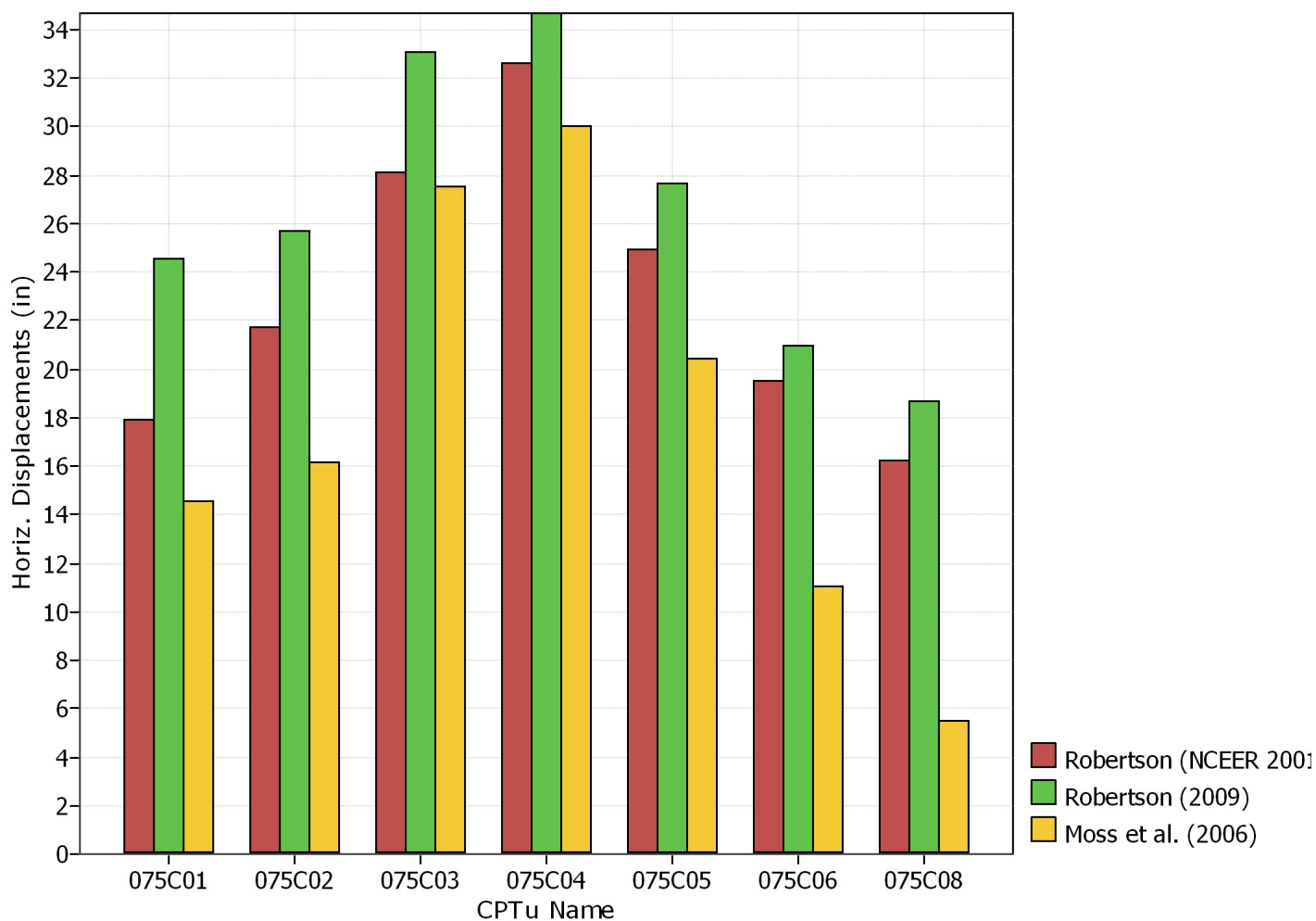
Project title : 14-108 Aqua Del Vista

Location : Coachella - NCEER 2001 Methods

Overall lateral displacements report



Overall Parametric Assessment Method



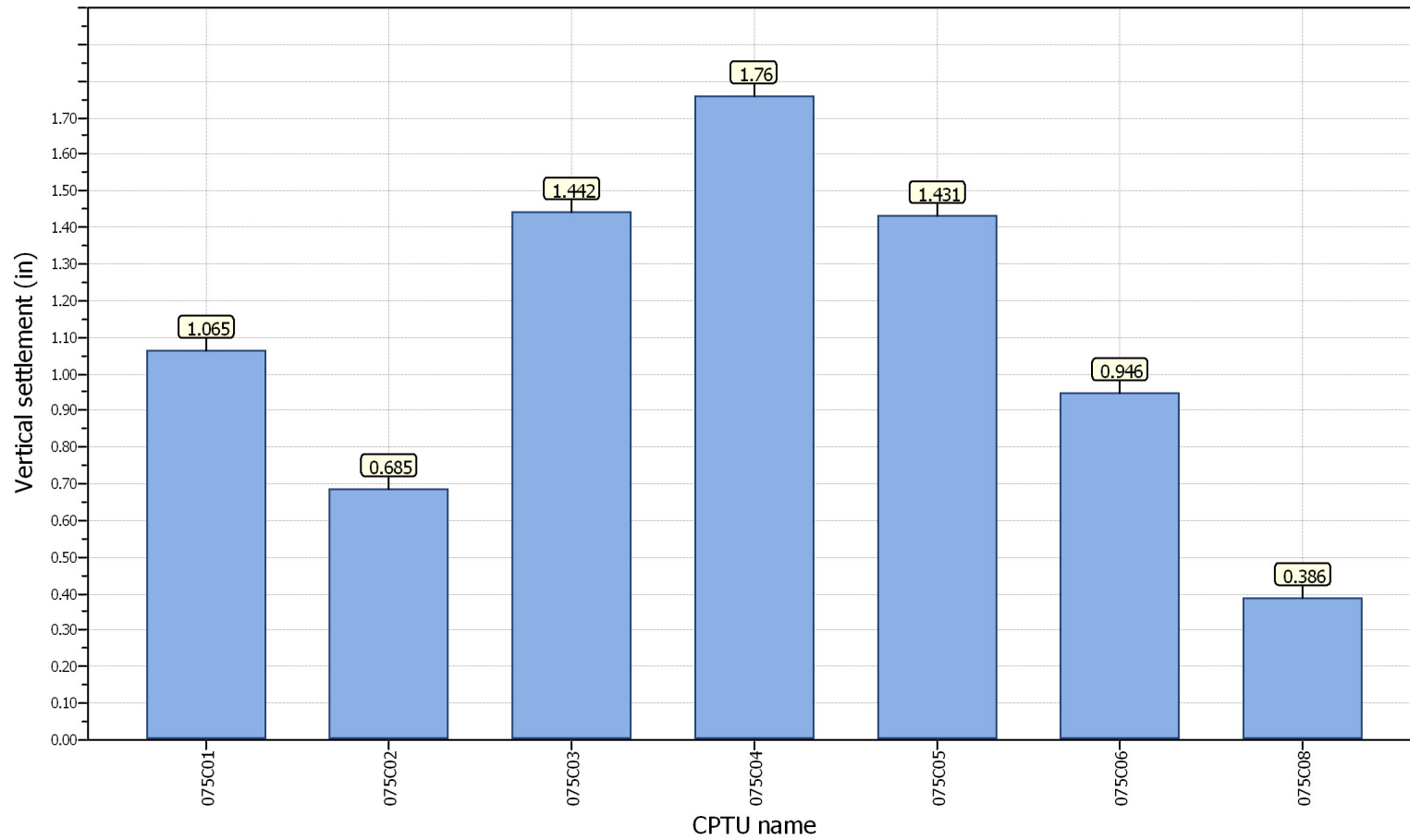
:: CPT main liquefaction parameters details ::

CPT Name	Earthquake Mag.	Earthquake Accel.	GWT in situ (ft)	GWT earthq. (ft)
075C01	7.80	1.10	12.00	12.00
075C02	7.80	1.10	20.00	20.00
075C03	7.80	1.10	8.00	8.00
075C04	7.80	1.10	10.00	10.00
075C05	7.80	1.10	12.00	12.00
075C06	7.80	1.10	20.00	20.00
075C08	7.80	1.10	35.00	35.00

Project title : 14-108 Aqua Del Vista

Location : Coachella - NCEER 2001 METHODS

Overall vertical settlements report



APPENDIX D

STANDARD GRADING SPECIFICATIONS

STANDARD GRADING SPECIFICATIONS

These specifications present the usual and minimum requirements for projects on which Petra Geotechnical, Inc. is the geotechnical consultant.

No deviation from these specifications will be allowed, except where specifically superseded in the preliminary geology and soils report, or in other written communication signed by the Soils Engineer or Engineering Geologist of record.

I. GENERAL

- A. The Soils Engineer and Engineering Geologist are the Owner's or Builders' representative on the Project. For the purpose of these specifications, participation by the Soils Engineer includes that observation performed by any person or persons employed by, and responsible to, the licensed Civil Engineer signing the soils report.
- B. All clearing, site preparation, or earthwork performed on the project shall be conducted by the Contractor under the supervision of the Soils Engineer.
- C. It is the Contractor's responsibility to prepare the ground surface to receive the fills to the satisfaction of the Soils Engineer and to place, spread, mix, water, and compact the fill in accordance with the specifications of the Soils Engineer. The Contractor shall also remove all material considered unsatisfactory by the Soils Engineer.
- D. It is also the Contractor's responsibility to have suitable and sufficient compaction equipment on the job site to handle the amount of fill being placed. If necessary, excavation equipment will be shut down to permit completion of compaction. Sufficient watering apparatus will also be provided by the Contractor, with due consideration for the fill material, rate of placement, and time of year.
- E. A final report shall be issued by the Soils Engineer and Engineering Geologist attesting to the Contractor's conformance with these specifications.

II. SITE PREPARATION

- A. All vegetation and deleterious material shall be disposed of off site. This removal shall be concluded prior to placing fill.
- B. Soil, alluvium, or bedrock materials determined by the Soils Engineer as being unsuitable for placement in compacted fills shall be removed from the site. Any material incorporated as a part of a compacted fill must be approved by the Soils Engineer.



STANDARD GRADING SPECIFICATIONS

- C. After the ground surface to receive fill has been cleared, it shall be scarified, disced, or bladed by the Contractor until it is uniform and free from ruts, hollows, hummocks, or other uneven features which may prevent uniform compaction.

The scarified ground surface shall then be brought to optimum moisture, mixed as required, and compacted as specified. If the scarified zone is greater than 12 inches in depth, the excess shall be removed and placed in lifts restricted to 6 inches.

Prior to placing fill, the ground surface to receive fill shall be inspected, tested, and approved by the Soils Engineer.

- D. Any underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, pipe lines, or others are to be removed or treated in a manner prescribed by the Soils Engineer.
- E. In order to provide uniform bearing conditions in cut-fill transition lots and where cut lots are partially in soil, colluvium, or unweathered bedrock materials, the bedrock portion of the lot extending a minimum of 3 feet outside of building lines shall be over excavated a minimum of 3 feet and replaced with compacted fill. (Typical details are given on Plates SG-1.)

III. COMPACTED FILLS

- A. Any material imported or excavated on the property may be utilized in the fill, provided each material has been determined to be suitable by the Soils Engineer. Roots, tree branches, and other matter missed during clearing shall be removed from the fill as directed by the Soils Engineer.
1. Rock fragments less than 6 inches in diameter may be utilized in the fill, provided:
 2. They are not placed in concentrated pockets.
 3. There is a sufficient percentage of fine grained material to surround the rocks.
- B. The distribution of rocks is supervised by the Soils Engineer.
- C. Rocks greater than 6 inches in diameter shall be taken off site, or placed in accordance with the recommendations of the Soils Engineer in areas designated as suitable for rock disposal. (A typical detail for Rock Disposal is given in Plate SG-2).



STANDARD GRADING SPECIFICATIONS

- D. Material that is spongy, subject to decay, or otherwise considered unsuitable shall not be used in the compacted fill.
- E. Representative samples of material to be utilized as compacted fill shall be analyzed by the laboratory of the Soils Engineer to determine their physical properties. If any material other than that previously tested is encountered during grading, the appropriate analysis of this material shall be conducted by the Soils Engineer as soon as possible.
- F. Material used in the compaction process shall be evenly spread, watered processed, and compacted in thin lifts not to exceed 6 inches in thickness to obtain a uniformly dense layer. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Soils Engineer.
- G. If the moisture content or relative density varies from that required by the Soils Engineer, the Contractor shall rework the fill until it is approved by the Soils Engineer.
- H. Each layer shall be compacted to 90 percent of the maximum density in compliance with the testing method specified by the controlling governmental agency. (In general, ASTM D-1557-91, the five-layer method will be used.)

If compaction to a lesser percentage is authorized by the controlling governmental agency because of a specific land use or expansive soils condition, the area to receive fill compacted to less than 90 percent shall either be delineated on the grading plan or appropriate reference made to the area in the soils report.

- I. All fills shall be keyed and benched through all topsoil, colluvium, alluvium or creep material, into sound bedrock or firm material except where the slope receiving fill exceeds a ratio of five horizontal to one vertical, in accordance with the recommendations of the Soils Engineer.
- J. The key for hillside fills should be a minimum of 15 feet in width and within bedrock or firm materials, unless otherwise specified in the soils report. (See detail on Plate SG-3).
- K. Subdrainage devices shall be constructed in compliance with the ordinances of the controlling governmental agency, or with the recommendations of the Soils Engineer or Engineering Geologist. (Typical Canyon Subdrain details are given in Plate SG-4.)



STANDARD GRADING SPECIFICATIONS

- L. The contractor will be required to obtain a minimum relative compaction of 90 percent out to the finish slope face of fill slopes, buttresses, and stabilization fills. This may be achieved by either overbuilding the slope and cutting back to the compacted core, or by direct compaction of the slope face with suitable equipment, or by any other procedure which produces the required compaction.
- M. All fill slopes should be planted or protected from erosion by other methods specified in the soils report.
- N. Fill-over-cut slopes shall be properly keyed through topsoil, colluvium or creep material into rock or firm materials, and the transition shall be stripped of all soil prior to placing fill. (See detail on Plate SG-7.)

IV. CUT SLOPES

- A. The Engineering Geologist shall inspect all cut slopes at vertical intervals not exceeding 10 feet.
- B. If any conditions not anticipated in the preliminary report such as perched water, seepage, lenticular or confined strata of a potentially adverse nature, unfavorably inclined bedding, joints or fault planes are encountered during grading, these conditions shall be analyzed by the Engineering Geologist and Soils Engineer, and recommendations shall be made to treat these problems. (Typical details for stabilization of a portion of a cut slopes are given in Plates SG-5 and SG-8).
- C. Cut slopes that face in the same direction as the prevailing drainage shall be protected from slope wash by a nonerodible interceptor swale placed at the top of the slope.
- D. Unless otherwise specified in the soils and geological report, no cut slopes shall be excavated higher or steeper than that allowed by the ordinances of controlling governmental agencies.
- E. Drainage terraces shall be constructed in compliance with the ordinances of controlling governmental agencies, or with the recommendations of the Soils Engineer or Engineering Geologist.



STANDARD GRADING SPECIFICATIONS

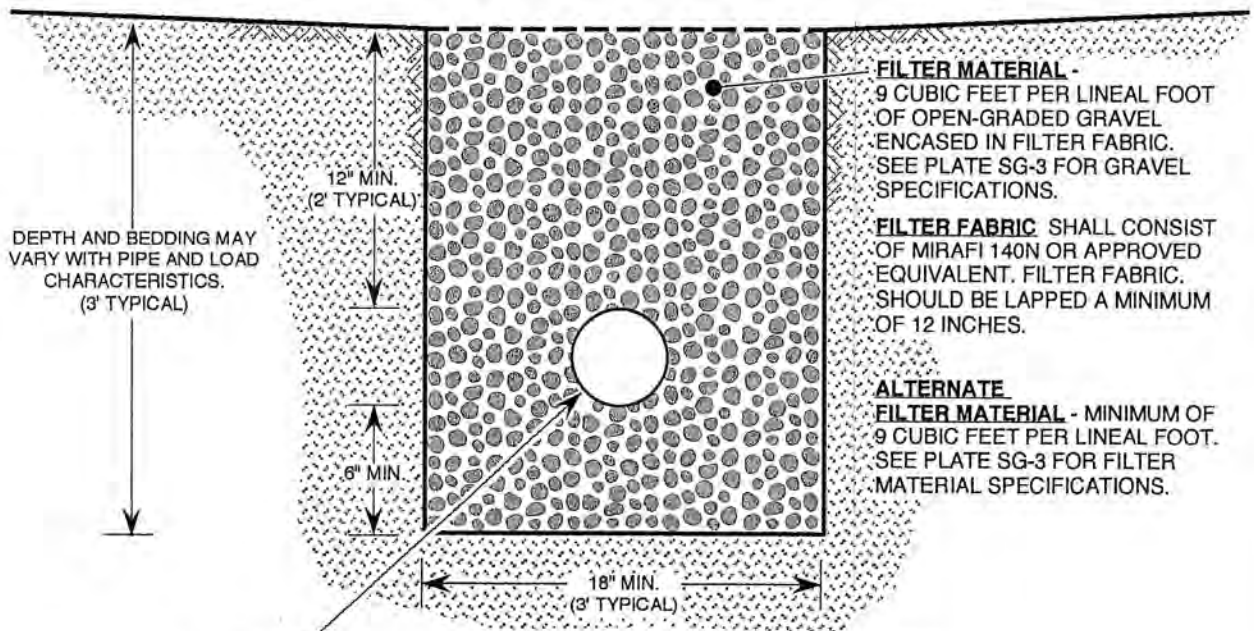
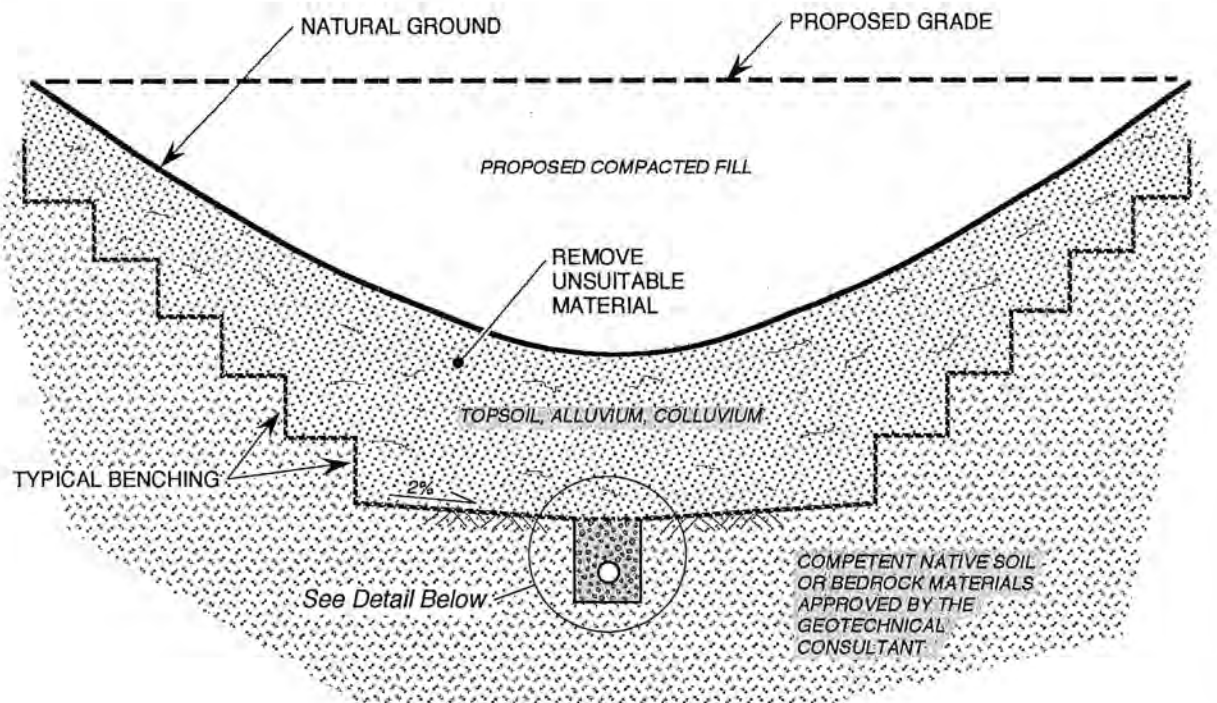
V. GRADING CONTROL

- A. Observation of the fill placement shall be provided by the Soils Engineer during the progress of grading.
- B. In general, density tests should be made at intervals not exceeding 2 feet of fill height or every 500 cubic yards of fill placement. This criteria will vary depending on soil conditions and the size of the job. In any event, an adequate number of field density tests shall be made to verify that the required compaction is being achieved.
- C. Density tests should also be made on the surface material to receive fill as required by the Soils Engineer.
- D. All cleanouts, processed ground to receive fill, key excavations, subdrains, and rock disposals must be inspected and approved by the Soils Engineer or Engineering Geologist prior to placing any fill. It shall be the Contractor's responsibility to notify the Soils Engineer when such areas are ready for inspection.

VI. CONSTRUCTION CONSIDERATIONS

- A. Erosion control measures, when necessary, shall be provided by the Contractor during grading and prior to the completion and construction of permanent drainage controls.
- B. Upon completion of grading and termination of inspections by the Soils Engineer, no further filling or excavating, including that necessary for footings, foundations, large tree wells, retaining walls, or other features shall be performed without the approval of the Soils Engineer or Engineering Geologist.
- C. Care shall be taken by the Contractor during final grading to preserve any berms, drainage terraces, interceptor swales, or other devices of permanent nature on or adjacent to the property.

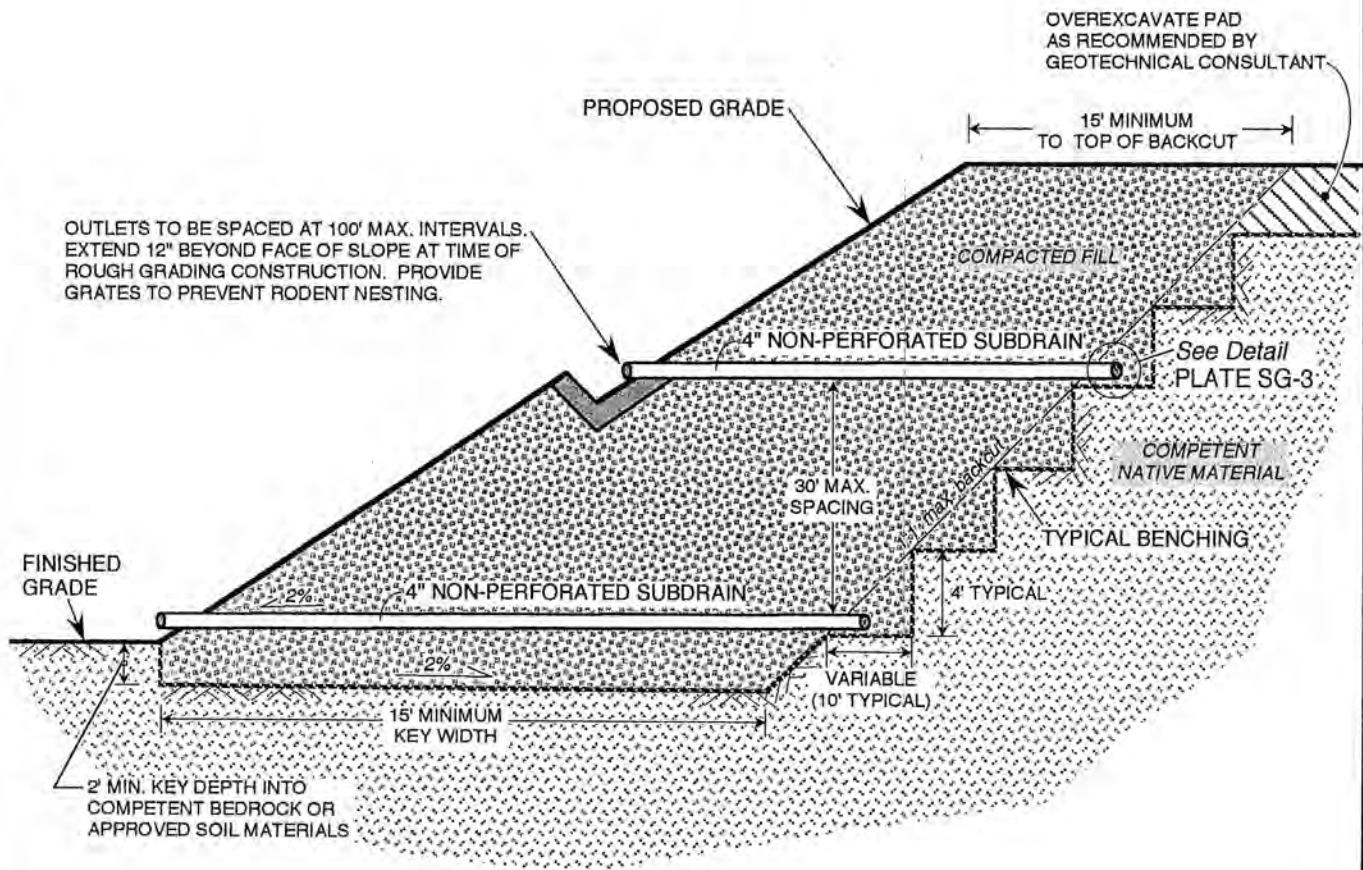




MINIMUM 6-INCH DIAMETER PVC SCHEDULE 40, OR ABS SDR-35 WITH A MINIMUM OF EIGHT 1/4-INCH DIAMETER PERFORATIONS PER LINEAL FOOT IN BOTTOM HALF OF PIPE. PIPE TO BE LAID WITH PERFORATIONS FACING DOWN.

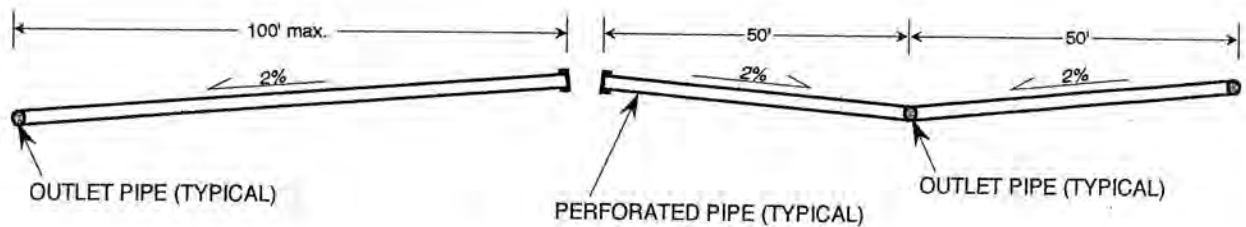
NOTES:

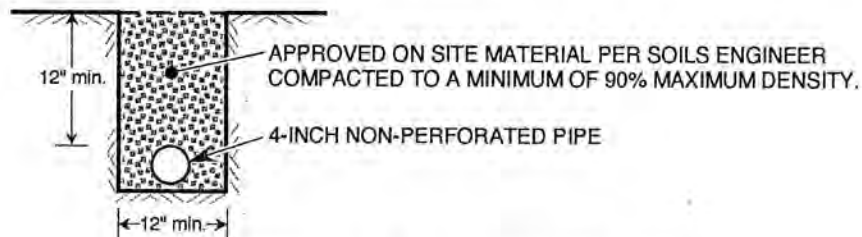
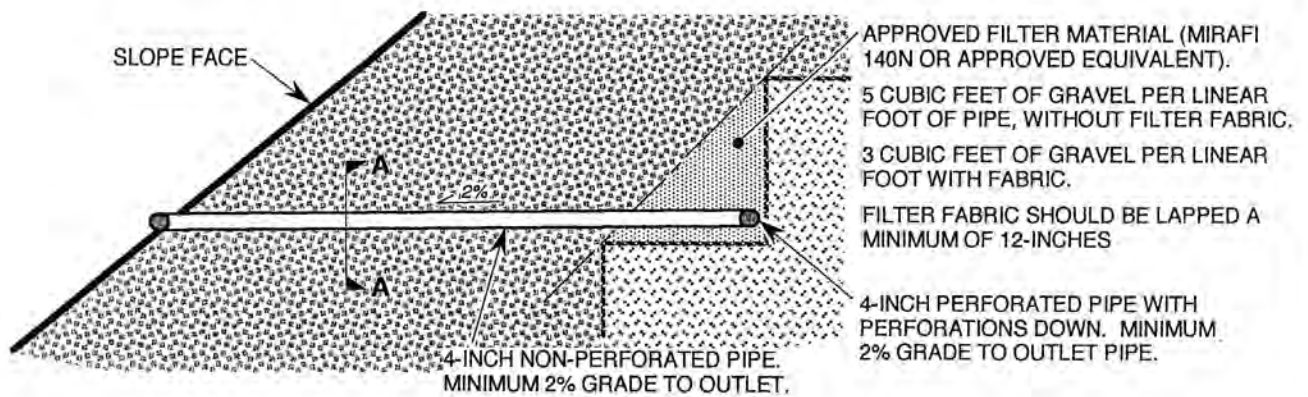
1. FOR CONTINUOUS RUNS IN EXCESS OF 500 FEET USE 8-INCH DIAMETER PIPE.
2. FINAL 20 FEET OF PIPE AT OUTLET SHALL BE NON-PERFORATED AND BACKFILLED WITH FINE-GRAINED MATERIAL.



NOTES:

1. 30' MAXIMUM VERTICAL SPACING BETWEEN SUBDRAIN SYSTEMS.
2. 100' MAXIMUM HORIZONTAL DISTANCE BETWEEN NON-PERFORATED OUTLET PIPES. (See Below)
3. MINIMUM GRADIENT OF 2% FOR ALL PERFORATED AND NON-PERFORATED PIPE.





SECTION A - A (OUTLET PIPE)

PIPE SPECIFICATIONS:

1. 4-INCH MINIMUM DIAMETER, PVC SCHEDULE 40, OR ABS SDR-35.
2. FOR PERFORATED PIPE, MINIMUM 8 PERFORATIONS PER FOOT ON BOTTOM HALF OF PIPE.

FILTER MATERIAL/FABRIC SPECIFICATIONS:

OPEN GRADED GRAVEL ENCASED IN FILTER FABRIC.
(MIRAFI 140N OR EQUIVALENT)

ALTERNATE:

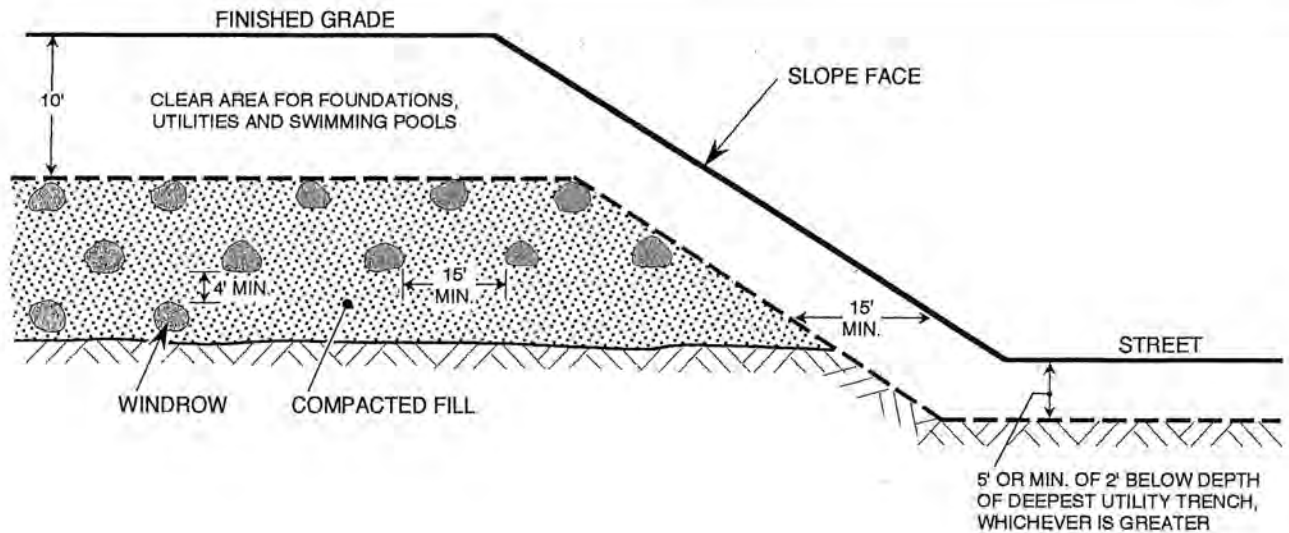
CLASS 2 PERMEABLE FILTER MATERIAL PER CALTRANS
STANDARD SPECIFICATION 68-1.025.

OPEN GRADED

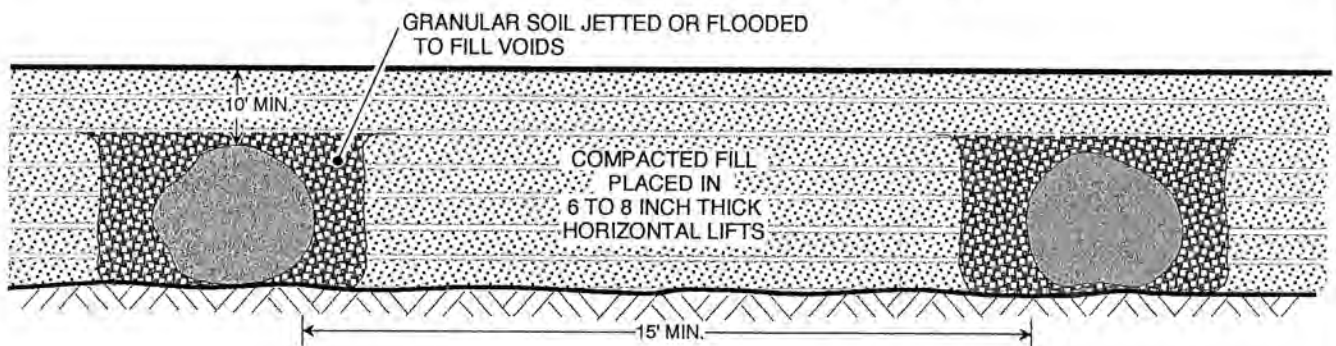
SEIVE SIZE	PERCENT PASSING
1 1/2-INCH	88 - 100
1-INCH	5 - 40
3/4-INCH	0 - 17
3/8-INCH	0 - 7
No. 200	0 - 3

CLASS 2

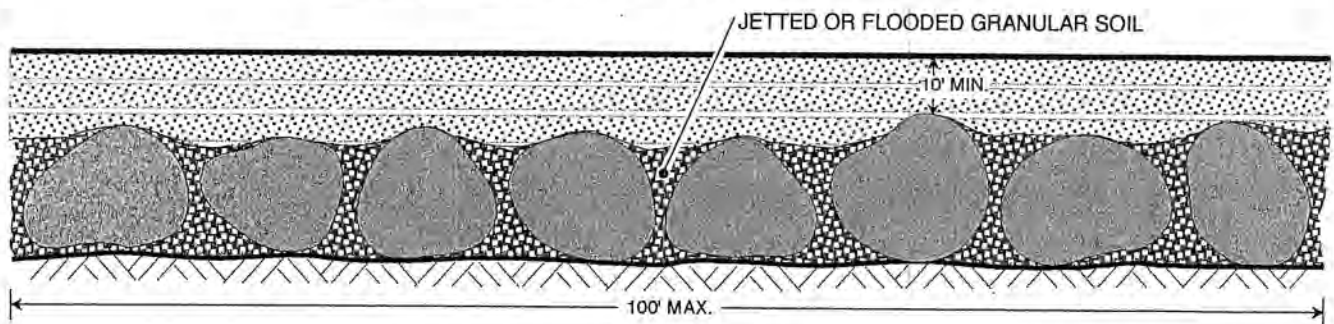
SEIVE SIZE	PERCENT PASSING
1-INCH	100
3/4-INCH	90 - 100
3/8-INCH	40 - 100
No. 4	25 - 40
No. 8	18 - 33
No. -30	5 - 15
No. -50	0 - 7
No. 200	0 - 3



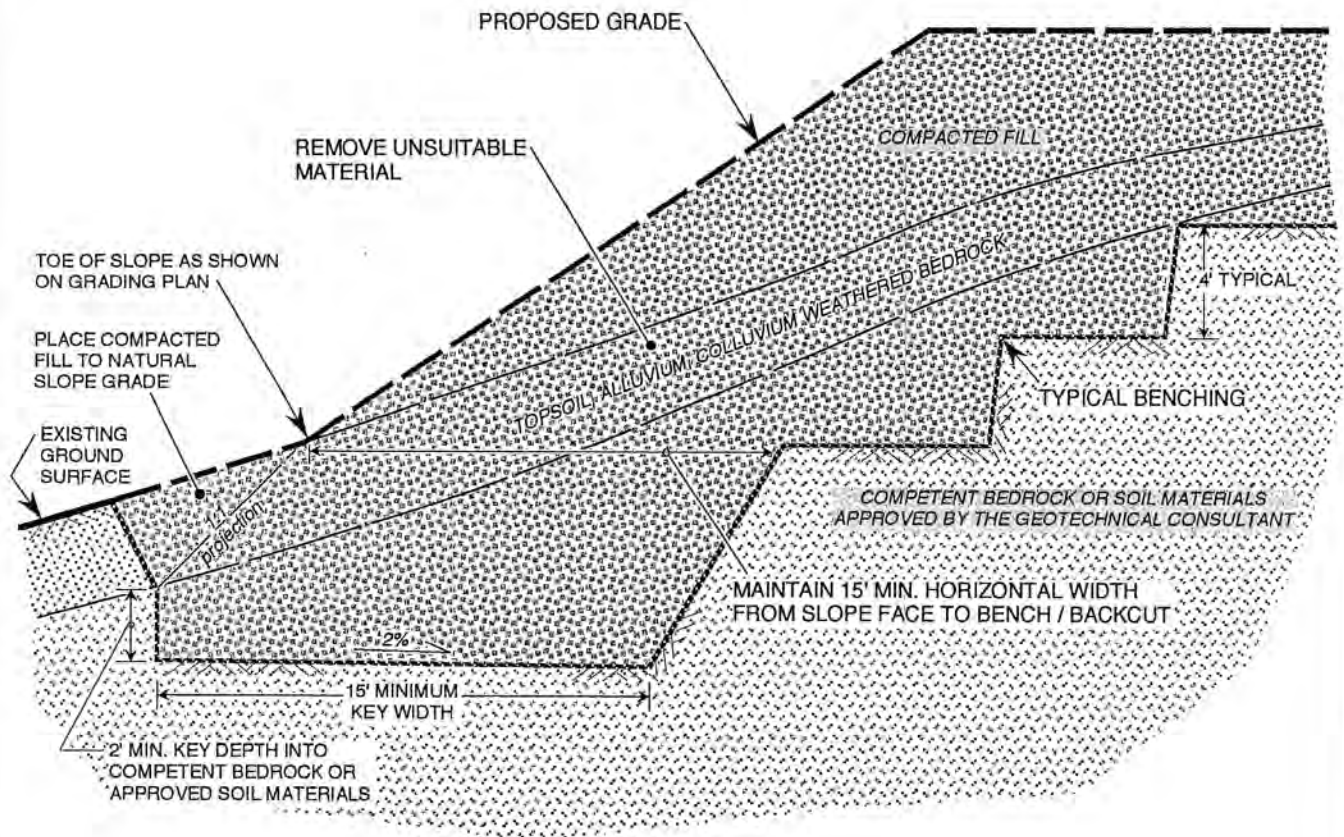
TYPICAL WINDROW DETAIL (END VIEW)



TYPICAL WINDROW DETAIL (PROFILE VIEW)

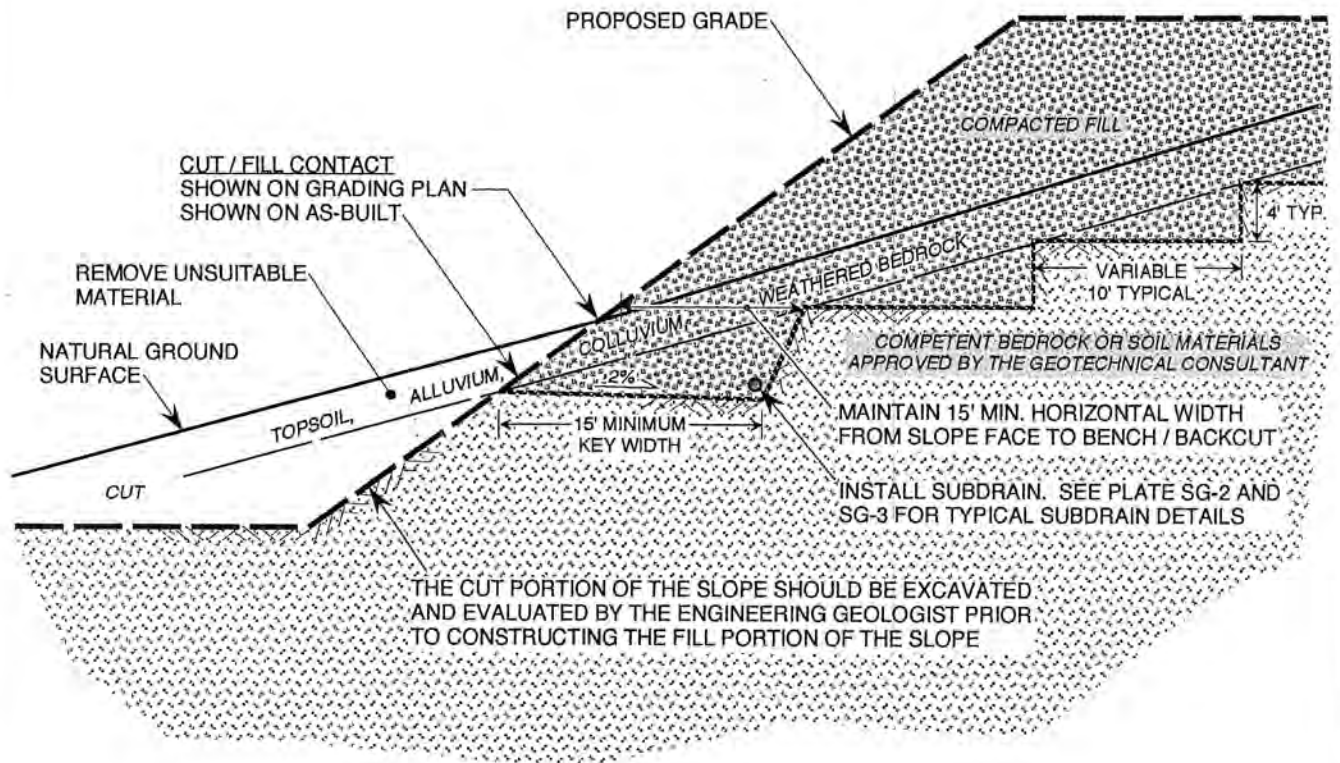


NOTE: OVERSIZE ROCK IS DEFINED AS CLASTS HAVING A MAXIMUM DIMENSION OF 12" OR LARGER



NOTES:

1. WHERE NATURAL SLOPE GRADIENT IS 5:1 OR LESS, BENCHING IS NOT NECESSARY; HOWEVER, FILL IS NOT TO BE PLACED ON COMPRESSIBLE OR UNSUITABLE MATERIAL.
2. SOILS ENGINEER TO DETERMINE IF SUBDRAIN IS REQUIRED.



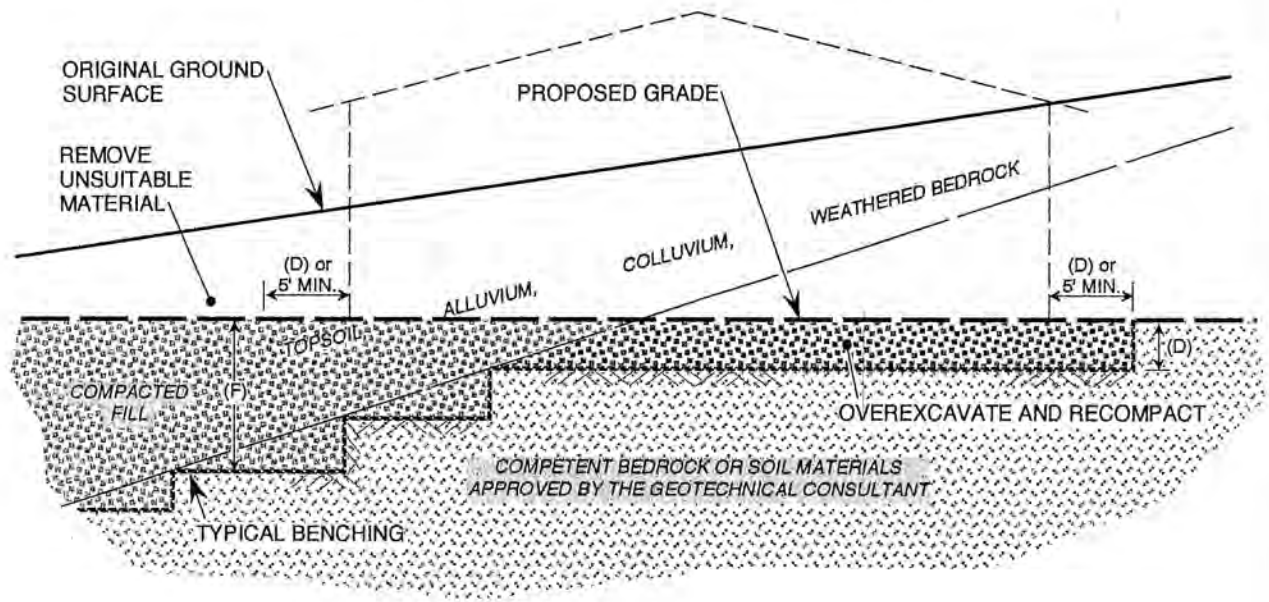
PETRA

FILL SLOPE ABOVE CUT SLOPE

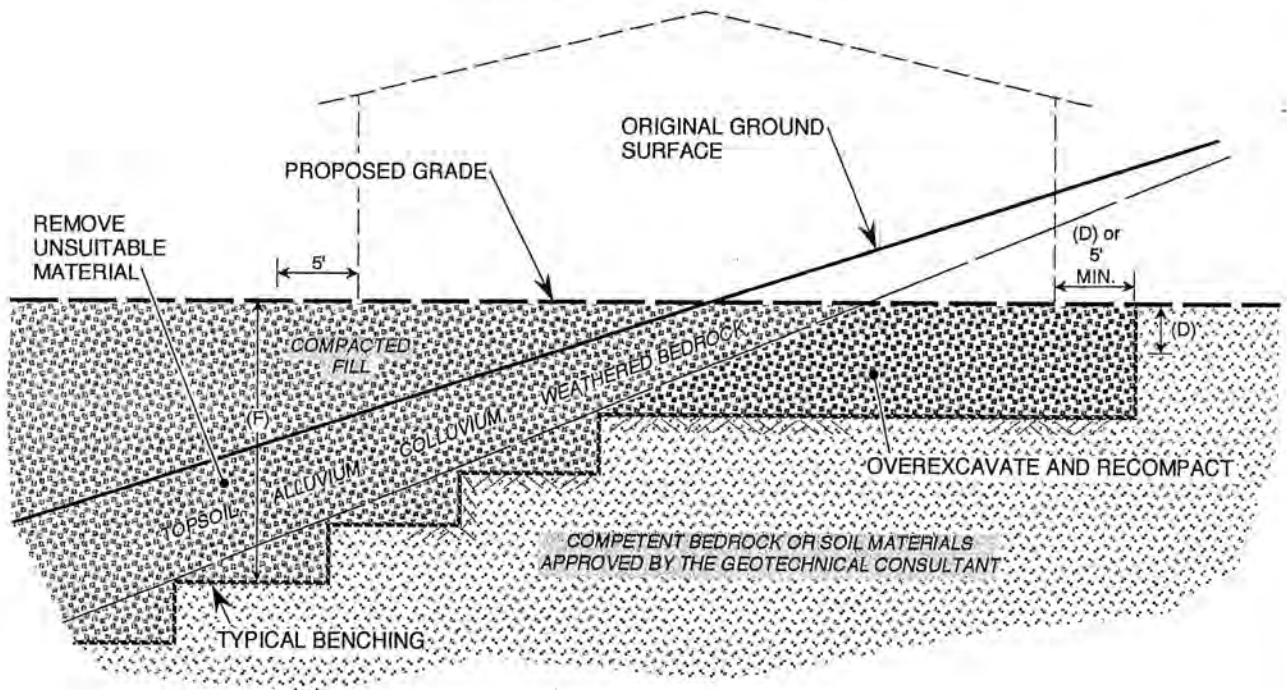
PLATE SG-6

CUT LOT

UNSUITABLE MATERIAL EXPOSED IN PORTION OF CUT PAD



CUT-FILL TRANSITION LOT



MAXIMUM DEPTH OF FILL (F)

FOOTING DEPTH TO 3 FEET EQUAL DEPTH

3 TO 6 FEET 3 FEET

GREATER THAN 6 FEET 1/2 THE THICKNESS OF FILL PLACED ON THE "FILL" PORTION (F) TO 15 FEET MAXIMUM

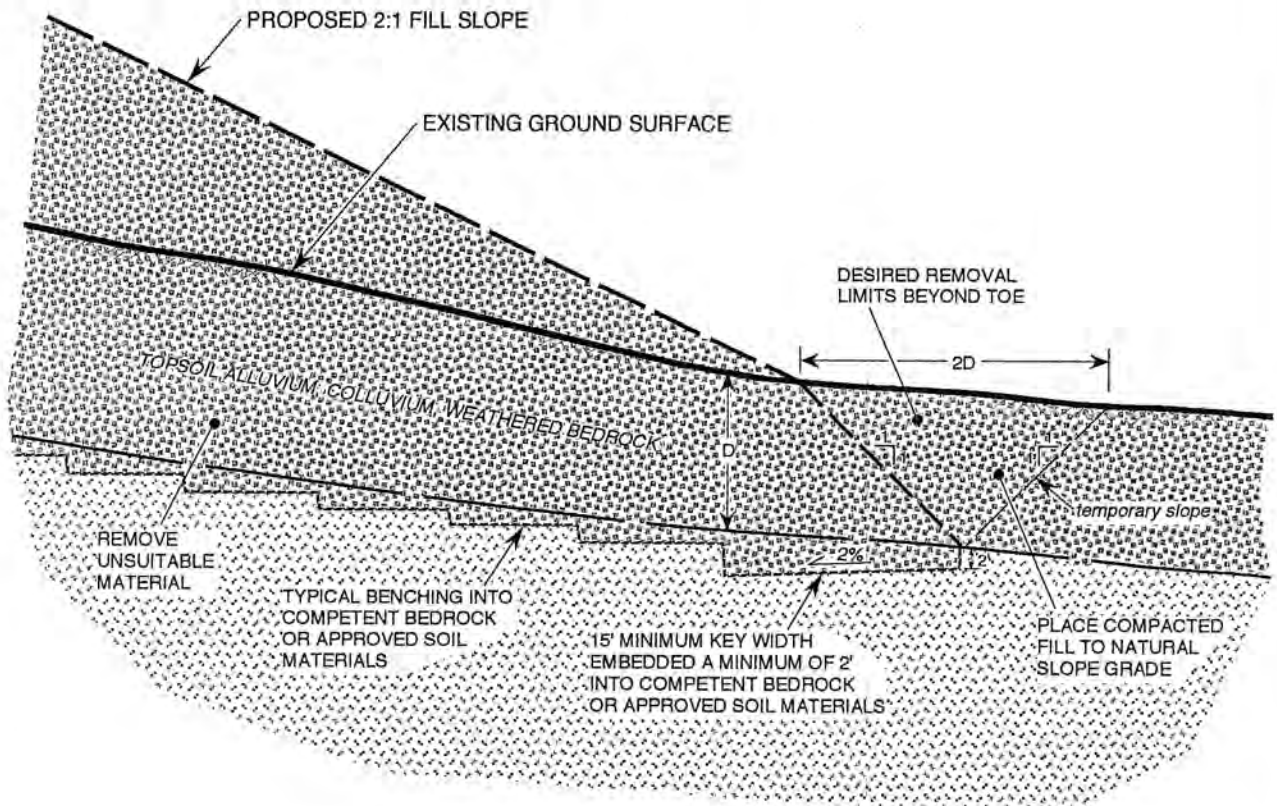
DEPTH OF OVEREXCAVATION (D)

FOOTING DEPTH TO 3 FEET EQUAL DEPTH

3 TO 6 FEET 3 FEET

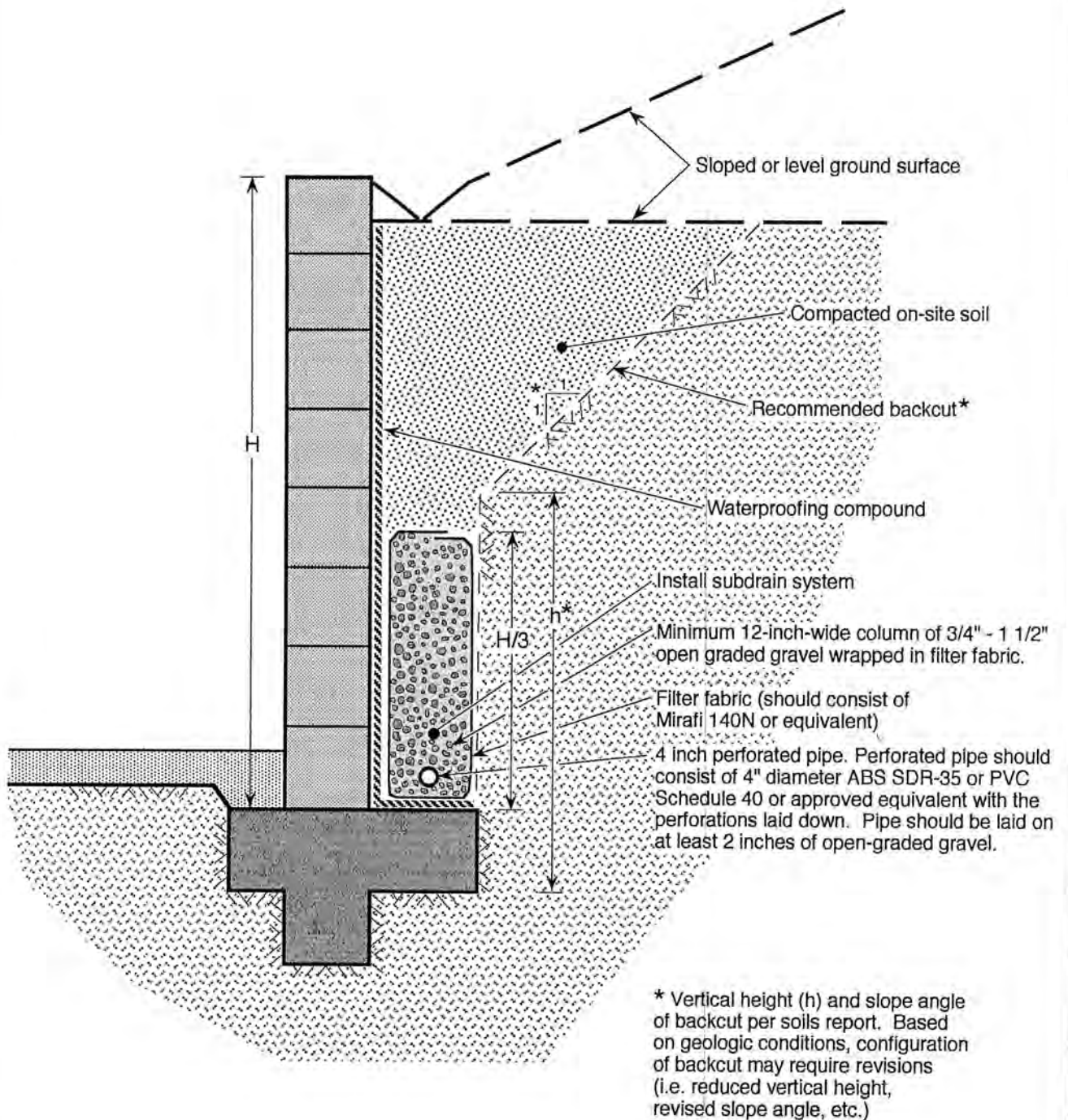
GREATER THAN 6 FEET 1/2 THE THICKNESS OF FILL PLACED ON THE "FILL" PORTION (F) TO 15 FEET MAXIMUM

TYPICAL REMOVAL OF UNSUITABLE SURFICIAL SOILS BEYOND PROPOSED TOE OF FILL SLOPE



D = RECOMMENDED DEPTH OF REMOVAL
PER GEOTECHNICAL REPORT

NATIVE SOIL BACKFILL

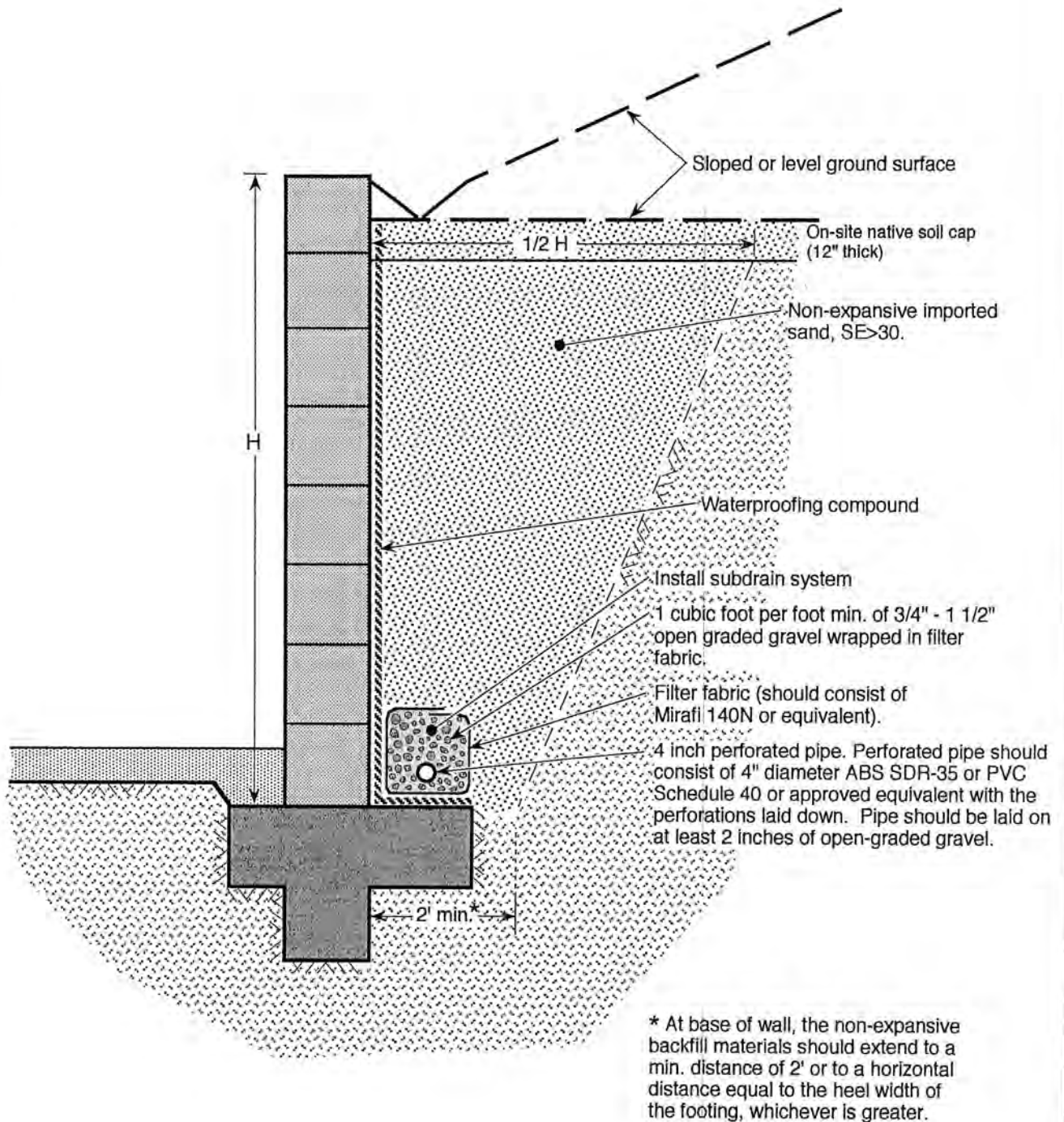


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**RETAINING WALL BACKFILL
AND SUBDRAIN DETAILS**

FIGURE RW-1

IMPORTED SAND BACKFILL

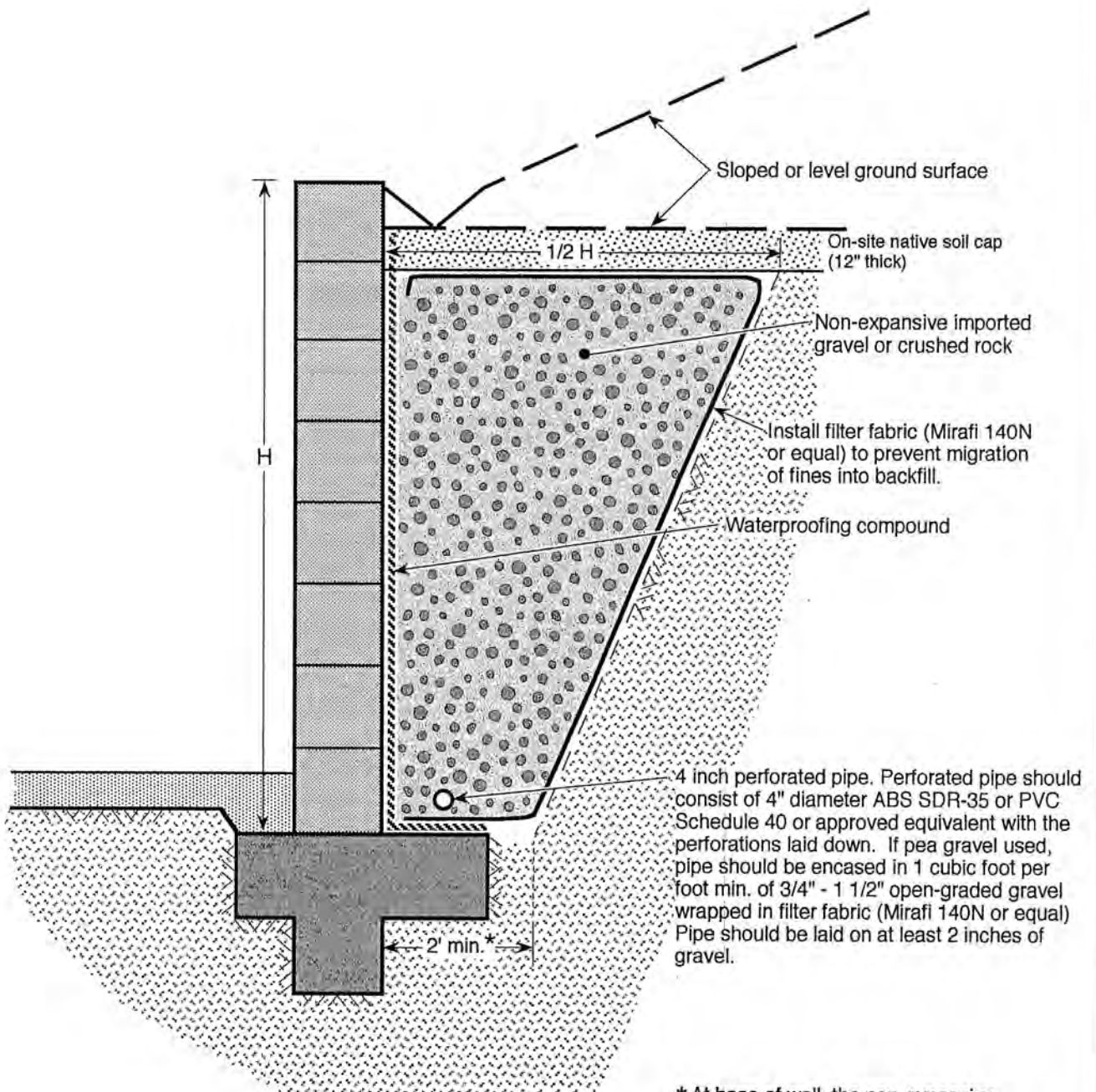


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**RETAINING WALL BACKFILL
AND SUBDRAIN DETAILS**

FIGURE RW-2

IMPORTED GRAVEL OR CRUSHED ROCK BACKFILL



* At base of wall, the non-expansive backfill materials should extend to a min. distance of 2' or to a horizontal distance equal to the heel width of the footing, whichever is greater.



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**RETAINING WALL BACKFILL
AND SUBDRAIN DETAILS**

FIGURE RW-3