

Input parameters						
No	E (Mpa)	(N1)60	Dr (%)	Friction angle	γ (kN/m3)	Pile end condition
1	15	10	40	31	17.1	CE
2	15	10	40	31	17.1	CE
3	15	10	40	31	17.1	CE
4	15	10	40	31	17.1	CE
5	15	10	40	31	17.1	CE
6	15	10	40	31	17.1	CE
7	15	10	40	31	17.1	CE
8	15	10	40	31	17.1	CE
9	15	10	40	31	17.1	CE
10	15	10	40	31	17.1	CE
11	15	10	40	31	17.1	CE
12	15	10	40	31	17.1	CE
13	15	10	40	31	17.1	CE
14	15	10	40	31	17.1	CE
15	15	10	40	31	17.1	CE
16	25	15	60	37	18.3	CE
17	25	15	60	37	18.3	CE
18	25	15	60	37	18.3	CE
19	25	15	60	37	18.3	CE
20	25	15	60	37	18.3	CE
21	25	15	60	37	18.3	CE
22	25	15	60	37	18.3	CE
23	25	15	60	37	18.3	CE
24	25	15	60	37	18.3	CE
25	25	15	60	37	18.3	CE
26	25	15	60	37	18.3	CE
27	25	15	60	37	18.3	CE
28	25	15	60	37	18.3	CE
29	25	15	60	37	18.3	CE
30	25	15	60	37	18.3	CE
31	28	16	65	34	16	CE
32	28	16	65	34	16	CE
33	28	16	65	34	16	CE
34	28	16	65	34	16	CE
35	58	18	80	42	19.4	CE
36	58	18	80	42	19.4	CE
37	58	18	80	42	19.4	CE
38	58	18	80	42	19.4	CE
39	58	18	80	42	19.4	CE
40	58	18	80	42	19.4	CE
41	58	18	80	42	19.4	CE

42	58	18	80	42	19.4	CE
43	58	18	80	42	19.4	CE
44	58	18	80	42	19.4	CE
45	58	18	80	42	19.4	CE
46	58	18	80	42	19.4	CE
47	58	18	80	42	19.4	CE
48	58	18	80	42	19.4	CE
49	58	18	80	42	19.4	CE
99	15	10	40	31	17.1	CE
100	15	10	40	31	17.1	CE
101	15	10	40	31	17.1	CE
102	15	10	40	31	17.1	CE
103	15	10	40	31	17.1	CE
104	15	10	40	31	17.1	CE
105	15	10	40	31	17.1	CE
106	15	10	40	31	17.1	CE
107	15	10	40	31	17.1	CE
108	15	10	40	31	17.1	CE
109	15	10	40	31	17.1	CE
110	15	10	40	31	17.1	CE
111	15	10	40	31	17.1	CE
112	15	10	40	31	17.1	CE
113	15	10	40	31	17.1	CE
114	25	15	60	37	18.3	CE
115	25	15	60	37	18.3	CE
116	25	15	60	37	18.3	CE
117	25	15	60	37	18.3	CE
118	25	15	60	37	18.3	CE
119	25	15	60	37	18.3	CE
120	25	15	60	37	18.3	CE
121	25	15	60	37	18.3	CE
122	25	15	60	37	18.3	CE
123	25	15	60	37	18.3	CE
124	25	15	60	37	18.3	CE
125	25	15	60	37	18.3	CE
126	25	15	60	37	18.3	CE
127	25	15	60	37	18.3	CE
128	25	15	60	37	18.3	CE
129	28	16	65	34	16	CE
130	28	16	65	34	16	CE
131	28	16	65	34	16	CE
132	28	16	65	34	16	CE
133	58	18	80	42	19.4	CE
134	58	18	80	42	19.4	CE

135	58	18	80	42	19.4	CE
136	58	18	80	42	19.4	CE
137	58	18	80	42	19.4	CE
138	58	18	80	42	19.4	CE
139	58	18	80	42	19.4	CE
140	58	18	80	42	19.4	CE
141	58	18	80	42	19.4	CE
142	58	18	80	42	19.4	CE
143	58	18	80	42	19.4	CE
144	58	18	80	42	19.4	CE
145	58	18	80	42	19.4	CE
146	58	18	80	42	19.4	CE
147	58	18	80	42	19.4	CE
197	15	10	40	31	17.1	CE
198	15	10	40	31	17.1	CE
199	15	10	40	31	17.1	CE
200	15	10	40	31	17.1	CE
201	15	10	40	31	17.1	CE
202	15	10	40	31	17.1	CE
203	15	10	40	31	17.1	CE
204	15	10	40	31	17.1	CE
205	15	10	40	31	17.1	CE
206	15	10	40	31	17.1	CE
207	15	10	40	31	17.1	CE
208	15	10	40	31	17.1	CE
209	15	10	40	31	17.1	CE
210	15	10	40	31	17.1	CE
211	15	10	40	31	17.1	CE
212	25	15	60	37	18.3	CE
213	25	15	60	37	18.3	CE
214	25	15	60	37	18.3	CE
215	25	15	60	37	18.3	CE
216	25	15	60	37	18.3	CE
217	25	15	60	37	18.3	CE
218	25	15	60	37	18.3	CE
219	25	15	60	37	18.3	CE
220	25	15	60	37	18.3	CE
221	25	15	60	37	18.3	CE
222	25	15	60	37	18.3	CE
223	25	15	60	37	18.3	CE
224	25	15	60	37	18.3	CE
225	25	15	60	37	18.3	CE
226	25	15	60	37	18.3	CE
227	28	16	65	34	16	CE

228	28	16	65	34	16	CE
229	28	16	65	34	16	CE
230	28	16	65	34	16	CE
231	58	18	80	42	19.4	CE
232	58	18	80	42	19.4	CE
233	58	18	80	42	19.4	CE
234	58	18	80	42	19.4	CE
235	58	18	80	42	19.4	CE
236	58	18	80	42	19.4	CE
237	58	18	80	42	19.4	CE
238	58	18	80	42	19.4	CE
239	58	18	80	42	19.4	CE
240	58	18	80	42	19.4	CE
241	58	18	80	42	19.4	CE
242	58	18	80	42	19.4	CE
243	58	18	80	42	19.4	CE
244	58	18	80	42	19.4	CE
245	58	18	80	42	19.4	CE

		Steel pipe pile settlement under seismic excitation (mm)	
L (m)	PGA (g)	Dry soil condition	Saturated soil condition
4	0.1	2.9	4.2
4	0.102	3	4.3
4	0.34	15.5	25
4	0.82	35	62
4	0.52	22	35
4	0.6	26	42
4	0.37	18.5	27.5
4	0.326	12	20
4	0.65	31	50.2
4	0.165	3	5.2
4	0.33	16	25.3
4	0.438	20	30.2
4	0.31	11	16.2
4	0.4	18	25.3
4	0.104	3	4
4	0.1	2	4
4	0.102	2	4.3
4	0.34	12.2	21.3
4	0.82	32	55.2
4	0.52	19	29.6
4	0.6	22	40
4	0.37	17	25
4	0.326	11	17.6
4	0.65	27	46
4	0.165	2	4.5
4	0.33	14	24.64
4	0.438	17	27
4	0.31	10	15
4	0.4	15	23
4	0.104	2	4
4	0.1	2	3
4	0.102	2	3.2
4	0.34	11	19
4	0.82	30	53
4	0.1	1	2.2
4	0.102	1.2	2.6
4	0.34	7	16
4	0.82	25	42
4	0.52	11	19
4	0.6	14	25
4	0.37	10	16

4	0.326	6	12
4	0.65	16	28
4	0.165	1.3	4
4	0.33	8.2	15
4	0.438	10	17
4	0.31	6	10.5
4	0.4	9.3	15
4	0.104	1.1	3.2
14	0.1	7.3	10
14	0.102	7.6	9.6
14	0.34	40	62
14	0.82	89	155
14	0.52	55	86
14	0.6	67	115
14	0.37	49	72
14	0.326	32	50
14	0.65	79	129
14	0.165	8.2	13
14	0.33	42	70
14	0.438	50	78
14	0.31	29	44
14	0.4	45	66
14	0.104	8	9.8
14	0.1	6.1	7.8
14	0.102	6.5	7.9
14	0.34	32	55
14	0.82	81	142
14	0.52	48.4	75.68
14	0.6	58.96	101.2
14	0.37	43.12	63.36
14	0.326	28.16	44
14	0.65	69.52	113.52
14	0.165	7.22	11.44
14	0.33	36.96	61.6
14	0.438	44	68.64
14	0.31	25.52	38.72
14	0.4	39.6	58.08
14	0.104	7.04	8.6
14	0.1	5	6.1
14	0.102	5.25	6.65
14	0.34	28	49
14	0.82	77	133
14	0.1	3.8	4.88
14	0.102	4	4.9

14	0.34	19	38.5
14	0.82	65	115
14	0.52	29.04	45.4
14	0.6	35.4	60.72
14	0.37	25.6	38.1
14	0.326	16.88	26.4
14	0.65	41.7	68.12
14	0.165	4.32	6.9
14	0.33	22.2	36.96
14	0.438	26.4	41.2
14	0.31	15.3	23.23
14	0.4	23.76	34.8
14	0.104	4.23	5.2
27	0.1	12.6	18
27	0.102	13	17
27	0.34	66	110
27	0.82	150	269
27	0.52	90	150
27	0.6	116	200
27	0.37	85	125
27	0.326	55	88
27	0.65	134	221
27	0.165	14	23
27	0.33	72.3	121
27	0.438	86	135
27	0.31	50	76
27	0.4	77	113
27	0.104	14	17
27	0.1	10	15
27	0.102	11	15
27	0.34	55	95
27	0.82	138	246
27	0.52	83	133
27	0.6	101	175
27	0.37	74	110
27	0.326	48	75
27	0.65	119	195
27	0.165	13	19.9
27	0.33	63	105
27	0.438	75	120
27	0.31	43	66
27	0.4	66	100
27	0.104	12	15
27	0.1	8.6	11

27	0.102	9	12
27	0.34	48	85
27	0.82	132	229
27	0.1	6.5	9
27	0.102	7	9
27	0.34	33	67
27	0.82	110	200
27	0.52	49	78
27	0.6	61	104
27	0.37	44	66
27	0.326	29	45
27	0.65	71	117
27	0.165	8	12
27	0.33	39	64
27	0.438	45	71
27	0.31	26	40
27	0.4	41	60
27	0.104	7	9



Abbreviations
(N1)60 = The equivalent SPT blow count for clean sand
PGA (g) = peak ground acceleration
Dr (%) = soil relative density
CE = Closed end pile
OE = Open end pile
Pile dimensions: D(out)=0.91, D(inner)=0.805m

