

Appendix A

Database for Rectangular CCFST Columns											
N	B (mm)	H (mm)	t (mm)	L (mm)	L/B	E _o (MPa)	f _{0.2} (MPa)	f _u (MPa)	n	f' _{c,cyl}	N Test (kN)
1	51.0	51.0	1.8	150.0	2.9	205100.0	353.0	680.9	10.4	21.5	234.0
2	51.0	51.0	1.8	150.0	2.9	205100.0	353.0	680.9	10.4	21.5	243.0
3	51.0	51.0	1.8	150.0	2.9	205100.0	353.0	680.9	10.4	34.9	268.0
4	51.0	51.0	1.8	150.0	2.9	205100.0	353.0	680.9	10.4	34.9	274.0
5	51.0	51.0	2.9	150.0	2.9	207900.0	440.0	743.8	8.2	21.5	358.0
6	51.0	51.0	2.9	150.0	2.9	207900.0	440.0	743.8	8.2	21.5	364.0
7	51.0	51.0	2.9	150.0	2.9	207900.0	440.0	743.8	8.2	34.9	394.0
8	51.0	51.0	2.9	150.0	2.9	207900.0	440.0	743.8	8.2	34.9	393.0
9	100.0	100.0	2.9	300.0	3.0	195700.0	358.0	664.9	8.3	21.5	705.0
10	100.0	100.0	2.9	300.0	3.0	195700.0	358.0	664.9	8.3	21.5	716.0
11	100.0	100.0	2.9	300.0	3.0	195700.0	358.0	664.9	8.3	34.9	765.0
12	100.0	100.0	2.9	300.0	3.0	195700.0	358.0	664.9	8.3	34.9	742.0
13	101.0	101.0	5.1	300.0	3.0	202100.0	435.0	727.2	7.0	21.5	1352.0
14	101.0	101.0	5.1	300.0	3.0	202100.0	435.0	727.2	7.0	21.5	1348.0
15	101.0	101.0	5.1	300.0	3.0	202100.0	435.0	727.2	7.0	34.9	1434.0
16	101.0	101.0	5.1	300.0	3.0	202100.0	435.0	727.2	7.0	34.9	1461.0
17	152.0	152.0	2.9	450.0	3.0	192600.0	268.0	585.9	6.8	21.5	1035.0
18	152.0	152.0	2.9	450.0	3.0	192600.0	268.0	585.9	6.8	21.5	1062.0
19	152.0	152.0	2.9	450.0	3.0	192600.0	268.0	585.9	6.8	34.9	1074.0
20	152.0	152.0	2.9	450.0	3.0	192600.0	268.0	585.9	6.8	34.9	1209.0
21	150.0	150.0	4.8	450.0	3.0	192200.0	340.0	644.8	5.6	21.5	1804.0
22	150.0	150.0	4.8	450.0	3.0	192200.0	340.0	644.8	5.6	21.5	1798.0
23	150.0	150.0	4.8	450.0	3.0	192200.0	340.0	644.8	5.6	34.9	1947.0
24	150.0	150.0	4.8	450.0	3.0	192200.0	340.0	644.8	5.6	34.9	1976.0
25	100.3	100.3	2.8	440.0	4.4	182000.0	390.3	762.1	6.7	36.3	767.6
26	100.3	100.3	2.8	440.0	4.4	182000.0	390.3	762.1	6.7	75.4	1090.5
27	99.8	99.3	3.0	299.0	3.0	217000.0	365.0	707.0	6.0	49.1	830.0
28	101.0	100.5	3.0	299.0	3.0	217000.0	365.0	707.0	6.0	68.1	1004.0
29	101.0	100.5	3.0	299.0	3.0	217000.0	365.0	707.0	6.0	86.4	1162.0
30	121.0	120.5	5.0	358.0	3.0	201000.0	317.0	665.0	6.3	49.1	1373.0
31	120.0	120.0	5.0	359.0	3.0	201000.0	317.0	665.0	6.3	68.1	1566.0
32	120.5	119.5	5.0	357.0	3.0	201000.0	317.0	665.0	6.3	86.4	1840.0
33	150.0	149.5	5.0	447.0	3.0	210000.0	324.0	673.0	7.8	49.1	1860.0
34	150.0	149.5	5.0	449.0	3.0	210000.0	324.0	673.0	7.8	68.1	2218.0
35	150.0	149.5	5.0	449.0	3.0	210000.0	324.0	673.0	7.8	86.4	2612.0
36	100.1	49.7	5.0	299.0	3.0	199000.0	322.0	671.0	3.4	49.1	720.0
37	100.2	49.7	5.0	299.0	3.0	199000.0	322.0	671.0	3.4	68.1	768.0
38	100.1	49.7	5.0	299.0	3.0	199000.0	322.0	671.0	3.4	86.4	837.0
39	149.5	100.3	5.0	448.0	3.0	201000.0	321.0	669.0	6.0	49.1	1419.0
40	149.8	100.4	5.0	447.0	3.0	201000.0	321.0	669.0	6.0	68.1	1643.0
41	149.7	100.3	5.0	445.0	3.0	201000.0	321.0	669.0	6.0	86.4	1920.0
42	160.0	160.0	2.9	480.0	3.0	202800.0	446.2	735.0	4.9	35.2	1461.5
43	160.0	160.0	2.9	480.0	3.0	202800.0	446.2	735.0	4.9	35.2	1534.1
44	160.0	160.0	2.9	480.0	3.0	202800.0	446.2	735.0	4.9	41.1	1584.9
45	160.0	160.0	2.9	480.0	3.0	202800.0	446.2	735.0	4.9	41.1	1532.8
46	160.0	160.0	3.9	480.0	3.0	197400.0	414.5	704.4	4.6	35.2	2039.6
47	160.0	160.0	3.9	480.0	3.0	197400.0	414.5	704.4	4.6	35.2	1930.6
48	160.0	160.0	4.8	480.0	3.0	197900.0	431.9	715.4	6.7	35.2	2124.6
49	160.0	160.0	4.8	480.0	3.0	197900.0	431.9	715.4	6.7	35.2	2011.9
50	160.0	160.0	2.9	480.0	3.0	202800.0	446.2	735.0	4.9	35.4	1543.3
51	160.0	160.0	2.9	480.0	3.0	202800.0	446.2	735.0	4.9	35.4	1590.0
52	160.0	160.0	2.9	480.0	3.0	202800.0	446.2	735.0	4.9	47.0	1768.8
53	160.0	160.0	2.9	480.0	3.0	202800.0	446.2	735.0	4.9	47.0	1913.8
54	160.0	160.0	3.9	480.0	3.0	197400.0	414.5	704.4	4.6	35.4	1955.4
55	160.0	160.0	3.9	480.0	3.0	197400.0	414.5	704.4	4.6	35.4	1896.5
56	160.0	160.0	4.8	480.0	3.0	197900.0	431.9	715.4	6.7	35.4	2151.5
57	160.0	160.0	4.8	480.0	3.0	197900.0	431.9	715.4	6.7	35.4	2141.3
58	160.0	160.0	2.9	480.0	3.0	202800.0	446.2	735.0	4.9	37.8	1724.6
59	160.0	160.0	2.9	480.0	3.0	202800.0	446.2	735.0	4.9	37.8	1780.0
60	160.0	160.0	2.9	480.0	3.0	202800.0	446.2	735.0	4.9	41.9	1689.7
61	160.0	160.0	2.9	480.0	3.0	202800.0	446.2	735.0	4.9	41.9	1765.1
62	160.0	160.0	3.9	480.0	3.0	197400.0	414.5	704.4	4.6	37.8	2007.1
63	160.0	160.0	3.9	480.0	3.0	197400.0	414.5	704.4	4.6	37.8	1947.0
64	160.0	160.0	4.8	480.0	3.0	197900.0	431.9	715.4	6.7	37.8	2215.0

65	160.0	160.0	4.8	480.0	3.0	197900.0	431.9	715.4	6.7	37.8	2196.8
66	100.0	100.0	2.0	300.0	3.0	202500.0	385.0	481.0	12.4	30.0	534.0
67	100.0	100.0	2.0	300.0	3.0	202500.0	385.0	481.0	12.4	53.0	687.0
68	100.0	100.0	2.0	300.0	3.0	202500.0	385.0	481.0	12.4	74.0	836.0
69	100.0	100.0	5.0	300.0	3.0	180000.0	458.0	632.0	3.7	30.0	1410.0
70	100.0	100.0	5.0	300.0	3.0	180000.0	458.0	632.0	3.7	53.0	1488.0
71	100.0	100.0	5.0	300.0	3.0	180000.0	458.0	632.0	3.7	74.0	1559.0
72	150.0	150.0	6.0	300.0	2.0	194000.0	497.0	762.0	3.0	46.6	2768.0
73	150.0	150.0	6.0	300.0	2.0	194000.0	497.0	762.0	3.0	61.9	2972.0
74	150.0	150.0	6.0	300.0	2.0	194000.0	497.0	762.0	3.0	83.5	3020.0
75	150.0	150.0	3.0	300.0	2.0	189000.0	448.0	699.0	4.0	46.6	1382.0
76	150.0	150.0	3.0	300.0	2.0	189000.0	448.0	699.0	4.0	61.9	1620.0
77	150.0	150.0	3.0	300.0	2.0	189000.0	448.0	699.0	4.0	83.5	1851.0
78	200.0	200.0	4.0	300.0	1.5	200000.0	503.0	961.0	4.0	46.6	1627.0
79	200.0	200.0	4.0	300.0	1.5	200000.0	503.0	961.0	4.0	83.5	2180.0
80	160.0	160.0	3.0	300.0	1.9	208000.0	536.0	766.0	5.0	46.6	882.0
81	160.0	160.0	3.0	300.0	1.9	208000.0	536.0	766.0	5.0	61.9	1015.0
82	160.0	160.0	3.0	300.0	1.9	208000.0	536.0	766.0	5.0	83.5	1280.0
83	140.0	140.0	3.0	300.0	2.1	212000.0	486.0	736.0	6.0	46.6	1049.0
84	140.0	140.0	3.0	300.0	2.1	212000.0	486.0	736.0	6.0	61.9	1097.0
85	140.0	140.0	3.0	300.0	2.1	212000.0	486.0	736.0	6.0	83.5	1259.0
86	120.0	120.0	1.8	360.0	3.0	185000.0	286.7	789.6	6.7	50.7	923.4
87	120.0	120.0	1.8	360.0	3.0	185000.0	286.7	789.6	6.7	47.8	871.5
88	120.0	120.0	1.8	360.0	3.0	185000.0	286.7	789.6	6.7	45.8	848.5
89	120.0	120.0	1.8	360.0	3.0	185000.0	286.7	789.6	6.7	45.5	830.0
90	120.0	120.0	1.8	360.0	3.0	185000.0	286.7	789.6	6.7	46.9	857.1
91	120.0	120.0	1.8	360.0	3.0	185000.0	286.7	789.6	6.7	45.0	826.9
92	120.0	120.0	1.8	360.0	3.0	185000.0	286.7	789.6	6.7	44.2	831.1
93	200.7	97.1	4.0	600.0	3.0	207500.0	301.5	671.1	10.0	41.2	1422.9
94	200.2	98.5	4.0	600.0	3.0	207500.0	301.5	671.1	10.0	41.7	1350.2
95	200.7	97.9	4.0	600.0	3.0	207500.0	301.5	671.1	10.0	41.0	1388.7
96	200.2	98.9	4.0	600.0	3.0	207500.0	301.5	671.1	10.0	37.8	1291.8
97	150.5	150.5	5.8	450.0	3.0	194000.0	497.0	761.0	3.0	46.6	2768.1
98	150.6	150.6	5.8	450.0	3.0	194000.0	497.0	761.0	3.0	61.9	2972.0
99	150.5	150.5	5.8	450.0	3.0	194000.0	497.0	761.0	3.0	83.5	3019.9
100	150.5	150.5	2.8	450.0	3.0	189000.0	448.0	699.0	4.0	46.6	1381.5
101	150.5	150.5	2.8	450.0	3.0	189000.0	448.0	699.0	4.0	61.9	1620.0
102	150.6	150.6	2.8	450.0	3.0	189000.0	448.0	699.0	4.0	83.5	1851.3
103	197.1	109.5	4.1	600.0	3.0	200000.0	503.0	961.0	4.0	46.6	1627.2
104	197.6	109.6	4.0	600.0	3.0	200000.0	503.0	961.0	4.0	83.5	2180.0
105	160.5	81.3	2.9	480.0	3.0	208000.0	536.0	766.0	5.0	46.6	881.5
106	160.7	80.7	2.9	480.0	3.0	208000.0	536.0	766.0	5.0	61.9	1014.5
107	160.6	80.4	2.9	480.0	3.0	208000.0	536.0	766.0	5.0	83.5	1280.1
108	140.2	80.1	3.1	420.0	3.0	212000.0	486.0	736.0	6.0	46.6	1048.7
109	140.2	80.1	3.1	420.0	3.0	212000.0	486.0	736.0	6.0	61.9	1096.9
110	140.3	80.0	3.1	420.0	3.0	212000.0	486.0	736.0	6.0	83.5	1258.8
111	63.5	63.5	1.5	190.5	3.0	198000.0	470.0	735.4	3.5	30.0	276.0
112	63.5	63.5	1.5	190.5	3.0	198000.0	470.0	735.4	3.5	40.0	293.0
113	76.2	50.8	1.5	228.6	3.0	198000.0	470.0	735.4	3.5	30.0	242.0
114	76.2	50.8	1.5	228.6	3.0	198000.0	470.0	735.4	3.5	40.0	266.0
115	76.2	76.2	1.5	228.6	3.0	198000.0	470.0	735.4	3.5	30.0	391.0
116	76.2	76.2	1.5	228.6	3.0	198000.0	470.0	735.4	3.5	40.0	413.0
117	101.6	50.8	1.5	304.8	3.0	198000.0	470.0	735.4	3.5	30.0	330.0
118	101.6	50.8	1.5	304.8	3.0	198000.0	470.0	735.4	3.5	40.0	359.0
119	51.0	51.0	2.9	150.0	2.9	207900.0	440.0	743.8	8.2	21.5	363.0
120	101.0	101.0	5.1	300.0	3.0	202100.0	435.0	727.2	7.0	21.5	1360.0
121	101.0	101.0	2.9	300.0	3.0	195700.0	358.0	664.9	8.3	34.9	763.0
122	152.0	152.0	2.9	450.0	3.0	192600.0	268.0	585.9	6.8	34.9	1178.0
123	150.5	150.5	5.8	450.0	3.0	194000.0	497.0	737.5	3.0	46.6	2745.0
124	100.0	100.0	4.9	300.0	3.0	180000.0	458.0	682.8	3.7	53.0	1565.0
125	60.0	60.0	1.0	180.0	3.0	200000.0	258.0	409.0	10.0	22.7	114.0
126	60.0	60.0	1.0	210.0	3.5	200000.0	258.0	409.0	10.0	22.7	131.0
127	60.0	60.0	1.0	240.0	4.0	200000.0	258.0	409.0	10.0	22.7	126.0
128	80.0	80.0	1.0	240.0	3.0	200000.0	258.0	409.0	10.0	22.7	190.0
129	80.0	80.0	1.0	280.0	3.5	200000.0	258.0	409.0	10.0	22.7	182.0
130	80.0	80.0	1.0	320.0	4.0	200000.0	258.0	409.0	10.0	22.7	166.0
131	100.0	100.0	1.0	300.0	3.0	200000.0	258.0	409.0	10.0	22.7	258.0
132	100.0	100.0	1.0	350.0	3.5	200000.0	258.0	409.0	10.0	22.7	237.0
133	100.0	100.0	1.0	400.0	4.0	200000.0	258.0	409.0	10.0	22.7	233.0
134	60.0	60.0	1.0	180.0	3.0	200000.0	258.0	409.0	10.0	29.4	142.0
135	60.0	60.0	1.0	210.0	3.5	200000.0	258.0	409.0	10.0	29.4	107.0

136	60.0	60.0	1.0	240.0	4.0	200000.0	258.0	409.0	10.0	29.4	117.0
137	80.0	80.0	1.0	240.0	3.0	200000.0	258.0	409.0	10.0	29.4	190.0
138	80.0	80.0	1.0	280.0	3.5	200000.0	258.0	409.0	10.0	29.4	203.0
139	80.0	80.0	1.0	320.0	4.0	200000.0	258.0	409.0	10.0	29.4	211.0
140	100.0	100.0	1.0	300.0	3.0	200000.0	258.0	409.0	10.0	29.4	261.0
141	100.0	100.0	1.0	350.0	3.5	200000.0	258.0	409.0	10.0	29.4	252.0
142	40.1	59.9	3.8	178.9	4.5	206000.0	479.0	492.0	6.0	42.6	477.5
143	40.1	59.8	3.8	179.5	4.5	206000.0	479.0	492.0	6.0	42.6	481.0
144	40.1	59.9	3.8	179.5	4.5	206000.0	479.0	492.0	6.0	80.9	531.8
145	40.1	59.8	3.8	179.1	4.5	206000.0	479.0	492.0	6.0	114.6	585.1
146	60.1	60.3	2.8	180.3	3.0	210000.0	449.0	463.0	6.0	42.6	484.2
147	60.1	60.2	2.8	179.7	3.0	210000.0	449.0	463.0	6.0	80.9	594.7
148	60.1	60.3	2.8	179.2	3.0	210000.0	449.0	463.0	6.0	114.6	712.2
149	59.9	80.1	3.7	239.7	4.0	210000.0	451.0	464.0	7.0	42.6	712.6
150	59.9	80.3	3.7	239.9	4.0	210000.0	451.0	464.0	7.0	80.9	878.6
151	59.8	80.2	3.7	240.0	4.0	210000.0	451.0	464.0	7.0	114.6	999.6
152	59.9	80.2	3.7	240.1	4.0	210000.0	451.0	464.0	7.0	114.6	976.6
153	40.2	99.7	1.9	299.9	7.5	200000.0	420.0	452.0	8.0	42.6	398.3
154	40.2	99.7	1.9	300.0	7.5	200000.0	420.0	452.0	8.0	80.9	534.6
155	40.2	99.7	1.9	300.0	7.5	200000.0	420.0	452.0	8.0	114.6	674.1
156	79.9	119.9	2.8	359.8	4.5	200000.0	381.0	443.0	8.0	42.6	870.8
157	79.9	120.0	2.8	359.9	4.5	200000.0	381.0	443.0	8.0	80.9	1255.2
158	79.9	120.0	2.8	359.9	4.5	200000.0	381.0	443.0	8.0	114.6	1610.3
159	60.0	120.0	4.0	360.0	6.0	195000.0	538.0	757.3	5.0	35.2	1261.0
160	60.0	120.0	5.0	360.0	6.0	200000.0	581.0	787.9	4.0	35.2	1632.0
161	80.0	120.0	4.0	360.0	4.5	196000.0	516.0	751.0	5.0	35.2	1362.0
162	80.0	120.0	5.0	360.0	4.5	200000.0	558.0	779.2	5.0	35.2	1732.0
163	120.0	120.0	4.0	360.0	3.0	203000.0	549.0	783.9	5.0	35.2	1815.0
164	120.0	120.0	5.0	360.0	3.0	203000.0	578.0	795.3	5.0	35.2	2275.0
165	120.0	120.0	6.0	360.0	3.0	203000.0	598.0	802.7	5.0	35.2	2854.0
166	100.0	100.0	3.0	400.0	4.0	202000.0	266.0	615.0	7.4	37.0	698.0
167	250.0	250.0	3.0	850.0	3.4	202000.0	266.0	615.0	7.4	37.0	2709.0
168	100.0	100.0	3.0	400.0	4.0	199000.0	511.0	716.0	7.5	37.0	1038.9
169	250.0	250.0	3.0	850.0	3.4	199000.0	511.0	716.0	7.5	37.0	3186.3
170	120.0	120.0	3.8	360.0	3.0	200000.0	581.0	747.0	6.0	43.8	1568.0
171	120.0	120.0	3.8	360.0	3.0	200000.0	581.0	747.0	6.0	43.8	1598.0
172	140.0	140.0	3.8	420.0	3.0	200000.0	581.0	747.0	6.0	38.9	1732.0
173	140.0	140.0	3.8	420.0	3.0	200000.0	581.0	747.0	6.0	38.9	1723.0
174	160.0	160.0	3.8	480.0	3.0	200000.0	581.0	747.0	6.0	43.8	2195.0
175	160.0	160.0	3.8	480.0	3.0	200000.0	581.0	747.0	6.0	43.8	2158.0
176	200.0	200.0	3.8	600.0	3.0	200000.0	581.0	747.0	6.0	44.7	2981.0
177	120.0	120.0	5.9	360.0	3.0	199420.0	535.0	724.0	5.5	43.8	2079.0
178	140.0	140.0	5.9	420.0	3.0	199420.0	535.0	724.0	5.5	38.9	2151.0
179	140.0	140.0	5.9	420.0	3.0	199420.0	535.0	724.0	5.5	38.9	2352.0
180	160.0	160.0	5.9	480.0	3.0	199420.0	535.0	724.0	5.5	44.7	2809.0
181	120.0	120.0	7.8	360.0	3.0	198640.0	542.0	736.0	5.4	43.8	2823.0
182	120.0	120.0	7.8	360.0	3.0	198640.0	542.0	736.0	5.4	43.8	2611.0
183	140.0	140.0	7.8	420.0	3.0	198640.0	542.0	736.0	5.4	43.8	3153.0
184	140.0	140.0	7.8	420.0	3.0	198640.0	542.0	736.0	5.4	43.8	3061.0
185	160.0	160.0	7.8	480.0	3.0	198640.0	542.0	736.0	5.4	43.8	3864.0
186	160.0	160.0	7.8	480.0	3.0	198640.0	542.0	736.0	5.4	43.8	3772.0
187	140.0	140.0	3.8	420.0	3.0	200000.0	581.0	747.0	6.0	52.4	2174.0
188	140.0	140.0	3.8	420.0	3.0	200000.0	581.0	747.0	6.0	52.4	1926.0
189	160.0	160.0	3.8	480.0	3.0	200000.0	581.0	747.0	6.0	52.4	2759.0
190	160.0	160.0	3.8	480.0	3.0	200000.0	581.0	747.0	6.0	52.4	2446.0
191	180.0	180.0	3.8	540.0	3.0	200000.0	581.0	747.0	6.0	52.4	2872.0
192	180.0	180.0	3.8	540.0	3.0	200000.0	581.0	747.0	6.0	52.4	2701.0
193	140.0	140.0	5.9	420.0	3.0	199420.0	535.0	724.0	5.5	54.8	2622.0
194	140.0	140.0	5.9	420.0	3.0	199420.0	535.0	724.0	5.5	54.8	2709.0
195	140.0	140.0	7.8	420.0	3.0	198640.0	542.0	736.0	5.4	52.4	3338.0
196	140.0	140.0	7.8	420.0	3.0	198640.0	542.0	736.0	5.4	52.4	3339.0
197	160.0	160.0	7.8	480.0	3.0	198640.0	542.0	736.0	5.4	54.8	3560.0
198	160.0	160.0	7.8	480.0	3.0	198640.0	542.0	736.0	5.4	54.8	3711.0
199	180.0	180.0	7.8	540.0	3.0	198640.0	542.0	736.0	5.4	52.4	4296.0
200	180.0	180.0	7.8	540.0	3.0	198640.0	542.0	736.0	5.4	52.4	4304.0
201	140.0	140.0	11.9	420.0	3.0	196040.0	535.0	732.0	6.1	52.4	5323.0
202	160.0	160.0	11.9	480.0	3.0	196040.0	535.0	732.0	6.1	52.4	5667.0
203	180.0	180.0	11.9	540.0	3.0	196040.0	535.0	732.0	6.1	52.4	6544.0
204	140.0	140.0	3.8	420.0	3.0	200000.0	581.0	747.0	6.0	64.9	1987.0
205	140.0	140.0	3.8	420.0	3.0	200000.0	581.0	747.0	6.0	64.9	1787.0
206	200.0	200.0	3.8	600.0	3.0	200000.0	581.0	747.0	6.0	64.9	3120.0

207	250.0	250.0	3.8	750.0	3.0	200000.0	581.0	747.0	6.0	64.9	4484.0
208	140.0	140.0	5.9	420.0	3.0	199420.0	535.0	724.0	5.5	64.9	2669.0
209	160.0	160.0	5.9	480.0	3.0	199420.0	535.0	724.0	5.5	64.9	3181.0
210	140.0	140.0	7.8	420.0	3.0	198640.0	542.0	736.0	5.4	64.9	3337.0
211	140.0	140.0	7.8	420.0	3.0	198640.0	542.0	736.0	5.4	64.9	3351.0

Database for Circular CCFST Columns										
N	D (mm)	t (mm)	L (mm)	L/D	E _o (MPa)	f _{0.2} (MPa)	f _u (MPa)	n	f' _{c_cyl}	N_Test
1	50.8	1.2	150	2.95	195000	291.0	611.2	7.0	20.0	106.0
2	50.8	1.2	150	2.95	195000	291.0	611.2	7.0	20.0	112.0
3	50.8	1.2	150	2.95	195000	291.0	611.2	7.0	30.0	134.0
4	50.8	1.2	150	2.95	195000	291.0	611.2	7.0	30.0	130.0
5	50.8	1.6	150	2.95	195000	298.0	617.3	7.0	20.0	132.0
6	50.8	1.6	150	2.95	195000	298.0	617.3	7.0	20.0	140.0
7	50.8	1.6	150	2.95	195000	320.0	635.4	7.0	30.0	167.0
8	50.8	1.6	150	2.95	195000	320.0	635.4	7.0	30.0	162.0
9	101.6	1.6	300	2.95	195000	320.0	635.4	7.0	20.0	421.0
10	101.6	1.6	300	2.95	195000	320.0	635.4	7.0	20.0	426.0
11	101.6	1.6	300	2.95	195000	320.0	635.4	7.0	30.0	477.0
12	101.6	1.6	300	2.95	195000	320.0	635.4	7.0	30.0	477.0
13	127.0	1.6	400	3.15	195000	274.0	595.7	7.0	20.0	664.0
14	127.0	1.6	400	3.15	195000	274.0	595.7	7.0	20.0	685.0
15	127.0	1.6	400	3.15	195000	274.0	595.7	7.0	30.0	743.0
16	127.0	1.6	400	3.15	195000	274.0	595.7	7.0	30.0	748.0
17	152.4	1.6	450	2.95	195000	279.0	600.4	7.0	20.0	816.0
18	152.4	1.6	450	2.95	195000	279.0	600.4	7.0	20.0	801.0
19	152.4	1.6	450	2.95	195000	279.0	600.4	7.0	30.0	904.0
20	152.4	1.6	450	2.95	195000	279.0	600.4	7.0	30.0	890.0
21	203.2	2.0	500	2.46	195000	259.0	581.1	7.0	20.0	1390.0
22	203.2	2.0	500	2.46	195000	259.0	581.1	7.0	20.0	1378.0
23	203.2	2.0	500	2.46	195000	259.0	581.1	7.0	30.0	1522.0
24	203.2	2.0	500	2.46	195000	259.0	581.1	7.0	30.0	1550.0
25	127.0	1.6	375	2.95	195000	274.0	595.7	7.0	62.4	284.0
26	127.0	1.6	375	2.95	195000	274.0	595.7	7.0	62.4	1288.0
27	152.4	1.6	450	2.95	195000	279.0	600.4	7.0	62.4	263.0
28	152.4	1.6	450	2.95	195000	279.0	600.4	7.0	62.4	1744.0
29	113.6	2.8	485	4.27	173900	288.6	689.5	7.6	36.3	738.0
30	113.6	2.8	485	4.27	173900	288.6	689.5	7.6	75.4	1137.0
31	101.0	1.5	440	4.36	184200	320.6	708.0	7.2	36.3	501.3
32	101.0	1.5	440	4.36	184200	320.6	708.0	7.2	75.4	819.0
33	72.8	2.8	216	2.97	206000	296.0	715.0	5.5	93.8	561.0
34	73.1	2.8	215	2.94	206000	296.0	715.0	5.5	93.8	554.0
35	73.1	2.8	216	2.95	206000	296.0	715.0	5.5	93.8	596.0
36	72.7	2.8	215	2.96	206000	296.0	715.0	5.5	93.8	485.0
37	72.8	2.8	217	2.98	206000	296.0	715.0	5.5	144.4	739.0
38	72.7	2.8	216	2.97	206000	296.0	715.0	5.5	144.4	792.0
39	72.8	2.8	221	3.04	206000	296.0	715.0	5.5	144.4	624.0
40	72.6	2.8	216	2.98	206000	296.0	715.0	5.5	144.4	501.0
41	89.3	2.8	267	2.99	202000	292.0	727.0	4.1	93.8	924.0
42	88.9	2.8	270	3.04	202000	292.0	727.0	4.1	93.8	836.0
43	88.6	2.8	268	3.02	202000	292.0	727.0	4.1	93.8	763.0
44	88.9	2.8	266	2.99	202000	292.0	727.0	4.1	93.8	656.0
45	89.3	2.8	267	2.99	202000	292.0	727.0	4.1	144.4	1072.0
46	88.9	2.8	270	3.04	202000	292.0	727.0	4.1	144.4	816.0
47	89.3	2.8	270	3.02	202000	292.0	727.0	4.1	144.4	777.0
48	88.9	2.8	268	3.01	202000	292.0	727.0	4.1	144.4	641.0
49	159.0	2.9	480	3.02	195200	383.9	680.9	3.1	35.2	1263.6
50	159.0	2.9	480	3.02	195200	383.9	680.9	3.1	35.2	1322.2
51	159.0	2.9	480	3.02	195200	383.9	680.9	3.1	41.1	1348.7
52	159.0	2.9	480	3.02	195200	383.9	680.9	3.1	41.1	1315.6
53	159.0	3.8	480	3.02	184433	400.7	665.7	5.1	35.2	1626.8

54	159.0	3.8	480	3.02	184433	400.7	665.7	5.1	35.2	1624.0
55	159.0	4.5	480	3.02	177000	401.0	647.7	7.1	35.2	1712.9
56	159.0	4.5	480	3.02	177000	401.0	647.7	7.1	35.2	1630.1
57	159.0	2.9	480	3.02	195200	383.9	680.9	3.1	34.6	1309.5
58	159.0	2.9	480	3.02	195200	383.9	680.9	3.1	34.6	1290.9
59	159.0	2.9	480	3.02	195200	383.9	680.9	3.1	47.0	1513.7
60	159.0	2.9	480	3.02	195200	383.9	680.9	3.1	47.0	1551.6
61	159.0	3.8	480	3.02	184433	400.7	665.7	5.1	34.6	1597.6
62	159.0	3.8	480	3.02	184433	400.7	665.7	5.1	34.6	1611.9
63	159.0	4.5	480	3.02	195200	401.0	691.3	7.1	34.6	1725.4
64	159.0	4.5	480	3.02	195200	401.0	691.3	7.1	34.6	1739.2
65	159.0	2.9	480	3.02	195200	383.9	680.9	3.1	33.8	1366.1
66	159.0	2.9	480	3.02	195200	383.9	680.9	3.1	33.8	1333.2
67	159.0	2.9	480	3.02	195200	383.9	680.9	3.1	41.9	1465.9
68	159.0	2.9	480	3.02	195200	383.9	680.9	3.1	41.9	1451.7
69	159.0	3.8	480	3.02	184433	400.7	665.7	5.1	33.8	1642.4
70	159.0	3.8	480	3.02	184433	400.7	665.7	5.1	33.8	1647.8
71	159.0	4.5	480	3.02	177000	401.0	647.7	7.1	33.8	1745.8
72	159.0	4.5	480	3.02	177000	401.0	647.7	7.1	33.8	1715.0
73	72.8	2.9	215	2.95	202000	258.0	729.0	3.8	49.9	415.0
74	72.9	2.8	216	2.96	202000	258.0	729.0	3.8	49.9	450.0
75	72.8	2.8	216	2.97	202000	258.0	729.0	3.8	49.9	377.0
76	73.3	2.8	216	2.95	202000	258.0	729.0	3.8	49.9	294.0
77	73.0	2.8	214	2.93	202000	258.0	729.0	3.8	49.9	396.0
78	73.0	2.8	215	2.95	202000	258.0	729.0	3.8	49.9	343.0
79	73.0	2.8	216	2.96	202000	258.0	729.0	3.8	49.9	252.0
80	72.8	2.8	216	2.97	202000	258.0	729.0	3.8	63.6	487.0
81	73.5	2.8	216	2.94	202000	258.0	729.0	3.8	63.6	487.0
82	73.0	2.8	216	2.96	202000	258.0	729.0	3.8	63.6	434.0
83	73.3	2.8	217	2.96	202000	258.0	729.0	3.8	63.6	339.0
84	72.8	2.8	215	2.95	202000	258.0	729.0	3.8	63.6	426.0
85	72.8	2.9	216	2.97	202000	258.0	729.0	3.8	63.6	403.0
86	72.8	2.8	216	2.97	202000	258.0	729.0	3.8	63.6	282.0
87	89.3	3.1	266	2.98	201000	321.0	673.0	4.9	63.6	750.0
88	89.3	3.2	266	2.98	201000	321.0	673.0	4.9	63.6	828.0
89	89.5	3.1	265	2.96	201000	321.0	673.0	4.9	63.6	726.0
90	89.3	3.1	265	2.97	201000	321.0	673.0	4.9	63.6	536.0
91	73.1	2.8	440	6.02	206000	298.0	725.0	4.3	102.1	567.2
92	73.8	2.8	440	5.96	206000	298.0	725.0	4.3	140.0	749.7
93	89.3	2.8	535	5.99	201000	322.0	653.0	3.8	92.3	812.8
94	89.0	2.8	536	6.02	201000	322.0	653.0	3.8	125.2	963.1
95	104.0	2.0	300	2.88	191900	412.0	631.0	4.3	31.0	699.0
96	104.0	2.0	300	2.88	191900	412.0	631.0	4.3	49.0	901.0
97	104.0	2.0	300	2.88	191900	412.0	631.0	4.3	65.0	1133.0
98	114.3	6.0	300	2.62	183600	266.0	539.0	8.4	31.0	1593.0
99	114.3	6.0	300	2.62	183600	266.0	539.0	8.4	49.0	1648.0
100	114.3	6.0	300	2.62	183600	266.0	539.0	8.4	65.0	1674.0
101	120.0	1.8	360	3	185000	286.7	789.6	6.7	50.7	823.2
102	120.0	1.8	360	3	185000	286.7	789.6	6.7	47.8	813.8
103	120.0	1.8	360	3	185000	286.7	789.6	6.7	45.8	802.2
104	120.0	1.8	360	3	185000	286.7	789.6	6.7	45.5	774.3
105	120.0	1.8	360	3	185000	286.7	789.6	6.7	46.9	806.7
106	120.0	1.8	360	3	185000	286.7	789.6	6.7	45.0	768.4
107	120.0	1.8	360	3	185000	286.7	789.6	6.7	44.2	777.2
108	168.9	2.9	510	3.02	196300	339.6	770.6	8.0	41.2	1707.5
109	168.4	2.9	510	3.03	196300	339.6	770.6	8.0	41.7	1595.1

110	169.7	2.9	510	3.01	196300	339.6	770.6	8.0	41.0	1607.4
111	170.6	2.9	510	2.99	196300	339.6	770.6	8.0	37.8	1573.1
112	298.5	7.7	900.2	3.02	193250	248.0	633.0	6.4	32.0	4709.6
113	299.0	9.9	898.6	3.01	198350	242.0	634.0	5.8	32.0	5325.3
114	297.6	11.9	902.1	3.03	208420	249.0	603.0	6.3	32.0	6064.6
115	299.0	7.7	900.6	3.01	193250	248.0	633.0	6.4	35.4	4955.5
116	299.0	9.9	899.2	3.01	198350	242.0	634.0	5.8	35.4	5378.7
117	297.7	11.9	900	3.02	208420	249.0	603.0	6.3	35.4	6154.2
118	298.5	7.8	900	3.01	193250	248.0	633.0	6.4	38.2	4640.4
119	298.5	9.9	900.4	3.02	198350	242.0	634.0	5.8	38.2	5444.8
120	298.3	11.9	899.2	3.01	208420	249.0	603.0	6.3	38.2	6224.9
121	323.2	7.9	975	3.02	192330	544.0	725.0	5.7	34.4	10167.4
122	324.0	9.9	973.2	3	201220	542.0	719.0	6.1	34.4	11016.6
123	323.3	11.9	976.5	3.02	199540	542.0	724.0	6.2	34.4	12726.2
124	323.2	7.9	975.1	3.02	192330	544.0	725.0	5.7	40.0	10298.8
125	323.0	9.9	974.6	3.02	201220	542.0	719.0	6.1	40.0	9729.6
126	324.5	11.9	974.6	3	199540	542.0	724.0	6.2	40.0	12235.3
127	325.0	7.9	975.2	3	192330	544.0	725.0	5.7	43.0	10436.7
128	324.2	9.9	973.4	3	201220	542.0	719.0	6.1	43.0	13200.3
129	324.3	11.9	975.5	3.01	199540	542.0	724.0	6.2	43.0	13115.7
130	101.6	1.5	304.8	3	198000	470.0	735.4	3.5	30.0	478.0
131	101.6	1.5	304.8	3	198000	470.0	735.4	3.5	40.0	552.0
132	60.4	2.8	181.2	3	196000	296.0	708.0	6.0	36.4	358.0
133	60.4	2.8	181.2	3	196000	296.0	708.0	6.0	36.4	362.8
134	60.4	2.8	181.2	3	196000	296.0	708.0	6.0	85.8	495.5
135	60.4	2.8	181.2	3	196000	296.0	708.0	6.0	120.0	578.5
136	76.4	3.0	229.2	3	202000	258.0	709.0	4.0	36.4	489.3
137	76.4	3.0	229.2	3	202000	258.0	709.0	4.0	85.8	682.4
138	76.3	3.0	228.9	3	202000	258.0	709.0	4.0	85.8	694.4
139	76.3	3.0	228.9	3	202000	258.0	709.0	4.0	120.0	869.2
140	114.4	2.9	343.2	3	195000	293.0	678.0	7.0	36.4	864.1
141	114.4	3.0	343.2	3	195000	293.0	678.0	7.0	85.8	1240.2
142	114.5	2.9	343.5	3	195000	293.0	678.0	7.0	120.0	1766.7
143	165.2	3.0	495.6	3	201000	267.0	684.0	9.0	36.4	1438.3
144	165.4	3.0	496.2	3	201000	267.0	684.0	9.0	85.8	2312.2
145	165.3	3.0	495.9	3	201000	267.0	684.0	9.0	120.0	2699.3
146	60.4	2.9	151.3	2.5	188700	333.0	729.2	4.9	39.0	563.8
147	60.5	2.9	151	2.49	188700	333.0	729.2	4.9	39.0	581.2
148	60.5	2.9	151	2.5	188700	333.0	729.2	4.9	77.0	562.9
149	60.5	3.0	151	2.5	188700	333.0	729.2	4.9	77.0	543.4
150	60.6	2.9	151	2.49	188700	333.0	729.2	4.9	34.4	460.6
151	60.4	2.9	151	2.5	188700	333.0	729.2	4.9	34.4	462.6
152	60.5	2.9	151	2.5	188700	333.0	729.2	4.9	74.0	470.0
153	60.4	2.9	151	2.5	188700	333.0	729.2	4.9	74.0	487.1
154	76.4	3.1	190	2.49	202000	288.0	742.5	7.3	39.0	706.3
155	76.3	3.1	190	2.49	202000	288.0	742.5	7.3	39.0	636.3
156	76.3	3.1	190	2.49	202000	288.0	742.5	7.3	77.0	675.4
157	76.4	3.1	190	2.49	202000	288.0	742.5	7.3	34.4	595.1

158	76.4	3.1	190.3	2.49	202000	288.0	742.5	7.3	74.0	635.0
159	114.4	3.1	285	2.49	187900	320.0	699.9	6.1	39.0	945.4
160	114.4	3.1	285	2.49	187900	320.0	699.9	6.1	77.0	1184.3
161	114.5	3.1	285	2.49	187900	320.0	699.9	6.1	34.4	906.0
162	114.4	3.1	285	2.49	187900	320.0	699.9	6.1	74.0	1245.0
163	140.1	3.0	348	2.48	195300	318.0	686.7	6.3	39.0	1191.1
164	140.1	3.1	348	2.48	195300	318.0	686.7	6.3	77.0	1789.4
165	140.2	3.0	348	2.48	195300	318.0	686.7	6.3	34.4	1135.1
166	140.1	3.0	348	2.48	195300	318.0	686.7	6.3	34.4	1145.6
167	140.2	3.0	348	2.48	195300	318.0	686.7	6.3	74.4	1711.3
168	165.0	3.1	412	2.5	198100	300.0	714.9	9.0	39.0	1442.7
169	165.4	3.1	412	2.49	198100	300.0	714.9	9.0	77.0	2290.5
170	165.0	3.1	412	2.5	198100	300.0	714.9	9.0	34.4	1323.1
171	165.2	3.1	412	2.49	198100	300.0	714.9	9.0	74.4	2269.0
172	124.8	1.3	375.3	3.01	217000	496.0	777.0	3.2	54.5	1131.0
173	125.3	1.3	374.5	2.99	217000	496.0	777.0	3.2	54.5	1142.0
174	150.1	1.7	444.8	2.96	215000	493.0	780.0	3.2	54.5	1698.0
175	149.8	1.7	444.9	2.97	215000	493.0	780.0	3.2	54.5	1661.0
176	180.7	1.7	539.7	2.99	215000	493.0	780.0	3.2	54.5	2169.0
177	180.7	1.7	540.4	2.99	215000	493.0	780.0	3.2	54.5	2193.0
178	50.9	3.1	150	2.95	195000	228.2	562.1		35.8	235.0
179	101.9	2.8	400	3.93	195000	225.7	656.4		35.8	570.0
180	114.1	2.8	400	3.51	195000	280.7	617.8		35.8	766.0
181	168.4	3.2	400	2.38	195000	281.1	615.8	8.3	35.8	1449.0
182	101.2	2.8	400	3.95	195000	324.4	647.2	8.3	31.4	729.0
183	113.9	2.9	400	3.51	195000	270.3	579.4	8.3	31.4	800.0
184	168.2	3.2	400	2.38	195000	280.1	575.3	8.3	31.4	1522.0
185	114.3	3.1	290	2.54	189099	293.0	602.1	10	43.6	831.0
186	101.0	2.0	290	2.87	208228	357.0	690.3	9.21	43.6	600.0
187	101.0	1.5	290	2.87	204581	322.0	655.6	9.09	43.6	562.0
188	219.0	3.9	620	2.83	203500	269.3	710.3	9.1	35.6	2271.0
189	219.0	3.9	620	2.83	203500	269.3	710.3	9.1	35.6	2459.0
190	219.0	3.9	620	2.83	203500	269.3	710.3	9.1	35.6	2331.0
191	219.0	3.9	620	2.83	203500	269.3	710.3	9.1	33.1	2242.0
192	219.0	3.9	620	2.83	203500	269.3	710.3	9.1	33.1	2304.0
193	219.0	3.9	620	2.83	203500	269.3	710.3	9.1	33.1	2306.0
194	219.0	3.9	620	2.83	203500	269.3	710.3	9.1	33.8	2254.0
195	219.0	3.9	620	2.83	203500	269.3	710.3	9.1	33.8	2270.0
196	219.0	3.9	620	2.83	203500	269.3	710.3	9.1	33.8	2218.0
197	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	35.6	1082.0
198	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	35.6	1099.0
199	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	35.6	1116.0
200	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	33.1	1053.0
201	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	33.1	956.0
202	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	33.1	1040.0
203	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	33.8	1016.0
204	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	33.8	1023.0
205	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	33.8	990.0
206	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	52.6	1318.0
207	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	52.6	1317.0
208	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	45.8	1171.0
209	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	45.8	1174.0
210	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	41.7	1074.0
211	114.0	4.2	350	3.07	199500	346.1	769.3	5.9	41.7	1091.0