

Table S1 Pillar stability cases database.

Samples	A_1 (m)	A_2 (m)	A_3	A_4 (MPa)	A_5 (MPa)	Level
1	5.9	4	1.48	172	49.6	Stable
2	7.2	4	1.8	172	56.7	Stable
3	7.8	4	1.95	172	99.9	Unstable
4	4.8	4	1.2	172	77.9	Unstable
5	4.6	4	1.15	172	70.8	Unstable
6	3.5	4	0.88	172	70.8	Unstable
7	8.7	5	1.74	172	85	Unstable
8	7.6	4	1.9	172	91.8	Unstable
9	5.1	4	1.28	172	63.8	Unstable
10	12.1	4	3.03	172	91.8	Unstable
11	5.9	4	1.48	172	63.8	Unstable
12	12	4	3	172	42.5	Unstable
13	7.8	4	1.95	172	77.9	Unstable
14	4.6	4.5	1.02	172	93.5	Failed
15	5.6	4	1.4	172	93.5	Failed
16	6.3	4	1.58	172	93.5	Failed
17	5.4	5	1.08	172	93.5	Failed
18	4.7	5	0.94	172	93.5	Failed
19	3.9	4.5	0.87	172	93.5	Failed
20	5.8	4.5	1.29	172	93.5	Failed
21	4	4	1	172	93.5	Failed
22	5.9	4	1.48	172	105.4	Failed
23	5.5	4	1.38	172	93.5	Failed
24	5.7	4	1.43	172	105.4	Failed
25	5.2	4	1.3	172	98.6	Failed
26	5.3	4	1.33	172	91.8	Failed
27	4.8	5	0.96	172	88.4	Failed
28	7.1	4	1.78	172	98.6	Failed
29	4.3	4	1.08	172	93.5	Failed
30	3.1	5	0.62	172	93.5	Failed
31	24	52	0.46	265	38	Stable
32	21	39	0.54	176	26	Stable
33	27	40	0.68	176	28	Stable
34	30	44	0.68	265	40	Stable
35	30	40	0.75	176	33	Stable
36	30	40	0.75	176	29	Stable
37	45	53	0.85	200	51	Stable
38	21	24	0.88	176	29	Stable
39	21	21	1	100	31	Stable
40	21	21	1	100	26	Stable
41	32	28	1.14	90	30	Stable
42	15	12	1.25	176	37	Stable
43	15	12	1.25	176	33	Stable
44	24	18	1.33	72	36	Stable
45	33	23	1.43	316	75	Stable
46	12	8	1.5	215	28	Stable
47	33	20	1.65	121	55	Stable
48	17	10	1.7	310	46	Stable
49	15	7	2.14	215	29	Stable
50	24	11	2.18	148	66	Stable
51	33	15	2.2	316	76	Stable
52	20	8	2.5	310	46	Stable
53	17	6	2.83	72	31	Stable

54	35	12	2.92	148	63	Stable
55	21	5	4.2	72	39	Stable
56	18	4	4.5	72	48	Stable
57	24	52	0.46	265	72	Unstable
58	15	27	0.56	176	28	Unstable
59	27	46	0.59	265	59	Unstable
60	24	38	0.63	160	70	Unstable
61	30	44	0.68	265	82	Unstable
62	15	18	0.83	100	31	Unstable
63	25	28	0.89	90	32	Unstable
64	25	27	0.93	70	29	Unstable
65	15	15	1	176	43	Unstable
66	15	49	0.31	200	64	Failed
67	9	20	0.45	100	38	Failed
68	11	23	0.48	316	99	Failed
69	15	30	0.5	100	38	Failed
70	14	28	0.5	90	49	Failed
71	11	20	0.55	121	69	Failed
72	15	27	0.56	176	31	Failed
73	11	18	0.61	316	102	Failed
74	27	40	0.68	176	38	Failed
75	19	28	0.68	90	41	Failed
76	30	40	0.75	176	57	Failed
77	15	18	0.83	100	40	Failed
78	6.5	3.8	1.7	94	26	Stable
79	6.5	3.8	1.7	94	30	Stable
80	9.5	3.8	2.5	94	35	Stable
81	7.6	3.8	2	94	35	Stable
82	6.1	3.8	1.6	94	35	Stable
83	5.3	3.8	1.4	94	37	Stable
84	9.9	3.8	2.6	94	60	Stable
85	3	3.8	0.8	94	28	Unstable
86	3.8	3.8	1	94	34	Unstable
87	4.7	3.8	1.24	94	34	Unstable
88	4.9	3.8	1.3	94	35	Unstable
89	6.6	3.8	1.74	94	40	Unstable
90	5.7	3.8	1.5	94	47	Unstable
91	6.3	3.8	1.67	94	48	Unstable
92	5.3	3.8	1.4	94	48	Unstable
93	6.8	3.8	1.8	94	53	Unstable
94	3	3.8	0.8	94	54	Unstable
95	3.5	3.8	0.92	94	55	Unstable
96	4.6	3.8	1.2	94	56	Failed
97	3.4	3.8	0.9	94	48	Failed
98	2.3	3.8	0.6	94	48	Failed
99	2.9	3.8	0.76	94	50	Failed
100	4.8	3.8	1.26	94	53	Failed
101	5.3	3.8	1.4	94	55	Failed
102	3.8	3.8	1	94	55	Failed
103	3.6	3.8	0.96	94	55	Failed
104	4.6	3.8	1.2	94	55	Failed
105	6.1	3.8	1.6	94	58	Failed
106	5.7	3.8	1.5	94	58	Failed
107	3.8	3.8	1	94	58	Failed
108	1.9	3.8	0.5	94	58	Failed
109	3.8	3.8	1	94	59	Failed

110	7.6	3.8	2	94	59	Failed
111	3.8	3.8	1	94	59	Failed
112	8.6	3.8	2.27	94	60	Failed
113	2.3	3.8	0.6	94	60	Failed
114	4.6	3.8	1.2	94	63	Failed
115	4.6	3.8	1.2	94	54	Failed
116	3.5	3.8	0.92	94	55	Failed
117	5	3.8	1.32	94	55	Failed
118	4.9	3.8	1.3	94	56	Failed
119	5.3	3.8	1.4	94	63	Failed
120	5.7	3.8	1.5	94	63	Failed
121	3	3	1	210	34.5	Stable
122	3	3	1	210	44.1	Stable
123	6.1	5.5	1.11	210	26.2	Stable
124	3	3	1	210	52.4	Stable
125	3	3	1	210	51.7	Stable
126	6.1	5.5	1.11	210	27.6	Stable
127	3	3	1	210	58.6	Stable
128	3	3	1	210	64.8	Stable
129	6.1	6.1	1	210	31.7	Stable
130	6.1	5.5	1.11	210	33.1	Stable
131	5.5	5.5	1	210	37.2	Stable
132	6.1	4.3	1.43	210	52.4	Stable
133	12.2	6.1	2	210	40	Stable
134	6.7	6.1	1.1	210	34.5	Stable
135	6.1	4.3	1.43	210	52.4	Stable
136	6.1	4.3	1.43	210	55.2	Stable
137	5.8	5.5	1.06	210	44.1	Stable
138	6.1	6.1	1	210	49.7	Stable
139	6.1	2.4	2.5	210	52.4	Stable
140	6.1	2.4	2.5	210	54.5	Stable
141	6.1	2.4	2.5	210	59.3	Stable
142	4.6	2.7	1.67	210	72.4	Stable
143	6.1	2.7	2.22	210	86.9	Stable
144	3	3	1	210	78.6	Unstable
145	3	2.7	1.11	210	92.4	Unstable
146	3	2.7	1.11	210	104.8	Failed
147	3	2.7	1.11	210	108.3	Failed
148	4.6	3	1.5	210	127.6	Failed
149	3.8	6	0.63	240	68	Unstable
150	6	6	1	240	84	Unstable
151	6.2	6	1.03	240	74	Unstable
152	7.3	6	1.22	240	67	Unstable
153	4.7	6	0.78	240	95	Failed
154	7.5	6	1.25	240	83	Failed
155	7.5	6	1.25	240	100	Failed
156	8.5	6	1.42	240	82	Failed
157	10.5	6	1.75	240	92	Failed
158	10.7	18.3	0.58	215	9	Failed
159	10.7	18.3	0.58	215	9.4	Failed
160	10.7	18.3	0.58	215	10.3	Failed
161	15.2	27.4	0.56	153	12.6	Failed
162	10.7	18.3	0.58	215	12.8	Failed
163	12.2	27.4	0.44	150	17.2	Failed
164	8.5	15.8	0.54	150	17.2	Failed
165	12.2	27.4	0.44	150	17.3	Failed

166	7.9	9.8	0.81	160	19	Failed
167	12.8	7.3	1.73	160	17.4	Failed
168	12.5	15.2	0.82	160	17.8	Failed
169	6.1	12.2	0.49	160	19	Failed
170	6.7	12.2	0.54	160	20	Failed
171	3.7	8.5	0.43	215	24.1	Failed
172	8.2	9.1	0.9	160	25	Failed
173	5.5	7.3	0.75	160	27	Failed
174	12.2	15.8	0.77	165	8.4	Failed
175	12.2	15.8	0.77	165	7.6	Failed
176	10	11	0.91	61	0.14	Stable
177	9	11	0.82	61	0.14	Stable
178	12	10	1.2	61	1.29	Stable
179	8	11	0.73	61	0.67	Stable
180	11	23.5	0.47	61	1.33	Stable
181	17	19	0.89	61	1.4	Stable
182	14	13.25	1.06	61	1.43	Stable
183	19	13.5	1.41	61	1.6	Stable
184	23	14.25	1.61	61	4.97	Stable
185	12	20.25	0.59	61	4.56	Failed
186	19	19	1	61	6.45	Unstable
187	17	19	0.89	61	7.06	Failed
188	12	14	0.86	61	1.37	Stable
189	10	15	0.67	61	2.72	Stable
190	16	14.5	1.1	61	4.02	Stable
191	9	17.75	0.51	61	2.75	Stable
192	11	17.75	0.62	61	2.49	Stable
193	14	12.5	1.12	61	8.66	Unstable
194	14	15.75	0.89	61	3.52	Stable
195	10	17	0.59	61	3.53	Unstable
196	17	15	1.13	61	2.64	Stable
197	19	14	1.36	61	3.67	Stable
198	18	12.25	1.47	61	7.93	Unstable
199	13	15	0.87	61	4.22	Stable
200	16	16.25	0.98	61	6.32	Unstable
201	13	16.5	0.79	61	5.11	Unstable
202	17	14	1.21	61	6.05	Stable
203	16	14	1.14	61	5.8	Unstable
204	19	12.75	1.49	61	6.99	Stable
205	19	24	0.79	61	6.82	Unstable
206	16	24	0.67	61	5.55	Unstable
207	27	13.5	2	61	8.97	Stable
208	17	16	1.06	61	3.9	Stable
209	15	16	0.94	61	4.79	Stable
210	19	16	1.19	61	2.73	Stable
211	14	16	0.88	61	4.92	Stable
212	15	16	0.94	61	5.12	Unstable
213	16.5	12	1.38	104	2.26	Stable
214	17.25	13	1.33	104	2.7	Stable
215	18.5	15	1.23	104	1.98	Stable
216	17.25	8.5	2.03	104	3.01	Stable
217	17.5	11	1.59	104	3.19	Stable
218	16.25	11	1.48	104	4.27	Stable
219	12.75	17	0.75	104	1.37	Stable
220	17.5	14	1.25	104	3.41	Stable
221	17.25	19	0.91	104	3.47	Stable

222	18.75	26	0.72	104	2.25	Stable
223	12.5	15.5	0.81	104	1.42	Stable
224	13	61	0.21	104	0.98	Stable
225	17.25	12	1.44	104	6.66	Unstable
226	15	32	0.47	104	0.39	Unstable
227	14.5	23	0.63	104	2.93	Stable
228	14	14	1	104	8.77	Unstable
229	12	15	0.8	104	4.96	Unstable
230	16	18	0.89	104	2.87	Stable
231	19.25	15.5	1.24	104	5.21	Stable
232	8	21.5	0.37	104	1.56	Stable
233	7	21	0.33	104	2.57	Failed
234	14.25	18	0.79	104	5.33	Unstable
235	13	17	0.76	104	16.67	Stable
236	7.75	11	0.7	104	4.57	Unstable
