

Appendix

Table S1 Loading sequence of T0194 - 2019

Loading sequence	Confining pressure/kPa	Contact stress/kPa	Cyclic stress/kPa
1	60	12	30
2	45	9	30
3	30	6	30
4	15	3	30
5	60	12	55
6	45	9	55
7	30	6	55
8	15	3	55
9	60	12	75
10	45	9	75
11	30	6	75
12	15	3	75
13	60	12	105
14	45	9	105
15	30	6	105
16	15	3	105

Table S2 Loading sequence of the 96-level dynamic triaxial test considering the influence of dynamic and static stresses

Sequence	Confining pressure/ kPa	Cyclic stress/ kPa	Contact stress (multiple of confining pressure)						Number of loadings
			0.2 $k_0=0.83$	0.3 $k_0=0.76$	0.5 $k_0=0.66$	0.7 $k_0=0.59$	1.0 $k_0=0.50$	1.5 $k_0=0.40$	
0	30	55	6	9	15	21	30	45	1000/100
1	60	30	12	18	30	42	60	90	100
2	45	30	9	13.5	22.5	31.5	45	67.5	100
3	30	30	6	9	15	21	30	45	100
4	15	30	3	4.5	7.5	10.5	15	22.5	100
5	60	55	12	18	30	42	60	90	100
6	45	55	9	13.5	22.5	31.5	45	67.5	100
7	30	55	6	9	15	21	30	45	100
8	15	55	3	4.5	7.5	10.5	15	22.5	100
9	60	75	12	18	30	42	60	90	100
10	45	75	9	13.5	22.5	31.5	45	67.5	100
11	30	75	6	9	15	21	30	45	100
12	15	75	3	4.5	7.5	10.5	15	22.5	100
13	60	105	12	18	30	42	60	90	100
14	45	105	9	13.5	22.5	31.5	45	67.5	100
15	30	105	6	9	15	21	30	45	100
16	15	105	3	4.5	7.5	10.5	15	22.5	100

Table S3 24-stage simplified loading sequence considering dynamic and static separation^[4]

Sequence No	Confining stress/kPa	Vertical resultant force/kPa	Contact stress/kPa	Cyclic stress/kPa	Loading times	Remarks
0	60	85.0	30.0	55.0	1000	Preload Contact stress is 0.5 times of confining pressure
1	60	117.0	12.0	105.0	100	Contact stress is 0.2 times of confining pressure
2	45	114.0	9.0	105.0	100	
3	30	111.0	6.0	105.0	100	
4	15	108.0	3.0	105.0	100	
5	60	93.0	18.0	75.0	100	Contact stress is 0.3 times of confining pressure
6	45	88.5	13.5	75.0	100	
7	30	84.0	9.0	75.0	100	
8	15	79.5	4.5	75.0	100	
9	60	85.0	30.0	55.0	100	Contact stress is 0.5 times of confining pressure
10	45	77.5	22.5	55.0	100	
11	30	70.0	15.0	55.0	100	
12	15	62.5	7.5	55.0	100	
13	60	72.0	42.0	30.0	100	Contact stress is 0.7 times of confining pressure
14	45	61.5	31.5	30.0	100	
15	30	51.0	21.0	30.0	100	
16	15	40.5	10.5	30.0	100	
17	60	80.0	60.0	20.0	100	Contact stress is 1.0 times of confining pressure
18	45	65.0	45.0	20.0	100	
19	30	50.0	30.0	20.0	100	
20	15	35.0	15.0	20.0	100	
21	60	105.0	90.0	15.0	100	Contact stress is 1.5 times of confining pressure
22	45	82.5	67.5	15.0	100	
23	30	60.0	45.0	15.0	100	
24	15	37.5	22.5	15.0	100	
total					3400	times

Table S4 28 - stage loading sequence for subgrade soil considering static deviator stress levels^[19]

Loading sequence	Confining pressure/kPa	Contact stress/kPa	Cyclic stress/kPa
1	20	15	10
2	40	15	10
3	60	15	10
4	80	15	10
5	20	15	25
6	40	15	25
7	60	15	25
8	80	15	25
9	20	15	40
10	40	15	40
11	60	15	40
12	80	15	40
13	20	15	55
14	40	15	55
15	60	15	55
16	80	15	55
17	20	35	40
18	40	35	40
19	60	35	40
20	80	35	40
21	20	55	25
22	40	55	25
23	60	55	25
24	80	55	25
25	20	75	10
26	40	75	10
27	60	75	10
28	80	75	10