

Particle gradation of silty sand
First group

Type B densitometer method

Temperature (°C)	$\rho_{w20}(\text{g/cm}^3)$	C's	V (mL)	m_d	R_2	m'_T	n'_w	C'_D	X	G_s	K	$L_t(\text{cm})$	t(s)	d(mm)
21	0.998201	1.588	1000	30	1.012	0.0002	0.0002	0.0004	63.4057	2.7	0.1033	13.09	30	0.0682
21	0.998201	1.588	1000	30	1.009	0.0002	0.0002	0.0004	47.5543	2.7	0.1033	15.01	60	0.0517
21	0.998201	1.588	1000	30	1.0062	0.0002	0.0002	0.0004	32.7596	2.7	0.1033	16.802	120	0.0387
21	0.998201	1.588	1000	30	1.003	0.0002	0.0002	0.0004	15.8514	2.7	0.1033	18.85	300	0.0259
21	0.998201	1.588	1000	30	1.0018	0.0002	0.0002	0.0004	9.5109	2.7	0.1033	19.618	900	0.0153
21	0.998201	1.588	1000	30	1.0014	0.0002	0.0002	0.0004	7.3973	2.7	0.1033	19.874	1800	0.0109
21.5	0.998201	1.588	1000	30	1.001	0.0003	0.0002	0.0004	5.8122	2.7	0.1026	20.13	3600	0.0077
21.5	0.998201	1.588	1000	30	1.0008	0.0003	0.0002	0.0004	4.7554	2.7	0.1026	20.258	7200	0.0054
22	0.998201	1.588	1000	30	1.0008	0.0004	0.0002	0.0004	5.2838	2.7	0.1019	20.258	10800	0.0044
20.5	0.998201	1.588	1000	30	1.0008	0.0001	0.0002	0.0004	3.6987	2.7	0.1038	20.258	86400	0.0016

Sieve analysis method

Total mass (g)		500		Particle size (mm)		Percentage	
Sieve diameter (mm)	Mass on sieve (g)	Percentage of soil smaller than a certain particle size		Particle size (mm)	Percentage		
2	12.9	97.24		0.0682	18.9177		
1	4.01	96.44		0.0517	14.1883		
0.5	9.36	94.57		0.0387	9.7742		
0.25	44.43	85.68		0.0259	4.7294		
0.1	243.39	37.01		0.0153	2.8377		
0.075	35.85	29.84		0.0109	2.2071		
< 0.075	149.18			0.0077	1.7341		
				0.0054	1.4188		
				0.0044	1.5765		
				0.0016	1.1035		

Particle size of densimeter method and mass percentage of soil smaller than a certain particle size

Group 2

Type B densitometer method

Temperature (°C)	$\rho_{w20}(\text{g/cm}^3)$	C's	V (mL)	m_d	R_2	m'_T	n'_w	C'_D	X	G_s	K	$L_t(\text{cm})$	t(s)	d(mm)
21	0.998201	1.588	1000	30	1.0124	0.0002	0.0002	0.0004	65.5193	2.7	0.1033	12.834	30	0.0676
21	0.998201	1.588	1000	30	1.01	0.0002	0.0002	0.0004	52.8381	2.7	0.1033	14.37	60	0.0506
21	0.998201	1.588	1000	30	1.0044	0.0002	0.0002	0.0004	23.2488	2.7	0.1033	17.954	120	0.0400
20.5	0.998201	1.588	1000	30	1.0034	0.0001	0.0002	0.0004	17.4366	2.7	0.1038	18.594	300	0.0258
20.5	0.998201	1.588	1000	30	1.0018	0.0001	0.0002	0.0004	8.9825	2.7	0.1038	19.618	900	0.0153
20.5	0.998201	1.588	1000	30	1.0014	0.0001	0.0002	0.0004	6.8690	2.7	0.1038	19.874	1800	0.0109
21	0.998201	1.588	1000	30	1.0014	0.0002	0.0002	0.0004	7.3973	2.7	0.1033	19.874	3600	0.0077
21	0.998201	1.588	1000	30	1.0012	0.0002	0.0002	0.0004	6.3406	2.7	0.1033	20.002	7200	0.0054
22	0.998201	1.588	1000	30	1.0008	0.0004	0.0002	0.0004	5.2838	2.7	0.1019	20.258	10800	0.0044
20.5	0.998201	1.588	1000	30	1.0012	0.0001	0.0002	0.0004	5.8122	2.7	0.1038	20.002	86400	0.0016

Sieve analysis method

Total mass (g)		500			
Sieve diameter (mm)	Mass on sieve (g)	smaller than a certain particle size		Particle size (mm)	Percentage
2	12.78	97.25		0.0676	17.4347
1	5.21	96.21		0.0506	14.0602
0.5	11.47	93.92		0.0400	6.1865
0.25	48.39	84.24		0.0258	4.6399
0.1	247.42	34.75		0.0153	2.3902
0.075	40.72	26.61		0.0109	1.8278
< 0.075	133.05			0.0077	1.9684
				0.0054	1.6872
				0.0044	1.4060
				0.0016	1.5466

Particle size of densimeter method and mass percentage of soil smaller than a certain particle size

Group 3

Type B densitometer method

Temperature (°C)	$\rho_{w20}(\text{g/cm}^3)$	C's	V (mL)	m_d	R_2	m'_T	n'_w	C'_D	X	G_s	K	$L_t(\text{cm})$	t(s)	d(mm)
21	0.998201	1.588	1000	30	1.012	0.0002	0.0002	0.0004	63.4057	2.7	0.1033	13.09	30	0.0682
21	0.998201	1.588	1000	30	1.008	0.0002	0.0002	0.0004	42.2705	2.7	0.1033	15.65	60	0.0528
21	0.998201	1.588	1000	30	1.0058	0.0002	0.0002	0.0004	30.6461	2.7	0.1033	17.058	120	0.0389
21	0.998201	1.588	1000	30	1.0028	0.0002	0.0002	0.0004	14.7947	2.7	0.1033	18.978	300	0.0260
20.5	0.998201	1.588	1000	30	1.0016	0.0001	0.0002	0.0004	7.9257	2.7	0.1038	19.746	900	0.0154
21.5	0.998201	1.588	1000	30	1.0012	0.0003	0.0002	0.0004	6.8690	2.7	0.1026	20.002	1800	0.0108
21	0.998201	1.588	1000	30	1.0012	0.0002	0.0002	0.0004	6.3406	2.7	0.1033	20.002	3600	0.0077
21	0.998201	1.588	1000	30	1.0008	0.0002	0.0002	0.0004	4.2270	2.7	0.1033	20.258	7200	0.0055
22	0.998201	1.588	1000	30	1.0006	0.0004	0.0002	0.0004	4.2270	2.7	0.1019	20.386	10800	0.0044
20.5	0.998201	1.588	1000	30	1.0008	0.0001	0.0002	0.0004	3.6987	2.7	0.1038	20.258	86400	0.0016

Sieve analysis method

Total mass (g)			Particle size of densimeter method and mass percentage of soil smaller than a certain particle size		
500					
Sieve diameter (mm)	Mass on sieve (g)	smaller than a certain particle size	Particle size (mm)	Percentage	
2	12	97.33		0.0682	18.7630
1	3.48	96.63		0.0528	12.5087
0.5	8.47	94.94		0.0389	9.0688
0.25	42.09	86.52		0.0260	4.3780
0.1	242.72	37.98		0.0154	2.3454
0.075	41.92	29.59		0.0108	2.0327
< 0.075	147.96			0.0077	1.8763
				0.0055	1.2509
				0.0044	1.2509
				0.0016	1.0945

Unconfined compressive strength test

Disposable protective clothing related

Compressive strength (Kpa)

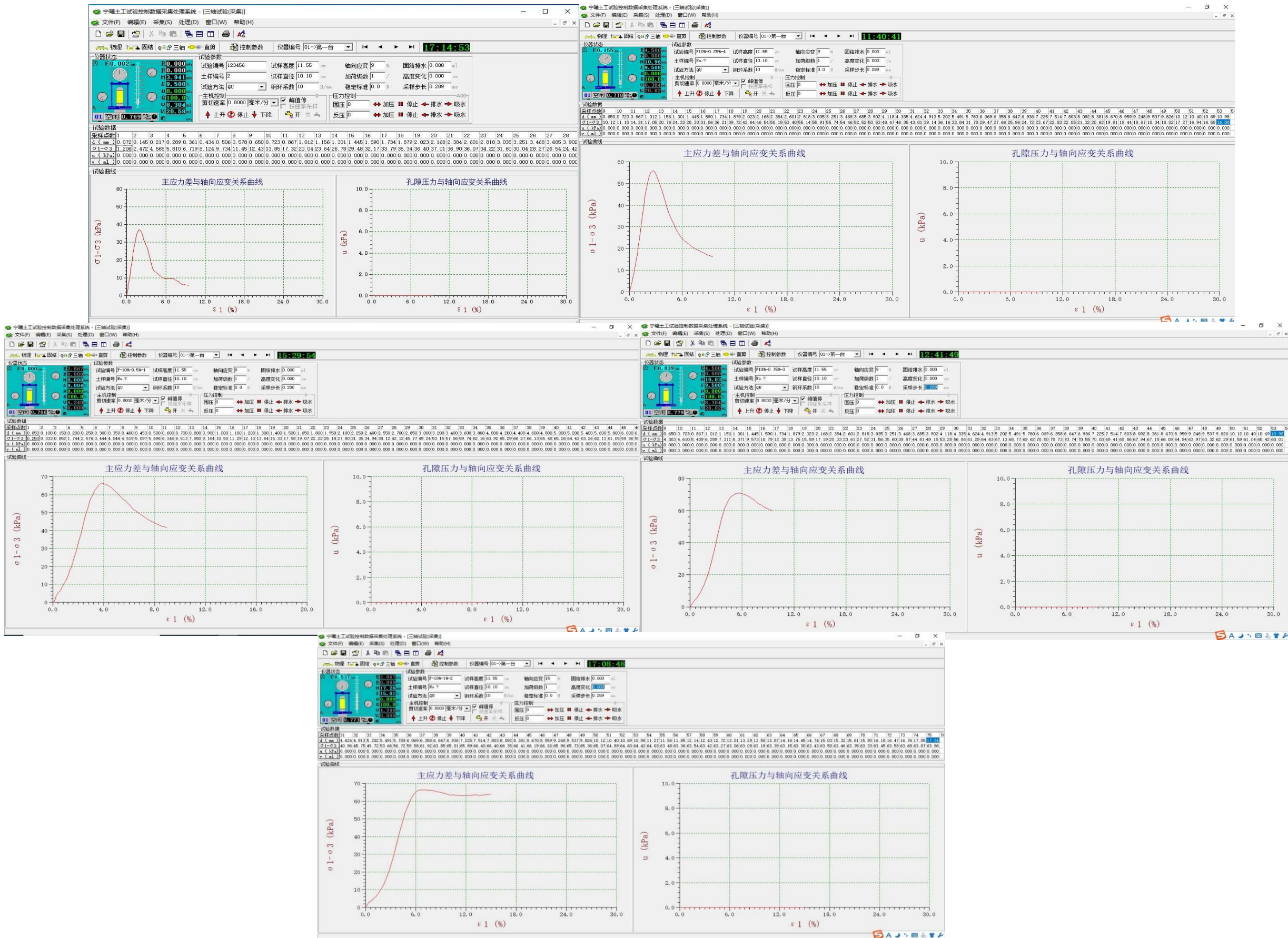
Moisture content 6%				
	First	The second	Third	
0%	46.22	40.03	43.33	
DPC 0.25%	59.13	55.42	63.65	
DPC 0.5%	64.13	65.38	70.26	
DPC 0.75%	66.02	51.69	61.36	
Moisture content 8%				
	First	The second	Third	
0%	42.84	43.72	41.6	
DPC 0.25%	68.72	59.13	62.2	
DPC 0.5%	68.02	69.58	69.86	
DPC 0.75%	72.3	67.27	68.14	
Moisture content 10%				
	First	The second	Third	
0%	37.01	37.11	32.91	
DPC 0.25%	60.45	55.95	53.05	
DPC 0.5%	66.3	67.32	75.83	
DPC 0.75%	65.79	70.79	72.78	
DPC 1%	67.95	66.41	66.79	

Disposable Nitrile Gloves related

Compressive strength (Kpa)

Moisture content 6%				
	First	The second	Third	
0%	46.22	40.03	43.33	
DNG 0.5%	44.5	55.66	57.1	
DNG 1%	47.76	43.77	42.42	
DNG 1.5%	38.84	39.6	31.7	
Moisture content 8%				
	First	The second	Third	
0%	42.84	43.72	41.6	
DNG 0.5%	66.03	61.49	62.31	
DNG 1%	48.04	42.23	45.63	
DNG 1.5%	38.93	38.24	35.67	
Moisture content 10%				
	First	The second	Third	
0%	37.01	37.11	32.91	
DNG 0.5%	45.77	47.28	45.08	
DNG 1%	37.85	40.24	38.8	
DNG 1.5%	37.2	40.96	34.91	

Some pictures of actual test data



Penetration test

Disposable protective clothing related

Permeability coefficient

Moisture content 6%

	First	The seconc	Third
0%	1.E-04	1.E-04	1.E-04
DPC 0.25%	9.E-05	9.E-05	8.E-05
DPC 0.5%	9.E-05	9.E-05	7.E-05
DPC 0.75%	1.E-04	5.E-05	5.E-05

Moisture content 8%

	First	The seconc	Third
0%	9.E-05	7.E-05	7.E-05
DPC 0.25%	8.E-05	7.E-05	7.E-05
DPC 0.5%	7.E-05	8.E-05	7.E-05
DPC 0.75%	6.E-05	6.E-05	6.E-05

Moisture content 10%

	First	The seconc	Third
0%	8.E-05	9.E-05	8.E-05
DPC 0.25%	8.E-05	9.E-05	9.E-05
DPC 0.5%	6.E-05	6.E-05	7.E-05
DPC 0.75%	7.E-05	6.E-05	6.E-05

Disposable Nitrile Gloves related

Permeability coefficient

Moisture content 6%

	First	The second	Third
0%	1.E-04	1.E-04	1.E-04
DNG 0.5%	9.E-05	9.E-05	9.E-05
DNG 1%	6.E-05	6.E-05	6.E-05
DNG 1.5%	5.E-05	1.E-04	5.E-05

Moisture content 8%

	First	The second	Third
0%	9.E-05	7.E-05	7.E-05
DNG 0.5%	5.E-05	5.E-05	5.E-05
DNG 1%	5.E-05	4.E-05	5.E-05
DNG 1.5%	4.E-05	3.E-05	3.E-05

Moisture content 10%

	First	The second	Third
0%	8.E-05	9.E-05	8.E-05
DNG 0.5%	1.E-04	1.E-04	1.E-04
DNG 1%	5.E-05	5.E-05	5.E-05
DNG 1.5%	4.E-05	4.E-05	3.E-05

Some pictures of actual test data

