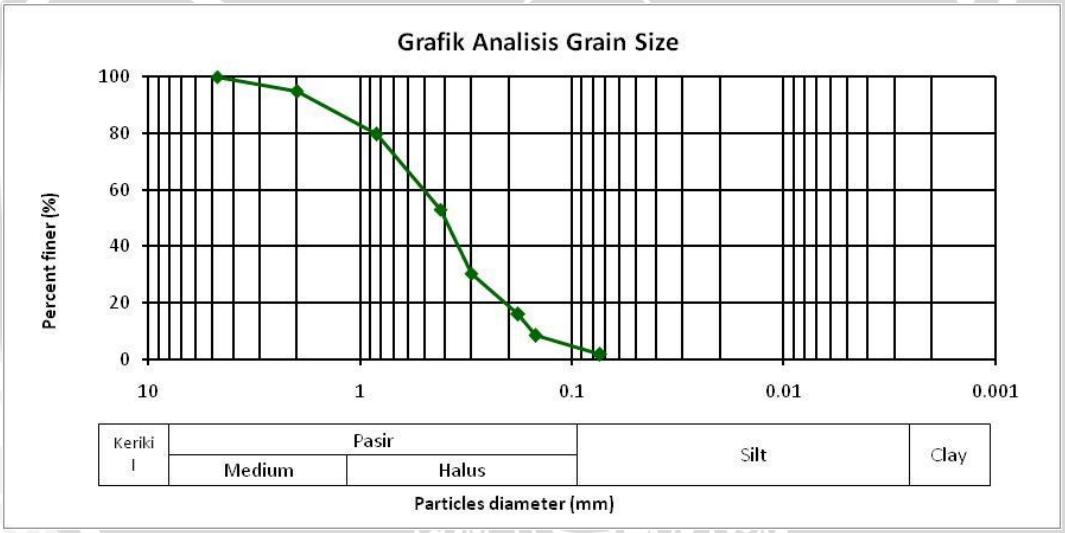
Lampiran 1

Hasil Analisis Gradasi Butiran Tanah

Nomor Ayakan	Diameter Ayakan (mm)	Berat Tertahan (gr)	Berat Kumulatif (gr)	Persen Tertahan (%)	Persen Lolos (%)
No. 4	4.75	0.0	0	0.00	100.00
No. 10	2	26.0	26	5.22	94.78
No. 20	0.84	75.9	101.9	20.44	79.56
No. 40	0.42	132.0	233.9	46.92	53.08
No. 50	0.3	112.2	346.1	69.43	30.57
No. 80	0.18	72.5	418.6	83.97	16.03
No. 100	0.149	37.5	456.1	91.49	8.51
No. 200	0.074	33.3	489.4	98.17	1.83
PAN		9.1	498.5	100.00	0.00



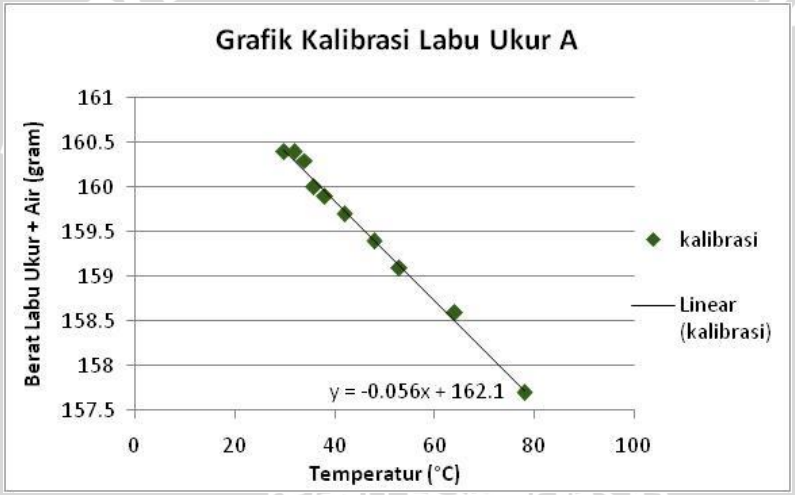
$$Cu = \frac{D60}{D10} = \frac{0.53}{0.17} = 3.12$$

$$Cc = \frac{D30^2}{D60\ x\ D10} = \frac{0.31^2}{0.53\ x\ 0.17} = 1.07$$

Lampiran 2

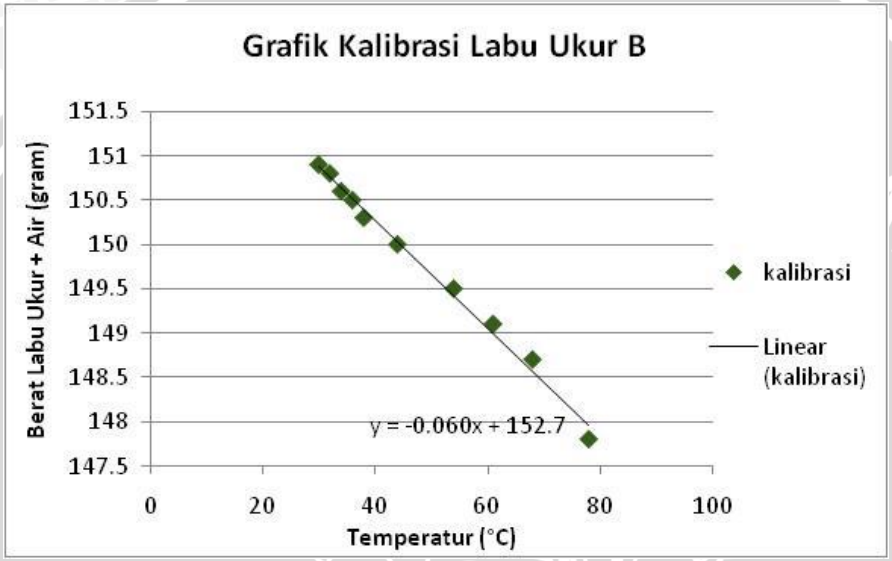
Hasil Analisis Spesifik Gravity Tanah

Labu Ukur	A									
No. Pemeriksaan	1	2	3	4	5	6	7	8	9	10
Temperatur (°C)	78	64	53	48	42	38	36	34	32	30
Berat Labu Ukur + Air (gram)	157.7	158.6	159.1	159.4	159.7	160	160	160.3	160.4	160.4



Labu Ukur		A									
Berat Labu Ukur	gram	52.2									
Berat Tanah Kering (Ws)	gram	20									
Berat Labu Ukur + Air + Tanah (W1)	gram	170.5	170.9	171.2	171.9	172.3	172.6	172.7	173.1	173.4	173.4
Suhu	gram	82	76	70	62	53	45	42	37	34	30
Berat Labu Ukur + Air (W2)	(°C)	157.502	157.839	158.176	158.626	159.131	159.581	159.750	160.031	160.199	160.424
Berat Jenis Air (Gt)	gram/cm³	0.971	0.974	0.978	0.982	0.986	0.99	0.992	0.993	0.994	0.995
Berat Jenis Tanah (Gs)	gram/cm³	2.774	2.807	2.804	2.920	2.887	2.836	2.814	2.866	2.924	2.833
Rata-rata Berat Jenis	gram/cm³	2.846									

Labu Ukur	B									
No. Pemeriksaan	1	2	3	4	5	6	7	8	9	10
Temperatur (°C)	78	68	61	54	44	38	36	34	32	30
Berat Labu Ukur + Air (gram)	147.8	148.7	149.1	149.5	150	150	150.5	150.6	150.8	150.9



Labu Ukur		B									
Berat Labu Ukur	gram	50.1									
Berat Tanah Kering (Ws)	gram	20									
Berat Labu Ukur + Air + Tanah (W1)	gram	160.8	161.3	161.5	162	162.2	162.6	163.1	163.3	163.5	163.7
Suhu	gram	82	75	71	64	61	50	45	40	33	30
Berat Labu Ukur + Air (W2)	(°C)	147.723	148.148	148.390	148.815	148.997	149.665	149.969	150.272	150.697	150.879
Berat Jenis Air (Gt)	gram/cm³	0.971	0.975	0.977	0.981	0.983	0.988	0.99	0.992	0.995	0.995
Berat Jenis Tanah (Gs)	gram/cm³	2.805	2.848	2.836	2.879	2.892	2.797	2.883	2.846	2.765	2.772
Rata-rata Berat Jenis	gram/cm³	2.832									

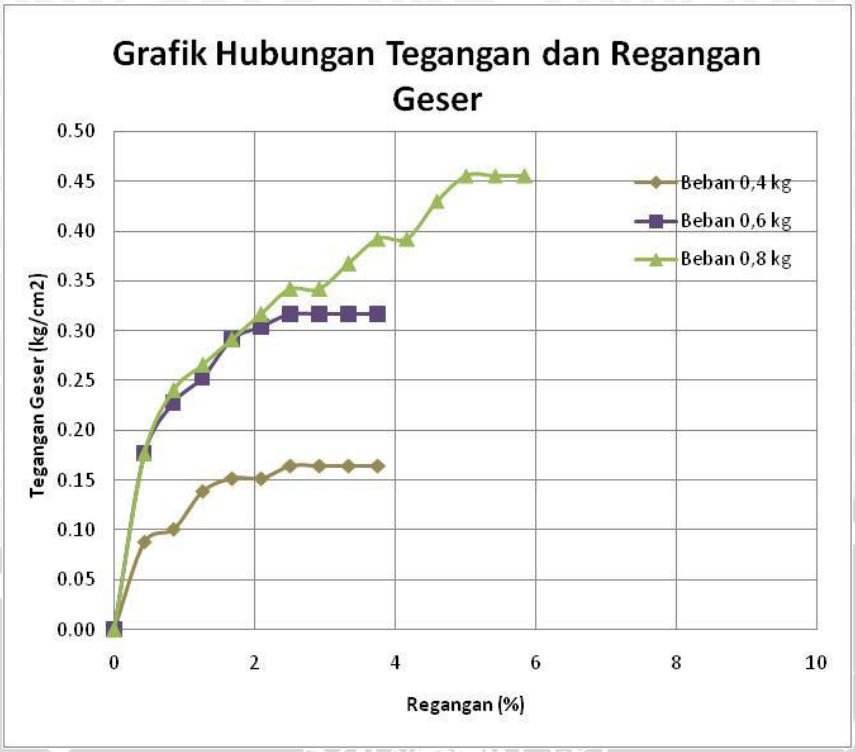
Lampiran 3

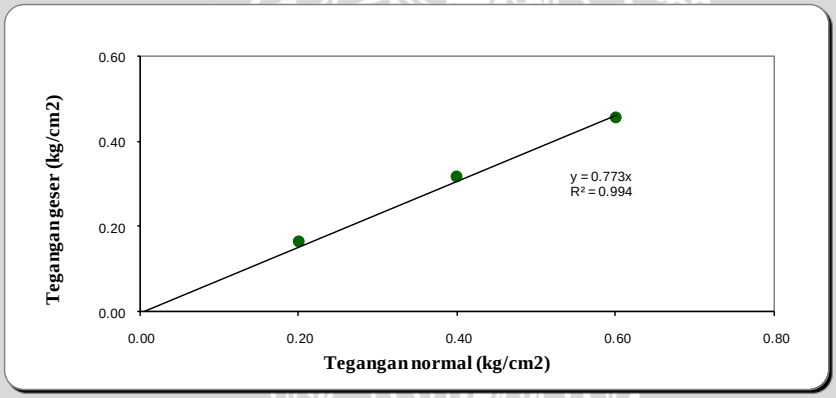
Hasil Analisis Uji Geser Langsung (Direct Shear)

Data :

Kalibrasi alat : 0,358 Tinggi Sampel : 2 cm Diameter Sampel : 6 cm Luas Sampel : 28,274 cm^2

NORMAL FORCE	P1 = 0.4 kg			P2 = 0.8 kg			P3 = 1.2 kg			
NORMAL STRESS	s1 = 0.20 kg/cm^2			s2 = 0.40 kg/cm^2			s3 = 0.60 kg/cm^2			
STRAIN	DIAL READING	SHEAR FORCE	SHEAR STRESS	DIAL READING	SHEAR FORCE	SHEAR STRESS	DIAL READING	SHEAR FORCE	SHEAR STRESS	ΔL / L0
0	0	0	0	0	0	0	0	0	0	0.00
25	7.0	2.506	0.089	14.0	5.012	0.177	14.0	5.012	0.177	0.42
50	8.0	2.864	0.101	18.0	6.444	0.228	19.0	6.802	0.241	0.83
75	11.0	3.938	0.139	20.0	7.160	0.253	21.0	7.518	0.266	1.25
100	12.0	4.296	0.152	23.0	8.234	0.291	23.0	8.234	0.291	1.67
125	12.0	4.296	0.152	24.0	8.592	0.304	25.0	8.950	0.317	2.08
150	13.0	4.654	0.165	25.0	8.950	0.317	27.0	9.666	0.342	2.50
175	13.0	4.654	0.165	25.0	8.950	0.317	27.0	9.666	0.342	2.92
200	13.0	4.654	0.165	25.0	8.950	0.317	29.0	10.382	0.367	3.33
225	13.0	4.654	0.165	25.0	8.950	0.317	31.0	11.098	0.393	3.75
250		0.000	0.000				31.0	11.098	0.393	4.17
275		0.000	0.000				34.0	12.172	0.431	4.58
300		0.000	0.000				36.0	12.888	0.456	5.00
325		0.000	0.000				36.0	12.888	0.456	5.42
350		0.000	0.000				36.0	12.888	0.456	5.83
375		0.000	0.000				36.0	12.888	0.456	6.25
400		0	0		0.0000	0.0000		0.0000	0.0000	
425		0	0		0.0000	0.0000				
450		0	0		0	0				





C	**=**	**0.0000**	kg/cm2
∅	**=**	**33.007**	**°**

Lampiran 4

Hasil Analisis Uji Pemadatan Standar

Berat Mould : 4260 kg

Diameter Mould : 10,16 cm

Tinggi Sampel : 11,63 cm

Kadar Air

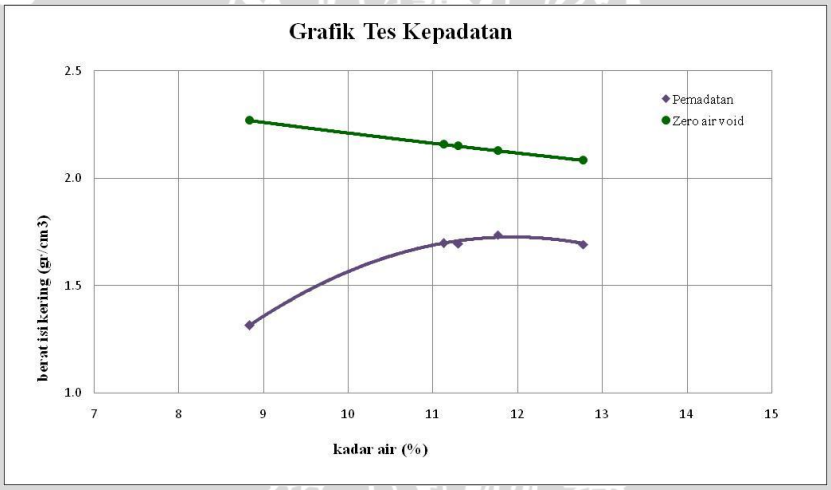
Penambahan air (ml)	264			330			360			390			420		
Lapisan	Atas	Tengah	Bawah	Atas	Tengah	Bawah	Atas	Tengah	Bawah	Atas	Tengah	Bawah	Atas	Tengah	Bawah
Cawan No.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Berat cawan + berat tanah basah	25.50	29.90	25.80	23.90	30.70	29.20	22.20	36.70	27.20	25.20	29.10	30.00	37.80	37.40	44.50
Berat cawan + berat tanah kering	24.10	27.90	24.00	22.30	28.30	26.50	20.70	32.80	25.10	23.50	26.30	27.20	34.60	33.70	39.80
Berat air	1.40	2.00	1.8	1.6	2.4	2.7	1.5	3.9	2.1	1.7	2.8	2.8	3.20	3.70	4.7
Berat cawan	5.70	5.70	5.80	5.70	5.60	6.00	4.00	4.30	6.40	5.70	4.20	5.80	5.90	6.10	5.70
Berat tanah kering	18.40	22.20	18.2	16.6	22.7	20.5	16.7	28.5	18.7	17.8	22.1	21.4	28.70	27.60	34.1
Kadar air w%	7.61	9.01	9.89	9.64	10.57	13.17	8.98	13.68	11.23	9.55	12.67	13.08	11.15	13.41	13.78
Rata-rata Kadar Air %	8.8			11.1			11.3			11.8			12.8		

Kepadatan

Penambahan Air		264	330	360	390	420
Berat tanah basah +cetakan	gram	5610	6040	6040	6090	6060
Berat cetakan	gram	4260	4260	4260	4260	4260
Berat tanah basah	gram	1350	1780	1780	1830	1800
Volume cetakan	cm3	943.50	943.50	943.50	943.50	943.50
Berat isi basah (γw)	gr/cm^3	1.431	1.887	1.887	1.940	1.908
Berat isi kering (γd)	gr/cm^3	1.315	1.698	1.695	1.735	1.692

Zero Air Void

Penambahan Air	ml	264	330	360	390	420
Kadar air (wc)	%	8.84	11.13	11.30	11.77	12.78
Gs	gr/cm^3	2.839	2.839	2.839	2.839	2.839
Berat jenis air (gw)	gr/cm^3	1	1	1	1	1
ZAV	gr/cm^3	2.270	2.158	2.150	2.128	2.083



Lampiran 5

Hasil Analisis Pemadatan Model Lereng

γ_d rencana : 1,315 gr/cm^3 = 1315 kg/m^3

Luas box : (Panjang box *x* Lebar box) = 0,98 m *x* 1,15 m = 1,13 m^2

Berat tanah untuk tinggi rencana 10 cm : 1315*x* 0,113 = 148,595 kg

Berat tanah untuk tinggi rencana 3,6 cm : 1315 *x* 0,041 = 53,915 kg

Berat tanah untuk tinggi rencana 3,2 cm : 1315 *x* 0,036 = 47,34 kg

Berat galian (gram)	800
Berat pasir+kerucut (gram)	5900
Berat sisa pasir di kerucut (gram)	5120
Tanah di pelat (gram)	172
Berat isi kering lapangan	1.316
Berat isi kering maksimal di laboratorium	1.735
Rc (%)	75.84

Lampiran 6

Hasil Pengujian Kadar air dan Kepadatan Pasir pada Model Lereng dengan Rasio Jarak Pondasi ke Tepi Lereng dengan Lebar Pondasi sebesar Satu (d/B=1)

Lereng Tanpa Perkuatan B = 4 cm ; α = 46°

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Berat Cawan + Tanah Basah	gram	21.30	21.40	21.20	21.40	20.80	21.40	21.70	20.10	20.10	21.20	19.80	21.00	21.80	21.60	21.30	21.40	21.40	21.50	19.60	19.30	20.10
Berat Cawan + Tanah Kering	gram	19.90	20.00	19.90	20.10	19.50	20.10	20.40	18.80	18.80	20.00	18.60	19.80	20.50	20.20	20.00	20.20	20.20	20.20	18.40	18.10	18.80
Berat Cawan	gram	5.7	5.7	5.6	5.7	5.4	5.9	6	4.2	4.2	5.7	4.2	5.6	6	5.7	5.6	5.7	5.8	5.6	4.1	3.9	4
Berat Tanah Kering	gram	14.2	14.3	14.3	14.4	14.1	14.2	14.4	14.6	14.6	14.3	14.4	14.2	14.5	14.5	14.4	14.5	14.4	14.6	14.3	14.2	14.8
Berat Air	gram	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.3	1.4	1.3	1.2	1.2	1.3	1.2	1.2	1.3
Kadar Air	%	9.86	9.79	9.09	9.03	9.22	9.15	9.03	8.90	8.90	8.39	8.33	8.45	8.97	9.66	9.03	8.28	8.33	8.90	8.39	8.45	8.78
Kadar Air Rata-Rata	%	8.90																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.50	18.70	18.40	18.50	18.70	18.40	18.50	18.70	18.40	18.50	18.30	18.40	18.50	18.70	18.40	18.50	18.30	18.40	18.50	18.30	18.40
Berat Tanah Basah + Ring	gr	34.10	34.40	34.00	34.20	34.10	33.90	34.20	34.60	34.30	34.00	33.90	33.80	34.30	34.60	34.10	34.20	33.90	34.30	34.00	33.70	34.50
Berat Tanah Basah	gr	15.60	15.70	15.60	15.70	15.40	15.50	15.70	15.90	15.90	15.50	15.60	15.40	15.80	15.90	15.70	15.70	15.60	15.90	15.50	15.40	16.10
Soil Unit Weight	gr/cm^3	1.44	1.45	1.44	1.45	1.43	1.43	1.45	1.47	1.47	1.43	1.44	1.43	1.46	1.47	1.45	1.45	1.44	1.47	1.43	1.43	1.49
Berat Tanah Kering + Ring	gr	32.70	33.00	32.70	32.90	32.80	32.60	32.90	33.30	33.00	32.80	32.70	32.60	33.00	33.20	32.80	33.00	32.70	33.00	32.80	32.50	33.20
Berat Tanah Kering	gr	14.20	14.30	14.30	14.40	14.10	14.20	14.40	14.60	14.60	14.30	14.40	14.20	14.50	14.50	14.40	14.50	14.40	14.60	14.30	14.20	14.80
Berat Air	gr	1.40	1.40	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.20	1.20	1.20	1.30	1.40	1.30	1.20	1.20	1.30	1.20	1.20	1.30
Kadar Air	%	9.86	9.79	9.09	9.03	9.22	9.15	9.03	8.90	8.90	8.39	8.33	8.45	8.97	9.66	9.03	8.28	8.33	8.90	8.39	8.45	8.78
Dry Density of Soil (γd)	gr/cm3	1.314	1.323	1.323	1.333	1.305	1.314	1.333	1.351	1.351	1.323	1.333	1.314	1.342	1.342	1.333	1.342	1.333	1.351	1.323	1.314	1.370
γd Rata-Rata	gr/cm3	1.332																				

Lereng Tanpa Perkuatan B = 6 cm ; α = 46°

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Berat Cawan + Tanah Basah	gram	20.00	20.00	20.00	21.60	21.50	21.60	20.90	21.30	21.00	20.00	21.20	21.50	21.60	19.70	21.60	20.00	19.80	21.30	21.30	19.80	21.40
Berat Cawan + Tanah Kering	gram	18.50	18.50	18.60	20.00	19.90	20.20	19.70	20.00	19.80	18.70	19.90	20.20	20.30	18.80	20.40	18.90	18.60	20.10	20.20	18.60	20.20
Berat Cawan	gram	4.3	4.2	4.3	5.7	5.5	6	5.7	5.8	5.6	4.4	5.7	5.9	5.9	4.3	5.9	4.4	4.2	5.8	5.8	4.3	5.7
Berat Tanah Kering	gram	14.2	14.3	14.3	14.3	14.4	14.2	14	14.2	14.2	14.3	14.2	14.3	14.4	14.5	14.5	14.5	14.4	14.3	14.4	14.3	14.5
Berat Air	gram	1.5	1.5	1.4	1.6	1.6	1.4	1.2	1.3	1.2	1.3	1.3	1.3	1.3	0.9	1.2	1.1	1.2	1.2	1.1	1.2	1.2
Kadar Air	%	10.56	10.49	9.79	11.19	11.11	9.86	8.57	9.15	8.45	9.09	9.15	9.09	9.03	6.21	8.28	7.59	8.33	8.39	7.64	8.39	8.28
Kadar Air Rata-Rata	%	8.98																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60
Berat Tanah Basah + Ring	gr	34.20	34.50	34.30	34.40	34.70	34.20	33.70	34.20	34.00	34.10	34.20	34.20	34.20	34.10	34.30	34.10	34.30	34.10	34.00	34.20	34.30
Berat Tanah Basah	gr	15.70	15.80	15.70	15.90	16.00	15.60	15.20	15.50	15.40	15.60	15.50	15.60	15.70	15.40	15.70	15.60	15.60	15.50	15.50	15.50	15.70
Soil Unit Weight	gr/cm^3	1.45	1.46	1.45	1.47	1.48	1.44	1.41	1.43	1.43	1.44	1.43	1.44	1.45	1.43	1.45	1.44	1.44	1.43	1.43	1.43	1.45
Berat Tanah Kering + Ring	gr	32.70	33.00	32.90	32.80	33.10	32.80	32.50	32.90	32.80	32.80	32.90	32.90	32.90	33.20	33.10	33.00	33.10	32.90	32.90	33.00	33.10
Berat Tanah Kering	gr	14.20	14.30	14.30	14.30	14.40	14.20	14.00	14.20	14.20	14.30	14.20	14.30	14.40	14.50	14.50	14.50	14.40	14.30	14.40	14.30	14.50
Berat Air	gr	1.50	1.50	1.40	1.60	1.60	1.40	1.20	1.30	1.20	1.30	1.30	1.30	1.30	0.90	1.20	1.10	1.20	1.20	1.10	1.20	1.20
Kadar Air	%	10.56	10.49	9.79	11.19	11.11	9.86	8.57	9.15	8.45	9.09	9.15	9.09	9.03	6.21	8.28	7.59	8.33	8.39	7.64	8.39	8.28
Dry Density of Soil (γd)	gr/cm3	1.314	1.323	1.323	1.323	1.333	1.314	1.295	1.314	1.314	1.323	1.314	1.323	1.333	1.342	1.342	1.342	1.333	1.323	1.333	1.323	1.342
γd Rata-Rata	gr/cm3	1.325																				

Lereng Tanpa Perkuatan B = 8 cm ; α = 46°

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Berat Cawan + Tanah Basah	gram	21.40	21.50	21.40	20.10	21.90	19.70	21.50	21.00	21.50	20.10	19.90	21.20	21.50	21.30	21.00	21.00	19.60	21.20	21.10	19.90	21.60
Berat Cawan + Tanah Kering	gram	20.00	20.20	20.10	18.70	20.40	18.40	20.20	19.80	20.20	18.80	18.60	20.00	20.30	20.00	19.80	19.90	18.50	19.80	19.90	18.70	20.20
Berat Cawan	gram	5.8	6	5.8	4.3	6.1	4.3	6.1	5.8	6	4.6	4.3	5.7	6	5.8	5.7	5.7	4.3	5.6	5.7	4.3	5.8
Berat Tanah Kering	gram	14.2	14.2	14.3	14.4	14.3	14.1	14.1	14	14.2	14.2	14.3	14.3	14.3	14.2	14.1	14.2	14.2	14.2	14.2	14.4	14.4
Berat Air	gram	1.4	1.3	1.3	1.4	1.5	1.3	1.3	1.2	1.3	1.3	1.3	1.2	1.2	1.3	1.2	1.1	1.1	1.4	1.2	1.2	1.4
Kadar Air	%	9.86	9.15	9.09	9.72	10.49	9.22	9.22	8.57	9.15	9.15	9.09	8.39	8.39	9.15	8.51	7.75	7.75	9.86	8.45	8.33	9.72
Kadar Air Rata-Rata	%	9.00																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60
Berat Tanah Basah + Ring	gr	34.10	34.20	34.20	34.30	34.50	34.00	33.90	33.90	34.10	34.00	34.30	34.10	34.00	34.20	33.90	33.80	34.00	34.20	33.90	34.30	34.40
Berat Tanah Basah	gr	15.60	15.50	15.60	15.80	15.80	15.40	15.40	15.20	15.50	15.50	15.60	15.50	15.50	15.50	15.30	15.30	15.30	15.60	15.40	15.60	15.80
Soil Unit Weight	gr/cm^3	1.44	1.43	1.44	1.46	1.46	1.43	1.43	1.41	1.43	1.43	1.44	1.43	1.43	1.43	1.42	1.42	1.42	1.44	1.43	1.44	1.46
Berat Tanah Kering + Ring	gr	32.70	32.90	32.90	32.90	33.00	32.70	32.60	32.70	32.80	32.70	33.00	32.90	32.80	32.90	32.70	32.70	32.90	32.80	32.70	33.10	33.00
Berat Tanah Kering	gr	14.20	14.20	14.30	14.40	14.30	14.10	14.10	14.00	14.20	14.20	14.30	14.30	14.30	14.20	14.10	14.20	14.20	14.20	14.20	14.40	14.40
Berat Air	gr	1.40	1.30	1.30	1.40	1.50	1.30	1.30	1.20	1.30	1.30	1.30	1.20	1.20	1.30	1.20	1.10	1.10	1.40	1.20	1.20	1.40
Kadar Air	%	9.86	9.15	9.09	9.72	10.49	9.22	9.22	8.57	9.15	9.15	9.09	8.39	8.39	9.15	8.51	7.75	7.75	9.86	8.45	8.33	9.72
Dry Density of Soil (γd)	gr/cm3	1.314	1.314	1.323	1.333	1.323	1.305	1.305	1.295	1.314	1.314	1.323	1.323	1.323	1.314	1.305	1.314	1.314	1.314	1.314	1.333	1.333
γd Rata-Rata	gr/cm3	1.317																				

Lereng Tanpa Perkuatan B = 4 cm ; α = 51°

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Berat Cawan + Tanah Basah	gram	21.30	21.10	21.10	20.00	20.20	21.60	19.70	20.90	19.70	21.10	20.10	21.40	21.20	19.80	21.30	21.10	19.80	21.30	21.40	21.50	19.40
Berat Cawan + Tanah Kering	gram	20.00	19.70	19.80	18.60	18.70	20.20	18.50	19.70	18.40	19.80	18.80	20.10	20.00	18.50	20.00	19.90	18.60	20.10	20.20	20.40	18.30
Berat Cawan	gram	5.7	5.4	5.6	4.3	4.3	6	4.3	5.3	4.2	5.6	4.4	5.7	5.6	4.2	5.7	5.7	4.3	5.8	5.9	6.1	4.1
Berat Tanah Kering	gram	14.3	14.3	14.2	14.3	14.4	14.2	14.2	14.4	14.2	14.2	14.4	14.4	14.4	14.3	14.3	14.2	14.3	14.3	14.3	14.3	14.2
Berat Air	gram	1.3	1.4	1.3	1.4	1.5	1.4	1.2	1.2	1.3	1.3	1.3	1.3	1.2	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.1
Kadar Air	%	9.09	9.79	9.15	9.79	10.42	9.86	8.45	8.33	9.15	9.15	9.03	9.03	8.33	9.09	9.09	8.45	8.39	8.39	8.39	7.69	7.75
Kadar Air Rata-Rata	%	8.90																				

Ring No.		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60
Berat Tanah Basah + Ring	gr	34.10	34.40	34.10	34.20	34.60	34.20	33.90	34.30	34.10	34.00	34.40	34.30	34.10	34.30	34.20	33.90	34.20	34.10	34.00	34.10	33.90
Berat Tanah Basah	gr	15.60	15.70	15.50	15.70	15.90	15.60	15.40	15.60	15.50	15.50	15.70	15.70	15.60	15.60	15.60	15.40	15.50	15.50	15.50	15.40	15.30
Soil Unit Weight	gr/cm^3	1.44	1.45	1.43	1.45	1.47	1.44	1.43	1.44	1.43	1.43	1.45	1.45	1.44	1.44	1.44	1.43	1.43	1.43	1.43	1.43	1.42
Berat Tanah Kering + Ring	gr	32.80	33.00	32.80	32.80	33.10	32.80	32.70	33.10	32.80	32.70	33.10	33.00	32.90	33.00	32.90	32.70	33.00	32.90	32.80	33.00	32.80
Berat Tanah Kering	gr	14.30	14.30	14.20	14.30	14.40	14.20	14.20	14.40	14.20	14.20	14.40	14.40	14.40	14.30	14.30	14.20	14.30	14.30	14.30	14.30	14.20
Berat Air	gr	1.30	1.40	1.30	1.40	1.50	1.40	1.20	1.20	1.30	1.30	1.30	1.30	1.20	1.30	1.30	1.20	1.20	1.20	1.20	1.10	1.10
Kadar Air	%	9.09	9.79	9.15	9.79	10.42	9.86	8.45	8.33	9.15	9.15	9.03	9.03	8.33	9.09	9.09	8.45	8.39	8.39	8.39	7.69	7.75
Dry Density of Soil (γd)	gr/cm3	1.323	1.323	1.314	1.323	1.333	1.314	1.314	1.333	1.314	1.314	1.333	1.333	1.333	1.323	1.323	1.314	1.323	1.323	1.323	1.323	1.314
γd Rata-Rata	gr/cm3	1.322																				

Lereng Tanpa Perkuatan B = 6 cm ; α = 51°

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Berat Cawan + Tanah Basah	gram	19.80	20.00	20.00	21.60	21.50	21.60	21.10	21.30	21.40	20.10	21.30	21.50	21.60	19.70	21.40	19.90	19.50	21.20	21.30	19.80	21.10
Berat Cawan + Tanah Kering	gram	18.40	18.50	18.60	20.10	20.00	20.20	19.90	19.90	20.10	18.70	19.90	20.30	20.30	18.50	20.10	18.70	18.40	20.10	20.20	18.60	20.00
Berat Cawan	gram	4.3	4.2	4.3	5.7	5.5	6	5.7	5.8	5.6	4.4	5.7	5.9	5.9	4.3	5.9	4.4	4.2	5.8	5.8	4.3	5.7
Berat Tanah Kering	gram	14.1	14.3	14.3	14.4	14.5	14.2	14.2	14.1	14.5	14.3	14.2	14.4	14.4	14.2	14.2	14.3	14.2	14.3	14.4	14.3	14.3
Berat Air	gram	1.4	1.5	1.4	1.5	1.5	1.4	1.2	1.4	1.3	1.4	1.4	1.2	1.3	1.2	1.3	1.2	1.1	1.1	1.1	1.2	1.1
Kadar Air	%	9.93	10.49	9.79	10.42	10.34	9.86	8.45	9.93	8.97	9.79	9.86	8.33	9.03	8.45	9.15	8.39	7.75	7.69	7.64	8.39	7.69
Kadar Air Rata-Rata	%	9.06																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60
Berat Tanah Basah + Ring	gr	34.00	34.50	34.30	34.40	34.70	34.20	33.90	34.20	34.40	34.20	34.30	34.20	34.20	34.10	34.10	34.00	34.00	34.00	34.00	34.20	34.00
Berat Tanah Basah	gr	15.50	15.80	15.70	15.90	16.00	15.60	15.40	15.50	15.80	15.70	15.60	15.60	15.70	15.40	15.50	15.50	15.30	15.40	15.50	15.50	15.40
Soil Unit Weight	gr/cm^3	1.43	1.46	1.45	1.47	1.48	1.44	1.43	1.43	1.46	1.45	1.44	1.44	1.45	1.43	1.43	1.43	1.42	1.43	1.43	1.43	1.43
Berat Tanah Kering + Ring	gr	32.60	33.00	32.90	32.90	33.20	32.80	32.70	32.80	33.10	32.80	32.90	33.00	32.90	32.90	32.80	32.80	32.90	32.90	32.90	33.00	32.90
Berat Tanah Kering	gr	14.10	14.30	14.30	14.40	14.50	14.20	14.20	14.10	14.50	14.30	14.20	14.40	14.40	14.20	14.20	14.30	14.20	14.30	14.40	14.30	14.30
Berat Air	gr	1.40	1.50	1.40	1.50	1.50	1.40	1.20	1.40	1.30	1.40	1.40	1.20	1.30	1.20	1.30	1.20	1.10	1.10	1.10	1.20	1.10
Kadar Air	%	9.93	10.49	9.79	10.42	10.34	9.86	8.45	9.93	8.97	9.79	9.86	8.33	9.03	8.45	9.15	8.39	7.75	7.69	7.64	8.39	7.69
Dry Density of Soil (γd)	gr/cm3	1.305	1.323	1.323	1.333	1.342	1.314	1.314	1.305	1.342	1.323	1.314	1.333	1.333	1.314	1.314	1.323	1.314	1.323	1.333	1.323	1.323
γd Rata-Rata	gr/cm3	1.322																				

Lereng Tanpa Perkuatan B = 8 cm ; α = 51°

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Berat Cawan + Tanah Basah	gram	21.80	21.80	21.60	19.90	21.90	19.80	21.50	21.00	21.40	20.00	19.90	21.30	21.50	21.40	21.20	21.10	19.80	21.50	21.50	19.80	21.20
Berat Cawan + Tanah Kering	gram	20.30	20.50	20.20	18.60	20.60	18.50	20.30	19.80	20.20	18.80	18.60	20.10	20.30	20.20	19.90	20.00	18.70	20.20	20.10	18.60	20.10
Berat Cawan	gram	5.8	6	5.8	4.3	6.1	4.3	6.1	5.8	6	4.6	4.3	5.7	6	5.8	5.7	5.7	4.3	5.6	5.7	4.3	5.8
Berat Tanah Kering	gram	14.5	14.5	14.4	14.3	14.5	14.2	14.2	14	14.2	14.2	14.3	14.4	14.3	14.4	14.2	14.3	14.4	14.6	14.4	14.3	14.3
Berat Air	gram	1.5	1.3	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.3	1.2	1.2	1.2	1.3	1.1	1.1	1.3	1.4	1.2	1.1
Kadar Air	%	10.34	8.97	9.72	9.09	8.97	9.15	8.45	8.57	8.45	8.45	9.09	8.33	8.39	8.33	9.15	7.69	7.64	8.90	9.72	8.39	7.69
Kadar Air Rata-Rata	%	8.74																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60
Berat Tanah Basah + Ring	gr	34.50	34.50	34.40	34.10	34.50	34.10	33.90	33.90	34.00	33.90	34.30	34.20	34.00	34.30	34.10	33.90	34.20	34.50	34.30	34.20	34.00
Berat Tanah Basah	gr	16.00	15.80	15.80	15.60	15.80	15.50	15.40	15.20	15.40	15.40	15.60	15.60	15.50	15.60	15.50	15.40	15.50	15.90	15.80	15.50	15.40
Soil Unit Weight	gr/cm^3	1.48	1.46	1.46	1.44	1.46	1.43	1.43	1.41	1.43	1.43	1.44	1.44	1.43	1.44	1.43	1.43	1.43	1.47	1.46	1.43	1.43
Berat Tanah Kering + Ring	gr	33.00	33.20	33.00	32.80	33.20	32.80	32.70	32.70	32.80	32.70	33.00	33.00	32.80	33.10	32.80	32.80	33.10	33.20	32.90	33.00	32.90
Berat Tanah Kering	gr	14.50	14.50	14.40	14.30	14.50	14.20	14.20	14.00	14.20	14.20	14.30	14.40	14.30	14.40	14.20	14.30	14.40	14.60	14.40	14.30	14.30
Berat Air	gr	1.50	1.30	1.40	1.30	1.30	1.30	1.20	1.20	1.20	1.20	1.30	1.20	1.20	1.20	1.30	1.10	1.10	1.30	1.40	1.20	1.10
Kadar Air	%	10.34	8.97	9.72	9.09	8.97	9.15	8.45	8.57	8.45	8.45	9.09	8.33	8.39	8.33	9.15	7.69	7.64	8.90	9.72	8.39	7.69
Dry Density of Soil (γd)	gr/cm3	1.342	1.342	1.333	1.323	1.342	1.314	1.314	1.295	1.314	1.314	1.323	1.333	1.323	1.333	1.314	1.323	1.333	1.351	1.333	1.323	1.323
γd Rata-Rata	gr/cm3	1.326																				

Lereng Tanpa Perkuatan B = 4 cm ; α = 46°

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Berat Cawan + Tanah Basah	gram	20.30	20.10	19.80	21.30	21.00	21.70	21.30	21.30	21.30	19.60	21.10	21.50	21.50	19.90	21.40	20.10	20.10	21.30	21.20	21.20	21.20
Berat Cawan + Tanah Kering	gram	18.80	18.70	18.50	19.90	19.70	20.30	20.00	20.10	20.00	18.40	19.80	20.20	20.30	18.60	20.20	18.80	18.70	20.10	20.10	20.00	20.00
Berat Cawan	gram	4.3	4.2	4.3	5.7	5.5	6	5.7	5.8	5.6	4.4	5.7	5.9	5.9	4.3	5.9	4.4	4.2	5.8	5.8	5.7	5.7
Berat Tanah Kering	gram	14.5	14.5	14.2	14.2	14.2	14.3	14.3	14.3	14.4	14	14.1	14.3	14.4	14.3	14.3	14.4	14.5	14.3	14.3	14.3	14.3
Berat Air	gram	1.5	1.4	1.3	1.4	1.3	1.4	1.3	1.2	1.3	1.2	1.3	1.3	1.2	1.3	1.2	1.3	1.4	1.2	1.1	1.2	1.2
Kadar Air	%	10.34	9.66	9.15	9.86	9.15	9.79	9.09	8.39	9.03	8.57	9.22	9.09	8.33	9.09	8.39	9.03	9.66	8.39	7.69	8.39	8.39
Kadar Air Rata-Rata	%	8.99																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60
Berat Tanah Basah + Ring	gr	34.50	34.60	34.10	34.10	34.20	34.30	34.10	34.20	34.30	33.70	34.10	34.20	34.10	34.30	34.10	34.20	34.60	34.10	33.90	34.20	34.10
Berat Tanah Basah	gr	16.00	15.90	15.50	15.60	15.50	15.70	15.60	15.50	15.70	15.20	15.40	15.60	15.60	15.60	15.50	15.70	15.90	15.50	15.40	15.50	15.50
Soil Unit Weight	gr/cm^3	1.48	1.47	1.43	1.44	1.43	1.45	1.44	1.43	1.45	1.41	1.43	1.44	1.44	1.44	1.43	1.45	1.47	1.43	1.43	1.43	1.43
Berat Tanah Kering + Ring	gr	33.00	33.20	32.80	32.70	32.90	32.90	32.80	33.00	33.00	32.50	32.80	32.90	32.90	33.00	32.90	32.90	33.20	32.90	32.80	33.00	32.90
Berat Tanah Kering	gr	14.50	14.50	14.20	14.20	14.20	14.30	14.30	14.30	14.40	14.00	14.10	14.30	14.40	14.30	14.30	14.40	14.50	14.30	14.30	14.30	14.30
Berat Air	gr	1.50	1.40	1.30	1.40	1.30	1.40	1.30	1.20	1.30	1.20	1.30	1.30	1.20	1.30	1.20	1.30	1.40	1.20	1.10	1.20	1.20
Kadar Air	%	10.34	9.66	9.15	9.86	9.15	9.79	9.09	8.39	9.03	8.57	9.22	9.09	8.33	9.09	8.39	9.03	9.66	8.39	7.69	8.39	8.39
Dry Density of Soil (γd)	gr/cm3	1.342	1.342	1.314	1.314	1.314	1.323	1.323	1.323	1.333	1.295	1.305	1.323	1.333	1.323	1.323	1.333	1.342	1.323	1.323	1.323	1.323
γd Rata-Rata	gr/cm3	1.324																				

Lereng Tanpa Perkuatan B = 6 cm ; α = 56°

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Berat Cawan + Tanah Basah	gram	20.00	20.10	20.20	21.30	21.10	21.70	21.30	21.50	21.30	19.90	20.90	21.50	21.20	19.90	21.40	20.10	19.40	21.00	21.20	21.20	21.20
Berat Cawan + Tanah Kering	gram	18.70	18.70	18.80	20.00	19.90	20.30	20.00	20.30	19.90	18.70	19.80	20.20	20.00	18.60	20.10	18.80	18.30	19.70	19.90	20.00	20.00
Berat Cawan	gram	4.3	4.2	4.3	5.7	5.5	6	5.7	5.8	5.6	4.4	5.7	5.9	5.9	4.3	5.9	4.4	4.2	5.8	5.8	5.7	5.7
Berat Tanah Kering	gram	14.4	14.5	14.5	14.3	14.4	14.3	14.3	14.5	14.3	14.3	14.1	14.3	14.1	14.3	14.2	14.4	14.1	13.9	14.1	14.3	14.3
Berat Air	gram	1.3	1.4	1.4	1.3	1.2	1.4	1.3	1.2	1.4	1.2	1.1	1.3	1.2	1.3	1.3	1.3	1.1	1.3	1.3	1.2	1.2
Kadar Air	%	9.03	9.66	9.66	9.09	8.33	9.79	9.09	8.28	9.79	8.39	7.80	9.09	8.51	9.09	9.15	9.03	7.80	9.35	9.22	8.39	8.39
Kadar Air Rata-Rata	%	8.90																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60	18.50	18.70	18.60
Berat Tanah Basah + Ring	gr	34.20	34.60	34.50	34.10	34.30	34.30	34.10	34.40	34.30	34.00	33.90	34.20	33.80	34.30	34.10	34.20	33.90	33.80	33.90	34.20	34.10
Berat Tanah Basah	gr	15.70	15.90	15.90	15.60	15.60	15.70	15.60	15.70	15.70	15.50	15.20	15.60	15.30	15.60	15.50	15.70	15.20	15.20	15.40	15.50	15.50
Soil Unit Weight	gr/cm^3	1.45	1.47	1.47	1.44	1.44	1.45	1.44	1.45	1.45	1.43	1.41	1.44	1.42	1.44	1.43	1.45	1.41	1.41	1.43	1.43	1.43
Berat Tanah Kering + Ring	gr	32.90	33.20	33.10	32.80	33.10	32.90	32.80	33.20	32.90	32.80	32.80	32.90	32.60	33.00	32.80	32.90	32.80	32.50	32.60	33.00	32.90
Berat Tanah Kering	gr	14.40	14.50	14.50	14.30	14.40	14.30	14.30	14.50	14.30	14.30	14.10	14.30	14.10	14.30	14.20	14.40	14.10	13.90	14.10	14.30	14.30
Berat Air	gr	1.30	1.40	1.40	1.30	1.20	1.40	1.30	1.20	1.40	1.20	1.10	1.30	1.20	1.30	1.30	1.30	1.10	1.30	1.30	1.20	1.20
Kadar Air	%	9.03	9.66	9.66	9.09	8.33	9.79	9.09	8.28	9.79	8.39	7.80	9.09	8.51	9.09	9.15	9.03	7.80	9.35	9.22	8.39	8.39
Dry Density of Soil (γd)	gr/cm3	1.333	1.342	1.342	1.323	1.333	1.323	1.323	1.342	1.323	1.323	1.305	1.323	1.305	1.323	1.314	1.333	1.305	1.286	1.305	1.323	1.323
γd Rata-Rata	gr/cm3	1.321																				

Lereng Tanpa Perkuatan B = 8 cm ; α = 56°

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Berat Cawan + Tanah Basah	gram	21.50	21.40	21.30	21.40	20.90	21.40	21.70	20.10	19.70	21.20	19.70	21.40	21.50	21.40	21.30	21.00	21.40	21.00	19.60	19.30	19.30
Berat Cawan + Tanah Kering	gram	20.10	20.00	19.80	20.10	19.60	20.10	20.40	18.80	18.50	20.00	18.40	20.00	20.30	20.20	20.00	19.90	20.20	19.70	18.40	18.10	18.20
Berat Cawan	gram	5.7	5.7	5.6	5.7	5.4	5.9	6	4.2	4.2	5.7	4.2	5.6	6	5.7	5.6	5.7	5.8	5.6	4.1	3.9	4
Berat Tanah Kering	gram	14.4	14.3	14.2	14.4	14.2	14.2	14.4	14.6	14.3	14.3	14.2	14.4	14.3	14.5	14.4	14.2	14.4	14.1	14.3	14.2	14.2
Berat Air	gram	1.4	1.4	1.5	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.3	1.4	1.2	1.2	1.3	1.1	1.2	1.3	1.2	1.2	1.1
Kadar Air	%	9.72	9.79	10.56	9.03	9.15	9.15	9.03	8.90	8.39	8.39	9.15	9.72	8.39	8.28	9.03	7.75	8.33	9.22	8.39	8.45	7.75
Kadar Air Rata-Rata	%	8.89																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.50	18.70	18.40	18.50	18.70	18.40	18.50	18.70	18.40	18.50	18.30	18.40	18.50	18.70	18.40	18.50	18.30	18.40	18.50	18.30	18.40
Berat Tanah Basah + Ring	gr	34.30	34.40	34.10	34.20	34.20	33.90	34.20	34.60	33.90	34.00	33.80	34.20	34.00	34.40	34.10	33.80	33.90	33.80	34.00	33.70	33.70
Berat Tanah Basah	gr	15.80	15.70	15.70	15.70	15.50	15.50	15.70	15.90	15.50	15.50	15.50	15.80	15.50	15.70	15.70	15.30	15.60	15.40	15.50	15.40	15.30
Soil Unit Weight	gr/cm^3	1.46	1.45	1.45	1.45	1.43	1.43	1.45	1.47	1.43	1.43	1.43	1.46	1.43	1.45	1.45	1.42	1.44	1.43	1.43	1.43	1.42
Berat Tanah Kering + Ring	gr	32.90	33.00	32.60	32.90	32.90	32.60	32.90	33.30	32.70	32.80	32.50	32.80	32.80	33.20	32.80	32.70	32.70	32.50	32.80	32.50	32.60
Berat Tanah Kering	gr	14.40	14.30	14.20	14.40	14.20	14.20	14.40	14.60	14.30	14.30	14.20	14.40	14.30	14.50	14.40	14.20	14.40	14.10	14.30	14.20	14.20
Berat Air	gr	1.40	1.40	1.50	1.30	1.30	1.30	1.30	1.30	1.20	1.20	1.30	1.40	1.20	1.20	1.30	1.10	1.20	1.30	1.20	1.20	1.10
Kadar Air	%	9.72	9.79	10.56	9.03	9.15	9.15	9.03	8.90	8.39	8.39	9.15	9.72	8.39	8.28	9.03	7.75	8.33	9.22	8.39	8.45	7.75
Dry Density of Soil (γd)	gr/cm3	1.333	1.323	1.314	1.333	1.314	1.314	1.333	1.351	1.323	1.323	1.314	1.333	1.323	1.342	1.333	1.314	1.333	1.305	1.323	1.314	1.314
γd Rata-Rata	gr/cm3	1.324																				

Lereng Dengan Perkuatan B = 4 cm ; α = 46° ; n=2

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Berat Cawan + Tanah Basah	gram	20.00	19.90	20.10	21.20	21.50	21.60	21.50	21.50	21.60	19.70	21.40	21.80	21.20	19.50	21.80	19.70	19.80	21.10	21.30	20.00	21.60
Berat Cawan + Tanah Kering	gram	18.50	18.50	18.70	19.90	20.00	20.30	20.10	20.20	20.20	18.40	20.20	20.30	20.00	18.50	20.40	18.40	18.60	19.90	20.10	18.80	20.40
Berat Cawan	gram	4.3	4.2	4.3	5.7	5.5	6	5.7	5.8	5.6	4.4	5.7	5.9	5.9	4.3	5.9	4.4	4.2	5.8	5.8	4.3	5.7
Berat Tanah Kering	gram	14.2	14.3	14.4	14.2	14.5	14.3	14.4	14.4	14.6	14	14.5	14.4	14.1	14.2	14.5	14	14.4	14.1	14.3	14.5	14.7
Berat Air	gram	1.5	1.4	1.4	1.3	1.5	1.3	1.4	1.3	1.4	1.3	1.2	1.5	1.2	1	1.4	1.3	1.2	1.2	1.2	1.2	1.2
Kadar Air	%	10.56	9.79	9.72	9.15	10.34	9.09	9.72	9.03	9.59	9.29	8.28	10.42	8.51	7.04	9.66	9.29	8.33	8.51	8.39	8.28	8.16
Kadar Air Rata-Rata	%	9.10																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40
Berat Tanah Basah + Ring	gr	34.10	34.20	34.20	33.90	34.50	34.00	34.20	34.20	34.40	33.70	34.20	34.30	33.70	33.70	34.30	33.70	34.10	33.70	33.90	34.20	34.30
Berat Tanah Basah	gr	15.70	15.70	15.80	15.50	16.00	15.60	15.80	15.70	16.00	15.30	15.70	15.90	15.30	15.20	15.90	15.30	15.60	15.30	15.50	15.70	15.90
Soil Unit Weight	gr/cm^3	1.45	1.45	1.46	1.43	1.48	1.44	1.46	1.45	1.48	1.42	1.45	1.47	1.42	1.41	1.47	1.42	1.44	1.42	1.43	1.45	1.47
Berat Tanah Kering + Ring	gr	32.60	32.80	32.80	32.60	33.00	32.70	32.80	32.90	33.00	32.40	33.00	32.80	32.50	32.70	32.90	32.40	32.90	32.50	32.70	33.00	33.10
Berat Tanah Kering	gr	14.20	14.30	14.40	14.20	14.50	14.30	14.40	14.40	14.60	14.00	14.50	14.40	14.10	14.20	14.50	14.00	14.40	14.10	14.30	14.50	14.70
Berat Air	gr	1.50	1.40	1.40	1.30	1.50	1.30	1.40	1.30	1.40	1.30	1.20	1.50	1.20	1.00	1.40	1.30	1.20	1.20	1.20	1.20	1.20
Kadar Air	%	10.56	9.79	9.72	9.15	10.34	9.09	9.72	9.03	9.59	9.29	8.28	10.42	8.51	7.04	9.66	9.29	8.33	8.51	8.39	8.28	8.16
Dry Density of Soil (γd)	gr/cm3	1.314	1.323	1.333	1.314	1.342	1.323	1.333	1.333	1.351	1.295	1.342	1.333	1.305	1.314	1.342	1.295	1.333	1.305	1.323	1.342	1.360
γd Rata-Rata	gr/cm3	1.326																				

Lereng Dengan Perkuatan B = 6 cm ; α = 46° ; n=2

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Berat Cawan + Tanah Basah	gram	21.50	21.90	21.60	21.70	21.30	21.30	21.70	21.30	21.20	21.00	21.10	21.20	21.10	21.10	21.40	21.30	21.60	21.40	21.30	21.30	21.60
Berat Cawan + Tanah Kering	gram	20.10	20.50	20.20	20.30	20.10	20.00	20.30	20.10	19.90	19.70	19.80	20.00	19.90	19.90	20.20	20.20	20.30	20.10	20.10	20.10	20.30
Berat Cawan	gram	5.5	5.5	5.5	5.5	5.5	5.6	5.4	5.6	5.4	5.5	5.3	5.5	5.7	5.7	5.8	5.8	5.9	5.9	5.7	5.7	5.8
Berat Tanah Kering	gram	14.6	15	14.7	14.8	14.6	14.4	14.9	14.5	14.5	14.2	14.5	14.5	14.2	14.2	14.4	14.4	14.4	14.2	14.4	14.4	14.5
Berat Air	gram	1.4	1.4	1.4	1.4	1.2	1.3	1.4	1.2	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.3	1.3	1.2	1.2	1.3
Kadar Air	%	9.59	9.33	9.52	9.46	8.22	9.03	9.40	8.28	8.97	9.15	8.97	8.28	8.45	8.45	8.33	7.64	9.03	9.15	8.33	8.33	8.97
Kadar Air Rata-Rata	%	8.80																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40
Berat Tanah Basah + Ring	gr	34.40	34.90	34.50	34.60	34.30	34.10	34.70	34.20	34.20	33.90	34.30	34.10	33.80	33.90	34.00	33.90	34.20	33.90	34.00	34.10	34.20
Berat Tanah Basah	gr	16.00	16.40	16.10	16.20	15.80	15.70	16.30	15.70	15.80	15.50	15.80	15.70	15.40	15.40	15.60	15.50	15.70	15.50	15.60	15.60	15.80
Soil Unit Weight	gr/cm^3	1.48	1.52	1.49	1.50	1.46	1.45	1.51	1.45	1.46	1.43	1.46	1.45	1.43	1.43	1.44	1.43	1.45	1.43	1.44	1.44	1.46
Berat Tanah Kering + Ring	gr	33.00	33.50	33.10	33.20	33.10	32.80	33.30	33.00	32.90	32.60	33.00	32.90	32.60	32.70	32.80	32.80	32.90	32.60	32.80	32.90	32.90
Berat Tanah Kering	gr	14.60	15.00	14.70	14.80	14.60	14.40	14.90	14.50	14.50	14.20	14.50	14.50	14.20	14.20	14.40	14.40	14.40	14.20	14.40	14.40	14.50
Berat Air	gr	1.40	1.40	1.40	1.40	1.20	1.30	1.40	1.20	1.30	1.30	1.30	1.20	1.20	1.20	1.20	1.10	1.30	1.30	1.20	1.20	1.30
Kadar Air	%	9.59	9.33	9.52	9.46	8.22	9.03	9.40	8.28	8.97	9.15	8.97	8.28	8.45	8.45	8.33	7.64	9.03	9.15	8.33	8.33	8.97
Dry Density of Soil (γd)	gr/cm3	1.351	1.388	1.360	1.370	1.351	1.333	1.379	1.342	1.342	1.314	1.342	1.342	1.314	1.314	1.333	1.333	1.333	1.314	1.333	1.333	1.342
γd Rata-Rata	gr/cm3	1.341																				

Lereng Dengan Perkuatan B = 8 cm ; α = 46° ; n=2

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Berat Cawan + Tanah Basah	gram	21.10	21.50	21.40	19.50	21.30	21.60	21.60	22.00	19.70	21.60	19.90	19.70	22.00	21.00	20.10	19.50	21.00	21.40	20.90	20.80	19.70
Berat Cawan + Tanah Kering	gram	19.80	20.10	20.00	18.20	19.90	20.30	20.30	20.70	18.40	20.30	18.70	18.40	20.70	19.70	18.80	18.30	19.80	20.20	19.70	19.80	18.50
Berat Cawan	gram	5.7	5.7	5.7	4	5.8	6.1	5.7	6	4	5.7	4.3	4.3	6.2	5.6	4.3	4.2	5.5	5.9	5.7	5.6	4.2
Berat Tanah Kering	gram	14.1	14.4	14.3	14.2	14.1	14.2	14.6	14.7	14.4	14.6	14.4	14.1	14.5	14.1	14.5	14.1	14.3	14.3	14	14.2	14.3
Berat Air	gram	1.3	1.4	1.4	1.3	1.4	1.3	1.3	1.3	1.3	1.3	1.2	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1	1.2
Kadar Air	%	9.22	9.72	9.79	9.15	9.93	9.15	8.90	8.84	9.03	8.90	8.33	9.22	8.97	9.22	8.97	8.51	8.39	8.39	8.57	7.04	8.39
Kadar Air Rata-Rata	%	8.89																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40
Berat Tanah Basah + Ring	gr	33.80	34.30	34.10	33.90	34.00	33.90	34.30	34.50	34.10	34.30	34.10	33.80	34.20	33.90	34.20	33.70	34.00	33.90	33.60	33.70	33.90
Berat Tanah Basah	gr	15.40	15.80	15.70	15.50	15.50	15.50	15.90	16.00	15.70	15.90	15.60	15.40	15.80	15.40	15.80	15.30	15.50	15.50	15.20	15.20	15.50
Soil Unit Weight	gr/cm^3	1.43	1.46	1.45	1.43	1.43	1.43	1.47	1.48	1.45	1.47	1.44	1.43	1.46	1.43	1.46	1.42	1.43	1.43	1.41	1.41	1.43
Berat Tanah Kering + Ring	gr	32.50	32.90	32.70	32.60	32.60	32.60	33.00	33.20	32.80	33.00	32.90	32.50	32.90	32.60	32.90	32.50	32.80	32.70	32.40	32.70	32.70
Berat Tanah Kering	gr	14.10	14.40	14.30	14.20	14.10	14.20	14.60	14.70	14.40	14.60	14.40	14.10	14.50	14.10	14.50	14.10	14.30	14.30	14.00	14.20	14.30
Berat Air	gr	1.30	1.40	1.40	1.30	1.40	1.30	1.30	1.30	1.30	1.30	1.20	1.30	1.30	1.30	1.30	1.20	1.20	1.20	1.20	1.00	1.20
Kadar Air	%	9.22	9.72	9.79	9.15	9.93	9.15	8.90	8.84	9.03	8.90	8.33	9.22	8.97	9.22	8.97	8.51	8.39	8.39	8.57	7.04	8.39
Dry Density of Soil (γd)	gr/cm3	1.305	1.333	1.323	1.314	1.305	1.314	1.351	1.360	1.333	1.351	1.333	1.305	1.342	1.305	1.342	1.305	1.323	1.323	1.295	1.314	1.323
γd Rata-Rata	gr/cm3	1.324																				

Lereng Dengan Perkuatan B = 4 cm ; α = 51° ; n=2

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Berat Cawan + Tanah Basah	gram	20.00	20.10	19.80	21.00	20.90	21.30	21.60	21.40	21.10	19.70	21.00	21.20	21.40	19.70	21.50	19.90	19.90	21.20	21.30	19.50	21.00
Berat Cawan + Tanah Kering	gram	18.60	18.80	18.50	19.80	19.80	20.00	20.20	20.10	19.90	18.50	19.80	19.70	20.10	18.40	20.20	18.70	18.70	20.00	20.10	18.40	19.80
Berat Cawan	gram	4.3	4.2	4.3	5.7	5.5	6	5.7	5.8	5.6	4.4	5.7	5.9	5.9	4.3	5.9	4.4	4.2	5.8	5.8	4.3	5.7
Berat Tanah Kering	gram	14.3	14.6	14.2	14.1	14.3	14	14.5	14.3	14.3	14.1	14.1	13.8	14.2	14.1	14.3	14.3	14.5	14.2	14.3	14.1	14.1
Berat Air	gram	1.4	1.3	1.3	1.2	1.1	1.3	1.4	1.3	1.2	1.2	1.2	1.5	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.2
Kadar Air	%	9.79	8.90	9.15	8.51	7.69	9.29	9.66	9.09	8.39	8.51	8.51	10.87	9.15	9.22	9.09	8.39	8.28	8.45	8.39	7.80	8.51
Kadar Air Rata-Rata	%	8.84																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40
Berat Tanah Basah + Ring	gr	34.10	34.40	33.90	33.70	33.90	33.70	34.30	34.10	33.90	33.70	33.80	33.70	33.90	33.90	34.00	33.90	34.20	33.80	33.90	33.70	33.70
Berat Tanah Basah	gr	15.70	15.90	15.50	15.30	15.40	15.30	15.90	15.60	15.50	15.30	15.30	15.30	15.50	15.40	15.60	15.50	15.70	15.40	15.50	15.20	15.30
Soil Unit Weight	gr/cm^3	1.45	1.47	1.43	1.42	1.43	1.42	1.47	1.44	1.43	1.42	1.42	1.42	1.43	1.43	1.44	1.43	1.45	1.43	1.43	1.41	1.42
Berat Tanah Kering + Ring	gr	32.70	33.10	32.60	32.50	32.80	32.40	32.90	32.80	32.70	32.50	32.60	32.20	32.60	32.60	32.70	32.70	33.00	32.60	32.70	32.60	32.50
Berat Tanah Kering	gr	14.30	14.60	14.20	14.10	14.30	14.00	14.50	14.30	14.30	14.10	14.10	13.80	14.20	14.10	14.30	14.30	14.50	14.20	14.30	14.10	14.10
Berat Air	gr	1.40	1.30	1.30	1.20	1.10	1.30	1.40	1.30	1.20	1.20	1.20	1.50	1.30	1.30	1.30	1.20	1.20	1.20	1.20	1.10	1.20
Kadar Air	%	9.79	8.90	9.15	8.51	7.69	9.29	9.66	9.09	8.39	8.51	8.51	10.87	9.15	9.22	9.09	8.39	8.28	8.45	8.39	7.80	8.51
Dry Density of Soil (γd)	gr/cm3	1.323	1.351	1.314	1.305	1.323	1.295	1.342	1.323	1.323	1.305	1.305	1.277	1.314	1.305	1.323	1.323	1.342	1.314	1.323	1.305	1.305
γd Rata-Rata	gr/cm3	1.316																				

Lereng Dengan Perkuatan B = 6 cm ; α = 51° ; n=2

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Berat Cawan + Tanah Basah	gram	21.60	21.60	21.70	19.70	21.70	19.60	21.60	21.60	21.70	19.90	19.60	21.30	21.40	21.00	21.10	21.00	19.50	21.40	21.50	20.10	21.00
Berat Cawan + Tanah Kering	gram	20.20	20.20	20.10	18.50	20.40	18.40	20.30	20.20	20.40	18.70	18.40	20.00	20.20	20.00	19.90	19.80	18.30	20.10	20.20	18.80	19.80
Berat Cawan	gram	5.8	6	5.8	4.3	6.1	4.3	6.1	5.8	6	4.6	4.3	5.7	6	5.8	5.7	5.7	4.3	5.8	5.7	4.3	5.6
Berat Tanah Kering	gram	14.4	14.2	14.3	14.2	14.3	14.1	14.2	14.4	14.4	14.1	14.1	14.3	14.2	14.2	14.2	14.1	14	14.3	14.5	14.5	14.2
Berat Air	gram	1.4	1.4	1.6	1.2	1.3	1.2	1.3	1.4	1.3	1.2	1.2	1.3	1.2	1	1.2	1.2	1.2	1.3	1.3	1.3	1.2
Kadar Air	%	9.72	9.86	11.19	8.45	9.09	8.51	9.15	9.72	9.03	8.51	8.51	9.09	8.45	7.04	8.45	8.51	8.57	9.09	8.97	8.97	8.45
Kadar Air Rata-Rata	%	8.92																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40
Berat Tanah Basah + Ring	gr	34.20	34.10	34.30	33.80	34.10	33.70	33.90	34.30	34.10	33.70	33.80	34.00	33.80	33.70	33.80	33.70	33.70	34.00	34.20	34.30	33.80
Berat Tanah Basah	gr	15.80	15.60	15.90	15.40	15.60	15.30	15.50	15.80	15.70	15.30	15.30	15.60	15.40	15.20	15.40	15.30	15.20	15.60	15.80	15.80	15.40
Soil Unit Weight	gr/cm^3	1.46	1.44	1.47	1.43	1.44	1.42	1.43	1.46	1.45	1.42	1.42	1.44	1.43	1.41	1.43	1.42	1.41	1.44	1.46	1.46	1.43
Berat Tanah Kering + Ring	gr	32.80	32.70	32.70	32.60	32.80	32.50	32.60	32.90	32.80	32.50	32.60	32.70	32.60	32.70	32.60	32.50	32.50	32.70	32.90	33.00	32.60
Berat Tanah Kering	gr	14.40	14.20	14.30	14.20	14.30	14.10	14.20	14.40	14.40	14.10	14.10	14.30	14.20	14.20	14.20	14.10	14.00	14.30	14.50	14.50	14.20
Berat Air	gr	1.40	1.40	1.60	1.20	1.30	1.20	1.30	1.40	1.30	1.20	1.20	1.30	1.20	1.00	1.20	1.20	1.20	1.30	1.30	1.30	1.20
Kadar Air	%	9.72	9.86	11.19	8.45	9.09	8.51	9.15	9.72	9.03	8.51	8.51	9.09	8.45	7.04	8.45	8.51	8.57	9.09	8.97	8.97	8.45
Dry Density of Soil (γd)	gr/cm3	1.333	1.314	1.323	1.314	1.323	1.305	1.314	1.333	1.333	1.305	1.305	1.323	1.314	1.314	1.314	1.305	1.295	1.323	1.342	1.342	1.314
γd Rata-Rata	gr/cm3	1.318																				

Lereng Dengan Perkuatan B = 8 cm ; α = 51° ; n=2

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Berat Cawan + Tanah Basah	gram	21.60	21.80	21.40	20.00	21.70	20.10	21.50	21.20	21.70	19.90	19.90	21.20	21.40	21.30	21.20	21.10	19.90	21.20	21.40	20.00	21.10
Berat Cawan + Tanah Kering	gram	20.20	20.30	20.00	18.60	20.30	18.60	20.30	20.00	20.40	18.70	18.60	20.00	20.20	20.10	20.00	19.80	18.70	20.10	20.10	18.80	19.90
Berat Cawan	gram	5.8	6	5.8	4.3	6.1	4.3	6.1	5.8	6	4.6	4.3	5.7	6	5.8	5.7	5.7	4.3	5.8	5.7	4.3	5.6
Berat Tanah Kering	gram	14.4	14.3	14.2	14.3	14.2	14.3	14.2	14.2	14.4	14.1	14.3	14.3	14.2	14.3	14.3	14.1	14.4	14.3	14.4	14.5	14.3
Berat Air	gram	1.4	1.5	1.4	1.4	1.4	1.5	1.2	1.2	1.3	1.2	1.3	1.2	1.2	1.2	1.2	1.3	1.2	1.1	1.3	1.2	1.2
Kadar Air	%	9.72	10.49	9.86	9.79	9.86	10.49	8.45	8.45	9.03	8.51	9.09	8.39	8.45	8.39	8.39	9.22	8.33	7.69	9.03	8.28	8.39
Kadar Air Rata-Rata	%	8.97																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40
Berat Tanah Basah + Ring	gr	34.20	34.30	34.00	34.10	34.10	34.20	33.80	33.90	34.10	33.70	34.10	33.90	33.80	34.00	33.90	33.80	34.10	33.80	34.10	34.20	33.90
Berat Tanah Basah	gr	15.80	15.80	15.60	15.70	15.60	15.80	15.40	15.40	15.70	15.30	15.60	15.50	15.40	15.50	15.50	15.40	15.60	15.40	15.70	15.70	15.50
Soil Unit Weight	gr/cm^3	1.46	1.46	1.44	1.45	1.44	1.46	1.43	1.43	1.45	1.42	1.44	1.43	1.43	1.43	1.43	1.43	1.44	1.43	1.45	1.45	1.43
Berat Tanah Kering + Ring	gr	32.80	32.80	32.60	32.70	32.70	32.70	32.60	32.70	32.80	32.50	32.80	32.70	32.60	32.80	32.70	32.50	32.90	32.70	32.80	33.00	32.70
Berat Tanah Kering	gr	14.40	14.30	14.20	14.30	14.20	14.30	14.20	14.20	14.40	14.10	14.30	14.30	14.20	14.30	14.30	14.10	14.40	14.30	14.40	14.50	14.30
Berat Air	gr	1.40	1.50	1.40	1.40	1.40	1.50	1.20	1.20	1.30	1.20	1.30	1.20	1.20	1.20	1.20	1.30	1.20	1.10	1.30	1.20	1.20
Kadar Air	%	9.72	10.49	9.86	9.79	9.86	10.49	8.45	8.45	9.03	8.51	9.09	8.39	8.45	8.39	8.39	9.22	8.33	7.69	9.03	8.28	8.39
Dry Density of Soil (γd)	gr/cm3	1.333	1.323	1.314	1.323	1.314	1.323	1.314	1.314	1.333	1.305	1.323	1.323	1.314	1.323	1.323	1.305	1.333	1.323	1.333	1.342	1.323
γd Rata-Rata	gr/cm3	1.322																				

Lereng Dengan Perkuatan B = 4 cm ; α = 56° ; n=2

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Berat Cawan + Tanah Basah	gram	21.50	21.50	21.70	21.80	21.70	21.90	21.10	21.40	21.80	21.40	21.30	21.70	21.50	21.50	21.50	20.90	21.00	20.80	21.00	21.00	20.90
Berat Cawan + Tanah Kering	gram	20.10	20.20	20.20	20.50	20.40	20.50	19.80	20.10	20.40	20.20	20.10	20.30	20.30	20.30	20.30	19.70	19.80	19.60	19.80	19.90	19.80
Berat Cawan	gram	6	6.2	6	6.2	6.1	6.2	5.6	5.9	6	6	6	6	6	6	6	5.4	5.5	5.4	5.5	5.5	5.5
Berat Tanah Kering	gram	14.1	14	14.2	14.3	14.3	14.3	14.2	14.2	14.4	14.2	14.1	14.3	14.3	14.3	14.3	14.3	14.3	14.2	14.3	14.4	14.3
Berat Air	gram	1.4	1.3	1.5	1.3	1.3	1.4	1.3	1.3	1.4	1.2	1.2	1.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1
Kadar Air	%	9.93	9.29	10.56	9.09	9.09	9.79	9.15	9.15	9.72	8.45	8.51	9.79	8.39	8.39	8.39	8.39	8.39	8.45	8.39	7.64	7.69
Kadar Air Rata-Rata	%	8.89																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40
Berat Tanah Basah + Ring	gr	33.90	33.80	34.10	34.00	34.10	34.10	33.90	34.00	34.20	33.80	33.80	34.10	33.90	34.00	33.90	33.90	34.00	33.80	33.90	34.00	33.80
Berat Tanah Basah	gr	15.50	15.30	15.70	15.60	15.60	15.70	15.50	15.50	15.80	15.40	15.30	15.70	15.50	15.50	15.50	15.50	15.50	15.40	15.50	15.50	15.40
Soil Unit Weight	gr/cm^3	1.43	1.42	1.45	1.44	1.44	1.45	1.43	1.43	1.46	1.43	1.42	1.45	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43
Berat Tanah Kering + Ring	gr	32.50	32.50	32.60	32.70	32.80	32.70	32.60	32.70	32.80	32.60	32.60	32.70	32.70	32.80	32.70	32.70	32.80	32.60	32.70	32.90	32.70
Berat Tanah Kering	gr	14.10	14.00	14.20	14.30	14.30	14.30	14.20	14.20	14.40	14.20	14.10	14.30	14.30	14.30	14.30	14.30	14.30	14.20	14.30	14.40	14.30
Berat Air	gr	1.40	1.30	1.50	1.30	1.30	1.40	1.30	1.30	1.40	1.20	1.20	1.40	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.10	1.10
Kadar Air	%	9.93	9.29	10.56	9.09	9.09	9.79	9.15	9.15	9.72	8.45	8.51	9.79	8.39	8.39	8.39	8.39	8.39	8.45	8.39	7.64	7.69
Dry Density of Soil (γd)	gr/cm3	1.305	1.295	1.314	1.323	1.323	1.323	1.314	1.314	1.333	1.314	1.305	1.323	1.323	1.323	1.323	1.323	1.323	1.314	1.323	1.333	1.323
γd Rata-Rata	gr/cm3	1.319																				

Lereng Dengan Perkuatan B = 6 cm ; α = 56° ; n=2

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Berat Cawan + Tanah Basah	gram	21.00	21.20	20.90	21.10	21.20	21.30	21.00	21.00	20.70	20.90	20.70	21.20	21.00	21.00	21.10	21.10	21.30	21.50	21.40	21.70	21.20
Berat Cawan + Tanah Kering	gram	20.10	19.90	19.90	19.80	19.80	20.00	19.70	19.80	19.50	19.70	19.50	19.80	19.80	19.80	19.90	19.90	20.10	20.20	20.10	20.20	20.00
Berat Cawan	gram	5.5	5.5	5.5	5.5	5.5	5.6	5.4	5.6	5.4	5.5	5.3	5.5	5.7	5.7	5.8	5.8	5.9	5.9	5.7	5.7	5.8
Berat Tanah Kering	gram	14.6	14.4	14.4	14.3	14.3	14.4	14.3	14.2	14.1	14.2	14.2	14.3	14.1	14.1	14.1	14.1	14.2	14.3	14.4	14.5	14.2
Berat Air	gram	0.9	1.3	1	1.3	1.4	1.3	1.3	1.2	1.2	1.2	1.2	1.4	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.5	1.2
Kadar Air	%	6.16	9.03	6.94	9.09	9.79	9.03	9.09	8.45	8.51	8.45	8.45	9.79	8.51	8.51	8.51	8.51	8.45	9.09	9.03	10.34	8.45
Kadar Air Rata-Rata	%	8.68																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40
Berat Tanah Basah + Ring	gr	33.90	34.20	33.80	34.00	34.20	34.10	34.00	33.90	33.70	33.80	33.90	34.10	33.70	33.80	33.70	33.70	33.90	34.00	34.10	34.50	33.80
Berat Tanah Basah	gr	15.50	15.70	15.40	15.60	15.70	15.70	15.60	15.40	15.30	15.40	15.40	15.70	15.30	15.30	15.30	15.30	15.40	15.60	15.70	16.00	15.40
Soil Unit Weight	gr/cm^3	1.43	1.45	1.43	1.44	1.45	1.45	1.44	1.43	1.42	1.43	1.43	1.45	1.42	1.42	1.42	1.42	1.43	1.44	1.45	1.48	1.43
Berat Tanah Kering + Ring	gr	33.00	32.90	32.80	32.70	32.80	32.80	32.70	32.70	32.50	32.60	32.70	32.70	32.50	32.60	32.50	32.50	32.70	32.70	32.80	33.00	32.60
Berat Tanah Kering	gr	14.60	14.40	14.40	14.30	14.30	14.40	14.30	14.20	14.10	14.20	14.20	14.30	14.10	14.10	14.10	14.10	14.20	14.30	14.40	14.50	14.20
Berat Air	gr	0.90	1.30	1.00	1.30	1.40	1.30	1.30	1.20	1.20	1.20	1.20	1.40	1.20	1.20	1.20	1.20	1.20	1.30	1.30	1.50	1.20
Kadar Air	%	6.16	9.03	6.94	9.09	9.79	9.03	9.09	8.45	8.51	8.45	8.45	9.79	8.51	8.51	8.51	8.51	8.45	9.09	9.03	10.34	8.45
Dry Density of Soil (γd)	gr/cm3	1.351	1.333	1.333	1.323	1.323	1.333	1.323	1.314	1.305	1.314	1.314	1.323	1.305	1.305	1.305	1.305	1.314	1.323	1.333	1.342	1.314
γd Rata-Rata	gr/cm3	1.321																				

Lereng Dengan Perkuatan B = 8 cm ; α = 56° ; n=2

Lapisan		1			2			3			4			5			6			7		
Nomor Cawan		**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Berat Cawan + Tanah Basah	gram	21.60	21.50	21.40	21.60	21.50	21.90	21.10	21.20	21.20	21.40	21.60	21.70	21.90	21.50	21.40	20.90	20.90	20.80	21.00	21.00	20.90
Berat Cawan + Tanah Kering	gram	20.20	20.10	20.10	20.30	20.30	20.60	19.80	19.90	20.20	20.20	20.40	20.30	20.50	20.30	20.20	19.80	19.80	19.60	19.80	19.80	19.80
Berat Cawan	gram	6	6.2	6	6.2	6.1	6.2	5.6	5.9	6	6	6	6	6	6	6	5.4	5.5	5.4	5.5	5.5	5.5
Berat Tanah Kering	gram	14.2	13.9	14.1	14.1	14.2	14.4	14.2	14	14.2	14.2	14.4	14.3	14.5	14.3	14.2	14.4	14.3	14.2	14.3	14.3	14.3
Berat Air	gram	1.4	1.4	1.3	1.3	1.2	1.3	1.3	1.3	1	1.2	1.2	1.4	1.4	1.2	1.2	1.1	1.1	1.2	1.2	1.2	1.1
Kadar Air	%	9.86	10.07	9.22	9.22	8.45	9.03	9.15	9.29	7.04	8.45	8.33	9.79	9.66	8.39	8.45	7.64	7.69	8.45	8.39	8.39	7.69
Kadar Air Rata-Rata	%	8.70																				

Lapisan		1			2			3			4			5			6			7		
Ring No.		**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Tingi Ring	cm	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Diameter Ring	cm	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Volume Ring	cm^3	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81	10.81
Berat Ring	gr	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40	18.40	18.50	18.40
Berat Tanah Basah + Ring	gr	34.00	33.80	33.80	33.80	33.90	34.10	33.90	33.80	33.60	33.80	34.10	34.10	34.30	34.00	33.80	33.90	33.90	33.80	33.90	34.00	33.80
Berat Tanah Basah	gr	15.60	15.30	15.40	15.40	15.40	15.70	15.50	15.30	15.20	15.40	15.60	15.70	15.90	15.50	15.40	15.50	15.40	15.40	15.50	15.50	15.40
Soil Unit Weight	gr/cm^3	1.44	1.42	1.43	1.43	1.43	1.45	1.43	1.42	1.41	1.43	1.44	1.45	1.47	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43
Berat Tanah Kering + Ring	gr	32.60	32.40	32.50	32.50	32.70	32.80	32.60	32.50	32.60	32.60	32.90	32.70	32.90	32.80	32.60	32.80	32.80	32.60	32.70	32.80	32.70
Berat Tanah Kering	gr	14.20	13.90	14.10	14.10	14.20	14.40	14.20	14.00	14.20	14.20	14.40	14.30	14.50	14.30	14.20	14.40	14.30	14.20	14.30	14.30	14.30
Berat Air	gr	1.40	1.40	1.30	1.30	1.20	1.30	1.30	1.30	1.00	1.20	1.20	1.40	1.40	1.20	1.20	1.10	1.10	1.20	1.20	1.20	1.10
Kadar Air	%	9.86	10.07	9.22	9.22	8.45	9.03	9.15	9.29	7.04	8.45	8.33	9.79	9.66	8.39	8.45	7.64	7.69	8.45	8.39	8.39	7.69
Dry Density of Soil (γd)	gr/cm3	1.314	1.286	1.305	1.305	1.314	1.333	1.314	1.295	1.314	1.314	1.333	1.323	1.342	1.323	1.314	1.333	1.323	1.314	1.323	1.323	1.323
γd Rata-Rata	gr/cm3	1.318																				

Lampiran 7

Perhitungan Daya Dukung Lereng Tanpa Perkuatan dengan Metode Analitik

A. Metode Shield

γ = 1.315 gr/cm^3

ϕ = sudut geser dalam tanah = 33,007°

D = kedalaman pondasi = 0

L = panjang pondasi = ~

1. Data (B=4 cm ; β=46°)

β = sudut kemiringan lereng = 46°

B = lebar Pondasi = 4 cm = 1,5748 inchi

b = Jarak pondasi ke puncak lereng = 4 cm = 1,5748 inchi

$f_\phi = 10^{(0,1159\phi-2,386)} = 10^{(0,1159.33,007-\ 2,386)} = 27,5113$

$f_B = 10^{(0,34-0,2 \log B)} = 10^{(0.34-0,2\log 1,5748)} = 1,9978$

$f_{D/B} = 1 + 0,65\ (D/B) = 1 + 0,65\ (0/1,5748) = 1$

$f_{B/L} = 1 – 0,27\ (B/L) = 1 – 0,27\ (1,5748/\sim) = 1$

$f_{D/B,\ B/L} = 1 + 0,39\ (D/L) = 1 + 0,39\ (0/\sim) = 1$

$f_{\beta,\ b/B} = 1 – 0,8\ [1 – (1 – \tan \beta)^2]\{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 – 0.8\ [1 – (1 – \tan 46°)^2]\{2/[2 + (1,5748/1,5748)^2 \tan 46°]\}$

$= 0,9779$

$f_{\beta,\ b/D,\ D/B} = 1 + 0,6\ (B/L)\ [1 – (1 – \tan \beta)^2]\{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 + 0,6\ (1,5478/\sim)\ [1 – (1 – \tan 46°)^2]\{2/[2 + (1,5748/1,5748)^2 \tan 46°]\}$

$= 1$

$f_{\beta,\ b/B,\ B/L} = 1 + 0,33\ (D/B) \tan \beta\ \{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 + 0,33\ (0/1,5478) \tan 46°\ \{2/[2 + (1,5748/1,5748)^2 \tan 46°]\}$

$= 1$

$N_{\gamma q} = 27,5113 \times 1,9978 \times 1 \times 1 \times 1 \times 0,9779 \times 1 \times 1 = 53,7473$

$q_u = 0,5 \times \gamma \times B \times N_{\gamma q} = 0,5 \times 1,315 \times 4 \times 53,7473 = 141,36\ gr/cm^2$

$q_u = 14,136\ kN/m^2$

2. Data (B=4 cm ; β=51°)

γ = 1.3828 gr/cm^3

ϕ = sudut geser dalam tanah = 33,007°

β = sudut kemiringan lereng = 51°

B = lebar Pondasi = 4 cm = 1,5748 inchi

D = kedalaman pondasi = 0

L = panjang pondasi = ~

b = Jarak pondasi ke puncak lereng = 4 cm = 1,5748 inchi

f_ϕ = $10^{(0,1159\phi-2,386)}$ = $10^{(0,1159.33,007-\ 2,386)}$ = 27,5113

f_B = $10^{(0,34-0,2\ \log\ B)}$ = $10^{(0.34-0,2\log\ 1,5748)}$ = 1,9978

$f_{D/B}$ = 1 + 0,65 (D/B) = 1 + 0,65 (0/1,5748) = 1

$f_{B/L}$ = 1 – 0,27 (B/L) = 1 – 0,27 (1,5748/~) = 1

$f_{D/B,\ B/L}$ = 1 + 0,39 (D/L) = 1 + 0,39 (0/~) = 1

$f_{\beta,\ b/B}$ = 1 – 0,8 [1 – (1 – tan β)^2]{2/[2 + (b/B)^2 tan β]}

= 1 – 0.8 [1 – (1 – tan 51°)^2]{2/[2 + (1,5748/1,5748)^2 tan 51°]}

= 0,9755

$f_{\beta,\ b/D,\ D/B}$ = 1 + 0,6 (B/L) [1 – (1 – tan 51)^2]{2/[2 + (b/B)^2 tan 51]}

= 1 + 0,6 (1,5478/~) [1 – (1 – tan 51°)^2]{2/[2 + (1,5748/1,5748)^2 tan 51°]}

= 1

$f_{\beta,\ b/B,\ B/L}$ = 1 + 0,33 (D/B) tan β {2/[2 + (b/B)^2 tan β]}

= 1 + 0,33 (0/1,5478) tan 51° {2/[2 + (1,5748/1,5748)^2 tan 51°]}

= 1

$N_{\gamma q}$ = 27,5113 x 1,9978 x 1 x 1 x 1 x 0,9779 x 1 x 1 = 53,6172

q_u = 0,5 x γ x B x $N_{\gamma q}$ = 0,5 x 1,315 x 4 x 53,6172 = 141,01 gr/cm^2

q_u = 14,101 kN/m^2

3. Data (B=4 cm ; β=56°)

β = sudut kemiringan lereng = 56°

B = lebar Pondasi = 4 cm = 1,5748 inchi

b = Jarak pondasi ke puncak lereng = 4 cm = 1,5748 inchi

f_ϕ = $10^{(0,1159\phi-2,386)}$ = $10^{(0,1159.33,007-\ 2,386)}$ = 27,5113

f_B $= 10^{(0,34-0,2 \log B)} = 10^{(0.34-0,2\log 1,5748)} = 1,9978$

$f_{D/B}$ $= 1 + 0,65\ (D/B) = 1 + 0,65\ (0/1,5748) = 1$

$f_{B/L}$ $= 1 - 0,27\ (B/L) = 1 - 0,27\ (1,5748/\sim) = 1$

$f_{D/B,\ B/L}$ $= 1 + 0,39\ (D/L) = 1 + 0,39\ (0/\sim) = 1$

$f_{\beta,\ b/B}$ $= 1 - 0,8\ [1 - (1 - \tan \beta)^2]\{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 - 0.8\ [1 - (1 - \tan 56°)^2]\{2/[2 + (1,5748/1,5748)^2 \tan 56°]\}$

$= 0,9732$

$f_{\beta,\ b/D,\ D/B}$ $= 1 + 0,6\ (B/L)\ [1 - (1 - \tan \beta)^2]\{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 + 0,6\ (1,5478/\sim)\ [1 - (1 - \tan 56°)^2]\{2/[2 + (1,5748/1,5748)^2 \tan 56°]\}$

$= 1$

$f_{\beta,\ b/B,\ B/L}$ $= 1 + 0,33\ (D/B) \tan \beta\ \{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 + 0,33\ (0/1,5478) \tan 56°\ \{2/[2 + (1,5748/1,5748)^2 \tan 56°]\}$

$= 1$

$N_{\gamma q}$ $= 27,5113 \times 1,9978 \times 1 \times 1 \times 1 \times 0,9732 \times 1 \times 1 = 53,4875$

q_u $= 0,5 \times \gamma \times B \times N_{\gamma q} = 0,5 \times 1,315 \times 4 \times 53,4875 = 140,67\ \ gr/cm^2$

q_u $= 14,067\ kN/m^2$

4. Data (B=6 cm ; β=46°)

β = sudut kemiringan lereng = 46°

B = lebar Pondasi = 6 cm = 2,3622 inchi

b = Jarak pondasi ke puncak lereng = 6 cm = 2,3622 inchi

f_ϕ $= 10^{(0,1159\phi-2,386)} = 10^{(0,1159.33,007-\ 2,386)} = 27,5113$

f_B $= 10^{(0,34-0,2 \log B)} = 10^{(0.34-0,2\log 2,3622)} = 1,8422$

$f_{D/B}$ $= 1 + 0,65\ (D/B) = 1 + 0,65\ (0/2,3622) = 1$

$f_{B/L}$ $= 1 - 0,27\ (B/L) = 1 - 0,27\ (2,3622/\sim) = 1$

$f_{D/B,\ B/L}$ $= 1 + 0,39\ (D/L) = 1 + 0,39\ (0/\sim) = 1$

$f_{\beta,\ b/B}$ $= 1 - 0,8\ [1 - (1 - \tan \beta)^2]\{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 - 0.8\ [1 - (1 - \tan 46°)^2]\{2/[2 + (2,3622/2,3622)^2 \tan 46°]\}$

$= 0,9779$

$f_{\beta,\ b/D,\ D/B}$ $= 1 + 0,6\ (B/L)\ [1 - (1 - \tan \beta)^2]\{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 + 0,6\ (1,5478/\sim)\ [1 - (1 - \tan 46°)^2]\{2/[2 + (2,3622/2,3622)^2 \tan 46°]\}$

$= 1$

$f_{\beta, b/B, B/L} = 1 + 0,33\ (D/B) \tan \beta\ \{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 + 0,33\ (0/2,3622) \tan 46°\ \{2/[2 + (2,3622/2,3622)^2 \tan 46°]\}$

$= 1$

$N_{\gamma q} = 27,5113 \times 1,8422 \times 1 \times 1 \times 1 \times 0,9779 \times 1 \times 1 = 49,5608$

$q_u = 0,5 \times \gamma \times B \times N_{\gamma q} = 0,5 \times 1,315 \times 6 \times 49,5608 = 195,51\ gr/cm^2$

$q_u = 19,551\ kN/m^2$

5. Data (B=6 cm ; β=51°)

β = sudut kemiringan lereng = 51°

B = lebar Pondasi = 6 cm = 2,3622 inchi

b = Jarak pondasi ke puncak lereng = 6 cm = 2,3622 inchi

$f_\phi = 10^{(0,1159\phi - 2,386)} = 10^{(0,1159.33,007 - 2,386)} = 27,5113$

$f_B = 10^{(0,34 - 0,2 \log B)} = 10^{(0.34 - 0,2 \log 2,3622)} = 1,8422$

$f_{D/B} = 1 + 0,65\ (D/B) = 1 + 0,65\ (0/2,3622) = 1$

$f_{B/L} = 1 - 0,27\ (B/L) = 1 - 0,27\ (2,3622/\sim) = 1$

$f_{D/B, B/L} = 1 + 0,39\ (D/L) = 1 + 0,39\ (0/\sim) = 1$

$f_{\beta, b/B} = 1 - 0,8\ [1 - (1 - \tan \beta)^2]\{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 - 0.8\ [1 - (1 - \tan 51°)^2]\{2/[2 + (2,3622/2,3622)^2 \tan 51°]\}$

$= 0,9755$

$f_{\beta, b/D, D/B} = 1 + 0,6\ (B/L)\ [1 - (1 - \tan \beta)^2]\{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 + 0,6\ (1,5478/\sim)\ [1 - (1 - \tan 51°)^2]\{2/[2 + (2,3622/2,3622)^2 \tan 51°]\}$

$= 1$

$f_{\beta, b/B, B/L} = 1 + 0,33\ (D/B) \tan \beta\ \{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 + 0,33\ (0/2,3622) \tan 51°\ \{2/[2 + (2,3622/2,3622)^2 \tan 51°]\}$

$= 1$

$N_{\gamma q} = 27,5113 \times 1,8422 \times 1 \times 1 \times 1 \times 0,9779 \times 1 \times 1 = 49,4409$

$q_u = 0,5 \times \gamma \times B \times N_{\gamma q} = 0,5 \times 1,315 \times 6 \times 49,4409 = 195,04\ gr/cm^2$

$q_u = 19,504\ kN/m^2$

6. Data (B=6 cm ; β=56°)

β = sudut kemiringan lereng = 56°

B = lebar Pondasi = 6 cm = 2,3622 inchi

b = Jarak pondasi ke puncak lereng = 6 cm = 2,3622 inchi

$f_\phi = 10^{(0,1159\phi - 2,386)} = 10^{(0,1159.33,007 - 2,386)} = 27,5113$

$f_B = 10^{(0,34 - 0,2 \log B)} = 10^{(0.34 - 0,2 \log 2,3622)} = 1,8422$

$f_{D/B} = 1 + 0,65\ (D/B) = 1 + 0,65\ (0/2,3622) = 1$

$f_{B/L} = 1 - 0,27\ (B/L) = 1 - 0,27\ (2,3622/\sim) = 1$

$f_{D/B,\ B/L} = 1 + 0,39\ (D/L) = 1 + 0,39\ (0/\sim) = 1$

$f_{\beta,\ b/B} = 1 - 0,8\ [1 - (1 - \tan \beta)^2]\{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 - 0.8\ [1 - (1 - \tan 56°)^2]\{2/[2 + (2,3622/2,3622)^2 \tan 56°]\}$

$= 0,9732$

$f_{\beta,\ b/D,\ D/B} = 1 + 0,6\ (B/L)\ [1 - (1 - \tan \beta)^2]\{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 + 0,6\ (1,5478/\sim)\ [1 - (1 - \tan 56°)^2]\{2/[2 + (2,3622/2,3622)^2 \tan 56°]\}$

$= 1$

$f_{\beta,\ b/B,\ B/L} = 1 + 0,33\ (D/B) \tan \beta\ \{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 + 0,33\ (0/2,3622) \tan 56°\ \{2/[2 + (2,3622/2,3622)^2 \tan 56°]\}$

$= 1$

$N_{\gamma q} = 27,5113 \times 1,8422 \times 1 \times 1 \times 1 \times 0,9732 \times 1 \times 1 = 49,3213$

$q_u = 0,5 \times \gamma \times B \times N_{\gamma q} = 0,5 \times 1,315 \times 6 \times 49,3213 = 194,57\ gr/cm^2$

$q_u = 19,457\ kN/m^2$

7. Data (B=8 cm ; β=46°)

β = sudut kemiringan lereng = 46°

B = lebar Pondasi = 8 cm = 3,1492 inchi

b = Jarak pondasi ke puncak lereng = 6 cm = 3,1496 inchi

$f_\phi = 10^{(0,1159\phi - 2,386)} = 10^{(0,1159.33,007 - 2,386)} = 27,5113$

$f_B = 10^{(0,34 - 0,2 \log B)} = 10^{(0.34 - 0,2 \log 3,1496)} = 1,7392$

$f_{D/B} = 1 + 0,65\ (D/B) = 1 + 0,65\ (0/3,1496) = 1$

$f_{B/L}$ = 1 – 0,27 (B/L) = 1 – 0,27 (3,1496/~) = 1

$f_{D/B,\ B/L}$ = 1 + 0,39 (D/L) = 1 + 0,39 (0/~) = 1

$f_{\beta,\ b/B}$ = 1 – 0,8 [1 – (1 – tan β)^2]{2/[2 + (b/B)^2 tan β]}

= 1 – 0.8 [1 – (1 – tan 46°)^2]{2/[2 + (3,1496/3,1496)^2 tan 46°]}

= 0,9779

$f_{\beta,\ b/D,\ D/B}$ = 1 + 0,6 (B/L) [1 – (1 – tan β)^2]{2/[2 + (b/B)^2 tan β]}

= 1 + 0,6 (1,5478/~) [1 – (1 – tan 46°)^2]{2/[2 + (3,1496/3,1496)^2 tan 46°]}

= 1

$f_{\beta,\ b/B,\ B/L}$ = 1 + 0,33 (D/B) tan β {2/[2 + (b/B)^2 tan β]}

= 1 + 0,33 (0/2,3622) tan 46° {2/[2 + (3,1496/3,1496)^2 tan 56°]}

= 1

$N_{\gamma q}$ = 27,5113 x 1,7392 x 1 x 1 x 1 x 0,9779 x 1 x 1 = 46,7897

q_u = 0,5 x γ x B x $N_{\gamma q}$ = 0,5 x 1,315 x 8 x 46,7879 = 246,11 gr/cm

q_u = 24,611 kN/m^2

8. Data (B=8 cm ; β=51°)

β = sudut kemiringan lereng = 51°

B = lebar Pondasi = 8 cm = 3,1492 inchi

b = Jarak pondasi ke puncak lereng = 6 cm = 3,1496 inchi

f_{ϕ} = $10^{(0,1159\phi-2,386)}$ = $10^{(0,1159.33,007-\ 2,386)}$ = 27,5113

f_B = $10^{(0,34-0,2\ \log\ B)}$ = $10^{(0.34-0,2\log 3,1496)}$ = 1,7392

$f_{D/B}$ = 1 + 0,65 (D/B) = 1 + 0,65 (0/3,1496) = 1

$f_{B/L}$ = 1 – 0,27 (B/L) = 1 – 0,27 (3,1496/~) = 1

$f_{D/B,\ B/L}$ = 1 + 0,39 (D/L) = 1 + 0,39 (0/~) = 1

$f_{\beta,\ b/B}$ = 1 – 0,8 [1 – (1 – tan β)^2]{2/[2 + (b/B)^2 tan β]}

= 1 – 0.8 [1 – (1 – tan 51°)^2]{2/[2 + (3,1496/3,1496)^2 tan 51°]}

= 0,9755

$f_{\beta,\ b/D,\ D/B}$ = 1 + 0,6 (B/L) [1 – (1 – tan β)^2]{2/[2 + (b/B)^2 tan β]}

= 1 + 0,6 (1,5478/~) [1 – (1 – tan 51°)^2]{2/[2 + (3,1496/3,1496)^2 tan 51°]}

= 1

$f_{\beta, b/B, B/L}$ $= 1 + 0,33\ (D/B) \tan \beta\ \{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 + 0,33\ (0/2,3622) \tan 51°\ \{2/[2 + (3,1496/3,1496)^2 \tan 51°]\}$

$= 1$

$N_{\gamma q}$ $= 27,5113 \times 1,7392 \times 1 \times 1 \times 1 \times 0,9755 \times 1 \times 1 = 46,6765$

q_u $= 0,5 \times \gamma \times B \times N_{\gamma q} = 0,5 \times 1,315 \times 8 \times 46,6765 = 245,52\ gr/cm^2$

q_u $= 24,552\ kN/m^2$

9. Data (B=8 cm ; β=56°)

β = sudut kemiringan lereng = 56°

B = lebar Pondasi = 8 cm = 3,1492 inchi

b = Jarak pondasi ke puncak lereng = 6 cm = 3,1496 inchi

f_ϕ $= 10^{(0,1159\phi - 2,386)} = 10^{(0,1159.33,007 - 2,386)} = 27,5113$

f_B $= 10^{(0,34 - 0,2 \log B)} = 10^{(0.34 - 0,2 \log 3,1496)} = 1,7392$

$f_{D/B}$ $= 1 + 0,65\ (D/B) = 1 + 0,65\ (0/3,1496) = 1$

$f_{B/L}$ $= 1 - 0,27\ (B/L) = 1 - 0,27\ (3,1496/\sim) = 1$

$f_{D/B, B/L}$ $= 1 + 0,39\ (D/L) = 1 + 0,39\ (0/\sim) = 1$

$f_{\beta, b/B}$ $= 1 - 0,8\ [1 - (1 - \tan \beta)^2]\{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 - 0.8\ [1 - (1 - \tan 56°)^2]\{2/[2 + (3,1496/3,1496)^2 \tan 56°]\}$

$= 0,9732$

$f_{\beta, b/D, D/B}$ $= 1 + 0,6\ (B/L)\ [1 - (1 - \tan \beta)^2]\{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 + 0,6\ (1,5478/\sim)\ [1 - (1 - \tan 56°)^2]\{2/[2 + (3,1496/3,1496)^2 \tan 56°]\}$

$= 1$

$f_{\beta, b/B, B/L}$ $= 1 + 0,33\ (D/B) \tan \beta\ \{2/[2 + (b/B)^2 \tan \beta]\}$

$= 1 + 0,33\ (0/2,3622) \tan 56°\ \{2/[2 + (3,1496/3,1496)^2 \tan 56°]\}$

$= 1$

$N_{\gamma q}$ $= 27,5113 \times 1,7392 \times 1 \times 1 \times 1 \times 0,9732 \times 1 \times 1 = 46,5636$

q_u $= 0,5 \times \gamma \times B \times N_{\gamma q} = 0,5 \times 1,315 \times 8 \times 46,5636 = 244,92\ gr/$

q_u $= 24,492\ kN/m^2$

B. Metode Hansen

γ = 1.315 gr/cm^3

ϕ = sudut geser dalam tanah = 33,007°

D = kedalaman pondasi = 0

L = panjang pondasi = ~

1. Data (B=4 cm ; β=46°)

β = sudut kemiringan lereng = 46°

B = lebar Pondasi = 4 cm

b = Jarak pondasi ke puncak lereng = 4 cm

Untuk d = 4B (Tanah Datar) :

$Nq = e^{\pi \tan\phi} . tan^2 (45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007} . tan^2 (45 + \frac{33{,}007}{2}) = 26{,}114$

$Nc = (Nq - 1)\ cot\ \phi = (26{,}114 - 1)\ cot\ 33{,}007 = 38{,}662$

$N\gamma = 1{,}5\ (Nq - 1)\ tan\ \phi = 1{,}5\ (26{,}114 - 1)\ tan\ 33{,}007 = 24{,}470$

Dengan mengasumsikan bahwa nilai c = 0 dan D_f = 0, maka diperoleh nilai daya dukung sebagai berikut;

$$q_u = (\ c\ x\ Nc\ ) + (\ D_f\ x\ \gamma\ x\ Nq\ ) + (\ \gamma\ x\ \frac{B}{2}\ x\ N_\gamma)$$

$$q_u = (\ 0\ x\ 38{,}662\ ) + (\ 0\ x\ 1{,}315\ x\ 26{,}114\ ) + (\ 1{,}315\ x\ \frac{4}{2}\ x\ 24{,}470)$$

q_u = 64,36 gr/cm^2 = 6,436 kN/m^2

Untuk Tanah Lereng :

$$q_u = (\ c.N_c.s_c.d_c.i_c.g_c.b_c\ ) + (\ D_f.\gamma.N_q.s_q.d_q.i_q.g_q.b_q\ ) + (\ \gamma.\frac{B}{2}.N_\gamma.s_\gamma.d_\gamma.i_\gamma.g_\gamma.b_\gamma\ )$$

$Nq = e^{\pi \tan\phi} . tan^2 (45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007} . tan^2 (45 + \frac{33{,}007}{2}) = 26{,}114$

$Nc = (Nq - 1)\ cot\ \phi = (26{,}114 - 1)\ cot\ 33{,}007 = 38{,}662$

$N\gamma = 1{,}5\ (Nq - 1)\ tan\ \phi = 1{,}5\ (26{,}114 - 1)\ tan\ 33{,}007 = 24{,}470$

dimana;

$d_c = d_q = d_\gamma = 1$ (faktor kedalaman)

$i_c = i_q = i_\gamma = 1$ (faktor kemiringan beban)

$s_c = s_q = s_\gamma = 1$ (faktor bentuk pondasi)

$b_c = b_q = b_\gamma = 1$ (faktor kemiringan dasar pondasi)

untuk d=0 cm, maka;

$g_q = g_\gamma = (1 - tan\beta)^2 = (1 - tan\ 46°)^2 = 0{,}972$

untuk D_f = 0 cm maka nilai daya dukung :

$$q_u = 1{,}315\ x\ \frac{4}{2}\ x\ 24{,}470\ x\ 0{,}972 = 62.554\ gr/cm^2 = 6{,}255\ kN/m^2$$

Dengan menggunakan interpolasi, dihitung daya dukung pada kondisi d = B (4 cm) :

$d = 0 \rightarrow q_u = 6{,}255\ kN/m^2$

$d = 4B\ (16\ cm) \rightarrow q_u = 6{,}436\ kN/m^2$

$$\frac{6{,}436-6{,}255}{16-0} = \frac{qu-6{,}255}{4-0}$$

$0{,}724 = 16\ q_u - 100{,}08$

$q_u = 6{,}300\ kN/m^2$

2. Data (B=4 cm ; β=51°)

β = sudut kemiringan lereng = 51°

B = lebar Pondasi = 4 cm

b = Jarak pondasi ke puncak lereng = 4 cm

<u>Untuk d = 4B (Tanah Datar) :</u>

$$Nq = e^{\pi\ tan\phi}\ .\ tan^2\left(45 + \frac{\phi}{2}\right) = e^{\pi \tan 33{,}007}\ .\ tan^2\left(45 + \frac{33{,}007}{2}\right) = 26{,}114$$

$Nc = (Nq - 1)\ cot\ \phi = (26{,}114 - 1)\ cot\ 33{,}007 = 38{,}662$

$N\gamma = 1{,}5\ (Nq - 1)\ tan\ \phi = 1{,}5\ (26{,}114 - 1)\ tan\ 33{,}007 = 24{,}470$

Dengan mengasumsikan bahwa nilai c = 0 dan D_f = 0, maka diperoleh nilai daya dukung sebagai berikut;

$$q_u = (\ c\ x\ Nc\ ) + (\ D_f\ x\ \gamma\ x\ Nq\ ) + (\ \gamma\ x\ \frac{B}{2}\ x\ N_\gamma)$$

$$q_u = (\ 0\ x\ 38{,}662\ ) + (\ 0\ x\ 1{,}315\ x\ 26{,}114\ ) + (\ 1{,}315\ x\ \frac{4}{2}\ x\ 24{,}470)$$

$q_u = 64{,}36\ gr/cm^2 = 6{,}436\ kN/m^2$

Untuk Tanah Lereng :

$$q_u = (c.N_c.s_c.d_c.i_c.g_c.b_c) + (D_f.\gamma.N_q.s_q.d_q.i_q.g_q.b_q) + (\gamma.\frac{B}{2}.N_\gamma.s_\gamma.d_\gamma.i_\gamma.g_\gamma.b_\gamma)$$

$Nq = e^{\pi \tan\phi} . tan^2 (45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007} . tan^2 (45 + \frac{33{,}007}{2}) = 26{,}114$

$Nc = (Nq - 1)\ cot\ \phi = (26{,}114 - 1)\ cot\ 33{,}007 = 38{,}662$

$N\gamma = 1{,}5\ (Nq - 1)\ tan\ \phi = 1{,}5\ (26{,}114 - 1)\ tan\ 33{,}007 = 24{,}470$

dimana;

$d_c = d_q = d_\gamma = 1$ (faktor kedalaman)

$i_c = i_q = i_\gamma = 1$ (faktor kemiringan beban)

$s_c = s_q = s_\gamma = 1$ (faktor bentuk pondasi)

$b_c = b_q = b_\gamma = 1$ (faktor kemiringan dasar pondasi)

untuk d=0 cm, maka;

$g_q = g_\gamma = (1 - tan\beta)^2 = (1 - tan\ 46°)^2 = 0{,}969$

untuk D_f = 0 cm maka nilai daya dukung :

$$q_u = 1{,}315\ x\ \frac{4}{2}\ x\ 24{,}470\ x\ 0{,}969 = 62{,}361\ gr/cm^2 = 6{,}236\ kN/m^2$$

Dengan menggunakan interpolasi, dihitung daya dukung pada kondisi d = B (4 cm) :

$d = 0 \rightarrow q_u = 6{,}236\ kN/m^2$

$d = 4B\ (16\ cm) \rightarrow q_u = 6{,}436\ kN/m^2$

$\frac{6{,}436 - 6{,}236}{16 - 0} = \frac{qu - 6{,}236}{4 - 0}$

$0{,}8 = 16\ q_u - 99.776$

$q_u = 6{,}286\ kN/m^2$

3. Data (B=4 cm ; β=56°)

β = sudut kemiringan lereng = 56°

B = lebar Pondasi = 4 cm

b = Jarak pondasi ke puncak lereng = 4 cm

Untuk d = 4B (Tanah Datar) :

$Nq = e^{\pi \tan\phi} . tan^2 (45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007} . tan^2 (45 + \frac{33{,}007}{2}) = 26{,}114$

Nc = (Nq – 1) *cot* ϕ = (26,114 – 1) *cot* 33,007 = 38,662

Nγ = 1,5 (Nq – 1) *tan* ϕ = 1,5 (26,114 – 1) *tan* 33,007 = 24,470

Dengan mengasumsikan bahwa nilai c = 0 dan D_f = 0, maka diperoleh nilai daya dukung sebagai berikut;

$$q_u = (c \; x \; Nc) + (D_f \; x \; \gamma \; x \; Nq) + (\gamma \; x \; \frac{B}{2} \; x \; N_\gamma)$$

$$q_u = (0 \; x \; 38,662) + (0 \; x \; 1,315 \; x \; 26,114) + (1,315 \; x \; \frac{4}{2} \; x \; 24,470)$$

q_u = 64,36 gr/cm^2 = 6,436 kN/m^2

<u>Untuk Tanah Lereng :</u>

$$q_u = (c.N_c.s_c.d_c.i_c.g_c.b_c) + (D_f.\gamma.N_q.s_q.d_q.i_q.g_q.b_q) + (\gamma.\frac{B}{2}.N_\gamma.s_\gamma.d_\gamma.i_\gamma.g_\gamma.b_\gamma)$$

$$Nq = e^{\pi \, tan\phi} . \; tan^2 (45 + \frac{\phi}{2}) = e^{\pi \tan 33,007} . \; tan^2 (45 + \frac{33,007}{2}) = 26,114$$

Nc = (Nq – 1) *cot* ϕ = (26,114 – 1) *cot* 33,007 = 38,662

Nγ = 1,5 (Nq – 1) *tan* ϕ = 1,5 (26,114 – 1) *tan* 33,007 = 24,470

dimana;

$d_c = d_q = d_\gamma = 1$ (faktor kedalaman)

$i_c = i_q = i_\gamma = 1$ (faktor kemiringan beban)

$s_c = s_q = s_\gamma = 1$ (faktor bentuk pondasi)

$b_c = b_q = b_\gamma = 1$ (faktor kemiringan dasar pondasi)

untuk d=0 cm, maka;

$g_q = g_\gamma = (1 - tan\beta)^2 = (1 - tan \; 46°)^2 = 0,966$

untuk D_f = 0 cm maka nilai daya dukung :

$$q_u = 1,315 \; x \; \frac{4}{2} \; x \; 24,470 \; x \; 0,966 = 62.168 \text{ gr/cm}^2 = 6,217 \text{ kN/m}^2$$

Dengan menggunakan interpolasi, dihitung daya dukung pada kondisi d = B (4 cm) :

d = 0 → q_u = 6,537 kN/m^2

d = 4B (16 cm) → q_u = 6,436 kN/m^2

$$\frac{6,436-6,217}{16-0} = \frac{qu-6,217}{4-0}$$

0,876 = 16 q_u – 99.472

q_u = 6,271 kN/m^2

4. Data (B=6 cm ; β=46°)

β = sudut kemiringan lereng = 46°

B = lebar Pondasi = 6 cm

b = Jarak pondasi ke puncak lereng = 6 cm

Untuk d = 4B (Tanah Datar) :

$Nq = e^{\pi \tan\phi} . \tan^2(45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007} . \tan^2(45 + \frac{33{,}007}{2}) = 26{,}114$

$Nc = (Nq - 1) \cot \phi = (26{,}114 - 1) \cot 33{,}007 = 38{,}662$

$N\gamma = 1{,}5 (Nq - 1) \tan \phi = 1{,}5 (26{,}114 - 1) \tan 33{,}007 = 24{,}470$

Dengan mengasumsikan bahwa nilai c = 0 dan D_f = 0, maka diperoleh nilai daya dukung sebagai berikut;

$$q_u = (c \times Nc) + (D_f \times \gamma \times Nq) + (\gamma \times \frac{B}{2} \times N_\gamma)$$

$$q_u = (0 \times 38{,}662) + (0 \times 1{,}315 \times 26{,}114) + (1{,}315 \times \frac{6}{2} \times 24{,}470)$$

q_u = 96.53 gr/cm^2 = 9.653 kN/m^2

Untuk Tanah Lereng :

$$q_u = (c.N_c.s_c.d_c.i_c.g_c.b_c) + (D_f.\gamma.N_q.s_q.d_q.i_q.g_q.b_q) + (\gamma.\frac{B}{2}.N_\gamma.s_\gamma.d_\gamma.i_\gamma.g_\gamma.b_\gamma)$$

$Nq = e^{\pi \tan\phi} . \tan^2(45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007} . \tan^2(45 + \frac{33{,}007}{2}) = 26{,}114$

$Nc = (Nq - 1) \cot \phi = (26{,}114 - 1) \cot 33{,}007 = 38{,}662$

$N\gamma = 1{,}5 (Nq - 1) \tan \phi = 1{,}5 (26{,}114 - 1) \tan 33{,}007 = 24{,}470$

dimana;

$d_c = d_q = d_\gamma = 1$ (faktor kedalaman)

$i_c = i_q = i_\gamma = 1$ (faktor kemiringan beban)

$s_c = s_q = s_\gamma = 1$ (faktor bentuk pondasi)

$b_c = b_q = b_\gamma = 1$ (faktor kemiringan dasar pondasi)

untuk d=0 cm, maka;

$g_q = g_\gamma = (1 - \tan\beta)^2 = (1 - \tan 46°)^2 = 0{,}972$

untuk D_f = 0 cm maka nilai daya dukung :

$q_u = 1{,}315\ x\ \frac{6}{2}\ x\ 24{,}470\ x\ 0{,}972 = 94{,}217\ gr/cm^2 = 9{,}422\ kN/m^2$

Dengan menggunakan interpolasi, dihitung daya dukung pada kondisi d = B (6 cm) :

d = 0 $\rightarrow q_u = 9{,}422\ kN/m^2$

d = 4B (24 cm) $\rightarrow q_u = 9.653\ kN/m^2$

$\frac{9{,}653-9{,}422}{24-0} = \frac{qu-9{,}422}{6-0}$

$1{,}386 = 24\ q_u - 226{,}128$

$q_u = 9{,}479\ kN/m^2$

5. Data (B=6 cm ; β=51°)

β = sudut kemiringan lereng = 51°

B = lebar Pondasi = 6 cm

b = Jarak pondasi ke puncak lereng = 6 cm

Untuk d = 4B (Tanah Datar) :

$Nq = e^{\pi\ tan\phi}\ .\ tan^2\ (45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007}\ .\ tan^2\ (45 + \frac{33{,}007}{2}) = 26{,}114$

$Nc = (Nq - 1)\ cot\ \phi = (26{,}114 - 1)\ cot\ 33{,}007 = 38{,}662$

$N\gamma = 1{,}5\ (Nq - 1)\ tan\ \phi = 1{,}5\ (26{,}114 - 1)\ tan\ 33{,}007 = 24{,}470$

Dengan mengasumsikan bahwa nilai c = 0 dan D_f = 0, maka diperoleh nilai daya dukung sebagai berikut;

$q_u = (\ c\ x\ Nc\ ) + (\ D_f\ x\ \gamma\ x\ Nq\ ) + (\ \gamma\ x\ \frac{B}{2}\ x\ N_\gamma)$

$q_u = (\ 0\ x\ 38{,}662\ ) + (\ 0\ x\ 1{,}315\ x\ 26{,}114\ ) + (\ 1{,}315\ x\ \frac{6}{2}\ x\ 24{,}470)$

$q_u = 96.53\ gr/cm^2 = 9{,}653\ kN/m^2$

Untuk Tanah Lereng :

$q_u = (\ c.N_c.s_c.d_c.i_c.g_c.b_c\ ) + (\ D_f.\gamma.N_q.s_q.d_q.i_q.g_q.b_q\ ) + (\ \gamma.\frac{B}{2}.N_\gamma.s_\gamma.d_\gamma.i_\gamma.g_\gamma.b_\gamma\ )$

$Nq = e^{\pi\ tan\phi}\ .\ tan^2\ (45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007}\ .\ tan^2\ (45 + \frac{33{,}007}{2}) = 26{,}114$

$Nc = (Nq - 1)\ cot\ \phi = (26{,}114 - 1)\ cot\ 33{,}007 = 38{,}662$

$N\gamma = 1{,}5\ (Nq - 1)\ tan\ \phi = 1{,}5\ (26{,}114 - 1)\ tan\ 33{,}007 = 24{,}470$

dimana;

$d_c = d_q = d_\gamma = 1$ (faktor kedalaman)

$i_c = i_q = i_\gamma = 1$ (faktor kemiringan beban)

$s_c = s_q = s_\gamma = 1$ (faktor bentuk pondasi)

$b_c = b_q = b_\gamma = 1$ (faktor kemiringan dasar pondasi)

untuk d=0 cm, maka;

$g_q = g_\gamma = (1 - tan\beta)^2 = (1 - tan\ 51°)^2 = 0{,}969$

untuk D_f = 0 cm maka nilai daya dukung :

$$q_u = 1{,}315\ x\ \frac{6}{2}\ x\ 24{,}470\ x\ 0{,}969 = 93{,}542\ gr/cm^2 = 9{,}354 kN/m^2$$

Dengan menggunakan interpolasi, dihitung daya dukung pada kondisi d = B (6 cm) :

d = 0 $\rightarrow q_u = 9{,}354\ kN/m^2$

d = 4B (24 cm) $\rightarrow q_u = 9{,}653\ kN/m^2$

$$\frac{9{,}653-9{,}354}{24-0} = \frac{qu-9{,}354}{6-0}$$

$1{,}794 = 24\ q_u - 224{,}496$

$q_u = 9{,}428\ kN/m^2$

6. Data (B=6 cm ; β=56°)

β = sudut kemiringan lereng = 56°

B = lebar Pondasi = 6 cm

b = Jarak pondasi ke puncak lereng = 6 cm

<u>Untuk d = 4B (Tanah Datar) :</u>

$$Nq = e^{\pi\ tan\phi}\ .\ tan^2\left(45 + \frac{\phi}{2}\right) = e^{\pi \tan 33{,}007}.\ tan^2\left(45 + \frac{33{,}007}{2}\right) = 26{,}114$$

$Nc = (Nq - 1)\ cot\ \phi = (26{,}114 - 1)\ cot\ 33{,}007 = 38{,}662$

$N\gamma = 1{,}5\ (Nq - 1)\ tan\ \phi = 1{,}5\ (26{,}114 - 1)\ tan\ 33{,}007 = 24{,}470$

Dengan mengasumsikan bahwa nilai c = 0 dan D_f = 0, maka diperoleh nilai daya dukung sebagai berikut;

$$q_u = (\ c\ x\ Nc\ ) + (\ D_f\ x\ \gamma\ x\ Nq\ ) + (\ \gamma\ x\ \frac{B}{2}\ x\ N_\gamma)$$

q_u = (0 *x* 38,662) + (0 *x* 1,315 *x* 26,114) + (1,315 *x* $\frac{6}{2}$ *x* 24,470)

q_u = 96.53 gr/cm^2 = 9,653 kN/m^2

Untuk Tanah Lereng :

q_u = ($c.N_c.s_c.d_c.i_c.g_c.b_c$) + ($D_f.\gamma.N_q.s_q.d_q.i_q.g_q.b_q$) + ($\gamma.\frac{B}{2}.N_\gamma.s_\gamma.d_\gamma.i_\gamma.g_\gamma.b_\gamma$)

Nq = $e^{\pi \tan\phi}$. *tan*^{2} (45 + $\frac{\phi}{2}$) = $e^{\pi \tan 33{,}007}$. *tan*^{2} (45 + $\frac{33{,}007}{2}$) = 26,114

Nc = (Nq – 1) *cot* ϕ = (26,114 – 1) *cot* 33,007 = 38,662

Nγ = 1,5 (Nq – 1) *tan* ϕ = 1,5 (26,114 – 1) *tan* 33,007 = 24,470

dimana;

$d_c = d_q = d_\gamma = 1$ (faktor kedalaman)

$i_c = i_q = i_\gamma = 1$ (faktor kemiringan beban)

$s_c = s_q = s_\gamma = 1$ (faktor bentuk pondasi)

$b_c = b_q = b_\gamma = 1$ (faktor kemiringan dasar pondasi)

untuk d=0 cm, maka;

$g_q = g_\gamma = (1 - tan\beta)^2 = (1 - tan\ 56°)^2 = 0{,}966$

untuk D_f = 0 cm maka nilai daya dukung :

q_u = 1,315 *x* $\frac{6}{2}$ *x* 24,470 *x* 0,966 = 93.252 gr/cm^2 = 9,325 kN/m^2

Dengan menggunakan interpolasi, dihitung daya dukung pada kondisi d = B (6 cm) :

d = 0 → q_u = 9,325 kN/m^2

d = 4B (24 cm) → q_u = 9,653 kN/m^2

$\frac{9{,}653-9{,}325}{24-0} = \frac{qu-9{,}325}{6-0}$

1,968= 24 q_u – 223,8

q_u = 9,407 kN/m^2

7. Data (B=8 cm ; β=46°)

β = sudut kemiringan lereng = 46°

B = lebar Pondasi = 8 cm

b = Jarak pondasi ke puncak lereng = 8 cm

Untuk d = 4B (Tanah Datar) :

$Nq = e^{\pi \tan\phi} . \tan^2(45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007} . \tan^2(45 + \frac{33{,}007}{2}) = 26{,}114$

$Nc = (Nq - 1) \cot \phi = (26{,}114 - 1) \cot 33{,}007 = 38{,}662$

$N\gamma = 1{,}5 (Nq - 1) \tan \phi = 1{,}5 (26{,}114 - 1) \tan 33{,}007 = 24{,}470$

Dengan mengasumsikan bahwa nilai c = 0 dan D_f = 0, maka diperoleh nilai daya dukung sebagai berikut;

$$q_u = (c \times Nc) + (D_f \times \gamma \times Nq) + (\gamma \times \frac{B}{2} \times N_\gamma)$$

$$q_u = (0 \times 38{,}662) + (0 \times 1{,}315 \times 26{,}114) + (1{,}315 \times \frac{8}{2} \times 24{,}470)$$

$$q_u = 128.71 \text{ gr/cm}^2 = 12.871 \text{ kN/m}^2$$

Untuk Tanah Lereng :

$$q_u = (c.N_c.s_c.d_c.i_c.g_c.b_c) + (D_f.\gamma.N_q.s_q.d_q.i_q.g_q.b_q) + (\gamma.\frac{B}{2}.N_\gamma.s_\gamma.d_\gamma.i_\gamma.g_\gamma.b_\gamma)$$

$Nq = e^{\pi \tan\phi} . \tan^2(45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007} . \tan^2(45 + \frac{33{,}007}{2}) = 26{,}114$

$Nc = (Nq - 1) \cot \phi = (26{,}114 - 1) \cot 33{,}007 = 38{,}662$

$N\gamma = 1{,}5 (Nq - 1) \tan \phi = 1{,}5 (26{,}114 - 1) \tan 33{,}007 = 24{,}470$

dimana;

$d_c = d_q = d_\gamma = 1$ (faktor kedalaman)

$i_c = i_q = i_\gamma = 1$ (faktor kemiringan beban)

$s_c = s_q = s_\gamma = 1$ (faktor bentuk pondasi)

$b_c = b_q = b_\gamma = 1$ (faktor kemiringan dasar pondasi)

untuk d=0 cm, maka;

$g_q = g_\gamma = (1 - \tan\beta)^2 = (1 - \tan 46°)^2 = 0{,}972$

untuk D_f = 0 cm maka nilai daya dukung :

$$q_u = 1{,}315 \times \frac{8}{2} \times 24{,}470 \times 0{,}972 = 125{,}108 \text{ gr/cm}^2 = 12{,}511 \text{ kN/m}^2$$

Dengan menggunakan interpolasi, dihitung daya dukung pada kondisi d = B (8 cm) :

$d = 0 \rightarrow q_u = 12{,}511 \text{ kN/m}^2$

$d = 4B (32 \text{ cm}) \rightarrow q_u = 12{,}871 \text{ kN/m}^2$

$$\frac{12{,}871 - 12{,}511}{32 - 0} = \frac{qu - 12{,}511}{8 - 0}$$

$2{,}88 = 32\ q_u - 400{,}352$

$q_u = 12{,}601\ kN/m^2$

8. Data (B=8 cm ; β=51°)

β = sudut kemiringan lereng = 51°

B = lebar Pondasi = 8 cm

b = Jarak pondasi ke puncak lereng = 8 cm

Untuk d = 4B (Tanah Datar) :

$Nq = e^{\pi\ tan\phi} . tan^2 (45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007} . tan^2 (45 + \frac{33{,}007}{2}) = 26{,}114$

$Nc = (Nq - 1)\ cot\ \phi = (26{,}114 - 1)\ cot\ 33{,}007 = 38{,}662$

$N\gamma = 1{,}5\ (Nq - 1)\ tan\ \phi = 1{,}5\ (26{,}114 - 1)\ tan\ 33{,}007 = 24{,}470$

Dengan mengasumsikan bahwa nilai c = 0 dan D_f = 0, maka diperoleh nilai daya dukung sebagai berikut;

$$q_u = (\ c\ x\ Nc\ ) + (\ D_f\ x\ \gamma\ x\ Nq\ ) + (\ \gamma\ x\ \frac{B}{2}\ x\ N_\gamma)$$

$$q_u = (\ 0\ x\ 38{,}662\ ) + (\ 0\ x\ 1{,}315\ x\ 26{,}114\ ) + (\ 1{,}315\ x\ \frac{8}{2}\ x\ 24{,}470)$$

$q_u = 128.71\ gr/cm^2 = 12.871\ kN/m^2$

Untuk Tanah Lereng :

$$q_u = (\ c.N_c.s_c.d_c.i_c.g_c.b_c\ ) + (\ D_f.\gamma.N_q.s_q.d_q.i_q.g_q.b_q\ ) + (\ \gamma.\frac{B}{2}.N_\gamma.s_\gamma.d_\gamma.i_\gamma.g_\gamma.b_\gamma\ )$$

$Nq = e^{\pi\ tan\phi} . tan^2 (45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007} . tan^2 (45 + \frac{33{,}007}{2}) = 26{,}114$

$Nc = (Nq - 1)\ cot\ \phi = (26{,}114 - 1)\ cot\ 33{,}007 = 38{,}662$

$N\gamma = 1{,}5\ (Nq - 1)\ tan\ \phi = 1{,}5\ (26{,}114 - 1)\ tan\ 33{,}007 = 24{,}470$

dimana;

$d_c = d_q = d_\gamma = 1$ (faktor kedalaman)

$i_c = i_q = i_\gamma = 1$ (faktor kemiringan beban)

$s_c = s_q = s_\gamma = 1$ (faktor bentuk pondasi)

$b_c = b_q = b_\gamma = 1$ (faktor kemiringan dasar pondasi)

untuk d=0 cm, maka;

$g_q = g_\gamma = (1 - tan\beta\ )^2 = (1 - tan\ 51°\ )^2 = 0{,}969$

untuk D_f = 0 cm maka nilai daya dukung :

$q_u = 1{,}315 \; x \; \frac{8}{2} \; x \; 24{,}470 \; x \; 0{,}969 = 124{,}722 gr/cm^2 = 12{,}472 \; kN/m^2$

Dengan menggunakan interpolasi, dihitung daya dukung pada kondisi d = B (8 cm) :

d = 0 $\rightarrow q_u = 12{,}472 \; kN/m^2$

d = 4B (32 cm) $\rightarrow q_u = 12{,}871 \; kN/m^2$

$\frac{12{,}871 - 12{,}472}{32 - 0} = \frac{qu - 12{,}472}{8 - 0}$

$3{,}192 = 32 \; q_u - 399{,}104$

$q_u = 12{,}572 \; kN/m^2$

9. Data (B=8 cm ; β=56°)

β = sudut kemiringan lereng = 56°

B = lebar Pondasi = 8 cm

b = Jarak pondasi ke puncak lereng = 8 cm

Untuk d = 4B (Tanah Datar) :

$Nq = e^{\pi \tan\phi} \cdot tan^2 (45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007} \cdot tan^2 (45 + \frac{33{,}007}{2}) = 26{,}114$

$Nc = (Nq - 1) \; cot \; \phi = (26{,}114 - 1) \; cot \; 33{,}007 = 38{,}662$

$N\gamma = 1{,}5 \; (Nq - 1) \; tan \; \phi = 1{,}5 \; (26{,}114 - 1) \; tan \; 33{,}007 = 24{,}470$

Dengan mengasumsikan bahwa nilai c = 0 dan D_f = 0, maka diperoleh nilai daya dukung sebagai berikut;

$q_u = (c \; x \; Nc) + (D_f \; x \; \gamma \; x \; Nq) + (\gamma \; x \; \frac{B}{2} \; x \; N_\gamma)$

$q_u = (0 \; x \; 38{,}662) + (0 \; x \; 1{,}315 \; x \; 26{,}114) + (1{,}315 \; x \; \frac{8}{2} \; x \; 24{,}470)$

$q_u = 128.71 \; gr/cm^2 = 12.871 \; kN/m^2$

Untuk Tanah Lereng :

$q_u = (c.N_c.s_c.d_c.i_c.g_c.b_c) + (D_f.\gamma.N_q.s_q.d_q.i_q.g_q.b_q) + (\gamma.\frac{B}{2}.N_\gamma.s_\gamma.d_\gamma.i_\gamma.g_\gamma.b_\gamma)$

$Nq = e^{\pi \tan\phi} \cdot tan^2 (45 + \frac{\phi}{2}) = e^{\pi \tan 33{,}007} \cdot tan^2 (45 + \frac{33{,}007}{2}) = 26{,}114$

$Nc = (Nq - 1) \; cot \; \phi = (26{,}114 - 1) \; cot \; 33{,}007 = 38{,}662$

$N\gamma = 1{,}5 \; (Nq - 1) \; tan \; \phi = 1{,}5 \; (26{,}114 - 1) \; tan \; 33{,}007 = 24{,}470$

dimana;

$d_c = d_q = d_\gamma = 1$ (faktor kedalaman)

$i_c = i_q = i_\gamma = 1$ (faktor kemiringan beban)

$s_c = s_q = s_\gamma = 1$ (faktor bentuk pondasi)

$b_c = b_q = b_\gamma = 1$ (faktor kemiringan dasar pondasi)

untuk d=0 cm, maka;

$g_q = g_\gamma = (1 - tan\beta)^2 = (1 - tan\ 46°)^2 = 0{,}966$

untuk D_f = 0 cm maka nilai daya dukung :

$$q_u = 1{,}315\ x\ \frac{8}{2}\ x\ 24{,}470\ x\ 0{,}966 = 124{,}341\ gr/cm^2 = 12{,}434\ kN/m^2$$

Dengan menggunakan interpolasi, dihitung daya dukung pada kondisi d = B (8 cm) :

$d = 0 \rightarrow q_u = 12{,}434\ kN/m^2$

$d = 4B\ (32\ cm) \rightarrow q_u = 12{,}871\ kN/m^2$

$$\frac{12{,}871 - 12{,}434}{32 - 0} = \frac{qu - 12.434}{8 - 0}$$

$3{,}496 = 32\ q_u - 397{,}888$

$q_u = 12{,}543\ kN/m^2$

Lampiran 8

Hasil Analisis Daya Dukung Lereng dengan Metode Eksperimen

Lereng Tanpa Perkuatan

1. α=46°, B=4cm, d/B=1

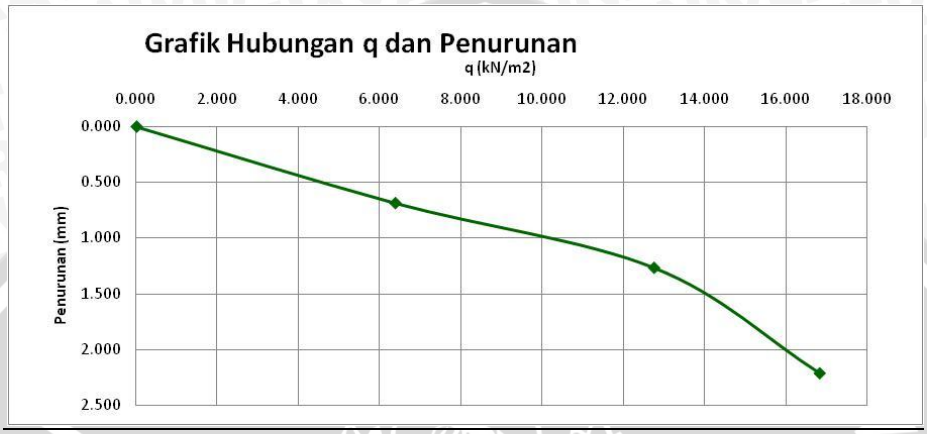
Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	2806	0.000	0.000	0.000	0.000
25	2740	0.330	0.825	0.064	6.378
50	2598	1.040	2.600	0.128	12.755
75	2431	1.875	4.688	0.191	19.133
77	2400	2.030	5.075	0.196	19.643

2. α=51°, B=4cm, d/B=1

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	3160	0.000	0.000	0.000	0.000
25	3043	0.585	1.463	0.064	6.378
50	2926	1.170	2.925	0.128	12.755
73	2662	2.490	6.225	0.186	18.622

3. α=56°, B=4cm, d/B=1

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	3455	0.000	0.000	0.000	0.000
25	3318	0.685	1.713	0.064	6.378
50	3202	1.265	3.163	0.128	12.755
66	3013	2.210	5.525	0.168	16.837

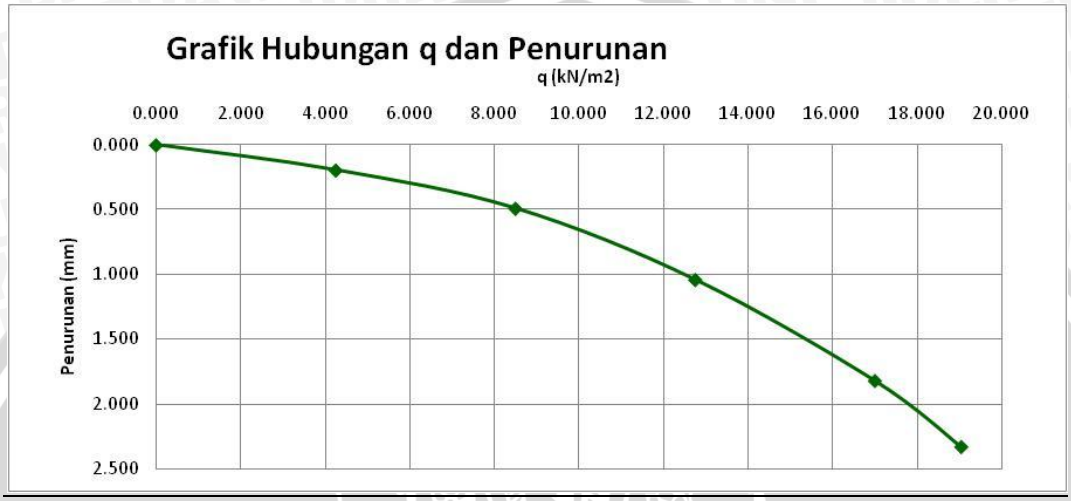


4. α=46°, B=6cm, d/B=1

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)
0	2789	0.000	0.000	0.000
25	2753	0.180	0.300	0.043
50	2694	0.475	0.792	0.085
75	2597	0.960	1.600	0.128
100	2458	1.655	2.758	0.170
124.5	2110	3.395	5.658	0.212

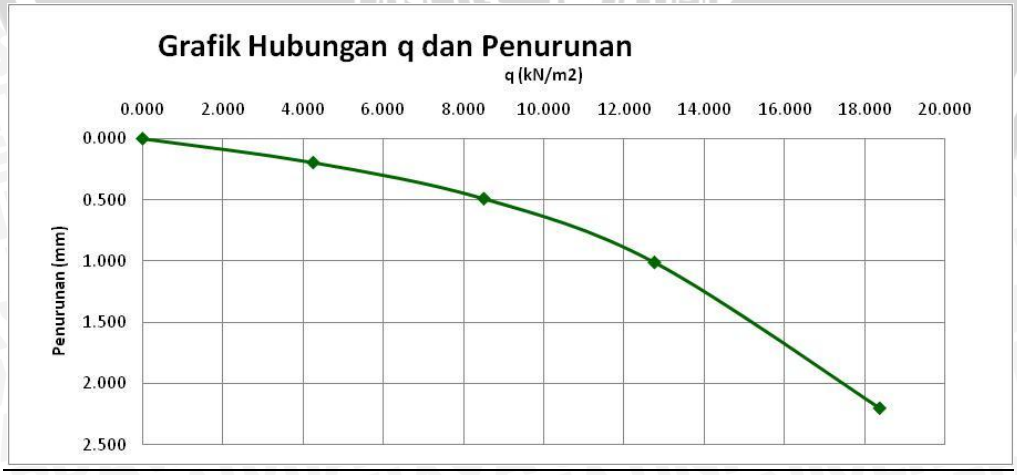
5. α=51°, B=6cm, d/B=1

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	2450	0.000	0.000	0.000	0.000
25	2411	0.195	0.325	0.043	4.252
50	2352	0.490	0.817	0.085	8.503
75	2242	1.040	1.733	0.128	12.755
100	2086	1.820	3.033	0.170	17.007
112	1984	2.330	3.883	0.190	19.048



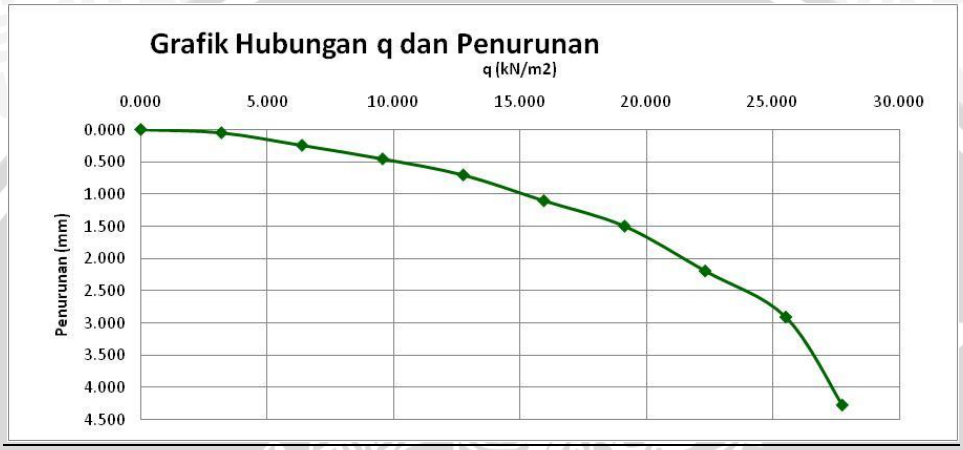
6. α=56°, B=6cm, d/B=1

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	3850	0.000	0.000	0.000	0.000
25	3811	0.195	0.325	0.043	4.252
50	3752	0.490	0.817	0.085	8.503
75	3648	1.010	1.683	0.128	12.755
108	3410	2.200	3.667	0.184	18.367



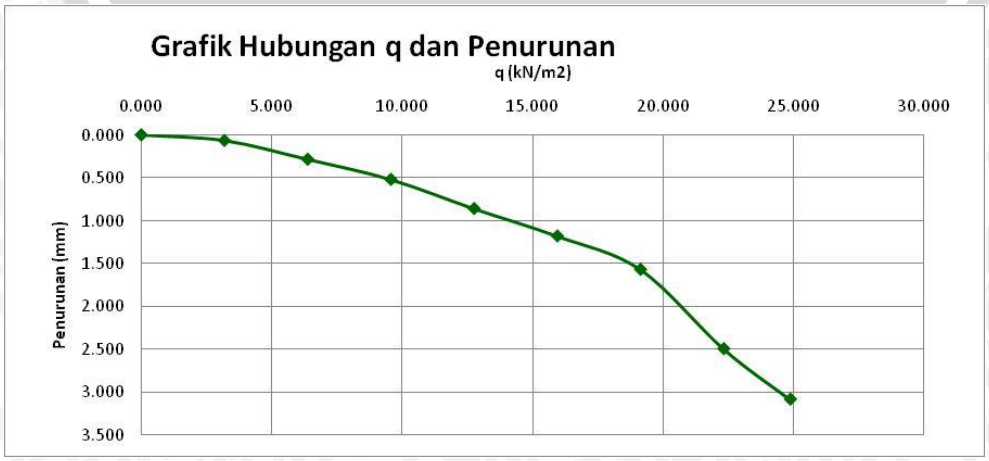
7. α=46°, B=8cm, d/B=1

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	1539	0.000	0.000	0.000	0.000
25	1529	0.050	0.063	0.032	3.189
50	1490	0.245	0.306	0.064	6.378
75	1448	0.455	0.569	0.096	9.566
100	1398	0.705	0.881	0.128	12.755
125	1318	1.105	1.381	0.159	15.944
150	1239	1.500	1.875	0.191	19.133
175	1100	2.195	2.744	0.223	22.321
200	957	2.910	3.638	0.255	25.510
217.5	684	4.275	5.344	0.277	27.742



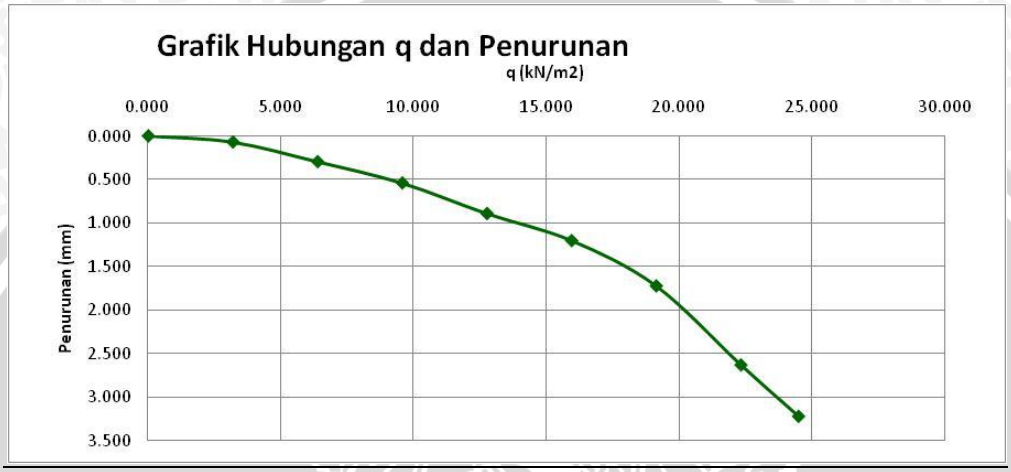
8. α=51°, B=8cm, d/B=1

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	2645	0.000	0.000	0.000	0.000
25	2632	0.065	0.081	0.032	3.189
50	2588	0.285	0.356	0.064	6.378
75	2541	0.520	0.650	0.096	9.566
100	2473	0.860	1.075	0.128	12.755
125	2409	1.180	1.475	0.159	15.944
150	2331	1.570	1.963	0.191	19.133
175	2146	2.495	3.119	0.223	22.321
195	2028	3.085	3.856	0.249	24.872



9. α=56°, B=8cm, d/B=1

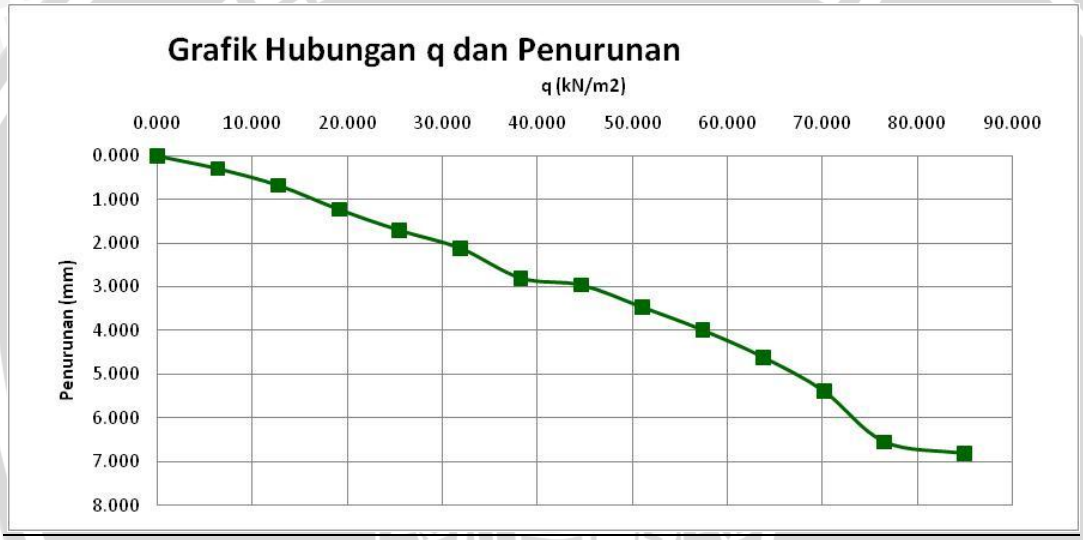
Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	2166	0.000	0.000	0.000	0.000
25	2152	0.070	0.088	0.032	3.189
50	2107	0.295	0.369	0.064	6.378
75	2058	0.540	0.675	0.096	9.566
100	1988	0.890	1.113	0.128	12.755
125	1926	1.200	1.500	0.159	15.944
150	1822	1.720	2.150	0.191	19.133
175	1641	2.625	3.281	0.223	22.321
192	1523	3.215	4.019	0.245	24.490



Lereng Dengan Perkuatan

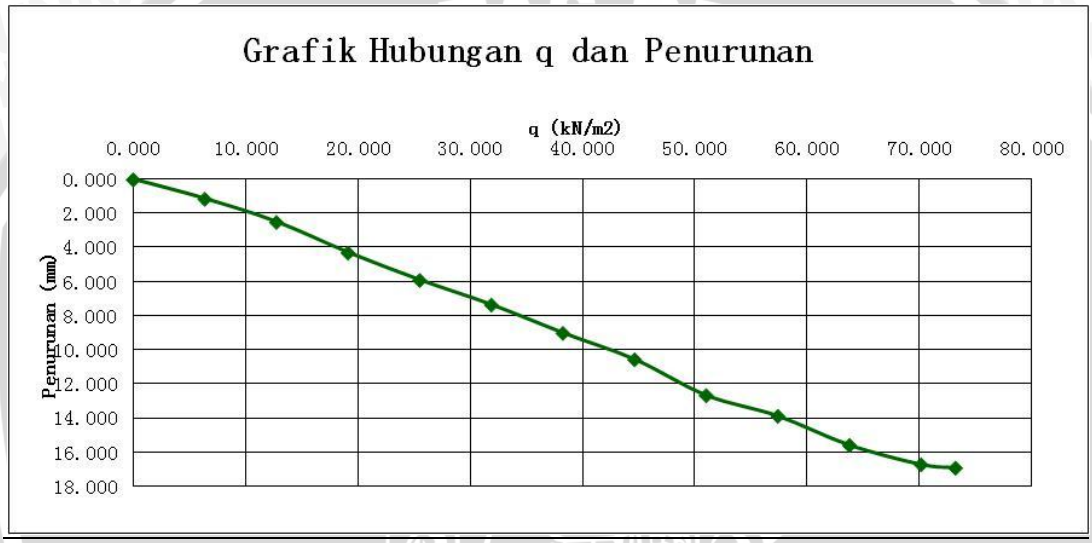
1. α=46°, B=4cm, d/B=1, n=2

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	3008	0.000	0.000	0.000	0.000
25	2950	0.290	0.725	0.064	6.378
50	2873	0.675	1.688	0.128	12.755
75	2763	1.225	3.063	0.191	19.133
100	2667	1.705	4.263	0.255	25.510
125	2586	2.110	5.275	0.319	31.888
150	2449	2.795	6.988	0.383	38.265
175	2417	2.955	7.388	0.446	44.643
200	2316	3.460	8.650	0.510	51.020
225	2211	3.985	9.963	0.574	57.398
250	2086	4.610	11.525	0.638	63.776
275	1931	5.385	13.463	0.702	70.153
300	1699	6.545	16.363	0.765	76.531
333	1645	6.815	17.038	0.849	84.949



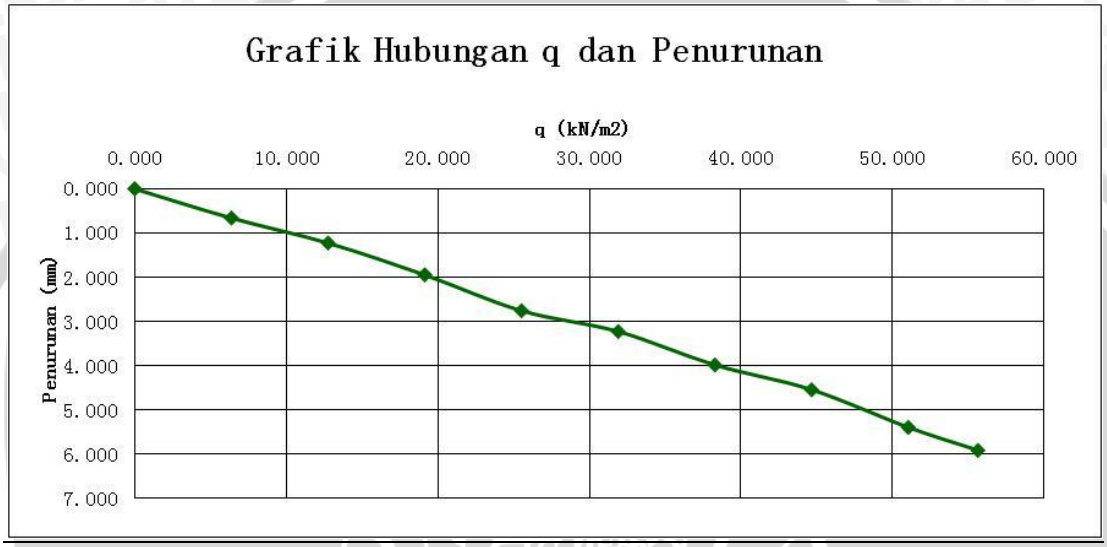
2. α=51°, B=4cm, d/B=1, n=2

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	3507	0.000	0.000	0.000	0.000
25	3416	0.455	1.138	0.064	6.378
50	3307	1.000	2.500	0.128	12.755
75	3163	1.720	4.300	0.191	19.133
100	3034	2.365	5.913	0.255	25.510
125	2918	2.945	7.363	0.319	31.888
150	2785	3.610	9.025	0.383	38.265
175	2661	4.230	10.575	0.446	44.643
200	2492	5.075	12.688	0.510	51.020
225	2395	5.560	13.900	0.574	57.398
250	2258	6.245	15.613	0.638	63.776
275	2167	6.700	16.750	0.702	70.153
287	2151	6.780	16.950	0.732	73.214



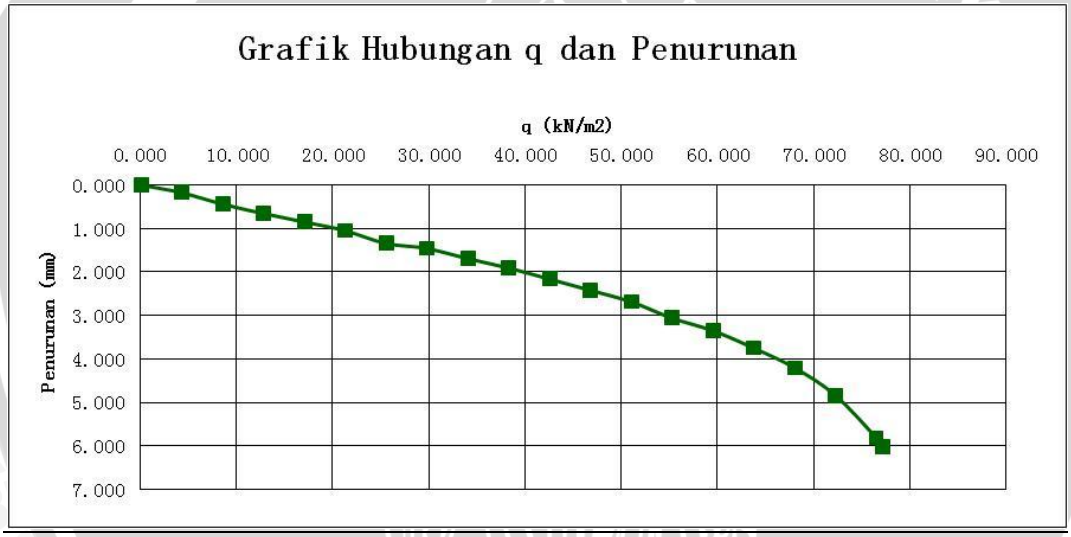
3. α=56°, B=4cm, d/B=1, n=2

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	2424	0.000	0.000	0.000	0.000
25	2292	0.660	1.650	0.064	6.378
50	2179	1.225	3.063	0.128	12.755
75	2035	1.945	4.863	0.191	19.133
100	1873	2.755	6.888	0.255	25.510
125	1779	3.225	8.063	0.319	31.888
150	1628	3.980	9.950	0.383	38.265
175	1516	4.540	11.350	0.446	44.643
200	1346	5.390	13.475	0.510	51.020
218	1242	5.910	14.775	0.556	55.612



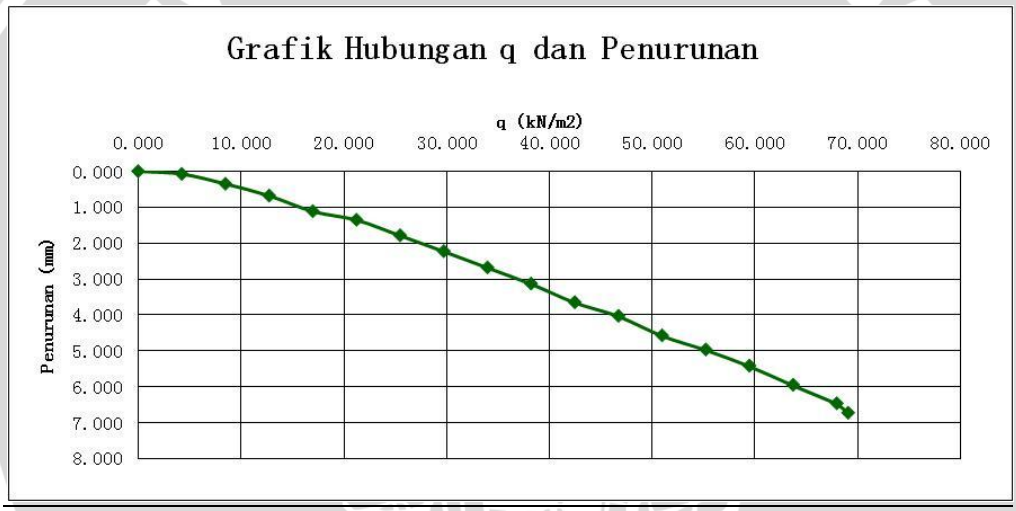
4. α=46°, B=6cm, d/B=1, n=2

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	4110	0.000	0.000	0.000	0.000
25	4075	0.175	0.292	0.043	4.252
50	4022	0.440	0.733	0.085	8.503
75	3979	0.655	1.092	0.128	12.755
100	3940	0.850	1.417	0.170	17.007
125	3900	1.050	1.750	0.213	21.259
150	3841	1.345	2.242	0.255	25.510
175	3818	1.460	2.433	0.298	29.762
200	3771	1.695	2.825	0.340	34.014
225	3728	1.910	3.183	0.383	38.265
250	3677	2.165	3.608	0.425	42.517
275	3625	2.425	4.042	0.468	46.769
300	3572	2.690	4.483	0.510	51.020
325	3497	3.065	5.108	0.553	55.272
350	3439	3.355	5.592	0.595	59.524
375	3359	3.755	6.258	0.638	63.776
400	3268	4.210	7.017	0.680	68.027
425	3141	4.845	8.075	0.723	72.279
450	2945	5.825	9.708	0.765	76.531
454	2904	6.030	10.050	0.772	77.211



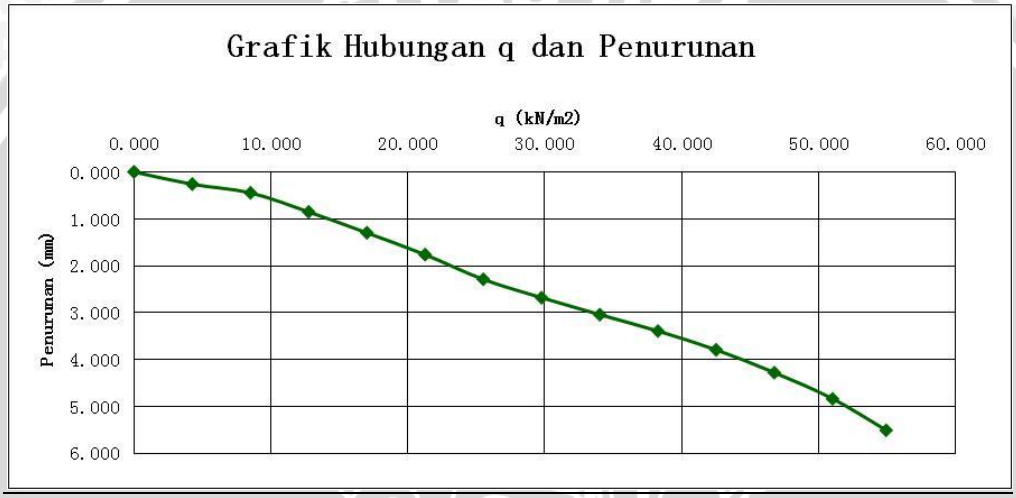
5. α=51°, B=6cm, d/B=1, n=2

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	3495	0.000	0.000	0.000	0.000
25	3480	0.075	0.125	0.043	4.252
50	3425	0.350	0.583	0.085	8.503
75	3359	0.680	1.133	0.128	12.755
100	3272	1.115	1.858	0.170	17.007
125	3224	1.355	2.258	0.213	21.259
150	3137	1.790	2.983	0.255	25.510
175	3049	2.230	3.717	0.298	29.762
200	2958	2.685	4.475	0.340	34.014
225	2868	3.135	5.225	0.383	38.265
250	2764	3.655	6.092	0.425	42.517
275	2688	4.035	6.725	0.468	46.769
300	2579	4.580	7.633	0.510	51.020
325	2500	4.975	8.292	0.553	55.272
350	2410	5.425	9.042	0.595	59.524
375	2303	5.960	9.933	0.638	63.776
400	2200	6.475	10.792	0.680	68.027
406.5	2147	6.740	11.233	0.691	69.133



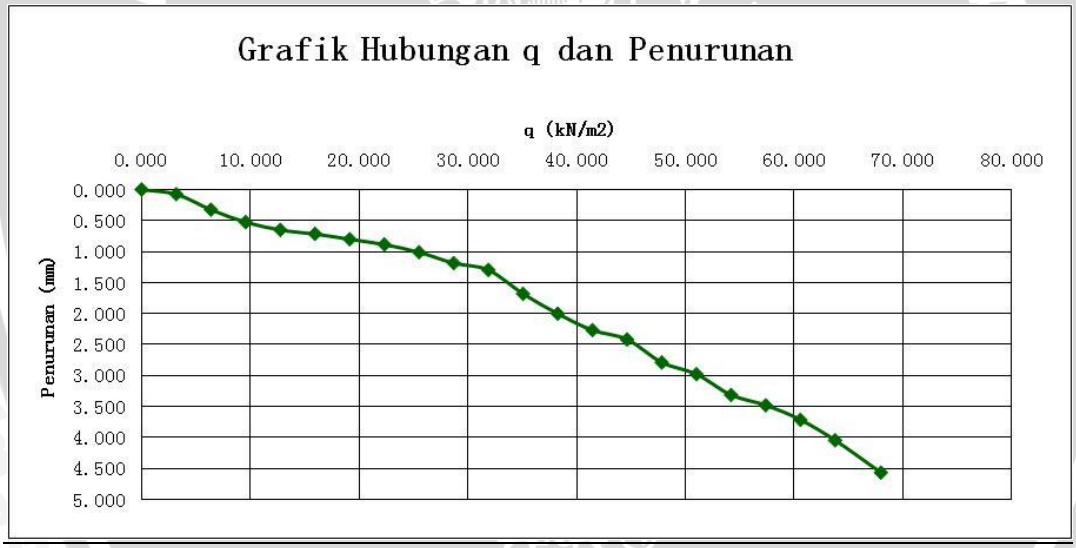
6. α=56°, B=6cm, d/B=1, n=2

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	2745	0.000	0.000	0.000	0.000
25	2693	0.260	0.433	0.043	4.252
50	2656	0.445	0.742	0.085	8.503
75	2575	0.850	1.417	0.128	12.755
100	2486	1.295	2.158	0.170	17.007
125	2393	1.760	2.933	0.213	21.259
150	2288	2.285	3.808	0.255	25.510
175	2210	2.675	4.458	0.298	29.762
200	2138	3.035	5.058	0.340	34.014
225	2068	3.385	5.642	0.383	38.265
250	1988	3.785	6.308	0.425	42.517
275	1891	4.270	7.117	0.468	46.769
300	1780	4.825	8.042	0.510	51.020
323	1646	5.495	9.158	0.549	54.932



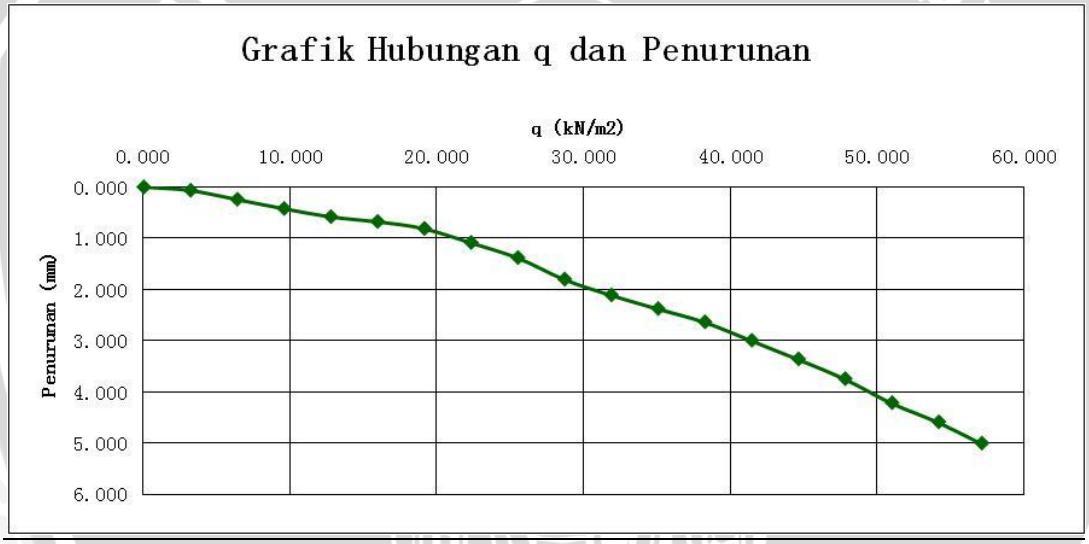
7. α=46°, B=8cm, d/B=1, n=2

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	3269	0.000	0.000	0.000	0.000
25	3254	0.075	0.094	0.032	3.189
50	3204	0.325	0.406	0.064	6.378
75	3164	0.525	0.656	0.096	9.566
100	3139	0.650	0.813	0.128	12.755
125	3126	0.715	0.894	0.159	15.944
150	3109	0.800	1.000	0.191	19.133
175	3092	0.885	1.106	0.223	22.321
200	3067	1.010	1.263	0.255	25.510
225	3032	1.185	1.481	0.287	28.699
250	3010	1.295	1.619	0.319	31.888
275	2933	1.680	2.100	0.351	35.077
300	2869	2.000	2.500	0.383	38.265
325	2816	2.265	2.831	0.415	41.454
350	2786	2.415	3.019	0.446	44.643
375	2712	2.785	3.481	0.478	47.832
400	2674	2.975	3.719	0.510	51.020
425	2607	3.310	4.138	0.542	54.209
450	2574	3.475	4.344	0.574	57.398
475	2527	3.710	4.638	0.606	60.587
500	2461	4.040	5.050	0.638	63.776
533	2357	4.560	5.700	0.680	67.985



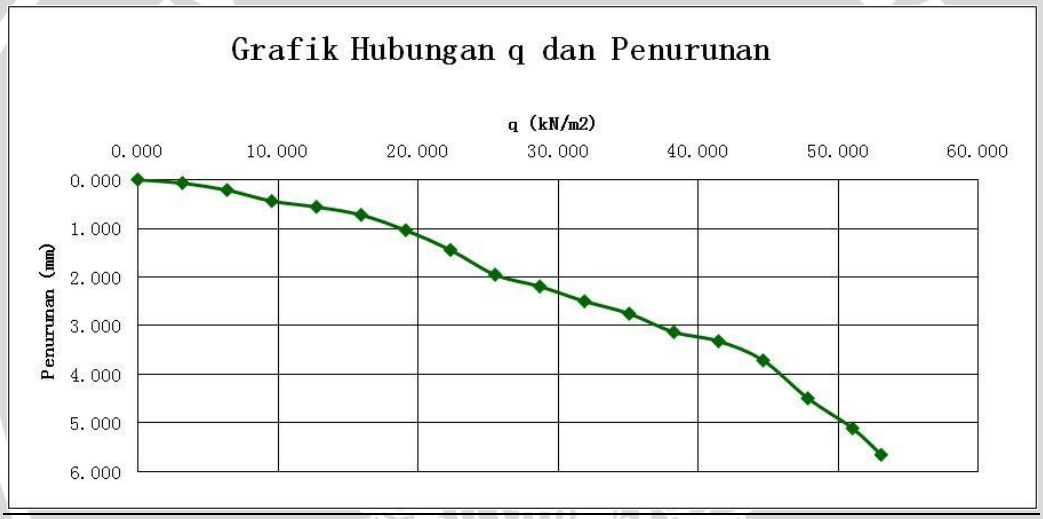
8. α=51°, B=8cm, d/B=1, n=2

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	4527	0.000	0.000	0.000	0.000
25	4514	0.065	0.081	0.032	3.189
50	4479	0.240	0.300	0.064	6.378
75	4443	0.420	0.525	0.096	9.566
100	4411	0.580	0.725	0.128	12.755
125	4392	0.675	0.844	0.159	15.944
150	4365	0.810	1.013	0.191	19.133
175	4310	1.085	1.356	0.223	22.321
200	4251	1.380	1.725	0.255	25.510
225	4167	1.800	2.250	0.287	28.699
250	4105	2.110	2.638	0.319	31.888
275	4052	2.375	2.969	0.351	35.077
300	4000	2.635	3.294	0.383	38.265
325	3928	2.995	3.744	0.415	41.454
350	3855	3.360	4.200	0.446	44.643
375	3778	3.745	4.681	0.478	47.832
400	3684	4.215	5.269	0.510	51.020
425	3609	4.590	5.738	0.542	54.209
448	3526	5.005	6.256	0.571	57.143



9. α=56°, B=8cm, d/B=1, n=2

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm^2)	q (kN/m^2)
0	2942	0.000	0.000	0.000	0.000
25	2928	0.070	0.088	0.032	3.189
50	2899	0.215	0.269	0.064	6.378
75	2854	0.440	0.550	0.096	9.566
100	2830	0.560	0.700	0.128	12.755
125	2797	0.725	0.906	0.159	15.944
150	2734	1.040	1.300	0.191	19.133
175	2653	1.445	1.806	0.223	22.321
200	2551	1.955	2.444	0.255	25.510
225	2503	2.195	2.744	0.287	28.699
250	2442	2.500	3.125	0.319	31.888
275	2391	2.755	3.444	0.351	35.077
300	2315	3.135	3.919	0.383	38.265
325	2278	3.320	4.150	0.415	41.454
350	2199	3.715	4.644	0.446	44.643
375	2043	4.495	5.619	0.478	47.832
400	1920	5.110	6.388	0.510	51.020
416	1811	5.655	7.069	0.531	53.061



Lampiran 9

Perhitungan Daya Dukung pada Penurunan s/B : 2%

Daya Dukung (q) diperoleh dengan interpolasi orde dua dengan rumus:

$F(x_0) = b_o + b_1 (x_o - x_0) + b_2 (x_0 - x_0) (x_0 - x_1)$

$b_o = f(x_0)$

$b_1 = \frac{f(x_1) - f(x_0)}{x_1 - x_0}$

$b_2 = \frac{\frac{f(x_2) - f(x_1)}{x_2 - x_1} - \frac{f(x_1) - f(x_0)}{x_1 - x_0}}{x_2 - x_0}$

Lereng Tanpa Perkuatan

1. α=46°, B=4cm, d/B=1

s/B(%)	s/B (%)		q (kN/m^2)		B_1	B_2	q (kN/m^2)
(x)	(x_0,x_1,x_2)		[f(x_0),f(x_1),f(x_2)]				f(x)
2	x_0	0.825	f(x_0)	6.378	3.593	-0.139	10.697
	x_1	2.600	f(x_1)	12.755			
	x_2	4.688	f(x_2)	19.133			

2. α=51°, B=4cm, d/B=1

s/B(%)	s/B (%)		q (kN/m^2)		B_1	B_2	q (kN/m^2)
(x)	(x_0,x_1,x_2)		[f(x_0),f(x_1),f(x_2)]				f(x)
2	x_0	1.463	f(x_0)	6.378	4.361	-0.542	8.991
	x_1	2.925	f(x_1)	12.755			
	x_2	6.225	f(x_2)	18.622			

3. α=56°, B=4cm, d/B=1

s/B(%)	s/B (%)		q (kN/m^2)		B_1	B_2	q (kN/m^2)
(x)	(x_0,x_1,x_2)		[f(x_0),f(x_1),f(x_2)]				f(x)
2	x_0	0.000	f(x_0)	0.000	3.724	0.213	7.571
	x_1	1.713	f(x_1)	6.378			
	x_2	3.163	f(x_2)	12.755			

4. α=46°, B=6cm, d/B=1

s/B(%)	s/B (%)		q (kN/m^2)		B_1	B_2	q (kN/m^2)
(x)	(x_0,x_1,x_2)		[f(x_0),f(x_1),f(x_2)]				f(x)
2	x_0	1.600	f(x_0)	12.755	3.671	-0.550	14.390
	x_1	2.758	f(x_1)	17.007			
	x_2	5.658	f(x_2)	21.173			

5. α=51°, B=6cm, d/B=1

s/B(%)	s/B (%)		q (kN/m^2)		B_1	B_2	q (kN/m^2)
(x)	(x_0,x_1,x_2)		[f(x_0),f(x_1),f(x_2)]				f(x)
2	x_0	0.817	f(x_0)	8.503	4.638	-0.617	13.797
	x_1	1.733	f(x_1)	12.755			
	x_2	3.033	f(x_2)	17.007			

6. α=56°, B=6cm, d/B=1

s/B(%)	s/B (%)		q (kN/m^2)		B_1	B_2	q (kN/m^2)
(x)	(x_0,x_1,x_2)		[f(x_0),f(x_1),f(x_2)]				f(x)
2	x_0	0.817	f(x_0)	8.503	4.906	-0.728	14.036
	x_1	1.683	f(x_1)	12.755			
	x_2	3.667	f(x_2)	18.367			

7. α=46°, B=8cm, d/B=1

s/B(%)	s/B (%)		q (kN/m^2)		B_1	B_2	q (kN/m^2)
(x)	(x_0,x_1,x_2)		[f(x_0),f(x_1),f(x_2)]				f(x)
2	x_0	1.875	f(x_0)	19.133	3.671	-0.058	19.597
	x_1	2.744	f(x_1)	22.321			
	x_2	3.638	f(x_2)	25.510			

8. α=51°, B=8cm, d/B=1

s/B(%)	s/B (%)		q (kN/m^2)		B_1	B_2	q (kN/m^2)
(x)	(x_0,x_1,x_2)		[f(x_0),f(x_1),f(x_2)]				f(x)
2	x_0	1.475	f(x_0)	15.944	6.541	-2.302	19.333
	x_1	1.963	f(x_1)	19.133			
	x_2	3.119	f(x_2)	22.321			

9. α=56°, B=8cm, d/B=1

s/B(%)	s/B (%)		q (kN/m^2)		B_1	B_2	q (kN/m^2)
(x)	(x_0,x_1,x_2)		[f(x_0),f(x_1),f(x_2)]				f(x)
2	x_0	1.500	f(x_0)	15.944	4.906	-1.172	18.485
	x_1	2.150	f(x_1)	19.133			
	x_2	3.281	f(x_2)	22.321			

Lereng Dengan Perkuatan Variasi Kemiringan Lereng (n=2)

Lebar Pondasi	Kemiringan Lereng	s/B(%)	s/B (%)		q (kN/m^2)		B_1	B_2	q (kN/m^2)
		(x)	(x_0,x_1,x_2)		[f(x_0),f(x_1),f(x_2)]				f(x)
4	46	2	x_0	1.688	f(x_0)	12.755	4.638	0.263	14.117
			x_1	3.063	f(x_1)	19.133			
			x_2	4.263	f(x_2)	25.510			
	51		x_0	1.138	f(x_0)	6.378	4.681	-0.360	10.570
			x_1	2.500	f(x_1)	12.755			
			x_2	4.300	f(x_2)	19.133			
	56		x_0	1.650	f(x_0)	6.378	4.515	-0.303	8.070
			x_1	3.063	f(x_1)	12.755			
			x_2	4.863	f(x_2)	19.133			
6	46		x_0	1.750	f(x_0)	21.259	8.648	19.808	22.224
			x_1	2.242	f(x_1)	25.510			
			x_2	2.433	f(x_2)	29.762			
	51		x_0	1.858	f(x_0)	17.007	10.629	-4.235	18.668
			x_1	2.258	f(x_1)	21.259			
			x_2	2.983	f(x_2)	25.510			
	56		x_0	1.417	f(x_0)	12.755	5.733	-0.163	16.114
			x_1	2.158	f(x_1)	17.007			
			x_2	2.933	f(x_2)	21.259			
8	46		x_0	1.619	f(x_0)	31.888	6.626	1.527	34.356
			x_1	2.100	f(x_1)	35.077			
			x_2	2.500	f(x_2)	38.265			
	51		x_0	1.725	f(x_0)	25.510	6.074	2.362	27.018
			x_1	2.250	f(x_1)	28.699			
			x_2	2.638	f(x_2)	31.888			
	56		x_0	1.806	f(x_0)	22.321	5.002	6.002	22.775
			x_1	2.444	f(x_1)	25.510			
			x_2	2.744	f(x_2)	28.699			

Lereng Dengan Perkuatan Variasi Lebar Pondasi (n=2)

Kemiringan Lereng	Lebar Pondasi	s/B(%)	s/B (%)		q (kN/m^2)		B_1	B_2	q (kN/m^2)
		(x)	(x_0,x_1,x_2)		[f(x_0),f(x_1),f(x_2)]				f(x)
46	4	2	x_0	1.688	f(x_0)	12.755	4.638	0.263	14.117
			x_1	3.063	f(x_1)	19.133			
			x_2	4.263	f(x_2)	25.510			
	6		x_0	1.750	f(x_0)	21.259	8.648	19.808	22.224
			x_1	2.242	f(x_1)	25.510			
			x_2	2.433	f(x_2)	29.762			
	8		x_0	1.619	f(x_0)	31.888	6.626	1.527	34.356
			x_1	2.100	f(x_1)	35.077			
			x_2	2.500	f(x_2)	38.265			
51	4		x_0	1.138	f(x_0)	6.378	4.681	-0.360	10.570
			x_1	2.500	f(x_1)	12.755			
			x_2	4.300	f(x_2)	19.133			
	6		x_0	1.858	f(x_0)	17.007	10.629	-4.235	18.668
			x_1	2.258	f(x_1)	21.259			
			x_2	2.983	f(x_2)	25.510			
	8		x_0	1.725	f(x_0)	25.510	6.074	2.362	27.018
			x_1	2.250	f(x_1)	28.699			
			x_2	2.638	f(x_2)	31.888			
56	4		x_0	1.650	f(x_0)	6.378	4.515	-0.303	8.070
			x_1	3.063	f(x_1)	12.755			
			x_2	4.863	f(x_2)	19.133			
	6		x_0	1.417	f(x_0)	12.755	5.733	-0.163	16.114
			x_1	2.158	f(x_1)	17.007			
			x_2	2.933	f(x_2)	21.259			
	8		x_0	1.806	f(x_0)	22.321	5.002	6.002	22.775
			x_1	2.444	f(x_1)	25.510			
			x_2	2.744	f(x_2)	28.699			

LAMPIRAN 10

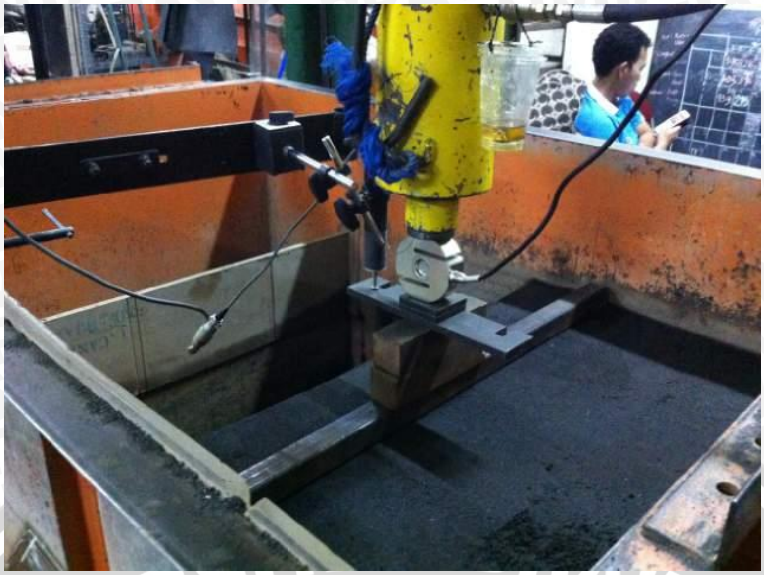
DOKUMENTASI PENELITIAN

Pemodelan Lereng Pasir

Proses Pemadatan Pemodelan

Pengujian kadar air dan kepadatan pasir

Pemotongan Pemodelan menjadi bentuk lereng



Proses Pembebanan Lereng

Pembacaan Beban dan Penurunan yang terjadi

Kenampakan runtuh pada lereng

Kenampakan perkuatan geotekstil pada lereng