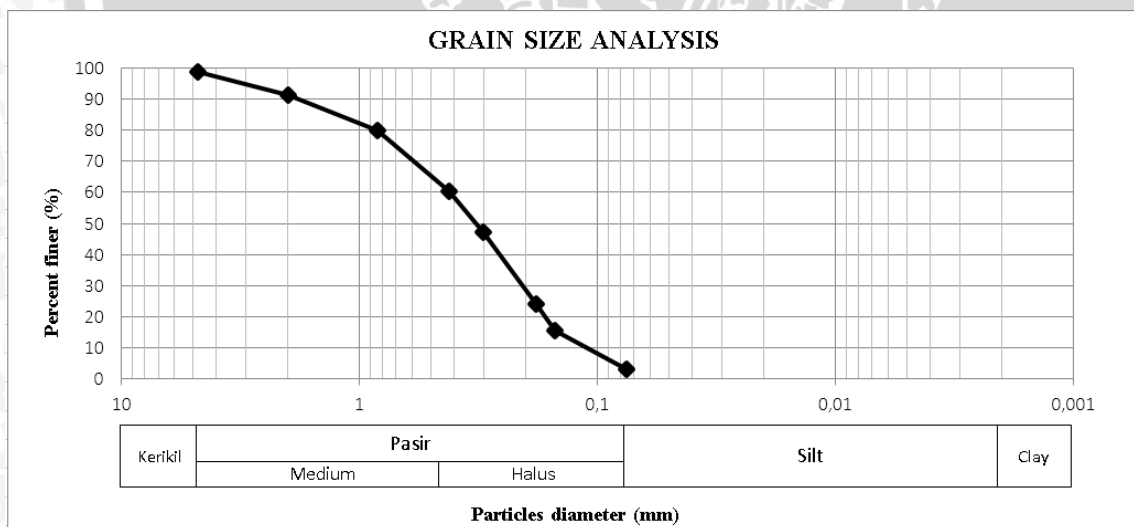


LAMPIRAN

Lampiran 1. Analisis Gradasi Butir Tanah

Saringan		Tertahan Saringan	Jumlah Tertahan	% Komulatif Tertahan	% Komulatif Lolos Saringan
Diameter (mm)	Nomor	(gram)	(gram)		
4,75	4	7,95	7,95	1	99
2	10	39,99	47,94	9	91
0,84	20	62,08	110,02	20,04	79,96
0,42	40	108,76	218,78	39,85	60,15
0,3	50	72,05	290,83	52,97	47,03
0,18	80	126,38	417,21	75,99	24,01
0,15	100	47,13	464,34	84,57	15,43
0,075	200	66,74	531,08	96,73	3,27
Pan		17,98	549,06	100	0,00

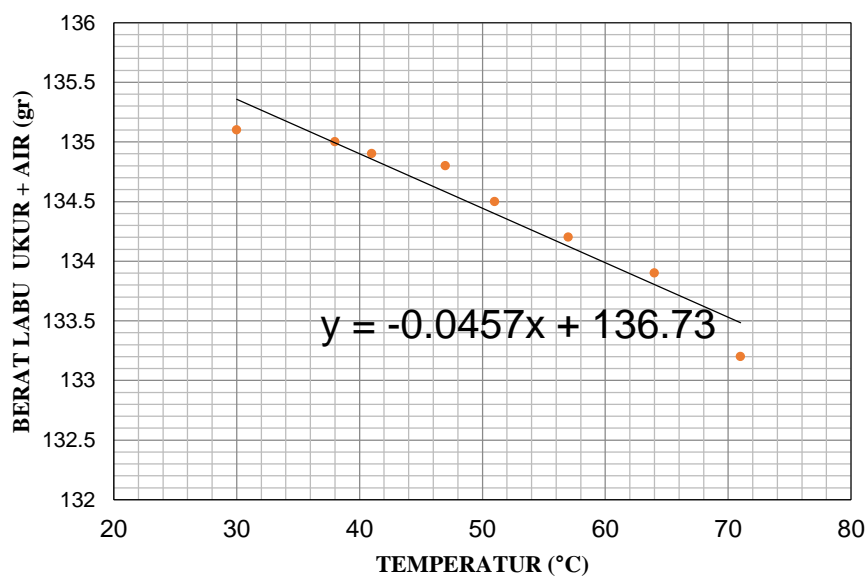


Lampiran 2. Analisis *Specific Gravity* Tanah

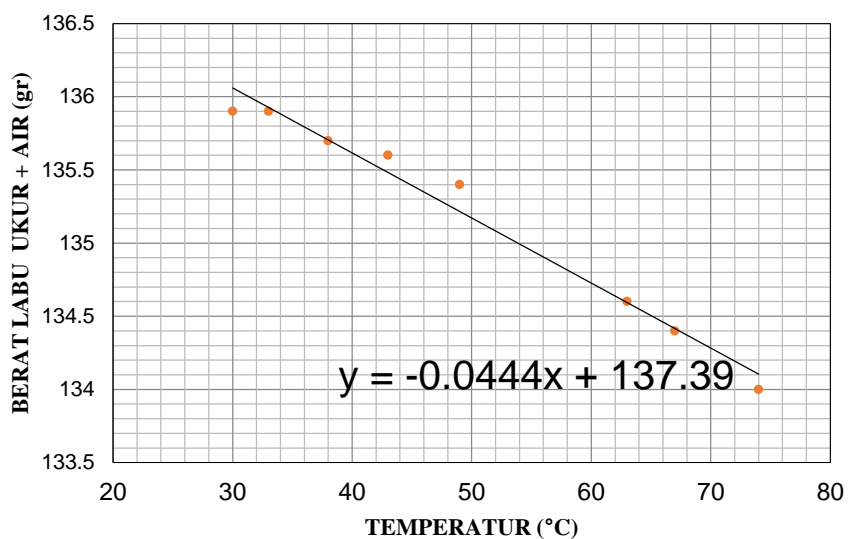
Data Percobaan Kalibrasi Labu Ukur

No	1		2		3	
	Berat Labu ukur +air	Temp. (°C)	Berat Labu ukur +air	Temp. (°C)	Berat Labu ukur +air	Temp. (°C)
1	133.2	71	134	74	148	72
2	133.9	64	134.4	67	148.2	68
3	134.2	57	134.6	63	148.8	60
4	134.5	51	135.4	49	149.3	51.5
5	134.8	47	135.6	43	149.6	45
6	134.9	41	135.7	38	149.7	42
7	135	38	135.9	33	149.8	38
8	135.1	30	135.9	30	150.1	30

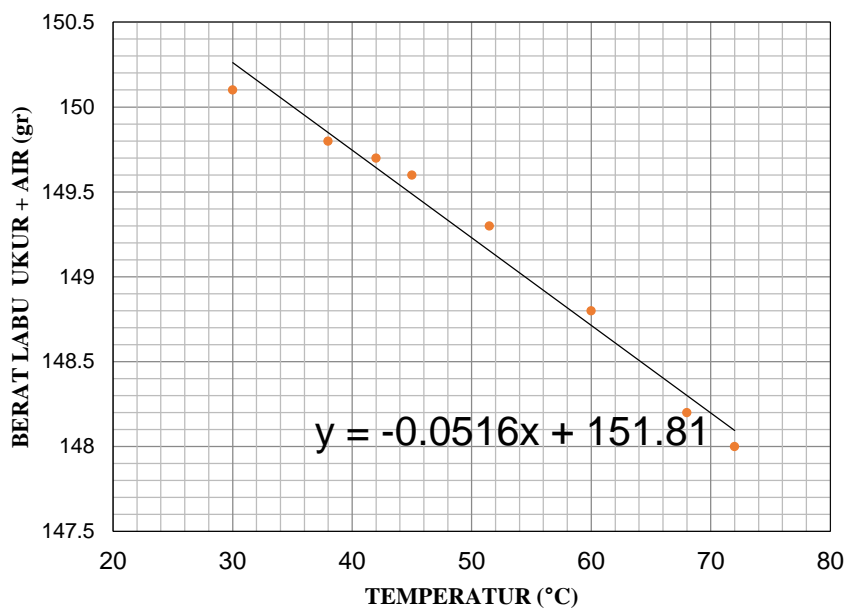
Kalibrasi Labu Ukur No. 1



KALIBRASI LABU 2



KALIBRASI LABU 3



LABU UKUR	SATUAN	1							
Berat Tanah Kering (Ws)	gram	20	20	20	20	20	20	20	20
Berat Labu Ukur + Air + Tanah Kering (W1)	gram	149	151	151,5	152,7	153,8	154,7	155,9	156,8
Suhu (°C)	°C	55	50	47	42	35	32	30	29
Berat Labu Ukur + Air (W2)	gram	134,217	134,445	134,582	134,811	135,131	135,268	135,359	135,405
Berat Jenis Tanah (Gs)	gram/cm ³	3,834	5,806	6,489	9,476	15,032	35,236	-36,969	-14,334
Rata-rata Berat Jenis	gram/cm ³	3,071							

LABU UKUR	SATUAN	2							
Berat Tanah Kering (Ws)	gram	20	20	20	20	20	20	20	20
Berat Labu Ukur + Air + Tanah Kering (W1)	gram	146,9	147	147,5	147,8	148	148,8	149,3	151
Suhu (°C)	°C	76	74	66	58	51	47	38	29
Berat Labu Ukur + Air (W2)	gram	134,016	134,104	134,46	134,815	135,126	135,303	135,703	136,102
Berat Jenis Tanah (Gs)	gram/cm ³	2,811	2,815	2,874	2,851	2,807	3,075	3,124	3,901
Rata-rata Berat Jenis	gram/cm ³	3,032							

LABU UKUR	SATUAN	3							
Berat Tanah Kering (Ws)	gram	20	20	20	20	20	20	20	20
Berat Labu Ukur + Air + Tanah Kering (W1)	gram	161	161,2	161,6	161,9	162,8	163,1	163,7	164,4
Suhu (°C)	°C	73	68	60	53	47	43	39	29
Berat Labu Ukur + Air (W2)	gram	148,043	148,301	148,714	149,075	149,385	149,591	149,798	150,314
Berat Jenis Tanah (Gs)	gram/cm ³	2,840	2,816	2,811	2,787	3,037	3,081	3,280	3,368
Rata-rata Berat Jenis	gram/cm ³	3,003							

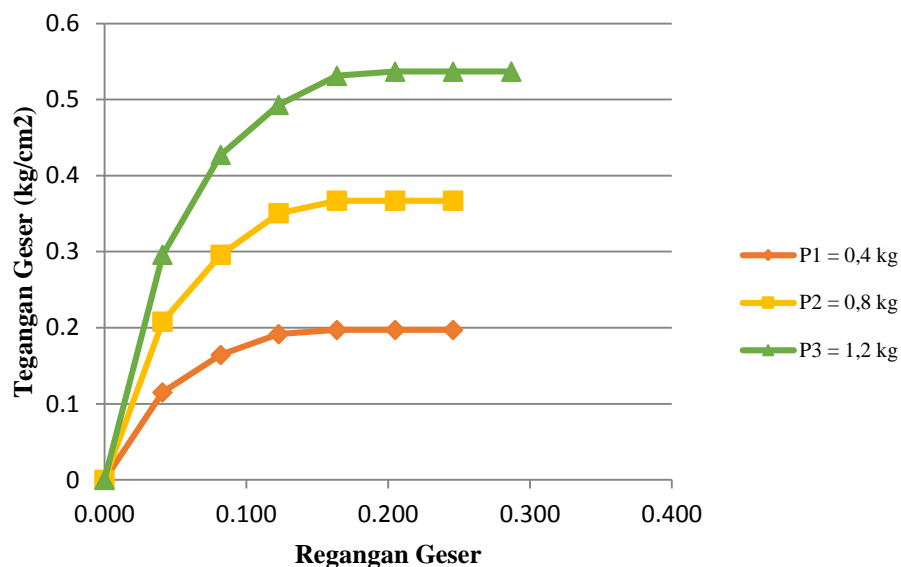
Rata-rata = 3,035

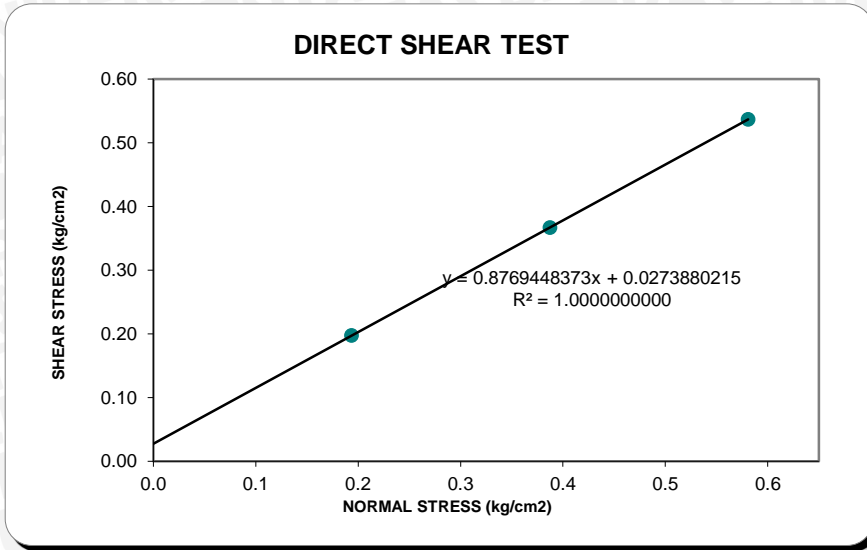
Lampiran 3. Analisis Uji Geser Langsung (*Direct Shear*)

<i>Diameter</i>	:	6.1	cm
<i>Area</i>	:	29.21	cm ²
<i>Height</i>	:	1.8	cm
<i>Lever Ratio</i>	:	14.14	
<i>Volume Weight</i>	:	1.531	gr/cm ³
<i>Calibration</i>	:	0.32	

NORMAL FORCE	P1 = 0.4 kg	P2 = 0.8 kg	P3 = 1.2 kg	Regangan Geser								
NORMAL STRESS	s1 = 0.2 kg/cm ²	s2 = 0.4 kg/cm ²	s3 = 0.6 kg/cm ²	DIAL READING	SHEAR FORCE	SHEAR STRESS	DIAL READING	SHEAR FORCE	SHEAR STRESS	DIAL READING	SHEAR FORCE	SHEAR STRESS
0	0	0	0	0	0	0	0	0	0	0	0	0
25	10.5	3.3600	0.1150	19.0	6.0800	0.2081	27.0	8.6400	0.2958	39.0	12.4800	0.4273
50	15.0	4.8000	0.1643	27.0	8.6400	0.2958	39.0	12.4800	0.4273	49.0	15.6800	0.5368
75	17.5	5.6000	0.1917	32.0	10.2400	0.3506	45.0	14.4000	0.4930	49.0	15.6800	0.5368
100	18.0	5.7600	0.1972	33.5	10.7200	0.3670	48.5	15.5200	0.5313	49.0	15.6800	0.5368
125	18.0	5.7600	0.1972	33.5	10.7200	0.3670	49.0	15.6800	0.5368	49.0	15.6800	0.5368
150	18.0	5.7600	0.1972	33.5	10.7200	0.3670	49.0	15.6800	0.5368	49.0	15.6800	0.5368
175							49.0	15.6800	0.5368			
200												

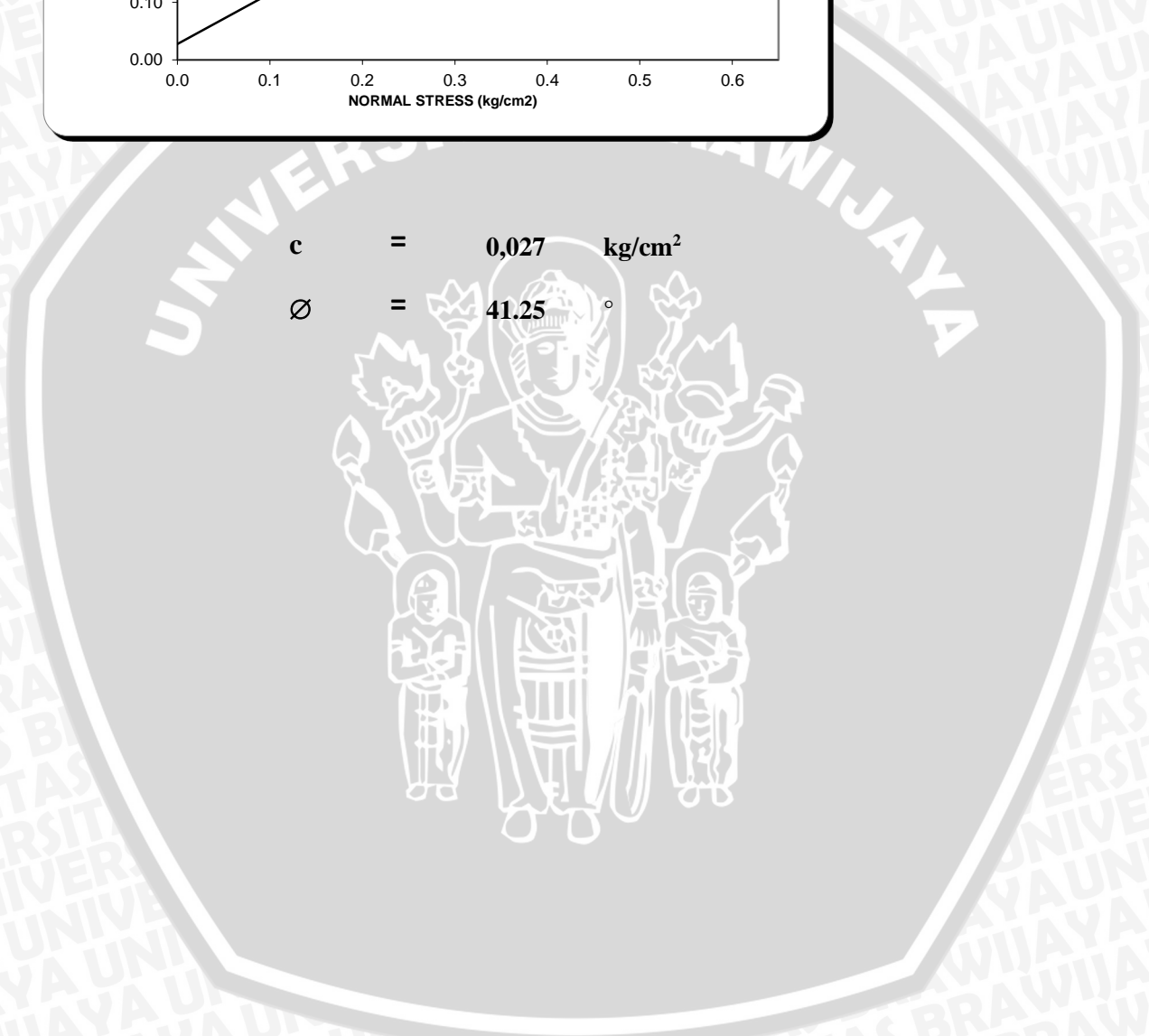
Grafik Hubungan Tegangan dan Regangan Geser





$c = 0,027 \text{ kg/cm}^2$

$\phi = 41.25^\circ$



Lampiran 4. Analisis Uji Pemadatan Standar (ASTM D-698-70 METODE B)

Berat *Mold* = 6000 gr
 Tinggi *Mold* = 11,5 cm
 Diameter *Mold* = 15,5 cm

Kadar Air

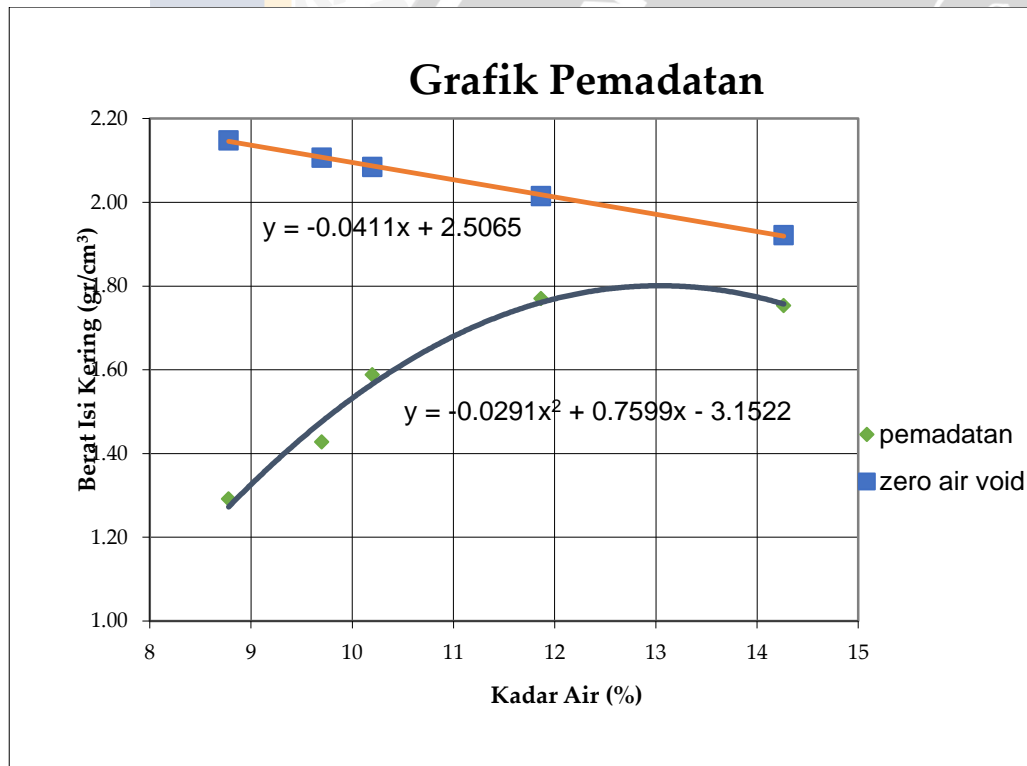
Penambahan Air	p1			p2			p3			p4			p5		
	atas	tengah	bawah	atas	tengah	bawah	atas	tengah	bawah	atas	tengah	bawah	atas	tengah	bawah
Berat Cawan	6.00	4.00	4.00	5.60	4.00	4.10	6.00	5.50	5.30	7.80	6.10	4.10	5.50	5.50	5.60
Berat Tanah Basah + Cawan	29.40	31.80	35.80	29.30	17.20	28.60	29.10	27.90	20.00	32.00	29.70	31.80	30.70	29.70	32.60
Berat Tanah Kering + Cawan	27.50	29.60	33.20	27.20	16.00	26.50	27.00	25.70	18.70	29.50	27.10	28.90	27.30	26.60	29.60
Berat Air	1.90	2.20	2.60	2.10	1.20	2.10	2.10	2.20	1.30	2.50	2.60	2.90	3.40	3.10	3.00
Berat Tanah Kering	21.50	25.60	29.20	21.60	12.00	22.40	21.00	20.20	13.40	21.70	21.00	24.80	21.80	21.10	24.00
Kadar Air (w) (%)	8.84	8.59	8.90	9.72	10.00	9.38	10.00	10.89	9.70	11.52	12.38	11.69	15.60	14.69	12.50
Kadar Air Rata-rata (%)	8.7784			9.6991			10.1975			11.8651			14.2628		

Density

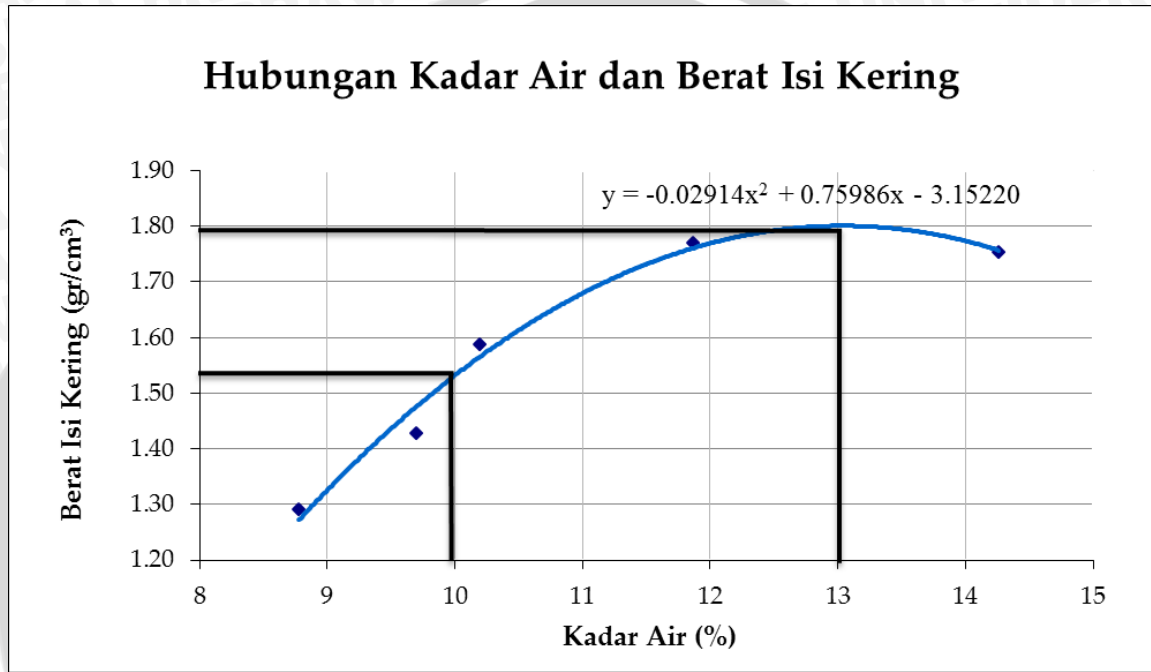
Penambahan Air	cc	p1	p2	p3	p4	p5
Berat Cetakan	gr	6000	6000	6000	6000	6000
Berat Tanah Basah + Cetakan	gr	9050	9400	9800	10300	10350
Berat Tanah Basah	gr	3050	3400	3800	4300	4350
Isi Cetakan	ml	2170.83	2170.83	2170.83	2170.83	2170.83
Berat Isi Basah	gr/cm ³	1.4050	1.5662	1.7505	1.9808	2.0038
Berat Isi Kering	gr/cm ³	1.2916	1.4277	1.5885	1.7707	1.7537

Zero Air Void

Kadar Air (%)	Gs	γ_w	Zero Air Void Line
8.778	2.648	1	2.149
9.699	2.648	1	2.107
10.198	2.648	1	2.085
11.865	2.648	1	2.015
14.263	2.648	1	1.922



Hubungan Kadar Air dan Berat Isi Kering



OMC	13.038%
γ_d max	1.801 gr/cm ³
85% γ_d	1.531 gr/cm ³
WC 85%	9.99%

Lampiran 5. Pengujian Kadar Air dan Kepadatan Pasir

Tanpa perkuatan B = 6 cm, d/B = 0

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	37.14	35.27	37.02	36.64	36.67	36.42	36.14	36.37	36.12	36.34	36.37	35.82	36.24	35.97	35.42	35.94	35.87	36.02	35.94	36.27	36.12
3. Berat Tanah Basah	gr	18.90	17.20	19.00	18.40	18.60	18.40	17.90	18.30	18.10	18.10	18.30	17.80	18.00	17.90	17.40	17.70	17.80	18.00	17.70	18.20	18.10
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.675	1.623	1.793	1.631	1.755	1.736	1.587	1.727	1.708	1.604	1.727	1.679	1.596	1.689	1.642	1.569	1.679	1.698	1.569	1.717	1.708
6. Berat Ring + Tanah Kering	gr	35.42	33.83	35.27	34.96	34.90	33.89	34.55	34.74	34.52	34.62	34.81	34.27	34.67	34.36	33.89	34.37	34.24	34.01	34.30	34.34	34.35
7. Berat Tanah Kering	gr	17.18	15.76	17.25	16.72	16.83	15.87	16.31	16.67	16.50	16.38	16.74	16.25	16.43	16.29	15.87	16.13	16.17	15.99	16.06	16.27	16.33
8. Berat Air	gr	1.72	1.44	1.75	1.68	1.77	2.53	1.59	1.63	1.60	1.72	1.56	1.55	1.57	1.61	1.53	1.57	1.63	2.01	1.64	1.93	1.77
9. Kadar Air	%	10.01	9.14	10.14	10.05	10.52	15.94	9.75	9.78	9.70	10.50	9.32	9.54	9.56	9.88	9.64	9.73	10.08	12.57	10.21	11.86	10.84
10. Kadar Air Rata-Rata	%	10.42																				
11. γ_d	gr/cm ³	1.523	1.487	1.628	1.482	1.588	1.497	1.446	1.573	1.557	1.452	1.579	1.533	1.456	1.537	1.497	1.430	1.526	1.509	1.424	1.535	1.541
12. γ_d rata-rata	gr	1.514																				

Tanpa perkuatan B = 6 cm, d/B = 0,5

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	36.34	36.57	36.12	36.24	36.67	36.82	35.84	35.87	36.42	36.14	36.27	36.22	36.44	35.67	36.62	37.14	36.17	35.82	35.44	36.37	35.72
3. Berat Tanah Basah	gr	18.10	18.50	18.10	18.00	18.60	18.80	17.60	17.80	18.40	17.90	18.20	18.20	18.20	17.60	18.60	18.90	18.10	17.80	17.20	18.30	17.70
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.604	1.745	1.708	1.596	1.755	1.774	1.560	1.679	1.736	1.587	1.717	1.717	1.613	1.661	1.755	1.675	1.708	1.679	1.525	1.727	1.670
6. Berat Ring + Tanah Kering	gr	34.84	35.02	34.61	34.78	35.18	35.17	34.36	34.34	34.82	34.53	34.67	34.57	34.72	34.04	34.91	35.31	34.40	34.15	33.83	34.57	34.12
7. Berat Tanah Kering	gr	16.60	16.95	16.59	16.54	17.11	17.15	16.12	16.27	16.80	16.29	16.60	16.55	16.48	15.97	16.89	17.07	16.33	16.13	15.59	16.50	16.10
8. Berat Air	gr	1.50	1.55	1.51	1.46	1.49	1.65	1.48	1.53	1.60	1.61	1.60	1.65	1.72	1.63	1.71	1.83	1.77	1.67	1.61	1.80	1.60
9. Kadar Air	%	9.04	9.14	9.10	8.83	8.71	9.62	9.18	9.40	9.52	9.88	9.64	9.97	10.44	10.21	10.12	10.72	10.84	10.35	10.33	10.91	9.94
10. Kadar Air Rata-Rata	%	9.80																				
11. γ_d	gr/cm ³	1.471	1.599	1.565	1.466	1.614	1.618	1.429	1.535	1.585	1.444	1.566	1.561	1.461	1.507	1.594	1.513	1.541	1.522	1.382	1.557	1.519
12. γ_d rata-rata	gr	1.526																				

Tanpa perkuatan B = 6 cm, d/B = 1

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	36.94	35.47	35.42	36.24	36.07	36.12	35.94	35.87	36.62	36.64	36.97	36.32	36.24	36.97	36.62	36.54	36.87	36.32	36.64	36.59	34.82
3. Berat Tanah Basah	gr	18.70	17.40	17.40	18.00	18.00	18.10	17.70	17.80	18.60	18.40	18.90	18.30	18.00	18.90	18.60	18.30	18.80	18.30	18.40	18.52	16.80
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.658	1.642	1.642	1.596	1.698	1.708	1.569	1.679	1.755	1.631	1.783	1.727	1.596	1.783	1.755	1.622	1.774	1.727	1.631	1.747	1.585
6. Berat Ring + Tanah Kering	gr	35.29	33.91	33.88	34.67	34.48	34.57	34.35	34.39	34.95	35.08	35.19	34.59	34.54	35.36	34.99	34.99	35.11	34.73	34.92	34.85	33.38
7. Berat Tanah Kering	gr	17.05	15.84	15.86	16.43	16.41	16.55	16.11	16.32	16.93	16.84	17.12	16.57	16.30	17.29	16.97	16.75	17.04	16.71	16.68	16.78	15.36
8. Berat Air	gr	1.65	1.56	1.54	1.57	1.59	1.55	1.59	1.48	1.67	1.56	1.78	1.73	1.70	1.61	1.63	1.55	1.76	1.59	1.72	1.74	1.44
9. Kadar Air	%	9.68	9.85	9.71	9.56	9.69	9.37	9.87	9.07	9.86	9.26	10.40	10.44	10.43	9.31	9.61	9.25	10.33	9.52	10.31	10.37	9.38
10. Kadar Air Rata-Rata	%	9.77																				
11. γ_d	gr/cm ³	1.511	1.494	1.496	1.456	1.548	1.561	1.428	1.540	1.597	1.493	1.615	1.563	1.445	1.631	1.601	1.485	1.608	1.577	1.479	1.583	1.449
12. γ_d rata-rata	gr	1.532																				

Tanpa perkuatan B = 8 cm, d/B = 0

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	37.74	36.60	37.12	35.50	36.36	35.82	35.42	35.90	35.58	36.21	35.97	35.76	35.55	36.00	35.00	35.25	36.16	35.14	35.84	35.27	35.72
3. Berat Tanah Basah	gr	19.50	18.53	19.10	17.26	18.29	17.80	17.18	17.83	17.56	17.97	17.90	17.74	17.31	17.93	16.98	17.01	18.09	17.12	17.60	17.20	17.70
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.728	1.748	1.802	1.530	1.726	1.679	1.523	1.682	1.657	1.593	1.689	1.674	1.534	1.692	1.602	1.508	1.707	1.615	1.560	1.623	1.670
6. Berat Ring + Tanah Kering	gr	36.34	35.03	36.32	34.22	34.96	34.53	34.20	34.46	34.23	34.98	34.73	34.60	34.28	34.68	33.86	33.81	34.50	33.70	34.36	33.69	34.21
7. Berat Tanah Kering	gr	18.10	16.96	18.30	15.98	16.89	16.51	15.96	16.39	16.21	16.74	16.66	16.58	16.04	16.61	15.84	15.57	16.43	15.68	16.12	15.62	16.19
8. Berat Air	gr	1.40	1.57	0.80	1.28	1.40	1.29	1.22	1.44	1.35	1.23	1.24	1.16	1.27	1.32	1.14	1.44	1.66	1.44	1.48	1.58	1.51
9. Kadar Air	%	7.73	9.26	4.37	8.01	8.29	7.81	7.64	8.79	8.33	7.35	7.44	7.00	7.92	7.95	7.20	9.25	10.10	9.18	9.18	10.12	9.33
10. Kadar Air Rata-Rata	%	8.20																				
11. γ_d	gr/cm ³	1.604	1.600	1.727	1.416	1.594	1.558	1.415	1.546	1.529	1.484	1.572	1.564	1.422	1.567	1.494	1.380	1.550	1.479	1.429	1.474	1.528
12. γ_d rata-rata	gr	1.521																				

Tanpa perkuatan $B = 8 \text{ cm}$, $d/B = 0,5$

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	36.09	36.41	37.34	35.63	35.76	35.50	35.62	35.87	35.49	36.62	36.97	36.27	36.06	36.79	36.42	35.63	36.41	35.48	36.87	36.69	36.52
3. Berat Tanah Basah	gr	17.85	18.34	19.32	17.39	17.69	17.48	17.38	17.80	17.47	18.38	18.90	18.25	17.82	18.72	18.40	17.39	18.34	17.46	18.63	18.62	18.50
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.582	1.730	1.823	1.541	1.669	1.649	1.541	1.679	1.648	1.629	1.783	1.722	1.580	1.766	1.736	1.541	1.730	1.647	1.651	1.757	1.745
6. Berat Ring + Tanah Kering	gr	34.35	34.26	35.47	34.05	34.30	33.95	34.09	34.44	33.99	34.97	35.30	34.58	34.38	35.06	34.69	33.94	34.70	33.90	34.96	34.92	34.64
7. Berat Tanah Kering	gr	16.11	16.19	17.45	15.81	16.23	15.93	15.85	16.37	15.97	16.73	17.23	16.56	16.14	16.99	16.67	15.70	16.63	15.88	16.72	16.85	16.62
8. Berat Air	gr	1.74	2.15	1.87	1.58	1.46	1.55	1.53	1.43	1.50	1.65	1.67	1.69	1.68	1.73	1.73	1.69	1.71	1.58	1.91	1.77	1.88
9. Kadar Air	%	10.80	13.28	10.72	9.99	9.00	9.73	9.65	8.74	9.39	9.86	9.69	10.21	10.41	10.18	10.38	10.76	10.28	9.95	11.42	10.50	11.31
10. Kadar Air Rata-Rata	%	10.30																				
11. γ_d	gr/cm ³	1.428	1.528	1.646	1.401	1.531	1.503	1.405	1.545	1.507	1.483	1.626	1.562	1.431	1.603	1.573	1.392	1.569	1.498	1.482	1.590	1.568
12. γ_d rata-rata	gr	1.518																				

Tanpa perkuatan $B = 8 \text{ cm}$, $d/B = 1$

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	36.64	36.67	37.12	36.24	36.07	36.82	36.64	37.17	36.62	36.34	36.57	35.82	35.84	36.17	36.22	36.64	36.67	37.02	36.54	36.47	35.42
3. Berat Tanah Basah	gr	18.40	18.60	19.10	18.00	18.00	18.80	18.40	19.10	18.60	18.10	18.50	17.80	17.60	18.10	18.20	18.40	18.60	19.00	18.30	18.40	17.40
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.631	1.755	1.802	1.596	1.698	1.774	1.631	1.802	1.755	1.604	1.745	1.679	1.560	1.708	1.717	1.631	1.755	1.793	1.622	1.736	1.642
6. Berat Ring + Tanah Kering	gr	34.89	34.92	35.34	34.33	35.17	34.05	34.80	35.24	34.73	34.33	34.53	33.83	33.93	34.38	34.33	34.58	34.49	34.79	34.43	34.42	33.58
7. Berat Tanah Kering	gr	16.65	16.85	17.32	16.09	17.10	16.03	16.56	17.17	16.71	16.09	16.46	15.81	15.69	16.31	16.31	16.34	16.42	16.77	16.19	16.35	15.56
8. Berat Air	gr	1.75	1.75	1.78	1.91	0.90	2.77	1.84	1.93	1.89	2.01	2.04	1.99	1.91	1.79	1.89	2.06	2.18	2.23	2.11	2.05	1.84
9. Kadar Air	%	10.51	10.39	10.28	11.87	5.26	17.28	11.11	11.24	11.31	12.49	12.39	12.59	12.17	10.97	11.59	12.61	13.28	13.30	13.03	12.54	11.83
10. Kadar Air Rata-Rata	%	11.81																				
11. γ_d	gr/cm ³	1.476	1.590	1.634	1.426	1.613	1.512	1.468	1.620	1.577	1.426	1.553	1.492	1.391	1.539	1.539	1.448	1.549	1.582	1.435	1.543	1.468
12. γ_d rata-rata	gr	1.518																				

Tanpa perkuatan B = 10 cm, d/B = 0

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	35.02	34.05	32.30	34.76	34.88	34.34	35.26	35.79	35.63	37.34	37.31	36.92	36.78	36.71	35.34	36.75	35.38	36.23	36.40	35.52	35.44
3. Berat Tanah Basah	gr	16.78	15.98	14.28	16.52	16.81	16.32	17.02	17.72	17.61	19.10	19.24	18.90	18.54	18.64	17.32	18.51	17.31	18.21	18.16	17.45	17.42
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.487	1.508	1.347	1.464	1.586	1.540	1.509	1.672	1.661	1.693	1.815	1.783	1.643	1.759	1.634	1.641	1.633	1.718	1.610	1.646	1.644
6. Berat Ring + Tanah Kering	gr	33.74	32.80	31.21	33.61	33.67	33.19	34.22	34.73	34.52	36.09	36.08	35.79	35.52	35.39	34.06	35.44	33.98	34.76	34.73	33.96	33.81
7. Berat Tanah Kering	gr	15.50	14.73	13.19	15.37	15.60	15.17	15.98	16.66	16.50	17.85	18.01	17.77	17.28	17.32	16.04	17.20	15.91	16.74	16.49	15.89	15.79
8. Berat Air	gr	1.28	1.25	1.09	1.15	1.21	1.15	1.04	1.06	1.11	1.25	1.23	1.13	1.26	1.32	1.28	1.31	1.40	1.47	1.67	1.56	1.63
9. Kadar Air	%	8.26	8.49	8.26	7.48	7.76	7.58	6.51	6.36	6.73	7.00	6.83	6.36	7.29	7.62	7.98	7.62	8.80	8.78	10.13	9.82	10.32
10. Kadar Air Rata-Rata	%	7.90																				
11. γ_d	gr/cm ³	1.374	1.390	1.244	1.362	1.472	1.431	1.416	1.572	1.557	1.582	1.699	1.677	1.532	1.634	1.513	1.525	1.501	1.579	1.462	1.499	1.490
12. γ_d rata-rata	gr	1.501																				

Tanpa perkuatan B = 10 cm, d/B = 0,5

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	36.94	36.57	36.22	36.44	35.77	35.72	36.34	35.87	37.12	36.34	36.67	36.32	36.24	36.97	36.42	36.64	36.57	36.72	36.24	36.17	35.32
3. Berat Tanah Basah	gr	18.70	18.50	18.20	18.20	17.70	17.70	18.10	17.80	19.10	18.10	18.60	18.30	18.00	18.90	18.40	18.40	18.50	18.70	18.00	18.10	17.30
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.658	1.745	1.717	1.613	1.670	1.670	1.604	1.679	1.802	1.604	1.755	1.727	1.596	1.783	1.736	1.631	1.745	1.764	1.596	1.708	1.632
6. Berat Ring + Tanah Kering	gr	35.14	34.87	34.52	34.74	34.07	34.02	34.84	34.37	35.42	34.74	34.97	34.72	34.64	35.27	34.82	34.94	34.77	34.92	34.54	34.57	33.72
7. Berat Tanah Kering	gr	16.90	16.80	16.50	16.50	16.00	16.00	16.60	16.30	17.40	16.50	16.90	16.70	16.40	17.20	16.80	16.70	16.90	16.30	16.50	16.50	15.70
8. Berat Air	gr	1.80	1.70	1.70	1.70	1.70	1.70	1.50	1.50	1.70	1.60	1.70	1.60	1.60	1.70	1.60	1.70	1.80	1.80	1.70	1.60	1.60
9. Kadar Air	%	10.65	10.12	10.30	10.30	10.63	10.63	9.04	9.20	9.77	9.70	10.06	9.58	9.76	9.88	9.52	10.18	10.78	10.65	10.43	9.70	10.19
10. Kadar Air Rata-Rata	%	10.05																				
11. γ_d	gr/cm ³	1.585	1.557	1.463	1.510	1.510	1.471	1.538	1.642	1.463	1.595	1.576	1.454	1.623	1.585	1.480	1.576	1.595	1.445	1.557	1.481	1.481
12. γ_d rata-rata	gr	1.535																				

Tanpa perkuatan B = 10 cm, d/B = 1

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	36.94	36.37	35.72	35.84	36.07	36.22	37.54	35.77	35.52	36.24	36.27	36.82	35.74	36.17	35.52	36.94	35.97	36.32	35.64	36.47	36.42
3. Berat Tanah Basah	gr	18.70	18.30	17.70	17.60	18.00	18.20	19.30	17.70	17.50	18.00	18.20	18.80	17.50	18.10	17.50	18.70	17.90	18.30	17.40	18.40	18.40
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.658	1.727	1.670	1.560	1.698	1.717	1.711	1.670	1.651	1.596	1.717	1.774	1.551	1.708	1.651	1.658	1.689	1.727	1.542	1.736	1.736
6. Berat Ring + Tanah Kering	gr	35.07	34.41	34.01	34.14	34.27	34.32	35.73	34.08	33.88	34.38	34.49	34.74	33.76	34.31	33.68	34.93	34.09	34.29	33.73	34.60	34.51
7. Berat Tanah Kering	gr	16.83	16.34	15.99	15.90	16.20	16.30	17.49	16.01	15.86	16.14	16.42	16.72	15.52	16.24	15.66	16.69	16.02	16.27	15.49	16.53	16.49
8. Berat Air	gr	1.87	1.96	1.71	1.70	1.80	1.90	1.81	1.69	1.64	1.86	1.78	2.08	1.98	1.86	1.84	2.01	1.88	2.03	1.91	1.87	1.91
9. Kadar Air	%	11.11	12.00	10.69	10.69	11.11	11.66	10.35	10.56	10.34	11.52	10.84	12.44	12.76	11.45	11.75	12.04	11.74	12.48	12.33	11.31	11.58
10. Kadar Air Rata-Rata	%	11.46																				
11. γ_d	gr/cm ³	1.492	1.542	1.509	1.409	1.528	1.538	1.550	1.511	1.496	1.431	1.549	1.578	1.376	1.532	1.478	1.479	1.511	1.535	1.373	1.560	1.556
12. γ_d rata-rata	gr	1.502																				

Dengan perkuatan $B = 6 \text{ cm}$, $d/B = 0$, $n = 2$, $u/B = 0,5$

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	37.24	35.37	35.82	35.84	36.77	36.52	36.74	36.27	36.62	35.94	36.77	36.72	36.24	36.07	36.02	36.34	36.17	36.62	36.34	36.57	36.22
3. Berat Tanah Basah	gr	19.00	17.30	17.80	17.60	18.70	18.50	18.50	18.20	18.60	17.70	18.70	18.70	18.00	18.00	18.00	18.10	18.10	18.60	18.10	18.50	18.20
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.684	1.632	1.679	1.560	1.764	1.745	1.640	1.717	1.755	1.569	1.764	1.764	1.596	1.698	1.698	1.604	1.708	1.755	1.604	1.745	1.717
6. Berat Ring + Tanah Kering	gr	35.55	33.69	34.06	34.20	35.14	34.88	35.06	34.58	34.93	34.36	35.01	34.92	34.72	34.59	34.38	34.73	34.63	34.98	34.78	35.00	34.64
7. Berat Tanah Kering	gr	17.31	15.62	16.04	15.96	17.07	16.86	16.82	16.51	16.91	16.12	16.94	16.90	16.48	16.52	16.36	16.49	16.56	16.96	16.54	16.93	16.62
8. Berat Air	gr	1.69	1.68	1.76	1.64	1.63	1.64	1.68	1.69	1.69	1.58	1.76	1.80	1.52	1.48	1.64	1.61	1.54	1.64	1.56	1.57	1.58
9. Kadar Air	%	9.76	10.76	10.97	10.28	9.55	9.73	9.99	10.24	9.99	9.80	10.39	10.65	9.22	8.96	10.02	9.76	9.30	9.67	9.43	9.27	9.51
10. Kadar Air Rata-Rata	%																				9.87	
11. γ_d	gr/cm ³	1.534	1.474	1.513	1.415	1.611	1.591	1.491	1.558	1.595	1.429	1.598	1.595	1.461	1.559	1.544	1.462	1.562	1.600	1.466	1.597	1.568
12. γ_d rata-rata	gr																				1.534	

Dengan perkuatan $B = 6 \text{ cm}$, $d/B = 0,5$; $n = 2$, $u/B = 0,5$

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	36.94	36.87	36.22	37.94	35.37	36.02	36.64	36.57	36.42	36.74	36.97	34.62	36.74	36.67	35.62	36.54	36.37	36.72	36.44	35.57	36.62
3. Berat Tanah Basah	gr	18.70	18.80	18.20	19.70	17.30	18.00	18.40	18.50	18.40	18.50	18.90	16.60	18.50	18.60	17.60	18.30	18.30	18.70	18.20	17.50	18.60
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.658	1.774	1.717	1.746	1.632	1.698	1.631	1.745	1.736	1.640	1.783	1.566	1.640	1.755	1.661	1.622	1.727	1.764	1.613	1.651	1.755
6. Berat Ring + Tanah Kering	gr	35.22	35.15	34.60	35.82	33.66	34.22	34.87	34.82	34.52	34.89	35.05	33.05	34.94	34.79	33.89	34.67	34.52	34.87	34.68	33.87	34.82
7. Berat Tanah Kering	gr	16.98	17.08	16.58	17.58	15.59	16.20	16.63	16.75	16.50	16.65	16.98	15.03	16.70	16.72	15.87	16.43	16.45	16.85	16.44	15.80	16.80
8. Berat Air	gr	1.72	1.72	1.62	2.12	1.71	1.80	1.77	1.75	1.90	1.85	1.92	1.57	1.80	1.88	1.73	1.87	1.85	1.85	1.76	1.70	1.80
9. Kadar Air	%	10.13	10.07	9.77	12.06	10.97	11.11	10.64	10.45	11.52	11.11	11.31	10.45	10.78	11.24	10.90	11.38	11.25	10.98	10.71	10.76	10.71
10. Kadar Air Rata-Rata	%																				10.87	
11. γ_d	gr/cm ³	1.505	1.611	1.564	1.558	1.471	1.528	1.474	1.580	1.557	1.476	1.602	1.418	1.480	1.578	1.497	1.456	1.552	1.590	1.457	1.491	1.585
12. γ_d rata-rata	gr																				1.525	

Dengan perkuatan $B = 6 \text{ cm}$, $d/B = 1$, $n = 2$, $u/B = 0,5$

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	35.84	36.67	36.92	36.64	36.07	35.62	36.24	36.67	36.32	35.64	36.67	37.42	37.34	35.57	36.52	36.74	36.57	36.42	37.34	36.17	36.62
3. Berat Tanah Basah	gr	17.60	18.60	18.90	18.40	18.00	17.60	18.00	18.60	18.30	17.40	18.60	19.40	19.10	17.50	18.50	18.50	18.40	18.40	19.10	18.10	18.60
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.560	1.755	1.783	1.631	1.698	1.661	1.596	1.755	1.727	1.542	1.755	1.830	1.693	1.651	1.745	1.640	1.745	1.736	1.693	1.708	1.755
6. Berat Ring + Tanah Kering	gr	34.21	34.97	35.16	34.85	34.27	33.91	34.53	34.82	34.57	33.99	34.89	35.70	35.60	33.84	34.71	35.01	34.79	34.63	35.56	34.48	34.91
7. Berat Tanah Kering	gr	15.97	16.90	17.14	16.61	16.20	15.89	16.29	16.75	16.55	15.75	16.82	17.68	17.36	15.77	16.69	16.77	16.72	16.61	17.32	16.41	16.89
8. Berat Air	gr	1.63	1.70	1.76	1.79	1.80	1.71	1.71	1.85	1.75	1.65	1.78	1.72	1.74	1.73	1.81	1.73	1.78	1.79	1.78	1.69	1.71
9. Kadar Air	%	10.21	10.06	10.27	10.78	11.11	10.76	10.50	11.04	10.57	10.48	10.58	9.73	10.02	10.97	10.84	10.32	10.65	10.78	10.28	10.30	10.12
10. Kadar Air Rata-Rata	%											10.49										
11. γ_d	gr/cm ³	1.416	1.595	1.617	1.472	1.528	1.499	1.444	1.580	1.561	1.396	1.587	1.668	1.539	1.488	1.575	1.486	1.578	1.567	1.535	1.548	1.594
12. γ_d rata-rata	gr											1.537										

Dengan perkuatan $B = 8 \text{ cm}$, $d/B = 0$, $n = 2$, $u/B = 0,5$

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	36.44	35.97	36.72	37.44	34.77	36.02	36.54	36.77	36.02	37.34	36.07	35.92	36.94	36.57	36.02	35.74	36.17	35.92	36.84	35.47	36.42
3. Berat Tanah Basah	gr	18.20	17.90	18.70	19.20	16.70	18.00	18.30	18.70	18.00	19.10	18.00	17.90	18.70	18.50	18.00	17.50	18.10	17.90	18.60	17.40	18.40
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.613	1.689	1.764	1.702	1.576	1.698	1.622	1.764	1.698	1.693	1.698	1.689	1.658	1.745	1.698	1.551	1.708	1.689	1.649	1.642	1.736
6. Berat Ring + Tanah Kering	gr	35.13	34.62	35.16	35.79	33.62	34.61	34.94	35.43	34.62	34.89	34.58	34.54	35.59	35.20	34.74	34.51	34.93	34.73	35.62	34.30	35.18
7. Berat Tanah Kering	gr	16.89	16.55	17.14	17.55	15.55	16.59	16.70	17.36	16.60	16.65	16.51	16.52	17.35	17.13	16.72	16.27	16.86	16.71	17.38	16.23	17.16
8. Berat Air	gr	1.31	1.35	1.56	1.65	1.15	1.41	1.60	1.34	1.40	2.45	1.49	1.38	1.35	1.37	1.28	1.23	1.24	1.19	1.22	1.17	1.24
9. Kadar Air	%	7.76	8.16	9.10	9.40	7.40	8.50	9.58	7.72	8.43	14.71	9.02	8.35	7.78	8.00	7.66	7.56	7.35	7.12	7.02	7.21	7.23
10. Kadar Air Rata-Rata	%											8.34										
11. γ_d	gr/cm ³	1.497	1.561	1.617	1.556	1.467	1.565	1.480	1.638	1.566	1.476	1.558	1.559	1.538	1.616	1.578	1.442	1.591	1.577	1.541	1.531	1.619
12. γ_d rata-rata	gr											1.551										

Dengan perkuatan $B = 8 \text{ cm}$, $d/B = 0,5$; $n = 2$, $u/B = 0,5$

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	36.44	36.17	35.92	35.74	35.87	36.12	36.94	36.07	36.72	35.84	37.87	35.62	36.14	37.07	35.82	36.44	36.37	36.72	36.44	36.07	36.72
3. Berat Tanah Basah	gr	18.20	18.10	17.90	17.50	17.80	18.10	18.70	18.00	18.70	17.60	19.80	17.60	17.90	19.00	17.80	18.20	18.30	18.70	18.20	18.00	18.70
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.613	1.708	1.689	1.551	1.679	1.708	1.658	1.698	1.764	1.560	1.868	1.661	1.587	1.793	1.679	1.613	1.727	1.764	1.613	1.698	1.764
6. Berat Ring + Tanah Kering	gr	34.79	34.47	34.27	34.11	34.26	34.47	35.23	34.42	35.03	34.13	36.17	33.99	34.50	35.31	34.18	34.77	34.65	35.04	34.73	34.47	35.09
7. Berat Tanah Kering	gr	16.55	16.40	16.25	15.87	16.19	16.45	16.99	16.35	17.01	15.89	18.10	15.97	16.26	17.24	16.16	16.53	16.58	17.02	16.49	16.40	17.07
8. Berat Air	gr	1.65	1.70	1.65	1.63	1.61	1.65	1.71	1.65	1.69	1.71	1.70	1.63	1.64	1.76	1.64	1.67	1.72	1.68	1.71	1.60	1.63
9. Kadar Air	%	9.97	10.37	10.15	10.27	9.94	10.03	10.06	10.09	9.94	10.76	9.39	10.21	10.09	10.21	10.15	10.10	10.37	9.87	10.37	9.76	9.55
10. Kadar Air Rata-Rata	%											10.08										
11. γ_d	gr/cm ³	1.467	1.547	1.533	1.407	1.528	1.552	1.506	1.543	1.605	1.408	1.708	1.507	1.441	1.627	1.525	1.465	1.564	1.606	1.462	1.547	1.611
12. γ_d rata-rata	gr											1.531										

Dengan perkuatan $B = 8 \text{ cm}$, $d/B = 1$, $n = 2$, $u/B = 0,5$

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	37.34	35.87	35.12	36.44	36.67	36.82	35.34	36.57	36.22	36.74	35.17	35.72	37.54	36.67	35.02	36.84	36.67	35.62	37.04	35.87	37.12
3. Berat Tanah Basah	gr	19.10	17.80	17.10	18.20	18.60	18.80	17.10	18.50	18.20	18.50	17.10	17.70	19.30	18.60	17.00	18.60	18.60	17.60	18.80	17.80	19.10
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.693	1.679	1.613	1.613	1.755	1.774	1.516	1.745	1.717	1.640	1.613	1.670	1.711	1.755	1.604	1.649	1.755	1.661	1.666	1.679	1.802
6. Berat Ring + Tanah Kering	gr	35.49	34.11	33.47	34.67	36.45	33.24	34.75	34.82	33.48	35.22	33.54	34.00	35.76	35.06	33.54	35.24	34.99	34.02	35.22	34.27	34.41
7. Berat Tanah Kering	gr	17.25	16.04	15.45	16.43	18.38	15.22	16.51	16.75	15.46	16.98	15.47	15.98	17.52	16.99	15.52	17.00	16.92	16.00	16.98	16.20	16.39
8. Berat Air	gr	1.85	1.76	1.65	1.77	0.22	3.58	0.59	1.75	2.74	1.52	1.63	1.72	1.78	1.61	1.48	1.60	1.68	1.60	1.82	1.60	2.71
9. Kadar Air	%	10.72	10.97	10.68	10.77	1.20	23.52	3.57	10.45	17.72	8.95	10.54	10.76	10.16	9.48	9.54	9.41	9.93	10.00	10.72	9.88	16.53
10. Kadar Air Rata-Rata	%											10.74										
11. γ_d	gr/cm ³	1.529	1.513	1.458	1.456	1.734	1.436	1.463	1.580	1.459	1.505	1.460	1.508	1.553	1.603	1.464	1.507	1.596	1.510	1.505	1.528	1.546
12. γ_d rata-rata	gr											1.520										

Dengan perkuatan $B = 10 \text{ cm}$, $d/B = 0,5$, $n = 2$, $u/B = 0,5$

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	36.74	36.17	35.92	36.64	37.07	36.02	35.24	38.57	35.22	35.74	36.27	36.72	36.04	35.97	36.42	36.64	36.47	36.32	37.44	36.07	36.12
3. Berat Tanah Basah	gr	18.50	18.10	17.90	18.40	19.00	18.00	17.00	20.50	17.20	17.50	18.20	18.70	17.80	17.90	18.40	18.40	18.40	18.30	19.20	18.00	18.10
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.640	1.708	1.689	1.631	1.793	1.698	1.507	1.934	1.623	1.551	1.717	1.764	1.578	1.689	1.736	1.631	1.736	1.727	1.702	1.698	1.708
6. Berat Ring + Tanah Kering	gr	35.10	34.47	34.22	35.03	35.35	34.18	33.60	36.86	33.69	34.18	34.56	35.00	34.47	34.33	34.78	34.99	34.76	35.11	35.66	34.45	34.46
7. Berat Tanah Kering	gr	16.86	16.40	16.20	16.79	17.28	16.16	15.36	18.79	15.67	15.94	16.49	16.98	16.23	16.26	16.76	16.75	16.69	17.09	17.42	16.38	16.44
8. Berat Air	gr	1.64	1.70	1.70	1.61	1.72	1.84	1.64	1.71	1.53	1.56	1.71	1.72	1.57	1.64	1.64	1.65	1.71	1.21	1.78	1.62	1.66
9. Kadar Air	%	9.73	10.37	10.49	9.59	9.95	11.39	10.68	9.10	9.76	9.79	10.37	10.13	9.67	10.09	9.79	9.85	10.25	7.08	10.22	9.89	10.10
10. Kadar Air Rata-Rata	%	9.92																				
11. γ_d	gr/cm ³	1.494	1.547	1.528	1.488	1.630	1.525	1.361	1.773	1.478	1.413	1.556	1.602	1.439	1.534	1.581	1.485	1.575	1.612	1.544	1.545	1.551
12. γ_d rata-rata	gr	1.536																				

Dengan perkuatan $B = 10 \text{ cm}$, $d/B = 0,5$; $n = 2$, $u/B = 0,5$

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	36.74	36.47	36.52	36.54	36.37	36.72	37.14	36.57	35.32	37.54	36.37	35.92	35.84	36.17	35.52	37.04	36.47	36.32	36.44	36.67	36.22
3. Berat Tanah Basah	gr	18.50	18.40	18.50	18.30	18.30	18.70	18.90	18.50	17.30	19.30	18.30	17.90	17.60	18.10	17.50	18.80	18.40	18.30	18.20	18.60	18.20
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.640	1.736	1.745	1.622	1.727	1.764	1.675	1.745	1.632	1.711	1.727	1.689	1.560	1.708	1.651	1.666	1.736	1.727	1.613	1.755	1.717
6. Berat Ring + Tanah Kering	gr	34.94	34.66	34.68	34.82	34.61	34.98	35.36	34.89	33.74	35.63	34.84	34.27	34.31	34.60	33.88	35.34	34.82	34.72	34.82	35.08	34.67
7. Berat Tanah Kering	gr	16.70	16.59	16.66	16.58	16.54	16.96	17.12	16.82	15.72	17.39	16.77	16.25	16.07	16.53	15.86	17.10	16.75	16.70	16.58	17.01	16.65
8. Berat Air	gr	1.80	1.81	1.84	1.72	1.76	1.74	1.78	1.68	1.58	1.91	1.53	1.65	1.53	1.57	1.64	1.70	1.65	1.60	1.62	1.59	1.55
9. Kadar Air	%	10.78	10.91	11.04	10.37	10.64	10.26	10.40	9.99	10.05	10.98	9.12	10.15	9.52	9.50	10.34	9.94	9.85	9.58	9.77	9.35	9.31
10. Kadar Air Rata-Rata	%	10.09																				
11. γ_d	gr/cm ³	1.480	1.565	1.572	1.470	1.561	1.600	1.518	1.587	1.483	1.541	1.582	1.533	1.424	1.560	1.496	1.516	1.580	1.576	1.470	1.605	1.571
12. γ_d rata-rata	gr	1.538																				

Dengan perkuatan $B = 10 \text{ cm}$, $d/B = 1$, $n = 2$, $u/B = 0,5$

Lapisan		1			2			3			4			5			6			7		
Tinggi Ring	cm	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55	2.60	2.55	2.55
Diameter Ring	cm	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30	2.35	2.30	2.30
1. Berat Ring	gr	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02	18.24	18.07	18.02
2. Berat Ring + Tanah Basah	gr	36.54	36.77	36.12	36.64	36.77	36.62	36.34	36.27	36.32	36.24	36.17	35.52	36.64	35.87	35.52	36.44	35.87	36.52	36.54	36.27	36.12
3. Berat Tanah Basah	gr	18.30	18.70	18.10	18.40	18.70	18.60	18.10	18.20	18.30	18.00	18.10	17.50	18.40	17.80	17.50	18.20	17.80	18.50	18.30	18.20	18.10
4. Volume Tanah	cm ³	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60	11.28	10.60	10.60
5. γ_w	gr/cm ³	1.622	1.764	1.708	1.631	1.764	1.755	1.604	1.717	1.727	1.596	1.708	1.651	1.631	1.679	1.651	1.613	1.679	1.745	1.622	1.717	1.708
6. Berat Ring + Tanah Kering	gr	34.85	34.91	34.24	34.72	34.72	34.67	34.65	34.40	34.46	34.68	34.53	33.99	35.07	34.33	33.98	34.85	34.28	34.65	34.90	34.63	34.49
7. Berat Tanah Kering	gr	16.61	16.84	16.22	16.48	16.65	16.65	16.41	16.33	16.44	16.44	16.46	15.97	16.83	16.26	15.96	16.61	16.21	16.63	16.66	16.56	16.47
8. Berat Air	gr	1.69	1.86	1.88	1.92	2.05	1.95	1.69	1.87	1.86	1.56	1.64	1.53	1.57	1.54	1.54	1.59	1.59	1.87	1.64	1.64	1.63
9. Kadar Air	%	10.17	11.05	11.59	11.65	12.31	11.71	10.30	11.45	11.31	9.49	9.96	9.58	9.33	9.47	9.65	9.57	9.81	11.24	9.84	9.90	9.90
10. Kadar Air Rata-Rata	%											10.44										
11. γ_d	gr/cm ³	1.472	1.589	1.530	1.461	1.571	1.571	1.455	1.541	1.551	1.457	1.553	1.507	1.492	1.534	1.506	1.472	1.529	1.569	1.477	1.562	1.554
12. γ_d rata-rata	gr											1.522										

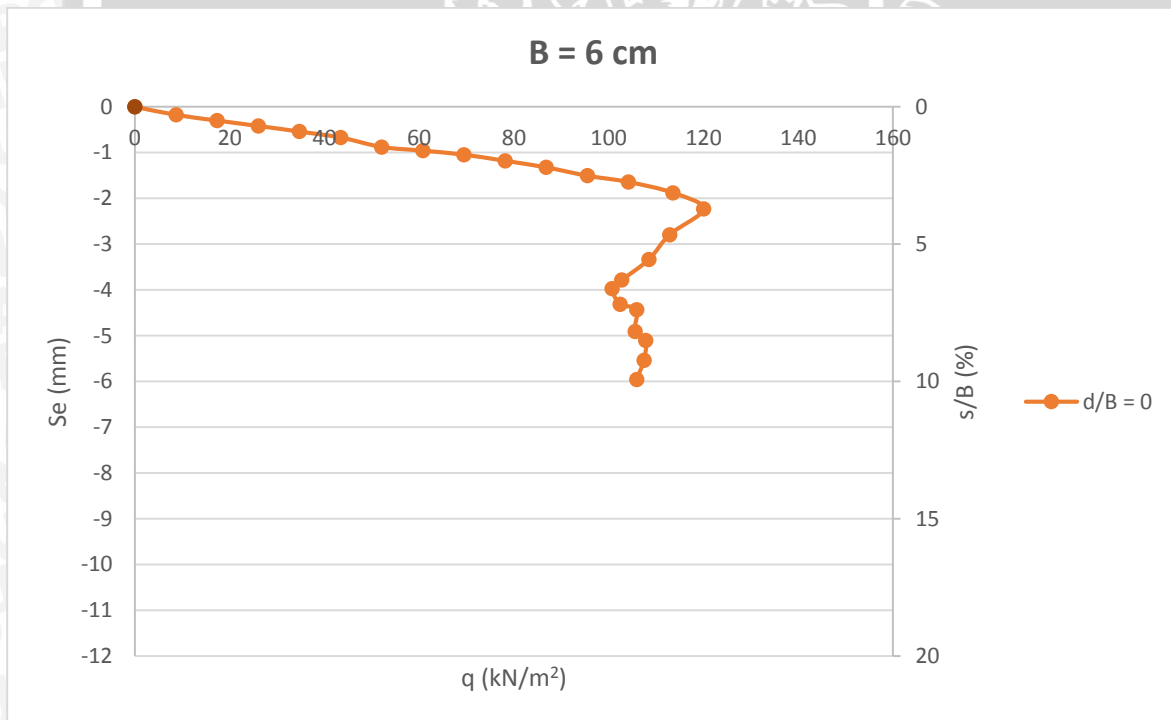


Lampiran 6. Rekapitulasi Data Daya Dukung dan Penurunan Berdasarkan Eksperimen

Tanpa Perkuatan

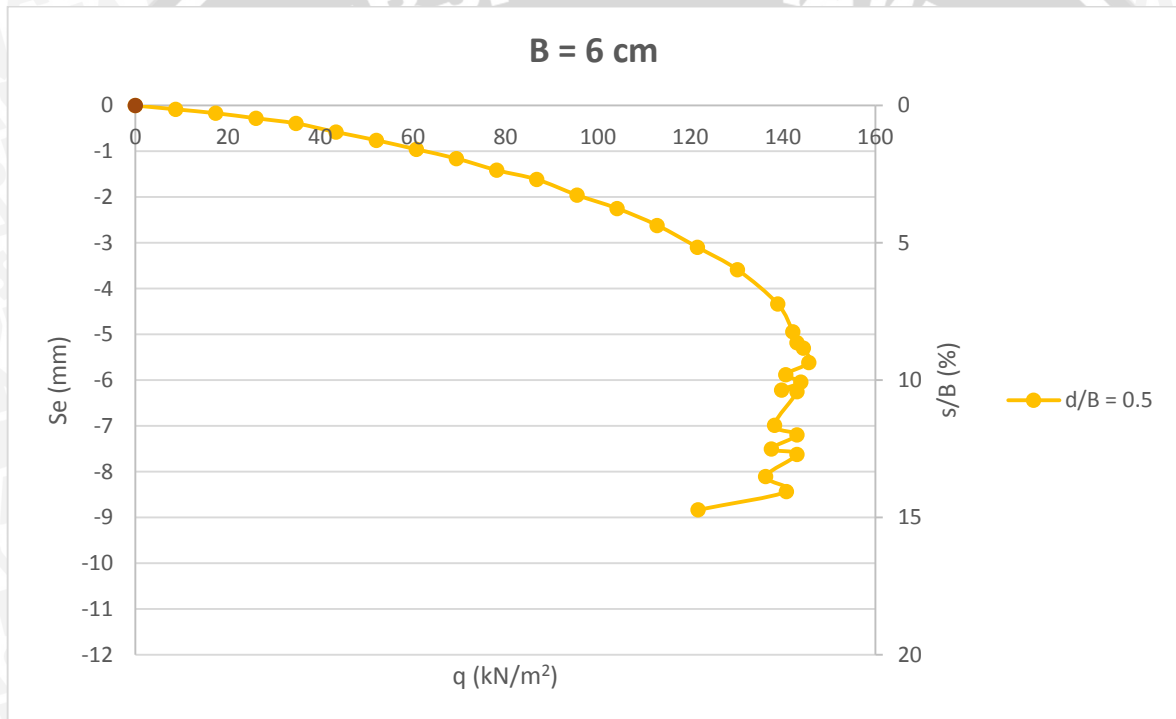
1. $B = 6 \text{ cm}$, $d/B = 0$

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm ²)	q (kN/m ²)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-3048	-3255	-30.480	-16.275	0	0	0	0	0	0
50	-3015	-3251	-30.150	-16.255	0.330	0.020	0.175	0.292	0.087	8.681
100	-2995	-3241	-29.950	-16.205	0.530	0.070	0.300	0.500	0.174	17.361
150	-2980	-3224	-29.800	-16.120	0.680	0.155	0.417	0.696	0.260	26.042
200	-2965	-3205	-29.650	-16.025	0.830	0.250	0.540	0.900	0.347	34.722
250	-2953	-3177	-29.530	-15.885	0.950	0.390	0.670	1.117	0.434	43.403
300	-2937	-3126	-29.370	-15.630	1.110	0.645	0.877	1.463	0.521	52.083
350	-2926	-3116	-29.260	-15.580	1.220	0.695	0.957	1.596	0.608	60.764
400	-2918	-3097	-29.180	-15.485	1.300	0.790	1.045	1.742	0.694	69.444
450	-2904	-3071	-29.040	-15.355	1.440	0.920	1.180	1.967	0.781	78.125
500	-2889	-3044	-28.890	-15.220	1.590	1.055	1.323	2.204	0.868	86.806
550	-2871	-3007	-28.710	-15.035	1.770	1.240	1.505	2.508	0.955	95.486
600	-2854	-2986	-28.540	-14.930	1.940	1.345	1.643	2.738	1.042	104.167
654	-2829	-2942	-28.290	-14.710	2.190	1.565	1.878	3.129	1.135	113.542
692	-2786	-2886	-27.860	-14.430	2.620	1.845	2.233	3.721	1.201	120.056
650	-2715	-2803	-27.150	-14.015	3.330	2.260	2.795	4.658	1.128	112.847
625	-2645	-2727	-26.450	-13.635	4.030	2.640	3.335	5.558	1.085	108.507
592	-2577	-2683	-25.770	-13.415	4.710	2.860	3.785	6.308	1.028	102.778
580	-2552	-2658	-25.520	-13.290	4.960	2.985	3.973	6.621	1.007	100.694
590	-2498	-2630	-24.980	-13.150	5.500	3.125	4.313	7.188	1.024	102.431
610	-2480	-2619	-24.800	-13.095	5.680	3.180	4.430	7.383	1.059	105.903
608	-2404	-2579	-24.040	-12.895	6.440	3.380	4.910	8.183	1.056	105.556
621	-2374	-2561	-23.740	-12.805	6.740	3.470	5.105	8.508	1.078	107.813
619	-2308	-2520	-23.080	-12.600	7.400	3.675	5.538	9.229	1.075	107.465
610	-2242	-2484	-22.420	-12.420	8.060	3.855	5.958	9.929	1.059	105.903



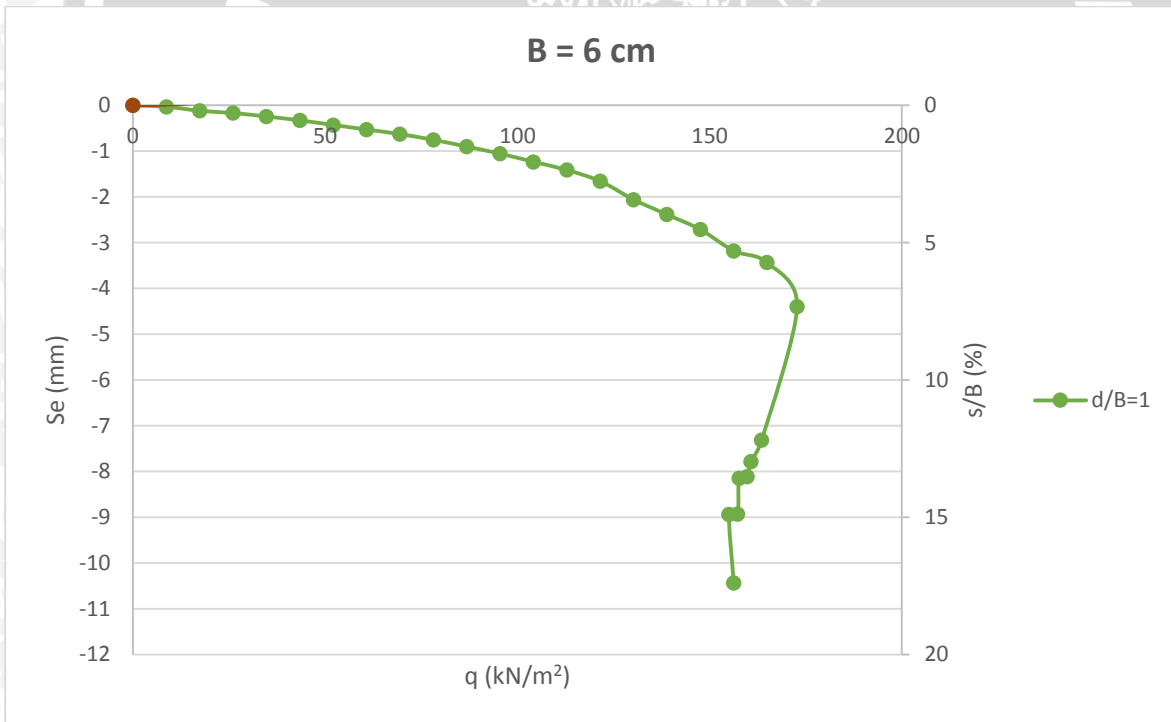
2. $B = 6 \text{ cm}$, $d/B = 0,5$

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm2)	q (kN/m2)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-3048	-3255	-30.480	-16.275	0	0	0	0	0	0
50	-3015	-3251	-30.150	-16.255	0.330	0.020	0.175	0.292	0.087	8.681
100	-2995	-3241	-29.950	-16.205	0.530	0.070	0.300	0.500	0.174	17.361
150	-2980	-3224	-29.800	-16.120	0.680	0.155	0.417	0.696	0.260	26.042
200	-2965	-3205	-29.650	-16.025	0.830	0.250	0.540	0.900	0.347	34.722
250	-2953	-3177	-29.530	-15.885	0.950	0.390	0.670	1.117	0.434	43.403
300	-2937	-3126	-29.370	-15.630	1.110	0.645	0.877	1.463	0.521	52.083
350	-2926	-3116	-29.260	-15.580	1.220	0.695	0.957	1.596	0.608	60.764
400	-2918	-3097	-29.180	-15.485	1.300	0.790	1.045	1.742	0.694	69.444
450	-2904	-3071	-29.040	-15.355	1.440	0.920	1.180	1.967	0.781	78.125
500	-2889	-3044	-28.890	-15.220	1.590	1.055	1.323	2.204	0.868	86.806
550	-2871	-3007	-28.710	-15.035	1.770	1.240	1.505	2.508	0.955	95.486
600	-2854	-2986	-28.540	-14.930	1.940	1.345	1.643	2.738	1.042	104.167
654	-2829	-2942	-28.290	-14.710	2.190	1.565	1.878	3.129	1.135	113.542
692	-2786	-2886	-27.860	-14.430	2.620	1.845	2.233	3.721	1.201	120.056
650	-2715	-2803	-27.150	-14.015	3.330	2.260	2.795	4.658	1.128	112.847
625	-2645	-2727	-26.450	-13.635	4.030	2.640	3.335	5.558	1.085	108.507
592	-2577	-2683	-25.770	-13.415	4.710	2.860	3.785	6.308	1.028	102.778
580	-2552	-2658	-25.520	-13.290	4.960	2.985	3.973	6.621	1.007	100.694
590	-2498	-2630	-24.980	-13.150	5.500	3.125	4.313	7.188	1.024	102.431
610	-2480	-2619	-24.800	-13.095	5.680	3.180	4.430	7.383	1.059	105.903
608	-2404	-2579	-24.040	-12.895	6.440	3.380	4.910	8.183	1.056	105.556
621	-2374	-2561	-23.740	-12.805	6.740	3.470	5.105	8.508	1.078	107.813
619	-2308	-2520	-23.080	-12.600	7.400	3.675	5.538	9.229	1.075	107.465
610	-2242	-2484	-22.420	-12.420	8.060	3.855	5.958	9.929	1.059	105.903



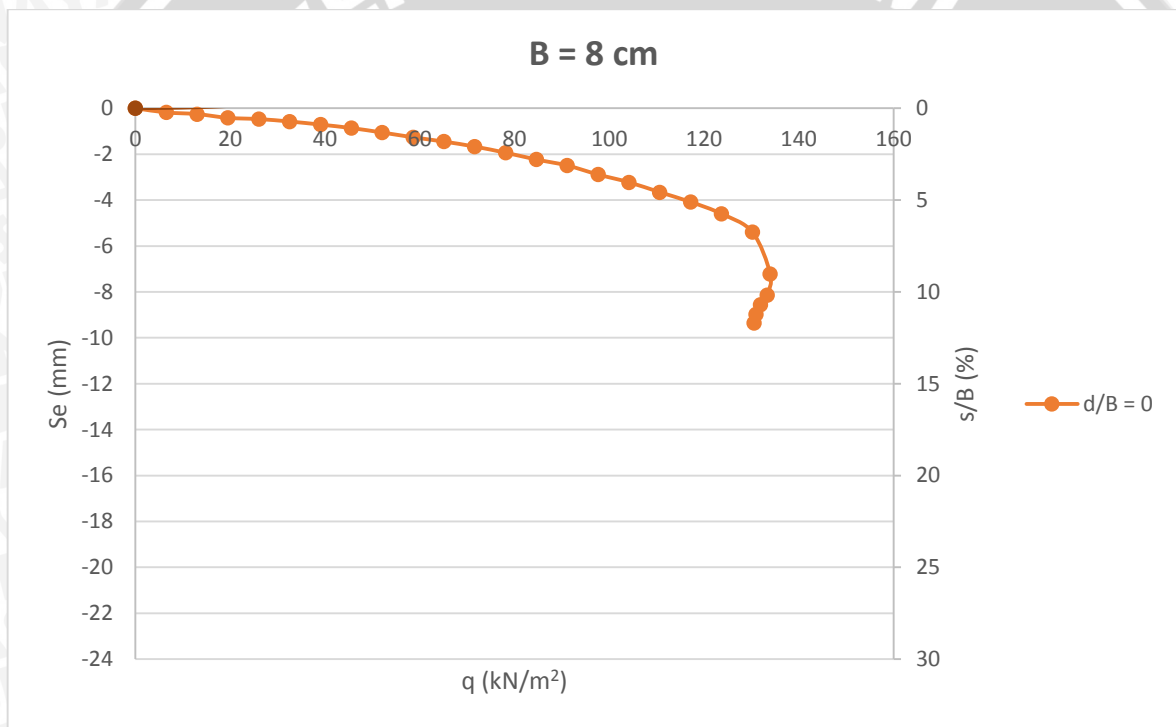
3. $B = 6 \text{ cm}$, $d/B = 1$

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm ²)	q (kN/m ²)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-2777	-1651	-27.770	-8.255	0	0	0	0	0	0
50	-2775	-1643	-27.750	-8.215	0.020	0.040	0.030	0.050	0.087	8.681
100	-2769	-1620	-27.690	-8.100	0.080	0.155	0.118	0.196	0.174	17.361
150	-2762	-1614	-27.620	-8.070	0.150	0.185	0.168	0.279	0.260	26.042
200	-2754	-1600	-27.540	-8.000	0.230	0.255	0.243	0.404	0.347	34.722
250	-2746	-1582	-27.460	-7.910	0.310	0.345	0.328	0.546	0.434	43.403
300	-2736	-1562	-27.360	-7.810	0.410	0.445	0.428	0.713	0.521	52.083
350	-2727	-1540	-27.270	-7.700	0.500	0.555	0.528	0.879	0.608	60.764
400	-2718	-1518	-27.180	-7.590	0.590	0.665	0.628	1.046	0.694	69.444
450	-2707	-1490	-27.070	-7.450	0.700	0.805	0.753	1.254	0.781	78.125
500	-2695	-1455	-26.950	-7.275	0.820	0.980	0.900	1.500	0.868	86.806
550	-2682	-1419	-26.820	-7.095	0.950	1.160	1.055	1.758	0.955	95.486
600	-2666	-1380	-26.660	-6.900	1.110	1.355	1.233	2.054	1.042	104.167
650	-2650	-1340	-26.500	-6.700	1.270	1.555	1.413	2.354	1.128	112.847
700	-2630	-1283	-26.300	-6.415	1.470	1.840	1.655	2.758	1.215	121.528
750	-2597	-1188	-25.970	-5.940	1.800	2.315	2.058	3.429	1.302	130.208
800	-2571	-1109	-25.710	-5.545	2.060	2.710	2.385	3.975	1.389	138.889
850	-2545	-1030	-25.450	-5.150	2.320	3.105	2.713	4.521	1.476	147.569
900	-2506	-922	-25.060	-4.610	2.710	3.645	3.178	5.296	1.563	156.250
950	-2485	-861	-24.850	-4.305	2.920	3.950	3.435	5.725	1.649	164.931
995	-2413	-620	-24.130	-3.100	3.640	5.155	4.398	7.329	1.727	172.743
942	-2157	35	-21.570	0.175	6.200	8.430	7.315	12.192	1.635	163.542
926	-2109	126	-21.090	0.630	6.680	8.885	7.783	12.971	1.608	160.764
920	-2078	196	-20.780	0.980	6.990	9.235	8.113	13.521	1.597	159.722
908	-2077	207	-20.770	1.035	7.000	9.290	8.145	13.575	1.576	157.639
906	-2000	366	-20.000	1.830	7.770	10.085	8.928	14.879	1.573	157.292
893	-1999	368	-19.990	1.840	7.780	10.095	8.938	14.896	1.550	155.035
900	-1863	694	-18.630	3.470	9.140	11.725	10.433	17.388	1.563	156.250



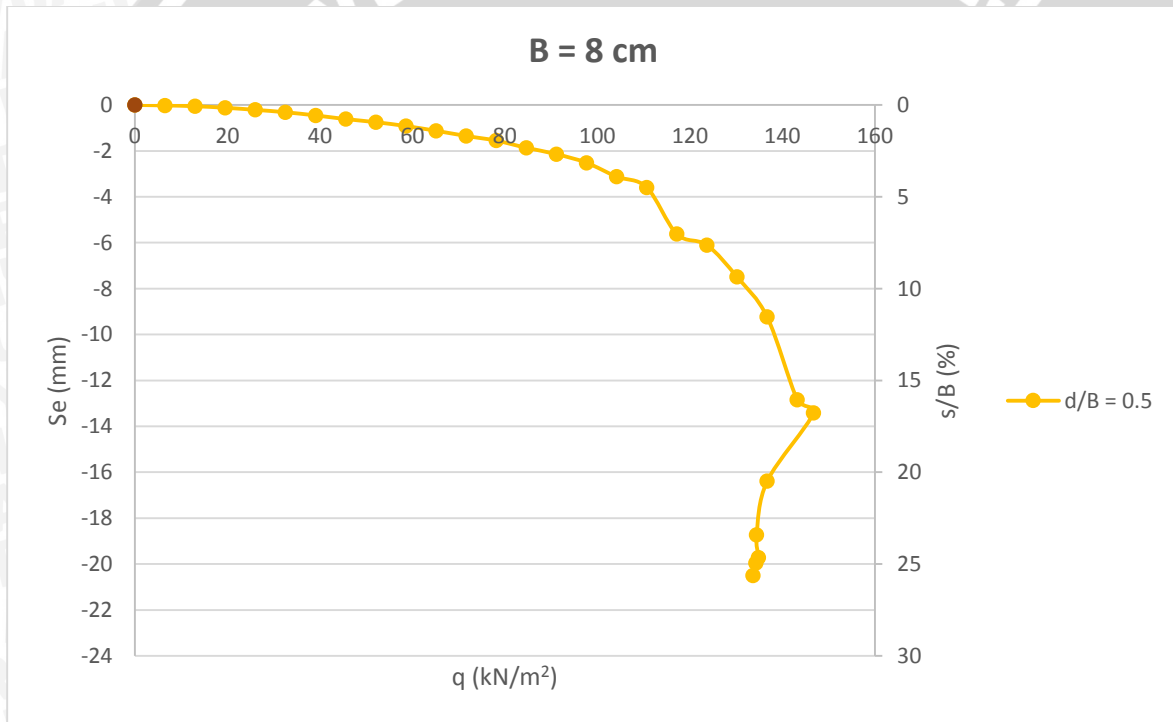
B = 8 cm, d/B = 0

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm2)	q (kN/m2)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-3484	-2213	-34.840	-11.065	0	0	0	0	0	0
50	-3467	-2174	-34.670	-10.870	0.170	0.195	0.183	0.228	0.065	6.510
100	-3463	-2153	-34.630	-10.765	0.210	0.300	0.255	0.319	0.130	13.021
150	-3445	-2124	-34.450	-10.620	0.390	0.445	0.418	0.522	0.195	19.531
200	-3440	-2112	-34.400	-10.560	0.440	0.505	0.473	0.591	0.260	26.042
250	-3429	-2092	-34.290	-10.460	0.550	0.605	0.578	0.722	0.326	32.552
300	-3415	-2066	-34.150	-10.330	0.690	0.735	0.713	0.891	0.391	39.063
350	-3401	-2034	-34.010	-10.170	0.830	0.895	0.863	1.078	0.456	45.573
400	-3383	-1992	-33.830	-9.960	1.010	1.105	1.058	1.322	0.521	52.083
450	-3362	-1951	-33.620	-9.755	1.220	1.310	1.265	1.581	0.586	58.594
500	-3343	-1914	-33.430	-9.570	1.410	1.495	1.453	1.816	0.651	65.104
550	-3321	-1871	-33.210	-9.355	1.630	1.710	1.670	2.088	0.716	71.615
600	-3291	-1824	-32.910	-9.120	1.930	1.945	1.938	2.422	0.781	78.125
650	-3260	-1768	-32.600	-8.840	2.240	2.225	2.233	2.791	0.846	84.635
700	-3233	-1717	-32.330	-8.585	2.510	2.480	2.495	3.119	0.911	91.146
750	-3194	-1638	-31.940	-8.190	2.900	2.875	2.888	3.609	0.977	97.656
800	-3158	-1575	-31.580	-7.875	3.260	3.190	3.225	4.031	1.042	104.167
850	-3111	-1496	-31.110	-7.480	3.730	3.585	3.658	4.572	1.107	110.677
900	-3067	-1414	-30.670	-7.070	4.170	3.995	4.083	5.103	1.172	117.188
950	-3012	-1318	-30.120	-6.590	4.720	4.475	4.598	5.747	1.237	123.698
1000	-2922	-1180	-29.220	-5.900	5.620	5.165	5.393	6.741	1.302	130.208
1029	-2723	-848	-27.230	-4.240	7.610	6.825	7.218	9.022	1.340	133.984
1024	-2623	-678	-26.230	-3.390	8.610	7.675	8.143	10.178	1.333	133.333
1013	-2575	-607	-25.750	-3.035	9.090	8.030	8.560	10.700	1.319	131.901
1006	-2532	-527	-25.320	-2.635	9.520	8.430	8.975	11.219	1.310	130.990
1003	-2493	-456	-24.930	-2.280	9.910	8.785	9.348	11.684	1.306	130.599



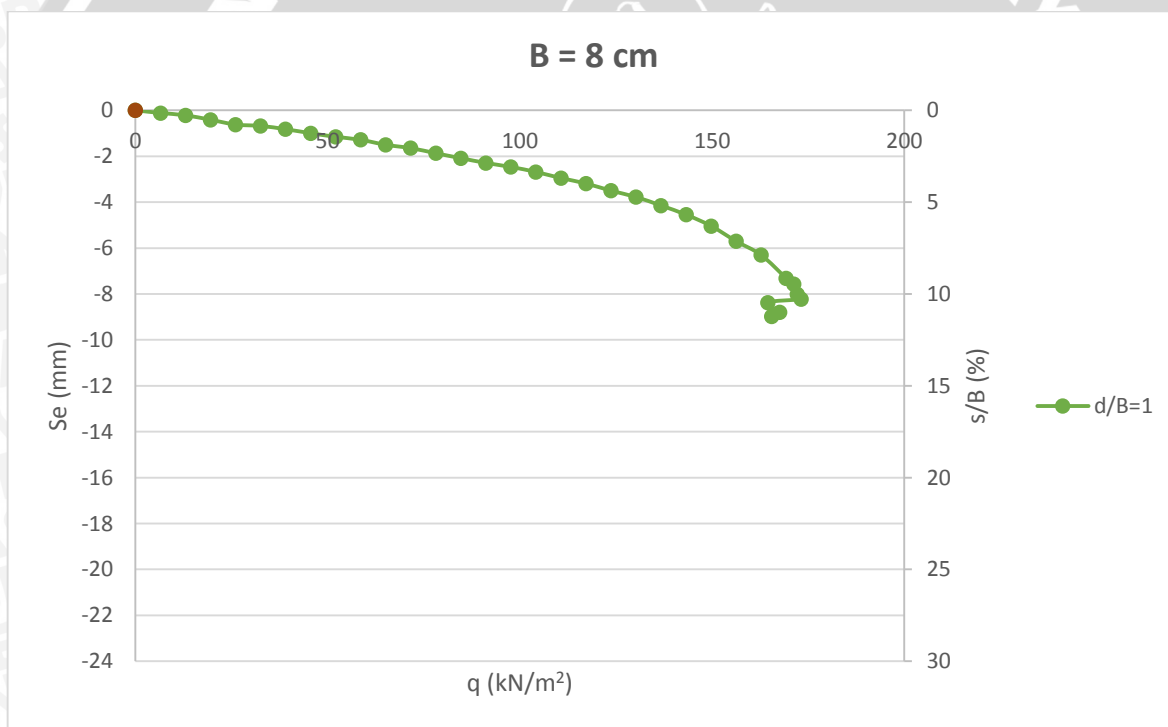
4. $B = 8 \text{ cm}$, $d/B = 0,5$

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm ²)	q (kN/m ²)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-4979	-1006	-49.790	-5.030	0	0	0	0	0	0
50	-4977	-1002	-49.770	-5.010	0.020	0.020	0.020	0.025	0.065	6.510
100	-4977	-988	-49.770	-4.940	0.020	0.090	0.055	0.069	0.130	13.021
150	-4976	-963	-49.760	-4.815	0.030	0.215	0.123	0.153	0.195	19.531
200	-4971	-937	-49.710	-4.685	0.080	0.345	0.212	0.266	0.260	26.042
250	-4966	-905	-49.660	-4.525	0.130	0.505	0.317	0.397	0.326	32.552
300	-4958	-866	-49.580	-4.330	0.210	0.700	0.455	0.569	0.391	39.063
350	-4949	-820	-49.490	-4.100	0.300	0.930	0.615	0.769	0.456	45.573
400	-4941	-782	-49.410	-3.910	0.380	1.120	0.750	0.937	0.521	52.083
450	-4931	-735	-49.310	-3.675	0.480	1.355	0.917	1.147	0.586	58.594
500	-4917	-680	-49.170	-3.400	0.620	1.630	1.125	1.406	0.651	65.104
550	-4901	-622	-49.010	-3.110	0.780	1.920	1.350	1.688	0.716	71.615
600	-4885	-573	-48.850	-2.865	0.940	2.165	1.553	1.941	0.781	78.125
650	-4862	-494	-48.620	-2.470	1.170	2.560	1.865	2.331	0.846	84.635
700	-4840	-427	-48.400	-2.135	1.390	2.895	2.143	2.678	0.911	91.146
750	-4812	-333	-48.120	-1.665	1.670	3.365	2.518	3.147	0.977	97.656
800	-4765	-185	-47.650	-0.925	2.140	4.105	3.123	3.903	1.042	104.167
850	-4728	-71	-47.280	-0.355	2.510	4.675	3.593	4.491	1.107	110.677
900	-4530	345	-45.300	1.725	4.490	6.755	5.623	7.028	1.172	117.188
950	-4475	427	-44.750	2.135	5.040	7.165	6.103	7.628	1.237	123.698
1000	-4333	699	-43.330	3.495	6.460	8.525	7.493	9.366	1.302	130.208
1050	-4160	1050	-41.600	5.250	8.190	10.280	9.235	11.544	1.367	136.719
1100	-3803	1777	-38.030	8.885	11.760	13.915	12.838	16.047	1.432	143.229
1127	-3750	1899	-37.500	9.495	12.290	14.525	13.408	16.759	1.467	146.745
1050	-3420	2432	-34.200	12.160	15.590	17.190	16.390	20.488	1.367	136.719
1032.5	-3154	2836	-31.540	14.180	18.250	19.210	18.730	23.413	1.344	134.440
1035.5	-3051	3023	-30.510	15.115	19.280	20.145	19.713	24.641	1.348	134.831
1031.5	-3026	3072	-30.260	15.360	19.530	20.390	19.960	24.950	1.343	134.310
1026.5	-2968	3174	-29.680	15.870	20.110	20.900	20.505	25.631	1.337	133.659



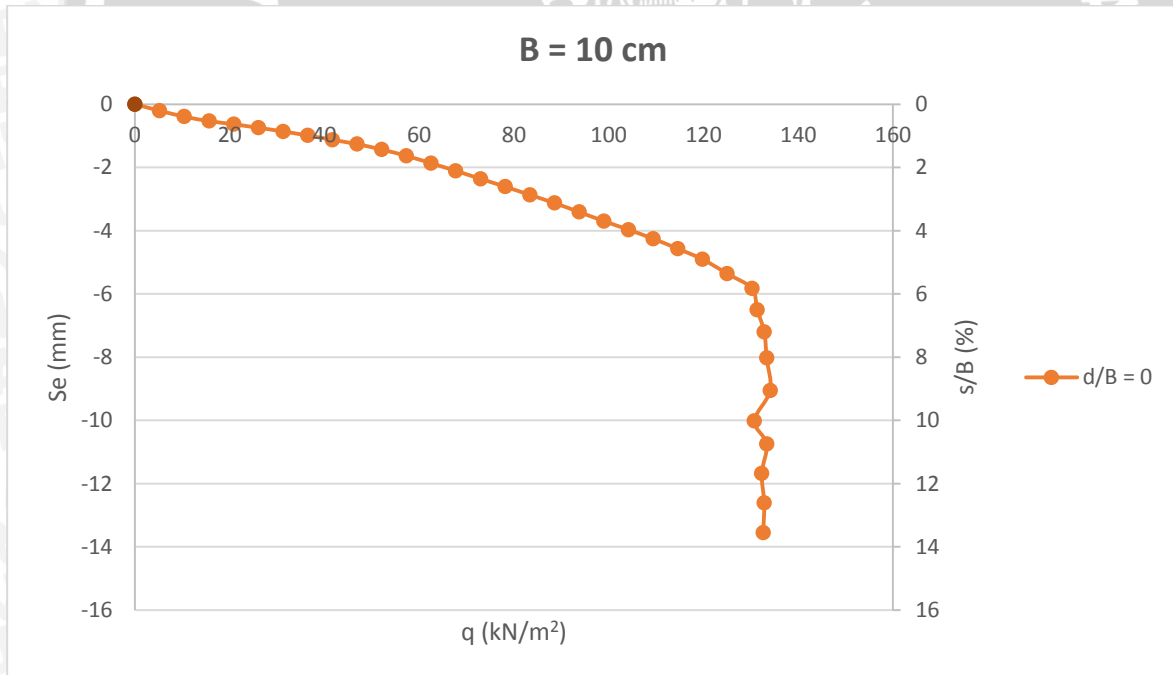
5. $B = 8 \text{ cm}$, $d/B = 1$

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm2)	q (kN/m2)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-2597	-3760	-25.970	-18.800	0	0	0	0	0	0
50	-2585	-3738	-25.850	-18.690	0.120	0.110	0.115	0.144	0.065	6.510
100	-2577	-3714	-25.770	-18.570	0.200	0.230	0.215	0.269	0.130	13.021
150	-2550	-3690	-25.500	-18.450	0.470	0.350	0.410	0.513	0.195	19.531
200	-2525	-3657	-25.250	-18.285	0.720	0.515	0.618	0.772	0.260	26.042
250	-2523	-3637	-25.230	-18.185	0.740	0.615	0.678	0.847	0.326	32.552
300	-2509	-3608	-25.090	-18.040	0.880	0.760	0.820	1.025	0.391	39.063
350	-2490	-3576	-24.900	-17.880	1.070	0.920	0.995	1.244	0.456	45.573
400	-2475	-3543	-24.750	-17.715	1.220	1.085	1.153	1.441	0.521	52.083
450	-2466	-3509	-24.660	-17.545	1.310	1.255	1.283	1.603	0.586	58.594
500	-2440	-3474	-24.400	-17.370	1.570	1.430	1.500	1.875	0.651	65.104
550	-2428	-3440	-24.280	-17.200	1.690	1.600	1.645	2.056	0.716	71.615
600	-2401	-3405	-24.010	-17.025	1.960	1.775	1.868	2.334	0.781	78.125
650	-2375	-3371	-23.750	-16.855	2.220	1.945	2.083	2.603	0.846	84.635
700	-2352	-3334	-23.520	-16.670	2.450	2.130	2.290	2.863	0.911	91.146
750	-2337	-3294	-23.370	-16.470	2.600	2.330	2.465	3.081	0.977	97.656
800	-2314	-3253	-23.140	-16.265	2.830	2.535	2.683	3.353	1.042	104.167
850	-2282	-3210	-22.820	-16.050	3.150	2.750	2.950	3.688	1.107	110.677
900	-2255	-3170	-22.550	-15.850	3.420	2.950	3.185	3.981	1.172	117.188
950	-2217	-3120	-22.170	-15.600	3.800	3.200	3.500	4.375	1.237	123.698
1000	-2188	-3068	-21.880	-15.340	4.090	3.460	3.775	4.719	1.302	130.208
1050	-2142	-3011	-21.420	-15.055	4.550	3.745	4.148	5.184	1.367	136.719
1100	-2097	-2943	-20.970	-14.715	5.000	4.085	4.543	5.678	1.432	143.229
1150	-2040	-2859	-20.400	-14.295	5.570	4.505	5.038	6.297	1.497	149.740
1200	-1956	-2762	-19.560	-13.810	6.410	4.990	5.700	7.125	1.563	156.250
1250	-1879	-2675	-18.790	-13.375	7.180	5.425	6.303	7.878	1.628	162.760
1300	-1750	-2529	-17.500	-12.645	8.470	6.155	7.313	9.141	1.693	169.271
1315	-1716	-2494	-17.160	-12.470	8.810	6.330	7.570	9.463	1.712	171.224
1322	-1673	-2402	-16.730	-12.010	9.240	6.790	8.015	10.019	1.721	172.135
1330	-1650	-2366	-16.500	-11.830	9.470	6.970	8.220	10.275	1.732	173.177
1263	-1636	-2334	-16.360	-11.670	9.610	7.130	8.370	10.463	1.645	164.453
1287	-1600	-2234	-16.000	-11.170	9.970	7.630	8.800	11.000	1.676	167.578
1271	-1563	-2236	-15.630	-11.180	10.340	7.620	8.980	11.225	1.655	165.495



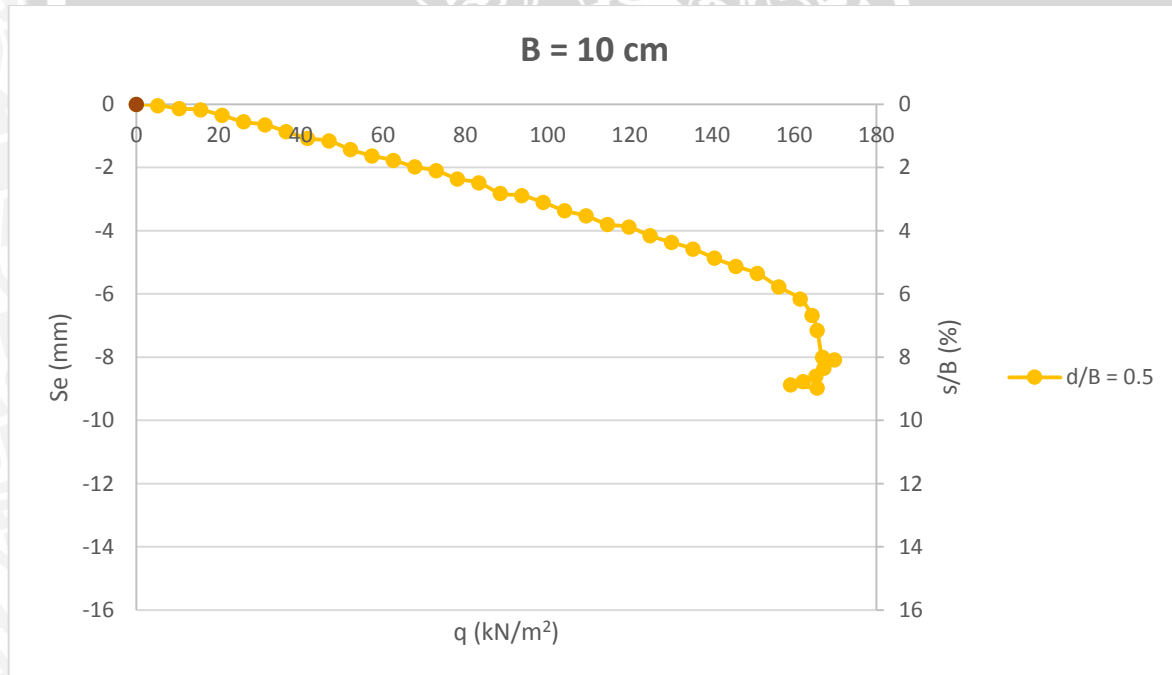
B = 10 cm, d/B = 0

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm2)	q (kN/m2)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-3544	-899	-35.440	-4.495	0	0	0	0	0	0
50	-3542	-821	-35.420	-4.105	0.020	0.390	0.205	0.205	0.052	5.208
100	-3542	-746	-35.420	-3.730	0.020	0.765	0.392	0.392	0.104	10.417
150	-3548	-678	-35.480	-3.390	-0.040	1.105	0.532	0.532	0.156	15.625
200	-3563	-608	-35.630	-3.040	-0.190	1.455	0.632	0.632	0.208	20.833
250	-3576	-537	-35.760	-2.685	-0.320	1.810	0.745	0.745	0.260	26.042
300	-3590	-463	-35.900	-2.315	-0.460	2.180	0.860	0.860	0.313	31.250
350	-3602	-388	-36.020	-1.940	-0.580	2.555	0.987	0.987	0.365	36.458
400	-3614	-309	-36.140	-1.545	-0.700	2.950	1.125	1.125	0.417	41.667
450	-3624	-234	-36.240	-1.170	-0.800	3.325	1.263	1.263	0.469	46.875
500	-3629	-156	-36.290	-0.780	-0.850	3.715	1.433	1.433	0.521	52.083
550	-3630	-74	-36.300	-0.370	-0.860	4.125	1.633	1.633	0.573	57.292
600	-3625	9	-36.250	0.045	-0.810	4.540	1.865	1.865	0.625	62.500
650	-3619	94	-36.190	0.470	-0.750	4.965	2.108	2.108	0.677	67.708
700	-3612	180	-36.120	0.900	-0.680	5.395	2.358	2.358	0.729	72.917
750	-3607	270	-36.070	1.350	-0.630	5.845	2.608	2.608	0.781	78.125
800	-3599	357	-35.990	1.785	-0.550	6.280	2.865	2.865	0.833	83.333
850	-3589	441	-35.890	2.205	-0.450	6.700	3.125	3.125	0.885	88.542
900	-3576	528	-35.760	2.640	-0.320	7.135	3.408	3.408	0.938	93.750
950	-3559	610	-35.590	3.050	-0.150	7.545	3.698	3.698	0.990	98.958
1000	-3547	694	-35.470	3.470	-0.030	7.965	3.968	3.968	1.042	104.167
1050	-3530	775	-35.300	3.875	0.140	8.370	4.255	4.255	1.094	109.375
1100	-3509	859	-35.090	4.295	0.350	8.790	4.570	4.570	1.146	114.583
1150	-3485	945	-34.850	4.725	0.590	9.220	4.905	4.905	1.198	119.792
1200	-3436	1028	-34.360	5.140	1.080	9.635	5.358	5.358	1.250	125.000
1250	-3384	1113	-33.840	5.565	1.600	10.060	5.830	5.830	1.302	130.208
1261	-3292	1200	-32.920	6.000	2.520	10.495	6.508	6.508	1.314	131.354
1275	-3197	1287	-31.970	6.435	3.470	10.930	7.200	7.200	1.328	132.813
1280	-3106	1434	-31.060	7.170	4.380	11.665	8.023	8.023	1.333	133.333
1287	-2958	1552	-29.580	7.760	5.860	12.255	9.058	9.058	1.341	134.063
1255	-2816	1651	-28.160	8.255	7.280	12.750	10.015	10.015	1.307	130.729
1280	-2710	1731	-27.100	8.655	8.340	13.150	10.745	10.745	1.333	133.333
1270	-2569	1823	-25.690	9.115	9.750	13.610	11.680	11.680	1.333	132.292
1275	-2428	1915	-24.280	9.575	11.160	14.070	12.615	12.615	1.328	132.813
1273	-2287	2007	-22.870	10.035	12.570	14.530	13.550	13.550	1.326	132.604



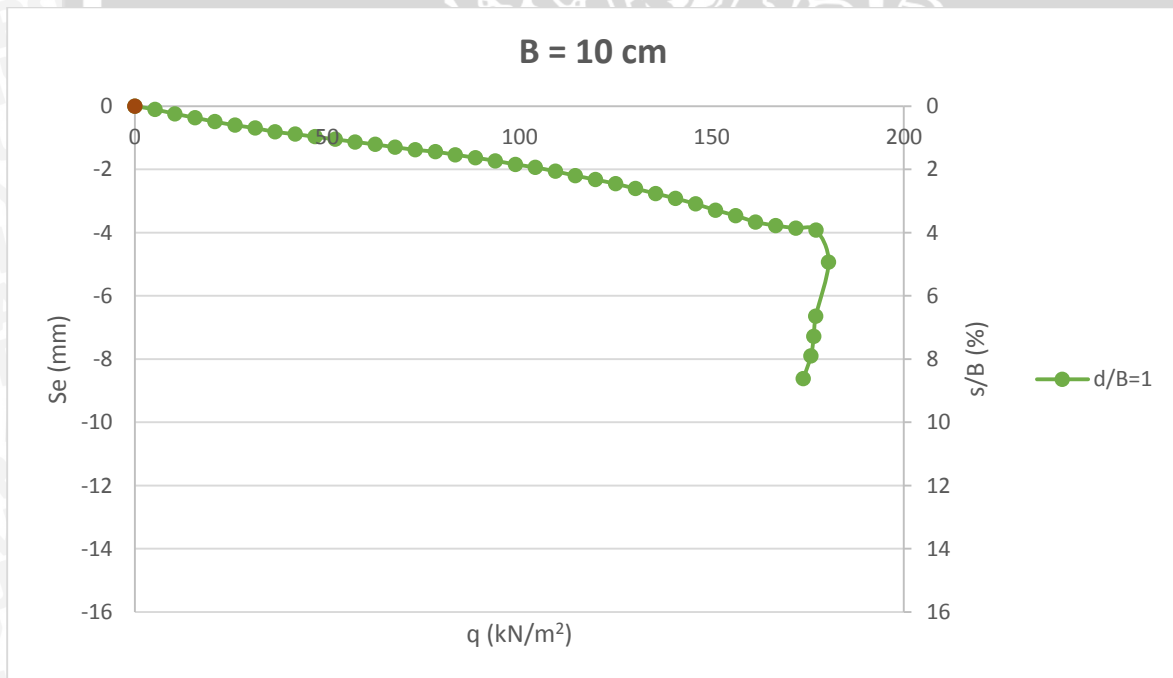
6. B = 10 cm, d/B = 0,5

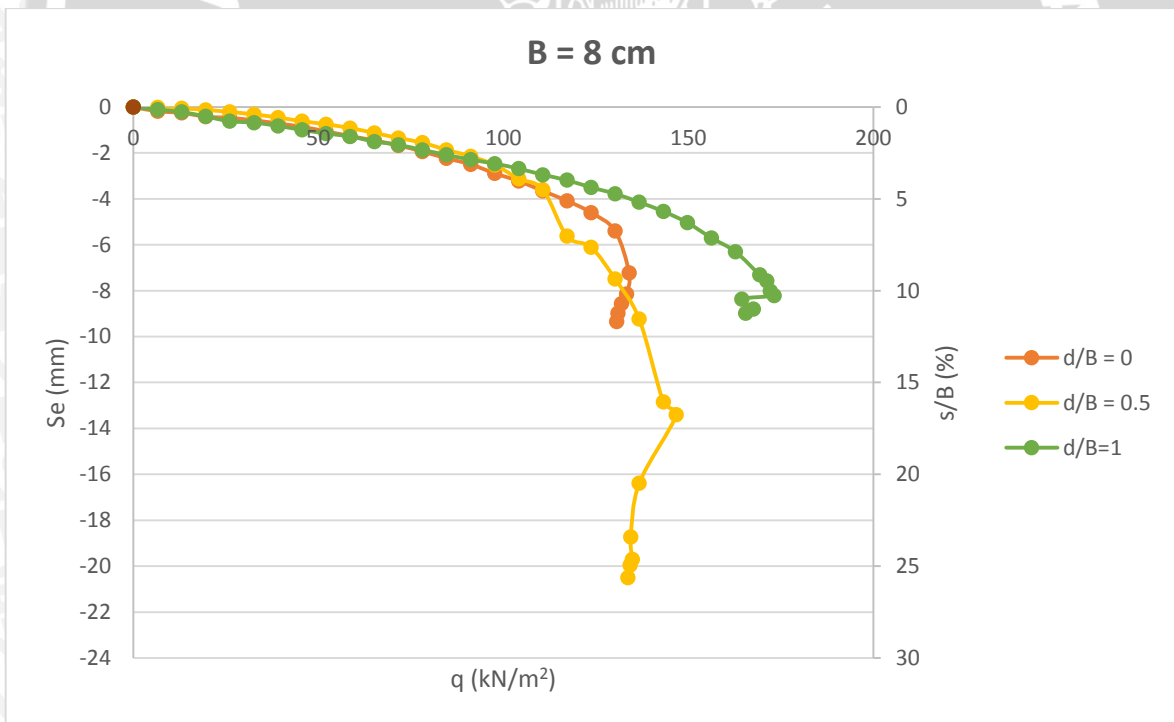
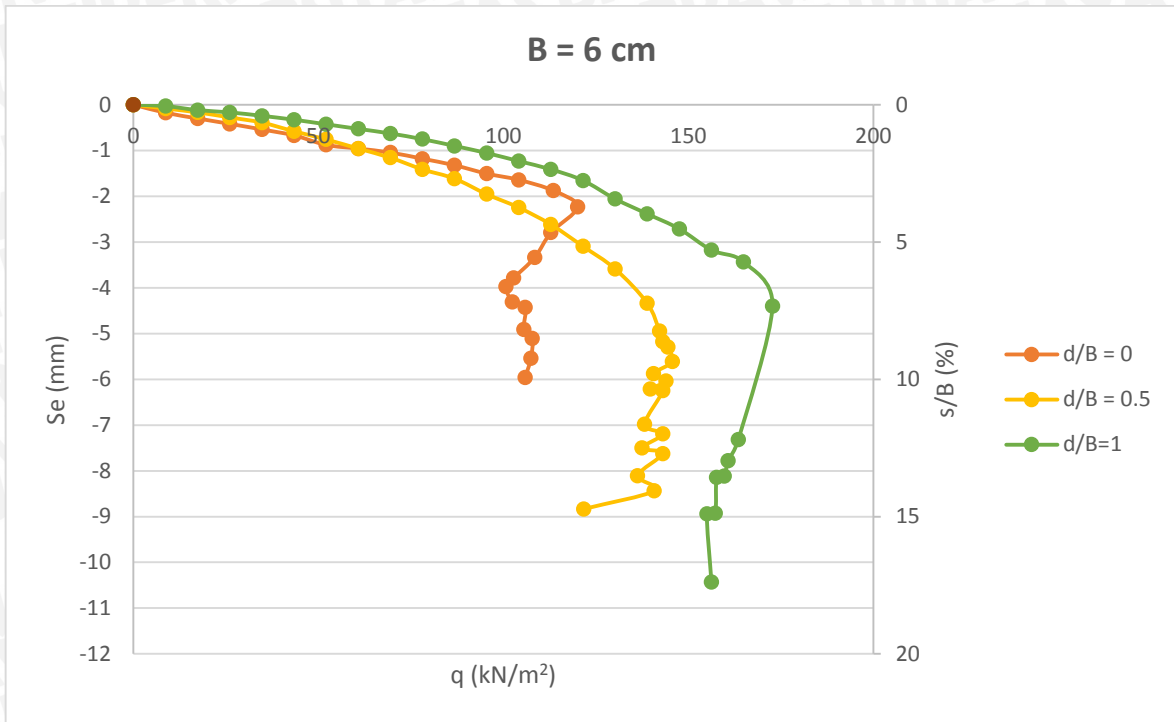
BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm2)	q (kN/m2)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-4326	-270	-43.260	-1.350	0	0	0	0	0	0
50	-4324	-258	-43.240	-1.290	0,020	0,060	0,040	0,040	0,052	5,208
100	-4312	-244	-43.120	-1.220	0,140	0,130	0,135	0,135	0,104	10,417
150	-4309	-232	-43.090	-1.160	0,170	0,190	0,180	0,180	0,156	15,625
200	-4287	-207	-42.870	-1.035	0,390	0,315	0,353	0,353	0,208	20,833
250	-4268	-164	-42.680	-0.820	0,580	0,530	0,555	0,555	0,260	26,042
300	-4259	-144	-42.590	-0.720	0,670	0,630	0,650	0,650	0,313	31,250
350	-4233	-111	-42.330	-0.555	0,930	0,795	0,863	0,863	0,365	36,458
400	-4207	-75	-42.070	-0.375	1,190	0,975	1,083	1,083	0,417	41,667
450	-4205	-48	-42.050	-0.240	1,210	1,110	1,160	1,160	0,469	46,875
500	-4168	-12	-41.680	-0.060	1,580	1,290	1,435	1,435	0,521	52,083
550	-4146	22	-41.460	0.110	1,800	1,460	1,630	1,630	0,573	57,292
600	-4134	55	-41.340	0.275	1,920	1,625	1,773	1,773	0,625	62,500
650	-4107	85	-41.070	0.425	2,190	1,775	1,983	1,983	0,677	67,708
700	-4101	120	-41.010	0.600	2,250	1,950	2,100	2,100	0,729	72,917
750	-4062	147	-40.620	0.735	2,640	2,085	2,363	2,363	0,781	78,125
800	-4057	186	-40.570	0.930	2,690	2,280	2,485	2,485	0,833	83,333
850	-4018	242	-40.180	1.210	3,080	2,560	2,820	2,820	0,885	88,542
900	-4014	262	-40.140	1.310	3,120	2,660	2,890	2,890	0,938	93,750
950	-3991	301	-39.910	1.505	3,350	2,855	3,103	3,103	0,990	98,958
1000	-3957	339	-39.570	1.695	3,690	3,045	3,368	3,368	1,042	104,167
1050	-3944	379	-39.440	1.895	3,820	3,245	3,533	3,533	1,094	109,375
1100	-3913	423	-39.130	2.115	4,130	3,465	3,798	3,798	1,146	114,583
1150	-3915	461	-39.150	2.305	4,110	3,655	3,883	3,883	1,198	119,792
1200	-3883	508	-38.830	2.540	4,430	3,890	4,160	4,160	1,250	125,000
1250	-3862	551	-38.620	2.755	4,640	4,105	4,373	4,373	1,302	130,208
1300	-3848	605	-38.480	3.025	4,780	4,375	4,578	4,578	1,354	135,417
1350	-3814	653	-38.140	3.265	5,120	4,615	4,868	4,868	1,406	140,625
1400	-3792	713	-37.920	3.565	5,340	4,915	5,128	5,128	1,458	145,833
1450	-3773	766	-37.730	3.830	5,530	5,180	5,355	5,355	1,510	151,042
1500	-3743	875	-37.430	4.375	5,830	5,725	5,778	5,778	1,563	156,250
1550	-3706	953	-37.060	4.765	6,200	6,115	6,158	6,158	1,615	161,458
1578	-3662	1072	-36.620	5.360	6,640	6,710	6,675	6,675	1,644	164,375
1590	-3624	1187	-36.240	5.935	7,020	7,285	7,153	7,153	1,656	165,625
1603	-3556	1390	-35.560	6.950	7,700	8,300	8,000	8,000	1,670	166,979
1630	-3548	1409	-35.480	7.045	7,780	8,395	8,088	8,088	1,698	169,792
1606	-3528	1472	-35.280	7.360	7,980	8,710	8,345	8,345	1,673	167,292
1587	-3511	1541	-35.110	7.705	8,150	9,055	8,603	8,603	1,653	165,313
1557	-3488	1564	-34.880	7.820	8,380	9,170	8,775	8,775	1,622	162,188
1528	-3482	1593	-34.820	7.965	8,440	9,315	8,878	8,878	1,592	159,167
1590	-3476	1622	-34.760	8.110	8,500	9,460	8,980	8,980	1,656	165,625

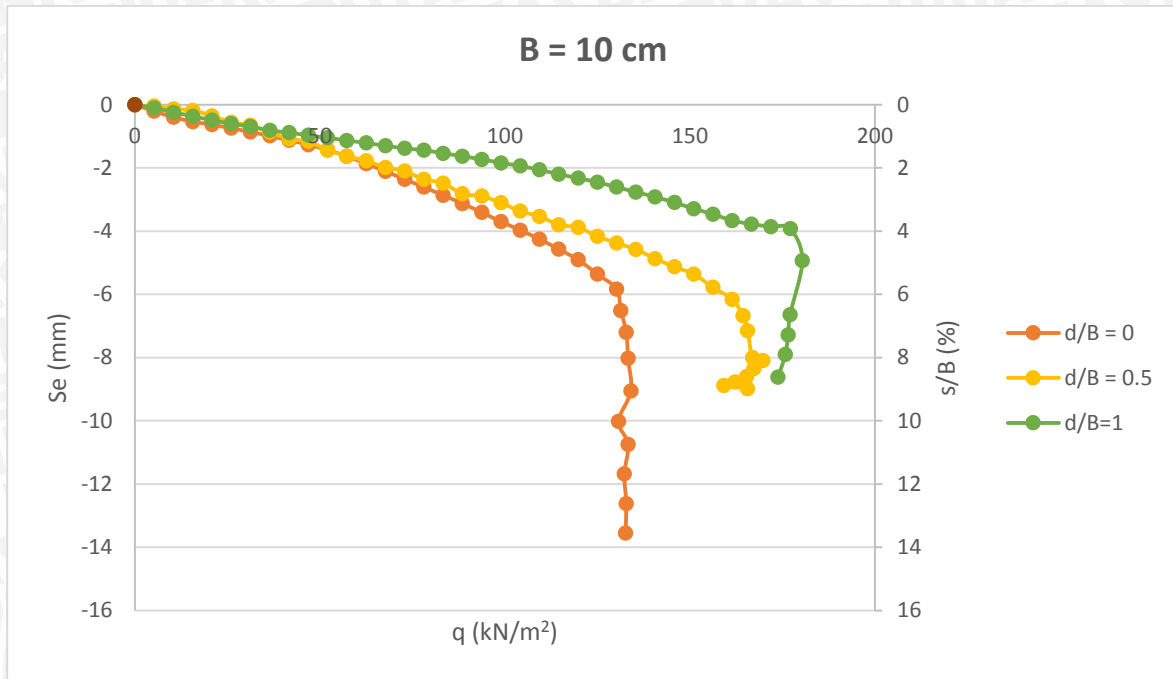


7. $B = 8 \text{ cm}$, $d/B = 1$

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm ²)	q (kN/m ²)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-3907	-1852	-39.070	-9.260	0	0	0	0	0	0
50	-3899	-1827	-38.990	-9.135	0.080	0.125	0.102	0.102	0.052	5.208
100	-3888	-1794	-38.880	-8.970	0.190	0.290	0.240	0.240	0.104	10.417
150	-3879	-1762	-38.790	-8.810	0.280	0.450	0.365	0.365	0.156	15.625
200	-3869	-1732	-38.690	-8.660	0.380	0.600	0.490	0.490	0.208	20.833
250	-3859	-1707	-38.590	-8.535	0.480	0.725	0.602	0.602	0.260	26.042
300	-3851	-1687	-38.510	-8.435	0.560	0.825	0.693	0.693	0.313	31.250
350	-3840	-1661	-38.400	-8.305	0.670	0.955	0.813	0.813	0.365	36.458
400	-3834	-1645	-38.340	-8.225	0.730	1.035	0.882	0.882	0.417	41.667
450	-3827	-1625	-38.270	-8.125	0.800	1.135	0.967	0.967	0.469	46.875
500	-3820	-1607	-38.200	-8.035	0.870	1.225	1.048	1.048	0.521	52.083
550	-3813	-1588	-38.130	-7.940	0.940	1.320	1.130	1.130	0.573	57.292
600	-3806	-1570	-38.060	-7.850	1.010	1.410	1.210	1.210	0.625	62.500
650	-3799	-1549	-37.990	-7.745	1.080	1.515	1.298	1.298	0.677	67.708
700	-3792	-1530	-37.920	-7.650	1.150	1.610	1.380	1.380	0.729	72.917
750	-3785	-1520	-37.850	-7.600	1.220	1.660	1.440	1.440	0.781	78.125
800	-3777	-1498	-37.770	-7.490	1.300	1.770	1.535	1.535	0.833	83.333
850	-3769	-1476	-37.690	-7.380	1.380	1.880	1.630	1.630	0.885	88.542
900	-3760	-1455	-37.600	-7.275	1.470	1.985	1.728	1.728	0.938	93.750
950	-3750	-1430	-37.500	-7.150	1.570	2.110	1.840	1.840	0.990	98.958
1000	-3741	-1409	-37.410	-7.045	1.660	2.215	1.938	1.938	1.042	104.167
1050	-3730	-1382	-37.300	-6.910	1.770	2.350	2.060	2.060	1.094	109.375
1100	-3718	-1351	-37.180	-6.755	1.890	2.505	2.198	2.198	1.146	114.583
1150	-3706	-1325	-37.060	-6.625	2.010	2.635	2.323	2.323	1.198	119.792
1200	-3695	-1295	-36.950	-6.475	2.120	2.785	2.453	2.453	1.250	125.000
1250	-3681	-1261	-36.810	-6.305	2.260	2.955	2.608	2.608	1.302	130.208
1300	-3667	-1227	-36.670	-6.135	2.400	3.125	2.763	2.763	1.354	135.417
1350	-3653	-1193	-36.530	-5.965	2.540	3.295	2.918	2.918	1.406	140.625
1400	-3637	-1155	-36.370	-5.775	2.700	3.485	3.093	3.093	1.458	145.833
1450	-3619	-1113	-36.190	-5.565	2.880	3.695	3.288	3.288	1.510	151.042
1500	-3603	-1075	-36.030	-5.375	3.040	3.885	3.463	3.463	1.563	156.250
1550	-3585	-1031	-35.850	-5.155	3.220	4.105	3.663	3.663	1.615	161.458
1600	-3575	-1005	-35.750	-5.025	3.320	4.235	3.778	3.778	1.667	166.667
1650	-3568	-988	-35.680	-4.940	3.390	4.320	3.855	3.855	1.719	171.875
1701	-3562	-973	-35.620	-4.865	3.450	4.395	3.923	3.923	1.772	177.188
1732	-3472	-749	-34.720	-3.745	4.350	5.515	4.933	4.933	1.804	180.417
1700	-3319	-371	-33.190	-1.855	5.880	7.405	6.643	6.643	1.771	177.083
1695	-3263	-227	-32.630	-1.135	6.440	8.125	7.283	7.283	1.766	176.563
1688	-3211	-84	-32.110	-0.420	6.960	8.840	7.900	7.900	1.758	175.833
1669	-3146	72	-31.460	0.360	7.610	9.620	8.615	8.615	1.739	173.854



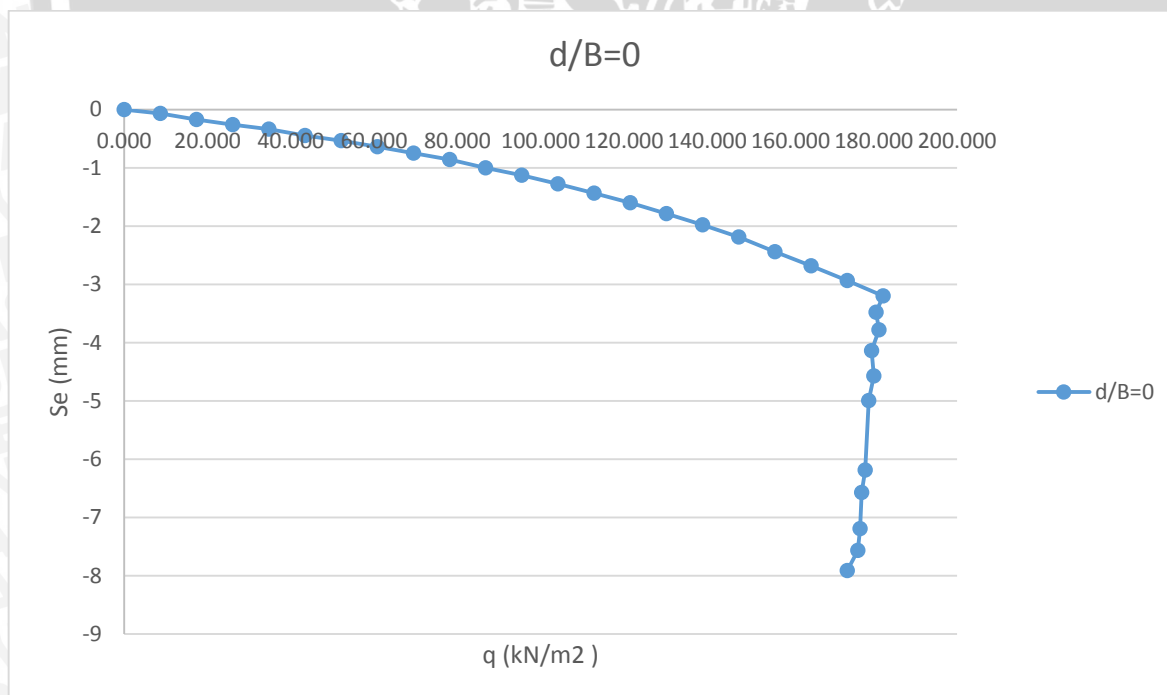




Dengan Perkuatan

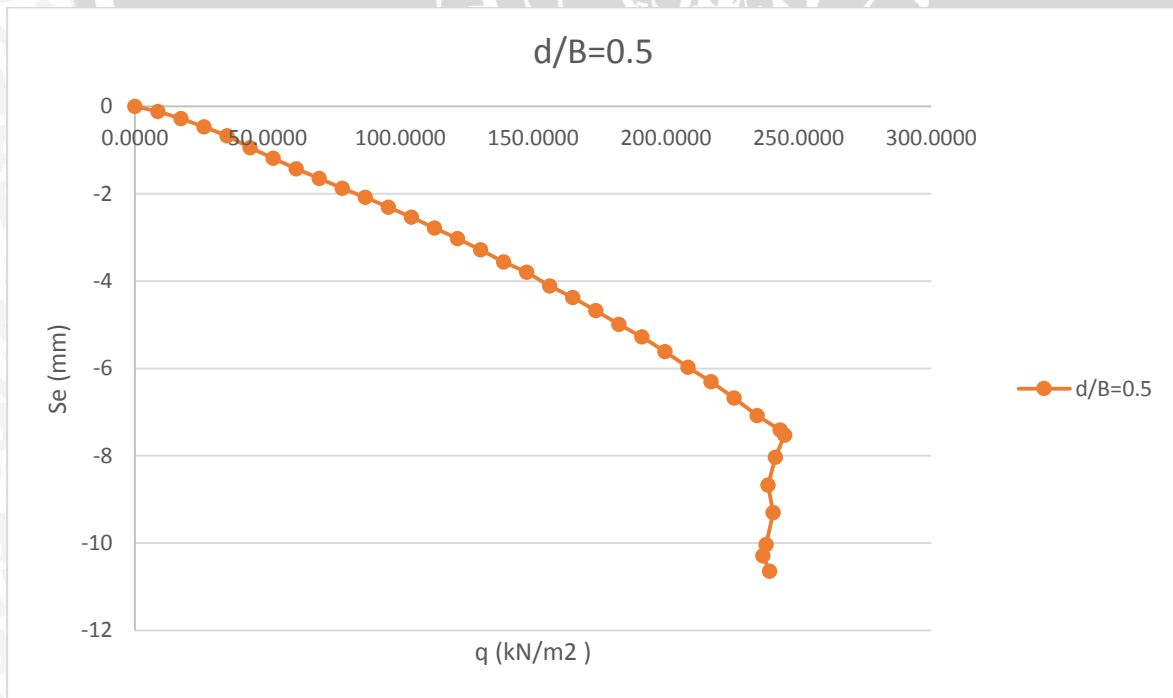
1. $B = 6 \text{ cm}$, $d/B = 0$, $n = 2$, $u/B = 0,5$

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm ²)	q (kN/m ²)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-3008	-2856	-30.08	-14.28	0	0	0	0.000	0.000	0.000
50	-3001	-2843	-30.01	-14.215	0.07	0.065	0.0675	0.113	0.087	8.681
100	-2989	-2826	-29.89	-14.13	0.19	0.15	0.17	0.283	0.174	17.361
150	-2979	-2810	-29.79	-14.05	0.29	0.23	0.26	0.433	0.260	26.042
200	-2970	-2798	-29.7	-13.99	0.38	0.29	0.335	0.558	0.347	34.722
250	-2956	-2781	-29.56	-13.905	0.52	0.375	0.4475	0.746	0.434	43.403
300	-2946	-2767	-29.46	-13.835	0.62	0.445	0.5325	0.888	0.521	52.083
350	-2932	-2753	-29.32	-13.765	0.76	0.515	0.6375	1.063	0.608	60.764
400	-2919	-2735	-29.19	-13.675	0.89	0.605	0.7475	1.246	0.694	69.444
450	-2904	-2720	-29.04	-13.6	1.04	0.68	0.86	1.433	0.781	78.125
500	-2887	-2697	-28.87	-13.485	1.21	0.795	1.0025	1.671	0.868	86.806
550	-2872	-2677	-28.72	-13.385	1.36	0.895	1.1275	1.879	0.955	95.486
600	-2853	-2655	-28.53	-13.275	1.55	1.005	1.2775	2.129	1.042	104.167
650	-2833	-2631	-28.33	-13.155	1.75	1.125	1.4375	2.396	1.128	112.847
700	-2814	-2604	-28.14	-13.02	1.94	1.26	1.6	2.667	1.215	121.528
750	-2792	-2574	-27.92	-12.87	2.16	1.41	1.785	2.975	1.302	130.208
800	-2770	-2540	-27.7	-12.7	2.38	1.58	1.98	3.300	1.389	138.889
850	-2746	-2505	-27.46	-12.525	2.62	1.755	2.1875	3.646	1.476	147.569
900	-2716	-2463	-27.16	-12.315	2.92	1.965	2.4425	4.071	1.563	156.250
950	-2688	-2424	-26.88	-12.12	3.2	2.16	2.68	4.467	1.649	164.931
1000	-2659	-2381	-26.59	-11.905	3.49	2.375	2.9325	4.888	1.736	173.611
1050	-2627	-2338	-26.27	-11.69	3.81	2.59	3.2	5.333	1.823	182.292
1040	-2594	-2292	-25.94	-11.46	4.14	2.82	3.48	5.800	1.806	180.556
1044	-2559	-2241	-25.59	-11.205	4.49	3.075	3.7825	6.304	1.813	181.250
1034	-2516	-2185	-25.16	-10.925	4.92	3.355	4.1375	6.896	1.795	179.514
1037	-2465	-2112	-24.65	-10.56	5.43	3.72	4.575	7.625	1.800	180.035
1030	-2414	-2045	-24.14	-10.225	5.94	4.055	4.9975	8.329	1.788	178.819
1025	-2272	-1852	-22.72	-9.26	7.36	5.02	6.19	10.317	1.780	177.951
1020	-2226	-1790	-22.26	-8.95	7.82	5.33	6.575	10.958	1.771	177.083
1018	-2150	-1695	-21.5	-8.475	8.58	5.805	7.1925	11.988	1.767	176.736
1015	-2103	-1639	-21.03	-8.195	9.05	6.085	7.5675	12.613	1.762	176.215
1000	-2069	-1568	-20.69	-7.84	9.39	6.44	7.915	13.192	1.736	173.611



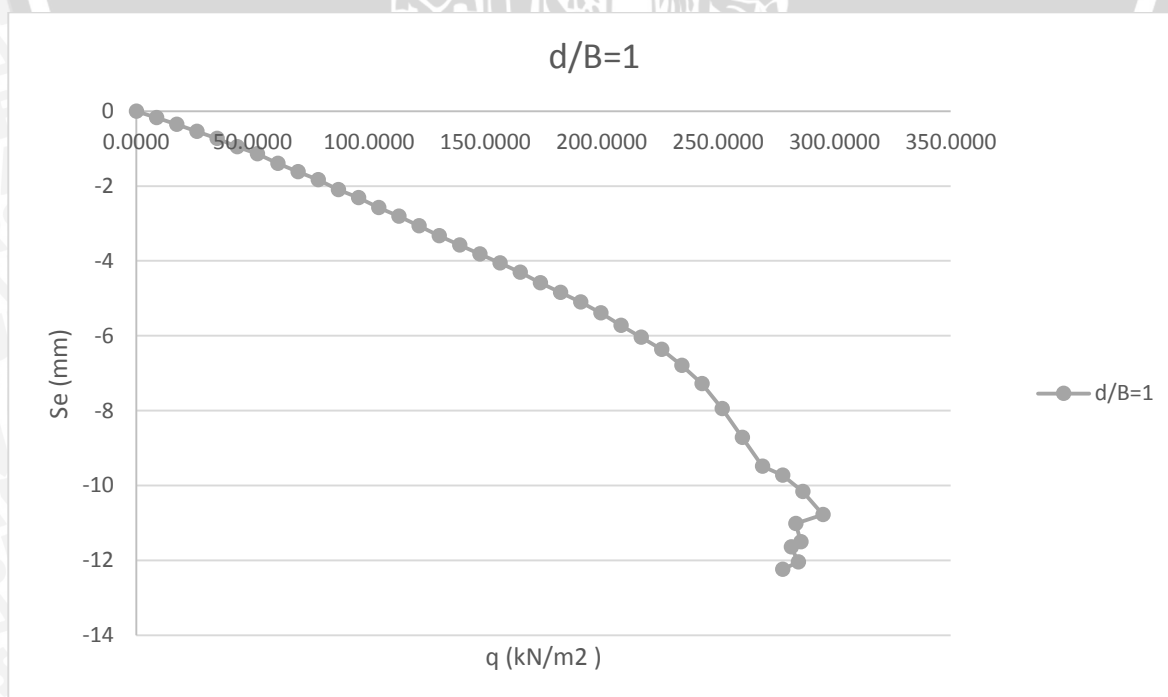
2. $B = 6 \text{ cm}$, $d/B = 0,5$; $n = 2$, $u/B = 0,5$

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm2)	q (kN/m2)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-1734	-4211	-17.34	-21.055	0	0	0	0.0000	0.0000	0.0000
50	-1718	-4195	-17.18	-20.975	0.16	0.08	0.12	0.2000	0.0868	8.6806
100	-1698	-4173	-16.98	-20.865	0.36	0.19	0.275	0.4583	0.1736	17.3611
150	-1669	-4153	-16.69	-20.765	0.65	0.29	0.47	0.7833	0.2604	26.0417
200	-1637	-4136	-16.37	-20.68	0.97	0.375	0.6725	1.1208	0.3472	34.7222
250	-1592	-4118	-15.92	-20.59	1.42	0.465	0.9425	1.5708	0.4340	43.4028
300	-1552	-4099	-15.52	-20.495	1.82	0.56	1.19	1.9833	0.5208	52.0833
350	-1513	-4080	-15.13	-20.4	2.21	0.655	1.4325	2.3875	0.6076	60.7639
400	-1478	-4064	-14.78	-20.32	2.56	0.735	1.6475	2.7458	0.6944	69.4444
450	-1444	-4040	-14.44	-20.2	2.9	0.855	1.8775	3.1292	0.7813	78.1250
500	-1414	-4018	-14.14	-20.09	3.2	0.965	2.0825	3.4708	0.8681	86.8056
550	-1383	-3990	-13.83	-19.95	3.51	1.105	2.3075	3.8458	0.9549	95.4861
600	-1352	-3961	-13.52	-19.805	3.82	1.25	2.535	4.2250	1.0417	104.1667
650	-1319	-3927	-13.19	-19.635	4.15	1.42	2.785	4.6417	1.1285	112.8472
700	-1287	-3893	-12.87	-19.465	4.47	1.59	3.03	5.0500	1.2153	121.5278
750	-1256	-3855	-12.56	-19.275	4.78	1.78	3.28	5.4667	1.3021	130.2083
800	-1220	-3814	-12.2	-19.07	5.14	1.985	3.5625	5.9375	1.3889	138.8889
850	-1192	-3777	-11.92	-18.885	5.42	2.17	3.795	6.3250	1.4757	147.5694
900	-1151	-3732	-11.51	-18.66	5.83	2.395	4.1125	6.8542	1.5625	156.2500
950	-1119	-3692	-11.19	-18.46	6.15	2.595	4.3725	7.2875	1.6493	164.9306
1000	-1081	-3646	-10.81	-18.23	6.53	2.825	4.6775	7.7958	1.7361	173.6111
1050	-1041	-3601	-10.41	-18.005	6.93	3.05	4.99	8.3167	1.8229	182.2917
1100	-1005	-3559	-10.05	-17.795	7.29	3.26	5.275	8.7917	1.9097	190.9722
1150	-964	-3506	-9.64	-17.53	7.7	3.525	5.6125	9.3542	1.9965	199.6528
1200	-919	-3453	-9.19	-17.265	8.15	3.79	5.97	9.9500	2.0833	208.3333
1250	-878	-3402	-8.78	-17.01	8.56	4.045	6.3025	10.5042	2.1701	217.0139
1300	-828	-3351	-8.28	-16.755	9.06	4.3	6.68	11.1333	2.2569	225.6944
1350	-775	-3296	-7.75	-16.48	9.59	4.575	7.0825	11.8042	2.3438	234.3750
1400	-729	-3257	-7.29	-16.285	10.05	4.77	7.41	12.3500	2.4306	243.0556
1410	-716	-3237	-7.16	-16.185	10.18	4.87	7.525	12.5417	2.4479	244.7917
1390	-648	-3169	-6.48	-15.845	10.86	5.21	8.035	13.3917	2.4132	241.3194
1374	-562	-3088	-5.62	-15.44	11.72	5.615	8.6675	14.4458	2.3854	238.5417
1385	-478	-3002	-4.78	-15.01	12.56	6.045	9.3025	15.5042	2.4045	240.4514
1370	-384	-2898	-3.84	-14.49	13.5	6.565	10.0325	16.7208	2.3785	237.8472
1363	-351	-2861	-3.51	-14.305	13.83	6.75	10.29	17.1500	2.3663	236.6319
1377	-305	-2812	-3.05	-14.06	14.29	6.995	10.6425	17.7375	2.3906	239.0625



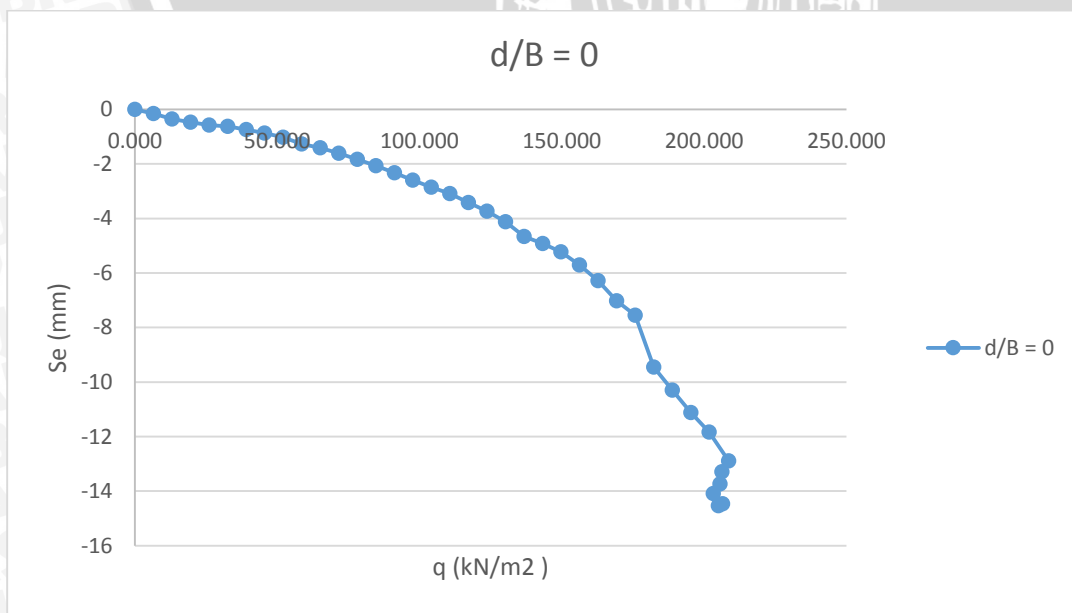
3. $B = 6 \text{ cm}$, $d/B = 1$, $n = 2$, $u/B = 0,5$

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm ²)	q (kN/m ²)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-2161	-2773	-21.61	-13.865	0	0	0	0.0000	0.0000	0.0000
50	-2138	-2748	-21.38	-13.74	0.23	0.125	0.1775	0.2958	0.0868	8.6806
100	-2116	-2723	-21.16	-13.615	0.45	0.25	0.35	0.5833	0.1736	17.3611
150	-2091	-2695	-20.91	-13.475	0.7	0.39	0.545	0.9083	0.2604	26.0417
200	-2069	-2665	-20.69	-13.325	0.92	0.54	0.73	1.2167	0.3472	34.7222
250	-2044	-2627	-20.44	-13.135	1.17	0.73	0.95	1.5833	0.4340	43.4028
300	-2023	-2593	-20.23	-12.965	1.38	0.9	1.14	1.9000	0.5208	52.0833
350	-1994	-2548	-19.94	-12.74	1.67	1.125	1.3975	2.3292	0.6076	60.7639
400	-1970	-2508	-19.7	-12.54	1.91	1.325	1.6175	2.6958	0.6944	69.4444
450	-1947	-2468	-19.47	-12.34	2.14	1.525	1.8325	3.0542	0.7813	78.1250
500	-1918	-2421	-19.18	-12.105	2.43	1.76	2.095	3.4917	0.8681	86.8056
550	-1895	-2381	-18.95	-11.905	2.66	1.96	2.31	3.8500	0.9549	95.4861
600	-1866	-2333	-18.66	-11.665	2.95	2.2	2.575	4.2917	1.0417	104.1667
650	-1840	-2291	-18.4	-11.455	3.21	2.41	2.81	4.6833	1.1285	112.8472
700	-1811	-2247	-18.11	-11.235	3.5	2.63	3.065	5.1083	1.2153	121.5278
750	-1782	-2200	-17.82	-11	3.79	2.865	3.3275	5.5458	1.3021	130.2083
800	-1753	-2158	-17.53	-10.79	4.08	3.075	3.5775	5.9625	1.3889	138.8889
850	-1726	-2117	-17.26	-10.585	4.35	3.28	3.815	6.3583	1.4757	147.5694
900	-1698	-2076	-16.98	-10.38	4.63	3.485	4.0575	6.7625	1.5625	156.2500
950	-1669	-2036	-16.69	-10.18	4.92	3.685	4.3025	7.1708	1.6493	164.9306
1000	-1636	-1990	-16.36	-9.95	5.25	3.915	4.5825	7.6375	1.7361	173.6111
1050	-1605	-1947	-16.05	-9.735	5.56	4.13	4.845	8.0750	1.8229	182.2917
1100	-1575	-1904	-15.75	-9.52	5.86	4.345	5.1025	8.5042	1.9097	190.9722
1150	-1541	-1856	-15.41	-9.28	6.2	4.585	5.3925	8.9875	1.9965	199.6528
1200	-1501	-1803	-15.01	-9.015	6.6	4.85	5.725	9.5417	2.0833	208.3333
1250	-1464	-1752	-14.64	-8.76	6.97	5.105	6.0375	10.0625	2.1701	217.0139
1300	-1425	-1698	-14.25	-8.49	7.36	5.375	6.3675	10.6125	2.2569	225.6944
1350	-1375	-1629	-13.75	-8.145	7.86	5.72	6.79	11.3167	2.3438	234.3750
1400	-1315	-1554	-13.15	-7.77	8.46	6.095	7.2775	12.1292	2.4306	243.0556
1450	-1232	-1453	-12.32	-7.265	9.29	6.6	7.945	13.2417	2.5174	251.7361
1500	-1138	-1331	-11.38	-6.655	10.23	7.21	8.72	14.5333	2.6042	260.4167
1550	-1050	-1200	-10.5	-6	11.11	7.865	9.4875	15.8125	2.6910	269.0972
1600	-1024	-1158	-10.24	-5.79	11.37	8.075	9.7225	16.2042	2.7778	277.7778
1650	-975	-1081	-9.75	-5.405	11.86	8.46	10.16	16.9333	2.8646	286.4583
1700	-909	-967	-9.09	-4.835	12.52	9.03	10.775	17.9583	2.9514	295.1389
1632	-892	-904	-8.92	-4.52	12.69	9.345	11.0175	18.3625	2.8333	283.3333
1645	-843	-807	-8.43	-4.035	13.18	9.83	11.505	19.1750	2.8559	285.5903
1621	-817	-803	-8.17	-4.015	13.44	9.85	11.645	19.4083	2.8142	281.4236
1639	-740	-797	-7.4	-3.985	14.21	9.88	12.045	20.0750	2.8455	284.5486
1600	-706	-788	-7.06	-3.94	14.55	9.925	12.2375	20.3958	2.7778	277.7778



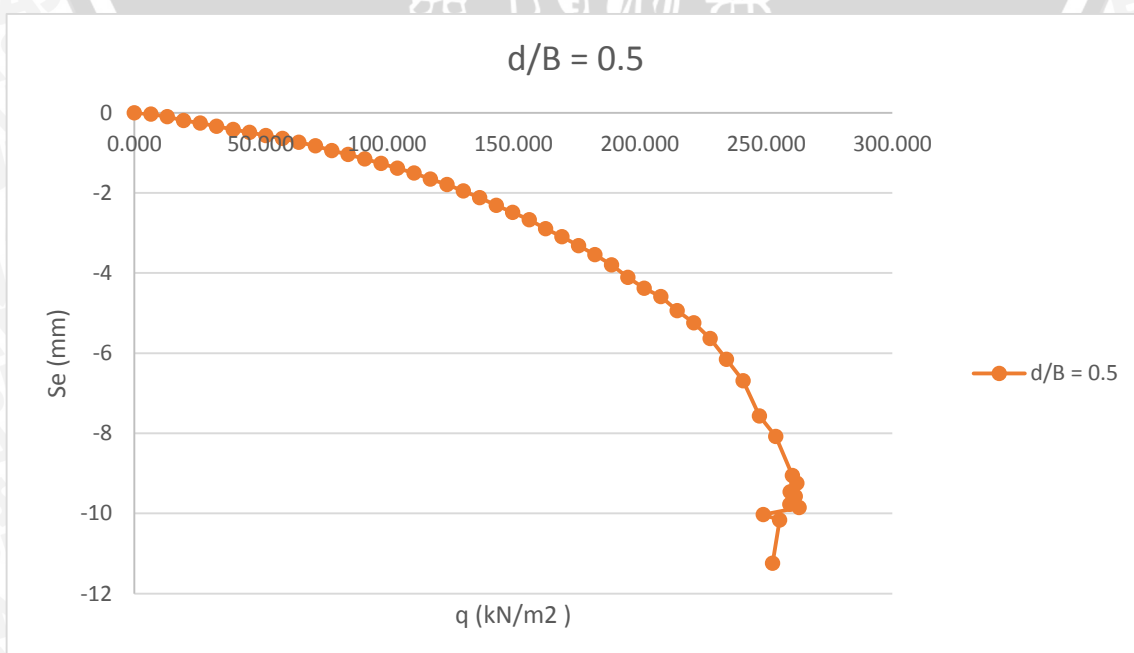
4. $B = 8 \text{ cm}$, $d/B = 0$, $n = 2$, $u/B = 0,5$

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm ²)	q (kN/m ²)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-1963	-2797	-19.63	-13.985	0	0	0	0.000	0.000	0.000
50	-1950	-2763	-19.5	-13.815	0.13	0.17	0.15	0.187	0.065	6.510
100	-1934	-2713	-19.34	-13.565	0.29	0.42	0.355	0.444	0.130	13.021
150	-1924	-2688	-19.24	-13.44	0.39	0.545	0.4675	0.584	0.195	19.531
200	-1915	-2664	-19.15	-13.32	0.48	0.665	0.5725	0.716	0.260	26.042
250	-1908	-2656	-19.08	-13.28	0.55	0.705	0.6275	0.784	0.326	32.552
300	-1894	-2638	-18.94	-13.19	0.69	0.795	0.7425	0.928	0.391	39.063
350	-1877	-2622	-18.77	-13.11	0.86	0.875	0.8675	1.084	0.456	45.573
400	-1860	-2594	-18.6	-12.97	1.03	1.015	1.0225	1.278	0.521	52.083
450	-1838	-2541	-18.38	-12.705	1.25	1.28	1.265	1.581	0.586	58.594
500	-1816	-2526	-18.16	-12.63	1.47	1.355	1.4125	1.766	0.651	65.104
550	-1794	-2489	-17.94	-12.445	1.69	1.54	1.615	2.019	0.716	71.615
600	-1770	-2450	-17.7	-12.25	1.93	1.735	1.8325	2.291	0.781	78.125
650	-1744	-2409	-17.44	-12.045	2.19	1.94	2.065	2.581	0.846	84.635
700	-1716	-2362	-17.16	-11.81	2.47	2.175	2.3225	2.903	0.911	91.146
750	-1686	-2314	-16.86	-11.57	2.77	2.415	2.5925	3.241	0.977	97.656
800	-1657	-2267	-16.57	-11.335	3.06	2.65	2.855	3.569	1.042	104.167
850	-1631	-2224	-16.31	-11.12	3.32	2.865	3.0925	3.866	1.107	110.677
900	-1595	-2168	-15.95	-10.84	3.68	3.145	3.4125	4.266	1.172	117.188
950	-1560	-2108	-15.6	-10.54	4.03	3.445	3.7375	4.672	1.237	123.698
1000	-1518	-2037	-15.18	-10.185	4.45	3.8	4.125	5.156	1.302	130.208
1050	-1461	-1936	-14.61	-9.68	5.02	4.305	4.6625	5.828	1.367	136.719
1100	-1431	-1894	-14.31	-9.47	5.32	4.515	4.9175	6.147	1.432	143.229
1150	-1396	-1839	-13.96	-9.195	5.67	4.79	5.23	6.538	1.497	149.740
1200	-1345	-1750	-13.45	-8.75	6.18	5.235	5.7075	7.134	1.563	156.250
1250	-1279	-1653	-12.79	-8.265	6.84	5.72	6.28	7.850	1.628	162.760
1300	-1197	-1520	-11.97	-7.6	7.66	6.385	7.0225	8.778	1.693	169.271
1350	-1137	-1431	-11.37	-7.155	8.26	6.83	7.545	9.431	1.758	175.781
1400	-932	-1076	-9.32	-5.38	10.31	8.605	9.4575	11.822	1.823	182.292
1450	-842	-920	-8.42	-4.6	11.21	9.385	10.2975	12.872	1.888	188.802
1500	-762	-750	-7.62	-3.75	12.01	10.235	11.1225	13.903	1.953	195.313
1550	-688	-613	-6.88	-3.065	12.75	10.92	11.835	14.794	2.018	201.823
1602	-580	-408	-5.8	-2.04	13.83	11.945	12.8875	16.109	2.086	208.594
1584	-540	-327	-5.4	-1.635	14.23	12.35	13.29	16.613	2.063	206.250
1579	-504	-222	-5.04	-1.11	14.59	12.875	13.7325	17.166	2.056	205.599
1561	-470	-147	-4.7	-0.735	14.93	13.25	14.09	17.613	2.033	203.255
1586	-436	-64	-4.36	-0.32	15.27	13.665	14.4675	18.084	2.065	206.510
1575	-423	-61	-4.23	-0.305	15.4	13.68	14.54	18.175	2.051	205.078



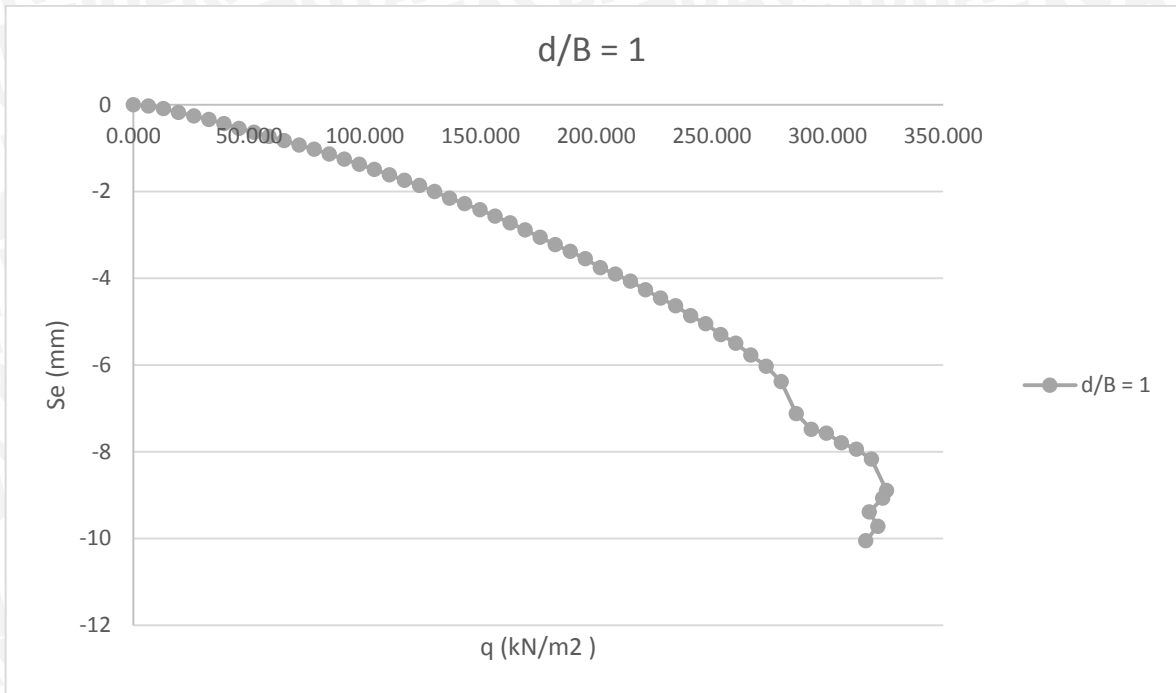
5. $B = 8 \text{ cm}$, $d/B = 0,5$, $n = 2$, $u/B = 0,5$

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm ²)	q (kN/m ²)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-2036	-2480	-20.36	-12.4	0	0	0	0.000	0.000	0.000
50	-2032	-2475	-20.32	-12.375	0.04	0.025	0.0325	0.041	0.065	6.510
100	-2027	-2458	-20.27	-12.29	0.09	0.11	0.1	0.125	0.130	13.021
150	-2017	-2441	-20.17	-12.205	0.19	0.195	0.1925	0.241	0.195	19.531
200	-2010	-2428	-20.1	-12.14	0.26	0.26	0.26	0.325	0.260	26.042
250	-2002	-2413	-20.02	-12.065	0.34	0.335	0.3375	0.422	0.326	32.552
300	-1995	-2397	-19.95	-11.985	0.41	0.415	0.4125	0.516	0.391	39.063
350	-1987	-2382	-19.87	-11.91	0.49	0.49	0.49	0.612	0.456	45.573
400	-1979	-2367	-19.79	-11.835	0.57	0.565	0.5675	0.709	0.521	52.083
450	-1971	-2353	-19.71	-11.765	0.65	0.635	0.6425	0.803	0.586	58.594
500	-1961	-2336	-19.61	-11.68	0.75	0.72	0.735	0.919	0.651	65.104
550	-1951	-2319	-19.51	-11.595	0.85	0.805	0.8275	1.034	0.716	71.615
600	-1939	-2298	-19.39	-11.49	0.97	0.91	0.94	1.175	0.781	78.125
650	-1928	-2281	-19.28	-11.405	1.08	0.995	1.0375	1.297	0.846	84.635
700	-1916	-2260	-19.16	-11.3	1.2	1.1	1.15	1.438	0.911	91.146
750	-1904	-2239	-19.04	-11.195	1.32	1.205	1.2625	1.578	0.977	97.656
800	-1891	-2216	-18.91	-11.08	1.45	1.32	1.385	1.731	1.042	104.167
850	-1878	-2194	-18.78	-10.97	1.58	1.43	1.505	1.881	1.107	110.677
900	-1862	-2167	-18.62	-10.835	1.74	1.565	1.6525	2.066	1.172	117.188
950	-1847	-2143	-18.47	-10.715	1.89	1.685	1.7875	2.234	1.237	123.698
1000	-1829	-2115	-18.29	-10.575	2.07	1.825	1.9475	2.434	1.302	130.208
1050	-1811	-2084	-18.11	-10.42	2.25	1.98	2.115	2.644	1.367	136.719
1100	-1789	-2051	-17.89	-10.255	2.47	2.145	2.3075	2.884	1.432	143.229
1150	-1769	-2019	-17.69	-10.095	2.67	2.305	2.4875	3.109	1.497	149.740
1200	-1749	-1987	-17.49	-9.935	2.87	2.465	2.6675	3.334	1.563	156.250
1250	-1723	-1949	-17.23	-9.745	3.13	2.655	2.8925	3.616	1.628	162.760
1300	-1701	-1914	-17.01	-9.57	3.35	2.83	3.09	3.863	1.693	169.271
1350	-1675	-1875	-16.75	-9.375	3.61	3.025	3.3175	4.147	1.758	175.781
1400	-1650	-1837	-16.5	-9.185	3.86	3.215	3.5375	4.422	1.823	182.292
1450	-1620	-1793	-16.2	-8.965	4.16	3.435	3.7975	4.747	1.888	188.802
1500	-1585	-1739	-15.85	-8.695	4.51	3.705	4.1075	5.134	1.953	195.313
1550	-1553	-1693	-15.53	-8.465	4.83	3.935	4.3825	5.478	2.018	201.823
1600	-1530	-1657	-15.3	-8.285	5.06	4.115	4.5875	5.734	2.083	208.333
1650	-1490	-1595	-14.9	-7.975	5.46	4.425	4.9425	6.178	2.148	214.844
1700	-1456	-1544	-14.56	-7.72	5.8	4.68	5.24	6.550	2.214	221.354
1750	-1411	-1477	-14.11	-7.385	6.25	5.015	5.6325	7.041	2.279	227.865
1800	-1350	-1392	-13.5	-6.96	6.86	5.44	6.15	7.688	2.344	234.375
1850	-1285	-1305	-12.85	-6.525	7.51	5.875	6.6925	8.366	2.409	240.885
1900	-1186	-1152	-11.86	-5.76	8.5	6.64	7.57	9.463	2.474	247.396
1950	-1107	-1107	-11.07	-5.535	9.29	6.865	8.0775	10.097	2.539	253.906
2000	-977	-977	-9.77	-4.885	10.59	7.515	9.0525	11.316	2.604	260.417
2014	-951	-951	-9.51	-4.755	10.85	7.645	9.2475	11.559	2.622	262.240
1993	-922	-922	-9.22	-4.61	11.14	7.79	9.465	11.831	2.595	259.505
2009	-908	-908	-9.08	-4.54	11.28	7.86	9.57	11.963	2.616	261.589
1992	-881	-881	-8.81	-4.405	11.55	7.995	9.7725	12.216	2.594	259.375
2021	-870	-870	-8.7	-4.35	11.66	8.05	9.855	12.319	2.632	263.151
1912	-847	-847	-8.47	-4.235	11.89	8.165	10.0275	12.534	2.490	248.958
1961	-829	-829	-8.29	-4.145	12.07	8.255	10.1625	12.703	2.553	255.339
1940	-803	-450	-8.03	-2.25	12.33	10.15	11.24	14.050	2.526	252.604



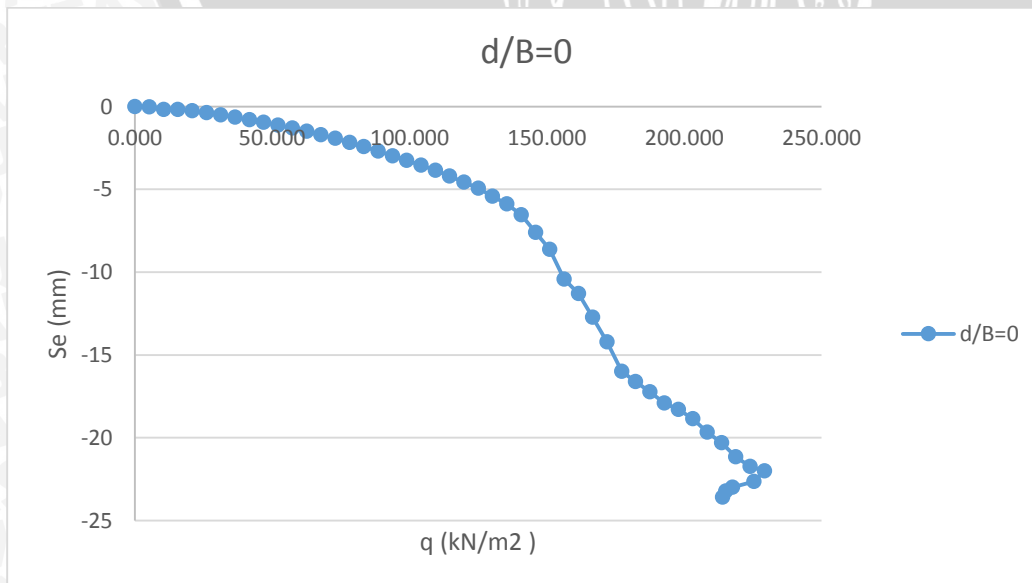
6. $B = 8 \text{ cm}$, $d/B = 1$, $n = 2$, $u/B = 0,5$

BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm ²)	q (kN/m ²)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-2703	-2913	-27.03	-14.565	0	0	0	0.000	0.000	0.000
50	-2701	-2904	-27.01	-14.52	0.02	0.045	0.0325	0.041	0.065	6.510
100	-2698	-2888	-26.98	-14.44	0.05	0.125	0.0875	0.109	0.130	13.021
150	-2693	-2863	-26.93	-14.315	0.1	0.25	0.175	0.219	0.195	19.531
200	-2686	-2843	-26.86	-14.215	0.17	0.35	0.26	0.325	0.260	26.042
250	-2679	-2825	-26.79	-14.125	0.24	0.44	0.34	0.425	0.326	32.552
300	-2671	-2803	-26.71	-14.015	0.32	0.55	0.435	0.544	0.391	39.063
350	-2663	-2775	-26.63	-13.875	0.4	0.69	0.545	0.681	0.456	45.573
400	-2657	-2750	-26.57	-13.75	0.46	0.815	0.6375	0.797	0.521	52.083
450	-2648	-2730	-26.48	-13.65	0.55	0.915	0.7325	0.916	0.586	58.594
500	-2640	-2707	-26.4	-13.535	0.63	1.03	0.83	1.038	0.651	65.104
550	-2632	-2683	-26.32	-13.415	0.71	1.15	0.93	1.163	0.716	71.615
600	-2623	-2661	-26.23	-13.305	0.8	1.26	1.03	1.288	0.781	78.125
650	-2614	-2636	-26.14	-13.18	0.89	1.385	1.1375	1.422	0.846	84.635
700	-2604	-2609	-26.04	-13.045	0.99	1.52	1.255	1.569	0.911	91.146
750	-2594	-2583	-25.94	-12.915	1.09	1.65	1.37	1.713	0.977	97.656
800	-2584	-2554	-25.84	-12.77	1.19	1.795	1.4925	1.866	1.042	104.167
850	-2573	-2526	-25.73	-12.63	1.3	1.935	1.6175	2.022	1.107	110.677
900	-2564	-2495	-25.64	-12.475	1.39	2.09	1.74	2.175	1.172	117.188
950	-2554	-2466	-25.54	-12.33	1.49	2.235	1.8625	2.328	1.237	123.698
1000	-2541	-2438	-25.41	-12.19	1.62	2.375	1.9975	2.497	1.302	130.208
1050	-2526	-2406	-25.26	-12.03	1.77	2.535	2.1525	2.691	1.367	136.719
1100	-2513	-2380	-25.13	-11.9	1.9	2.665	2.2825	2.853	1.432	143.229
1150	-2500	-2351	-25	-11.755	2.03	2.81	2.42	3.025	1.497	149.740
1200	-2485	-2320	-24.85	-11.6	2.18	2.965	2.5725	3.216	1.563	156.250
1250	-2470	-2289	-24.7	-11.445	2.33	3.12	2.725	3.406	1.628	162.760
1300	-2453	-2257	-24.53	-11.285	2.5	3.28	2.89	3.613	1.693	169.271
1350	-2437	-2223	-24.37	-11.115	2.66	3.45	3.055	3.819	1.758	175.781
1400	-2420	-2189	-24.2	-10.945	2.83	3.62	3.225	4.031	1.823	182.292
1450	-2405	-2157	-24.05	-10.785	2.98	3.78	3.38	4.225	1.888	188.802
1500	-2389	-2122	-23.89	-10.61	3.14	3.955	3.5475	4.434	1.953	195.313
1550	-2367	-2083	-23.67	-10.415	3.36	4.15	3.755	4.694	2.018	201.823
1600	-2354	-2049	-23.54	-10.245	3.49	4.32	3.905	4.881	2.083	208.333
1650	-2336	-2019	-23.36	-10.095	3.67	4.47	4.07	5.088	2.148	214.844
1700	-2317	-1977	-23.17	-9.885	3.86	4.68	4.27	5.338	2.214	221.354
1750	-2298	-1940	-22.98	-9.7	4.05	4.865	4.4575	5.572	2.279	227.865
1800	-2281	-1904	-22.81	-9.52	4.22	5.045	4.6325	5.791	2.344	234.375
1850	-2258	-1858	-22.58	-9.29	4.45	5.275	4.8625	6.078	2.409	240.885
1900	-2239	-1820	-22.39	-9.1	4.64	5.465	5.0525	6.316	2.474	247.396
1950	-2215	-1770	-22.15	-8.85	4.88	5.715	5.2975	6.622	2.539	253.906
2000	-2195	-1729	-21.95	-8.645	5.08	5.92	5.5	6.875	2.604	260.417
2050	-2168	-1675	-21.68	-8.375	5.35	6.19	5.77	7.213	2.669	266.927
2100	-2143	-1622	-21.43	-8.11	5.6	6.455	6.0275	7.534	2.734	273.438
2150	-2108	-1548	-21.08	-7.74	5.95	6.825	6.3875	7.984	2.799	279.948
2200	-2038	-1394	-20.38	-6.97	6.65	7.595	7.1225	8.903	2.865	286.458
2250	-2005	-1316	-20.05	-6.58	6.98	7.985	7.4825	9.353	2.930	292.969
2300	-1996	-1298	-19.96	-6.49	7.07	8.075	7.5725	9.466	2.995	299.479
2350	-1977	-1248	-19.77	-6.24	7.26	8.325	7.7925	9.741	3.060	305.990
2400	-1959	-1224	-19.59	-6.12	7.44	8.445	7.9425	9.928	3.125	312.500
2450	-1942	-1167	-19.42	-5.835	7.61	8.73	8.17	10.213	3.190	319.010
2500	-1875	-1012	-18.75	-5.06	8.28	9.505	8.8925	11.116	3.255	325.521
2487	-1858	-975	-18.58	-4.875	8.45	9.69	9.07	11.338	3.238	323.828
2443	-1833.2	-897.8	-18.332	-4.489	8.698	10.076	9.387	11.734	3.181	318.099
2471	-1804.257143	-822	-18.04257143	-4.11	8.987428571	10.455	9.721214286	12.152	3.217	321.745
2431	-1775.314286	-746.2	-17.75314286	-3.731	9.276857143	10.834	10.05542857	12.569	3.165	316.536



7. $B = 10 \text{ cm}$, $d/B = 0$, $n = 2$, $u/B = 0,5$

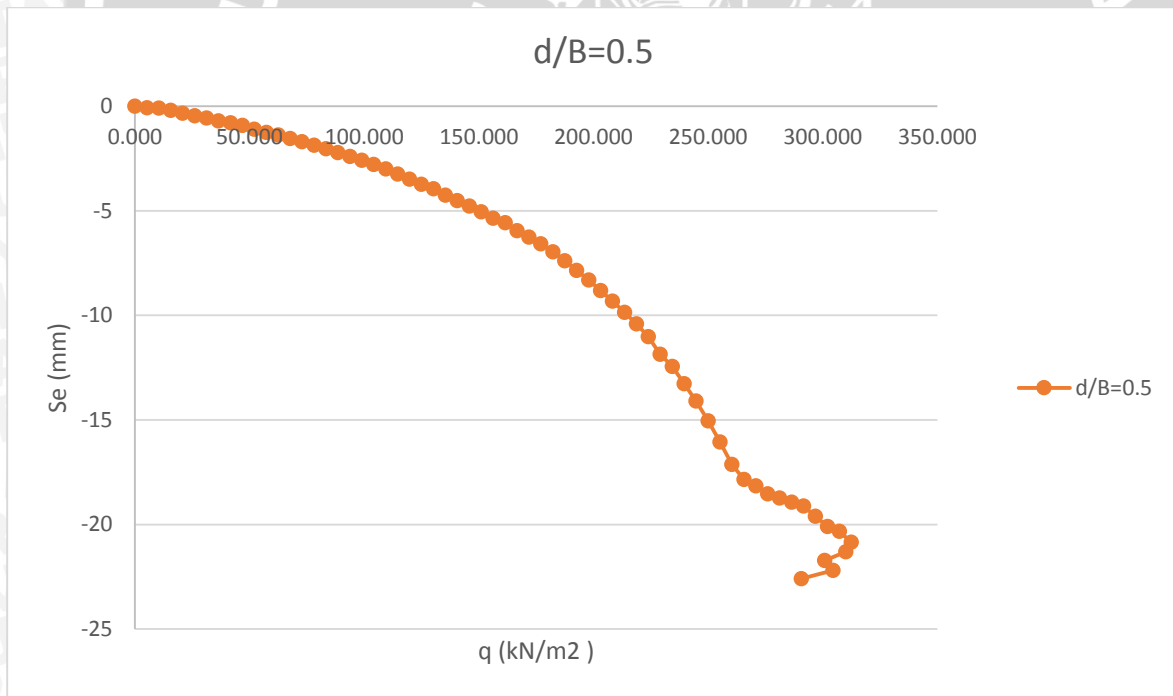
BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm2)	q (kN/m2)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-3558	-2730	-35.58	-13.65	0	0	0	0.000	0.000	0.000
50	-3558	-2723	-35.58	-13.615	0	0.035	0.0175	0.018	0.052	5.208
100	-3556	-2660	-35.56	-13.3	0.02	0.35	0.185	0.185	0.104	10.417
150	-3557	-2658	-35.57	-13.29	0.01	0.36	0.185	0.185	0.156	15.625
200	-3548	-2648	-35.48	-13.24	0.1	0.41	0.255	0.255	0.208	20.833
250	-3535	-2625	-35.35	-13.125	0.23	0.525	0.3775	0.377	0.260	26.042
300	-3523	-2595	-35.23	-12.975	0.35	0.675	0.5125	0.512	0.313	31.250
350	-3508	-2575	-35.08	-12.875	0.5	0.775	0.6375	0.638	0.365	36.458
400	-3491	-2547	-34.91	-12.735	0.67	0.915	0.7925	0.792	0.417	41.667
450	-3474	-2519	-34.74	-12.595	0.84	1.055	0.9475	0.947	0.469	46.875
500	-3453	-2488	-34.53	-12.44	1.05	1.21	1.13	1.130	0.521	52.083
550	-3434	-2456	-34.34	-12.28	1.24	1.37	1.305	1.305	0.573	57.292
600	-3412	-2420	-34.12	-12.1	1.46	1.55	1.505	1.505	0.625	62.500
650	-3391	-2384	-33.91	-11.92	1.67	1.73	1.7	1.700	0.677	67.708
700	-3367	-2343	-33.67	-11.715	1.91	1.935	1.9225	1.923	0.729	72.917
750	-3339	-2297	-33.39	-11.485	2.19	2.165	2.1775	2.178	0.781	78.125
800	-3311	-2252	-33.11	-11.26	2.47	2.39	2.43	2.430	0.833	83.333
850	-3280	-2209	-32.8	-11.045	2.78	2.605	2.6925	2.693	0.885	88.542
900	-3246	-2159	-32.46	-10.795	3.12	2.855	2.9875	2.988	0.938	93.750
950	-3216	-2112	-32.16	-10.56	3.42	3.09	3.255	3.255	0.990	98.958
1000	-3181	-2063	-31.81	-10.315	3.77	3.335	3.5525	3.553	1.042	104.167
1050	-3146	-2009	-31.46	-10.045	4.12	3.605	3.8625	3.863	1.094	109.375
1100	-3107	-1949	-31.07	-9.745	4.51	3.905	4.2075	4.208	1.146	114.583
1150	-3064	-1891	-30.64	-9.455	4.94	4.195	4.5675	4.568	1.198	119.792
1200	-3022	-1827	-30.22	-9.135	5.36	4.515	4.9375	4.938	1.250	125.000
1250	-2967	-1747	-29.67	-8.735	5.91	4.915	5.4125	5.413	1.302	130.208
1300	-2912	-1670	-29.12	-8.35	6.46	5.3	5.88	5.880	1.354	135.417
1350	-2839	-1554	-28.39	-7.77	7.19	5.88	6.535	6.535	1.406	140.625
1400	-2715	-1374	-27.15	-6.87	8.43	6.78	7.605	7.605	1.458	145.833
1450	-2599	-1199	-25.99	-5.995	9.59	7.655	8.6225	8.623	1.510	151.042
1500	-2428	-818	-24.28	-4.09	11.3	9.56	10.43	10.430	1.563	156.250
1550	-2309	-711	-23.09	-3.555	12.49	10.095	11.2925	11.293	1.615	161.458
1600	-2161	-436	-21.61	-2.18	13.97	11.47	12.72	12.720	1.667	166.667
1650	-2009	-144	-20.09	-0.72	15.49	12.93	14.21	14.210	1.719	171.875
1702	-1827	206	-18.27	1.03	17.31	14.68	15.995	15.995	1.773	177.292
1750	-1806	408	-18.06	2.04	17.52	15.69	16.605	16.605	1.823	182.292
1800	-1778	600	-17.78	3	17.8	16.65	17.225	17.225	1.875	187.500
1850	-1733	780	-17.33	3.9	18.25	17.55	17.9	17.900	1.927	192.708
1900	-1690	850	-16.9	4.25	18.68	17.9	18.29	18.290	1.979	197.917
1950	-1654	1000	-16.54	5	19.04	18.65	18.845	18.845	2.031	203.125
2000	-1619	1256	-16.19	6.28	19.39	19.93	19.66	19.660	2.083	208.333
2050	-1578	1433	-15.78	7.165	19.8	20.815	20.3075	20.308	2.135	213.542
2100	-1531	1677	-15.31	8.385	20.27	22.035	21.1525	21.153	2.188	218.750
2150	-1478	1803	-14.78	9.015	20.8	22.665	21.7325	21.733	2.240	223.958
2200	-1422	1803	-14.22	9.015	21.36	22.665	22.0125	22.013	2.292	229.167
2163	-1400	2012	-14	10.06	21.58	23.71	22.645	22.645	2.253	225.313
2089	-1390	2132	-13.9	10.66	21.68	24.31	22.995	22.995	2.176	217.604
2065	-1383	2211	-13.83	11.055	21.75	24.705	23.2275	23.228	2.151	215.104
2054	-1377	2343	-13.77	11.715	21.81	25.365	23.5875	23.588	2.140	213.958



8. $B = 10 \text{ cm}$, $d/B = 0,5$, $n = 2$, $u/B = 0,5$

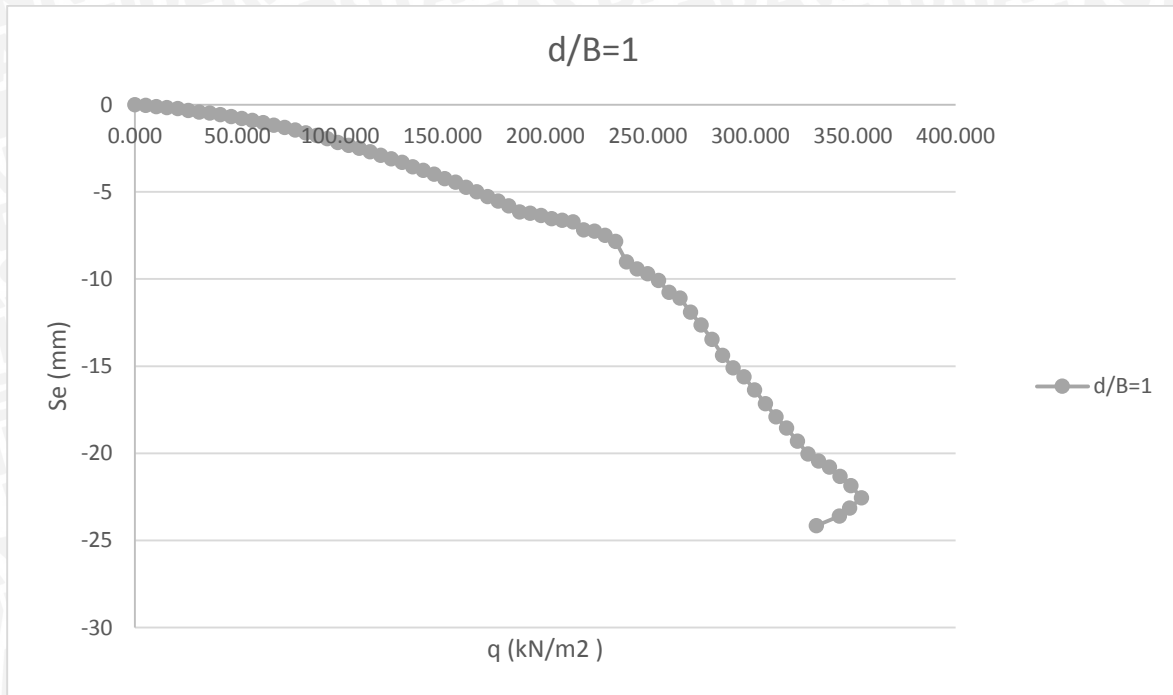
BEBAN (kg)	LVDT		LVDT Terkalibrasi		PENURUNAN (mm)			s/B (%)	q (kg/cm2)	q (kN/m2)
	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-2792	-2636	-27.92	-13.18	0	0	0	0.000	0.000	0.000
50	-2790	-2611	-27.9	-13.055	0.02	0.125	0.0725	0.072	0.052	5.208
100	-2787	-2611	-27.87	-13.055	0.05	0.125	0.0875	0.088	0.104	10.417
150	-2780	-2582	-27.8	-12.91	0.12	0.27	0.195	0.195	0.156	15.625
200	-2774	-2534	-27.74	-12.67	0.18	0.51	0.345	0.345	0.208	20.833
250	-2766	-2501	-27.66	-12.505	0.26	0.675	0.4675	0.468	0.260	26.042
300	-2760	-2471	-27.6	-12.355	0.32	0.825	0.5725	0.573	0.313	31.250
350	-2751	-2438	-27.51	-12.19	0.41	0.99	0.7	0.700	0.365	36.458
400	-2745	-2408	-27.45	-12.04	0.47	1.14	0.805	0.805	0.417	41.667
450	-2737	-2376	-27.37	-11.88	0.55	1.3	0.925	0.925	0.469	46.875
500	-2719	-2341	-27.19	-11.705	0.73	1.475	1.1025	1.103	0.521	52.083
550	-2709	-2302	-27.09	-11.51	0.83	1.67	1.25	1.250	0.573	57.292
600	-2698	-2272	-26.98	-11.36	0.94	1.82	1.38	1.380	0.625	62.500
650	-2681	-2237	-26.81	-11.185	1.11	1.995	1.5525	1.553	0.677	67.708
700	-2668	-2202	-26.68	-11.01	1.24	2.17	1.705	1.705	0.729	72.917
750	-2656	-2163	-26.56	-10.815	1.36	2.365	1.8625	1.863	0.781	78.125
800	-2641	-2121	-26.41	-10.605	1.51	2.575	2.0425	2.043	0.833	83.333
850	-2626	-2081	-26.26	-10.405	1.66	2.775	2.2175	2.218	0.885	88.542
900	-2611	-2039	-26.11	-10.195	1.81	2.985	2.3975	2.398	0.938	93.750
950	-2595	-1994	-25.95	-9.97	1.97	3.21	2.59	2.590	0.990	98.958
1000	-2577	-1954	-25.77	-9.77	2.15	3.41	2.78	2.780	1.042	104.167
1050	-2557	-1904	-25.57	-9.52	2.35	3.66	3.005	3.005	1.094	109.375
1100	-2536	-1847	-25.36	-9.235	2.56	3.945	3.2525	3.253	1.146	114.583
1150	-2514	-1797	-25.14	-8.985	2.78	4.195	3.4875	3.488	1.198	119.792
1200	-2490	-1743	-24.9	-8.715	3.02	4.465	3.7425	3.743	1.250	125.000
1250	-2469	-1703	-24.69	-8.515	3.23	4.665	3.9475	3.948	1.302	130.208
1300	-2446	-1623	-24.46	-8.115	3.46	5.065	4.2625	4.263	1.354	135.417
1350	-2421	-1573	-24.21	-7.865	3.71	5.315	4.5125	4.513	1.406	140.625
1400	-2399	-1509	-23.99	-7.545	3.93	5.635	4.7825	4.783	1.458	145.833
1450	-2372	-1454	-23.72	-7.27	4.2	5.91	5.055	5.055	1.510	151.042
1500	-2347	-1381	-23.47	-6.905	4.45	6.275	5.3625	5.363	1.563	156.250
1550	-2324	-1340	-23.24	-6.7	4.68	6.48	5.58	5.580	1.615	161.458
1600	-2294	-1252	-22.94	-6.26	4.98	6.92	5.95	5.950	1.667	166.667
1650	-2265	-1184	-22.65	-5.92	5.27	7.26	6.265	6.265	1.719	171.875
1700	-2235	-1118	-22.35	-5.59	5.57	7.59	6.58	6.580	1.771	177.083
1750	-2205	-1022	-22.05	-5.11	5.87	8.07	6.97	6.970	1.823	182.292
1800	-2169	-923	-21.69	-4.615	6.23	8.565	7.3975	7.398	1.875	187.500
1850	-2131	-819	-21.31	-4.095	6.61	9.085	7.8475	7.848	1.927	192.708
1900	-2091	-715	-20.91	-3.575	7.01	9.605	8.3075	8.308	1.979	197.917
1950	-2041	-610	-20.41	-3.05	7.51	10.13	8.82	8.820	2.031	203.125
2000	-1992	-505	-19.92	-2.525	8	10.655	9.3275	9.328	2.083	208.333
2050	-1941	-397	-19.41	-1.985	8.51	11.195	9.8525	9.853	2.135	213.542
2100	-1884	-288	-18.84	-1.44	9.08	11.74	10.41	10.410	2.188	218.750
2150	-1824	-163	-18.24	-0.815	9.68	12.365	11.0225	11.023	2.240	223.958
2200	-1734	-5	-17.34	-0.025	10.58	13.155	11.8675	11.868	2.292	229.167
2250	-1680	121	-16.8	0.605	11.12	13.785	12.4525	12.453	2.344	234.375
2300	-1596	282	-15.96	1.41	11.96	14.59	13.275	13.275	2.396	239.583
2350	-1514	447	-15.14	2.235	12.78	15.415	14.0975	14.098	2.448	244.792
2400	-1421	638	-14.21	3.19	13.71	16.37	15.04	15.040	2.500	250.000
2450	-1324	852	-13.24	4.26	14.68	17.44	16.06	16.060	2.552	255.208
2500	-1222	1078	-12.22	5.39	15.7	18.57	17.135	17.135	2.604	260.417
2550	-1168	1253	-11.68	6.265	16.24	19.445	17.8425	17.843	2.656	265.625
2600	-1147	1335	-11.47	6.675	16.45	19.855	18.1525	18.153	2.708	270.833
2650	-1119	1433	-11.19	7.165	16.73	20.345	18.5375	18.538	2.760	276.042
2700	-1114	1501	-11.14	7.505	16.78	20.685	18.7325	18.733	2.813	281.250
2750	-1098	1551	-10.98	7.755	16.94	20.935	18.9375	18.938	2.865	286.458
2800	-1070	1565	-10.7	7.825	17.22	21.005	19.1125	19.113	2.917	291.667
2850	-1022	1668	-10.22	8.34	17.7	21.52	19.61	19.610	2.969	296.875
2900	-974	1769	-9.74	8.845	18.18	22.025	20.1025	20.103	3.021	302.083
2950	-948	1810	-9.48	9.05	18.44	22.23	20.335	20.335	3.073	307.292
3000	-890	1900	-8.9	9.5	19.02	22.68	20.85	20.850	3.125	312.500
2977	-845	1994	-8.45	9.97	19.47	23.15	21.31	21.310	3.101	310.104
2888	-812	2091	-8.12	10.455	19.8	23.635	21.7175	21.718	3.008	300.833
2923	-766	2188	-7.66	10.94	20.26	24.12	22.19	22.190	3.045	304.479
2790	-717	2252	-7.17	11.26	20.75	24.44	22.595	22.595	2.906	290.625

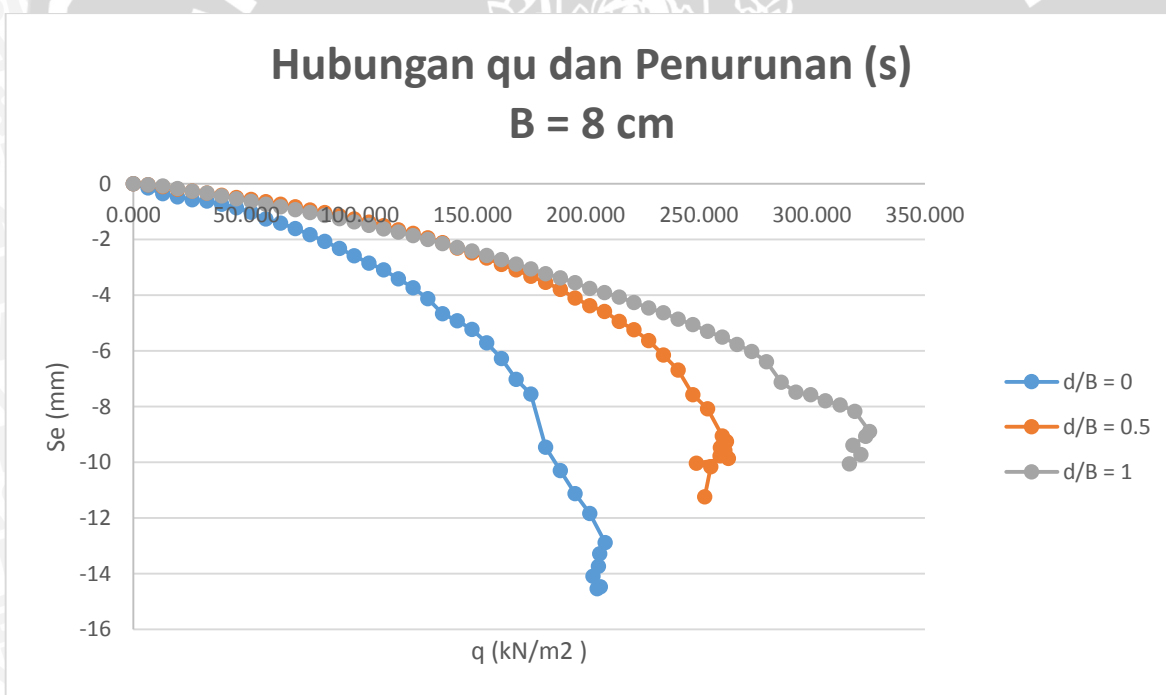
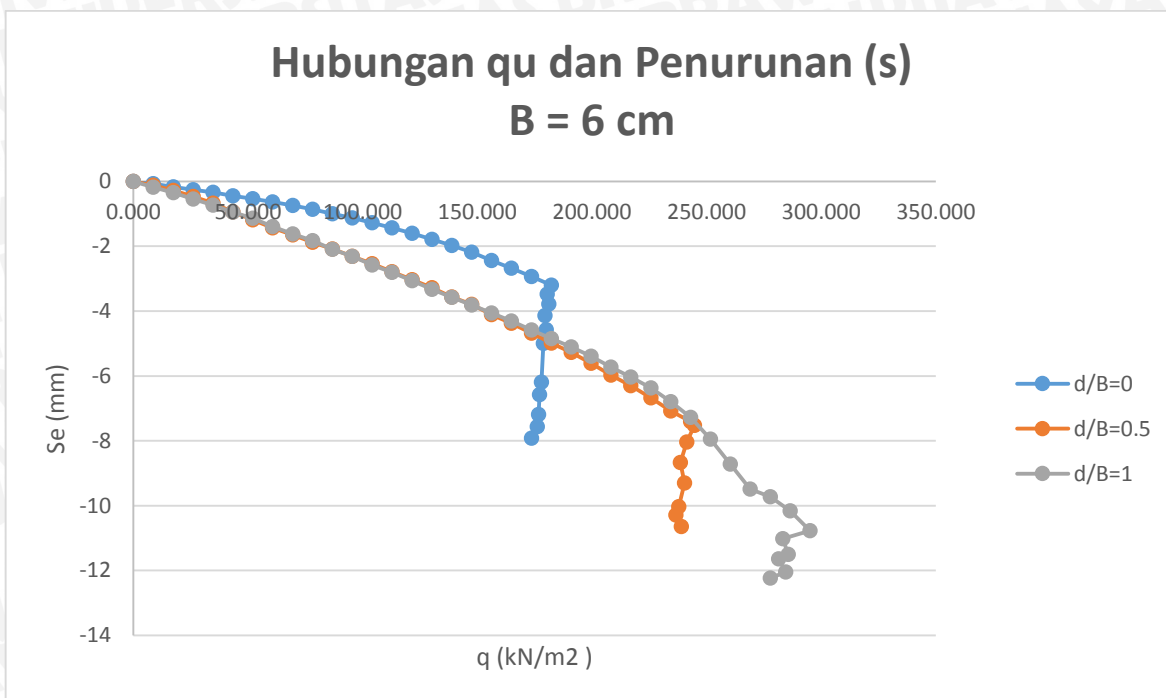
3050	-3948	-2331	-39,480	-11,655	1,920	2,055	1,988	1,988	3,177	317,708
3100	-3941	-2316	-39,410	-11,580	1,990	2,130	2,060	2,060	3,229	322,917
3150	-3937	-2311	-39,370	-11,555	2,030	2,155	2,093	2,093	3,281	328,125
3200	-3932	-2296	-39,320	-11,480	2,080	2,230	2,155	2,155	3,333	333,333
3250	-3928	-2278	-39,280	-11,390	2,120	2,320	2,220	2,220	3,385	338,542
3300	-3922	-2270	-39,220	-11,350	2,180	2,360	2,270	2,270	3,438	343,750
3350	-3916	-2260	-39,160	-11,300	2,240	2,410	2,325	2,325	3,490	348,958
3400	-3912	-2249	-39,120	-11,245	2,280	2,465	2,373	2,373	3,542	354,167
3450	-3908	-2233	-39,080	-11,165	2,320	2,545	2,433	2,433	3,594	359,375
3500	-3896	-2213	-38,960	-11,065	2,440	2,645	2,543	2,543	3,646	364,583
3550	-3883	-2188	-38,830	-10,940	2,570	2,770	2,670	2,670	3,698	369,792
3600	-3868	-2158	-38,680	-10,790	2,720	2,920	2,820	2,820	3,750	375,000
3650	-3856	-2126	-38,560	-10,630	2,840	3,080	2,960	2,960	3,802	380,208
3700	-3841	-2091	-38,410	-10,455	2,990	3,255	3,123	3,123	3,854	385,417
3750	-3826	-2047	-38,260	-10,235	3,140	3,475	3,308	3,308	3,906	390,625
3800	-3807	-2007	-38,070	-10,035	3,330	3,675	3,503	3,503	3,958	395,833
3850	-3790	-1962	-37,900	-9,810	3,500	3,900	3,700	3,700	4,010	401,042
3900	-3775	-1911	-37,750	-9,555	3,650	4,155	3,903	3,903	4,063	406,250
3950	-3757	-1863	-37,570	-9,315	3,830	4,395	4,113	4,113	4,115	411,458
4000	-3741	-1817	-37,410	-9,085	3,990	4,625	4,308	4,308	4,167	416,667
4050	-3720	-1767	-37,200	-8,835	4,200	4,875	4,538	4,538	4,219	421,875
4100	-3698	-1722	-36,980	-8,610	4,420	5,100	4,760	4,760	4,271	427,083
4120	-3656	-1662	-36,560	-8,310	4,840	5,400	5,120	5,120	4,292	429,167
4092	-3611	-1595	-36,110	-7,975	5,290	5,735	5,513	5,513	4,263	426,250
4083	-3578	-1541	-35,780	-7,705	5,620	6,005	5,813	5,813	4,253	425,313
4062	-3557	-1500	-35,570	-7,500	5,830	6,210	6,020	6,020	4,231	423,125
4054	-3524	-1465	-35,240	-7,325	6,160	6,385	6,273	6,273	4,223	422,292
4067	-3494	-1436	-34,940	-7,180	6,460	6,530	6,495	6,495	4,236	423,646
4065	-3465	-1404	-34,650	-7,020	6,750	6,690	6,720	6,720	4,234	423,438
4055	-3437	-1374	-34,370	-6,870	7,030	6,840	6,935	6,935	4,224	422,396



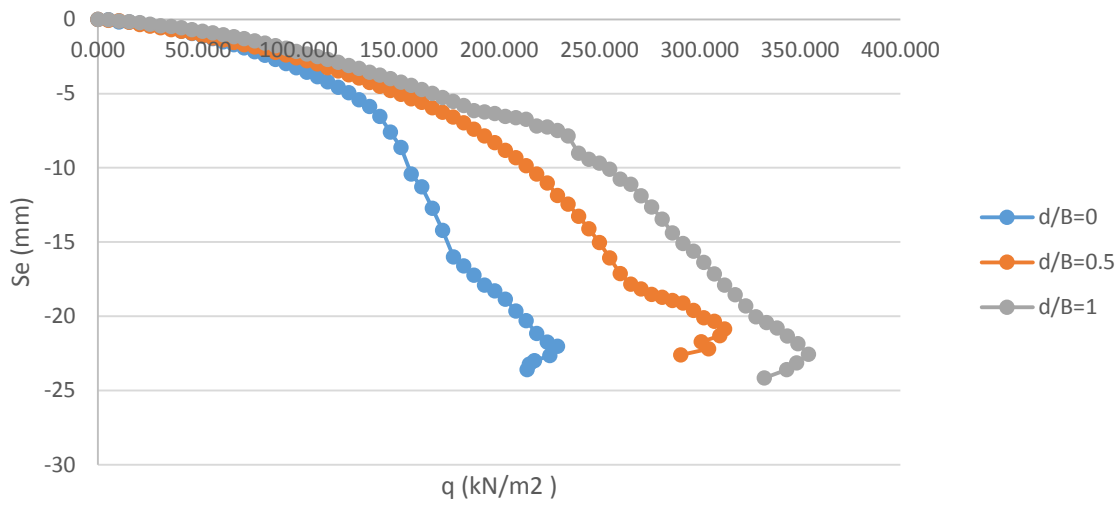
9. $B = 10 \text{ cm}$, $d/B = 1$, $n = 2$, $u/B = 0,5$

	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Pembacaan 1	Pembacaan 2	Rata-Rata			
0	-3800	-2222	-38	-11.11	0	0	0	0.000	0.000	0.000
50	-3797	-2214	-37.97	-11.07	0.03	0.04	0.035	0.035	0.052	5.208
100	-3789	-2201	-37.89	-11.005	0.11	0.105	0.1075	0.107	0.104	10.417
150	-3783	-2193	-37.83	-10.965	0.17	0.145	0.1575	0.158	0.156	15.625
200	-3774	-2182	-37.74	-10.91	0.26	0.2	0.23	0.230	0.208	20.833
250	-3762	-2167	-37.62	-10.835	0.38	0.275	0.3275	0.328	0.260	26.042
300	-3749	-2152	-37.49	-10.76	0.51	0.35	0.43	0.430	0.313	31.250
350	-3742	-2144	-37.42	-10.72	0.58	0.39	0.485	0.485	0.365	36.458
400	-3730	-2132	-37.3	-10.66	0.7	0.45	0.575	0.575	0.417	41.667
450	-3716	-2116	-37.16	-10.58	0.84	0.53	0.685	0.685	0.469	46.875
500	-3702	-2101	-37.02	-10.505	0.98	0.605	0.7925	0.792	0.521	52.083
550	-3687	-2086	-36.87	-10.43	1.13	0.68	0.905	0.905	0.573	57.292
600	-3671	-2068	-36.71	-10.34	1.29	0.77	1.03	1.030	0.625	62.500
650	-3654	-2042	-36.54	-10.21	1.46	0.9	1.18	1.180	0.677	67.708
700	-3635	-2030	-36.35	-10.15	1.65	0.96	1.305	1.305	0.729	72.917
750	-3616	-2008	-36.16	-10.04	1.84	1.07	1.455	1.455	0.781	78.125
800	-3595	-1988	-35.95	-9.94	2.05	1.17	1.61	1.610	0.833	83.333
850	-3574	-1965	-35.74	-9.825	2.26	1.285	1.7725	1.773	0.885	88.542
900	-3551	-1939	-35.51	-9.695	2.49	1.415	1.9525	1.953	0.938	93.750
950	-3521	-1912	-35.21	-9.56	2.79	1.55	2.17	2.170	0.990	98.958
1000	-3499	-1891	-34.99	-9.455	3.01	1.655	2.3325	2.333	1.042	104.167
1050	-3477	-1868	-34.77	-9.34	3.23	1.77	2.5	2.500	1.094	109.375
1100	-3450	-1838	-34.5	-9.19	3.5	1.92	2.71	2.710	1.146	114.583
1150	-3423	-1814	-34.23	-9.07	3.77	2.04	2.905	2.905	1.198	119.792
1200	-3395	-1789	-33.95	-8.945	4.05	2.165	3.1075	3.108	1.250	125.000
1250	-3369	-1758	-33.69	-8.79	4.31	2.32	3.315	3.315	1.302	130.208
1300	-3338	-1723	-33.38	-8.615	4.62	2.495	3.5575	3.558	1.354	135.417
1350	-3310	-1698	-33.1	-8.49	4.9	2.62	3.76	3.760	1.406	140.625
1400	-3282	-1664	-32.82	-8.32	5.18	2.79	3.985	3.985	1.458	145.833
1450	-3248	-1632	-32.48	-8.16	5.52	2.95	4.235	4.235	1.510	151.042
1500	-3221	-1601	-32.21	-8.005	5.79	3.105	4.4475	4.448	1.563	156.250
1550	-3183	-1562	-31.83	-7.81	6.17	3.3	4.735	4.735	1.615	161.458
1600	-3149	-1526	-31.49	-7.63	6.51	3.48	4.995	4.995	1.667	166.667
1650	-3114	-1485	-31.14	-7.425	6.86	3.685	5.2725	5.273	1.719	171.875
1700	-3079	-1450	-30.79	-7.25	7.21	3.86	5.535	5.535	1.771	177.083
1750	-3043	-1411	-30.43	-7.055	7.57	4.055	5.8125	5.813	1.823	182.292
1800	-3001	-1360	-30.01	-6.8	7.99	4.31	6.15	6.150	1.875	187.500
1850	-3002	-1326	-30.02	-6.63	7.98	4.48	6.23	6.230	1.927	192.708
1900	-3000	-1280	-30	-6.4	8	4.71	6.355	6.355	1.979	197.917
1950	-2996	-1217	-29.96	-6.085	8.04	5.025	6.5325	6.533	2.031	203.125
2000	-3003	-1162	-30.03	-5.81	7.97	5.3	6.635	6.635	2.083	208.333
2050	-3012	-1106	-30.12	-5.53	7.88	5.58	6.73	6.730	2.135	213.542
2100	-2971	-1007	-29.71	-5.035	8.29	6.075	7.1825	7.183	2.188	218.750
2150	-2984	-954	-29.84	-4.77	8.16	6.34	7.25	7.250	2.240	223.958
2200	-2976	-874	-29.76	-4.37	8.24	6.74	7.49	7.490	2.292	229.167
2250	-2955	-774	-29.55	-3.87	8.45	7.24	7.845	7.845	2.344	234.375
2300	-2844	-527	-28.44	-2.635	9.56	8.475	9.0175	9.018	2.396	239.583
2350	-2824	-404	-28.24	-2.02	9.76	9.09	9.425	9.425	2.448	244.792
2400	-2820	-304	-28.2	-1.52	9.8	9.59	9.695	9.695	2.500	250.000
2450	-2803	-180	-28.03	-0.9	9.97	10.21	10.09	10.090	2.552	255.208
2500	-2782	47	-27.82	0.235	10.18	11.345	10.7625	10.763	2.604	260.417
2550	-2749	116	-27.49	0.58	10.51	11.69	11.1	11.100	2.656	265.625
2600	-2674	285	-26.74	1.425	11.26	12.535	11.8975	11.898	2.708	270.833
2650	-2585	404	-25.85	2.02	12.15	13.13	12.64	12.640	2.760	276.042
2700	-2470	503	-24.7	2.515	13.3	13.625	13.4625	13.463	2.813	281.250
2750	-2390	710	-23.9	3.55	14.1	14.66	14.38	14.380	2.865	286.458
2800	-2333	887	-23.33	4.435	14.67	15.545	15.1075	15.108	2.917	291.667
2850	-2289	1003	-22.89	5.015	15.11	16.125	15.6175	15.618	2.969	296.875
2900	-2236	1198	-22.36	5.99	15.64	17.1	16.37	16.370	3.021	302.083
2950	-2175	1388	-21.75	6.94	16.25	18.05	17.15	17.150	3.073	307.292
3000	-2120	1578	-21.2	7.89	16.8	19	17.9	17.900	3.125	312.500
3050	-2086	1768	-20.86	8.84	17.14	19.95	18.545	18.545	3.177	317.708
3100	-2029	1958	-20.29	9.79	17.71	20.9	19.305	19.305	3.229	322.917
3150	-1977	2148	-19.77	10.74	18.23	21.85	20.04	20.040	3.281	328.125
3200	-1924	2200	-19.24	11	18.76	22.11	20.435	20.435	3.333	333.333
3250	-1893	2282	-18.93	11.41	19.07	22.52	20.795	20.795	3.385	338.542
3300	-1843	2394	-18.43	11.97	19.57	23.08	21.325	21.325	3.438	343.750
3350	-1766	2450	-17.66	12.25	20.34	23.36	21.85	21.850	3.490	348.958
3400	-1700	2600	-17	13	21	24.11	22.555	22.555	3.542	354.167
3344	-1648	2732	-16.48	13.66	21.52	24.77	23.145	23.145	3.483	348.333
3297	-1606	2832	-16.06	14.16	21.94	25.27	23.605	23.605	3.434	343.438
3189	-1558	2954	-15.58	14.77	22.42	25.88	24.15	24.150	3.322	332.188

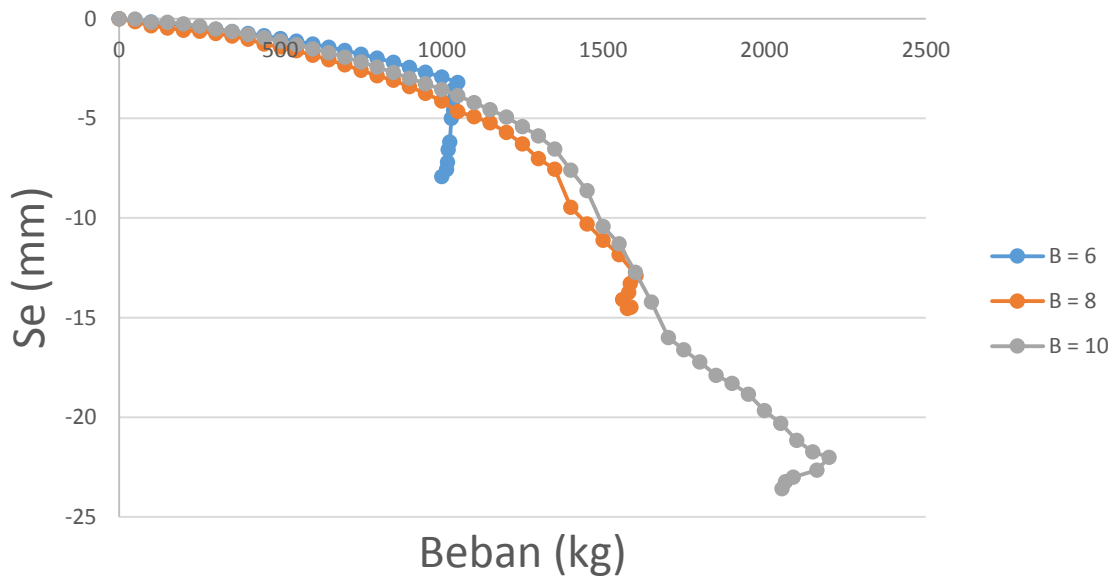


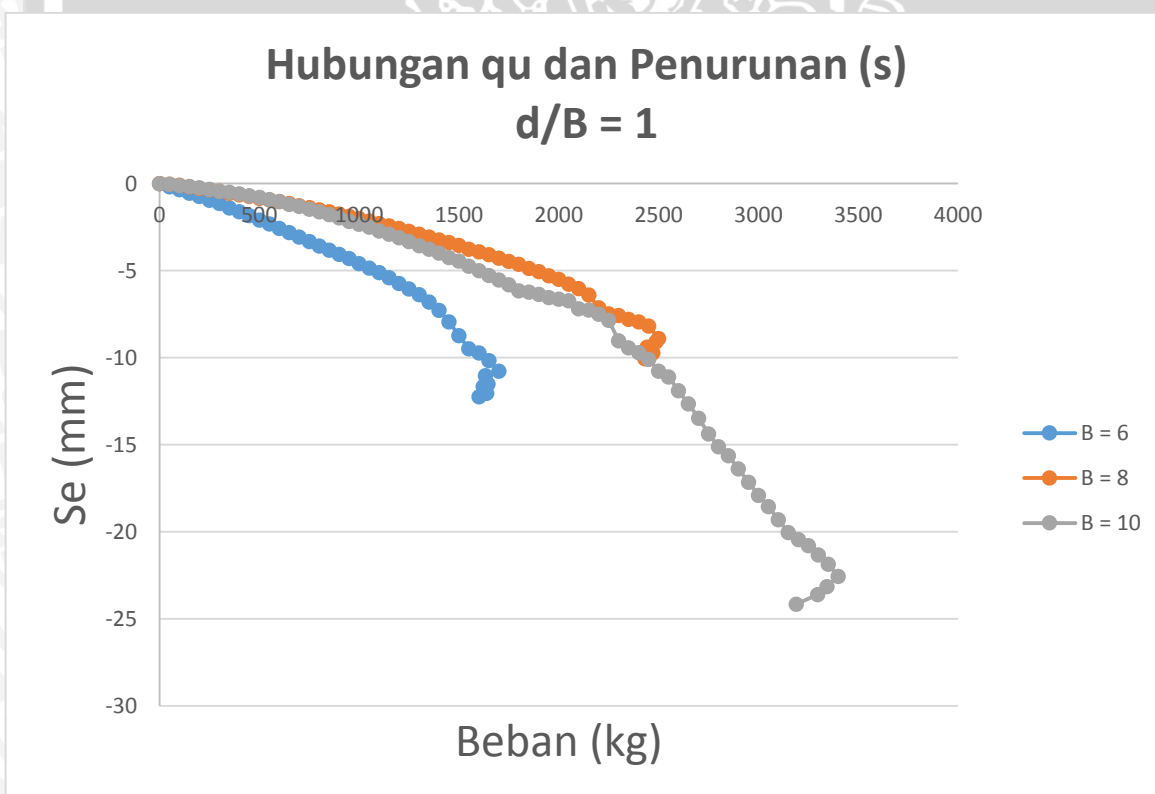
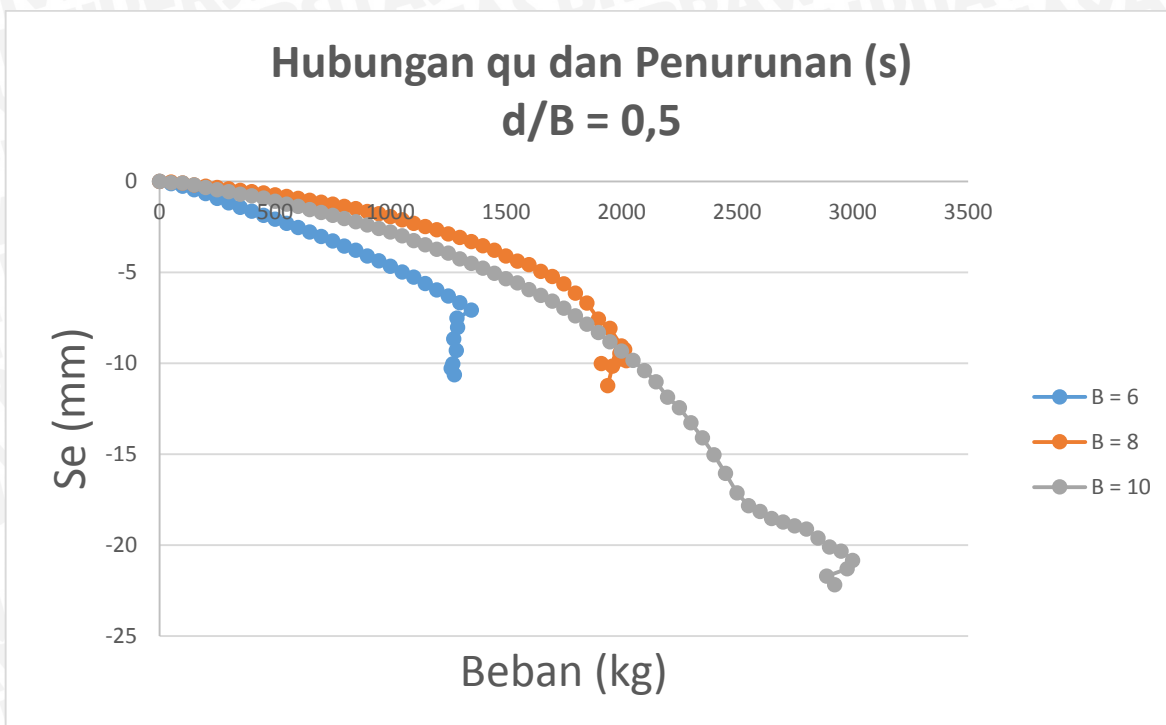


Hubungan q_u dan Penurunan (s) B = 10 cm



Hubungan q_u dan Penurunan (s) $d/B = 0$





Lampiran 7. Perhitungan Daya Dukung Tanah Pasir Tanpa Perkuatan dengan Metode Analitik

A. Metode Meyerhoff

$$\gamma = 16,48 \text{ kN/m}^3$$

$$c = 0,027$$

$$\phi = 41,25^\circ$$

$$L = \sim$$

- **B = 6 cm, d/B = 0**

B = lebar pondasi (B = 6 cm = 0,06 m)

d = jarak kedalaman pondasi (d = 0 cm)

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = (N_q - 1) \tan (1,4 \phi) = (76,67 - 1) \tan (1,4 \cdot 41,25) = 119,93$$

$$K_p = \tan^2 (45 + \phi/2) = \tan^2 (45 + 41,25/2) = 4,87$$

$$f_{cs} = 1 + 0,2 K_p B/L = 1 + 0,2 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{qs} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{\gamma s} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{cd} = 1 + 0,2 \sqrt{K_p} (D/B) = 1 + 0,2 \sqrt{K_p} (0/0,06) = 1$$

$$f_{qd} = 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{K_p} (0/0,06) = 1$$

$$f_{\gamma d} = 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{K_p} (0/0,06) = 1$$

$$f_{ci}, f_{qi}, f_{\gamma i} = 1$$

$$q_u = c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} + q \cdot N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i}$$

$$= 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 + 16,48 \cdot 0 \cdot 76,67 \cdot 1 \cdot 1 \cdot 1 + 0,5 \cdot 0,06 \cdot 119,93 \cdot 1 \cdot 1 \cdot 1$$

$$= 31,9974$$

$$= 61,624 \text{ kN/m}^3$$

- **B = 6 cm, d/B = 0,5**

$$B = \text{lebar pondasi (B = 6 cm = 0,06 m)}$$

$$d = \text{jarak kedalaman pondasi (d = 3 cm = 0,03 m)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = (N_q - 1) \tan (1,4 \phi) = (76,67 - 1) \tan (1,4 \cdot 41,25) = 119,93$$

$$K_p = \tan^2 (45 + \phi/2) = \tan^2 (45 + 41,25/2) = 4,87$$

$$f_{cs} = 1 + 0,2 K_p B/L = 1 + 0,2 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{qs} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{\gamma s} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{cd} = 1 + 0,2 \sqrt{K_p} (D/B) = 1 + 0,2 \sqrt{K_p} (0,03/0,06) = 1,22$$

$$f_{qd} = 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{K_p} (0,03/0,06) = 1,11$$

$$f_{\gamma d} = 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{K_p} (0,03/0,06) = 1,11$$

$$f_{ci}, f_{qi}, f_{\gamma i} = 1$$

$$q_u = c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} + q \cdot N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d}$$

$$\cdot f_{\gamma i}$$

$$= 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 + 16,48 \cdot 0,03 \cdot 76,67 \cdot 1,22 \cdot 1,11 \cdot 1,11 + 0,5 \cdot$$

$$0,06 \cdot 119,93 \cdot 1 \cdot 1 \cdot 1$$

$$= 110,77 \text{ kN/m}^3$$

- **B = 6 cm, d/B = 1**

$$B = \text{lebar pondasi (B = 6 cm = 0,06 m)}$$

$$d = \text{jarak kedalaman pondasi (d = 6 cm = 0,06 m)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = (N_q - 1) \tan (1,4 \phi) = (76,67 - 1) \tan (1,4 \cdot 41,25) = 119,93$$

$$K_p = \tan^2 (45 + \phi/2) = \tan^2 (45 + 41,25/2) = 4,87$$

$$f_{cs} = 1 + 0,2 K_p B/L = 1 + 0,2 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{qs} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{\gamma_s} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{cd} = 1 + 0,2 \sqrt{K_p} (D/B) = 1 + 0,2 \sqrt{K_p} (0,06/0,06) = 1,44$$

$$f_{qd} = 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{K_p} (0,06/0,06) = 1,22$$

$$f_{\gamma_d} = 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{K_p} (0,06/0,06) = 1,22$$

$$f_{ci}, f_{qi}, f_{\gamma_i} = 1$$

$$\begin{aligned} q_u &= c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} + q \cdot N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma_s} \cdot f_{\gamma_d} \\ &\cdot f_{\gamma_i} \\ &= 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 + 16,48 \cdot 0,03 \cdot 76,67 \cdot 1,44 \cdot 1,22 \cdot 1,22 + 0,5 \cdot \\ &0,06 \cdot 119,93 \cdot 1 \cdot 1 \cdot 1 \\ &= 168,283 \text{ kN/m}^3 \end{aligned}$$

• **B = 8 cm, d/B = 0**

$$B = \text{lebar pondasi (B = 8 cm = 0,08 m)}$$

$$d = \text{jarak kedalaman pondasi (d = 0 cm)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = (N_q - 1) \tan (1,4 \phi) = (76,67 - 1) \tan (1,4 \cdot 41,25) = 119,93$$

$$K_p = \tan^2 (45 + \phi/2) = \tan^2 (45 + 41,25/2) = 4,87$$

$$f_{cs} = 1 + 0,2 K_p B/L = 1 + 0,2 \cdot 4,87 \cdot 0,08/\sim = 1$$

$$f_{qs} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,08/\sim = 1$$

$$f_{\gamma_s} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,08/\sim = 1$$

$$f_{cd} = 1 + 0,2 \sqrt{K_p} (D/B) = 1 + 0,2 \sqrt{4,87} (0/0,08) = 1$$

$$f_{qd} = 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{4,87} (0/0,08) = 1$$

$$f_{\gamma_d} = 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{4,87} (0/0,08) = 1$$

$$f_{ci}, f_{qi}, f_{\gamma_i} = 1$$

$$\begin{aligned} q_u &= c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} + q \cdot N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma_s} \cdot f_{\gamma_d} \\ &\cdot f_{\gamma_i} \\ &= 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 + 16,48 \cdot 0 \cdot 76,67 \cdot 1 \cdot 1 \cdot 1 + 0,5 \cdot 0,08 \cdot 119,93 \cdot \\ &1 \cdot 1 \cdot 1 \\ &= 81,38 \text{ kN/m}^3 \end{aligned}$$

- **B = 8 cm, d/B = 0,5**

$$B = \text{lebar pondasi (B = 8 cm = 0,08 m)}$$

$$d = \text{jarak kedalaman pondasi (d = 4 cm = 0,04 m)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = (N_q - 1) \tan (1,4 \phi) = (76,67 - 1) \tan (1,4 \cdot 41,25) = 119,93$$

$$K_p = \tan^2 (45 + \phi/2) = \tan^2 (45 + 41,25/2) = 4,87$$

$$f_{cs} = 1 + 0,2 K_p B/L = 1 + 0,2 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{qs} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{\gamma s} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{cd} = 1 + 0,2 \sqrt{K_p} (D/B) = 1 + 0,2 \sqrt{K_p} (0,06/0,06) = 1,221$$

$$f_{qd} = 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{K_p} (0,06/0,06) = 1,110$$

$$f_{\gamma d} = 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{K_p} (0,06/0,06) = 1,110$$

$$f_{ci}, f_{qi}, f_{\gamma i} = 1$$

$$\begin{aligned} q_u &= c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} + q \cdot N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\beta} \cdot f_{q\beta} + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \\ &= 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 + 16,48 \cdot 0,03 \cdot 76,67 \cdot 1,221 \cdot 1,110 \cdot 1,110 + 0,5 \cdot \\ &\quad 0,08 \cdot 119,93 \cdot 1 \cdot 1 \cdot 1 \\ &= 146,746 \text{ kN/m}^3 \end{aligned}$$

- **B = 8 cm, d/B = 1**

$$B = \text{lebar pondasi (B = 8 cm = 0,08 m)}$$

$$d = \text{jarak kedalaman pondasi (d = 8 cm = 0,08 m)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = (N_q - 1) \tan (1,4 \phi) = (76,67 - 1) \tan (1,4 \cdot 41,25) = 119,93$$

$$K_p = \tan^2 (45 + \phi/2) = \tan^2 (45 + 41,25/2) = 4,87$$

$$f_{cs} = 1 + 0,2 K_p B/L = 1 + 0,2 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{qs} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{\gamma s} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{cd} = 1 + 0,2 \sqrt{K_p} (D/B) = 1 + 0,2 \sqrt{K_p} (0,06/0,06) = 1,44$$

$$f_{qd} = 1 + 0,1 \sqrt{Kp} (D/B) = 1 + 0,1 \sqrt{Kp} (0,06/0,06) = 1,22$$

$$f_{\gamma d} = 1 + 0,1 \sqrt{Kp} (D/B) = 1 + 0,1 \sqrt{Kp} (0,06/0,06) = 1,22$$

$$f_{ci}, f_{qi}, f_{\gamma i} = 1$$

$$\begin{aligned} q_u &= c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} + q \cdot N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \\ &= 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 + 16,48 \cdot 0,03 \cdot 76,67 \cdot 1,44 \cdot 1,22 \cdot 1,22 + 0,5 \cdot \\ &\quad 0,08 \cdot 119,93 \cdot 1 \cdot 1 \cdot 1 \\ &= 223,258 \text{ kN/m}^3 \end{aligned}$$

- **B = 10 cm, d/B = 0**

B = lebar pondasi (B = 10 cm = 0,1 m)

d = jarak kedalaman pondasi (d = 10 cm = 0,1 m)

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = (N_q - 1) \tan (1,4 \phi) = (76,67 - 1) \tan (1,4 \cdot 41,25) = 119,93$$

$$K_p = \tan^2 (45 + \phi/2) = \tan^2 (45 + 41,25/2) = 4,87$$

$$f_{cs} = 1 + 0,2 K_p B/L = 1 + 0,2 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{qs} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{\gamma s} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,06/\sim = 1$$

$$f_{cd} = 1 + 0,2 \sqrt{Kp} (D/B) = 1 + 0,2 \sqrt{Kp} (0,06/0,06) = 1$$

$$f_{qd} = 1 + 0,1 \sqrt{Kp} (D/B) = 1 + 0,1 \sqrt{Kp} (0,06/0,06) = 1$$

$$f_{\gamma d} = 1 + 0,1 \sqrt{Kp} (D/B) = 1 + 0,1 \sqrt{Kp} (0,06/0,06) = 1$$

$$f_{ci}, f_{qi}, f_{\gamma i} = 1$$

$$\begin{aligned} q_u &= c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} + q \cdot N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \\ &= 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 + 16,48 \cdot 0,03 \cdot 76,67 \cdot 1 \cdot 1 \cdot 1 + 0,5 \cdot 0,08 \cdot 119,93 \cdot 1 \cdot 1 \cdot 1 \\ &= 101,153 \text{ kN/m}^3 \end{aligned}$$

- **B = 10 cm, d/B = 0,5**

B = lebar pondasi (B = 10 cm = 0,1 m)

d = jarak kedalaman pondasi (d = 5 cm)

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$\begin{aligned}
 N_c &= (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28 \\
 N_\gamma &= (N_q - 1) \tan (1,4 \phi) = (76,67 - 1) \tan (1,4 \cdot 41,25) = 119,93 \\
 K_p &= \tan^2 (45 + \phi/2) = \tan^2 (45 + 41,25/2) = 4,87 \\
 f_{cs} &= 1 + 0,2 K_p B/L = 1 + 0,2 \cdot 4,87 \cdot 0,1/\sim = 1 \\
 f_{qs} &= 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,1/\sim = 1 \\
 f_{\gamma s} &= 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,1/\sim = 1 \\
 f_{cd} &= 1 + 0,2 \sqrt{K_p} (D/B) = 1 + 0,2 \sqrt{4,87} (0,05/0,1) = 1,221 \\
 f_{qd} &= 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{4,87} (0,5/0,1) = 1,11 \\
 f_{\gamma d} &= 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{4,87} (0,5/0,1) = 1,11 \\
 f_{ci}, f_{qi}, f_{\gamma i} &= 1
 \end{aligned}$$

$$\begin{aligned}
 Q_u &= c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} + q \cdot N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \\
 &= 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 + 16,48 \cdot 0,05 \cdot 76,67 \cdot 1 \cdot 1 \cdot 1 + 0,5 \cdot 0,06 \cdot 119,93 \\
 &\quad \cdot 1 \cdot 1 \cdot 1 \\
 &= 182,721 \text{ kN/m}^3
 \end{aligned}$$

• **B = 10 cm, d/B = 1**

$$\begin{aligned}
 B &= \text{lebar pondasi (} B = 10 \text{ cm} = 0,1 \text{ m)} \\
 d &= \text{jarak kedalaman pondasi (} d = 10 \text{ cm} = 0,1 \text{ m)} \\
 N_q &= e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67 \\
 N_c &= (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28 \\
 N_\gamma &= (N_q - 1) \tan (1,4 \phi) = (76,67 - 1) \tan (1,4 \cdot 41,25) = 119,93 \\
 K_p &= \tan^2 (45 + \phi/2) = \tan^2 (45 + 41,25/2) = 4,87 \\
 f_{cs} &= 1 + 0,2 K_p B/L = 1 + 0,2 \cdot 4,87 \cdot 0,1/\sim = 1 \\
 f_{qs} &= 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,1/\sim = 1 \\
 f_{\gamma s} &= 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,1/\sim = 1 \\
 f_{cd} &= 1 + 0,2 \sqrt{K_p} (D/B) = 1 + 0,2 \sqrt{4,87} (0,1/0,1) = 1,44 \\
 f_{qd} &= 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{4,87} (0,1/0,1) = 1,22 \\
 f_{\gamma d} &= 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{4,87} (0,1/0,1) = 1,22 \\
 f_{ci}, f_{qi}, f_{\gamma i} &= 1
 \end{aligned}$$

$$\begin{aligned}
 q_u &= c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} + q \cdot N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \\
 &\cdot f_{\gamma i} \\
 &= 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 + 16,48 \cdot 0,03 \cdot 76,67 \cdot 1,44 \cdot 1,22 \cdot 1,22 + 0,5 \cdot 0,1 \\
 &\quad \cdot 119,93 \cdot 1 \cdot 1 \cdot 1 \\
 &= 278,233 \text{ kN/m}^3
 \end{aligned}$$

2. Metode Hansen

$$\gamma = 16,48 \text{ kN/m}^3$$

$$C = 0.027$$

$$\phi = \text{sudut geser dalam tanah} = 41.25^\circ$$

• **B = 6, d/B = 0**

$$B = \text{lebar pondasi (B = 6 cm = 0,06 m)}$$

$$d = \text{jarak kedalaman pondasi (d = 0 cm)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = 1,5 (N_q - 1) \tan \phi = 1,5 (N_q - 1) \tan \phi = 1,5 (76,67 - 1) \tan 41,25 = 99,54$$

$$f_{cs} = 1 + (B/L)(N_q / N_c) = 1 + (0,06/\sim)(76,67/86,28) = 1$$

$$f_{qs} = 1 + (B/L)\tan \phi = 1 + (0,06/\sim)\tan 41,25 = 1$$

$$f_{\gamma s} = 1 - 0,4 (B/L) = 1 - 0,4 (0,06/\sim) = 1$$

$$f_{cd} = 1 + 0,4 (D/B) = 1 + 0,4 (0/0,06) = 1$$

$$\begin{aligned}
 f_{qd} &= 1 + 2 \tan \phi (1 - \sin \phi)^2 (D/B) \\
 &= 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0/0,06) = 1
 \end{aligned}$$

$$f_{\gamma d}, f_{ci}, f_{qi}, f_{c\delta}, f_{q\delta}, f_{\gamma\delta}, f_{c\beta}, f_{q\beta}, f_{\gamma\beta} = 1$$

$$\begin{aligned}
 q_u &= c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} \cdot f_{c\delta} \cdot f_{c\beta} + q \cdot N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} \\
 &\quad + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \cdot f_{\gamma\delta} \cdot f_{\gamma\beta} \\
 &= 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 + 0 + 0,5 \cdot 16,48 \cdot 6 \cdot 99,54 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \\
 &= 51,54 \text{ kN/m}^2
 \end{aligned}$$

- **B = 6, d/B = 0,5**

$$B = \text{lebar pondasi (} B = 6 \text{ cm} = 0,06 \text{ m)}$$

$$d = \text{jarak kedalaman pondasi (} d = 3 \text{ cm} = 0,03 \text{ m)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = 1,5 (N_q - 1) \tan \phi = 1,5 (76,67 - 1) \tan 41,25 = 99,54$$

$$f_{cs} = 1 + (B/L)(N_q / N_c) = 1 + (0,06/\sim)(76,67/86,28) = 1$$

$$f_{qs} = 1 + (B/L)\tan \phi = 1 + (0,06/\sim)\tan 41,25 = 1$$

$$f_{\gamma s} = 1 - 0,4 (B/L) = 1 - 0,4 (0,06/\sim) = 1$$

$$f_{cd} = 1 + 0,4 (D/B) = 1 + 0,4 (0,03/0,06) = 1,2$$

$$f_{qd} = 1 + 2 \tan \phi (1 - \sin \phi)^2 (D/B) \\ = 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0,03/0,06) = 1,101$$

$$f_{\gamma d}, f_{ci}, f_{qi}, f_{\gamma i}, f_{c\delta}, f_{q\delta}, f_{\gamma\delta}, f_{c\beta}, f_{q\beta}, f_{\gamma\beta} = 1$$

$$q_u = c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} \cdot f_{c\delta} \cdot f_{c\beta} + q \times N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} \\ + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \cdot f_{\gamma\delta} \cdot f_{\gamma\beta} \\ = 0,027 \cdot 86,28 \cdot 1 \cdot 1,2 \cdot 1 \cdot 1 \cdot 1 + 0,03 \cdot 76,67 \cdot 1 \cdot 1,101 \cdot 1 \cdot 1 \cdot 1 + 0,5 \times 16,48 \cdot 99,54 \\ \cdot \\ 6 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \\ = 93,773 \text{ kN/m}^2$$

- **B = 6, d/B = 1**

$$B = \text{lebar pondasi (} B = 6 \text{ cm} = 0,06 \text{ m)}$$

$$d = \text{jarak kedalaman pondasi (} d = 6 \text{ cm} = 0,06 \text{ m)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = 1,5 (N_q - 1) \tan \phi = 1,5 (76,67 - 1) \tan 41,25 = 99,54$$

$$f_{cs} = 1 + (B/L)(N_q / N_c) = 1 + (0,06/\sim)(76,67/86,28) = 1$$

$$f_{qs} = 1 + (B/L)\tan \phi = 1 + (0,06/\sim)\tan 41,25 = 1$$

$$f_{\gamma s} = 1 - 0,4 (B/L) = 1 - 0,4 (0,06/\sim) = 1$$

$$f_{cd} = 1 + 0,4 (D/B) = 1 + 0,4 (0,06/0,06) = 1,4$$

$$f_{qd} = 1 + 2 \tan \phi (1 - \sin \phi)^2 (D/B) \\ = 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0,06/0,06) = 1,203$$

$$f_{\gamma d}, f_{ci}, f_{qi}, f_{\gamma i}, f_{c\delta}, f_{q\delta}, f_{\gamma\delta}, f_{c\beta}, f_{q\beta}, f_{\gamma\beta} = 1$$

$$\begin{aligned} q_u &= c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} \cdot f_{c\delta} \cdot f_{c\beta} + q \times N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} \\ &\quad + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \cdot f_{\gamma\delta} \cdot f_{\gamma\beta} \\ &= 0,027 \cdot 86,28 \cdot 1.1.1.1.1 + 16,48 \cdot 0,06 \cdot 76,67 \cdot 1.1.1.1.1 + 0,5 \times \\ &16,48 \cdot \\ &\quad 99,54 \cdot 1.1.1.1.1 \\ &= 143,708 \text{ kN/m}^2 \end{aligned}$$

• **B = 8, d/B = 0**

B = lebar pondasi (B = 8 cm = 0,08 m)

d = jarak kedalaman pondasi (d = 0 cm)

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = 1,5 (N_q - 1) \tan \phi = 1,5 (N_q - 1) \tan \phi = 1,5 (76,67 - 1) \tan 41,25 = 99,54$$

$$f_{cs} = 1 + (B/L)(N_q / N_c) = 1 + (0,08/\sim)(76,67/86,28) = 1$$

$$f_{qs} = 1 + (B/L) \tan \phi = 1 + (0,08/\sim) \tan 41,25 = 1$$

$$f_{\gamma s} = 1 - 0,4 (B/L) = 1 - 0,4 (0,08/\sim) = 1$$

$$f_{cd} = 1 + 0,4 (D/B) = 1 + 0,4 (0/0,08) = 1$$

$$\begin{aligned} f_{qd} &= 1 + 2 \tan \phi (1 - \sin \phi)^2 (D/B) \\ &= 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0/0,08) = 1 \end{aligned}$$

$$f_{\gamma d}, f_{ci}, f_{qi}, f_{\gamma i}, f_{c\delta}, f_{q\delta}, f_{\gamma\delta}, f_{c\beta}, f_{q\beta}, f_{\gamma\beta} = 1$$

$$\begin{aligned} q_u &= c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} \cdot f_{c\delta} \cdot f_{c\beta} + q \times N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} \\ &\quad + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \cdot f_{\gamma\delta} \cdot f_{\gamma\beta} \\ &= 0,027 \cdot 86,28 \cdot 1.1.1.1.1 + 0 + 0,5 \times 16,48 \cdot 99,54 \cdot 1.1.1.1.1 \\ &= 67,94 \text{ kN/m}^2 \end{aligned}$$

- **B = 8, d/B = 0,5**

$$B = \text{lebarpondasi}(B = 8 \text{ cm} = 0,08 \text{ m})$$

$$d = \text{jarakkedalaman pondasi}(d = 4 \text{ cm})$$

$$N_q = e^{(\pi \tan \phi)} \tan^2(45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2(45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = 1,5 (N_q - 1) \tan \phi = 1,5 (N_q - 1) \tan \phi = 1,5 (76,67 - 1) \tan 41,25 = 99,54$$

$$f_{cs} = 1 + (B/L)(N_q / N_c) = 1 + (0,08/\sim)(76,67/86,28) = 1$$

$$f_{qs} = 1 + (B/L) \tan \phi = 1 + (0,08/\sim) \tan 41,25 = 1$$

$$f_{\gamma s} = 1 - 0,4 (B/L) = 1 - 0,4 (0,08/\sim) = 1$$

$$f_{cd} = 1 + 0,4 (D/B) = 1 + 0,4 (0,04/0,08) = 1,200$$

$$f_{qd} = 1 + 2 \tan \phi (1 - \sin \phi)^2 (D/B) \\ = 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0,04/0,08) = 1,102$$

$$f_{\gamma d} = 1$$

$$f_{ci}, f_{qi}, f_{\gamma i} = 1$$

$$q_u = c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} \cdot f_{c\delta} \cdot f_{c\beta} + q \times N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} \\ + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \cdot f_{\gamma\delta} \cdot f_{\gamma\beta} \\ = 0,027 \cdot 86,28 \cdot 1 \cdot 1,200 \cdot 1 \cdot 1 \cdot 1 + 16,48 \cdot 0,04 \cdot 76,67 \cdot 1 \cdot 1,102 \cdot 1 \cdot 1 \cdot 1 + 0,5 \times 16,48 \\ \cdot 0,08 \cdot 76,67 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \\ = 124,099 \text{ kN/m}^2$$

- **B = 8, d/B = 1**

$$B = \text{lebarpondasi}(B = 8 \text{ cm} = 0,08 \text{ m})$$

$$d = \text{jarakkedalaman pondasi}(d = 8 \text{ cm})$$

$$N_q = e^{(\pi \tan \phi)} \tan^2(45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2(45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = 1,5 (N_q - 1) \tan \phi = 1,5 (N_q - 1) \tan \phi = 1,5 (76,67 - 1) \tan 41,25 = 99,54$$

$$f_{cs} = 1 + (B/L)(N_q / N_c) = 1 + (0,006/\sim)(76,67/86,28) = 1$$

$$f_{qs} = 1 + (B/L) \tan \phi = 1 + (0,08/\sim) \tan 41,25 = 1$$

$$f_{\gamma s} = 1 - 0,4 (B/L) = 1 - 0,4 (0,08/\sim) = 1$$

$$f_{cd} = 1 + 0,4 (D/B) = 1 + 0,4 (0,08/0,08) = 1,400$$

$$f_{qd} = 1 + 2 \tan \phi (1 - \sin \phi)^2 (D/B) \\ = 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0,08/0,08) = 1,204$$

$$f_{\gamma d} = 1$$

$$f_{ci}, f_{qi}, f_{\gamma i} = 1$$

$$\begin{aligned} q_u &= c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} \cdot f_{c\delta} \cdot f_{c\beta} + q \times N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} \\ &\quad + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \cdot f_{\gamma\delta} \cdot f_{\gamma\beta} \\ &= 0,027 \cdot 86,28 \cdot 1,1 \cdot 1,400 \cdot 1,1 \cdot 1 + 16,48 \cdot 0,04 \cdot 76,67 \cdot 1,1 \cdot 204 \cdot 1,1 \cdot 1 + 0,5 \times 16,48 \\ &\quad \cdot 0,08 \cdot 76,67 \cdot 1,1 \cdot 1,1 \cdot 1,1 \\ &= 214,722 \text{ kN/m}^2 \end{aligned}$$

- **B = 10, d/B = 0**

$$B = \text{lebar pondasi (B = 10 cm = 0,10 m)}$$

$$d = \text{jarak kedalaman pondasi (d = 0 cm)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2(45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2(45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = 1,5 (N_q - 1) \tan \phi = 1,5 (N_q - 1) \tan \phi = 1,5 (76,67 - 1) \tan 41,25 = 99,54$$

$$f_{cs} = 1 + (B/L)(N_q / N_c) = 1 + (0,1/\sim)(76,67/86,28) = 1$$

$$f_{qs} = 1 + (B/L) \tan \phi = 1 + (0,1/\sim) \tan 41,25 = 1$$

$$f_{\gamma s} = 1 - 0,4 (B/L) = 1 - 0,4 (0,1/\sim) = 1$$

$$f_{cd} = 1 + 0,4 (D/B) = 1 + 0,4 (0/0,1) = 1$$

$$\begin{aligned} f_{qd} &= 1 + 2 \tan \phi (1 - \sin \phi)^2 (D/B) \\ &= 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0/0,1) = 1 \end{aligned}$$

$$f_{\gamma d} = 1$$

$$f_{ci}, f_{qi}, f_{\gamma i} = 1$$

$$\begin{aligned} q_u &= c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} \cdot f_{c\delta} \cdot f_{c\beta} + q \times N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} \\ &\quad + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \cdot f_{\gamma\delta} \cdot f_{\gamma\beta} \\ &= 0,027 \cdot 86,28 \cdot 1,1 \cdot 1,1 \cdot 1,1 \cdot 1 + 0 + 0,5 \times 16,48 \cdot 0,1 \cdot 76,67 \cdot 1,1 \cdot 1,1 \cdot 1,1 \\ &= 101,153 \text{ kN/m}^2 \end{aligned}$$

- **B = 6, d/B = 0,5**

$$B = \text{lebar pondasi (B = 10 cm = 0,1 m)}$$

$$d = \text{jarak kedalaman pondasi (d = 5 cm)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2(45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2(45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = 1,5 (N_q - 1) \tan \phi = 1,5 (N_q - 1) \tan \phi = 1,5 (76,67 - 1) \tan 41,25 = 99,54$$

$$f_{cs} = 1 + (B/L)(N_q / N_c) = 1 + (0,1/\sim)(76,67/86,28) = 1$$

$$f_{qs} = 1 + (B/L)\tan\phi = 1 + (0,1/\sim)\tan 41,25 = 1$$

$$f_{ys} = 1 - 0,4 (B/L) = 1 - 0,4 (0,1/\sim) = 1$$

$$f_{cd} = 1 + 0,4 (D/B) = 1 + 0,4 (0,5/0,1) = 1,20$$

$$f_{qd} = 1 + 2 \tan \phi (1 - \sin \phi)^2 (D/B) \\ = 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0,5/0,1) = 1,102$$

$$f_{\gamma d}, f_{ci}, f_{qi}, f_{\gamma i}, f_{c\delta}, f_{q\delta}, f_{\gamma\delta}, f_{c\beta}, f_{q\beta}, f_{\gamma\beta} = 1$$

$$q_u = c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} \cdot f_{c\delta} \cdot f_{c\beta} + q \cdot N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} \\ + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{ys} \cdot f_{\gamma d} \cdot f_{\gamma i} \cdot f_{\gamma\delta} \cdot f_{\gamma\beta} \\ = 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 + 16,48 \cdot 76,67 \cdot 1 \cdot 1,102 \cdot 1 + 0,5 \cdot 16,48 \cdot 10 \cdot \\ 99,54 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \\ = 154,425 \text{ kN/m}^2$$

• **B = 10, d/B = 1**

$$B = \text{lebar pondasi (B = 10 cm = 0,1 m)}$$

$$d = \text{jarak kedalaman pondasi (d = cm)}$$

$$N_q = e^{(\pi \tan\phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot\phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = 1,5 (N_q - 1) \tan\phi = 1,5 (N_q - 1) \tan\phi = 1,5 (76,67 - 1) \tan 41,25 = 99,54$$

$$f_{cs} = 1 + (B/L)(N_q / N_c) = 1 + (0,1/\sim)(76,67/86,28) = 1$$

$$f_{qs} = 1 + (B/L)\tan\phi = 1 + (0,1/\sim)\tan 41,25 = 1$$

$$f_{ys} = 1 - 0,4 (B/L) = 1 - 0,4 (0,1/\sim) = 1$$

$$f_{cd} = 1 + 0,4 (D/B) = 1 + 0,4 (0/0,1) = 1$$

$$f_{qd} = 1 + 2 \tan \phi (1 - \sin \phi)^2 (D/B) \\ = 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0/0,1) = 1$$

$$f_{\gamma d}, f_{ci}, f_{qi}, f_{\gamma i}, f_{c\delta}, f_{q\delta}, f_{\gamma\delta}, f_{c\beta}, f_{q\beta}, f_{\gamma\beta} = 1$$

$$q_u = c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} \cdot f_{c\delta} \cdot f_{c\beta} + q \cdot N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} \\ + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{ys} \cdot f_{\gamma d} \cdot f_{\gamma i} \cdot f_{\gamma\delta} \cdot f_{\gamma\beta} \\ = 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 + 0 + 0,5 \cdot 16,48 \cdot 10 \cdot 99,54 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \\ = 237,356 \text{ kN/m}^2$$

3. Metode Hansen Vesic

$$\gamma = 16,48 \text{ kN/m}^3$$

$$C = 0.027$$

$$\phi = \text{sudut geser dalam tanah} = 41.25^\circ$$

- **B = 6, d/B = 0**

$$B = \text{lebar pondasi} = 6 \text{ cm}$$

$$Nq = e^{\pi \tan \phi} \cdot \tan^2 \left(45 + \frac{\phi}{2} \right) = e^{\pi \tan 41,25} \cdot \tan^2 \left(45 + \frac{41,25}{2} \right) = 76,671$$

$$Nc = (Nq - 1) \cot \phi = (76,671 - 1) \cdot \cot 41,25 = 86,286$$

$$N\gamma = 2 (Nq + 1) \tan \phi = 2 (76,671 + 1) \cdot \tan 41,25 = 136,231$$

$$F_{sc} = 1 + (B/L)(Nq/Nc) = 1 + 0(76,671/86,286) = 1$$

$$F_{sq} = 1 + (B/L) \tan \phi = 1 + 0(\tan 41,25) = 1$$

$$F_{s\gamma} = 1 - 0,4(B/L) = 1 - 0,4(0) = 1$$

$$F_{dc} = 1 + 0,4(d/B) = 1 + 0,4(0) = 1$$

$$F_{dq} = 1 + 2 \tan \phi (1 - \sin \phi)^2 (d/B) = 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0) = 1$$

$$F_{d\gamma} = 1$$

$$F_{ic} = 1$$

$$F_{iq} = 1$$

$$F_{i\gamma} = 1$$

$$\begin{aligned} q_u &= (c \times Nc \times F_{sc} \times F_{dc} \times F_{ic}) + (d \times \gamma \times Nq \times F_{sq} \times F_{dq} \times F_{iq}) + (\gamma \times (B/2) \times \\ &\quad N\gamma \times F_{s\gamma} \times F_{d\gamma} \times F_{i\gamma}) \\ &= (0,027 \times 86,286 \times 1 \times 1 \times 1) + (0 \times 16,48 \times 76,671 \times 1 \times 1 \times 1) + (16,48 \times \\ &\quad (0,06/2) \times 136,231 \times 1 \times 1 \times 1) \\ &= 69,682 \text{ kN/m}^3 \end{aligned}$$

- **B = 6, d/B = 0,5**

$$B = \text{lebar pondasi} = 6 \text{ cm}$$

$$Nq = e^{\pi \tan \phi} \cdot \tan^2 \left(45 + \frac{\phi}{2} \right) = e^{\pi \tan 41,25} \cdot \tan^2 \left(45 + \frac{41,25}{2} \right) = 76,671$$

$$Nc = (Nq - 1) \cot \phi = (76,671 - 1) \cdot \cot 41,25 = 86,286$$

$$N\gamma = 2 (Nq + 1) \tan \phi = 2 (76,671 + 1) \cdot \tan 41,25 = 136,231$$

$$Fs_c = 1 + (B/L)(Nq/Nc) = 1 + 0(76,671/86,286) = 1$$

$$Fs_q = 1 + (B/L) \tan \phi = 1 + 0(\tan 41,25) = 1$$

$$Fs_\gamma = 1 - 0,4(B/L) = 1 - 0,4(0) = 1$$

$$Fd_c = 1 + 0,4(d/B) = 1 + 0,4(0,03/0,06) = 1,200$$

$$Fd_q = 1 + 2 \tan \phi (1 - \sin \phi)^2 (d/B) = 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0,03/0,06) = 1,102$$

$$Fd_\gamma = 1$$

$$Fi_c = 1$$

$$Fi_q = 1$$

$$Fi_\gamma = 1$$

$$\begin{aligned} qu &= (c \times Nc \times Fs_c \times Fd_c \times Fi_c) + (d \times \gamma \times Nq \times Fs_q \times Fd_q \times Fi_q) + (\gamma \times (B/2) \times \\ &\quad N\gamma \times Fs_\gamma \times Fd_\gamma \times Fi_\gamma) \\ &= (0,027 \times 86,286 \times 1 \times 1,200 \times 1) + (0,03 \times 16,48 \times 76,671 \times 1 \times 1,102 \times 1) \\ &\quad + (16,48 \times (0,06/2) \times 136,231 \times 1 \times 1 \times 1) \\ &= 111,912 \text{ kN/m}^3 \end{aligned}$$

- **B = 6, d/B = 1**

$$B = \text{lebar pondasi} = 6 \text{ cm}$$

$$Nq = e^{\pi \tan \phi} \cdot \tan^2 \left(45 + \frac{\phi}{2} \right) = e^{\pi \tan 41,25} \cdot \tan^2 \left(45 + \frac{41,25}{2} \right) = 76,671$$

$$Nc = (Nq - 1) \cot \phi = (76,671 - 1) \cdot \cot 41,25 = 86,286$$

$$N\gamma = 2 (Nq + 1) \tan \phi = 2 (76,671 + 1) \cdot \tan 41,25 = 136,231$$

$$F_{sc} = 1 + (B/L)(Nq/Nc) = 1 + 0(76,671/86,286) = 1$$

$$F_{sq} = 1 + (B/L) \tan \phi = 1 + 0(\tan 41,25) = 1$$

$$F_{s\gamma} = 1 - 0,4(B/L) = 1 - 0,4(0) = 1$$

$$F_{dc} = 1 + 0,4(d/B) = 1 + 0,4(0,06/0,06) = 1,400$$

$$F_{dq} = 1 + 2 \tan \phi (1 - \sin \phi)^2 (d/B) = 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0,06/0,06) = 1,204$$

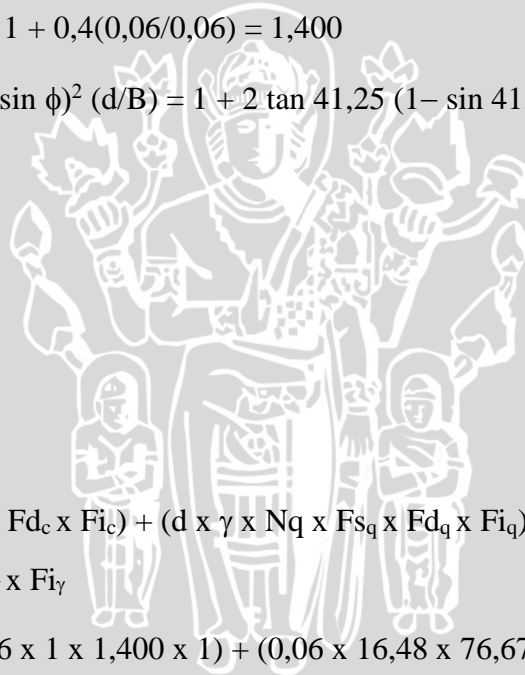
$$F_{d\gamma} = 1$$

$$F_{ic} = 1$$

$$F_{iq} = 1$$

$$F_{i\gamma} = 1$$

$$\begin{aligned} qu &= (c \times Nc \times F_{sc} \times F_{dc} \times F_{ic}) + (d \times \gamma \times Nq \times F_{sq} \times F_{dq} \times F_{iq}) + (\gamma \times (B/2) \times \\ &\quad N\gamma \times F_{s\gamma} \times F_{d\gamma} \times F_{i\gamma}) \\ &= (0,027 \times 86,286 \times 1 \times 1,400 \times 1) + (0,06 \times 16,48 \times 76,671 \times 1 \times 1,204 \times 1) \\ &\quad + (16,48 \times (0,06/2) \times 136,231 \times 1 \times 1 \times 1) \\ &= 161,857 \text{ kN/m}^3 \end{aligned}$$



- **B = 8, d/B = 0**

$$B = \text{lebar pondasi} = 8 \text{ cm}$$

$$Nq = e^{\pi \tan \phi} \cdot \tan^2 \left(45 + \frac{\phi}{2} \right) = e^{\pi \tan 41,25} \cdot \tan^2 \left(45 + \frac{41,25}{2} \right) = 76,671$$

$$Nc = (Nq - 1) \cot \phi = (76,671 - 1) \cdot \cot 41,25 = 86,286$$

$$N\gamma = 2 (Nq + 1) \tan \phi = 2 (76,671 + 1) \cdot \tan 41,25 = 136,231$$

$$Fs_c = 1 + (B/L)(Nq/Nc) = 1 + 0(76,671/86,286) = 1$$

$$Fs_q = 1 + (B/L) \tan \phi = 1 + 0(\tan 41,25) = 1$$

$$Fs_\gamma = 1 - 0,4(B/L) = 1 - 0,4(0) = 1$$

$$Fd_c = 1 + 0,4(d/B) = 1 + 0,4(0) = 1$$

$$Fd_q = 1 + 2 \tan \phi (1 - \sin \phi)^2 (d/B) = 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0)$$

$$= 1$$

$$Fd_\gamma = 1$$

$$Fi_c = 1$$

$$Fi_q = 1$$

$$Fi_\gamma = 1$$

$$qu = (c \times Nc \times Fs_c \times Fd_c \times Fi_c) + (d \times \gamma \times Nq \times Fs_q \times Fd_q \times Fi_q) + (\gamma \times (B/2) \times N\gamma \times Fs_\gamma \times Fd_\gamma \times Fi_\gamma)$$

$$= (0,027 \times 86,286 \times 1 \times 1 \times 1) + (0 \times 16,48 \times 76,671 \times 1 \times 1 \times 1) + (16,48 \times (0,08/2) \times 136,231 \times 1 \times 1 \times 1)$$

$$= 92,133 \text{ kN/m}^3$$

- **B = 8; d/B = 0,5**

$$B = \text{lebar pondasi (B = 8 cm = 0,08 m)}$$

$$d = \text{jarak kedalaman pondasi (d = 4 cm = 0,04 m)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = 2 (N_q + 1) \tan \phi = 2 (N_q + 1) \tan \phi = 2 (76,67 + 1) \tan 41,25 = 136,231$$

$$f_{cs} = 1 + (B/L)(N_q / N_c) = 1 + (0,06/)(76,67/86,28) = 1$$

$$f_{qs} = 1 + (B/L)\tan \phi = 1 + (0,08/\sim)\tan 41,25 = 1$$

$$f_{\gamma s} = 1 - 0,4 (B/L) = 1 - 0,4 (0,08/\sim) = 1$$

$$f_{cd} = 1 + 0,4 (D/B) = 1 + 0,4 (0,5/0,08) = 1,2$$

$$f_{qd} = 1 + 2 \tan \phi (1 - \sin \phi)^2 (D/B)$$

$$= 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0,5/0,08) = 1,102$$

$$f_{\gamma d}, f_{ci}, f_{qi}, f_{\gamma i}, f_{c\delta}, f_{q\delta}, f_{\gamma\delta}, f_{c\beta}, f_{q\beta}, f_{\gamma\beta} = 1$$

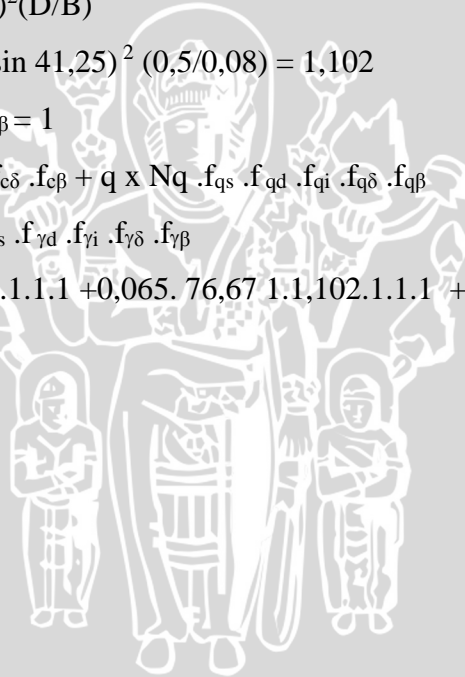
$$q_u = c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} \cdot f_{c\delta} \cdot f_{c\beta} + q \times N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta}$$

$$+ 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \cdot f_{\gamma\delta} \cdot f_{\gamma\beta}$$

$$= 0,027 \cdot 86,28 \cdot 1 \cdot 1,2 \cdot 1 \cdot 1 \cdot 1 + 0,065 \cdot 76,67 \cdot 1 \cdot 1,102 \cdot 1 \cdot 1 \cdot 1 + 0,5 \times 16,48 \cdot 8 \cdot$$

$$136,231 \cdot 1 \cdot 1 \cdot 1 \cdot 1$$

$$= 148,284 \text{ kN/m}^2$$



- **B = 8; d/B = 1**

$$B = \text{lebar pondasi (B = 8 cm = 0,08 m)}$$

$$d = \text{jarak kedalaman pondasi (d = 8 cm = 0,08 m)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = 2 (N_q + 1) \tan \phi = 2 (N_q + 1) \tan \phi = 2 (76,67 + 1) \tan 41,25 = 136,231$$

$$f_{cs} = 1 + (B/L)(N_q / N_c) = 1 + (0,06/)(76,67/86,28) = 1$$

$$f_{qs} = 1 + (B/L)\tan \phi = 1 + (0,08/\sim)\tan 41,25 = 1$$

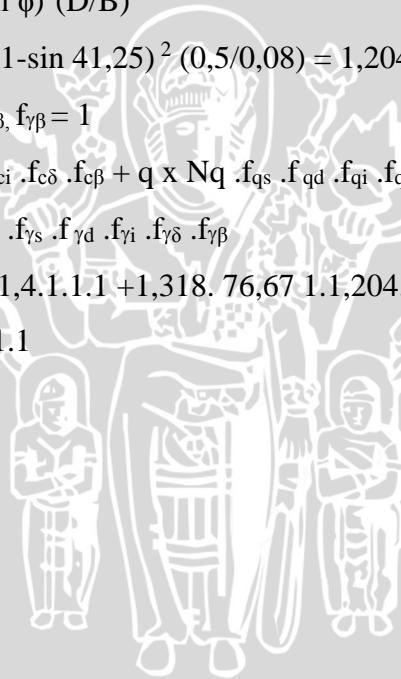
$$f_{\gamma s} = 1 - 0,4 (B/L) = 1 - 0,4 (0,08/\sim) = 1$$

$$f_{cd} = 1 + 0,4 (D/B) = 1 + 0,4 (0,5/0,08) = 1,4$$

$$f_{qd} = 1 + 2 \tan \phi (1 - \sin \phi)^2 (D/B) \\ = 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0,5/0,08) = 1,204$$

$$f_{\gamma d}, f_{ci}, f_{qi}, f_{\gamma i}, f_{c\delta}, f_{q\delta}, f_{\gamma\delta}, f_{c\beta}, f_{q\beta}, f_{\gamma\beta} = 1$$

$$q_u = c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} \cdot f_{c\delta} \cdot f_{c\beta} + q \times N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} \\ + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \cdot f_{\gamma\delta} \cdot f_{\gamma\beta} \\ = 0,027 \cdot 86,28 \cdot 1 \cdot 1,4 \cdot 1 \cdot 1 \cdot 1 + 1,318 \cdot 76,67 \cdot 1 \cdot 1,204 \cdot 1 \cdot 1 \cdot 1 + 0,5 \times 16,48 \cdot 8 \cdot \\ 136,231 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \\ = 214,722 \text{ kN/m}^2$$



- **B = 10, d/B = 0**

$$B = \text{lebar pondasi (} B = 10 \text{ cm} = 0,1 \text{ m)}$$

$$d = \text{jarak kedalaman pondasi (} d = 0 \text{ cm} = 0,00 \text{ m)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = 2 (N_q + 1) \tan \phi = 2 (N_q + 1) \tan \phi = 2 (76,67 + 1) \tan 41,25 = 136,231$$

$$f_{cs} = 1 + (B/L)(N_q / N_c) = 1 + (0,06)/(76,67/86,28) = 1$$

$$f_{qs} = 1 + (B/L) \tan \phi = 1 + (0,08/\sim) \tan 41,25 = 1$$

$$f_{\gamma s} = 1 - 0,4 (B/L) = 1 - 0,4 (0,08/\sim) = 1$$

$$f_{cd} = 1 + 0,4 (D/B) = 1 + 0,4 (0,5/0,08) = 1$$

$$f_{qd} = 1 + 2 \tan \phi (1 - \sin \phi)^2 (D/B)$$

$$= 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0,5/0,08) = 1$$

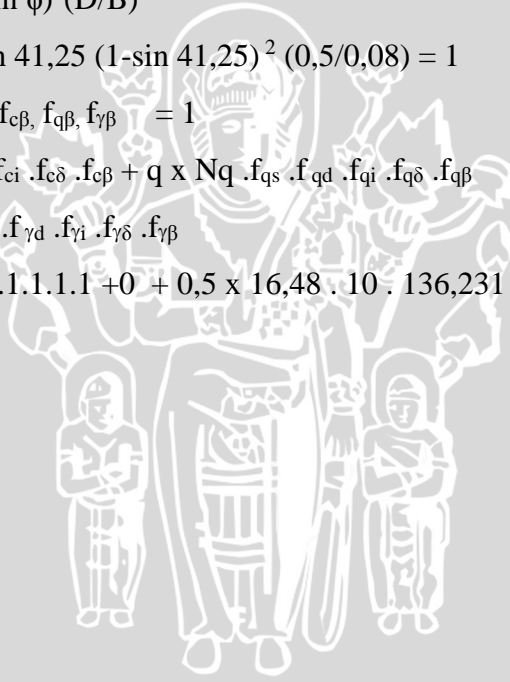
$$f_{\gamma d}, f_{ci}, f_{qi}, f_{\gamma i}, f_{c\delta}, f_{q\delta}, f_{\gamma\delta}, f_{c\beta}, f_{q\beta}, f_{\gamma\beta} = 1$$

$$q_u = c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} \cdot f_{c\delta} \cdot f_{c\beta} + q \times N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta}$$

$$+ 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \cdot f_{\gamma i} \cdot f_{\gamma\delta} \cdot f_{\gamma\beta}$$

$$= 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 + 0 + 0,5 \times 16,48 \cdot 10 \cdot 136,231 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1$$

$$= 114,584 \text{ kN/m}^2$$



- **B = 10, d/B = 0,5**

$$B = \text{lebar pondasi} = 10 \text{ cm}$$

$$Nq = e^{\pi \tan \phi} \cdot \tan^2 \left(45 + \frac{\phi}{2} \right) = e^{\pi \tan 41,25} \cdot \tan^2 \left(45 + \frac{41,25}{2} \right) = 76,671$$

$$Nc = (Nq - 1) \cot \phi = (76,671 - 1) \cdot \cot 41,25 = 86,286$$

$$N\gamma = 2 (Nq + 1) \tan \phi = 2 (76,671 + 1) \cdot \tan 41,25 = 136,231$$

$$F_{Sc} = 1 + (B/L)(Nq/Nc) = 1 + 0 (76,671/86,286) = 1$$

$$F_{Sq} = 1 + (B/L) \tan \phi = 1 + 0 (\tan 41,25) = 1$$

$$F_{S\gamma} = 1 - 0,4(B/L) = 1 - 0,4(0) = 1$$

$$F_{dc} = 1 + 0,4(d/B) = 1 + 0,4(0,05/0,1) = 1,20$$

$$F_{dq} = 1 + 2 \tan \phi (1 - \sin \phi)^2 (d/B) = 1 + 2 \tan 41,25 (1 - \sin 41,25)^2 (0,05/0,1) = 1,102$$

$$F_{d\gamma} = 1$$

$$F_{ic} = 1$$

$$F_{iq} = 1$$

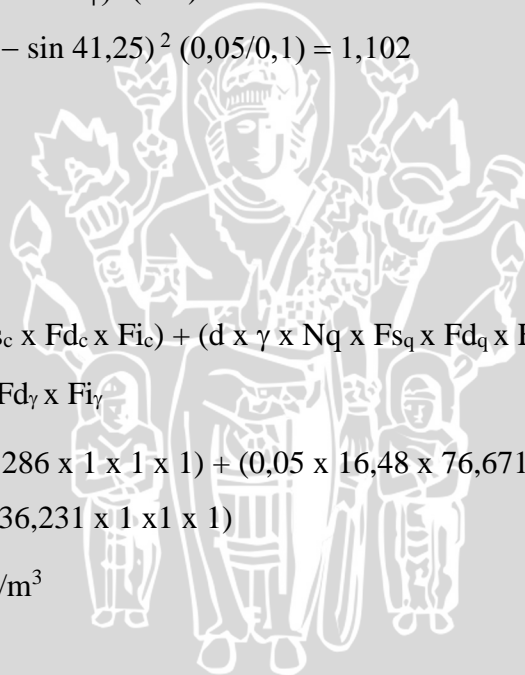
$$F_{i\gamma} = 1$$

$$qu = (c \times Nc \times F_{Sc} \times F_{dc} \times F_{ic}) + (d \times \gamma \times Nq \times F_{Sq} \times F_{dq} \times F_{iq}) + (\gamma \times (B/2) \times$$

$$N\gamma \times F_{S\gamma} \times F_{d\gamma} \times F_{i\gamma})$$

$$= (0,027 \times 86,286 \times 1 \times 1 \times 1) + (0,05 \times 16,48 \times 76,671 \times 1 \times 1 \times 1) + (16,48 \times (0,1/2) \times 136,231 \times 1 \times 1 \times 1)$$

$$= 184,656 \text{ kN/m}^3$$



- **B = 10 cm, d/B = 1**

$$B = \text{lebar pondasi (B = 10 cm = 0,1 m)}$$

$$d = \text{jarak kedalaman pondasi (d = 10 cm = 0,1 m)}$$

$$N_q = e^{(\pi \tan \phi)} \tan^2 (45 + \phi/2) = e^{(\pi \tan 41,25)} \tan^2 (45 + 41,25/2) = 76,67$$

$$N_c = (N_q - 1) \cot \phi = (76,67 - 1) \cot 41,25 = 86,28$$

$$N_\gamma = (N_q - 1) \tan (1,4 \phi) = (76,67 - 1) \tan (1,4 \cdot 41,25) = 119,93$$

$$K_p = \tan^2 (45 + \phi/2) = \tan^2 (45 + 41,25/2) = 4,87$$

$$f_{cs} = 1 + 0,2 K_p B/L = 1 + 0,2 \cdot 4,87 \cdot 0,1/\sim = 1$$

$$f_{qs} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,1/\sim = 1$$

$$f_{\gamma s} = 1 + 0,1 K_p B/L = 1 + 0,1 \cdot 4,87 \cdot 0,1/\sim = 1$$

$$f_{cd} = 1 + 0,2 \sqrt{K_p} (D/B) = 1 + 0,2 \sqrt{K_p} (0,1/0,1) = 1,44$$

$$f_{qd} = 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{K_p} (0,1/0,1) = 1,22$$

$$f_{\gamma d} = 1 + 0,1 \sqrt{K_p} (D/B) = 1 + 0,1 \sqrt{K_p} (0,1/0,1) = 1,22$$

$$f_{ci}, f_{qi}, f_{\gamma i} = 1$$

$$\begin{aligned} q_u &= c \cdot N_c \cdot f_{cs} \cdot f_{cd} \cdot f_{ci} + q \cdot N_q \cdot f_{qs} \cdot f_{qd} \cdot f_{qi} \cdot f_{q\delta} \cdot f_{q\beta} + 0,5 \cdot \gamma \cdot B \cdot N_\gamma \cdot f_{\gamma s} \cdot f_{\gamma d} \\ &\cdot f_{\gamma i} \\ &= 0,027 \cdot 86,28 \cdot 1 \cdot 1 \cdot 1 + 16,48 \cdot 0,03 \cdot 76,67 \cdot 1,44 \cdot 1,22 \cdot 1,22 + 0,5 \cdot 0,1 \\ &\quad \cdot 119,93 \cdot 1 \cdot 1 \cdot 1 \\ &= 278,233 \text{ kN/m}^3 \end{aligned}$$