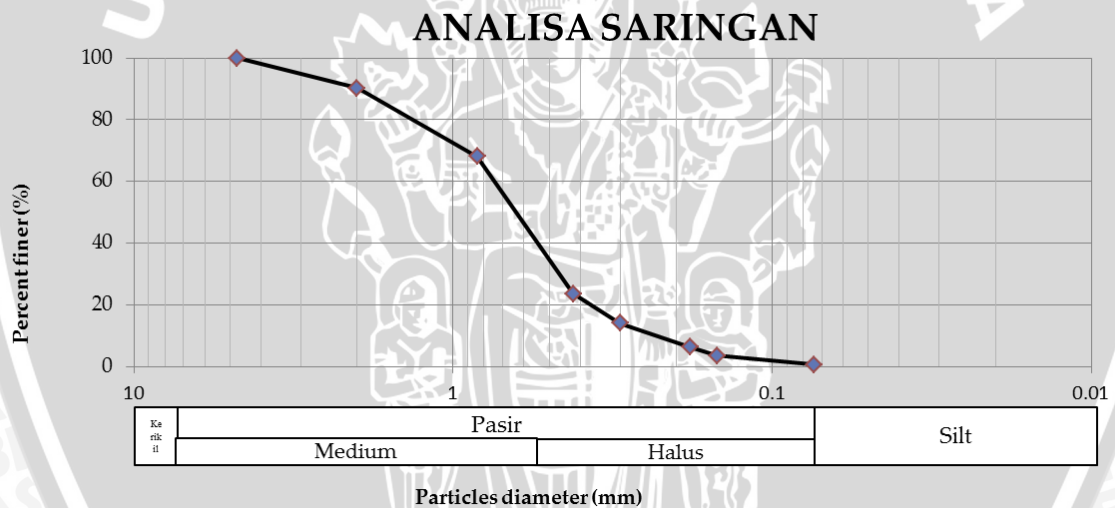


## Lampiran 1

### Analisis Gradasi Butiran Tanah

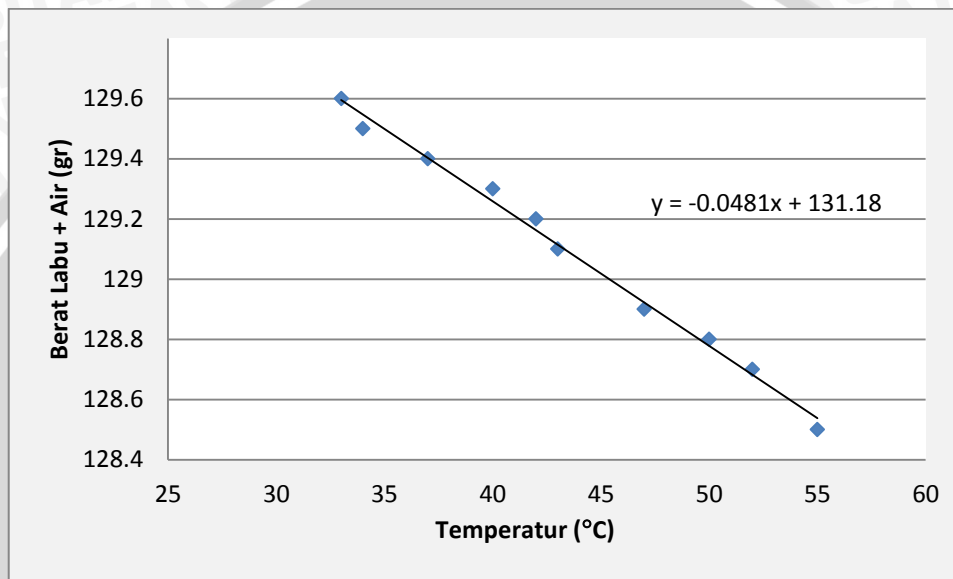
Diameter ayakan	Berat tertahan (gr)	Berat kumulatif (gr)	Persen tertahan (%)	Persen lolos (%)
4,75 mm (no. 4)	0.00	0	0.000	100.000
2,00 mm (no. 10)	48.8	48.8	9.760	90.240
0,84 mm (no. 20)	111	159.8	31.960	68.040
0,42 mm (no. 40)	222.4	382.2	76.440	23.560
0,30 mm (no.50)	47.5	429.7	85.940	14.060
0,18 mm (no. 80)	39.3	469	93.800	6.200
0,15 mm (no. 100)	13.7	482.7	96.540	3.460
0,07 mm (no. 200)	14.5	497.2	99.440	0.560
PAN	2.8	500	100.000	0.000



## Lampiran 2

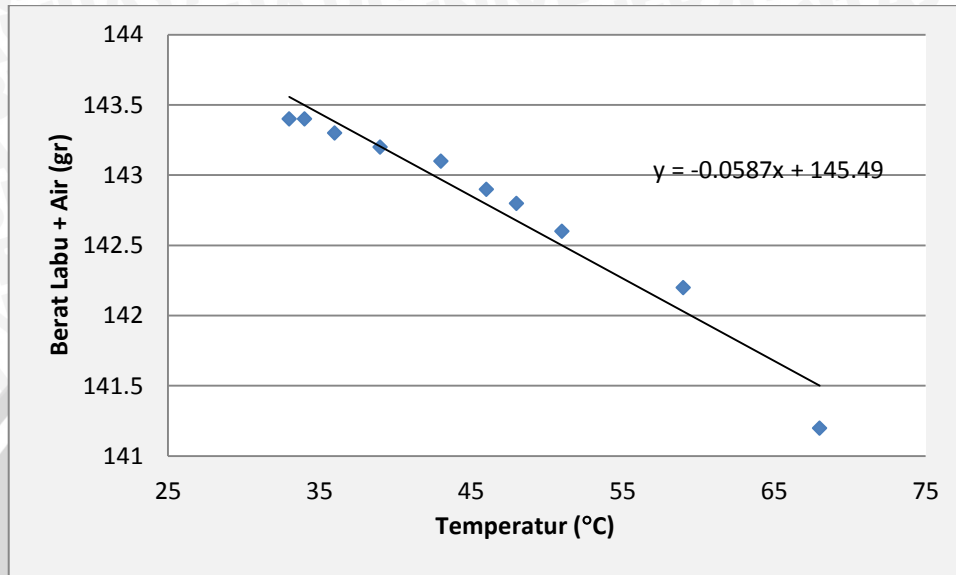
### Hasil Analisis *Specific Gravity* Tanah

Labu ukur	A									
No.	1	2	3	4	5	6	7	8	9	10
Berat Labu + Air	128.5	128.7	128.8	128.9	129.1	129.2	129.3	129.4	129.5	129.6
Temperatur	55	52	50	47	43	42	40	37	34	33



Labu Ukur	A					
Berat labu ukur	gr	28.2				
Berat tanah kering (Ws)	gr	20				
Berat piknometer + air + tanah (W1)	gr	140.5	141.5	141.8	142	142
Temperatur	°C	68	49	43	39	34
Berat piknometer + air (W2)	gr	127.836	128.748	129.036	129.228	129.468
Spacific Gravity air (Gt)	-	0.9789	0.9885	0.9911	0.9926	0.9944
$G_s = (W_s * G_t) / (W_s - (W_1 - W_2))$	-	2.669	2.728	2.739	2.747	2.663
Gs rata-rata	-	2.709				

Labu ukur	B									
No.	1	2	3	4	5	6	7	8	9	10
Berat Labu + Air	141.2	142.2	142.6	142.8	142.9	143.1	143.2	143.3	143.4	143.4
Temperatur	68	59	51	48	46	43	39	36	34	33



Labu Ukur	B					
Berat labu ukur	gr	28.2				
Berat tanah kering (Ws)	gr	20				
Berat piknometer + air + tanah (W1)	gr	154.5	155.1	155.4	155.8	156.2
Temperatur	°C	66	47	41	38	34
Berat piknometer + air (W2)	gr	141.572	142.674	143.022	143.196	143.428
Spsific Gravity air (Gt)	-	0.98	0.989	0.9902	0.993	0.9944
Gs = (Ws*Gt)/(Ws-(W1-W2))	-	2.771	2.612	2.598	2.685	2.752
Gs rata-rata	-	2.684				

### Lampiran 3

#### Hasil Analisis Uji Geser Langsung (*Direct Shear*)

##### Lapisan 3

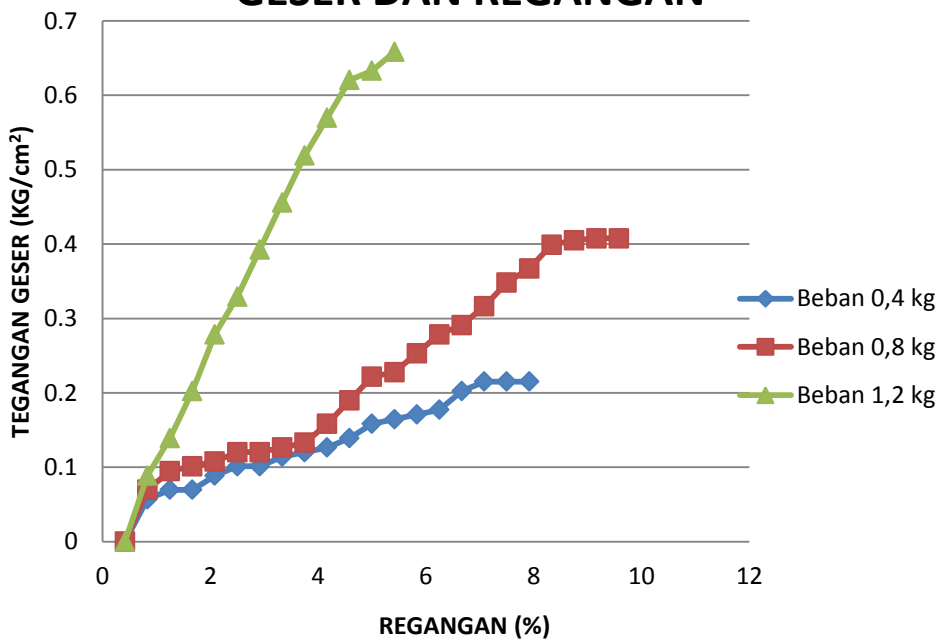
Kalibrasi Alat = 0,358  
Tinggi Sampel = 2 cm

Diameter Sampel = 6 cm  
Luas Sampel = 28,274cm<sup>2</sup>

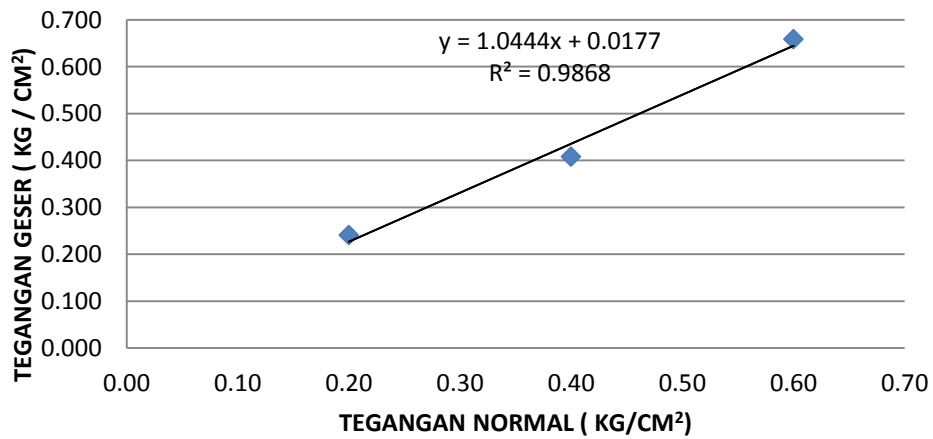
NORMAL FORCE	P <sub>1</sub> = 0.4 kg				P <sub>2</sub> = 0.8 kg				P <sub>3</sub> = 1.2 kg			
NORMAL STRESS	σ <sub>1</sub> = 0.20 kg/cm <sup>2</sup>				σ <sub>2</sub> = 0.40 kg/cm <sup>2</sup>				σ <sub>3</sub> = 0.60 kg/cm <sup>2</sup>			
HORIZONTAL DIAL READING	VERTICAL DIAL READING	SHEAR FORCE	SHEAR STRESS	ΔL LO	VERTICAL DIAL READING	SHEAR FORCE	SHEAR STRESS	ΔL LO	VERTICAL DIAL READING	SHEAR FORCE	SHEAR STRESS	ΔL LO
0	0	0	0	0	0	0	0	0	0	0	0	0
25	4.5	1.6110	0.0570	0.41667	5.5	1.9690	0.0696	0.41667	7.0	2.5060	0.0886	0.41667
50	5.5	1.9690	0.0696	0.83333	7.5	2.6850	0.0950	0.83333	11.0	3.9380	0.1393	0.83333
75	5.5	1.9690	0.0696	1.25	8.0	2.8640	0.1013	1.25	16.0	5.7280	0.2026	1.25
100	7.0	2.5060	0.0886	1.66667	8.5	3.0430	0.1076	1.66667	22.0	7.8760	0.2786	1.66667
125	8.0	2.8640	0.1013	2.08333	9.5	3.4010	0.1203	2.08333	26.0	9.3080	0.3292	2.08333
150	8.0	2.8640	0.1013	2.5	9.5	3.4010	0.1203	2.5	31.0	11.0980	0.3925	2.5
175	9.0	3.2220	0.1140	2.91667	10.0	3.5800	0.1266	2.91667	36.0	12.8880	0.4558	2.91667
200	9.5	3.4010	0.1203	3.33333	10.5	3.7590	0.1329	3.33333	41.0	14.6780	0.5191	3.33333
225	10.0	3.5800	0.1266	3.75	12.5	4.4750	0.1583	3.75	45.0	16.1100	0.5698	3.75
250	11.0	3.9380	0.1393	4.16667	15.0	5.3700	0.1899	4.16667	49.0	17.5420	0.6204	4.16667
275	12.5	4.4750	0.1583	4.58333	17.5	6.2650	0.2216	4.58333	50.0	17.9000	0.6331	4.58333
300	13.0	4.6540	0.1646	5	18.0	6.4440	0.2279	5	52.0	18.6160	0.6584	5
325	13.5	4.8330	0.1709	5.41667	20.0	7.1600	0.2532	5.41667	52.0	<b>18.6160</b>	<b>0.6584</b>	5.41667
350	14.0	5.0120	0.1773	5.83333	22.0	7.8760	0.2786	5.83333				
375	16.0	5.7280	0.2026	6.25	23.0	8.2340	0.2912	6.25				
400	17.0	6.0860	0.21525	6.66667	25.0	8.9500	0.3165	6.66667				
425	17.0	6.0860	0.21525	7.08333	27.5	9.8450	0.3482	7.08333				
450	17.0	6.0860	0.21525	7.5	29	10.382	0.36719	7.5				
475	19.0	6.8020	0.24057	7.91667	31.5	11.277	0.39885	7.91667				
500	19.5	6.9810	0.24691	8.33333	32	11.466	0.40518	8.33333				
525	20	7.1600	0.25324	8.75	32.2	11.5276	0.40771	8.75				
550	22	7.8760	0.27856	9.16667	32.2	11.5276	0.40771	9.16667				
575	22	7.8760	0.27856	9.58333	32.2	<b>11.5276</b>	<b>0.40771</b>	9.58333				
600	22	<b>7.8760</b>	<b>0.27856</b>	10								
625												
650												
675												
700												



### GRAFIK HUBUNGAN TEGANGAN GESER DAN REGANGAN



### TEGANGAN GESER DAN NORMAL



$C = 0.0177 \text{ kg/cm}^2$   
 $\phi = 34.101^\circ$

### Lapisan 5

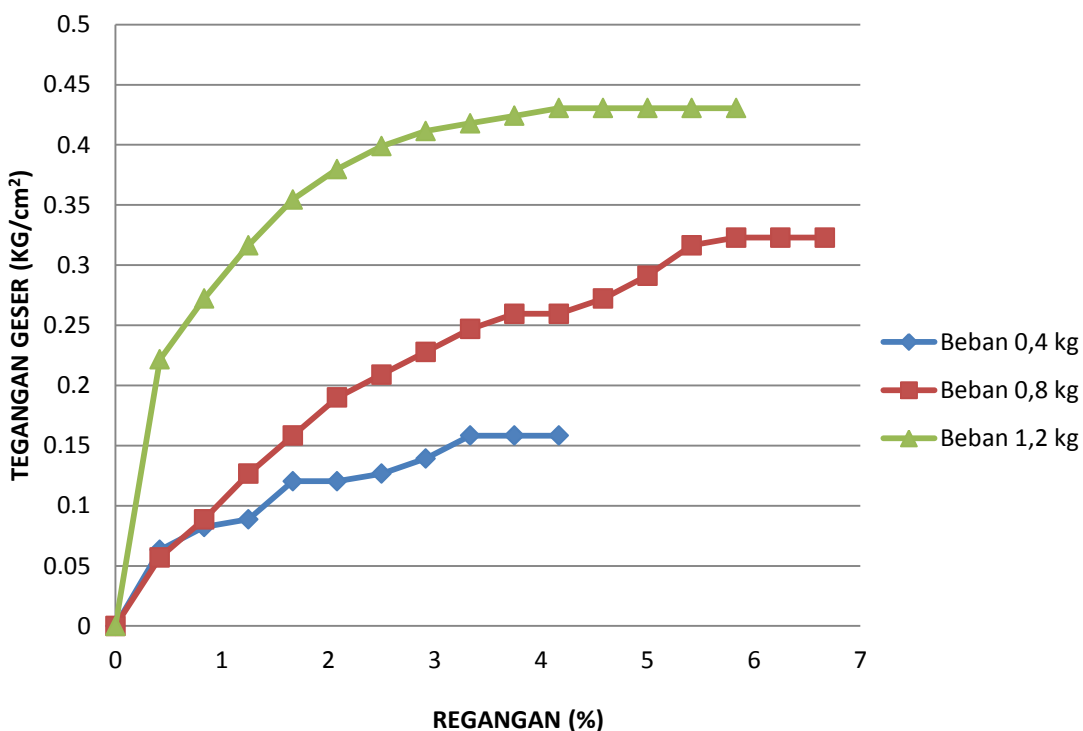
Kalibrasi Alat = 0,358  
 Tinggi Sampel = 2 cm

Diameter Sampel = 6 cm  
 Luas Sampel = 28,274cm<sup>2</sup>

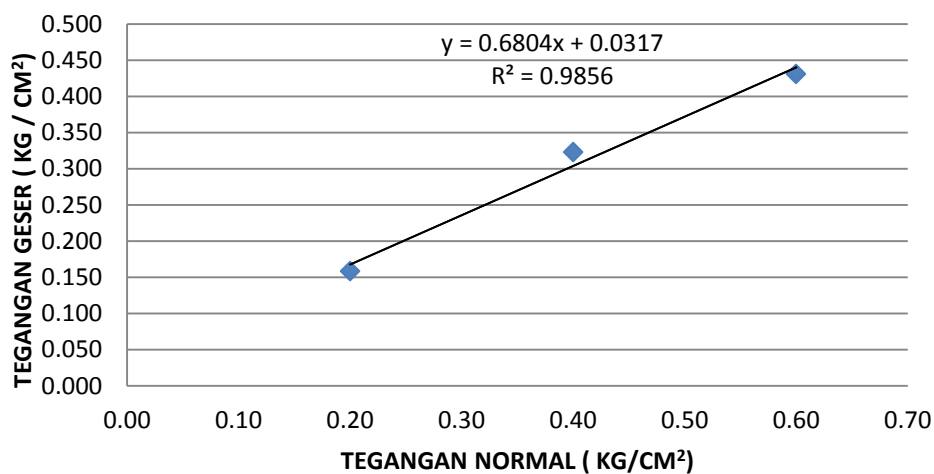
NORMAL FORCE NORMAL STRESS	P <sub>1</sub> = 0.4 kg σ <sub>1</sub> = 0.20 kg/cm <sup>2</sup>				P <sub>2</sub> = 0.8 kg σ <sub>2</sub> = 0.40 kg/cm <sup>2</sup>				P <sub>3</sub> = 1.2 kg σ <sub>3</sub> = 0.60 kg/cm <sup>2</sup>				
	HORIZONTAL DIAL READING	VERTICAL DIAL READING	SHEAR FORCE	SHEAR STRESS	ΔL L <sub>0</sub>	VERTICAL DIAL READING	SHEAR FORCE	SHEAR STRESS	ΔL L <sub>0</sub>	VERTICAL DIAL READING	SHEAR FORCE	SHEAR STRESS	ΔL L <sub>0</sub>
0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	5.0	1.7900	0.0633	0.41667	4.5	1.6110	0.0570	0.41667	17.5	6.2650	0.2216	0.41667	
50	6.5	2.3270	0.0823	0.83333	7.0	2.5060	0.0886	0.83333	21.5	7.6970	0.2722	0.83333	
75	7.0	2.5060	0.0886	1.25	10.0	3.5800	0.1266	1.25	25.0	8.9500	0.3165	1.25	
100	9.5	3.4010	0.1203	1.66667	12.5	4.4750	0.1583	1.66667	28.0	10.0240	0.3545	1.66667	
125	9.5	3.4010	0.1203	2.08333	15.0	5.3700	0.1899	2.08333	30.0	10.7400	0.3799	2.08333	
150	10.0	3.5800	0.1266	2.5	16.5	5.9070	0.2089	2.5	31.5	11.2770	0.3988	2.5	
175	11.0	3.9380	0.1393	2.91667	18.0	6.4440	0.2279	2.91667	32.5	11.6350	0.4115	2.91667	
200	12.5	4.4750	0.1583	3.33333	19.5	6.9810	0.2469	3.33333	33.0	11.8140	0.4178	3.33333	
225	12.5	4.4750	0.1583	3.75	20.5	7.3390	0.2596	3.75	33.5	11.9930	0.4242	3.75	
250	12.5	<b>4.4750</b>	<b>0.1583</b>	4.16667	20.5	7.3390	0.2596	4.16667	34.0	12.1720	0.4305	4.16667	
275					21.5	7.6970	0.2722	4.58333	34.0	12.1720	0.4305	4.58333	
300					23.0	8.2340	0.2912	5	34.0	12.1720	0.4305	5	
325					25.0	8.9500	0.3165	5.41667	34.0	12.1720	0.4305	5.41667	
350					25.5	9.1290	0.3229	5.83333	34.0	<b>12.1720</b>	<b>0.4305</b>	5.83333	
375					25.5	9.1290	0.3229	6.25					
400					25.5	<b>9.1290</b>	<b>0.3229</b>	6.66667					
425													
450													



### GRAFIK HUBUNGAN TEGANGAN GESER DAN REGANGAN



### TEGANGAN GESER DAN NORMAL



C = 0,0317 kg/cm<sup>2</sup>  
 Ø = 34,548 °



## Lapisan 7

Kalibrasi Alat = 0,358  
 Tinggi Sampel = 2 cm

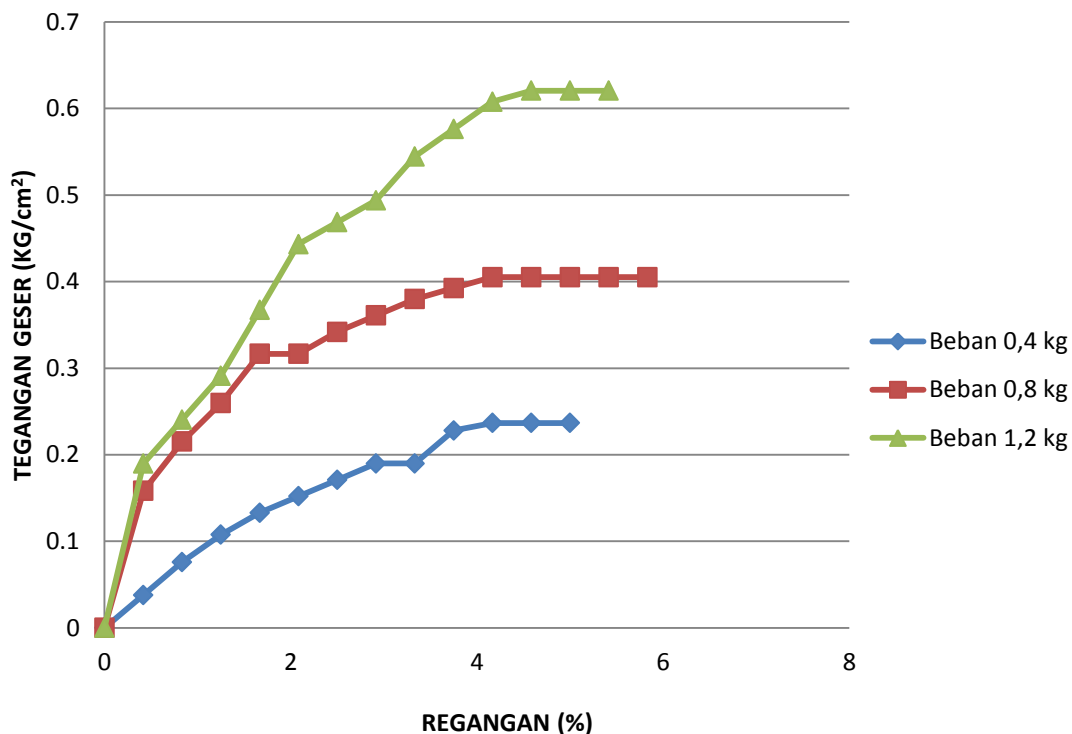
Diameter Sampel = 6 cm  
 Luas Sampel = 28,274cm<sup>2</sup>

NORMAL FORCE NORMAL STRESS	P <sub>1</sub> = 0.4 kg σ <sub>1</sub> = 0.20 kg/cm <sup>2</sup>				P <sub>2</sub> = 0.8 kg σ <sub>2</sub> = 0.40 kg/cm <sup>2</sup>				P <sub>3</sub> = 1.2 kg σ <sub>3</sub> = 0.60 kg/cm <sup>2</sup>				
	HORIZONTAL DIAL READING	VERTICAL DIAL READING	SHEAR FORCE	SHEAR STRESS	ΔL LO	VERTICAL DIAL READING	SHEAR FORCE	SHEAR STRESS	ΔL LO	VERTICAL DIAL READING	SHEAR FORCE	SHEAR STRESS	ΔL LO
0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	3.0	1.0740	0.0380	0.41667	12.5	4.4750	0.1583	0.41667	15.0	5.3700	0.1899	0.41667	
50	6.0	2.1480	0.0760	0.83333	17.0	6.0860	0.2153	0.83333	19.0	6.8020	0.2406	0.83333	
75	8.5	3.0430	0.1076	1.25	20.5	7.3390	0.2596	1.25	23.0	8.2340	0.2912	1.25	
100	10.5	3.7590	0.1329	1.66667	25.0	8.9500	0.3165	1.66667	29.0	10.3820	0.3672	1.66667	
125	12.0	4.2960	0.1519	2.08333	25.0	8.9500	0.3165	2.08333	35.0	12.5300	0.4432	2.08333	
150	13.5	4.8330	0.1709	2.5	27.0	9.6660	0.3419	2.5	37.0	13.2460	0.4685	2.5	
175	15.0	5.3700	0.1899	2.91667	28.5	10.2030	0.3609	2.91667	39.0	13.9620	0.4938	2.91667	
200	15.0	5.3700	0.1899	3.33333	30.0	10.7400	0.3799	3.33333	43.0	15.3940	0.5445	3.33333	
225	18.0	6.4440	0.2279	3.75	31.0	11.0980	0.3925	3.75	45.5	16.2890	0.5761	3.75	
250	18.7	6.6946	0.2368	4.16667	32.0	11.4560	0.4052	4.16667	48.0	17.1840	0.6078	4.16667	
275	18.7	6.6946	0.2368	4.58333	32.0	11.4560	0.4052	4.58333	49.0	17.5420	0.6204	4.58333	
300	18.7	<b>6.6946</b>	<b>0.2368</b>	5	32.0	11.4560	0.4052	5	49.0	17.5420	0.6204	5	
325					32.0	11.4560	0.4052	5.41667	49.0	<b>17.5420</b>	<b>0.6204</b>	5.41667	
350					32.0	<b>11.4560</b>	<b>0.4052</b>	5.83333					
375													
400													
425													
450													

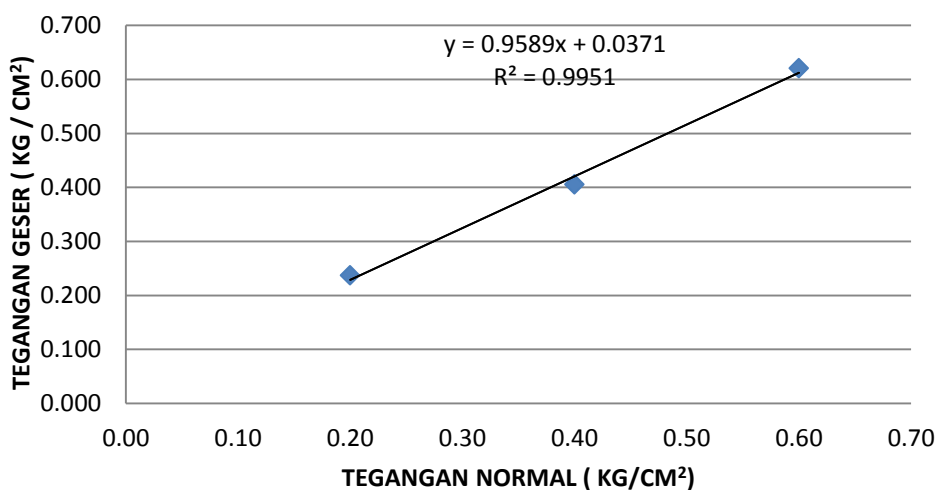




### GRAFIK HUBUNGAN TEGANGAN GESER DAN REGANGAN



### TEGANGAN GESER DAN NORMAL



$C = 0,0371 \text{ kg/cm}^2$   
 $\phi = 34,982^\circ$



## Lampiran 4

### Hasil Uji Pemadatan Standar

Data :

Berat mould = 2560 gram  
 Diameter sampel = 15.5 cm  
 Tinggi sampel = 11.5 cm

### Kadar Air

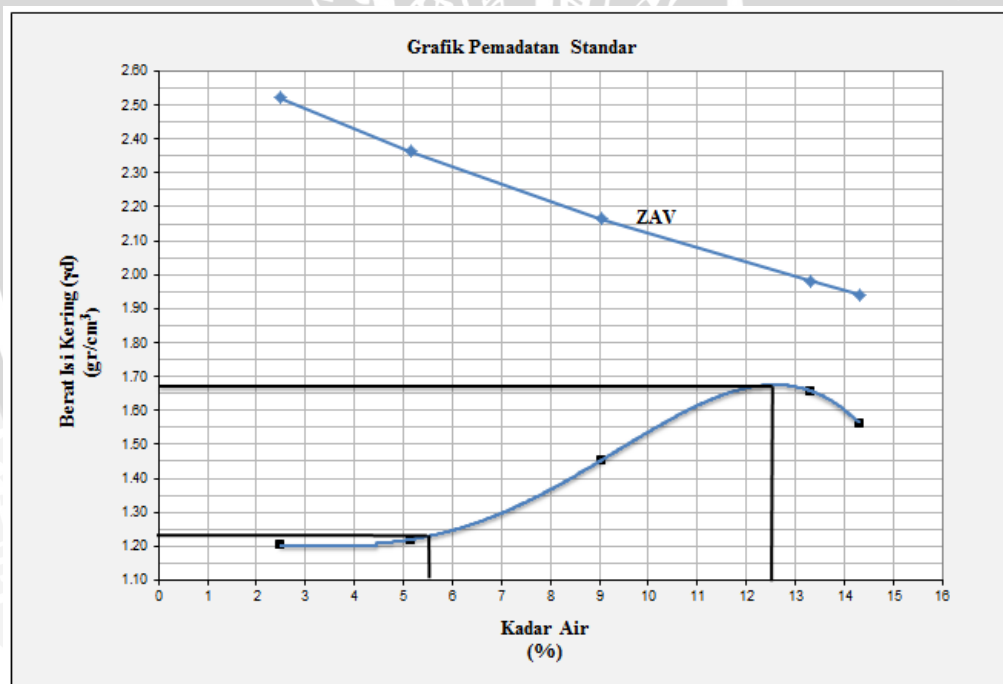
Penambahan Air	ml	100			200			300			400			500		
		atas	tengah	bawah	atas	tengah	bawah	atas	tengah	bawah	atas	tengah	bawah	atas	tengah	bawah
Berat cawan	gr	5.40	5.60	5.80	6.00	5.80	5.30	5.60	5.80	5.40	5.70	5.60	5.80	5.80	6.00	5.60
Berat tanah basah + cawan	gr	17.30	27.30	31.30	17.40	24.60	30.50	32.00	21.20	22.70	20.80	24.20	27.60	22.40	20.30	27.50
Berat tanah kering + cawan	gr	17.00	26.70	30.80	16.80	23.80	29.20	29.80	19.90	21.30	19.00	22.00	25.10	20.30	18.50	24.80
Berat air	gr	0.30	0.60	0.50	0.60	0.80	1.30	2.20	1.30	1.40	1.80	2.20	2.50	2.10	1.80	2.70
Berat tanah kering	gr	11.60	21.10	25.00	10.80	18.00	23.90	24.20	14.10	15.90	13.30	16.40	19.30	14.50	12.50	19.20
Kadar Air	%	2.59	2.84	2.00	5.56	4.44	5.44	9.09	9.22	8.81	13.53	13.41	12.95	14.48	14.40	14.06
Kadar air rata-rata	%	2.48			5.15			9.04			13.30			14.32		

### Kepadatan

Penambahan air	ml	100	200	300	400	500
Berat cetakan	gr	2560	2560	2560	2560	2560
Berat tanah basah + cetakan	gr	5240	5340	5995	6635	6430
Berat tanah basah	gr	2680	2780	3435	4075	3870
Isi cetakan	cm <sup>3</sup>	2170.8				
Berat isi basah	gr/cm <sup>3</sup>	1.235	1.281	1.582	1.877	1.783
Berat isi kering	gr/cm <sup>3</sup>	1.205	1.218	1.451	1.657	1.559

### Zero Air Void

Penambahan air	ml	100	200	300	400	500
Kadar air	%	2.48	5.15	9.04	13.30	14.32
Gs	gr/cm <sup>3</sup>	2.696				
Berat jenis air	gr/cm <sup>3</sup>	1				
Berat jenis air (ZAV)	gr/cm <sup>3</sup>	2.52726	2.367512	2.16776	1.98442	1.94526



## Lampiran 5

### Pemadatan Model Lereng

$$\gamma_d \text{ rencana} : 1,23 \text{ gr/cm}^3 = 1230 \text{ kg/m}^3$$

$$\text{Luas boks} : 0,98 \text{ m}^2$$

$$\text{Berat tanah untuk tinggi rencana 10 cm: } 1230 \times 0,098 = 120,54 \text{ kg}$$

$$\text{Berat tanah untuk tinggi rencana 8,5 cm: } 1230 \times 0,083 = 102,09 \text{ kg}$$

$$\text{Berat tanah untuk tinggi rencana 9 cm: } 1230 \times 0,088 = 108,24 \text{ kg}$$

$$\text{Berat tanah untuk tinggi rencana 9,5 cm: } 1230 \times 0,093 = 114,51 \text{ kg}$$

### Hasil Pengujian *Sand Cone*

<b>Berat kerucut+tabung+pasir sebelum</b>	<b>gr</b>	7020
<b>Berat kerucut+tabung+pasir sesudah</b>	<b>gr</b>	6613
<b>Berat tanah yang digali</b>	<b>gr</b>	500
<b>Berat isi kering maksimum di laboratorium</b>	<b>gr/cm<sup>3</sup></b>	1.66
<b>Berat isi kering model</b>	<b>gr/cm<sup>3</sup></b>	1.23
<b>Kerapatan relatif (Dr)</b>	<b>%</b>	74.01

## Lampiran 6

## Hasil Pengujian Kadar Air dan Kepadatan Pasir pada Model Lereng dengan Jarak Pondasi ke Tepi Lereng 1,5 B

Lereng Tanpa Perkuatan

Lapisan		1	2	3	4	5	6	7							
Berat cawan + tanah basah	gram	21.8	21.5	20.3	21.9	21.3	21.7	19.8	21.6	21.3	20.9	21.5	22.3	21.2	20.1
Berat cawan + tanah kering	gram	20.8	20.6	19.5	21.1	20.5	21	19	20.6	20.5	20.1	20.7	21.5	20.3	19.4
Berat cawan	gram	5.7	5.7	4.1	5.5	5.8	5.9	4.3	3.7	5.6	5.7	5	6	5.6	5.4
Berat tanah kering	gram	15.1	14.9	15.4	15.6	14.7	15.1	14.7	16.9	14.9	14.4	15.7	15.5	14.7	14
Berat air	gram	1	0.9	0.8	0.8	0.8	0.7	0.8	1	0.8	0.8	0.8	0.8	0.9	0.7
Kadar air	%	6.62	6.04	5.19	5.13	5.44	4.64	5.44	5.92	5.37	5.56	5.10	5.16	6.12	5.00
Kadar air rata-rata (%)									5.48						

Lapisan		1	2	3	4	5	6	7								
Berat ring + tanah	gram	32.7	32.6	32.1	32.1	32.4	32.2	32.6	32.4	32.6	32.5	32	32.1	32.3	32.2	
Berat ring	gram	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	
Diameter ring	cm	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
Tinggi ring	cm	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	
Volume ring	cm <sup>3</sup>	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	
Berat tanah	gram	14.2	14.1	13.6	13.6	13.9	13.6	14	14	14.2	14.1	13.5	13.6	13.9	13.7	
$\gamma_t$	gr/cm <sup>3</sup>	1.314	1.357	1.258	1.309	1.286	1.309	1.295	1.347	1.314	1.357	1.249	1.309	1.286	1.318	
Kadar air	%	6.62	6.04	5.19	5.13	5.44	4.64	5.44	5.92	5.37	5.56	5.10	5.16	6.12	5.00	
$\gamma_d$	gr/cm <sup>3</sup>	1.232	1.280	1.196	1.245	1.220	1.251	1.229	1.272	1.247	1.286	1.189	1.245	1.212	1.256	
$\gamma_t$ rata-rata	gr/cm <sup>3</sup>									1.308						
$\gamma_d$ rata-rata	gr/cm <sup>3</sup>									1.240						

**Lereng dengan perkuatan geotekstil L=0,32H, n=1**

Lapisan		1	2	3	4	5	6	7							
Berat cawan + tanah basah	gram	20.1	21.1	21.6	21.8	21.2	19.9	20.3	20.2	20.2	21.6	20.6	20.8	22.8	19.2
Berat cawan + tanah kering	gram	19.3	20.3	20.7	21	20.6	19.1	19.6	19.5	19.4	20.8	19.8	20	21.8	18.3
Berat cawan	gram	4.2	5.6	5.3	5.9	5.7	4.1	5.7	5.6	4.2	5.7	5.7	5.6	5.9	4.7
Berat tanah kering	gram	15.1	14.7	15.4	15.1	14.9	15	13.9	13.9	15.2	15.1	14.1	14.4	15.9	13.6
Berat air	gram	0.8	0.8	0.9	0.8	0.6	0.8	0.7	0.7	0.8	0.8	0.8	0.8	1	0.9
Kadar air	%	5.30	5.44	5.84	5.30	4.03	5.33	5.04	5.04	5.26	5.30	5.67	5.56	6.29	6.62
Kadar air rata-rata (%)									5.43						

Lapisan		1	2	3	4	5	6	7								
Berat ring + tanah	gram	32.2	32.3	31.9	32.2	31.8	32.1	32.4	32.5	32.4	32.6	32.4	32.2	32.4	32.5	
Berat ring	gram	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	
Diameter ring	cm	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
Tinggi ring	cm	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	
Volume ring	cm <sup>3</sup>	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	
Berat tanah	gram	13.7	13.8	13.4	13.7	13.3	13.6	13.9	14	13.9	14.1	13.9	13.7	13.9	14	
$\gamma_t$	gr/cm <sup>3</sup>	1.268	1.328	1.240	1.318	1.231	1.309	1.286	1.347	1.286	1.357	1.286	1.318	1.286	1.347	
Kadar air	%	5.30	5.44	5.84	5.30	4.03	5.33	5.04	5.04	5.26	5.30	5.67	5.56	6.29	6.62	
$\gamma_d$	gr/cm <sup>3</sup>	1.204	1.260	1.172	1.252	1.183	1.243	1.225	1.283	1.222	1.289	1.217	1.249	1.210	1.264	
$\gamma_t$ rata-rata	gr/cm <sup>3</sup>									1.301						
$\gamma_d$ rata-rata	gr/cm <sup>3</sup>									1.234						

**Lereng dengan perkuatan geotekstil L=0,32H, n=2**

Lapisan		1	2	3	4	5	6	7							
Berat cawan + tanah basah	gram	20.2	21	19.8	19.5	21.5	20.3	22.3	21.9	20.5	18.2	20.1	20.5	19.5	20.2
Berat cawan + tanah kering	gram	19.4	20.2	18.9	18.8	20.6	19.4	21.4	21	19.9	17.5	19.3	19.6	18.7	19.6
Berat cawan	gram	4.7	5.8	5.4	5.8	5.6	5.4	5.7	6	5.7	2.9	6.1	6	4.1	4.7
Berat tanah kering	gram	14.7	14.4	13.5	13	15	14	15.7	15	14.2	14.6	14.2	14.6	13.2	13.6
Berat air	gram	0.8	0.8	0.9	0.7	0.9	0.9	0.9	0.9	0.6	0.7	0.8	0.9	0.8	0.6
Kadar air	%	5.44	5.56	6.67	5.38	6.00	6.43	5.73	6.00	4.23	4.79	5.63	6.16	6.06	4.41
Kadar air rata-rata (%)									5.61						

Lapisan		1	2	3	4	5	6	7								
Berat ring + tanah	gram	33.1	32.3	32.1	32.2	31.8	32	33.2	33.1	32.8	32.9	33.5	33.2	32.8	32.7	
Berat ring	gram	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	
Diameter ring	cm	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
Tinggi ring	cm	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	
Volume ring	cm <sup>3</sup>	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	
Berat tanah	gram	14.6	13.8	13.6	13.7	13.3	13.5	14.7	14.6	14.3	14.4	15	14.7	14.3	14.2	
$\gamma_t$	gr/cm <sup>3</sup>	1.351	1.328	1.258	1.318	1.231	1.299	1.360	1.405	1.323	1.386	1.388	1.415	1.323	1.367	
Kadar air	%	5.44	5.56	6.67	5.38	6.00	6.43	5.73	6.00	4.23	4.79	5.63	6.16	6.06	4.41	
$\gamma_d$	gr/cm <sup>3</sup>	1.281	1.258	1.180	1.251	1.161	1.221	1.287	1.326	1.270	1.322	1.314	1.333	1.248	1.309	
$\gamma_t$ rata-rata	gr/cm <sup>3</sup>									1.339						
$\gamma_d$ rata-rata	gr/cm <sup>3</sup>									1.269						

**Lereng dengan perkuatan geotekstil L=0,32H, n=3**

Lapisan		1	2	3	4	5	6	7							
Berat cawan + tanah basah	gram	20.2	21	23	19	22.3	22	22.4	20.2	20.1	20	21.5	21.8	21.9	21.4
Berat cawan + tanah kering	gram	19.4	20.2	22.1	18.2	21.4	21.2	21.5	20.3	19.2	19	20.6	20.8	20.9	20.5
Berat cawan	gram	4.7	5.8	5.8	4.3	5.7	6	5.7	6	4.3	4.2	5.8	5.7	5.7	5.8
Berat tanah kering	gram	14.7	14.4	16.3	13.9	15.7	15.2	15.8	14.3	14.9	14.8	14.8	15.1	15.2	14.7
Berat air	gram	0.8	0.8	0.9	0.8	0.9	0.8	0.9	-0.1	0.9	1	0.9	1	1	0.9
Kadar air	%	5.44	5.56	5.52	5.76	5.73	5.26	5.70	-0.70	6.04	6.76	6.08	6.62	6.58	6.12
Kadar air rata-rata (%)		5.46													

Lapisan		1	2	3	4	5	6	7							
Berat ring + tanah	gram	32.5	32.3	32	32.2	31.8	32	32.7	32.5	32.5	32.4	32.7	32.5	32.5	32.4
Berat ring	gram	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
Diameter ring	cm	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Tinggi ring	cm	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5
Volume ring	cm <sup>3</sup>	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391
Berat tanah	gram	14	13.8	13.5	13.7	13.3	13.5	14.2	14	14	13.9	14.2	14	14	13.9
$\gamma_t$	gr/cm <sup>3</sup>	1.295	1.328	1.249	1.318	1.231	1.299	1.314	1.347	1.295	1.338	1.314	1.347	1.295	1.338
Kadar air	%	5.44	5.56	5.52	5.76	5.73	5.26	5.70	-0.70	6.04	6.76	6.08	6.62	6.58	6.12
$\gamma_d$	gr/cm <sup>3</sup>	1.229	1.258	1.184	1.247	1.164	1.234	1.243	1.357	1.222	1.253	1.239	1.264	1.216	1.261
$\gamma_t$ rata-rata	gr/cm <sup>3</sup>	1.308													
$\gamma_d$ rata-rata	gr/cm <sup>3</sup>	1.241													



**Lereng dengan perkuatan geotekstil L=0,37H, n=1**

Lapisan		1	2	3	4	5	6	7							
Berat cawan + tanah basah	gram	19.8	21.6	23	21	21.7	20.2	19.9	20.3	22.6	21.9	21.4	20.7	21.7	21.1
Berat cawan + tanah kering	gram	18.9	20.6	22.1	20.2	20.9	20.1	19.1	19.5	21.8	21	20.4	19.8	20.8	20.3
Berat cawan	gram	4	5.5	5.4	5.3	5.6	4.2	4.2	4.3	6.1	5.6	5.4	5.6	5.7	5.6
Berat tanah kering	gram	14.9	15.1	16.7	14.9	15.3	15.9	14.9	15.2	15.7	15.4	15	14.2	15.1	14.7
Berat air	gram	0.9	1	0.9	0.8	0.8	0.1	0.8	0.8	0.8	0.9	1	0.9	0.9	0.8
Kadar air	%	6.04	6.62	5.39	5.37	5.23	0.63	5.37	5.26	5.10	5.84	6.67	6.34	5.96	5.44
Kadar air rata-rata (%)									5.38						

Lapisan		1	2	3	4	5	6	7								
Berat ring + tanah	gram	32.6	32.4	32.1	32.2	31.8	32.1	32	32.3	32.4	32.2	32.4	32.6	32.6	32.8	
Berat ring	gram	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	
Diameter ring	cm	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
Tinggi ring	cm	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	
Volume ring	cm <sup>3</sup>	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	
Berat tanah	gram	14.1	13.9	13.6	13.7	13.3	13.6	13.5	13.8	13.9	13.7	13.9	14.1	14.1	14.3	
$\gamma_t$	gr/cm <sup>3</sup>	1.305	1.338	1.258	1.318	1.231	1.309	1.249	1.328	1.286	1.318	1.286	1.357	1.305	1.376	
Kadar air	%	6.04	6.62	5.39	5.37	5.23	0.63	5.37	5.26	5.10	5.84	6.67	6.34	5.96	5.44	
$\gamma_d$	gr/cm <sup>3</sup>	1.230	1.255	1.194	1.251	1.170	1.301	1.186	1.262	1.224	1.246	1.206	1.276	1.231	1.305	
$\gamma_t$ rata-rata	gr/cm <sup>3</sup>									1.305						
$\gamma_d$ rata-rata	gr/cm <sup>3</sup>									1.238						

**Lereng dengan perkuatan geotekstil L=0,37H, n=2**

Lapisan		1	2	3	4	5	6	7							
Berat cawan + tanah basah	gram	20.2	21	22.3	22	20.5	18.1	19.5	19.6	19.7	19.5	21.5	20.3	20.1	20.5
Berat cawan + tanah kering	gram	19.4	20.2	21.4	21.2	19.9	17.5	18.7	18.8	18.9	18.8	20.6	19.4	19.3	19.6
Berat cawan	gram	4.7	5.8	5.7	6	5.7	2.9	4.1	4.7	5.4	5.8	5.6	5.4	6.1	6
Berat tanah kering	gram	14.7	14.4	15.7	15.2	14.2	14.6	14.6	14.1	13.5	13	15	14	13.2	13.6
Berat air	gram	0.8	0.8	0.9	0.8	0.6	0.6	0.8	0.8	0.8	0.7	0.9	0.9	0.8	0.9
Kadar air	%	5.44	5.56	5.73	5.26	4.23	4.11	5.48	5.67	5.93	5.38	6.00	6.43	6.06	6.62
Kadar air rata-rata (%)		5.56													

Lapisan		1	2	3	4	5	6	7								
Berat ring + tanah	gram	33	32.9	32.8	32.9	32.6	32.6	33.4	33.5	32.7	32.9	33.5	33.2	32.5	32	
Berat ring	gram	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	
Diameter ring	cm	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
Tinggi ring	cm	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	
Volume ring	cm <sup>3</sup>	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	
Berat tanah	gram	14.5	14.4	14.3	14.4	14.1	14.1	14.9	15	14.2	14.4	15	14.7	14	13.5	
$\gamma_t$	gr/cm <sup>3</sup>	1.342	1.386	1.323	1.386	1.305	1.357	1.379	1.444	1.314	1.386	1.388	1.415	1.295	1.299	
Kadar air	%	5.44	5.56	5.73	5.26	4.23	4.11	5.48	5.67	5.93	5.38	6.00	6.43	6.06	6.62	
$\gamma_d$	gr/cm <sup>3</sup>	1.273	1.313	1.252	1.317	1.252	1.303	1.307	1.366	1.240	1.315	1.309	1.329	1.221	1.219	
$\gamma_t$ rata-rata	gr/cm <sup>3</sup>									1.358						
$\gamma_d$ rata-rata	gr/cm <sup>3</sup>									1.287						

**Lereng dengan perkuatan geotekstil L=0,37H, n=3**

Lapisan		1	2	3	4	5	6	7							
Berat cawan + tanah basah	gram	19.3	21.6	21	20.2	21.5	20.6	21.6	21.3	21.3	19.7	21.5	19.6	19.8	21.5
Berat cawan + tanah kering	gram	18.5	20.8	20.2	19.2	20.7	19.8	20.9	20.6	20.5	18.8	20.7	18.8	19	20.6
Berat cawan	gram	4.3	5.7	5.7	4.3	6	5.7	5.4	5.6	5.7	4.1	5.7	4.3	4.3	5.7
Berat tanah kering	gram	14.2	15.1	14.5	14.9	14.7	14.1	15.5	15	14.8	14.7	15	14.5	14.7	14.9
Berat air	gram	0.8	0.8	0.8	1	0.8	0.8	0.7	0.7	0.8	0.9	0.8	0.8	0.8	0.9
Kadar air	%	5.63	5.30	5.52	6.71	5.44	5.67	4.52	4.67	5.41	6.12	5.33	5.52	5.44	6.04
Kadar air rata-rata (%)		5.52													

Lapisan		1	2	3	4	5	6	7							
Berat ring + tanah	gram	32.7	32.3	32.9	33.1	31.8	32	32.9	32.6	32	32.2	33.4	33.4	33.1	33.2
Berat ring	gram	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
Diameter ring	cm	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Tinggi ring	cm	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5
Volume ring	cm <sup>3</sup>	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391
Berat tanah	gram	14.2	13.8	13.5	13.7	13.3	13.5	14.4	14.1	14.4	14.6	14.9	14.9	14.6	14.7
$\gamma_t$	gr/cm <sup>3</sup>	1.314	1.328	1.249	1.318	1.231	1.299	1.333	1.357	1.333	1.405	1.379	1.434	1.351	1.415
Kadar air	%	5.63	5.30	5.52	6.71	5.44	5.67	4.52	4.67	5.41	6.12	5.33	5.52	5.44	6.04
$\gamma_d$	gr/cm <sup>3</sup>	1.244	1.261	1.184	1.236	1.167	1.229	1.275	1.296	1.264	1.324	1.309	1.359	1.281	1.334
$\gamma_t$ rata-rata	gr/cm <sup>3</sup>	1.339													
$\gamma_d$ rata-rata	gr/cm <sup>3</sup>	1.269													

**Lereng dengan perkuatan geotekstil L=0,42H, n=1**

Lapisan		1	2	3	4	5	6	7							
Berat cawan + tanah basah	gram	19.1	21.1	21	20.5	20.8	20.2	19.1	20.2	21.5	22.1	19.8	21	22.2	20
Berat cawan + tanah kering	gram	18.4	20.3	20.2	19.7	20	19.4	18.3	19.4	20.7	21.3	19	20.1	21.2	19.2
Berat cawan	gram	5.7	5.6	4.2	5.3	5.7	4.2	4.2	5.5	5.9	5.6	4.3	4.1	5.8	5.9
Berat tanah kering	gram	12.7	14.7	16	14.4	14.3	15.2	14.1	13.9	14.8	15.7	14.7	16	15.4	13.3
Berat air	gram	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	1	0.8
Kadar air	%	5.51	5.44	5.00	5.56	5.59	5.26	5.67	5.76	5.41	5.10	5.44	5.62	6.49	6.02
Kadar air rata-rata (%)		5.56													

Lapisan		1	2	3	4	5	6	7								
Berat ring + tanah	gram	32.4	32.3	32	32.2	31.8	32	32	32.1	32.6	32.1	32.1	32.6	32.5	32.5	
Berat ring	gram	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	
Diameter ring	cm	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
Tinggi ring	cm	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	
Volume ring	cm <sup>3</sup>	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	
Berat tanah	gram	13.9	13.8	13.5	13.7	13.3	13.5	13.5	13.6	14.1	13.6	13.6	14.1	14	14	
$\gamma_t$	gr/cm <sup>3</sup>	1.286	1.328	1.249	1.318	1.231	1.299	1.249	1.309	1.305	1.309	1.258	1.357	1.295	1.347	
Kadar air	%	5.51	5.44	5.00	5.56	5.59	5.26	5.67	5.76	5.41	5.10	5.44	5.62	6.49	6.02	
$\gamma_d$	gr/cm <sup>3</sup>	1.219	1.260	1.190	1.249	1.166	1.234	1.182	1.238	1.238	1.245	1.194	1.285	1.216	1.271	
$\gamma_t$ rata-rata	gr/cm <sup>3</sup>									1.296						
$\gamma_d$ rata-rata	gr/cm <sup>3</sup>									1.228						

**Lereng dengan perkuatan geotekstil L=0,42H, n=2**

Lapisan		1	2	3	4	5	6	7							
Berat cawan + tanah basah	gram	19.6	19.6	20.3	20.3	19.5	20.1	21	19.6	22.3	22	21.5	20.1	20.7	18.3
Berat cawan + tanah kering	gram	18.9	18.8	19.4	19.6	18.8	19.3	20.2	18.7	21.4	21.2	20.6	19.4	19.9	17.5
Berat cawan	gram	5.4	5.8	4.7	6	4.7	6.1	5.8	4.1	5.7	6	5.6	5.4	5.7	2.9
Berat tanah kering	gram	13.5	13	14.7	13.6	14.1	13.2	14.4	14.6	15.7	15.2	15	14	14.2	14.6
Berat air	gram	0.7	0.8	0.9	0.7	0.7	0.8	0.8	0.9	0.9	0.8	0.9	0.7	0.8	0.8
Kadar air	%	5.19	6.15	6.12	5.15	4.96	6.06	5.56	6.16	5.73	5.26	6.00	5.00	5.63	5.48
Kadar air rata-rata (%)									5.60						

Lapisan		1	2	3	4	5	6	7								
Berat ring + tanah	gram	32.4	32.5	32.1	32.6	32.9	33	32.6	32.3	32.8	32.9	32.7	32.9	33	33.1	
Berat ring	gram	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	
Diameter ring	cm	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
Tinggi ring	cm	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	
Volume ring	cm <sup>3</sup>	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	
Berat tanah	gram	13.9	14	13.6	14.1	14.4	14.5	14.1	13.8	14.3	14.4	14.2	14.4	14.5	14.6	
$\gamma_t$	gr/cm <sup>3</sup>	1.286	1.347	1.258	1.357	1.333	1.395	1.305	1.328	1.323	1.386	1.314	1.386	1.342	1.405	
Kadar air	%	5.19	6.15	6.12	5.15	4.96	6.06	5.56	6.16	5.73	5.26	6.00	5.00	5.63	5.48	
$\gamma_d$	gr/cm <sup>3</sup>	1.223	1.269	1.186	1.291	1.269	1.316	1.236	1.251	1.252	1.317	1.240	1.320	1.270	1.332	
$\gamma_t$ rata-rata	gr/cm <sup>3</sup>									1.340						
$\gamma_d$ rata-rata	gr/cm <sup>3</sup>									1.269						

**Lereng dengan perkuatan geotekstil L=0,42H, n=3**

Lapisan		1	2	3	4	5	6	7							
Berat cawan + tanah basah	gram	19.7	19.5	20.1	20.3	21.5	20.1	19.5	19.6	20.1	21	22.3	22	20.7	18.3
Berat cawan + tanah kering	gram	18.9	18.8	19.3	19.6	20.6	19.4	18.7	18.8	19.4	20.2	21.4	21.2	19.9	17.5
Berat cawan	gram	5.4	5.8	6.1	6	5.6	5.4	4.1	4.7	4.7	5.8	5.7	6	5.7	2.9
Berat tanah kering	gram	13.5	13	13.2	13.6	15	14	14.6	14.1	14.7	14.4	15.7	15.2	14.2	14.6
Berat air	gram	0.8	0.7	0.8	0.7	0.9	0.7	0.8	0.8	0.7	0.8	0.9	0.8	0.8	0.8
Kadar air	%	5.93	5.38	6.06	5.15	6.00	5.00	5.48	5.67	4.76	5.56	5.73	5.26	5.63	5.48
Kadar air rata-rata (%)									5.51						

Lapisan		1	2	3	4	5	6	7								
Berat ring + tanah	gram	32	32.3	32	32.2	31.8	32	32.4	32.1	32.5	32.7	32.6	32.1	32	32.3	
Berat ring	gram	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	
Diameter ring	cm	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
Tinggi ring	cm	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	
Volume ring	cm <sup>3</sup>	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	10.807	10.391	
Berat tanah	gram	13.5	13.8	13.5	13.7	13.3	13.5	13.9	13.6	14	14.2	14.1	13.6	13.5	13.8	
$\gamma_t$	gr/cm <sup>3</sup>	1.249	1.328	1.249	1.318	1.231	1.299	1.286	1.309	1.295	1.367	1.305	1.309	1.249	1.328	
Kadar air	%	5.93	5.38	6.06	5.15	6.00	5.00	5.48	5.67	4.76	5.56	5.73	5.26	5.63	5.48	
$\gamma_d$	gr/cm <sup>3</sup>	1.179	1.260	1.178	1.254	1.161	1.237	1.219	1.239	1.237	1.295	1.234	1.243	1.183	1.259	
$\gamma_t$ rata-rata	gr/cm <sup>3</sup>									1.294						
$\gamma_d$ rata-rata	gr/cm <sup>3</sup>									1.227						

## Lampiran 7

### Perhitungan Daya Dukung Lereng Tanpa Perkuatan dengan Metode Analitik

#### 1. Metode Shields

##### Data:

$$\gamma = 1,23 \text{ gr/cm}^3$$

$$\phi = \text{sudut geser dalam tanah} = 34,544^\circ$$

$$\beta = \text{sudut kemiringan lereng} = 51^\circ$$

$$B = \text{lebar pondasi} = 6 \text{ cm} = 2,362 \text{ inchi}$$

$$D = \text{kedalaman pondasi} = 0$$

$$L = \text{panjang pondasi} = \sim$$

$$b = \text{jarak pondasi ke puncak lereng} = 9 \text{ cm} = 3,543 \text{ inchi}$$

$$f_\phi = 10^{(0,1159\phi - 2,386)} = 10^{(0,1159 \cdot 34,544 - 2,386)} = 41,462$$

$$f_B = 10^{(0,34 - 0,2 \log B)} = 10^{(0,34 - 0,2 \log 2,362)} = 1,842$$

$$f_{D/B} = 1 + 0,65 (D/B) = 1 + 0,65 (0/2,362) = 1$$

$$f_{B/L} = 1 - 0,27 (B/L) = 1 - 0,27 (2,362/\sim) = 1$$

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

$$\begin{aligned} f_{\beta, b/B} &= 1 - 0,8 [ 1 - ( 1 - \tan \beta )^2 ] \{ 2/[2 + (b/B)^2 \tan \beta ] \} \\ &= 1 - 0,8 [ 1 - ( 1 - \tan 51 )^2 ] \{ 2/[2 + (3,543/2,362)^2 \tan 51 ] \} \\ &= 0,6836 \end{aligned}$$

$$\begin{aligned} f_{\beta, b/D, D/B} &= 1 + 0,6 (B/L) [ 1 - ( 1 - \tan \beta )^2 ] \{ 2/[2 + (b/B)^2 \tan \beta ] \} \\ &= 1 + 0,6 (2,362/\sim) [ 1 - ( 1 - \tan 51 )^2 ] \{ 2/[2 + (3,543/2,362)^2 \tan 51 ] \} \\ &= 1 \end{aligned}$$

$$\begin{aligned} f_{\beta, b/B, B/L} &= 1 + 0,33 (D/B) \tan \beta \{ 2/[2 + (b/B)^2 \tan \beta ] \} \\ &= 1 + 0,33 (0/2,362) \tan 51 \{ 2/[2 + (3,543/2,362)^2 \tan 51 ] \} \\ &= 1 \end{aligned}$$

$$N_{\gamma q} = 41,462 \times 1,842 \times 1 \times 1 \times 1 \times 1 \times 0,6836 \times 1 \times 1 = 52,2085$$

$$q_u = 0,5 \times \gamma \times B \times N_{\gamma q} = 0,5 \times 1,23 \times 6 \times 52,2085 = 192,6497 \text{ gr/cm}^2$$

$$q_u = 19,26497 \text{ kN/m}^2$$

## 2. Metode Hansen

### Data:

$$\gamma = 1,23 \text{ gr/cm}^3$$

$$\phi = \text{sudut geser dalam tanah} = 34,544^\circ$$

$$\beta = \text{sudut kemiringan lereng} = 51^\circ$$

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

$$D = \text{kedalaman pondasi} = 0$$

$$L = \text{panjang pondasi} = \sim$$

$$b = \text{jarak pondasi ke puncak lereng} = 9 \text{ cm}$$

### Untuk $b = 4B$ (Tanah Datar):

$$N_q = e^{\pi \tan \phi} \cdot \tan^2 \left( 45 + \frac{\phi}{2} \right) = e^{\pi \tan 34,544} \cdot \tan^2 \left( 45 + \frac{34,544}{2} \right) = 31,469$$

$$N_c = (N_q - 1) \cot \phi = (31,469 - 1) \cot 34,544 = 44,259$$

$$N_\gamma = 1,5(N_q - 1) \tan \phi = 1,5(31,469 - 1) \tan 34,544 = 31,463$$

Dengan mengasumsi bahwa nilai  $c = 0$  dan  $D_f = 0$ , maka diperoleh nilai daya dukung sebagai berikut:

$$q_u = c \times N_c + D_f \times \gamma \times N_q + \gamma \times \frac{B}{2} \times N_\gamma$$

$$q_u = 0 \times 44,259 + 0 \times 1,23 \times 31,469 + 1,23 \times \frac{6}{2} \times 31,463$$

$$q_u = 116,098 \text{ gr/cm}^2 = 11,6098 \text{ kN/m}^2$$

### Untuk Tanah Lereng:

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

$$N_q = e^{\pi \tan \phi} \cdot \tan^2 \left( 45 + \frac{\phi}{2} \right) = e^{\pi \tan 34,544} \cdot \tan^2 \left( 45 + \frac{34,544}{2} \right) = 31,469$$

$$N_c = (N_q - 1) \cot \phi = (31,469 - 1) \cot 34,544 = 44,259$$

$$N_\gamma = 1,5(N_q - 1) \tan \phi = 1,5(31,469 - 1) \tan 34,544 = 31,463$$



$$d_c = d_q = d_r = 1$$

$$i_c = i_q = i_r = 1$$

$$b_c = b_q = b_r = 1$$

Untuk  $d = 0$  cm, maka:

$$g_q = g_r = (1 - \tan\beta)^2 = (1 - \tan 51^\circ)^2 = 0,0552$$

Untuk  $D_f = 0$  cm maka nilai daya dukung:

$$q_u = 1,23 \times \frac{6}{2} \times 31,463 \times 0,0552 = 6,4086 \text{ gr/cm}^2 = 0,64086 \text{ kN/m}^2$$

Dengan menggunakan interpolasi, dihitung daya dukung pada kondisi  $d = 1,5B$  (9 cm):

$d = 0$ :

$$q_u = 0,64086 \text{ kN/m}^2$$

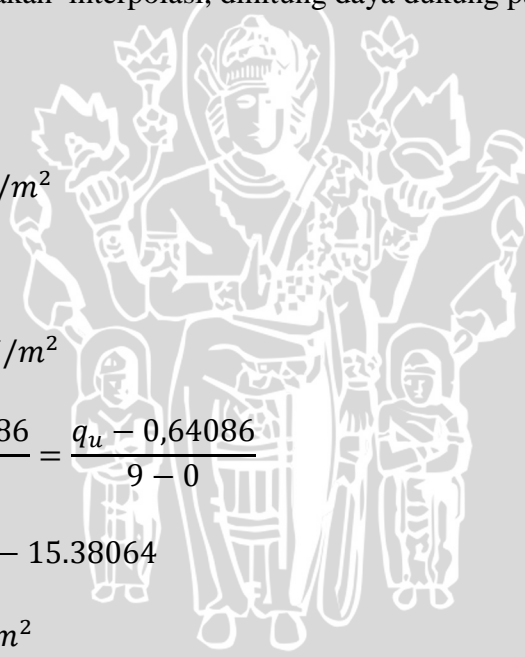
$d = 4B$  (24 cm):

$$q_u = 11,6098 \text{ kN/m}^2$$

$$\frac{11,6098 - 0,64086}{24 - 0} = \frac{q_u - 0,64086}{9 - 0}$$

$$98,7204 = 24q_u - 15,38064$$

$$q_u = 4,7542 \text{ kN/m}^2$$

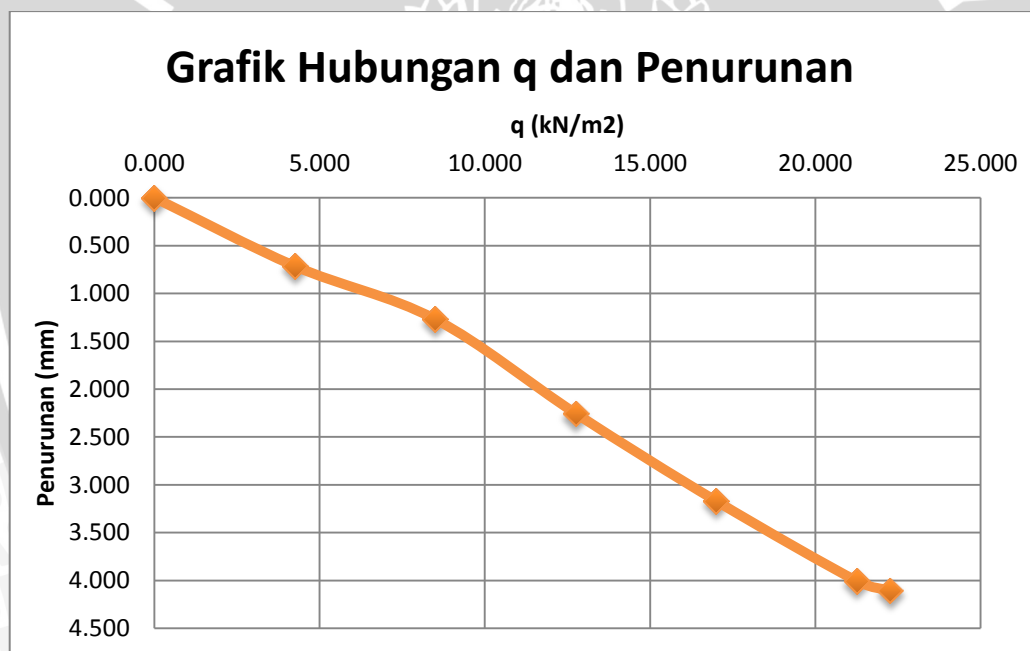


**Lampiran 8**

**Hasil Analisis Daya Dukung Lereng dengan Metode Eksperimen**

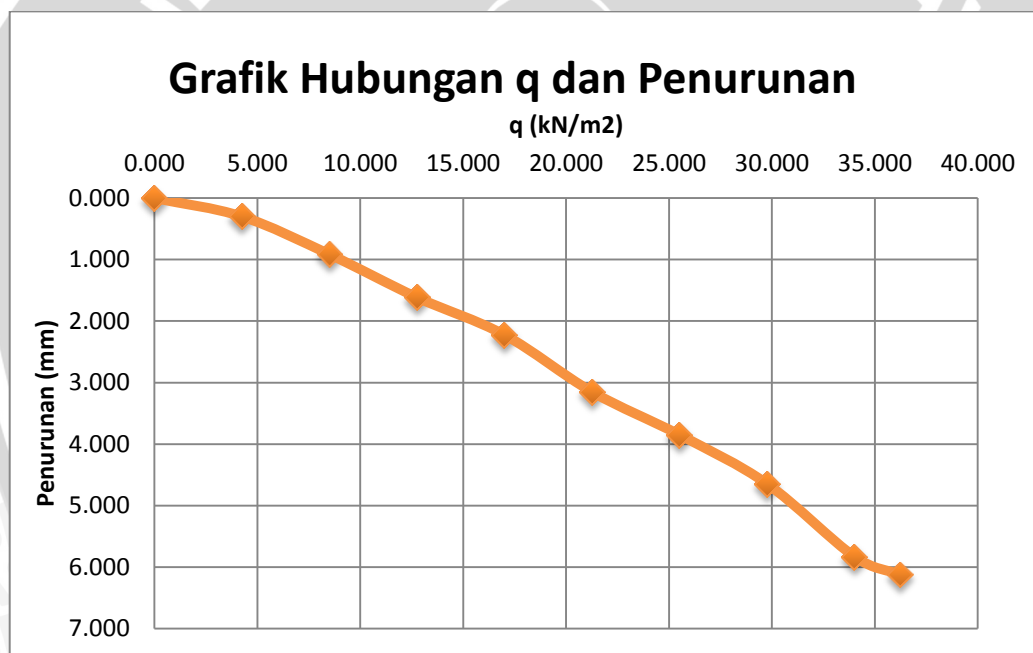
**Lereng tanpa perkuatan**

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm <sup>2</sup> )	q (kN/m <sup>2</sup> )
0	5110	0.000	0.000	0.000	0.000
25	4967	0.715	1.192	0.043	4.252
50	4856	1.270	2.117	0.085	8.503
75	4659	2.255	3.758	0.128	12.755
100	4476	3.170	5.283	0.170	17.007
125	4309	4.005	6.675	0.213	21.259
131	4289	4.105	6.842	0.223	22.279



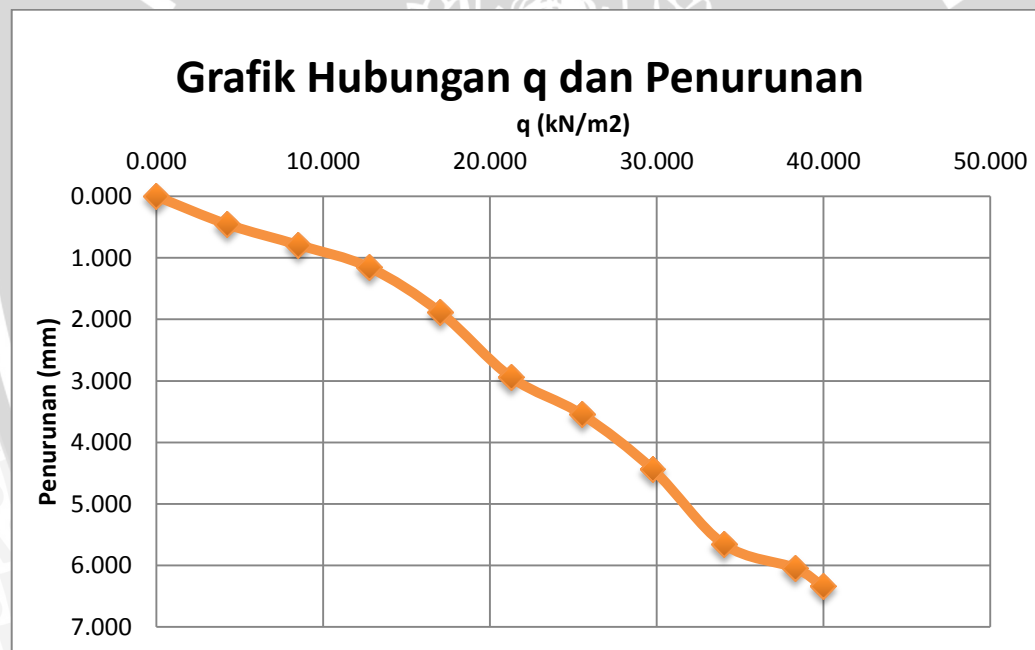
**Lereng dengan perkuatan geotekstil L=0,32H, n=1**

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm <sup>2</sup> )	q (kN/m <sup>2</sup> )
0	4581	0.000	0.000	0.000	0.000
25	4521	0.300	0.500	0.043	4.252
50	4398	0.915	1.525	0.085	8.503
75	4258	1.615	2.692	0.128	12.755
100	4136	2.225	3.708	0.170	17.007
125	3951	3.150	5.250	0.213	21.259
150	3811	3.850	6.417	0.255	25.510
175	3652	4.645	7.742	0.298	29.762
200	3415	5.83	9.7167	0.340	34.014
213	3357	6.12	10.2	0.3622449	36.224



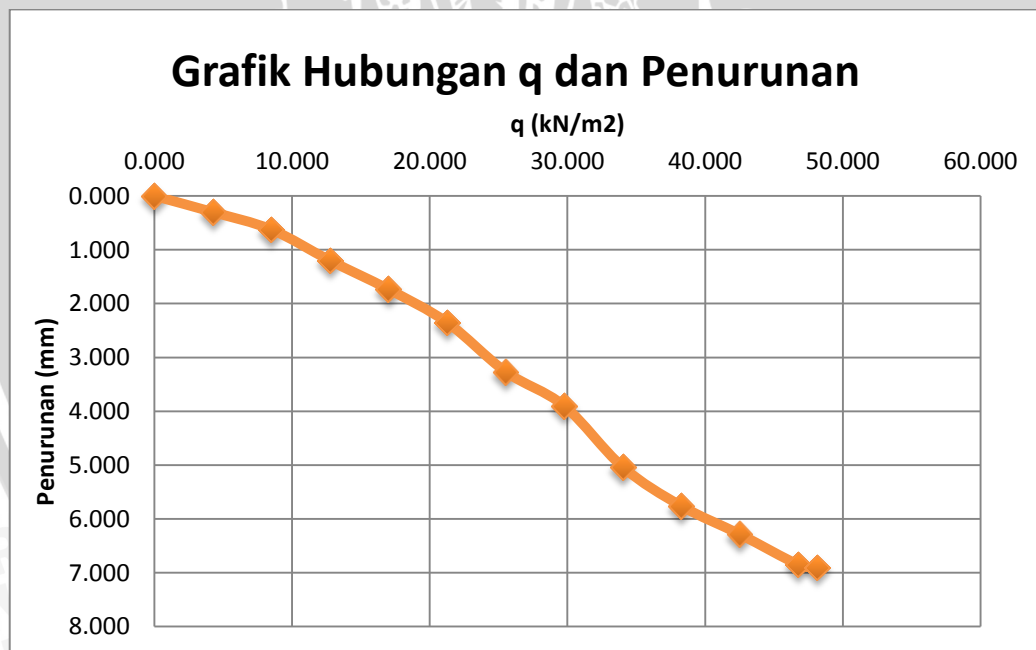
**Lereng dengan perkuatan geotekstil L=0,32H, n=2**

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm <sup>2</sup> )	q (kN/m <sup>2</sup> )
0	4889	0.000	0.000	0.00	0.00
25	4798	0.455	0.758	0.04	4.25
50	4731	0.790	1.317	0.09	8.50
75	4658	1.155	1.925	0.13	12.76
100	4512	1.885	3.142	0.17	17.01
125	4301	2.940	4.900	0.21	21.26
150	4180	3.545	5.908	0.26	25.51
175	4001	4.440	7.400	0.30	29.76
200	3758	5.655	9.425	0.34	34.01
225	3681	6.040	10.067	0.38	38.27
235	3621	6.340	10.567	0.40	39.97



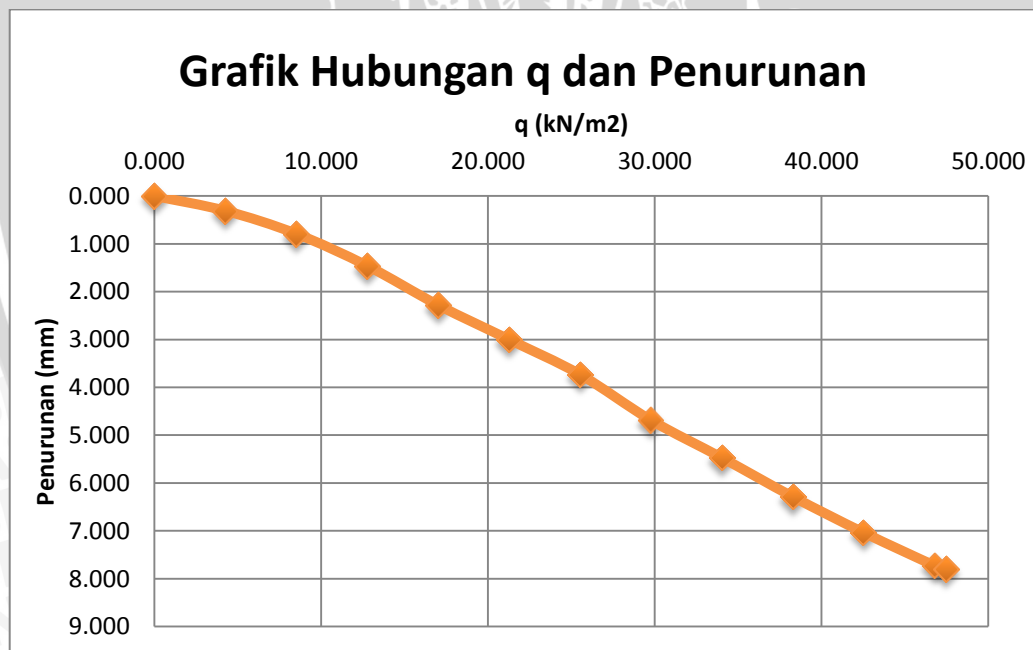
**Lereng dengan perkuatan geotekstil L=0,32H, n=3**

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm <sup>2</sup> )	q (kN/m <sup>2</sup> )
0	4881	0.000	0.000	0.00	0.00
25	4821	0.300	0.500	0.04	4.25
50	4756	0.625	1.042	0.09	8.50
75	4641	1.200	2.000	0.13	12.76
100	4534	1.735	2.892	0.17	17.01
125	4411	2.350	3.917	0.21	21.26
150	4228	3.265	5.442	0.26	25.51
175	4101	3.900	6.500	0.30	29.76
200	3874	5.035	8.392	0.34	34.01
225	3729	5.760	9.600	0.38	38.27
250	3624	6.285	10.475	0.43	42.52
275	3511	6.850	11.417	0.47	46.77
283	3501	6.900	11.500	0.48	48.13



**Lereng dengan perkuatan geotekstil  $L=0,37H$ ,  $n=1$**

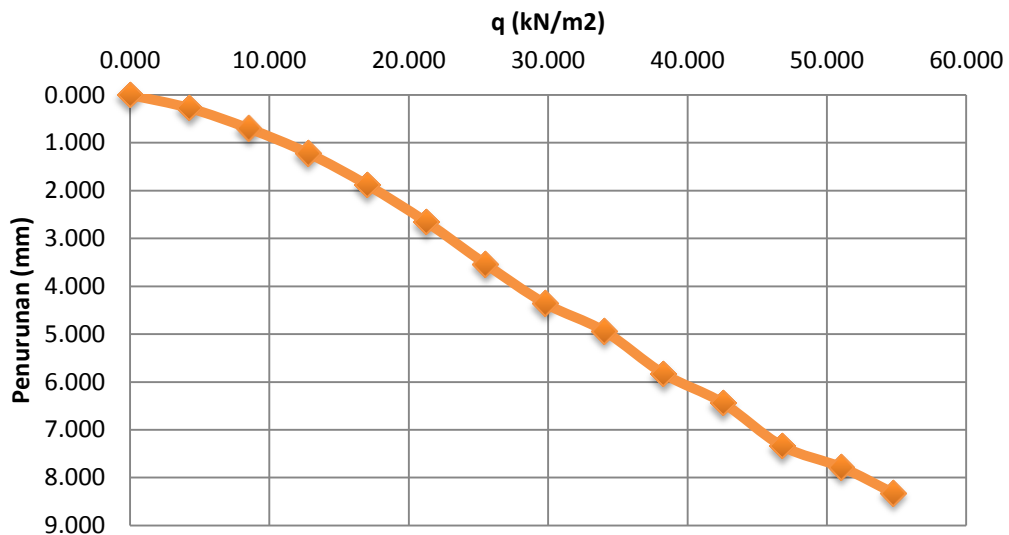
Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm <sup>2</sup> )	q (kN/m <sup>2</sup> )
0	4835	0.000	0.000	0.000	0.000
25	4773	0.310	0.517	0.043	4.252
50	4677	0.790	1.317	0.085	8.503
75	4543	1.460	2.433	0.128	12.755
100	4379	2.280	3.800	0.170	17.007
125	4235	3.000	5.000	0.213	21.259
150	4089	3.730	6.217	0.255	25.510
175	3898	4.685	7.808	0.298	29.762
200	3741	5.470	9.117	0.340	34.014
225	3578	6.285	10.475	0.383	38.265
250	3428	7.035	11.725	0.425	42.517
275	3290	7.725	12.875	0.468	46.769
279	3275	7.800	13.000	0.474	47.449



**Lereng dengan perkuatan geotekstil L=0,37H, n=2**

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm <sup>2</sup> )	q (kN/m <sup>2</sup> )
0	5108	0.000	0.000	0.000	0.000
25	5053	0.275	0.458	0.043	4.252
50	4968	0.700	1.167	0.085	8.503
75	4865	1.215	2.025	0.128	12.755
100	4732	1.880	3.133	0.170	17.007
125	4577	2.655	4.425	0.213	21.259
150	4401	3.535	5.892	0.255	25.510
175	4237	4.355	7.258	0.298	29.762
200	4121	4.935	8.225	0.340	34.014
225	3943	5.825	9.708	0.383	38.265
250	3821	6.435	10.725	0.425	42.517
275	3641	7.335	12.225	0.468	46.769
300	3552	7.780	12.967	0.510	51.020
322	3444	8.320	13.867	0.548	54.762

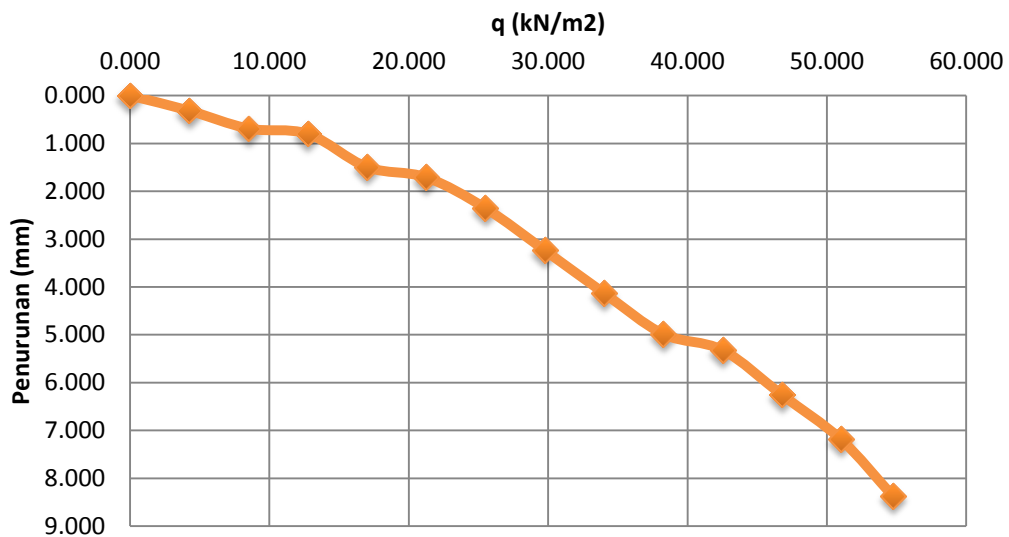
**Grafik Hubungan q dan Penurunan**



**Lereng dengan perkuatan geotekstil  $L=0,37H$ ,  $n=3$**

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm <sup>2</sup> )	q (kN/m <sup>2</sup> )
0	4739	0.000	0.000	0.000	0.000
25	4676	0.315	0.525	0.043	4.252
50	4601	0.690	1.150	0.085	8.503
75	4579	0.800	1.333	0.128	12.755
100	4440	1.495	2.492	0.170	17.007
125	4397	1.710	2.850	0.213	21.259
150	4268	2.355	3.925	0.255	25.510
175	4092	3.235	5.392	0.298	29.762
200	3913	4.130	6.883	0.340	34.014
225	3742	4.985	8.308	0.383	38.265
250	3675	5.320	8.867	0.425	42.517
275	3488	6.255	10.425	0.468	46.769
300	3301	7.190	11.983	0.510	51.020
322	3063	8.380	13.967	0.548	54.762

**Grafik Hubungan q dan Penurunan**

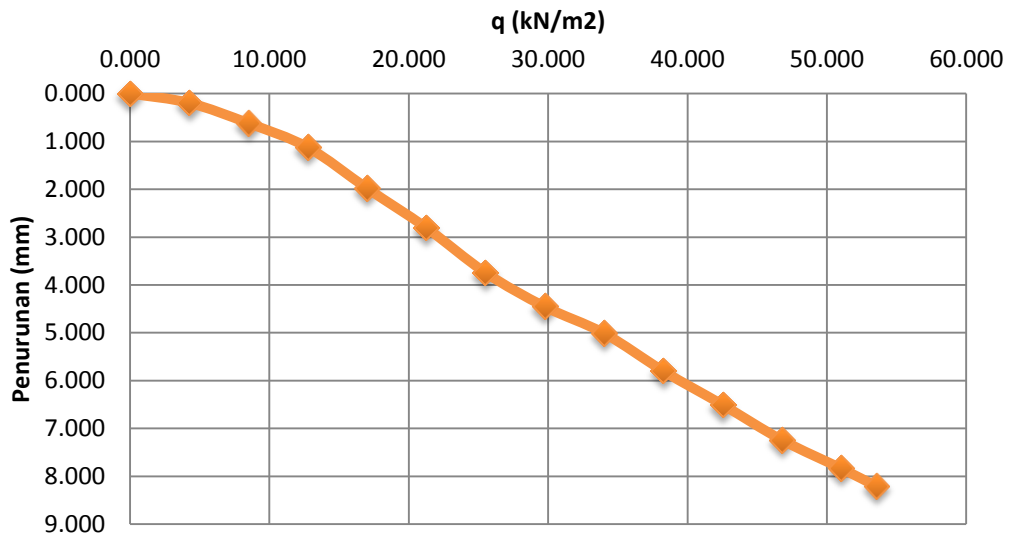




**Lereng dengan perkuatan geotekstil  $L=0,42H$ ,  $n=1$**

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm <sup>2</sup> )	q (kN/m <sup>2</sup> )
0	4883	0.000	0.000	0.000	0.000
25	4844	0.195	0.325	0.043	4.252
50	4759	0.620	1.033	0.085	8.503
75	4658	1.125	1.875	0.128	12.755
100	4487	1.980	3.300	0.170	17.007
125	4322	2.805	4.675	0.213	21.259
150	4134	3.745	6.242	0.255	25.510
175	3992	4.455	7.425	0.298	29.762
200	3881	5.010	8.350	0.340	34.014
225	3723	5.800	9.667	0.383	38.265
250	3582	6.505	10.842	0.425	42.517
275	3435	7.240	12.067	0.468	46.769
300	3316	7.835	13.058	0.510	51.020
315	3241	8.210	13.683	0.536	53.571

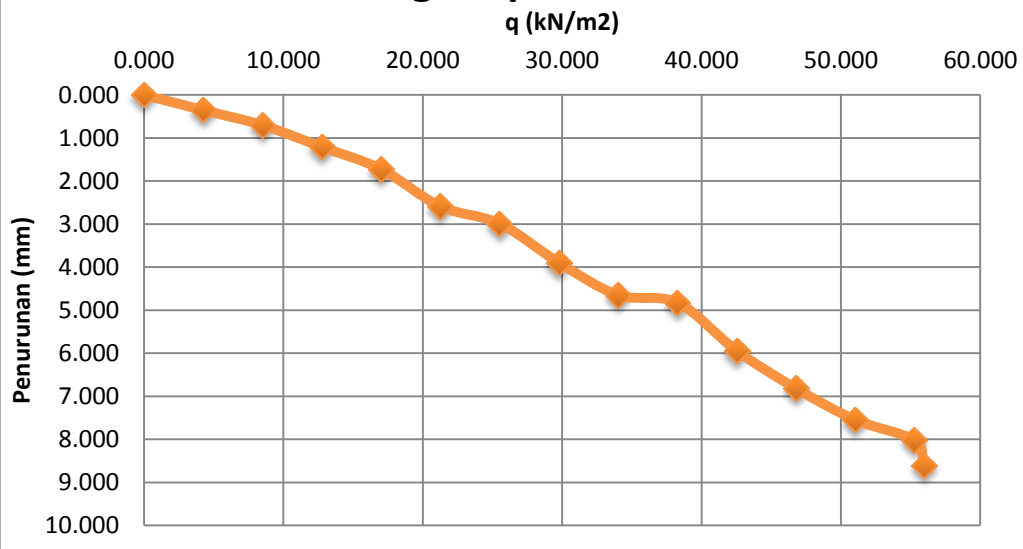
**Grafik Hubungan q dan Penurunan**



**Lereng dengan perkuatan geotekstil L=0,42H, n=2**

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm <sup>2</sup> )	q (kN/m <sup>2</sup> )
0	4753	0.000	0.000	0.000	0.000
25	4682	0.355	0.592	0.043	4.252
50	4612	0.705	1.175	0.085	8.503
75	4511	1.210	2.017	0.128	12.755
100	4408	1.725	2.875	0.170	17.007
125	4235	2.590	4.317	0.213	21.259
150	4155	2.990	4.983	0.255	25.510
175	3974	3.895	6.492	0.298	29.762
200	3823	4.65	7.75	0.340	34.014
225	3788	4.825	8.0417	0.3827	38.2653
250	3565	5.94	9.9	0.4252	42.5170
275	3390	6.815	11.358	0.4677	46.7687
300	3244	7.545	12.575	0.5102	51.0204
325	3149	8.02	13.367	0.5527	55.2721
329	3031	8.61	14.35	0.5595	55.9524

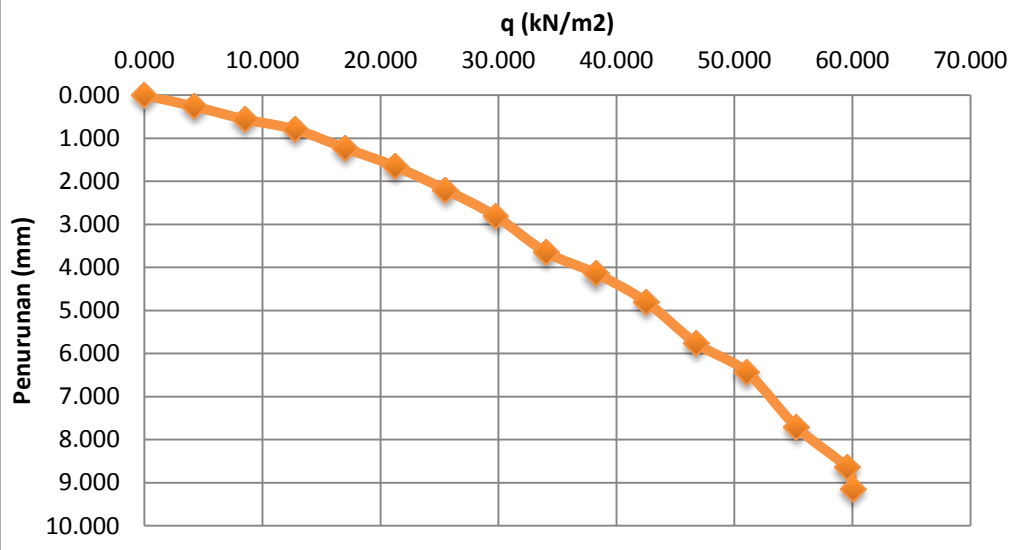
**Grafik Hubungan q dan Penurunan**



**Lereng dengan perkuatan geotekstil L=0,42H, n=3**

Beban (kg)	LVDT	Penurunan (mm)	s/B (%)	q (kg/cm <sup>2</sup> )	q (kN/m <sup>2</sup> )
0	4741	0.000	0.000	0.000	0.000
25	4688	0.265	0.442	0.043	4.252
50	4629	0.560	0.933	0.085	8.503
75	4582	0.795	1.325	0.128	12.755
100	4495	1.230	2.050	0.170	17.007
125	4410	1.655	2.758	0.213	21.259
150	4302	2.195	3.658	0.255	25.510
175	4179	2.810	4.683	0.298	29.762
200	4012	3.645	6.075	0.340	34.014
225	3913	4.140	6.900	0.383	38.265
250	3781	4.800	8.000	0.425	42.517
275	3588	5.765	9.608	0.468	46.769
300	3456	6.425	10.708	0.510	51.020
325	3199	7.710	12.850	0.553	55.272
350	3012	8.645	14.408	0.595	59.524
353	2913	9.140	15.233	0.600	60.034

**Grafik Hubungan q dan Penurunan**



### Lampiran 9

Perhitungan Daya Dukung pada Penurunan s/B: 2%, 4%, 6% dan 7,167%

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

$$f(x_0) = b_0 + b_1(x_0 - x_0) + b_2(x_0 - x_0)(x_0 - x_1)$$

$$b_0 = f(x_0)$$

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

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

#### Lereng tanpa perkuatan:

s/B(%)	s/B (%)		q (kN/m <sup>2</sup> )		B <sub>1</sub>	B <sub>2</sub>	q (kN/m <sup>2</sup> )
(x)	(x <sub>0</sub> ,x <sub>1</sub> ,x <sub>2</sub> )		[f(x <sub>0</sub> ),f(x <sub>1</sub> ),f(x <sub>2</sub> )]				f(x)
2	x <sub>0</sub>	1.192	f(x <sub>0</sub> )	4.252	4.596	0.782	8.041
	x <sub>1</sub>	2.117	f(x <sub>1</sub> )	8.503			
	x <sub>2</sub>	3.758	f(x <sub>2</sub> )	12.755			
4	x <sub>0</sub>	2.117	f(x <sub>0</sub> )	8.503	2.590	0.063	13.409
	x <sub>1</sub>	3.758	f(x <sub>1</sub> )	12.755			
	x <sub>2</sub>	5.283	f(x <sub>2</sub> )	17.007			
6	x <sub>0</sub>	5.283	f(x <sub>0</sub> )	17.007	3.055	1.968	18.244
	x <sub>1</sub>	6.675	f(x <sub>1</sub> )	21.259			
	x <sub>2</sub>	6.842	f(x <sub>2</sub> )	22.279			
6.842							22.279

**Lereng yang diperkuat geotekstil dengan variasi panjang:**

Jumlah Lapisan	Panjang	s/B(%)	s/B (%)		q (kN/m <sup>2</sup> )		B <sub>1</sub>	B <sub>2</sub>	q (kN/m <sup>2</sup> )
		(x)	(x <sub>0</sub> ,x <sub>1</sub> ,x <sub>2</sub> )		[f(x <sub>0</sub> ),f(x <sub>1</sub> ),f(x <sub>2</sub> )]				f(x)
1	L/H=0.45	2	x <sub>0</sub>	0.500	f(x <sub>0</sub> )	4.252	4.148	-0.230	10.310
			x <sub>1</sub>	1.525	f(x <sub>1</sub> )	8.503			
			x <sub>2</sub>	2.692	f(x <sub>2</sub> )	12.755			
	L/H=0.52		x <sub>0</sub>	0.517	f(x <sub>0</sub> )	4.252	5.315	-0.786	11.338
			x <sub>1</sub>	1.317	f(x <sub>1</sub> )	8.503			
			x <sub>2</sub>	2.433	f(x <sub>2</sub> )	12.755			
	L/H=0.59		x <sub>0</sub>	1.033	f(x <sub>0</sub> )	8.503	5.052	-0.912	13.276
			x <sub>1</sub>	1.875	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	3.300	f(x <sub>2</sub> )	17.007			
2	L/H=0.45	2	x <sub>0</sub>	1.317	f(x <sub>0</sub> )	8.503	6.989	-1.915	11.181
			x <sub>1</sub>	1.925	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	3.142	f(x <sub>2</sub> )	17.007			
	L/H=0.52		x <sub>0</sub>	1.167	f(x <sub>0</sub> )	8.503	4.953	-0.568	12.643
			x <sub>1</sub>	2.025	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	3.133	f(x <sub>2</sub> )	17.007			
	L/H=0.59		x <sub>0</sub>	1.175	f(x <sub>0</sub> )	8.503	5.052	-0.058	14.672
			x <sub>1</sub>	2.017	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	2.875	f(x <sub>2</sub> )	17.007			
3	L/H=0.45	2	x <sub>0</sub>	1.042	f(x <sub>0</sub> )	8.503	4.437	0.179	12.755
			x <sub>1</sub>	2.000	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	2.892	f(x <sub>2</sub> )	17.007			
	L/H=0.52		x <sub>0</sub>	1.150	f(x <sub>0</sub> )	8.503	23.191	-14.549	14.971
			x <sub>1</sub>	1.333	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	2.492	f(x <sub>2</sub> )	17.007			
	L/H=0.59		x <sub>0</sub>	0.933	f(x <sub>0</sub> )	8.503	10.855	-4.470	16.864
			x <sub>1</sub>	1.325	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	2.050	f(x <sub>2</sub> )	17.007			

Jumlah Lapisan	Panjang	s/B(%)	s/B (%)		q (kN/m <sup>2</sup> )		B <sub>1</sub>	B <sub>2</sub>	q (kN/m <sup>2</sup> )
		(x)	(x <sub>0</sub> ,x <sub>1</sub> ,x <sub>2</sub> )	[f(x <sub>0</sub> ),f(x <sub>1</sub> ),f(x <sub>2</sub> )]	f(x)				
1	L/H=0.45	4	x <sub>0</sub>	2.692	f(x <sub>0</sub> )	12.755	4.182	-0.557	16.014
			x <sub>1</sub>	3.708	f(x <sub>1</sub> )	17.007			
			x <sub>2</sub>	5.250	f(x <sub>2</sub> )	21.259			
	L/H=0.52		x <sub>0</sub>	2.433	f(x <sub>0</sub> )	12.755	3.111	0.168	17.682
			x <sub>1</sub>	3.800	f(x <sub>1</sub> )	17.007			
			x <sub>2</sub>	5.000	f(x <sub>2</sub> )	21.259			
	L/H=0.59		x <sub>0</sub>	1.875	f(x <sub>0</sub> )	12.755	2.984	0.039	19.153
			x <sub>1</sub>	3.300	f(x <sub>1</sub> )	17.007			
			x <sub>2</sub>	4.675	f(x <sub>2</sub> )	21.259			
2	L/H=0.45	x <sub>0</sub>	1.925	f(x <sub>0</sub> )	12.755	6.989	-1.369	18.820	
		x <sub>1</sub>	3.142	f(x <sub>1</sub> )	21.259				
		x <sub>2</sub>	5.908	f(x <sub>2</sub> )	25.510				
	L/H=0.52	x <sub>0</sub>	2.025	f(x <sub>0</sub> )	12.755	3.836	-0.227	19.943	
		x <sub>1</sub>	3.133	f(x <sub>1</sub> )	17.007				
		x <sub>2</sub>	4.425	f(x <sub>2</sub> )	21.259				
	L/H=0.59	x <sub>0</sub>	2.017	f(x <sub>0</sub> )	12.755	4.953	-0.871	22.635	
		x <sub>1</sub>	2.875	f(x <sub>1</sub> )	17.007				
		x <sub>2</sub>	4.317	f(x <sub>2</sub> )	21.259				
3	L/H=0.45	x <sub>0</sub>	2.892	f(x <sub>0</sub> )	17.007	4.148	-0.533	21.555	
		x <sub>1</sub>	3.917	f(x <sub>1</sub> )	21.259				
		x <sub>2</sub>	5.442	f(x <sub>2</sub> )	25.510				
	L/H=0.52	x <sub>0</sub>	2.850	f(x <sub>0</sub> )	21.259	3.955	-0.416	23.771	
		x <sub>1</sub>	3.925	f(x <sub>1</sub> )	25.510				
		x <sub>2</sub>	5.392	f(x <sub>2</sub> )	29.762				
	L/H=0.59	x <sub>0</sub>	2.758	f(x <sub>0</sub> )	21.259	4.724	-0.299	26.997	
		x <sub>1</sub>	3.658	f(x <sub>1</sub> )	25.510				
		x <sub>2</sub>	4.683	f(x <sub>2</sub> )	29.762				

Jumlah Lapisan	Panjang	s/B(%)	s/B (%)		q (kN/m <sup>2</sup> )		B <sub>1</sub>	B <sub>2</sub>	q (kN/m <sup>2</sup> )
		(x)	(x <sub>0</sub> ,x <sub>1</sub> ,x <sub>2</sub> )	[f(x <sub>0</sub> ),f(x <sub>1</sub> ),f(x <sub>2</sub> )]	f(x)				
1	L/H=0.45	6	x <sub>0</sub>	3.708	f(x <sub>0</sub> )	17.007	2.758	0.327	23.089
			x <sub>1</sub>	5.250	f(x <sub>1</sub> )	21.259			
			x <sub>2</sub>	6.417	f(x <sub>2</sub> )	25.510			
	L/H=0.52		x <sub>0</sub>	3.800	f(x <sub>0</sub> )	17.007	3.543	-0.020	24.057
			x <sub>1</sub>	5.000	f(x <sub>1</sub> )	21.259			
			x <sub>2</sub>	6.217	f(x <sub>2</sub> )	25.510			
	L/H=0.59		x <sub>0</sub>	4.675	f(x <sub>0</sub> )	21.259	2.714	0.320	24.752
			x <sub>1</sub>	6.242	f(x <sub>1</sub> )	25.510			
			x <sub>2</sub>	7.425	f(x <sub>2</sub> )	29.762			
2	L/H=0.45	x <sub>0</sub>	4.900	f(x <sub>0</sub> )	21.259	4.217	-0.547	25.842	
		x <sub>1</sub>	5.908	f(x <sub>1</sub> )	25.510				
		x <sub>2</sub>	7.400	f(x <sub>2</sub> )	29.762				
	L/H=0.52	x <sub>0</sub>	4.425	f(x <sub>0</sub> )	17.007	5.798	-0.948	25.976	
		x <sub>1</sub>	5.892	f(x <sub>1</sub> )	25.510				
		x <sub>2</sub>	7.258	f(x <sub>2</sub> )	29.762				
	L/H=0.59	x <sub>0</sub>	4.983	f(x <sub>0</sub> )	34.014	-5.638	3.259	26.653	
		x <sub>1</sub>	6.492	f(x <sub>1</sub> )	25.510				
		x <sub>2</sub>	7.750	f(x <sub>2</sub> )	29.762				
3	L/H=0.45	x <sub>0</sub>	3.917	f(x <sub>0</sub> )	21.259	2.788	0.476	27.620	
		x <sub>1</sub>	5.442	f(x <sub>1</sub> )	25.510				
		x <sub>2</sub>	6.500	f(x <sub>2</sub> )	29.762				
	L/H=0.52	x <sub>0</sub>	3.925	f(x <sub>0</sub> )	25.510	2.899	-0.016	30.505	
		x <sub>1</sub>	5.392	f(x <sub>1</sub> )	29.762				
		x <sub>2</sub>	6.883	f(x <sub>2</sub> )	34.014				
	L/H=0.59	x <sub>0</sub>	3.658	f(x <sub>0</sub> )	25.510	4.148	-0.452	33.829	
		x <sub>1</sub>	4.683	f(x <sub>1</sub> )	29.762				
		x <sub>2</sub>	6.075	f(x <sub>2</sub> )	34.014				

Jumlah Lapisan	Panjang	s/B(%)	s/B (%)		q (kN/m <sup>2</sup> )		B <sub>1</sub>	B <sub>2</sub>	q (kN/m <sup>2</sup> )
		(x)	(x <sub>0</sub> ,x <sub>1</sub> ,x <sub>2</sub> )	[f(x <sub>0</sub> ),f(x <sub>1</sub> ),f(x <sub>2</sub> )]	f(x)				
1	L/H=0.45	6.842	x <sub>0</sub>	5.250	f(x <sub>0</sub> )	25.510	1.706	0.100	26.084
			x <sub>1</sub>	7.742	f(x <sub>1</sub> )	29.762			
			x <sub>2</sub>	9.717	f(x <sub>2</sub> )	34.014			
	L/H=0.52		x <sub>0</sub>	5.000	f(x <sub>0</sub> )	21.259	3.495	-0.293	26.558
			x <sub>1</sub>	6.217	f(x <sub>1</sub> )	25.510			
			x <sub>2</sub>	7.808	f(x <sub>2</sub> )	29.762			
	L/H=0.59		x <sub>0</sub>	4.675	f(x <sub>0</sub> )	21.259	2.714	0.320	27.555
			x <sub>1</sub>	6.242	f(x <sub>1</sub> )	25.510			
			x <sub>2</sub>	7.425	f(x <sub>2</sub> )	29.762			
2	L/H=0.45	x <sub>0</sub>	5.908	f(x <sub>0</sub> )	25.510	2.850	-0.213	28.283	
		x <sub>1</sub>	7.400	f(x <sub>1</sub> )	29.762				
		x <sub>2</sub>	9.425	f(x <sub>2</sub> )	34.014				
	L/H=0.52	x <sub>0</sub>	5.892	f(x <sub>0</sub> )	25.510	3.111	0.552	28.248	
		x <sub>1</sub>	7.258	f(x <sub>1</sub> )	29.762				
		x <sub>2</sub>	8.225	f(x <sub>2</sub> )	34.014				
	L/H=0.59	x <sub>0</sub>	4.983	f(x <sub>0</sub> )	25.510	2.819	0.202	30.881	
		x <sub>1</sub>	6.492	f(x <sub>1</sub> )	29.762				
		x <sub>2</sub>	7.750	f(x <sub>2</sub> )	34.014				
3	L/H=0.45	x <sub>0</sub>	5.442	f(x <sub>0</sub> )	25.510	4.017	-0.600	30.849	
		x <sub>1</sub>	6.500	f(x <sub>1</sub> )	29.762				
		x <sub>2</sub>	8.392	f(x <sub>2</sub> )	34.014				
	L/H=0.52	x <sub>0</sub>	5.392	f(x <sub>0</sub> )	29.762	2.850	0.046	33.893	
		x <sub>1</sub>	6.883	f(x <sub>1</sub> )	34.014				
		x <sub>2</sub>	8.308	f(x <sub>2</sub> )	38.265				
	L/H=0.59	x <sub>0</sub>	6.075	f(x <sub>0</sub> )	34.014	5.154	-0.669	37.996	
		x <sub>1</sub>	6.900	f(x <sub>1</sub> )	38.265				
		x <sub>2</sub>	8.000	f(x <sub>2</sub> )	42.517				



**Lereng yang diperkuat geotekstil dengan variasi jumlah lapisan:**

Panjang	Jumlah Lapisan	s/B(%)	s/B (%)		q (kN/m <sup>2</sup> )		B <sub>1</sub>	B <sub>2</sub>	q (kN/m <sup>2</sup> )
		(x)	(x <sub>0</sub> , x <sub>1</sub> , x <sub>2</sub> )		[f(x <sub>0</sub> ), f(x <sub>1</sub> ), f(x <sub>2</sub> )]				f(x)
L/H=0.45	1	2	x <sub>0</sub>	0.500	f(x <sub>0</sub> )	4.252	4.148	-0.230	10.310
			x <sub>1</sub>	1.525	f(x <sub>1</sub> )	8.503			
			x <sub>2</sub>	2.692	f(x <sub>2</sub> )	12.755			
	2		x <sub>0</sub>	1.317	f(x <sub>0</sub> )	8.503	6.989	-1.915	11.181
			x <sub>1</sub>	1.925	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	3.142	f(x <sub>2</sub> )	17.007			
	3		x <sub>0</sub>	1.042	f(x <sub>0</sub> )	8.503	4.437	0.179	12.755
			x <sub>1</sub>	2.000	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	2.892	f(x <sub>2</sub> )	17.007			
L/H=0.52	1	2	x <sub>0</sub>	0.517	f(x <sub>0</sub> )	4.252	5.315	-0.786	11.338
			x <sub>1</sub>	1.317	f(x <sub>1</sub> )	8.503			
			x <sub>2</sub>	2.433	f(x <sub>2</sub> )	12.755			
	2		x <sub>0</sub>	1.167	f(x <sub>0</sub> )	8.503	4.953	-0.568	12.643
			x <sub>1</sub>	2.025	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	3.133	f(x <sub>2</sub> )	17.007			
	3		x <sub>0</sub>	1.150	f(x <sub>0</sub> )	8.503	23.191	-14.549	14.971
			x <sub>1</sub>	1.333	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	2.492	f(x <sub>2</sub> )	17.007			
L/H=0.59	1	2	x <sub>0</sub>	1.033	f(x <sub>0</sub> )	8.503	5.052	-0.912	13.276
			x <sub>1</sub>	1.875	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	3.300	f(x <sub>2</sub> )	17.007			
	2		x <sub>0</sub>	1.175	f(x <sub>0</sub> )	8.503	5.052	-0.058	14.672
			x <sub>1</sub>	2.017	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	2.875	f(x <sub>2</sub> )	17.007			
	3		x <sub>0</sub>	0.933	f(x <sub>0</sub> )	8.503	10.855	-4.470	16.864
			x <sub>1</sub>	1.325	f(x <sub>1</sub> )	12.755			
			x <sub>2</sub>	2.050	f(x <sub>2</sub> )	17.007			

Panjang	Jumlah Lapisan	s/B(%)	s/B (%)		q (kN/m <sup>2</sup> )		B <sub>1</sub>	B <sub>2</sub>	q (kN/m <sup>2</sup> )
		(x)	(x <sub>0</sub> , x <sub>1</sub> , x <sub>2</sub> )	[f(x <sub>0</sub> ), f(x <sub>1</sub> ), f(x <sub>2</sub> )]	f(x)				
L/H=0.45	1	4	x <sub>0</sub>	2.692	f(x <sub>0</sub> )	12.755	4.182	-0.557	16.014
			x <sub>1</sub>	3.708	f(x <sub>1</sub> )	17.007			
			x <sub>2</sub>	5.250	f(x <sub>2</sub> )	21.259			
	2		x <sub>0</sub>	1.925	f(x <sub>0</sub> )	12.755	6.989	-1.369	18.820
			x <sub>1</sub>	3.142	f(x <sub>1</sub> )	21.259			
			x <sub>2</sub>	5.908	f(x <sub>2</sub> )	25.510			
	3		x <sub>0</sub>	2.892	f(x <sub>0</sub> )	17.007	4.148	-0.533	21.555
			x <sub>1</sub>	3.917	f(x <sub>1</sub> )	21.259			
			x <sub>2</sub>	5.442	f(x <sub>2</sub> )	25.510			
L/H=0.52	1	x <sub>0</sub>	2.433	f(x <sub>0</sub> )	12.755	3.111	0.168	17.682	
		x <sub>1</sub>	3.800	f(x <sub>1</sub> )	17.007				
		x <sub>2</sub>	5.000	f(x <sub>2</sub> )	21.259				
	2	x <sub>0</sub>	2.025	f(x <sub>0</sub> )	12.755	3.836	-0.227	19.943	
		x <sub>1</sub>	3.133	f(x <sub>1</sub> )	17.007				
		x <sub>2</sub>	4.425	f(x <sub>2</sub> )	21.259				
	3	x <sub>0</sub>	2.850	f(x <sub>0</sub> )	21.259	3.955	-0.416	23.771	
		x <sub>1</sub>	3.925	f(x <sub>1</sub> )	25.510				
		x <sub>2</sub>	5.392	f(x <sub>2</sub> )	29.762				
L/H=0.59	1	x <sub>0</sub>	1.875	f(x <sub>0</sub> )	12.755	2.984	0.039	19.153	
		x <sub>1</sub>	3.300	f(x <sub>1</sub> )	17.007				
		x <sub>2</sub>	4.675	f(x <sub>2</sub> )	21.259				
	2	x <sub>0</sub>	2.017	f(x <sub>0</sub> )	12.755	4.953	-0.871	22.635	
		x <sub>1</sub>	2.875	f(x <sub>1</sub> )	17.007				
		x <sub>2</sub>	4.317	f(x <sub>2</sub> )	21.259				
	3	x <sub>0</sub>	2.758	f(x <sub>0</sub> )	21.259	4.724	-0.299	26.997	
		x <sub>1</sub>	3.658	f(x <sub>1</sub> )	25.510				
		x <sub>2</sub>	4.683	f(x <sub>2</sub> )	29.762				

Panjang	Jumlah Lapisan	s/B(%)	s/B (%)		q (kN/m <sup>2</sup> )		B <sub>1</sub>	B <sub>2</sub>	q (kN/m <sup>2</sup> )
		(x)	(x <sub>0</sub> , x <sub>1</sub> , x <sub>2</sub> )	[f(x <sub>0</sub> ), f(x <sub>1</sub> ), f(x <sub>2</sub> )]	f(x)				
L/H=0.45	1	6	x <sub>0</sub>	3.708	f(x <sub>0</sub> )	17.007	2.758	0.327	23.089
			x <sub>1</sub>	5.250	f(x <sub>1</sub> )	21.259			
			x <sub>2</sub>	6.417	f(x <sub>2</sub> )	25.510			
	2		x <sub>0</sub>	4.900	f(x <sub>0</sub> )	21.259	4.217	-0.547	25.842
			x <sub>1</sub>	5.908	f(x <sub>1</sub> )	25.510			
			x <sub>2</sub>	7.400	f(x <sub>2</sub> )	29.762			
	3		x <sub>0</sub>	3.917	f(x <sub>0</sub> )	21.259	2.788	0.476	27.620
			x <sub>1</sub>	5.442	f(x <sub>1</sub> )	25.510			
			x <sub>2</sub>	6.500	f(x <sub>2</sub> )	29.762			
L/H=0.52	1	x <sub>0</sub>	3.800	f(x <sub>0</sub> )	17.007	3.543	-0.020	24.057	
		x <sub>1</sub>	5.000	f(x <sub>1</sub> )	21.259				
		x <sub>2</sub>	6.217	f(x <sub>2</sub> )	25.510				
	2	x <sub>0</sub>	4.425	f(x <sub>0</sub> )	17.007	5.798	-0.948	25.976	
		x <sub>1</sub>	5.892	f(x <sub>1</sub> )	25.510				
		x <sub>2</sub>	7.258	f(x <sub>2</sub> )	29.762				
	3	x <sub>0</sub>	3.925	f(x <sub>0</sub> )	25.510	2.899	-0.016	30.505	
		x <sub>1</sub>	5.392	f(x <sub>1</sub> )	29.762				
		x <sub>2</sub>	6.883	f(x <sub>2</sub> )	34.014				
L/H=0.59	1	x <sub>0</sub>	4.675	f(x <sub>0</sub> )	21.259	2.714	0.320	24.752	
		x <sub>1</sub>	6.242	f(x <sub>1</sub> )	25.510				
		x <sub>2</sub>	7.425	f(x <sub>2</sub> )	29.762				
	2	x <sub>0</sub>	4.983	f(x <sub>0</sub> )	34.014	-5.638	3.259	26.653	
		x <sub>1</sub>	6.492	f(x <sub>1</sub> )	25.510				
		x <sub>2</sub>	7.750	f(x <sub>2</sub> )	29.762				
	3	x <sub>0</sub>	3.658	f(x <sub>0</sub> )	25.510	4.148	-0.452	33.829	
		x <sub>1</sub>	4.683	f(x <sub>1</sub> )	29.762				
		x <sub>2</sub>	6.075	f(x <sub>2</sub> )	34.014				

Panjang	Jumlah Lapisan	s/B(%)	s/B (%)		q (kN/m <sup>2</sup> )		B <sub>1</sub>	B <sub>2</sub>	q (kN/m <sup>2</sup> )
		(x)	(x <sub>0</sub> , x <sub>1</sub> , x <sub>2</sub> )	[f(x <sub>0</sub> ), f(x <sub>1</sub> ), f(x <sub>2</sub> )]	f(x)				
L/H=0.45	1	7.167	x <sub>0</sub>	5.250	f(x <sub>0</sub> )	25.510	1.706	0.100	26.084
			x <sub>1</sub>	7.742	f(x <sub>1</sub> )	29.762			
			x <sub>2</sub>	9.717	f(x <sub>2</sub> )	34.014			
	2		x <sub>0</sub>	5.908	f(x <sub>0</sub> )	25.510	2.850	-0.213	28.283
			x <sub>1</sub>	7.400	f(x <sub>1</sub> )	29.762			
			x <sub>2</sub>	9.425	f(x <sub>2</sub> )	34.014			
	3		x <sub>0</sub>	5.442	f(x <sub>0</sub> )	25.510	4.017	-0.600	30.849
			x <sub>1</sub>	6.500	f(x <sub>1</sub> )	29.762			
			x <sub>2</sub>	8.392	f(x <sub>2</sub> )	34.014			
L/H=0.52	1	x <sub>0</sub>	5.000	f(x <sub>0</sub> )	21.259	3.495	-0.293	26.558	
		x <sub>1</sub>	6.217	f(x <sub>1</sub> )	25.510				
		x <sub>2</sub>	7.808	f(x <sub>2</sub> )	29.762				
	2	x <sub>0</sub>	5.892	f(x <sub>0</sub> )	25.510	3.111	0.552	29.248	
		x <sub>1</sub>	7.258	f(x <sub>1</sub> )	29.762				
		x <sub>2</sub>	8.225	f(x <sub>2</sub> )	34.014				
	3	x <sub>0</sub>	5.392	f(x <sub>0</sub> )	29.762	2.850	0.046	33.893	
		x <sub>1</sub>	6.883	f(x <sub>1</sub> )	34.014				
		x <sub>2</sub>	8.308	f(x <sub>2</sub> )	38.265				
L/H=0.59	1	x <sub>0</sub>	4.675	f(x <sub>0</sub> )	21.259	2.714	0.320	27.555	
		x <sub>1</sub>	6.242	f(x <sub>1</sub> )	25.510				
		x <sub>2</sub>	7.425	f(x <sub>2</sub> )	29.762				
	2	x <sub>0</sub>	4.983	f(x <sub>0</sub> )	25.510	2.819	0.202	30.881	
		x <sub>1</sub>	6.492	f(x <sub>1</sub> )	29.762				
		x <sub>2</sub>	7.750	f(x <sub>2</sub> )	34.014				
	3	x <sub>0</sub>	6.075	f(x <sub>0</sub> )	34.014	5.154	-0.669	37.996	
		x <sub>1</sub>	6.900	f(x <sub>1</sub> )	38.265				
		x <sub>2</sub>	8.000	f(x <sub>2</sub> )	42.517				