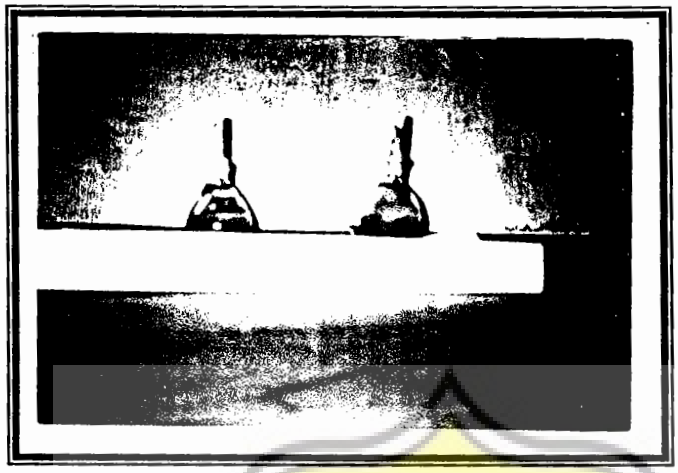
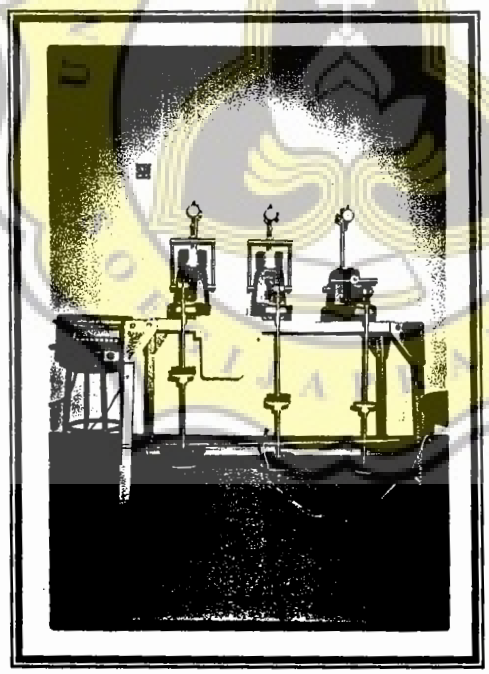
LEMBAR DOKUMEN



Gambar Dokumen. 1. Percobaan Mencari Nilai G_s



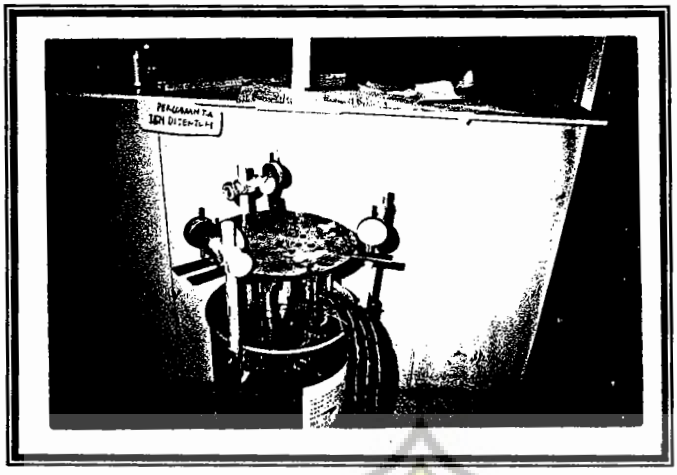
Gambar Dokumen. 2. Penelitian Sampel Tanah Dengan Alat Oedometer

Gambar. 5. Penjenuhan Sampel Tahap I

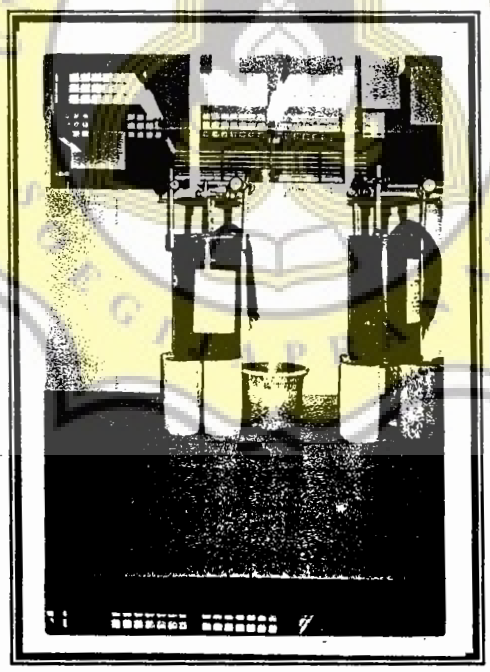
Gambar Dokumen. 6. Memasukkan Sampel Tanah ke Dalam Drum Percobaan Bersamaan Dengan Karung Goni

Gambar Dokumen. 7. Cara Memasukkan Vertikal Drain Dengan Tongkat Besi

Gambar Dokumen. 8. Memasukkan Tanah Sampel ke Dalam Drum Percobaan



Gambar Dokumen. 9. Percobaan dengan menggunakan Drum Setelah Beban Dan Dial Gauge Dipasang.



Gambar Dokumen. 10. Proses Keluarnya Air Dari Vertikal Drain Yang Di Tampung Dalam Ember

LAMPIRAN

PENGUJIAN KADAR AIR SAMPEL TANAH PERCOBAAN I

Data Ring :

Diameter = 4,97 cm

Tinggi = 2,01 cm

Luas = 19,39 cm^2

Data Ring + Sampel tanah

		Sampel K1-1	Sampel K1-2
1.	Berat Ring (b)	= 60 gr	= 60 gr
2.	Diameter Ring	= 4,99 cm	= 4,97 cm
3.	Tinggi Ring	= 2,01 cm	= 2,01 cm
4.	Brt Stlh Percobaan (a)	= 103,7 gr	= 118,8 gr
5.	Brt Ring + Smpl	= 114,5 gr	= 109,6 gr
6.	Brt Ring + Tnh Bsh.	= 84,5 gr	= 85,3 gr
7.	Brt Tnh Basah $(w) = a - b$	= 43,7 gr	= 58,8 gr
8.	Brt Tnh Kering (Ws)	= 24,5 gr	= 32,5 gr
9.	Brt Air (Ww)	= 19,2 gr	= 26,3 gr
10.	$w = \frac{Ww}{Ws} \times 100\%$	= 78,37 %	= 80,923 %

PENGUJIAN KADAR AIR SAMPEL TANAH PERCOBAAN II

Data Ring :

Diameter = 4,97 cm

Tinggi = 2,01 cm

Luas = 19,39 cm^2

Data Ring + Sampel tanah

		Sampel K2-1	Sampel K2-2
1.	Berat Ring (b)	= 61,1 gr	= 60,5 gr
2.	Diameter Ring	= 4,99 cm	= 4,97 cm
3.	Tinggi Ring	= 2,01 cm	= 2,01 cm
4.	Brt Stlh Percobaan (a)	= 113,5 gr	= 101,2 gr
5.	Brt Ring + Smpl	= 117,6 gr	= 117,5 gr
6.	Brt Ring + Tnh Bsh.	= 87,3 gr	= 89,4 gr
7.	Brt Tnh Basah $(w) = a - b$	= 52,4 gr	= 40,7 gr
8.	Brt Tnh Kering (Ws)	= 23,3 gr	= 23,8 gr
9.	Brt Air (Ww)	= 23,1 gr	= 16,9 gr
10.	$w = \frac{Ww}{Ws} \times 100\%$	= 78,839 %	= 71,008 %

PENGUJIAN KADAR AIR SAMPEL TANAH PERCOBAAN III

Data Ring :

Diameter = 4,97 cm

Tinggi = 2,01 cm

Luas = 19,39 cm^2

Data Ring + Sampel tanah

		Sampel K3-1	Sampel K3-2
1.	Berat Ring (b)	= 60,6 gr	= 61,1 gr
2.	Diameter Ring	= 4,97 cm	= 4,99 cm
3.	Tinggi Ring	= 2,01 cm	= 2,01 cm
4.	Brt Stlh Percobaan (a)	= 119,8 gr	= 117,8 gr
5.	Brt Ring + Smpl	= 110,5 gr	= 110,5 gr
6.	Brt Ring + Tnh Bsh.	= 81,5 gr	= 81,5 gr
7.	Brt Tnh Basah $(w) = a - b$	= 59,2 gr	= 56,7 gr
8.	Brt Tnh Kering (Ws)	= 33,2 gr	= 32,2 gr
9.	Brt Air (Ww)	= 26 gr	= 24,5 gr
10.	$w = \frac{Ww}{Ws} \times 100\%$	= 78,313 %	= 76,087 %

PENGUJIAN KADAR AIR SAMPEL TANAH PERCOBAAN IV

Data Ring :

Diameter = 4,99 cm

Tinggi = 2,01 cm

Luas = 19,56 cm^2

Data Ring + Sampel tanah

		Sampel K4-1	Sampel K4-2
1.	Berat Ring (b)	= 60 gr	= 61,1 gr
2.	Diameter Ring	= 4,99 cm	= 4,97 cm
3.	Tinggi Ring	= 2,01 cm	= 2,01 cm
4.	Brt Stlh Percobaan (a)	= 115,3 gr	= 123,9 gr
5.	Brt Ring + Smpl	= 109,6 gr	= 117,6 gr
6.	Brt Ring + Tnh Bsh.	= 85,3 gr	= 87,3 gr
7.	Brt Tnh Basah $(w) = a - b$	= 55,3 gr	= 62,8 gr
8.	Brt Tnh Kering (Ws)	= 30,1 gr	= 35,4 gr
9.	Brt Air (Ww)	= 25,2 gr	= 27,4 gr
10.	$w = \frac{Ww}{Ws} \times 100\%$	= 83,721 %	= 77,401 %

PENGUJIAN BERAT JENIS SAMPEL TANAH PERCOBAAN I

		Picnometer 1	Picnometer 2
a.	Picno Kosong (a)	21,6 gr	31,2 gr
b.	Picno Kosong + air (b)	74,2 gr	81,5 gr
c.	Picno Kosong + Tanah (c)	35,1 gr	44 gr
d.	Temperatur (t_1)	26 ° (1,00324)	26 ° (1,00324)
e.	Picno Ksg + Tnh + Aguades (d)	82,5 gr	89,8 gr
f.	Temperatur (t_2)	28 ° (1,00374)	28 ° (1,00374)
g.	Harga Pic, $w = (b-a)\times t_1$	52,77 gr	50,46 gr
h.	$Gs = \frac{c-a}{w-(d-c)\times t_2}$	2,599 gr	2,85 gr
i.	Gs Rata – rata $= \frac{G_{s1}+G_{s2}}{2} =$	2,725 gr	

PENGUJIAN BERAT JENIS SAMPEL TANAH PERCOBAAN II

		Picnometer 1	Picnometer 2
a.	Picno Kosong (a)	27,7 gr	23,2 gr
b.	Picno Kosong + air (b)	72,5 gr	71,1 gr
c.	Picno Kosong + Tanah (c)	40,9 gr	39,2 gr
d.	Temperatur (t_1)	26 ° (1,00324)	26 ° (1,00324)
e.	Picno Ksg + Tnh + Aguades (d)	80,8 gr	80,4 gr
f.	Temperatur (t_2)	28 ° (1,00374)	28 ° (1,00374)
g.	Harga Pic, $w = (b-a)\times t_1$	44,945 gr	48,055 gr
h.	$Gs = \frac{c-a}{w-(d-c)\times t_2}$	2,696 gr	2,387 gr
i.	Gs Rata – rata $= \frac{G_{s1}+G_{s2}}{2} =$	2,542 gr	

PENGUJIAN BERAT JENIS SAMPEL TANAH PERCOBAAN III

		Picnometer 1	Picnometer 2
a.	Picno Kosong (a)	21,1 gr	23,6 gr
b.	Picno Kosong + air (b)	74,1 gr	72,3 gr
c.	Picno Kosong + Tanah (c)	29,4 gr	32,3 gr
d.	Temperatur (t_1)	28 ° (1,00374)	28 ° (1,00374)
e.	Picno Ksg + Tnh + Aguades (d)	79,3 gr	77,6 gr
f.	Temperatur (t_2)	29 ° (1,00400)	29 ° (1,00400)
g.	Harga Pic, $w = (b-a)\times t_1$	53,198 gr	48,882 gr
h.	$Gs = \frac{c-a}{w-(d-c)\times t_2}$	2,670 gr	2,393 gr
i.	Gs Rata – rata $= \frac{G_{s1}+G_{s2}}{2} =$	2,564 gr	

PENGUJIAN BERAT JENIS SAMPEL TANAH PERCOBAAN IV

		Picnometer 1	Picnometer 2
a.	Picno Kosong (a)	21,7 gr	23,2 gr
b.	Picno Kosong + air (b)	72,5 gr	71,1 gr
c.	Picno Kosong + Tanah (c)	30,9 gr	35,2 gr
d.	Temperatur (t_1)	28 ° (1,00374)	28 ° (1,00374)
e.	Picno Ksg + Tnh + Aguades (d)	78,1 gr	78,3 gr
f.	Temperatur (t_2)	29 ° (1,00400)	29 ° (1,00400)
g.	Harga Pic, $w = (b-a)\times t_1$	50,989 gr	48,055 gr
h.	$Gs = \frac{c-a}{w-(d-c)\times t_2}$	2,555 gr	2,509 gr
i.	Gs Rata – rata $= \frac{G_{s1}+G_{s2}}{2} =$	2,532 gr	

CONTOH PERHITUNGAN KONSOLIDASI

Hasil pengujian konsolidasi serta penurunan yang terjadi pada sampel tanah masih dalam bentuk data primer, dan ini perlu diolah untuk mendapatkan parameter – parameter dari perhitungan Settlement (S_c). Berikut contoh perhitungannya :

Data Alat Konsolidasi

$\Sigma MA = 0$

$- P_1.50 + P_2.5 = 0$

$P_2 = 10\ P_1$

Tabel Oedometer Specimen Sizes And Beam Ratios

Specimen		Beam Ratio	Load (kg)	Stress	Typical Maximum Stress	Stress for 1 kg	Application
Diameter (mm)	Area (mm^2)						
50.0	1963	10:1	1	50 Kpa	8 Mpa	50 kpa	High pressure (SI)
50.5	2003	10:1	10	5 kgf/cm^2	80 kgf/cm^2	0.5 kgf/ft^2	Metric 'technical'
63.5 (2.5 in.)	3167 (4.909 in^2)	10:1	1.55	1000 lbf/ft^2	103200 lbf/ft2	645 lbf/ft^2	ASTM
71.4	4004	10:1	2	0.5 kgf/cm^2	40 kgf/cm^2	0.25 kgf/cm^2	Metric 'technical'
75.0	4418	9:1	1	20 kpa	3.2 Mpa	20 kpa	BS 1377 : 1975 (SI)
112.0	9852	10:1	1	10 kpa	1.6 Mpa	10 kpa	Large diameter (SI)
3 in.	7.069 in^2 (4561)	11:1	10 lb	1 $tonf/ft^2$ (107.3 kpa)	16 $tonf/ft^2$	0.22 $tonf/ft^2$ (23.7 kpa)	Obsolete BS

Sumber : *Manual Of Soil Laboratory Testing*, Vol. 2 (K.H. Head, MA (Cantab),C. Eng, FICE, FGS

Berdasarkan table didapat :

1 kg = 50 kpa

= 50 kN/m^2

= 0,5 kg/cm^2

Perhitungan Tekanan

Beban P_1 (kg)	***Pressure* P (kg/cm^2)**
0,3 x 0,5	0,15
0,5 x 0,5	0,25
1,0 x 0,5	1
2,0 x 0,5	2

Water Content

Berat tanah kering (Ws) = 24,5 gr

Berat air (Ww) = 19,2 gr

Water Content $w = \frac{Ww}{Ws} \times 100\%$

$w = \frac{19,2}{24,5} \times 100\%$ = 78.37 %

Berat Jenis Tanah

		Picnometer 1	Picnometer 2
a.	Picno Kosong (a)	21,6 gr	31,2 gr
b.	Picno Kosong + air (b)	74,2 gr	81,5 gr
c.	Picno Kosong + Tanah (c)	35,1 gr	44 gr
d.	Temperatur (t_1)	26 ° (1,00324)	26 ° (1,00324)
e.	Picno Ksg + Tnh + Aguades (d)	82,5 gr	89,8 gr
f.	Temperatur (t_2)	28 ° (1,00374)	28 ° (1,00374)

Perhitungan Harga Picnometer :

Picnometer 1 :

$w = (b-a)\times t_1 = (74{,}2-21{,}6)\times 1{,}00324 = 52{,}77$ gr

Picnometer 2 :

$w = (b-a)\times t_1 = (81{,}5-31{,}2)\times 1{,}00324 = 50{,}46$ gr

Perhitungan Berat Jenis (G_s) :

Picnometer 1 :

$$G_{s1} = \frac{c-a}{w-(d-c)\times t_2} = \frac{35{,}1-21{,}6}{52{,}77-(82{,}5-35{,}1)\times 1{,}00374} = 2{,}599 \text{ gr}$$

Picnometer 2 :

$$G_{s2} = \frac{c-a}{w-(d-c)\times t_2} = \frac{44-31{,}2}{50{,}46-(89{,}8-44)\times 1{,}00374} = 2{,}85 \text{ gr}$$

Berat Jenis rata – rata :

$$\text{Gs Rata – rata} = \frac{G_{s1}+G_{s2}}{2} = \frac{2{,}599+2{,}85}{2} = 2{,}725 \text{ gr}$$

Final Test Data

Tinggi mula – mula (H_i) = 2,01 cm

Berat tanah kering (W_s) = 24,5 gr

Luas (A) = 19,39 cm^2

Gs Rata – rata = 2,725 gr

Tinggi efektif benda uji (H_s) $= \dfrac{W_s}{A\times G_s}$

$= \dfrac{24{,}5}{19{,}39\times 1{,}725}$ = 0,463684 cm

Tinggi ruang pori awal (H_v) = $Hi - Hs$

= 2,01 – 0,463684 = 1,5463 cm

Perhitungan Pembebanan

Pembebanan 2 kg

Applied Pressure		=	1 kg/cm^2
Perubahan tinggi sampel	(ΔH)	=	0,01427 cm
Perubahan Angka pori	$(\Delta e) = \frac{\Delta H}{H_s}$	=	0,03077529
Angka pori stlh konsolidasi	(e) = e0 - Δe	=	3,304077
Tinggi rata – rata	$(H_t) = H_i - \frac{1}{2}\Delta H$	=	2,002865 cm
½ Tinggi rata – rata	$(H_{dr}) = \frac{1}{2}H$	=	1,001433 cm

Coeficient of Consolidation (C_v)

Metode Akar Waktu (*Square Root Fitting Method*)

$t_{90} = 0{,}640$

$$C_v = \frac{0{,}848 \times H^2 dr}{t_{90}} = \frac{0{,}848 \times 1{,}001433^2}{0{,}640} = 1{,}3288 \text{ cm}^2/\text{menit}$$

Metode Logaritma Waktu (*Log Fitting Method*)

$t_{50} = 4$

$$C_v = \frac{0{,}197 \times H^2 dr}{t_{50}} = \frac{0{,}197 \times 1{,}001433^2}{4} = 0{,}04939 \text{ cm}^2/\text{menit}$$

Dari grafik hubungan antara C_v, Angka pori (e), dengan log P didapat nilai C_v rata – rata sebesar :0,01 cm^2/menit.

Perhitungan Rebound

Pembebanan 2 kg

Pembebanan 1 kg

Applied Pressure = 0,5 kg/cm^2

Perubahan tinggi sampel (ΔH) = 0,01432 cm

Perubahan Angka pori $(\Delta e) = \frac{\Delta H}{H_s}$ = 0,0308831

Angka pori stlh konsolidasi (e) = e0 - Δe = 3,303969

Tinggi rata – rata $(H_t) = H_i - \frac{1}{2}\Delta H$ = 2,00284 cm

½ Tinggi rata – rata $(H_{dr}) = \frac{1}{2}H$ = 1,00142 cm

Perhitungan Settlement

Compression Index

$$C_c = \frac{e_1 - e_2}{\log P_2 - \log P_1} = \frac{3{,}27801 - 3{,}302632}{0{,}5 - 0{,}25} = 0{,}019324$$

$$C_r = \frac{e_1' - e_2'}{\log P_2' - \log P_1'} = \frac{3{,}303969 - 3{,}303775}{0{,}5 - 0{,}25} = 7{,}76E-04$$

Waktu Konsolidasi

$$t = \frac{T_v \times H_d^{\,2}}{C_v} = \frac{0{,}848 \times 1{,}005^2}{0{,}01} = 85{,}65 \text{ menit}$$

Besar Settlement (S_c)

$$S_c = C_r \frac{H}{1+e_0} \log \frac{P_0'}{P_c'} + C_c \frac{H}{1+e_0} \log \frac{\Delta P + P_0'}{P_c'}$$

$$= 7{,}76E-04 \times \frac{2{,}01}{1+3{,}2978} \times \log \frac{0{,}25}{0{,}2519} + 0{,}019324 \times \frac{2{,}01}{1+3{,}2978} \times \log \frac{0{,}25+0{,}25}{0{,}2519}$$

$$= 0{,}0027217 \text{ cm}$$

HASIL PENGAMATAN DIAL GAUGE PADA ALAT OEDOMETER
PENGUJIAN SAMPEL TANAH SKALA KECIL
Sampel K1-1 (dengan VD)

Waktu	$\sqrt{t}$	0.3 Kg/cm2		0.5 Kg/cm2	
		div	(mm)	div	(mm)
0	0	0,000	20,100	438,000	15,720
0,1	0,316	4,000	20,060	440,000	15,700
0,15	0,387	5,000	20,050	445,000	15,650
0,25	0,500	6,000	20,040	452,000	15,580
0,5	0,707	8,000	20,020	458,000	15,520
1	1,000	19,000	19,910	467,000	15,430
2	1,414	68,000	19,420	468,000	15,420
4	2,000	102,000	19,080	469,000	15,410
8	2,828	143,000	18,670	469,000	15,410
15	3,873	198,000	18,120	469,000	15,410
30	5,477	280,000	17,300		
60	7,746	361,000	16,490		
120	10,954	406,000	16,040		
240	15,492	421,000	15,890		
360	18,974	426,000	15,840		
480	21,909	435,000	15,750		
1440	37,947	438,000	15,720		

Rebound

Waktu	$\sqrt{t}$	0.3 Kg/cm2		0 Kg/cm2	
		div	(mm)	div	(mm)
0	0	469,000	15,410	458,000	15,520
120	10,954	458,000	15,520		
1440	37,947			447,000	15,630

LAMPIRAN

HASIL PENGAMATAN DIAL GAUGE PADA ALAT OEDOMETER

PENGUJIAN SAMPEL TANAH SKALA KECIL

Sampel K1–2 (tanpa VD)

Waktu	$\sqrt{t}$	0.3 Kg/cm2		0.5 Kg/cm2	
		Div	(mm)	div	(mm)
0	0	0,000	20,100	438,000	15,720
0,1	0,316	4,000	20,060	440,000	15,700
0,15	0,387	5,000	20,050	445,000	15,650
0,25	0,500	6,000	20,040	452,000	15,580
0,5	0,707	8,000	20,020	458,000	15,520
1	1,000	19,000	19,910	463,000	15,470
2	1,414	68,000	19,420	467,000	15,430
4	2,000	102,000	19,080	470,000	15,400
8	2,828	143,000	18,670	472,000	15,380
15	3,873	198,000	18,120	475,000	15,350
30	5,477	280,000	17,300	478,000	15,320
60	7,746	361,000	16,490	478,000	15,320
120	10,954	406,000	16,040		
240	15,492	421,000	15,890		
360	18,974	426,000	15,840		
480	21,909	435,000	15,750		
1440	37,947	438,000	15,720		

Rebound

Waktu	$\sqrt{t}$	0.3 Kg/cm2		0 Kg/cm2	
		div	(mm)	div	(mm)
0	0	478,000	15,320	472,000	15,380
120	10,954	472,000	15,380		
1440	37,947			411,000	15,990

HASIL PENGAMATAN DIAL GAUGE PADA ALAT OEDOMETER
PENGUJIAN SAMPEL TANAH SKALA KECIL
Sampel K2-1 (dengan VD)

Waktu	$\sqrt{t}$	0.3 Kg/cm2		0.5 Kg/cm2	
		div	(mm)	div	(mm)
0	0	0,000	20,100	124,000	18,860
0,1	0,316	32,000	19,780	125,000	18,850
0,15	0,387	39,000	19,710	126,000	18,840
0,25	0,500	44,000	19,660	128,000	18,820
0,5	0,707	55,000	19,550	132,000	18,780
1	1,000	68,000	19,420	135,000	18,750
2	1,414	74,000	19,360	137,000	18,730
4	2,000	84,000	19,260	138,000	18,720
8	2,828	89,000	19,210	138,000	18,720
15	3,873	96,000	19,140	138,000	18,720
30	5,477	109,000	19,010		
60	7,746	113,000	18,970		
120	10,954	116,000	18,940		
240	15,492	119,000	18,910		
360	18,974	121,000	18,890		
480	21,909	123,000	18,870		
1440	37,947	124,000	18,860		

Rebound

Waktu	$\sqrt{t}$	0.3 Kg/cm2		0 Kg/cm2	
		div	(mm)	div	(mm)
0	0	138,000	18,720	127,500	18,825
120	10,954	136,500	18,735		
1440	37,947			107,000	19,030

HASIL PENGAMATAN DIAL GAUGE PADA ALAT OEDOMETER
PENGUJIAN SAMPEL TANAH SKALA KECIL
Sampel K2-2 (tanpa VD)

Waktu	$\sqrt{t}$	0.3 Kg/cm2		0.5 Kg/cm2		1 Kg/cm2		2 Kg/cm2	
		div	(mm)	Div	(mm)	div	(mm)	div	(mm)
0	0	0,000	20,100	22,000	19,880	36,000	19,740	169,000	18,410
0,1	0,316	3,000	20,070	23,000	19,870	36,500	19,735	174,000	18,360
0,15	0,387	3,500	20,065	24,000	19,860	37,000	19,730	176,000	18,340
0,25	0,500	4,000	20,060	25,000	19,850	38,000	19,720	178,000	18,320
0,5	0,707	4,500	20,055	27,000	19,830	39,000	19,710	180,000	18,300
1	1,000	5,500	20,045	28,500	19,815	41,000	19,690	181,000	18,290
2	1,414	7,000	20,030	29,500	19,805	42,000	19,680	181,500	18,285
4	2,000	10,000	20,000	30,000	19,800	43,500	19,665	182,000	18,280
8	2,828	12,000	19,980	31,000	19,790	50,500	19,595	183,000	18,270
15	3,873	13,000	19,970	31,500	19,785	69,000	19,410	183,000	18,270
30	5,477	14,500	19,955	32,000	19,780	99,500	19,105		
60	7,746	16,500	19,935	32,500	19,775	132,000	18,780		
120	10,954	18,000	19,920	33,000	19,770	142,000	18,680		
240	15,492	20,000	19,900	34,000	19,760	154,000	18,560		
360	18,974	20,500	19,895	35,000	19,750	159,500	18,505		
480	21,909	21,000	19,890	35,500	19,745	162,500	18,475		
1440	37,947	22,000	19,880	36,000	19,740	169,000	18,410		

Rebound

Waktu	$\sqrt{t}$	1 Kg/cm2		0.5 Kg/cm2		0.3 Kg/cm2		0 Kg/cm2	
		div	(mm)	div	(mm)	div	(mm)	div	(mm)
0	0	183,000	18,270	179,500	18,305	171,000	18,390	168,000	18,420
120	10,954	179,500	18,305	171,000	18,390	163,000	18,470		
1440	37,947							129,000	18,810

HASIL PENGAMATAN DIAL GAUGE PADA ALAT OEDOMETER
PENGUJIAN SAMPEL TANAH SKALA KECIL
Sampel K 3–1 (dengan VD)

Waktu	$\sqrt{t}$	0.3 Kg/cm2		0.5 Kg/cm2	
		div	(mm)	div	(mm)
0	0	0,000	20,100	296,000	17,140
0,1	0,316	30,000	19,800	298,000	17,120
0,15	0,387	40,000	19,700	300,000	17,100
0,25	0,500	50,000	19,600	302,000	17,080
0,5	0,707	58,000	19,520	304,000	17,060
1	1,000	80,000	19,300	305,000	17,050
2	1,414	120,000	18,900	308,000	17,020
4	2,000	125,000	18,850	312,000	16,980
8	2,828	150,000	18,600	318,000	16,920
15	3,873	201,000	18,090	322,000	16,880
30	5,477	249,000	17,610	328,000	16,820
60	7,746	274,000	17,360	343,000	16,670
120	10,954	283,000	17,270	356,000	16,540
240	15,492	288,000	17,220	369,000	16,410
360	18,974	291,000	17,190	371,000	16,390
480	21,909	292,000	17,180		
1440	37,947	296,000	17,140		

Rebound

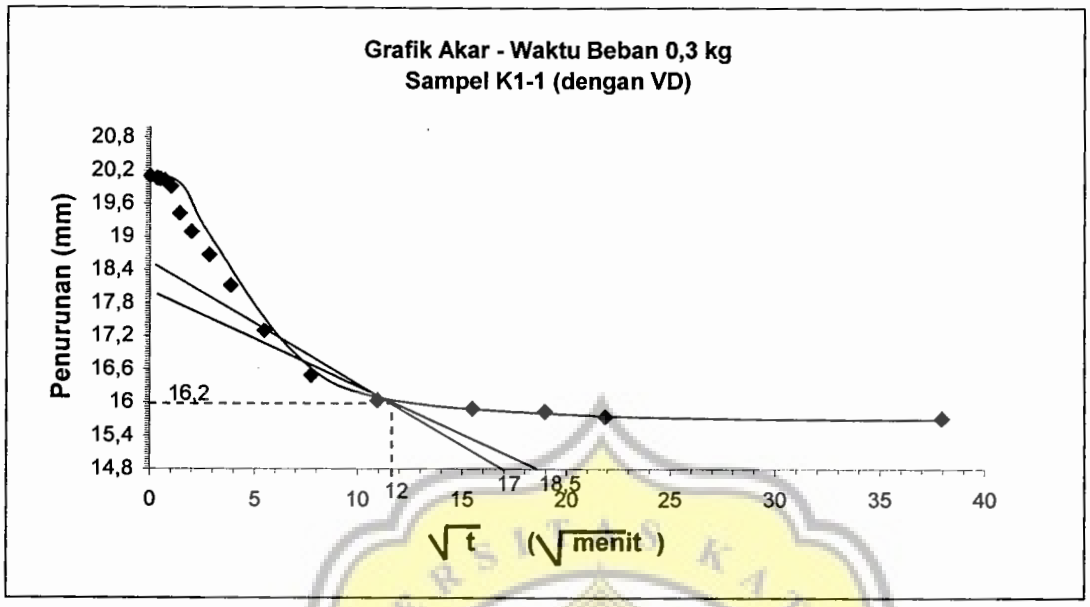
Waktu	$\sqrt{t}$	0.3 Kg/cm2		0 Kg/cm2	
		div	(mm)	div	(mm)
0	0	371,000	16,390	371,500	16,385
120	10,954	371,500	16,385		
1440	37,947			351,000	16,590

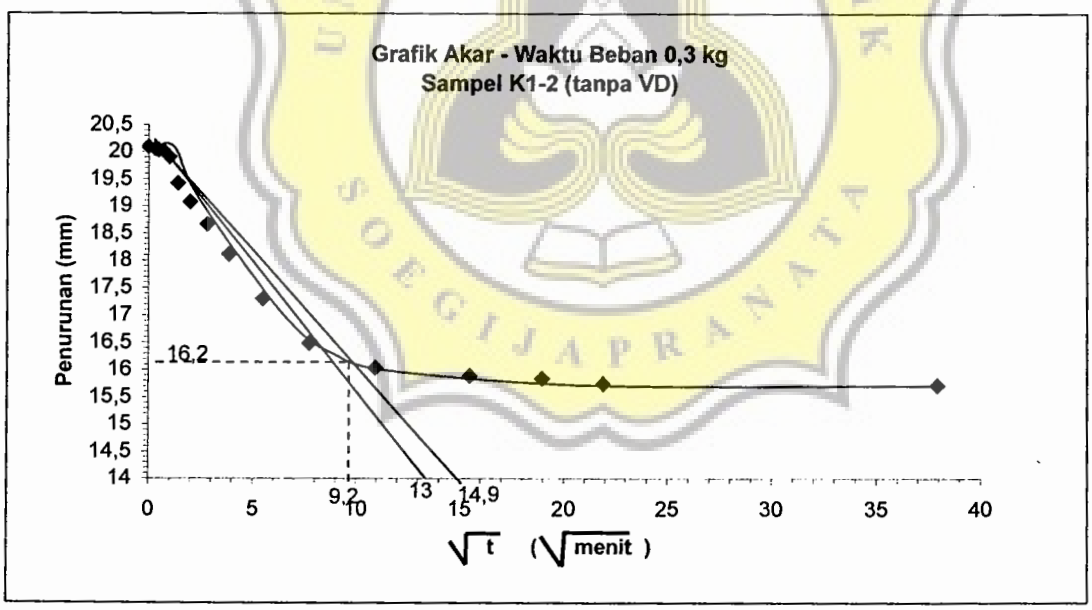
HASIL PENGAMATAN DIAL GAUGE PADA ALAT OEDOMETER
PENGUJIAN SAMPEL TANAH SKALA KECIL
Sampel K3–2 (tanpa VD)

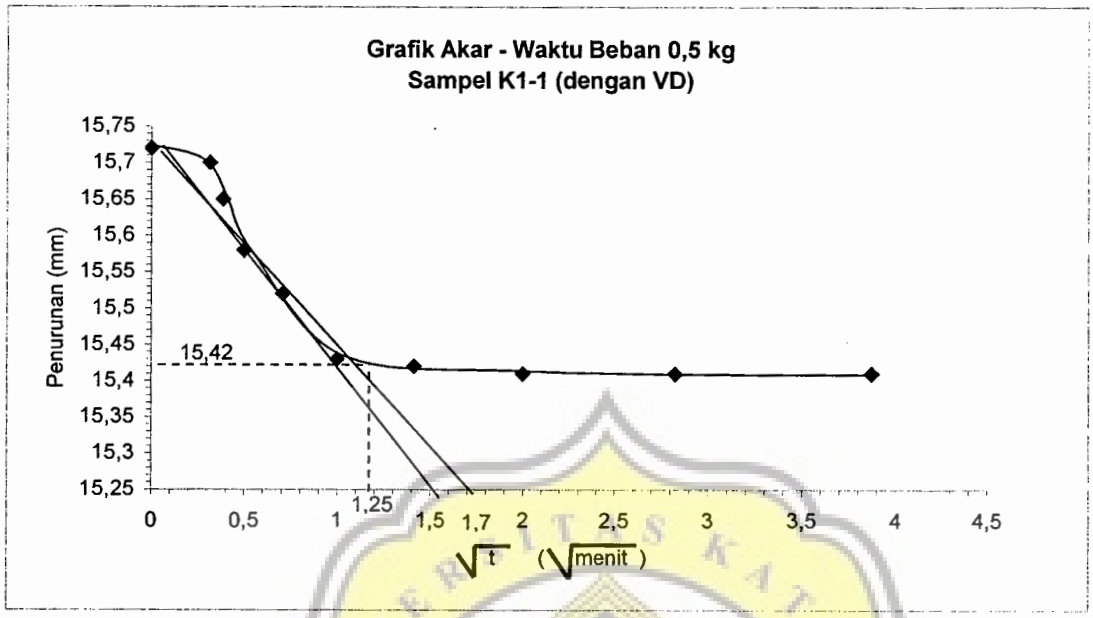
Waktu	$\sqrt{t}$	0.3 Kg/cm2		0.5 Kg/cm2	
		div	(mm)	div	(mm)
0	0	0,000	20,100	296,000	17,140
0,1	0,316	30,000	19,800	298,000	17,120
0,15	0,387	40,000	19,700	300,000	17,100
0,25	0,500	50,000	19,600	302,000	17,080
0,5	0,707	58,000	19,520	304,000	17,060
1	1,000	80,000	19,300	305,000	17,050
2	1,414	115,000	18,950	308,000	17,020
4	2,000	125,000	18,850	312,000	16,980
8	2,828	150,000	18,600	318,000	16,920
15	3,873	201,000	18,090	322,000	16,880
30	5,477	249,000	17,610	328,000	16,820
60	7,746	274,000	17,360	343,000	16,670
120	10,954	283,000	17,270	358,000	16,520
240	15,492	288,000	17,220	369,000	16,410
360	18,974	291,000	17,190	371,000	16,390
480	21,909	292,000	17,180		
1440	37,947	296,000	17,140		

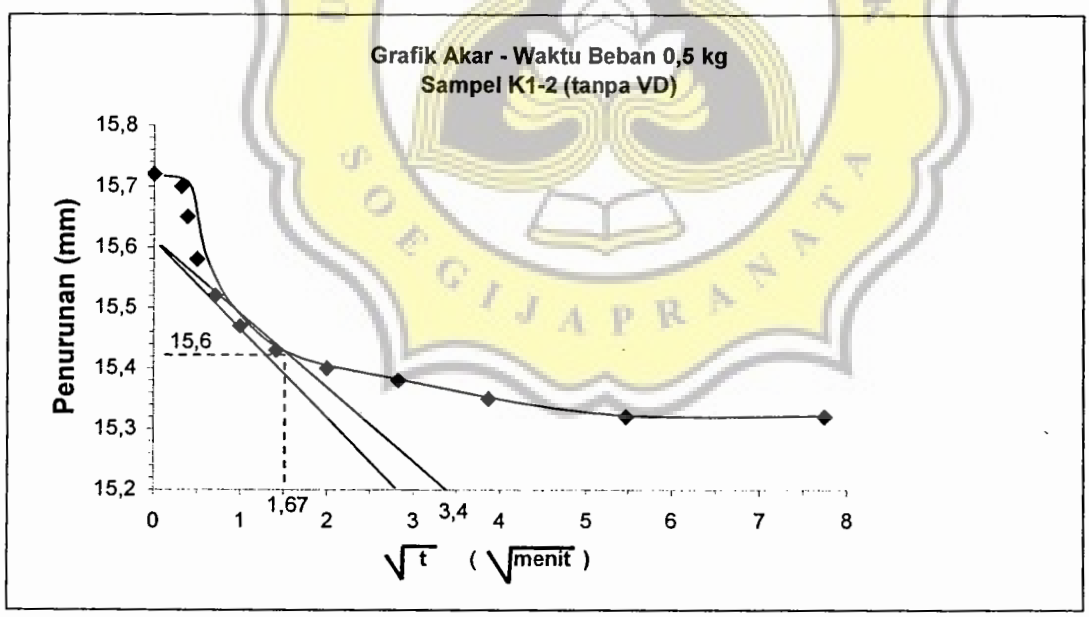
Rebound

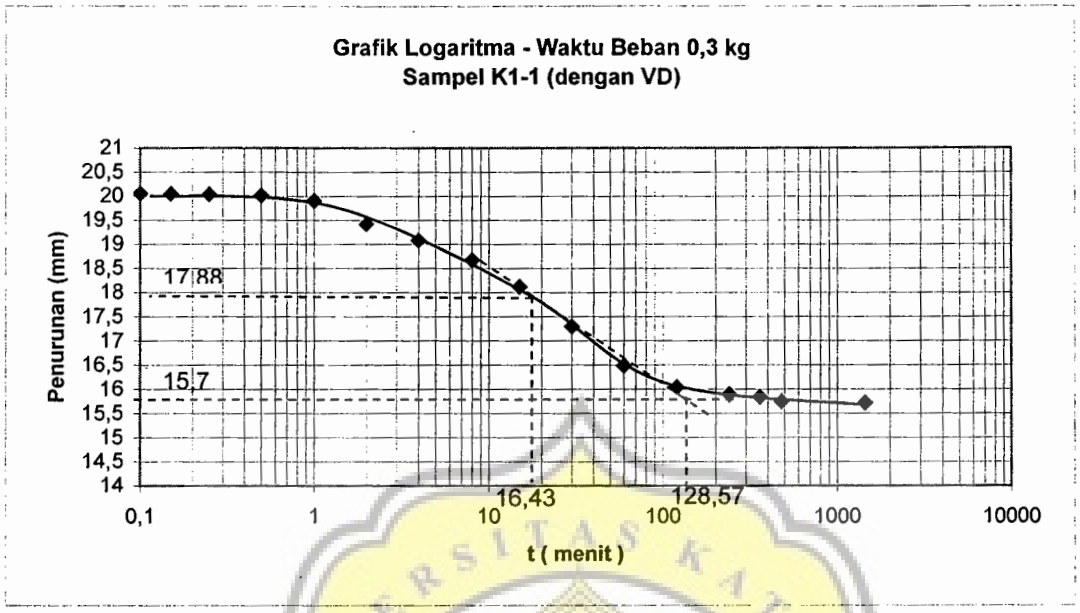
Waktu	$\sqrt{t}$	0.3 Kg/cm2		0 Kg/cm2	
		div	(mm)	div	(mm)
0	0	371,000	16,390	365,000	16,450
120	10,954	365,000	16,450		
1440	37,947			344,500	16,655

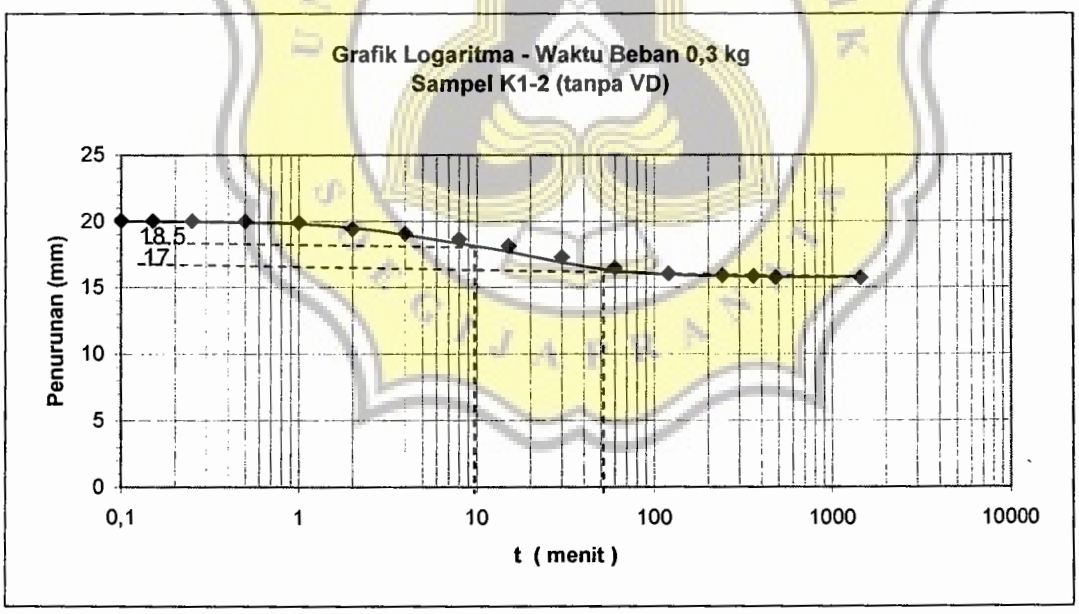

Grafik Akar - Waktu Beban 0,3 kg
Sampel K1-1 (dengan VD)
Penurunan (mm)
20,8
20,2
19,6
19
18,4
17,8
17,2
16,6
16
15,4
14,8
16,2
0
5
10
12
15
17
18,5
20
25
30
35
40
√t (√menit)

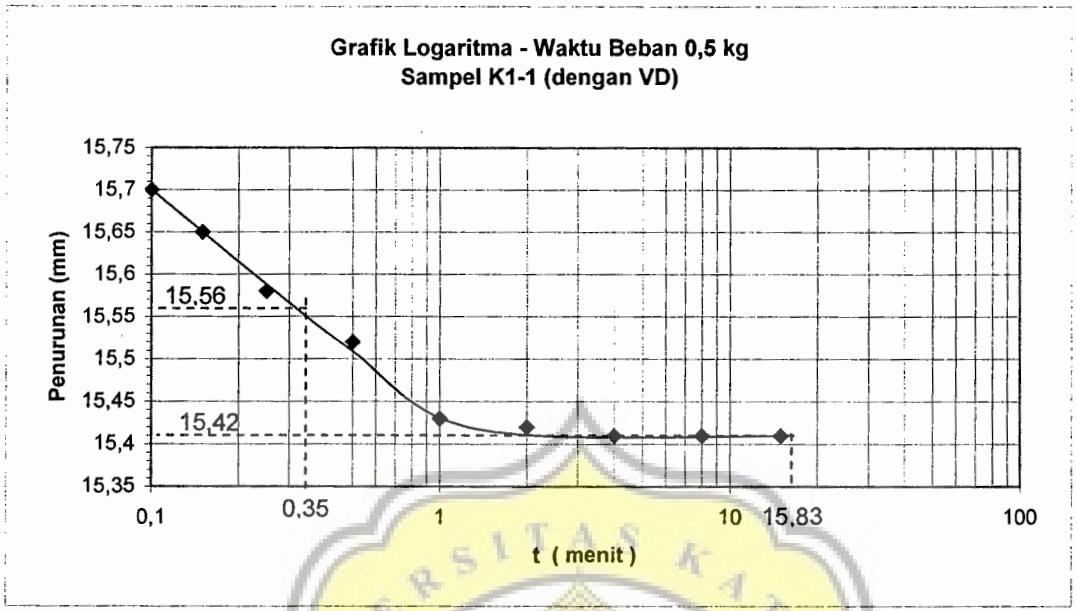

Grafik Akar - Waktu Beban 0,3 kg
Sampel K1-2 (tanpa VD)
Penurunan (mm)
20,5
20
19,5
19
18,5
18
17,5
17
16,5
16
15,5
15
14,5
14
16,2
0
5
9,2
10
13
14,9
15
20
25
30
35
40
√t (√menit)

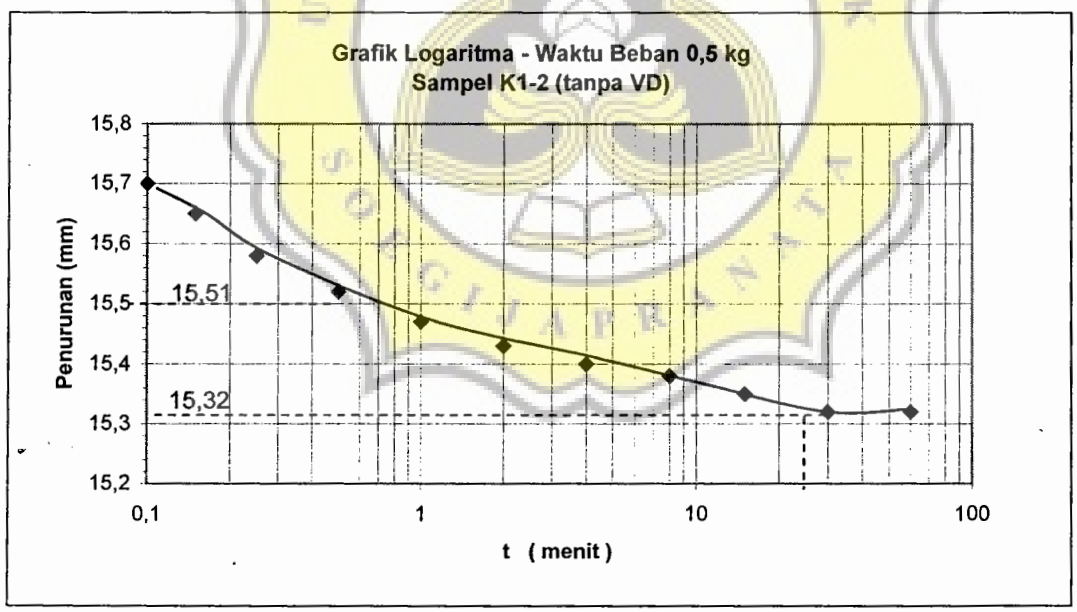

Grafik Akar - Waktu Beban 0,5 kg
Sampel K1-1 (dengan VD)
Penurunan (mm)
15,75
15,7
15,65
15,6
15,55
15,5
15,45
15,4
15,35
15,3
15,25
15,42
0
0,5
1
1,25
1,5
1,7
2
2,5
3
3,5
4
4,5
√t (√menit)

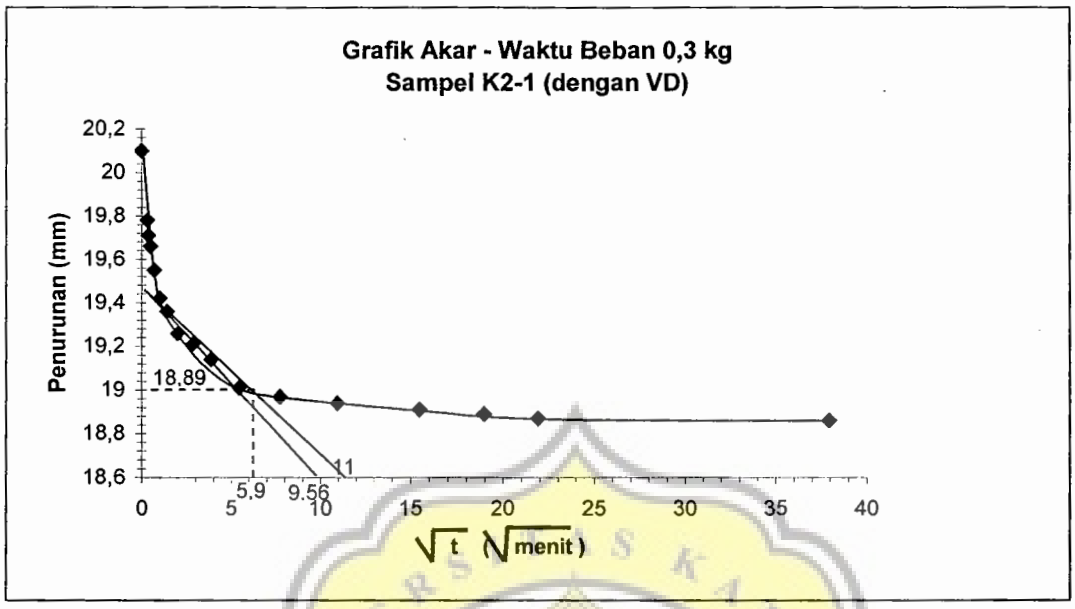

Grafik Akar - Waktu Beban 0,5 kg
Sampel K1-2 (tanpa VD)
Penurunan (mm)
15,8
15,7
15,6
15,5
15,4
15,3
15,2
15,6
0
1
1,67
2
3
3,4
4
5
6
7
8
√t (√menit)

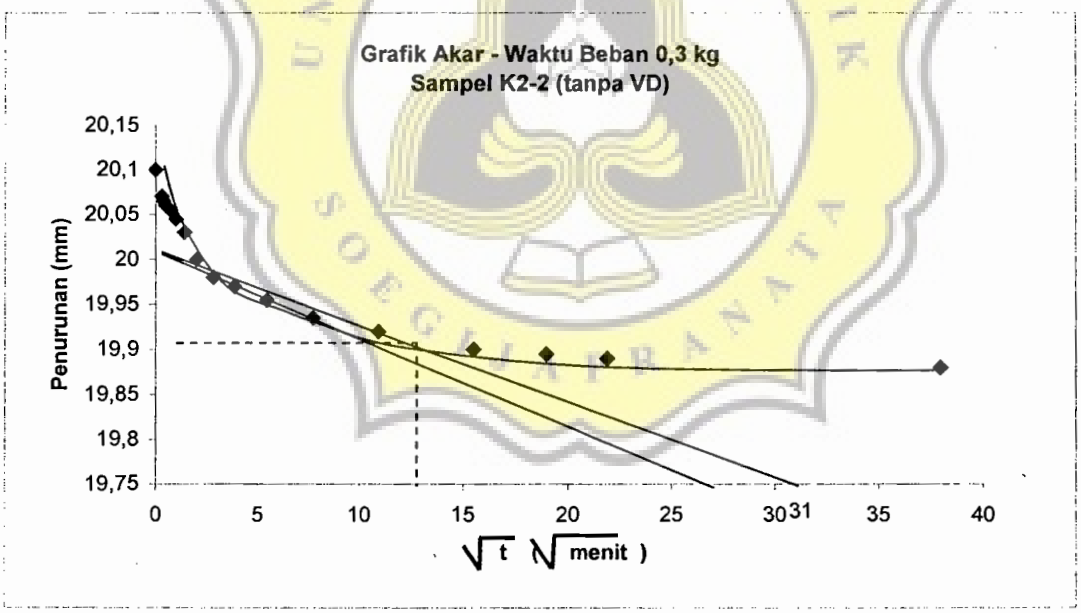

Grafik Logaritma - Waktu Beban 0,3 kg
Sampel K1-1 (dengan VD)
Penurunan (mm)
21
20,5
20
19,5
19
18,5
18
17,5
17
16,5
16
15,5
15
14,5
14
17,88
15,7
16,43
128,57
0,1
1
10
100
1000
10000
t (menit)

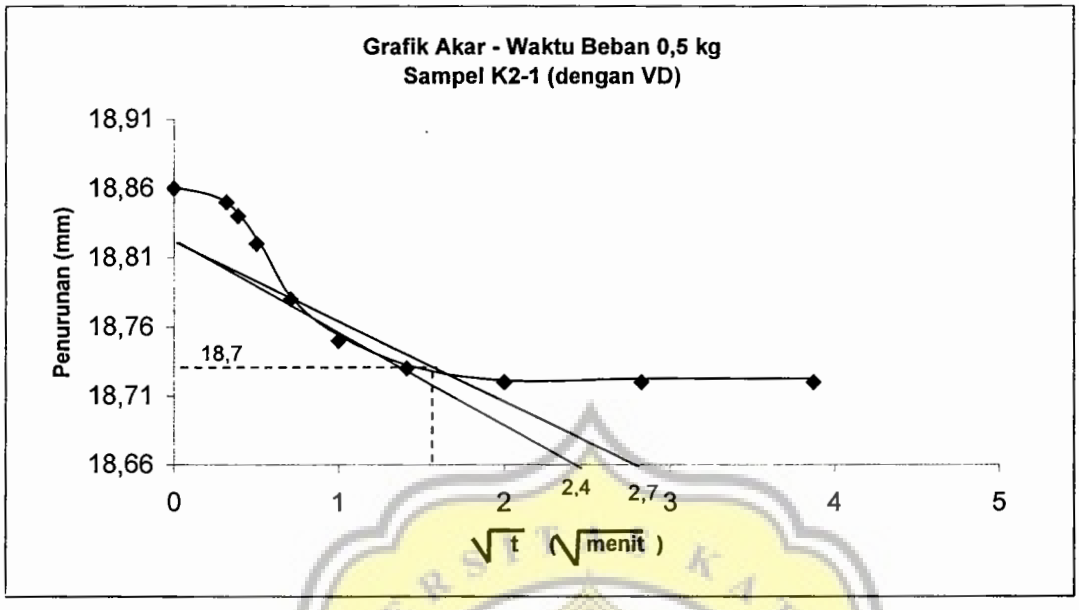

Grafik Logaritma - Waktu Beban 0,3 kg
Sampel K1-2 (tanpa VD)
Penurunan (mm)
25
20
15
10
5
0
18,5
17
0,1
1
10
100
1000
10000
t (menit)

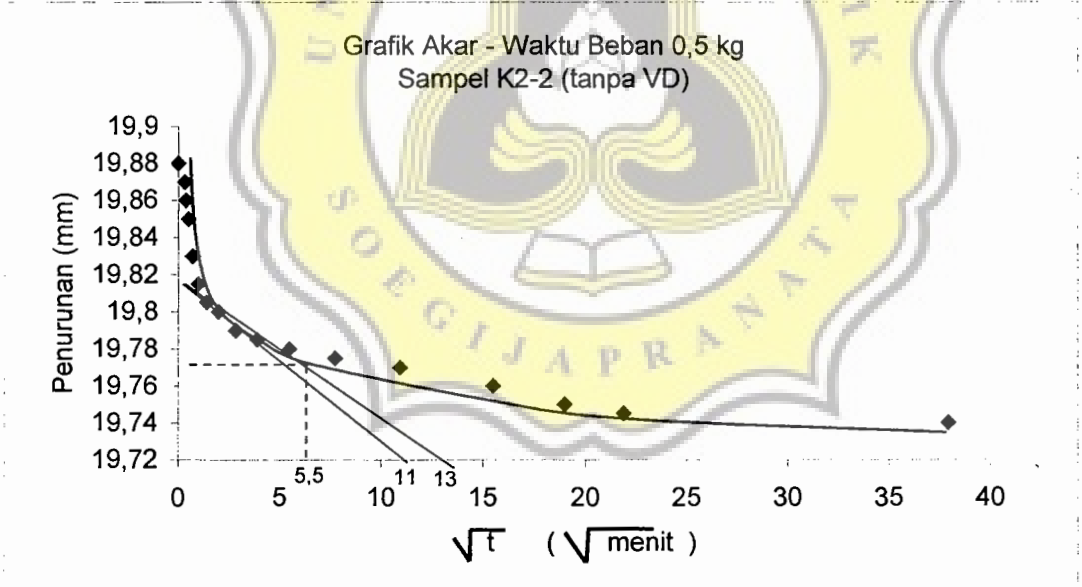

Grafik Logaritma - Waktu Beban 0,5 kg
Sampel K1-1 (dengan VD)
Penurunan (mm)
15,75
15,7
15,65
15,6
15,55
15,5
15,45
15,4
15,35
15,56
15,42
0,1
0,35
1
10
15,83
100
t (menit)

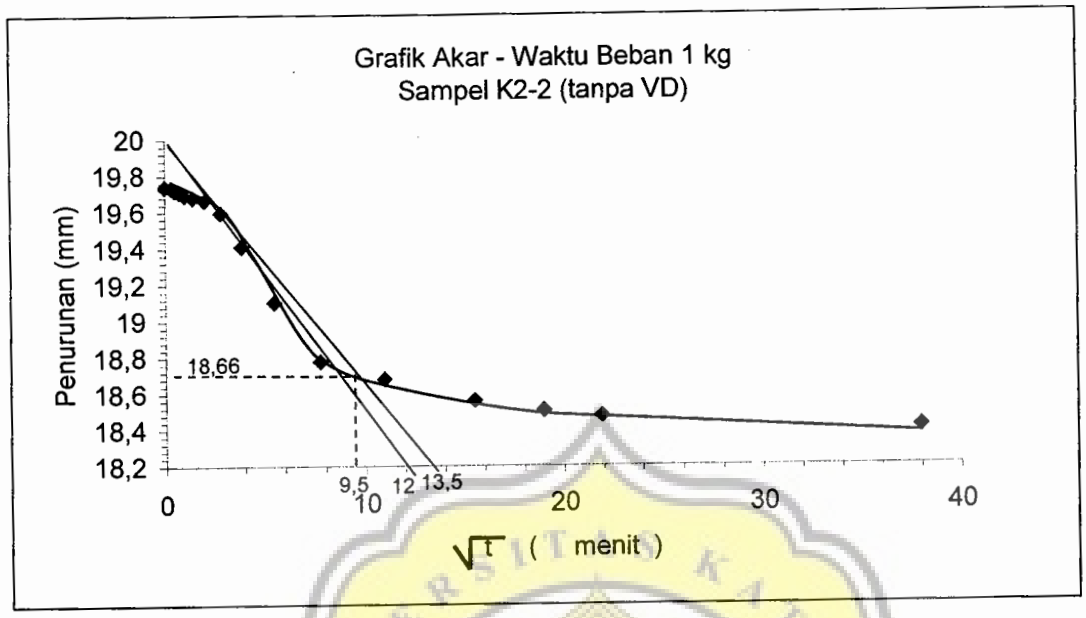

Grafik Logaritma - Waktu Beban 0,5 kg
Sampel K1-2 (tanpa VD)
Penurunan (mm)
15,8
15,7
15,6
15,5
15,4
15,3
15,2
15,51
15,32
0,1
1
10
100
t (menit)

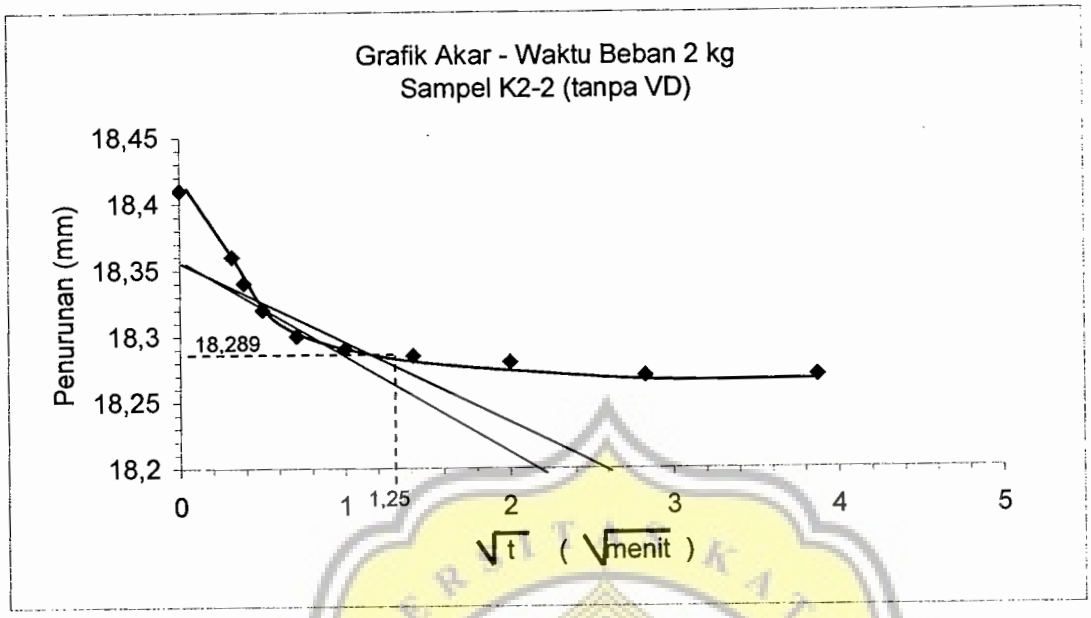

Grafik Akar - Waktu Beban 0,3 kg
Sampel K2-1 (dengan VD)
Penurunan (mm)
20,2
20
19,8
19,6
19,4
19,2
19
18,8
18,6
18,89
11
5.9
9.56
0
5
10
15
20
25
30
35
40
√t (√menit)

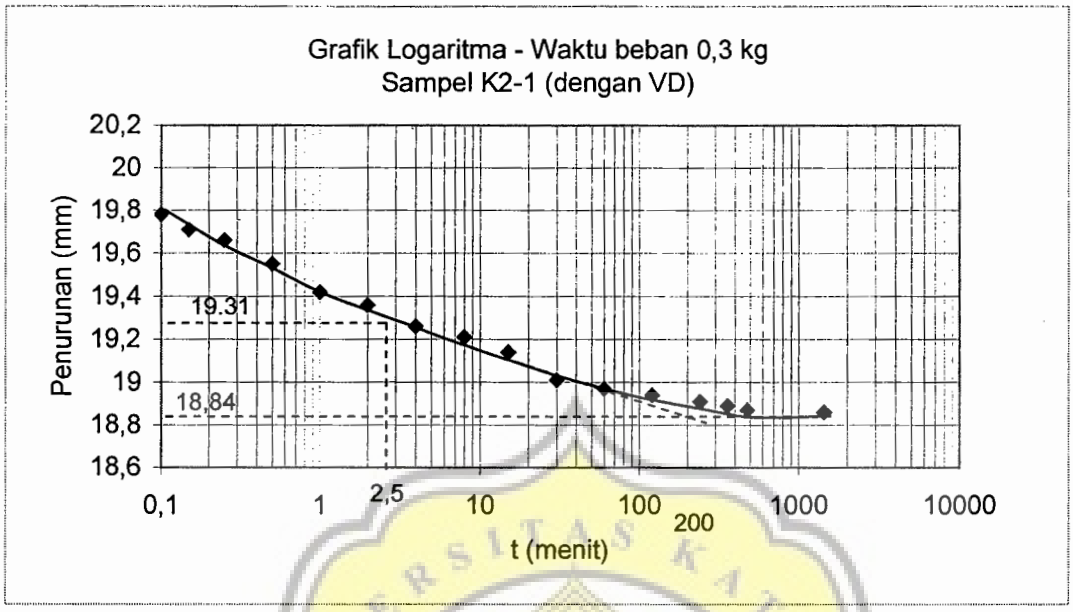

Grafik Akar - Waktu Beban 0,3 kg
Sampel K2-2 (tanpa VD)
Penurunan (mm)
20,15
20,1
20,05
20
19,95
19,9
19,85
19,8
19,75
0
5
10
15
20
25
30
31
35
40
√t (√menit)

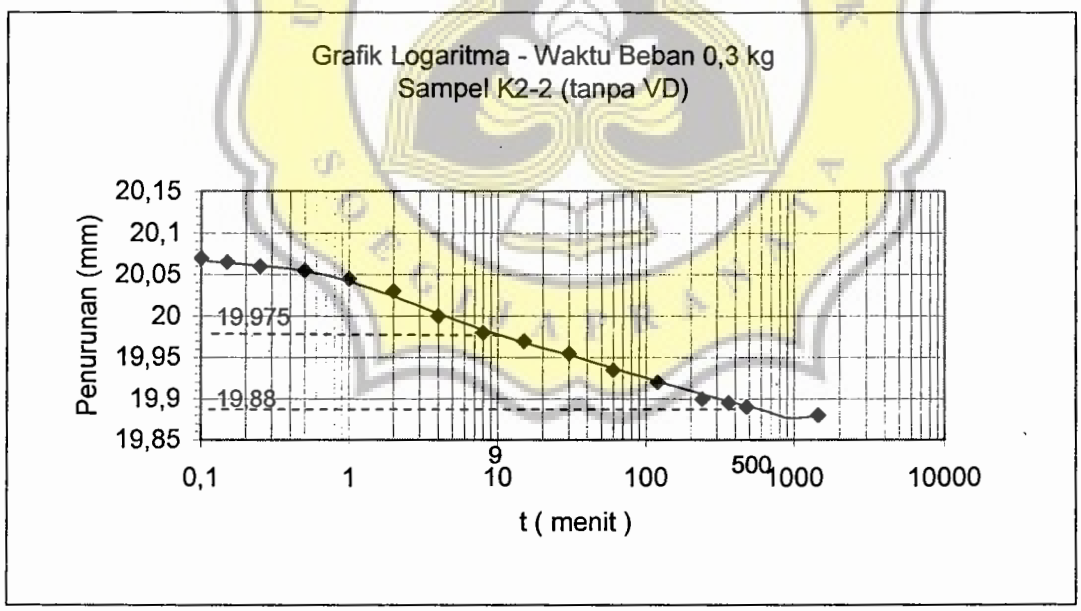

Grafik Akar - Waktu Beban 0,5 kg
Sampel K2-1 (dengan VD)
Penurunan (mm)
18,91
18,86
18,81
18,76
18,71
18,66
18,7
0
1
2
2,4
2,7
3
4
5
√t (√menit)

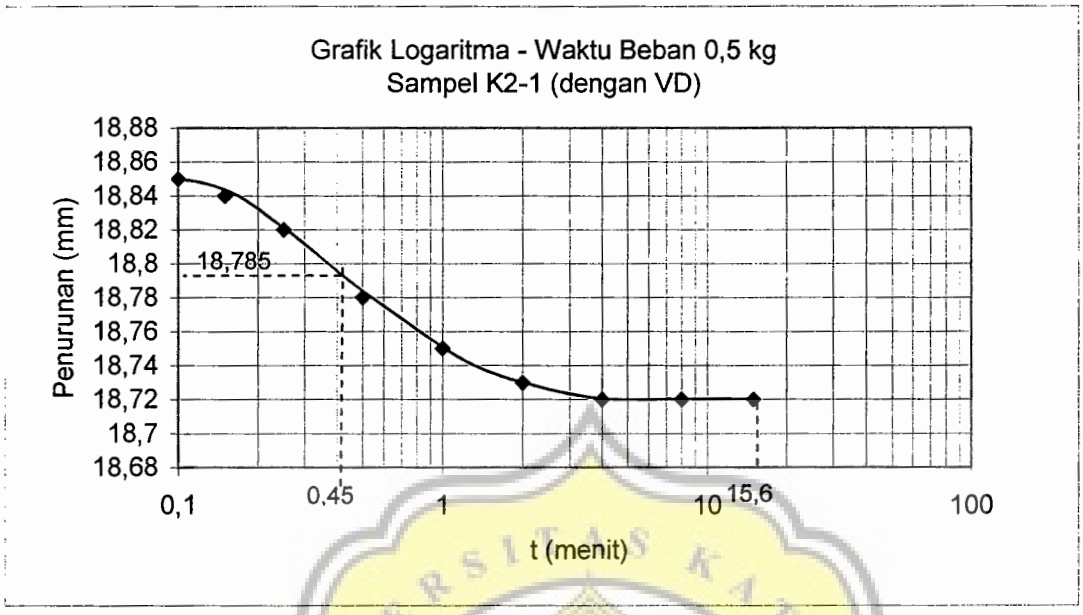

Grafik Akar - Waktu Beban 0,5 kg
Sampel K2-2 (tanpa VD)
Penurunan (mm)
19,9
19,88
19,86
19,84
19,82
19,8
19,78
19,76
19,74
19,72
5,5
11
13
0
5
10
15
20
25
30
35
40
√t (√menit)

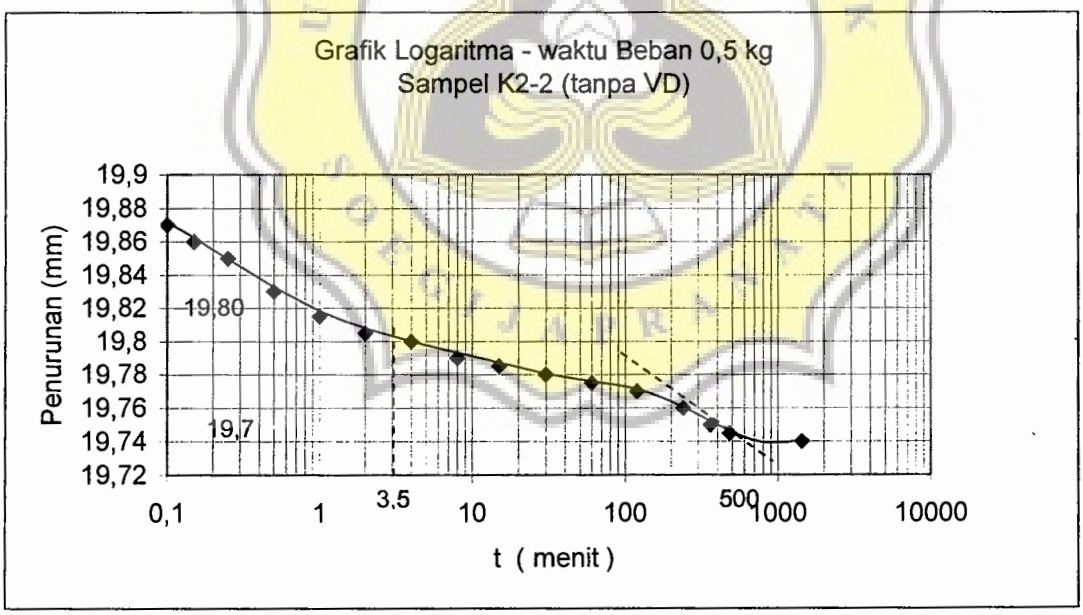

Grafik Akar - Waktu Beban 1 kg
Sampel K2-2 (tanpa VD)
Penurunan (mm)
20
19,8
19,6
19,4
19,2
19
18,8
18,6
18,4
18,2
18,66
0
9,5
10
12
13,5
20
30
40
√t (menit)

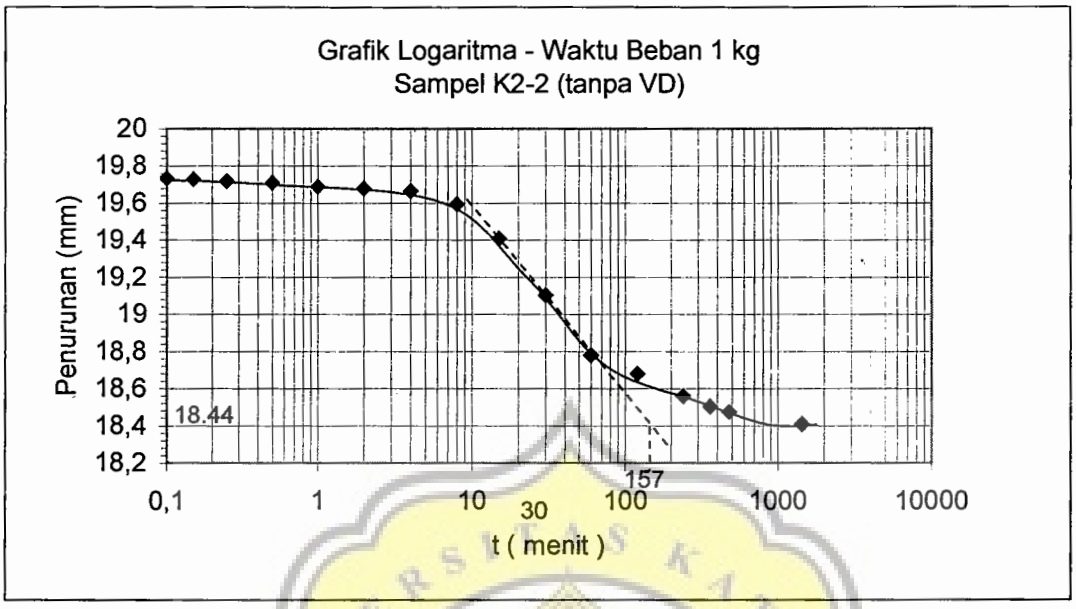

Grafik Akar - Waktu Beban 2 kg
Sampel K2-2 (tanpa VD)
Penurunan (mm)
18,45
18,4
18,35
18,3
18,25
18,2
18,289
0
1
1,25
2
3
4
5
√t (√menit)

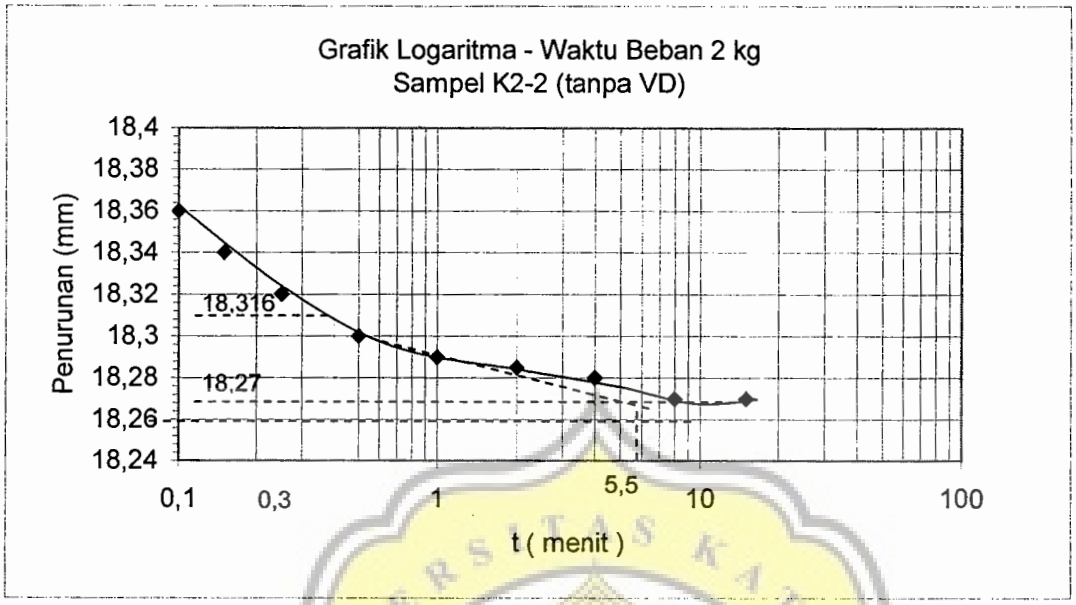

Grafik Logaritma - Waktu beban 0,3 kg
Sampel K2-1 (dengan VD)
Penurunan (mm)
20,2
20
19,8
19,6
19,4
19,2
19
18,8
18,6
19.31
18,84
0,1
1
2,5
10
100
200
1000
10000
t (menit)

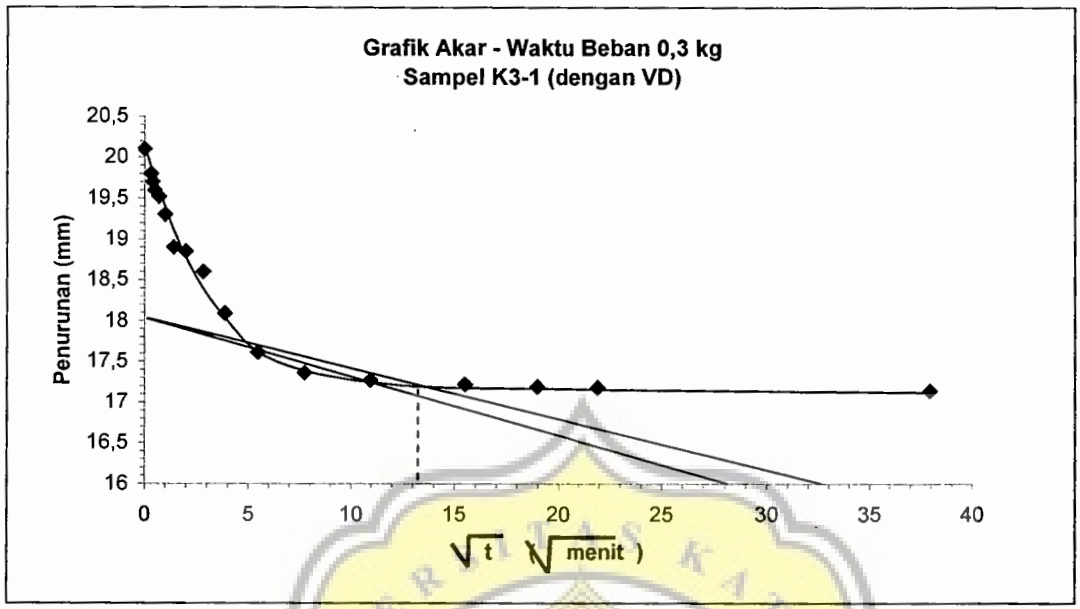

Grafik Logaritma - Waktu Beban 0,3 kg
Sampel K2-2 (tanpa VD)
Penurunan (mm)
20,15
20,1
20,05
20
19,95
19,9
19,85
19,975
19,88
0,1
1
9
10
100
500
1000
10000
t (menit)

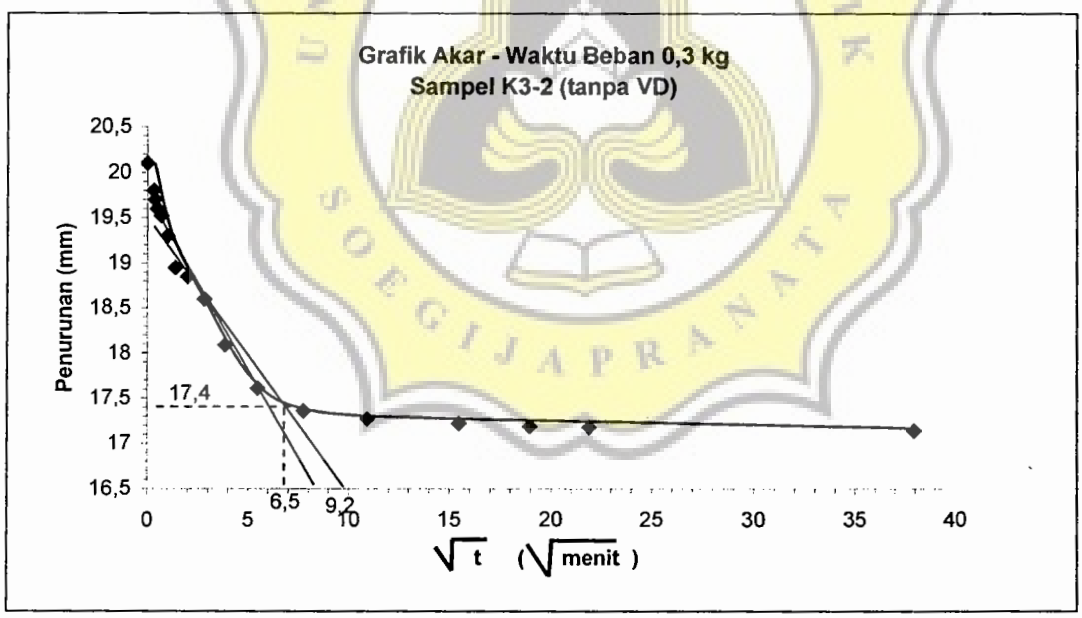

Grafik Logaritma - Waktu Beban 0,5 kg
Sampel K2-1 (dengan VD)
Penurunan (mm)
18,88
18,86
18,84
18,82
18,8
18,78
18,76
18,74
18,72
18,7
18,68
18,785
0,1
0,45
1
10
15,6
100
t (menit)

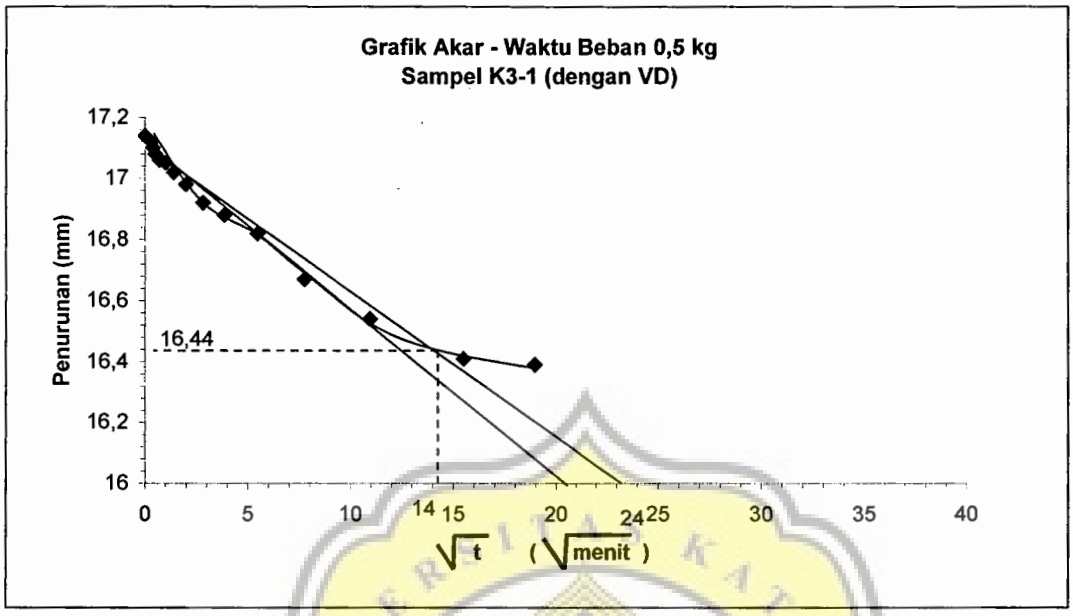

Grafik Logaritma - waktu Beban 0,5 kg
Sampel K2-2 (tanpa VD)
Penurunan (mm)
19,9
19,88
19,86
19,84
19,82
19,8
19,78
19,76
19,74
19,72
19,80
19,7
0,1
1
3,5
10
100
500
1000
10000
t (menit)

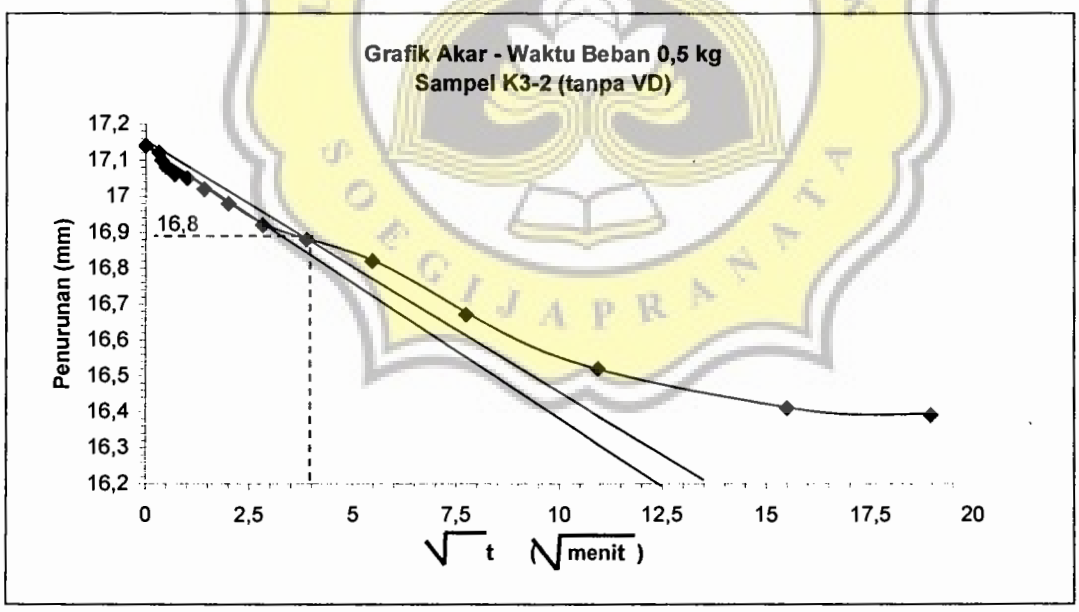

Grafik Logaritma - Waktu Beban 1 kg
Sampel K2-2 (tanpa VD)
Penurunan (mm)
20
19,8
19,6
19,4
19,2
19
18,8
18,6
18,4
18,2
18.44
157
0,1
1
10
30
100
1000
10000
t (menit)

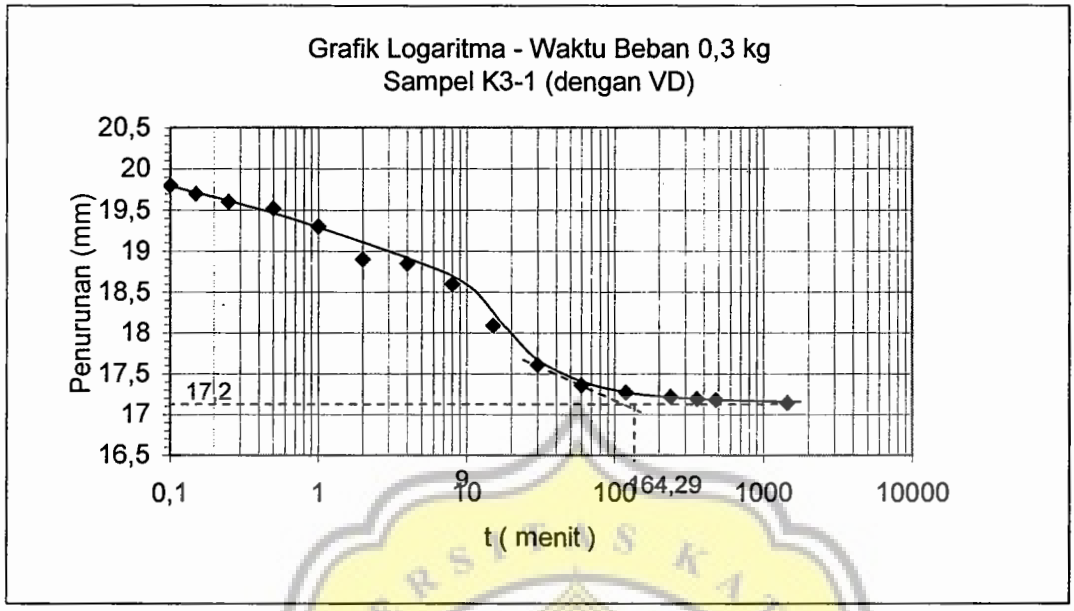

Grafik Logaritma - Waktu Beban 2 kg
Sampel K2-2 (tanpa VD)
Penurunan (mm)
18,4
18,38
18,36
18,34
18,32
18,3
18,28
18,26
18,24
18,316
18,27
0,1
0,3
1
5,5
10
100
t (menit)

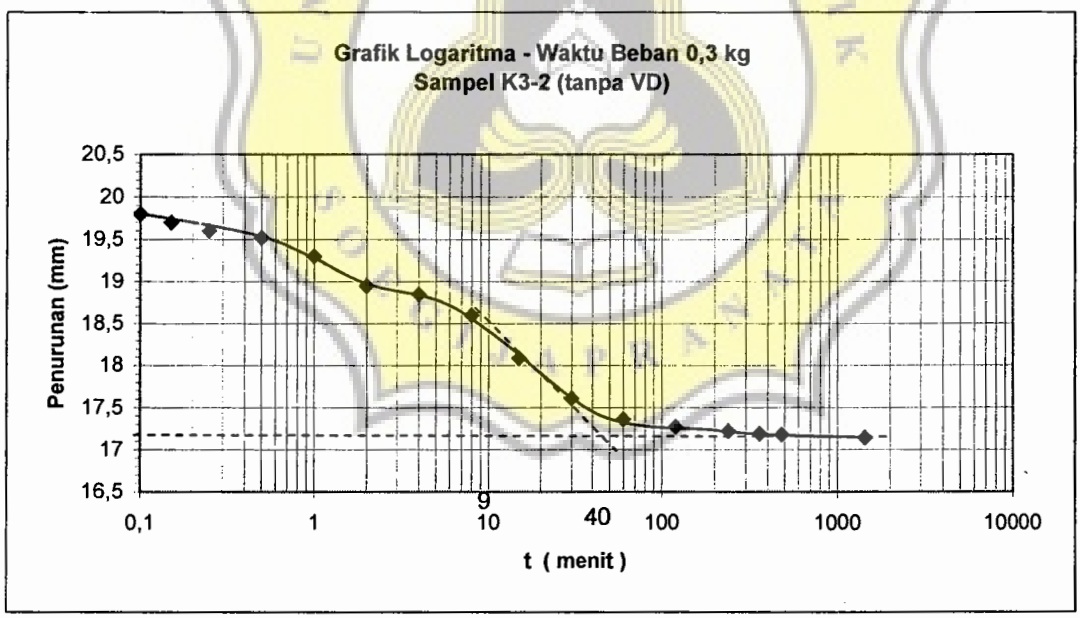

Grafik Akar - Waktu Beban 0,3 kg
Sampel K3-1 (dengan VD)
Penurunan (mm)
20,5
20
19,5
19
18,5
18
17,5
17
16,5
16
0
5
10
15
20
25
30
35
40
√t (√menit)

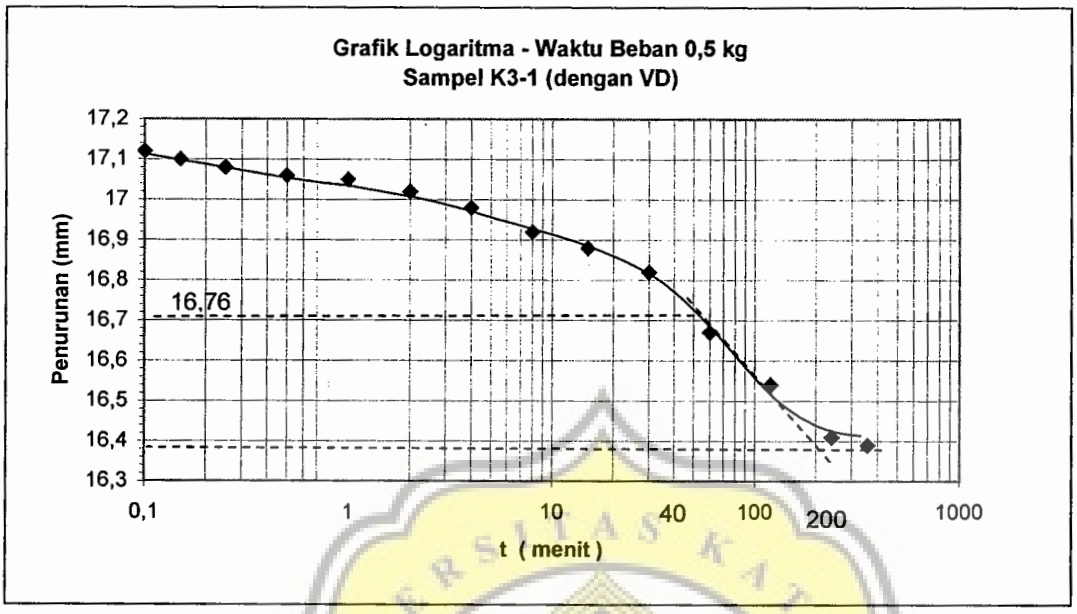

Grafik Akar - Waktu Beban 0,3 kg
Sampel K3-2 (tanpa VD)
Penurunan (mm)
20,5
20
19,5
19
18,5
18
17,5
17
16,5
17,4
6,5
9,2
0
5
10
15
20
25
30
35
40
√t (√menit)

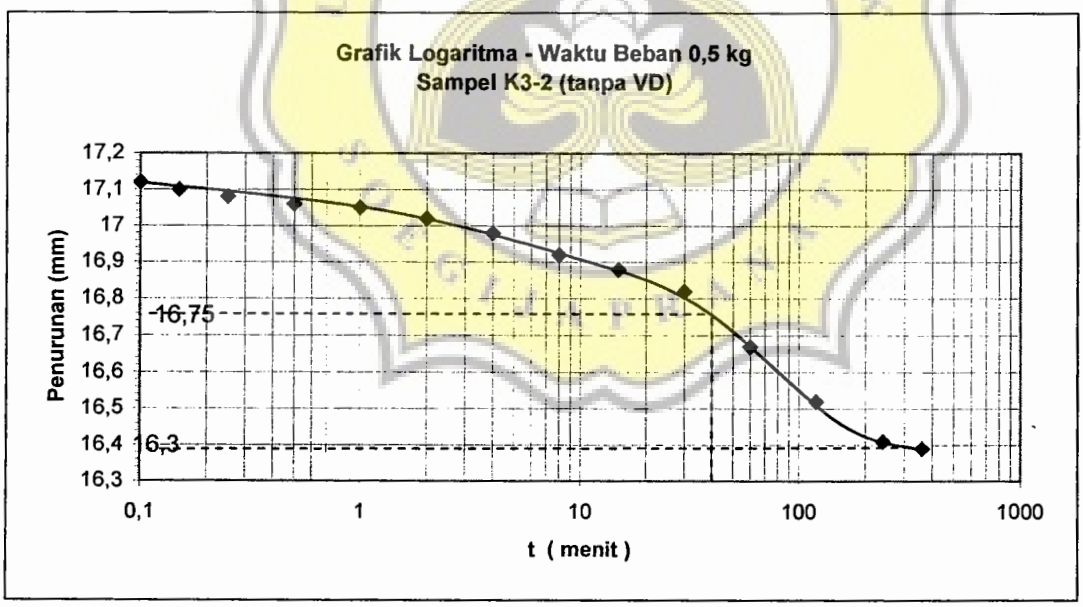

Grafik Akar - Waktu Beban 0,5 kg
Sampel K3-1 (dengan VD)
Penurunan (mm)
17,2
17
16,8
16,6
16,4
16,2
16
16,44
0
5
10
14
15
20
24
25
30
35
40
√t
(√menit)

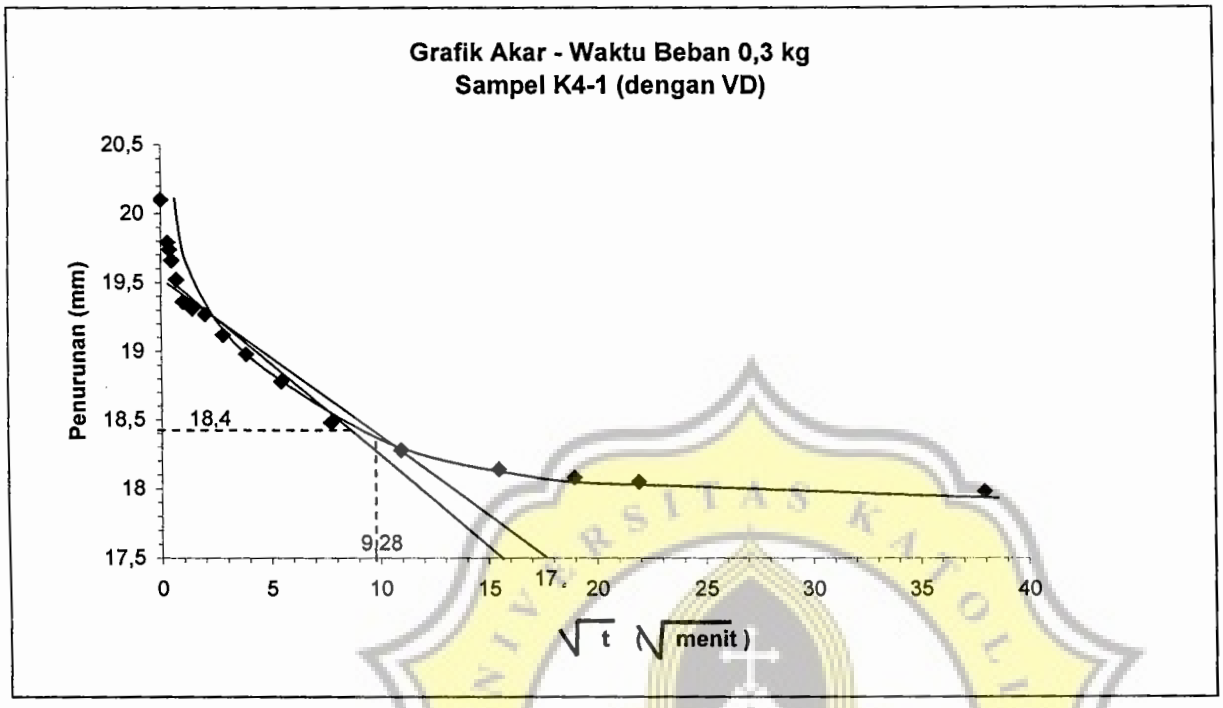

Grafik Akar - Waktu Beban 0,5 kg
Sampel K3-2 (tanpa VD)
Penurunan (mm)
17,2
17,1
17
16,9
16,8
16,7
16,6
16,5
16,4
16,3
16,2
16,8
0
2,5
5
7,5
10
12,5
15
17,5
20
√t
(√menit)

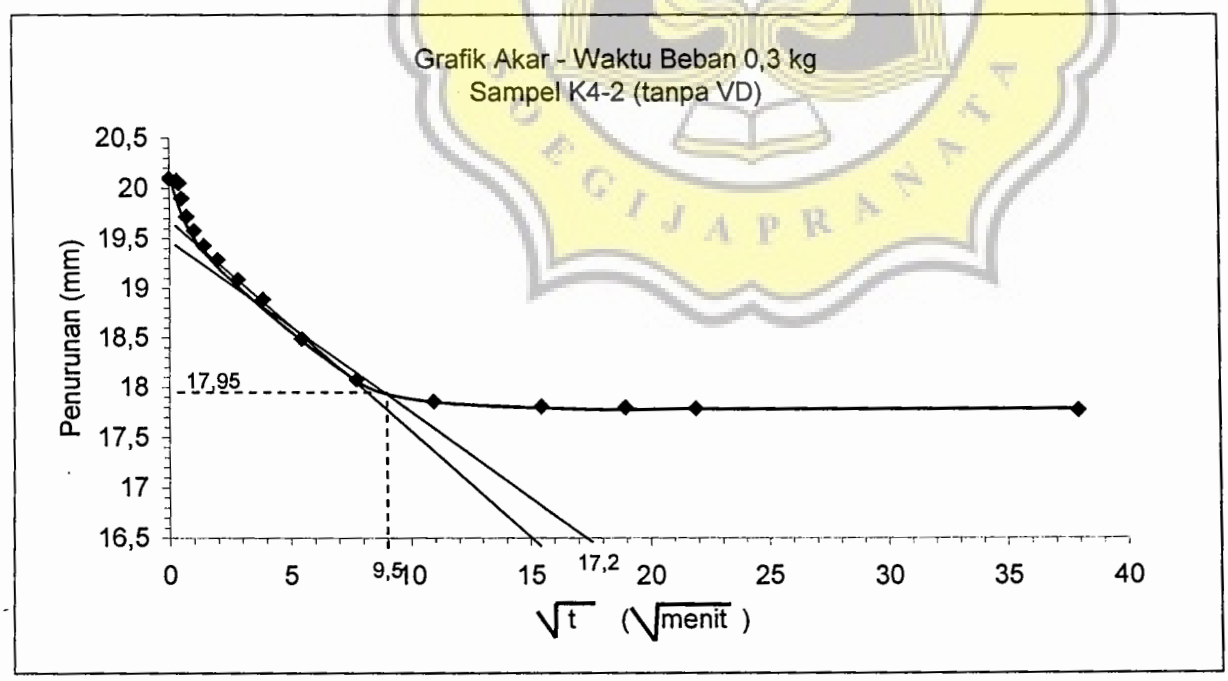

Grafik Logaritma - Waktu Beban 0,3 kg
Sampel K3-1 (dengan VD)
Penurunan (mm)
20,5
20
19,5
19
18,5
18
17,5
17
16,5
17,2
0,1
1
9
10
100
64,29
1000
10000
t (menit)

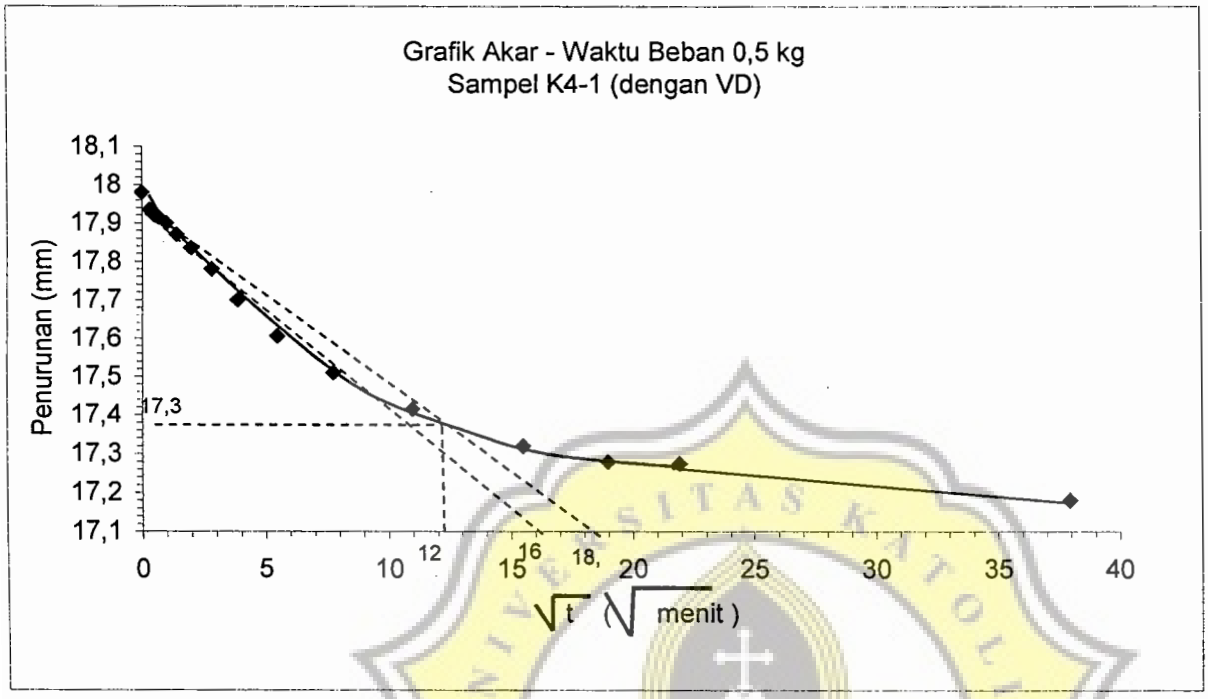

Grafik Logaritma - Waktu Beban 0,3 kg
Sampel K3-2 (tanpa VD)
Penurunan (mm)
20,5
20
19,5
19
18,5
18
17,5
17
16,5
0,1
1
9
10
40
100
1000
10000
t (menit)

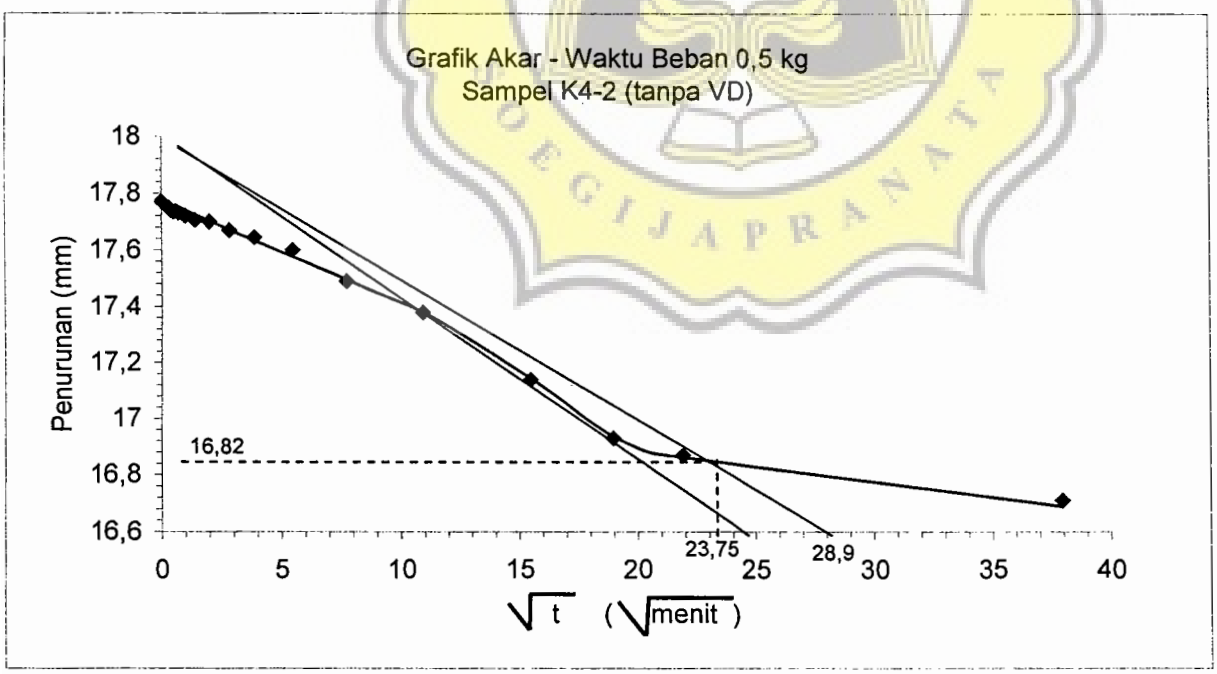

Grafik Logaritma - Waktu Beban 0,5 kg
Sampel K3-1 (dengan VD)
Penurunan (mm)
17,2
17,1
17
16,9
16,8
16,7
16,6
16,5
16,4
16,3
16,76
0,1
1
10
40
100
200
1000
t (menit)

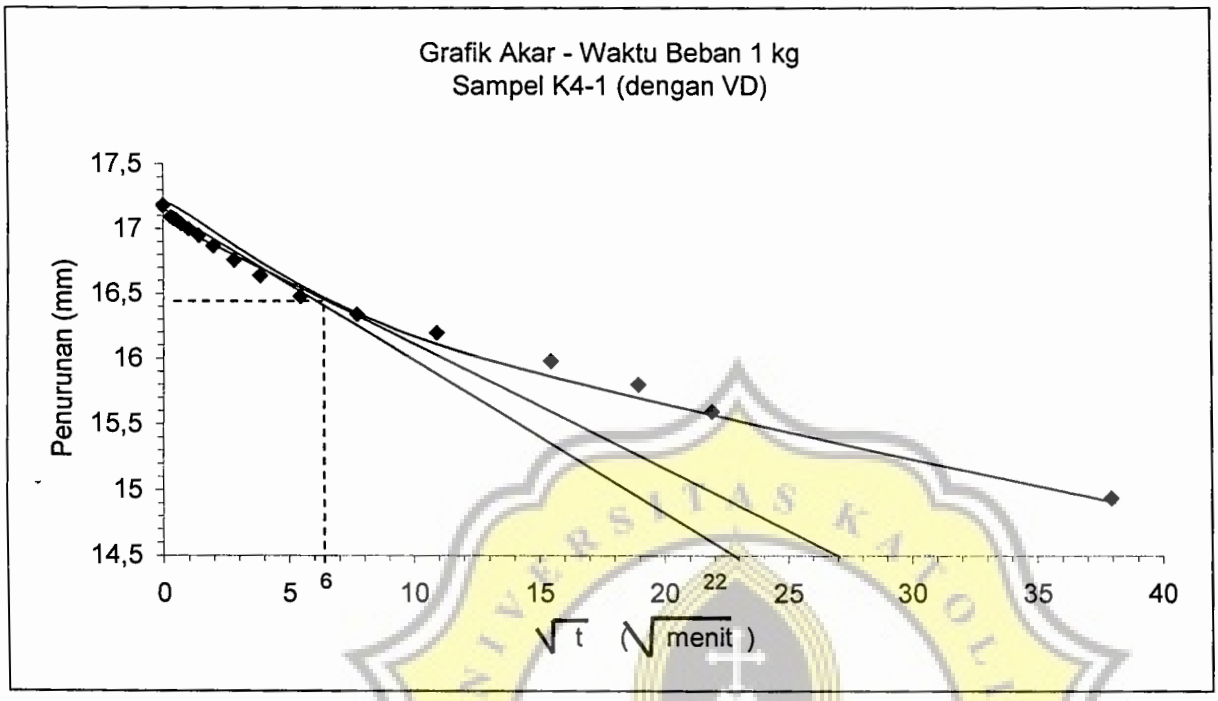

Grafik Logaritma - Waktu Beban 0,5 kg
Sampel K3-2 (tanpa VD)
Penurunan (mm)
17,2
17,1
17
16,9
16,8
16,7
16,6
16,5
16,4
16,3
16,75
16,3
0,1
1
10
100
1000
t (menit)

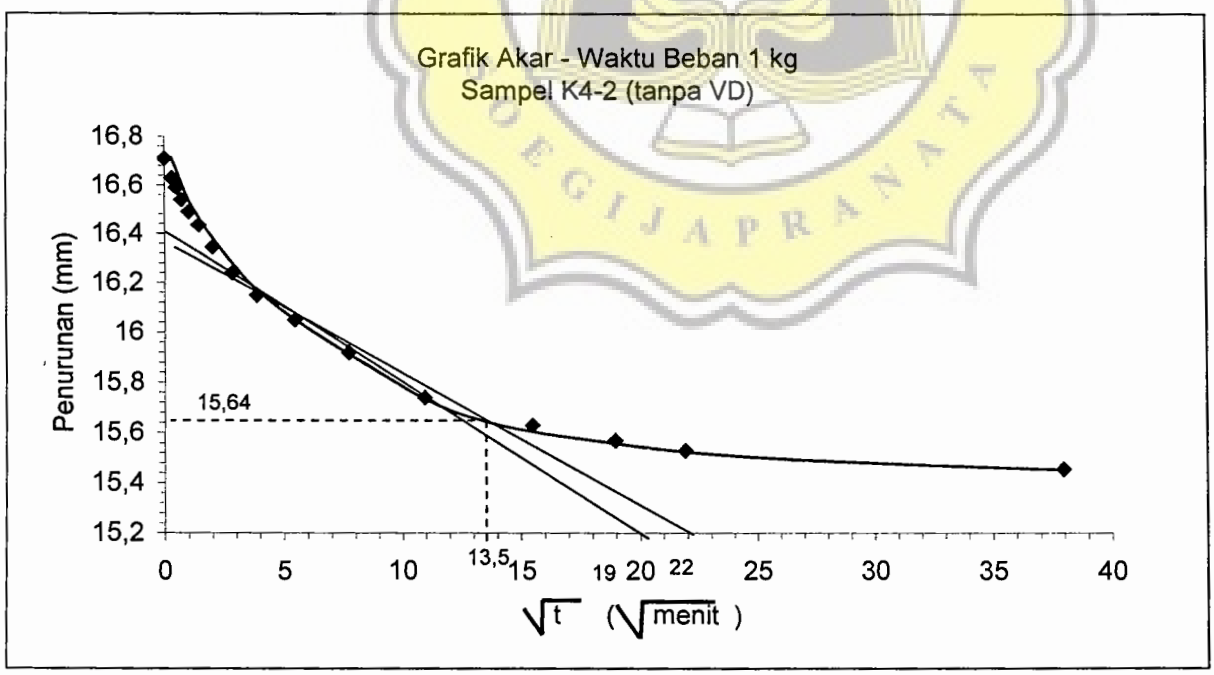

Grafik Akar - Waktu Beban 0,3 kg
Sampel K4-1 (dengan VD)
Penurunan (mm)
20,5
20
19,5
19
18,5
18
17,5
18,4
9,28
17,
0
5
10
15
20
25
30
35
40
√t (√menit)

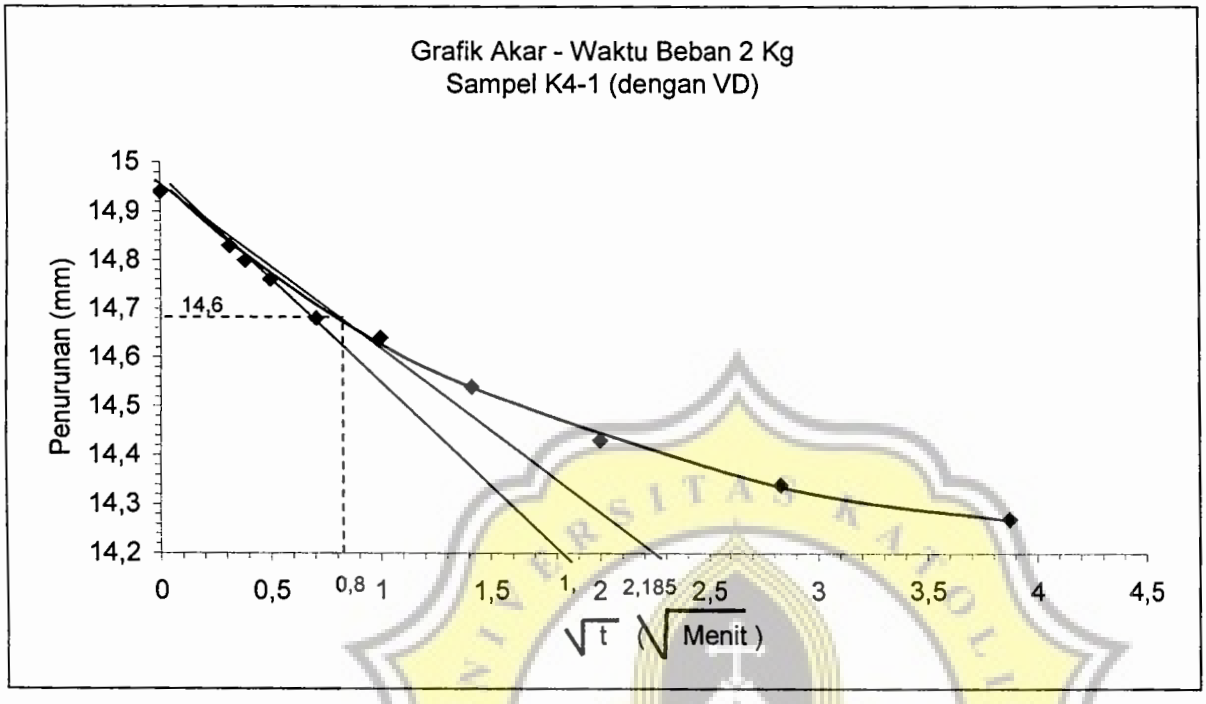

Grafik Akar - Waktu Beban 0,3 kg
Sampel K4-2 (tanpa VD)
Penurunan (mm)
20,5
20
19,5
19
18,5
18
17,5
17
16,5
17,95
9,5
17,2
0
5
10
15
20
25
30
35
40
√t (√menit)

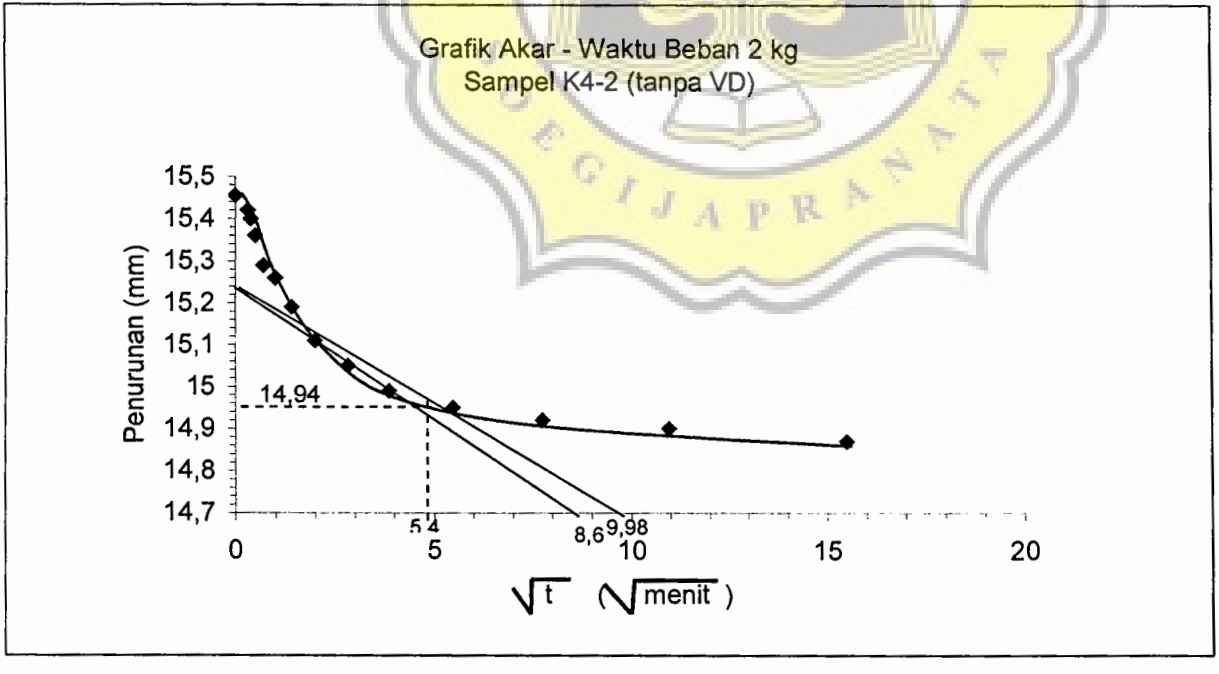

Grafik Akar - Waktu Beban 0,5 kg
Sampel K4-1 (dengan VD)
Penurunan (mm)
18,1
18
17,9
17,8
17,7
17,6
17,5
17,4
17,3
17,2
17,1
17,3
0
5
10
12
15
16
18,
20
25
30
35
40
√t (√menit)


Grafik Akar - Waktu Beban 0,5 kg
Sampel K4-2 (tanpa VD)
Penurunan (mm)
18
17,8
17,6
17,4
17,2
17
16,8
16,6
16,82
0
5
10
15
20
23,75
25
28,9
30
35
40
√t (√menit)

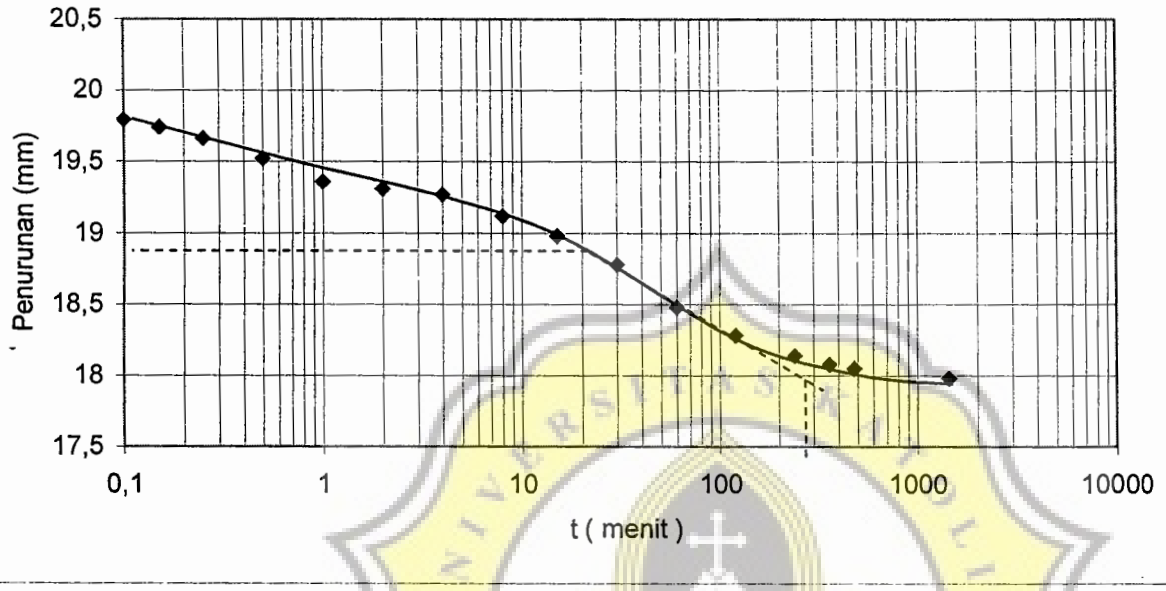

Grafik Akar - Waktu Beban 1 kg
Sampel K4-1 (dengan VD)
Penurunan (mm)
17,5
17
16,5
16
15,5
15
14,5
0
5
6
10
15
20
22
25
30
35
40
√t (√menit)


Grafik Akar - Waktu Beban 1 kg
Sampel K4-2 (tanpa VD)
Penurunan (mm)
16,8
16,6
16,4
16,2
16
15,8
15,6
15,4
15,2
15,64
0
5
10
13,5
15
19
20
22
25
30
35
40
√t (√menit)

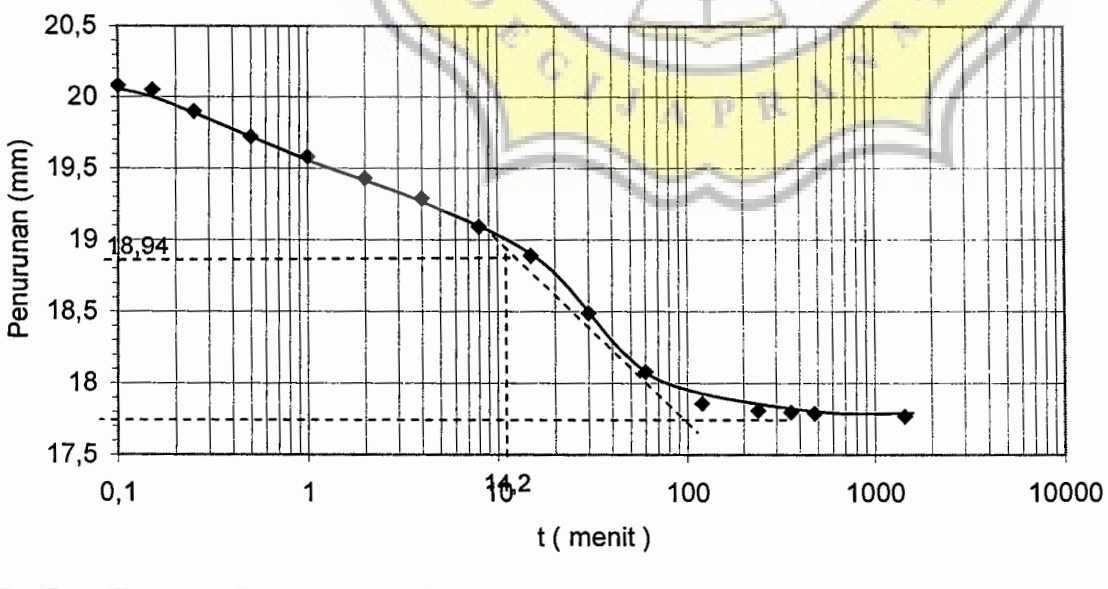

Grafik Akar - Waktu Beban 2 Kg
Sampel K4-1 (dengan VD)
Penurunan (mm)
15
14,9
14,8
14,7
14,6
14,5
14,4
14,3
14,2
14,6
0
0,5
0,8
1
1,5
1,
2
2,185
2,5
3
3,5
4
4,5
√t (√Menit)

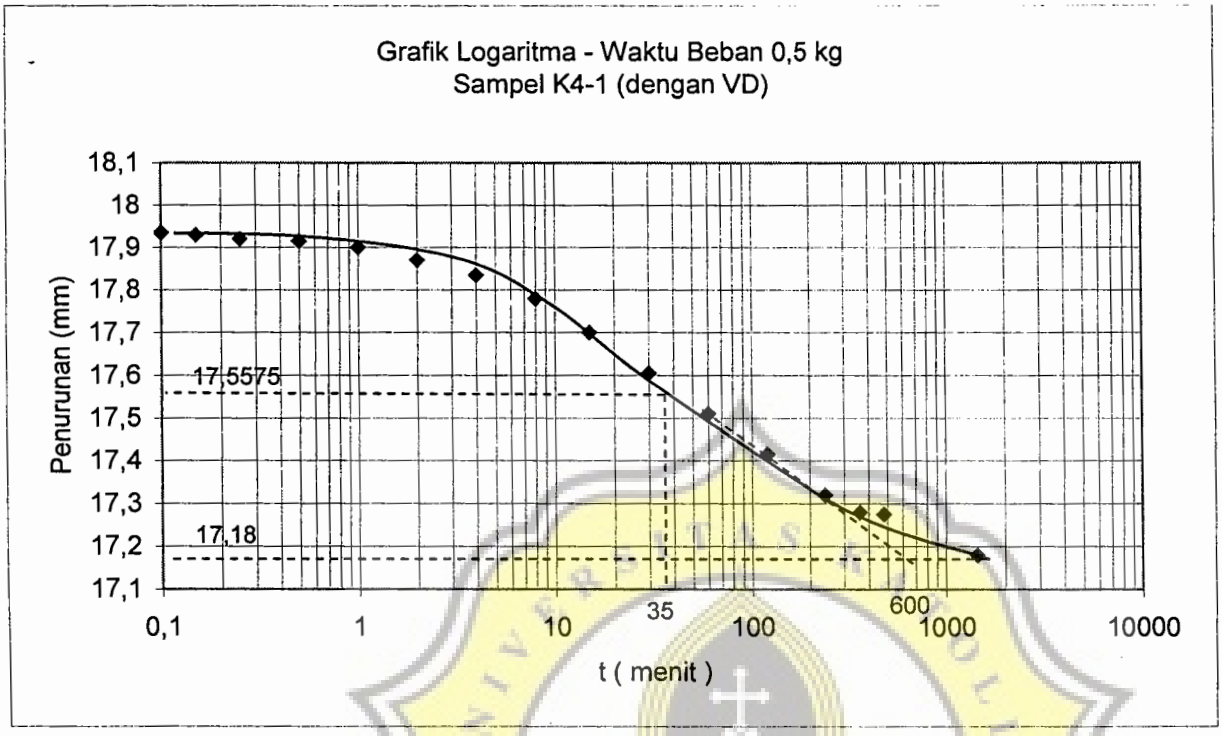

Grafik Akar - Waktu Beban 2 kg
Sampel K4-2 (tanpa VD)
Penurunan (mm)
15,5
15,4
15,3
15,2
15,1
15
14,9
14,8
14,7
14,94
5,4
8,6
9,98
0
5
10
15
20
√t (√menit)

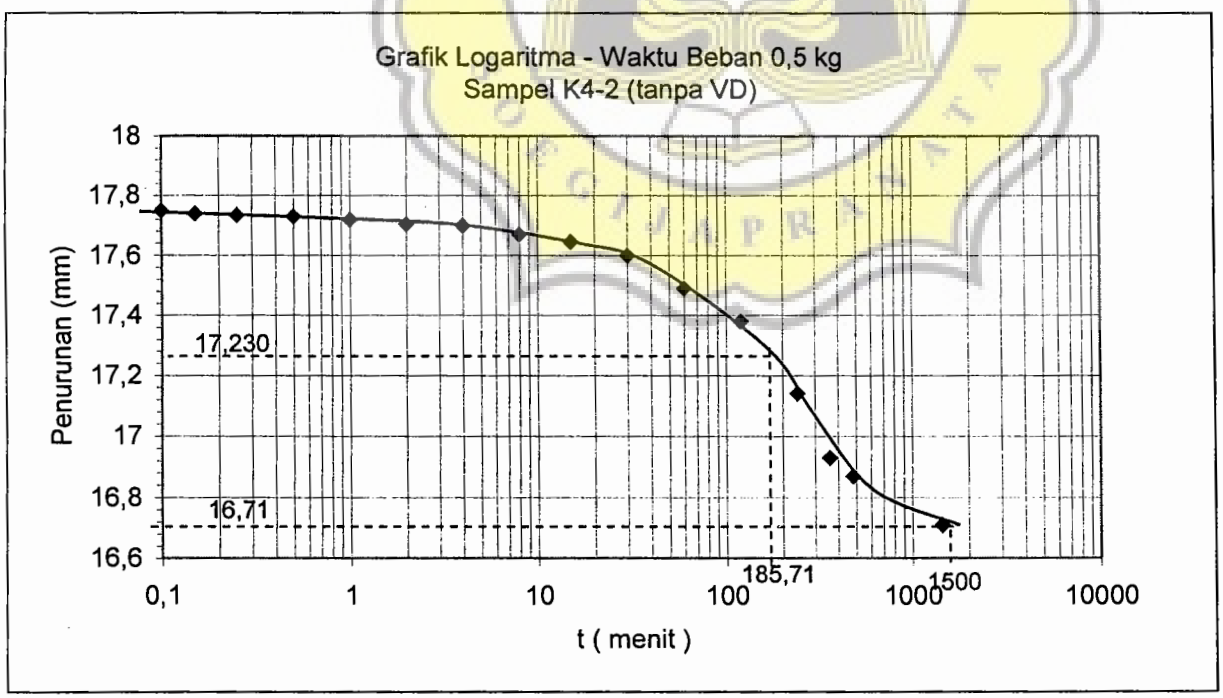
Grafik Metode Logarima Beban 0,3 kg
Sampel K4-1 (dengan VD)

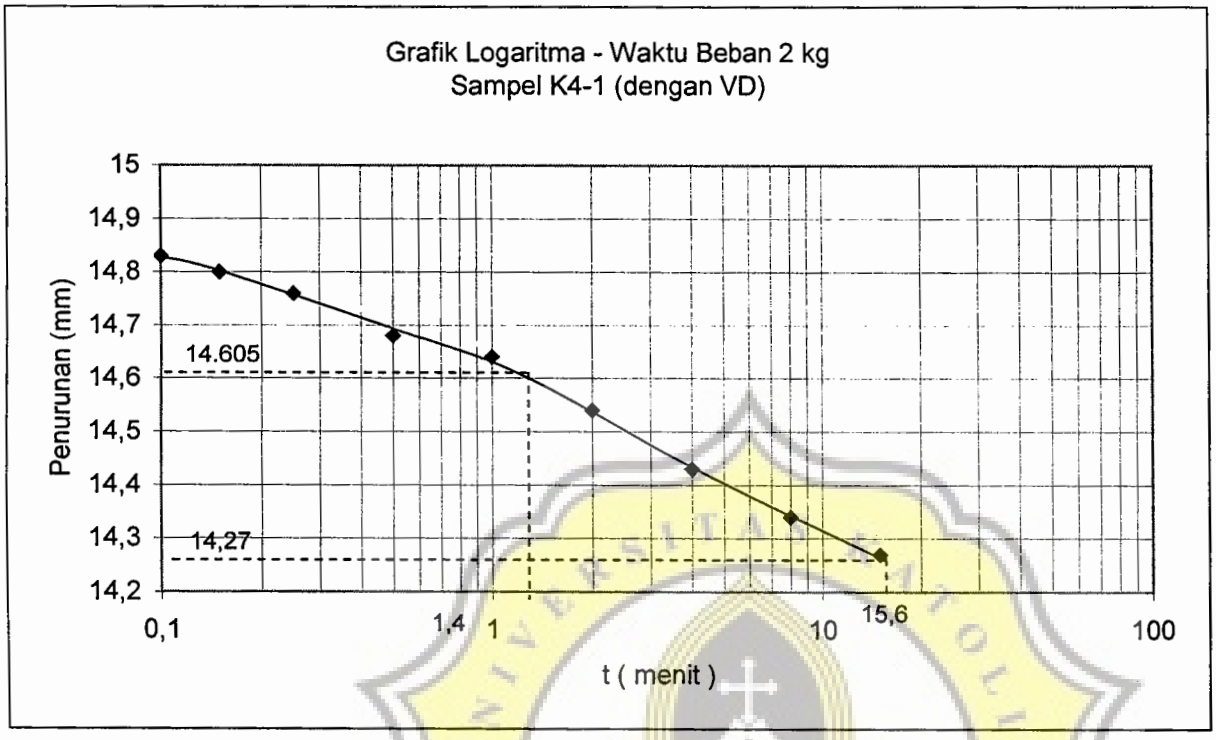


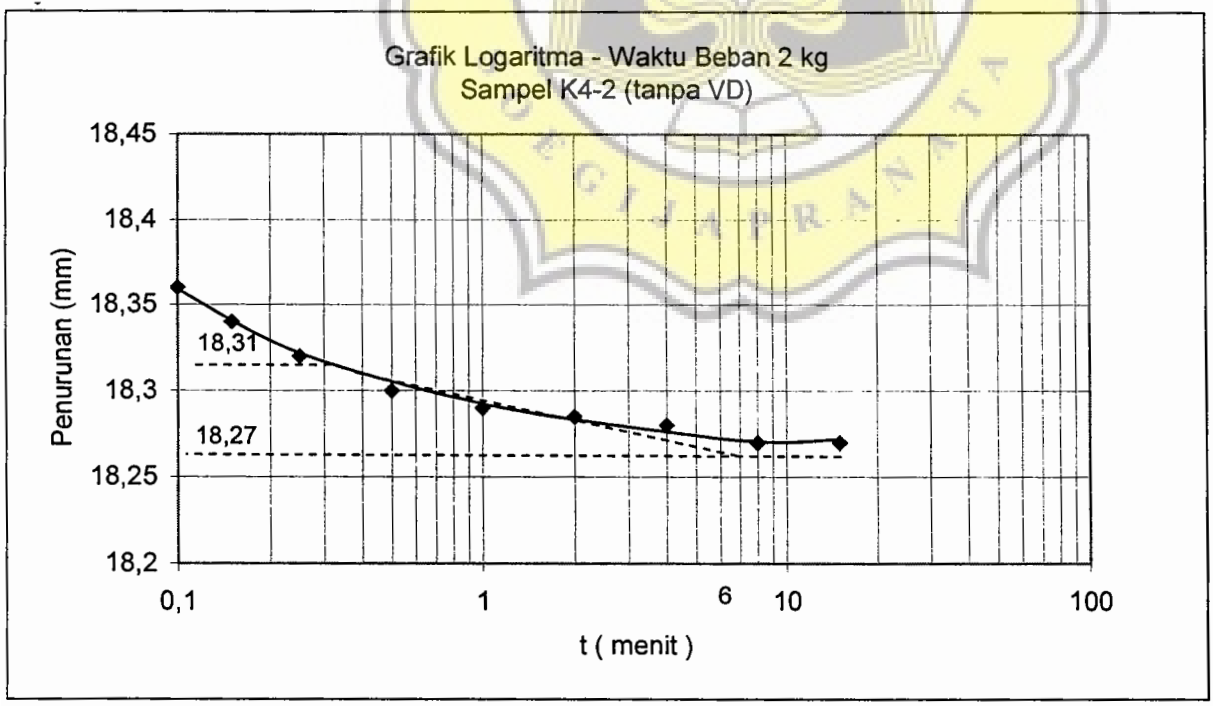
Grafik Logaritma - Waktu Beban 0,3 kg
Sampel K4-2 (tanpa VD)




Grafik Logaritma - Waktu Beban 0,5 kg
Sampel K4-1 (dengan VD)
Penurunan (mm)
18,1
18
17,9
17,8
17,7
17,6
17,5
17,4
17,3
17,2
17,1
17,5575
17,18
0,1
1
10
35
100
600
1000
10000
t (menit)


Grafik Logaritma - Waktu Beban 0,5 kg
Sampel K4-2 (tanpa VD)
Penurunan (mm)
18
17,8
17,6
17,4
17,2
17
16,8
16,6
17,230
16,71
0,1
1
10
100
185,71
1000
1500
10000
t (menit)


Grafik Logaritma - Waktu Beban 2 kg
Sampel K4-1 (dengan VD)
Penurunan (mm)
15
14,9
14,8
14,7
14,6
14,5
14,4
14,3
14,2
14.605
14,27
0,1
1,4
1
10
15,6
100
t (menit)


Grafik Logaritma - Waktu Beban 2 kg
Sampel K4-2 (tanpa VD)
Penurunan (mm)
18,45
18,4
18,35
18,3
18,25
18,2
18,31
18,27
0,1
1
6
10
100
t (menit)

HASIL PERHTUNGAN NILAI Cv, e DARI PERCOBAAN I (SKALA KECIL)

Tabel Cv, Angka pori (e) Sampel K1-1

Beban/load (kg)	Hi (cm)	△H (cm)	Ht (cm)	Hdr (cm)	t90	Cv (cm^2/mnt) Akar Waktu	t50	Cv (cm^2/mnt) Log - Waktu
0,300	2,01	0,01572	2,00214	1,00107	144	0,0059015	16,43	0,01201593
0,500	2,01	0,01541	2,002295	1,001148	1,563	0,54396626	0,35	0,56414964

Beban/Load	Hi	△H	A	Gs	Ws	Hs	Hv	e0	△e	e
0,3	2,01	0,01572	19,390	2,532	30,100	0,61309106	1,396909	2,27846893	0,025641	2,252828
0,500	2,01	0,01541	19,390	2,532	30,100	0,61309106	1,396909	2,27846893	0,025135	2,253334

Tabel Cv, Angka pori (e) Sampel K1-2

Beban/load (kg)	Hi (cm)	△H (cm)	Ht (cm)	Hdr (cm)	t90	Cv (cm^2/mnt) Akar Waktu	t50	Cv (cm^2/mnt) Log - Waktu
0,300	2,01	0,01572	2,00214	1,00107	85,5625	0,0099321	10	0,01974218
0,500	2,01	0,01532	2,00234	1,00117	2,806	0,30291714	0,5	0,3949225

Beban/Load	Hi	△H	A	Gs	Ws	Hs	Hv	e0	△e	e
0,3	2,01	0,01572	19,390	2,564	35,400	0,71204499	1,297955	1,82285536	0,022077	1,800778
0,500	2,01	0,01532	19,390	2,564	35,400	0,71204499	1,297955	1,82285536	0,021515	1,80134

HASIL PERHTUNGAN NILAI Cv, e DARI PERCOBAAN II (SKALA KECIL)

Tabel Cv, Angka pori (e) Sampel K2-1

Beban/load (kg)	Hi (cm)	△H (cm)	Ht (cm)	Hdr (cm)	t90	Cv (cm^2/mnt) Akar Waktu	t50	Cv (cm^2/mnt) Log - Waktu
0,300	2,01	0,01886	2,00057	1,000285	35,4025	0,02396677	6,25	0,03153797
0,500	2,01	0,01872	2,00064	1,00032	2,980	0,28474591	0,45	0,438058

Beban/Load	Hi	△H	A	Gs	Ws	Hs	Hv	e0	△e	e
0,3	2,01	0,01886	19,390	2,725	29,300	0,55452778	1,455472	2,62470572	0,034011	2,590695
0,500	2,01	0,01872	19,390	2,725	29,300	0,55452778	1,455472	2,62470572	0,033758	2,590947

Tabel Cv, Angka pori (e) Sampel K2-2

Beban/load (kg)	Hi (cm)	△H (cm)	Ht (cm)	Hdr (cm)	t90	Cv (cm^2/mnt) Akar Waktu	t50	Cv (cm^2/mnt) Log - Waktu
0,300	2,01	0,01988	2,00006	1,00003	156,25	0,00542753	9	0,0218902
0,500	2,01	0,01974	2,00013	1,000065	30,250	0,0280367	3,5	0,05629303
1,000	2,01	0,01841	2,000795	1,000398	90,250	0,00940359	30	0,00657189
2,000	2,01	0,01827	2,000865	1,000433	1,563	0,54315479	0,32	0,61615763

Beban/Load	Hi	△H	A	Gs	Ws	Hs	Hv	e0	△e	e
0,3	2,01	0,01988	19,390	2,542	33,200	0,67357309	1,336427	1,98408596	0,029514	1,954572
0,500	2,01	0,01974	19,390	2,542	33,200	0,67357309	1,336427	1,98408596	0,029306	1,95478
1,000	2,01	0,01841	19,390	2,542	33,200	0,67357309	1,336427	1,98408596	0,027332	1,956754
2,000	2,01	0,01827	19,390	2,542	33,200	0,67357309	1,336427	1,98408596	0,027124	1,956962

0,3	2,01	0,01714	19,390	2,564	23,800	0,4787195	1,53128	3,19870082	0,035804	3,162897
0,500	2,01	0,01639	19,390	2,564	23,800	0,4787195	1,53128	3,19870082		

HASIL PERHTUNGAN NILAI Cv, e DARI PERCOBAAN IV (SKALA KECIL)

Tabel Cv, Angka pori (e) Sampel K4-1

Beban/load (kg)	Hi (cm)	△ H (cm)	Ht (cm)	Hdr (cm)	t90	Cv (cm^2/mnt) Akar Waktu	t50	Cv (cm^2/mnt) Log - Waktu
0,300	2,01	0,01798	2,00101	1,000505	86,22	0,0098452	2	0,09859951
0,500	2,01	0,01718	2,00141	1,000705	144,000	0,0058972	35	0,00563651
1,000	2,01	0,01494	2,00253	1,001265	36,000	0,0236152	120	0,00164582
2,000	2,01	0,01427	2,002865	1,001433	0,640	1,3287988	4	0,0493912

Beban/Load	Hi	△ H	A	Gs	Ws	Hs	Hv	e0	△ e	e
0,3	2,01	0,01798	19,390	2,725	24,500	0,4636836	1,546316	3,33485214	0,038776	3,296076
0,500	2,01	0,01718	19,390	2,725	24,500	0,4636836	1,546316	3,33485214	0,037051	3,297801
1,000	2,01	0,01494	19,390	2,725	24,500	0,4636836	1,546316	3,33485214	0,03222	3,302632
2,000	2,01	0,01427	19,390	2,725	24,500	0,4636836	1,546316	3,33485214	0,030775	3,304077

Tabel Cv, Angka pori (e) Sampel K4-2

Beban/load (kg)	Hi (cm)	△ H (cm)	Ht (cm)	Hdr (cm)	t90	Cv (cm^2/mnt) Akar Waktu	t50	Cv (cm^2/mnt) Log - Waktu
0,300	2,01	0,01777	2,001115	1,000558	90,25	0,0094066	214,29	0,00092034
0,500	2,01	0,01671	2,001645	1,000823	564,063	0,0015059	185,71	0,00106254
1,000	2,01	0,015455	2,002273	1,001136	182,250	0,0046635	30	0,0065816
2,000	2,01	0,01487	2,002565	1,001283	29,160	0,0291556	0,3	0,6583521

Beban/Load	Hi	△ H	A	Gs	Ws	Hs	Hv	e0	△ e	e
0,3	2,01	0,01777	19,390	2,542	32,500	0,6593712	1,350629	2,04835858	0,02695	2,021409
0,500	2,01	0,01671	19,390	2,542	32,500	0,6593712	1,350629	2,04835858	0,025342	2,023016
1,000	2,01	0,015455	19,390	2,542	32,500	0,6593712	1,350629	2,04835858	0,023439	2,02492
2,000	2,01	0,01487	19,390	2,542	32,500	0,6593712	1,350629	2,04835858	0,022552	2,025807

HASIL PENGUJIAN PERCOBAAN LABORATORIUM DENGAN ALAT UJI OEDOMETER

K1-1

p (kg/cm^2)	e	Cv (cm2/mnt) Log - Waktu
0,15	2,25282837	0,01201593
0,25	2,253334	0,56414964
0,15	2,25315458	

K1-2

p (kg/cm2)	e	Cv (cm2/mnt) Log - Waktu
0,15	1,8007781	0,01974218
0,25	1,80133986	0,3949225
0,15	1,8012556	

K4-1

P (kg/cm^2)	e	Cv (cm2/mnt) Log - Waktu
0,15	3,2960757	0,09859951
0,25	3,29780102	0,00563651
0,5	3,3026319	0,00164582
1	3,30407685	0,0493912
0,5	3,30396902	
0,25	3,30377492	
0,15	3,30351612	

K2-1

P (kg/cm2)	e	Cv (cm2/mnt) Log - Waktu
0,15	2,590695	0,03153797
0,25	2,590947	0,438058
0,15	2,59092	

K2-2

P (kg/cm2)	e	Cv (cm2/mnt) Log - Waktu
0,15	1,954572	0,0218902
0,25	1,95478	0,05629303
0,5	1,956754	0,00657189
1	1,956962	0,61615763
0,5	1,95691	
0,25	1,956784	
0,15	1,956665	

K3-1

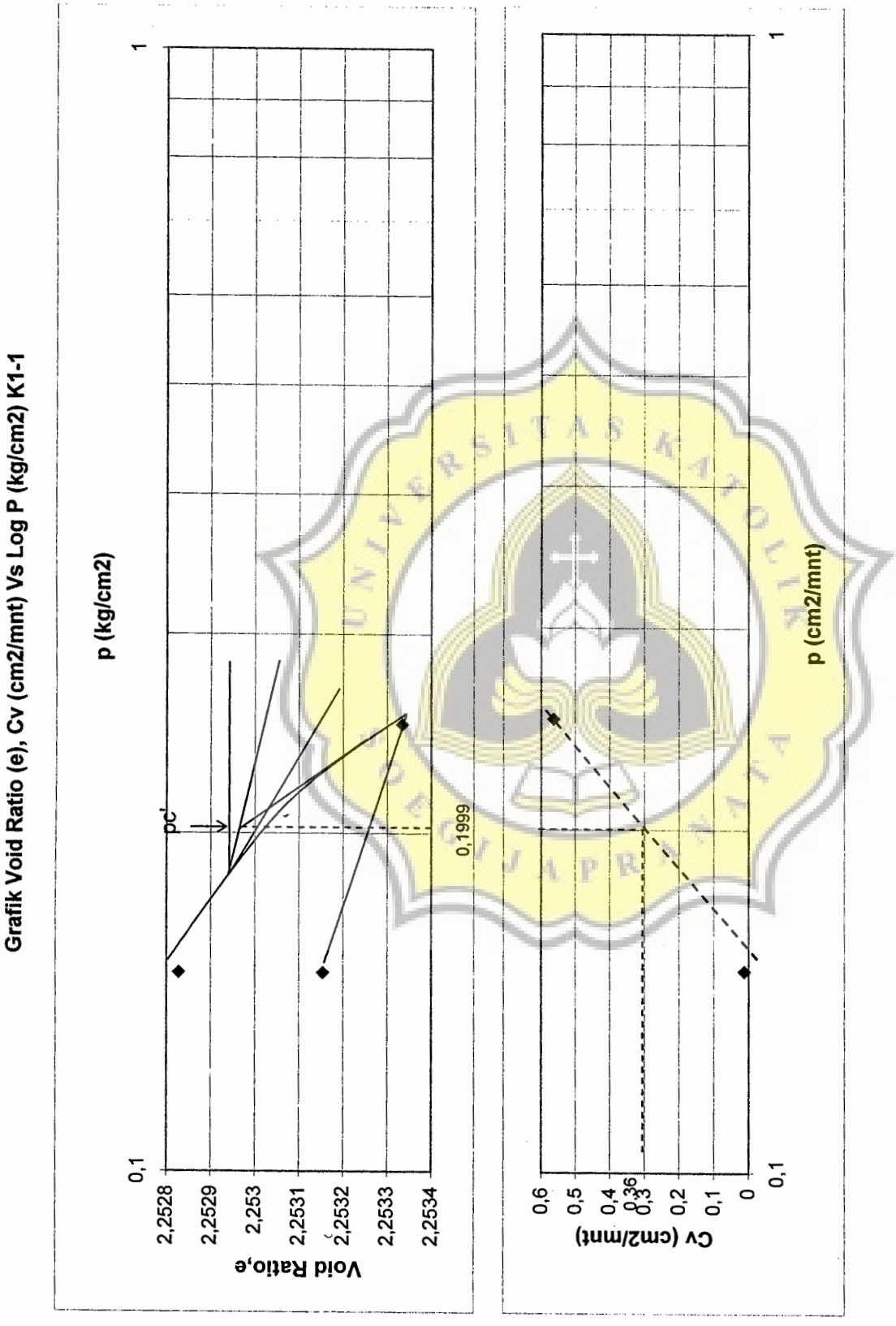
P(kg/cm2)	e	Cv (cm2/mnt) Log - Waktu
0,15	3,162897	0,021920201
0,25	3,164464	0,014096839
0,15	3,164474	

K3-2

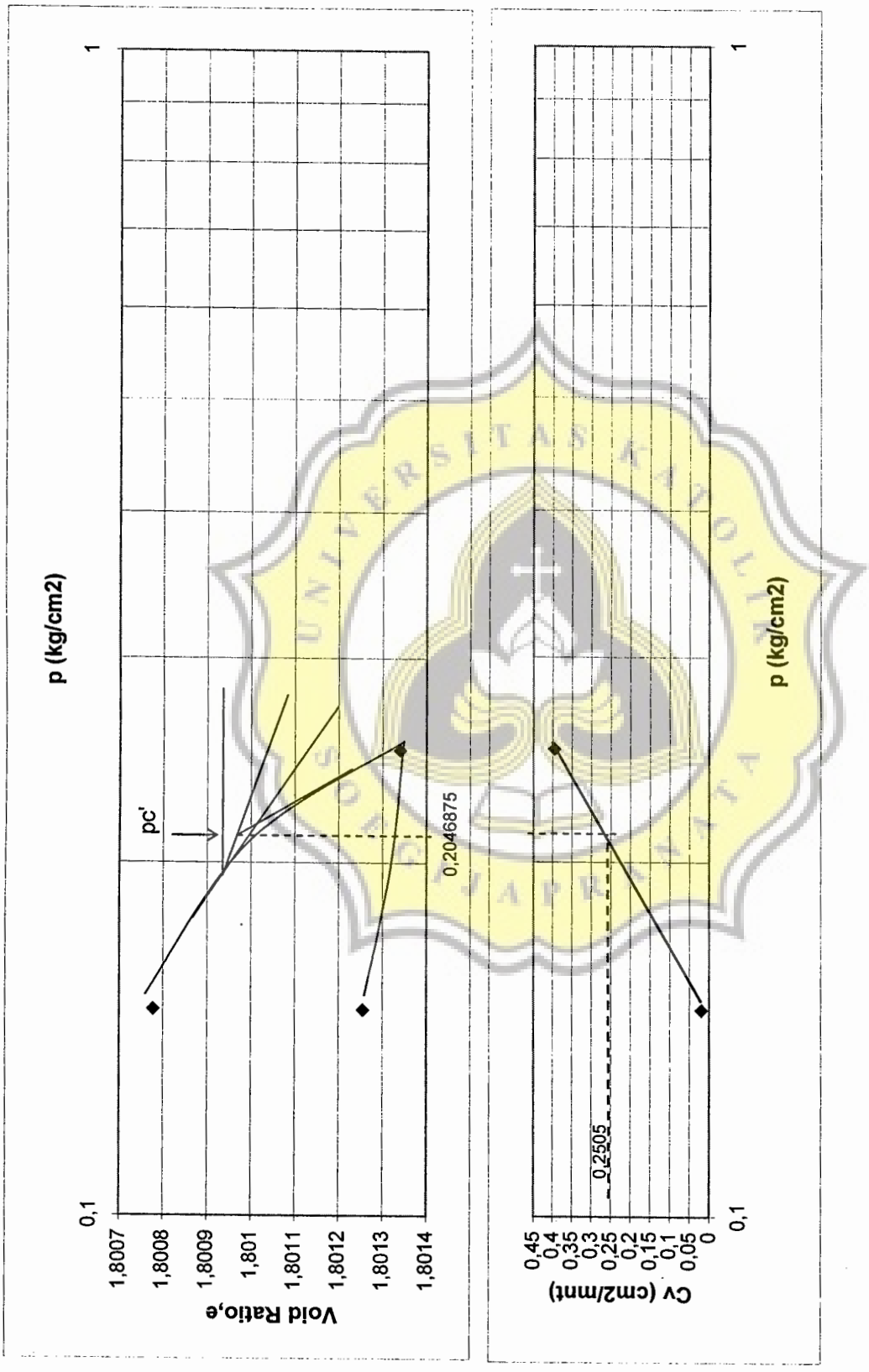
p (kg/cm^2)	e	Cv (cm2/mnt) Log - Waktu
0,15	2,038522	0,021920201
0,25	2,039666	0,006578525
0,15	2,039574	

K4-2

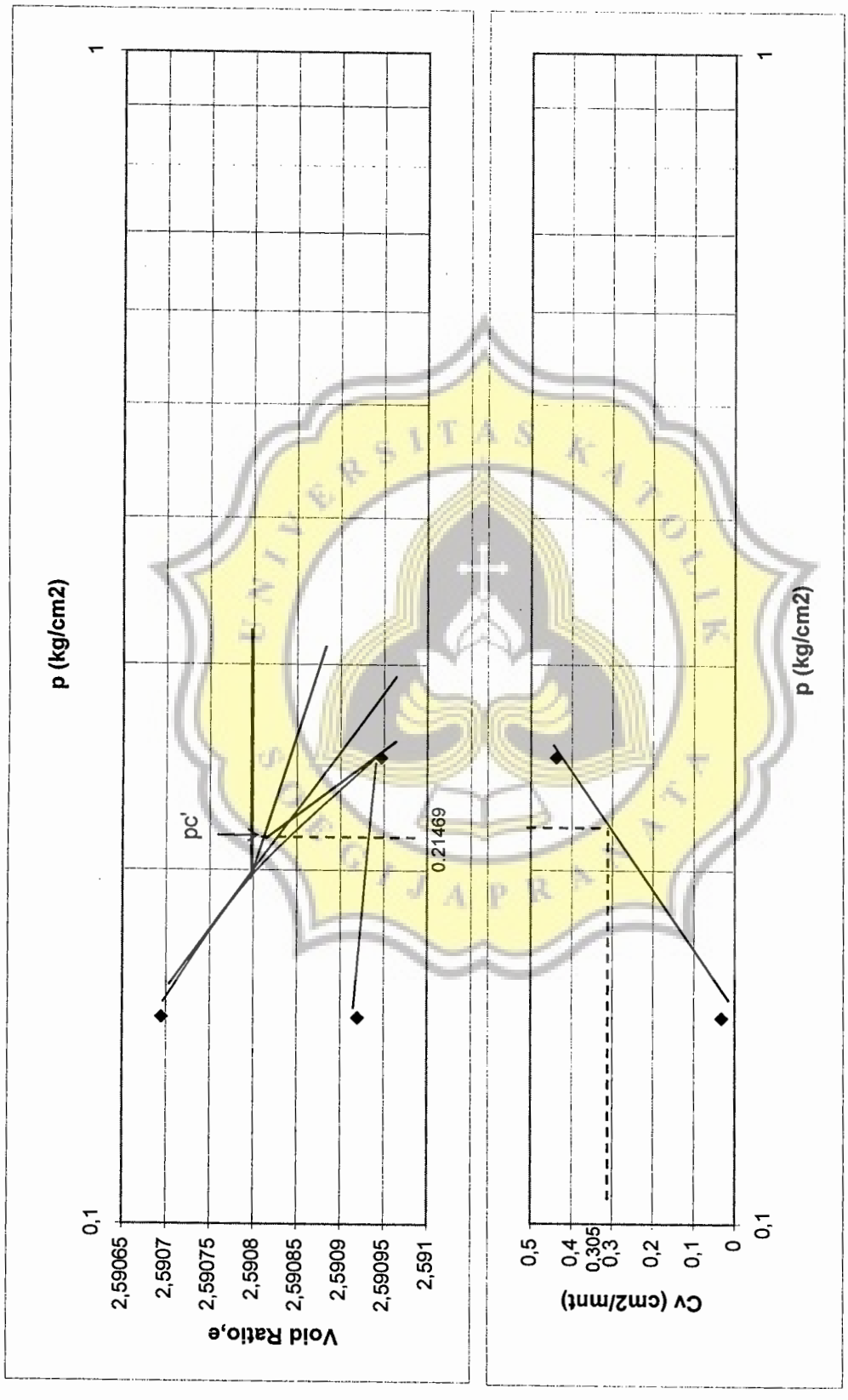
P (kg/cm2)	e	Cv (cm2/mnt) Log - Waktu
0,15	2,021409	0,00092034
0,25	2,023016	0,001062539
0,5	2,02492	0,006581598
1	2,025807	0,658352097
0,5	2,025799	
0,25	2,025731	
0,15	2,025564	


Grafik Void Ratio (e), Cv (cm2/mnt) Vs Log P (kg/cm2) K1-1
p (kg/cm2)
1
0,1
2,2528
2,2529
2,253
2,2531
2,2532
2,2533
2,2534
Void Ratio,e
pc'
0,1999
p (cm2/mnt)
1
0,1
0,6
0,5
0,4
0,36
0,3
0,2
0,1
0
Cv (cm2/mnt)

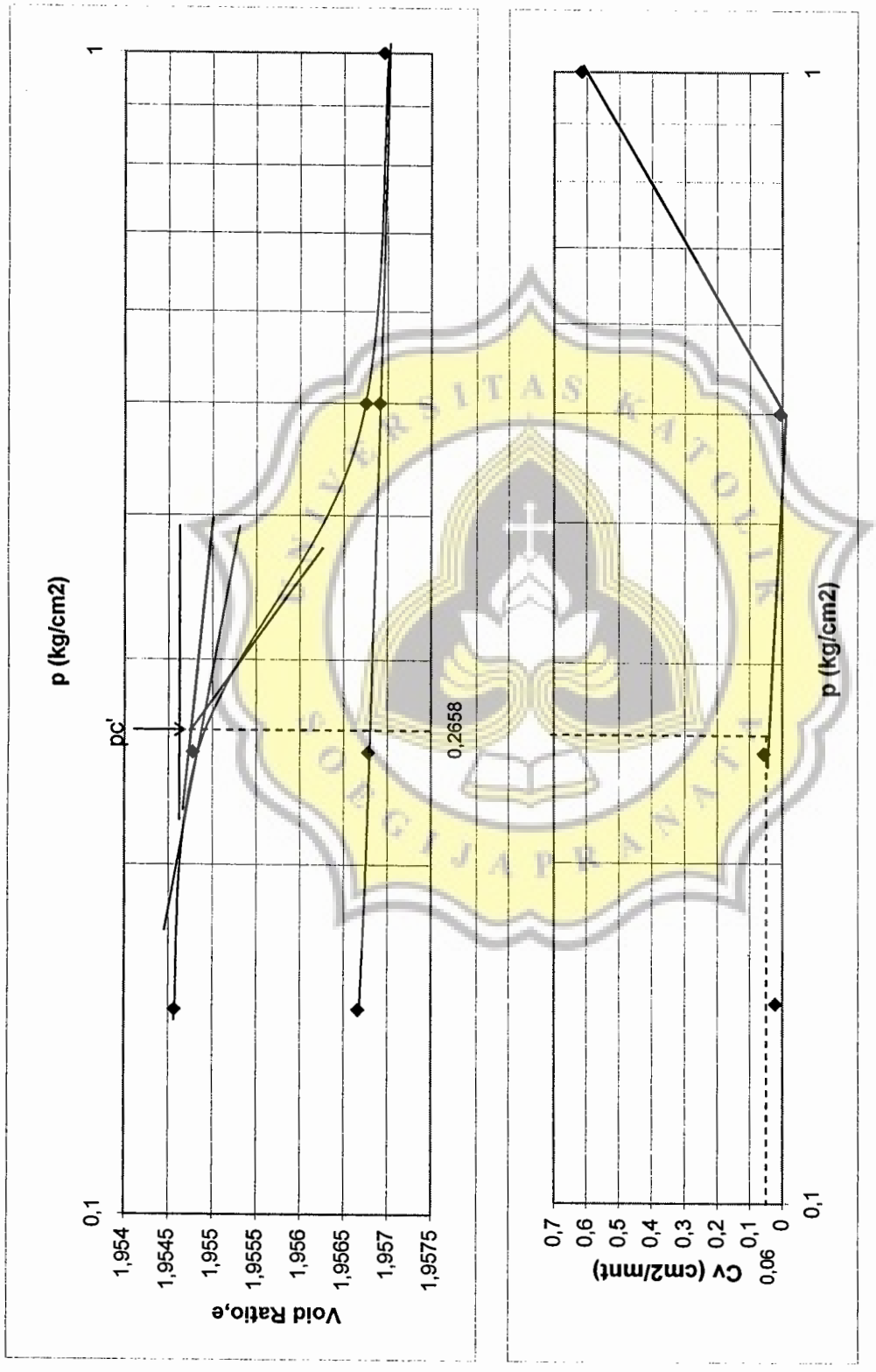
Grafik Void Ratio (e), Cv (cm2/mnt) Vs Log P (kg/cm2) K1-2



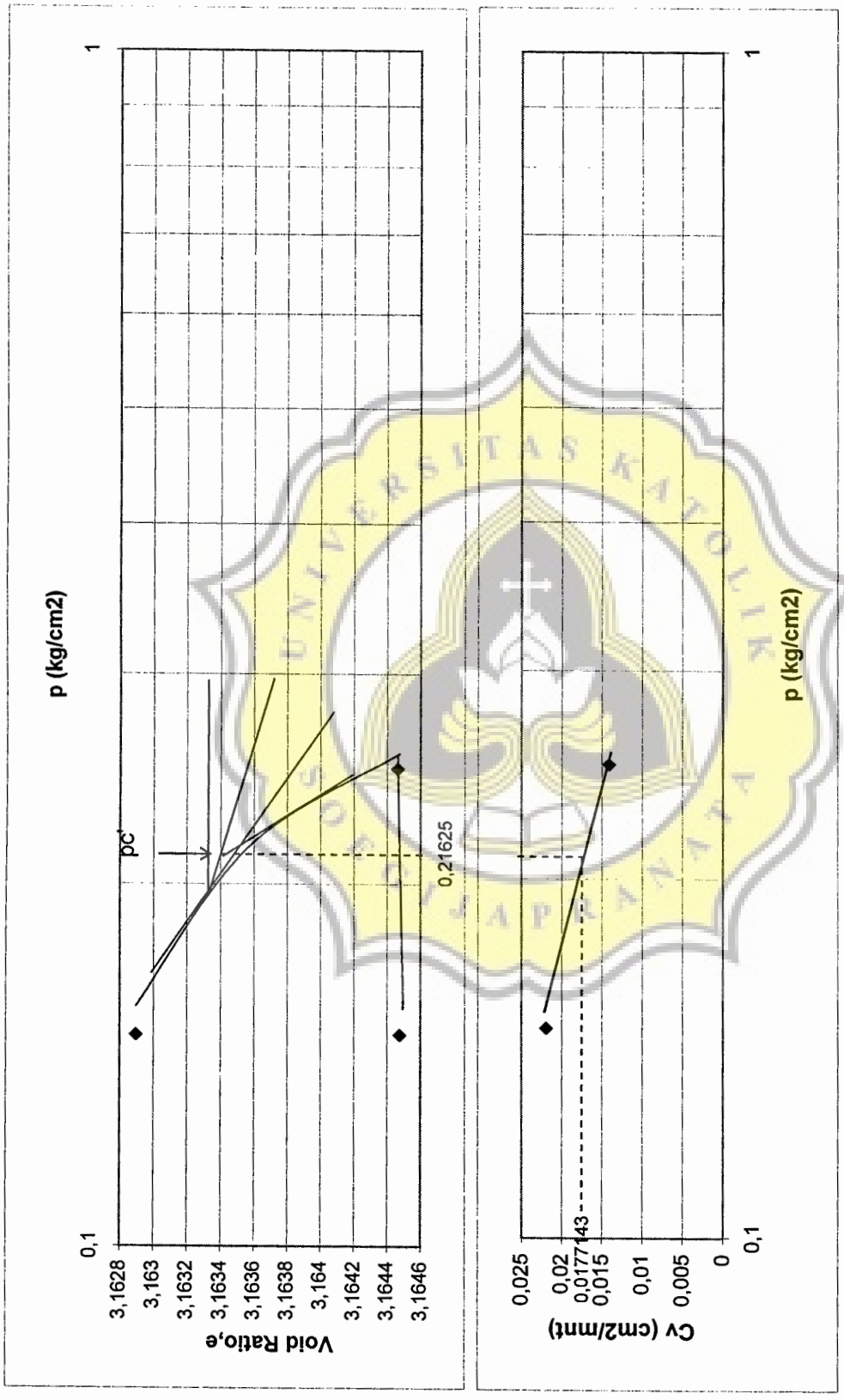
Grafik Void Ratio (e), Cv (cm2/mnt) Vs Log P (kg/cm2) K2-1



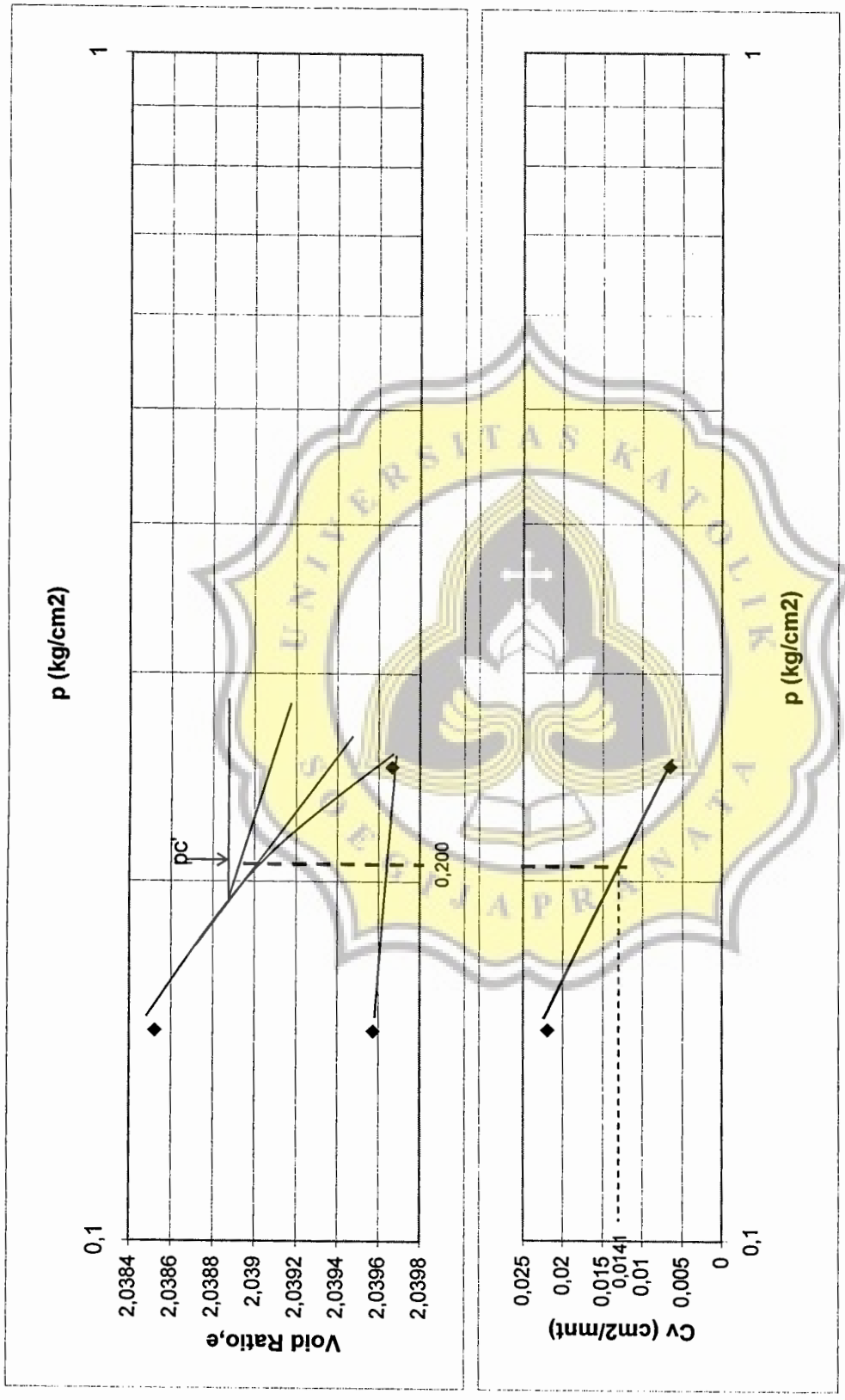
Grafik Void Ratio (e), Cv (cm2/mnt) Vs Log P (kg/cm2) K2-2



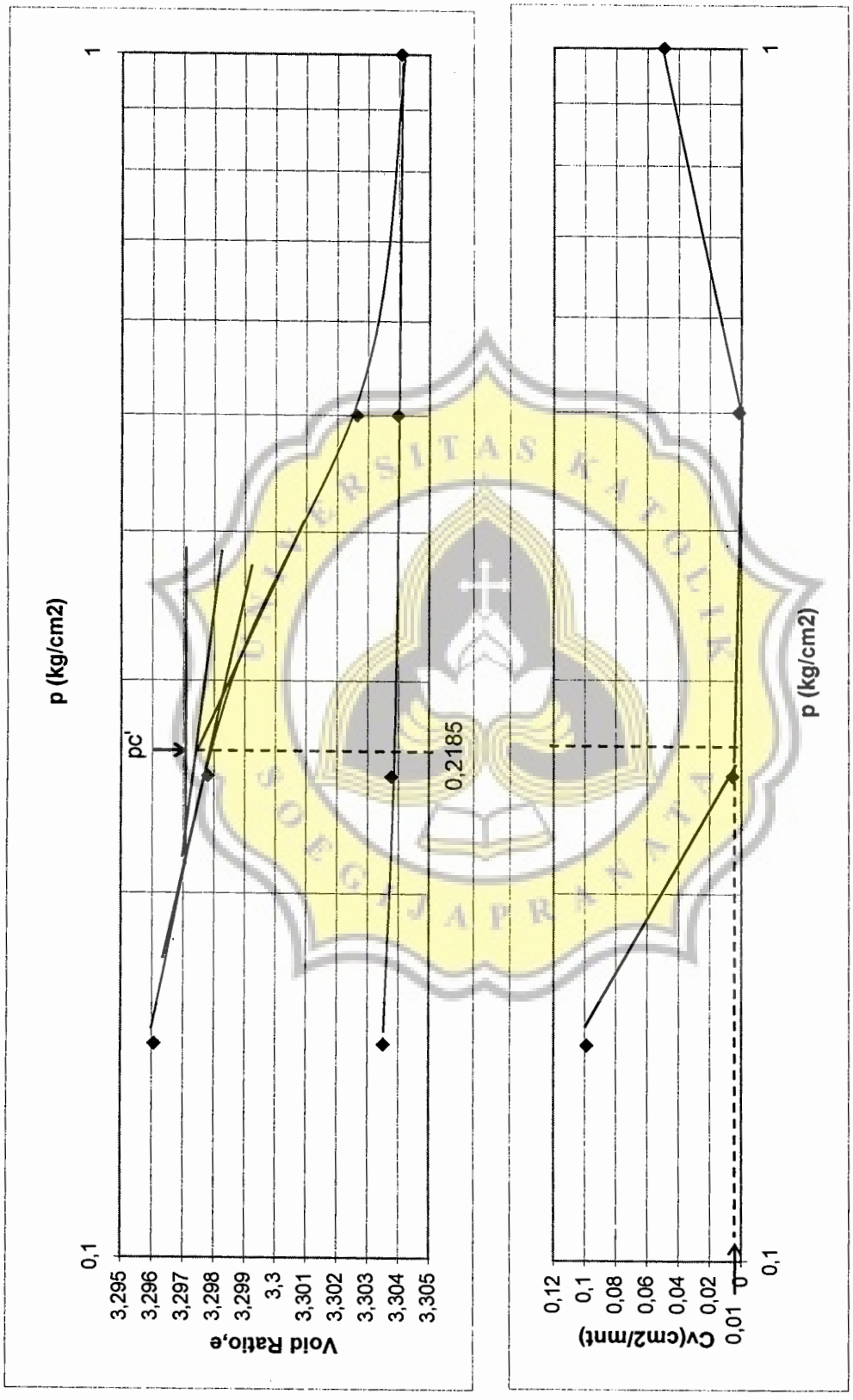
Grafik Void Ratio (e), Cv (cm2/mnt) Vs Log P (kg/cm2) K3-1



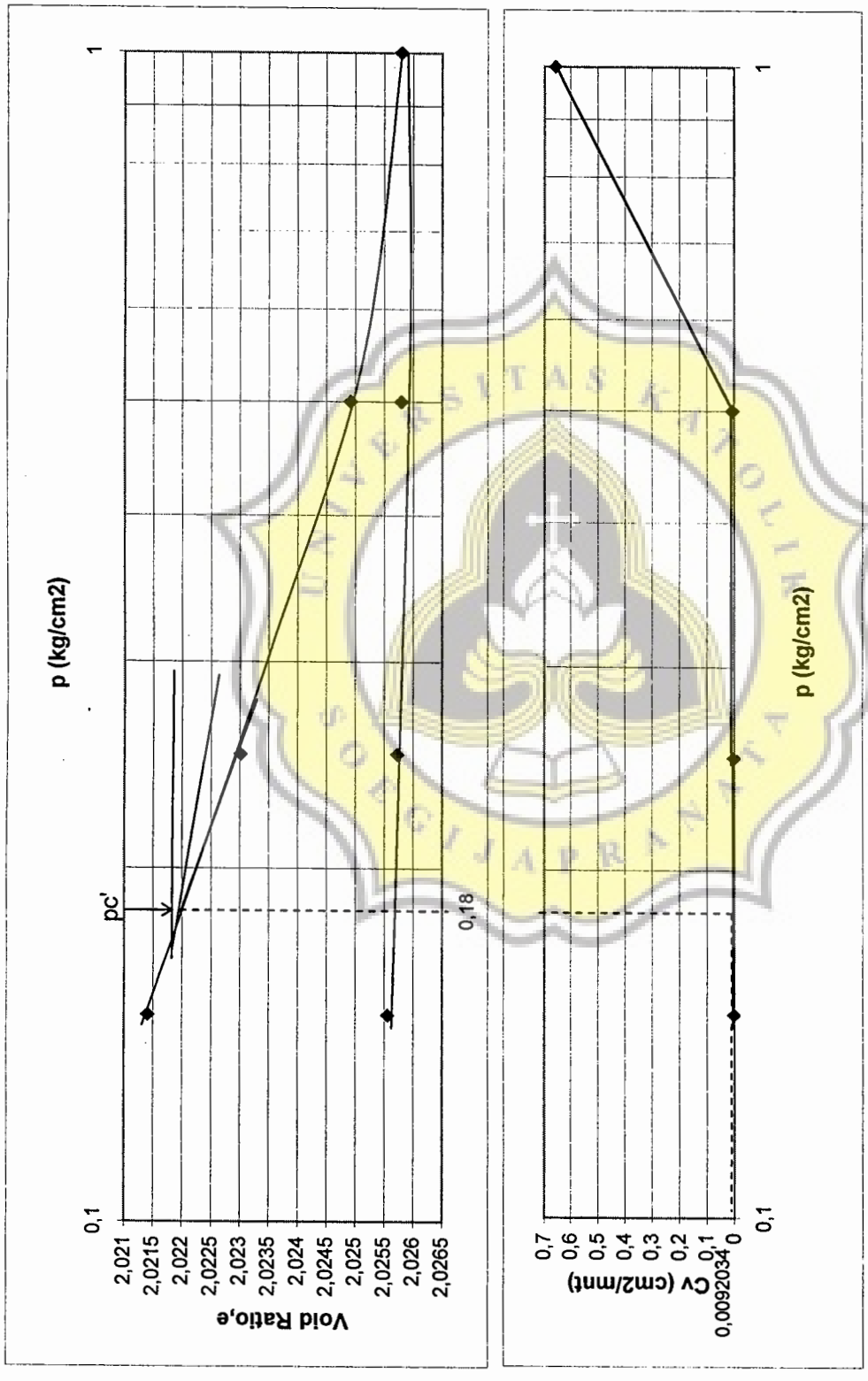
Grafik Void Ratio (e), Cv (cm2/mnt) Vs Log P (kg/cm2) K3-2



Grafik Void Ratio (e), Cv (cm^2/mnt) Vs Log P (kg/cm^2) K4-1



Grafik Void Ratio (e), Cv (cm2/mnt) Vs Log P (kg/cm2) K4-2



TABEL HASIL PERHITUNGAN NILAI t DENGAN DERAJAT KONSOLIDASI U (%)

Sampel K1-1

U (%)	Sc	T_v	C_v	H	H^2	t (menit)
0,1	0,0006	0,008	0,36	1,005	1,01	0,02245
0,2	0,001201	0,031	0,36	1,005	1,01	0,08697
0,3	0,001801	0,071	0,36	1,005	1,01	0,1992
0,4	0,002401	0,126	0,36	1,005	1,01	0,35351
0,5	0,003001	0,197	0,36	1,005	1,01	0,55271
0,6	0,003602	0,287	0,36	1,005	1,01	0,80521
0,7	0,004202	0,403	0,36	1,005	1,01	1,13067
0,8	0,004802	0,567	0,36	1,005	1,01	1,59079
0,9	0,005403	0,848	0,36	1,005	1,01	2,37917

Sampel K1-2

U (%)	Sc	T_v	C_v	H	H^2	t (menit)
0,1	0,000976	0,008	0,2505	1,005	1,01	0,03226
0,2	0,001952	0,031	0,2505	1,005	1,01	0,12499
0,3	0,002928	0,071	0,2505	1,005	1,01	0,28627
0,4	0,003905	0,126	0,2505	1,005	1,01	0,50804
0,5	0,004881	0,197	0,2505	1,005	1,01	0,79431
0,6	0,005857	0,287	0,2505	1,005	1,01	1,15719
0,7	0,006833	0,403	0,2505	1,005	1,01	1,62491
0,8	0,007809	0,567	0,2505	1,005	1,01	2,28616
0,9	0,008785	0,848	0,2505	1,005	1,01	3,41917

Sampel K2-1

U (%)	Sc (cm)	T_v	C_v	H (cm)	H^2 (cm^2)	t (menit)
0,1	3E-04	0,008	0,305	1,005	1,010025	0,026492
0,2	7E-04	0,031	0,305	1,005	1,010025	0,102658
0,3	0,001	0,071	0,305	1,005	1,010025	0,235121
0,4	0,001	0,126	0,305	1,005	1,010025	0,417256
0,5	0,002	0,197	0,305	1,005	1,010025	0,652377
0,6	0,002	0,287	0,305	1,005	1,010025	0,950417
0,7	0,002	0,403	0,305	1,005	1,010025	1,334558
0,8	0,003	0,567	0,305	1,005	1,010025	1,877653
0,9	0,003	0,848	0,305	1,005	1,010025	2,808201

Sampel K2-2

U (%)	Sc (cm)	T_v	C_v	H (cm)	H^2 (cm^2)	t (menit)
0,1	0,002	0,008	0,06	1,005	1,010025	0,13467
0,2	0,003	0,031	0,06	1,005	1,010025	0,521846
0,3	0,005	0,071	0,06	1,005	1,010025	1,195196
0,4	0,007	0,126	0,06	1,005	1,010025	2,121053
0,5	0,008	0,197	0,06	1,005	1,010025	3,316249
0,6	0,01	0,287	0,06	1,005	1,010025	4,831286
0,7	0,011	0,403	0,06	1,005	1,010025	6,784001
0,8	0,013	0,567	0,06	1,005	1,010025	9,544736
0,9	0,015	0,848	0,06	1,005	1,010025	14,27502

TABEL HASIL PERHITUNGAN NILAI tDENGAN DERAJAT KONSOLIDASI U (%)

Sampel K3-1

U (%)	Sc (cm)	T_v	C_v	H (cm)	H^2 (cm^2)	t (menit)
0,1	0,001686	0,008	0,017714	1,005	1,010025	0,45614
0,2	0,003372	0,031	0,017714	1,005	1,010025	1,767542
0,3	0,005059	0,071	0,017714	1,005	1,010025	4,048242
0,4	0,006745	0,126	0,017714	1,005	1,010025	7,184204
0,5	0,008431	0,197	0,017714	1,005	1,010025	11,23245
0,6	0,010117	0,287	0,017714	1,005	1,010025	16,36402
0,7	0,011803	0,403	0,017714	1,005	1,010025	22,97805
0,8	0,01349	0,567	0,017714	1,005	1,010025	32,32892
0,9	0,015176	0,848	0,017714	1,005	1,010025	48,35084

Sampel K3-2

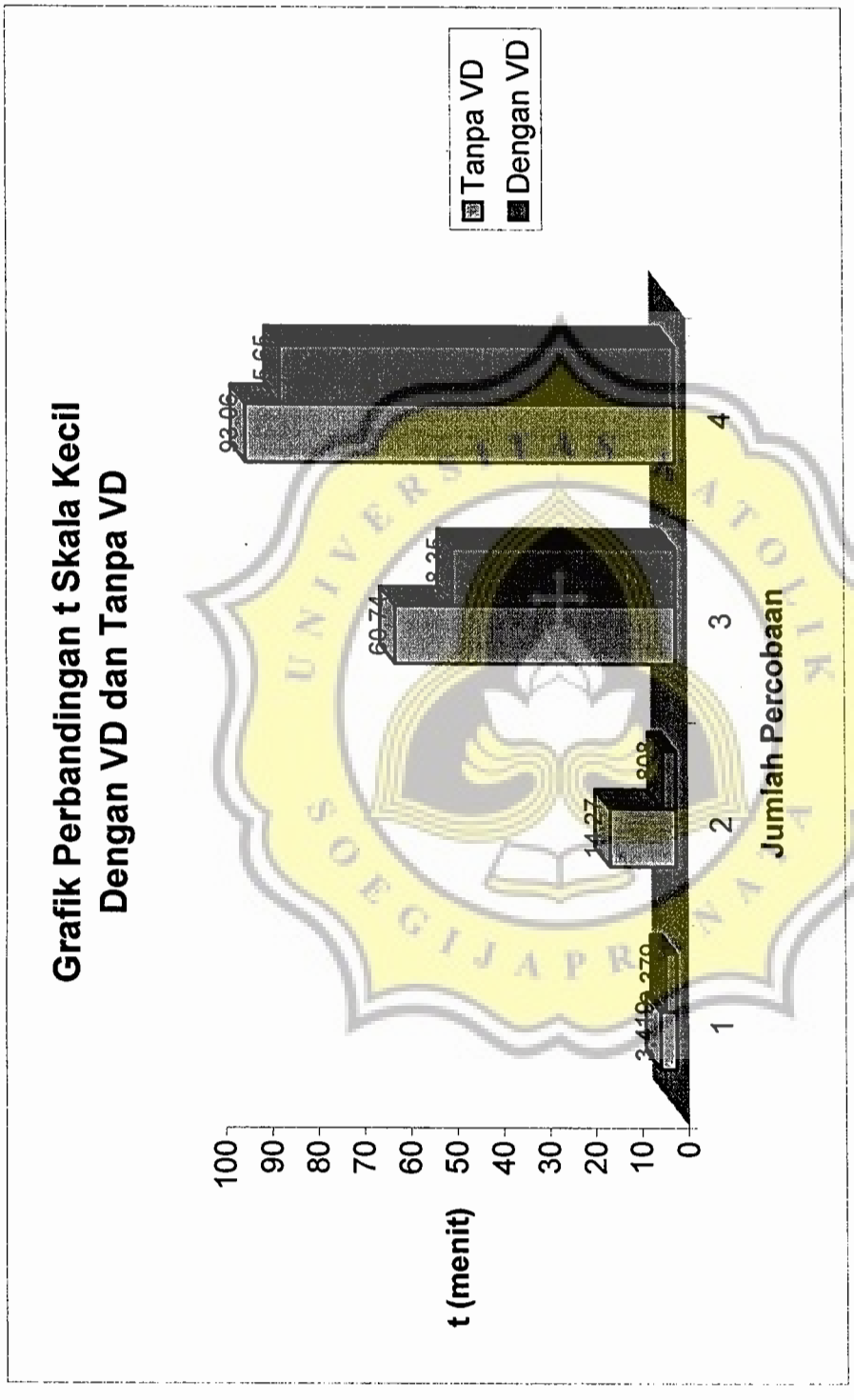
U (%)	Sc	T_v	C_v	H	H^2	t (menit)
0,1	0,000989	0,008	0,0141	1,005	1,010025	0,573064
0,2	0,001977	0,031	0,0141	1,005	1,010025	2,220622
0,3	0,002966	0,071	0,0141	1,005	1,010025	5,085941
0,4	0,003955	0,126	0,0141	1,005	1,010025	9,025755
0,5	0,004944	0,197	0,0141	1,005	1,010025	14,1117
0,6	0,005932	0,287	0,0141	1,005	1,010025	20,55866
0,7	0,006921	0,403	0,0141	1,005	1,010025	28,86809
0,8	0,00791	0,567	0,0141	1,005	1,010025	40,6159
0,9	0,008898	0,848	0,0141	1,005	1,010025	60,74477

Sampel K4-1

U (%)	Sc (cm)	T_v	C_v	H (cm)	H^2 (cm^2)	t (menit)
0,1	0,002722	0,008	0,01	1,005	1,010025	0,80802
0,2	0,005443	0,031	0,01	1,005	1,010025	3,131078
0,3	0,008165	0,071	0,01	1,005	1,010025	7,171178
0,4	0,010887	0,126	0,01	1,005	1,010025	12,72632
0,5	0,013609	0,197	0,01	1,005	1,010025	19,89749
0,6	0,01633	0,287	0,01	1,005	1,010025	28,98772
0,7	0,019052	0,403	0,01	1,005	1,010025	40,70401
0,8	0,021774	0,567	0,01	1,005	1,010025	57,26842
0,9	0,024495	0,848	0,01	1,005	1,010025	85,65012

Sampel K4-2

U (%)	Sc (cm)	T_v	C_v	H (cm)	H^2 (cm^2)	t (menit)
0,1	0,003504	0,008	0,0092	1,005	1,010025	0,877958
0,2	0,007007	0,031	0,0092	1,005	1,010025	3,402088
0,3	0,010511	0,071	0,0092	1,005	1,010025	7,791879
0,4	0,014015	0,126	0,0092	1,005	1,010025	13,82784
0,5	0,017519	0,197	0,0092	1,005	1,010025	21,61972
0,6	0,021022	0,287	0,0092	1,005	1,010025	31,49675
0,7	0,024526	0,403	0,0092	1,005	1,010025	44,22714
0,8	0,02803	0,567	0,0092	1,005	1,010025	62,22528
0,9	0,031534	0,848	0,0092	1,005	1,010025	93,06356


Grafik Perbandingan t Skala Kecil
Dengan VD dan Tanpa VD
Tanpa VD
Dengan VD
t (menit)
Jumlah Percobaan
0
10
20
30
40
50
60
70
80
90
100
1
2
3
4
92.06
69.74
14.27

TABEL DAN GRAFIK HUBUNGAN ANGKA PORI (e) DENGAN LOG P PERCOBAAN I SAMPEL K1-1

Tabel Hubungan e - log P

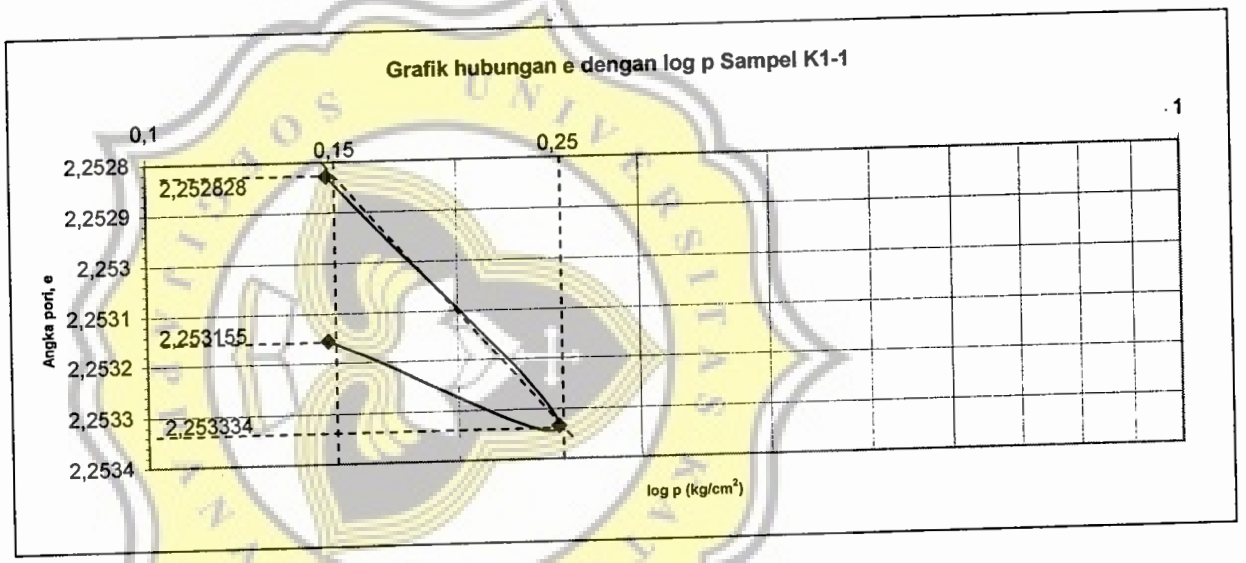
Beban/Load	Hi	△H	A	Gs	Ws	Hs	Hv	e0	△e	e	p (kg/cm^2)
0,3	2,01	0,01572	19,390	2,532	30,100	0,613091	1,396909	2,278469	0,025641	2,252828	0,15
0,500	2,01	0,01541	19,390	2,532	30,100	0,613091	1,396909	2,278469	0,025135	2,253334	0,25
0,3	2,01	0,01552	19,390	2,532	30,100	0,613091	1,396909	2,278469	0,025314	2,253155	0,15

$$C_c = \frac{2{,}252828 - 2{,}253334}{0{,}25 - 0{,}15}$$

$$= 5{,}06\ E\text{-}03$$

$$C_r = \frac{2{,}253334 - 2{,}253155}{0{,}25 - 0{,}15}$$

$$= 1{,}79\ E\text{-}03$$



TABEL DAN GRAFIK HUBUNGAN ANGKA PORI (e) DENGAN LOG P PERCOBAAN I SAMPEL K1-2

Tabel Hubungan e - log P

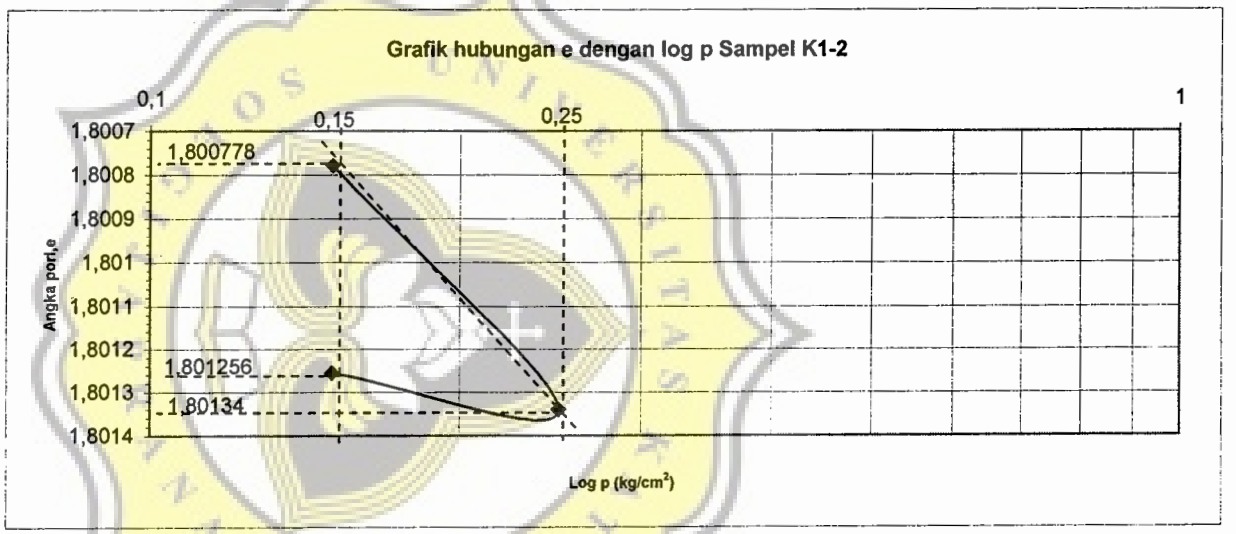
Beban/Load	Hi	△H	A	Gs	Ws	Hs	Hv	e0	△e	e	p (kg/cm^2)
0,3	2,01	0,01572	19,390	2,564	35,400	0,712045	1,297955	1,822855	0,022077	1,800778	0,15
0,500	2,01	0,01532	19,390	2,564	35,400	0,712045	1,297955	1,822855	0,021515	1,80134	0,25
0,3	2,01	0,01538	19,390	2,564	35,400	0,712045	1,297955	1,822855	0,0216	1,801256	0,15

$$C_c = \frac{1{,}800778 - 1{,}80134}{0{,}25 - 0{,}15}$$

$$= 5{,}62\ E\text{-}03$$

$$C_r = \frac{1{,}80134 - 1{,}801256}{0{,}5 - 0{,}25}$$

$$= 8{,}4\ E\text{-}04$$



TABEL DAN GRAFIK HUBUNGAN ANGKA PORI (e) DENGAN LOG P PERCOBAAN II SAMPEL K2-1

Tabel Hubungan e - log P

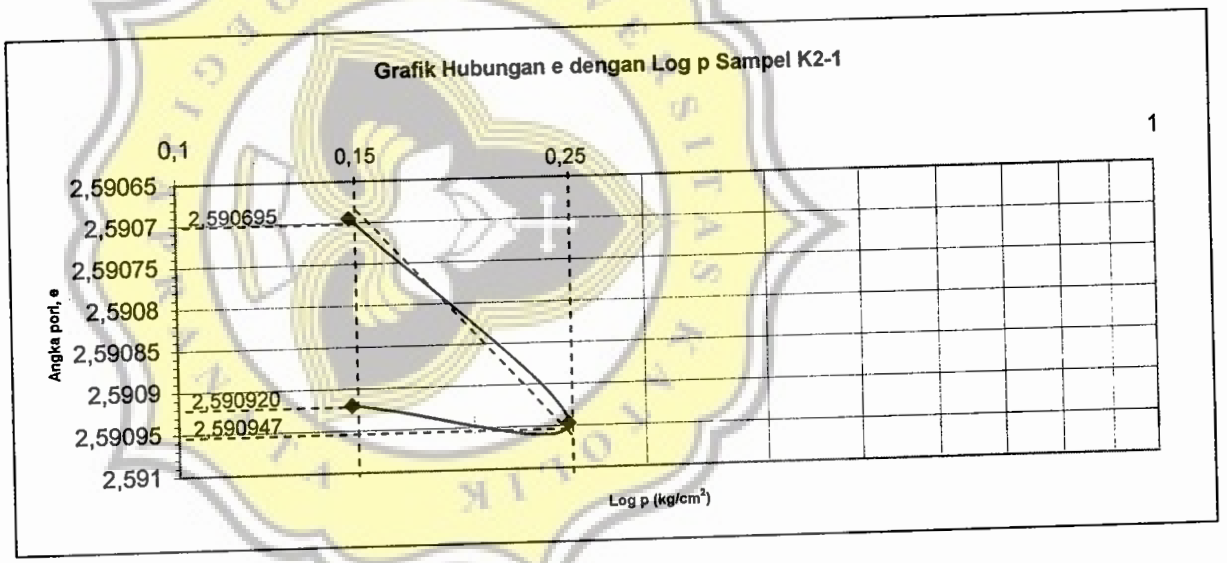
Beban/Load	Hi	△H	A	Gs	Ws	Hs	Hv	e0	△e	e	P (kg/cm^2)
0,3	2,01	0,01886	19,39	2,725	29,3	0,554528	1,455472	2,624706	0,034011	2,590695	0,15
0,5	2,01	0,01872	19,39	2,725	29,3	0,554528	1,455472	2,624706	0,033758	2,590947	0,25
0,3	2,01	0,018735	19,39	2,725	29,3	0,554528	1,455472	2,624706	0,033786	2,59092	0,15

$$C_c = \frac{2{,}590695 - 2{,}590947}{0{,}25 - 0{,}15}$$

$$= 2{,}52E\text{-}03$$

$$C_r = \frac{2{,}590947 - 2{,}590920}{0{,}25 - 0{,}15}$$

$$= 2{,}70\ E\text{-}04$$



TABEL DAN GRAFIK HUBUNGAN ANGKA PORI (e) DENGAN LOG P PERCOBAAN II SAMPEL K2-2

Tabel Hubungan e - log P

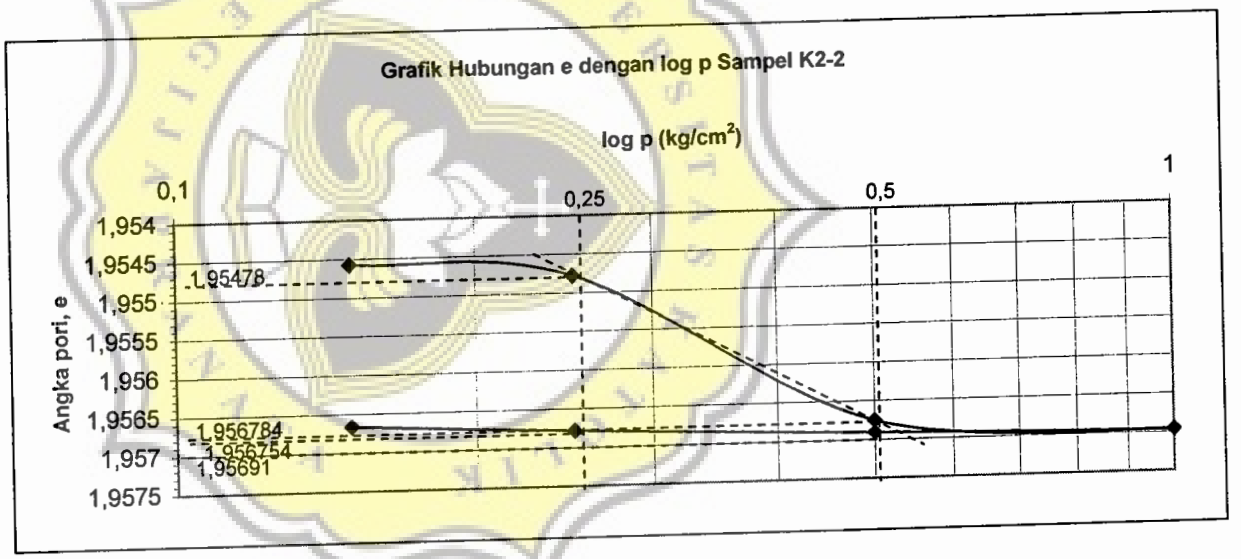
Beban/Load	Hi	△H	A	Gs	Ws	Hs	Hv	e0	△e	e	P (kg/cm^2)
0,3	2,01	0,01988	19,390	2,542	33,200	0,673573	1,336427	1,984086	0,029514	1,954572	0,15
0,500	2,01	0,01974	19,390	2,542	33,200	0,673573	1,336427	1,984086	0,029306	1,95478	0,25
1,000	2,01	0,01841	19,390	2,542	33,200	0,673573	1,336427	1,984086	0,027332	1,956754	0,5
2,000	2,01	0,01827	19,390	2,542	33,200	0,673573	1,336427	1,984086	0,027124	1,956962	1
1,000	2,01	0,018305	19,390	2,542	33,200	0,673573	1,336427	1,984086	0,027176	1,95691	0,5
0,500	2,01	0,01839	19,390	2,542	33,200	0,673573	1,336427	1,984086	0,027302	1,956784	0,25
0,300	2,01	0,01847	19,390	2,542	33,200	0,673573	1,336427	1,984086	0,027421	1,956665	0,15

$$C_c = \frac{1,95478 - 1,956754}{0,5 - 0,25}$$

$$= 7,896\ E\text{-}03$$

$$C_r = \frac{1,95691 - 1,956784}{0,5 - 0,25}$$

$$= 4,64\ E\text{-}04$$



TABEL DAN GRAFIK HUBUNGAN ANGKA PORI (e) DENGAN LOG P PERCOBAAN III SAMPEL K3-1

Tabel Hubungan e - log P

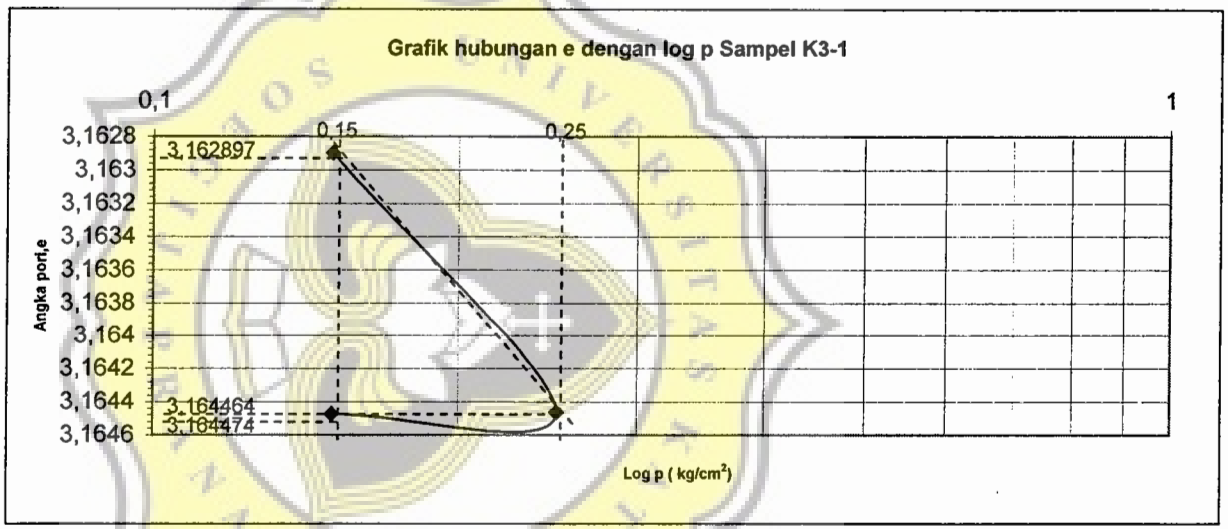
Beban/Load	Hi	△H	A	Gs	Ws	Hs	Hv	e0	△e	e	P(kg/cm^2)
0,3	2,01	0,01714	19,390	2,564	23,800	0,47872	1,53128	3,198701	0,035804	3,162897	0,15
0,500	2,01	0,01639	19,390	2,564	23,800	0,47872	1,53128	3,198701	0,034237	3,164464	0,25
0,3	2,01	0,016385	19,390	2,564	23,800	0,47872	1,53128	3,198701	0,034227	3,164474	0,15

$$C_c = \frac{3{,}162897 - 3{,}164464}{0{,}25 - 0{,}15}$$

$$= 0{,}01567$$

$$C_r = \frac{3{,}164474 - 3{,}164464}{0{,}25 - 0{,}15}$$

$$= 1{,}0\ E\text{-}04$$



TABEL DAN GRAFIK HUBUNGAN ANGKA PORI (e) DENGAN LOG P PERCOBAAN III SAMPEL K3-2

Tabel Hubungan e - log P

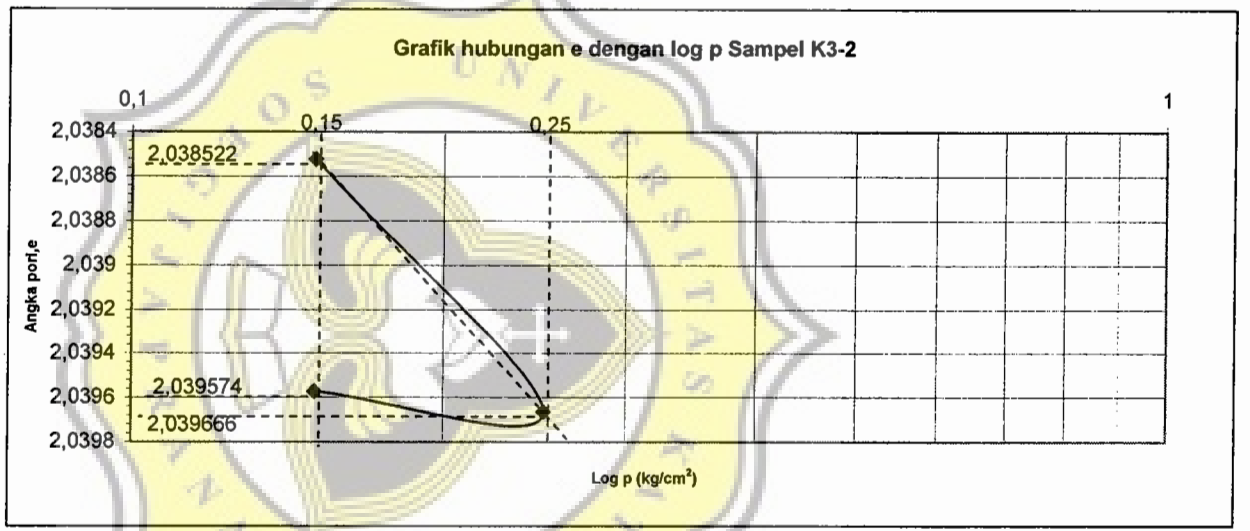
Beban/Load	Hi	△H	A	Gs	Ws	Hs	Hv	e0	△e	e	p (kg/cm^2)
0,3	2,01	0,01714	19,390	2,532	32,200	0,655865	1,354135	2,064656	0,026133	2,038522	0,15
0,500	2,01	0,01639	19,390	2,532	32,200	0,655865	1,354135	2,064656	0,02499	2,039666	0,25
0,3	2,01	0,01645	19,390	2,532	32,200	0,655865	1,354135	2,064656	0,025081	2,039574	0,15

$$C_c = \frac{2{,}038522 - 2{,}039666}{0{,}25 - 0{,}15}$$

$$= 0{,}01144$$

$$C_r = \frac{2{,}039666 - 2{,}039574}{0{,}25 - 0{,}15}$$

$$= 9{,}2\ E\text{-}04$$



TABEL DAN GRAFIK HUBUNGAN ANGKA PORI (e) DENGAN LOG P PERCOBAAN IV SAMPEL K4-1

Tabel Hubungan e - log P

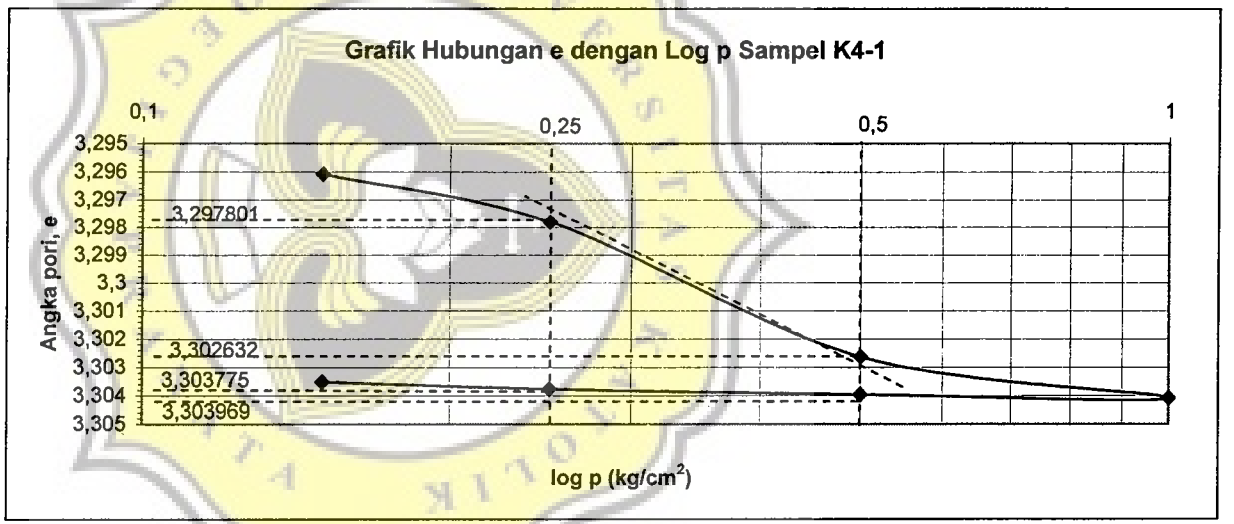
Beban/Load	Hi	△H	A	Gs	Ws	Hs	Hv	e0	△e	e	P (kg/cm^2)
0,3	2,01	0,01798	19,390	2,725	24,500	0,463684	1,546316	3,334852	0,038776	3,296076	0,15
0,500	2,01	0,01718	19,390	2,725	24,500	0,463684	1,546316	3,334852	0,037051	3,297801	0,25
1,000	2,01	0,01494	19,390	2,725	24,500	0,463684	1,546316	3,334852	0,03222	3,302632	0,5
2,000	2,01	0,01427	19,390	2,725	24,500	0,463684	1,546316	3,334852	0,030775	3,304077	1
1,000	2,01	0,01432	19,390	2,725	24,500	0,463684	1,546316	3,334852	0,030883	3,303969	0,5
0,500	2,01	0,01441	19,390	2,725	24,500	0,463684	1,546316	3,334852	0,031077	3,303775	0,25
0,300	2,01	0,01453	19,390	2,725	24,500	0,463684	1,546316	3,334852	0,031336	3,303516	0,15

$$C_c = \frac{3{,}297801 - 3{,}302632}{0{,}5 - 0{,}25}$$

$$= 0{,}019324$$

$$C_r = \frac{3{,}303969 - 3{,}303775}{0{,}5 - 0{,}25}$$

$$= 7{,}76\ E\text{-}04$$



TABEL DAN GRAFIK HUBUNGAN ANGKA PORI (e) DENGAN LOG P PERCOBAAN IV SAMPEL K4-2

Tabel Hubungan e - log P

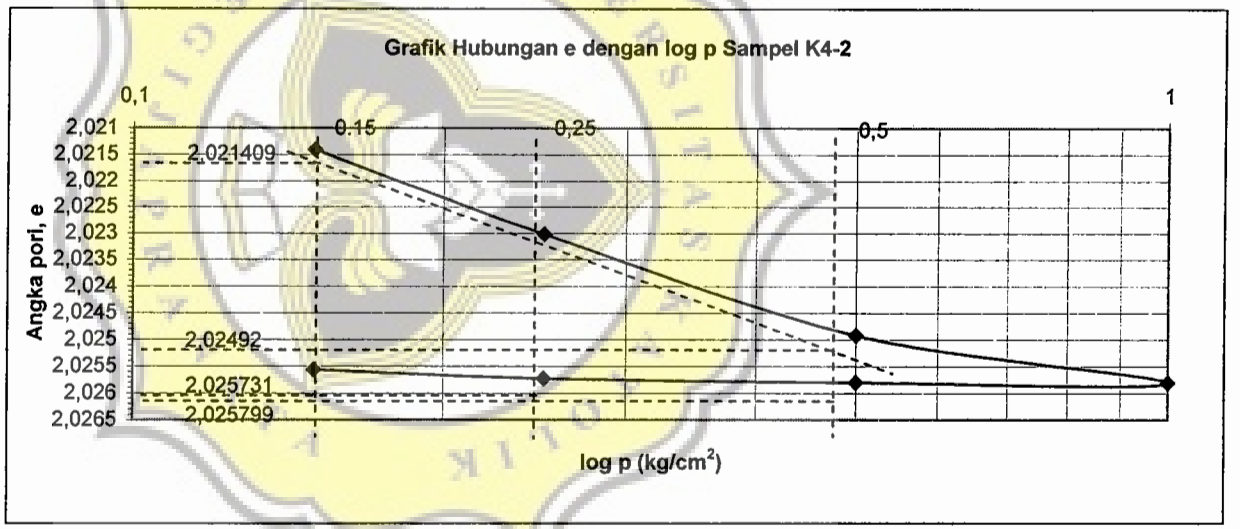
Beban/Load	Hi	△H	A	Gs	Ws	Hs	Hv	e0	△e	e	P (kg/cm^2)
0,300	2,01	0,01777	19,390	2,542	32,500	0,659371	1,350629	2,048359	0,02695	2,021409	0,15
0,500	2,01	0,01671	19,390	2,542	32,500	0,659371	1,350629	2,048359	0,025342	2,023016	0,25
1,000	2,01	0,015455	19,390	2,542	32,500	0,659371	1,350629	2,048359	0,023439	2,02492	0,5
2,000	2,01	0,01487	19,390	2,542	32,500	0,659371	1,350629	2,048359	0,022552	2,025807	1
1,000	2,01	0,014875	19,390	2,542	32,500	0,659371	1,350629	2,048359	0,022559	2,025799	0,5
0,500	2,01	0,01492	19,390	2,542	32,500	0,659371	1,350629	2,048359	0,022628	2,025731	0,25
0,300	2,01	0,01503	19,390	2,542	32,500	0,659371	1,350629	2,048359	0,022794	2,025564	0,15

$$C_c = \frac{2{,}021409 - 2{,}02492}{0{,}5 - 0{,}15}$$

$$= 0{,}01003142857$$

$$C_r = \frac{2{,}025799 - 2{,}025731}{0{,}5 - 0{,}25}$$

$$= 2{,}72\ E\text{-}04$$



Tabel Penurunan Sampel Secara Laboratorium

Perc.	C_c	C_r	H (cm)	e_0	$1+e_0$	$C_c*H/1+e_o$	$C_r*H/1+e_o$	$p_{o'}$	$\triangle p$	$p_o'+\triangle p$	p_c'	Log (p_c'/p_0')	Log$((p_0'+\triangle p)/p_c')$	S_c (cm)
K1-1	1,79E-03	4,60E-03	2,01	2,253	3,253	0,001106	0,002846	0,15	0,1	0,25	0,2	0,1247215	0,22184875	0,0006
K1-2	5,62E-03	8,40E-04	2,01	1,801	2,801	0,004033	0,000603	0,15	0,1	0,25	0,205	0,1350001	0,22184875	0,000976
K2-1	2,52E-03	2,70E-04	2,01	2,591	3,591	0,001411	0,000151	0,15	0,1	0,25	0,215	0,1557206	0,22184875	0,000336
K2-2	7,90E-03	4,64E-04	2,01	1,955	2,955	0,005371	0,000316	0,25	0,25	0,5	0,266	0,026615	0,301029996	0,001625
K3-1	0,01567	1,00E-04	2,01	3,163	4,163	0,007566	4,83E-05	0,15	0,1	0,25	0,216	0,1588649	0,22184875	0,001686
K3-2	9,20E-04	0,010329	2,01	2,039	3,039	0,000609	0,006833	0,15	0,1	0,25	0,2	0,1249387	0,22184875	0,000989
K4-1	0,019324	7,76E-04	2,01	3,298	4,298	0,009037	0,000363	0,25	0,25	0,5	0,252	0,0032019	0,301029996	0,002722
K4-2	0,0100314	2,72E-04	2,01	2,021	3,021	0,006673	0,000181	0,15	0,35	0,5	0,18	0,0791812	0,522878745	0,003504

Perc.	Cv
K1-1	0,36
K1-2	0,2505
K2-1	0,305
K2-2	0,06
K3-1	0,0177143
K3-2	0,0141
K4-1	0,01
K4-2	0,0092034

SKALA BESAR

Percobaan Skala Besar *(Secara Permodelan)*

Pengujian Kadar Air Tanah Percobaan I

1. Data Tong:

   Diameter Tong = 28 cm

   Tinggi Tong = 50 cm

   Luas Tong (A) = $\frac{1}{4}\pi d^2 = \frac{1}{4}x3{,}14x(28)^2 = 615{,}44$

2. Kadar Air Mula-Mula (w)

   Data Konsolidasi Percobaan I :

No.	Sampel Tanah Percobaan I Permodelan	A	
		1	2
1.	Berat Cawan + Tanah Basah (a)	42,4 gr	46.9 gr
2.	Berat Cawan + Tanah Kering .(b)	24,1 gr	27 gr
3.	Berat Cawan (c)	5 gr	5,1 gr
4.	$w = \frac{(a-b)}{(b-c)} \times 100\%$	95,812%	90,868%

No.	Sampel Tanah Percobaan I Permodelan	B	
		1	2
1.	Berat Cawan + Tanah Basah (a)	38,2 gr	41,4 gr
2.	Berat Cawan + Tanah Kering .(b)	22 gr	24 gr
3.	Berat Cawan (c)	4,9 gr	5 gr
4.	$w = \frac{(a-b)}{(b-c)} \times 100\%$	94,737%	91,579%

Pengujian Kadar Air Tanah Percobaan II

1. Data Tong:

   Diameter Tong = 28 cm

   Tinggi Tong = 50 cm

   Luas Tong (A) = $\frac{1}{4}\pi d^2 = \frac{1}{4}x3{,}14x(28)^2 = 615{,}44$

2. Kadar Air Mula-Mula (w)

Data Konsolidasi Percobaan II :

No.	Sampel Tanah Percobaan II Permodelan	A	
		1	2
1.	Berat Cawan + Tanah Basah (a)	38,2 gr	30,2 gr
2.	Berat Cawan + Tanah Kering .(b)	21,7 gr	18,2 gr
3.	Berat Cawan (c)	4,8 gr	4,8 gr
4.	$w = \frac{(a-b)}{(b-c)} \times 100\%$	97,633%	89,552%

No.	Sampel Tanah Percobaan II Permodelan	B	
		1	2
1.	Berat Cawan + Tanah Basah (a)	34 gr	35,3 gr
2.	Berat Cawan + Tanah Kering .(b)	19,9 gr	20 gr
3.	Berat Cawan (c)	4,6 gr	4,6 gr
4.	$w = \frac{(a-b)}{(b-c)} \times 100\%$	92,157%	99,351%

Pengujian Kadar Air Tanah Percobaan III

1. Data Tong:

   Diameter Tong = 28 cm

   Tinggi Tong = 50 cm

   Luas Tong (A) = $\frac{1}{4}\pi d^2 = \frac{1}{4}x3{,}14x(28)^2 = 615{,}44$

2. Kadar Air Mula-Mula (w)

Data Konsolidasi Percobaan III :

No.	Sampel Tanah Percobaan III Permodelan	A	
		1	2
1.	Berat Cawan + Tanah Basah (a)	39,2 gr	35,2 gr
2.	Berat Cawan + Tanah Kering .(b)	22,7 gr	20,2 gr
3.	Berat Cawan (c)	4,5 gr	4,6 gr
4.	$w = \frac{(a-b)}{(b-c)} \times 100\%$	90,659%	96,154%

No.	Sampel Tanah Percobaan III Permodelan	B	
		1	2
1.	Berat Cawan + Tanah Basah (a)	35 gr	34,3 gr
2.	Berat Cawan + Tanah Kering .(b)	20,2 gr	19,8 gr
3.	Berat Cawan (c)	4,5 gr	4,7 gr
4.	$w = \frac{(a-b)}{(b-c)} \times 100\%$	94,268%	96,026%

Pengujian Kadar Air Tanah Percobaan IV

1. Data Tong:

   Diameter Tong = 28 cm

   Tinggi Tong = 50 cm

   Luas Tong (A) = $\frac{1}{4}\pi d^2 = \frac{1}{4}x3{,}14x(28)^2 = 615{,}44$

2. Kadar Air Mula-Mula (w)

Data Konsolidasi Percobaan IV :

No.	Sampel Tanah Percobaan IV Permodelan	A	
		1	2
1.	Berat Cawan + Tanah Basah (a)	42,5 gr	44,7 gr
2.	Berat Cawan + Tanah Kering .(b)	24,1 gr	24,9 gr
3.	Berat Cawan (c)	4,8 gr	4,8 gr
4.	$w = \frac{(a-b)}{(b-c)} \times 100\%$	95,337%	98,507%

No.	Sampel Tanah Percobaan IV Permodelan	B	
		1	2
1.	Berat Cawan + Tanah Basah (a)	51,9 gr	47,2 gr
2.	Berat Cawan + Tanah Kering .(b)	29,2 gr	26,5 gr
3.	Berat Cawan (c)	4,7 gr	4,8 gr
4.	$w = \frac{(a-b)}{(b-c)} \times 100\%$	92,653%	95,392%

Data Ring + Sample Tanah

Berat Tong A = 3,25 Kg

B = 3,2 Kg

Berat Tong + Tanah mula-mula

Perc.	Berat Tnh. Lempung (Kg)		Brt Tong + Tnh. (Kg)	
	A	B	A	B
I	38,68	36,94	41,93	40,14
II	35,46	36,28	38,71	39,48
III	36,24	35,68	39,49	38,88
IV	32,53	35,179	35,78	38,379

Berat Tanah Kering

$$w = \frac{(a-b)}{(b-c)} x100\%$$

Dimana:

a = Berat tong + Tanah Basah

b = Berat tong + Tanah Kering

c = Berat tong

$$93,34\% = \frac{(3,25+38,68)-(3,25+x)}{(3,25+x)-3,25)}$$

$$0,9334 = \frac{(3,25+41,93)-(3,25+x)}{(3,25+x)-3,25)}$$

$$1,9334x = 38,68$$

$$x = \frac{38,68}{1,9334}$$

$$x = 20,006$$

Perc.	Water Content (%)		Berat Tanah Kering (Kg)	
	A	B	A	B
I	93,340	93,158	20,006	19,124
II	93,593	96,013	18,317	18,509
III	93,407	95,147	18,738	18,284
IV	96,922	94,023	16,519	18,131

LAMPIRAN

Perhitungan Angka Pori Awal (e_0)

$$e_0 = \frac{H_v}{H_s}$$

$$= \frac{17{,}654}{12{,}346}$$

$$= 1{,}429$$

Perhitungan Pembebanan 6 Kg

Final dial = 30 cm

Perubahan tegangan sample tanah (ΔH) = 0,105

Perubahan angka pori (Δe)

$$\Delta_e = \frac{\Delta H}{H_s}$$

$$= \frac{0{,}105}{12{,}346}$$

$$= 0{,}0085$$

Angka Pori Setelah Konsolidasi (e)

$$e = e_0 - \Delta_e$$

$$e = 1{,}429 - 0{,}0085$$

$$= 1{,}4205$$

LAMPIRAN

Tabel Perhitungan e Tiap-tiap Beban

Percobaan I D_1

Beban (Kg)	Hs	Hv	ΔH	e_0	Δ_e	e
6	12,346	17,654	0,105	1,429	0,0085	1,420
10	12,346	16,919	2,097	1,370	0,169	1,201
20	12,346	14,821	1,427	1,200	0,189	0,011
40	12,346	13,394	3,450	1,085	0,279	0,806
60	12,346	9,944	5,090	0,805	0,412	0,393

Percobaan I D_2

Beban (Kg)	Hs	Hv	ΔH	e_0	Δ_e	e
6	11,422	18,578	0,62	1,626	0,054	1,572
10	11,422	17,958	1,575	1,572	0,138	1,434
20	11,422	16,383	2,17	1,434	0,189	1,245
40	11,422	14,213	3,237	1,244	0,283	0,961
60	11,422	10,975	1,694	0,961	0,148	0,813

Percobaan II D_1

Beban (Kg)	Hs	Hv	ΔH	e_0	Δ_e	e
6	11,304	18,696	1,332	1,654	0,118	1,536
10	11,304	17,363	1,132	1,536	0,1	1,436
20	11,304	16,241	1,38	1,437	0,122	1,315
40	11,304	14,861	0,817	1,315	0,072	1,243
60	11,304	14,043	0,89	1,242	0,079	1,163

Percobaan II D_2

Beban (Kg)	Hs	Hv	ΔH	e_0	Δ_e	e
6	11,283	18,717	0,763	1,659	0,068	1,591
10	11,283	17,954	0,802	1,591	0,071	1,519
20	11,283	17,152	1,16	1,520	0,103	1,417
40	11,283	15,992	2,758	1,417	0,244	1,173
60	11,283	13,234	3,317	1,173	0,294	0,879

Percobaan III D1

Beban (Kg)	Hs	Hv	ΔH	e_0	Δ_e	e
6	11,563	18,437	0,977	1,594	0,084	1,509
10	11,563	17,459	1,02	1,509	0,088	1,421
20	11,563	16,439	1,55	1,422	0,134	1,288
40	11,563	14,889	2,215	1,288	0,192	1,096
60	11,563	12,674	1,785	1,096	0,154	0,942

Percobaan III D_2

Beban (Kg)	Hs	Hv	ΔH	e_0	Δ_e	e
6	11,802	18,198	1,7	1,541	0,144	1,397
10	11,802	16,498	1,33	1,398	0,113	1,285
20	11,802	15,168	1,73	1,285	0,146	1,139
40	11,802	13,438	3,29	1,139	0,279	0,86
60	11,802	10,148	8,15	0,859	0,690	0,169

Percobaan IV D_1

Beban (Kg)	Hs	Hv	ΔH	e_0	Δ_e	e
6	10,194	19,806	1,285	1,943	0,126	1,817
10	10,194	17,981	1,41	1,764	0,138	1,626
20	10,194	16,571	1,952	1,626	0,189	1,437
40	10,194	14,506	2,08	1,429	0,204	1,225
60	10,194	12,566	1,79	1,233	0,176	1,057

Percobaan IV D_2

Beban (Kg)	Hs	Hv	ΔH	e_0	Δ_e	e
6	11,189	18,811	2,133	1,681	0,191	1,490
10	11,189	16,178	3,06	1,446	0,273	1,173
20	11,189	13,118	3,077	1,172	0,275	0,897
40	11,189	10,041	3,11	0,897	0,278	0,619
60	11,189	6,931	2,275	0,619	0,203	0,416

Lampiran

Index Properties	Percobaan							
	I		II		III		IV	
	A	B	A	B	A	B	A	B
Water content, wn (%)	88,340	88,158	87,593	88,013	87,407	88,147	87,922	88,023
	0,883	0,882	0,876	0,880	0,874	0,881	0,879	0,880
Specific Gravity, Gs	2,633	2,633	2,633	2,633	2,633	2,633	2,633	2,633
γ_{sat} (Kg/cm^3)	1,491	1,492	1,494	1,492	1,495	1,492	1,493	1,492
$\gamma = \gamma_{sat} - \gamma_w$	0,491	0,492	0,494	0,492	0,495	0,492	0,493	0,492
Pasir	8,233	8,233	8,233	8,233	8,233	8,233	8,233	8,233
$P_0' = 0,5\ H - \gamma$	7,365	7,375	7,409	7,384	7,420	7,376	7,389	7,383
P_0'	15,597	15,608	15,641	15,616	15,652	15,608	15,622	15,616
ΔP	**14,233**	**14,233**	**14,233**	**14,233**	**14,233**	**14,233**	**14,233**	**14,233**

Perc.	Gls Ukur 50 cc (gr)	Pasir + Gls Ukr (gr)	Pasir (gr)	γ sand gr/cc	γ sand Rata-rata
I	79,3	163,6	84,3	1,686	
II	79,3	160,7	81,4	1,628	**1,647**
III	79,3	159,8	80,5	1,61	
IV	79,3	162,4	83,1	1,662	

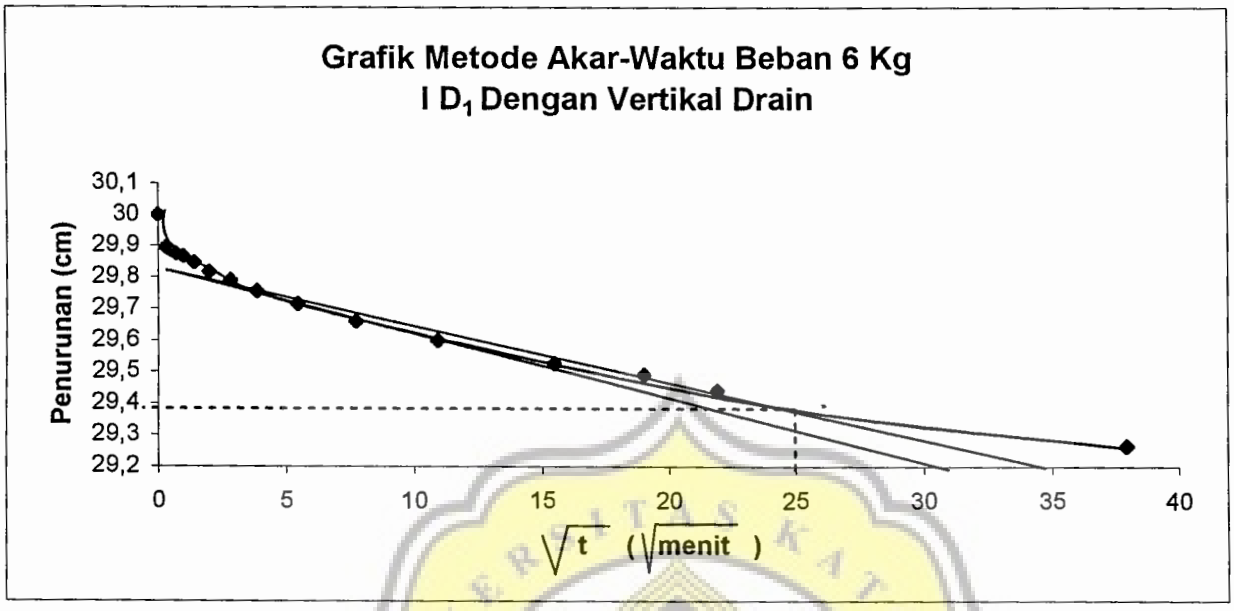
Lampiran

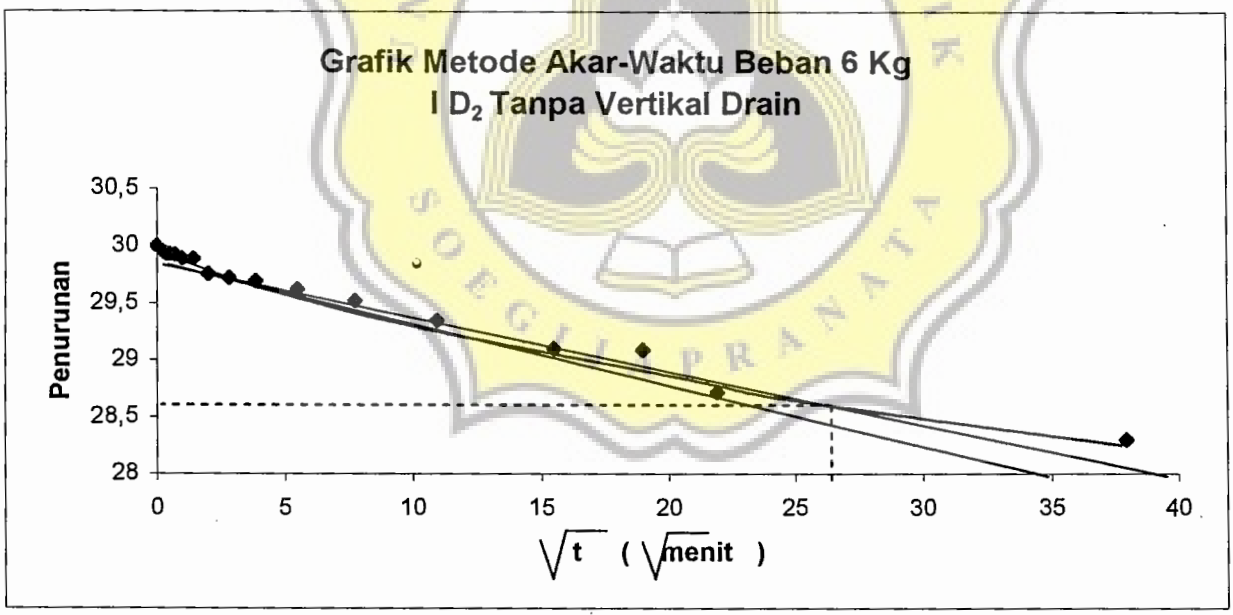
Tabel Pembacaan Dial Percobaan II D_1 (Dgn Vertikal Drain)

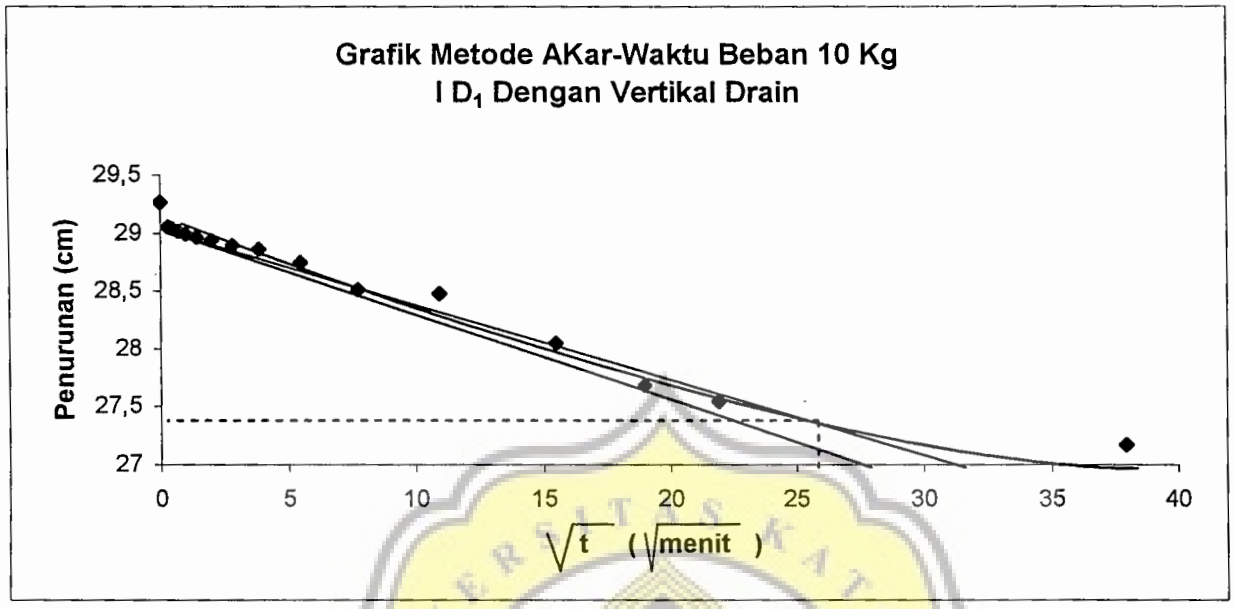
Waktu	$\sqrt{t}$	6 kg/cm2		10 kg/cm2		20 kg/cm2		40 kg/cm2		60 kg/cm2	
		div	(cm)	div	(cm)	div	(cm)	div	(cm)	div	(cn
0	0	0,000	30,000	133,250	28,668	245,500	27,545	363,500	26,365	465,250	25,3
0,1	0,316	4,250	29,958	138,000	28,620	248,500	27,515	389,500	26,105	468,750	25,3
0,15	0,387	5,000	29,950	138,250	28,618	250,750	27,493	390,250	26,098	468,750	25,3
0,25	0,5	5,000	29,950	138,500	28,615	251,000	27,490	390,500	26,095	468,750	25,3
0,5	0,707	5,500	29,945	139,250	28,608	252,000	27,480	390,750	26,093	468,750	25,3
1	1	7,000	29,930	141,000	28,590	252,750	27,473	391,000	26,090	468,750	25,3
2	1,414	7,500	29,925	143,250	28,568	254,000	27,460	391,250	26,088	468,750	25,3
4	2	14,250	29,858	146,500	28,535	255,500	27,445	392,250	26,078	469,250	25,3
8	2,828	16,250	29,838	148,000	28,520	257,500	27,425	393,000	26,070	470,250	25,2
15	3,873	17,750	29,823	150,250	28,498	260,500	27,395	394,000	26,060	470,750	25,2
30	5,477	22,750	29,773	154,250	28,458	265,500	27,345	397,250	26,028	471,250	25,2
60	7,746	29,750	29,703	160,750	28,393	284,750	27,153	403,250	25,968	472,000	25,2
120	10,954	42,500	29,575	170,750	28,293	308,500	26,915	409,250	25,908	496,500	25,0
240	15,492	63,750	29,363	188,500	28,115	327,500	26,725	413,000	25,870	519,000	24,8
360	18,974	71,750	29,283	204,750	27,953	339,000	26,610	441,500	25,585	531,000	24,6
480	21,909	97,500	29,025	219,000	27,810	340,000	26,600	450,750	25,493	533,500	24,6
1440	37,947	133,250	28,668	245,500	27,545	363,500	26,365	465,250	25,348	554,250	24,4

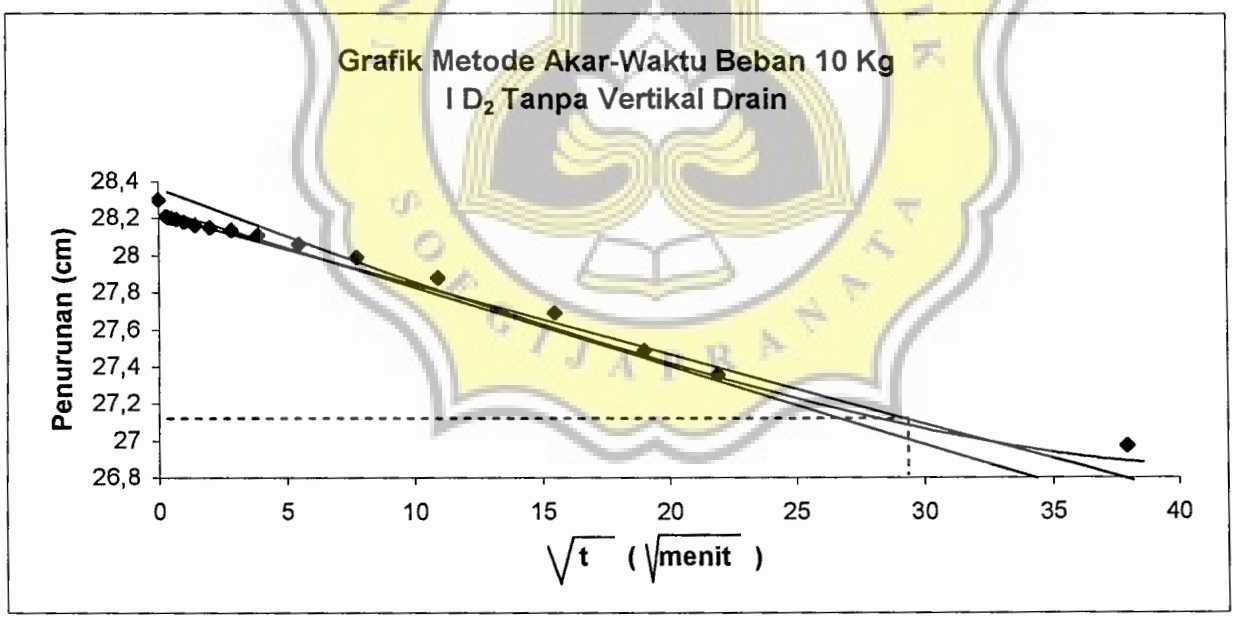
Tabel Pembacaan Dial Percobaan II D_2 (Tanpa Vertikal Drain)

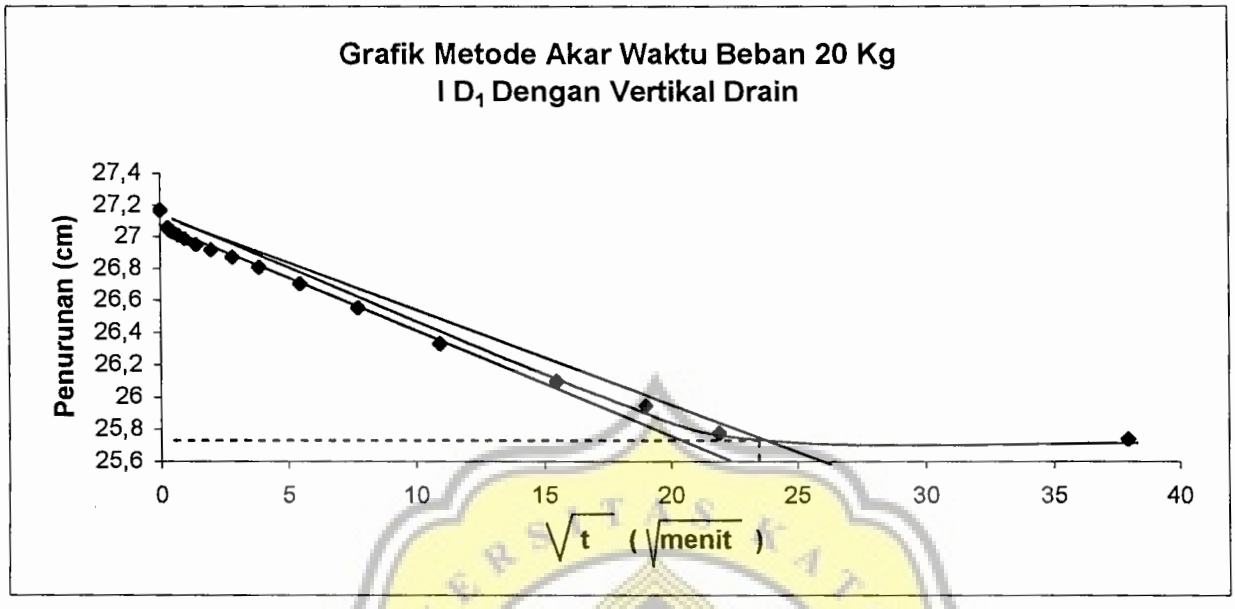
Waktu	$\sqrt{t}$	6 kg/cm2		10 kg/cm2		20 kg/cm2		40 kg/cm2		60 kg/cm2	
		div	(cm)	div	(cm)	div	(cm)	div	(cm)	div	(cm
0	0	0,000	30,000	62,000	29,380	219,500	27,805	436,500	25,635	760,250	22,3
0,1	0,316	4,000	29,960	65,000	29,350	225,000	27,750	449,500	25,505	763,250	22,3
0,15	0,387	4,000	29,960	65,750	29,343	225,750	27,743	450,750	25,493	763,250	22,3
0,25	0,5	4,000	29,960	66,250	29,338	226,250	27,738	454,000	25,460	763,500	22,3
0,5	0,707	4,250	29,958	66,500	29,335	227,000	27,730	457,750	25,423	765,500	22,3
1	1	5,000	29,950	67,000	29,330	227,750	27,723	459,000	25,410	766,000	22,3
2	1,414	5,750	29,943	67,750	29,323	229,250	27,708	461,500	25,385	766,500	22,3
4	2	7,500	29,925	69,750	29,303	231,000	27,690	465,000	25,350	767,250	22,3
8	2,828	9,000	29,910	72,250	29,278	233,250	27,668	472,500	25,275	776,750	22,2
15	3,873	11,000	29,890	75,000	29,250	236,500	27,635	480,500	25,195	777,000	22,2
30	5,477	9,250	29,908	79,000	29,210	242,000	27,580	490,500	25,095	788,250	22,1
60	7,746	20,000	29,800	80,750	29,193	255,000	27,450	504,500	24,955	811,500	21,8
120	10,954	27,500	29,725	81,000	29,190	263,250	27,368	590,500	24,095	827,500	21,7
240	15,492	38,750	29,613	81,500	29,185	284,500	27,155	682,000	23,180	853,000	21,4
360	18,974	47,500	29,525	117,750	28,823	302,000	26,980	381,000	26,190	923,000	20,7
480	21,909	54,500	29,455	165,500	28,345	318,250	26,818	735,500	22,645	929,750	20,7
1440	37,947	62,000	29,380	219,500	27,805	436,500	25,635	760,250	22,398	929,750	20,7

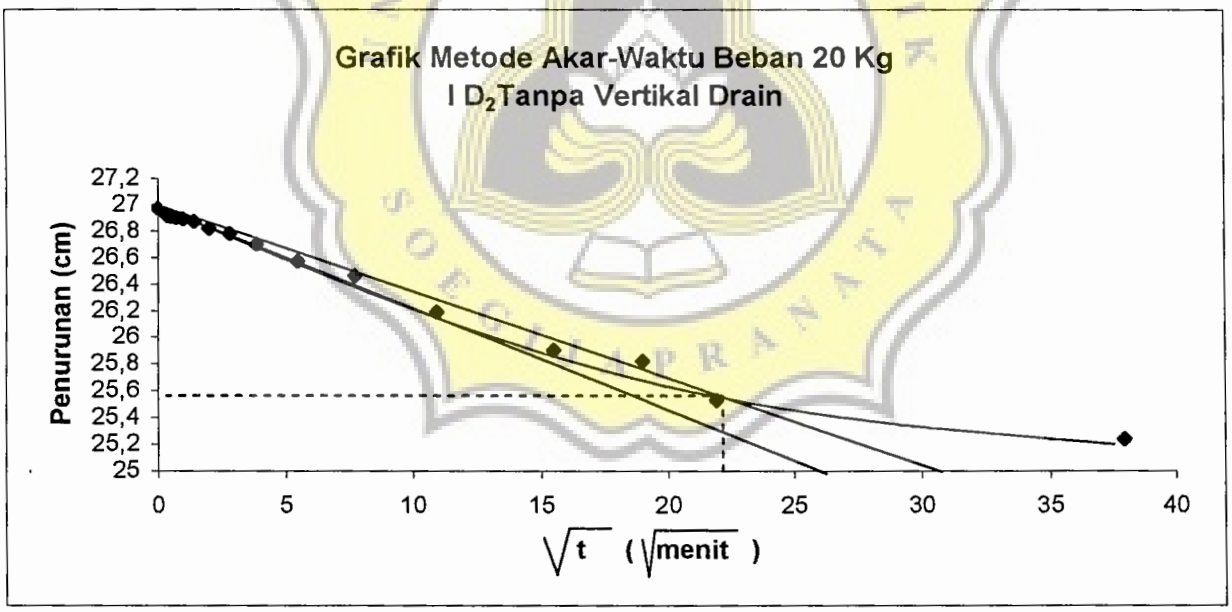

Grafik Metode Akar-Waktu Beban 6 Kg
I D1 Dengan Vertikal Drain
Penurunan (cm)
30,1
30
29,9
29,8
29,7
29,6
29,5
29,4
29,3
29,2
0
5
10
15
20
25
30
35
40
√t (√menit)

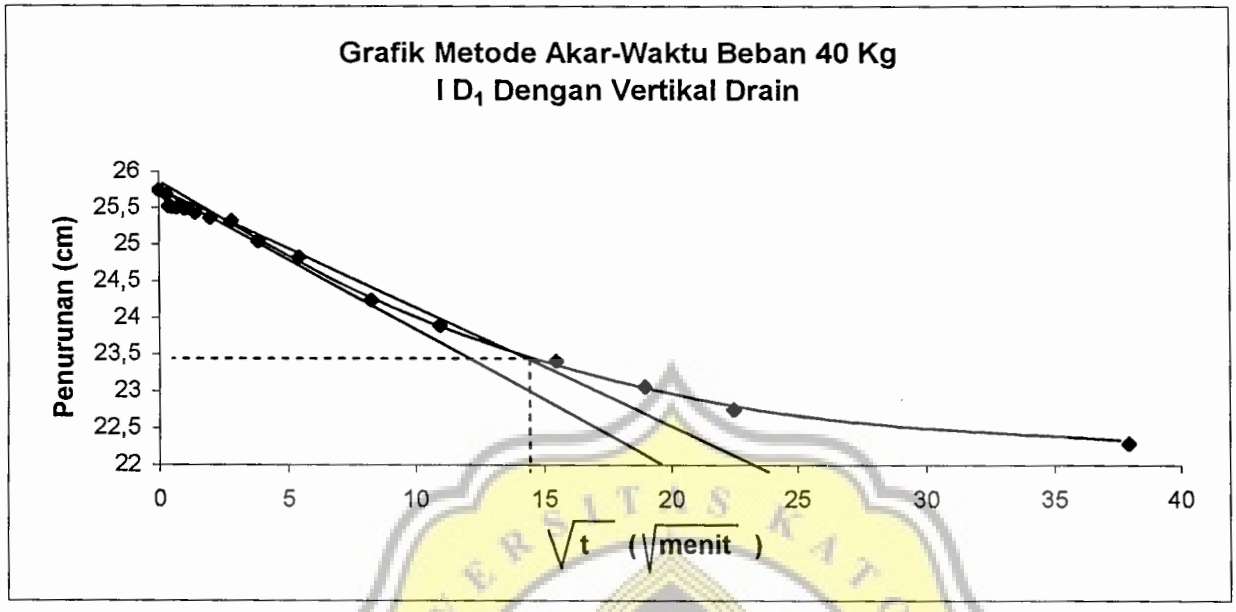

Grafik Metode Akar-Waktu Beban 6 Kg
I D2 Tanpa Vertikal Drain
Penurunan
30,5
30
29,5
29
28,5
28
0
5
10
15
20
25
30
35
40
√t (√menit)

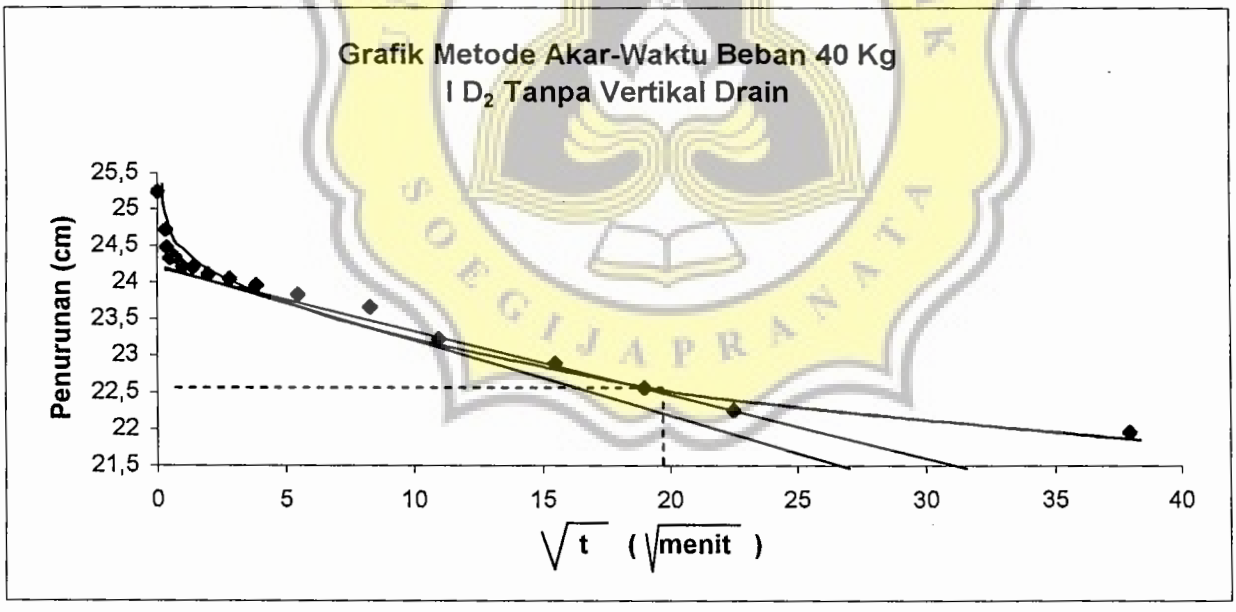

Grafik Metode AKar-Waktu Beban 10 Kg
I D1 Dengan Vertikal Drain
Penurunan (cm)
29,5
29
28,5
28
27,5
27
0
5
10
15
20
25
30
35
40
√t (√menit)

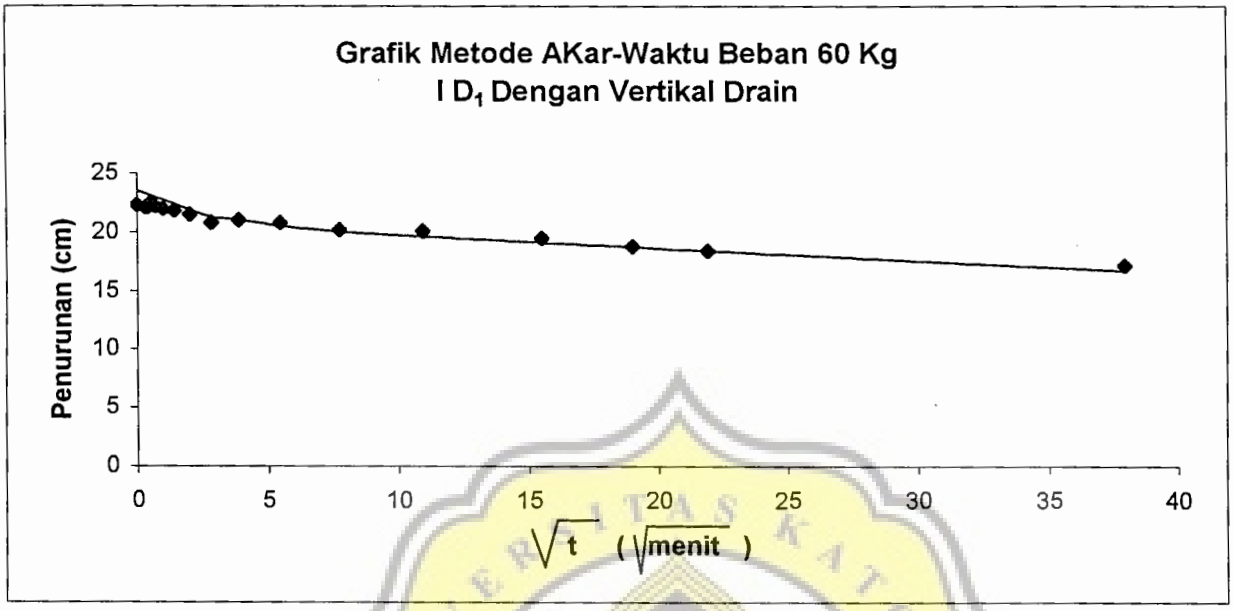

Grafik Metode Akar-Waktu Beban 10 Kg
I D2 Tanpa Vertikal Drain
Penurunan (cm)
28,4
28,2
28
27,8
27,6
27,4
27,2
27
26,8
0
5
10
15
20
25
30
35
40
√t (√menit)

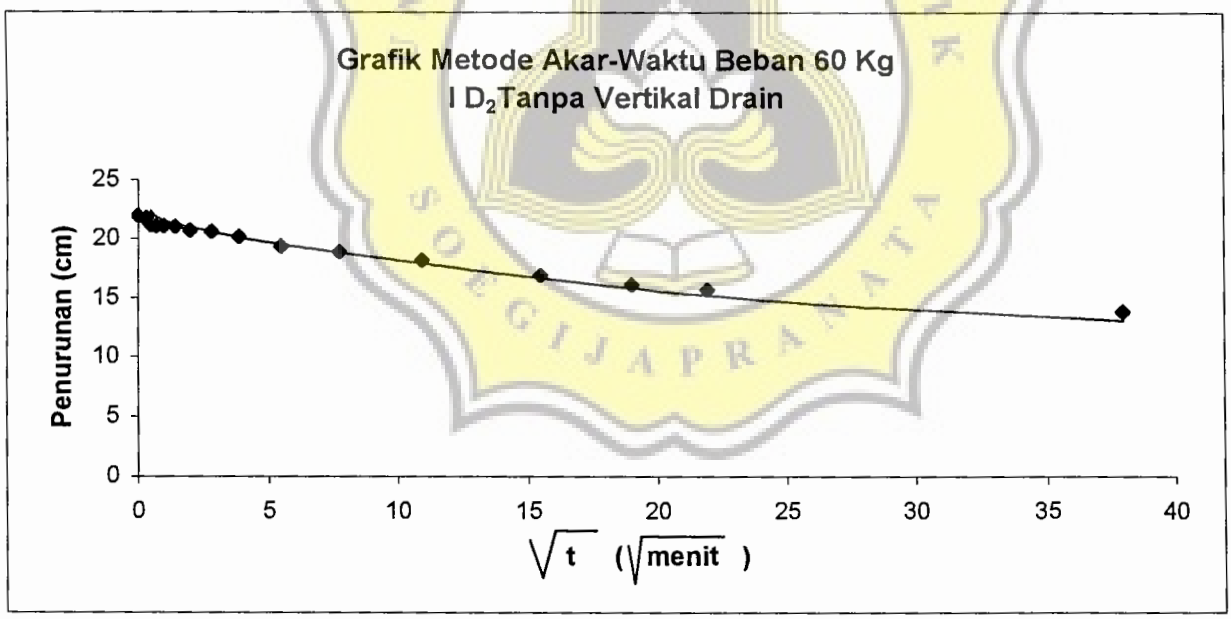

Grafik Metode Akar Waktu Beban 20 Kg
I D1 Dengan Vertikal Drain
Penurunan (cm)
27,4
27,2
27
26,8
26,6
26,4
26,2
26
25,8
25,6
0
5
10
15
20
25
30
35
40
√t (√menit)

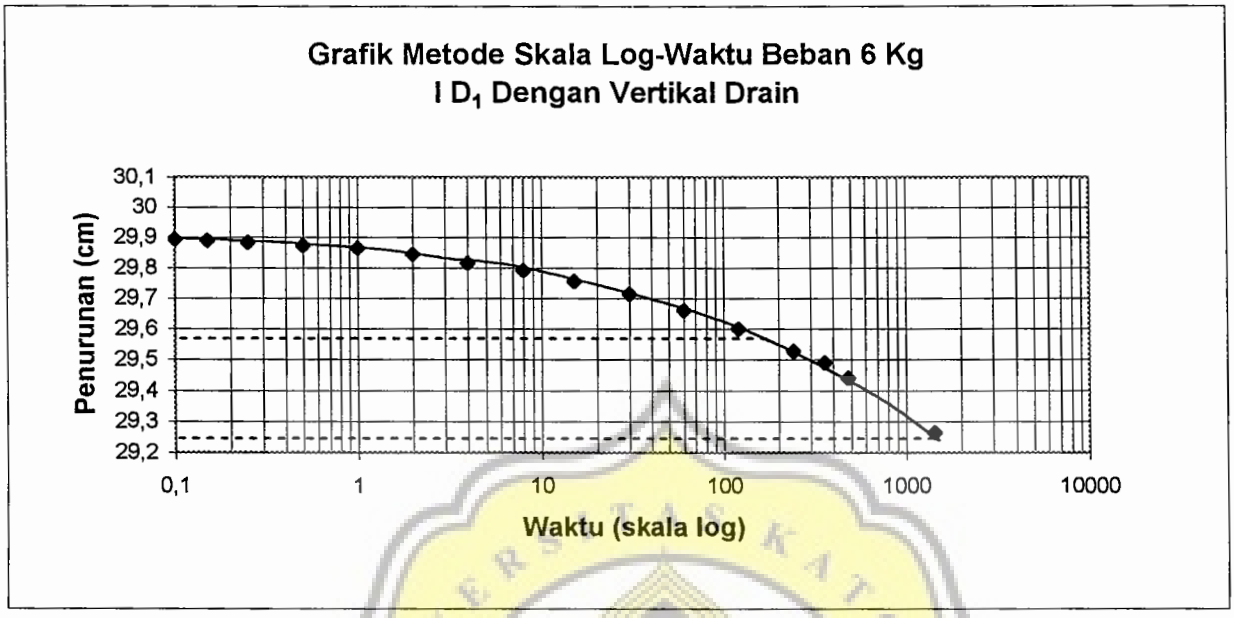

Grafik Metode Akar-Waktu Beban 20 Kg
I D2Tanpa Vertikal Drain
Penurunan (cm)
27,2
27
26,8
26,6
26,4
26,2
26
25,8
25,6
25,4
25,2
25
0
5
10
15
20
25
30
35
40
√t (√menit)

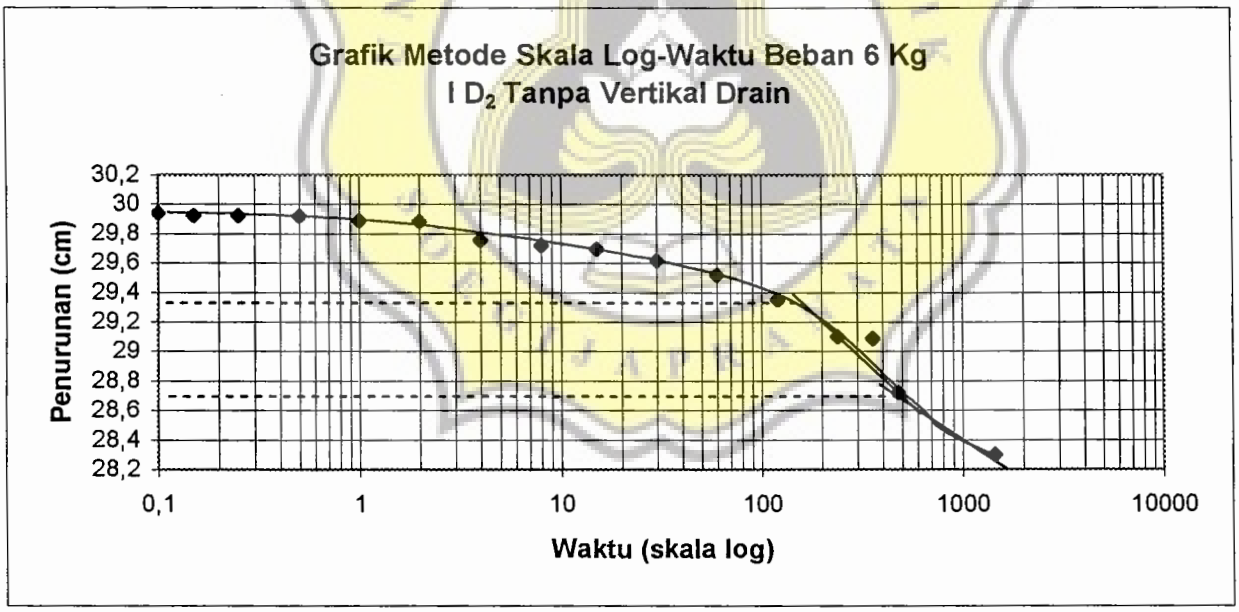

Grafik Metode Akar-Waktu Beban 40 Kg
I D1 Dengan Vertikal Drain
Penurunan (cm)
26
25,5
25
24,5
24
23,5
23
22,5
22
0
5
10
15
20
25
30
35
40
√t (√menit)

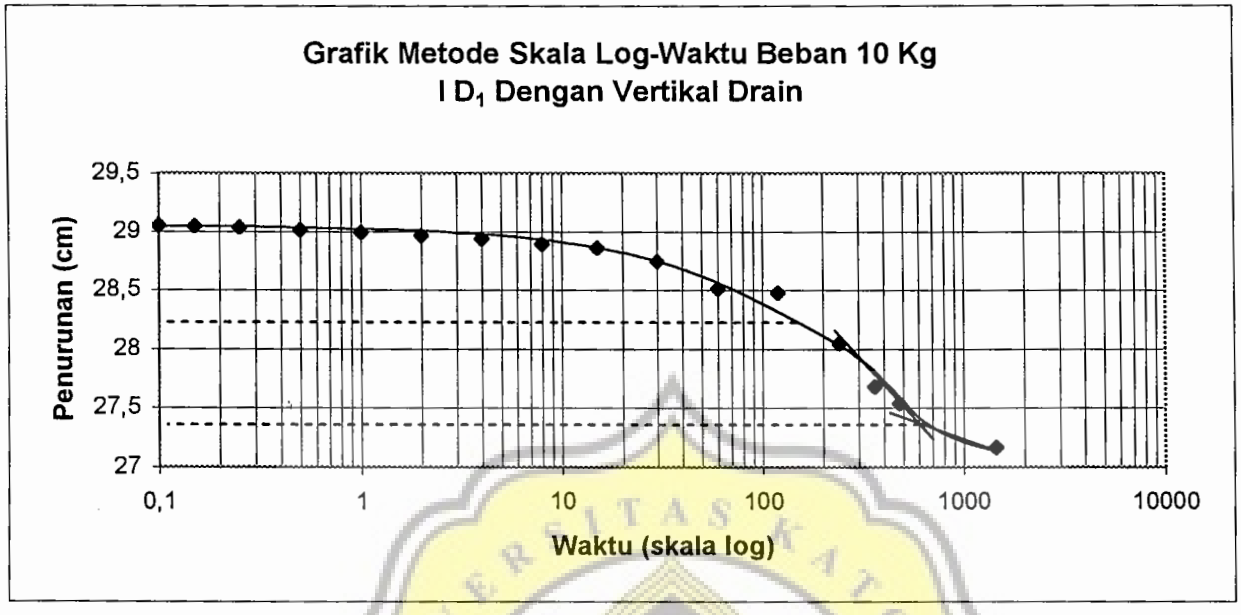

Grafik Metode Akar-Waktu Beban 40 Kg
I D2 Tanpa Vertikal Drain
Penurunan (cm)
25,5
25
24,5
24
23,5
23
22,5
22
21,5
0
5
10
15
20
25
30
35
40
√t (√menit)

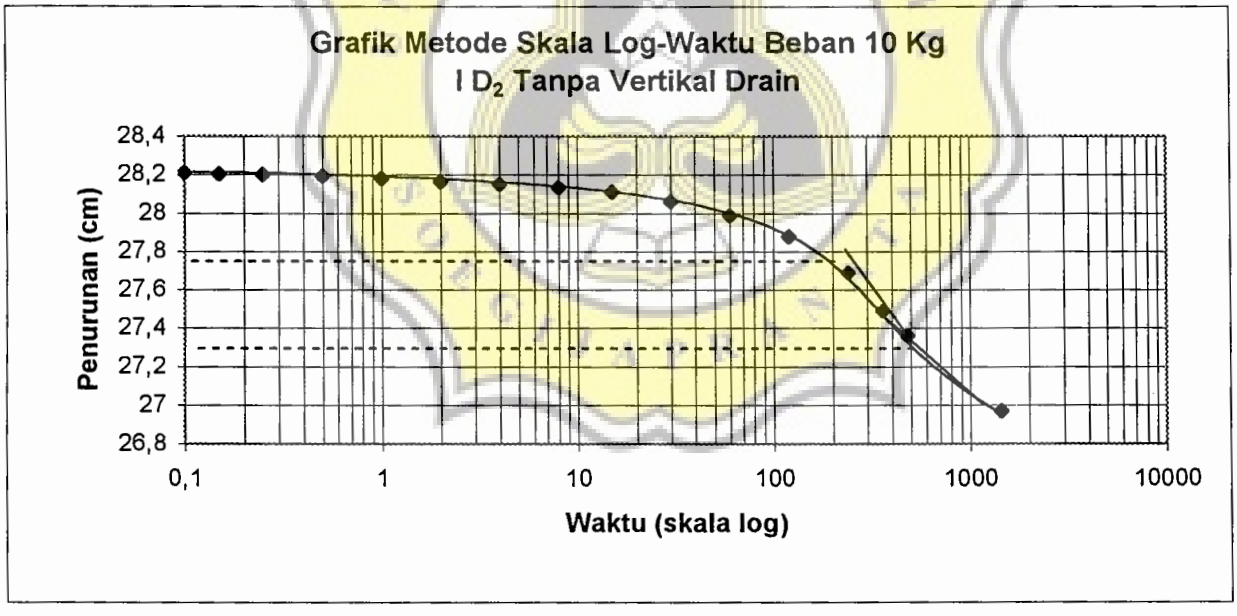

Grafik Metode AKar-Waktu Beban 60 Kg
I D1 Dengan Vertikal Drain
Penurunan (cm)
0
5
10
15
20
25
0
5
10
15
20
25
30
35
40
√t (√menit)

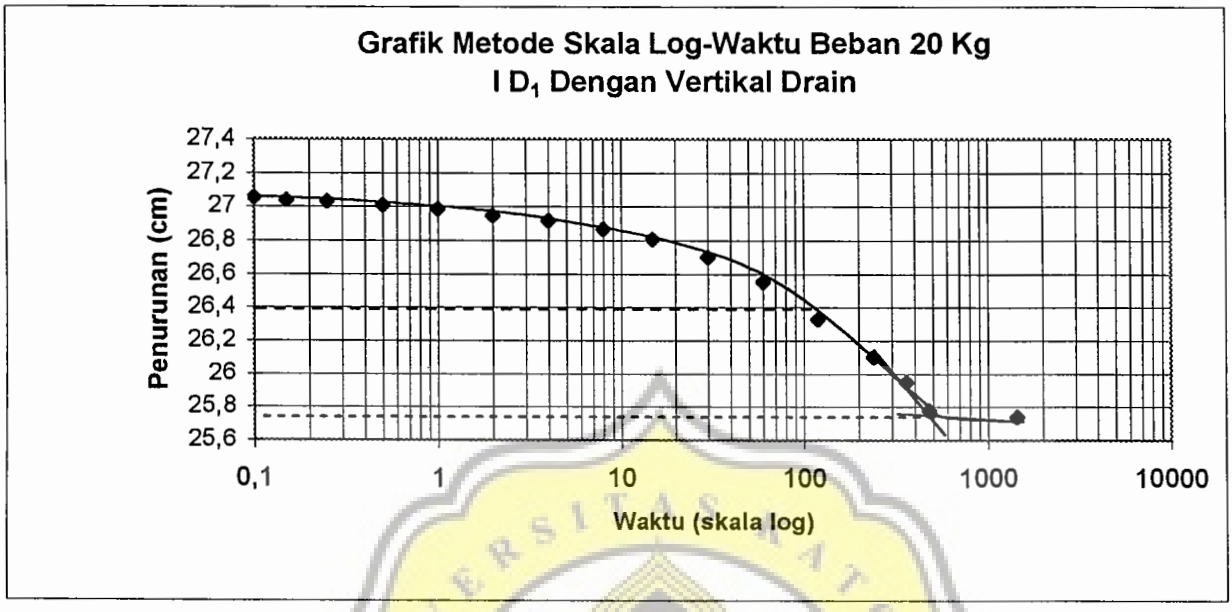

Grafik Metode Akar-Waktu Beban 60 Kg
I D2Tanpa Vertikal Drain
Penurunan (cm)
0
5
10
15
20
25
0
5
10
15
20
25
30
35
40
√t (√menit)

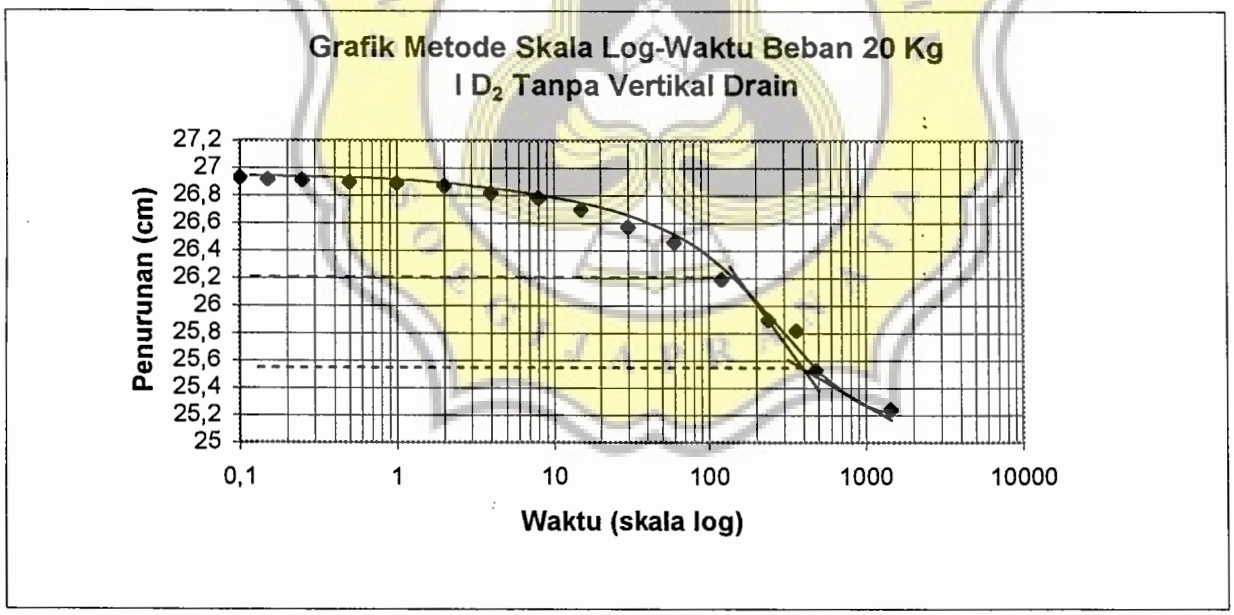

Grafik Metode Skala Log-Waktu Beban 6 Kg
I D_1 Dengan Vertikal Drain
Penurunan (cm)
30,1
30
29,9
29,8
29,7
29,6
29,5
29,4
29,3
29,2
0,1
1
10
100
1000
10000
Waktu (skala log)

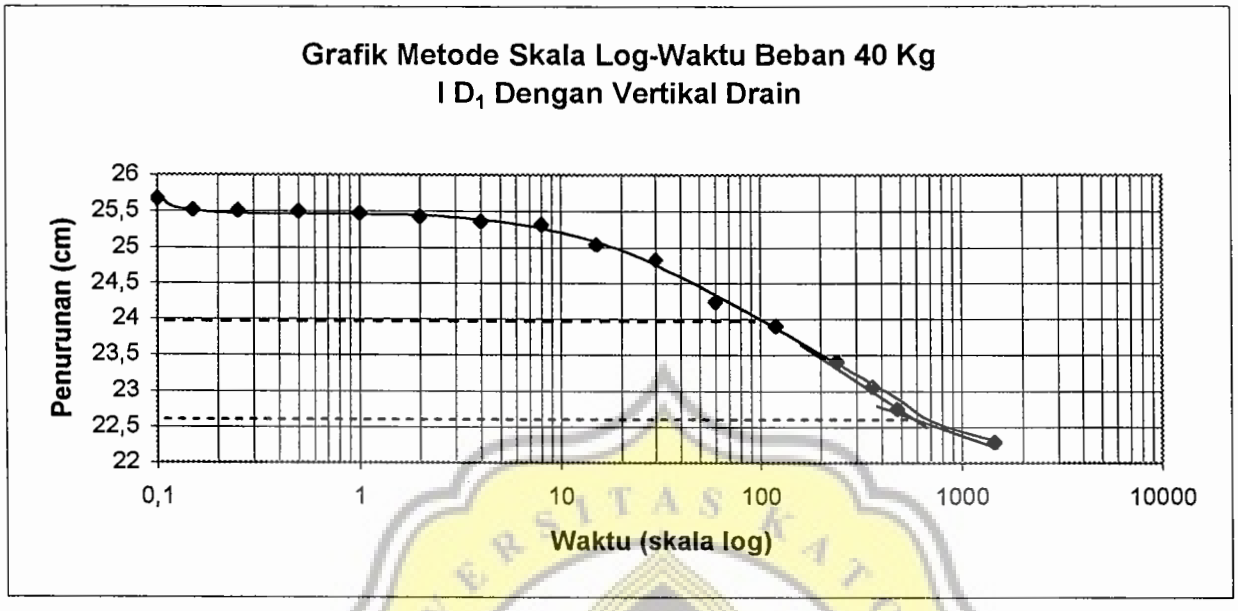

Grafik Metode Skala Log-Waktu Beban 6 Kg
I D_2 Tanpa Vertikal Drain
Penurunan (cm)
30,2
30
29,8
29,6
29,4
29,2
29
28,8
28,6
28,4
28,2
0,1
1
10
100
1000
10000
Waktu (skala log)

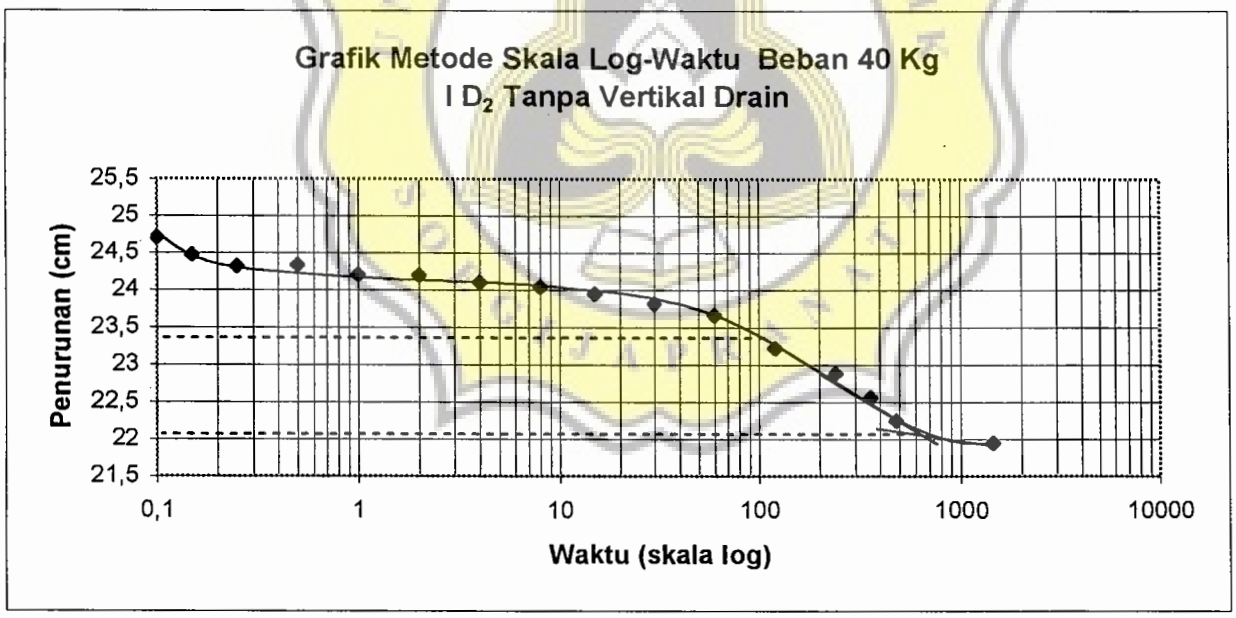

Grafik Metode Skala Log-Waktu Beban 10 Kg
I D1 Dengan Vertikal Drain
Penurunan (cm)
29,5
29
28,5
28
27,5
27
0,1
1
10
100
1000
10000
Waktu (skala log)

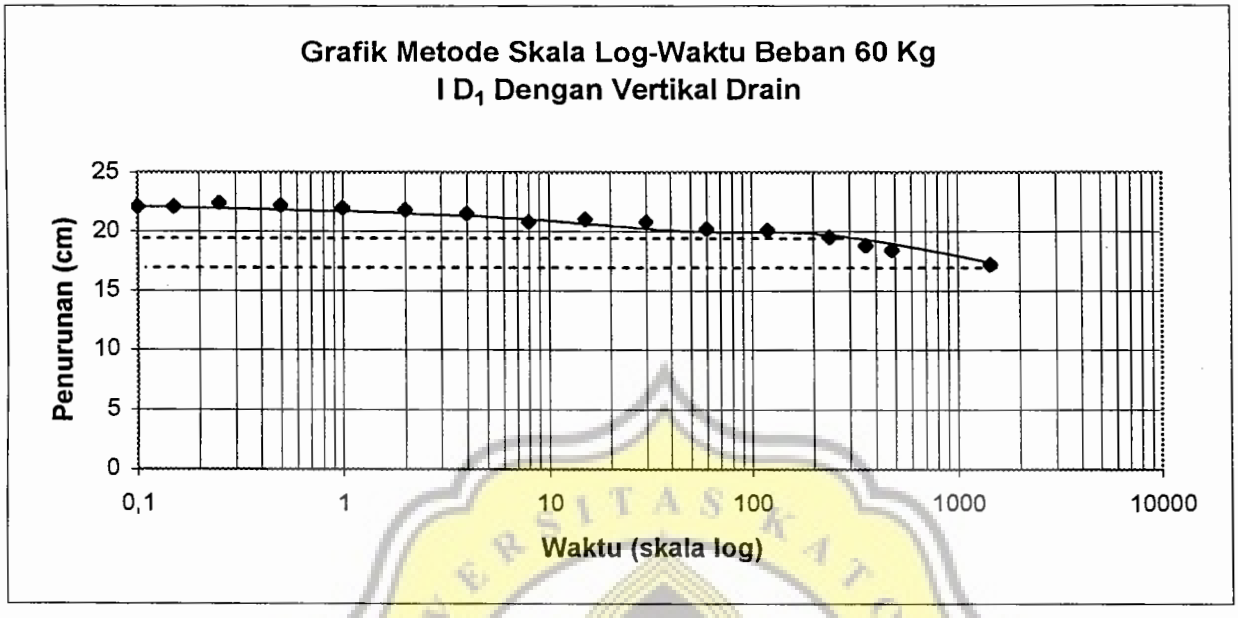

Grafik Metode Skala Log-Waktu Beban 10 Kg
I D2 Tanpa Vertikal Drain
Penurunan (cm)
28,4
28,2
28
27,8
27,6
27,4
27,2
27
26,8
0,1
1
10
100
1000
10000
Waktu (skala log)

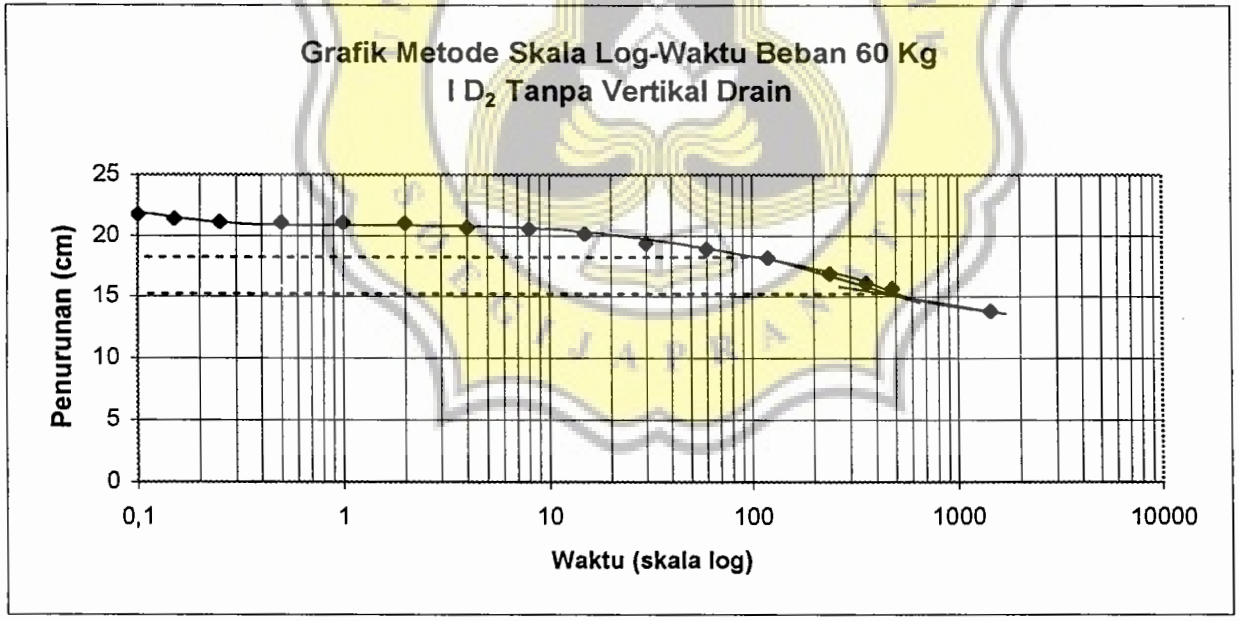

Grafik Metode Skala Log-Waktu Beban 20 Kg
I D1 Dengan Vertikal Drain
Penurunan (cm)
27,4
27,2
27
26,8
26,6
26,4
26,2
26
25,8
25,6
0,1
1
10
100
1000
10000
Waktu (skala log)


Grafik Metode Skala Log-Waktu Beban 20 Kg
I D2 Tanpa Vertikal Drain
Penurunan (cm)
27,2
27
26,8
26,6
26,4
26,2
26
25,8
25,6
25,4
25,2
25
0,1
1
10
100
1000
10000
Waktu (skala log)


Grafik Metode Skala Log-Waktu Beban 40 Kg
I D1 Dengan Vertikal Drain
Penurunan (cm)
26
25,5
25
24,5
24
23,5
23
22,5
22
0,1
1
10
100
1000
10000
Waktu (skala log)


Grafik Metode Skala Log-Waktu Beban 40 Kg
I D2 Tanpa Vertikal Drain
Penurunan (cm)
25,5
25
24,5
24
23,5
23
22,5
22
21,5
0,1
1
10
100
1000
10000
Waktu (skala log)


Grafik Metode Skala Log-Waktu Beban 60 Kg
I D1 Dengan Vertikal Drain
Penurunan (cm)
25
20
15
10
5
0
0,1
1
10
100
1000
10000
Waktu (skala log)

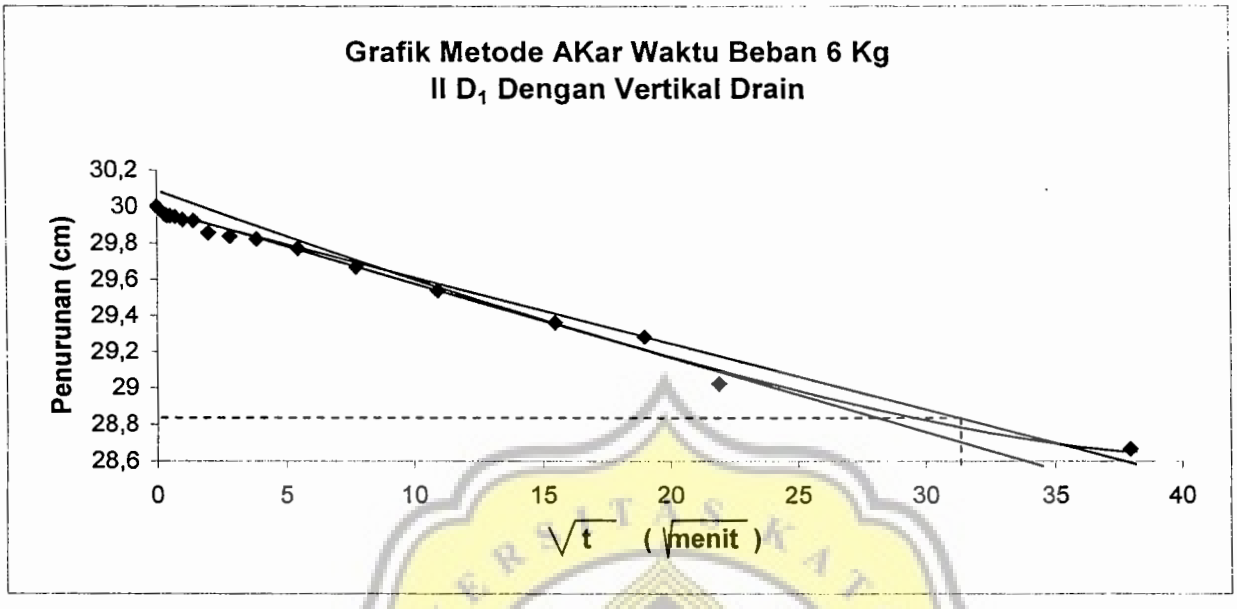

Grafik Metode Skala Log-Waktu Beban 60 Kg
I D2 Tanpa Vertikal Drain
Penurunan (cm)
25
20
15
10
5
0
0,1
1
10
100
1000
10000
Waktu (skala log)

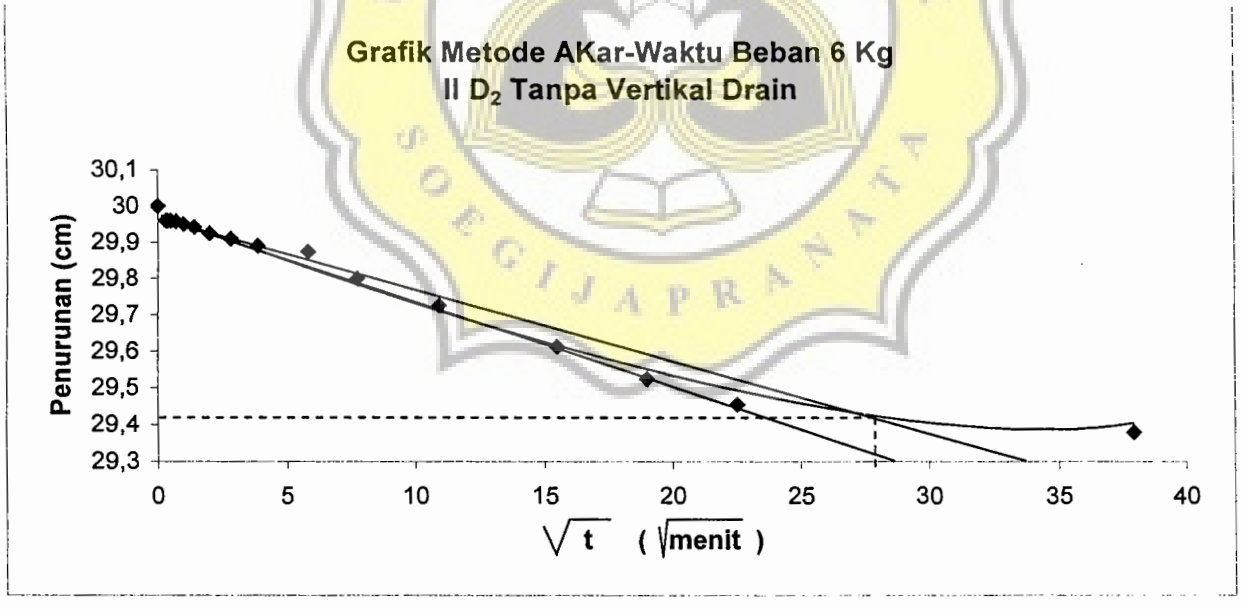
Tabel Pembacaan Dial Percobaan II D_1 (Dgn Vertikal Drain)

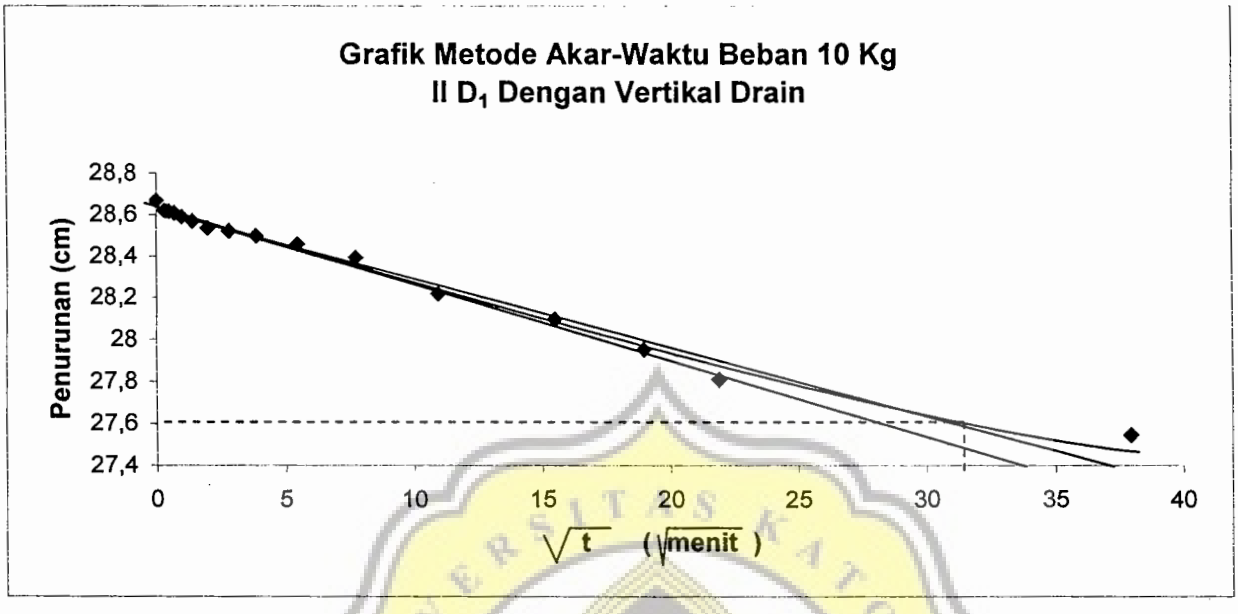
Waktu	$\sqrt{t}$	6 kg/cm2		10 kg/cm2		20 kg/cm2		40 kg/cm2		60 kg/cm2	
		div	(cm)	div	(cm)	div	(cm)	div	(cm)	div	(cm)
0	0	0,000	30,000	133,250	28,668	245,500	27,545	363,500	26,365	465,250	25,348
0,1	0,316	4,250	29,958	138,000	28,620	248,500	27,515	389,500	26,105	468,750	25,313
0,15	0,387	5,000	29,950	138,250	28,618	250,750	27,493	390,250	26,098	468,750	25,313
0,25	0,5	5,000	29,950	138,500	28,615	251,000	27,490	390,500	26,095	468,750	25,313
0,5	0,707	5,500	29,945	139,250	28,608	252,000	27,480	390,750	26,093	468,750	25,313
1	1	7,000	29,930	141,000	28,590	252,750	27,473	391,000	26,090	468,750	25,313
2'	1,414	7,500	29,925	143,250	28,568	254,000	27,460	391,250	26,088	468,750	25,313
4'	2	14,250	29,858	146,500	28,535	255,500	27,445	392,250	26,078	469,250	25,308
8'	2,828	16,250	29,838	148,000	28,520	257,500	27,425	393,000	26,070	470,250	25,298
15'	3,873	17,750	29,823	150,250	28,498	260,500	27,395	394,000	26,060	470,750	25,293
30'	5,477	22,750	29,773	154,250	28,458	265,500	27,345	397,250	26,028	471,250	25,288
60'	7,746	29,750	29,703	160,750	28,393	284,750	27,153	403,250	25,968	472,000	25,280
120	10,954	42,500	29,575	170,750	28,293	308,500	26,915	409,250	25,908	496,500	25,035
240	15,492	63,750	29,363	188,500	28,115	327,500	26,725	413,000	25,870	519,000	24,810
360	18,974	71,750	29,283	204,750	27,953	339,000	26,610	441,500	25,585	531,000	24,690
480	21,909	97,500	29,025	219,000	27,810	340,000	26,600	450,750	25,493	533,500	24,665
1440	37,947	133,250	28,668	245,500	27,545	363,500	26,365	465,250	25,348	554,250	24,458

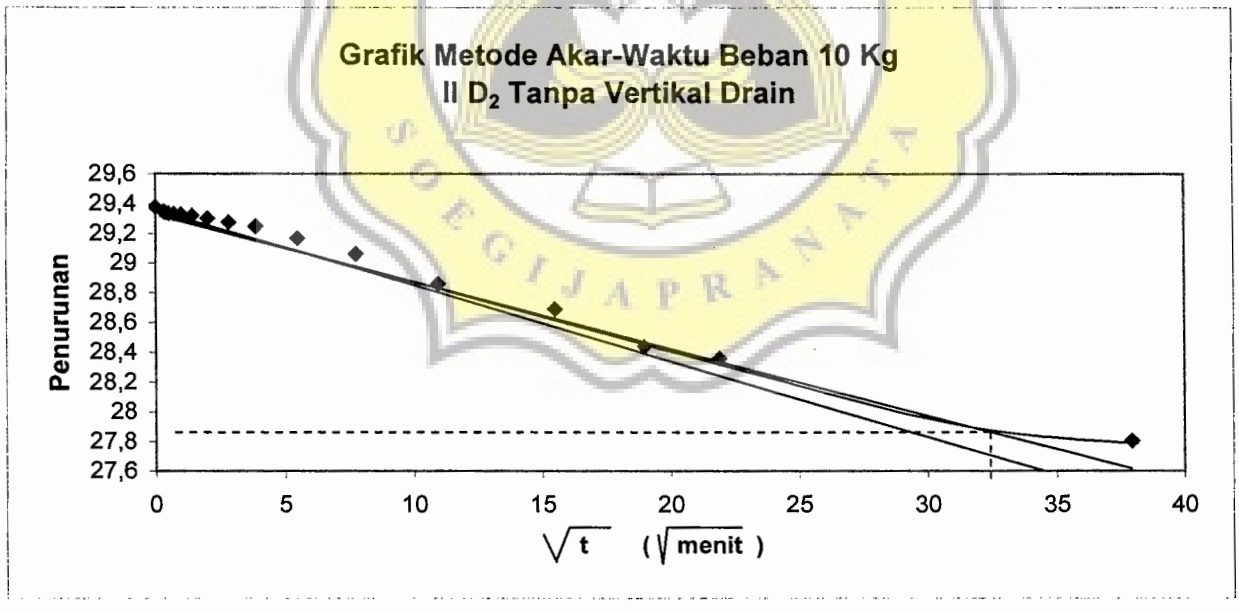
Tabel Pembacaan Dial Percobaan II D_2 (Tanpa Vertikal Drain)

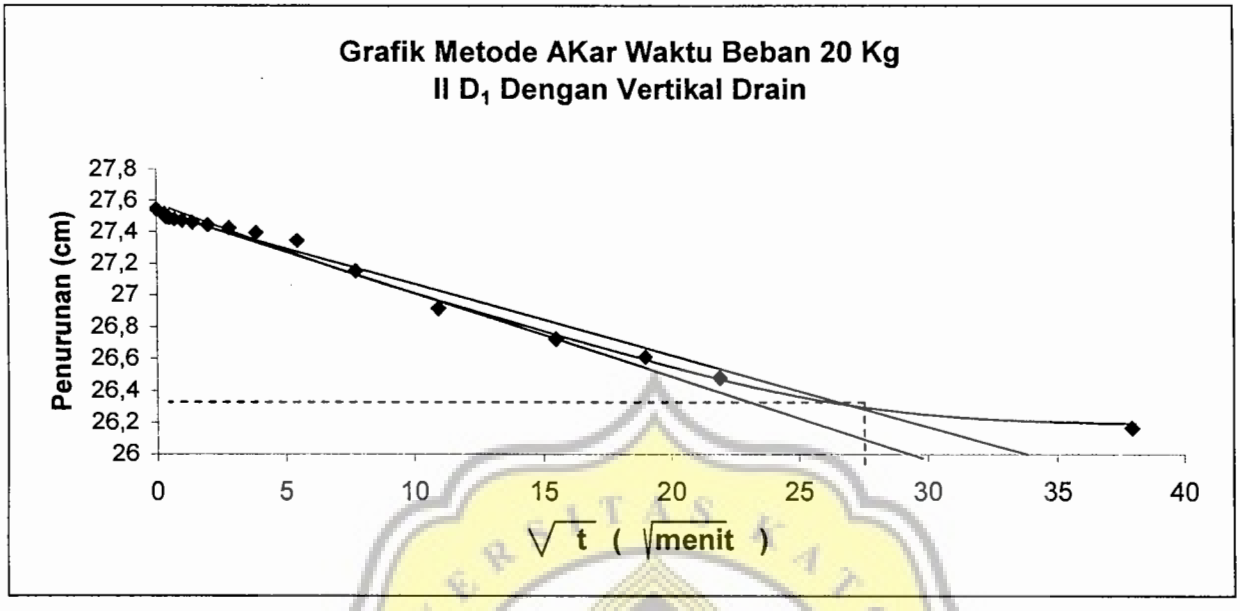
Waktu	$\sqrt{t}$	6 kg/cm2		10 kg/cm2		20 kg/cm2		40 kg/cm2		60 kg/cm2	
		div	(cm)	div	(cm)	div	(cm)	div	(cm)	div	(cm)
0	0	0,000	30,000	62,000	29,380	219,500	27,805	436,500	25,635	760,250	22,398
0,1	0,316	4,000	29,960	65,000	29,350	225,000	27,750	449,500	25,505	763,250	22,368
0,15	0,387	4,000	29,960	65,750	29,343	225,750	27,743	450,750	25,493	763,250	22,368
0,25	0,5	4,000	29,960	66,250	29,338	226,250	27,738	454,000	25,460	763,500	22,365
0,5	0,707	4,250	29,958	66,500	29,335	227,000	27,730	457,750	25,423	765,500	22,345
1	1	5,000	29,950	67,000	29,330	227,750	27,723	459,000	25,410	766,000	22,340
2'	1,414	5,750	29,943	67,750	29,323	229,250	27,708	461,500	25,385	766,500	22,335
4'	2	7,500	29,925	69,750	29,303	231,000	27,690	465,000	25,350	767,250	22,328
8'	2,828	9,000	29,910	72,250	29,278	233,250	27,668	472,500	25,275	776,750	22,233
15'	3,873	11,000	29,890	75,000	29,250	236,500	27,635	480,500	25,195	777,000	22,230
30'	5,477	9,250	29,908	79,000	29,210	242,000	27,580	490,500	25,095	788,250	22,118
60'	7,746	20,000	29,800	80,750	29,193	255,000	27,450	504,500	24,955	811,500	21,885
120	10,954	27,500	29,725	81,000	29,190	263,250	27,368	590,500	24,095	827,500	21,725
240	15,492	38,750	29,613	81,500	29,185	284,500	27,155	682,000	23,180	853,000	21,470
360	18,974	47,500	29,525	117,750	28,823	302,000	26,980	381,000	26,190	923,000	20,770
480	21,909	54,500	29,455	165,500	28,345	318,250	26,818	735,500	22,645	929,750	20,703
1440	37,947	62,000	29,380	219,500	27,805	436,500	25,635	760,250	22,398	929,750	20,703

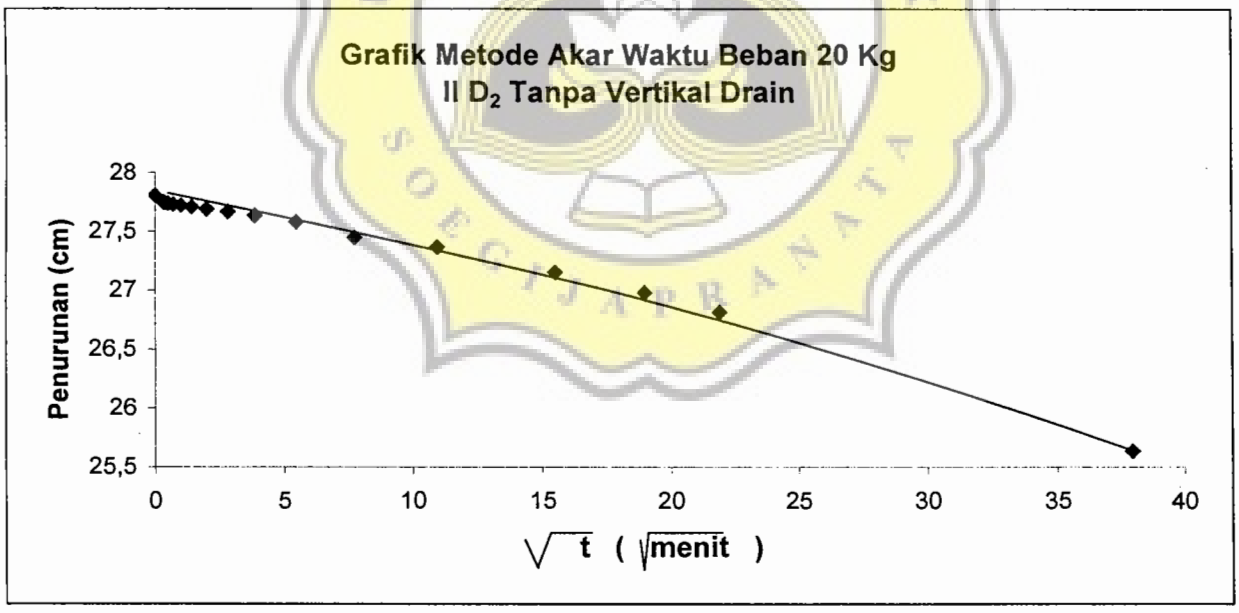

Grafik Metode AKar Waktu Beban 6 Kg
II D_1 Dengan Vertikal Drain
Penurunan (cm)
30,2
30
29,8
29,6
29,4
29,2
29
28,8
28,6
0
5
10
15
20
25
30
35
40
$\sqrt{t}$ ($\sqrt{menit}$)

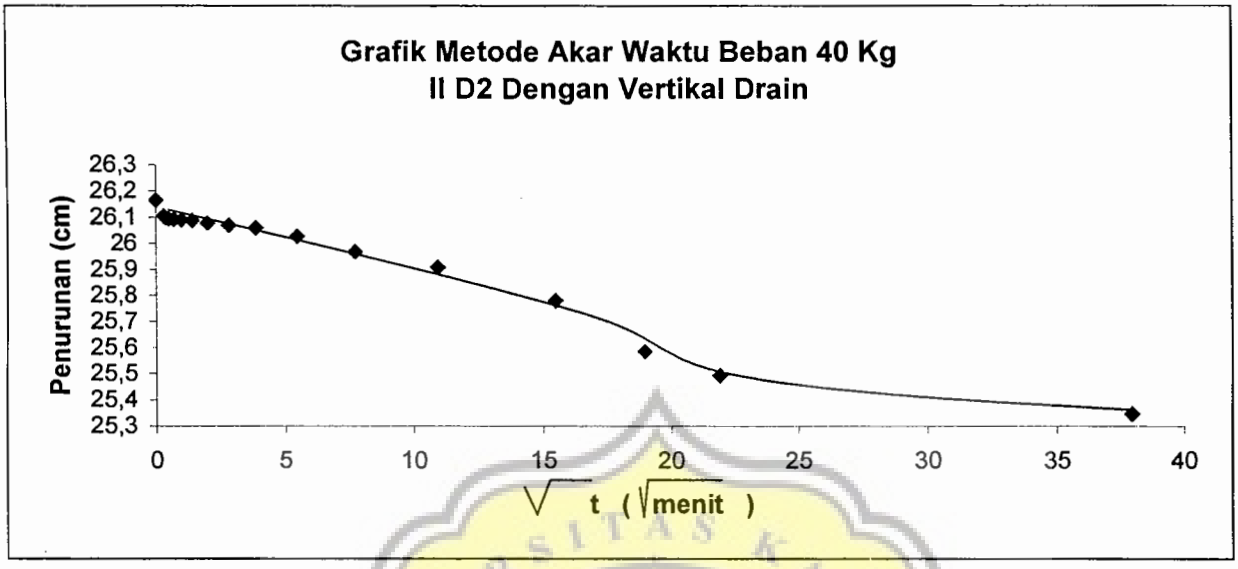

Grafik Metode AKar-Waktu Beban 6 Kg
II D_2 Tanpa Vertikal Drain
Penurunan (cm)
30,1
30
29,9
29,8
29,7
29,6
29,5
29,4
29,3
0
5
10
15
20
25
30
35
40
$\sqrt{t}$ ($\sqrt{menit}$)

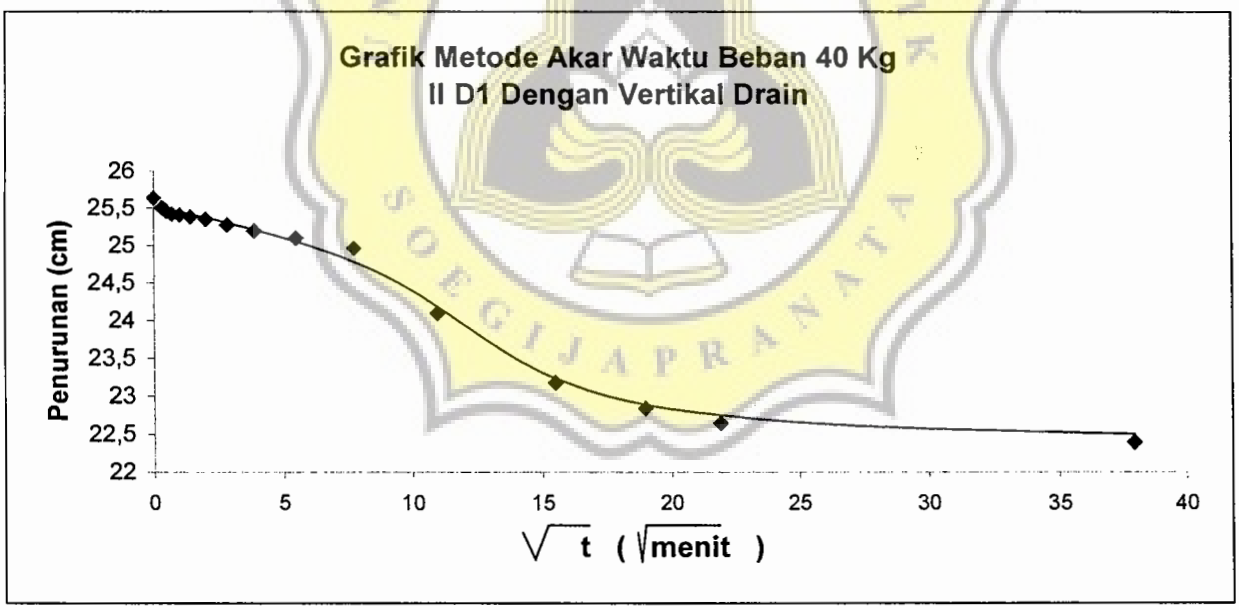

Grafik Metode Akar-Waktu Beban 10 Kg
II D_1 Dengan Vertikal Drain
Penurunan (cm)
28,8
28,6
28,4
28,2
28
27,8
27,6
27,4
0
5
10
15
20
25
30
35
40
$\sqrt{t}$ ($\sqrt{menit}$)

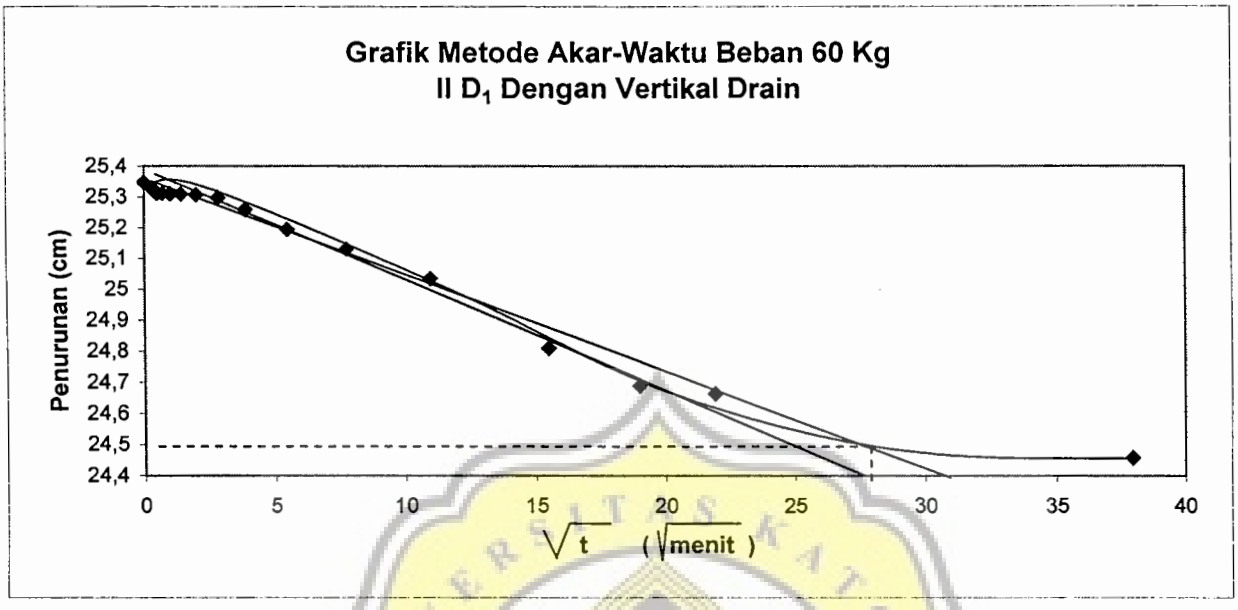

Grafik Metode Akar-Waktu Beban 10 Kg
II D_2 Tanpa Vertikal Drain
Penurunan
29,6
29,4
29,2
29
28,8
28,6
28,4
28,2
28
27,8
27,6
0
5
10
15
20
25
30
35
40
$\sqrt{t}$ ($\sqrt{menit}$)

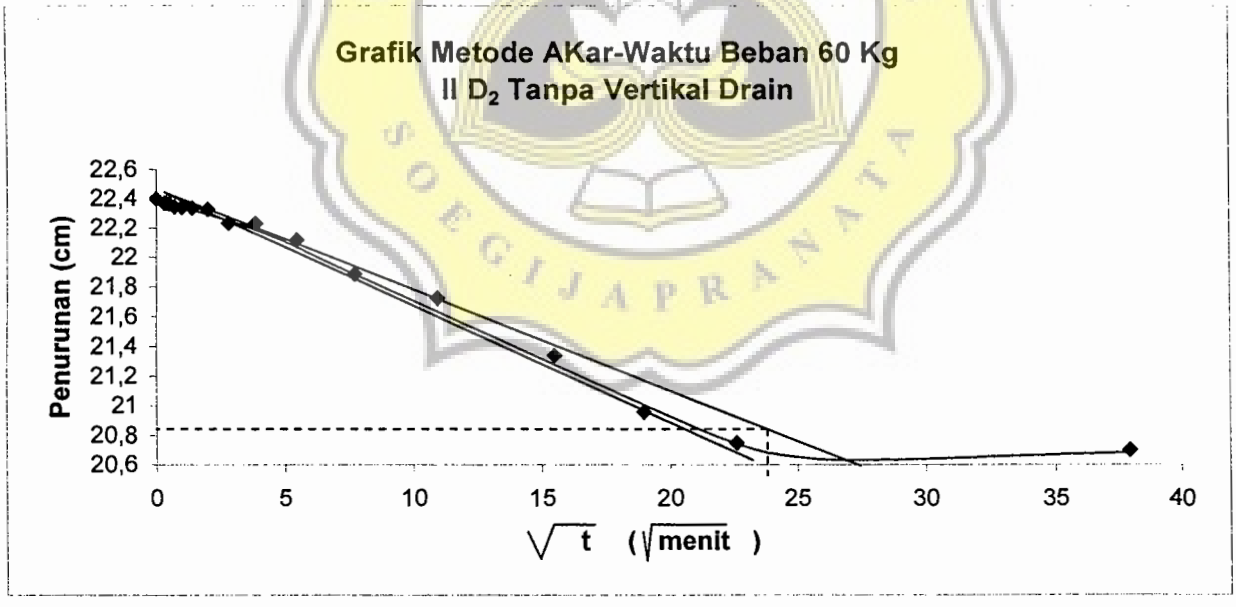

Grafik Metode AKar Waktu Beban 20 Kg
II D_1 Dengan Vertikal Drain
Penurunan (cm)
27,8
27,6
27,4
27,2
27
26,8
26,6
26,4
26,2
26
0
5
10
15
20
25
30
35
40
√ t (√menit)


Grafik Metode Akar Waktu Beban 20 Kg
II D_2 Tanpa Vertikal Drain
Penurunan (cm)
28
27,5
27
26,5
26
25,5
0
5
10
15
20
25
30
35
40
√ t (√menit)

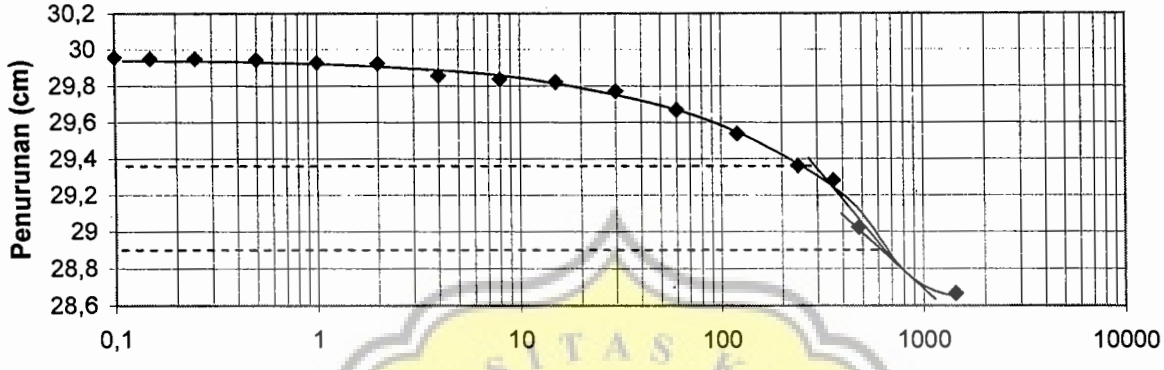

Grafik Metode Akar Waktu Beban 40 Kg
II D2 Dengan Vertikal Drain
Penurunan (cm)
26,3
26,2
26,1
26
25,9
25,8
25,7
25,6
25,5
25,4
25,3
0
5
10
15
20
25
30
35
40
√ t (√menit)


Grafik Metode Akar Waktu Beban 40 Kg
II D1 Dengan Vertikal Drain
Penurunan (cm)
26
25,5
25
24,5
24
23,5
23
22,5
22
0
5
10
15
20
25
30
35
40
√ t (√menit)

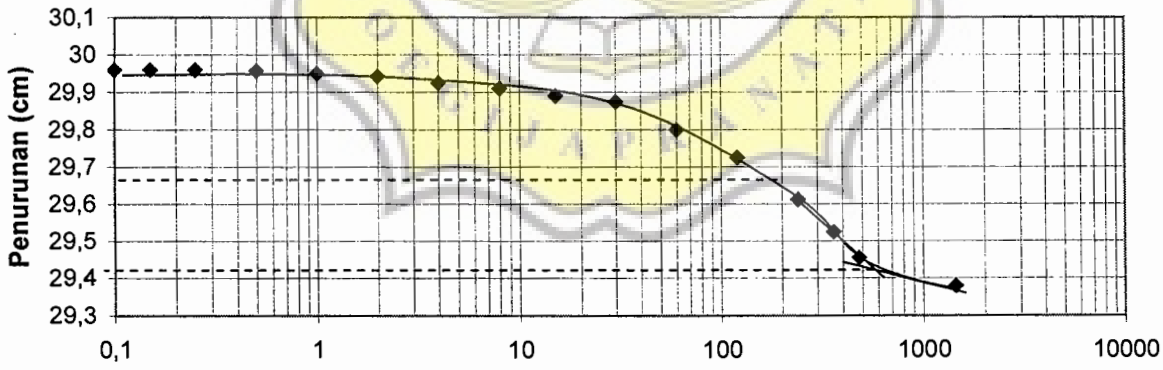

Grafik Metode Akar-Waktu Beban 60 Kg
II D_1 Dengan Vertikal Drain
Penurunan (cm)
25,4
25,3
25,2
25,1
25
24,9
24,8
24,7
24,6
24,5
24,4
0
5
10
15
20
25
30
35
40
$\sqrt{t}$ ($\sqrt{menit}$)


Grafik Metode AKar-Waktu Beban 60 Kg
II D_2 Tanpa Vertikal Drain
Penurunan (cm)
22,6
22,4
22,2
22
21,8
21,6
21,4
21,2
21
20,8
20,6
0
5
10
15
20
25
30
35
40
$\sqrt{t}$ ($\sqrt{menit}$)

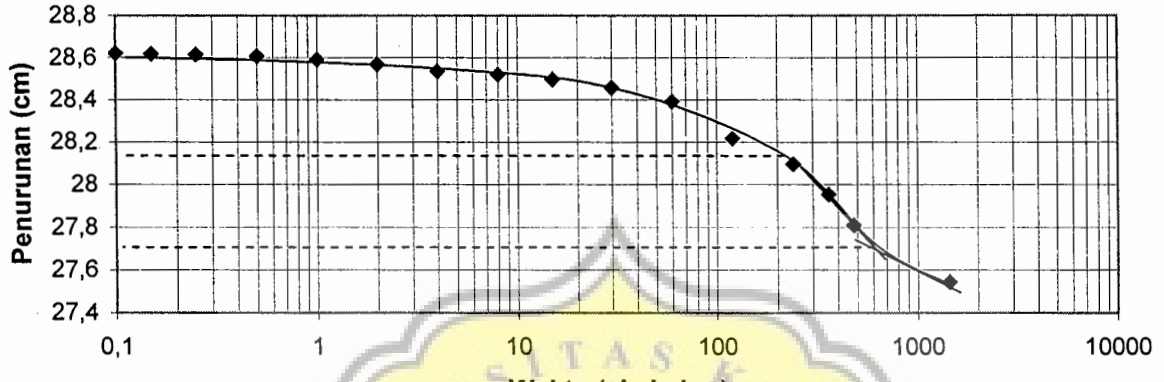
Grafik Metode Skala Log-Waktu Beban 6 Kg
II D_1 Dengan Vertikal Drain



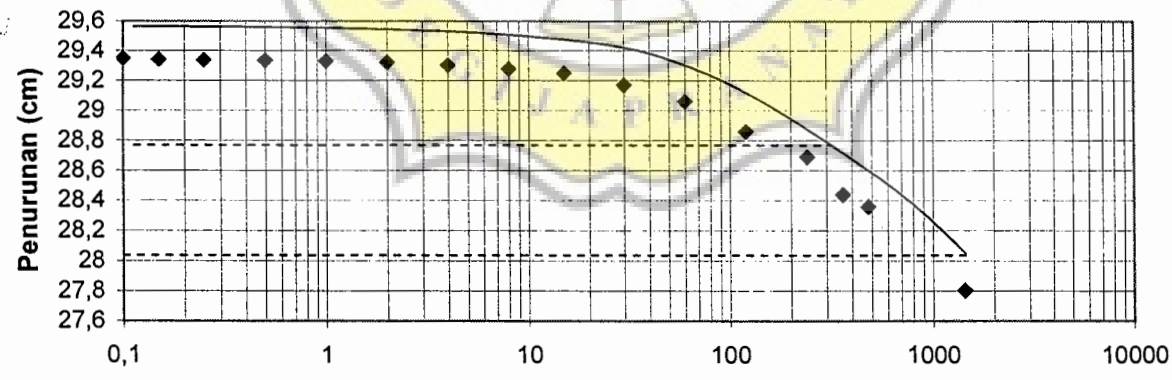
Grafik Metode Skala Log-Waktu Beban 6 Kg
II D_2 Tanpa Vertikal Drain



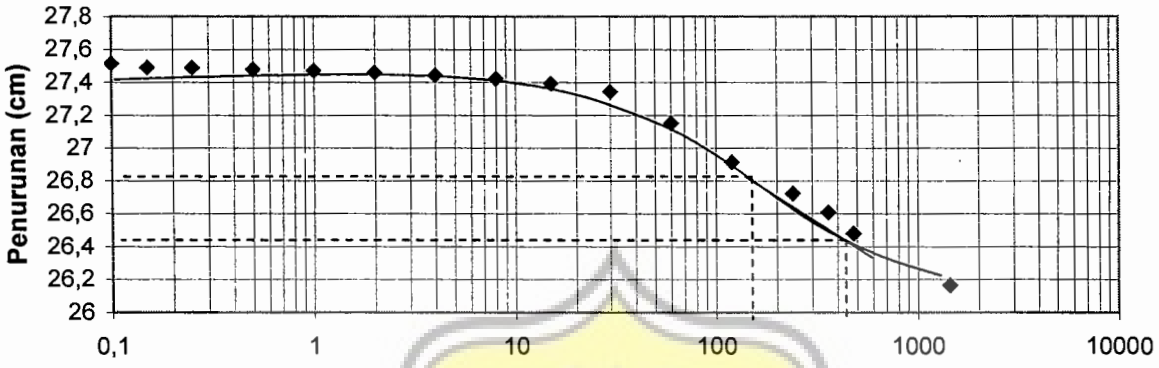
Grafik Metode Skala Log-Waktu Beban 10 Kg
II D_1 Dengan Vertikal Drain



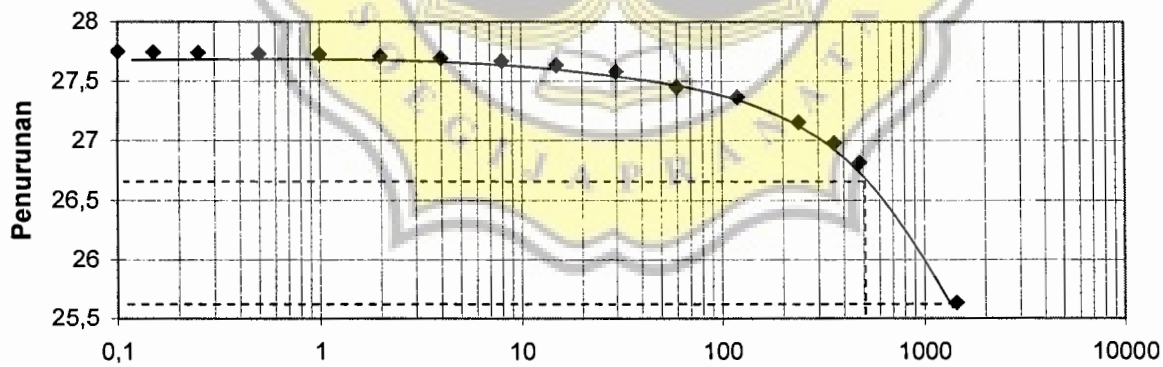
Grafik Metode Skala Log-Waktu Beban 10 Kg
II D_2 Tanpa Vertikal Drain



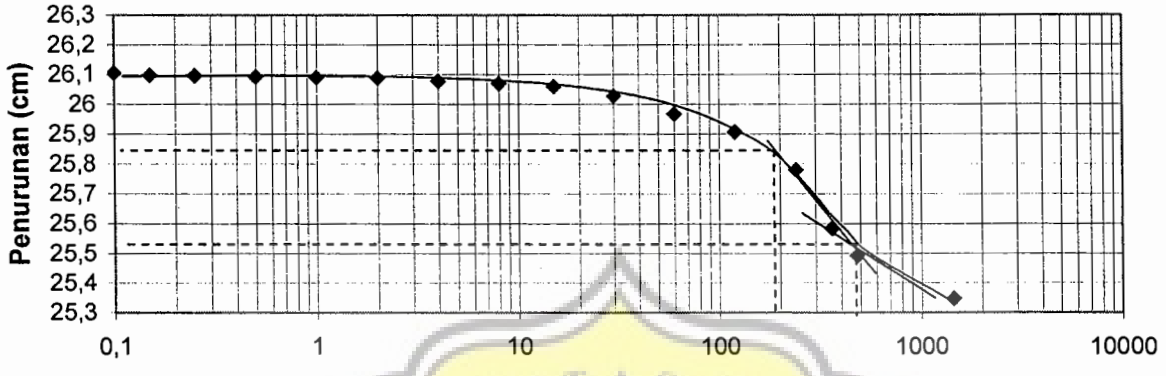
Grafik Metode Skala Log-Waktu Beban 20 Kg
II D_1 Dengan Vertikal Drain



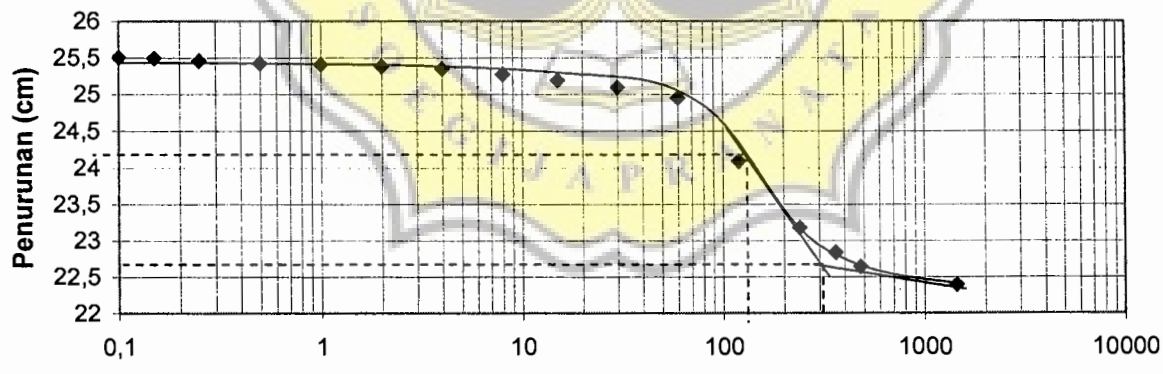
Grafik Metode Skala Log-Waktu Beban 20 Kg
II D_2 Tanpa Vertikal Drain



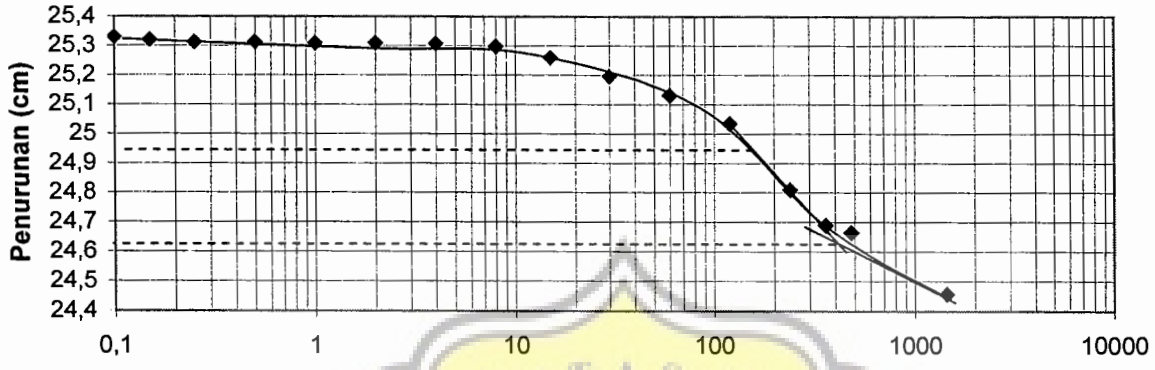
Grafik Metode Skala Log-Waktu Beban 40 Kg
II D_1 Dengan Vertikal Drain



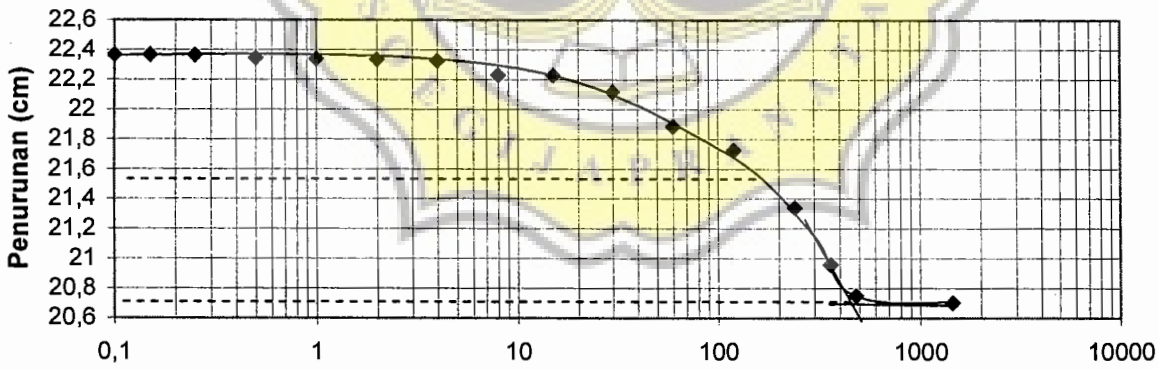
Grafik Metode Skala Log-Waktu Beban 40 Kg
II D_2 Tanpa Vertikal Drain



Grafik Metode Skala Log-Waktu Beban 60 Kg
II D_1 Dengan Vertikal Drain



Grafik Metode Skala Log-Waktu Beban 60 Kg
II D_2 Tanpa Vertikal Drain



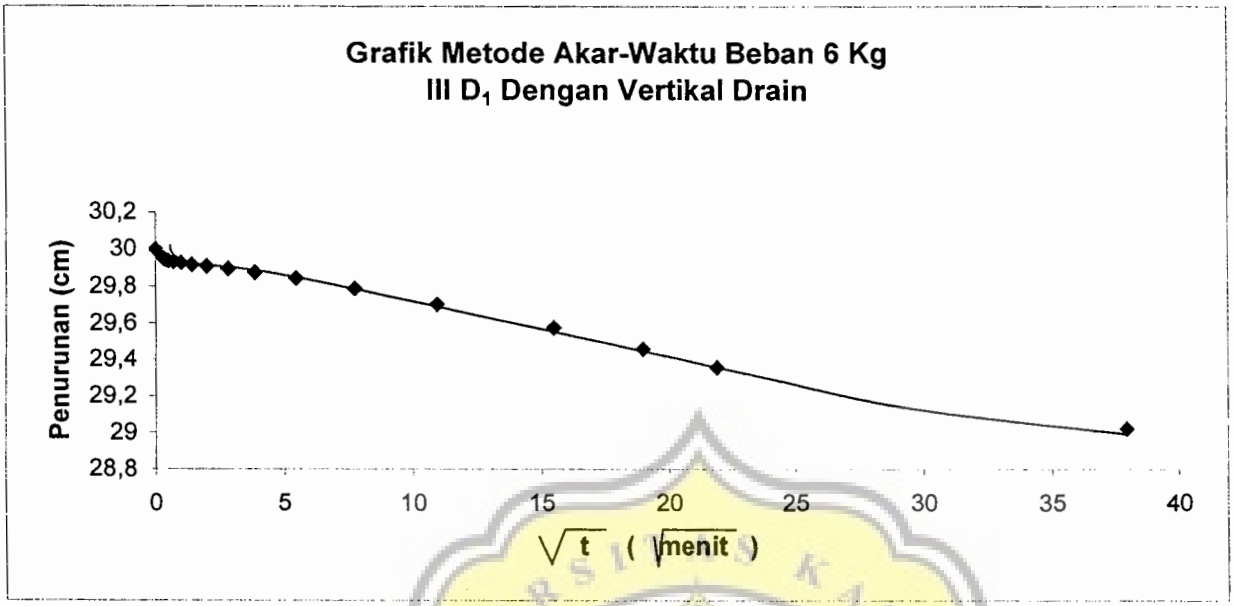
Lampiran

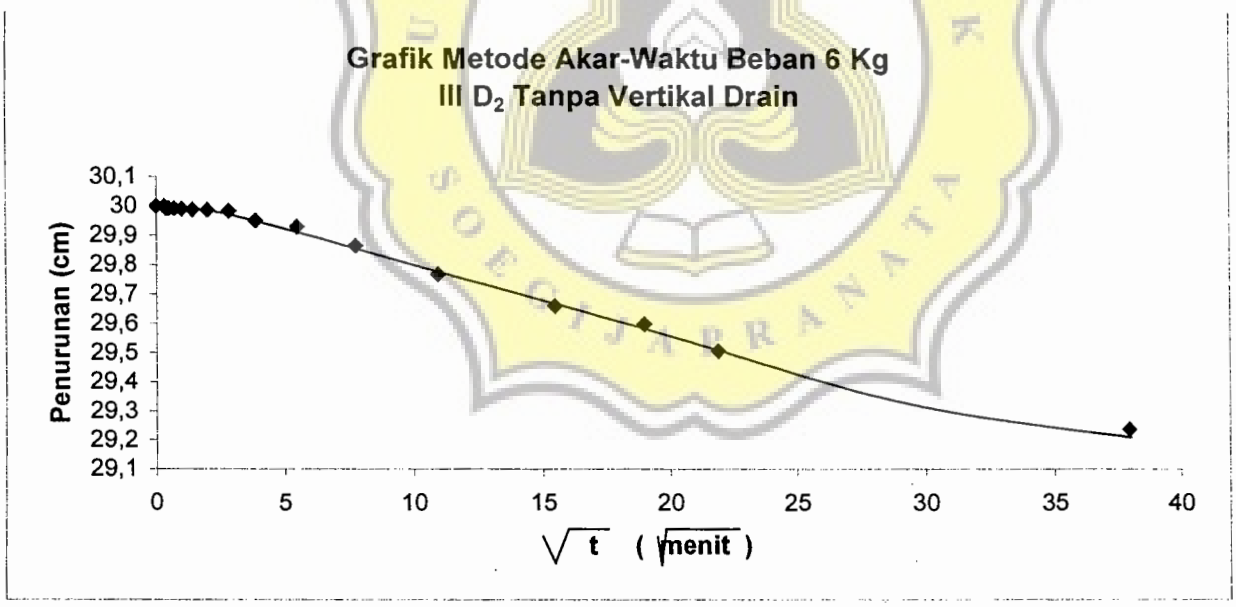
Tabel Pembacaan Dial Percobaan III D_1 (Dgn Vertikal Drain)

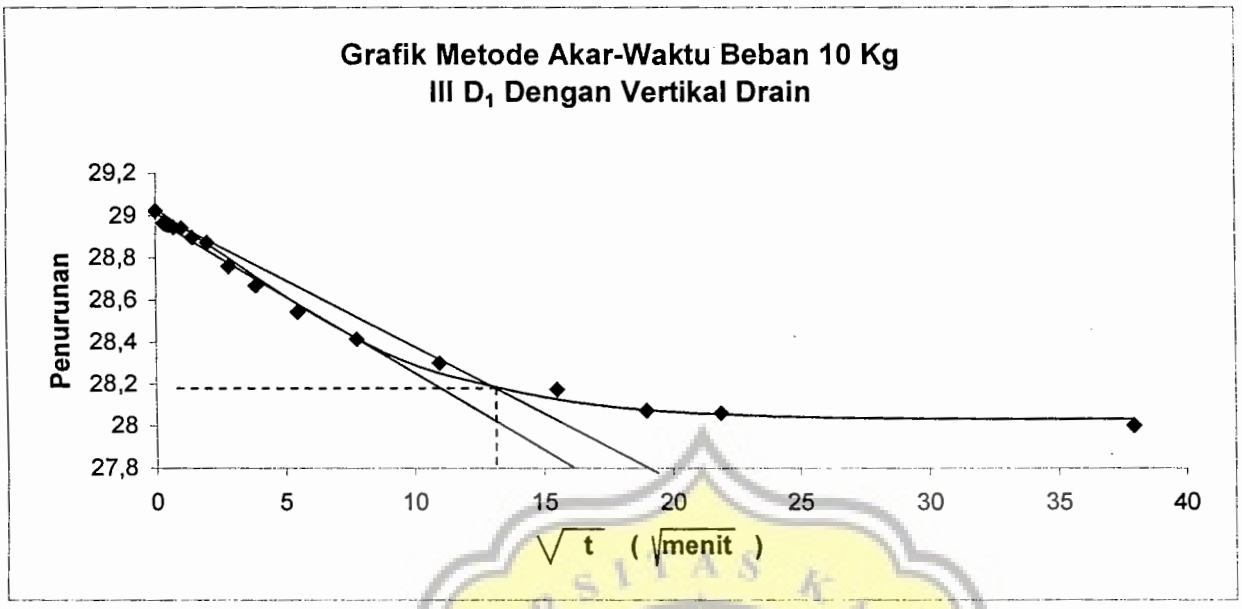
Waktu	$\sqrt{t}$	6 kg/cm2		10 kg/cm2		20 kg/cm2		40 kg/cm2		60 kg/cm2	
		div	(cm)	div	(cm)	div	(cm)	div	(cm)	div	(cm
0	0	0,000	30,000	97,750	29,023	199,750	28,003	354,750	26,453	576,250	24,2
0,1	0,316	5,000	29,950	153,500	28,465	213,500	27,865	399,000	26,010	625,750	23,7
0,15	0,387	5,750	29,943	154,000	28,460	215,250	27,848	399,750	26,003	627,750	23,7
0,25	0,5	6,250	29,938	154,500	28,455	216,500	27,835	400,500	25,995	629,000	23,7
0,5	0,707	6,750	29,933	155,000	28,450	217,250	27,828	401,750	25,983	629,750	23,7
1	1	7,250	29,928	155,750	28,443	218,000	27,820	403,500	25,965	631,500	23,6
2	1,414	8,250	29,918	156,250	28,438	219,750	27,803	405,750	25,943	632,750	23,6
4	2	9,250	29,908	157,250	28,428	220,750	27,793	409,000	25,910	634,750	23,6
8	2,828	10,500	29,895	157,750	28,423	222,250	27,778	412,750	25,873	639,250	23,6
15	3,873	12,500	29,875	159,750	28,403	224,250	27,758	418,750	25,813	642,750	23,5
30	5,477	15,500	29,845	162,750	28,373	228,250	27,718	427,750	25,723	649,500	23,5
60	7,746	21,000	29,790	167,250	28,328	234,250	27,658	441,000	25,590	661,250	23,3
120	10,954	29,500	29,705	174,750	28,253	245,000	27,550	459,750	25,403	677,750	23,2
240	15,492	42,250	29,578	182,750	28,173	263,500	27,365	488,500	25,115	687,250	23,1
360	18,974	54,000	29,460	192,750	28,073	277,500	27,225	511,000	24,890	696,000	23,0
480	21,909	64,000	29,360	194,000	28,060	292,000	27,080	529,750	24,703	701,750	22,9
1440	37,947	97,750	29,023	199,750	28,003	354,750	26,453	576,250	24,238	754,750	22,4

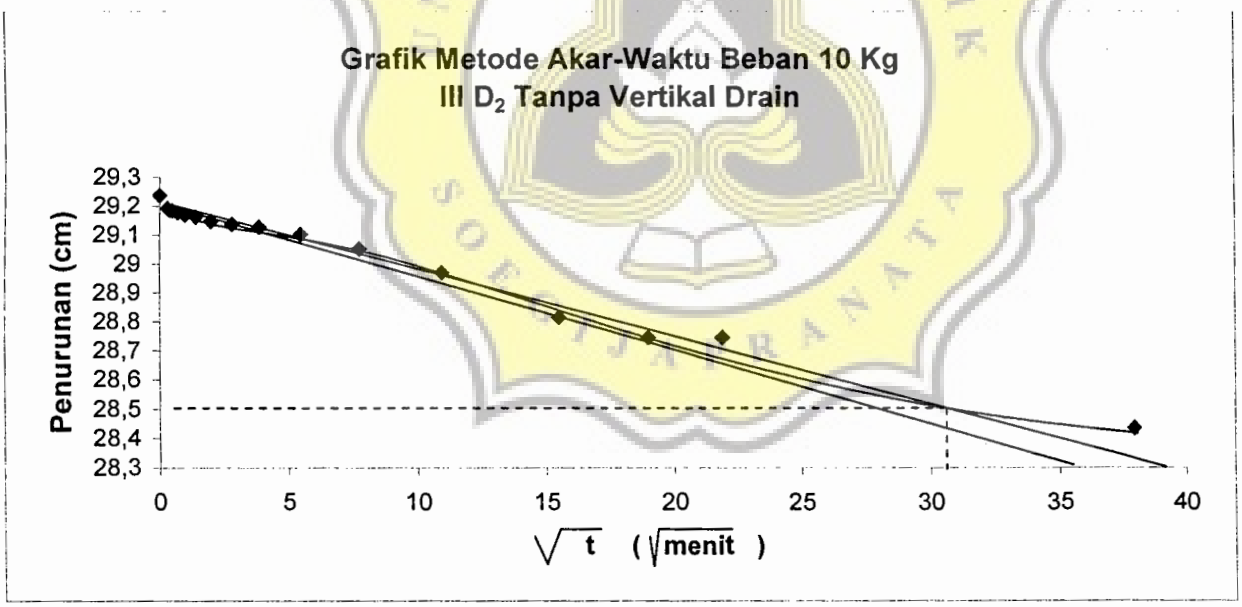
Tabel Pembacaan Dial Percobaan III D_2 (Tanpa Vertikal Drain)

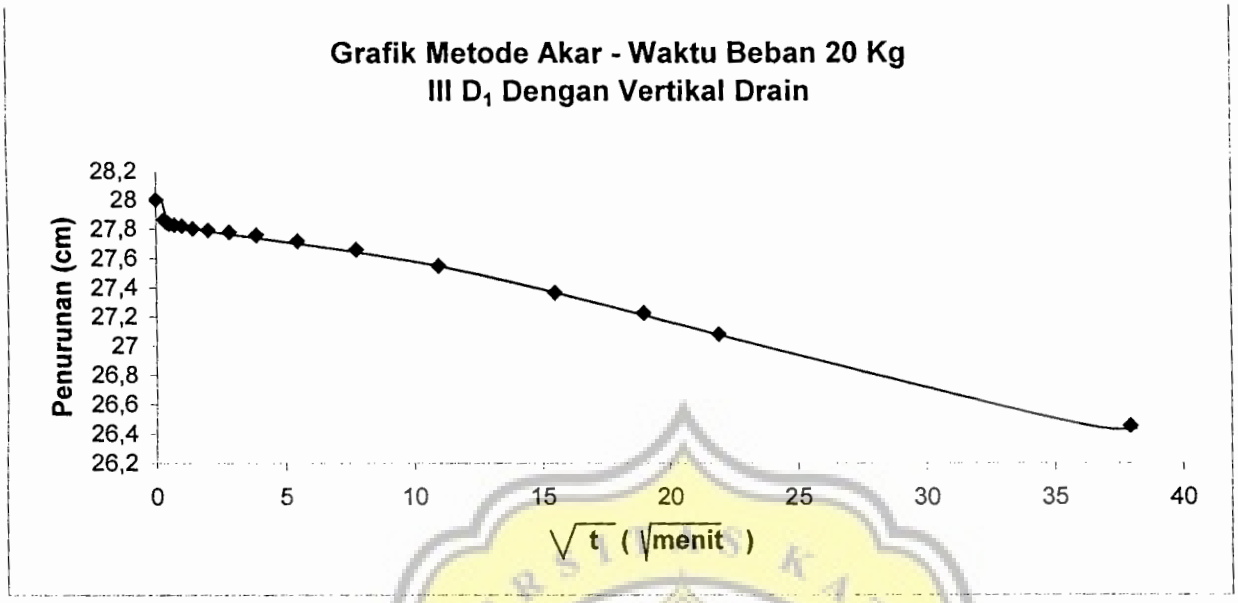
Waktu	$\sqrt{t}$	6 kg/cm2		10 kg/cm2		20 kg/cm2		40 kg/cm2		60 kg/cm2	
		div	(cm)	div	(cm)	div	(cm)	div	(cm)	div	(cm
0	0	0,000	30,000	76,250	29,238	156,500	28,435	272,500	27,275	548,250	24,51
0,1	0,316	0,000	30,000	80,750	29,193	160,000	28,400	322,750	26,773	567,000	24,33
0,15	0,387	0,750	29,993	81,250	29,188	161,250	28,388	323,750	26,763	568,000	24,32
0,25	0,5	0,750	29,993	81,500	29,185	161,750	28,383	324,750	26,753	569,500	24,30
0,5	0,707	0,750	29,993	82,250	29,178	162,750	28,373	326,500	26,735	571,750	24,28
1	1	1,000	29,990	83,000	29,170	164,000	28,360	328,750	26,713	573,000	24,27
2	1,414	1,250	29,988	83,750	29,163	164,750	28,353	333,500	26,665	576,500	24,23
4	2	1,350	29,987	85,250	29,148	166,000	28,340	337,000	26,630	580,500	24,19
8	2,828	1,650	29,984	86,250	29,138	168,000	28,320	343,750	26,563	587,250	24,12
15	3,873	1,750	29,983	87,250	29,128	170,750	28,293	351,750	26,483	593,750	24,06
30	5,477	2,600	29,974	89,750	29,103	175,750	28,243	364,500	26,355	601,750	23,98
60	7,746	3,500	29,965	94,750	29,053	188,750	28,113	379,000	26,210	630,000	23,70
120	10,954	4,750	29,953	103,000	28,970	200,000	28,000	398,500	26,015	669,000	23,31
240	15,492	7,250	29,928	118,500	28,815	233,500	27,665	421,500	25,785	701,000	22,99
360	18,974	10,000	29,900	125,500	28,745	251,750	27,483	469,000	25,310	812,000	21,88
480	21,909	11,750	29,883	125,500	28,745	264,750	27,353	512,500	24,875	855,500	21,44
1440	37,947	76,250	29,238	156,500	28,435	272,500	27,275	548,250	24,518	864,500	21,35

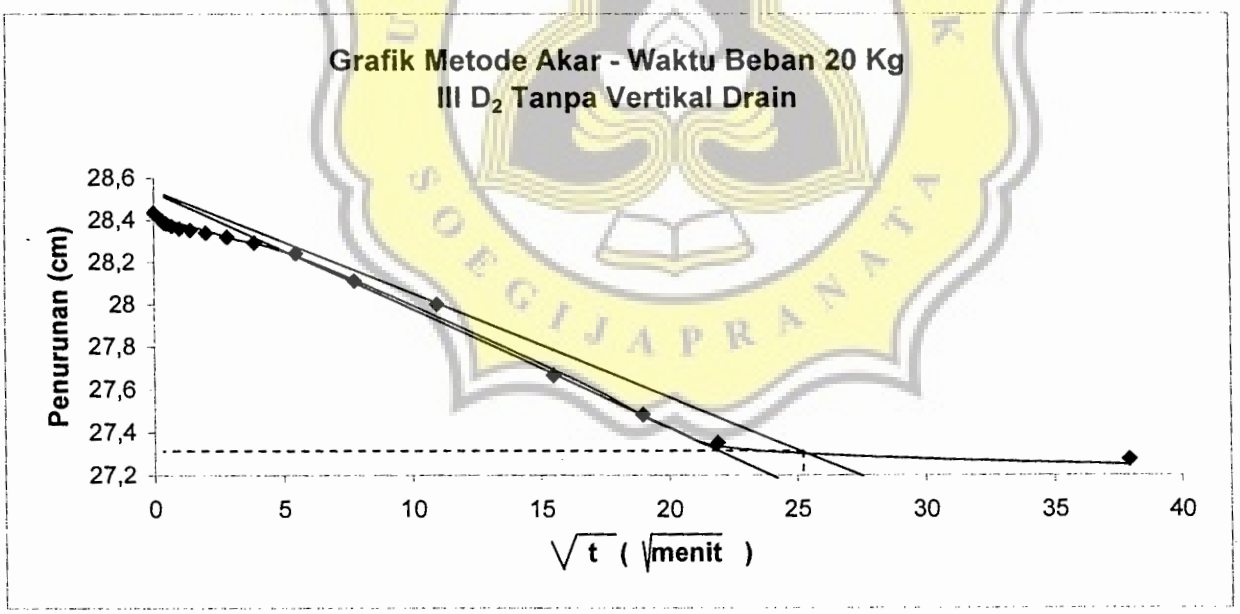

Grafik Metode Akar-Waktu Beban 6 Kg
III D_1 Dengan Vertikal Drain
Penurunan (cm)
30,2
30
29,8
29,6
29,4
29,2
29
28,8
0
5
10
15
20
25
30
35
40
√t (√menit)

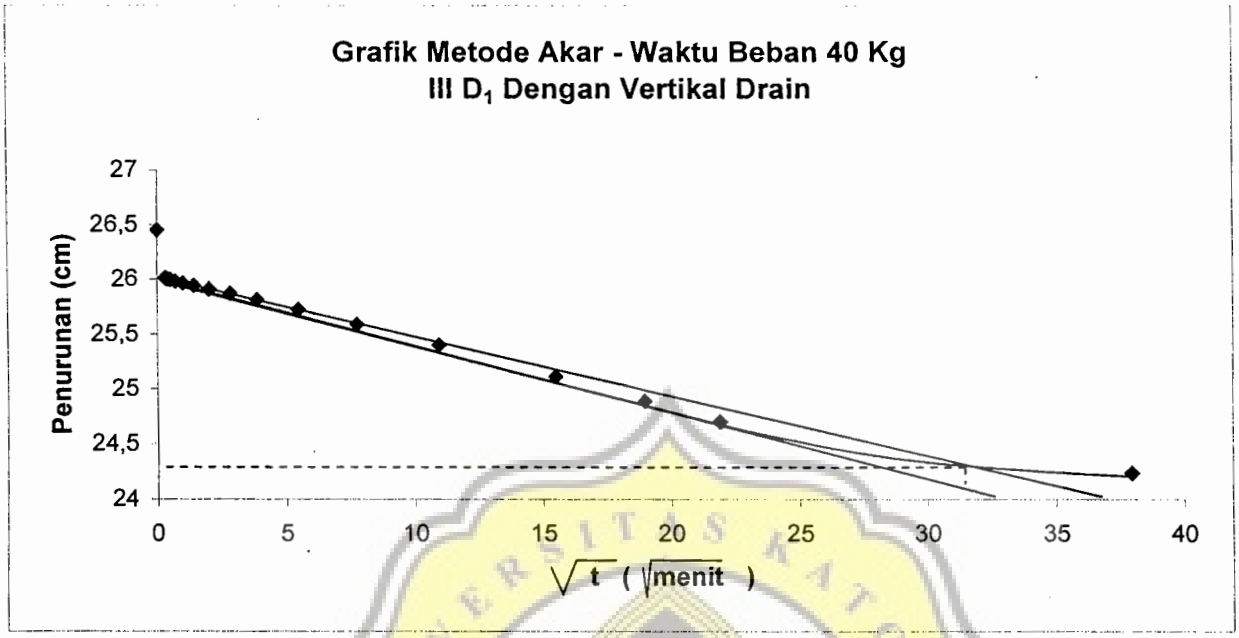

Grafik Metode Akar-Waktu Beban 6 Kg
III D_2 Tanpa Vertikal Drain
Penurunan (cm)
30,1
30
29,9
29,8
29,7
29,6
29,5
29,4
29,3
29,2
29,1
0
5
10
15
20
25
30
35
40
√t (√menit)

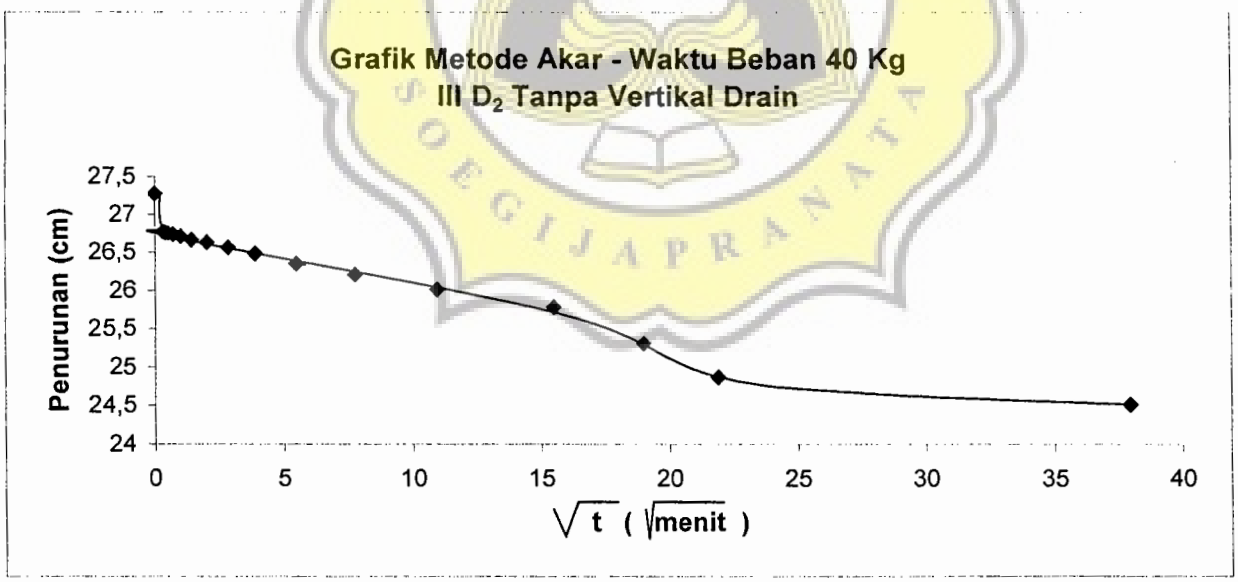

Grafik Metode Akar-Waktu Beban 10 Kg
III D_1 Dengan Vertikal Drain
Penurunan
29,2
29
28,8
28,6
28,4
28,2
28
27,8
0
5
10
15
20
25
30
35
40
√ t (√menit)

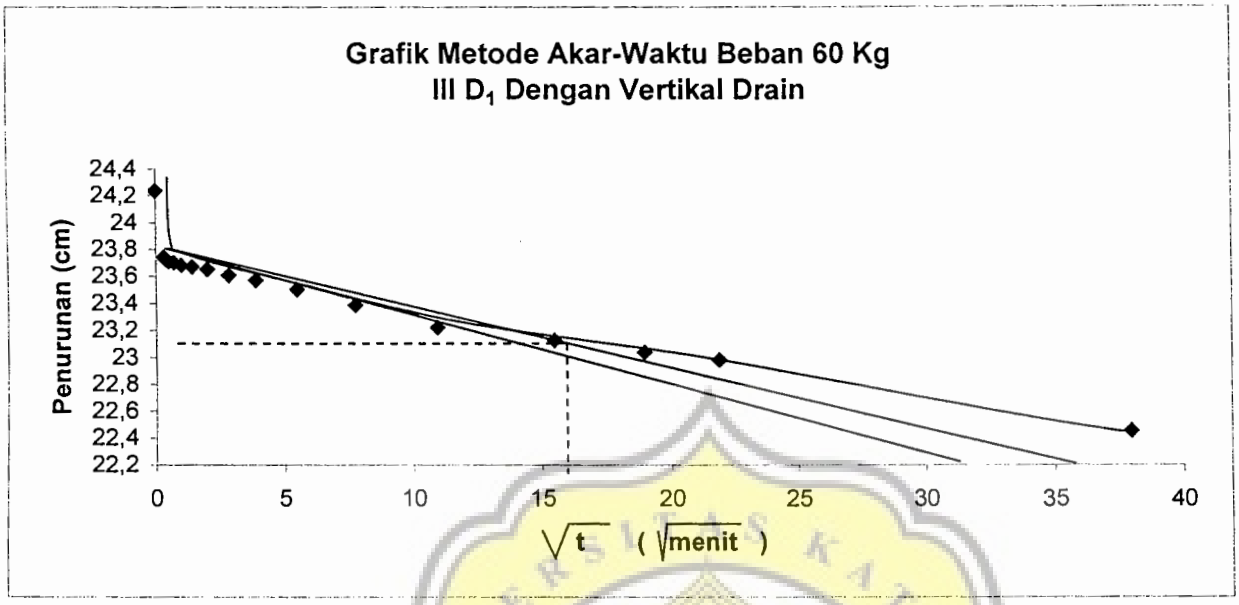

Grafik Metode Akar-Waktu Beban 10 Kg
III D_2 Tanpa Vertikal Drain
Penurunan (cm)
29,3
29,2
29,1
29
28,9
28,8
28,7
28,6
28,5
28,4
28,3
0
5
10
15
20
25
30
35
40
√ t (√menit)

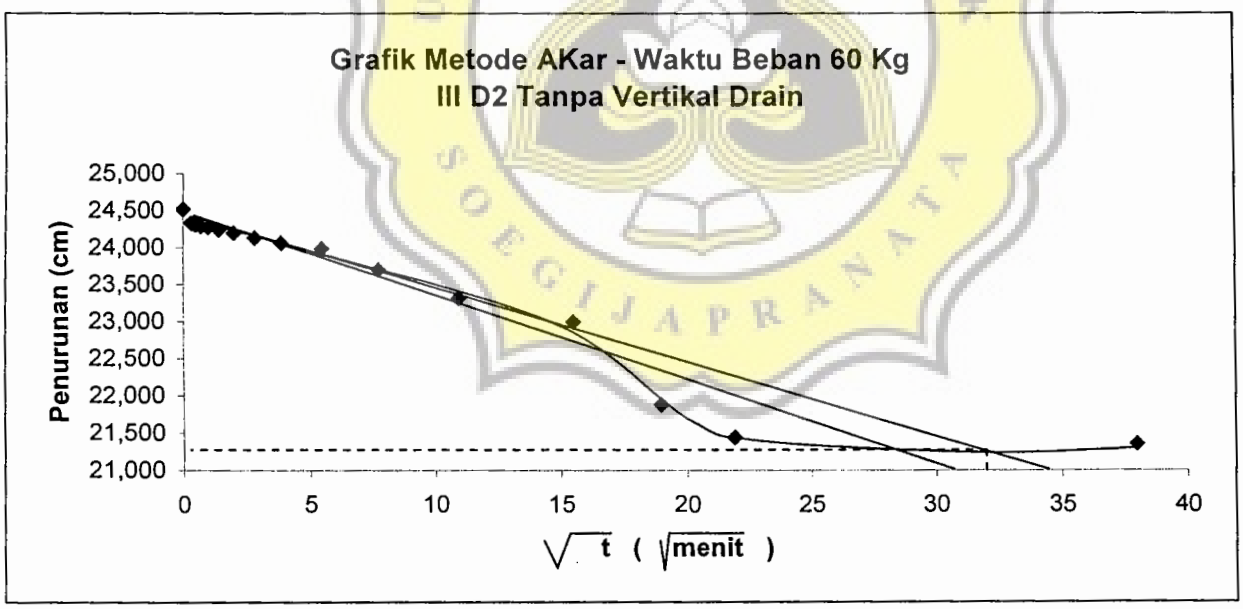

Grafik Metode Akar - Waktu Beban 20 Kg
III D_1 Dengan Vertikal Drain
Penurunan (cm)
28,2
28
27,8
27,6
27,4
27,2
27
26,8
26,6
26,4
26,2
0
5
10
15
20
25
30
35
40
√ t (√menit)


Grafik Metode Akar - Waktu Beban 20 Kg
III D_2 Tanpa Vertikal Drain
Penurunan (cm)
28,6
28,4
28,2
28
27,8
27,6
27,4
27,2
0
5
10
15
20
25
30
35
40
√ t (√menit)

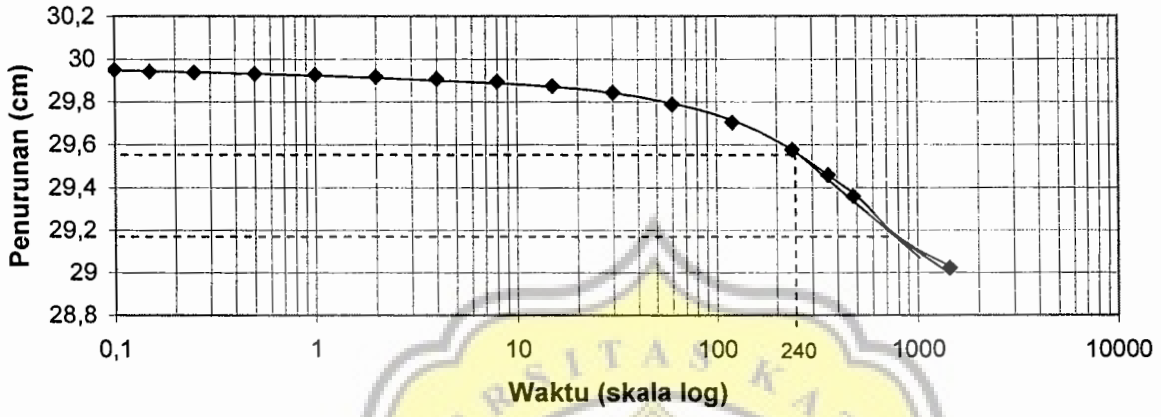

Grafik Metode Akar - Waktu Beban 40 Kg
III D_1 Dengan Vertikal Drain
Penurunan (cm)
27
26,5
26
25,5
25
24,5
24
0
5
10
15
20
25
30
35
40
√t (√menit)


Grafik Metode Akar - Waktu Beban 40 Kg
III D_2 Tanpa Vertikal Drain
Penurunan (cm)
27,5
27
26,5
26
25,5
25
24,5
24
0
5
10
15
20
25
30
35
40
√t (√menit)

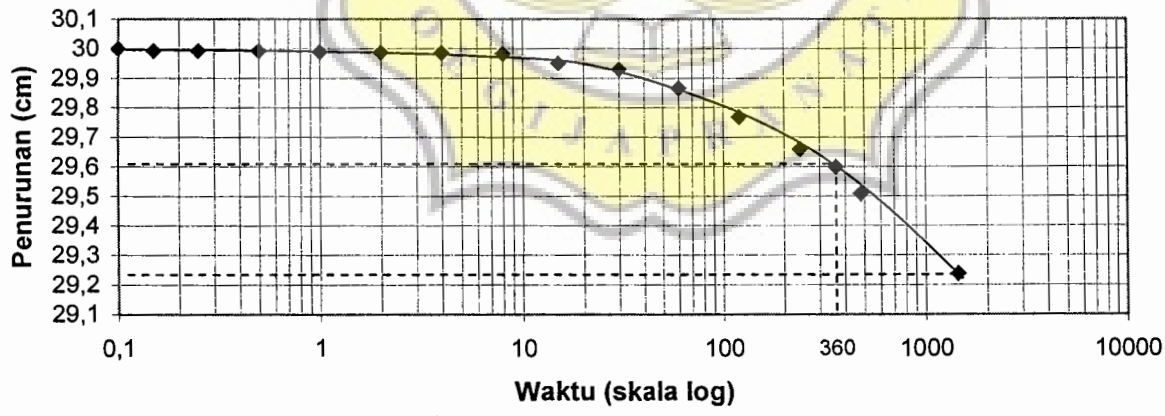

Grafik Metode Akar-Waktu Beban 60 Kg
III D_1 Dengan Vertikal Drain
Penurunan (cm)
24,4
24,2
24
23,8
23,6
23,4
23,2
23
22,8
22,6
22,4
22,2
0
5
10
15
20
25
30
35
40
√t (√menit)


Grafik Metode AKar - Waktu Beban 60 Kg
III D2 Tanpa Vertikal Drain
Penurunan (cm)
25,000
24,500
24,000
23,500
23,000
22,500
22,000
21,500
21,000
0
5
10
15
20
25
30
35
40
√ t (√menit)

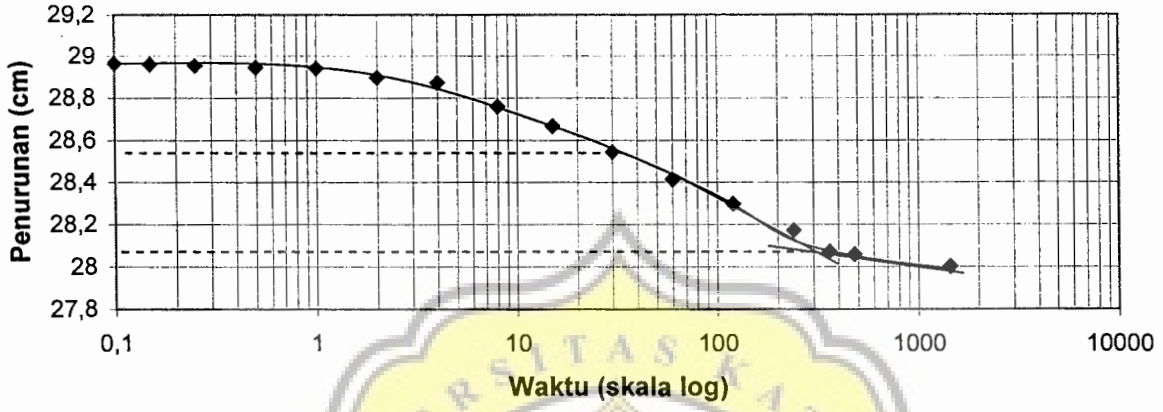
Grafik Metode Skala Log - Waktu Beban 6 Kg
III D_1 Dengan Vertikal Drain



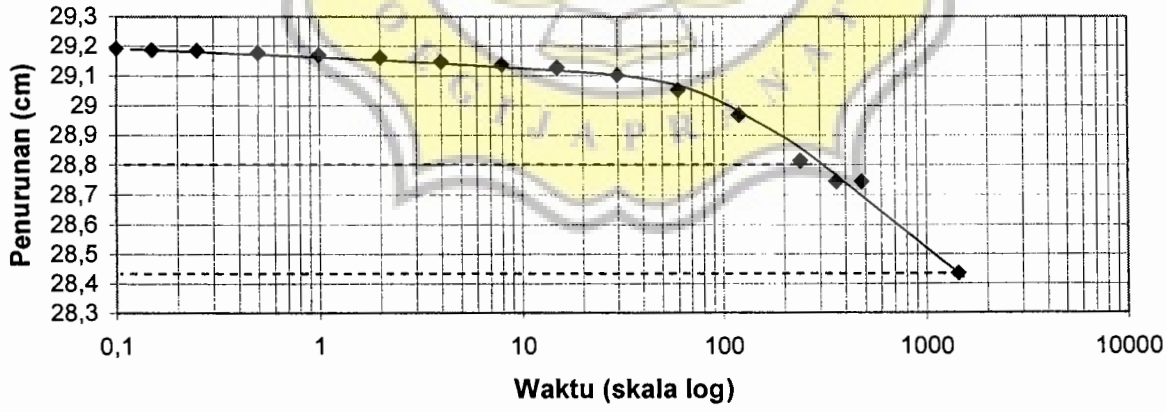
Grafik Metode Skala Log - Waktu Beban 6 Kg
III D_2 Tanpa Vertikal Drain



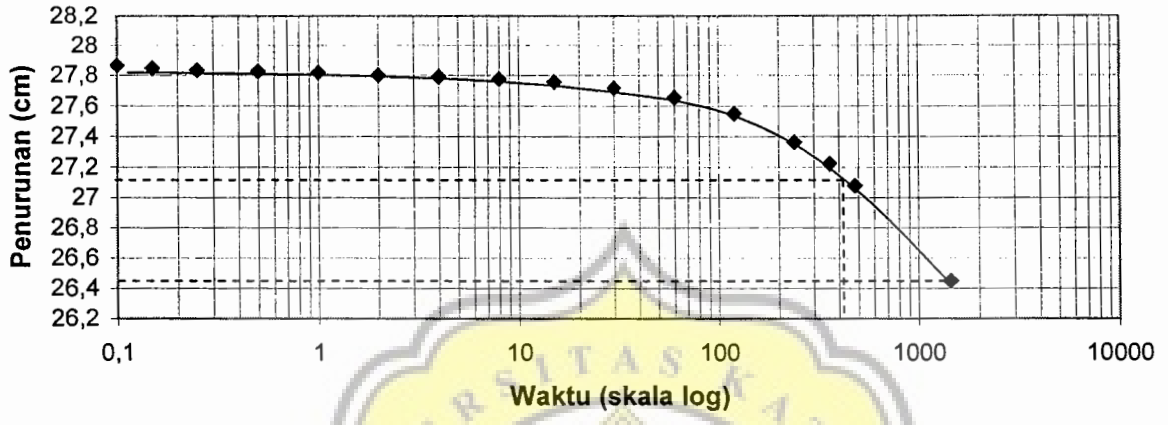
Grafik Metode Skala Log - Waktu Beban 10 Kg
III D_1 Dengan Vertikal Drain



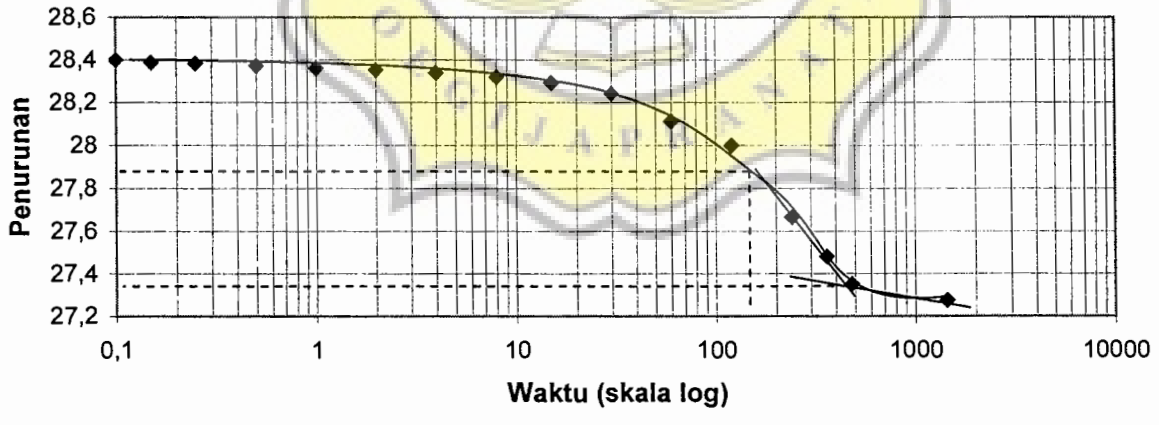
Grafik Metode Skala Log - Waktu Beban 10 Kg
III D_2 Tanpa Vertikal Drain

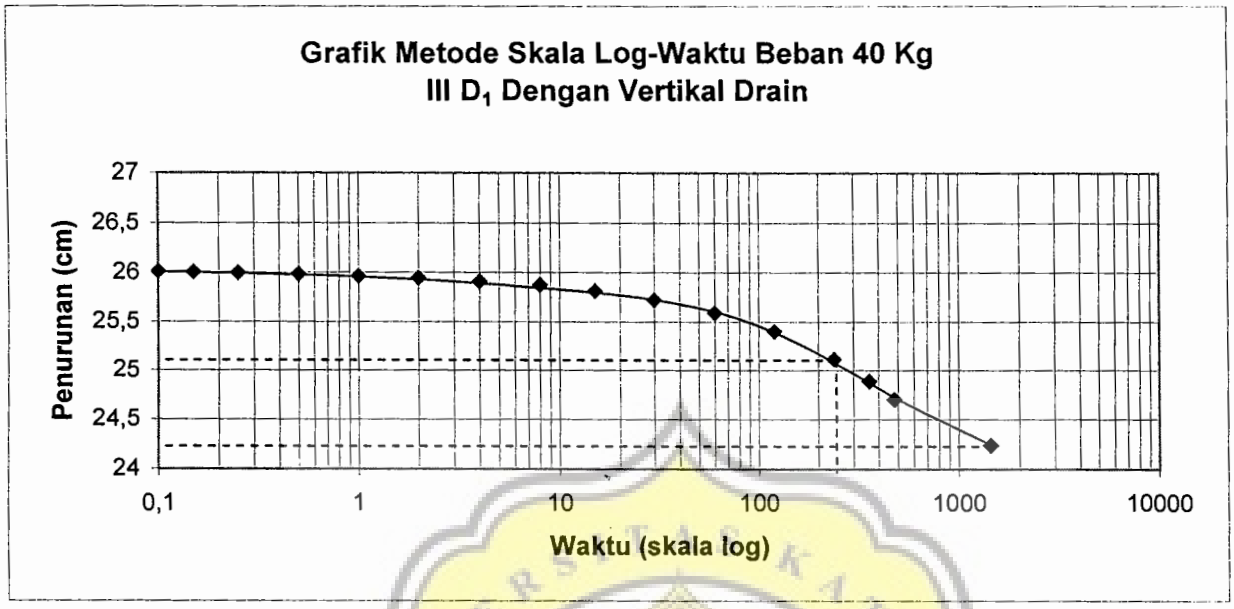


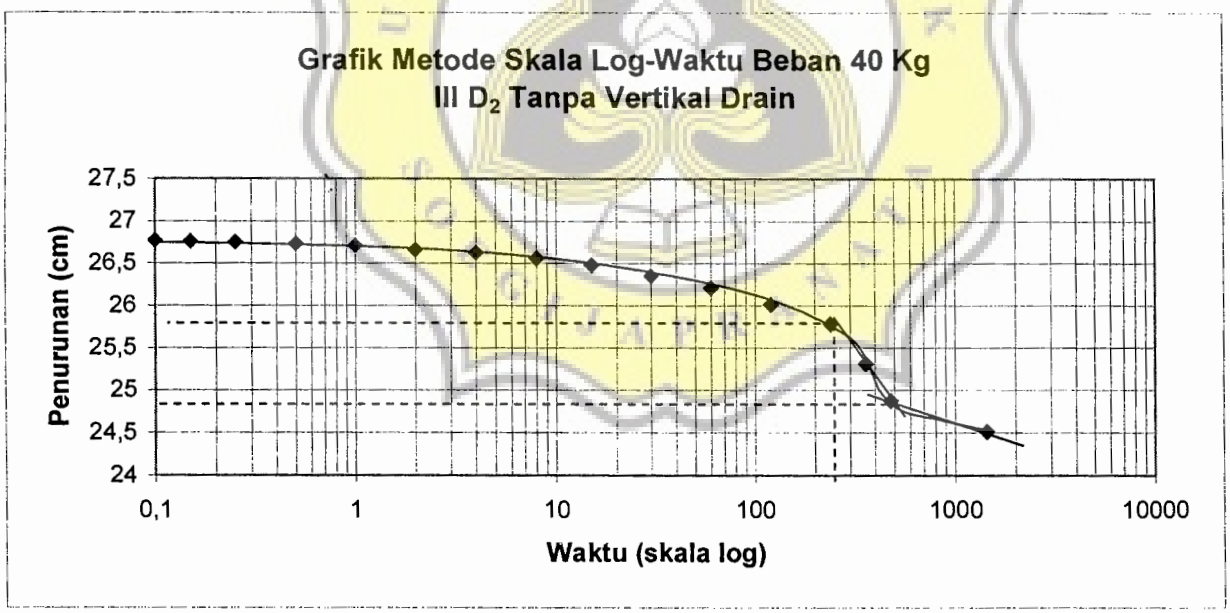
Grafik Metode Skala Log-Waktu Beban 20 Kg
III D_1 Dengan Vertikal Drain

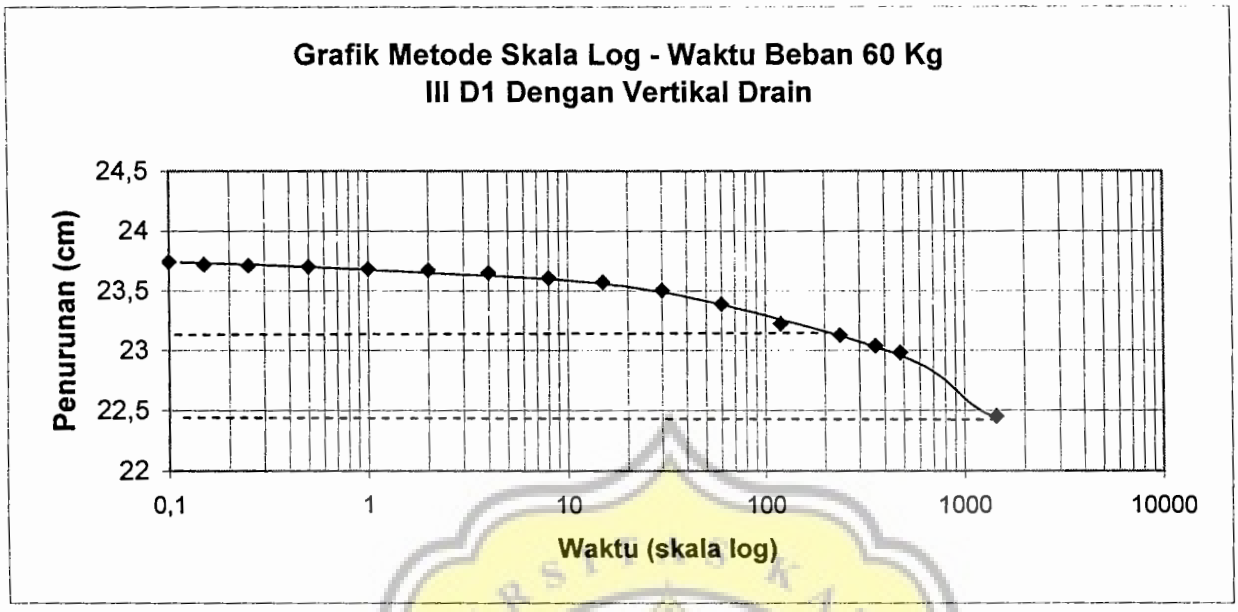


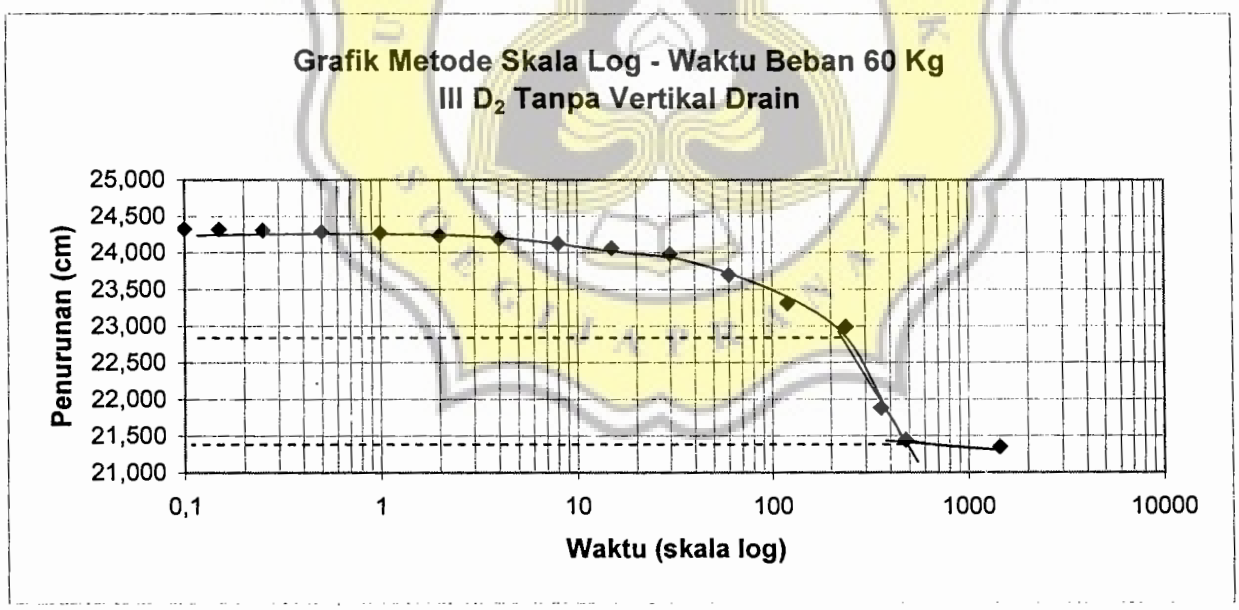
Grafik Metode Skala Log-Waktu Beban 20 Kg
III D_2 Tanpa Vertikal Drain




Grafik Metode Skala Log-Waktu Beban 40 Kg
III D_1 Dengan Vertikal Drain
Penurunan (cm)
27
26,5
26
25,5
25
24,5
24
0,1
1
10
100
1000
10000
Waktu (skala log)


Grafik Metode Skala Log-Waktu Beban 40 Kg
III D_2 Tanpa Vertikal Drain
Penurunan (cm)
27,5
27
26,5
26
25,5
25
24,5
24
0,1
1
10
100
1000
10000
Waktu (skala log)


Grafik Metode Skala Log - Waktu Beban 60 Kg
III D1 Dengan Vertikal Drain
Penurunan (cm)
24,5
24
23,5
23
22,5
22
0,1
1
10
100
1000
10000
Waktu (skala log)


Grafik Metode Skala Log - Waktu Beban 60 Kg
III D_2 Tanpa Vertikal Drain
Penurunan (cm)
25,000
24,500
24,000
23,500
23,000
22,500
22,000
21,500
21,000
0,1
1
10
100
1000
10000
Waktu (skala log)

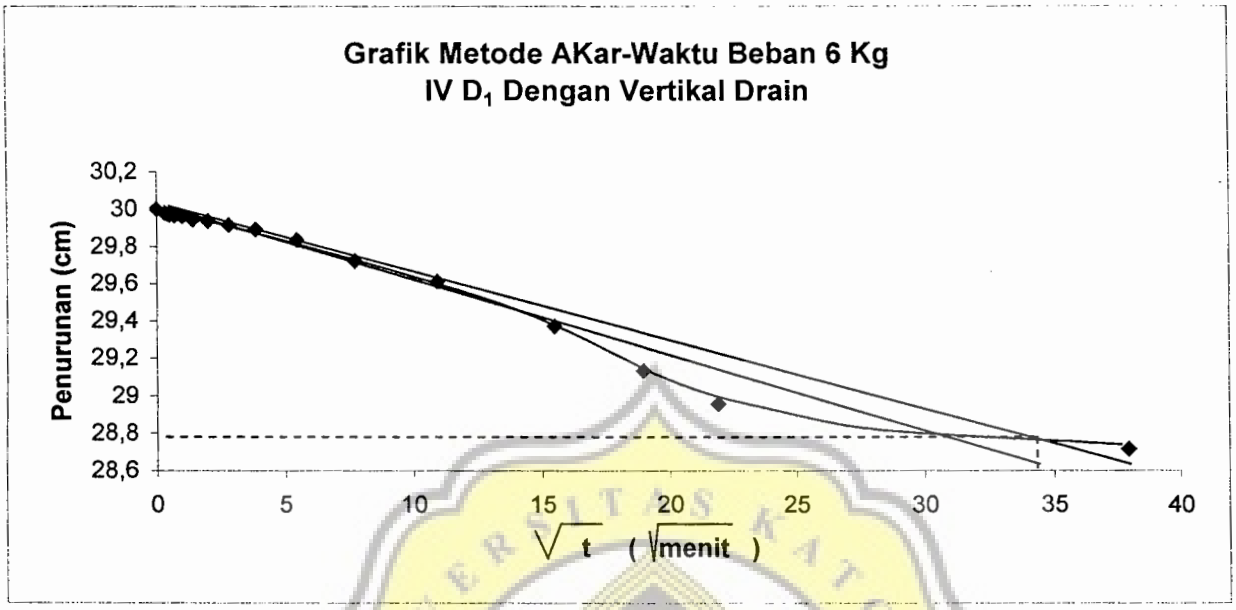
Lampiran

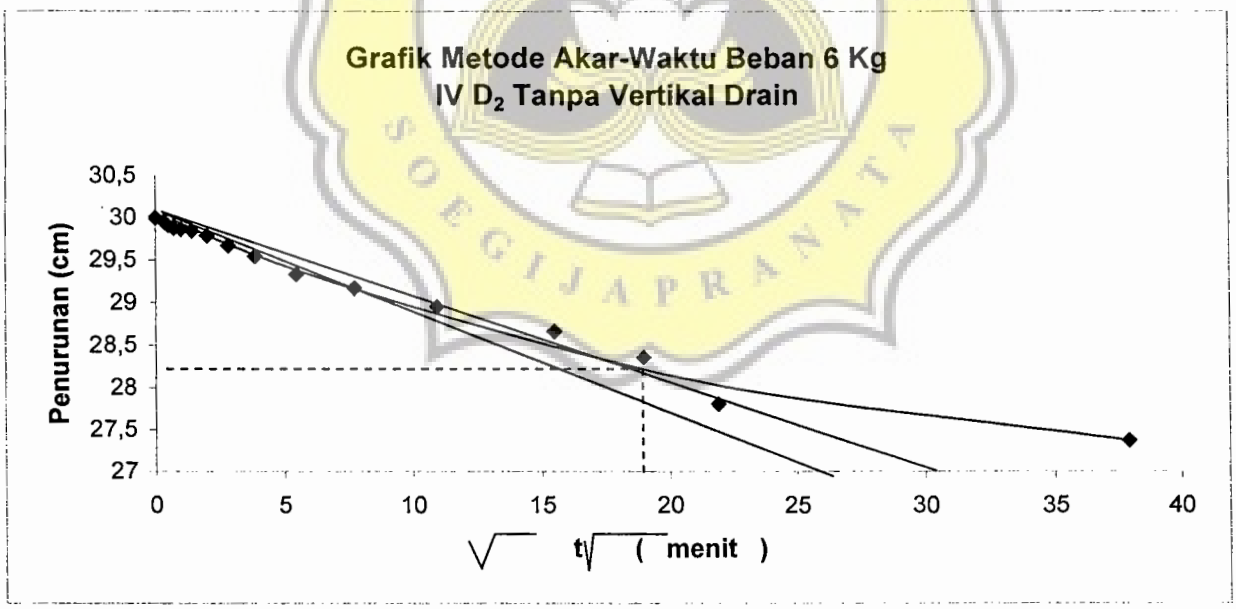
Tabel Pembacaan Dial Percobaan IV D_1 (Dengan Vertikal Drain)

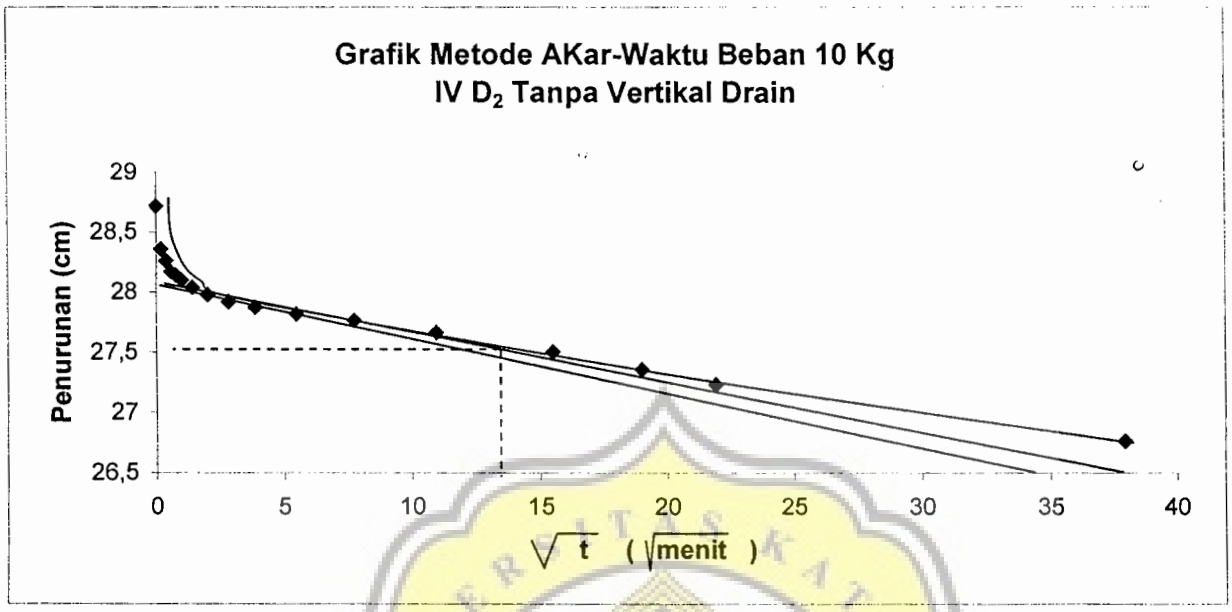
Waktu	$\sqrt{t}$	6 kg/cm2		10 kg/cm2		20 kg/cm2		40 kg/cm2		60 kg/cm2	
		div	(cm)	div	(cm)	div	(cm)	div	(cm)	div	(cm
0	0	0,000	30,000	128,500	28,715	323,500	26,765	516,000	24,840	724,000	22,7(
0,1	0,316	2,000	29,980	194,000	28,060	369,000	26,310	552,000	24,480	772,500	22,2
0,15	0,387	2,250	29,978	195,000	28,050	371,000	26,290	553,000	24,470	773,750	22,2(
0,25	0,5	3,000	29,970	195,500	28,045	371,500	26,285	555,500	24,445	774,500	22,2
0,5	0,707	3,500	29,965	196,000	28,040	372,750	26,273	558,500	24,415	775,500	22,2
1	1	3,750	29,963	197,500	28,025	374,000	26,260	560,750	24,393	777,000	22,2
2'	1,414	5,500	29,945	199,500	28,005	375,750	26,243	563,500	24,365	777,750	22,2
4'	2	6,250	29,938	202,250	27,978	377,750	26,223	567,500	24,325	779,250	22,2(
8'	2,828	8,500	29,915	208,000	27,920	380,500	26,195	572,000	24,280	782,500	22,1
15'	3,873	10,750	29,893	212,500	27,875	383,000	26,170	574,750	24,253	786,500	22,1
30'	5,477	16,500	29,835	218,000	27,820	387,500	26,125	579,000	24,210	792,250	22,0
60'	7,746	27,600	29,724	223,500	27,765	395,250	26,048	581,250	24,188	802,500	21,9
120	10,954	38,750	29,613	233,500	27,665	400,500	25,995	601,000	23,990	817,250	21,8
240	15,492	62,750	29,373	249,500	27,505	424,500	25,755	619,500	23,805	842,000	21,5
360	18,974	86,500	29,135	264,000	27,360	444,500	25,555	636,500	23,635	862,750	21,3
480	21,909	104,250	28,958	276,500	27,235	463,500	25,365	656,000	23,440	881,000	21,1
1440	37,947	128,500	28,715	323,500	26,765	516,000	24,840	724,000	22,760	881,000	21,1

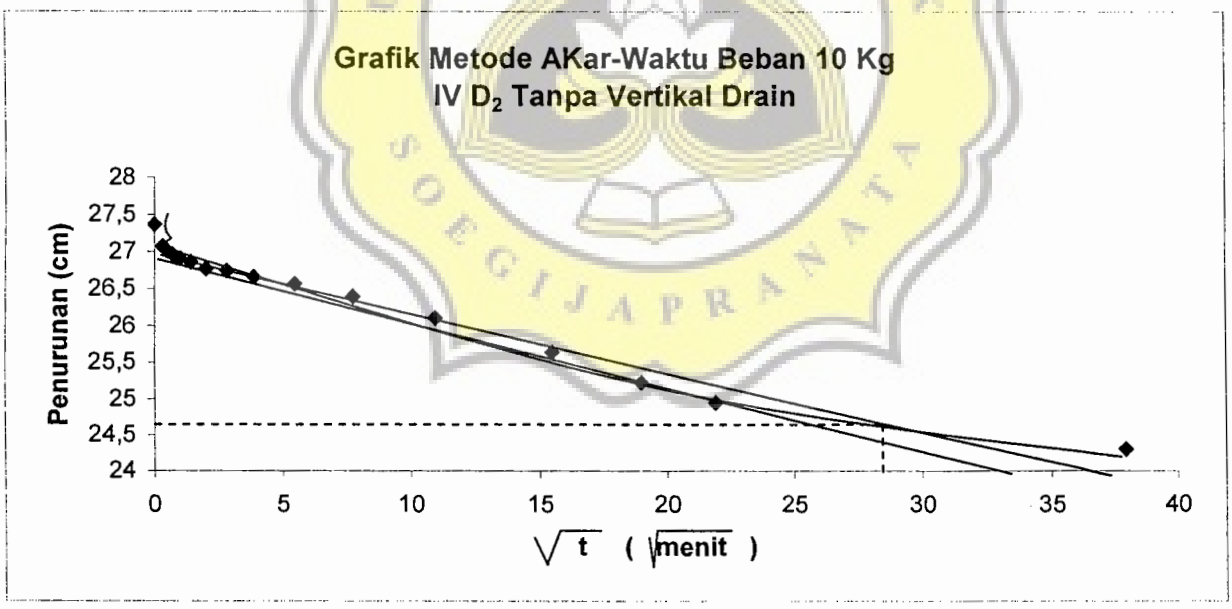
Tabel Pembacaan Dial Percobaan IV D_2 (Tanpa Vertikal Drain)

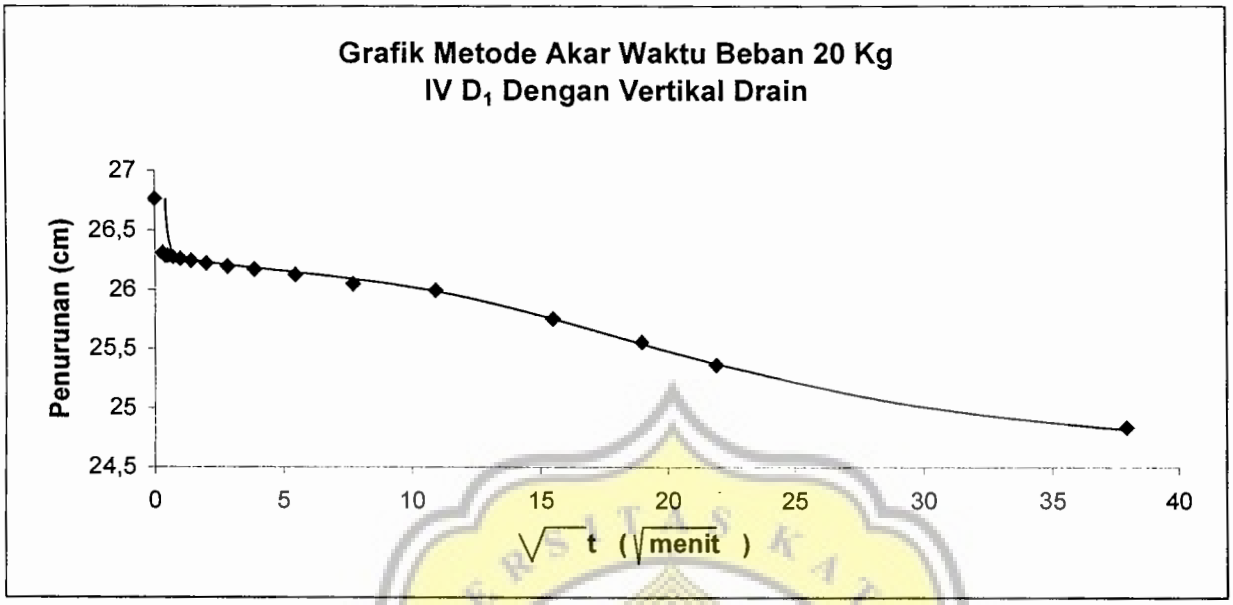
Waktu	$\sqrt{t}$	6 kg/cm2		10 kg/cm2		20 kg/cm2		40 kg/cm2		60 kg/cm2	
		div	(cm)	div	(cm)	div	(cm)	div	(cm)	div	(cm
0	0	0,000	30,000	263,250	27,368	569,250	24,308	877,000	21,230	1188,000	18,12
0,1	0,316	3,750	29,963	293,000	27,070	603,000	23,970	922,500	20,775	1251,000	17,49
0,15	0,387	6,500	29,935	295,500	27,045	604,000	23,960	927,500	20,725	1251,500	17,48
0,25	0,5	9,000	29,910	299,000	27,010	606,750	23,933	928,000	20,720	1251,750	17,48
0,5	0,707	12,250	29,878	304,000	26,960	611,500	23,885	928,500	20,715	1252,250	17,47
1	1	13,750	29,863	309,000	26,910	616,250	23,838	931,000	20,690	1254,000	17,46
2'	1,414	15,500	29,845	314,000	26,860	627,750	23,723	936,000	20,640	1255,400	17,44
4'	2	21,250	29,788	323,000	26,770	644,750	23,553	491,500	25,085	1257,500	17,42
8'	2,828	32,750	29,673	325,500	26,745	650,250	23,498	947,000	20,530	1261,750	17,38
15'	3,873	45,500	29,545	334,000	26,660	659,750	23,403	954,000	20,460	1265,900	17,34
30'	5,477	66,500	29,335	343,500	26,565	669,500	23,305	965,000	20,350	1274,750	17,25
60'	7,746	82,750	29,173	360,500	26,395	695,250	23,048	981,000	20,190	1288,500	17,11
120	10,954	104,750	28,953	389,750	26,103	716,500	22,835	1034,750	19,653	1309,900	16,90
240	15,492	134,000	28,660	436,000	25,640	750,000	22,500	1090,000	19,100	1335,500	16,64
360	18,974	164,500	28,355	477,500	25,225	780,500	22,195	1131,000	18,690	1399,250	16,00
480	21,909	219,500	27,805	513,500	24,865	818,500	21,815	1160,000	18,400	1415,500	15,84
1440	37,947	263,250	27,368	569,250	24,308	877,000	21,230	1188,000	18,120	1415,500	15,84

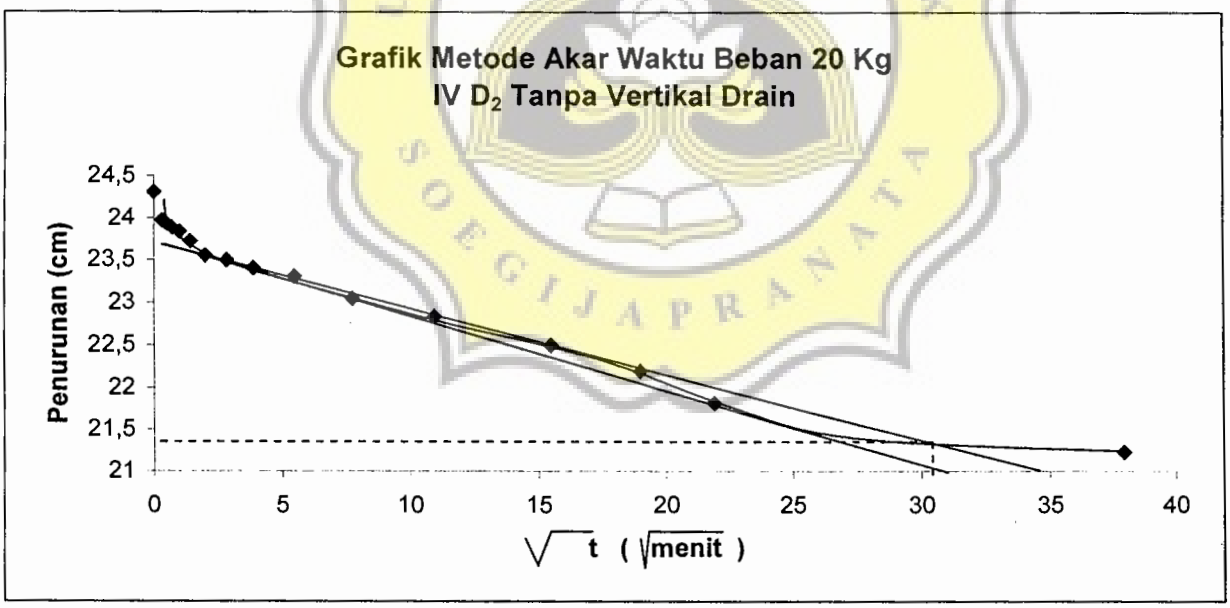

Grafik Metode AKar-Waktu Beban 6 Kg
IV D_1 Dengan Vertikal Drain
Penurunan (cm)
30,2
30
29,8
29,6
29,4
29,2
29
28,8
28,6
0
5
10
15
20
25
30
35
40
√ t (√menit)

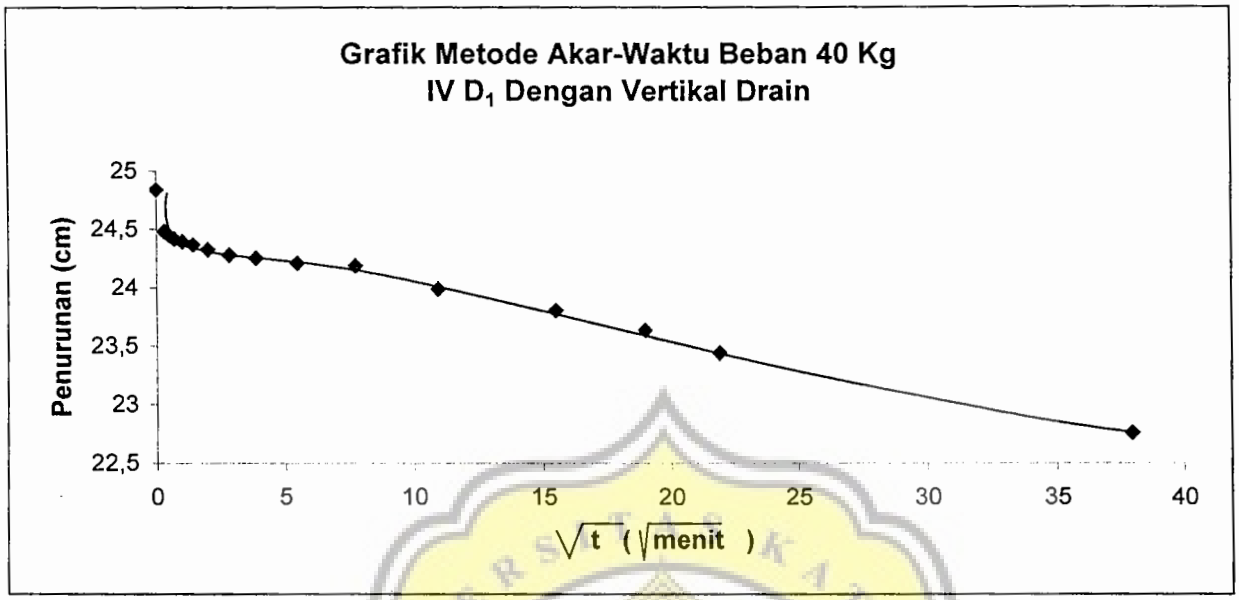

Grafik Metode Akar-Waktu Beban 6 Kg
IV D_2 Tanpa Vertikal Drain
Penurunan (cm)
30,5
30
29,5
29
28,5
28
27,5
27
0
5
10
15
20
25
30
35
40
√ t√ (menit)

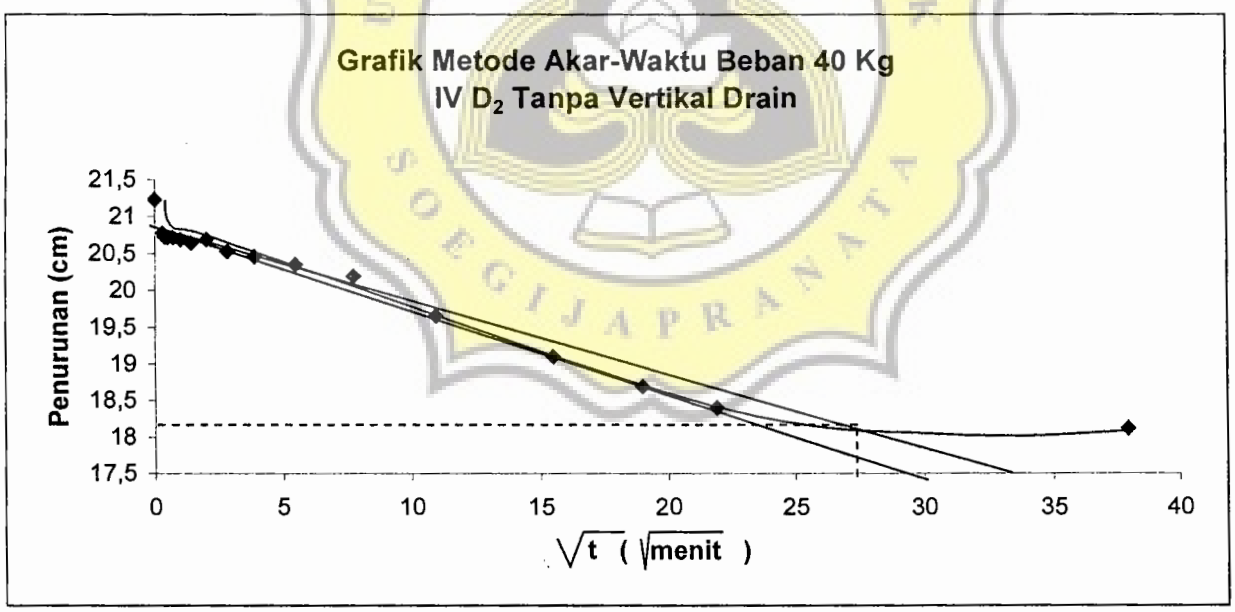

Grafik Metode AKar-Waktu Beban 10 Kg
IV D_2 Tanpa Vertikal Drain
Penurunan (cm)
29
28,5
28
27,5
27
26,5
0
5
10
15
20
25
30
35
40
√ t (√menit)

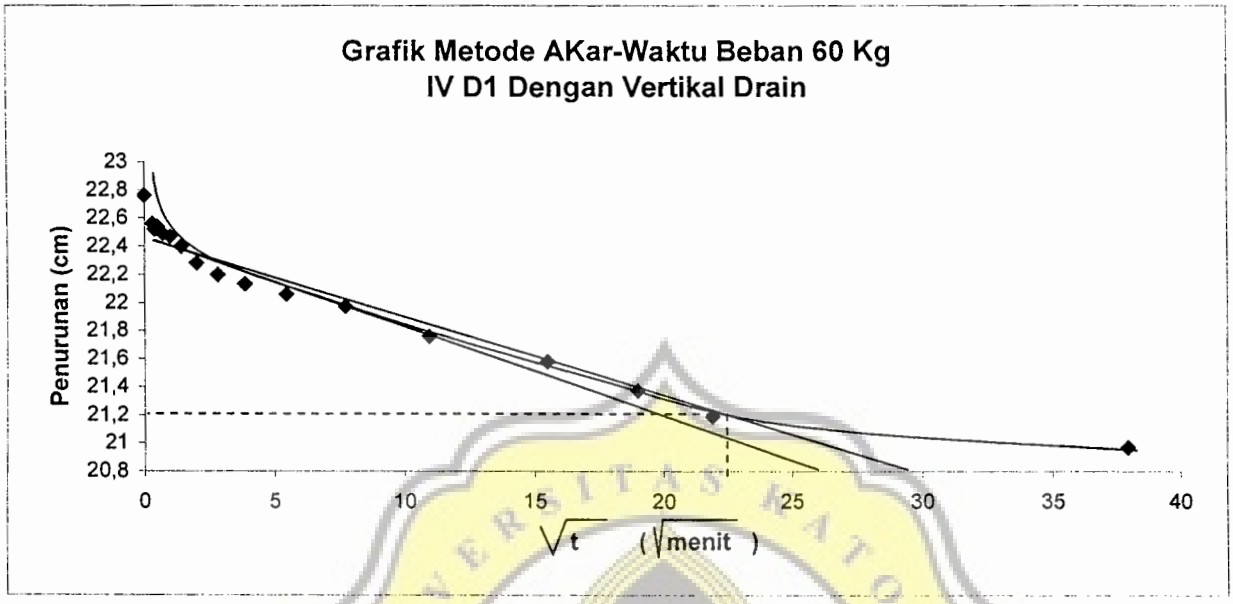

Grafik Metode AKar-Waktu Beban 10 Kg
IV D_2 Tanpa Vertikal Drain
Penurunan (cm)
28
27,5
27
26,5
26
25,5
25
24,5
24
0
5
10
15
20
25
30
35
40
√ t (√menit)

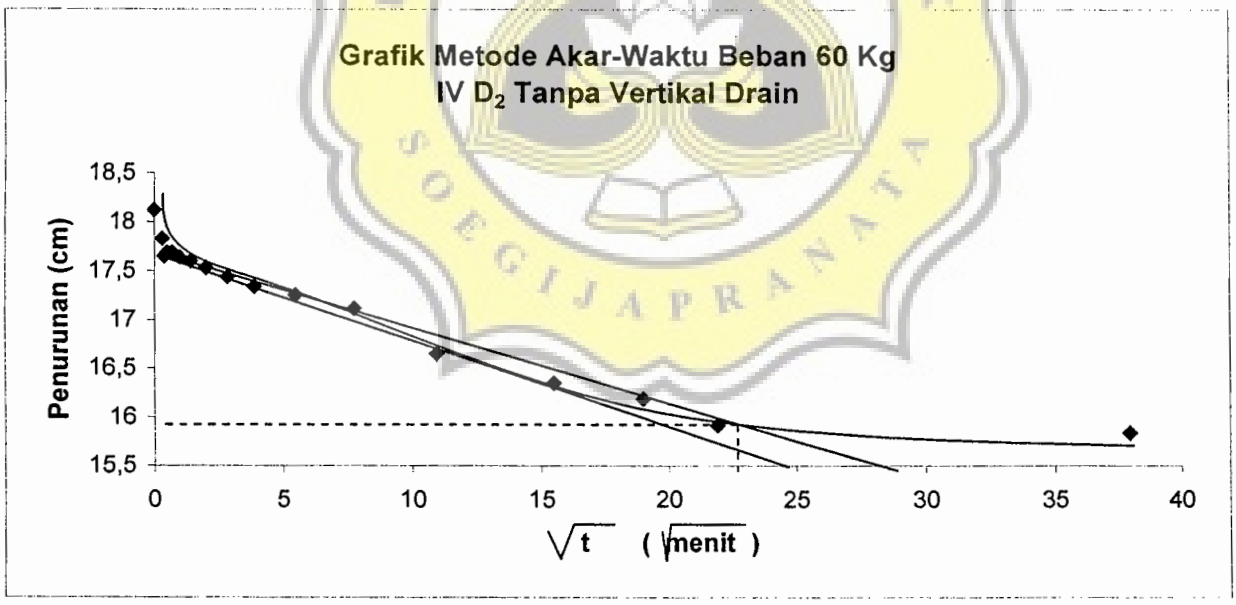

Grafik Metode Akar Waktu Beban 20 Kg
IV D_1 Dengan Vertikal Drain
Penurunan (cm)
27
26,5
26
25,5
25
24,5
0
5
10
15
20
25
30
35
40
√ t (√menit)

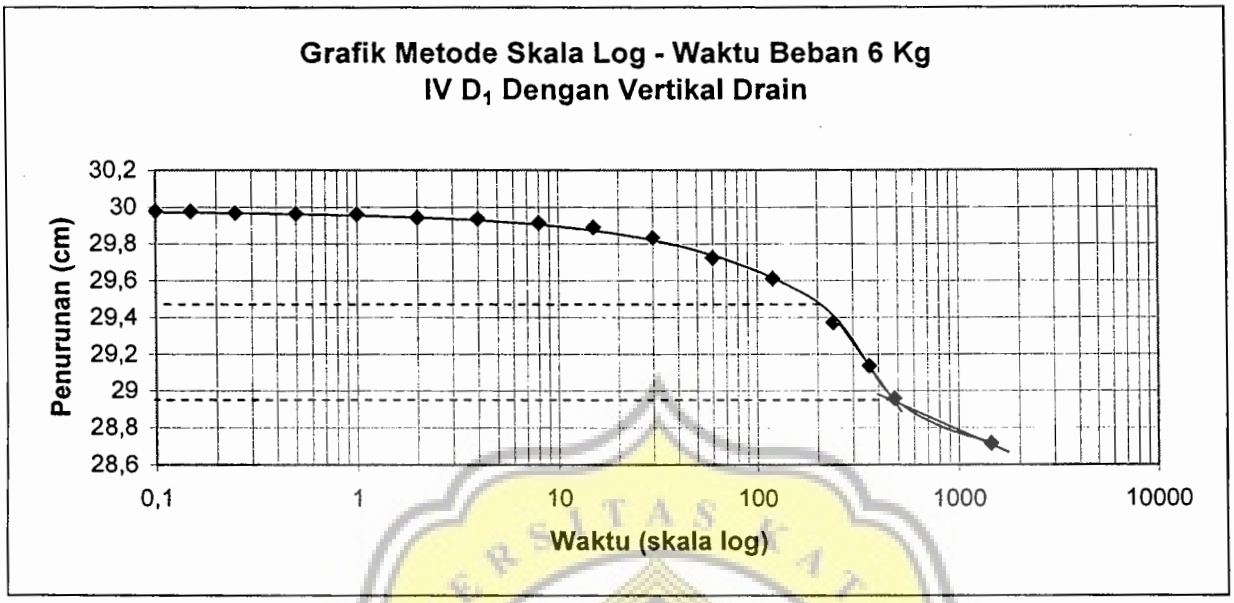

Grafik Metode Akar Waktu Beban 20 Kg
IV D_2 Tanpa Vertikal Drain
Penurunan (cm)
24,5
24
23,5
23
22,5
22
21,5
21
0
5
10
15
20
25
30
35
40
√ t (√menit)

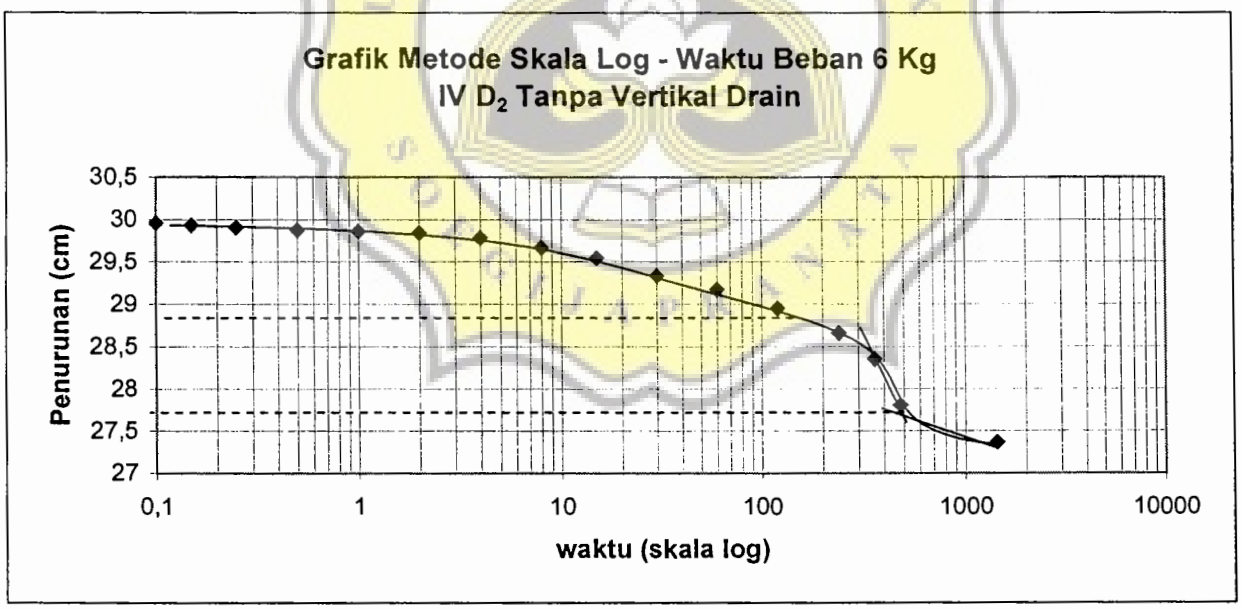

Grafik Metode Akar-Waktu Beban 40 Kg
IV D_1 Dengan Vertikal Drain
Penurunan (cm)
25
24,5
24
23,5
23
22,5
0
5
10
15
20
25
30
35
40
√t (√menit)

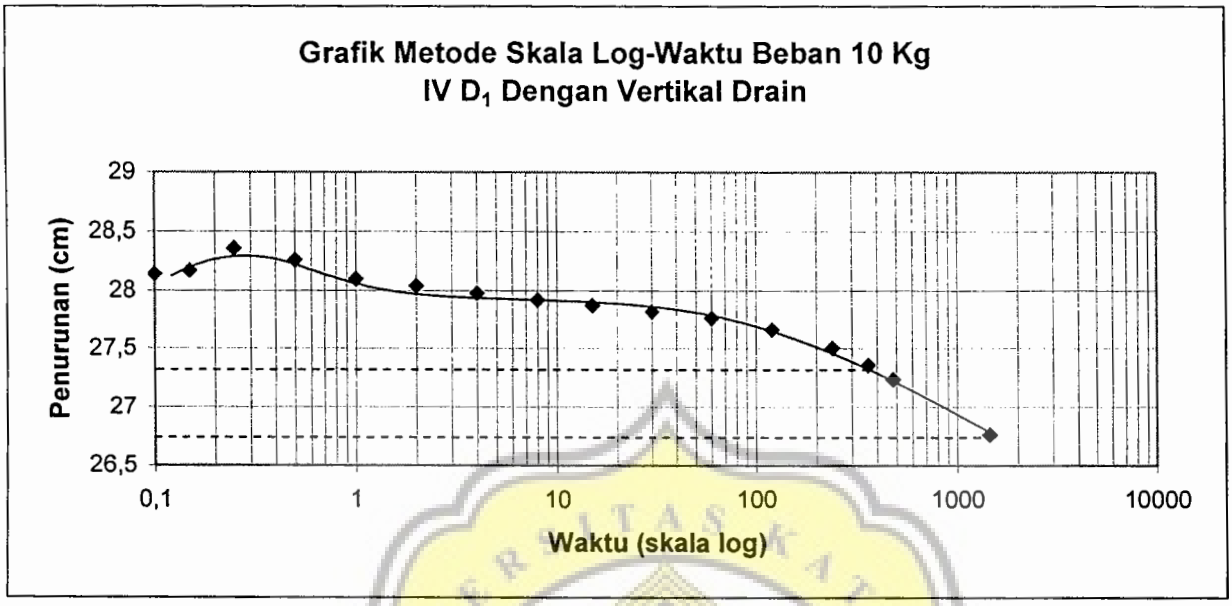

Grafik Metode Akar-Waktu Beban 40 Kg
IV D_2 Tanpa Vertikal Drain
Penurunan (cm)
21,5
21
20,5
20
19,5
19
18,5
18
17,5
0
5
10
15
20
25
30
35
40
√t (√menit)

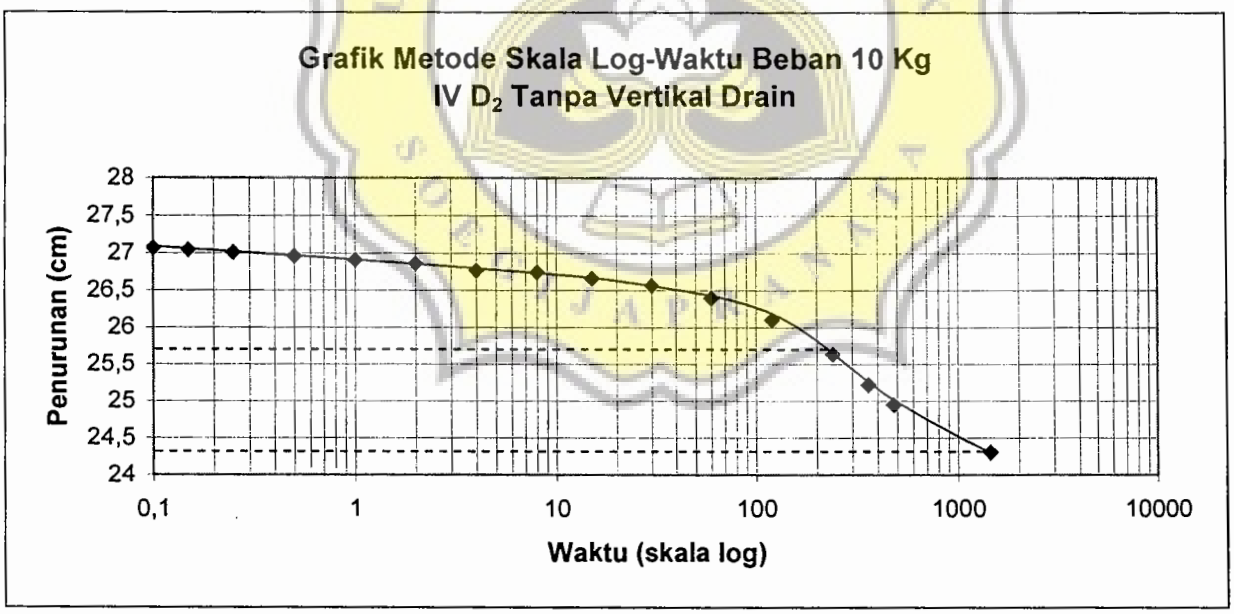

Grafik Metode AKar-Waktu Beban 60 Kg
IV D1 Dengan Vertikal Drain
Penurunan (cm)
23
22,8
22,6
22,4
22,2
22
21,8
21,6
21,4
21,2
21
20,8
0
5
10
15
20
25
30
35
40
√t (√menit)


Grafik Metode Akar-Waktu Beban 60 Kg
IV D2 Tanpa Vertikal Drain
Penurunan (cm)
18,5
18
17,5
17
16,5
16
15,5
0
5
10
15
20
25
30
35
40
√t (√menit)

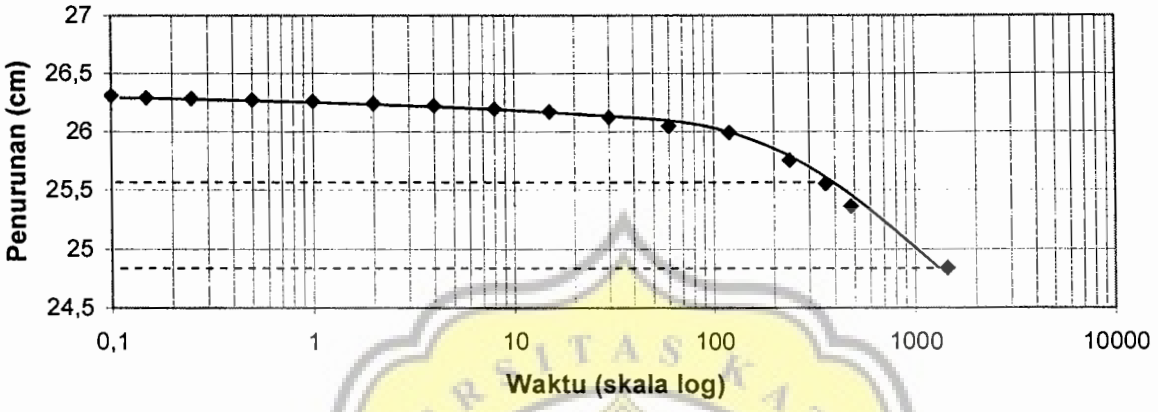

Grafik Metode Skala Log - Waktu Beban 6 Kg
IV D_1 Dengan Vertikal Drain
Penurunan (cm)
30,2
30
29,8
29,6
29,4
29,2
29
28,8
28,6
0,1
1
10
100
1000
10000
Waktu (skala log)


Grafik Metode Skala Log - Waktu Beban 6 Kg
IV D_2 Tanpa Vertikal Drain
Penurunan (cm)
30,5
30
29,5
29
28,5
28
27,5
27
0,1
1
10
100
1000
10000
waktu (skala log)

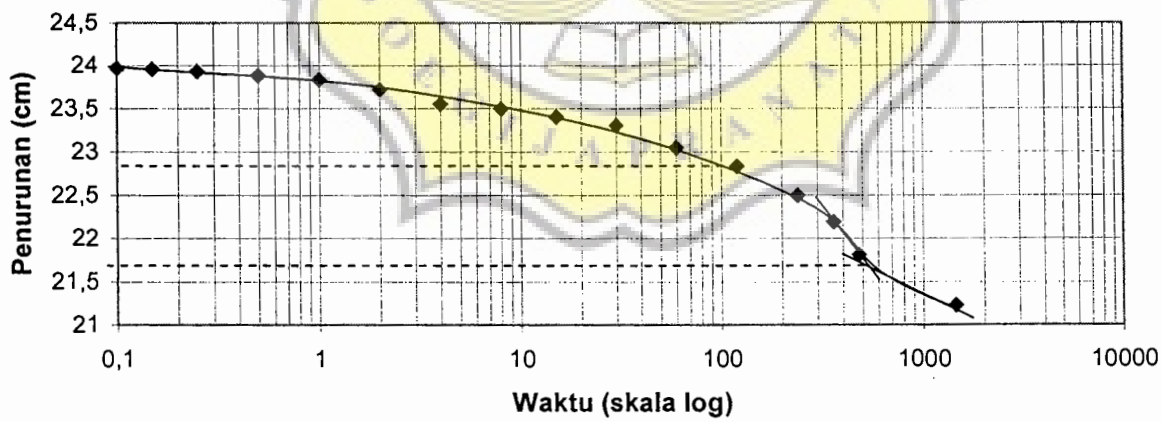

Grafik Metode Skala Log-Waktu Beban 10 Kg
IV D_1 Dengan Vertikal Drain
Penurunan (cm)
29
28,5
28
27,5
27
26,5
0,1
1
10
100
1000
10000
Waktu (skala log)


Grafik Metode Skala Log-Waktu Beban 10 Kg
IV D_2 Tanpa Vertikal Drain
Penurunan (cm)
28
27,5
27
26,5
26
25,5
25
24,5
24
0,1
1
10
100
1000
10000
Waktu (skala log)

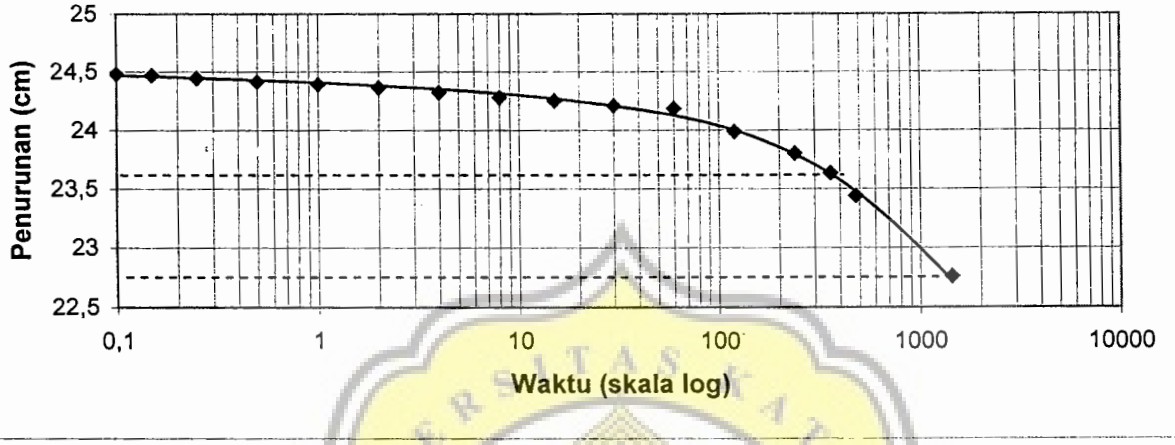
Grafik Metode Skala Log-Waktu Beban 20 Kg
IV D_1 Dengan Vertikal Drain



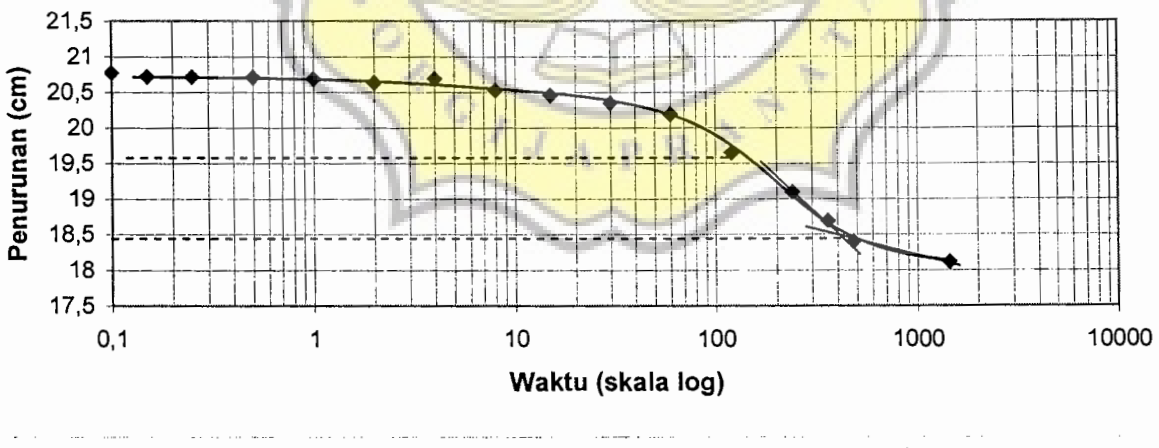
Grafik Metode SKala Log-Waktu Beban 20 Kg
IV D_2 Tanpa Vertikal Drain

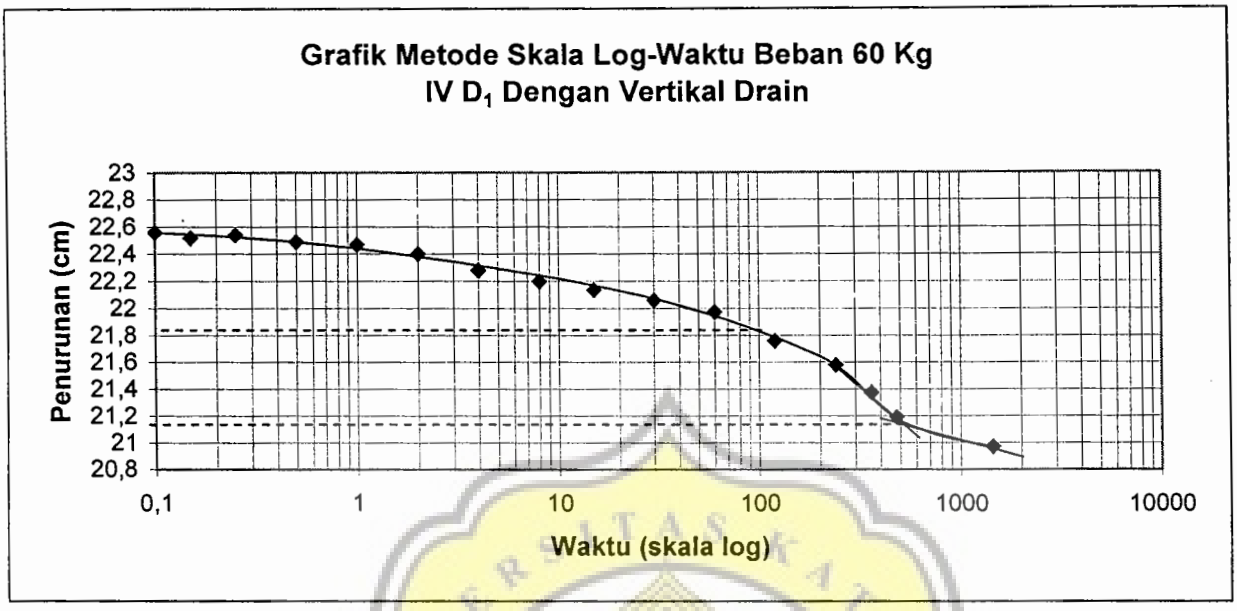


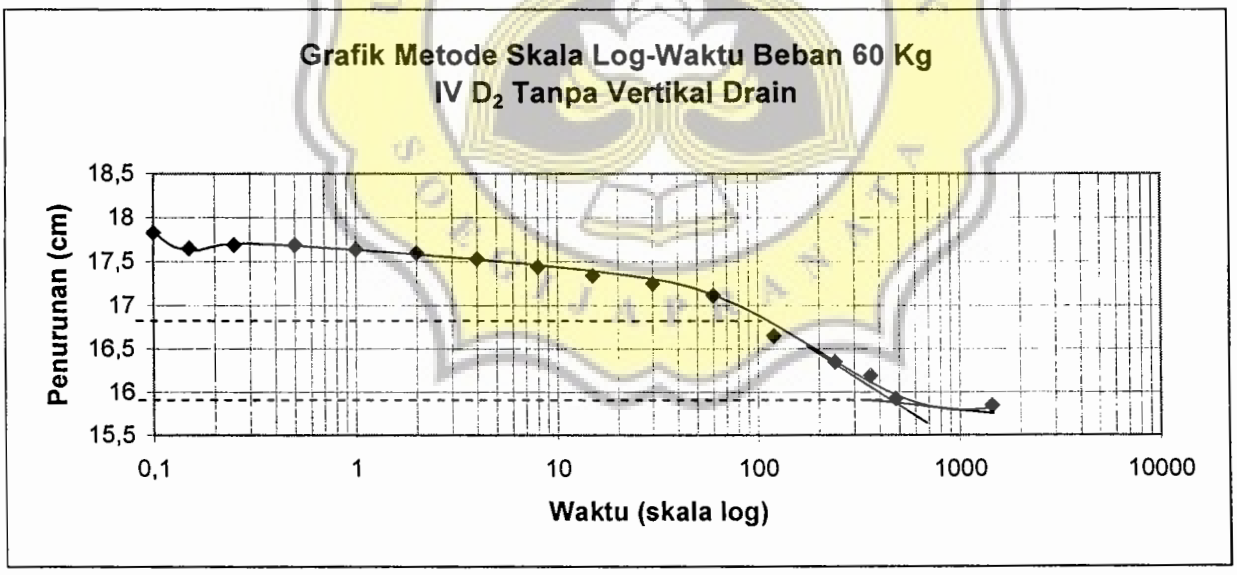
Grafik Metode Skala Log-Waktu Beban 40 Kg
IV D1 Dengan Vertikal Drain



Grafik Metode Skala Log-Waktu Beban 40 Kg
IV D_2 Tanpa Vertikal Drain




Grafik Metode Skala Log-Waktu Beban 60 Kg
IV D_1 Dengan Vertikal Drain
Penurunan (cm)
23
22,8
22,6
22,4
22,2
22
21,8
21,6
21,4
21,2
21
20,8
0,1
1
10
100
1000
10000
Waktu (skala log)


Grafik Metode Skala Log-Waktu Beban 60 Kg
IV D_2 Tanpa Vertikal Drain
Penurunan (cm)
18,5
18
17,5
17
16,5
16
15,5
0,1
1
10
100
1000
10000
Waktu (skala log)

Tabel Rebound Pembacaan Dial Gauge Pada Percobaan Skala Besar

I D_1

waktu	Rebound			
	6	10	20	40
0				
120	987,5	1009,5	1107	1156,5

III D_1

waktu	Rebound			
	6	10	20	40
0				
120	563,75	597	641,25	678,25

I D_2

waktu	Rebound			
	6	10	20	40
0				
120	1039,5	1061,5	1159	1208,5

III D_2

waktu	Rebound			
	6	10	20	40
0				
120	727,5	747,25	773,75	814,5

II D_1

waktu	Rebound			
	6	10	20	40
0				
120	427,75	475,75	499,3	524,75

IV D_1

waktu	Rebound			
	6	10	20	40
0				
120	726	727,5	728,75	729,5

II D_2

waktu	Rebound			
	6	10	20	40
0				
120	492	576,75	682,5	1665,5

IV D_2

waktu	Rebound			
	6	10	20	40
0				
120	1233,75	1236	1239	1189,75

Ket : I D_1 = Percobaan I dengan Vertikal Drain
I D_2 = Percobaan I Tanpa Vertikal Drain

Tabel. Hasil Nilai C_v dari Percobaan Skala Besar

Metode	Load	Percobaan			
		I	II	III	IV
Dengan VD	6	0,02703	0,01695	0,01650	0,02061
	10	0,02801	0,01728	0,06673	0,01259
	20	0,03343	0,02841	0,00902	0,00820
	40	0,02615	0,01720	0,01265	0,00900
	60	0,00689	0,01909	0,02684	0,02354

Metode	Load	Percobaan			
		I	II	III	IV
Tanpa VD	6	0,02789922	0,024807819	0,014401612	0,034354363
	10	0,02014227	0,013420665	0,015751357	0,01643716
	20	0,02235555	0,006894598	0,02433957	0,018235932
	40	0,02923862	0,024700727	0,013210875	0,014663857
	60	0,02796872	0,013861711	0,012867397	0,014203125


UNIVERSITAS KATOLIK
SOEGIJAPRANATA

HASIL PERHITUNGAN NILAI C_v DARI PERCOBAAN (SKALA BESAR)

Percobaan I Dengan Vertikal Drain

Beban	Hdr	t90	Cv	t50	Cv
6	14,816	625	0,004964	160	0,027029
10	14,108	644,379	0,004366	140	0,028008
20	13,026	745,71	0,003216	100	0,033426
40	11,521	204,714	0,009164	100	0,02615
60	9,894	-	-	280	0,006887

Percobaan I Tanpa Vertikal Drain

Beban	Hdr	t90	Cv	t50	Cv
6	14,575	699,6025	0,0042915	150	0,027899
10	14,3	852,191	0,0033914	200	0,020142
20	13,2625	292,936	0,0084864	155	0,022356
40	12,18275	532,44	0,0039397	100	0,029239
60	11,91525	-	-	100	0,027969

Percobaan II Dengan Vertikal Drain

Beban	Hdr	t90	C_v	t50	C_v
6	14,667	1178,549	0,0025798	250	0,016952
10	14,05	1078,028	0,002588	225	0,017284
20	13,427	756,25	0,0033693	125	0,028413
40	12,878	-	-	190	0,017195
60	12,451	841	0,0026053	160	0,019088

Percobaan II Tanpa Vertikal Drain

Beban	Hdr	t90	C_v	t50	C_v
6	14,845	850,714	0,0036612	175	0,024808
10	14,296	1075,84	0,0026849	300	0,013421
20	13,36	-	-	510	0,006895
40	12,008	-	-	115	0,024701
60	10,775	591,949	0,002772	165	0,013862

Percobaan III Dengan Vertikal Drain

Beban	Hdr	t90	Cv	t50	Cv
6	14,756	-	-	260	0,016497
10	14,256	156,25	0,018384	60	0,066731
20	13,614	-	-	405	0,009015
40	12,673	1024	0,002217	250	0,012655
60	11,673	245,44	0,007846	100	0,026841

Percobaan III Tanpa Vertikal Drain

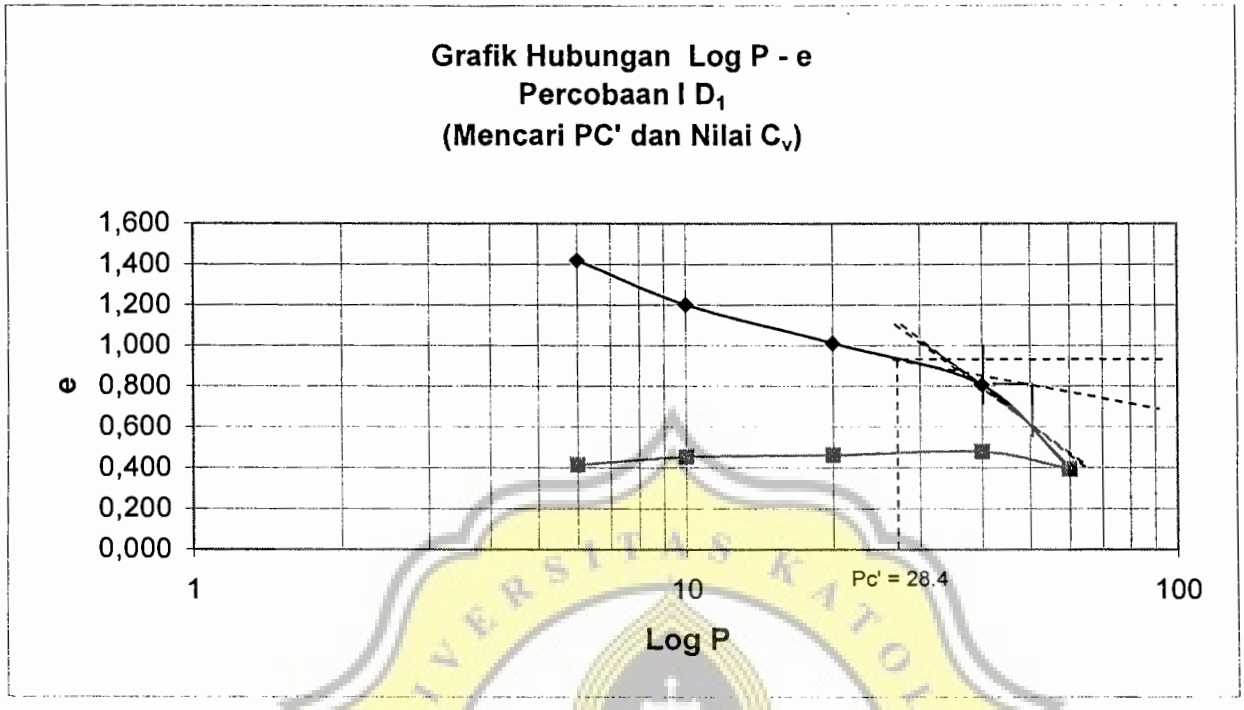
Beban	Hdr	t90	Cv	t50	Cv
6	14,809	-	-	300	0,014402
10	14,418	1178,78	0,002493	260	0,015751
20	13,928	637,5625	0,0043	157	0,02434
40	12,948	-	-	250	0,013211
60	11,430	1178,778	0,001566	200	0,012867

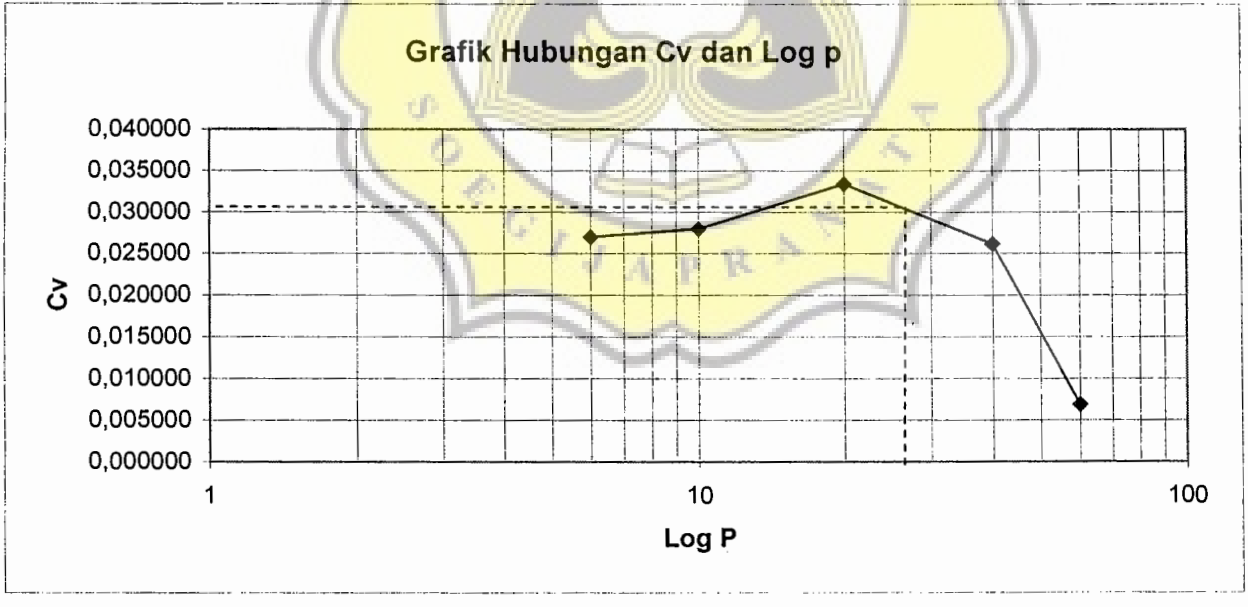
Percobaan IV Dengan Vertikal Drain

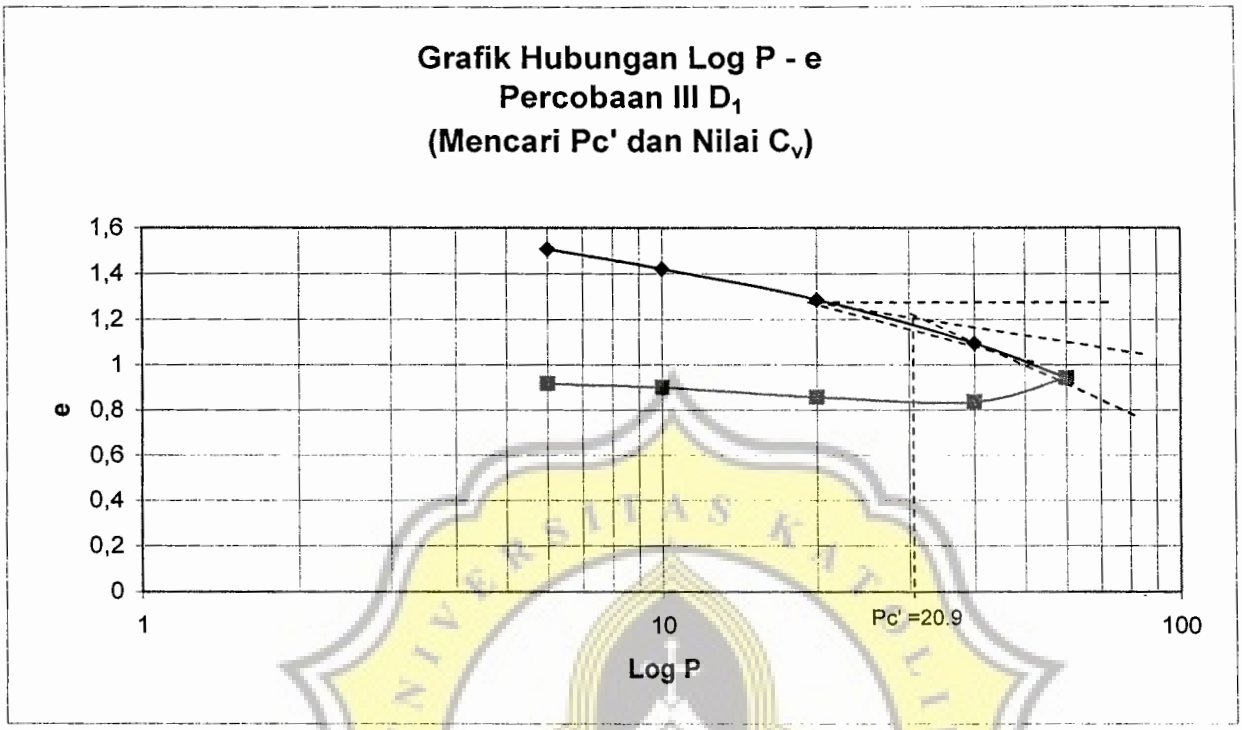
Beban	Hdr	t90	C_v	t50	C_v
6	14,466	1167,361	0,002534	200	0,020613
10	13,375	169	0,01496	280	0,012586
20	12,901	-	-	400	0,008197
40	11,9	-	-	310	0,008999
60	10,932	513,778	0,003288	100	0,023543

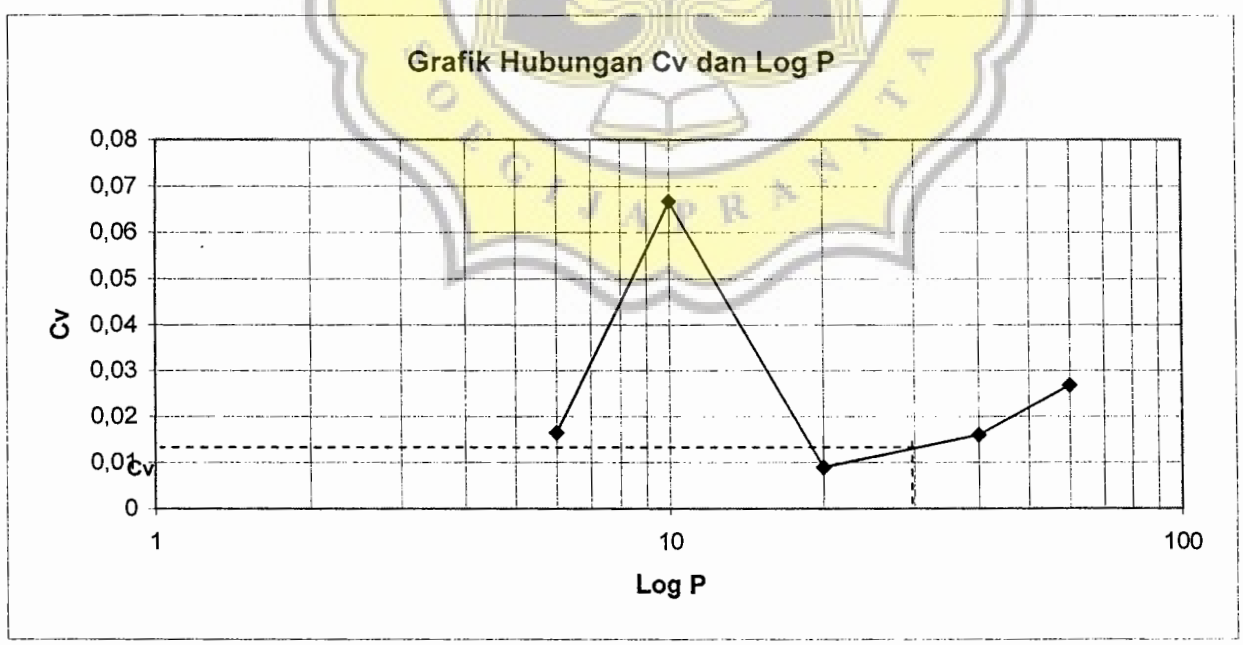
Percobaan IV Tanpa Vertikal Drain

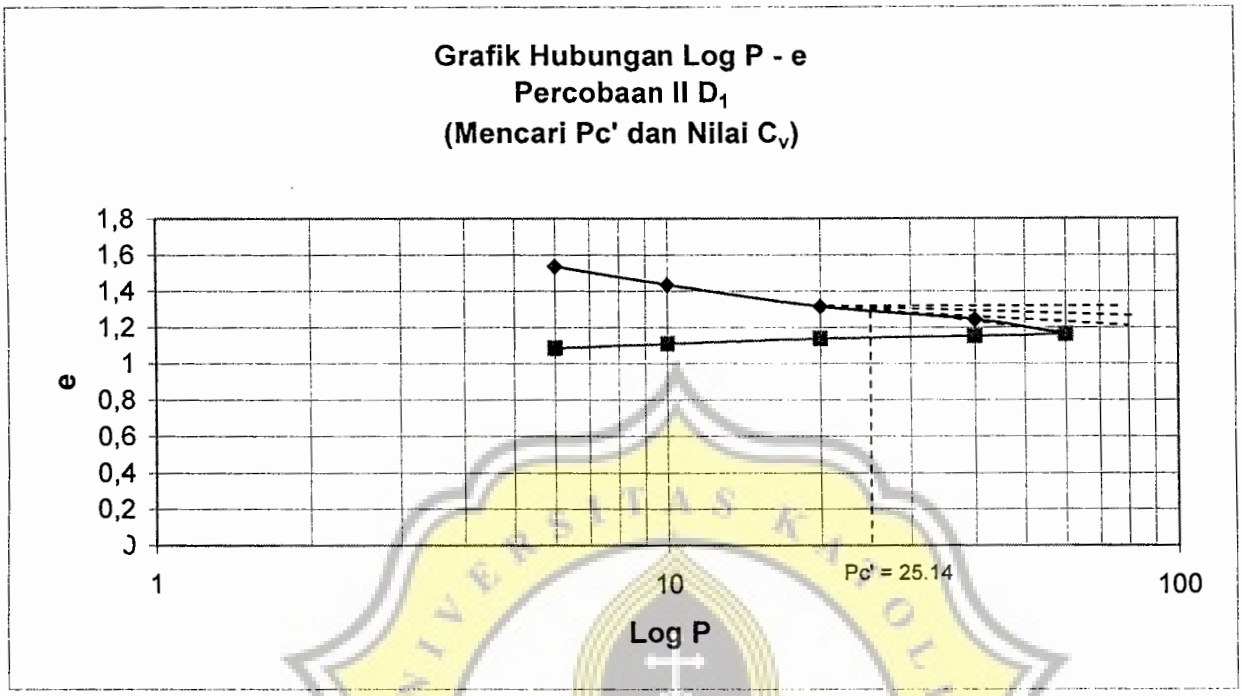
Beban	Hdr	t90	C_v	t50	C_v
6	14,466	361	0,008193	120	0,034354
10	12,918	802,778	0,002938	200	0,016437
20	11,384	961	0,001906	140	0,018236
40	9,837	756,25	0,001808	130	0,014664
60	8,491	498,77	0,002043	100	0,014203

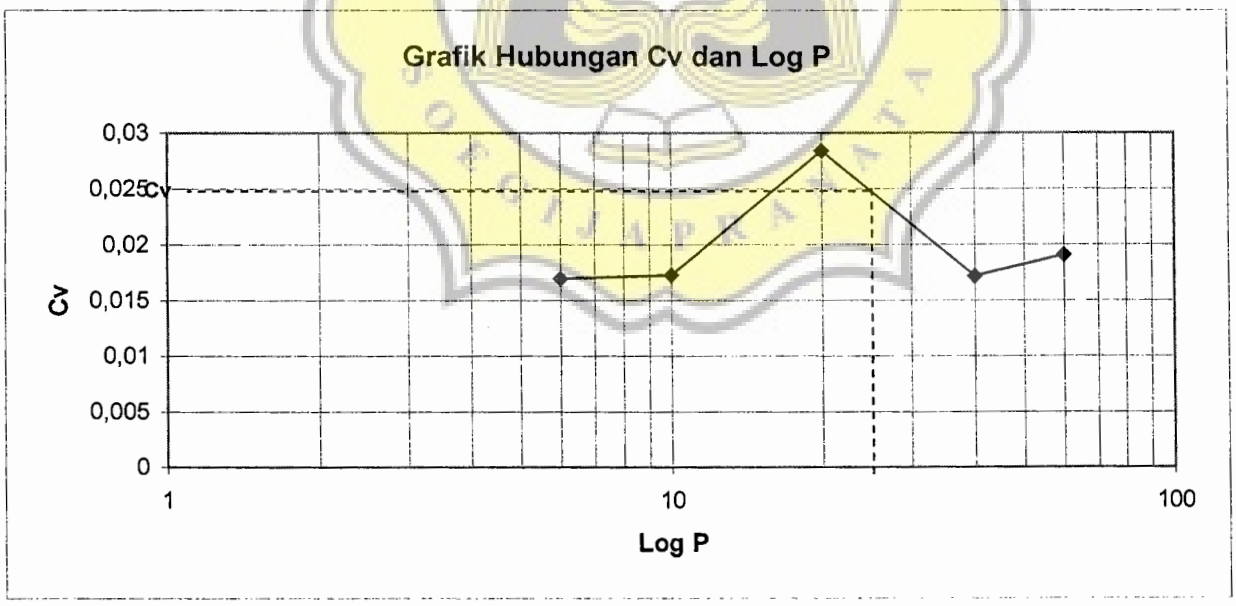

Grafik Hubungan Log P - e
Percobaan I D1
(Mencari PC' dan Nilai Cv)
e
1,600
1,400
1,200
1,000
0,800
0,600
0,400
0,200
0,000
1
10
100
Pc' = 28.4
Log P


Grafik Hubungan Cv dan Log p
Cv
0,040000
0,035000
0,030000
0,025000
0,020000
0,015000
0,010000
0,005000
0,000000
1
10
100
Log P

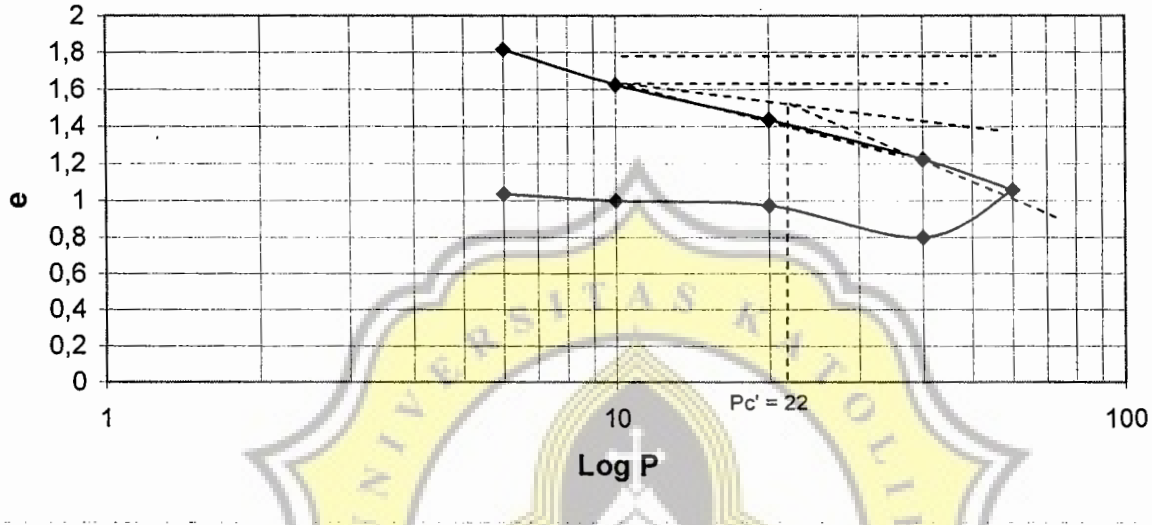

Grafik Hubungan Log P - e
Percobaan III D_1
(Mencari Pc' dan Nilai C_v)
e
1,6
1,4
1,2
1
0,8
0,6
0,4
0,2
0
1
10
100
Pc' =20.9
Log P


Grafik Hubungan Cv dan Log P
Cv
0,08
0,07
0,06
0,05
0,04
0,03
0,02
0,01
Cv
0
1
10
100
Log P

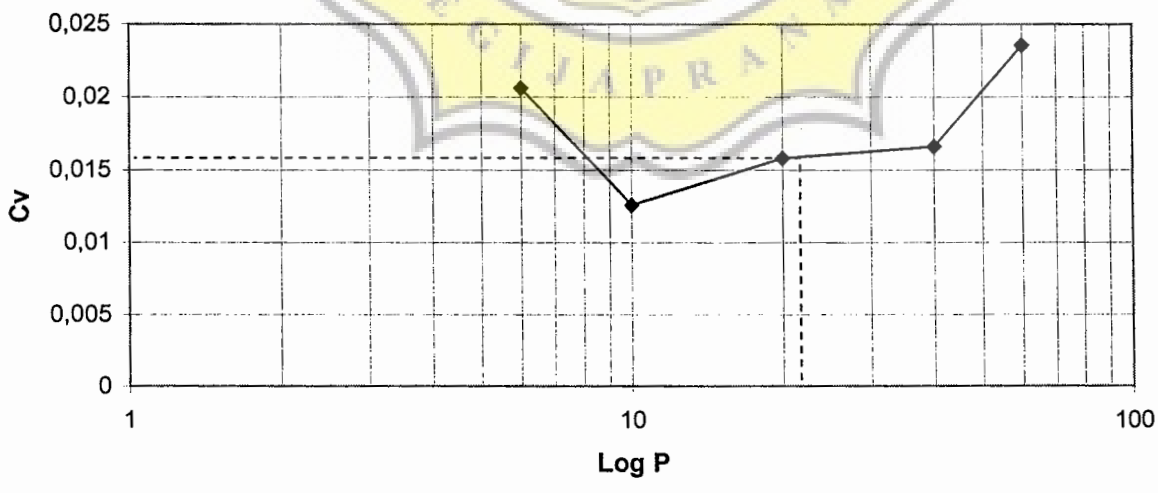

Grafik Hubungan Log P - e
Percobaan II D1
(Mencari Pc' dan Nilai Cv)
e
1,8
1,6
1,4
1,2
1
0,8
0,6
0,4
0,2
0
1
10
100
Pc' = 25.14
Log P

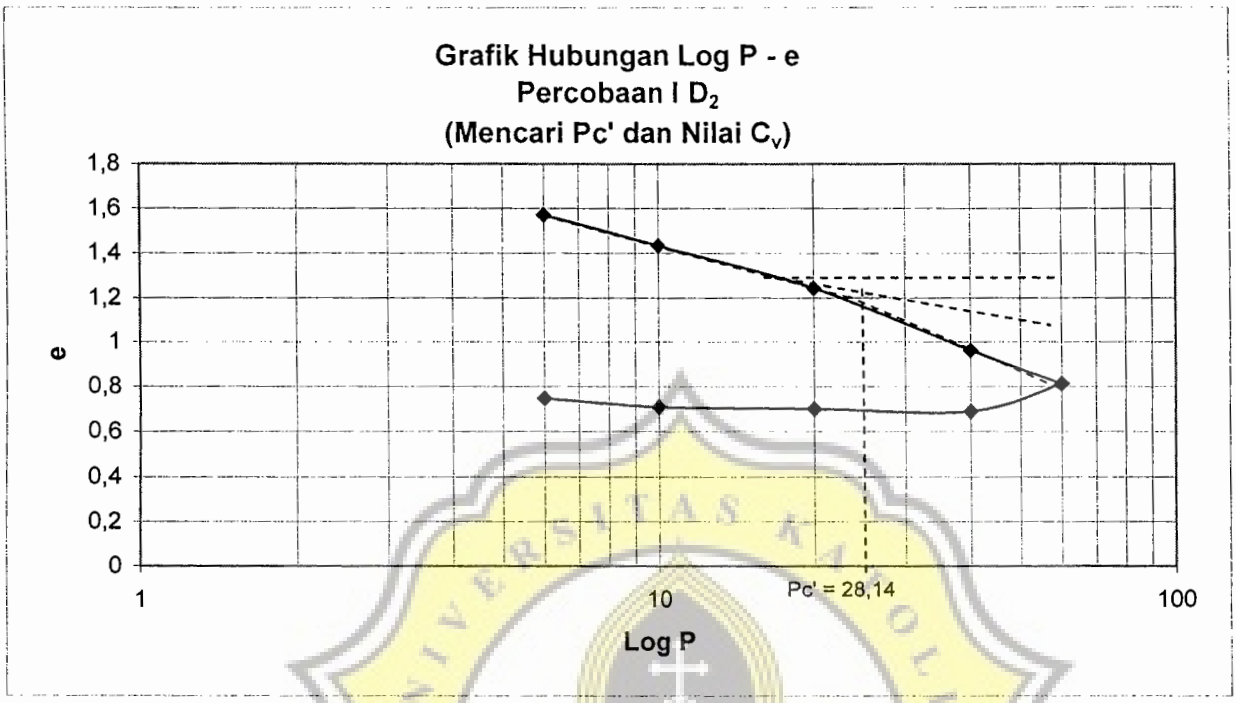

Grafik Hubungan Cv dan Log P
Cv
0,03
0,025
Cv
0,02
0,015
0,01
0,005
0
1
10
100
Log P

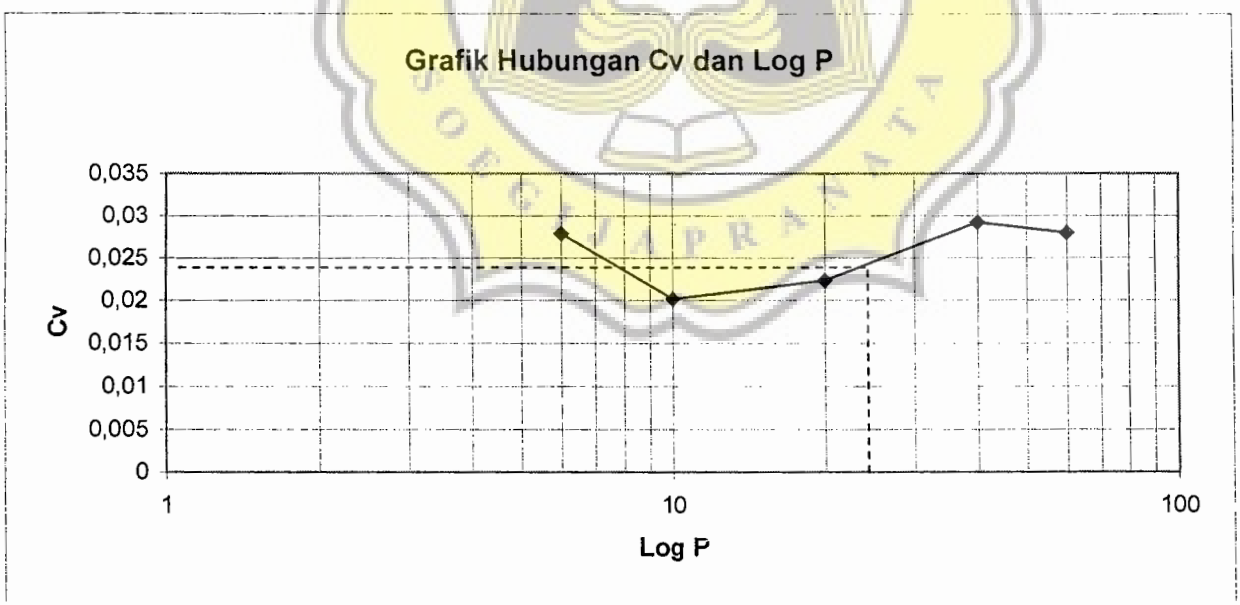
Grafik Hubungan Log P - e
Percobaan IV D_1
(Mencari Pc' dan Nilai C_v)

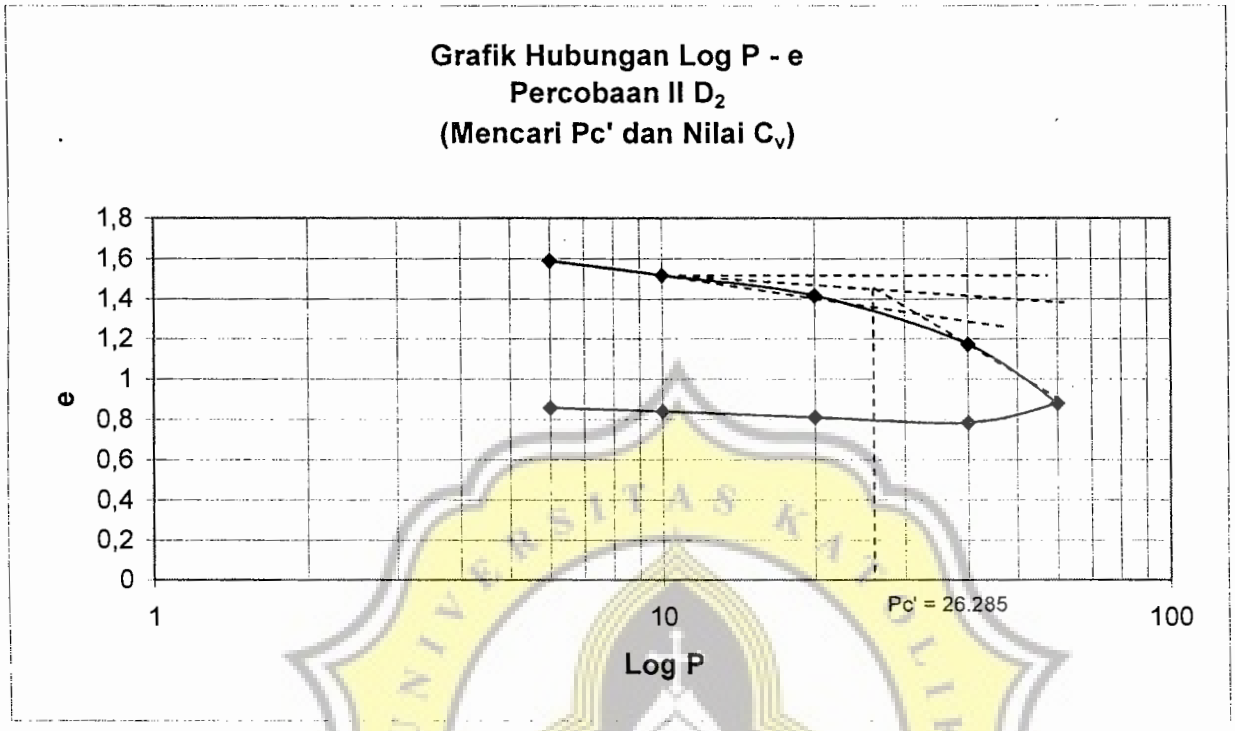


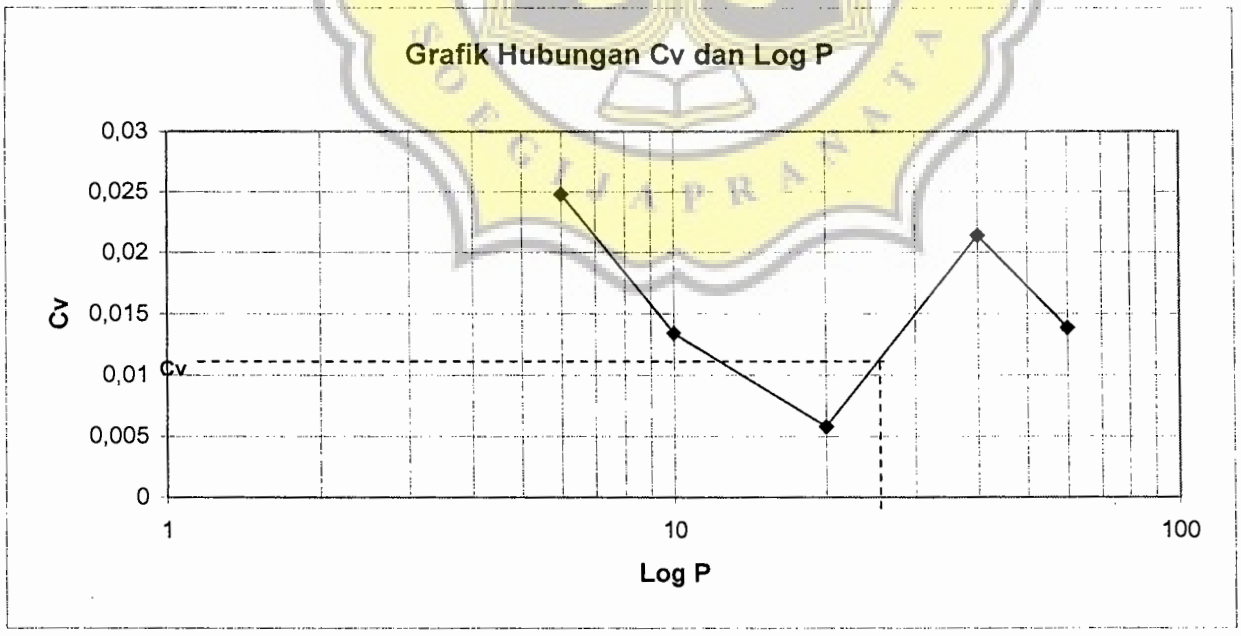
Grafik Hubungan C_v dan Log P

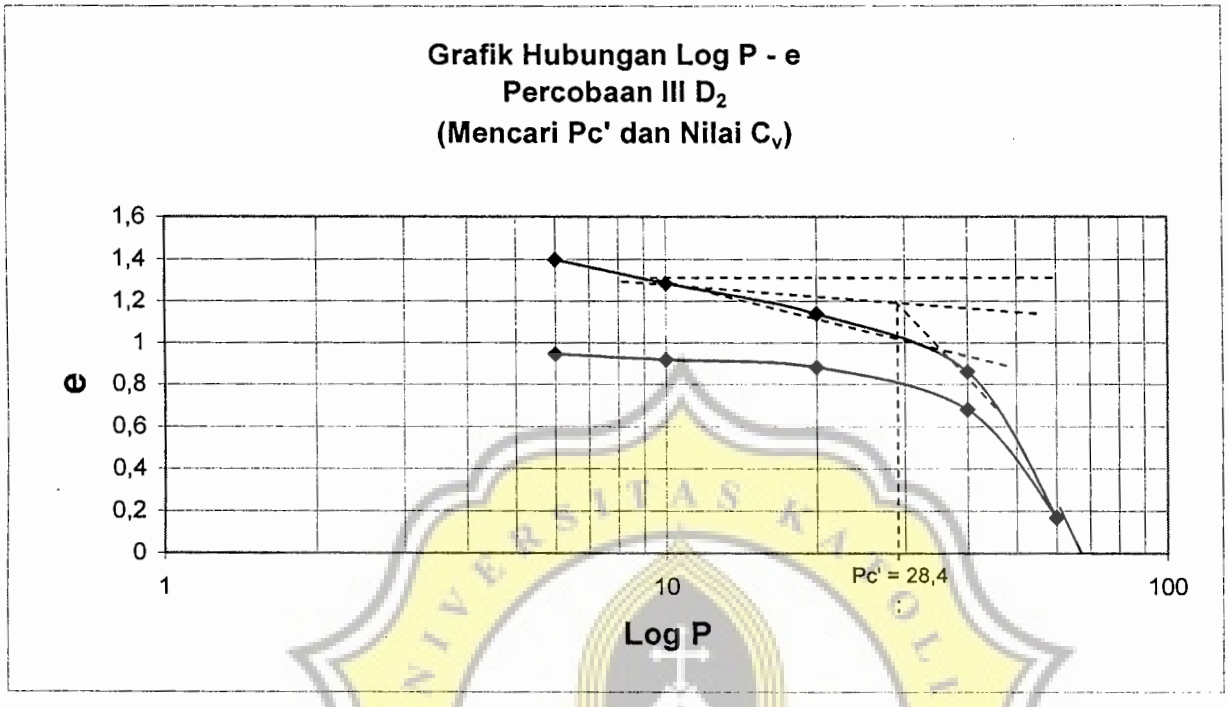


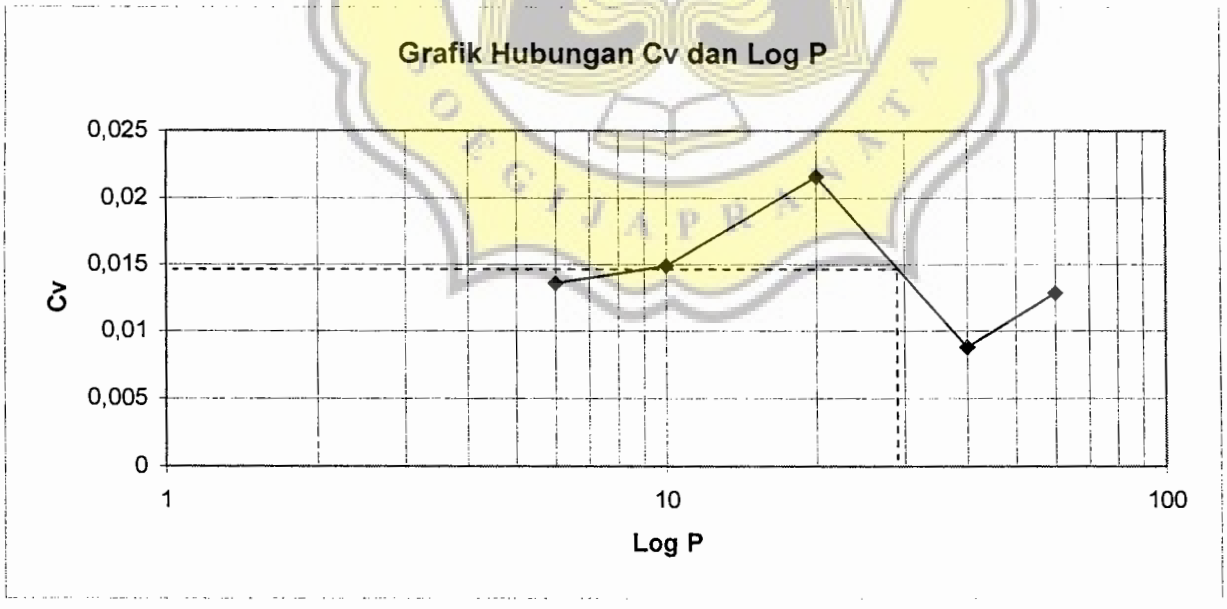

Grafik Hubungan Log P - e
Percobaan I D_2
(Mencari Pc' dan Nilai C_v)
e
1,8
1,6
1,4
1,2
1
0,8
0,6
0,4
0,2
0
1
10
100
Pc' = 28,14
Log P

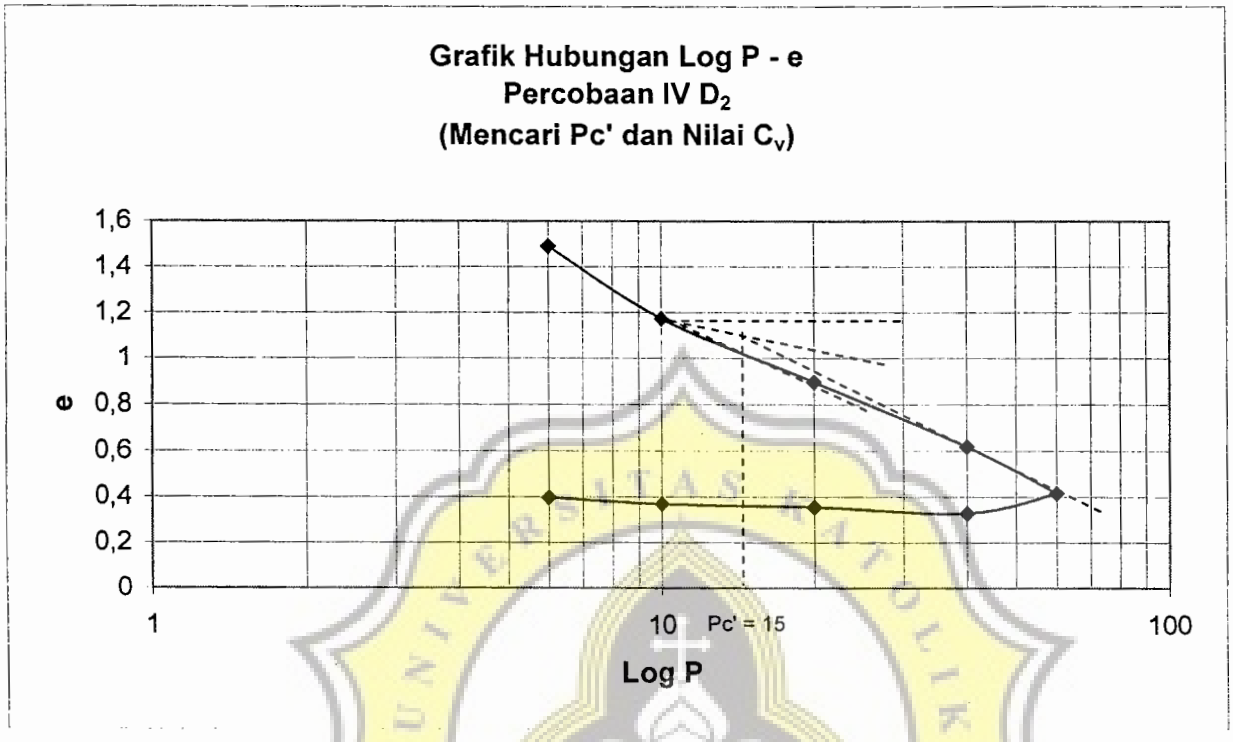

Grafik Hubungan Cv dan Log P
Cv
0,035
0,03
0,025
0,02
0,015
0,01
0,005
0
1
10
100
Log P

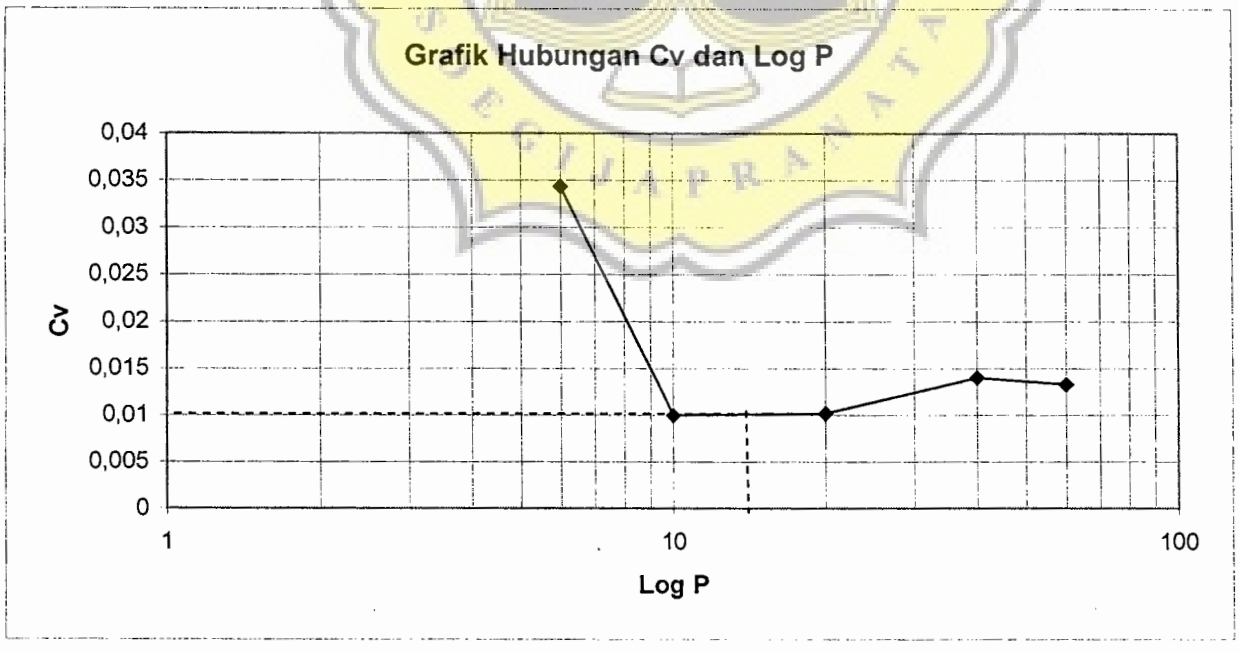

Grafik Hubungan Log P - e
Percobaan II D_2
(Mencari Pc' dan Nilai C_v)
e
1,8
1,6
1,4
1,2
1
0,8
0,6
0,4
0,2
0
1
10
100
Pc' = 26.285
Log P


Grafik Hubungan Cv dan Log P
Cv
0,03
0,025
0,02
0,015
0,01
0,005
0
Cv
1
10
100
Log P


Grafik Hubungan Log P - e
Percobaan III D_2
(Mencari Pc' dan Nilai C_v)
e
1,6
1,4
1,2
1
0,8
0,6
0,4
0,2
0
1
10
100
Pc' = 28,4
Log P


Grafik Hubungan Cv dan Log P
Cv
0,025
0,02
0,015
0,01
0,005
0
1
10
100
Log P


Grafik Hubungan Log P - e
Percobaan IV D_2
(Mencari Pc' dan Nilai C_v)
e
1,6
1,4
1,2
1
0,8
0,6
0,4
0,2
0
1
10
Pc' = 15
100
Log P


Grafik Hubungan Cv dan Log P
Cv
0,04
0,035
0,03
0,025
0,02
0,015
0,01
0,005
0
1
10
100
Log P

TABEL HASIL PERHITUNGAN NILAI t DENGAN DERAJAT KONSOLIDASI U (%)

Sampel I D_1

U (%)	Sc (cm)	T_v	C_v	H (cm)	H^2 (cm^2)	t (menit)
0,1	0,183	0,008	0,031	1,005	1,01	0,260652
0,2	0,366	0,031	0,031	1,005	1,01	1,010025
0,3	0,549	0,071	0,031	1,005	1,01	2,313283
0,4	0,732	0,126	0,031	1,005	1,01	4,105263
0,5	0,915	0,197	0,031	1,005	1,01	6,418546
0,6	1,098	0,287	0,031	1,005	1,01	9,350877
0,7	1,281	0,403	0,031	1,005	1,01	13,13033
0,8	1,464	0,567	0,031	1,005	1,01	18,47368
0,9	1,647	0,848	0,031	1,005	1,01	27,62907

Sampel II D_1

U (%)	Sc (cm)	T_v	C_v	H (cm)	H^2 (cm^2)	t (menit)
0,1	0,041	0,008	0,024	1,005	1,01	0,336675
0,2	0,082	0,031	0,024	1,005	1,01	1,304616
0,3	0,123	0,071	0,024	1,005	1,01	2,987991
0,4	0,164	0,126	0,024	1,005	1,01	5,302631
0,5	0,205	0,197	0,024	1,005	1,01	8,290622
0,6	0,246	0,287	0,024	1,005	1,01	12,07822
0,7	0,287	0,403	0,024	1,005	1,01	16,96
0,8	0,328	0,567	0,024	1,005	1,01	23,86184
0,9	0,369	0,848	0,024	1,005	1,01	35,68755

Sampel III D_1

U (%)	Sc (cm)	T_v	C_v	H (cm)	H^2 (cm^2)	t (menit)
0,1	0,175	0,008	0,014	1,005	1,010025	0,577157
0,2	0,35	0,031	0,014	1,005	1,010025	2,236484
0,3	0,525	0,071	0,014	1,005	1,010025	5,12227
0,4	0,7	0,126	0,014	1,005	1,010025	9,090225
0,5	0,875	0,197	0,014	1,005	1,010025	14,21249
0,6	1,05	0,287	0,014	1,005	1,010025	20,70551
0,7	1,225	0,403	0,014	1,005	1,010025	29,07429
0,8	1,4	0,567	0,014	1,005	1,010025	40,90601
0,9	1,575	0,848	0,014	1,005	1,010025	61,17866

Sampel IV D_1

U (%)	Sc (cm)	T_v	C_v	H (cm)	H^2 (cm^2)	t (menit)
0,1	0,149	0,008	0,016	1,005	1,010025	0,505013
0,2	0,298	0,031	0,016	1,005	1,010025	1,956923
0,3	0,447	0,071	0,016	1,005	1,010025	4,481986
0,4	0,596	0,126	0,016	1,005	1,010025	7,953947
0,5	0,745	0,197	0,016	1,005	1,010025	12,43593
0,6	0,894	0,287	0,016	1,005	1,010025	18,11732
0,7	1,043	0,403	0,016	1,005	1,010025	25,44
0,8	1,192	0,567	0,016	1,005	1,010025	35,79276
0,9	1,341	0,848	0,016	1,005	1,010025	53,53133

TABEL HASIL PERHITUNGAN NILAI t DENGAN DERAJAT KONSOLIDASI U (%)

Sampel I D_2

U (%)	Sc (cm)	T_v	C_v	H (cm)	H^2 (cm^2)	t (menit)
0,1	0,019	0,008	0,024	1,005	1,010025	0,336675
0,2	0,038	0,031	0,024	1,005	1,010025	1,304616
0,3	0,057	0,071	0,024	1,005	1,010025	2,987991
0,4	0,076	0,126	0,024	1,005	1,010025	5,302631
0,5	0,095	0,197	0,024	1,005	1,010025	8,290622
0,6	0,114	0,287	0,024	1,005	1,010025	12,07822
0,7	0,133	0,403	0,024	1,005	1,010025	16,96
0,8	0,152	0,567	0,024	1,005	1,010025	23,86184
0,9	0,171	0,848	0,024	1,005	1,010025	35,68755

Sampel II D_2

U (%)	Sc (cm)	T_v	C_v	H (cm)	H^2 (cm^2)	t (menit)
0,1	0,166	0,008	0,0115	1,005	1,010025	0,702626
0,2	0,332	0,031	0,0115	1,005	1,010025	2,722676
0,3	0,498	0,071	0,0115	1,005	1,010025	6,235807
0,4	0,664	0,126	0,0115	1,005	1,010025	11,06636
0,5	0,83	0,197	0,0115	1,005	1,010025	17,30217
0,6	0,996	0,287	0,0115	1,005	1,010025	25,20671
0,7	1,162	0,403	0,0115	1,005	1,010025	35,39479
0,8	1,328	0,567	0,0115	1,005	1,010025	49,79862
0,9	1,494	0,848	0,0115	1,005	1,010025	74,47837

Sampel III D_2

U (%)	Sc (cm)	T_v	C_v	H (cm)	H^2 (cm^2)	t (menit)
0,1	0,034	0,008	0,012	1,005	1,010025	0,67335
0,2	0,068	0,031	0,012	1,005	1,010025	2,609231
0,3	0,102	0,071	0,012	1,005	1,010025	5,975981
0,4	0,136	0,126	0,012	1,005	1,010025	10,60526
0,5	0,17	0,197	0,012	1,005	1,010025	16,58124
0,6	0,204	0,287	0,012	1,005	1,010025	24,15643
0,7	0,238	0,403	0,012	1,005	1,010025	33,92001
0,8	0,272	0,567	0,012	1,005	1,010025	47,72368
0,9	0,306	0,848	0,012	1,005	1,010025	71,3751

Sampel IV D_2

U (%)	Sc (cm)	T_v	C_v	H (cm)	H^2 (cm^2)	t (menit)
0,1	0,058	0,008	0,01	1,005	1,010025	0,80802
0,2	0,116	0,031	0,01	1,005	1,010025	3,131078
0,3	0,174	0,071	0,01	1,005	1,010025	7,171178
0,4	0,232	0,126	0,01	1,005	1,010025	12,72632
0,5	0,29	0,197	0,01	1,005	1,010025	19,89749
0,6	0,348	0,287	0,01	1,005	1,010025	28,98772
0,7	0,406	0,403	0,01	1,005	1,010025	40,70401
0,8	0,464	0,567	0,01	1,005	1,010025	57,26842
0,9	0,522	0,848	0,01	1,005	1,010025	85,65012

Tabel C_c Percobaan Skala Besar (D_1) Dengan Vertikal Drain

Perc. A	P_1	P_2	e_1	e_2	Cc	Pc' (kg/cm^2)
I	10	40	1,200	0,800	0,013	38,1
II	20	40	1,300	1,250	0,003	38,571
III	10	20	1,400	1,300	0,010	31,428
IV	20	40	1,450	1,250	0,010	11,9

Tabel C_c Percobaan Skala Besar (D_2) Tanpa Vertikal Drain

Perc.B	P_1	P_2	e_1	e_2	Cc	Pc' (kg/cm^2)
I	10	20	1,250	1,150	0,010	38,571
II	20	30	1,250	1,100	0,015	25
III	10	40	1,500	1,200	0,010	20,9
IV	20	40	0,900	0,600	0,015	11,6

Tabel C_r Percobaan Skala Besar (D_1) Dengan Vertikal Drain

Perc. A	P_1	P_2	e_1	e_2	Cr	Pc' (kg/cm^2)
I	20	30	0,475	0,45	0,003	38,1
II	20	40	1,15	1,1	0,002	38,571
III	10	20	0,85	0,825	0,003	31,428
IV	20	40	0,35	0,3	0,003	11,9

Tabel C_r Percobaan Skala Besar (D_2) Tanpa Vertikal Drain

Perc.B	P_1	P_2	e_1	e_2	Cr	Pc' (kg/cm^2)
I	10	20	0,95	0,9	0,005	38,571
II	20	30	1,25	0,7	0,055	25
III	10	40	0,85	0,8	0,002	20,9
IV	20	40	0,59	0,555	0,002	11,6

Tabel S_c Percobaan D_1 Dengan Vertikal Drain

Perc. D_1	P_0'	Δp	$P_0' + \Delta p$	Pc' (kg/cm^2)	C_c	C_r	e_0	$H/(1+e_0)$	Log (P_c'/P_0')	Log $(P_0'+\Delta p)/P_c'$	Sc
I	15,597	14,233	29,830	28,4	0,013	0,003	1,400	12,500	0,260	1,050	0,183
II	15,641	14,233	29,874	25,14	0,003	0,002	1,580	11,628	0,206	1,188	0,041
III	15,652	14,233	29,885	20,9	0,010	0,003	1,500	12,000	0,126	1,430	0,175
IV	15,622	14,233	29,855	22	0,010	0,003	1,800	10,714	0,149	1,357	0,149

Tabel S_c Percobaan D_2 Tanpa Vertikal Drain

Perc. D_2	P_0'	Δp	$P_0' + \Delta p$	Pc' (kg/cm^2)	C_c	C_r	e_0	$H/(1+e_0)$	Log (P_c'/P_0')	$(P_0'+\Delta p)/P_c'$	Sc
I	15,608	14,233	29,841	28,14	0,010	0,005	1,400	12,500	0,256	0,025	0,019
II	15,616	14,233	29,849	26,285	0,015	0,055	1,590	11,583	0,254	0,028	0,166
III	15,608	14,233	29,841	28	0,010	0,002	1,600	11,538	-0,017	0,299	0,034
IV	18,077	14,233	32,310	15	0,015	0,002	1,500	12,000	-0,081	0,333	0,058

Ket: D_1 = Percobaan dengan menggunakan Vertikal Drain

D_2 = Percobaan tanpa menggunakan Vertikal Drain

Tabel S_c Percobaan D_1 Dengan Vertikal Drain

Perc. D_1	P_0'	Δp	$P_0' + \Delta p$	Pc' (kg/cm^2)	C_c	C_r	e_0	$H/(1+e_0)$	Log (P_c'/P_0')	Log $(P_0'+\Delta p)/P_c'$	Sc
I	15,597	14,233	29,830	28,4	0,013	0,003	1,400	12,500	0,260	1,050	0,183
II	15,641	14,233	29,874	25,14	0,003	0,002	1,580	11,628	0,206	1,188	0,041
III	15,652	14,233	29,885	20,9	0,010	0,003	1,500	12,000	0,126	1,430	0,175
IV	15,622	14,233	29,855	22	0,010	0,003	1,800	10,714	0,149	1,357	0,149

Tabel S_c Percobaan D_2 Tanpa Vertikal Drain

Perc. D_2	P_0'	Δp	$P_0' + \Delta p$	Pc' (kg/cm^2)	C_c	C_r	e_0	$H/(1+e_0)$	Log (P_c'/P_0')	$(P_0'+\Delta p)/P_c'$	Sc
I	15,608	14,233	29,841	28,14	0,010	0,005	1,400	12,500	0,256	0,025	0,019
II	15,616	14,233	29,849	26,285	0,015	0,055	1,590	11,583	0,254	0,028	0,166
III	15,608	14,233	29,841	28	0,010	0,002	1,600	11,538	-0,017	0,299	0,034
IV	18,077	14,233	32,310	15	0,015	0,002	1,500	12,000	-0,081	0,333	0,058

Ket: D_1 = Percobaan dengan menggunakan Vertikal Drain

D_2 = Percobaan tanpa menggunakan Vertikal Drain