

LAMPIRAN

Lampiran 1. Data Hasil Uji Sifat Geoteknik Tanah

a. Berat Jenis

Kalibrasi Piknometer

No	Uraian	Satuan	1	2	3	4	5
1	Berat piknometer kosong (W_p)	g	29.38	29.38	29.38	29.38	29.38
2	Berat piknometer + air ($W_{pw,c}$)	g	79.12	79.12	79.12	79.12	79.12
3	Temperatur dalam piknometer (T)	°C	30.8	30.8	30.8	30.8	30.8
4	Berat volume air ($\gamma_{w,c}$)		48.54	48.54	48.54	48.54	48.54
5	Volume piknometer (V_p)	mL	49.97	49.97	49.97	49.97	49.97

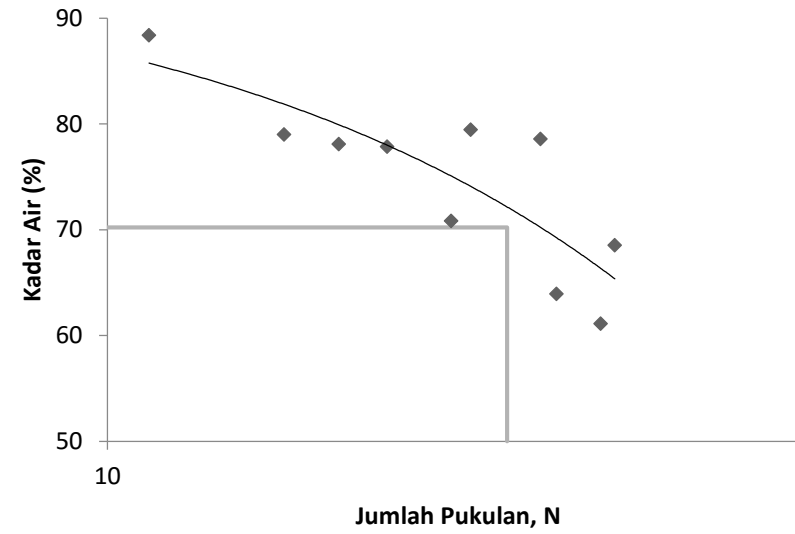
Penghitungan Berat Jenis

No	Uraian	Satuan	1	2	3
1	Berat piknometer kosong (W_p)	g	29.38	27.06	29.67
2	Berat piknometer + tanah kering (W_{ps})	g	39.29	36.06	39.67
3	Berat piknometer + tanah kering + air ($W_{pws,t}$)	g	85.08	82.3	81.01
4	Berat piknometer + air ($W_{pw,t}$)	g	79.12	75.88	74.7
5	Temperatur (T)	°C	30	29.2	27.2
6	Berat jenis ($G_{s,t}$)		2.51	2.80	2.70
7	Berat jenis pada $T=20^\circ\text{C}$ (G_s)		2.51	2.80	2.70
8	Rata-rata berat jenis			2.67	

b. Batas-batas konsistensi

Batas Cair

No	Uraian	Satuan	1	2	3	4	5					
1	Jumlah pukulan		31	32	28	27	23	22	19	17	15	11
2	Berat cawan kosong (w1)	g	9.84	9.32	9.37	9.84	9.25	9.32	9.25	9.32	9.87	9.16
3	Berat cawan + tanah basah (w2)	g	30.72	29.51	29.91	30.18	29.26	30.3	29.26	30.3	30.51	29.77
4	Berat cwan + tanah kering (w3)	g	22.8	21.3	21.9	21.23	20.4	21.6	20.5	21.1	21.4	20.1
5	Berat air, $w = w2 - w3$	g	7.92	8.21	8.01	8.95	8.86	8.7	8.76	9.2	9.11	9.67
6	Berat tanah kering, $Ws = w3 - w1$	g	12.96	11.98	12.53	11.39	11.15	12.28	11.25	11.78	11.53	10.94
7	Kadar air, $w = Ww / Ws$	%	61.1	68.5	63.9	78.6	79.5	70.8	77.9	78.1	79.0	88.4
8	Rata - rata kadar air	%	64.8		71.3		75.2		78.0		83.7	
9	Batas cair	%					74.6					
10	Flow Index						0.18128					



Gambar 1. Hubungan kadar air dan jumlah pukulan.

Batas Plastis

No	Uraian	a	b
1	Berat cawan timbang	9.26	10.25
2	Berat cawan + tanah basah	29.68	34.08
3	Berat cawan + tanah kering	24.5	28.45
4	Berat air	5.18	5.63
5	Berat tanah kering	15.24	18.2
6	Kadar air	34.0	30.9
7	Kadar air rata - rata	32.5	

Batas Plastis (PL) = 32,5%

Indeks Plastisitas (PI) = 54,7%

Batas Cair (LL) = 87,2%

Batas Susut

No	Uraian	Satuan	Percobaan ke-	
			1	2
1	Berat cawan susut, W_{sd}	g	10.66	10.15
2	Berat cawan susut + pasta tanah, W_{sdw}	g	46.58	45.72
3	Berat cawan susut + tanah kering, W_{sdd}	g	31.88	31.26
4	Berat tanah kering, $W_s = W_{sdd} - W_{sd}$	g	21.22	21.11
5	Kadar air tanah awal, w	%	69.27	68.50
6	Berat tanah kering + lilin, W_{sxa}	g	25.95	27.34
7	Berat tanah kering + lilin dalam air, W_{sxw}	g	10.24	9.53
8	Berat air yang didesak oleh tanah kering, W_{wsx}	g	15.71	17.81
9	Volume tanah kering + lilin, V_{dx}	cm ³	15.71	17.81
10	Berat lapisan lilin pada tanah kering, W_x	g	4.73	6.23
11	Volume lapisan lilin pada tanah kering, V_x	cm ³	5.50	7.24
12	Volume tanah kering, V_d	cm ³	10.21	10.57
13	Batas susut tanah, SL	%	15.03	15.66
14	Batas susut tanah rerata, SL rata-rata	%	15.35	

Faktor-faktor susut tanah :

Angka susut tanah (SR) = 2,08

Susut volumetrik (VS) = 1,12

Susut linier (LS) = 0,26

Kalibrasi cawan susut

Uraian	Satuan	a	b	c
Berat cawan susut + pelat kaca, W_2	g	16.17	16.99	16.38
Berat cawan susut + pelat kaca + air, W_1	g	38.64	38.14	38.81
Berat air, $W_w = W_1 - W_2$	g	22.47	21.15	22.43
Volume cawan susut, $V = (W_w/R_{ow})$	cm ³	22.47	21.15	22.43
Volume cawan susut rata-rata	cm ³		21.72	
Deviasi Volume cawan susut	cm ³		0.89	

Volume cawan susut terkalibrasi = 21,72

Kalibrasi rapat massa lilin

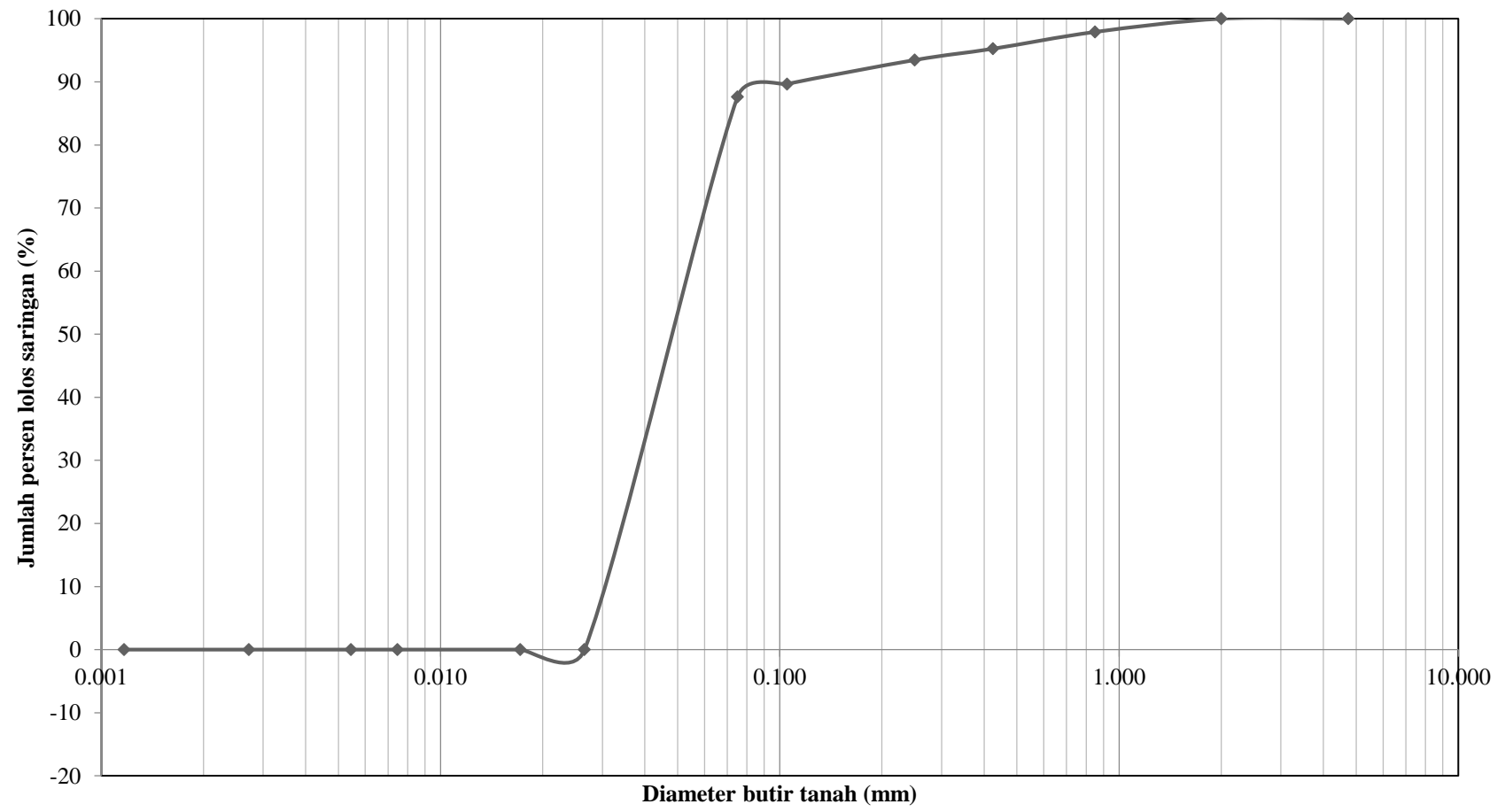
Uraian	Satuan	1	2	3
Diameter silinder lilin, d_{wp}	cm	4.74	4.75	4.68
Tinggi silinder lilin, h_{wp}	cm	1.27	1.18	1.23
Volume silinder	cm ³	22.41	20.91	21.16
Volume silinder lilin rerata, V_{wp}	cm ³		21.49	
Berat silinder lilin, W_{wp}	g		19.06	
Rapat massa lilin, $R_{Ox} = (W_{wp}/V_{wp})$	g/cm ³		0.89	

c. Distribusi ukuran partikel tanah

Uraian	Satuan	Hasil
Berat total contoh tanah basah	g	65
Berat total contoh tanah kering	g	65
Berat tanah berdiameter <0,075 mm	g	56.56
Berat tanah berdiameter >0,075 mm	g	8.45

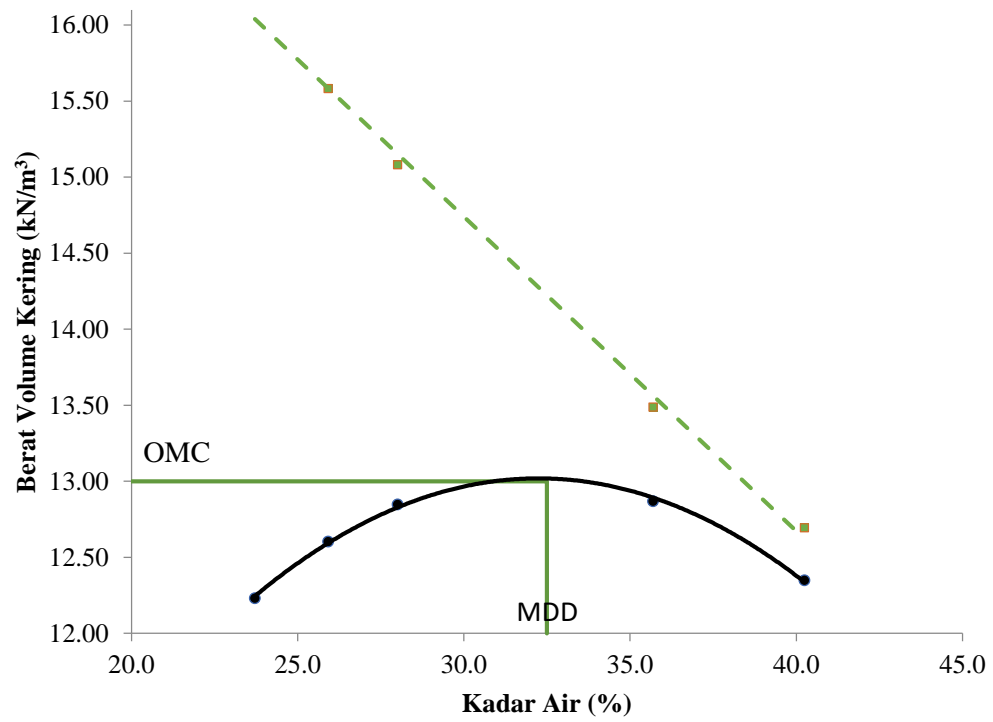
t (menit)	Larutan tanah R1	Larutan Reagent R2	Temperatur t (°C)	Skala Hidrometer Terkalibrasi Meniskus R ^I	Kedalaman L	Konstanta K	Diameter D (mm)	Skala Hidrometer Terkalibrasi R	Persen Berat P	Adjust Percent PA
2	34	2	28.6	35	9.28	0.01233	0.02656	35.75	54.8%	47.9%
5	31	2	28.6	32	9.70	0.01233	0.01717	32.75	50.2%	43.9%
30	22	2	28.5	23	10.95	0.01236	0.00746	23.68	36.3%	31.7%
60	17	2	28.5	18	11.64	0.01236	0.00544	18.68	28.6%	25.0%
250	8	1	28.5	9	12.89	0.01198	0.00272	10.68	16.4%	14.3%
1440	5	1	28.5	6	13.31	0.01216	0.00117	7.68	11.8%	10.3%

Nomor Saringan	Ukuran butir (mm)	Berat tertahan (g)	Persen berat tertahan (g)	Persen lolos saringan (%)
#4	4.740	0	0	100
#10	2.000	0	0	100
#20	0.850	1.36	2.09	97.9
#40	0.425	1.73	2.66	95.2
#60	0.250	1.16	1.78	93.5
#140	0.105	2.47	3.80	89.7
#200	0.075	1.34	2.06	87.6
Pan	< 0,075	0.10	0.15	87.4
Jumlah		8.16		



d. Pemadatan

No	Uraian	1	2	3	4	5										
1	W_1 (g)	1709.00	1515.00	1947.00	3535.00	4180.00										
2	W_2 (g)	3154.00	3027.00	3535.00	5213.00	5832.00										
3	W_m (g)	1445.00	1512.00	1588.00	1678.00	1652.00										
4	D (cm)	10.05	10.03	10.00	10.15	10.07										
5	h (cm)	11.81	11.83	12.06	11.65	11.75										
6	V (cm ³)	936.83	934.68	947.16	942.62	935.78										
7	$Y = K (W_m/V)$	15.13	15.87	16.45	17.46	17.32										
8	Pemeriksaan W															
a	No Cawan	a	t	b	a	t	b	a	t	b	a	t	b	a	t	b
b	w_o	9.22	9.21	9.40	9.41	9.95	10.04	9.35	9.35	9.30	9.33	9.30	9.32	12.27	10.07	9.37
c	w_b	29.22	29.21	29.40	29.41	29.95	30.04	29.35	29.35	29.30	29.33	29.30	29.32	32.27	30.07	29.37
d	w_d	25.50	25.30	25.53	25.29	25.91	25.85	24.98	24.99	24.90	24.30	24.40	23.50	26.57	24.31	23.61
e	$w_w = w_b - w_d$	3.72	3.91	3.87	4.12	4.04	4.19	4.37	4.36	4.40	5.03	4.90	5.82	5.70	5.76	5.76
f	$w_s = w_d - w_o$	16.28	16.09	16.13	15.88	15.96	15.81	15.63	15.64	15.60	14.97	15.10	14.18	14.30	14.24	14.24
g	w (%)	22.9	24.3	24.0	25.9	25.3	26.5	28.0	27.9	28.2	33.6	32.5	41.0	39.9	40.4	40.4
h	w rata-rata (%)	23.7				25.9				28.0			35.7			40.25
9	Y (kN/m ³)	12.23				12.60				12.85			12.87			12.35
10	Berat jenis	2.70				2.70				2.70			2.70			2.70
11	Y_{zav} (kN/m ³)	16.11				15.58				15.08			13.49			12.69



Gambar 2. Hubungan berat volume kering dan kadar air.

Lampiran 2. Data Hasil Uji Tekan Bebas

a. Tanah Asli

Benda uji 1

Diameter	5.27	cm	Luas	21.81	cm ²
Tinggi	9.9	cm	Volume	215.95	cm ³
Berat	333.8	g	Berat vol.	1.55	g/cm ³
Kalibrasi proving ring :			1.581	kg/div	
Hasil Uji Kuat Tekan Bebas:			q_u	158.76	kPa

Deformasi		Regangan $\varepsilon = \frac{\Delta H}{H_0}$ (%)	Luas terkoreksi A (cm ²)	Beban Aksial		Tegangan P/A (kPa)
Arloji ukur (a)	$\Delta H = a$ $\times 10^{-3}$ (cm)			Arloji Ukur	Beban P (kg)	
0	0	0.00	21.81	0	0.00	0.00
30	0.03	0.30	21.85	1	1.58	7.10
60	0.06	0.61	21.89	2	3.16	14.17
90	0.09	0.91	21.93	3	4.74	21.21
120	0.12	1.21	21.97	3.5	5.53	24.71
150	0.15	1.52	22.01	4.5	7.11	31.71
180	0.18	1.82	22.05	5	7.91	35.16
210	0.21	2.12	22.09	6	9.49	42.12
240	0.24	2.42	22.13	6.3	9.96	44.14
270	0.27	2.73	22.18	7	11.07	48.96
300	0.3	3.03	22.22	8	12.65	55.85
330	0.33	3.33	22.26	9	14.23	62.71
360	0.36	3.64	22.30	9.5	15.02	66.07
390	0.39	3.94	22.34	10.2	16.13	70.81
420	0.42	4.24	22.38	11.5	18.18	79.69
450	0.45	4.55	22.42	13	20.55	89.91
480	0.48	4.85	22.47	14	22.13	96.65
510	0.51	5.15	22.51	15	23.72	103.36
540	0.54	5.45	22.55	15.8	24.98	108.67
570	0.57	5.76	22.59	16.5	26.09	113.27
600	0.6	6.06	22.64	17	26.88	116.48
630	0.63	6.36	22.68	18	28.46	123.10
660	0.66	6.67	22.72	18.5	29.25	126.28
690	0.69	6.97	22.76	19	30.04	129.45
720	0.72	7.27	22.81	19.8	31.30	134.64
750	0.75	7.58	22.85	20	31.62	135.74

780	0.78	7.88	22.90	21	33.20	142.26
810	0.81	8.18	22.94	21.5	33.99	145.37
840	0.84	8.48	22.98	22	34.78	148.46
870	0.87	8.79	23.03	22.2	35.10	149.53
900	0.9	9.09	23.07	22.5	35.57	151.26
930	0.93	9.39	23.12	23	36.36	154.32
960	0.96	9.70	23.16	23.5	37.15	157.37
990	0.99	10.00	23.21	23.5	37.15	157.07
1020	1.02	10.30	23.25	23.8	37.63	158.76
1050	1.05	10.61	23.30	23.8	37.63	158.46
1080	1.08	10.91	23.34	23.8	37.63	158.15
1110	1.11	11.21	23.39	23.8	37.63	157.84
1140	1.14	11.52	23.43	23.8	37.63	157.53
1170	1.17	11.82	23.48	23.5	37.15	155.24
1200	1.2	12.12	23.52	23	36.36	151.64
1230	1.23	12.42	23.57	23	36.36	151.35
1260	1.26	12.73	23.62	22.2	35.10	145.80
1290	1.29	13.03	23.66	22	34.78	144.20
1320	1.32	13.33	23.71	21.5	33.99	140.64
1350	1.35	13.64	23.76	21	33.20	137.10
1380	1.38	13.94	23.80	20.5	32.41	133.57
1410	1.41	14.24	23.85	20	31.62	130.05
1440	1.44	14.55	23.90	19.5	30.83	126.55
1470	1.47	14.85	23.95	19	30.04	123.06
1500	1.5	15.15	23.99	18.5	29.25	119.58
1530	1.53	15.45	24.04	18	28.46	116.12
1560	1.56	15.76	24.09	17.5	27.67	112.67
1590	1.59	16.06	24.14	17	26.88	109.23
1620	1.62	16.36	24.19	16.5	26.09	105.80

Benda uji 2

Data Benda Uji Sebelum Pengujian :

Diameter	5.27	cm	Luas	21.84	cm ²
Tinggi	9.31	cm	Volume	203.33	cm ³
Berat	325.31	g	Berat vol.	1.60	g/cm ³
Kalibrasi proving ring :	1.581		kg/div		
Hasil Uji Kuat Tekan Bebas:	q _u		149.13	kPa	

deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
arloji ukur (a)	$\Delta H = a$ $\times 10^{(-3)}$	regangan $\varepsilon =$ $\Delta H/H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0.00	21.84	0	0.00	0.00
30	0.03	0.32	21.84	2	3.16	14.20
60	0.06	0.64	21.84	3	4.74	21.30
90	0.09	0.97	21.84	4	6.32	28.41
120	0.12	1.29	21.84	5	7.91	35.51
150	0.15	1.61	21.84	6.5	10.28	46.16
180	0.18	1.93	21.84	7.5	11.86	53.26
210	0.21	2.26	21.84	9	14.23	63.91
240	0.24	2.58	21.84	10.2	16.13	72.43
270	0.27	2.90	21.84	12	18.97	85.22
300	0.3	3.22	21.84	13	20.55	92.32
330	0.33	3.54	21.84	14	22.13	99.42
360	0.36	3.87	21.84	15.3	24.19	108.65
390	0.39	4.19	21.84	16.5	26.09	117.17
420	0.42	4.51	21.84	17.5	27.67	124.27
450	0.45	4.83	21.84	18	28.46	127.82
480	0.48	5.16	21.84	19	30.04	134.93
510	0.51	5.48	21.84	19.5	30.83	138.48
540	0.54	5.80	21.84	20	31.62	142.03
570	0.57	6.12	21.84	20.7	32.73	147.00
600	0.6	6.44	21.84	20.8	32.88	147.71
630	0.63	6.77	21.84	21	33.20	149.13
660	0.66	7.09	21.84	21	33.20	149.13
690	0.69	7.41	21.84	21	33.20	149.13
720	0.72	7.73	21.84	20.9	33.04	148.42
750	0.75	8.06	21.84	20.5	32.41	145.58
780	0.78	8.38	21.84	19	30.04	134.93
810	0.81	8.70	21.84	18	28.46	127.82
840	0.84	9.02	21.84	17	26.88	120.72
870	0.87	9.34	21.84	16	25.30	113.62
900	0.9	9.67	21.84	15	23.72	106.52
930	0.93	9.99	21.84	14.5	22.92	102.97
960	0.96	10.31	21.84	14	22.13	99.42
990	0.99	10.63	21.84	13.6	21.50	96.58

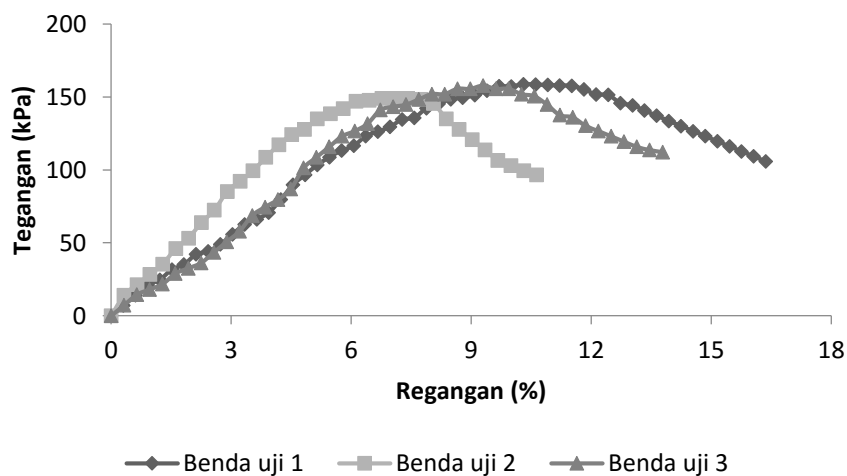
Benda uji 3

Data Benda Uji Sebelum Pengujian :

Diameter	5.22	cm	Luas	21.43	cm ²
Tinggi	9.36	cm	Volume	200.57	cm ³
Berat	329.01	g	Berat vol.	1.64	g/cm ³
Kalibrasi proving ring :	1.581	kg/div			
Hasil Uji Kuat Tekan Bebas:	q _u	157.79	kPa		

deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\varepsilon = \Delta H/H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0.00	21.43	0	0.00	0.00
30	0.03	0.32	21.43	1	1.58	7.24
60	0.06	0.64	21.43	2	3.16	14.48
90	0.09	0.96	21.43	2.5	3.95	18.09
120	0.12	1.28	21.43	3	4.74	21.71
150	0.15	1.60	21.43	4	6.32	28.95
180	0.18	1.92	21.43	4.5	7.11	32.57
210	0.21	2.24	21.43	5	7.91	36.19
240	0.24	2.56	21.43	6	9.49	43.43
270	0.27	2.88	21.43	7	11.07	50.67
300	0.3	3.21	21.43	8	12.65	57.90
330	0.33	3.53	21.43	9.5	15.02	68.76
360	0.36	3.85	21.43	10.3	16.28	74.55
390	0.39	4.17	21.43	11	17.39	79.62
420	0.42	4.49	21.43	12	18.97	86.86
450	0.45	4.81	21.43	14	22.13	101.33
480	0.48	5.13	21.43	15	23.72	108.57
510	0.51	5.45	21.43	16	25.30	115.81
540	0.54	5.77	21.43	17	26.88	123.05
570	0.57	6.09	21.43	17.5	27.67	126.66
600	0.6	6.41	21.43	18.2	28.77	131.73
630	0.63	6.73	21.43	19.5	30.83	141.14
660	0.66	7.05	21.43	19.8	31.30	143.31
690	0.69	7.37	21.43	20	31.62	144.76
720	0.72	7.69	21.43	20.5	32.41	148.38
750	0.75	8.01	21.43	21	33.20	152.00
780	0.78	8.33	21.43	21	33.20	152.00
810	0.81	8.65	21.43	21.5	33.99	155.62

840	0.84	8.97	21.43	21.5	33.99	155.62
870	0.87	9.29	21.43	21.8	34.47	157.79
900	0.9	9.62	21.43	21.5	33.99	155.62
930	0.93	9.94	21.43	21.5	33.99	155.62
960	0.96	10.26	21.43	21	33.20	152.00
990	0.99	10.58	21.43	20.8	32.88	150.55
1020	1.02	10.90	21.43	20	31.62	144.76
1050	1.05	11.22	21.43	19	30.04	137.52
1080	1.08	11.54	21.43	18.8	29.72	136.07
1110	1.11	11.86	21.43	18	28.46	130.28
1140	1.14	12.18	21.43	17.5	27.67	126.66
1170	1.17	12.50	21.43	17	26.88	123.05
1200	1.2	12.82	21.43	16.5	26.09	119.43
1230	1.23	13.14	21.43	16	25.30	115.81
1260	1.26	13.46	21.43	15.7	24.82	113.64
1290	1.29	13.78	21.43	15.5	24.51	112.19



Gambar 3. Hubungan Tegangan dan regangan.

b. Non Siklus

Data Benda Uji Sebelum Pengujian :

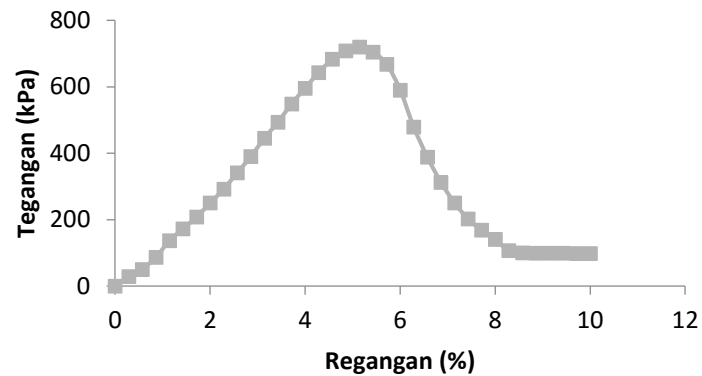
Diameter	5.2 cm	Luas	21.24 cm ²
Tinggi	10.5 cm	Volume	222.99 cm ³
Berat	335.92 g	Berat vol.	1.51 g/cm ³

Kalibrasi proving ring : 1.58 kg/div

Hasil Uji Kuat Tekan Bebas:

q_u	720.5 kPa	e_f	5.1 %
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Deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
arloji ukur (a)	$\Delta H = a$ $\times 10^{(-3)}$	regangan $\varepsilon =$ $\Delta H/H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0.00	0.00	21.24	0	0.00	0.00
30	0.03	0.29	21.30	4	6.32	29.13
60	0.06	0.57	21.36	7	11.07	50.83
90	0.09	0.86	21.42	12	18.97	86.89
120	0.12	1.14	21.48	19	30.04	137.17
150	0.15	1.43	21.54	24	37.94	172.77
180	0.18	1.71	21.61	29	45.85	208.16
210	0.21	2.00	21.67	35	55.34	250.49
240	0.24	2.29	21.73	41	64.82	292.58
270	0.27	2.57	21.80	48	75.89	341.53
300	0.30	2.86	21.86	55	86.96	390.19
330	0.33	3.14	21.93	63	99.60	445.63
360	0.36	3.43	21.99	70	110.67	493.69
390	0.39	3.71	22.06	78	123.32	548.48
420	0.42	4.00	22.12	85	134.39	595.93
450	0.45	4.29	22.19	92	145.45	643.09
480	0.48	4.57	22.25	98	154.94	682.98
510	0.51	4.86	22.32	102	161.26	708.73
540	0.54	5.14	22.39	104	164.42	720.46
570	0.57	5.43	22.46	102	161.26	704.47
600	0.60	5.71	22.52	97	153.36	667.92
630	0.63	6.00	22.59	86	135.97	590.38
660	0.66	6.29	22.66	70	110.67	479.08
690	0.69	6.57	22.73	57	90.12	388.92
720	0.72	6.86	22.80	46	72.73	312.90
750	0.75	7.14	22.87	37	58.50	250.91
780	0.78	7.43	22.94	30	47.43	202.82
810	0.81	7.71	23.01	25	39.53	168.49
840	0.84	8.00	23.08	21	33.20	141.09
870	0.87	8.29	23.16	16	25.30	107.17
900	0.90	8.57	23.23	15	23.72	100.16
930	0.93	8.86	23.30	15	23.72	99.84
960	0.96	9.14	23.37	15	23.72	99.53
990	0.99	9.43	23.45	15	23.72	99.22
1020	1.02	9.71	23.52	15	23.72	98.90
1050	1.05	10.00	23.60	15	23.72	98.59



Gambar 4. Hubungan tegangan dan regangan.

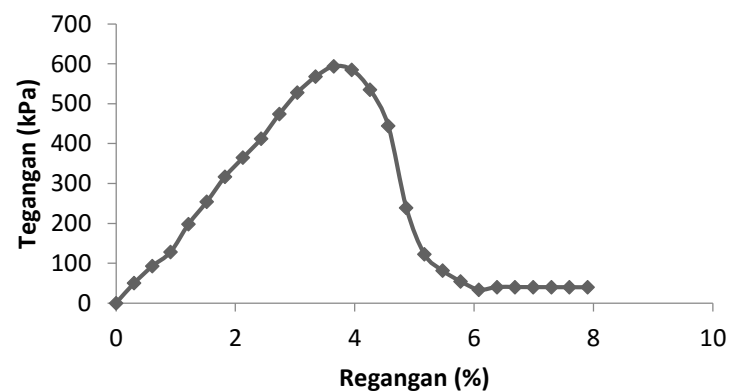
c. Siklus Kesatu

Data Benda Uji Sebelum Pengujian :

Diameter	5.25 cm	Luas	21.65 cm ²
Tinggi	9.87 cm	Volume	213.66 cm ³
Berat	338.56 g	Berat vol.	1.58 g/cm ³
Kalibrasi proving ring :	1.581 kg/div		
Hasil Uji Kuat Tekan Bebas:			
q_u	593.68 kPa	e_f	3.6 %

Deformasi		Regangan $\varepsilon = \frac{\Delta H}{H_0}$ (%)	Luas terkoreksi A (cm ²)	Beban Aksial		Tegangan P/A (kPa)
Arloji ukur (a)	$\frac{\Delta H}{H_0} = a$ $\times 10^{-3}$ (cm)			Arloji Ukur	Beban P (kg)	
0	0.00	0.00	21.65	0	0.00	0.00
30	0.03	0.30	21.71	7	11.07	50.00
60	0.06	0.61	21.78	13	20.55	92.57
90	0.09	0.91	21.85	18	28.46	127.79
120	0.12	1.22	21.91	28	44.27	198.17
150	0.15	1.52	21.98	36	56.92	254.01
180	0.18	1.82	22.05	45	71.15	316.53
210	0.21	2.13	22.12	52	82.21	364.63
240	0.24	2.43	22.19	59	93.28	412.43
270	0.27	2.74	22.26	68	107.51	473.87
300	0.30	3.04	22.33	76	120.16	527.96

330	0.33	3.34	22.40	82	129.64	567.86
360	0.36	3.65	22.47	86	135.97	593.68
390	0.39	3.95	22.54	85	134.39	584.93
420	0.42	4.26	22.61	78	123.32	535.06
450	0.45	4.56	22.68	65	102.77	444.47
480	0.48	4.86	22.75	35	55.34	238.57
510	0.51	5.17	22.83	18	28.46	122.30
540	0.54	5.47	22.90	12	18.97	81.27
570	0.57	5.78	22.97	8	12.65	54.01
600	0.60	6.08	23.05	5	7.91	33.65
630	0.63	6.38	23.12	6	9.49	40.24
660	0.66	6.69	23.20	6	9.49	40.11
690	0.69	6.99	23.27	6	9.49	39.98
720	0.72	7.29	23.35	6	9.49	39.85
750	0.75	7.60	23.43	6	9.49	39.72
780	0.78	7.90	23.51	6	9.49	39.59



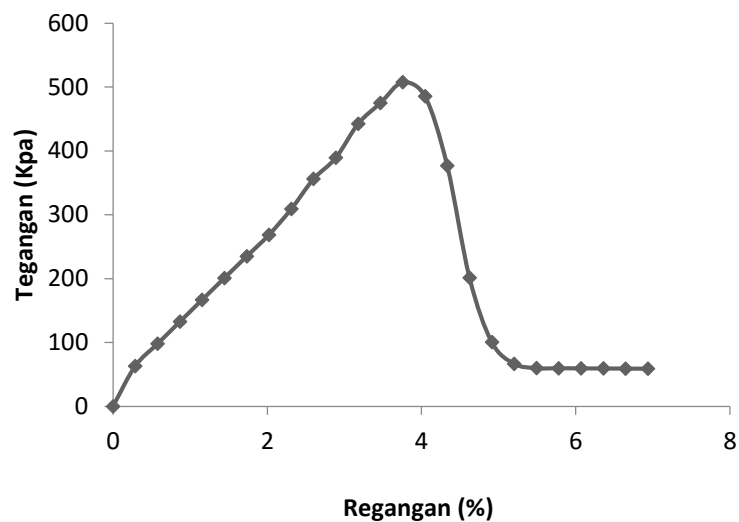
Gambar 5. Hubungan tegangan dan regangan.

d. Siklus Kedua

Data Benda Uji Sebelum Pengujian :

Diameter	5.3 cm	Luas	22.06 cm ²
Tinggi	10.38 cm	Volume	229.00 cm ³
Berat	348.18 g	Berat vol.	1.52 g/cm ³
Kalibrasi proving ring :	1.581	kg/div	
Hasil Uji Kuat Tekan Bebas:			
q_u	507.44 kPa	e_f	3.8 %

Deformasi		Regangan $\epsilon = \frac{\Delta H}{H_0}$ (%)	Luas terkoreksi A (cm ²)	Beban Aksial		Tegangan P/A (kPa)
Arloji ukur (a)	$\Delta H = a$ $\times 10^{-3}$ (cm)			Arloji Ukur	Beban P (kg)	
0	0	0.00	22.06	0	0.00	0.00
30	0.03	0.29	22.13	9	14.23	63.09
60	0.06	0.58	22.19	14	22.13	97.85
90	0.09	0.87	22.25	19	30.04	132.41
120	0.12	1.16	22.32	24	37.94	166.77
150	0.15	1.45	22.39	29	45.85	200.93
180	0.18	1.73	22.45	34	53.75	234.88
210	0.21	2.02	22.52	39	61.66	268.63
240	0.24	2.31	22.58	45	71.15	309.04
270	0.27	2.60	22.65	52	82.21	356.05
300	0.3	2.89	22.72	57	90.12	389.13
330	0.33	3.18	22.79	65	102.77	442.43
360	0.36	3.47	22.85	70	110.67	475.04
390	0.39	3.76	22.92	75	118.58	507.44
420	0.42	4.05	22.99	72	113.83	485.68
450	0.45	4.34	23.06	56	88.54	376.62
480	0.48	4.62	23.13	30	47.43	201.15
510	0.51	4.91	23.20	15	23.72	100.27
540	0.54	5.20	23.27	10	15.81	66.64
570	0.57	5.49	23.34	9	14.23	59.80
600	0.6	5.78	23.42	9	14.23	59.61
630	0.63	6.07	23.49	9	14.23	59.43
660	0.66	6.36	23.56	9	14.23	59.25
690	0.69	6.65	23.63	9	14.23	59.06
720	0.72	6.94	23.71	9	14.23	58.88



Gambar 6. Hubungan tegangan dan regangan.

e. Siklus Ketiga

Data Benda Uji Sebelum Pengujian :

Diameter	5.3	cm	Luas	22.06	cm ²
Tinggi	11.2	cm	Volume	247.09	cm ³
Berat	365.75	g	Berat vol.	1.48	g/cm ³

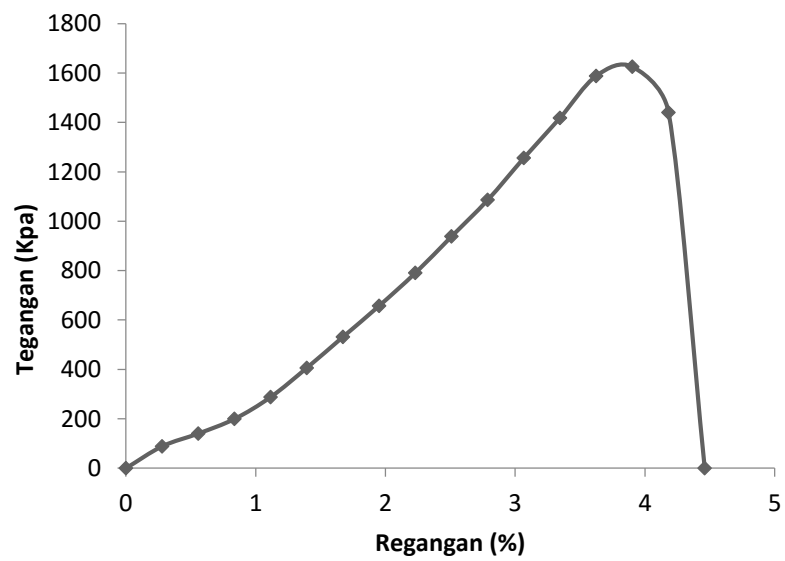
Kalibrasi proving ring : 1.581 kg/div

Hasil Uji Kuat Tekan Bebas:

q_u 205.61 kPa e_f 2.5 %

Deformasi		Regangan $\epsilon = \frac{\Delta H}{H_0}$ (%)	Luas terkoreksi A (cm ²)	Beban Aksial		Tegangan P/A (kPa)
Arloji ukur (a)	$\Delta H = a$ $\times 10^{-3}$ (cm)			Arloji Ukur	Beban P (kg)	
0	0.00	0.00	22.06	0	0.00	0.00
30	0.03	0.28	22.12	4	6.32	28.04
60	0.06	0.56	22.19	7	11.07	48.94
90	0.09	0.84	22.25	10	15.81	69.71
120	0.12	1.12	22.31	15	23.72	104.27
150	0.15	1.39	22.37	19	30.04	131.71
180	0.18	1.67	22.44	22	34.78	152.07
210	0.21	1.95	22.50	26	41.11	179.21
240	0.24	2.23	22.57	29	45.85	199.32
270	0.27	2.51	22.63	30	47.43	205.61

300	0.30	2.79	22.69	30	47.43	205.02
330	0.33	3.07	22.76	25	39.53	170.36
360	0.36	3.35	22.83	20	31.62	135.90
390	0.39	3.62	22.89	11	17.39	74.53
420	0.42	3.90	22.96	9	14.23	60.80
450	0.45	4.18	23.02	5	7.91	33.68
480	0.48	4.46	23.09	5	7.91	33.58
510	0.51	4.74	23.16	3	4.74	20.09
540	0.54	5.02	23.23	2	3.16	13.35
570	0.57	5.30	23.30	0	0.00	0.00



Gambar 7. Hubungan tegangan dan regangan.

Lampiran 3. Dokumentasi Benda Uji

a. Tanah Asli



Gambar 8. Benda uji 1 setelah pengujian. Gambar 9. Benda uji 2 setelah pengujian.



Gambar 10. Benda uji 3 setelah pengujian.

b. Non Siklus



Gambar 11. Setelah pengujian.

c. Siklus Kesatu

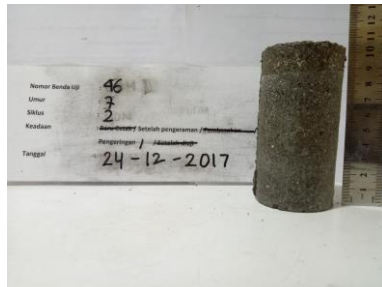


Gambar 12. Setelah siklus pertama.

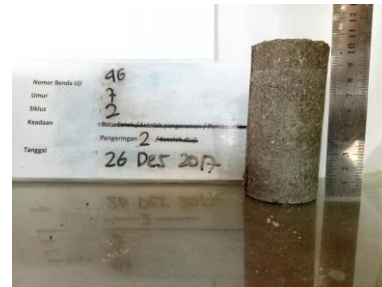


Gambar 13. Setelah pengujian.

d. Siklus Kedua



Gambar 14. Setelah siklus pertama.



Gambar 15. Setelah siklus kedua.



Gambar 16. Setelah pengujian.

e. Siklus Ketiga



Gambar 17. Setelah siklus pertama.



Gambar 18. Setelah siklus kedua.



Gambar 19. Setelah siklus ketiga.



Gambar 20. Setelah pengujian.