

LAMPIRAN B
DATA HASIL UJI TEKAN BEBAS

1. Tanah Asli

Data Benda Uji Sebelum Pengujian :

Diameter 5,11 cm
Tinggi 10,02 cm
Berat 320,22 g

Benda Uji 1

Luas 20,5084 cm²
Volume 205,494 cm³
Berat vol. g/cm³
Kalibrasi proving ring : 0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

q_u 55,97231 kPa

ϵ_f %

Waktu (detik)	Deformasi		Regangan $\epsilon = \Delta H/H_0$ (%)	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	0,0000	20,508395	0	0,0000	0
30	30	0,03	0,2994	20,569982	4	1,9300	9,2043
60	60	0,06	0,5988	20,63194	8	3,8600	18,3534
90	90	0,09	0,8982	20,694272	12	5,7900	27,4472
120	120	0,12	1,1976	20,756982	15	7,2375	34,2053
150	150	0,15	1,4970	20,820073	18	8,6850	40,9220
180	180	0,18	1,7964	20,883549	20	9,6500	45,3307
210	210	0,21	2,0958	20,947413	22,5	10,8563	50,8415
240	240	0,24	2,3952	21,011669	23,5	11,3388	52,9387
270	270	0,27	2,6946	21,07632	24	11,5800	53,8993
300	300	0,3	2,9940	21,141371	25	12,0625	55,9723
330	330	0,33	3,2934	21,206824	24	11,5800	53,5676
360	360	0,36	3,5928	21,272683	23	11,0975	51,1767
390	390	0,39	3,8922	21,338953	21	10,1325	46,5814
420	420	0,42	4,1916	21,405638	18	8,6850	39,8025
450	450	0,45	4,4910	21,47274	15	7,2375	33,0651
480	480	0,48	4,7904	21,540264	12	5,7900	26,3692

Data Benda Uji Sebelum Pengujian :

Diameter 5,13 cm
Tinggi 10,05 cm
Berat 323,44 g

Benda Uji 2

Luas 20,669245 cm²
Volume 207,72591 cm³
Berat vol. g/cm³
Kalibrasi proving ring : 0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

q_u 51,25572 kPa

ε_f %

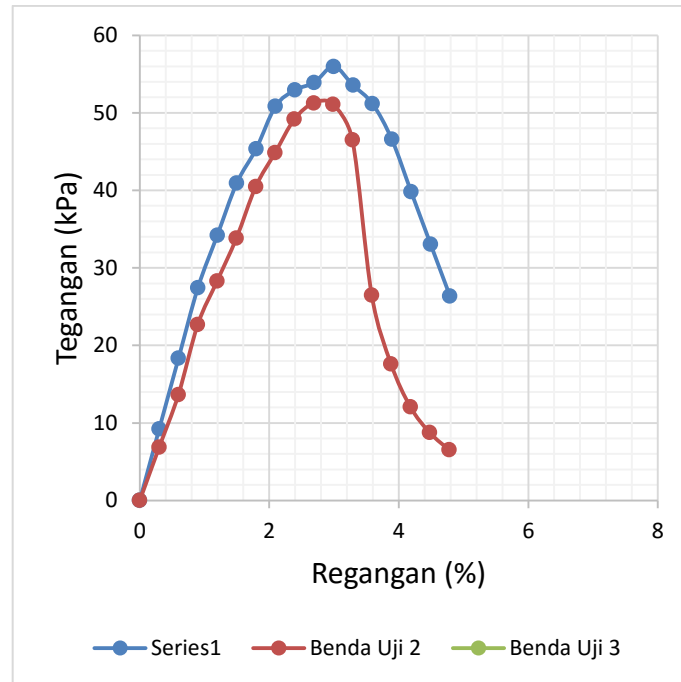
Waktu (detik)	Deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\varepsilon = \Delta H/H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,669245	0	0,0000	0
30	30	0,03	0,2985	20,731129	3	1,4475	6,8496
60	60	0,06	0,5970	20,793385	6	2,8950	13,6582
90	90	0,09	0,8955	20,856015	10	4,8250	22,6953
120	120	0,12	1,1940	20,919024	12,5	6,0313	28,2836
150	150	0,15	1,4925	20,982415	15	7,2375	33,8378
180	180	0,18	1,7910	21,046192	18	8,6850	40,4823
210	210	0,21	2,0896	21,110357	20	9,6500	44,8436
240	240	0,24	2,3881	21,174915	22	10,6150	49,1776
270	270	0,27	2,6866	21,239868	23	11,0975	51,2557
300	300	0,3	2,9851	21,305222	23	11,0975	51,0985
330	330	0,33	3,2836	21,370979	21	10,1325	46,5116
360	360	0,36	3,5821	21,437143	12	5,7900	26,4960
390	390	0,39	3,8806	21,503718	8	3,8600	17,6093
420	420	0,42	4,1791	21,570707	5,5	2,6538	12,0688
450	450	0,45	4,4776	21,638116	4	1,9300	8,7500
480	480	0,48	4,7761	21,705947	3	1,4475	6,5420

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,13	5,11
Tinggi, H_0 (cm)	10,05	10,02
Luas penampang, A (cm ²)	20,67	20,50
Volume benda uji, V_1 (cm ³)	207,69	205,46
Berat tanah, W_1 (g)	323,44	320,22
Berat jenis, G_s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W_1 (g)	9,22	9,2	9,09	9,12
Berat cawan + tanah, W_2 (g)	29,54	29,34	29,18	29,47
Berat cawan + tanah kering, W_3 (g)	24,97	24,73	24,65	24,85
Kadar air, W (%)	29,0	29,7	29,1	29,4
Kadar air rata-rata, W_f (%)	29,4		29,2	
Berat tanah kering, W_d (g)	250,05		247,77	



Gambar 1. Kurva Tegangan-Regangan

2. Benda uji dengan umur pemeraman 0 hari (langsung diuji)

a. Kadar semen 3%

Data Benda Uji Sebelum Pengujian :

Diameter 5,14 Cm

Tinggi 10,2 Cm

Berat 319,25 G

Benda Uji 1

Luas 20,74991 cm²

Volume 211,649 cm³

Berat vol. 1,5084 g/cm³

Kalibrasi proving ring :

0,4825 kg/di

Hasil Uji Kuat Tekan Bebas:

q_u 73,727492 kPa

ϵ_f %

Waktu (detik)	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	0,0000	20,749905	0	0,0000	0
30	30	0,03	0,2941	20,811114	2	0,9650	4,5488
60	60	0,06	0,5882	20,872686	6	2,8950	13,6063
90	90	0,09	0,8824	20,934623	13	6,2725	29,3930
120	120	0,12	1,1765	20,996928	20	9,6500	45,0859
150	150	0,15	1,4706	21,059605	26	12,5450	58,4372
180	180	0,18	1,7647	21,122658	31	14,9575	69,4671
210	210	0,21	2,0588	21,18609	33	15,9225	73,7275

240	240	0,24	2,3529	21,249903	27	13,0275	60,1413
270	270	0,27	2,6471	21,314102	20	9,6500	44,4150
300	300	0,3	2,9412	21,37869	13	6,2725	28,7825

Data Benda Uji Sebelum Pengujian :

Diameter 5,16 cm
Tinggi 10,21 cm
Berat 316,58 g

Benda Uji 2

Luas 20,9117 cm²
Volume 213,5084 cm³
Berat vol. 1,4828 g/cm³

Kalibrasi proving ring :

0,4825 kg/di

Hasil Uji Kuat Tekan Bebas:

q_u 84,243208 kPa

ϵ_f %

Waktu (detik)	Deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\epsilon = \Delta H/H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,911697	0	0,0000	0
30	30	0,03	0,2938	20,973323	3	1,4475	6,7705
60	60	0,06	0,5877	21,035313	7	3,3775	15,7513
90	90	0,09	0,8815	21,097671	13	6,2725	29,1659
120	120	0,12	1,1753	21,160399	19	9,1675	42,5007
150	150	0,15	1,4691	21,223502	26	12,5450	57,9859
180	180	0,18	1,7630	21,286982	33	15,9225	73,3781
210	210	0,21	2,0568	21,350843	38	18,3350	84,2432
240	240	0,24	2,3506	21,415088	34	16,4050	75,1494
270	270	0,27	2,6445	21,479721	24	11,5800	52,8870
300	300	0,3	2,9383	21,544746	16	7,7200	35,1516
330	330	0,33	3,2321	21,610165	9	4,3425	19,7129

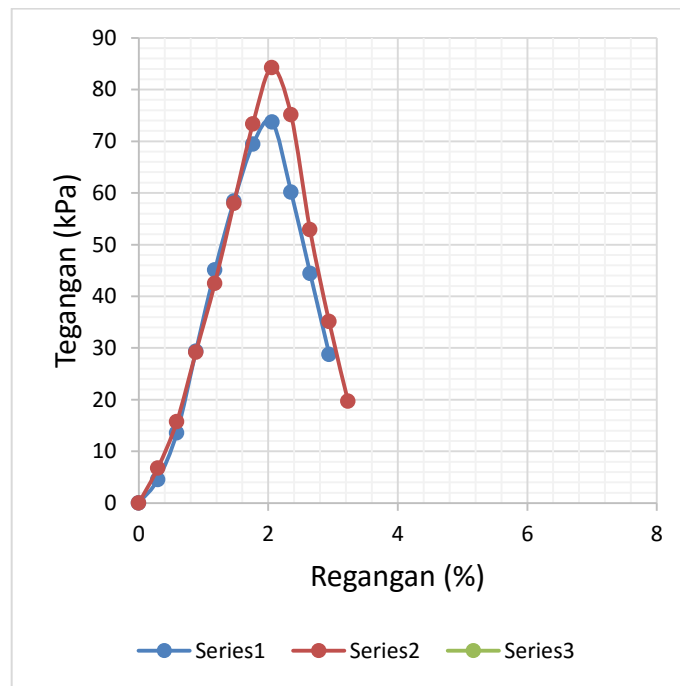
Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,14	5,16
Tinggi, H_0 (cm)	10,2	10,21
Luas penampang, A (cm ²)	20,75	20,91
Volume benda uji, V_1 (cm ³)	211,61	213,47
Berat tanah, W_1 (g)	318,68	316
Berat jenis, G_s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W_1 (g)	9,08	9,69	9,37	8,92

Berat cawan + tanah, W_2 (g)	29,11	29,69	29,46	28,97
Berat cawan + tanah kering, W_3 (g)	24,92	25,37	25,32	24,66
Kadar air, W (%)	26,5	27,6	26,0	27,4
Kadar air rata-rata, W_f (%)	27,0		26,7	
Berat tanah kering, W_d (g)	250,93		249,47	



Gambar 2. Kurva Tegangan-Regangan

b. Kadar semen 5%

Data Benda Uji Sebelum Pengujian :

Diameter 5,1 cm
Tinggi 10,25 cm
Berat 320,49 g

Benda Uji 1

Luas 20,42821 cm²
Volume 209,3891 cm³
Berat vol. 1,5306 g/cm³

Kalibrasi proving ring :

0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

 q_u 97,88365 kPa ϵ_f %

Waktu (detik)	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	0,0000	20,428206	0	0,0000	0
30	30	0,03	0,2927	20,488172	4,5	2,1713	10,3962
60	60	0,06	0,5854	20,54849	13	6,2725	29,9454

90	90	0,09	0,8780	20,609165	22	10,6150	50,5276
120	120	0,12	1,1707	20,670199	30	14,4750	68,6978
150	150	0,15	1,4634	20,731595	40	19,3000	91,3258
180	180	0,18	1,7561	20,793358	43	20,7475	97,8836
210	210	0,21	2,0488	20,855489	41	19,7825	93,0529
240	240	0,24	2,3415	20,917993	36	17,3700	81,4608
270	270	0,27	2,6341	20,980873	26	12,5450	58,6565
300	300	0,3	2,9268	21,044132	19	9,1675	42,7355
330	330	0,33	3,2195	21,107774	14	6,7550	31,3944

Data Benda Uji Sebelum Pengujian :

Diameter 5,09 cm
Tinggi 10,24 cm
Berat 315,18 g

Benda Uji 2

Luas 20,34817 cm²
Volume 208,3653 cm³
Berat vol. 1,5126 g/cm³

Kalibrasi proving ring :

0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

q_u 81,53397 kPa

ϵ_f

%

Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\epsilon = \Delta H/H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,348174	0	0,0000	0
30	30	0,03	0,2930	20,407963	6	2,8950	13,9161
60	60	0,06	0,5859	20,468104	11	5,3075	25,4379
90	90	0,09	0,8789	20,528601	16	7,7200	36,8916
120	120	0,12	1,1719	20,589457	20	9,6500	45,9781
150	150	0,15	1,4648	20,650674	24	11,5800	55,0102
180	180	0,18	1,7578	20,712257	28	13,5100	63,9878
210	210	0,21	2,0508	20,774208	31	14,9575	70,6323
240	240	0,24	2,3438	20,83653	33	15,9225	74,9644
270	270	0,27	2,6367	20,899228	36	17,3700	81,5340
300	300	0,3	2,9297	20,962304	29	13,9925	65,4825
330	330	0,33	3,2227	21,025762	21	10,1325	47,2753
360	360	0,36	3,5156	21,089606	14	6,7550	31,4214
390	390	0,39	3,8086	21,153838	9	4,3425	20,1382

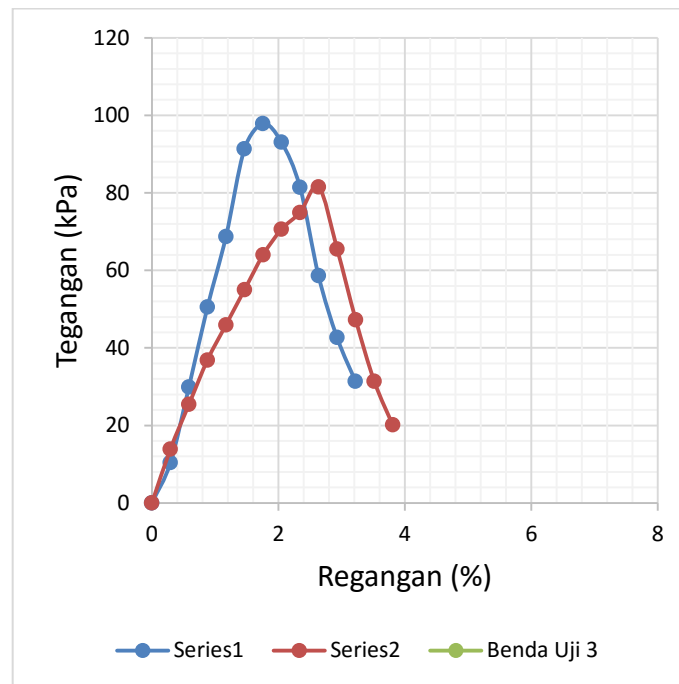
Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,1	5,09
Tinggi, H_0 (cm)	10,25	10,24
Luas penampang, A (cm ²)	20,42	20,34

Volume benda uji, V_1 (cm ³)	209,35	208,33
Berat tanah, W_1 (g)	320,36	314,33
Berat jenis, G_s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W_1 (g)	9,05	9,17	9,28	11,98
Berat cawan + tanah, W_2 (g)	29,08	29,24	29,32	32,01
Berat cawan + tanah kering, W_3 (g)	24,75	24,98	25,15	27,62
Kadar air, W (%)	27,6	26,9	26,3	28,1
Kadar air rata-rata, W_f (%)	27,3		27,2	
Berat tanah kering, W_d (g)	251,73		247,17	



Gambar 3. Kurva tegangan-regangan

c. Kadar semen 8%

Data Benda Uji Sebelum Pengujian :

Diameter 5,13 cm
Tinggi 10,21 cm
Berat 319,35 g

Benda Uji 1

Luas 20,6692 cm²
Volume 211,033 cm³
Berat vol. 1,513 g/cm³
Kalibrasi proving ring : 0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

Waktu (detik)	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	0,0000	20,669245	0	0,0000	0
30	30	0,03	0,2938	20,730156	3	1,4475	6,8499
60	60	0,06	0,5877	20,791428	8,5	4,1013	19,3509
90	90	0,09	0,8815	20,853062	17	8,2025	38,5874
120	120	0,12	1,1753	20,915063	26	12,5450	58,8411
150	150	0,15	1,4691	20,977434	38	18,3350	85,7428
180	180	0,18	1,7630	21,040179	46	22,1950	103,4844
210	210	0,21	2,0568	21,103299	54	26,0550	121,1183
240	240	0,24	2,3506	21,166799	47	22,6775	105,1015
270	270	0,27	2,6445	21,230683	36	17,3700	80,2611
300	300	0,3	2,9383	21,294954	26	12,5450	57,7914
330	330	0,33	3,2321	21,359614	20	9,6500	44,3203
360	360	0,36	3,5260	21,424669	14	6,7550	30,9300

Data Benda Uji Sebelum Pengujian :

Diameter 5,13 cm
 Tinggi 10,24 cm
 Berat 319,13 g

Benda Uji 2

Luas 20,6692 cm²
 Volume 211,6531 cm³
 Berat vol. 1,5078 g/cm³
 Kalibrasi proving ring : 0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

Waktu (detik)	Deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{-3}$	regangan $\varepsilon = \frac{\Delta H}{H_0}$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,669245	0	0,0000	0
30	30	0,03	0,2930	20,729977	3,5	1,6888	7,9916
60	60	0,06	0,5859	20,791068	10	4,8250	22,7661
90	90	0,09	0,8789	20,852519	17	8,2025	38,5884
120	120	0,12	1,1719	20,914335	25	12,0625	56,5799
150	150	0,15	1,4648	20,976518	32	15,4400	72,2076
180	180	0,18	1,7578	21,039072	39	18,8175	87,7414
210	210	0,21	2,0508	21,102001	43	20,7475	96,4520
240	240	0,24	2,3438	21,165307	45	21,7125	100,6362
270	270	0,27	2,6367	21,228994	41	19,7825	91,4157
300	300	0,3	2,9297	21,293065	35	16,8875	77,8030
330	330	0,33	3,2227	21,357525	28	13,5100	62,0545

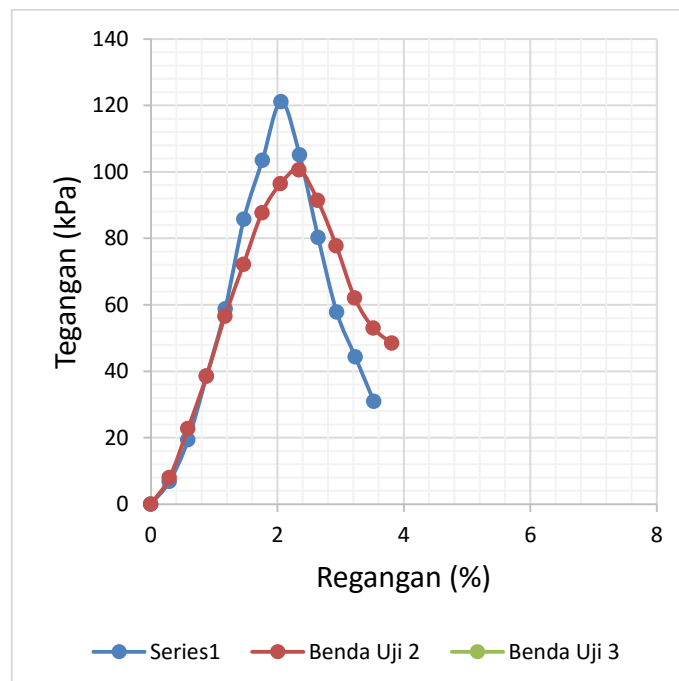
360	360	0,36	3,5156	21,422375	24	11,5800	53,0286
390	390	0,39	3,8086	21,487621	22	10,6150	48,4619

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,13	5,13
Tinggi, H_0 (cm)	10,21	10,24
Luas penampang, A (cm ²)	20,67	20,67
Volume benda uji, V_1 (cm ³)	210,99	211,61
Berat tanah, W_1 (g)	318,59	318,53
Berat jenis, G_s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W_1 (g)	9,72	9,21	13,333	9,23
Berat cawan + tanah, W_2 (g)	29,89	29,34	33,45	29,3
Berat cawan + tanah kering, W_3 (g)	25,48	24,99	29,06	24,97
Kadar air, W (%)	28,0	27,6	27,9	27,5
Kadar air rata-rata, W_f (%)	27,8		27,7	
Berat tanah kering, W_d (g)	249,34		249,41	



Gambar 4. Kurva tegangan-regangan

3. Benda uji dengan umur pemeraman 1 hari

a. Kadar semen 3%

Data Benda Uji Sebelum Pengujian :

Diameter 5,06 cm
Tinggi 10,23 cm
Berat 321 G

Benda Uji 1

Luas 20,10902 cm²
Volume 205,7153 cm³
Berat vol. 1,5604 g/cm³

Kalibrasi proving ring :

0,4825 kg/d

Hasil Uji Kuat Tekan Bebas:

q_u 97,949771 kPa

ϵ_f %

Waktu (detik)	Deformasi		Regangan $\epsilon = \Delta H/H_0$ (%)	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	0,0000	20,10902	0	0,0000	0
30	30	0,03	0,2933	20,168165	6	2,8950	14,0816
60	60	0,06	0,5865	20,227658	10	4,8250	23,4003
90	90	0,09	0,8798	20,287503	13	6,2725	30,3306
120	120	0,12	1,1730	20,347703	16	7,7200	37,2195
150	150	0,15	1,4663	20,408262	21	10,1325	48,7057
180	180	0,18	1,7595	20,469182	26	12,5450	60,1228
210	210	0,21	2,0528	20,530467	31	14,9575	71,4709
240	240	0,24	2,3460	20,59212	34	16,4050	78,1527
270	270	0,27	2,6393	20,654144	38	18,3350	87,0849
300	300	0,3	2,9326	20,716544	41	19,7825	93,6770
330	330	0,33	3,2258	20,779321	43	20,7475	97,9498
360	360	0,36	3,5191	20,84248	42	20,2650	95,3820
390	390	0,39	3,8123	20,906024	36	17,3700	81,5075
420	420	0,42	4,1056	20,969957	27	13,0275	60,9442
450	450	0,45	4,3988	21,034282	18	8,6850	40,5052
480	480	0,48	4,6921	21,099003	14	6,7550	31,4074

Data Benda Uji Sebelum Pengujian :

Diameter 5,12 Cm
Tinggi 10,26 Cm
Berat 323,66 G

Benda Uji 2

Luas 20,58874 cm²
Volume 211,2405 cm³
Berat vol. 1,5322 g/cm³

Kalibrasi proving ring :

0,4825 kg/d

Hasil Uji Kuat Tekan Bebas:

q_u 82,824033 kPa

ϵ_f %

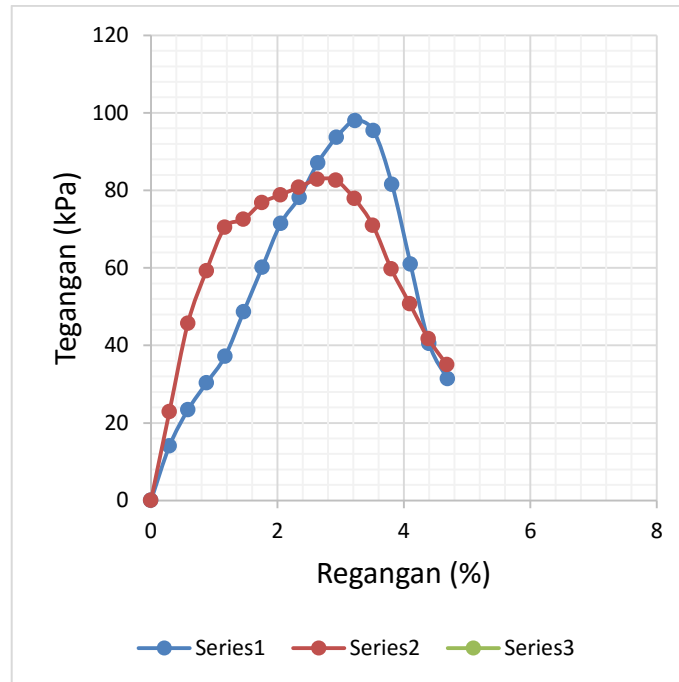
Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\epsilon = \frac{\Delta H}{H_0}$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,588742	0	0,0000	0
30	30	0,03	0,2924	20,649119	10	4,8250	22,9226
60	60	0,06	0,5848	20,709852	20	9,6500	45,7109
90	90	0,09	0,8772	20,770943	26	12,5450	59,2493
120	120	0,12	1,1696	20,832395	31	14,9575	70,4350
150	150	0,15	1,4620	20,894213	32	15,4400	72,4920
180	180	0,18	1,7544	20,956398	34	16,4050	76,7942
210	210	0,21	2,0468	21,018954	35	16,8875	78,8176
240	240	0,24	2,3392	21,081885	36	17,3700	80,8275
270	270	0,27	2,6316	21,145194	37	17,8525	82,8240
300	300	0,3	2,9240	21,208884	37	17,8525	82,5753
330	330	0,33	3,2164	21,27296	35	16,8875	77,8765
360	360	0,36	3,5088	21,337423	32	15,4400	70,9863
390	390	0,39	3,8012	21,402279	27	13,0275	59,7132
420	420	0,42	4,0936	21,467529	23	11,0975	50,7122
450	450	0,45	4,3860	21,533179	19	9,1675	41,7649
480	480	0,48	4,6784	21,599232	16	7,7200	35,0629

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,11	5,13
Tinggi, H ₀ (cm)	10,2	10,19
Luas penampang, A (cm ²)	20,50	20,67
Volume benda uji, V ₁ (cm ³)	209,15	210,58
Berat tanah, W ₁ (g)	321,66	324,31
Berat jenis, G _s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W ₁ (g)	9,23	9,09	10,25	9,35
Berat cawan + tanah, W ₂ (g)	29,32	29,18	30,32	29,54
Berat cawan + tanah kering, W ₃ (g)	25,07	24,91	25,97	25,32
Kadar air, W (%)	26,8	27,0	27,7	26,4
Kadar air rata-rata, W _f (%)	26,9		27,0	
Berat tanah kering, W _d (g)	253,45		255,27	



Gambar 5. Kurva tegangan-regangan

b. Kadar semen 5%

Data Benda Uji Sebelum Pengujian :

Diameter 5,1 cm
 Tinggi 10,05 cm
 Berat 319,64 g

Benda Uji 1

Luas 20,42821 cm²
 Volume 205,3035 cm³
 Berat vol. 1,5569 g/cm³

Kalibrasi proving ring : 0,4825 kg/di

Hasil Uji Kuat Tekan Bebas:

q_u 102,0887 kPa ϵ_f %

Waktu (detik)	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	0,0000	20,428206	0	0,0000	0
30	30	0,03	0,2985	20,489369	10	4,8250	23,1014
60	60	0,06	0,5970	20,550898	16	7,7200	36,8515
90	90	0,09	0,8955	20,612798	24	11,5800	55,1113
120	120	0,12	1,1940	20,675073	31	14,9575	70,9710
150	150	0,15	1,4925	20,737725	36	17,3700	82,1689
180	180	0,18	1,7910	20,800757	41	19,7825	93,2977
210	210	0,21	2,0896	20,864174	45	21,7125	102,0887
240	240	0,24	2,3881	20,927979	45	21,7125	101,7774

270	270	0,27	2,6866	20,992175	44	21,2300	99,2114
300	300	0,3	2,9851	21,056766	45	21,7125	101,1550
330	330	0,33	3,2836	21,121756	44	21,2300	98,6027
360	360	0,36	3,5821	21,187149	37	17,8525	82,6600
390	390	0,39	3,8806	21,252947	29	13,9925	64,5870
420	420	0,42	4,1791	21,319156	20	9,6500	44,4044
450	450	0,45	4,4776	21,385778	9	4,3425	19,9197
480	480	0,48	4,7761	21,452818	2	0,9650	4,4128

Data Benda Uji Sebelum Pengujian :

Diameter 5,08 cm
Tinggi 10,07 cm
Berat 319,07 g

Benda Uji 2

Luas 20,2683 cm²
Volume 204,1018 cm³
Berat vol. 1,5633 g/cm³

Kalibrasi proving ring :

0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

q_u 128,0514 kPa

ϵ_f %

Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\epsilon = \Delta H/H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,268299	0	0,0000	0
30	30	0,03	0,2979	20,328862	9	4,3425	20,9554
60	60	0,06	0,5958	20,389787	17	8,2025	39,4641
90	90	0,09	0,8937	20,451079	26	12,5450	60,1760
120	120	0,12	1,1917	20,512741	35	16,8875	80,7627
150	150	0,15	1,4896	20,574775	42	20,2650	96,6230
180	180	0,18	1,7875	20,637186	51	24,6075	116,9731
210	210	0,21	2,0854	20,699977	56	27,0200	128,0514
240	240	0,24	2,3833	20,763151	56	27,0200	127,6618
270	270	0,27	2,6812	20,826711	56	27,0200	127,2722
300	300	0,3	2,9791	20,890662	56,5	27,2613	128,0155
330	330	0,33	3,2771	20,955007	54	26,0550	121,9754
360	360	0,36	3,5750	21,01975	44	21,2300	99,0812
390	390	0,39	3,8729	21,084894	36	17,3700	80,8160
420	420	0,42	4,1708	21,150443	32	15,4400	71,6138
450	450	0,45	4,4687	21,2164	28	13,5100	62,4673
480	480	0,48	4,7666	21,282771	25	12,0625	55,6004

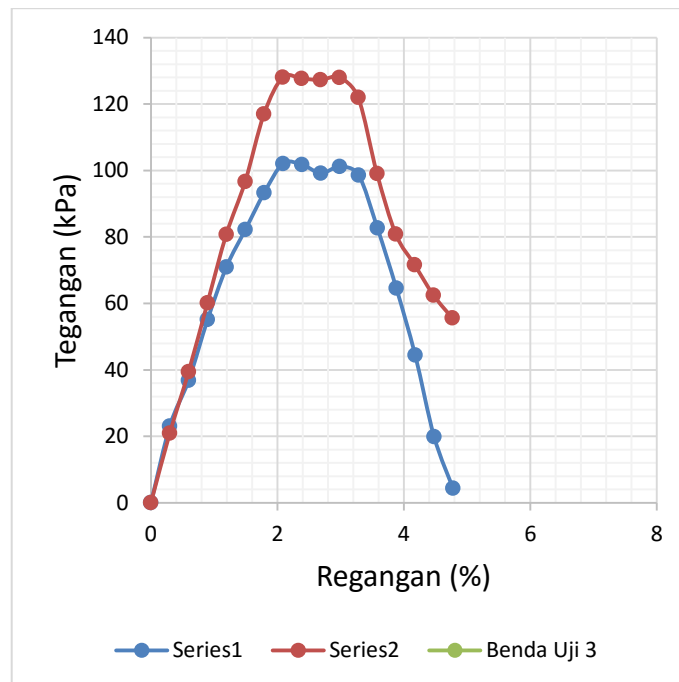
Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,09	5,14
Tinggi, H_0 (cm)	10,14	10,19
Luas penampang, A (cm ²)	20,34	20,75

Volume benda uji, V_1 (cm ³)	206,29	211,40
Berat tanah, W_1 (g)	320,3	319,68
Berat jenis, G_s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W_1 (g)	9,09	10,25	9,25	9,63
Berat cawan + tanah, W_2 (g)	29,28	30,42	29,38	29,97
Berat cawan + tanah kering, W_3 (g)	24,88	26,05	25,11	25,71
Kadar air, W (%)	27,9	27,7	26,9	26,5
Kadar air rata-rata, W_f (%)	27,8		26,7	
Berat tanah kering, W_d (g)	250,70		252,30	



Gambar 6. Kurva tegangan-regangan

c. Kadar semen 8%

Data Benda Uji Sebelum Pengujian :

Diameter	5,03	cm
Tinggi	10,01	cm
Berat	317,85	g

Benda Uji 1

Luas	19,8713	cm ²
Volume	198,912	cm ³
Berat vol.	1,598	g/cm ³

Kalibrasi proving ring :

0,4825 kg/

Hasil Uji Kuat Tekan Bebas:

 q_u 206,0269 kPa ϵ_f %

Waktu (detik)	Deformasi		Regangan $\epsilon = \Delta H/H_0$ (%)	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	0,0000	19,87128	0	0,0000	0
30	30	0,03	0,2997	19,931014	15	7,2375	35,6228
60	60	0,06	0,5994	19,991107	25	12,0625	59,1929
90	90	0,09	0,8991	20,051564	33	15,9225	77,8990
120	120	0,12	1,1988	20,112388	40	19,3000	94,1375
150	150	0,15	1,4985	20,173582	46	22,1950	107,9297
180	180	0,18	1,7982	20,235149	56	27,0200	130,9930
210	210	0,21	2,0979	20,297094	64	30,8800	149,2493
240	240	0,24	2,3976	20,359418	66	31,8450	153,4422
270	270	0,27	2,6973	20,422127	69	33,2925	159,9243
300	300	0,3	2,9970	20,485223	73	35,2225	168,6741
330	330	0,33	3,2967	20,54871	79	38,1175	181,9738
360	360	0,36	3,5964	20,612592	85	41,0125	195,1878
390	390	0,39	3,8961	20,676873	90	43,4250	206,0269
420	420	0,42	4,1958	20,741555	84	40,5300	191,6921
450	450	0,45	4,4955	20,806644	72	34,7400	163,7935
480	480	0,48	4,7952	20,872142	51	24,6075	115,6563

Data Benda Uji Sebelum Pengujian :

Diameter 5,09 cm
 Tinggi 10,04 cm
 Berat 317,33 g

Benda Uji 2

Luas 20,3482 cm²
 Volume 204,2957 cm³
 Berat vol. 1,5533 g/cm³

Kalibrasi proving ring :

0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

 q_u 320,1607 kPa ϵ_f %

Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{-3}$	regangan $\epsilon = \Delta H/H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,348174	0	0,0000	0
30	30	0,03	0,2988	20,409158	16	7,7200	37,1075
60	60	0,06	0,5976	20,470508	21	10,1325	48,5576
90	90	0,09	0,8964	20,532228	30	14,4750	69,1594
120	120	0,12	1,1952	20,594321	35	16,8875	80,4427
150	150	0,15	1,4940	20,656792	40	19,3000	91,6565

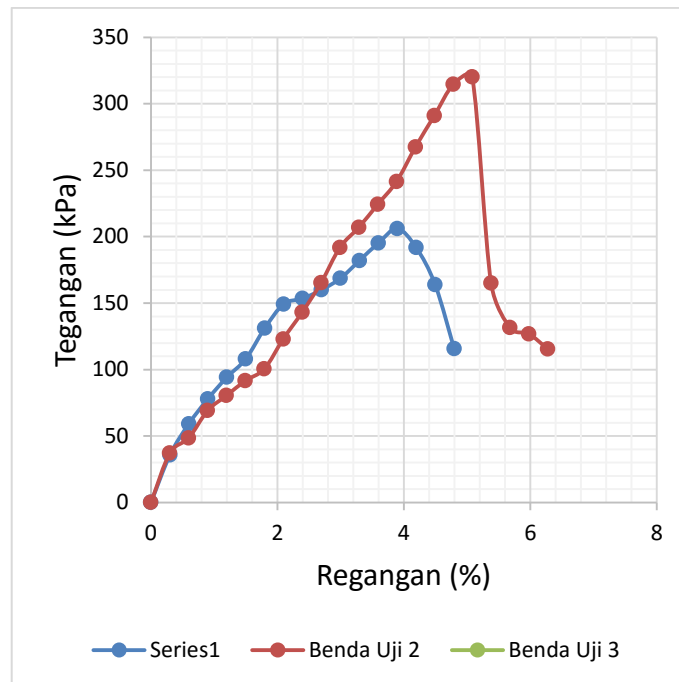
180	180	0,18	1,7928	20,719642	44	21,2300	100,5164
210	210	0,21	2,0916	20,782876	54	26,0550	122,9857
240	240	0,24	2,3904	20,846497	63	30,3975	143,0454
270	270	0,27	2,6892	20,910509	73	35,2225	165,2436
300	300	0,3	2,9880	20,974915	85	41,0125	191,8161
330	330	0,33	3,2869	21,039719	92	44,3900	206,9733
360	360	0,36	3,5857	21,104924	100	48,2500	224,2759
390	390	0,39	3,8845	21,170536	108	52,1100	241,4672
420	420	0,42	4,1833	21,236556	120	57,9000	267,4629
450	450	0,45	4,4821	21,302989	131	63,2075	291,0697
480	480	0,48	4,7809	21,36984	142	68,5150	314,5237
510	510	0,51	5,0797	21,437111	145	69,9625	320,1607
540	540	0,54	5,3785	21,504807	75	36,1875	165,0791
570	570	0,57	5,6773	21,572932	60	28,9500	131,6462
600	600	0,6	5,9761	21,64149	58	27,9850	126,8549
630	630	0,63	6,2749	21,710485	53	25,5725	115,5507

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2	Benda 3
Diameter / lebar sisi (cm)	5,12	5,16	
Tinggi, H_0 (cm)	10,16	10,08	
Luas penampang, A (cm ²)	20,58	20,91	
Volume benda uji, V_1 (cm ³)	209,14	210,75	
Berat tanah, W_1 (g)	318,69	317,96	
Berat jenis, G_s	2,65	2,65	

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W_1 (g)	9,21	9,2	9,2	10,25
Berat cawan + tanah, W_2 (g)	29,37	29,22	29,63	31,44
Berat cawan + tanah kering, W_3 (g)	25,13	24,9	25,29	26,74
Kadar air, W (%)	26,6	27,5	27,0	28,5
Kadar air rata-rata, W_f (%)	27,1		27,7	
Berat tanah kering, W_d (g)	250,79		248,92	



Gambar 7. Kurva tegangan-regangan

4. Benda uji dengan umur pemeraman 3 hari

a. Kadar semen 3%

Data Benda Uji Sebelum Pengujian :

Diameter 5,08 cm

Tinggi 10 cm

Berat 318,03 g

Benda Uji 1

Luas 20,2683 cm²

Volume 202,683 cm³

Berat vol. g/cm³

Kalibrasi proving ring :

0,4825 k

Hasil Uji Kuat Tekan Bebas:

q_u 186,90146 kPa

ϵ_f %

Waktu (detik)	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	0,0000	20,268299	0	0,0000	0
30	30	0,03	0,3000	20,329287	10	4,8250	23,2833
60	60	0,06	0,6000	20,390643	22	10,6150	51,0691
90	90	0,09	0,9000	20,45237	34	16,4050	78,6867
120	120	0,12	1,2000	20,514473	43	20,7475	99,2143
150	150	0,15	1,5000	20,576953	56	27,0200	128,8170
180	180	0,18	1,8000	20,639816	70	33,7750	160,5309
210	210	0,21	2,1000	20,703063	80	38,6000	182,9034

240	240	0,24	2,4000	20,7667	82	39,5650	186,9015
270	270	0,27	2,7000	20,830729	62	29,9150	140,8814
300	300	0,3	3,0000	20,895154	45	21,7125	101,9373
330	330	0,33	3,3000	20,959978	36	17,3700	81,2977
360	360	0,36	3,6000	21,025207	27	13,0275	60,7841

Data Benda Uji Sebelum Pengujian :

Diameter 5,11 cm
Tinggi 10,01 cm
Berat 287,76 g

Benda Uji 2

Luas 20,5084 cm²
Volume 205,289 cm³
Berat vol. g/cm³

Kalibrasi proving ring :

0,4825 kg/di

Hasil Uji Kuat Tekan Bebas:

q_u 59,288465 kPa

ϵ_f %

Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\epsilon = \Delta H/H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,508395	0	0,0000	0
30	30	0,03	0,2997	20,570044	7	3,3775	16,1075
60	60	0,06	0,5994	20,632064	14	6,7550	32,1182
90	90	0,09	0,8991	20,694459	21	10,1325	48,0321
120	120	0,12	1,1988	20,757233	26	12,5450	59,2885
150	150	0,15	1,4985	20,820389	24	11,5800	54,5618
180	180	0,18	1,7982	20,883931	19	9,1675	43,0633
210	210	0,21	2,0979	20,947861	16	7,7200	36,1532
240	240	0,24	2,3976	21,012184	14	6,7550	31,5372
270	270	0,27	2,6973	21,076903	12	5,7900	26,9489
300	300	0,3	2,9970	21,142022	10,5	5,0663	23,5076
330	330	0,33	3,2967	21,207545	9,5	4,5838	21,2031
360	360	0,36	3,5964	21,273475	8	3,8600	17,7999
390	390	0,39	3,8961	21,339817	7	3,3775	15,5265
420	420	0,42	4,1958	21,406573	7	3,3775	15,4781

Data Benda Uji Sebelum Pengujian :

Diameter 5,05 cm
Tinggi 10,14 cm
Berat 319,04 g

Benda Uji 3

Luas 20,02962 cm²
Volume 203,1003 cm³
Berat vol. g/cm³

Kalibrasi proving ring :

0,4825 kg/di

Hasil Uji Kuat Tekan Bebas:

q_u 100,4358 kPa

ϵ_f %

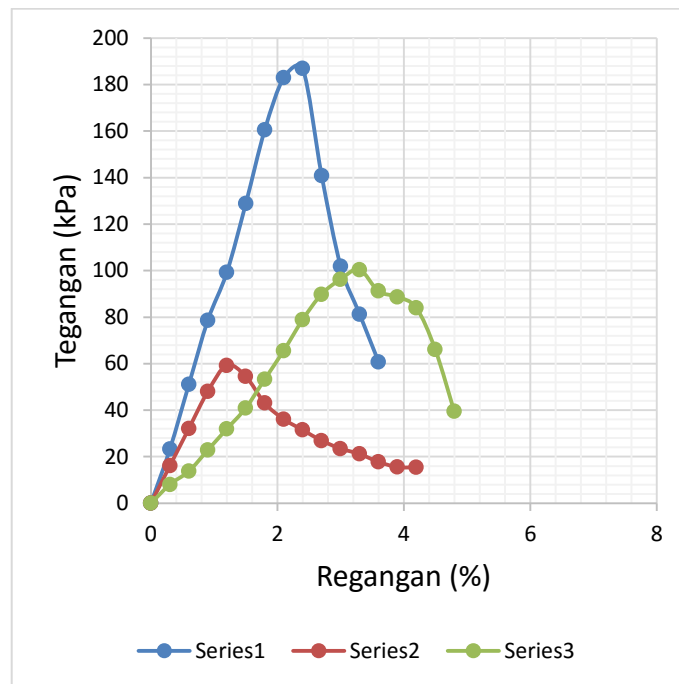
Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\epsilon = \Delta H/H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,508395	0	0,0000	0
30	30	0,03	0,2997	20,570044	3,5	1,6888	8,0538
60	60	0,06	0,5994	20,632064	6	2,8950	13,7650
90	90	0,09	0,8991	20,694459	10	4,8250	22,8724
120	120	0,12	1,1988	20,757233	14	6,7550	31,9246
150	150	0,15	1,4985	20,820389	18	8,6850	40,9214
180	180	0,18	1,7982	20,883931	23,5	11,3388	53,2625
210	210	0,21	2,0979	20,947861	29	13,9925	65,5277
240	240	0,24	2,3976	21,012184	35	16,8875	78,8430
270	270	0,27	2,6973	21,076903	40	19,3000	89,8296
300	300	0,3	2,9970	21,142022	43	20,7475	96,2694
330	330	0,33	3,2967	21,207545	45	21,7125	100,4358
360	360	0,36	3,5964	21,273475	41	19,7825	91,2246
390	390	0,39	3,8961	21,339817	40	19,3000	88,7229
420	420	0,42	4,1958	21,406573	38	18,3350	84,0239
450	450	0,45	4,4955	21,473749	30	14,4750	66,1271
480	480	0,48	4,7952	21,541347	18	8,6850	39,5518

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2	Benda 3
Diameter / lebar sisi (cm)	5,06	5,15	5,05
Tinggi, H ₀ (cm)	10	10,05	10,14
Luas penampang, A (cm ²)	20,11	20,83	20,03
Volume benda uji, V ₁ (cm ³)	201,05	209,31	203,06
Berat tanah, W ₁ (g)	318,82	288,82	317,57
Berat jenis, G _s	2,65	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2		Benda 3	
Berat Cawan, W ₁ (g)	9,62	9,09	9,35	9,35	9,27	12,94
Berat cawan + tanah, W ₂ (g)	29,66	29,11	29,4	29,38	29,29	33
Berat cawan + tanah kering, W ₃ (g)	25,68	25,13	25,22	24,9	25,04	28,95
Kadar air, W (%)	24,8	24,8	26,3	28,8	26,9	25,3
Kadar air rata-rata, W _f (%)	24,8		27,6		26,1	
Berat tanah kering, W _d (g)	255,47		226,39		251,79	



Gambar 8. Kurva tegangan-regangan

b. Kadar semen 5%

Data Benda Uji Sebelum Pengujian :

Diameter 5,13 cm
 Tinggi 10,26 cm
 Berat 315,68 g

Benda Uji 1

Luas 20,66924 cm²
 Volume 212,0665 cm³
 Berat vol. 1,4886 g/cm³

Kalibrasi proving ring :

0,4825 kg

Hasil Uji Kuat Tekan Bebas:

 q_u 144,0645 kPa ϵ_f %

Waktu (detik)	Deformasi		Regangan $\epsilon = \frac{\Delta H}{H_0}$ (%)	Luas terkoreksi A (cm ²)	Beban Aksial		Tegangan P/A (kPa)
	Arloji ukur (a)	$\frac{\Delta H}{a} \times 10^{-3}$ (cm)			Arloji Ukur	Beban P (kg)	
0	0	0	0,0000	20,669245	0	0,0000	0
30	30	0,03	0,2924	20,729859	5	2,4125	11,4167
60	60	0,06	0,5848	20,790829	11	5,3075	25,0430
90	90	0,09	0,8772	20,852159	17	8,2025	38,5891
120	120	0,12	1,1696	20,913851	24	11,5800	54,3180
150	150	0,15	1,4620	20,97591	32	15,4400	72,2097
180	180	0,18	1,7544	21,038339	37,5	18,0938	84,3696
210	210	0,21	2,0468	21,10114	43	20,7475	96,4559

240	240	0,24	2,3392	21,164317	49	23,6425	109,5868
270	270	0,27	2,6316	21,227873	55	26,5375	122,6373
300	300	0,3	2,9240	21,291813	61	29,4325	135,6074
330	330	0,33	3,2164	21,356138	65	31,3625	144,0645
360	360	0,36	3,5088	21,420854	59	28,4675	130,3712
390	390	0,39	3,8012	21,485963	55	26,5375	121,1642
420	420	0,42	4,0936	21,551469	48,5	23,4013	106,5200
450	450	0,45	4,3860	21,617375	40	19,3000	87,5837
480	480	0,48	4,6784	21,683686	34	16,4050	74,2185
510	510	0,51	4,9708	21,750405	22	10,6150	47,8764
540	540	0,54	5,2632	21,817536	19	9,1675	41,2206

Data Benda Uji Sebelum Pengujian :

Diameter 5,07 cm
Tinggi 10,22 cm
Berat 318,53 g

Benda Uji 2

Luas 20,18858 cm²
Volume 206,3273 cm³
Berat vol. 1,5438 g/cm³

Kalibrasi proving ring : 0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

q_u 169,5421 kPa

ϵ_f %

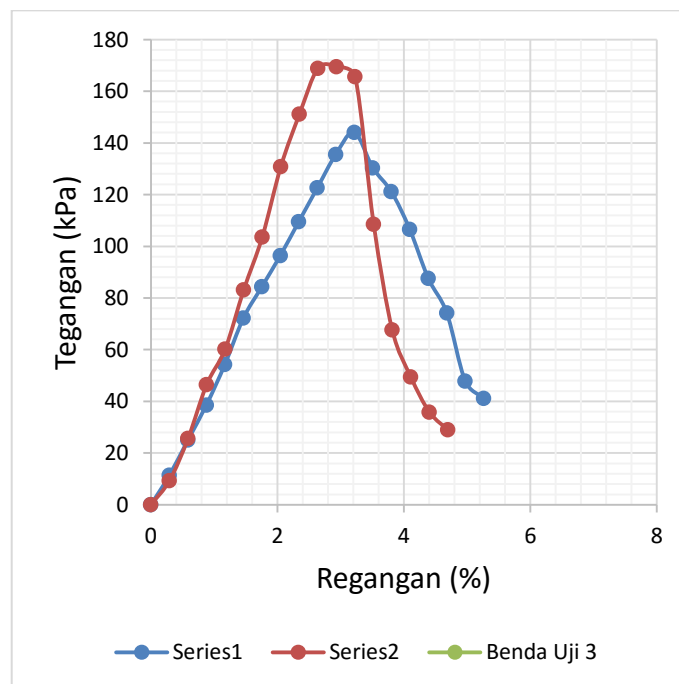
Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\epsilon = \Delta H / H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,188581	0	0,0000	0
30	30	0,03	0,2935	20,248018	4	1,9300	9,3507
60	60	0,06	0,5871	20,307805	11	5,3075	25,6387
90	90	0,09	0,8806	20,367947	20	9,6500	46,4782
120	120	0,12	1,1742	20,428446	26	12,5450	60,2427
150	150	0,15	1,4677	20,489305	36	17,3700	83,1652
180	180	0,18	1,7613	20,550528	45	21,7125	103,6468
210	210	0,21	2,0548	20,612118	57	27,5025	130,8936
240	240	0,24	2,3483	20,674078	66	31,8450	151,1068
270	270	0,27	2,6419	20,736412	74	35,7050	168,9135
300	300	0,3	2,9354	20,799123	74,5	35,9463	169,5421
330	330	0,33	3,2290	20,862214	73	35,2225	165,6261
360	360	0,36	3,5225	20,92569	48	23,1600	108,5745
390	390	0,39	3,8160	20,989552	30	14,4750	67,6526
420	420	0,42	4,1096	21,053806	22	10,6150	49,4605
450	450	0,45	4,4031	21,118454	16	7,7200	35,8611
480	480	0,48	4,6967	21,183501	13	6,2725	29,0477

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,15	5,11
Tinggi, H_0 (cm)	10,3	10,22
Luas penampang, A (cm ²)	20,83	20,50
Volume benda uji, V_1 (cm ³)	214,52	209,56
Berat tanah, W_1 (g)	317,02	319,47
Berat jenis, G_s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W_1 (g)	9,18	12,22	10,22	9,06
Berat cawan + tanah, W_2 (g)	29,19	32,25	30,26	29,06
Berat cawan + tanah kering, W_3 (g)	25	28,05	26,02	24,75
Kadar air, W (%)	26,5	26,5	26,8	27,5
Kadar air rata-rata, W_f (%)	26,5		27,2	
Berat tanah kering, W_d (g)	250,59		251,25	



Gambar 9. Kurva tegangan-regangan

c. Kadar semen 8%

Data Benda Uji Sebelum Pengujian :

Diameter 5,12 cm
Tinggi 10,18 cm
Berat 315,07 g

Benda Uji 1

Luas 20,58874 cm²
Volume 209,5934 cm³
Berat vol. 1,5032 g/cm³

Kalibrasi proving ring :

0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

 q_u 252,8953 kPa ϵ_f %

Waktu (detik)	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	0,0000	20,588742	0	0,0000	0
30	30	0,03	0,2947	20,649595	8	3,8600	18,3377
60	60	0,06	0,5894	20,710809	21	10,1325	47,9942
90	90	0,09	0,8841	20,772387	34	16,4050	77,4745
120	120	0,12	1,1788	20,834333	45	21,7125	102,2349
150	150	0,15	1,4735	20,896649	56	27,0200	126,8463
180	180	0,18	1,7682	20,959339	71	34,2575	160,3419
210	210	0,21	2,0629	21,022406	84	40,5300	189,1312
240	240	0,24	2,3576	21,085854	99	47,7675	222,2339
270	270	0,27	2,6523	21,149686	113	54,5225	252,8953
300	300	0,3	2,9470	21,213906	96	46,3200	214,1987
330	330	0,33	3,2417	21,278517	61	29,4325	135,6922
360	360	0,36	3,5363	21,343522	49	23,6425	108,6667
390	390	0,39	3,8310	21,408926	42	20,2650	92,8583
420	420	0,42	4,1257	21,474733	37	17,8525	81,5531
450	450	0,45	4,4204	21,540944	32	15,4400	70,3156
480	480	0,48	4,7151	21,607566	28	13,5100	61,3364

Data Benda Uji Sebelum Pengujian :

Diameter 5 cm
Tinggi 10,15 cm
Berat 318,74 g

Benda Uji 2

Luas 19,63495 cm²
Volume 199,2948 cm³
Berat vol. 1,5993 g/cm³

Kalibrasi proving ring :

0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

 q_u 256,1656 kPa ϵ_f %

Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{-3}$	regangan $\epsilon = \frac{\Delta H}{H_0}$ (%)		arloji Ukur	Beban (P) (kg)	

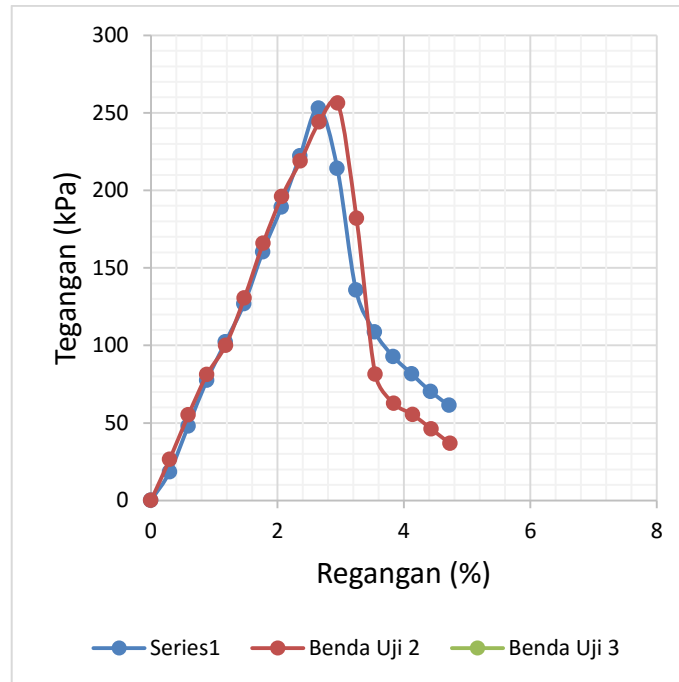
0	0	0	0,0000	19,634954	0	0,0000	0
30	30	0,03	0,2956	19,69316	11	5,3075	26,4389
60	60	0,06	0,5911	19,751713	23	11,0975	55,1175
90	90	0,09	0,8867	19,810615	34	16,4050	81,2358
120	120	0,12	1,1823	19,869869	42	20,2650	100,0508
150	150	0,15	1,4778	19,929478	55	26,5375	130,6270
180	180	0,18	1,7734	19,989447	70	33,7750	165,7538
210	210	0,21	2,0690	20,049777	83	40,0475	195,9453
240	240	0,24	2,3645	20,110473	93	44,8725	218,8905
270	270	0,27	2,6601	20,171537	104	50,1800	244,0398
300	300	0,3	2,9557	20,232973	109,5	52,8338	256,1656
330	330	0,33	3,2512	20,294785	78	37,6350	181,9183
360	360	0,36	3,5468	20,356975	35	16,8875	81,3806
390	390	0,39	3,8424	20,419548	27	13,0275	62,5870
420	420	0,42	4,1379	20,482506	24	11,5800	55,4619
450	450	0,45	4,4335	20,545854	20	9,6500	46,0757
480	480	0,48	4,7291	20,609595	16	7,7200	36,7466

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,1	5,13
Tinggi, H_0 (cm)	10,18	10,11
Luas penampang, A (cm ²)	20,42	20,67
Volume benda uji, V_1 (cm ³)	207,92	208,93
Berat tanah, W_1 (g)	316,72	320
Berat jenis, G_s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
	Berat Cawan, W_1 (g)	9,02	9,25	9,59
Berat cawan + tanah, W_2 (g)	29,03	29,25	29,6	29,32
Berat cawan + tanah kering, W_3 (g)	24,99	25,13	25,33	25,2
Kadar air, W (%)	25,3	25,9	27,1	25,7
Kadar air rata-rata, W_f (%)	25,6		26,4	
Berat tanah kering, W_d (g)	252,12		253,10	



Gambar 10. Kurva tegangan-regangan

5. Benda uji dengan umur pemeraman 7 hari

a. Kadar semen 3%

Data Benda Uji Sebelum Pengujian :

Diameter 5 cm

Tinggi 10,29 cm

Berat 320,52 g

Benda Uji 1

Luas 19,63495 cm²

Volume 202,0437 cm³

Berat vol. 1,5864 g/cm³

Kalibrasi proving ring :

0,4825

Hasil Uji Kuat Tekan Bebas:

q_u 141,26624 kPa

ϵ_f %

Waktu (detik)	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	0,0000	19,634954	0	0,0000	0
30	30	0,03	0,2915	19,692366	10	4,8250	24,0363
60	60	0,06	0,5831	19,750115	25	12,0625	59,9152
90	90	0,09	0,8746	19,808204	35	16,8875	83,6352
120	120	0,12	1,1662	19,866635	46	22,1950	109,5973
150	150	0,15	1,4577	19,925412	48,5	23,4013	115,2128
180	180	0,18	1,7493	19,984538	54	26,0550	127,8987
210	210	0,21	2,0408	20,044016	59	28,4675	139,3265

240	240	0,24	2,3324	20,103849	60	28,9500	141,2662
270	270	0,27	2,6239	20,16404	50	24,1250	117,3705
300	300	0,3	2,9155	20,224592	43	20,7475	100,6364
330	330	0,33	3,2070	20,28551	39	18,8175	91,0008
360	360	0,36	3,4985	20,346795	37	17,8525	86,0740
390	390	0,39	3,7901	20,408452	35	16,8875	81,1754
420	420	0,42	4,0816	20,470484	34	16,4050	78,6171
450	450	0,45	4,3732	20,532894	33	15,9225	76,0729
480	480	0,48	4,6647	20,595686	32	15,4400	73,5428

Data Benda Uji Sebelum Pengujian :

Diameter 5,11 cm

Tinggi 10,27 cm

Berat 321,57 g

Benda Uji 2

Luas 20,5084 cm²

Volume 210,6212 cm³

Berat vol. g/cm³

Kalibrasi proving ring :

0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

q_u 95,474985 kPa

ε_f %

Waktu (detik)	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	0,0000	20,508395	0	0,0000	0
30	30	0,03	0,2921	20,568479	6	2,8950	13,8075
60	60	0,06	0,5842	20,628915	10	4,8250	22,9451
90	90	0,09	0,8763	20,689707	17	8,2025	38,8921
120	120	0,12	1,1685	20,750859	25	12,0625	57,0257
150	150	0,15	1,4606	20,812374	30	14,4750	68,2285
180	180	0,18	1,7527	20,874254	32	15,4400	72,5613
210	210	0,21	2,0448	20,936503	33	15,9225	74,6064
240	240	0,24	2,3369	20,999125	34	16,4050	76,6380
270	270	0,27	2,6290	21,062122	35,5	17,1288	79,7797
300	300	0,3	2,9211	21,125499	37	17,8525	82,9013
330	330	0,33	3,2132	21,189258	38	18,3350	84,8856
360	360	0,36	3,5054	21,253403	41	19,7825	91,3107
390	390	0,39	3,7975	21,317937	43	20,7475	95,4750
420	420	0,42	4,0896	21,382865	42	20,2650	92,9715
450	450	0,45	4,3817	21,448189	39	18,8175	86,0677
480	480	0,48	4,6738	21,513914	32,5	15,6813	71,5040

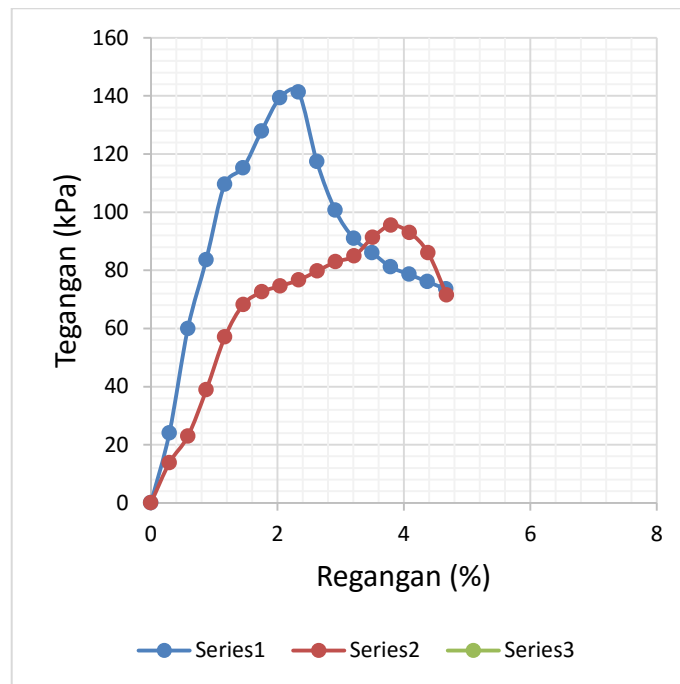
Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,07	5,08
Tinggi, H_0 (cm)	10,34	10,28

Luas penampang, A (cm ²)	20,18	20,26
Volume benda uji, V ₁ (cm ³)	208,71	208,32
Berat tanah, W ₁ (g)	322,01	323,07
Berat jenis, G _s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
	Berat Cawan, W ₁ (g)	8,94	9,32	9,13
Berat cawan + tanah, W ₂ (g)	28,94	29,46	29,26	29,13
Berat cawan + tanah kering, W ₃ (g)	24,75	25,33	24,83	24,78
Kadar air, W (%)	26,5	25,8	28,2	27,8
Kadar air rata-rata, W _f (%)	26,1		28,0	
Berat tanah kering, W _d (g)	255,26		252,42	



Gambar 11. Kurva tegangan-regangan

b. Kadar semen 5%

Data Benda Uji Sebelum Pengujian :

Diameter	5,1	cm
Tinggi	10,16	cm
Berat	289,5	g

Benda Uji 1

Luas	20,42821	cm ²
Volume	207,5506	cm ³
Berat vol.	1,3948	g/cm ³

Kalibrasi proving ring :

0,4825 kg

Hasil Uji Kuat Tekan Bebas:

 q_u 181,5329 kPa

 ε_f %

Waktu (detik)	Deformasi		Regangan $\varepsilon = \Delta H/H_0$ (%)	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	0,0000	20,428206	0	0,0000	0
30	30	0,03	0,2953	20,488704	12	5,7900	27,7225
60	60	0,06	0,5906	20,549562	22	10,6150	50,6741
90	90	0,09	0,8858	20,610782	40	19,3000	91,8611
120	120	0,12	1,1811	20,672368	55	26,5375	125,9328
150	150	0,15	1,4764	20,734323	70	33,7750	159,7992
180	180	0,18	1,7717	20,796651	79	38,1175	179,8043
210	210	0,21	2,0669	20,859354	80	38,6000	181,5329
240	240	0,24	2,3622	20,922437	60	28,9500	135,7392
270	270	0,27	2,6575	20,985902	40	19,3000	90,2191
300	300	0,3	2,9528	21,049754	35	16,8875	78,7023
330	330	0,33	3,2480	21,113995	28,5	13,7513	63,8912
360	360	0,36	3,5433	21,17863	26	12,5450	58,1088
390	390	0,39	3,8386	21,243662	25	12,0625	55,7028
420	420	0,42	4,1339	21,309094	24	11,5800	53,3105
450	450	0,45	4,4291	21,374931	23,5	11,3388	52,0391

Data Benda Uji Sebelum Pengujian :

Diameter 5,11 cm
 Tinggi 10,18 cm
 Berat 314,91 g

Benda Uji 2

Luas 20,5084 cm²
 Volume 208,7755 cm³
 Berat vol. 1,5084 g/cm³

Kalibrasi proving ring : 0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

 q_u 149,1853 kPa

 ε_f %

Waktu (detik)	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	0,0000	20,508395	0	0,0000	0
30	30	0,03	0,2947	20,569011	12	5,7900	27,6143
60	60	0,06	0,5894	20,629987	24	11,5800	55,0654
90	90	0,09	0,8841	20,691325	36	17,3700	82,3532
120	120	0,12	1,1788	20,753028	48	23,1600	109,4778
150	150	0,15	1,4735	20,815101	57	27,5025	129,6172
180	180	0,18	1,7682	20,877546	62	29,9150	140,5654
210	210	0,21	2,0629	20,940368	66	31,8450	149,1853

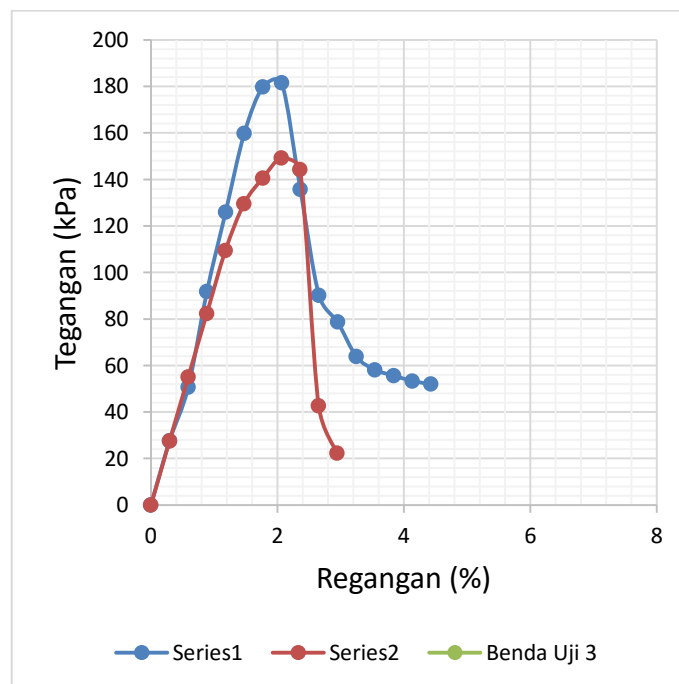
240	240	0,24	2,3576	21,003568	64	30,8800	144,2292
270	270	0,27	2,6523	21,067151	19	9,1675	42,6888
300	300	0,3	2,9470	21,13112	10	4,8250	22,3998

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2	Benda 3
Diameter / lebar sisi (cm)	5,1	5,13	
Tinggi, H_o (cm)	10,17	10,18	
Luas penampang, A (cm ²)	20,42	20,67	
Volume benda uji, V_1 (cm ³)	207,72	210,37	
Berat tanah, W_1 (g)	320,16	316,33	
Berat jenis, G_s	2,65	2,65	

Data Pengujian Kadar Air

	Benda 1		Benda 2	
	Berat Cawan, W_1 (g)	9,35	9,24	9,19
Berat cawan + tanah, W_2 (g)	29,39	29,39	29,29	29,23
Berat cawan + tanah kering, W_3 (g)	24,99	25,03	24,82	24,77
Kadar air, W (%)	28,1	27,6	28,6	28,4
Kadar air rata-rata, W_f (%)	27,9		28,5	
Berat tanah kering, W_d (g)	250,37		246,15	



Gambar 12. Kurva tegangan-regangan

c. Kadar semen 8%

Data Benda Uji Sebelum Pengujian :

Diameter 5,13 cm
 Tinggi 10,15 cm
 Berat 316,38 g

Benda Uji 1

Luas 20,66924 cm²
 Volume 209,7928 cm³
 Berat vol. 1,5081 g/cm³

Kalibrasi proving ring :

0,4825 kg

Hasil Uji Kuat Tekan Bebas:

 q_u 227,3698 kPa ϵ_f %

Waktu (detik)	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	0,0000	20,669245	0	0,0000	0
30	30	0,03	0,2956	20,730517	7	3,3775	15,9829
60	60	0,06	0,5911	20,792154	15	7,2375	34,1474
90	90	0,09	0,8867	20,854159	26	12,5450	59,0129
120	120	0,12	1,1823	20,916534	40	19,3000	90,5183
150	150	0,15	1,4778	20,979284	60	28,9500	135,3714
180	180	0,18	1,7734	21,042411	76	36,6700	170,9560
210	210	0,21	2,0690	21,105919	89	42,9425	199,5961
240	240	0,24	2,3645	21,169812	98	47,2850	219,1167
270	270	0,27	2,6601	21,234093	102	49,2150	227,3698
300	300	0,3	2,9557	21,298765	102	49,2150	226,6794
330	330	0,33	3,2512	21,363833	101	48,7325	223,7734
360	360	0,36	3,5468	21,429299	95	45,8375	209,8370
390	390	0,39	3,8424	21,495168	80	38,6000	176,1633
420	420	0,42	4,1379	21,561443	60	28,9500	131,7164
450	450	0,45	4,4335	21,628127	48	23,1600	105,0482
480	480	0,48	4,7291	21,695226	43	20,7475	93,8146

Data Benda Uji Sebelum Pengujian :

Diameter 5,12 cm
 Tinggi 10,13 cm
 Berat 313,13 g

Benda Uji 2

Luas 20,58874 cm²
 Volume 208,564 cm³
 Berat vol. 1,5014 g/cm³

Kalibrasi proving ring :

0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

 q_u 329,1659 kPa ϵ_f %

Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{-3}$	regangan $\epsilon = \frac{\Delta H}{H_0}$ (%)		arloji Ukur	Beban (P) (kg)	

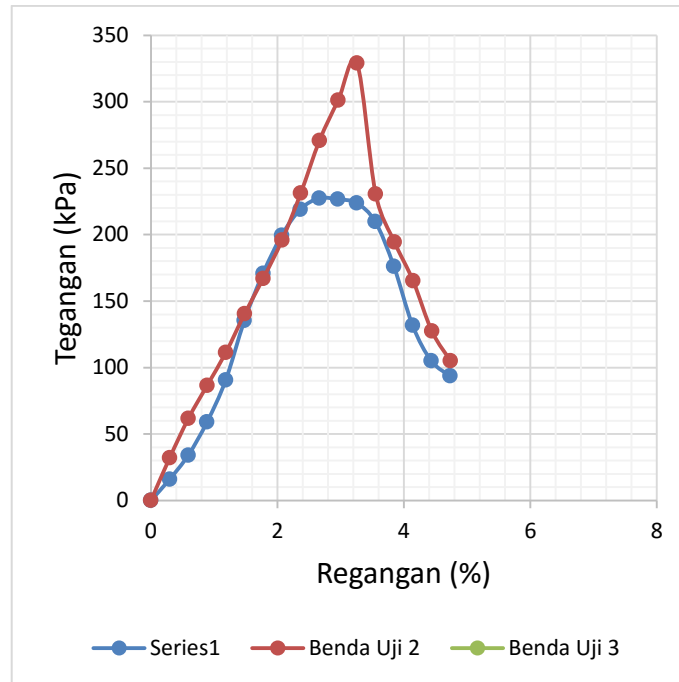
0	0	0	0,0000	20,588742	0	0,0000	0
30	30	0,03	0,2962	20,649896	14	6,7550	32,0905
60	60	0,06	0,5923	20,711415	27	13,0275	61,7050
90	90	0,09	0,8885	20,773302	38	18,3350	86,5853
120	120	0,12	1,1846	20,835556	49	23,6425	111,3159
150	150	0,15	1,4808	20,898192	62	29,9150	140,4266
180	180	0,18	1,7769	20,961201	74	35,7050	167,1021
210	210	0,21	2,0731	21,024592	87	41,9775	195,8655
240	240	0,24	2,3692	21,088367	103	49,6975	231,1855
270	270	0,27	2,6654	21,152531	121	58,3825	270,7630
300	300	0,3	2,9615	21,217086	135	65,1375	301,1718
330	330	0,33	3,2577	21,282036	148	71,4100	329,1659
360	360	0,36	3,5538	21,347385	104	50,1800	230,5977
390	390	0,39	3,8500	21,413137	88	42,4600	194,5220
420	420	0,42	4,1461	21,479295	75	36,1875	165,2752
450	450	0,45	4,4423	21,545863	58	27,9850	127,4179
480	480	0,48	4,7384	21,612845	48	23,1600	105,1225

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5	5,15
Tinggi, H_0 (cm)	10,19	10,11
Luas penampang, A (cm ²)	19,63	20,83
Volume benda uji, V_1 (cm ³)	200,04	210,56
Berat tanah, W_1 (g)	318,01	315,56
Berat jenis, G_s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W_1 (g)	12,23	9,38	10,25	10,25
Berat cawan + tanah, W_2 (g)	32,29	29,47	30,36	30,4
Berat cawan + tanah kering, W_3 (g)	27,86	25,07	25,96	26,04
Kadar air, W (%)	28,3	28,0	28,0	27,6
Kadar air rata-rata, W_f (%)	28,2		27,8	
Berat tanah kering, W_d (g)	248,07		246,90	



Gambar 13. Kurva tegangan-regangan

6. Benda uji dengan umur pemeraman 14 hari

a. Kadar semen 3%

Data Benda Uji Sebelum Pengujian :

Diameter 5,09 cm

Tinggi 10,17 cm

Berat 320,49 g

Benda Uji 1

Luas 20,34817 cm²

Volume 206,9409 cm³

Berat vol. g/cm³

Kalibrasi proving ring : 0,4825 kg

Hasil Uji Kuat Tekan Bebas:

q_u 231,93051 kPa

ϵ_f %

Waktu (detik)	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	0,0000	20,348174	0	0,0000	0
30	30	0,03	0,2950	20,408376	6	2,8950	13,9158
60	60	0,06	0,5900	20,468935	11	5,3075	25,4369
90	90	0,09	0,8850	20,529854	20	9,6500	46,1116
120	120	0,12	1,1799	20,591137	29	13,9925	66,6629
150	150	0,15	1,4749	20,652788	36	17,3700	82,5069
180	180	0,18	1,7699	20,714808	45	21,7125	102,8248
210	210	0,21	2,0649	20,777202	52	25,0900	118,4630

240	240	0,24	2,3599	20,839973	63	30,3975	143,0901
270	270	0,27	2,6549	20,903124	72	34,7400	163,0375
300	300	0,3	2,9499	20,966666	80	38,6000	180,6039
330	330	0,33	3,2448	21,030582	88	42,4600	198,0604
360	360	0,36	3,5398	21,094896	95	45,8375	213,1634
390	390	0,39	3,8348	21,159604	101	48,7325	225,9333
420	420	0,42	4,1298	21,224711	104	50,1800	231,9305
450	450	0,45	4,4248	21,290219	96	46,3200	213,4310
480	480	0,48	4,7198	21,356133	75	36,1875	166,2283
510	510	0,51	5,0147	21,422457	60	28,9500	132,5709

Data Benda Uji Sebelum Pengujian :

Diameter 5,09 cm
Tinggi 10,24 cm
Berat 319,56 g

Benda Uji 2

Luas 20,34817 cm²
Volume 208,3653 cm³
Berat vol. g/cm³

Kalibrasi proving ring :

0,4825 kg/di

Hasil Uji Kuat Tekan Bebas:

q_u 121,56494 kPa

ϵ_f %

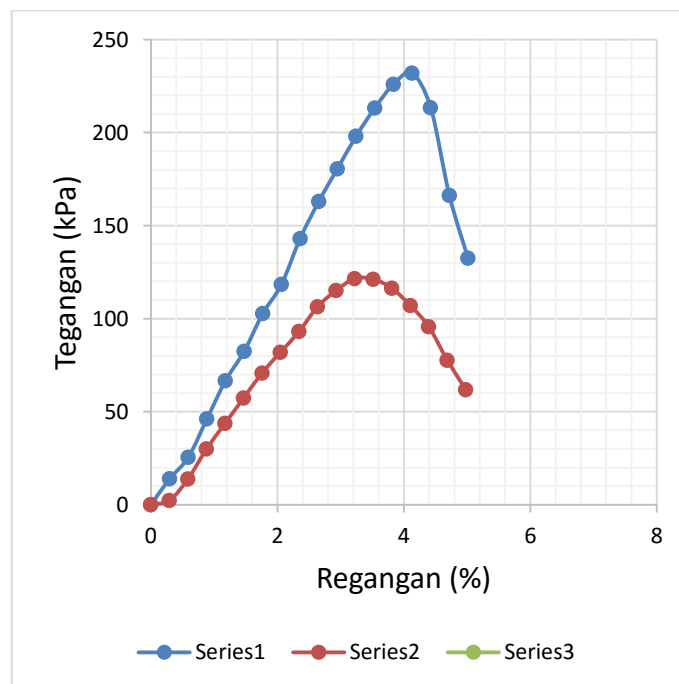
Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\epsilon = \Delta H/H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,348174	0	0,0000	0
30	30	0,03	0,2930	20,407963	1	0,4825	2,3194
60	60	0,06	0,5859	20,468104	6	2,8950	13,8752
90	90	0,09	0,8789	20,528601	13	6,2725	29,9744
120	120	0,12	1,1719	20,589457	19	9,1675	43,6792
150	150	0,15	1,4648	20,650674	25	12,0625	57,3023
180	180	0,18	1,7578	20,712257	31	14,9575	70,8436
210	210	0,21	2,0508	20,774208	36	17,3700	82,0246
240	240	0,24	2,3438	20,83653	41	19,7825	93,1375
270	270	0,27	2,6367	20,899228	47	22,6775	106,4471
300	300	0,3	2,9297	20,962304	51	24,6075	115,1589
330	330	0,33	3,2227	21,025762	54	26,0550	121,5649
360	360	0,36	3,5156	21,089606	54	26,0550	121,1969
390	390	0,39	3,8086	21,153838	52	25,0900	116,3538
420	420	0,42	4,1016	21,218463	48	23,1600	107,0764
450	450	0,45	4,3945	21,283483	43	20,7475	95,6295
480	480	0,48	4,6875	21,348904	35	16,8875	77,5995
510	510	0,51	4,9805	21,414728	28	13,5100	61,8888

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,09	5,15
Tinggi, H_0 (cm)	10,19	10,11
Luas penampang, A (cm ²)	20,34	20,83
Volume benda uji, V_1 (cm ³)	207,31	210,56
Berat tanah, W_1 (g)	320,49	319,56
Berat jenis, G_s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W_1 (g)	9,63	9,48	12,93	9,19
Berat cawan + tanah, W_2 (g)	29,69	29,6	33,06	29,22
Berat cawan + tanah kering, W_3 (g)	25,5	25,21	28,81	24,96
Kadar air, W (%)	26,4	27,9	26,8	27,0
Kadar air rata-rata, W_f (%)	27,2		26,9	
Berat tanah kering, W_d (g)	252,05		251,84	



Gambar 14. Kurva tegangan-regangan

b. Kadar semen 5%

Data Benda Uji Sebelum Pengujian :

Diameter 5,08 cm
Tinggi 10,2 cm
Berat 311,9 g

Benda Uji 1

Luas 20,2683 cm²
Volume 206,7367 cm³
Berat vol. g/cm³

Kalibrasi proving ring :

0,4825 kg

Hasil Uji Kuat Tekan Bebas:

q_u 253,0953 kPa ϵ_f %

Waktu (detik)	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	0,0000	20,268299	0	0,0000	0
30	30	0,03	0,2941	20,328088	6	2,8950	13,9708
60	60	0,06	0,5882	20,38823	13	6,2725	30,1808
90	90	0,09	0,8824	20,448729	20	9,6500	46,2946
120	120	0,12	1,1765	20,509588	30	14,4750	69,2358
150	150	0,15	1,4706	20,570811	39	18,8175	89,7386
180	180	0,18	1,7647	20,6324	50	24,1250	114,7061
210	210	0,21	2,0588	20,69436	60	28,9500	137,2352
240	240	0,24	2,3529	20,756692	71	34,2575	161,9073
270	270	0,27	2,6471	20,819401	91	43,9075	206,8900
300	300	0,3	2,9412	20,88249	103	49,6975	233,4647
330	330	0,33	3,2353	20,945963	112	54,0400	253,0953
360	360	0,36	3,5294	21,009822	75	36,1875	168,9683
390	390	0,39	3,8235	21,074073	52	25,0900	116,7942
420	420	0,42	4,1176	21,138717	47	22,6775	105,2411
450	450	0,45	4,4118	21,203759	44	21,2300	98,2214

Data Benda Uji Sebelum Pengujian :

Diameter 5,14 cm
Tinggi 9,96 cm
Berat 316,41 g

Benda Uji 2

Luas 20,74991 cm²
Volume 206,6691 cm³
Berat vol. g/cm³

Kalibrasi proving ring :

0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

q_u 356,145 kPa ϵ_f %

Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\epsilon = \frac{\Delta H}{H_0}$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,749905	0	0,0000	0

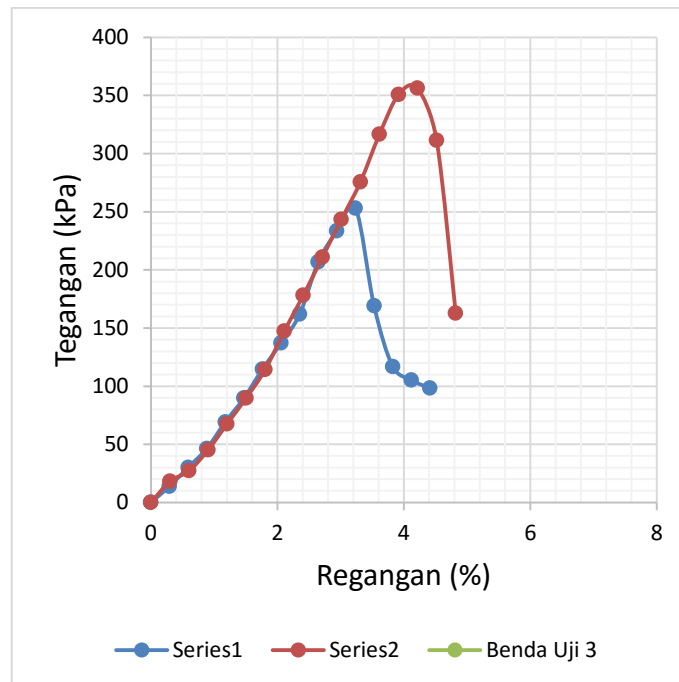
30	30	0,03	0,3012	20,812594	8	3,8600	18,1941
60	60	0,06	0,6024	20,875662	12	5,7900	27,2087
90	90	0,09	0,9036	20,939114	20	9,6500	45,2104
120	120	0,12	1,2048	21,002953	30	14,4750	67,6094
150	150	0,15	1,5060	21,067182	40	19,3000	89,8711
180	180	0,18	1,8072	21,131805	51	24,6075	114,2352
210	210	0,21	2,1084	21,196826	66	31,8450	147,3803
240	240	0,24	2,4096	21,262249	80	38,6000	178,0931
270	270	0,27	2,7108	21,328076	95	45,8375	210,8328
300	300	0,3	3,0120	21,394312	110	53,0750	243,3664
330	330	0,33	3,3133	21,460961	125	60,3125	275,6939
360	360	0,36	3,6145	21,528027	144	69,4800	316,6100
390	390	0,39	3,9157	21,595513	160	77,2000	350,6895
420	420	0,42	4,2169	21,663423	163	78,6475	356,1450
450	450	0,45	4,5181	21,731762	143	68,9975	311,4637
480	480	0,48	4,8193	21,800533	75	36,1875	162,8398

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,08	5,14
Tinggi, H_0 (cm)	10,2	9,96
Luas penampang, A (cm ²)	20,26	20,75
Volume benda uji, V_1 (cm ³)	206,70	206,63
Berat tanah, W_1 (g)	311,9	316,41
Berat jenis, G_s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W_1 (g)	9,51	9,11	9,75	13,32
Berat cawan + tanah, W_2 (g)	29,58	29,15	29,85	33,48
Berat cawan + tanah kering, W_3 (g)	25,35	24,83	25,56	29,17
Kadar air, W (%)	26,7	27,5	27,1	27,2
Kadar air rata-rata, W_f (%)	27,1		27,2	
Berat tanah kering, W_d (g)	245,41		248,82	



Gambar 15. Kurva tegangan-regangan

c. Kadar semen 8%

Data Benda Uji Sebelum Pengujian :

Diameter 5,12 cm
 Tinggi 10,16 cm
 Berat 315,6 g

Benda Uji 1

Luas 20,58874 cm²
 Volume 209,1816 cm³
 Berat vol. g/cm³

Kalibrasi proving ring :

0,4825 kg

Hasil Uji Kuat Tekan Bebas:

 q_u 366,926 kPa ϵ_f %

Waktu (detik)	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	0,0000	20,588742	0	0,0000	0
30	30	0,03	0,2953	20,649715	11	5,3075	25,2142
60	60	0,06	0,5906	20,711051	21	10,1325	47,9936
90	90	0,09	0,8858	20,772752	32	15,4400	72,9159
120	120	0,12	1,1811	20,834822	42	20,2650	95,4170
150	150	0,15	1,4764	20,897264	55	26,5375	124,5775
180	180	0,18	1,7717	20,960082	69	33,2925	155,8197
210	210	0,21	2,0669	21,023278	80	38,6000	180,1175
240	240	0,24	2,3622	21,086856	91	43,9075	204,2659

270	270	0,27	2,6575	21,150821	104	50,1800	232,7408
300	300	0,3	2,9528	21,215174	118	56,9350	263,2702
330	330	0,33	3,2480	21,27992	130	62,7250	289,1610
360	360	0,36	3,5433	21,345063	145	69,9625	321,5414
390	390	0,39	3,8386	21,410605	155	74,7875	342,6645
420	420	0,42	4,1339	21,476552	160	77,2000	352,6320
450	450	0,45	4,4291	21,542906	167	80,5775	366,9260
480	480	0,48	4,7244	21,609671	159	76,7175	348,2694
510	510	0,51	5,0197	21,676851	153	73,8225	334,0885
540	540	0,54	5,3150	21,744451	125	60,3125	272,0996
570	570	0,57	5,6102	21,812473	60	28,9500	130,2005

Data Benda Uji Sebelum Pengujian :

Diameter 5,09 cm
Tinggi 10,15 cm
Berat 318,96 g

Benda Uji 2

Luas 20,34817 cm²
Volume 206,534 cm³
Berat vol. g/cm³

Kalibrasi proving ring : 0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

q_u 425,9131 kPa

ϵ_f %

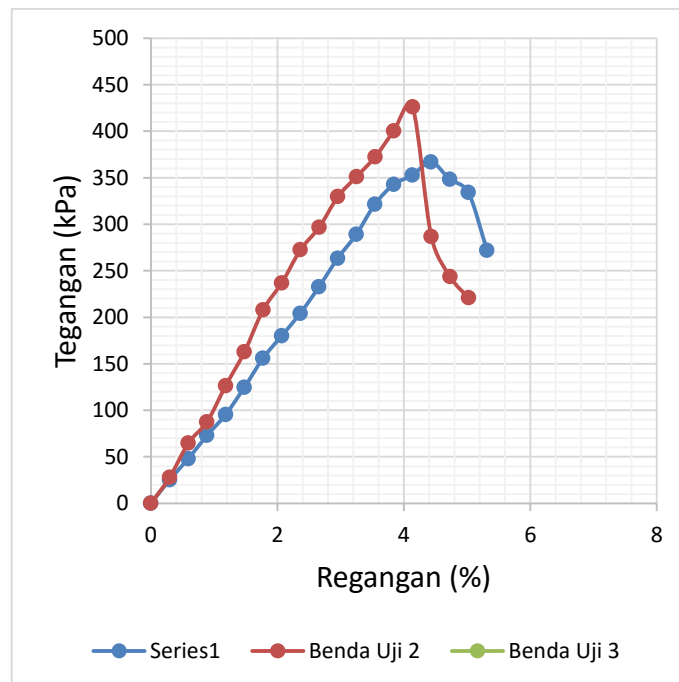
Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\epsilon = \Delta H / H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,348174	0	0,0000	0
30	30	0,03	0,2956	20,408495	12	5,7900	27,8315
60	60	0,06	0,5911	20,469174	28	13,5100	64,7477
90	90	0,09	0,8867	20,530215	38	18,3350	87,6106
120	120	0,12	1,1823	20,591622	55	26,5375	126,4266
150	150	0,15	1,4778	20,653397	71	34,2575	162,7171
180	180	0,18	1,7734	20,715543	91	43,9075	207,9272
210	210	0,21	2,0690	20,778065	104	50,1800	236,9161
240	240	0,24	2,3645	20,840965	120	57,9000	272,5397
270	270	0,27	2,6601	20,904248	131	63,2075	296,6218
300	300	0,3	2,9557	20,967916	146	70,4450	329,5823
330	330	0,33	3,2512	21,031972	156	75,2700	351,0839
360	360	0,36	3,5468	21,096422	166	80,0950	372,4480
390	390	0,39	3,8424	21,161267	179	86,3675	400,3849
420	420	0,42	4,1379	21,226513	191	92,1575	425,9131
450	450	0,45	4,4335	21,292162	129	62,2425	286,7717
480	480	0,48	4,7291	21,358218	110	53,0750	243,7777
510	510	0,51	5,0246	21,424685	100	48,2500	220,9286

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,12	5,09
Tinggi, H_0 (cm)	10,16	10,15
Luas penampang, A (cm ²)	20,58	20,34
Volume benda uji, V_1 (cm ³)	209,14	206,50
Berat tanah, W_1 (g)	315,6	318,96
Berat jenis, G_s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W_1 (g)	9,35	9,08	9,41	9,52
Berat cawan + tanah, W_2 (g)	29,38	29,15	29,44	29,62
Berat cawan + tanah kering, W_3 (g)	25,09	24,93	25,15	25,25
Kadar air, W (%)	27,3	26,6	27,3	27,8
Kadar air rata-rata, W_f (%)	26,9		27,5	
Berat tanah kering, W_d (g)	248,62		250,13	



Gambar 16. Kurva tegangan-regangan

7. Benda uji dengan umur pemeraman 28 hari

a. Kadar semen 3%

Data Benda Uji Sebelum Pengujian :

Diameter 5,11 cm
Tinggi 10,21 cm
Berat 320,92 g

Benda Uji 1

Luas 20,5084 cm²
Volume 209,3907 cm³
Berat vol. g/cm³

Kalibrasi proving ring : 0,4825 kg

Hasil Uji Kuat Tekan Bebas:

q_u 164,33517 kPa ϵ_f %

Waktu (detik)	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	0,0000	20,188581	0	0,0000	0
30	30	0,03	0,2944	20,248193	5	2,4125	11,6883
60	60	0,06	0,5888	20,308158	15	7,2375	34,9613
90	90	0,09	0,8832	20,368479	25	12,0625	58,0962
120	120	0,12	1,1776	20,42916	32	15,4400	74,1423
150	150	0,15	1,4720	20,490203	41	19,7825	94,7118
180	180	0,18	1,7664	20,551613	50	24,1250	115,1570
210	210	0,21	2,0608	20,613391	59	28,4675	135,4780
240	240	0,24	2,3553	20,675542	68	32,8100	155,6748
270	270	0,27	2,6497	20,738069	72	34,7400	164,3352
300	300	0,3	2,9441	20,800975	61	29,4325	138,8074
330	330	0,33	3,2385	20,864264	26	12,5450	58,9843
360	360	0,36	3,5329	20,927939	19	9,1675	42,9728

Data Benda Uji Sebelum Pengujian :

Diameter 5,07 cm
Tinggi 10,19 cm
Berat 323,09 g

Benda Uji 2

Luas 20,18858 cm²
Volume 205,7216 cm³
Berat vol. g/cm³

Kalibrasi proving ring : 0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

q_u 214,38533 kPa ϵ_f %

Waktu (detik)	Deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{-3}$	regangan $\epsilon = \frac{\Delta H}{H_0}$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,188581	0	0,0000	0

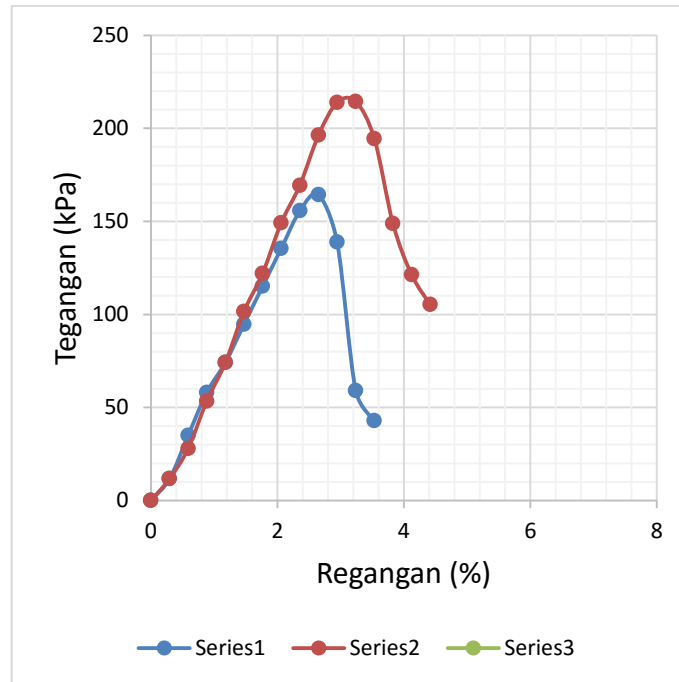
30	30	0,03	0,2944	20,248193	5	2,4125	11,6883
60	60	0,06	0,5888	20,308158	12	5,7900	27,9690
90	90	0,09	0,8832	20,368479	23	11,0975	53,4485
120	120	0,12	1,1776	20,42916	32	15,4400	74,1423
150	150	0,15	1,4720	20,490203	44	21,2300	101,6419
180	180	0,18	1,7664	20,551613	53	25,5725	122,0664
210	210	0,21	2,0608	20,613391	65	31,3625	149,2555
240	240	0,24	2,3553	20,675542	74	35,7050	169,4108
270	270	0,27	2,6497	20,738069	86	41,4950	196,2892
300	300	0,3	2,9441	20,800975	94	45,3550	213,8999
330	330	0,33	3,2385	20,864264	94,5	45,5963	214,3853
360	360	0,36	3,5329	20,927939	86	41,4950	194,5084
390	390	0,39	3,8273	20,992004	66	31,8450	148,8183
420	420	0,42	4,1217	21,056463	54	26,0550	121,3877
450	450	0,45	4,4161	21,121319	47	22,6775	105,3278

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,11	5,07
Tinggi, H_0 (cm)	10,21	10,19
Luas penampang, A (cm ²)	20,50	20,18
Volume benda uji, V_1 (cm ³)	209,35	205,68
Berat tanah, W_1 (g)	316,76	318,67
Berat jenis, G_s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W_1 (g)	9,41	9,22	12,1	9,82
Berat cawan + tanah, W_2 (g)	29,46	29,27	32,25	30,09
Berat cawan + tanah kering, W_3 (g)	25,48	25,23	27,94	25,81
Kadar air, W (%)	24,8	25,2	27,2	26,8
Kadar air rata-rata, W_f (%)	25,0		27,0	
Berat tanah kering, W_d (g)	253,41		250,94	



Gambar 17. Kurva tegangan-regangan

b. Kadar semen 5%

Data Benda Uji Sebelum Pengujian :

Diameter 5,07 cm
 Tinggi 10,15 cm
 Berat 315,03 g

Benda Uji 1

Luas 20,18858 cm²
 Volume 204,9141 cm³
 Berat vol. g/cm³

Kalibrasi proving ring :

0,4825 k

Hasil Uji Kuat Tekan Bebas:

 q_u 297,5899 kPa ϵ_f %

Waktu (detik)	Deformasi		Regangan $\epsilon = \Delta H/H_0$ (%)	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	0,0000	20,188581	0	0,0000	0
30	30	0,03	0,2956	20,248429	7	3,3775	16,3634
60	60	0,06	0,5911	20,308632	16	7,7200	37,2911
90	90	0,09	0,8867	20,369195	26	12,5450	60,4179
120	120	0,12	1,1823	20,43012	37	17,8525	85,7230
150	150	0,15	1,4778	20,49141	50	24,1250	115,4953
180	180	0,18	1,7734	20,553069	65	31,3625	149,6935
210	210	0,21	2,0690	20,615101	77	37,1525	176,7957
240	240	0,24	2,3645	20,677508	91	43,9075	208,3097

270	270	0,27	2,6601	20,740293	107	51,6275	244,1941
300	300	0,3	2,9557	20,803462	120	57,9000	273,0310
330	330	0,33	3,2512	20,867016	128	61,7600	290,3461
360	360	0,36	3,5468	20,93096	130	62,7250	293,9819
390	390	0,39	3,8424	20,995297	132	63,6900	297,5899
420	420	0,42	4,1379	21,060031	131	63,2075	294,4277
450	450	0,45	4,4335	21,125165	106	51,1450	237,5046
480	480	0,48	4,7291	21,190703	79	38,1175	176,4607
510	510	0,51	5,0246	21,256649	64	30,8800	142,5120
540	540	0,54	5,3202	21,323007	50	24,1250	110,9910

Data Benda Uji Sebelum Pengujian :

Diameter 5,08 cm

Tinggi 10,11 cm

Berat 323,34 g

Benda Uji 2

Luas 20,2683 cm²Volume 204,9125 cm³Berat vol. g/cm³

Kalibrasi proving ring :

0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

q_u 334,5418 kPaε_f %

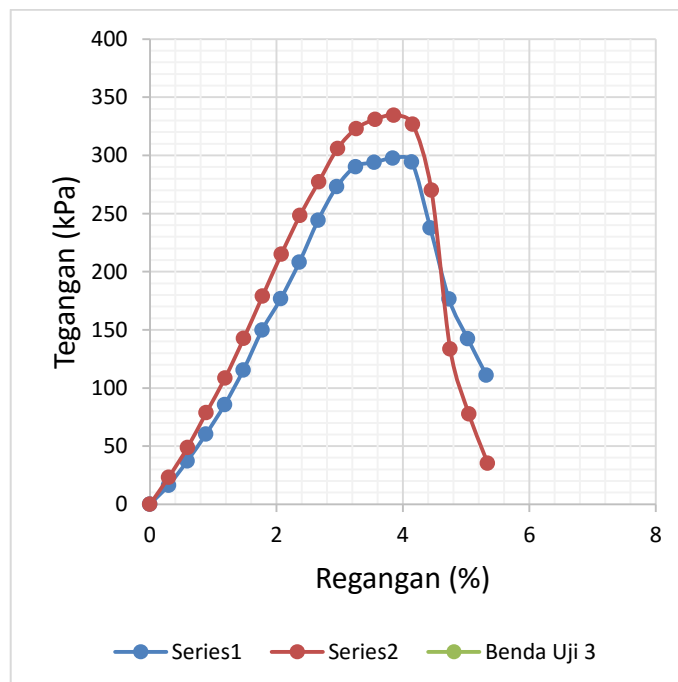
Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\epsilon = \Delta H/H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,268299	0	0,0000	0
30	30	0,03	0,2967	20,328621	10	4,8250	23,2840
60	60	0,06	0,5935	20,389304	21	10,1325	48,7510
90	90	0,09	0,8902	20,45035	34	16,4050	78,6945
120	120	0,12	1,1869	20,511762	47	22,6775	108,4579
150	150	0,15	1,4837	20,573545	62	29,9150	142,6425
180	180	0,18	1,7804	20,6357	78	37,6350	178,9129
210	210	0,21	2,0772	20,698233	94	45,3550	214,9616
240	240	0,24	2,3739	20,761145	109	52,5925	248,5087
270	270	0,27	2,6706	20,824442	122	58,8650	277,3019
300	300	0,3	2,9674	20,888125	135	65,1375	305,9149
330	330	0,33	3,2641	20,952199	143	68,9975	323,0522
360	360	0,36	3,5608	21,016667	147	70,9275	331,0700
390	390	0,39	3,8576	21,081533	149	71,8925	334,5418
420	420	0,42	4,1543	21,146801	146	70,4450	326,7943
450	450	0,45	4,4510	21,212475	121	58,3825	269,9979
480	480	0,48	4,7478	21,278557	60	28,9500	133,4675
510	510	0,51	5,0445	21,345053	35	16,8875	77,6135
540	540	0,54	5,3412	21,411965	16	7,7200	35,3696

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,07	5,08
Tinggi, H_0 (cm)	10,15	10,11
Luas penampang, A (cm ²)	20,18	20,26
Volume benda uji, V_1 (cm ³)	204,88	204,87
Berat tanah, W_1 (g)	312,49	319,01
Berat jenis, G_s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W_1 (g)	9,4	9,55	9,43	8,85
Berat cawan + tanah, W_2 (g)	29,4	29,6	29,49	28,86
Berat cawan + tanah kering, W_3 (g)	25,34	25,52	25,12	24,63
Kadar air, W (%)	25,5	25,5	27,9	26,8
Kadar air rata-rata, W_f (%)	25,5		27,3	
Berat tanah kering, W_d (g)	248,98		250,54	



Gambar 18. Kurva tegangan-regangan

c. Kadar semen 8%

Data Benda Uji Sebelum Pengujian :

Diameter 5,09 cm
 Tinggi 10,12 cm
 Berat 318,52 g

Benda Uji 1

Luas 20,34817 cm²
 Volume 205,9235 cm³
 Berat vol. g/cm³

Kalibrasi proving ring :

0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

 q_u 439,2364 kPa ε_f %

Waktu (detik)	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	0,0000	20,348174	0	0,0000	0
30	30	0,03	0,2964	20,408674	10	4,8250	23,1927
60	60	0,06	0,5929	20,469535	22	10,6150	50,8723
90	90	0,09	0,8893	20,53076	37	17,8525	85,3027
120	120	0,12	1,1858	20,592352	51	24,6075	117,2278
150	150	0,15	1,4822	20,654315	70	33,7750	160,4182
180	180	0,18	1,7787	20,716652	88	42,4600	201,0617
210	210	0,21	2,0751	20,779367	100	48,2500	227,7897
240	240	0,24	2,3715	20,842462	123	59,3475	279,3331
270	270	0,27	2,6680	20,905941	136	65,6200	307,9183
300	300	0,3	2,9644	20,969809	153	73,8225	345,3530
330	330	0,33	3,2609	21,034068	165	79,6125	371,3018
360	360	0,36	3,5573	21,098722	179	86,3675	401,5718
390	390	0,39	3,8538	21,163774	189	91,1925	422,7027
420	420	0,42	4,1502	21,229229	197	95,0525	439,2364
450	450	0,45	4,4466	21,29509	103	49,6975	228,9413
480	480	0,48	4,7431	21,361361	68	32,8100	150,6768
510	510	0,51	5,0395	21,428046	52	25,0900	114,8648

Data Benda Uji Sebelum Pengujian :

Diameter 5,11 cm
 Tinggi 10,08 cm
 Berat 318,45 g

Benda Uji 2

Luas 20,5084 cm²
 Volume 206,7246 cm³
 Berat vol. g/cm³

Kalibrasi proving ring :

0,4825 kg/div

Hasil Uji Kuat Tekan Bebas:

 q_u 520,9472 kPa ε_f %

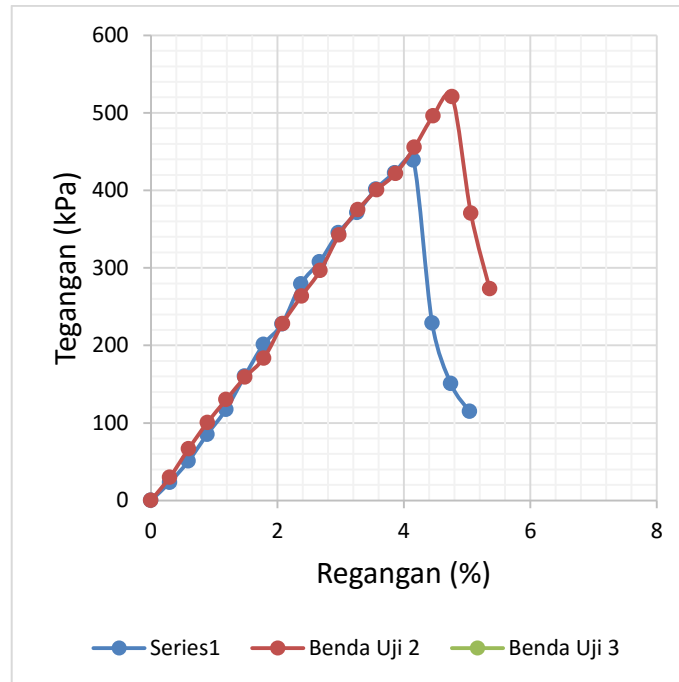
Waktu (detik)	deformasi			luas terkoreksi A (cm ²)	Beban Aksial		tegangan P/A (kPa)
	arloji ukur (a)	$\Delta H = a \times 10^{(-3)}$	regangan $\epsilon = \Delta H/H_0$ (%)		arloji Ukur	Beban (P) (kg)	
0	0	0	0,0000	20,508395	0	0,0000	0
30	30	0,03	0,2976	20,569614	13	6,2725	29,9146
60	60	0,06	0,5952	20,6312	29	13,9925	66,5334
90	90	0,09	0,8929	20,693156	44	21,2300	100,6450
120	120	0,12	1,1905	20,755484	57	27,5025	129,9895
150	150	0,15	1,4881	20,81819	70	33,7750	159,1554
180	180	0,18	1,7857	20,881275	81	39,0825	183,6092
210	210	0,21	2,0833	20,944744	101	48,7325	228,2510
240	240	0,24	2,3810	21,0086	117	56,4525	263,6059
270	270	0,27	2,6786	21,072847	132	63,6900	296,4948
300	300	0,3	2,9762	21,137487	153	73,8225	342,6134
330	330	0,33	3,2738	21,202526	168	81,0600	375,0490
360	360	0,36	3,5714	21,267966	180	86,8500	400,6018
390	390	0,39	3,8690	21,333811	190	91,6750	421,5523
420	420	0,42	4,1667	21,400065	206	99,3950	455,6364
450	450	0,45	4,4643	21,466732	225	108,5625	496,1156
480	480	0,48	4,7619	21,533815	237	114,3525	520,9472
510	510	0,51	5,0595	21,601319	169	81,5425	370,3162
540	540	0,54	5,3571	21,669248	125	60,3125	273,0439

Data Benda Uji Sebelum Pengujian

	Benda 1	Benda 2
Diameter / lebar sisi (cm)	5,09	5,11
Tinggi, H ₀ (cm)	10,12	10,08
Luas penampang, A (cm ²)	20,34	20,50
Volume benda uji, V ₁ (cm ³)	205,88	206,69
Berat tanah, W ₁ (g)	314,46	314,35
Berat jenis, G _s	2,65	2,65

Data Pengujian Kadar Air

	Benda 1		Benda 2	
Berat Cawan, W ₁ (g)	6,34	6,3	9,47	9,34
Berat cawan + tanah, W ₂ (g)	26,38	26,34	29,67	29,54
Berat cawan + tanah kering, W ₃ (g)	22,08	22,22	25,5	25,26
Kadar air, W (%)	27,3	25,9	26,0	26,9
Kadar air rata-rata, W _f (%)	26,6		26,4	
Berat tanah kering, W _d (g)	248,39		248,60	



Gambar 19. Kurva tegangan-regangan