

BAB V

HASIL PENELITIAN

Data-data yang didapat dari hasil penelitian kemudian diolah dengan menggunakan komputer untuk mendapatkan grafik-grafik dan gambar-gambar yang diperlukan.

5.1 Modulus Elastisitas Kayu

Modulus Elastisitas kayu dapat dihitung dengan menggunakan persamaan 3.2. Hitungan Modulus Elastisitas kayu Sampel 1 sampai dengan Sampel 5 adalah sebagai berikut:

1. Sampel 1

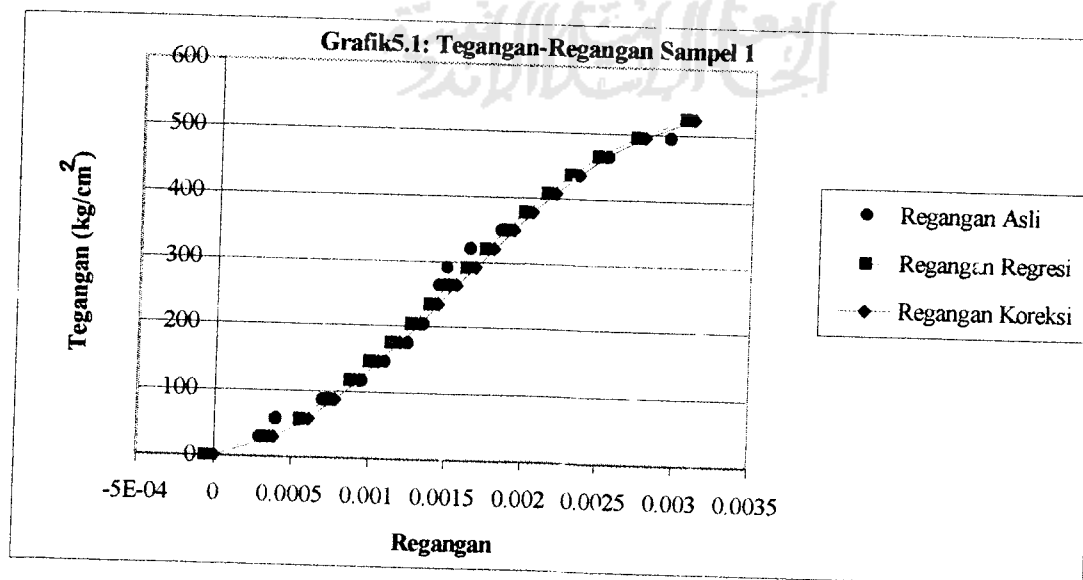
Hasil pengujian kuat desak kayu sampel 1 dapat dilihat pada Tabel 5.1 dan Gambar 5.1.

Panjang mula-mula (L_0) = 20 cm

$$\begin{aligned}\text{Luas} &= \text{lebar} \times \text{tebal} \\ &= 7,00 \times 5,00 \\ &= 35 \text{ cm}^2\end{aligned}$$

Tabel 5.1: Kuat Desak Kayu Sampel 1

BEBAN		Ekstensometer mm	Tegangan kg/cm ²	Regangan Asli	Regangan Regresi	Regangan Koreksi
kN	kg					
0	0	0	0	0	-0.000057	0
10	1019.368	0.06	29.1248	0.00030	0.00033	0.000387
20	2038.736	0.08	58.2496	0.00040	0.000555	0.000612
30	3058.104	0.14	87.3744	0.00070	0.000727	0.000784
40	4077.472	0.19	116.499	0.00095	0.000877	0.000934
50	5096.84	0.22	145.624	0.00110	0.001000	0.001057
60	6116.208	0.25	174.749	0.00125	0.001140	0.001197
70	7135.576	0.27	203.874	0.00135	0.001270	0.001327
80	8154.944	0.28	232.998	0.00140	0.001390	0.001447
90	9174.312	0.29	262.123	0.00145	0.001509	0.001566
100	10193.68	0.30	291.248	0.00150	0.001630	0.001687
110	11213.05	0.33	320.373	0.00165	0.001750	0.001807
120	12232.42	0.37	349.498	0.00185	0.001880	0.001937
130	13251.78	0.40	378.622	0.00200	0.002000	0.002057
140	14271.15	0.43	407.747	0.00215	0.002150	0.002207
150	15290.52	0.47	436.872	0.00235	0.002300	0.002357
160	16309.89	0.51	465.997	0.00255	0.002480	0.002537
170	17329.26	0.59	495.122	0.00295	0.002730	0.002787
180	18348.62	0.615	524.246	0.00308	0.003050	0.003107



Batas sebanding : $\sigma_p = 320,3728 \text{ kg/cm}^2$

$$\varepsilon_p = 0.001807$$

Modulus Elastisitas Kayu:

$$E = \frac{320,3728}{0.001807}$$

$$= 177295,4086 \text{ kg/cm}^2$$

2. Sampel 2

Hasil pengujian kuat desak kayu sampel 2 dapat dilihat pada Tabel 5.2 dan

Gambar 5.2.

Panjang mula-mula (L_0) = 19,8 cm

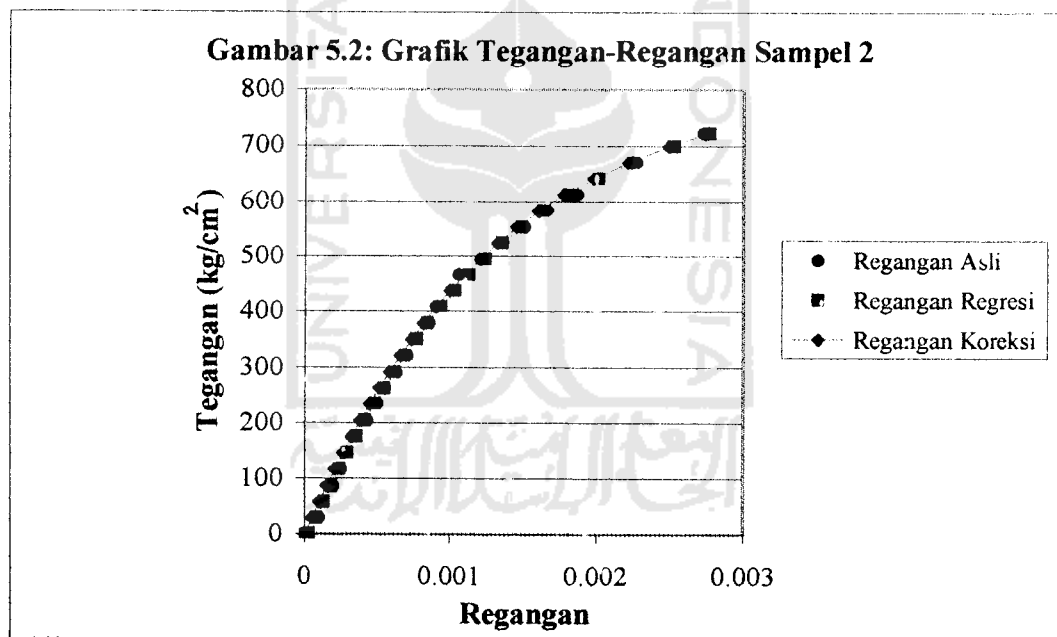
Luas (A) = 35 cm²

Tabel 5.2: Kuat Desak Kayu Sampel 2

BEBAN		Ekstensometer mm	Tegangan kg/cm ²	Regangan Asli	Regangan Regresi	Regangan Koreksi
kN	kg					
0	0	0	0	0	0.00003419	0
10	1019.368	0.020	29.1248	0.00010	0.00008370	0.00004951
20	2038.736	0.025	58.2496	0.00013	0.00013480	0.00010061
30	3058.104	0.040	87.3744	0.00020	0.00018750	0.00015331
40	4077.472	0.050	116.499	0.00025	0.00024210	0.00020791
50	5096.84	0.060	145.624	0.00030	0.00029860	0.00026441
60	6116.208	0.070	174.749	0.00035	0.00035720	0.00032301
70	7135.576	0.085	203.874	0.00043	0.00041820	0.00038401
80	8154.944	0.100	232.998	0.00051	0.00048160	0.00044741
90	9174.312	0.110	262.123	0.00056	0.00054830	0.00051411
100	10193.68	0.125	291.248	0.00063	0.00061800	0.00058381
110	11213.05	0.140	320.373	0.00071	0.00069130	0.00065711
120	12232.42	0.150	349.498	0.00076	0.00076860	0.00073441
130	13251.78	0.170	378.622	0.00086	0.00085050	0.00081631
140	14271.15	0.180	407.747	0.00091	0.00093780	0.00090361

Tabel 5.2: Lanjutan Kuat Desak Kayu Sampel 2

150	15290.52	0.20	436.872	0.00101	0.00103100	0.00099681
160	16309.89	0.210	465.997	0.00106	0.00113190	0.00109771
170	17329.26	0.240	495.122	0.00121	0.00124100	0.00120681
180	18348.62	0.270	524.246	0.00136	0.00136100	0.00132681
190	19367.99	0.300	553.371	0.00152	0.00149400	0.00145981
200	20387.36	0.330	582.496	0.00167	0.00164400	0.00160981
210	21406.73	0.370	611.621	0.00187	0.00181520	0.00178101
220	22426.1	0.400	640.746	0.00202	0.00201400	0.00197981
230	23445.46	0.450	669.870	0.00227	0.00224900	0.00221481
240	24464.83	0.500	698.995	0.00253	0.00252500	0.00249081
248	25280	0.540	722.295	0.00273	0.00277000	0.00273581



Batas sebanding : $\sigma_p = 495,1216 \text{ kg/cm}^2$

$$\varepsilon_p = 0,00120681$$

Modulus Elastisitas Kayu :

$$E = \frac{495,1216}{0,00120681}$$

$$= 410273,6339 \text{ kg/cm}^2$$

3. Sampel 3

Hasil pengujian kuat desak kayu sampel 3 dapat dilihat pada Tabel 5.3 dan

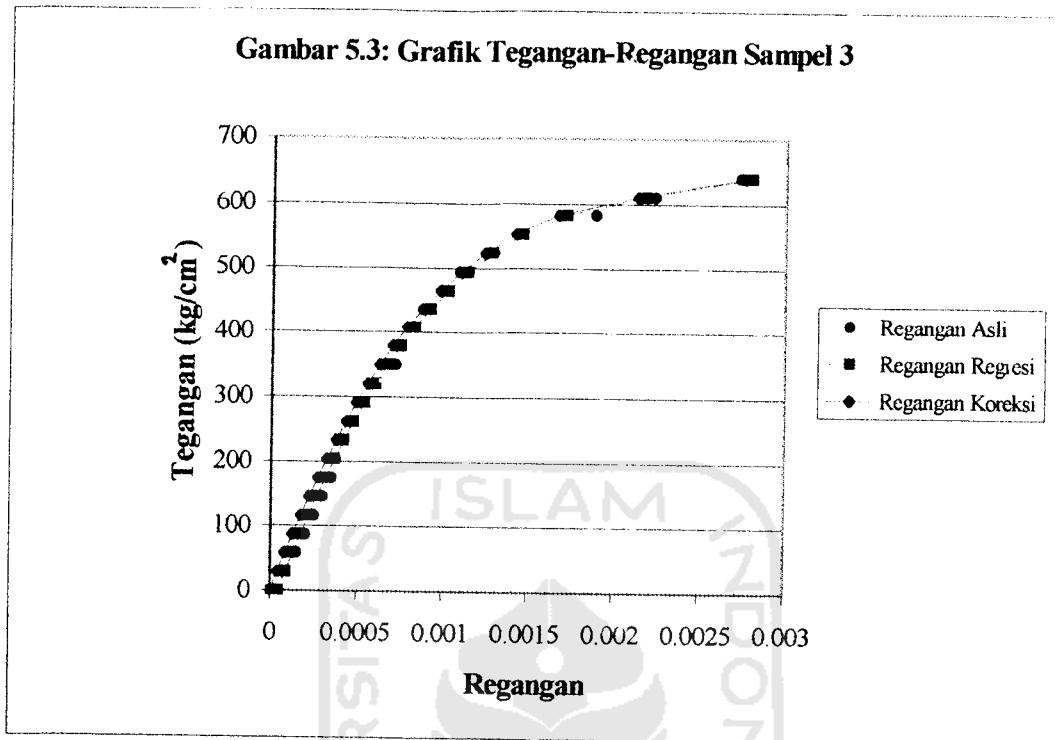
Gambar 5.3.

Panjang mula-mula (L_0) = 20,1 cm

Luas (A) = 35 cm²

Tabel 5.3: Kuat Desak Kayu Sampel 3

BEBAN		Ekstensometer mm	Tegangan kg/cm ²	Regangan Asli	Regangan Regresi	Regangan Koreksi
kN	kg					
0	0	0	0	0	0.00004585	0
10	1019.368	0.0015	29.1248	7.46269E-06	0.00008673	0.00004088
20	2038.736	0.0030	58.2496	1.49254E-05	0.000129	0.00008315
30	3058.104	0.0040	87.3744	1.99005E-05	0.00017293	0.00012708
40	4077.472	0.0050	116.499	2.48756E-05	0.00021855	0.0001727
50	5096.84	0.0060	145.624	2.98507E-05	0.000266	0.00022015
60	6116.208	0.0070	174.749	3.48259E-05	0.0003157	0.00026985
70	7135.576	0.0075	203.874	3.73134E-05	0.0003677	0.00032185
80	8154.944	0.0085	232.998	4.22886E-05	0.0004223	0.00037645
90	9174.312	0.0090	262.123	4.47761E-05	0.0004799	0.00043405
100	10193.68	0.0100	291.248	4.97512E-05	0.0005411	0.00049525
110	11213.05	0.0120	320.373	5.97015E-05	0.0006063	0.00056045
120	12232.42	0.0145	349.498	7.21393E-05	0.000676	0.00063015
130	13251.78	0.0150	378.622	7.46269E-05	0.0007517	0.00070585
140	14271.15	0.0165	407.747	8.20896E-05	0.0008342	0.00078835
150	15290.52	0.0180	436.872	8.95522E-05	0.0009255	0.00087965
160	16309.89	0.0200	465.997	9.95025E-05	0.0010282	0.00098235
170	17329.26	0.0220	495.122	0.000109453	0.001147	0.00110115
180	18348.62	0.0260	524.246	0.000129353	0.001288	0.00124215
190	19367.99	0.0295	553.371	0.000146766	0.0014672	0.00142135
200	20387.36	0.0380	582.496	0.000189055	0.0017212	0.00167535
210	21406.73	0.0450	611.621	0.000223881	0.0021842	0.00213835
220	22426.1	0.0550	640.746	0.000273632	0.0028043	0.00275845



Batas sebanding : $\sigma_p = 495,1216 \text{ kg/cm}^2$

$$\epsilon_p = 0,0011012$$

Modulus Elastisitas Kayu :

$$E = \frac{495,1216}{0,0011012}$$

$$= 449620,0509 \text{ kg/cm}^2$$

4. Sampel 4

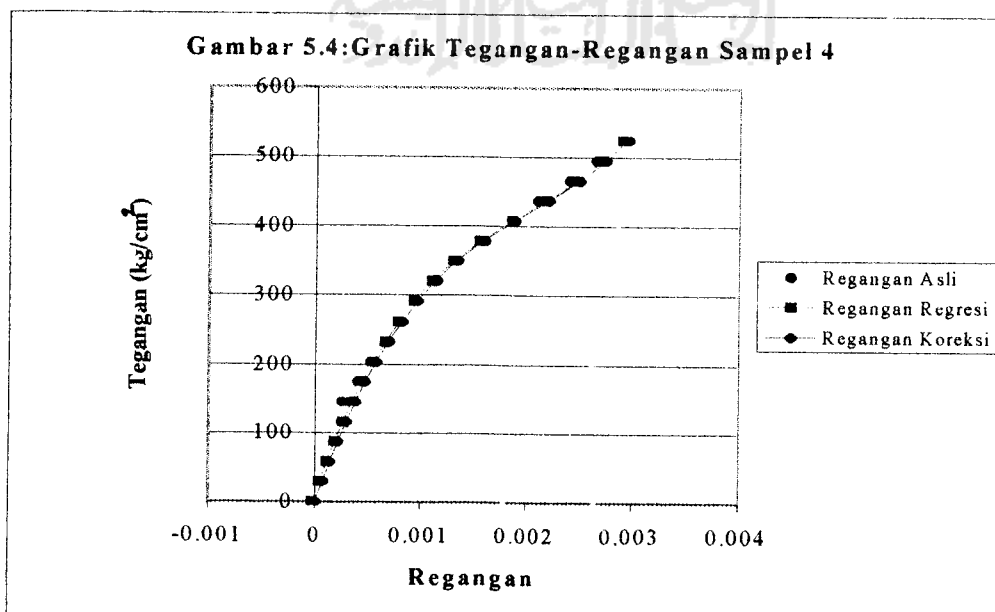
Hasil pengujian kuat desak kayu sampel 3 dapat dilihat pada Tabel 5.4 dan Gambar 5.4.

Panjang mula-mula (L_0) = 19,9 cm

Luas (A) = 35 cm²

Tabel 5.4: Kuat Desak Kayu Sampel 4

BEBAN		Ekstensometer mm	Tegangan kg/cm ²	Regangan Asli	Regangan Regresi	Regangan Koreksi
kN	kg					
0	0	0	0	0	-0.00030128	0
10	1019.4	0.015	29.1248	7.538E-05	0.000037166	0.000067294
20	2038.7	0.025	58.2496	0.0001256	0.000108332	0.00013846
30	3058.1	0.035	87.3744	0.0001759	0.000183933	0.000214061
40	4077.5	0.050	116.499	0.0002513	0.000264681	0.000294809
50	5096.8	0.050	145.624	0.0002513	0.000351478	0.000381606
60	6116.2	0.080	174.749	0.0004020	0.000445489	0.000475617
70	7135.6	0.105	203.874	0.0005276	0.000548261	0.000578389
80	8154.9	0.140	232.998	0.0007035	0.000661893	0.000692021
90	9174.3	0.160	262.123	0.0008040	0.000789342	0.00081947
100	10194	0.190	291.248	0.0009548	0.000934871	0.000964999
110	11213	0.230	320.373	0.0011558	0.001104825	0.001134953
120	12232	0.270	349.498	0.0013568	0.001308599	0.001338727
130	13252	0.320	378.622	0.0016080	0.001558346	0.001588474
140	14271	0.370	407.747	0.0018593	0.001859512	0.00188964
150	15291	0.420	436.872	0.0021106	0.002183198	0.002213326
160	16310	0.480	465.997	0.0024121	0.002475256	0.002505384
170	17329	0.530	495.122	0.0026633	0.002715266	0.002745394
180	18349	0.590	524.246	0.0029648	0.002911645	0.002941773



Batas sebanding : $\sigma_p = 320,3728 \text{ kg/cm}^2$

$$\varepsilon_p = 0,00113495$$

Modulus Elastisitas Kayu :

$$E = \frac{320,3728}{0,00113495}$$

$$= 282278,7117 \text{ kg/cm}^2$$

5. Sampel 5

Hasil pengujian kuat desak kayu sampel 3 dapat dilihat pada Tabel 5.5 dan Gambar 5.5.

Panjang mula-mula (L_0) = 19,8 cm

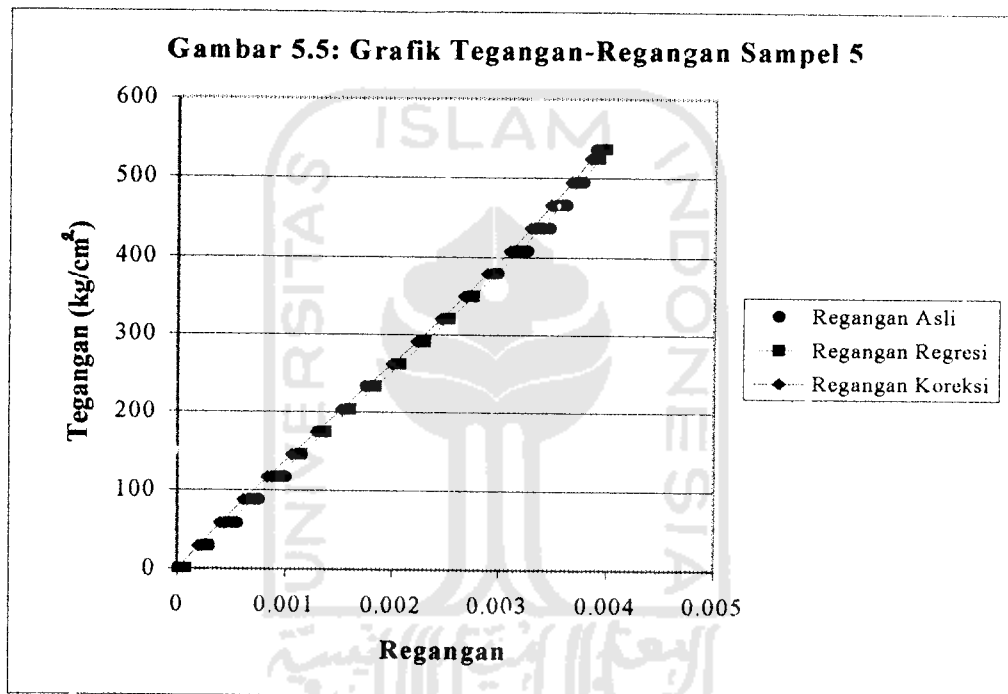
Luas (A) = 35 cm²

Tabel 5.5: Kuat Desak Kayu Sampel 5

BEBAN		Ekstensometer mm	Tegangan kg/cm ²	Regangan Asli	Regangan Regresi	Regangan Koreksi
kN	kg					
0	0	0	0	0	0.000081438	0
10	1019.4	0.060	29.1248	0.0003015	0.000278843	0.000197405
20	2038.7	0.110	58.2496	0.0005528	0.000484147	0.000402709
30	3058.1	0.150	87.3744	0.0007538	0.000697051	0.000615613
40	4077.5	0.200	116.499	0.0010050	0.000916944	0.000835506
50	5096.8	0.230	145.624	0.0011558	0.001142864	0.001061426
60	6116.2	0.260	174.749	0.0013065	0.001373470	0.001292032
70	7135.6	0.320	203.874	0.0016080	0.001607088	0.00152565
80	8154.9	0.350	232.998	0.0017588	0.001841804	0.001760366
90	9174.3	0.405	262.123	0.0020352	0.002075630	0.001994192
100	10194	0.450	291.248	0.0022613	0.002306637	0.002225199
110	11213	0.495	320.373	0.0024874	0.002533110	0.002451672
120	12232	0.540	349.498	0.0027136	0.002753699	0.002672261
130	13252	0.595	378.622	0.0029899	0.002967367	0.002885929
140	14271	0.650	407.747	0.0032663	0.003173490	0.003092052

Tabel 5.5: Lanjutan Kuat Desak Kayu Sampel 5

150	15291	0.690	436.872	0.0034673	0.003371732	0.003290294
160	16310	0.720	465.997	0.0036181	0.003562017	0.003480579
170	17329	0.750	495.122	0.0037688	0.003744459	0.003663021
180	18349	0.770	524.246	0.0038693	0.003919295	0.003837857
184	18756	0.775	535.896	0.0038945	0.003987175	0.003905737



Batas sebanding : $\sigma_p = 291,248 \text{ kg/cm}^2$

$$\varepsilon_p = 0,0022252$$

Modulus Elastisitas Kayu :

$$E = \frac{291,248}{0,0022252}$$

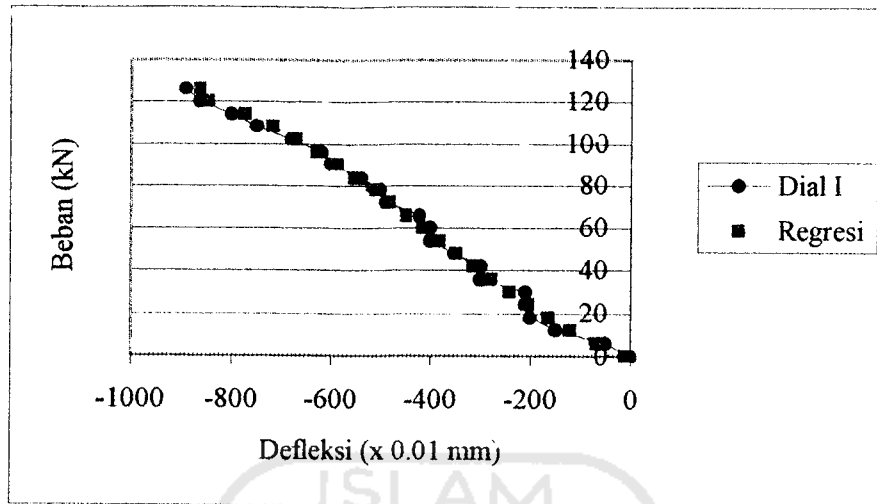
$$= 130886,2125 \text{ kg/cm}^2$$

5.2 Kuat Desak Benda Uji

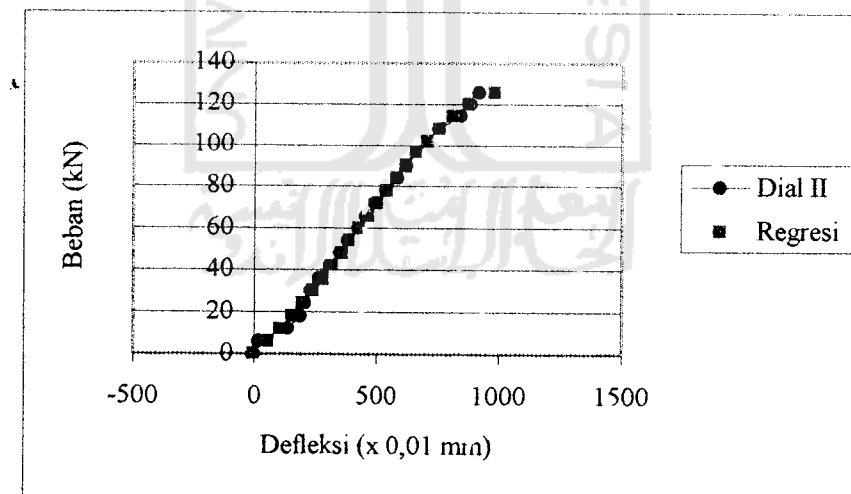
Dari setiap pengujian desak terhadap benda uji, diperoleh grafik atau diagram hubungan antara besar beban dengan defleksinya (δ), untuk lebih jelasnya dapat dilihat pada Tabel 5.6 sampai dengan Tabel 5.33, Gambar 5.6 sampai dengan Gambar 5.61 dan Lampiran 4 pada Gambar 1 sampai dengan Gambar 7.

Tabel 5.6: Tabel Kuat Desak Benda Uji $L_c = 20 i_{\min} / I$ / Dial I dan Dial II / 1

BEBAN (kN)	Sampel $L_c = 20 i_{\min} / I$			
	Dial I	Regresi	Dial II	Regresi
0	0	-9.6646	0	-7.42977
6	-50	-70.44	16	53.673765
12	-150	-120.0162	134	105.83298
18	-200	-163.8017	183	152.8366
24	-210	-204.0173	209	196.48772
30	-210	-241.8476	231	237.82578
36	-300	-278.0272	262	277.52738
42	-300	-313.0627	310	316.07467
48	-350	-347.3348	353	353.83837
54	-400	-381.1533	385	391.12414
60	-400	-414.7899	425	428.20184
66	-420	-448.5021	456	465.32656
72	-490	-482.5531	492	502.7567
78	-500	-517.2339	540	540.77261
84	-540	-552.891	582	579.70005
90	-600	-589.9705	623	619.94426
96	-620	-629.0959	664	662.04685
102	-680	-671.2263	717	706.79194
108	-750	-718.0379	755	755.43348
114	-800	-773.1171	842	810.27962
120	-865	-848.3776	881	876.73659
126	-893	-862.8672	914	979.04279



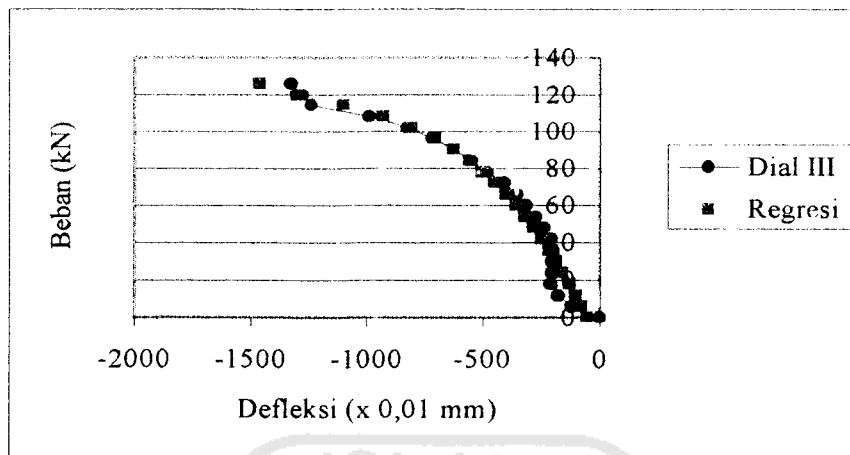
Gambar 5.6: Grafik Beban-Defleksi Dial I / $Lc=20. i_{\min} / 1$



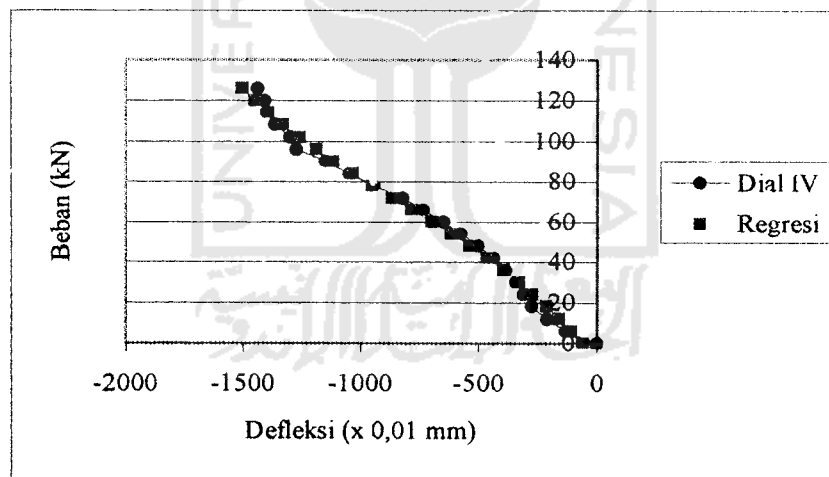
Gambar 5.7: Grafik Beban-Defleksi Dial II / $Lc=20. i_{\min} / 1$

Tabel 5.7: Tabel Kuat Desak Benda Uji $L_c = 20 i_{\min} / 1$ / Dial III dan Dial IV / 1

BEBAN (kN)	Sampel $L_c = 20 i_{\min} / 1$			
	Dial III	Regresi	Dial IV	Regresi
0	0	-53.48167	0	-58.79766
6	-120	-77.96367	-130	-106.6558
12	-178	-103.4347	-210	-157.2953
18	-210	-129.9979	-275	-211.0153
24	-205	-157.7741	-308	-268.1374
30	-205	-186.9067	-340	-328.9912
36	-202	-217.5679	-380	-393.8862
42	-209	-249.9665	-435	-463.0625
48	-240	-284.36	-504	-536.6115
54	-275	-321.0708	-574	-614.3679
60	-317	-360.5111	-648	-695.7916
66	-360	-403.2192	-733	-779.8898
72	-410	-449.9188	-820	-865.2541
78	-485	-501.6145	-944	-950.2511
84	-550	-559.76	-1048	-1033.315
90	-625	-626.5664	-1150	-1113.206
96	-715	-705.6123	-1275	-1189.138
102	-825	-803.1107	-1300	-1260.75
108	-990	-930.2943	-1365	-1328.004
114	-1240	-1102.398	-1398	-1391.071
120	-1281	-1301.001	-1407	-1450.229
126	-1327	-1464.201	-1439	-1505.802



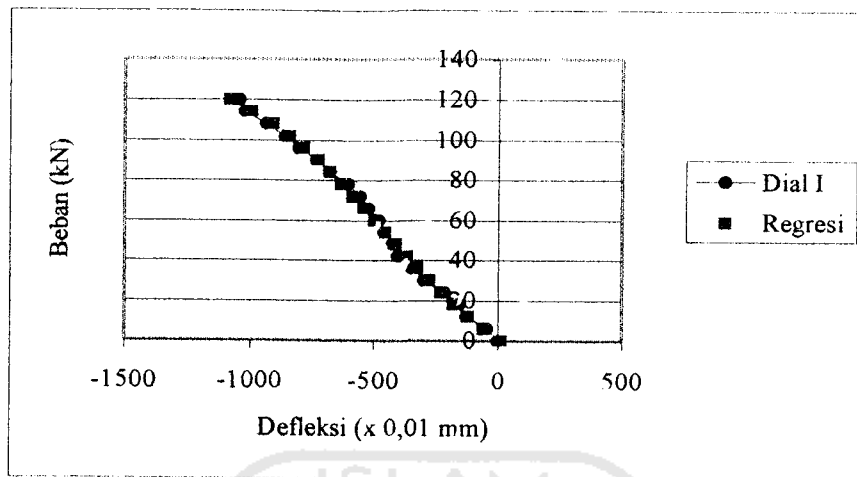
Gambar 5.8: Grafik Beban-Defleksi Dial III / $Lc = 20 \cdot i_{\min} / 1$



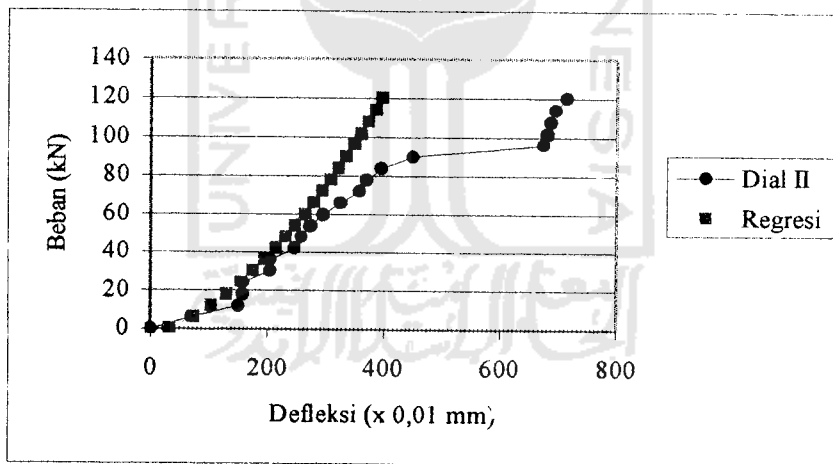
Gambar 5.9: Grafik Beban-Defleksi Dial IV / $Lc = 20 \cdot i_{\min} / 1$

Tabel 5.8: Tabel Kuat Desak Benda Uji $L_c = 20 i_{\min} / \text{Dial I dan Dial II} / 2$

BEBAN (kN)	Sampel $L_c = 20 i_{\min} / 2$			
	Dial I	Regresi	Dial II	Regresi
0	0	15.22986	0	32.824234
6	-45	-58.7916	70	72.328163
12	-125	-120.5765	150	103.61353
18	-155	-175.7305	158	130.38535
24	-210	-226.7212	158	154.19476
30	-295	-274.9155	205	175.86725
36	-343	-321.1844	205	195.90417
42	-403	-366.143	247	214.63708
48	-426	-410.265	259	232.29879
54	-456	-453.946	273	249.06015
60	-480	-497.544	296	265.051
66	-521	-541.4103	326	280.37269
72	-556	-585.9183	359	295.10619
78	-605	-631.4987	371	309.31736
84	-676	-678.6892	396	323.06065
90	-730	-728.2196	450	336.38168
96	-802	-781.1776	675	349.31911
102	-860	-839.388	680	361.90607
108	-934	-906.5023	687	374.17119
114	-1021	-992.784	695	386.13941
120	-1043	-1080.444	714	397.83262



Gambar 5.10: Grafik Beban-Defleksi Dial I / $Lc=20$. $i_{\min}/2$

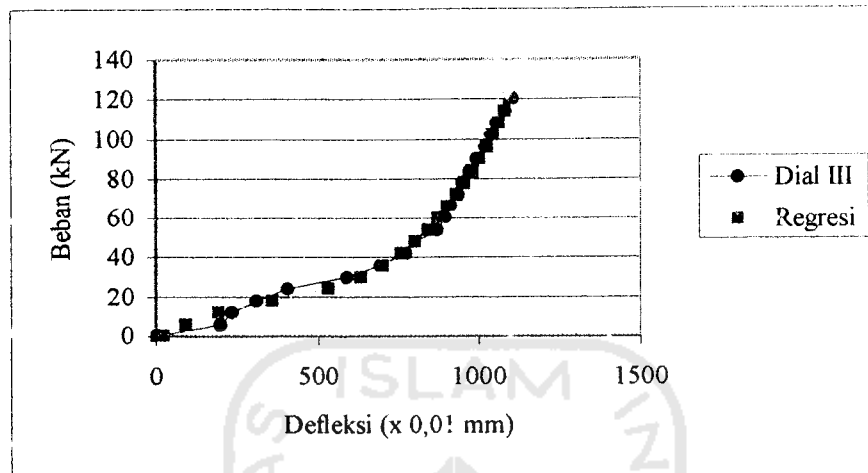


Gambar 5.11: Grafik Beban-Defleksi Dial II / $Lc=20$. $i_{\min}/2$

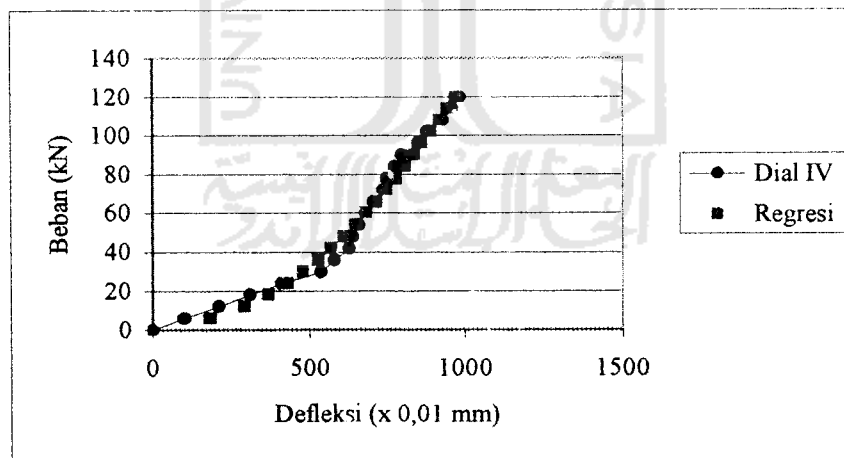


Tabel 5.9: Tabel Kuat Desak Benda Uji $L_c = 20 i_{\min} / 2$ / Dial III dan Dial IV / 2

BEBAN (kN)	Sampel $L_c = 20 i_{\min} / 2$			
	Dial III	Regresi	Dial IV	Regresi
0	0	22.700067	0	
6	197	91.023388	100	182.249814
12	232	190.03147	210	294.71186
18	310	358.98223	310	369.573555
24	405	532.85824	412	430.105487
30	590	634.77061	537	482.422105
36	694	701.66157	581	529.233862
42	772	758.1726	629	572.025541
48	803	802.58077	641	611.715176
54	872	840.74071	660	648.91734
60	897	874.41212	682	684.067373
66	912	904.68586	709	717.486993
72	939	932.28735	738	749.421927
78	951	957.72497	752	780.064885
84	973	981.36974	773	809.57031
90	994	1003.5014	796	838.064239
96	1021	1024.3364	851	865.651118
102	1039	1044.046	880	892.41865
108	1056	1062.7684	929	918.441325
114	1083	1080.6165	957	943.783051
120	1107	1097.6841	983	968.499142



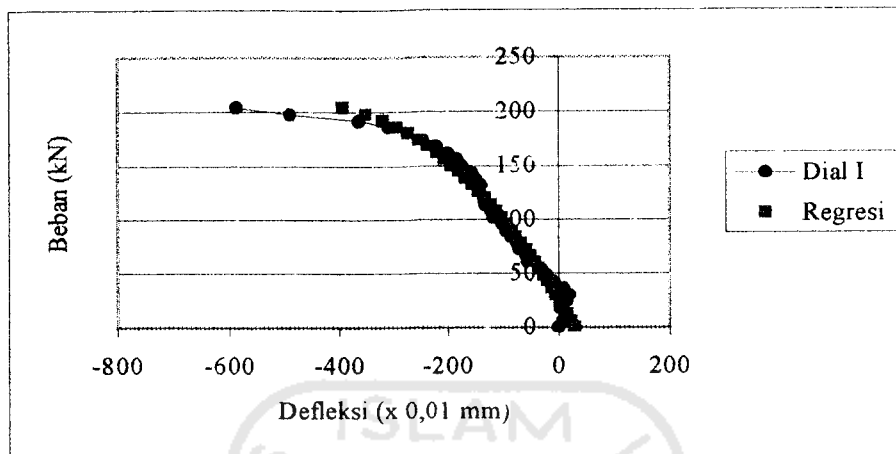
Gambar 5.12: Grafik Beban-Defleksi Dial III / $L_c = 20 \cdot i_{\min} / 2$



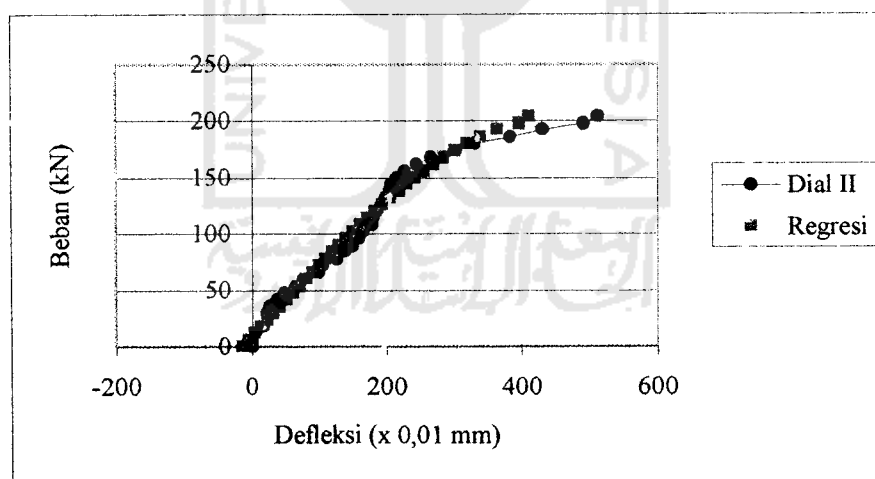
Gambar 5.13: Grafik Beban-Defleksi Dial IV / $L_c = 20 \cdot i_{\min} / 2$

Tabel 5.10: Tabel Kuat Desak Benda Uji $L_c = 30 i_{\min} / l$ / Dial I dan Dial II / 1

BEBAN (kN)	Sampel $L_c = 30 i_{\min} / l$			
	Dial I	Regresi	Dial II	Regresi
0	0	28.9035724	0	-14.5003197
6	7	22.3130906	0	-5.12024916
12	14	15.6095675	5	4.252970528
18	3	8.78764218	17	13.62758789
24	14	1.84152248	24	23.01186381
30	19	-5.2350648	22	32.41414465
36	8	-12.448932	26	41.84293749
42	-8	-19.807496	38	51.30698951
48	-22	-27.318858	48	60.81537349
54	-33	-34.991892	66	70.37758199
60	-56	-42.836357	76	80.00363315
66	-59	-50.863018	98	89.70419156
72	-72	-59.083802	104	99.4907088
78	-76	-67.51198	126	109.3755893
84	-86	-76.162385	137	119.372389
90	-95	-85.051687	149	129.4960567
96	-102	-94.198722	160	139.7632311
102	-118	-103.62491	164	150.1926124
108	-122	-113.35477	177	160.8054328
114	-132	-123.4166	180	171.6260632
120	-135	-133.84333	186	182.6828076
126	-143	-144.67367	193	194.0089632
132	-142	-155.95359	199	205.6442662
138	-151	-167.73845	204	217.6369096
144	-158	-180.09586	206	230.0464397
150	-175	-193.10985	215	242.94805
156	-183	-206.88707	227	255.4391992
162	-202	-221.56629	245	270.6503052
168	-221	-237.33385	267	285.7630813
174	-245	-254.45009	304	302.0444833
180	-275	-273.29842	331	319.9164199
186	-308	-294.48614	383	340.1220012
192	-363	-319.08557	432	364.2297687
198	-488	-349.36841	491	397.1345859
204	-586	-392.48742	512	411.3747067



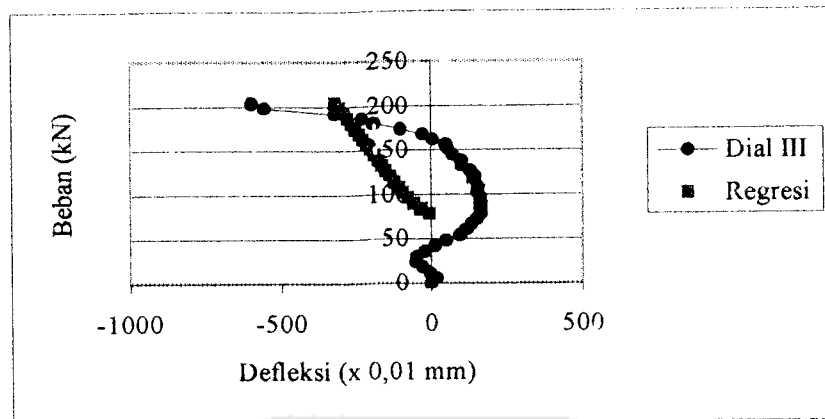
Gambar 5.14: Grafik Beban-Defleksi Dial I / $Lc=30$. $i_{\min} / 1$



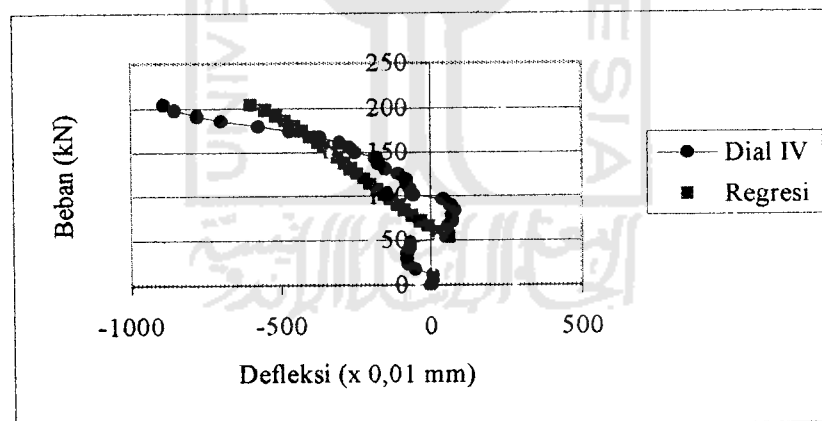
Gambar 5.15: Grafik Beban-Defleksi Dial II / $Lc=30$. $i_{\min} / 1$

Tabel 5.11: Tabel Kuat Desak Benda Uji $L_c = 30 i_{\min} / 1$ / Dial III dan Dial IV / 1

BEBAN (kN)	Sampel $L_c = 30 i_{\min} / 1$			
	Dial III	Regresi	Dial IV	Regresi
0	0		0	
6	17		10	
12	-2		10	
18	-28		-50	
24	-50		-75	
30	-47		-80	
36	-21		-80	
42	14		-70	
48	50		-65	
54	95		50	52.099352
60	115		60	25.446928
66	135		60	-6.3249948
72	150		70	-35.108228
78	163	-5.31490179	70	-61.862938
84	163	-34.8368502	80	-87.160024
90	163	-56.789658	65	-111.37545
96	162	-75.4615959	40	-134.77599
102	153	-92.2200751	-60	-157.5626
108	154	-107.714691	-68	-179.8947
114	140	-122.317484	-80	-201.90493
120	140	-136.267639	-85	-223.7088
126	129	-149.732143	-110	-245.41167
132	102	-162.835432	-150	-267.11408
138	99	-175.675592	-175	-288.91658
144	72	-188.334032	-185	-310.92443
150	60	-200.955227	-250	-333.25306
156	50	-213.383981	-270	-356.03489
162	8	-225.90343	-305	-375.42904
168	-28	-238.50381	-370	-403.63602
174	-100	-251.253019	-470	-428.92183
180	-190	-264.227163	-575	-455.66117
186	-230	-277.515888	-700	-484.42255
192	-320	-291.230284	-780	-516.16106
198	-554	-305.515597	-854	-552.75503
204	-597	-320.573554	-892	-599.19517



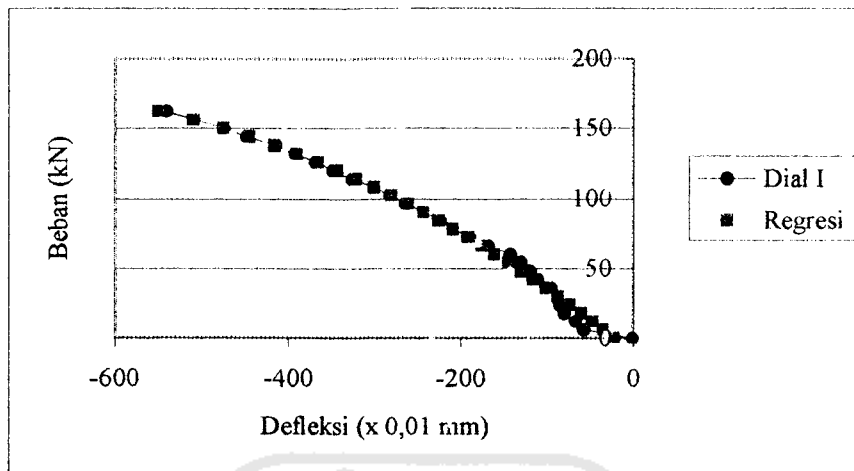
Gambar 5.16: Grafik Beban-Defleksi Dial III / $L_c = 30$. $i_{\min} / 1$



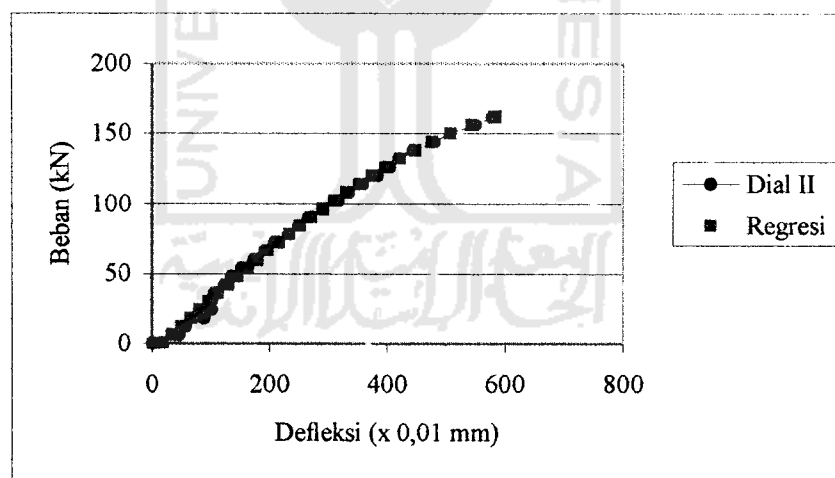
Gambar 5.17: Grafik Beban-Defleksi Dial IV / $L_c = 30$. $i_{\min} / 1$

Tabel 5.12: Tabel Kuat Desak Benda Uji $L_c = 30 i_{\min} / \text{Dial I dan Dial II} / 2$

BEBAN (kN)	Sampel $L_c = 30 i_{\min} / 2$			
	Dial I	Regresi	Dial II	Regresi
0	0	-21.878011	0	18.725981
6	-57	-34.441361	46	34.172784
12	-67	-47.238706	57	49.736365
18	-80	-60.282893	88	65.429732
24	-84	-73.58799	102	81.266884
30	-87	-87.169447	102	97.262968
36	-95	-101.0443	107	113.43447
42	-109	-115.2314	124	129.79946
48	-120	-129.7517	135	146.37783
54	-130	-144.62862	153	163.19169
60	-142	-159.88842	174	180.26572
66	-168	-175.56077	193	197.62772
72	-189	-191.67936	210	215.30924
78	-208	-208.28271	233	233.34639
84	-223	-225.41523	250	251.78094
90	-243	-243.12852	266	270.66166
96	-264	-261.48316	291	290.0462
102	-282	-280.55099	316	310.00365
108	-301	-300.41838	333	330.61802
114	-326	-321.19061	358	351.99338
120	-348	-342.99828	383	374.26133
126	-368	-366.00677	404	397.59262
132	-392	-390.43068	420	422.21578
138	-415	-416.5573	445	448.44917
144	-448	-444.78645	480	476.75993
150	-475	-475.70405	508	507.88481
156	-510	-510.23198	548	543.11672
162	-541	-549.98192	578	585.16565



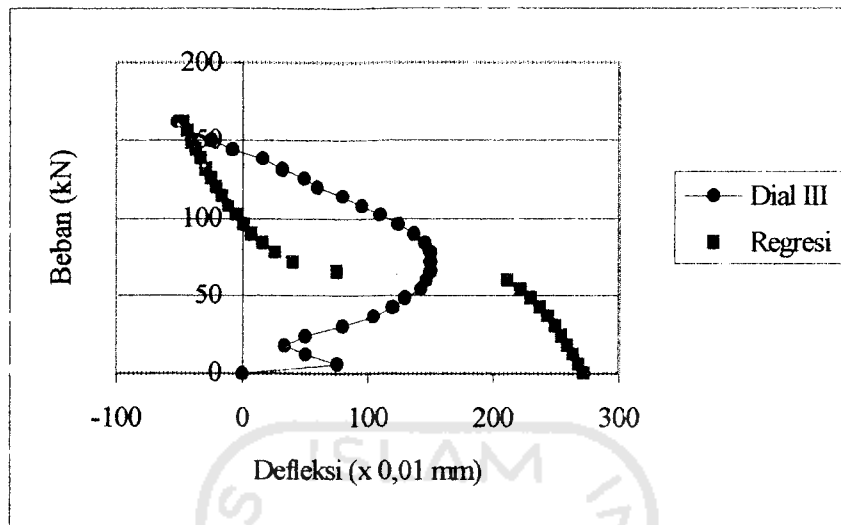
Gambar 5.18: Grafik Beban-Defleksi Dial I / $Lc=30$. $i_{\min}/2$



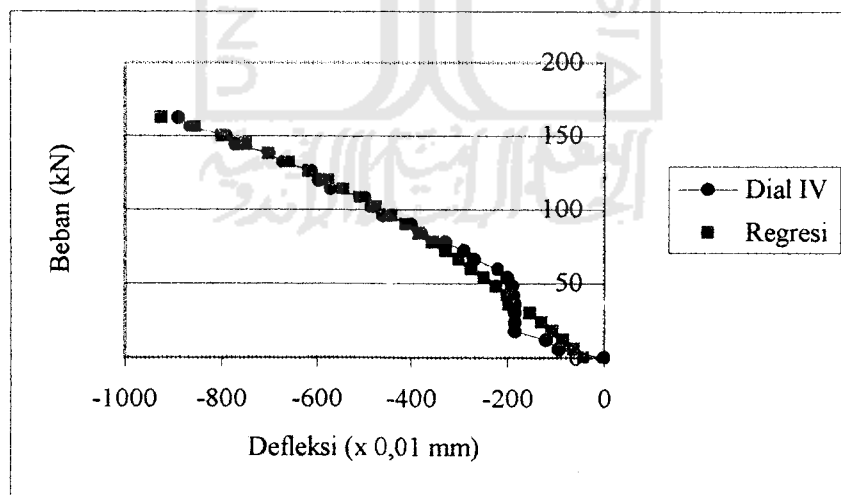
Gambar 5.19: Grafik Beban-Defleksi Dial II / $Lc=30$. $i_{\min}/2$

Tabel 5.13: Tabel Kuat Desak Benda Uji $L_c = 30 i_{\min} / 2$ / Dial III dan Dial IV / 2

BEBAN (kN)	Sampel $L_c = 30 i_{\min} / 2$			
	Dial III	Regresi	Dial IV	Regresi
0	0	272.14429	0	-41.52163
6	76	268.21145	-95	-62.91339
12	51	264.04162	-120	-84.66944
18	34	259.59485	-185	-106.8101
24	50	254.8191	-185	-129.3577
30	80	249.64444	-185	-152.3367
36	105	243.97339	-185	-197.7742
42	120	237.66304	-188	-199.7003
48	130	230.48936	-190	-224.1483
54	143	222.06507	-200	-249.1559
60	147	211.60717	-220	-274.765
66	150	75.240223	-270	-301.0233
72	150	40.473922	-290	-327.9854
78	150	26.402829	-330	-355.7134
84	146	16.182976	-380	-384.2796
90	137	7.1895606	-400	-413.7682
96	124	0.8128695	-460	-444.2785
102	110	-5.431812	-485	-475.9291
108	96	-11.05277	-500	-508.8633
114	80	-16.18771	-570	-543.2572
120	60	-20.93105	-595	-576.3315
126	49	-25.35075	-610	-617.3682
132	32	-29.49757	-670	-657.7388
138	16	-33.41056	-700	-700.9488
144	-8	-37.12048	-770	-747.7179
150	-25	-40.65207	-790	-799.1328
156	-44	-44.02553	-865	-856.9803
162	-52	-47.25763	-890	-924.6095



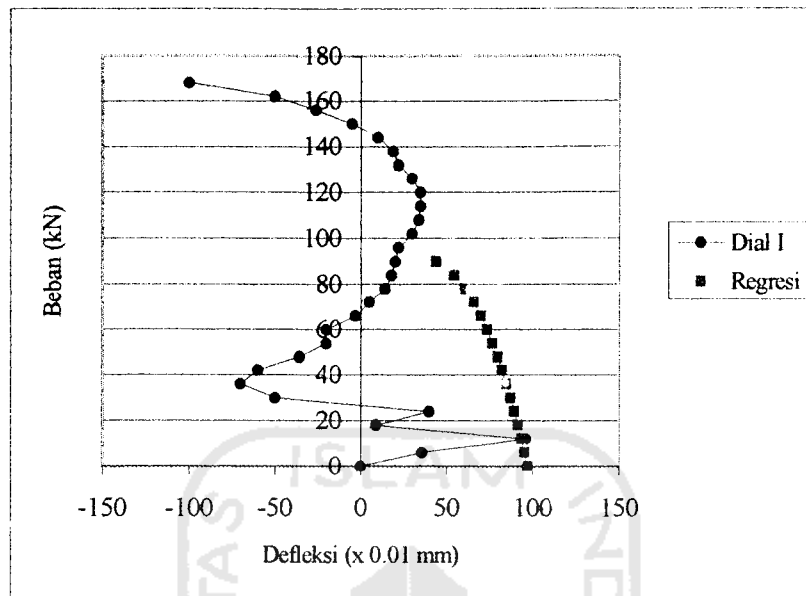
Gambar 5.20: Grafik Beban-Defleksi Dial III / $L_c = 30. i_{\min} / 2$



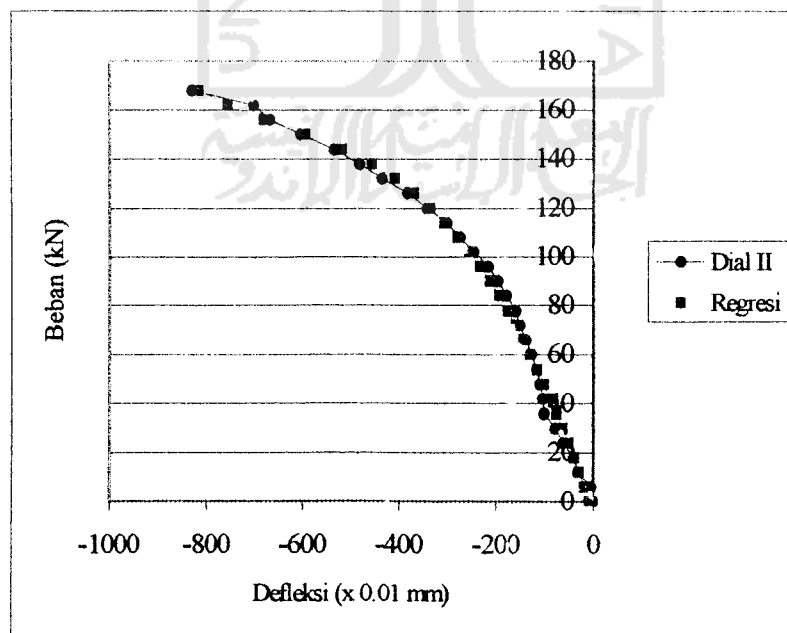
Gambar 5.21: Grafik Beban-Defleksi Dial IV / $L_c = 30. i_{\min} / 2$

Tabel 5.14: Tabel Kuat Desak Benda Uji $L_c = 40 i_{\min} / 1$ / Dial I dan Dial II / 1

BEBAN (kN)	Sampel $L_c = 40 i_{\min} / 1$			
	Dial I	Regresi	Dial II	Regresi
0	0	97.130	0	-7.75
6	36	95.298	-4	-18.01
12	96	93.390	-31	-28.59
18	9	91.390	-40	-39.49
24	40	89.290	-61	-50.77
30	-50	87.070	-77	-62.43
36	-70	84.720	-100	-74.51
42	-60	82.210	-103	-87.06
48	-36	79.510	-108	-100.12
54	-20	76.570	-115	-113.74
60	-20	73.340	-126	-127.99
66	-3	69.730	-137	-142.94
72	5	65.580	-150	-158.68
78	14	60.630	-159	-175.31
84	18	54.250	-178	-192.98
90	20	43.980	-195	-211.83
96	22		-215	-232.08
102	30		-245	-254.01
108	34		-273	-277.98
114	35		-300	-304.48
120	35		-340	-334.22
126	30		-382	-368.25
132	22		-435	-408.20
138	19		-482	-456.65
144	10		-535	-517.599
150	-5		-605	-594.67
156	-26		-668	-680.69
162	-50		-702	-756.74
168	-100		-830	-816.74



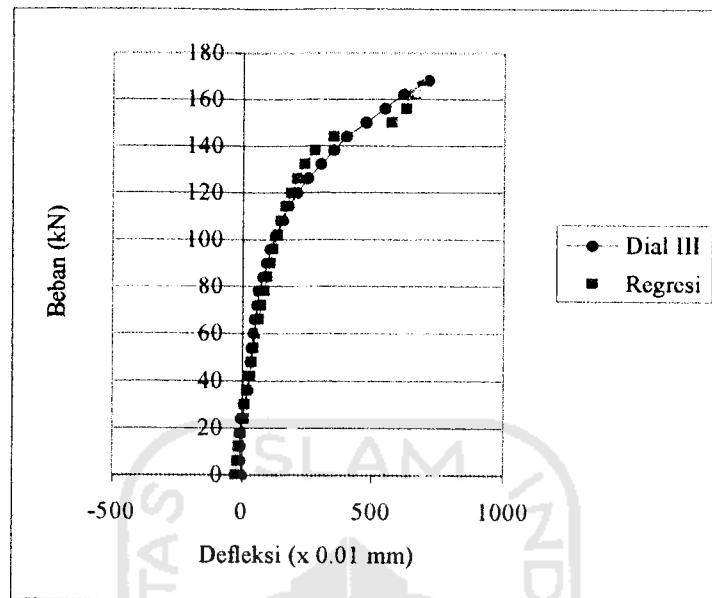
Gambar 5.22: Grafik Beban-Defleksi Dial I / $Lc=40$. $i_{\min} / 1$



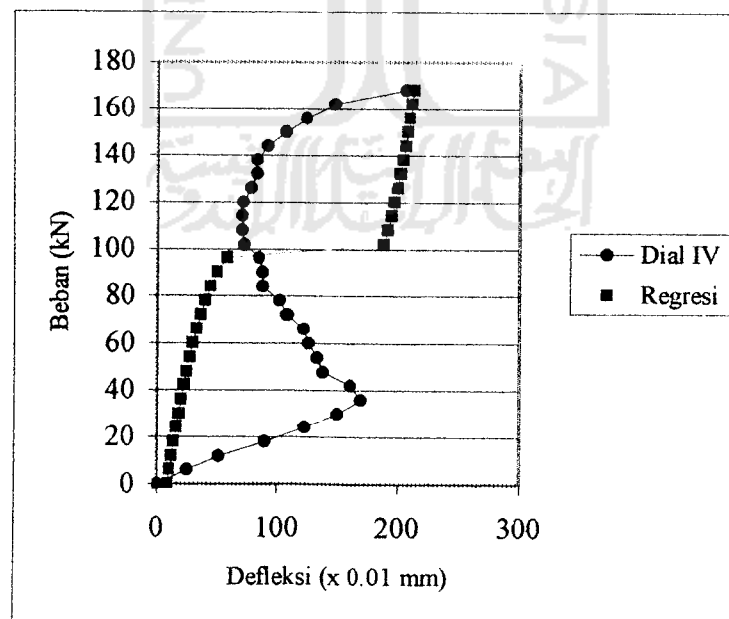
Gambar 5.23: Grafik Beban-Defleksi Dial II / $Lc=40$. $i_{\min} / 1$

Tabel 5.15: Tabel Kuat Desak Benda Uji $L_c = 40 i_{\min} / 1$ / Dial III dan Dial IV / 1

BEBAN		Sampel $L_c = 40 i_{\min} / 1$		
(kN)	Dial III	Regresi	Dial IV	Regresi
0	0	-23.13	0	8.87
6	-5	-16.55	25	10.53
12	-5	-9.77	51	12.25
18	-5	-2.79	90	14.05
24	-1	4.42	123	15.93
30	10	11.87	150	17.90
36	23	19.58	170	19.98
42	30	27.58	161	22.185
48	35	35.90	138	24.53
54	40	44.57	133	27.04
60	46	53.64	126	29.76
66	51	63.14	122	32.74
72	60	73.13	108	36.04
78	65	83.69	102	39.79
84	82	94.898	88	44.20
90	95	106.87	88	49.71
96	110	119.75	85	57.64
102	130	133.72	72	188.81
108	155	149.06	70	191.87
114	175	166.15	70	194.65
120	210	185.60	71	197.21
126	250	208.44	78	199.596
132	300	236.67	83	201.83
138	350	275.27	83	203.94
144	400	348.62	92	205.94
150	475	571.77	107	207.85
156	545	625.26	124	209.67
162	615	659.09	147	211.41
168	715	685.02	206	213.08



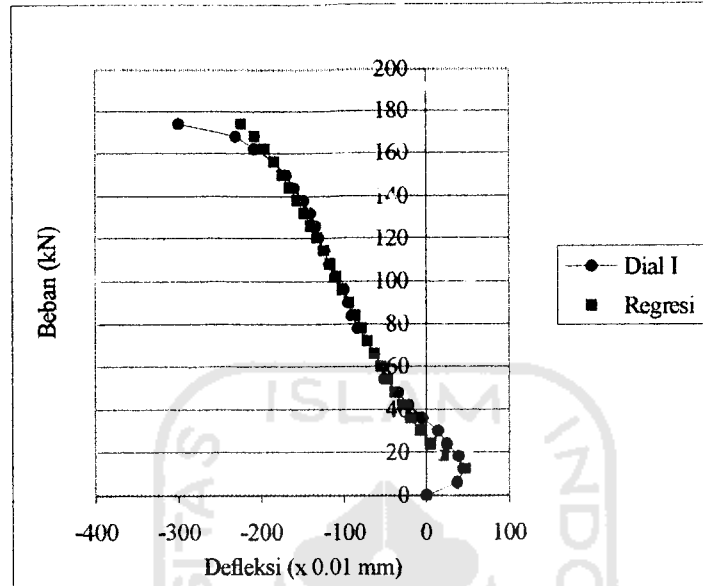
Gambar 5.24: Grafik Beban-Defleksi Dial III / $L_c = 40$. $i_{min} / 1$



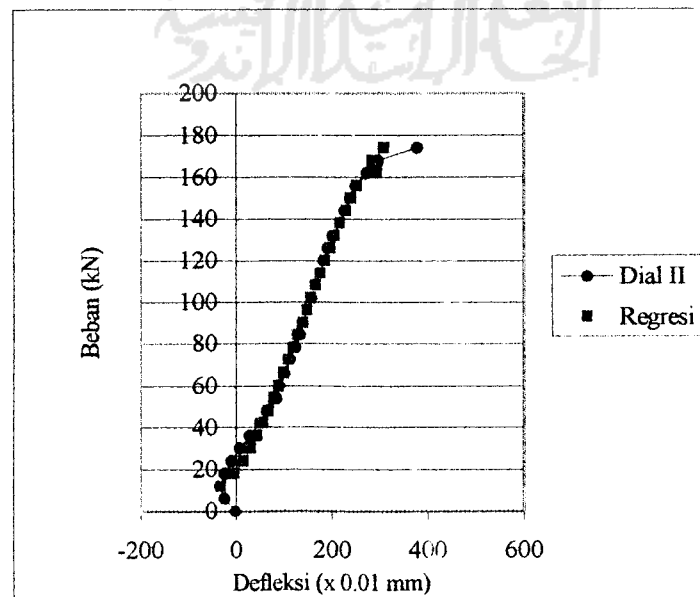
Gambar 5.25: Grafik Beban-Defleksi Dial IV / $L_c = 40$. $i_{min} / 1$

Tabel 5.16: Tabel Kuat Desak Benda Uji $L_c = 40 i_{\min} / 2$ / Dial I dan Dial II / 2

BEBAN (kN)	Sampel $L_c = 40 i_{\min} / 2$			
	Dial I	Regresi	Dial II	Regresi
0	0		0	
6	38		-25	
12	45	46.75	-34	-31.64
18	39	20.41	-25	-3.567
24	25	5.088	-10	14.921
30	14	-7.29	7	30.155
36	-5	-18.18	28	43.62
42	-21	-28.02	50	55.94
48	-34	-37.23	64	67.48
54	-50	-45.97	84	78.44
60	-54	-54.34	90	88.97
66	-62	-62.45	101	99.18
72	-71	-70.35	112	109.14
78	-83	-78.096	125	118.92
84	-90	-85.74	134	128.58
90	-95	-93.310	139	138.17
96	-100	-100.85	148	147.73
102	-110	-108.39	158	157.30
108	-117	-115.98	166	166.94
114	-123	-123.633	176	176.68
120	-130	-131.40	183	186.59
126	-134	-139.33	192	196.71
132	-140	-147.47	202	207.14
138	-149	-155.885	218	217.96
144	-160	-164.68	228	229.31
150	-170	-173.98	240	241.38
156	-184	-183.97	250	254.46
162	-208	-194.99	275	296.08
168	-230	-207.67	298	286.35
174	-300	-223.67	380	309.92



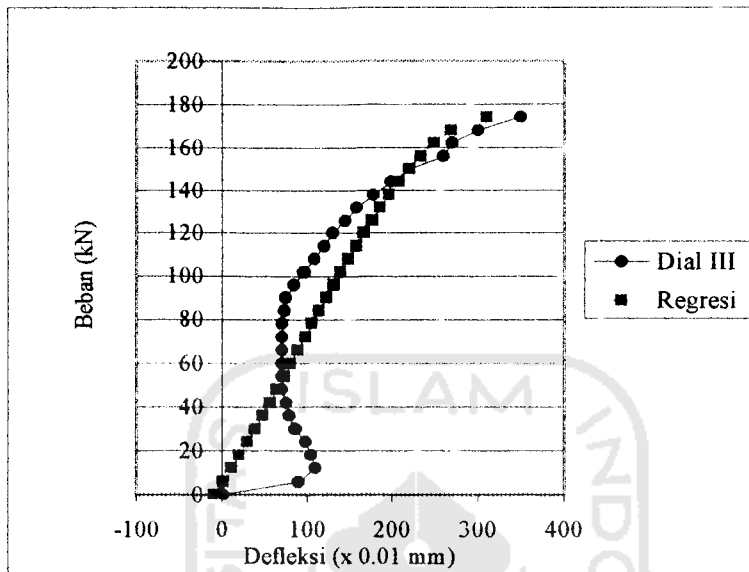
Gambar 5.26: Grafik Beban-Defleksi Dial I / $Lc = 40 i_{\min} / 2$



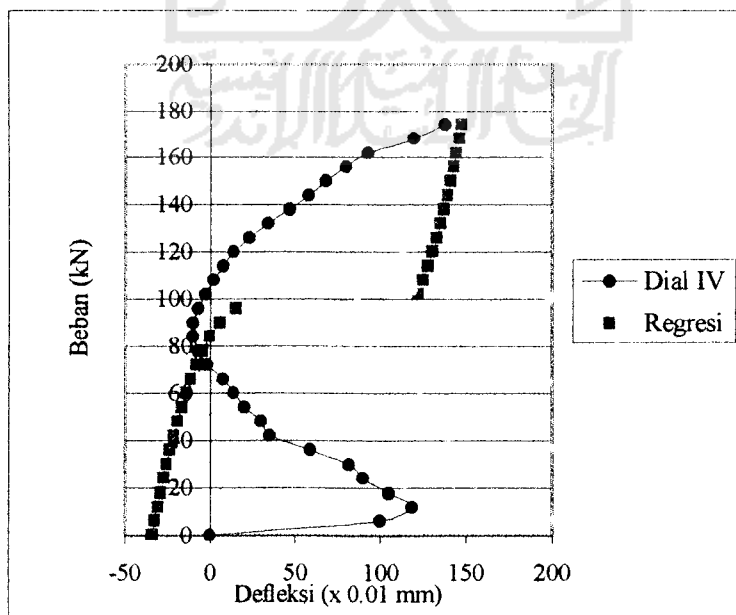
Gambar 5.27: Grafik Beban-Defleksi Dial II / $Lc = 40 i_{\min} / 2$

Tabel 5.17: Tabel Kuat Desak Benda Uji $L_c = 40 i_{\min} / 2$ / Dial III dan Dial IV / 2

BEBAN (kN)	Sampel $L_c = 40 i_{\min} / 2$			
	Dial III	Regresi	Dial IV	Regresi
0	0	-8.98	0	-33.76
6	90	1.36	100	-32.22
12	110	11.21	119	-30.61
18	105	20.68	105	-28.93
24	98	29.86	90	-27.17
30	86	38.79	82	-25.32
36	79	47.53	59	-23.37
42	76	56.12	35	-21.298
48	71	64.59	30	-19.08
54	71	72.98	20	-16.70
60	71	81.30	14	-14.11
66	71	89.59	8	-11.26
72	71	97.87	-2	-8.07
78	71	106.17	-7	-4.39
84	73	114.49	-10	0.0109
90	75	122.89	-10	5.74
96	84	131.39	-7	15.30
102	96	139.99	-3	122.35
108	108	148.77	2	125.44
114	120	157.74	8	128.21
120	130	166.96	14	130.73
126	145	176.49	23	133.06
132	158	186.41	34	135.23
138	178	196.84	47	137.27
144	198	207.93	58	139.19
150	220	219.93	68	141.01
156	260	233.25	80	142.75
162	270	248.69	93	144.41
168	300	268.48	120	145.99
174	350	310.38	138	147.52



Gambar 5.28: Grafik Beban-Defleksi Dial III / $Lc= 40 i_{min} / 2$



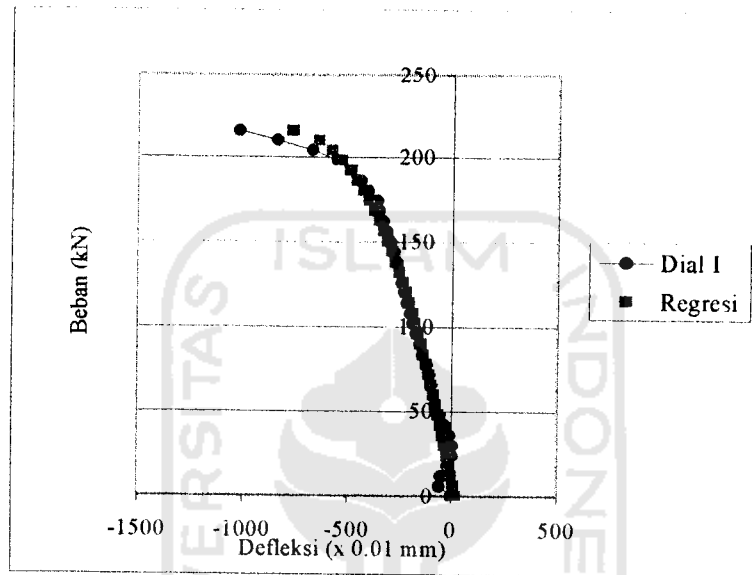
Gambar 5.29: Grafik Beban-Defleksi Dial IV / $Lc= 40 i_{min} / 2$

Tabel 5.18: Tabel Kuat Desak Benda Uji $L_c = 50 i_{\min} / 1$ / Dial I dan Dial II / 1

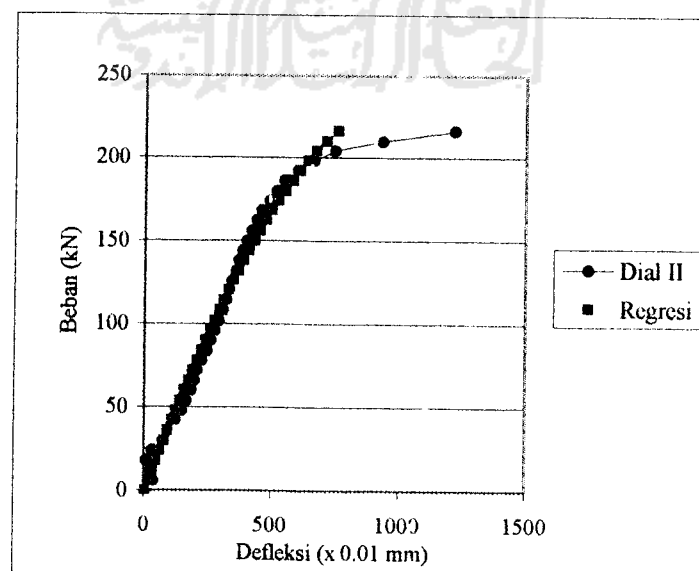
BEBAN (kN)	Sampel $L_c = 50 i_{\min} / 1$			
	Dial I	Regresi	Dial II	Regresi
0	0	20.15	0	5.48
6	-55	10.53	39	20.09
12	-49	-0.73	30	34.82
18	-15	-9.25	8	49.68
24	8	-19.43	31	64.68
30	5	-29.80	75	79.83
36	-10	-40.39	95	95.13
42	-33	-51.20	124	110.59
48	-54	-62.25	148	126.24
54	-70	-73.55	165	142.06
60	-85	-85.11	184	158.07
66	-95	-96.96	198	174.29
72	-105	-109.10	209	190.73
78	-117	-121.57	224	207.41
84	-137	-134.38	246	224.33
90	-150	-147.55	260	241.52
96	-170	-161.13	278	258.99
102	-184	-175.13	291	276.77
108	-201	-189.59	308	294.87
114	-215	-204.56	322	313.34
120	-226	-220.08	333	332.19
126	-242	-236.22	345	351.47
132	-251	-253.03	360	371.20
138	-263	-270.59	372	391.45
144	-279	-288.99	387	412.25
150	-296	-308.57	403	433.68
156	-315	-328.84	424	455.81
162	-331	-350.59	440	478.73
168	-352	-373.84	462	502.56
174	-360	-398.92	493	527.43
180	-410	-426.23	520	553.53
186	-440	-456.38	548	581.09
192	-490	-490.31	603	610.44
198	-550	-529.59	664	642.04
204	-670	-577.29	750	676.61

Tabel 5.18: Lanjutan Tabel Kuat Desak Benda Uji $L_c = 50 i_{\min}$ / Dial I dan Dial II / 1

210	-840	-641.09	935	715.31
216	-1020	-769.38	1220	760.35



Gambar 5.30: Grafik Beban-Defleksi Dial I / $L_c = 50 i_{\min}$ / 1



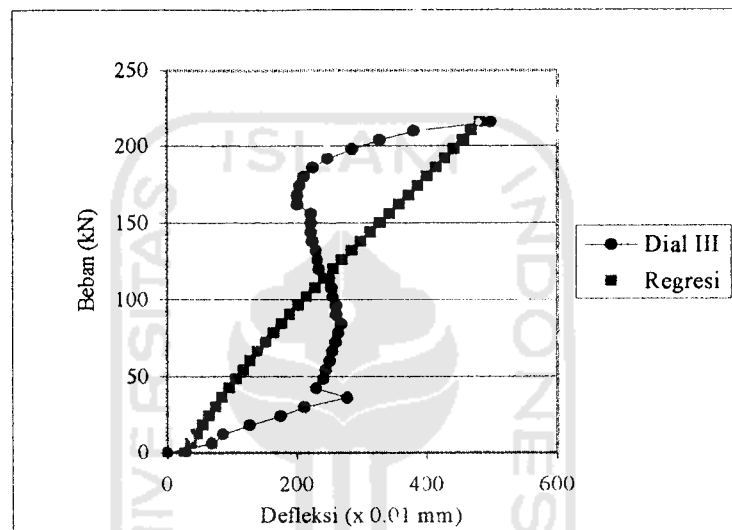
Gambar 5.31: Grafik Beban-Defleksi Dial II / $L_c = 50 i_{\min}$ / 1

Tabel 5.19: Tabel Kuat Desak Benda Uji $L_c = 50 i_{\min} / 1$ / Dial III dan Dial IV / 1

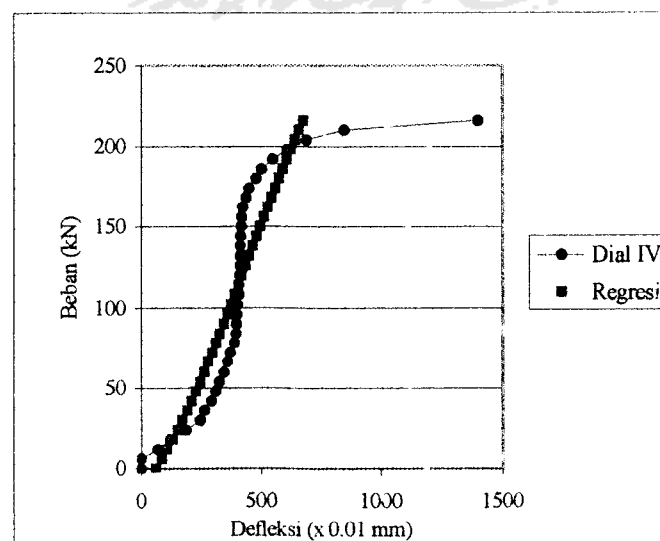
BEBAN (kN)	Sampel $L_c = 50 i_{\min} / 1$			
	Dial III	Regresi	Dial IV	Regresi
0	0	26.997	0	61.34
6	69	36.130	1	86.38
12	87	45.478	68	109.61
18	128	55.040	122	131.45
24	175	64.840	186	152.19
30	212	74.870	245	172.05
36	279	85.144	263	191.18
42	230	95.670	291	209.68
48	241	106.460	310	227.67
54	246	117.510	324	245.21
60	252	128.830	344	262.37
66	256	140.430	360	279.19
72	261	152.310	371	295.73
78	265	164.480	389	312.02
84	269	176.920	396	328.10
90	262	189.640	399	343.99
96	262	202.640	400	359.74
102	257	215.897	403	375.36
108	255	229.410	409	390.87
114	250	243.150	410	406.29
120	235	257.090	412	421.66
126	233	271.240	413	436.98
132	230	285.530	413	452.28
138	224	299.940	415	467.57
144	222	314.430	417	482.88
150	222	328.967	419	498.23
156	222	343.510	420	513.63
162	201	358.010	424	529.11
168	201	372.430	439	544.68
174	205	386.740	452	560.37
180	211	400.900	480	576.21
186	225	414.880	502	592.22
192	248	428.650	550	608.43

Tabel 5.19: Lanjutan Tabel Kuat Desak Benda Uji $L_c = 50 i_{\min}$ / Dial III dan Dial IV/1

198	286	442.196	610	624.87
204	328	455.490	690	641.58
210	380	468.520	850	658.61
216	498	481.280	1400	675.99



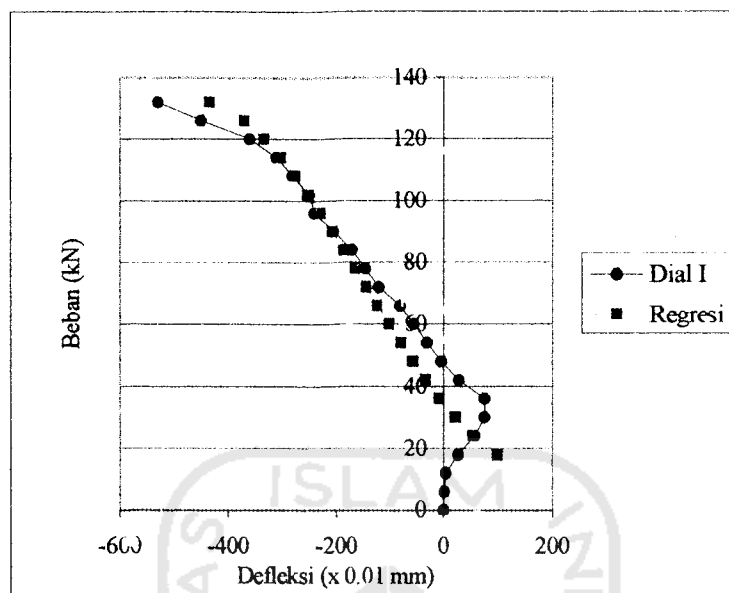
Gambar 5.32: Grafik Beban-Defleksi Dial III / $L_c = 50 i_{\min} / 1$



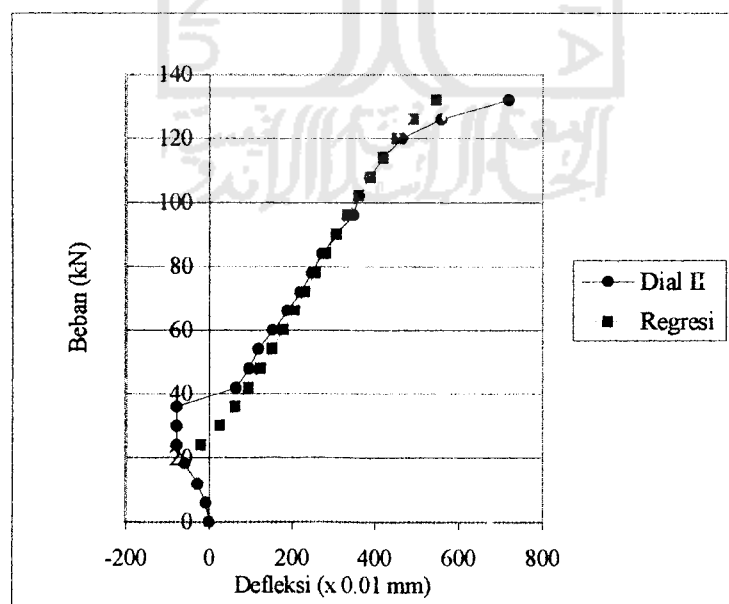
Gambar 5.33: Grafik Beban-Defleksi Dial IV / $L_c = 50 i_{\min} / 1$

Tabel 5.20: Tabel Kuat Desak Benda Uji $L_c = 50 i_{\min} / 2$ / Dial I dan Dial II / 2

BEBAN (kN)	Sampel $L_c = 50 i_{\min} / 2$			
	Dial I	Regresi	Dial II	Regresi
0	0		0	
6	1		-8	
12	4		-27	
18	27	99.12	-58	
24	57	53.95	-77	-18.710
30	75	20.87	-77	27.320
36	75	-7.31	-78	64.050
42	28	-32.75	65	96.280
48	-5	-56.45	97	125.820
54	-30	-79.01	120	153.620
60	-55	-100.81	155	180.260
66	-80	-122.15	190	206.140
72	-120	-143.17	220	231.580
78	-145	-164.17	248	256.820
84	-170	-185.31	273	282.110
90	-205	-206.8	308	307.690
96	-240	-228.89	348	333.830
102	-250	-251.91	362	360.890
108	-280	-276.30	388	389.310
114	-310	-302.79	420	419.780
120	-360	-332.76	465	453.520
126	-450	-369.59	560	493.070
132	-530	-434.02	720	546.899



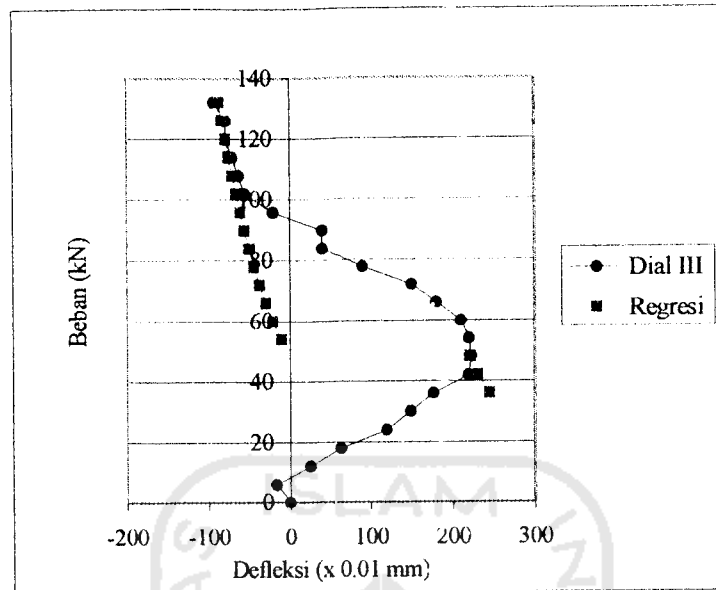
Gambar 5.34: Grafik Beban-Defleksi Dial I / $Lc = 50 i_{\min} / 2$



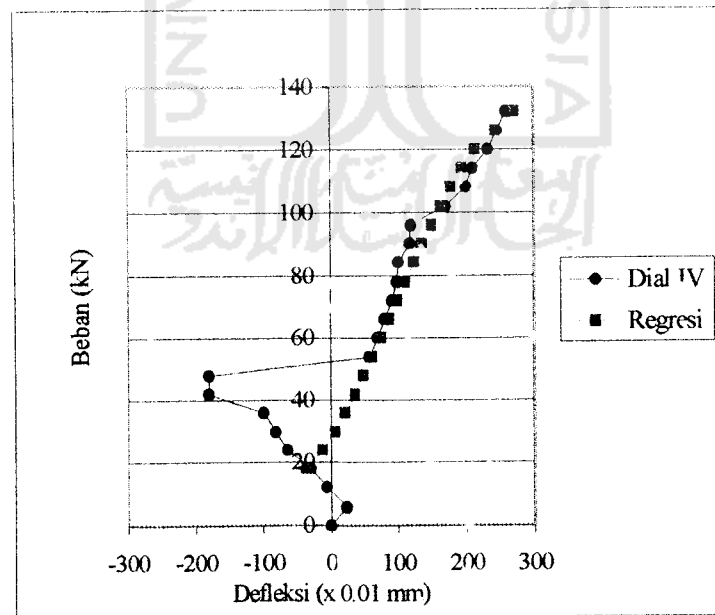
Gambar 5.35: Grafik Beban-Defleksi Dial II / $Lc = 50 i_{\min} / 2$

Tabel 5.21: Tabel Kuat Desak Benda Uji $L_c = 50 i_{\min} / 2$ / Dial III dan Dial IV / 2

BEBAN (kN)	Sampel $L_c = 50 i_{\min} / 2$			
	Dial III	Regresi	Dial IV	Regresi
0	0		0	
6	-16		24	
12	25		-6	
18	63		-30	-35.52
24	120		-64	-11.24
30	148		-81	6.29
36	176	244.81	-98	22.02
42	219	230.14	-180	36.35
48	222	220.39	-180	49.77
54	220	-9.787	58	62.61
60	210	-20.268	70	75.07
66	180	-28.96	80	87.29
72	150	-36.50	91	99.43
78	90	-43.21	98	111.58
84	40	-49.29	101	123.89
90	40	-54.88	118	136.48
96	-20	-60.06	120	149.53
102	-54	-64.91	170	163.29
108	-62	-69.48	200	178.12
114	-70	-73.79	210	194.68
120	-78	-77.89	233	214.498
126	-78	-81.81	246	243.81
132	-92	-85.55	260	271.33



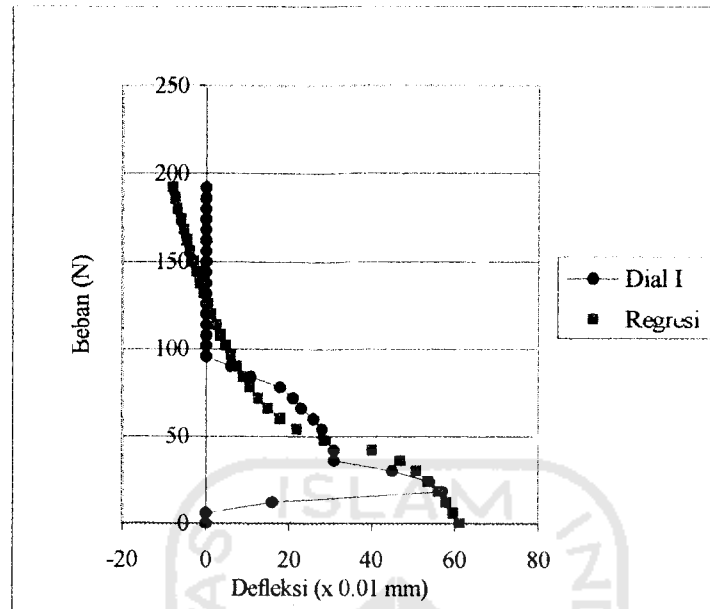
Gambar 5.36: Grafik Beban-Defleksi Dial III / $L_c = 50 i_{\min} / 2$



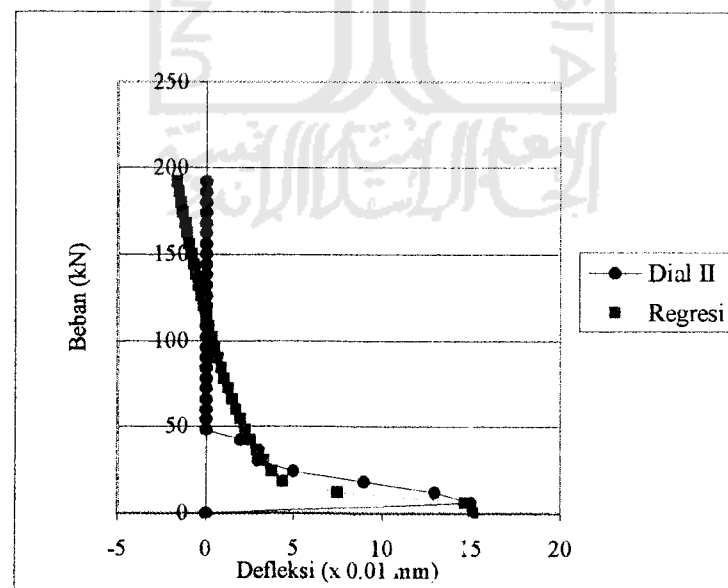
Gambar 5.37: Grafik Beban-Defleksi Dial IV / $L_c = 50 i_{\min} / 2$

Tabel 5.22: Tabel Kuat Desak Benda Uji $L_c = 60 i_{\min} / 1$ / Dial I dan Dial II / 1

BEBAN (kN)	Sampel $L_c = 60 i_{\min} / 1$			
	Dial I	Regresi	Dial II	Regresi
0	0	61.27	0	15.12
6	0	59.72	15	14.68
12	16	57.99	13	7.47
18	57	56.01	9	4.40
24	54	53.68	5	3.78
30	45	50.768	3	3.30
36	31	46.796	3	2.91
42	31	40.08	2	2.57
48	29	28.52	0	2.26
54	28	21.885	0	1.99
60	26	17.94	0	1.73
66	23	15.041	0	1.49
72	21	12.71	0	1.28
78	18	10.74	0	1.07
84	11	9.01	0	0.879
90	6	7.47	0	0.694
96	0	6.07	0	0.517
102	0	4.79	0	0.348
108	0	3.59	0	0.189
114	0	2.48	0	0.0292
120	0	1.43	0	-0.121
126	0	0.45	0	-0.2667
132	0	-0.49	0	-0.407
138	0	-1.38	0	-0.544
144	0	-2.24	0	-0.676
150	0	-3.05	0	-0.800
156	0	-3.84	0	-0.930
162	0	-4.596	0	-1.050
168	0	-5.33	0	-1.170
174	0	-6.03	0	-1.286
180	0	-6.71	0	-1.399
186	0	-7.37	0	-1.509
192	0	-8.02	0	-1.618



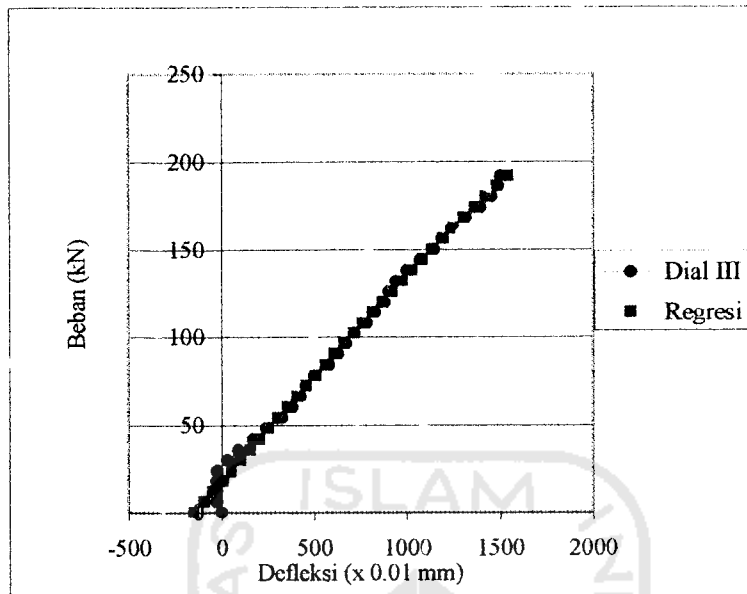
Gambar 5.38: Grafik Beban-Defleksi Dial I / $L_c = 60 i_{\min} / 1$



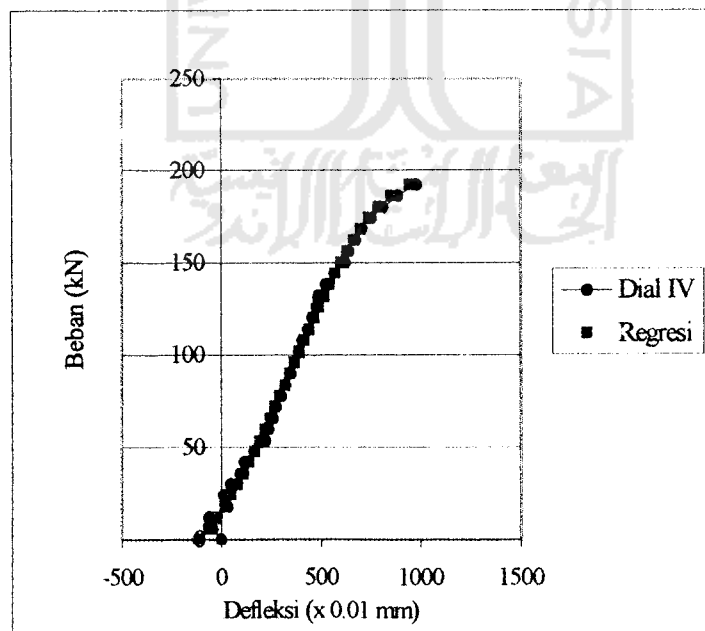
Gambar 5.39: Grafik Beban-Defleksi Dial II / $L_c = 60 i_{\min} / 1$

Tabel 5.23: Tabel Kuat Desak Benda Uji $L_c = 60 i_{\min} / 1$ / Dial III dan Dial IV / 1

BEBAN (kN)	Sampel $L_c = 60 i_{\min} / 1$			
	Dial III	Regresi	Dial IV	Regresi
0	0	-146.901	0	-115.583
6	-26	-96.065	-45	-61.770
12	-26	-45.377	-60	-18.180
18	-26	5.187	31	18.577
24	-23	55.660	11	52.455
30	34	106.050	51	83.908
36	90	156.410	100	113.580
42	173	206.740	120	141.909
48	246	257.070	167	169.188
54	324	307.440	222	195.645
60	380	357.850	241	221.457
66	424	408.350	261	246.764
72	454	458.950	277	271.688
78	504	509.680	302	296.330
84	574	560.570	324	320.785
90	631	611.640	352	345.138
96	671	662.920	370	369.472
102	719	714.450	391	393.869
108	781	766.250	410	418.413
114	828	818.360	439	443.193
120	878	870.810	459	468.308
126	905	923.640	480	493.869
132	943	976.880	491	520.007
138	1004	1030.580	526	546.879
144	1075	1084.790	570	574.686
150	1146	1139.540	621	603.689
156	1194	1194.90	643	634.252
162	1243	1250.930	673	666.901
168	1315	1307.677	710	702.478
174	1392	1365.230	756	742.478
180	1451	1423.650	815	790.155
186	1491	1483.037	886	856.594
192	1502	1543.490	980	946.842



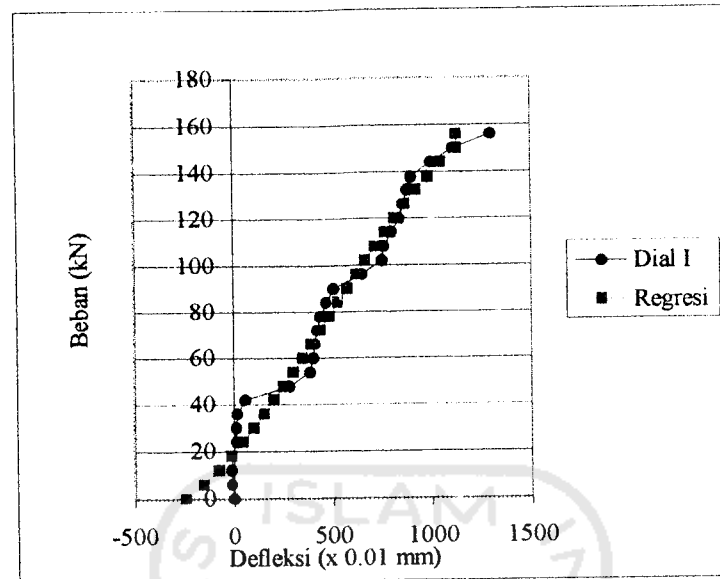
Gambar 5.40: Grafik Beban-Defleksi Dial III / $I_c = 60 i_{\min} / 1$



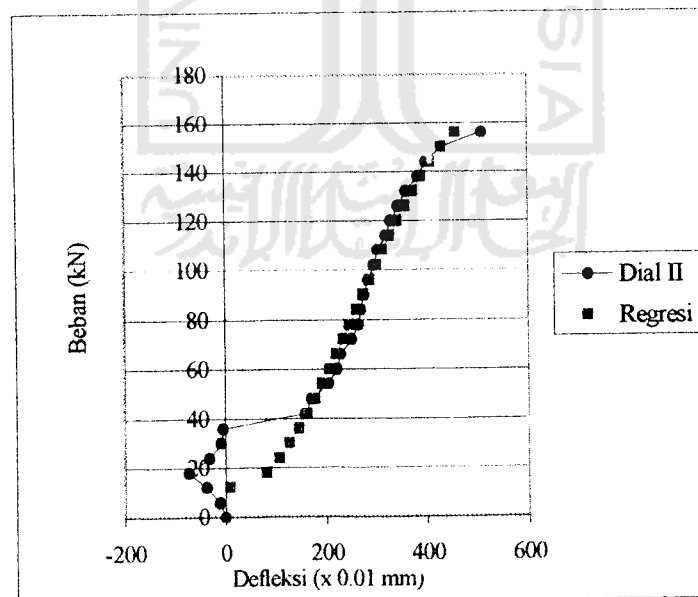
Gambar 5.41: Grafik Beban-Defleksi Dial IV / $I_c = 60 i_{\min} / 1$

Tabel 5.24: Tabel Kuat Desak Benda Uji $L_c = 60 i_{\min} / 2$ / Dial I dan Dial II / 2

BEBAN (kN)	Sampel $L_c = 60 i_{\min} / 2$			
	Dial I	Regresi	Dial II	Regresi
0	0	-241.23	0	
6	-9	-151.08	-11	
12	-12	-77.58	-38	8.76
18	-12	-12.88	-73	80.65
24	11	46.23	-33	106.60
30	12	101.45	-9	127.44
36	18	153.86	-5	145.69
42	59	204.16	158	162.33
48	280	252.86	172	177.88
54	385	300.36	205	192.67
60	400	346.97	222	206.89
66	410	392.96	230	220.70
72	420	438.56	252	234.22
78	440	483.99	265	247.56
84	470	529.44	270	260.78
90	505	575.13	276	273.97
96	650	621.28	285	287.21
102	750	668.12	295	300.58
108	760	715.94	304	314.17
114	800	765.06	320	328.06
120	840	815.91	330	342.40
126	860	869.06	345	357.34
132	880	925.28	360	373.12
138	900	985.80	385	390.08
144	1000	1052.63	400	408.82
150	1110	1129.79	430	430.54
156	1300	1128.00	510	458.60



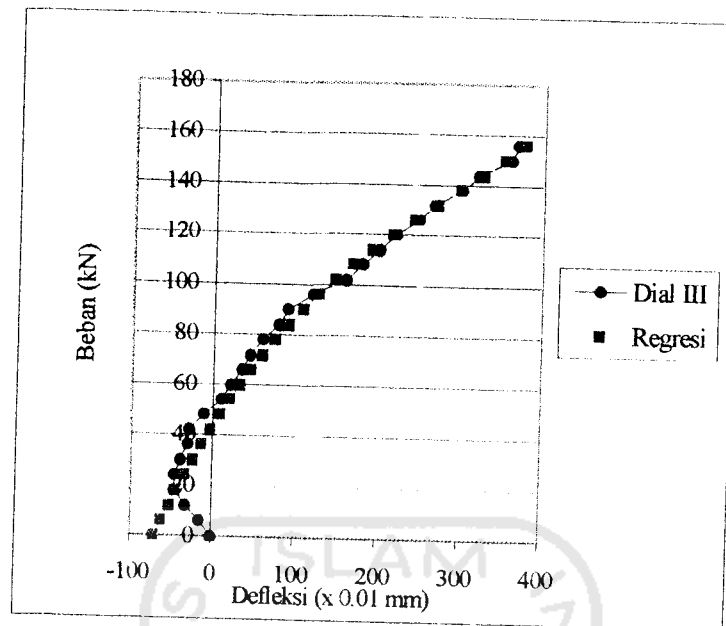
Gambar 5.42: Grafik Beban-Defleksi Dial I / $L_c = 60 i_{\min} / 2$



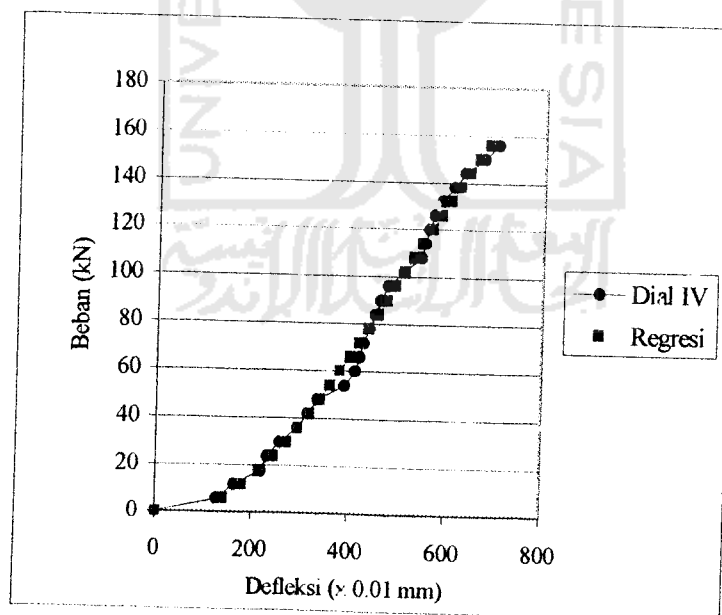
Gambar 5.43: Grafik Beban-Defleksi Dial II / $L_c = 60 i_{\min} / 2$

Tabel 5.25: Tabel Kuat Desak Benda Uji $L_c = 60 i_{\min} / \text{Dial III dan Dial IV} / 2$

BEBAN (kN)	Sampel $L_c = 60 i_{\min} / 2$			
	Dial III	Regresi	Dial IV	Regresi
0	0	-69.90	0	0
6	-15	-61.38	128	139.49
12	-32	-52.56	164	182.85
18	-46	-43.41	220	216.68
24	-46	-33.91	233	245.84
30	-39	-24.01	259	272.12
36	-30	-13.69	295	296.42
42	-29	-2.90	315	319.27
48	-11	8.40	336	341.03
54	10	20.29	391	361.93
60	21	32.81	413	382.15
66	35	46.05	422	401.84
72	45	60.099	429	421.095
78	60	75.06	441	440.020
84	79	91.05	453	458.680
90	90	108.22	463	477.150
96	120	126.70	479	495.496
102	160	146.67	511	513.770
108	180	168.27	548	532.030
114	200	191.60	555	550.330
120	220	216.64	563	568.730
126	248	243.19	573	587.280
132	267	270.75	588	606.050
138	300	298.64	613	625.124
144	320	326.06	635	644.570
150	360	352.34	673	664.497
156	368	377.05	703	685.020



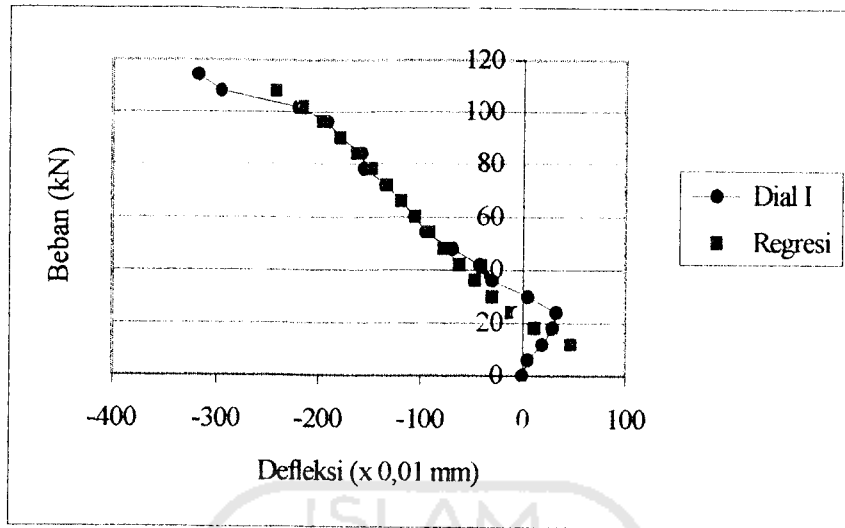
Gambar 5.44: Grafik Beban-Defleksi Dial III / $L_c = 60 i_{\min} / 2$



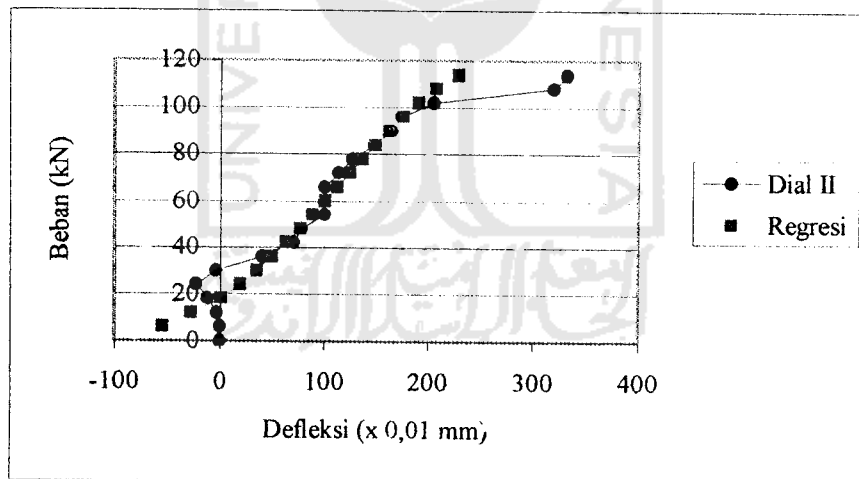
Gambar 5.45: Grafik Beban-Defleksi Dial IV / $L_c = 60 i_{\min} / 2$

Tabel 5.26: Tabel Kuat Desak Benda Uji $L_c = \frac{1}{2} L / \text{Dial I dan Dial II} / 1$

BEBAN (kN)	Sampel $L_c = \frac{1}{2} L / 1$			
	Dial I	Regresi	Dial II	Regresi
0	0		0	
6	5		0	-54.009335
12	19	46.936895	-3	-27.731285
18	29	11.083917	-12	0.72054084
24	33	-11.454715	-23	19.920541
30	5	-30.109357	-4	35.9807347
36	-30	-46.778563	41	50.373678
42	-42	-62.26449	70	63.7458928
48	-69	-77.009732	78	76.4588148
54	-95	-91.30315	100	88.7477817
60	-106	-105.36058	100	100.785561
66	-119	-119.36506	100	112.713634
72	-134	-133.49272	114	124.661035
78	-155	-147.93601	127	136.758944
84	-158	-162.93343	148	149.155967
90	-179	-178.82106	164	162.039604
96	-191	-196.14589	174	175.674231
102	-220	-215.98917	205	190.482966
108	-295	-241.4054	319	207.268831
114	-318		332	228.081418



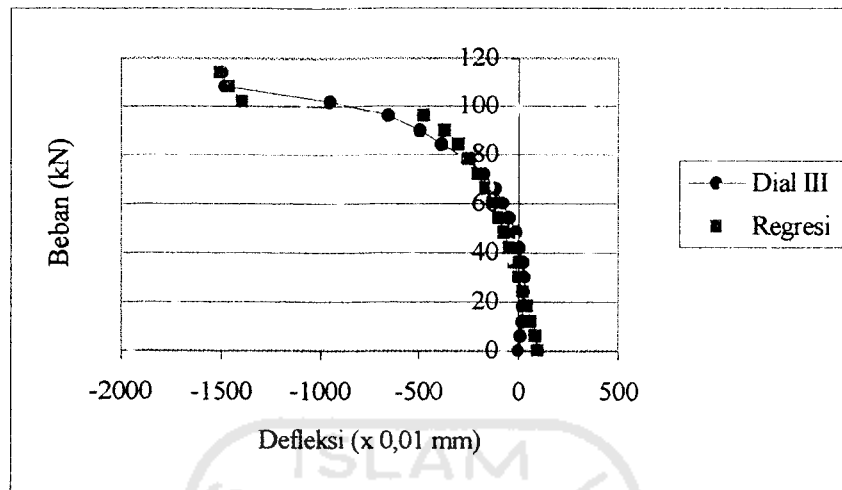
Gambar 5.46: Grafik Beban-Defleksi Dial I / $L_c = \frac{1}{2} L / 1$



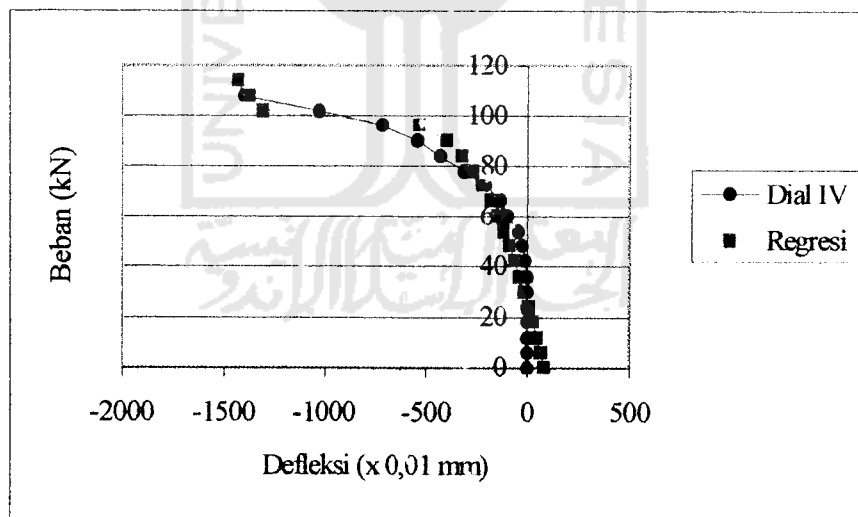
Gambar 5.47: Grafik Beban-Defleksi Dial II / $L_c = \frac{1}{2} L / 1$

Tabel 5.27: Tabel Kuat Desak Benda Uji $l_c = \frac{1}{2} L / 1$ / Dial III dan Dial IV / 1

BEBAN (kN)	Sampel $l_c = \frac{1}{2} L / 1$			
	Dial III	Regresi	Dial IV	Regresi
0	0	100.14298	0	82.8118005
6	8	81.862195	0	64.7565623
12	20	62.809252	0	45.9179205
18	23	42.895863	0	26.2039978
24	24	22.016259	0	5.50425823
30	27	0.0420263	0	-16.316158
36	23	-23.185185	0	-39.424495
42	3	-47.864246	-10	-64.032198
48	-15	-74.250436	-25	-90.412847
54	-49	-102.68025	-45	-118.93057
60	-80	-133.61215	-100	-150.08744
66	-118	-167.69759	-135	-184.60812
72	-178	-205.91558	-210	-223.60444
78	-265	-249.85648	-310	-268.93709
84	-385	-302.4249	-430	-324.16728
90	-495	-370.10085	-540	-397.97657
96	-655	-475.79603	-715	-532.07477
102	-950	-1392.1852	-1030	-1308.2733
108	-1480	-1458.4373	-1400	-1377.2347
114	-1497	-1510.2644	-1431	-1430.1176



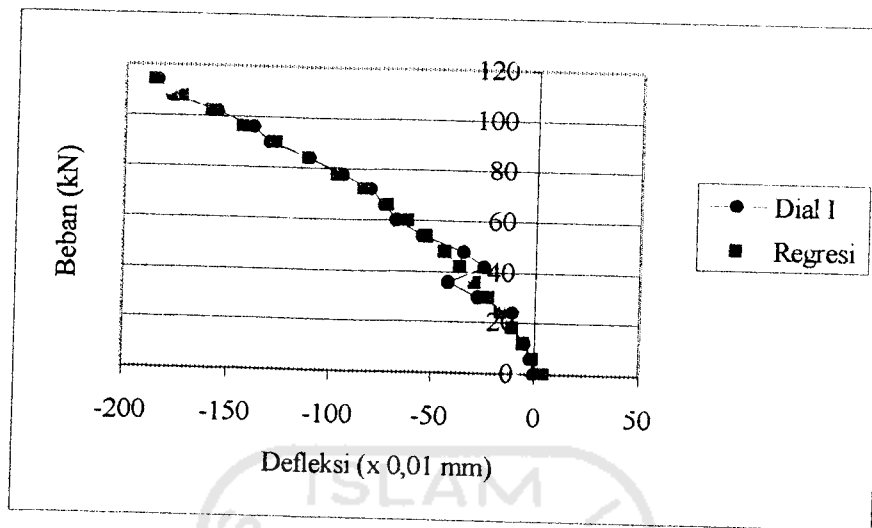
Gambar 5.48: Grafik Beban-Defleksi Dial III / $L_c = \frac{1}{2} L / 1$



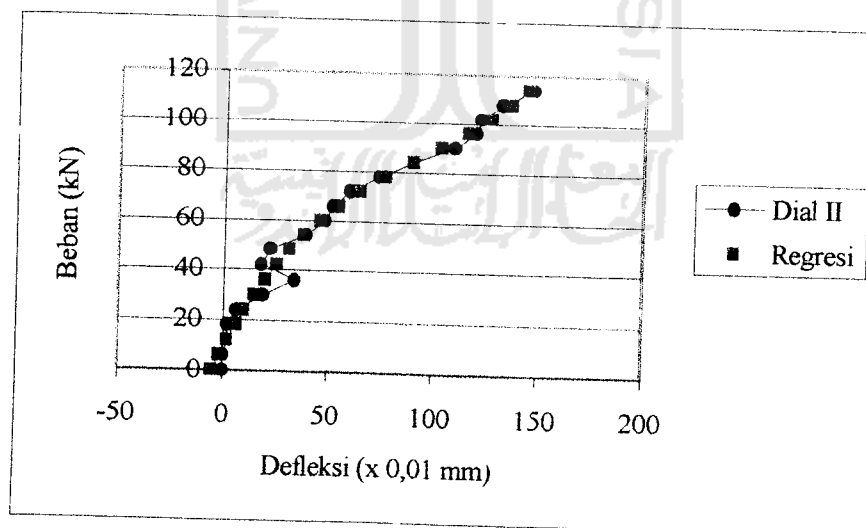
Gambar 5.49: Grafik Beban-Defleksi Dial IV / $L_c = \frac{1}{2} L / 1$

Tabel 5.28: Tabel Kuat Desak Benda Uji $L_c = \frac{1}{2} L$ / Dial I dan Dial II / 2

BEBAN (kN)	Sampel $L_c = \frac{1}{2} L / 2$			
	Dial I	Regresi	Dial II	Regresi
0	0	4.5581532	0	-5.5331903
6	-2	-0.353922	0	-1.9521154
12	-5	-5.5257627	2	1.8381491
18	-11	-10.990695	2	5.8681674
24	-11	-16.788805	6	10.175805
30	-28	-22.968778	19	14.808678
36	-42	-29.590323	34	19.82764
42	-25	-36.727343	18	25.311824
48	-35	-44.472004	22	31.365917
54	-55	-52.939623	39	38.130432
60	-68	-62.273582	48	45.794818
66	-74	-72.647336	52	54.608182
72	-81	-84.25489	60	64.862128
78	-95	-97.26883	74	76.761312
84	-111	-111.72972	90	90.048166
90	-130	-127.3563	110	103.64468
96	-138	-143.42354	120	116.22884
102	-156	-158.98866	122	127.19276
108	-178	-173.35473	132	136.60041
114	-185	-186.26876	147	144.73325



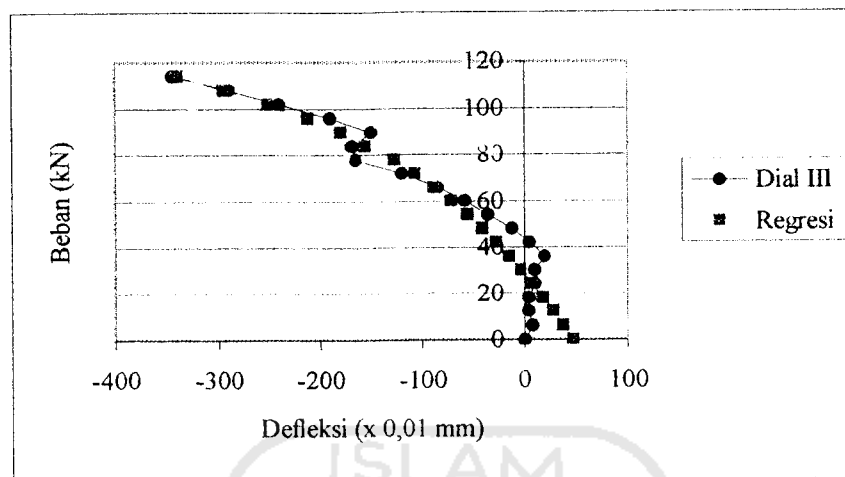
Gambar 5.50: Grafik Beban-Defleksi Dial I / $L_c = \frac{1}{2} L / 2$



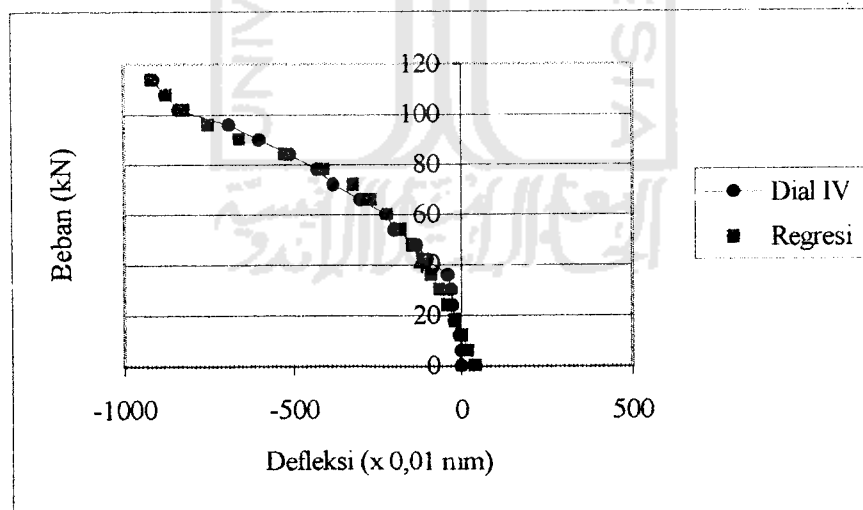
Gambar 5.51: Grafik Beban-Defleksi Dial II / $L_c = \frac{1}{2} L / 2$

Tabel 5.29: Tabel Kuat Desak Benda Uji $L_c = \frac{1}{2} L / 2$ / Dial III dan Dial IV / 2

BEBAN (kN)	Sampel $L_c = \frac{1}{2} L / 2$			
	Dial III	Regresi	Dial IV	Regresi
0	0	46.6307402	0	39.1340864
6	8	37.5101951	0	21.1998144
12	4	27.9842735	-5	2.24423956
18	4	18.0075198	-20	-17.886006
24	10	7.52608043	-25	-39.38388
30	10	-3.5245091	-30	-62.497201
36	20	-15.222307	-40	-87.552147
42	5	-27.663059	-100	-114.99096
48	-12	-40.965912	-130	-145.43559
54	-36	-55.281562	-200	-179.80174
60	-58	-70.804098	-225	-219.51965
66	-84	-87.788546	-300	-267.00255
72	-120	-106.57724	-380	-320.75078
78	-165	-127.63942	-430	-408.06264
84	-169	-155.62802	-510	-526.44557
90	-150	-179.44582	-600	-659.33893
96	-190	-212.24678	-690	-755.33952
102	-240	-251.04331	-840	-823.66652
108	-290	-295.16742	-876	-875.24437
114	-344	-340.4012	-915	-918.02491



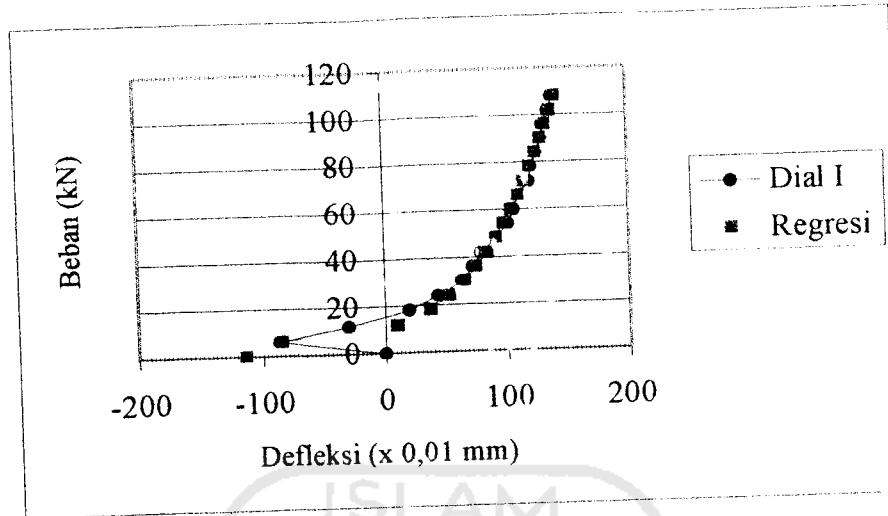
Gambar 5.52: Grafik Beban-Defleksi Dial III / $L_c = \frac{1}{2} L / 2$



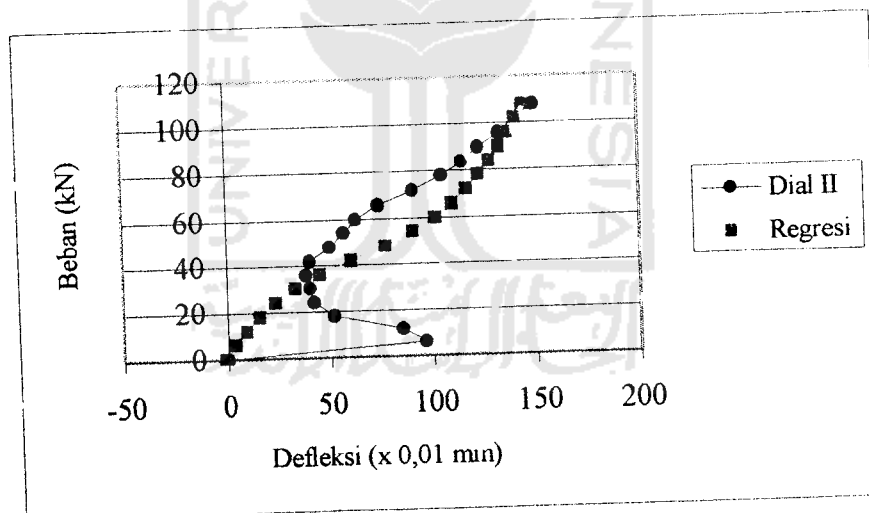
Gambar 5.53: Grafik Beban-Defleksi Dial IV / $L_c = \frac{1}{2} L / 2$

Tabel 5.30: Tabel Kuat Desak Benda Uji $L_c = L / \text{Dial I dan Dial II} / 1$

BEBAN (kN)	Sampel $L_c - L / 1$			
	Dial I	Regresi	Dial II	Regresi
0	0	-113.3972	0	-1.2481762
6	-86	-84.12418	96	3.7361256
12	-30	9.9907558	85	9.3557365
18	20	37.544712	52	15.82778
24	44	53.778454	42	23.497465
30	64	65.93826	40	32.937295
36	73	75.882575	38	45.053531
42	80	84.402658	40	60.53673
48	92	91.917159	50	77.099222
54	102	98.677366	57	90.852217
60	107	104.84724	63	101.4533
66	111	110.54035	74	109.88771
72	120	115.83895	91	116.88435
78	122	120.80473	105	122.88258
84	126	125.48531	115	128.15232
90	131	129.91825	123	132.86793
96	132	134.13382	133	137.1477
102	137	138.15676	141	141.07529
108	140	142.00759	150	144.71205



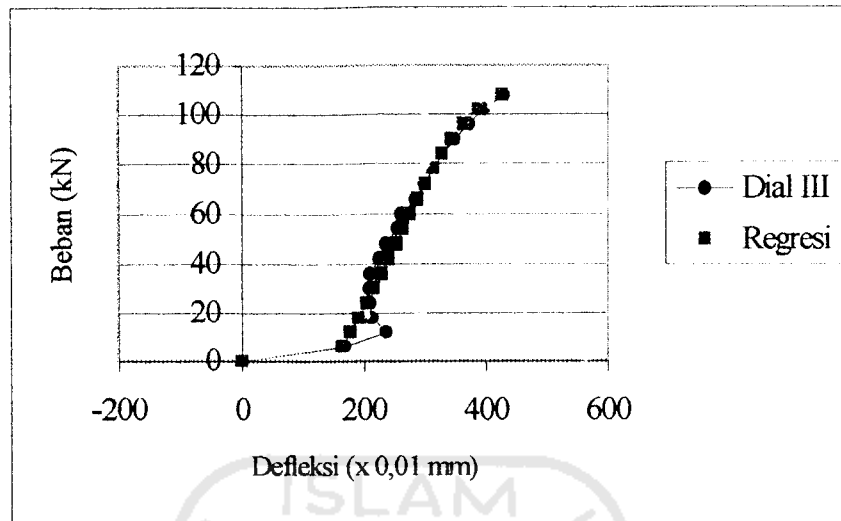
Gambar 5.54: Grafik Beban-Defleksi Dial I / $L_c = L / 1$



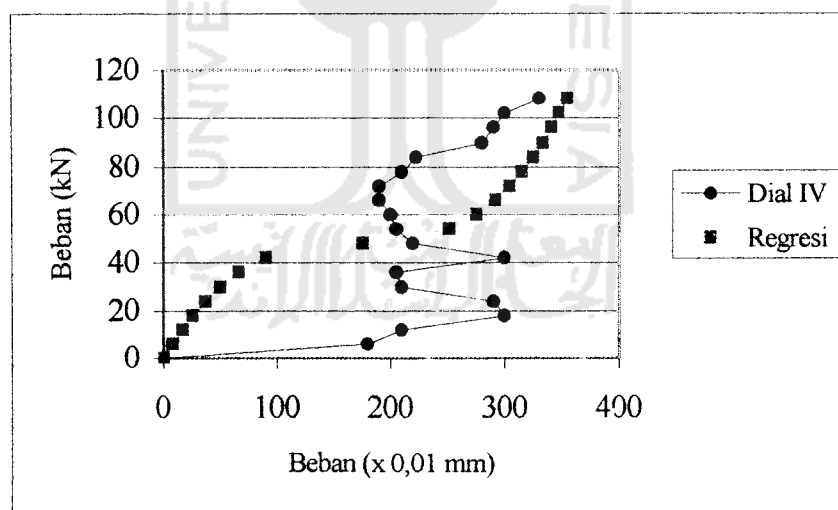
Gambar 5.55: Grafik Beban-Defleksi Dial II / $L_c = L / 1$

Tabel 5.31: Tabel Kuat Desak Benda Uji $L_c = L / 1$ / Dial III dan Dial IV / 1

BEBAN (kN)	Sampel $L_c = L / 1$			
	Dial III	Regresi	Dial IV	Regresi
0	0	-0.437338	0	0.8256821
6	169	164.29771	180	8.5172817
12	237	178.67144	210	16.998114
18	212	192.06329	300	26.507091
24	210	204.79679	290	37.424443
30	209	217.08517	210	50.420995
36	210	229.08408	205	66.890654
42	225	240.9179	300	90.819972
48	236	252.69519	220	175.83428
54	255	264.51935	205	251.76342
60	261	276.49805	200	275.39923
66	285	288.75366	190	291.75436
72	301	301.43807	190	304.68749
78	314	314.75752	210	315.56376
84	329	329.02178	223	325.04357
90	350	344.7591	280	333.50252
96	371	363.06107	290	341.17634
102	395	387.25961	300	348.22639
108	430	426.63789	330	354.76379



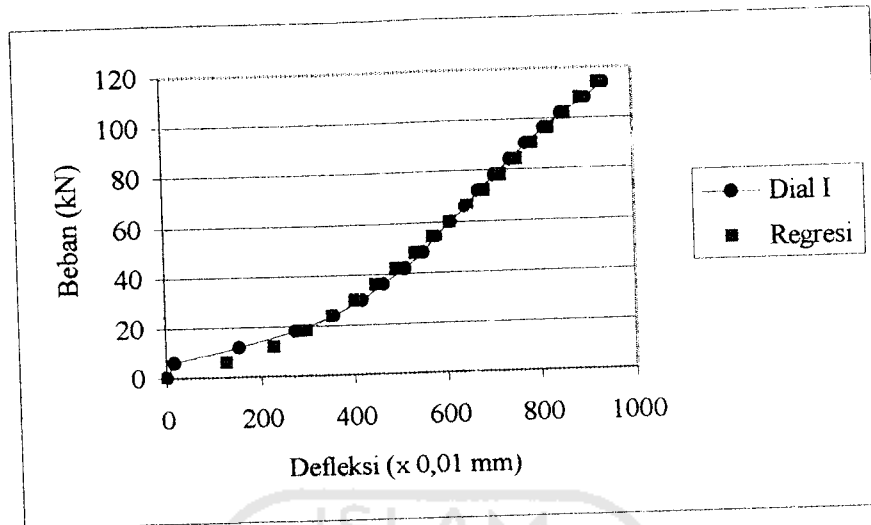
Gambar 5.56: Grafik Beban-Defleksi Dial III / $L_c = L / 1$



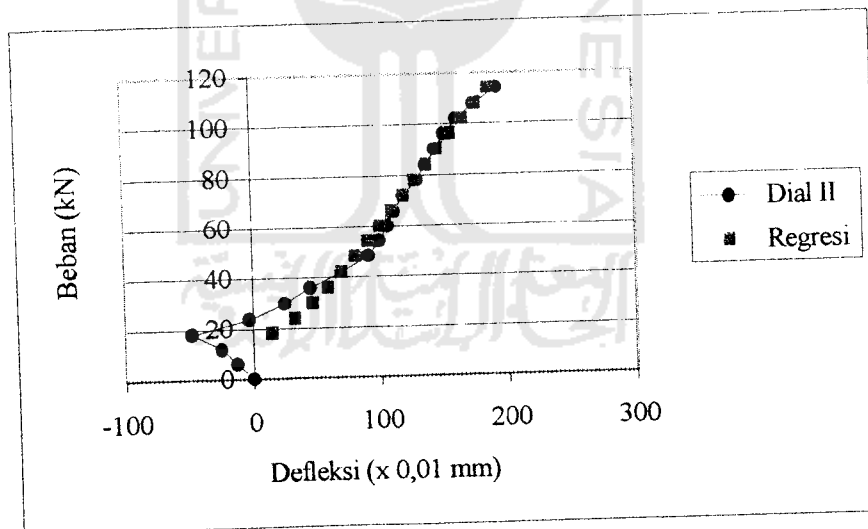
Gambar 5.57: Grafik Beban-Defleksi Dial IV / $L_c = L / 1$

Tabel 5.32: Tabel Kuat Desak Benda Uji $L_c = L / 2$ Dial I dan Dial II / 2

BEBAN (kN)	Sampel $L_c = L / 2$			
	Dial I	Regresi	Dial II	Regresi
0	0		0	
6	17	127.06971	-13	
12	154	229.06036	-25	
18	274	297.45495	-48	15.075354
24	356	353.97238	-3	32.912987
30	417	403.94244	25	47.075761
36	463	449.68765	45	59.420279
42	510	492.47479	70	70.676401
48	550	533.09038	91	81.21567
54	578	572.06745	100	91.261758
60	612	609.79183	106	100.96554
66	644	646.55817	112	110.43838
72	672	682.60221	119	119.7693
78	706	718.12089	130	129.03519
84	740	753.28564	138	138.3077
90	774	788.252	145	147.65903
96	814	823.16694	153	157.67729
102	850	858.17533	162	166.92609
108	900	893.42594	176	177.05122
114	940	929.07806	194	187.70435



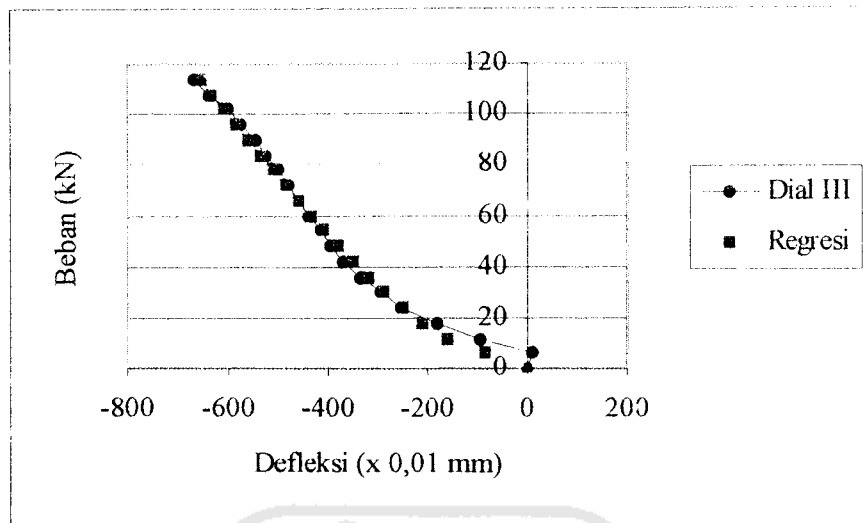
Gambar 5.58: Grafik Beban-Defleksi Dial I / $L_c = L / 2$



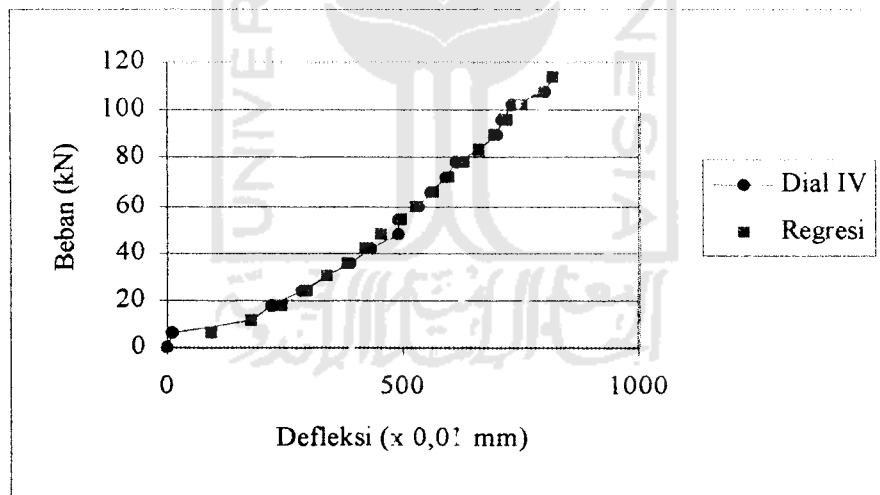
Gambar 5.59: Grafik Beban-Defleksi Dial II / $L_c = L / 2$

Tabel 5.33: Tabel Kuat Desak Benda Uji $L_c = L / \text{Dial III dan Dial IV} / 2$

BEBAN (kN)	Sampel $L_c = L / 2$			
	Dial III	Regresi	Dial IV	Regresi
0	0		0	
6	9	-84.71804	10	92.432006
12	-95	-161.7984	180	179.96368
18	-180	-211.5186	220	241.96382
24	-255	-252.2378	285	293.77804
30	-295	-288.0681	340	339.76629
36	-334	-320.759	385	381.91198
42	-370	-351.2521	430	421.31994
48	-395	-380.1265	490	450.68365
54	-415	-407.7711	490	494.75261
60	-440	-434.465	530	529.03615
66	-460	-460.419	560	562.62538
72	-480	-485.7996	590	595.44766
78	-500	-510.7435	615	627.67075
84	-525	-535.3674	660	659.43682
90	-545	-559.7746	700	690.87035
96	-575	-584.0597	710	722.08382
102	-600	-608.3128	730	753.18221
108	-640	-632.6229	800	784.26671
114	-670	-657.0809	815	815.43804



Gambar 5.60: Grafik Beban-Defleksi Dial III / $L_c = L / 2$



Gambar 5.61: Grafik Beban-Defleksi Dial IV / $L_c = L / 2$