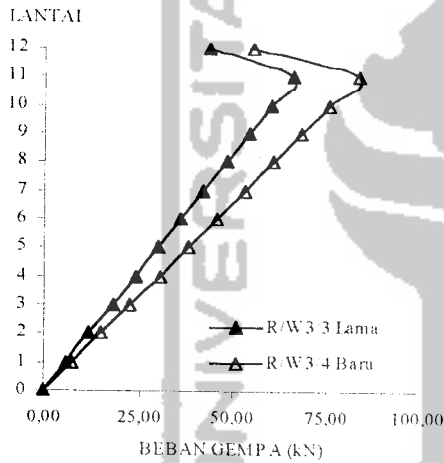


BAB VI

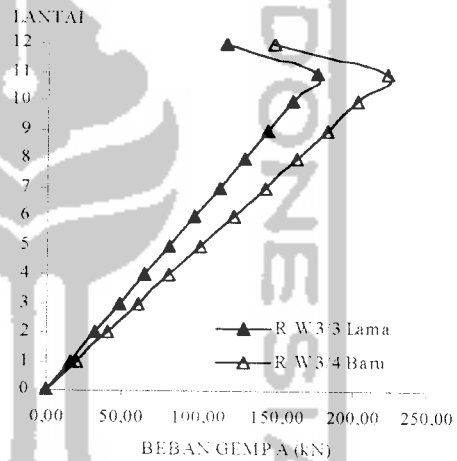
HASIL PERHITUNGAN DAN PEMBAHASAN

6.1 Hasil Penelitian

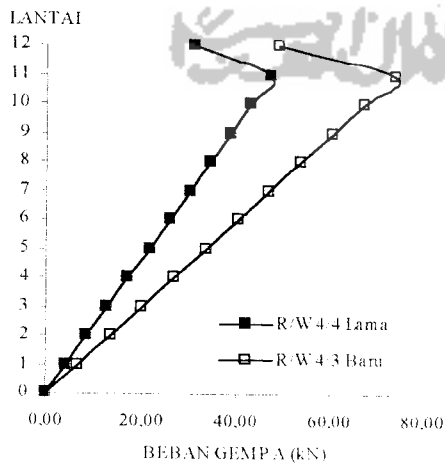
Berdasarkan perhitungan disain struktur dengan menggunakan *code* lama dan *code* baru, didapatkan hasil sebagai berikut :



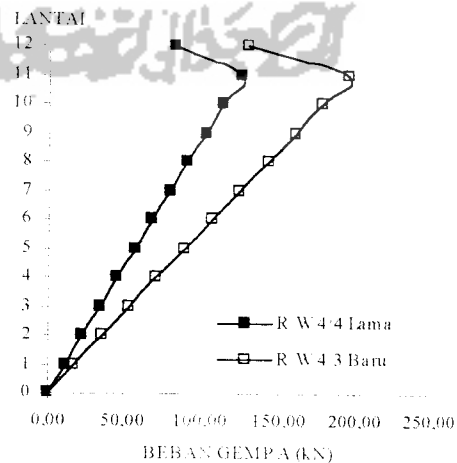
Gambar 6.1.1 Grafik Beban Gempa Portal E R/W 3/3 Lama dan 3/4 Baru



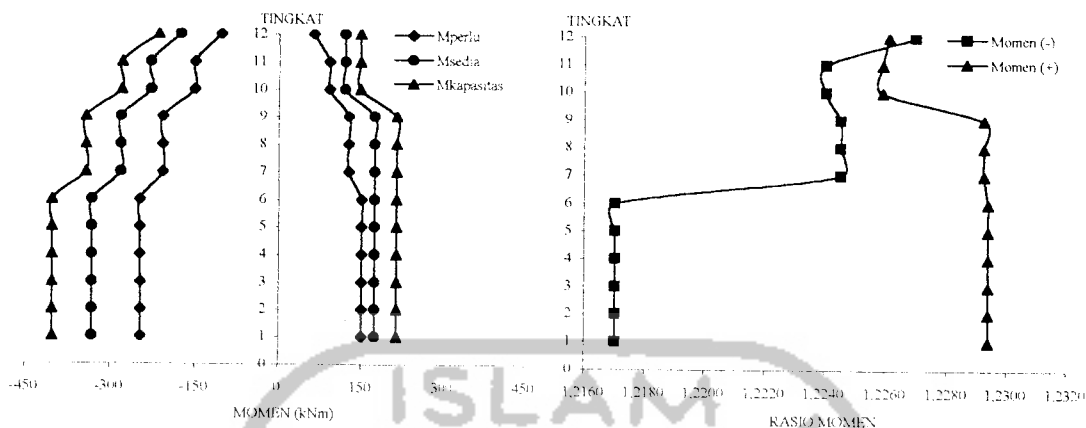
Gambar 6.1.2 Grafik Beban Gempa Portal 2 R/W 3/3 Lama dan 3/4 Baru



Gambar 6.1.3 Grafik Beban Gempa Portal E R/W 4/4 Lama dan 4/3 Baru

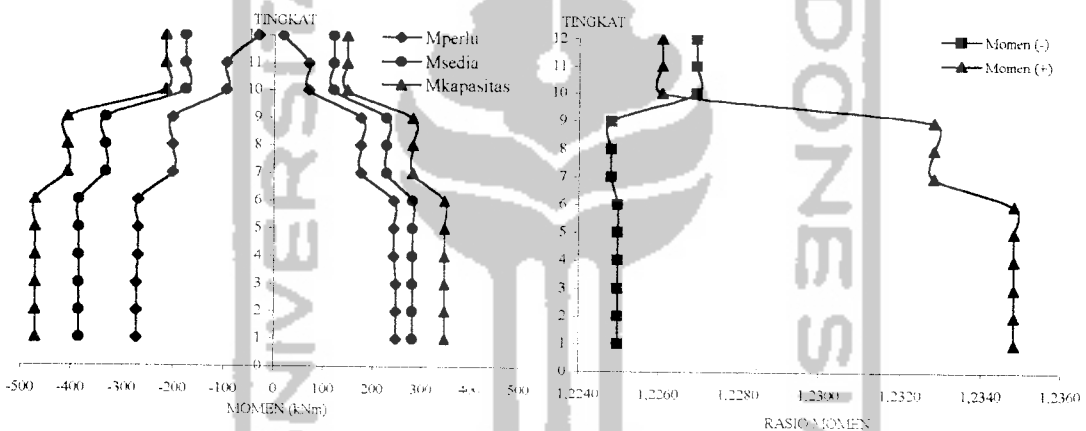


Gambar 6.1.4 Grafik Beban Gempa Portal 2 R/W 4/4 Lama dan 4/3 Baru



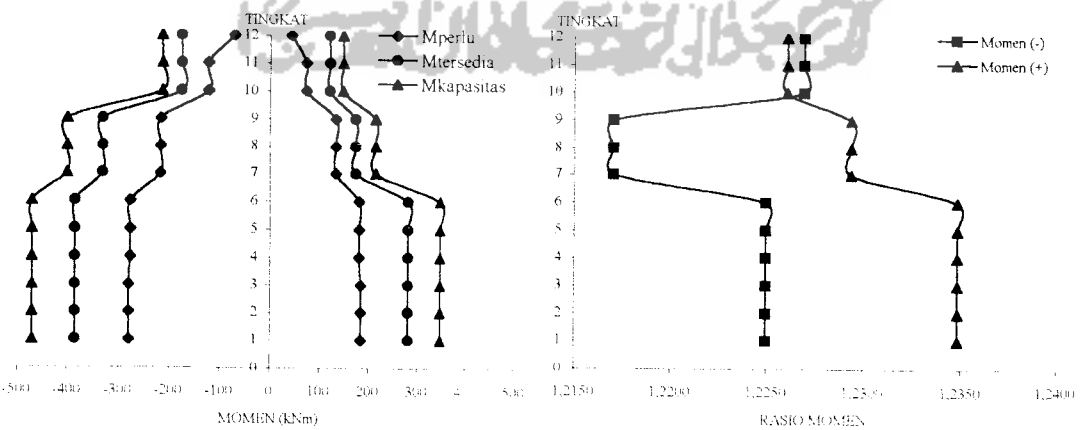
Gambar 6.2.1 Grafik Momen Tumpuan Portal E Bentang 7m R/W 3/3 Lama

Gambar 6.2.2 Grafik Rasio Mkap - Mtersedia Tumpuan Portal E Bentang 7m R/W 3/3 Lama



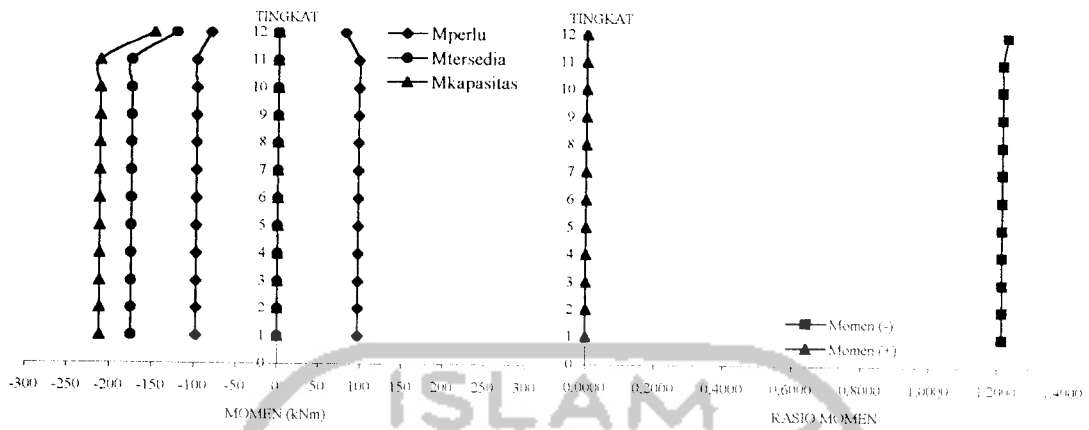
Gambar 6.2.3 Grafik Momen Tumpuan Portal E Bentang 4m R/W 3/3 Lama

Gambar 6.2.4 Grafik Rasio Mkap - Mtersedia Tumpuan Portal E Bentang 4m R/W 3/3 Lama



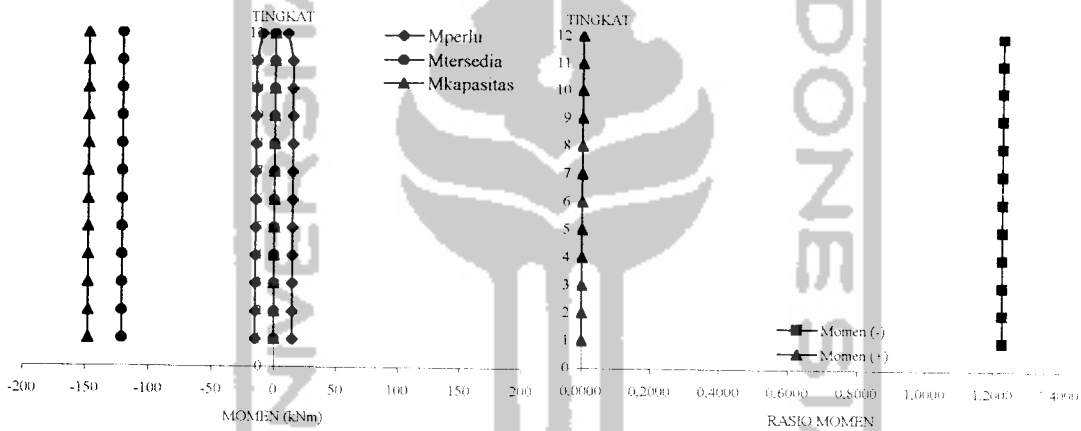
Gambar 6.2.5 Grafik Momen Tumpuan Portal 2 R/W 3/3 Lama

Gambar 6.2.6 Grafik Rasio Mkap - Mtersedia Tumpuan Portal 2 R/W 3/3 Lama



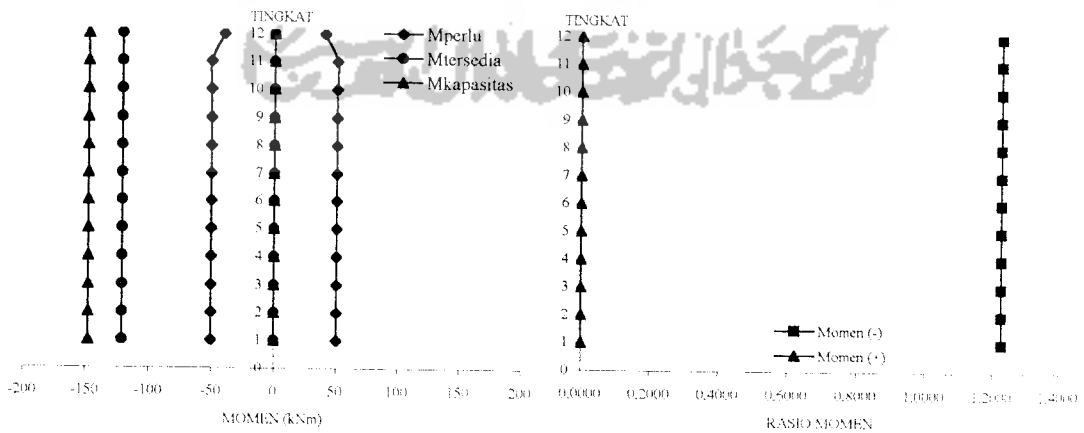
Gambar 6.2.7 Grafik Momen Lapangan Portal E Bentang 7m R/W 3/3 Lama

Gambar 6.2.8 Grafik Rasio Mkap - Mtersedia Lapangan Portal E Bentang 7m R/W 3/3 Lama



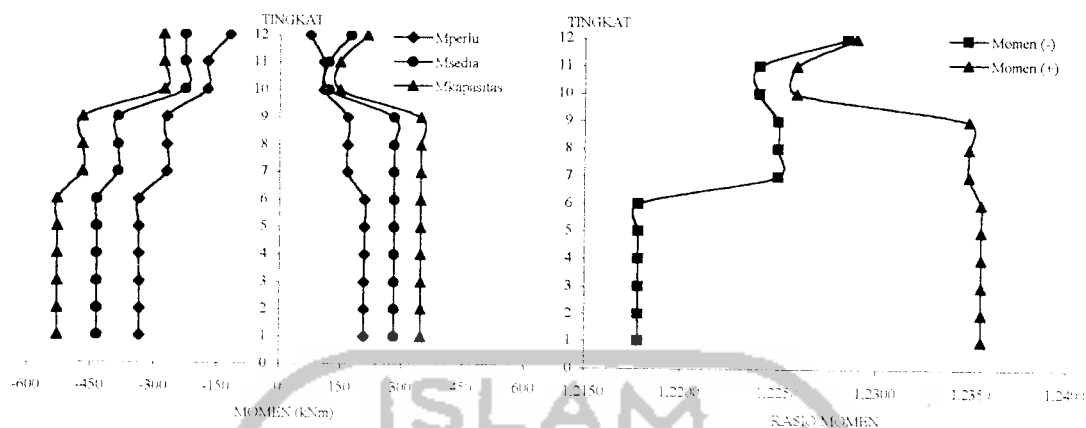
Gambar 6.2.9 Grafik Momen Lapangan Portal E Bentang 4m R/W 3/3 Lama

Gambar 6.2.10 Grafik Rasio Mkap - Mtersedia Lapangan Portal E Bentang 4m R/W 3/3 Lama



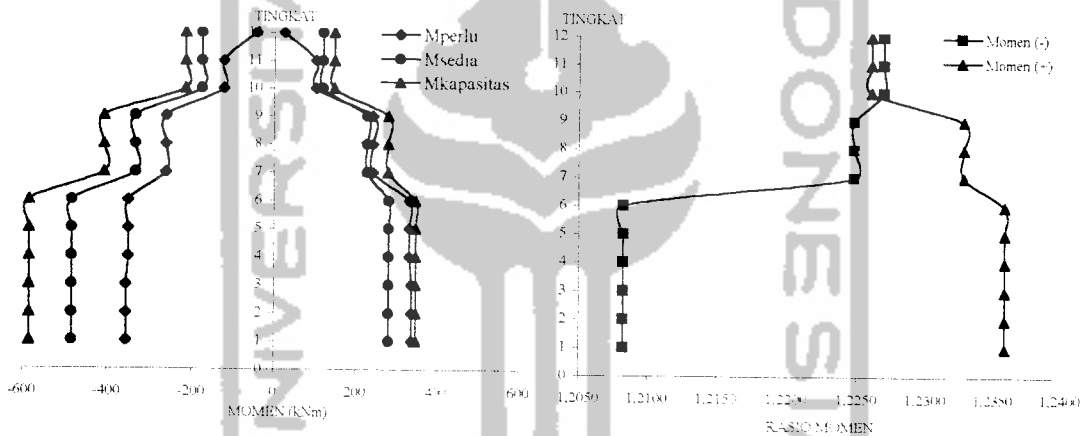
Gambar 6.2.11 Grafik Momen Lapangan Portal 2 R/W 3/3 Lama

Gambar 6.2.12 Grafik Rasio Mkap - Mtersedia Lapangan Portal 2 R/W 3/3 Lama



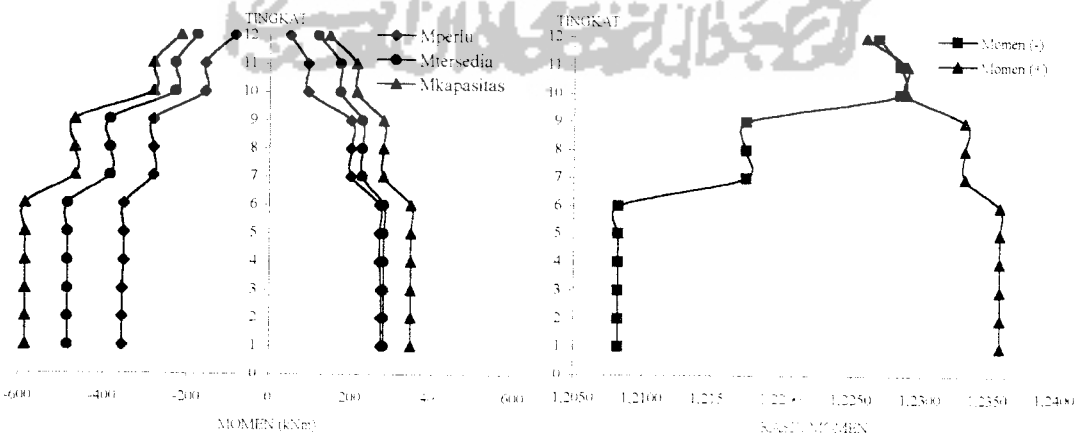
Gambar 6.2.13 Grafik Momen Tumpuan Portal E Bentang 7m R/W 3-4 Baru

Gambar 6.2.14 Grafik Rasio Mkap - Mtersedia Tumpuan Portal E Bentang 7m R/W 3-4 Baru



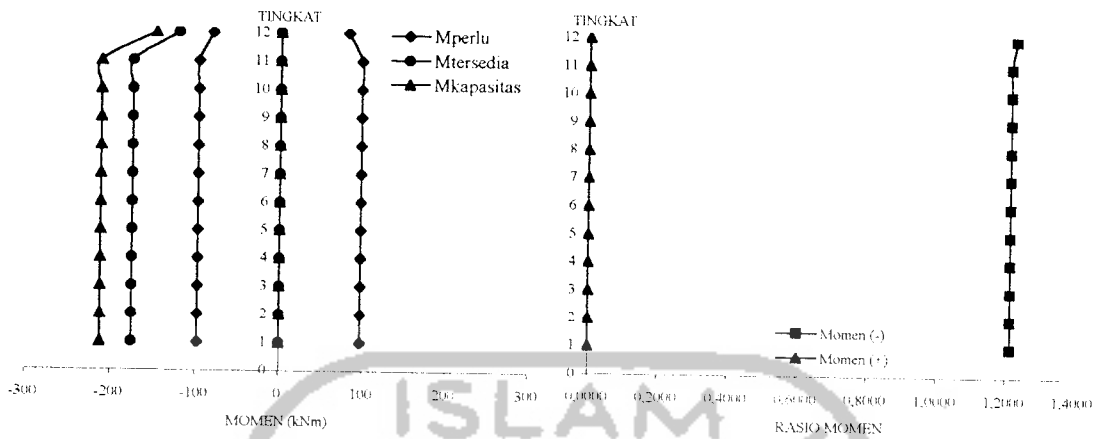
Gambar 6.2.15 Grafik Momen Tumpuan Portal E Bentang 4m R/W 3-4 Baru

Gambar 6.2.16 Grafik Rasio Mkap - Mtersedia Tumpuan Portal E Bentang 4m R/W 3-4 Baru



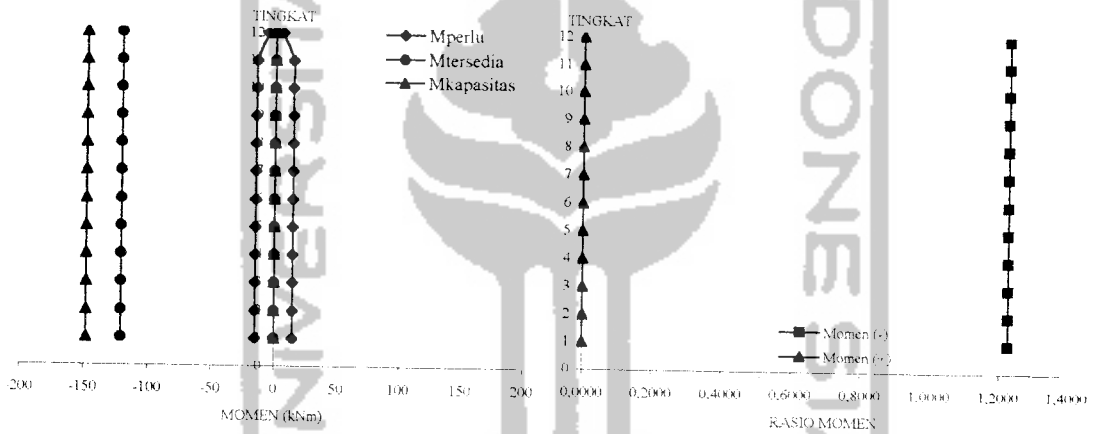
Gambar 6.2.17 Grafik Momen Tumpuan Portal 2 R/W 3-4 Baru

Gambar 6.2.18 Grafik Rasio Mkap - Mtersedia Tumpuan Portal 2 R/W 3-4 Baru



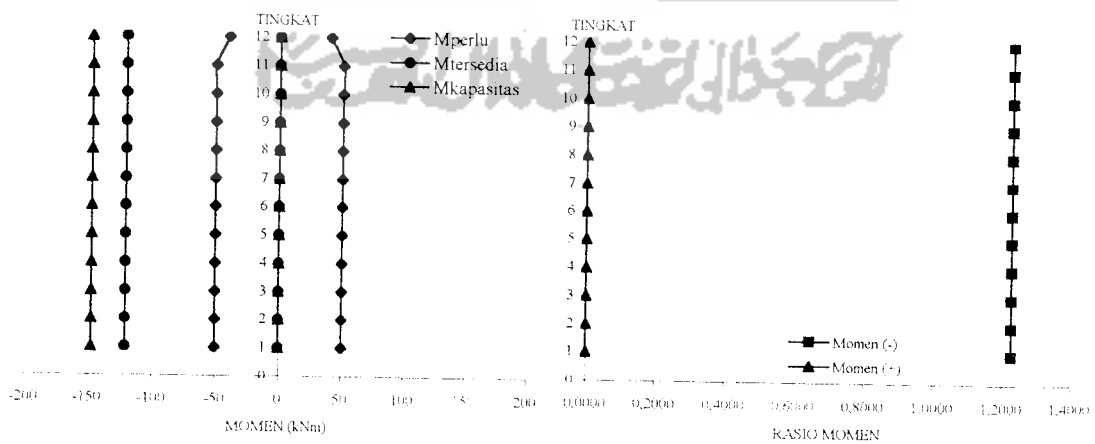
Gambar 6.2.19 Grafik Momen Lapangan Portal E Bentang 7m R/W 3-4 Baru

Gambar 6.2.20 Grafik Rasio Mkap - Mtersedia Lapangan Portal E Bentang 7m R/W 3-4 Baru



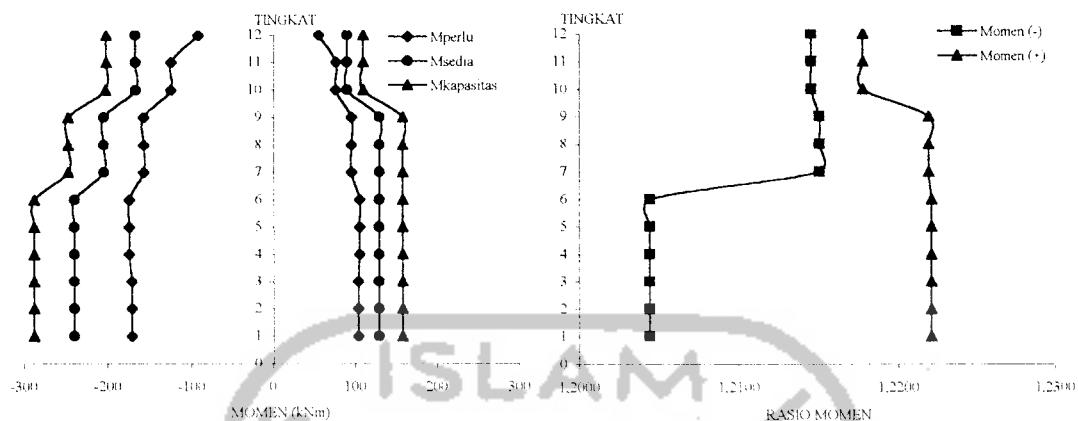
Gambar 6.2.21 Grafik Momen Lapangan Portal E Bentang 4m R/W 3-4 Baru

Gambar 6.2.22 Grafik Rasio Mkap - Mtersedia Lapangan Portal E Bentang 4m R/W 3-4 Baru



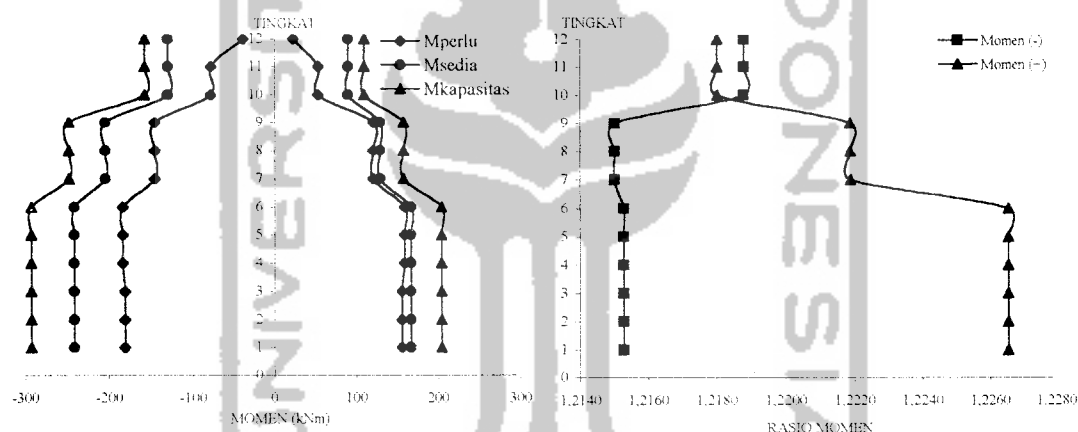
Gambar 6.2.23 Grafik Momen Lapangan Portal 2 R/W 3-4 Baru

Gambar 6.2.24 Grafik Rasio Mkap - Mtersedia Lapangan Portal 2 R/W 3-4 Baru



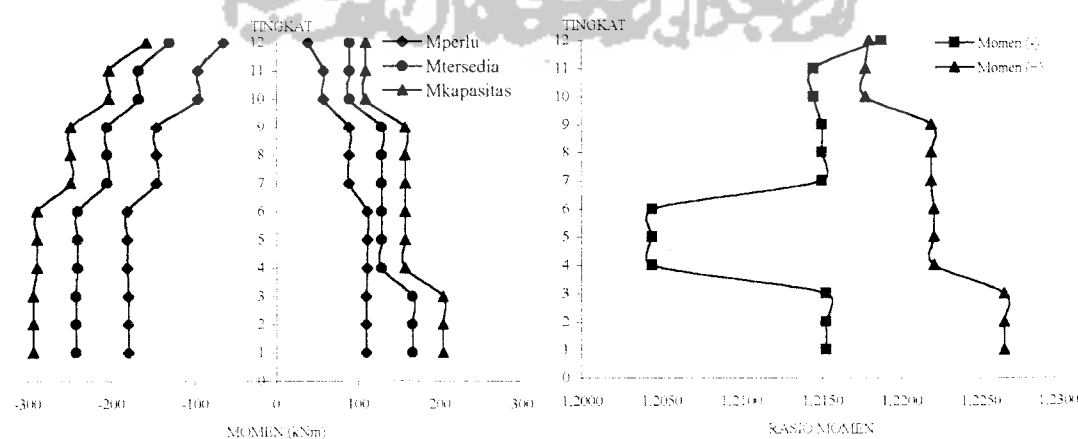
Gambar 6.2.25 Grafik Momen Tumpuan Portal E Bentang 7m R/W 4/4 Lama

Gambar 6.2.26 Grafik Rasio Mkap - Mtersedia Tumpuan Portal E Bentang 7m R/W 4/4 Lama



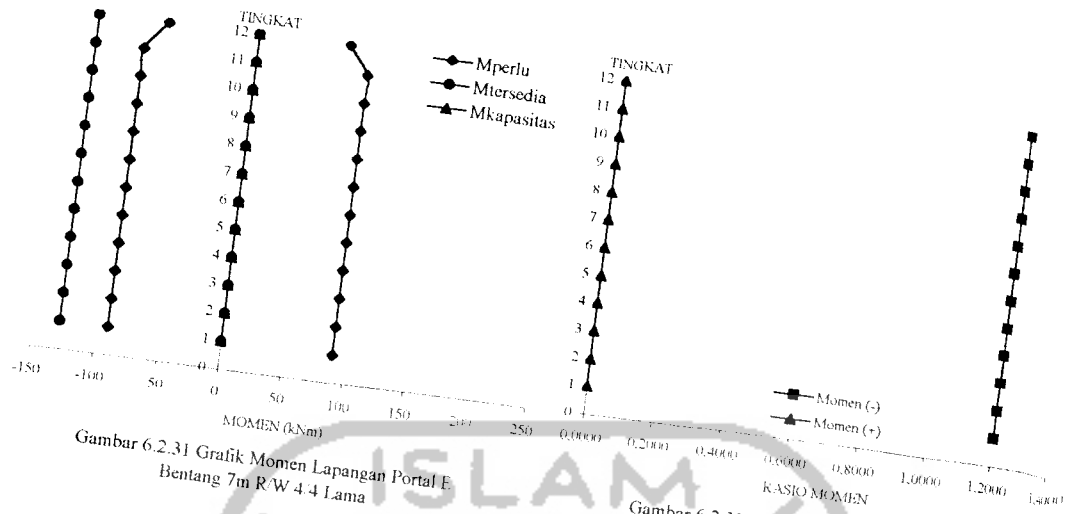
Gambar 6.2.27 Grafik Momen Tumpuan Portal E Bentang 4m R/W 4/4 Lama

Gambar 6.2.28 Grafik Rasio Mkap - Mtersedia Tumpuan Portal E Bentang 4m R/W 4/4 Lama



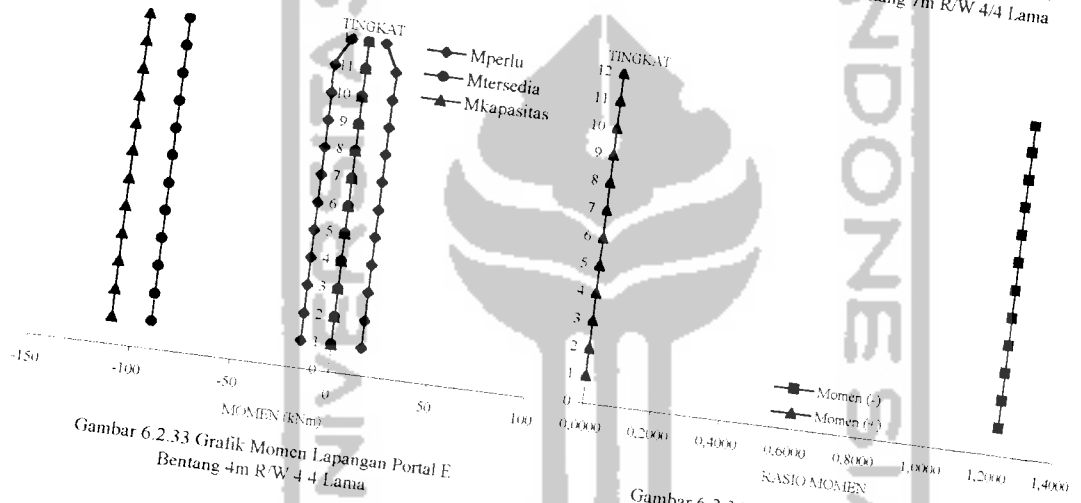
Gambar 6.2.29 Grafik Momen Tumpuan Portal 2 R/W 4/4 Lama

Gambar 6.2.30 Grafik Rasio Mkap - Mtersedia Tumpuan Portal 2 R/W 4/4 Lama



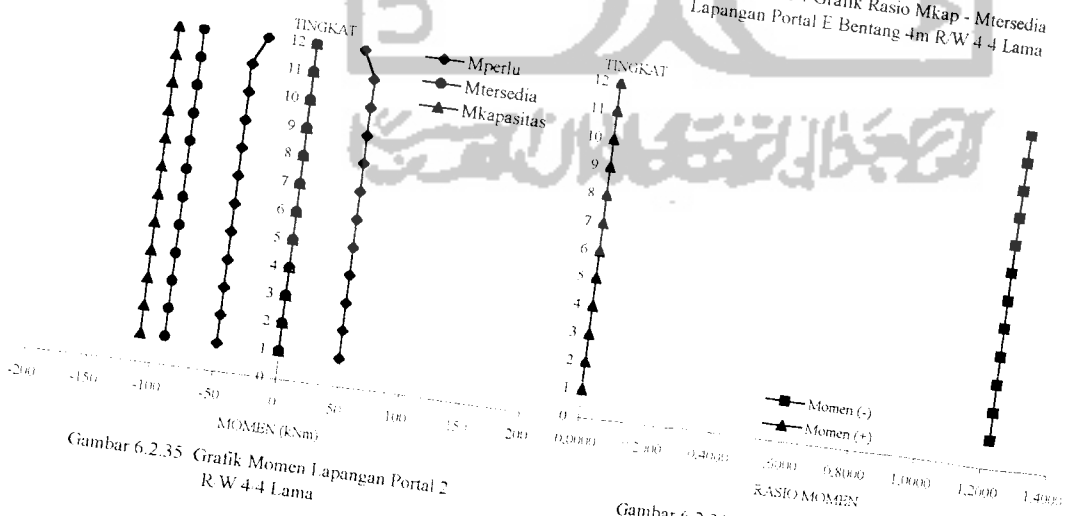
Gambar 6.2.31 Grafik Momen Lapangan Portal E Bentang 7m R/W 4-4 Lama

Gambar 6.2.32 Grafik Rasio Mkap - Mtersedia Lapangan Portal E Bentang 7m R/W 4-4 Lama



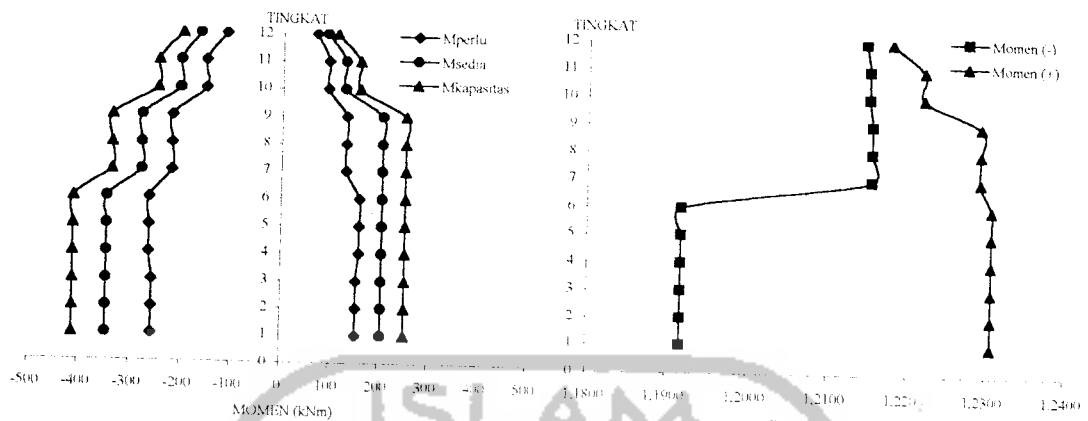
Gambar 6.2.33 Grafik Momen Lapangan Portal E Bentang 4m R/W 4-4 Lama

Gambar 6.2.34 Grafik Rasio Mkap - Mtersedia Lapangan Portal E Bentang 4m R/W 4-4 Lama



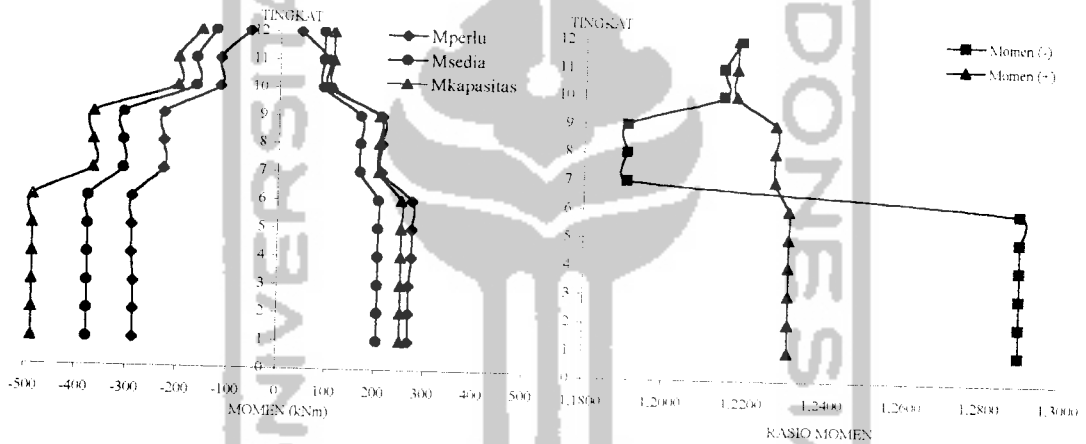
Gambar 6.2.35 Grafik Momen Lapangan Portal 2 R/W 4-4 Lama

Gambar 6.2.36 Grafik Rasio Mkap - Mtersedia Lapangan Portal 2 R/W 4-4 Lama



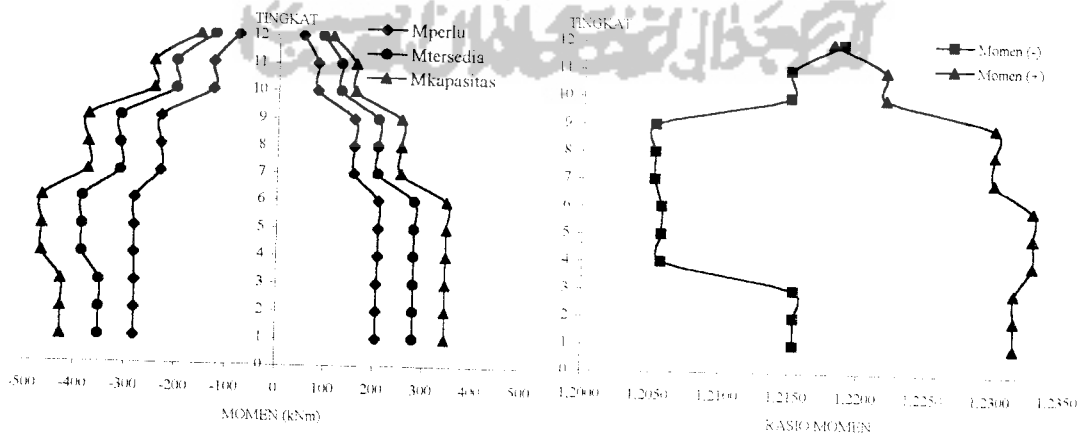
Gambar 6.2.37 Grafik Momen Tumpuan Portal E Bentang 7m R.W 4/3 Baru

Gambar 6.2.38 Grafik Rasio Mkap - Mtersedia Tumpuan Portal E Bentang 7m R.W 4/3 Baru



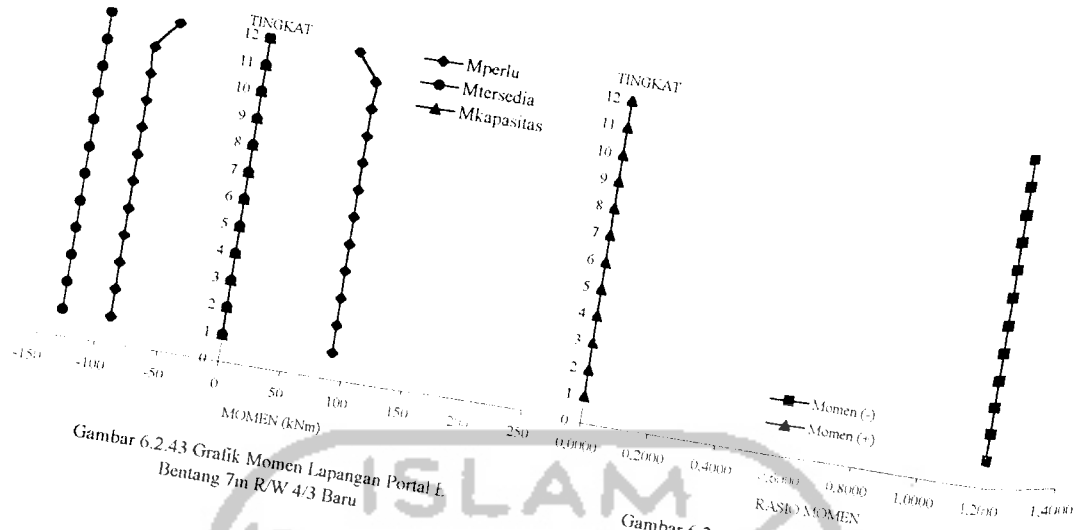
Gambar 6.2.39 Grafik Momen Tumpuan Portal E Bentang 4m R.W 4/3 Baru

Gambar 6.2.40 Grafik Rasio Mkap - Mtersedia Tumpuan Portal E Bentang 4m R.W 4/3 Baru



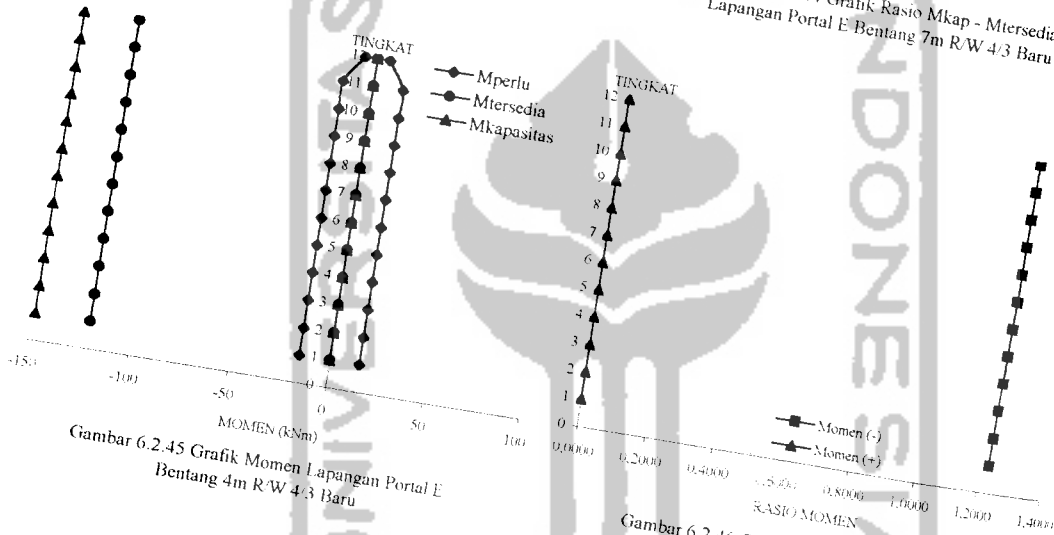
Gambar 6.2.41 Grafik Momen Tumpuan Portal 2 R.W 4/3 Baru

Gambar 6.2.42 Grafik Rasio Mkap - Mtersedia Tumpuan Portal 2 R.W 4/3 Baru



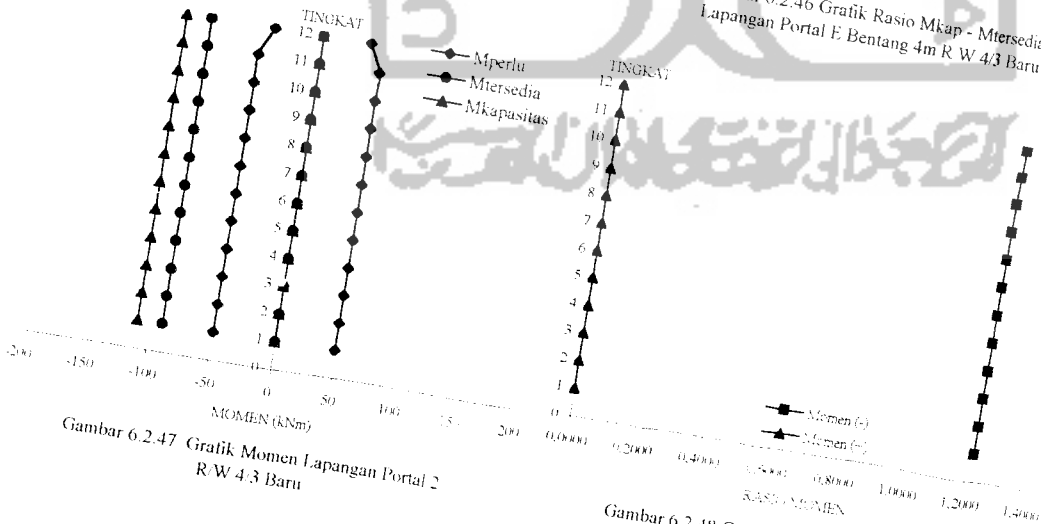
Gambar 6.2.43 Grafik Momen Lapangan Portal E Bentang 7m R/W 4/3 Baru

Gambar 6.2.44 Grafik Rasio Mkap - Mtersedia Lapangan Portal E Bentang 7m R/W 4/3 Baru



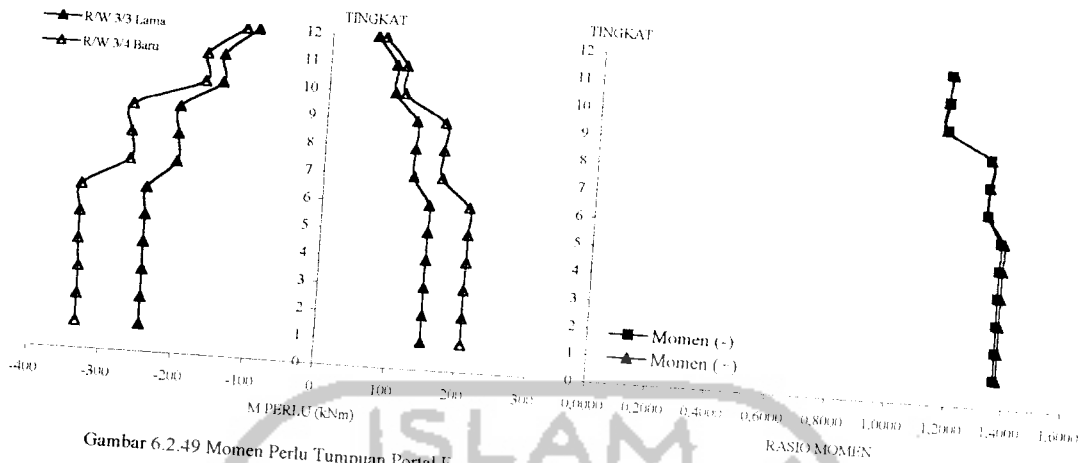
Gambar 6.2.45 Grafik Momen Lapangan Portal E Bentang 4m R/W 4/3 Baru

Gambar 6.2.46 Grafik Rasio Mkap - Mtersedia Lapangan Portal E Bentang 4m R/W 4/3 Baru



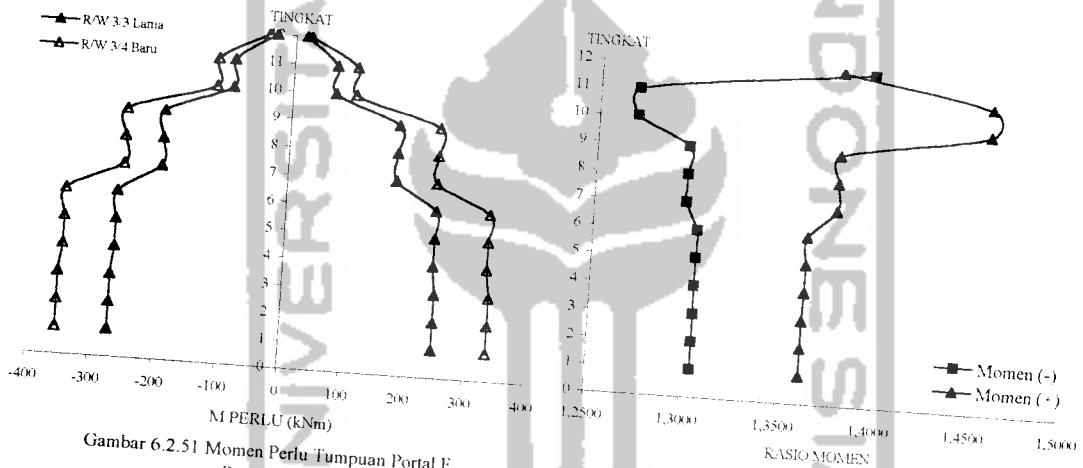
Gambar 6.2.47 Grafik Momen Lapangan Portal 2 R/W 4/3 Baru

Gambar 6.2.48 Grafik Rasio Mkap - Mtersedia Lapangan Portal 2 R/W 4/3 Baru



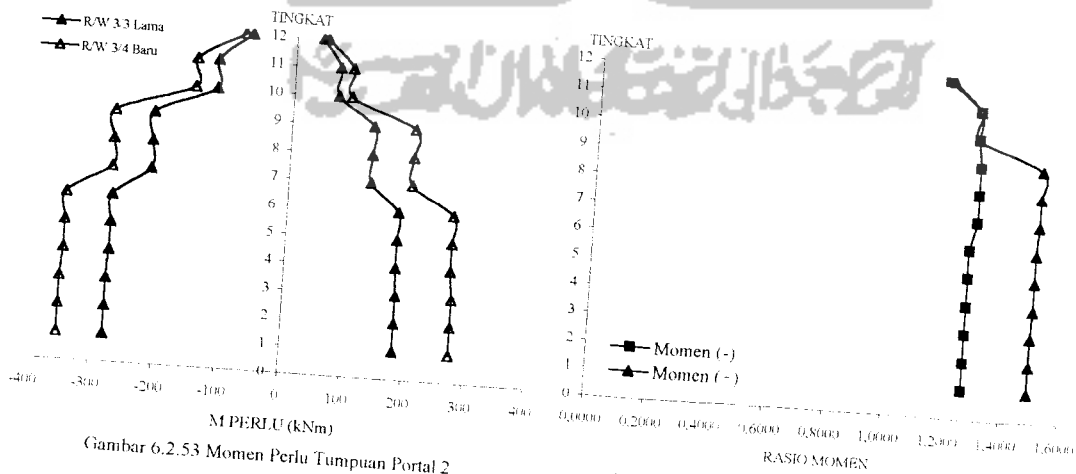
Gambar 6.2.49 Momen Perlu Tumpuan Portal E Bentang 7m

Gambar 6.2.50 Rasio Mperlu Tumpuan Portal E Bentang 7m R W 3/4 Baru - R/W 3/3 Lama



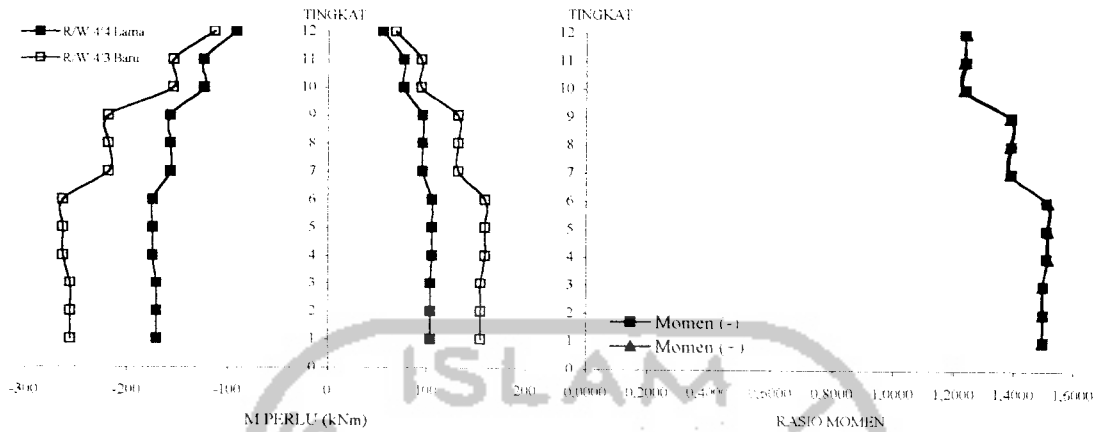
Gambar 6.2.51 Momen Perlu Tumpuan Portal E Bentang 4m

Gambar 6.2.52 Rasio Mperlu Tumpuan Portal E Bentang 4m R W 3/4 Baru - R/W 3/3 Lama



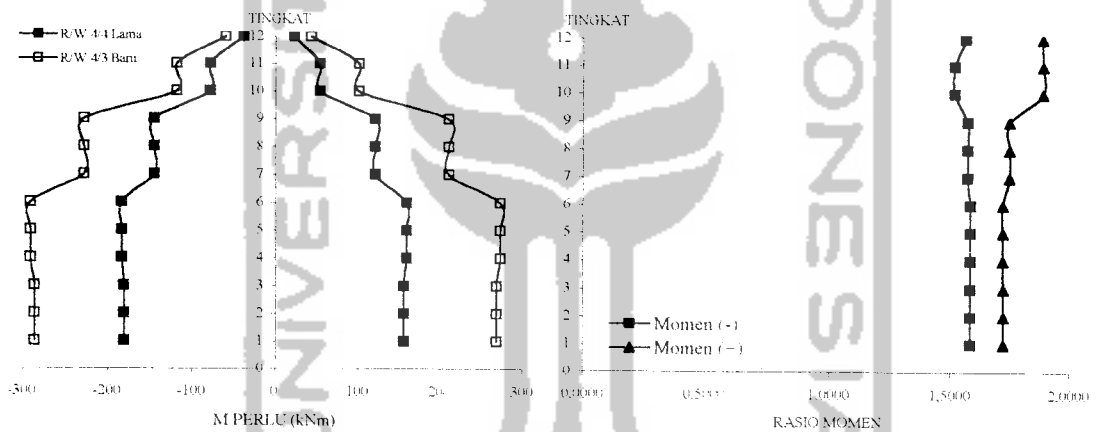
Gambar 6.2.53 Momen Perlu Tumpuan Portal 2

Gambar 6.2.54 Rasio Mperlu Tumpuan Portal 2 R W 3/4 Baru - R/W 3/3 Lama



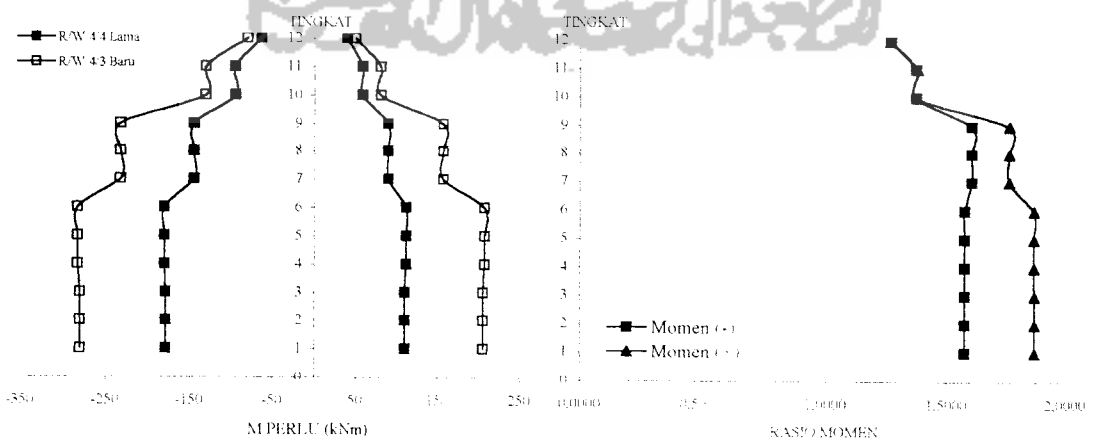
Gambar 6.2.55 Momen Perlu Tumpuan Portal E Bentang 7m

Gambar 6.2.56 Rasio Mperlu Tumpuan Portal E Bentang 7m R/W 4/3 Baru - R/W 4/4 Lama



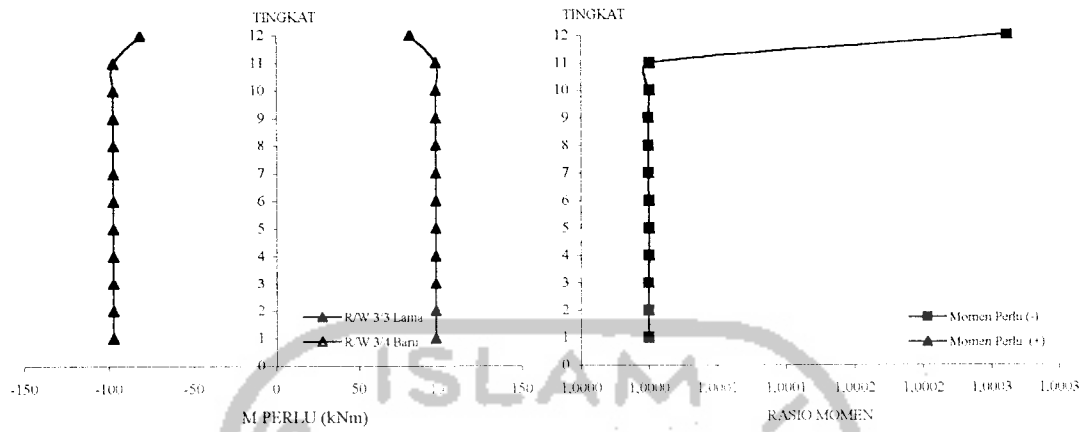
Gambar 6.2.57 Momen Perlu Tumpuan Portal E Bentang 4m

Gambar 6.2.58 Rasio Mperlu Tumpuan Portal E Bentang 4m R/W 4/3 Baru - R/W 4/4 Lama



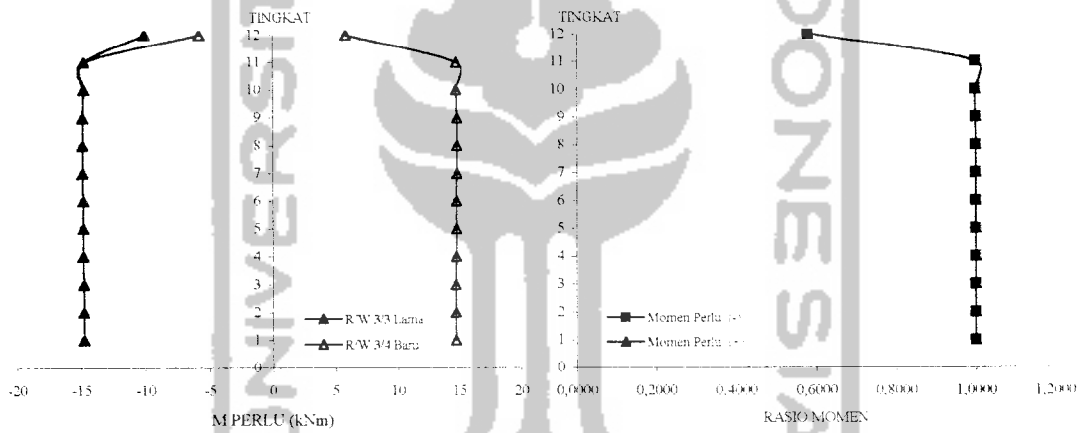
Gambar 6.2.59 Momen Perlu Tumpuan Portal 2

Gambar 6.2.60 Rasio Mperlu Tumpuan Portal 2 R/W 4/3 Baru - R/W 4/4 Lama



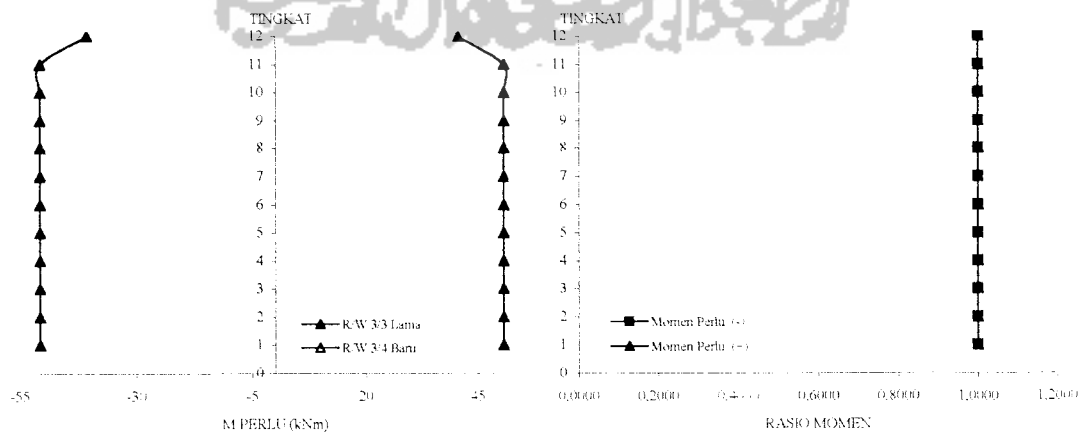
Gambar 6.2.61 Momen Perlu Lapangan Portal E Bentang 7m

Gambar 6.2.62 Rasio Mperlu Lapangan Portal E Bentang 7m R/W 3/4 Baru - R/W 3/3 Lama



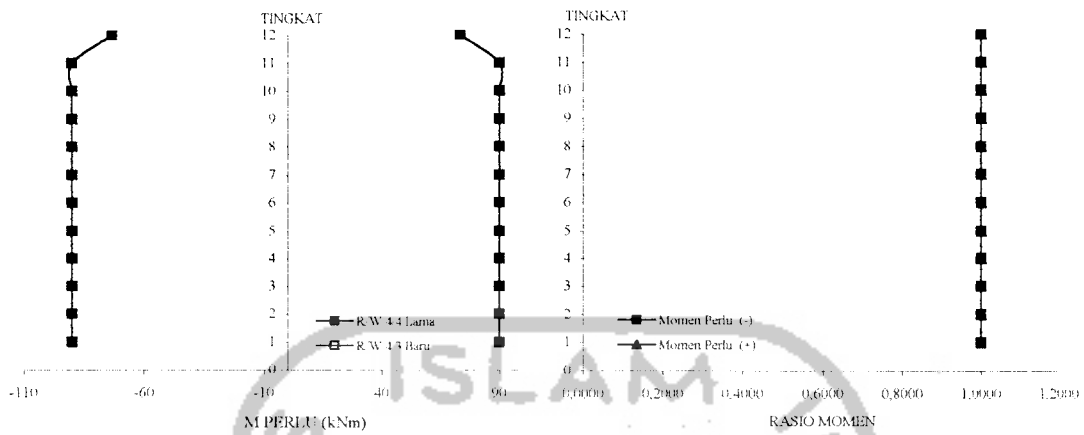
Gambar 6.2.63 Momen Perlu Lapangan Portal E Bentang 4m

Gambar 6.2.64 Rasio Mperlu Lapangan Portal E Bentang 4m R/W 3/4 Baru - R/W 3/3 Lama



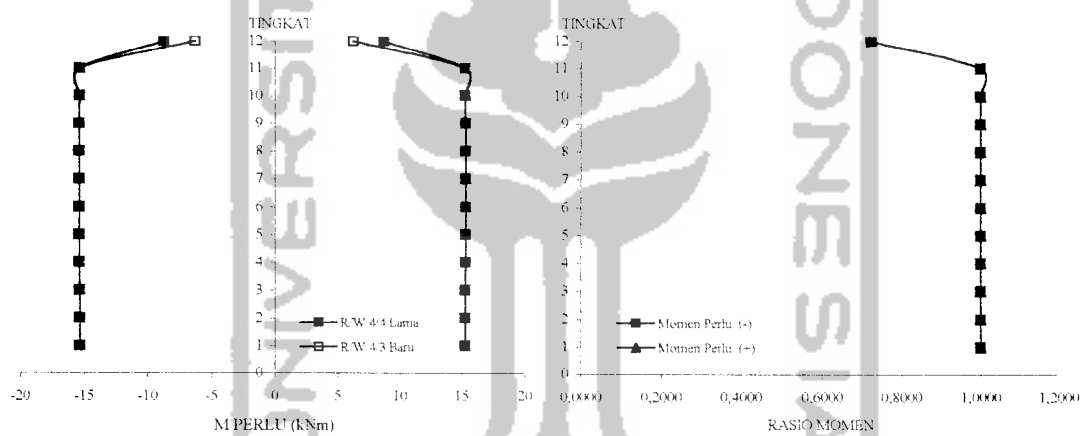
Gambar 6.2.65 Momen Perlu Lapangan Portal 2

Gambar 6.2.66 Rasio Mperlu Lapangan Portal 2 R/W 3/4 Baru - R/W 3/3 Lama



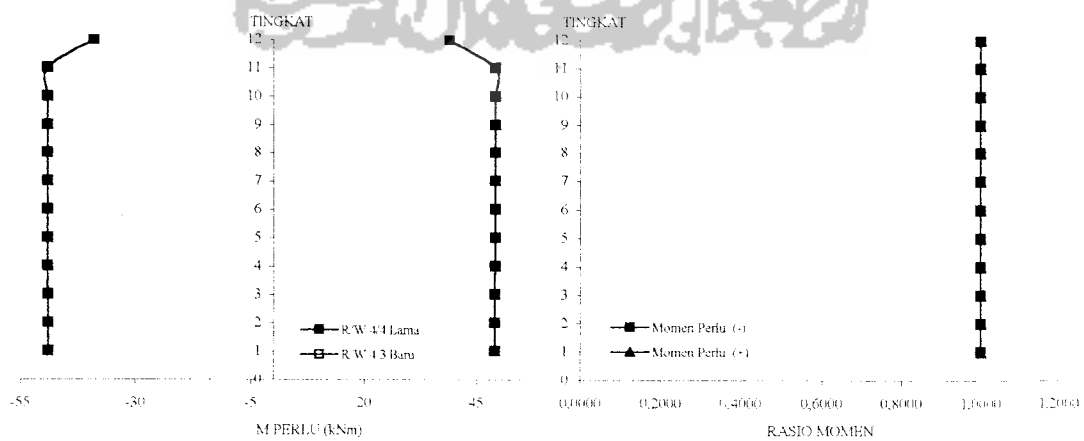
Gambar 6.2.67 Momen Perlu Lapangan Portal E Bentang 7m

Gambar 6.2.68 Rasio Mperlu Lapangan Portal E Bentang 7m R/W 4/3 Baru - R/W 4/4 Lama



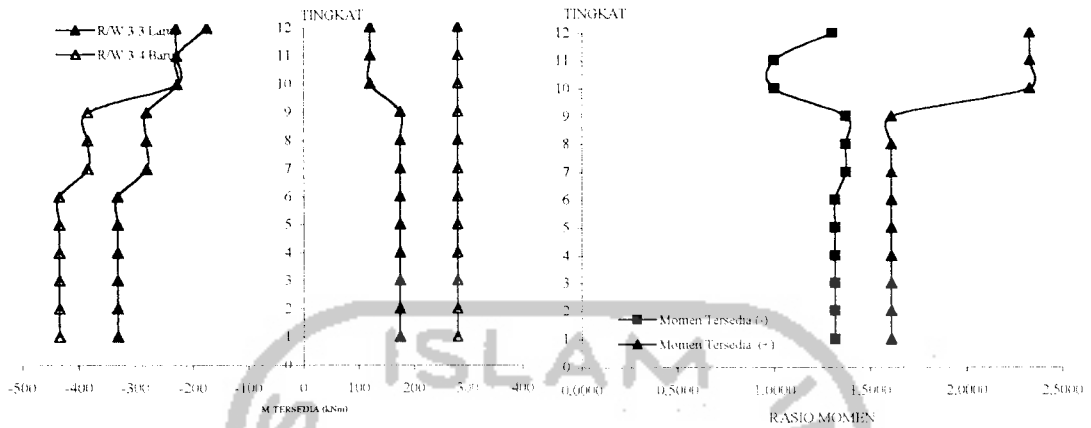
Gambar 6.2.69 Momen Perlu Lapangan Portal E Bentang 4m

Gambar 6.2.70 Rasio Mperlu Lapangan Portal E Bentang 4m R/W 4/3 Baru - R/W 4/4 Lama



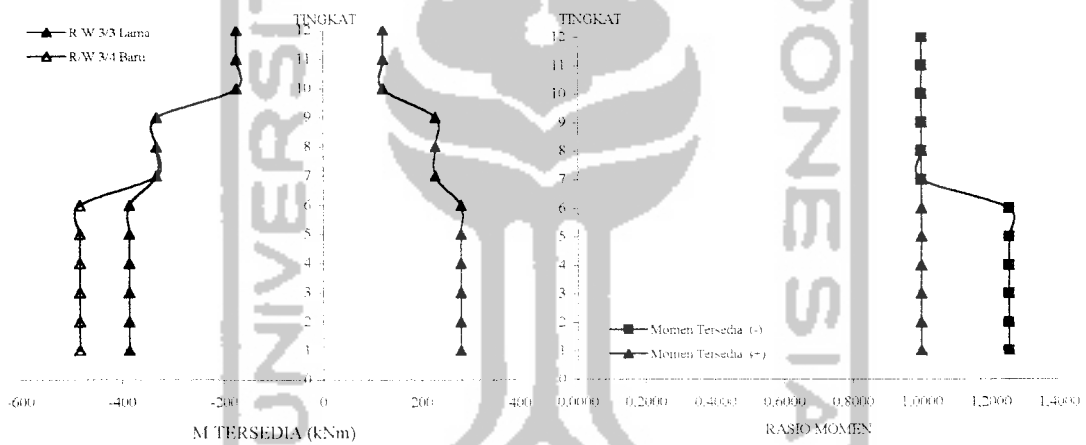
Gambar 6.2.71 Momen Perlu Lapangan Portal 2

Gambar 6.2.72 Rasio Mperlu Lapangan Portal 2 R/W 4/3 Baru - R/W 4/4 Lama



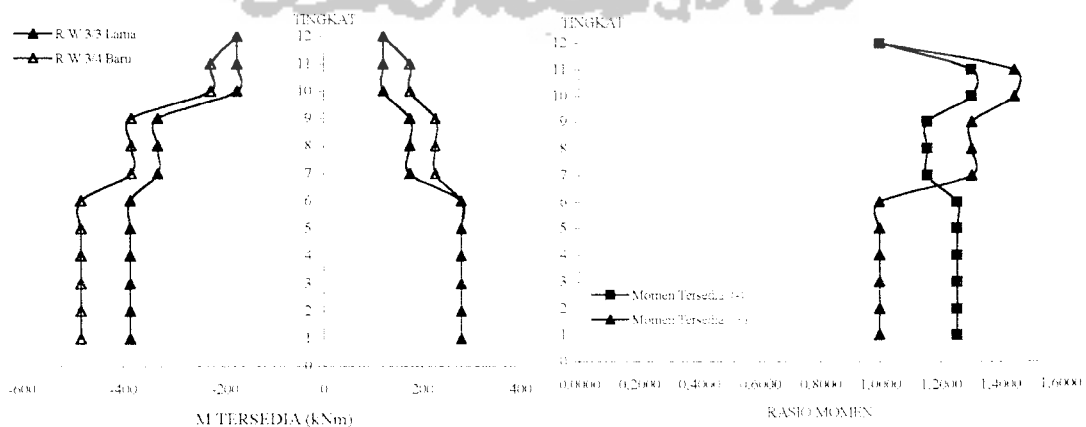
Gambar 6.2.73 Momen Tersedia Tumpuan Portal E Bentang 7m

Gambar 6.2.74 Rasio Mtersedia Tumpuan Portal E Bentang 7m R/W 3/4 Baru - R/W 3/3 Lama



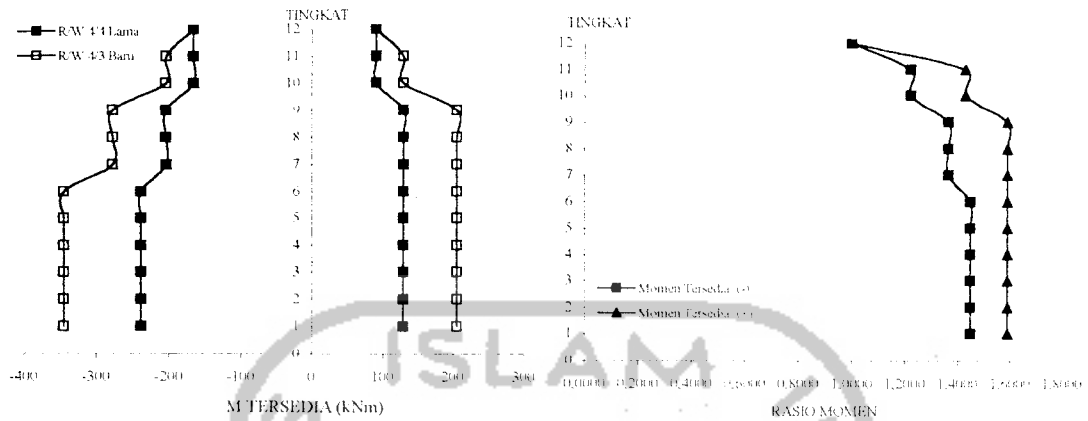
Gambar 6.2.75 Momen Tersedia Tumpuan Portal E Bentang 4m

Gambar 6.2.76 Rasio Mtersedia Tumpuan Portal E Bentang 4m R/W 3/4 Baru - R/W 3/3 Lama



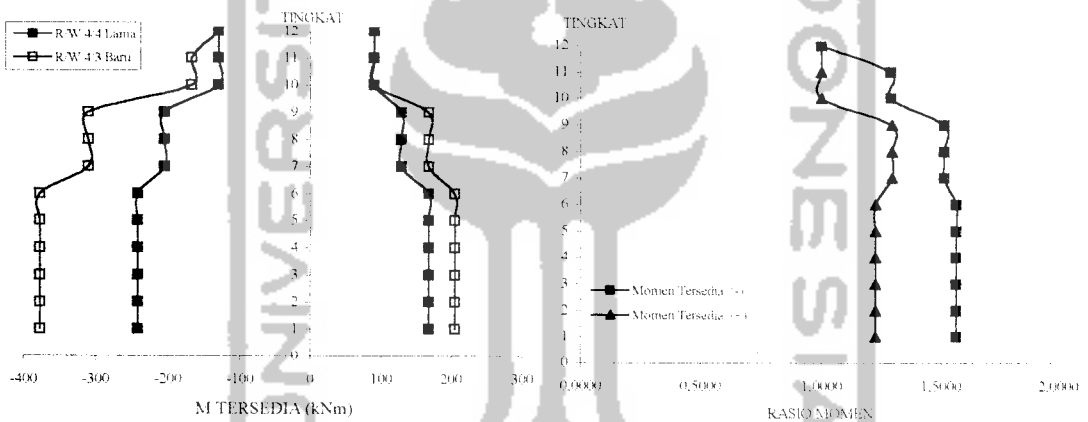
Gambar 6.2.77 Momen Tersedia Tumpuan Portal 2

Gambar 6.2.78 Rasio Mtersedia Tumpuan Portal 2 R/W 3/4 Baru - R/W 3/3 Lama



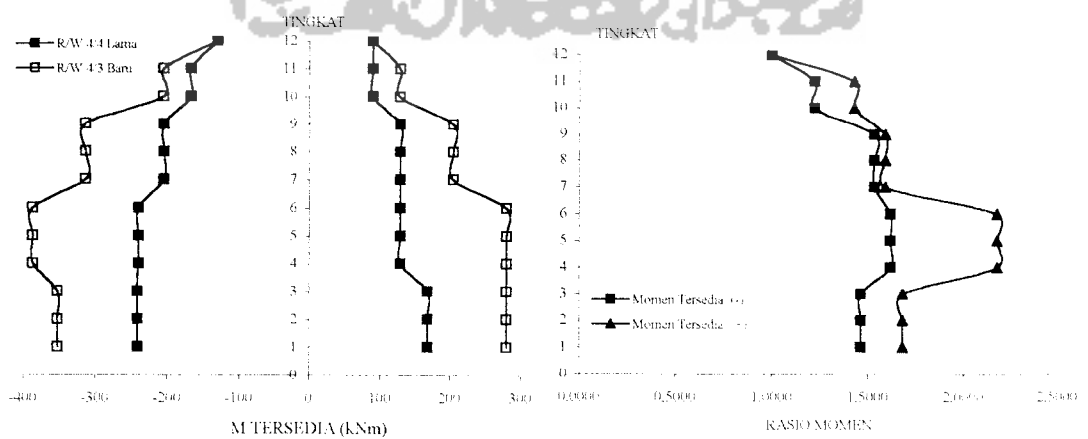
Gambar 6.2.79 Momen Tersedia Tumpuan Portal E Bentang 7m

Gambar 6.2.80 Rasio Mtersedia Tumpuan Portal E Bentang 7m R/W 4.3 Baru - R/W 4.4 Lama



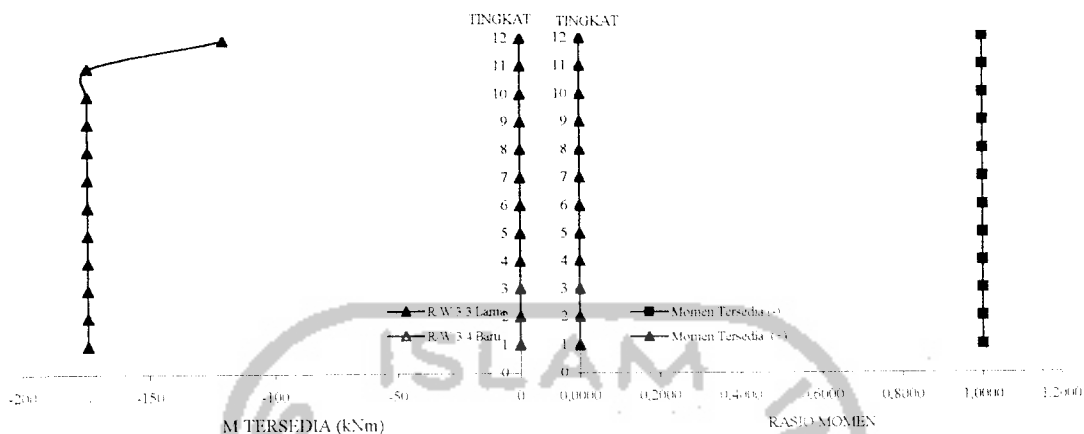
Gambar 6.2.81 Momen Tersedia Tumpuan Portal E Bentang 4m

Gambar 6.2.82 Rasio Mtersedia Tumpuan Portal E Bentang 4m R/W 4.3 Baru - R/W 4.4 Lama



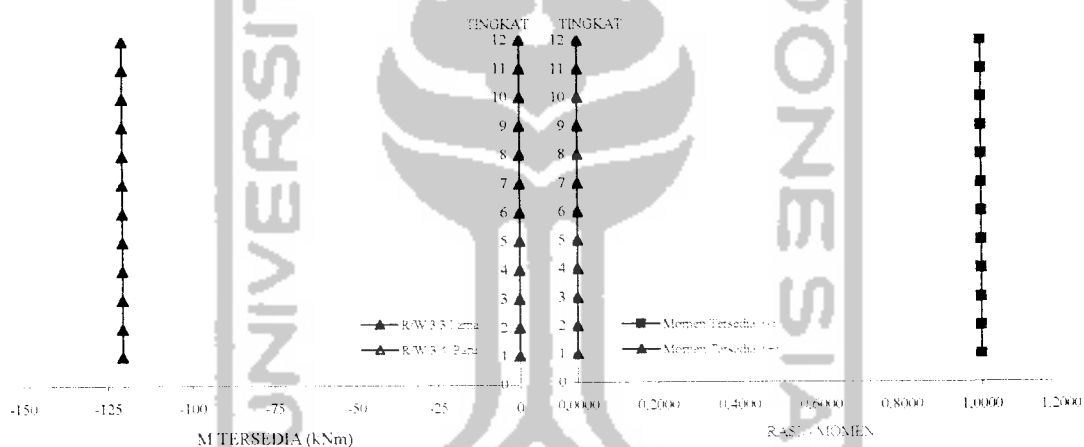
Gambar 6.2.83 Momen Tersedia Tumpuan Portal 2

Gambar 6.2.84 Rasio Mtersedia Tumpuan Portal 2 R/W 4.3 Baru - R/W 4.4 Lama



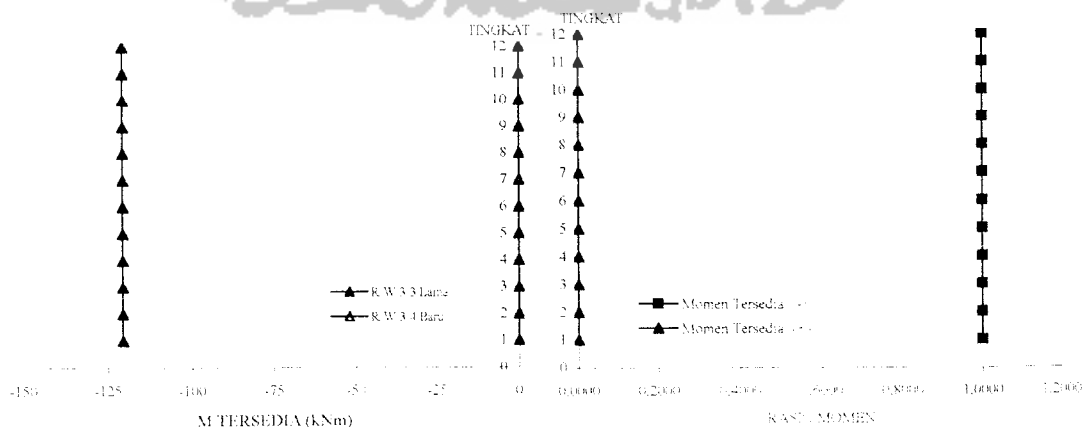
Gambar 6.2.85 Momen Tersedia Lapangan Portal E Bentang 7m

Gambar 6.2.86 Rasio Mtersedia Lapangan Portal E Bentang 7m RW 3/4 Baru - RW 3/3 Lama



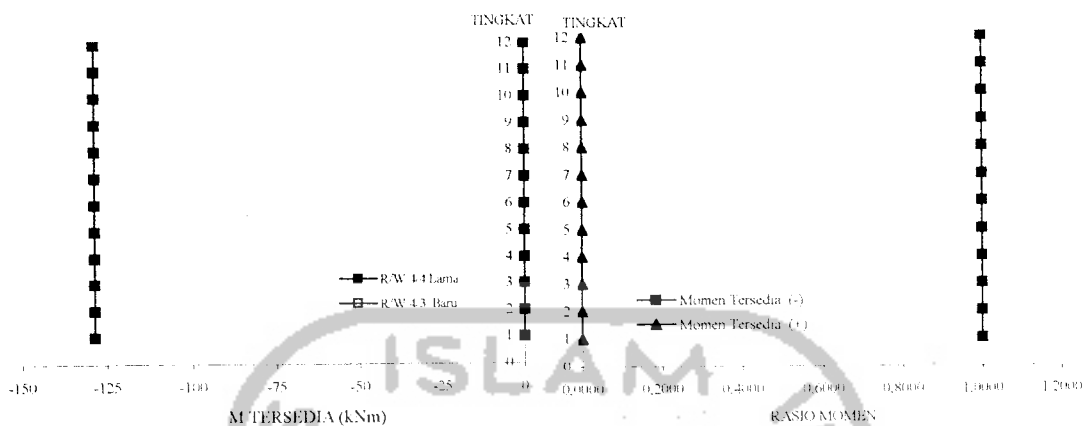
Gambar 6.2.87 Momen Tersedia Lapangan Portal E Bentang 4m

Gambar 6.2.88 Rasio Mtersedia Lapangan Portal E Bentang 4m RW 3/4 Baru - RW 3/3 Lama



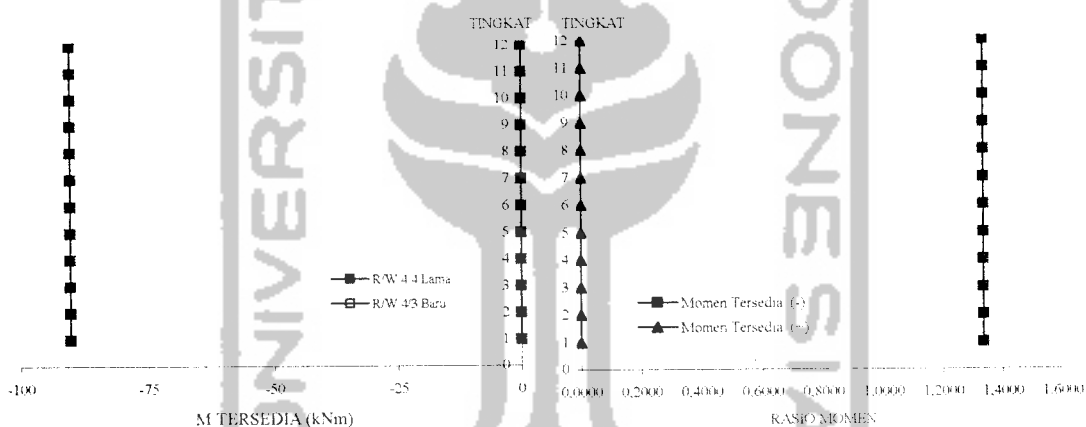
Gambar 6.2.89 Momen Tersedia Lapangan Portal 2

Gambar 6.2.90 Rasio Mtersedia Lapangan Portal 2 RW 3/4 Baru - RW 3/3 Lama



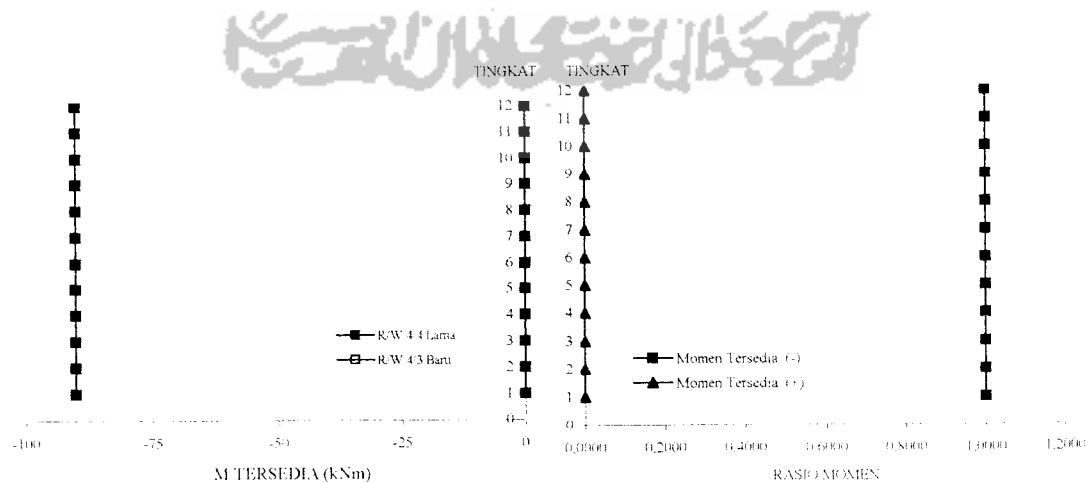
Gambar 6.2.91 Momen Tersedia Lapangan Portal E Bentang 7m

Gambar 6.2.92 Rasio Mtersedia Lapangan Portal E Bentang 7m R W 4.3 Baru - R/W 4.4 Lama



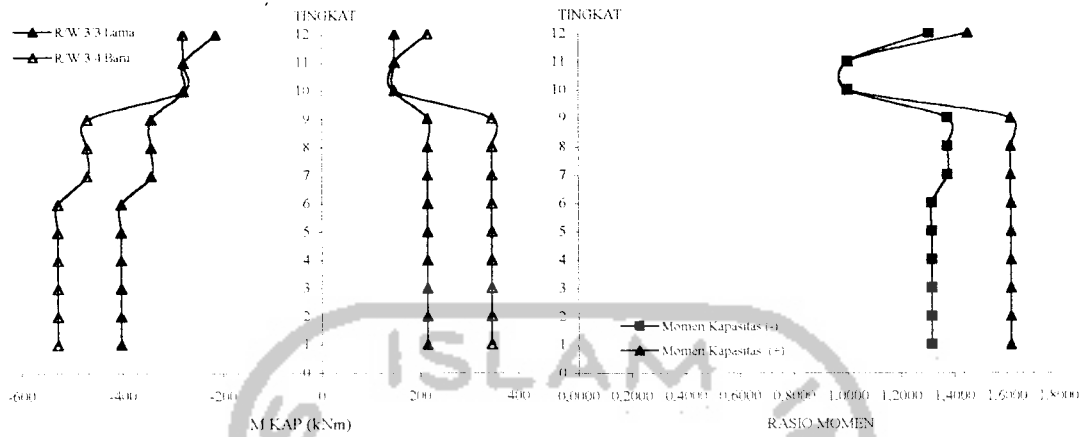
Gambar 6.2.93 Momen Tersedia Lapangan Portal E Bentang 4m

Gambar 6.2.94 Rasio Mtersedia Lapangan Portal E Bentang 4m R W 4.3 Baru - R W 4.4 Lama



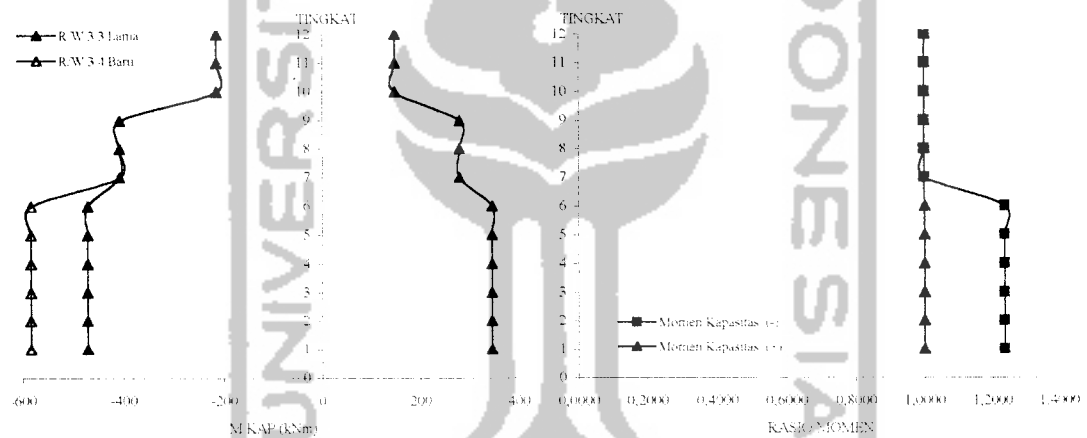
Gambar 6.2.95 Momen Tersedia Lapangan Portal 2

Gambar 6.2.96 Rasio Mtersedia Lapangan Portal 2 R W 4.3 Baru - R/W 4.4 Lama



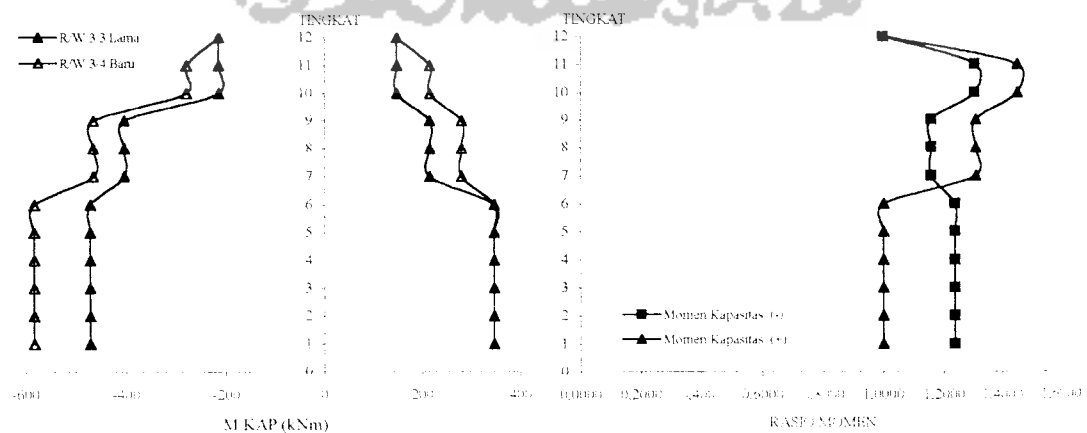
Gambar 6.2.97 Momen Kapasitas Tumpuan Portal E Bentang 7m

Gambar 6.2.98 Rasio Mkap Tumpuan Portal E Bentang 7m R/W 3.4 Baru - R/W 3.3 Lama



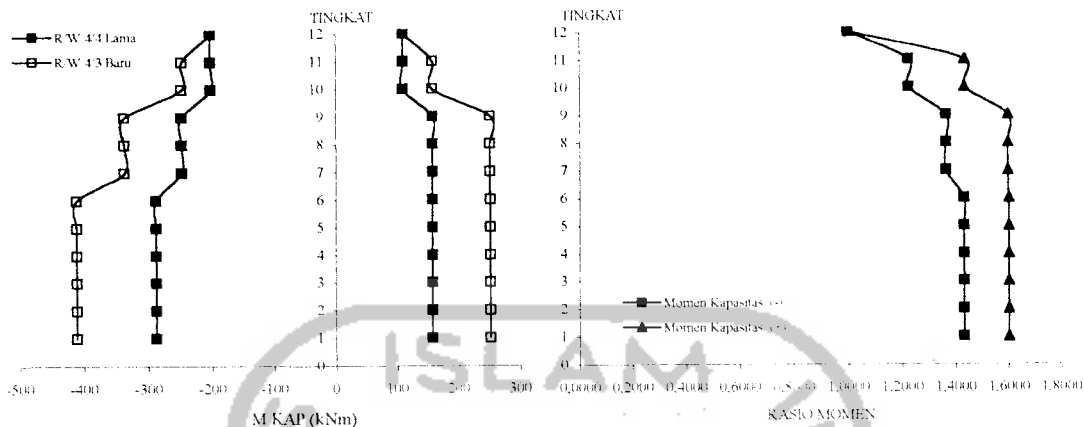
Gambar 6.2.99 Momen Kapasitas Tumpuan Portal E Bentang 4m

Gambar 6.2.100 Rasio Mkap Tumpuan Portal E Bentang 4m R/W 3.4 Baru - R/W 3.3 Lama



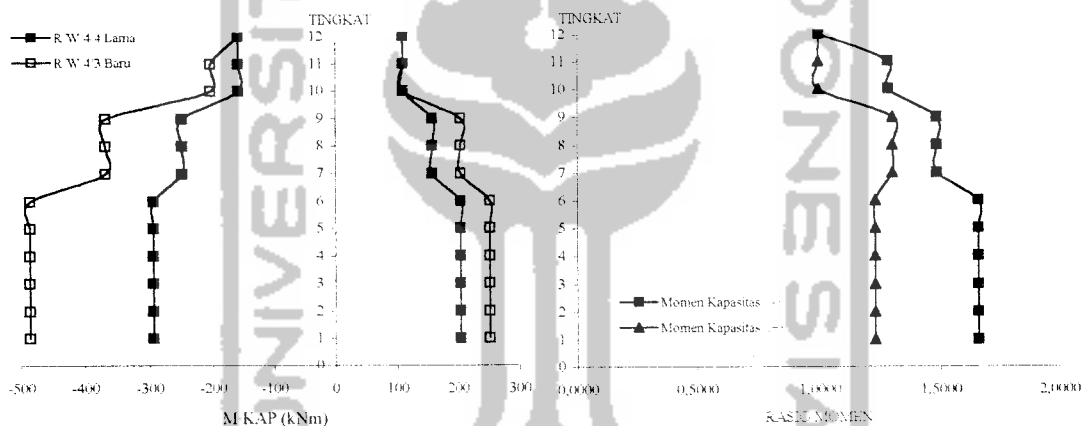
Gambar 6.2.101 Momen Kapasitas Tumpuan Portal 2

Gambar 6.2.102 Rasio Mkap Tumpuan Portal 2 R/W 3.4 Baru - R/W 3.3 Lama



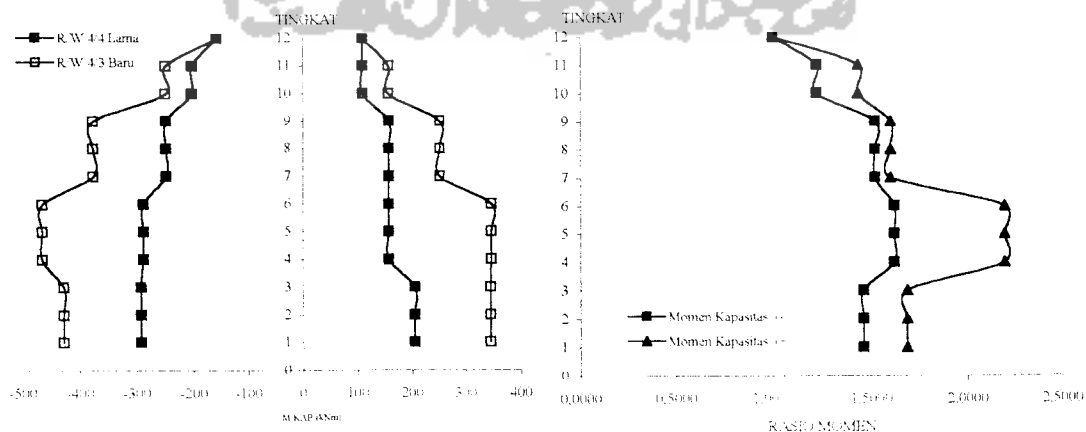
Gambar 6.2.103 Momen Kapasitas Tumpuan Portal E Bentang 7m

Gambar 6.2.104 Rasio Mkap Tumpuan Portal E Bentang 7m R W 4/3 Baru - R W 4/4 Lama



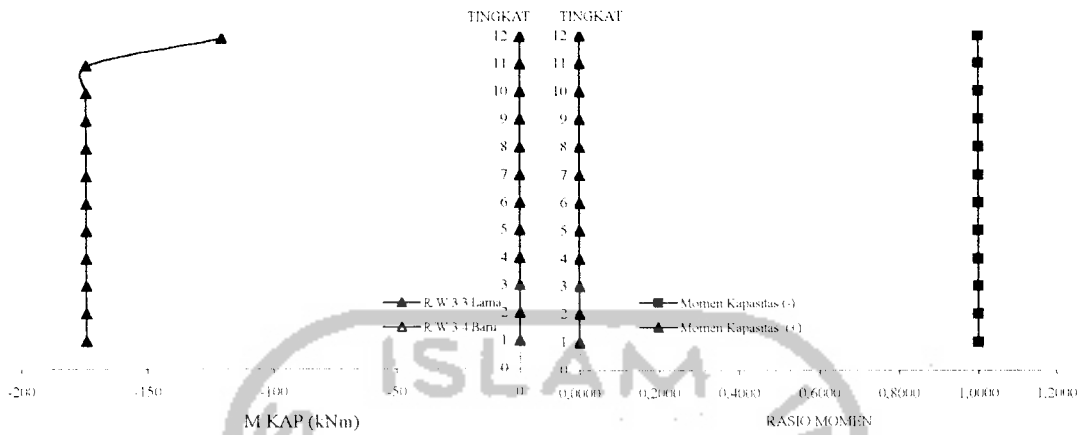
Gambar 6.2.105 Momen Kapasitas Tumpuan Portal E Bentang 4m

Gambar 6.2.106 Rasio Mkap Tumpuan Portal E Bentang 4m R W 4/3 Baru - R W 4/4 Lama



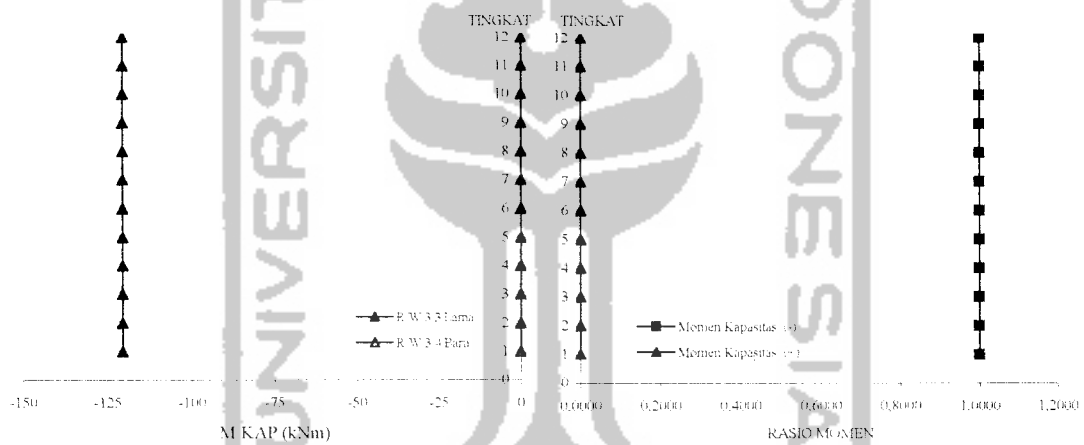
Gambar 6.2.107 Momen Kapasitas Tumpuan Portal 2

Gambar 6.2.108 Rasio Mkap Tumpuan Portal 2 R W 4/3 Baru - R W 4/4 Lama



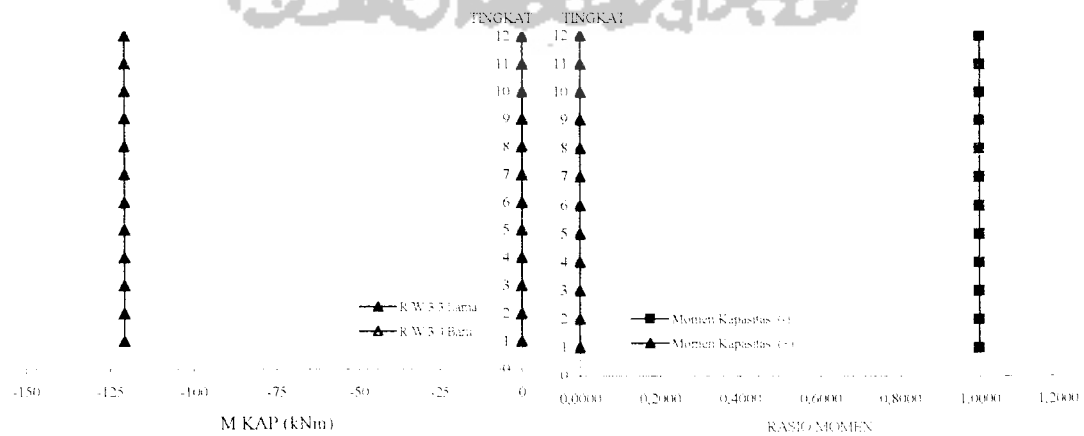
Gambar 6.2.109 Momen Kapasitas Lapangan Portal E Bentang 7m

Gambar 6.2.10 Rasio Mkap Lapangan Portal E Bentang 7m R.W 3:4 Baru - R.W 3:3 Lama



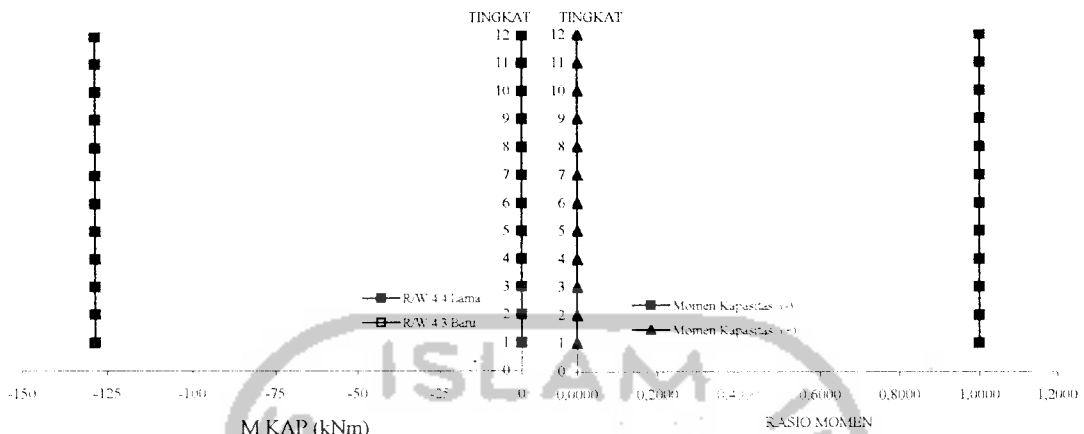
Gambar 6.2.111 Momen Kapasitas Lapangan Portal E Bentang 4m

Gambar 6.2.12 Rasio Mkap Lapangan Portal E Bentang 4m R.W 3:4 Baru - R.W 3:3 Lama



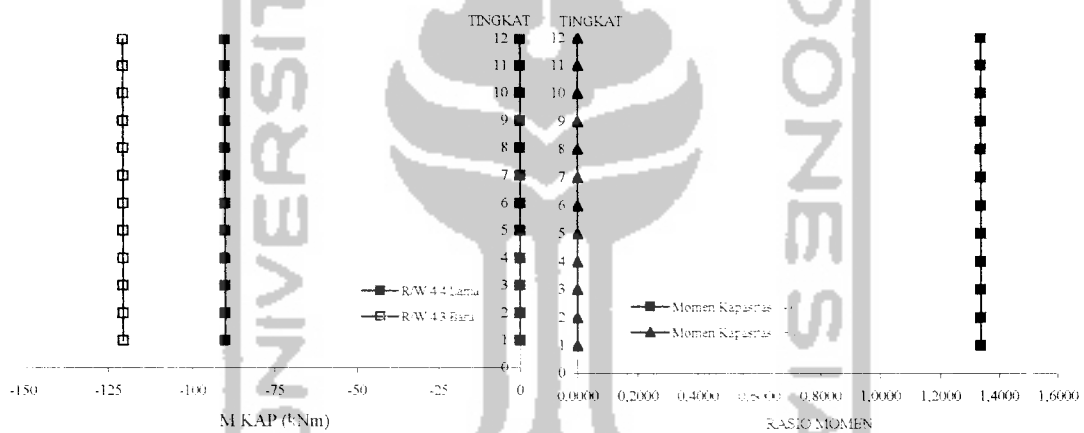
Gambar 6.2.113 Momen Kapasitas Lapangan Portal 2

Gambar 6.2.14 Rasio Mkap Lapangan Portal 2 R.W 3:4 Baru - R.W 3:3 Lama



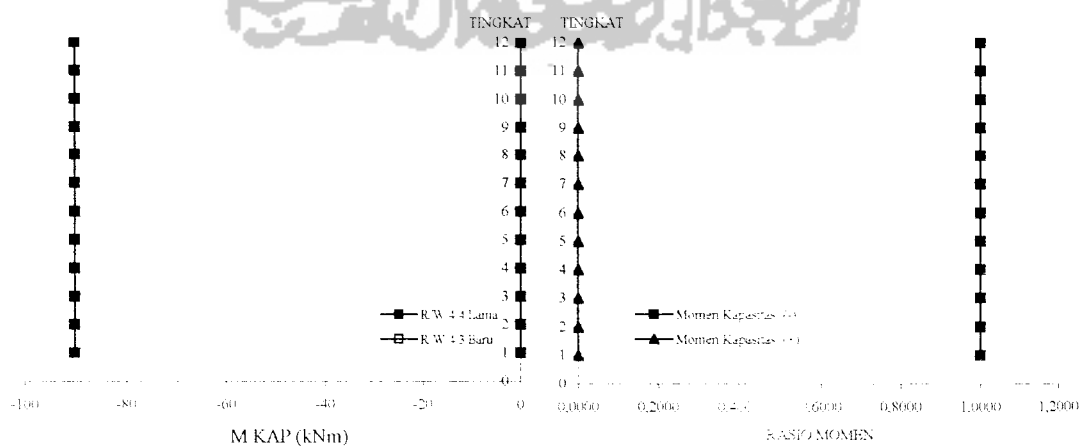
Gambar 6.2.115 Momen Kapasitas Lapangan Portal E Bentang 7m

Gambar 6.2.16 Rasio Mkap Lapangan Portal E Bentang 7m R/W 4/3 Baru - R/W 4/4 Lama



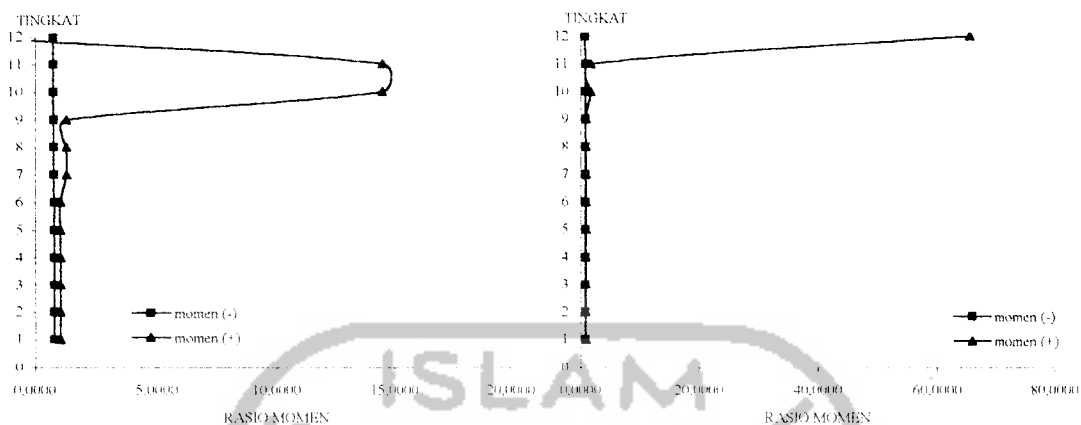
Gambar 6.2.117 Momen Kapasitas Lapangan Portal E Bentang 4m

Gambar 6.2.18 Rasio Mkap Lapangan Portal E Bentang 4m R/W 4/3 Baru - R/W 4/4 Lama



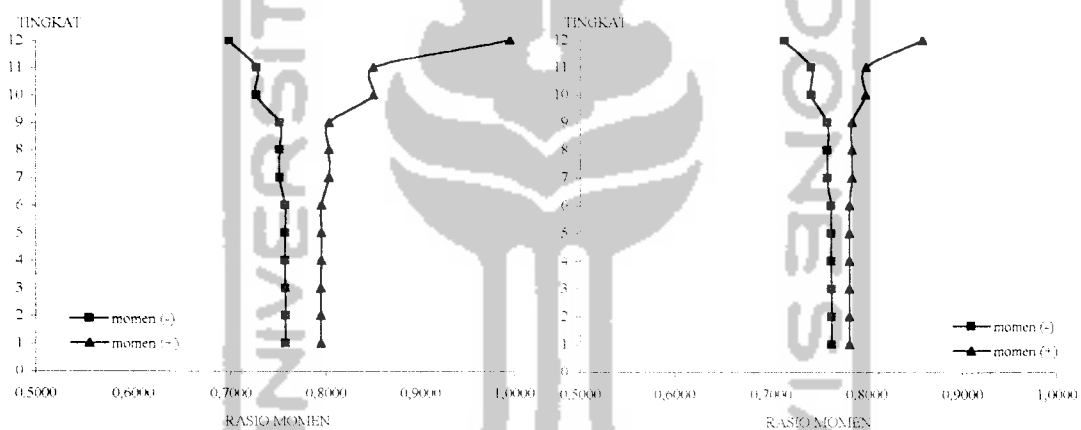
Gambar 6.2.119 Momen Kapasitas Lapangan Portal 2

Gambar 6.2.120 Rasio Mkap Lapangan Portal 2 R/W 4/3 Baru - R/W 4/4 Lama



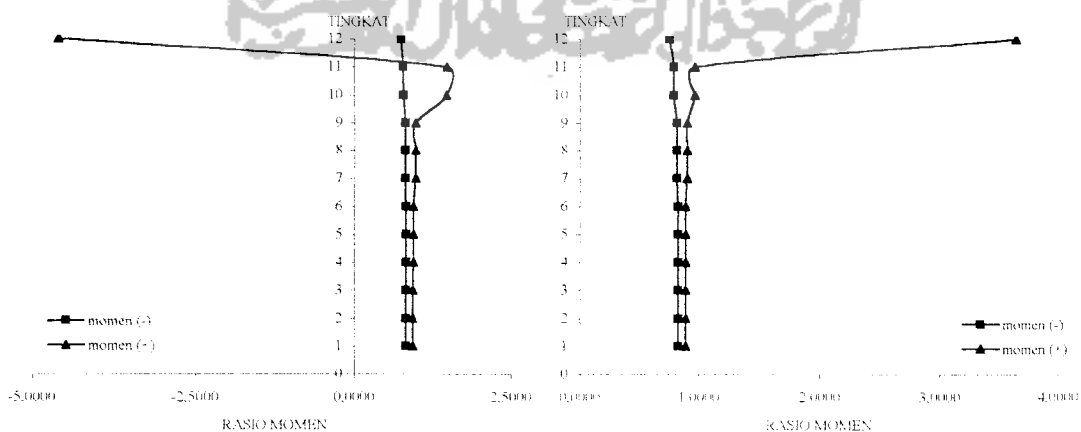
Gambar 6.2.121 Rasio Momen Tepi-As Portal E Bentang 7m R/W 3:3 Lama

Gambar 6.2.122 Rasio Momen Tepi-As Portal E Bentang 7m R/W 3:4 Baru



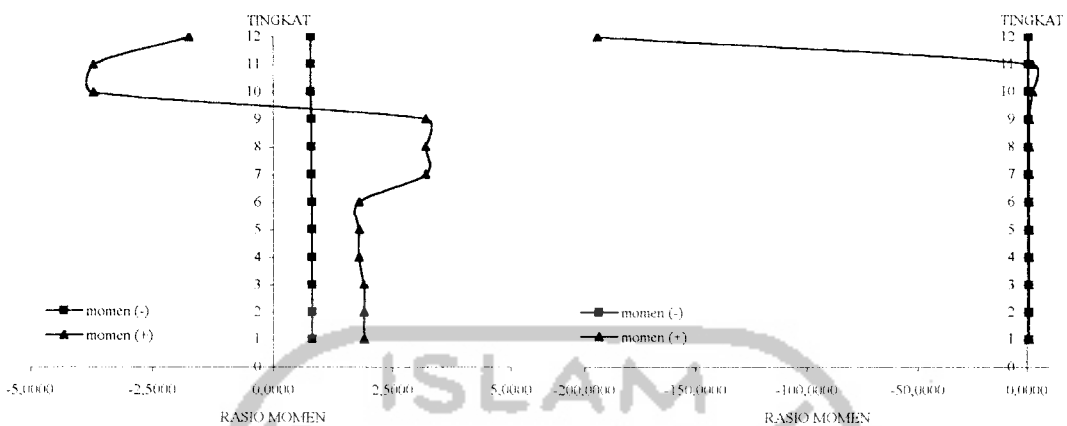
Gambar 6.2.123 Rasio Momen Tepi-As Portal E Bentang 4m R/W 3:3 Lama

Gambar 6.2.124 Rasio Momen Tepi-As Portal E Bentang 4m R/W 3:4 Baru



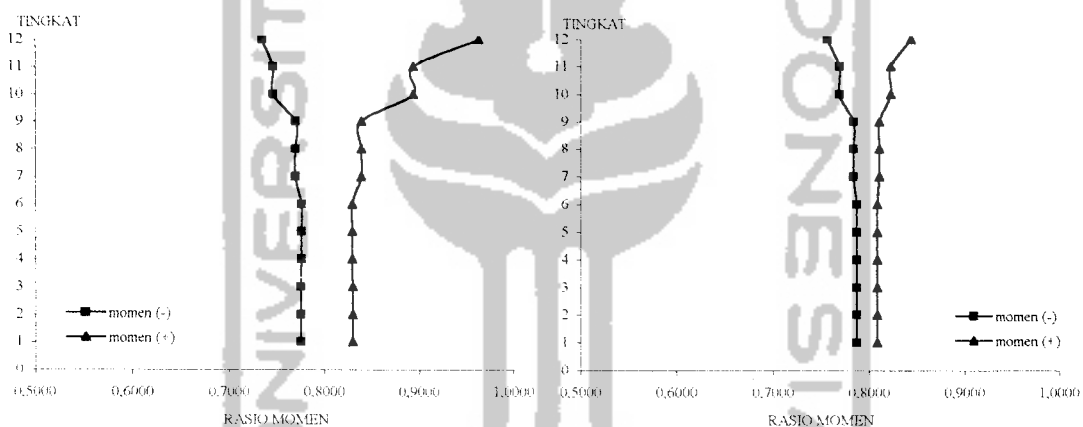
Gambar 6.2.125 Rasio Momen Tepi-As Portal 2 R/W 3:3 Lama

Gambar 6.2.126 Rasio Momen Tepi-As Portal 2 R/W 3:4 Baru



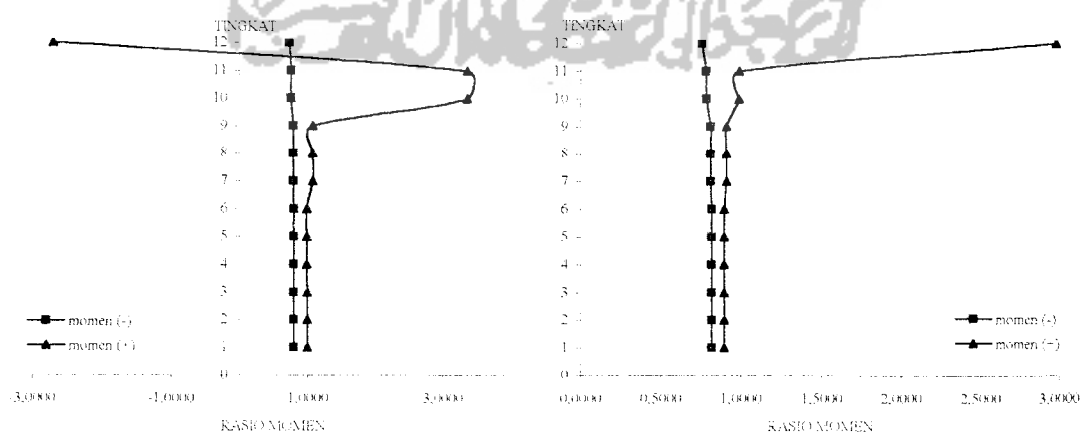
Gambar 6.2.127 Rasio Momen Tepi-As Portal E Bentang 7m R/W 4/4 Lama

Gambar 6.2.128 Rasio Momen Tepi-As Portal E Bentang 7m R/W 4/3 Baru



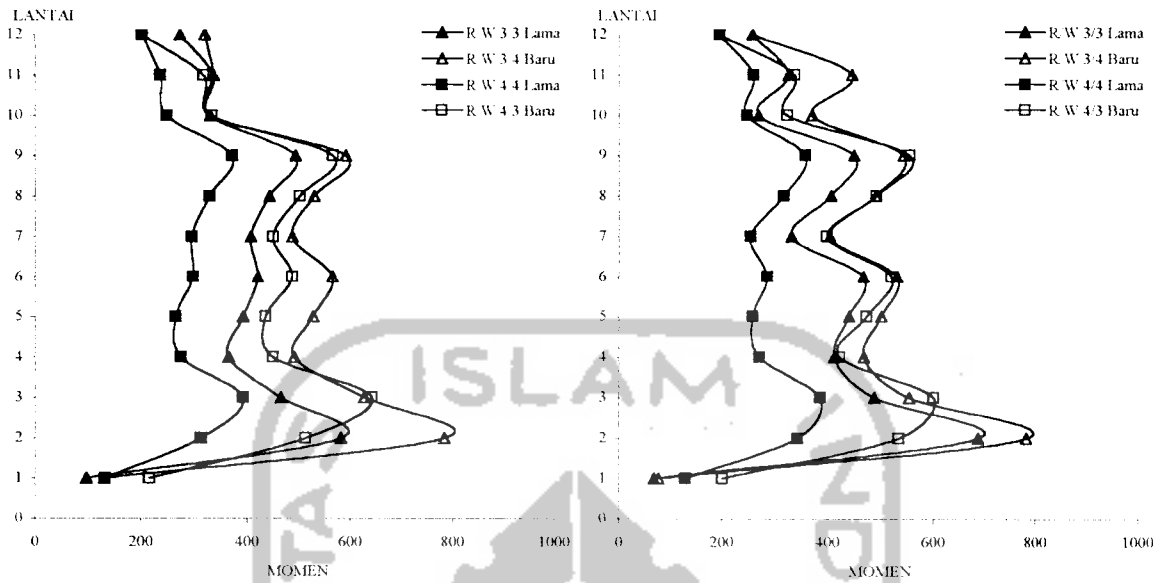
Gambar 6.2.129 Rasio Momen Tepi-As Portal E Bentang 4m R/W 4/4 Lama

Gambar 6.2.130 Rasio Momen Tepi-As Portal E Bentang 4m R/W 4/3 Baru



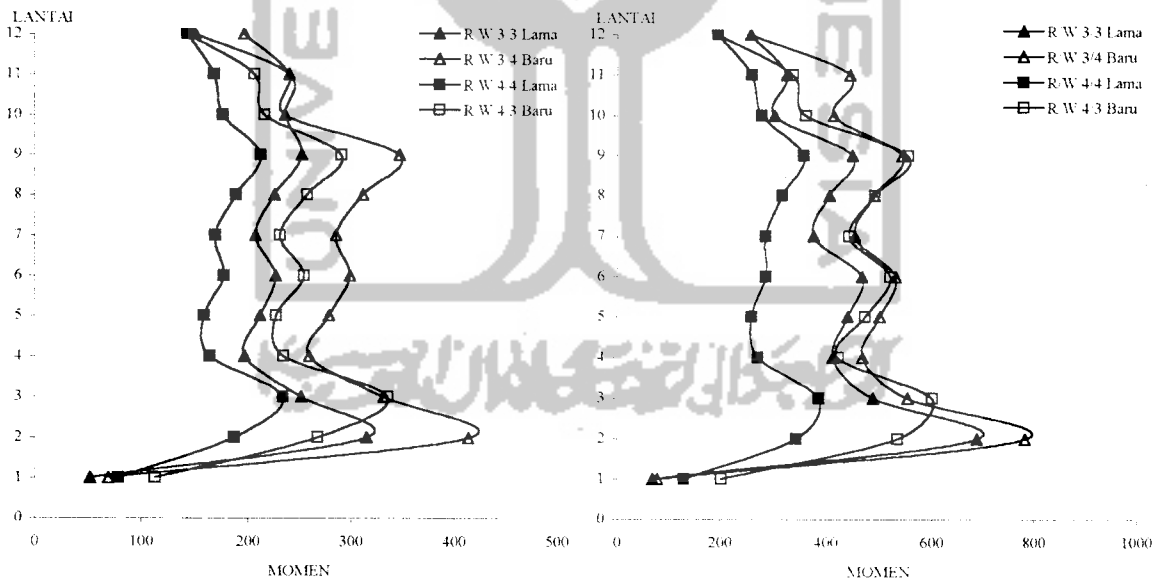
Gambar 6.2.131 Rasio Momen Tepi-As Portal 2 R/W 4-4 Lama

Gambar 6.2.132 Rasio Momen Tepi-As Portal 2 R/W 4-3 Baru



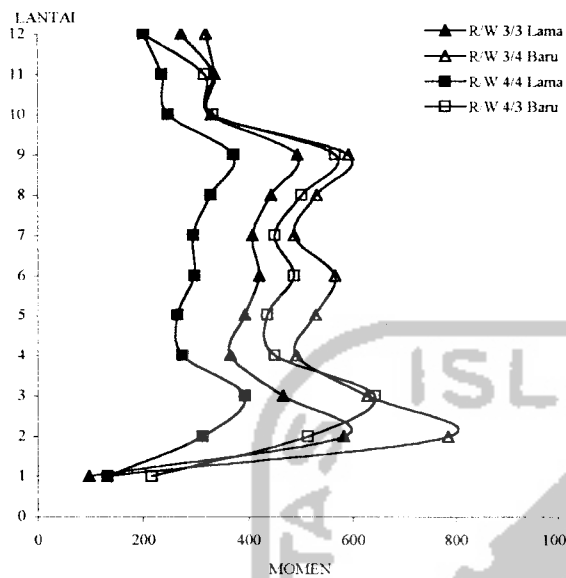
Gambar 6.2.133 Momen Kapasitas Kolom A untuk Arah X

Gambar 6.2.134 Momen Kapasitas Kolom A untuk Arah Y

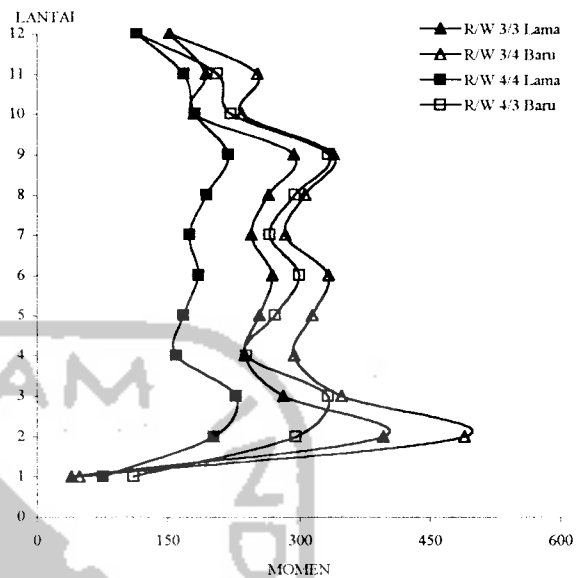


Gambar 6.2.135 Momen Kapasitas Kolom B untuk Arah X

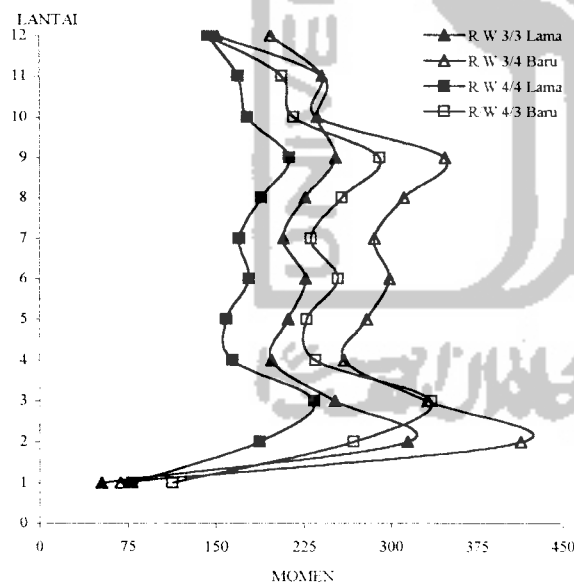
Gambar 6.2.136 Momen Kapasitas Kolom B untuk Arah Y



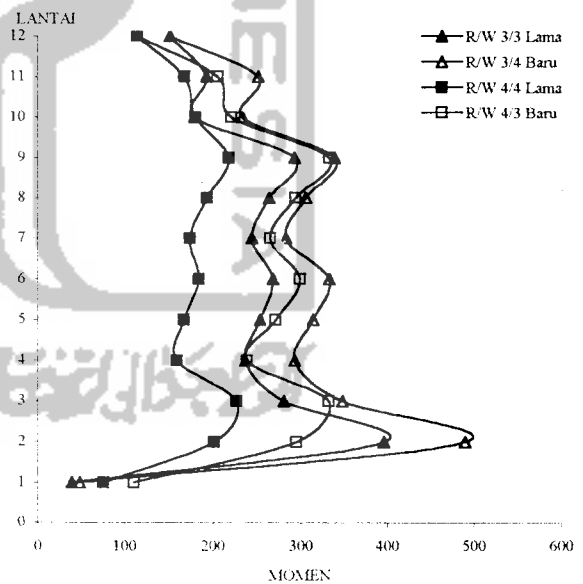
Gambar 6.2.137 Momen Kapasitas Kolom C untuk Arah X



Gambar 6.2.138 Momen Kapasitas Kolom C untuk Arah Y



Gambar 6.2.139 Momen Kapasitas Kolom D untuk Arah X



Gambar 6.2.140 Momen Kapasitas Kolom D untuk Arah Y

Tabel 6.1 Kebutuhan Tulangan Balok R/W 3/3

PORTAL 1							
Lantai	Tulangan Longitudinal				Tulangan Geser		
	Tumpuan		Lapangan		Dalam Sendi Plastis	Luar Sendi Plastis	Senggang Praktis
	Tarik	Tekan	Tarik	Tekan			
1	6 - D22	3 - D22	3 - D22	0 - D22	P10 - 65	P10 - 120	P10 - 200
2	6 - D22	3 - D22	3 - D22	0 - D22	P10 - 65	P10 - 120	P10 - 200
3	6 - D22	3 - D22	3 - D22	0 - D22	P10 - 65	P10 - 120	P10 - 200
4	6 - D22	3 - D22	3 - D22	0 - D22	P10 - 65	P10 - 120	P10 - 200
5	6 - D22	3 - D22	3 - D22	0 - D22	P10 - 65	P10 - 120	P10 - 200
6	6 - D22	3 - D22	3 - D22	0 - D22	P10 - 65	P10 - 120	P10 - 200
7	5 - D22	3 - D22	3 - D22	0 - D22	P10 - 70	P10 - 130	P10 - 200
8	5 - D22	3 - D22	3 - D22	0 - D22	P10 - 70	P10 - 130	P10 - 200
9	5 - D22	3 - D22	3 - D22	0 - D22	P10 - 70	P10 - 130	P10 - 200
10	4 - D22	2 - D22	3 - D22	0 - D22	P10 - 80	P10 - 160	P10 - 200
11	4 - D22	2 - D22	3 - D22	0 - D22	P10 - 80	P10 - 160	P10 - 200
12	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 100	P10 - 200	P10 - 200
1	7 - D22	5 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
2	7 - D22	5 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
3	7 - D22	5 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
4	7 - D22	5 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
5	7 - D22	5 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
6	7 - D22	5 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
7	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 60	P10 - 120	P10 - 200
8	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 60	P10 - 120	P10 - 200
9	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 60	P10 - 120	P10 - 200
10	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 100	P10 - 200	P10 - 200
11	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 100	P10 - 200	P10 - 200
12	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 100	P10 - 200	P10 - 200
PORTAL 2							
Lantai	Tulangan Longitudinal				Tulangan Geser		
	Tumpuan		Lapangan		Dalam Sendi Plastis	Luar Sendi Plastis	Senggang Praktis
	Tarik	Tekan	Tarik	Tekan			
1	7 - D22	5 - D22	2 - D22	0 - D22	P10 - 50	P10 - 120	P10 - 200
2	7 - D22	5 - D22	2 - D22	0 - D22	P10 - 50	P10 - 120	P10 - 200
3	7 - D22	5 - D22	2 - D22	0 - D22	P10 - 50	P10 - 120	P10 - 200
4	7 - D22	5 - D22	2 - D22	0 - D22	P10 - 50	P10 - 120	P10 - 200
5	7 - D22	5 - D22	2 - D22	0 - D22	P10 - 50	P10 - 120	P10 - 200
6	7 - D22	5 - D22	2 - D22	0 - D22	P10 - 50	P10 - 120	P10 - 200
7	6 - D22	3 - D22	2 - D22	0 - D22	P10 - 60	P10 - 150	P10 - 200
8	6 - D22	3 - D22	2 - D22	0 - D22	P10 - 60	P10 - 150	P10 - 200
9	6 - D22	3 - D22	2 - D22	0 - D22	P10 - 60	P10 - 150	P10 - 200
10	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 70	P10 - 150	P10 - 200
11	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 70	P10 - 150	P10 - 200
12	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 70	P10 - 150	P10 - 200

Tabel 6.2 Kebutuhan Tulangan Balok R/W 3/4

PORTAL 1							
Lantai	Tulangan Longitudinal				Tulangan Geser		
	Tumpuan		Lapangan		Dalam Sendi Plastis	Luar Sendi Plastis	Sengkang Praktis
	Tarik	Tekan	Tarik	Tekan			
1	8 - D22	5 - D22	3 - D22	0 - D22	P10 - 55	P10 - 90	P10 - 200
2	8 - D22	5 - D22	3 - D22	0 - D22	P10 - 55	P10 - 90	P10 - 200
3	8 - D22	5 - D22	3 - D22	0 - D22	P10 - 55	P10 - 90	P10 - 200
4	8 - D22	5 - D22	3 - D22	0 - D22	P10 - 55	P10 - 90	P10 - 200
5	8 - D22	5 - D22	3 - D22	0 - D22	P10 - 55	P10 - 90	P10 - 200
6	8 - D22	5 - D22	3 - D22	0 - D22	P10 - 55	P10 - 90	P10 - 200
7	7 - D22	5 - D22	3 - D22	0 - D22	P10 - 55	P10 - 95	P10 - 200
8	7 - D22	5 - D22	3 - D22	0 - D22	P10 - 55	P10 - 95	P10 - 200
9	7 - D22	5 - D22	3 - D22	0 - D22	P10 - 55	P10 - 95	P10 - 200
10	4 - D22	2 - D22	3 - D22	0 - D22	P10 - 80	P10 - 150	P10 - 200
11	4 - D22	2 - D22	3 - D22	0 - D22	P10 - 80	P10 - 150	P10 - 200
12	4 - D22	3 - D22	2 - D22	0 - D22	P10 - 85	P10 - 150	P10 - 200
1	9 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 95	P10 - 200
2	9 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 95	P10 - 200
3	9 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 95	P10 - 200
4	9 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 95	P10 - 200
5	9 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 95	P10 - 200
6	9 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 95	P10 - 200
7	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
8	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
9	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
10	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 100	P10 - 150	P10 - 200
11	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 100	P10 - 150	P10 - 200
12	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 100	P10 - 150	P10 - 200
PORTAL 2							
Lantai	Tulangan Longitudinal				Tulangan Geser		
	Tumpuan		Lapangan		Dalam Sendi Plastis	Luar Sendi Plastis	Sengkang Praktis
	Tarik	Tekan	Tarik	Tekan			
1	9 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 100	P10 - 200
2	9 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 100	P10 - 200
3	9 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 100	P10 - 200
4	9 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 100	P10 - 200
5	9 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 100	P10 - 200
6	9 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 100	P10 - 200
7	7 - D22	4 - D22	2 - D22	0 - D22	P10 - 50	P10 - 140	P10 - 200
8	7 - D22	4 - D22	2 - D22	0 - D22	P10 - 50	P10 - 140	P10 - 200
9	7 - D22	4 - D22	2 - D22	0 - D22	P10 - 50	P10 - 140	P10 - 200
10	4 - D22	3 - D22	2 - D22	0 - D22	P10 - 65	P10 - 150	P10 - 200
11	4 - D22	3 - D22	2 - D22	0 - D22	P10 - 65	P10 - 150	P10 - 200
12	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 80	P10 - 150	P10 - 200

Tabel 6.3 Kebutuhan Tulangan Balok R/W 4/4

PORTAL E							
Lantai	Tulangan Longitudinal				Tulangan Geser		
	Tumpuan		Lapangan		Dalam Sendi Plastis	Luar Sendi Plastis	Sengkang Praktis
	Tarik	Tekan	Tarik	Tekan			
1	6 - D22	3 - D22	3 - D22	0 - D22	P10 - 60	P10 - 100	P10 - 200
2	6 - D22	3 - D22	3 - D22	0 - D22	P10 - 60	P10 - 100	P10 - 200
3	6 - D22	3 - D22	3 - D22	0 - D22	P10 - 60	P10 - 100	P10 - 200
4	6 - D22	3 - D22	3 - D22	0 - D22	P10 - 60	P10 - 100	P10 - 200
5	6 - D22	3 - D22	3 - D22	0 - D22	P10 - 60	P10 - 100	P10 - 200
6	6 - D22	3 - D22	3 - D22	0 - D22	P10 - 60	P10 - 100	P10 - 200
7	5 - D22	3 - D22	3 - D22	0 - D22	P10 - 60	P10 - 100	P10 - 200
8	5 - D22	3 - D22	3 - D22	0 - D22	P10 - 60	P10 - 100	P10 - 200
9	5 - D22	3 - D22	3 - D22	0 - D22	P10 - 60	P10 - 100	P10 - 200
10	4 - D22	2 - D22	3 - D22	0 - D22	P10 - 70	P10 - 120	P10 - 200
11	4 - D22	2 - D22	3 - D22	0 - D22	P10 - 70	P10 - 120	P10 - 200
12	4 - D22	2 - D22	3 - D22	0 - D22	P10 - 80	P10 - 150	P10 - 200
1	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 55	P10 - 100	P10 - 200
2	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 55	P10 - 100	P10 - 200
3	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 55	P10 - 100	P10 - 200
4	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 55	P10 - 100	P10 - 200
5	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 55	P10 - 100	P10 - 200
6	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 55	P10 - 100	P10 - 200
7	5 - D22	3 - D22	2 - D22	0 - D22	P10 - 65	P10 - 150	P10 - 200
8	5 - D22	3 - D22	2 - D22	0 - D22	P10 - 65	P10 - 150	P10 - 200
9	5 - D22	3 - D22	2 - D22	0 - D22	P10 - 65	P10 - 150	P10 - 200
10	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 90	P10 - 150	P10 - 200
11	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 90	P10 - 150	P10 - 200
12	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 100	P10 - 150	P10 - 200
PORTAL 2							
Lantai	Tulangan Longitudinal				Tulangan Geser		
	Tumpuan		Lapangan		Dalam Sendi Plastis	Luar Sendi Plastis	Sengkang Praktis
	Tarik	Tekan	Tarik	Tekan			
1	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
2	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
3	6 - D22	4 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
4	6 - D22	3 - D22	2 - D22	0 - D22	P10 - 55	P10 - 115	P10 - 200
5	6 - D22	3 - D22	2 - D22	0 - D22	P10 - 55	P10 - 115	P10 - 200
6	6 - D22	3 - D22	2 - D22	0 - D22	P10 - 55	P10 - 115	P10 - 200
7	5 - D22	3 - D22	2 - D22	0 - D22	P10 - 55	P10 - 125	P10 - 200
8	5 - D22	3 - D22	2 - D22	0 - D22	P10 - 55	P10 - 125	P10 - 200
9	5 - D22	3 - D22	2 - D22	0 - D22	P10 - 55	P10 - 125	P10 - 200
10	4 - D22	2 - D22	2 - D22	0 - D22	P10 - 65	P10 - 150	P10 - 200
11	4 - D22	2 - D22	2 - D22	0 - D22	P10 - 65	P10 - 150	P10 - 200
12	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 75	P10 - 150	P10 - 200

Tabel 6.4 Kebutuhan Tulangan Balok R/W 4/3

PORTAL E							
Lantai	Tulangan Longitudinal				Tulangan Geser		
	Tumpuan		Lapangan		Dalam Sendi Plastis	Luar Sendi Plastis	Sengkang Praktis
	Tarik	Tekan	Tarik	Tekan			
1	9 - D22	5 - D22	3 - D22	0 - D22	P10 - 50	P10 - 75	P10 - 200
2	9 - D22	5 - D22	3 - D22	0 - D22	P10 - 50	P10 - 75	P10 - 200
3	9 - D22	5 - D22	3 - D22	0 - D22	P10 - 50	P10 - 75	P10 - 200
4	9 - D22	5 - D22	3 - D22	0 - D22	P10 - 50	P10 - 75	P10 - 200
5	9 - D22	5 - D22	3 - D22	0 - D22	P10 - 50	P10 - 75	P10 - 200
6	9 - D22	5 - D22	3 - D22	0 - D22	P10 - 50	P10 - 75	P10 - 200
7	7 - D22	5 - D22	3 - D22	0 - D22	P10 - 50	P10 - 80	P10 - 200
8	7 - D22	5 - D22	3 - D22	0 - D22	P10 - 50	P10 - 80	P10 - 200
9	7 - D22	5 - D22	3 - D22	0 - D22	P10 - 50	P10 - 80	P10 - 200
10	5 - D22	3 - D22	3 - D22	0 - D22	P10 - 60	P10 - 100	P10 - 200
11	5 - D22	3 - D22	3 - D22	0 - D22	P10 - 60	P10 - 100	P10 - 200
12	4 - D22	2 - D22	3 - D22	0 - D22	P10 - 80	P10 - 150	P10 - 200
1	10 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 75	P10 - 200
2	10 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 75	P10 - 200
3	10 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 75	P10 - 200
4	10 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 75	P10 - 200
5	10 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 75	P10 - 200
6	10 - D22	5 - D22	2 - D22	0 - D22	P10 - 40	P10 - 75	P10 - 200
7	8 - D22	4 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
8	8 - D22	4 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
9	8 - D22	4 - D22	2 - D22	0 - D22	P10 - 50	P10 - 100	P10 - 200
10	4 - D22	2 - D22	2 - D22	0 - D22	P10 - 85	P10 - 150	P10 - 200
11	4 - D22	2 - D22	2 - D22	0 - D22	P10 - 85	P10 - 150	P10 - 200
12	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 100	P10 - 150	P10 - 200
PORTAL 2							
Lantai	Tulangan Longitudinal				Tulangan Geser		
	Tumpuan		Lapangan		Dalam Sendi Plastis	Luar Sendi Plastis	Sengkang Praktis
	Tarik	Tekan	Tarik	Tekan			
1	9 - D22	7 - D22	2 - D22	0 - D22	P10 - 40	P10 - 65	P10 - 200
2	9 - D22	7 - D22	2 - D22	0 - D22	P10 - 40	P10 - 65	P10 - 200
3	9 - D22	7 - D22	2 - D22	0 - D22	P10 - 40	P10 - 65	P10 - 200
4	10 - D22	7 - D22	2 - D22	0 - D22	P10 - 35	P10 - 60	P10 - 200
5	10 - D22	7 - D22	2 - D22	0 - D22	P10 - 35	P10 - 60	P10 - 200
6	10 - D22	7 - D22	2 - D22	0 - D22	P10 - 35	P10 - 60	P10 - 200
7	8 - D22	5 - D22	2 - D22	0 - D22	P10 - 45	P10 - 80	P10 - 200
8	8 - D22	5 - D22	2 - D22	0 - D22	P10 - 45	P10 - 80	P10 - 200
9	8 - D22	5 - D22	2 - D22	0 - D22	P10 - 45	P10 - 80	P10 - 200
10	5 - D22	3 - D22	2 - D22	0 - D22	P10 - 55	P10 - 125	P10 - 200
11	5 - D22	3 - D22	2 - D22	0 - D22	P10 - 55	P10 - 125	P10 - 200
12	3 - D22	2 - D22	2 - D22	0 - D22	P10 - 75	P10 - 150	P10 - 200

Tabel 6.6 Kebutuhan Tulangan Geser Kolom

Lantai	Kolom	Tulangan Terpasang							
		R/W 3/3		R/W 3/4		R/W 4/4		R/W 4/3	
		S. Plastik	Luar S Plastik	S. Plastik	Luar S Plastik	S. Plastik	Luar S Plastik	S. Plastik	Luar S Plastik
1	A	P12- 65	P12- 55	P12- 50	P12- 55	P12- 100	P12- 65	P12- 70	P12- 70
2		P12- 65	P12- 55	P12- 50	P12- 55	P12- 100	P12- 65	P12- 70	P12- 70
3		P12- 65	P12- 55	P12- 50	P12- 55	P12- 100	P12- 65	P12- 70	P12- 70
4		P12- 80	P12- 90	P12- 65	P12- 100	P12- 100	P12- 85	P12- 80	P12- 100
5		P12- 80	P12- 90	P12- 65	P12- 100	P12- 100	P12- 85	P12- 80	P12- 100
6		P12- 80	P12- 90	P12- 65	P12- 100	P12- 100	P12- 85	P12- 80	P12- 100
7		P12- 90	P12- 90	P12- 75	P12- 100	P12- 100	P12- 85	P12- 90	P12- 100
8		P12- 90	P12- 90	P12- 75	P12- 100	P12- 100	P12- 85	P12- 90	P12- 100
9		P12- 90	P12- 90	P12- 75	P12- 100	P12- 100	P12- 85	P12- 90	P12- 100
10		P12- 100	P12- 75	P12- 100	P12- 75	P12- 100	P12- 80	P12- 100	P12- 80
11		P12- 100	P12- 75	P12- 100	P12- 75	P12- 100	P12- 80	P12- 100	P12- 80
12		P12- 100	P12- 75	P12- 100	P12- 75	P12- 100	P12- 80	P12- 100	P12- 80
1	B	P12- 65	P12- 50	P12- 55	P12- 50	P12- 100	P12- 65	P12- 70	P12- 70
2		P12- 65	P12- 50	P12- 55	P12- 50	P12- 100	P12- 65	P12- 70	P12- 70
3		P12- 65	P12- 50	P12- 55	P12- 50	P12- 100	P12- 65	P12- 70	P12- 70
4		P12- 80	P12- 90	P12- 70	P12- 90	P12- 100	P12- 80	P12- 80	P12- 100
5		P12- 80	P12- 90	P12- 70	P12- 90	P12- 100	P12- 80	P12- 80	P12- 100
6		P12- 80	P12- 90	P12- 70	P12- 90	P12- 100	P12- 80	P12- 80	P12- 100
7		P12- 90	P12- 85	P12- 80	P12- 80	P12- 100	P12- 85	P12- 90	P12- 100
8		P12- 90	P12- 85	P12- 80	P12- 90	P12- 100	P12- 85	P12- 90	P12- 100
9		P12- 90	P12- 85	P12- 80	P12- 90	P12- 100	P12- 85	P12- 90	P12- 100
10		P12- 100	P12- 70	P12- 100	P12- 70	P12- 100	P12- 80	P12- 100	P12- 90
11		P12- 100	P12- 70	P12- 100	P12- 70	P12- 100	P12- 80	P12- 100	P12- 90
12		P12- 100	P12- 70	P12- 100	P12- 70	P12- 100	P12- 80	P12- 100	P12- 80
1	C	P12- 80	P12- 50	P12- 80	P12- 50	P12- 100	P12- 65	P12- 70	P12- 60
2		P12- 80	P12- 50	P12- 80	P12- 50	P12- 100	P12- 65	P12- 70	P12- 60
3		P12- 80	P12- 50	P12- 80	P12- 50	P12- 100	P12- 65	P12- 70	P12- 60
4		P12- 85	P12- 85	P12- 85	P12- 85	P12- 100	P12- 85	P12- 80	P12- 100
5		P12- 85	P12- 85	P12- 85	P12- 85	P12- 100	P12- 85	P12- 80	P12- 100
6		P12- 85	P12- 85	P12- 85	P12- 85	P12- 100	P12- 85	P12- 80	P12- 100
7		P12- 90	P12- 90	P12- 90	P12- 90	P12- 100	P12- 85	P12- 90	P12- 100
8		P12- 90	P12- 90	P12- 90	P12- 90	P12- 100	P12- 85	P12- 90	P12- 100
9		P12- 90	P12- 90	P12- 90	P12- 90	P12- 100	P12- 85	P12- 90	P12- 100
10		P12- 100	P12- 75	P12- 100	P12- 75	P12- 100	P12- 80	P12- 100	P12- 80
11		P12- 100	P12- 75	P12- 100	P12- 75	P12- 100	P12- 80	P12- 100	P12- 80
12		P12- 100	P12- 75	P12- 100	P12- 75	P12- 100	P12- 80	P12- 100	P12- 80
1	D	P12- 100	P12- 55	P12- 100	P12- 55	P12- 100	P12- 65	P12- 100	P12- 65
2		P12- 100	P12- 55	P12- 100	P12- 55	P12- 100	P12- 65	P12- 100	P12- 65
3		P12- 100	P12- 55	P12- 100	P12- 55	P12- 100	P12- 65	P12- 100	P12- 65
4		P12- 100	P12- 70	P12- 100	P12- 70	P12- 100	P12- 75	P12- 100	P12- 80
5		P12- 100	P12- 70	P12- 100	P12- 70	P12- 100	P12- 75	P12- 100	P12- 80
6		P12- 100	P12- 70	P12- 100	P12- 70	P12- 100	P12- 75	P12- 100	P12- 80
7		P12- 100	P12- 75	P12- 100	P12- 75	P12- 100	P12- 75	P12- 100	P12- 85
8		P12- 100	P12- 75	P12- 100	P12- 75	P12- 100	P12- 75	P12- 100	P12- 85
9		P12- 100	P12- 75	P12- 100	P12- 75	P12- 100	P12- 75	P12- 100	P12- 85
10		P12- 100	P12- 65	P12- 100	P12- 65	P12- 100	P12- 75	P12- 100	P12- 80
11		P12- 100	P12- 65	P12- 100	P12- 65	P12- 100	P12- 75	P12- 100	P12- 80
12		P12- 100	P12- 65	P12- 100	P12- 65	P12- 100	P12- 75	P12- 100	P12- 80

Tabel 6.7 Kebutuhan Tulangan Poer Pondasi

	Tulangan Terpasang			
	R/W 3/3	R/W 3/4	R/W 4/4	R/W 4/3
Arah X	D22 - 290	D22 - 260	D22 - 350	D22 - 250
Arah Y	D22 - 250	D22 - 200	D22 - 300	D22 - 220

Tabel 6.8 Perbandingan Gaya Gempa

Lantai	Gaya Gempa (kN)			Gaya Gempa (kN)		
	RW 3/3 Lama	RW 3/4 Baru	Perbandingan	RW 4/4 Lama	RW 4/3 Baru	Perbandingan
Arah X	441,0502	557,2799	120,86%	294,4079	459,5533	135,94%
Arah Y	1176,1338	1486,0797	120,86%	785,0876	1225,4756	135,94%

Tabel 6.9 Perbandingan Luas Tulangan RW 3/4 Baru dan RW 3/3 Lama

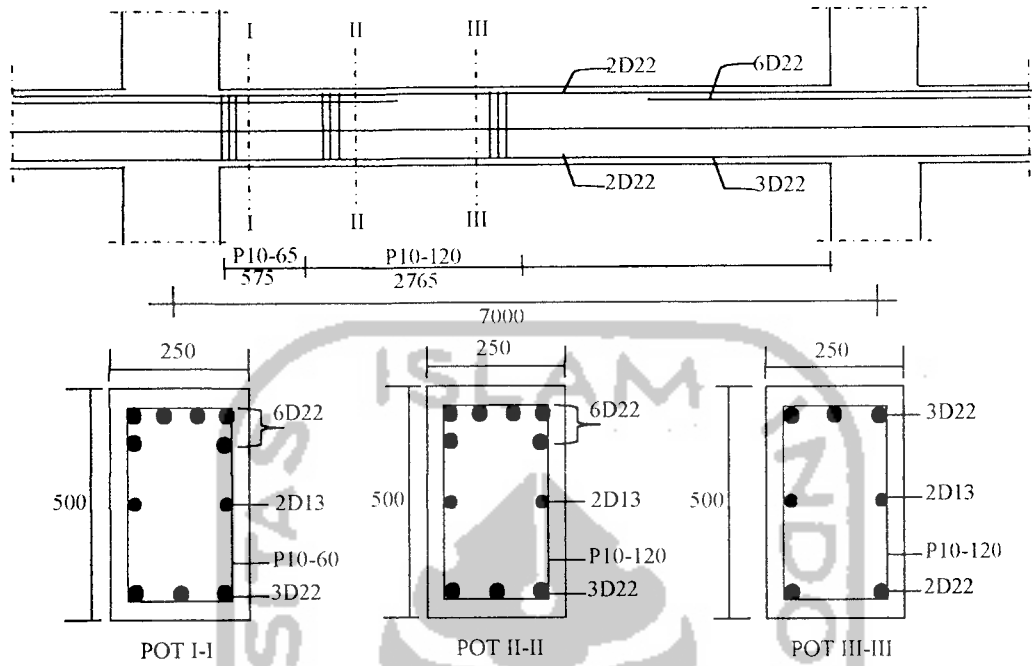
Balok	Tulangan Longitudinal (AS+AS') - mm ²			Tulangan Geser - mm ²		
	RW 3/3 Lama	RW 3/4 Baru	Perbandingan	RW 3/3 Lama	RW 3/4 Baru	Perbandingan
7m	42075,5308	55443,0132	124,11%	26491,8508	32873,8618	119,41%
4m	40052,3207	53063,6704	124,52%	17343,1055	19355,4617	110,40%
5m	43085,9576	53918,6810	120,09%	53810,4558	54543,8102	101,34%
Σ	125213,8091	162425,3645	122,91%	97645,4120	106773,1337	108,55%

KOLOM	Tulangan Longitudinal (AS+AS') - mm ²			Tulangan Geser - mm ²		
	RW 3/3 Lama	RW 3/4 Baru	Perbandingan	RW 3/3 Lama	RW 3/4 Baru	Perbandingan
A	51408,0000	74403,0000	130,91%	50538,5379	53435,9930	105,42%
B	41517,0000	59031,0000	129,67%	52268,6778	54701,3600	104,45%
C	42588,0000	51345,0000	117,06%	50240,7696	54483,4992	107,79%
D	20380,5000	33484,5000	139,13%	50540,1978	53130,6978	104,88%
Σ	155893,5000	218263,5000	128,58%	203588,1831	215751,5501	105,64%

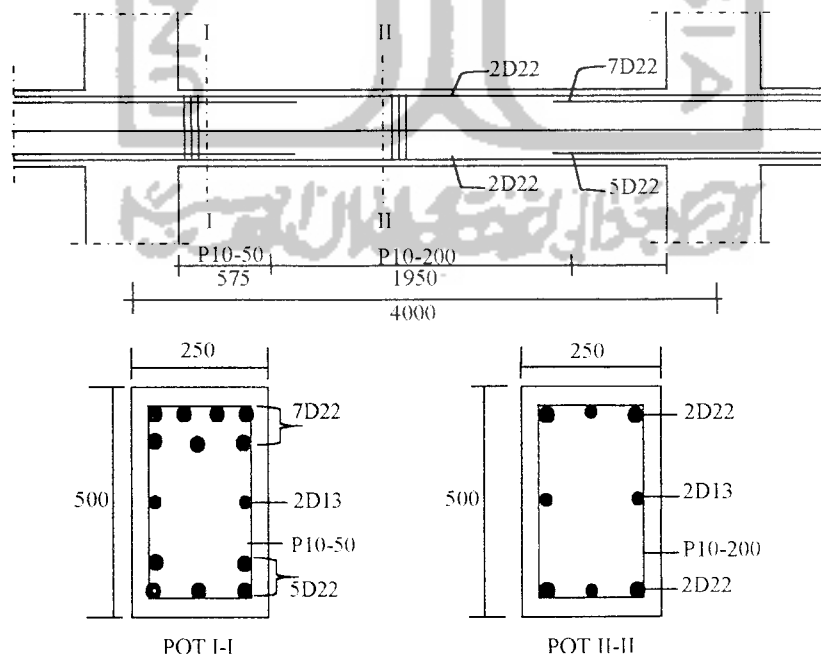
Tabel 6.10 Perbandingan Luas Tulangan RW 4/3 Baru dan RW 4/4 Lama

Balok	Tulangan Longitudinal (AS+AS') - mm ²			Tulangan Geser - mm ²		
	RW 4/4 Lama	RW 4/3 Baru	Perbandingan	RW 4/4 Lama	RW 4/3 Baru	Perbandingan
7m	44812,9411	62197,6332	127,95%	48152,9917	50635,0786	104,90%
4m	36987,8045	55613,5656	133,49%	16125,2571	16637,1588	103,08%
5m	39106,6112	62021,2835	136,95%	47232,3834	49781,0566	105,12%
Σ	120907,3568	179832,4824	132,77%	111510,6321	117053,2940	104,74%

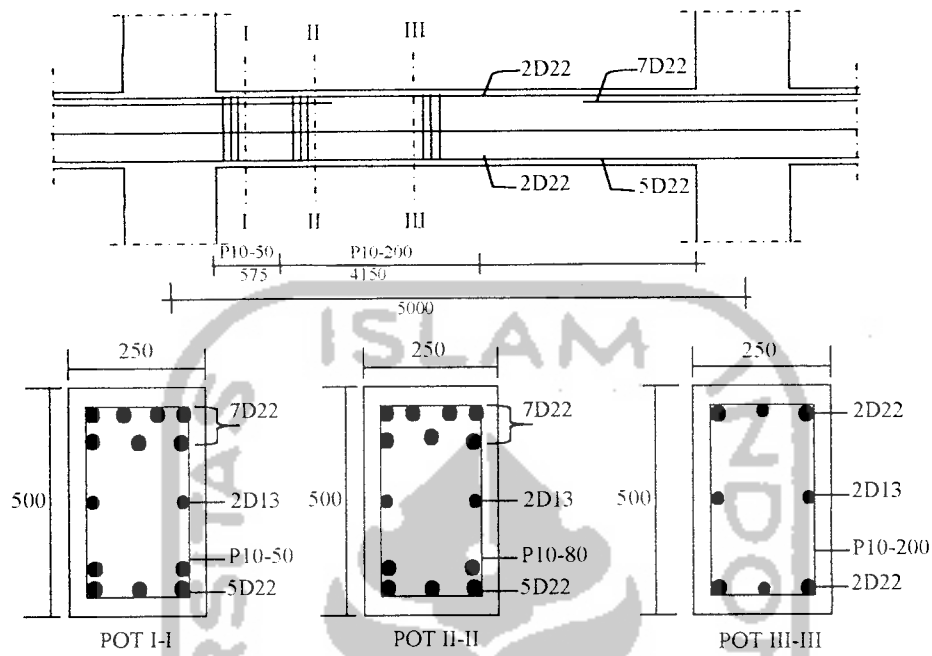
Kolom	Tulangan Longitudinal (AS+AS') - mm ²			Tulangan Geser - mm ²		
	RW 4/4 Lama	RW 4/3 Baru	Perbandingan	RW 4/4 Lama	RW 4/3 Baru	Perbandingan
A	32032,0000	48837,6000	134,41%	46015,2081	48049,4762	104,23%
B	25704,0000	38007,2000	132,37%	46430,7964	47526,1429	102,30%
C	24248,0000	36013,6000	132,67%	46015,2081	47720,5238	103,57%
D	16374,4000	21554,4000	124,03%	48259,3846	49001,2866	101,51%
Σ	98358,4000	144412,8000	131,89%	186720,5973	192297,4294	102,90%



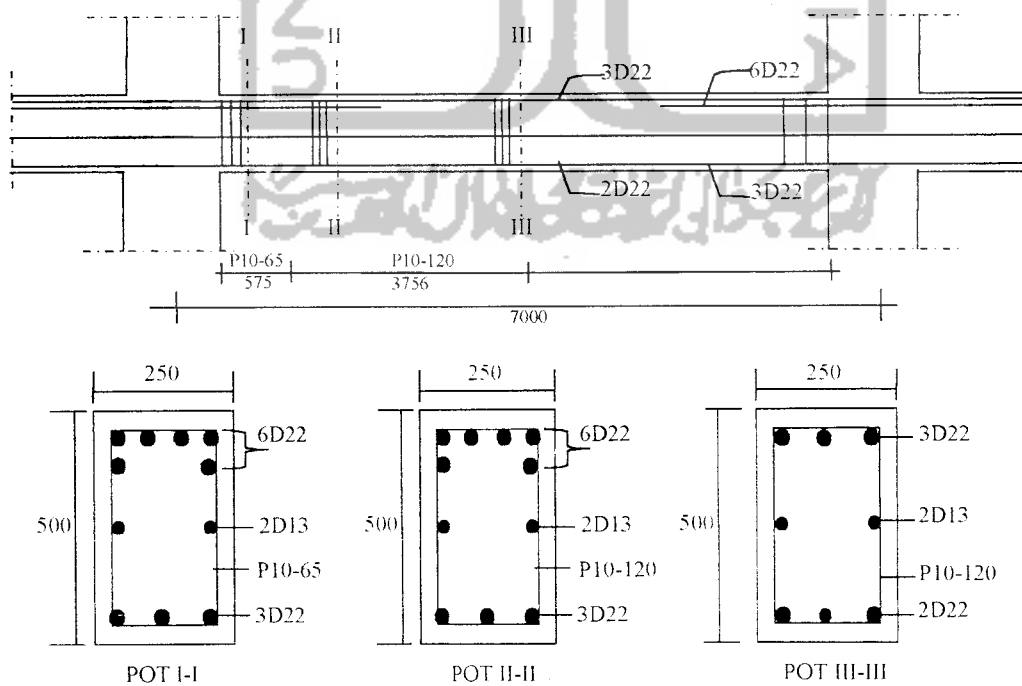
Gambar 6.3.1 Balok Portal E Bentang 7m Lantai 3



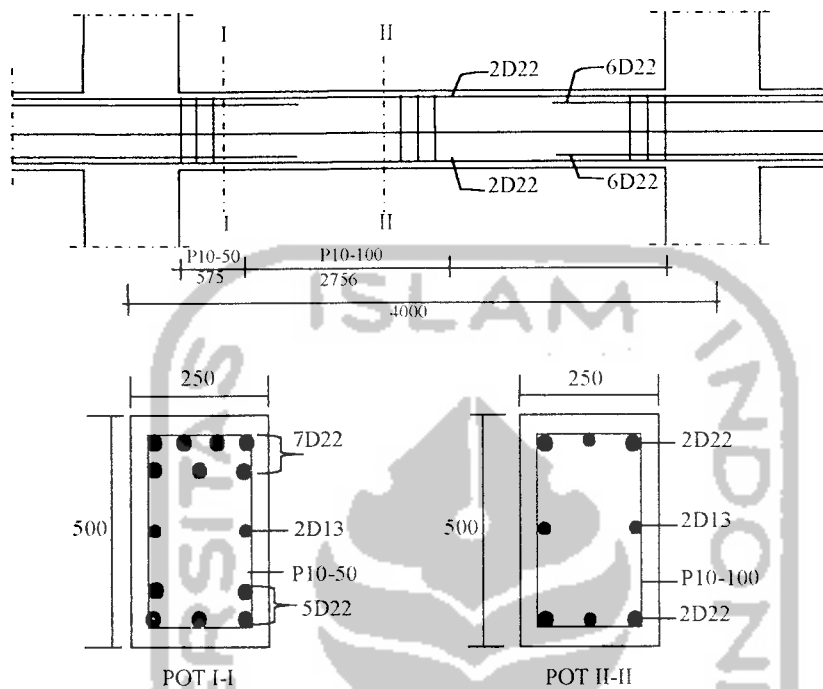
Gambar 6.3.2 Balok Portal E Bentang 4 m Lantai 3



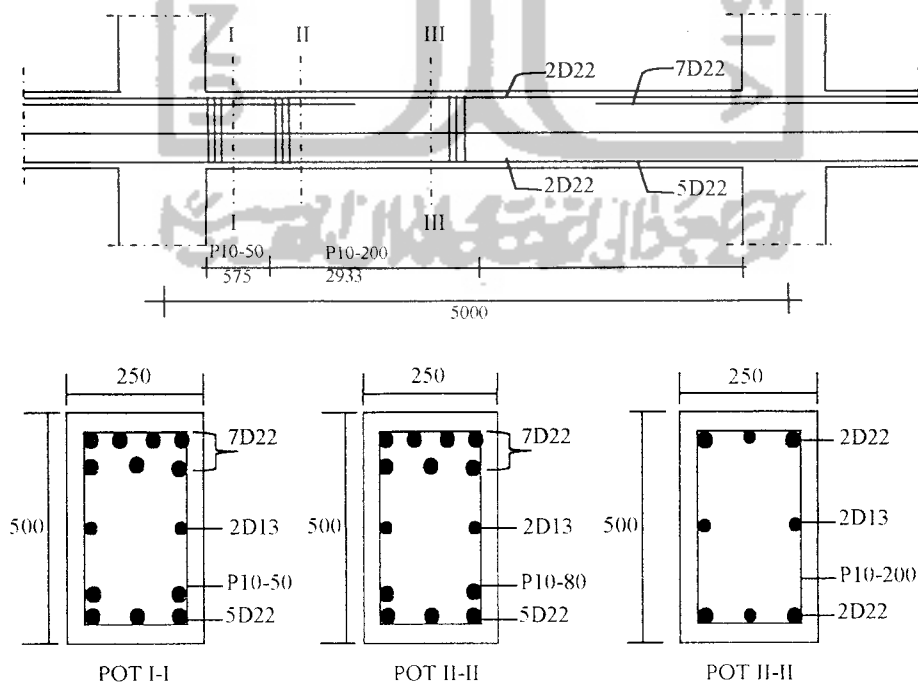
Gambar 6.3.3 Balok Portal 2 Lantai 3



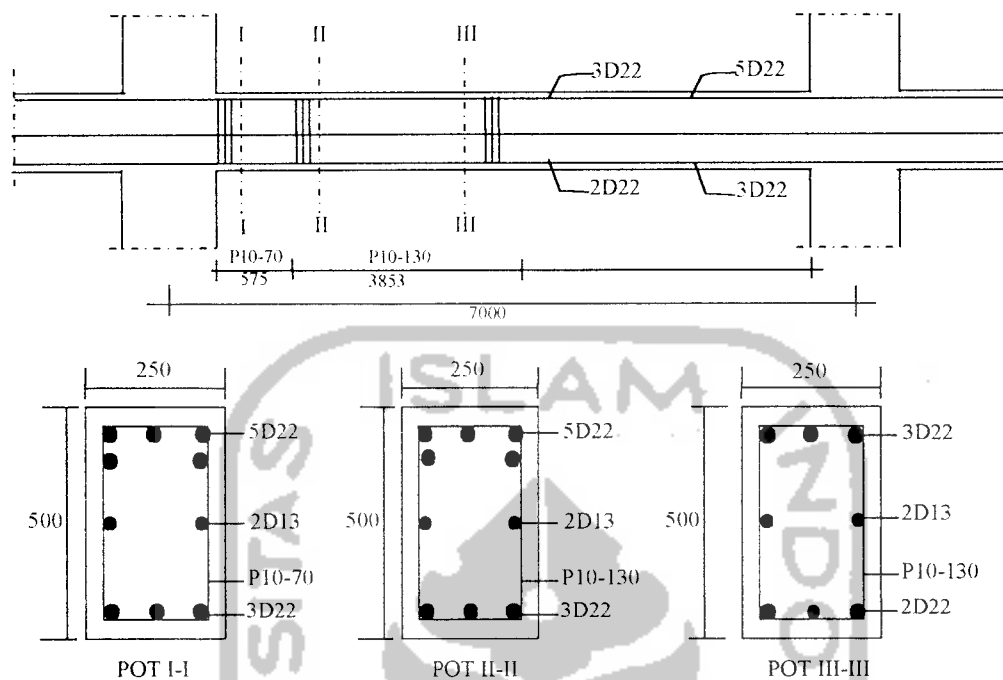
Gambar 6.3.4 Balok Portal E Bentang 7 m Lantai 4



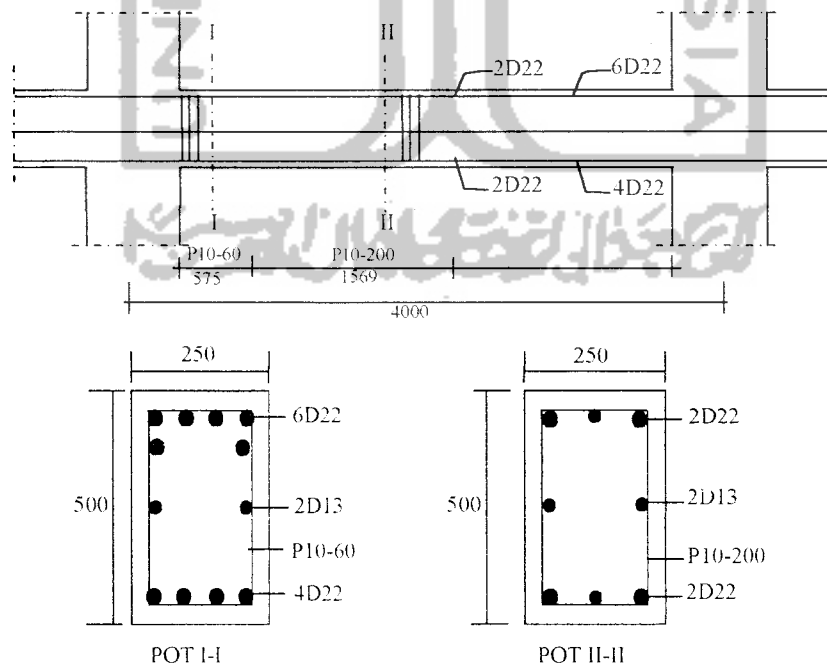
Gambar 6.3.5 Balok Portal E Bentang 4 m Lantai 4



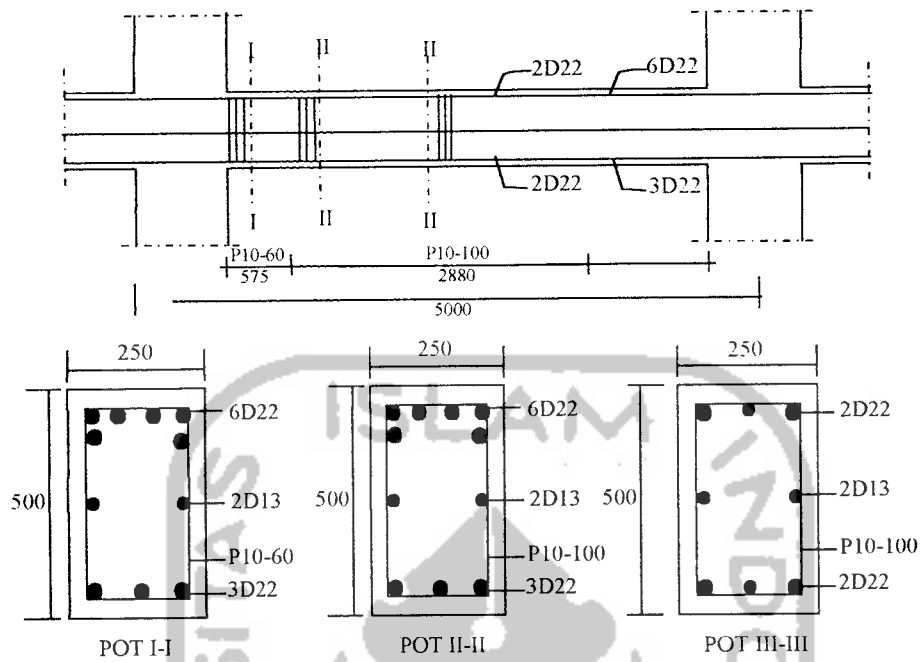
Gambar 6.3.6 Balok Portal 2 Lantai 4



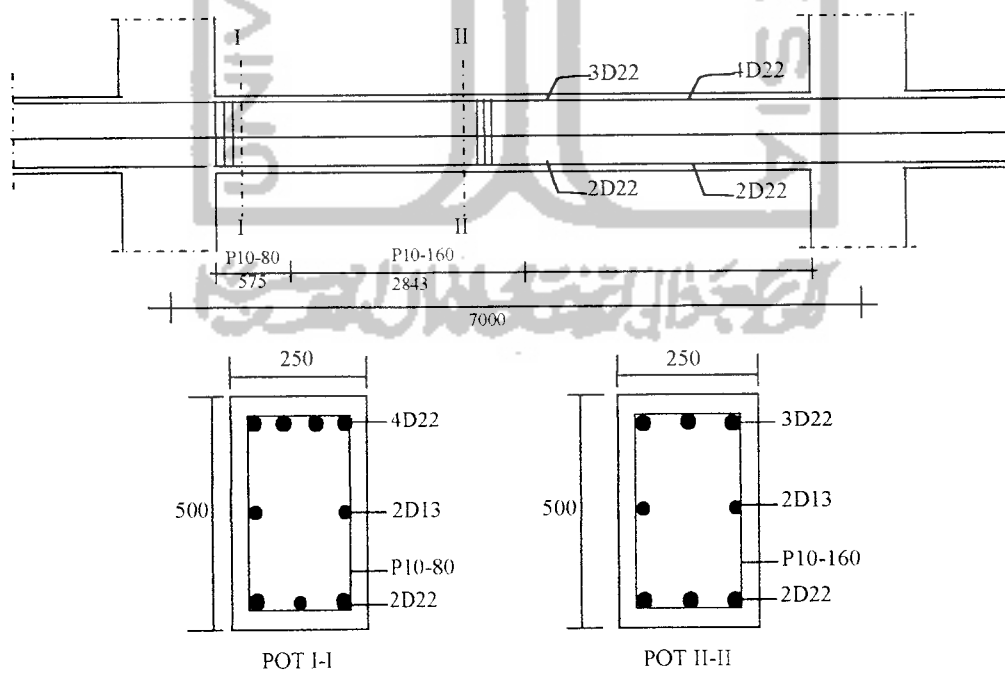
Gambar 6.3.7 Balok Portal E Bentang 7m Lantai 7



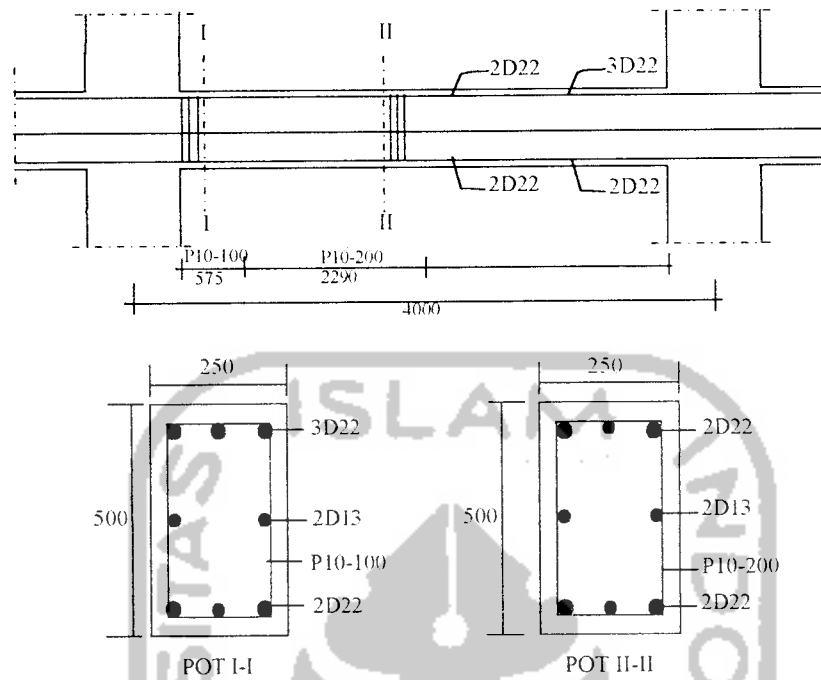
Gambar 6.3.8 Balok Portal E Bentang 4 m Lantai 7



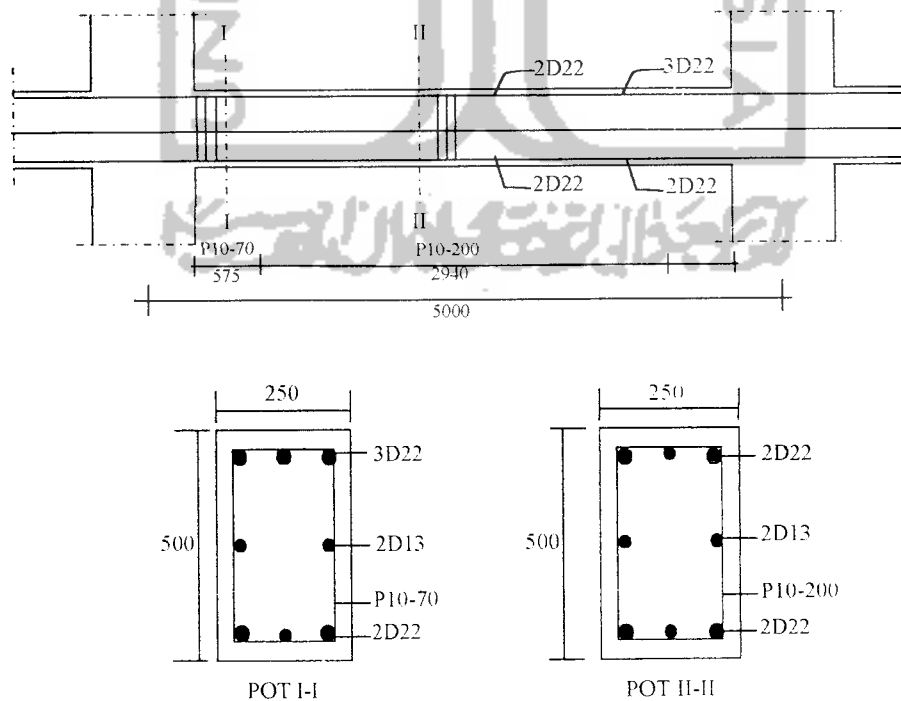
Gambar 6.3.9 Balok Portal 2 Lantai 7



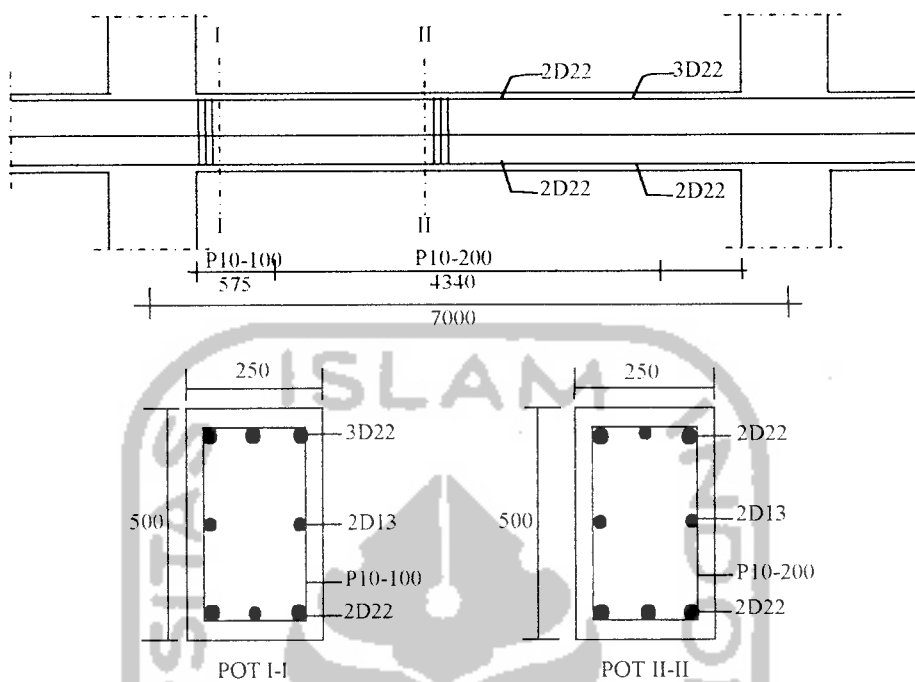
Gambar 6.3.10 Balok Portal E Bentang 7m Lantai 10



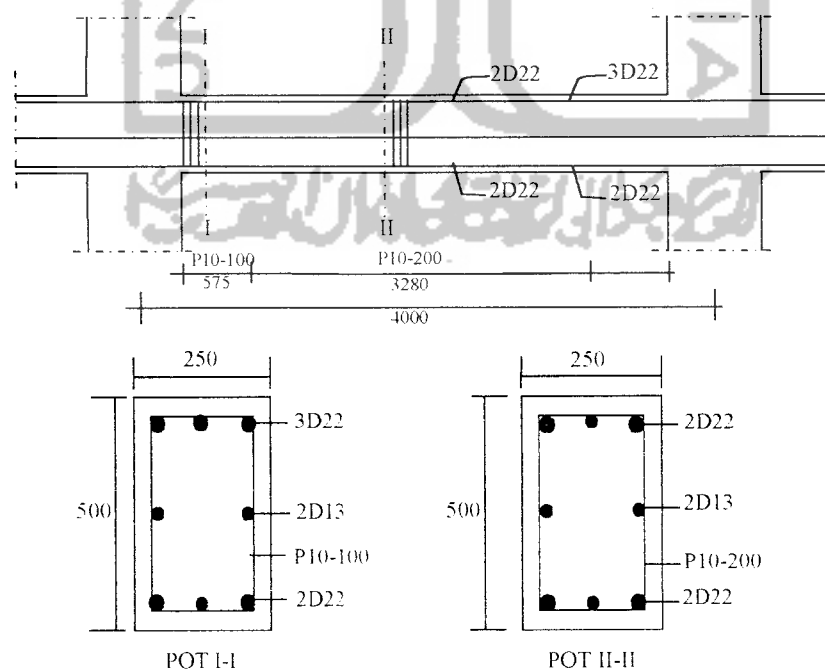
Gambar 6.3.11 Balok Portal E Bentang 4 m Lantai 10



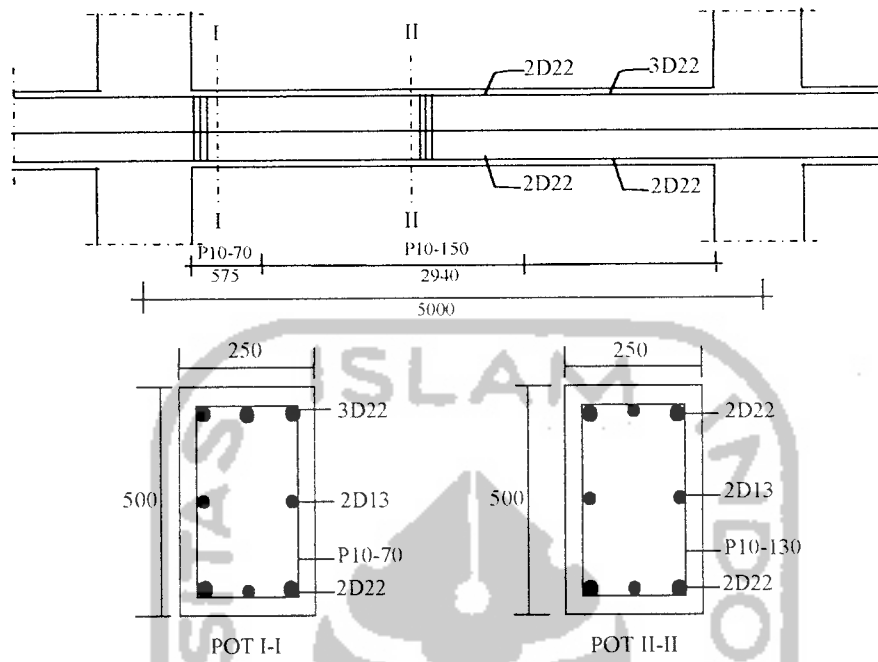
Gambar 6.3.12 Balok Portal 2 Lantai 10



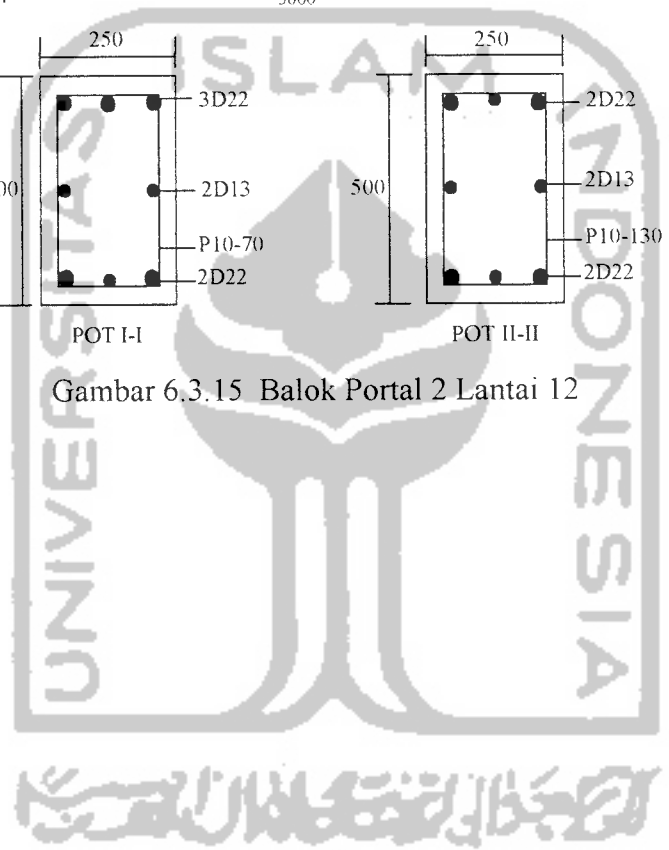
Gambar 6.3.13 Balok Portal E Bentang 7m Lantai 12

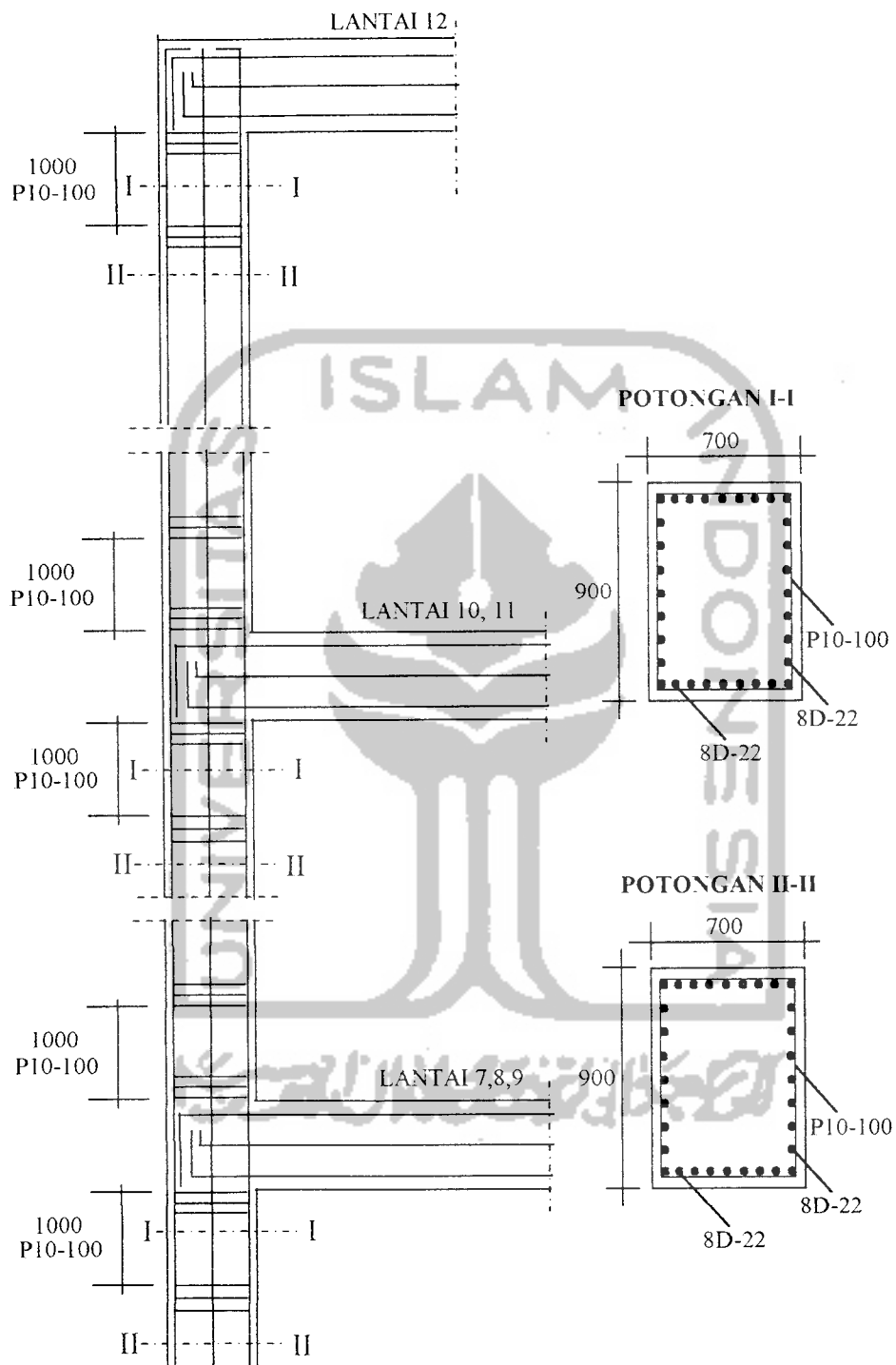


Gambar 6.3.14 Balok Portal E Bentang 4 m Lantai 12

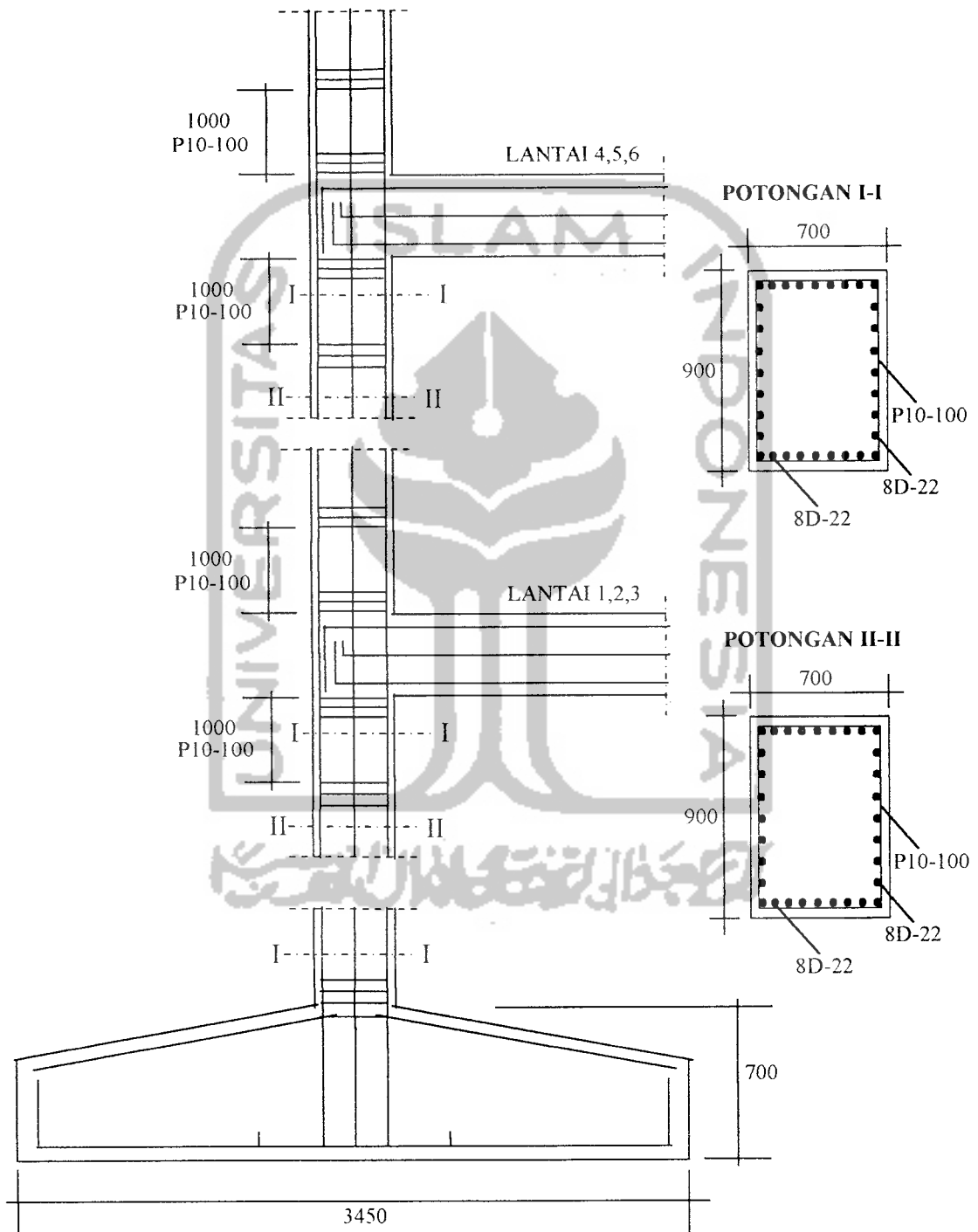


Gambar 6.3.15 Balok Portal 2 Lantai 12

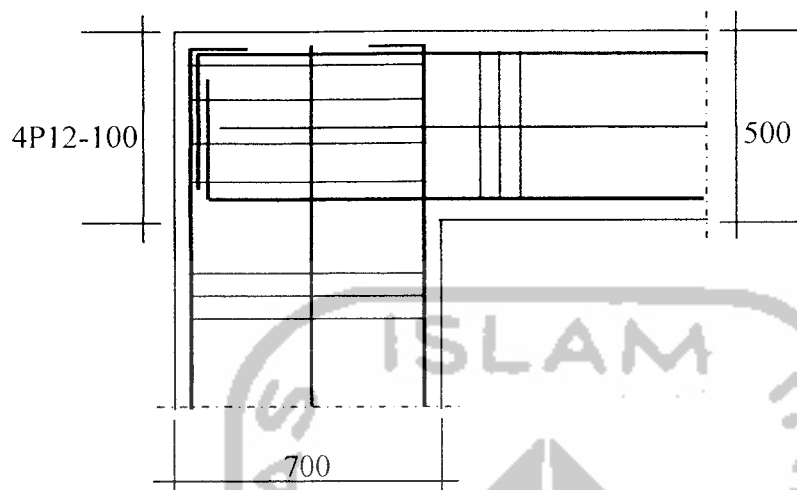




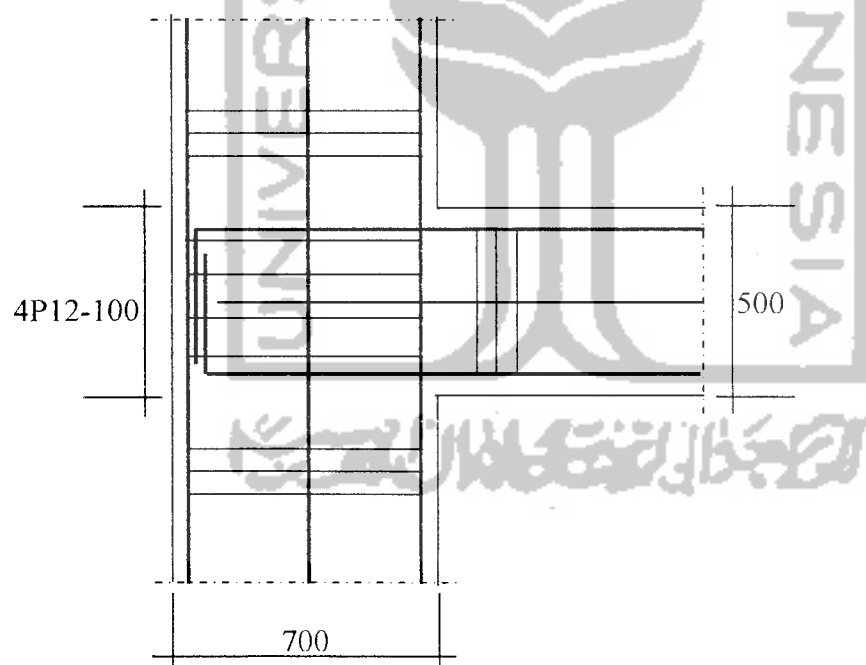
Gambar 6.3.16 Kolom D



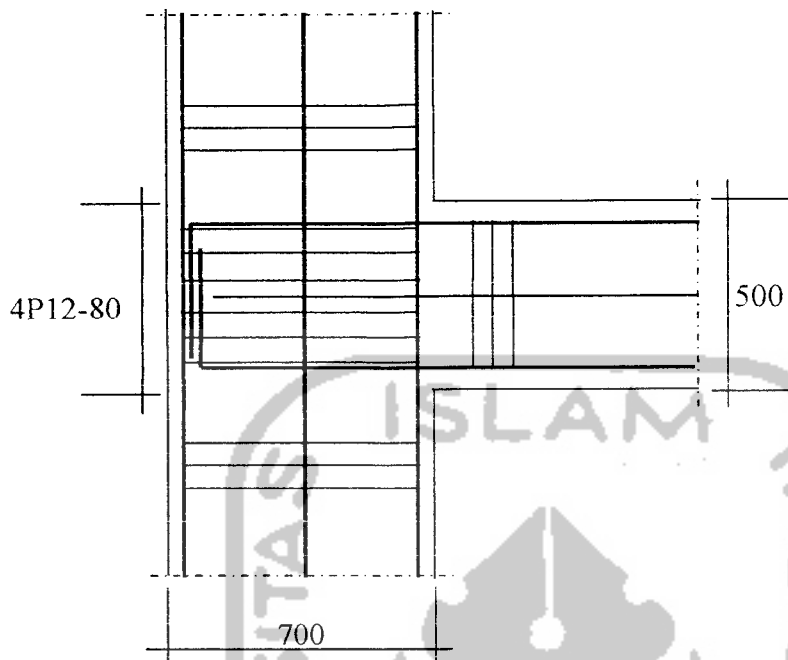
Gambar 6.3.17 Pondasi dan Kolom D



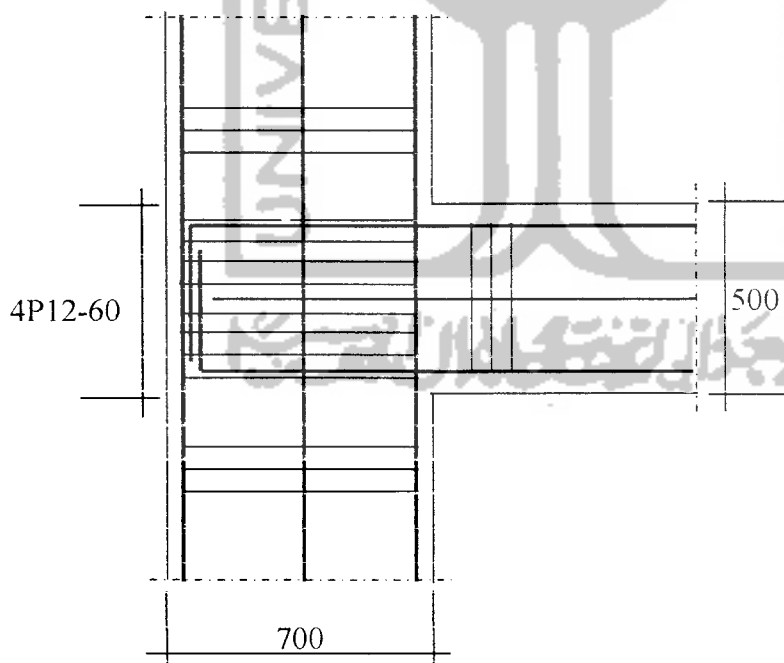
Gambar 6.3.18 Detail Joint Balok-Kolom D Lantai 12



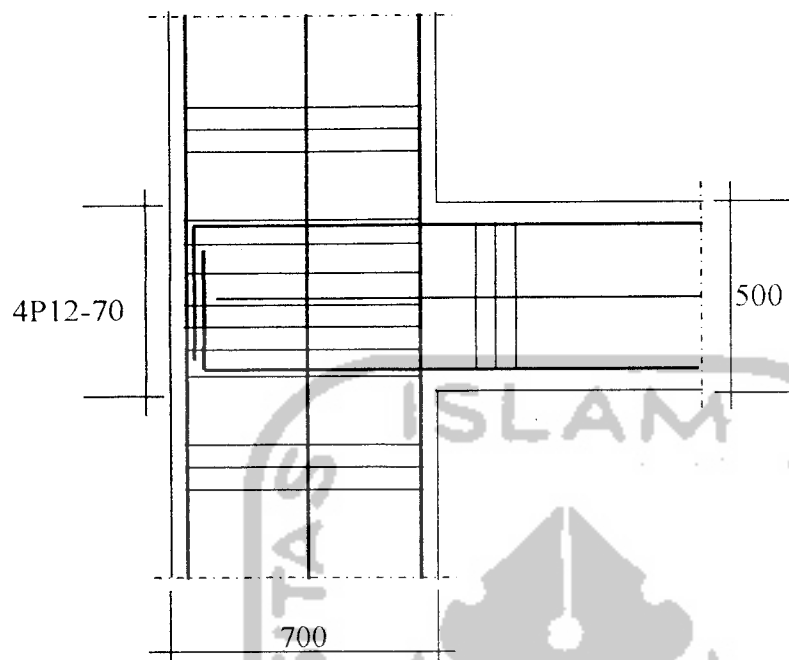
Gambar 6.3.19 Detail Joint Balok-Kolom D Lantai 10 dan 11



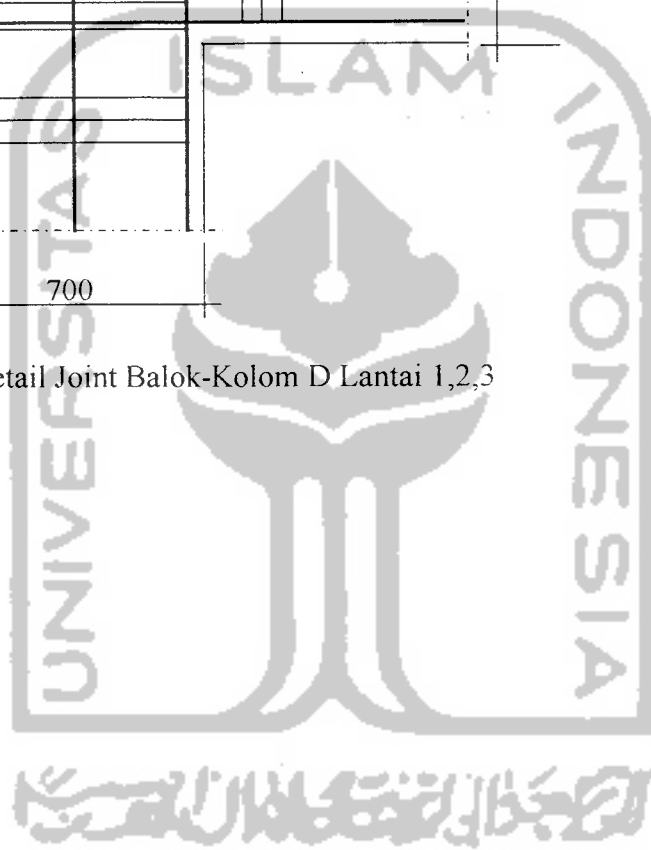
Gambar 6.3.20 Detail Joint Balok-Kolom D Lantai 7,8,9



Gambar 6.3.21 Detail Joint Balok-Kolom D Lantai 4,5,6



Gambar 6.3.22 Detail Joint Balok-Kolom D Lantai 1,2,3



6.2 Pembahasan

Berdasarkan hasil perhitungan desain struktur pada ranking wilayah gempu 3 dan 4 dengan menggunakan *code* lama dan *code* baru didapat hasil sebagai berikut:

6.2.1 Perbandingan Beban Gempa

Dari grafik 6.1, pada ranking wilayah gempu 3 (R/W 3/3 lama & R/W 3/4 baru) dan ranking wilayah gempu 4 (R/W 4/4 lama – R/W 4/3 baru), perhitungan dengan menggunakan *code* baru akan menghasilkan gaya geser dasar V yang lebih besar dari pada perhitungan dengan menggunakan *code* lama. Untuk R/W 3/4 baru mengalami pembesaran 120,86 % dari R/W 3/3 lama, sedangkan untuk R/W 4/3 baru terjadi pembesaran gaya geser dasar V sebesar 135,94 % dari R/W 4/4 lama.

Akibat beban gempa pada R/W baru mengalami pembesaran dari R/W lama, maka momen perlu, momen tersedia, dan momen kapasitas pada balok dan kolom juga akan mengalami pembesaran.

6.2.2 Kebutuhan Tulangan Balok

Struktur yang berada pada satu ranking wilayah gempu dengan menggunakan perancangan *code* baru membutuhkan luas tulangan lebih besar dibandingkan perancangan dengan *code* lama. Pada R/W 3/4 baru, luas tulangan longitudinal mengalami pembesaran sebesar 122,91% sedangkan luas tulangan geser mengalami pembesaran 108,55% dari R/W 3/3 lama. Pada R/W 4/3 baru,

luas tulangan longitudinal bertambah 132,77% dan luas tulangan geser bertambah 105,64% dari R/W 3/3 lama.

6.2.3 Kebutuhan Tulangan Kolom

Secara umum kebutuhan tulangan kolom pada struktur yang berdiri pada satu rangking wilayah gempa dengan menggunakan perancangan *code* baru membutuhkan luas tulangan yang lebih besar dibandingkan perancangan dengan *code* lama. Pada R/W 3/4 baru kolom mengalami pembesaran luas tulangan longitudinal sebesar 128,58% dan luas tulangan geser sebesar 105,64% dari R/W 3/3 lama. Sedangkan pada R/W 4/3 baru, pembesaran luas tulangan longitudinal yang terjadi sebesar 131,89% dan 102,90% untuk luas tulangan geser dibanding R/W 4/4 lama.

6.2.4 Kebutuhan Tulangan Poer Pondasi

Kebutuhan tulangan poer pondasi pada struktur yang berada di satu rangking wilayah gempa dengan menggunakan perancangan *code* baru memerlukan jumlah tulangan yang lebih besar dibandingkan dengan perancangan *code* lama. Hal ini disebabkan gaya aksial dan momen pada dasar struktur untuk *code* baru lebih besar dibandingkan *code* lama.