

Lampiran 5. Perhitungan Mn

	Bahan	As(cm ²)	fy(kg/cm ²)	T	f'c(kg/cm ²)	b(cm)	d(cm)	a(mm)	Z(cm)	Mn(kgcm)	P(kg)	Berat Jenis (gr/cm ³)	q/ Berat sendiri mortar(kg/cm)	Mmax beban mati(kgcm)	Mmax beban hidup(kg cm)	Mmax total	Mn-Mmax
var 1	0	4.0192	1576.2	6335.06	177.1	80	2	0.52605	1.73698	11003.86	189.33	2.05	0.3683	294.66667	3786.67	4081.33	6922.53
	100	4.0192	1576.2	6335.06	107.9	80	2	0.86342	1.56829	9935.226	103.67	1.69	0.3045	243.63333	2073.33	2316.97	7618.26
	200	4.0192	1576.2	6335.06	63.6	80	2	1.46482	1.26759	8030.256	69.67	1.24	0.2225	177.96667	1393.33	1571.3	6458.96
	300	4.0192	1576.2	6335.06	30.6	80	2	3.04453	0.47773	3026.474	45.33	1.08	0.194	155.23333	906.667	1061.9	1964.57
var 2	0	3.0144	1576.2	4751.3	177.1	80	2	0.39453	1.80273	8565.32	123.00	1.98	0.357	285.6	2460	2745.6	5819.72
	100	3.0144	1576.2	4751.3	107.9	80	2	0.64756	1.67622	7964.213	82.67	1.53	0.2762	220.96667	1653.33	1874.3	6089.91
	200	3.0144	1576.2	4751.3	63.6	80	2	1.09862	1.45069	6892.667	57.00	1.25	0.2254	180.33333	1140	1320.33	5572.33
	300	3.0144	1576.2	4751.3	30.6	80	2	2.2834	0.8583	4078.04	40.67	0.96	0.1726	138.06667	813.333	951.4	3126.64

Contoh perhitungan untuk var 1, tanpa lerak (0 cc)

$$As = 8 \times 3,14 \times 0,4 \times 0,4 = 4.0192 \text{ cm}^2$$

$$T = Fy \times As = 1576.2 \times 4.0192 = 6335,06 \text{ kg}$$

$$a = \frac{Fy \times As}{0.85 f'c x b} = \frac{6335,06}{0.85 \times 1576.2 \times 80} = 0.52 \text{ cm}$$

$$Z = (d - \frac{a}{2}) = 2 - \frac{0.52}{2} = 1,736 \text{ cm}$$

$$Mn = T \times Z = 6335.06 \times 1,736 = 11003,9 \text{ kgcm}$$

$$q = \text{Berat jenis mortar} \times \text{Luas penampang mortar} = 2.05 \times 45 \times 4 : 1000 = 0.368 \text{ kg/cm}$$

$$M_{\text{max}} \text{ beban mati} = 1/8 \times q \times l^2 = 1/8 \times 0.368 \times 80^2 = 294,667 \text{ kgcm}$$

$$M_{\text{max}} \text{ beban hidup} = 1/4 \times P \times l = 1/4 \times 189,33 \times 80 = 3786,67 \text{ kgcm}$$

$$M_{\text{max}} \text{ total} = M_{\text{max}} \text{ beban mati} + M_{\text{max}} \text{ beban hidup} = 294,667 + 3786,67 = 4081,33 \text{ kgcm}$$