LAMPIRAN 1

SURAT KETERANGAN TUGAS AKHIR

Sesuai dengan persetujuan dari Ketua Jurusan Teknik Sipil, Fakultas Teknik, Universitas Kristen Maranatha, melalui surat No. 1329/TA/FTS/UKM/IX/2012 tanggal 8 September 2012, dengan ini saya selaku Pembimbing Tugas Akhir memberikan tugas kepada:

Nama : Caecilia Eleonora

NRP : 0921051

untuk membuat Tugas Akhir bidang Struktur dengan judul:

ANALISIS DAN DESAIN BALOK BENTANG 18 M PADA GEDUNG 9 LANTAI DENGAN BETON PRATEGANG DAN BAJA PROFIL KHUSUS

Pokok pembahasan Tugas Akhir adalah sebagai berikut:

1. Pendahuluan
2. Tinjauan Literatur
3. Studi Kasus dan Pembahasan
4. Kesimpulan dan Saran

Hal-hal lain yang dianggap perlu dapat disertakan untuk melengkapi penulisan Tugas Akhir ini.

Bandung, 10 September 2012

Dr. Yosafat Aji Pranata, S.T., M.T.

Pembimbing

LAMPIRAN 2

SURAT KETERANGAN SELESAI TUGAS AKHIR

Yang bertanda tangan di bawah ini selaku Dosen Pembimbing Tugas Akhir dari mahasiswa:

Nama : Caecilia Eleonora

NRP : 0921051

Menyatakan bahwa Tugas Akhir dari mahasiswa tersebut diatas dengan judul:

ANALISIS DAN DESAIN BALOK BENTANG 18 M PADA GEDUNG 9 LANTAI DENGAN BETON PRATEGANG DAN BAJA PROFIL KHUSUS

dinyatakan selesai dan dapat diajukan pada Ujian Sidang Tugas Akhir (USTA).

Bandung, 9 Januari 2013

Dr. Yosafat Aji Pranata, S.T., M.T.

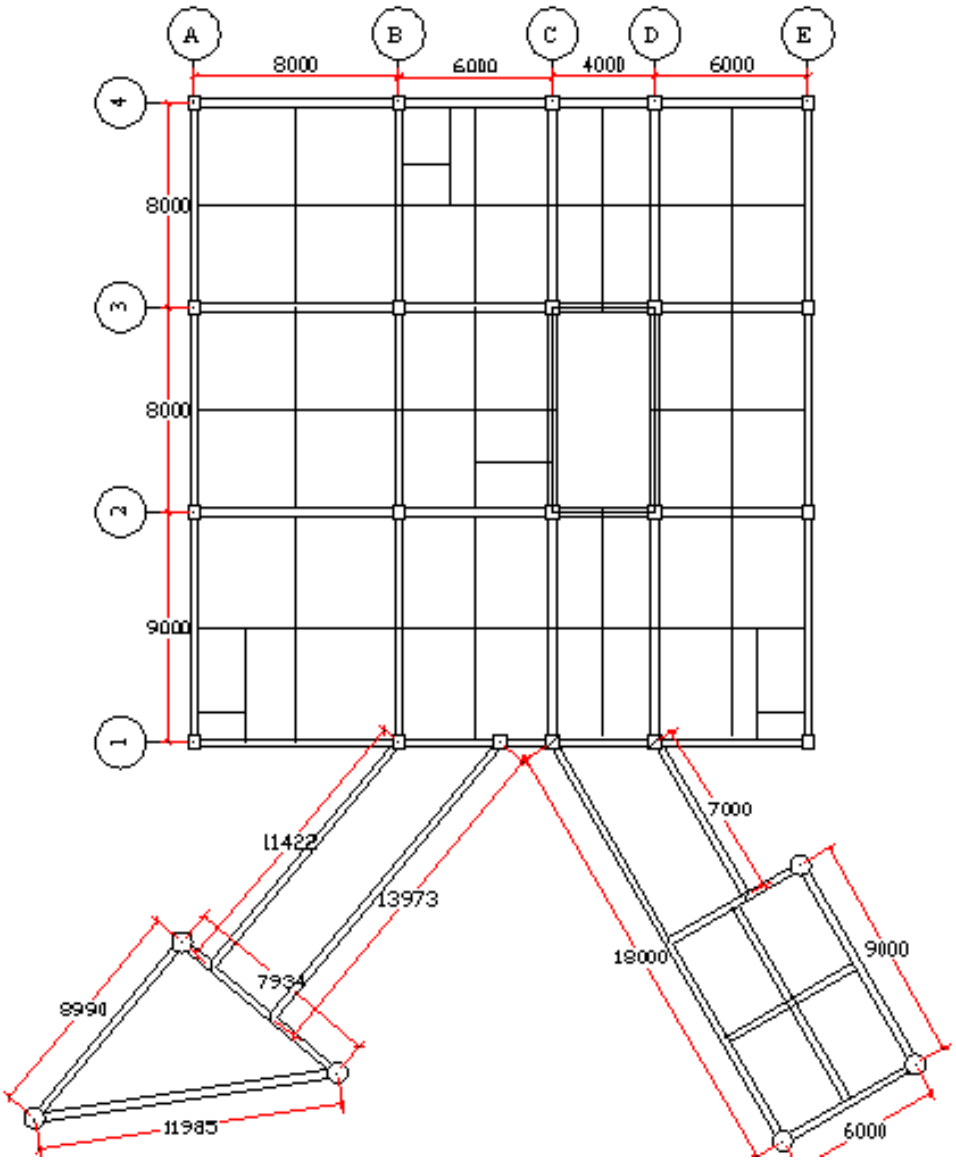
Pembimbing

LAMPIRAN 3

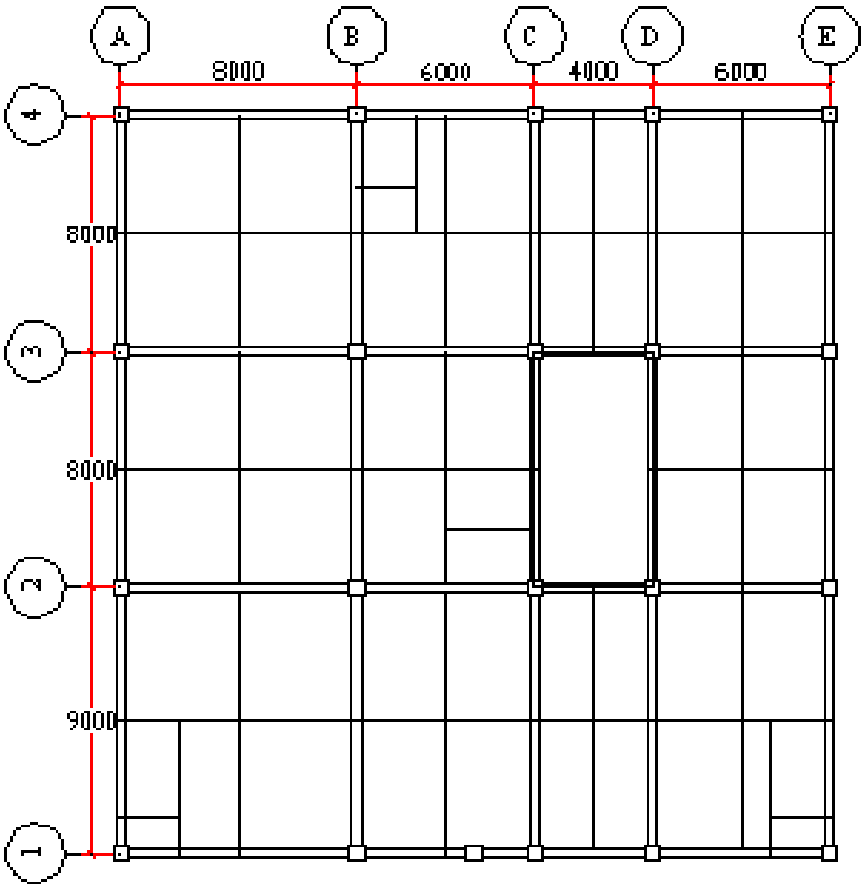
(DENAH BANGUNAN & DENAH STRUKTUR)

LAMPIRAN 3

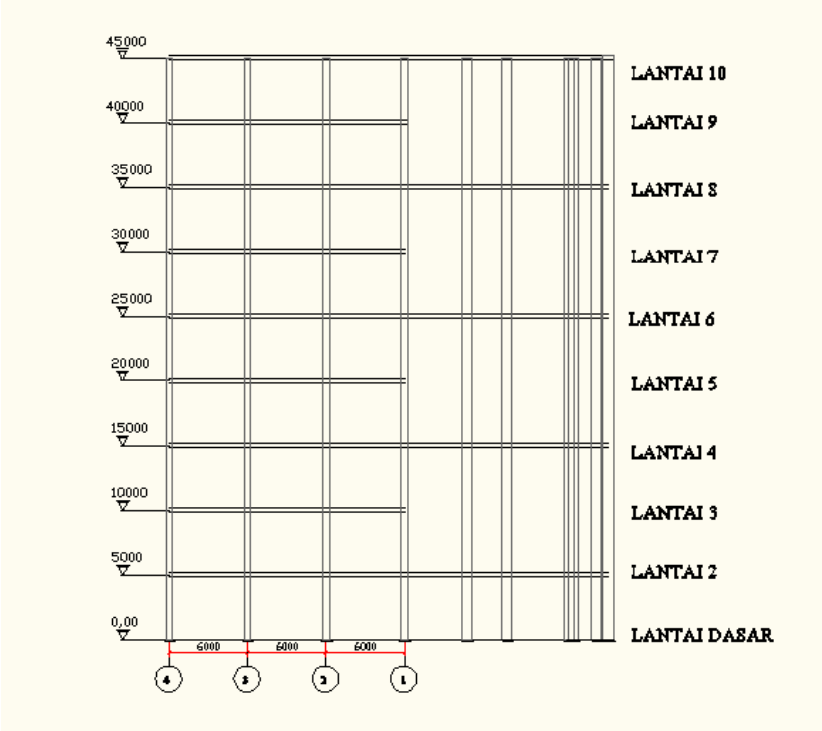
L.3 Denah Bangunan



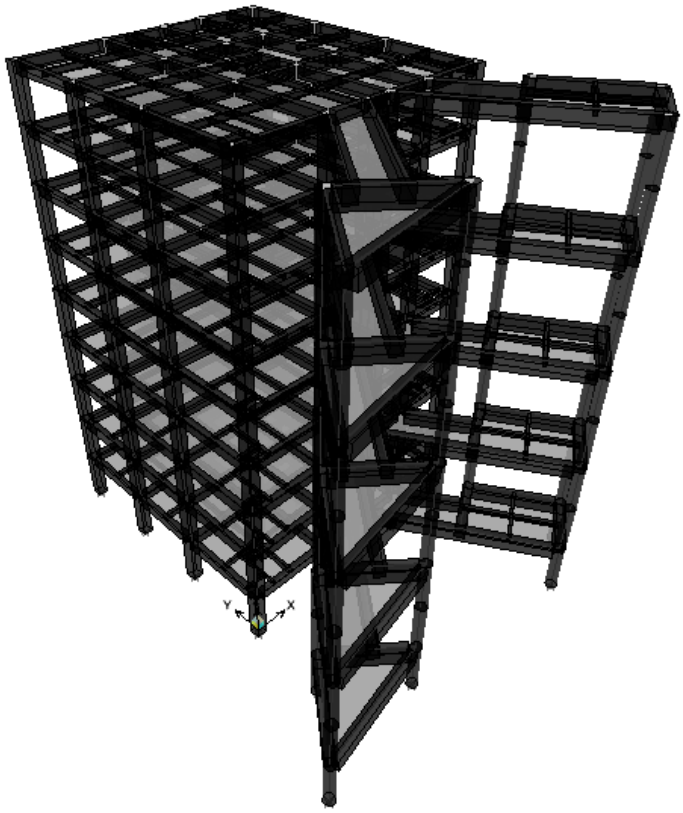
Gambar L.3.1 Denah Lantai 1, 3, 5, 7, dan 9.



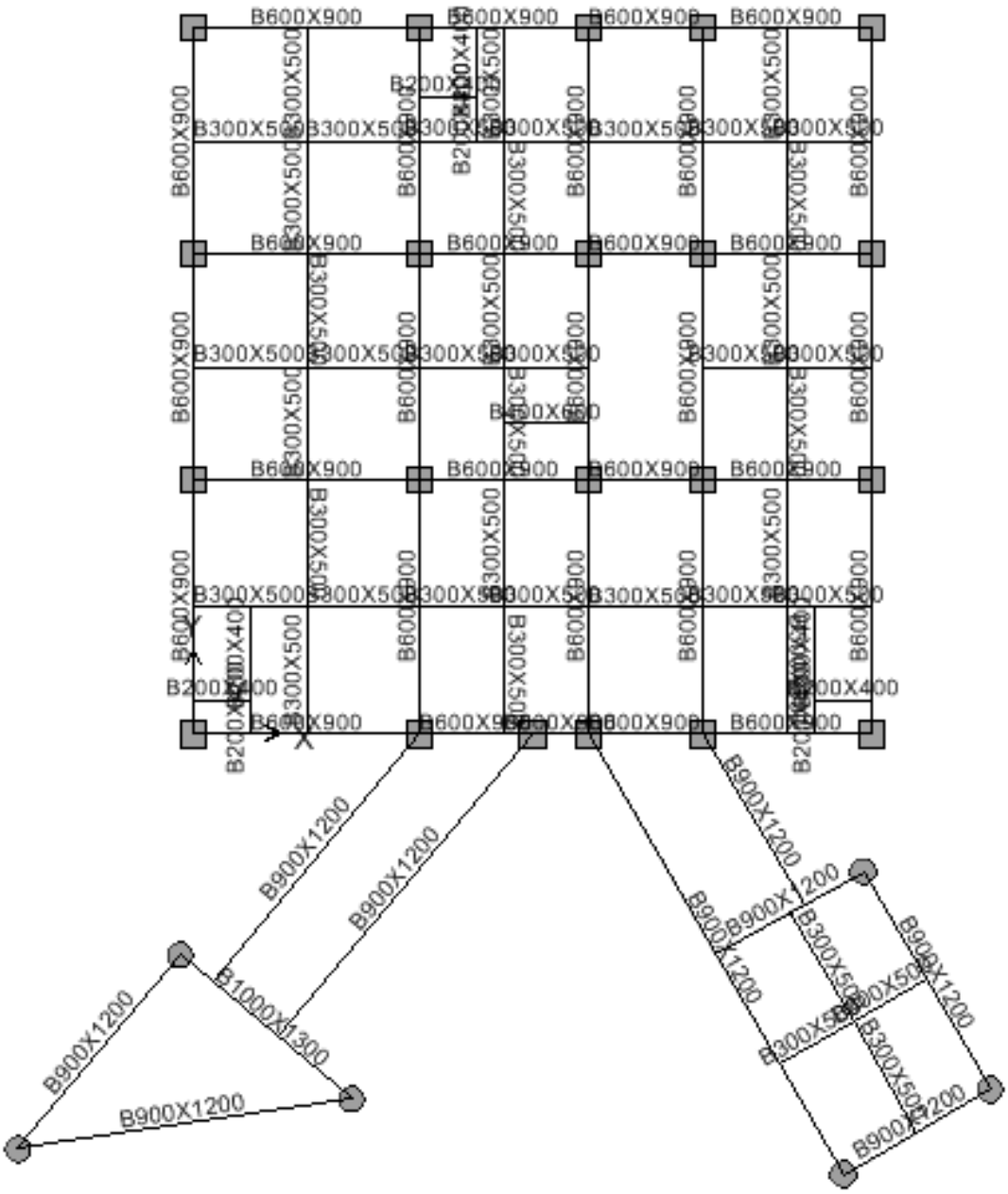
Gambar L.3.2 Denah Lantai 2, 4, 6, dan 8



Gambar L.3.3 Tampak Samping Struktur



Gambar L.3.4 Model 3D Bangunan

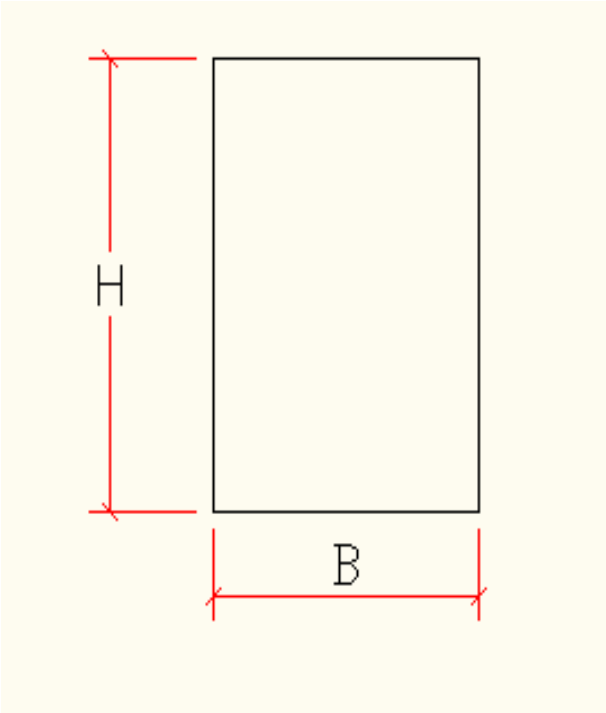


Gambar L.3.5 Denah Struktur Lantai 1, 3, 5, 7, dan 9

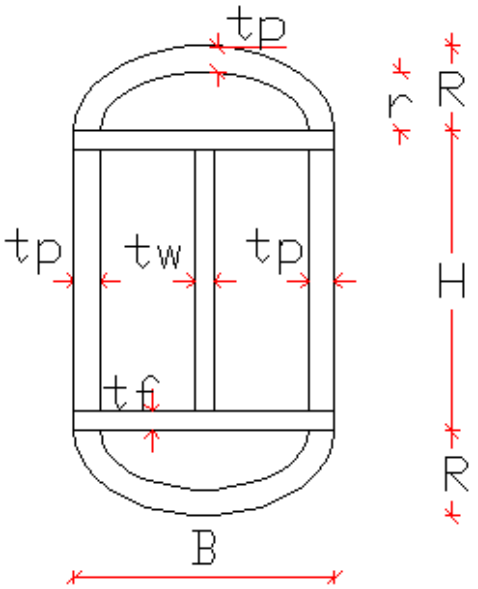
LAMPIRAN 4

(GAMBAR PENAMPANG MATERIAL)

L.4 Gambar Penampang Material



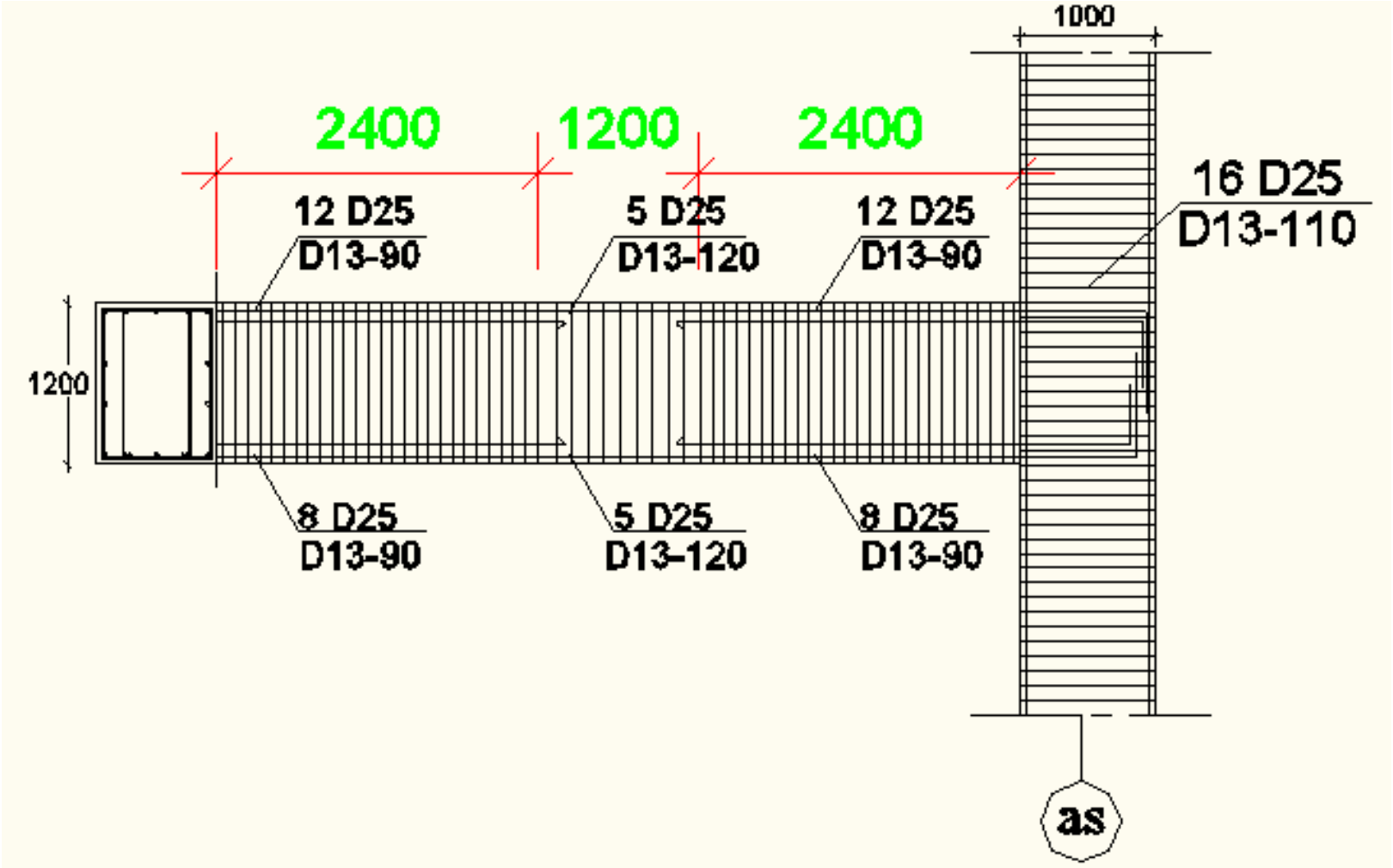
Gambar L.4.1 Profil Beton Prategang



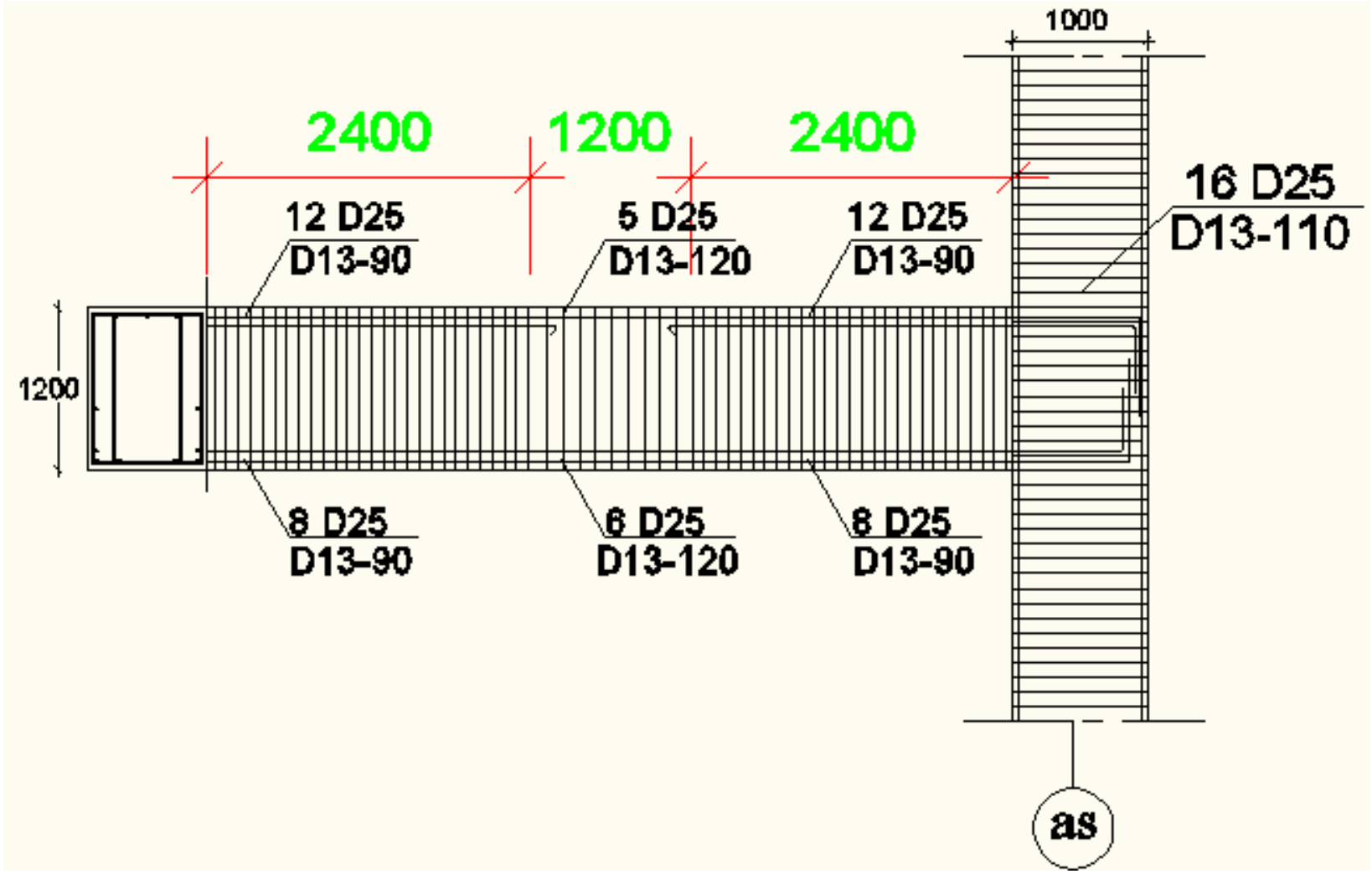
Gambar L.4.2 Profil Baja Khusus

LAMPIRAN 5

(GAMBAR DETAIL PENULANGAN)



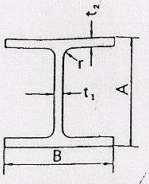
Gambar L.5.1 Detail Penulangan Balok dan Kolom (Bangunan A)



Gambar L.5.2 Detail Penulangan Balok dan Kolom (Bangunan B)

LAMPIRAN 6

(TABEL PROFIL BAJA IWF DAN PROFIL PIPE)



Wide Flange Shapes

(Metric Series)

Section Index	Weight	Depth of Section (A)	Flange Width (B)	Thickness		Corner Radius	Sectional Area	Moment of Inertia		Radius of Gyration		Modulus of Section	
				Web (t_1)	Flange (t_2)	(r)		Jx	Jy	ix	iy	Zx	Zy
mm	kg/m	mm	mm	mm	mm	mm	cm²	cm⁴	cm⁴	cm	cm	cm³	cm³
900×300	286	912	302	18	34	28	364.0	498,000	15,700	37.0	6.56	10,900	1,040
	243	900	300	16	28	28	309.8	411,000	12,600	36.4	6.39	9,140	843
	213	890	299	15	23	28	270.9	345,000	10,300	35.7	6.16	7,760	688
800×300	241	808	302	16	30	28	307.6	339,000	13,800	33.2	6.70	8,400	915
	210	800	300	14	26	28	267.4	292,000	11,700	33.0	6.62	7,290	782
	191	792	300	14	22	28	243.4	254,000	9,930	32.3	6.39	6,410	662
700×300	215	708	302	15	28	28	273.6	237,000	12,900	29.4	6.86	6,700	853
	185	700	300	13	24	28	235.5	201,000	10,800	29.3	6.78	5,760	722
	166	692	300	13	20	28	211.5	172,000	9,020	28.6	6.53	4,980	602
600×300	175	594	302	14	23	28	222.4	137,000	10,600	24.9	6.90	4,620	701
	151	588	300	12	20	28	192.5	118,000	9,020	24.8	6.85	4,020	601
	137	582	300	12	17	28	174.5	103,000	7,670	24.3	6.63	3,530	511
600×200	134	612	202	13	23	22	107.7	103,000	3,180	24.6	4.31	3,380	314
	120	606	201	12	20	22	152.5	90,400	2,720	24.3	4.22	2,980	271
	106	600	200	11	17	22	134.4	77,600	2,280	24.0	4.12	2,590	228
	94.6	596	199	10	15	22	120.5	68,700	1,980	23.9	4.05	2,310	199
500×300	128	488	300	11	18	26	163.5	71,000	8,110	20.8	7.04	2,910	541
	114	482	300	11	15	26	145.5	60,400	6,760	20.4	6.82	2,500	451
500×200	103	506	201	11	19	20	131.3	56,500	2,580	20.7	4.43	2,230	257
	89.7	500	200	10	16	20	114.2	47,800	2,140	20.5	4.33	1,910	214
	79.5	496	199	9	14	20	101.3	41,900	1,840	20.3	4.27	1,690	185
450×300	124	440	300	11	18	24	157.4	56,100	8,110	18.9	7.18	2,550	541
	106	434	299	10	15	24	135.0	46,800	6,690	18.6	7.04	2,160	448
450×200	76.0	450	200	9	14	18	96.76	33,500	1,870	18.6	4.40	1,490	187
	66.2	446	199	8	12	18	84.30	28,700	1,580	18.5	4.33	1,290	159
400×400	605	498	432	45	70	22	770.1	298,000	94,400	19.7	11.1	12,000	4,370
	415	458	417	30	50	22	528.6	187,000	60,500	18.8	10.7	8,170	2,900
	283	428	407	20	35	22	360.7	119,000	39,400	18.2	10.4	5,570	1,930
	232	414	405	18	28	22	295.4	92,800	31,000	17.7	10.2	4,480	1,530

Gambar L.6.1 Tabel Profil Baja IWF

	Diameters			Transverse Areas			Length of Pipe per Sq. Foot of				
Size Inches	External Inches	Internal Inches	Nominal Thickness Inches	External Sq. Ins.	Internal Sq. Ins.	Metal Sq. Ins.	External Surface Feet	Internal Surface Feet	Cubic Feet per Foot of Pipe	Weight per Foot Pounds	Number Threads per Inch of Screw
1/8	.405	.215	.095	.129	.036	.093	9.431	17.750	.00025	.314	27
1/4	.540	.302	.119	.229	.072	.157	7.073	12.650	.00050	.535	18
3/8	.675	.423	.126	.358	.141	.217	5.658	9.030	.00098	.738	18
1/2	.840	.546	.147	.554	.234	.320	4.547	7.000	.00163	1.00	14
3/4	1.050	.742	1.54	.866	.433	.433	3.637	5.15	.00300	1.47	14
1	1.315	.957	.179	1.358	.719	.639	2.904	3.995	.00500	2.17	11½
1¼	1.660	1.278	.191	2.164	1.283	.881	2.301	2.990	.00891	3.00	11½
1½	1.900	1.500	.200	2.835	1.767	1.068	2.010	2.542	.01227	3.65	11½
2	2.375	1.939	.218	4.430	2.953	1.477	1.608	1.970	.02051	5.02	11½
2½	2.875	2.323	.276	6.492	4.238	2.254	1.328	1.645	.02943	7.66	8
3	3.500	2.900	.300	9.621	6.605	3.016	1.091	1.317	.04587	10.3	8
3½	4.000	3.364	.318	12.56	8.888	3.678	.954	1.135	.06172	12.5	8
4	4.500	3.826	.337	15.90	11.497	4.407	.848	.995	.0798	14.9	8
5	5.563	4.813	.375	24.30	18.194	6.112	.686	.792	.1263	20.8	8
6	6.625	5.761	.432	34.47	26.067	8.300	.576	.673	.1810	28.6	8
8	8.625	7.625	.500	58.42	45.663	12.76	.442	.501	.3171	43.4	8
10	10.750	9.564	.593	90.76	71.84	18.92	.355	.400	.4989	64.4	8
12	12.750	11.376	.687	127.64	101.64	26.00	.299	.336	.7058	88.6	
14	14.000	12.500	.750	153.94	122.72	31.22	.272	.306	.8522	107.0	
16	16.000	14.314	.843	201.05	160.92	40.13	.238	.263	1.117	137.0	
18	18.000	16.126	.937	254.85	204.24	50.61	.212	.237	1.418	171.0	
20	20.000	17.938	1.031	314.15	252.72	61.43	.191	.208	1.755	209.0	
24	24.000	21.564	1.218	452.40	365.22	87.18	.159	.177	2.536	297.0	

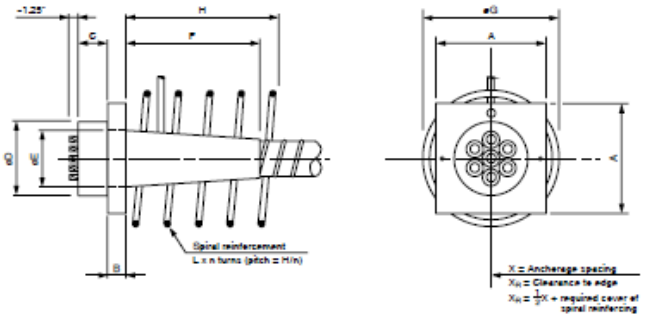
Gambar L.6.2 Tabel Profil *Pipe*

LAMPIRAN 7

(SPESIFIKASI *STRESSING ANCHORAGE VSL TYPE E*)

VSL MULTISTRAND SYSTEMS:

Type E Stressing Anchorage



Tendon Unit		Dimensions (Inches) A	B	C	øD	øE	F	øG	H	J	J*	L	n	X
0.5" Strand	5-1	2.76	0.59	1.77	1.65	0.59	2.76	3.15	3.54	0.98	1.18	#3	2	3.54
	5-3	4.53	0.79	1.97	3.54	1.97	7.48	5.12	5.91	1.57	1.17	#4	3	6.10
	5-4	5.12	0.79	1.97	3.74	2.17	7.48	6.30	5.91	1.77	1.97	#4	3	7.09
	5-7	6.89	0.98	2.17	4.33	2.91	7.48	8.07	7.87	2.17	2.36	#4	4	9.25
	5-12	9.06	1.38	2.36	5.91	4.09	14.57	11.22	9.84	2.56	2.83	#4	5	12.01
	5-19	11.42	1.57	2.95	7.09	5.31	18.50	14.37	11.81	3.15	3.43	#5	6	15.16
	5-22	12.40	1.77	3.35	7.48	5.91	18.90	15.55	14.17	3.35	3.62	#5	6	16.34
	5-31	14.57	2.17	3.74	9.06	6.77	21.65	18.50	15.75	3.94	4.21	#5	8	19.29
	5-37	15.94	2.36	4.13	9.45	7.40	22.44	20.08	16.54	4.72	5.00	#7	7	21.06
	5-43	17.32	2.36	4.33	10.24	8.50	26.77	21.65	18.90	5.12	5.39	#7	8	22.83
	5-55	19.69	2.76	5.12	11.42	9.06	26.77	24.41	21.26	5.51	5.91	#7	9	25.79
0.6" Strand	6-1	2.95	0.59	1.97	2.09	0.71	2.76	3.15	3.54	1.18	1.38	#3	2	4.13
	6-2	4.33	0.59	1.97	3.54	1.97	7.48	5.12	5.91	1.77	1.97	#4	3	5.91
	6-3	5.31	0.79	1.97	3.74	2.20	7.48	6.30	5.91	1.77	1.97	#4	3	7.28
	6-4	6.30	0.98	2.17	4.33	2.56	7.48	7.48	7.87	1.97	2.17	#4	4	8.27
	6-7	8.07	1.38	2.36	5.31	3.31	11.42	10.24	9.84	2.36	2.64	#4	5	11.02
	6-12	10.63	1.57	2.95	6.69	4.65	18.11	13.58	11.81	3.15	3.43	#5	6	14.37
	6-19	13.39	1.97	3.74	7.87	5.91	23.23	17.32	13.78	3.74	4.02	#5	9	18.11
	6-22	14.57	2.17	3.94	8.66	6.77	27.17	18.50	15.75	4.33	4.61	#5	8	19.49
	6-31	17.13	2.56	4.72	10.24	7.56	27.17	22.05	18.90	5.12	5.39	#7	8	23.23
	6-37	18.90	2.76	5.31	11.02	8.46	32.68	24.02	21.26	5.51	5.91	#7	9	25.20
	6-43	20.47	2.95	5.71	11.81	9.69	37.40	25.59	25.20	5.91	6.30	#8	8	27.17
	6-55	22.83	3.54	6.30	13.39	10.94	37.40	29.13	24.80	6.69	7.09	#8	9	30.71

Notes:
- Other sizes available on request.
- Anchorage spacings are in accordance with test requirements of FIP (Recommendations for Acceptance of Post-Tensioning Systems: March 1992). For proper design and detailing of anchorage zones and related reinforcement, refer to the VSL Publication *Detailing for Post-Tensioning*.

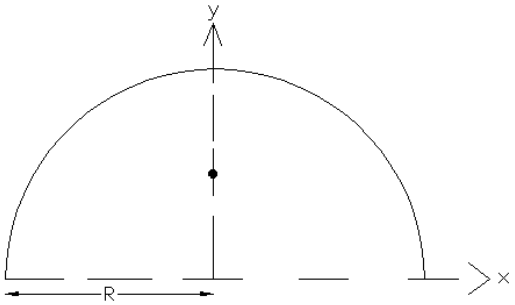
Dimensions are valid for:
- Nominal minimum concrete cylinder strength at 28 days: 4000 psi (28 MPa).
- Maximum prestressing force may be applied when concrete reaches a cylinder strength of 3,500 psi (24 MPa).
- Temporary overstressing to 80% of Guaranteed Ultimate Tensile Strength.
- Yield strength of spiral reinforcement: Grade 60 (400 MPa).
- Information for other concrete strength and conditions are available from your local VSL Representative.
- Large bearing plates are available where bearing stress is arbitrarily limited to 3,000 psi (21 MPa) with the tendon locked off at 70% Guaranteed Ultimate Tensile Strength.
- Spiral reinforcement shall be centered on the anchorage assembly and be placed directly behind the bearing plate.
- Additional orthogonal reinforcement may be required in the local anchorage zone as determined by design.

Gambar L.7 Spesifikasi *Stressing Anchorage VSL Type E*

LAMPIRAN 8

(PERHITUNGAN LUAS DAN MOMEN INERSIA PROFIL BAJA KHUSUS)

L.5 Perhitungan Luas dan Momen Inersia Baja Profil Khusus



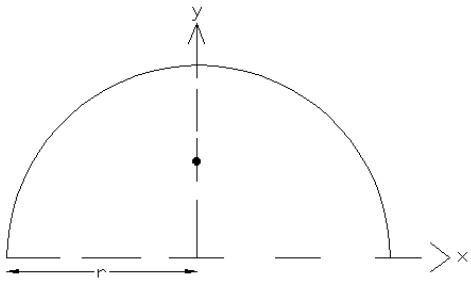
Gambar L.8.1 Letak Titik Berat ½ Lingkaran Besar

Rumus :

Luas ½ lingkaran, $A_1 = ½.\pi.R^2$

Titik berat x, $x_1 = 0$

Titik berat y, $y_1 = \frac{4R}{3\pi}$



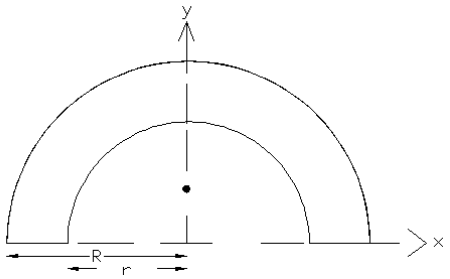
Gambar L.8.2 Letak Titik Berat ½ Lingkaran Kecil

Luas ½ lingkaran, $A_2 = ½.\pi.r^2$

Titik berat x, $x_2 = 0$

Titik berat y, $y_2 = \frac{4r}{3\pi}$

Maka, titik berat ½ lingkaran berongga seperti pada gambar di bawah:



Gambar L.8.3 Letak Titik Berat ½ Lingkaran Berongga

$x_p = 0$

$$y_p = \frac{A_1.y_1 - A_2.y_2}{A_1 - A_2}$$

$$= \frac{\frac{1}{2}.\pi.R^2.\left(\frac{4R}{3\pi}\right) - \frac{1}{2}.\pi.r^2.\left(\frac{4r}{3\pi}\right)}{\frac{1}{2}.\pi.R^2 - \frac{1}{2}.\pi.r^2}$$

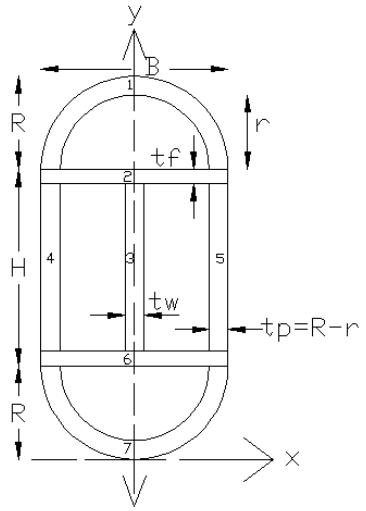
$$= \frac{\left(\frac{2R^3}{3}\right) - \left(\frac{2r^3}{3}\right)}{\frac{1}{2}.\pi.\left(R^2 - r^2\right)} = \frac{\frac{2}{3}\left(R^3 - r^3\right)}{\frac{1}{2}.\pi.\left(R^2 - r^2\right)} = \frac{4}{3}.\frac{\left(R^3 - r^3\right)}{\pi.\left(R^2 - r^2\right)}$$

Dan rumus momen inersia penampang ½ lingkaran berongga ;

$I_{xp} = \left(0{,}1098.(R^4 - r^4)\right) - \left(0{,}283.R^2.r^2.(R-r)/(R+r)\right)$

$I_{yp} = \pi.(R^4 - r^4)/8$

Maka, perhitungan luas (A_0) dan momen inersia dari profil, sebagai berikut :



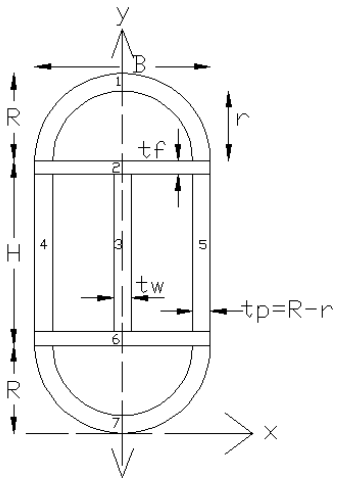
	$\mathbf{A_i}$	$\mathbf{x_i}$
1	$\frac{1}{2}.\pi.(R^2 - r^2)$	0
2	$B.t_f$	0
3	$(H - 2.t_f).t_w$	0
4	$(H - 2.t_f).(R-r)$	0
5	$(H - 2.t_f).(R-r)$	0
6	$B.t_f$	0
7	$\frac{1}{2}.\pi.(R^2 - r^2)$	0

Dari tabel di atas, didapat nilai titik berat profil baja khusus, x_0 , dengan rumus sebagai berikut :

$$x_0 = \frac{\Sigma A_i.x_i}{\Sigma A_i} = 0$$

Dan rumus luas profil baja khusus, A_0 sebagai berikut :

$A_o = A_1 + A_2 + A_3 + A_4 + A_5 + A_6 + A_7$



	$\mathbf{A_i}$	$\mathbf{y_i}$
1	½. π .($R^2 - r^2$)	$\left[H + R + \frac{4}{3.\pi}.\frac{(R^3 - r^3)}{(R^2 - r^2)}\right]$
2	B.t_f	$\left[R + \left(H - \frac{1}{2}t_f\right)\right]$
3	(H - 2.t_f).t_w	$\left[R + \frac{1}{2}H\right]$
4	(H - 2.t_f).(R–r)	$\left[R + \frac{1}{2}H\right]$
5	(H - 2.t_f).(R–r)	$\left[R + \frac{1}{2}H\right]$
6	B.t_f	$\left[R + \frac{1}{2}.t_f\right]$
7	½. π .($R^2 - r^2$)	$\left[R - \frac{4}{3.\pi}.\frac{(R^3 - r^3)}{(R^2 - r^2)}\right]$

Dari tabel di atas, didapat nilai titik berat profil baja khusus, y_0 , dengan rumus sebagai berikut :

$$y_0 = \frac{\Sigma A_i . y_i}{\Sigma A_i}$$

Perhitungan momen inersia I_x dari profil baja khusus :

	$\mathbf{I_{xi}}$	$\mathbf{A_i .(y_i-y_0)^2}$
1	$\left(0{,}1098.(R^4-r^4)\right)-\left(0{,}283.R^2.r^2.(R-r)/(R+r)\right)$	$\frac{1}{2}.\pi.(R^2-r^2)\left(H+R+\frac{4}{3.\pi}.\frac{(R^3-r^3)}{(R^2-r^2)}-y_0\right)^2$
2	$\frac{1}{12}.\mathrm{B.t_f^3}$	$B.t_f.\left[R+\left(H-\frac{1}{2}t_f\right)-y_0\right]^2$
3	$\frac{1}{12}.\mathrm{t_w.(H-2t_f)^3}$	$\left(H-2.t_f\right).t_w\left[\left(R+\frac{1}{2}H\right)-y_0\right]^2$
4	$\frac{1}{12}.\mathrm{(R-r).(H-2t_f)^3}$	$\left(H-2.t_f\right).(R-r).\left[\left(R+\frac{1}{2}H\right)-y_0\right]^2$
5	$\frac{1}{12}.\mathrm{(R-r).(H-2t_f)^3}$	$\left(H-2.t_f\right).(R-r).\left[\left(R+\frac{1}{2}H\right)-y_0\right]^2$
6	$\frac{1}{12}.\mathrm{B.t_f^3}$	$B.t_f.\left[\left(R+\frac{1}{2}t_f\right)-y_0\right]^2$
7	$\left(0{,}1098.(R^4-r^4)\right)-\left(0{,}283.R^2.r^2.(R-r)/(R+r)\right)$	$\frac{1}{2}.\pi.(R^2-r^2)\left(\left(R-\left(\frac{4}{3.\pi}.\frac{(R^3-r^3)}{(R^2-r^2)}\right)\right)-y_0\right)^2$

Maka, $\mathbf{I_x = I_{xi} + A_i.(y_i-y_0)^2}$

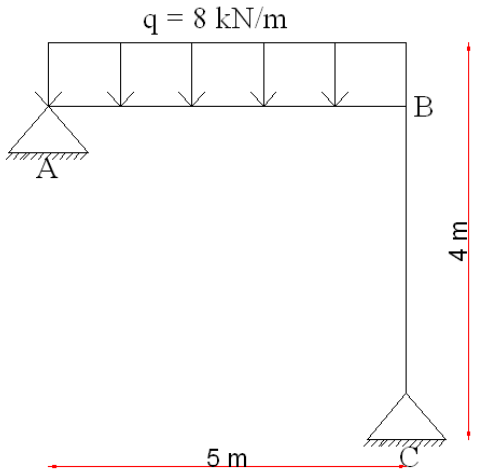
Perhitungan momen inersia I_y dari profil baja khusus :

	$\mathbf{I_{yi}}$	$\mathbf{A_i .(x_i-x_0)^2}$
1	$\pi.(R^4-r^4)/8$	0
2	$\frac{1}{12}.\mathrm{B^3.t_f}$	0
3	$\frac{1}{12}.\mathrm{t_w^3.(H-2t_f)}$	0
4	$\frac{1}{12}.\mathrm{(R-r)^3.(H-2t_f)}$	0
5	$\frac{1}{12}.\mathrm{(R-r)^3.(H-2t_f)}$	0
6	$\frac{1}{12}.\mathrm{B^3.t_f}$	0
7	$\pi.(R^4-r^4)/8$	0

Maka, rumus $\mathbf{I_y = I_{yi} + A_i.(x_i - x_0)^2 = I_{yi}}$

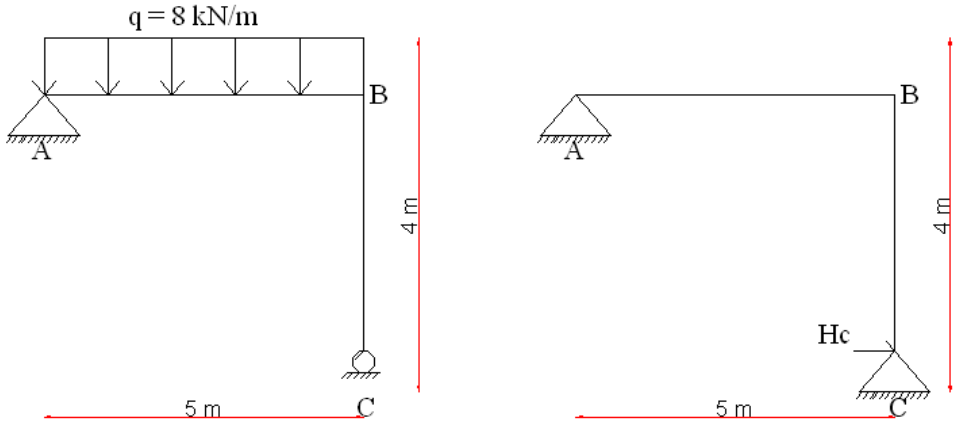
LAMPIRAN 9

(VERIFIKASI *SOFTWARE*)



Gambar L.9.1 Gambar Portal

Penyelesaian :



Gambar L.9.2 Gambar Portal Dengan Kelebihan Gaya Hc =1

Struktur primer :

$\Sigma Mc = 0$

$V_A.5 - 8.5.\ \frac{5}{2}. = 0$

$V_A = 20$ kN

$\Sigma V = 0$

$V_A + Vc\ - 8.5 = 0$

$Vc = 20$ kN

Kelebihan Gaya Hc = 1 kN

$\Sigma M_A = 0$

$-V_C.5 - 1.4 = 0$; $V_C = -0{,}8$ kN

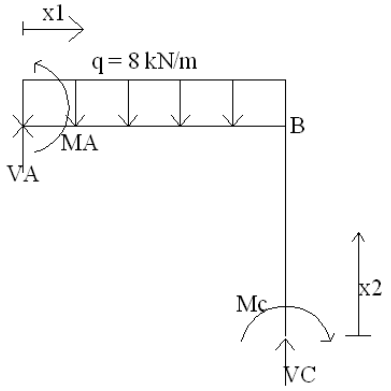
$\Sigma V = 0$

$V_A + Vc = 0$

$V_A = -0{,}8$ kN

$\Sigma H = 0$

$H_A + 1 = 0$; $H_A = -1$ kN

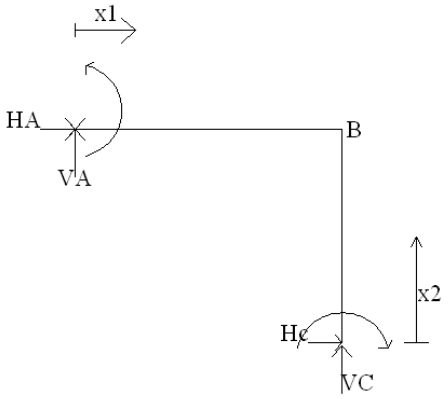


$0 \le x1 \le 5$

$M_1 = V_A.x1 - q.x1.\ \frac{x1}{2} = 20.x1 - 4x1^2$

$0 \le x2 \le 4$

$M_2 = 0$



$0 \le x1 \le 5$

$m_1 = V_A.x1 = 0{,}8.x1$

$0 \le x2 \le 4$

$m_2 = Hc\ .x2 = 1.x2$

Persamaan Kompatibilitas

$0 = \Delta_c + H_c.f_{cc}$

Menghitung Δ_c

$$\Delta_c = \int_0^l \frac{M.m}{EI}.dx = \int_0^5 \frac{M_1.m_1}{EI}.dx \int_0^4 \frac{M_2.m_2}{EI}.dx$$

$$= \int_0^5 \frac{(20.x_1 - 4x1^2)(0{,}8.x1)}{EI}.dx1 + \int_0^4 \frac{(0).(1.x_2)}{EI}.dx2$$

$$= \int_0^5 \frac{(16x1^2 - 3{,}2.x_1^3)}{EI}.dx1 + 0$$

$$\Delta_c = \frac{1}{EI}\left[\frac{16}{3}x1^3 - 0{,}8x1^4\right]_0^5 = \frac{165{,}555}{EI}$$

$$f_{cc} = \int_0^l \frac{m.m}{EI}.dx = \int_0^5 \frac{m_1.m_1}{EI}.dx \int_0^4 \frac{m_2.m_2}{EI}.dx$$

$$= \int_0^5 \frac{(0{,}8x_1).(0{,}8x_1)}{EI}.dx1 + \int_0^4 \frac{(1.x_2).(1.x_2)}{EI}.dx2$$

$$= \int_0^5 \frac{(0{,}64.x_1^{\,2})}{EI}.dx1 + \int_0^4 \frac{x_2^{\,2}}{EI}.dx2$$

$$f_{cc} = \frac{1}{EI}\left[\frac{0{,}64}{3}x1^3\right]_0^5 + \frac{1}{EI}\left[\frac{1}{3}x2^3\right]_0^4$$

$$= \frac{48}{EI}$$

$$0 = \Delta_c + H_c.f_{cc}$$

$$0 = \frac{165{,}555}{EI} + H_c.\frac{48}{EI}$$

H_c = -3,448 kN

$\Sigma H = 0$

$H_A - H_c = 0$

H_A = 3,448 kN

$\Sigma M_A = 0$

$-V_c.5 + H_c.4 + 8.5.\frac{5}{2} = 0$

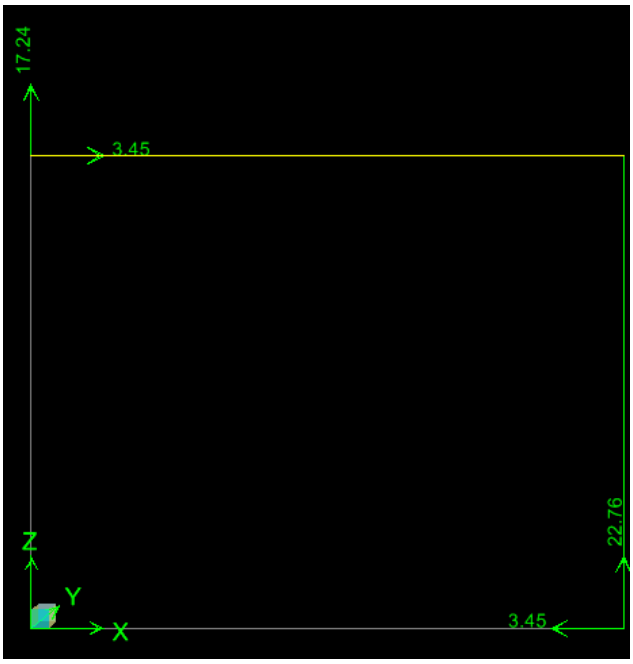
V_c = 22,758 kN

$\Sigma V = 0$

$V_A + V_c - 8.5 = 0$

V_A = 17,242 kN

	Manual	**ETABS**
V_A	17,242	17,24
H_A	3,448	3,45
V_C	22,758	22,76
H_C	3,448	3,45



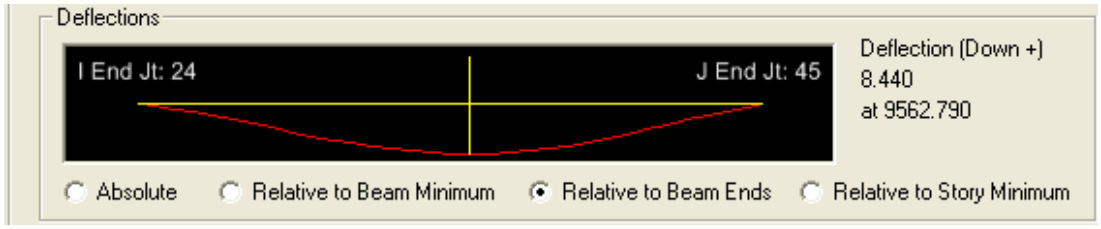
Gambar L.9. HASIL *ETABS*

LAMPIRAN 10

(LENDUTAN PADA BALOK BAJA PROFIL KHUSUS)

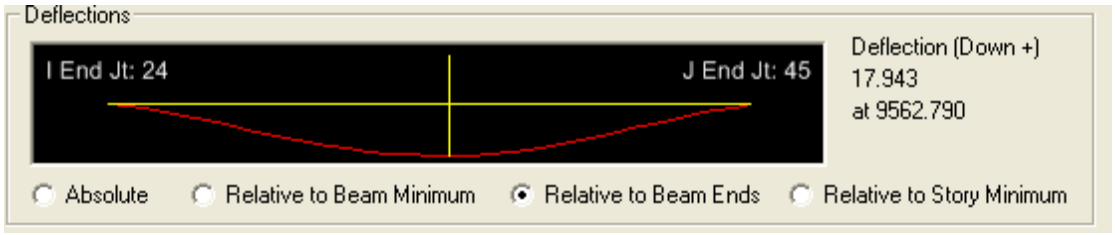
L.10 Lendutan pada Balok Baja Profil Khusus

Lendutan ijin (Δ_{ijin}) = L/ 240 = 18000/240 = 75 mm



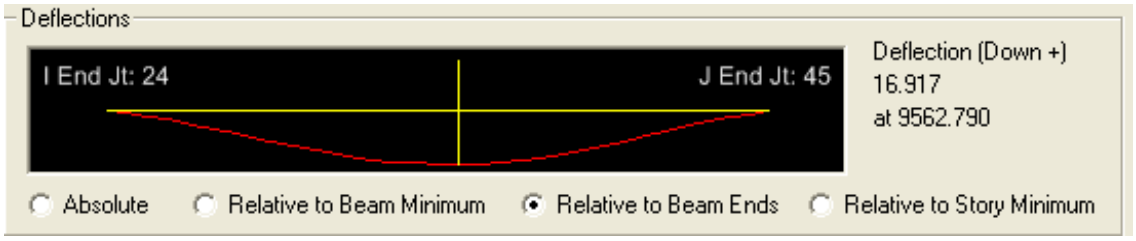
Gambar L.10.1 Lendutan pada Lantai 9

Δ = 8,440 mm < Δ_{ijin} = 75 mm (OK)



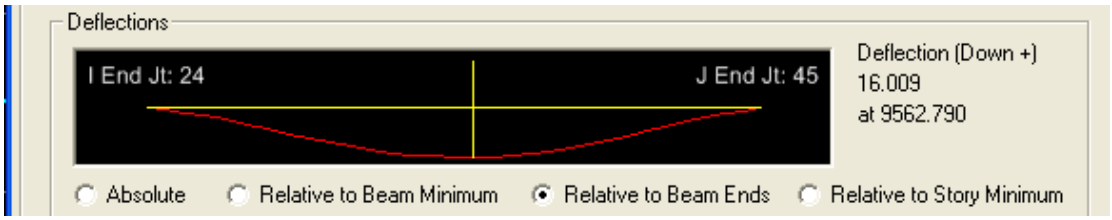
Gambar L.10.2 Lendutan pada Lantai 7

Δ = 17,943 mm < Δ_{ijin} = 75 mm (OK)



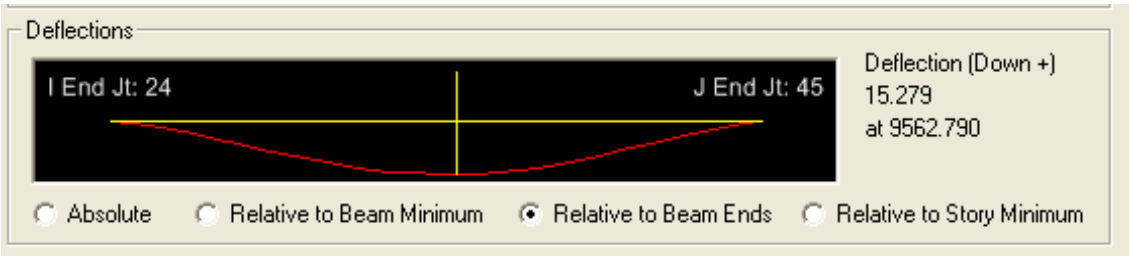
Gambar L.10.3 Lendutan pada Lantai 5

Δ = 16,917 mm < Δ_{ijin} = 75 mm (OK)



Gambar L.10.4 Lendutan pada Lantai 3

Δ = 16,009 mm < Δ_{ijin} = 75 mm (OK)



Gambar L.10.5 Lendutan pada Lantai 1

Δ = 15,279 mm < Δ_{ijin} = 75 mm (OK)