

LAMPIRAN

Lampiran 1. Tabel gaya aksial rangka utama

Nama Bagian Jembatan	Nama Batang	Gaya Aksial (kN)	
Rangka Utama	A1	-967	Tekan
	A2	408	Tarik
	B1	-967	Tekan
	B2	-679	Tekan
	B3	933	Tarik
	C1	408	Tekan
	C2	933	Tekan
	C3	-843	Tarik
	C4	657	Tekan
	D1	-843	Tarik
	D2	-679	Tarik
	D3	-1281	Tarik
	D4	810	Tekan
	E1	657	Tekan
	E2	810	Tekan
	E3	-443	Tarik
	E4	1458	Tekan
	F1	-443	Tarik
	F2	-1281	Tarik
	F3	-1497	Tarik
	F4	413	Tekan
	G1	1458	Tekan
	G2	576	Tekan
	G3	408	Tekan
	G4	852	Tekan

Lampiran 2. Tabel data perencanaan

Nama Batang	Profil (mm)					Baut (mm)					Pelat Sambung (MPa)						
	H	B	h	b	A	P	D	D'	D'	n	S	Sl	St	t	Fy	Fu	
Rangka Utama	A1	400	350	12	12	17424	8731	22	24	26	20	90	120	50	10	355	490
	A2	350	350	9	9	12276	7000	22	24	26	16	80	90	50	10	355	490
	B1	400	350	12	12	17424	8731	22	24	26	20	90	120	50	10	355	490
	B2	400	350	12	12	17424	7000	22	24	26	20	90	120	50	10	355	490
	B3	350	350	16	9	12462	8731	22	24	26	14	75	150	75	10	355	490
	C1	350	350	9	9	12276	7000	22	24	26	16	80	90	50	10	355	490
	C2	350	350	16	9	12462	8731	22	24	26	14	75	150	75	10	355	490
	C3	350	300	16	9	12462	8731	22	24	26	12	75	150	75	10	355	490
	C4	350	350	9	9	12276	7000	22	24	26	16	80	90	50	10	355	490
	D1	350	300	16	9	12462	8731	22	24	26	12	75	150	75	10	355	490
	D2	400	350	12	12	17424	7000	22	24	26	20	90	120	50	10	355	490
	D3	400	350	12	12	17424	7000	22	24	26	20	90	120	50	10	355	490
	D4	350	350	16	9	12462	8731	22	24	26	20	75	150	75	10	355	490
	E1	350	350	9	9	12276	7000	22	24	26	16	80	90	50	10	355	490
	E2	350	350	16	9	12462	8731	22	24	26	20	75	150	75	10	355	490
	E3	350	250	9	12	12462	8731	22	24	26	10	75	120	65	10	355	490
E4	350	350	9	9	12276	7000	22	24	26	20	80	90	50	10	355	490	
F1	350	250	9	12	12462	8731	22	24	26	10	75	120	65	10	355	490	
F2	400	350	12	12	17424	7000	22	24	26	20	90	120	50	10	355	490	
F3	400	350	12	12	17424	7000	22	24	26	20	90	120	50	10	355	490	
F4	350	350	16	9	8934	8731	22	24	26	16	80	90	50	10	355	490	
G1	350	350	9	9	12276	7000	22	24	26	20	80	90	50	10	355	490	
G2	350	350	16	9	8934	8731	22	24	26	16	80	90	50	10	355	490	
G3	350	350	16	9	8934	8731	22	24	26	16	80	90	50	10	355	490	
G4	350	350	9	9	12276	7000	22	24	26	16	80	90	50	10	355	490	

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Nama Batang	Profil (mm)					Baut (mm)					Pelat Sambung (MPa)						
	H	B	h	b	A	P	D	D'	D'	n	S	S1	St	t	Fy	Fu	
Cross girder	CGB1	1100	500	28	26	55144	4900	16	18	20	10	70	60	40	13	355	490
	CGB2	1100	500	28	26	55144	4900	20	22	24	10	70	60	40	13	355	490
	CGB3	1100	400	28	26	49544	4900	20	22	24	10	70	60	40	13	355	490
	CGB4	1100	500	28	26	55144	4900	20	22	24	10	70	60	40	13	355	490
	CGA1	350	350	19	12	17044	4900	20	22	24	8	70	60	40	13	355	490

Nama Batang	Profil (mm)						Baut (mm)					Pelat Sambung (MPa)					
	H	B	h	b	A	P	D	D'	D'	n	S	S1	St	t	Fy	Fu	
<i>Longitudinal girder</i>	LGB1	700	350	16	28	29904	4900	20	22	24	10	70	60	40	13	355	490
	LGB2	700	350	16	28	29904	4900	20	22	24	10	70	60	40	13	355	490
	LGB3	700	350	16	28	29904	4900	20	22	24	10	70	60	40	13	355	490

Nama Batang	Profil (mm)					Baut (mm)					Pelat Sambung (Mpa)						
	IL	UB	h	b	A	I'	D	D'	D'	n	S	S1	St	t	Fy	Fu	
Bracing	BB1	150	150	10	7	3910	4000	16	18	20	8	60	80	35	10	355	490
	BB2	150	150	10	7	3910	4000	16	18	20	8	60	80	60	10	355	490
	BB3	150	150	10	7	3910	4000	16	18	20	8	60	80	60	10	355	490
	BA1	150	150	10	7	3910	4000	16	18	20	8	60	80	60	10	355	490
	BA2	150	150	10	7	3910	4000	16	18	20	8	60	80	60	10	355	490
	BA3	150	150	10	7	3910	4000	16	18	20	8	60	80	60	10	355	490
	IA1	150	150	10	7	3910	4000	16	18	20	8	60	80	60	10	355	490
	IA2	150	150	10	7	3910	4000	16	18	20	8	60	80	60	10	355	490

Lampiran 3. Hasil Perencanaan Sambungan Geser

Nama Batang		Sambungan Geser (R_n)			Pu	Ket $R_n \geq P_u$	
		Kuat Geser Baut	Slip Kritis	Kuat Tumpu			Kuat Geser Blok
Rangka Utama	A1	2604,9	1498,38	3757,32	1757,475	967	Aman
	A2	2083,92	1198,71	2981,16	1382,025	408	Aman
	B1	2604,9	1498,38	3757,32	1757,475	967	Aman
	B2	2604,9	1498,38	3757,32	1757,475	679	Aman
	B3	1823,43	1048,866	2716,56	1389,937	933	Aman
	C1	2083,92	1198,71	2981,16	1382,025	408	Aman
	C2	1823,43	1048,866	2716,56	1389,937	933	Aman
	C3	1562,94	899,028	2328,48	1270,125	843	Aman
	C4	2083,92	1198,704	2981,16	1382,025	657	Aman
	D1	1562,94	899,028	2328,48	1270,125	843	Aman
	D2	2604,9	1498,38	3757,32	1757,475	679	Aman
	D3	2604,9	1498,38	3757,32	1757,475	1281	Aman
	D4	2604,9	1498,38	1940,4	1150,3125	810	Aman
	E1	2083,92	1198,704	2981,16	1382,025	657	Aman
	E2	2604,9	1498,38	1940,4	1150,3125	810	Aman
	E3	1302,45	749,19	1940,4	1024,0875	443	Aman
	E4	2604,9	1498,38	3757,32	1509,825	1458	Aman
	F1	1302,45	749,19	1940,4	1024,0875	443	Aman
	F2	2604,9	1498,38	3757,32	1757,475	1281	Aman
	F3	2604,9	1498,38	3757,32	1757,475	1497	Aman
	F4	2083,92	1198,704	2981,16	1382,025	413	Aman
	G1	2604,9	1742,46	3757,32	1509,825	1458	Aman
	G2	2083,92	1393,97	2981,16	1382,025	576	Aman
	G3	2083,92	1198,704	2981,16	1382,025	408	Aman
	G4	1393,968	1198,704	1842,7	1382,025	852	Aman

Nama Batang		Sambungan Geser (R_n)				Vu	Ket $R_n \geq P_u$
		Kuat Geser Baut	Slip Kritis	Kuat Tumpu	Kuat Geser Blok		
<i>Cross girder</i>	CGB1	1076,235	749,19	2155,608	962,1885	585	Aman
	CGB2	1076,235	749,19	2155,608	962,1885	474	Aman
	CGB3	1076,235	749,19	2155,608	962,1885	187	Aman
	CGB4	1076,235	749,19	2155,608	962,1885	70	Aman
	CGA1	860,988	599,352	1696,968	1033,851	55	Aman

Nama Batang		Sambungan Geser (R_n)				Pu	Ket $R_n \geq P_u$
		Kuat Geser Baut	<i>Kritis</i> <i>Slip</i>	Kuat Tumpu	Kuat Geser Blok		
<i>Longitudinal Girder</i>	LGB1	1291,482	728,172	2614,24	1208,7075	585	Aman
	LGB2	1721,976	970,896	3531,52	1443,7605	938	Aman
	LGB3	1937,223	1092,25	4321,8	1876,896	1001	Aman

Nama Batang		Sambungan Geser (R_n)				Pu	Ket $R_n \geq P_u$
		Kuat Geser Baut	<i>Kritis</i> <i>Slip</i>	Kuat Tumpu	Kuat Geser Blok		
<i>Bracing</i>	BB1	551,142	309,168	1067,22	411,6	96	Aman
	BB2	551,142	309,168	1067,22	411,6	134	Aman
	BB3	551,142	309,168	1067,22	411,6	185	Aman
	BA1	551,142	309,168	1067,22	411,6	94	Aman
	BA2	551,142	309,168	1067,22	411,6	163	Aman
	BA3	551,142	309,168	1067,22	411,6	234	Aman
	IA1	551,142	309,168	1067,22	411,6	147	Aman
	IA2	551,142	309,168	1067,22	411,6	227	Aman

Lampiran 4. Hasil Perencanaan Batang Tekan dan Batang Tarik

Nama Batang	b/t(mm)			Ket	KL/r		Ket	Batang Tekan			Ket $R_n \geq P_u$
	Sayap	π	Badan	π	KL/r	π		Tekuk Lentur	Tekuk Torsi	P_u	
A1	25,17	47,46	31,33	47,46	Inelastis	62,175	159,68	Inelastis	4162,415	967	Aman
B1	25,17	47,46	31,33	47,46	Inelastis	62,175	159,68	Inelastis	4162,415	967	Aman
B2	27,17	47,46	33,33	47,46	Inelastis	49,848	159,68	Inelastis	4617,98	679	Aman
C3	9,375	18,99	35,33	50,52	Inelastis	114,85	159,68	Inelastis	1473,128	843	Aman
D1	9,375	18,99	35,33	50,52	Inelastis	114,85	159,68	Inelastis	1473,128	843	Aman
D2	27,17	47,46	33,33	47,46	Inelastis	49,848	159,68	Inelastis	4617,98	679	Aman
D3	25,17	47,46	31,33	47,46	Inelastis	49,848	159,68	Inelastis	4617,98	1281	Aman
E3	10,42	18,99	36,22	50,52	Inelastis	147,58	159,68	Inelastis	639,614	443	Aman
F1	10,42	18,99	36,22	50,52	Inelastis	147,58	159,68	Inelastis	639,614	443	Aman
F2	25,17	47,46	31,33	47,46	Inelastis	49,848	159,68	Inelastis	4617,98	1281	Aman
F3	25,17	47,46	31,33	47,46	Inelastis	49,848	159,68	Inelastis	4617,98	1497	Aman

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Nama Batang	b/t(mm)			Ket	KL/r		Ket	Batang Tekan			Ket $R_n \geq P_u$
	Sayap	π	Badan	π	KL/r	π		Tekuk Lentur	Tekuk Torsi	P_u	
CGB1	8,93	15,8	40,2	42,1	Inelastis	47,579	111,795	Inelastis	14860,145	585	Aman
CGB2	8,93	15,8	40,2	42,1	Inelastis	47,579	111,795	Inelastis	14860,145	474	Aman
CGB3	7,14	15,8	40,2	42,1	Inelastis	62,949	111,795	Inelastis	11749,627	187	Aman
CGB4	7,14	15,8	40,2	42,1	Inelastis	62,949	111,795	Inelastis	11749,627	70	Aman
CGA1	9,21	15,8	26	42,1	Inelastis	54,892	111,795	Inelastis	4341,291	55	Aman


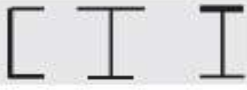






Cross
Girder

Nama Batang	b/t(mm)				Ket	KL/r		Batang Tekan			Ket $R_n \geq P_u$		
	Sayap	πr	Badan	πr		KL/r	πr	Tekuk Lentur	Tekuk Torsi	P_u			
<i>Longitudinal Girder</i>	LGB1	6,25	19	40,3	50,5	Inelastis	78,825	111,8	Inelastis	5987,44	7815,35	585	Aman
	LGB2	6,25	19	40,3	50,5	Inelastis	78,825	111,8	Inelastis	3724,28	7815,35	938	Aman
	LGB3	6,25	19	40,3	50,5	Inelastis	78,825	111,8	Inelastis	5987,44	7815,35	1001	Aman
Nama Batang	b/t(mm)				Ket	KL/r		Batang Tekan			Ket $R_n \geq P_u$		
	Sayap	πr	Badan	πr		KL/r	πr	Tekuk Lentur	Tekuk Torsi	P_u			
<i>Bracing</i>	BB1	7,5	18,99	18,57	50,52	Inelastis	105,425	111,795	Inelastis	541,497	963,7128	96	Aman
	BB2	7,5	18,99	18,57	50,52	Inelastis	105,425	111,795	Inelastis	541,497	963,7128	134	Aman
	BB3	7,5	18,99	18,57	50,52	Inelastis	105,425	111,795	Inelastis	541,497	963,7128	185	Aman
	BA1	8,75	18,99	22,14	50,52	Inelastis	90,603	111,795	Inelastis	790,072	1097,4537	94	Aman
	BA2	8,75	18,99	22,14	50,52	Inelastis	90,603	111,795	Inelastis	790,072	1097,4537	163	Aman
	BA3	8,333	18,99	22	50,52	Inelastis	78,772	111,795	Inelastis	1243,755	1555,9425	234	Aman
	IA1	7,5	18,99	18,57	50,52	Inelastis	105,425	111,795	Inelastis	541,497	963,7128	147	Aman
	IA2	7,5	18,99	18,57	50,52	Inelastis	105,425	111,795	Inelastis	541,497	963,7128	227	Aman

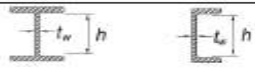



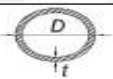
Nama Batang	Batang Tarik		Pu	Ket $R_n \geq P_u$
	P. Kotor	P. Berlubang		
A2	1922,42	2091,306	408	Aman
B3	1951,55	2205,7245	933	Aman
C1	1922,42	2091,306	408	Aman
C2	1951,55	2205,7245	933	Aman
C4	1922,42	2091,306	657	Aman
D4	1951,55	2205,7245	810	Aman
E1	1922,42	2091,306	657	Aman
E2	1951,55	2205,7245	810	Aman
E4	1922,42	2091,306	1458	Aman
F4	1399,06	1494,759	413	Aman
G1	1922,42	2091,306	1458	Aman
G2	1399,06	1494,759	413	Aman
G3	1399,06	1494,759	408	Aman
G4	1922,42	2091,306	852	Aman

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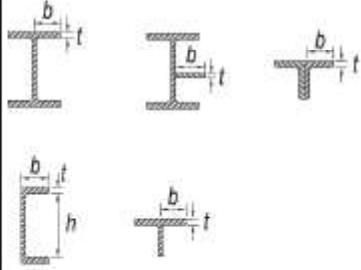
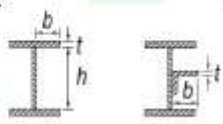
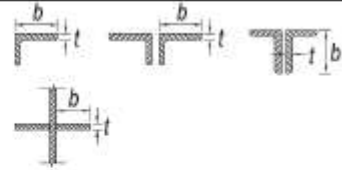

Lampiran 5 Tabel SNI 03 1729-2015

Penampang Melintang	Tanpa Elemen Langsing		Dengan Elemen Langsing	
	Penampang pada Bab E	Keadaan Batas	Penampang pada Bab E	Keadaan Batas
	E3 E4	FB TB	E7	LB FB TB
	E3 E4	FB FTB	E7	LB FB FTB
	E3	FB	E7	LB FB
	E3	FB	E7	LB FB
	E3 E4	FB FTB	E7	LB FB FTB
	E6 E3 E4	FB FTB	E6 E7	LB FB FTB
	E5		E5	
	E3	FB	N/A	N/A
Bentuk tidak smetris selain siku tunggal	E4	FTB	E7	LB FTB

FB = tekuk lentur, TB = tekuk torsi, FTB = tekuk torsi-lentur, LB = tekuk lokal

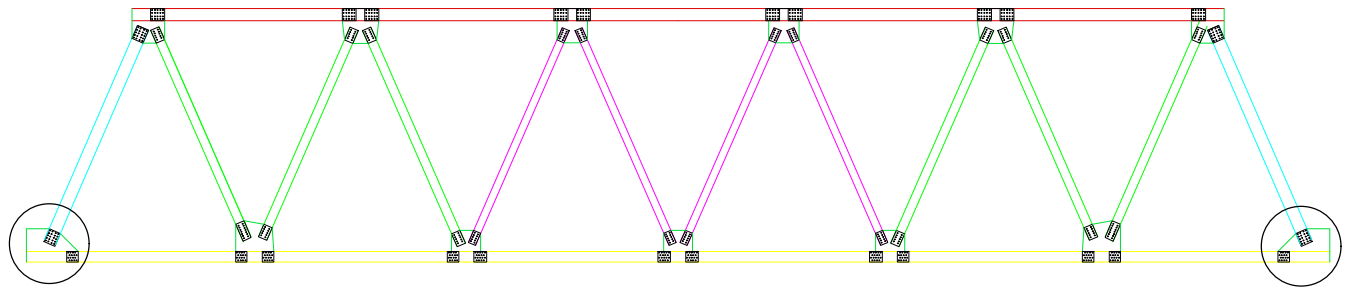
	Kasus	Deskripsi elemen	Rasio tebal-terhadap-lebar	Batasan rasio tebal-terhadap-lebar	Contoh
Elemen yang diperkaku	5	badan dari profil I simetris ganda dan kanal	b/t	$1,49 \sqrt{\frac{E}{F_y}}$	
	6	dinding PSB persegi dan boks dari ketebalan merata	b/t	$1,40 \sqrt{\frac{E}{F_y}}$	
	7	Pelat penutup sayap dan pelat diafragma antara deretan sarana penyambung atau las	b/t	$1,40 \sqrt{\frac{E}{F_y}}$	
	8	Semua elemen diperkaku lainnya	b/t	$1,49 \sqrt{\frac{E}{F_y}}$	
	9	PSB bulat	D/t	$0,11 \frac{E}{F_y}$	

Tabel B4.1a
Rasio Tebal-terhadap-Lebar: Elemen Tekan
Komponen Struktur yang Menahan Tekan Aksial

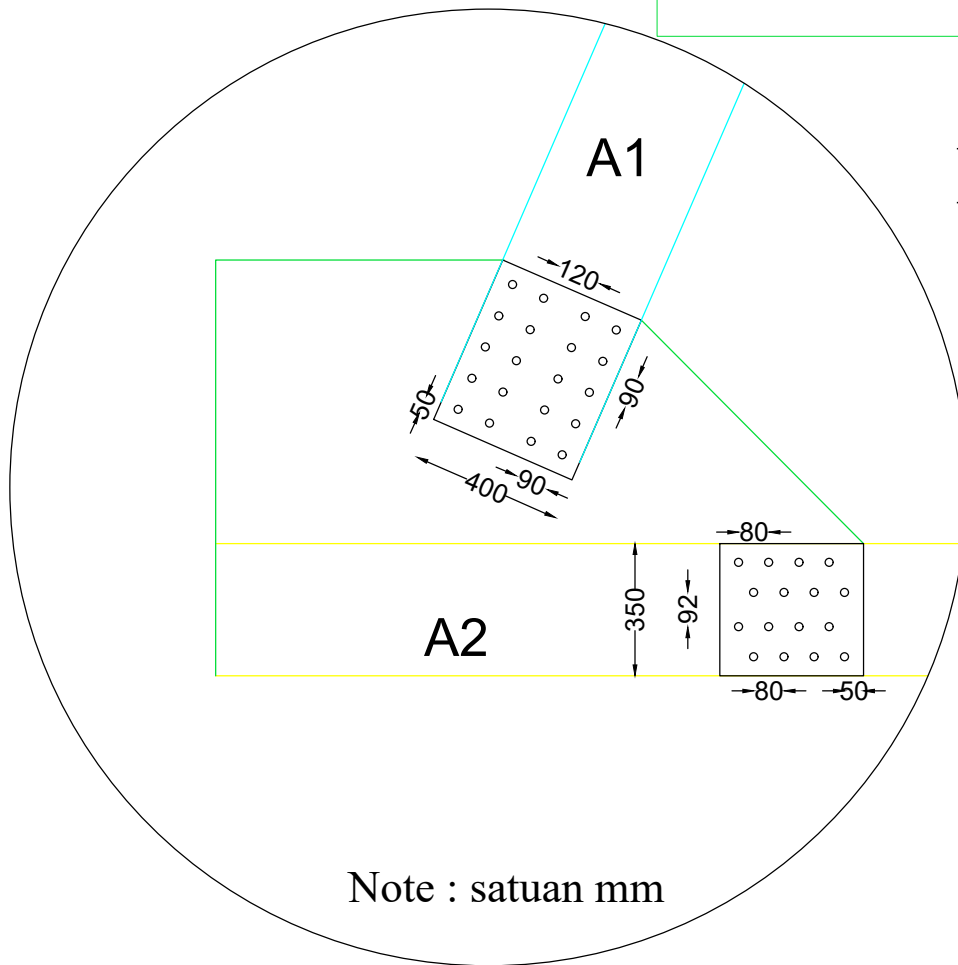
	Kasus	Deskripsi elemen	Rasio tebal-terhadap-lebar	Batasan rasio tebal-terhadap-lebar	Contoh
Elemen tanpa pengaku	1	Sayap dari Profil I canai panas, pelat yang diproyeksikan dari profil I canai panas; kaki berdiri bebas dari sepasang siku disambung dengan kontak menerus, sayap dari kanal, dan sayap dari T	b/t	$0,56\sqrt{E/F_y}$	
	2	Sayap dari profil I tersusun dan pelat atau kaki siku yang diproyeksikan dari profil I tersusun	b/t	$0,64\sqrt{\frac{k_c E^{[a]}}{F_y}}$	
	3	Kaki dari siku tunggal, kaki dari siku ganda dengan pemisah, dan semua elemen tak-diperkaku lainnya	b/t	$0,45\sqrt{\frac{E}{F_y}}$	
	4	stem dari T	b/t	$0,75\sqrt{\frac{E}{F_y}}$	

Lampiran 6 Hasil Desain dan Detail Sambungan Baut pada Jembatan

RANGKA UTAMA

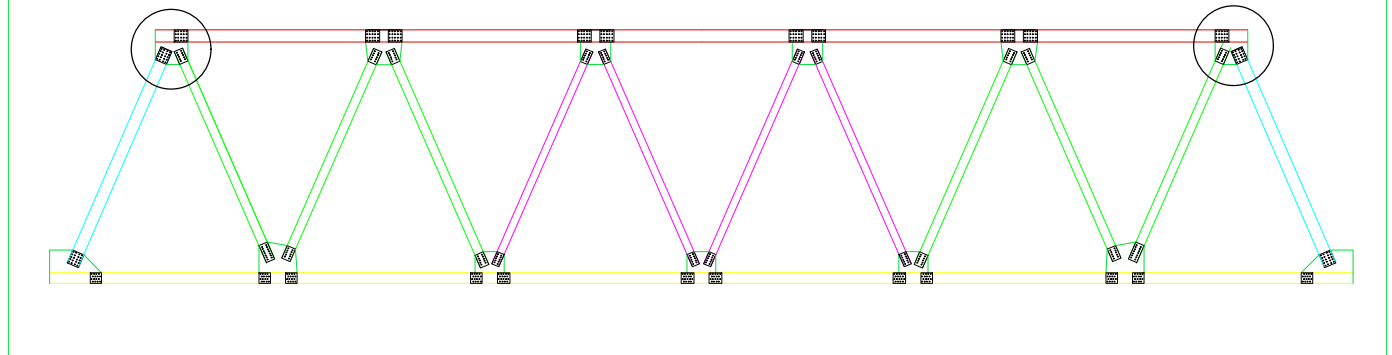


Detail Rangka Utama Batang A

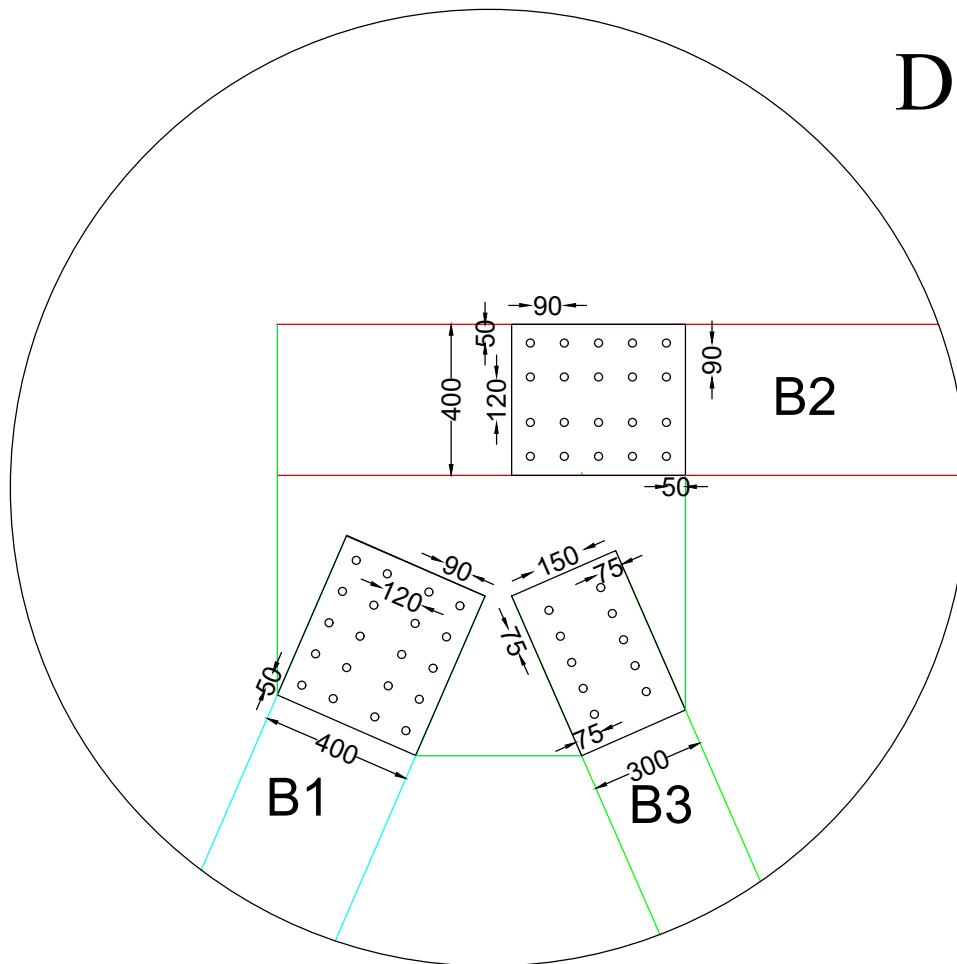


Skala 1 : 20

RANGKA UTAMA



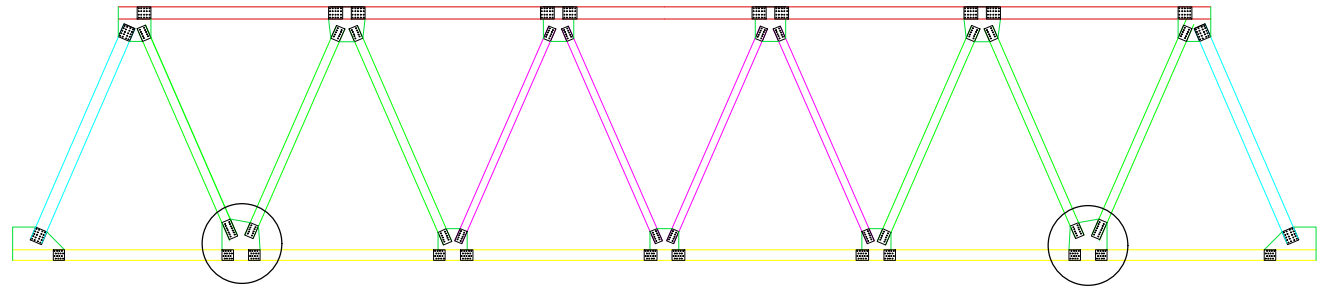
Detail Rangka Utama Batang B



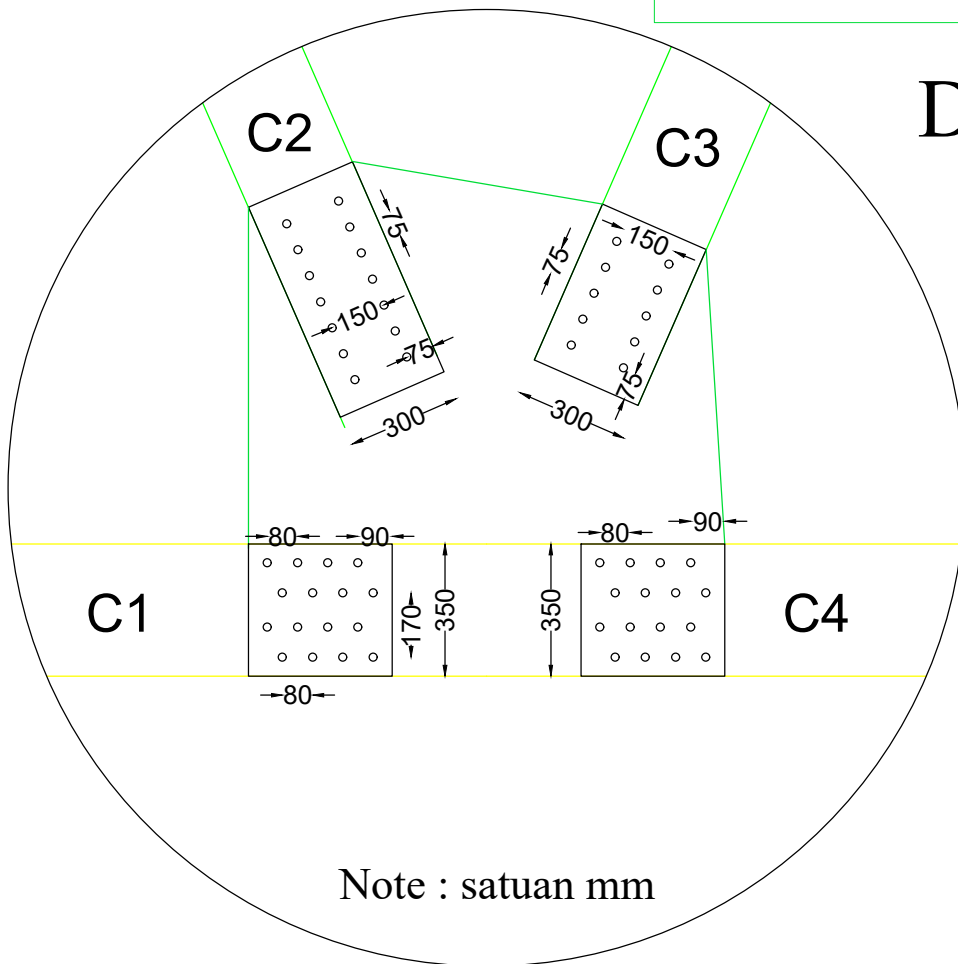
Skala 1 : 20

Note : satuan mm

RANGKA UTAMA

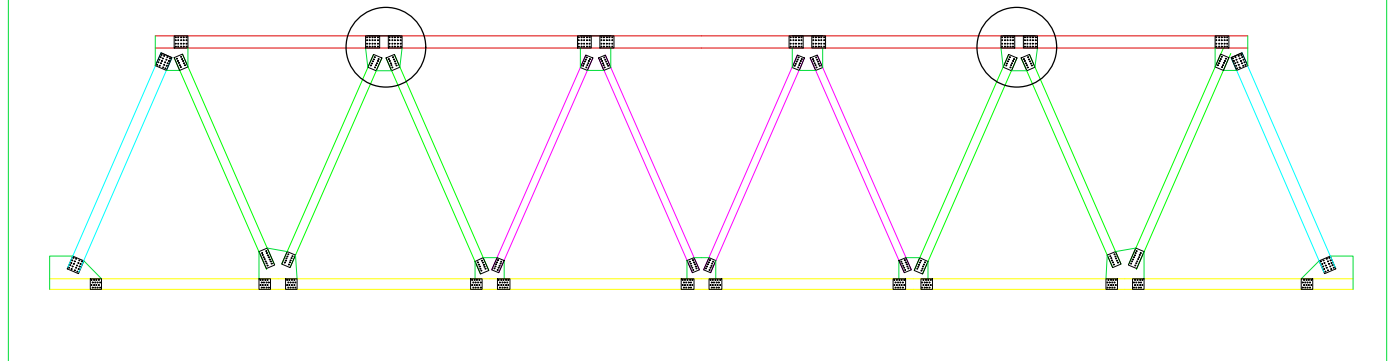


Detail Rangka Utama Batang C

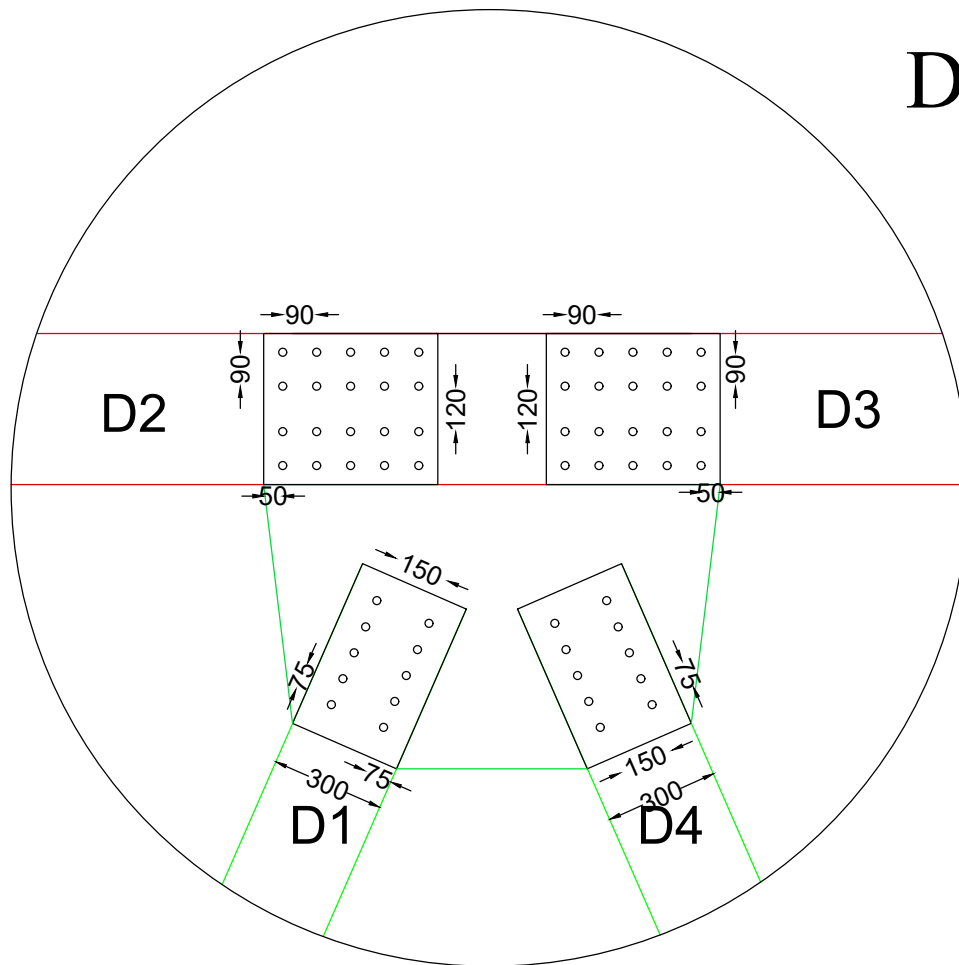


Skala 1 : 20

RANGKA UTAMA



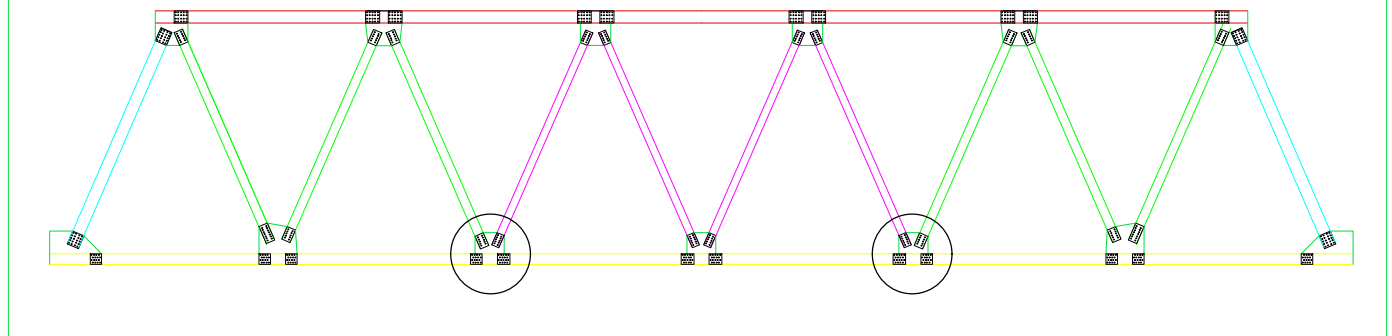
Detail Rangka Utama Batang D



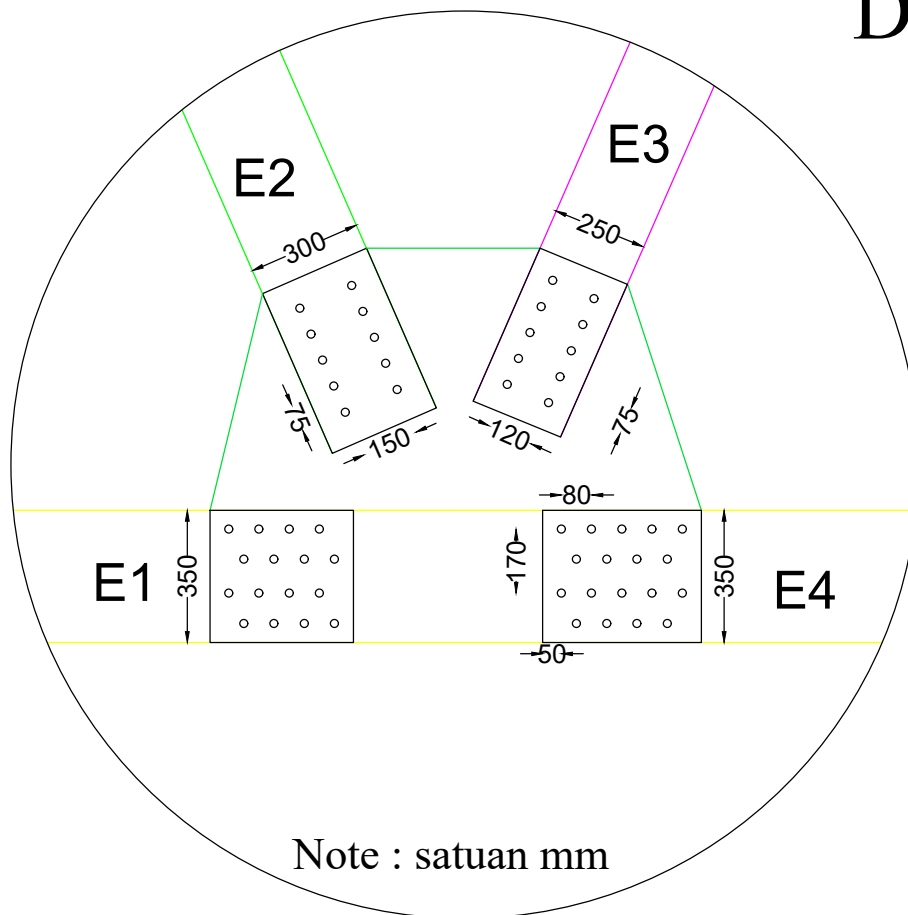
Skala 1 : 20

Note : satuan mm

RANGKA UTAMA

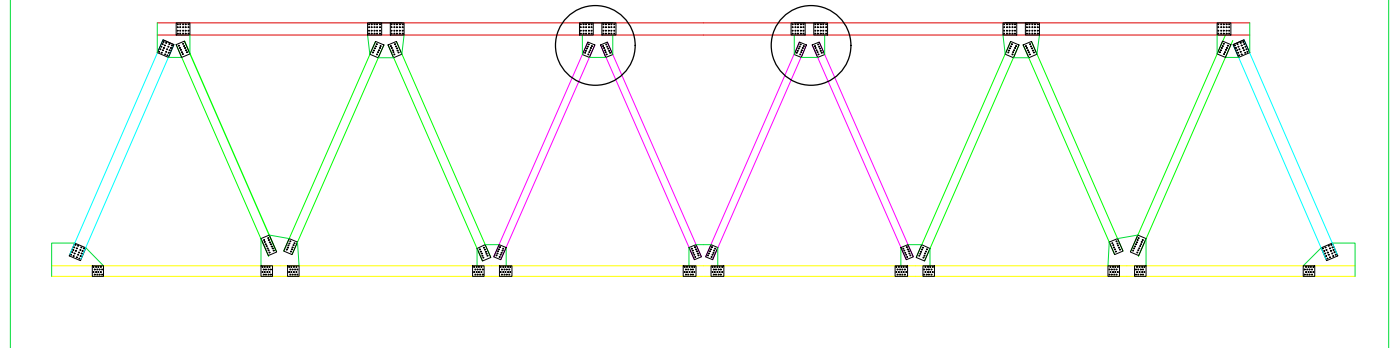


Detail Rangka Utama Batang E

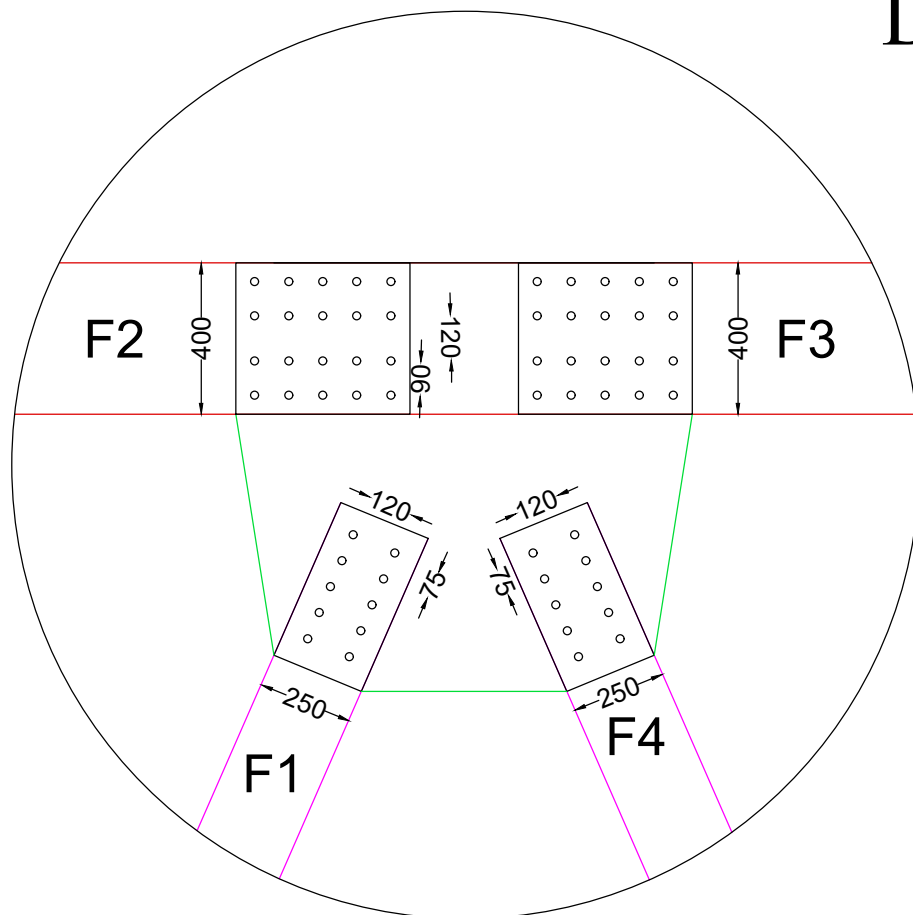


Skala 1 : 20

RANGKA UTAMA



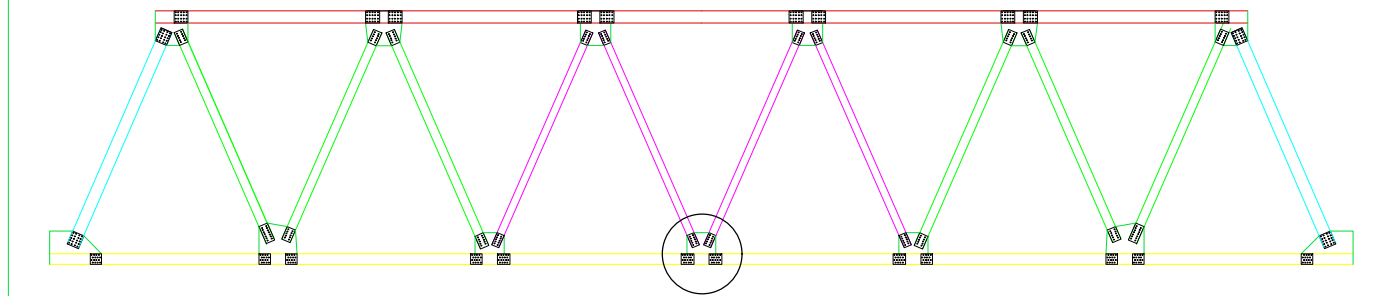
Detail Rangka Utama Batang F



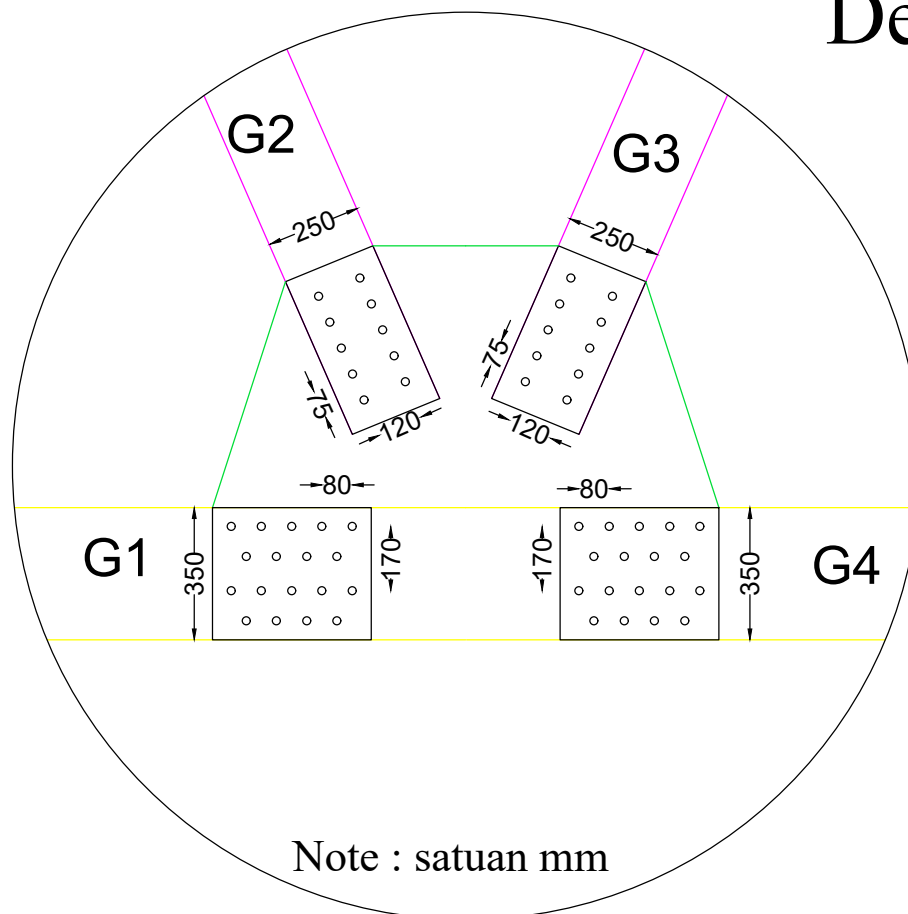
Skala 1 : 20

Note : satuan mm

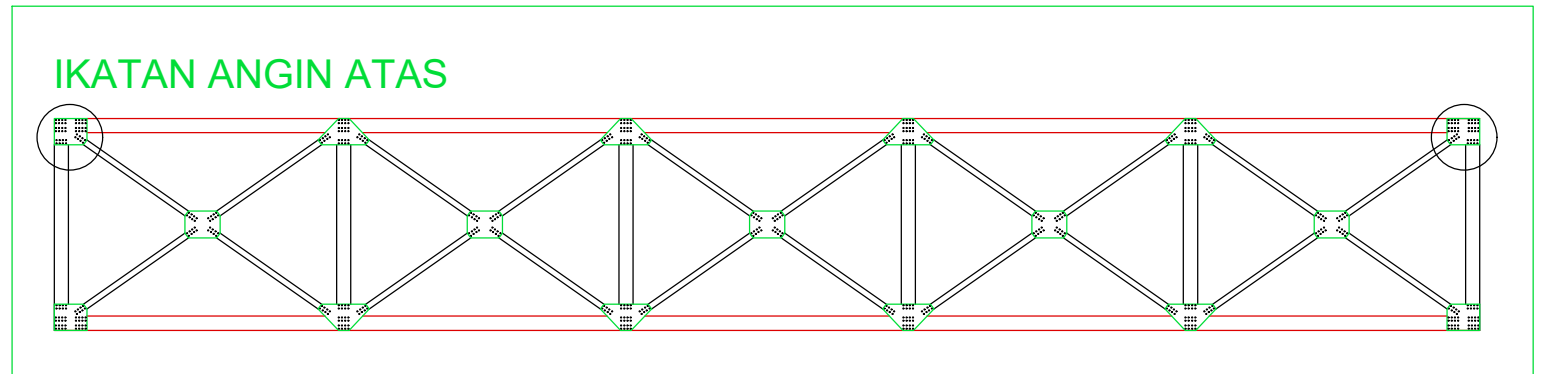
RANGKA UTAMA



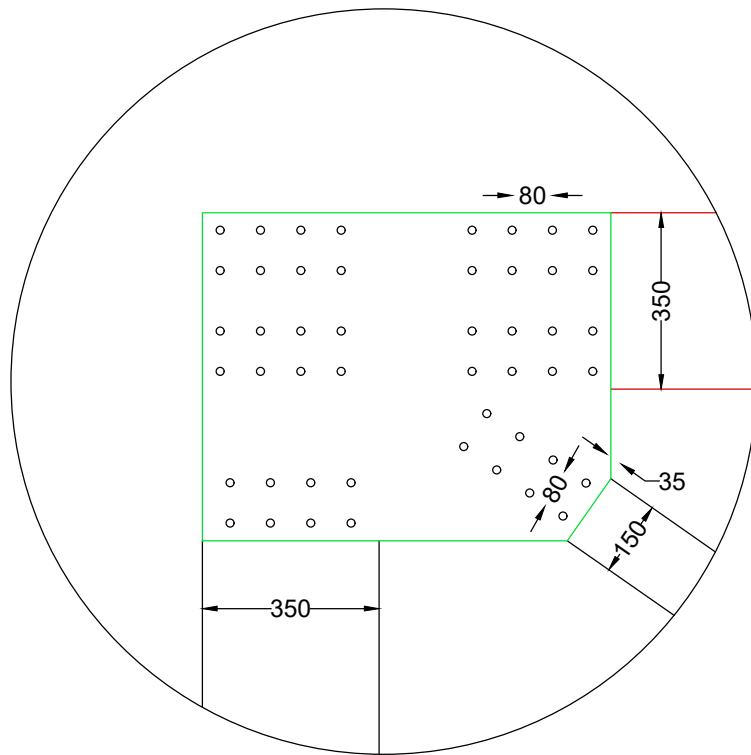
Detail Rangka Utama Batang G



Skala 1 : 20

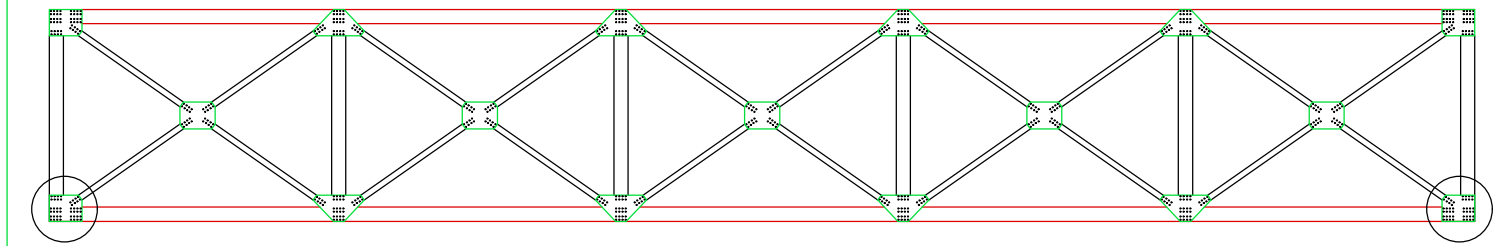


Ikatan Angin Atas Batang BA1

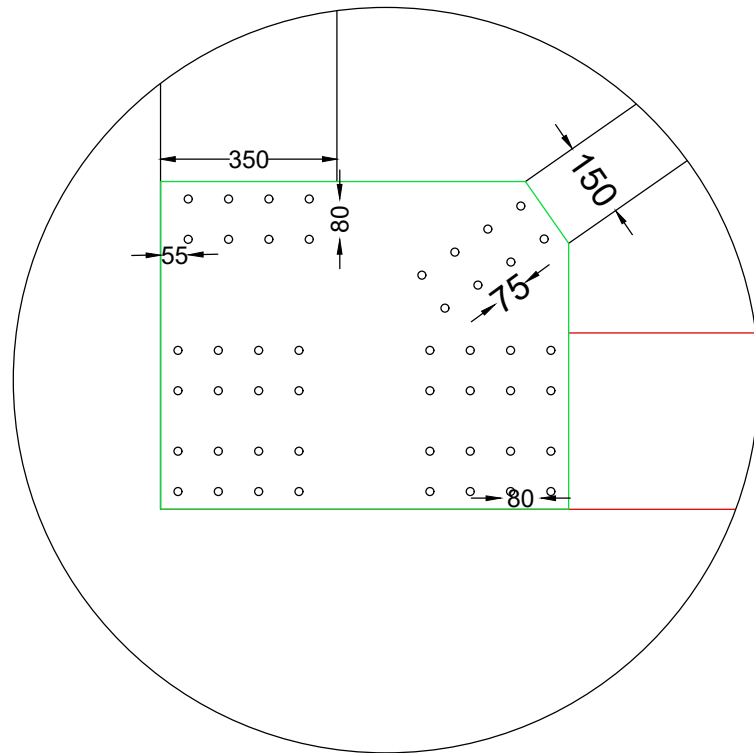


Skala 1 : 15 Note : satuan mm

IKATAN ANGIN ATAS

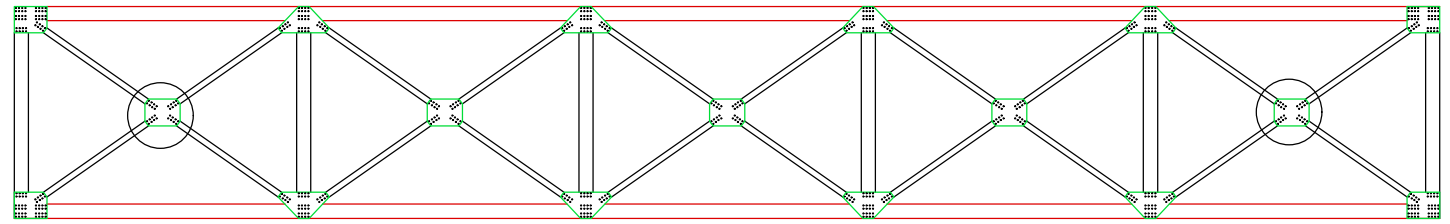


Ikatan Angin Atas Batang BA1

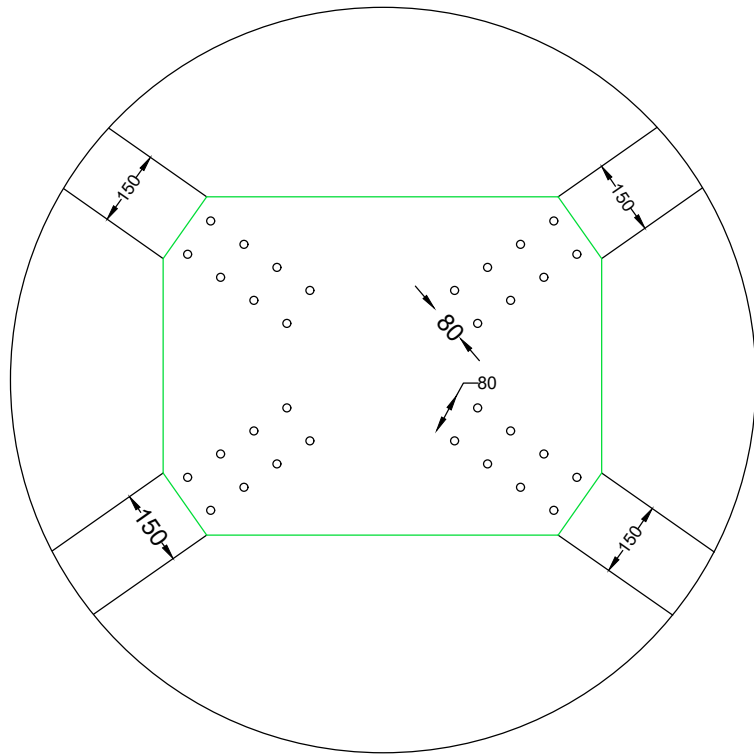


Skala 1 : 15 Note : satuan mm

IKATAN ANGIN ATAS

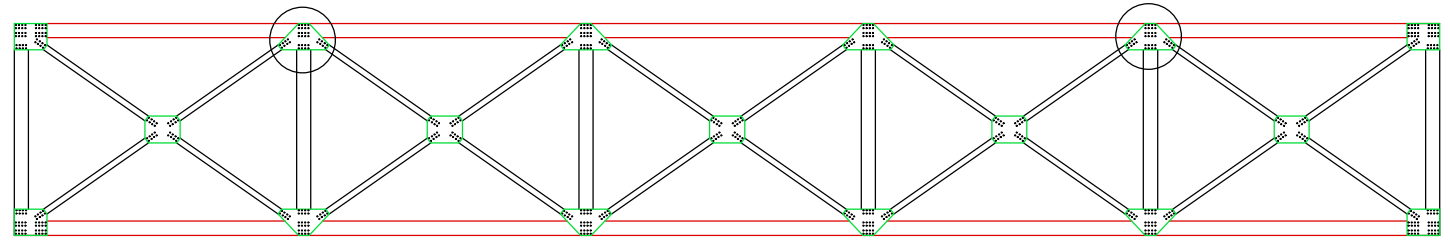


Ikatan Angin Atas Utama Batang BA1

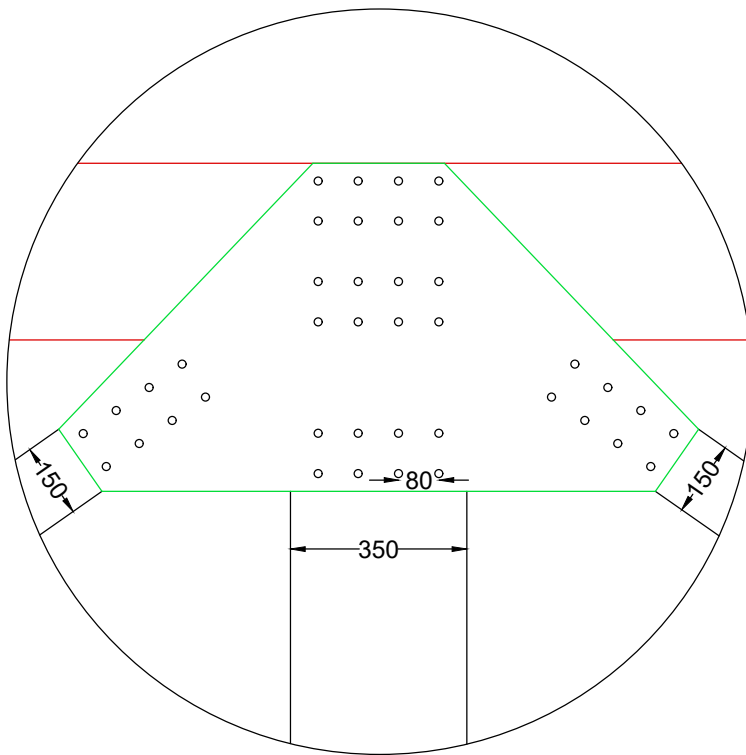


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IKATAN ANGIN ATAS

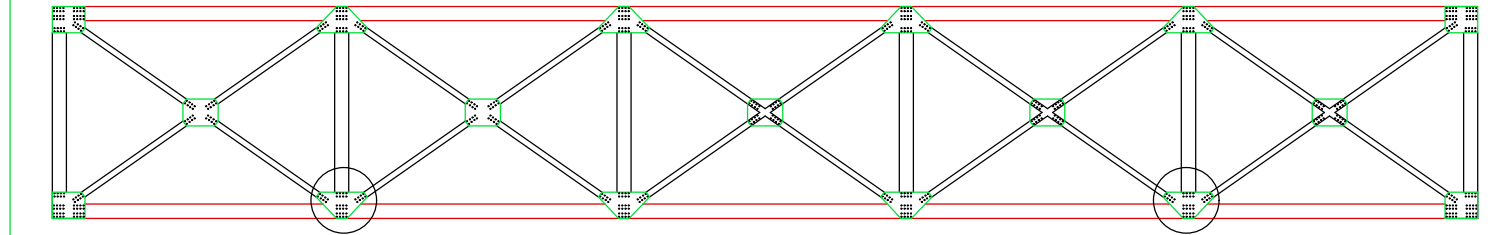


Ikatan Angin Atas Batang BA1-2

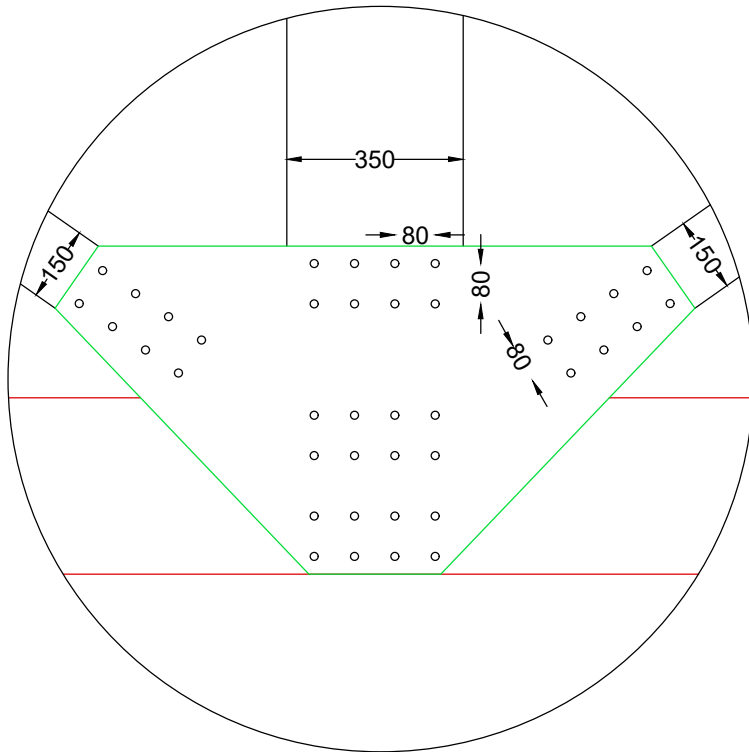


Skala 1 : 15 Note : satuan mm

IKATAN ANGIN ATAS

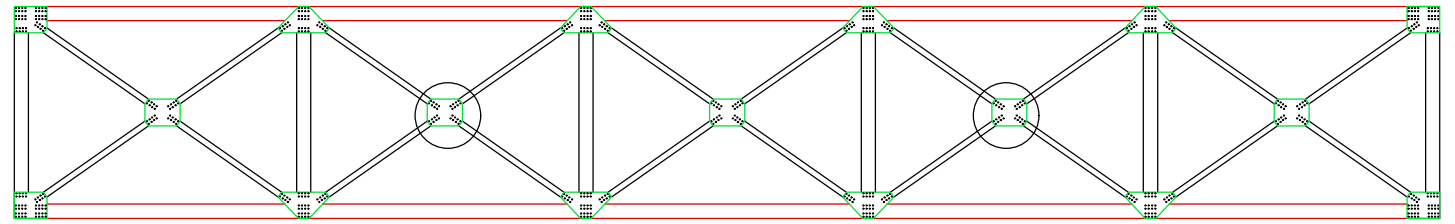


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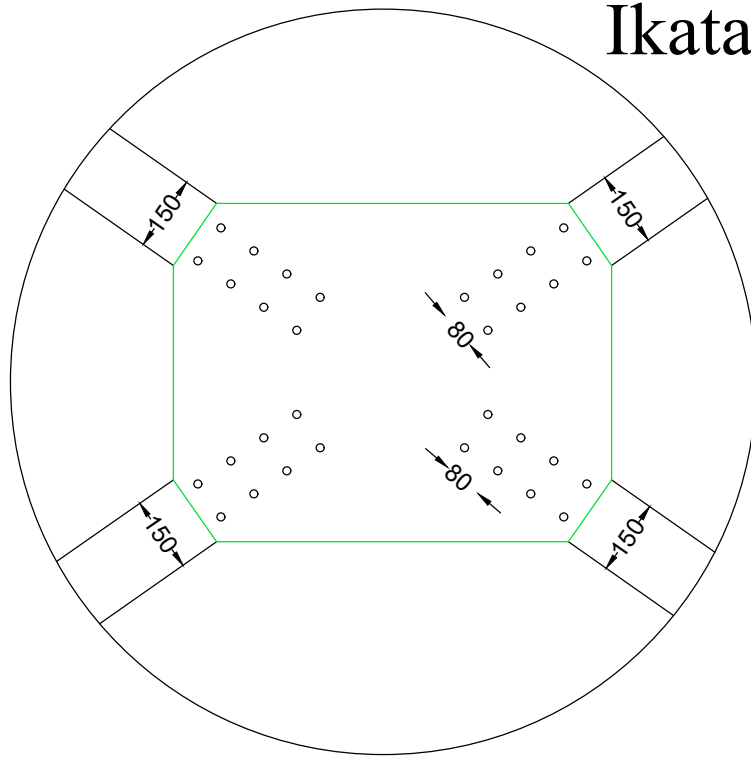


Skala 1 : 15 Note : satuan mm

IKATAN ANGIN ATAS

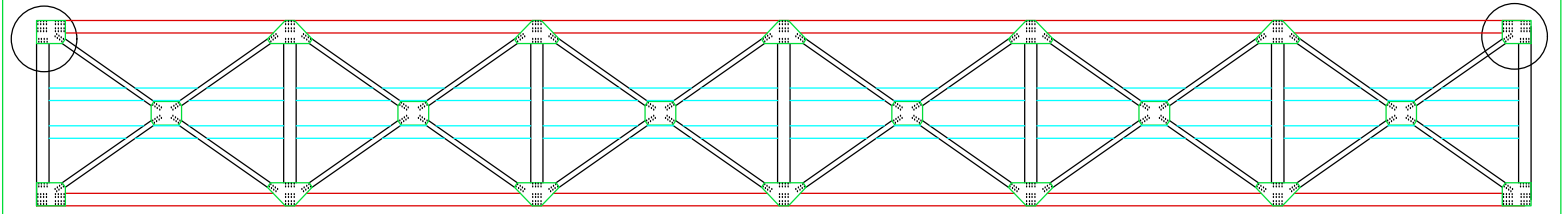


Ikatan Angin Atas Batang BA2

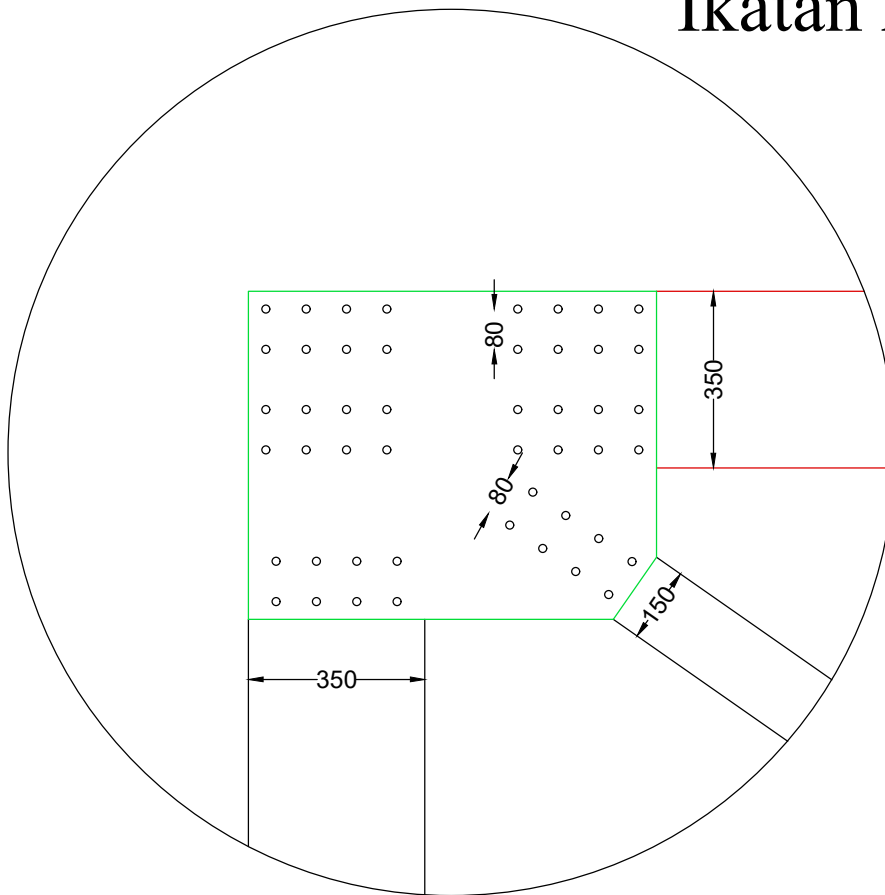


Skala 1 : 15 Note : satuan mm

IKATAN ANGIN BAWAH



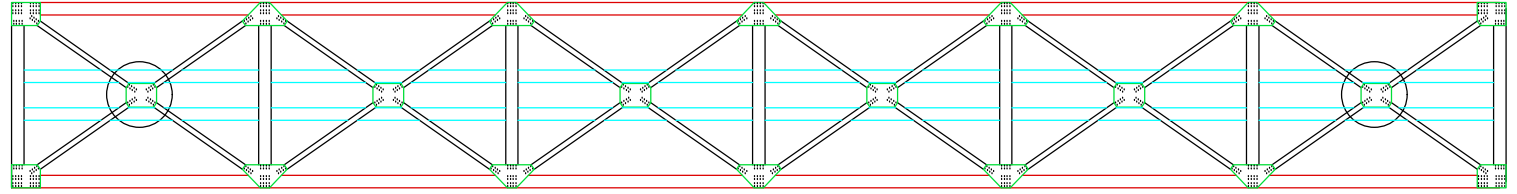
Ikatan Angin Bawah Batang BB1



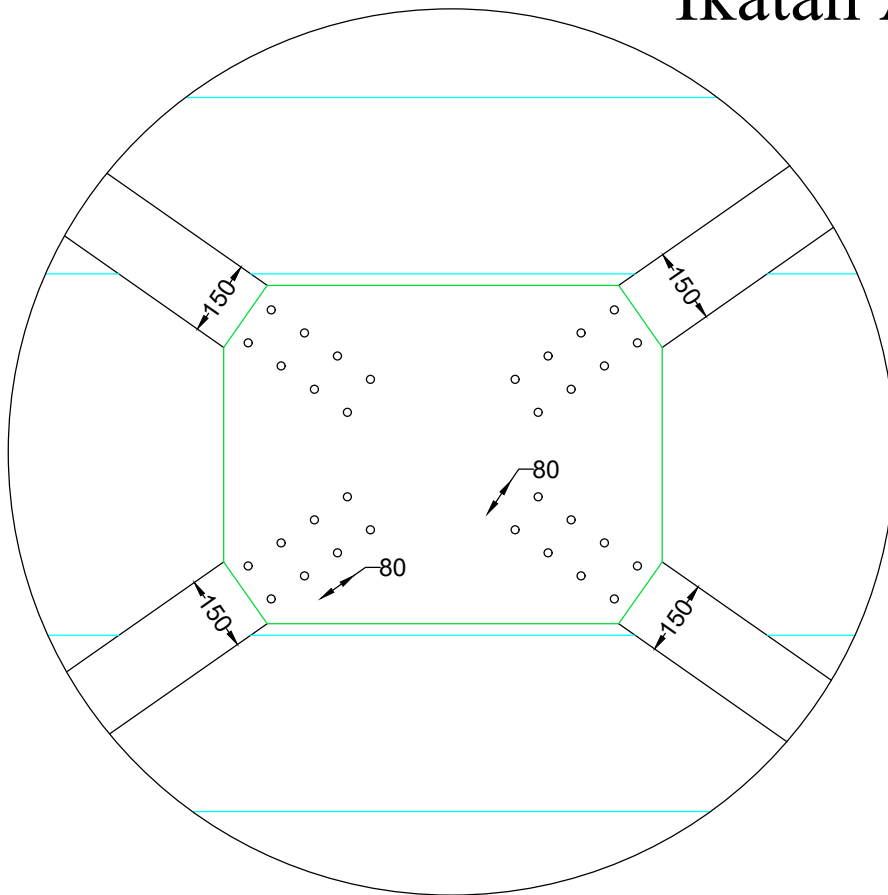
Skala 1 : 15

Note : satuan mm

IKATAN ANGIN BAWAH

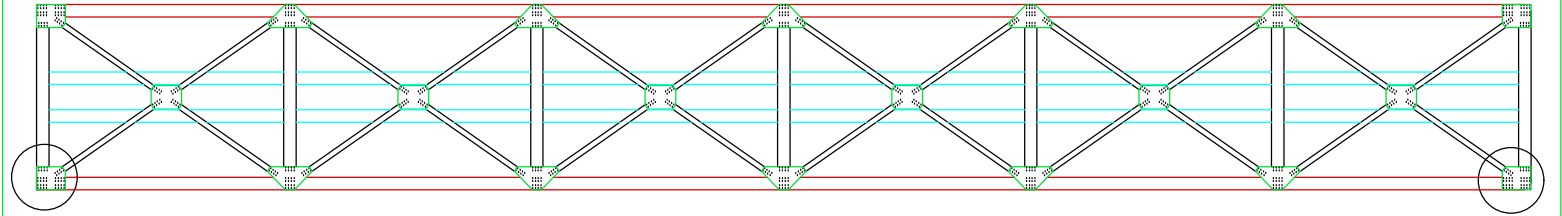


Ikatan Angin Bawah Batang BB1

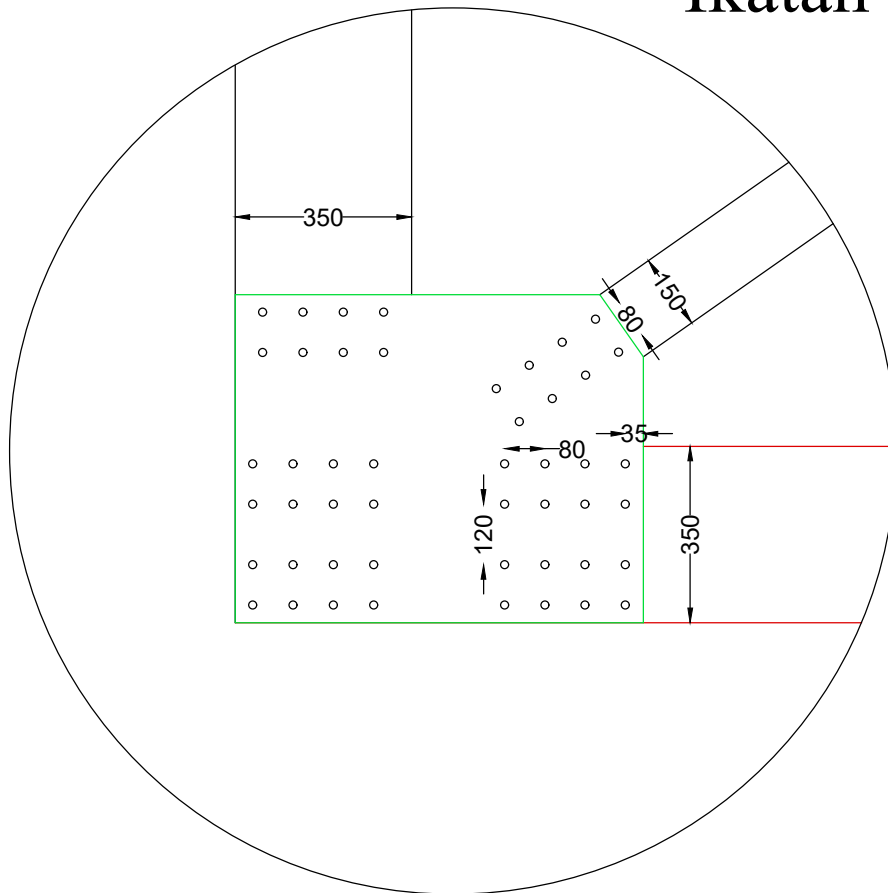


Skala 1 : 15 Note : satuan mm

IKATAN ANGIN BAWAH

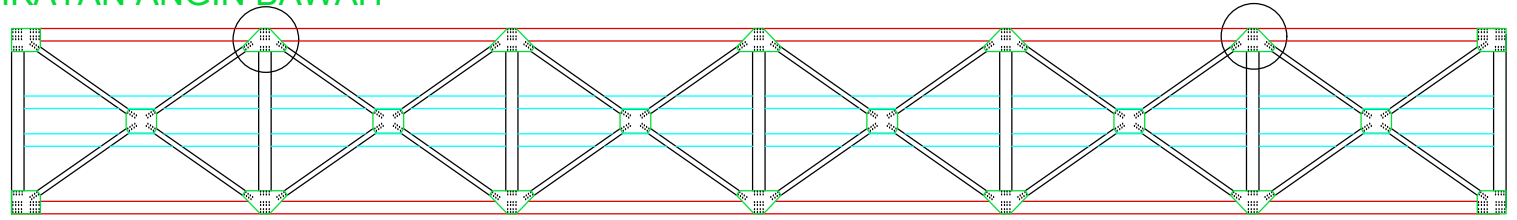


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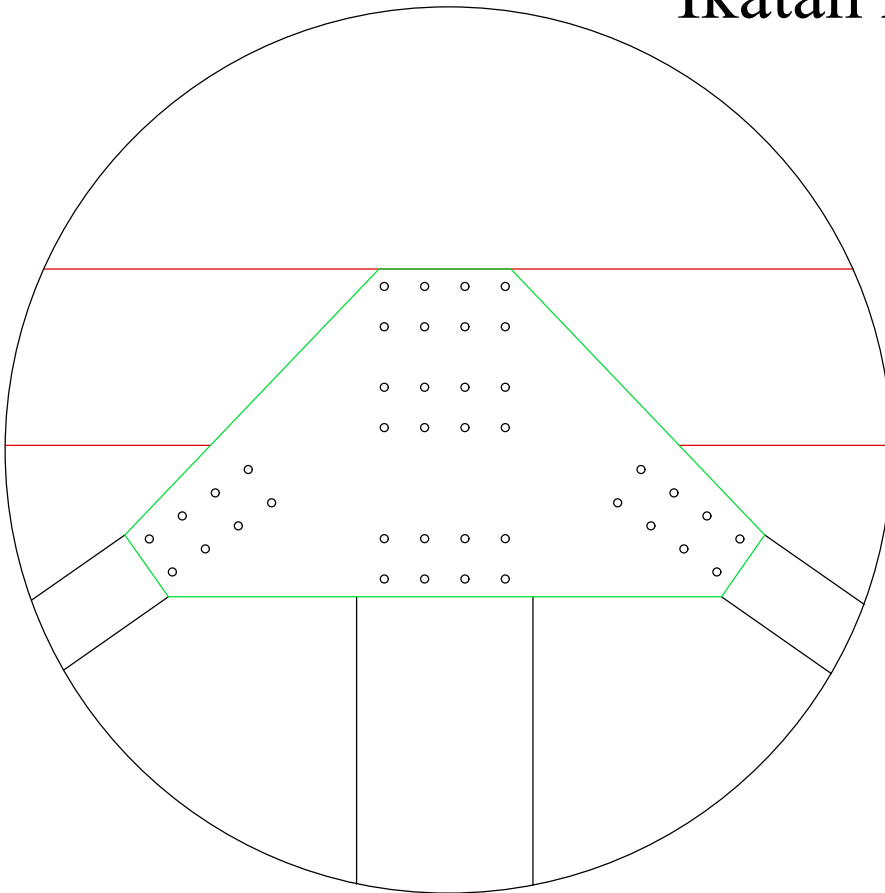


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IKATAN ANGIN BAWAH

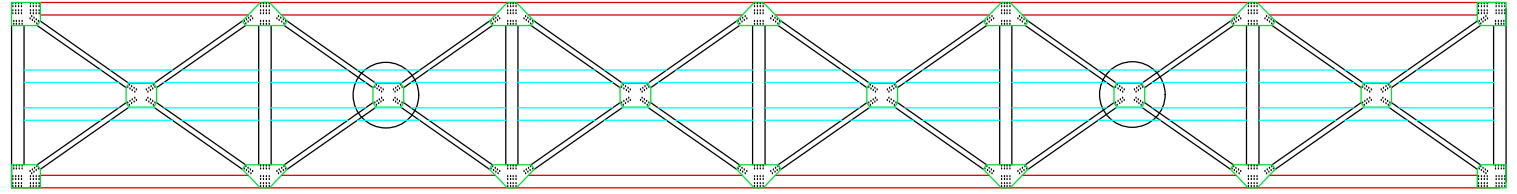


Ikatan Angin Bawah Batang BB1-2

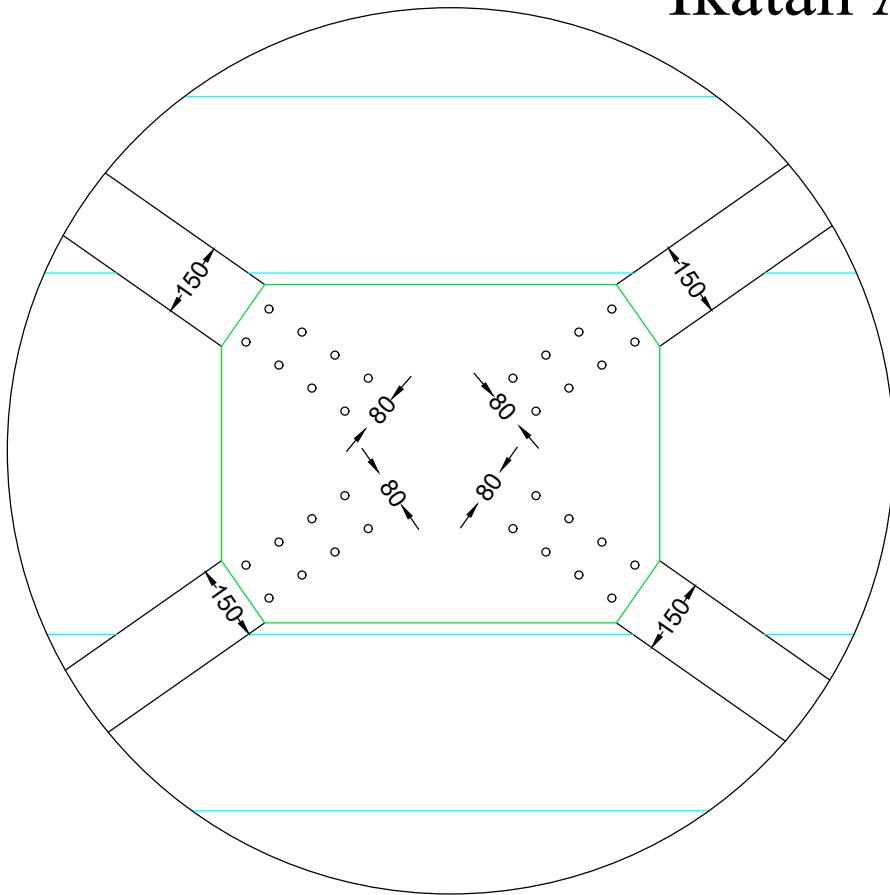


Skala 1 : 15 Note : satuan mm

IKATAN ANGIN BAWAH

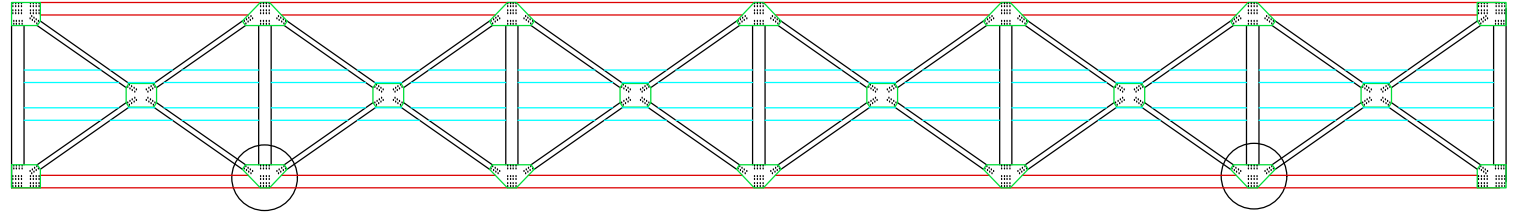


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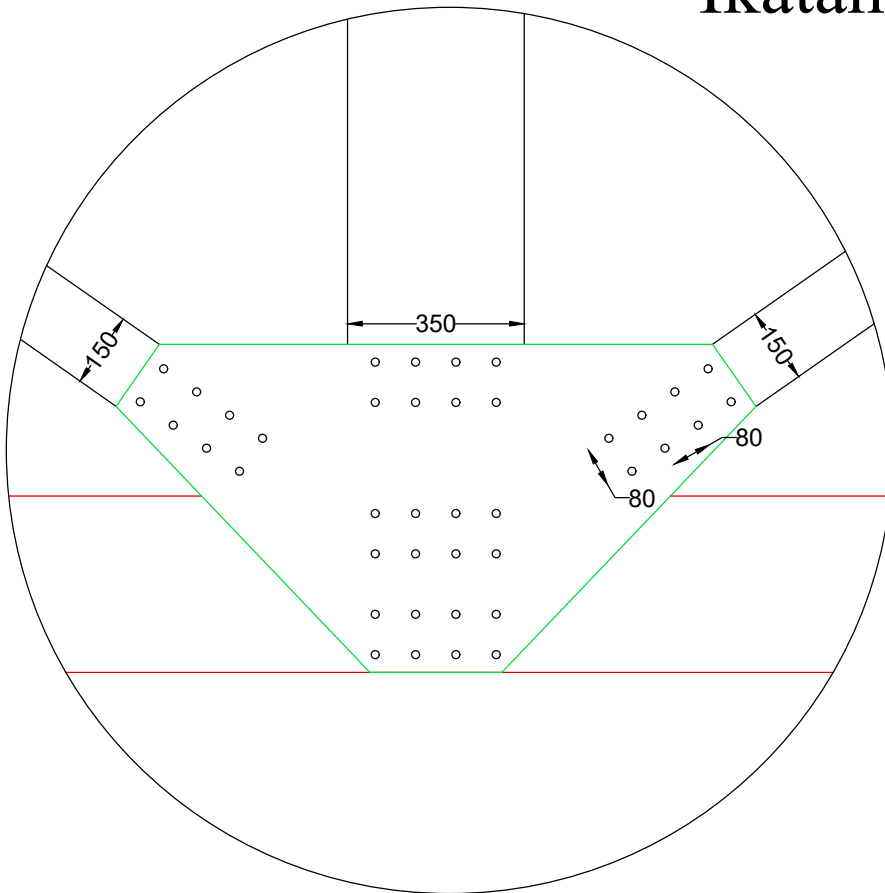


Skala 1 : 15 Note : satuan mm

IKATAN ANGIN BAWAH

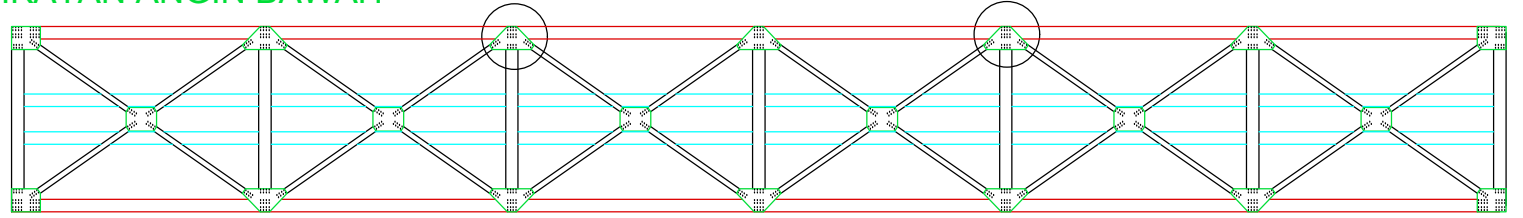


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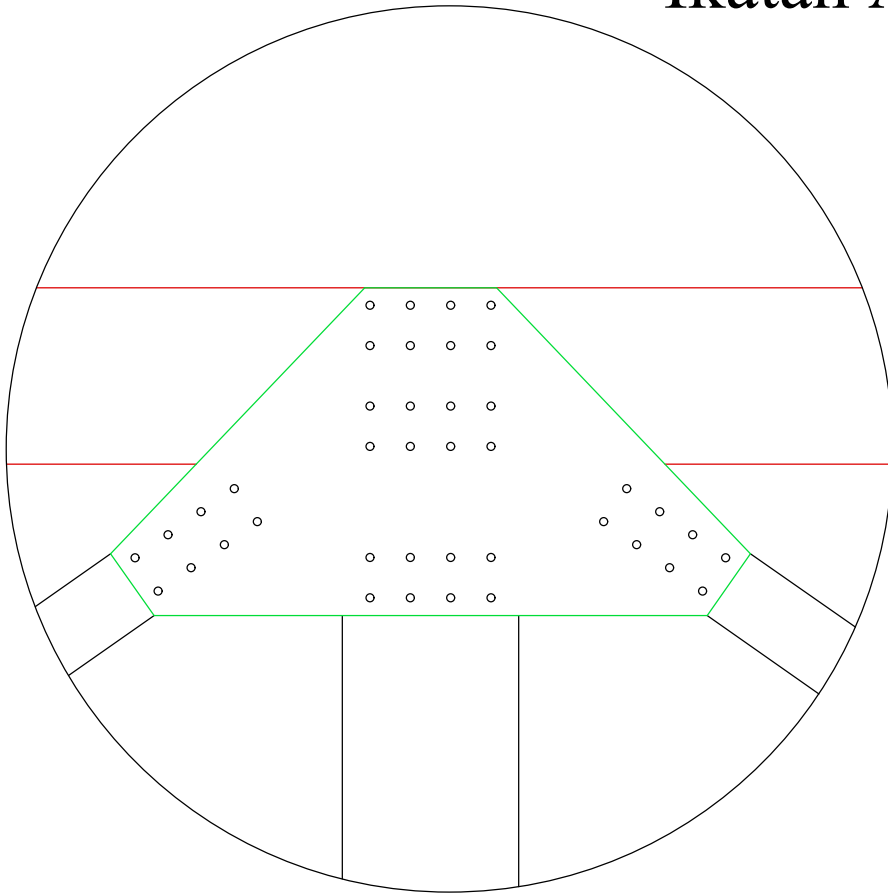


Skala 1 : 15 Note : satuan mm

IKATAN ANGIN BAWAH

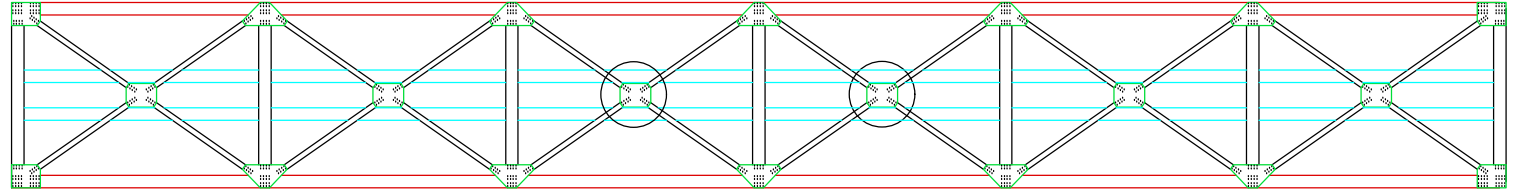


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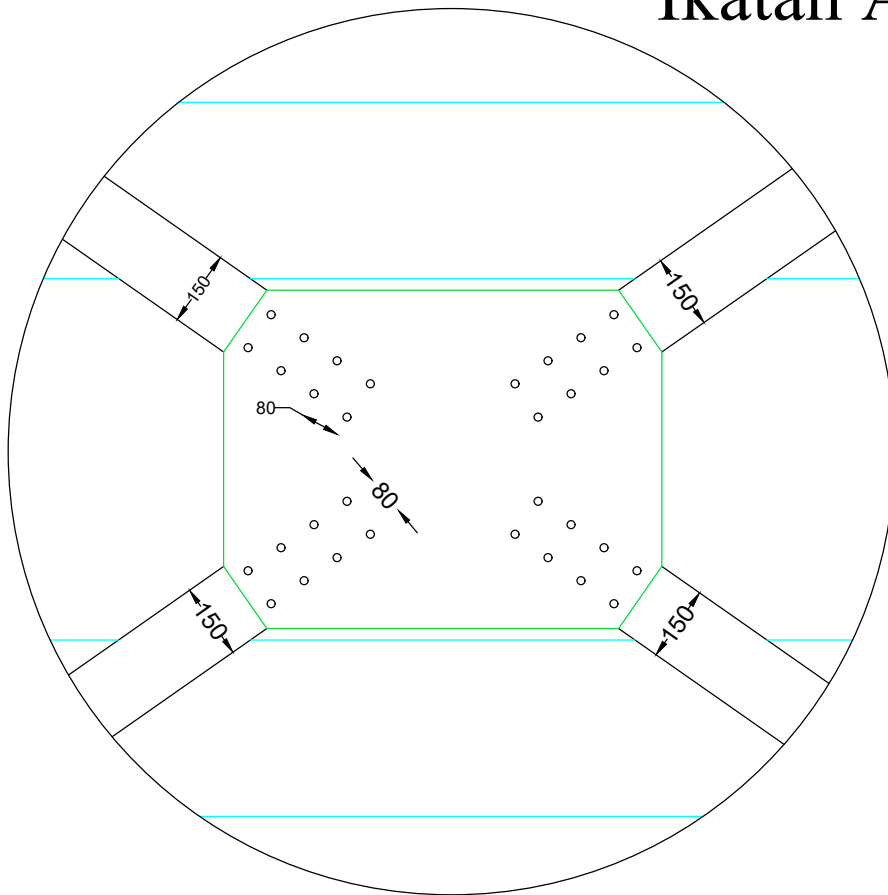


Skala 1 : 15 Note : satuan mm

IKATAN ANGIN BAWAH

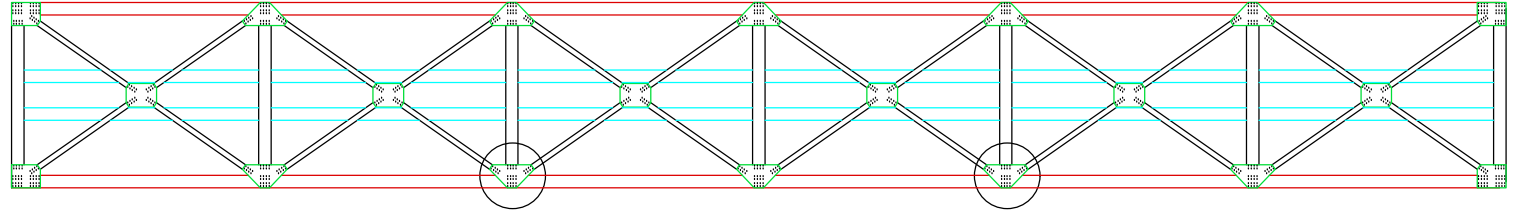


Ikatan Angin Bawah Batang BB3

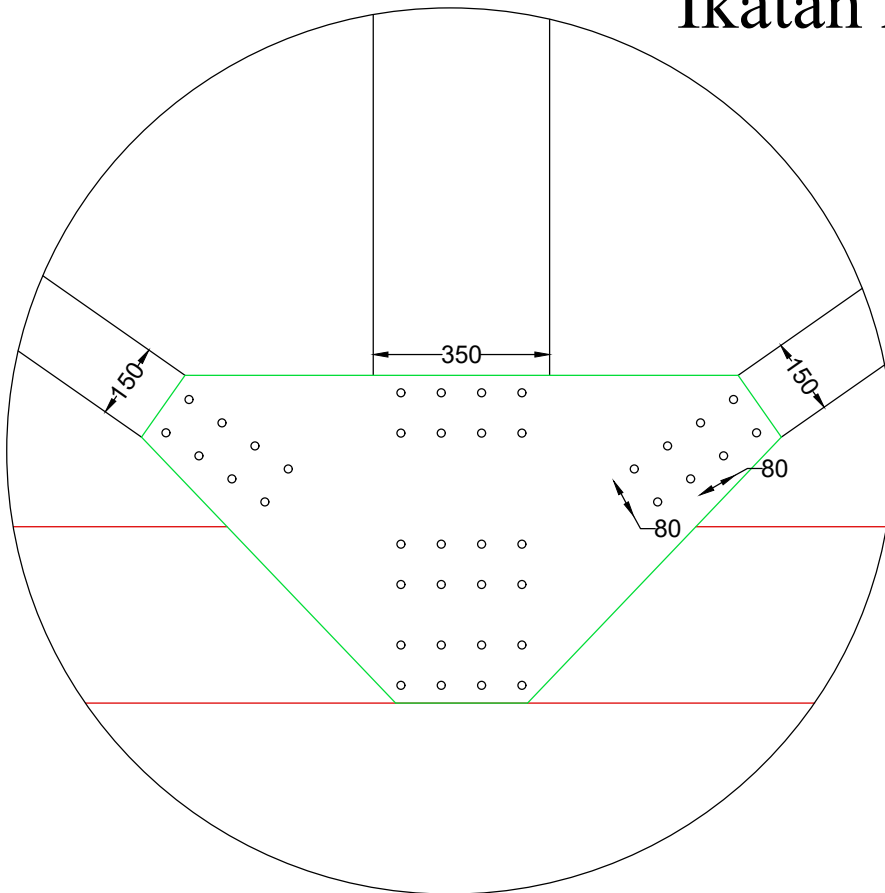


Skala 1 : 15 Note : satuan mm

IKATAN ANGIN BAWAH

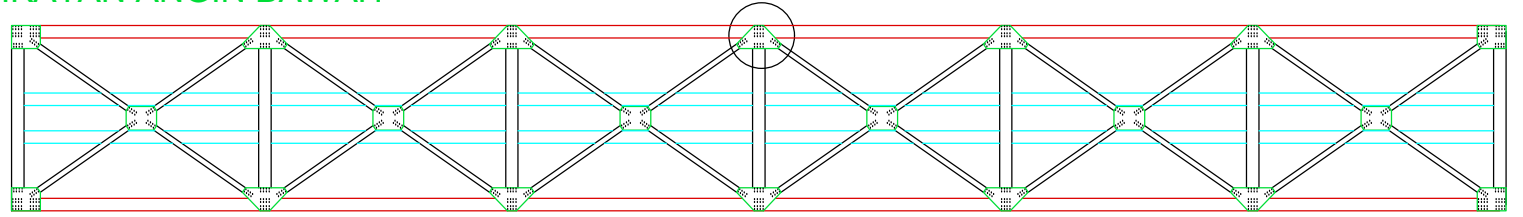


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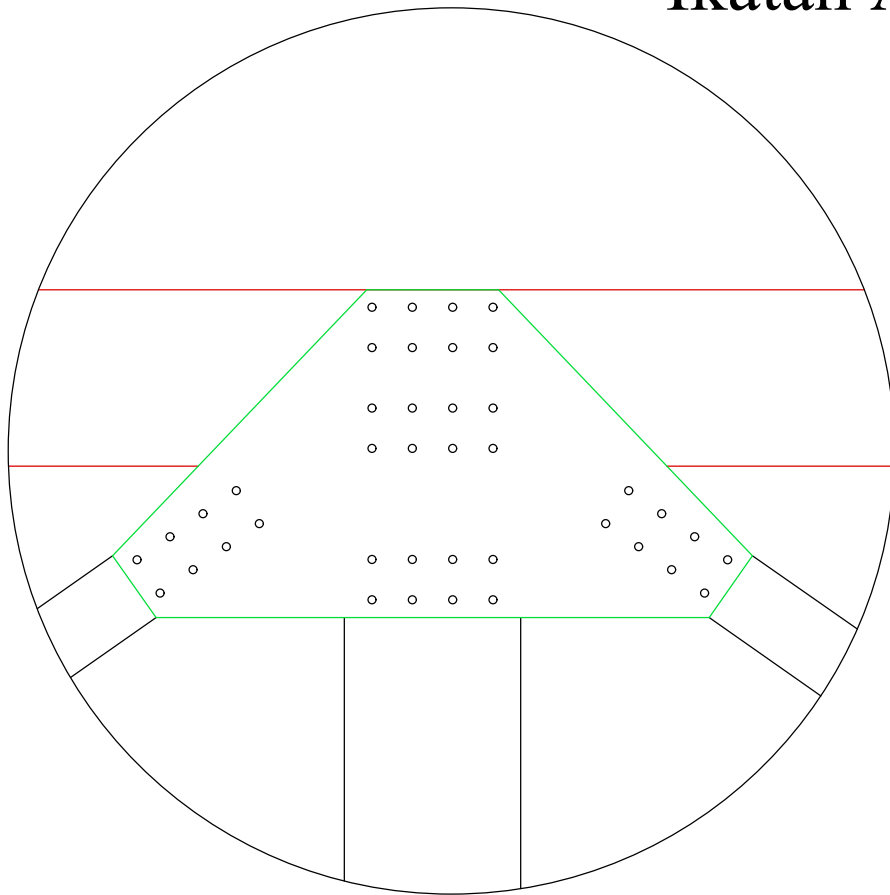


Skala 1 : 15 Note : satuan mm

IKATAN ANGIN BAWAH

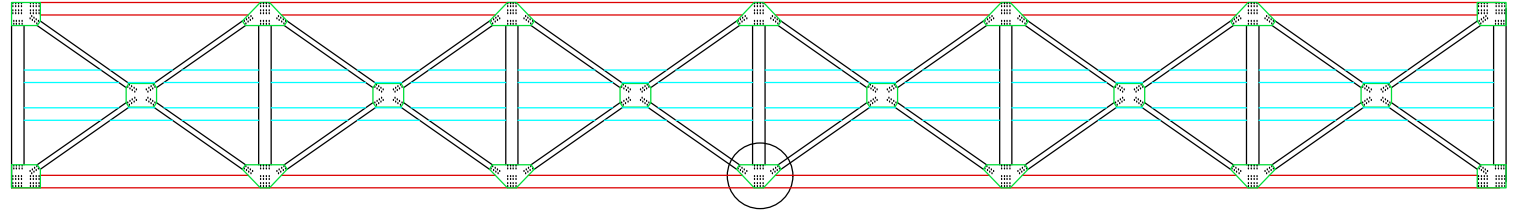


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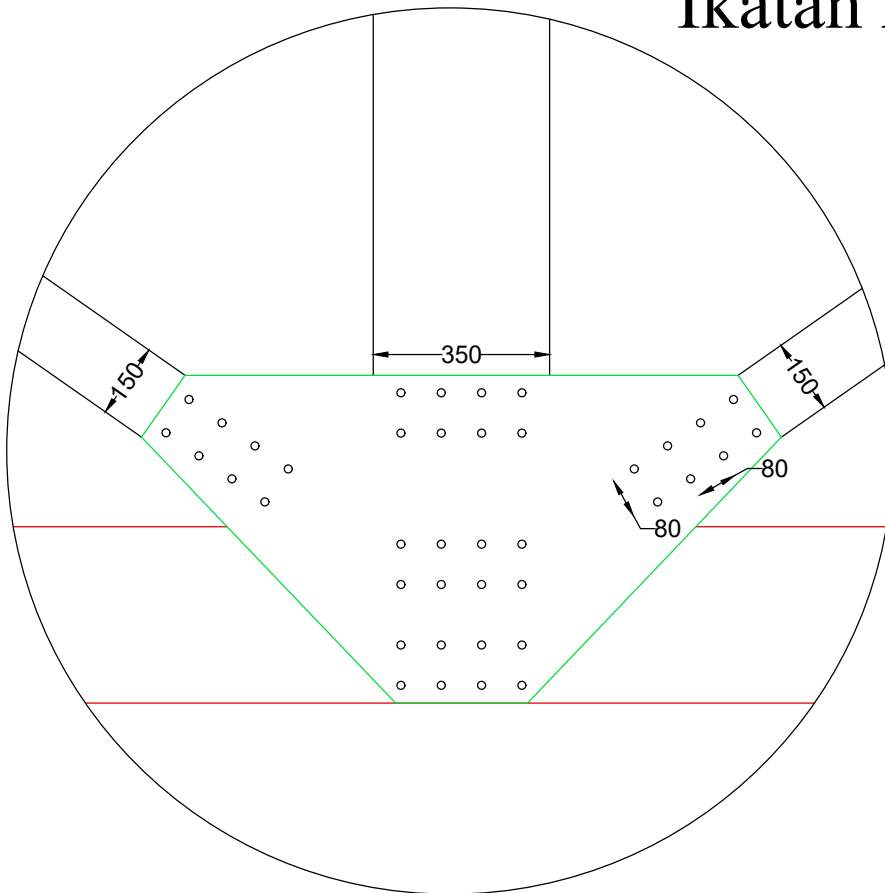


Skala 1 : 15 Note : satuan mm

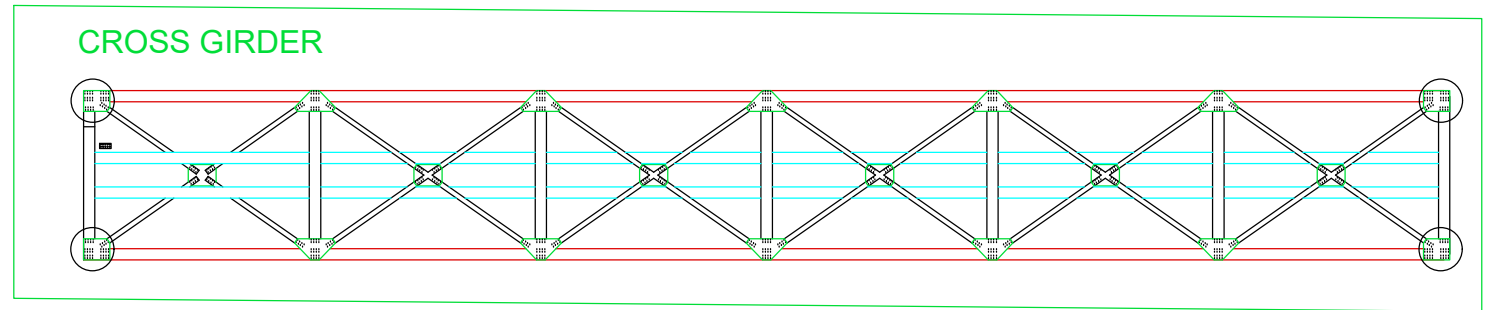
IKATAN ANGIN BAWAH



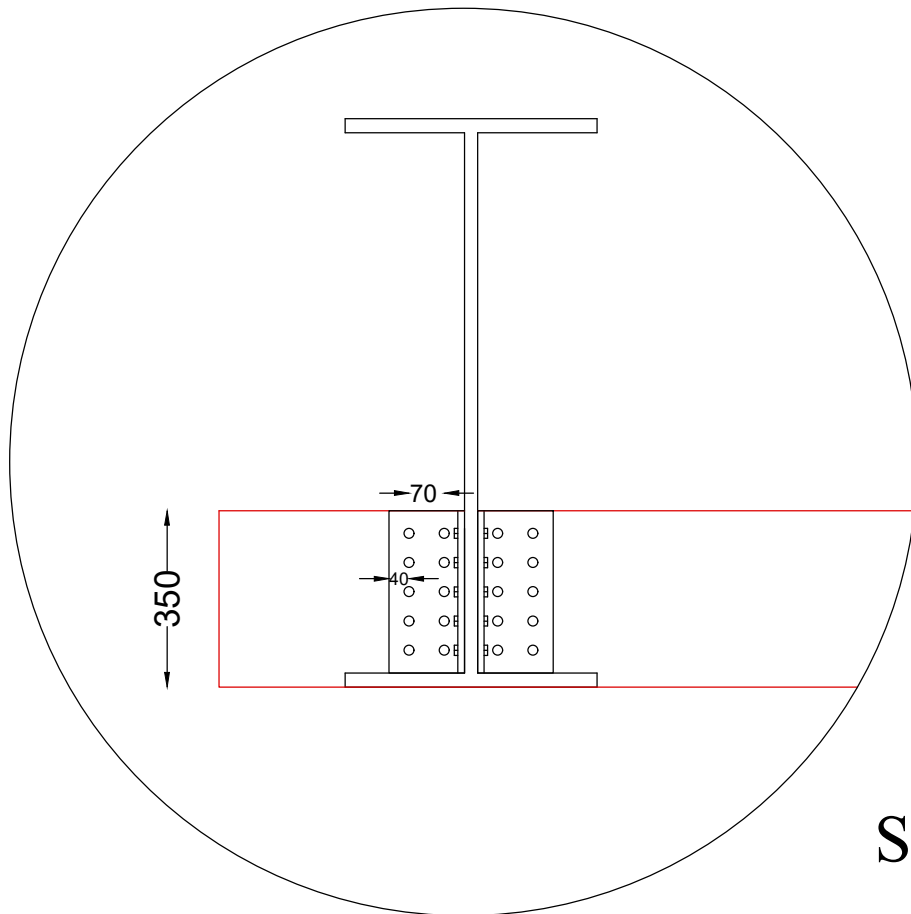
Ikatan Angin Bawah Batang BB3



Skala 1 : 15 Note : satuan mm



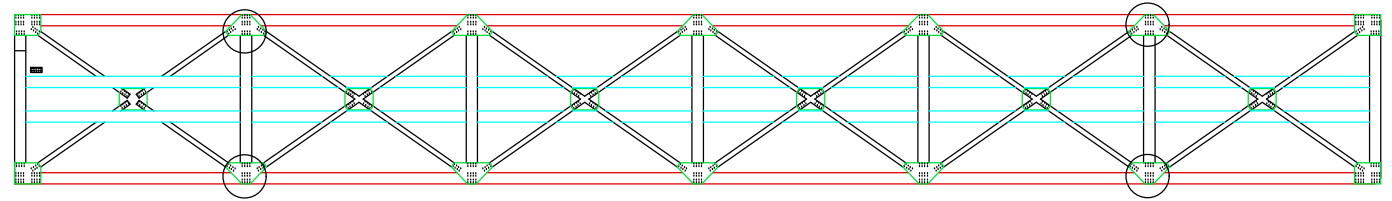
Cross Girder Batang CGB1



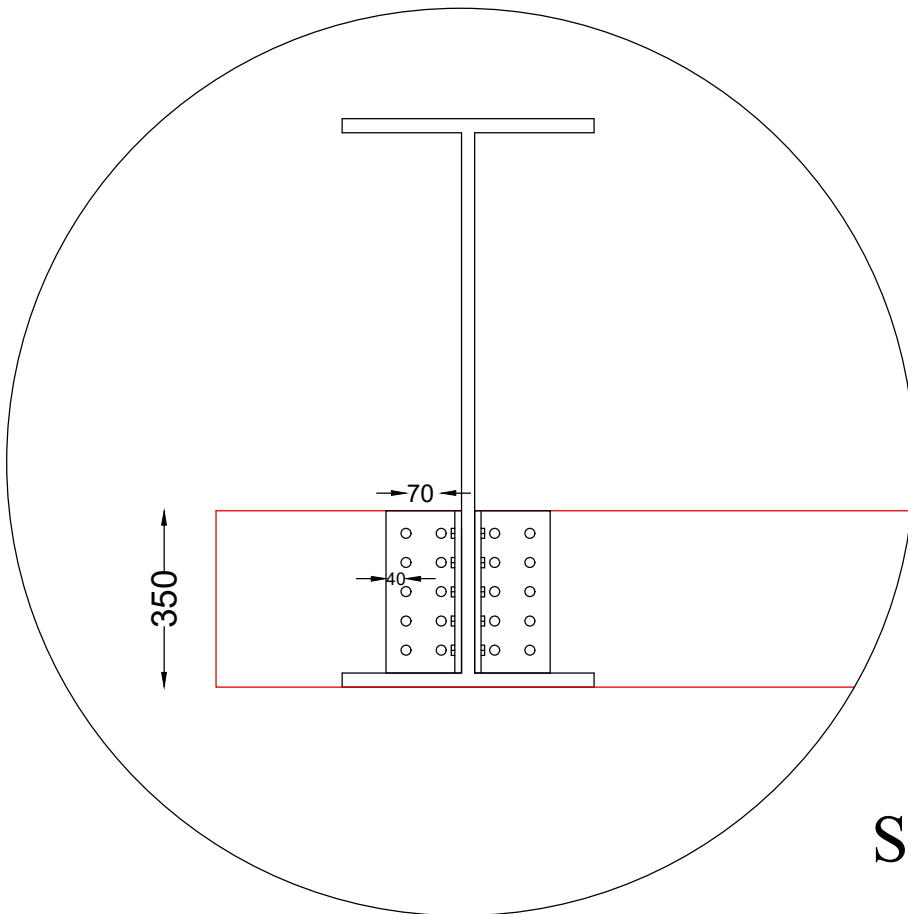
Skala 1 : 15

Note : satuan mm

CROSS GIRDER



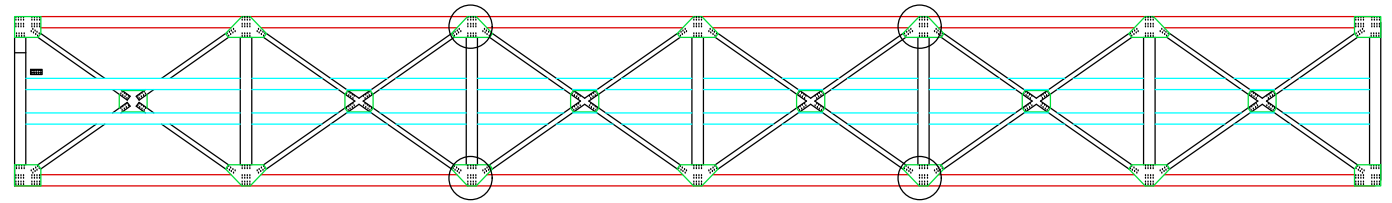
Cross Girder Batang CBG2



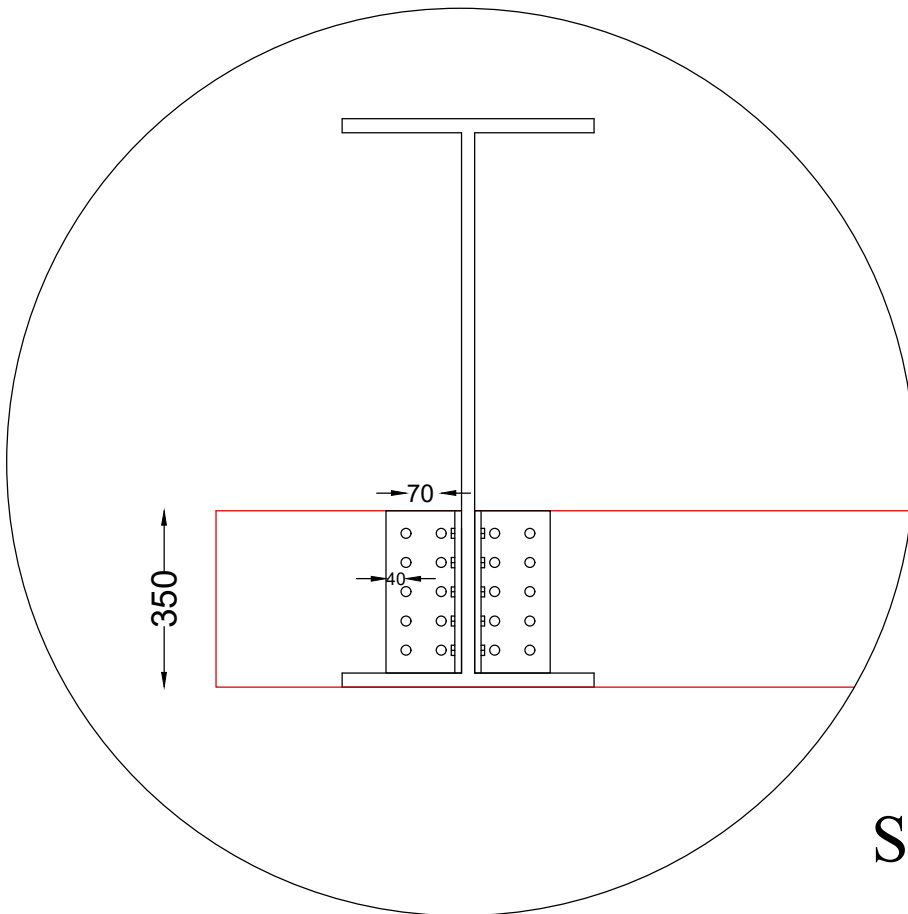
Skala 1 : 15

Note : satuan mm

CROSS GIRDER



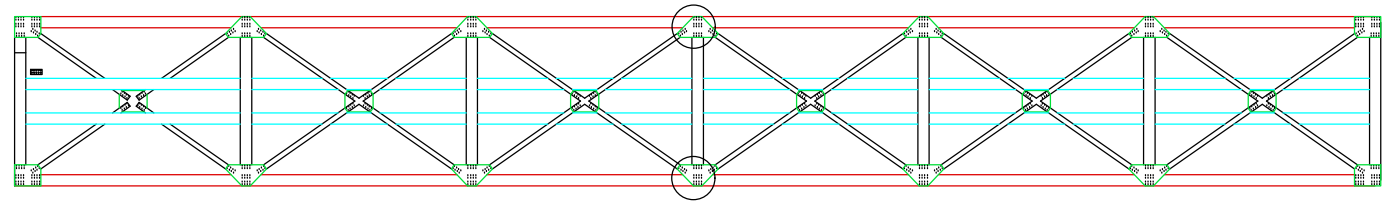
Cross Girder Batang CGB3



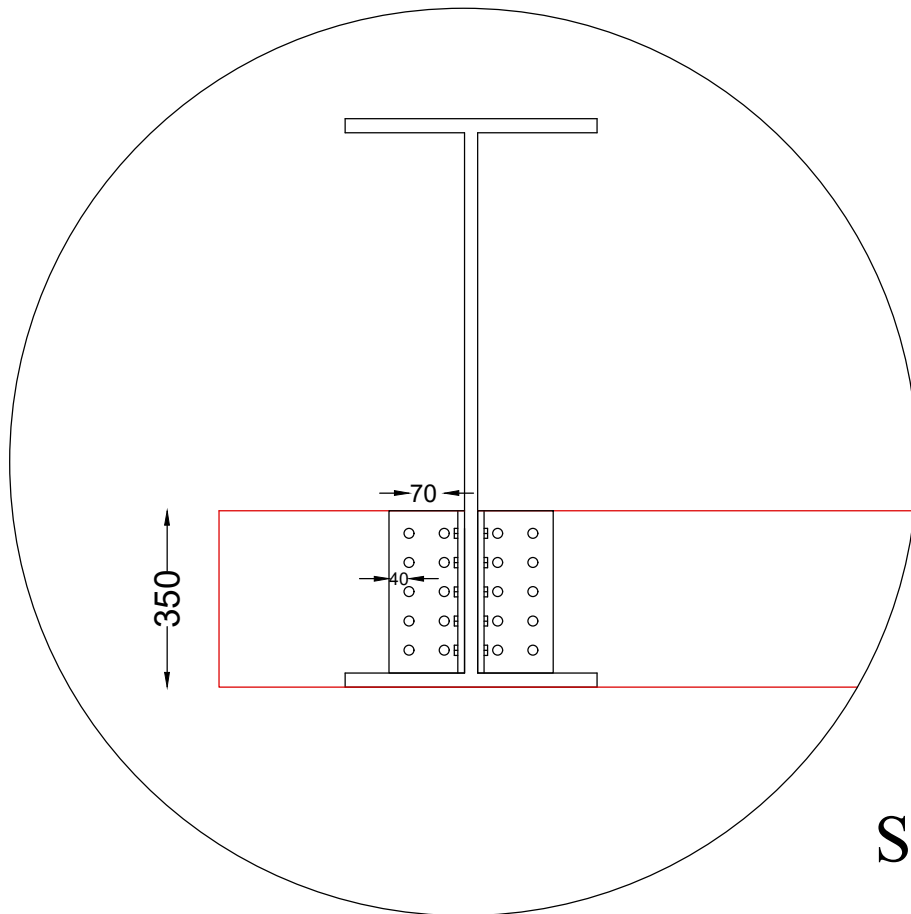
Skala 1 : 15

Note : satuan mm

CROSS GIRDER

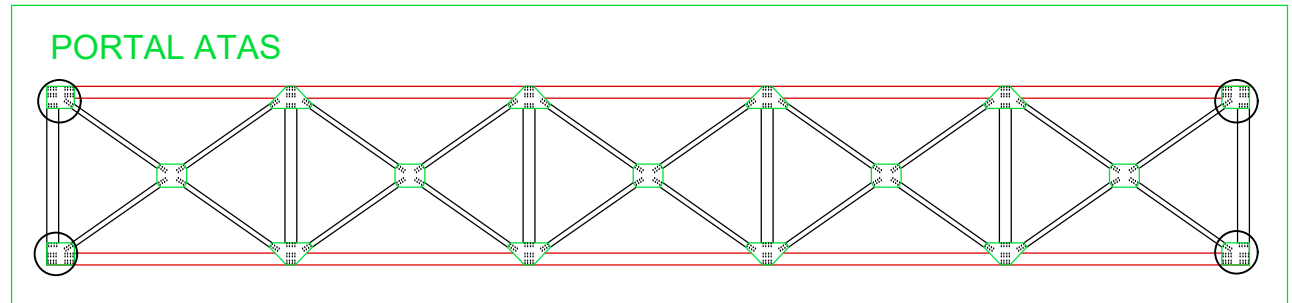


Cross Girder Batang CGB4

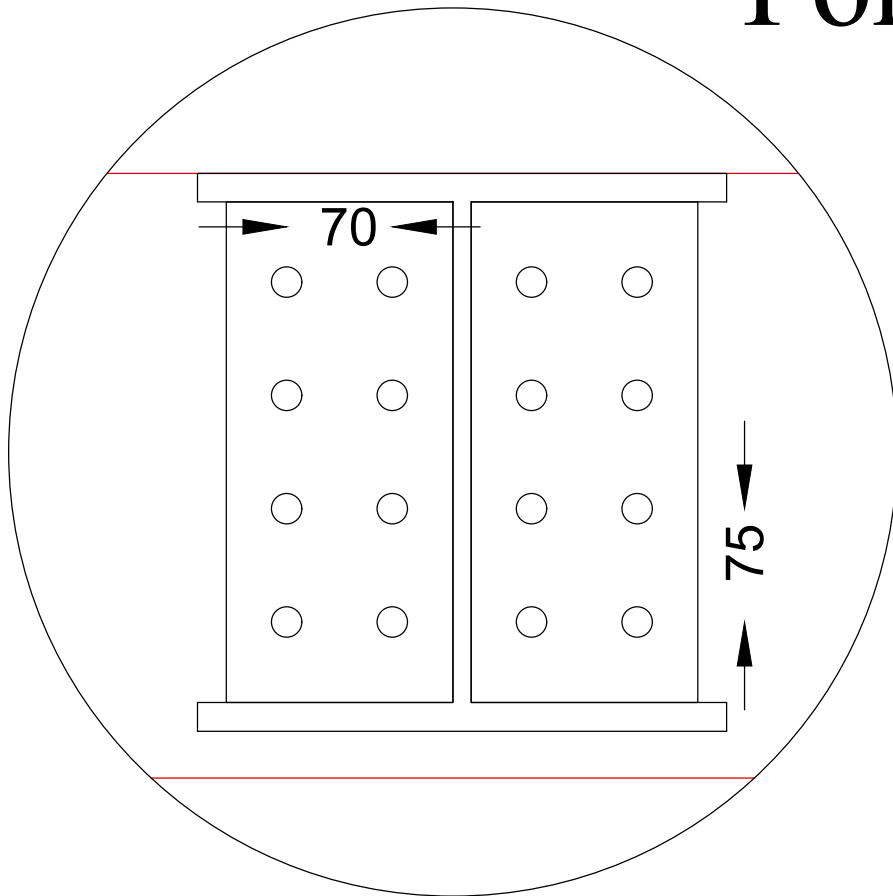


Skala 1 : 15

Note : satuan mm



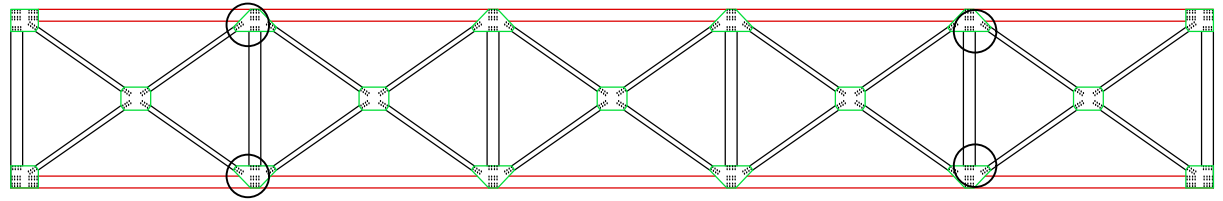
Portal Atas Batang CGA1



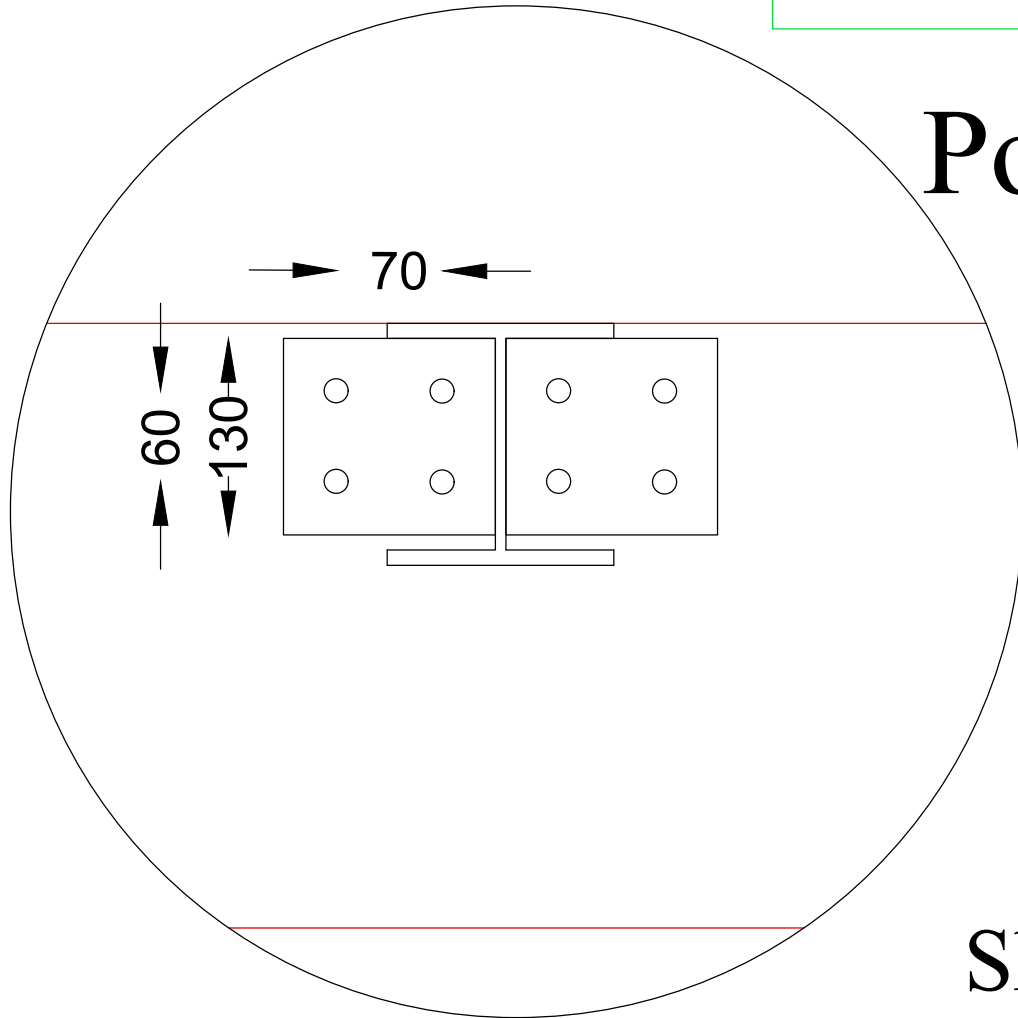
Skala 1 : 5

Note : satuan mm

PORTAL ATAS



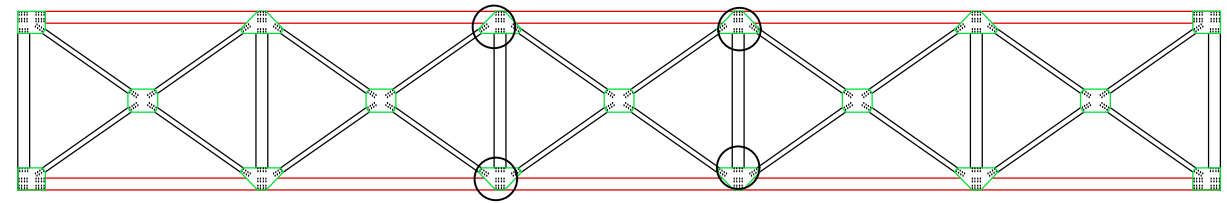
Portal Atas Batang IK 1



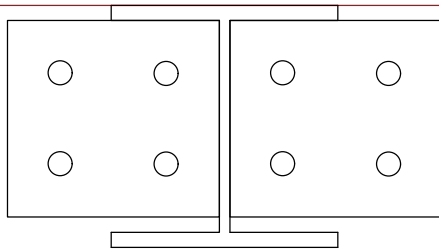
Skala 1 : 5

Note : satuan mm

PORTAL ATAS



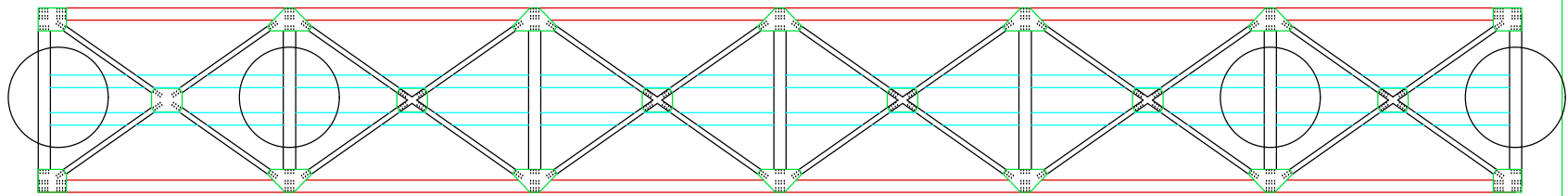
Portal Atas Batang IK2



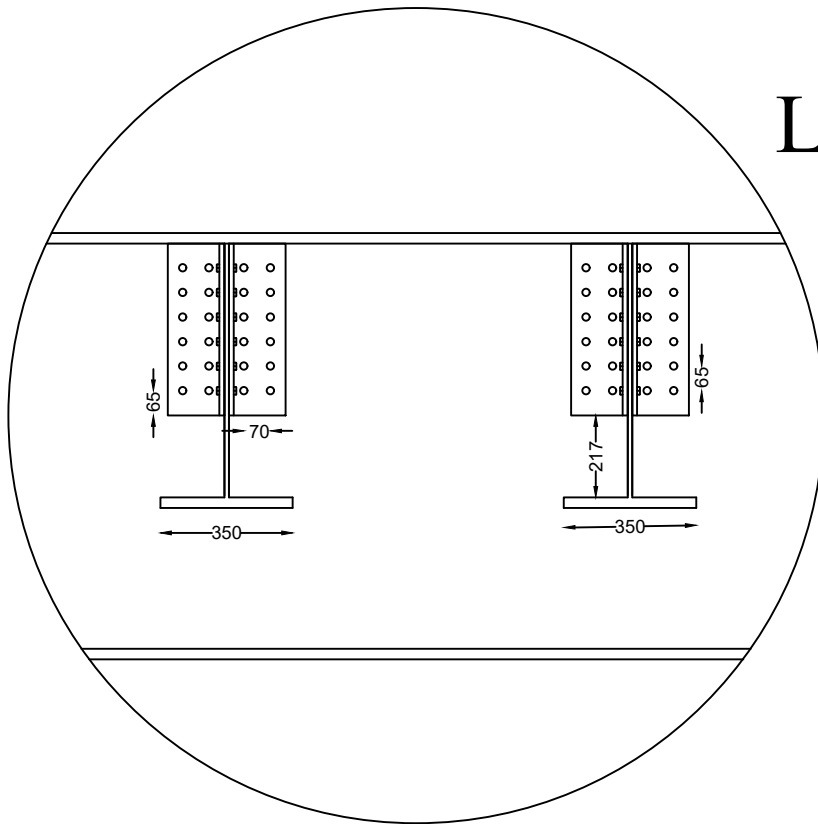
Skala 1 : 5

Note : satuan mm

LONGITUDINAL GIRDER

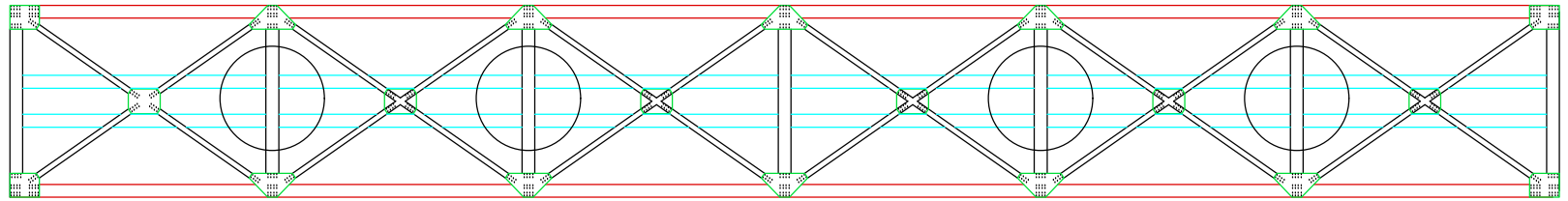


Longitudinal Girder Batang LG1

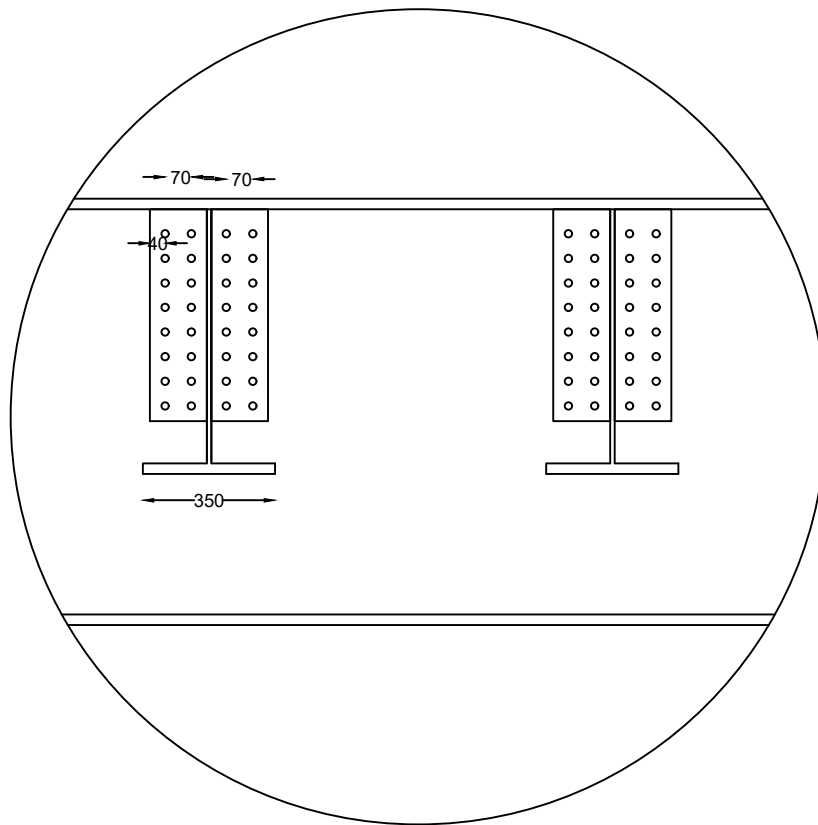


Skala 1 : 20

LONGITUDINAL GIRDER

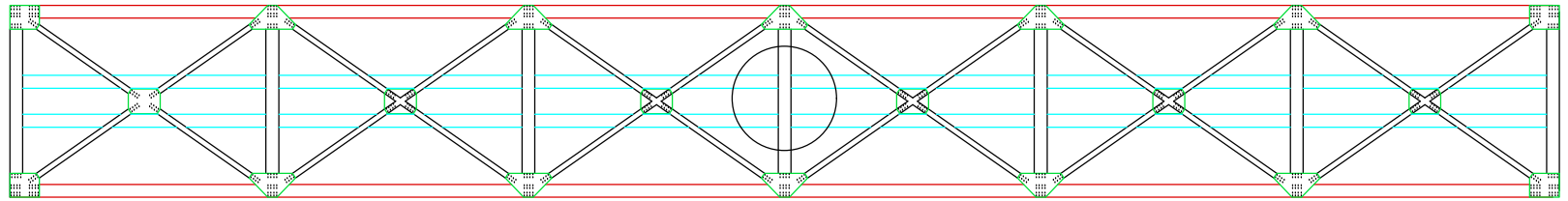


Longitudinal Girder Batang LG2

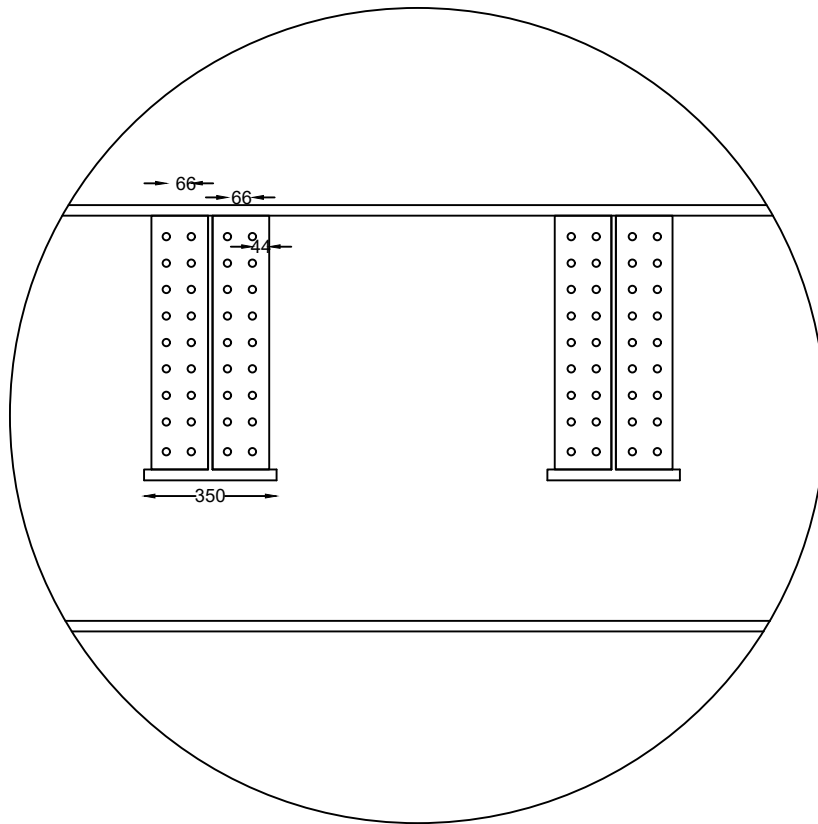


Skala 1 : 20

LONGITUDINAL GIRDER



Longitudinal Girder Batang LG3



Skala 1 : 20