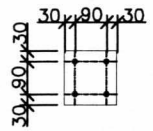
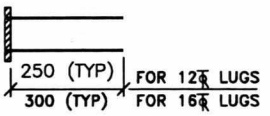
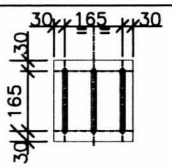
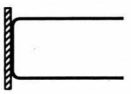
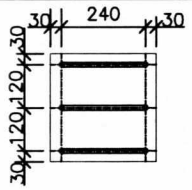
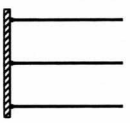
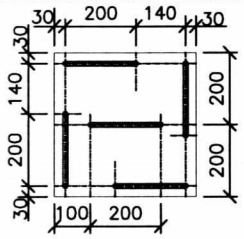
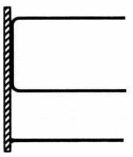
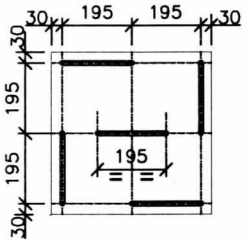
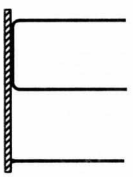
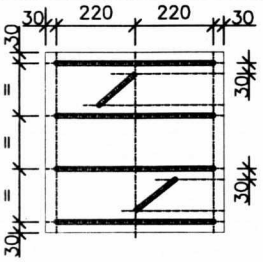
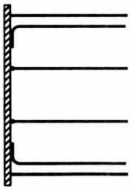
PS DESIGNATES

S.NO.	TYPE OF INSERT	DIA OF LUGS	THK. OF INSERT	DETAILS OF INSERT PLATE	
				PLAN	CROSS SECTION
1.	PS1	12	12	 SIZE 150x150	
	PS2	16	16		
2.	PS3	12	12	 SIZE 225x225	
	PS4	16	16		
3.	PS5	12	12	 SIZE 300x300	
	PS6	16	16		
4.	PS7	12	12	 SIZE 400x400	
	PS8	16	16		
5.	PS9	12	12	 SIZE 450x450	
	PS10	16	16		
6.	PS11	12	12	 SIZE 500x500	
	PS12	16	16		

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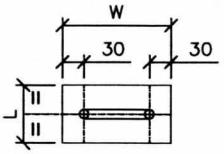
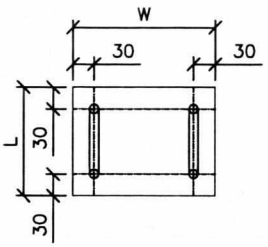
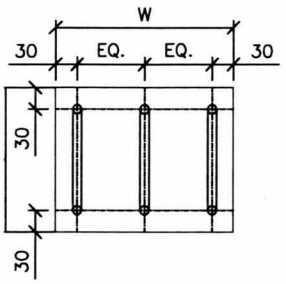
T DESIGNATES



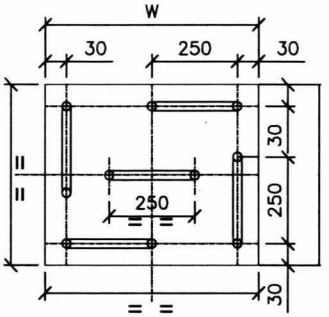
TYPE T1



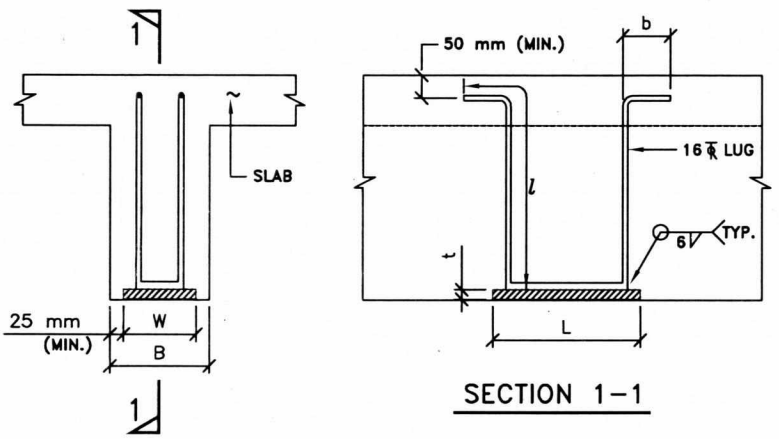
TYPE T2, T3 & T4



TYPE T5 & T6



TYPE T7



SECTION 1–1

TYPICAL FIXING DETAIL

S.NO.	TYPE OF INSERT	WIDTH OF BEAM 'B' (mm)	MAXIMUM WIDTH OF PLATE 'W' (mm)	LENGTH OF PLATE 'L' (mm)	MAXIMUM 'b' (mm)	THICKNESS OF PLATE 't' (mm)	TOTAL ANCHORAGE LENGTH 'l' (mm)
1.	T1	230	180	180	110	16	350
2.	T2	300	220	250	110	20	350
3.	T3	350	270	250	110	20	350
4.	T4	400	320	250	110	20	350
5.	T5	450	370	300	110	32	350
6.	T6	500	420	300	110	32	350
7.	T7	500	420	400	110	32	350

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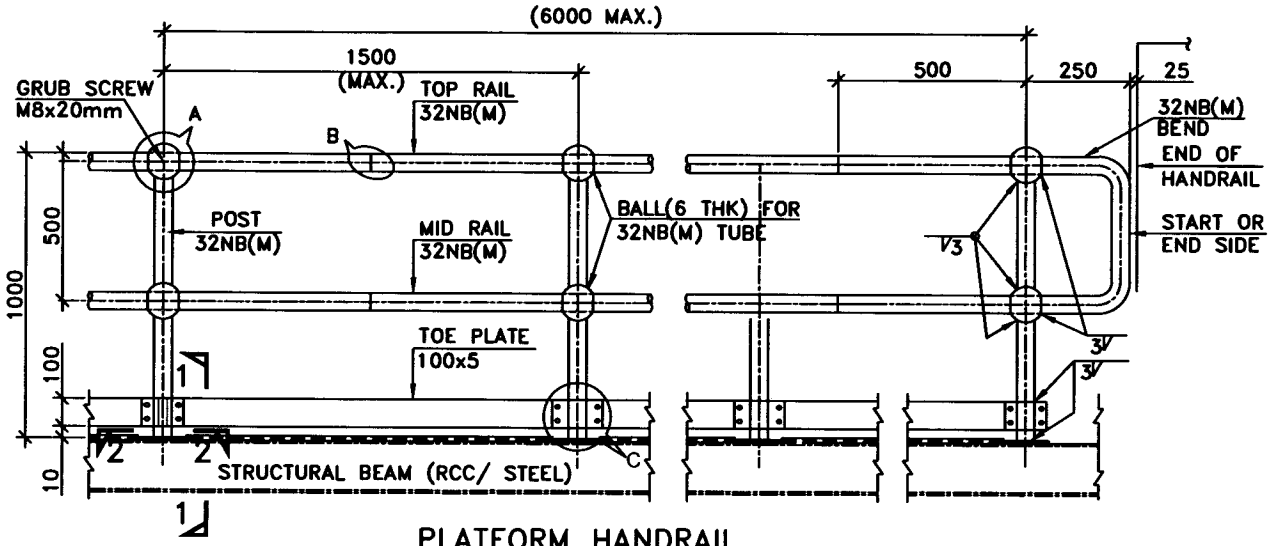
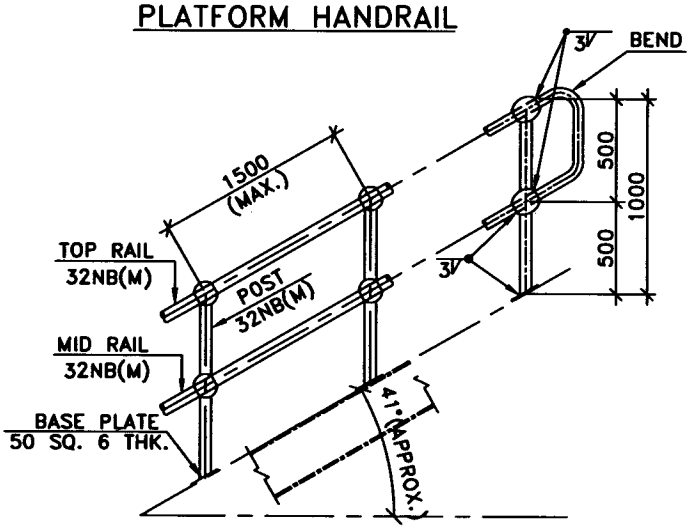
NOTES :-

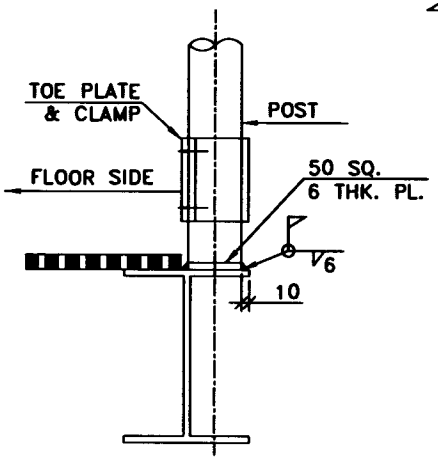
1. ALL DIMENSIONS ARE IN mm.
2. ALL M.S. TUBES SHALL CONFIRM TO IS : 1161/1239 & PLATE SHALL CONFIRM TO IS:2062.
3. PAINTING AND GALVANIZATION OF HANDRAIL SHALL BE AS PER JOB SPECIFICATION.



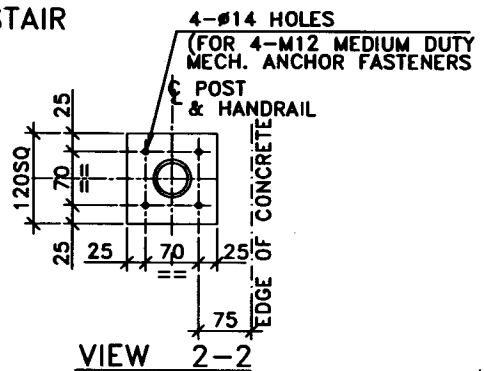
PLATFORM HANDRAIL



STAIR HANDRAIL
INCLINED RAILING
ON STEEL STAIR



VIEW 1-1
HORIZONTAL RAILING
ON STEEL PLATFORM



VIEW 2-2
BASE PLATE DETAIL
FOR VERTICAL POST
ON RCC BEAM/SLAB

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
1	23.02.2021	REAFFIRMED & REISSUED AS STANDARD	AK	SG/AS	RS	S.MAZUMDAR
0	15.10.2015	ISSUED AS STANDARD	KKS	SG/AS	RS	SC

Approved by

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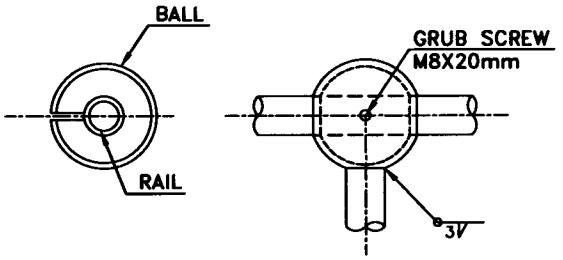
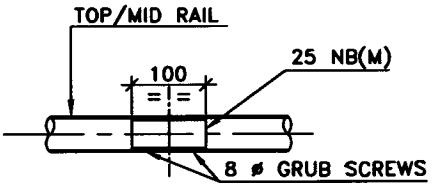
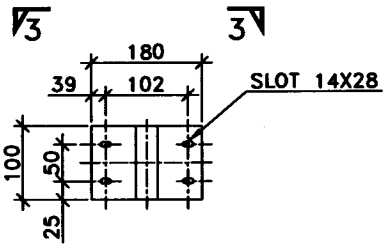


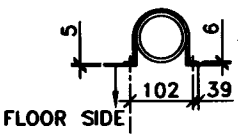
DETAIL– Ⓐ



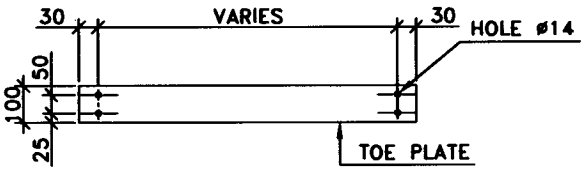
DETAIL – Ⓑ
DETAIL OF SPLICE



DETAIL – Ⓒ



VIEW 3–3
TOE PLATE CLAMP



TOE PLATE DETAIL

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	
1	23.02.2021	REAFFIRMED & REISSUED AS STANDARD	AK	RBS	AS	S.MAZUMDAR
0	15.10.2015	ISSUED AS STANDARD	KKS	SG/AS	RS	SC

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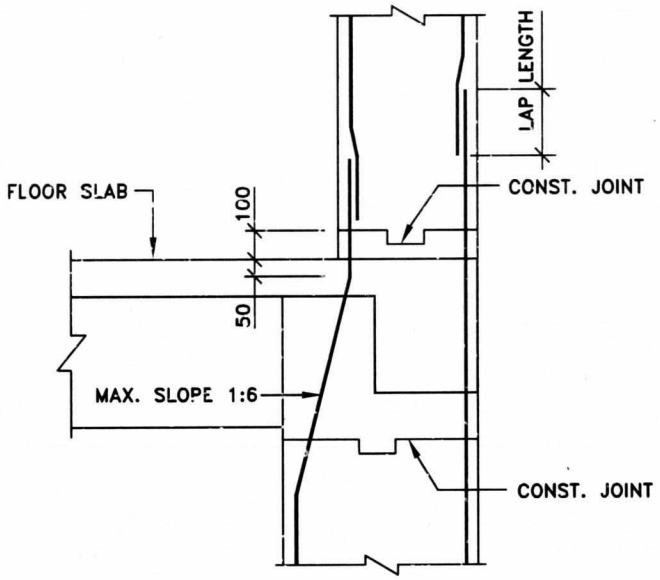
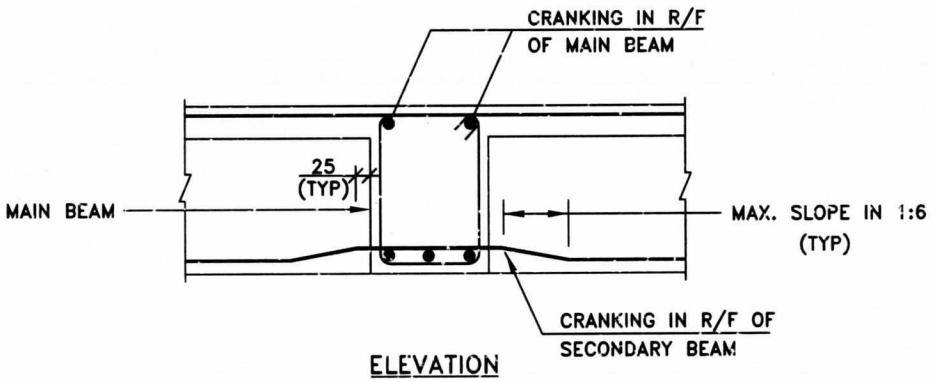


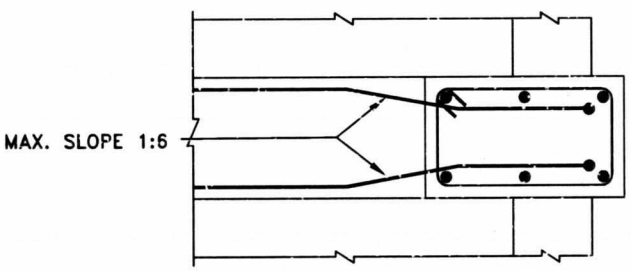
ELEVATION

TYP. DETAIL AT BEAM COLUMN JUNCTION



ELEVATION

TYP. DETAIL AT JUNCTION OF TWO BEAMS OF SAME DEPTH



PLAN

TYP. DETAIL AT JUNCTION OF BEAM AND COL. OF SAME WIDTH

NOTE:

ALL DIMENSIONS ARE IN mm.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
7	04.03.2024	REAFFIRMED AND ISSUED AS STANDARD	IMMANUEL	SUDIP PAUL	ANURAG SINHA	MAINAK NANDI
6	06.06.2018	REAFFIRMED AND ISSUED AS STANDARD	CS	AVK	R.SRIVASTAVA	RK TRIVEDI

Approved by

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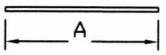
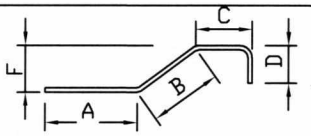
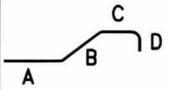
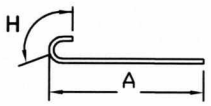
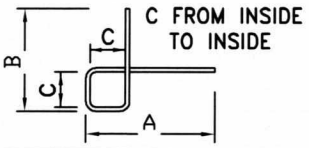
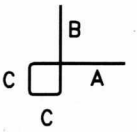
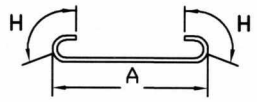
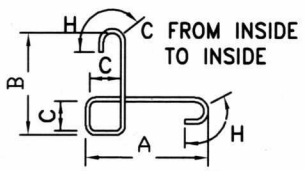
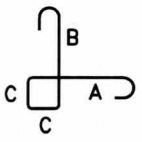
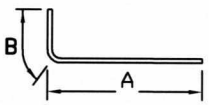
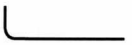
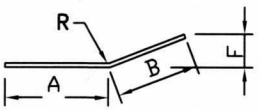
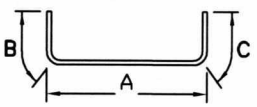
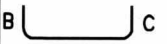
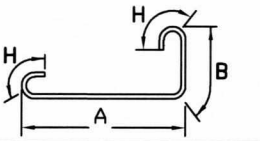
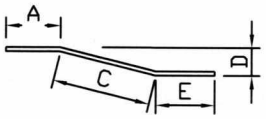
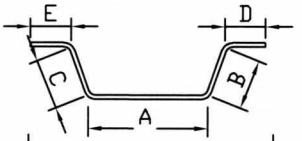
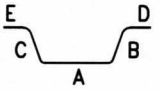
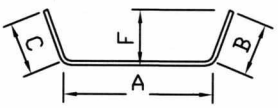
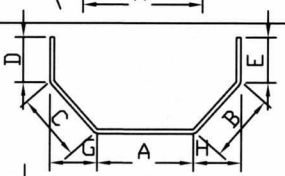
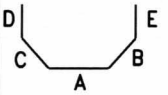
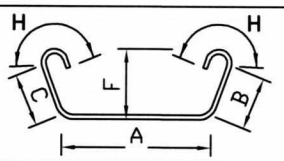
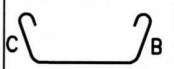
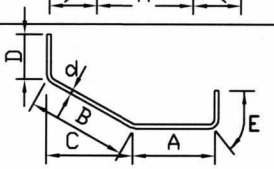
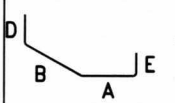
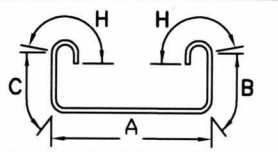
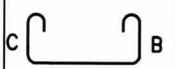
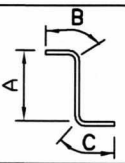
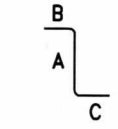
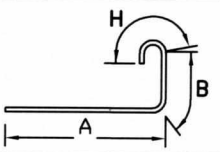
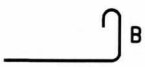
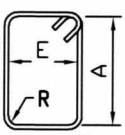
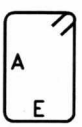
TABLE-1: STANDARD RE-BAR SHAPES

SL. NO.	METHOD OF MEASUREMENT OF BENDING DIMENSIONS	SKETCH & DIMENSIONS TO BE GIVEN IN SCHEDULE	SL. NO.	METHOD OF MEASUREMENT OF BENDING DIMENSIONS	SKETCH & DIMENSIONS TO BE GIVEN IN SCHEDULE
1		STRAIGHT	11		
2			12		
3			13		
4			14		
5			15		
6			16		
7			17		
8			18		
9			19		
10			20		

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
7	26-02-24	REVISED AND ISSUED AS STANDARD	AM	SR	ANURAG SINHA	MAINAK NANDI
6	06-06-18	REAFFIRMED AND ISSUED AS STANDARD	CS	AVM	R.SRIVASTAVA	RK TRIVEDI

Approved by

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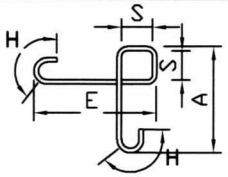
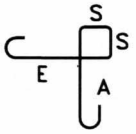
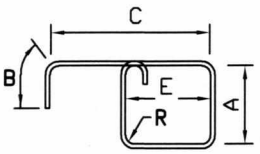
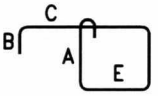
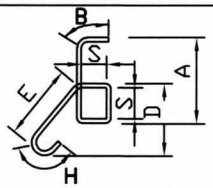
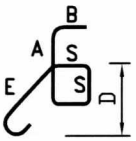
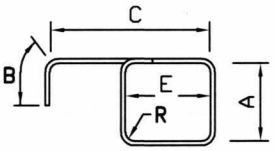
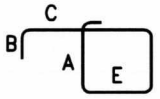
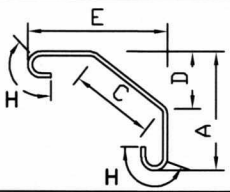
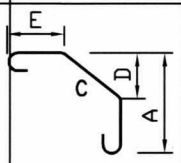
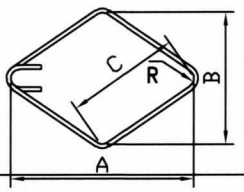
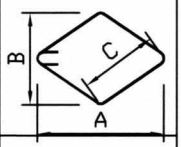
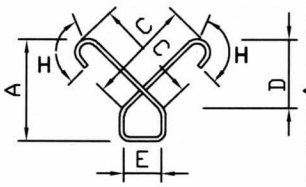
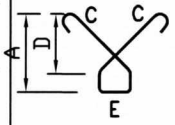
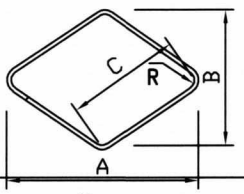
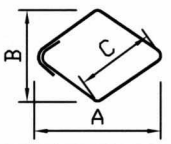
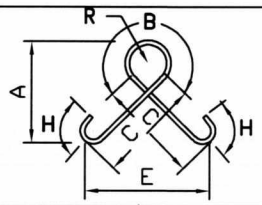
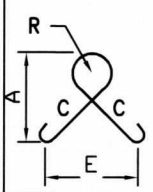
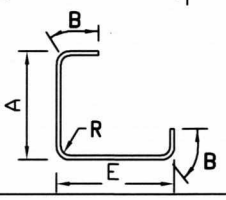
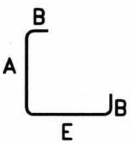
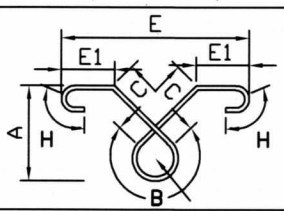
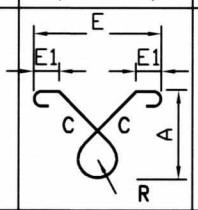
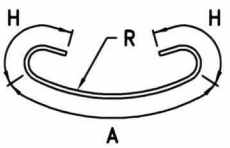
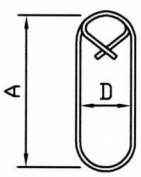
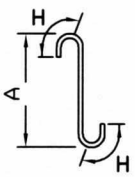
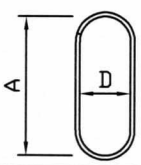
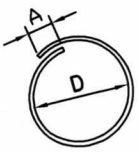
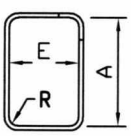
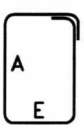
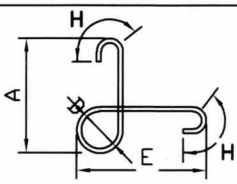
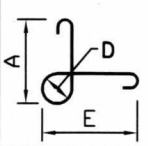
SL. NO.	METHOD OF MEASUREMENT OF BENDING DIMENSIONS	SKETCH & DIMENSIONS TO BE GIVEN IN SCHEDULE	SL. NO.	METHOD OF MEASUREMENT OF BENDING DIMENSIONS	SKETCH & DIMENSIONS TO BE GIVEN IN SCHEDULE
21			30		
22			31		
23			32		
24			33		
25			34		
26			35		
27			36		
28			37		
29			38		

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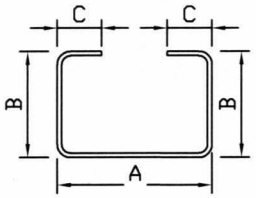
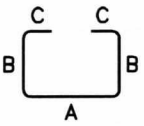
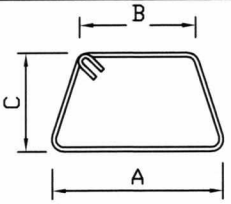
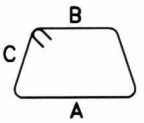
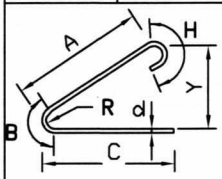
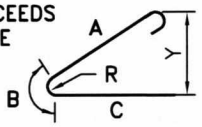
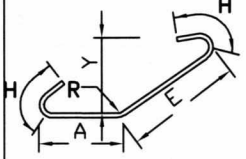
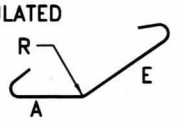
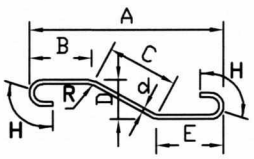
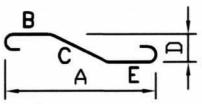
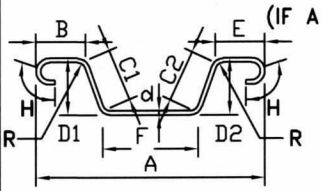
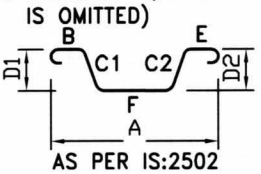
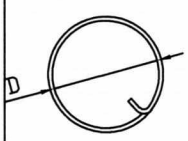
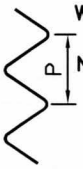
SL. NO.	METHOD OF MEASUREMENT OF BENDING DIMENSIONS	SKETCH & DIMENSIONS TO BE GIVEN IN SCHEDULE	SL. NO.	METHOD OF MEASUREMENT OF BENDING DIMENSIONS	SKETCH & DIMENSIONS TO BE GIVEN IN SCHEDULE
39			40		
 IF ANGLE WITH HORZ. IS 45° OR LESS A+B+C+H−2(R+d) IF ANGLE IS GREATER THAN 45° & R EXCEEDS 12d, L TO BE CALCULATED 			 IF ANGLE WITH HORZ. IS 45° OR LESS & R IS 12d OR LESS A+E+2H, IF ANGLE IS GREATER THAN 45° & R EXCEEDS 12d L TO BE CALCULATED 		
 IF ANGLE WITH HORZ. IS 45° OR LESS & R IS 12d OR LESS B+C+E+2H OR $A+2H+C-\sqrt{C^2-D^2}$ (IF A IS SPECIFIED B OR E IS OMITTED) 			IF ANGLE WITH HORZ. IS 45° OR LESS & R IS 12d OR LESS B+C1+C2+E+F+2H OR $A+C1+C2+2H-\sqrt{C1^2-D1^2}-\sqrt{C2^2-D2^2}$ (IF A IS SPECIFIED B, E OR F IS OMITTED)   AS PER IS:2502		
  WHERE P IS NOT GREATER THAN D/5 N π(D+d)+8d N= NUMBER OF COMPLETE AND FRACTIONAL TURNS D= INTERNAL DIA. P= PITCH OF HELIX d= SIZE OF BAR				

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CUT LENGTH CALCULATION

TABLE-2:

BAR TYPE REFER SHT. 1 TO 3	HIGH YIELD DEFORMED BARS DIAMETER ≤ 25 MM	HIGH YIELD DEFORMED BARS DIAMETER > 25 MM	REMARKS
1	A	A	
2	A+13d	A+17d	
3	A+13d+13d	A+17d+17d	
4	A+B-3d	A+B-4d	
5	A+B+C-(3d+3d)	A+B+C-(4d+4d)	
6	A+E+C	A+E+C	*
7	A+B+C	A+B+C	*
8	A+B+C+13d+13d	A+B+C+17d+17d	*
9	A+B+C+13d+13d-(3d+3d)	A+B+C+17d+17d-(4d+4d)	
10	A+B+13d-3d	A+B+17d-4d	
11	A+B+C+D-3d	A+B+C+D-4d	*
12	A+B+C+C+d	A+B+C+C+d	
13	A+B+C+C+13d+13d+d	A+B+C+C+17d+17d+d	
14	A+B	A+B	*
15	A+B+13d+13d-3d	A+B+17d+17d-4d	
16	A+B+C+D+E	A+B+C+D+E	*
17	A+B+C+D+E	A+B+C+D+E	*
18	A+B+D+E-3d	A+B+D+E-4d	*
19	A+B+C-3d-3d	A+B+C-4d-4d	
20	2(A+E)+24d	2(A+E)+24d	
21	A+E+S+S+13d+13d+d	A+E+S+S+17d+17d+d	
22	A+E+S+S+S+13d+6d+2d	A+E+S+S+S+17d+7d+2d	
23	$A+E+C+13d+13d-D\sqrt{C^2-D^2}$	$A+E+C+17d+17d-D\sqrt{C^2-D^2}$	*
24	E+2A-2D+2C+13d+13d	E+2A-2D+2C+17d+17d	
25	B+2C+13d+13d	B+2C+17d+17d	
26	2C+2E1+B+13d+13d	2C+2E1+B+17d+17d	
27	2A+3D+22d	2A+3D+22d	
28	2A+3D+22d	2A+3D+22d	
29	2(A+E)+20d	2(A+E)+20d	
30	2A+E+C+12d+6d	2A+E+C+12d+7d	
31	2A+E+C+9d+6d	2A+E+C+9d+7d	
32	4C+24d	4C+24d	
33	4C+24d	4C+24d	
34	A+E-1/2R-d+12d	A+E-1/2R-d+14d	
35	A+13d+13d	A+17d+17d	
36	A+13d+13d	A+17d+17d	

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CUT LENGTH CALCULATION

BAR TYPE REFER 7-68-0101) SHT. 4	HIGH YIELD DEFORMED BARS DIAMETER ≤ 25 MM	HIGH YIELD DEFORMED BARS DIAMETER > 25 MM	REMARKS
37	$\pi D+A$	$\pi D+A$	
38	A+E+4/3d+13d+13d	A+E+4/3d+17d+17d	
39	A+2B+2C−12d	A+2B+2C−12d	
40	$A+B+2[\{(A-B)/2\}^2+C^2]^{1/2}+13d$	$A+B+2[\{(A-B)/2\}^2+C^2]^{1/2}+17d$	

NOTES: −

1. READ SHEETS 1 TO 5 IN CONJUNCTION.
2. THE COMPUTATIONS OF CUT LENGTH ARE BASED ON IS 2502 EXCEPT THAT THESE SHALL BE IN MULTIPLES OF 10mm.
3. WHERE MARKED * ON SHEETS 4 & 5, IT IS ASSUMED THAT ANGLE OR BEND WITH HORIZONTAL IS 45° OR LESS.
4. HOOKS INDICATED IN SHT. 1 TO 3 ARE FOR DRAFTING PURPOSE ONLY. FOR 90° BEND, HOOKS ARE NOT REQUIRED, ONLY HOOK ALLOWANCE SHALL BE ADOPTED AS PER SHT. 4 & 5.
5. ALL DIMENSIONS ON SHT. 1 to 3 ARE FROM OUTSIDE EDGES OF BARS UNLESS OTHERWISE MENTIONED.

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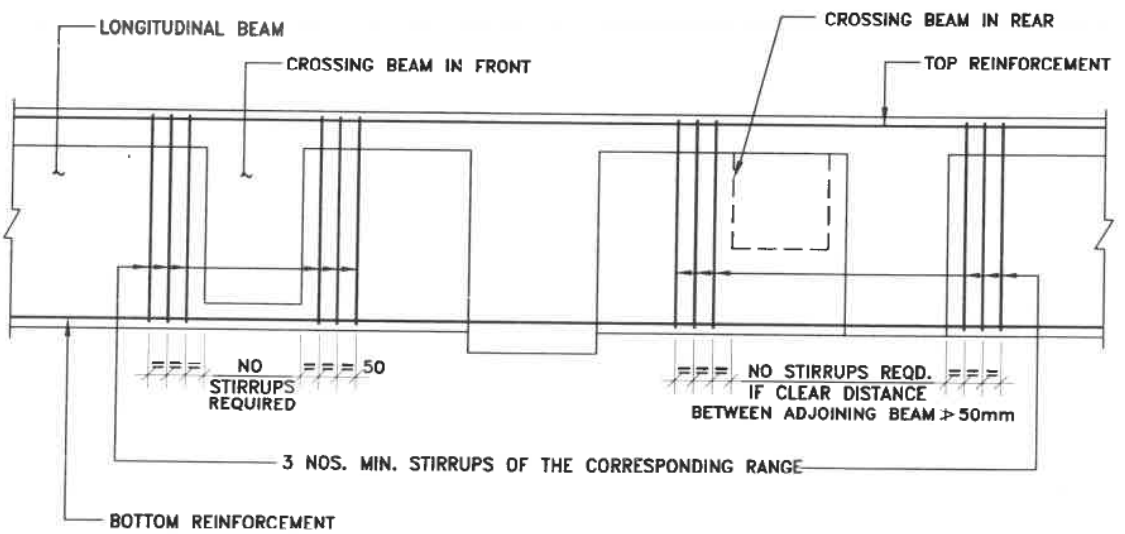

NOTE:

ALL DIMENSIONS ARE IN mm.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
6	29.03.24	REAFFIRMED AND ISSUED AS STANDARD	KML		ANURAG SINHA	MAINAK NANDI
5	06.06.18	REAFFIRMED AND ISSUED AS STANDARD	CS	AVM	R.SRIVASTAVA	RK TRIVEDI

Approved by

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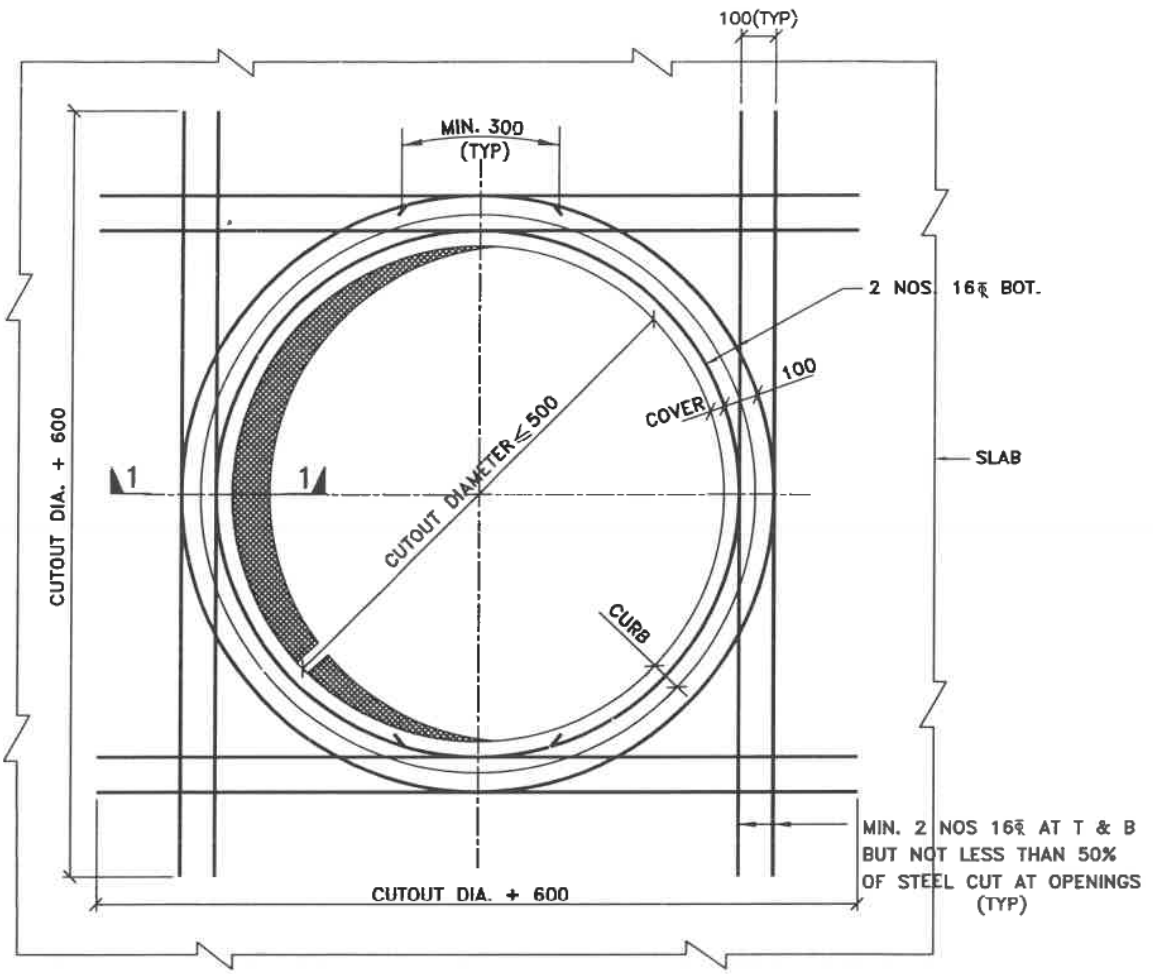

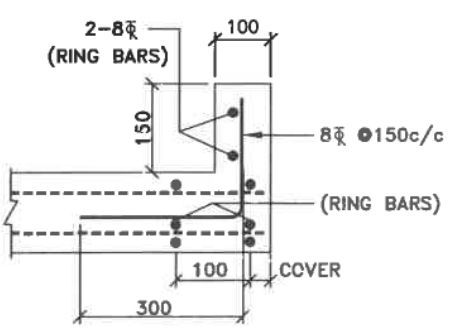

SECTION: 1-1

NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. ALL THE BARS SHALL BE EFFECTIVELY TIED WITH THE MAIN REINFORCEMENT BARS CUT OR SPLAYED NEAR THE OPENING AS PER THE DIRECTION OF THE ENGINEER-IN-CHARGE.
3. THIS DETAIL APPLIES TO SLABS UPTO 200 THK.
4. OMIT CURB WHERE SPECIFICALLY STATED ON DRAWINGS.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
7	29.03.24	REAFFIRMED AND ISSUED AS STANDARD	KML	PM	ANURAG SINHA	MAINAK NANDI
6	06.06.18	REAFFIRMED AND ISSUED AS STANDARD	CS	AVM	R.SRIVASTAVA	RK TRIVEDI

Approved by

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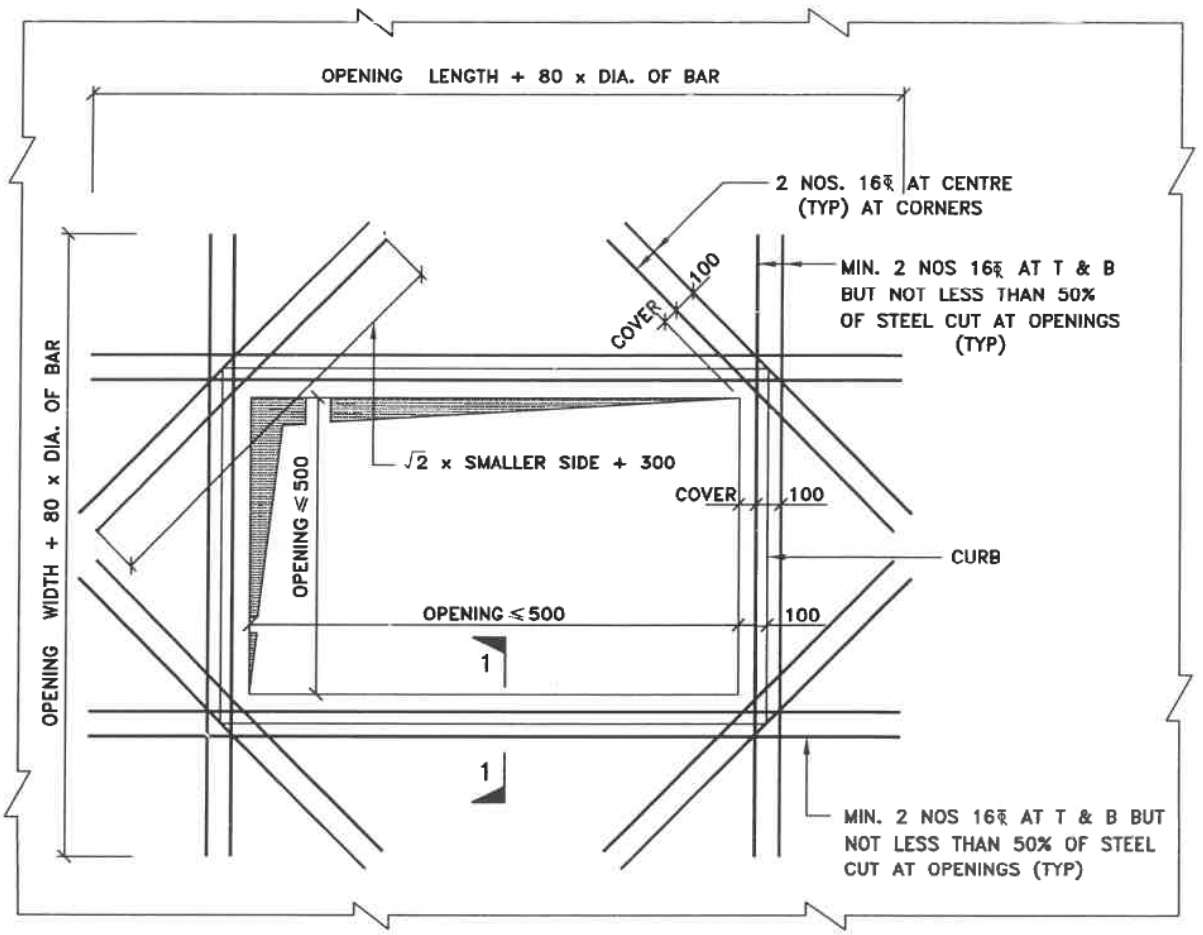

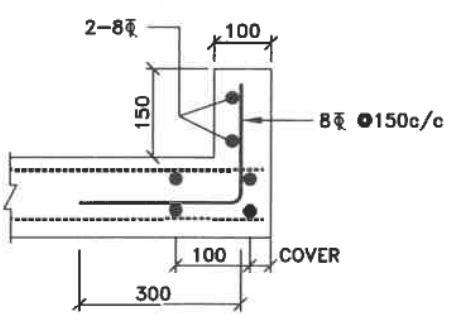

SECTION: 1–1

NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. EXTRA BARS MAY BE OMITTED IF A BEAM IS PROVIDED AT THE RELEVANT EDGE.
3. CORNER BAR MAY BE OMITTED IF TWO BEAMS MEET AT THE RELEVANT CORNER.
4. ALL THE BARS MENTIONED ABOVE SHALL BE EFFECTIVELY TIED WITH THE MAIN REINFORCEMENT BARS CUT OR SPLAYED NEAR OPENING AS DIRECTED BY ENGINEER-IN-CHARGE.
5. OMIT CURB WHERE SPECIFICALLY STATED ON DRAWING.
6. THIS DETAIL APPLIES TO SLABS UPTO 200 THK.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	
7	29.03.24	REAFFIRMED AND ISSUED AS STANDARD	KML	PM	ANURAG SINHA	MAINAK NANDI
6	06.06.18	REAFFIRMED AND ISSUED AS STANDARD	CS	AVM	R.SRIVASTAVA	RK TRIVEDI

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STANDARD LAP LENGTH FOR REBARS

TYPE OF REBARS	TYPE OF STRUCTURE	LAP LENGTH GRADE OF CONCRETE						TENSILE STRESS (σ_s) FOR Fe500 (N / mm^2)	DESIGN METHOD
		M20	M25	M30	M35	M40	M45		
HIGH STRENGTH DEFORMED BARS CONFORMING TO IS 1786 AS PER GENERAL NOTES OF THE PROJECT	GENERAL R.C.C STRUCTURES / LIQUID RETAINING STRUCTURES / CHIMNEY	57 D	49 D	46 D	40 D	36 D	36 D	435	LIMIT STATE
	STORAGE BINS	54 D	48 D	43 D	40 D	36 D	34 D	275	WORKING STRESS

REMARKS: 'D' DENOTES DIAMETER OF REBARS.

NOTES :-

1. LAP LENGTHS FOR REBARS, FULLY STRESSED TO TENSILE STESS AT DESIGN LOAD / WORKING LOAD, HAS BEEN DERIVED FROM THE BASIC FORMULA GIVEN BELOW (REFER CLAUSE 26.2.1, IS 456)

$$L_d = \frac{D\sigma_s}{4\tau_{bd}}$$

WHERE D = NOMINAL DIAMETER OF THE BARS ; L_d = LAP LENGTH

σ_s = TENSILE STRESS AT DESIGN LOAD / WORKING LOAD IN REBARS HAS BEEN ADOPTED AS 0.87fy FOR LIMIT STATE AND 0.55fy FOR WORKING STRESS

τ_{bd} = DESIGN BOND STRESS AS PER CLAUSE 26.2.1.1 OF IS 456 FOR LIMIT STATE AND TABLE 21 OF IS 456 FOR WORKING STRESS DESIGN.

2. IS CODE REFERENCES :

LIQUID RETAINING STRUCTURE	IS 3370
R.C.C CHIMNEYS	IS 4998
STORAGE BINS	IS 4995
GENERAL R.C.C STRUCTURES	IS 456

3. LAP LENGTH SHALL BE ROUNDED UP TO THE NEXT HIGHER WHOLE NUMBER.
4. THE LONGITUDINAL DISTANCE BETWEEN TWO ADJACENT LAPS SHOULD NOT BE LESS THAN 1.3 TIMES THE LAP LENGTH L_d.
5. LAP SPLICES SHALL NOT BE USED FOR BARS LARGER THAN 32mm.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
8	22.12.25	REVISED AND REISSUED AS STANDARD	AK	PM	AS	MN
7	28.09.20	REAFFIRMED AND ISSUED AS STANDARD	JG	AVM	AS	SM
6	21.07.14	REVISED AND ISSUED AS STANDARD	A.K. SHARMA	AMARJEET	P.K.MITTAL	S.CHANDA

Approved by

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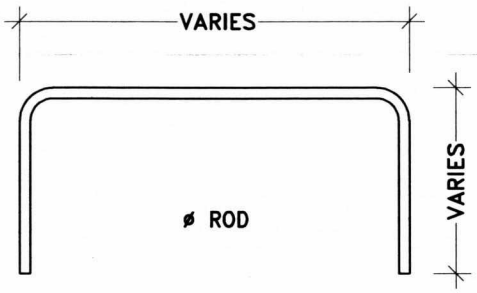

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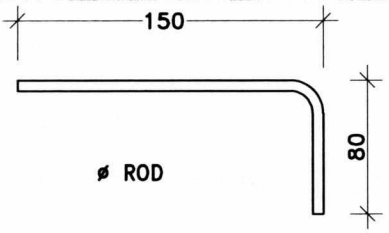

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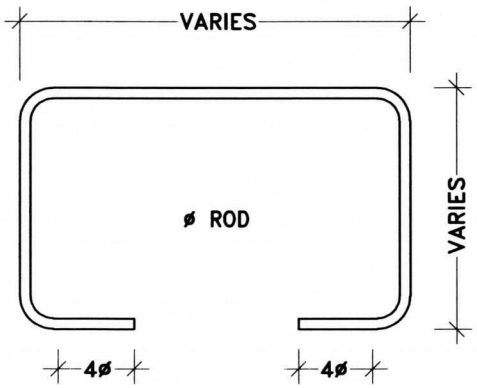

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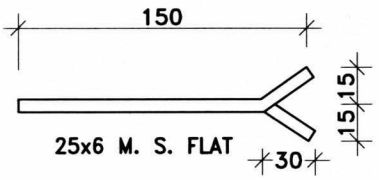

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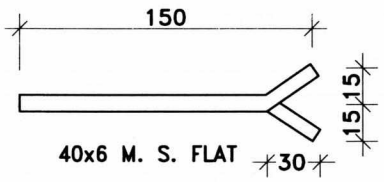

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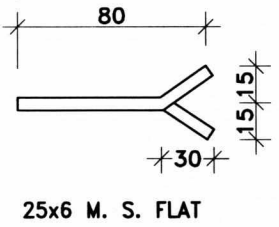

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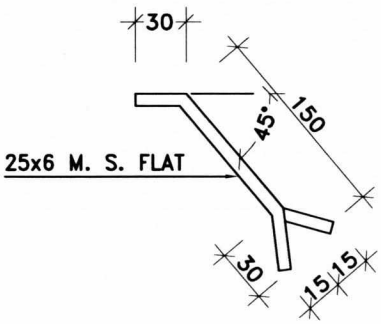

TYPE–'C4'

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
7	12.12.23	REAFFIRMED AND ISSUED AS STANDARD	SN	AD/MM	ANURAG SINHA	MAINAK NANDI
6	06.06.18	REAFFIRMED AND ISSUED AS STANDARD	CS	AVM	R.SRIVASTAVA	RK TRIVEDI

Approved by

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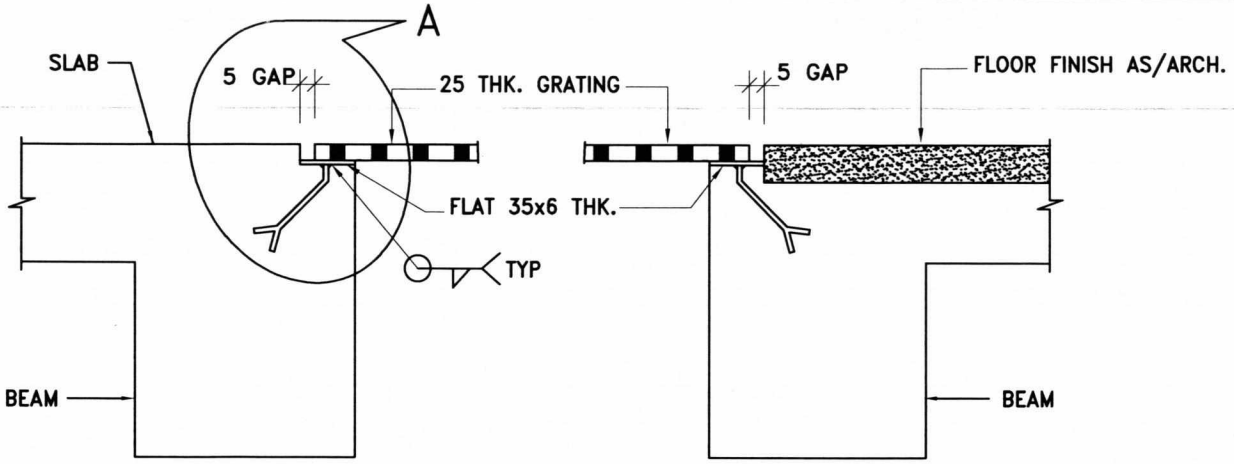
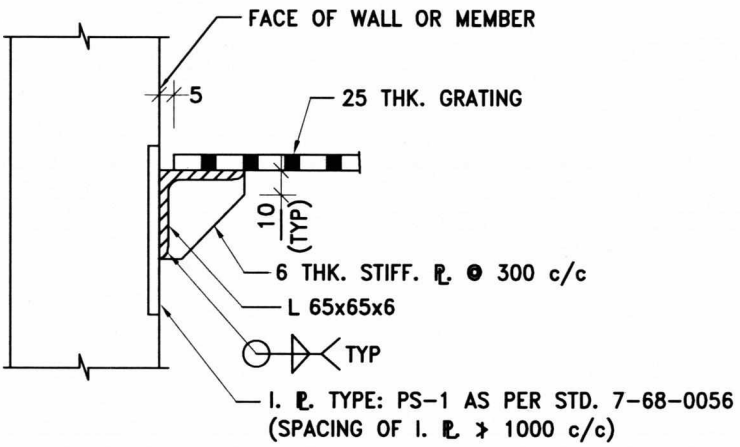
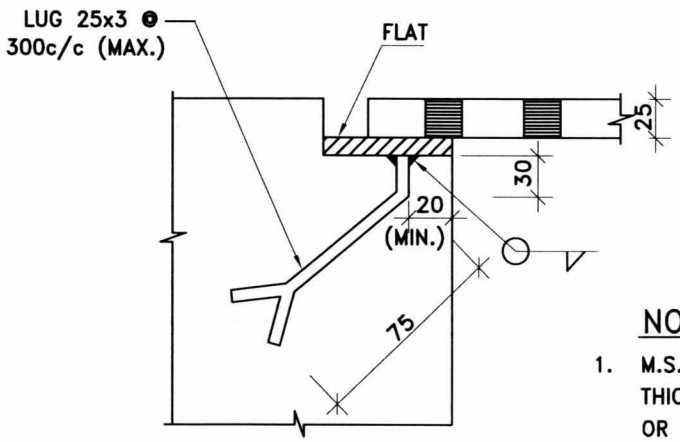


GRATING SUPPORT OVER BEAM WITHOUT FLOOR FINISH

GRATING SUPPORT OVER BEAM WITH FLOOR FINISH



GRATING SUPPORT ON WALL/COLUMN



DETAIL-'A'

NOTES:

1. M.S. LUGS SHALL BE SUITABLY BENT IF CONCRETE THICKNESS IS LESS THAN THE LENGTH OF LUGS OR LUGS INTERFERE WITH R/F BARS.
2. ALL DIMENSIONS ARE IN mm.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
8	12.12.23	REVISED AND ISSUED AS STANDARD	SN	AD/MM	ANURAG SINHA	MAINAK NANDI
7	06.06.18	REAFFIRMED AND ISSUED AS STANDARD	CS	AVM	R.SRIVASTAVA	RK TRIVEDI

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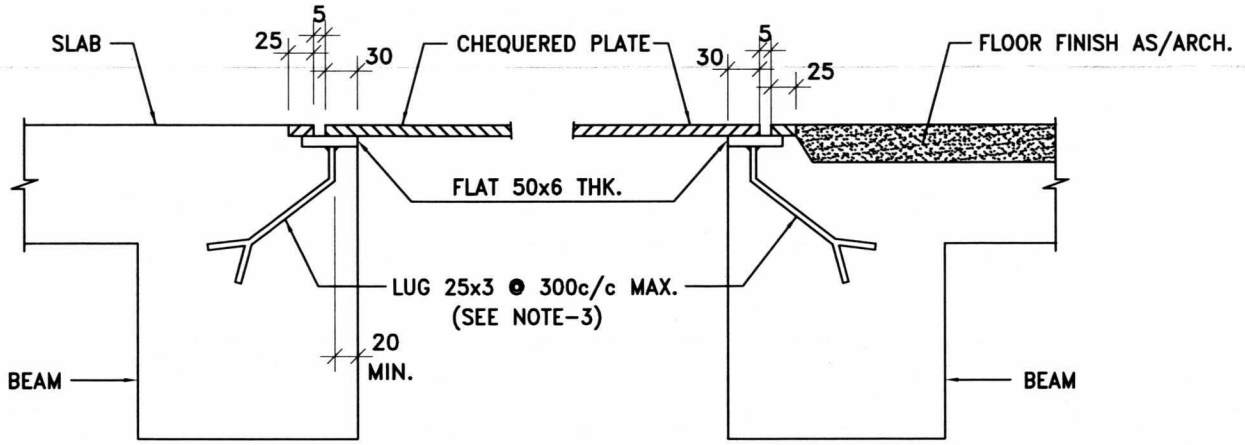
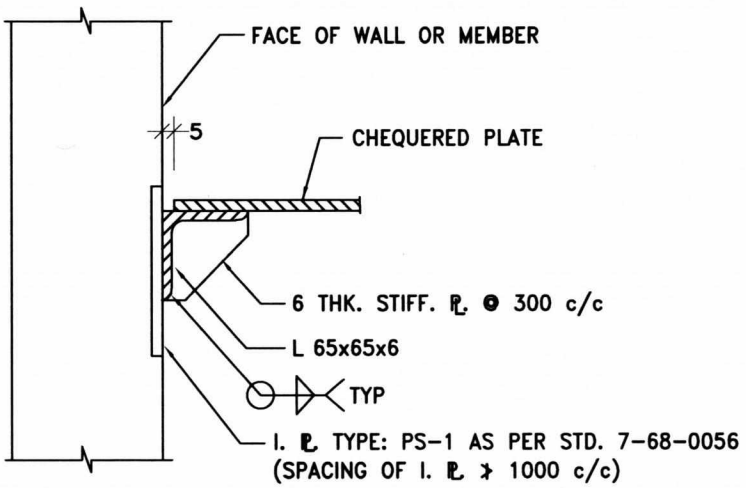


CHQD. PL SUPPORT OVER BEAM WITHOUT FLOOR FINISH

CHQD. PL SUPPORT OVER BEAM WITH FLOOR FINISH



CHQD. PL SUPPORT ON WALL/COLUMN

NOTES:

1. M.S. LUGS SHALL BE SUITABLY BENT IF CONC. THICKNESS IS LESS THAN THE LENGTH OF LUGS OR LUGS INTERFERE WITH R/F BARS
2. ALL DIMENSIONS ARE IN mm.
3. DETAILS OF LUGS SHALL BE SAME AS GIVEN IN 7-68-0202.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
8	12.12.23	REVISED AND ISSUED AS STANDARD	SN	AD/MM	ANURAG SINHA	MAINAK NANDI
7	06.06.18	REAFFIRMED AND ISSUED AS STANDARD	CS	AVM	R.SRIVASTAVA	RK TRIVEDI

Approved by

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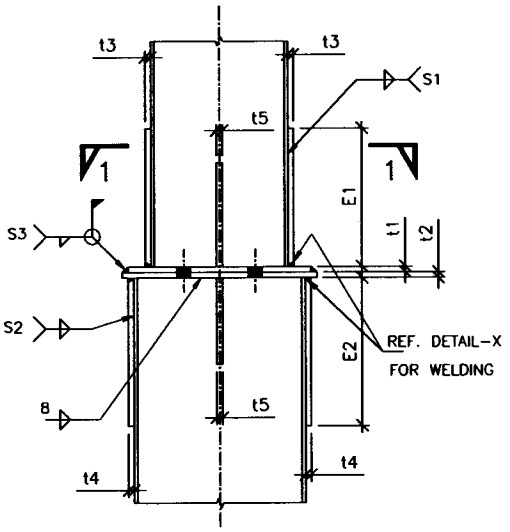
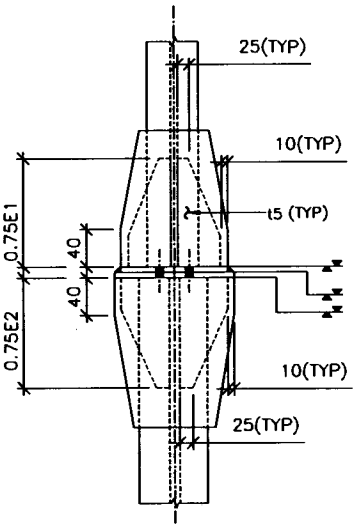
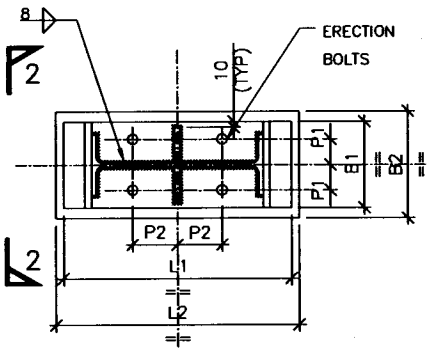
DETAIL OF WELDED COLUMN SPLICE
(UNEQUAL PARALLEL FLANGE SECTION)



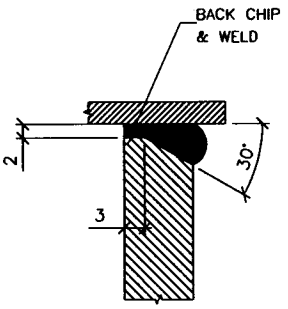
ELEVATION



VIEW 2–2



VIEW 1–1



DETAIL–X

NOTES :-

1. ALL DIMENSIONS ARE IN mm.
2. PARALLEL FLANGE SECTIONS SHALL CONFIRM TO IS:12778.
3. STRUCTURAL STEEL FOR CONNECTION PLATES SHALL BE OF SAME GRADE AS THAT OF THE CONNECTING MEMBERS.
4. ENDS OF COLUMNS SHALL BE GROUND FLUSH, BEFORE WELDING TO THE BASE / CAP PLATES.
5. ERECTION BOLTS ARE DESIGNED FOR 5% MOMENT AND 5% AXIAL LOAD CAPACITY OF THE SMALLER SECTION.
6. ERECTION BOLT SHALL BE LEFT PERMANENTLY IN POSITION.
7. ERECTION BOLTS SHALL BE OF PROPERTY CLASS 4.6 CONFORMING TO IS:1367.
8. UPPER COLUMN SHALL BE SUITABLY HELD IN POSITION WITH THE HELP OF GUY–ROPES / TIES TILL THE BASE AND CAP PLATES ARE WELDED IN POSITION.
9. THE CONNECTION IS DESIGNED FOR FULL TENSION CAPACITY OR 75% OF THE MOMENT CAPACITY OF UPPER COLUMN.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	
1	22.09.20	REAFFIRMED & ISSUED AS STANDARD	JEETU	AVM	AS	SM
0	15.07.14	ISSUED AS STANDARD	VPS	AS	PKM	SC

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COLUMN SECTIONS SPLICED		BASE AND FLANGE PLATE DETAILS (UPPER COLUMN)							CAP AND FLANGE PLATE DETAILS (LOWER COLUMN)						WELD SIZE	ERECTION BOLT		
UPPER COLUMN	LOWER COLUMN	L1	B1	E1	t1	t3	S1	L2	B2	E2	t2	t4	S2	S3	ø	P1	P2	t5
ISMB600	WPB600x300x177.77	685	315	450	30	20	12	740	360	450	30	16	12	20	22	125	225	12
WPB600x300x128.79	WPB600x300x177.77	710	400	515	32	25	16	810	455	515	32	25	16	20	27	125	225	12
	WPB700x300x149.89																	
	WPB700x300x204.48																	
	WPB700x300x240.51																	
WPB600x300x177.77	WPB700x300x204.48	730	400	550	36	25	16	810	455	550	36	25	16	20	27	125	225	12
	WPB700x300x240.51																	
WPB700x300x149.89	WPB700x300x204.48	810	425	575	32	25	16	870	480	575	32	25	16	20	27	125	275	12
	WPB700x300x240.51																	
	WPB800x300x224.37	810	425	575	32	25	16	910	480	575	32	25	16	20	27	125	275	12
	WPB800x300x262.33																	
WPB700x300x204.48	WPB700x300x240.51	850	450	680	36	30	16	910	510	680	36	30	16	20	27	125	275	12
	WPB800x300x224.37																	
	WPB800x300x262.33																	
WPB700x300x240.51	WPB800x300x262.33	1050	500	755	40	30	16	1110	560	755	40	30	16	20	27	125	275	16
WPB800x300x262.33	WPB900x300x291.45	1200	500	755	40	30	16	1260	560	755	40	30	16	20	27	125	325	16

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	
1	22.09.20	REAFFIRMED & ISSUED AS STANDARD	JEETU	AVM	AS	SM
0	15.07.14	ISSUED AS STANDARD	VPS	AS	PKM	SC

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NOTES:–

1. ALL DIMENSIONS ARE IN mm.
2. SPLICE IS DESIGNED FOR FULL STRENGTH OF SMALLER ISMB SECTION.
3. ENDS OF ISMB SECTIONS SHALL BE GROUND FLUSH, BEFORE WELDING TO THE BASE / CAP PLATES.
4. BASE AND CAP PLATE SURFACES SHALL BE GROUND FLUSH.
5. ERECTION BOLTS ARE DESIGNED FOR 5% MOMENT AND 5% AXIAL LOAD CAPACITY OF THE SMALLER SECTION.
6. UPPER COLUMN SHALL BE SUITABLY HELD IN POSITION WITH THE HELP OF GUY–ROPES / TIES TILL THE BASE AND CAP PLATES ARE WELDED IN POSITION.
7. ERECTION BOLTS SHALL BE LEFT PERMANENTLY IN POSITION.
8. ERECTION BOLTS SHALL BE OF PROPERTY CLASS 4.6 CONFORMING TO IS:1367.
9. BASE PLATE OF SMALLER ISMB SECTION SHALL BE OMITTED IN CASE OF SHOP SPLICING AND THE SMALLER ISMB SECTION ALONG WITH ALL GUSSETS AS SHOWN SHALL BE WELDED WITH THE CAP PLATE OF THE LARGER ISMB SECTION.
10. THIS STANDARD IS VALID FOR STRUCTURAL STEEL OF GRADE E350 & E250 CONFIRMING TO IS 2062.
11. GRADE OF BASE PLATE, CAP PLATE, FLANGE PLATE & ALL MISC. CONNECTION PLATES SHALL BE SAME AS THAT OF GRADE OF COLUMN.
12. WELDING ELECTRODE SHALL BE COMPATIBLE WITH CORRESPONDING GRADE OF STEEL.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
6	01.05.25	REVISED AND ISSUED AS STANDARD	AB	SP	ANURAG SINHA	MAINAK NANDI
5	01.08.19	REAFFIRMED AND ISSUED AS STANDARD	JG	AVM	RAJANJI SRIVASTAVA	R.K.TRIVEDI
4	21.01.14	REAFFIRMED AND ISSUED AS STANDARD	VPS	AJS	P K.MITTAL	S CHANDA

Approved by

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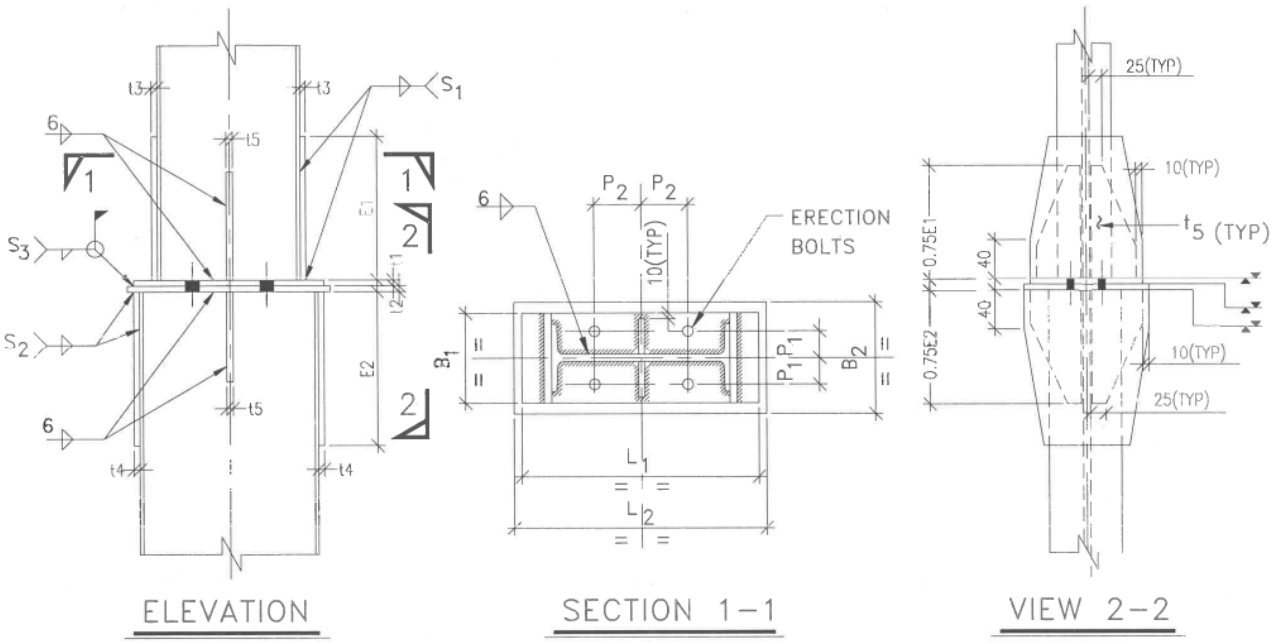

ELEVATION SECTION 1–1 VIEW 2–2

COLUMN SECTIONS SPLICED		BASE AND FLANGE PLATE DETAILS (SMALLER SECTION)						CAP AND FLANGE PLATE DETAILS (LARGER SECTION)						WELD SIZE	ERECTION BOLT			
UPPER	LOWER	L_1	B_1	E_1	t_1	t_3	S_1	L_2	B_2	E_2	t_2	t_4	S_2	S_3	ø	P_1	P_2	t_5
100	125/150	140	100	150	12	08	06	165/190	120/125	150/160	12/12	08/08	06/06	06	12	30	25	OMIT
125	150/175	165	105	160	12	08	06	190/215	125/130	160/165	12/12	08/08	06/06	06	12	30	35	OMIT
150	175/200	190	110	165	16	10	06	215/240	130/170	165/220	16/16	08/08	06/06	06	12	35	50	OMIT
175	200/225	215	145	220	16	10	06	240/280	170/180	220/225	16/20	08/10	06/08	08	12	50	60	OMIT
200	225/250	250	150	225	20	12	08	280/305	180/180	225/225	20/20	10/10	08/08	10	16	45	65	10
225	250/300	275	150	225	20	12	10	305/350	180/205	225/265	20/20	10/10	08/10	10	16	45	75	10
250	300/350	300	175	265	20	12	10	350/400	205/220	265/285	20/20	10/10	10/10	10	16	55	85	10
300	350/400	350	190	285	20	12	10	400/450	220/220	285/285	20/25	10/12	10/10	12	16	65	110	12
350	400/450	415	190	285	25	16	12	450/500	220/245	285/310	25/25	12/12	10/10	12	20	60	130	12
400	450/500	465	205	310	25	16	12	500/560	245/285	310/360	25/25	12/12	10/10	12	20	70	150	12
450	500	525	240	360	25	18	12	560	285	360	25	12	10	12	20	85	175	12
500	600	580	280	420	28	18	12	665	315	420	28	12	12	12	20	105	200	12

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NOTES :-

1. ALL DIMENSIONS ARE IN mm.
2. ALL BUTT WELD ARE FULL STRENGTH WELDS.
3. ALL EDGES SHALL BE PREPARED BEFORE BUTT WELDING.
4. SPLICE PLATES ARE DESIGNED FOR 40% OF FULL STRENGTH OF THE MEMBER.
5. SPLICE SHALL NOT BE LOCATED AT THE POINT OF MAXIMUM BENDING MOMENT AND/OR MAXIMUM SHEAR FORCE.
6. SPLICE PLATES MAY BE OMITTED FOR PURLINS & SIDE GIRTS FOR MEMBER SIZES UPTO 150MM DEPTH.
7. SPLICE DETAILS FOR APPROPRIATE GRADE OF STEEL LIKE E250, E350, Yst240, Yst310, Yst355, ETC. AS PER PROJECT GENERAL NOTES SHALL BE FOLLOWED.
8. NUMBER OF SPLICES PER MEMBER SHALL BE AS PER CLAUSE 5.2.8 OF SPECIFICATION NO. 6-68-0006.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	
7	11-09-23	REVISED AND ISSUED AS STANDARD	JITENDER	AKSHAY/AMARJEET	ANURAG SINHA	SANJAY MAZUMDAR
6	27-03-19	REAFFIRMED AND ISSUED AS STANDARD	JG	AJS	RAJANJI SRIVASTAVA	R.K. TRIVEDI

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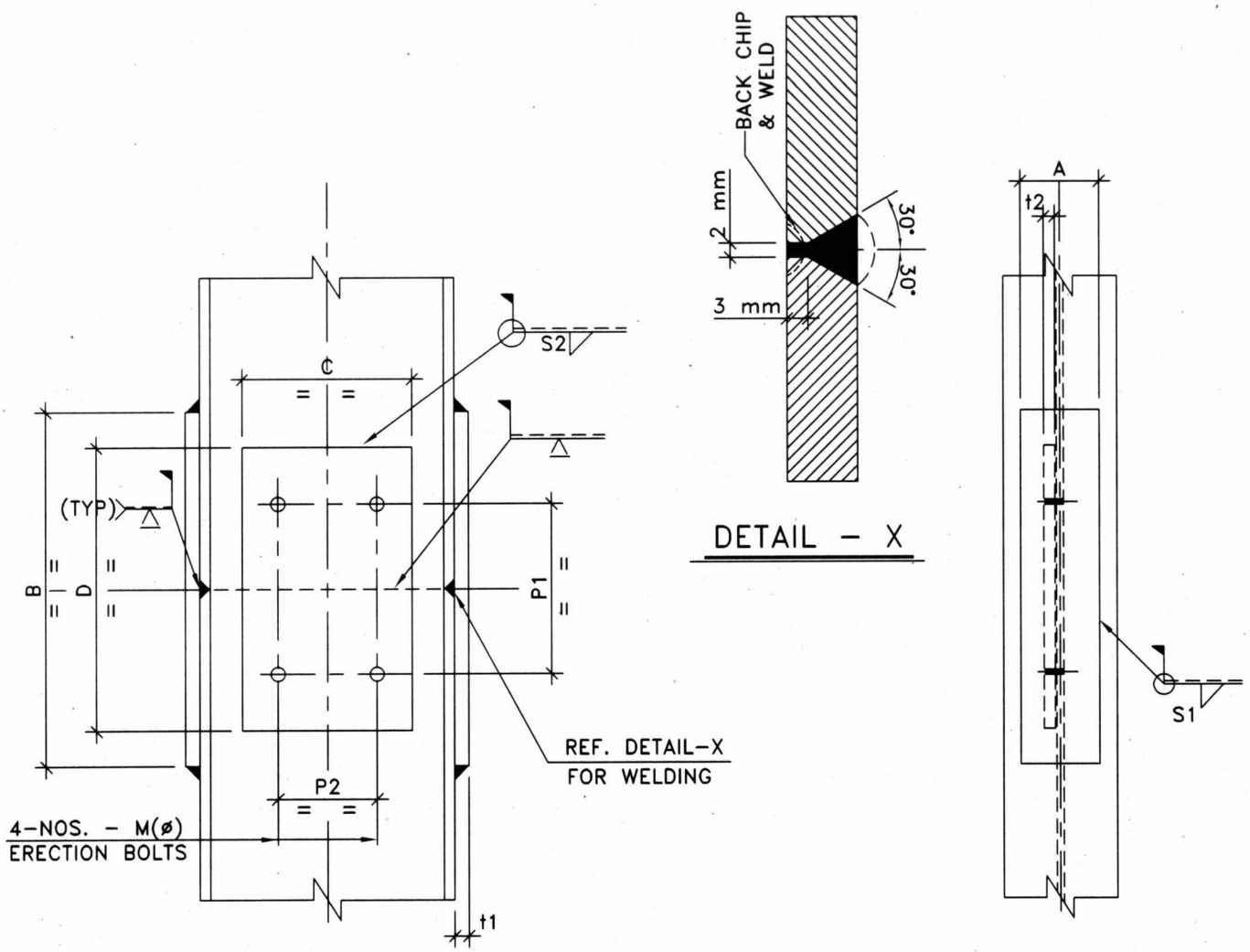

BEAMS

SIZE OF JOIST	FLANGE SPLICE PLATE					WEB SPLICE PLATE					ERECTION BOLTS		
	A	B (E250)	B (E350)	t1	WELD SIZE S1	C	D (E250)	D (E350)	t2	WELD SIZE S2	M(ø)	P1	P2
MB125	55	100	100	6	6	90	100	100	6	6	12	50	40
MB150	60	120	120	6	6	110	120	120	6	6	16	60	50
MB175	70	120	120	6	6	120	120	120	6	6	16	60	60
MB200	80	150	150	6	6	120	120	120	6	6	16	60	60
MB225	90	170	190	6	6	120	120	120	6	6	16	60	60
MB250	100	260	260	8	6	120	120	120	6	6	16	60	60
MB300	120	300	300	8	6	150	120	140	6	6	16	60	80
MB350	120	300	340	8	6	150	160	200	8	6	16	60	80
MB400	120	300	340	10	8	180	210	250	8	6	16	60	100
MB450	130	300	340	10	8	215	240	300	8	6	16	60	135
MB500	160	400	400	10	8	260	300	350	8	6	16	60	150
MB600	180	400	450	12	10	300	300	350	10	8	16	60	160

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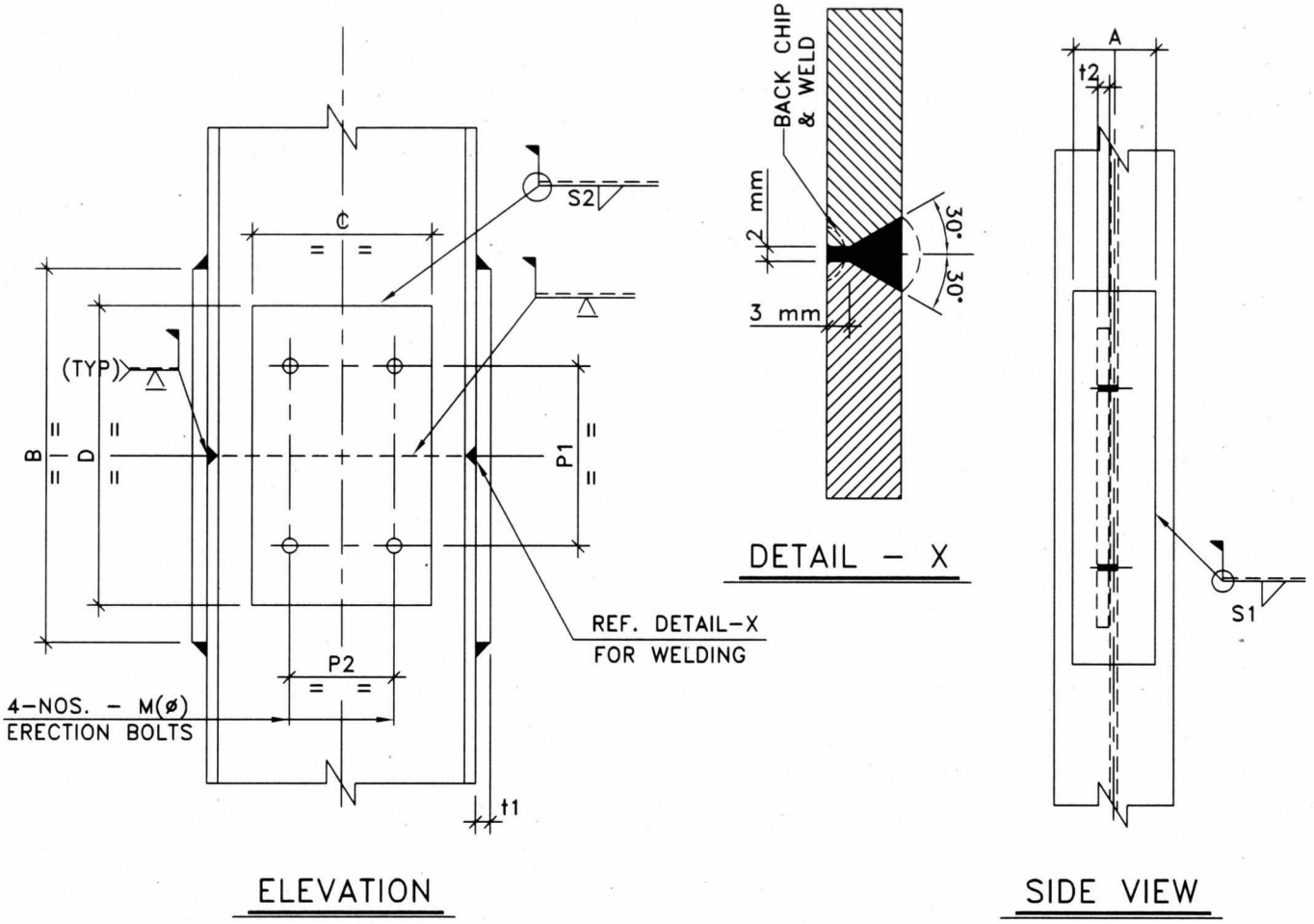

PARALLEL FLANGE BEAMS

MEMBER SIZE	FLANGE SPLICE PLATE					WEB SPLICE PLATE					ERECTION BOLTS		
	A	B (E250)	B (E350)	t1	WELD SIZE S1	C	D (E250)	D (E350)	t2	WELD SIZE S2	M(ø)	P1	P2
NPB 300x150x49.32	120	300	340	8	6	150	120	150	8	6	16	60	80
NPB 400x180x66.3	140	300	340	10	8	180	200	250	8	6	16	60	100
NPB 500x200x90.7	160	400	450	10	8	250	300	380	8	6	16	60	150
NPB 600x220x122.4	180	400	450	12	10	300	300	380	10	8	16	60	160
WPB 600x300x128.79	250	400	450	12	10	300	300	380	10	8	16	80	170
WPB 600x300x177.8	250	500	600	14	12	300	340	400	10	8	16	80	180
WPB 700x300x149.89	250	500	600	14	12	350	380	440	10	8	16	80	190
WPB 700x300x204.5	250	600	680	16	12	350	380	440	12	10	16	80	190
WPB 700x300x240.5	250	600	680	18	14	350	380	440	14	12	16	80	190
WPB 800x300x224.37	250	600	680	18	14	400	380	450	14	12	16	100	200
WPB 800x300x262.33	250	600	680	20	16	400	380	450	14	12	16	100	200
WPB 900x300x291.45	250	600	700	20	16	450	450	550	16	12	16	100	200

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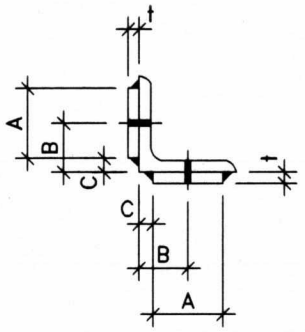
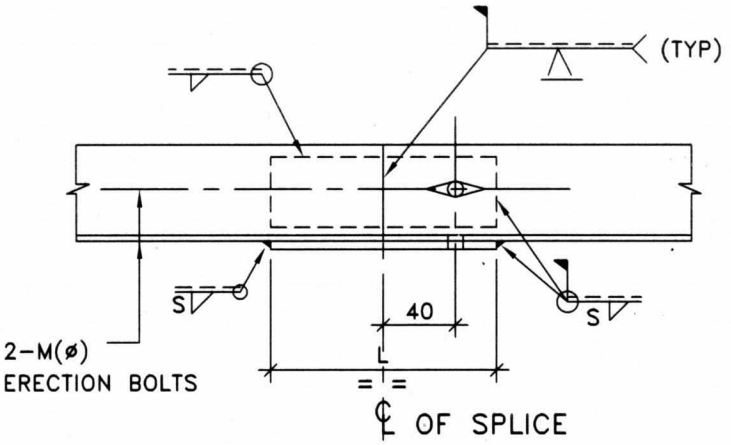


END VIEW



ELEVATION

EQUAL ANGLE (SINGLE)

SIZE OF ANGLE	SPLICE PLATE			B	C	BOLT DIA M(ø)	SIZE OF WELD (S)
	A	t	L				
L 50x50x6	30	6	130	28	10	12	5
L 65x65x6	45	6	130	35	10	12	5
L 65x65x8	45	6	130	35	10	12	6
L 75x75x6	55	6	130	40	10	16	6
L 75x75x8	55	6	130	40	10	16	6
L 90x90x6	60	6	130	50	15	16	6
L 90x90x8	60	8	130	50	15	16	8
L 100x100x8	60	8	150	60	20	16	8
L 130x130x10	70	8	200	80	30	16	8
L 150x150x10	80	8	200	90	35	16	8

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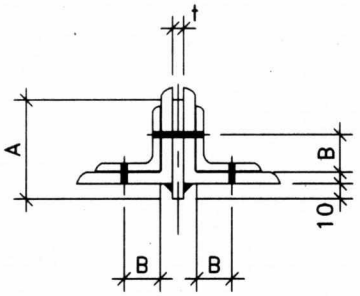
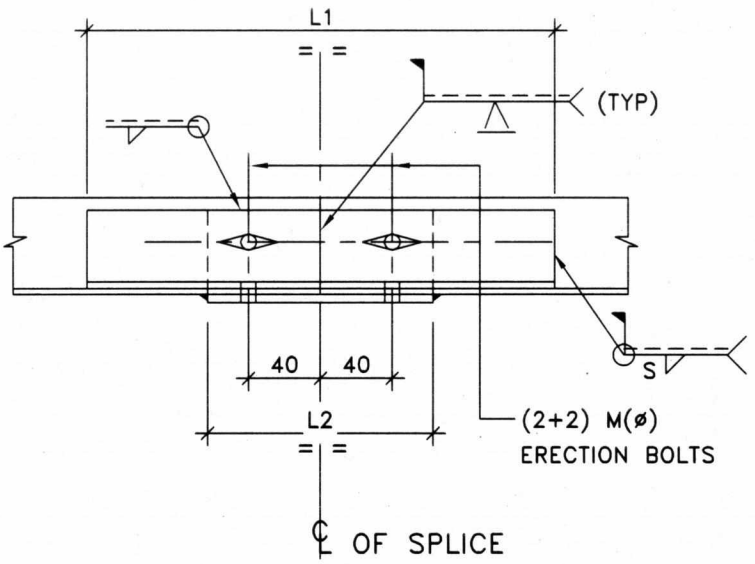


END VIEW



ELEVATION

EQUAL ANGLES (DOUBLE)

SIZE OF ANGLE	SPLICE ANGLE	L1	SPLICE PLATE			B	ERECTION BOLT DIA M(ø)	SIZE OF WELD (S)
			A	t	L2			
JL 50x50x6	JL 35x35x6	150	50	t	130	19	12	5
JL 65x65x6	JL 35x35x6	150	65	t	130	19	12	5
JL 65x65x8	JL 50x50x6	200	65	t	130	28	12	6
JL 75x75x6	JL 50x50x6	200	75	t	130	28	12	6
JL 75x75x8	JL 50x50x6	230	75	t	130	28	12	6
JL 90x90x6	JL 50x50x6	240	90	t	130	28	12	6
JL 90x90x8	JL 65x65x6	270	90	t	130	35	12	6
JL 100x100x8	JL 65x65x6	300	100	t	130	35	12	6
JL 130x130x10	JL 75x75x8	400	130	t	130	40	16	6
JL 150x150x10	JL 90x90x8	480	150	t	130	50	16	6

t – THICKNESS OF PLATE AS PER DESIGN DRG./CONNECTION DESIGN.

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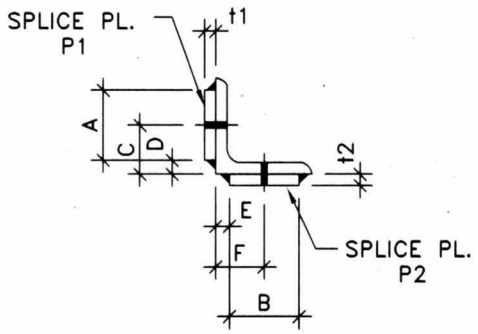
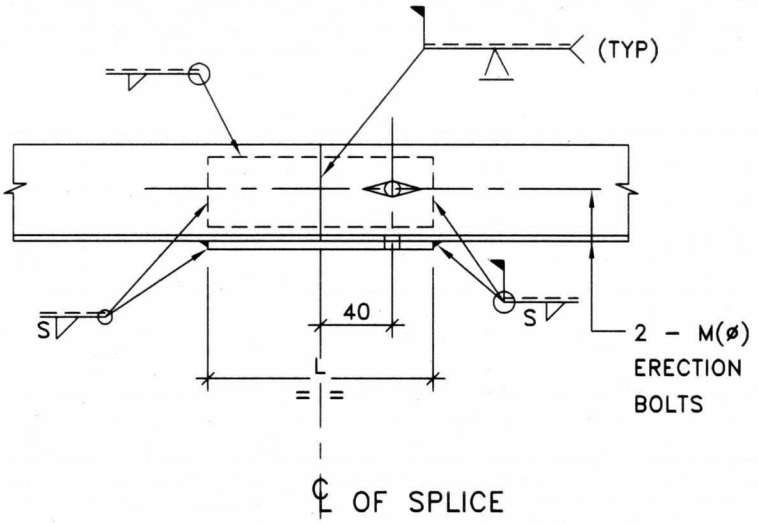


END VIEW



ELEVATION

UNEQUAL ANGLE (SINGLE)

SIZE OF ANGLE	SPLICE PLATE P1		SPLICE PLATE P2		L	C	D	E	F	EREC-TION BOLT DIA M(ø)	SIZE OF WELD (S)
	A	t1	B	t2							
L 75x50x6	35	6	30	6	130	40	20	10	28	12	6
L 100x75x6	40	6	45	6	130	60	40	15	40	12	6
L 100x75x8	60	6	50	6	130	60	30	15	40	12	6
L 125x75x8	75	6	50	6	150	75	40	15	40	12	6
L 125x75x10	75	6	50	6	200	75	40	15	40	12	6
L 150x75x10	100	6	50	6	250	90	40	15	40	12	6
L 150x115x10	100	6	75	6	250	90	40	30	70	16	6

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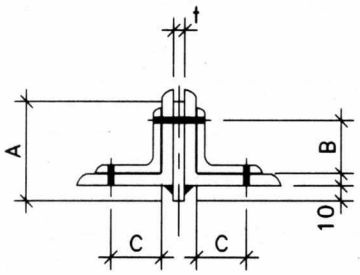
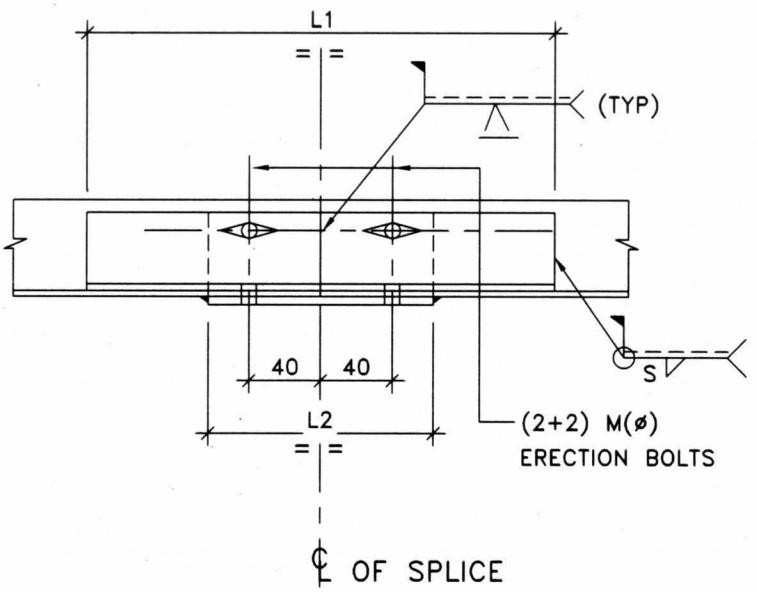


END VIEW



ELEVATION

UNEQUAL ANGLES (DOUBLE)

SIZE OF ANGLE	SPLICE ANGLE	L1	SPLICE PLATE			B	C	ERECTION BOLT DIA M(ø)	SIZE OF WELD (S)
			A	t	L2				
JL 75x50x6	JL 35x35x6	150	75	t	130	19	19	12	6
JL 100x75x6	JL 50x50x6	200	100	t	130	28	28	12	6
JL 100x75x8	JL 50x50x6	270	100	t	130	28	28	12	6
JL 125x75x8	JL 75x50x6	300	125	t	130	40	28	12	6
JL 125x75x10	JL 75x50x8	320	125	t	130	40	28	12	6
JL 150x75x10	JL 75x50x8	350	150	t	130	40	28	12	6
JL 150x115x10	JL 100x75x8	420	150	t	130	60	40	12	6

t – THICKNESS OF PLATE AS PER DESIGN DRG./CONNECTION DESIGN.

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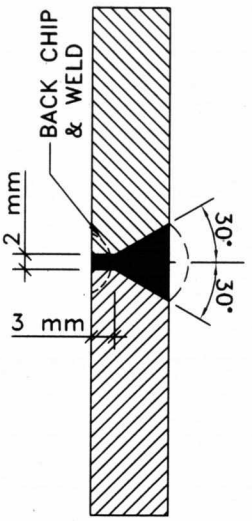
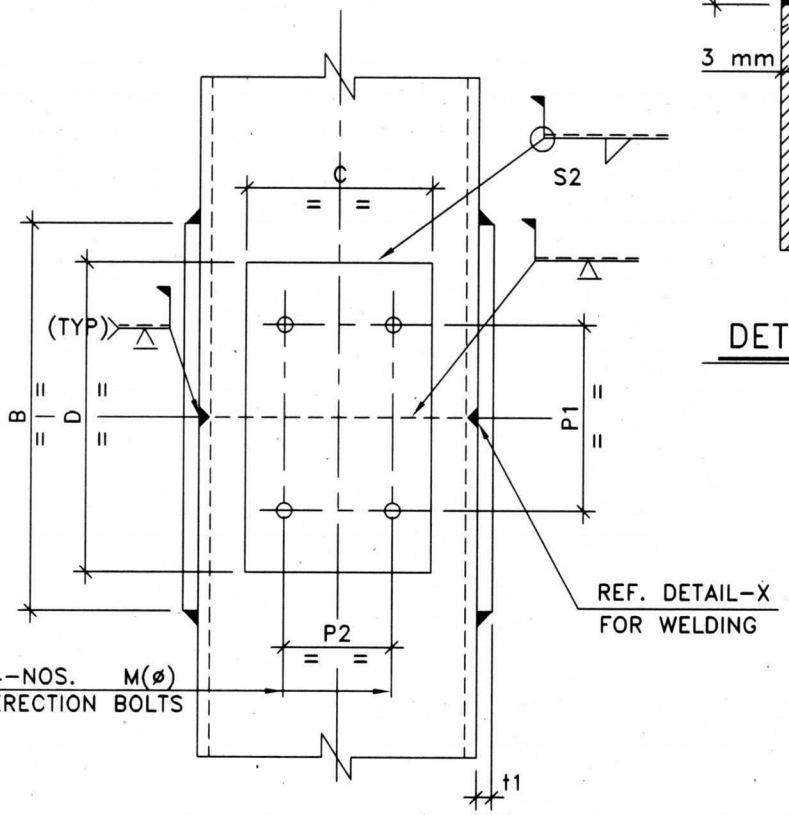
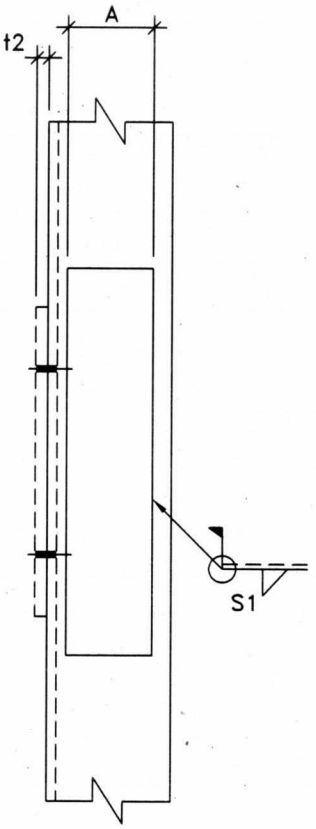
SECTION



DETAIL – X



ELEVATION



END VIEW

CHANNELS

SIZE OF CHANNEL	FLANGE SPLICE PLATE					WEB SPLICE PLATE					ERECTION BOLTS			REMARKS
	A	B (E250)	B (E350)	t1	WELD SIZE S1	C	D (E250)	D (E350)	t2	WELD SIZE S2	M(ø)	P1	P2	
MC100	35	120	120	8	6	40	90	90	6	6	12	50	–	TWO BOLTS
MC125	45	120	120	8	6	50	90	90	6	6	12	50	–	TWO BOLTS
MC150	55	150	150	8	6	60	120	120	6	6	16	60	–	TWO BOLTS
MC175	55	150	150	10	8	120	120	120	6	6	16	60	60	
MC200	55	150	150	12	10	120	120	120	6	6	16	60	60	
MC225	60	160	160	12	10	120	120	120	6	6	16	60	60	
MC250	60	160	160	12	10	120	120	120	6	6	16	60	60	
MC300	70	160	160	12	10	150	120	140	6	6	16	60	60	
MC350	80	190	190	12	10	200	120	150	6	6	16	60	60	
MC400	80	190	190	12	10	240	140	180	6	6	16	60	60	

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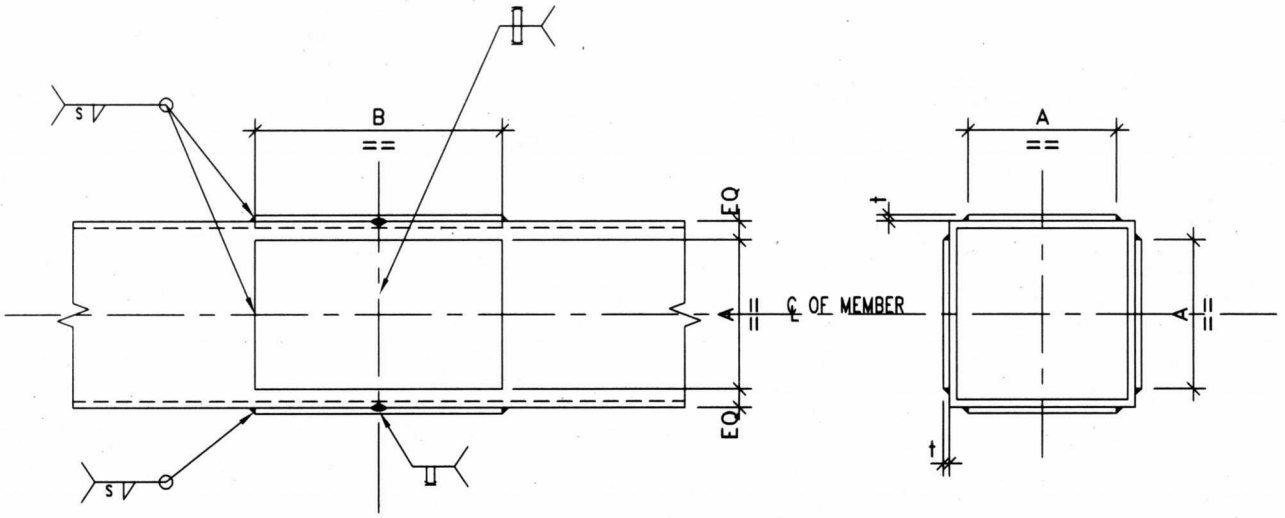

ELEVATION

END VIEW

SQUARE HOLLOW SECTIONS

MEMBER SIZE	SPLICE PLATE					SIZE OF WELD (S)
	A	B (Yst240)	B (Yst310)	B (Yst355)	t	
SHS 75x4.9	40	100	100	100	6	6
SHS 100x6	60	100	100	100	6	6
SHS 132x5.4	90	120	120	120	6	6
SHS 150x6	110	120	120	120	6	6
SHS 180x8	130	180	200	220	6	6
SHS 200x10	150	250	310	320	8	6
SHS 220X10	170	300	350	350	8	6
SHS 250x10	200	300	350	350	10	8
SHS 300X10	240	300	350	350	10	8
SHS 300X12.5	240	350	420	440	10	8

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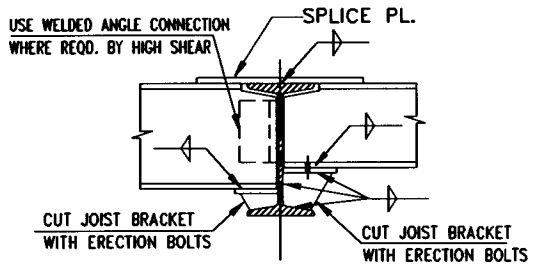
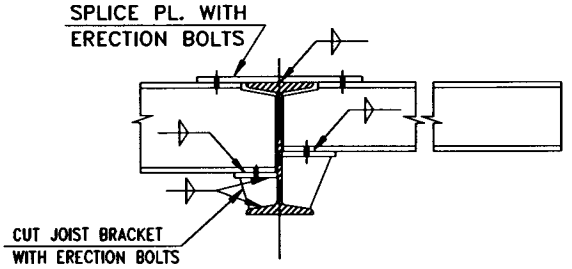
BEAM TO BEAM AND BEAM TO COLUMN CONNECTION DETAILS

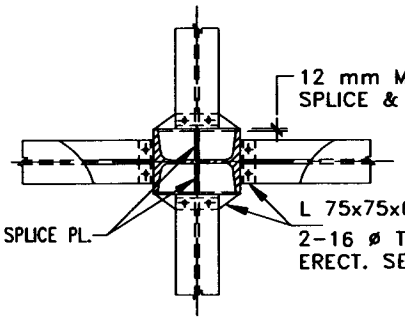


DETAIL–1

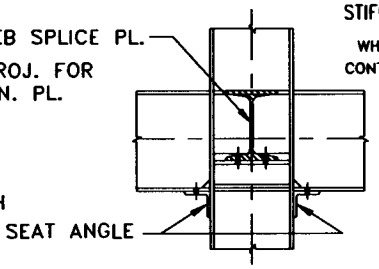


DETAIL–2

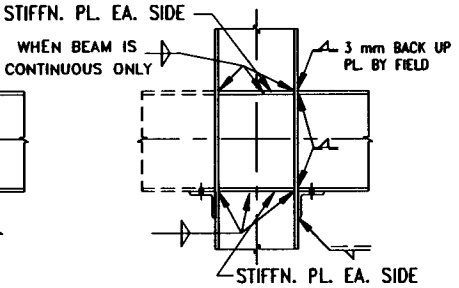
TYPICAL BEAM TO GIRDER CONNECTION



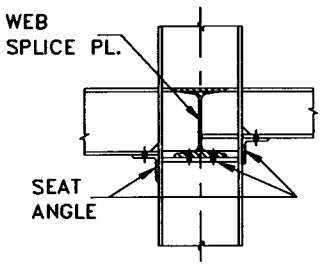
PLAN



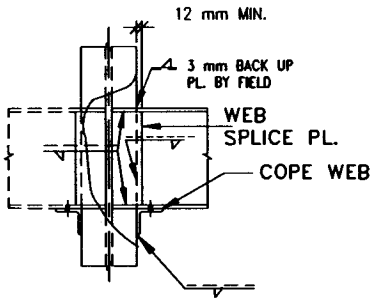
ELEVATION – A
(FOR DET. NOT SHOWN SEE ELEVATION B)



ELEVATION – B
(BEAM FRAMING AT 90° NOT SHOWN)



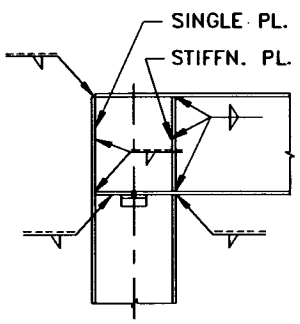
ELEVATION – C
(DET. NOT SHOWN SEE ELEVATION B)



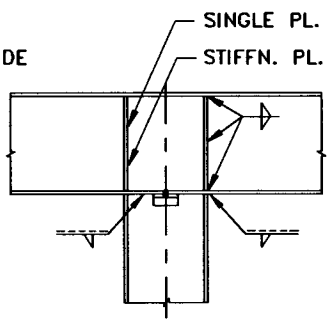
ELEVATION – D

NOTES :–
(ALSO APPLICABLE TO STD. NOS. 7–68–0209 & 7–68–0212)

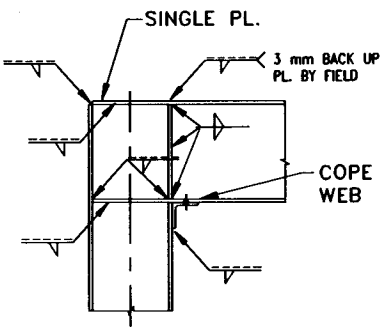
1. DETAILS SHOWN ARE TYPICAL ONLY AND SHALL BE USED WHEREVER DESIGN CONSIDERATIONS PERMIT IN WELDED CONTINUOUS FRAME STRUCTURE.
2. ALL MATERIAL & FABRICATION SHALL CONFORM TO IS CODE FOR FUSION WELDING IN BUILDING CONSTRUCTION.
3. OMIT ERECTION ANGLES & CLIPS WHEN WELDS ARE MADE IN SHOP.
4. ALL REINFORCING FILLET WELDS USED IN CONJUNCTION WITH V–WELDS SHALL BE 5 mm.
5. MILLED ENDS MAY BE ELIMINATED ON SMALL, LIGHTLY LOADED COLUMNS.
6. AT INTERSECTIONS, THICKNESS OF CONNECTION PLATES AND/ OR STIFFENER PLATES TO BE GOVERNED BY MAX. BEAM FLANGE THICKNESS.



DETAIL–4



DETAIL–5



DETAIL–6

TYPICAL BEAM TO COLUMN RIGID CONNECTION

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	
6	28–09–20	REAFFIRMED AND ISSUED AS STANDARD	JG	AVM	AS	SM
5	07–08–14	REAFFIRMED AND ISSUED AS STANDARD	SUSHMA	V.GOEL	P.K.MITTAL	S.CHANDA

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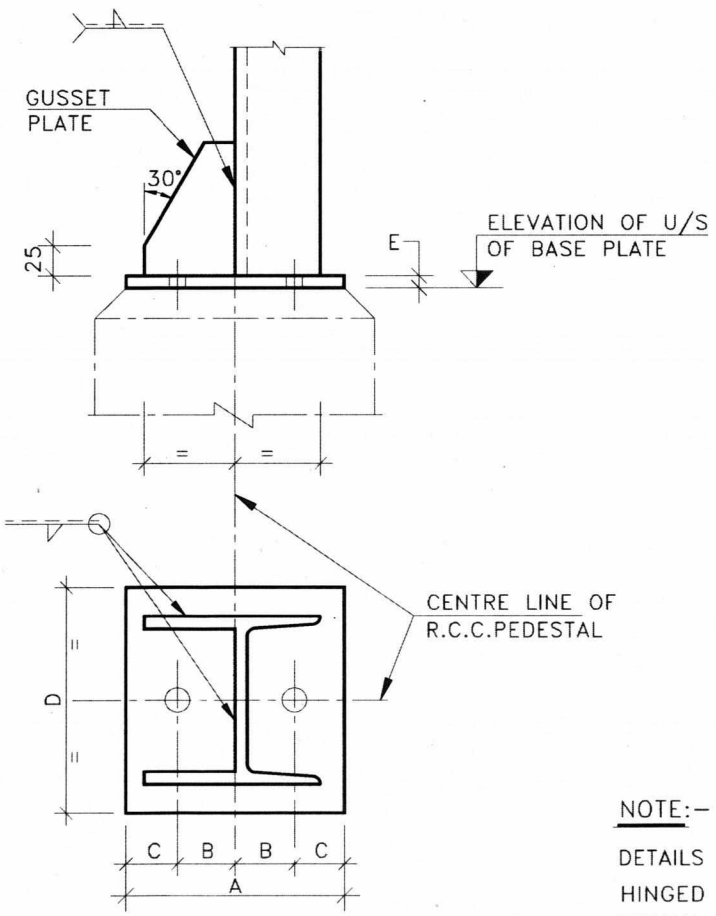
	A	B	C	D	E	HOLE ø	BOLT M	AREA OF BASE PL cm^2	RESISTING AREA FOR 2 BOLTS cm^2	ALLOWABLE TENSION (kg)	ALLOWABLE SHEAR (kg)	WEIGHT (kg)
ISMC 100	150	40	35	140	12	19	16	210	3.14	3690	2460	1.98
ISMC 125	150	40	35	170	12	19	16	255	3.14	3690	2460	2.41
ISMC 150	180	50	40	190	12	21	18	342	3.84	4510	3010	3.23
ISMC 175	180	50	40	220	16	23	20	396	4.90	5750	3840	4.98
ISMC 200	180	50	40	240	16	23	20	432	4.90	5750	3840	5.43
ISMC 225	210	60	45	270	16	25	22	567	6.06	7120	4750	7.13
ISMC 250	210	60	45	290	16	25	22	609	6.06	7120	4750	7.64
ISMC 300	230	60	55	340	20	27	24	782	7.06	8290	5540	12.28
ISMC 350	240	65	55	390	20	32	27	936	9.18	10790	7200	14.70
ISMC 400	240	65	55	440	20	32	27	1056	9.18	10790	7200	16.58



GUSSET PLATE	STEEL SHAPES	THK
	ISMC 100 TO 150	6
	ISMC 175 TO 225	8
	ISMC 250 TO 400	10

NOTE:-

DETAILS IN THIS STANDARD SHALL BE ADOPTED FOR HINGED BASE ONLY, WHEN SO REFERRED IN THE DESIGN DRAWING.

ISMC 100 TO ISMC 400

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
7	08-12-22	REAFFIRMED & ISSUED AS STANDARD	JITENDER	ALPANA SRIVASTAVA	ANURAG SINHA	S. MAZUMDAR
6	15-04-17	REAFFIRMED & ISSUED AS STANDARD	Anju	ADITYA	RAJAN JI SRIVASTAVA	R.NANDA

Approved by

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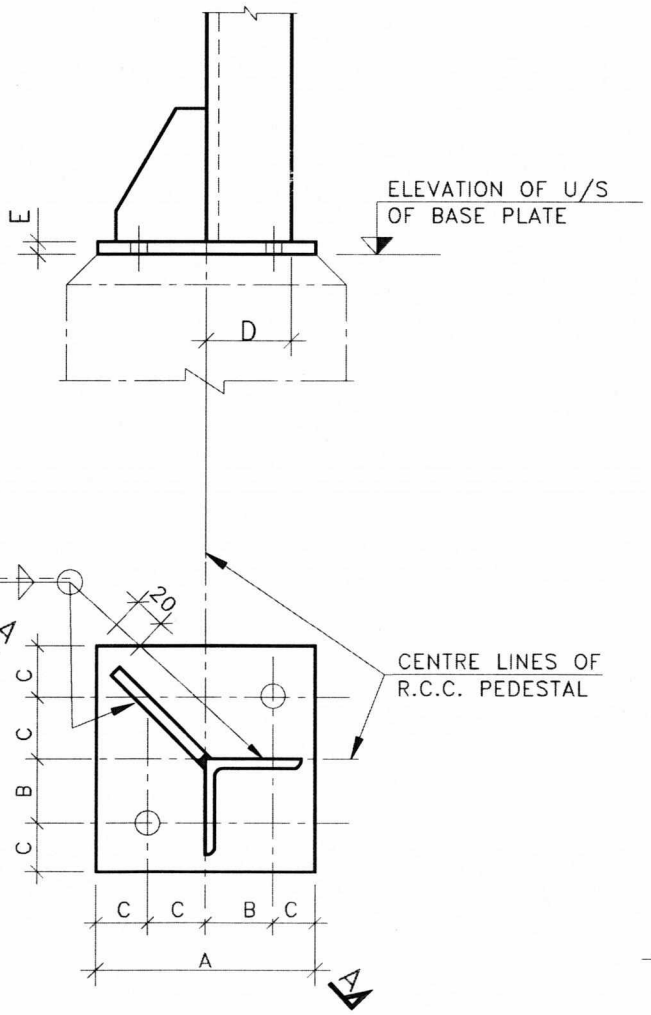
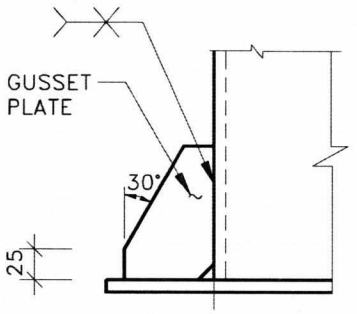
	A	B	C	D	E	HOLE ø	BOLT M	AREA OF BASE PL cm^2	RESISTING AREA FOR 2 BOLTS cm^2	ALLOWABLE TENSION (kg)	ALLOWABLE SHEAR (kg)	WEIGHT (kg)
L 50x50x6	145	40	35	50	10	19	16	210	3.14	3690	2460	1.67
L 65x65x6	145	40	35	65	10	19	16	210	3.14	3690	2460	1.67
L 75x75x8	155	50	35	75	16	23	20	240	4.90	5750	3840	3.02
L 80x80x8	160	55	35	80	16	23	20	256	4.90	5750	3840	3.22
L 90x90x8	180	60	40	90	16	23	20	324	4.90	5750	3840	4.07
L 100x100x8	200	65	45	100	16	27	24	400	7.06	8290	5540	5.08
L 130x130x10	240	90	50	130	16	27	24	576	7.06	8290	5540	7.24
L 150x150x12	280	100	60	150	20	32	27	784	9.18	10790	7200	12.31



L 50x50x6 TO L 150x150x12



VIEW A–A

GUSSET PLATE	STEEL SHAPES	THK
	L 50 TO 75	6
	L 80 TO 100	8
	L 130 TO 150	10

NOTE :–

DETAILS IN THIS STANDARD SHALL BE ADOPTED FOR HINGED BASE ONLY WHEN SO REFERRED IN THE DESIGN DRAWING.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
7	08–12–22	REAFFIRMED & ISSUED AS STANDARD	JITENDER	ALPANA SRIVASTAVA	ANURAG SINHA	S. MAZUMDAR
6	15–04–17	REAFFIRMED & ISSUED AS STANDARD	Anju	ADITYA	RAJAN JI SRIVASTAVA	R.NANDA

Approved by

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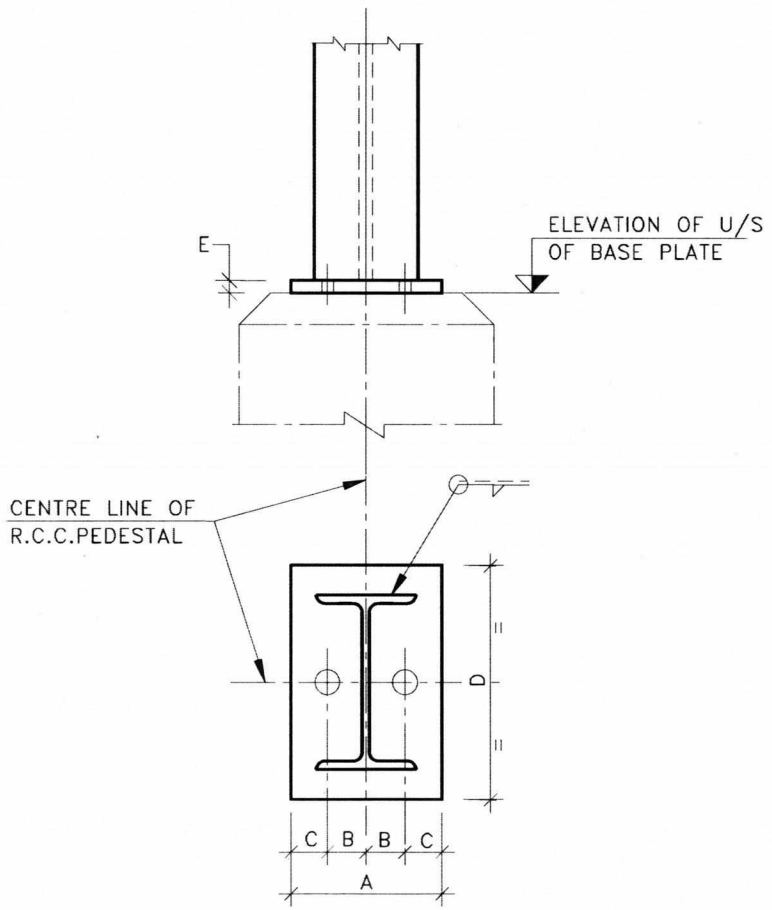
	A	B	C	D	E	HOLE ø	BOLT M	AREA OF BASE PL cm²	RESISTING AREA FOR 2 BOLTS cm²	ALLOWABLE TENSION (kg)	ALLOWABLE SHEAR (kg)	WEIGHT (kg)
MB 100	130	35	30	140	12	19	16	182	3.14	3690	2460	1.72
MB 125	130	35	30	170	12	19	16	221	3.14	3690	2460	2.08
MB 150	150	40	35	190	16	23	20	285	4.90	5750	3840	3.58
MB 175	150	40	35	210	16	23	20	315	4.90	5750	3840	3.96
MB 200	180	50	40	240	16	23	20	432	4.90	5750	3840	5.43
MB 225	180	50	40	270	20	27	24	486	7.06	8290	5540	7.63
MB 250	200	60	40	290	20	27	24	580	7.06	8290	5540	9.11
MB 300	220	60	50	340	20	32	27	748	9.18	10790	7200	11.75
MB 350	220	60	50	390	20	35	30	858	11.22	13180	8800	13.45
MB 400	230	60	55	440	20	35	30	1012	11.12	13180	8800	15.90



MB 100 TO MB 400

NOTE:

DETAILS IN THIS STANDARD SHALL BE ADOPTED FOR HINGED BASE ONLY WHEN SO REFERRED IN THE DESIGN DRAWING.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	
8	08-12-22	REAFFIRMED AND ISSUED AS STANDARD	JITENDER	ALPANA SRIVASTAVA	ANURAG SINHA	S. MAZUMDAR
7	15-04-17	REAFFIRMED AND ISSUED AS STANDARD	Anju	ADITYA	RAJAN JI SRIVASTAVA	R.NANDA

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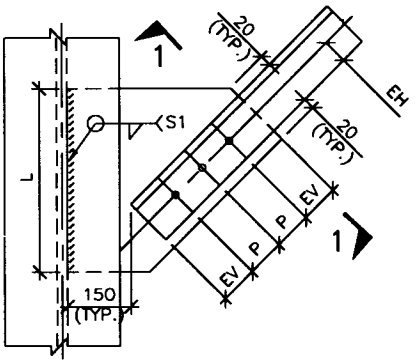
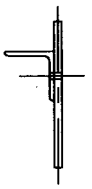
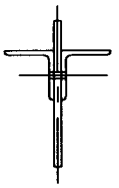
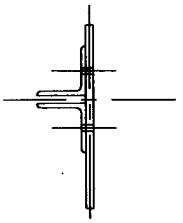




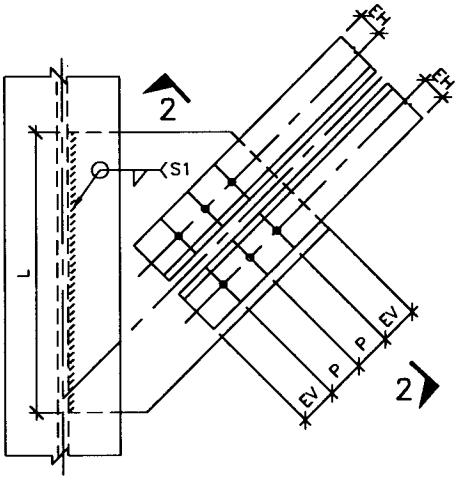
SEC. 1–1
(FOR SINGLE ANGLE)

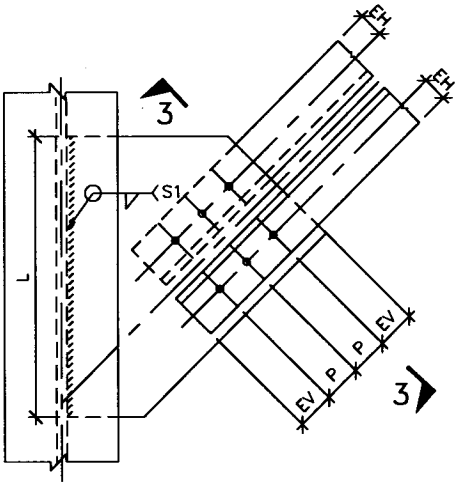


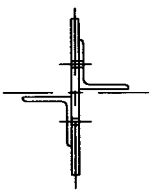
SEC. 1–1
(FOR DOUBLE ANGLE)



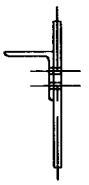
SEC. 2–2



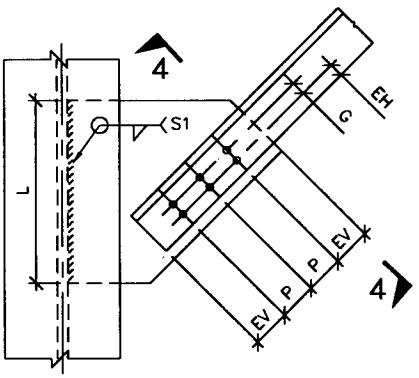


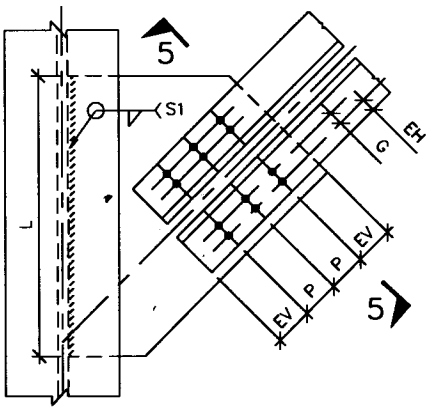


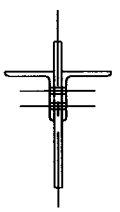
SEC. 3–3



SEC. 4–4
(FOR SINGLE ANGLE)







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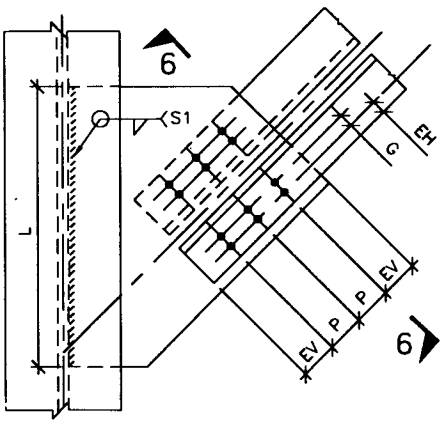
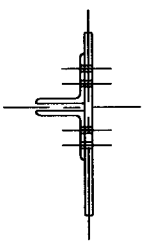
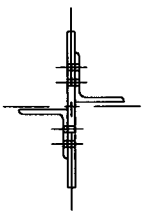




SEC. 5–5



SEC. 6–6

TYP. BRACING CONNECTION DETAILS OF ISA WITH GUSSET PLATES

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	
0	18.05.2022	ISSUED AS STANDARD	AV	RM	AS	SM

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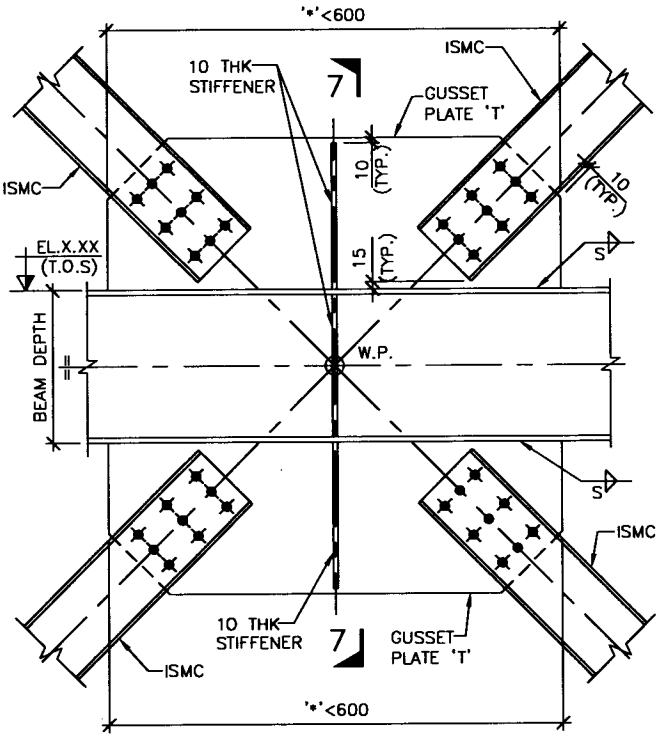
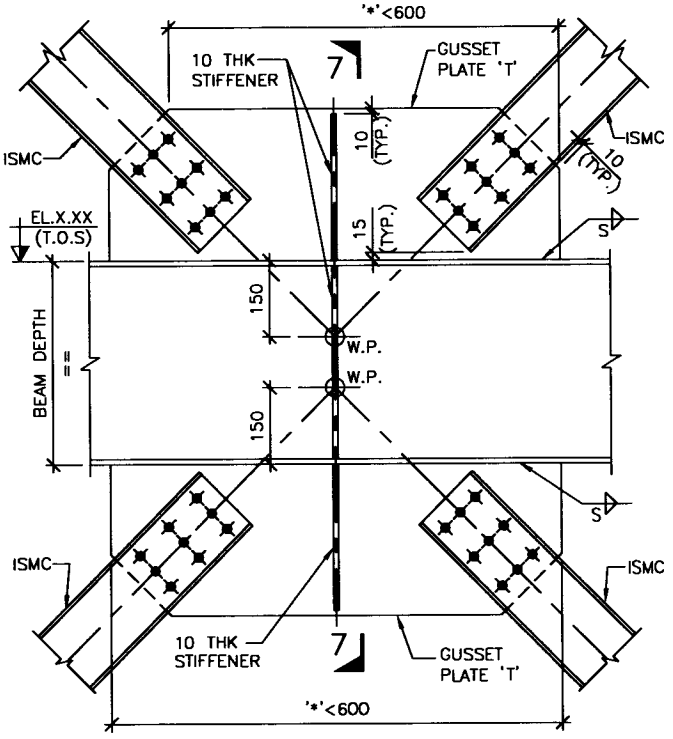


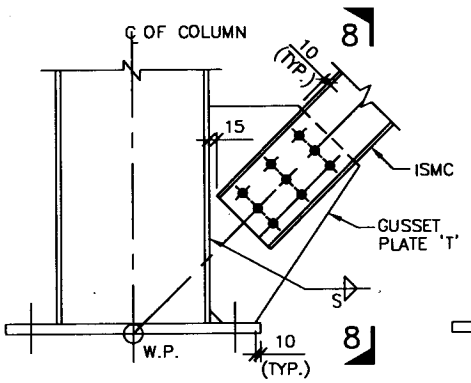
FOR BEAM UPTO 300 DEEP



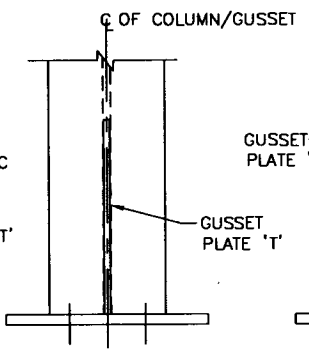
FOR BEAM GREATER THAN 300 DEEP

DETAIL-4A

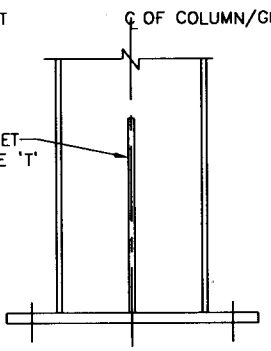
(*- WHEREVER THE DIMENSION WITH * IS MORE THAN 600 mm, SEPARATE GUSSET PLATE TO BE PROVIDED & INTERMEDIATE STIFFENERS TO BE AVOIDED)



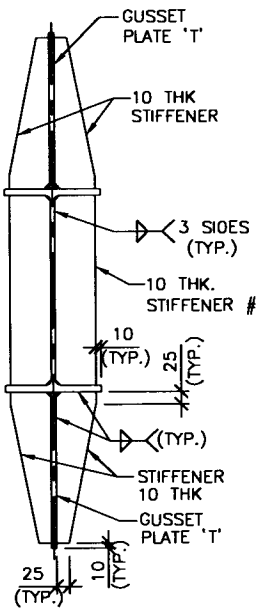
FOR COLUMN FLANGE



SECTION 8-8

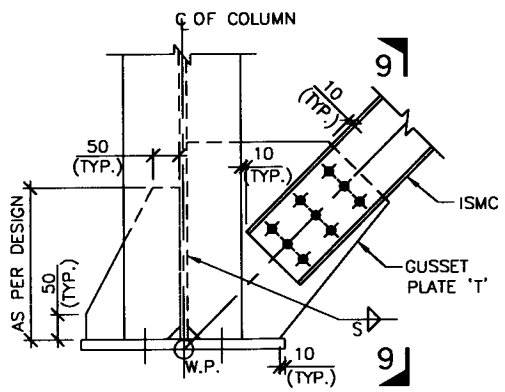


SECTION 9-9

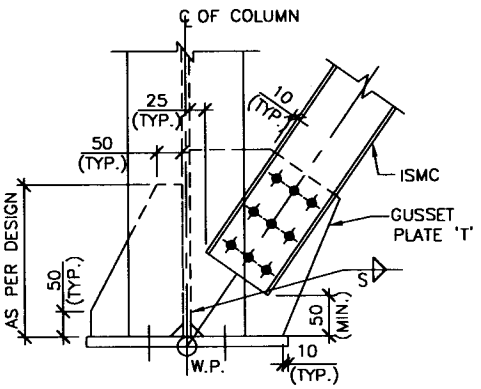


SECTION 7-7

(# DEPTH OF STIFFENER CAN BE REDUCE BASED ON BEAM DEPTH AND HANGER/POST LOADINGS)



FOR COLUMN WEB



FOR COLUMN WEB
FOR COLUMN SIZE GREATER THAN 700 DEEP

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					Approved by	
0	18.05.2022	ISSUED AS STANDARD	AV	RM	AS	SM

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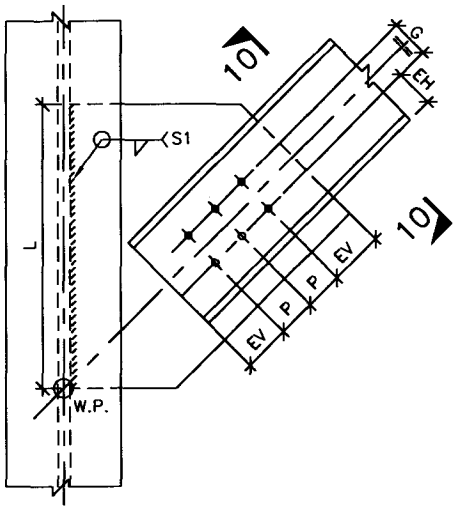
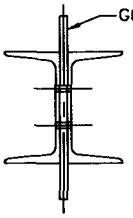
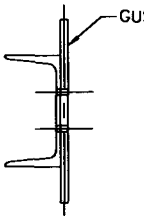
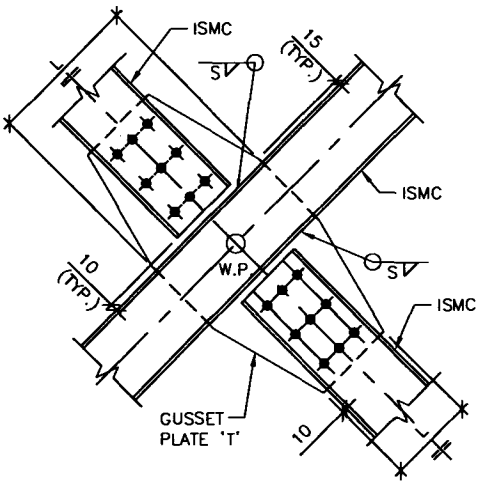




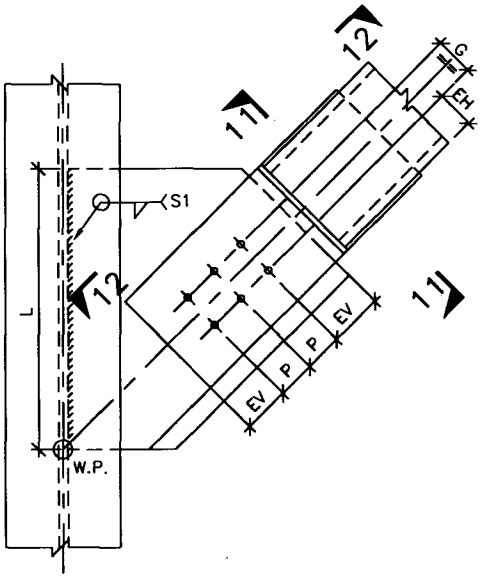
SECTION 10–10
(FOR DOUBLE CHANNEL)

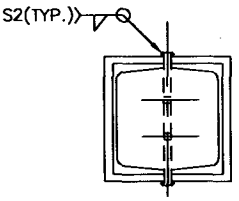


SECTION 10–10
(FOR SINGLE CHANNEL)

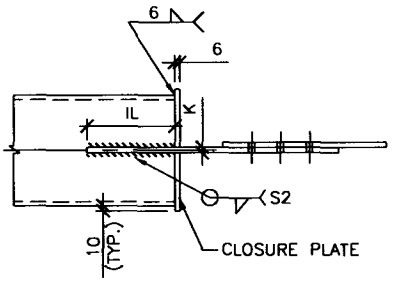


DETAIL FOR CROSS BRACING





SECTION 11–11
(IN TWO HALVES)



VIEW 12–12

TYP. BRACING CONNECTION DETAILS OF ISMC WITH GUSSET PLATES

NOTES :–

1. ALL DIMENSIONS ARE IN mm.
2. ANGLE & ISMC SECTIONS SHALL CONFORM TO IS:808 & SQUARE HOLLOW SECTIONS SHALL CONFORM TO IS:4923.
3. GRADE OF STRUCTURAL STEEL FOR ALL ISA, ISMC & CONNECTING GUSSET SHALL PLATE SHALL BE E350 CONFIRMING IS 2062 & FOR SQUARE HOLLOW SECTIONS SHALL BE YSt 310 CONFIRMING TO IS:4923.
4. CONNECTION DESIGN IS AS PER CLAUSE 10.3 (BEARING TYPE BOLTS) OF IS:800–2007.
5. CONNECTION DETAILS SHOWN HERE ARE FOR VERTICAL BRACINGS CONNECTIONS ONLY.
6. NO HOT WORK (e.g. WELDING, MAKING HOLES, ETC.) IS PERMITTED AT SITE.
7. ALL CONNECTION BOLTS SHALL BE OF PROPERTY CLASS 8.8 CONFORMING TO IS:3757 & IS:4000.
8. HEXAGONAL NUTS SHALL CONFORM TO IS:6623
9. WASHERS SHALL CONFORM TO IS:6649.
10. TIGHTENING OF NUTS SHALL BE AS PER IS:4000.
11. ALL HOLES ARE SHOWN THUS .
12. THE CONNECTIONS ARE DESIGNED FOR 100% OF AXIAL CAPACITY FOR YIELDING OF GROSS SECTIONS OF BRACING MEMBER AS PER IS:800–2007 (LSD)
13. ALL BOLTS, NUTS & WASHERS SHALL BE GALVANISED AS PER IS:1367, PART XIII.
14. ANCHOR BOLTS ARRANGEMENT SHALL BE SUCH THAT WORK POINT OF VERTICAL BRACING SHALL BE FROM UNDERSIDE OF BASE PLATE.
15. NO. OF BOLTS SHOWN IN CONNECTION DETAIL ARE INDICATIVE ONLY, FOR ACTUAL CONNECTION DETAIL REFER DESIGN TABLE OF RESPECTIVE CONNECTION.

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TABLE-1 : BRACING CONNECTION (SINGLE ANGLE)

SL NO.	BRACING MEMBER	NO. OF COL. OF BOLT	NO. OF ROW OF BOLT	BOLT DIA (mm)	HOLE DIA (mm)	GUSSET LENGTH (L) (mm)	GUSSET PLATE THK. (T) (mm)	WELD SIZE S_1 (mm)	SPACE B/W COL. P(mm)	SPACE B/W ROW G (mm)	EV (mm)	EH (mm)	AXIAL CAPACITY OF CONNECTION (kN)
1	ISA 50x50x6	4	1	16	18	120	10	6	55	-	27	27	180
2	ISA 65x65x6	4	1	16	18	160	10	6	60	-	35	35	235
3	ISA 75x75x6	5	1	16	18	180	10	6	60	-	35	35	275
4	ISA 75x75x8	4	1	20	22	230	10	6	70	-	40	40	360
5	ISA 90x90x6	5	1	20	22	220	10	6	70	-	45	45	330
6	ISA 90x90x8	5	1	20	22	280	10	6	70	-	45	45	435
7	ISA 100x100x8	6	1	20	22	310	10	6	80	-	45	45	490
8	ISA 100x100x10	7	1	20	22	380	10	6	80	-	45	45	600
9	ISA 100x100x12	8	1	20	22	420	10	6	80	-	45	45	670
10	ISA 110x110x12	6	1	24	26	400	10	8	80	-	45	45	795
11	ISA 130x130x10	7	1	24	26	400	10	8	80	-	50	50	795
12	ISA 130x130x12	8	1	24	26	480	10	8	80	-	50	50	950
13	ISA 150x150x12	6	2	20	22	430	12	10	110	50	50	50	1105
14	ISA 150x150x16	6	2	20	22	560	12	10	110	50	50	50	1450
15	ISA 200x200x16	7	2	24	26	760	12	10	120	80	60	60	1965
16	ISA 200x200x20	7	2	24	26	940	12	10	135	80	60	60	2430

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TABLE -2 : BRACING CONNECTION (DOUBLE ANGLE)

SL NO.	BRACING MEMBER	NO. OF COL. OF BOLT	NO. OF ROW OF BOLT	BOLT DIA (mm)	HOLE DIA (mm)	GUSSET LENGTH L(mm)	GUSSET PLATE THK.(T) (mm)	WELD SIZE S_1 (mm)	SPACE B/W COL. P (mm)	SPACE B/W ROW G (mm)	EV (mm)	EH (mm)	AXIAL CAPACITY OF CONNECTION (kN)
1	2xISA 50x50x6	4	1	16	18	170	12	8	55	-	27	27	360
2	2xISA 65x65x6	4	1	16	18	220	12	8	60	-	35	35	470
3	2xISA 75x75x6	5	1	16	18	220	12	10	60	-	35	35	550
4	2xISA 75x75x8	4	1	20	22	230	16	12	70	-	40	40	725
5	2xISA 90x90x6	5	1	20	22	210	16	12	70	-	45	45	665
6	2xISA 90x90x8	5	1	20	22	280	16	12	70	-	45	45	875
7	2xISA 100x100x8	6	1	20	22	310	16	12	80	-	45	45	980
8	2xISA 100x100x10	7	1	20	22	380	20	12	80	-	45	45	1205
9	2xISA 100x100x12	8	1	20	22	420	20	12	80	-	45	45	1340
10	2xISA 110x110x12	6	1	24	26	500	20	12	80	-	45	45	1595
11	2xISA 130x130x10	7	1	24	26	500	20	12	80	-	50	50	1595
12	2xISA 130x130x12	8	1	24	26	600	20	12	80	-	50	50	1900
13	2xISA 150x150x12	6	2	24	26	530	20	16	110	50	50	50	2210
14	2xISA 150x150x16	6	2	24	26	700	20	16	110	50	50	50	2900
15	2xISA 200x200x16	7	2	24	26	730	25	20	120	80	60	60	3930
16	2xISA 200x200x20	7	2	24	26	900	25	20	135	80	60	60	4860

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TABLE -3 : BRACING CONNECTION (SINGLE CHANNEL)

SL NO.	BRACING MEMBER	NO. OF COL. OF BOLT	NO. OF ROW OF BOLT	BOLT DIA (mm)	HOLE DIA (mm)	GUSSET LENGTH L (mm)	GUSSET PLATE THK. (T) (mm)	WELD SIZE		SPACE B/W COL. P (mm)	SPACE B/W ROW. G (mm)	EV (mm)	EH (mm)	AXIAL CAPACITY OF CONNECTION (kN)
								GUSSET S_1 (mm)	BOX S_2 (mm)					
1	ISMC 100	5	2	16	18	190	10	8	-	60	40	30	30	385
2	ISMC 150	5	2	20	22	270	12	10	-	80	50	50	50	675
3	ISMC 200	5	2	20	22	360	12	10	-	100	80	60	60	905
4	ISMC 250	5	2	24	26	480	12	10	-	100	100	75	75	1240
5	ISMC 300	5	2	24	26	480	16	12	-	120	130	85	85	1470
6	ISMC 400	5	2	30	33	500	20	16	-	120	220	90	90	2030

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TABLE - 4 : BRACING CONNECTION (DOUBLE CHANNEL)

SL NO.	BRACING MEMBER	NO. OF COL. OF BOLT	NO. OF ROW OF BOLT	BOLT DIA (mm)	HOLE DIA (mm)	GUSSET LENGTH L (mm)	GUSSET PLATE THK. (T) (mm)	WELD SIZE		K (mm)	IL (mm)	SPACE B/W COL. P (mm)	SPACE B/W ROW. G (mm)	EV (mm)	EH (mm)	AXIAL CAPACITY OF CONNECTION (kN)
								GUSSET $T S_1$ (mm)	BOX S_2 (mm)							
1	ISMC 100][	5	2	16	18	260	16	12	-	-	-	60	40	30	30	775
2	ISMC 150][	5	2	20	22	440	16	12	-	-	-	80	50	50	50	1355
3	ISMC 200][	5	2	20	22	580	20	12	-	-	-	100	80	60	60	1810
4	ISMC 250][	5	2	24	26	600	20	16	-	-	-	100	100	75	75	2480
5	ISMC 300][	5	2	24	26	630	20	18				120	130	85	85	2945
6	ISMC 400][	5	2	30	33	780	25	20				120	220	90	90	4060
7	ISMC 100 []	4	2	20	22	260	16	12	6	25	240	50	40	30	30	775
8	ISMC 150 []	5	2	20	22	440	20	12	8	32	330	50	50	50	50	1355
9	ISMC 200 []	5	2	24	26	580	20	12	8	32	430	60	80	60	60	1810
10	ISMC 250 []	5	2	24	26	600	20	16	10	32	470	80	100	75	75	2480
11	ISMC 300 []	5	2	27	30	630	25	18	12	32	470	100	130	85	85	2945
12	ISMC 400 []	5	2	30	33	780	25	20	12	32	640	100	220	90	90	4060

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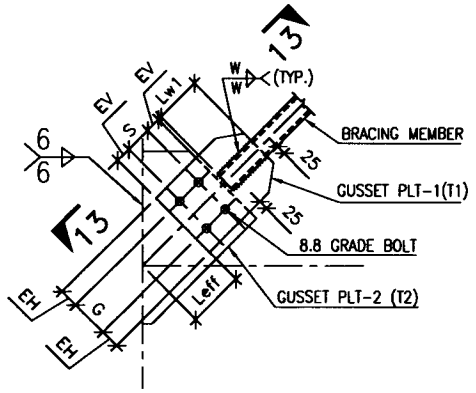
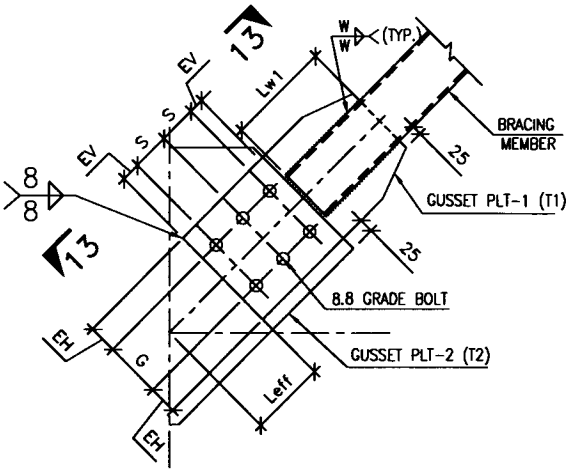


TYPE–I
(4 BOLT)



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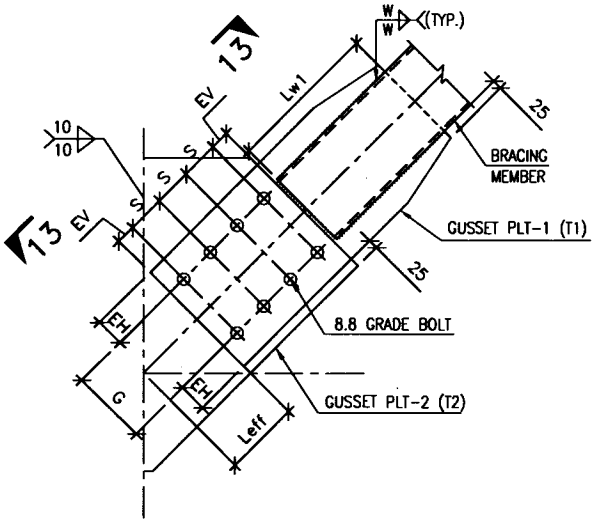
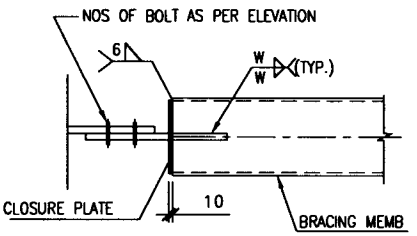
(6 BOLT)



TYPE–III
(8 BOLT)



SECTION 13–13

MEMBER	TYPE	DIA OF BOLT	PLATE (T1)	PLATE (T2)	END DIST (EV)	PITCH (S)	GAUGE (G)	EDGE DIST (EH)	Leff	WELD LENGTH BETWEEN VER. BRACE & PLATE T1 (Lw1)	WELD SIZE BETWEEN VER. BRACE & PLATE T1 (W)	MIN. WELD LENGTH BETWEEN T2 & CONNECTING STR MEMB
SHS60X60X4	I	20	10	10	40	50	100	50	150	125	4	125
SHS80X80X4	I	20	10	10	40	50	100	50	150	150	4	175
SHS100X100X5	I	24	12	12	45	60	125	60	150	175	5	250
SHS150X150X6	II	30	16	16	50	75	150	75	200	275	6	350
SHS180X180X6	II	30	20	20	50	75	150	75	200	325	6	400
SHS220X220X6	III	30	20	20	50	75	150	75	200	400	6	400
SHS220X220X8	III	36	25	25	55	90	200	100	200	425	8	525
SHS250X250X8	III	36	25	25	55	90	200	100	200	500	8	600

NOTE 1: STRUCTURAL STEEL SECTION GRADE YST 310 , PLATE GRADE E350 CONFORMING TO IS:2062 AND BOLT SHALL BE OF PROPERTY CLASS 8.8 CONFIRMING TO IS:3757 & IS:4000.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
0	18.05.2022	ISSUED AS STANDARD	AV	RM	AS	SM

Approved by

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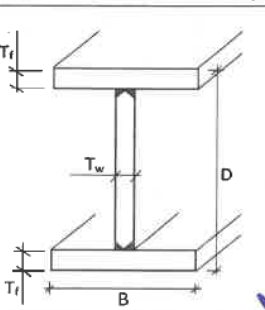
SPECIFIED STRUCTURAL STEEL SECTIONS	RECOMMENDED EQUIVALENT STRUCTURAL STEEL SECTIONS FOR SUBSTITUTION		
SECTIONS AS PER IS 808	SECTIONS AS PER IS 808	SECTIONS AS PER BS EN 10365	PLATE FABRICATED SECTIONS (REFER NOTE 8)
ISMC 100 (9.56)	-	UPN 100 (10.60) / UPE 100 (9.80)	-
ISMC 150 (16.80)	-	UPN 160 (18.80) / UPE 160 (17.00)	-
ISMC 200 (22.30)	-	UPN 200 (25.30) / UPE 200 (22.80)	-
ISMC 250 (30.60)	-	UPN 240 (33.20) / UPE 240 (30.20)	-
ISMB 200 (24.17)	ISNPB 200x100x25.09	UB 203x133x25 / IPE O 200 (25.10)	-
ISMB 250 (37.30)	ISNPB 250x150x39.78	UB 254x146x37 / IPE O 270 (42.30)	-
ISMB 300 (46.02)	ISNPB 300x150x49.32	UB 305x165x46 / IPE O 300 (49.30)	-
ISMB 400 (61.55)	ISNPB 400x180x66.31	UB 406x178x60 / IPE 400 (66.30)	-
ISMB 450 (72.38)	ISNPB 450x190x77.58	UB 457x152x74 / IPE 450 (77.60)	-
ISMB 500 (86.88)	ISNPB 500x200x90.69	UB 533x210x92 / IPE 500 (90.70)	-
ISMB 600 (121.00)	ISNPB 600x220x122.45	UB 610x229x125 / IPE 600 (122.40)	-
ISNPB 200x100x25.09	-	UB 203x133x25 / IPE O 200 (25.10)	-
ISNPB 250x150x39.78	-	IPE O 270 (42.30)	-
ISNPB 300x150x49.32	-	IPE O 300 (49.30)	-
ISNPB 400x180x66.31	-	IPE 400 (66.30)	-
ISNPB 450x190x77.58	-	IPE 450 (77.60)	-
ISNPB 500x200x90.69	-	UB 533x210x92 / IPE 500 (90.70)	-
ISNPB 600x220x122.45	-	UB 610x229x125 / IPE 600 (122.40)	-
ISWPB 200x200x42.26	-	UC 203x203x46 / HE 200 A (42.30)	D192 x B185 x T_w 8 x T_f 14 (50.97)
ISWPB 250x250x73.15	-	UC 254x254x73	D252 x B250 x T_w 12 x T_f 16 (83.53)
ISWPB 300x300x100.85	-	UC 305x305x97 / HE 320 A (97.60)	D294 x B290 x T_w 12 x T_f 20 (114.99)
ISWPB 300x300x117.03	-	-	D300 x B290 x T_w 14 x T_f 25 (141.3)
ISWPB 360x300x125.81	-	UC 356x368x129 / HE 320 B (127.00)	D350 x B300 x T_w 12 x T_f 22 (132.45)
ISWPB 600x300x128.79	-	HE 600 AA (129.00)	D570 x B300 x T_w 14 x T_f 20 (152.45)
ISWPB 600x300x177.78	-	HE 600 A (178.00)	D590 x B300 x T_w 16 x T_f 32 (216.79)
ISWPB 700x300x149.89	-	HE 700 AA (150.00)	D670 x B300 x T_w 16 x T_f 22 (182.25)
ISWPB 700x300x204.48	-	HE 700 A (204.00)	D690 x B300 x T_w 16 x T_f 36 (247.19)
ISWPB 700x300x240.51	-	HE 700 B (241.00)	D700 x B300 x T_w 22 x T_f 40 (295.48)
ISWPB 800x300x262.34	-	HE 800 B (262.00)	D800 x B300 x T_w 20 x T_f 45 (323.42)
ISWPB 900x300x291.46	-	HE 900 B (291.00)	D900 x B300 x T_w 22 x T_f 45 (351.84)

LEGENDS:

D = Overall depth of section (mm)
B = Width of flange plates (mm)
(xxx.xx) = (Unit Weight in kg/m)

T_w = Thickness of web plate (mm)
T_f = Thickness of flange plates (mm)



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					Approved by	
1	04.03.2025	ISSUED AS STANDARD	RAVI / RK	PM	ANURAG SINHA	MAINAK NANDI
0	26.11.2024	ISSUED AS STANDARD	RAVI / RK	PM	ANURAG SINHA	MAINAK NANDI

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LEGENDS (CONTD.):

ISMC : Indian Standard Medium Channels
ISMB : Indian Standard Medium Beams
ISNPB : Indian Standard Narrow Parallel Flange Beams
ISWPB: Indian Standard Wide Parallel Flange Beams
UPN : Tapered Flange Channels
UPE : Parallel Flange Channels
UB : Universal Beams
IPE : Parallel Flange I Sections
UC : Universal Columns
HE : Wide Flange Beams

NOTES:

1. THE RECOMMENDED EQUIVALENT STRUCTURAL STEEL SECTIONS SHALL BE USED ONLY IN CASE THE SPECIFIED STRUCTURAL STEEL SECTIONS AS MENTIONED IN THE AFC DRAWINGS ARE NOT AVAILABLE, OR DELIVERY PERIOD IS NOT COMMENSURATE WITH PROJECT COMPLETION SCHEDULE, BASED ON THE ENQUIRY(S) MADE.
2. THE LIST OF BIS CERTIFIED MANUFACTURERS (AS PER IS 2062) IS AVAILABLE AT https://www.manakonline.in/MANAK/ApplicationLicenceRelatedrpt
3. PREFERENCE OF SUBSTITUTION SHALL BE GIVEN TO ROLLED SECTIONS OVER PLATE FABRICATED SECTIONS, WHEREVER POSSIBLE, TO REDUCE FABRICATION EFFORTS.
4. SUBSTITUTION OF SECTIONS, IF ANY SHALL BE PROPOSED BY THE CONTRACTOR TO THE ENGINEER-IN-CHARGE IN ADVANCE FOR APPROVAL.
5. GRADE OF MATERIAL FOR RECOMMENDED EQUIVALENT STRUCTURAL STEEL SECTIONS SHALL BE SAME AS THAT OF THE SPECIFIED STRUCTURAL STEEL SECTION.
6. UNIT WEIGHTS OF THE RECOMMENDED EQUIVALENT STRUCTURAL STEEL SECTIONS SHALL BE AS PER THE RESPECTIVE CODES/ AS MENTIONED.
7. SUBSTITUTED SECTIONS (IF ANY) SHALL BE INCORPORATED IN THE AS-BUILT DRAWINGS BY THE CONTRACTOR.
8. FOR RECOMMENDED EQUIVALENT PLATE FABRICATED SECTIONS, WELDS BETWEEN FLANGES AND WEB PLATE SHALL BE FULL PENETRATION BUTT WELD. THERE SHALL NOT BE ANY JOINT WITHIN FLANGES & WEB PLATES. EACH FLANGE & WEB PLATE SHALL BE A SINGLE ENTITY.
9. PAYMENT FOR THE INCREASE IN WEIGHT (IF ANY) FOR REPLACING THE SPECIFIED STEEL SECTIONS WITH THE RECOMMENDED EQUIVALENT STEEL SECTIONS SHALL BE AS PER COMMERCIAL TERMS & CONDITIONS OF CONTRACT.

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INTRODUCTION:–

THIS STANDARD ON WELDING SYMBOLS INCORPORATES THE REQUIREMENTS OF THE BIS (BUREAU OF INDIAN STANDARD) CODE ON WELDING AND ALLIED PROCESSES PART–1 SYMBOLIC REPRESENTATION ON DRAWINGS–WELDED JOINTS (IS 813 PART–1 2018). FOR OTHER ADDITIONAL SYMBOLS REFER IS 813 PART–1 2018.

THESE WELDING SYMBOLS SHALL BE USED ON DRAWINGS FOR ALL JOBS.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
7	25.09.25	REVISED AND ISSUED AS STANDARD	AB	SP	ANURAG SINHA	MAINAK NANDI
6	01.08.19	REAFFIRMED AND ISSUED AS STANDARD	JG	AVM	RAJANJI SRIVASTAVA	R.K.TRIVEDI
5	28.11.13	REAFFIRMED AND ISSUED AS STANDARD	A K SHARMA	AMARJEET	P K MITTAL	S CHANDA

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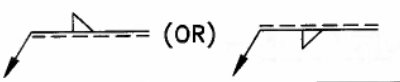
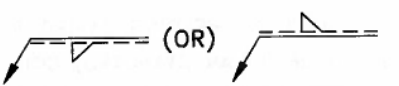
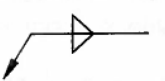
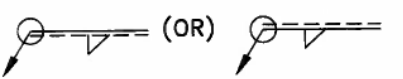
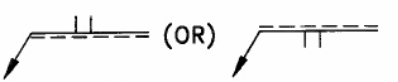
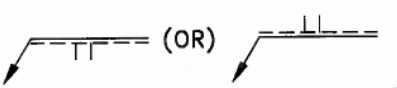
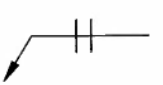
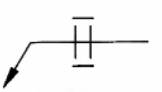
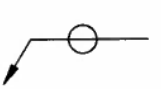
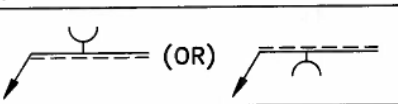
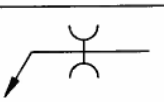
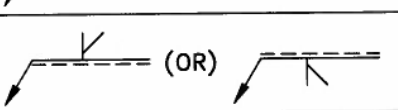
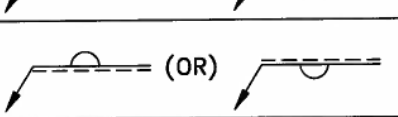
STANDARD BASIC SYMBOLS FOR WELDING

REFER IS 813(PART 1) 2018

S.NO.	INSTRUCTIONS	DRAWING REPRESENTATION
1	NEAR SIDE FILLET WELD	
2	FAR SIDE FILLET WELD	
3	BOTH SIDE FILLET WELD	
4	FILLET WELD ALL ROUND	
5	SITE WELD	
6	SQUARE BUTT NEAR SIDE	
7	SQUARE BUTT FAR SIDE	
8	SQUARE BUTT BOTH SIDE	
9	SQUARE BUTT BOTH SIDE GRINDING FINISH	
10	RESISTANCE SPOT WELD	
11	SINGLE-U BUTT (NEAR SIDE)	
12	DOUBLE-U BUTT	
13	SINGLE BEVEL BUTT WELD WITH BROAD ROOT FACE (NEAR SIDE)	
14	BACKING RUN, BACK OR BACKING WELD (NEAR SIDE)	

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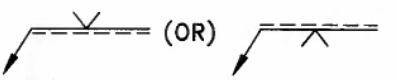
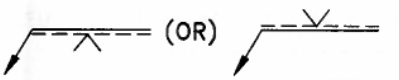
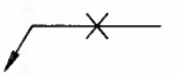
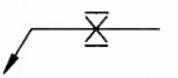
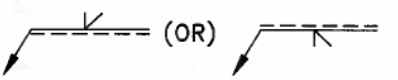
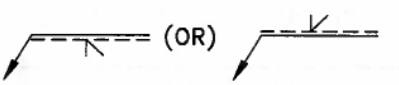
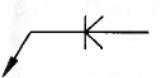
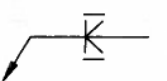
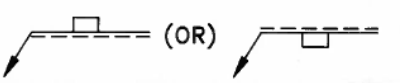
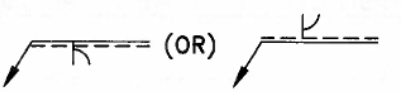
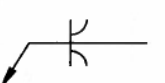
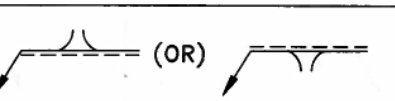
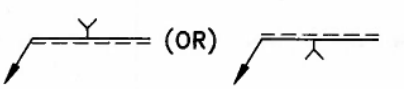
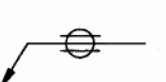
STANDARD BASIC SYMBOLS FOR WELDING

REFER IS 813(PART 1) 2018

S.NO.	INSTRUCTIONS	DRAWING REPRESENTATION
15	SINGLE-V BUTT NEAR SIDE	
16	SINGLE-V BUTT FAR SIDE	
17	DOUBLE-V BUTT	
18	DOUBLE-V BUTT GRINDING FINISH	
19	SINGLE BEVEL-BUTT NEAR SIDE	
20	SINGLE BEVEL-BUTT FAR SIDE	
21	DOUBLE BEVEL-BUTT	
22	DOUBLE BEVEL-BUTT GRINDING FINISH	
23	STITCH WELD	REFER SHEET 5 OF 6
24	PLUG OR SLOT WELD (NEAR SIDE)	
25	SINGLE J- BUTT (FAR SIDE)	
26	DOUBLE-J BUTT	
27	FLANGED BUTT/CORNER WELD BETWEEN PLATES WITH RAISED EDGES(NEAR SIDE)	
28	SINGLE-V BUTT WELD WITH BROAD ROOT FACE (NEAR SIDE)	
29	RESISTANCE SEAM WELD	

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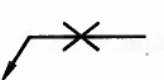
SUPPLEMENTARY SYMBOLS:

SHAPE OF WELD SURFACE	SYMBOL
a) FLAT (USUALLY FINISHED FLUSH)	
b) CONVEX	
c) CONCAVE	

EXAMPLE OF APPLICATION OF SUPPLEMENTARY SYMBOLS:

SHAPE OF WELD SURFACE	SYMBOL
FLAT (FLUSH) SINGLE-V BUTT WELD	
CONVEX DOUBLE-V BUTT WELD	
CONCAVE FILLET WELD	
FLAT (FLUSH) SINGLE-V BUTT WELD WITH FLAT (FLUSH) BACKING RUN	

POSITION OF SYMBOL ACCORDING TO THE REFERENCE LINE

a) TO BE WELDED ON ARROW SIDE	b) TO BE WELDED ON OTHER SIDE	 c) FOR SYMMETRIC WELDS

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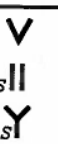
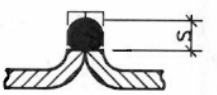
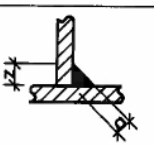
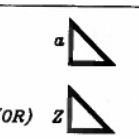
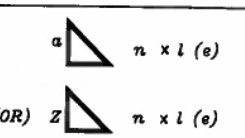
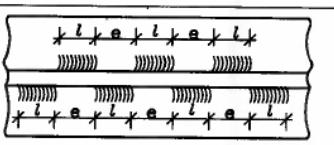
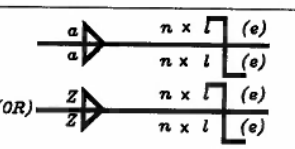
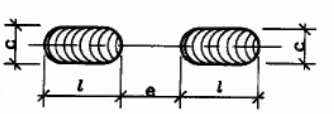
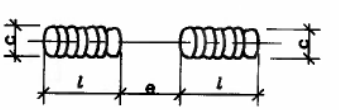
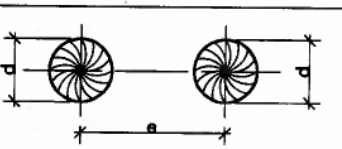
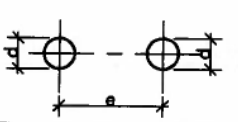
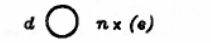
METHOD OF INDICATING DIMENSIONS OF WELD:

IS 813(PART 1) 2018

S.NO.	DESIGNATION OF WELDS	DEFINITION	INSCRIPTION
1	BUTT WELD		
2	BUTT WELD BETWEEN PLATES WITH RAISED EDGES		
3	CONTINUOUS FILLET WELD		
4	INTERMITTENT FILLET WELD		
5	STAGGERED INTERMITTENT FILLET WELD		
6	PLUG OR SLOT WELD		
7	SEAM WELD		
8	PLUG WELD		
9	SPOT WELD		

NOTE : 'n' INDICATES NUMBER OF WELD ELEMENTS
'*l*' INDICATES LENGTH OF WELD (WITHOUT END CRATERS)

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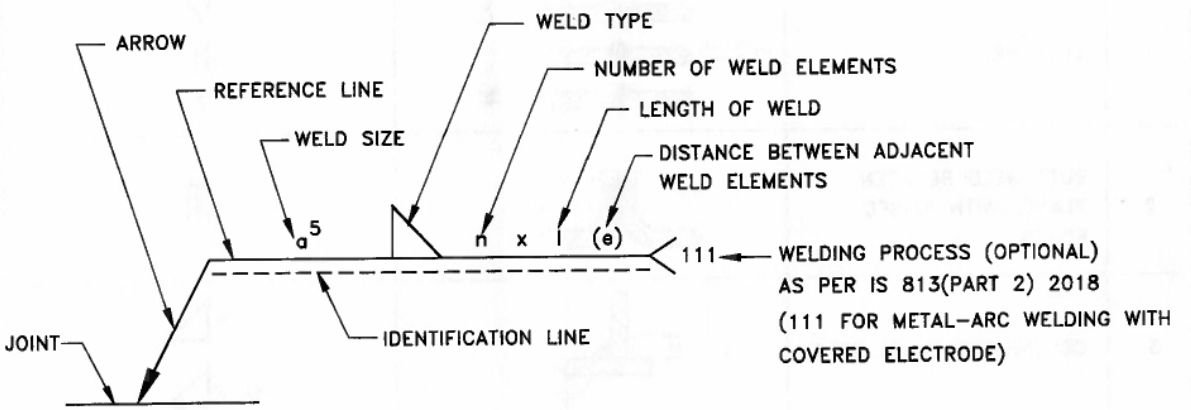
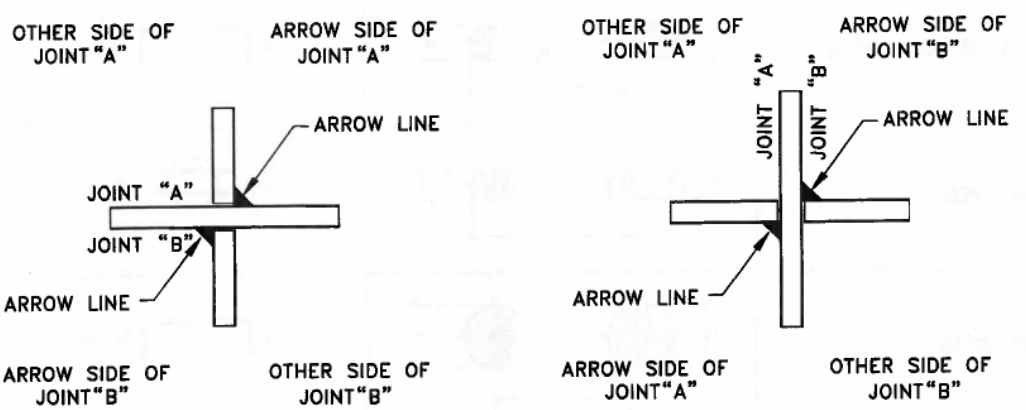


STANDARD REPRESENTATION OF WELDS IN DRAWINGS



POSITION OF WELDING SYMBOL ACCORDING TO THE REFERENCE LINE

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TABLE–1 (FOR CABLE DUCT)

W \ L	4500	5000	6000	7000	8000
1200	MC200	MC200	MC250	MC250*	MC300*
1000	MC150	MC200	MC200*	MC250*	MC250*
800	MC150	MC150	MC200	MC200*	MC250*
600	MC150	MC150	MC150	MC150*	MC250*
400	MC150	MC150	MC150	MC150*	MC250*

TABLE–2 (FOR CABLE/ LADDER TRAY)

W \ L	4500	5000	6000	7000	8000
1000	MC125	MC125	MC125*	MC150*	MC150*
600	MC125	MC125	MC125*	MC125*	MC150*
400	MC125	MC125	MC125*	MC125*	MC125*

* REFER NOTE–5

LEGEND:–

L : c/c SPACING OF PIPE RACK PORTALS/PIPE SLEEPERS.

W : WIDTH OF INSTRUMENTATION CABLE DUCT AS/RELEVANT PIPING/INSTRUMENTATION DRG.

NOTES :–

1. ALL DIMENSIONS ARE IN mm.
2. THE MATERIAL OF CONSTRUCTION SHALL BE STRUCTURAL STEEL CONFORMING TO IS:2062 GRADE 350 BR/BO.
3. THE CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS AS PER SPECIFICATION NO. 6–68–0006.
4. A GAP OF MIN. 200MM SHALL BE MAINTAINED BETWEEN EDGE OF CABLE DUCT AND THAT OF WALKWAY.
5. COMPRESSION FLANGE OF CABLE/ DUCT TRAY SUPPORTING MEMBER SHALL BE RESTRAINED BY USING ANGLE 50X50X6 AT A SPACING OF 3M FOR DUCTS AND 1.5M FOR CABLE/ LADDER TRAY.
6. SPLICE PLATE SHALL BE PROVIDED ON BOTTOM FACE OF TOP FLANGE OF CHANNEL.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	
4	06.06.24	REVISED & REISSUED AS STANDARD	ANNU AHUJA	VIKRAM GUPTA	ANURAG SINHA	MAINAK NANDI
3	28.03.19	REVISED & REISSUED AS STANDARD	JC	AJS	RAJANJI SRIVASTAVA	R.K. TRIVEDI

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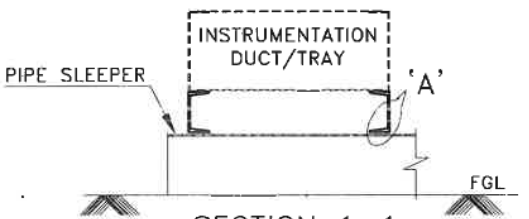
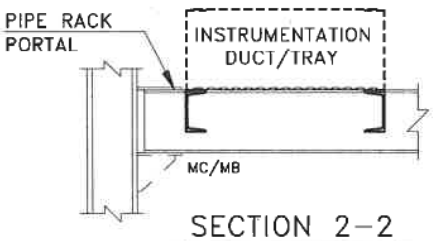
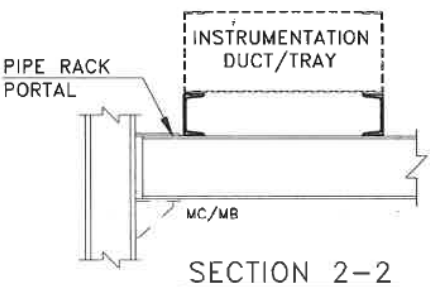


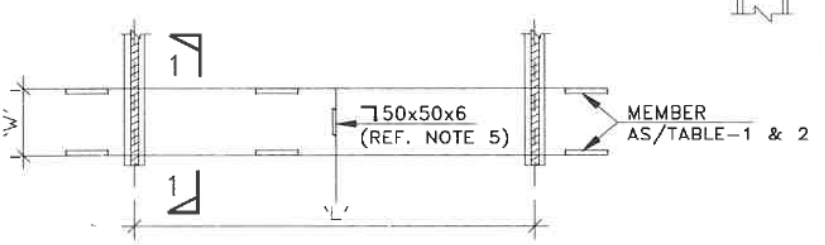
SECTION 1–1



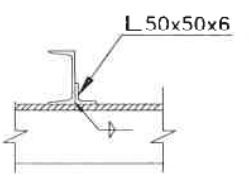
SECTION 2–2
(OPTION–1)



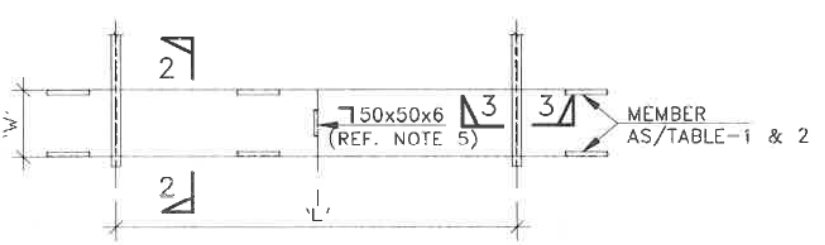
SECTION 2–2
(OPTION–2)



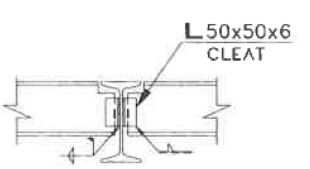
TYPICAL ARRANGEMENT SHOWING INSTRUMENTATION CABLE DUCT/TRAY SUPPORTS ON PIPE SLEEPERS



DETAIL 'A'



TYPICAL ARRANGEMENT SHOWING INSTRUMENTATION CABLE DUCT/TRAY SUPPORTS ON PIPE RACKS



SECTION 3–3
(OPTION–1)

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GRADE OF CONC.	BOLT TYPE	DIMENSIONS MM		BOLT DIA (ø) IN MM											
				10	12	16	18	20	22	24	27	30	33	36	39
M20	I & III	L		250	300	450	450	550	600	650	750	850	950	1000	1100
		E		95	115	155	170	190	210	230	255	285	315	345	370
		H	TYPE-I	280	336	498	504	610	666	722	831	940	1049	1108	1217
			TYPE-III	430	486	648	654	910	966	1022	1281	1390	1499	1558	1667
	II & IV	L		200	200	300	350	400	450	450	550	600	700	700	800
		E		150	180	240	270	300	330	380	405	450	495	540	585
		H	TYPE-II	230	236	348	404	460	516	522	631	690	799	808	917
			TYPE-IV	380	386	498	554	760	816	822	1081	1140	1249	1258	1367
M25	I & III	L		200	250	400	400	450	550	550	650	700	800	850	950
		E		95	115	155	170	190	210	230	255	285	315	345	370
		H	TYPE-I	230	286	448	454	510	616	622	731	790	899	958	1067
			TYPE-III	380	436	598	604	810	916	922	1181	1240	1349	1408	1517
	II & IV	L		150	150	250	250	300	350	350	450	500	550	600	650
		E		150	180	240	270	300	330	360	405	450	495	540	585
		H	TYPE II	180	186	298	304	360	416	422	531	590	649	708	767
			TYPE-IV	330	336	440	454	660	716	722	981	1040	1099	1158	1217
M30	I & III	L		180	220	315	335	390	445	470	550	600	680	735	815
		E		95	115	155	170	190	210	230	255	285	315	345	370
		H	TYPE-I	210	260	365	390	450	515	545	635	690	780	845	935
			TYPE-III	360	410	515	540	750	815	845	1085	1140	1230	1295	1385
	II & IV	L		150	150	200	200	250	275	300	350	375	425	450	500
		E		150	180	240	270	300	330	360	405	450	495	540	585
		H	TYPE-II	180	190	250	255	310	345	375	435	465	525	560	620
			TYPE-IV	330	340	400	405	610	645	675	885	915	975	1010	1070

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
9	06.06.24	REVISED AND ISSUED AS STANDARD	ANNU AHUJA	VIKRAM GUPTA	ANURAG SINHA	MAINAK NANDI
8	27.03.19	REVISED AND ISSUED AS STANDARD	JITENDER GUPTA	AMARJEET	RAJANJI SRIVASTAVA	R.K.TRIVEDI
7	26.11.13	REVISED AND ISSUED AS STANDARD	A.K. SHARMA	AMARJEET	P.K.MITTAL	S.CHANDA

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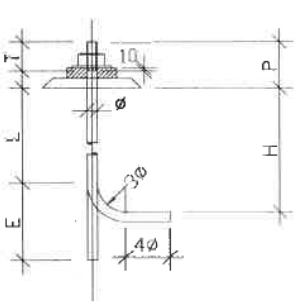
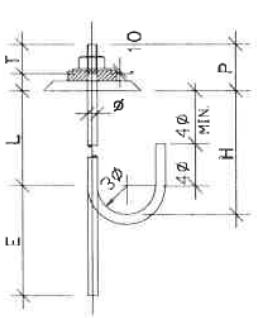
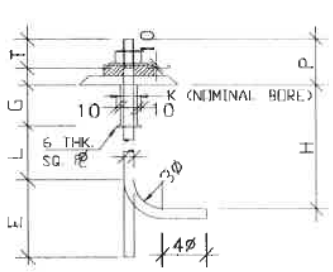
GRADE OF CONC.	BOLT TYPE	DIMENSIONS MM		BOLT DIA (ø) IN MM											
				10	12	16	18	20	22	24	27	30	33	36	39
M35	I & III	L		160	190	275	295	340	390	410	480	525	595	640	710
		E		95	115	155	170	190	210	230	255	285	315	345	370
		H	TYPE-I	190	230	325	350	400	460	485	565	615	695	750	830
			TYPE-III	340	380	475	500	700	760	785	1015	1065	1145	1200	1280
	II & IV	L		150	150	150	150	180	225	225	275	300	350	350	400
		E		150	180	240	270	300	330	360	405	450	495	540	585
		H	TYPE-II	180	190	200	205	240	290	300	360	390	450	460	520
			TYPE-IV	330	340	350	355	540	590	600	810	840	900	910	970
M40	I & III	L		150	170	240	255	300	340	360	425	460	525	565	625
		E		95	115	155	170	190	210	230	255	285	315	345	370
		H	TYPE-I	180	210	290	310	360	410	435	510	550	625	675	745
			TYPE-III	330	360	440	460	660	710	735	960	1000	1075	1125	1195
	II & IV	L		150	150	150	150	175	200	200	225	250	275	300	325
		E		150	180	240	270	300	330	360	405	450	495	540	585
		H	TYPE-II	180	190	200	205	235	270	275	310	340	375	410	445
			TYPE-IV	330	340	350	355	535	570	575	760	790	825	860	895



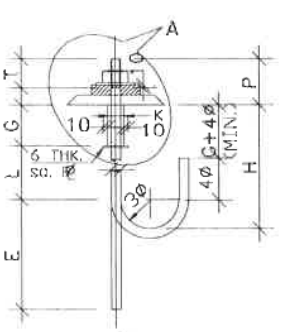
TYPE – I



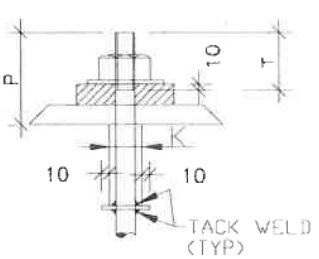
TYPE – II



TYPE – III



TYPE – IV



DETAIL–A (TYP)

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GRADE OF CONC.	BOLT TYPE	DIMENSIONS MM			BOLT DIA (ø) IN MM																										
					10	12	16	18	20	22	24	27	30	33	36	39	42	45	48	52	56	60	64								
M20,M25, M30,M35 & M40	III & IV	SLEEVE	G		150	150	150	150	300	300	300	450	450	450	450	450															
			K		50	50	50	50	50	80	80	80	80	80	80	100															
	I TO IV IX & XII	THREADED (T) LENGTH	SINGLE NUT		40	45	55	60	60	65	70	75	80	90	95	100															
			DOUBLE NUT		50	60	70	75	80	90	95	105	110	120	130	140															
M20 & M25	V		G		150	150	150	200	300	300	300	450	450	450	450	550	600	650	700	750	800	900	900								
			H		210	222	234	291	398	410	417	580	585	598	608	722	786	841	905	975	1035	1150	1171								
	V & VI		W		80	80	90	100	100	130	130	140	150	170	180	200	210	220	230	260	270	290	320								
			t3		10	12	16	16	20	20	25	25	25	28	32	36	36	36	40	45	45	50	56								
	VII		L						350	400	400	500	550	600	750	950	1050	1100	1200	1350	1500	1750	1900								
	VIII		L												350	400	450	500	550	600	650	700	750								
			C												160	200	200	200	240	240	240	260	280								
M30	V		G		150	150	150	200	300	300	300	450	450	450	450	500	500	550	600	650	750	800	800								
			H		210	225	235	290	400	410	415	580	585	600	610	675	690	745	805	875	985	1050	1075								
	V & VI		W		80	80	90	100	100	100	100	110	110	140	160	200	210	220	230	260	270	290	320								
			t3		10	12	16	16	20	20	20	25	25	28	32	36	36	36	40	45	45	50	56								
	VII		L						275	325	325	375	425	500	600	750	850	975	1000	1075	1225	1375	1525								
	VIII		L												300	350	400	450	500	550	600	650	700								
			C												125	160	160	160	185	185	200	240	240								

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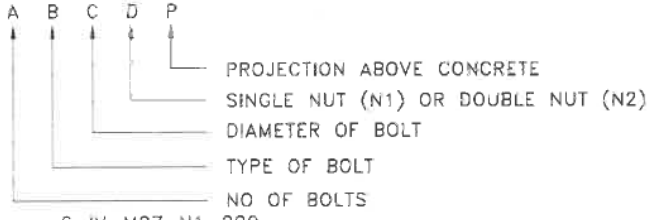
GRADE OF CONC.	BOLT TYPE	DIMENSIONS MM		BOLT DIA (ø) IN MM																		
				10	12	16	18	20	22	24	27	30	33	36	39	42	45	48	52	56	60	64
M35 & M40	V	G		150	150	150	200	300	300	300	450	450	450	450	450	500	550	600	600	700	750	750
		H		210	225	235	290	400	410	415	580	585	600	610	625	690	745	805	825	935	1000	1025
	V & VI	W		80	80	90	100	100	100	100	110	110	140	160	200	210	220	230	260	270	290	320
		t3		10	12	16	16	20	20	20	25	25	28	32	36	36	36	40	45	45	50	56
	VII	L						250	275	300	350	400	450	550	675	775	875	900	975	1100	1250	1375
	VIII	L												300	350	400	450	500	550	600	650	700
		C												125	160	160	160	185	185	200	240	240
M20, M25, M30, M35, & M40	V & VI	E		50	60	70	75	80	90	95	105	110	120	130	140	150	155	165	180	190	200	215
	V , VI , VII & VIII	K		50	50	50	50	50	80	80	80	80	80	80	100	100	100	100	125	125	125	150
		THREADED (T) LENGTH	SINGLE NUT	40	45	55	60	60	65	70	75	80	90	95	100	105	110	120	125	135	140	150
			DOUBLE NUT	50	60	70	75	80	90	95	105	110	120	130	140	150	155	165	180	190	200	215
	VII	t3						16	16	16	16	16	16	16	16	16	16	20	20	20	20	20
	VIII	t3												16	20	20	20	25	25	25	28	32
	VII & VIII	G		150	150	150	150	300	300	300	450	450	450	450	450	450	450	450	450	450	450	600
	IX	L		80	100	150	170	200														
M20&25	XII	L		185	220	310	335	385	435	460	535	590	660	720								
M30		L		150	150	200	225	250	275	300	350	375	425	450								
M35&M40		L		150	150	175	200	225	250	275	300	350	375	400								

NOTES :-

1. BOLTS SHALL BE MARKED ON THE DRAWING AS UNDER :



e.g.6-IV-M27-N1-200

2. BOLTS SHALL BE TURNED FROM M.S. ROUNDS CONFORMING TO IS:2062 GRADE-E250 QUALITY A/BR/BO.
3. NUTS AND WASHERS SHALL CONFORM TO IS:1363.
4. THREADING SHALL BE COARSE CONFORMING TO IS:1367 AND IS:4218.
5. ANCHOR BOLTS SHALL BE SET ACCURATELY AND HELD IN POSITION BY TEMPLATE BEFORE CONCRETING.
6. 6 THK. SQ. PLATE AT THE BOTTOM OF SLEEVE SHALL BE TACK WELDED WITH BOLT AND SLEEVE FOR BOLT TYPE III, IV, VII AND VIII.
7. SLEEVE SHALL BE M.S. TUBES (MEDIUM) AS PER IS:1239.
8. REFER DESIGN DRAWINGS FOR PROJECTION (P) OF BOLT ABOVE TOP OF ROUGH CONCRETE AND NUMBER (A) OF BOLTS.
9. ANCHOR BOLTS SHALL BE TEMPERED BEFORE MACHINING IF MADE BY FORGING. THE FORGING TEMPERATURE SHALL BE ABOVE 900° C BUT LOWER THAN SUPER HEATING TEMPERATURE.

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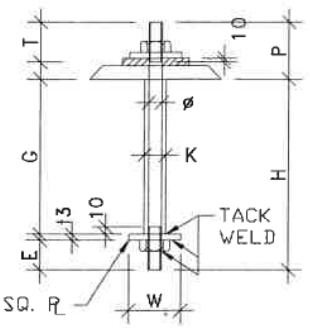
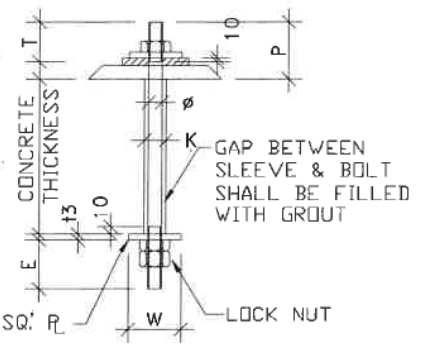
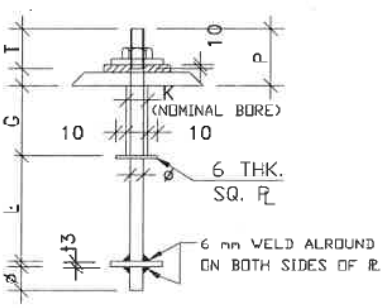
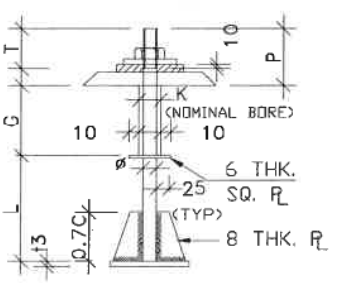


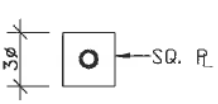
TYPE – V



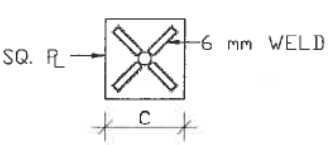
TYPE – VI



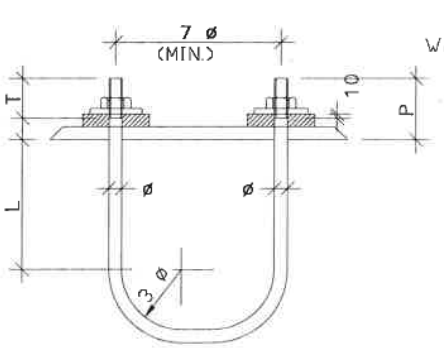




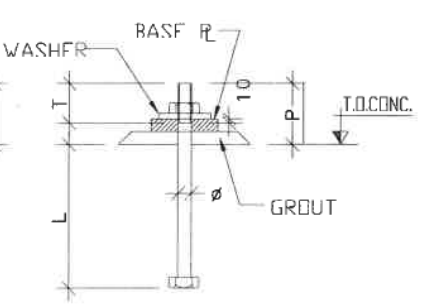
TYPE – VII



TYPE – VIII



TYPE – IX



TYPE – XII

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GRADE OF CONC.	BOLT TYPE	DIMENSIONS MM		BOLT DIA (ø) IN MM																		
				20	22	24	27	30	33	36	39	42	45	48	52	56	60	64				
M20, M25, M30, M35 & M40	X	a		150	160	180	200	220	240	260	280	300										
		b		250	290	310	330	370	390	460	480	500										
		L		600	700	800	900	1000	1100	1200	1300	1400										
		E		220	220	240	270	300	330	360	390	420										
		H		640	744	848	954	1060	1166	1272	1378	1484										
		ISA		100x100 X10	130X130X10			150X150X12		200X200X16												
		THREADED LENGTH (T)	SINGLE NUT	60	65	70	75	80	90	95	100	105										
			DOUBLE NUT	80	90	95	105	110	120	130	140	150										
	XI	h				18		20		25		30		30		30		30				
		k				18		22		25		30		35		40		50				
		c				24		30		36		42		48		56		64				
		q				65		75		85		95		110		125		140				
		r				1.6		1.6		2.0		2.0		2.0		3.0		3.0				
		f				140		150		170		190		210		220		240				
		e				30		35		42		50		58		65		75				
		L				800		1000		1200		1400		1600		1800		2000				
		ISMC				75x40		75x40		100x50		125x65		150x75		150x75		175x75				
		THREADED LENGTH (T)	SINGLE NUT			70		80		95		105		120		135		150				
			DOUBLE NUT			95		110		130		150		165		190		215				

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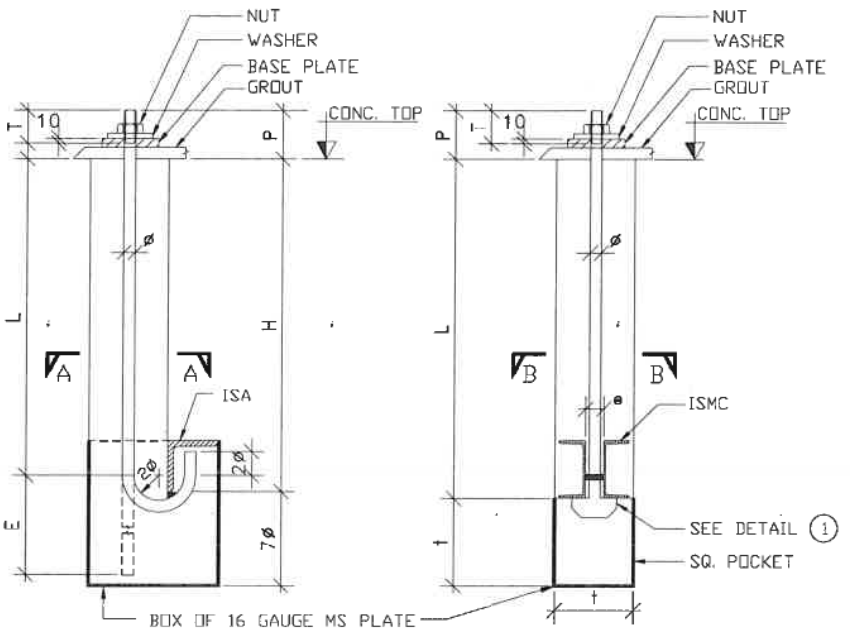
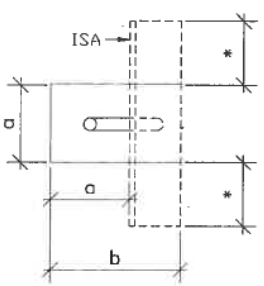
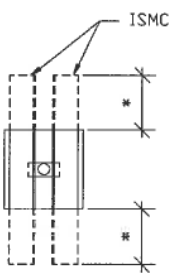




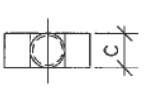
VIEW A – A

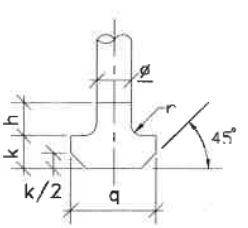
TYPE – X

(* AS PER DESIGN REQUIREMENT)



VIEW B – B





DETAIL – (1)

(FOR FORGED BOLT HEAD)

TYPE – XI

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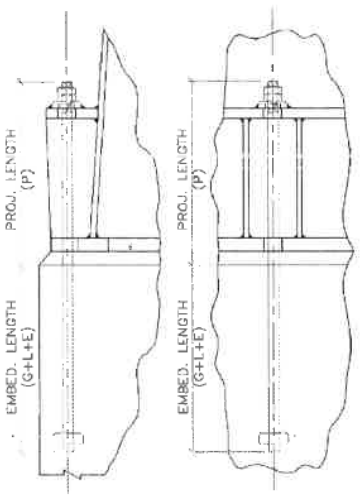

FIGURE 1: ANCHOR BOLT WITH ANCHOR CHAIR
(VERTICAL VESSELS ON SKIRT, STORAGE TANKS, ETC.)

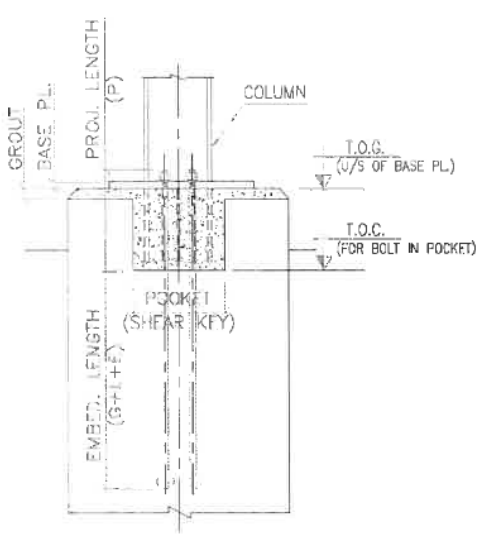

FIGURE 2: ANCHOR BOLT WITH POCKET IN PEDESTAL

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NOTES:-

1. ALL HANDRAILS AND UPRIGHT SHALL BE AS PER RESPECTIVE TYPE.
2. ALL FILLET WELDS OF 3mm (MINIMUM) THICKNESS SHALL BE CONTINUOUS UNLESS NOTED OTHERWISE.
3. JOINTS IN HANDRAILS SHALL BE PROVIDED AT SUITABLE LOCATIONS, WELDED AND GROUND FLUSH.
4. FOR ADDITIONAL TYPE OF UPRIGHT FIXING DETAILS REFER EIL STD. 7-68-0061.
5. ALL M.S. TUBES SHALL CONFORM TO IS:1239.
6. FABRICATION OF TOP RAIL, INTERMEDIATE FLAT AND TOE PLATE SHALL ONLY BE STARTED AFTER TAKING ACTUAL DIMENSIONS AT SITE.
7. ADJUSTMENT IN SPACING OF VERTICAL POST SHALL BE DONE AT EITHER END OF PLATFORM.

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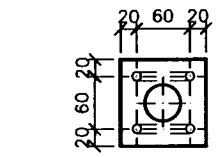
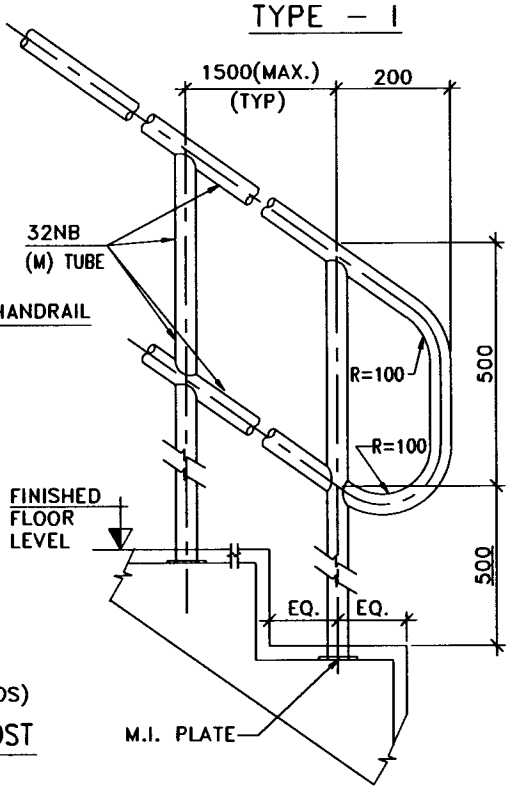
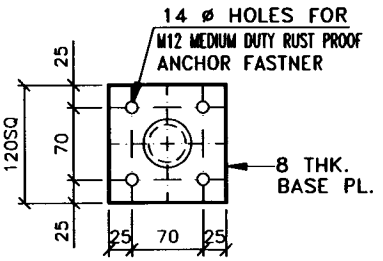
TYPE – I

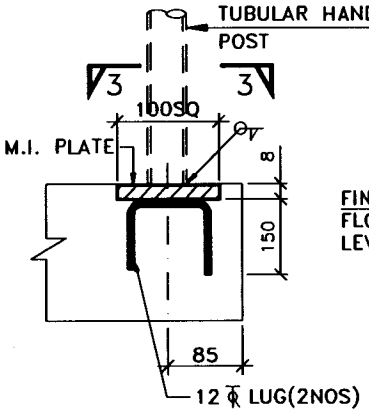


VIEW 3–3

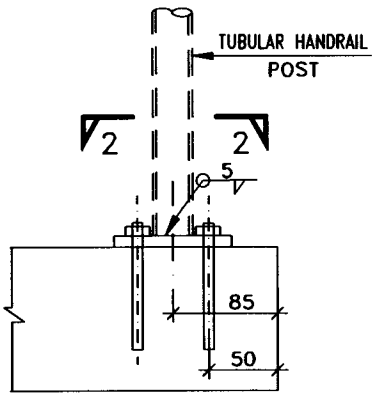




VIEW 2–2

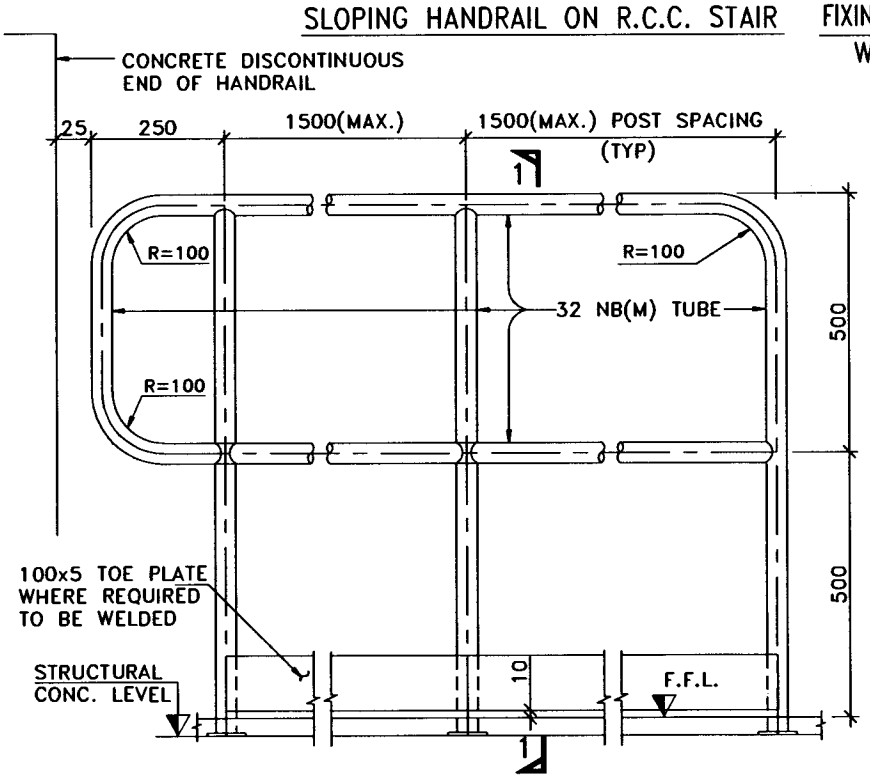


FIXING DET OF TUB. POST
WITH M.I.PLATE (ALT–I)

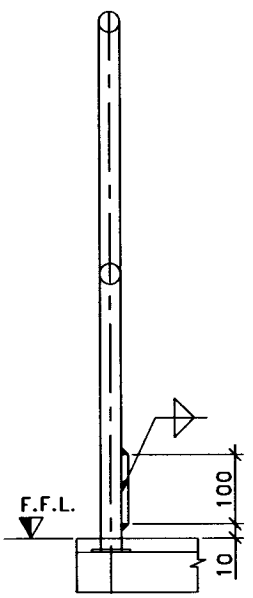


FIXING DET OF TUBULAR POST
WITH ANCHOR FASTNER
ALT–II

SLOPING HANDRAIL ON R.C.C. STAIR



HORIZONTAL HANDRAIL ON R.C.C. PLATFORM



SEC. 1–1

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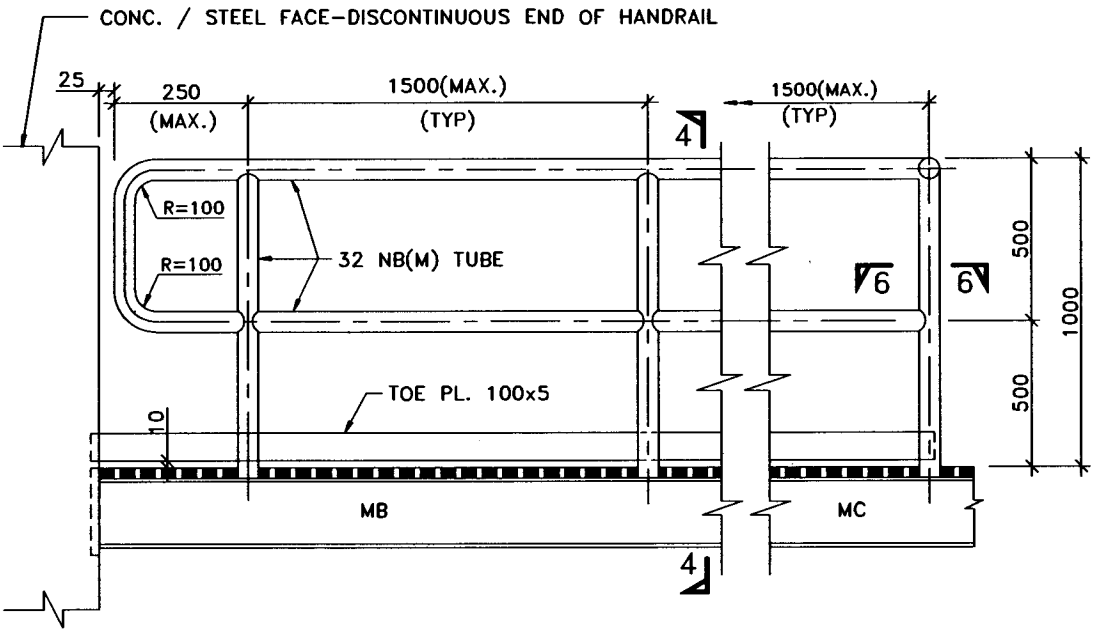
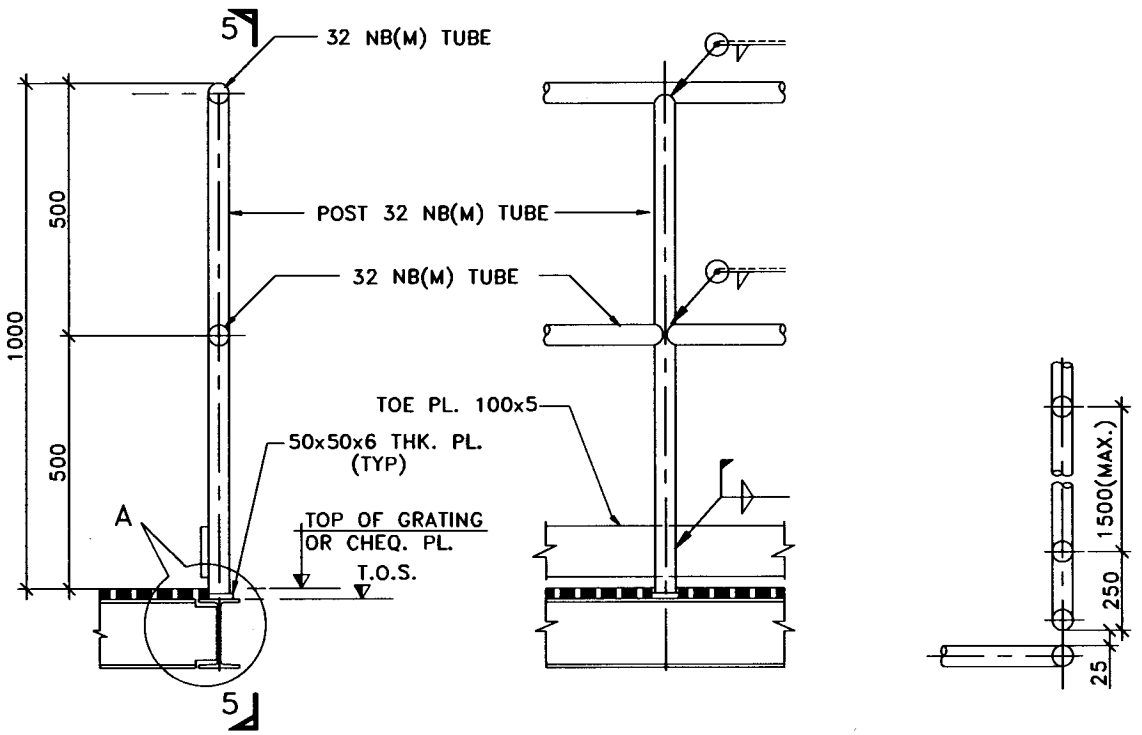
TYPE – II



HORIZONTAL HANDRAIL ON STEEL PLATFORM



SECTION 4–4
(FOR DETAIL (A) REFER PAGE 8 OF 8)

VIEW 5–5

VIEW 6–6
(AT CORNER)

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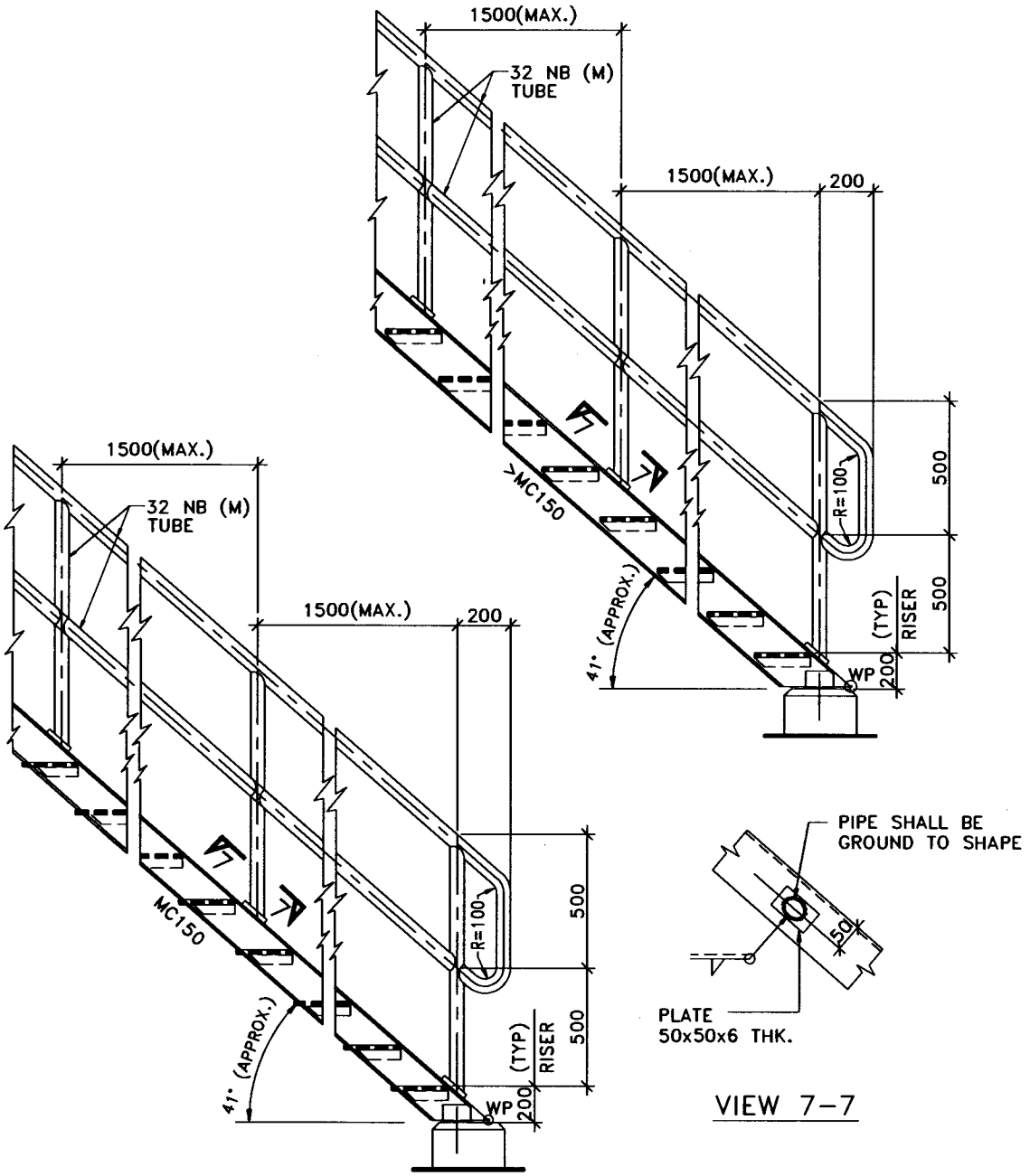
TYPE – II



VIEW 7–7

SLOPING HANDRAIL ON STEEL STAIR

WHEREVER HIGHER SIZE OF STRINGER BEAMS ARE REQUIRED AS PER DESIGN SIMILAR G.A. BE FOLLOWED FOR THE SAME.

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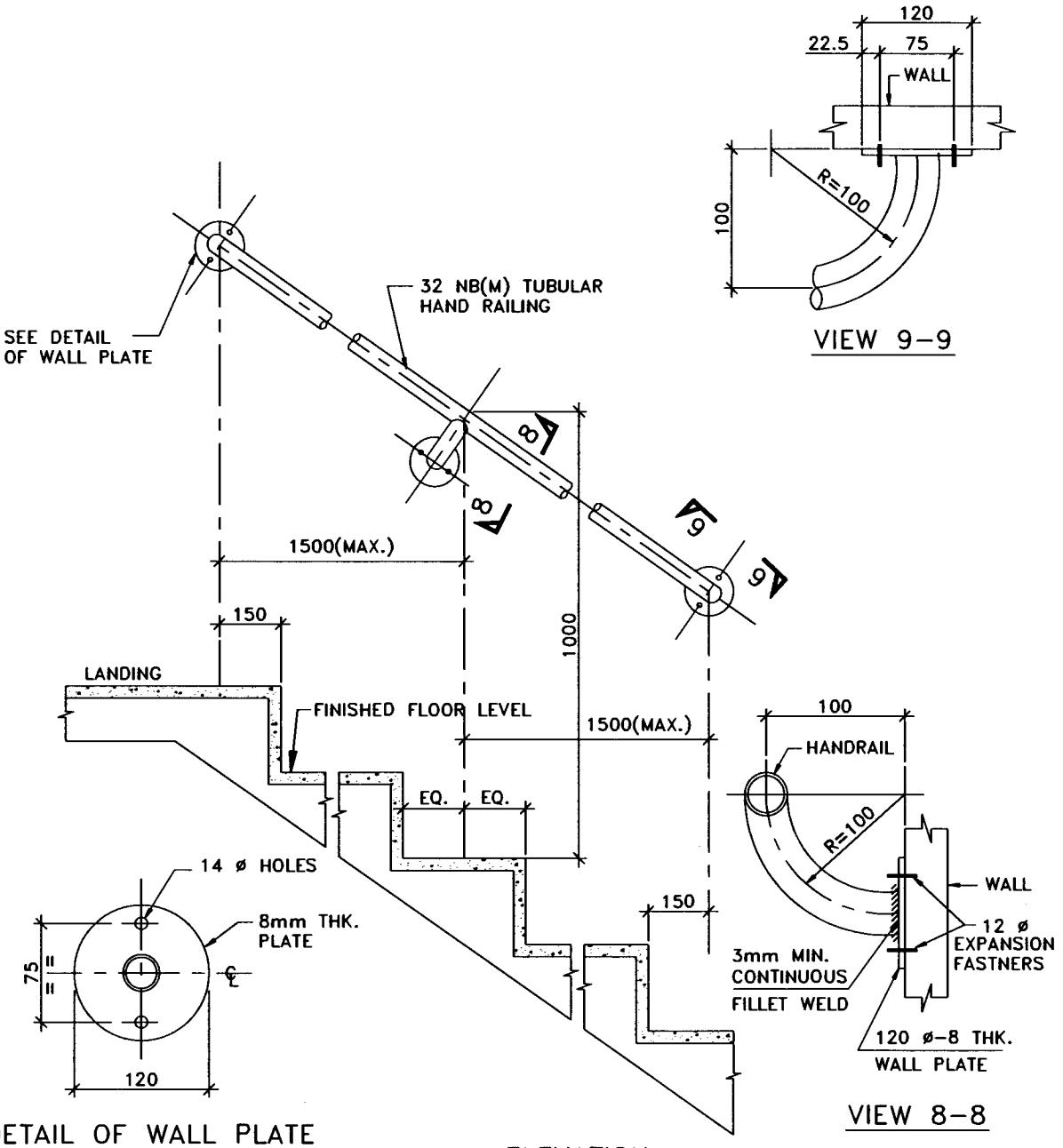
TYPE – III



HANDRAIL FIXED TO WALL DIRECT

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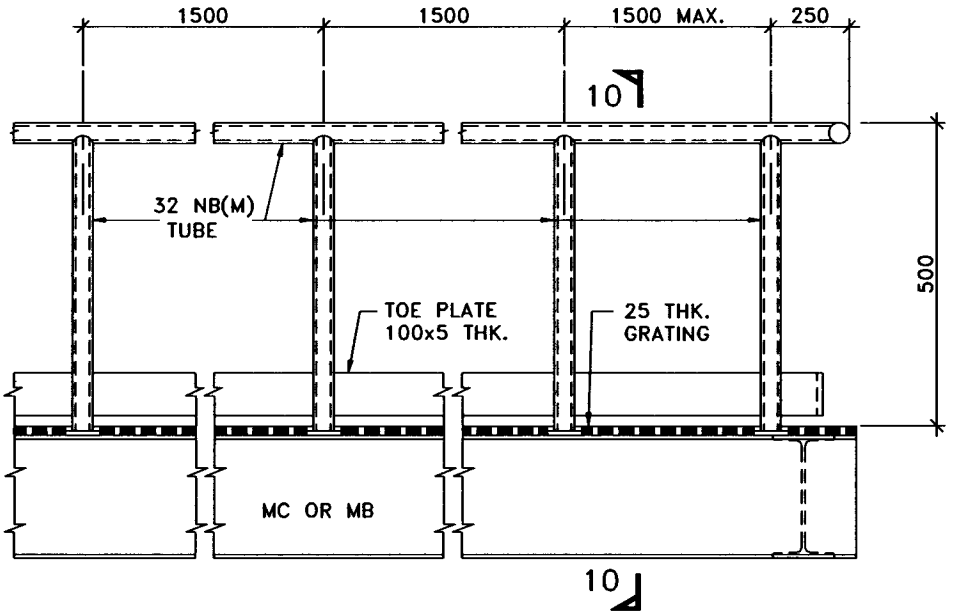
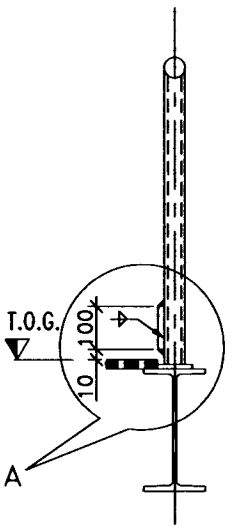
TYPE – IV



HANDRAIL ON HORIZONTAL PLATFORM (STEEL)



SEC. 10–10

NOTE : HANDRAIL TYPE–IV SHALL BE USED OVER PIPE CROSS OVER AND LOW LEVEL PLATFORMS SUCH AS FOR VALVE OPERATION ETC. AS MENTIONED IN STD 7–68–0562 & 0563.

(FOR DETAILS Ⓐ REFER PAGE 8 OF 8)

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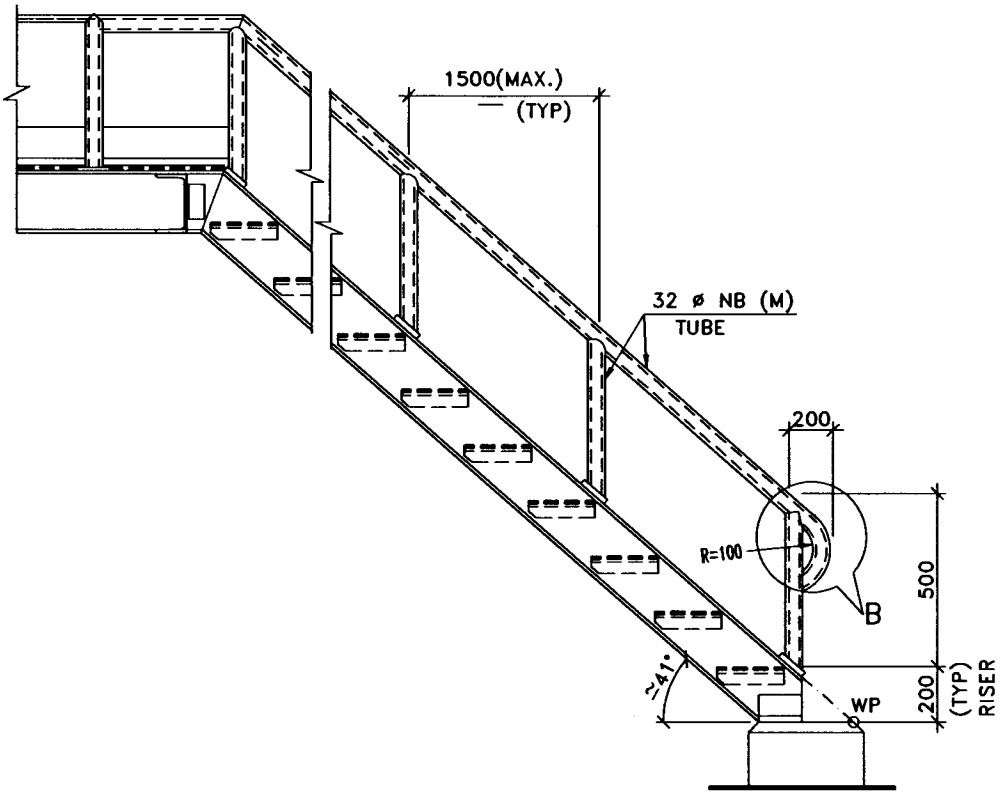
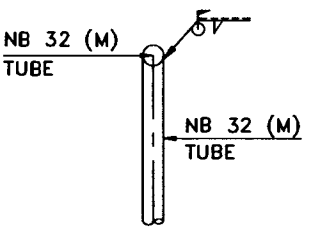
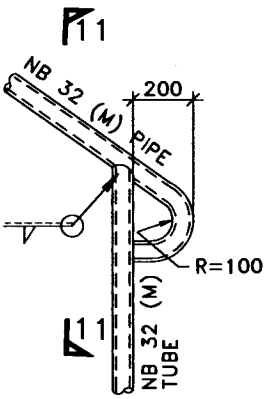
TYPE – IV



SLOPING HALF HANDRAIL ON STEEL STAIR



SEC. 11–11



DETAIL – (B)

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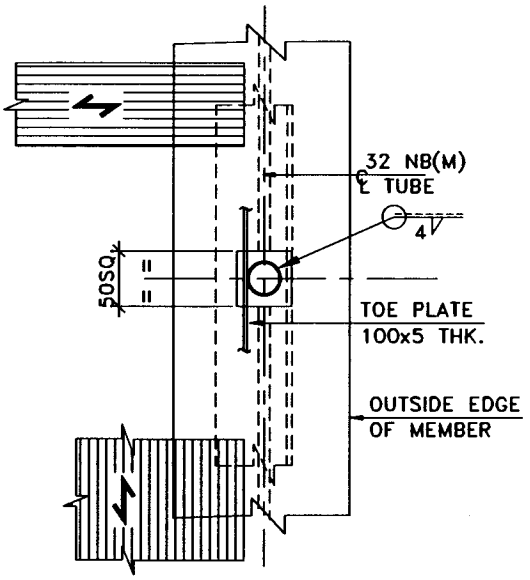
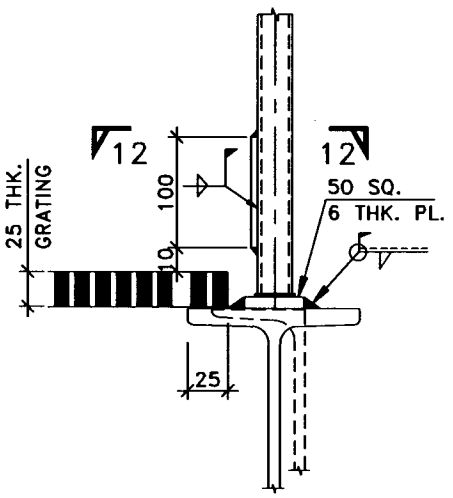


VIEW 12–12



DETAIL – (A)

CONNECTION DETAILS
(FOR TYPE II & IV)

NOTE : CHEQUERED PLATES / GRATINGS SHALL BE SUITABLY NOTCHED TO ACCOMMODATE THE TUBE IN CASE OF BEAM MC100 OR MC125.

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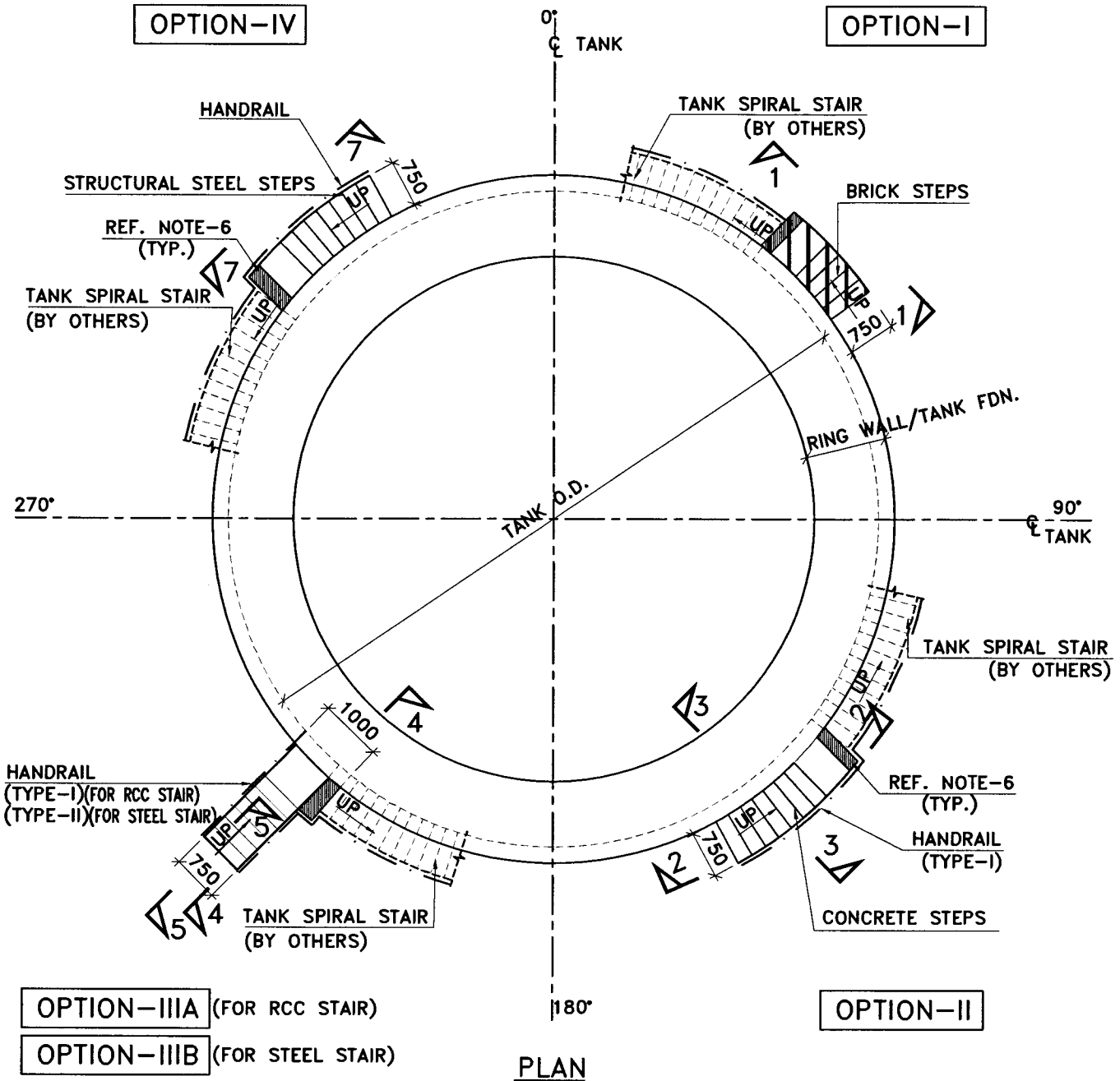

PLAN

ACCESS OPTIONS TO SPIRAL STAIRCASE

NOTES:–

1. ALL DIMENSIONS ARE IN mm.
2. CONCRETE & STRUCTURAL STEEL WORKS SHALL BE AS PER PROJECT GENERAL NOTES.
3. ANY UNDESIRABLE SOIL SHALL BE REMOVED & REPLACED BY COMPACTED SAND.
4. FOR HANDRAIL DETAILS REFER EIL STD. NO. 7–68–0501.
5. FOR INSERT PLATE REFER EIL STD. NO. 7–68–0056.
6. FOR TANKS WITH FIRE–BRICK LINING, ADDITIONAL STEP, SUIT TO SITE SHALL BE PROVIDED AT LANDING LEVEL.
7. GRATING SHALL BE TYPE–I AS PER EIL STD. NO. 7–68–0697.
8. ALL WELDS ARE 6 mm FILLET WELDS U.N.O.

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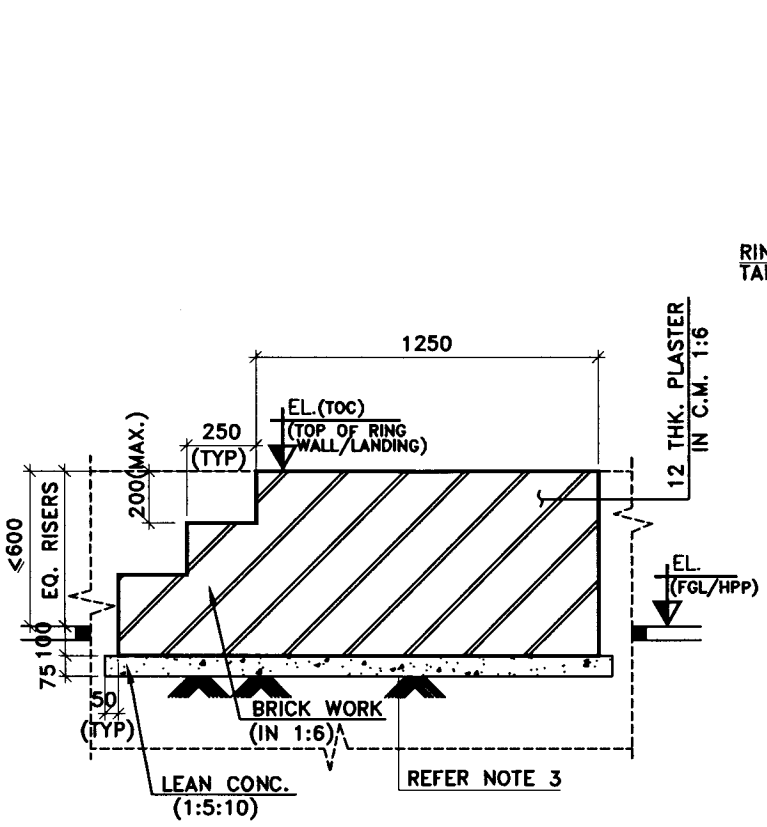
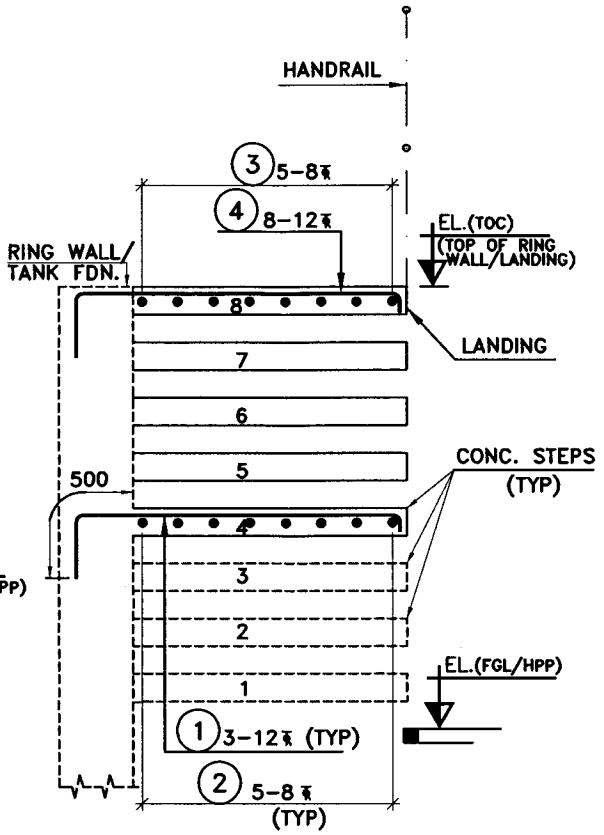
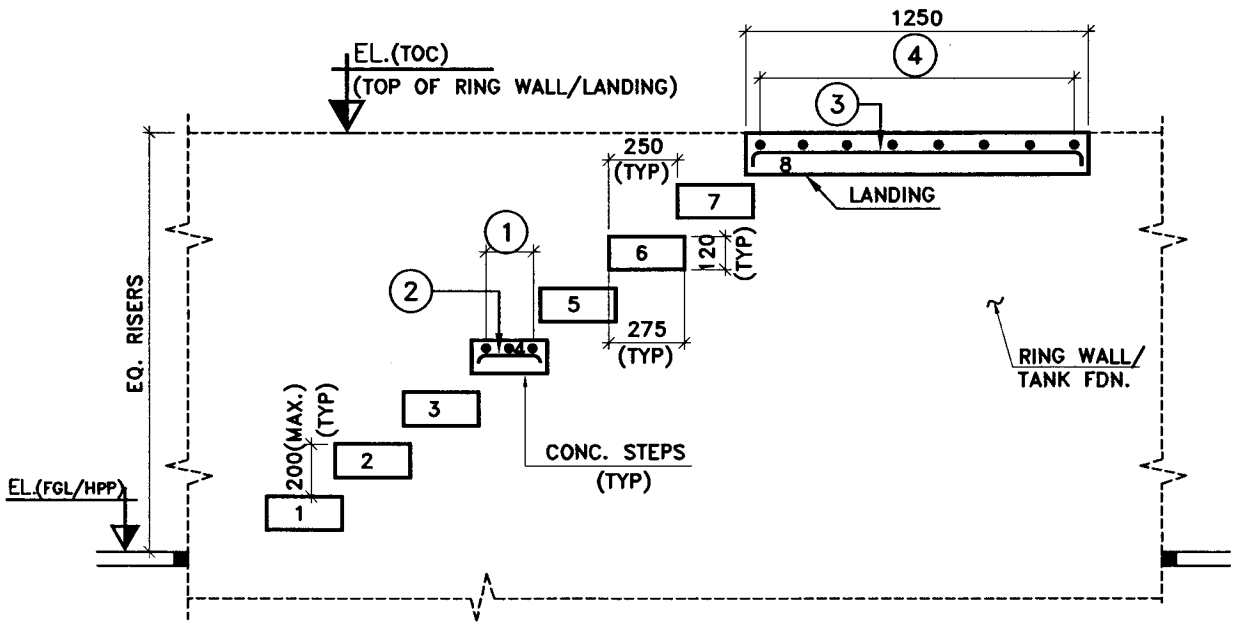


VIEW 1–1
(OPTION–I)



SECTION 3–3
(OPTION–II)



SECTION 2–2
(OPTION–II)
(No. OF STEPS SHOWN ARE INDICATIVE ONLY)

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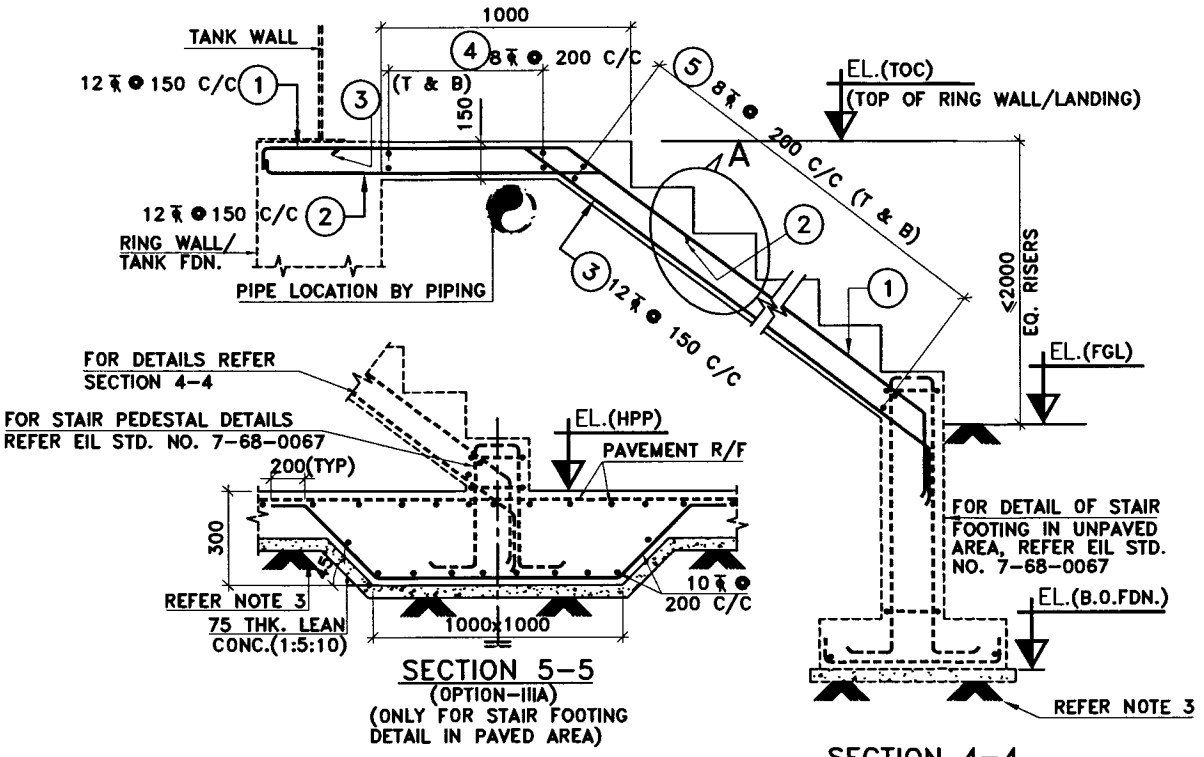
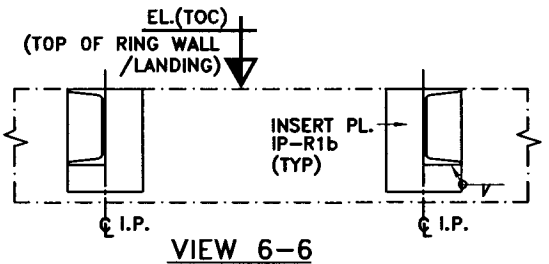
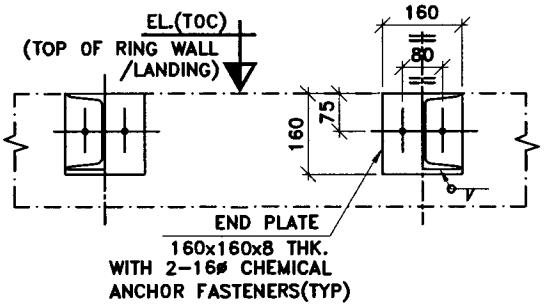


SECTION 5–5
(OPTION–IIIA)
(ONLY FOR STAIR FOOTING DETAIL IN PAVED AREA)

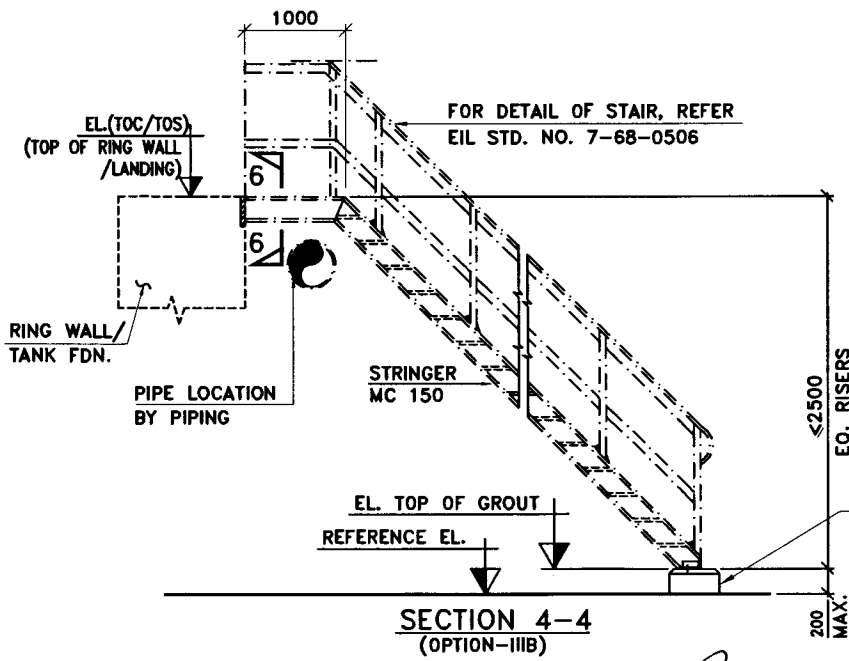
SECTION 4–4
(OPTION–IIIA)
(FOR STAIR IN UNPAVED AREA)
(HANDRAIL NOT SHOWN FOR CLARITY)



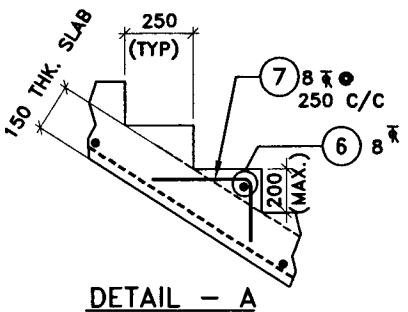
VIEW 6–6
(WITH INSERT PLATE)



VIEW 6–6
(WITH ANCHOR FASTENERS)



SECTION 4–4
(OPTION–IIIB)



DETAIL – A

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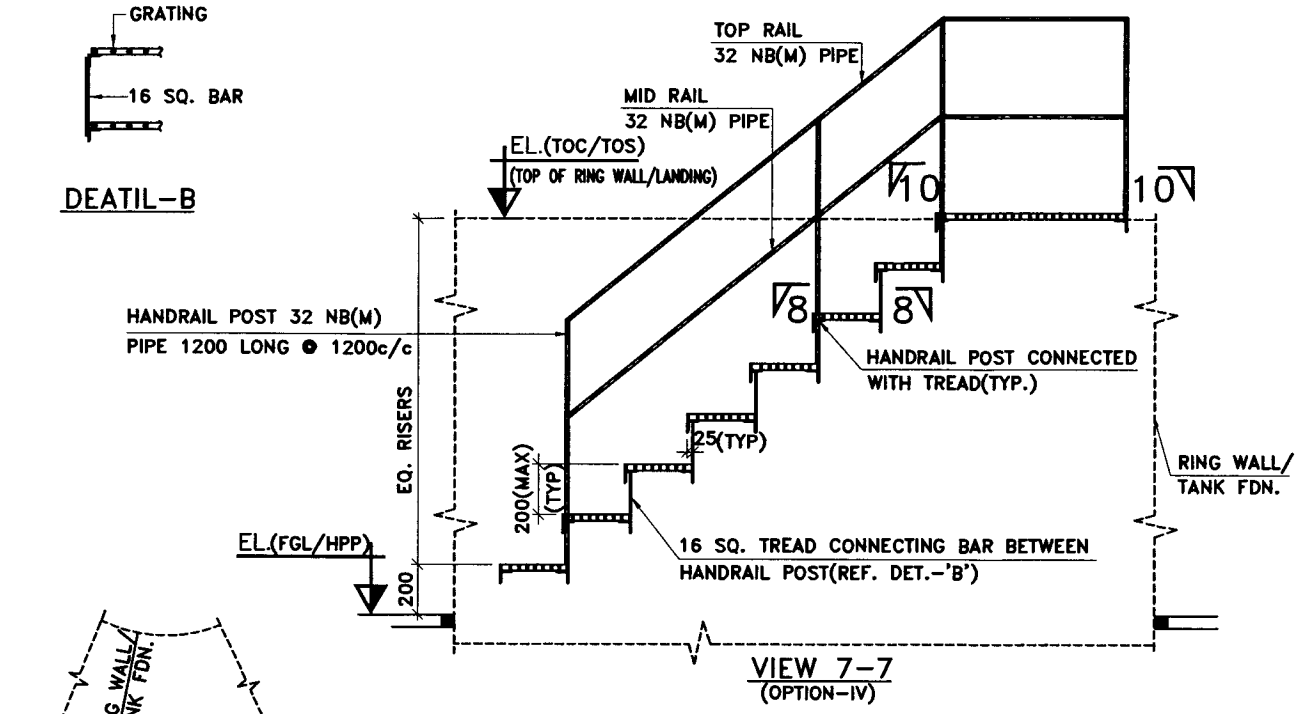

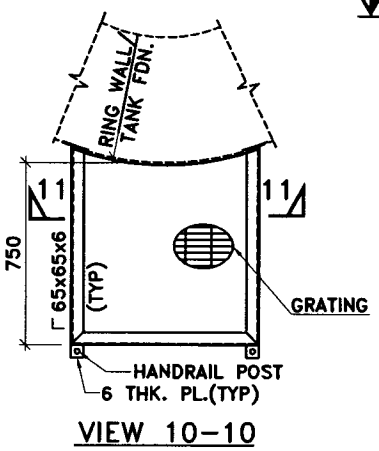

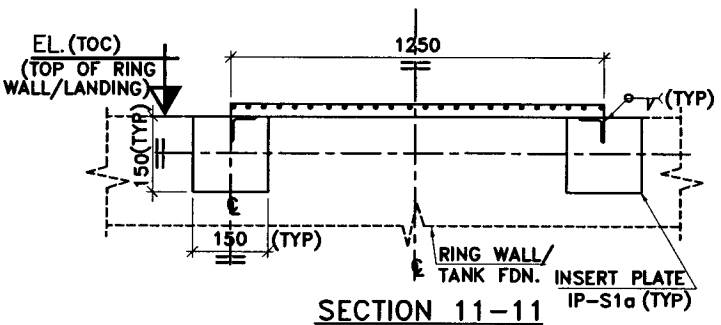

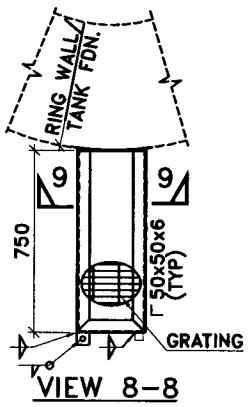

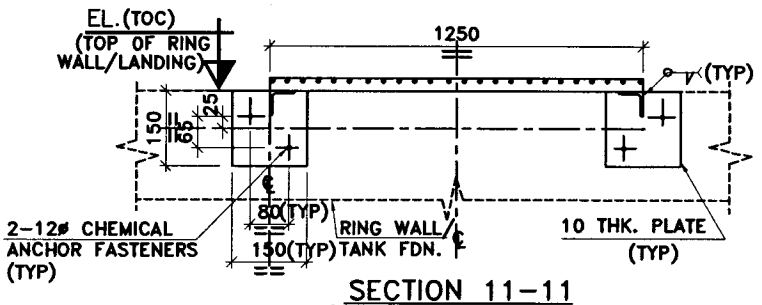

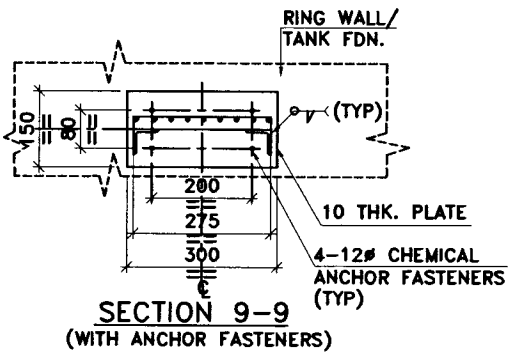

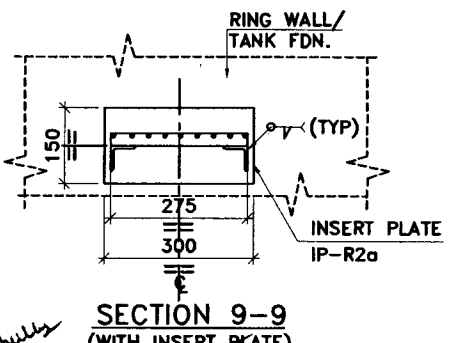

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0	09.03.15	ISSUED AS STANDARD	KKS/DIVYA	DEEPAK AGARWAL	P. K. MITTAL	S. CHANDA

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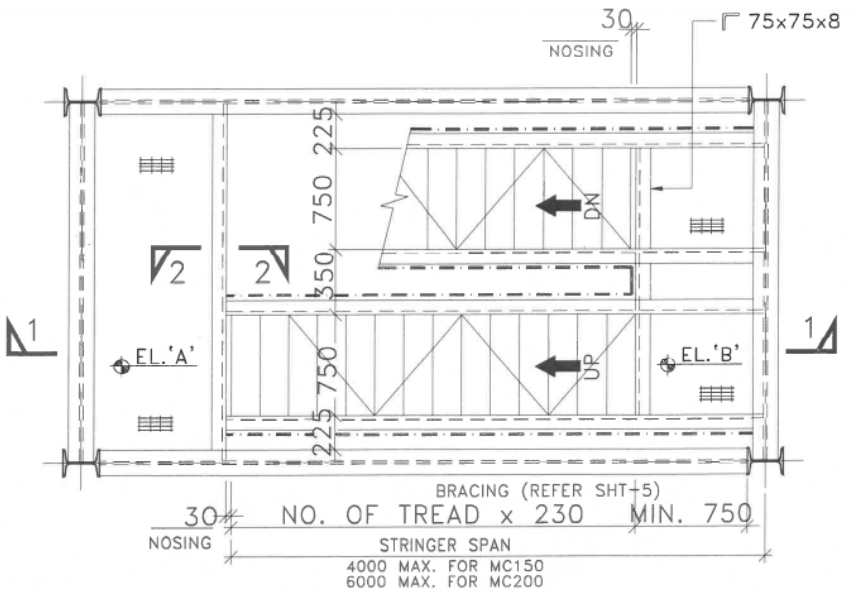
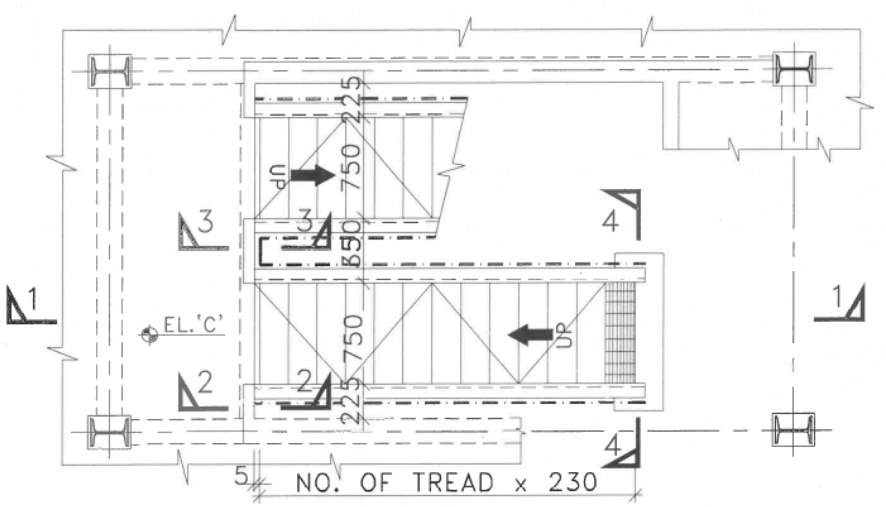
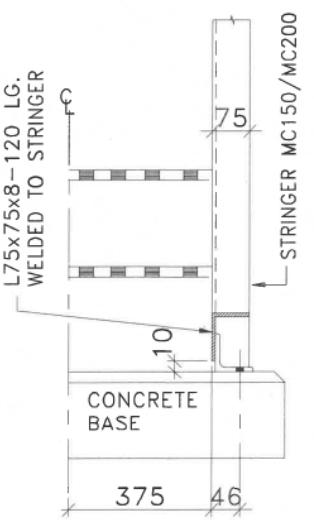


PLAN AT EL. 'A'



PLAN AT EL. 'C'



SECTION 4-4

NOTES :-

1. FOR STAIRWAY/TREAD USE ELECTROFORGED GRATING TYPE-II AS PER EIL STD NO 7-68-0697.
2. FOR CONNECTION DETAILS REFER SHEETS 3, 4, 5 AND 6.
3. STRINGER SHALL BE SUITABLY DESIGNED FOR OFFICE BUILDING, WARE HOUSES AND WORKSHOP.
4. FOR DETAIL OF INSERT PLATE 'R1a' REFER EIL STD. NO. 7-68-0056.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	
8	03.04.25	REAFFIRMED AND ISSUED AS STANDARD	SHUBHAM	SUDIP PAUL	ANURAG SINHA	MAINAK NANDI
7	01.08.19	REAFFIRMED AND ISSUED AS STANDARD	JS	AVM	RAJANJI SRIVASTAVA	R.K. TRIVEDI

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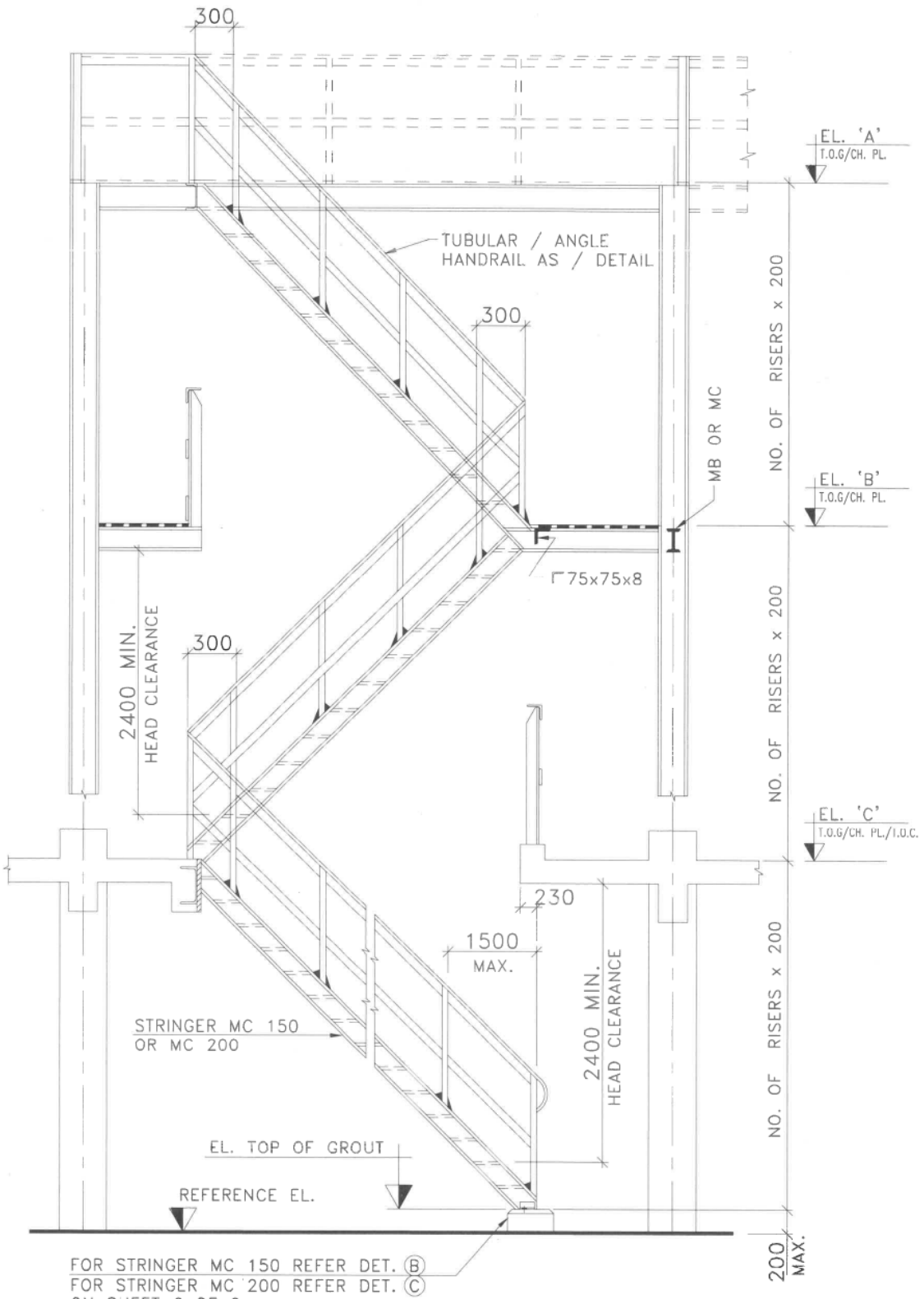

SECTION 1–1

MAXIMUM RISER IS 200 HOWEVER IT MAY BE REDUCED AND ADJUSTED AS REQUIRED.

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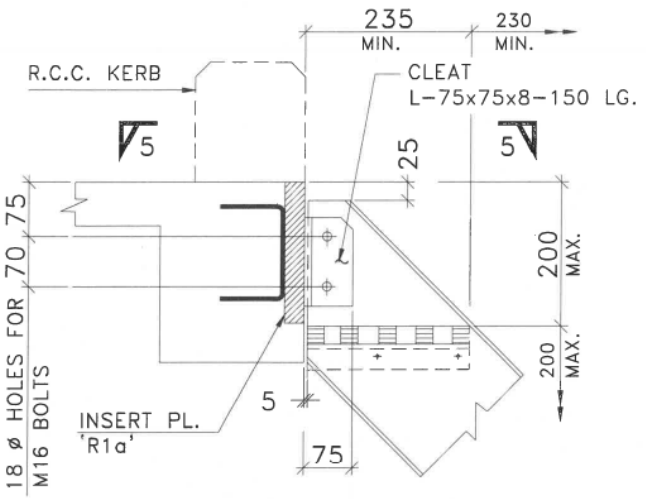
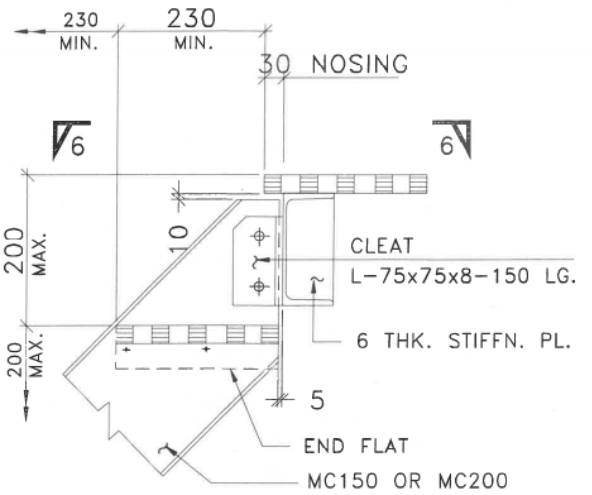


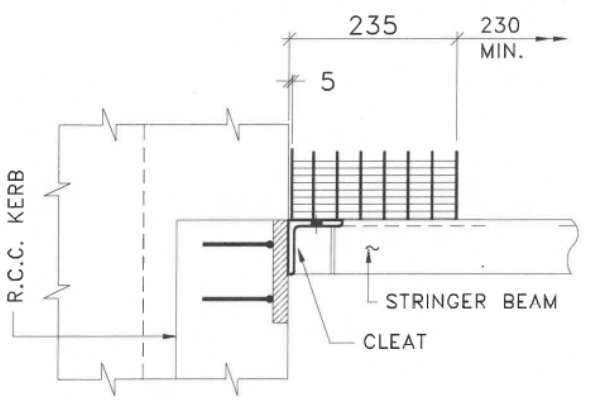
SECTION 2-2

(CONNECTION WITH CONCRETE BEAM)

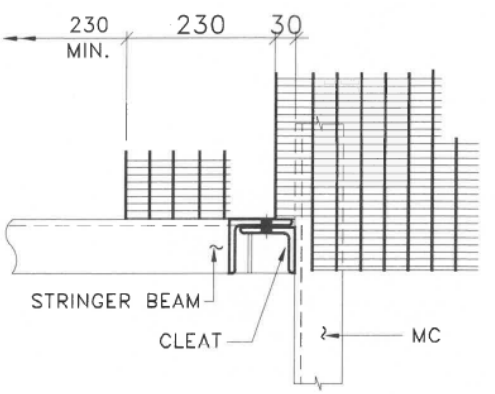


SECTION 2-2

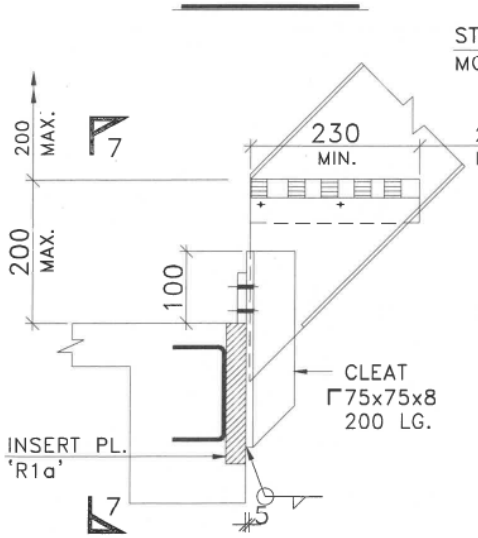
(CONNECTION WITH STEEL BEAM MC)



VIEW 5-5

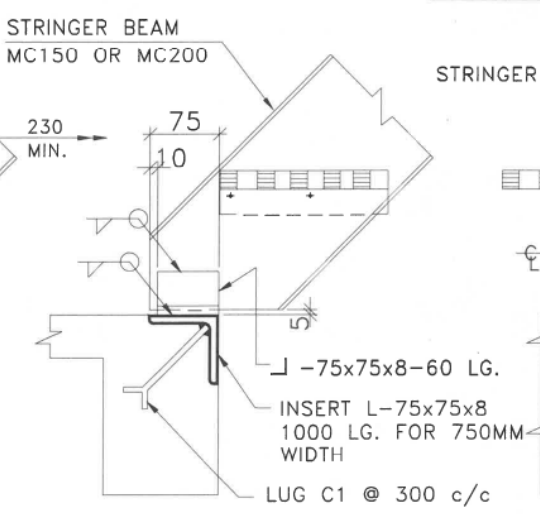


VIEW 6-6



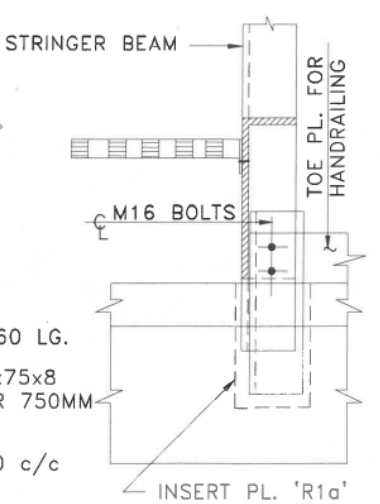
SECTION 3-3

(CONNECTION WITH CONCRETE BEAM)
(R.C.C. KERB NOT SHOWN FOR CLARITY)



SECTION 3-3 (ALT.)

(CONNECTION WITH CONCRETE BEAM)
(R.C.C. KERB NOT SHOWN FOR CLARITY)



VIEW 7-7

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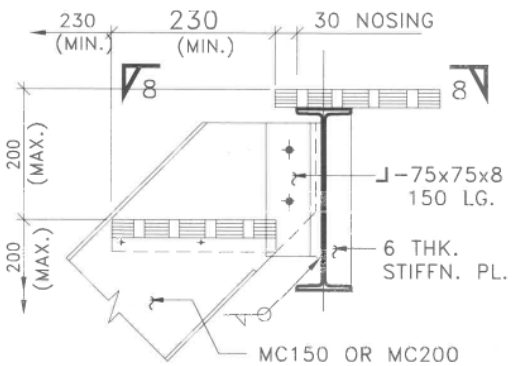
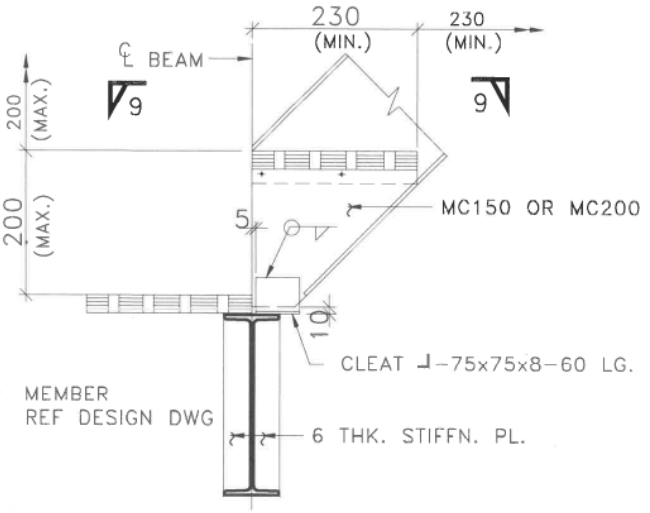


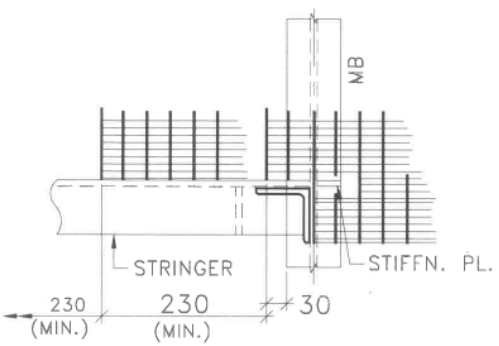
SECTION 2-2

(CONNECTION WITH STEEL BEAM ISMB)

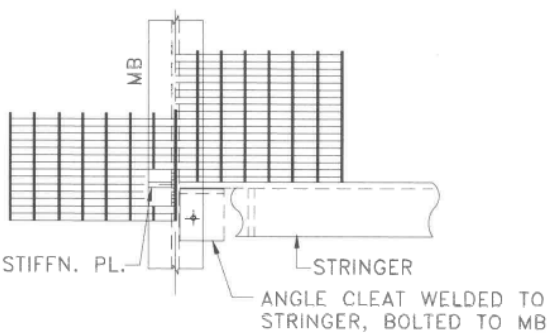


SECTION 3-3

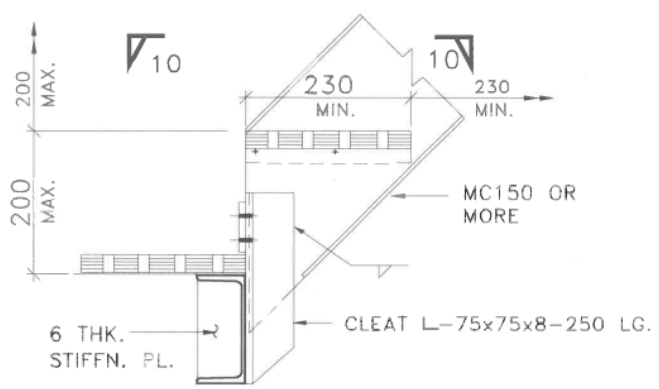
(CONNECTION WITH STEEL BEAM ISMB)



VIEW 8-8

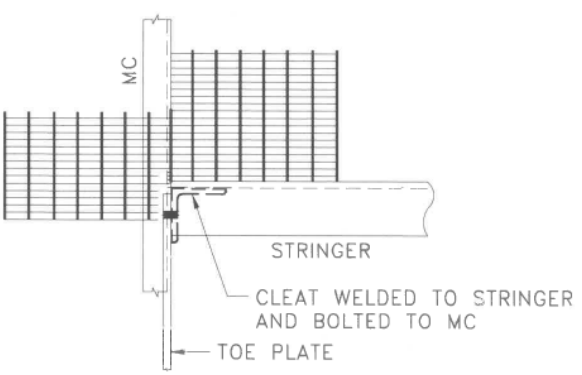


VIEW 9-9



SECTION 3-3

(CONNECTION WITH STEEL BEAM ISMC)



VIEW 10-10

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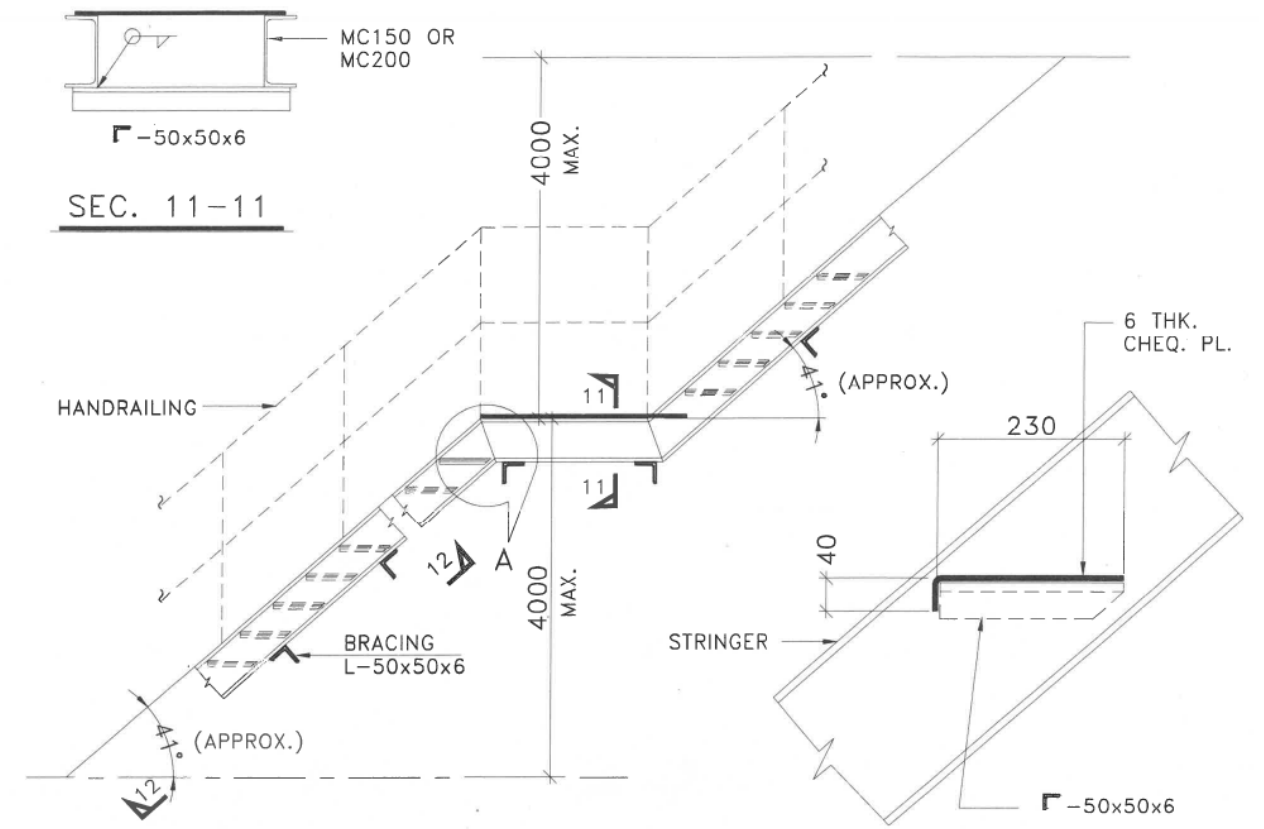
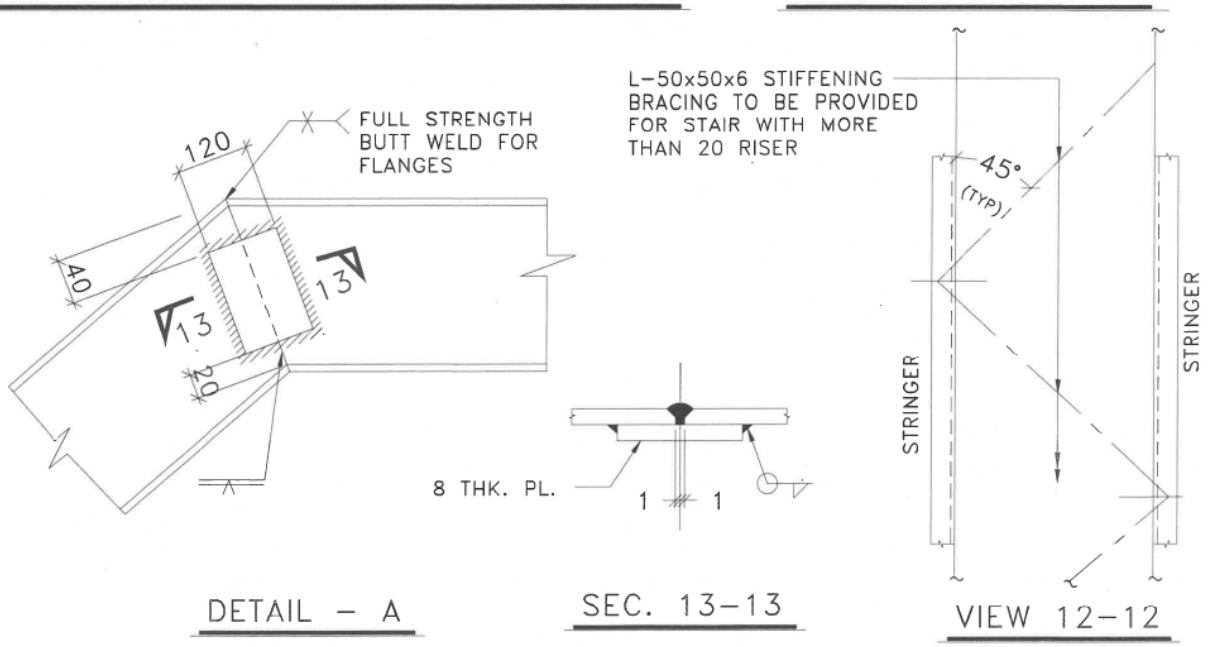


ELEVATION SHOWING STRINGER BRACINGS

TYP. DET. OF CHEQ. PL. STEP



DETAIL − A

SEC. 13−13

VIEW 12−12

STAIR DETS WITH CHEQURED PLATE STEPS

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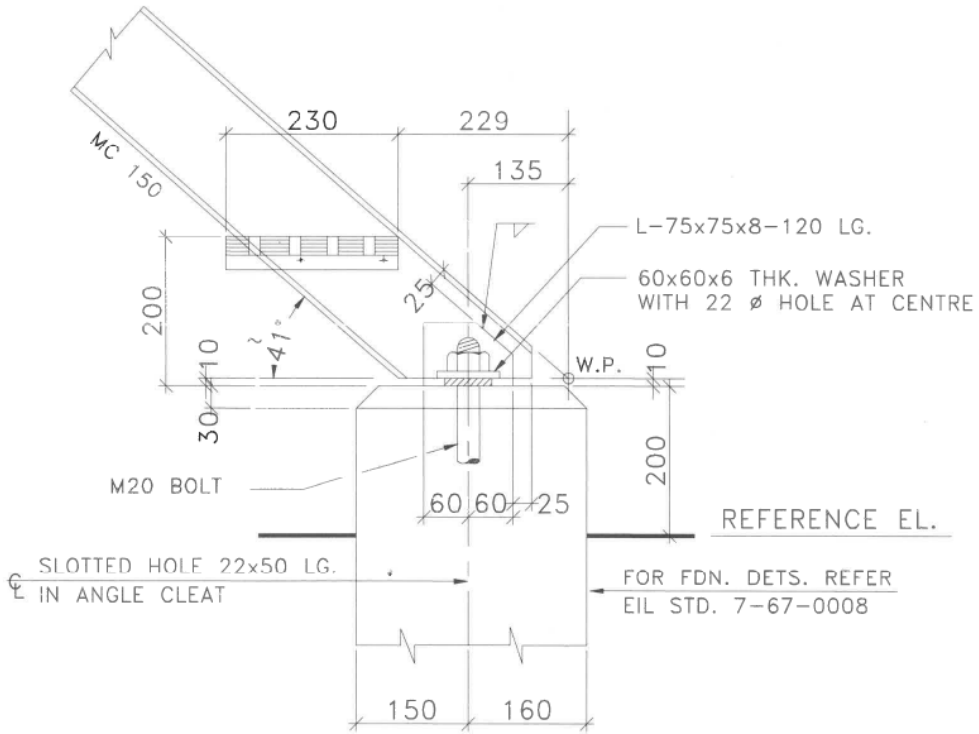
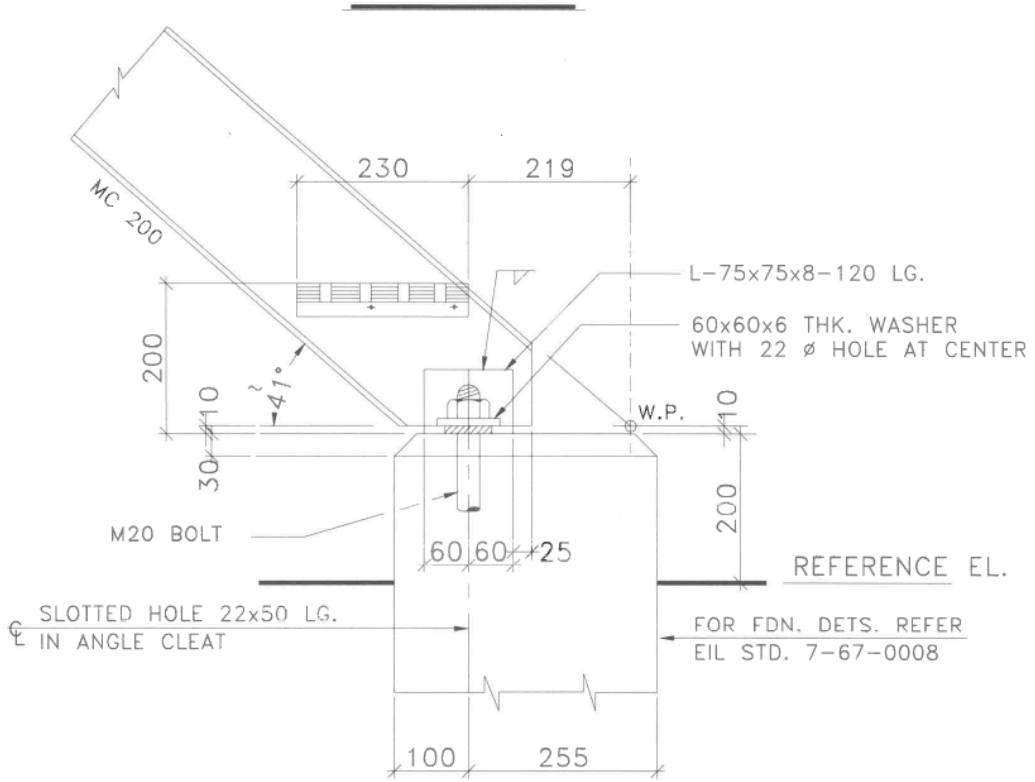


DETAIL – B



DETAIL – C

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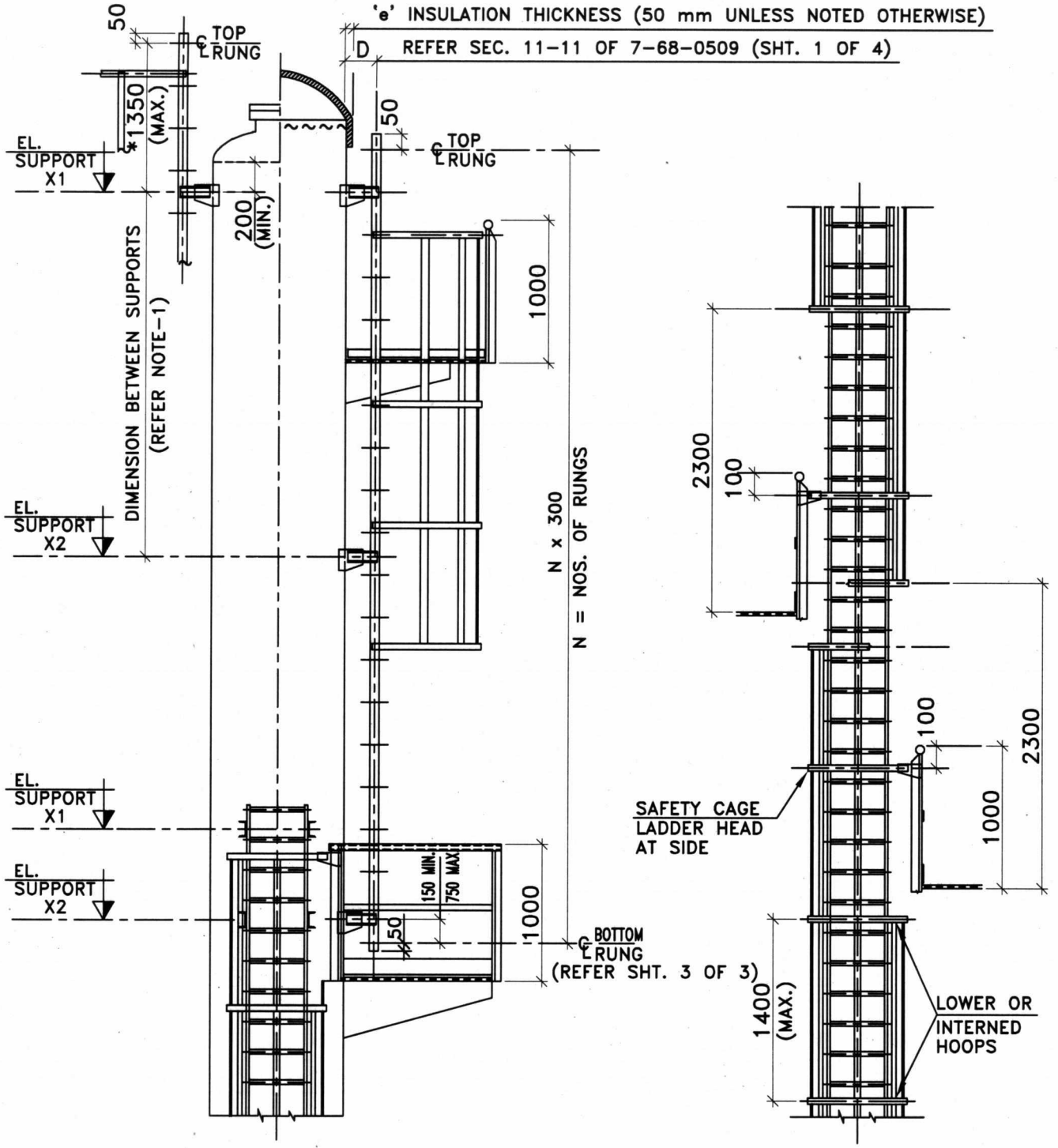
DETAILS OF STEEL LADDER



LADDER FOR SIDE ENTRY

LADDER FOR SIDE ENTRY

VESSEL DIA (mm)	DISTANCE 'D' (mm)
UPTO 800	200 + e
> 800 ⩽ 3200	260 + e
> 3200 ⩽ 8000	275 + e

* MC100 SHALL BE ADOPTED FOR DISTANCE MORE THAN 1350 UPTO 2000

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
9	14.12.23	REVISED AND ISSUED AS STANDARD	JITENDER GUPTA	AMARJEET	ANURAG SINHA	MAINAK NANDI
8	01.08.19	REAFFIRMED AND ISSUED AS STANDARD	JG	AVM	RAJANJI SRIVASTAVA	S.CHANDA

Approved by

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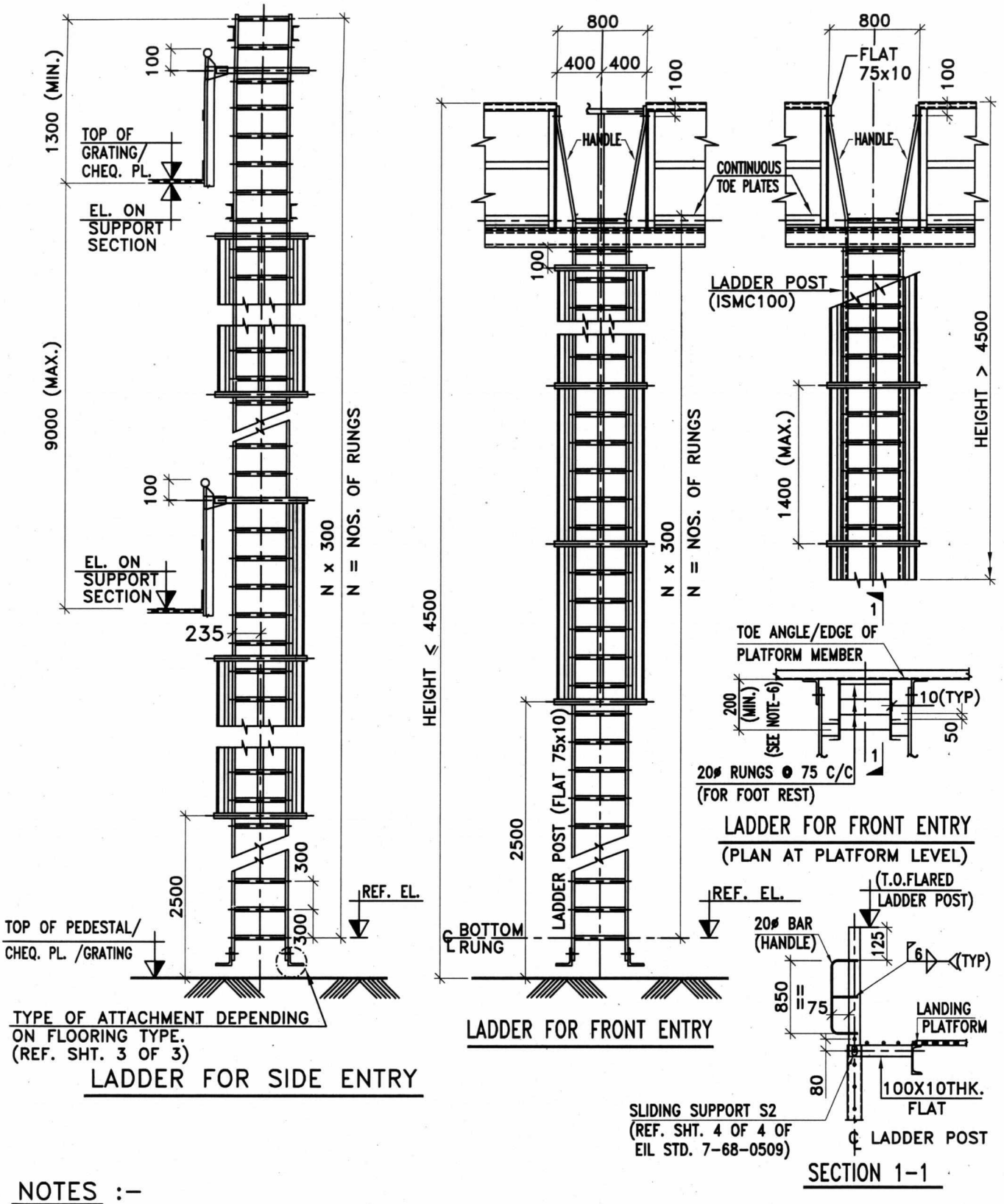
DETAILS OF STEEL LADDER



NOTES :-

1. LADDER POSTS SHALL BE OF FLAT (75x10) UPTO 3.60m (MAX.) BETWEEN SUPPORTS AND ISMC 100 UPTO 7.0m (MAX.) BETWEEN SUPPORTS.
2. RUNGS SHALL BE 20 ø. FOR STEEL LADDER JOINT DETAILS, REFER EIL STD. 7-68-0509.
3. SUPPORT TYPE 'X1' CORRESPONDS TO FIXED SUPPORT AND 'S2/X2' CORRESPONDS TO SLIDING SUPPORT. FOR EACH LADDER, ONLY ONE FIXED SUPPORT SHALL BE PROVIDED. REMAINING SUPPORT(S) SHALL BE OF SLIDING TYPE.
4. SUPPORT ELEVATION X1, X2 CORRESPOND TO ℄ OF BOLT HOLES.
5. SUPPORTS 'X1' IS CAPABLE TO SUSTAIN A LOAD FOR 9000 mm LONG LADDER ONLY.
6. LADDER SHALL BE GIVEN SUITABLE SLOPE (MAX.6°),IF NECESSARY,TO AVOID FOULING WITH ANCHOR CHAIRS.

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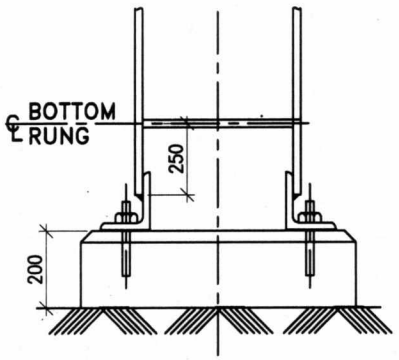
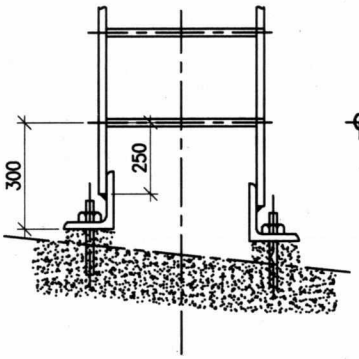
DETAILS OF STEEL LADDER

TYPE OF ATTACHMENT	NATURE OF SUPPORT SECTION	REMARKS
A1, A2	SITE WITHOUT PAVING	
B1, B2	CONCRETE FLOOR	A1, B1, C1, D1 : FIXED TYPE
C1, C2, D1, D2	CHEQUERED PLATE / GRATING FLOORING	A2, B2, C2, D2 : SLIDING TYPE



TYPE – A1



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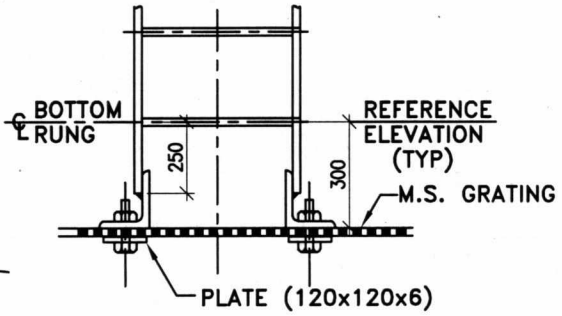

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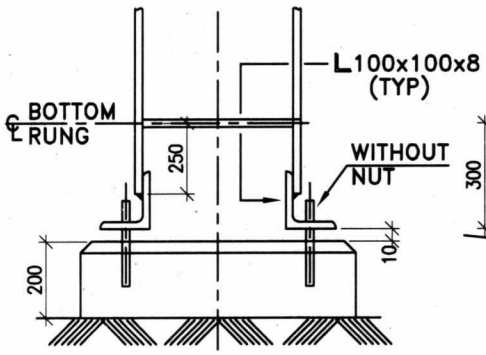

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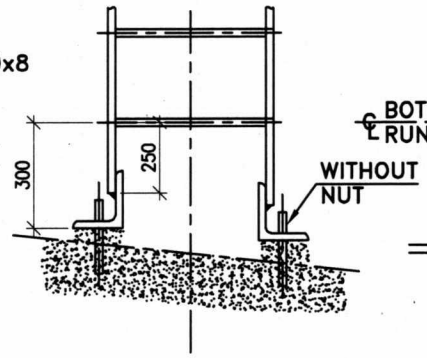

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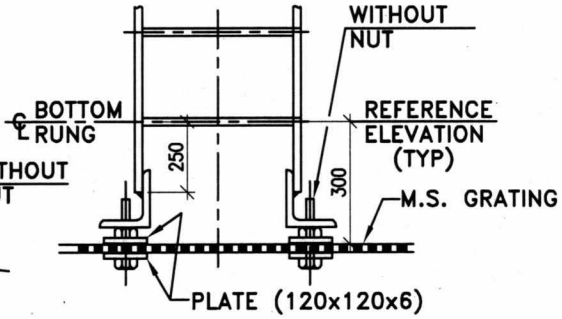

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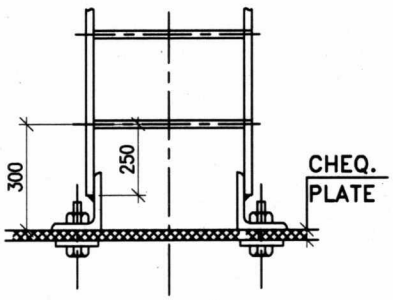

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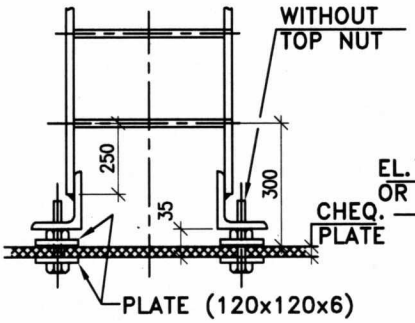

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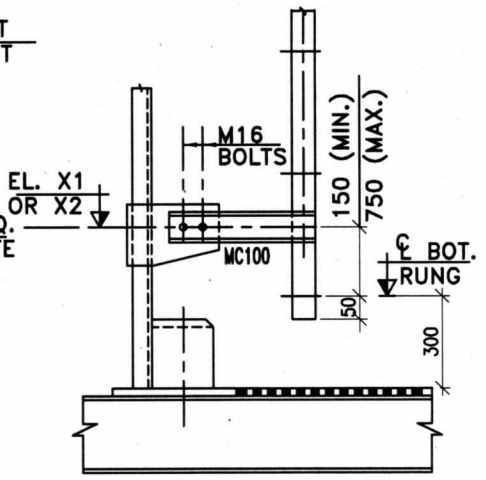
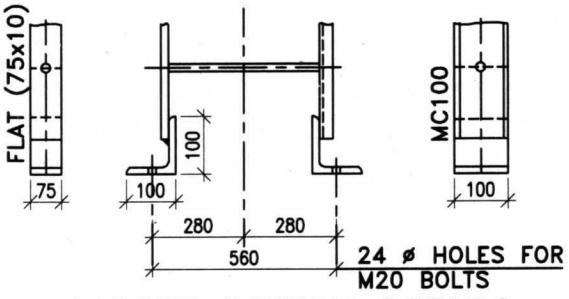


TYPE – E

(FREE)



LADDER BOTTOM DETAILS

NOTE :-

IN CASE OF TOWERS BOTTOM RUNG SHALL BE 300 mm FROM FGL /HPP.

TYPE OF ATTACHMENT AT BASE

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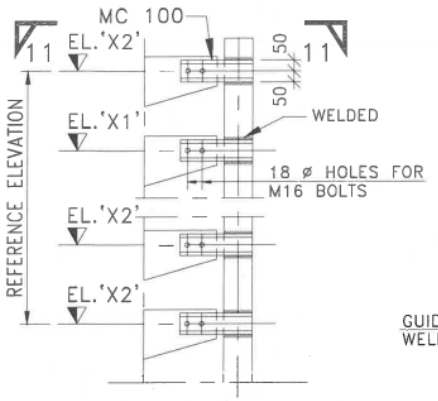
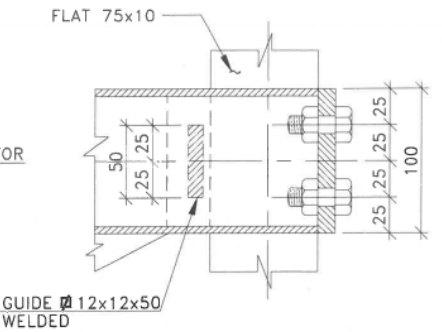
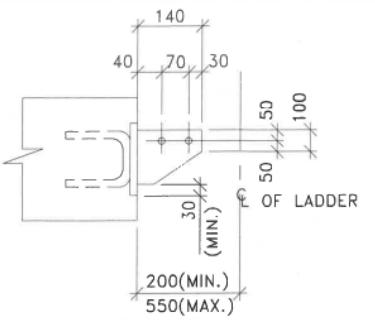
STEEL LADDER JOINT DETAILS



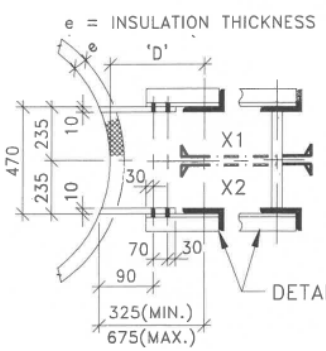
LADDER ATTACHMENT TO VESSELS



SECTION 12–12

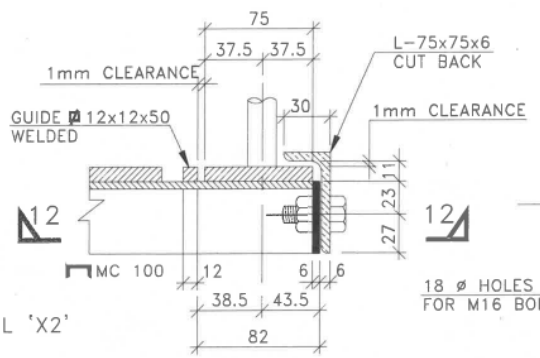


SECTION 13–13

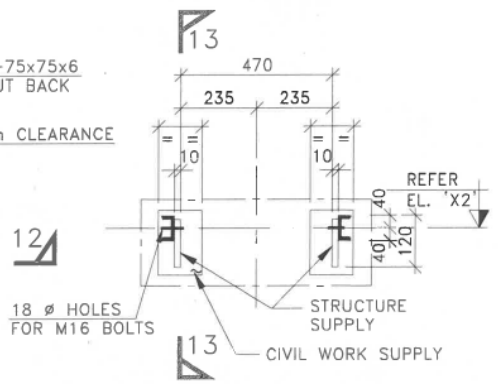


DETAIL 'X2'

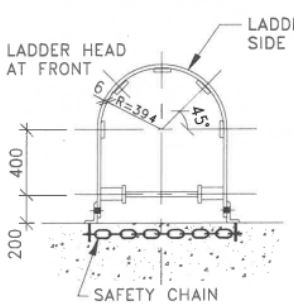
(FOR LADDER POST FLAT 75x10)

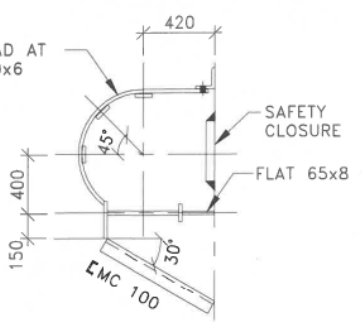


SECTION 11–11

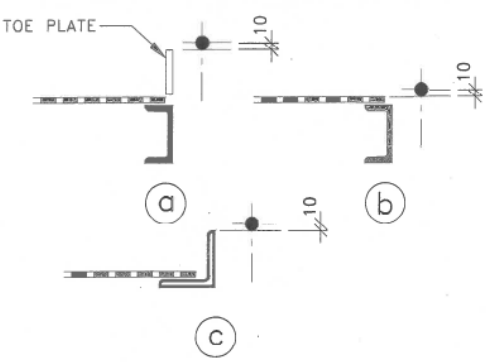


LADDER ATTACHMENT TO CONCRETE

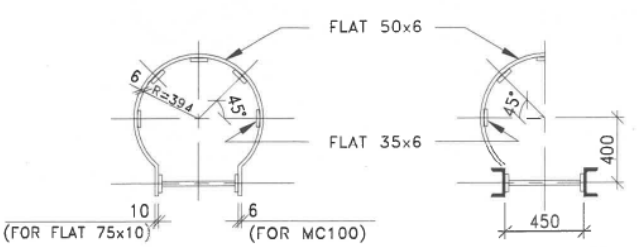




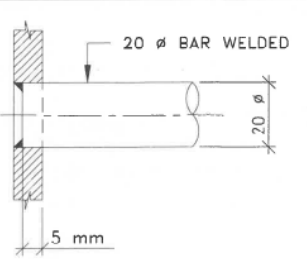
SAFETY CAGE HOOP DETAILS



LOCATION OF RUNG FOR LADDER



LOWER AND INTERMEDIATE CAGE



ATTACHMENT OF BAR

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
8	03.04.25	REAFFIRMED AND ISSUED AS STANDARD	SHUBHAM	SUDIP PAUL	ANURAG SINHA	MAINAK NANDI
7	01.08.19	REAFFIRMED AND ISSUED AS STANDARD	JG	AVM	RAJANJI SRIVASTAVA	R.K.TRIVEDI

Approved by

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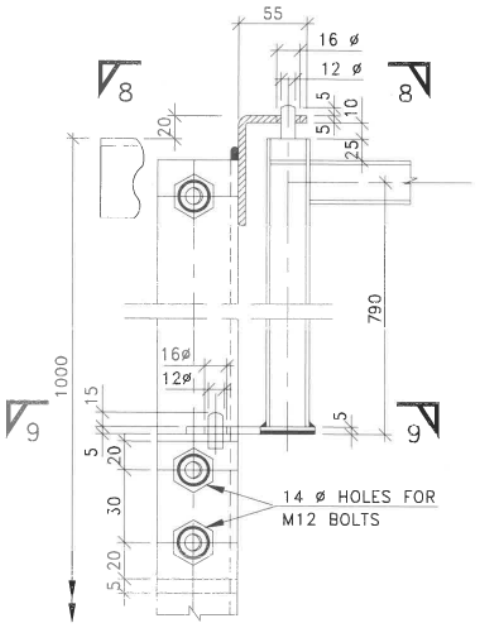
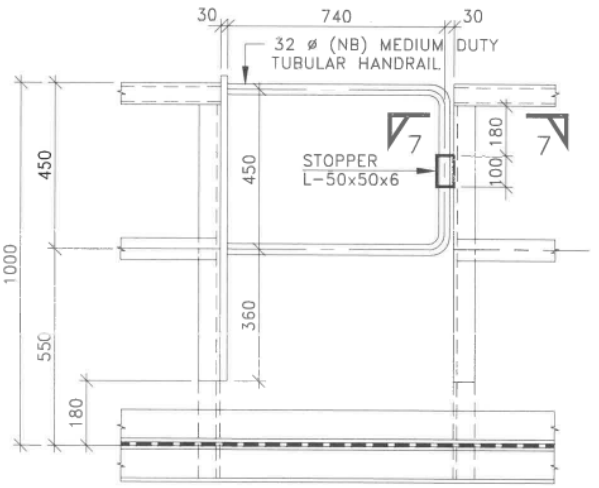
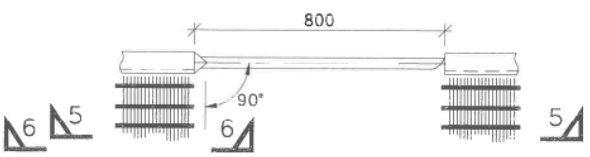


SECTION 6-6



SECTION 5-5



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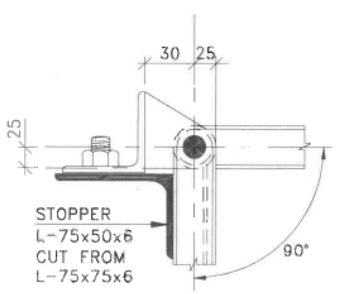

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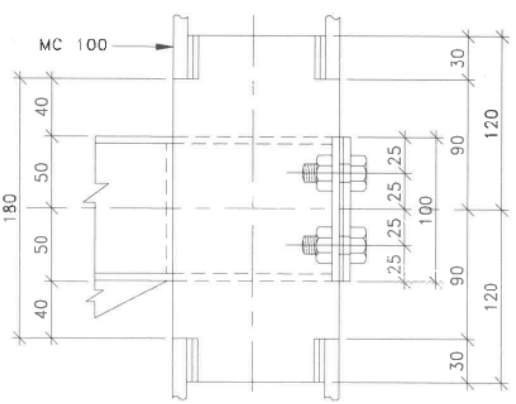

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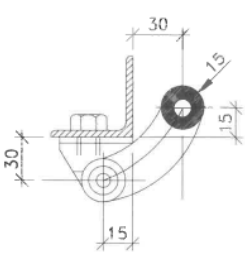
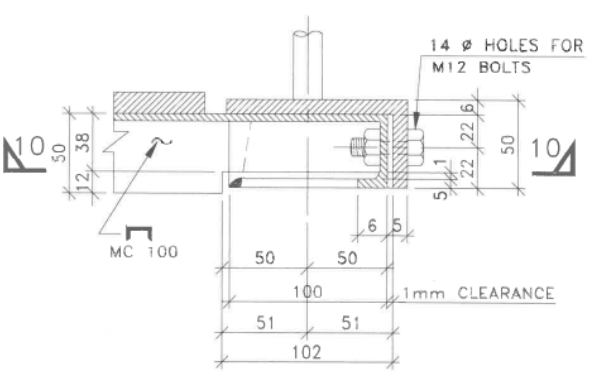
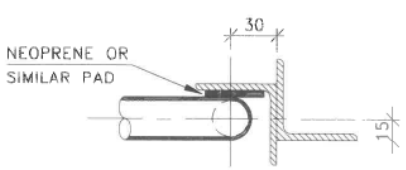


SECTION 9-9



DETAIL 'X2'
(FOR LADDER POST MC 100)



SECTION 7-7

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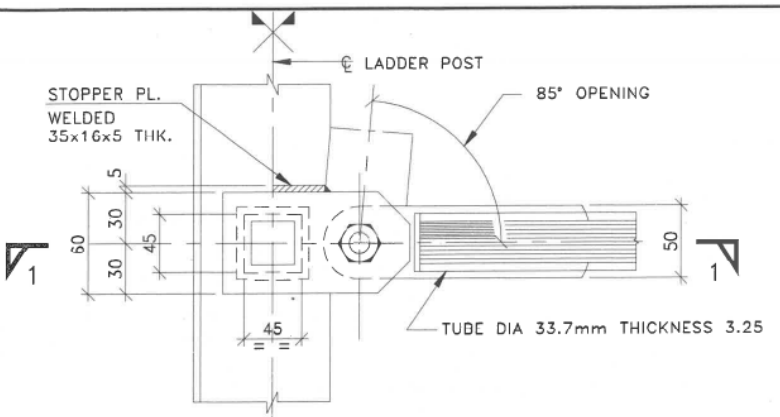
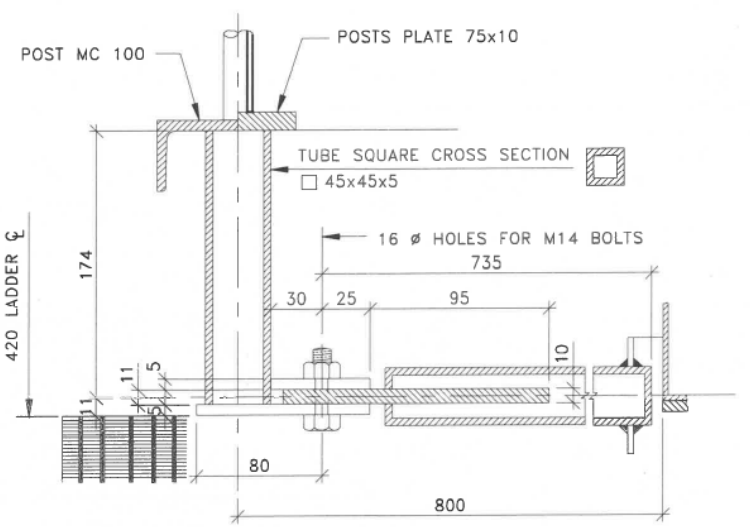
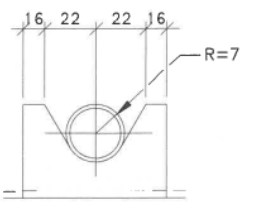


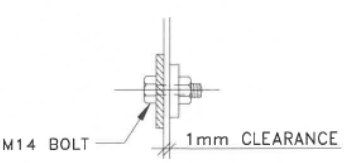
SAFETY BAR INSTALLATION ON LADDER POSTS



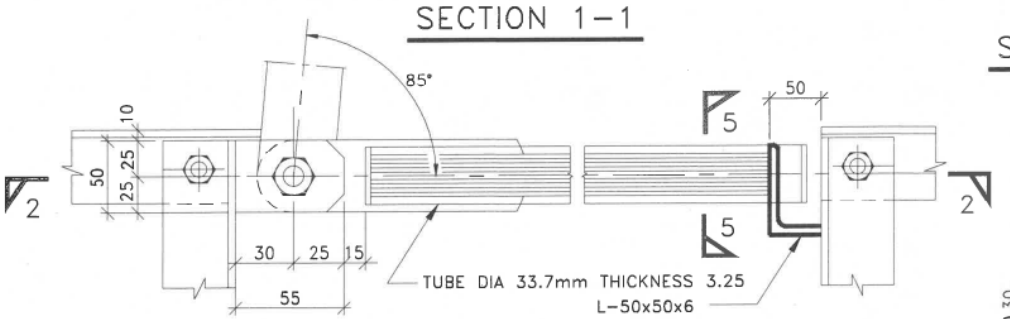
SECTION 1–1



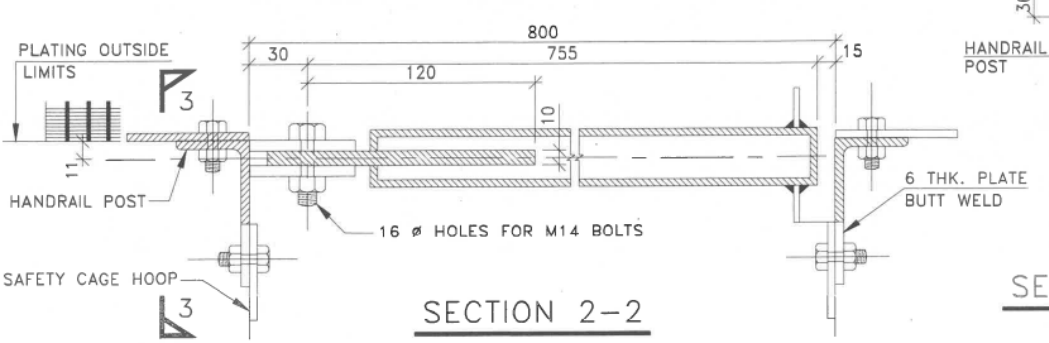
SECTION 5–5



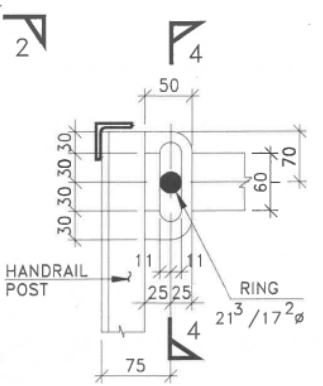
SECTION 4–4



SAFETY BAR INSTALLATION ON HANDRAIL POSTS



SECTION 2–2



SAFETY CAGE HOOP ATTACHMENT TO HANDRAIL POST

SECTION 3–3

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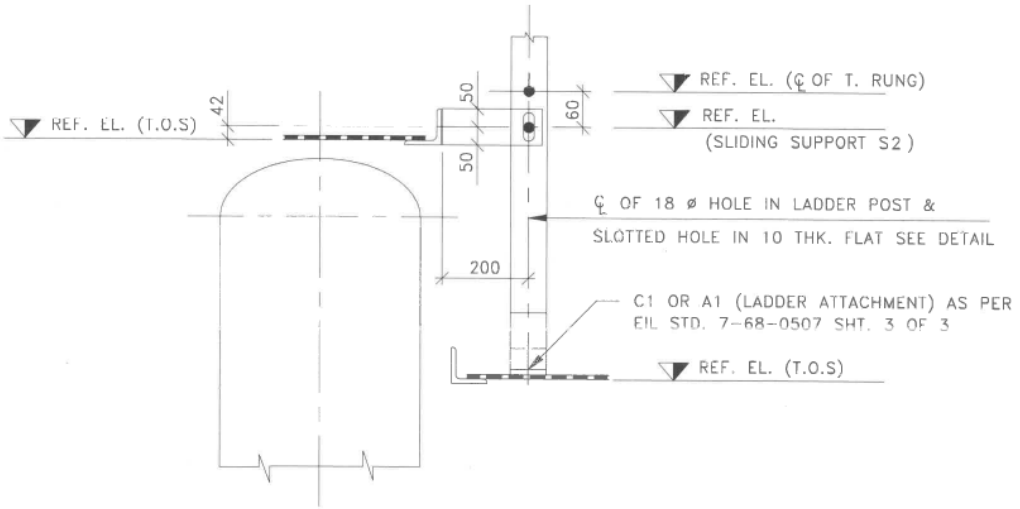
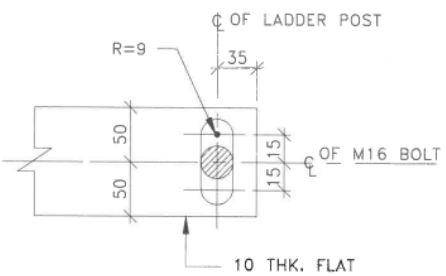


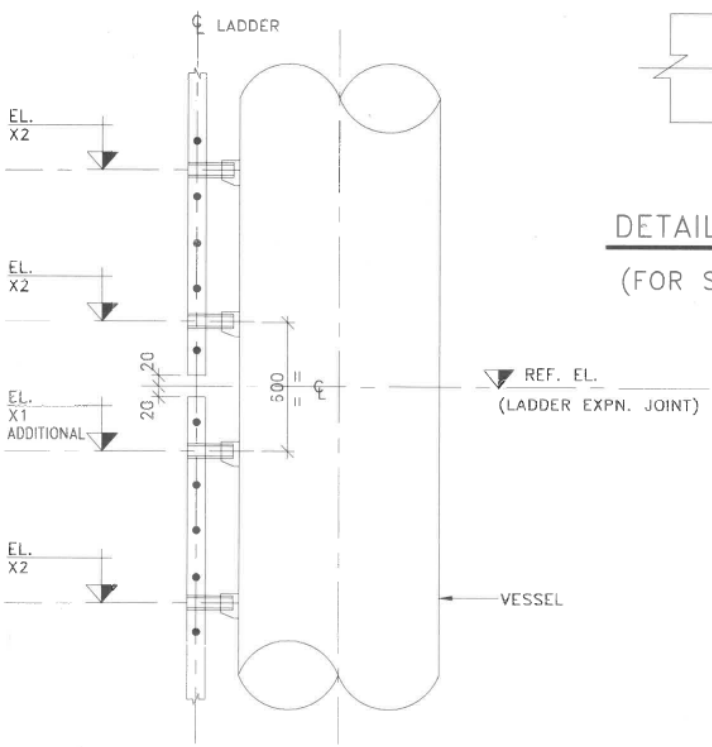
SLIDING CONN. DET. OF LADDER

(WITH TOE ANGLE OF PLATFORM ON THE HEAD OF VESSEL)



DETAIL OF SLOTTED HOLE

(FOR SLIDING SUPPORT S2)



DET. OF LADDER EXPANSION JOINT

(WHEN DISTANCE BETWEEN TOP AND BOT. MOST SUPPORT ⩾ 9000)

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NOTES:–

1. THIS STANDARD COVERS DETAILS OF OPERATING PLATFORMS ON GRADE, OR ON ELEVATED RCC STRUCTURE FOR A MAXIMUM HEIGHT OF 2300mm ABOVE FGL/HPP AND/OR 2150mm ABOVE FFL.
2. ALL DIMENSIONS ARE IN MILLIMETRES.
3. STRUCTURAL STEEL SHALL BE OF MINIMUM E250 GRADE, QUALITY BR/BO CONFORMING TO IS 2062.
4. GRADE OF CONCRETE AND REINFORCEMENT BARS SHALL BE AS MENTIONED IN GENERAL NOTES OF THE PROJECT.
5. GENERAL NOTES OF THE PROJECT SHALL ALSO BE FOLLOWED FOR CONCRETE AND STEEL WORKS.
6. THE LOCATION AND ORIENTATION OF PLATFORMS SHALL BE AS PER STRUCTURAL DRG/PIPING GAD.
7. LIVE LOAD OF 3.0 KN/SQM HAS BEEN CONSIDERED WHILE DESIGNING THE PLATFORMS.
8. DETAILS OF LADDERS SHALL BE AS PER EIL STD. NO. 7–68–0507.
9. DETAILS OF LADDER PEDESTAL SHALL BE AS PER EIL STD. NO. 7–67–0008.
10. GRATING SHALL BE ELECTROFORGED TYPE–I AS PER EIL STD. NO. 7–68–0697.
11. HANDRAIL TYPE–IV AS PER EIL STD. NO. 7–68–0501 SHALL BE USED.
12. ALL GUSSET PLATES SHALL BE 8mm THICK, UNLESS NOTED OTHERWISE.
13. ALL CONNECTIONS SHALL BE WELDED USING 6mm THICK FILLET WELDS. CONNECTIONS AT CORNER LOCATIONS SHALL BE WITH SUITABLE CLEAT ANGLE.
14. ANCHOR BOLTS SHALL BE AS PER EIL STD. NO. 7–68–0417.
15. FOUNDATIONS SHOWN IN THIS STANDARD ARE VALID FOR SBC OF 5.0 T/SQM AND ABOVE AT FOUNDATION LEVEL.
16. CONSTRUCTION JOINTS IN PAVEMENT SHALL BE SUITABLY LOCATED AT SITE IN CASE THICKENED PAVEMENT IS ADOPTED FOR PLATFORM FOUNDATIONS.
17. GROUT SHALL BE 1:2 CEMENT SAND MORTAR TYPE.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
6	29.03.24	REVISED AND ISSUED AS STANDARD	JITENDER	AMARJEET	ANURAG SINHA	MAINAK NANDI
5	09.07.18	REVISED AND ISSUED AS STANDARD	GAURAV KUMAR	ALPANA	RAJANJI SRIVASTAVA	R.K. TRIVEDI

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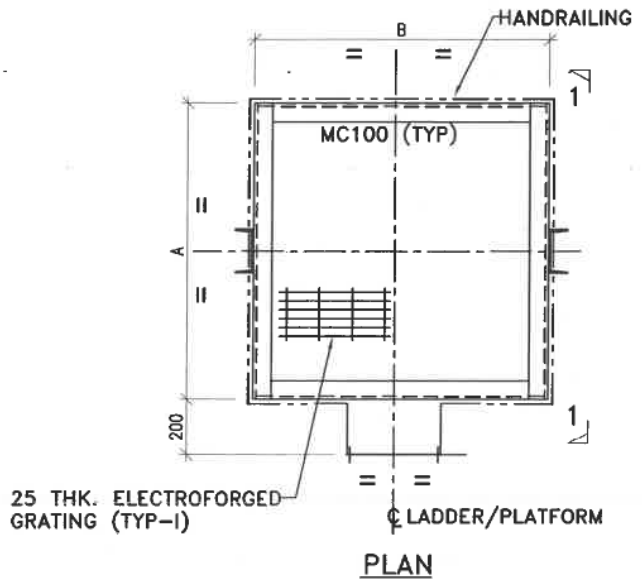
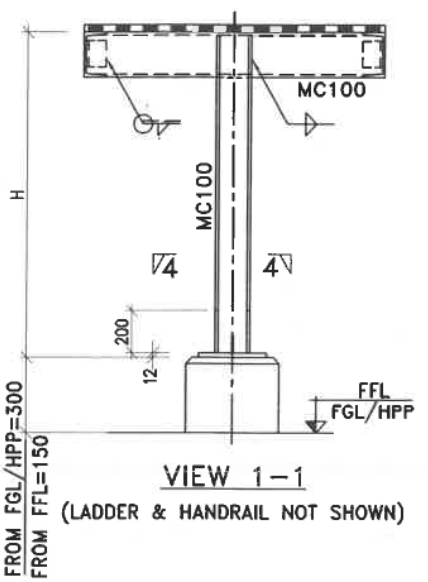
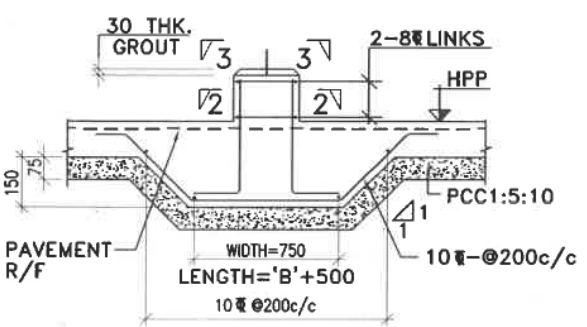


PLAN



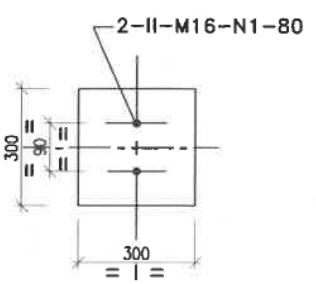
VIEW 1-1

(LADDER & HANDRAIL NOT SHOWN)

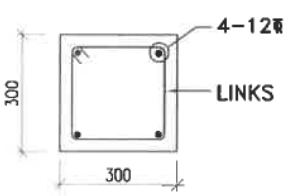


DETAIL OF FOUNDATION

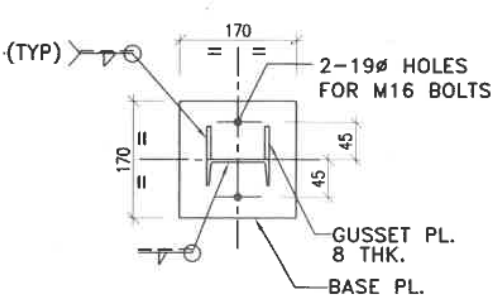
(W.R.T. VIEW 1-1)



VIEW 3-3



SEC. 2-2



VIEW. 4-4

TYP. DETAILS OF PLATFORMS FOR

750	≤A	≤1000
750	≤B	≤1000
750	≤H	≤1000

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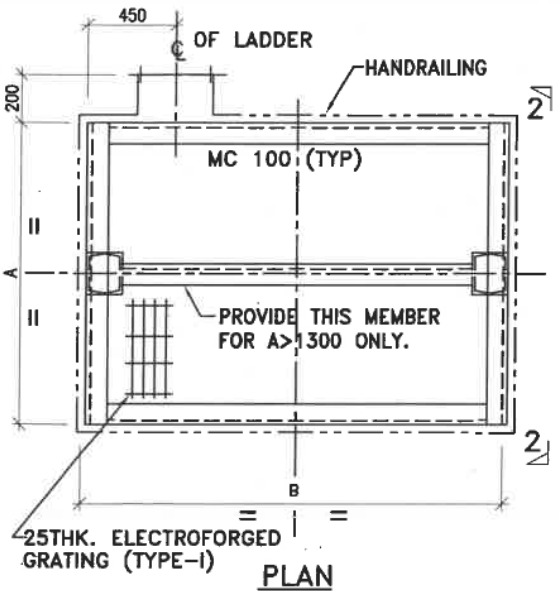
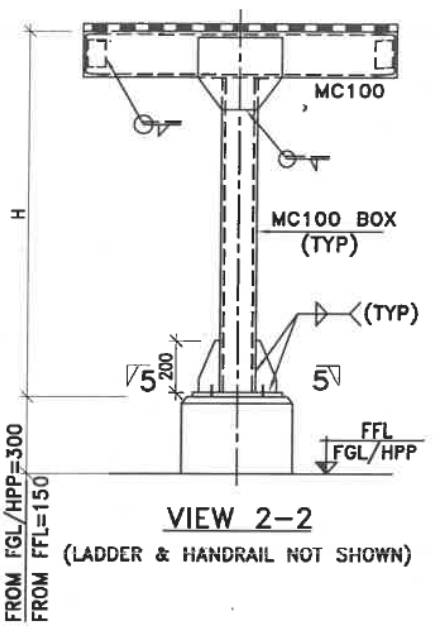
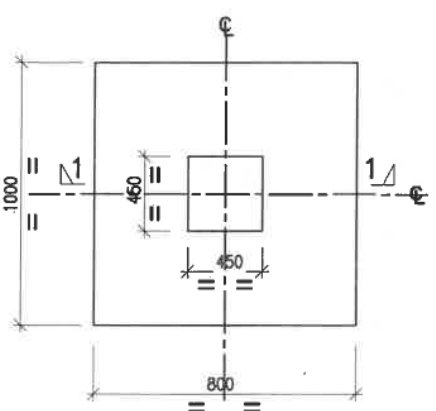


PLAN



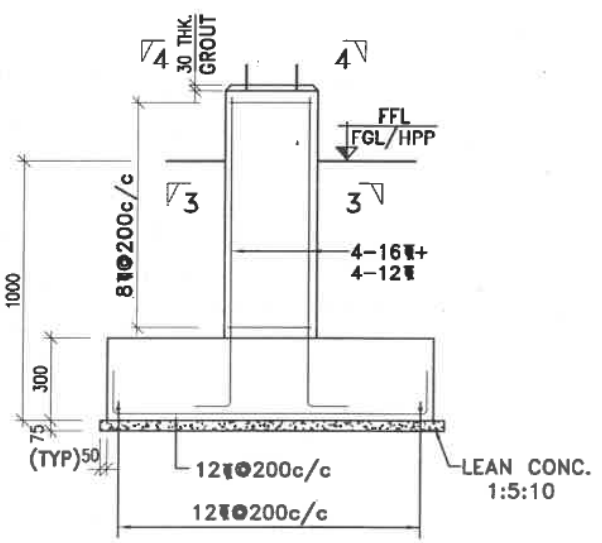
VIEW 2–2

(LADDER & HANDRAIL NOT SHOWN)

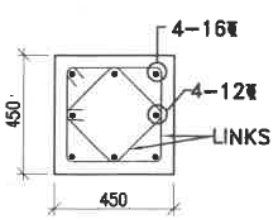


PLAN OF FOUNDATION

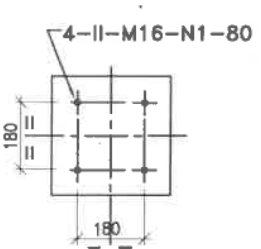
(2 NOS. REQD. THUS)



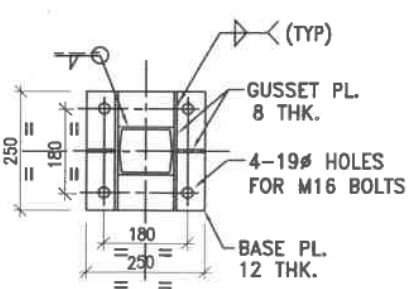
SECTION 1–1



SEC. 3–3



VIEW 4-4



VIEW 5–5

TYP. DETAILS OF PLATFORMS FOR

1000	≤A	≤1500
1000	≤B	≤2500
1000	≤H	≤2000

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NOTES :-

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. FOLLOWING LOADING HAS BEEN CONSIDERED :-
   a) LIVE LOAD =2.0 kN/m^2 ON CROSSOVERS.
   b) SELF WEIGHT OF MEMBER INCLUDING GRATINGS.
3. REINFORCEMENT, CONCRETE AND STRUCTURAL STEEL GRADE SHALL BE AS PER GENERAL NOTES FOR THE PROJECT.
4. LOCATION AND ORIENTATION OF PLATFORMS SHALL BE AS PER PIPING GAD.
5. STAIRCASE DETAIL SHALL BE AS PER EIL STANDARD NO. 7-68-0506.
6. STAIRCASE ON EACH SIDE OF CROSSOVER SHALL HAVE INCLINATION OF 41° TO HORIZONTAL, WITH RISERS NOT EXCEEDING 200mm.
7. GRATING SHALL BE TYPE-I AS PER EIL STANDARD NO. 7-68-0697.
8. FOR D $\geq$ 2000 HANDRAIL SHALL BE OF TYPE-II AS PER EIL STD. NO. 7-68-0501, HANDRAIL FOR OTHER PLATFORMS SHALL BE OF TYPE-IV.
9. GUSSET PLATES SHALL BE 8mm THICK, UNLESS NOTED OTHERWISE.
10. ANCHOR BOLTS SHALL BE AS PER EIL STANDARD 7-68-0417.
11. PIPE SLEEPERS HAVE BEEN ASSUMED TO BE 500mm (MAXIMUM) ABOVE GRADE AND WITH A MAXIMUM LENGTH OF 5000mm SYMMETRICALLY LOCATED WITH RESPECT TO CENTRE LINE, THUS REQUIRING SINGLE SPAN CROSSOVERS.
12. VARYING CROSSOVER LENGTHS AGAINST HEIGHT OF 1000, 1600, 2000 AND 2500 ABOVE THE PEDESTAL HAVE BEEN TABULATED ON SHT. 3 OF THIS STANDARD.
13. TABULATED HORIZONTAL AND VERTICAL FORCES 'H AND V' ON THE FOUNDATION MAY BE USED FOR DESIGN OF FOOTING, SINCE SOIL RECOMMENDATION VARY FOR DIFFERENT SITES. HOWEVER, A STANDARD FOUNDATION DETAIL GIVEN ON SHEET 4 MAY BE ADOPTED FOR MINIMUM SOIL BEARING CAPACITY OF $5T/m^2$ AT FOUNDATION LEVEL.
14. THIS STANDARD SHALL BE SUITABLY USED AS CROSS-OVER FOR RCC/ MASONARY DYKE WALLS IN TANK FARM, AS APPLICABLE.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	
5	28.11.22	REVISED AND ISSUED AS STANDARD	ATULYA	DEEPAK	ANURAG SINHA	S. MAZUMDAR
4	23.07.14	REVISED AND ISSUED AS STANDARD	SUSHMA	AJS	P.K.MITTAL	S.CHANDA

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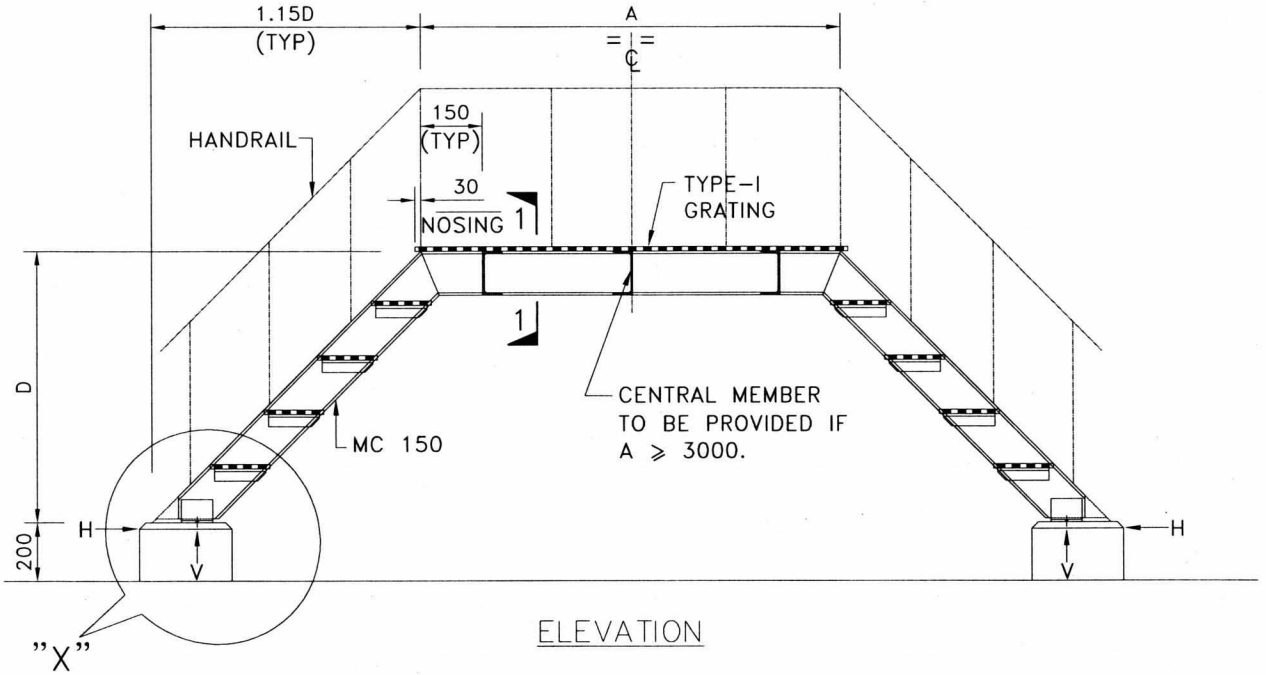
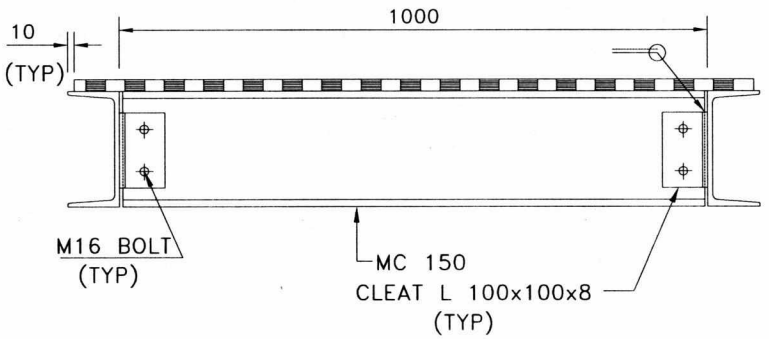
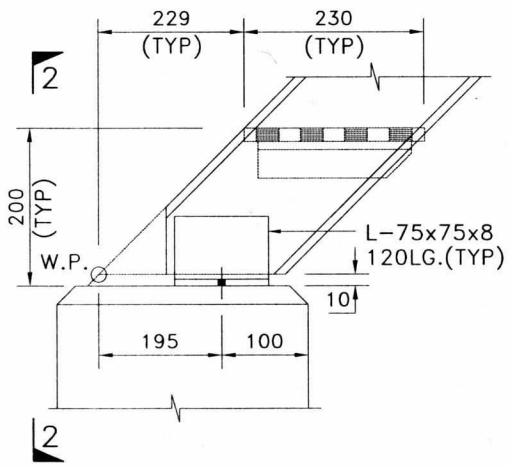


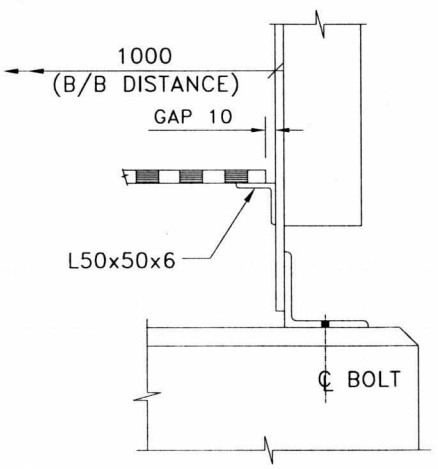
ELEVATION



SECTION 1-1
(HANDRAIL NOT SHOWN)



DETAIL "X" FOR
MC150 STRINGER



VIEW 2-2

Rev. No.	Date	Purpose	Prepared by	Checked	Stds. Committee Convenor	Stds. Bureau Chairman
5	28.11.22	REVISED AND ISSUED AS STANDARD	ATULYA	DEEPAK	ANURAG SINHA	S.MAZUMDAR
4	23.07.14	REVISED AND ISSUED AS STANDARD	SUSHMA	AJS	P.K.MITTAL	S.CHANDA

Approved by

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DESIGN FORCES IN VERTICAL AND HORIZONTAL DIRECTION, FOR PIPE SLEEPER CROSSOVERS

SL. NO.	LENGTH A, mm	HEIGHT D, mm	FORCES AT TOP OF PEDEDTAL, TONNE	
			V	H
1	1000	1000	0.38	0.35
2	1500	1000	0.38	0.35
3	2000	1000	0.38	0.35
4	2500	1000	0.49	0.56
5	3000	1000	0.49	0.56
6	3500	1000	0.49	0.56
7	1000	1600	0.52	0.42
8	1500	1600	0.52	0.42
9	2000	1600	0.52	0.42
10	2500	1600	0.62	0.59
11	3000	1600	0.62	0.59
12	3500	1600	0.62	0.59
13	1000	2000	0.61	0.48
14	1500	2000	0.61	0.48
15	2000	2000	0.61	0.48
16	2500	2000	0.72	0.64
17	3000	2000	0.72	0.64
18	3500	2000	0.72	0.64
19	3000	2500	0.83	0.70

Rev. No.	Date	Purpose	Prepared by	Checked	Stds. Committee Convenor	Stds. Bureau Chairman
5	28.11.22	REVISED AND ISSUED AS STANDARD	ATULYA	DEEPAK	ANURAG SINHA	S.MAJUMDAR
4	23.07.14	REVISED AND ISSUED AS STANDARD	SUSHMA	AJS	P.K.MITTAL	S.CHANDA

Approved by

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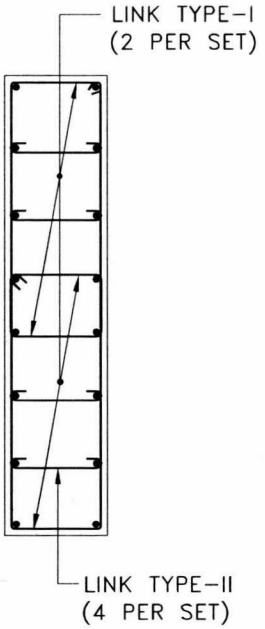
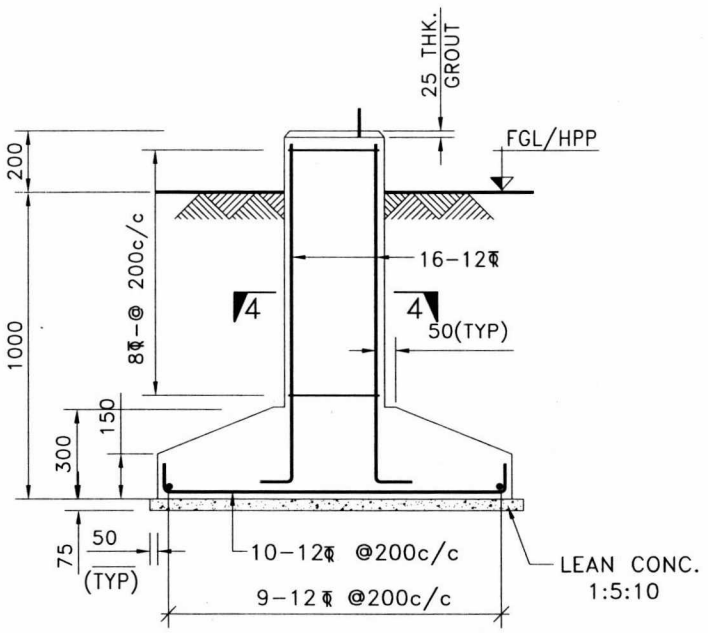
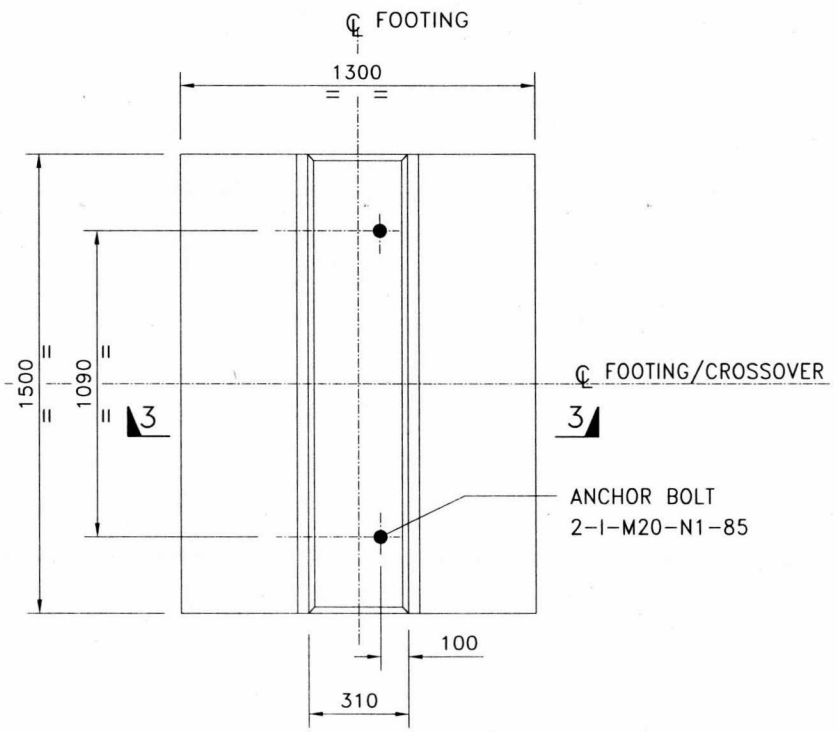


SEC 4-4



SEC 3-3



PLAN

Rev. No.	Date	Purpose	Prepared by	Checked	Stds. Committee Convenor	Stds Bureau Chairman
5	28.11.22	REVISED AND ISSUED AS STANDARD	ATULYA	DEEPAK	ANURAG SINHA	S.MAZUMDAR
4	23.07.14	REVISED AND ISSUED AS STANDARD	SUSHMA	AJS	P.K.MITTAL	S.CHANDA

Approved by

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NOTES :-

1. ELECTRICAL DEPTT. & INSTRUMENTATION DEPTT. WILL PROVIDE FOLLOWING INFORMATION ON THEIR DRAWINGS WHICH WILL BE ISSUED FOR CONSTRUCTION:
   a) LAYOUT AND SIZE OF THE CABLE TRENCH.
   b) TYPE OF COVER REQUIRED i.e. PRECAST RCC / CHEQUERED PLATE.
   c) LIVE LOAD ON THE COVERS IF MORE THAN AS DEFINED IN TABLE 2.
   d) INSERT PLATE REQUIREMENT AND ITS SPACING.
   e) LAYOUT AND SIZE OF OPENING FOR PANELS. (SHEET 15 OF 16)
2. GRADE OF CONCRETE AND REBARS FOR CABLE TRENCH & PRECAST COVER SHALL BE AS PER GENERAL NOTES OF THE PROJECT. HOWEVER, M25 AS MINIMUM GRADE OF RCC AND FE500D AS MINIMUM GRADE OF REINFORCEMENT HAS BEEN CONSIDERED IN DESIGN.
3. R.C.C. CABLE TRENCHES ARE DESIGNED FOR A SURCHARGE LOAD OF 1 T/M^2 .
4. STRUCTURAL STEEL FOR PRECAST COVER SUPPORTS INCLUDING INSERT PLATES IS ALSO IN THE SCOPE OF CIVIL CONTRACTOR.
5. ALL OTHER STRUCTURAL STEEL WORKS INCLUDING CHEQUERED PLATE SHALL BE UNDER THE SCOPE OF ELECTRICAL CONTRACTOR.
6. STRUCTURAL STEEL SHALL CONFORM TO MINIMUM E250 GRADE A/BR/B0 AS PER IS 2062. CHEQUERED PLATE SHALL CONFORM TO IS 3502.
7. Cc STANDS FOR CLEAR COVER. CLEAR COVER SHALL BE 30MM MINIMUM, UNLESS NOTED OTHERWISE. IN CASE CLEAR COVER IS MORE FOR A PROJECT, THE ELEMENT THICKNESS SHALL BE INCREASED ACCORDINGLY.
8. 5MM GAP TO BE FILLED WITH 1:3 CEMENT MORTAR.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
2	19.03.2024	REVISED AND ISSUED AS STANDARD	ANURAG KR. SINHA	MAITRAYEE MAJUMDER	ANURAG SINHA	MAINAK NANDI
1	13.04.2017	REVISED AND ISSUED AS STANDARD	TENDER	ALPANA	RAJANJI SRIVASTAVA	R.NANDA

Approved by

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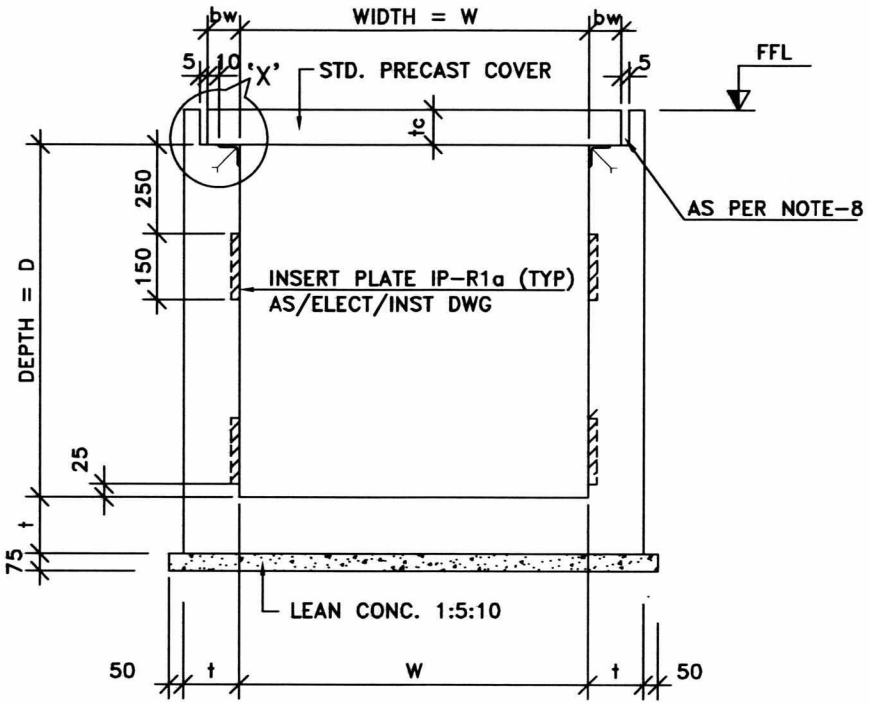
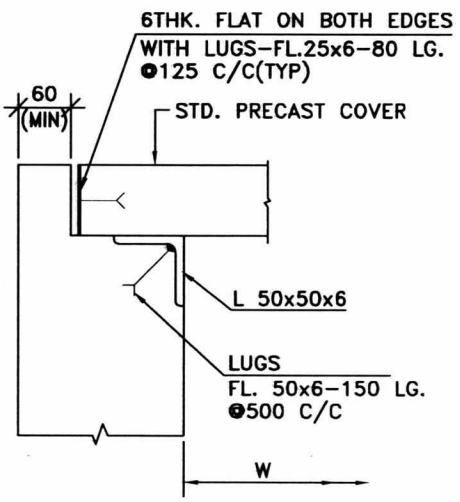


TYP. SECTION OF CABLE TRENCH



DETAIL – 'X'
(TYP.)

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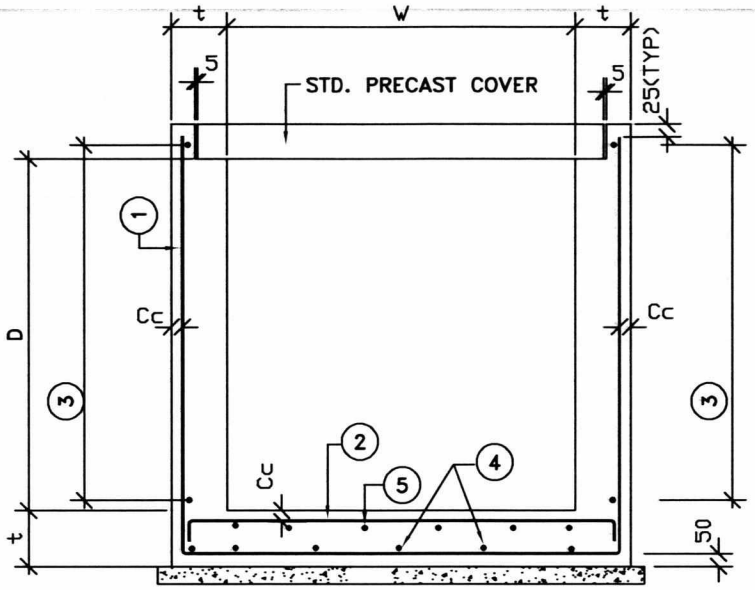
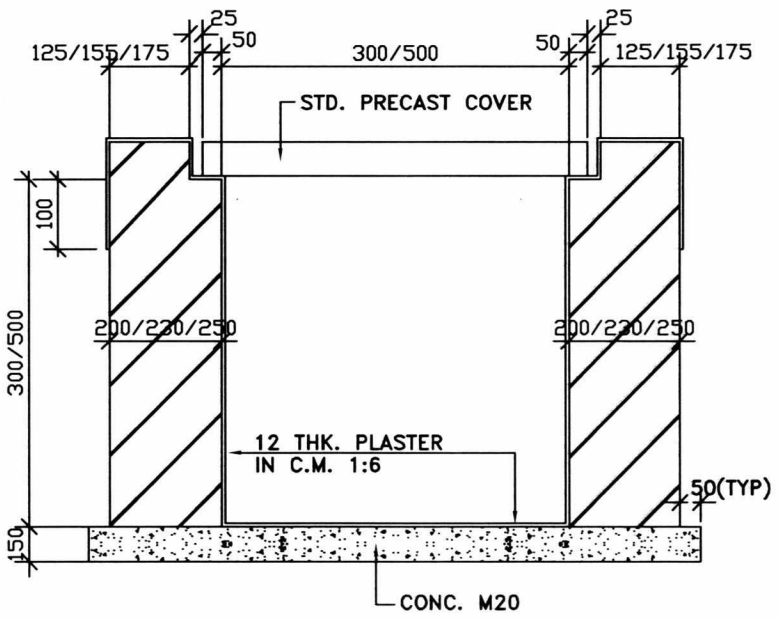


CABLE TRENCH SECTION WITH R.C.C.

(FOR DETS OF R/F BARS ① TO ⑥ REFER TABLE-1 SHT 5 OF 16)



CABLE TRENCH SECTION WITH BRICK MASONRY

(IN C.M. 1:6)

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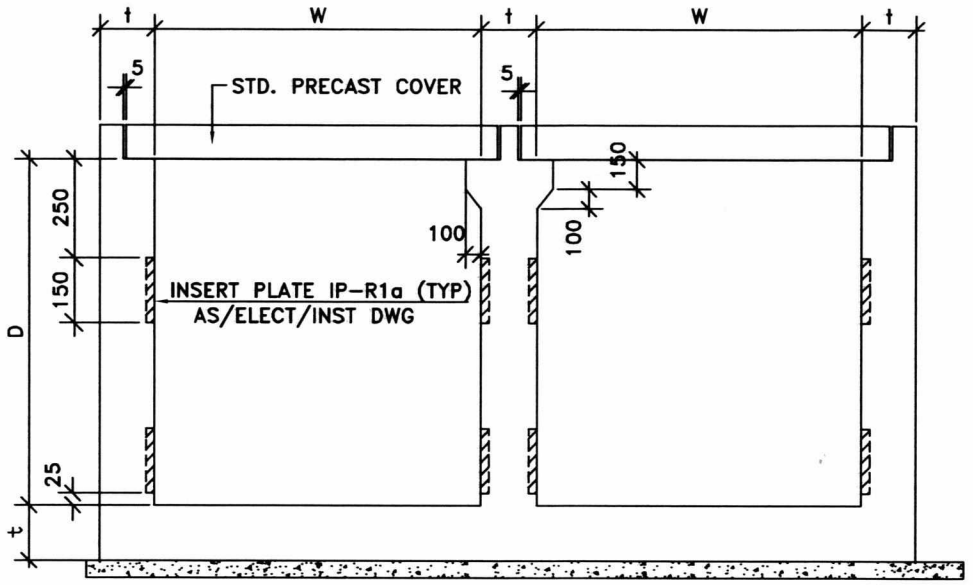
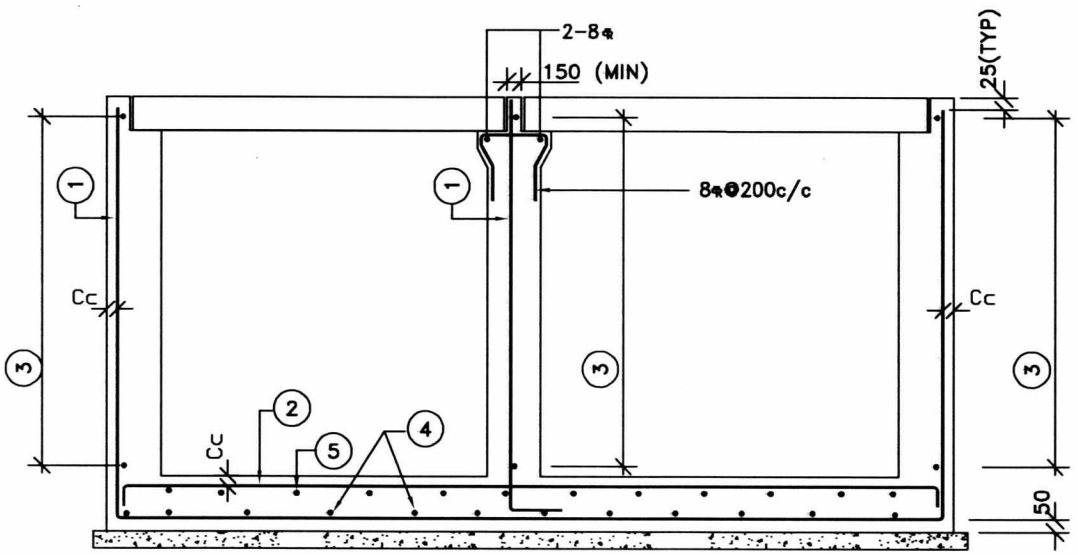


CABLE TRENCH SECTION WITH PARTITION



CABLE TRENCH SECTION WITH PARTITION

(FOR DETS OF R/F BARS ① TO ⑤ REFER TABLE-1 SHT 5 OF 16)

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TABLE-1 DETAIL OF CABLE TRENCH REINFORCEMENT

S.NO.	WORKING DIMENSIONS				R/F CONFORMING TO GRADE Fe-500D(TMT) OF IS:1786.					APPROX. QUANTITIES PER METRE LENGTH.		
	DEPTH	WIDTH	THICK-NESS	CLEAR COVER	BAR MARK (REF. SHT. 10 & 11 OF 16)					LEAN CONC. 1:5:10	CONC.	REBARS
	D (mm)	W (mm)	t (mm)	Cc (mm)	(1)	(2)	(3)	(4)	(5)	(m^3)	(m^3)	(kg)
1.	300	300	125	30	8Φ-200C/C.	—	8Φ-300C/C.	8Φ-300C/C.	Φ —	0.045	0.15	3.80
2.	300	500	125	30	8Φ-200C/C.	—	8Φ-300C/C.	8Φ-300C/C.	—	0.048	0.17	4.70
3.	500	500	125	30	8Φ-200C/C.	—	8Φ-300C/C.	8Φ-300C/C.	—	0.060	0.22	5.60
4.	750	750	125	30	8Φ-200C/C.	10Φ-150C/C.	8Φ-300C/C.	8Φ-300C/C.	8Φ-300C/C.	0.079	0.32	19.0
5.	1000	1000	125	30	10Φ-150C/C.	8Φ-200C/C.	8Φ-300C/C.	8Φ-300C/C.	8Φ-300C/C.	0.098	0.41	26.0
6.		1250	125	30	10Φ-150C/C.	8Φ-150C/C.	8Φ-300C/C.	8Φ-300C/C.	8Φ-300C/C.	0.116	0.44	29.0
7.		1500	150	30	10Φ-150C/C.	12Φ-150C/C.	8Φ-300C/C.	8Φ-300C/C.	8Φ-300C/C.	0.139	0.57	36.0
8.		2000	175	30	10Φ-150C/C.	12Φ-150C/C.	8Φ-250C/C.	8Φ-300C/C.	8Φ-300C/C.	0.180	0.77	49.0
9.	1250	500	150	30	10Φ-150C/C.	8 Φ-250C/C.	8Φ-300C/C.	8Φ-300C/C.	8Φ-300C/C.	0.063	0.50	27.1
10.		750	150	30	10Φ-150C/C.	8 Φ-200C/C.	8Φ-300C/C.	8Φ-300C/C.	8Φ-300C/C.	0.08	0.54	29.5
11.		1000	150	30	10Φ-150C/C.	10Φ-200C/C.	8Φ-300C/C.	8Φ-300C/C.	8Φ-300C/C.	0.101	0.57	32.0
12.		1250	150	30	10Φ-150C/C.	10Φ-150C/C.	8Φ-300C/C.	8Φ-300C/C.	8Φ-300C/C.	0.120	0.61	37.0
13.		1500	150	30	10Φ-150C/C.	12Φ-150C/C.	8Φ-300C/C.	8Φ-300C/C.	8Φ-300C/C.	0.139	0.65	43.0
14.		2000	175	30	10Φ-150C/C.	12Φ-150C/C.	8Φ-250C/C.	8Φ-300C/C.	8Φ-300C/C.	0.180	0.85	49.0
15.	1500	1000	175	30	12Φ-200C/C.	8Φ-250C/C.	8Φ-250C/C.	8Φ-300C/C.	8Φ-300C/C.	0.105	0.76	36.0
16.		1250	175	30	12Φ-200C/C.	8Φ-175C/C.	8Φ-250C/C.	8Φ-300C/C.	8Φ-300C/C.	0.124	0.81	40.0
17.		1500	175	30	12Φ-200C/C.	10Φ-175C/C.	8Φ-250C/C.	8Φ-300C/C.	8Φ-300C/C.	0.143	0.85	44.0
18.		2000	175	30	12Φ-200C/C.	12Φ-175C/C.	8Φ-250C/C.	8Φ-300C/C.	8Φ-300C/C.	0.180	0.94	56.0
19.	2200	2250	250	30	12Φ-150C/C.	12Φ-150C/C.	8Φ-200C/C.	8Φ-250C/C.	8Φ-250C/C.	0.206	1.80	95.0

NOTES-

1. THE QUANTITIES GIVEN IN THIS TABLE ARE FOR ESTIMATION PURPOSE ONLY.
2. PREFERABLY THE DEPTH OF CABLE TRENCH SHALL NOT BE MORE THAN THE WIDTH.
3. TRENCHES OF DEPTH 300 & 500mm IN BRICK MASONRY WHEREVER SPECIFIED.

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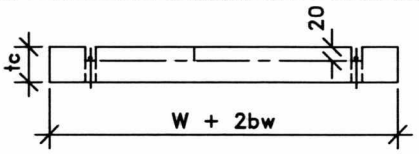
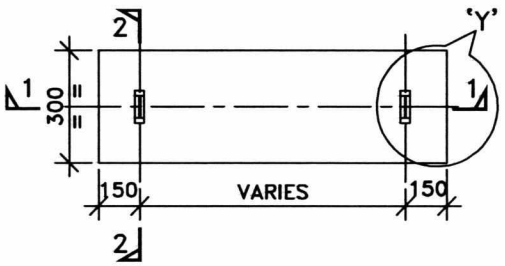
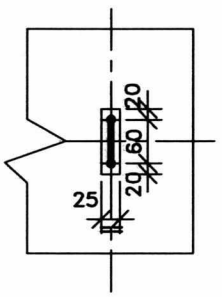


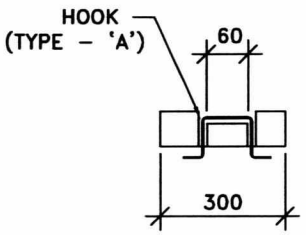
SEC. 1–1



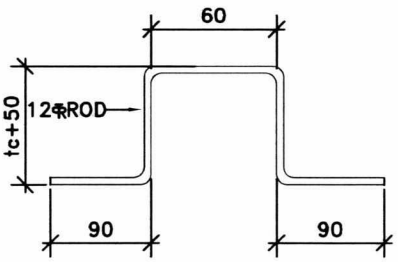
PRECAST R.C.C. COVERS



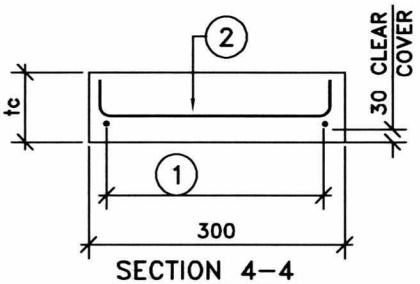
DETAIL – 'Y'
(TYP.)



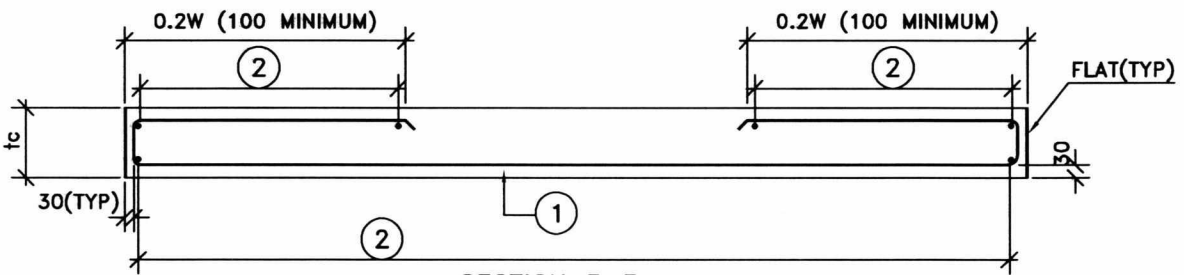
SEC. 2–2



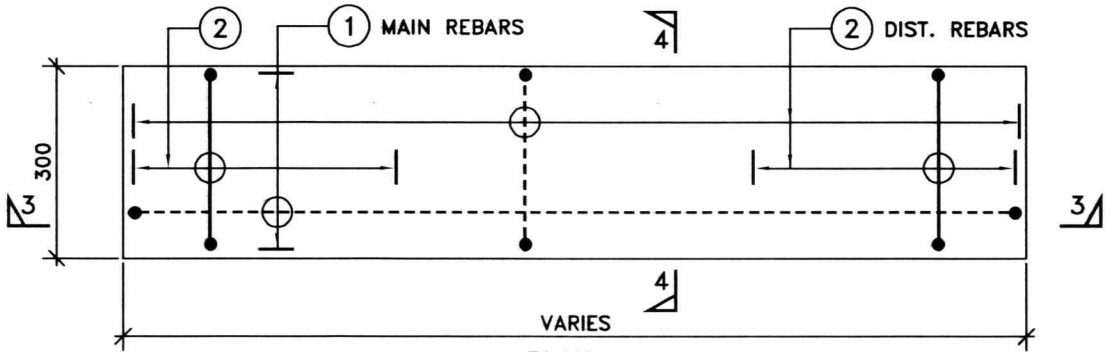
HOOK TYPE 'A'



SECTION 4–4



SECTION 3–3



PLAN
(STANDARD PRECAST COVER)

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TABLE-2: DETAIL OF STANDARD PRECAST COVERS

S.NO.	TYPE	WORKING DIMENSIONS				DESIGN LOAD ON EACH COVER		FOR ONE UNIT OF WIDTH 300 mm				
		CLEAR WIDTH OF TRENCH W (mm)	BEARING OF COVER bw (mm)	TOTAL LENGTH OF COVER W+2bw (mm)	THICK-NESS OF COVER tc (mm)	TOTAL U.D.L. (KG/m²)	EQUV. CONCEN. LOAD AT CENTRE OF SPAN (kgs)	REINFORCEMENT CONFORMING TO GRADE Fe-500D(TMT) OF IS:1786		APPROX. QUANTITIES		SELF WEIGHT (kgs)
								BAR MKD. (1)	BAR MKD. (2)	CONCRETE	REINF. (kg)	
1.	PC-1	300	50	400	100	≤2000	≤1000	3-8Φ	3-8Φ	0.012	0.94	30
2.	PC-2	500	50	600	100	≤2000	≤1000	3-8Φ	3-8Φ	0.018	1.18	45
3.	PC-3A	750	50	850	100	≤1500	≤750	3-8Φ	4-8Φ	0.026	1.62	64
4.	PC-3B				100	>1500 ≤2000	>750 ≤1000	4-8Φ	4-8Φ	0.026	1.96	64
5.	PC-4A	1000	50	1100	100	≤1500	≤750	4-8Φ	5-8Φ	0.033	2.57	83
6.	PC-4B				120	>1500 ≤2000	>750 ≤1000	4-8Φ	5-8Φ	0.040	2.57	99
7.	PC-5A	1250	50	1350	120	≤1500	≤750	4-8Φ	5-8Φ	0.049	2.98	122
8.	PC-5B				120	>1500 ≤2000	>750 ≤1000	4-10Φ	5-8Φ	0.049	4.22	122
9.	PC-6A	1500	75	1650	120	≤1500	≤750	3-10Φ	6-8Φ	0.060	3.96	149
10.	PC-6B				130	>1500 ≤2000	>750 ≤1000	4-10Φ	6-8Φ	0.065	4.99	161
11.	PC-7A	2000	75	2150	130	≤1500	≤750	4-10Φ	7-8Φ	0.083	6.36	210
12.	PC-7B				140	>1500 ≤2000	>750 ≤1000	4-12Φ	7-8Φ	0.090	8.67	226
13.	PC-8A	2250	75	2400	140	≤1500	≤750	4-10Φ	8-8Φ	0.101	6.89	252
14.	PC-8B				150	>1500 ≤2000	>750 ≤1000	4-12Φ	8-8Φ	0.108	9.50	270

NOTES :-

1. FOR LOCATION OF BARS MKD. (1) AND (2) REFER SHT. 6 OF 16.
2. ALL PRECAST COVERS SHALL BE MARKED (T) ON THE TOP FOR PROPER PLACEMENT.
3. THE QUANTITIES GIVEN IN THIS TABLE ARE FOR ESTIMATION PURPOSE ONLY.
4. DESIGN IS VALID FOR EITHER TOTAL UDL OR EQUV. POINT LOAD AT CENTRE OF SPAN.

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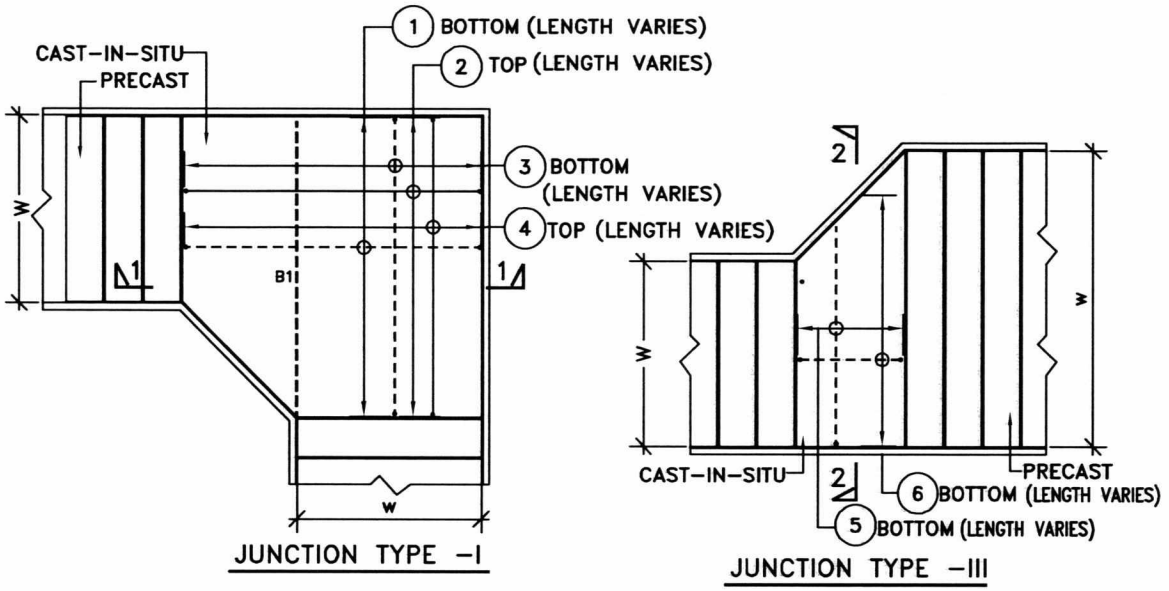

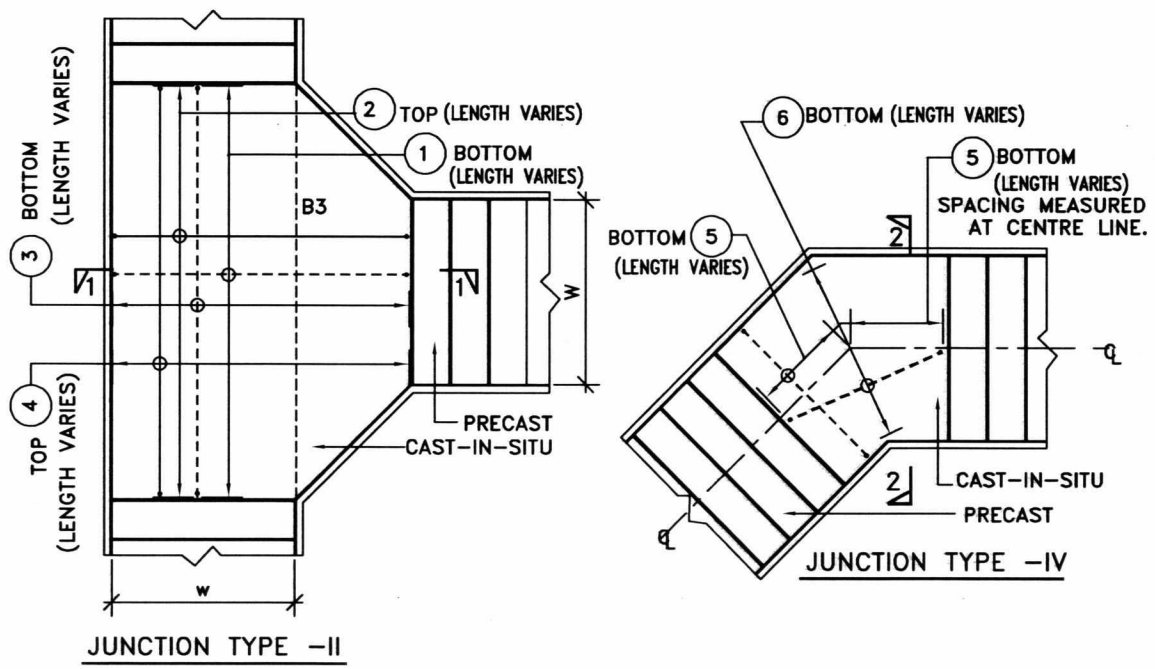

CAST-IN-SITU COVERS

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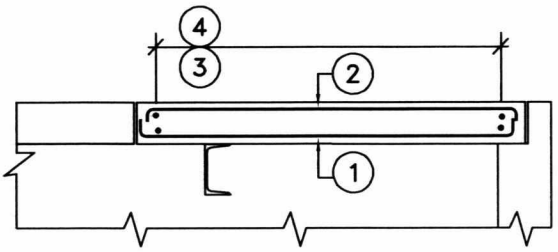
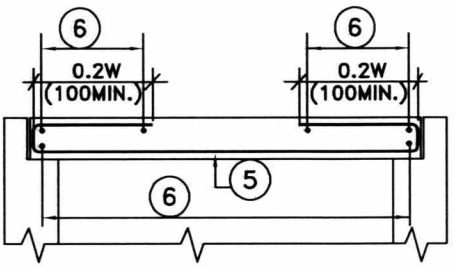


SECTION 1–1



SECTION 2–2

TABLE–3:DETAIL OF CAST–IN–SITU COVERS

S.NO.	W (mm)	tc (mm)	REINFORCEMENT DETAIL FOR CAST–IN–SITU COVERS					
			JUNCTION TYPE I & II				JUNCTION TYPE III & IV	
			BAR MARK (1)	BAR MARK (2)	BAR MARK (3)	BAR MARK (4)	BAR MARK (5)	BAR MARK (6)
1.	300	100	8ϕ120c/c	–	8ϕ150c/c	–	8ϕ150c/c	8ϕ200c/c
2.	500	100	8ϕ120c/c	–	8ϕ150c/c	–	8ϕ150c/c	8ϕ200c/c
3.	750	100	8ϕ120c/c	8ϕ200c/c	8ϕ200c/c	8ϕ200c/c	8ϕ150c/c	8ϕ200c/c
4.	1000	120	8ϕ120c/c	8ϕ200c/c	8ϕ300c/c	8ϕ300c/c	8ϕ150c/c	8ϕ300c/c
5.	1250	120	10ϕ120c/c	8ϕ200c/c	8ϕ300c/c	8ϕ300c/c	10ϕ150c/c	8ϕ300c/c
6.	1500	130	10ϕ120c/c	8ϕ200c/c	8ϕ300c/c	8ϕ300c/c	10ϕ150c/c	8ϕ300c/c
7.	2000	140	12ϕ120c/c	8ϕ200c/c	8ϕ300c/c	8ϕ300c/c	12ϕ150c/c	8ϕ300c/c
8.	2250	150	12ϕ120c/c	8ϕ200c/c	8ϕ300c/c	8ϕ300c/c	12ϕ150c/c	8ϕ300c/c

NOTES :–

1. THE CAST–IN–SITU COVERS ARE DESIGNED FOR TOTAL UDL OF 2000 kg/m. OR AN EQUIVALENT POINT LOAD OF 1000 kg ACTING AT MID SPAN.
2. FOR CONNECTION DETAIL AND SIZES OF B1 & B3 REFER SHT.8 OF 16 & 12 OF 16.
3. FOR LOCATION OF BAR MARKS (1) TO (6) REFER ABOVE SECTIONS 1–1 & 2–2.

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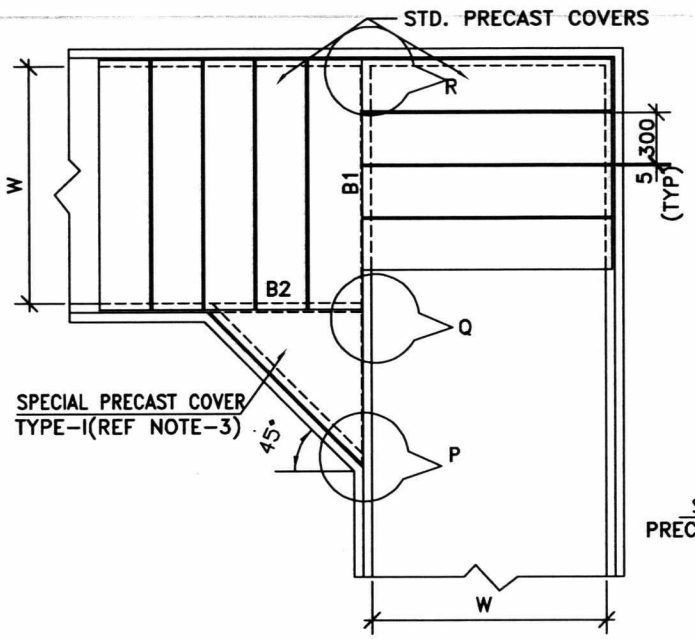
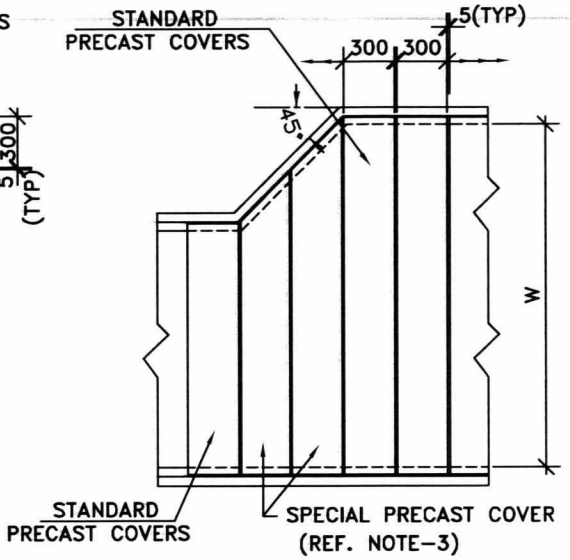


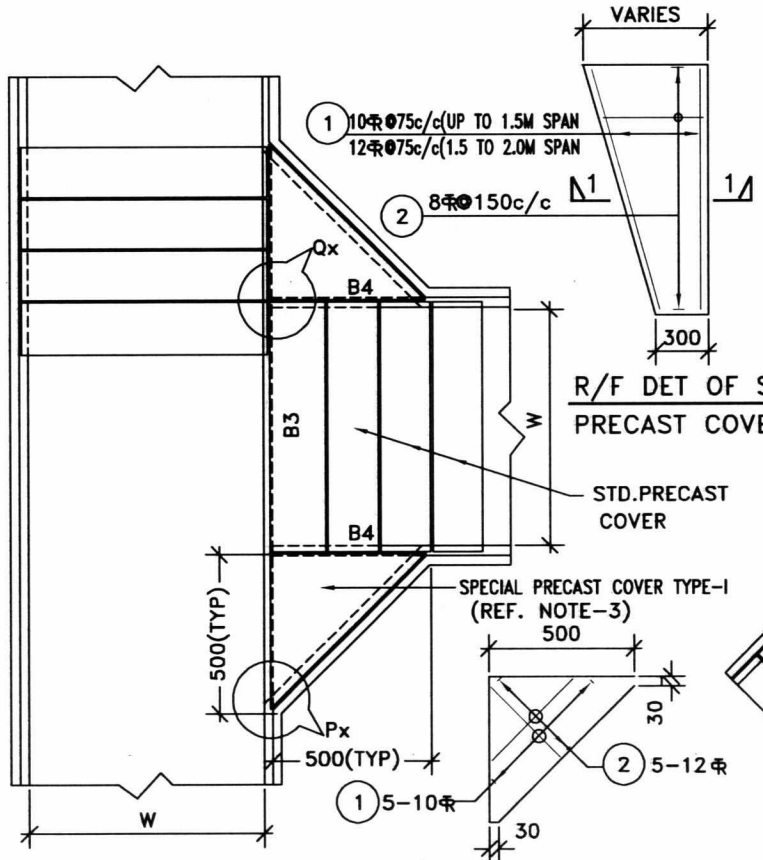
JUNCTION TYPE – I



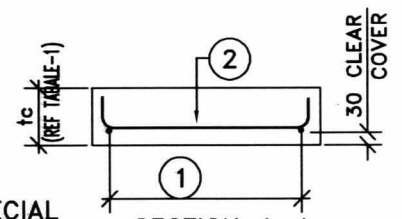
JUNCTION TYPE – III

NOTES :

1. FOR DETAILS P, Q, Px, Qx & R REFER SHT. 11 OF 16.
2. FOR DETAIL OF BEAMS B1 TO B4 REF. TABLE 4 SHT 12 OF 16.
3. SPECIAL PRECAST COVER AT JUNCTION OF CABLE TRENCH PREFERABLY BE IN CAST-IN-SITU (REF SHT 8 OF 16)



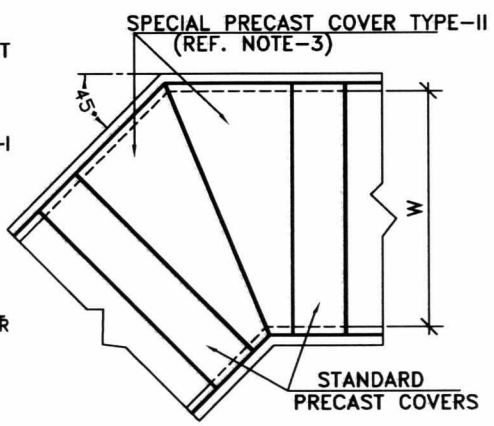
R/F DET OF SPECIAL
PRECAST COVER TYPE-II



SECTION 1-1

JUNCTION TYPE – II

R/F DET OF SPECIAL
PRECAST COVER TYPE-I



JUNCTION TYPE – IV

SPECIAL PRECAST COVERS

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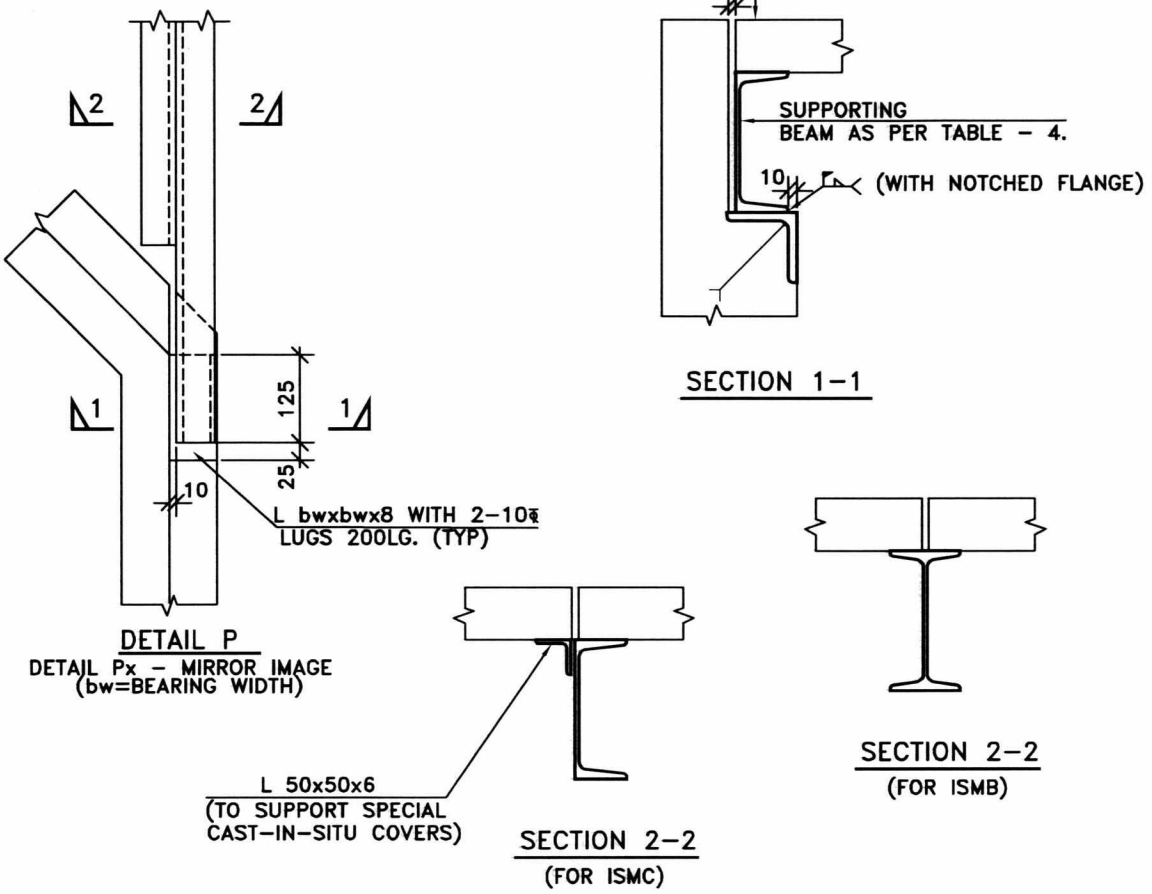

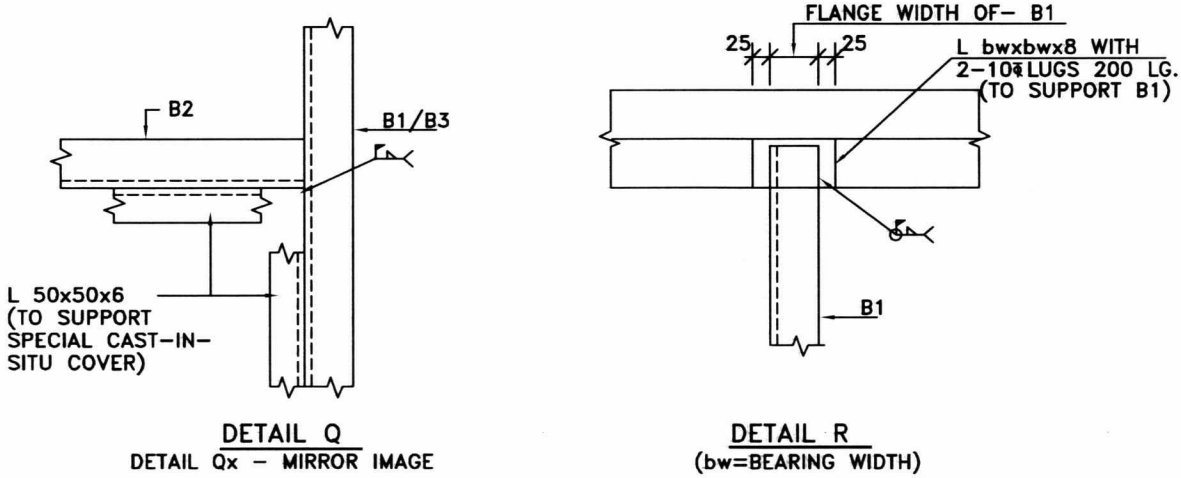

SUPPORTING MEMBERS

(FOR LOCATION OF DET. P, Q, Px, Qx & R REF. SHT. 10 OF 16)

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TABLE–4: DETAIL OF SUPPORTING MEMBERS AT JUNCTIONS

S.NO.	WIDTH OF MAIN TRENCH W	JUNCTION TYPE – I				JUNCTION TYPE – II			
		SUPPORTING MEMBER B1		SUPPORTING MEMBER B2		SUPPORTING MEMBER B3		SUPPORTING MEMBER B4	
		SIZE	LENGTH	SIZE	LENGTH	SIZE	LENGTH	SIZE	LENGTH
1.	300	MC 100	1020	MC 100	625	MC 100	1650	MC 100	625
2.	500	MC 100	1220	MC 100	625	MC 150	1850	MC 100	625
3.	750	MC 100	1470	MC 100	625	MC 150	2100	MC 100	625
4.	1000	MC 100	1720	MC 100	625	MC 150	2350	MC 100	625
5.	1250	MC 150	1970	MC 100	625	MC 150	2600	MC 100	625
6.	1500	MC 150	2270	MC 100	625	MC 150	2900	MC 100	625
7.	2000	MC 150	2770	MC 100	625	MC 200	3400	MC 100	625
8.	2250	MC 150	3020	MC 100	625	MC 200	3650	MC 100	625

NOTE

THE SUPPORTING MEMBERS ARE DESIGNED FOR COVER WT. PLUS A POINT LOAD OF 1000 KG. AT MID SPAN.

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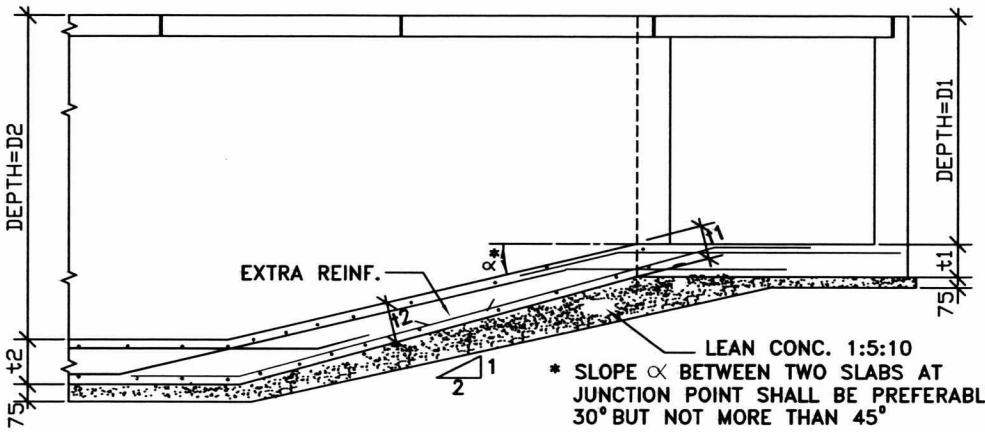

TYPICAL DETAIL AT JUNCTION FOR DIFFERENT DEPTHS OF TRENCH.

(R/F DETAIL OF TRENCH IN SLOPE SHALL BE BASED ON DEPTH D2).

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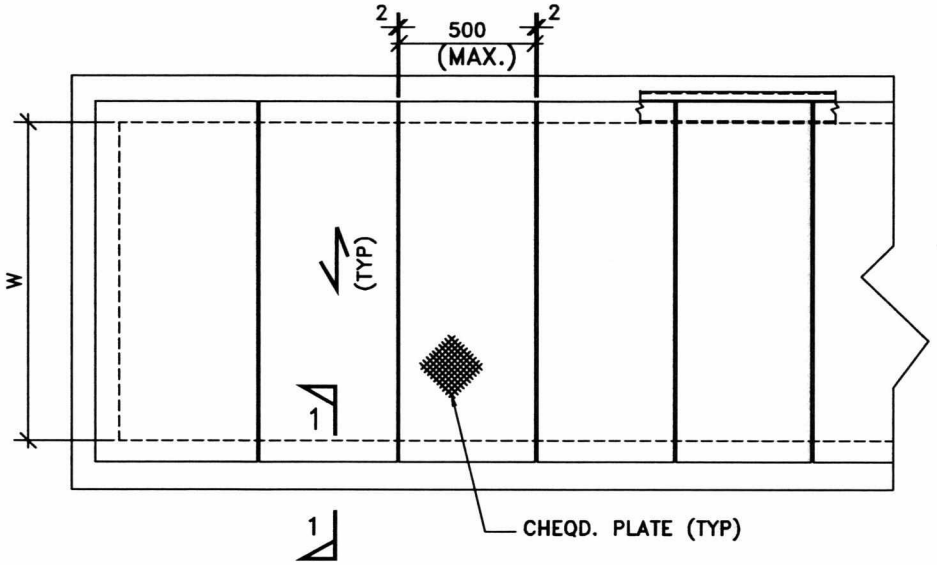
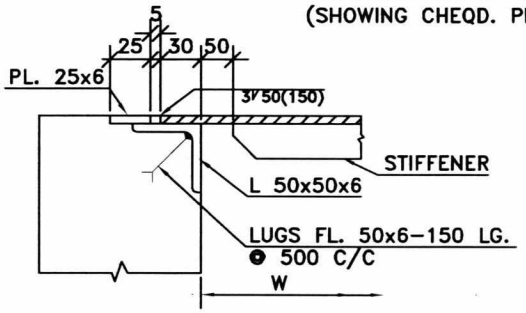
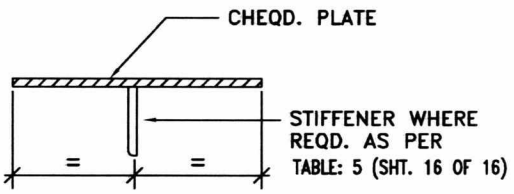


TYPICAL TRENCH PLAN
(SHOWING CHEQD. PLATE)



SECTION 1-1



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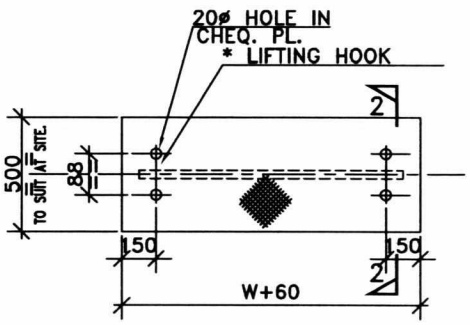
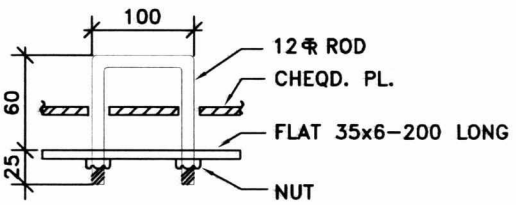


TYP. CHEQD. PLATE DETAIL
(SHOWING CHEQD. PLATE)



TYP. LIFTING HOOK DETAIL

* ONE HOOK FOR SPAN UPTO 500
TWO HOOKS FOR SPAN ABOVE 500.

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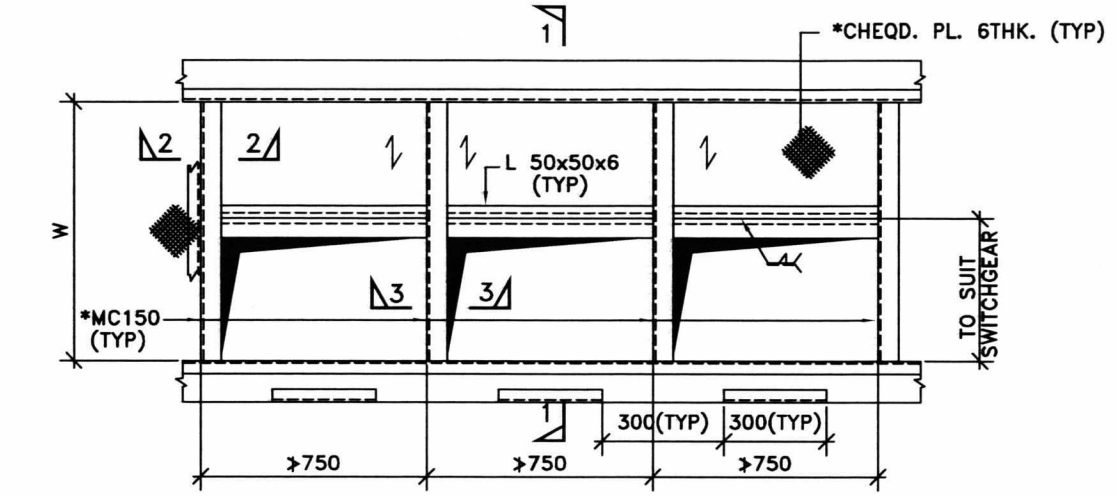
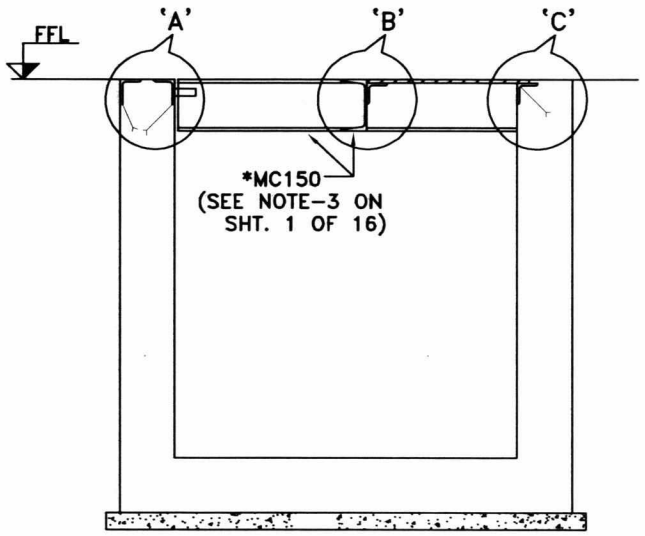
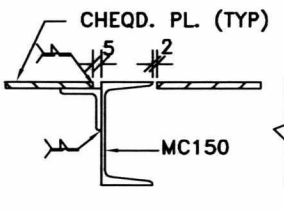


TYPICAL TRENCH PLAN
(AT SWITCH GEARS)



SECTION 1-1



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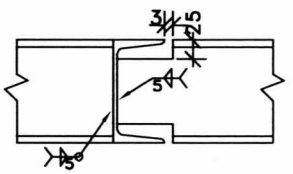

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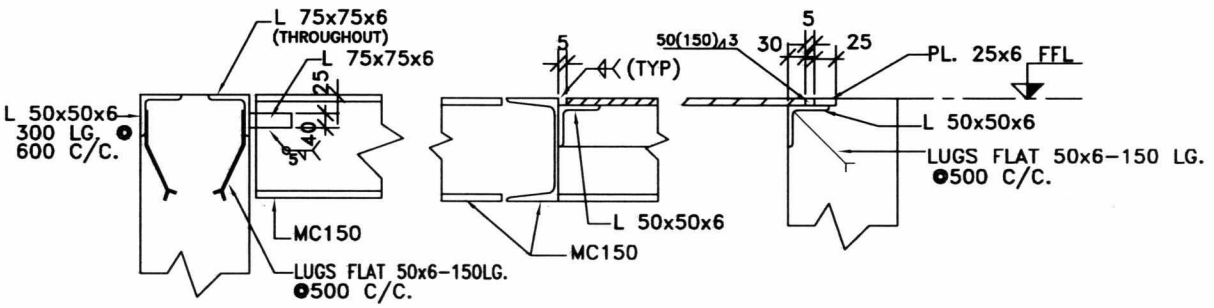

DETAIL A DETAIL B DETAIL C

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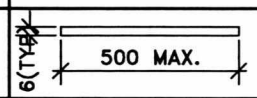
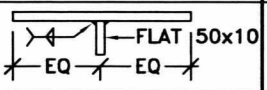
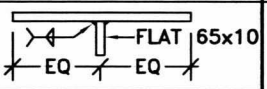
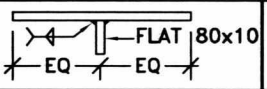
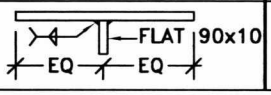
TABLE– 5: DETAIL OF CHEQUERED PLATE COVER

S.NO.	TYPE	SECTION	SECTION PROPERTIES FOR 500mm WIDE PLATE			RECOMMENDED SPAN (W) mm
			WT. kg/m	I=cm^4	Zmin =cm^3	
1.	I		23.55	0.90	3.00	W < 500
2.	II		27.45	44.90	9.16	500 < W ≤ 1250
3.	III		28.62	91.00	14.76	1250 < W ≤ 1500
4.	IV		29.79	160.30	21.66	1500 < W ≤ 2000
5.	V		30.62	221.16	26.97	2000 < W ≤ 2250

NOTE–

THE DESIGN IS BASED ON A LIVE LOAD OF 500 Kg/m^2 AND MAXIMUM ALLOWABLE DEFLECTION = W/200 (W = SPAN)

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NOTES :-

1. THIS STANDARD IS BASED ON FOLLOWING PRINCIPLES OF LAYING CABLES IN THE PLANT AREA
   a) UNIT AREA – CABLES IN RCC TRENCH/BRICK MASONRY TO BE FILLED WITH SAND AND COVERED WITH PRECAST RCC SLABS.
   b) INSIDE BUILDING – CABLES IN RCC TRENCH TO BE COVERED WITH CHEQUERED PLATE/RCC COVERS.
   c) OFFSITE AREA – AS PER PROJECT SPECIFIC REQUIREMENT.
2. ELECTRICAL DEPTT. & INSTRUMENTATION DEPTT. WILL PROVIDE FOLLOWING INFORMATION ON THEIR DRAWINGS WHICH WILL BE ISSUED FOR CONSTRUCTION:
   a) LAYOUT AND SIZE OF THE CABLE TRENCH.
   b) TYPE OF COVER REQUIRED i.e. PRECAST RCC / CHEQUERED PLATE.
   c) LIVE LOAD ON THE COVERS IF MORE THAN AS DEFINED IN TABLE 2.
   d) INSERT PLATE REQUIREMENT AND ITS SPACING.
   e) LAYOUT AND SIZE OF OPENING FOR PANELS. (SHEET 15 OF 17)
3. RELEVANT GENERAL CIVIL DRAWINGS SHALL BE REFERRED FOR THE TRENCHES IN UNIT & OFFSITE AREA.
4. R.C.C. CABLE TRENCHES ARE DESIGNED FOR A SURCHARGE LOAD OF 10.0 T HYDRA.
5. GRADE OF CONCRETE AND REBARS FOR CABLE TRENCH & PRECAST COVER SHALL BE AS PER GENERAL NOTES OF THE PROJECT. HOWEVER, M25 AS MINIMUM GRADE OF RCC AND Fe500D AS MINIMUM GRADE OF REINFORCEMENT HAS BEEN CONSIDERED IN DESIGN.
6. THIS STANDARD IS NOT APPLICABLE FOR CABLE TRENCH / COVERS AT ROAD CROSSING.
7. STRUCTURAL STEEL FOR CABLE SUPPORTS INCLUDING INSERT PLATES IS IN SCOPE OF CIVIL CONTRACTOR.
8. ALL OTHER STRUCTURAL STEEL WORKS SHALL BE UNDER THE SCOPE OF ELECTRICAL CONTRACTOR INCLUDING CHEQUERED PLATE.
9. STRUCTURAL STEEL SHALL CONFORM TO MINIMUM E250 GRADE A/BR/B0 AS PER IS 2062. CHEQUERED PLATE SHALL CONFORM TO IS 3502.
10. Cc STANDS FOR CLEAR COVER. CLEAR COVER SHALL BE 30MM MINIMUM, UNLESS NOTED OTHERWISE. IN CASE CLEAR COVER IS MORE FOR A PROJECT, THE ELEMENT THICKNESS SHALL BE INCREASED ACCORDINGLY.
11. 5MM GAP TO BE FILLED WITH 1:3 CEMENT MORTAR.

PRECAST COVERS DESIGNED FOR 10 T. HYDRA

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
6	19.03.24	REVISED AND ISSUED AS STANDARD	ANURAG KR. SINHA	MAITRAYEE MAJUMDER	ANURAG SINHA	MAINAK NANDI
5	20.06.22	REVISED AND ISSUED AS STANDARD	ANURAG KR. SINHA	S.C.MAITY	ANURAG SINHA	S. MAZUMDAR

Approved by

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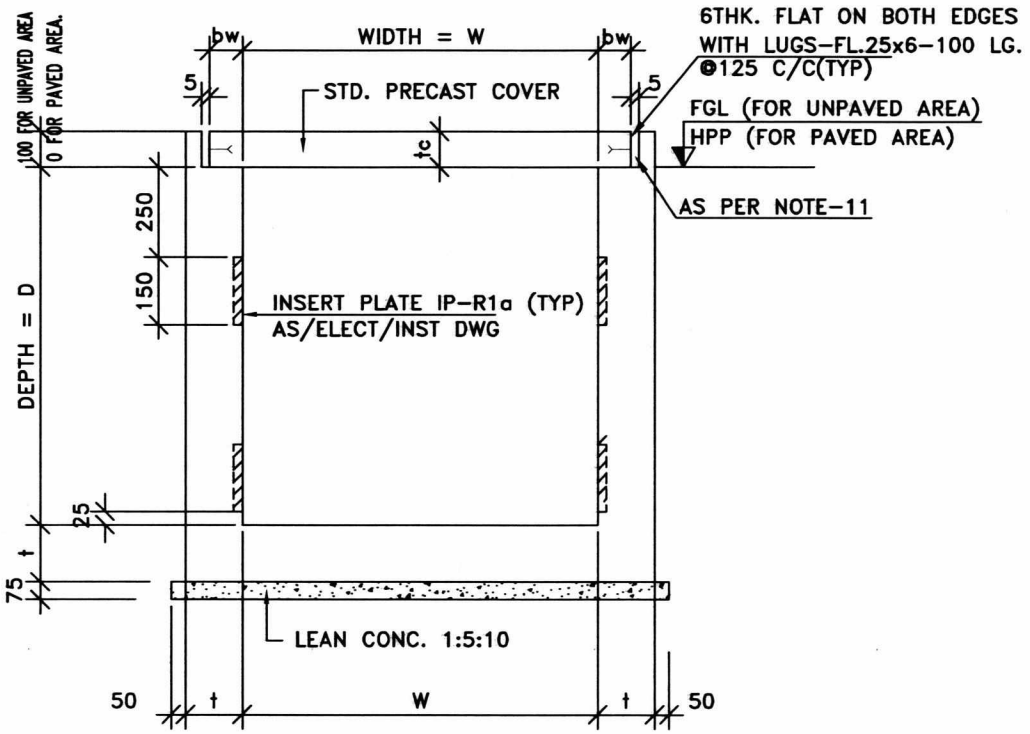

TYP. SECTION OF CABLE TRENCH

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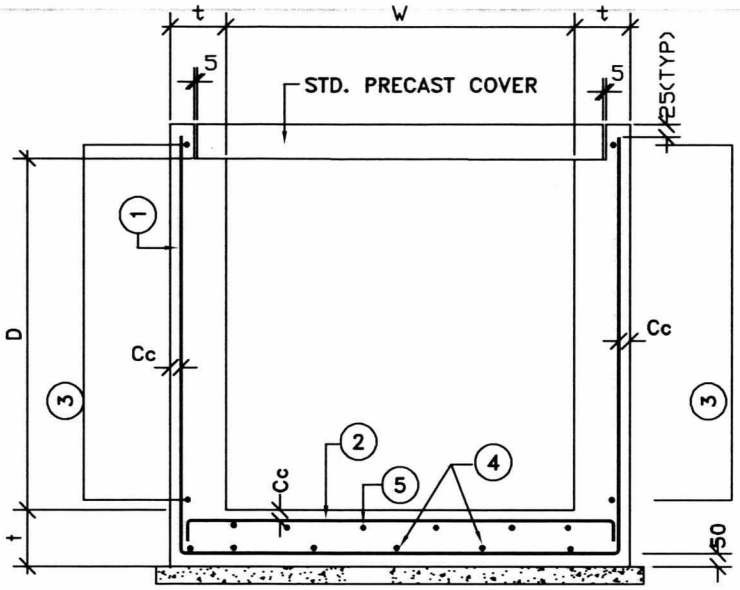
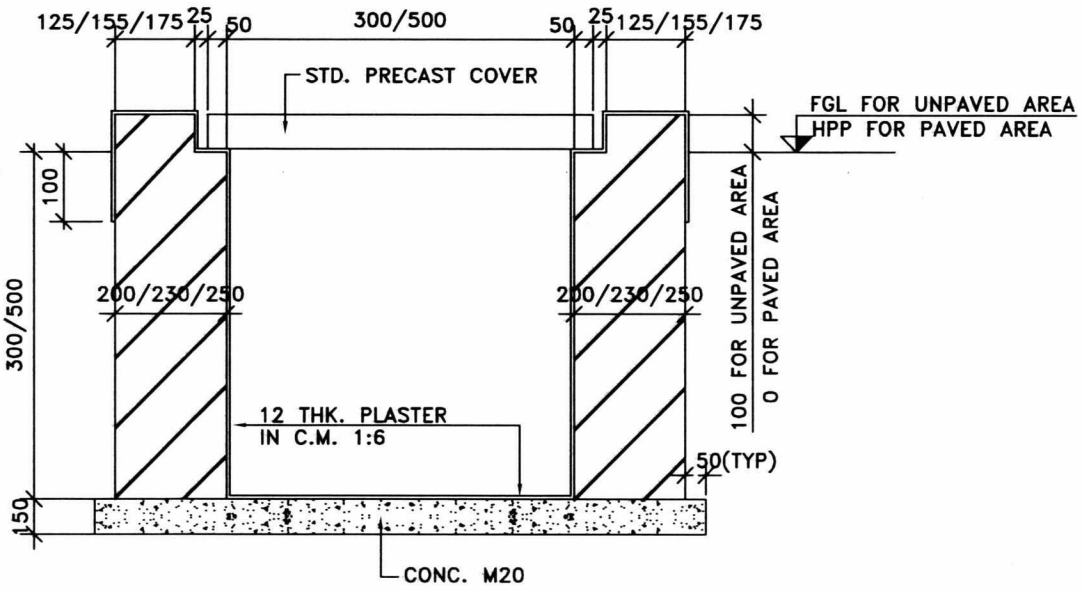


CABLE TRENCH SECTION WITH R.C.C.

(FOR DETS OF R/F BARS ① TO ⑤ REFER TABLE–1 SHT 5 OF 17)



CABLE TRENCH SECTION WITH BRICK MASONRY

(IN C.M. 1:6)

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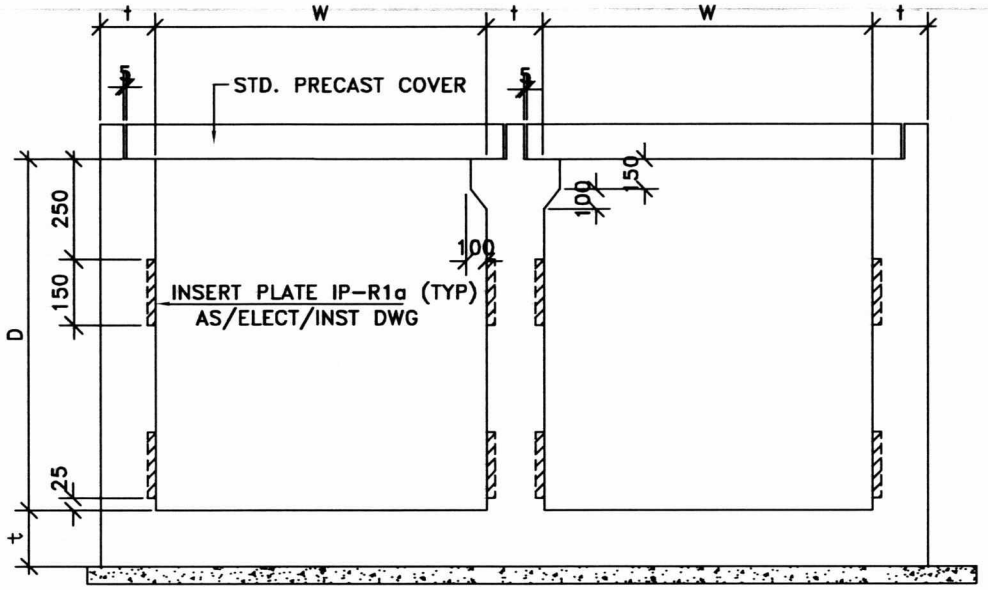
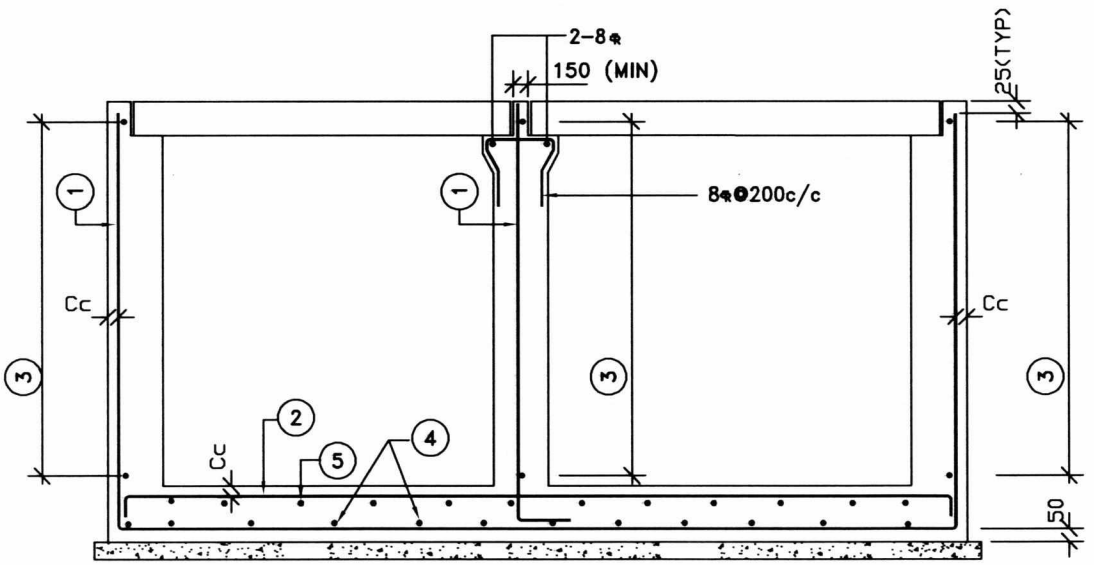


CABLE TRENCH SECTION WITH PARTITION



CABLE TRENCH SECTION WITH PARTITION

(FOR DETS OF R/F BARS ① TO ⑤ REFER TABLE-1 SHT 5 OF 17)

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TABLE– 1: DETAIL OF CABLE TRENCH REINFORCEMENT

S.NO.	WORKING DIMENSIONS			R/F CONFORMING TO IS: 1786 GRADE Fe–500(TMT).					APPROX. QUANTITIES PER METRE LENGTH.		
	DEPTH	WIDTH	THICK–NESS	BAR MARK (REF. SHT. 10 OF 17)					LEAN CONC. 1:5:10	CONC.	REBARS
	D (mm)	W (mm)	t (mm)	①	②	③	④	⑤	(m^3)	(m^3)	(kg)
1.	300	300	125	8 ϕ–200C/C.		8 ϕ–300C/C.	8 ϕ–300C/C.		0.045	0.09	3.80
2.	300	500	125	8 ϕ–200C/C.		8 ϕ–300C/C.	8 ϕ–300C/C.		0.048	0.11	4.70
3.	500	500	125	8 ϕ–200C/C.		8 ϕ–300C/C.	8 ϕ–300C/C.		0.060	0.15	5.60
4.	750	750	125	8 ϕ–200C/C.	8 ϕ–150C/C.	8 ϕ–300C/C.	8 ϕ–300C/C.	8 ϕ–300C/C.	0.079	0.25	19.0
5.	1000	1000	150	10 ϕ–150C/C.	8 ϕ–150C/C.	8 ϕ–300C/C.	8 ϕ–300C/C.	8 ϕ–300C/C.	0.098	0.41	26.0
6.		1250	150	10 ϕ–150C/C.	8 ϕ–150C/C.	8 ϕ–300C/C.	8 ϕ–300C/C.	8 ϕ–300C/C.	0.116	0.44	29.0
7.		1500	150	10 ϕ–150C/C.	12 ϕ–150C/C.	8 ϕ–300C/C.	8 ϕ–300C/C.	8 ϕ–300C/C.	0.139	0.47	36.0
8.		2000	150	10 ϕ–150C/C.	12 ϕ–150C/C.	8 ϕ–250C/C.	8 ϕ–300C/C.	8 ϕ–300C/C.	0.180	0.65	49.0
9.	1250	1000	150	10ϕ–150C/C.	10ϕ–150C/C.	8ϕ–300C/C.	8ϕ–300C/C.	8ϕ–300C/C.	0.101	0.57	32.0
10.		1250	150	10ϕ–150C/C.	10ϕ–150C/C.	8ϕ–300C/C.	8ϕ–300C/C.	8ϕ–300C/C.	0.120	0.61	37.0
11.		1500	150	10ϕ–150C/C.	12ϕ–150C/C.	8ϕ–300C/C.	8ϕ–300C/C.	8ϕ–300C/C.	0.139	0.65	43.0
12.		2000	150	10ϕ–150C/C.	12ϕ–150C/C.	8ϕ–250C/C.	8ϕ–300C/C.	8ϕ–300C/C.	0.180	0.72	49.0
13.	1500	1000	200	12ϕ–200C/C.	10ϕ–150C/C.	8ϕ–250C/C.	8ϕ–300C/C.	8ϕ–300C/C.	0.105	0.88	36.0
14.		1250	200	12ϕ–200C/C.	10ϕ–150C/C.	8ϕ–250C/C.	8ϕ–300C/C.	8ϕ–300C/C.	0.124	0.93	40.0
15.		1500	200	12ϕ–200C/C.	10ϕ–150C/C.	8ϕ–250C/C.	8ϕ–300C/C.	8ϕ–300C/C.	0.143	0.98	44.0
16.		2000	200	12ϕ–200C/C.	12ϕ–175C/C.	8ϕ–250C/C.	8ϕ–300C/C.	8ϕ–300C/C.	0.180	1.08	56.0

NOTES–

1. THE QUANTITIES GIVEN IN THIS TABLE ARE FOR ESTIMATION PURPOSE ONLY.
2. PREFERABLY THE DEPTH OF CABLE TRENCH SHALL NOT BE MORE THAN THE WIDTH.
3. TRENCHES OF DEPTH 300 & 500mm IN BRICK MASONRY WHEREVER SPECIFIED.

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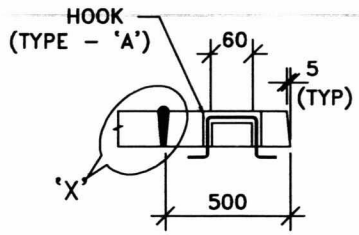
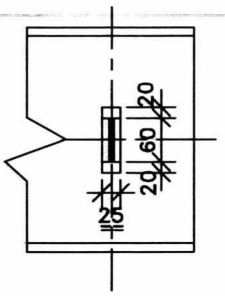
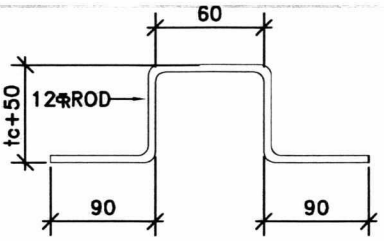


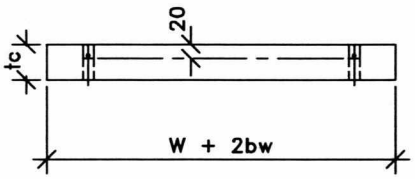
SEC. 2–2



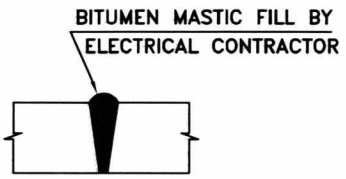
DETAIL – 'Y'
(TYP.)



HOOK TYPE 'A'



SEC. 1–1



DETAIL – 'X'
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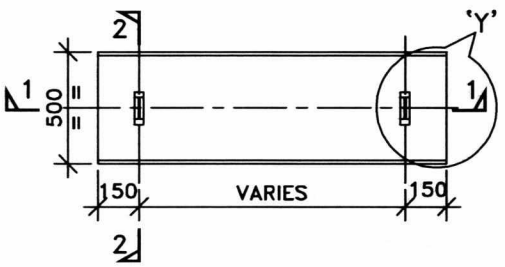
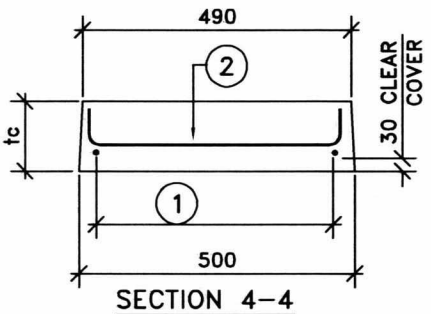


PRECAST R.C.C. COVERS



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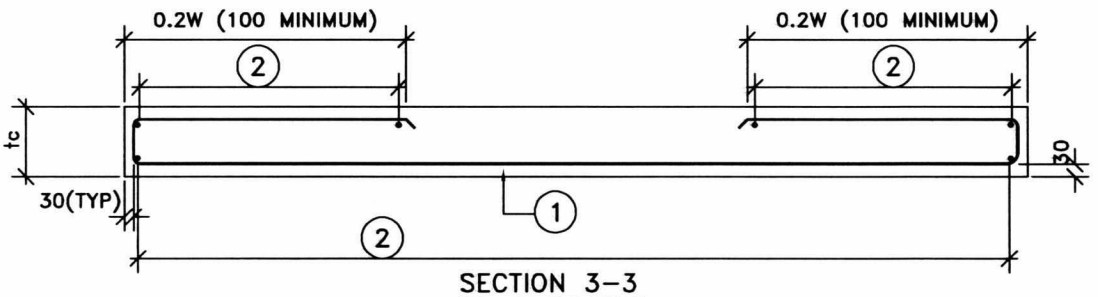
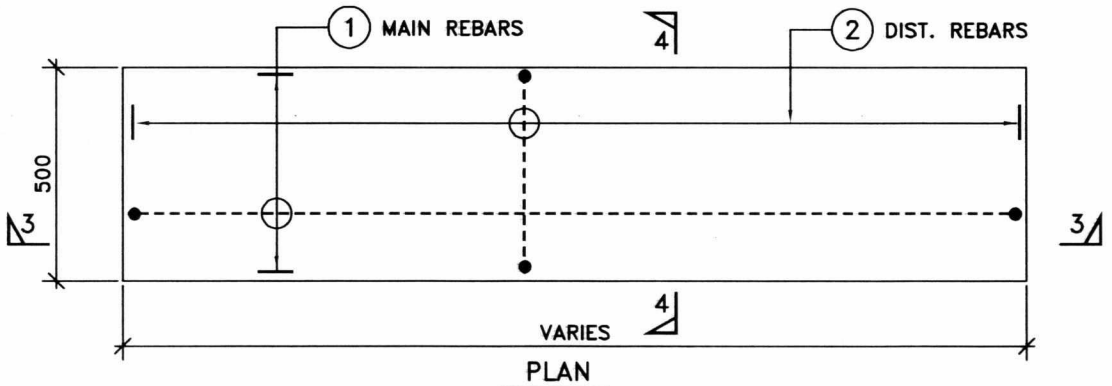


SECTION 3–3



PLAN
(STANDARD PRECAST COVER)

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TABLE-2: DETAIL OF STANDARD PRECAST COVERS

S.NO.	TYPE	WORKING DIMENSIONS				DESIGN LOAD ON EACH COVER	FOR ONE UNIT OF WIDTH 500 mm INCLUDING LIFTING HOOK				
		CLEAR WIDTH OF TRENCH W (mm)	BEARING OF COVER bw (mm)	TOTAL LENGTH OF COVER W+2bw (mm)	THICK-NESS OF COVER tc (mm)	CONCENTRATED LOAD AT CENTRE OF SPAN (kgs)	REINFORCEMENT CONFORMING TO IS: 1786, GRADE Fe-500 (TMT).		APPROX. QUANTITIES		SELF WEIGHT (kgs)
							BAR MKD. (1)	BAR MKD. (2)	CONCRETE (m^3)	REINF. (kg)	
1.	PC-1	300	50	400	150	≤5000	5-8ϕ	3-8ϕ	0.030	2.00	75
2.	PC-2	500	50	600	150	≤5000	7-10 ϕ	4-8ϕ	0.045	4.30	113
3.	PC-3	750	50	850	200	≤5000	7-10ϕ	5-8ϕ	0.085	6.64	213
4.	PC-4	1000	50	1100	200	≤5000	7-12ϕ	5-8ϕ	0.110	11.36	275
5.	PC-5	1250	50	1350	250	≤5000	7-12ϕ	6-8ϕ	0.168	14.37	422
6.	PC-6	1500	75	1650	250	≤5000	7-12ϕ	7-8ϕ	0.207	17.16	517
7.	PC-7	2000	75	2150	250	≤5000	5-16ϕ	9-8ϕ	0.268	26.74	672

NOTES :-

1. FOR LOCATION OF BARS MKD. (1) AND (2) REFER SHT. 6 OF 17.
2. ALL PRECAST COVERS SHALL BE MARKED (T) ON THE TOP FOR PROPER PLACEMENT.
3. THE QUANTITIES GIVEN IN THIS TABLE ARE FOR ESTIMATION PURPOSE ONLY.
4. DESIGN IS VALID FOR POINT LOAD AT CENTRE OF SPAN.

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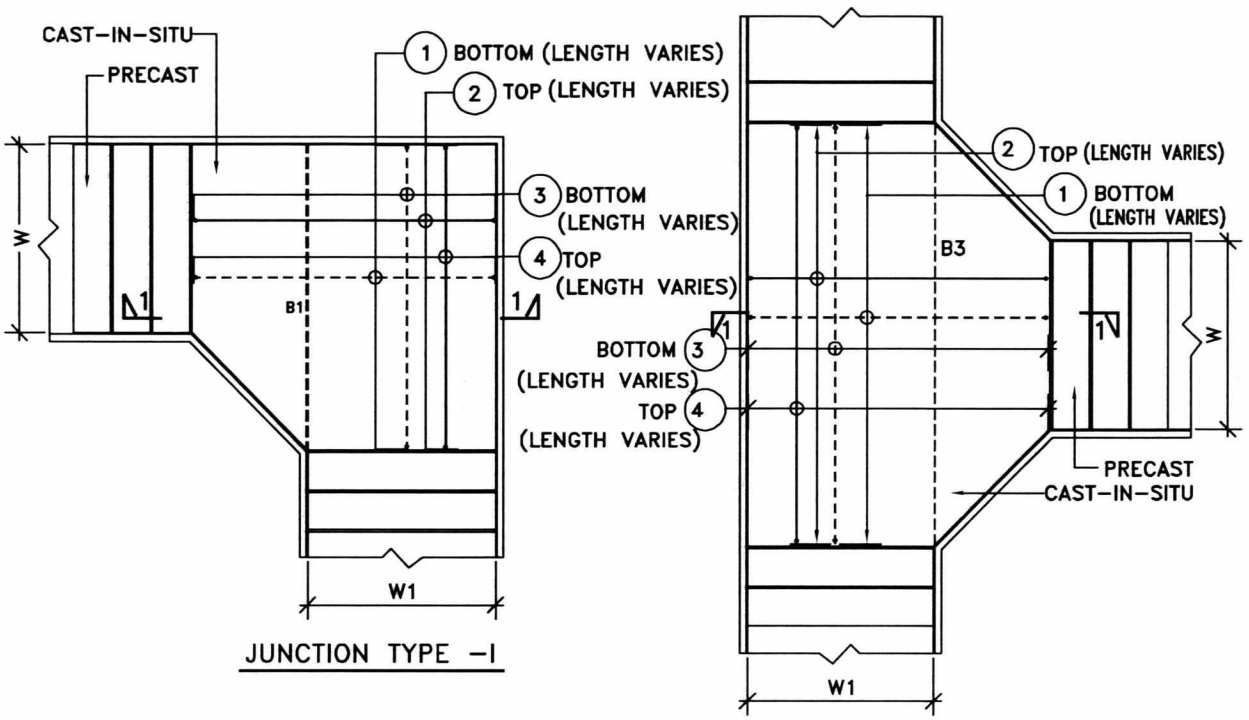

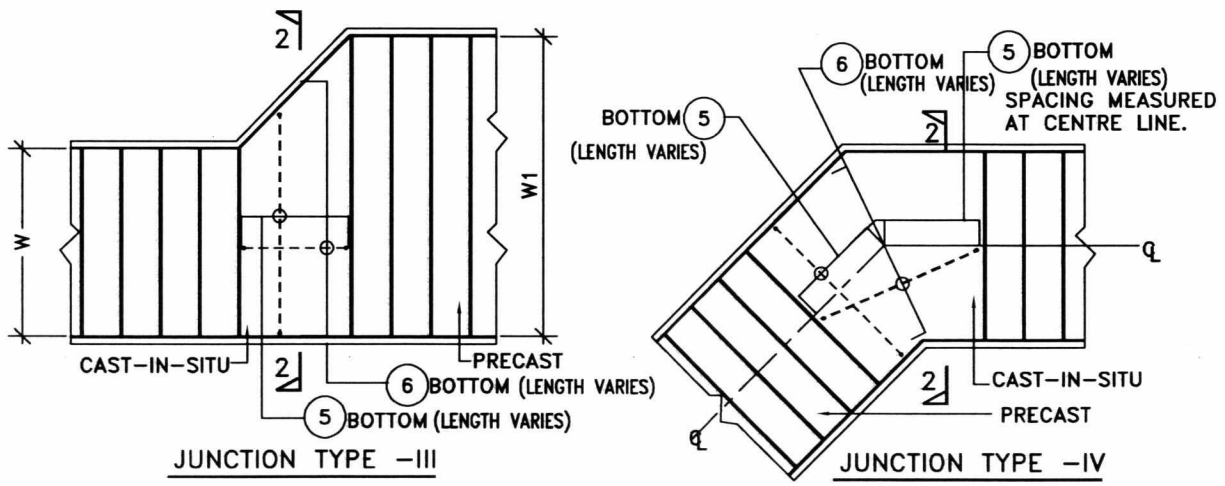

CAST-IN-SITU COVERS

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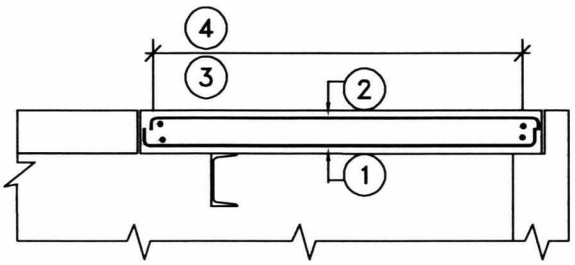
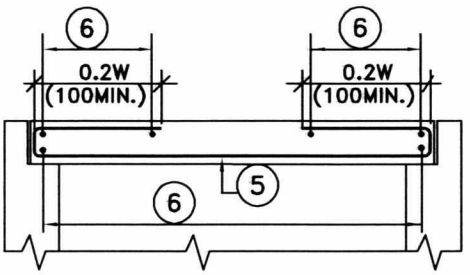


SECTION 1–1



SECTION 2–2

TABLE–3:DETAIL OF CAST–IN–SITU COVERS

S.NO.	CLEAR WIDTH OF TRENCH W1 (mm)	tc (mm)	REINFORCEMENT DETAIL FOR CAST–IN–SITU COVERS					
			JUNCTION TYPE I & II				JUNCTION TYPE III & IV	
			BAR MARK ①	BAR MARK ②	BAR MARK ③	BAR MARK ④	BAR MARK ⑤	BAR MARK ⑥
1.	300	150	8ϕ@120c/c	–	8ϕ@150c/c	–	8ϕ@120c/c	8ϕ@150c/c
2.	500	150	8ϕ@100c/c	–	8ϕ@150c/c	–	8ϕ@120c/c	8ϕ@150c/c
3.	750	200	10ϕ@150c/c	8ϕ@150c/c	8ϕ@150c/c	8ϕ@150c/c	10ϕ@200c/c	8ϕ@150c/c
4.	1000	200	12ϕ@120c/c	8ϕ@150c/c	8ϕ@200c/c	8ϕ@200c/c	10ϕ@200c/c	8ϕ@200c/c
5.	1250	250	12ϕ@150c/c	8ϕ@150c/c	8ϕ@200c/c	8ϕ@200c/c	12ϕ@200c/c	8ϕ@200c/c
6.	1500	250	12ϕ@200c/c	8ϕ@150c/c	8ϕ@200c/c	8ϕ@200c/c	12ϕ@200c/c	8ϕ@200c/c
7.	2000	250	16ϕ@200c/c	8ϕ@150c/c	8ϕ@200c/c	8ϕ@200c/c	12ϕ@150c/c	8ϕ@200c/c

NOTES :–
1. THE CAST–IN–SITU COVERS ARE DESIGNED FOR POINT LOAD OF 5000 kg ACTING AT MID SPAN.
2. FOR CONNECTION DETAIL AND SIZES OF B1 & B3 REFER SHT. 8 OF 17 AND 12 OF 17.
3. FOR LOCATION OF BAR MARKS ① TO ⑥ REFER ABOVE SECTIONS 1–1 & 2–2.

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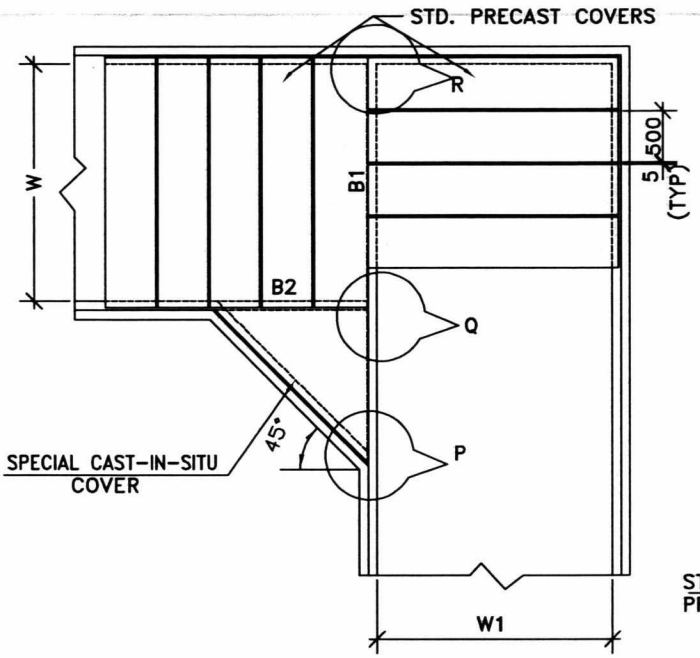
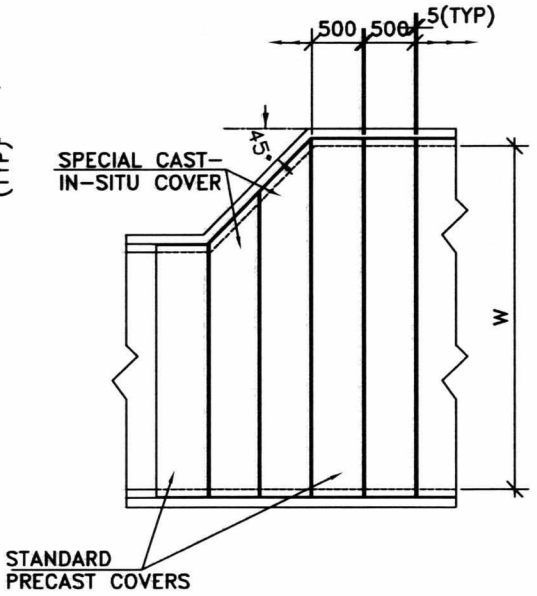
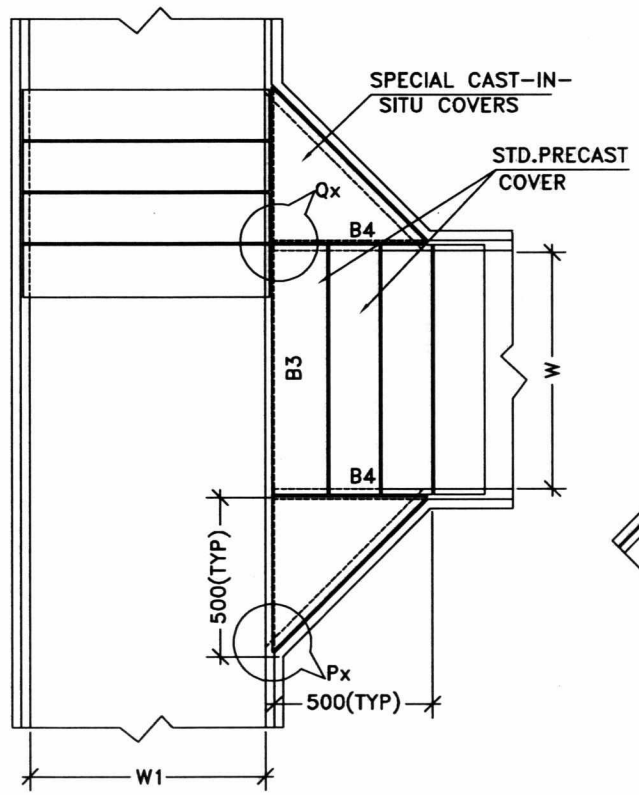


JUNCTION TYPE – I



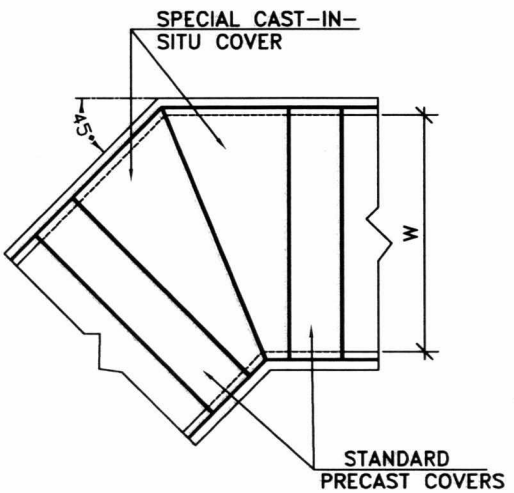
JUNCTION TYPE – III



JUNCTION TYPE – II

NOTES :

1. FOR DETAILS P, Q, Px, Qx & R REFER SHT. 11 OF 17.
2. FOR DETAIL OF BEAMS B1 TO B4 REF. TABLE 4 SHT 12 OF 17.



JUNCTION TYPE – IV

SPECIAL CAST-IN-SITU COVERS

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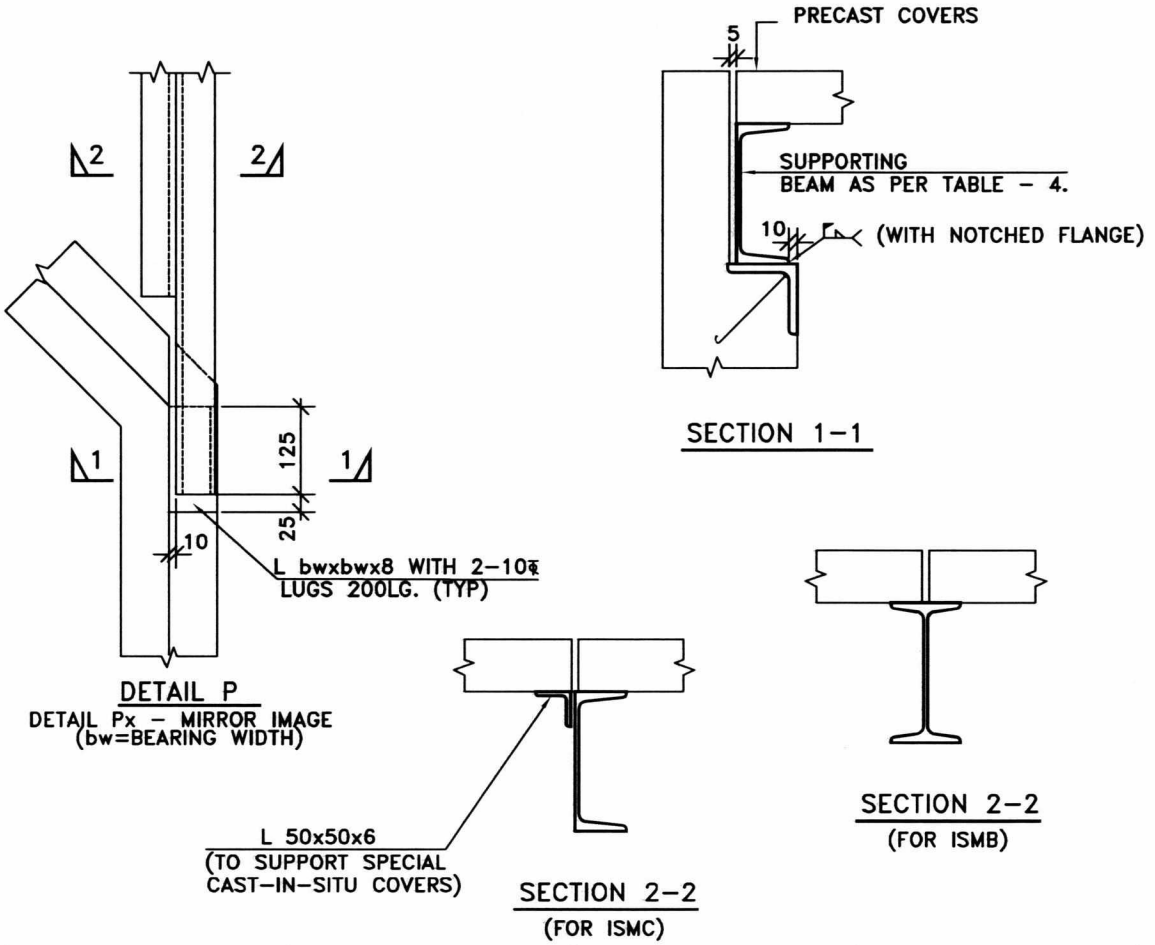

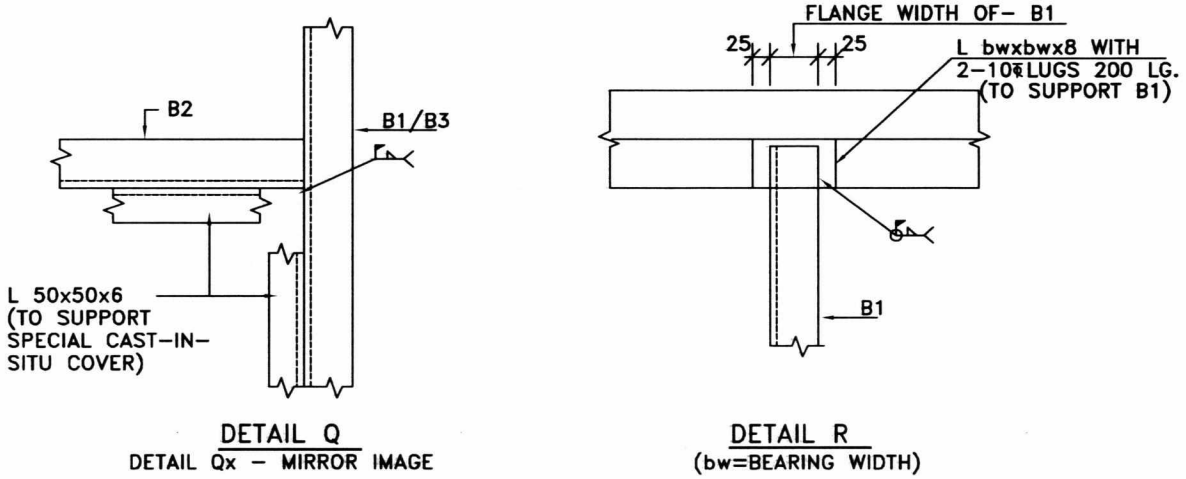

SUPPORTING MEMBERS

(FOR LOCATION OF DET. P, Q, Px, Qx & R REF. SHT. 10 OF 17)

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TABLE–4: DETAIL OF SUPPORTING MEMBERS B1, B2, B3 & B4 AT JUNCTIONS

S.NO.	CLEAR WIDTH OF MAIN TRENCH W	JUNCTION TYPE – I				JUNCTION TYPE – II			
		SUPPORTING MEMBER B1		SUPPORTING MEMBER B2		SUPPORTING MEMBER B3		SUPPORTING MEMBER B4	
		SIZE	LENGTH	SIZE	LENGTH	SIZE	LENGTH	SIZE	LENGTH
1.	300	MC 150	1020	MC 125	625	MC 200	1650	MC 125	625
2.	500	MC 150	1220	MC 125	625	MC 200	1850	MC 125	625
3.	750	MC 200	1470	MC 125	625	MC 250	2100	MC 125	625
4.	1000	MC 200	1720	MC 125	625	MC 250	2350	MC 125	625
5.	1250	MC 250	1970	MC 125	625	MC 300	2600	MC 125	625
6.	1500	MC 250	2270	MC 125	625	MC 300	2900	MC 125	625
7.	2000	MB 250	2770	MC 125	625	MC 300	3400	MC 125	625

NOTE

THE SUPPORTING MEMBERS ARE DESIGNED FOR COVER WT. PLUS A POINT LOAD OF 5000 kg. AT MID SPAN.

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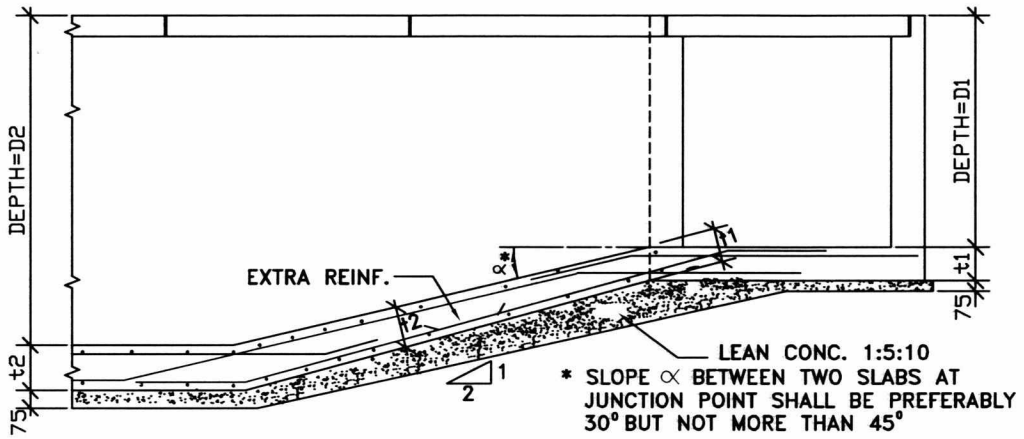

TYPICAL DETAIL AT JUNCTION FOR DIFFERENT DEPTHS OF TRENCH.

(R/F DETAIL OF TRENCH IN SLOPE SHALL BE BASED ON DEPTH D2).

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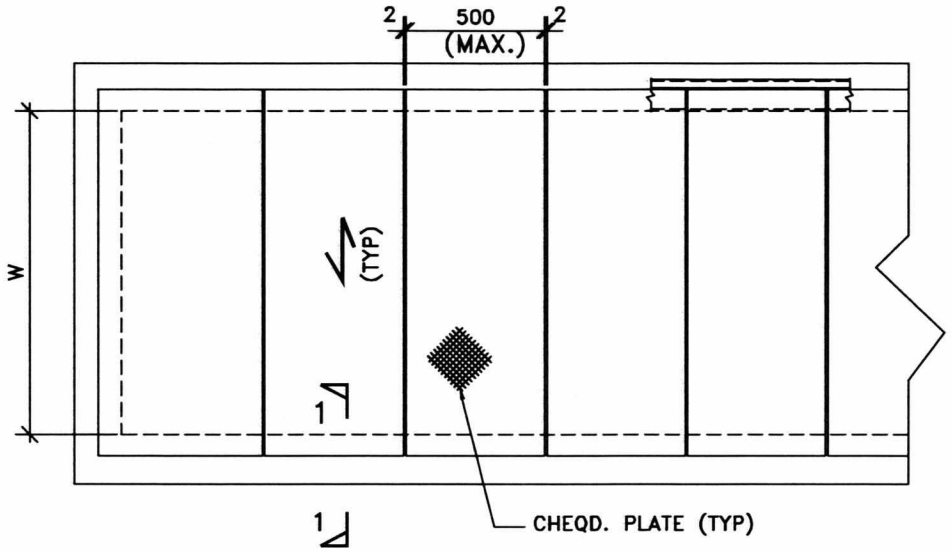
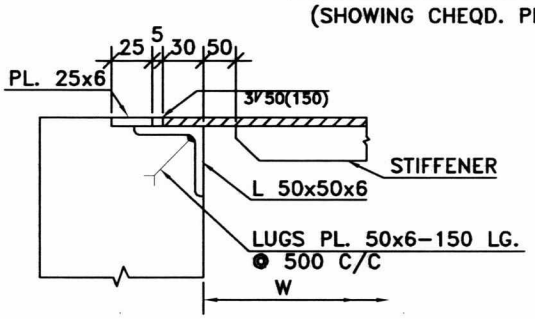
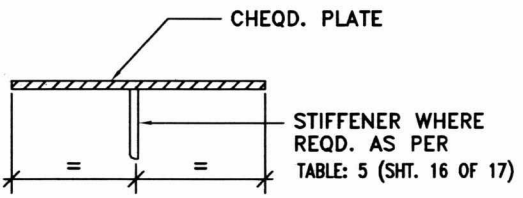


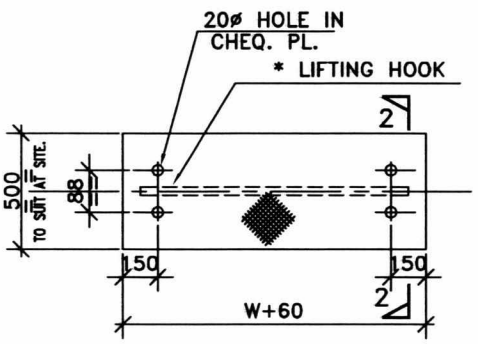
TYPICAL TRENCH PLAN
(SHOWING CHEQD. PLATE)



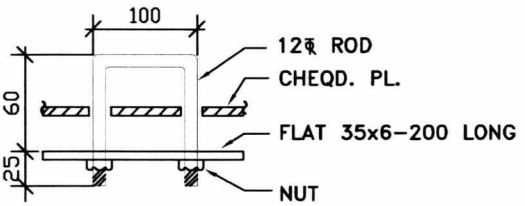
SECTION 1-1



SECTION 2-2



TYP. CHEQD. PLATE DETAIL
(SHOWING CHEQD. PLATE)



TYP. LIFTING HOOK DETAIL

* ONE HOOK FOR SPAN UPTO 500
TWO HOOKS FOR SPAN ABOVE 500.

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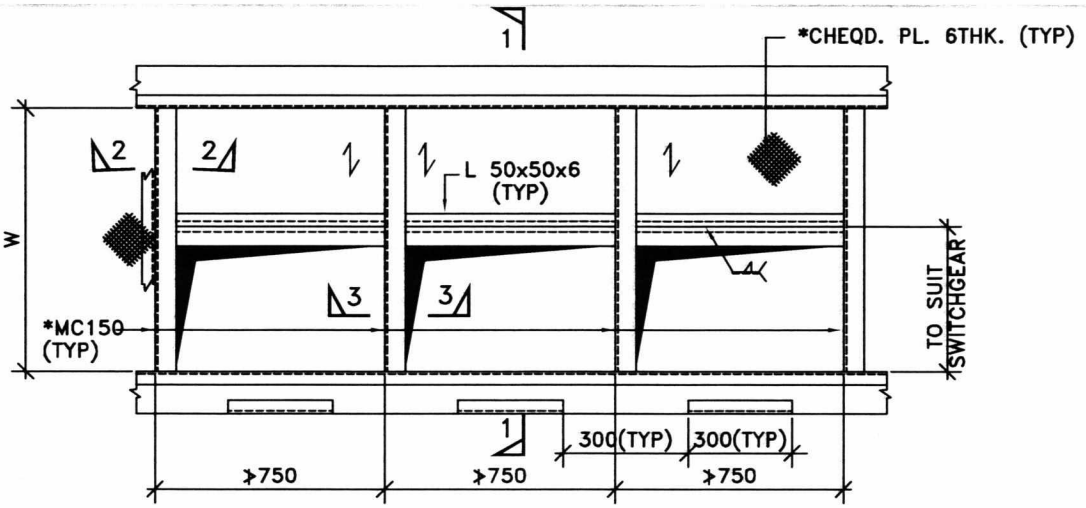
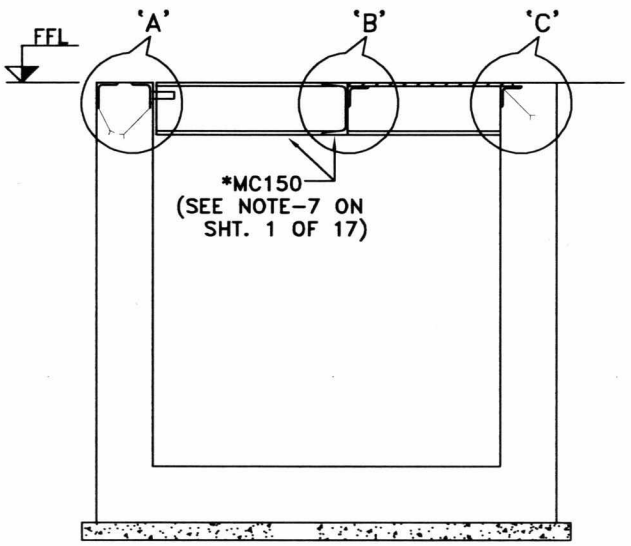
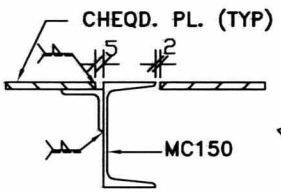


TYPICAL TRENCH PLAN
(AT SWITCH GEARS)



SECTION 1-1



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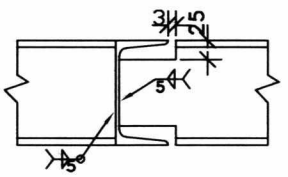
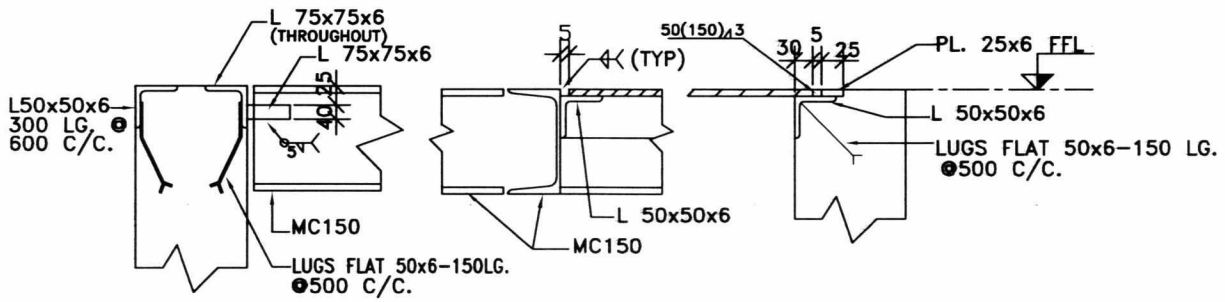


SECTION 3-3



DETAIL A DETAIL B DETAIL C

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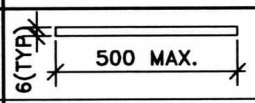
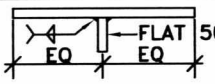
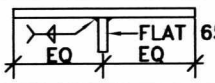
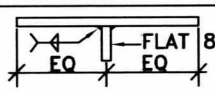
TABLE– 5: DETAIL OF CHEQUERED PLATE COVER

S.NO.	TYPE	SECTION	SECTION PROPERTIES FOR 500mm WIDE PLATE			RECOMMENDED SPAN (W) mm
			WT. kg/m	I=cm^4	Zmin =cm^3	
1.	I		23.55	0.90	3.00	W < 500
2.	II		27.45	44.90	9.16	500 < W ⩽ 1250
3.	III		28.62	91.00	14.76	1250 < W ⩽ 1500
4.	IV		29.79	160.30	21.66	1500 < W ⩽ 2000

NOTE–

THE DESIGN IS BASED ON A LIVE LOAD OF 500 Kg/m^2 AND MAXIMUM ALLOWABLE DEFLECTION = W/200 (W = SPAN)

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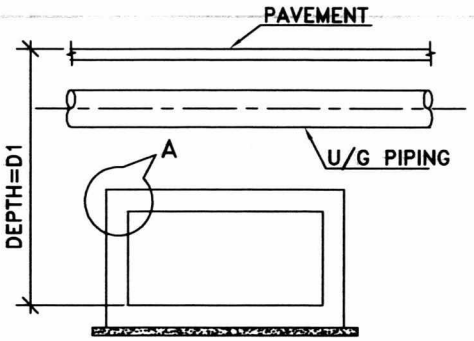
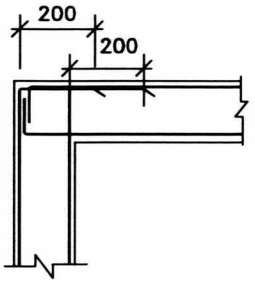
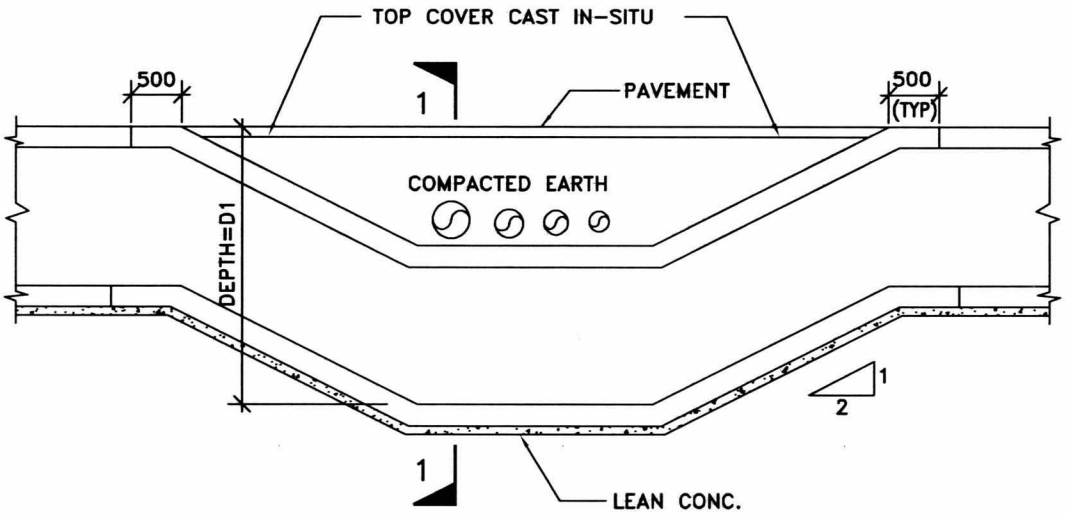


SECTION 1–1



DET. A



TYPICAL DETAIL AT JUNCTION FOR
DIFFERENT DEPTHS OF TRENCH.

NOTES : –

(1) TOP COVER FOR THE INDICATED PORTION SHALL BE CAST IN SITU. RCC DETAILS FOR THE COVER SLAB SHALL BE SAME AS THE PRECAST COVERS OF SAME SPAN, EXCEPT THE CORNER DETAIL WHICH IS SHOWN HERE.

(2) RC DETAILS FOR THE TRENCH WALL / BASE SHALL BE BASED ON DEPTH "D1".

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NOTES :

1. ALL DIMENSIONS ARE IN mm & LEVELS IN METRES.
2. MAX. WEIGHT OF EACH PRECAST TRENCH IS 5T.
3. THIS STANDARD IS SHOWING JOINT DETAILS AND LIFTING LUG OF PRECAST ELEMENTS ONLY.
4. FOR THICKNESS, R/F DETAILS OF WALL AND PRECAST COVER REFER STD.NO. 7–68–0625, 7–68–0626 & 7–68–0655.
5. LEAN CONCRETE TO BE SUITABLY ALIGNED/LEVEL TO ENSURE MATCHING OF WALL WITH FGL/HPP.
6. LIFTING POCKET SHALL BE FILLED WITH CONCRETE AFTER ERECTION/ALIGNMENT.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	
2	20–06–2022	REAFFIRMED AND ISSUED AS STANDARD	ANURAG KR. SINHA	S.C.MAITY	ANURAG SINHA	SANJAY MAZUMDAR
1	29–09–2016	REAFFIRMED AND ISSUED AS STANDARD	JITENDER	ALPANA	RAJANJI SRIVASTAVA	R.NANDA

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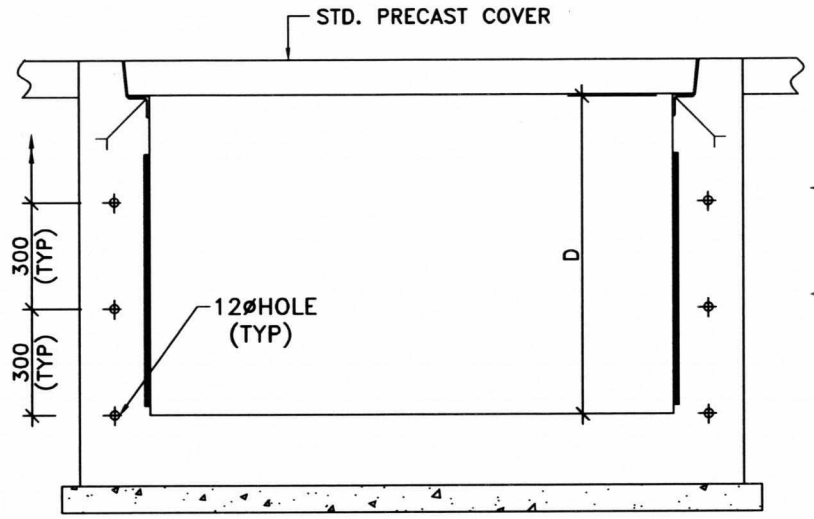
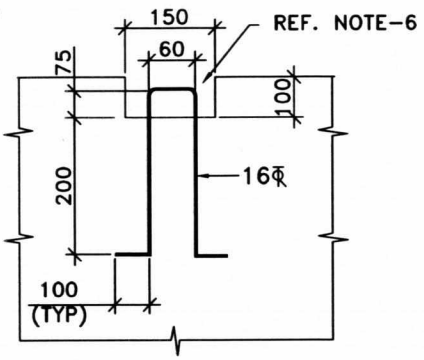
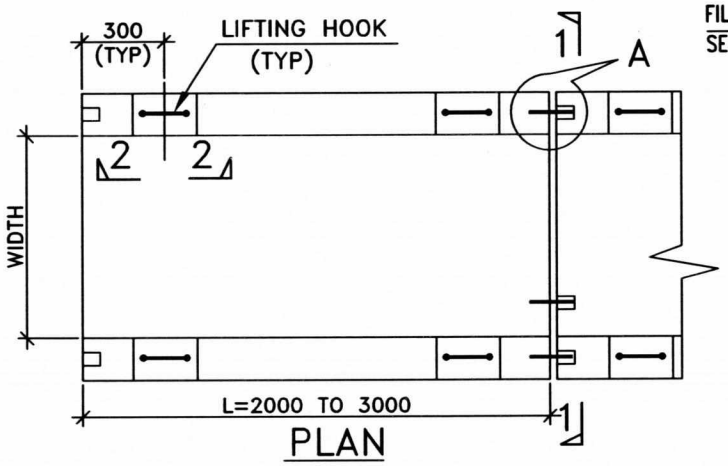


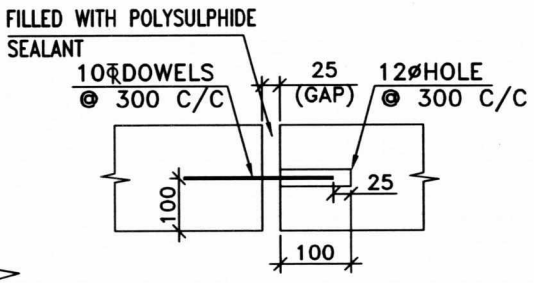
SECTION 1-1



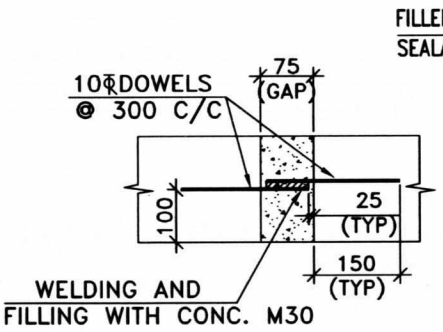
VIEW 2-2
(LIFTING HOOK DET.)



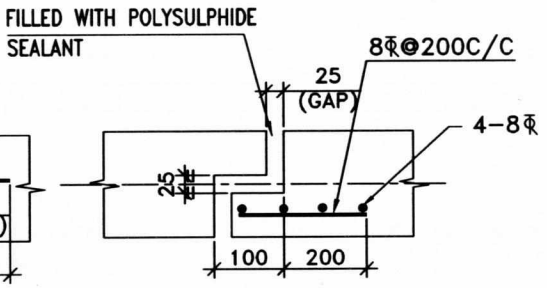
PLAN



DET.-A (ALT.-I)
(REFER ALT-II & ALT-III ALSO)



ALT.-II



ALT.-III

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
2	20-06-2022	REAFFIRMED AND ISSUED AS STANDARD	ANURAG KR. SINHA	S.C.MAITY	ANURAG SINHA	SANJAY MAZUMDAR
1	29-09-2016	REAFFIRMED AND ISSUED AS STANDARD	JITENDER	ALPANA	RAJANJI SRIVASTAVA	R. NANDA

Approved by

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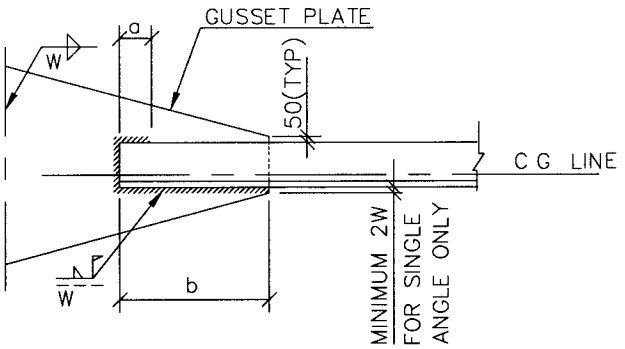

TYP. DET. OF WELD LENGTH FOR ANGLE MEMBERS

ANGLE SIZE	w (mm)	a(mm)	b(mm)	MIN GUSSET THK.(mm)
L 50x50x6	6	50	150	8
L 65x65x6	6	75	200	8
L 65x65x8	6	100	250	8
L 75x75x6	6	75	225	8
L 75x75x8	6	100	300	8
L 90x90x6	6	75	275	8
L 90x90x8	6	100	350	8
L 100x100x10	8	125	350	10
L 110x110x10	8	125	400	10
L 130x130x10	8	125	500	10
L 150x150x12	10	150	525	12
2L 50x50x6 B/B	6	50	150	8
2L 65x65x6 B/B	6	75	200	8
2L 65x65x8 B/B	6	100	250	8
2L 75x75x6 B/B	6	75	225	8
2L 75x75x8 B/B	6	100	300	8
2L 90x90x6 B/B	6	75	275	8
2L 90x90x8 B/B	6	100	350	8
2L 100x100x10 B/B	8	125	350	10
2L 110x110x10 B/B	8	125	400	10
2L 130x130x10 B/B	8	125	500	10
2L 150x150x12 B/B	10	150	525	12

NOTE THE WELD LENGTH IS NOT APPLICABLE FOR DOUBLE ANGLE ON THE SAME SIDE OF THE GUSSET PLATE

Rev. No	Date	Purpose	Prepared by	Checked by	Stds Committee Convenor	Stds. Bureau Chairman
4	28-01-20	REAFFIRMED AND ISSUED AS STANDARD	JG	ALPANA SRIVASTAVA	RAJANJI SRIVASTAVA	R K TRIVEDI
3	18-07-14	REVISED AND ISSUED AS STANDARD	Om Prakash	AJS	P K MITTAL	S.CHANDA

Approved by

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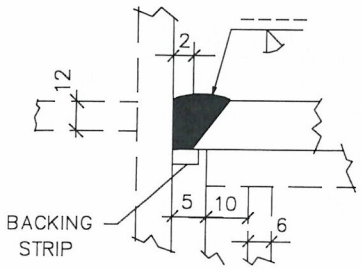
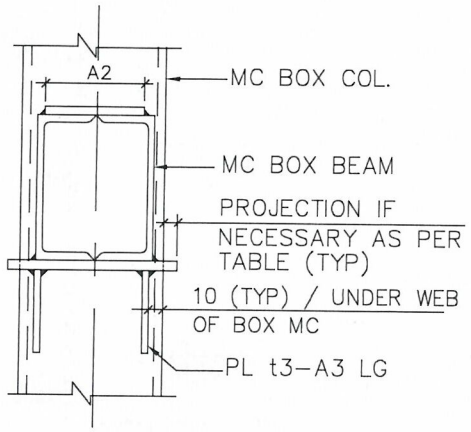
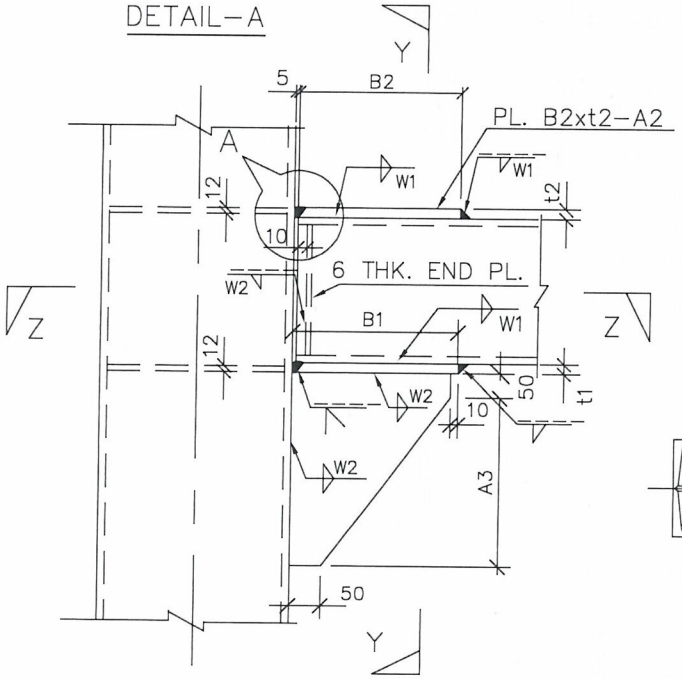


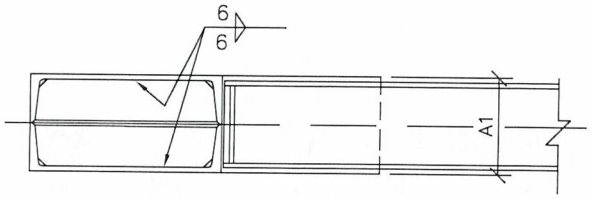
DETAIL–A



SEC Y–Y



ELEVATION



PLAN Z–Z

TYPICAL DETAILS OF MOMENT CONNECTION FOR MC BOX SECTIONS (TYPE–2)

COLUMN	MC 400 BOX				MC 300 BOX			MC 250 BOX		MC 200 BOX	
BEAM	MC–400 BOX	MC–300 BOX	MC–250 BOX	MC–200 BOX	MC–300 BOX	MC–250 BOX	MC–200 BOX	MC–250 BOX	MC–200 BOX	MC–200 BOX	MC–150 BOX
A1 mm	220	200	200	200	200	180	180	180	180	170	170
A2 mm	180	160	140	130	160	140	130	140	130	130	130
A3 mm	350	300	250	200	300	250	200	250	200	200	150
B1 mm	500	400	350	250	400	350	250	350	250	250	200
B2 mm	425	325	275	200	325	275	200	275	200	200	150
t1 mm	20	16	16	12	16	16	12	16	12	12	10
t2 mm	25	20	20	16	20	20	16	20	16	16	12
t3 mm	10	10	10	10	10	10	10	10	10	10	10
w1 mm	10	10	10	10	10	10	10	10	10	10	10
w2 mm	6	6	6	6	6	6	6	6	6	6	6

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
5	27.02.26	REAFFIRMED AND ISSUED AS STANDARD	AB	SP	ANURAG SINHA	NALIN KUMAR
4	22.09.20	REAFFIRMED AND ISSUED AS STANDARD	JG	AVM	AS	SM
3	07.08.14	REAFFIRMED AND ISSUED AS STANDARD	K K SHARMA	V. GOEL	P. K. MITTAL	S. CHANDA

Approved by

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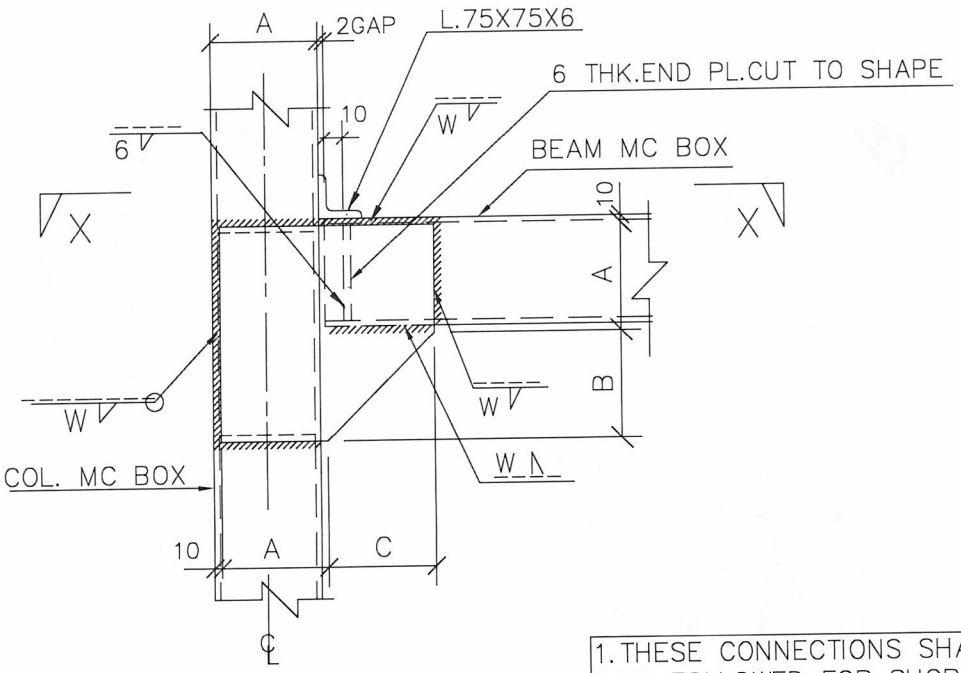
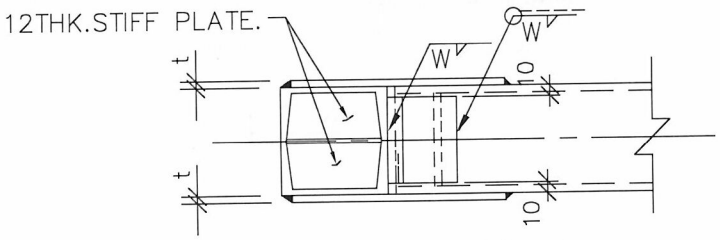


ELEVATION

1. THESE CONNECTIONS SHALL BE FOLLOWED FOR SHOP WELDING ONLY.

2. CONNECTIONS ARE SHOWN FOR FULL MOMENT PLUS 50% SHEAR CAPACITIES.



PLAN X–X

TYPICAL DETAILS OF MOMENT CONNECTION FOR MC BOX SECTIONS (TYPE–1)

COLUMN	BEAM	A (mm)	B (mm)	C (mm)	t (mm)	w(mm)
MC 150 BOX	MC 150 BOX	150	150	300	10	6
MC 200 BOX	MC 200/150 BOX	200/150	200/150	350	10	6
MC 250 BOX	MC 250 BOX	250	250	400	10	8
MC 300 BOX	MC 300 BOX	300	225	450	10	8
MC 400 BOX	MC 400 BOX	400	300	550	10	8

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NOTES :-

1. FOR LOCATION OF TRENCHES SUBJECTED TO CRANE LOADING, REFERENCE SHALL BE MADE TO RELEVANT GENERAL CIVIL DRAWINGS.
2. ELECTRICAL DEPTT. & INSTRUMENTATION DEPTT. WILL PROVIDE FOLLOWING INFORMATION ON THEIR DRAWINGS WHICH WILL BE ISSUED FOR CONSTRUCTION:
   a) LAYOUT AND SIZE OF CABLE TRENCH.
   b) INSERT PLATE REQUIREMENTS AND ITS SPACING.
   c) LOCATION & SIZE OF G.I. CONDUIT SLEEVES.
3. GRADE OF CONCRETE AND REBARS FOR CABLE TRENCH & PRECAST COVER SHALL BE AS PER GENERAL NOTES OF THE PROJECT. HOWEVER, M25 AS MINIMUM GRADE OF RCC AND FE500D AS MINIMUM GRADE OF REINFORCEMENT HAS BEEN CONSIDERED IN DESIGN.
4. CABLE TRENCHES ARE DESIGNED FOR THE FOLLOWING CONSIDERATIONS:
   a) CLASS-AA TRACKED VEHICULAR LOADS AS GIVEN IN IRC:6 (i.e UDL OF 11.40 T/SQ.M).
   b) CLASS-70R WHEELED VEHICULAR LOADS AS GIVEN IN IRC:6 (i.e. MAXIMUM TYRE PRESSURE OF 52.73 T/SQ.M).
   c) SURCHARGE LOADS FOR VEHICLES CALCULATED AS PER IRC: 6.
   d) NET SAFE BEARING CAPACITY OF SOIL IS 5 MT/SQ.M AT FOUNDATION LEVEL.
   e) WATER TABLE AT ANY DEPTH.
5. CABLE TRENCHES FOR JUNCTIONS WHEREVER REQUIRED SHALL BE DESIGNED & DETAILED SPECIFICALLY BASED ON THE AVAILABLE LAYOUT.
6. EVERY FIFTH COVER SHALL HAVE LIFTING HOOK OF TYPE H1 (REF. SHT. 4 OF 6).
7. CABLE TRENCHES IN UNIT AREAS (CLASSIFIED) SHALL BE FILLED WITH SAND.
8. JOINTS BETWEEN PRECAST COVERS TO BE FILLED AFTER CABLE LAYING.
9. CLEAR COVER SHALL BE 30MM MINIMUM, UNLESS NOTED OTHERWISE. IN CASE CLEAR COVER IS MORE FOR A PROJECT, THE ELEMENT THICKNESS SHALL BE INCREASED ACCORDINGLY.
10. 25X3 THK MS FLAT TO BE PROVIDED AFTER PLACEMENT OF PRECAST COVER.THE SAME IS TO BE LOCALLY BENT IN CASES WHERE THE WIDTH OF COVER SLAB IS LESS THAN THE TRENCH OUTER-TO-OUTER WIDTH.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
6	19.03.24	REVISED & REISSUED AS STANDARD	ANURAG KR. SINHA	MAITRAYEE MAJUMDER	ANURAG SINHA	MAINAK NANDI
5	20.06.22	REVISED & REISSUED AS STANDARD	ANURAG KR. SINHA	S.C.MAITY	ANURAG SINHA	SANJAY MAZUMDAR

Approved by

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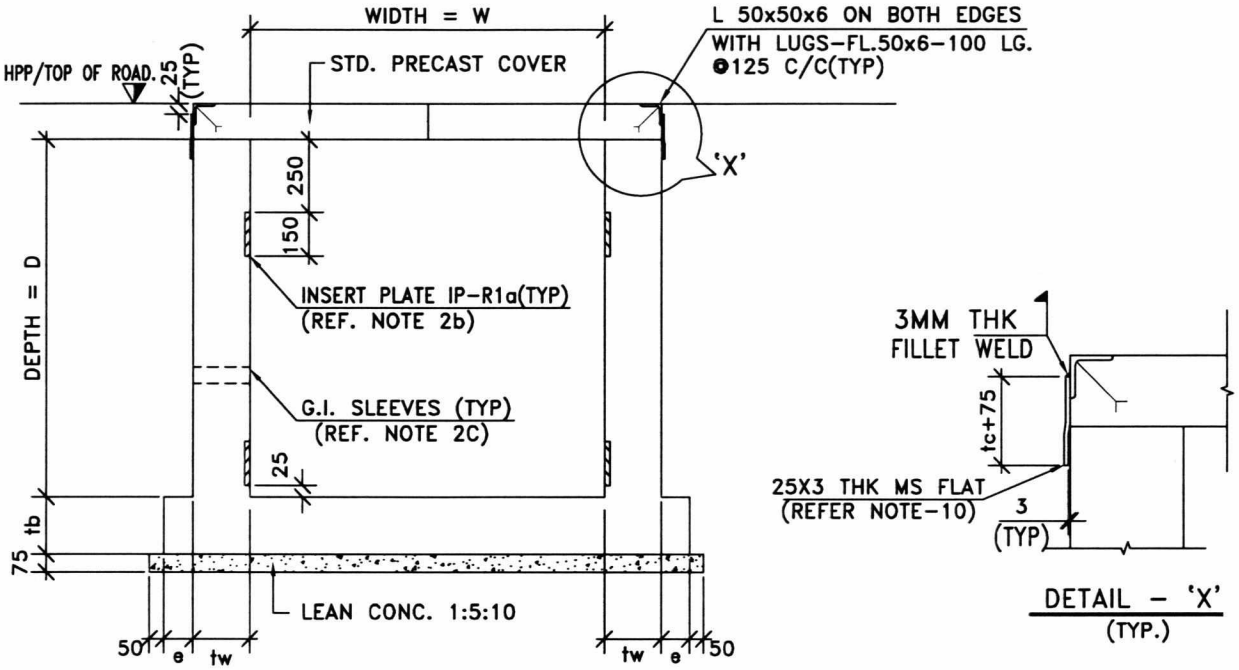
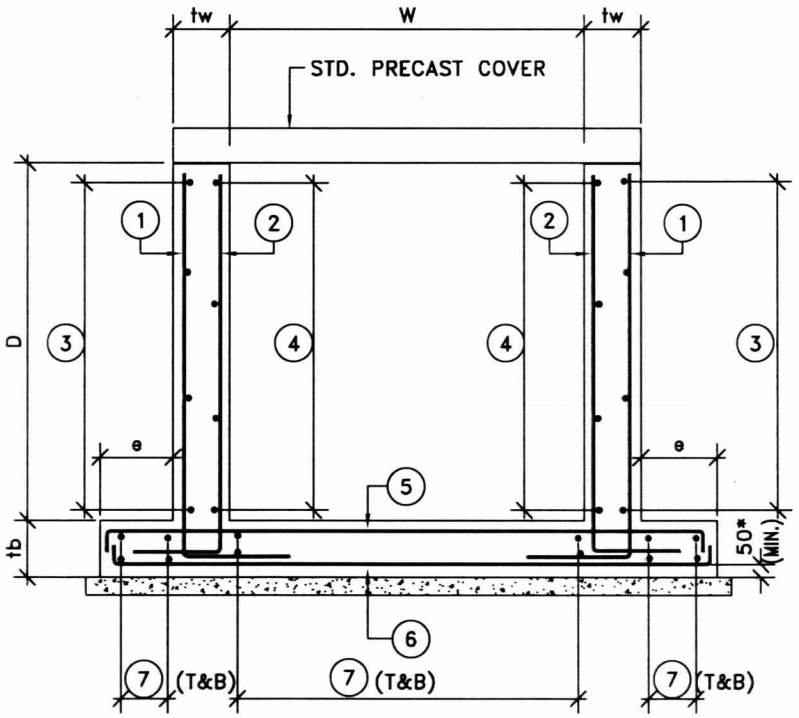


TYP. SECTION OF CABLE TRENCH



TYPICAL CABLE TRENCH SECTION

(FOR DETS OF R/F BARS ① TO ⑦ REFER TABLE-1 SHT 3 OF 6)

* REFER NOTE-9

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TABLE :1– DETAIL OF CABLE TRENCH REINFORCEMENT

S.NO.	WORKING DIMENSIONS					R/F CONFORMING TO IS: 1786							APPROX. QUANTITIES PER METRE LENGTH.		
	DEPTH D (mm)	WIDTH W (mm)	WALL THICK-NESS tw (mm)	BASE THICK-NESS tb (mm)	PROJEC-TION e (mm)	BAR MARK ①	②	③	④	⑤	⑥	⑦	LEAN CONC. 1:5:10 (m^3)	CONC. (m^3)	REINF. (kg)
1.	300	300	150	150	300	10ϕ-150C/C.	8ϕ-150C/C.	8ϕ-300C/C.	8ϕ-300C/C.	10ϕ-175C/C.	10ϕ-175C/C.	8ϕ-300C/C.	0.10	0.31	32.10
2.		500	150	150	300	10ϕ-150C/C.	8ϕ-150C/C.	8ϕ-300C/C.	8ϕ-300C/C.	10ϕ-175C/C.	10ϕ-175C/C.	8ϕ-300C/C.	0.12	0.34	33.80
3.	500	500	150	200	300	10ϕ-150C/C.	8ϕ-150C/C.	8ϕ-300C/C.	8ϕ-300C/C.	10ϕ-175C/C.	10ϕ-175C/C.	8ϕ-250C/C.	0.12	0.40	41.50
4.	750	750	200	200	400	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-250C/C.	8ϕ-250C/C.	10ϕ-175C/C.	10ϕ-175C/C.	8ϕ-250C/C.	0.16	0.72	60.70
5.	1000	750	200	200	400	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-250C/C.	8ϕ-250C/C.	12ϕ-175C/C.	12ϕ-175C/C.	8ϕ-250C/C.	0.16	0.82	74.10
6.		1000	200	200	500	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-250C/C.	8ϕ-250C/C.	12ϕ-175C/C.	12ϕ-175C/C.	8ϕ-250C/C.	0.19	0.92	83.50
7.		1250	200	200	450	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-250C/C.	8ϕ-250C/C.	12ϕ-175C/C.	12ϕ-175C/C.	8ϕ-250C/C.	0.20	0.95	90.30
8.		1500	200	200	450	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-250C/C.	8ϕ-250C/C.	12ϕ-175C/C.	12ϕ-175C/C.	8ϕ-250C/C.	0.22	1.00	90.50
9.		2000	200	200	500	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-250C/C.	8ϕ-250C/C.	12ϕ-175C/C.	12ϕ-175C/C.	8ϕ-250C/C.	0.27	1.12	100.00
10.	1250	1000	200	200	500	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-250C/C.	8ϕ-250C/C.	12ϕ-125C/C.	12ϕ-125C/C.	8ϕ-250C/C.	0.19	1.00	129.40
11.		1250	200	200	450	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-250C/C.	8ϕ-250C/C.	12ϕ-125C/C.	12ϕ-125C/C.	8ϕ-250C/C.	0.20	1.05	132.80
12.		1500	200	200	450	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-250C/C.	8ϕ-250C/C.	12ϕ-125C/C.	12ϕ-125C/C.	8ϕ-250C/C.	0.22	1.10	137.90
13.		2000	200	200	500	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-250C/C.	8ϕ-250C/C.	12ϕ-125C/C.	12ϕ-125C/C.	8ϕ-250C/C.	0.27	1.20	147.80
14.	1500	1000	250	200	500	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-200C/C.	8ϕ-200C/C.	12ϕ-150C/C.	12ϕ-150C/C.	8ϕ-250C/C.	0.19	1.30	109.30
15.		1250	250	250	450	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-200C/C.	8ϕ-200C/C.	12ϕ-150C/C.	12ϕ-150C/C.	8ϕ-200C/C.	0.20	1.45	114.80
16.		1500	250	250	450	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-200C/C.	8ϕ-200C/C.	12ϕ-150C/C.	12ϕ-150C/C.	8ϕ-200C/C.	0.22	1.50	120.30
17.		2000	250	250	500	12ϕ-150C/C.	10ϕ-250C/C.	8ϕ-200C/C.	8ϕ-200C/C.	12ϕ-150C/C.	12ϕ-150C/C.	8ϕ-200C/C.	0.27	1.70	128.50

NOTES–

1. TRENCH IS DESIGNED FOR LOADS AND CONDITIONS SPECIFIED IN NOTE 4 (SHT.1 OF 6).
2. THE QUANTITIES GIVEN IN THIS TABLE ARE FOR ESTIMATION PURPOSE ONLY.

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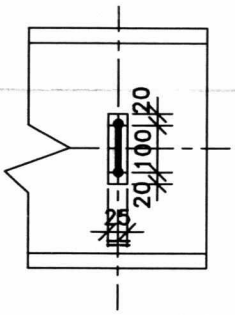
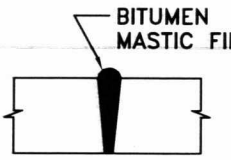


DETAIL – 'Y'
(TYP.)



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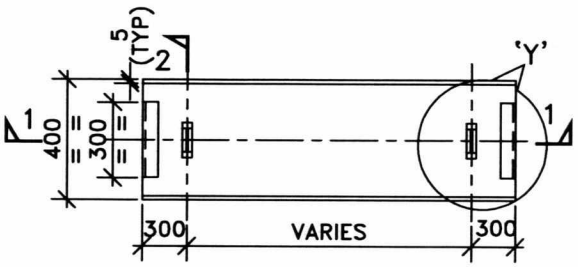
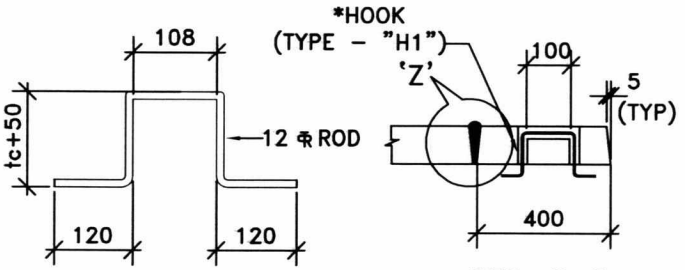
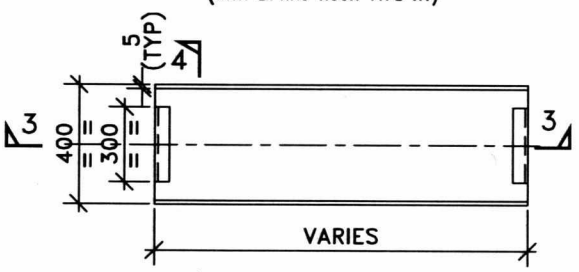


2 TYPE – A
(WITH LIFTING HOOK TYPE H1)



HOOK TYPE "H1"

SEC. 2–2



4 TYPE – B
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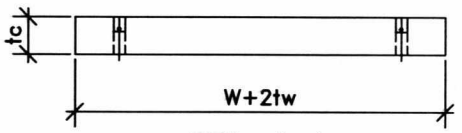
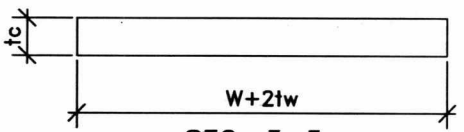
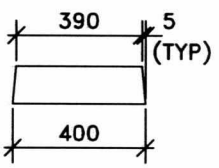


SEC. 1–1



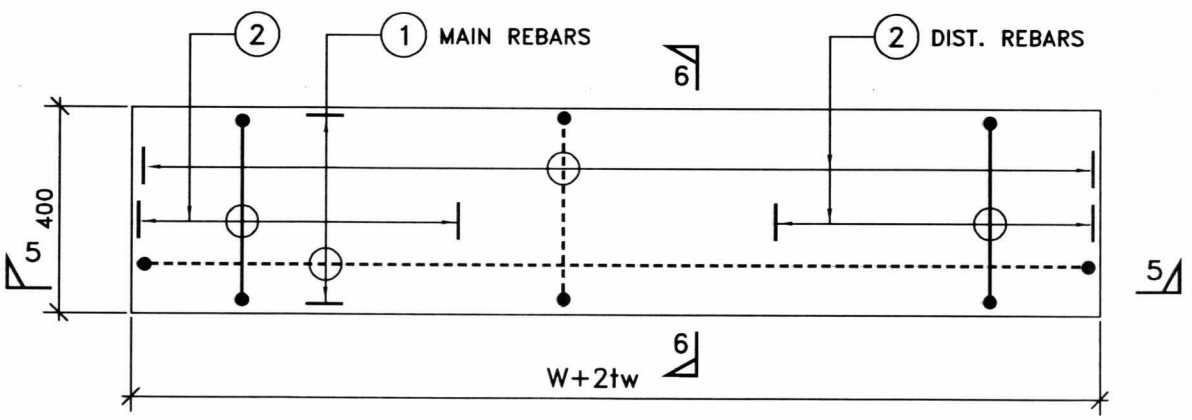
SEC. 3–3



SEC. 4–4

*ONE HOOK IN THE MIDDLE FOR TRENCH WIDTH UPTO 500
TWO HOOKS AS SHOWN FOR TRENCH WIDTH ABOVE 500

PRECAST R.C.C. COVERS



PLAN
(STANDARD PRECAST COVER TYPE PC–1 TO PC–3)

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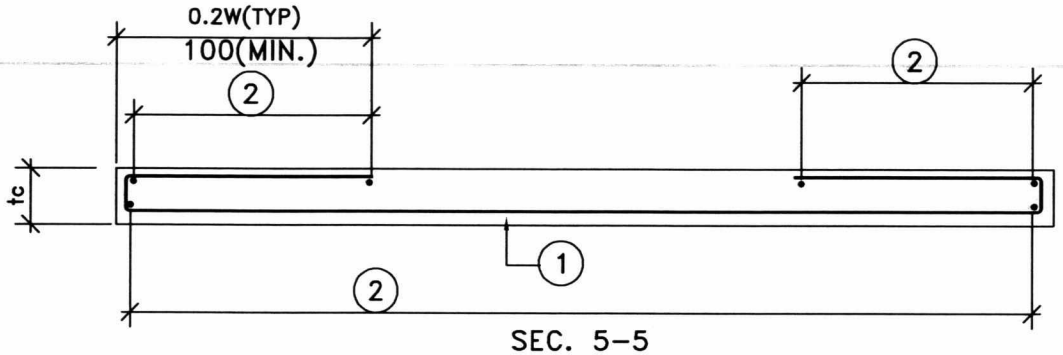
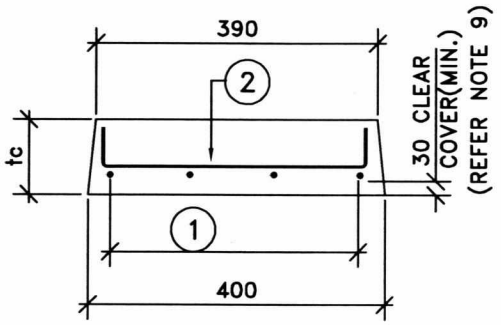
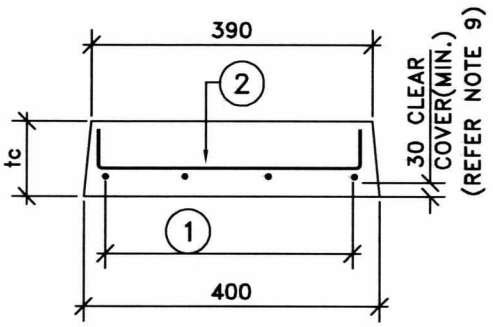


SEC. 5–5



SEC. 6–6



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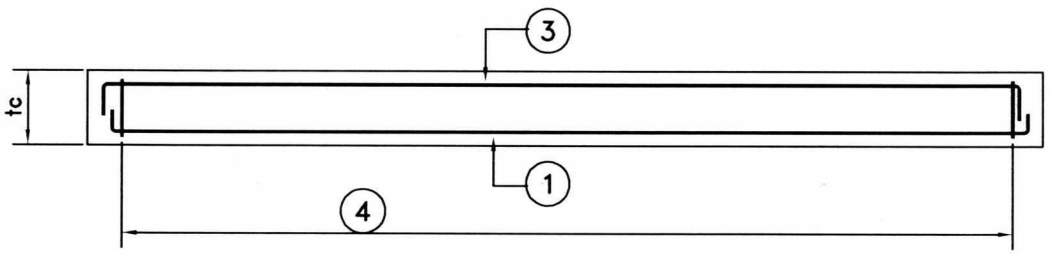
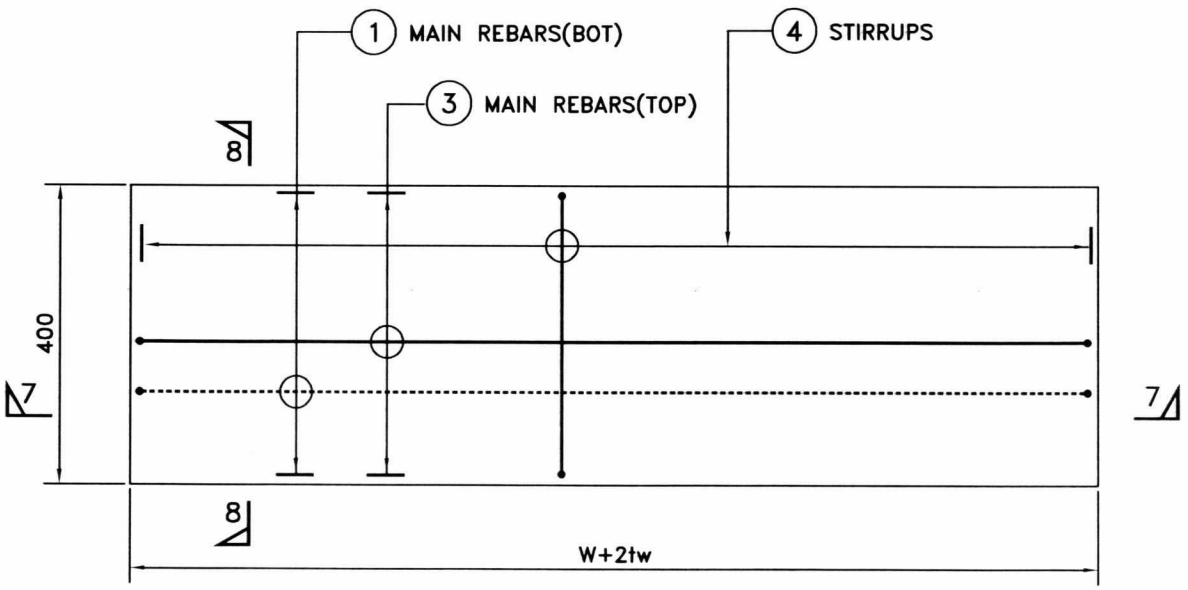


SEC. 7–7



PLAN

(STANDARD PRECAST COVER SLAB TYPE PC-4 TO PC-7)

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TABLE 2: DETAILS OF STANDARD PRECAST COVERS

S.NO.	TYPE	WORKING DIMENSIONS				FOR ONE UNIT OF WIDTH 400 mm						SELF WEIGHT (kg)
						REINFORCEMENT CONFORMING TO IS:1786				APPROX. QUANTITIES		
		CLEAR WIDTH OF TRENCH W (mm)	BEARING OF COVER SLAB tw (mm)	TOTAL LENGTH OF COVER SLAB W+2tw (mm)	THICK-NESS OF COVER SLAB tc (mm)	BAR MKD. (1)	BAR MKD. (2)	BAR MKD. (3)	BAR MKD. (4)	CONCRETE (m^3)	REINF. (kg)	
1.	PC-1	300	150	600	150	4-10ϕ	8-10ϕ	–	–	0.036	5.481	90.0
2.	PC-2	500	150	800	150	4-10ϕ	8-10ϕ	–	–	0.048	5.975	120.0
3.	PC-3	750	200	1150	200	4-10ϕ	9-10ϕ	–	–	0.069	8.185	230.0
4.	PC-4	1000	200	1400	200	4-12ϕ	–	3-10ϕ	17-10ϕ	0.112	20.343	280.0
			250	1500					18-10ϕ	0.120	15.506	300.0
5.	PC-5	1250	200	1650	200	5-12ϕ	–	3-10ϕ	19-10ϕ	0.132	18.210	330.0
			250	1750					20-10ϕ	0.140	17.333	350.0
6.	PC-6	1500	200	1900	250	5-12ϕ	–	3-10ϕ	15-10ϕ	0.190	17.765	475.0
			250	2000					16-10ϕ	0.200	16.519	500.0
7.	PC-7	2000	200	2400	250	5-12ϕ	–	3-10ϕ	31-10ϕ	0.240	29.667	600.0
			250	2500					32-10ϕ	0.250	28.420	625.0

NOTES :-

1. FOR LOCATION OF BARS MKD. (1) TO (4) REFER SHT. 4 OF 6 & SHT. 5 OF 6.
2. ALL PRECAST COVER SLABS SHALL BE MARKED (T) ON THE TOP FOR PROPER PLACEMENT.
3. THE QUANTITIES GIVEN IN THIS TABLE ARE FOR ESTIMATION PURPOSE ONLY.
4. COVER SLABS ARE DESIGNED FOR LOADS SPECIFIED IN NOTE 4 (SHT. 1 OF 6).

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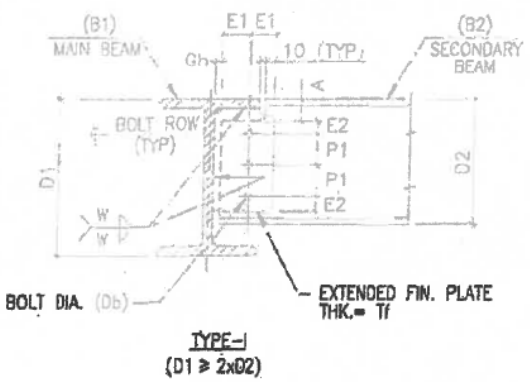
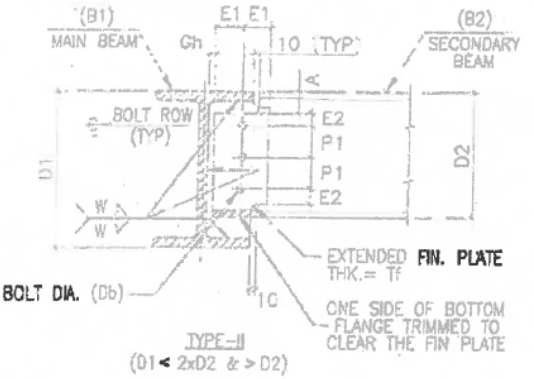
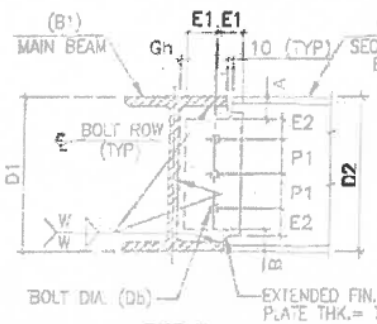


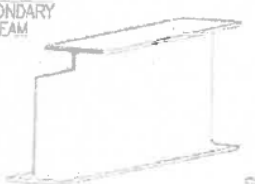
TYPE–I
(D1 ≥ 2xD2)



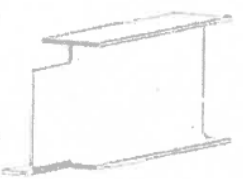
TYPE–II
(D1 < 2xD2 & > D2)



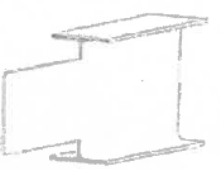
TYPE–III
(D1 ≤ D2)



SEC. BEAM NOTCH DETAIL
(FOR TYPE –I)



SEC. BEAM NOTCH DETAIL
(FOR TYPE –II)



SEC. BEAM NOTCH DETAIL
(FOR TYPE –III)

NOTES:–

1. ALL DIMENSIONS ARE IN mm.
2. THIS STANDARD IS VALID FOR STRUCTURAL STEEL OF GRADE E350 & E250 CONFIRMING TO IS 2062.
3. BEAM SECTIONS SHALL CONFIRM TO IS 808.
4. CONNECTION DESIGN IS AS PER CLAUSE 10.3 (BEARING TYPE BOLTS) OF IS 800 : 2007.
5. ALL CONNECTION BOLTS SHALL BE OF PROPERTY CLASS 8.8 CONFORMING TO IS 3757 & IS 4000.
6. HEXAGONAL NUTS SHALL CONFIRM TO IS 6623.
7. WASHERS SHALL CONFORM TO IS 6649.
8. ALL BOLTS, NUTS & WASHERS SHALL BE GALVANIZED AS PER IS. 1367, PART XIII.
9. WELDING ELECTRODE SHALL BE COMPATIBLE WITH CORRESPONDING GRADE OF STEEL.
10. THIS STANDARD IS ALSO APPLICABLE FOR NPB SECTIONS EQUIVALENT TO ISMB SECTIONS.

* % SHEAR CAPACITY OF CONNECTION W.R.T. SECONDARY BEAM SECTION SHEAR CAPACITY.

\# % AXIAL CAPACITY OF CONNECTION W.R.T. SECONDARY BEAM SECTION AXIAL CAPACITY.

ABBREVIATIONS:–

ISMB – MB ; ISMC – MC ; ISNPB – NPB ; ISWPB – WPB

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
1	28.01.2025	REVISED AND ISSUED AS STANDARD	SS/SS	SP/DA	ANURAG SINHA	MAINAK NANDI
0	24.10.2020	ISSUED AS STANDARD	GR	SS/PM	ANURAG SINHA	SM

Approved by

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TABLE FOR CONNECTION SCHEDULE

Secondary Beam (B2)	Main Beam (B1)	Connection Type	Bolt Dia (Db) (mm)	No. of Bolt Rows	Gap (Gb) (mm)	Edge Dist. (E1) (mm)	End dist (E2) (mm)	Bolt Spacing (P1) (mm)	Thk. of Fin Plate (Tf) (mm)	Weld Size (w) (mm)	Top Notch (A) (mm)	Bottom Notch (B) (mm)	Shear Capacity (%) *	Axial Capacity (%) #	STEEL GRADE E350 Shear Capacity (MT)	STEEL GRADE E350 Axial Capacity (MT)	STEEL GRADE E250 Shear Capacity (MT)	STEEL GRADE E250 Axial Capacity (MT)
WPB900x300x291.46	WPB900x300x291.46	III	36	7	20	75	75	100	16	14	65	65	42	4	128.5	47.3	91.0	33.8
	WPB800x300x262.34	III	36	7	20	75	65	90	16	14	65	165	40	4	122.4	47.3	87.4	33.8
WPB800x300x262.34	WPB900x300x291.46	II	36	7	20	75	65	90	16	14	65	0	47	5	120.9	53.1	86.3	38.2
	WPB800x300x262.34	III	36	7	20	75	65	90	16	14	65	65	47	5	120.9	53.1	86.3	36.0
	WPB700x300x240.51	III	36	6	20	75	60	90	16	14	65	160	40	5	102.9	53.1	73.5	36.0
WPB700x300x240.51	WPB900x300x291.46	II	36	6	20	75	65	90	16	14	65	0	45	5	98.4	48.7	70.2	34.8
	WPB800x300x262.34	II	36	6	20	75	65	90	16	14	65	0	45	5	98.4	48.7	70.2	34.8
	WPB700x300x240.51	III	36	6	20	75	65	90	16	14	60	60	45	4	98.4	38.9	70.2	27.8
	WPB700x300x204.48	III	36	6	20	75	60	90	16	14	60	65	45	4	98.4	38.9	70.2	27.8
	WPB600x300x177.78	III	36	5	16	75	55	90	16	12	60	165	39	4	85.3	38.9	60.9	27.8
WPB700x300x204.48	WPB900x300x291.46	II	36	5	20	75	75	90	16	14	65	0	45	5	82.7	41.4	59.1	29.5
	WPB800x300x262.34	II	36	5	20	75	75	90	16	14	65	0	45	5	82.7	41.4	59.1	29.5
	WPB700x300x240.51	III	36	5	20	75	75	90	16	14	60	55	45	5	82.7	41.4	59.1	29.5
	WPB700x300x204.48	III	36	5	20	75	75	90	16	14	55	55	45	5	82.7	41.4	59.1	29.5
	WPB700x300x149.89	III	36	5	20	75	75	90	16	12	55	65	45	4	82.7	33.1	59.1	23.6
	WPB600x300x177.78	III	36	5	16	75	60	90	16	12	55	155	43	4	79.0	33.1	56.5	23.6
WPB700x300x149.89	WPB900x300x291.46	II	36	5	20	75	75	90	16	12	65	0	53	5	84.8	30.4	60.6	21.7
	WPB800x300x262.34	II	36	5	20	75	75	90	16	12	65	0	53	5	84.8	30.4	60.6	21.7
	WPB700x300x240.51	III	36	5	20	75	75	90	16	12	60	45	53	5	84.8	30.4	60.6	21.7
	WPB700x300x204.46	III	36	5	20	75	75	90	16	12	55	45	53	5	84.8	30.4	60.6	21.7
	WPB700x300x149.89	III	36	5	20	75	75	90	16	12	45	45	50	5	80.0	30.4	57.2	21.7
	WPB600x300x177.78	III	36	5	20	75	60	90	16	12	55	135	45	5	72.0	30.4	51.4	21.7
	WPB600x300x128.79	III	36	5	20	75	60	90	16	12	45	145	45	5	72.0	30.4	51.4	21.7

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TABLE FOR CONNECTION SCHEDULE (CONT.)

Secondary Beam (B2)	Main Beam (B1)	Connection Type	Bolt Dia (Db) (mm)	No. of Bolt Rows	Gap (Gb) (mm)	Edge Dist. (E1) (mm)	End dist. (E2) (mm)	Bolt Spacing (P1) (mm)	Thk. of Fin Plate (T) (mm)	Weld Size (w) (mm)	Top Notch (A) (mm)	Bottom Notch (B) (mm)	Shear Capacity (%) *	Axial Capacity (%) #	STEEL GRADE E350 Shear Capacity (MT)	STEEL GRADE E350 Axial Capacity (MT)	STEEL GRADE E250 Shear Capacity (MT)	STEEL GRADE E250 Axial Capacity (MT)
WPB600x300x177.78	WPB900x300x291.46	II	36	5	14	75	60	90	14	12	65	0	53	5	74.7	36.0	53.3	25.7
	WPB800x300x262.34	II	36	5	14	75	60	90	14	12	65	0	53	5	74.7	36.0	53.3	25.7
	WPB700x300x240.51	II	36	5	14	75	60	90	14	12	60	0	53	5	74.7	36.0	53.3	25.7
	WPB700x300x204.48	II	36	5	14	75	60	90	14	12	55	0	53	5	74.7	36.0	53.3	25.7
	WPB700x300x149.89	II	36	5	14	75	60	90	14	12	55	0	50	4	70.5	28.8	50.3	20.6
	WPB600x300x177.78	III	36	5	14	75	60	90	14	12	55	55	50	4	70.5	28.8	50.3	20.6
	WPB600x300x128.79	III	36	4	14	75	75	100	14	12	55	65	45	4	63.4	28.8	45.3	20.6
WPB600x300x128.79	WPB900x300x291.46	II	36	5	12	75	60	90	14	10	65	0	55	5	69.2	26.1	49.4	18.6
	WPB800x300x262.34	II	36	5	12	75	60	90	14	10	65	0	55	5	69.2	26.1	49.4	18.6
	WPB700x300x240.51	II	36	5	12	75	60	90	14	10	60	0	55	5	69.2	26.1	49.4	18.6
	WPB700x300x204.48	II	36	5	12	75	60	90	14	10	55	0	55	5	69.2	26.1	49.4	18.6
	WPB700x300x149.89	II	36	5	12	75	60	90	14	10	45	0	55	4	69.2	20.9	49.4	14.9
	WPB600x300x177.78	III	36	5	12	75	60	90	14	10	55	0	55	4	69.2	20.9	49.4	14.9
	WPB600x300x128.79	III	36	5	12	75	60	90	14	10	45	45	50	4	63.0	20.9	45.0	14.9
	MB600	III	36	5	12	75	60	90	14	10	45	0	50	4	63.0	20.9	45.0	14.9
	MB500	III	30	5	12	60	55	75	12	10	45	110	45	3	56.7	15.7	40.5	11.2
MB600	WPB900x300x291.46	II	36	5	14	75	75	90	14	12	65	0	55	5	72.8	24.5	52.0	17.5
	WPB800x300x262.34	II	36	5	12	75	75	90	14	10	65	0	55	5	72.8	24.5	52.0	17.5
	WPB700x300x240.51	II	36	5	12	75	75	90	14	10	60	0	55	5	72.8	24.5	52.0	17.5
	WPB700x300x204.48	II	36	5	12	75	75	90	14	10	55	0	55	5	72.8	24.5	52.0	17.5
	WPB700x300x149.89	II	36	5	12	75	75	90	14	10	45	0	55	5	72.8	24.5	52.0	17.5
	WPB600x300x177.78	III	36	5	12	75	60	90	14	10	55	65	50	5	66.2	24.5	47.3	17.5
	WPB600x300x128.79	III	36	5	12	75	60	90	14	10	45	75	50	5	66.2	24.5	47.3	17.5
	MB600	III	36	5	12	75	75	90	14	10	45	45	55	5	72.8	24.5	52.0	17.5
	MB500	III	30	5	12	60	60	75	12	10	45	135	45	3	59.5	14.7	42.5	10.5

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TABLE FOR CONNECTION SCHEDULE (CONT.)

Secondary Beam (B2)	Main Beam (B1)	Connection Type	Bolt Dia (Db) (mm)	No. of Bolt Rows	Gap (Gh) (mm)	Edge Dist. (E1) (mm)	End dist. (E2) (mm)	Bolt Spacing (P1) (mm)	Thk. of Fin Plate (T1) (mm)	Weld Size (w) (mm)	Top Notch (A) (mm)	Bottom Notch (B) (mm)	Shear Capacity (%) *	Axial Capacity (%) #	STEEL GRADE E350 Shear Capacity (MT)	STEEL GRADE E350 Axial Capacity (MT)	STEEL GRADE E250 Shear Capacity (MT)	STEEL GRADE E250 Axial Capacity (MT)
MB500	WPB900x300x291.46	II	30	5	12	60	60	75	12	10	65	0	57	5	53.4	17.5	38.1	12.5
	WPB800x300x262.34	II	30	5	12	60	60	75	12	10	65	0	57	5	53.4	17.5	38.1	12.5
	WPB700x300x240.51	II	30	5	12	60	60	75	12	10	60	0	57	5	53.4	17.5	38.1	12.5
	WPB700x300x204.48	II	30	5	12	60	60	75	12	10	55	0	60	5	56.2	17.5	40.1	12.5
	WPB700x300x149.89	II	30	5	12	60	60	75	12	10	45	0	60	5	56.2	17.5	40.1	12.5
	WPB600x300x177.78	II	30	5	12	60	60	75	12	10	55	0	60	5	56.2	17.5	40.1	12.5
	WPB600x300x128.79	II	30	5	12	60	60	75	12	10	45	0	60	5	56.2	17.5	40.1	12.5
	MB600	II	30	5	12	60	60	75	12	10	45	0	60	5	56.2	17.5	40.1	12.5
	MB500	III	30	5	12	60	60	75	12	10	35	35	55	5	51.5	17.5	36.8	12.5
	MB450	III	24	5	10	50	50	60	10	8	35	85	42	2	39.4	7.0	28.1	5.0
	MB400	III	24	5	10	50	45	60	10	8	35	130	42	2	39.4	7.0	28.1	5.0
	MC400	III	24	5	10	50	45	60	10	8	35	135	36	2	33.8	7.0	24.1	5.0
MB450	WPB900x300x291.46	I	30	4	12	60	60	75	12	10	65	0	58	3	45.1	8.8	32.2	6.3
	WPB800x300x262.34	II	30	4	12	60	60	75	12	10	65	0	58	3	45.1	8.8	32.2	6.3
	WPB700x300x240.51	II	30	4	12	60	60	75	12	10	60	0	58	3	45.1	8.8	32.2	6.3
	WPB700x300x204.48	II	30	4	12	60	60	75	12	10	55	0	58	3	45.1	8.8	32.2	6.3
	WPB700x300x149.89	II	30	4	12	60	60	75	12	10	45	0	58	3	45.1	8.8	32.2	6.3
	WPB600x300x177.78	II	30	4	12	60	60	75	12	10	55	0	58	3	45.1	8.8	32.2	6.3
	WPB600x300x128.79	II	30	4	12	60	60	75	12	10	45	0	58	3	45.1	8.8	32.2	6.3
	MB600	II	30	4	12	60	60	75	12	10	45	0	58	3	45.0	8.8	32.2	6.3
	MB500	II	30	4	12	60	60	75	12	10	35	0	58	3	45.0	8.8	32.4	6.3
	MB450	III	24	5	10	50	50	60	10	8	35	35	52	3	40.4	8.8	28.9	6.3
	MB400	III	24	5	10	50	45	60	10	8	35	80	47	3	36.5	8.8	26.1	6.3
	MC400	III	24	5	10	50	45	60	10	8	35	85	47	3	36.5	8.8	26.1	6.3
MB400	WPB900x300x291.46	I	24	5	10	50	40	60	10	8	65	0	54	3	35.3	7.5	25.2	5.3
	WPB800x300x262.34	I	24	5	10	50	40	60	10	8	65	0	54	3	35.3	7.5	25.2	5.3

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TABLE FOR CONNECTION SCHEDULE (CONT.)

Secondary Beam (B2)	Main Beam (B1)	Connection Type	Bolt Dia (Db) (mm)	No. of Bolt Rows	Gap (Gb) (mm)	Edge Dist. (E1) (mm)	End dist. (E2) (mm)	Bolt Spacing (P1) (mm)	Thk. of Fin Plate (T) (mm)	Weld Size (w) (mm)	Top Notch (A) (mm)	Bottom Notch (B) (mm)	Shear Capacity (%) *	Axial Capacity (%) #	STEEL GRADE E350 Shear Capacity (MT)	STEEL GRADE E350 Axial Capcity (MT)	STEEL GRADE E250 Shear Capacity (MT)	STEEL GRADE E250 Axial Capcity (MT)
MB400	WPB700x300x240.51	II	24	5	10	50	50	60	10	8	60	0	55	3	36.0	7.5	25.7	5.3
	WPB700x300x204.48	II	24	5	10	50	50	60	10	8	55	0	55	3	36.0	7.5	25.7	5.3
	WPB700x300x149.89	II	24	5	10	50	50	60	10	8	45	0	55	3	36.0	7.5	25.7	5.3
	WPB600x300x177.78	II	24	5	10	50	50	60	10	8	55	0	55	3	36.0	7.5	25.7	5.3
	WPB600x300x128.79	II	24	5	10	50	50	60	10	8	45	0	57	3	37.3	7.5	26.6	5.3
	WPB360x300x125.81	III	24	4	10	40	40	60	8	8	45	95	35	1	22.9	2.5	16.3	1.8
	MB600	II	24	5	10	50	50	60	10	8	45	0	57	4	37.3	10.0	26.6	7.1
	MB500	II	24	5	10	50	50	60	10	8	35	0	57	4	37.3	10.0	26.6	7.1
	MB450	II	24	5	10	50	50	60	10	8	35	0	57	4	37.3	10.0	26.6	7.1
	MB400	III	24	5	10	50	50	55	10	8	30	30	54	5	35.3	12.5	25.2	8.9
	NC400	III	24	5	10	50	50	55	10	8	30	35	54	3	35.3	7.5	25.2	5.3
	MB300	III	20	4	10	40	40	55	8	6	30	130	33	1	21.6	2.5	15.4	1.8
	MC300	III	20	4	10	40	40	55	8	6	30	130	33	1	21.6	2.5	15.4	1.8
MB300	WPB900x300x291.46	I	24	3	10	50	45	60	10	10	65	0	45	1	19.1	1.9	13.6	1.3
	WPB800x300x262.34	I	24	3	10	50	45	60	10	10	65	0	45	1	19.1	1.9	13.6	1.3
	WPB700x300x240.51	I	24	3	10	50	50	60	10	8	60	0	45	1	19.1	1.9	13.6	1.3
	WPB700x300x204.48	I	24	3	10	50	50	60	10	8	55	0	45	1	19.1	1.9	13.6	1.3
	WPB700x300x149.89	I	24	3	10	50	50	60	10	8	45	0	45	1	19.1	1.9	13.6	1.3
	WPB600x300x177.78	II	24	3	10	50	50	60	10	8	55	0	45	1	19.1	1.9	13.6	1.3
	WPB600x300x128.79	II	24	3	10	50	50	60	10	8	45	0	45	2	19.1	3.7	13.6	2.7
	WPB360x300x125.81	II	24	3	10	50	50	60	10	8	45	0	45	1	19.1	1.9	13.6	1.3
	WPB300x300x100.85	III	24	3	10	50	40	60	10	8	45	50	29	1	12.3	1.9	8.8	1.3
	MB600	I	24	3	10	50	50	60	10	8	45	0	45	2	19.1	3.7	13.6	2.7
	MB500	II	24	3	10	50	50	60	10	8	35	0	45	2	19.1	3.7	13.6	2.7
	MB450	II	24	3	10	50	50	60	10	8	35	0	45	2	19.1	3.7	13.6	2.7
	MB400	II	24	3	10	50	50	60	10	8	30	0	45	2	19.1	3.7	13.6	2.7

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TABLE FOR CONNECTION SCHEDULE (CONT.)

Secondary Beam (B2)	Main Beam (B1)	Connection Type	Bolt Dia (Db) (mm)	No. of Bolt Rows	Gap (Gh) (mm)	Edge Dist. (E1) (mm)	End dist (E2) (mm)	Bolt Spacing (P1) (mm)	Thk. of Fin Plate (Tf) (mm)	Weld Size (w) (mm)	Top Notch (A) (mm)	Bottom Notch (B) (mm)	Shear Capacity (%) *	Axial Capacity (%) #	STEEL GRADE E350 Shear Capacity (MT)	STEEL GRADE E350 Axial Capacity (MT)	STEEL GRADE E250 Shear Capacity (MT)	STEEL GRADE E250 Axial Capacity (MT)
MB300	MC400	II	24	3	10	50	50	60	10	8	30	0	34	1	14.4	1.9	10.3	1.3
	MB300	III	20	4	10	40	40	50	8	6	30	30	45	1	19.1	1.9	13.6	1.3
	MC300	III	20	4	10	40	40	50	8	6	30	30	34	1	14.4	1.9	10.3	1.3
	MB250	III	20	3	10	40	40	50	8	6	30	80	33	1	14.0	1.9	10.0	1.3
	MC250	III	20	3	10	40	40	50	8	6	30	80	24	1	10.2	1.9	7.3	1.3
MB250	WPB900x300x291.46	I	20	3	10	40	35	50	8	8	65	0	42	1	13.3	1.5	9.5	1.1
	WPB800x300x262.34	I	20	3	10	40	35	50	8	8	65	0	42	1	13.3	1.5	9.5	1.1
	WPB700x300x240.51	I	20	3	10	40	40	50	8	8	60	0	42	1	13.3	1.5	9.5	1.1
	WPB700x300x204.48	I	20	3	10	40	40	50	8	8	55	0	42	1	13.3	1.5	9.5	1.1
	WPB700x300x149.89	I	20	3	10	40	40	50	8	8	45	0	42	1	13.3	1.5	9.5	1.1
	WPB600x300x177.78	I	20	3	10	40	40	50	8	8	55	0	42	1	13.3	1.5	9.5	1.1
	WPB600x300x128.79	I	20	3	10	40	40	50	8	8	45	0	42	1	13.3	1.5	9.5	1.1
	WPB360x300x125.81	II	20	3	10	40	40	50	8	8	45	0	42	1	13.3	1.5	9.5	1.1
	WPB300x300x100.85	II	20	3	10	40	40	50	8	8	45	0	42	1	13.3	1.5	9.5	1.1
	WPB250x250x73.15	II	20	3	10	40	35	50	8	8	40	0	42	1	13.3	1.5	9.5	1.1
	MB600	I	20	3	10	40	40	50	8	8	45	0	42	1	13.3	1.5	9.5	1.1
	MB500	I	20	3	10	40	40	50	8	8	35	0	42	1	13.3	1.5	9.5	1.1
	MB450	II	20	3	10	40	40	50	8	8	35	0	42	1	13.3	1.5	9.5	1.1
	MB400	II	20	3	10	40	40	50	8	8	30	0	42	1	13.3	1.5	9.5	1.1
	MC400	II	20	3	10	40	40	50	8	8	30	0	34	1	10.8	1.5	7.7	1.1
	MB300	II	20	3	10	40	40	50	8	6	30	0	42	1	13.3	1.5	9.5	1.1
	MC300	II	20	3	10	40	40	50	8	6	30	0	33	1	10.5	1.5	7.5	1.1
	MB250	III	20	3	10	40	40	50	8	6	30	30	42	1	13.3	1.5	9.5	1.1
	MC250	III	20	3	10	40	40	50	8	6	30	30	33	1	10.5	1.5	7.5	1.1
	MB200	III	20	2	10	40	40	70	8	5	25	75	28	1	8.9	1.5	6.3	1.1
	MC200	III	20	2	10	40	40	70	8	5	25	75	25	1	7.9	1.5	5.6	1.1

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TABLE FOR CONNECTION SCHEDULE (CONT.)

Secondary Beam (B2)	Main Beam (B1)	Connection Type	Bolt Dia (Db) (mm)	No. of Bolt Rows	Gap (Gh) (mm)	Edge Dist. (E1) (mm)	End dist. (E2) (mm)	Bolt Spacing (P1) (mm)	Thk. of Fin Plate (Tf) (mm)	Weld Size (w) (mm)	Top Notch (A) (mm)	Bottom Notch (B) (mm)	Shear Capacity (%) *	Axial Capacity (%) #	STEEL GRADE E350 Shear Capacity (MT)	STEEL GRADE E350 Axial Capcity (MT)	STEEL GRADE E250 Shear Capacity (MT)	STEEL GRADE E250 Axial Capcity (MT)
MB200	WPB900x300x291.46	I	20	2	10	40	40	55	8	8	65	0	29	1	6.1	1.0	4.4	0.7
	WPB800x300x262.34	I	20	2	10	40	40	55	8	8	65	0	29	1	6.1	1.0	4.4	0.7
	WPB700x300x240.51	I	20	2	10	40	40	60	8	8	60	0	31	1	6.5	1.0	4.7	0.7
	WPB700x300x204.48	I	20	2	10	40	40	60	8	8	55	0	34	1	7.1	1.0	5.1	0.7
	WPB700x300x149.89	I	20	2	10	40	40	60	8	8	45	0	34	1	7.1	1.0	5.1	0.7
	WPB600x300x177.78	I	20	2	10	40	40	60	8	8	55	0	34	1	7.1	1.0	5.1	0.7
	WPB600x300x128.79	I	20	2	10	40	40	60	8	8	45	0	34	1	7.1	1.0	5.1	0.7
	WPB360x300x125.81	II	20	2	10	40	40	60	8	8	45	0	37	1	7.7	1.0	5.6	0.7
	WPB300x300x100.85	II	20	2	10	40	40	60	8	8	45	0	39	1	8.2	1.0	5.9	0.7
	WPB250x250x73.15	II	20	2	10	40	40	60	8	8	40	0	39	1	8.2	1.0	5.9	0.7
	WPB200x200x42.26	III	20	2	10	40	40	50	8	6	30	40	25	1	5.2	1.0	3.8	0.7
	MB600	I	20	2	10	40	40	60	8	8	45	0	34	1	7.1	1.0	5.1	0.7
	MB500	I	20	2	10	40	40	60	8	8	35	0	34	1	7.1	1.0	5.1	0.7
	MB450	I	20	2	10	40	40	60	8	8	35	0	34	1	7.1	1.0	5.1	0.7
	MB400	I	20	2	10	40	40	60	8	8	30	0	34	1	7.1	1.0	5.1	0.7
	MC400	I	20	2	10	40	40	60	8	8	30	0	34	1	7.1	1.0	5.1	0.7
	MB300	II	20	2	10	40	40	60	8	6	30	0	34	1	7.1	1.0	5.1	0.7
	MC300	II	20	2	10	40	40	60	8	6	30	0	34	1	7.1	1.0	5.1	0.7
	MB250	II	20	2	10	40	40	60	8	6	30	0	34	1	7.1	1.0	5.1	0.7
	MC250	II	20	2	10	40	40	60	8	6	30	0	34	1	7.1	1.0	5.1	0.7
	MB200	III	20	2	10	40	40	65	8	5	25	25	34	1	7.1	1.0	5.1	0.7
	MC200	III	20	2	10	40	40	65	8	5	25	25	34	1	7.1	1.0	5.1	0.7
MC400	WPB900x300x291.46	I	24	5	10	50	45	60	10	10	65	0	42	4	27.1	8.1	19.4	5.8
	WPB800x300x262.34	I	24	5	10	50	45	60	10	10	65	0	42	4	27.1	8.1	19.4	5.8

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TABLE FOR CONNECTION SCHEDULE (CONT.)

Secondary Beam (B2)	Main Beam (B1)	Connection Type	Bolt Dia (Db) (mm)	No. of Bolt Rows	Gap (Gh) (mm)	Edge Dist. (E1) (mm)	End dist. (E2) (mm)	Bolt Spacing (P1) (mm)	Thk. of Fin Plate (Tf) (mm)	Weld Size (w) (mm)	Top Notch (A) (mm)	Bottom Notch (B) (mm)	Shear Capacity (%) *	Axial Capacity (%) #	STEEL GRADE E350 Shear Capacity (MT)	STEEL GRADE E350 Axial Capcity (MT)	STEEL GRADE E250 Axial Capcity (MT)
MC400	WPB700x300x240.51	II	24	5	10	50	45	60	10	8	60	0	42	4	27.2	8.1	5.8
	WPB700x300x204.48	II	24	5	10	50	45	60	10	8	55	0	42	4	27.2	8.1	5.8
	WPB700x300x149.89	II	24	5	10	50	45	60	10	8	45	0	42	4	27.2	8.1	5.8
	WPB600x300x177.78	II	24	5	10	50	45	60	10	8	55	0	42	4	27.2	8.1	5.8
	WPB600x300x128.79	II	24	5	10	50	45	60	10	8	45	0	42	4	27.2	8.1	5.8
	WPB360x300x125.81	III	24	4	10	50	40	60	10	8	45	95	36	4	23.3	8.1	5.8
	MB600	II	24	5	10	50	50	60	10	8	45	0	44	4	28.5	8.1	5.8
	MB500	II	24	5	10	50	50	60	10	8	35	0	44	4	28.5	8.1	5.8
	MB450	II	24	5	10	50	50	60	10	8	35	0	44	4	28.5	8.1	5.8
	MB400	III	24	5	10	50	50	60	10	8	30	30	42	3	27.2	6.1	4.3
	MC400	III	24	5	10	50	50	60	10	8	30	30	42	3	27.2	6.1	4.3
	MB300	III	20	4	10	40	40	53	8	6	30	130	25	1	16.2	2.0	1.4
	MC300	III	20	4	10	40	40	53	8	6	30	130	25	1	16.2	2.0	1.4
MC300	WPB900x300x291.46	I	24	3	10	50	45	60	10	8	65	0	44	1.5	18.9	2.2	1.6
	WPB800x300x252.34	I	24	3	10	50	45	60	10	8	65	0	44	1.5	18.9	2.2	1.6
	WPB700x300x240.51	I	24	3	10	50	50	60	10	8	60	0	44	1.5	18.9	2.2	1.6
	WPB700x300x204.48	I	24	3	10	50	50	60	10	8	55	0	44	1.5	18.9	2.2	1.6
	WPB700x300x149.89	I	24	3	10	50	50	60	10	8	45	0	44	1.5	18.9	2.2	1.6
	WPB600x300x177.78	II	24	3	10	50	50	60	10	8	55	0	44	1.5	18.9	2.2	1.6
	WPB600x300x128.79	II	24	3	10	50	50	60	10	8	45	0	44	1.5	18.9	2.2	1.6
	WPB360x300x125.81	II	24	3	10	50	50	60	10	8	45	0	44	1.5	18.9	2.2	1.6
	WPB300x300x100.85	III	24	3	10	50	40	60	10	8	45	50	28	1	12.0	1.5	1.1
	MB600	I	24	3	10	50	50	60	10	8	45	0	44	1.5	19.0	2.2	1.6
	MB500	II	24	3	10	50	50	60	10	8	35	0	44	1.5	19.0	2.2	1.6
	MB450	II	24	3	10	50	50	60	10	8	35	0	44	1.5	19.0	2.2	1.6
	MB400	II	24	3	10	50	50	60	10	8	30	0	44	1.5	19.0	2.2	1.6

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TABLE FOR CONNECTION SCHEDULE (CONT.)

Secondary Beam (B2)	Main Beam (B1)	Connection Type	Bolt Dia (Db) (mm)	No. of Bolt Rows	Grip (Gli) (mm)	Edge Dist. (E1) (mm)	End dist. (E2) (mm)	Bolt Spacing (P1) (mm)	Thk. of Fin Plate (Tf) (mm)	Weld Size (w) (mm)	Top Notch (A) (mm)	Bottom Notch (B) (mm)	Shear Capacity (%) *	Axial Capacity (%) #	STEEL GRADE E250 Shear Capacity (MT)	STEEL GRADE E250 Axial Capacity (MT)	STEEL GRADE E250 Shear Capacity (MT)	STEEL GRADE E250 Axial Capacity (MT)
MC300	MC400	II	24	3	10	50	50	60	10	8	30	0	37	1.5	16.0	2.2	11.3	1.6
	MB300	III	20	4	10	40	40	50	8	6	30	30	37	1.5	16.0	2.2	11.3	1.6
	MC300	III	20	4	10	40	40	50	8	6	30	30	37	1.5	16.0	2.2	11.3	1.6
	MB250	III	20	3	10	40	40	50	8	6	30	80	20	0.5	8.6	0.7	6.1	0.5
	MC250	III	20	3	10	40	40	50	8	6	30	80	20	0.5	8.6	0.7	6.1	0.5
MC250	WPB900x300x291.46	I	20	3	10	40	35	50	8	8	65	0	32	1	10.6	1.2	7.5	0.9
	WPB800x300x262.34	I	20	3	10	40	35	50	8	8	65	0	32	1	10.6	1.2	7.5	0.9
	WPB700x300x240.51	I	20	3	10	40	40	50	8	8	60	0	32	1	10.6	1.2	7.5	0.9
	WPB700x300x204.48	I	20	3	10	40	40	50	8	8	55	0	32	1	10.6	1.2	7.5	0.9
	WPB700x300x149.89	I	20	3	10	40	40	50	8	8	45	0	32	1	10.6	1.2	7.5	0.9
	WPB600x300x177.78	I	20	3	10	40	40	50	8	8	55	0	32	1	10.6	1.2	7.5	0.9
	WPB600x300x128.79	I	20	3	10	40	40	50	8	8	45	0	32	1	10.6	1.2	7.5	0.9
	WPB360x300x125.81	II	20	3	10	40	40	50	8	8	45	0	32	1	10.6	1.2	7.5	0.9
	WPB300x300x100.85	II	20	3	10	40	40	50	8	8	45	0	32	1	10.6	1.2	7.5	0.9
	WPB250x250x73.15	II	20	3	10	40	35	50	8	8	40	0	32	1	10.6	1.2	7.5	0.9
	MB600	I	20	3	10	40	40	50	8	8	45	0	32	1	10.6	1.2	7.6	0.9
	MB500	I	20	3	10	40	40	50	8	8	35	0	32	1	10.6	1.2	7.6	0.9
	MB450	II	20	3	10	40	40	50	8	8	35	0	32	1	10.6	1.2	7.6	0.9
	MB400	II	20	3	10	40	40	50	8	8	30	0	32	1	10.6	1.2	7.6	0.9
	MC400	II	20	3	10	40	40	50	8	8	30	0	32	1	10.6	1.2	7.6	0.9
	MB300	II	20	3	10	40	40	50	8	6	30	0	32	1	10.6	1.2	7.6	0.9
	MC300	II	20	3	10	40	40	50	8	6	30	0	32	1	10.6	1.2	7.6	0.9
	MB250	III	20	3	10	40	40	50	8	6	30	30	32	1	10.6	1.2	7.6	0.9
	MC250	III	20	3	10	40	40	50	8	6	30	30	32	1	10.6	1.2	7.5	0.9
	MB200	III	20	2	10	40	40	70	8	5	30	75	20	0.5	6.3	0.6	4.5	0.4
	MC200	III	20	2	10	40	40	70	9	5	30	75	20	0.5	6.3	0.6	4.5	0.4

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TABLE FOR CONNECTION SCHEDULE (CONT.)

Secondary Beam (B2)	Main Beam (B1)	Connection Type	Bolt Dia (Db) (mm)	No. of Bolt Rows	Gap (Gh) (mm)	Edge Dist. (E1) (mm)	End dist. (E2) (mm)	Bolt Spacing (P1) (mm)	Thk. of Fin Plate (Tf) (mm)	Weld Size (w) (mm)	Top Notch (A) (mm)	Bottom Notch (B) (mm)	Shear Capacity (%) *	Axial Capacity (%) #	STEEL GRADE E350 Shear Capacity (MT)	STEEL GRADE E350 Axial Capacity (MT)	STEEL GRADE E250 Shear Capacity (MT)	STEEL GRADE E250 Axial Capacity (MT)
MC200	WPB600x300x291.46	I	20	2	10	40	30	60	8	6	65	0	28	1	6.4	0.9	4.6	0.6
	WPB600x300x262.34	I	20	2	10	40	30	60	8	6	65	0	28	1	6.4	0.9	4.6	0.6
	WPB700x300x240.51	I	20	2	10	40	35	60	8	6	60	0	30	1	6.8	0.9	4.9	0.6
	WPB700x300x204.48	I	20	2	10	40	40	60	8	6	55	0	30	1	6.8	0.9	4.9	0.6
	WPB700x300x149.89	I	20	2	10	40	40	60	8	6	45	0	30	1	6.8	0.9	4.9	0.6
	WPB600x300x177.78	I	20	2	10	40	40	60	8	6	55	0	30	1	6.8	0.9	4.9	0.6
	WPB600x300x128.79	I	20	2	10	40	40	60	8	6	45	0	34	1	7.8	0.9	5.5	0.6
	WPB360x300x125.81	II	20	2	10	40	40	60	8	6	45	0	34	1	7.8	0.9	5.5	0.6
	WPB300x300x100.85	II	20	2	10	40	40	60	8	6	45	0	34	1	7.8	0.9	5.5	0.6
	WPB250x250x73.15	II	20	2	10	40	40	60	8	6	40	0	34	1	7.8	0.9	5.5	0.6
	WPB200x200x42.26	III	20	2	10	40	35	60	8	6	30	40	25	1	5.7	0.9	4.1	0.6
	MB600	I	20	2	10	40	40	60	8	6	45	0	34	1	7.8	0.9	5.5	0.6
	MB500	I	20	2	10	40	40	60	8	6	35	0	34	1	7.8	0.9	5.5	0.6
	MB450	I	20	2	10	40	40	60	8	6	35	0	34	1	7.8	0.9	5.5	0.6
	MB400	I	20	2	10	40	40	60	8	6	30	0	34	1	7.8	0.9	5.5	0.6
	MB300	II	20	2	10	40	40	60	8	6	30	0	34	1	7.8	0.9	5.5	0.6
	MB250	II	20	2	10	40	40	60	8	6	25	0	34	1	7.8	0.9	5.5	0.6
	MC400	II	20	2	10	40	40	60	8	6	30	0	34	1	7.8	0.9	5.5	0.6
	MC300	II	20	2	10	40	40	60	8	6	30	0	34	1	7.8	0.9	5.5	0.6
	MC250	II	20	2	10	40	40	60	8	6	30	0	34	1	7.8	0.9	5.5	0.6
	MB200	III	20	2	10	40	40	65	8	5	25	25	34	1	7.8	0.9	5.5	0.6
	MC200	III	20	2	10	40	40	65	8	5	25	25	34	1	7.8	0.9	5.5	0.6
MC150	WPB600x300x128.79	I	16	2	10	30	22	50	8	6	40	0	24	1	3.8	0.7	2.7	0.5
	WPB300x300x100.85	II	16	2	10	30	25	50	8	6	43	0	24	1	3.8	0.7	2.7	0.5
	WPB250x250x73.15	II	16	2	10	30	25	50	8	6	40	0	30	1	4.7	0.7	3.4	0.5
	WPB200x200x42.26	II	16	2	10	30	25	50	8	6	30	0	32	1	5.0	0.7	3.6	0.5

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TABLE FOR CONNECTION SCHEDULE (CONT.)

Secondary Beam (B2)	Main Beam (B1)	Connection Type	Bolt Dia (Db) (mm)	No. of Bolt Rows	Gap (Gb) (mm)	Edge Dist. (E1) (mm)	End dist. (E2) (mm)	Bolt Spacing (P1) (mm)	Thk. of Fin Plate (Tf) (mm)	Weld Size (w) (mm)	Top Notch (A) (mm)	Bottom Notch (B) (mm)	Shear Capacity (%) *	Axial Capacity (%) #	STEEL GRADE E350 Shear Capacity (MT)	STEEL GRADE E350 Axial Capacity (MT)	STEEL GRADE E250 Shear Capacity (MT)	STEEL GRADE E250 Axial Capacity (MT)
MC150	MB600	I	16	2	10	30	22	50	8	6	40	0	32	1	5.0	0.7	3.6	0.5
	MB500	I	16	2	10	30	25	50	8	6	35	0	32	1	5.0	0.7	3.8	0.5
	MB450	I	16	2	10	30	25	50	8	6	30	0	32	1	5.0	0.7	3.8	0.5
	MB400	I	16	2	10	30	25	50	8	6	30	0	32	1	5.0	0.7	3.8	0.5
	MC400	I	16	2	10	30	25	50	8	6	30	0	32	1	5.0	0.7	3.8	0.5
	MB300	I	16	2	10	30	25	50	8	6	30	0	32	1	5.0	0.7	3.8	0.5
	MC300	I	16	2	10	30	25	50	8	6	30	0	32	1	5.0	0.7	3.8	0.5
	MB250	II	16	2	10	30	25	50	8	6	25	0	32	1	5.0	0.7	3.8	0.5
	MC250	II	16	2	10	30	25	50	8	6	30	0	32	1	5.0	0.7	3.8	0.5
	MB200	II	16	2	10	30	25	50	8	5	25	0	32	1	5.0	0.7	3.6	0.5
	MC200	II	16	2	10	30	25	50	8	5	25	0	32	1	5.0	0.7	3.6	0.5
	MC150	III	16	2	10	30	25	50	8	5	20	20	32	1	5.0	0.7	3.6	0.5
MC100	MC400	I	12	2	10	20	16	30	6	5	30	0	25	1	2.3	0.4	1.7	0.3
	MC300	I	12	2	10	20	16	30	6	5	30	0	25	1	2.3	0.4	1.7	0.3
	MC250	I	12	2	10	20	16	30	6	5	30	0	25	1	2.3	0.4	1.7	0.3
	MC200	I	12	2	10	20	18	30	6	5	25	0	25	1	2.3	0.4	1.7	0.3
	MC150	II	12	2	10	20	18	30	6	5	20	0	25	1	2.3	0.4	1.7	0.3

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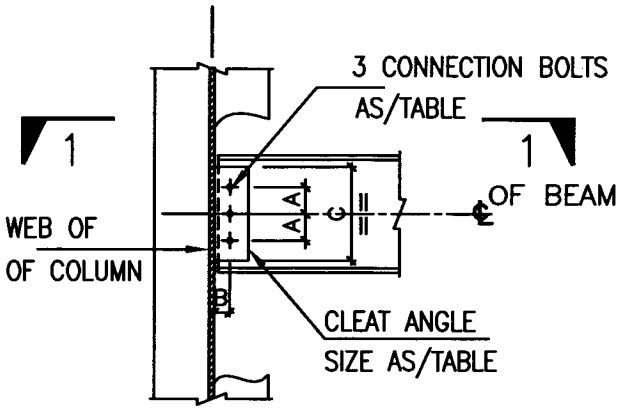

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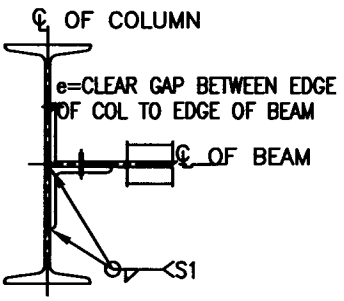

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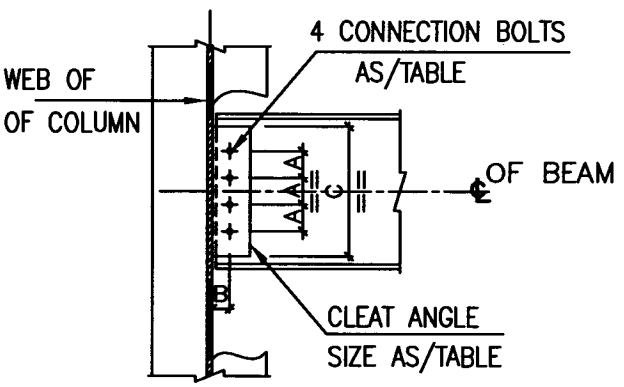

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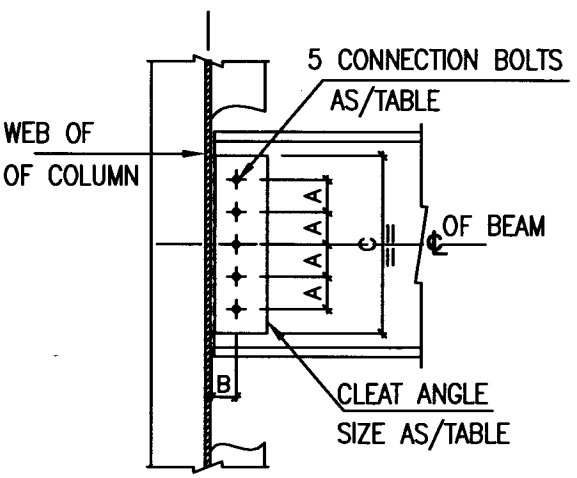

TYPE–III

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	
0	24.12.20	ISSUED AS STANDARD	GR	SS/PM	AS	SM

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SHEAR CONNECTION BETWEEN BEAM AND COLUMN

SL. NO	BEAM SIZE	TYPE	CLEAT ANGLE SIZE	NO OF BOLTS	DIA OF BOLTS	A	B	C	S1	e	% SHEAR CAPACITY OF THE CONNECTION WRT TO BEAM SHEAR CAPACITY	MINIMUM SHEAR CAPACITY (MT) OF THE CONNECTION
1	MB200	I	90x90x10	3	16	40	50	135	6	15	30	6.3
2	MB250	I	90x90x10	3	20	50	50	180	6	10	43	13.6
3	MB300	II	90x90x10	4	20	50	50	230	6	10	52	21.5
4	MB400	II	130x130x12	4	24	60	80	300	8	30	47	30.7
5	MB450	II	130x130x12	4	24	60	80	340	8	30	33	25.6
6	MB500	III	150x150x16	5	24	60	90	420	8	40	36	33.7
7	MB600	III	150x150x16	5	30	75	90	480	8	30	48	59.9

NOTES:–

1. ALL DIMENSIONS ARE IN mm.
2. THIS STANDARD IS VALID FOR STRUCTURAL STEEL OF GRADE E350 CONFIRMING TO IS:2062
3. COLUMN & BEAM SECTIONS SHALL CONFIRM TO IS:12778/IS:808
4. CONNECTION DESIGN IS AS PER CLAUSE 10.3 (BEARING TYPE BOLTS) OF IS:800–2007
5. ALL CONNECTION BOLTS SHALL BE OF PROPERTY CLASS 8.8 (AS PER TABLE) CONFORMING TO IS:3757 & IS:4000
6. HEXAGONAL NUTS SHALL CONFIRM TO IS:6623
7. WASHERS SHALL CONFORM TO IS:6649
8. ALL BOLTS, NUTS & WASHERS SHALL BE GALVANISED AS PER IS:1367, PART XIII.
9. WELDING ELECTRODE SHALL BE COMPATIBLE WITH E350 GRADE OF STEEL.
10. THIS STANDARD IS NOT APPLICABLE FOR EQUIPMENT SUPPORTING BEAMS.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
0	24.12.20	ISSUED AS STANDARD	GR	SS/PM	AS	SM

Approved by

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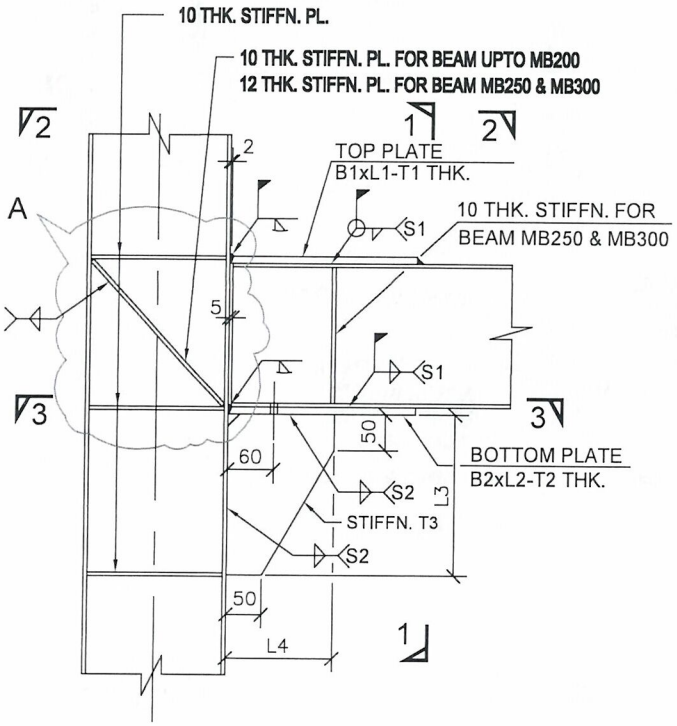
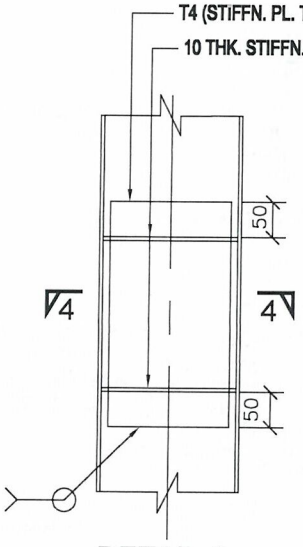
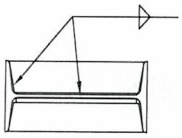


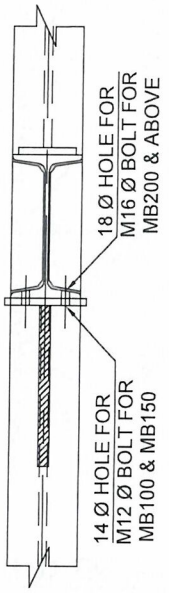
TYP. DET. OF MOMENT CONNECTION



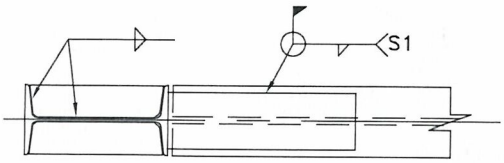
DETAIL-A
(ALTERNATE)



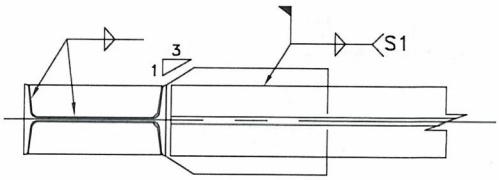
SEC. 4-4



SEC. 1-1



VIEW 2-2



VIEW 3-3

BEAM SIZE	COLUMN SIZE	TOP PLATE SIZE			BOTTOM PLATE SIZE			STIFFN. SIZE				WELD SIZE		
		L1	B1	T1	L2	B2	T2	L3	L4	T3	T4	S1	S2	
MB100	≥MB100	150	55	16	150	95	10	175	150	10	10	6	6	
MB150	≥MB150	155	60	16	155	100	10	230	150	10	8	6	6	
MB200	≥MB200	260	80	20	260	120	16	225	150	10	8	6	10	
MB250	≥MB250	290	105	25	290	145	20	265	150	10	8	8	10	
MB300	≥MB250	335	120	25	335	160	20	330	170	10	10	8	10	

NOTES:-

1. ALL CONNECTIONS ARE DESIGNED FOR FULL BENDING AND SHEAR STRENGTH OF BEAM.
2. ALTERNATE DETAIL `A' IS TO BE PROVIDED WHEN LONGITUDINAL BEAMS FOUL WITH DIAGONAL STIFFENER.
3. CONNECTION IS SHOWN FOR FIELD MOMENT CONNECTION.
4. WHEREVER FILLET WELD SIZE NOT MARKED IT SHALL BE CONSIDERED AS 6mm.

Rev. No.	Date	Purpose	Prepared by	Checked by	Approved by
4	27-02-2026	REAFFIRMED AND ISSUED AS STANDARD	AB	SP	ANUPAM GHAI (Steel Committee Convenor) / ANAND KUMAR (Steel Bureau Chairman)
3	21-09-2020	REAFFIRMED AND ISSUED AS STANDARD	JG	AVM	AS / SM
2	07-08-2014	REAFFIRMED AND ISSUED AS STANDARD	K K SHARMA	V. GOEL	P.K. MITTAL / S.S. CHANDA

Signature Not Verified
Digitally signed by ARITRA DE
Date: 2026.05.18 17:54:54 IST
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