

	PROJECT		Standby SRU & Additional Tanks		
	CLIENT		IOCL Paradip Refinery		
CONSTRUCTION STANDARD FOR STEEL WORKS	Project No. 080557C001	Document No. 080557C-000-LD-1890-001	Rev. No. B	Page 1 of 2	

CONSTRUCTION STANDARD FOR STEEL WORKS

B	10.06.2020	ISSUED FOR DESIGN	TUN	KRK	JP / KC	JMC
A	16.10.2019	ISSUED FOR DESIGN	TUN	KRK	JP / KC	JMC
REV.	DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED	AUTHORIZED

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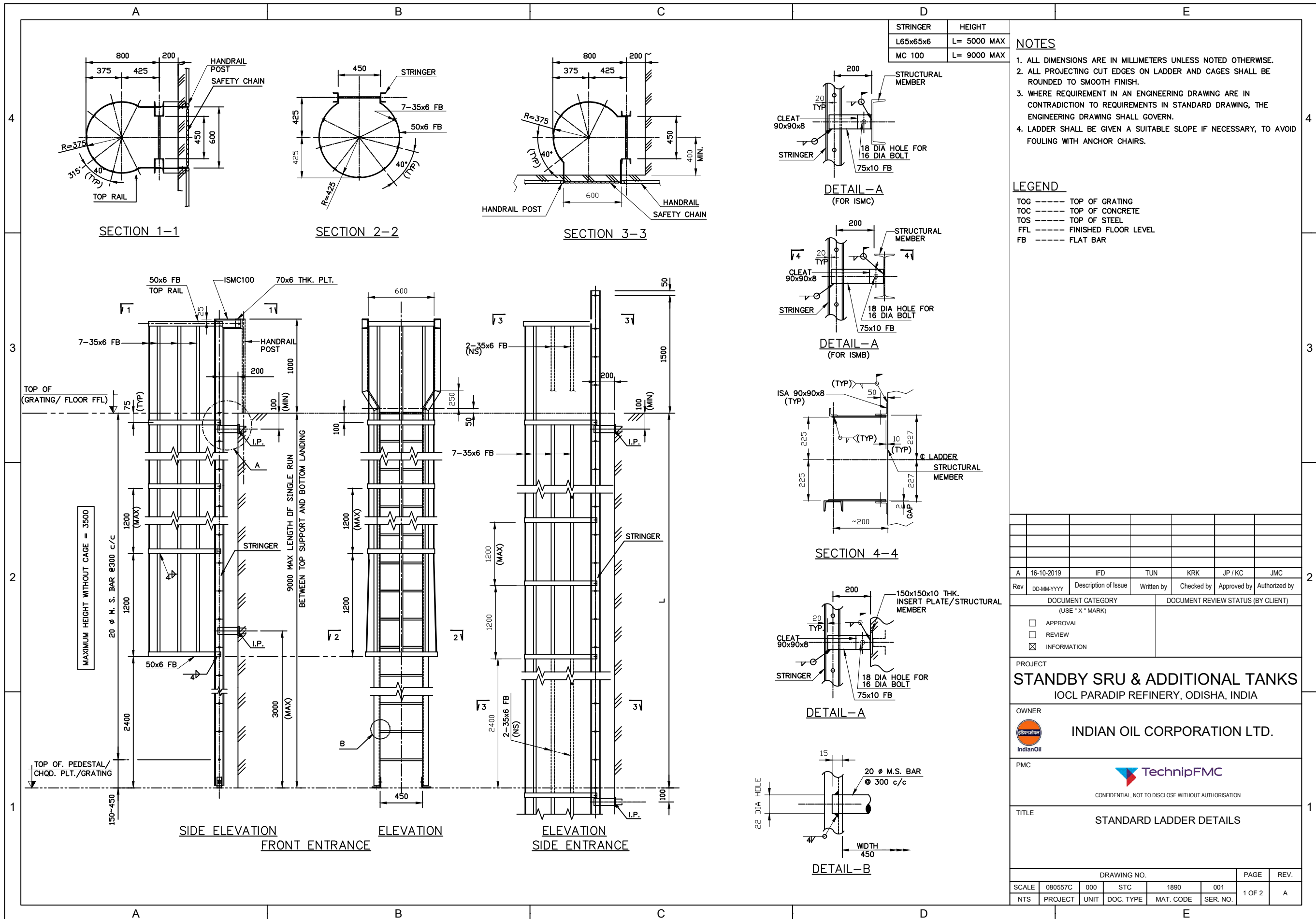
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		CLIENT	IOCL Paradip Refinery		
CONSTRUCTION STANDARD FOR STEEL WORKS	Project No. 080557C001	Document No. 080557C-000-LD-1890-001	Rev. No. B	Page 2 of 2	

SL. NO.	DRAWING NO.	DESCRIPTION	REV.	DATE	REMARKS
01	080557C -000-STC-1890-001 SHT. 1/2 TO 2/2	STANDARD LADDER DETAILS	A	16.10.2019	2 SHEETS
02	080557C -000-STC-1890-002 SHT. 1/3 TO 3/3	STANDARD HANDRAIL DETAILS	A	16.10.2019	3 SHEETS
03	080557C -000-STC-1890-003 SHT. 1/2 TO 2/2	STANDARD STAIRCASE DETAILS	A	16.10.2019	2 SHEETS
04	080557C -000-STC-1890-004 SHT. 1/3 TO 3/3	STANDARD GRATING & CHEQUERED PLATE FLOORING DETAILS	A	16.10.2019	3 SHEETS
05	080557C -000-STC-1890-005 SHT. 1/6	TYPICAL DETAIL OF MOMENT CONNECTION WITH COLUMN TO BEAM	B	10.06.2020	1 SHEET
06	080557C -000-STC-1890-005 SHT. 2/6	TYPICAL DETAIL OF MOMENT CONNECTION WITH COLUMN TO BEAM	B	10.06.2020	1 SHEET
07	080557C -000-STC-1890-005 SHT. 3/6	TYPICAL DETAIL OF MOMENT CONNECTION WITH BOX COLUMN TO BEAM	B	10.06.2020	1 SHEET
08	080557C -000-STC-1890-005 SHT. 4/6	TYPICAL DETAIL OF MOMENT CONNECTION WITH BOX COLUMN TO BEAM	B	10.06.2020	1 SHEET
09	080557C -000-STC-1890-005 SHT. 5/6	TYPICAL DETAIL OF MOMENT CONNECTION WITH BOX COLUMN TO BOX BEAM	B	10.06.2020	1 SHEET
10	080557C -000-STC-1890-005 SHT. 6/6	TYPICAL DETAIL OF MOMENT CONNECTION WITH BOX COLUMN TO BOX BEAM	B	10.06.2020	1 SHEET
11	080557C -000-STC-1890-006 SHT. 1/3	TYPICAL DETAIL OF SHEAR CONNECTION BEAM TO BEAM AND BEAM TO COLUMN	B	10.06.2020	1 SHEET
12	080557C -000-STC-1890-006 SHT. 2/3	TYPICAL DETAIL OF SHEAR CONNECTION BEAM TO BEAM	B	10.06.2020	1 SHEET
13	080557C -000-STC-1890-006 SHT. 3/3	TYPICAL DETAIL OF SHEAR CONNECTION BEAM TO BEAM AND BEAM TO COLUMN	A	16.10.2019	1 SHEET
14	080557C -000-STC-1890-007	TYPICAL SPLICE DETAIL OF COLUMNS / BEAMS	B	10.06.2020	1 SHEET
15	080557C -000-STC-1890-008 SHT. 1/2 TO 2/2	TYPICAL SPLICE DETAIL OF ANGLES	B	10.06.2020	2 SHEETS
16	080557C -000-STC-1890-009	TYPICAL SPLICE DETAIL OF CHANNELS	B	10.06.2020	1 SHEET
17	080557C -000-STC-1890-010	TYPICAL DETAIL OF WELD LENGTH FOR ANGLE MEMBERS	A	16.10.2019	1 SHEET

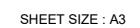
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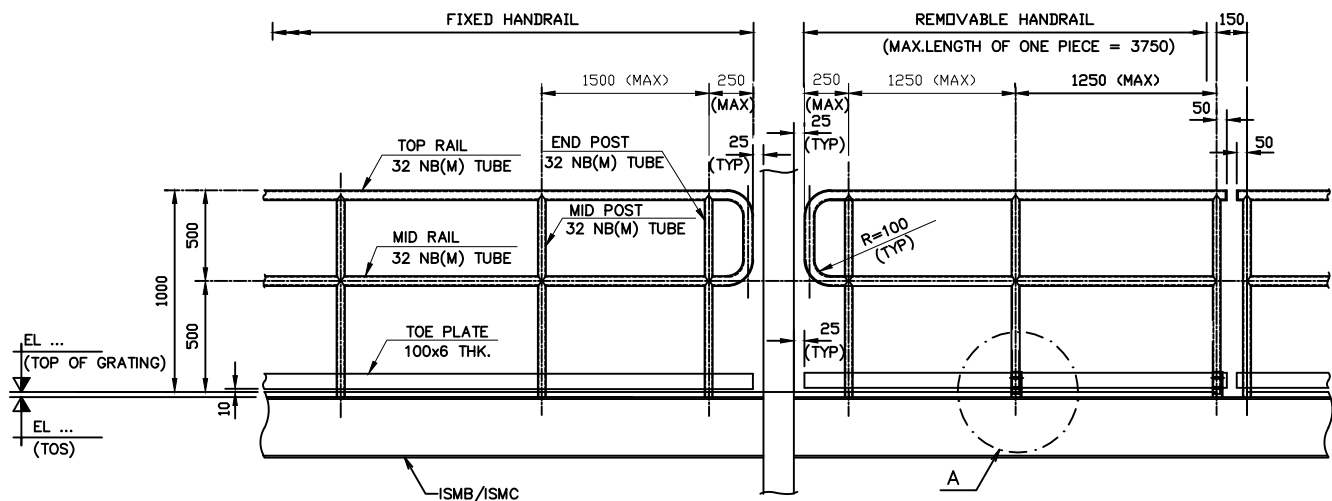
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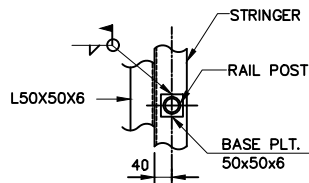


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PROJECT									
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STANDARD LADDER DETAILS									
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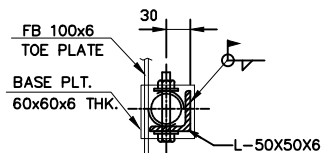




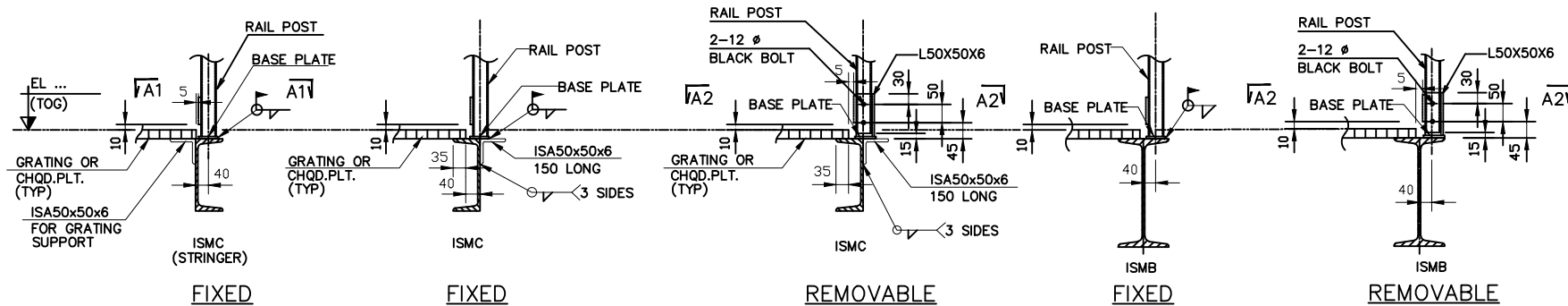
DETAIL-A



SECTION A1-A1



SECTION A2-A2



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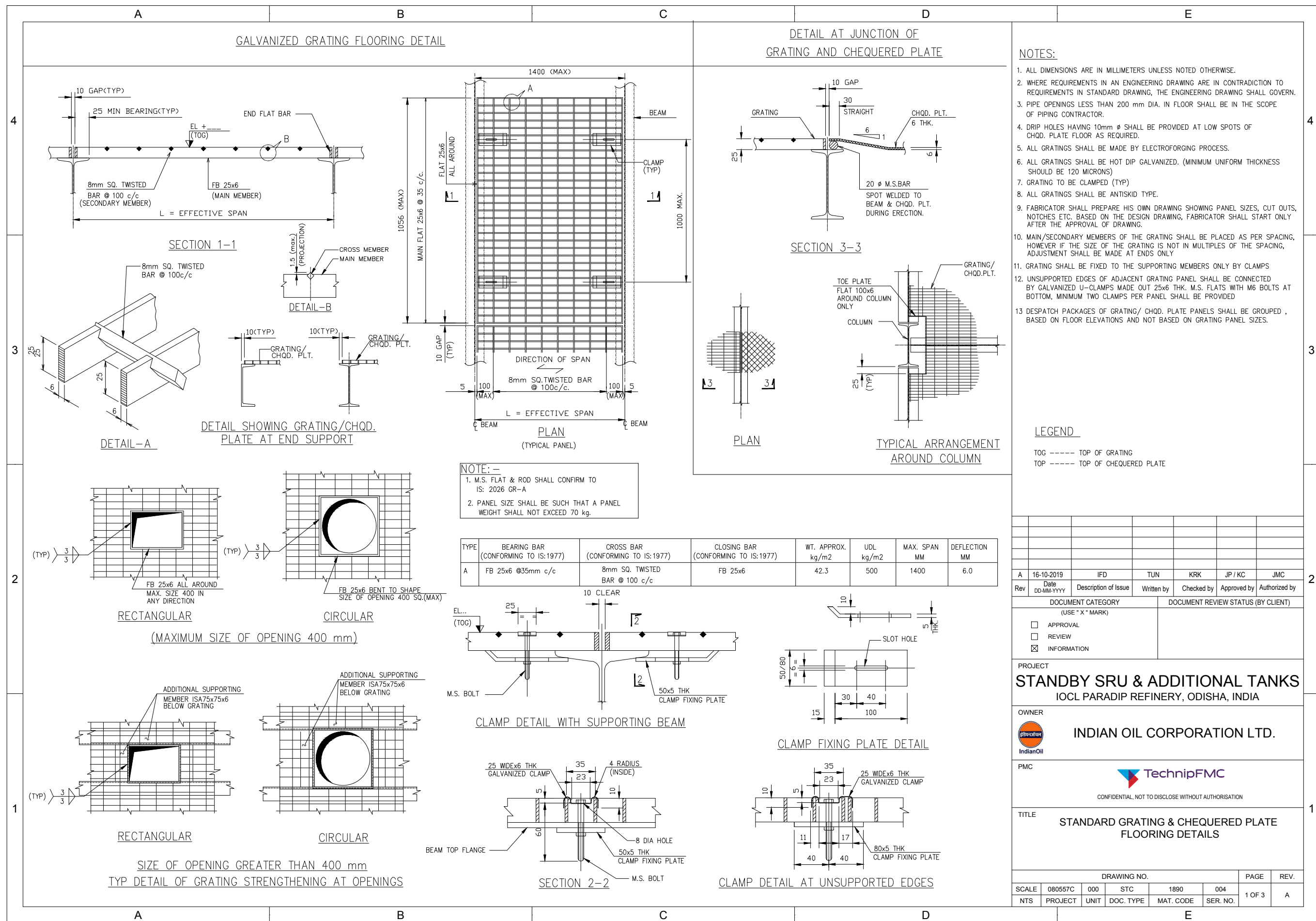
STANDARD HANDRAIL DETAILS

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4

3

2

1

A B C D E

GRATING/CHEQUERED PLATE FLOORING AT EQUIPMENT SUPPORTS

DETAIL-1

DETAIL-2

SECTION

SECTION

SECTION

SECTION

PLAN FOR HORIZONTAL VESSEL

PLAN FOR VERTICAL VESSEL

PLAN FOR PIPE DUCT (TOE PLATE NOT REQUIRED FOR D < 400)

NOTE:- PROVIDE ADDITIONAL SUPPORTING MEMBERS BELOW OPENING/ CUTOUTS AROUND GRATING PANEL WITH OPENING MORE THAN 400 DIA

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PROJECT

STANDBY SRU & ADDITIONAL TANKS

IOCL PARADIP REFINERY, ODISHA, INDIA

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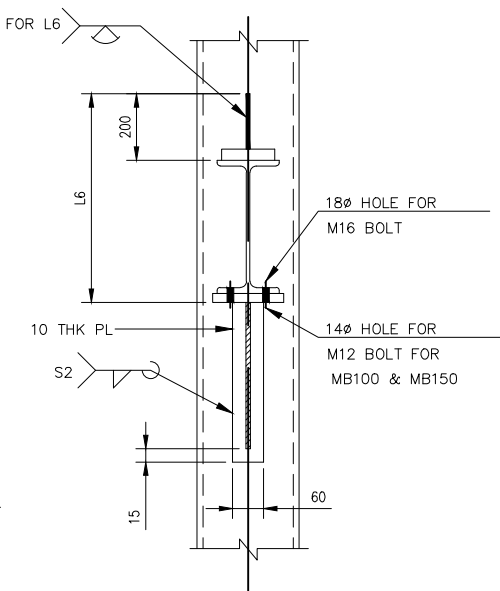
STANDARD GRATING & CHEQUERED PLATE FLOORING DETAILS

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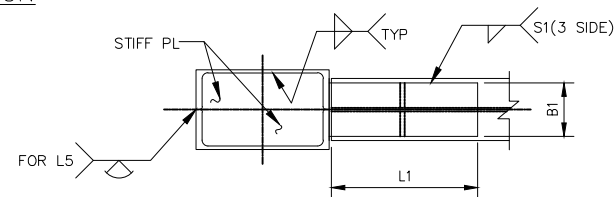
1. ALL DIMENSIONS ARE IN MILLIMETERS, UNO.
2. ALL CONNECTIONS ARE DESIGNED FOR FULL BENDING AND SHEAR STRENGTH OF BEAM.
3. WHEREVER FILLET WELD SIZE NOT MARKED, IT SHALL BE CONSIDERED AS 6MM.
4. WIDTH OF PLATE SHALL BE NOTCHED IN 1:3 SLOPE AT COLUMN CONNECTION TO MATCH THE COLUMN.
5. ALTERNATE DETAIL 'A' IS TO BE PROVIDED WHEN LONGITUDINAL BEAM JOINT WITH STIFFENER.
6. CONNECTION DESIGN SHOWN IS TENTATIVE AND MINIMUM REQUIREMENT, CONTRACTOR SHALL DESIGN THE CONNECTION FOR ACTUAL DESIGN FORCES AS PER RELEVANT CODE AND ISD / JSS.

CAD FILE NAME : 080557C-000-STC-1890-005_1_B.DWG SHEET SIZE : A3

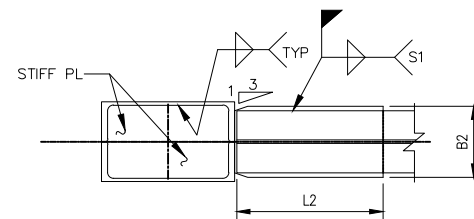
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<p>NOTES: –</p> <ol style="list-style-type: none"> ALL CONNECTIONS ARE DESIGNED FOR FULL BENDING AND SHEAR STRENGTH OF BEAM. ALL WELDS ARE 6mm THK. FILLET WELDS UNLESS SHOWN OTHERWISE WIDTH OF PLATE SHALL BE NOTCHED IN 1:3 SLOPE AT COLUMN CONNECTION TO MATCH WITH COLUMN. ALTERNATE DETAIL 'A' IS TO BE PROVIDED WHEN LONGITUDINAL BEAM FOUL WITH STIFFENER. CONNECTION DESIGN SHOWN IS TENTATIVE AND MINIMUM REQUIREMENT, CONTRACTOR SHALL DESIGN THE CONNECTION FOR ACTUAL DESIGN FORCES AS PER RELEVANT CODE AND JSD / JSS. 																																																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>B</td><td>10-06-2020</td><td>IFD</td><td>TUN</td><td>KRK</td><td>JP / KC</td><td>JMC</td></tr> <tr> <td>A</td><td>16-10-2019</td><td>IFD</td><td>TUN</td><td>KRK</td><td>JP / KC</td><td>JMC</td></tr> <tr> <td>Rev</td><td>Date DD-MM-YYYY</td><td>Description of Issue</td><td>Written by</td><td>Checked by</td><td>Approved by</td><td>Authorized by</td></tr> <tr> <td colspan="4" style="text-align: center;">DOCUMENT CATEGORY (USE "X" MARK)</td><td colspan="3" style="text-align: center;">DOCUMENT REVIEW STATUS (BY CLIENT)</td></tr> <tr> <td colspan="4"> <input type="checkbox"/> APPROVAL <input type="checkbox"/> REVIEW <input checked="" type="checkbox"/> INFORMATION </td><td colspan="3"></td></tr> </table>																												B	10-06-2020	IFD	TUN	KRK	JP / KC	JMC	A	16-10-2019	IFD	TUN	KRK	JP / KC	JMC	Rev	Date DD-MM-YYYY	Description of Issue	Written by	Checked by	Approved by	Authorized by	DOCUMENT CATEGORY (USE "X" MARK)				DOCUMENT REVIEW STATUS (BY CLIENT)			<input type="checkbox"/> APPROVAL <input type="checkbox"/> REVIEW <input checked="" type="checkbox"/> INFORMATION						
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<p>TITLE</p> <p style="text-align: center; font-weight: bold; font-size: 1.1em;">TYPICAL DETAIL OF MOMENT CONNECTION WITH COLUMN TO BEAM</p>																																																														
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(WITH MC BOX COLUMN TO BEAM)



VIEW 2-2



SECTION 3-3

INDIAN SECTION													
BEAM SIZE	COLUMN SIZE	TOP PLATE SIZE			BOTTOM PLATE SIZE			STIFFENER SIZE			WELD SIZE		
		L1	B1	T1	L2	B2	T2	L3	L4	T3	S1	S2	
MB100	≥MC100 □	150	55	16	150	95	10	175	150	10	6	6	
MB150	≥MC100 □	155	60	16	155	100	10	230	150	10	6	6	
MB200	≥MC150 □	260	80	20	260	120	16	225	150	10	8	8	
MB250	≥MC200 □	290	105	25	290	145	20	265	150	10	8	8	
MB300	≥MC200 □	335	120	25	335	160	20	330	170	10	8	8	

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2. ALL CONNECTIONS ARE DESIGNED FOR FULL BENDING AND SHEAR STRENGTH OF BEAM.
3. WHEREVER FILLET WELD SIZE NOT MARKED, IT SHALL BE CONSIDERED AS 6MM.
4. WIDTH OF PLATE SHALL BE NOTCHED IN 1:3 SLOPE AT COLUMN CONNECTION TO MATCH WITH COLUMN.
5. CONNECTION DESIGN SHOWN IS TENTATIVE AND MINIMUM REQUIREMENT, CONTRACTOR SHALL DESIGN THE CONNECTION FOR ACTUAL DESIGN FORCES AS PER RELEVANT CODE AND JSD / JSS.

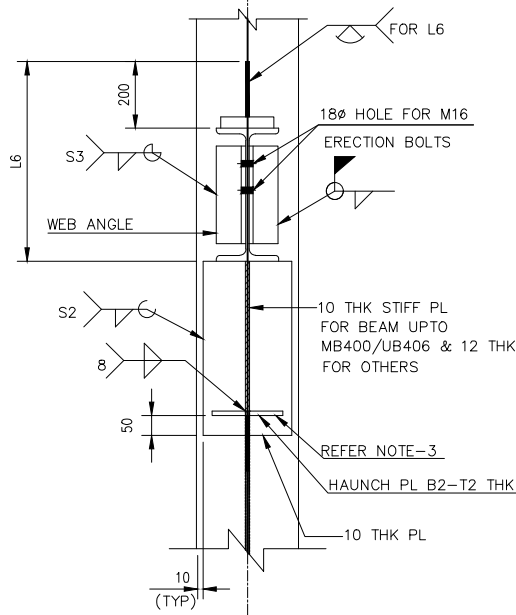
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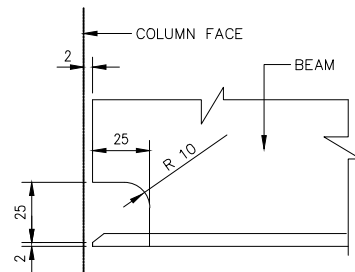
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TITLE	TYPICAL DETAIL OF MOMENT CONNECTION WITH BOX COLUMN TO BEAM
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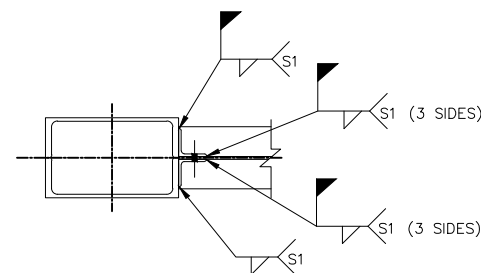
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DETAIL-B



SECTION 3-3

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1. ALL CONNECTIONS ARE DESIGNED FOR FULL BENDING AND SHEAR STRENGTH OF BEAM.
2. ALL WELDS ARE 6mm THK. FILLET WELDS UNLESS SHOWN OTHERWISE
3. WIDTH OF PLATE SHALL BE NOTCHED IN 1:3 SLOPE AT COLUMN CONNECTION TO MATCH WITH COLUMN.
4. ALTERNATE DETAIL 'A' IS TO BE PROVIDED WHEN LONGITUDINAL BEAM JOINT WITH STIFFENER.
5. THIS STANDARD IS NOT APPLICABLE FOR BEAM CONNECTING WITH WEB OF MC BOX COLUMN.

6. CONNECTION DESIGN SHOWN IS TENTATIVE AND MINIMUM REQUIREMENT, CONTRACTOR SHALL DESIGN THE CONNECTION FOR ACTUAL DESIGN FORCES AS PER RELEVANT CODE AND JSD / JSS.

CAD FILE NAME : 080557C-000-STC-1890-005 4 B.DWG SHEET SIZE : A3

1



TYPICAL DETAIL OF MOMENT CONNECTION

DETAIL A



SECTION 2-2

COLUMN →	MC 200 □		MC 250 □		MC 300 □			MC 400 □			
BEAM ↓	MC-200 □	MC-150 □	MC-250 □	MC-200 □	MC-300 □	MC-250 □	MC-200 □	MC-400 □	MC-300 □	MC-250 □	MC-200 □
A1	170	170	180	180	200	180	180	220	200	200	200
A2	130	130	140	130	160	140	130	180	160	140	130
A3	200	150	250	200	300	250	200	400	300	250	200
B1	250	200	350	250	400	350	250	500	400	350	250
B2	200	150	275	200	325	275	200	425	325	275	200
t1	12	10	16	12	16	16	12	20	16	16	12
t2	16	12	20	16	20	20	16	25	20	20	16
t3	10	10	10	10	10	10	10	10	10	10	10
W1	8	8	10	8	10	10	8	10	10	10	8
W2	6	6	8	6	8	8	6	8	8	8	6

NOTES: -

1. ALL CONNECTIONS ARE DESIGNED FOR FULL BENDING AND SHEAR STRENGTH OF BEAM.
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PROJECT
STANDBY SRU & ADDITIONAL TANKS
IOCI PARADIP REFINERY ODISHA INDIA

OWNER	INDIAN OIL CORPORATION LTD.
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TITLE	TYPICAL DETAIL OF MOMENT CONNECTION
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SCALE	080557C	000	STC	1890	005	5 OF 6	B
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2. CONNECTION DESIGN SHOWN IS TENTATIVE AND MINIMUM REQUIREMENT, CONTRACTOR SHALL DESIGN THE CONNECTION FOR ACTUAL DESIGN FORCES AS PER RELEVANT CODE AND JSD / JSS.

SECTION 1-1

INDIAN SECTION						
COLUMN SIZE	BEAM SIZE	A	B	C	t	w
MC150 □	MC150 □	150	150	300	10	6
MC200 □	MC200/150 □	150/200	150/200	350	10	6
MC250 □	MC250 □	250	250	400	10	8
MC300 □	MC300 □	300	225	450	10	8
MC400 □	MC400 □	400	300	550	10	8

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PROJECT
STANDBY SRU & ADDITIONAL TANKS
IOCL PARADIP REFINERY, ODISHA, INDIA

OWNER

 INDIAN OIL CORPORATION LTD.

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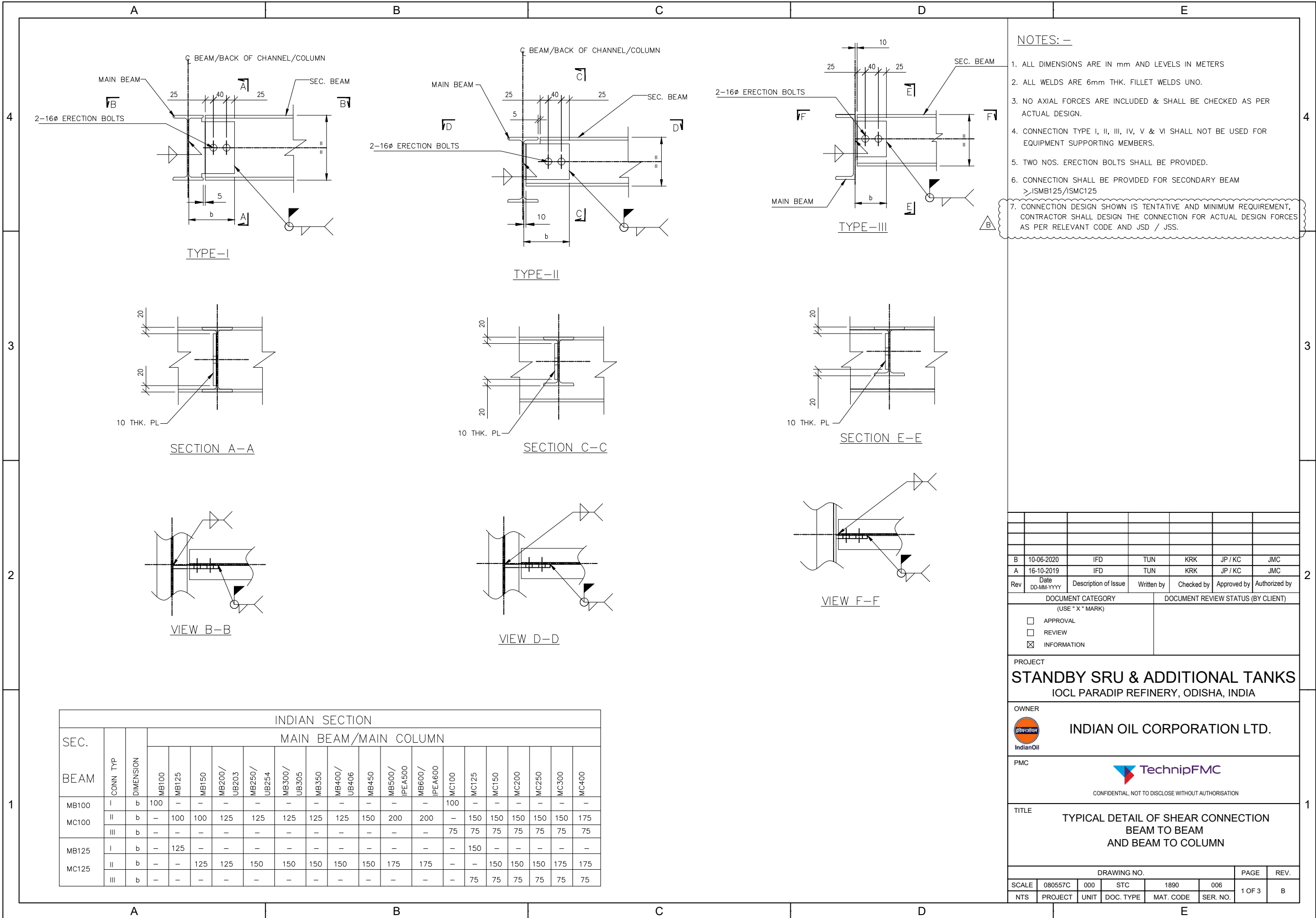
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TITLE	TYPICAL DETAIL OF MOMENT CONNECTION WITH BOX COLUMN TO BOX BEAM
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TYPICAL DETAIL OF SHEAR CONNECTION WITH BEAM TO BEAM							
DRAWING NO.						PAGE	REV.
SCALE	080557C	000	STC	1890	006	2 OF 3	B
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INDIAN SECTIONS

NOTES: –

- B**

PROJECT

STANDBY SRU & ADDITIONAL TANKS

IOCL PARADIP REFINERY, ODISHA, INDIA

OWNER



INDIAN OIL CORPORATION LTD.

PMC

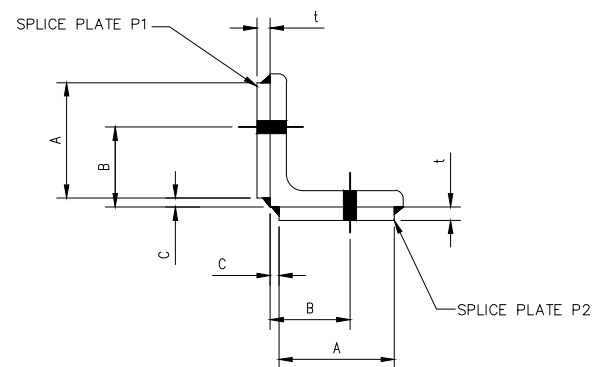


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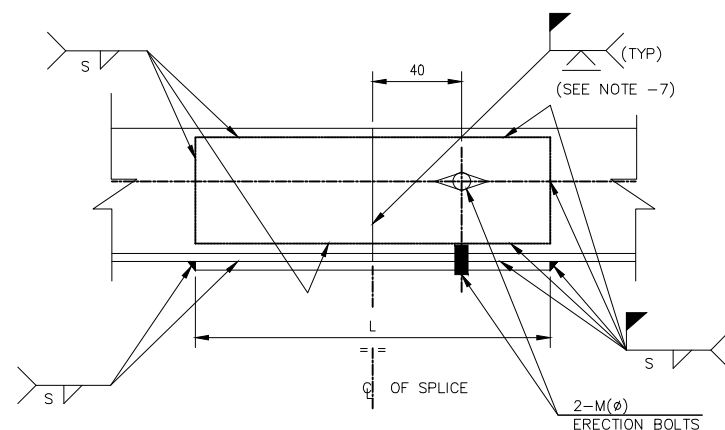
TITLE	
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TYPICAL SPLICE DETAIL OF COLUMNS / BEAMS

CAD FILE NAME : 080557C-000-STC-1890-007_1_B.DWG



CROSS SECTION





ELEVATION

EQUAL ANGLES (SINGLE)

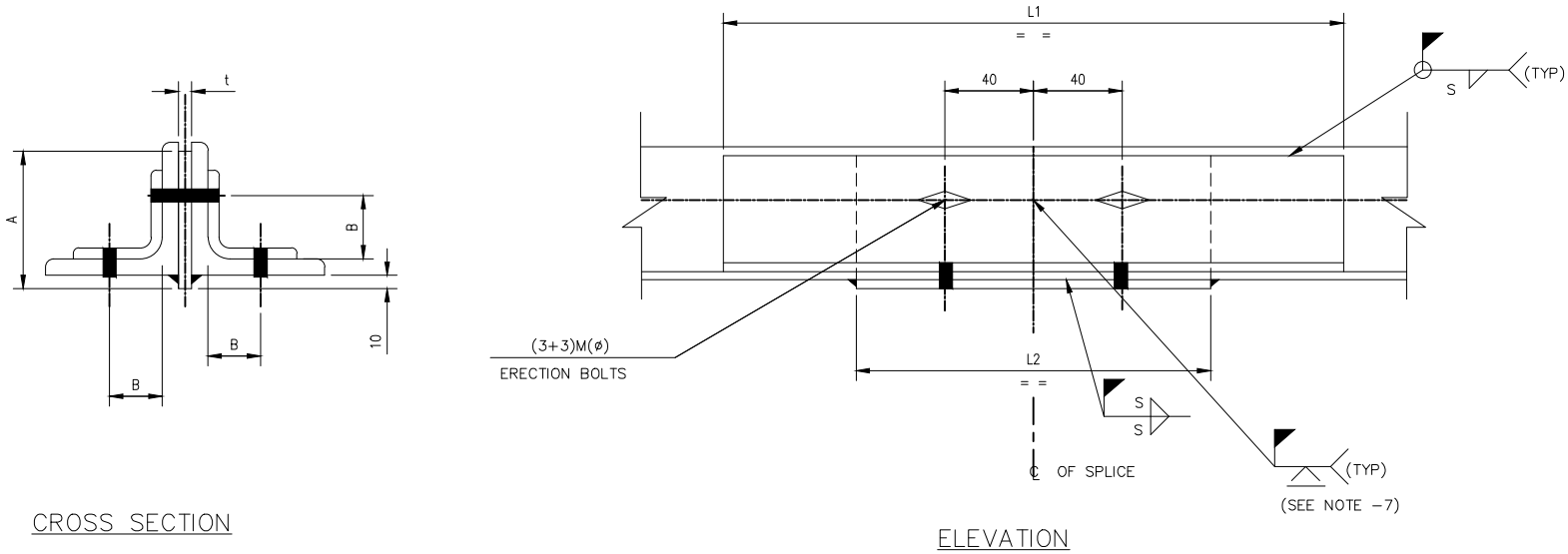
SIZE OF ANGLE	SPLICE PLATE			B	C	BOLT DIA M(ϕ)	SIZE OF WELD (S)
	A	t	L				
L 50X50X6	30	6	130	28	10	12	6
L 65X65X6	45	6	130	35	10	12	6
L 65X65X8	45	6	130	35	10	12	6
L 75X75X6	55	6	130	40	10	16	6
L 75X75X8	55	6	130	40	10	16	6
L 90X90X6	60	6	130	50	15	16	6
L 90X90X8	60	6	130	50	15	16	8
L100X100X8	60	6	150	60	20	16	8
L110X110X10	70	6	170	60	20	16	8
L130X130X10	70	8	200	80	30	16	8
L150X150X16	90	8	200	90	30	16	8
L200X200X20	120	10	250	110	40	16	10

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 PLATE MAY BE OMITTED FOR PURLINS & SIDE GIRTS FOR MEMBER SIZES UPTO 150mm DEPTH.
7. BUTT WELD SHALL BE SINGLE V BUTT WELD FOR THICKNESS EQUAL TO OR MORE THAN 16 mm.
8. CONNECTION DESIGN SHOWN IS TENTATIVE AND MINIMUM REQUIREMENT, CONTRACTOR SHALL DESIGN THE CONNECTION FOR FULL MEMBER STRENGTH AS PER RELEVANT CODE AND JSD / JSS.

B	10-06-2020	IFD	TUN	KRK	JP / KC	JMC	
A	16-10-2019	IFD	TUN	KRK	JP / KC	JMC	
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DOCUMENT CATEGORY				DOCUMENT REVIEW STATUS (BY CLIENT)			
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<input type="checkbox"/> REVIEW							
<input checked="" type="checkbox"/> INFORMATION							
PROJECT							
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TYPICAL SPLICE DETAIL OF ANGLES							
DRAWING NO.						PAGE	REV.
SCALE	080557C	000	STC	1890	008	1 OF 2	B
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.		

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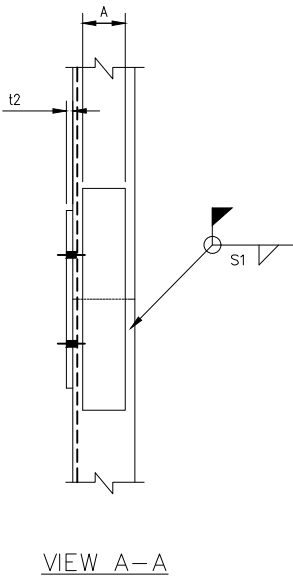
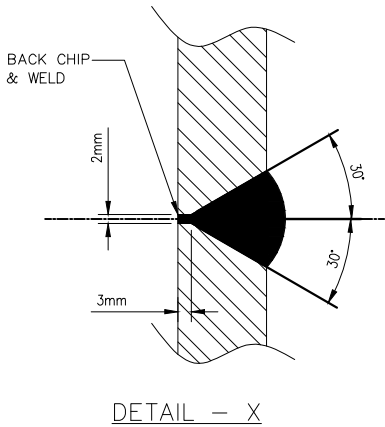
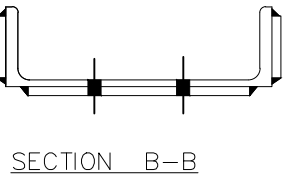
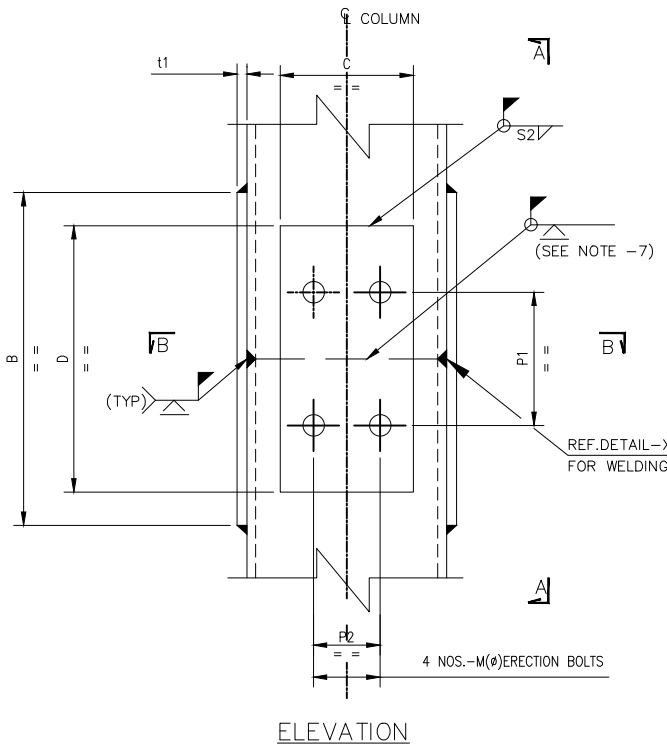
EQUAL ANGLES (DOUBLE)

SIZE OF ANGLE	SPLICE ANGLE	L1	SPLICE PLATE			B	ERECTION BOLT DIA M(ϕ)	SIZE OF WELD(S)
			A	t	L2			
2L 50X50X6	2L 35X35X6	150	50	t	130	19	12	6
2L 65X65X6	2L 50X50X6	150	65	t	130	28	12	6
2L 75X75X6	2L 50X50X6	200	75	t	130	28	12	6
2L 75X75X8	2L 50X50X6	230	75	t	130	28	12	6
2L 90X90X6	2L 50X50X6	240	90	t	130	28	12	6
2L 90X90X8	2L 65X65X6	270	90	t	130	35	12	6
2L 100X100X8	2L 65X65X6	300	100	t	130	35	12	6
2L 110X110X10	2L 65X65X6	350	100	t	130	35	16	6
2L 130X130X10	2L 75X75X8	400	130	t	130	40	16	6
2L 150X150X16	2L 90X90X8	480	150	t	130	50	16	6
2L 200X200X20	2L 100X100X8	500	200	t	150	60	16	8

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



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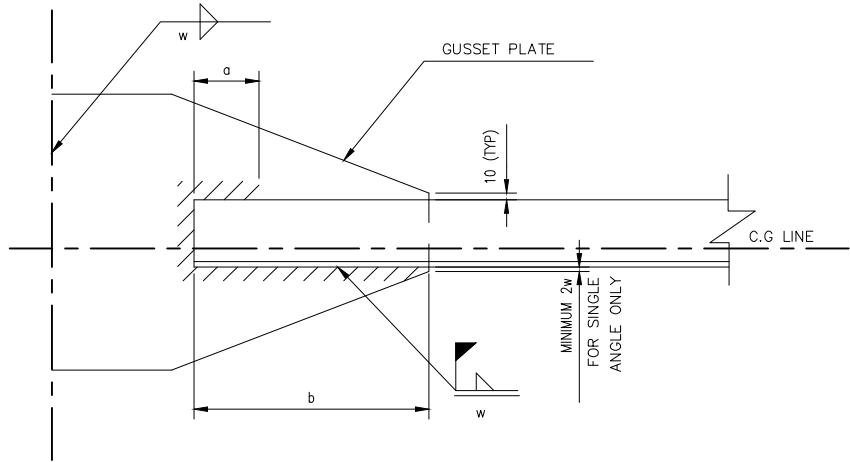


- NOTES: -
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SIZE OF CHANNEL	FLANGE SPLICE PLATES				WEB SPLICE PLATES							REMARKS
	A	B	t1	WELD SIZE	C	D	t2	WELD SIZE	ERECTION BOLTS			
				S1				S2	M(Ø)	P1	P2	
MC75	25	120	8	6	35	90	6	6	12	50	–	TWO BOLTS
MC100	35	120	8	6	40	90	6	6	12	50	–	TWO BOLTS
MC125	45	120	8	6	50	90	6	6	16	50	–	TWO BOLTS
MC150	55	150	8	6	60	120	6	6	16	60	–	TWO BOLTS
MC200	55	150	12	10	120	120	6	6	16	60	60	
MC250	65	160	12	10	120	120	6	6	16	60	60	
MC300	70	160	12	10	150	120	6	6	16	60	60	
MC350	80	190	12	10	200	120	6	6	16	60	60	
MC400	85	190	12	10	240	140	6	6	16	60	60	



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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 75x75x6	6	75	225	8
L 75x75x8	6	100	300	8
L 90x90x6	6	75	275	8
L 90x90x8	6	100	350	8
L 100x100x8	8	125	350	10
L 110x110x10	8	125	400	10
L 130Xx130x10	8	125	500	10
L 150x150x12	10	150	525	12
L 200x200x20	10	175	550	12
2L 50x50x6 B/B	6	50	150	8
2L 65x65x6 B/B	6	75	200	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 100x100x8 B/B	8	125	350	10
2L 110x110x10 B/B	8	125	400	10
2L 130x130x10 B/B	8	125	500	10
2L 150x150x16 B/B	10	150	525	12
2L 200x200x20 B/B	12	175	550	16

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