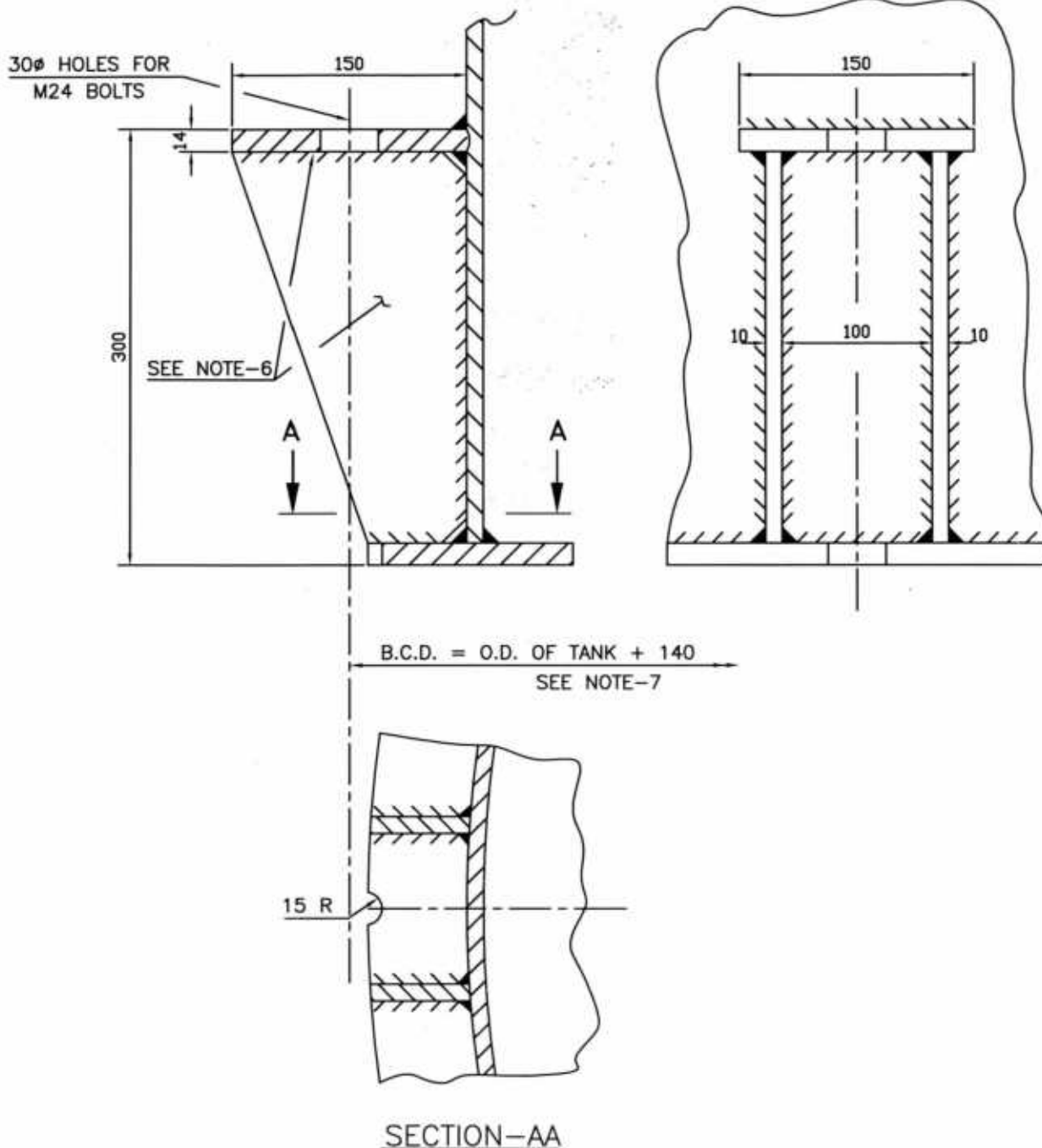


NOTES

1. ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE STATED.
2. ELECTRIC WIRES SHALL BE LONG ENOUGH TO COVER THE ENTIRE MOVEMENT OF THE ROLLING LADDER AND CONTINUITY SHALL BE CHECKED AFTER INSTALLATION. QUANTITY REQUIRED PER TANK 2 SETS. TYPE OF WIRE P.V.C. INSULATED COPPER WIRE CABLE, 50 mm² CROSS SECTION.
3. LIGHTNING PROTECTION OF FLOATING ROOF TANK SHALL BE CARRIED OUT AS PER API-RP-545 AND SHALL ALSO MEET THE REQUIREMENT OF OISD-180.
4. SPRING QUALITY STAINLESS STEEL SUBMERGED SHUNTS OF 0.4 mm THICK x 51 mm WIDE SHALL BE PROVIDED FOR INTERNAL & EXTERNAL FLOATING ROOF TANKS AT MAXIMUM SPACING OF 3000 mm. THE SHUNT TO SHELL CONTACT POINT SHALL BE SUBMERGED AT LEAST 0.3 m BELOW THE SURFACE OF THE LIQUID PRODUCT. THE SHUNT SHALL HAVE AS SHORT AND DIRECT A PATH AS POSSIBLE FROM THE CONDUCTIVE FLOATING ROOF TO THE TANK SHELL. THE SHUNTS SHALL BE OF THE MINIMUM LENGTH NECESSARY TO PERMIT THE FUNCTION OF THE FLOATING-ROOF SEAL ASSEMBLY. THE SHUNTS SHALL BE MINIMUM LENGTH NECESSARY TO REMAIN IN CONTACT WITH THE SHELL DURING THE FULL HORIZONTAL AND VERTICAL DESIGN MOVEMENT OF THE FLOATING ROOF.
5. BYPASS CONDUCTORS SHALL BE PROVIDED BETWEEN THE ROOF AND SHELL AT EVERY 30 m (MIN.) AROUND THE EXTERNAL FLOATING ROOF TANK CIRCUMFERENCE EVENLY SPACED AROUND THE ROOF PERIMETER WITH A MINIMUM OF TWO PER TANK. EACH CONDUCTOR, INCLUDING CONNECTIONS, SHALL HAVE A MAXIMUM END-TO-END ELECTRICAL RESISTANCE OF 0.03 OHMS. THE BYPASS CONDUCTORS SHALL BE OF THE MINIMUM LENGTH NECESSARY TO PERMIT FULL MOVEMENT OF THE FLOATING ROOF. THE BYPASS CONDUCTORS AND TERMINATION CONNECTIONS SHALL BE POSITIONED AND OF SUFFICIENT FLEXIBILITY, CROSS SECTIONAL AREA AND CORROSION RESISTANCE TO HAVE A MINIMUM SERVICE LIFE OF 30 YEARS. THESE BYPASS CONDUCTORS SHALL BE IN ADDITION TO THOSE PROVIDED ON THE LADDER.
6. ALL SEAL ASSEMBLY COMPONENTS (INCLUDING SPRINGS, SCISSOR ASSEMBLIES, SEAL MEMBRANES ETC.) AND ALL GAUGE AND GUIDE POLES SHALL BE ELECTRICALLY INSULATED IN EXTERNAL FLOATING ROOF TANK. THE INSULATION LEVEL SHALL BE RATED 1KV OR GREATER.

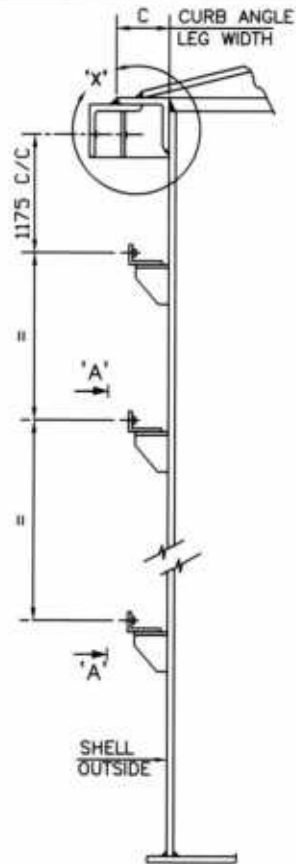
8	20.03.2024	REVISED AND REISSUED AS STANDARD	JIT SINGH	TKh	KJH	MN
7	02.08.2018	REVISED AND REISSUED AS STANDARD	JIT SINGH	RKK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	



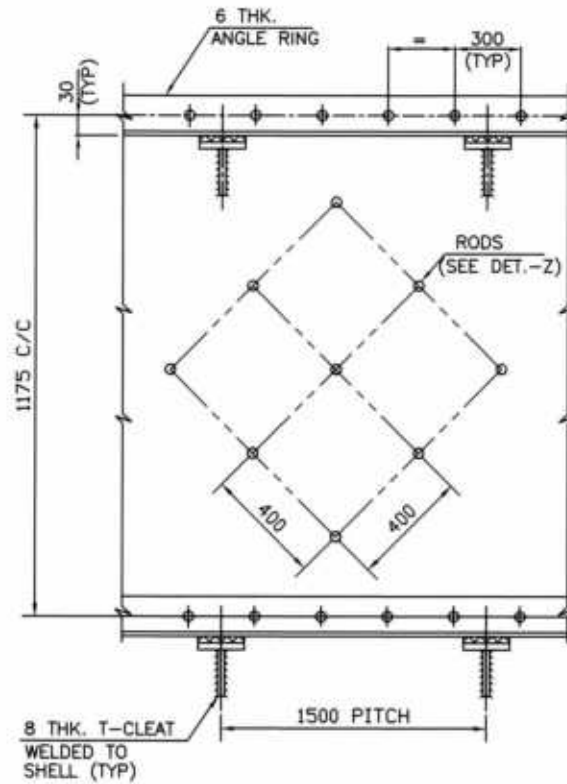
NOTES

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
2. FOR NON-PRESSURIZED TANKS OF DIAMETER \leq 10 METER, ANCHOR CHAIR SHALL BE PROVIDED AS PER THIS STANDARD. IF REQUIRED BY DESIGN, ANCHOR CHAIR SHALL BE AS PER 7-12-0004.
3. NO. OF ANCHOR CHAIRS SHALL BE MULTIPLE OF FOUR AND STRADDLE NORTH SOUTH CENTRE LINE.
4. FOR MATERIAL SPECIFICATION REFER ENGINEERING DRAWING.
5. IN CASE OF CONFLICT ENGINEERING DRAWING SHALL GOVERN.
6. ANCHOR CHAIR DESIGN SHALL BE CHECKED FOR PRESSURIZED TANKS AS PER THE PROVISIONS OF DESIGN CODE.
7. SUITABLE B.C.D. AND SLOTTED HOLES ON TOP PLATE SHALL BE SELECTED FOR STRESS RELIEVED TANKS TO TAKE CARE OF THERMAL EXPANSION.

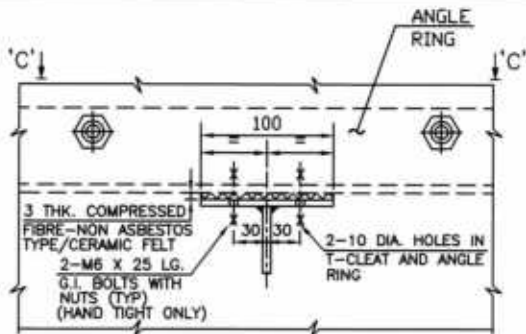
8	20.03.2024	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TKh	KA/NK	MN
7	02.08.2018	REVISED AND REISSUED AS STANDARD	JIT SINGH	RKK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	



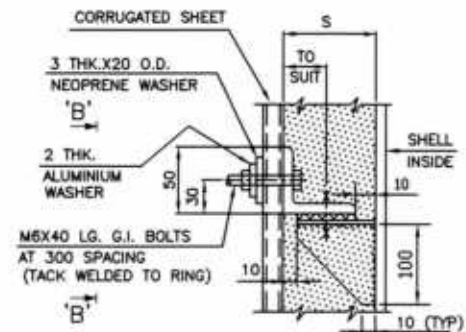
ELEVATION



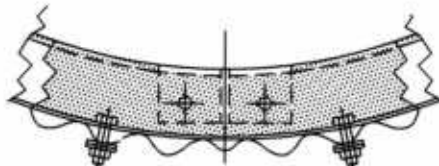
VIEW 'A-A'



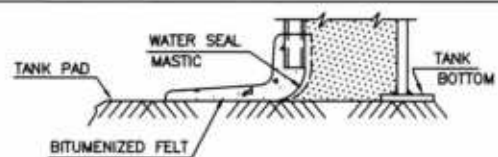
VIEW '-B-B'



DETAIL OF INSULATION SUPPORT
(WHERE S > 30)

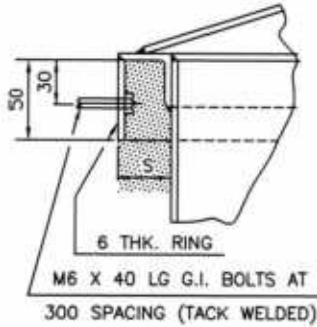


VIEW '-C-C'

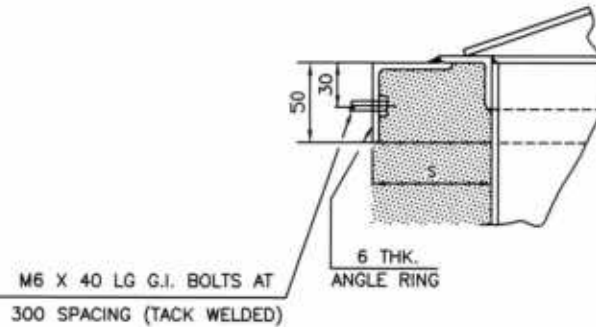


DETAIL OF SEALING ARRANGEMENT
AT BOTTOM OF THE TANK

9	13.03.2024	REVISED AND REISSUED AS STANDARD	JIT SINGH	TKh	MN
8	02.08.2018	REVISED AND REISSUED AS STANDARD	JIT SINGH	RKT	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Approved by
					Stds. Committee Convener
					Stds. Bureau Chairman

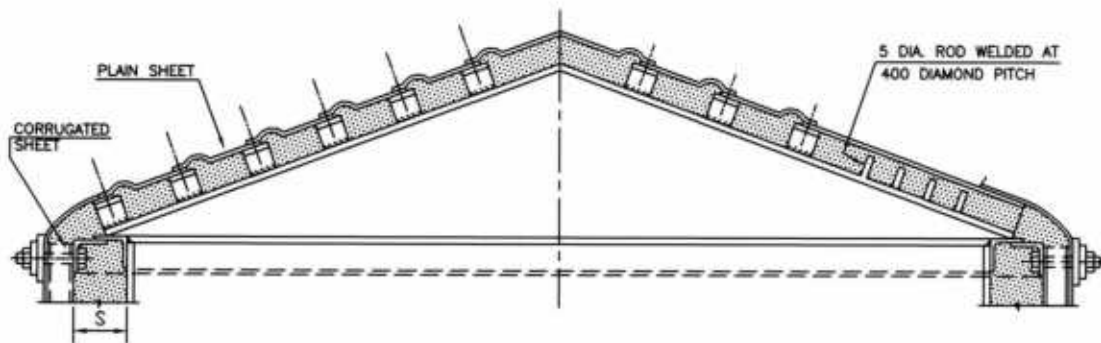


(i) WHEN INSULATION THK. IS
LESS OR EQUAL TO CURB
ANGLE LEG WIDTH

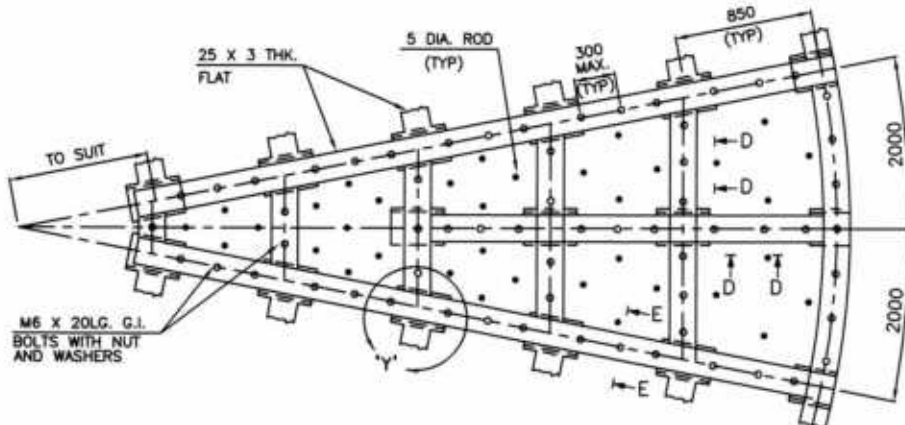


(ii) WHEN INSULATION THK. IS
MORE THAN THE CURB
LEG WIDTH.

DETAIL - 'X'

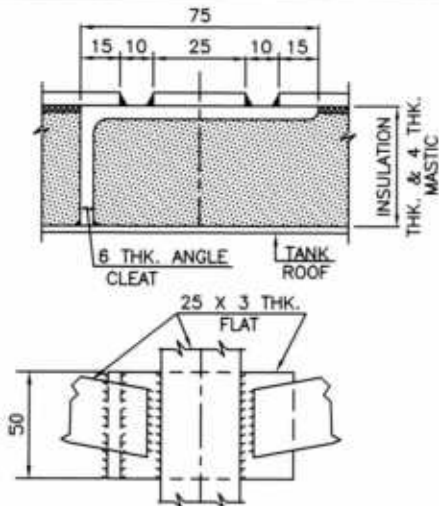


**ARRANGEMENT OF BLANKET AND PLAIN
SHEETING ON ROOF**

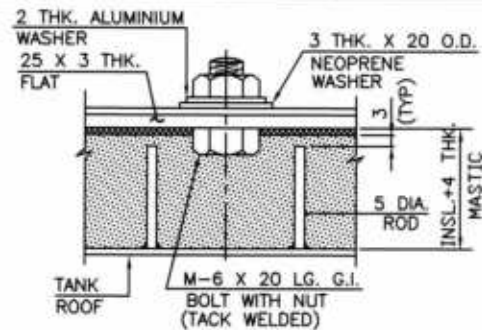


DETAIL OF SUPPORTS ON TANK ROOF

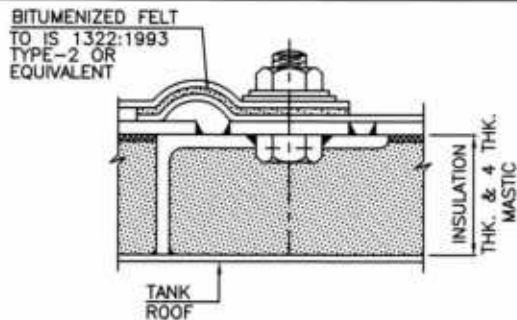
9	13.03.2024	REVISED AND REISSUED AS STANDARD	JIT SINGH	TKh	MN
8	02.08.2018	REVISED AND REISSUED AS STANDARD	JIT SINGH	RKK	KJH
Rev. No.	Date	Purpose	Prepared by	Checked by	Approved by
					Stds. Committee Convenor
					Stds. Bureau Chairman



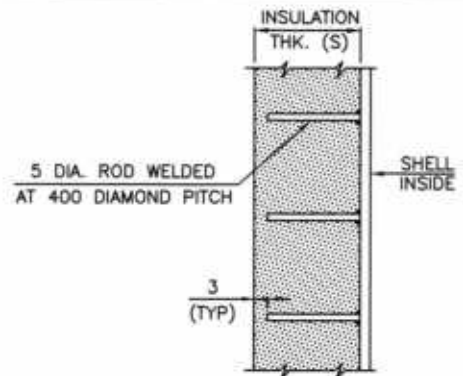
DETAIL - 'Y'



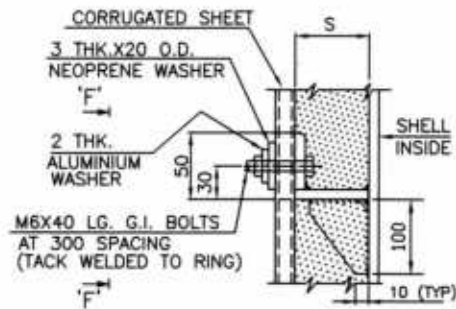
VIEW - 'D-D'



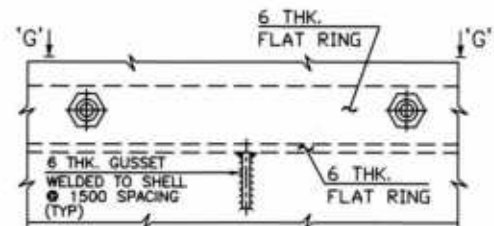
TYPICAL DETAIL OF LAP JOINTS
OF PLAIN SHEETING & SEC. 'E-E'



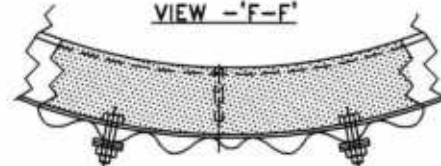
DETAIL - 'Z'
DETAIL OF RODS ON SHELL



DETAIL OF INSULATION SUPPORT
(WHERE $S \leq 30$)



VIEW - 'F-F'

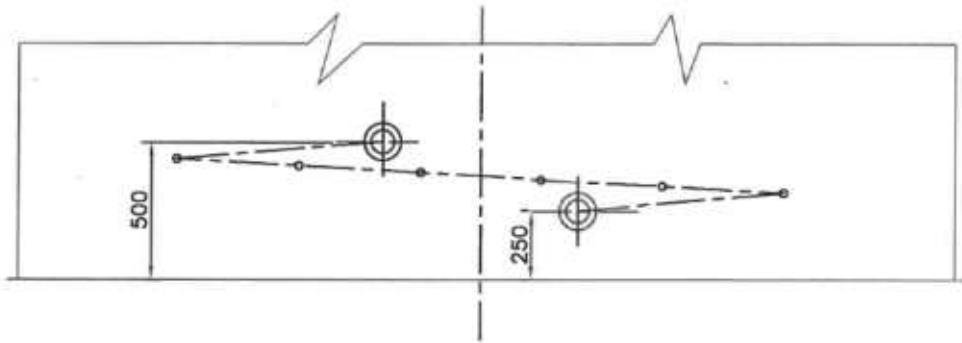


VIEW - 'G-G'

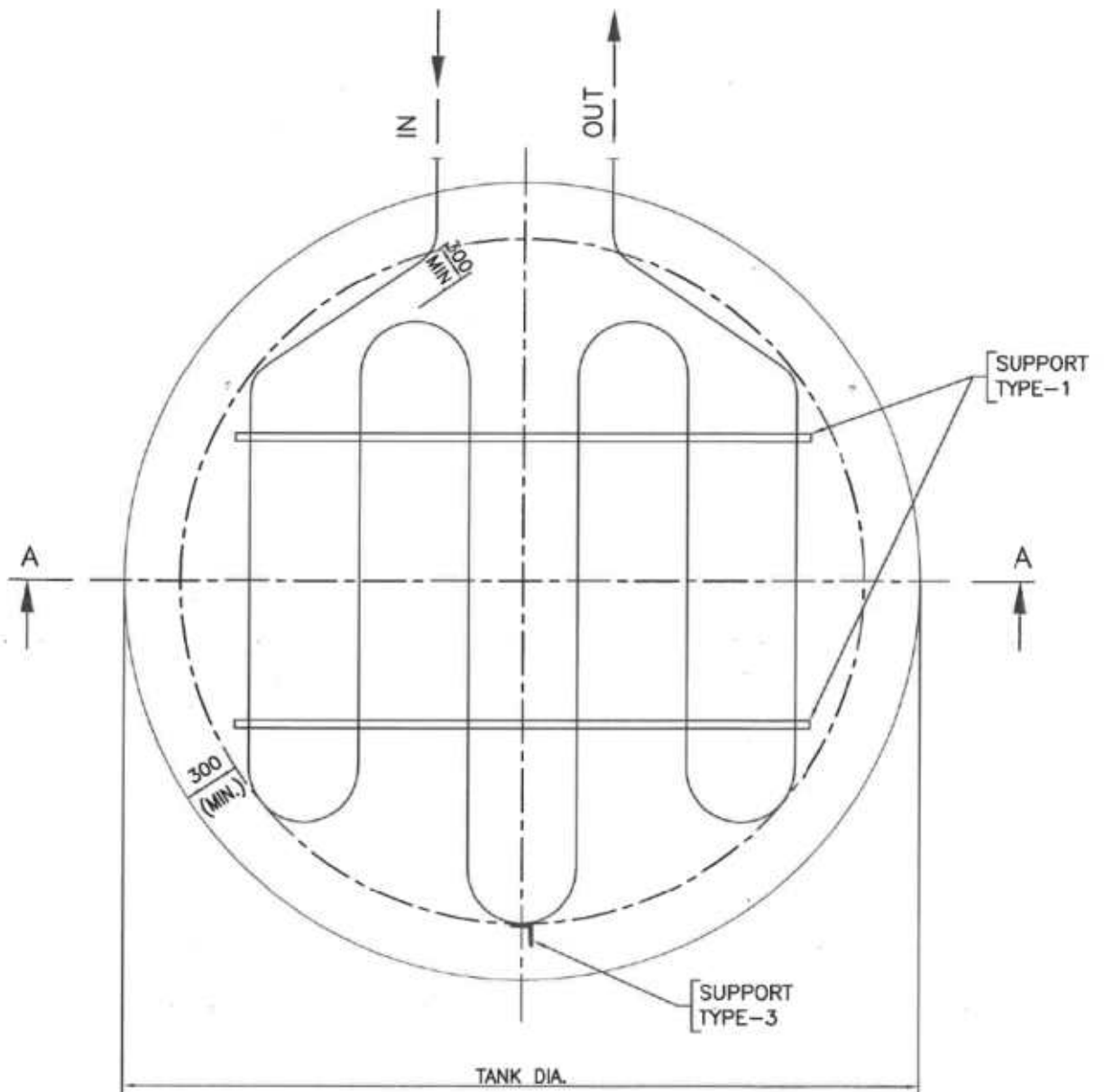
NOTES

1. ALL DIMENSIONS ARE IN mm.
2. FOR MATERIAL SPECIFICATION REFER ENGINEERING DRAWING.
3. IF INSULATION IS NOT IN TANK FABRICATOR'S SCOPE, ONLY T-CLEATS WITH ASBESTOS SHEET AND G.I. BOLTINGS, ANGLE / FLAT RINGS ALONG WITH TACK WELDED G.I. BOLTS, 5 DIA. RODS, ROOF ANGLE CLEATS AND FLATS WITH TACK WELDED G.I. BOLTS SHALL BE SUPPLIED BY TANK FABRICATOR. OTHERWISE ALL INSULATION MATERIAL AS PER EIL SPEC. 6-79-0026 SHALL BE SUPPLIED BY TANK FABRICATOR.
4. ALL ATTACHMENTS SHALL CLEAR WELD SEAMS AS PER REQUIREMENT OF CODE.
5. SEALING ARRANGEMENT SHALL ALSO BE PROVIDED FOR WIND GIRDER LOCATIONS IN ORDER TO PREVENT SEEPAGE OF ACCUMULATED RAIN/FIRE WATER BY WICKING ACTION.

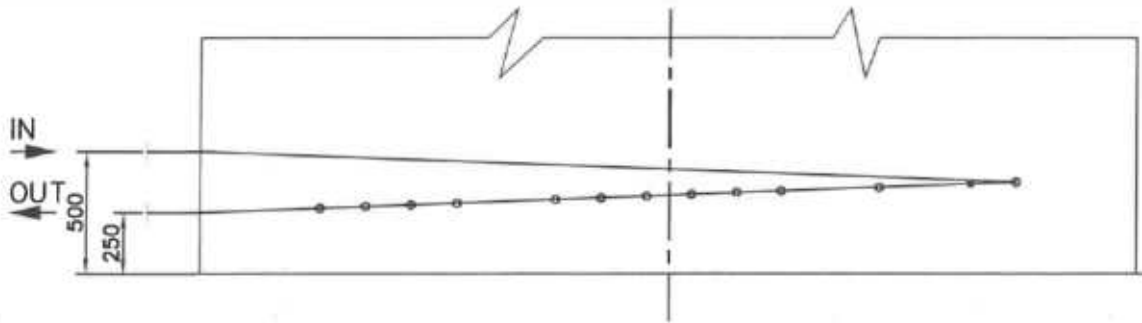
9	13.03.2024	REVISED AND REISSUED AS STANDARD	JIT SINGH	TKh	RANK Nalin	MN
8	02.08.2018	REVISED AND REISSUED AS STANDARD	JIT SINGH	RKK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman



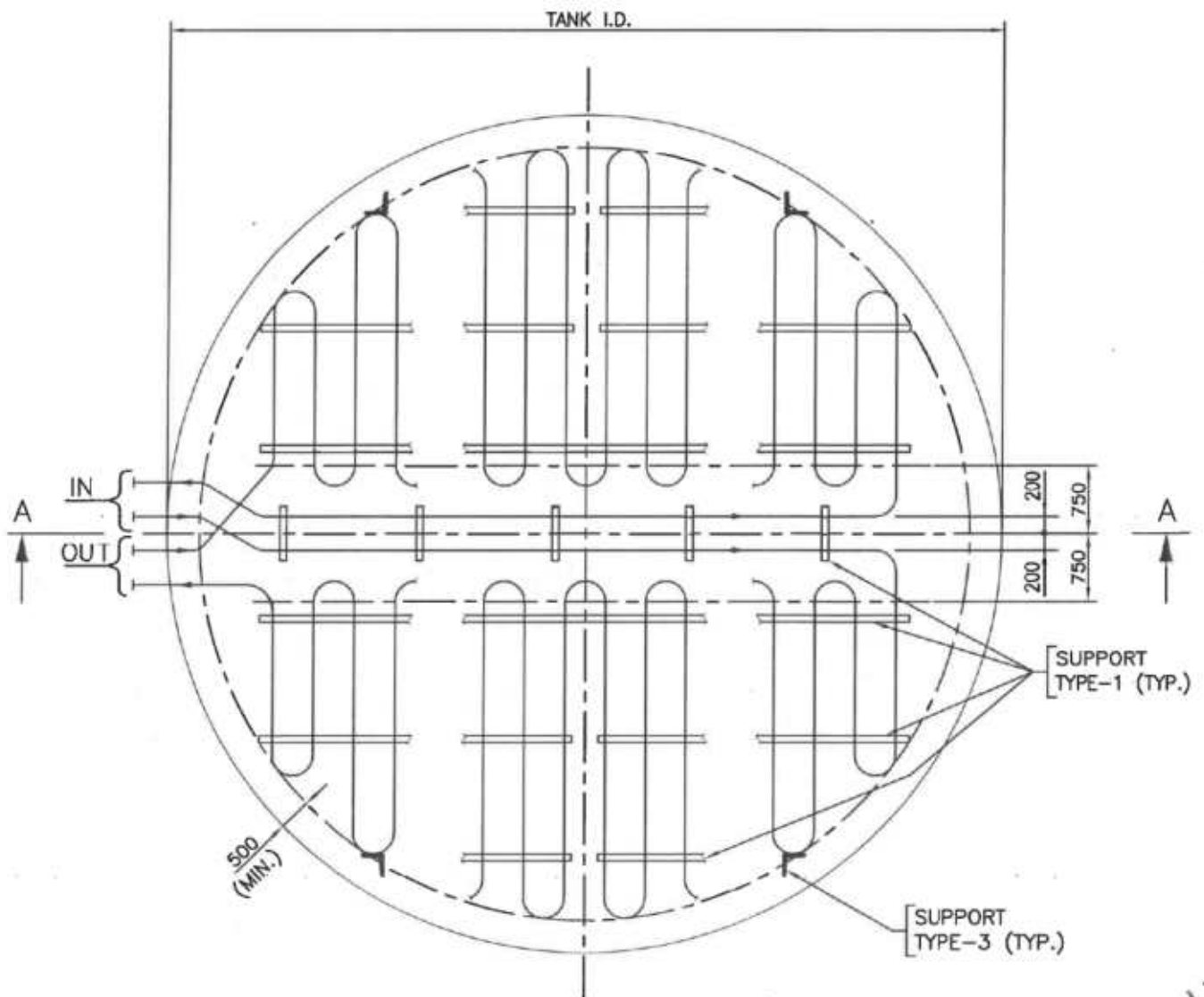
SECTION A-A



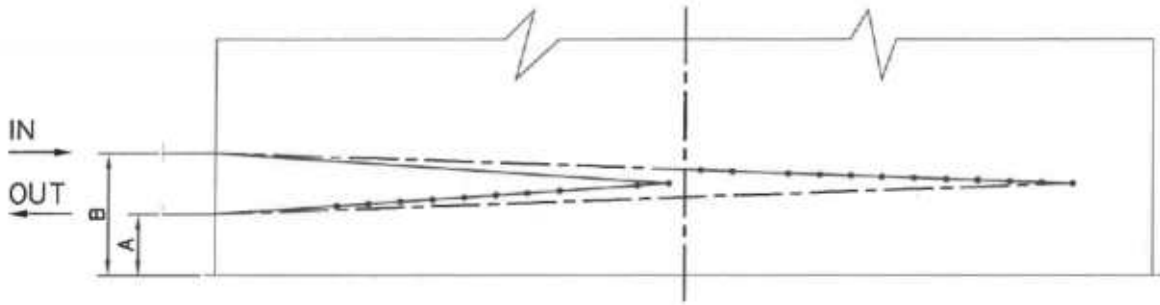
9	02.12.2024	REVISED AND REISSUED AS STANDARD	AS/SM	TKh	TK/NK/Nelis	MN
8	20.06.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	KJH	RKT
7	01.10.2013	REAFFIRMED AND REISSUED AS STANDARD	GCP	TK	RKT	SC
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	



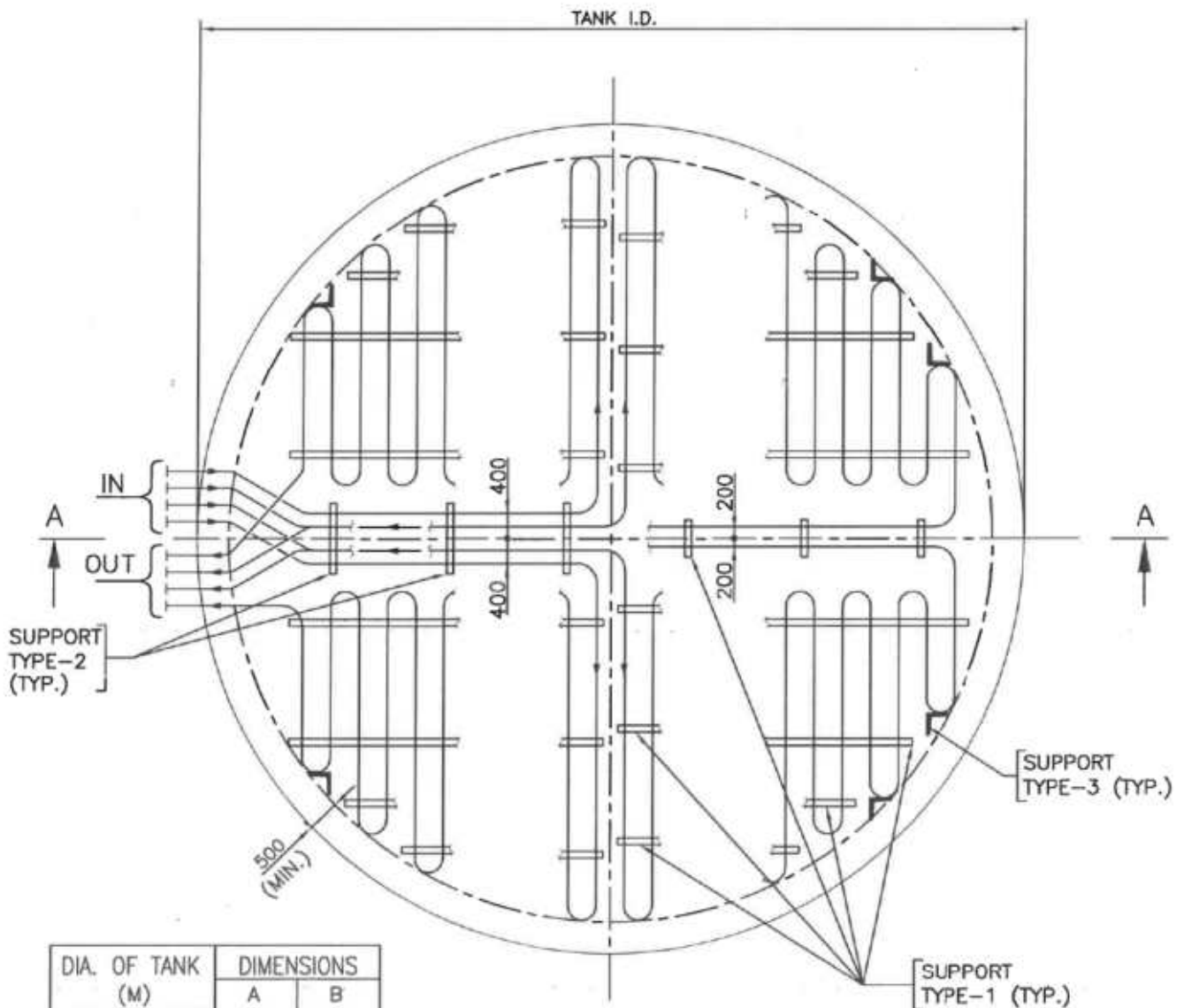
SECTION A-A



9	02.12.2024	REVISED AND REISSUED AS STANDARD	AS/SM	TKh	RANK	MN
8	20.06.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	KJH	RKT
7	01.10.2013	REAFFIRMED AND REISSUED AS STANDARD	GCP	TK	RKT	SC
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds Bureau Chairman
					Approved by	



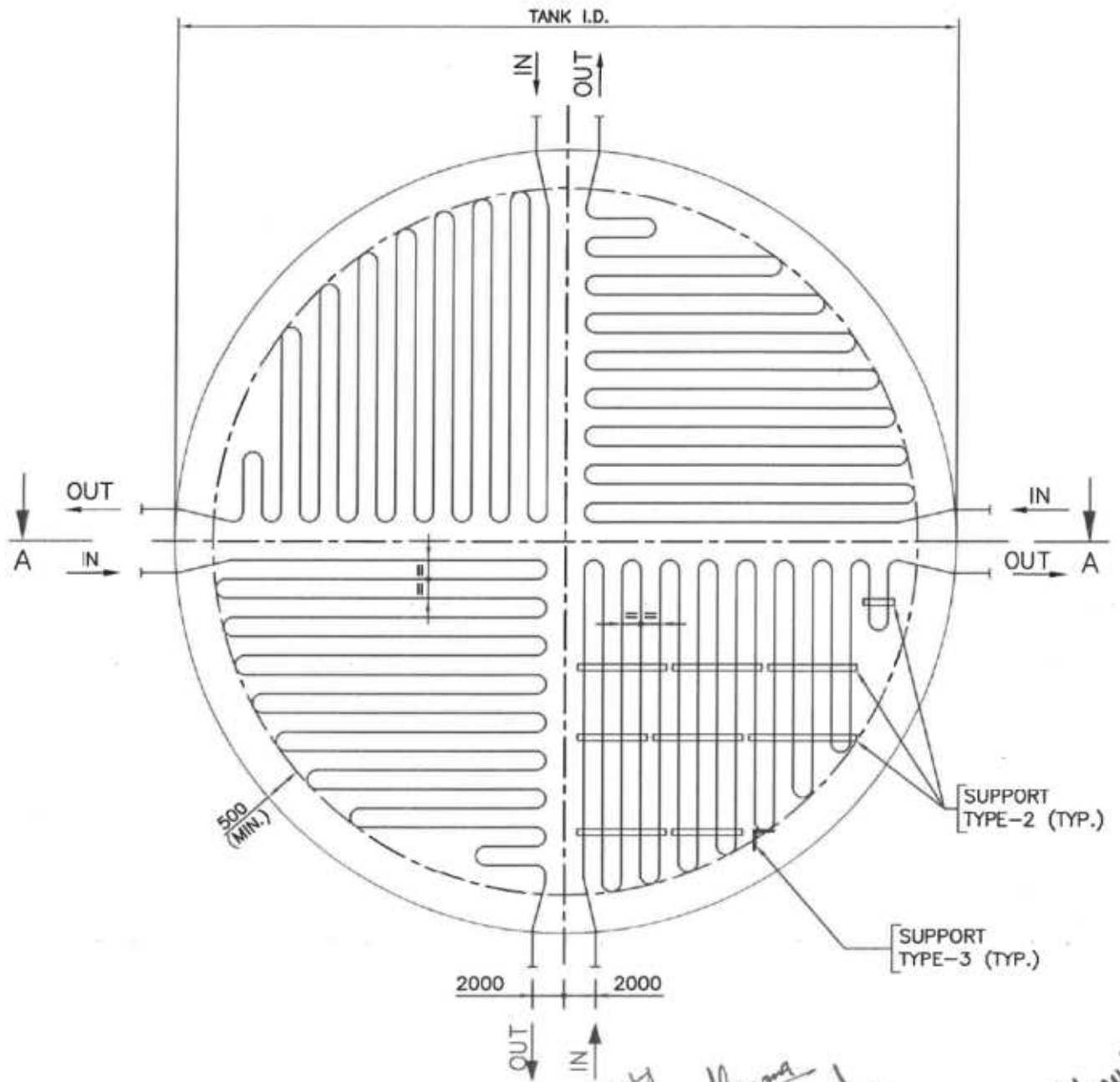
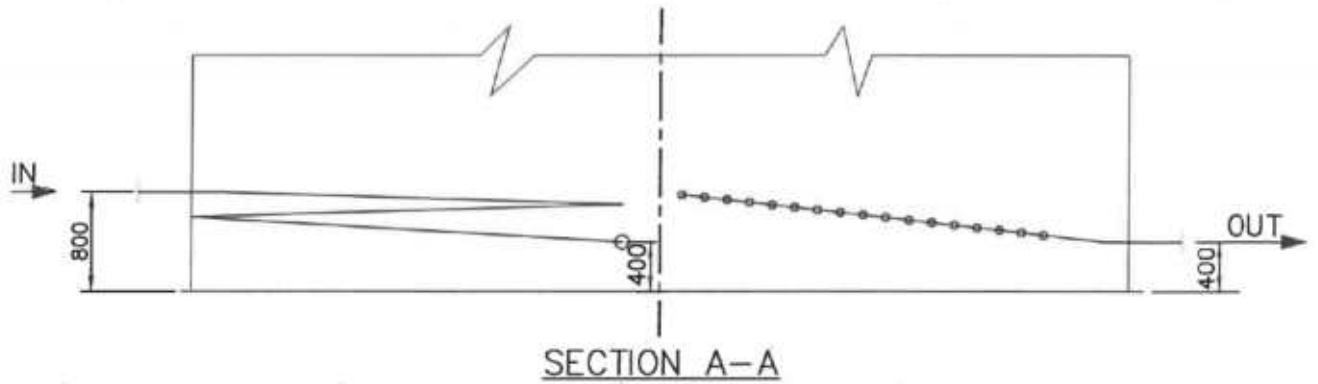
SECTION A-A



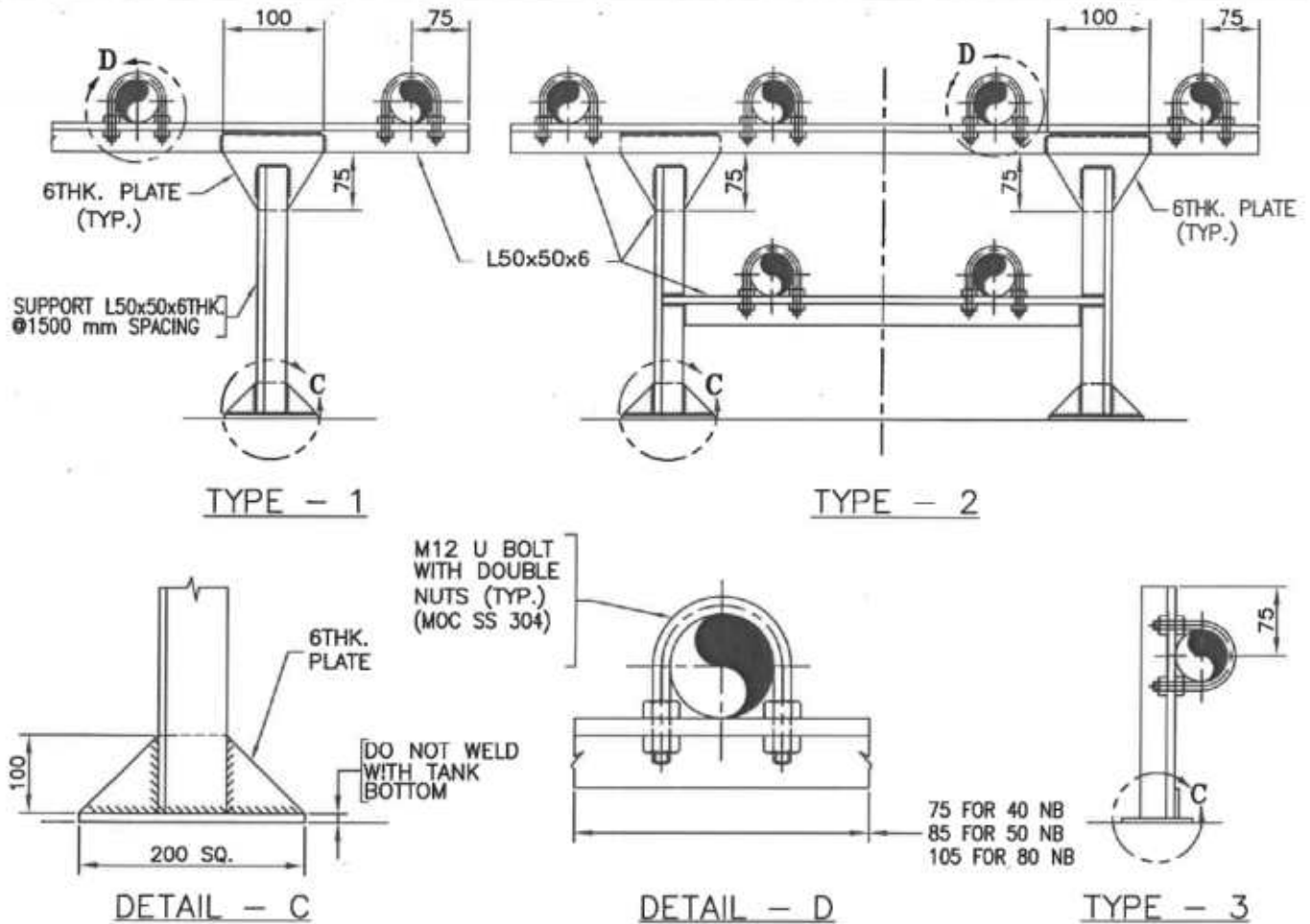
DIA. OF TANK (M)	DIMENSIONS	
	A	B
15.1 TO 20	250	500
20.1 TO 35	300	600
35.1 TO 50	550	700

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
9	02.12.2024	REVISED AND REISSUED AS STANDARD	AS/SM	TKh	TKh	MN
8	20.06.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	KJH	RKT
7	01.10.2013	REAFFIRMED AND REISSUED AS STANDARD	GCP	TK	RKT	SC

Approved by



9	02.12.2024	REVISED AND REISSUED AS STANDARD	AS/SM	TKh	KANIK Nalin	MN
8	20.06.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	K/JH	RKT
7	01.10.2013	REAFFIRMED AND REISSUED AS STANDARD	GCP	TK	RKT	SC
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	



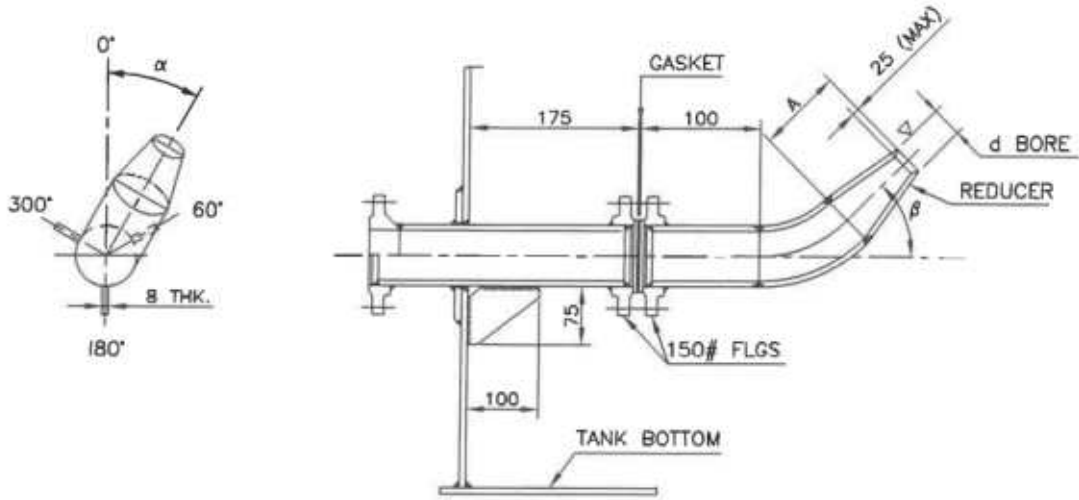
NOTES:

- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
- ALL FILLET WELDS SHALL BE 6mm UNLESS OTHERWISE SHOWN.
- STEAM INLET AND OUTLET NOZZLES SHALL PREFERABLY BE LOCATED NEAR THE LIQUID OUTLET NOZZLE.
- TANK FABRICATOR TO ENSURE THAT THE STEAM COIL AND COIL SUPPORTS DO NOT FOUL WITH INTERNALS LIKE
 - GAUGE HATCH AND LEVEL INDICATOR DIPPING AREA (APPROX. 500mm DIA.)
 - FLOATING ROOF LEG SUPPORTS (APPROX. 500mm DIA.)
 - ROOF DRAIN/EMERGENCY DRAIN/SIPHON DRAIN.
 - AGITATOR MIXER
 - SKIMMING DEVICE.
- AFTER HYDROTEST OF THE TANK THE HEIGHT OF ALL SUPPORTS SHALL BE READJUSTED TO TAKE CARE OF UNEVEN SETTLEMENT OF TANK BOTTOM BY USING PACKING PLATE FULLY WELDED TO SUPPORT BASE PLATE OR BY READJUSTING THE SUPPORTS HEIGHT.
- FOR MATERIAL SPECIFICATION, DESIGN DATA AND ACTUAL LENGTH OF COIL REQUIRED REFER ENGINEERING DRAWING.
- THIS STANDARD IS FOR GENERAL GUIDANCE. BASED ON REQUIRED LENGTH OF COIL SHOWN ON ENGINEERING DRAWING, SELECT AND WORK OUT A SUITABLE LAYOUT ENSURING UNIFORM HEATING OF PRODUCT STORED.
- PIPE MAY BE BENT TO A MINIMUM RADIUS EQUAL TO THREE TIMES THE DIAMETER. BEND SHALL BE FREE OF CRACKS AND BUCKLES. FLATTENING OF A BEND, AS MEASURED BY THE DIFFERENCE BETWEEN THE MAXIMUM AND MINIMUM DIAMETER AT ANY CROSS SECTION SHALL NOT EXCEED 8% OF THE NOMINAL OUTSIDE DIAMETER.
- HEATING COIL SHALL SLOPE TOWARDS OUTLET NOZZLE FOR SELF DRAINAGE.
- MAXIMUM UNSUPPORTED LENGTH OF STEAM COIL SHALL BE AS PER THE FOLLOWING TABLE.

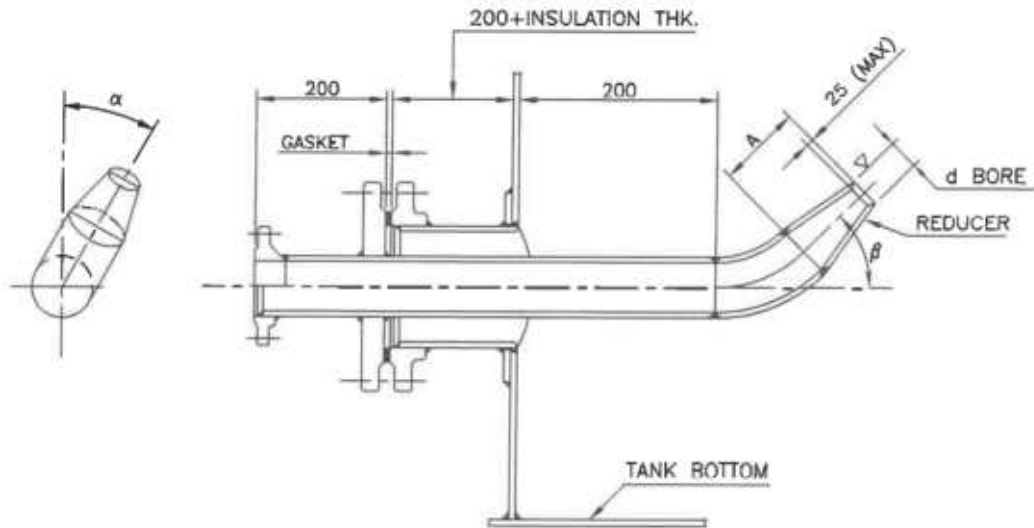
NOMINAL DIA. OF PIPE	40	50	80
MAXIMUM UNSUPPORTED LENGTH	4000	5000	6500

- UNLESS OTHERWISE STATED IN ENGINEERING DRAWING ALL INTERNAL BOLTS SHALL BE STAINLESS STEEL.
- NO INTERNAL FLANGES ARE ALLOWED.

Rev.	Date	Purpose	Prepared	Checked	Stds. Committee Convenor	Stds. Bureau Chairman
9	02.12.2024	REVISED AND REISSUED AS STANDARD	AS/SM	TKh	Frank Nalin	MN
8	20.06.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	KJH	RKT
7	01.10.2013	REAFFIRMED AND REISSUED AS STANDARD	GCP	TK	RKT	SC



TYPE - 1

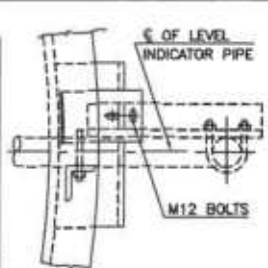
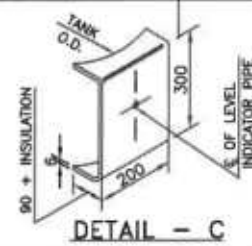
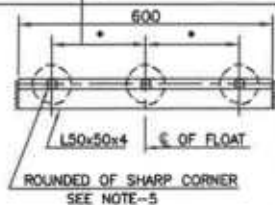
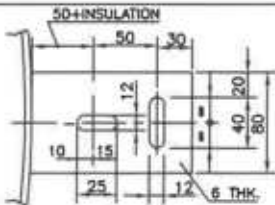
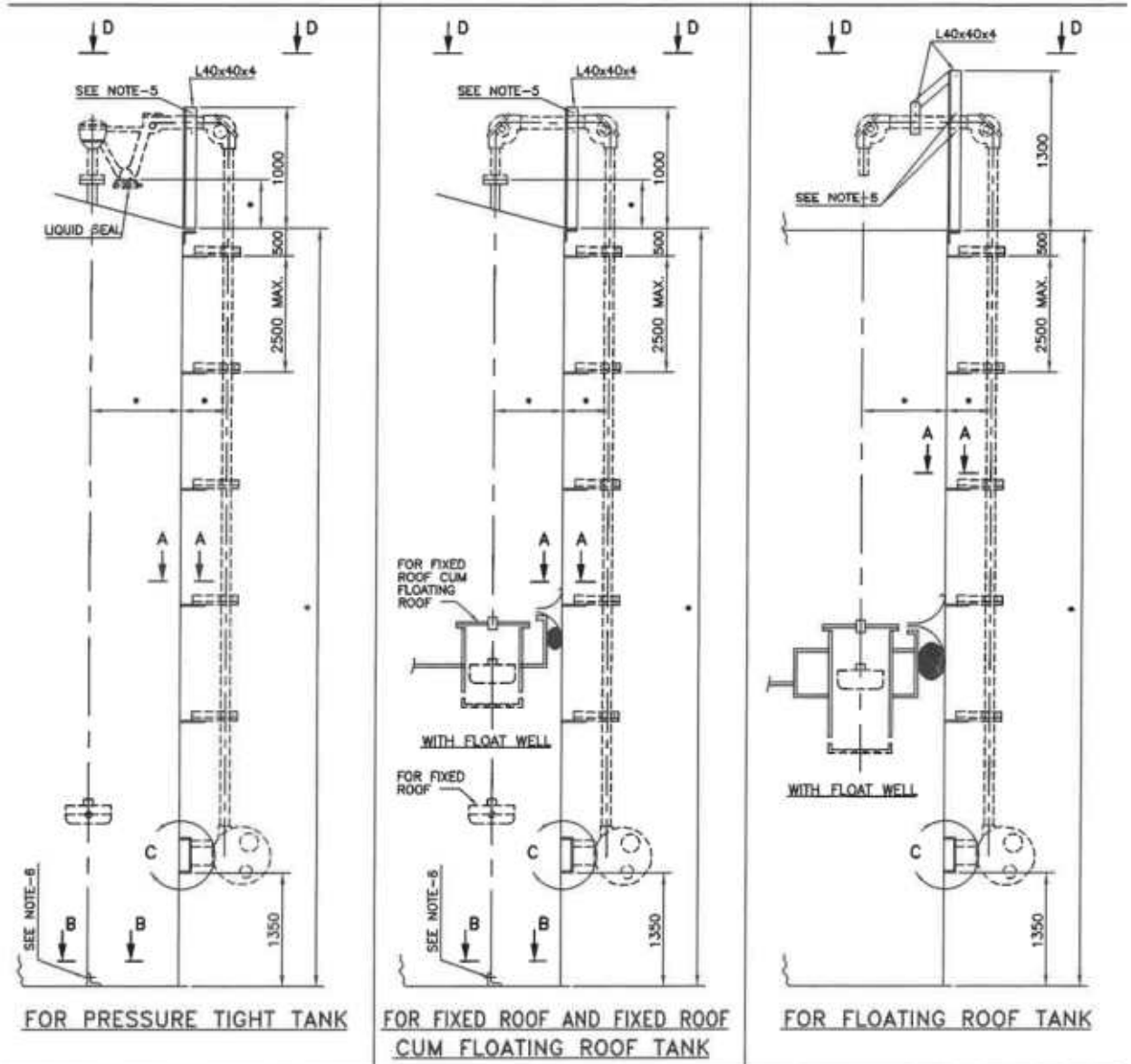


TYPE - 2

NOTES :

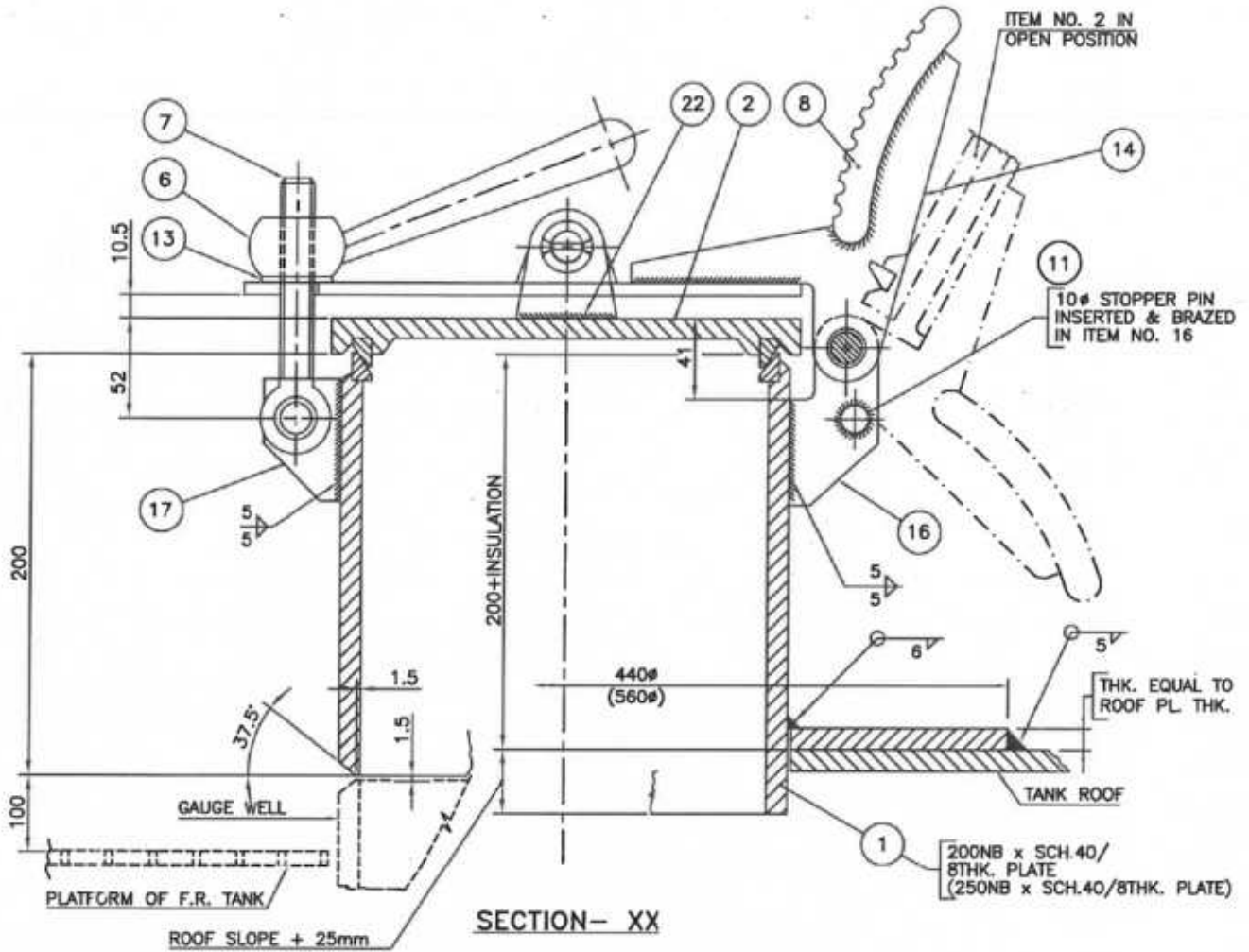
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
2. FOR MATERIAL SPECIFICATION AND DIMENSIONS MARKED α, β, A & d REFER ENGINEERING DRAWING.
3. FOR LINED TANKS TYPE-2 SHALL BE USED.
4. IN CASE OF CONFLICT ENGINEERING DRAWING SHALL GOVERN.

8	21.11.2024	REAFFIRMED AND REISSUED AS STANDARD	J.SINGH	TKh	KV/NK	MN
7	20.06.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	KJH	RKT
6	01.10.2013	REAFFIRMED AND REISSUED AS STANDARD	GCP	TK	RKT	SC
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	

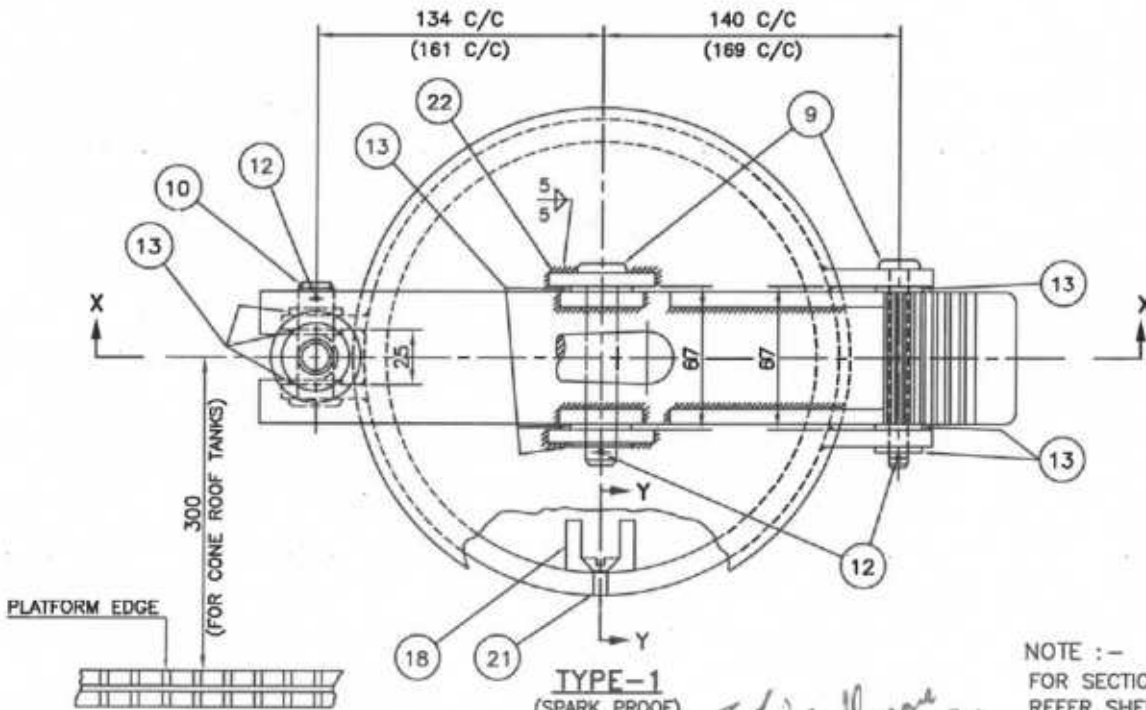


- NOTES**
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
 2. IN CASE OF CONFLICT ENGINEERING DRAWING SHALL GOVERN.
 3. FOR MATERIAL SPECIFICATION REFER ENGINEERING DRAWING.
 4. DIMENSIONS MARKED (*) SHALL BE AS PER FABRICATION / ENGINEERING DRAWING.
 5. DRILLING OF THE HOLES BY THE INSTRUMENT CONTRACTOR.
 6. ARRANGEMENT NOT APPLICABLE FOR LINED TANKS.

8	05.11.2024	REAFFIRMED AND REISSUED AS STANDARD	AS	TKh	KA/NK	MN
7	16.09.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	KJH	RKT
6	01.10.2013	REAFFIRMED AND REISSUED AS STANDARD	GCP	TK	RKT	SC
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
						Approved by



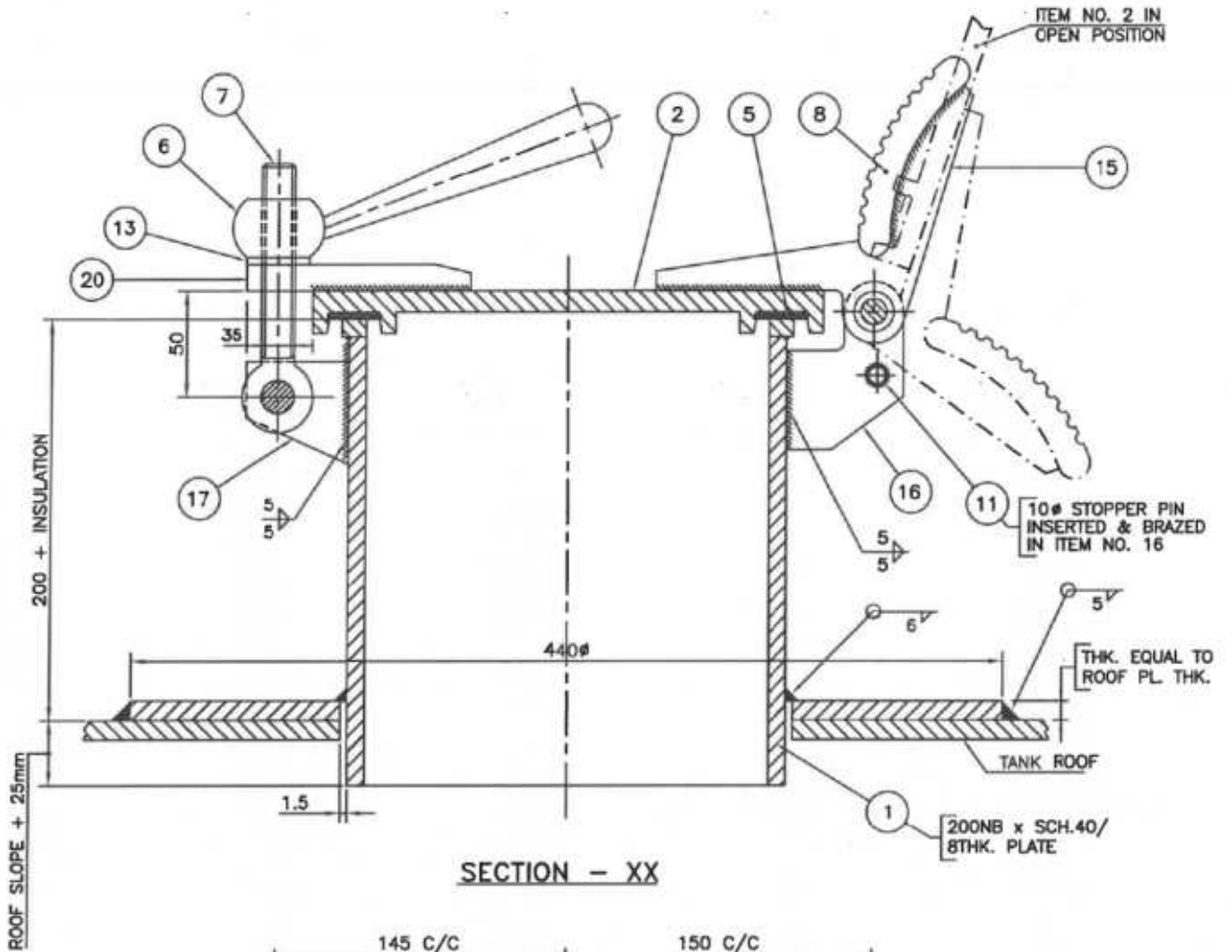
SECTION-XX



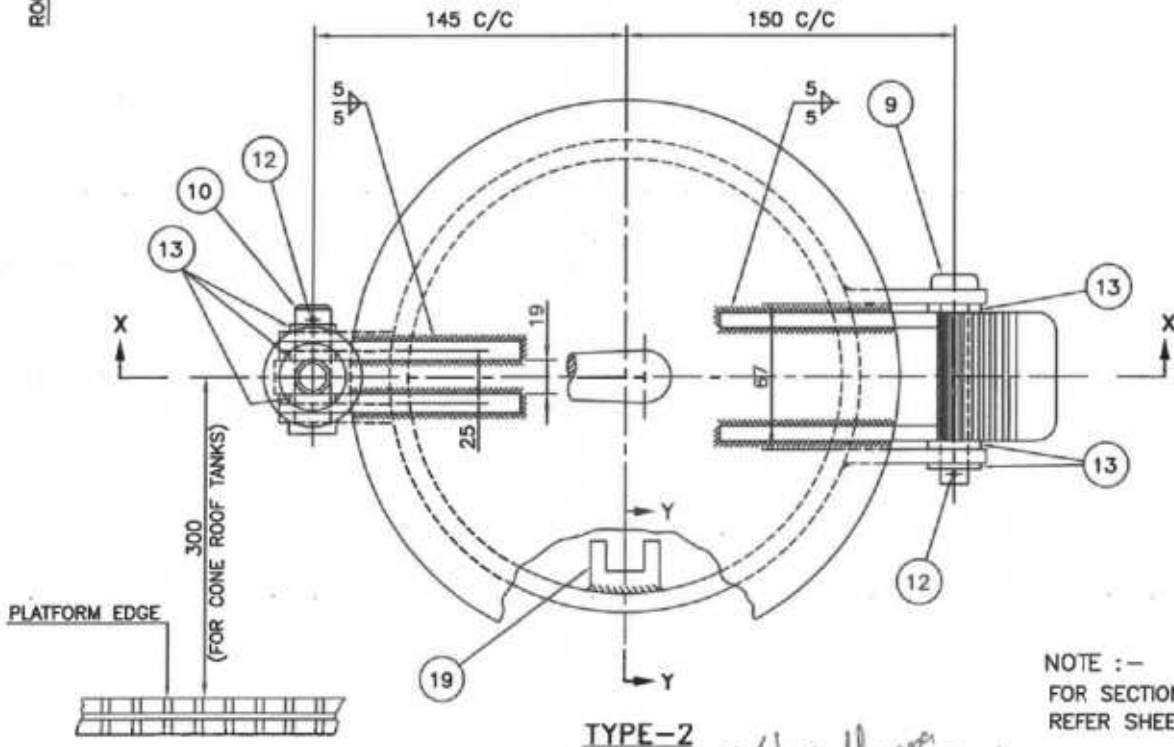
NOTE :-
FOR SECTION 'YY'
REFER SHEET 3 OF 6

8	02.12.2024	REVISED AND REISSUED AS STANDARD	J.SINGH	TKh	KA/NK/Modin	MN
7	20.06.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	KJH	RKT
6	01.10.2013	REVISED AND REISSUED AS STANDARD	GCP	TK	RKT	SC

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
Approved by						



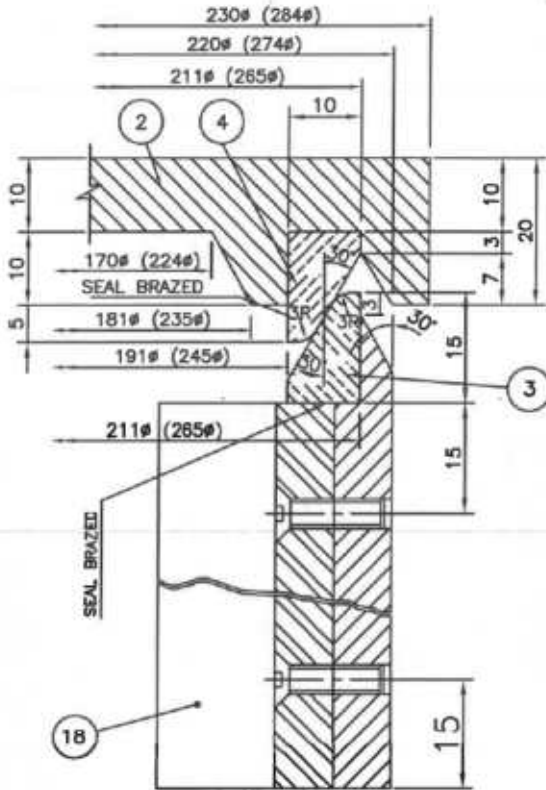
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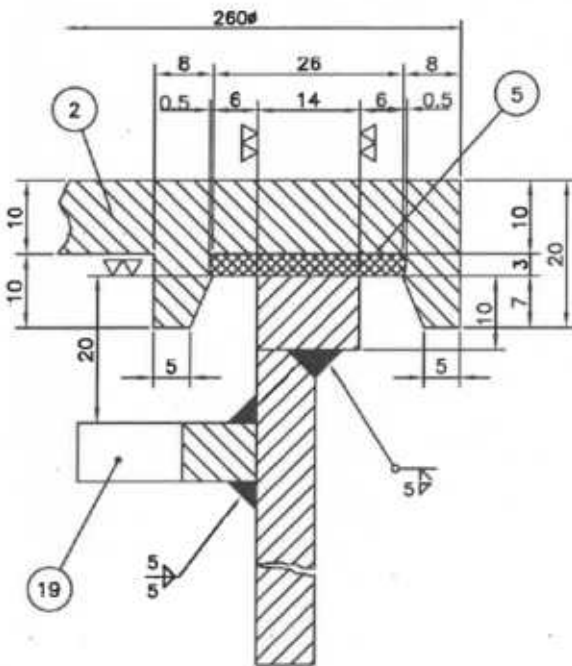
TYPE-2

NOTE :-
FOR SECTION 'YY'
REFER SHEET 3 OF 6

8	02.12.2024	REVISED AND REISSUED AS STANDARD	J.SINGH	TKh	KAN/NK Nalin	MN
7	20.06.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	KJH	RKT
6	01.10.2013	REVISED AND REISSUED AS STANDARD	GCP	TK	RKT	SC
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	



SECTION - 'YY'
(TYPE-1)



SECTION - 'YY'
(TYPE-2)

* COMPRESSED FIBRE ASBESTOS FREE GASKET

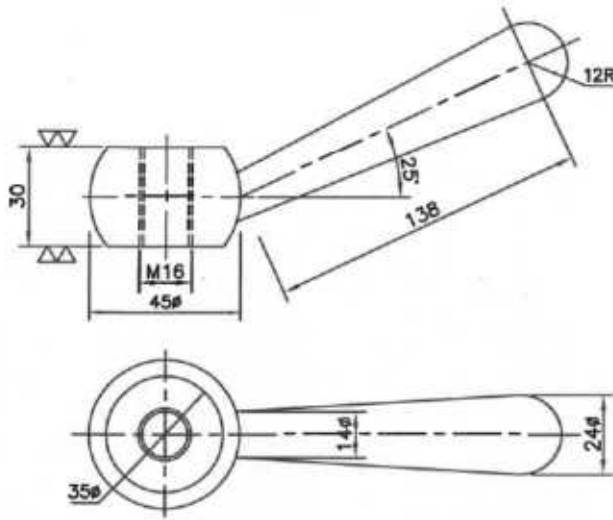
22	2	-	EAR PLATE	M.S.	-
21	2	-	SCREW	BRASS	-
20	-	2	GUIDE PLATE	-	M.S.
19	-	1	TAP GUIDE	-	M.S.
18	1	-	CHANNEL	ALUMINIUM	-
17	2	2	GUSSET FOR EYE	M.S.	M.S.
16	2	2	EAR PLATE	M.S.	M.S.
15	-	2	PADDLE BRACKET	-	M.S.
14	1	-	PADDLE BRACKET	M.S.	-
13	10	7	WASHER 3 THK. FOR M16 / 16 # PIN	BRASS	M.S.
12	3	2	SPLIT PIN	S.S.	S.S.
11	1	1	STOPPER PIN	BRASS	M.S.
10	1	1	LOCK PIN	BRASS	S.S.
9	2	1	LOCK PIN	BRASS	S.S.
8	1	1	PADDLE	M.S.	M.S.
7	1	1	EYE BOLT	IS-1367	IS-1367
6	1	1	NUT WITH HANDLE	IS-1875 CL-2	IS-1875 CL-2
5	-	1	GASKET	-	*
4	1	-	INSERT RING	BRASS	-
3	1	-	INSERT RING	BRASS	-
2	1	1	COVER	IS-2062 E250	IS-2062 E250
1	1	1	NOZZLE NECK	IS-2062 E250 SA-53/SA 106 GRB	IS-2062 E250 SA-53/SA 106 GRB
ITEM NO.	TYPE 1	TYPE 2	DESCRIPTION	MATERIAL	
	NO. OFF			TYPE-1	TYPE-2

BILL OF MATERIALS

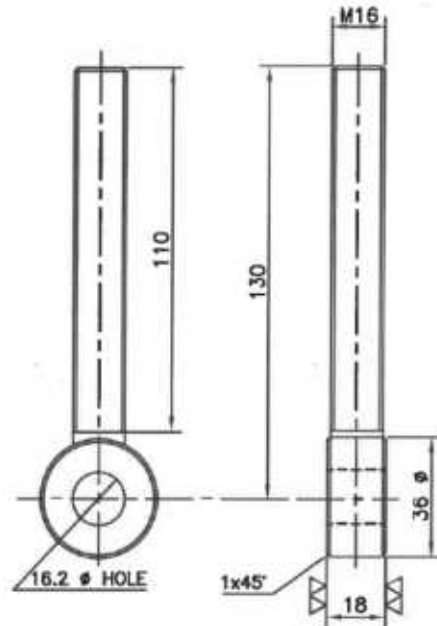
8	02.12.2024	REVISED AND REISSUED AS STANDARD	J.SINGH	RKT	KJH	MN
7	20.06.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	KJH	RKT
6	01.10.2013	REVISED AND REISSUED AS STANDARD	GCP	TK	RKT	SC
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman

Approved by

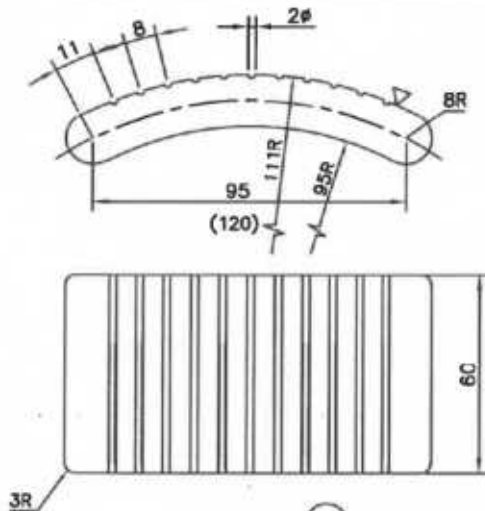
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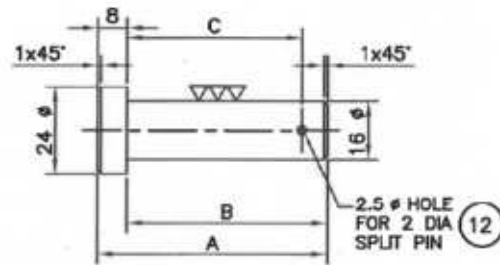
NUT WITH HANDLE (6)



EYE BOLT (7)

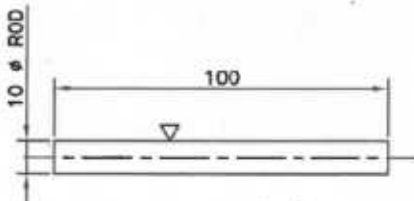


PADDLE (8)

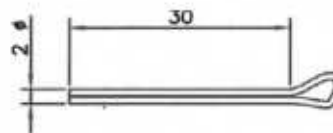


LOCK PIN (9) (10)

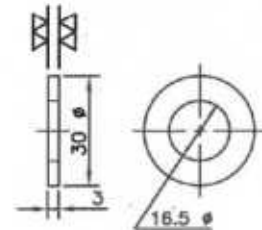
PART NO.	PIN DIA.	A	B	C
9	M 16	105	97	90
10	M 16	63	55	48



STOPPER PIN (11)

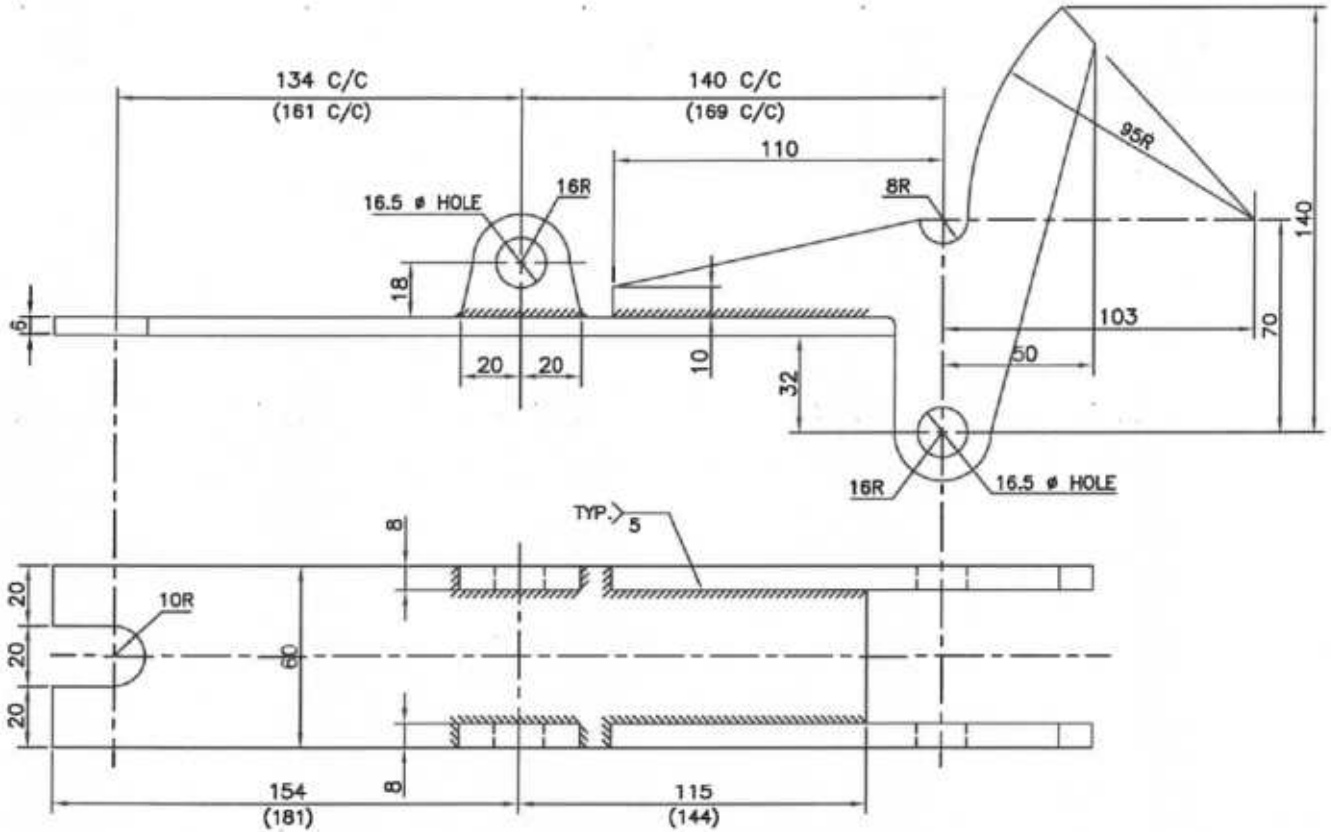


SPLIT PIN (12)

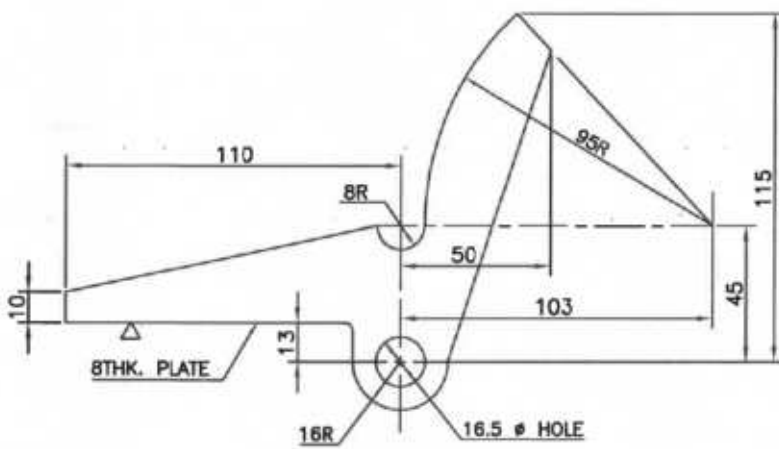


WASHER (13)

8	02.12.2024	REVISED AND REISSUED AS STANDARD	J.SINGH	TKh	KV/NK	MN
7	20.06.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	KJH	RKT
6	01.10.2013	REVISED AND REISSUED AS STANDARD	GCP	TK	RKT	SC
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	

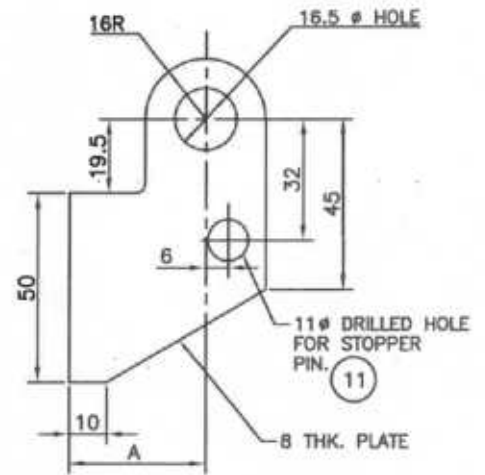


PADDLE BRACKET (14)



PADDLE BRACKET

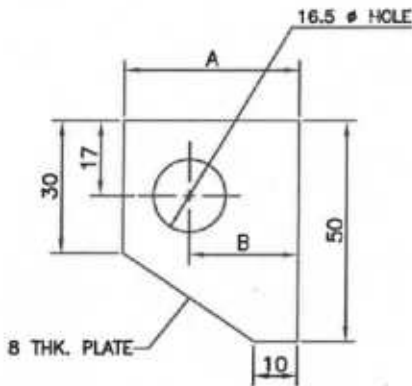
(15)



EAR PLATE (16)

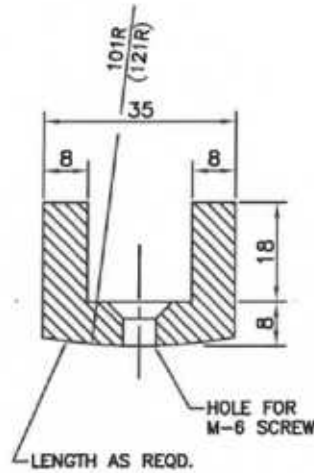
TYPE	A
1	38
2	48

8	02.12.2024	REVISED AND REISSUED AS STANDARD	J.SINGH	TKh	KA/NK	MN
7	20.06.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	KJH	RKT
6	01.10.2013	REVISED AND REISSUED AS STANDARD	GCP	TK	RKT	SC
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman

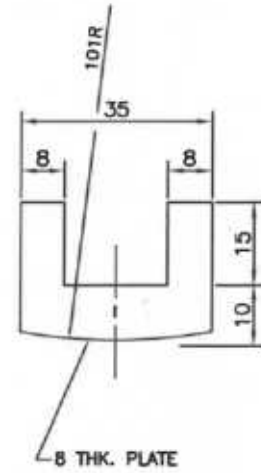


GUSSET WITH EYE (17)

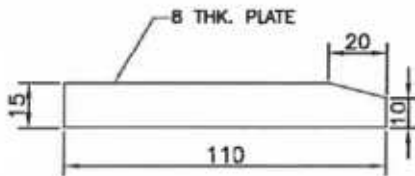
TYPE	A	B
1	40	25
2	51	36



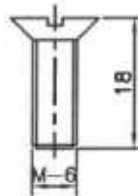
CHANNEL (18)



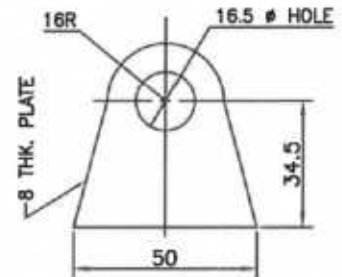
TAPE GUIDE (19)



GUIDE PLATE (20)



SCREW (21)

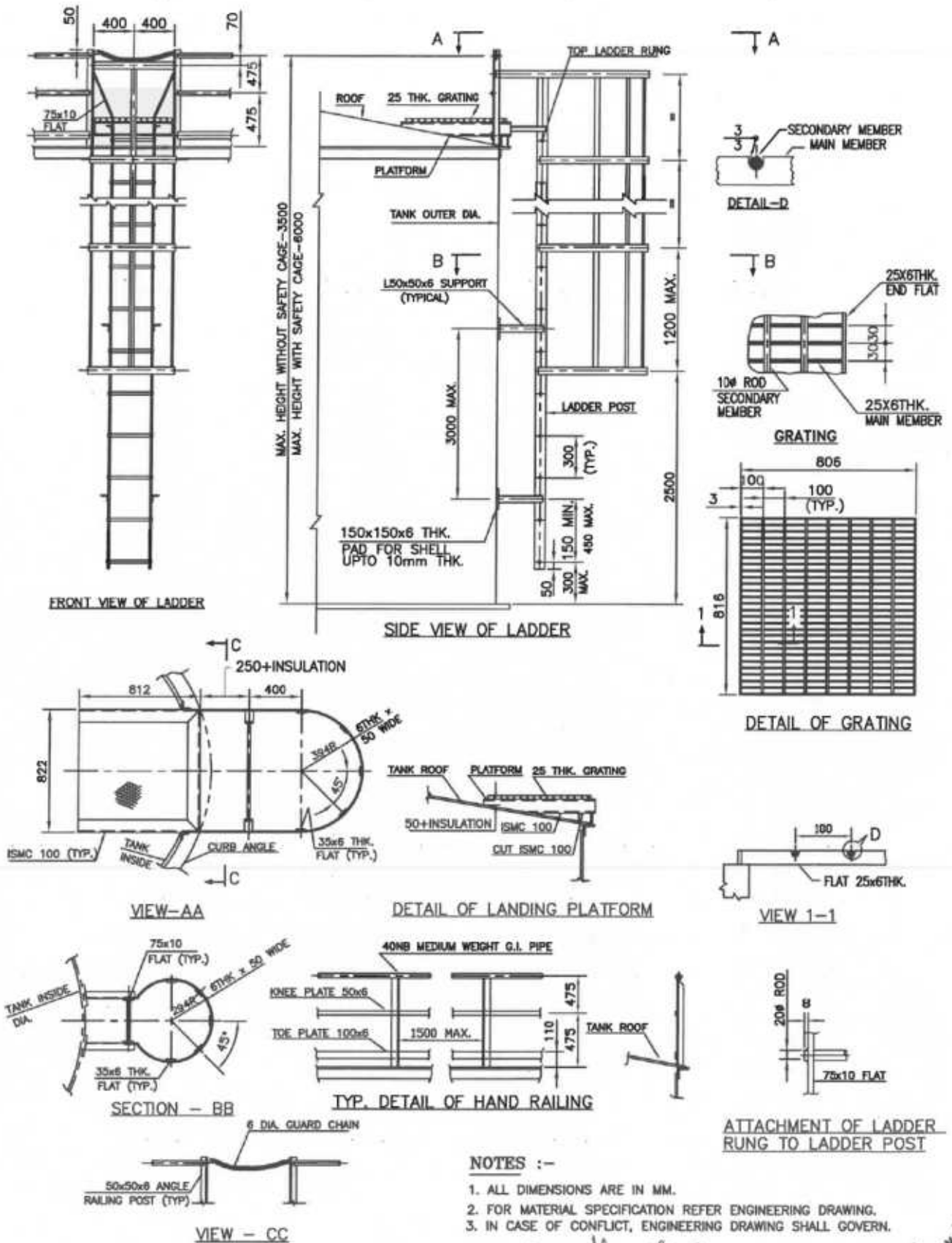


EAR PLATE (22)

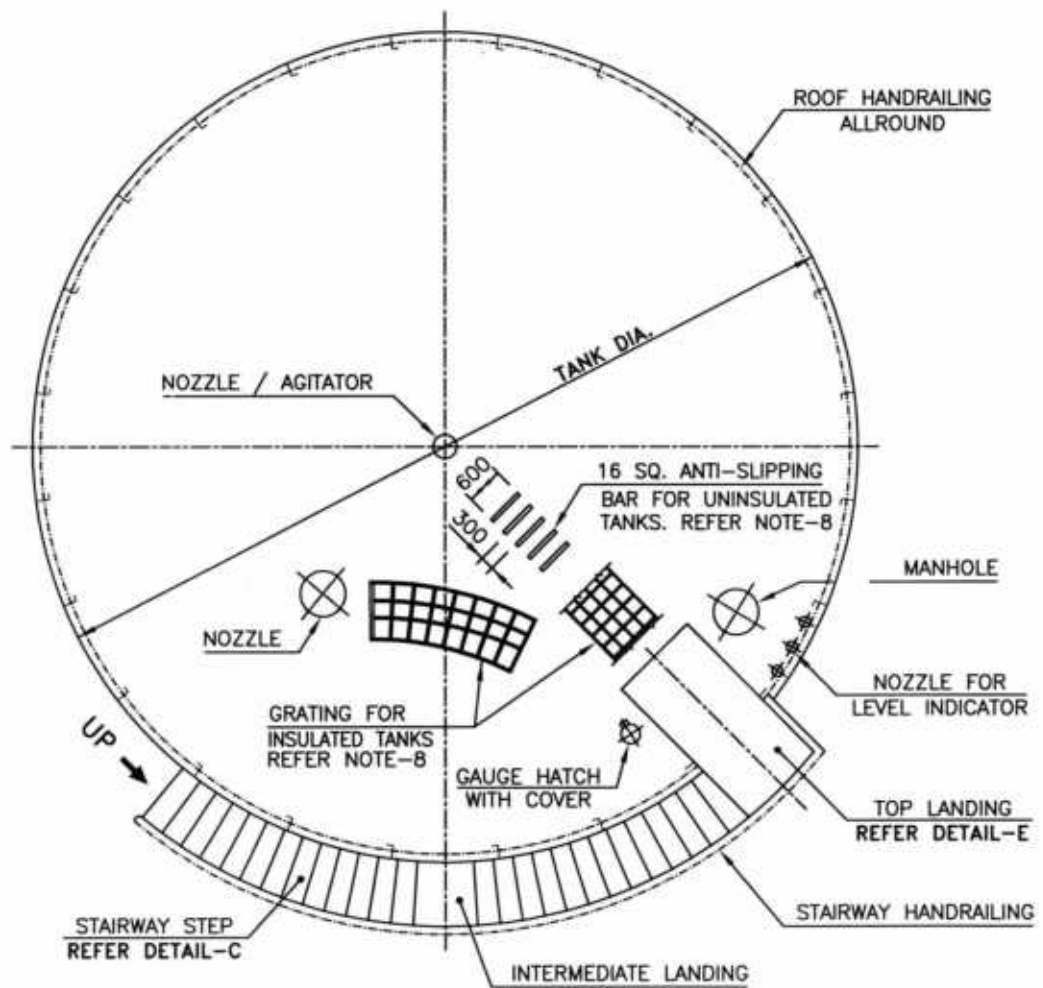
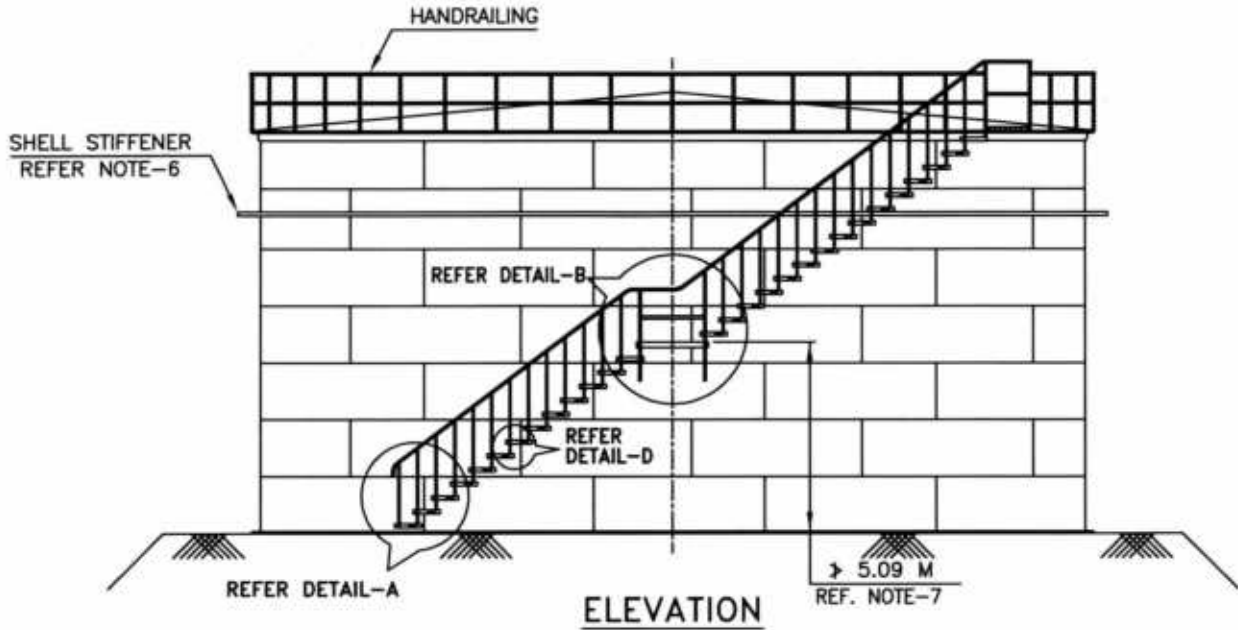
NOTES

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
2. AT THE TIME OF WELDING EAR PLATE '16' WITH ITEM '1' ENSURE THAT ANNULAR GAP BETWEEN ITEM 1 AND 2 IS UNIFORM THROUGHOUT THE PERIPHERY.
3. ALL HOLES SHALL BE REAMED AFTER DRILLING.
4. CONTACT FACE OF INSERT RINGS SHALL BE MACHINED TO HAVE GAS TIGHT SEAL.
5. FOR HYDROCARBON SERVICE USE TYPE-1 AND FOR GENERAL SERVICE USE TYPE-2.
6. THIS STANDARD IS APPLICABLE ONLY FOR NON-PRESSURE TANKS.
7. DIMENSIONS SHOWN IN BRACKETS ARE FOR 250NB GAUGE HATCH.

8	02.12.2024	REVISED AND REISSUED AS STANDARD	J.SINGH	TKR	KANK NALIN	MN
7	20.06.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	KJH	RKT
6	01.10.2013	REVISED AND REISSUED AS STANDARD	GCP	TK	RKT	SC
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	

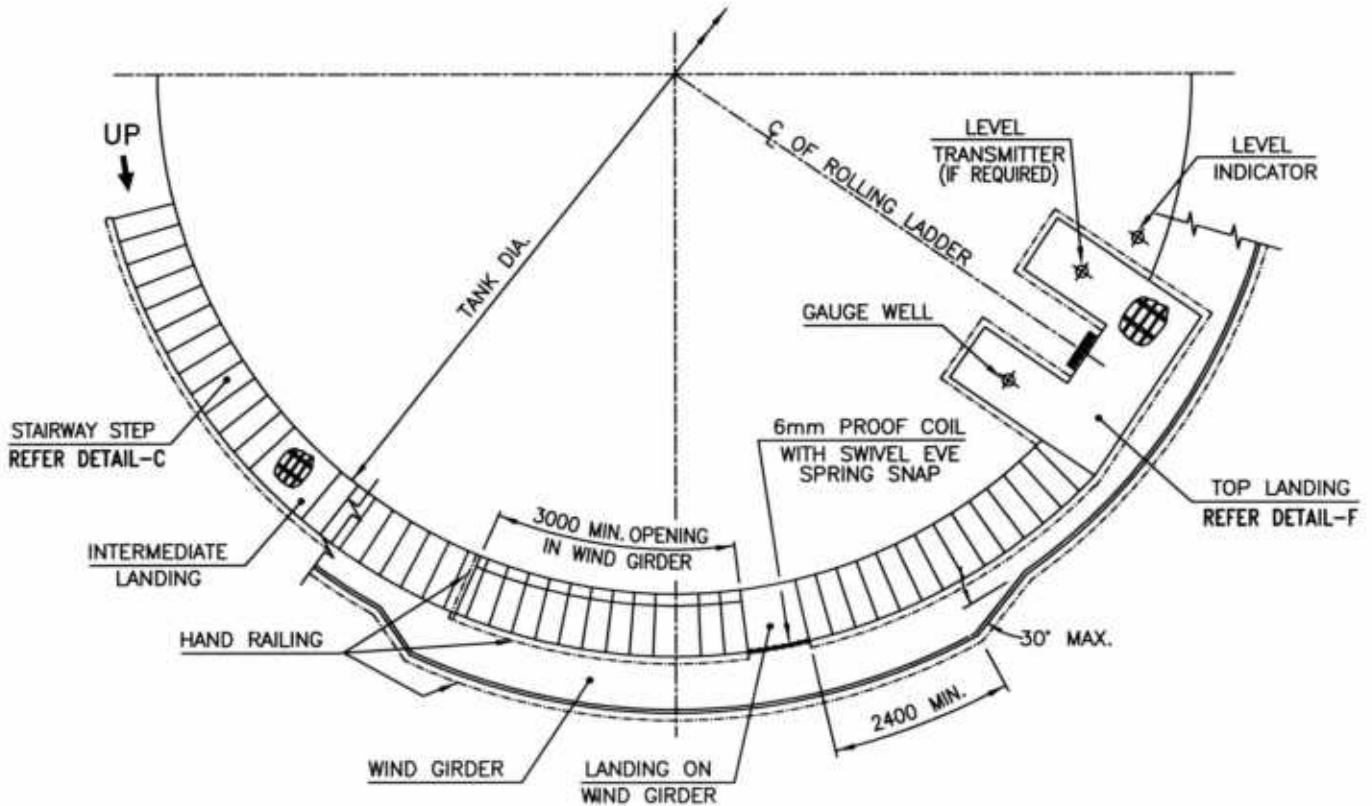
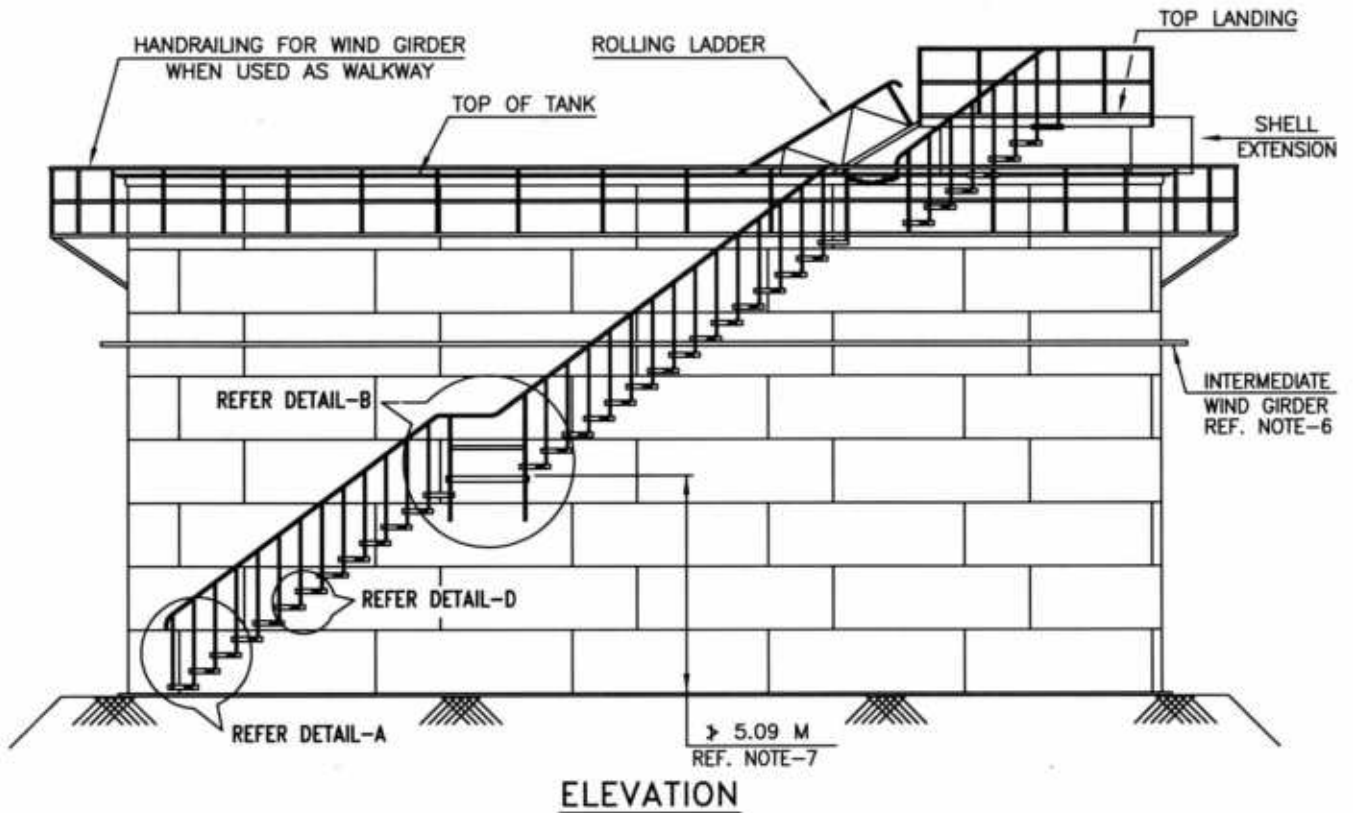


8	02.12.2024	REVISED AND REISSUED AS STANDARD	J.SINGH	Tkh	RANK Nalin	MN
7	20.06.2019	REAFFIRMED AND REISSUED AS STANDARD	DP	TK	KJH	RKT
6	17.10.2013	REAFFIRMED AND REISSUED AS STANDARD	GCP	KA	RKT	SC
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman



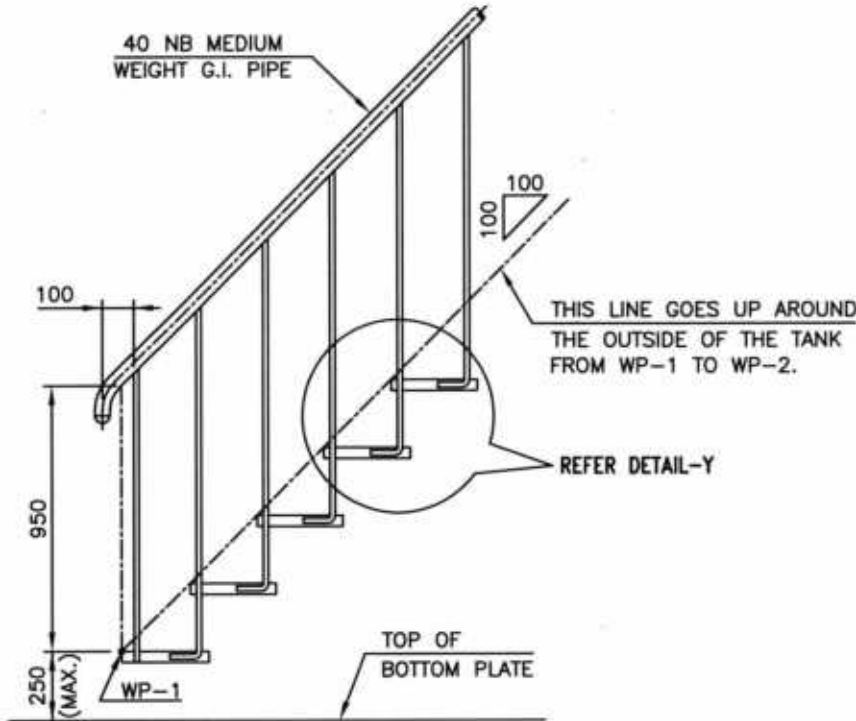
PLAN
(FIXED ROOF TANKS)

6	20.03.2024	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	Tkh	KANK Nalin	MN
5	02.08.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	RKK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by

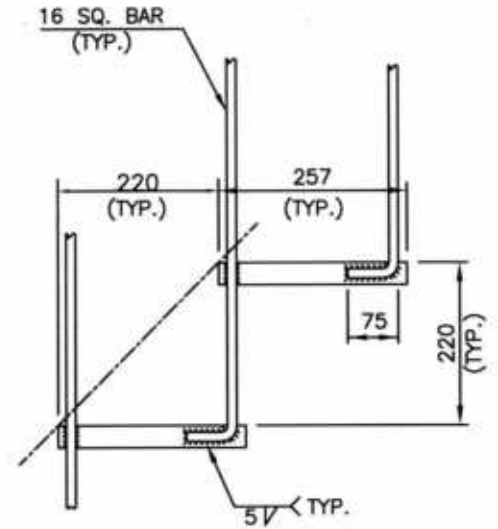


6	20.03.2024	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TKh	MN
5	02.08.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	RKK	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Approved by
				Stds. Committee Convener	Stds. Bureau Chairman

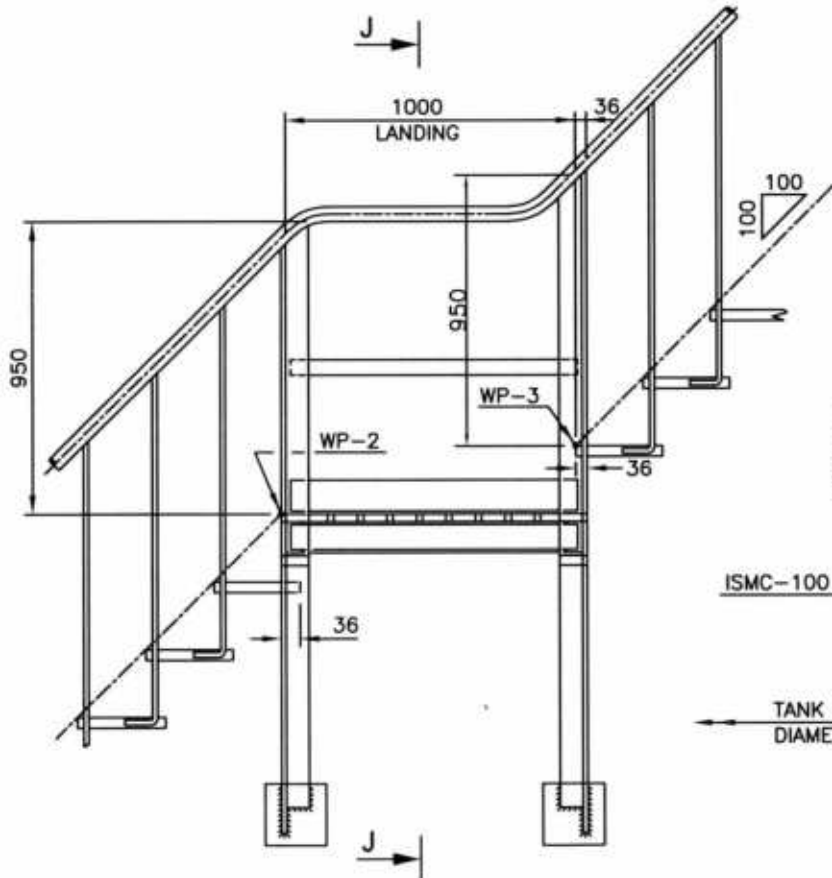
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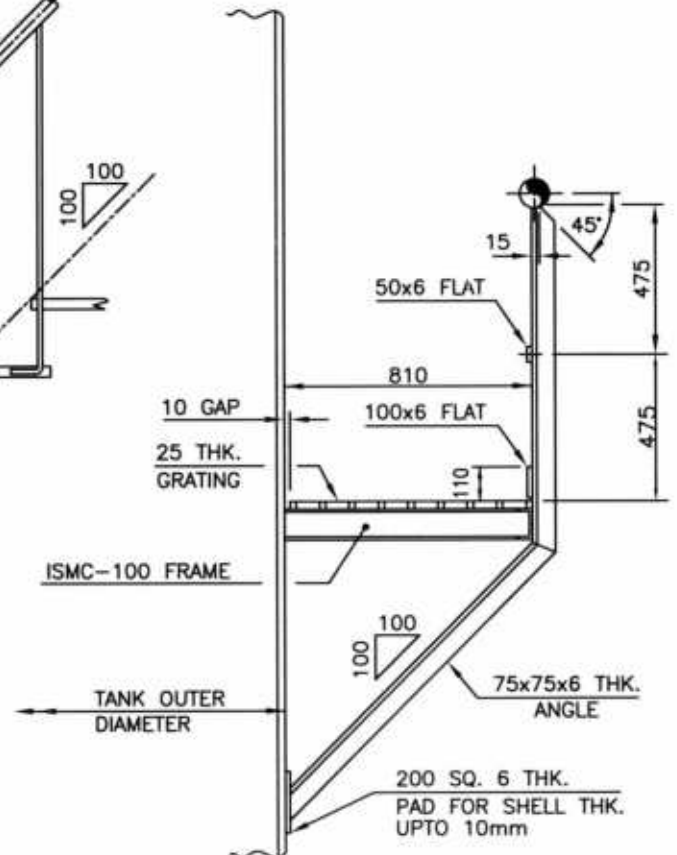
DETAIL - A



DETAIL - Y

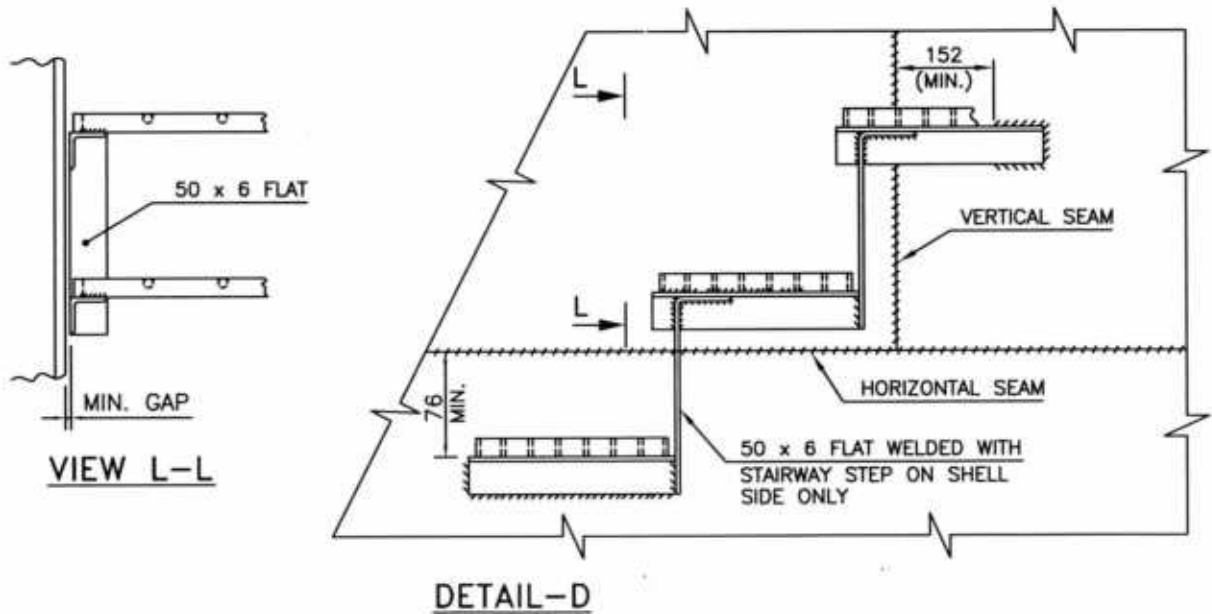
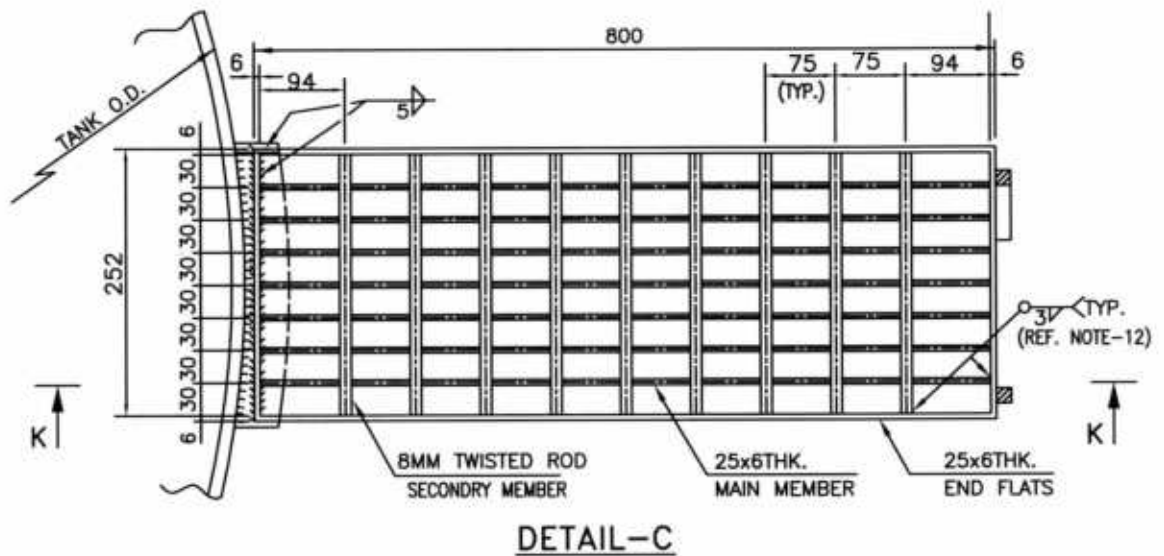
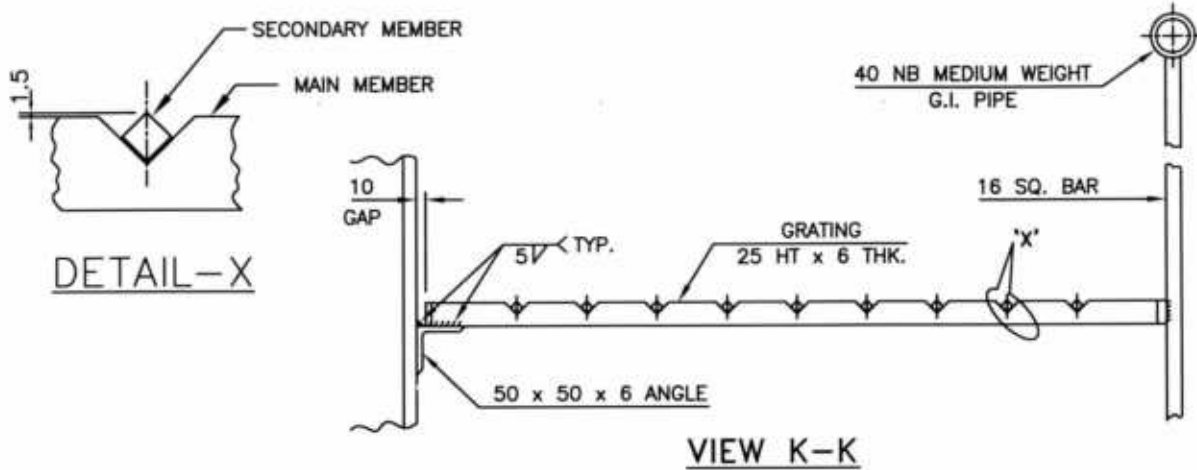


DETAIL - B
INTERMEDIATE LANDING



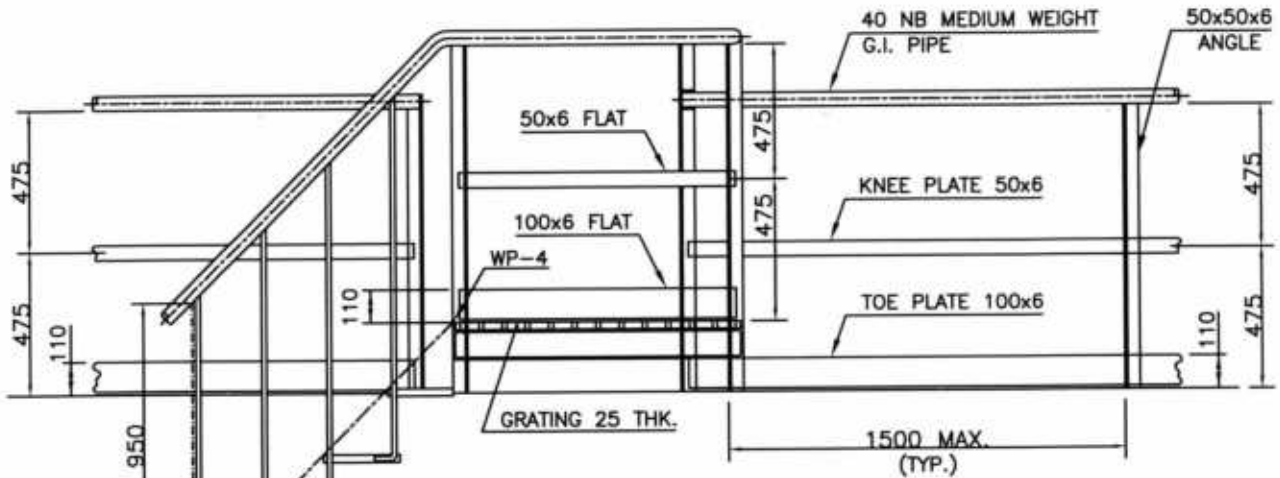
SECTION J-J

6	20.03.2024	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TKh	MN	
5	02.08.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	RKK	RKT	
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
				Approved by		

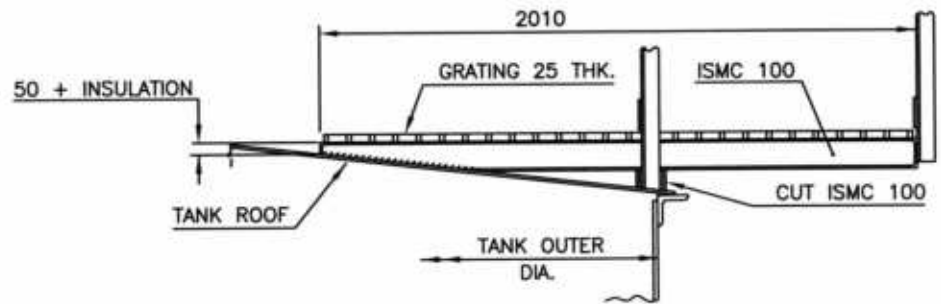


(TYP. VIEW SHOWING STAIRWAY STEPS TO SHELL ATTACHMENT NEAR WELD SEAMS)

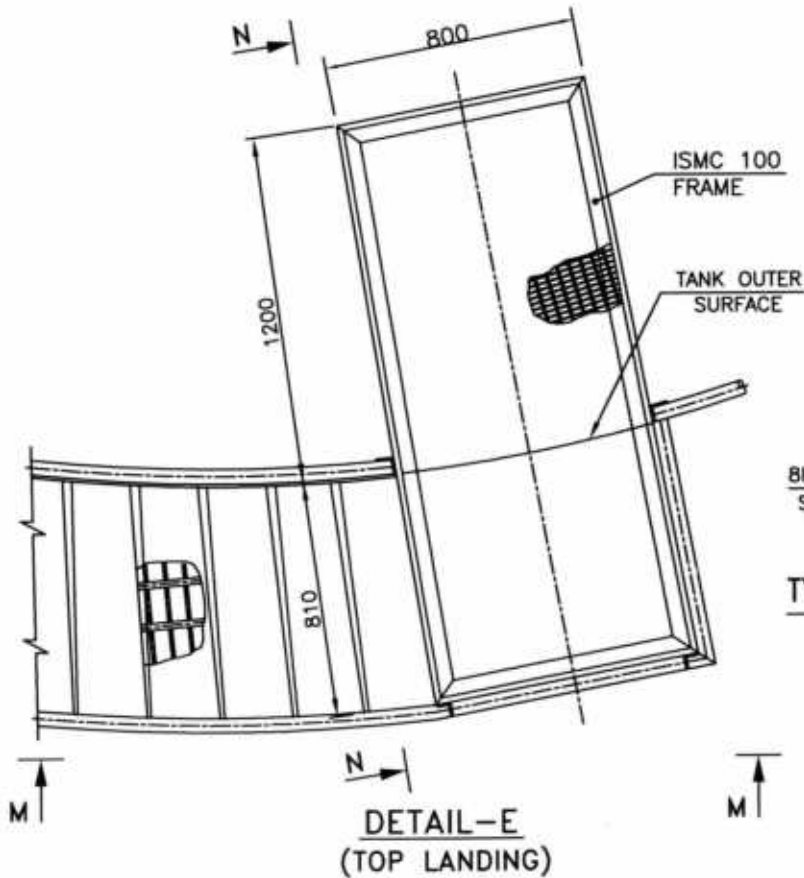
6	20.03.2024	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TKh	KANK NALY	MN
5	02.08.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	RKK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by



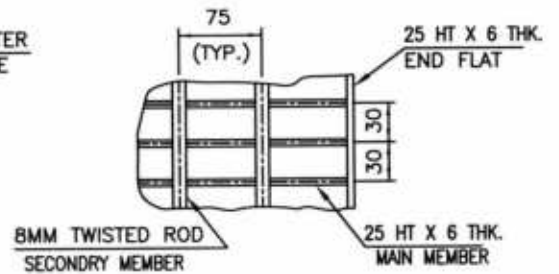
VIEW - MM



VIEW - NN

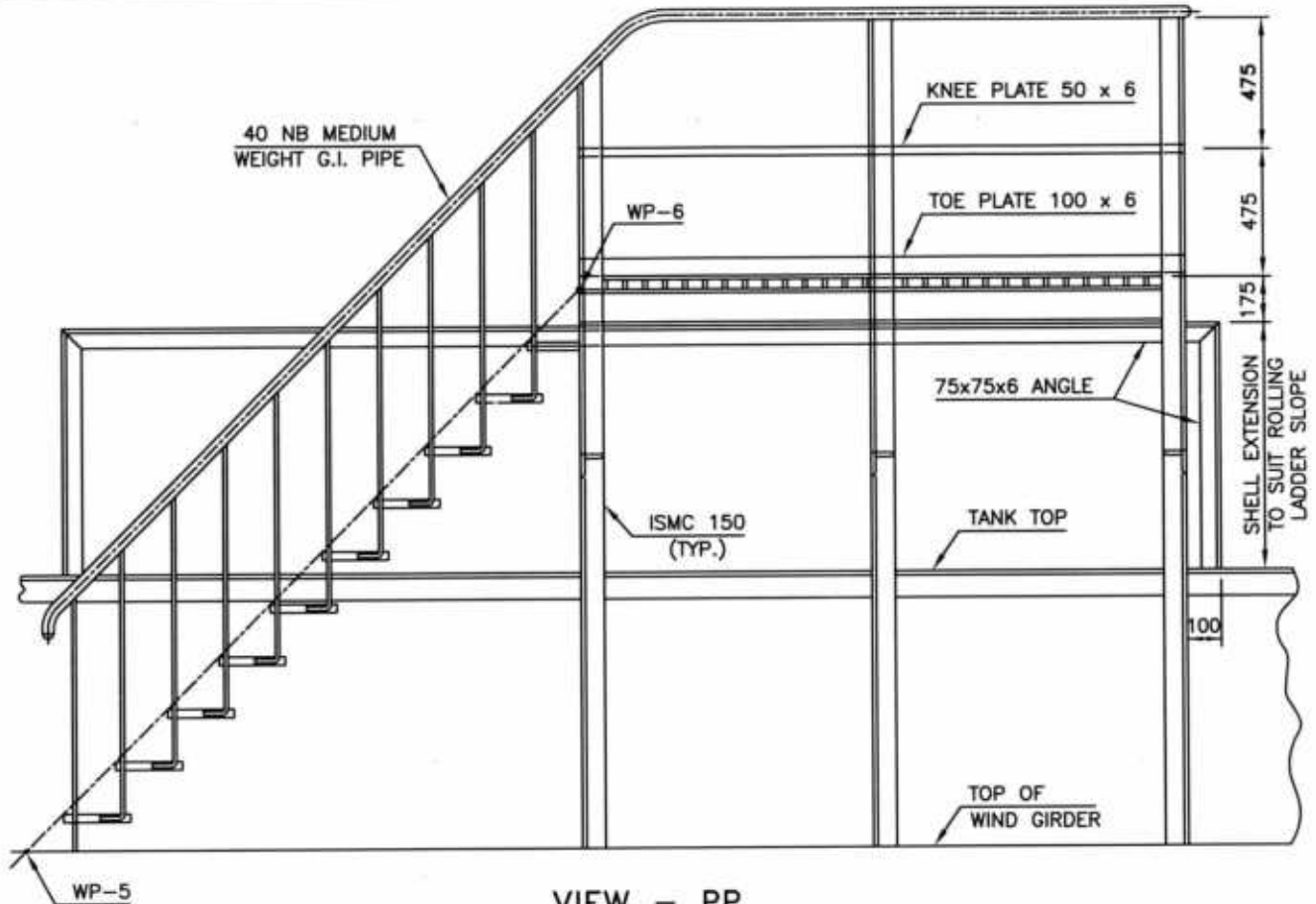


DETAIL-E
(TOP LANDING)

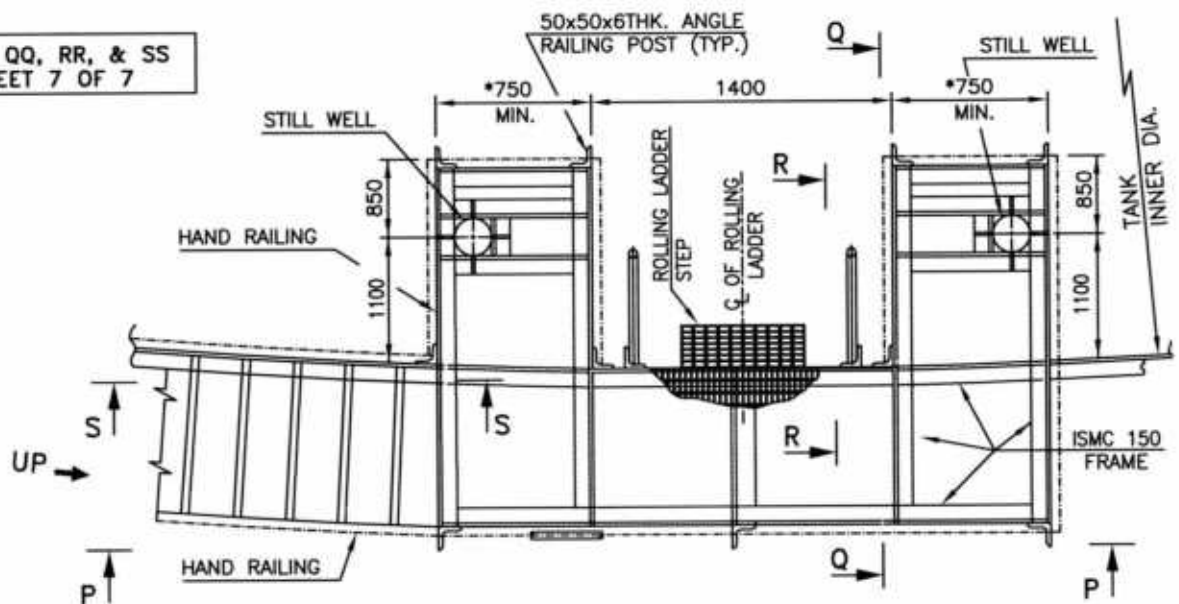


TYP. DETAIL OF PLATFORM GRATING

6	20.03.2024	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	Tkh	MN
5	02.08.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	RKK	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener
					Stds. Bureau Chairman
					Approved by

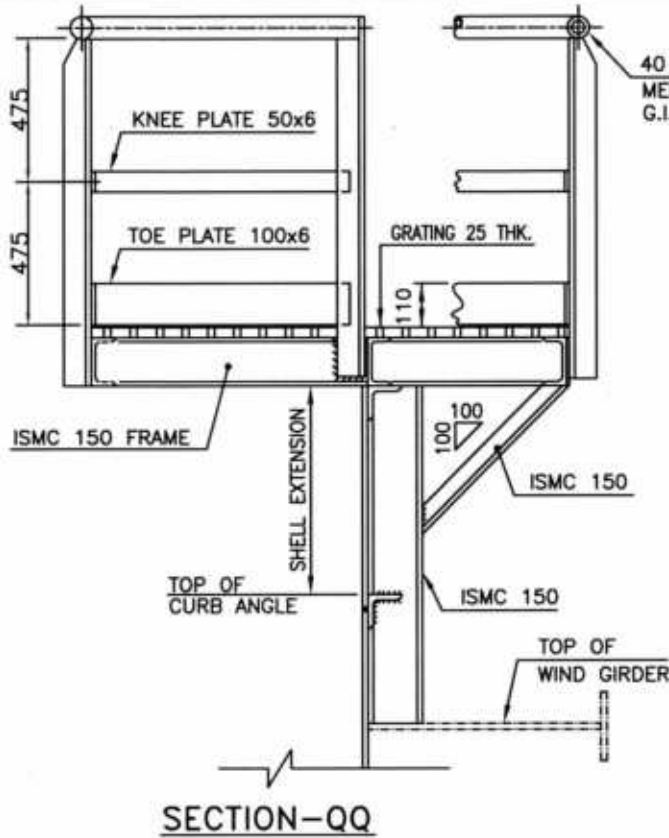


FOR SEC. QQ, RR, & SS
REFER SHEET 7 OF 7

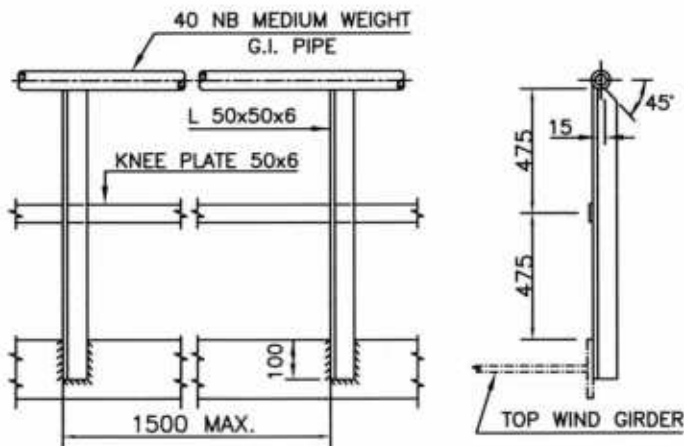


* : STILL WELL PIPE/FLANGE OD.
+500 (750 MIN.)

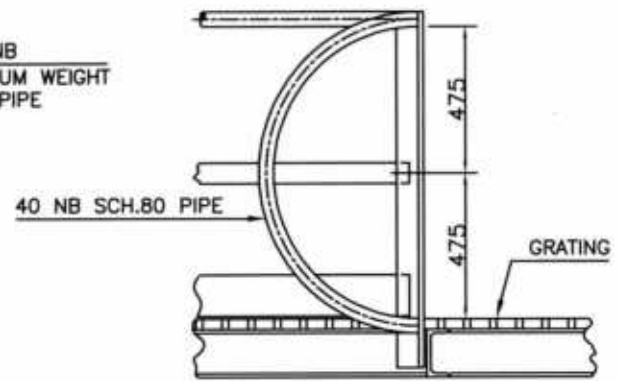
6	20.03.2024	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TKh	KANK NATH	MN
5	02.08.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	RKK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	



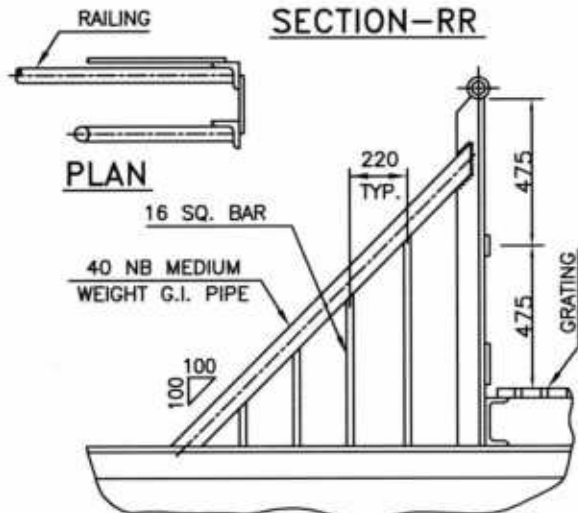
SECTION-QQ



TYP. HANDRAILING DETAIL FOR WIND GIRDER

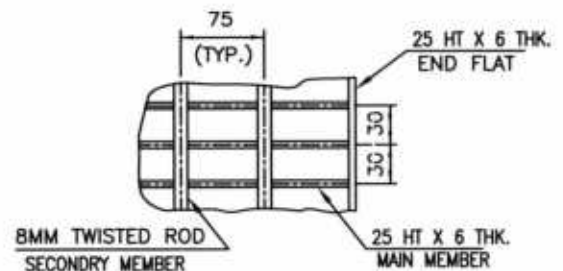


SECTION-RR



PLAN

SECTION-SS

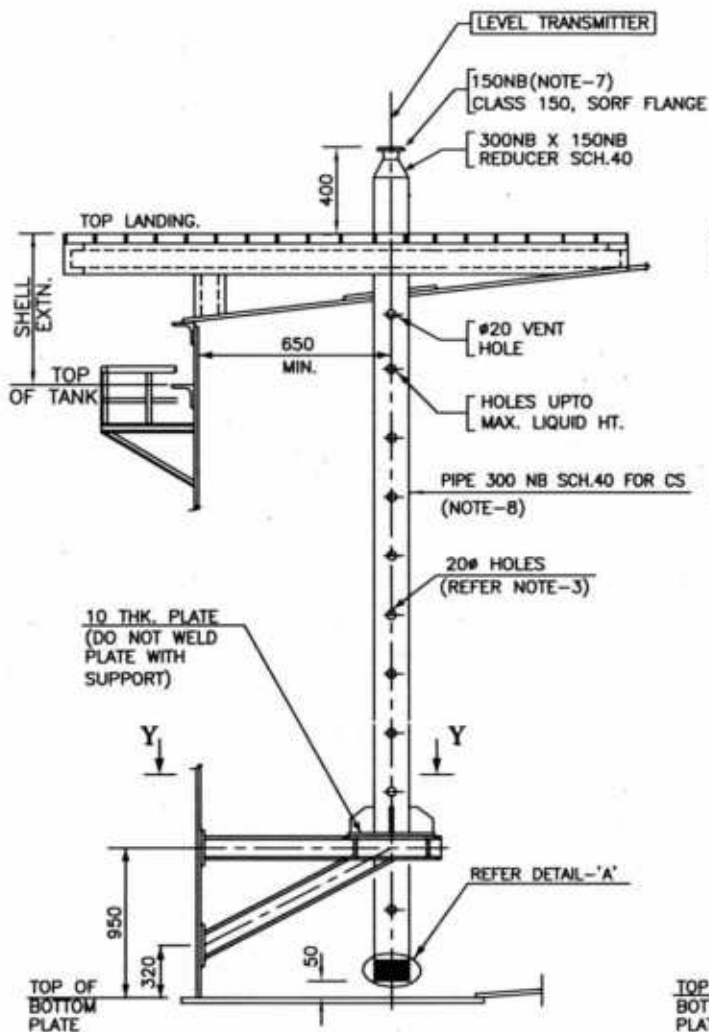


TYP. DETAIL OF PLATFORM GRATING

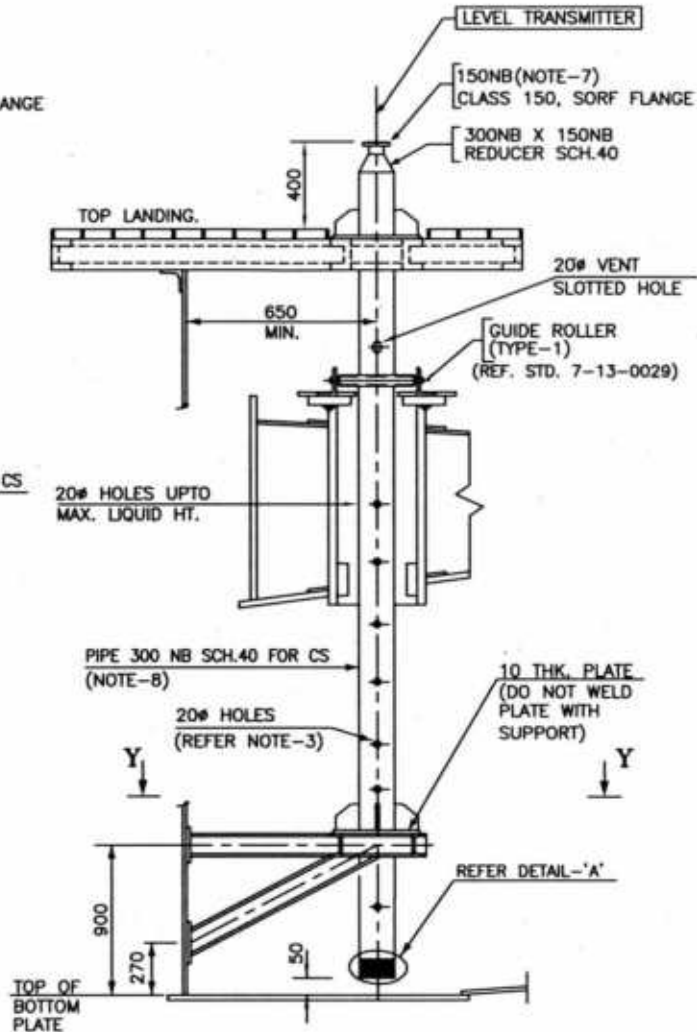
NOTES

1. ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE STATED.
2. UNLESS SPECIFIED OTHERWISE MATERIALS OF ALL PARTS OF SPIRAL STAIRWAY, ANGLES, CHANNELS, TWISTED BARS, FLATS SHALL BE OF IS : 2062 GR.A/B.
3. ALL FILLET WELDS SHALL BE 6mm CONTINUOUS UNLESS OTHERWISE SHOWN.
4. IN CASE ENGINEERING DRAWING SHOWS/REFERS TO DETAILS OTHER THAN SHOWN IN THIS STANDARD, SAME SHALL GOVERN.
5. SUITABLE OPENING SHALL BE MADE IN RAILING ON CONE ROOF TANKS IF MAINTENANCE PLATFORM FOR FOAM SYSTEM IS PROVIDED.
6. WIND GIRDER/STIFFENERS EXTENDING UPTO 152mm FROM OUTSIDE OF THE SHELL DO NOT REQUIRE ANY OPENING IN WIND GIRDER/STIFFENER.
7. INTER LANDING PLATFORM SHALL BE LOCATED IN SUCH A WAY THAT THEY ARE EQUISPACED, HOWEVER THE HEIGHT BETWEEN THEM SHALL NOT EXCEED THE LIMIT GIVEN IN THIS STANDARD.
8. ANTI-SLIPPING BARS/GRATING TO BE PROVIDED FOR APPROACH TO NOZZLES ON THE ROOF.
9. ALL GRATINGS SHALL BE MADE BY ELECTROFORGING PROCESS.
10. GRATING SHALL BE HOT DIP GALVANISED IN ACCORDANCE WITH IS:2629 AND TESTED AS PER IS:2633 AND IS:6745. QUANTITY OF ZINC COATING SHALL BE MINIMUM 900 gm/m² OF SURFACE AREA (0.12MM UNIFORM THICKNESS).
11. THE ELLECTROFORGED GRATING SHALL FULLFILL THE FOLLOWING MINIMUM REQUIREMENTS.
 - i) THE UNFUSED JOINTS ARE NOT IN EXCESS OF 5% OF THE TOTAL JOINTS AND ARE WELDED BY SMAW/GMAW PROCESS.
 - ii) THE JOINTS ARE ABLE TO SUSTAIN A MINIMUM PULL OUT LOAD OF 1.2 TIMES THE ALLOWABLE SHEAR CAPACITY OF THE CROSS MEMBER.
12. EVERY CROSS BAR AND MAIN MEMBER SHALL BE WELDED WITH END FLATS.

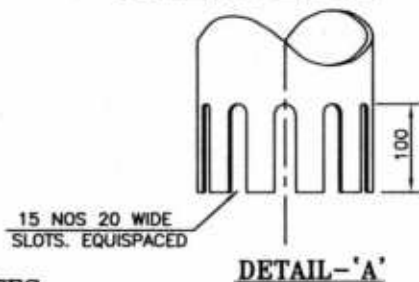
6	20.03.2024	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TKh	KANK Nalin	MN
5	02.08.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	RKK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by



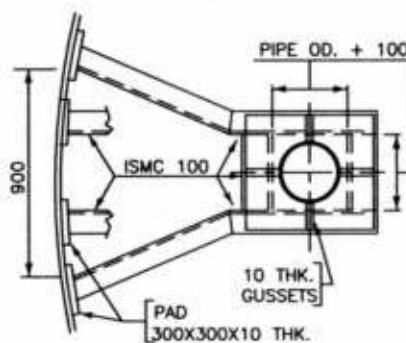
STILL WELL
FOR
CONE ROOF TANKS



STILL WELL
FOR
FLOATING ROOF TANKS



DETAIL - 'A'



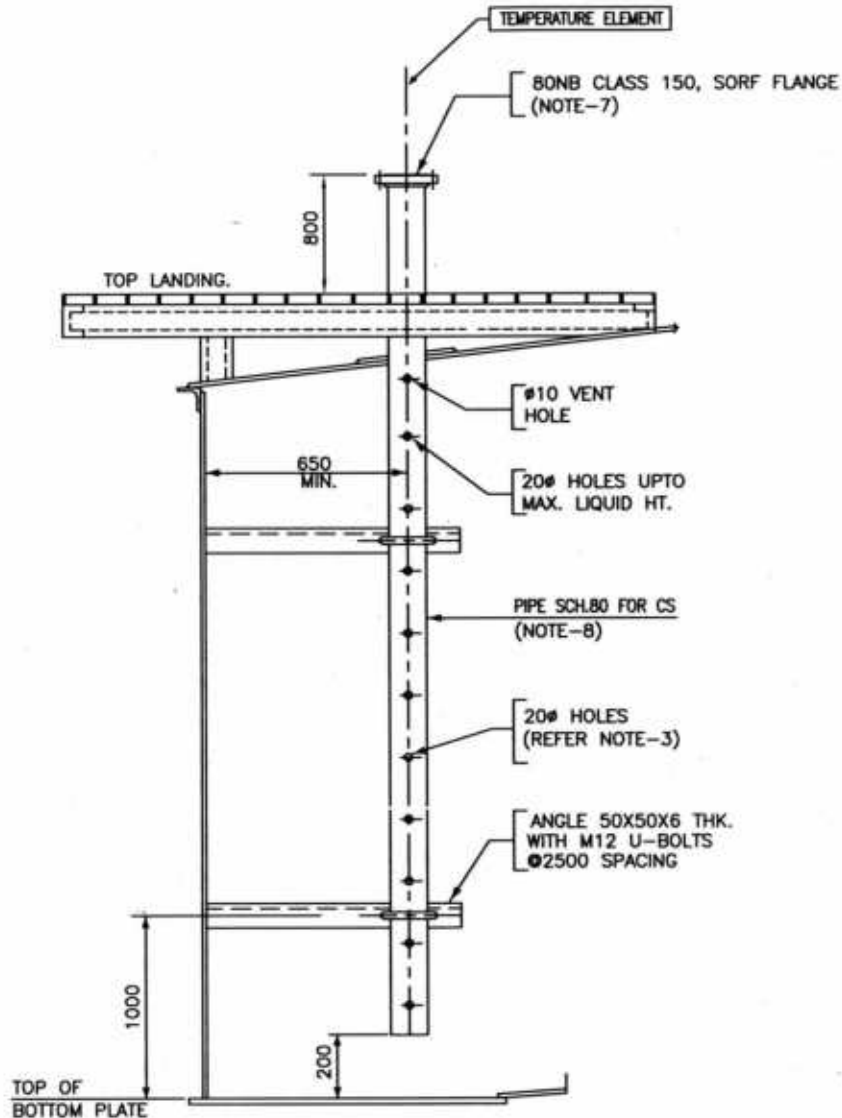
VIEW Y-Y

NOTES

- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
- STILLWELL SHALL BE IN TRUE VERTICAL POSITION AFTER HYDROTESTING.
- 20MM DIA HOLE AND EVERY HOLE TURNED 180 DEGREE. 500MM EQUAL SPACE BETWEEN 2 HOLES FOR ENTIRE PIPE LENGTH.
- ALL MATERIALS SHALL BE AS PER ENGINEERING DRAWING.
STILL-WELL TOLERANCES :-
a) OUTSIDE SURFACES OF THE PIPE MAY BE OUT OF ALIGNMENT / STRAIGHTNESS NOT MORE THAN 1 mm PER METRE LENGTH, BUT NOT MORE THAN 15 mm FOR ANY LENGTH.
b) STILL-WELL VERTICALITY SHALL BE WITHIN 1 mm PER METRE OF STILL-WELL HEIGHT BUT NOT MORE THAN 15 mm FOR ANY HEIGHT.
- GUIDE ROLLER ASSEMBLY MUST BE IN POSITION DURING HYDROTEST.
- REFER MECHANICAL DATASHEET.
- FOR TANK METALLURGY OTHER THAN CS, PIPE MATERIAL FOR STILL-WELL SHALL BE CONSIDERED ACCORDINGLY.

6	21.11.2022	REVISED AND REISSUED AS STANDARD	NS	TK	NK	SM
5	17.08.2021	REVISED AND REISSUED AS STANDARD	AK	TK	NK	SM
4	17.10.2013	REAFFIRMED AND REISSUED AS STANDARD	GCP	KA	RKT	SC
3	18.08.2009	REAFFIRMED AND REISSUED AS STANDARD	VPR	RKG	AKM	N DUARI
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman

Approved by



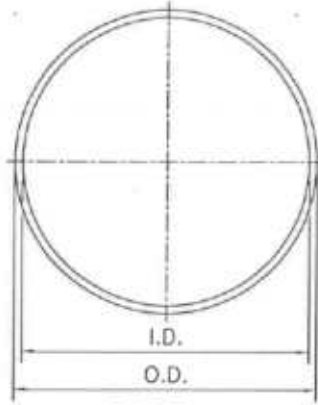
NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
2. STILLWELL SHALL BE IN TRUE VERTICAL POSITION AFTER HYDROTESTING.
3. 20MM DIA HOLE AND EVERY HOLE TURNED 180 DEGREE. 500MM EQUAL SPACE BETWEEN 2 HOLES FOR ENTIRE PIPE LENGTH.
4. ALL MATERIALS SHALL BE AS PER ENGINEERING DRAWING.
5. STILL-WELL TOLERANCES :-
 - a) OUTSIDE SURFACES OF THE PIPE MAY BE OUT OF ALIGNMENT / STRAIGHTNESS NOT MORE THAN 1MM / METRE LENGTH, BUT NOT MORE THAN 15MM FOR ANY LENGTH.
 - b) STILL-WELL VERTICALITY SHALL BE WITHIN 1MM/ METRE OF STILL-WELL HEIGHT BUT NOT MORE THAN 15MM FOR ANY HEIGHT.
6. WNRF FLANGE SHALL BE PROVIDED IN ACCORDANCE TO PROCESS/ CLIENT'S REQUIREMENT.
7. REFER MECHANICAL DATASHEET.
8. FOR TANK METALLURGY OTHER THAN CS, PIPE MATERIAL FOR STILL WELL SHALL BE CONSIDERED ACCORDINGLY.

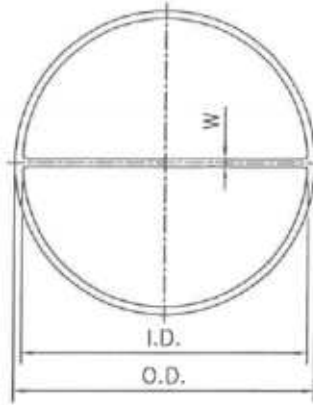
6	21.11.2022	REVISED AND REISSUED AS STANDARD	NS	TK	NK	SM
5	17.08.2021	REVISED AND REISSUED AS STANDARD	AK	TK	NK	SM
4	17.10.2013	REAFFIRMED AND REISSUED AS STANDARD	GCP	KA	RKT	SC
3	18.08.2009	REAFFIRMED AND REISSUED AS STANDARD	VPR	RKG	AKM	N.DUARI
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
						Approved by

<p>DETAIL-16</p>	<p>DETAIL-17</p>	<p>DETAIL-18</p>	<p>DETAIL-19</p>																				
<p>DETAIL-20</p>	<p>DETAIL-21</p>	<p>DETAIL-22</p>	<p>DETAIL-23</p>																				
<p>DETAIL-24</p>	<p>DETAIL-25</p>	<p>DETAIL-26</p>	<p>DETAIL-27</p>																				
<p>DETAIL-28</p>	<p>DETAIL-29</p>	<p>DETAIL-30</p>	<p>DETAIL-31</p>																				
<p>DETAIL-32</p>	<table border="1"> <thead> <tr> <th colspan="4">TABLE NO. - 1</th> </tr> <tr> <th>DIMENSIONS</th> <th>*</th> <th>**</th> <th>***</th> </tr> </thead> <tbody> <tr> <td>FOR METAL JACKETED GASKET & NON ASBESTOS / ELASTOMER GASKET.</td> <td>5</td> <td>6</td> <td>5</td> </tr> <tr> <td>FOR 4.5 mm SPWD GASKET</td> <td>6</td> <td>7</td> <td>6</td> </tr> <tr> <td>FOR 6.35 mm SPWD GASKET</td> <td>8</td> <td>9</td> <td>7</td> </tr> </tbody> </table>	TABLE NO. - 1				DIMENSIONS	*	**	***	FOR METAL JACKETED GASKET & NON ASBESTOS / ELASTOMER GASKET.	5	6	5	FOR 4.5 mm SPWD GASKET	6	7	6	FOR 6.35 mm SPWD GASKET	8	9	7	<p>NOTES: -</p> <ol style="list-style-type: none"> FOR CHANNEL COVER & TUBE SHEET A, BCD & D ETC. SHALL BE SAME AS FOR MATING FLANGES. IF SPIRAL WOUND GASKET IS USED FOR A JOINT:- <ol style="list-style-type: none"> DIAMETER OF TUBE SHEET & CHANNEL COVER 'D' SHALL BE GASKET OD + 8 mm. DIAMETER OF FLANGE RECESS FOR GASKET SHALL BE GASKET OD + 11 mm. ⊕ WELD DEPOSIT OR CLADDING SHALL BE AS SPECIFIED ON EQUIPMENT DRAWING. FOR ASTERISK MARKS REFER TABLE-1. WHEREVER 'R' IS SPECIFIED, IT IS TO BE RADIUS. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE. 	
TABLE NO. - 1																							
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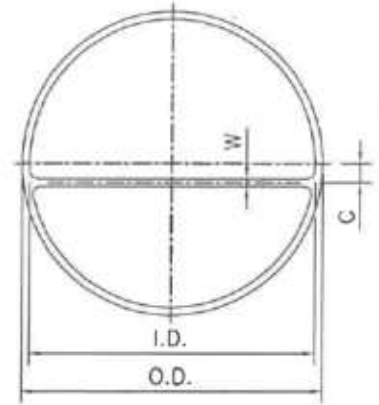
6	02.12.24	REVISED AND REISSUED AS STANDARD	J.SINGH	Kh	NA/NK/Naly	MN	Wandi
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT	
4	06.05.14	REVISED AND REISSUED AS STANDARD	GCP	KA	RKT	SC	
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman	Approved by



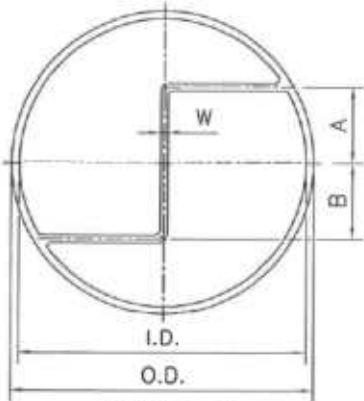
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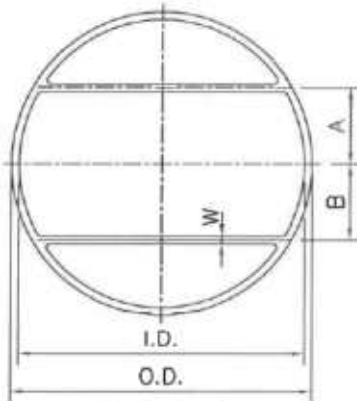
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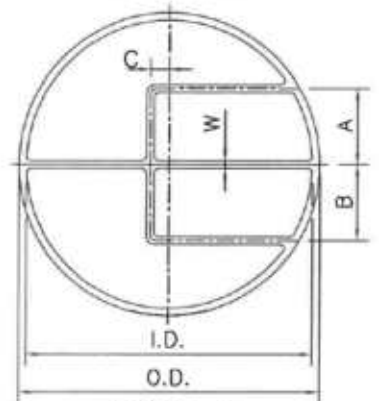
TYPE-3



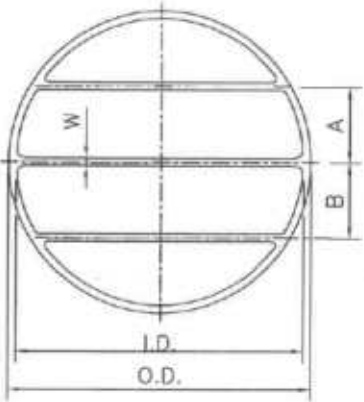
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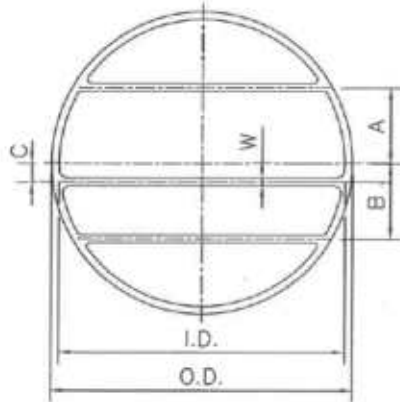
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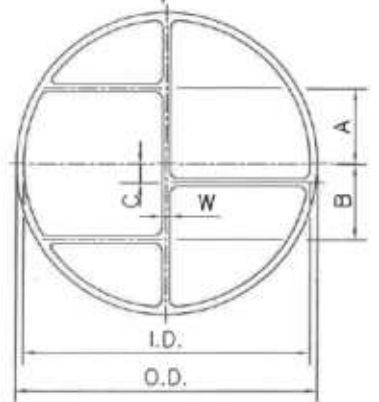
TYPE-6



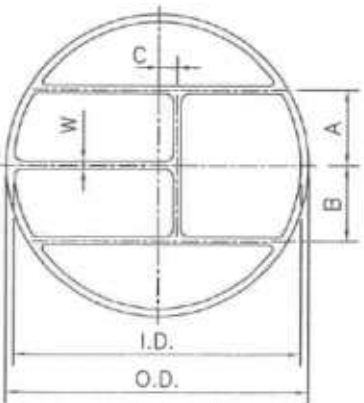
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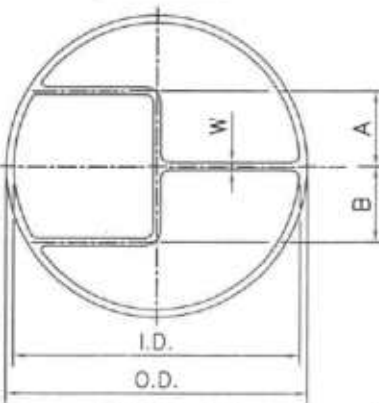
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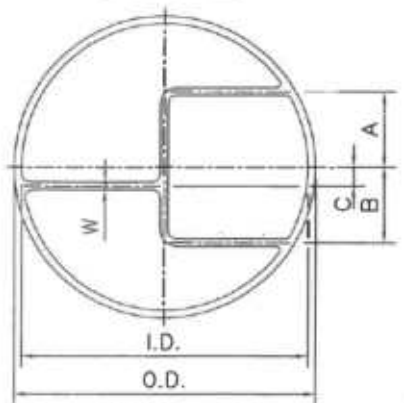
TYPE-9



TYPE-10

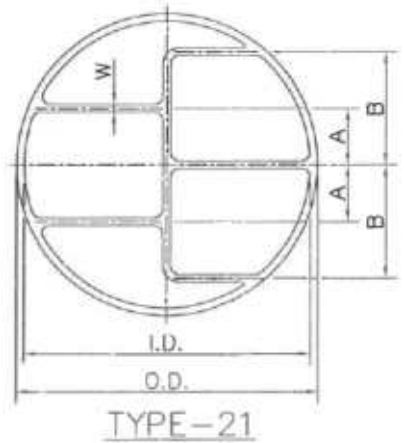
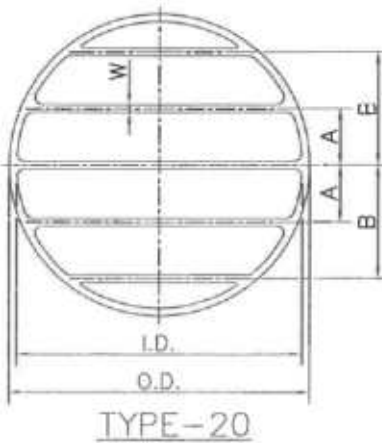
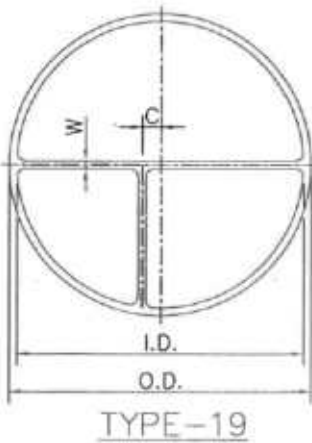
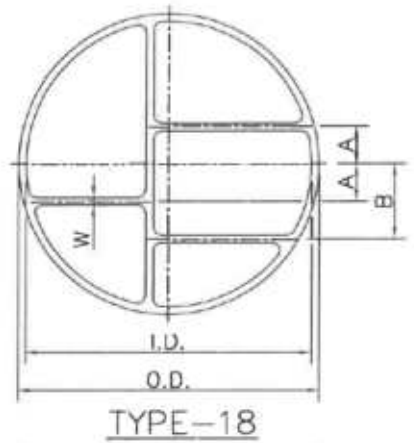
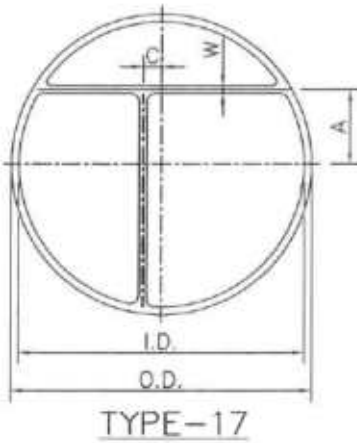
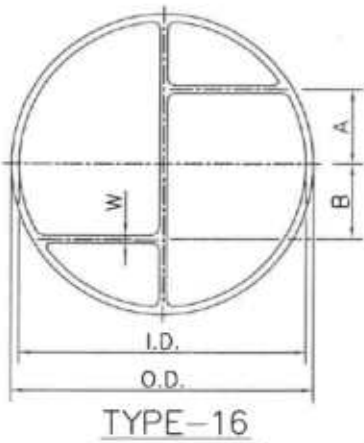
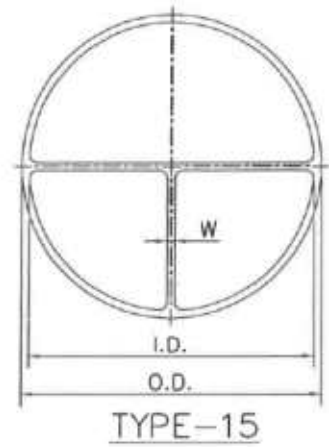
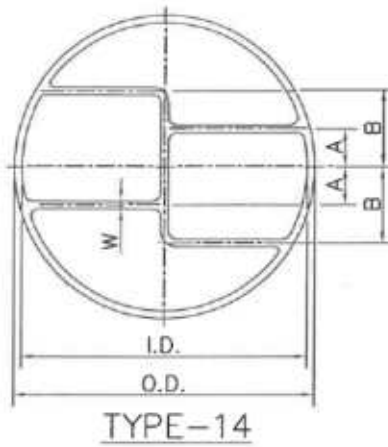
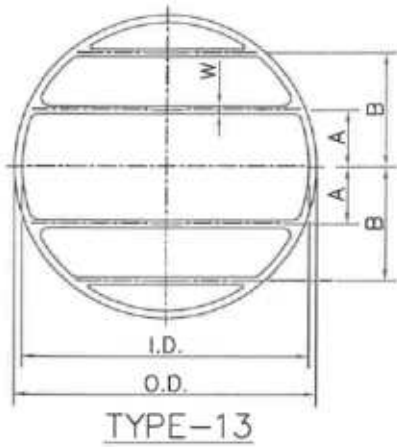


TYPE-11



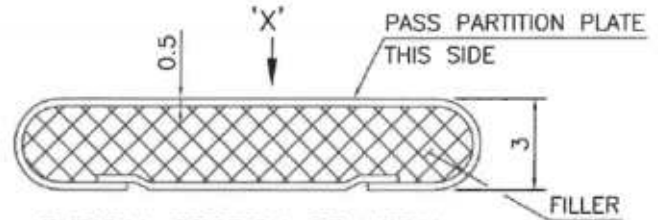
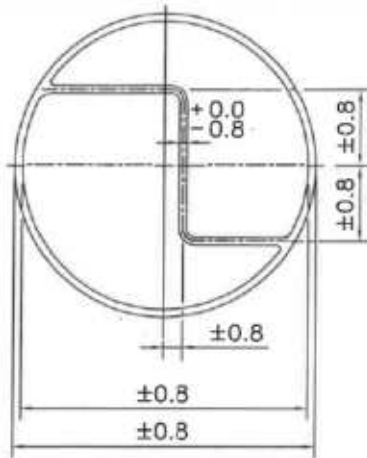
TYPE-12

6	02.12.24	REVISED AND REISSUED AS STANDARD	J.SINGH	NSK	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener / Stds. Bureau Chairman

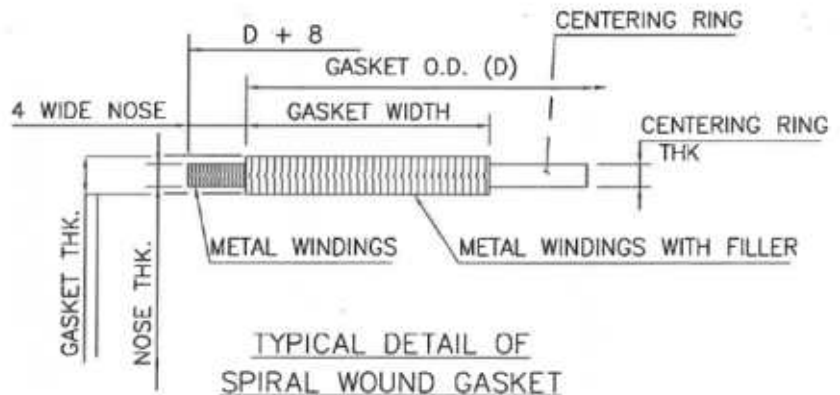


6	02.12.24	REVISED AND REISSUED AS STANDARD	J.SINGH	TKh	NK Nalin	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman

PERMISSIBLE TOLERANCES



TYPICAL SECTION OF METAL
JACKETED GASKETS



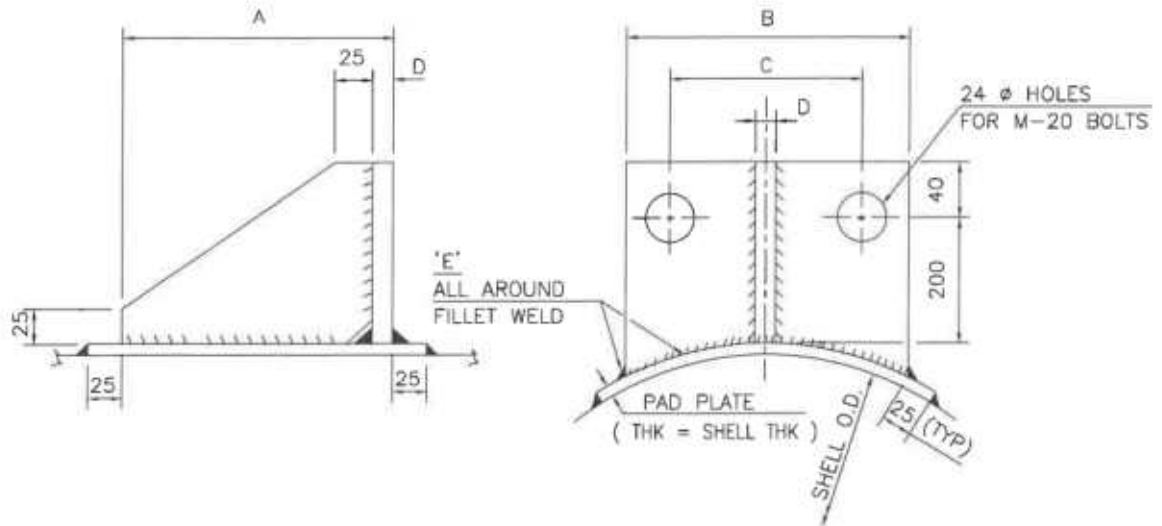
TYPICAL DETAIL OF
SPIRAL WOUND GASKET

GENERAL NOTES: -

- ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
- THE HARDNESS OF THE METAL FOR SOLID OR CLAD GASKETS SHALL BE MINIMUM 15 BHN LOWER THAN THAT OF THE MATERIAL OF THE FLANGE GASKET SEATING SURFACE AND IN ANY CASE NOT TO EXCEED THE FOLLOWING.

(a) LOW CARBON STEEL / LAS	-	110 BHN
(b) 5 Cr. 1/2 Mo.	-	130 BHN
(c) STAINLESS STEEL	-	160 BHN
(d) 11 - 13 Cr.	-	170 BHN
(e) MONEL	-	130 BHN
(f) SOFT IRON	-	90 BHN
(g) COPPER, BRASS	-	50 BHN
(h) ALUMINIUM	-	30 BHN
- FILLER IN METAL JACKETED GASKETS SHALL NOT BE OF COMPRESSED TYPE.
- ALL GASKETS SHALL BE MADE IN ONE CONTINUOUS PIECE ALL AROUND INCLUDING THE PASS PARTITION RIBS AND THEREFORE MUST BE CUT FROM ONE SHEET.
- THE CORNER RADII OF ALL GASKETS TO BE 10 mm.
- SOLID FLAT METAL GASKET SHALL BE 2 mm. THK.
- FOR SPIRAL WOUND GASKETS:-
 - THE PASS PARTITION RIB SHALL BE OF METAL JACKETED WELDED TO CENTRING RING.
 - CENTERING RING THK. SHALL BE SAME AS NOSE THK.
 - GASKET THK. SHALL BE AS SPECIFIED IN EQUIPMENT DRAWINGS. IT SHALL BE MIN. 4.5 FOR SHALL DIA UP TO 1000 & MIN. 6.35 FOR SHALL DIA MORE THAN 1000, IF NOT SPECIFIED.
- 'm' AND 'y' VALUES SHALL BE AS PER ASME SEC. VIII DIV. I.
- GASKET PLAN IS VIEWED FROM DIRECTION 'X'.
- FILLER SHALL BE ARAMIDE FIBRE UNLESS SPECIFIED OTHERWISE IN DRAWINGS & ASBESTOS NOT TO BE USED.

6	02.12.24	REVISED AND REISSUED AS STANDARD	J. SINGH	TKh	DKK/NK/Nalin	MN
5	21.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by

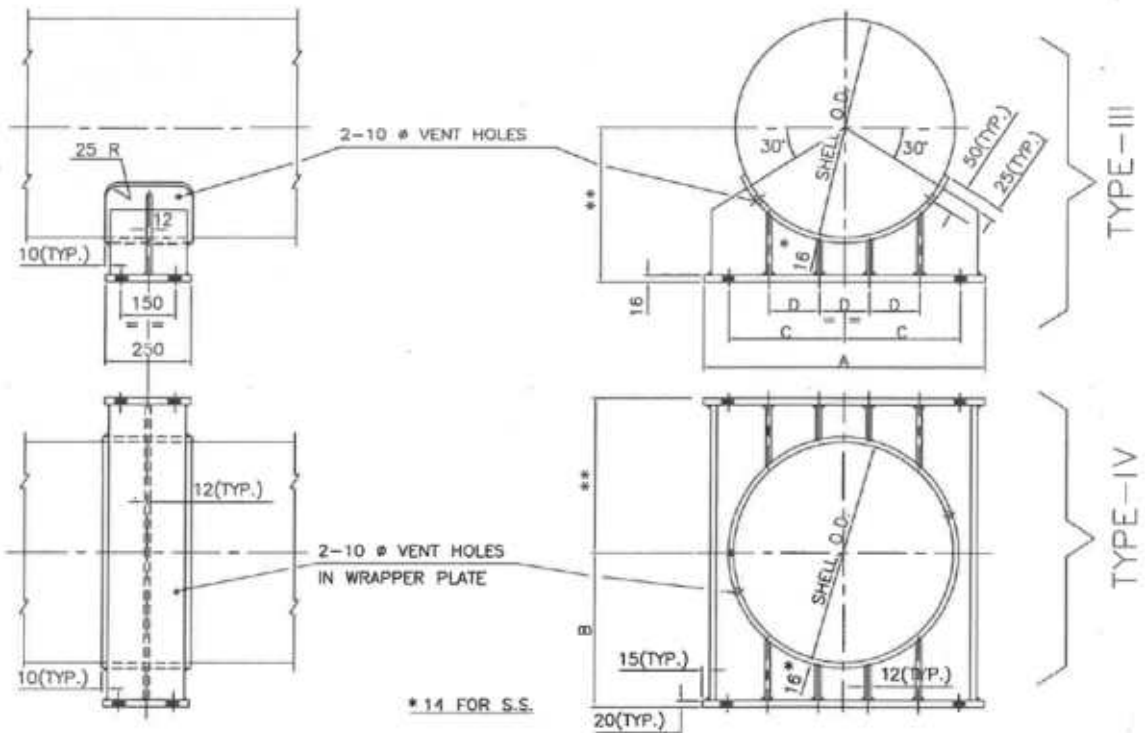
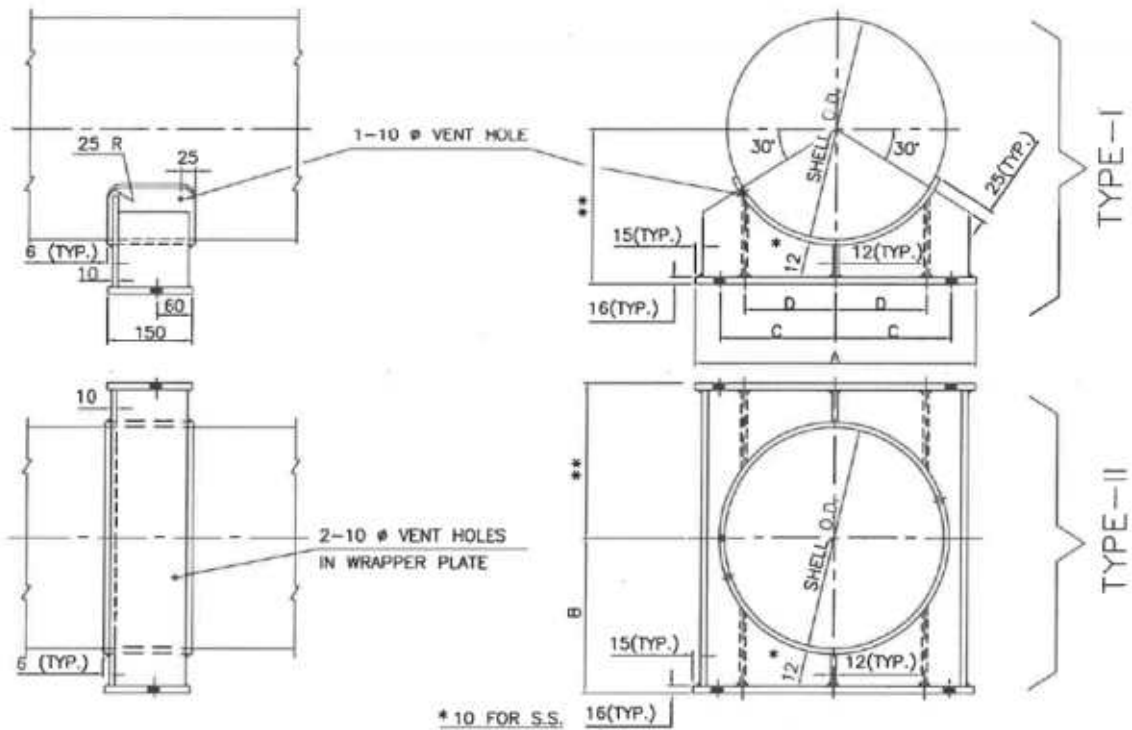


UNIT SIZE O.D.	A	B	C	D	E	NO. REQD.
219.1	230	130	90	14	10	2
273 TO 323.8		150				
355.6 TO 406.4				16		
457.2	250				12	
500 TO 550		180	100			
600				20		
650 TO 700	280					
750 TO 800		200	130		16	
850 TO 900	310			22		
950					20	
1000						4
1050		230	150			
1100 TO 1250				26		

NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. ALL CORNERS OF PAD PLATE SHALL BE SUITABLY RADIUSUED.
3. PROVIDE 1-6 ϕ VENT HOLE IN PAD.

6	05.11.24	REAFFIRMED AND REISSUED AS STANDARD	AS	TKh	NA/NK Nalya	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by



2-30 Ø HOLES
FOR M-24 BOLTS

2-30 X 65 SLOTTED
HOLES FOR M-24 BOLTS

FOR TYPE I AND II SADDLES

4-33 Ø HOLES
FOR M-27 BOLTS

4-33 X 88 SLOTTED
HOLES FOR M-27 BOLTS

FOR TYPE III AND IV SADDLES

** REFER SETTING PLAN.

6	02.12.24	REAFFIRMED AND REISSUED AS STANDARD	AS	TKh	KA/NK Nalin	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by

SL. NO.	UNIT SIZE O.D. mm.	A	B	C	D	NO. OF RIBS	
						TYPE-I	TYPE-II
1	219.1	400	230	130	-	1	3
2	273	460	260	160	-	1	3
3	323.8	510	270	190	-	1	3
4	355.6	540	280	200	-	1	3
5	406.4	590	310	220	-	1	3
6	457.2	640	330	250	80	2	4
7	500	680	350	270	103	3	5
8	550	730	380	290	105	3	5
9	600	780	400	320	120	3	5
10	650	830	430	340	135	3	5
11	700	880	450	370	160	3	5
12	750	930	480	390	165	3	5
13	800	980	500	410	180	3	5
14	850	1030	530	430	195	3	5
15	900	1080	550	460	220	3	5
16	950	1130	580	480	235	3	5
						TYPE-III / IV	
17	1000	1190	650	510	180	AS SHOWN	
18	1050	1240	675	530	200		
19	1100	1290	700	560	220		
20	1150	1340	725	580	230		
21	1200	1390	750	610	250		
22	1250	1440	775	630	270		
23	1300	1490	800	660	280		
24	1350	1540	825	680	280		
25	1400	1590	850	710	300		
26	1450	1640	875	730	320		
27	1500	1690	900	760	340		
28	1600	1790	950	810	350		
29	1700	1890	1000	860	380		
30	1800	1990	1050	910	420		
31	1900	2090	1100	960	450		
32	2000	2190	1150	1010	480		
33	2100	2290	1200	1060	500		
34	2200	2390	1250	1110	530		
35	2300	2490	1300	1160	550		
36	2400	2590	1350	1210	580		

NOTES: -

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.

6	02.12.24	REAFFIRMED AND REISSUED AS STANDARD	AS	TKh	KA/NK Nalgi	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by

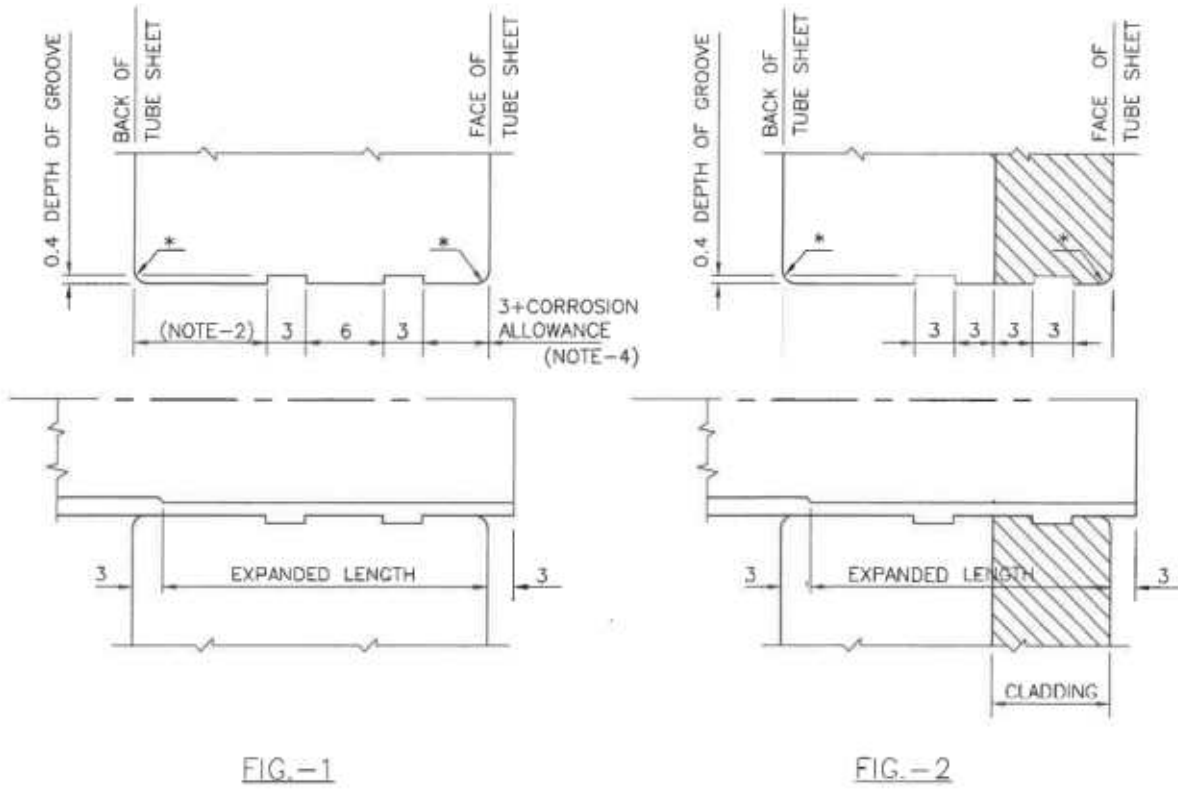


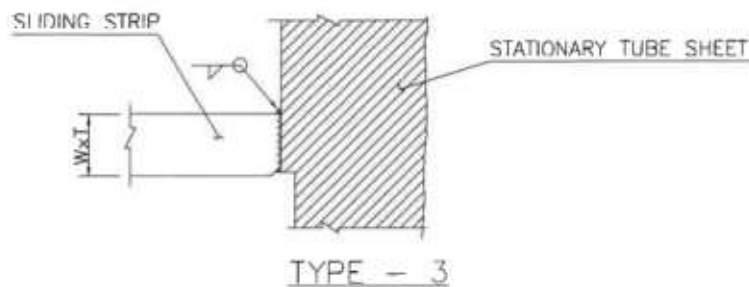
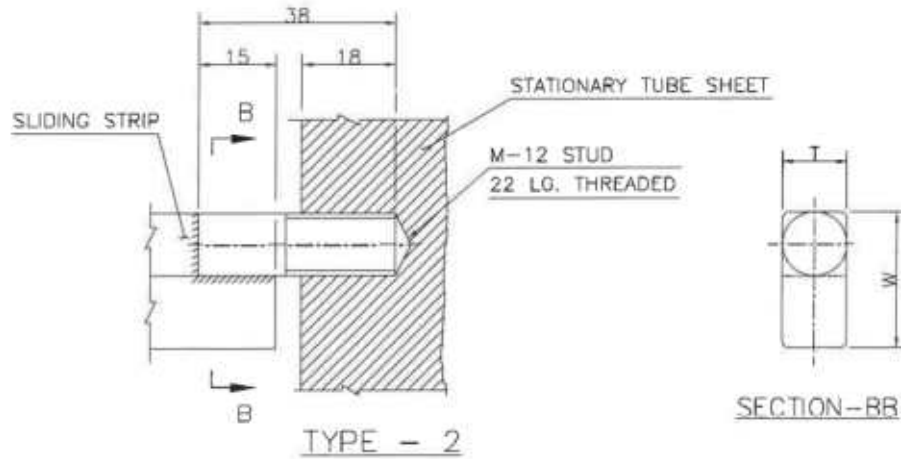
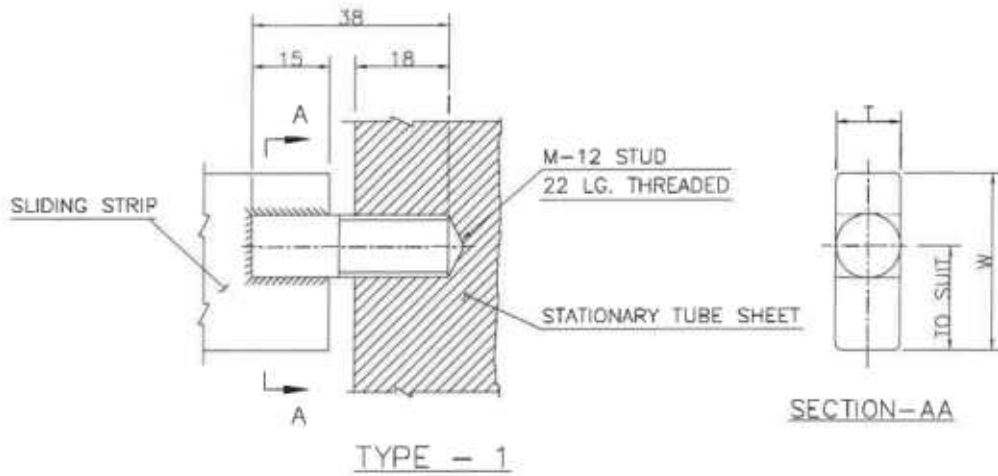
FIG.-1

FIG.-2

NOTES :-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. FOR TUBESHEET THICKNESS WHERE THE GAP BETWEEN 2ND GROOVE & BACK OF TUBE SHEET IS LOWER THAN 6 mm DELETE 2ND GROOVE.
3. FOLLOW SPECIAL CLOSE FIT AS PER TEMA / API 661 UNLESS SPECIFIED OTHERWISE.
4. FOR CORROSION ALLOWANCE LESS THAN 4 mm., INCREASE THIS DIMENSION TO TUBE SHEET THICKNESS MINUS 18 mm. BUT NOT TO EXCEED 7 mm.
- * 5. CHAMFER (1X45°) OR RADIUS (R=1).

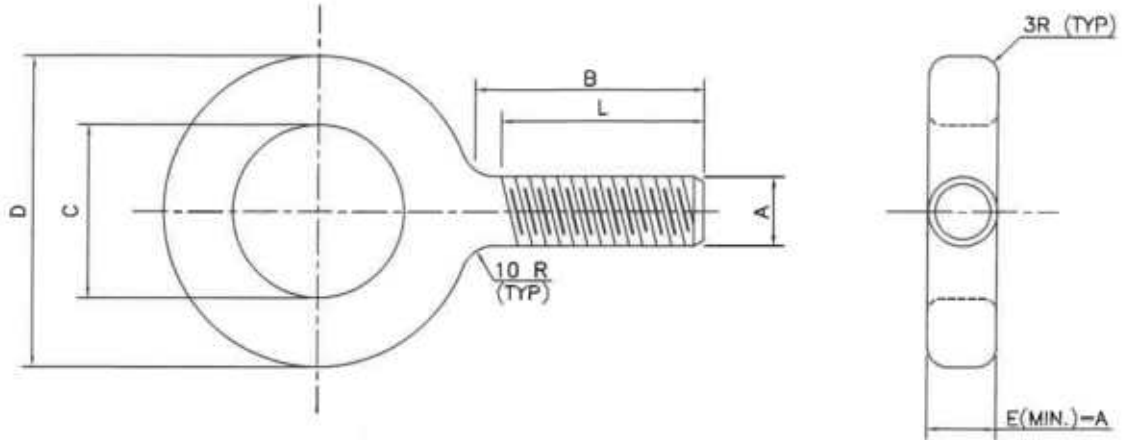
6	05.11.24	REAFFIRMED AND REISSUED AS STANDARD	AS	TKh	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor
					Stds. Bureau Chairman
Approved by					



NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. USE TYPE-1 WHEN SLIDING STRIP & TUBE SHEET MATERIAL IS DIFFERENT & $W \geq 25$
3. USE TYPE-2 WHEN SLIDING STRIP & TUBE SHEET MATERIAL IS DIFFERENT & $W < 25$
4. USE TYPE-3 WHEN SLIDING STRIP & TUBE SHEET MATERIAL IS SAME
5. FOR DIMENSIONS 'T' AND 'W' REFER GUIDE LINES FOR TUBE LAYOUT.
6. FOR DEFLECTOR STRIPS UNLESS SPECIFIED OTHERWISE USE DETAILS AS ABOVE.

6	05.11.24	REAFFIRMED AND REISSUED AS STANDARD	AS	TKh	KA/NK	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by

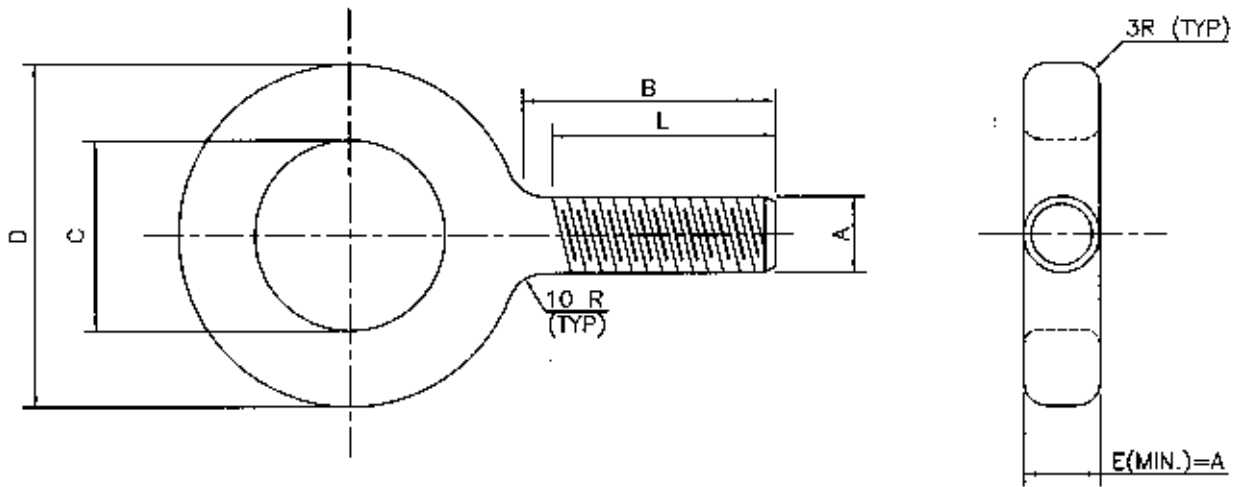


NOM. BOLT DIA A	THREAD LENGTH L	STOCK B	I. DIA. C	O. DIA. D	SAFE LOAD IN kg
M10	20	32	26	42	600
M12	24	38	30	52	1000
M16	32	45	35	64	1800
M20	40	50	38	72	2700
M22	44	58	44	84	3000
M24	48	64	46	92	3300
M27	54	70	50	102	4200
M33	66	76	56	114	6800
M39	78	90	64	132	8100
M45	90	96	74	154	9900
M48	96	102	84	162	11400
M56	112	127	102	168	14200

NOTES: -

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. EYE BOLT SHALL BE MADE OF FORGING.
3. MATERIAL OF CONSTRUCTION CARBON STEEL HAVING U.T.S OF 42 kg/mm² MIN.
4. UPTO M22 COARSE THREAD SERIES, M24 & ABOVE SHALL HAVE 3 mm PITCH.

6	08.11.24	REAFFIRMED AND REISSUED AS STANDARD	AS	TKh	RA/NK	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
Approved by						



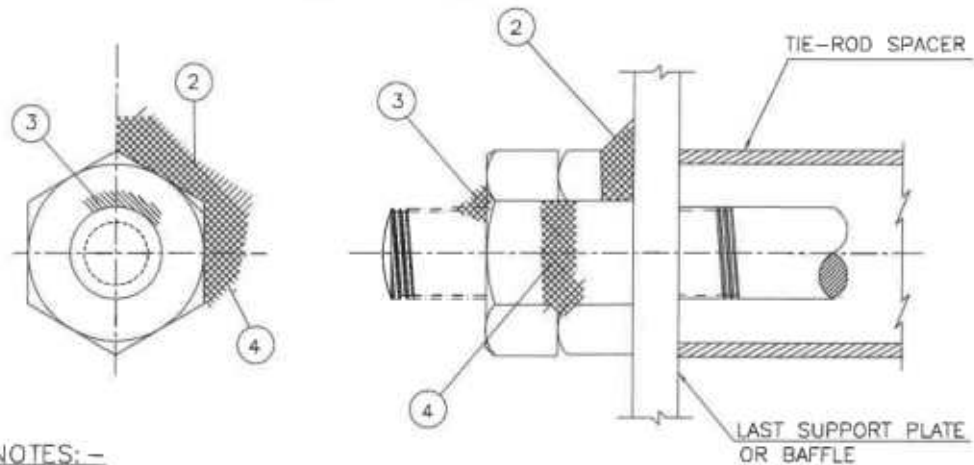
NOM. BOLT DIA A	THREAD LENGTH L	STOCK B	I. DIA. C	O. DIA. D	SAFE LOAD IN kg
M10	20	32	26	42	600
M12	24	38	30	52	1000
M16	32	45	35	64	1800
M20	40	50	38	72	2700
M22	44	58	44	84	3000
M24	48	64	46	92	3300
M27	54	70	50	102	4200
M33	66	76	56	114	6800
M39	78	90	64	132	8100
M45	90	96	74	154	9900
M48	96	102	84	162	11400
M56	112	127	102	168	14200

NOTES: -

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. EYE BOLT SHALL BE MADE OF FORGING.
3. MATERIAL OF CONSTRUCTION CARBON STEEL HAVING U.T.S OF 42 kg/mm² MIN.
4. UPTO M22 COARSE THREAD SERIES, M24 & ABOVE SHALL HAVE 3 mm PITCH.

3	27.01.09	REAFFIRMED AND REISSUED AS STANDARD	VPR	RKG	AKM	VC
2	26.03.04	REAFFIRMED AND REISSUED AS STANDARD	MKD	JV/PK	SSA	SKG
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
Approved by						

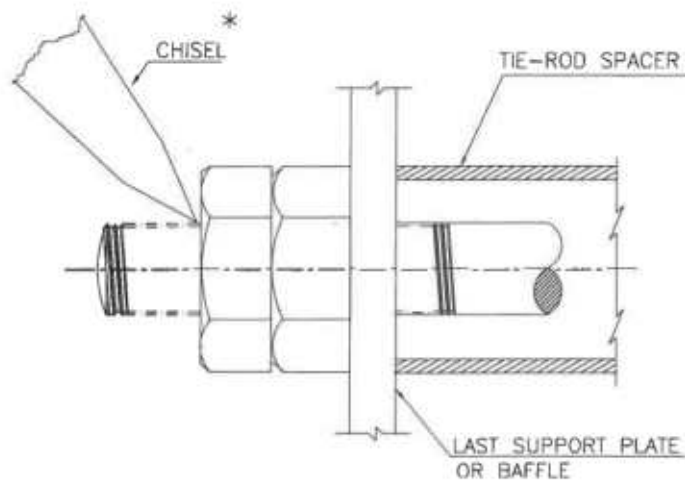
STEEL TIE-ROD



NOTES: -

1. ALL DIMENSIONS ARE IN mm. UNLESS STATED OTHERWISE.
2. WELD 1st NUT TO SUPPORT PLATE
3. WELD 2nd NUT TO TIE-ROD
4. WELD BOTH NUTS TOGETHER
5. ALL WELDS TO EXTEND THE LENGTH OF ONE FLAT OF NUT.

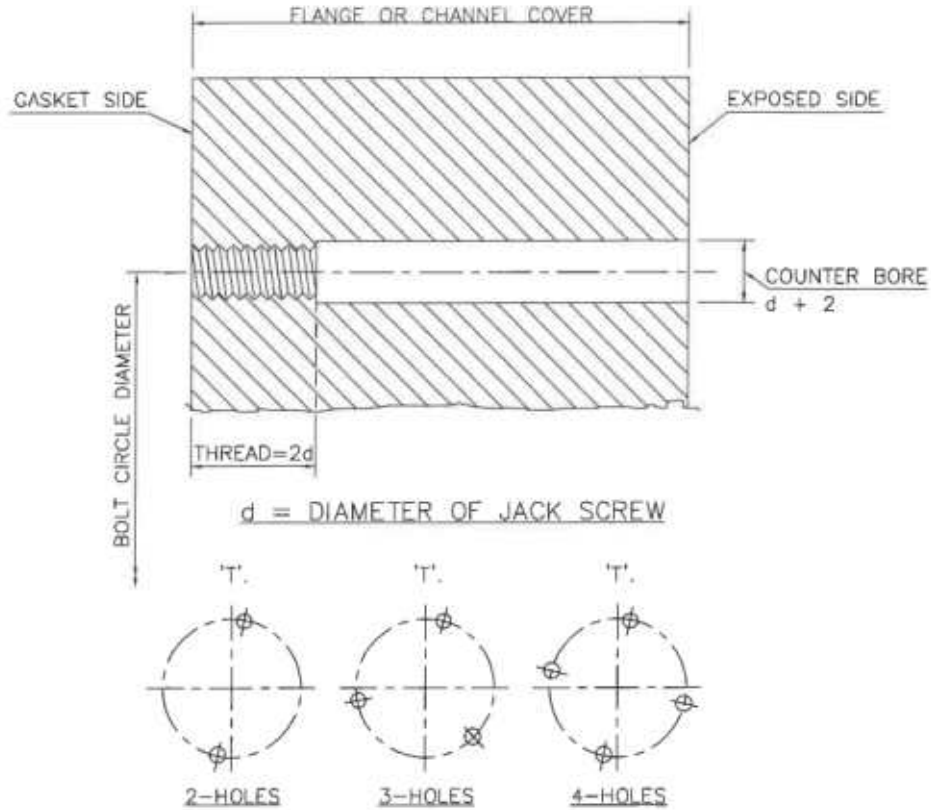
NON FERROUS TIE-ROD



NOTE: -

- * BREAK THREAD OF TIE-ROD IN TWO PLACES NEAR LAST NUT WITH BLUNT CHISEL TO LOCK TIE-ROD NUTS IN PLACE.

6	05.11.24	REAFFIRMED AND REISSUED AS STANDARD	AS	TKh	KA/NK	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by



NO. REQD.	'd'	SHELL I.D.
2	14	UPTO & INCL. 300
3	16	301 TO & INCL. 580
4	20	581 & LARGER

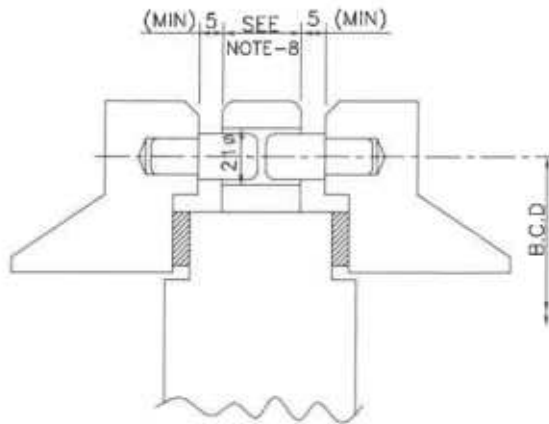
LOCATION OF JACK SCREW TAPPING HOLES

- HOLES ARE TO BE LOCATED ON THE BOLT CIRCLE DIAMETER OF FLANGE AND HALF WAY BETWEEN ADJACENT HOLES.
- FIRST HOLE SHALL BE LOCATED BETWEEN FIRST AND SECOND BOLT HOLE COUNTING CLOCKWISE FROM MARK 'T'.
- HOLES SHALL BE SPACED AS FOLLOWS
2-HOLES LAYOUT 180° APART
3-HOLES LAYOUT APPROX 120° APART
4-HOLES LAYOUT 90° APART.

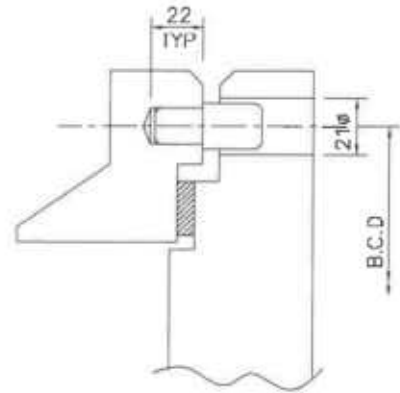
NOTES: -

- ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
- JACK SCREW SHALL BE OF STAINLESS STEEL MATERIAL.

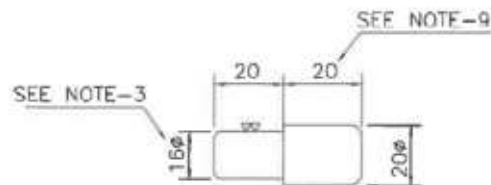
6	05.11.24	REAFFIRMED AND REISSUED AS STANDARD	AS	TKh	NK Nalin	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
						Approved by



FIXING DETAIL OF DOWEL PINS
(AT STATIONARY TUBE SHEET)



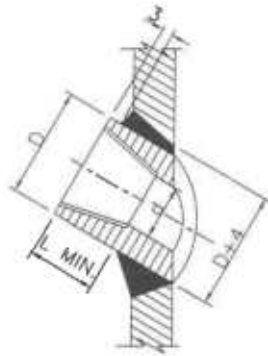
FIXING DETAIL OF DOWEL PINS
(AT CHANNEL COVER)



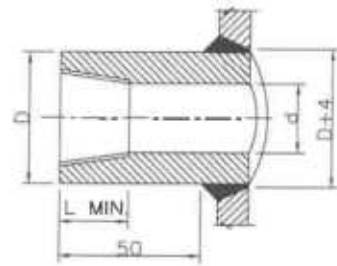
NOTES: -

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. DOWEL PINS TO BE PROVIDED ONLY WHEN CHANNEL CONSISTS OF PASS-PARTITION PLATE/S.
3. DOWEL PIN SHALL BE OF CARBON STEEL UNLESS SPECIFIED OTHERWISE.
4. MIN. 2 DOWEL PINS SHALL BE PROVIDED FOR EACH FLANGE & SHALL NOT BE LOCATED AT 180° APART.
5. ALL SHARP EDGES OF DOWEL PINS SHALL BE ROUNDED OFF.
6. SMALL END OF DOWEL PIN SHALL BE HELD IN POSITION BY TIGHT FIT.
7. LUG TO BE WELDED TO TUBESHEET. HOWEVER LUG FOR DOWEL PIN MAY BE THREADED AND SCREWED IN TUBE SHEET TO AVOID PWHT IN SPECIFIC CASES. MATERIAL OF LUG SHALL BE COMPATIBLE WITH TUBE SHEET MATERIAL.
8. WHEN GAP BETWEEN SHELL & CHANNEL FLANGES IS 25 MM. OR LESS, DOWEL PINS SHALL BE PROVIDED IN CHANNEL FLANGE ONLY.
9. AT THE LARGER END OF DOWEL PIN THE LENGTH CAN BE REDUCED IN CASE OF A SMALLER GAP BETWEEN SHELL AND CHANNEL FLANGES.

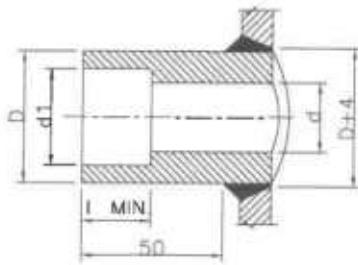
6	08.11.24	REAFFIRMED AND REISSUED AS STANDARD	AS	Tkh	KA/NK	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
						Approved by



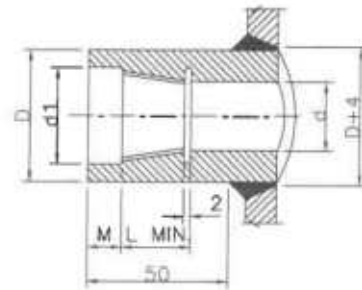
TYPE-1



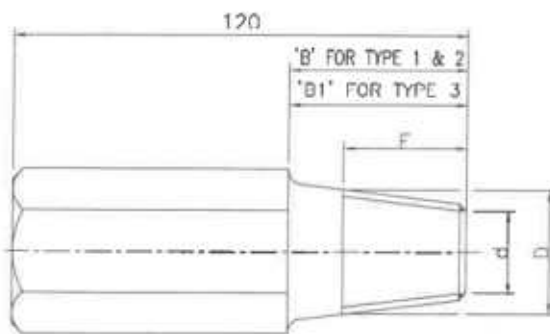
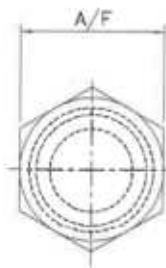
TYPE-2



TYPE-3



TYPE-4



PLUG DETAIL

6	21.11.24	REAFFIRMED AND REISSUED AS STANDARD	AS	<i>TKh</i>	KA/NK/Nalga	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	

COUPLINGS: -

NOM DIA. (INCHES)	D (ø)		L	d (ø) (APP)	d1 (ø)	M
	3000 #	6000 #				
1/8"	19	22	12	7	-	
1/4"	19	25	13	9	-	-
3/8"	22	32	15	12.5	-	-
1/2"	29	38	17	16.6	21.7	13
3/4"	35	45	18	21.8	27	15
1"	45	57	21	27.5	33.8	16
1 1/2"	64	76	23	42.1	48.6	19
2"	76	92	24	54.1	61.1	23

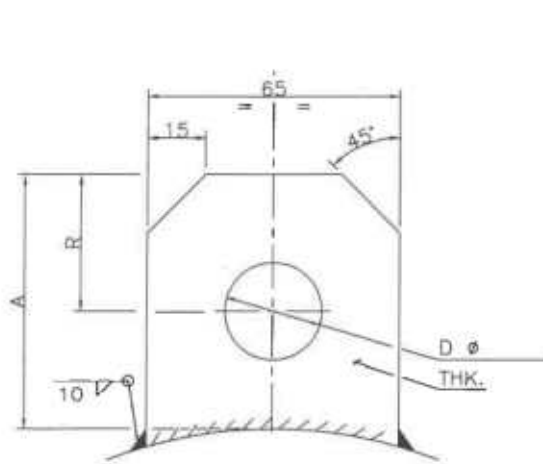
PLUGS: -

NOM. DIA. (INCHES)	A / F	B	D (ø)	F	B1	
1/8"	16	20	10.2	10	-	
1/4"	21	25	13.7	15	-	
3/8"	23	26	17.2	15.5	-	
1/2"	27	30	21.3	19.8	37	
3/4"	32	30	26.7	20.2	39	
1"	41	35	33.4	25	43	
1 1/2"	54	36	48.7	26.1	46	
2"	67	37	60.3	26.9	50	

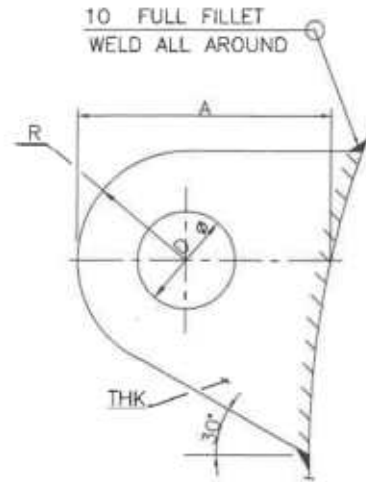
NOTES: -

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. ONLY THREADED COUPLINGS TO BE USED FOR SIZES BELOW 1/2"
3. TAPER ON THREADS 1:16 (MEASURE ON DIAMETER) AS PER ASME B 1.1

6	21.11.24	REAFFIRMED AND REISSUED AS STANDARD	AS	TKh	NSK	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by



LIFTING LUG FOR SHELL COVER,
CHANNEL AND CHANNEL COVER



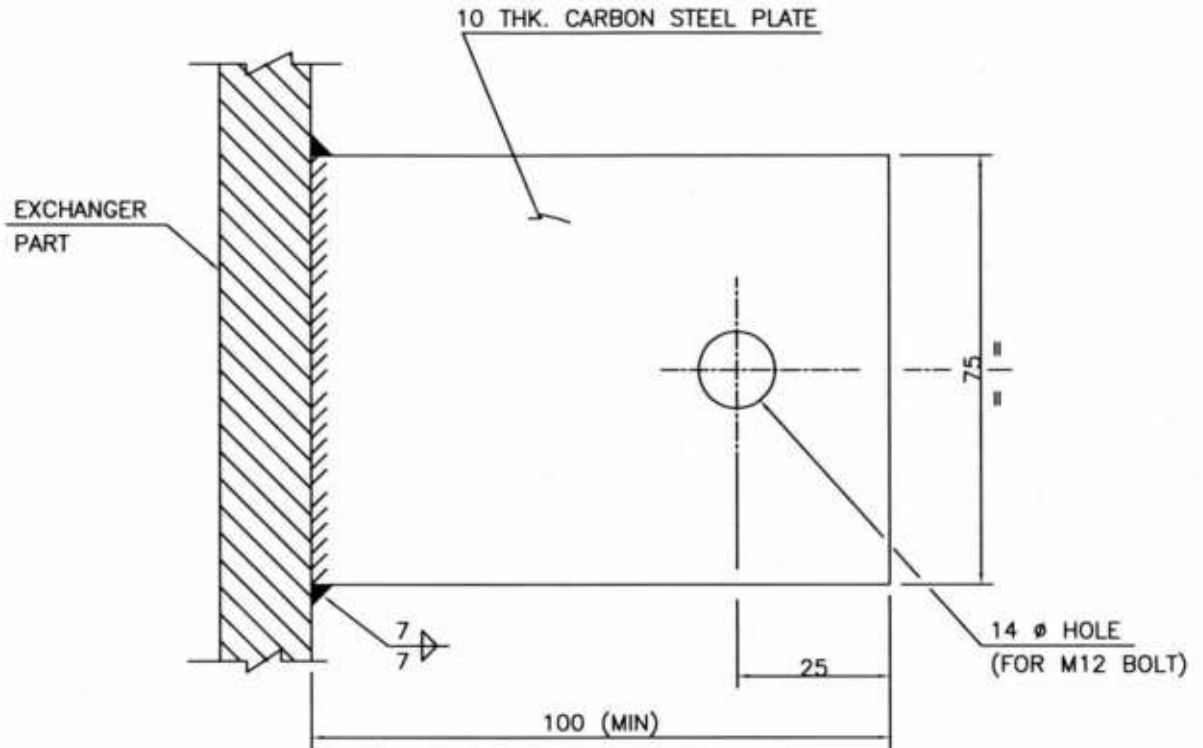
LIFTING LUG FOR
FLOATING HEAD COVER

SHELL I. D.	A	D	R	THK.
UPTO 450	65	25	28	12
451 - 1000	75	30	35	16
1001 - 1200	100	30	35	20
1201 & ABOVE	CUSTOM DESIGN			

NOTES: -

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. MATERIAL SHALL BE COMPATIBLE WITH PART IT IS WELDED TO. (USE BOILER QUALITY FOR CARBON STEEL)
3. USE TWO LIFTING LUGS EACH FOR CHANNEL AND SHELL COVER AND ONE FOR CHANNEL COVER AND FLOATING HEAD COVER.

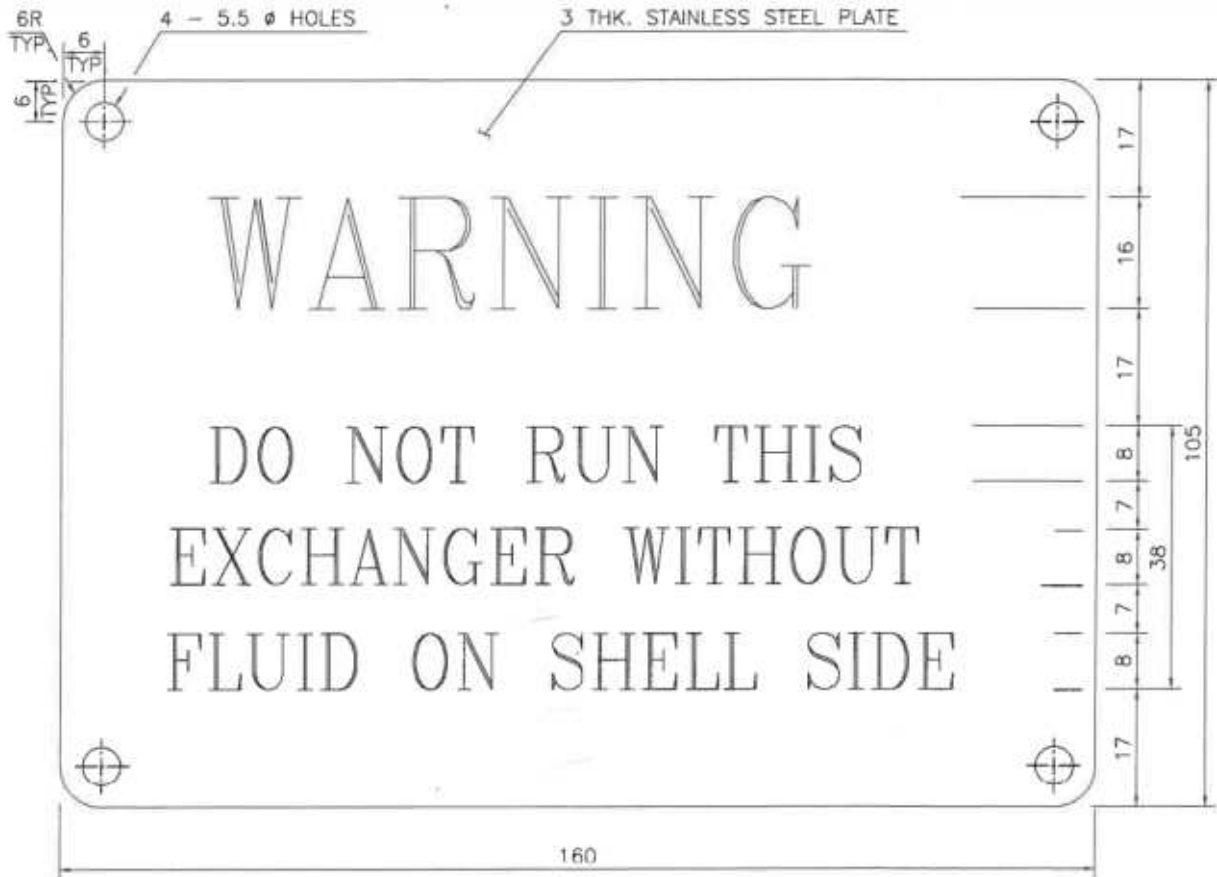
6	05.11.24	REAFFIRMED AND REISSUED AS STANDARD	AS	TKh	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener
					Stds. Bureau Chairman
					Approved by



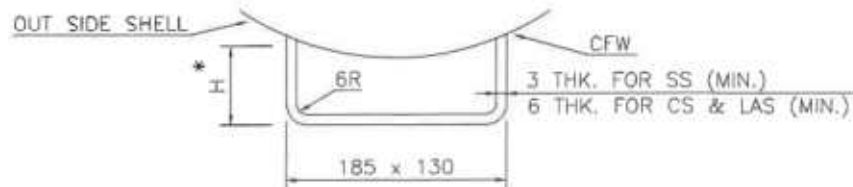
NOTES: -

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. DO NOT WELD EARTHING LUGS TO PRESSURE PARTS. IF REQUIRED, TAKE PRIOR APPROVAL OF COMPANY.
3. EARTHING LUG TO PROTRUDE OUT OF INSULATION, WHEREVER REQUIRED.
4. ALL EXCHANGERS TO BE FITTED WITH 2 EARTHING LUGS.
5. LOCATION OF EARTHING LUGS :-
 - (i) FOR VERTICAL EXCHANGER WITH 2 LUG SUPPORTS :- ON BOTH LUG SUPPORTS AT VERTICAL WEB.
 - (ii) FOR VERTICAL EXCHANGER WITH 3 LUG SUPPORTS :- ON ANY TWO AT VERTICAL WEB.
FOR VERTICAL EXCHANGER WITH 4 LUG SUPPORTS :- ON ANY TWO DIAMETRICALLY OPPOSITE AT VERTICAL WEB.
 - (iii) FOR HORIZONTAL EXCHANGER :- ONE ON CENTRAL WEB OF EACH SADDLE SUPPORT.
 - (iv) EARTHING LUG SHOULD BE LOCATED SUCH THAT IT WILL NOT FOUL WITH ANCHOR BOLT DURING ERECTION.
6. EARTHING LUG SHOULD BE PAINTED / GALVANISED.

6	16.11.2022	REVISED AND REISSUED AS STANDARD	NS	SK	NK	SM
5	20.03.2018	REVISED AND REISSUED AS STANDARD	JIT SINGH	SK/KJH	RKT	RN
4	30.09.2011	REVISED AND REISSUED AS STANDARD	JS	RKT	AKM/SC	DM
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by



DETAIL - 1



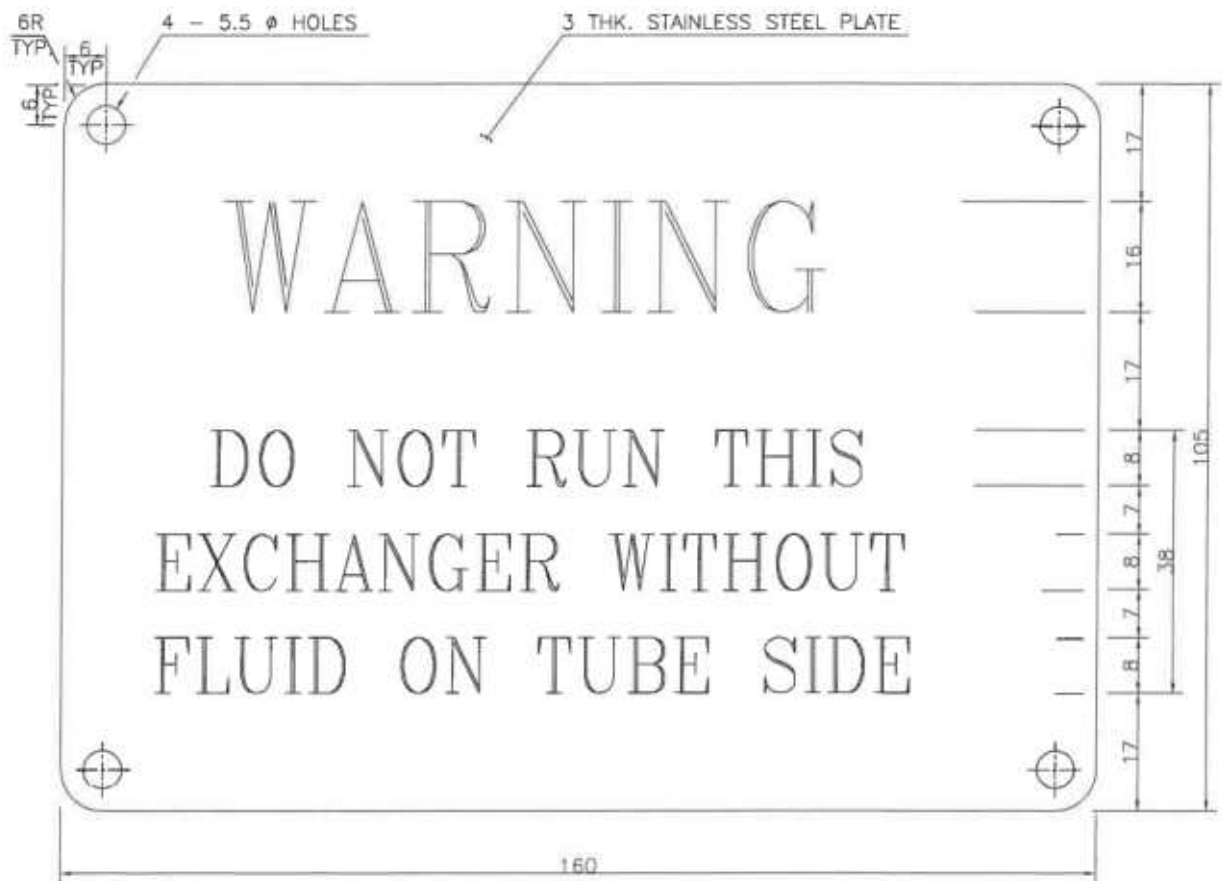
WARNING PLATE BRACKET DETAIL

MATL. SPEC.: - SAME AS EXCHANGER SHELL
* H = 75 OR 'INSULATION THK. + 10
WHICHEVER IS GREATER.

NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. MATERIAL TO BE 18:8 STAINLESS STEEL FOR WARNING PLATE.
3. ALL LETTERING WITH THE EXCEPTION OF WORD 'WARNING' TO BE ENGRAVED 2 mm. WIDE x 2 mm. DEEP AND FILLED WITH BLACK PAINT AFTER ENGRAVING.
4. THE WORD "WARNING" IS TO BE ENGRAVED 2.5 mm. WIDE x 2 mm. DEEP AND FILLED WITH RED PAINT AFTER ENGRAVING.
5. WARNING PLATE TO BE HELD WITH 5 Ø ALUMINIUM RIVETS ON WARNING PLATE BRACKET AND SHALL BE TACK WELDED TO BRACKET ON ALL FOUR SIDES.
6. BRACKET WITH WARNING PLATE TO BE LOCATED AS MARKED ON DRAWING.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
6	05.11.24	REAFFIRMED AND REISSUED AS STANDARD	AS	TKH	KA/NK Nishi	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT

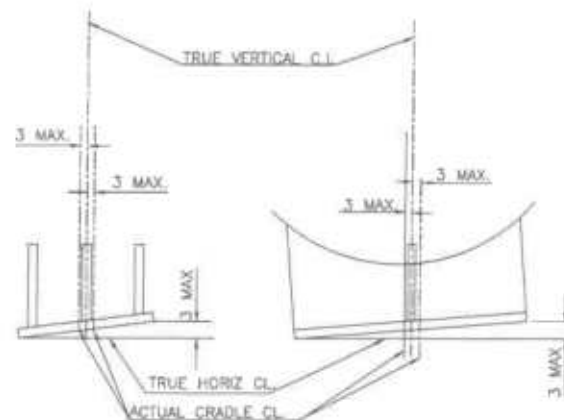
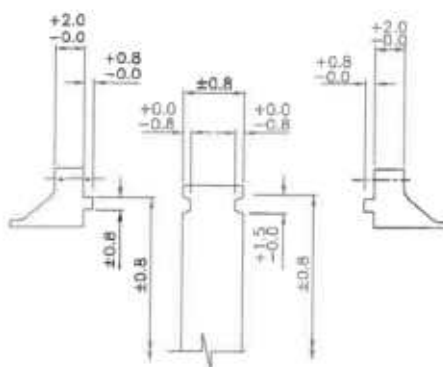
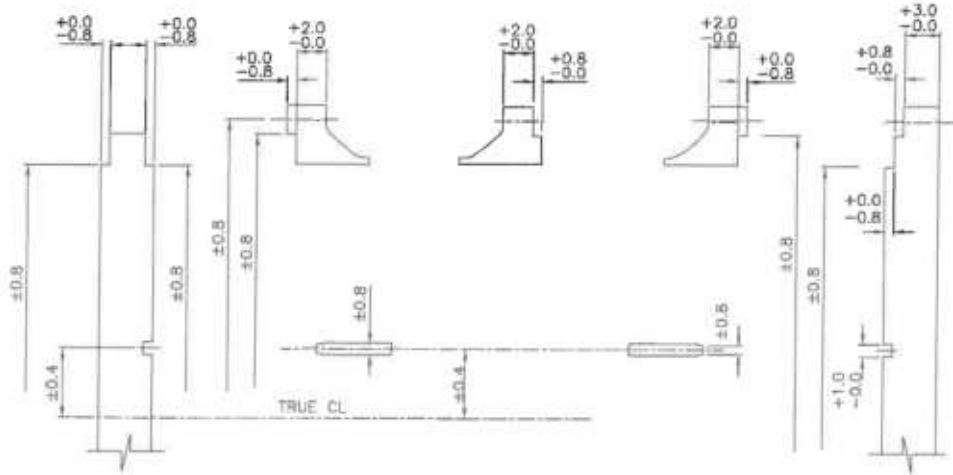
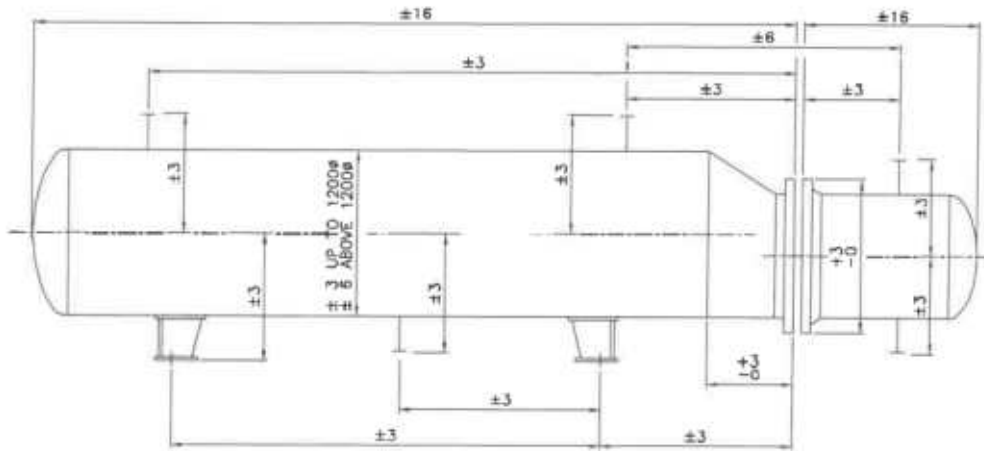


DETAIL - 2

FOR NOTES REFER SHEET 1 OF 2.

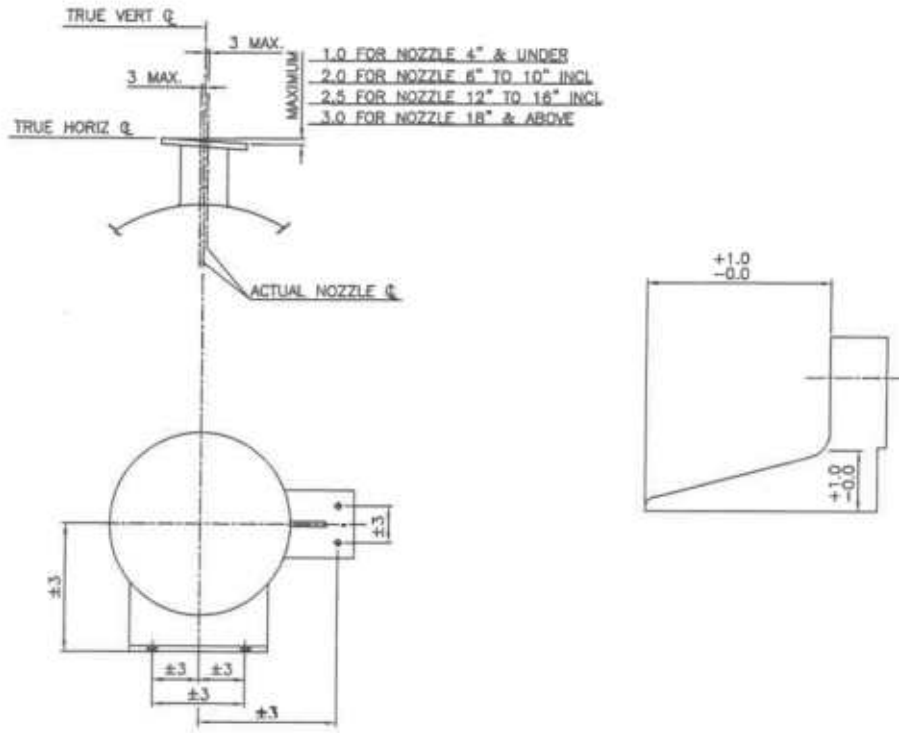
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Sids. Bureau Chairman
6	05.11.24	REAFFIRMED AND REISSUED AS STANDARD	AS	TKh	KA/NK Nalin	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT

Approved by *Mhandi*



6	21.11.24	REAFFIRMED AND REISSUED AS STANDARD	JSRINGH	TKh	KA/NK Nates	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
Approved by						
Copyright EIL - All rights reserved						

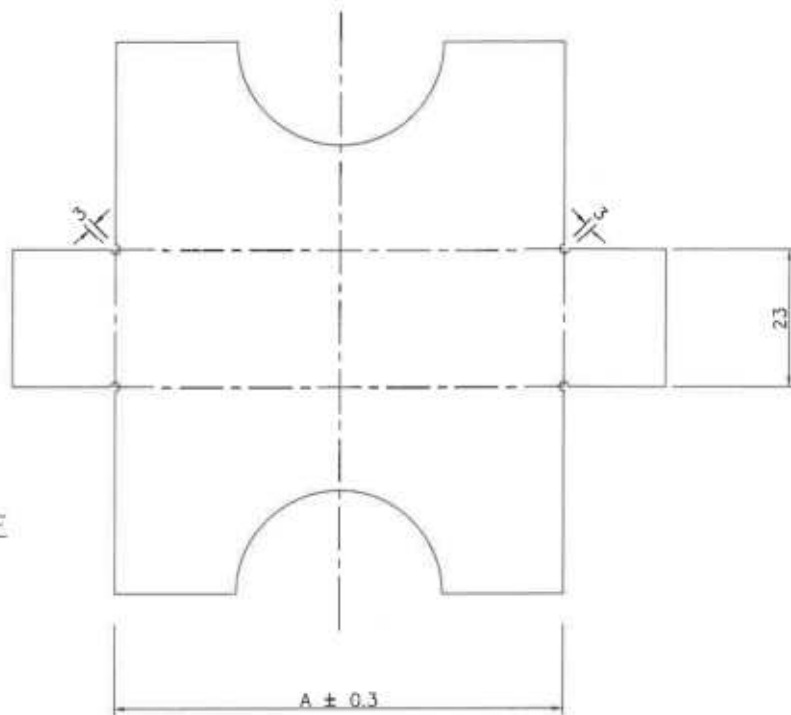
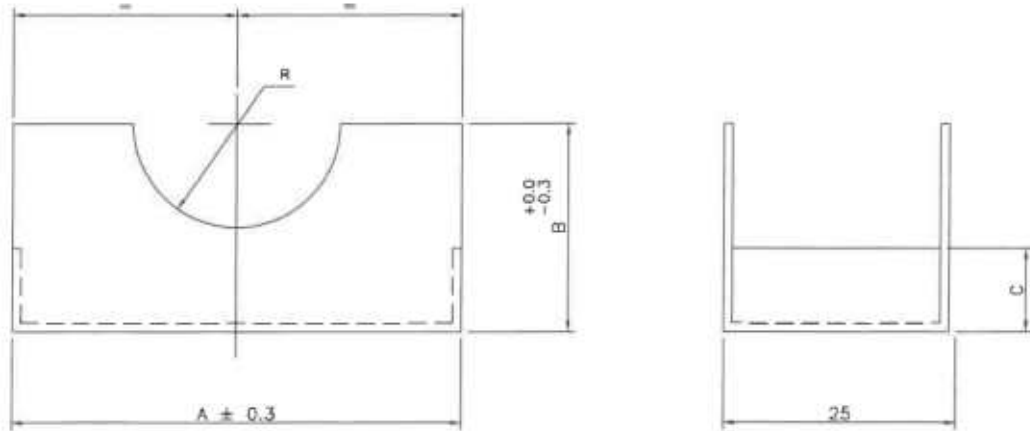
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GENERAL NOTES: -

1. CUMULATIVE TOLERANCES ON CONSECUTIVE DIMENSIONS SHALL BE LIMITED BY OVERALL DIMENSION TOLERANCE.
2. SPECIFIC TOLERANCES DESIRED FOR ANY PART SHALL BE SHOWN ON THE DRAWING AND SHALL BE GIVEN PREFERENCE TO THOSE GIVEN IN THIS STANDARD.
3. TUBE HOLE TOLERANCES SHALL BE AS PER TEMA.
4. ONLY WHEN NUMBER OF BAFFLE PITCHES EXCEED EIGHT.

6	21.11.24	REAFFIRMED AND REISSUED AS STANDARD	JSINCH	TKh	KA/NK	MN
5	21.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	

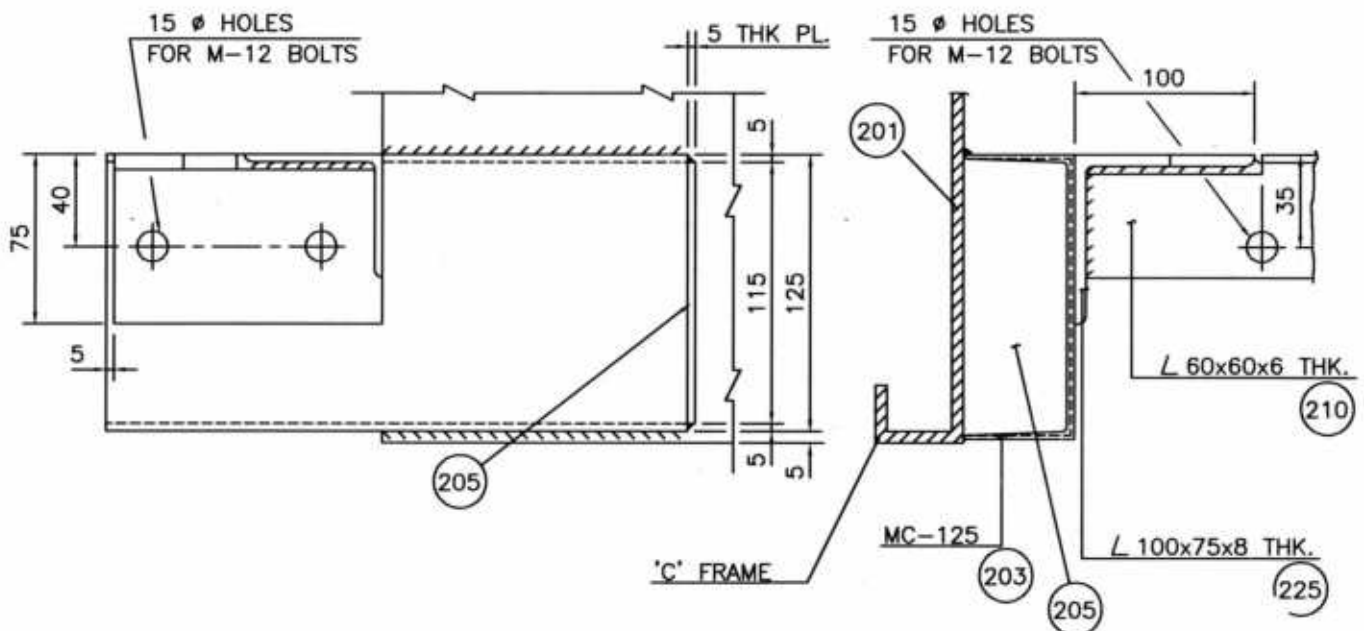


DEVELOPED FORM OF
PLATE 1 mm THK.

MATERIAL : ALUMINIUM

- A = HORIZONTAL TUBE PITCH - 0.2 mm
- B = VERTICAL TUBE PITCH / 2
- C = B - TUBE OUTSIDE RADIUS - 1 mm
- R = TUBE OUTSIDE RADIUS + 0.6 mm

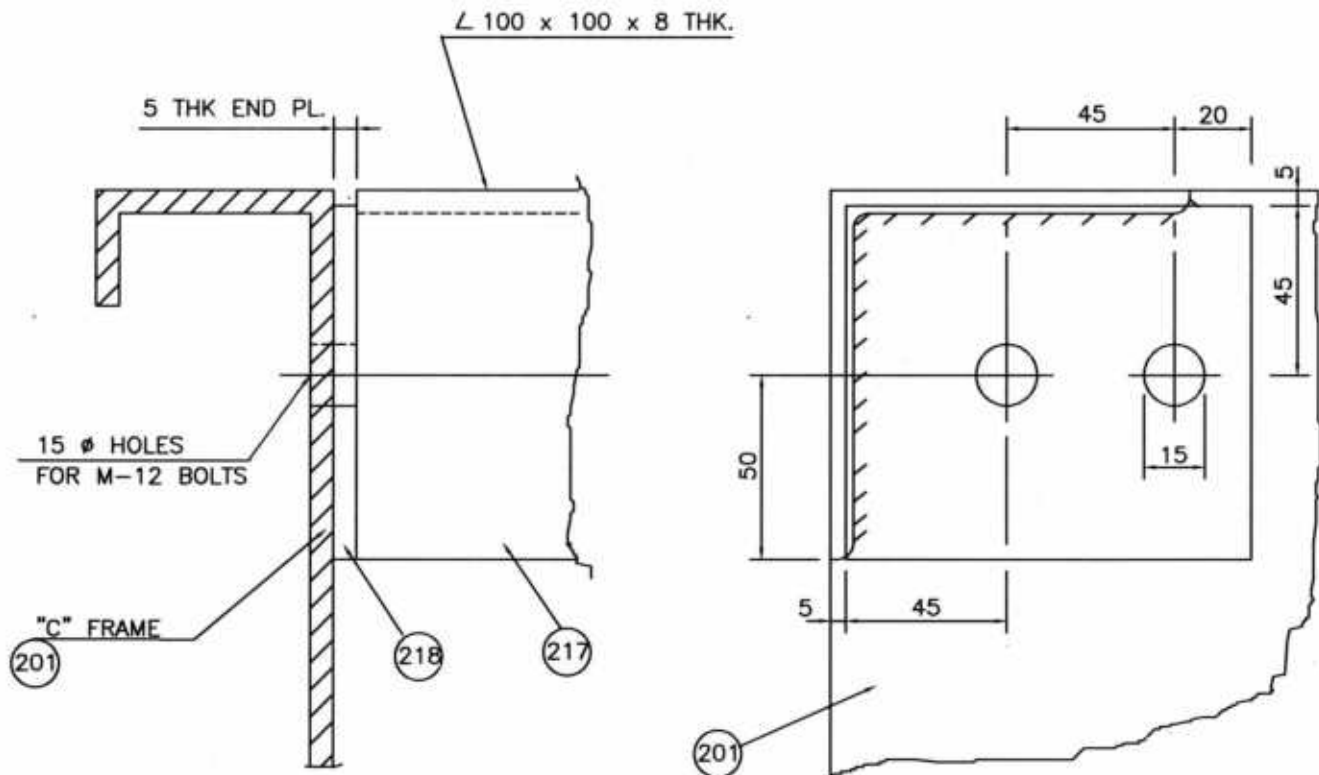
6	05.11.24	REAFFIRMED AND REISSUED AS STANDARD	AS	TKh	KA/NK Nalin	MN
5	31.10.19	REAFFIRMED AND REISSUED AS STANDARD	DP	NSK	KJH	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Sids. Committee Convener	Sids. Bureau Chairman
						Approved by



NOTE:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. THE PART NOS RELATE TO THOSE SHOWN IN TUBE BUNDLE FRAME DRAWING.

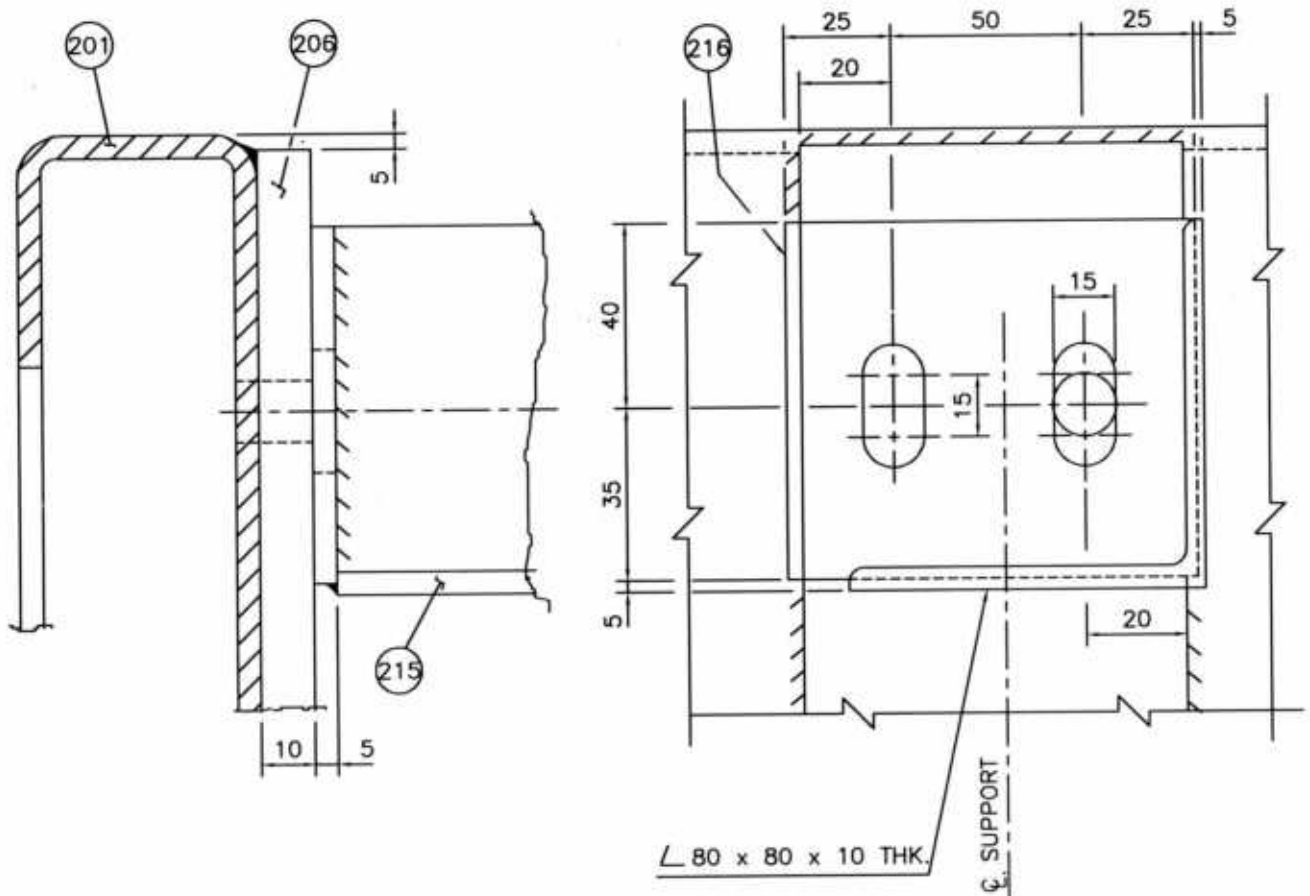
5	18.07.2023	REVISED AND REISSUED AS STANDARD	JIT SINGH	TK	NK	SM
4	31.10.2016	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	SK/KJH	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by



NOTE:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. THE PART NOS RELATE TO THOSE SHOWN IN TUBE BUNDLE FRAME DRAWING.

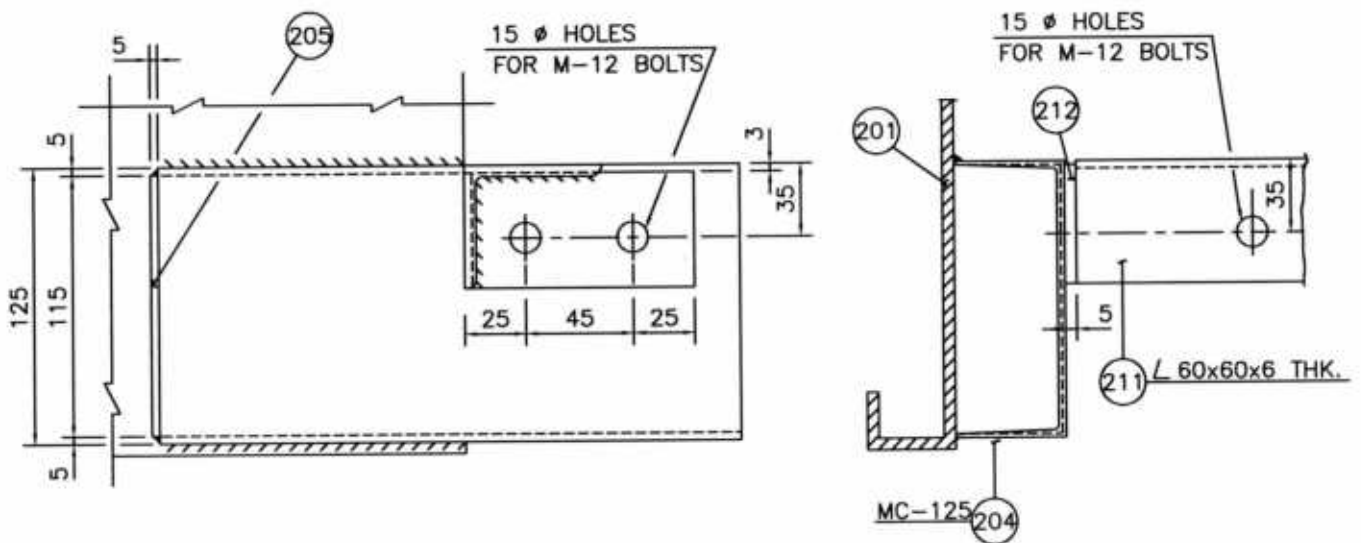
5	18.07.2023	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TK	NK	SM
4	20.03.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	SK/KJH	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by



NOTE:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. THE PART NOS RELATE TO THOSE SHOWN IN TUBE BUNDLE FRAME DRAWING.

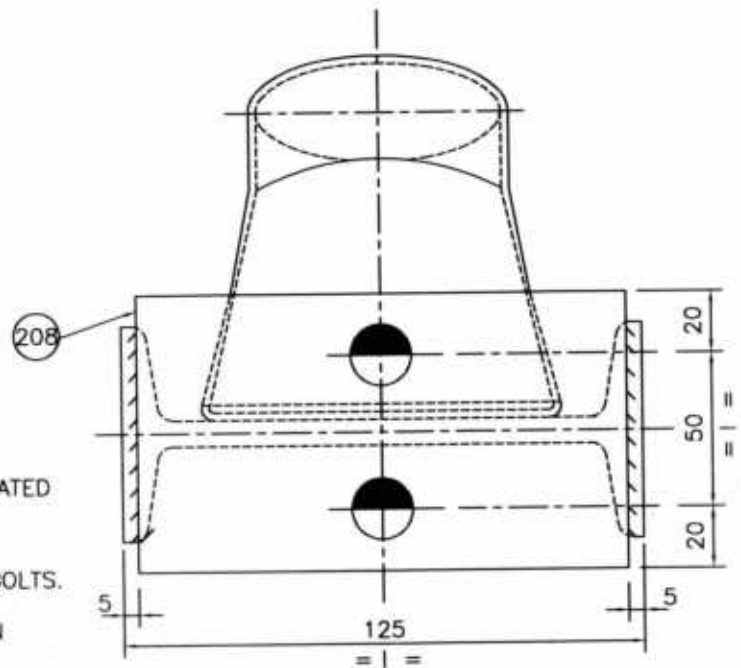
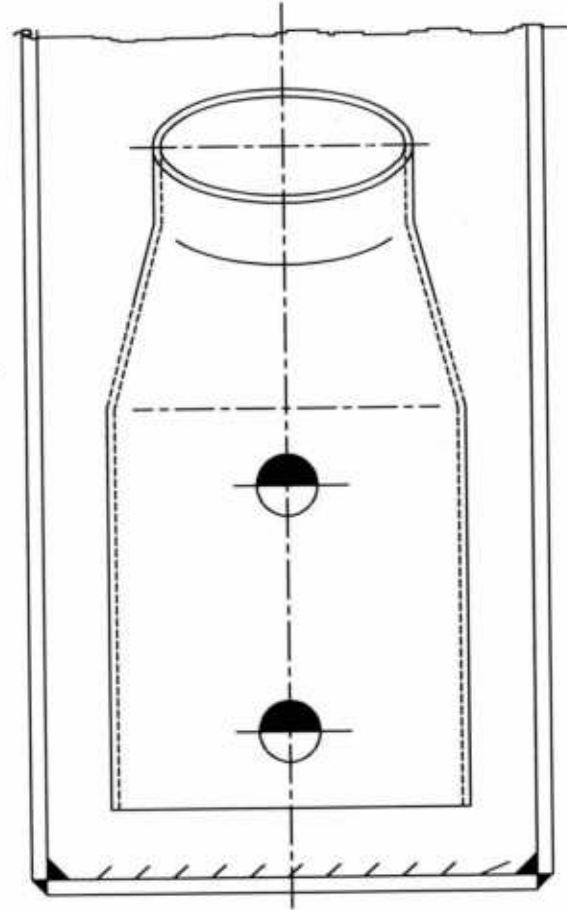
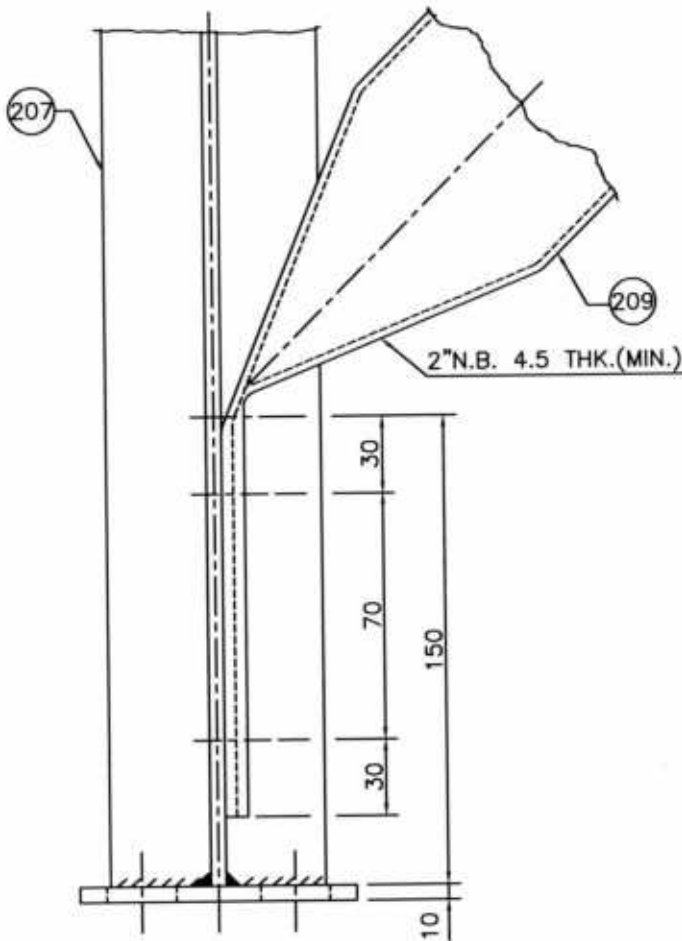
5	24.02.2023	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TK	NK	SM
4	20.03.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	SK/KJH	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	



NOTE:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. THE PART NOS RELATE TO THOSE SHOWN IN TUBE BUNDLE FRAME DRAWING.

5	24.02.2023	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TK	NK	SM
4	20.03.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	SK/KJH	RKT	RN
Rev. No	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	



MATL. OF CONST.- A 36 / IS 1239

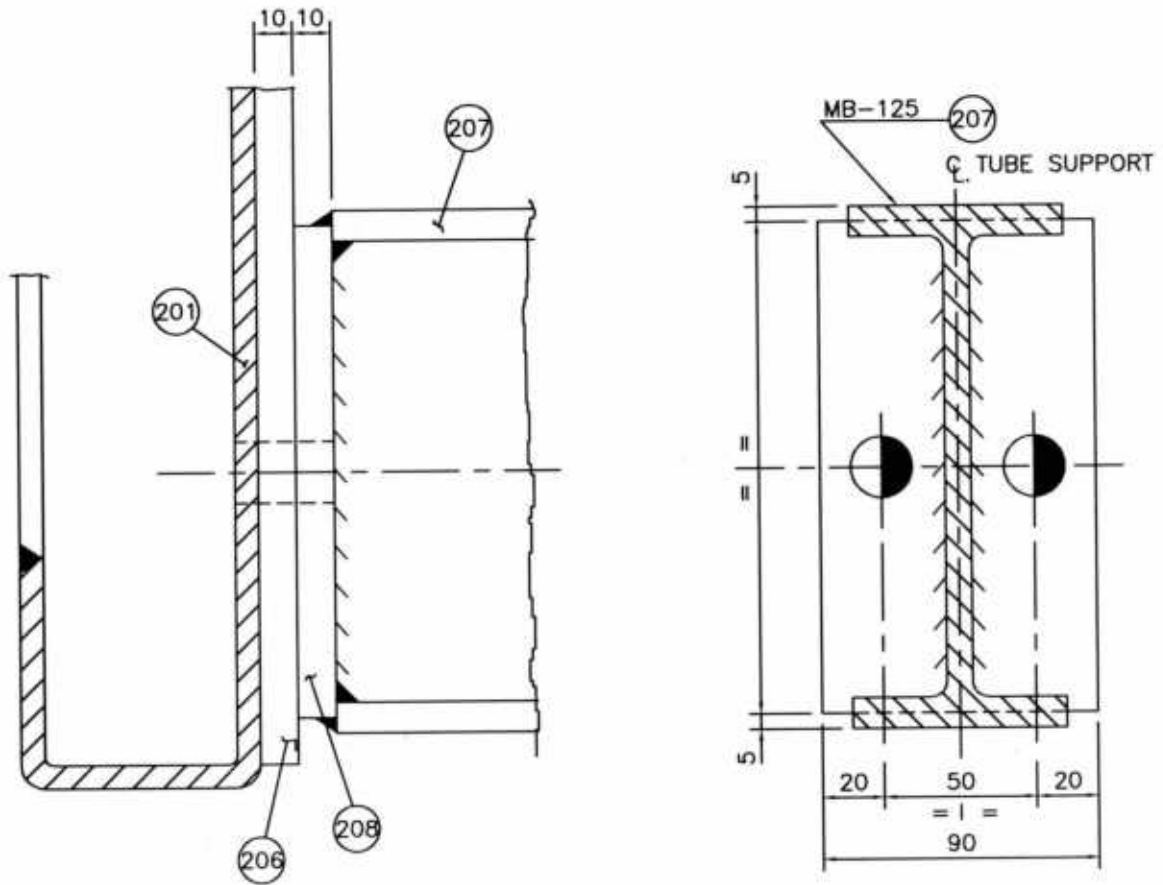
NOTE:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. INDICATES 18 ° HOLES FOR M-16 BOLTS.
3. THE PART NOS RELATE TO THOSE SHOWN IN TUBE BUNDLE FRAME DRAWING.

5	24 02 2023	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TK	NK	SM
4	20 03 2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	SK/KJH	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	



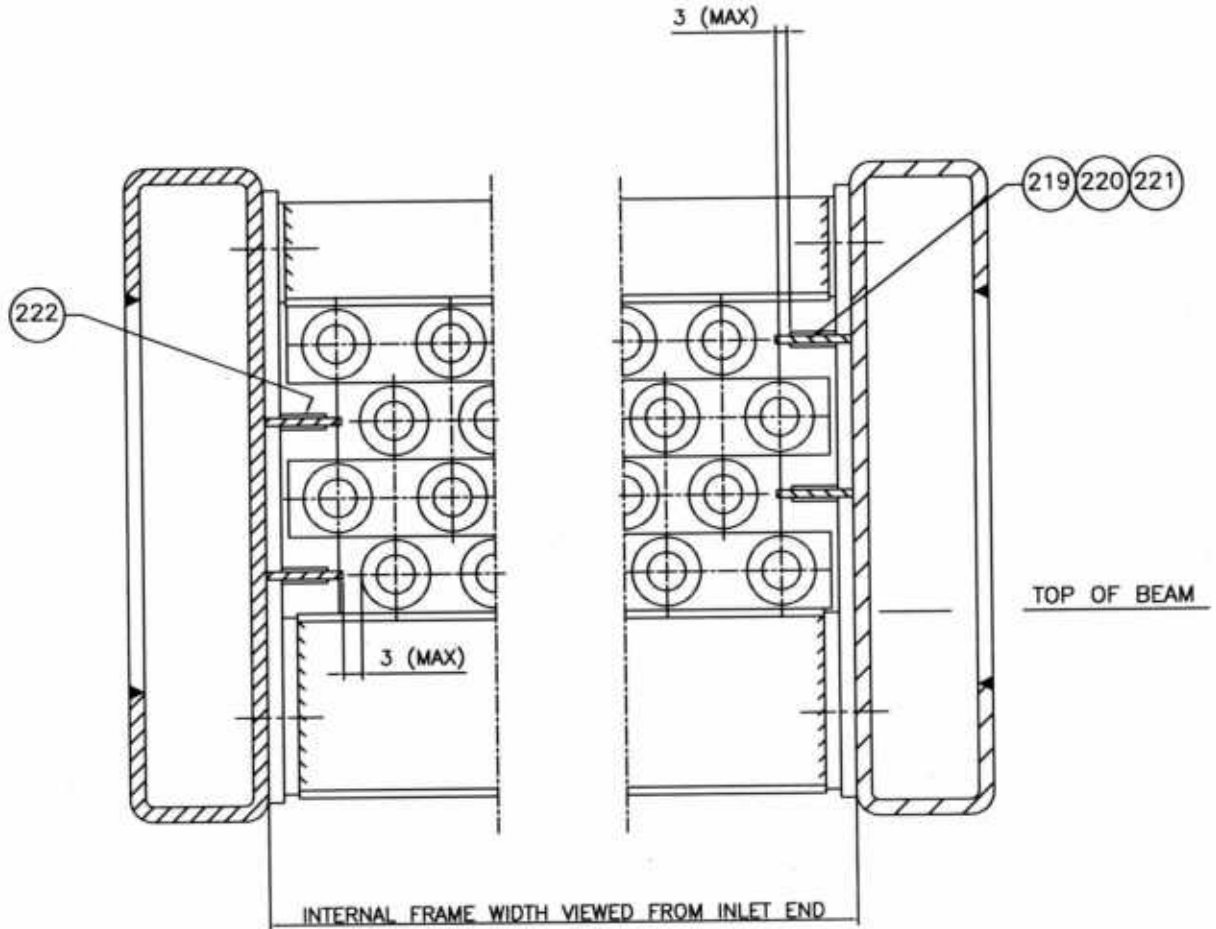
TUBE SUPPORT BOTTOM
BEAM DETAIL
(AIRCOOLED HEAT EXCHANGERS)



NOTE:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. INDICATES 18 ϕ HOLES FOR M-16 BOLTS.
3. THE PART NOS RELATE TO THOSE SHOWN IN TUBE BUNDLE FRAME DRAWING.

5	24.02.2023	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TK	NK	SM
4	20.03.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	SK/KJH	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	



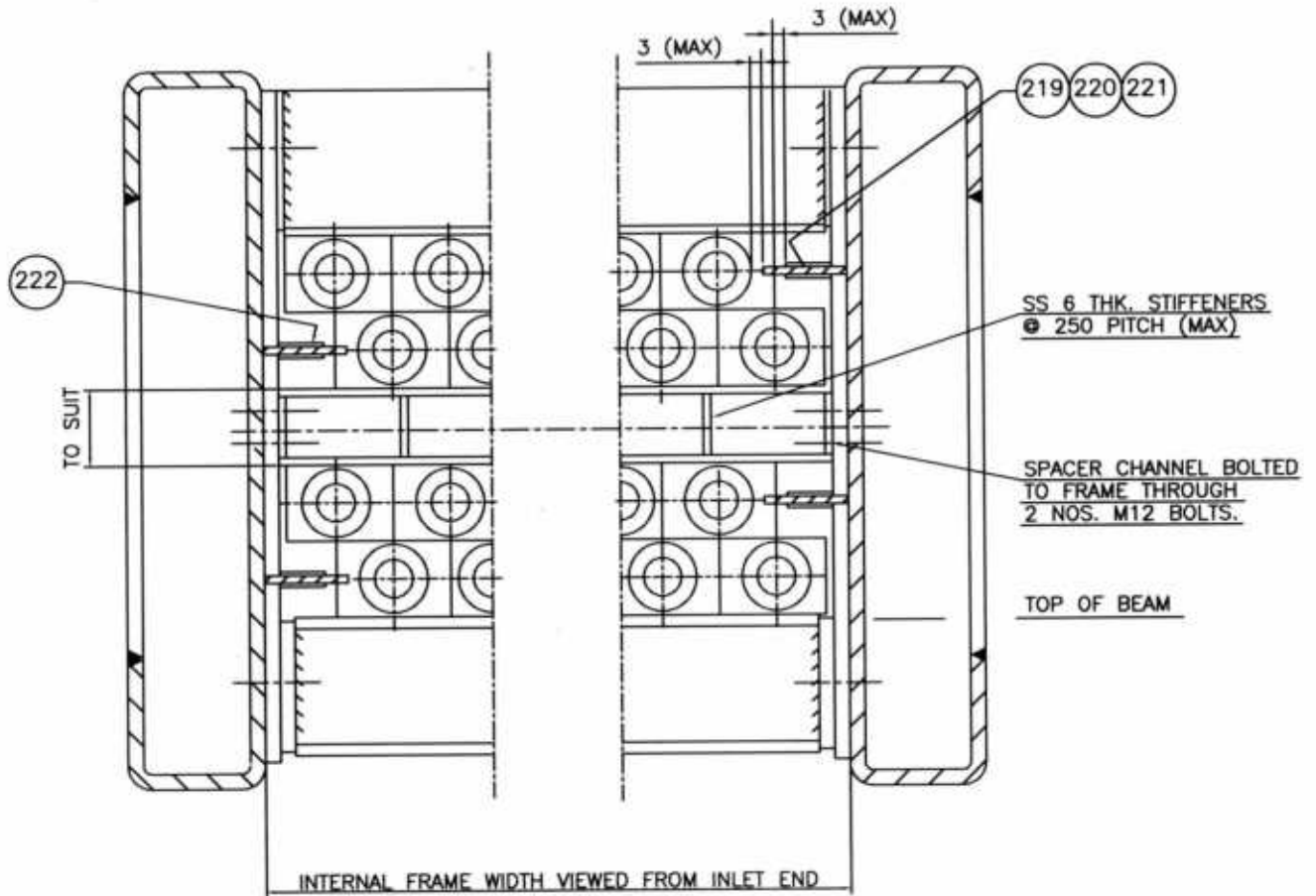
NOTES:—

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. DETAIL GIVEN IN THIS STANDARD IS TYPICAL IT SHOWS 4 NOS. OF ROWS OF TUBES. EXTRAPOLATE FOR NO. OF ROWS IF OTHER THAN SHOWN ABOVE.
3. THE PART NOS RELATE TO THOSE SHOWN IN TUBE BUNDLE FRAME DRAWING.

5	24.02.2023	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TK	NK	SM
4	20.03.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	SK/KJH	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Std. Committee Convener	Std. Bureau Chairman
					Approved by	



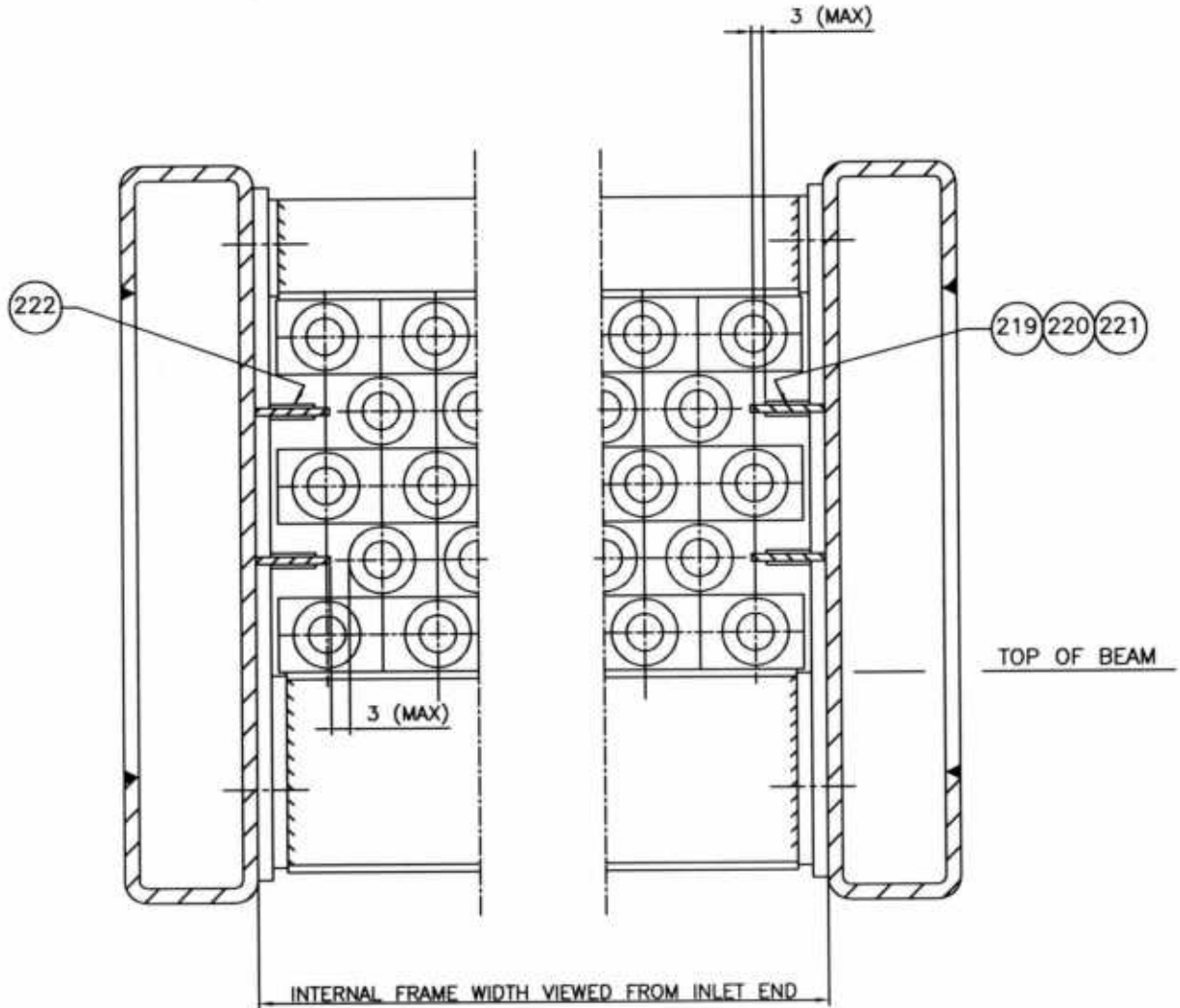
**TUBE BUNDLE FRAME
DETAIL WITH SPACER
(AIRCOOLED HEAT EXCHANGERS)**



NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. SPACER CHANNEL SHALL BE FABRICATED FROM 5 THK. PLATE (SS).
3. DETAIL GIVEN IN THIS STANDARD IS TYPICAL IT SHOWS 4 NOS. OF ROWS OF TUBES. EXTRAPOLATE FOR NO. OF ROWS IF OTHER THAN SHOWN ABOVE.
4. THE PART NOS RELATE TO THOSE SHOWN IN TUBE BUNDLE FRAME DRAWING.

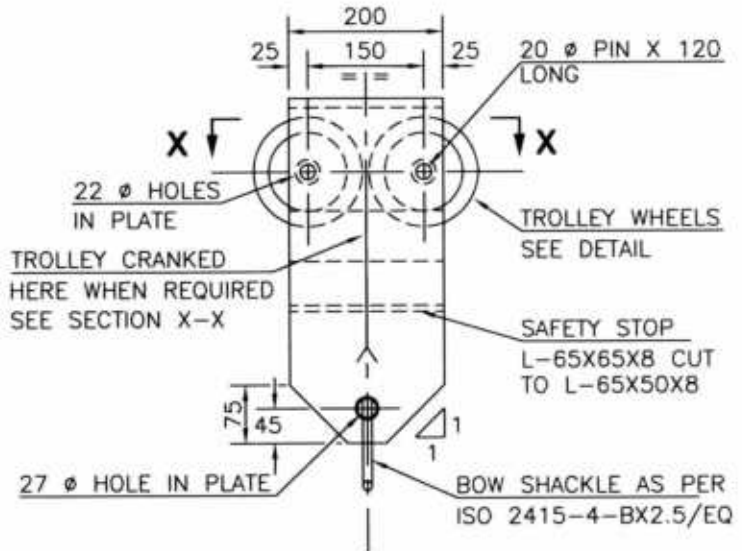
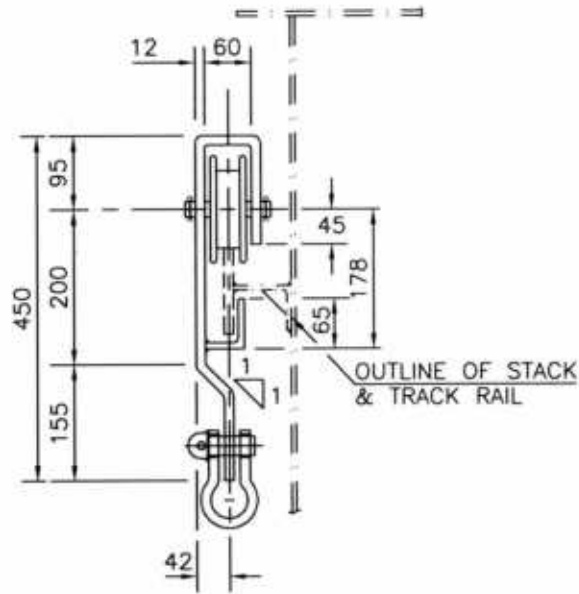
5	24.02.2023	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TK	NK	SM
4	20.03.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	SK/KJH	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	



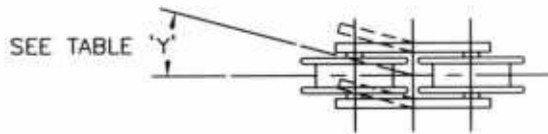
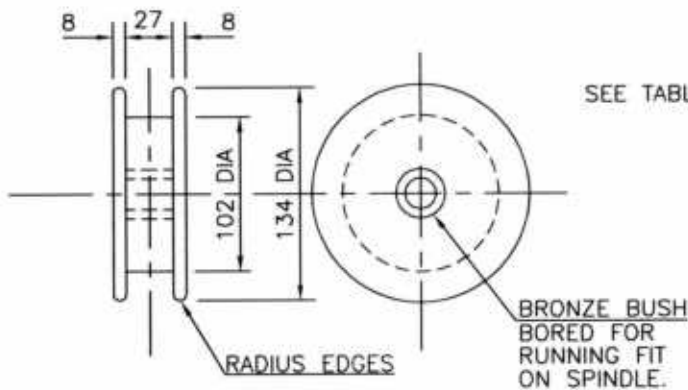
NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2. DETAIL GIVEN IN THIS STANDARD IS TYPICAL IT SHOWS 5 NOS. OF ROWS OF TUBES. EXTRAPOLATE FOR NO. OF ROWS IF OTHER THAN SHOWN ABOVE.
3. THE PART NOS RELATE TO THOSE SHOWN IN TUBE BUNDLE FRAME DRAWING.

5	24.02.2023	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	TK	NK	SM
4	20.03.2018	REAFFIRMED AND REISSUED AS STANDARD	JIT SINGH	SK/KJH	RKT	RN
Rev. No	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds Bureau Chairman
					Approved by	



TROLLEY DETAILS



SECTION X-X

TYPE	INSIDE DIA OF STACK	ANGLE 'Y'
A	460 TO 1525 INCLUSIVE	15°
B	OVER 1525	0°

**DETAILS OF TROLLEY WHEEL
 MATL:- STEEL WITH GRAPHITED
 PHOSPHOR BRONZE BUSH**

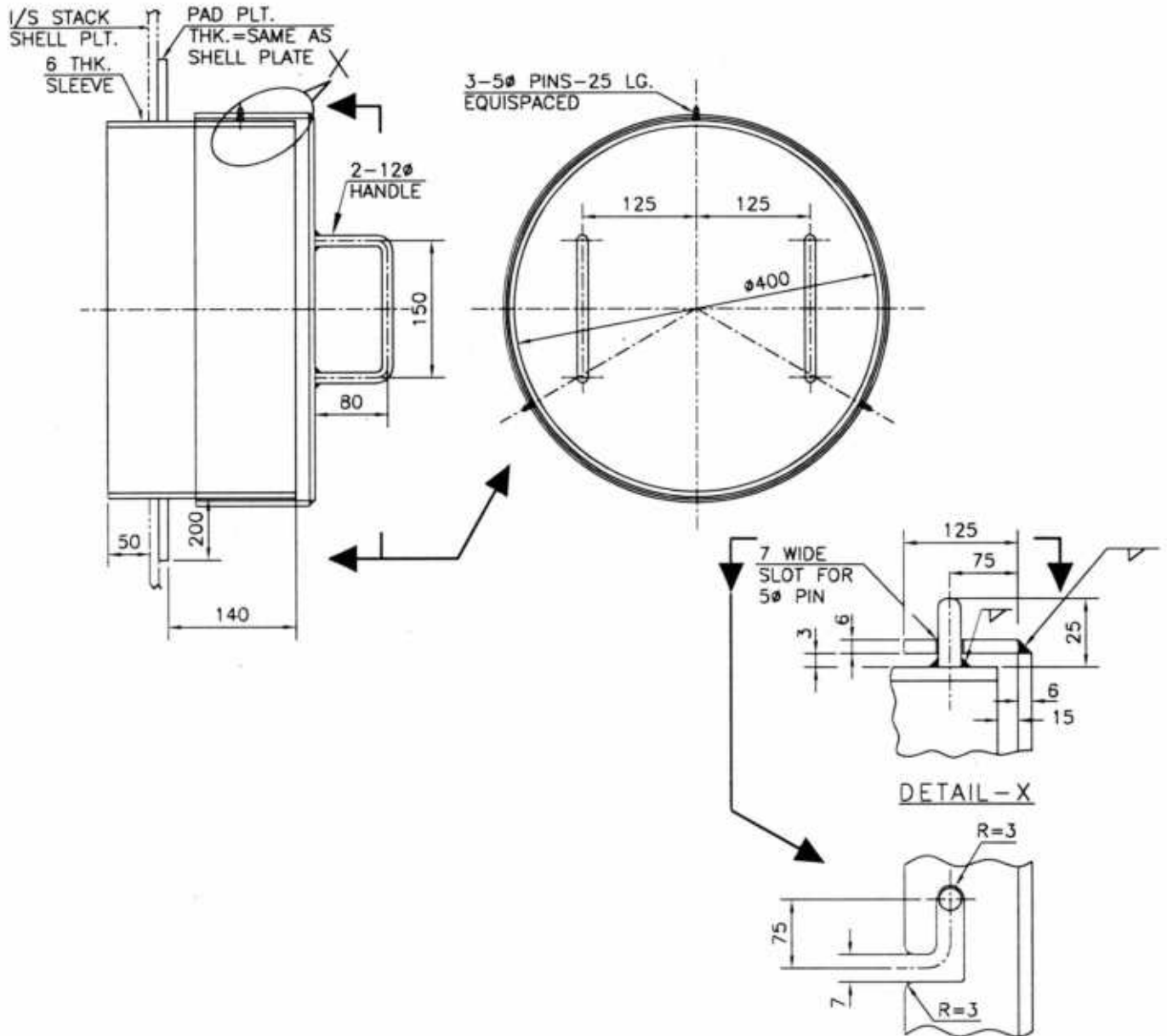
GENERAL NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL MATERIAL TO BE CARBON STEEL UNLESS OTHERWISE NOTED.

COMPANION STANDARD:-

STEEL STACK TOP RING & PAINTERS TROLLEY RAIL:- 7-17-0465

6	08.05.2023	REVISED & RE-ISSUED AS STANDARD	MB <i>[Signature]</i>	RP <i>[Signature]</i>	PG <i>[Signature]</i>	SM <i>[Signature]</i>
5	06.03.2018	REVISED & ISSUED AS STANDARD	MB	PG/MK	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds Committee Convener	Stds Bureau Chairman
						Approved by



GENERAL NOTES:-

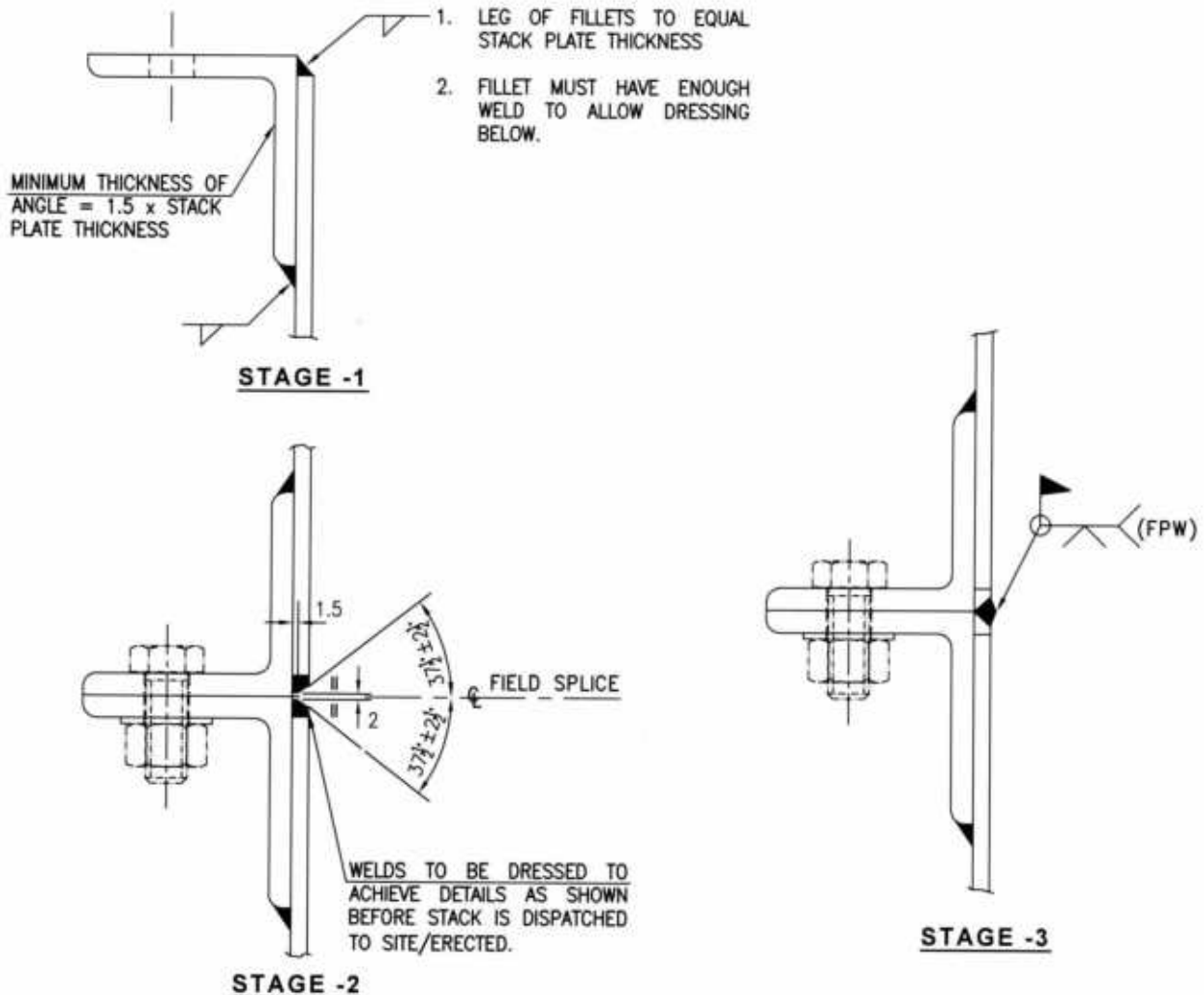
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. MOC=CS U.N.O. IN GENERAL ARRANGEMENT DRAWING.
3. VENTILATION OPENING TO BE PROVIDED BELOW STACK FLOOR, WHERE HEIGHT OF SKIRT PORTION IS GREATER THAN 6 METER.
4. ONE SUCH OPENING TO BE PROVIDED FOR EVERY 10 METER OF SKIRT HEIGHT. THE TOP MOST OPENING TO BE LOCATED WITHIN 4 METER BELOW STACK FLOOR.
5. SUITABLE EXTERNAL PLATFORM ACCESS TO BE PROVIDED.

COMPANION STANDARD:- NONE

3	14.09.2022	REVISED & ISSUED AS STANDARD	SS	PG/AP	PG	SM
2	06.03.2018	REVISED & ISSUED AS STANDARD	MB	PG/MK	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by

DETAIL-A

(NOT TO BE USED FOR PLATE THICKNESS > 8mm)



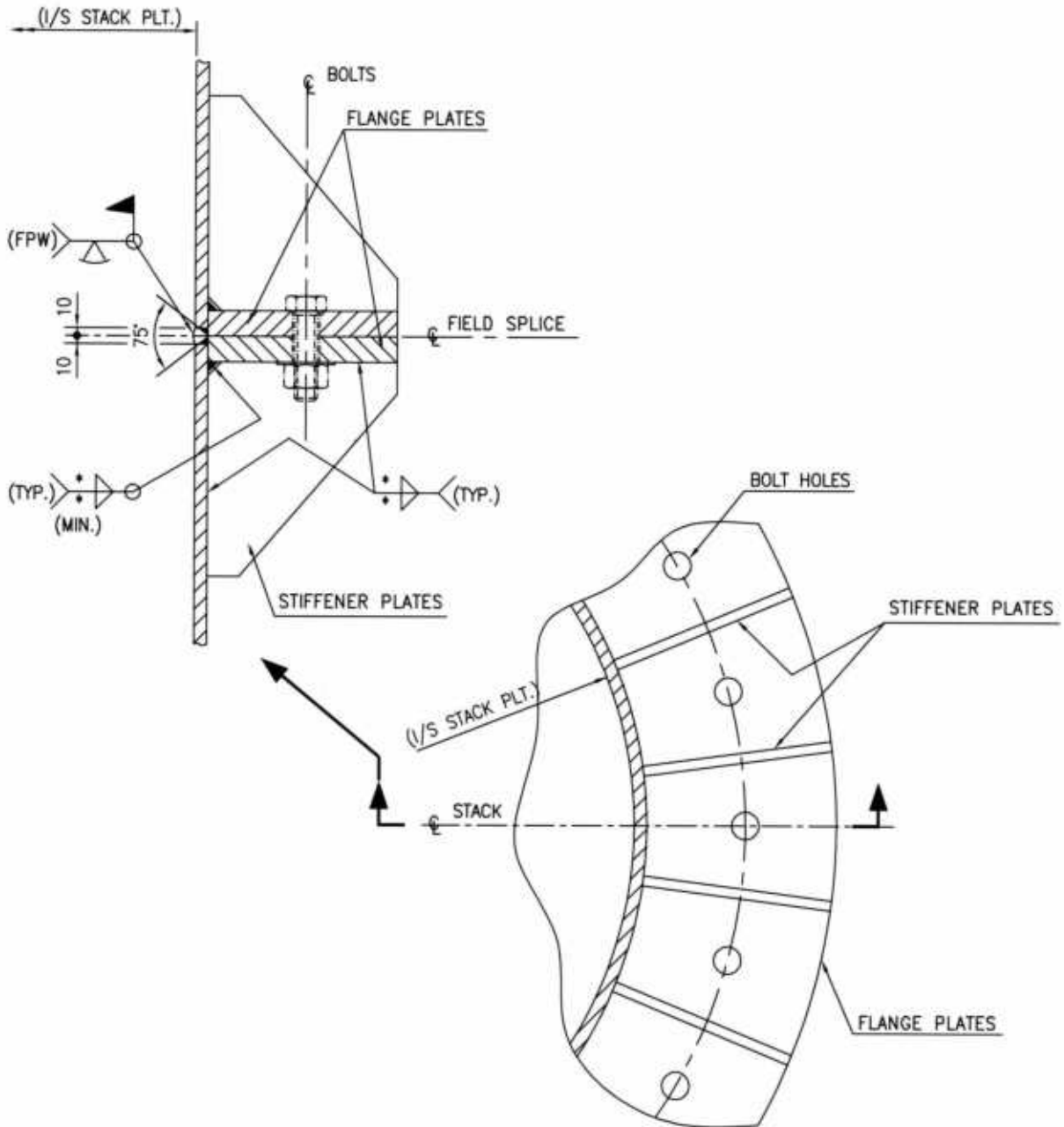
COMPANION STANDARD :- NONE

GENERAL NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. ALL MATERIAL TO BE CARBON STEEL UNLESS OTHERWISE NOTED.
3. ALL MATERIAL TO BE SUPPLIED BY CONTRACTOR.
4. CONTRACTOR CAN CHOOSE HIS PREFERRED DETAIL UON.
5. CONTRACTOR TO CALCULATE SIZE OF ANGLE, FLANGE PLATE, STIFFENERS AND BOLTING DETAILS WHEREVER APPLICABLE. CALCULATION SHALL BE SUBMITTED FOR REVIEW.
6. THE SPLICE CONNECTIONS (ANGLE/FLANGE PLATES/ GUSSETS/ BOLTS) SHALL BE DESIGNED FOR THE COMPLETE LOADS (GRAVITY, WINDS ETC.) OF THE OVERLYING TOTAL STACK. HOWEVER, FOR DETAILS 'A', 'B' & 'D' THESE CAN BE DESIGNED ONLY FOR THE COMPLETE LOADS DUE TO UPPER STACK SEGMENT PROVIDED THAT THE NEXT STACK SEGMENT IS ERECTED ONLY AFTER WELDING OF THIS SPLICE IS 100% COMPLETE.
7. BOLTS/NUTS WHEREVER USED SHALL BE LEFT IN POSITION AFTER COMPLETION OF WELDING.
8. FOR DETAIL 'A', 'B', 'C' & 'D' 250mm EACH SIDE OF FIELD WELD REFRACTORY LINING TO BE DONE INSITU AFTER STACK ERECTION AND WELDING IS COMPLETE.

6	22.03.2024	REVISED & ISSUED AS STANDARD	MB	RS/RP	PG	MN
5	02.04.2018	REVISED & ISSUED AS STANDARD	MB	PG/MK	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by

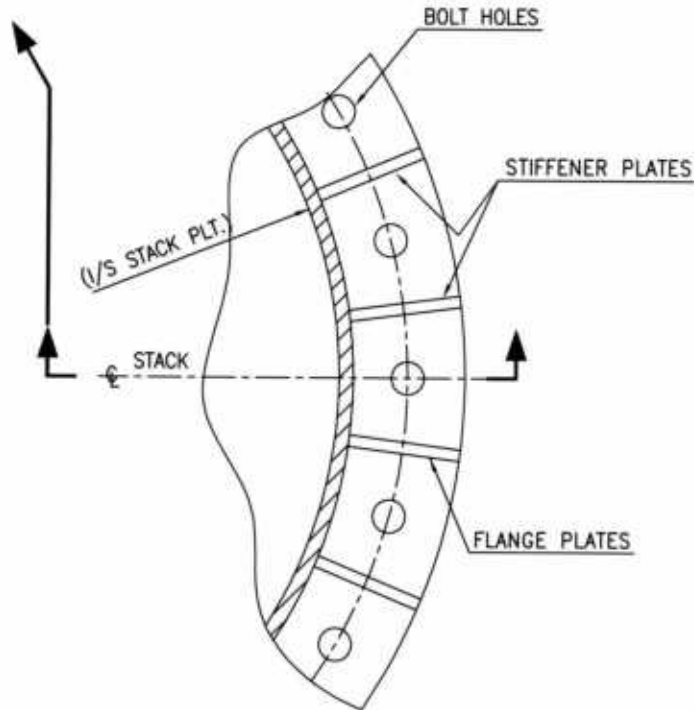
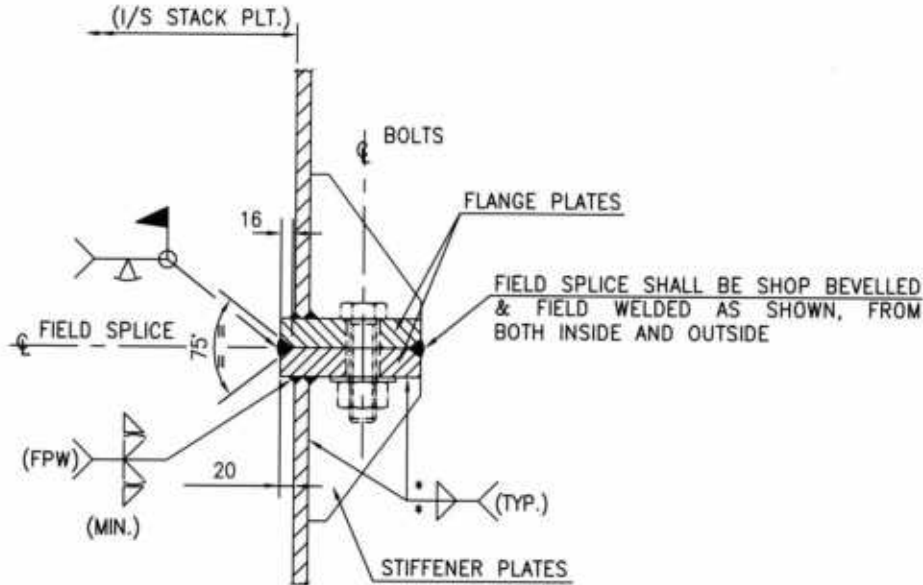
DETAIL-B



* - TO BE DECIDED BASED ON THE DESIGN OF SPLICE JOINT, GUSSET PLATE THICKNESS AND STACK PLATE THICKNESS. MINIMUM FILLET WELD SIZE SHALL BE 6MM.

6	22.03.2024	REVISED & ISSUED AS STANDARD	MB	PG	MN
5	02.04.2018	REVISED & ISSUED AS STANDARD	MB	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Approved by
				Stds. Committee Convener	Stds. Bureau Chairman

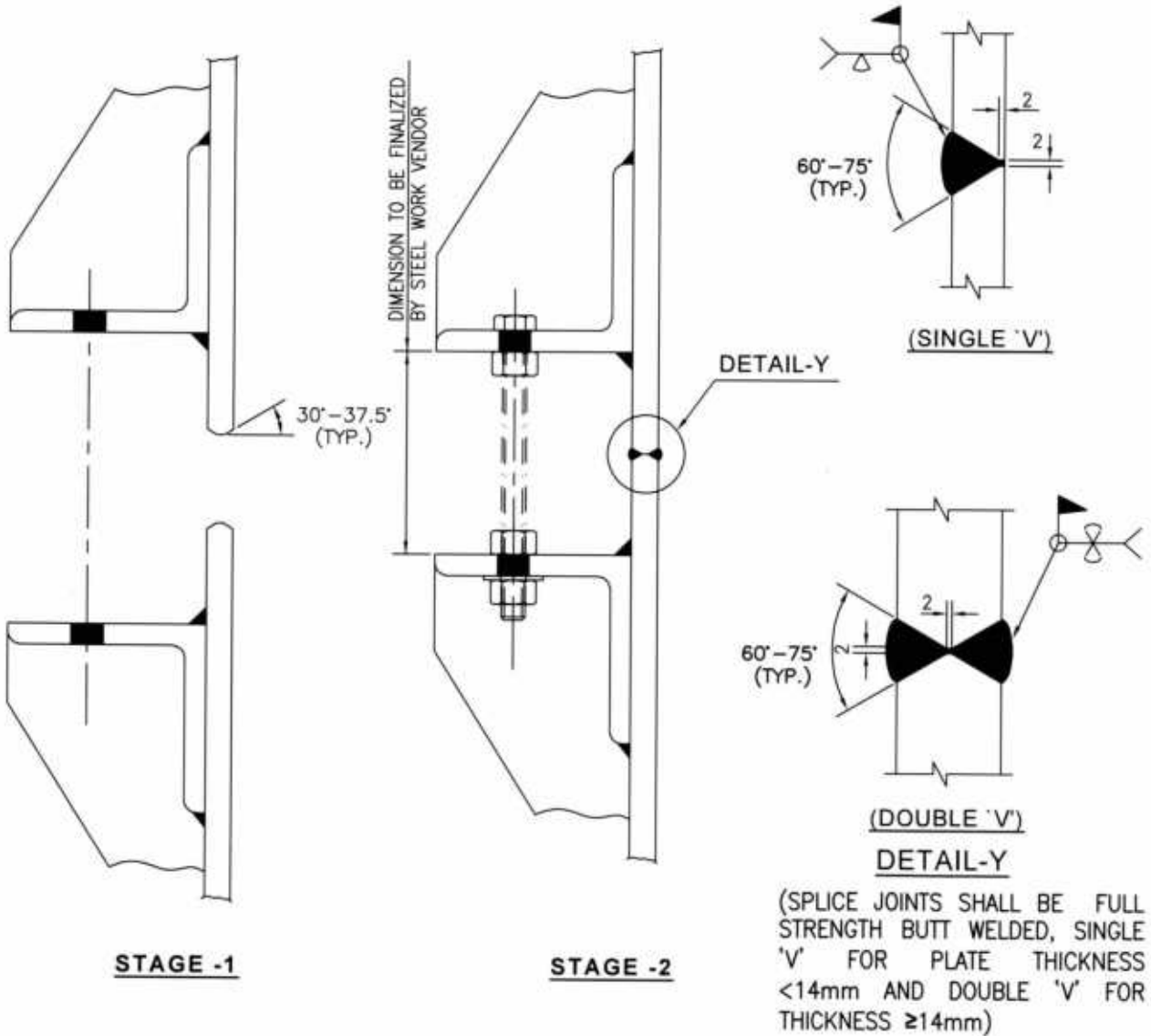
DETAIL-C



* - TO BE DECIDED BASED ON THE DESIGN OF SPLICE JOINT, GUSSET PLATE THICKNESS AND STACK PLATE THICKNESS. MINIMUM FILLET WELD SIZE SHALL BE 6MM.

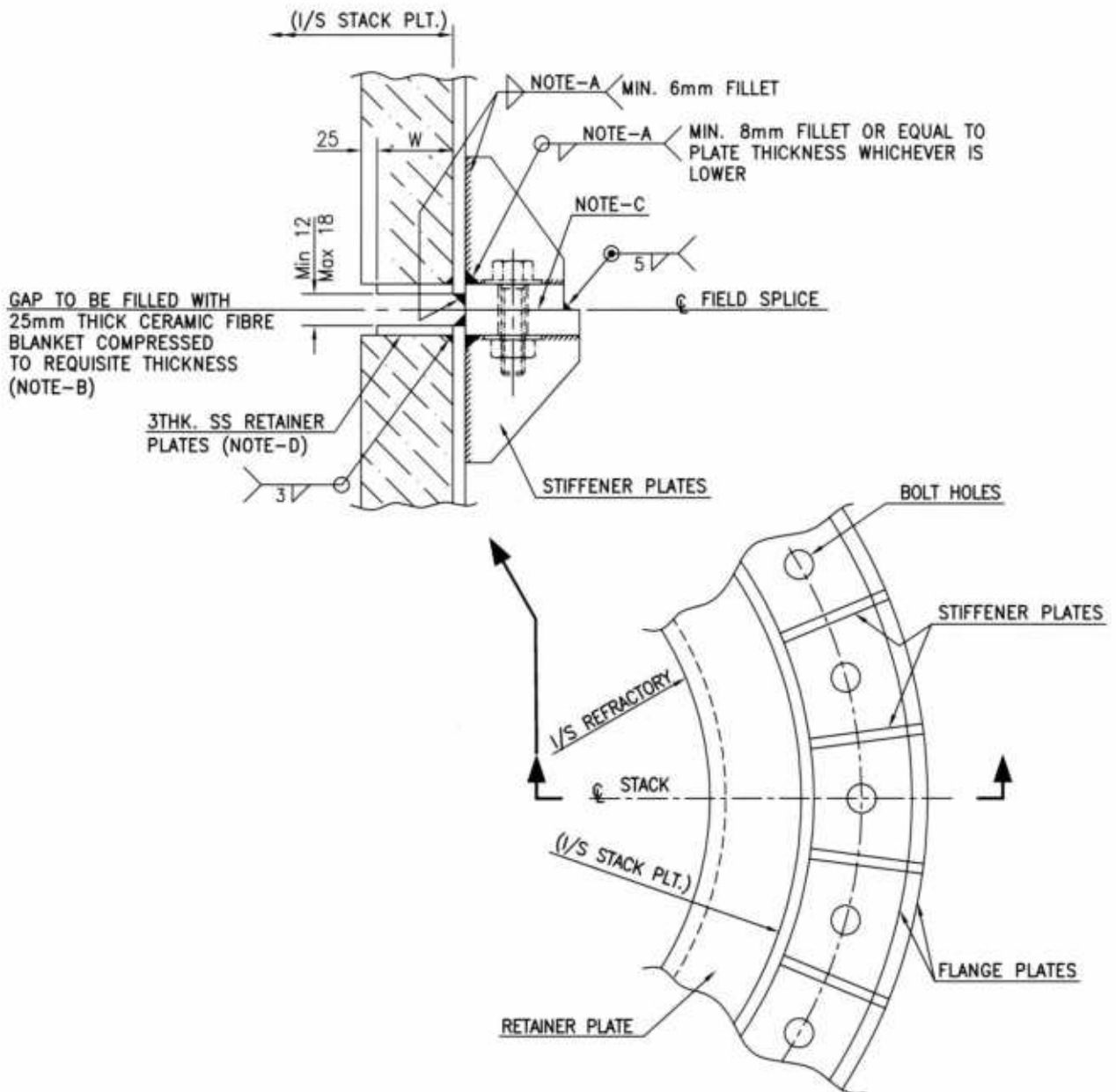
6	22.03.2024	REVISED & ISSUED AS STANDARD	<i>[Signature]</i> MB	<i>[Signature]</i> PG	MN	
5	02.04.2018	REVISED & ISSUED AS STANDARD	MB	PG/MK	RN	
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
			Approved by			

DETAIL-D



6	22.03.2024	REVISED & ISSUED AS STANDARD	MB	RS/RP	PG	MN
5	02.04.2018	REVISED & ISSUED AS STANDARD	MB	PG/MK	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
						Approved by

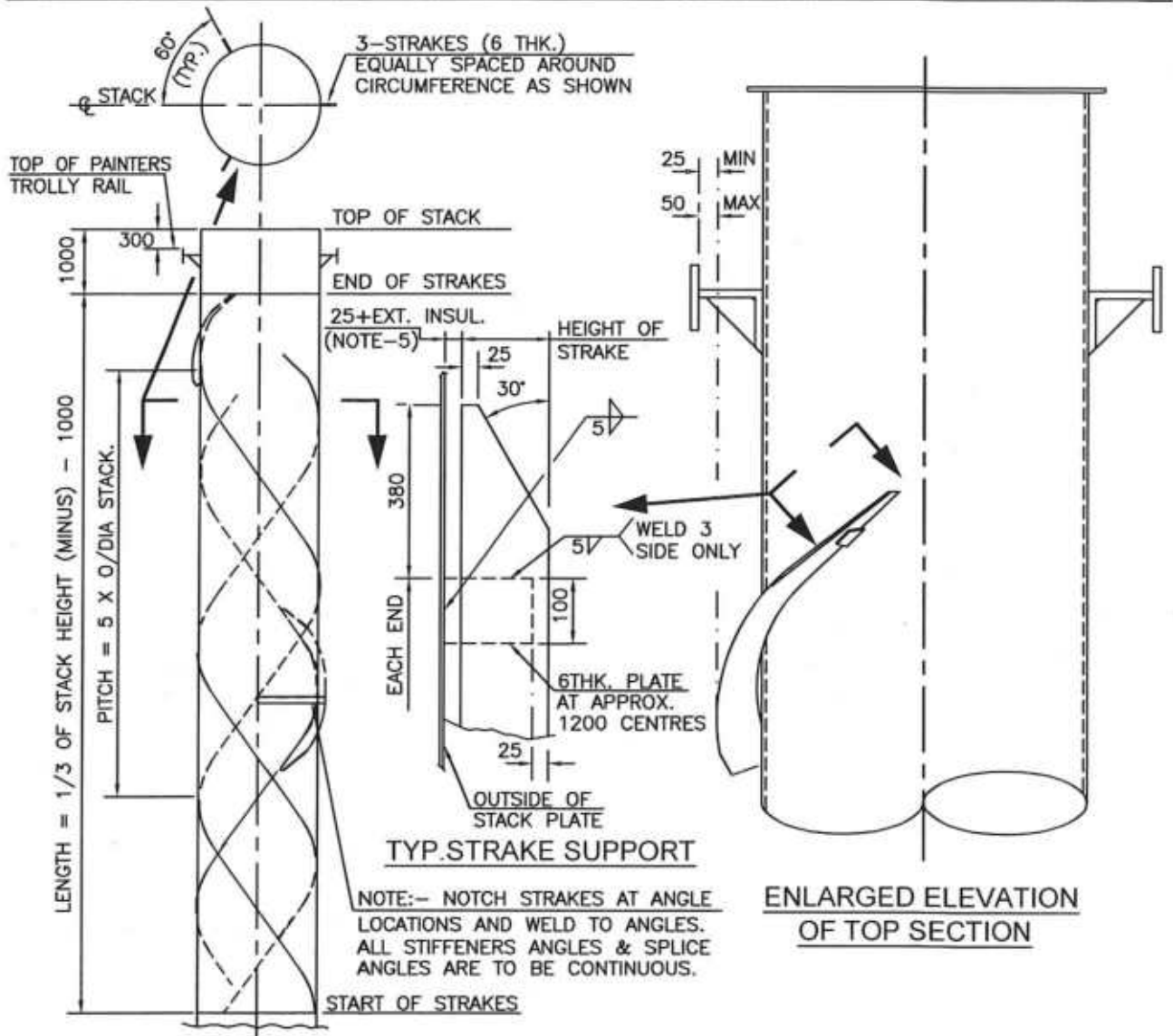
DETAIL-E



ADD ON NOTES FOR DETAIL-E:

- A. WELD TO BE DECIDED BASED ON THE DESIGN OF SPLICE JOINT, GUSSET PLATE THICKNESS AND STACK PLATE THICKNESS.
- B. CERAMIC FIBRE BLANKET OF 128 Kg/m³ DENSITY SUITABLE FOR 1260°C TO BE FIXED AT BOTTOM RETAINER PLATE WITH HEAT RESISTANT ADHESIVE. ADHESIVE TO BE SUITABLE FOR TEMPERATURE UP TO 300°C.
- C. CONTACT SURFACES OF THE FLANGE PLATE SHALL BE APPLIED WITH SEALING MASTIC UP TO 200°C.
- D. RETAINER PLATE M.O.C. SHALL BE SS304 U.O.N. IN GENERAL ARRANGEMENT DRAWINGS. RETAINER PLATE SHALL HAVE 3mm WIDE x 2/3*W' DEEP SLOTS IN THEIR LEADING EDGE @450 CENTRES.
- E. THIS DETAIL IS NOT PERMITTED IF THE TOTAL HEIGHT OF STACK ABOVE THE SPLICE ELEVATION IS MORE THAN 40m.

6	22.03.2024	REVISED & ISSUED AS STANDARD	MB	PG/MK	PG	MN
5	02.04.2018	REVISED & ISSUED AS STANDARD	MB	PG/MK	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by



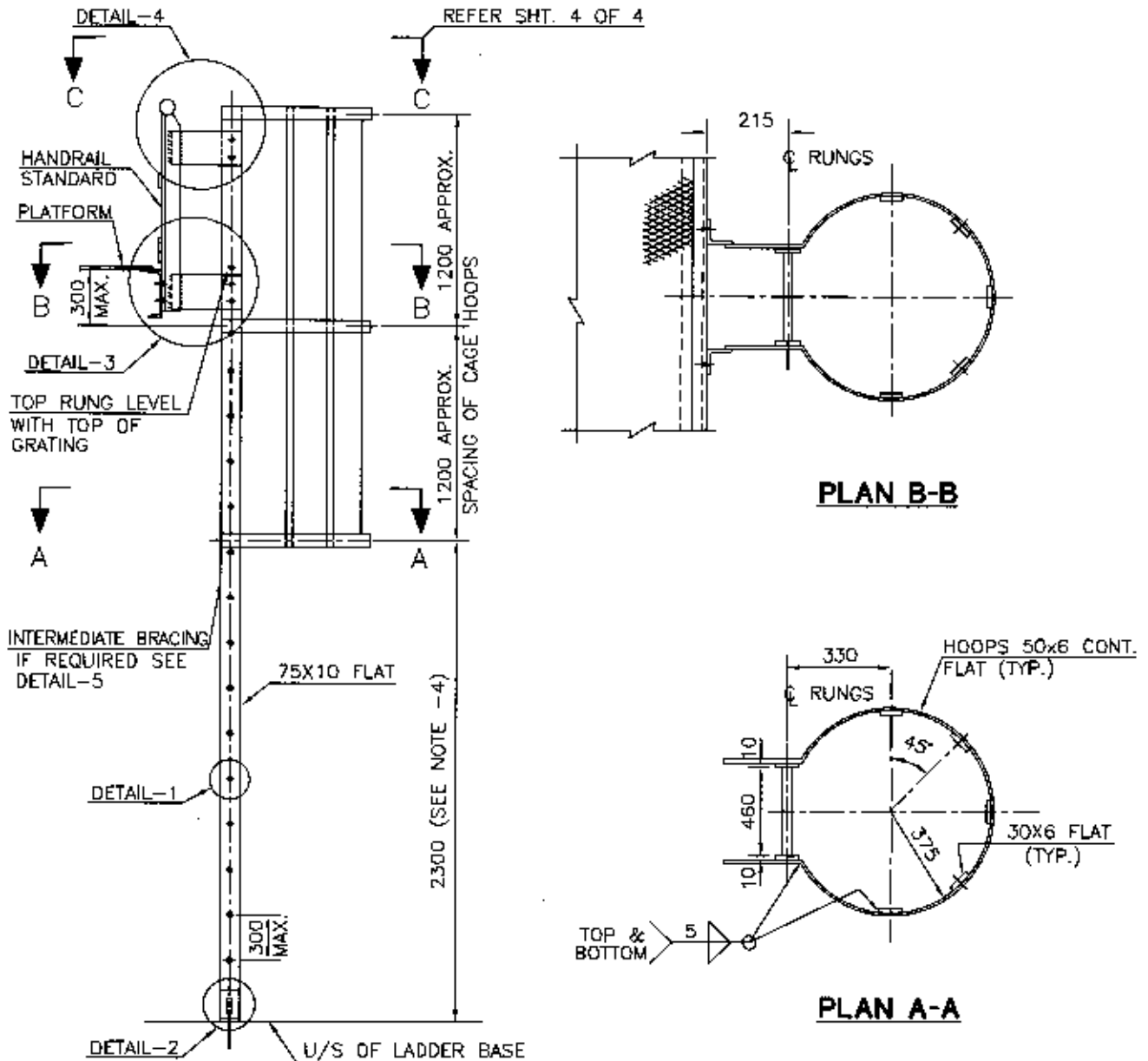
DIAGRAMMATIC ELEVATION SHOWING
PLATE FORMATIONS AROUND THE DIAMETER
IN LINE FORM ONLY FOR CLARITY

- GENERAL NOTES:-**
1. ALL DIMENSIONS ARE IN MILLIMETRES.
 2. ALL MATERIAL TO BE CARBON STEEL UNLESS OTHERWISE NOTED.
 3. FOR DIAMETER AND HEIGHT OF STACK, REFER GENERAL ARRANGEMENT DRAWING.
 4. PROJECTION OF STRAKES (HT. OF STRAKE +25MM) TO BE 0.1 x STACK O/D (STACK OD IS INCLUDING EXTERNAL INSULATION, IF ANY) UNLESS OTHERWISE NOTED IN GENERAL ARRANGEMENT DRAWING.

5. FOR EXTERNAL INSULATION THICKNESS (IF ANY), REFER GENERAL ARRANGEMENT DRAWING.

COMPANION STANDARD:-
STEEL STACK TOP RING & PAINTERS TROLLEY RAIL :-7-17-0465

5	14.12.2020	REVISED & ISSUED AS STANDARD	MB	AV/IRP	MK	SM
4	23.03.2017	REVISED & ISSUED AS STANDARD	SS	RP/AP	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by



GENERAL NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES.

2. ALL MATERIAL TO BE CARBON STEEL U.O.N.

3. FOR POSITION OF LADDERS AND ELEVATION OF PLATFORMS SERVED SEE ARRANGEMENT DWG.

COMPANION STANDARDS:-

LADDER & CAGE DETAILS (SIDE STEP TYPE)	-7-17-0454
STAIR DETAILS	-7-17-0456
CIRCULAR PLATFORMS (CHEQ. PLT. FLOORING)	-7-17-0457
RECTANGULAR PLATFORMS (CHEQ. PLT. FLOORING)	-7-17-0458
CIRCULAR PLATFORMS (OPEN TYPE FLOORING)	-7-17-0459
RECTANGULAR PLATFORMS (OPEN TYPE FLOORING)	-7-17-0460
HANDRAIL DETAILS	-7-17-0461

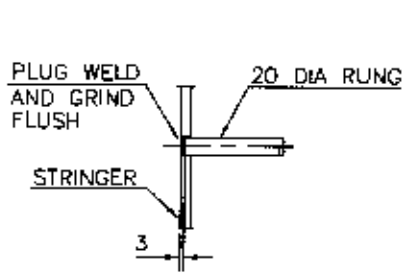
4. CAGES SHALL NOT BE PROVIDED FOR LADDERS TO PLATFORMS WHICH ARE LESS THAN 4000 ABOVE GRADE.

5. TOP RUNG LEVEL SHOULD MATCH WITH TOP OF TOE PLATE & ALL RUNG SPACINGS MUST BE EQUAL.

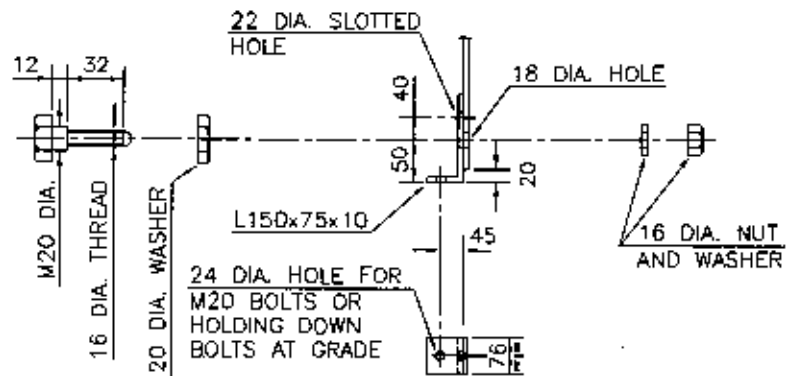
6. UON CONTRACTOR TO PROVIDE SELF CLOSING SAFETY GATE AS PER STANDARD.

7. LADDERS SHALL NOT BE CONTINUOUS FOR MORE THAN 9000 MM.

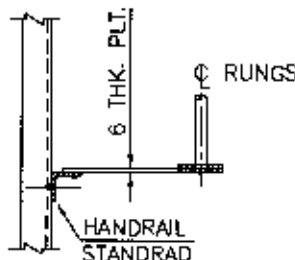
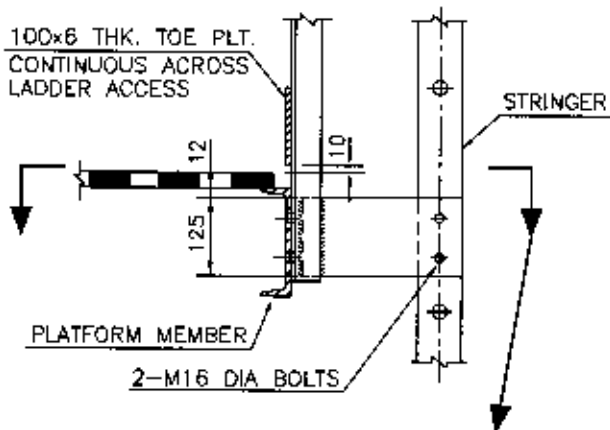
5	13.10.2021	REVISED & ISSUED AS STANDARD	MB	KM/RP	MK	SM
4	10.03.2017	REVISED & ISSUED AS STANDARD	SS	RP/AP	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman



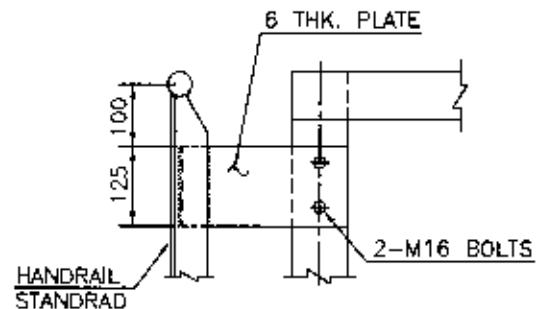
DETAIL-1



DETAIL-2



DETAIL-3



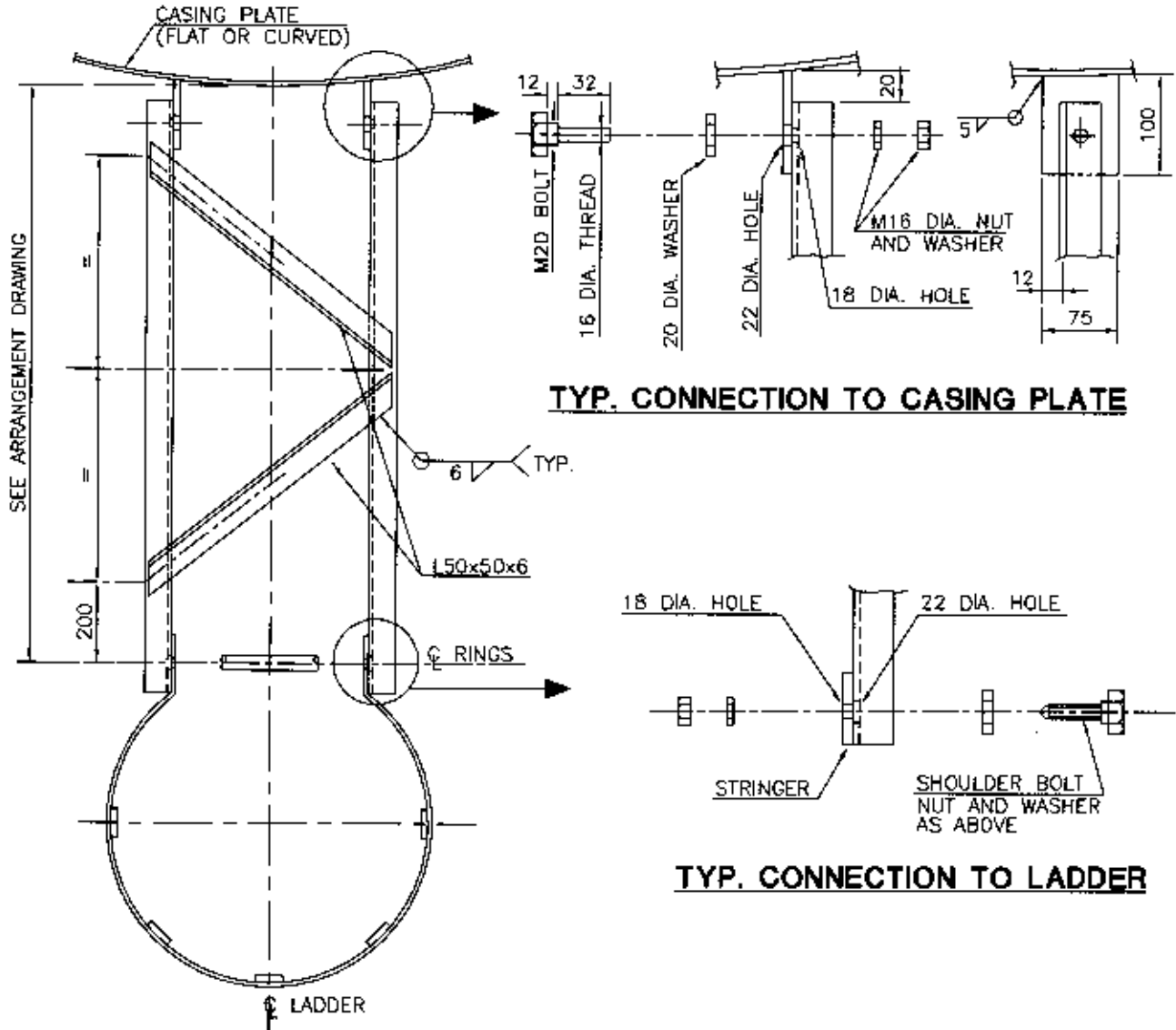
DETAIL-4

GENERAL NOTES:-

FOR GENERAL NOTES AND LIST OF COMPANION STANDARDS SEE SHEET NO. 1.

COMPANION STANDARDS:- SEE SHEET NO. 1

5	13.10.2021	REVISED & ISSUED AS STANDARD	MB	KM/RP	MK	SM
4	10.03.2017	REVISED & ISSUED AS STANDARD	SS	RP/AP	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
Approved by						



DETAIL-5 (PLAN)

(INTERMEDIATE BRACE TO BE USED IF DISTANCE BETWEEN PLATFORMS EXCEEDS 6100)

GENERAL NOTES:-

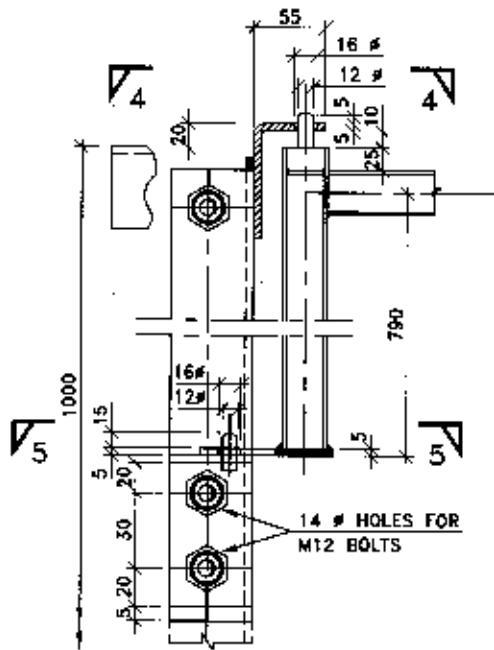
FOR GENERAL NOTES AND LIST OF COMPANION DRAWINGS SEE SHEET NO. 1.

COMPANION STANDARDS:- SEE SHEET NO. 1

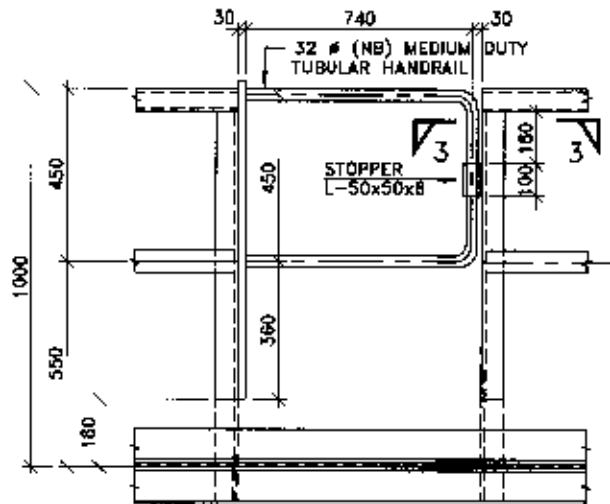
5	13.10.2021	REVISED & ISSUED AS STANDARD	<i>[Signature]</i> MB	<i>[Signature]</i> KM/RP	MK	SM
4	10.03.2017	REVISED & ISSUED AS STANDARD	SS	RP/AP	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
Approved by						

SAFETY MECHANISM AGAINST ACCIDENTAL FALL IN LADDER WELL

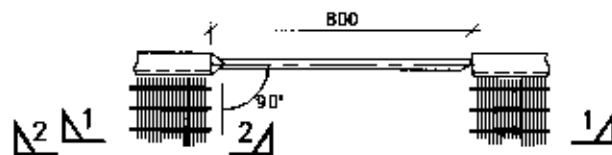
OPTION-1 (SELF CLOSING SAFETY GATE TO BE USED UON IN GEN. ARRGT. DWG.)



SECTION 2-2

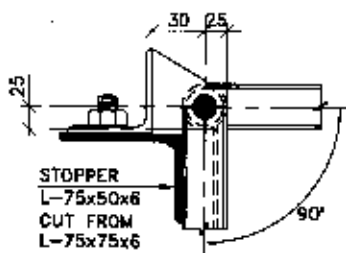


SECTION 1-1

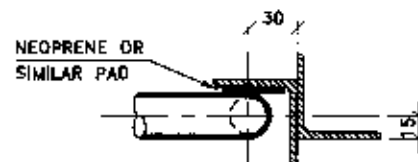


SELF CLOSING SAFETY GATE

(REFER NOTE-6)

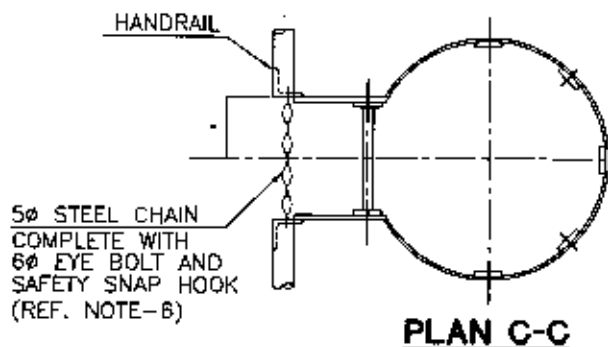


SECTION 4-4

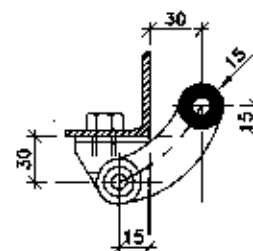


SECTION 3-3

OPTION-2 (SAFETY STEEL CHAIN)



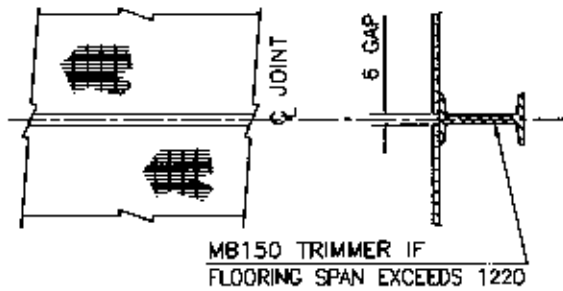
PLAN C-C



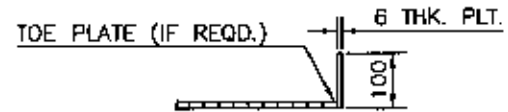
SECTION 5-5

COMPANION STANDARDS:-
 SEE SHEET NO. 1

5	13.10.2021	REVISED & ISSUED AS STANDARD	MB	KM/RP	MK	SM
4	10.03.2017	REVISED & ISSUED AS STANDARD	SS	RP/AP	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Sds. Committee Convener	Sds. Bureau Chairman



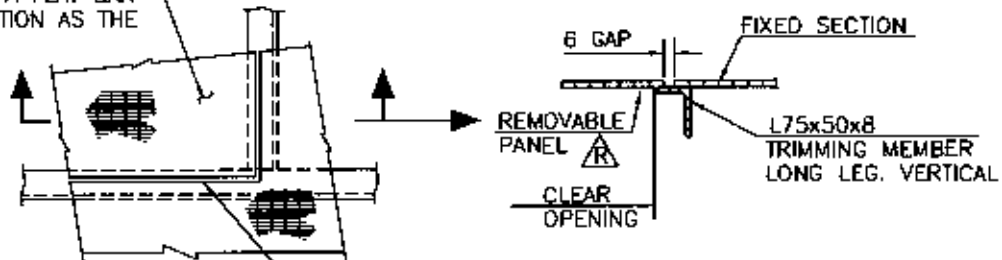
DETAIL-1



DETAIL-2

TOE PLATE 100x6 THK. FLAT ONLY REQD. WHERE OPENING EXCEEDS 100 IN ANY DIRECTION, OTHERWISE OPENING IS TO BE FINISHED WITH FLAT OF THE SAME SECTION AS FLOORING BEARER BARS

WHERE THE DIMENSIONS OF THE TRANSVERSE BARS EXCEED 915 THE REMOVABLE PANEL MUST BE FINISHED WITH A FLAT BAR OF THE SAME SECTION AS THE BEARER BARS



OPENING TO BE FINISHED WITH FLAT BAR OF THE SAME SECTION AS THE FLOORING BEARER BARS

DETAIL-3

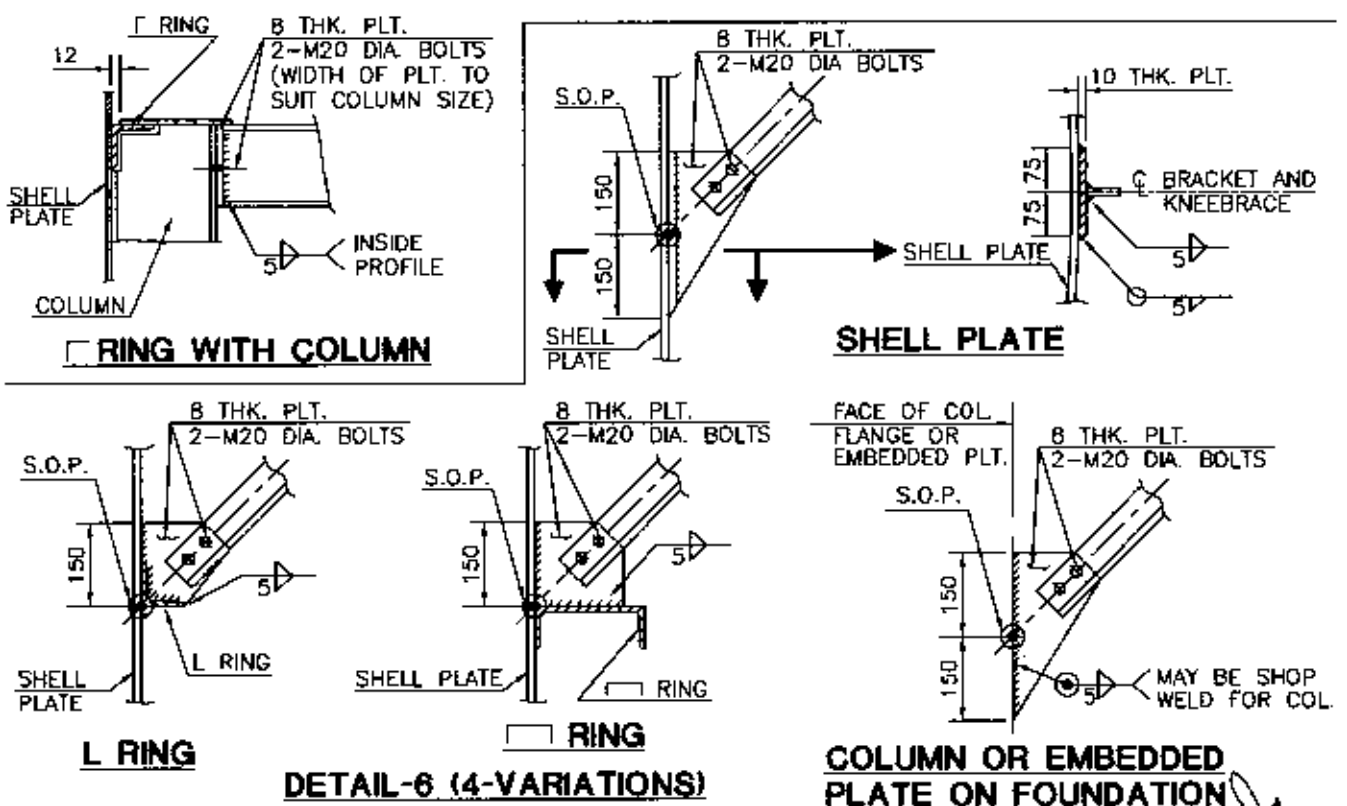
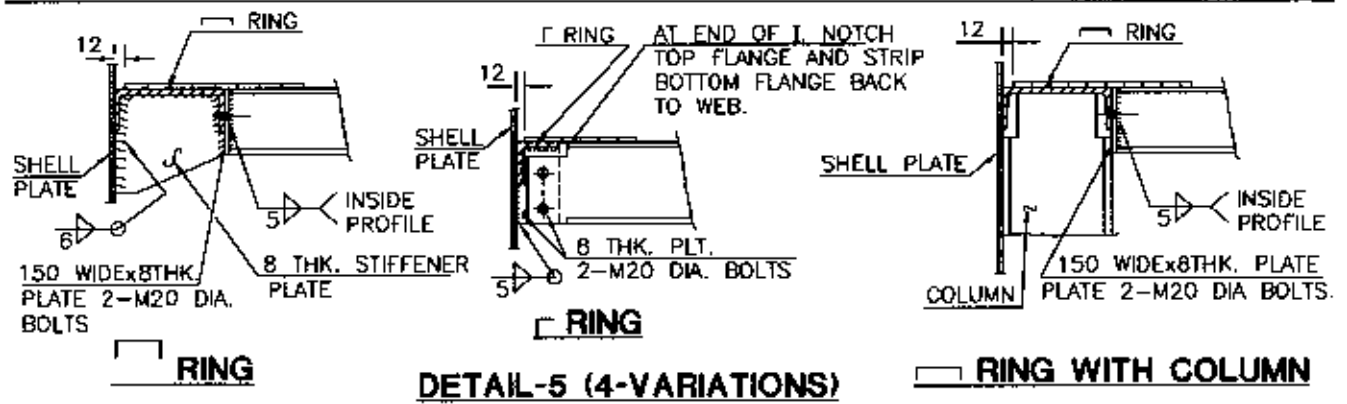
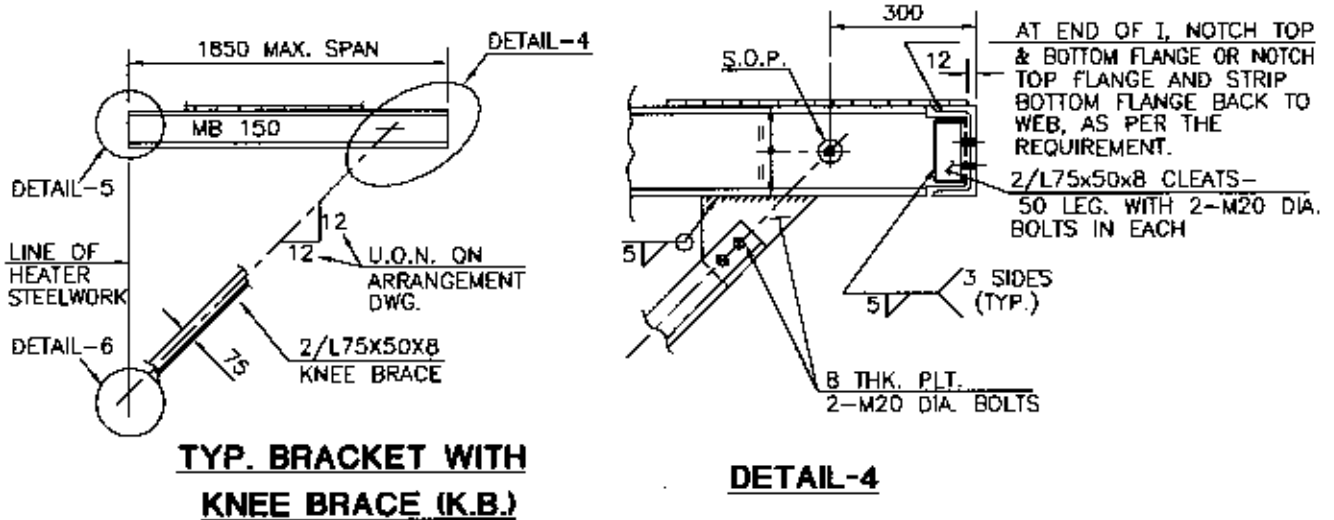
NOTE:- PLACEMENT OF TRIMMER MEMBERS TO SUIT REMOVABLE PANELS.

GENERAL NOTES:-

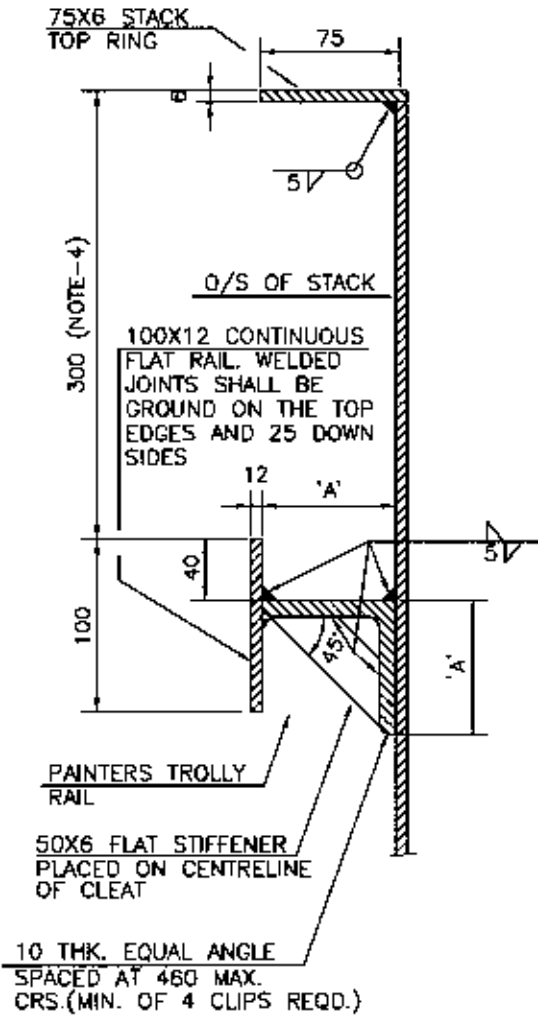
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL MATERIAL TO BE CARBON STEEL U.O.N.
3. FOR PAINTING AND/OR GALVANISING SEE ARRANGEMENT DRAWING / TENDER.
4. FOR LAYOUT, OVERALL DIMENSIONS AND ELEVATION OF PLATFORMS SEE ARRANGEMENT DRAWING.
5. OPEN TYPE PAINTED FLOORING IS FIXED TO FLOOR MEMBER BY 50x25 LG. ON EVERY SIXTH (6) BEARER BAR U.O.N. ON THE ARRANGEMENT DRAWING.
6. ALL ITEMS SHOWN ON THIS DRG. (INCLUDING OPEN TYPE FLOORING AND CLIPS) TO BE SUPPLIED BY STEELWORK VENDOR U.O.N. ON ARRANGEMENT DRG.
7. FOR PLATFORMS EXCEEDING THE LIMITS SHOWN ON THIS STANDARD OR HAVE PIPING/EQUIPMENT SUPPORTS, A DESIGN IS REQUIRED.
8. DETAILS SHOWN ON ARRANGEMENT DRAWING TAKE PREFERENCE.
9. FOR OPEN TYPE FLOORING SPECIFICATION SEE ARRANGEMENT DRAWING / TENDER.
10. DESIGN IS REQUIRED FOR PLATFORMS IN EXCESS OF THOSE COVERED ON THIS STANDARD OR HAVE PIPING/EQUIPMENT SUPPORT OR IN SITUATION DUE TO HEAD ROOM CONSTRAINT THE KNEE BRACE AS SHOWN IS NOT POSSIBLE.
11. THIS STANDARD IS FOR PLATFORMS WITH NOT MORE THAN 250KG/SQ.M. LIVE LOAD.

12. PLATFORMS MAY BE CIRCULAR OR POLYGON (POLYGON ONLY IN SPECIAL CASES)

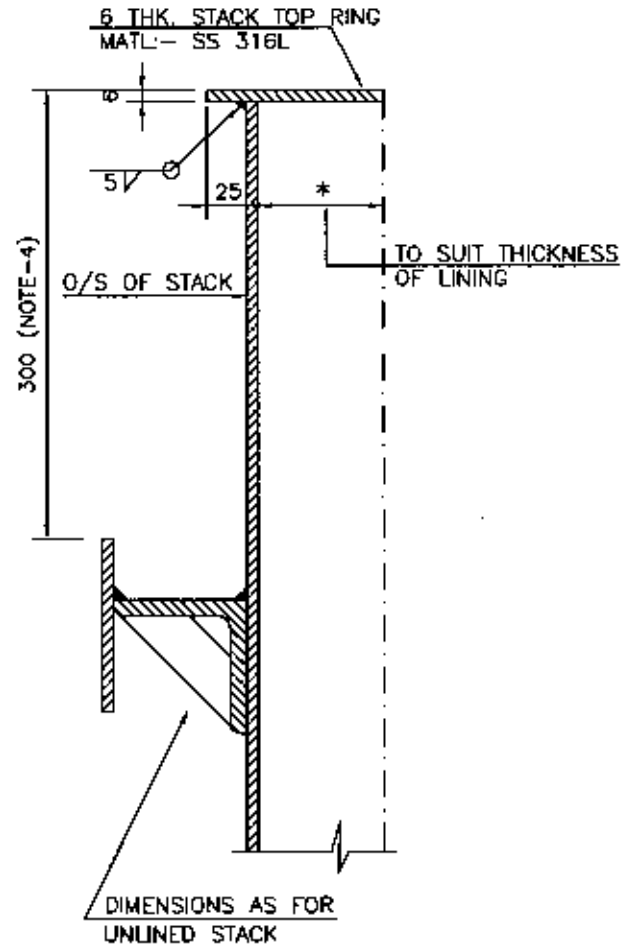
5	20.09.2021	REAFFIRMED & ISSUED AS STANDARD	MB	RKWRP	MK	GM
4	22.08.2016	REVISED & ISSUED AS STANDARD	SS	RPIAP	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Sds. Committee Convener	Sds. Bureau Chairman
						Approved by



5	20.09.2021	REAFFIRMED & ISSUED AS STANDARD	MB	KM/RA	MK	SM
4	22.08.2016	REVISED & ISSUED AS STANDARD	SS	RP/AP	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by



**TOP OF STACK DETAILS
FOR UNLINED STACKS**



**TOP OF STACK DETAILS
FOR LINED STACKS**

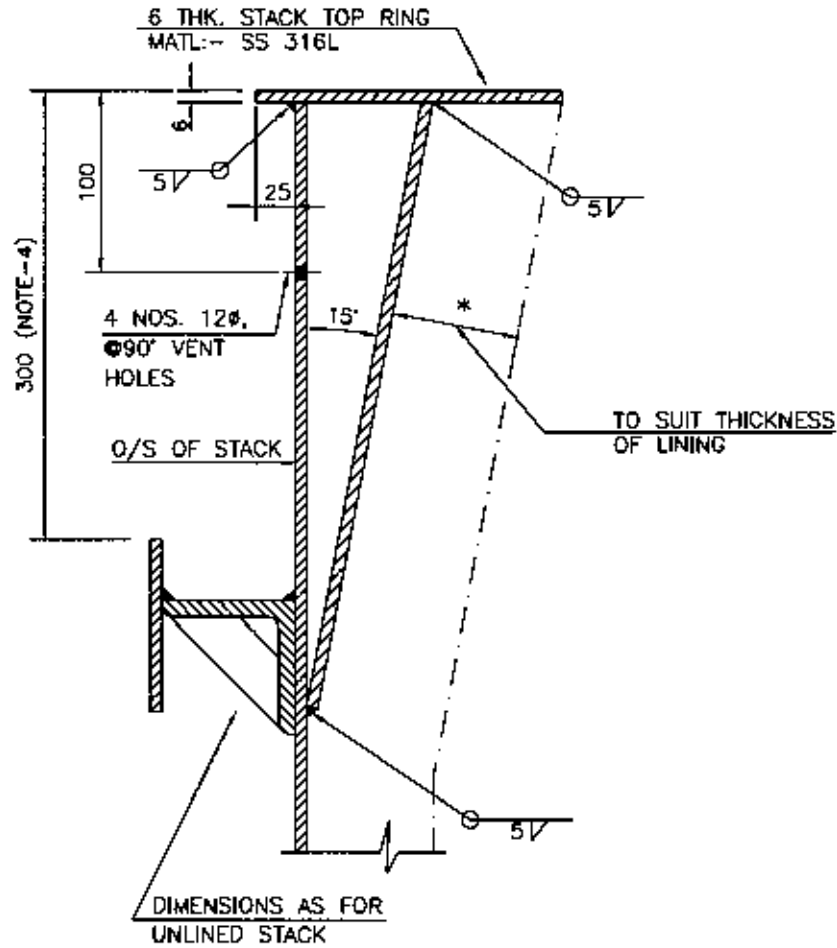
GENERAL NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. ALL MATERIAL TO BE CARBON STEEL U.N.O.
3. FOR STACKS WITHOUT STRAKES OR SPOILERS, DIMENSION 'A' IS TO BE 75. FOR STACKS WITH STRAKES OR SPOILERS DIMENSION 'A' IS TO BE THE HEIGHT OF STRAKES PLUS 50. TO ENABLE STANDARD ANGLES TO BE USED, THIS DIMENSIONS MAY BE INCREASE BY A MAX. OF 25.
4. IN CASE OF RAIN HOOD ON TOP ENSURE THAT TROLLEY MOVEMENT CLEARS THE SUPPORT STIFFENERS.
5. PAINTERS TROLLEY IS NOT SUPPLIED UNLESS REQUIRED BY CONTRACT.

COMPANION STANDARD:-

PAINTERS TROLLEY	-	7-17-0423
STACK STRAKES	-	7-17-0444
STACK SPOILERS	-	7-17-0413

5	30.03.2022	REVISED & ISSUED AS STANDARD	MB	AV/RP	MK	SM
4	10.03.2017	REVISED & ISSUED AS STANDARD	SS	RPI/AP	RKT	RN
Rev. No	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
						Approved by



**TOP OF STACK DETAILS FOR
LINED STACKS WITH REDUCED TIP**

GENERAL NOTES:-

FOR GENERAL NOTES AND LIST OF COMPANION STANDARDS SEE SHEET NO. 1.

COMPANION STANDARDS:-

SEE SHEET NO. 1

5	30.03.2022	REVISED & ISSUED AS STANDARD	MB	AVIRP	MK	SM
4	10.03.2017	REVISED & ISSUED AS STANDARD	SS	RP/AP	RKT	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by

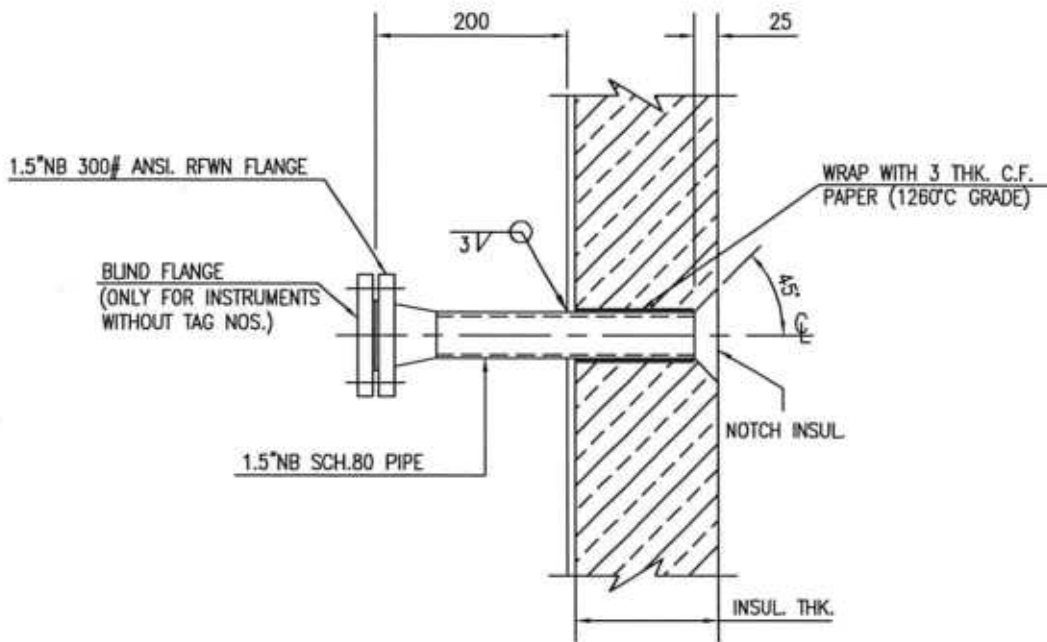
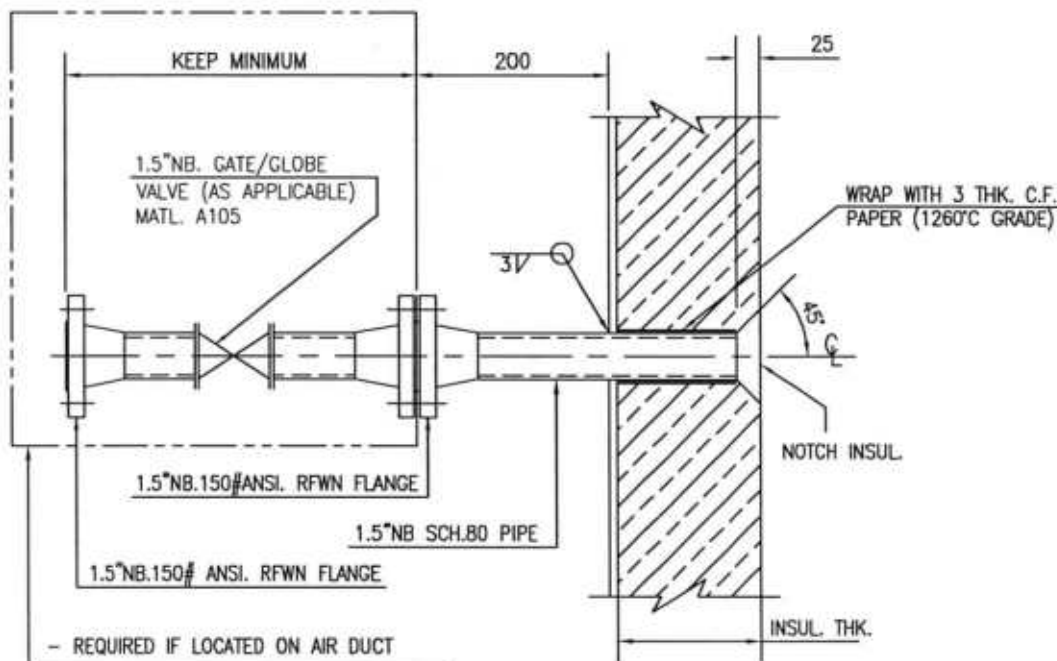


FIG-1 : DETAIL FOR (TE) (TI)
(TEMPERATURE ELEMENT/INDICATOR)



- REQUIRED IF LOCATED ON AIR DUCT
- NOT REQUIRED IF INSTRUMENT NOZZLE IS
LOCATED ON HEATER/STACK/FLUE GAS DUCT.

FIG-2 : DETAIL FOR (PT) (PI)
(PRESSURE TRANSMITTER/INDICATOR)

2	31.08.2020	REVISED & ISSUED AS STANDARD	MB	PG	MK	SM
1	08.03.2019	REVISED & ISSUED AS STANDARD	MB	PG	MK	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	

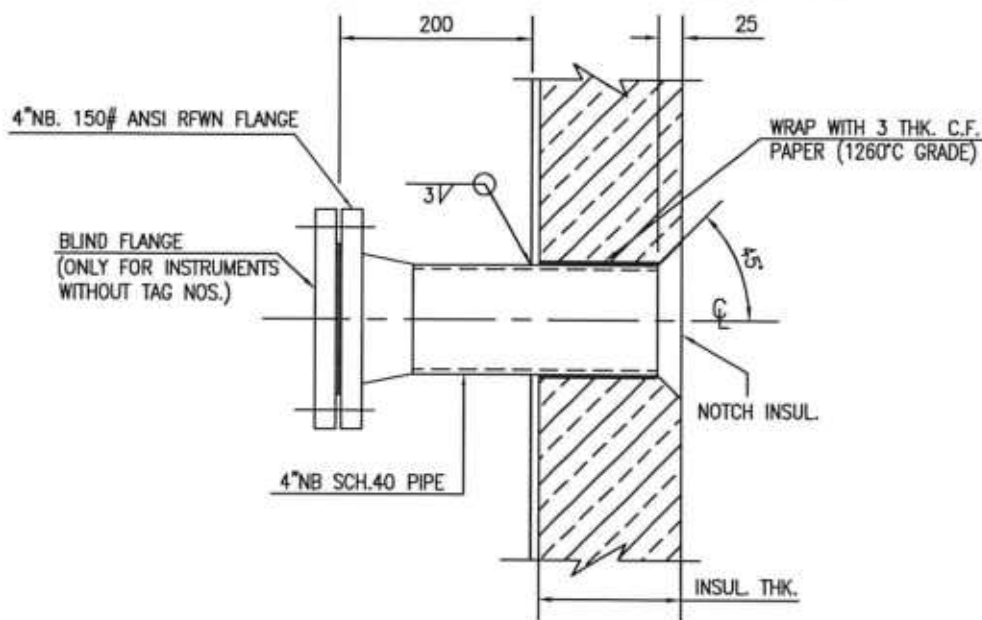


FIG.-3 : DETAIL FOR SC AE AE AE AE (OTHER THAN TDLS TYPE ANALYSER)
(FLUE GAS ANALYSER/ SAMPLING CONNECTIONS)

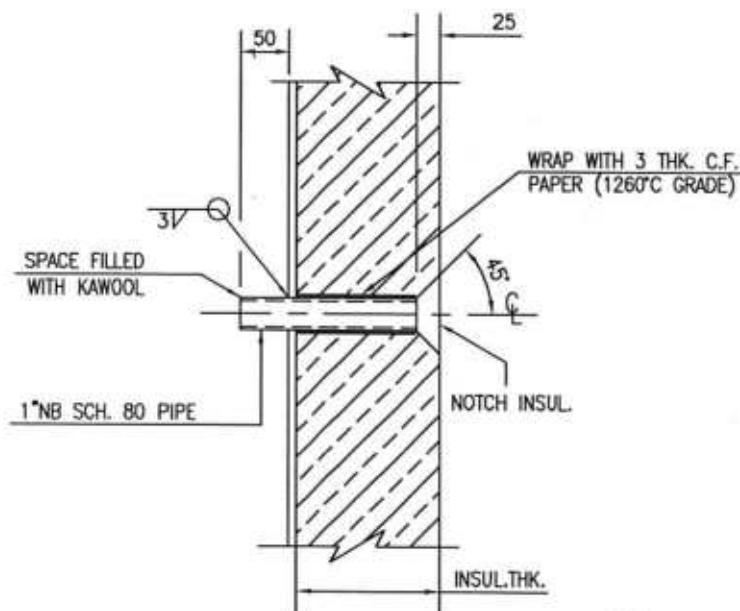


FIG.- 4 : DETAIL FOR TE (COIL SKIN THERMOCOUPLE)

2	31.08.2020	REVISED & ISSUED AS STANDARD	MB	AV	MK	SM
1	08.03.2019	REVISED & ISSUED AS STANDARD	MB	PG	MK	RKT

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman

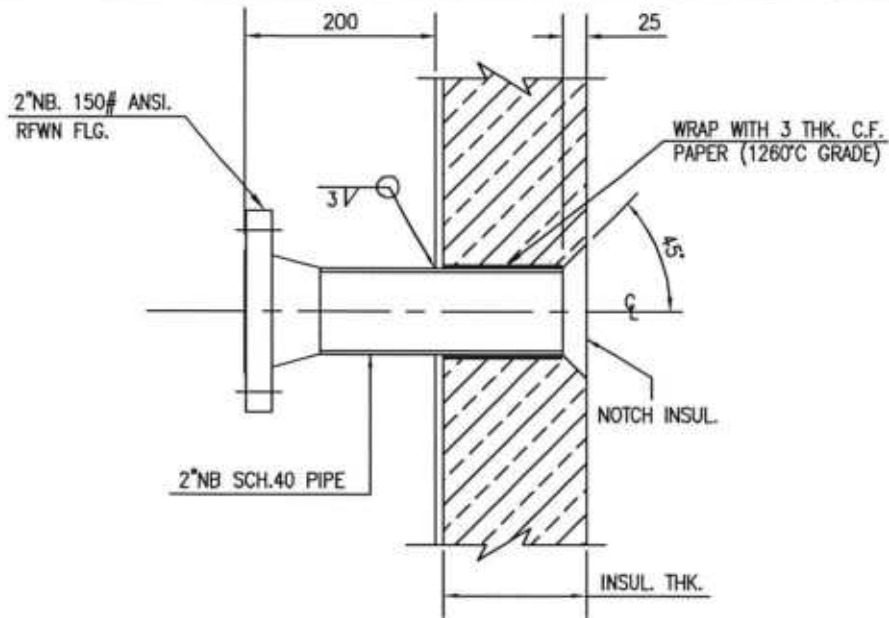


FIG.-5 : DETAIL FOR (SS)
(SNUFFING/SMOTHERING STEAM)

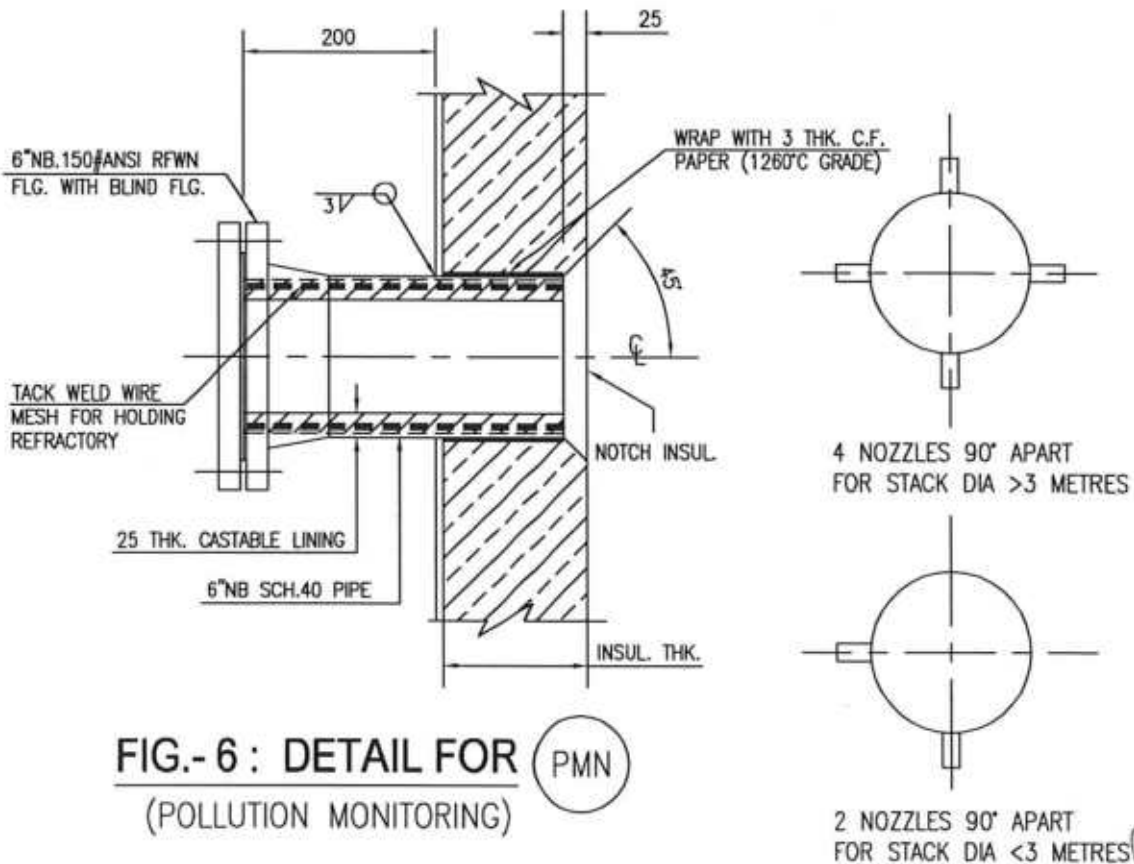


FIG.-6 : DETAIL FOR (PMN)
(POLLUTION MONITORING)

2	31.08.2020	REVISED & ISSUED AS STANDARD	MB	AV	MK	SM
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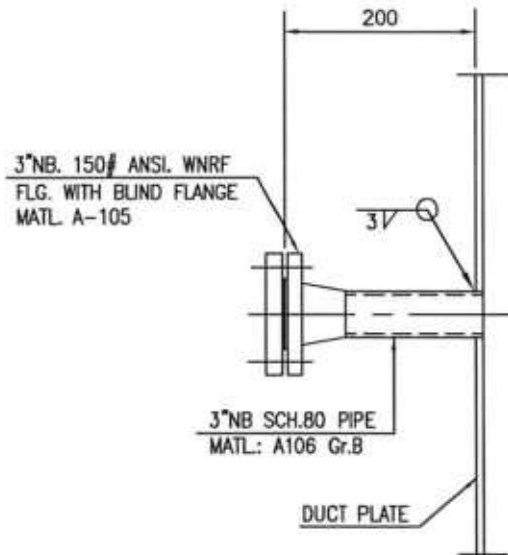


FIG.-9 : DETAIL FOR FLOW ELEMENT (FE)
(AVERAGING PITOT TUBE)
(REFER NOTE-10)

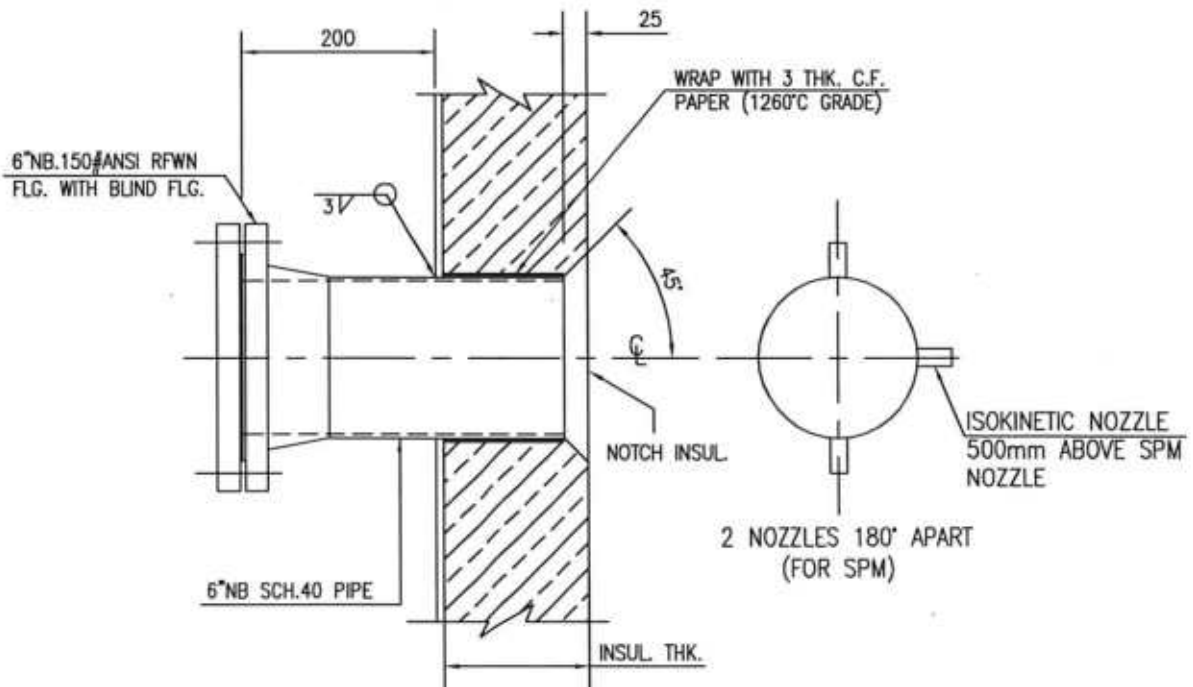


FIG.- 10 : DETAIL FOR (AE) SPM/ISOKINETIC
(FLUE GAS ANALYSER / SPM / ISOKINETIC)

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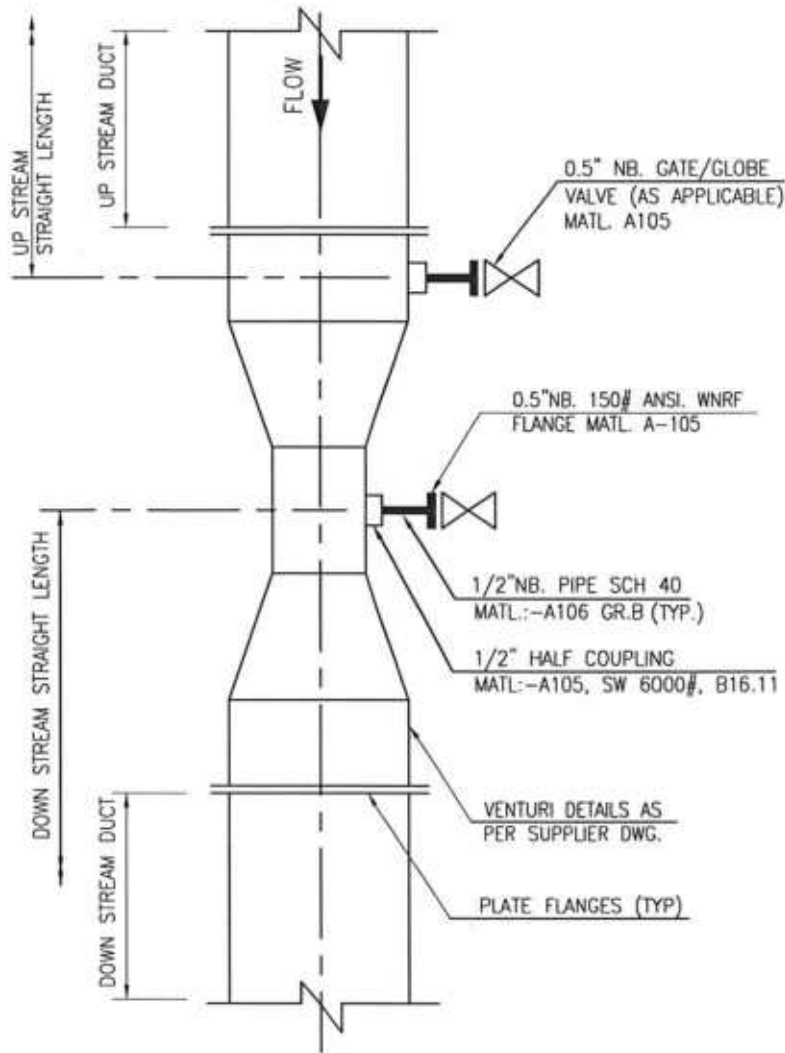


FIG.-11: DETAIL FOR VENTURI

FE

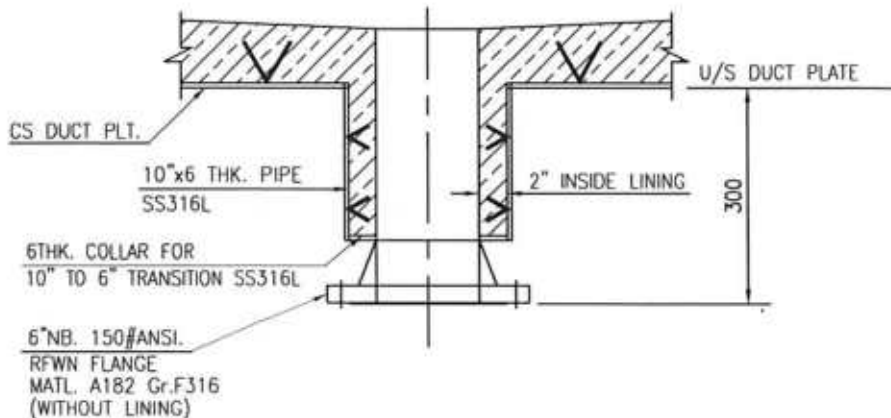


FIG.-12: DETAIL FOR APH DRAIN

2	31.08.2020	REVISED & ISSUED AS STANDARD	MB	AV	MK	SM
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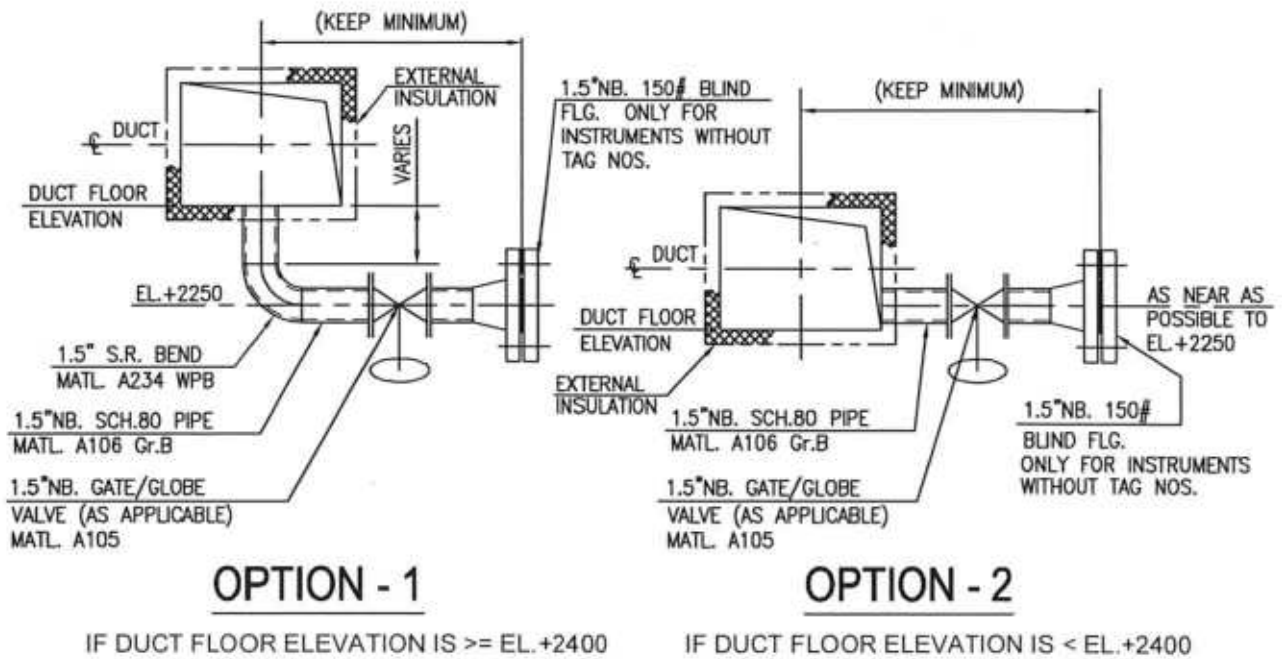


FIG.-13 : AT BURNER INLETS

PI

CONNECTIONS/VALVES SHALL BE INSTALLED/ORIENTED SUITABLY TO HAVE BEST POSSIBLE ACCESS WHILE MEASUREMENT/OPERATION AND ALWAYS ENSURE MIN. 2100 HEADROOM CLEARANCE FROM GRADE

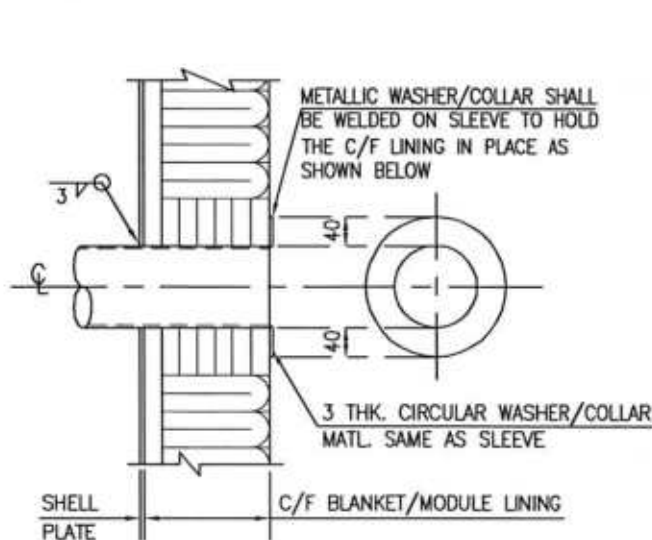


FIG.-14A : TYP. INSTRUMENT SLEEVE DETAIL
 (FOR CERAMIC FIBRE/MODULE LINING)

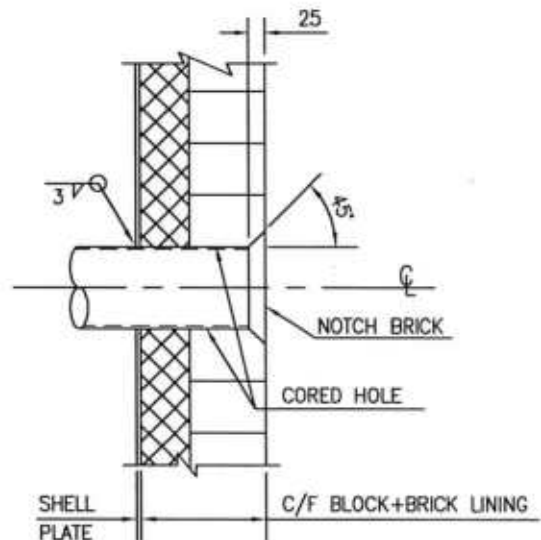


FIG.-14B : TYP. INSTRUMENT SLEEVE DETAIL
 (FOR BRICK AND C/F BLOCK LINING)

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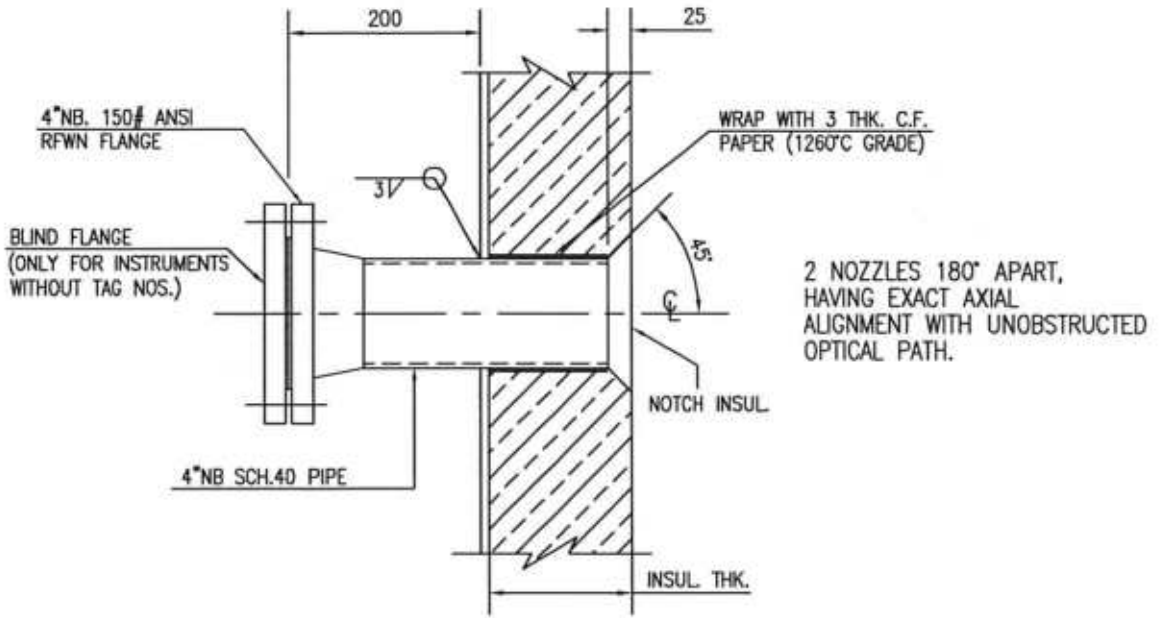


FIG.-15 : DETAIL FOR AE 02-TDLS

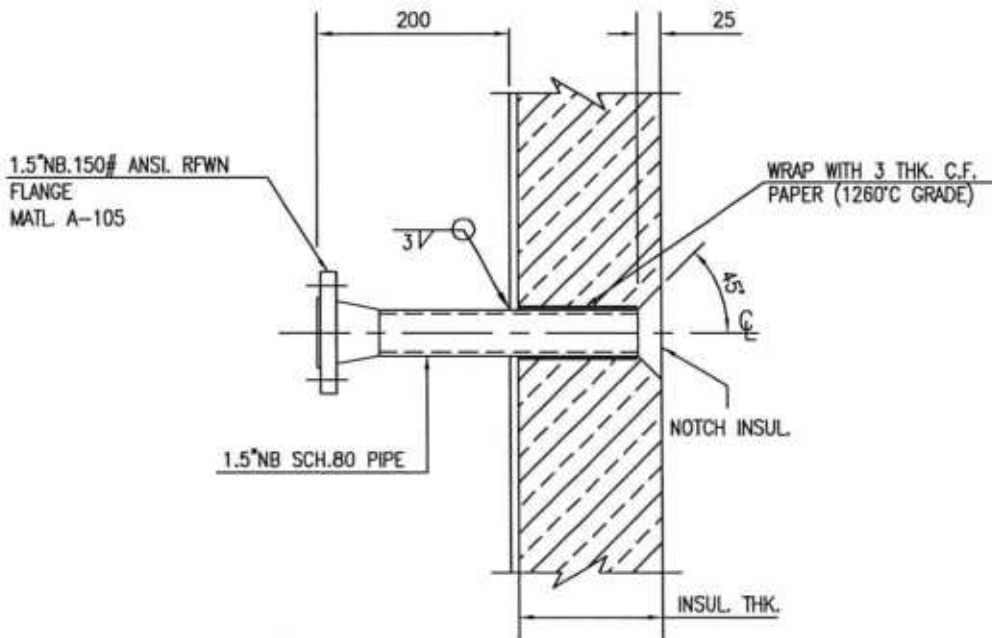
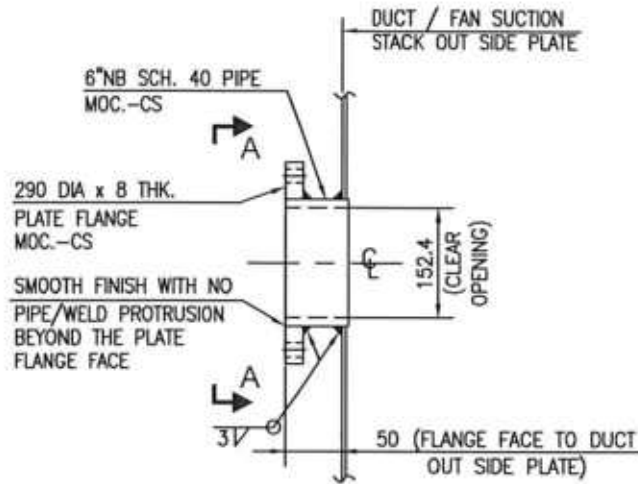


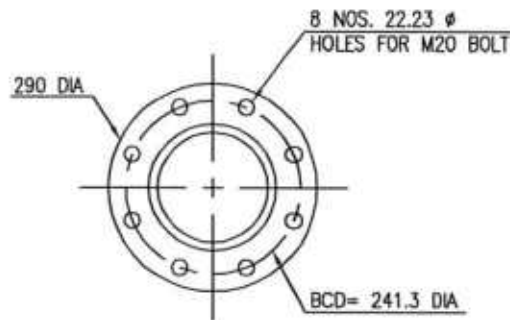
FIG.-16 : DETAIL FOR FT
(FLOW ELEMENT - THERMAL MASS FLOW METER)

2	31.08.2020	REVISED & ISSUED AS STANDARD	<i>[Signature]</i> MB	<i>[Signature]</i> AV	<i>[Signature]</i> MK	<i>[Signature]</i> SM
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NOZZLE DETAIL FOR
RECTANGULAR/CIRCULAR DUCT

- NO ADDITIONAL INSPECTION /
INSTALLATION CUTOUT WINDOW
REQUIRED IN DUCT/SUCTION STACK.



VIEW - A - A
(SUITABLE FOR MOUNTING 6"NB #150
FLANGED INSTRUMENT)

FIG.-17 : DETAIL FOR HC DETECTOR

2	31.08.2020	REVISED & ISSUED AS STANDARD	<i>MB</i> MB	<i>AV</i> AV	MK	SM
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GENERAL NOTES:-

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE NOTED.
2. FOR LOCATION REFER GAD.
3. DO NOT SCALE DWG. ASK, IF IN ANY DOUBT.
4. MATERIAL OF CONSTRUCTION OF BOLT, NUT AND GASKET SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED :-
GASKET SS-316 SPIRAL WOUND + GRAFIL + 1 RING.
BOLTING - A193 GR. B7 (BOLT)
- A194 Gr. 2H (NUT)
5. GATE VALVES SHALL BE AS PER VMS 51001 AND GLOBE VALVES SHALL BE AS PER VMS 52001, UNLESS OTHERWISE NOTED.
6. ALL FLANGES (INCLUDING BLIND) FOR FIRE BOX SIDE INSTRUMENTS INSTALLATION SHALL BE OF A105 UNLESS OTHERWISE NOTED.
7. MATERIAL OF CONSTRUCTION OF INSTRUMENT SLEEVE SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED :-
a) OIL FIRING
SS:310 FOR RADIANT BOX & CONV. SEC. UPTO 1st LEVEL SOOT BLOWER.
SS:316L FOR CONV. SEC. BEYOND 1st LEVEL SOOT BLOWER.
b) GAS FIRING
SS:310 FOR RADIANT BOX & CONV. SEC. UPTO 1st LEVEL STEAM LANCING.
SS:304L FOR CONV. SEC. BEYOND 1st LEVEL STEAM LANCING.
c) C.S. FOR HOT/COLD AIR DUCTING
8. THE INSTRUMENT CONNECTIONS DETAILS SHOWN ARE CONSIDERING CASTABLE LINING. IN CASE OF CERAMIC FIBRE /MODULE LINING THE DETAIL TO INCLUDE WASHER AS PER FIG.-14A & FOR BRICK & C.FIBRE BLOCK LINING TO BE AS PER FIG.-14B.
9. IN CASE DIFFERENT SIZE OR DETAIL IS INDICATED IN JOB SPECIFIC DOCUMENTS, SAME SHALL BE APPLICABLE.
10. ADDITIONAL NOZZLE 180° APART TO BE PROVIDED FOR SUPPORTING PITOT TUBE IN CASE SECOND SUPPORT (180° APART) SPECIFICALLY RECOMMENDED BY VENDOR.
11. IN ORDER TO CALIBRATE FLOW ELEMENT (AVERAGING PITOT TUBE) AT SITE, SUITABLE TAPPING NEED TO BE PROVIDED AT SITE. REFER TO DETAIL GIVEN BELOW.

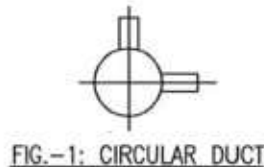


FIG.-1: CIRCULAR DUCT

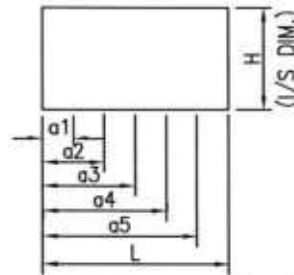


FIG.-2: RECTANGULAR DUCT (LxH)
L = MEASURED WIDTH OF THE DUCT

- a1 = 0.074L
- a2 = 0.288L
- a3 = 0.5L
- a4 = 0.712L
- a5 = 0.926L

TAPPING DETAILS & LOCATION FOR FLOW MEASUREMENT
IN AIR DUCT WITH PITOT TUBE

NIPPLE SIZE:- 50 NB. x100 LG. THESE NIPPLES MUST HAVE THREADED BLINDS.

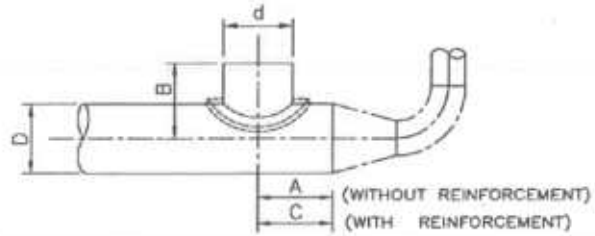
MEASUREMENT LOCATIONS:-

1. 1-D UPSTREAM OF AVERAGING PITOT TUBE
(D=L, DUCT WIDTH OR DIA.)
2. IN THE FLUE GAS DUCT AT ID FAN SUCTION AT A SUITABLE LOCATION FROM WHERE PITOT TUBE CAN BE EASILY INSERTED. THIS SHOULD NOT BE IN EXPANDING PORTION OF THE DUCT.

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NOTES:-

DIMENSIONS GIVEN ARE ONLY MINIMUM REQUIREMENTS FOR STUB-IN CONNECTIONS. ALL FABRICATION SHALL BE DONE AS PER ISOMETRIC SHEETS.

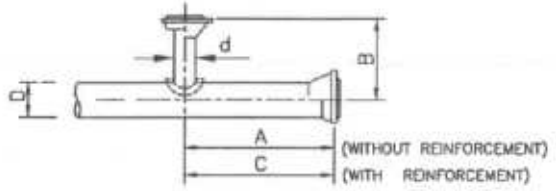


D	d	A	C	B	D	d	A	C	B	D	d	A	C	B	D	d	A	C	B
2"	2"	110	150	110	15"	12"	310	460	370	26"	12"	310	460	520	32"	12"	310	460	580
3"	2"	120	150	130		14"	320	490	380		14"	320	490	520		14"	320	490	580
	3"	140	190	140		16"	360	530	400		16"	360	530	520		16"	360	530	580
4"	2"	130	150	130	18"	2"	150	180	380		18"	380	590	560		18"	380	590	620
	3"	140	190	150		3"	160	210	360		20"	420	640	560		20"	420	640	620
	4"	160	220	160		4"	180	240	370		24"	470	750	620		24"	470	750	680
6"	2"	120	160	180		6"	220	300	370		26"	500	800	660		26"	500	800	720
	3"	140	190	180		8"	240	340	390	28"	2"	150	180	500		28"	520	850	750
	4"	160	220	200		10"	280	400	400		3"	160	210	510		30"	550	900	780
	6"	180	280	200		12"	310	460	410		4"	170	240	520		32"	570	950	810
8"	2"	120	160	210		14"	320	490	420		6"	220	300	520	36"	2"	150	180	610
	3"	140	190	260		16"	360	530	430		8"	240	340	520		3"	160	210	620
	4"	160	220	240	20"	18"	380	590	440		10"	280	400	520		4"	170	240	620
	6"	200	280	240		2"	150	180	390		12"	310	460	540		6"	220	300	620
	8"	220	330	240		3"	160	210	400		14"	320	490	540		8"	240	340	620
10"	2"	120	160	250		4"	180	240	400		16"	360	530	540		10"	280	400	620
	3"	140	190	260		6"	220	300	400		18"	380	590	580		12"	310	460	640
	4"	160	220	270		8"	240	340	420		20"	420	640	580		14"	320	490	640
	6"	200	280	280		10"	280	400	420		24"	470	750	640		16"	360	530	640
	8"	220	330	280		12"	310	460	440		26"	500	800	680		18"	380	590	680
	10"	270	400	300		14"	320	490	440		28"	520	850	710		20"	420	640	680
12"	2"	120	160	250		16"	360	530	460	30"	2"	150	180	530		24"	470	750	740
	3"	140	190	260		18"	380	590	480		3"	160	210	540		26"	500	800	760
	4"	160	220	270		20"	420	640	500		4"	170	240	540		28"	520	850	790
	6"	200	290	280		2"	150	180	450		6"	220	300	540		30"	550	900	810
	8"	220	330	280	24"	3"	160	210	460		8"	240	340	540		32"	570	950	840
	10"	270	400	320		4"	170	240	470		10"	280	400	540		36"	620	1050	910
	12"	300	450	330		6"	220	300	470		12"	310	460	560					
14"	2"	130	170	310		8"	240	340	480		14"	320	490	560					
	3"	150	200	320		10"	280	400	480		16"	360	530	560					
	4"	180	230	330		12"	310	460	500		18"	380	590	600					
	6"	210	290	330		14"	320	490	500		20"	420	640	600					
	8"	220	330	340		16"	360	530	520		24"	470	750	660					
	10"	270	400	360		18"	380	590	540		26"	500	800	700					
	12"	300	460	370		20"	420	640	560		28"	520	850	720					
	14"	320	490	380		24"	470	750	600		30"	550	900	780					
16"	2"	150	180	330	26"	2"	150	180	480	32"	2"	150	180	780					
	3"	160	210	340		3"	160	210	490		3"	160	210	550					
	4"	180	240	350		4"	170	240	500		4"	170	240	580					
	6"	220	300	350		6"	220	300	500		6"	220	300	560					
	8"	240	340	360		8"	240	340	500		8"	240	340	580					
	10"	280	400	360		10"	280	400	500		10"	280	400	580					

6	31.12.24	REAFFIRMED & ISSUED AS STANDARD	PK	SH	MN
5	06.12.19	REAFFIRMED & ISSUED AS STANDARD	SG	SH	RKT
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					Stds. Bureau Chairman
					Approved by

NOTES:-

DIMENSIONS GIVEN ARE ONLY MINIMUM REQUIREMENTS FOR STUB-IN CONNECTIONS. THESE ARE BASED ON ASME B16.9 FLANGES FOR SIZES UPTO 24"NB & ASME B16.47B FOR SIZES 26" & ABOVE. ALL FABRICATION SHALL BE DONE AS PER ISOMETRIC SHEETS.



D	d	A	C	B	D	d	A	C	B	D	d	A	C	B	D	d	A	C	B
2"	2"	180	220	180	16"	12"	450	600	500	26"	12"	450	600	650	32"	12"	480	630	710
3"	2"	200	230	200		14"	460	630	520		14"	460	630	680		14"	490	660	720
	3"	220	270	220		16"	500	670	540		16"	500	670	670		16"	530	700	730
4"	2"	210	240	220	18"	2"	310	340	430		18"	520	730	720		18"	550	760	780
	3"	220	270	230		3"	320	370	440		20"	560	780	720		20"	590	810	780
	4"	240	300	250		4"	340	400	450		24"	610	890	790		24"	640	920	850
6"	2"	220	260	250		6"	380	460	470		28"	640	940	800		26"	670	970	860
	3"	240	290	260		8"	400	500	500	28"	2"	300	330	570		28"	690	1020	900
	4"	260	320	280		10"	440	560	520		3"	310	360	580		30"	720	1070	940
	6"	280	380	300		12"	470	620	540		4"	320	390	610		32"	740	1120	980
8"	2"	230	280	280		14"	480	650	560		6"	370	450	620	36"	2"	330	360	680
	3"	250	300	300		16"	520	690	580		8"	390	490	630		3"	340	390	700
	4"	270	330	320		18"	540	750	600		10"	430	550	640		4"	350	420	710
	6"	300	390	340	20"	2"	310	350	460		12"	460	610	670		6"	400	480	720
	8"	330	440	350		3"	320	380	480		14"	470	640	680		8"	420	520	730
10"	2"	240	280	320		4"	340	410	490		16"	510	680	690		10"	460	580	740
	3"	260	310	340		6"	380	470	500		18"	530	740	740		12"	490	640	770
	4"	280	340	350		8"	400	510	530		20"	570	790	740		14"	500	670	780
	6"	320	400	380		10"	440	570	550		24"	620	900	810		16"	540	710	790
	8"	340	450	390		12"	480	620	570		26"	650	950	820		18"	560	770	840
	10"	390	520	420		14"	490	650	580		28"	670	1000	860		20"	600	820	840
12"	2"	260	300	350		16"	520	700	600	30"	2"	310	340	800		24"	650	930	910
	3"	280	330	380		18"	540	750	640		3"	320	370	620		26"	680	980	900
	4"	290	360	390		20"	580	810	670		4"	330	400	630		28"	700	1030	940
	6"	330	420	410	24"	2"	320	350	570		6"	380	460	640		30"	730	1080	970
	8"	350	460	420		3"	330	380	540		8"	400	500	650		32"	750	1130	1010
	10"	400	530	440		4"	340	410	560		10"	440	560	660		36"	800	1230	1080
	12"	430	580	460		6"	390	470	570		12"	470	620	690					
14"	2"	270	310	380		8"	410	510	590		14"	480	650	700					
	3"	290	340	400		10"	450	570	600		16"	520	690	710					
	4"	300	370	410		12"	480	630	630		18"	540	750	760					
	6"	350	430	430		14"	490	660	650		20"	580	800	780					
	8"	360	470	450		16"	530	700	660		24"	630	910	830					
	10"	410	540	480		18"	550	760	700		26"	660	960	840					
	12"	440	600	500		20"	590	810	720		28"	680	1010	870					
	14"	460	630	520		24"	640	920	770		30"	710	1060	920					
16"	2"	230	320	400	26"	2"	290	320	550	32"	2"	320	350	620					
	3"	310	350	420		3"	300	350	570		3"	330	380	640					
	4"	330	380	440		4"	310	380	590		4"	340	410	650					
	6"	370	440	450		6"	360	440	600		6"	390	470	660					
	8"	380	480	470		8"	380	480	610		8"	410	510	670					
	10"	420	540	480		10"	420	540	620		10"	450	570	680					

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PIPE SIZE	FLANGED MITERED 90° ELBOW (TYPE - I SHOWN)				TYPE - I MITERED ELBOW (2 WELDS)				TYPE - II MITERED ELBOW (3 WELDS)				TYPE - III MITERED ELBOW (4 WELDS)						
	FLAT/RAISED FACING		RING JOINT FACING		SM OR LG TONGUE & MALE FACING		SM OR LG GROOVE & FEMALE FACING (4mm DEPTH)		A		B		C		D				
	150#	300#	150#	300#	150#	300#	150#	300#	A	B	C	D	A	B	C	D			
6"	318	328	324	335	324	334	229	130	95	60	134	84	61	38	168	82	29	183	6"
8"	407	416	413	424	413	423	305	172	126	81	179	111	82	52	223	82	39	244	8"
10"	483	498	489	506	489	504	381	214	158	101	223	139	102	56	279	103	49	305	10"
12"	571	587	578	595	578	593	457	256	189	122	288	166	122	79	335	123	59	366	12"
14"	660	676	666	684	666	682	533	294	221	147	312	190	143	95	390	141	106	427	14"
16"	737	756	743	764	743	762	610	337	253	169	357	218	163	109	447	162	121	489	16"
18"	826	845	832	853	832	851	686	379	284	190	402	245	184	123	502	182	136	550	18"
20"	907	924	913	934	913	930	762	421	316	210	446	272	204	136	558	202	152	610	20"
22"	987	1003	-	1017	-	-	838	463	347	231	491	299	225	150	613	222	167	671	22"
24"	1066	1082	1073	1093	1073	1088	914	505	379	252	535	327	245	163	669	242	182	732	24"
26"	1080	1136	-	1148	-	-	991	547	410	274	581	354	266	177	725	263	197	794	26"
28"	1162	1216	-	1229	-	-	1067	589	442	295	625	381	286	191	781	283	212	855	28"
30"	1243	1301	-	1314	-	-	1143	631	473	316	670	408	306	204	837	303	227	916	30"
32"	1327	1387	-	1401	-	-	1219	673	505	337	714	436	327	216	892	323	242	977	32"
34"	1405	1468	-	1482	-	-	1295	715	535	357	759	463	347	231	948	344	258	1037	34"
36"	1489	1553	-	1567	-	-	1372	768	568	379	804	490	368	245	1004	364	273	1099	36"

NOTES:-

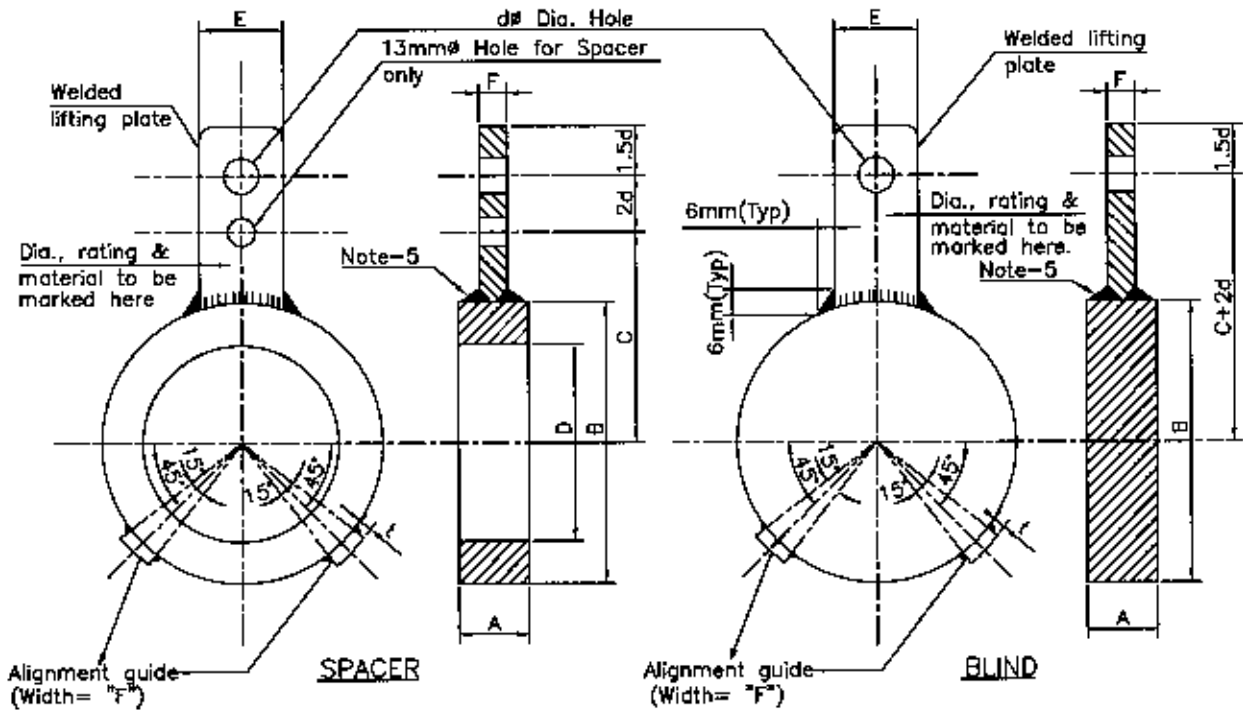
- MITERED ELBOWS WITH LESS THAN 90° DEFLECTION MAY BE ADOPTED FROM THE DETAILS SHOWN. A TWO PIECE (ONE WELD) 45° MITERED ELBOW SHOULD BE SIMILAR TO TYPE - I. A THREE PIECE (TWO WELDS) 45° MITERED ELBOW WOULD BE SIMILAR TO TYPE - III IN ANY CASE. THE TABULATED DIMENSIONS FOR 'A', 'B', 'C', & 'R' SHOULD BE MAINTAINED.
- ALL DIMENSIONS ARE IN mm CALCULATED AND ROUNDED OFF TO THE NEAREST 1 mm
- DIMENSION 'L' COMBINES ELBOW DIMENSION 'R' WITH LENGTH OF WELD NECK FLANGES ESTABLISHED AS PER ASME B16.5 FOR SIZES UP TO 24" AND AS PER ASME B16.47B FOR SIZES 26" AND ABOVE.
- WELD 'X' SHALL BE OMITTED EXCEPT WHEN FITTING OR FLANGE ARE USED WITH THE MITERED ELBOW OR IF THE JOINT MUST BE FIELD WELDED.
- NUMBER OF PIECES OF MITRES (N) SHALL BE AS PER PIPING MATERIAL SPECIFICATION (PMS). DIMENSIONS FOR MITRE FABRICATION SHALL BE AS FOLLOWS : $B=R \times \tan[45/(N-1)]$; $A=(R+r) \times \tan[45/(N-1)]$; $C=(R-r) \times \tan[45/(N-1)]$; WHERE R=RADIUS OF PIPE AND ANGLE IS IN DEGREES.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
6	23.09.20	REVISED & ISSUED AS STANDARD	SC	SH	SH	SC
5	01.07.15	REAFFIRMED & ISSUED AS STANDARD	SH	AK	RN	SC

FOR FIGURES
REF.EIL STANDARD NO.7-44-0033(SHT.1 OF 2)

PIPE SIZE	'L' FOR FF OR RF		'R' IDENTICAL FOR ALL TYPES	TYPE-I				TYPE-II				TYPE-III				PIPE SIZE
	150#	300#		A	B	C	D	A	B	C	D	A	B	C	D	
38"	1572	1640	1448	800	600	400	846	517	388	259	1060	384	288	192	1160	38"
40"	1653	1722	1524	842	631	421	893	544	408	273	1116	404	303	202	1221	40"
42"	1733	1805	1600	884	663	442	937	572	429	286	1171	424	318	213	1282	42"
44"	1813	1890	1676	926	694	463	982	599	449	299	1227	445	333	222	1343	44"
46"	1898	1975	1753	968	726	484	1027	626	470	313	1283	465	349	233	1404	46"
48"	1978	2053	1829	1010	758	505	1071	653	490	327	1339	485	363	243	1465	48"
50"	2059	2140	1905	1052	789	526	1116	681	510	340	1395	505	379	253	1526	50"
52"	2138	2224	1981	1094	821	547	1160	708	531	354	1450	525	394	263	1587	52"
54"	2219	2297	2057	1136	852	568	1205	735	551	367	1506	546	409	273	1648	54"
56"	2301	2402	2134	1178	884	589	1250	762	572	381	1562	566	424	283	1710	56"
58"	2385	2485	2210	1220	915	610	1295	790	592	395	1618	586	440	293	1770	58"
60"	2465	2558	2286	1263	947	631	1339	817	613	408	1673	606	455	303	1831	60"

6	23.09.20	REVISED & ISSUED AS STANDARD	SG	SH	SC	SM
5	01.07.15	REAFFIRMED & ISSUED AS STANDARD	SH	AK	RN	SC
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
Approved by						

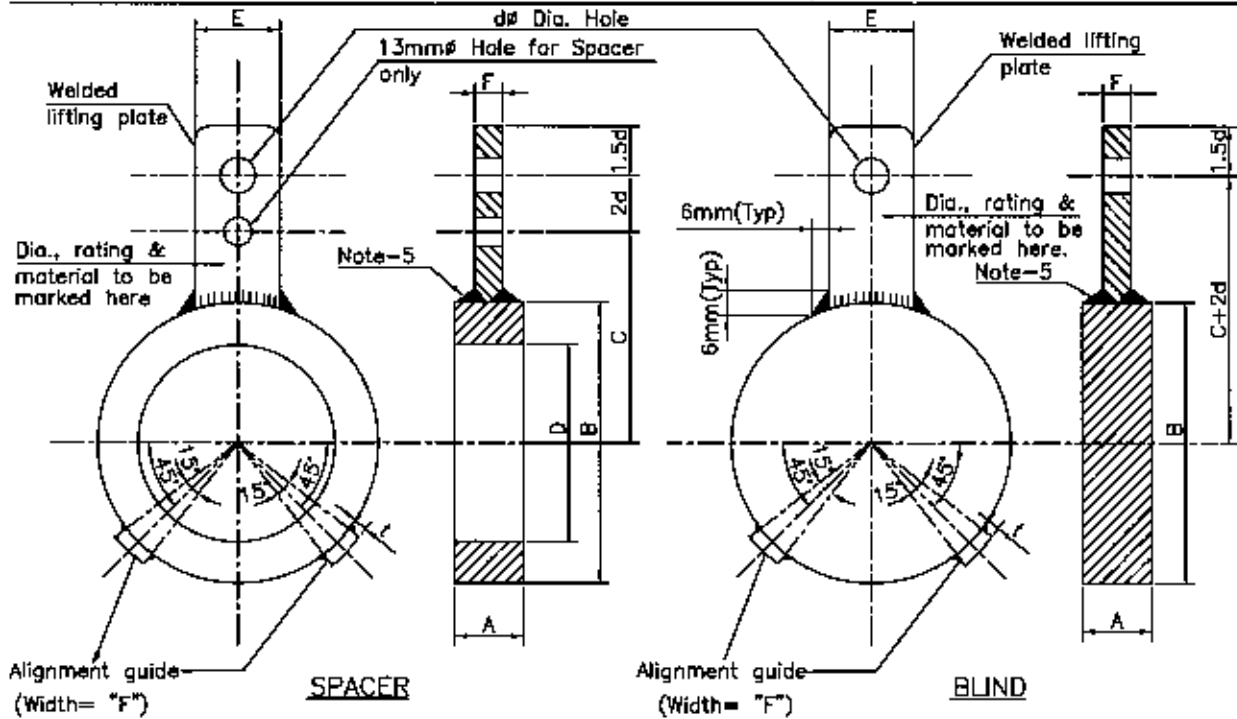


NOTES:

- Both surfaces shall have a resultant surface finish of 125µin to 250µin average roughness with either a concentric or spiral serrated finish.
- Dimensions are for flanges to ASME B 16.47B (erstwhile API 605) for sizes 26" to 60".
- Diameter, rating & material specification shall be marked on welded fixed plate. Material as per line class.
- Thickness 'A' is based on ASTM A285 Gr.C with corrosion allowance of 1.5mm on each face.
- Welding and heat treatment requirements shall be in accordance with ASME B31.3
- Alignment Guide shall be welded in the middle of thickness of Spacer & Blind.
- All dimensions are in mm unless otherwise specified.

DIA. NB	150#								WEIGHT KG(APPROX)	
	A	B	C	D	E	F	d	t	BLIND	SPACER
26	40	711	473	648	35	15	20	9	137	34
28	42	762	499	698	33	15	20	9	165	40
30	45	813	524	749	30	15	20	9	201	46
32	48	864	551	800	30	15	20	12	243	55
34	50	921	583	851	42	15	20	9	287	65
36	53	972	609	902	40	15	20	10	340	76
38	54	1022	642	925	48	15	20	17	382	100
40	59	1079	668	1003	44	15	20	10	465	102
42	61	1130	693	1054	41	18	20	11	528	113
44	64	1181	718	1105	38	18	20	11	605	126
46	67	1235	751	1156	62	18	20	16	693	145
48	70	1289	776	1205	56	18	20	12	789	167
52	75	1391	827	1306	45	18	26	12	984	201
56	80	1492	880	1406	42	27	26	17	1208	240
60	86	1600	943	1505	59	27	26	25	1493	300
TOL	±0.3	±0.5		±0.5	±0.5					

5	04.05.20	REAFFIRMED & ISSUED AS STANDARD	SH	AK	RN/	ATD	SKS
4	31.03.15	REVISED & ISSUED AS STANDARD	SH	AK	RN/	ATD	SKS
Rev No	Date	Purpose	Prepared by	Checked by	Stds Committee Convener	Stds Bureau Chairman	Approved by

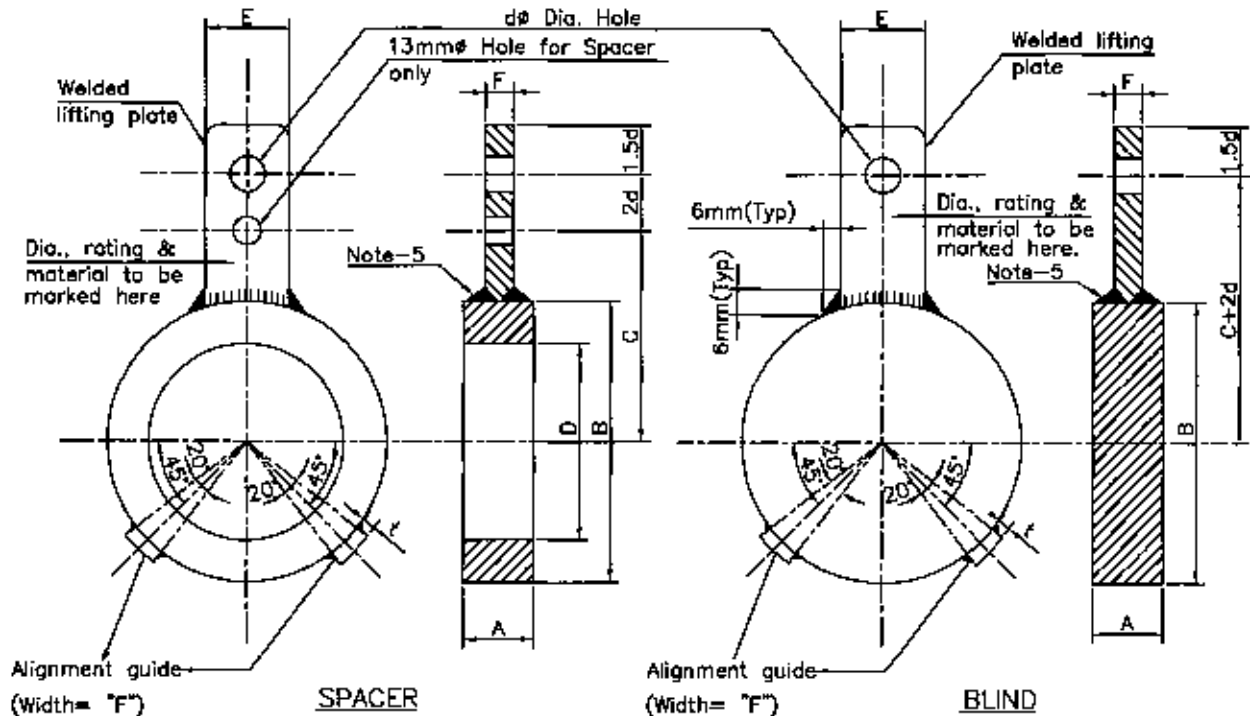


NOTES:

REFER PAGE 1 OF 3 FOR NOTES.

DIA. NB	300#								WEIGHT KG(APPROX)	
	A	B	C	D	E	F	d	t	BLIND	SPACER
26	60	737	514	641	37	15	20	29	221	70
28	65	787	541	689	33	15	20	33	273	84
30	69	845	576	738	35	15	20	36	334	104
32	73	902	607	787	48	15	20	33	403	126
34	77	952	634	835	42	15	20	36	473	144
36	82	1010	666	886	54	18	20	33	567	173
38	86	1060	691	941	47	18	20	33	655	189
40	91	1114	717	992	41	18	20	30	766	218
42	95	1168	747	1038	54	18	26	27	879	252
44	100	1219	772	1092	47	27	26	27	1008	278
46	104	1270	810	1140	61	27	26	42	1138	310
48	107	1327	836	1183	53	27	26	36	1278	361
52	116	1429	887	1286	42	35	26	36	1606	431
56	125	1537	963	1381	76	40	32	52	2003	543
60	133	1651	1019	1478	71	40	36	50	2459	679
TOL.	±0.3	±0.5		±0.5	±0.5					

5	04.05.20	REAFFIRMED & ISSUED AS STANDARD	SG	SH	SB	SKS
4	31.03.15	REVISED & ISSUED AS STANDARD	SH	AK	RN/ ATD	SC
Rev No	Date	Purpose	Prepared by	Checked by	Sds Committee Convener	Sds Bureau Chairman
						Approved by

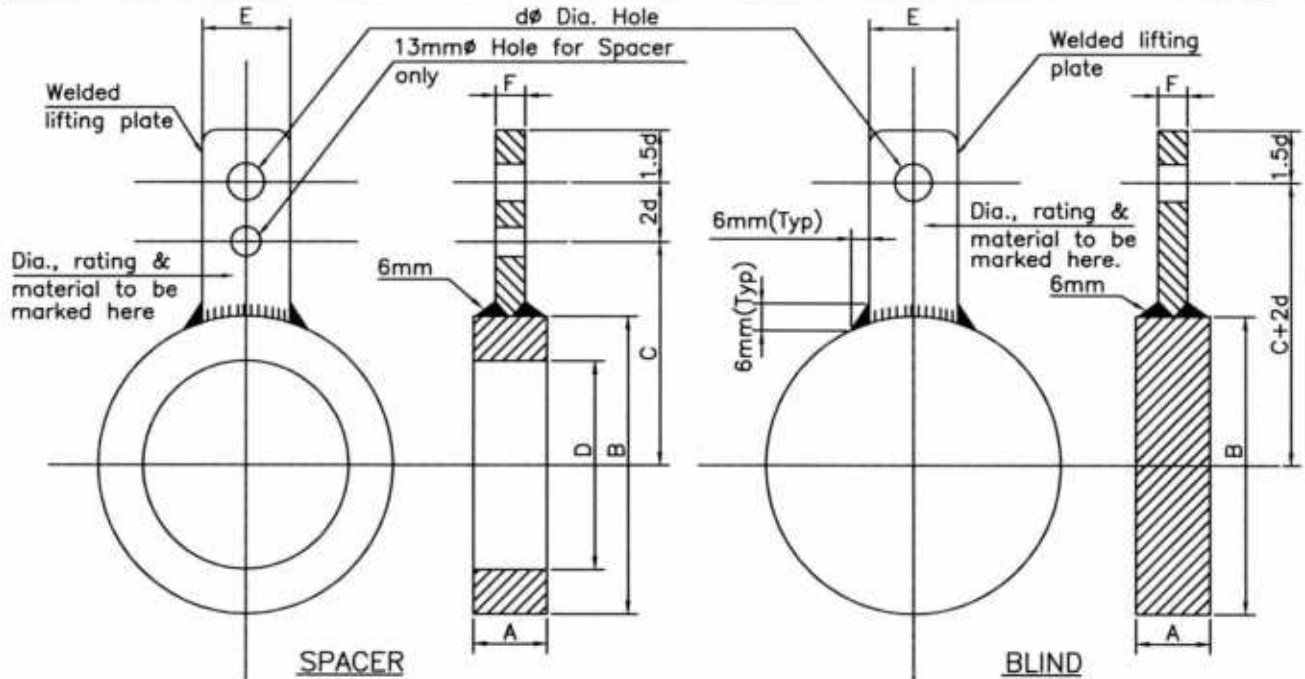


NOTES:

REFER PAGE 1 OF 3 FOR NOTES.

DIA. NB	600#								WEIGHT KG(APPROX)	
	A	B	C	D	E	F	d	t	BLIND	SPACER
26	82	727	524	632	38	15	20	33	294	94
28	88	784	556	681	42	15	20	30	367	117
30	95	841	591	732	46	15	20	33	456	144
32	100	895	623	779	49	18	20	33	543	171
34	107	952	661	829	70	18	20	39	658	208
36	113	1010	687	879	56	18	20	33	776	241
38	119	1054	715	930	63	18	26	46	897	267
40	125	1111	741	975	51	27	26	39	1046	318
42	130	1168	782	1022	70	27	26	46	1203	371
44	137	1225	807	1073	57	27	26	39	1394	428
46	143	1276	836	1122	63	35	32	46	1579	476
48	149	1333	877	1172	63	35	32	51	1796	542
52	161	1435	941	1267	68	40	32	58	2248	665
56	172	1543	1007	1364	72	40	36	65	2777	817
60	185	1657	1077	1462	110	40	36	71	3445	1023
TOL.	±0.3	±0.5		±0.5	±0.5					

5	04.05.20	REAFFIRMED & ISSUED AS STANDARD	SG	SH	ATD	SKS
4	31.03.15	REVISED & ISSUED AS STANDARD	SH	AK	RN/	SC
Rev No	Date	Purpose	Prepared by	Checked by	Stds Committee Convener	Stds Bureau Chairman
						Approved by

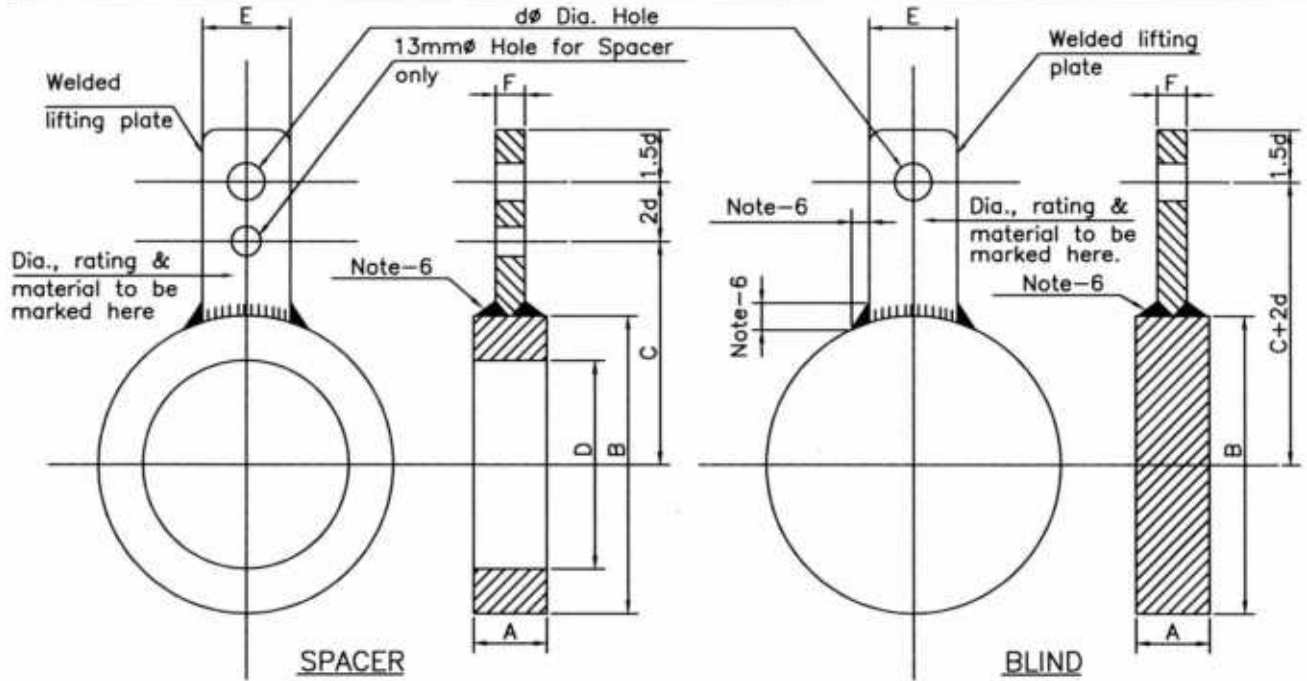


NOTES:

- Both surfaces shall have a resultant surface finish of 125µin to 250µin average roughness with either a concentric or spiral serrated finish.
- Dimensions are for flanges AWWA-C-207 CLASS D 175-150 PSI.
- Diameter, rating, material specification max pressure & max temperature shall be marked on welded lifting plate Material as per line class.
- Thickness 'A' is based on ASTM A516 Gr.70, with corrosion allowances of 1.5mm on each face.
- Max Pressure & Max Temp. are 10.55 Kg/cm² & 65°C.
- Weld size shall be 6 mm for upto 96", 8 mm for 102" to 132" and 8 mm for 138" & 144".
- All dimensions are in mm unless otherwise specified.

DIA. NB	150#							WEIGHT KG(APPROX)	
	A	B	C	D	E	F	d	BLIND	SPACER
26	28	772	485	665	50	15	20	104	27
28	29	829	514	716	50	15	20	128	33
30	31	879	542	767	50	15	20	149	36
32	33	937	580	818	50	15	20	180	43
34	35	988	606	869	50	15	20	211	49
36	37	1045	634	919	50	15	20	250	57
38	39	1109	669	970	50	15	20	296	70
40	40	1159	695	1021	50	15	20	341	77
42	42	1217	723	1072	50	18	20	384	87
44	44	1274	752	1123	50	18	20	441	99
46	46	1325	777	1173	50	18	20	499	108
48	48	1382	806	1224	50	18	20	566	122
50	49	1433	834	1275	50	18	25	634	132
52	51	1490	863	1326	50	18	25	713	148
TOL.	±0.3	±0.5		±0.5	±0.5				

2	28.09.23	REVISED & ISSUED AS STANDARD	ABA	SH	GB	SM
1	04.05.20	REAFFIRMED & ISSUED AS STANDARD	SG	SH	GB	SKS
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
Approved by						

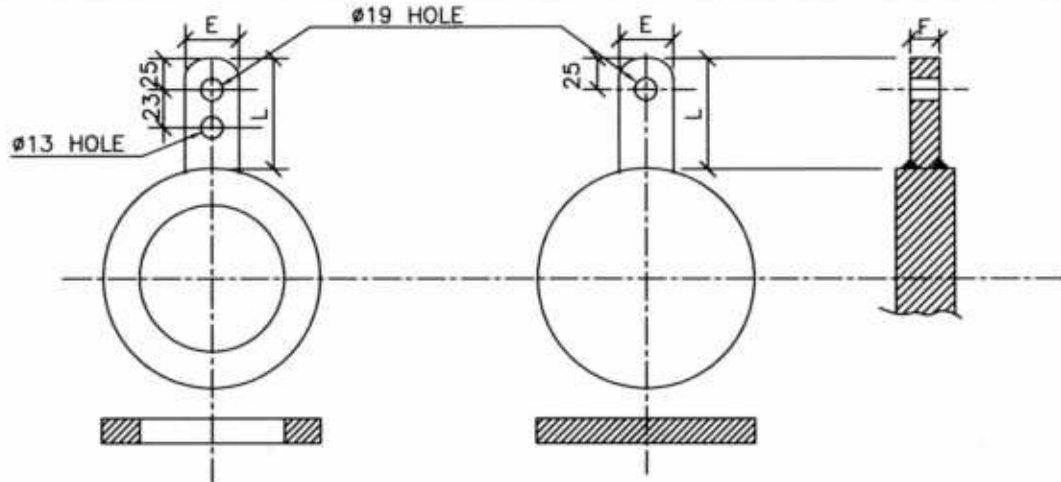


NOTES:

REFER PAGE 1 OF 2 FOR NOTES.

DIA. NB	150#							WEIGHT KG(APPROX)	
	A	B	C	D	E	F	d	BLIND	SPACER
54	53	1547	892	1377	55	25	25	784	164
60	59	1712	977	1529	55	25	25	1068	217
64	62	1883	1066	1681	55	25	25	1359	342
66	64	1883	1066	1681	55	25	25	1403	286
72	69	2048	1149	1834	55	25	25	1814	361
78	75	2207	1231	1986	55	25	30	2257	431
80	77	2372	1317	2138	55	25	30	2677	704
84	80	2372	1317	2138	55	25	30	2815	530
90	86	2530	1403	2291	55	25	30	3400	614
96	91	2696	1489	2443	55	25	30	4130	741
102	97	2842	1574	2596	55	25	30	4839	803
108	102	3000	1660	2748	55	30	30	5725	924
114	108	3146	1746	2900	55	40	30	6603	996
120	113	3299	1831	3053	55	50	30	7597	1095
126	119	3458	1917	3205	55	60	30	8791	1245
132	124	3623	2003	3358	55	75	30	10056	1424
138	129	3775	2089	3510	55	75	30	11445	1558
144	135	3934	2174	3662	55	75	30	12906	1731
TOL.	±0.3	±0.5		±0.5	±0.5				

2	28.09.23	REVISED & ISSUED AS STANDARD	ABA	SH	CS	SM
1	04.05.20	REAFFIRMED & ISSUED AS STANDARD	SG	SH	GB	SKS
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
Approved by						

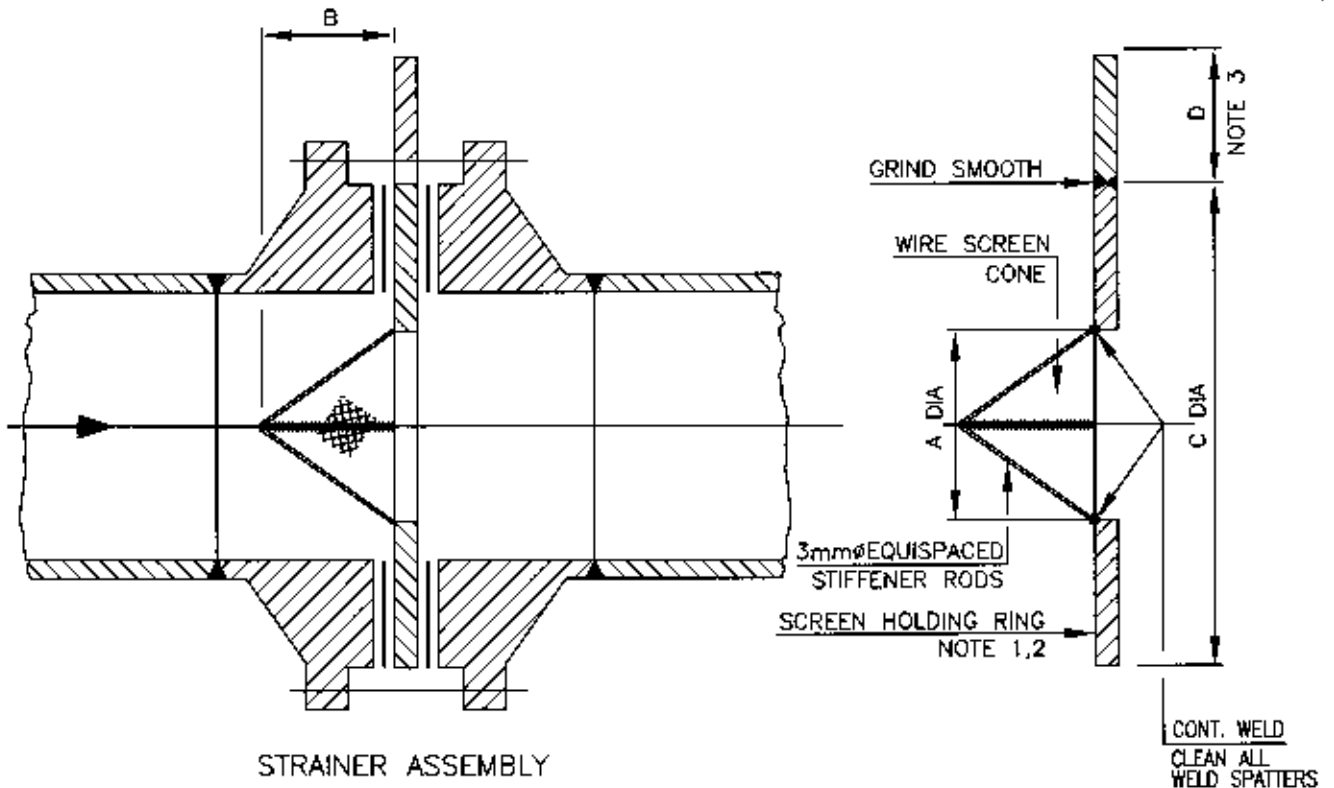


PIPE SIZE INCH	150CL FF			300CL FF			600CL FF		
	E	F	L	E	F	L	E	F	L
1/2"	25	3	100	25	6	100	25	6	110
3/4"	25	3	100	25	6	100	25	6	110
1"	25	3	100	25	6	100	25	6	110
1 1/2"	25	6	100	25	6	100	25	6	110
2"	25	6	100	25	6	100	25	6	110
2 1/2"	25	6	100	25	6	110	25	6	110
3"	40	6	105	40	6	110	40	8	110
4"	40	6	105	40	6	110	40	8	110
6"	40	6	105	40	6	110	40	8	115
8"	40	6	105	40	8	110	40	10	125
10"	40	8	105	40	10	110	40	10	125
12"	40	8	110	40	10	120	40	15	125
14"	40	10	120	40	15	120	40	15	145
16"	40	10	120	40	15	130	40	20	140
18"	40	10	120	40	20	130	40	20	140
20"	40	14	120	40	20	140	40	25	140
24"	50	16	120	50	20	140	50	25	145

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL OTHER DIMENSIONS SHALL BE AS PER ASME B16.48.
3. MATERIAL SHALL BE AS PER MR.
4. THE HANDLE MAY BE INTEGRAL OR ATTACHED TO THE LINE BLANK/SPACER BY WELDING. IN CASE OF ATTACHMENT OF HANDLE BY WELDING, HEAT TREATMENT AND WELDING SHALL BE IN ACCORDANCE WITH ASME B31.3.

5	28.09.23	REAFFIRMED AND ISSUED AS STANDARD	ABA	SH	CB	SM
4	10.09.18	REAFFIRMED AND ISSUED AS STANDARD	PK	SH	MI	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
Approved by						



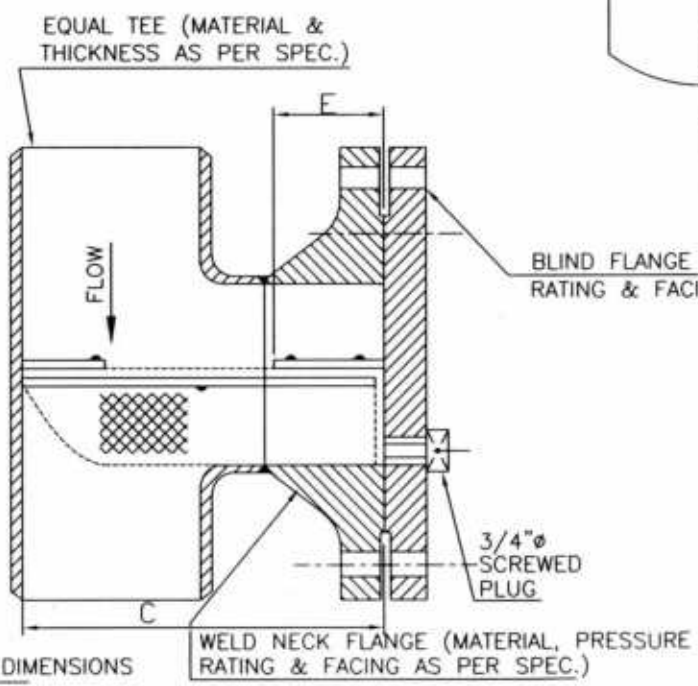
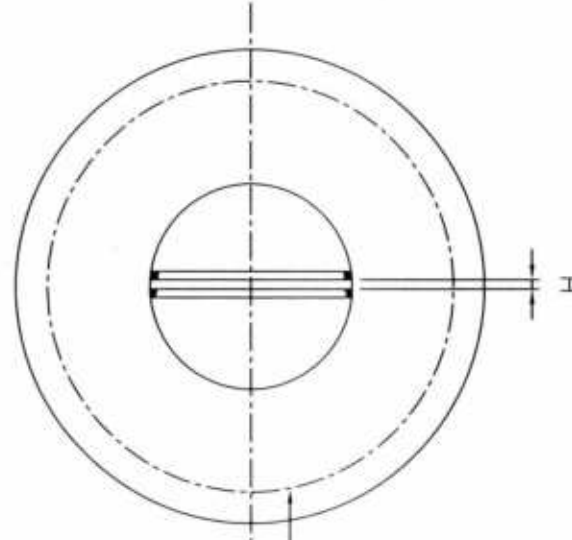
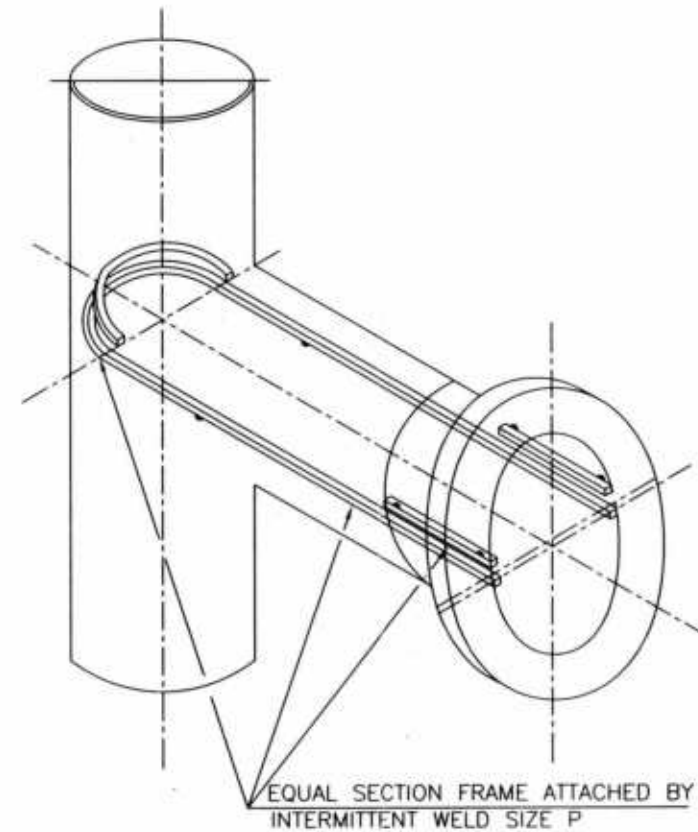
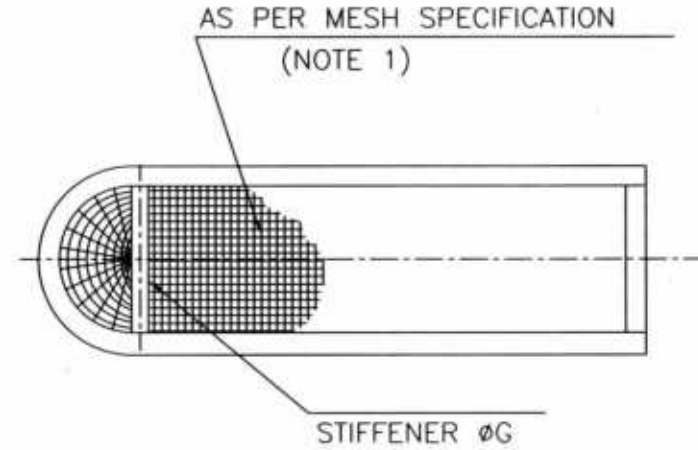
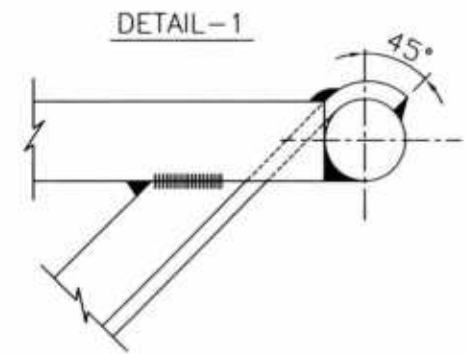
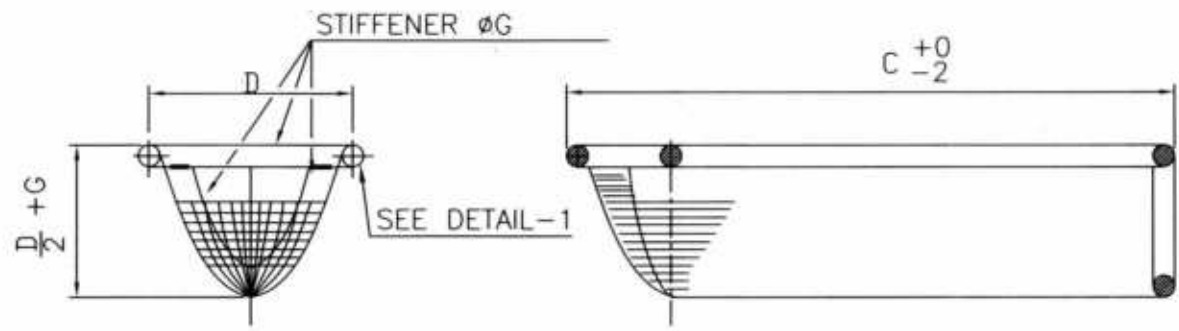
STRAINER ASSEMBLY

NOM PIPE SIZE (INCH)	AREA OF PIPE NOTE 6		EFFEC. AREA OF SCREEN cm ²	OPEN AREA OF SCREEN cm ²	A DIA. NOTE 4	B	C DIA.			LENGTH OF PROJ. PL D NOTE 3	NO. OF STIFF. RODS	MESH SPECIFICATIONS (SCREEN) NOTE 2
	X cm ²	Y cm ²					125# & 150# FF	250# & 300# FF	RAISED FACE ALL RATINGS			
1 1/2"	13.14	11.40	20.1	13.2	35	32	127	156	73	90	-	4x4 STD. STOCK S.S. WIRE MESH 0.047" DIA. WIRE, 0.203" SQ. OPENING, 65.9% OPEN AREA
2"	21.65	19.05	30.3	20.0	44	38	152	185	92	100	-	
2 1/2"	30.90	27.35	52.3	35.4	57	51	176	190	105	115	-	
3"	47.68	42.58	76.3	43.9	70	67	190	210	127	130	3	3x3 STD. STOCK S.S. WIRE MESH - 0.080" DIA. WIRE, 0.253" SQ. CLEAR, 57.6% OPEN AREA
4"	82.13	74.19	131.2	75.6	95	83	229	254	157	140	4	
6"	186.45	168.39	293.2	168.9	137	127	279	318	216	150	4	
8"	322.58	294.84	477.9	275.3	191	140	343	381	270	165	6	
10"	509.03	483.22	653.8	376.6	238	140	406	444	324	190	6	
12"	729.7	721.9	877.2	505.3	289	140	483	521	381	205	6	
14"	889.7	866.1	1054	607.0	327	140	533	584	413	190	8	
16"	1178.7	1140.0	1340	772.0	378	140	597	648	470	205	8	
18"	1507.7	1464.9	1665	958.8	429	140	635	711	533	215	8	
20"	1877.4	1829.0	2004	1154	479	140	698	775	584	230	10	
24"	2741.9	2677.4	2846	1640	581	140	813	914	692	270	10	

NOTES

- SCREEN HOLDING RING SHALL BE MADE FROM 3mm THICK CARBON STEEL PLATE UNLESS OTHERWISE SPECIFIED.
- SCREEN HOLDING RING FOR FLAT FACE FLANGES SHALL HAVE STANDARD ANSI DRILLING
- 3mm THK. x 20mm WIDE x 10" LENGTH CARBON STEEL PROJECTING PLATE FOR MARKING & HANDLING SHALL BE WELDED TO SCREEN HOLDING RING, THE LENGTH D OF PROJECTING PLATE FOR FLAT FACE FLANGES SHALL BE 40mm. ITEM NO., DIAMETER & RATING SHALL BE MARKED ON THIS PLATE
- DIMENSION "A" IS FOR MAX. WALL THICKNESS OF SCH. 80 FOR SIZES UPTO 10" & 12.7mm WALL FOR SIZES 12" & LARGER, FOR HIGHER THICKNESS PIPES DIMENSION "A" SHOULD BE REDUCED TO SUIT.
- IN CASE OF SYSTEMS WITH CRITICAL PRESSURE DROP OR IN CASE OF HIGHLY VISCOUS LIQUIDS THE MESH SPECIFICATION SHALL BE REVIEWED BY PROCESS
- AREA OF PIPE ARE FOLLOWING THICKNESS:
 (a) AREA X - SCH. 40 UPTO 10", 9.53mm WALL 12" & LARGER
 (b) AREA Y - SCH. 80 UPTO 10", 12.7mm WALL 12" & LARGER
- EFFECTIVE AREA OF SCREEN IS THE ACTUAL SCREEN AREA MINUS THE STIFFENER ROD AREA

6	24.08.2021	REAFFIRMED & ISSUED AS STANDARD	SG	SH	GB	SM
5	30.03.2017	REAFFIRMED AND ISSUED AS STANDARD	PK	SH	MI	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
Approved by						



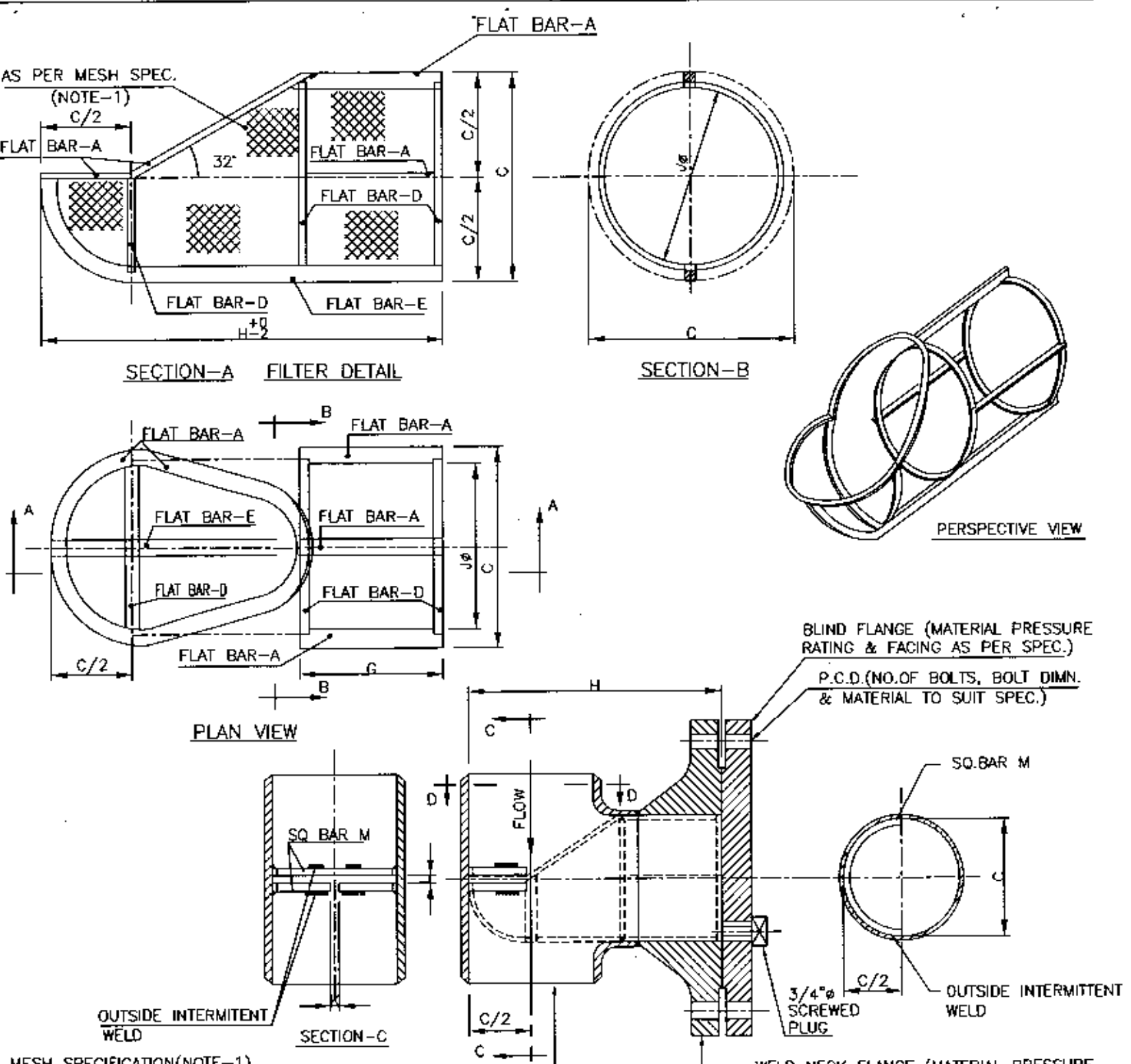
NOM ø	SCH	C					D	E	H	G	P
		150CL RF	300CL RF	300CL RTJ	600CL RF	600CL RTJ					
2"	40, STD	154	160	168	170	171	51	58	8	6	6X6
	80, XS	152	158	166	168	169	48				
	160	149	155	163	165	166	40				
	XXS	147	153	161	163	164	35				
2½"	40, STD	177	183	190	192	198	61	64	8	6	6X6
	80, XS	175	181	194	190	196	57				
	160	172	179	192	188	194	51				
3"	40, STD	194	204	211	213	214	76	64	8	6	6X6
	80, XS	192	202	209	211	212	72				
	160	189	198	206	208	209	64				
	XXS	185	194	202	204	205	54				
4"	40, STD	232	242	250	264	266	100	64	8	6	6X6
	80, XS	229	239	247	261	263	95				
	120	227	237	245	259	261	89				
	160	224	234	242	256	258	83				
	XXS	221	231	239	253	255	75				

MESH SPECIFICATIONS (NOTE-1)

SERVICE	OPENING (IN)	MESH SPECIFICATION	OPEN AREA%	MESH DESIGNATION	
OIL VISCOSITY IN cP	LOW VISCOSITY 0 < y < 2	0.097	8 MESH 22 SWG	62.2	TYPE 4
	MEDIUM VISCOSITY 2 ≤ y ≤ 8	0.111	7 MESH 21 SWG	60.3	TYPE 3
	HIGH VISCOSITY y > 8	0.202	4 MESH 18 SWG	65.3	TYPE 2
GASOLINE, PROPANE	0.053	14 MESH 26 SWG	55.1	TYPE 5	
WATER	0.053	14 MESH 26 SWG	55.1	TYPE 5	

- NOTES:-
1. THE MESH SPECIFICATIONS AS GIVEN IN THE TABLE ARE TO BE USED WHEN STRAINER IS INTENDED TO BE USED AS PERMANENT STRAINER. IN CASE OF TEMPORARY STRAINER THE MESH SPECIFICATION SHALL BE AS FOLLOWS:
FOR LINES UPTO 2½" -
S.S STD. STOCK MESH 0.047" DIA WIRE X 0.203 SQ. CLEAR OPENING - 65.9 % OPEN AREA
FOR LINES 3" & ABOVE -
S.S STD. STOCK MESH 0.08" DIA WIRE X 0.253 SQ. CLEAR OPENING - 57.6 % OPEN AREA.
 2. MATERIAL AS PER LINE SPECIFICATION.
 3. 3/4" ø SCREWED PLUG FOR DRAIN CONNECTION SHALL BE PROVIDED.

Rev. No.	Date	Purpose	Prepared by	Checked by	Approved by
7	28.03.23	REAFFIRMED AND ISSUED AS STANDARD	PK	SH	SM
6	22.03.18	REAFFIRMED AND ISSUED AS STANDARD	PK	SH	MI



MESH SPECIFICATION (NOTE-1)

SERVICE	STRAINER SIZE NOM. (IN)	OPENING (IN)	MESH SPECIFICATION	OPEN AREA %	MESH DESIGNATION
OIL LOW VISCOSITY 0 < μ < 2	6"	0.097	8MESH 22SWG	60.2	TYPE 4
	8" AND ABOVE	0.111	7MESH 21SWG	60.3	TYPE 3
OIL MEDIUM VISCOSITY 2 < μ < 8	6"	0.111	7MESH 21SWG	60.3	TYPE 3
	8" AND ABOVE	0.202	4MESH 18SWG	65.3	TYPE 2
OIL HIGH VISCOSITY μ > 8	6"	0.202	4MESH 18SWG	65.3	TYPE 2
	8" AND ABOVE	0.259	3MESH 16SWG	65.2	TYPE 1
GASOLINE PROPANE	6" AND 8"	0.053	14MESH 28SWG	55.1	TYPE 5
	10" AND ABOVE	0.087	8MESH 22SWG	60.2	TYPE 4
WATER	6" ABOVE	0.115	7MESH 21SWG	60.3	TYPE 3

NOTES:-

- THE MESH SPECIFICATION AS GIVEN IN THE TABLE IS TO BE USED WHEN STRAINER IS INTENDED TO BE USED AS PERMANENT STRAINER IN CASE OF TEMPORARY STRAINER THE MESH SPECIFICATIONS SHALL BE AS FOLLOWS: FOR LINE UP TO 2 1/2" - S.S. STD. STOCK MESH 0.07" DIA WIRE X 0.203 SQ. CLEAR OPENING - 65.9% OPEN AREA FOR LINES 3" & ABOVE S.S. STD. STOCK MESH 0.08" DIA WIRE X 0.253 SQ. CLEAR OPENING - 57.6% OPEN AREA.
- MATERIAL AS PER LINE SPECIFICATION
- 3/4" Ø SCREWED PLUG FOR DRAIN CONNECTION SHALL BE PROVIDED

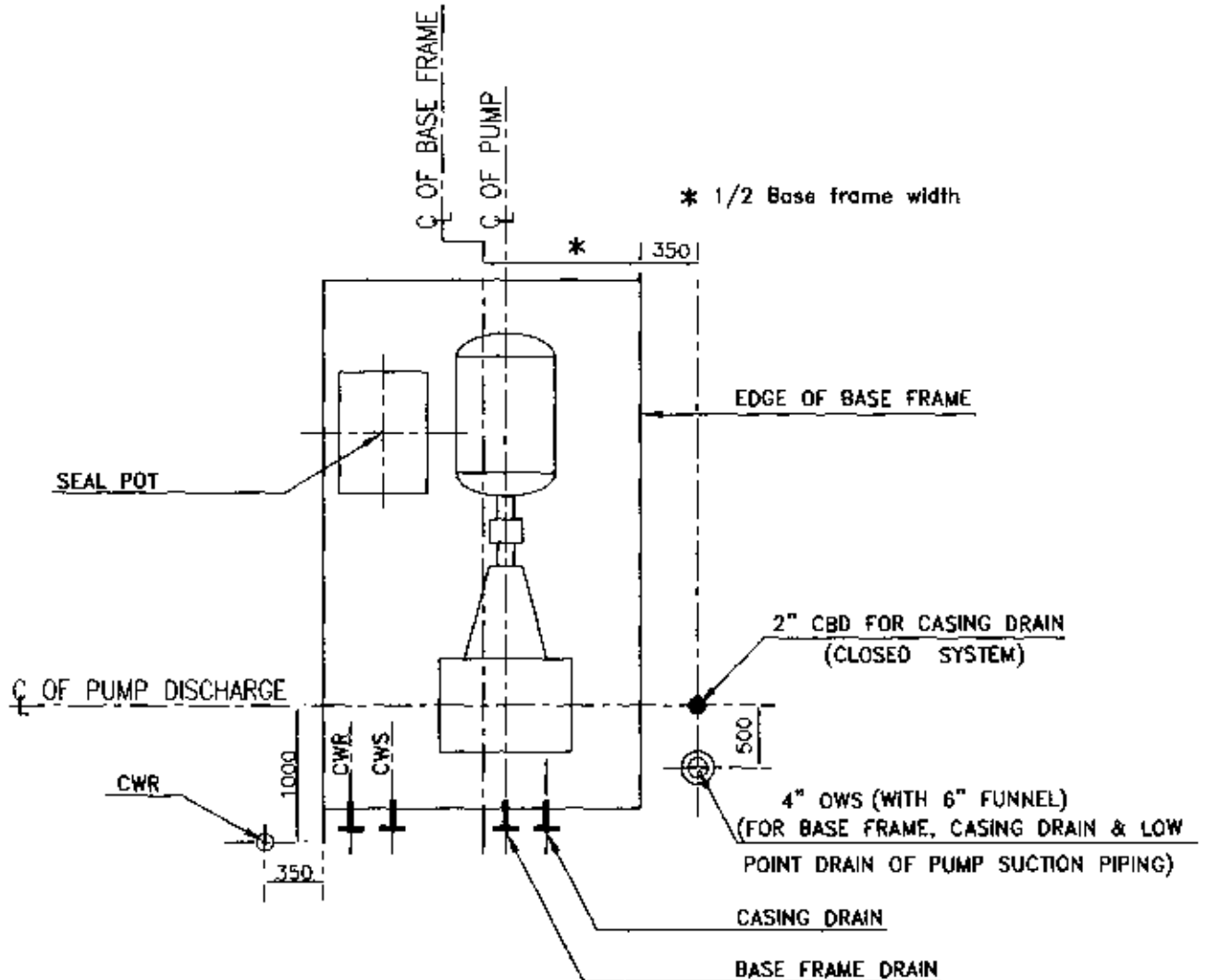
NOM	SCH	H					C	J	G					FLAT BAR			L	K	SQ BAR M
		150# RF	300# RF	300# RTJ	600# RF	600# RTJ			150# RF	300# RF	300# RTJ	600# RF	600# RTJ	D	E	A			
6"	40	308	318	331	343	349	151	131	121	131	144	156	162	15x5	10x5	10x5	7	8	10x10
	80	304	314	327	339	345	143	123	129	139	152	164	170						
	120	301	311	324	336	342	137	117	133	143	156	168	174						
	160	297	307	321	332	338	129	109	139	149	162	174	180						
	XXS	293	303	316	328	334	122	102	144	154	167	179	185						
8"	20-30	382	391	404	420	425	205	183	129	138	151	167	172	15x5	110x5	10x5	7	8	10x10
	40-60	378	387	400	416	421	197	177	132	141	154	170	175						
	80	376	386	399	415	420	192	172	137	147	160	176	181						
	120	370	380	393	409	414	180	160	146	156	169	185	190						
	XXS-160	366	376	389	405	410	171	151	154	164	177	193	198						
10"	20-30	446	462	475	503	509	256	216	125	141	154	182	188	15x5	20x10	20x5	7	14	10x10
	40	444	460	473	501	508	253	213	127	143	156	184	191						
	60	441	457	470	498	504	246	206	133	149	162	190	196						
	80	439	455	468	496	502	241	201	137	153	166	194	200						
	120	432	448	461	489	495	228	188	147	163	176	204	210						
12"	20	523	539	552	571	577	310	270	132	148	161	180	186	15x5	20x10	20x5	8	14	12x12
	30	521	537	550	569	575	305	265	137	153	166	185	191						
	STD-40	519	535	548	567	573	302	262	139	155	168	187	193						
	XS-60	515	531	544	563	569	294	254	145	161	174	193	199						
	80	512	528	541	560	566	287	247	151	167	180	199	205						
14"	10	577	593	606	621	627	341	291	148	164	177	192	198	15x5	25x10	25x5	10	16	12x12
	20	575	591	604	619	625	336	286	150	166	179	194	200						
	30-40	572	588	601	616	623	332	282	155	171	184	199	206						
	XS	570	586	599	614	620	328	278	158	174	187	202	208						
	60	568	584	597	612	618	324	274	157	173	186	201	207						
16"	10	628	647	660	686	691	382	332	135	154	167	193	198	20x5	30x12	30x7	10	16	14x14
	20	627	646	659	685	690	389	329	138	157	170	196	201						
	30	625	644	657	683	688	386	326	140	159	172	198	203						
	XS-40	621	640	653	679	684	379	319	142	161	174	200	205						
	60	619	638	651	677	682	376	316	143	162	175	201	206						
18"	10	704	724	737	755	761	443	373	146	166	179	197	203	20x5	35x12	35x7	10	16	14x14
	20	703	722	735	753	759	440	370	149	168	181	199	205						
	STD	701	720	733	751	757	437	367	151	170	183	201	207						
	30	700	719	732	750	756	433	363	155	174	187	205	211						
	XS	698	717	730	748	754	430	360	157	176	189	207	213						
20"	10	773	790	805	825	832	493	413	153	170	185	205	212	20x5	40x15	40x8	11	20	14x14
	STD-20	769	787	802	822	829	487	407	156	174	189	209	216						
	XS-30	766	784	799	819	826	480	400	162	180	195	215	222						
	40	764	782	797	817	824	476	396	164	182	197	217	224						
	60	762	780	795	815	822	472	392	166	184	199	219	226						
24"	10	882	898	914	940	949	594	504	132	148	164	190	199	20x5	45x15	45x8	11	20	14x14
	STD-20	879	895	911	937	946	588	498	136	152	168	194	203						
	XS	876	892	908	934	943	582	492	141	157	173	199	208						
	30	874	890	906	932	941	579	489	143	159	175	201	210						
	40	872	888	904	930	939	572	482	145	161	177	203	212						



7	24.08.2021	REAFFIRMED & ISSUED AS STANDARD	SG	SH	GB	
6	30/03/2017	Revised and Issued as Standard	PK	SH	MI	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Sds. Committee Convenor	Sds. Bureau Chairman
					Approved by	

T STRAINER TYPE-1
6"-24" (150# RF, 300# RF AND RTJ, 600# RF AND RTJ)

STANDARD No.
7-44-0304 Rev. 7
Page 1 of 1



APPLICABLE FOR PUMPS WITH

1. END SUCTION/TOP DISCHARGE
2. TOP SUCTION/TOP DISCHARGE
3. SIDE SUCTION/SIDE DISCHARGE

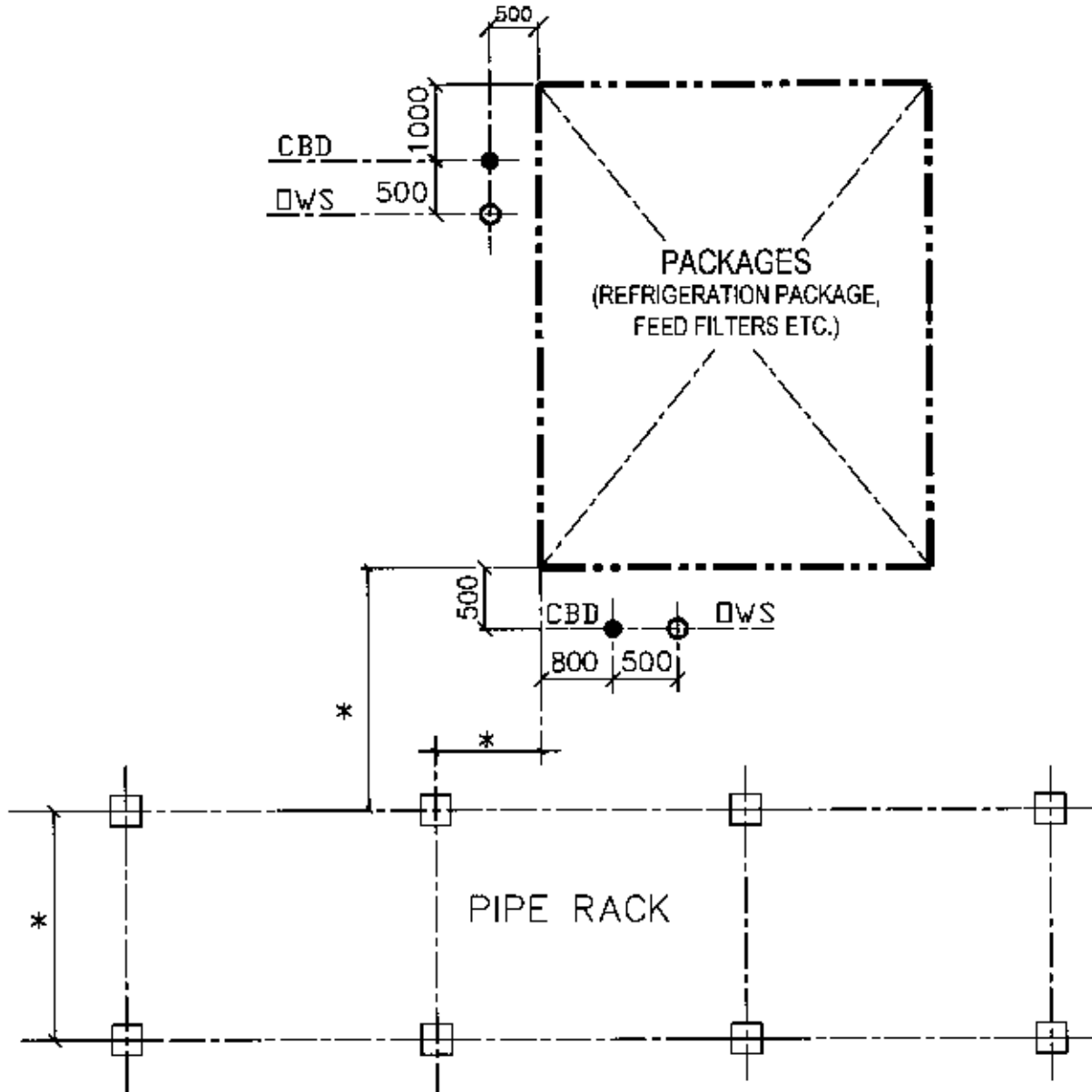
NOTES

1. Pump supplier to ensure that the locations / orientation of seal pot , Drain connections , CWS & CWR shall be as indicated in this drawing.
2. All dimensions are in mm, unless other wise specified.
3. Seal pot, CW supply/return, U/G points shall be mirror image for the pump tag nos identified during detail engineering, considering access/client requirements. Input shall be provided in MR.

LEGEND

- CBD : CLOSED BLOW DOWN
- ⊙ OWS : OILY WATER SEWER
- CWS : COOLING WATER SUPPLY
- CWR : COOLING WATER RETURN

2	04.05.20	REAFFIRMED & ISSUED AS ATANDARD	SG	SH	GP	SKS	
1	30.03.15	REVISED & REISSUED AS STANDARD	RJ	AK	RN	ATD	SC
Rev No	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds Bureau Chairman	Approved by



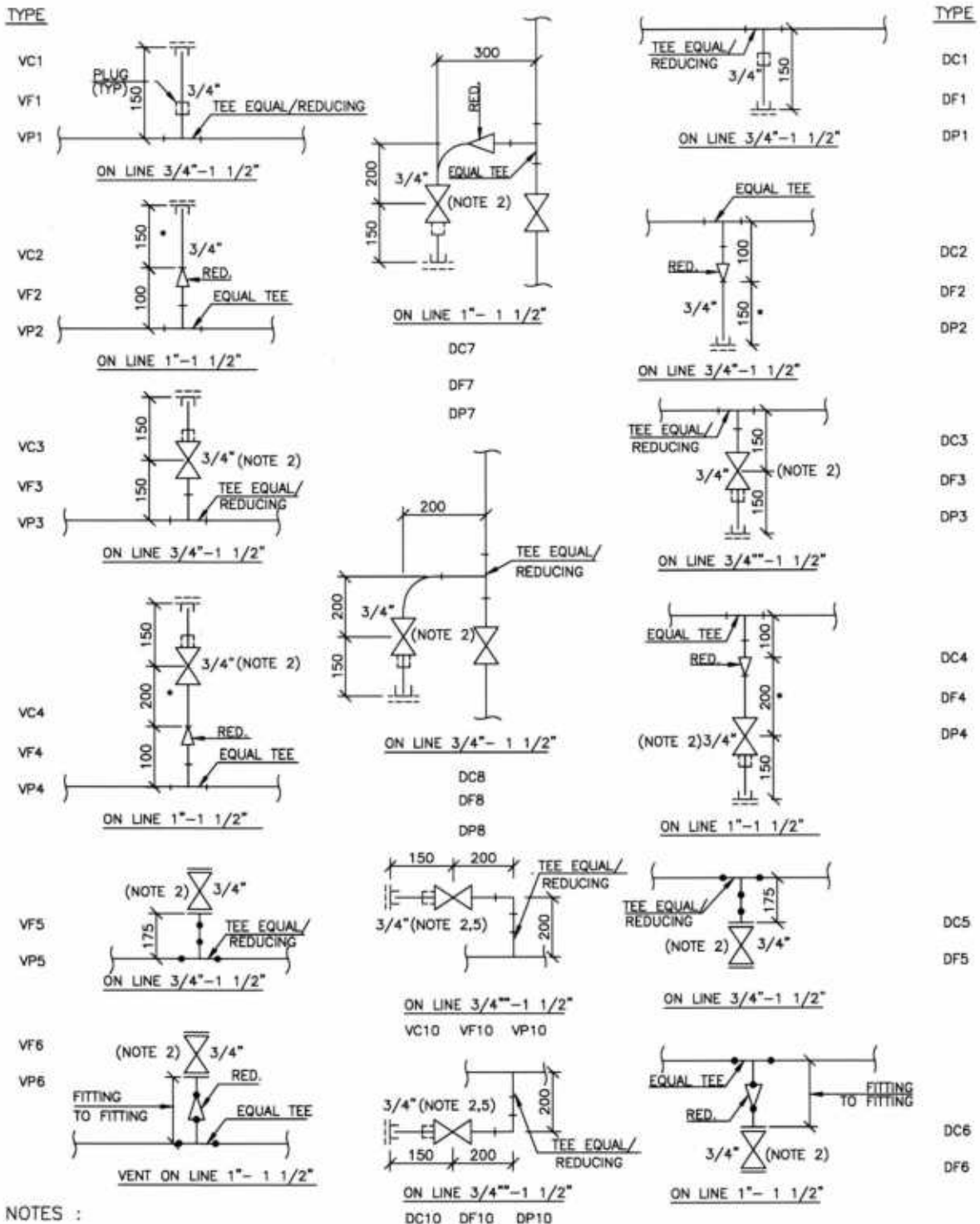
LEGEND

- = CBD (CLOSED BLOW DOWN)
- = OWS (ONLY WATER SEWER)
- * = AS PER EQUIPMENT LAYOUT/
3D-MODEL

NOTES:-

1. THE STANDARD DRAWINGS FOR DRAIN POINTS SHALL BE ATTACHED WITH THE MR FOR COMPRESSORS. VENDOR WHILE SUBMITTING THE PLOT PLAN IN KICK OFF MEETING SHALL INCORPORATE THE DRAIN POINTS AS PER STANDARD DRAWING ALONGWITH THE DIMENSIONAL DETAILS OF THE LOCATIONS.
2. THE VENDOR SHALL MANIFOLD ALL THE DRAIN POINTS HAVING COMMON DESTINATION. VENDOR SHALL TERMINATE SINGLE POINT DRAIN AT GRADE FOR EACH DESTINATION (i.e. CBD, OWS or CR/SS) FOR EACH SKID AT LOCATIONS SHOWN IN THE STANDARD.

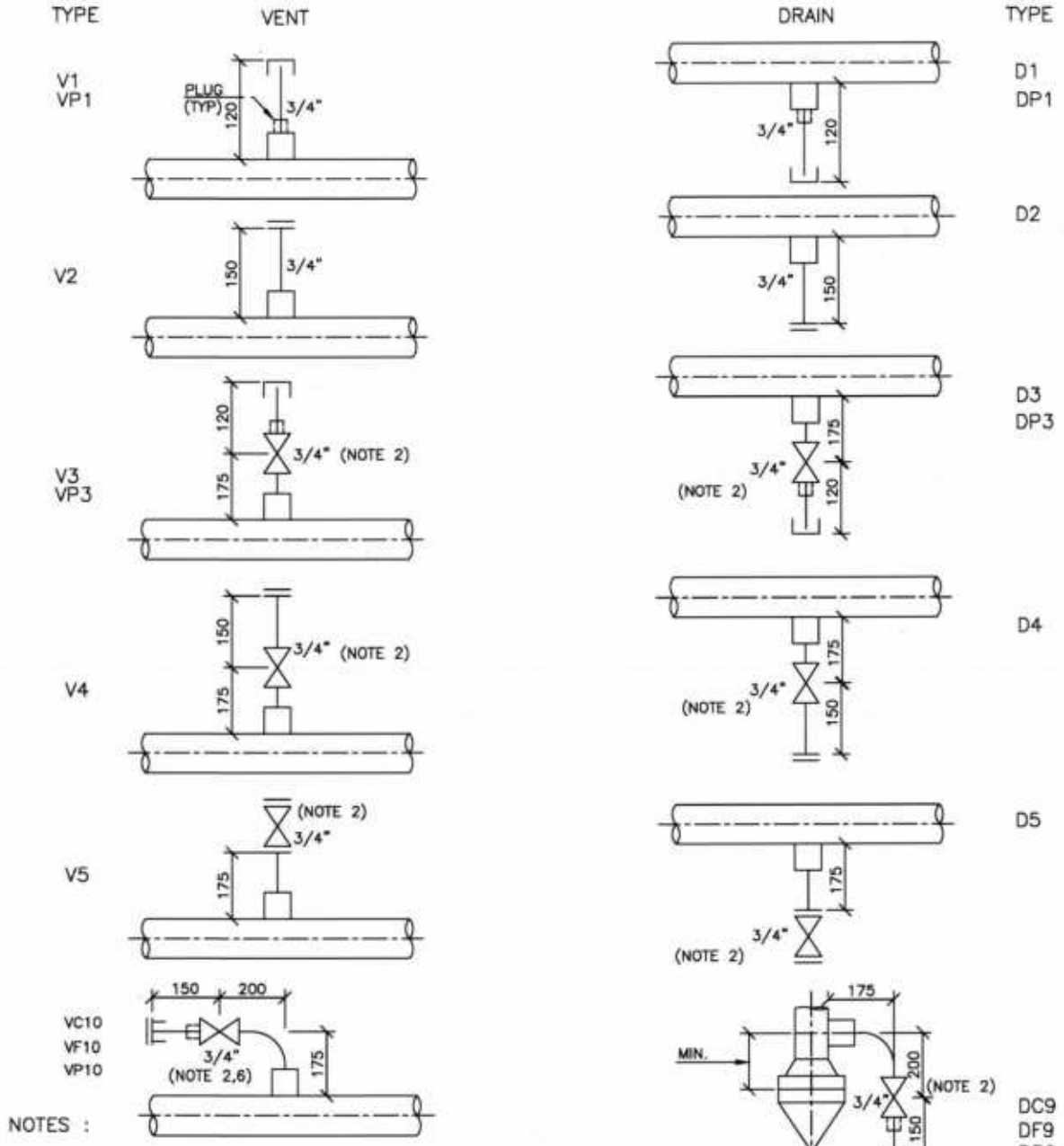
1	04 05 20	REAFFIRMED & ISSUED AS STANDARD	<i>SG</i>	<i>SH</i>	<i>GB</i>	<i>SKS</i>
0	30 03 15	ISSUED AS STANDARD	RJ	AK	RN	ATD
Rev No	Date	Purpose	Prepared by	Checked by	Stds Committee Convener	Stds Bureau Chairman
						Approved by



NOTES :

- DIMENSIONS INDICATED ARE VALID FOR 50mm(MAX) INSULATION. FOR HIGHER INSULATION THICKNESS, INCREASE DIMENSIONS AS REQUIRED. DIMENSIONS MARKED "*" ARE MAXIMUM AND MAY BE REDUCED TO SUIT.
- VALVES TO BE PROVIDED SHALL BE SIMILAR TO LINE ISOLATION VALVE (GATE, BALL OR PLUG VALVE ETC., WITH FLGD, S.W. OR SCR'D ENDS) UNLESS OTHERWISE SPECIFIED IN PMS, BRANCH-OFFS LIKE TEES(EQUAL OR REDUCING)/HALF COUPLINGS S.W. OR SCR'D)/SOCKLETS/WELDOLETS AND END CONNECTIONS LIKE CAP/PLUG/FLANGE & BLIND FLANGE SHALL BE AS PER PIPING MATERIAL SPECIFICATION.
- LEGEND : V = VENT; D = DRAIN; C = CAP; F = FLANGE; RED. = REDUCER, COUPLING OR SWAGE; P = PLUG.
- PLUGGED END OF VALVE OR FITTING SHALL BE THREADED.
- VALVE STEM ORIENTATION TO BE AT OR ABOVE 45° ABOVE THE HORIZONTAL POSITION IN LIQUID CRYOGENIC SERVICE.

6	20.06.22	REVISED & ISSUED AS STANDARD	PK	SH	GB	SM
5	06.12.19	REAFFIRMED & ISSUED AS STANDARD	SG	SH	MI	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
Approved by						



NOTES :

- DIMENSIONS INDICATED ARE VALID FOR 75mm (MAX) INSULN. THICKNESS. FOR HIGHER INSULATION THICKNESS INCREASE DIMENSION AS REQUIRED
- VALVES TO BE PROVIDED SHALL BE SIMILAR TO LINE ISOLATION VALVE (GATE, BALL OR PLUG VALVE ETC., WITH FLGD, SW OR SCR'D ENDS) UNLESS OTHERWISE SPECIFIED IN PMS. BRANCH-OFFS LIKE HALF CPLG(SW OR SCR'D)/SOCKOLET/WELDOLET & END CONNECTIONS LIKE CAP/PLUG/FLANGE & BLIND FLANGE SHALL BE AS PER PIPING MATERIAL SPECIFICATIONS.
- VENTS/DRAINS CAN BE PROVIDED ON FLAT SIDE OF ECCENTRIC REDUCER ON SIZES 4" & ABOVE
- LEGEND V=VENT, D=DRAIN, C=CAP, F=FLANGE, P=PLUG
- PLUGGED END OF VALVE OR FITTING SHALL BE THREADED
- FOR LIQUID CRYOGENIC SERVICE VALVE STEM ORIENTATION TO BE AT OR ABOVE 45° ABOVE HORIZONTAL POSITION.

6	20.06.22	REVISED & ISSUED AS STANDARD	PK	SH	GB	SM
5	06.12.19	REAFFIRMED & ISSUED AS STANDARD	SG	SH	MI	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
Approved by						

FOR LIQUID	FOR GAS LINES & STEAM LINES (NOTE-10)	FOR VERTICAL LINES
<p>DETAIL- ①</p>	<p>DETAIL- ②</p>	<p>DETAIL- ③</p> <p>* FOR STEAM & CONDENSIBLES, LOWER BLOCK VALVE SHALL BE RAISED TO THE LEVEL OF THE UPPER BLOCK VALVE</p>
<p>FOR LIQUID LINES ON PIPE RACK WITH OPERATING TEMP $\geq 0^{\circ}\text{C}$</p> <p>DETAIL- ④</p>	<p>FOR STEAM & GAS LINES ON PIPE RACK & LIQUID LINES WITH TEMP BELOW 0°C</p> <p>DETAIL- ⑤</p>	<p>FOR TAPS ON PIPE RACK (150# & 300#)</p> <p>DETAIL- ⑥ (NOTE-3)</p> <p>ORIENTATION OF TAPS SHALL BE LIQUID LINES WITH OPERATING TEMP. $\geq 0^{\circ}\text{C}$: 45° FROM VERTICAL DOWNWARDS STEAM, GAS & LIQUID LINES WITH OP.TEMP $< 0^{\circ}\text{C}$: 45° FROM VERTICAL UPWARDS</p>
<p>NOTE-5</p> <p>DETAIL- ⑦</p>	<p>NOTE-5</p> <p>DETAIL- ⑧</p>	

INSTRUMENT SCOPE

- A. ORIFICE FLANGES ASSEMBLY WITH BOLTS/NUTS AND GASKETS
- B. IMPULSE LINE STARTING AFTER THE TAPPING VALVE

NOTES :

1. ORIFICE FLANGES IN HORIZONTAL LINES SHALL BE PREFERRED.
2. TAPS SHALL BE ORIENTED TO SUIT LOCATION OF INSTRUMENT.
3. TAPPING ON PIPE AS PER DETAIL-6 SHALL BE CONSIDERED IN ACCORDANCE WITH THE COUPLING POSITIONS FROM UPSTREAM AND DOWNSTREAM SIDE FLANGE FACES FOR LINE OF :-
 - A. RATING 150# AND SIZE $\geq 16"$
 - B. RATING 300# AND SIZE $\geq 20"$
 FOR ALL OTHER LINE SIZES AND RATINGS, TAP SHALL BE CONSIDERED ON ORIFICE FLANGE FOR ORIFICE ASSEMBLIES BY INSTRUMENTATION.
4. IN CASE OF VERTICAL LINES FLOW SHALL BE UPWARDS FOR LIQUIDS CONTAINING VAPOUR & DOWNWARDS FOR WET GASES & STEAM.
5. THE ORIENTATION OF TAPPING IN CASE OF DETAILS 4 & 5 SHALL BE AS FOLLOWS:
 - FOR LIQUID LINES WITH OPERATING TEMPERATURE $\geq 0^{\circ}\text{C}$:
 - 4,8 & 16 BOLT FLANGE - AT 45° TO VERTICAL POINTING DOWNWARDS
 - 12 BOLT FLANGE - AT 60° TO VERTICAL POINTING DOWNWARDS
 - 20 BOLT FLANGE - AT 54° TO VERTICAL POINTING DOWNWARDS.
 - FOR LIQUID LINES WITH OPER. TEMP. $< 0^{\circ}\text{C}$ AND STEAM AND GAS LINES :
 - 4,8 & 16 BOLT FLANGE - AT 45° TO VERTICAL POINTING UPWARDS.
 - 12 BOLT FLANGE - AT 60° TO VERTICAL POINTING UPWARDS
 - 20 BOLT FLANGE - AT 54° TO VERTICAL POINTING UPWARDS.
6. DETAILS 4 & 5 SHALL NOT BE USED FOR PRE-FABRICATED HOOK-UPS.
7. FOR CLEARANCE REQUIREMENT AROUND ORIFICE FLANGE REFER EIL STD. 7-44-0504
8. FOR DETAILS OF ORIFICE TAPPINGS AND ORIENTATION, REFER EIL STD. 7-52-0005.
9. IN CASE OF PRE-FABRICATED HOOKUP, NIPPLE & ISOLATION VALVE SHALL BE SUPPLIED BY PREFABRICATION VENDOR.
10. FOR STEAM LINES, DETAIL-1 CAN BE CONSIDERED IN CASE OF SPACE CONSTRAINTS OR AS PER LICENSOR REQUIREMENT.
11. FOR DIMENSIONS A & B REFER STD. 7-52-0022.
12. FOR LIQUID CRYOGENIC SERVICE VALVE STEM ORIENTATION TO BE AT OR ABOVE 45° ABOVE HORIZONTAL POSITION.

PIPING SCOPE

- A. TAPPING NIPPLE, COUPLINGS AND VALVES

6	20.06.22	REVISED & ISSUED AS STANDARD	PK	SH	GB	SM
5	24.01.20	REVISED & ISSUED AS STANDARD	SG	SH	MI	RKT

Rev No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman

FOR LIQUID	FOR GAS LINES & STEAM LINES (NOTE-10)	FOR VERTICAL LINES
<p>DETAIL- ①</p>	<p>DETAIL- ②</p>	<p>DETAIL- ③</p> <p>* FOR STEAM & CONDENSIBLES, LOWER BLOCK VALVE SHALL BE RAISED TO THE LEVEL OF THE UPPER BLOCK VALVE</p>
<p>FOR LIQUID LINES ON PIPE RACK WITH OPERATING TEMP $\geq 0^{\circ}\text{C}$</p> <p>DETAIL- ④</p> <p>NOTE-5</p>	<p>FOR STEAM & GAS LINES ON PIPE RACK & LIQUID LINES WITH TEMP BELOW 0°C</p> <p>DETAIL- ⑤</p> <p>NOTE-5</p>	
<p>DETAIL- ⑦</p>	<p>DETAIL- ⑧</p>	

INSTRUMENT SCOPE

- A. ORIFICE FLANGES ASSEMBLY WITH BOLTS/NUTS AND GASKETS
B. IMPULSE LINE STARTING AFTER THE TAPPING VALVE

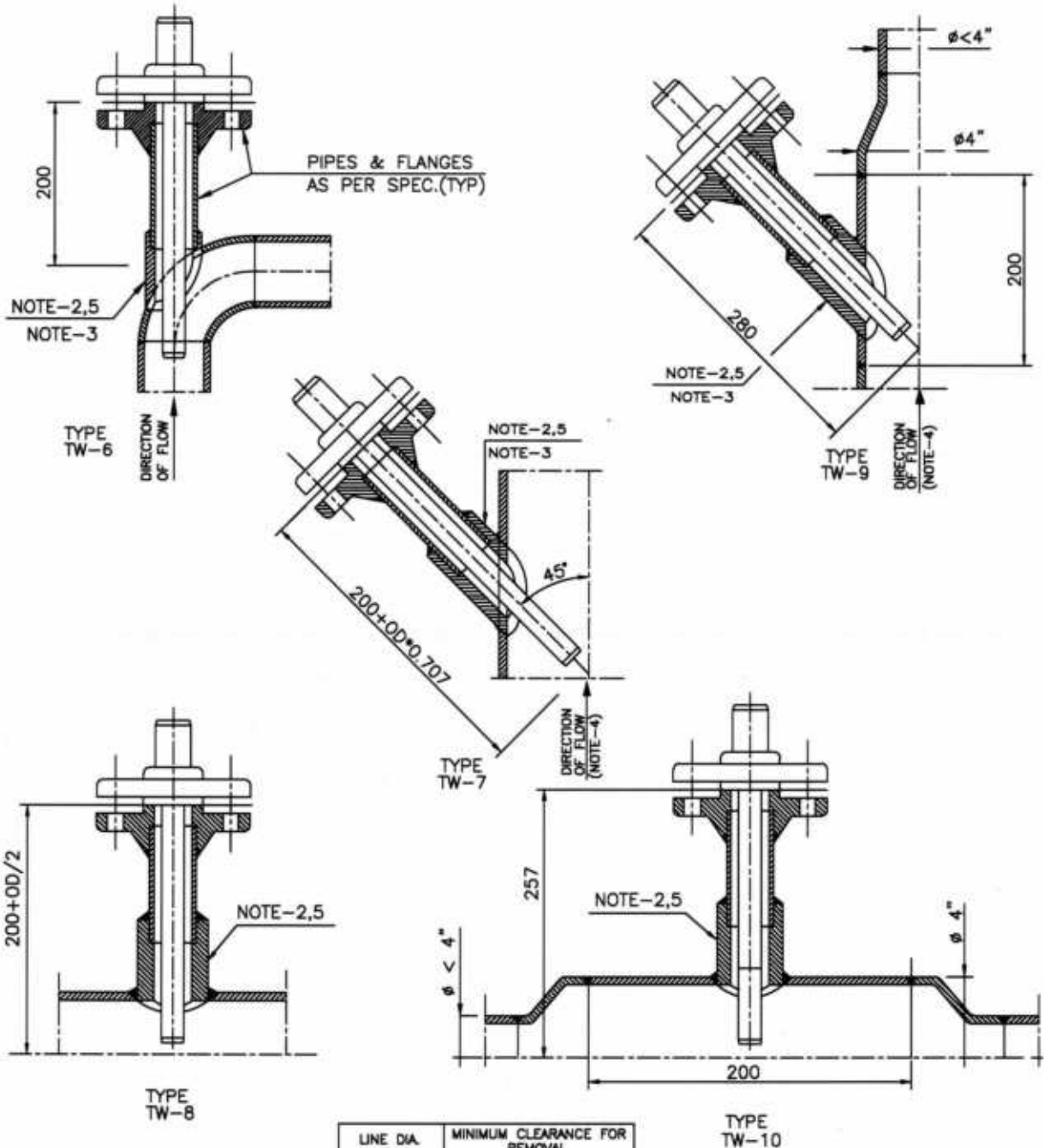
PIPING SCOPE

- A TAPPING NIPPLE, COUPLINGS AND VALVES

NOTES :

- ORIFICE FLANGES IN HORIZONTAL LINES SHALL BE PREFERRED.
- TAPS SHALL BE ORIENTED TO SUIT LOCATION OF INSTRUMENT.
- DELETED.
- IN CASE OF VERTICAL LINES FLOW SHALL BE UPWARDS FOR LIQUIDS CONTAINING VAPOUR & DOWNWARDS FOR WET GASES & STEAM.
- THE ORIENTATION OF TAPPING IN CASE OF DETAILS 4 & 5 SHALL BE AS FOLLOWS:
FOR LIQUID LINES WITH OPERATING TEMPERATURE $\geq 0^{\circ}\text{C}$:
4,8 & 16 BOLT FLANGE - AT 45° TO VERTICAL POINTING DOWNWARDS
12 BOLT FLANGE - AT 60° TO VERTICAL POINTING DOWNWARDS
20 BOLT FLANGE - AT 54° TO VERTICAL POINTING DOWNWARDS.
FOR LIQUID LINES WITH OPER. TEMP. $< 0^{\circ}\text{C}$ AND STEAM AND GAS LINES :
4,8 & 16 BOLT FLANGE - AT 45° TO VERTICAL POINTING UPWARDS,
12 BOLT FLANGE - AT 60° TO VERTICAL POINTING UPWARDS
20 BOLT FLANGE - AT 54° TO VERTICAL POINTING UPWARDS.
- DETAILS 4 & 5 SHALL NOT BE USED FOR PRE-FABRICATED HOOK-UPS.
- FOR CLEARANCE REQUIREMENT AROUND ORIFICE FLANGE REFER EIL STD. 7-44-0504
- FOR DETAILS OF ORIFICE TAPPINGS AND ORIENTATION. REFER EIL STD. 7-52-0005.
- IN CASE OF PRE-FABRICATED HOOKUP, NIPPLE & ISOLATION VALVE SHALL BE SUPPLIED BY PREFABRICATION VENDOR.
- FOR STEAM LINES, DETAIL-1 CAN BE CONSIDERED IN CASE OF SPACE CONSTRAINTS OR AS PER LICENSOR REQUIREMENT.
- FOR LIQUID CRYOGENIC SERVICE VALVE STEM ORIENTATION TO BE AT OR ABOVE 45° ABOVE HORIZONTAL POSITION.

6	20.06.22	REVISED & ISSUED AS STANDARD	PK	SH	MI	RKT
5	24.01.20	REVISED & ISSUED AS STANDARD	SG	SH	MI	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by



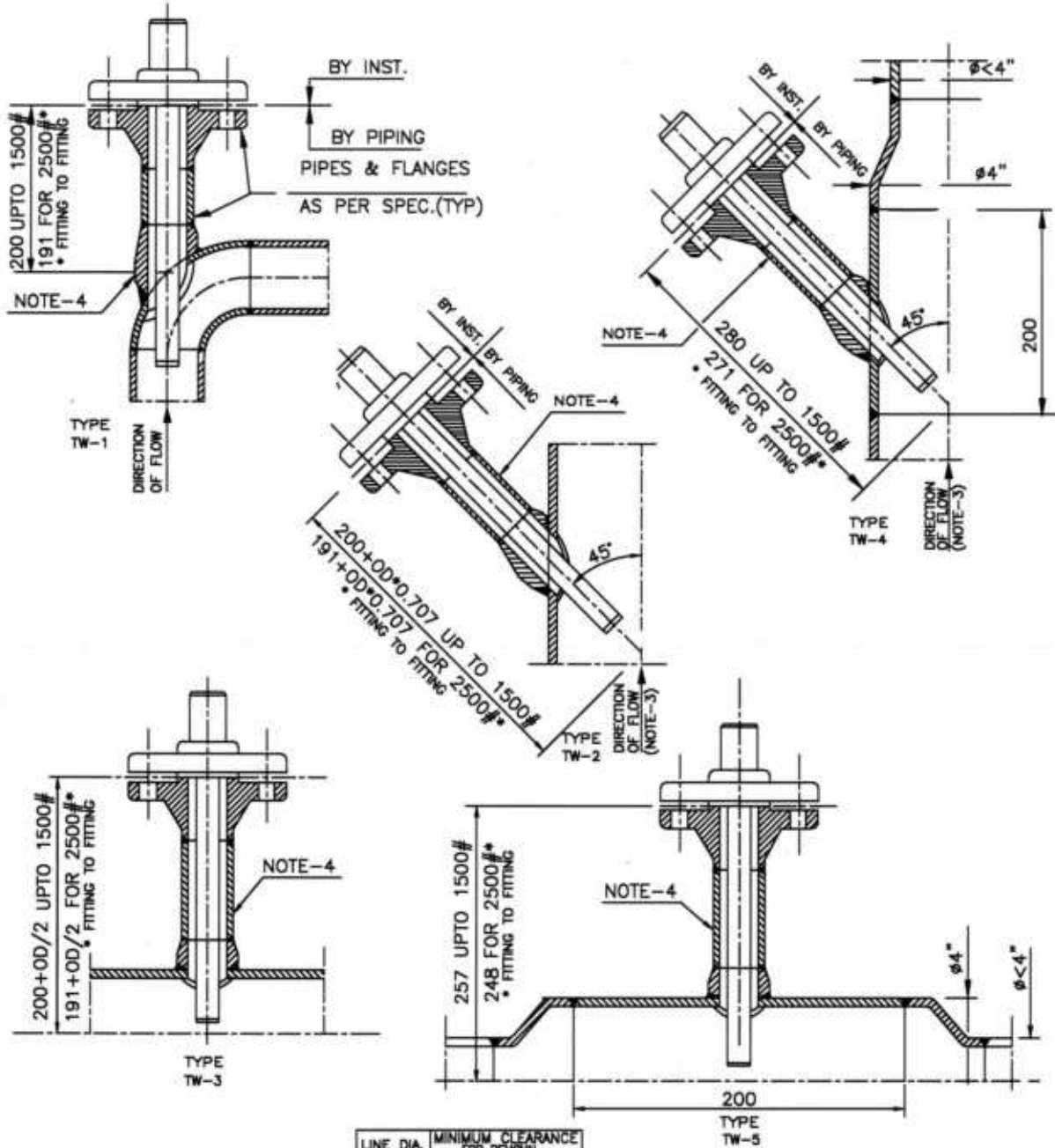
LINE DIA.	MINIMUM CLEARANCE FOR REMOVAL
4"	630
6"	630
8"	670
10"	670
12"	670
14"	670
16"	670
18"	670
20" AND LARGER	750
VESSELS	750

NOTES:-

- 1 BOLTS, NUTS AND GASKETS BY PIPING.
- 2 BRANCH FITTING SHALL BE AS PER PMS
- 3 IF BRANCH FITTING IS A COUPLING, IT SHALL BE OF SPECIAL LENGTH.
- 4 THE ARRANGEMENT CAN BE USED FOR DOWNWARD FLOW ALSO, IF CONFIRMED BY INSTRUMENTATION.
- 5 SIZE AND DETAIL OF TAPPING SHALL BE AS PER APPLICABLE SPECIFICATION FOR CLADDED/LINED/JACKETED PIPING.

- OD : OUTSIDE DIA IN MM
 TYPE TW-6 : ELBOW MIN. 4" DIA. OR LARGER
 TYPE TW-7 : VERTICAL LINE 4" DIA. OR LARGER
 TYPE TW-8 : HORIZONTAL LINE 4" DIA. OR LARGER
 TYPE TW-9 : VERTICAL LINE DIA. LESS THAN 4"
 TYPE TW-10: HORIZONTAL LINE DIA. LESS THAN 4"

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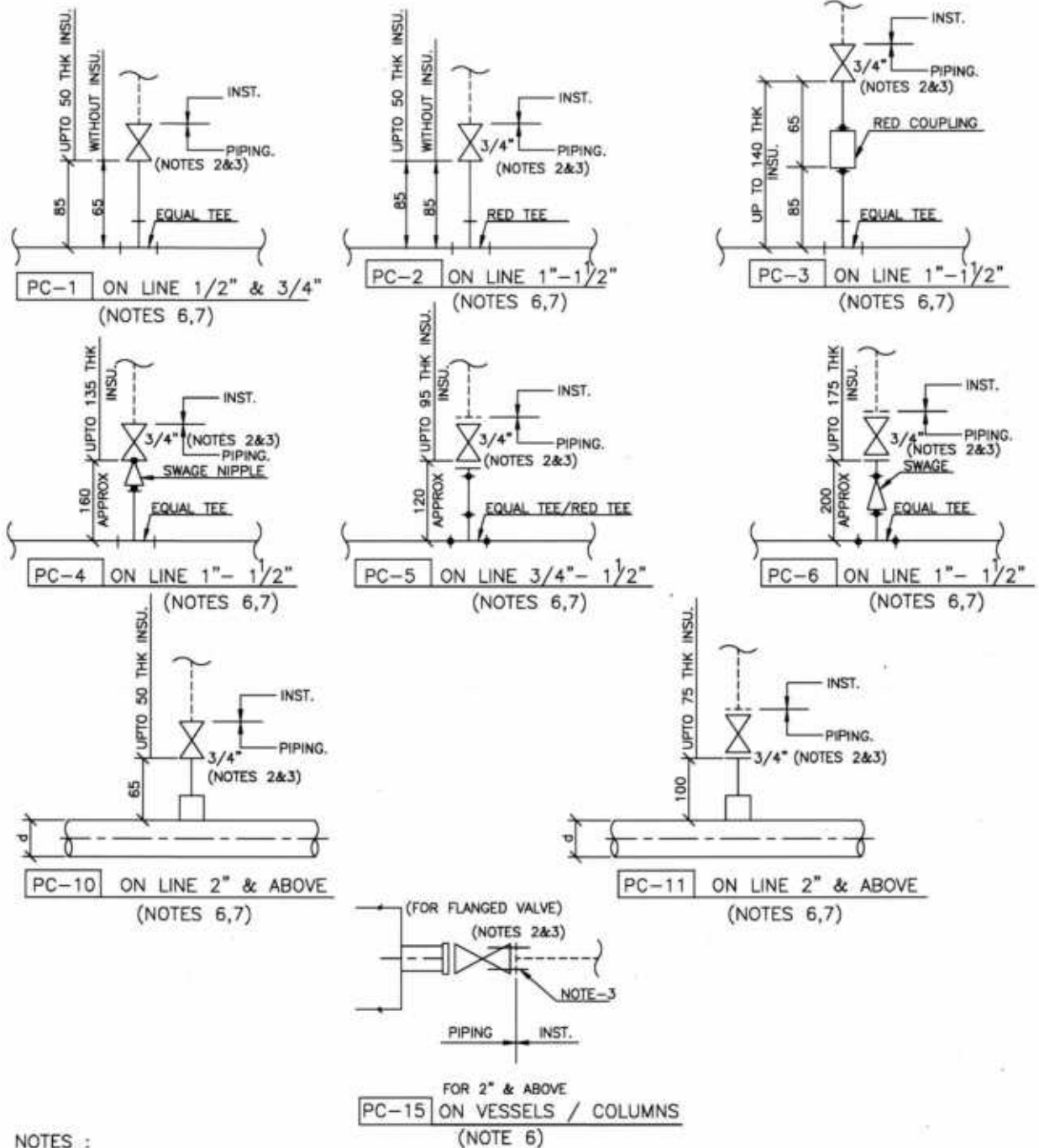
NOTES:-

- 1 BOLTS, NUTS AND GASKETS BY PIPING.
- 2 BRANCH FITTING SHALL BE AS PER PMS.
- 3 THE ARRANGEMENT CAN BE USED FOR DOWNWARD FLOW ALSO, IF CONFIRMED BY INSTRUMENTATION.
- 4 SIZE AND DETAIL OF TAPPING SHALL BE AS PER APPLICABLE SPECIFICATION FOR CLADDED/LINED/JACKETED PIPING.

LINE DIA.	MINIMUM CLEARANCE FOR REMOVAL
4"	630
6"	630
8"	670
10"	670
12"	670
14"	670
16"	670
18"	670
20" & ABOVE	750
VESSELS	750

- DD : OUTSIDE DIA IN MM
- TYPE TW-1 : ELBOW MIN. 4" # OR LARGER
- TYPE TW-2 : VERTICAL LINE 4" # OR LARGER
- TYPE TW-3 : HORIZONTAL LINE 4" # OR LARGER
- TYPE TW-4 : VERTICAL LINE DIA. LESS THAN 4"
- TYPE TW-5 : HORIZONTAL LINE DIA. LESS THAN 4"

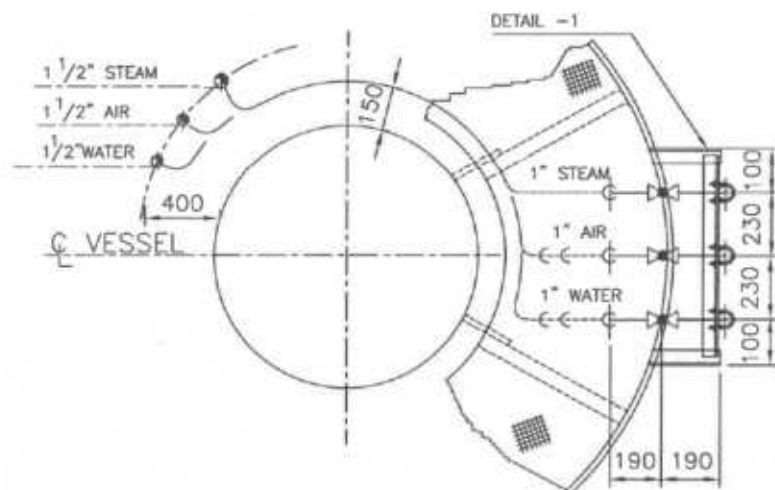
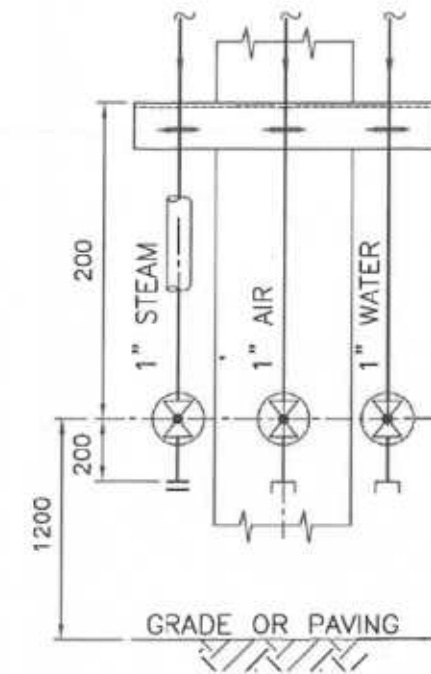
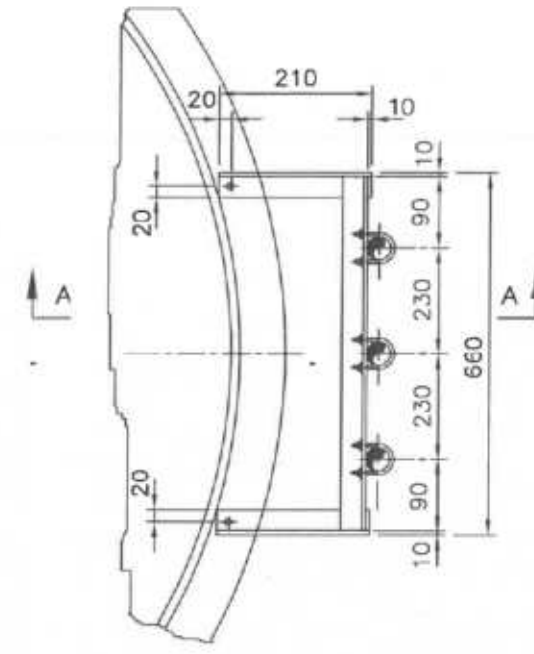
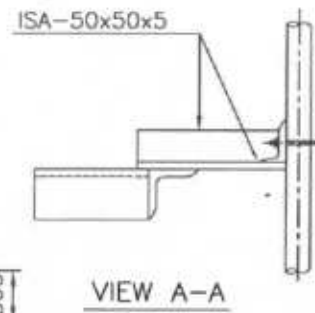
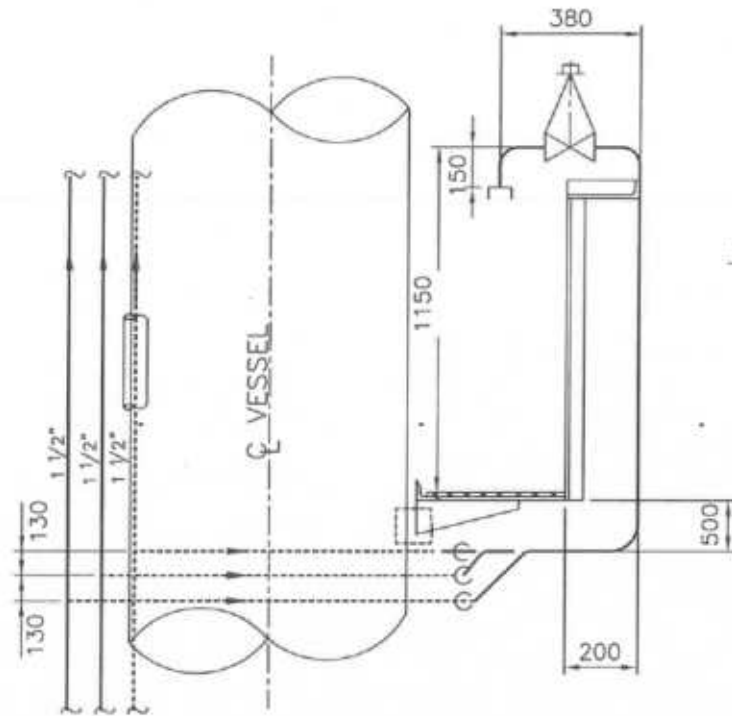
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
6	20.06.22	REVISED & ISSUED AS STANDARD	PK	SH	GB	SM
5	24.01.20	REVISED & ISSUED AS STANDARD	SG	SH	MI	RKT



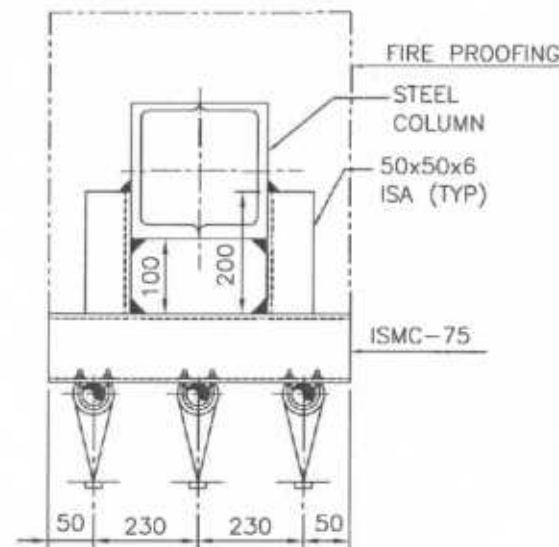
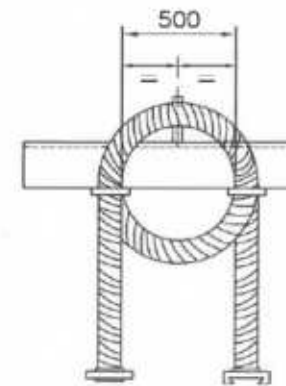
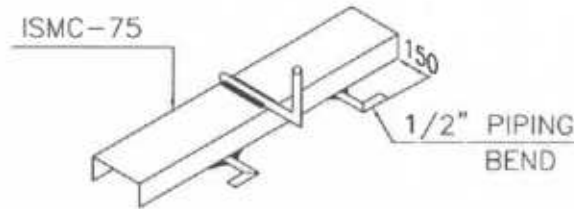
NOTES :

1. THE INDICATED DIMENSIONS ARE MINIMUM WHICH ALSO COVER INSULATION TO THE EXTENT SHOWN ABOVE. IN CASE OF HIGHER THICKNESS OF INSULATION THAN INDICATED THE DIFFERENCE SHALL BE ADDED IN THE DIMENSIONS SHOWN ABOVE.
2. PRESSURE TAPPING SHALL BE PROVIDED WITH VALVE SIMILAR TO LINE ISOLATION VALVE (GATE, BALL OR PLUG VALVE ETC., WITH FLGD, S.W. OR SCR'D ENDS) UNLESS OTHERWISE SPECIFIED IN PMS, TEE(EQUAL OR REDUCING)/HALF COUPLING(S.W. OR SCR'D)/STUB IN/SOCKOLET/WELDOLET SHALL BE AS PER PIPING MATERIAL SPECS. DOUBLE ISOLATION VALVE SHALL BE USED FOR CLASS 900 & ABOVE.
3. IN CASE OF FLGD VALVES BOLTING & GASKET ON BOTH SIDES OF VALVE SHALL BE IN PIPING SCOPE
4. IN CASE OF TAPPING PROVIDED OTHER THAN INDICATED IN THIS STD FOR LAYOUT REASONS DETAILED DIMENSIONS WILL BE CALLED OUT.
5. IN CASE OF PRE-FABRICATED HOOKUP, ISOLATION VALVE WITH NIPPLE SHALL BE SUPPLIED BY PREFABRICATION VENDOR HOWEVER, 3/4" WELDOLET/SOCKOLET/HALF COUPLING/EQUAL TEE/RED. TEE ETC. AS PER PMS SHALL BE IN PIPING SCOPE.
6. VALVE STEM ORIENTATION TO BE AT OR ABOVE 45° ABOVE THE HORIZONTAL POSITION IN LIQUID CRYOGENIC SERVICE.
7. FOR LIQUID CRYOGENIC SERVICE ADDITIONAL 45°/90° ELBOW TO BE INTRODUCED TO ENSURE REQUIREMENT GIVEN IN NOTE-6 IS MET.

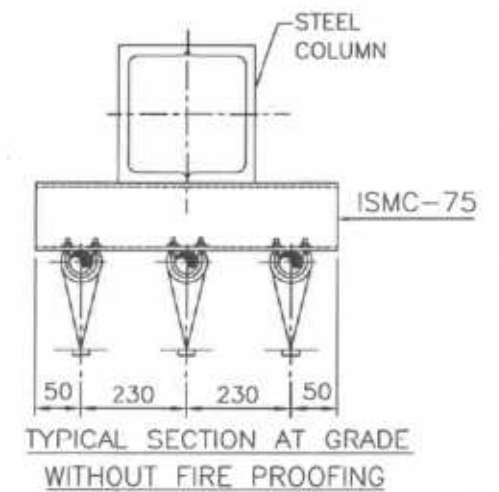
6	20.06.22	REVISED & ISSUED AS STANDARD	PK	SH	GB	SM
5	24.01.20	REAFFIRMED & ISSUED AS STANDARD	SG	SH	MI	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
Approved by						



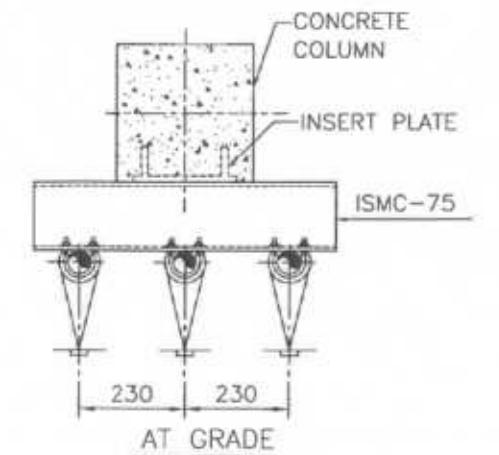
UTILITY HOSE STATION ON VESSEL PLATFORM



TYPICAL SECTION AT GRADE WITH FIRE PROOFING



TYPICAL SECTION AT GRADE WITHOUT FIRE PROOFING



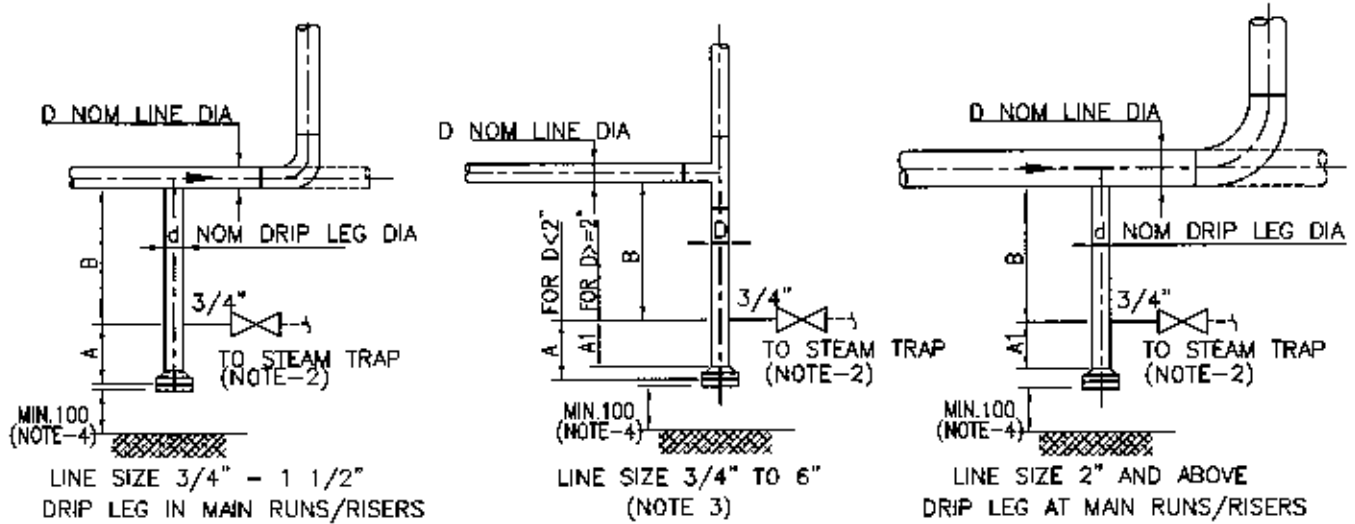
AT GRADE

THE HOSE SUPPORT WHEN REQD. SHALL BE MOUNTED AS CLOSE AS POSSIBLE. HOSE STATION ORIENTATION AND POSITION SHALL BE DECIDED CASE BY CASE.

NOTES:

- HOSE STATIONS AT GRADE SHALL BE SO LOCATED THAT AREAS TO BE SERVED CAN BE REACHED WITH A 15M HOSE.
- SERVICE POINTS SHALL ALWAYS BE GROUPED STEAM, AIR & WATER IN THAT ORDER FROM LEFT TO RIGHT.
- THE SIZE OF LINES SHALL BE AS GIVEN IN THIS STD. UNLESS OTHERWISE SPECIFIED ON P&ID.

6	31.12.24	REAFFIRMED & ISSUED AS STANDARD	PK	SH	GB	MN
5	06.12.19	REAFFIRMED & ISSUED AS STANDARD	SG	SH	MI	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Approved by	

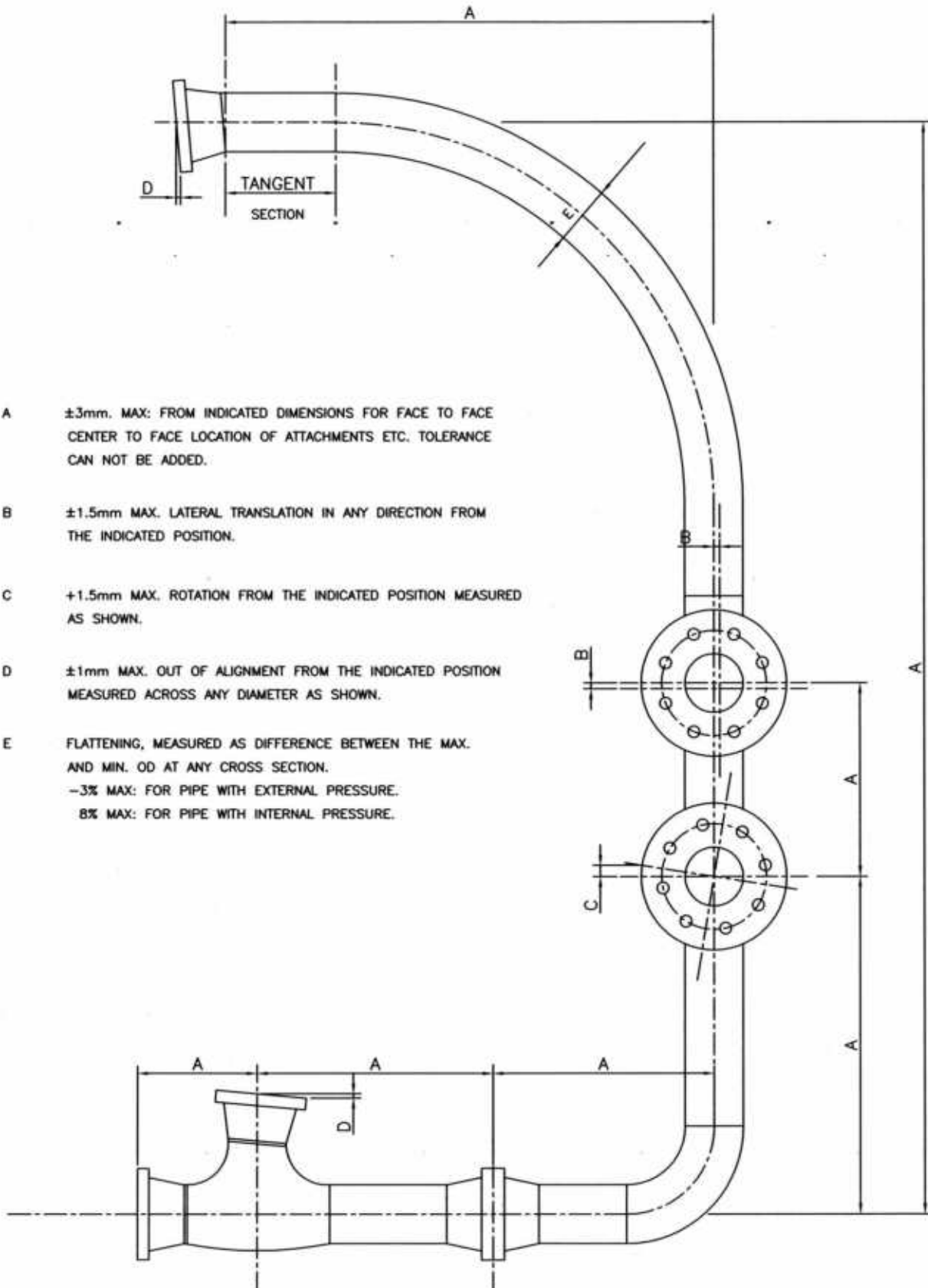


NOM LINE DIA D INCH	NOM DRIP LEG DIA d INCH	A MM	A1 MM	B MM
3/4"	3/4"	125	X	100
1"	1"	125		100
1 1/2"	1 1/2"	125		125
2"	2"	X	75	150
3"	3"		75	150
4"	4"		75	175
6"	4"		75	175
8"	4"		75	175
10"	6"		75	175
12"	6"		75	175
14"	8"		75	175
16"	8"		75	175
18"	10"		75	175
20"	10"		75	175
24" & ABOVE	12"		75	175

NOTES :-

- DELETED
- ALL PIPES, VALVES, FLANGES, FITTINGS, BRANCH-OFFS ETC. SHALL BE IN ACCORDANCE WITH PROJECT PIPING MATERIAL SPECIFICATIONS.
- THIS ARRANGEMENT MAY BE USED ONLY IN CASE OF SPACE CONSTRAINT. SUPPORTING ARRANGEMENT SHALL BE REVIEWED IN DETAIL TO ENSURE THAT THERE IS NO FOULING BETWEEN SUPPORT PEDESTAL AND BLIND FLANGE ASSEMBLY.
- BOTTOM OF PIPE ELEVATION SHALL BE MINIMUM 600MM FROM GRADE. IN CASE OF RATINGS BEYOND CLASS 600 AND SIZES BEYOND 8", BOTTOM OF PIPE SHALL BE FIXED TO ENSURE MINIMUM 100MM CLEARANCE FROM GRADE.

6	24.08.2021 REVISED & ISSUED AS STANDARD	SG	SH	OB	SM	
5	06.12.2019 REAFFIRMED & ISSUED AS STANDARD	SG	SH	MI	RKT	
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman



- A $\pm 3\text{mm}$ MAX: FROM INDICATED DIMENSIONS FOR FACE TO FACE CENTER TO FACE LOCATION OF ATTACHMENTS ETC. TOLERANCE CAN NOT BE ADDED.
- B $\pm 1.5\text{mm}$ MAX. LATERAL TRANSLATION IN ANY DIRECTION FROM THE INDICATED POSITION.
- C $+1.5\text{mm}$ MAX. ROTATION FROM THE INDICATED POSITION MEASURED AS SHOWN.
- D $\pm 1\text{mm}$ MAX. OUT OF ALIGNMENT FROM THE INDICATED POSITION MEASURED ACROSS ANY DIAMETER AS SHOWN.
- E FLATTENING, MEASURED AS DIFFERENCE BETWEEN THE MAX. AND MIN. OD AT ANY CROSS SECTION.
 -3% MAX: FOR PIPE WITH EXTERNAL PRESSURE.
 8% MAX: FOR PIPE WITH INTERNAL PRESSURE.

6	22.01.24	REAFFIRMED & ISSUED AS STANDARD	PK	SH	BB	MN
5	31.12.18	REAFFIRMED & ISSUED AS STANDARD	PK	SH	MI	RKT
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by
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OVERHEAD CLEARANCES :

Equipment, structure, platforms, piping & its supports shall be arranged to provide the following clearances overhead :

Over rail roads, top of rail to bottom of any obstruction	7 m
Over plant roads for major mobile equipment	7 m
Over secondary roads (bottom of pipe) and access ways for mobile equipment	5 m
Over grade & bottom of pipe (inside battery limit) at pump row access way	3.5 m
Over walk-ways, pass-ways & platforms to nearest obstruction and inside building	2.2 m
Over exchangers at grade, shell cover channel end	1.5 m
Clearance below offsite Pipe rack	2.2 m

HORIZONTAL CLEARANCES:

Between exchangers (aisles between piping)	0.9 m
Around pumps (aisles between piping)	0.9 m
Fired heaters to pumps handling flammable stock	1.5 m
Fired heaters to other flammable containing equipment not closely associated with heaters	1.5 m
At driver end of pumps, where truck access is required	3 m
At driver end of pumps, where truck access is not required	1.8 m
At shell cover end of exchangers at grade, for access way	1.3 m
Between shells of adjacent horizontal vessels	1.2 m

4	23.09.20	REAFFIRMED & ISSUED AS STANDARD				
3	01.07.15	REAFFIRMED & ISSUED AS STANDARD	SH	AK	RN	SC
Rev. No	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
Approved by						

PIPE BERTHING :

Under ground	300 mm minimum clear gap between pipes
Above ground	Normal- Flange to bare pipe (or insulation) plus 25 mm

EQUIPMENT SPACING :

Small pumps (3.7 kw & less)	Mounted on common foundations Suitable centre to centre distance
Medium pumps (22.5 kw & less)	900 mm clear aisle
Larger pumps (above 22.5 kw)	900 mm clear aisle
Exchangers and other equipment on structures	900 mm minimum clear aisle

PLATFORMS :

Towers, vertical & horizontal vessels :

Distance of platform below centreline of manhole flange - side platform	900-1050 mm
Width of manhole platform from manhole cover to outside edge of platform	900 mm
Platform extension beyond centreline of manhole - side platform	900 mm
Distance of platform below underside of flange - head platform	175 mm
Width of platform from three sides of manhole - head platform	750 mm





4	23.09.20	REAFFIRMED & ISSUED AS STANDARD	FK	SH	SS	SM
3	01.07.15	REAFFIRMED & ISSUED AS STANDARD	SH	AK	RN	SC
Rev. No	Date	Purpose	Prepared by	Checked by	Std. Committee Convener	Std. Bureau Chairman
						Approved by

HORIZONTAL EXCHANGER :

Clearance in front of channel or bonnet flange	1200 mm
Heat exchanger tube bundle removal space	Bundle length+1 m
Min. clearance from edge of flanges	300 mm

VERTICAL EXCHANGER :

Distance of platform below top flange of channel or bonnet	1500 mm
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4	23.09.20	REAFFIRMED & ISSUED AS STANDARD				
3	01.07.15	REAFFIRMED & ISSUED AS STANDARD	SH	AK	RN	SC
Rev. No	Date	Purpose	Prepared by	Checked by	Std. Committee Convenor	Std. Bureau Chairman
						Approved by


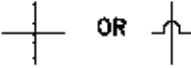
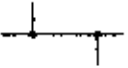
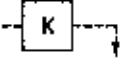
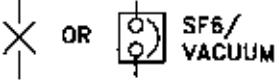






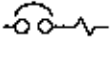

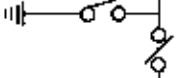


ACCESSIBILITY FOR VALVES AND INSTRUMENTS


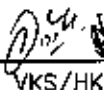
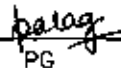

VALVES, INSTRUMENTS, EQUIPMENT TO BE OPERATED	CENTRE LINE OF ITEM TO BE OPERATED, LOCATED LESS THAN 3.6m ABOVE GRADE, 2.75m ABOVE FLOOR OR PLATFORM OR 1.8m ABOVE WING PLATFORM	CENTRE LINE OF ITEM TO BE OPERATED, LOCATED MORE THAN 3.6m ABOVE GRADE, 2.75m ABOVE FLOOR OR PLATFORM OR 1.8m ABOVE WING PLATFORM
EXCHANGER HEADS	NIL	PLATFORM
OPER. VALVES 2" & SMALLER	FIXED LADDER	FIXED LADDER
OPER. VALVES 3" & ABOVE	PLATFORM	PLATFORM
MOTOR OPERATED VALVES	PLATFORM	PLATFORM
CONTROL VALVES	PLATFORM	PLATFORM
RELIEF VALVES 2" & SMALLER	FIXED LADDER	FIXED LADDER
RELIEF VALVES 3" & ABOVE	PLATFORM	PLATFORM
BLOCK VALVES 2" & SMALLER	PORTABLE LADDER	PLATFORM
BLOCK VALVES 3" & ABOVE	PLATFORM (NOTE-1)	PLATFORM (NOTE-1)
BATTERY LIMIT VALVES	PLATFORM	PLATFORM
PRESSURE INSTRUMENT	FIXED LADDER IF ABOVE 2.2 m HEIGHT	FIXED LADDER
TEMPERATURE INSTRUMENT	FIXED LADDER IF ABOVE 2.2 m HEIGHT	FIXED LADDER
SAMPLE POINTS	PLATFORM	PLATFORM
GAUGE GLASSES	FIXED LADDER	FIXED LADDER
LEVEL CONTROLLERS	PLATFORM	PLATFORM
PROCESS BLINDS & SPACERS 2" & SMALLER	PORTABLE LADDER / PLATFORM	PLATFORM
PROCESS BLINDS & SPACERS 3" & ABOVE	PLATFORM	PLATFORM
MANWAYS / MANHOLES	PLATFORM	PLATFORM
HANDHOLES/ INSPECTION HOLES	PLATFORM	PLATFORM
NOZZLES	NO ACCESS REQD. (NOTE-2)	NO ACCESS REQD. (NOTE-2)
VESSEL VENTS	PORTABLE LADDER	FIXED LADDER
LINE DRAINS & VENTS	PORTABLE LADDER	PORTABLE LADDER
ORIFICE FLANGES	PORTABLE LADDER	PORTABLE LADDER


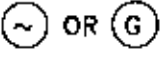















NOTE -1 : BLOCK VALVES WITH CENTRELINE LOCATED ABOVE 2m FROM THE OPERATING FLOOR, WHICH ARE REQUIRED FOR NORMAL OPERATION SHALL BE PROVIDED WITH PORTABLE PLATFORM OR CHAIN FOR OPERATION OF VALVES.

NOTE-2 : TEMPORARY ARRANGEMENT FOR ACCESS SHOULD BE FEASIBLE.

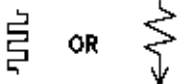
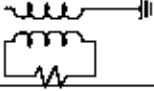













4	23.09.20	REAFFIRMED & ISSUED AS STANDARD	PK	SH	SB	SM
3	01.07.15	REAFFIRMED & ISSUED AS STANDARD	SH	AK	RN	SC
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
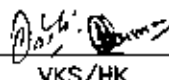
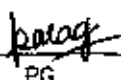

	BUS
	CROSSING OF CONDUCTORS—NOT CONNECTED
	CONNECTIONS OF CONDUCTORS
	KEY INTERLOCK, K—KEY, ARROW TERMINATES AT DEVICE
	SF6 / VACUUM CIRCUIT BREAKER
	AIR CIRCUIT BREAKER
	DRAWOUT FEATURE
	CABLE GLAND
	AIR BREAK ISOLATOR/DISCONNECT SWITCH
	OIL IMMERSED ISOLATOR/DISCONNECT SWITCH
	FUSE
	AIR CIRCUIT BREAKER WITH INHERENT RELEASES
	DOUBLE BREAK ISOLATOR
	ISOLATOR WITH EARTH SWITCH
	LIGHTNING ARRESTOR
	CONTACTOR

5	01.11.21	REAFFIRMED & ISSUED AS STANDARD				
5	08.11.16	UPDATED & ISSUED AS STANDARD	JSK	VKS/HK	PG	SM
5	08.11.16	UPDATED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN
4	27.06.11	REAFFIRMED & ISSUED	BP	RKS/RSC	UAP	DM
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					Approved by	

	PERMANENT MAGNET GENERATOR
	GENERATOR-DESCRIPTION AS INDICATED
	INDUCTION MOTOR
	SYNCHRONOUS MOTOR
	MINIATURE CIRCUIT BREAKER (MCB)
	MINIATURE CIRCUIT BREAKER WITH EARTH LEAKAGE CIRCUIT BREAKER (MCB + ELCB)
	MOULDED CASE CIRCUIT BREAKER (MCCB)
	RECTIFIER
	INVERTER
	DC - DC CONVERTER
	STATIC VOLTAGE REGULATOR
	AUTOMATIC VOLTAGE REGULATOR
	PUSH BUTTON STATION / LOCAL CONTROL STATION
	PUSH BUTTON STATION WITH AMMETER
	PUSH BUTTON STATION WITH INDICATING LAMP
	CAPACITOR, VARIABLE CAPACITOR
	

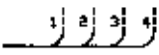

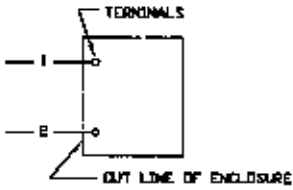










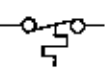
6	01.11.21	REAFFIRMED & ISSUED AS STANDARD	JSK	VKS/HK	PG	SM
5	08.11.16	UPDATED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN
4	27.06.11	REAFFIRMED & ISSUED	BP	RKS/RSC	UAP	DM
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						Approved by

	NEUTRAL GROUNDING RESISTOR
	NEUTRAL GROUNDING TRANSFORMER
	TWO WAY SELECTOR SWITCH
	THREE WAY SELECTOR SWITCH
	TIME DELAY RELAY
	DISTANCE PROTECTION RELAY
	CHECK SYNCHRONISING RELAY
	27 - UNDER VOLTAGE RELAY 27R - RESIDUAL VOLTAGE CHECK RELAY 27M - UNDER VOLTAGE RELAY (MOTOR PROTECTION) 27C - VOLTAGE HEALTHY CHECK RELAY
	REVERSE POWER RELAY
	LOW FORWARD POWER RELAY
	LOSS OF EXCITATION RELAY
	NEGATIVE PHASE SEQUENCE RELAY
	THERMAL OVERLOAD RELAY
	INSTANTANEOUS OVER CURRENT RELAY
	INSTANTANEOUS EARTH FAULT RELAY

6	01.11.21	REAFFIRMED & ISSUED AS STANDARD				
5	08.11.16	UPDATED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN
4	27.06.11	REAFFIRMED & ISSUED	BP	RKS/RSC	UAP	DM
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51	IDMTL OVER CURRENT RELAY
51G	STANDBY EARTH FAULT RELAY
51N	IDMTL EARTH FAULT RELAY
51V	VOLTAGE RESTRAINED IDMTL OVER CURRENT RELAY
59	OVER VOLTAGE RELAY
60	NEUTRAL DISPLACEMENT RELAY
63TX	AUX. RELAY FOR TRANSFORMER TROUBLE/TRIP
64F	ROTOR EARTH FAULT RELAY
64G	STATOR EARTH FAULT MAIN AND BACKUP RELAY
64R	RESTRICTED EARTH FAULT RELAY
67	DIRECTIONAL OVER CURRENT RELAY
67N	DIRECTIONAL EARTH FAULT RELAY
78	OUT OF STEP RELAY
80	CONTROL SUPPLY SUPERVISION RELAY
81	UNDER FREQUENCY / df/dt RELAY
86	LOCKOUT RELAY



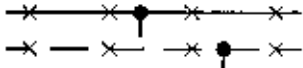






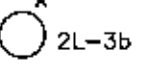
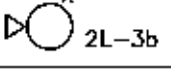
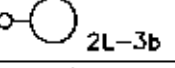
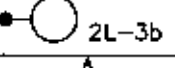
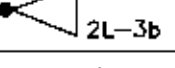


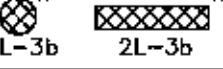
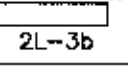



6	01.11.21	REAFFIRMED & ISSUED AS STANDARD	JSK	VKS/HK	PG	SM
5	08.11.16	UPDATED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN
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Rev. No.	Date	Purpose	Prepared by	Checked by	Std. Committee Convener	Std. Bureau Chairman
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	GROUPING OF CONDUCTORS, LINE BEND INDICATES DIRECTION OF CONDUCTOR JOINING CABLE, NUMERAL INDICATES WIRE NUMBER	
	TERMINAL BLOCK 'A', NUMERAL INDICATES TERMINAL NUMBER	
	WIRES DESIGNATED 1 & 2 ARE CONNECTED TO TERMINALS OF AN APPARATUS	
	H - HORN S - SIREN LSP - LOUDSPEAKER	
	RELAY COIL, 2 - INDICATES RELAY NUMBER	
	BREAK CONTACT DELAYED BREAK	
	MAKE CONTACT DELAYED MAKE	
	BREAK CONTACT DELAYED MAKE	
	MAKE CONTACT DELAYED BREAK	
	OPEN CONTACT - THE POSITION OF THE CONTACT IN A RELAY IS SHOWN WITH COIL DE-ENERGISED	
	CLOSED CONTACT - THE POSITION OF THE CONTACT IN A RELAY IS SHOWN WITH COIL DE-ENERGISED	
	MOTOR, 3 PHASE	
	NORMALLY OPEN	TEMPERATURE ACTUATED SWITCH
	NORMALLY CLOSED	






















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	HELD CLOSE	LIMIT SWITCH
	HELD OPEN	
	NORMALLY OPEN (OPEN ON LOW PRESSURE)	VACUUM/ PRESSURE SWITCH
	NORMALLY CLOSE (CLOSED ON LOW PRESSURE)	
	PUSH BUTTON - CLOSING, SINGLE CIRCUIT, MOMENTARY OR SPRING RETURN	
	PUSH BUTTON - OPENING, SINGLE CIRCUIT, MOMENTARY OR SPRING RETURN	
	PUSH BUTTON, TWO CIRCUIT, MOMENTARY OR SPRING RETURN	
	PUSH BUTTON, TWO CIRCUIT, MAINTAINED OR NON-SPRING RETURN	
	SEMICONDUCTOR DIODE	
	SILICON CONTROL RECTIFIER	
	FULL WAVE RECTIFIER	
	FUSE	
	EMERGENCY STOP (MUSHROOM HEAD)	
	STAY PUT EMERGENCY STOP (MUSHROOM HEAD) PUSH BUTTON WITH RESETTING FEATURE	
	EARTH CONNECTION	



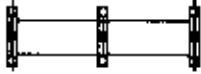

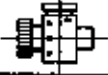



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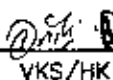
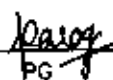

	EARTH CONDUCTOR-EXPOSED] SIZE AS SHOWN OR SPECIFIED ON PLANS
	EARTH CONDUCTOR-BURIED	
	EARTH STRIP / WIRE TAP, SIZE AS SHOWN OR SPECIFIED ON PLANS	
	EARTH ELECTRODE IN TEST PIT	
	DIRECTLY BURIED EARTH ELECTRODE	
	EARTH PLATE	
	LIGHTNING ARRESTOR	
	POLE MOUNTED LIGHTING FIXTURE (IN ELEVATION)	
	LIGHTING FIXTURE (IN ELEVATION)	
	CEILING MOUNTED LIGHTING FIXTURE	
	BRACKET MOUNTED LIGHTING FIXTURE	
	POLE MOUNTED LIGHTING FIXTURE	
	POLE MOUNTED STREET LIGHTING FIXTURE	
	POLE MOUNTED FLOOD LIGHTING FIXTURE	
	DOUBLE OBSTRUCTION AVIATION LIGHTING FIXTURE	
	EMERGENCY LIGHTING FIXTURE	
	CRITICAL LIGHTING FIXTURE	
	FLUORESCENT FIXTURE	
A - FIXTURE TYPE (AS PER DATASHEET FOR LIGHTING FIXTURE SCHEDULE) 2L - LIGHTING PANEL NO. 2, 3 - CIRCUIT NO., b - CONTROLLING SWITCH		
	LP - LIGHTING PANEL 2L - LIGHTING PANEL NO.	
	PP - POWER PANEL 2P - POWER PANEL NO.	
	ELP - EMERGENCY LIGHTING PANEL 2EL - EMERGENCY LIGHTING PANEL NO.	

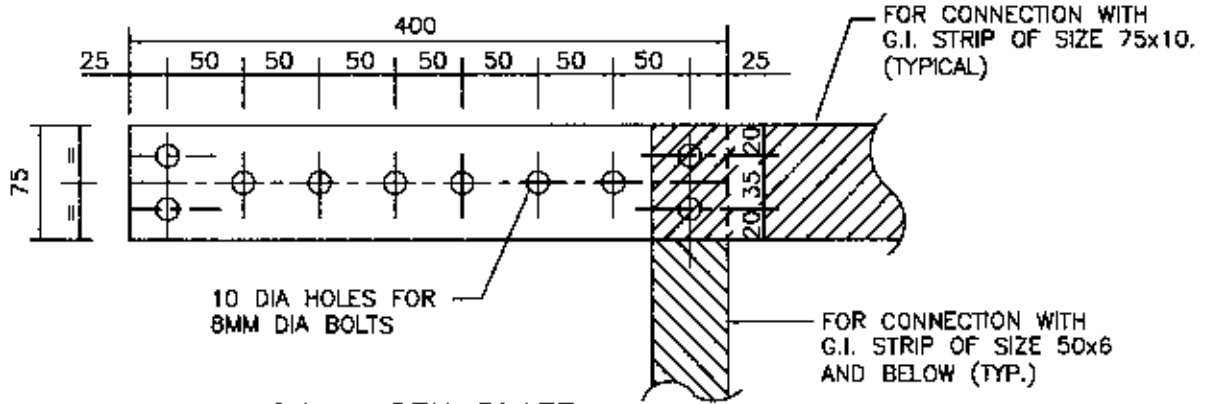
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 MDB-501	MDB – MAIN DISTRIBUTION BOARD MDB-501 – MAIN DISTRIBUTION BOARD NO.
 FLM-1	FLOOD LIGHT MAST-LATTICE STRUCTURE FLM-1 – FLOOD LIGHT MAST NO.
 HM-1	HM – HIGH MAST HM-1 – HIGH MAST NO.
 2e	5A, 240V SINGLE POLE SWITCH 2 – CIRCUIT NO., e – SWITCH NUMBER
	5A, 240V DOUBLE POLE SWITCH
	5A, 240V SINGLE POLE 2 WAY SWITCH
	15A, 240V SINGLE POLE SWITCH
	20A, DP MCB UNIT FOR WINDOW TYPE AC
	CEILING FAN
	AIR CIRCULATOR
	EXHAUST FAN
	5A, 240V, 3/5 PIN SOCKET/RECEPTACLE
	15/5A, 240V, 6 PIN SOCKET/RECEPTACLE
	10A, 240V, 3 PIN INDUSTRIAL TYPE SOCKET/RECEPTACLE
	20A, 240V, 3 PIN INDUSTRIAL TYPE SOCKET/RECEPTACLE
	5A, 24V, 3 PIN SOCKET/RECEPTACLE
	15A, 240V, 3 PIN SOCKET /RECEPTACLE
	415V, 3 PHASE POWER/WELDING RECEPTACLE
	PUSH BUTTON STATION
	LIGHTING JUNCTION BOX (3WAY)
	LIGHTING JUNCTION BOX (4WAY)

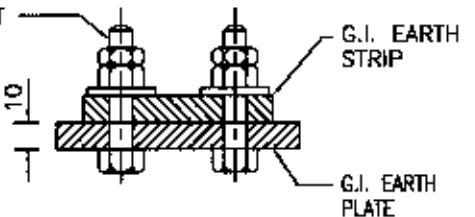
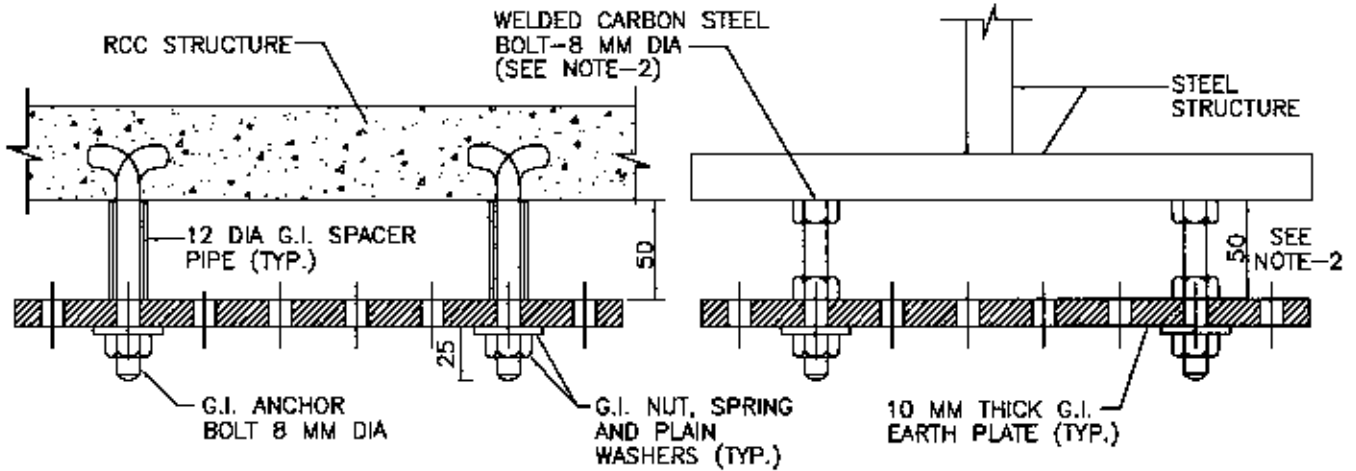
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	2 PIN SOCKET FOR TELEPHONE
	CIRCUIT BREAKER (SWITCHYARD)
	ISOLATOR (SWITCHYARD)
	GANTRY (SWITCHYARD)
	TRANSFORMER (SWITCHYARD)
	POTENTIAL TRANSFORMER (SWITCHYARD)
	CURRENT TRANSFORMER (SWITCHYARD)
	LIGHTNING ARRESTOR (SWITCHYARD)

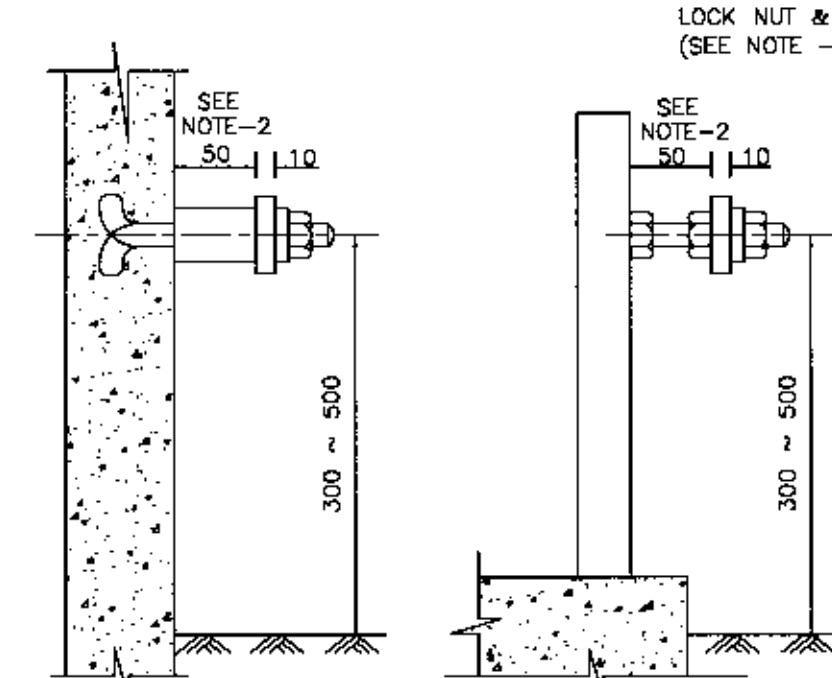
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G.I. EARTH PLATE



**TYPICAL FIXING DETAIL
OF G.I. EARTH STRIP
TO EARTH PLATE**



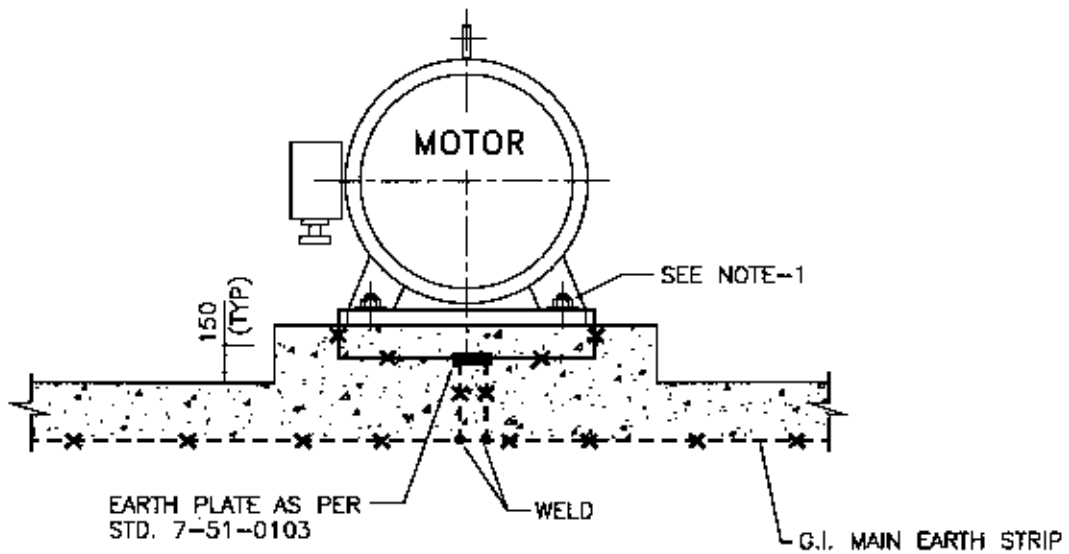
**TYPICAL INSTALLATION
OF EARTH PLATE ON
R.C.C. STRUCTURES**

**TYPICAL INSTALLATION
OF EARTH PLATE ON
STEEL STRUCTURES**

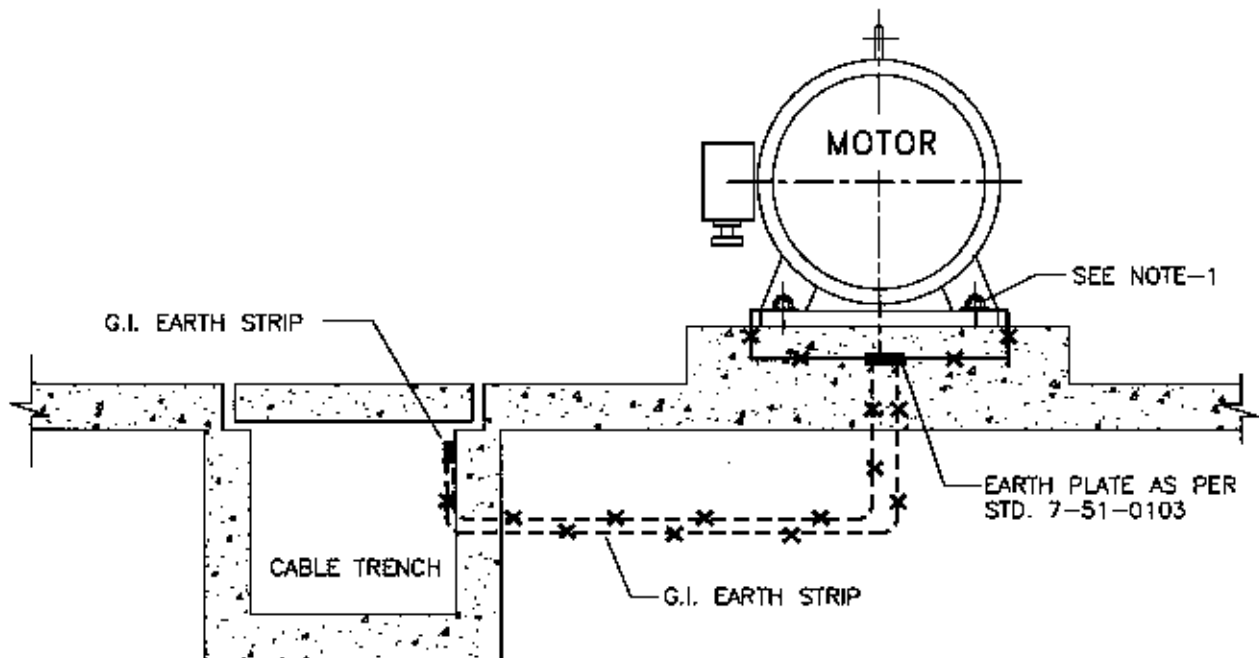
NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. WHERE FIRE PROOFING OF STEEL STRUCTURES ARE ENCOUNTERED LENGTH OF CARBON STEEL BOLTS SHALL BE SUITABLY INCREASED FOR FIXING OF EARTH PLATE.
3. ALL CONNECTIONS WITH EARTH PLATE SHALL BE MADE WITH 8MM DIA. G.I. BOLT, NUT, SPRING AND PLAIN WASHERS.
4. CRIMP TYPE CABLE LUGS SHALL BE USED FOR CONNECTION WITH G.I. WIRE ROPE/CU/AL CABLES.

7	01.11.21	UPDATED & ISSUED AS STANDARD	JSK	VKS/HK	TPG	SM
6	08.11.16	UPDATED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN
5	27.06.11	REAFFIRMED & ISSUED	BP	RKS/RSC	UAP	DM
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DETAIL-1
CONNECTION WITH BURIED EARTH GRID

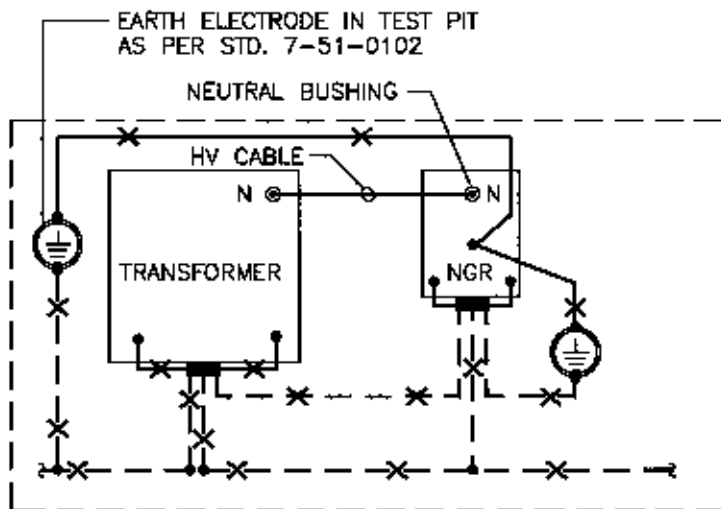
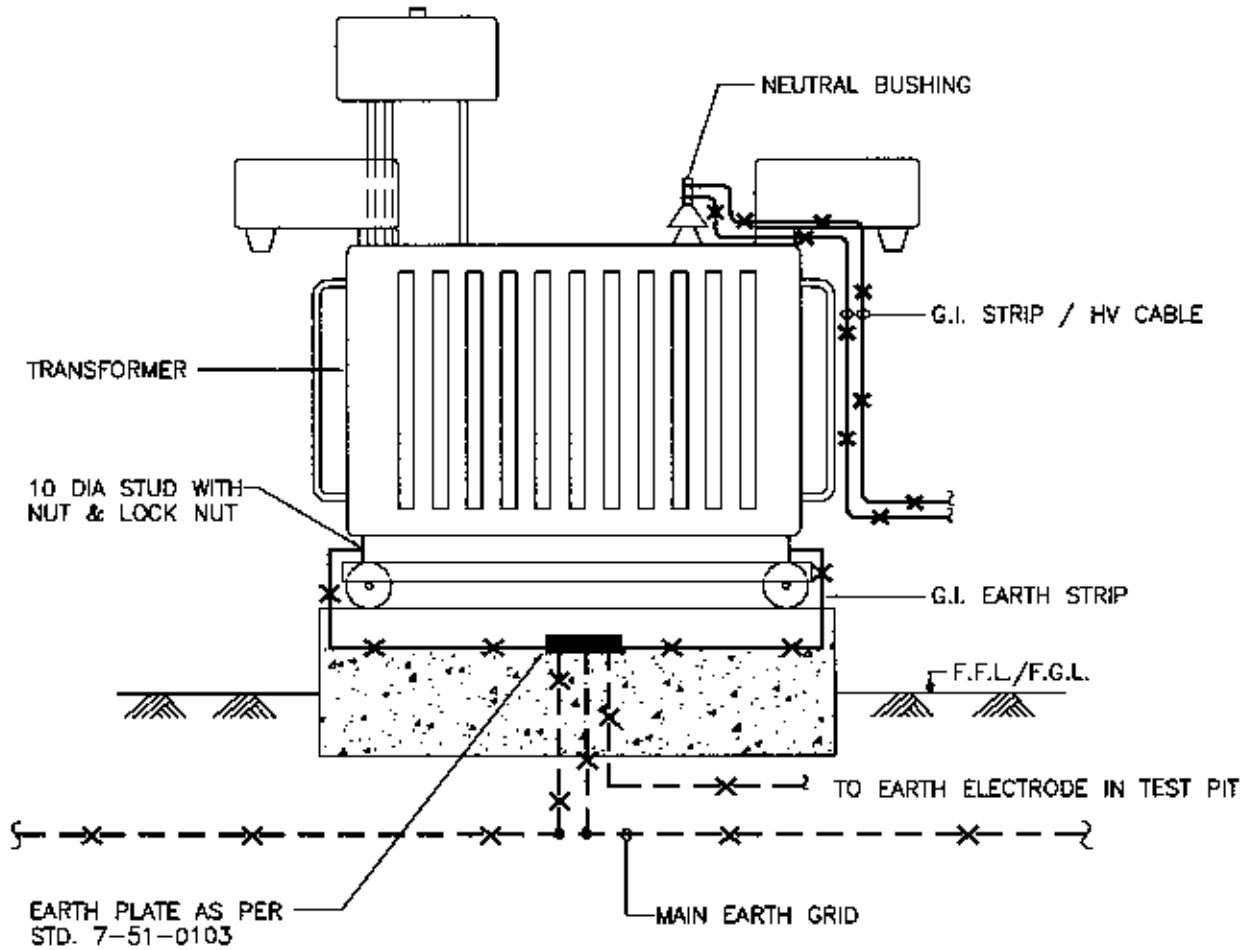


DETAIL-2
CONNECTION WITH EARTH GRID IN RCC TRENCH

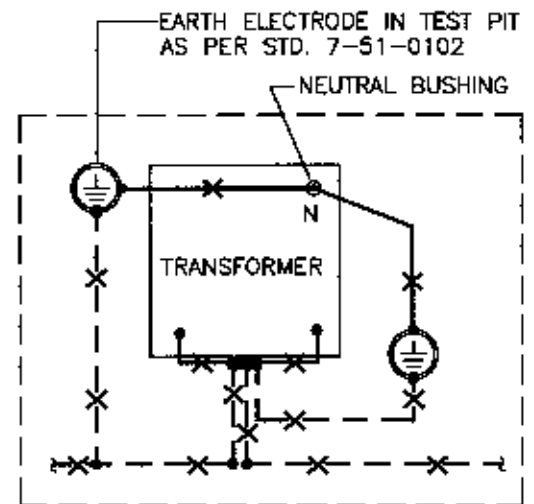
NOTE:-

1. MOTOR FOUNDATION BOLT SHALL NOT BE USED FOR EARTHING.
2. EARTHING OF P.B. STN. INSTALLED NEAR MOTOR FOUNDATION SHALL BE DONE BY TAPPING & SWG G.I. WIRE FROM EARTH PLATE.

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6	01.11.21	REAFFIRMED & ISSUED AS STANDARD	JSK	VKS/HK	PG	SM
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LINE DIAGRAM
NEUTRAL EARTHING THROUGH NGR

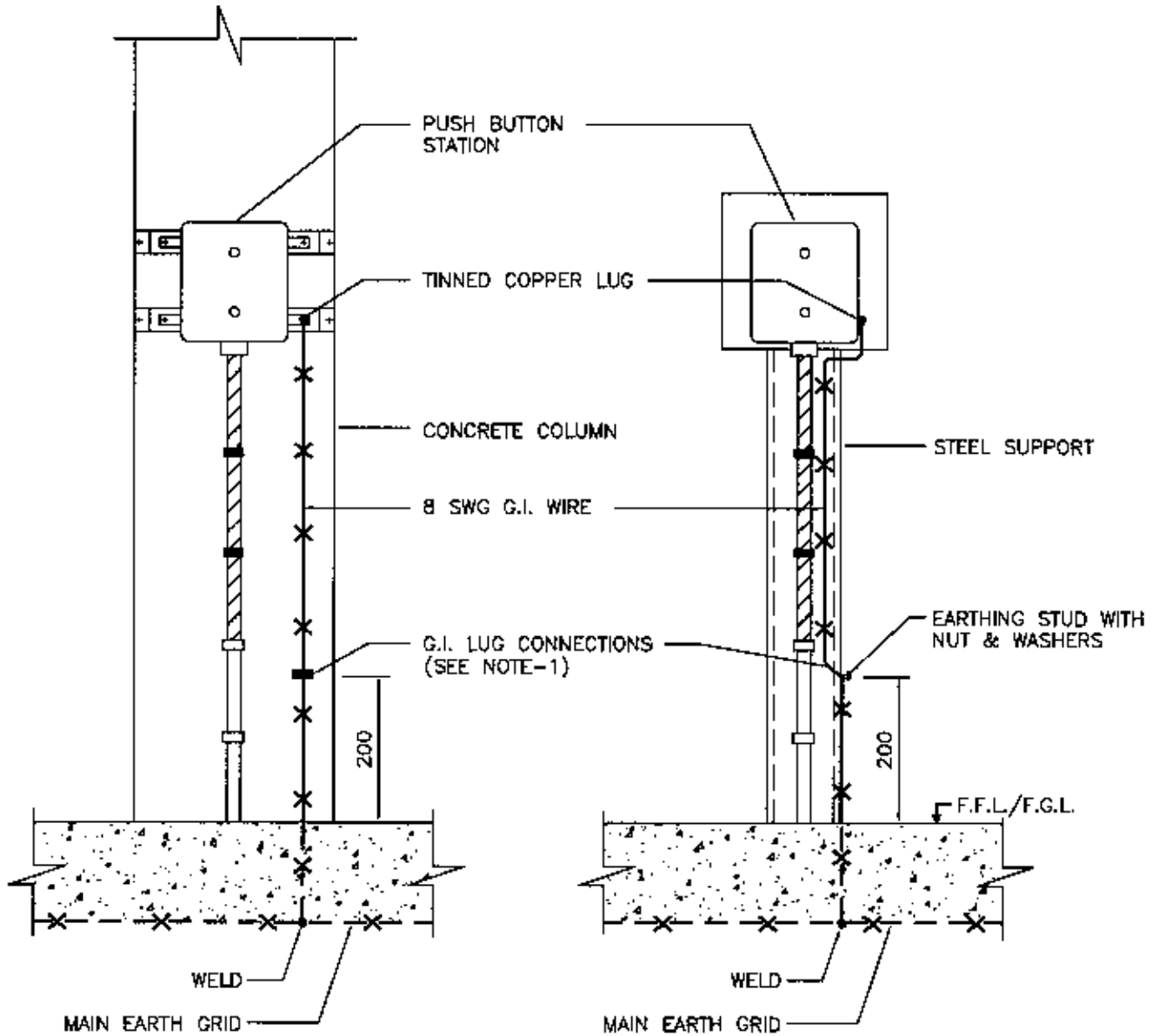


LINE DIAGRAM
SOLID NEUTRAL EARTHING

NOTES:—

1. EARTH ELECTRODE IN TEST PITS SHALL BE SO LOCATED THAT DISTANCE BETWEEN TWO PITS SHALL BE MINIMUM 6 METER.

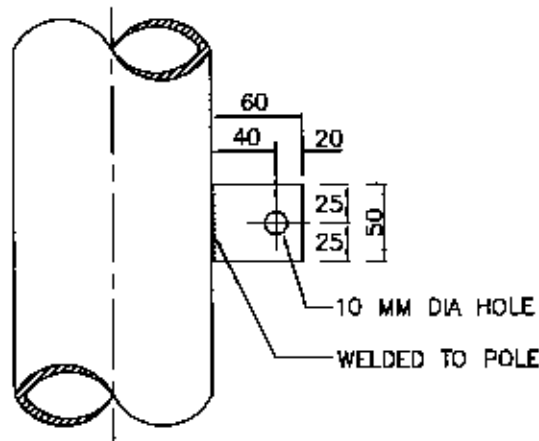
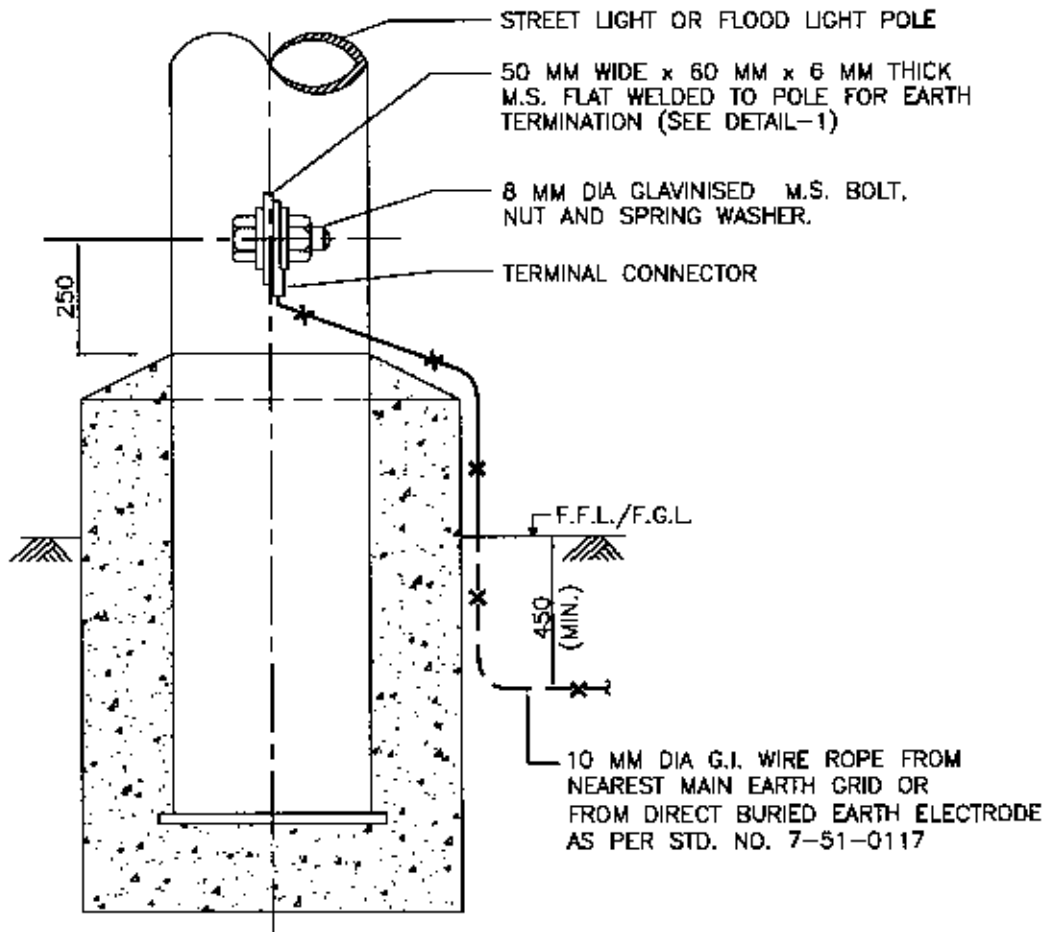
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Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
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NOTES:-

1. ALTERNATIVELY, CONNECTION SHALL BE TAKEN FROM THE NEAREST AVAILABLE EARTH PLATE

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5	08.11.16	REAFFIRMED & ISSUED	BP	FA/HK	BRB	RN
4	27.06.11	REAFFIRMED & ISSUED	BP	RKS/RSC	UAP	DM
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
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DETAIL-1

NOTES:-

1. USE TWO WIRES ROPES IF VOLTAGE IN THE POLE JUNCTION BOX IS 415 VOLTS.

6	01.11.21	REAFFIRMED & ISSUED AS STANDARD	JSK	VKS/HK	IPG	SM
5	08.11.16	REAFFIRMED & ISSUED	BP	FA/HK	BRB	RN
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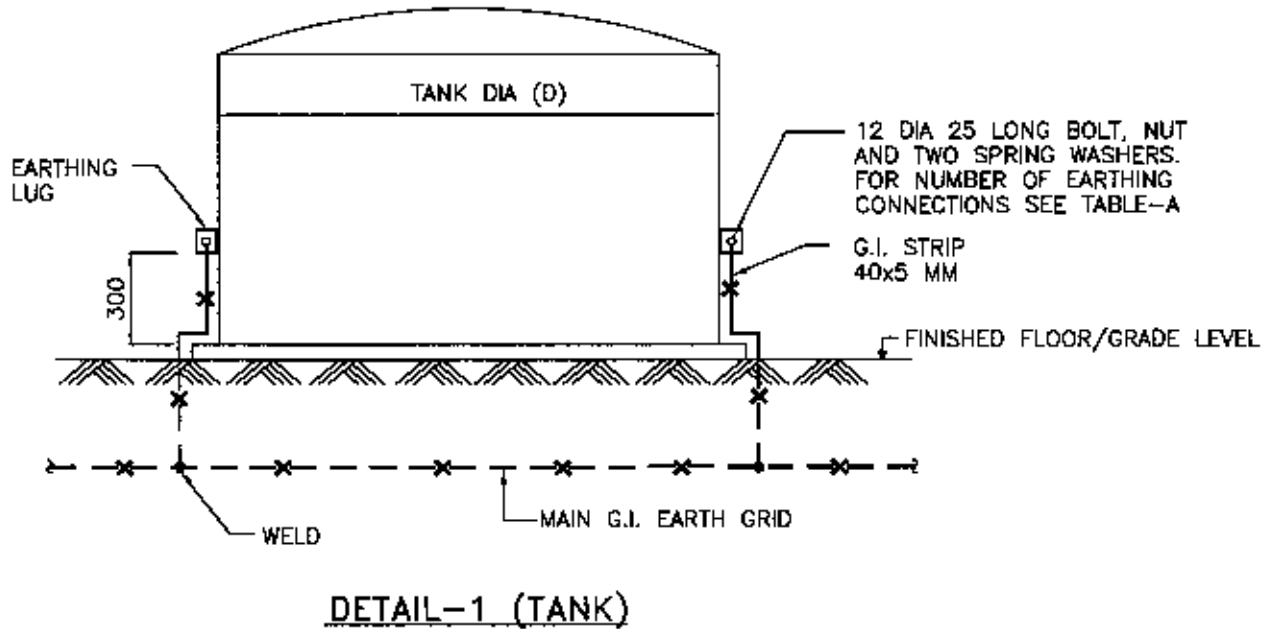
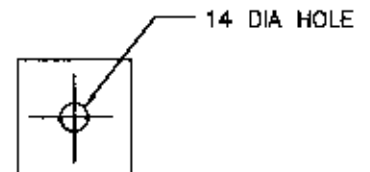


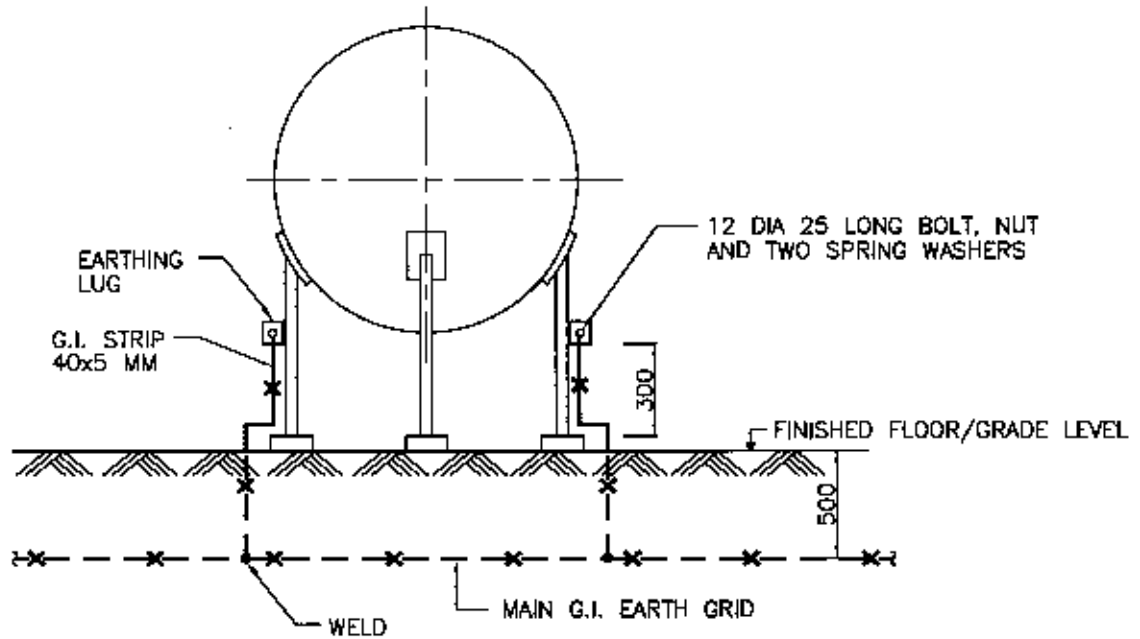
TABLE-A

TANK/SPHERE DIAMETER(D) (IN MTRS)	EARTHING CONNECTION
<15	2 AT 180°
15 < D < 25	3 AT 120°
25 < D < 35	4 AT 90°
35 < D < 45	5 AT 72°
45 < D < 55	6 AT 60°
55 < D < 65	7 AT 51.43°
65 < D < 75	8 AT 45°
75 < D < 85	9 AT 40°
85 < D < 95	10 AT 36°

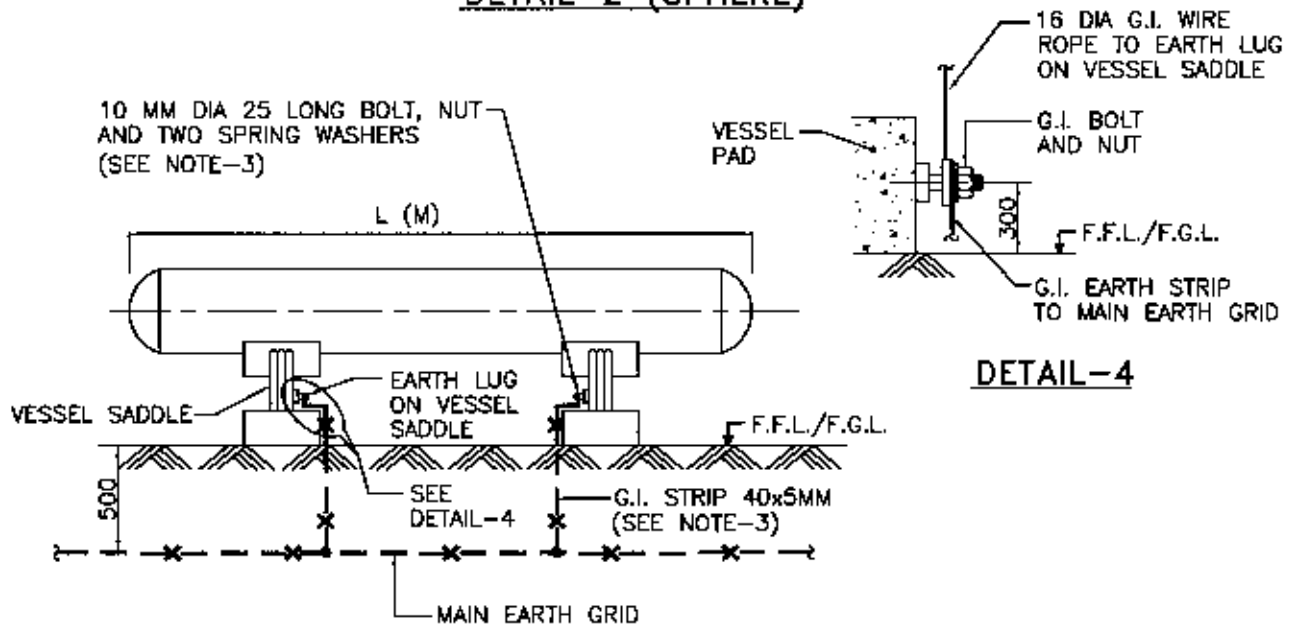


**EARTH LUG ON TANK
BY TANK FABRICATOR**

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DETAIL-2 (SPHERE)



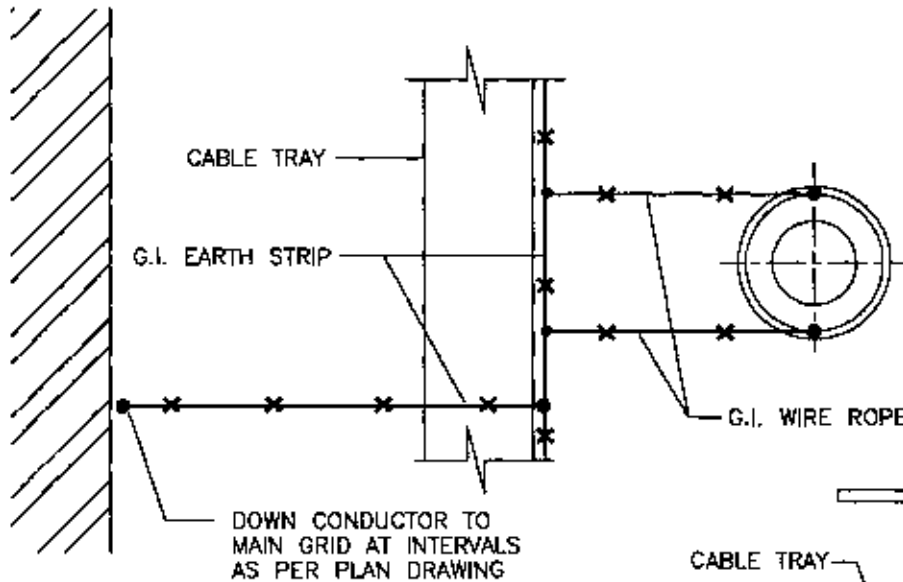
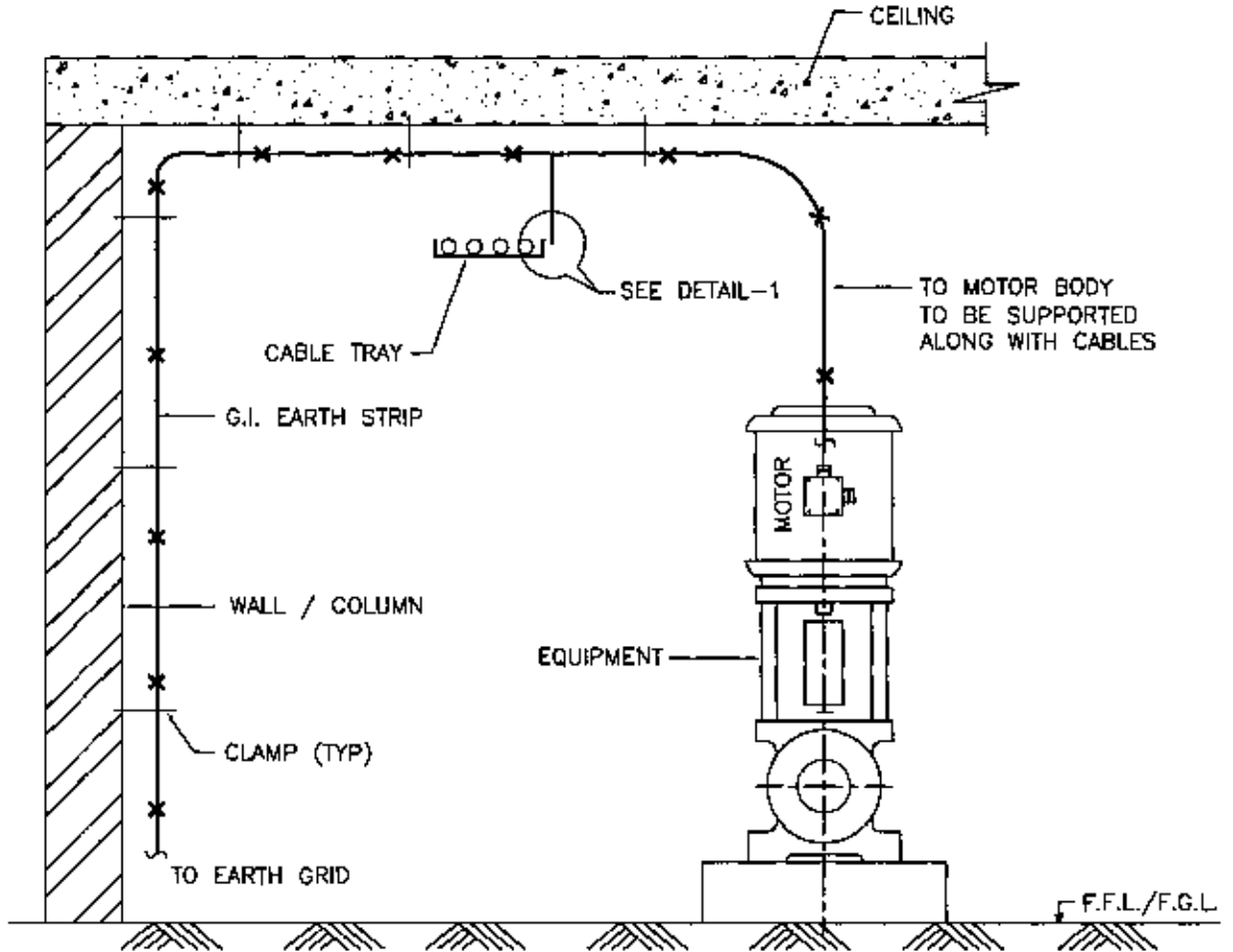
DETAIL-4

DETAIL-3 (HORIZONTAL VESSEL)

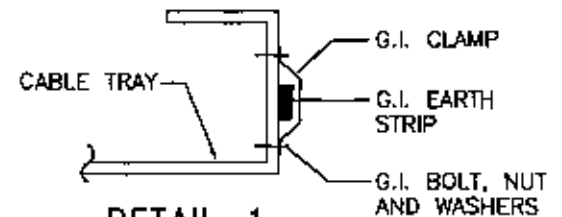
NOTES:-

1. FOR VESSELS TWO NOS. OF DIAMETRICALLY OPPOSITE EARTHING LUGS WILL BE AVAILABLE ON LEG SUPPORTS OF EQUIPMENT FOR PROVIDING EARTH CONNECTION.
2. ALL VESSELS SHALL HAVE TWO EARTH CONNECTIONS IN GENERAL.
3. HORIZONTAL VESSEL OF LENGTH MORE THAN 20 METERS :-
TWO EARTH LUGS ARE PROVIDED ON EACH SADDLE OF HORIZONTAL VESSELS, ACCORDINGLY THERE SHALL BE TWO EARTH CONNECTIONS TO THE EARTH GRID FROM EACH SADDLE.

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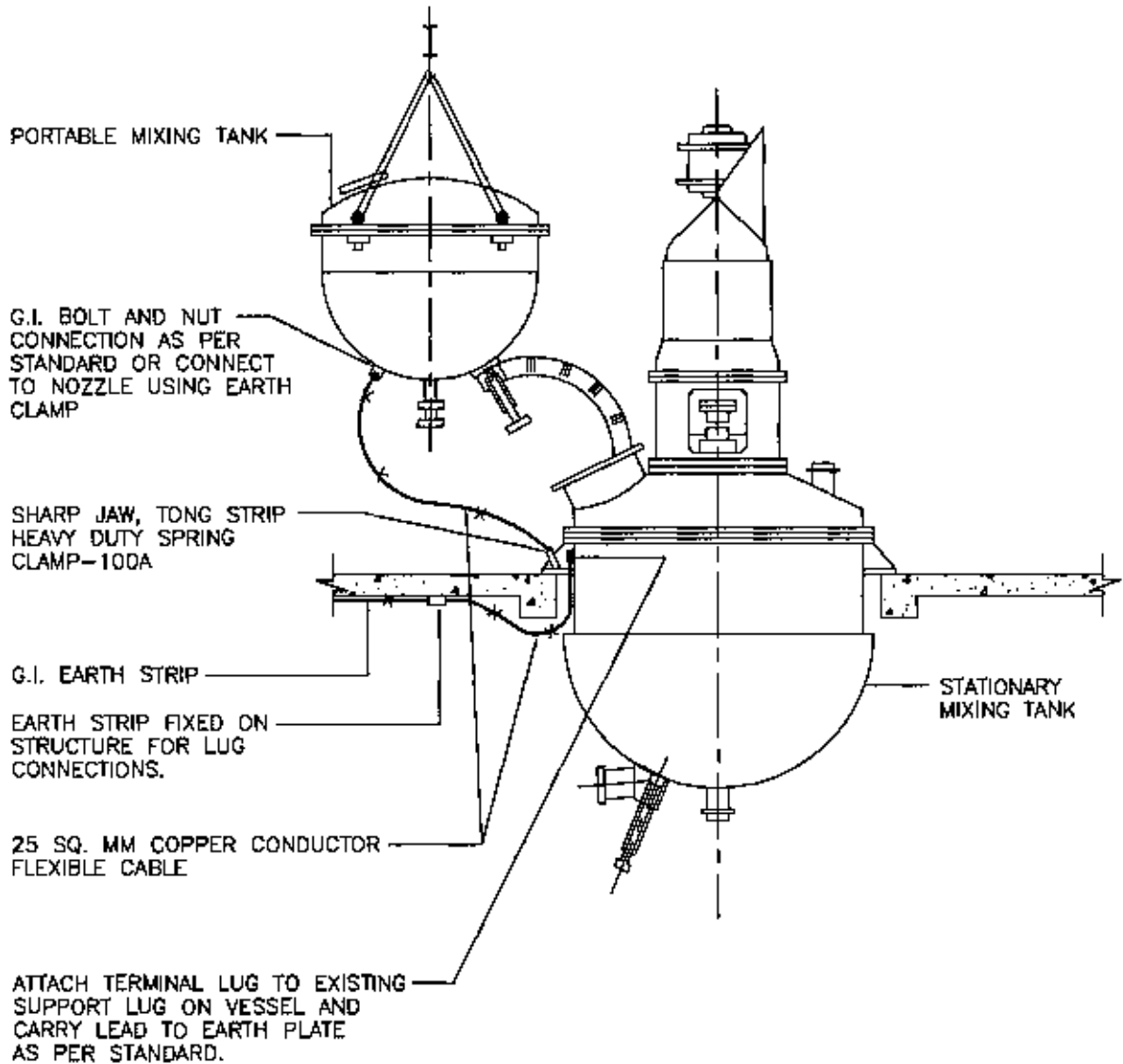
PLAN VIEW



DETAIL-1

6	29.11.21	REAFFIRMED & ISSUED AS STANDARD	JSK	VKS/HK	PG	SM
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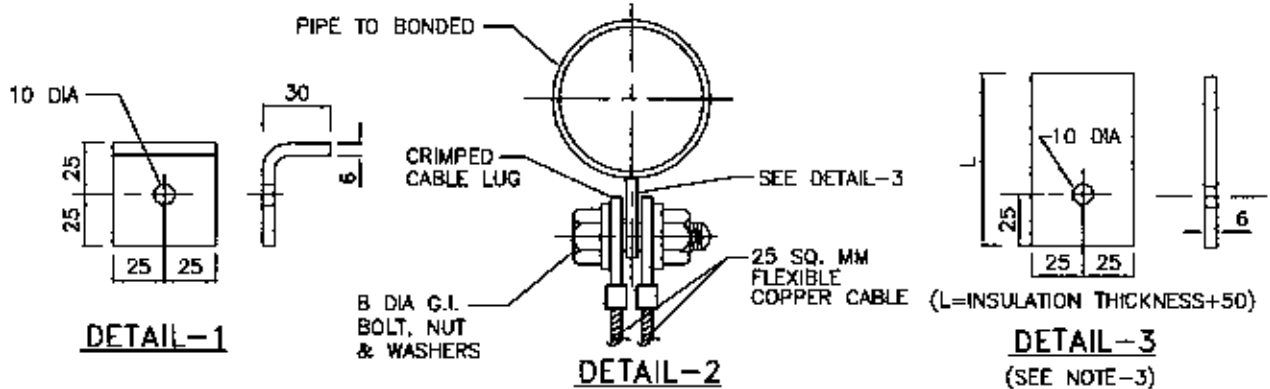
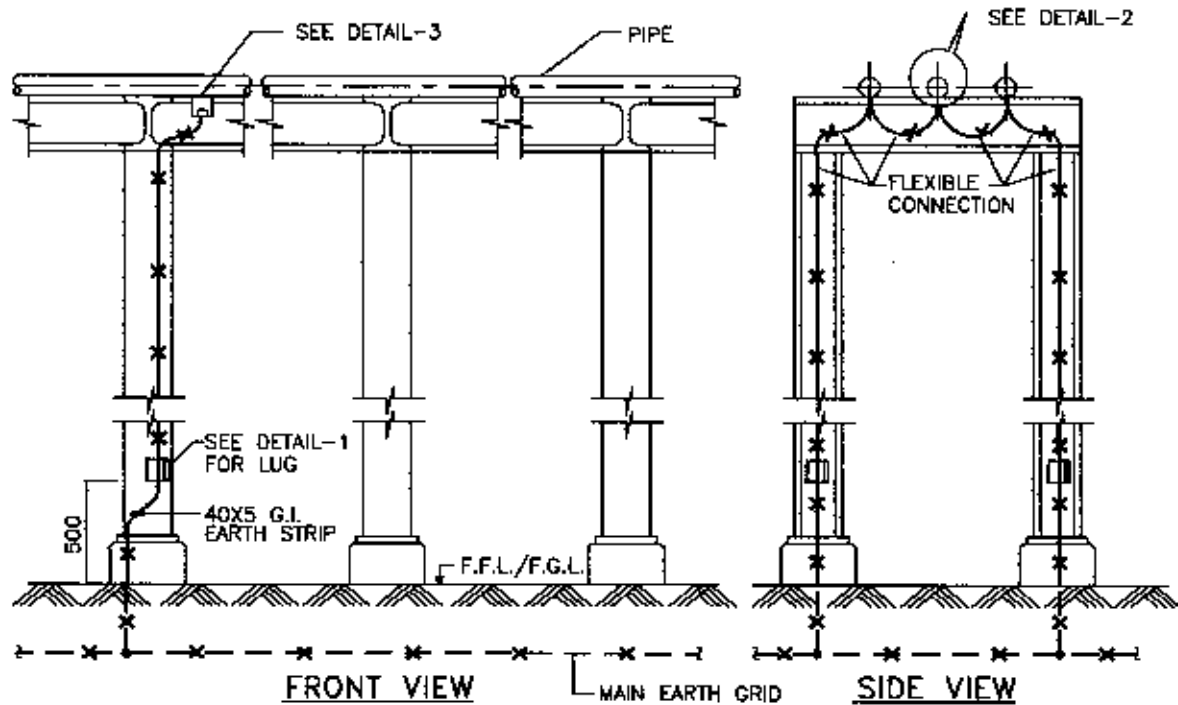
Rev No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	



NOTE:—

1. ALL PROCESSING EQUIPMENT SUCH AS MIXTURES, CHURNS, AUTOCLAVES, COLUMNS, CENTRIFUGES, FILTERS, PRESS PUMPS ETC. SHALL BE EARTHED, IF THESE ARE NOT IN DIRECT CONTACT WITH PROPERLY EARTHED STEEL MEMBERS.
2. ALL TEMPORARY EARTH CONNECTIONS SHALL BE MADE BEFORE OPENING THE VESSEL.

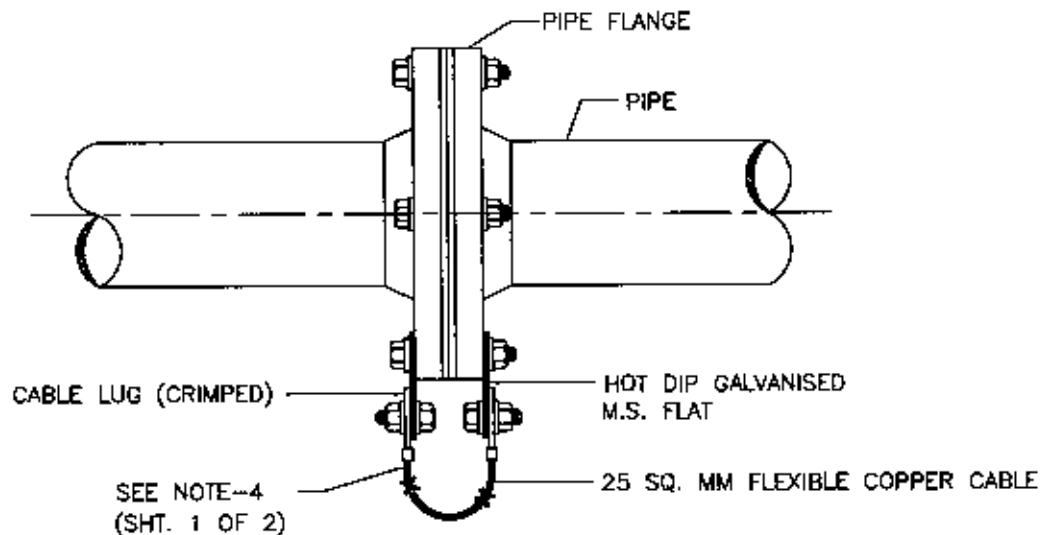
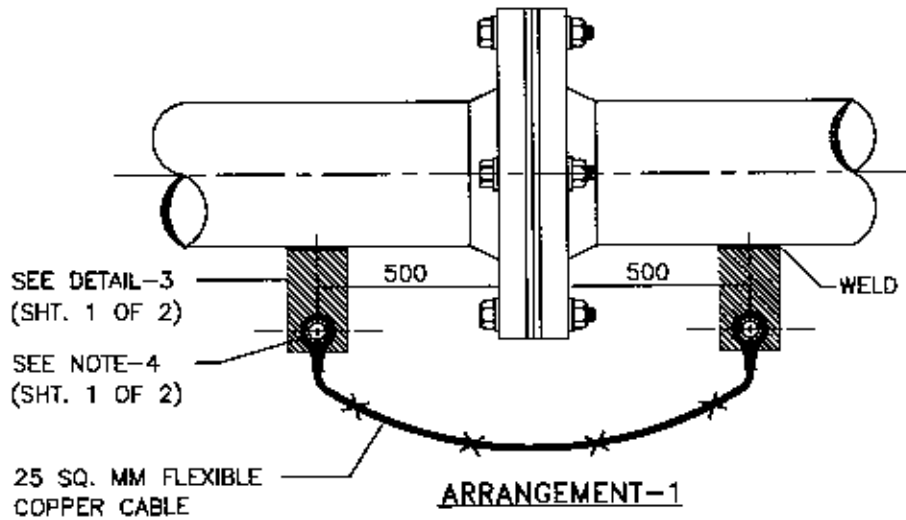
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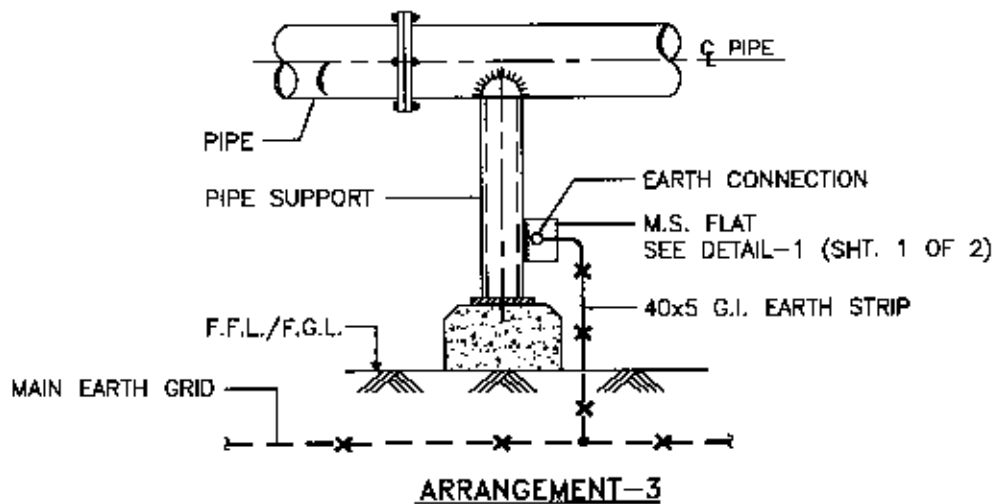
NOTES:-

- UNLESS MENTIONED OTHERWISE ON PLANS OR JOB SPECIFICATIONS, THE PIPE LINES SHALL BE BONDED AND EARTHED ONLY AT THE ENTRY AND EXIT POINTS OF BATTERY LIMIT OF PROCESS UNIT HANDLING FLAMMABLE SUBSTANCES.
- STEEL PIPE RACKS IN THE PROCESS UNIT AND OFFSITE AREA SHALL BE EARTHED AT MAXIMUM SPACING OF 25 METRES.
- BEFORE HYDROTESTING OF PIPELINES, PIPING CONTRACTOR SHALL WELD A PLATE (AS SHOWN IN DETAIL-3) OF SUITABLE MATERIAL TO SUIT PIPELINE MATERIAL.
- SUPPLY OF FLEXIBLE COPPER CABLE, LUGS, BOLTS, NUTS AND WASHERS ETC. AND MAKING CONNECTIONS SHALL BE DONE BY ELECTRICAL CONTRACTOR.

6	07.12.21	UPDATED & ISSUED AS STANDARD	JSK	VKS/HK	PG	SM
5	08.11.16	REVISED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN
4	27.06.11	REVISED & ISSUED	BP	RKS/RSC	UAP	DM
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman

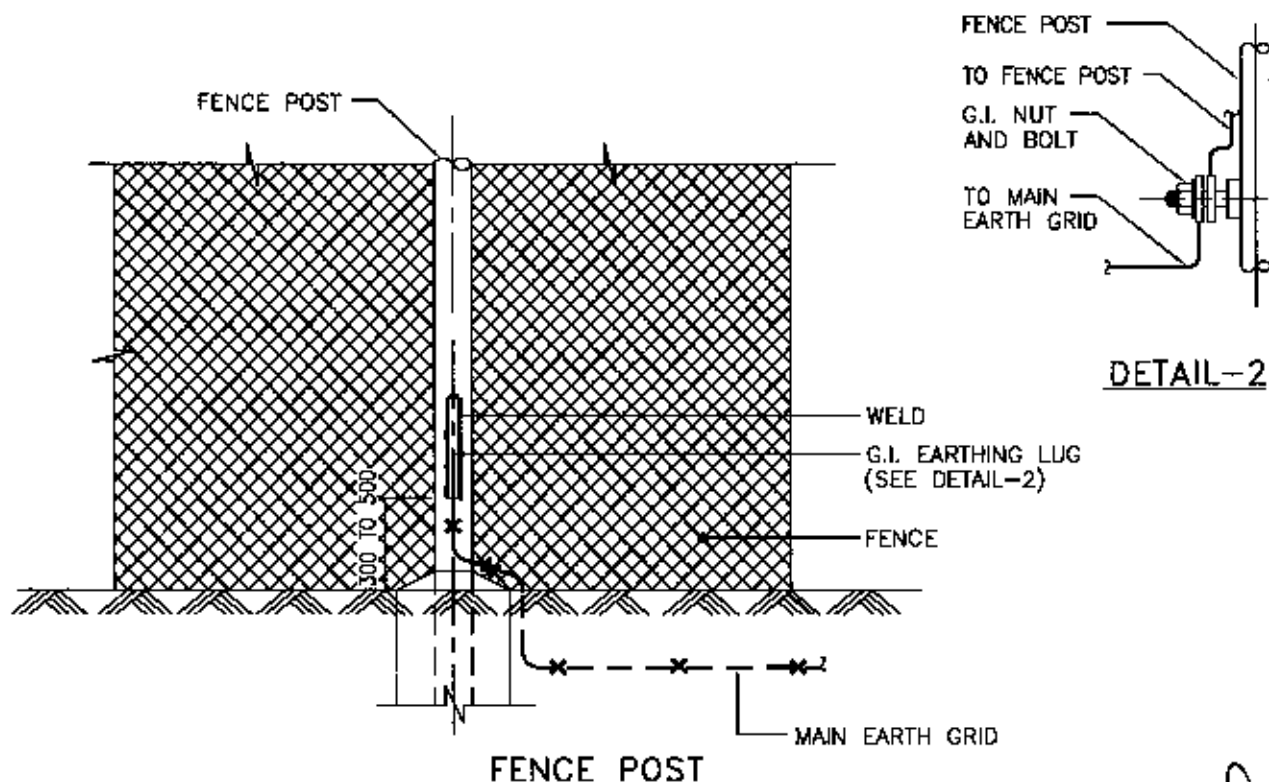
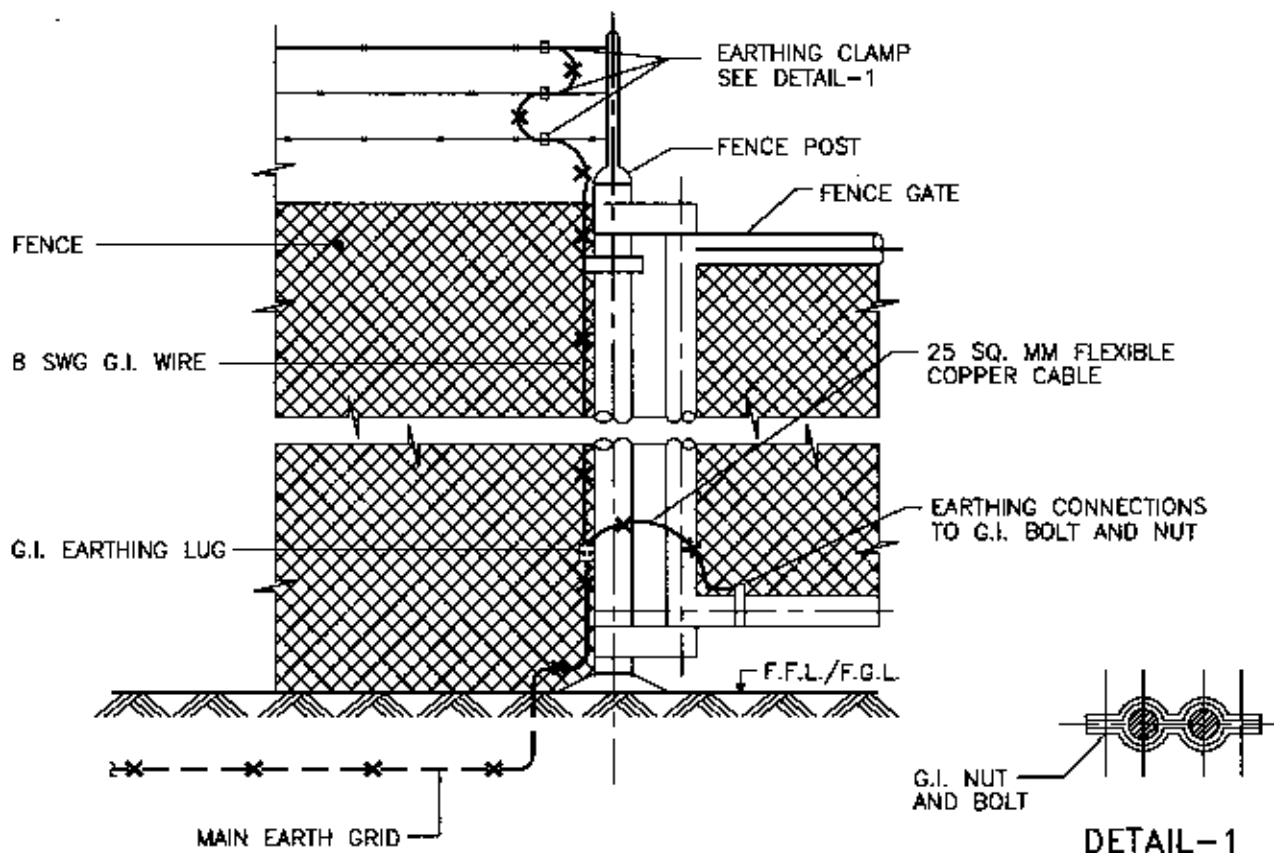


(APPLICABLE WHERE WELDED FLAT ARE
NOT AVAILABLE AS PER ARRANGEMENT-1)



(APPLICABLE WHEREVER PIPE SUPPORTS ARE WELDED
ON BOTH SIDES OF FLANGES / VALVES ETC.)

6	07.12.21	UPDATED & ISSUED AS STANDARD	USK	VKS/HK	PG	SM
5	08.11.16	REVISED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN
4	27.06.11	REVISED & ISSUED	BP	RKS/RSC	UAP	DM
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman



6	01.11.21	REAFFIRMED & ISSUED AS STANDARD	JSK	VKS/HK	PG	SM
5	08.11.16	REAFFIRMED & ISSUED	BP	FA/HK	BRB	RN
4	27.06.11	REAFFIRMED & ISSUED	BP	RKS/RSC	UAP	DM
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds Bureau Chairman
					Approved by	

TYPE OF EQUIPMENT	EARTH CONDUCTOR SIZE (SEE NOTE-1)
LV MOTORS UPTO 3.7KW	8 SWG SOLID G.I. WIRE
LV MOTORS FROM 5.5KW TO 30KW & WELDING RECEPTACLES	10 MM (3/8") DIA G.I. WIRE ROPE
LV MOTORS ABOVE 30KW INCLUDING MV MOTORS	16 MM (5/8") DIA G.I. WIRE ROPE/ 40x5 MM G.I. STRIP
BUILDING COLUMNS	40 x 5 G.I. STRIP
STORAGE TANKS (VERTICAL & HORIZONTAL)	40 x 5 G.I. STRIP
LOADING RACKS	40 x 5 G.I. STRIP
VESSELS & HEAT EXCHANGERS	40 x 5 G.I. STRIP
SMALL EQUIPMENT & INSTRUMENTS	8 SWG SOLID G.I. WIRE
LIGHTING, POWER & INSTRUMENT PANELS	10 MM (3/8") DIA G.I. WIRE ROPE
MAIN EARTH BUS / LV, MV, HV & EHV SWITCH GEAR INTERCONNECTIONS/ POWER TRANSFORMER	AS SPECIFIED
EHV, HV & MV SUB-STATIONS	AS SPECIFIED
PUSH BUTTON STATIONS	8 SWG SOLID G.I. WIRE
STREET LIGHT POLES	10 MM (3/8") DIA G.I. WIRE ROPE
LIGHTING TRANSFORMER	16 MM (5/8") DIA G.I. WIRE ROPE
PIPE RACK	40 X 5 G.I. STRIP
BONDING OF PIPE	25 SQ. MM INSULATED FLEXIBLE CU. CABLE
LIGHTNING PROTECTION	25 X 3 MM G.I. EARTH STRIP
CABLE TRAYS	40 X 5 G.I. STRIP

9	31.07.24	UPDATED AND ISSUED AS STANDARD
8	01.11.21	UPDATED AND ISSUED AS STANDARD
7	08.11.18	REVISED AND ISSUED AS STANDARD

Rev. No. Date Purpose

SKC SKS/HK MKS MN
 JSK VKS/HK PG SM
 BP FA/HK BRB RN
 Prepared by Checked by Stds. Committee Convenor Stds. Bureau Chairman

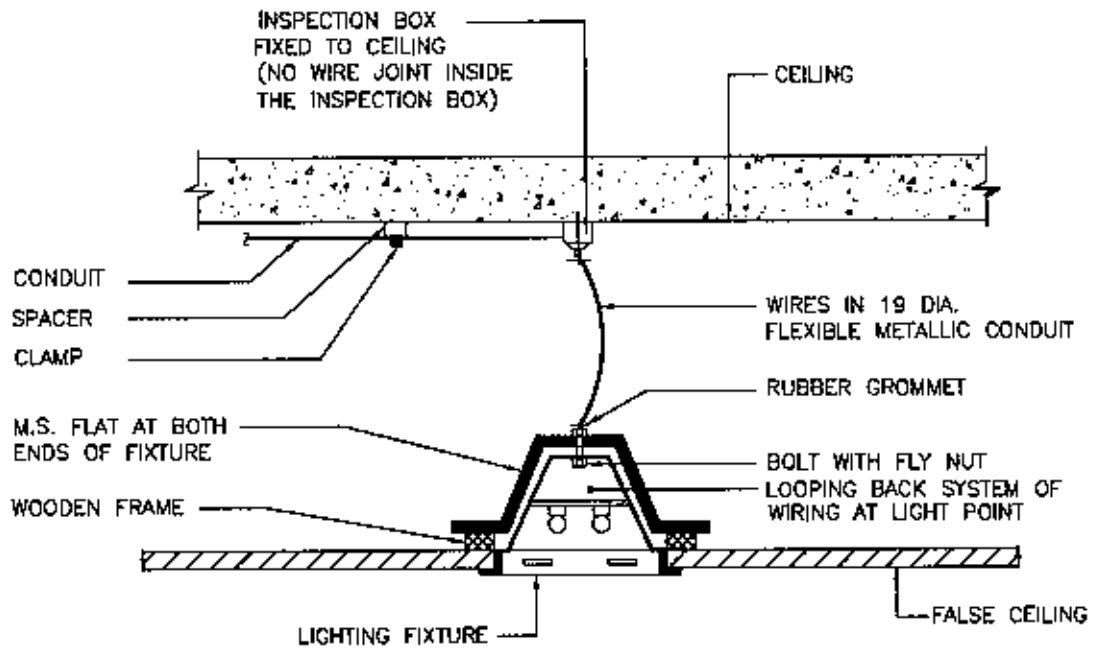
Approved by

TYPE OF EQUIPMENT	ALUMINUM CABLE (SEE NOTE-1&2)	COPPER CABLE (SEE NOTE-1&2)
LV MOTORS UPTO 3.7KW	16 SQ MM	10 SQ MM
LV MOTORS FROM 5.5KW TO 30KW	16 SQ MM	10 SQ MM
LV MOTORS ABOVE 30KW TO 55KW	25 SQ MM	16 SQ MM
LV MOTORS ABOVE 55KW TO 160KW	70 SQ MM	50 SQ MM
MV MOTORS	120 SQ MM	95 SQ MM
STORAGE TANKS (VERTICAL & HORIZONTAL)	70 SQ MM	50 SQ MM
VESSELS & HEAT EXCHANGERS	25 SQ MM	16 SQ MM
LIGHTING, POWER & INSTRUMENT PANELS	10 SQ MM	10 SQ MM
PUSH BUTTON STATIONS	10 SQ MM	10 SQ MM
STREET LIGHT POLES & FLOOD LIGHT MAST	16 SQ MM	10 SQ MM
PIPE RACK	25 SQ MM	16 SQ MM
WELDING RECEPTACLES	25 SQ MM	16 SQ MM

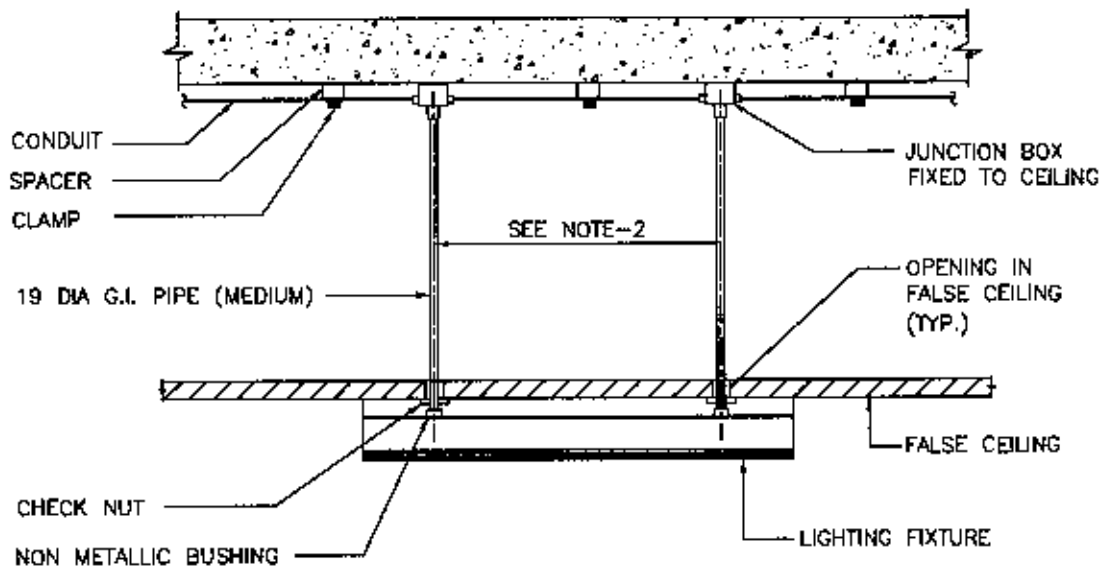
NOTE:-

1. TYPE OF EARTH CONNECTIONS TO INDIVIDUAL EQUIPMENT (I.E. WIRE ROPE / STRIP OR CABLE) FROM NEAREST EARTH PLATE / GRID SHALL BE SELECTED AS SPECIFIED ELSEWHERE. CABLE/WIRE ROPE CONNECTIONS SHALL BE MADE USING CRIMP TYPE OF LUGS.
2. EARTHING CABLE SHALL BE SINGLE CORE PVC INSULATED GREEN COLOR/GREEN WITH YELLOW COLOR STRIPE OUTER SHEATH.

9	31.07.24	UPDATED AND ISSUED AS STANDARD	SKC	SKS/HK	MKS	MN
8	01.11.21	UPDATED AND ISSUED AS STANDARD	JSK	VKS/HK	PG	SM
7	08.11.16	REVISED AND ISSUED AS STANDARD	BP	FA/HK	BRB	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
					Approved by	



DETAIL-1
RECESS MOUNTED FIXTURE
SUPPORTED ON WOODEN FRAME

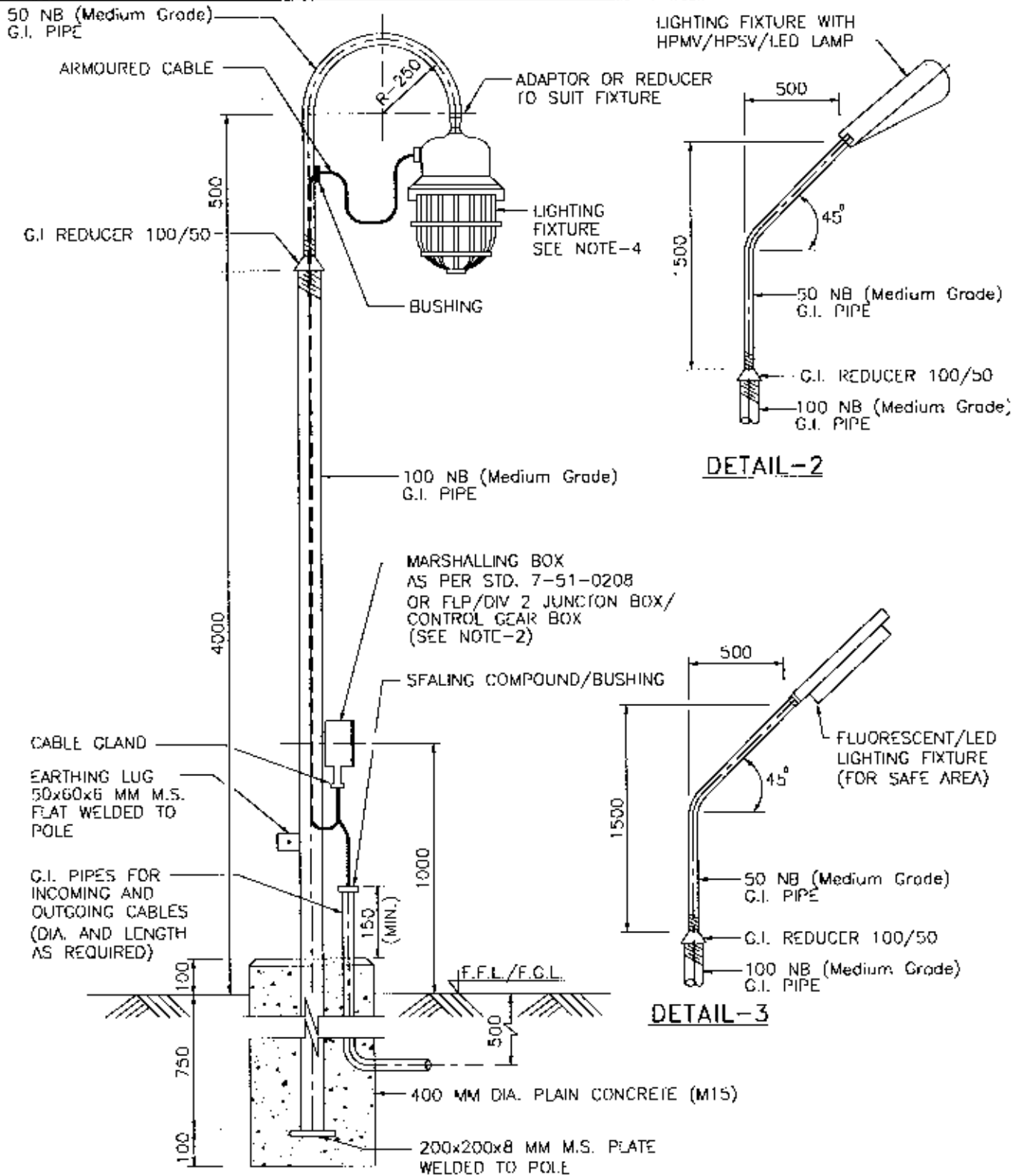


DETAIL-2
FIXTURE MOUNTING BELOW FALSE CEILING

NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. SUSPENSION/FIXING CENTRES SHALL BE AS PER FIXTURE MANUFACTURER'S DETAILS.

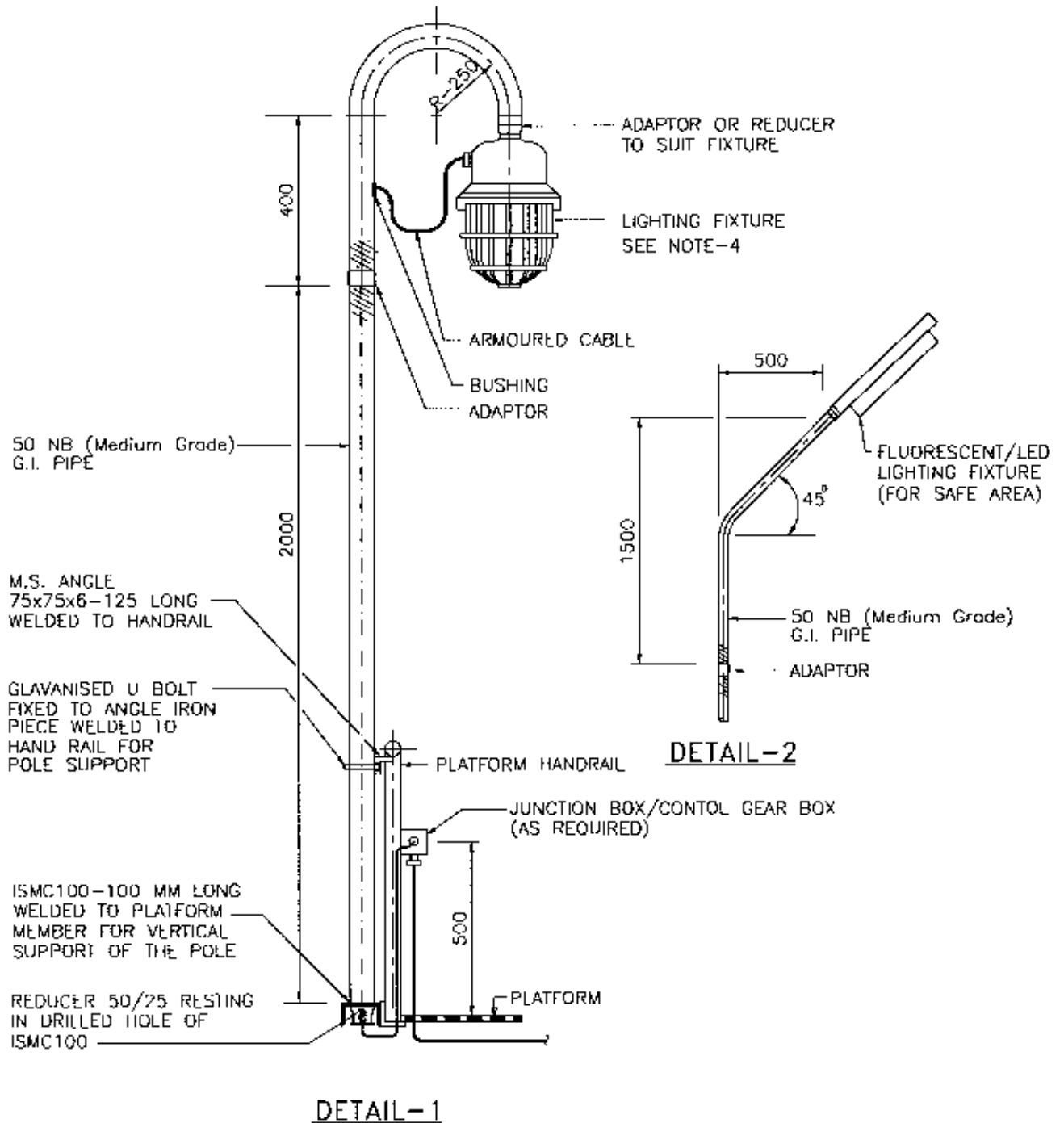
6	29.11.21	REAFFIRMED & ISSUED AS STANDARD	JSK	VKS/HK	PG	SM
5	21.10.16	REVISED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN
4	17.07.13	REAFFIRMED & ISSUED AS STANDARD	BP	FA/SA	UAP/JMS	DM
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	



NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. MARSHALLING BOX/JUNCTION BOX AND G.I. PIPES FOR CABLES SHALL BE LOCATED FACING CABLE TRENCH SIDE.
3. ALL G.I. PIPES SHALL BE MEDIUM GRADE.
4. LIGHTING FIXTURE CAN BE WELL GLASS/DOME GLASS/FLAT GLASS TYPE BASED ON TYPE OF LAMP.

6	29.09.20	UPDATED & ISSUED AS STANDARD	JSK	VKS/HK	SA	SM
5	10.07.17	UPDATED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
						Approved by

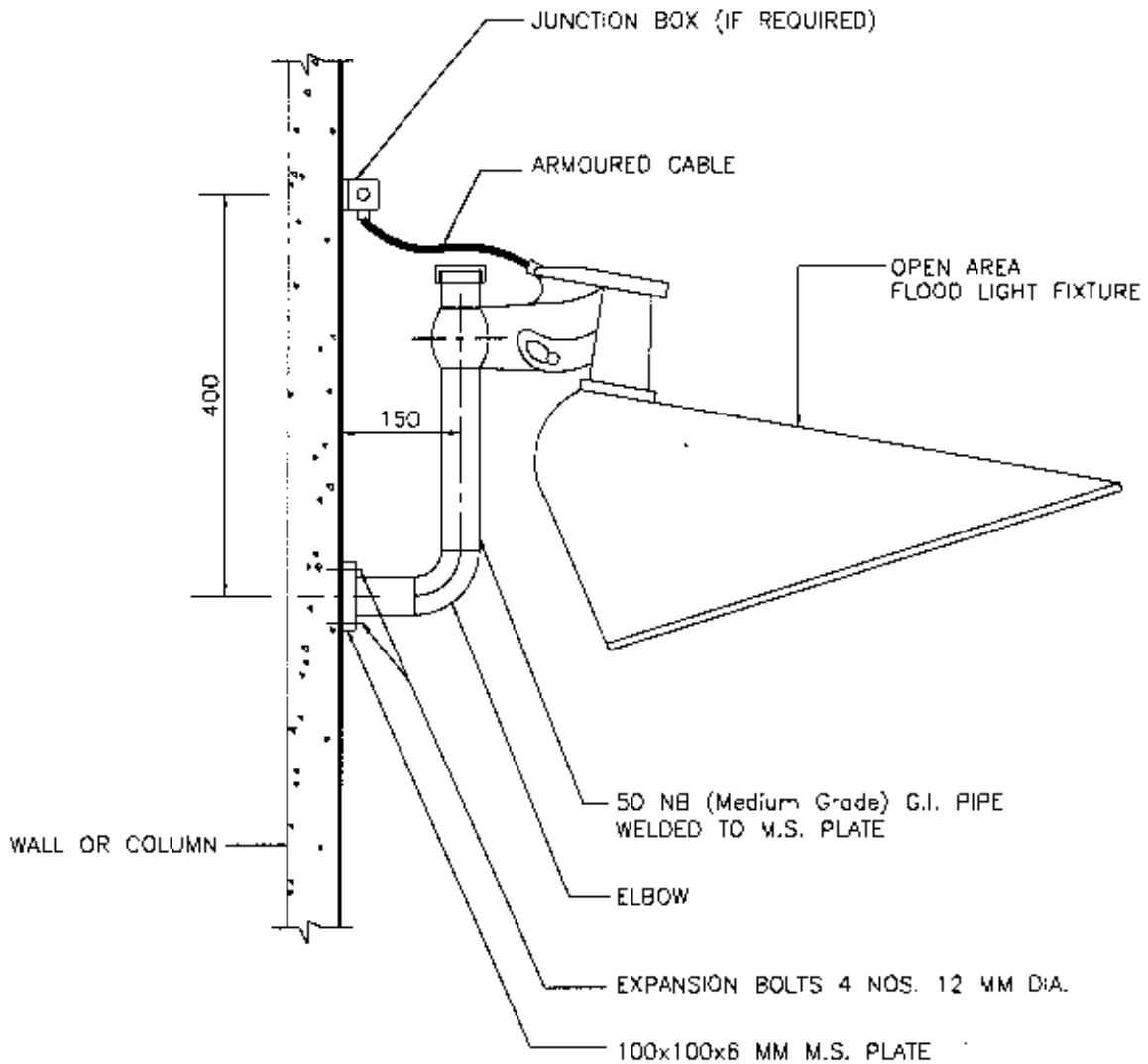


NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. FOR TYPE OF FIXTURE REFER LAYOUT DRAWING / LIGHTING FIXTURE SCHEDULE.
3. ALL G.I. PIPES SHALL BE MEDIUM GRADE.
4. LIGHTING FIXTURE CAN BE WELL GLASS/DOME GLASS/FLAT GLASS TYPE BASED ON TYPE OF LAMP.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
6	29.09.20	UPDATED & ISSUED AS STANDARD	JSK	VKS/HK	SA	SM
5	10.07.17	UPDATED & ISSUED AS STANDARD	BP	FA/IK	BRB	RN

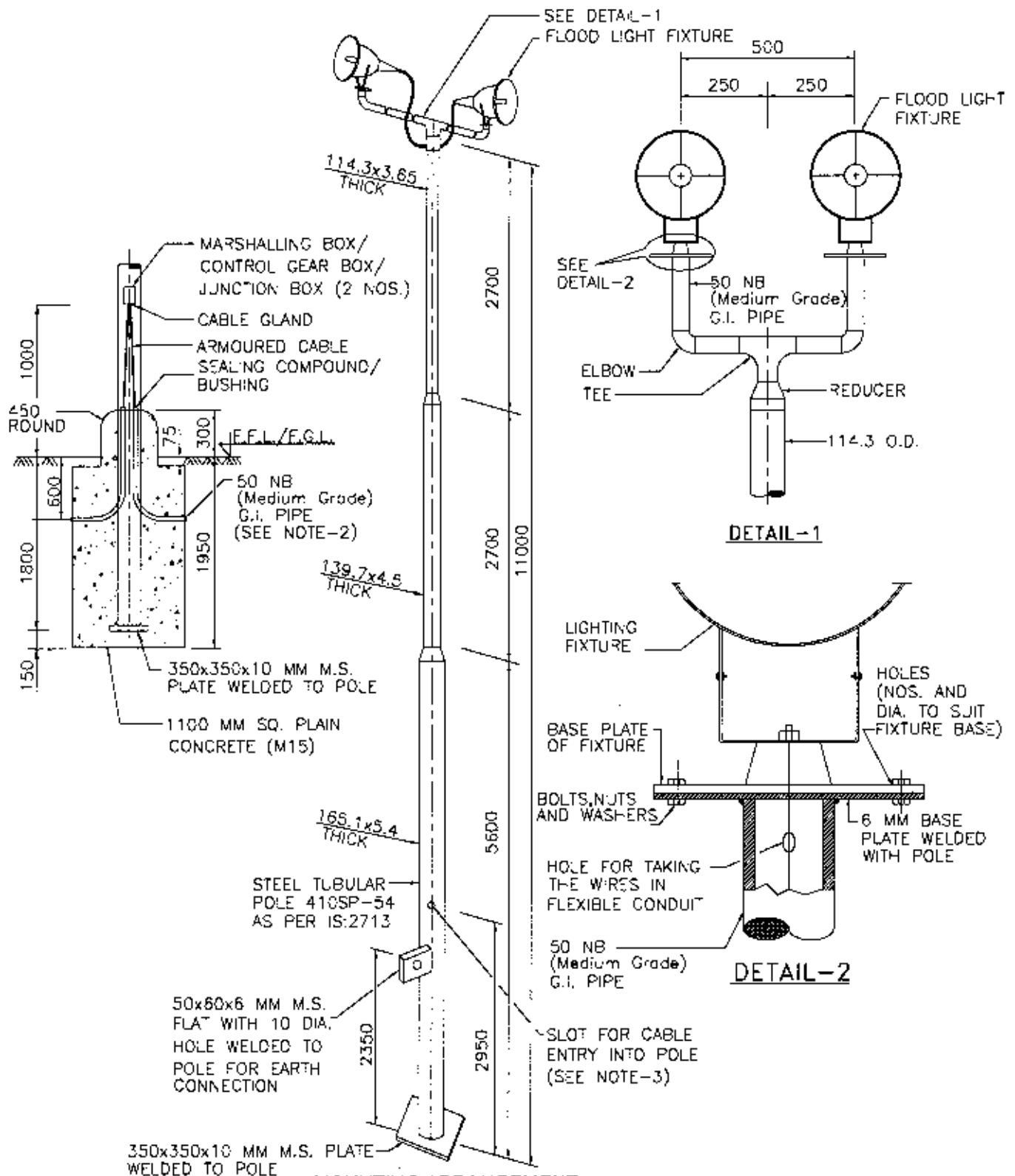
Approved by _____



NOTES: -

1. ALL DIMENSIONS ARE IN MM.

Rev No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Conventor	Stds. Bureau Chairman
6	29.09.20	UPDATED & ISSUED AS STANDARD	JSK	VKS/HK	SA	SM
5	10.07.17	REAFFIRMED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN

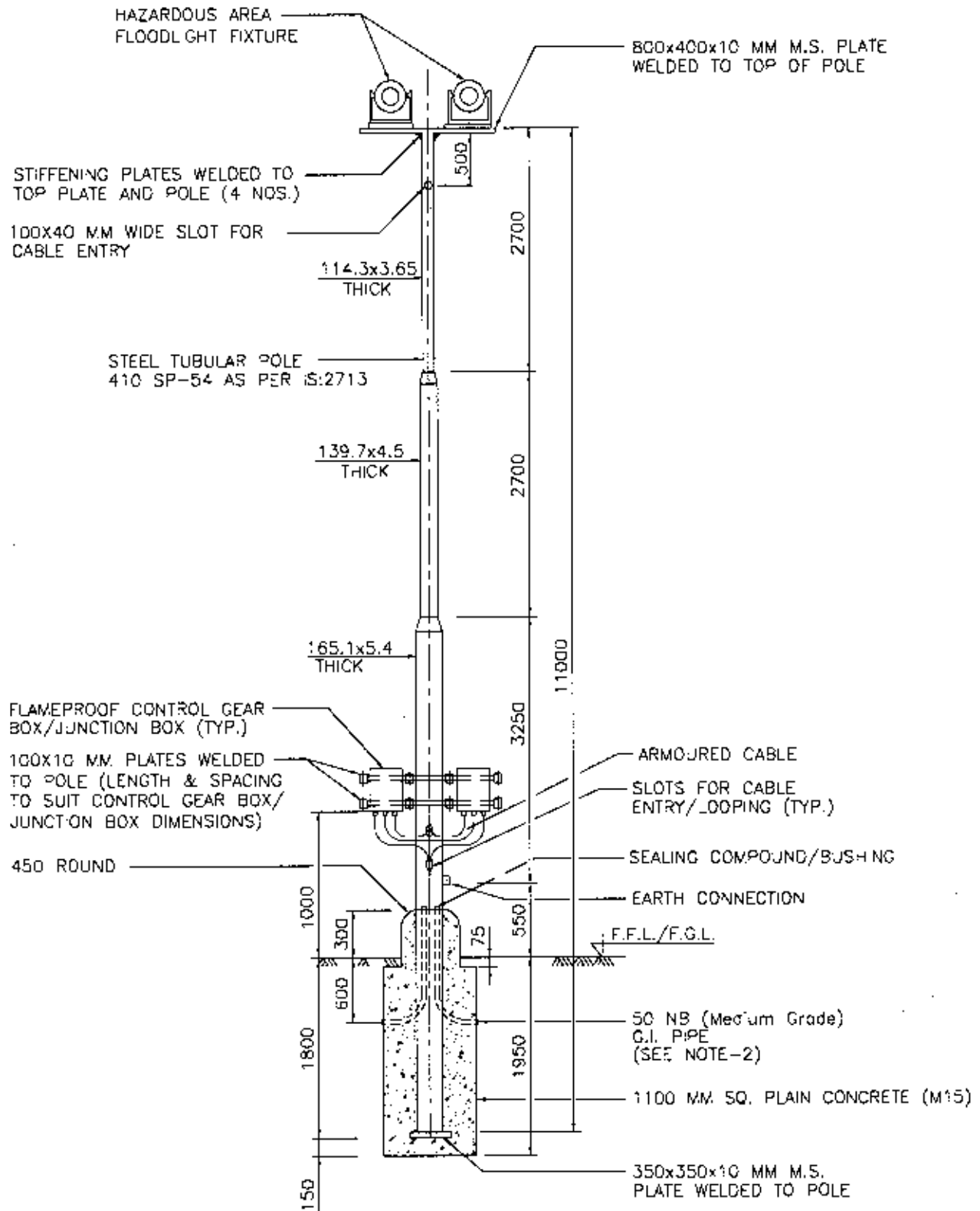


MOUNTING ARRANGEMENT FOR SAFE AREA FIXTURES

NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. MINIMUM TWO AND MAXIMUM THREE NUMBERS OF SLEEVES SHALL BE PROVIDED AS PER PLAN DRAWING.
3. 2 NOS. 25 DIA. HOLES SHALL BE PROVIDED ON OPPOSITE ENDS FOR FIXING OF MARSHALLING BOX ON ONE END AND CONTROL GEAR BOX/JUNCTION BOX ON OTHER END.

6	29.09.20	UPDATED & ISSUED AS STANDARD	JSK	VKS/HK	SA	SM
5	10.07.17	UPDATED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman

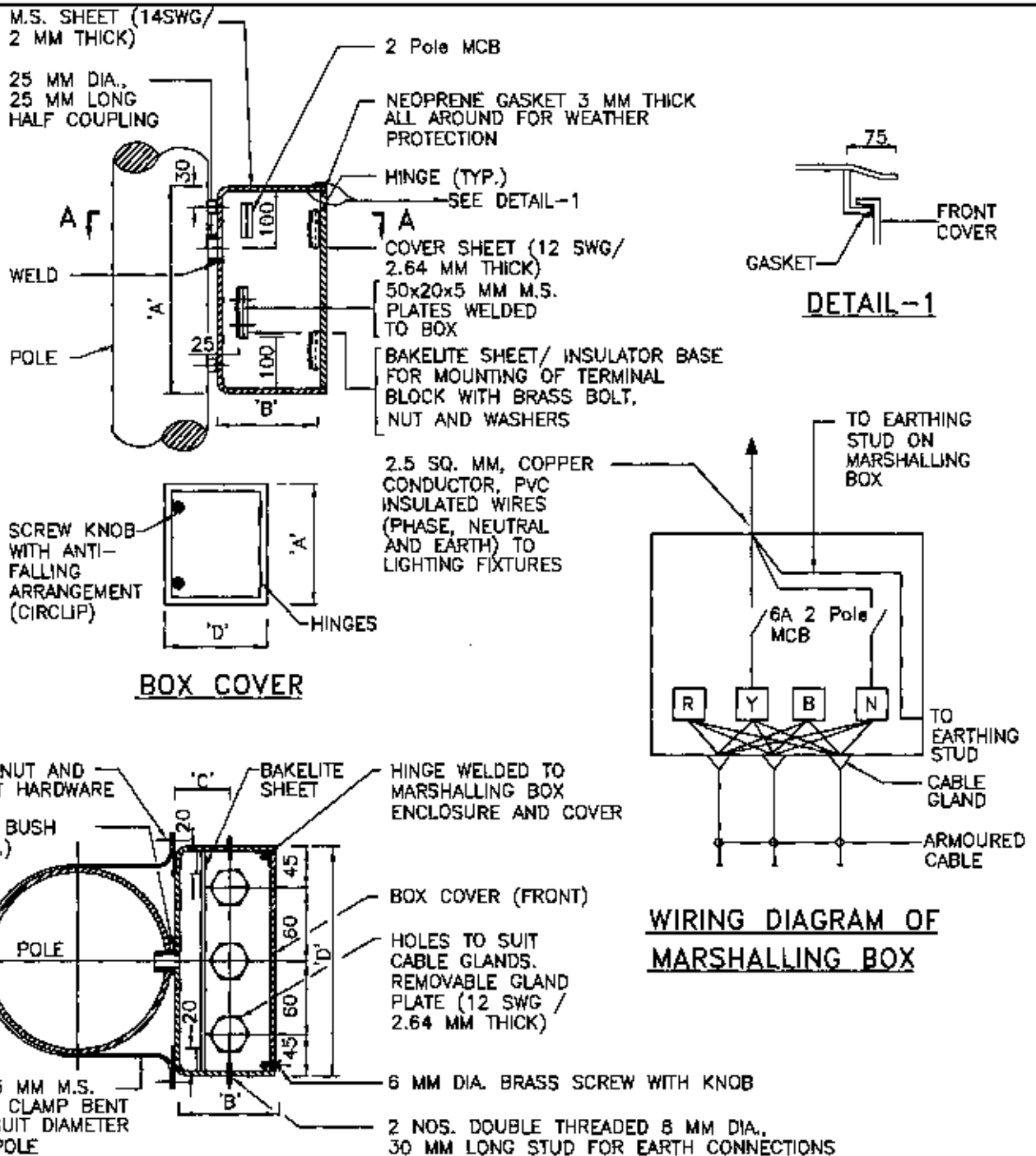


**MOUNTING ARRANGEMENT FOR
 HAZARDOUS AREA FIXTURES**

NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. MINIMUM TWO AND MAXIMUM THREE NUMBERS OF SLEEVES SHALL BE PROVIDED AS PER PLAN DRAWING.

6	29.09.20	UPDATED & ISSUED AS STANDARD	JSK	VKS/HK	SA	SM
5	10.07.17	UPDATED & ISSUED AS STANDARD	BP	FA/HK	BRB	DM
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
						Approved by

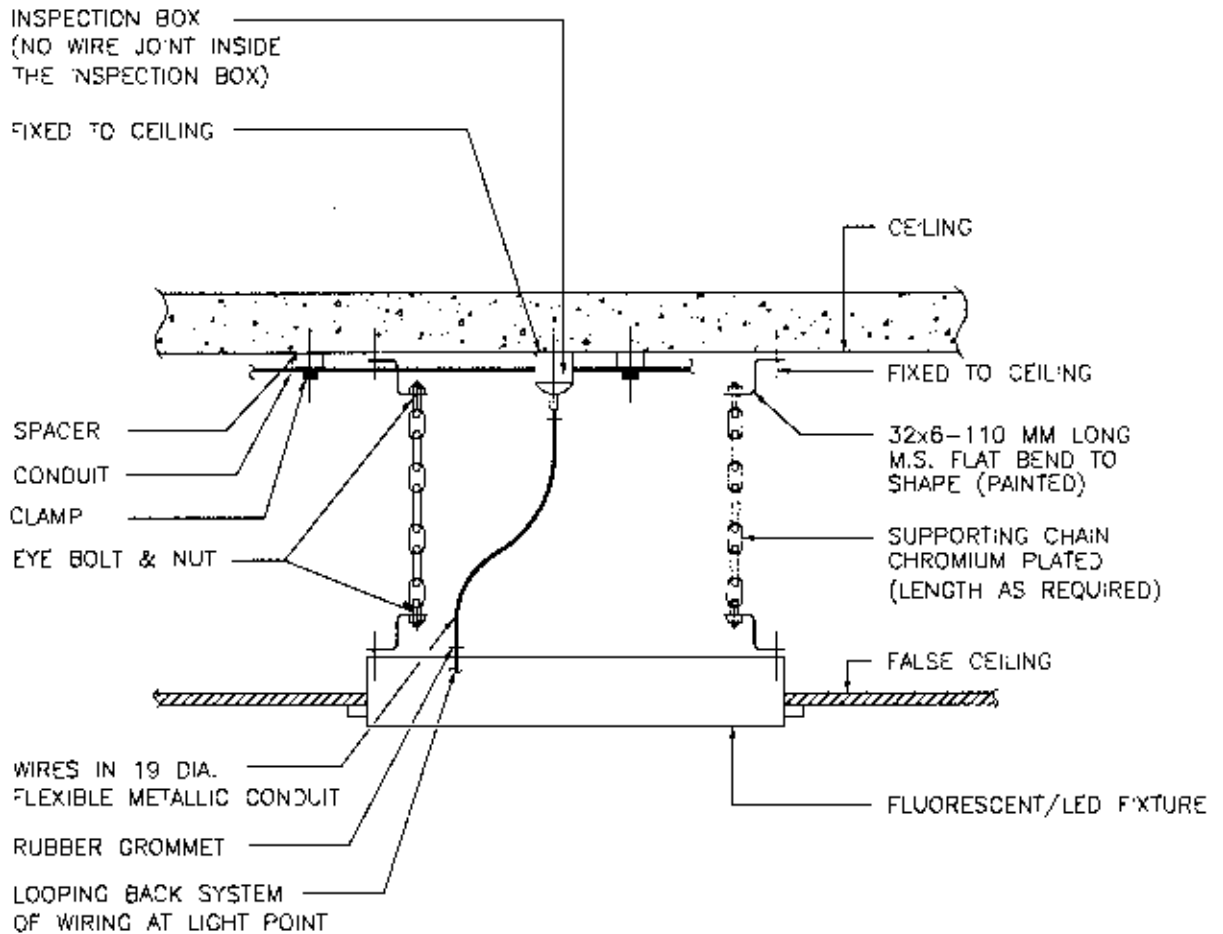


NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. MARSHALLING BOX SHALL HAVE WEATHER PROOF (IP55) ENCLOSURE PROTECTION, WITH DOUBLE COMPRESSION CABLE GLANDS WITH CHECK NUTS & LUGS.
3. THE BOX WITH ALL WELDED ATTACHMENTS, SHALL BE THOROUGHLY CLEANED AFTER FABRICATION AND SHALL BE PAINTED WITH EPOXY PAINT.

CABLE SIZE (IN SQ. MM)	CABLE ENTRIES	DIMENSIONS IN MM				
		'A'	'B'	'C'	'D'	Terminal Bolt Size
UPTO 4 X 16	2	250	100	45	210	5
ABOVE 4 X 16 AND UPTO 3.5 X 50	3	300	150	75	210	10

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
7	12.10.20	UPDATED & ISSUED AS STANDARD	JSK	VKS/HK	SA	SM
6	10.07.17	UPDATED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN

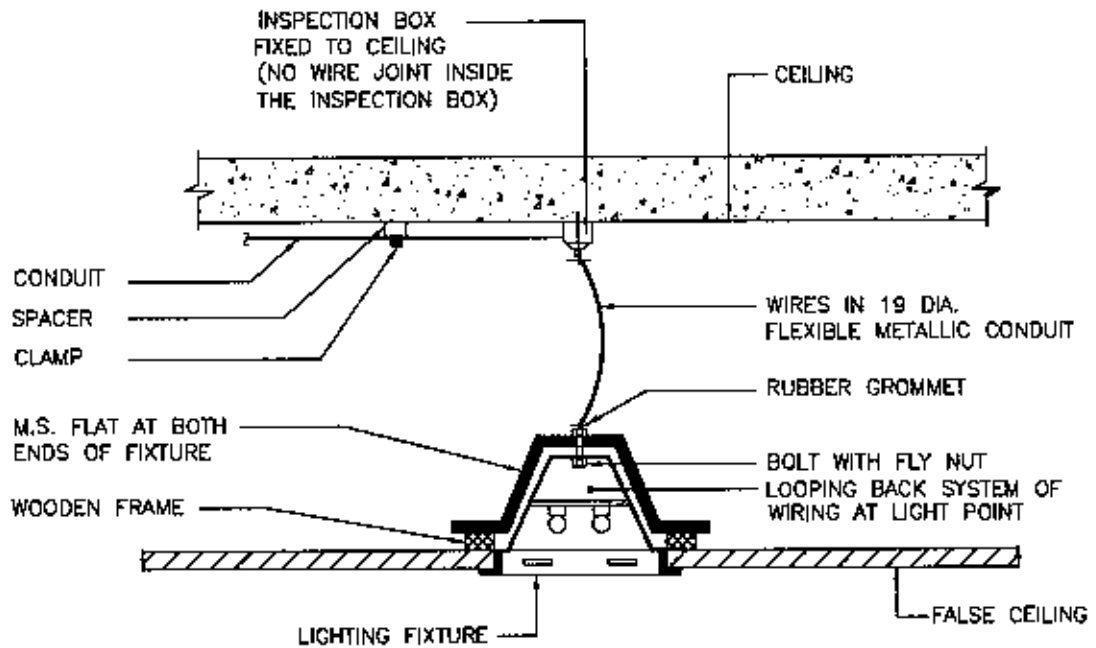


MOUNTING ARRANGEMENT WITH CHAIN SUPPORT

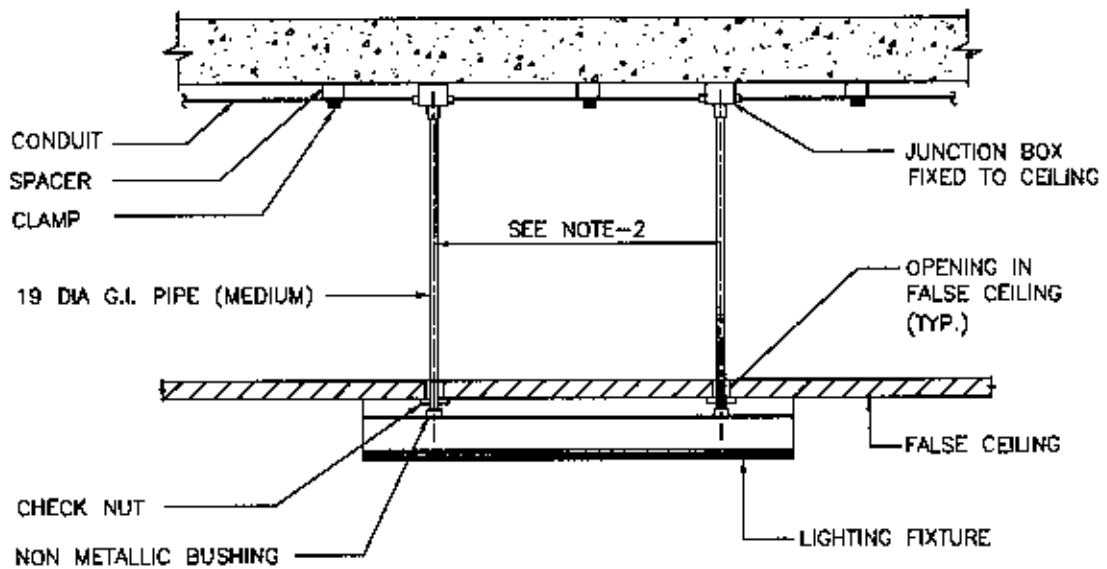
NOTES:—

1. ALL DIMENSIONS ARE IN MM.

6	29.09.20	UPDATED & ISSUED AS STANDARD	JSK	VKS/HK	SA	SM
5	10.07.17	UPDATED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	



DETAIL-1
RECESS MOUNTED FIXTURE
SUPPORTED ON WOODEN FRAME

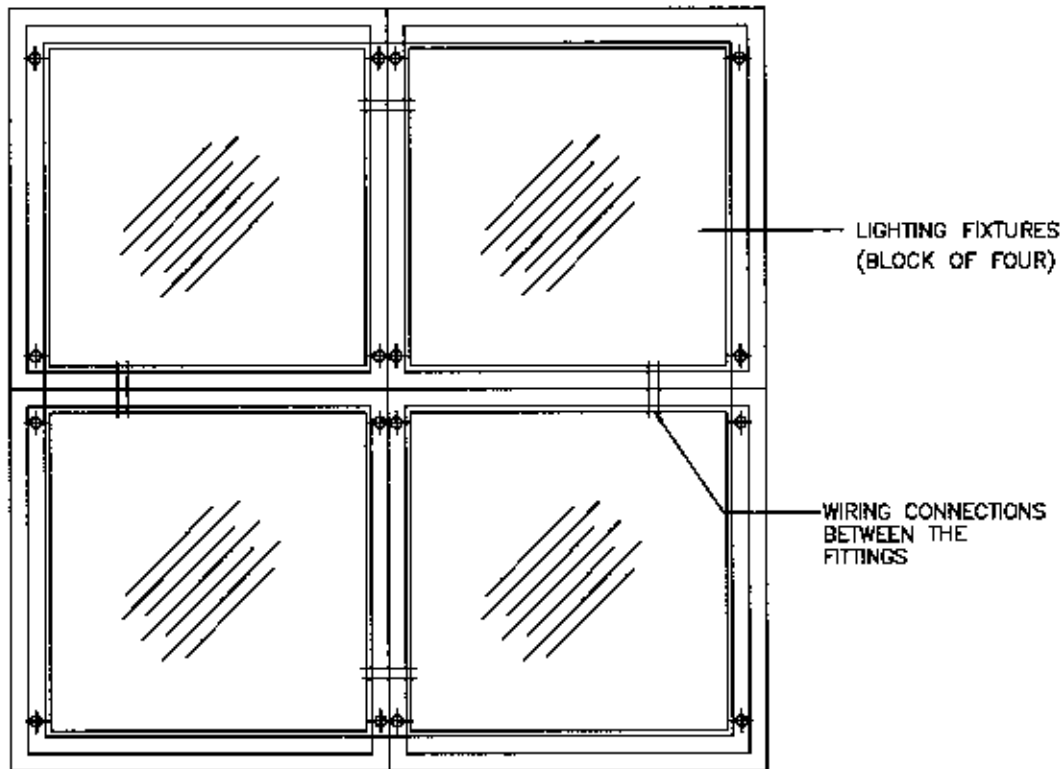
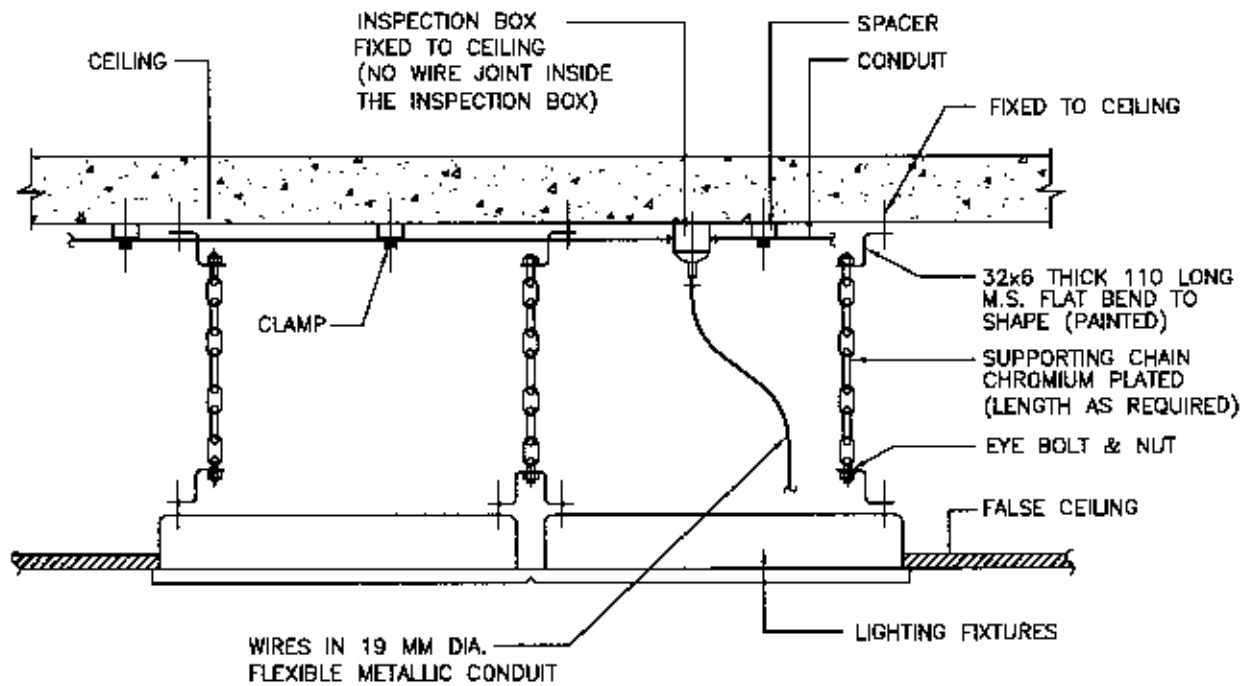


DETAIL-2
FIXTURE MOUNTING BELOW FALSE CEILING

NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. SUSPENSION/FIXING CENTRES SHALL BE AS PER FIXTURE MANUFACTURER'S DETAILS.

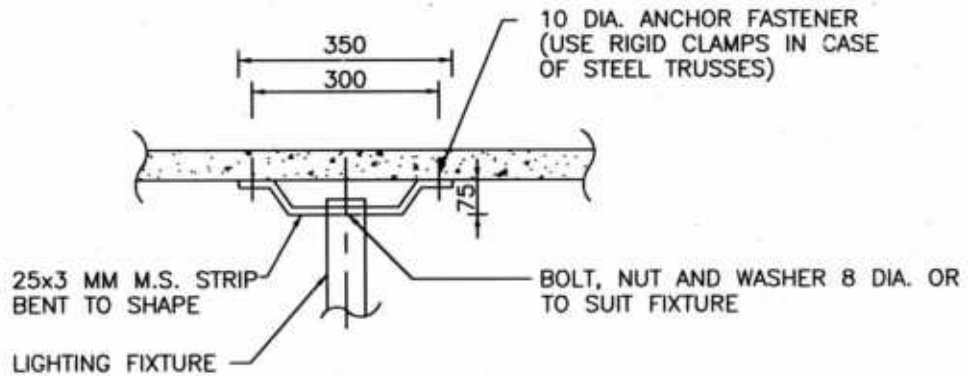
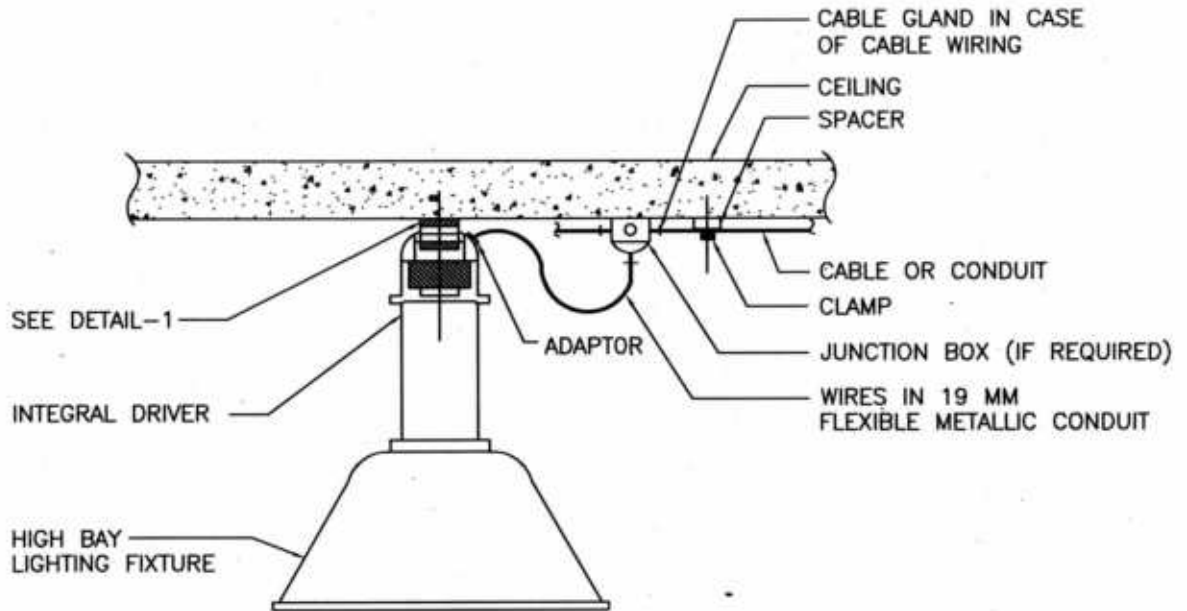
6	29.11.21	REAFFIRMED & ISSUED AS STANDARD	JSK	VKS/HK	PG	SM
5	21.10.16	REVISED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN
4	17.07.13	REAFFIRMED & ISSUED AS STANDARD	BP	FA/SA	UAP/JMS	DM
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
					Approved by	



NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. SUSPENSION/FIXING CENTRES SHALL BE AS PER FIXTURE MANUFACTURER'S DETAILS.

6	01.11.21	REAFFIRMED & ISSUED AS STANDARD	JSK	VKS/HK	PG	SM
5	21.10.16	REVISED & ISSUED AS STANDARD	BP	FA/HK	BRB	RN
4	17.07.13	REAFFIRMED & ISSUED AS STANDARD	BP	FA/SA	UAP/JMS	DM
Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
						Approved by

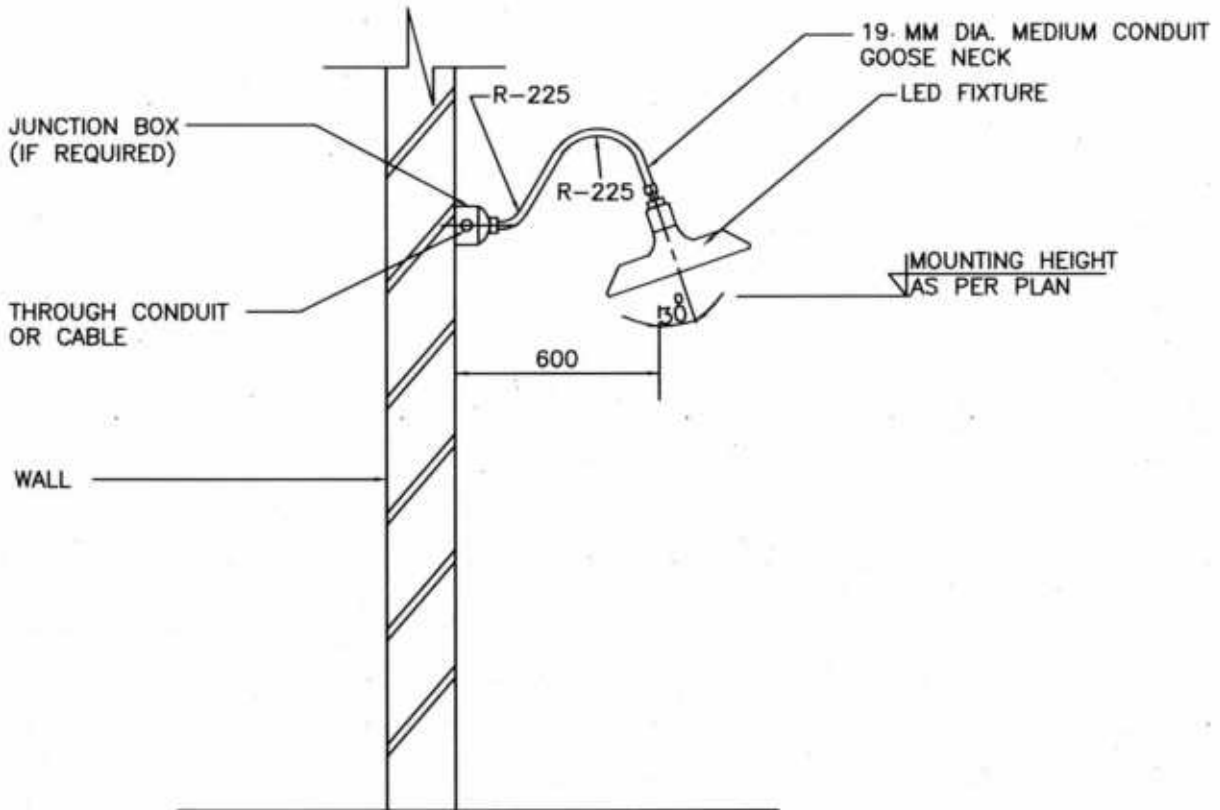


DETAIL-1

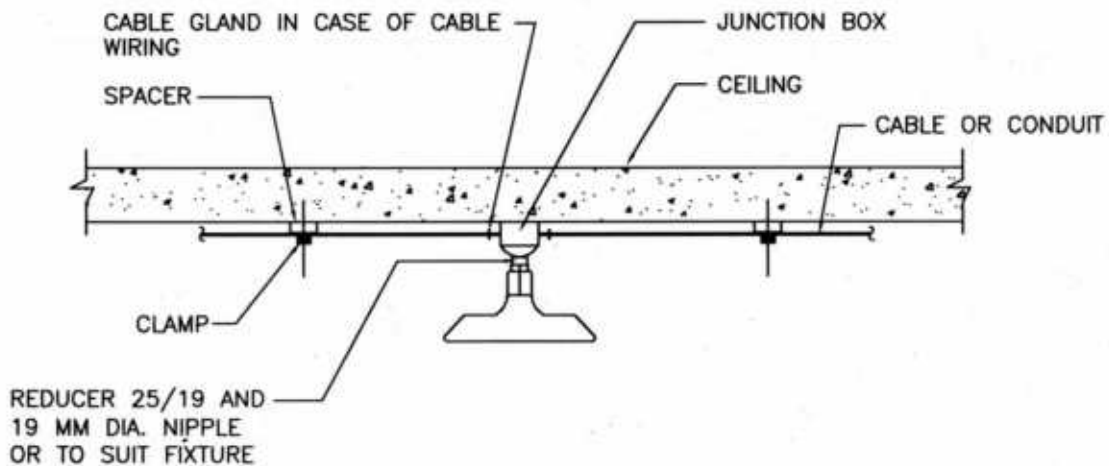
NOTES:-

1. ALL DIMENSIONS ARE IN MM.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convener	Stds. Bureau Chairman
6	15.09.22	UPDATED & ISSUED AS STANDARD	JSK	VKS/HK	MKS	SM
5	22.02.18	UPDATED & ISSUED AS STANDARD	BP	VKS/HK	BRB	RN
4	17.07.13	REAFFIRMED & ISSUED AS STANDARD	BP	FA/SA	UAP/JMS	DM
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WALL-MOUNTED



CEILING-MOUNTED

NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. APPLICABLE FOR SAFE AREAS.

Rev. No.	Date	Purpose	Prepared by	Checked by	Stds. Committee Convenor	Stds. Bureau Chairman
6	15.09.22	UPDATED & ISSUED AS STANDARD	JSK	VKS/HK	MKS	SM
5	22.02.18	UPDATED & ISSUED AS STANDARD	BP	VKS/HK	BRB	RN
4	17.07.13	REAFFIRMED & ISSUED AS STANDARD	BP	FA/SA	UAP/JMS	DM
Approved by						