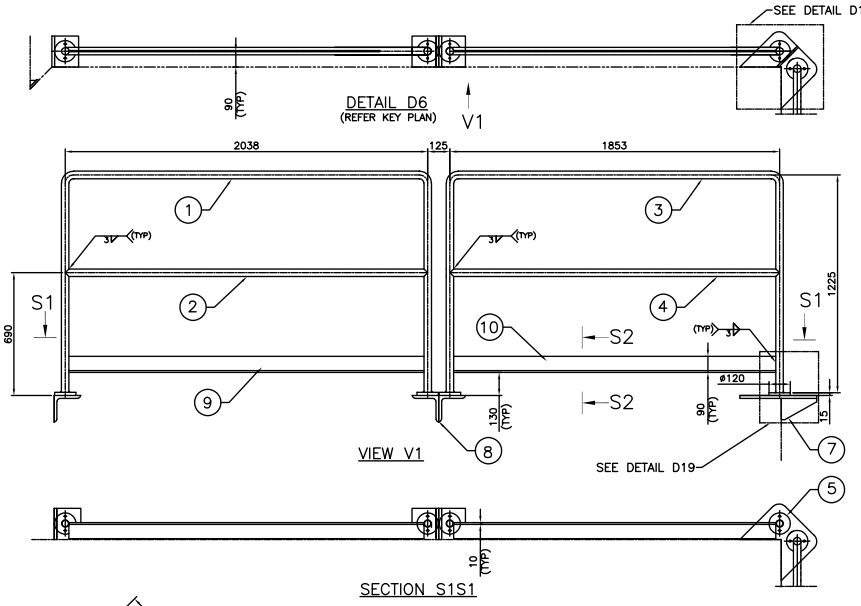
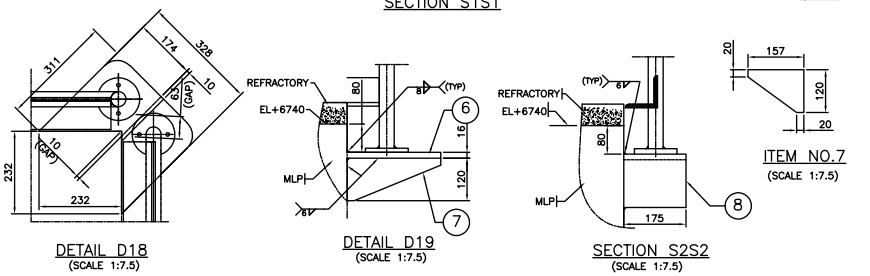
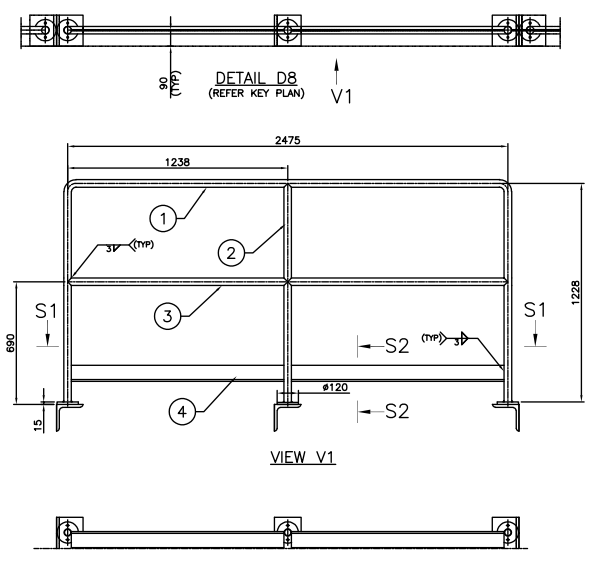
TITLE: MOBILE LAUNCH PEDESTAL HAND RAILING

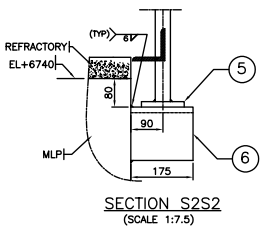
DWG NO: TCE.11365A-ME-857-DD-0015(SH3OF3)



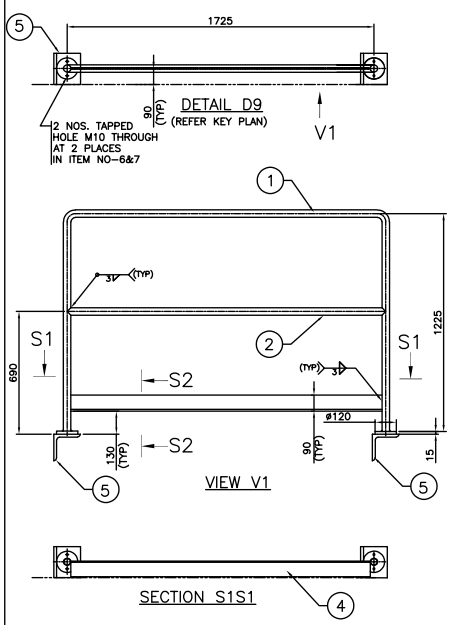


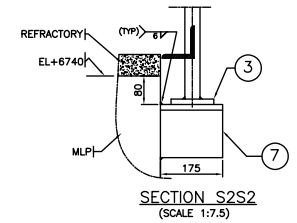
10	ANGLE ISA 90 x 10 THK x 1811 LG.	GRADE E250, QUALITY BR AS PER IS:2062	1
9	ANGLE ISA 90 x 10 THK x 1995 LG.	GRADE E250, QUALITY BR AS PER IS:2062	1
8	ANGLE ISA 150x150x16x175LG	GRADE E250, QUALITY BR AS PER IS:808	3
7	PLATE 10 THK x120 x 157	GRADE E250, QUALITY BR AS PER IS:2062	1
6	PLATE 16 THK x328 x 311	GRADE E250, QUALITY BR AS PER IS:2062	1
5	PLATE 15 THK x ø120	GRADE E250, QUALITY BR AS PER IS:2062	4
4	TUBE 40 NB,(MEDIUM) x 1853 LG.	YST 210 AS PER IS:1161	1
3	TUBE 40 NB,(MEDIUM) x 4264 LG.	YST 210 AS PER IS:1161	1
2	TUBE 40 NB,(MEDIUM) x 2038 LG.	YST 210 AS PER IS:1161	1
1	TUBE 40 NB,(MEDIUM) x 4448 LG.	YST 210 AS PER IS:1161	1
ITEM NO	DESCRIPTION	MATERIAL	QTY
BILL OF MATERIAL (QTY-2 NOS(1 LH + 1 R.H))			





6	ANGLE ISA 150x150x16x175LG	GRADE E250, QUALITY BR AS PER IS:808	3
5	PLATE 15 THK x ø120	GRADE E250, QUALITY BR AS PER IS:2062	3
4	ANGLE ISA 90 x 10 THK x 1195 LG.	GRADE E250, QUALITY BR AS PER IS:2062	2
3	TUBE 40 NB,(MEDIUM) x 1238 LG.	YST 210 AS PER IS:1161	2
2	TUBE 40 NB,(MEDIUM) x 1228 LG.	YST 210 AS PER IS:1161	1
1	TUBE 40 NB,(MEDIUM) x 4892 LG.	YST 210 AS PER IS:1161	1
ITEM NO	DESCRIPTION	MATERIAL	QTY
BILL OF MATERIAL (QTY-12 NOS)			





5	ANGLE ISA 150x150x16x175LG	GRADE E250, QUALITY BR AS PER IS:808	2
4	ANGLE ISA 90 x 10 THK x 1683 LG.	GRADE E250, QUALITY BR AS PER IS:2062	1
3	PLATE 15 THK x ø120	GRADE E250, QUALITY BR AS PER IS:2062	2
2	TUBE 40 NB,(MEDIUM) x 1725 LG.	YST 210 AS PER IS:1161	1
1	TUBE 40 NB,(MEDIUM) x 4205 LG.	YST 210 AS PER IS:1161	1
ITEM NO	DESCRIPTION	MATERIAL	QTY
BILL OF MATERIAL (QTY-1 NO)			

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT: AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

TITLE: MOBILE LAUNCH PEDESTAL HAND RAILING

FOR RO ISSUE ONLY			ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE
CLEARED						CHEM	CIVIL	ELEC	I&C	MECH		
DEPT	SIGNATURE	DATE	RO	FOR REVIEW & COMMENTS	ASP	–	–	–	–	KSR	RS	09-03-20
CHEM												
CIVIL												
ELEC												
I&C												
MECH												

ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE
			CHEM	CIVIL	ELEC	I&C	MECH		

TOLERANCES ON LINEAR DIMENSIONS (IS 2102)

DIMENSIONS	TOL.	DIMENSIONS	TOL.
UP TO 6	±0.1	315–1000	± 0.8
6–30	±0.2	1000–2000	± 1.2
30–120	±0.3	2000–4000	± 2.0
120–315	±0.5	4000–8000	± 3.0
RADII AND CHAMFERS	0.5–3	3–6	6–30
TOLERANCE	± 0.2	± 0.5	± 1.0

PROJECTION:

DO NOT SCALE THE DRAWING.
UNLESS OTHERWISE STATED:–
ALL DIMENSIONS ARE IN mm.
MACHINED SURFACES 'M'
SURFACE FINISH TO BE 'M' OR BETTER
REMOVE ALL BURRS
REMOVE ALL EXTERNAL SHARP CORNERS AND EDGES BY CHAMFER 0.15 TO 0.40 AND ROUND ALL INTERNAL CORNERS TO R 0.25

TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSION	TOLERANCE	TOLERANCE ON ANGULAR DIMENSIONS
XX	± 0.40	± 0°-30'
XX.X	± 0.25	
XX.XX	± 0.10	

FILE NAME : TCE.11365A-ME-857-DD-0015(SH3OF3)RO

'P' (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION BUT ARE ISSUED FOR LIMITED PURPOSES ONLY AS INDICATED IN THE SMALL BLOCK AT THE TOP RIGHT HAND CORNER OF THE TITLE BLOCK.

CONSTRUCTION / FABRICATION WORK IS PERMITTED ON 'R' (RELEASED) ISSUES ONLY.

INFORMATION CONTAINED WITHIN 'HOLD' BOXES IS NOT RELEASED FOR CONSTRUCTION / FABRICATION. FIELD / CONSTRUCTION OFFICE TO CLEAR 'HOLDS' IN TIME BEFORE PROCEEDING WITH ANY CONSTRUCTION/FABRICATION WORK RELATED TO 'HOLDS'.

SCALE: 1:15	APPROVED		DATE (RO ISSUE) 09-03-2020
DEL.CENTRE–DISC: MUM–ME		RS	DATE (CURRENT ISSUE) 09-03-2020
DRN: ASP	MUP		RS
CHD: KSR	DWG NO TCE.11365A-ME-857-DD-0015(SH3OF3)	ISSUE	RO

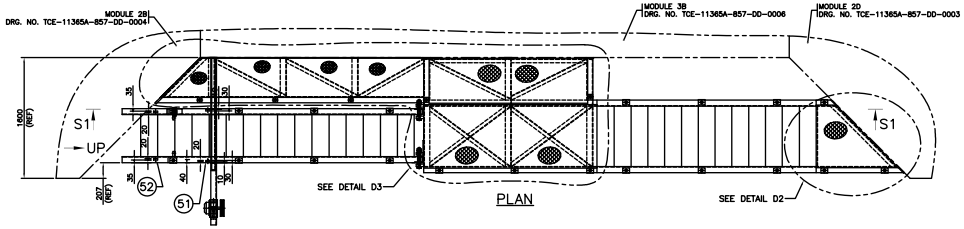
FILE NAME: F-041-Rev-R5.dwg

TCE FORM NO. 041 R5

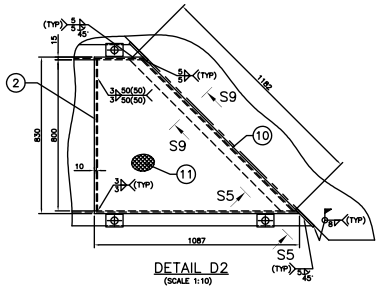
SIZE-A1

DETAILS OF STAIRCASE – TYPE 1

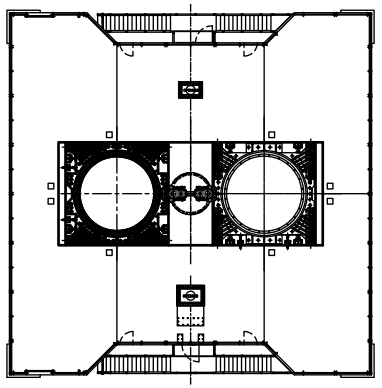
TCE-11365A-857-DD-0016



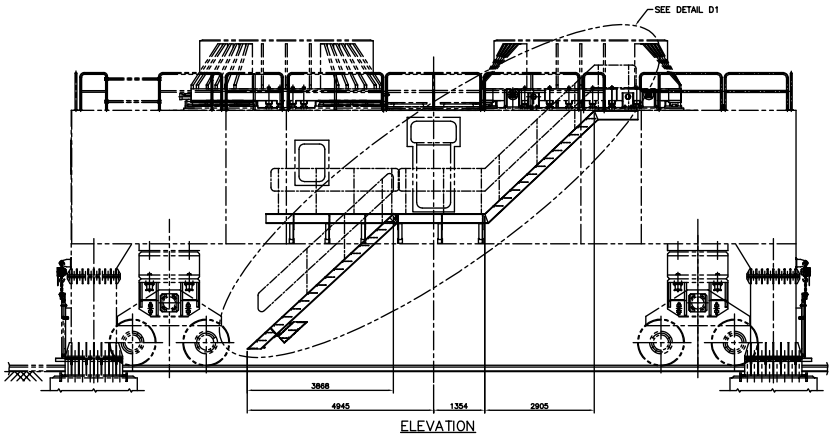
PLAN



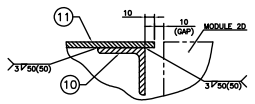
DETAIL D2
(SCALE 1:10)



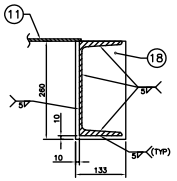
KEY PLAN
(SHOWING ALL MODULES OF MLP)
(SCALE 1:100)



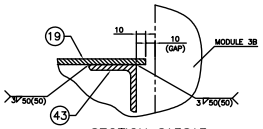
ELEVATION



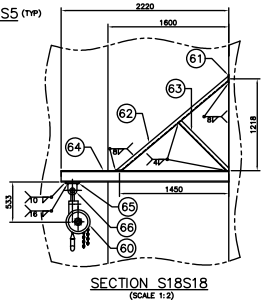
SECTION S9S9
(SCALE 1:2)



SECTION S5S5 (TYP)
(SCALE 1:5)



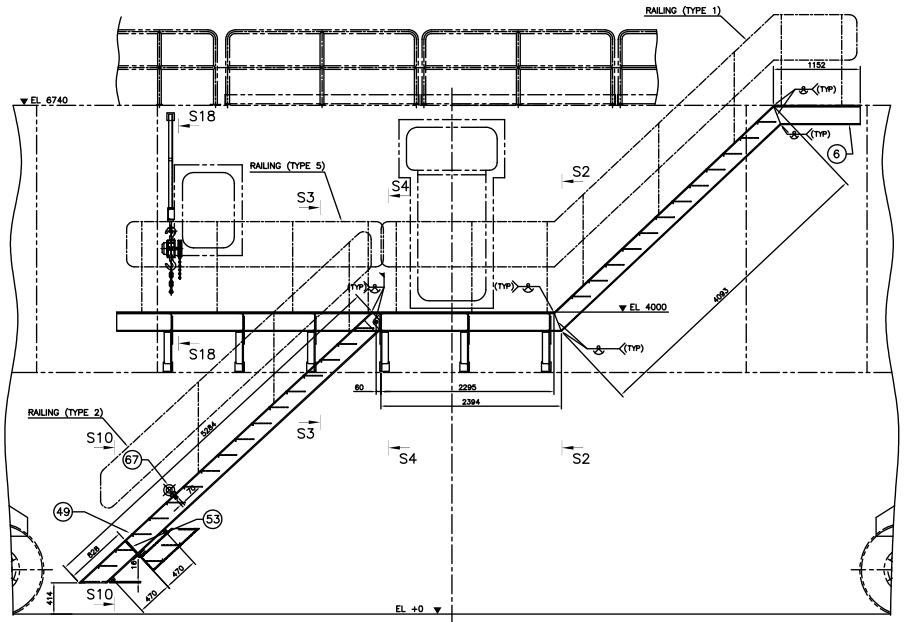
SECTION S13S13
(SCALE 1:2)



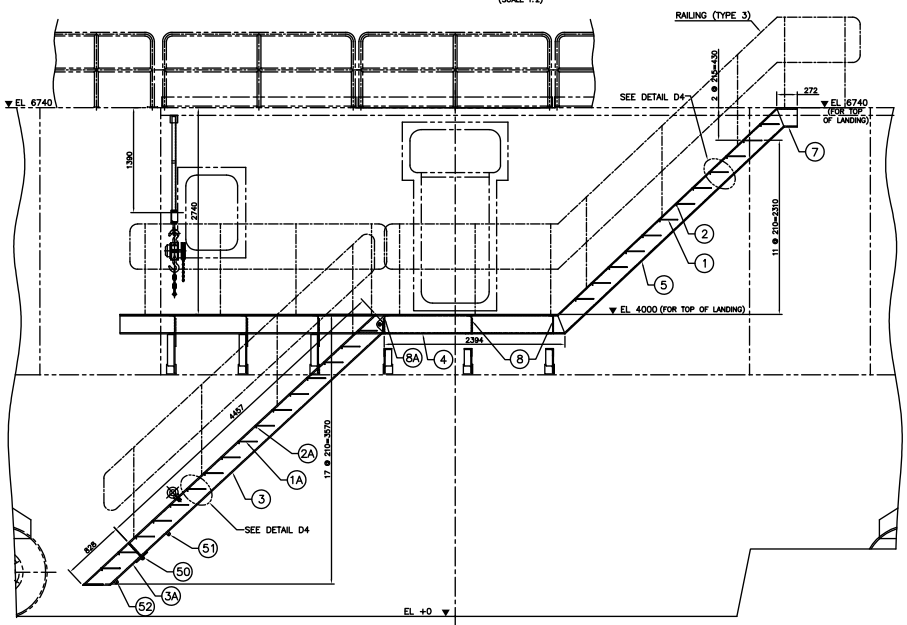
SECTION S18S18
(SCALE 1:2)

NOTES:–

1. QUANTITY REQUIRED : 1 FOR ONE MLP.
2. STAIRCASE (TYPE 1) FOR MODULE 3B IS SHOWN IN THIS DRAWING.
3. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO. TCE.11365A–D–857–0001.
4. THE STAIRCASE SHALL BE SUPPLIED AS LOOSE ITEMS TO SITE. THE STAIRCASE SHALL BE ASSEMBLED & WELDED TO MLP AT SITE AFTER THE COMPLETION OF WELDING OF THE VARIOUS MODULES OF MLP.
5. TOTAL WEIGHT OF EACH FINISHED STAIRCASE WITH RAILING : 2500 Kg.



DETAIL D1
(SCALE 1: 25)



DETAIL D1
(SCALE 1: 25)

BILL OF MATERIAL

PART NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	CHEQUERED PLATE 6 THK x 800 x 252	GRADE–E250, QUALITY A AS PER IS:2062	12	
1A	CHEQUERED PLATE 6 THK x 556 x 252	GRADE–E250, QUALITY A AS PER IS:2062	17	
2	FLAT 6 THK x 25 x 800	GRADE–E250, QUALITY BR AS PER IS:2062	12	
2A	FLAT 6 THK x 25 x 556	GRADE–E250, QUALITY BR AS PER IS:2062	17	
3	ISMC 250 x 4457 LG.	GRADE–E250, QUALITY A AS PER IS:2062	2	
3A	ISMC 250 x 828 LG.	GRADE–E250, QUALITY A AS PER IS:2062	2	
4	ISMC 250 x 2394 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
4A	ISMC 250 x 2387 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
5	ISMC 250 x 4093 LG.	GRADE–E250, QUALITY A AS PER IS:2062	2	
6	ISMC 250 x 1152 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
7	ISMC 250 x 272 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
8	ISMC 250 x 800 LG.	GRADE–E250, QUALITY A AS PER IS:2062	2	
8A	ISMC 250 x 1435 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
9	ISMC 250 x 628 LG.	GRADE–E250, QUALITY A AS PER IS:2062	2	
10	ISA 50 x 50 x 6 x 1182 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
11	CHEQUERED PLATE 6 THK x 1087 x 830	GRADE–E250, QUALITY A AS PER IS:2062	1	CUT TO SHAPE
12	ISA 50 x 50 x 6 x 1114 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
13	ISA 50 x 50 x 6 x 1171 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
14	ISA 50 x 50 x 6 x 1339 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
15	ISA 50 x 50 x 6 x 683 LG.	GRADE–E250, QUALITY A AS PER IS:2062	2	
16	ISA 50 x 50 x 6 x 665 LG.	GRADE–E250, QUALITY A AS PER IS:2062	2	
17	ISA 50 x 50 x 6 x 1339 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
18	PLATE 10 THK x 260 x 133	GRADE–E250, QUALITY BR AS PER IS:2062	3	
19	CHEQUERED PLATE 6 THK x 2100 x 595	GRADE–E250, QUALITY A AS PER IS:2062	1	
20	CHEQUERED PLATE 6 THK x 2301 x 830	GRADE–E250, QUALITY A AS PER IS:2062	1	
21	PLATE 10 THK x 270 x 100	GRADE–E250, QUALITY BR AS PER IS:2062	6	
22	PLATE 10 THK x 365 x 245	GRADE–E250, QUALITY BR AS PER IS:2062	3	
23	ISA 100 x 100 x 12 x 1316 LG.	GRADE–E250, QUALITY A AS PER IS:2062	3	
24	PLATE 10 THK x 125 x 125	GRADE–E250, QUALITY BR AS PER IS:2062	3	
25	ISMC 250 x 3531 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
26	ISMC 250 x 510 LG.	GRADE–E250, QUALITY A AS PER IS:2062	3	
27	CHEQUERED PLATE 6 THK x 519 x 3524	GRADE–E250, QUALITY A AS PER IS:2062	1	
28	ISA 50 x 50 x 6 x 787 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
29	ISA 50 x 50 x 6 x 1061 LG.	GRADE–E250, QUALITY A AS PER IS:2062	2	
29A	ISA 50 x 50 x 6 x 1006 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
30	PLATE 6 THK x 90 x 68	GRADE–E250, QUALITY BR AS PER IS:2062	10	
31	PIPE 50 N.B (M) x 1194 LG.	IS:1161 Yst–240	10	
32	PIPE 50 N.B (M) x 1220 LG.	IS:1161 Yst–240	14	
33	PIPE 40 N.B (M) x 15800 LG.	IS:1161 Yst–240	1	CUT TO SUIT
34	PIPE 40 N.B (M) x 10600 LG.	IS:1161 Yst–240	2	CUT TO SUIT
35	PIPE 40 N.B (M) x 9700 LG.	IS:1161 Yst–240	1	CUT TO SUIT
36	PIPE 40 N.B (M) x 8000 LG.	IS:1161 Yst–240	1	CUT TO SUIT
37	PLATE 10 THK x 125 x 175	GRADE–E250, QUALITY BR AS PER IS:2062	3	
38	ISA 100 x 100 x 12 x 598 LG.	GRADE–E250, QUALITY A AS PER IS:2062	3	
39	PIPE 40 N.B (M) x 1857 LG.	IS:1161 Yst–240	1	
40	PIPE 40 N.B (M) x 510 LG.	IS:1161 Yst–240	1	
41	PLATE 6 THK x 123 x 68	GRADE–E250, QUALITY BR AS PER IS:2062	14	
42	ISA 50 x 50 x 6 x 146 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
43	ISA 50 x 50 x 6 x 1073 LG.	GRADE–E250, QUALITY A AS PER IS:2062	1	
44	PLATE 10 THK x 376 x 245	GRADE–E250, QUALITY BR AS PER IS:2062	3	
45	PLATE 6 THK x 60 x 60	GRADE–E250, QUALITY BR AS PER IS:2062	2	
46	PLATE 32 THK x 100 x 234	GRADE–E250, QUALITY BR AS PER IS:2062	4	
47	PLATE 10 THK x 150 x 240	GRADE–E250, QUALITY BR AS PER IS:2062	2	
48	PIPE 32 N.B (M) x 110 LG.	IS:1161 Yst–240	2	
49	PLATE 25 THK x 75 x 228	GRADE–E250, QUALITY BR AS PER IS:2062	2	
50	BOTTOM HINGE	GRADE–E250, QUALITY A AS PER IS:2062	2	
51	PLATE 20 THK x 40 x 47	GRADE–E250, QUALITY BR AS PER IS:2062	2	
52	PLATE 20 THK x 45 x 45	GRADE–E250, QUALITY BR AS PER IS:2062	2	
53	PLATE 10 THK x 222 x 80	GRADE–E250, QUALITY BR AS PER IS:2062	2	
54	HEX. HD.SCREW M30x270 Lg. IS:1364 (PART2) 8.8–GRADE	–	2	
55	HEX. NUT M30 IS:1364 PART–3 GR 10.9	–	4	
56	MACHINED WASHER 33 IS:2016	45CB AS PER IS:1570 PART–2	4	
57	HEX. HD.SCREW M24x105 Lg. IS:1364 (PART2) 8.8–GRADE	–	2	
58	HEX. NUT M24 IS:1364 PART–3 GR 10.9	–	2	
59	MACHINED WASHER 26 IS:2016	45CB AS PER IS:1570 PART–2	4	
60	EPICYCLIC SPUR GEARED CHAIN PULLEY BLOCK LIFT– 3METRES, CAPACITY:– 2TONS, MAKE – INDEF TYPE–P	–	4	
61	PLATE 10 THK x 100 x 100	GRADE–E250, QUALITY BR AS PER IS:2062	4	
62	ISA 50 x 50 x 6 x 1930 LG.	GRADE–E250, QUALITY A AS PER IS:2062	4	
63	ISA 50 x 50 x 6 x 900 LG.	GRADE–E250, QUALITY A AS PER IS:2062	4	
64	ISMC 150 x 2220 LG.	GRADE–E250, QUALITY A AS PER IS:2062	4	
65	PLATE 20 THK x 150 x 75	GRADE–E250, QUALITY BR AS PER IS:2062	4	
66	PLATE 20 THK x 150 x 120	GRADE–E250, QUALITY BR AS PER IS:2062	4	
67	EYE BOLT IS:4190 SIZE M42 CAPACITY 5 TON		1	

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT: AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

TITLE: MOBILE LAUNCH PEDESTAL (FOR GSLV MK III)
DETAILS OF STAIRCASE – TYPE 1

SCALE: 1:50	APPROVED		DATE (RO ISSUE) 09–03–2020
DEL.CENTRE–DISCIPLINE–ME		RS	DATE (CURRENT ISSUE) 09–03–2020
DRN: ASP	MUP		RS
CHD: KSR	DRG NO. TCE.11365A–ME–857–DD–0016(SH1OF2)	ISSUE	R0

FOR RO ISSUE ONLY

	CLEARED		
DEPT	SIGNATURE	DATE
CHEM		
CIVIL		
ELEC		
I&C		
MECH		

ISSUE	REVISIONS	DRN	CLEARED CHEM	CIVIL	ELEC	I&C	MECH	APPD	DATE
R0	FOR REVIEW AND COMMENTS	ASP	–	–	–	–	KSR	RS	09–03–20

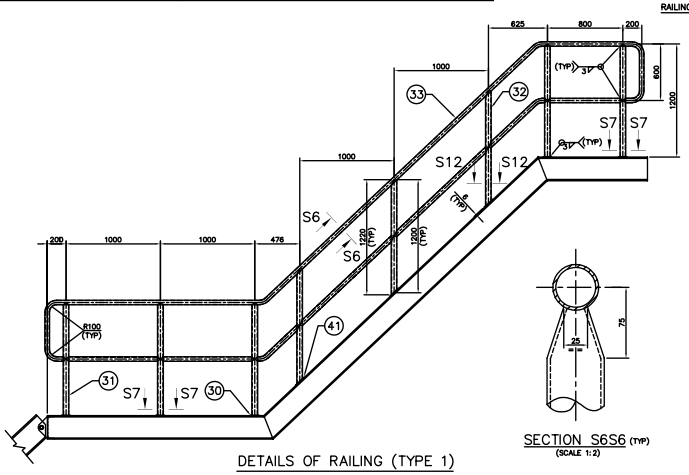
FILE NAME: F–041–Rev–R0.dwg

FILE NAME : TCE.11365A–ME–857–DD–0016(SH1OF2)

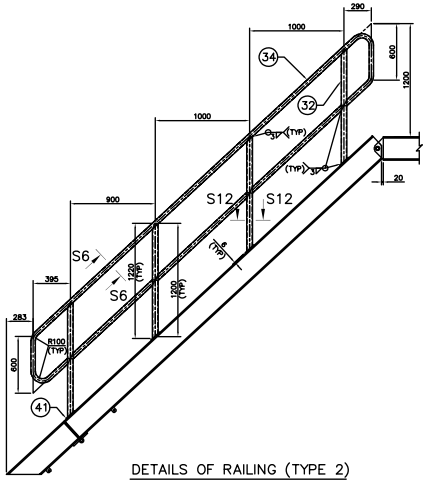
TCE FORM NO. 041 R0

DETAILS OF STAIRCASE – TYPE 1

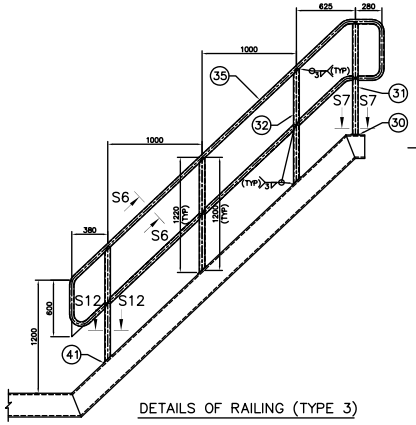
DWG NO TCE.11365A-ME-857-DD-0016(SH2OF2)



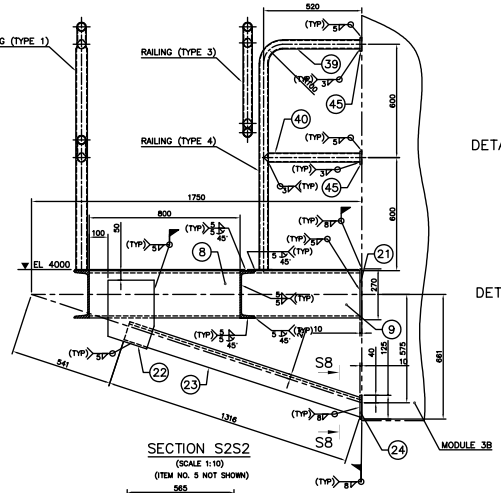
DETAILS OF RAILING (TYPE 1)



DETAILS OF RAILING (TYPE 2)

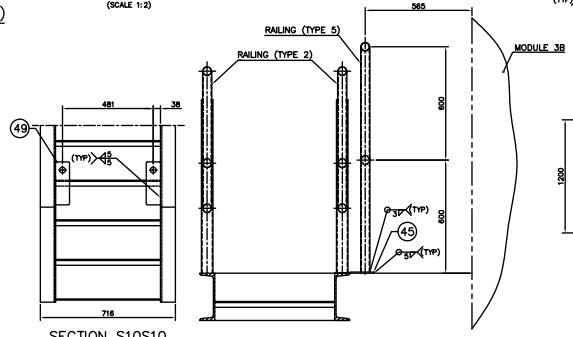


DETAILS OF RAILING (TYPE 3)



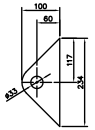
SECTION S2S2
(SCALE 1:10)
(ITEM NO. 5 NOT SHOWN)

SECTION S6S6 (TYP)
(SCALE 1:2)

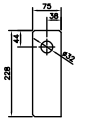


SECTION S4S4
(SCALE 1:10)

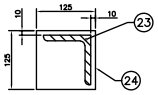
SECTION S10S10



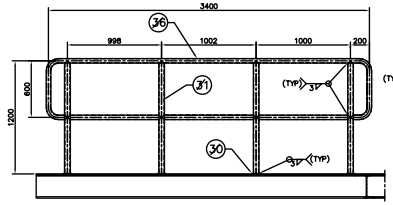
DETAILS OF ITEM NO.46



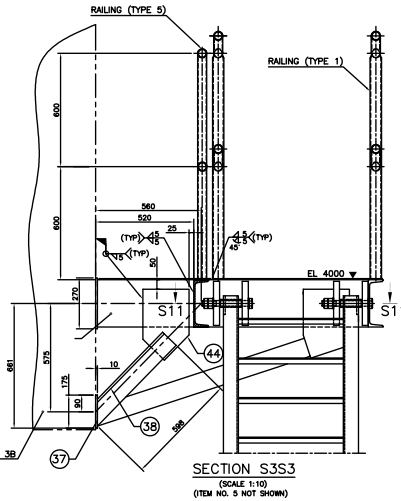
DETAILS OF ITEM NO.49



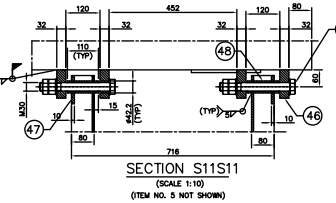
SECTION S8S8
(SCALE 1:4)



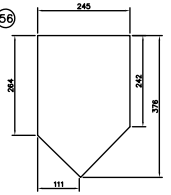
DETAILS OF RAILING (TYPE 5)



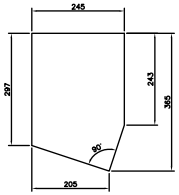
SECTION S3S3
(SCALE 1:10)
(ITEM NO. 5 NOT SHOWN)



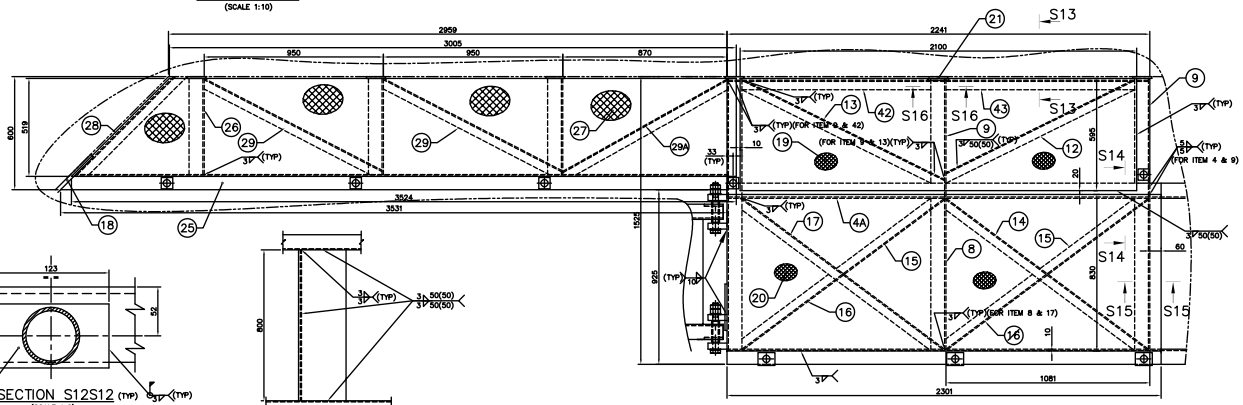
SECTION S11S11
(SCALE 1:10)
(ITEM NO. 5 NOT SHOWN)



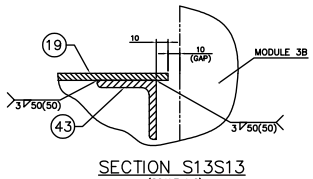
DETAILS OF ITEM NO.44
(SCALE 1:5)



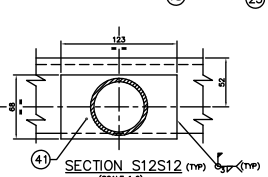
DETAILS OF ITEM NO.22
(SCALE 1:5)



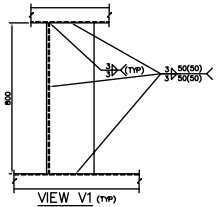
DETAIL D3 (ONLY BOTTOM FLANGES OF RAILING TYPES 1 & 4 ARE SHOWN)
(SCALE 1:10)



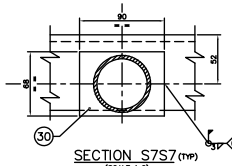
SECTION S13S13
(SCALE 1:2)



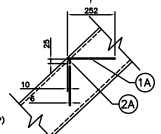
SECTION S12S12 (TYP)
(SCALE 1:2)



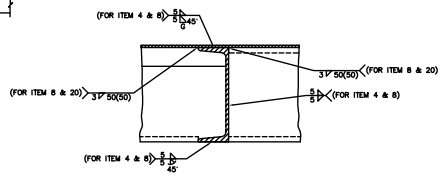
VIEW V1 (TYP)
(SCALE 1:10)
(RAILING NOT SHOWN)



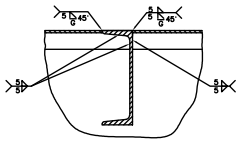
SECTION S7S7 (TYP)
(SCALE 1:2)



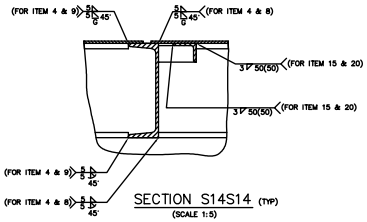
DETAIL D4 (TYP)
(SCALE 1:10)



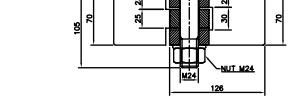
SECTION S15S15 (TYP)
(SCALE 1:5)



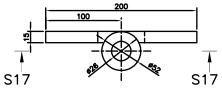
SECTION S16S16
(SCALE 1:5)
(ITEM NO. 19 NOT SHOWN)



SECTION S14S14 (TYP)
(SCALE 1:5)



SECTION S17S17



BOTTOM HINGE
DETAILS OF ITEM NO.50

DETAILS OF ITEM NO.51

DETAILS OF ITEM NO.52

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT: AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

TITLE: MOBILE LAUNCH PEDESTAL (FOR GSLV MK III)
DETAILS OF STAIRCASE – TYPE 1

SCALE: 1:25	APPROVED		DATE (RO ISSUE) 09-03-2020
DEL.CENTRE-DISCIPLINE-ME		RS	DATE (CURRENT ISSUE) 09-03-2020
DRN: ASP	MUP		RS
CHD: KSR	DWG NO TCE.11365A-ME-857-DD-0016(SH2OF2)	ISSUE	RO

FOR RO ISSUE ONLY			ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE
CLEARED						CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH		
DEPT	SIGNATURE	DATE	R0	FOR REVIEW AND COMMENTS	ASP	–	–	–	–	KSR	RS	09-03-20																				
CHEM																																
CIVIL																																
ELEC																																
I&C																																
MECH																																

FILE NAME: F-041-Rev-R0.dwg

FILE NAME : TCE.11365A-ME-857-DD-0016(SH2OF2)

TOLERANCES ON LINEAR DIMENSIONS (IS 2102)

RANGE	MACHINED	CASTING	FABRICATION
0.5 TO 3	±0.05	±0.5	±0.5
3 TO 6	±0.05	±0.5	±0.5
6 TO 30	±0.1	±0.5	±0.5
30 TO 120	±0.15	±0.5	±0.5
120 TO 400	±0.2	±0.5	±0.5
400 TO 1000	±0.3	±0.5	±0.5
1000 TO 2000	±0.5	±0.5	±0.5
2000 TO 4000	±0.8	±0.5	±0.5
4000 TO 8000	±1.2	±0.5	±0.5
TOLERANCE	± 0.05	± 0.5	± 0.5

TOLERANCE ON LINEAR DIMENSIONS

	MACHINED	CASTING	FABRICATION
PROJECTION	±0.1	±0.5	±0.5
TOLERANCE	± 0.05	± 0.5	± 0.5

TOLERANCE ON ANGULAR DIMENSIONS

TOLERANCE	± 0° – 30'

DO NOT SCALE THE DRAWING. USE ONLY DIMENSIONS MENTIONED. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED. ALL ANGULAR DIMENSIONS TO BE IN DEGREES AND MINUTES. ALL DIMENSIONS, UNLESS OTHERWISE MENTIONED, ARE TO BE MACHINED. ALL MACHINED SURFACES TO BE 3.2 MICRON. ALL WELDING SYMBOLS CONFORM TO IS 813.

ALL DIMENSIONS, CONFIRMED, TO BE TAKEN ONLY FROM THE DRAWING. ALL DIMENSIONS TO BE CHECKED AT SITE BEFORE FABRICATION. ANY DISCREPANCY SHALL BE REPORTED TO THE DESIGNER FOR RESOLUTION BEFORE FABRICATION. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED.

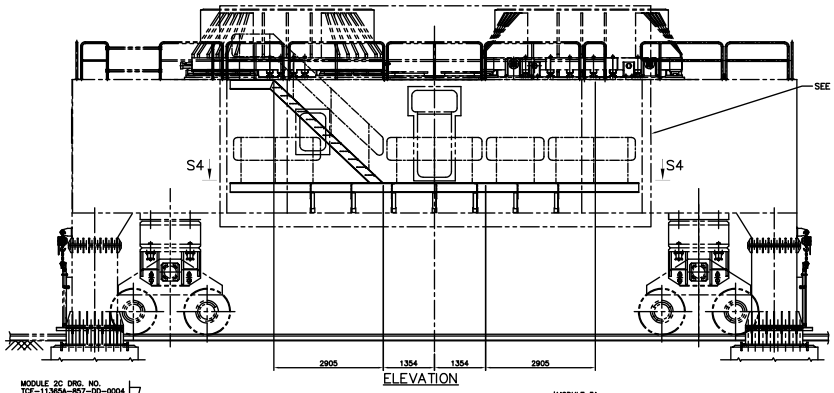
CONTRACTOR'S / SUPPLIER'S SEAL & SIGNATURE

DWG NO: TCE.11365A-ME-857-DD-0016(SH2OF2) ISSUE: RO

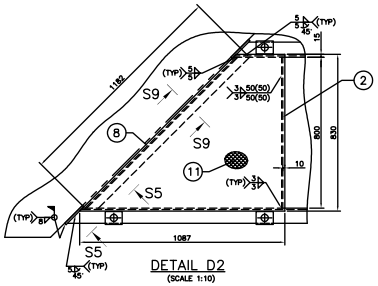
TCE FORM NO. 041 R0

DETAILS OF STAIRCASE – TYPE 2

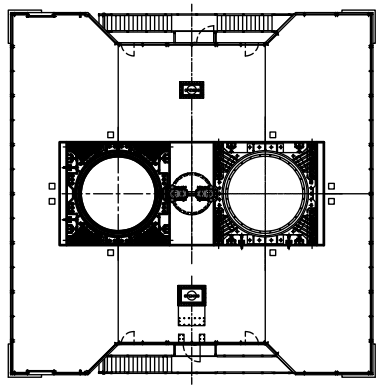
DWG NO TCE.11365A-ME-857-DD-0017(SH1OF2)



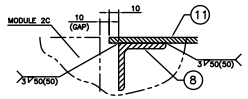
ELEVATION



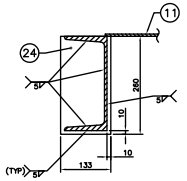
DETAIL D2
(SCALE 1:10)



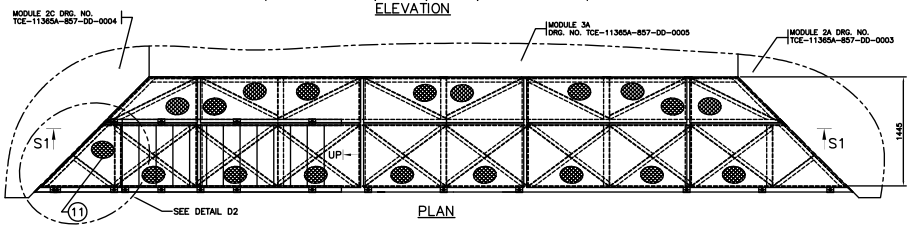
KEY PLAN
(SHOWING ALL MODULES OF MLP)
(SCALE 1:100)



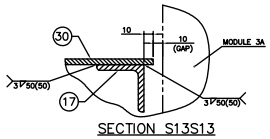
SECTION S9S9
(SCALE 1:2)



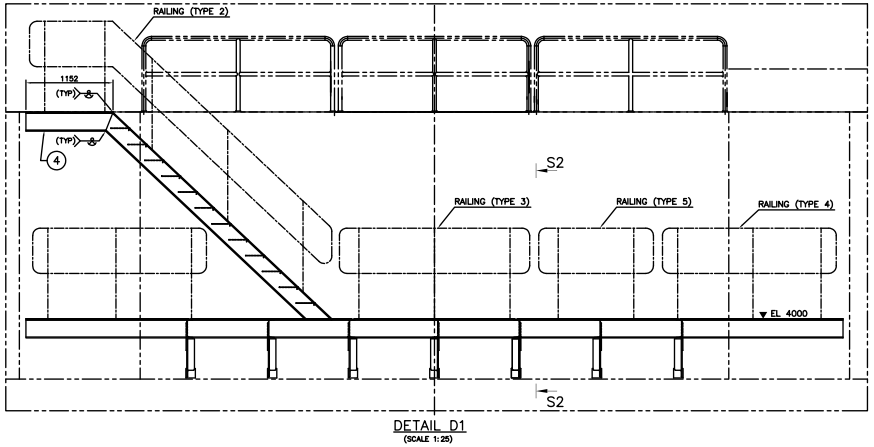
SECTION S5S5 (TYP)
(SCALE 1:5)



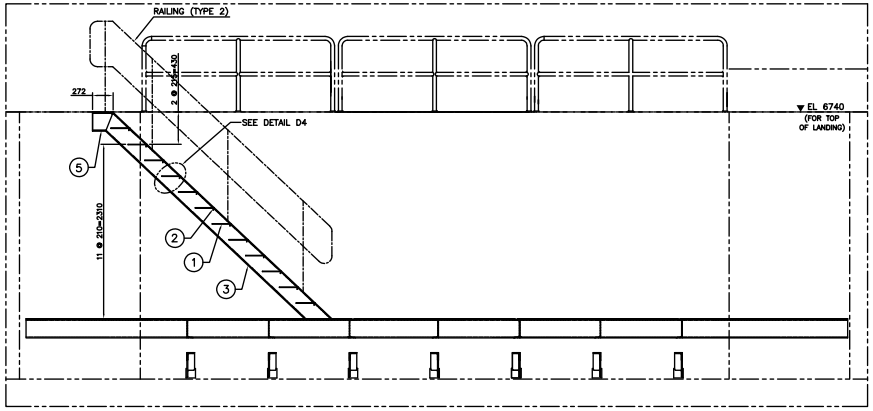
PLAN



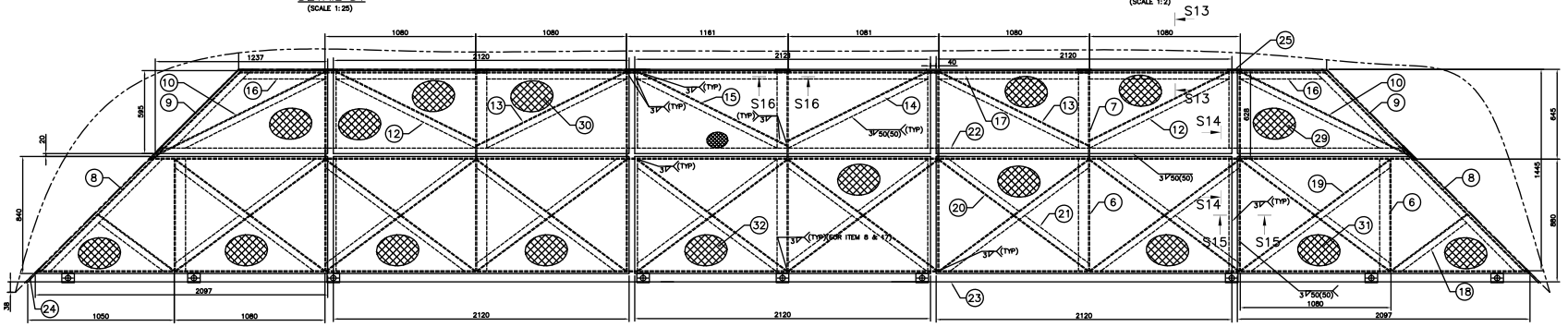
SECTION S13S13



DETAIL D1
(SCALE 1:25)



SECTION S1S1
(SCALE 1:2)



SECTION S4S4
(SCALE 1:8)

BILL OF MATERIAL

PART NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	CHEQUERED PLATE 6 THK x 800 x 252	GRADE-E250(QUALITY A AS PER IS:2062	12	
2	FLAT 6 THK x 25 x 800	GRADE-E250(QUALITY BR AS PER IS:2062	13	
3	ISMC 250 x 3993 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	2	
4	ISMC 250 x 1152 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	1	
5	ISMC 250 x 272 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	1	
6	ISMC 250 x 800 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	9	
7	ISMC 250 x 628 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	7	
8	ISA 50 x 50 x 6 x 1182 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	2	
9	ISA 50 x 50 x 6 x 953 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	2	
10	ISA 50 x 50 x 6 x 1336 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	2	
11	CHEQUERED PLATE 6 THK x 1087 x 830	GRADE-E250(QUALITY A AS PER IS:2062	1	CUT TO SHAPE
12	ISA 50 x 50 x 6 x 1142 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	2	
13	ISA 50 x 50 x 6 x 1200 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	2	
14	ISA 50 x 50 x 6 x 1105 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	1	
15	ISA 50 x 50 x 6 x 1186 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	2	
16	ISA 50 x 50 x 6 x 609 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	2	
17	ISA 50 x 50 x 6 x 1073 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	6	
18	ISA 50 x 50 x 6 x 677 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	2	
19	ISA 50 x 50 x 6 x 1338 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	8	
20	ISA 50 x 50 x 6 x 667 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	8	
21	ISA 50 x 50 x 6 x 665 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	8	
22	ISMC 250 x 9062 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	1	
23	ISMC 250 x 10822 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	1	
24	PLATE 10 THK x 260 x 133	GRADE-E250(QUALITY BR AS PER IS:2062	4	
25	PLATE 10 THK x 270 x 100	GRADE-E250(QUALITY BR AS PER IS:2062	7	
26	PLATE 10 THK x 365 x 245	GRADE-E250(QUALITY BR AS PER IS:2062	7	CUT TO SUIT
27	ISA 100 x 100 x 12 x 1316 LG.	GRADE-E250(QUALITY BR AS PER IS:2062	7	
28	PLATE 10 THK x 125 x 125	GRADE-E250(QUALITY BR AS PER IS:2062	7	
29	CHEQUERED PLATE 6 THK x 1237 x 595	GRADE-E250(QUALITY A AS PER IS:2062	2	CUT TO SUIT
30	CHEQUERED PLATE 6 THK x 2120 x 595	GRADE-E250(QUALITY A AS PER IS:2062	3	
31	CHEQUERED PLATE 6 THK x 2097 x 840	GRADE-E250(QUALITY A AS PER IS:2062	2	CUT TO SUIT
32	CHEQUERED PLATE 6 THK x 2120 x 840	GRADE-E250(QUALITY A AS PER IS:2062	3	
33	PLATE 6 THK x 90 x 68	GRADE-E250(QUALITY BR AS PER IS:2062	14	
34	PIPE 50 N.B (M) x 1194 LG.	IS1161 YH-240	14	
35	PIPE 50 N.B (M) x 1220 LG.	IS1161 YH-240	6	
36	PIPE 40 N.B (M) x 11300 LG.	IS1161 YH-240	1	CUT TO SUIT
37	PIPE 40 N.B (M) x 6240 LG.	IS1161 YH-240	2	CUT TO SUIT
38	PIPE 40 N.B (M) x 9700 LG.	IS1161 YH-240	1	CUT TO SUIT
39	PIPE 40 N.B (M) x 5857 LG.	IS1161 YH-240	2	CUT TO SUIT
40	PLATE 6 THK x 123 x 68	GRADE-E250(QUALITY BR AS PER IS:2062	6	
41	PIPE 40 N.B (M) x 4240 LG.	IS1161 YH-240	1	CUT TO SUIT

NOTES:–

1. QUANTITY REQUIRED : 1 FOR ONE MLP.
2. STAIRCASE (TYPE 1) FOR MODULE 3A IS SHOWN IN THIS DRAWING.
3. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO. TCE.11365A–D–857–0001.
4. THE STAIRCASE SHALL BE SUPPLIED AS LOOSE ITEMS TO SITE. THE STAIRCASE SHALL BE ASSEMBLED & WELDED TO MLP AT SITE AFTER THE COMPLETION OF WELDING OF THE VARIOUS MODULES OF MLP.
5. TOTAL WEIGHT OF EACH FINISHED STAIRCASE WITH RAILING : 2850 Kg.

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT: AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

TITLE: MOBILE LAUNCH PEDESTAL (FOR GSLV MK III)
DETAILS OF STAIRCASE – TYPE 2

SCALE: 1:25 | APPROVED | DATE (RO ISSUE) 09–03–2020
DEL.CENTRE–DISCIPLINE–ME | RS | DATE (CURRENT ISSUE) 09–03–2020
DRN: ASP | MUP | RS
CHD: KSR | DRG NO TCE.11365A–ME–857–DD–0017(SH1OF2) | ISSUE R0

TCE FORM NO. 041 R0

FOR RO ISSUE ONLY			ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE
CLEARED						CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH		
DEPT	SIGNATURE	DATE	R0	FOR FABRICATION	ASP	–	–	–	–	KSR	RS	09–03–20																				
CHEM																																
CIVIL																																
ELEC																																
I&C																																
MECH																																

FILE NAME : TCE.11365A-ME-857-DD-0017(SH1OF2).dwg

TOLERANCES ON LINEAR DIMENSIONS (IS 2102)

UPTO 6	± 0.1
OVER 6 UPTO 30	± 0.2
OVER 30 UPTO 120	± 0.3
OVER 120 UPTO 400	± 0.5
OVER 400 UPTO 1000	± 0.8
OVER 1000 UPTO 2000	± 1.2
OVER 2000 UPTO 4000	± 2.0
TOLERANCE	± 0.5 ± 0.8 ± 1.2

PROJECTION:

DO NOT SCALE THE DRAWING. UNLESS OTHERWISE INSTRUCTED, ALL DIMENSIONS ARE IN MM. ALL DIMENSIONS TO BE CHECKED AT SITE BEFORE MANUFACTURE. ALL MATERIAL, WORKMANSHIP TO BE AS PER RELEVANT INDIAN STANDARDS. UNLESS OTHERWISE SPECIFIED ALL WELDS SHALL BE CONTINUOUS FILLET WELDS OF SIZE EQUAL TO THE THICKNESS OF THINNER PLATE BEING WELDED. ALL WELDS SHALL BE AS PER IS:9595 AND IS:816. ALL WELDS SHALL BE CLEANED AND PAINTED AFTER WELDING. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED. ALL DIMENSIONS SHALL BE CHECKED AT SITE BEFORE MANUFACTURE. ALL MATERIAL, WORKMANSHIP TO BE AS PER RELEVANT INDIAN STANDARDS. UNLESS OTHERWISE SPECIFIED ALL WELDS SHALL BE CONTINUOUS FILLET WELDS OF SIZE EQUAL TO THE THICKNESS OF THINNER PLATE BEING WELDED. ALL WELDS SHALL BE AS PER IS:9595 AND IS:816. ALL WELDS SHALL BE CLEANED AND PAINTED AFTER WELDING.

TOLERANCE ON LINEAR DIMENSIONS

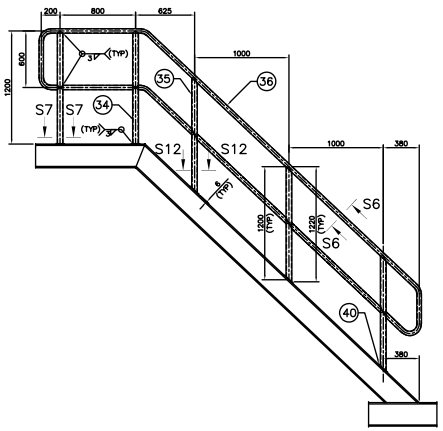
DIMENSIONS	TOLERANCE
UPTO 6	± 0.10
OVER 6 UPTO 30	± 0.20
OVER 30 UPTO 120	± 0.30
OVER 120 UPTO 400	± 0.50
OVER 400 UPTO 1000	± 0.80
OVER 1000 UPTO 2000	± 1.20
OVER 2000 UPTO 4000	± 2.00

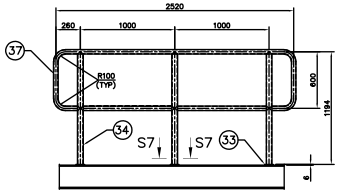
TOLERANCE ON ANGULAR DIMENSIONS: 2°–30'

THIS DRAWING AND DESIGN IS THE PROPERTY OF TATA CONSULTING ENGINEERS LIMITED (TCE) AND IS ISSUED IN CONFIDENCE FOR THE PURPOSE FOR WHICH IT IS SPECIFICALLY FURNISHED AND ON THE UNDERSTANDING THAT ITS CONTENTS SHALL NOT BE COPIED, USED OR COMMUNICATED TO A THIRD PARTY IN ANY MANNER WHATSOEVER WITHOUT THE WRITTEN PERMISSION OF TCE. THE RECIPIENT BY ACCEPTING THIS DRAWING AGREES TO RETURN IT TO TCE ON DEMAND AND ABIDES TO THE ABOVE CONDITIONS.

DETAILS OF STAIRCASE – TYPE 2

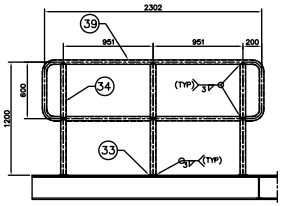
DWG NO: TCE.11365A-ME-857-DD-0017(SH2OF2)



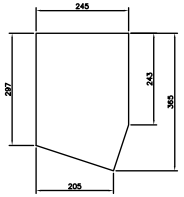


DETAILS OF RAILING (TYPE 3)

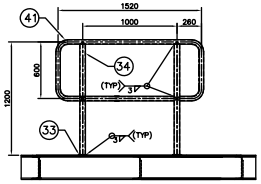
DETAILS OF RAILING (TYPE 1)



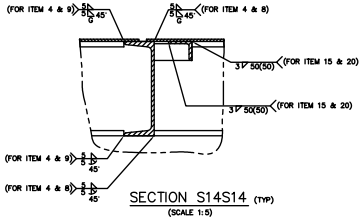
DETAILS OF RAILING (TYPE 4)



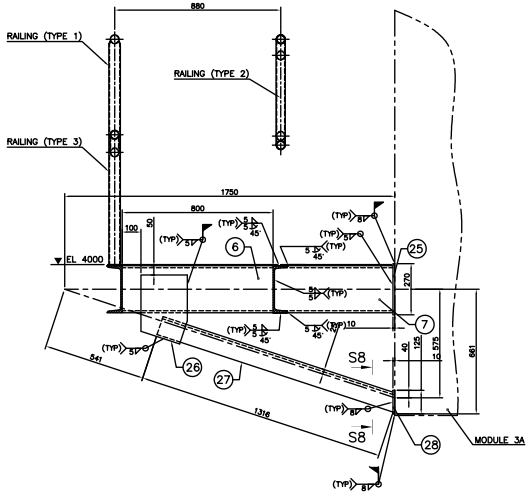
DETAILS OF ITEM NO.26
(SCALE 1:5)



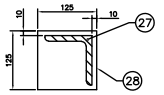
DETAILS OF RAILING (TYPE 5)



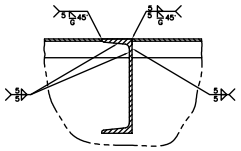
SECTION S14S14 (TYP)
(SCALE 1:5)



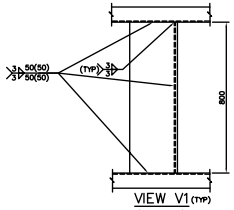
SECTION S2S2
(SCALE 1:10)
(ITEM NO. 5 NOT SHOWN)



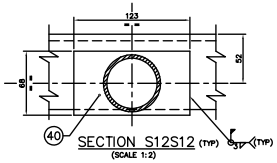
SECTION S8S8
(SCALE 1:4)



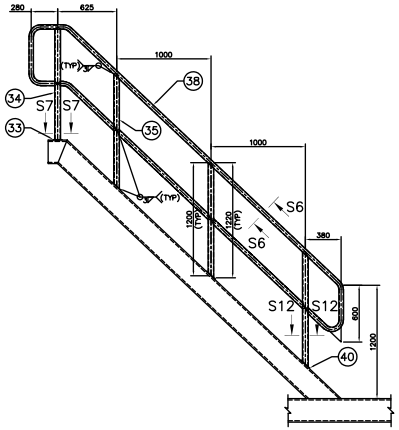
SECTION S16S16
(SCALE 1:5)
(ITEM NO. 19 NOT SHOWN)



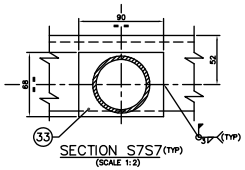
VIEW V1 (TYP)
(SCALE 1:10)
(RAILING NOT SHOWN)



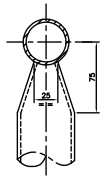
SECTION S12S12 (TYP)
(SCALE 1:2)



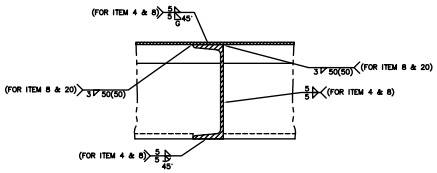
DETAILS OF RAILING (TYPE 2)



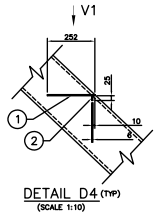
SECTION S7S7(TYP)
(SCALE 1:2)



SECTION S6S6 (TYP)
(SCALE 1:2)



SECTION S15S15 (TYP)
(SCALE 1:5)



DETAIL D4 (TYP)
(SCALE 1:10)

FOR RO ISSUE ONLY			ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE
CLEARED						CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH		
DEPT	SIGNATURE	DATE	RO	FOR FABRICATION	ASP	–	–	–	–	KSR	RS	09-03-20																				
CHEM																																
CIVIL																																
ELEC																																
I&C																																
MECH																																

FILE NAME: F-041-Rev-R0.dwg

TOLERANCE ON LINEAR DIMENSIONS (IS 2102)

RANGE	TOLERANCE
UP TO 6	± 0.05
OVER 6 UP TO 30	± 0.10
OVER 30 UP TO 120	± 0.15
OVER 120 UP TO 400	± 0.20
OVER 400 UP TO 1000	± 0.30
OVER 1000 UP TO 2000	± 0.50
OVER 2000 UP TO 4000	± 0.80
TOLERANCE	± 0.5 ± 0.8 ± 1.2

PROJECTION:

DO NOT SCALE THE DRAWING.
UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN MM.
ALL ANGULAR DIMENSIONS TO BE IN DEGREES AND MINUTES.
REMOVE ALL BURRS, SHARP EDGES TO A RADIUS OF 0.2 MAX.
REMOVE ALL BURRS, SHARP EDGES TO A RADIUS OF 0.2 MAX.

TOLERANCE ON LINEAR DIMENSIONS

RANGE	TOLERANCE
UP TO 30	± 0.05
OVER 30 UP TO 120	± 0.10
OVER 120 UP TO 400	± 0.15
OVER 400 UP TO 1000	± 0.20
OVER 1000 UP TO 2000	± 0.30
OVER 2000 UP TO 4000	± 0.50
OVER 4000 UP TO 8000	± 0.80
TOLERANCE	± 0.5 ± 0.8 ± 1.2

TOLERANCE ON ANGULAR DIMENSIONS

RANGE	TOLERANCE
UP TO 10	± 0.30
OVER 10 UP TO 50	± 0.15
OVER 50 UP TO 120	± 0.10
OVER 120	± 0.05

2°0'-30'

FILE NAME : TCE.11365A-ME-857-DD-0017(SH2OF2).dwg

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DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT: AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

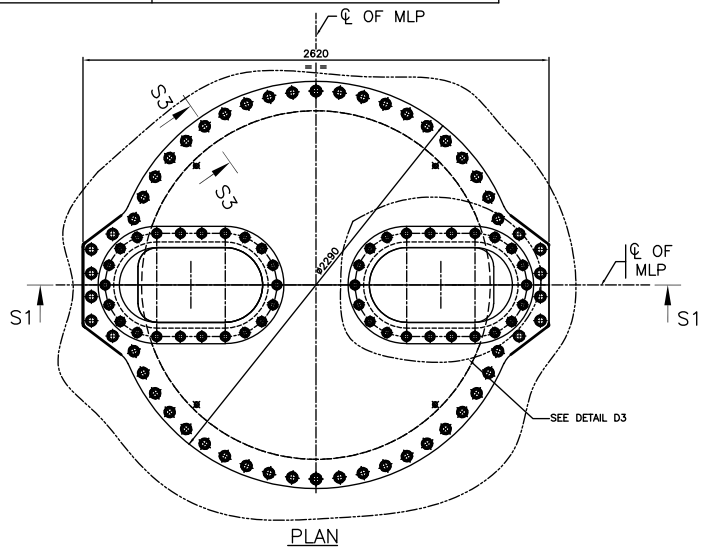
TITLE: MOBILE LAUNCH PEDESTAL (FOR GSLV MK III)
DETAILS OF STAIRCASE – TYPE 2

SCALE: 1:20	APPROVED		DATE (RO ISSUE) 09-03-2020
DEL.CENTRE-DISCIPLINE-ME		RS	DATE (CURRENT ISSUE) 09-03-2020
DRN: ASP	MUP		RS
CHD: KSR	DWG NO: TCE.11365A-ME-857-DD-0017(SH2OF2)	ISSUE	RO

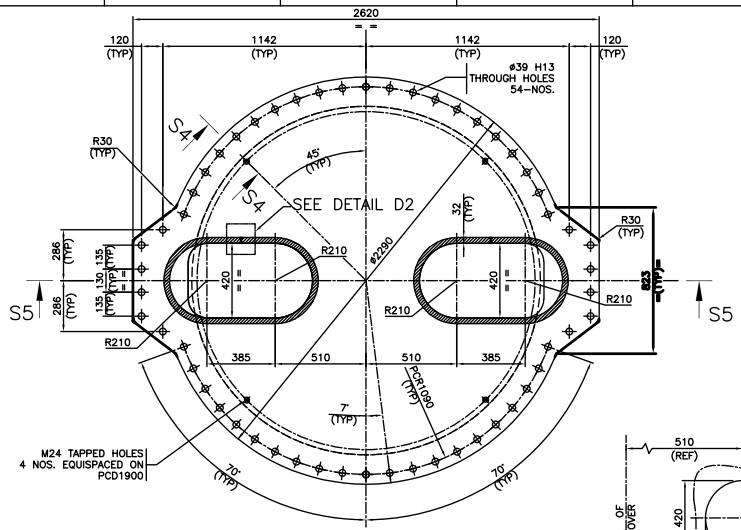
TCE FORM NO. 041 R0

TITLE: MOBILE LAUNCH PEDESTAL
ASSEMBLY AND DETAILS
COVER FOR L110 OPENING

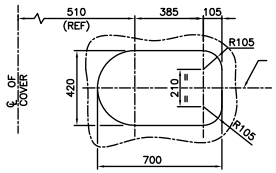
DWG NO: TCE.11365A-ME-857-DD-0018



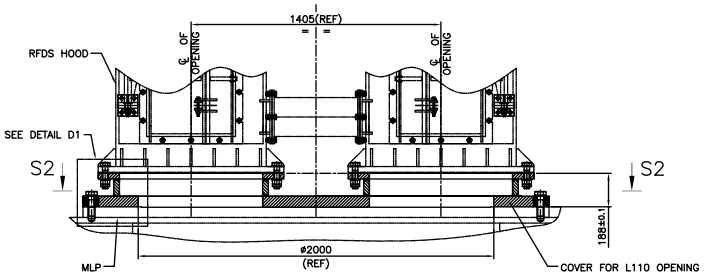
PLAN



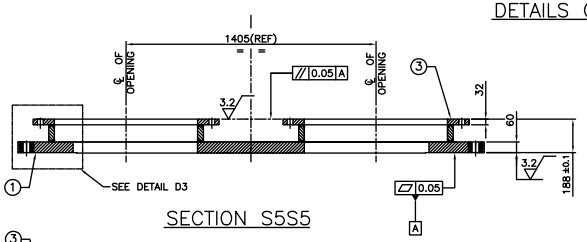
SECTION S2S2



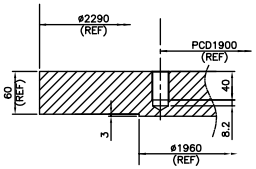
DETAILS OF CUTOUT ON ITEM NO.1
(TYPICAL AT 2 PLACES)



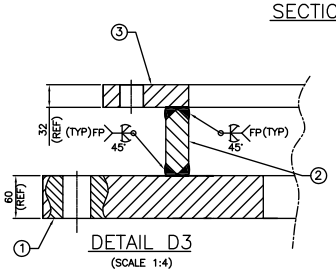
SECTION S1S1



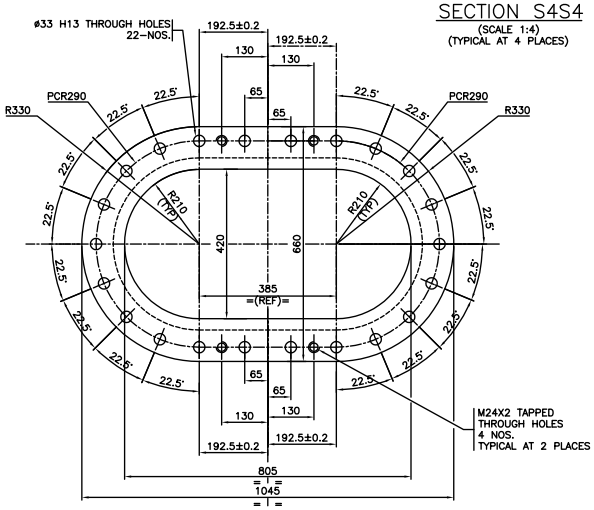
SECTION S5S5



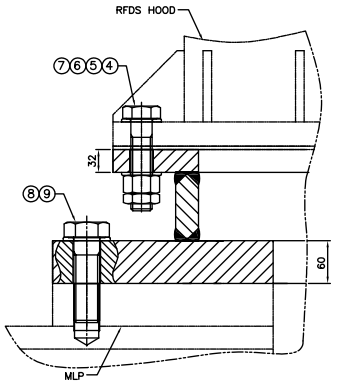
SECTION S4S4
(SCALE 1:4)
(TYPICAL AT 4 PLACES)



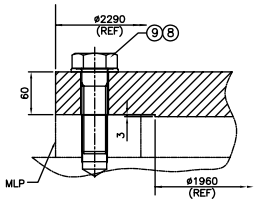
DETAIL D3
(SCALE 1:4)



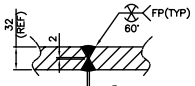
DETAIL D3 (TYPICAL AT 2 PLACES)
(SCALE 1:10)
(ITEM NO. 1 AND FASTENERS NOT SHOWN FOR CLARITY)



DETAIL D1
(SCALE 1:4)



SECTION S3S3
(SCALE 1:4)



DETAIL D2
(SCALE 1:4)

DETAILS OF COVER FOR L110 OPENING

BILL OF MATERIAL

PART NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	PLATE 63 X 2290 X 2620 LG	GRADE-E350, QUALITY BR AS PER IS:2062	1	
2	PLATE 32 X 96 X 3040 LG.	GRADE-E350, QUALITY BR AS PER IS:2062	2	BEND TO SHAPE
3	PLATE 36 X 660 X 1045 LG.	GRADE-E350, QUALITY BR AS PER IS:2062	2	
4	HEX. HD. BOLT M30x130 LG. IS:1364 (PART-1) GRADE 10.9		44	
5	HEX NUT M30 IS:1364 (PART-3) CLASS 10		44	
6	MACHINED WASHER 31 IS:2016	45C8 AS PER IS:1570 PART-2	88	
7	HEX THIN NUT M30 IS:1364 (PART-4) CLASS 10		44	
8	HEX. HD. BOLT M36x120 LG. IS:1364 (PART-1) GRADE 10.9		54	
9	MACHINED WASHER 37 IS:2016	45C8 AS PER IS:1570 PART-2	54	

NOTES:

1. QUANTITY REQUIRED : 1 (FOR ONE MLP)
2. FOR MANUFACTURING STANDARDS AND TOLERANCES, SURFACE PREPARATION AND WELDING INSTRUCTIONS REFER SPECIFICATION TCE.11365A-D-857-001.
3. UNLESS OTHERWISE SPECIFIED, ALL WELDING SHALL BE CARRIED OUT AS PER IS:9595.
4. STRESS RELIEVING IS TO BE CARRIED OUT AFTER COMPLETION OF ALL WELDING & BEFORE MACHINING.
5. UNLESS OTHERWISE SPECIFIED, ALL WELDING SHALL BE SUBJECTED TO THE FOLLOWING TESTS:

5.1.100% MT/PT FOR FILLET WELDS AFTER FINAL PASS.

5.2.100% PT FOR GROOVE WELDS AFTER ROOT PASS AND FINAL PASS.

5.3.100% UT/ RT FOR GROOVE WELDS AFTER FINAL PASS

6. UNLESS OTHERWISE SPECIFIED, ALL GROOVE WELDS SHALL BE FULL PENETRATION TYPE WITH 100% RADIOGRAPHIC/ULTRASONIC TESTING.
7. ALL DIMENSIONS SPECIFIED IN THIS DRAWING ARE FINAL DIMENSIONS WHICH ARE TO BE ACHIEVED AFTER FINISH MACHINING.
8. ALL MATING SURFACES, BORES AND THREADED HOLES SHALL BE GREASED. THE REMAINING EXPOSED SURFACES SHALL BE PAINTED AS PER THE INSTRUCTIONS STATED IN SPECIFICATION NO. TCE.11365A-D-857-001.
9. BILL OF MATERIAL SHOWS THE FINISHED SIZES OF PLATES, BARS AND OTHER SECTIONS. FOR MATERIAL PROCUREMENT, NECESSARY FABRICATION ALLOWANCE SHALL BE ADDED AS PER EXISTING SHOP PRACTICES.
10. USE TEMPLATES FOR MARKING AND DRILLING HOLES. THE SAME TEMPLATE IS TO BE USED FOR DRILLING HOLES IN ALL MATING COMPONENTS.
11. TOTAL WEIGHT OF FINISHED COMPONENT : 2100 KG.

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT
AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

TITLE
MOBILE LAUNCH PEDESTAL
COVER FOR L110 OPENING ASSEMBLY AND DETAILS

SCALE: 1:15	APPROVED		DATE (RO ISSUE)
DEL.CENTRE-DISC: MUM-ME	PROJECT MANAGER	RS	DATE (CURRENT ISSUE) 09-03-2020
DRN: ASP	MUP		RS
CHD: KSR	DWG NO TCE.11365A-ME-857-DD-0018	ISSUE	RO

SIZE: A1

FILE NAME : TCE-11365A57D00018R0

'P' (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION BUT ARE ISSUED FOR LIMITED PURPOSES ONLY AS INDICATED IN THE SMALL BLOCK AT THE TOP RIGHT HAND CORNER OF THE TITLE BLOCK.

CONSTRUCTION / FABRICATION WORK IS PERMITTED ON 'R' (RELEASED) ISSUES ONLY.

INFORMATION CONTAINED WITHIN 'HOLD' BOXES ON RELEASED FOR CONSTRUCTION / FABRICATION FIELD DRAWINGS MUST BE DESIGN OFFICE TO CLEAR THE 'HOLDS' IN TIME BEFORE PROCEEDING WITH ANY CONSTRUCTION/FABRICATION WORK RELATED TO 'HOLDS'.

DO NOT SCALE THE DRAWING. UNLESS OTHERWISE STATED:- ALL DIMENSIONS ARE IN mm. SURFACE FINISH TO BE 3.2 OR BETTER REMOVE ALL BURRS. REMOVE ALL EXTERNAL SHARP CORNERS AND EDGES BY CHAMFER 0.15 AND ROUND ALL INTERNAL CORNERS TO R 2.00

TOLERANCES ON LINEAR DIMENSIONS (IS 2102)

DIMENSIONAL RANGE	TOL. (MEDIUM)	TOL. (COARSE)
UP TO 6	±0.1	± 0.2
6-30	±0.2	± 0.5
30-120	±0.3	± 0.8
120-315	±0.5	± 1.2
BASIC ANGLE DIMENSIONS	0.5°	1°
TOLERANCE	± 0.2	± 0.5

TOLERANCES ON LINEAR DIMENSIONS:

SPECIFIED DIMENTIONS	TOLERANCE
XX	± 0.40
XX.X	± 0.25
XX.XX	± 0.10

TOLERANCE ON ANGULAR DIMENSIONS: ± 0°-30'

PROJECTION:

FOR R0 ISSUE ONLY				REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE
CLEARED						CHEM	CIVIL	ELEC	I&C	MECH			
DEPT	SIGNATURE	DATE	R0	FOR FABRICATION	ASP	–	–	–	–	KSR	RS	09-03-2020	
CHEM													
CIVIL													
ELEC													
I&C													
MECH													

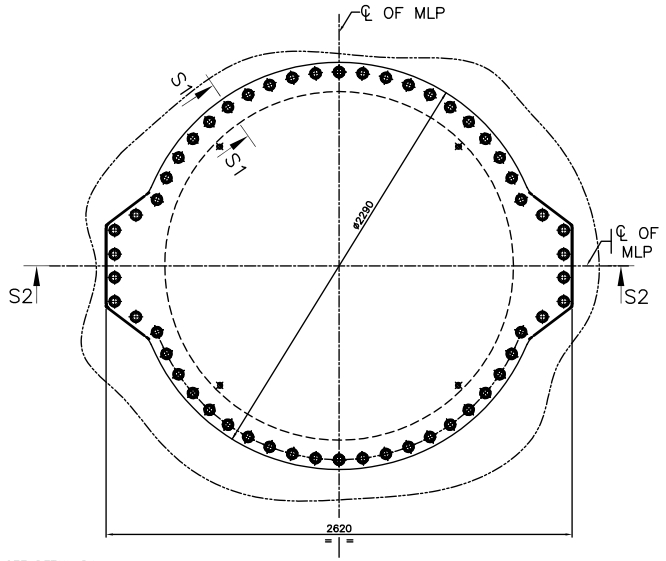
REVISIONS	DRN	CLEARED					APPD	DATE
		CHEM	CIVIL	ELEC	I&C	MECH		

FILE NAME: F-041-Rev-R5.dwg

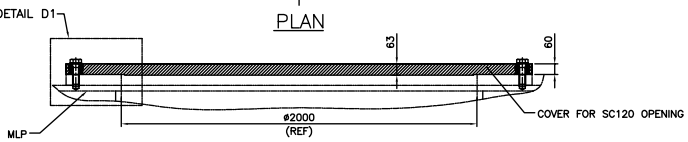
TCE FORM NO. 041 R5

TITLE: MOBILE LAUNCH PEDESTAL
COVER FOR SC120 OPENING
ASSEMBLY AND DETAILS

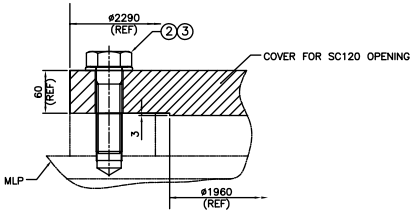
DWG NO: TCE.11365A-ME-857-DD-0019



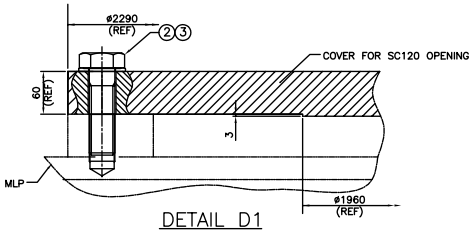
PLAN



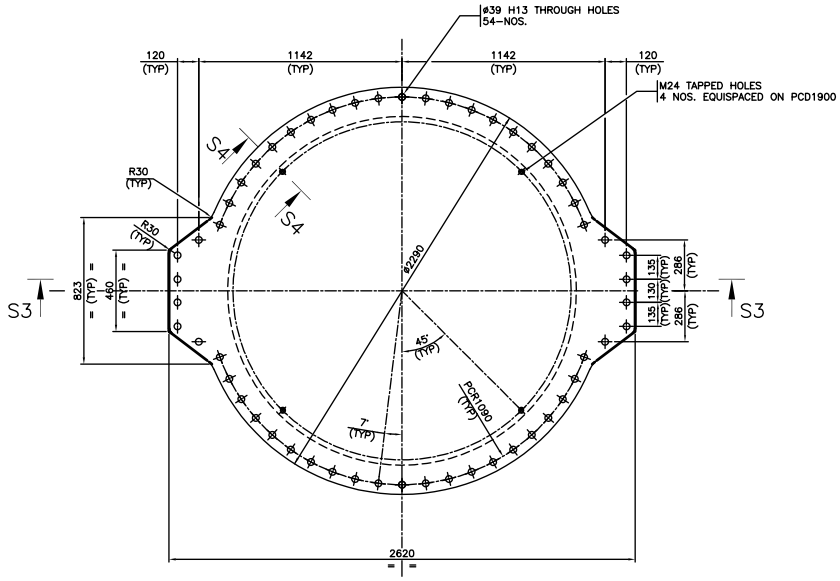
SECTION S2S2



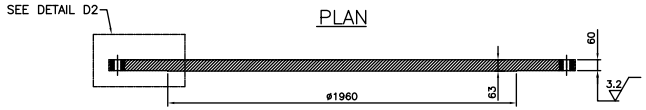
SECTION S1S1
(SCALE 1:4)



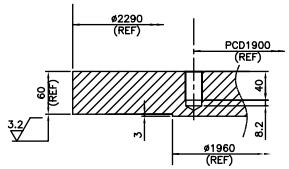
DETAIL D1
(SCALE 1:4)



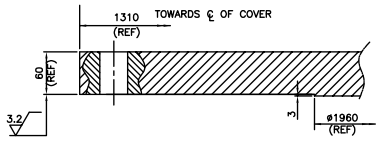
PLAN



SECTION S3S3



SECTION S4S4
(SCALE 1:4)
(TYPICAL AT 4 PLACES)



DETAIL D2
(SCALE 1:4)

DETAILS OF COVER FOR SC120 OPENING (ITEM NO. 1)

BILL OF MATERIAL

PART NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	PLATE 63 X 2290 X 2620 LG.	GRADE-E350, QUALITY BR AS PER IS:2062	1	
2	HEX. HD. BOLT M36x120 LG. IS:1364 (PART-1) GRADE 10.9		54	
3	MACHINED WASHER 37 IS:2016	45C8 AS PER IS:1570 PART-2	54	

NOTES:

1. QUANTITY REQUIRED : 1 (FOR ONE MLP)
2. FOR MANUFACTURING STANDARDS AND TOLERANCES, SURFACE PREPARATION AND WELDING INSTRUCTIONS REFER SPECIFICATION TCE.11365A-D-857-001.
3. ALL DIMENSIONS SPECIFIED IN THIS DRAWING ARE FINAL DIMENSIONS WHICH ARE TO BE ACHIEVED AFTER FINISH MACHINING.
4. ALL MATING SURFACES, BORES AND THREADED HOLES SHALL BE GREASED. THE REMAINING EXPOSED SURFACES SHALL BE PAINTED AS PER THE INSTRUCTIONS STATED IN SPECIFICATION NO. TCE.11365A-D-857-001.
5. BILL OF MATERIAL SHOWS THE FINISHED SIZES OF PLATES, BARS AND OTHER SECTIONS. FOR MATERIAL PROCUREMENT, NECESSARY FABRICATION ALLOWANCE SHALL BE ADDED AS PER EXISTING SHOP PRACTICES.
6. USE TEMPLATES FOR MARKING AND DRILLING HOLES. THE SAME TEMPLATE IS TO BE USED FOR DRILLING HOLES IN ALL MATING COMPONENTS.
7. TOTAL WEIGHT OF FINISHED COMPONENT : 2050 KG.

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT
AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

TITLE
MOBILE LAUNCH PEDESTAL
COVER FOR SC120 OPENING ASSEMBLY AND DETAILS

SCALE: 1:15	APPROVED		DATE (RO ISSUE)
DEL.CENTRE-DISC: MUM-ME	PROJECT MANAGER	RS	DATE (CURRENT ISSUE) 09-03-2020
DRN: ASP	MUP		RS
CHD: KSR	DWG NO TCE.11365A-ME-857-DD-0019	ISSUE	RO

SIZE: A1

FILE NAME : TCE-11365A857D0001RO

'P' (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION BUT ARE ISSUED FOR LIMITED PURPOSES ONLY AS INDICATED IN THE SMALL BLOCK AT THE TOP RIGHT HAND CORNER OF THE TITLE BLOCK.

CONSTRUCTION / FABRICATION WORK IS PERMITTED ON 'R' (RELEASED) ISSUES ONLY.

INFORMATION CONTAINED WITHIN 'HOLD' BOXES IS RELEASED FOR CONSTRUCTION/ FABRICATION FIELD. CONTACT THE DESIGN OFFICE TO CLEAR 'HOLDS' IN TIME BEFORE PROCEEDING WITH ANY CONSTRUCTION/FABRICATION WORK RELATED TO 'HOLDS'.

DO NOT SCALE THE DRAWING. UNLESS OTHERWISE STATED:- ALL DIMENSIONS ARE IN mm. SURFACE FINISH TO BE 3.2 OR BETTER REMOVE ALL BURRS REMOVE ALL EXTERNAL SHARP CORNERS AND EDGES BY CHAMFER 0.15 x 45° ROUND ALL INTERNAL CORNERS TO R 0.25

TOLERANCES ON LINEAR DIMENSIONS (IS 2102)

DIMENSIONS	TOL.	DIMENSIONS	TOL.
UP TO 6	±0.1	121-1000	± 0.5
6-30	±0.2	1001-2000	± 1.0
30-120	±0.3	2001-4000	± 2.0
120-315	±0.5	4001-8000	± 3.0
RADII AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	± 0.2	± 0.5	± 1.0

PROJECTION:

TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENTIONS	TOLERANCE	TOLERANCE ON ANGULAR DIMENSIONS
XX	± 0.40	± 0°-30'
XX.X	± 0.25	
XX.XX	± 0.10	

FOR RO ISSUE ONLY			REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE
CLEARED					CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH		
DEPT	SIGNATURE	DATE																			
CHEM			RO FOR FABRICATION		ASP				KSR	RS	09-03-2020										
CIVIL																					
ELEC																					
I&C																					
MECH																					

FILE NAME: F-041-Rev-R5.dwg

TCE FORM NO. 041 R5

TITLE: MOBILE LAUNCH PEDESTAL
BOTTOM COVER FOR L110
OPENING SUBASSEMBLY AND DETAILS

DWG NO TCE.11365A-ME-857-DD-0020

BILL OF MATERIAL

PART NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	PLATE 22 THK X ø 2170	GRADE-E350,QUALITY BR AS PER IS:2062	1	
2	PLATE 10 THK X 200 X 6190 LG	GRADE-E350,QUALITY BR AS PER IS:2062	1	
3	TUBE 200 NB (10 THK) X 200 LG	YST 210 AS PER IS:1161	1	
4	PLATE 10 THK X 200 X 872	GRADE-E350,QUALITY BR AS PER IS:2062	6	
5	PLATE 10 THK X 200 X 200	GRADE-E350,QUALITY BR AS PER IS:2062	6	
6	GASKET 8 THK X ID1980 X OD 2170	NEOPRENE RUBBER	1	
7	HEX. HEAD SCREW M16 X 60 LG IS:1364 (PART 2)	CLASS 10.9 IS:1367	40	
8	MACHINED WASHER 17 IS:2016	45C8 AS PER IS:1570 PART-2	40	

NOTES:

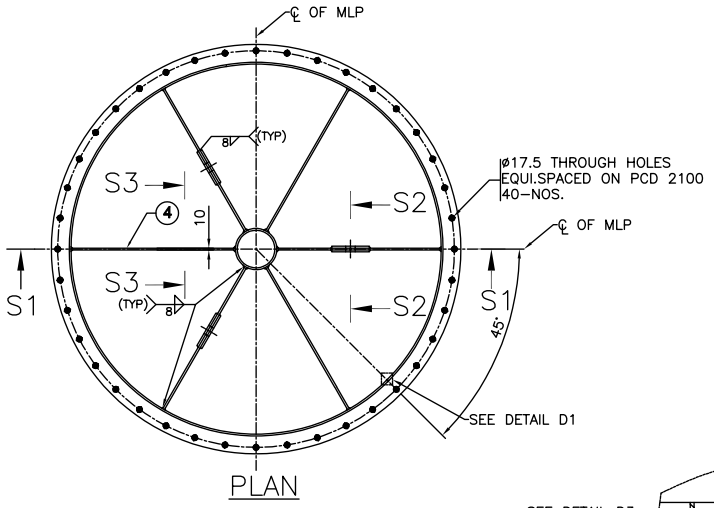
1. QUANTITY REQUIRED : 1 (FOR ONE MLP)
2. FOR MANUFACTURING STANDARDS AND TOLERANCES, SURFACE PREPARATION AND WELDING INSTRUCTIONS REFER SPECIFICATION TCE.11365A-D-857-001.
3. UNLESS OTHERWISE SPECIFIED, ALL WELDING SHALL BE CARRIED OUT AS PER IS:9595.
4. STRESS RELIEVING IS TO BE CARRIED OUT AFTER COMPLETION OF ALL WELDING & BEFORE MACHINING.
5. UNLESS OTHERWISE SPECIFIED, ALL WELDING SHALL BE SUBJECTED TO THE FOLLOWING TESTS:

5.1.100% MT/PT FOR FILLET WELDS AFTER FINAL PASS.

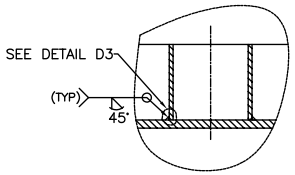
5.2.100% PT FOR GROOVE WELDS AFTER ROOT PASS AND FINAL PASS.

5.3. 100% UT/ RT FOR GROOVE WELDS AFTER FINAL PASS

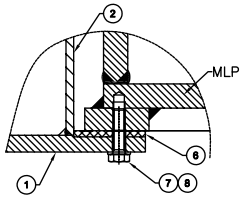
6. ALL DIMENSIONS SPECIFIED IN THIS DRAWING ARE FINAL DIMENSIONS WHICH ARE TO BE ACHIEVED AFTER FINISH MACHINING.
7. ALL MATING SURFACES, BORES AND THREADED HOLES SHALL BE GREASED. THE REMAINING EXPOSED SURFACES SHALL BE PAINTED AS PER THE INSTRUCTIONS STATED IN SPECIFICATION. NO.TCE.11365A-D-857-001.
8. BILL OF MATERIAL SHOWS THE FINISHED SIZES OF PLATES, BARS AND OTHER SECTIONS. FOR MATERIAL PROCUREMENT, NECESSARY FABRICATION ALLOWANCE SHALL BE ADDED AS PER EXISTING SHOP PRACTICES.
9. OVERALL SIZES OF ITEMS ARE INDICATED IN THE BILL OF MATERIAL. BASED ON AVAILABILITY OF PLATE SIZES AND REQUIRED SHAPE, THE ITEMS MAY BE FABRICATED FROM INDIVIDUAL PLATES WELDED TOGETHER. HOWEVER FULL PENETRATION BUTT WELDS WITH 100% RADIOGRAPHY IS TO BE CARRIED OUT FOR ALL THESE JOINTS. THE VENDOR SHALL OBTAIN PRIOR APPROVAL FROM THE PURCHASER FOR THE CONFIGURATION AND LOCATION OF ALL SUCH ADDITIONAL BUTT WELDED JOINTS THAT ARE PROPOSED TO BE CARRIED OUT BY HIM.
10. USE TEMPLATES FOR MARKING AND DRILLING HOLES. THE SAME TEMPLATE IS TO BE USED FOR DRILLING HOLES IN ALL MATING COMPONENTS.
11. ALL SCALLOPS SHALL BE 15R UNLESS OTHERWISE SPECIFIED.
12. TOTAL WEIGHT OF FINISHED COMPONENT : 860 KG.



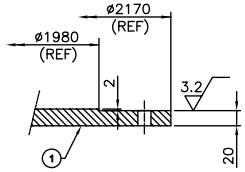
PLAN



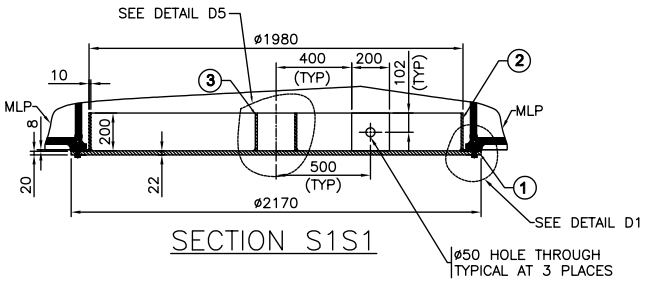
DETAIL D5
(SCALE 1:10)



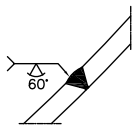
DETAIL D1
(SCALE 1:5)



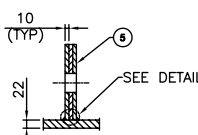
DETAIL D6
(SCALE 1:5)
(SHOWING DETAILS OF MACHINING OF ITEM NO. 1)



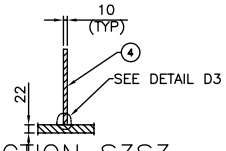
SECTION S1S1



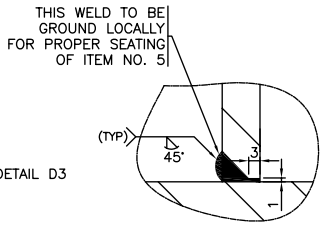
DETAIL D2
(SCALE 1:2)



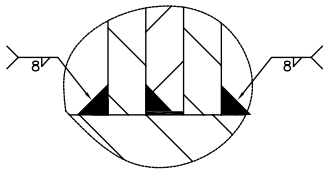
SECTION S2S2
(SCALE 1:10)



SECTION S3S3
(SCALE 1:10)



DETAIL D3
(SCALE 1:1)



DETAIL D4
(SCALE 1:1)

TOLERANCES ON LINEAR DIMENSIONS (IS 2102)			
DIMENSIONS	TOL.	DIMENSIONS	TOL.
UP TO 6	±0.1	315-1000	± 0.8
6-30	±0.2	1000-2000	± 1.2
30-120	±0.3	2000-4000	± 2.0
120-315	±0.5	4000-8000	± 3.0
RADII AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	± 0.2	± 0.5	± 1.0

PROJECTION:

DO NOT SCALE THE DRAWING.
UNLESS OTHERWISE STATED:-
ALL DIMENSIONS ARE IN mm.
ALL MACHINED FINISH TO BE $\sqrt{}$ OR BETTER
SURFACE FINISH TO BE $\sqrt{}$ OR BETTER
REMOVE ALL BURRS
REMOVE ALL EXTERNAL SHARP CORNERS AND EDGES BY CHAM.TO $^{0.15}_{0.40}$ X45°
ROUND ALL INTERNAL CORNERS TO R $^{0.15}_{0.40}$

TOLERANCES ON LINEAR DIMENSIONS.		TOLERANCE ON ANGULAR DIMENSIONS
SPECIFIED DIMENTIONS	TOLERANCE	
XX	± 0.40	±0°-30'
XX.X	± 0.25	
XX.XX	± 0.40	

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

PROJECT : AUGMENTATION OF SECOND LAUNCH PAD
MOBILE LAUNCH PEDESTAL

TITLE : BOTTOM COVER FOR L110
OPENING SUBASSEMBLY AND DETAILS

FOR RO ISSUE ONLY			ISSUE	REVISIONS	DRN	CLEARED						APPD	DATE
	CLEARED					CIVIL	ELEC	I&C	MECH				
DISC.	SIGNATURE	DATE	RO	FOR REVIEW & COMMENTS	ASP	—	—	—	MSM			RS	09-03-20
CIVIL													
ELEC													
I&C													
MECH													

FILE NAME :TCE.11365AME857DD0020R0

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CONSTRUCTION / FABRICATION WORK IS PERMITTED ON 'R' (RELEASED) ISSUES ONLY.

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TATA CONSULTING ENGINEERS LIMITED
MUMBAI

SCALE: 1:20	APPROVED		DATE (RO ISSUE) 09-03-2020
DEL.CENTRE-DISC: MUM-ME		RS	DATE (CURRENT ISSUE) 09-03-2020
DRN: ASP	MUP		RS
CHD: MSM	DWG NO TCE.11365A-ME-857-DD-0020		ISSUE RO

SIZE-A2

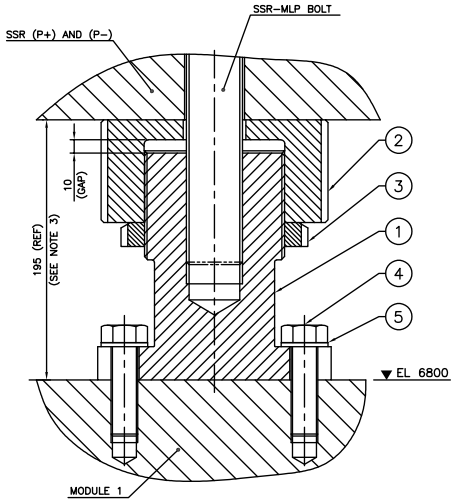
FILE NAME: F-042-Rev-R5.dwg

TCE FORM NO. 042 R5

TITLE: ADJUSTABLE SPACER SUBASSEMBLY AND DETAILS

DWG NO: TCE-11365A-857-DD-0021

PART NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	SPACER BLOCK	REFER DETAIL DRAWING	1	
2	ADJUSTABLE SPACER	REFER DETAIL DRAWING	1	
3	BEARING LOCK NUT SKF TYPE KM21	–	1	SKF OR EQUIVALENT
4	HEX. HD. SCREW M20 x 70–12.9 IS:1364 (PART2)	CLASS 12.9 IS:1367	4	
5	MACHINED WASHER 21 IS:2016	IS:2062, GRADE A	4	

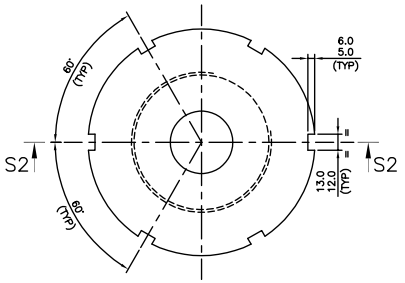


SECTIONAL ELEVATION

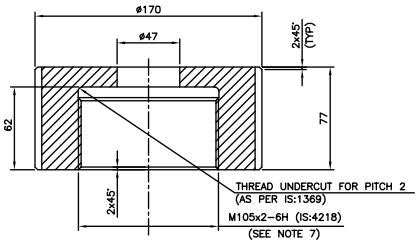
NOTES:

1. QUANTITY REQUIRED : 46 (FOR ONE MLP)
2. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO. TCE.11365A–D–850–001.
3. THE ADJUSTABLE SPACER SUBASSEMBLY IS TO BE ASSEMBLED ON TOP OF MLP BEFORE THE ASSEMBLY OF SSR (P+) AND SSR (P–). THE TOP SURFACE OF ADJUSTABLE SPACER (ITEM NO. 2) SHALL BE LOCATED 5mm BELOW BOTTOM SURFACE OF SSR (P+) AND (P–) DURING SSR POSITION ADJUSTMENT. AFTER COMPLETION OF SSR POSITION ADJUSTMENT, RAISE THE ADJUSTABLE SPACER TO BUTT AGAINST BOTTOM SURFACE OF SSR (P+) AND (P–) BEFORE TIGHTENING THE SSR–MLP BOLTS.
4. TOTAL WEIGHT OF FINISHED SUBASSEMBLY: 25 Kg.

ADJUSTABLE SPACER SUBASSEMBLY



PLAN

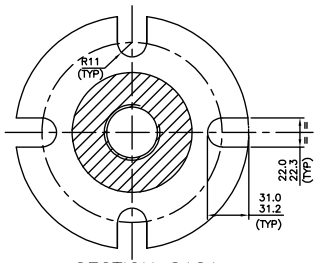


SECTION S2S2

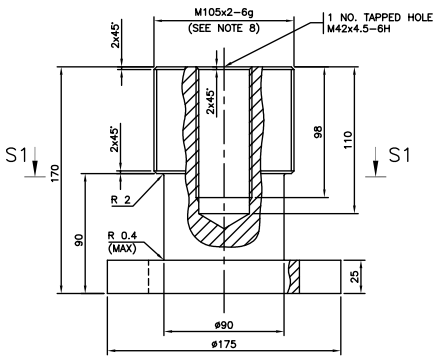
NOTES:

1. QUANTITY REQUIRED : 46 (FOR ONE MLP)
2. MATERIAL : AISI 4340 (40Ni2Cr1Mo28 OF IS:1570).
3. HEAT TREAT TO :
   TENSILE STRENGTH : 100 Kg/mm² NOM
   YIELD STRENGTH (0.2%STRAIN) : 80 Kg/mm² MIN
   ELONGATION : 17% MIN
   HARDNESS : 28–34 HRC
4. MACHINE ALL OVER
5. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO. TCE.11365A–D–850–001.
6. ALL MATING SURFACES, BORES AND THREADED HOLES TO BE GREASED. PAINT REMAINDER AS PER PAINTING INSTRUCTIONS STATED IN SPECIFICATION ON TCE.11365A–D–850–001.
7. THE BASIC DIMENSIONS FOR THE SCREW THREADS SHALL BE AS PER IS:4218 (PART3). THE TOLERANCES FOR THE BASIC DIMENSIONS OF SCREW THREAD SHALL BE AS PER IS:14962 (PART3)
8. TOTAL WEIGHT OF FINISHED COMPONENT: 8 Kg.

ADJUSTABLE SPACER



SECTION S1S1



ELEVATION

NOTES:

1. QUANTITY REQUIRED : 46 (FOR ONE MLP)
2. MATERIAL : AISI 4340 (40Ni2Cr1Mo28 OF IS:1570).
3. HEAT TREAT TO :
   TENSILE STRENGTH : 100 Kg/mm² NOM
   YIELD STRENGTH (0.2%STRAIN) : 80 Kg/mm² MIN
   ELONGATION : 17% MIN
   HARDNESS : 28–34 HRC
4. MACHINE ALL OVER
5. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO. TCE.11365A–D–850–001
6. USE TEMPLATE FOR MARKING AND DRILLING HOLES IN THE SPACER BLOCK. THE SAME TEMPLATE IS TO BE USED FOR DRILLING HOLES IN ALL MATING COMPONENTS.
7. ALL MATING SURFACES, BORES AND THREADED HOLES TO BE GREASED. PAINT REMAINDER AS PER PAINTING INSTRUCTIONS STATED IN SPECIFICATION ON TCE.11365A–D–850–001.
8. THE BASIC DIMENSIONS FOR THE SCREW THREADS SHALL BE AS PER IS:4218 (PART3). THE TOLERANCES FOR THE BASIC DIMENSIONS OF SCREW THREAD SHALL BE AS PER IS:14962 (PART3)
9. TOTAL WEIGHT OF FINISHED COMPONENT: 14 Kg.

SPACER BLOCK

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT: AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

TITLE: MOBILE LAUNCH PEDESTAL (FOR GSLV MK III)
ADJUSTABLE SPACER SUBASSEMBLY AND DETAILS

SCALE: 1:2	APPROVED	DATE (RO ISSUE)	09–03–2020
DEL.CENTRE–DISC: MUM–ME	RS	DATE (CURRENT ISSUE)	09–03–2020
DRN: ASP	MUP		RS
CHD: KSR	DWG NO: TCE–11365A–857–DD–0021	ISSUE	RO

SIZE: A1

FILE NAME : TCE11365A857DD0021RO

'P' (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION BUT ARE ISSUED FOR LIMITED PURPOSES ONLY AS INDICATED IN THE SMALL BLOCK AT THE TOP RIGHT HAND CORNER OF THE TITLE BLOCK.

CONSTRUCTION / FABRICATION WORK IS PERMITTED ON 'R' (RELEASED) ISSUES ONLY.

INFORMATION CONTAINED WITHIN 'HOLD' BOXES IS RELEASED FOR CONSTRUCTION/ FABRICATION. FIELD TO CONTACT THE DESIGN OFFICE TO CLEAR 'HOLDS' IN TIME BEFORE PROCEEDING WITH ANY CONSTRUCTION/FABRICATION WORK RELATED TO 'HOLDS'.

DO NOT SCALE THE DRAWING.
UNLESS OTHERWISE STATED:–
ALL DIMENSIONS ARE IN mm.
MACHINE ALL OVER. 'M'
SURFACE FINISH TO BE '6' OR BETTER
REMOVE ALL BURRS.
REMOVE ALL EXTERNAL SHARP CORNERS AND EDGES BY CHAMFER 0.15 x 45° OR ROUND ALL INTERNAL CORNERS TO R 0.25 0.40

TOLERANCES ON LINEAR DIMENSIONS (IS 2102)

DIMENSIONAL	TOL.	DIMENSIONAL	TOL.
UP TO 6	±0.1	121–1000	± 0.5
6–30	±0.2	1001–2000	± 1.0
31–120	±0.3	2001–4000	± 2.0
121–315	±0.5	4001–8000	± 3.0
RADII AND CHAMFERS	0.5–3	3–6	6–30
TOLERANCE	± 0.2	± 0.5	± 1.0

TOLERANCES ON LINEAR DIMENSIONS:

SPECIFIED DIMENTIONS	TOLERANCE
XX	± 0.40
XX.X	± 0.25
XX.XX	± 0.10

TOLERANCE ON ANGULAR DIMENSIONS: ± 0°–30'

PROJECTION:

FOR RO ISSUE ONLY			ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE
CLEARED						CHEM	CIVIL	ELEC	I&C	MECH		
DEPT	SIGNATURE	DATE	RO	FOR REVIEW & COMMENTS	ASP	–	–	–	–	KSR	RS	09–03–20
CHEM												
CIVIL												
ELEC												
I&C												
MECH												

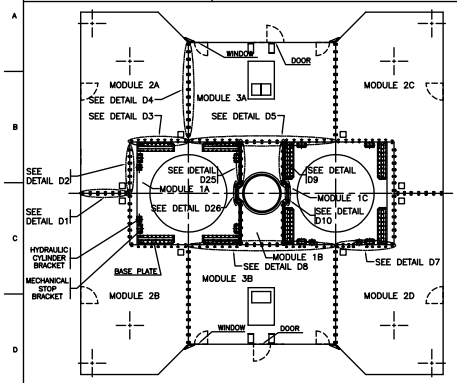
ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE
			CHEM	CIVIL	ELEC	I&C	MECH		

FILE NAME: F–041–Rev–R5.dwg

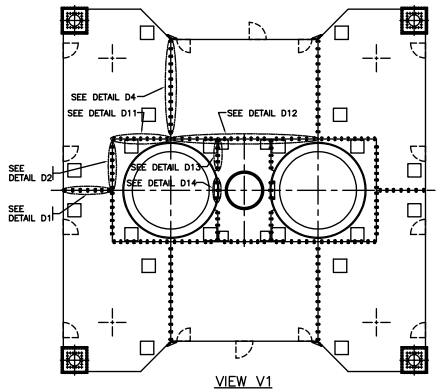
TCE FORM NO. 041 R5

MODULE INTERCONNECTION DETAILS

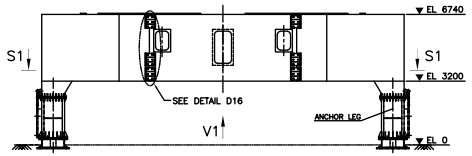
DWG NO TCE.11364A-ME-857-DD-0022(SH10F2)



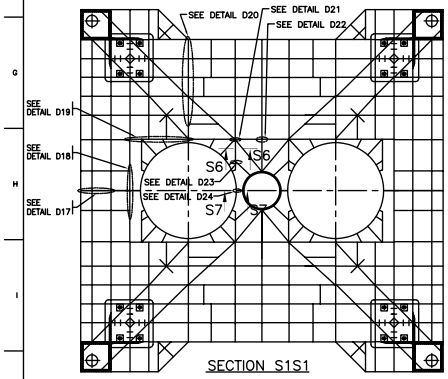
PLAN
(SHOWING ALL MODULES OF MLP)



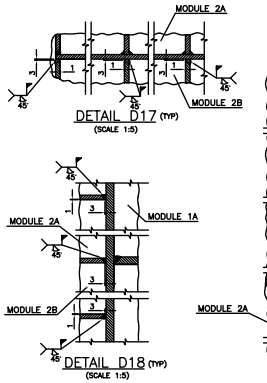
VIEW V1



ELEVATION



SECTION S1S1

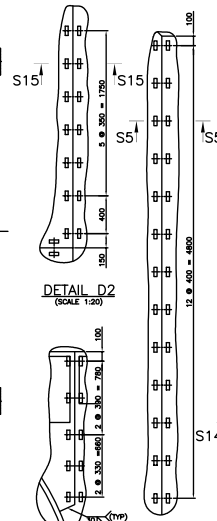


DETAIL D17 (TYP)
(SCALE 1:5)

DETAIL D18 (TYP)
(SCALE 1:5)

DETAIL D19 (TYP)
(SCALE 1:5)

DETAIL D20 (TYP)
(SCALE 1:5)



DETAIL D2
(SCALE 1:20)

DETAIL D13
(SCALE 1:20)

DETAIL D4
(SCALE 1:20)

DETAIL D9 (AS SHOWN)
DETAIL D25 (MIRROR IMAGE OF D9)
(SCALE 1:20)

DETAIL D14
(SCALE 1:20)

DETAIL D10 (AS SHOWN)
DETAIL D26 (MIRROR IMAGE OF D10)
(SCALE 1:20)

DETAIL D21 (TYP)
(SCALE 1:5)

DETAIL D22 (TYP)
(SCALE 1:5)

DETAILS OF ITEM NOS. 4 & 5
(SCALE 1:4)

DETAIL D5
(SCALE 1:20)

DETAIL D8
(SCALE 1:20)

DETAIL D12
(SCALE 1:20)

DETAIL D1
(SCALE 1:20)

DETAIL D3
(SCALE 1:20)

DETAIL D7
(SCALE 1:20)

DETAIL D11
(SCALE 1:20)

DETAIL OF ITEM NOS. 8 & 9
(SCALE 1:2)

TABLE 1

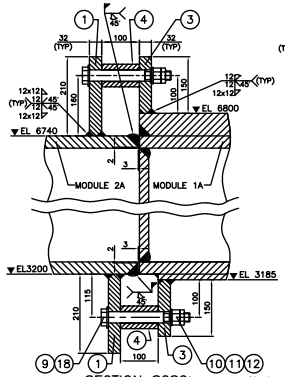
ITEM NO.	'L'
ITEM NO. 8	250
ITEM NO. 9	220

DETAIL D15
(SCALE 1:5)

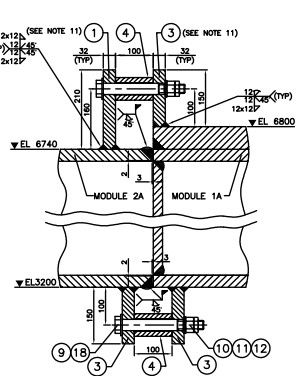
SECTION S8S8
(SCALE 1:5)

DETAIL D23 (TYP)
(SCALE 1:5)

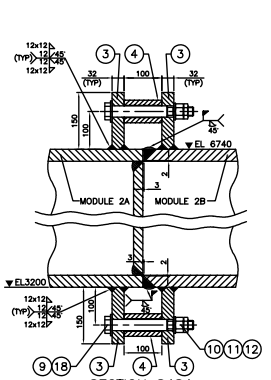
DETAIL D24
(SCALE 1:5)



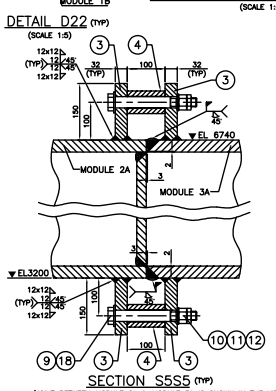
SECTION S2S2 (ROTATED BY 90°)(TYP)
(JOINT BETWEEN MODULE 2A & MODULE 1A IS SHOWN IN THE VIEW. SIMILAR JOINTS ARE APPLICABLE BETWEEN MODULE 2B & MODULE 1A, MODULE 2C & MODULE 1C AND MODULE 2D & MODULE 1C.)
(SCALE 1:5)



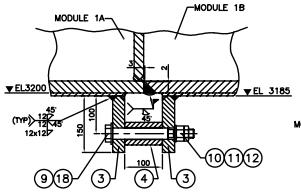
SECTION S3S3 (ROTATED BY 90°)(TYP)
(JOINT BETWEEN MODULE 2A & MODULE 1A IS SHOWN IN THE VIEW. SIMILAR JOINTS ARE APPLICABLE BETWEEN MODULE 2B & MODULE 1A, MODULE 2C & MODULE 1C AND MODULE 2D & MODULE 1C.)
(SCALE 1:5)



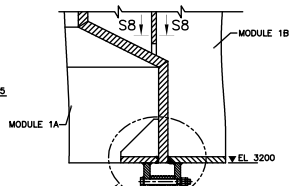
SECTION S4S4 (ROTATED BY 90°)(TYP)
(JOINT BETWEEN MODULE 2A & MODULE 2B IS SHOWN IN THE VIEW. SIMILAR JOINTS ARE APPLICABLE BETWEEN MODULE 2D & MODULE 2C.)
(SCALE 1:5)



SECTION S5S5 (TYP)
(JOINT BETWEEN MODULE 2A & MODULE 3A IS SHOWN IN THE VIEW. SIMILAR JOINTS ARE APPLICABLE BETWEEN MODULE 2C & MODULE 3A, MODULE 2D & MODULE 3B AND MODULE 2B & MODULE 3B)
(SCALE 1:5)



SECTION S6S6 (TYP)
(SCALE 1:5)



SECTION S7S7 (TYP)
(SCALE 1:10)

BILL OF MATERIAL

PART NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	PLATE 32 THK x 210 x 100	GRADE E-350 QUALITY BR-IS:2062	118	
2	PLATE 32 THK x 1000 x 200	GRADE E-350 QUALITY BR-IS:2062	2	CUT TO SHAPE
3	PLATE 32 THK x 150 x 100	GRADE E-350 QUALITY BR-IS:2062	665	
4	BAR ø60 x 110	GRADE E-350 QUALITY A-IS:2062	384	
5	BAR ø60 x 140	GRADE E-350 QUALITY A-IS:2062	6	
6	PLATE 20 THK x 200 x 200	GRADE E-350 QUALITY BR-IS:2062	2	CUT TO SHAPE
7	PLATE 20 THK x 200 x 170	GRADE E-350 QUALITY BR-IS:2062	4	CUT TO SHAPE
8	BAR ø50 x 275	CLASS 12.9 IS:1367	6	
9	BAR ø50 x 245	CLASS 12.9 IS:1367	384	
10	HEX. NUT M24 IS:1364 (PART 3)	CLASS 12 IS:1367	390	
11	HEX. THIN NUT M24 IS:1364 (PART 4)	CLASS 12 IS:1367	390	
12	MACHINED WASHER 25	45CB AS PER IS:1570 PART-2	390	
13	PLATE 20 THK x 640 x 563	GRADE E-350 QUALITY BR-IS:2062	12	
14	PLATE 16 THK x 478 x 114	GRADE E-350 QUALITY BR-IS:2062	24	CUT TO SHAPE
15	HEX. HD. SCREW M16 x 50 – IS:1364 (PART 2)	CLASS 12.9 IS:1367	144	
16	MACHINED WASHER 17	45CB AS PER IS:1570 PART-2	144	
17	PLATE 32 THK x 680 x 220	GRADE E-350 QUALITY BR-IS:2062	24	
18	MACHINED WASHER 31 IS:2016	45CB AS PER IS:1570 PART-2	390	

NOTES:–

1. THIS DRAWING SHOWS THE DETAILS OF BOLTING AND WELDING TO BE CARRIED OUT AT ALL THE MODULE INTERFACES.
2. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO. TCE.11365A–D–850–001.
3. ALL MATING SURFACES, BORES AND THREADED HOLES TO BE GREASED. PAINT REMAINDER AS PER PAINTING INSTRUCTIONS, STATED IN SPECIFICATION NO. TCE.11365A–D–850–001.
7. UNLESS OTHERWISE SPECIFIED ALL WELDING SHALL BE CARRIED OUT AS PER IS:9595.
8. UNLESS OTHERWISE SPECIFIED, ALL WELDING SHALL BE SUBJECTED TO THE FOLLOWING TESTS.
   8.1. 100% MT/PT FOR FILLET WELDS AFTER FINAL PASS.
   8.2. 100% PT FOR GROOVE WELDS AFTER ROOT PASS AND FINAL PASS.
   8.3. 100% UT/ RT FOR GROOVE WELDS AFTER FINAL PASS
9. UNLESS OTHERWISE SPECIFIED, ALL GROOVE WELDS SHALL BE FULL PENETRATION TYPE WITH 100% RADIOGRAPHIC/ULTRASONIC TESTING.
10. FINISH MACHINE THE LENGTH OF SPACERS (ITEM NOS.4 & 5) TO ACHIEVE A 3mm GAP AT ALL MODULE INTERFACES.
11. INTERCONNECTING BRACKETS
   11.1 MAKE PILOT HOLES ON THE INTERCONNECTING BRACKETS (ITEM NOS. 1 & 3) BEFORE WELDING TO THE MODULES. AFTER COMPLETION OF THE ALIGNMENT OF THE MODULES, THESE PILOT HOLES ARE TO BE ENLARGED AND THE BRACKETS ARE TO BE CONNECTED BY THE INTERCONNECTING BOLTS (ITEM NOS. 8 & 9).
   11.2 FOR ALL JOINTS OF MODULE 2 WITH MODULE 1, THE PILOT HOLES OF INTERCONNECTING BRACKETS ARE TO BE ENLARGED SO AS TO ACHIEVE A MINIMUM INTERFERENCE OF 0.025 mm AND MAXIMUM INTERFERENCE OF 0.035 mm.
   11.3 FOR ALL JOINTS OF MODULE 3 WITH MODULE 1 OR MODULE 2, THE PILOT HOLES OF INTERCONNECTING BRACKETS ARE TO BE ENLARGED SO AS TO ACHIEVE A MINIMUM CLEARANCE OF 0.01 mm AND MAXIMUM CLEARANCE OF 0.04 mm.
   11.4 THE INTERCONNECTING BRACKETS SHALL BE REMOVED FROM THE MODULES AFTER COMPLETION OF THE WELDING OF THE MODULES AT SITE WITHOUT DAMAGING THE PARENT PLATES AND ANY PROJECTION OR ROUGH SURFACE FOUND ON MLP AFTER THEIR REMOVAL IS TO BE GROUND SMOOTH AND PAINTED.
12. ALL THE MODULES SHALL BE SUITABLY SUPPORTED ON TEMPORARY ERECTION SUPPORTS DURING ASSEMBLY AT VENDOR'S SHOP AS WELL AS AT PURCHASER'S SITE.
13. FOR THE WELDING OF THE MODULES AT SITE, THE REQUIRED WELDING SEQUENCE (TO CONTROL DISTORTION OF MLP) AS WELL AS THE SUBSEQUENT STRESS RELIEVING AND OTHER POST WELD TREATMENTS NECESSARY TO BE CARRIED OUT IN ORDER TO ACHIEVE THE FINAL ACCURACY REQUIREMENTS OF MLP SHALL BE AS SPECIFIED BY THE WELDING CONSULTANT.
14. BILL OF MATERIAL SHOWS THE FINISHED SIZES OF PLATES, BARS AND OTHER SECTIONS. FOR MATERIAL PROCUREMENT, NECESSARY FABRICATION ALLOWANCE SHALL BE ADDED AS PER EXISTING SHOP PRACTICES.
15. ALL DIMENSIONAL TOLERANCES THAT ARE TO BE ACHIEVED DURING CONTROL ASSEMBLY AND AFTER SUBSEQUENT WELDING AND STRESS RELIEVING OF THE MLP AT SITE ARE STATED IN SHEET 2 OF THIS DRAWING.

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT: AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

TITLE: MOBILE LAUNCH PEDESTAL (FOR GSLV MK III)
MODULE INTERCONNECTION DETAILS

SCALE: 1:100	APPROVED	DATE (IRO ISSUE)	09–03–2020
DEL.CENTRE–DISCARUM–ME		DATE (CURRENT ISSUE)	09–03–2020
DRN: ASP	MUP		RS
CHD: KSR	DRG NO: TCE.11365A–ME–857–DD–0022(SH10F2)	ISSUE	R0

TCE FORM NO. 041 R0

FOR RO ISSUE ONLY

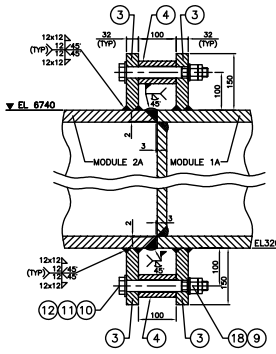
	CLEARED	
DEPT	SIGNATURE	DATE
CHEM		
CIVIL		
ELEC		
I&C		
MECH		

ISSUE	REVISIONS	DRN	CLEARED CHEM	CIVIL	ELEC	I&C	MECH	APPD	DATE
R0	FOR REVIEW AND COMMENTS	ASP	–	–	–	–	KSR	RS	09-03-2020

FILE NAME: F-041-Rev-R0.dwg

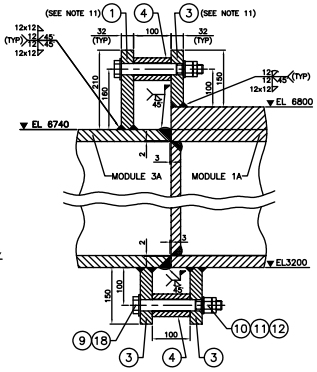
MODULE INTERCONNECTION DETAILS

DWG NO TCE.11365A-ME-857-DD-0022(SH2OF2)



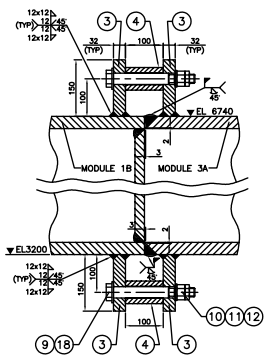
SECTION S10S10 (ROTATED BY 90°)(TYP)

(JOINT BETWEEN MODULE 2A & MODULE 1A IS SHOWN IN THE VIEW. SIMILAR JOINTS ARE APPLICABLE BETWEEN MODULE 2B & MODULE 1A, MODULE 2C & MODULE 1C AND MODULE 2D & MODULE 1C.)
(SCALE 1:5)



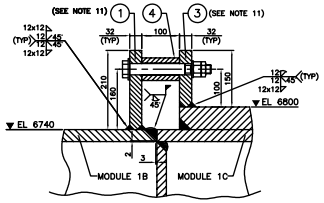
SECTION S11S11 (ROTATED BY 90°)(TYP)

(JOINT BETWEEN MODULE 3A & MODULE 1A IS SHOWN IN THE VIEW. SIMILAR JOINTS ARE APPLICABLE BETWEEN MODULE 3A & MODULE 1C, MODULE 3B & MODULE 1A AND MODULE 3B & MODULE 1C.)
(SCALE 1:5)



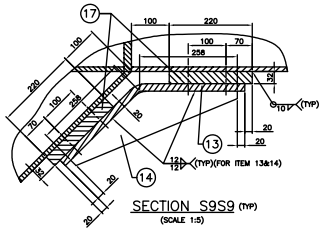
SECTION S12S12 (ROTATED BY 90°)(TYP)

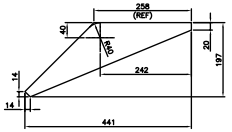
(JOINT BETWEEN MODULE 3A & MODULE 1B IS SHOWN IN THE VIEW. SIMILAR JOINTS BETWEEN APPLICABLE FOR MODULE 3B & MODULE 1B.)
(SCALE 1:5)

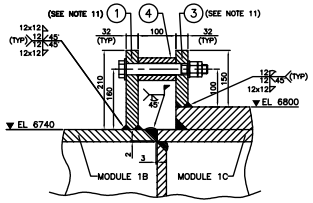


SECTION S13S13 (TYP)

(JOINT BETWEEN MODULE 1B & MODULE 1C IS SHOWN IN THE VIEW. SIMILAR JOINTS BETWEEN APPLICABLE FOR MODULE 1A & MODULE 1B.)
(SCALE 1:5)

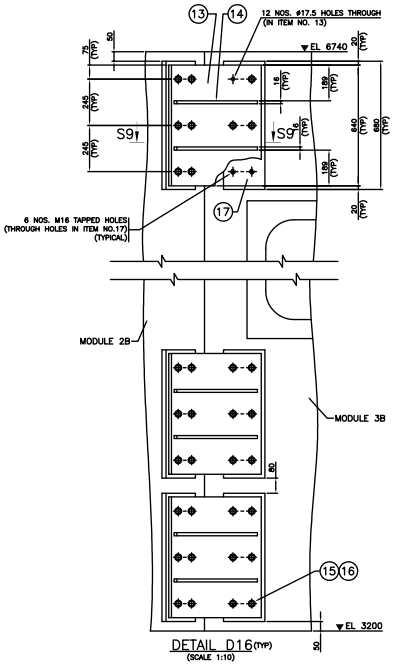




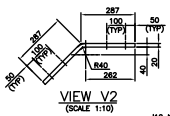


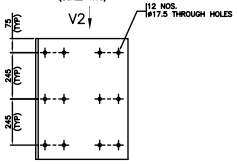
SECTION S14S14 (TYP)

(JOINT BETWEEN MODULE 1B & MODULE 1C IS SHOWN IN THE VIEW. SIMILAR JOINTS BETWEEN APPLICABLE FOR MODULE 1A & MODULE 1B.)
(SCALE 1:5)

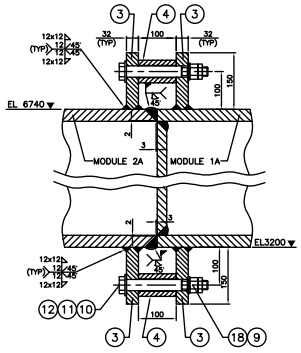


DETAIL D16 (TYP)
(SCALE 1:10)





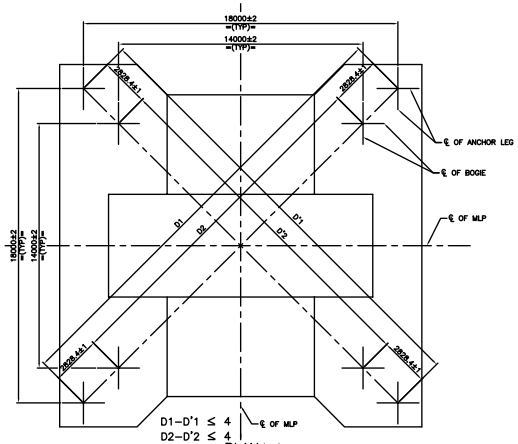
DETAILS OF ITEM NO. 13
(SCALE 1:10)



SECTION S15S15 (TYP)

(JOINT BETWEEN MODULE 2A & MODULE 1A IS SHOWN IN THE VIEW. SIMILAR JOINTS ARE APPLICABLE BETWEEN MODULE 2B & MODULE 1A, MODULE 2C & MODULE 1C, MODULE 2D & MODULE 1C)
(SCALE 1:5)

TOLERANCES TO BE ACHIEVED FOR MLP
(SEE NOTE 20)

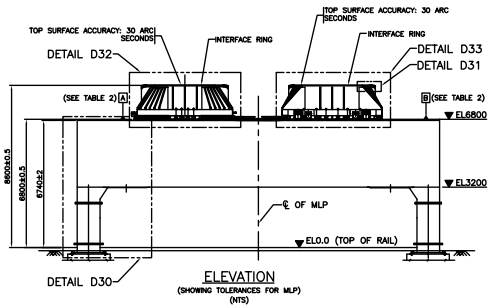


PLAN (NTS)
(SHOWING TOLERANCE FOR ℄ OF ANCHOR AND BOGIE)

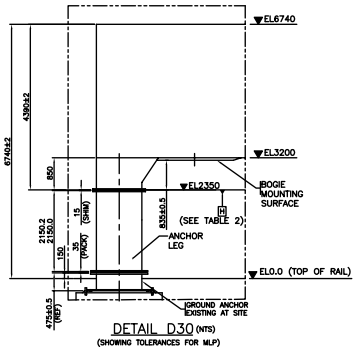
TABLE 2–TOLERANCES TO BE ACHIEVED DURING ASSEMBLY AT SHOP & SITE

SL. NO.	LOCATION ON MLP	CONTROL ASSEMBLY AT SHOP	CONTROL ASSEMBLY AT SITE	FINAL ERECTION
1	GROUND ANCHORS			
1.1	GROUTING AND LEVELLING OF TOP SURFACE OF GROUND ANCHORS (AT EL 150)	WITHIN ± 0.5 mm	WITHIN ± 0.5 mm	WITHIN ± 0.5 mm
1.2	CENTER TO CENTER DISTANCE OF FOUR GROUND ANCHORS	18000 ± 2 mm	18000 ± 2 mm	18000 ± 2 mm
1.3	DIFFERENCE OF TWO DIAGONAL DISTANCES BETWEEN GROUND ANCHORS	≤ 4 mm	≤ 4 mm	≤ 4 mm
2.0	ANCHOR LEGS			
2.1	LEVELLING OF TOP SURFACE OF FOUR ANCHOR LEGS	WITHIN ± 0.1 mm	WITHIN ± 0.1 mm	WITHIN ± 0.1 mm
2.2	OVERALL HEIGHT FROM GROUND LEVEL (AT EL 2350)	+ 2 mm + 0 mm	+ 2 mm + 0 mm	+ 2 mm + 0 mm
3.0	MODULES 2A,2B,2C & 2D			
3.1	PARALLELITY OF ANCHOR LEG BOLTING SURFACE B (AT EL 2350) WITH MACHINED PLATE SURFACES D & B OF MODULE 1 (AT EL 6800)	WITHIN ± 0.1 mm	WITHIN ± 0.1 mm	WITHIN ± 0.1 mm
3.2	OVERALL HEIGHT FROM BOTTOM OF ANCHOR LEG BOLTING SURFACE B (AT EL 2350) TO TOP MACHINED PLATE SURFACES A & B OF MODULE 1	4450 ± 2 mm	4450 ± 2 mm	4450 ± 2 mm
3.3	DISTANCE BETWEEN ANCHOR LEG CENTERLINES	18000 ± 2 mm	18000 ± 2 mm	18000 ± 2 mm
3.4	DISTANCE BETWEEN BOGIE CENTRELINES	14000 ± 2 mm	14000 ± 2 mm	14000 ± 2 mm
3.5	DIFFERENCE IN DIAGONALS OF ANCHOR LEG CENTERLINES & BOGIE CENTERLINES	≤ 4 mm	≤ 4 mm	≤ 4 mm
4.0	MODULE 1			
4.1	OVERALL HEIGHT FROM GROUND LEVEL (AT EL 6800)	± 0.5 mm	± 0.5 mm	± 0.5 mm
5.0	STRAP ON SUPPORT RING (SSR)			
5.1	TOP SURFACE ACCURACY OF "INTERFACE RING MOUNTING SURFACE" C & D OF SSRs (AT EL 8560)	WITHIN 15 ARCSEC (WITHOUT LOAD)	WITHIN 15 ARCSEC (WITHOUT LOAD)	WITHIN 30 ARCSEC (WITH 800 TON LOAD)
5.2	OVERALL HEIGHT FROM GROUND LEVEL (AT EL 8560)	± 0.5 mm	± 0.5 mm	± 0.5 mm
5.3	RELATIVE LEVELS OF TOP INTERFACE RING MOUNTING SURFACES C & D OF TWO SSRs (AT EL 8560)	± 0.5 mm	± 0.5 mm	± 0.5 mm

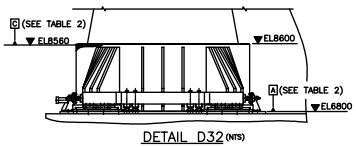
(THE TOLERANCES INDICATED ABOVE IN TABLE 2 UNDER THE COLUMN "FINAL ERECTION" ARE TO BE ACHIEVED AFTER SITE ASSEMBLY, WELDING & STRESS RELIEVING.)



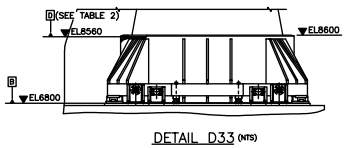
ELEVATION
(SHOWING TOLERANCES FOR MLP)
(NTS)



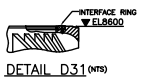
DETAIL D30 (NTS)
(SHOWING TOLERANCES FOR MLP)



DETAIL D32 (NTS)



DETAIL D33 (NTS)



DETAIL D31 (NTS)

FOR RO ISSUE ONLY			ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE
CLEARED						CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH	
DEPT	SIGNATURE	DATE	R0	FOR REVIEW AND COMMENTS	ASP	–	–	–	–	KSR	RS	09-03-2020																			
CHEM																															
CIVIL																															
ELEC																															
I&C																															
MECH																															

FILE NAME: F-041-Rev-R0.dwg

TOLERANCES ON LINEAR DIMENSIONS (IN mm)		
UP TO 6	± 0.05	± 0.10
OVER 6 UPTO 30	± 0.10	± 0.20
OVER 30 UPTO 120	± 0.15	± 0.30
OVER 120 UPTO 400	± 0.20	± 0.40
OVER 400 UPTO 1000	± 0.30	± 0.60
OVER 1000 UPTO 2000	± 0.50	± 1.00
OVER 2000 UPTO 4000	± 0.75	± 1.50
OVER 4000 UPTO 8000	± 1.00	± 2.00
OVER 8000 UPTO 12000	± 1.50	± 3.00
OVER 12000 UPTO 16000	± 2.00	± 4.00
OVER 16000 UPTO 20000	± 2.50	± 5.00
OVER 20000 UPTO 24000	± 3.00	± 6.00
OVER 24000 UPTO 28000	± 3.50	± 7.00
OVER 28000 UPTO 32000	± 4.00	± 8.00
OVER 32000 UPTO 36000	± 4.50	± 9.00
OVER 36000 UPTO 40000	± 5.00	± 10.00
ANGULAR TOLERANCE	± 0.5	± 1.0

PROJECTION:

DO NOT SCALE THE DRAWING.
UNLESS OTHERWISE STATED:
ALL DIMENSIONS ARE IN mm.
ALL TOLERANCES ARE AS PER IS 2102 (PART 1) 1993 UNLESS OTHERWISE STATED.
REMOVE ALL BURRS, SHARP EDGES AND CORNERS TO A RADIUS NOT EXCEEDING 0.2 mm.
ALL WELDS AS PER IS 816 : 1969.

TOLERANCE ON ANGULAR DIMENSIONS	
UP TO 2 m	± 0.5°
OVER 2 m	± 0.25°

TOLERANCE ON PARALLEL DIMENSIONS

TOLERANCE ON PARALLEL DIMENSIONS	
UP TO 2 m	± 0.5
OVER 2 m	± 0.25

2 0'–30'

FILE NAME : TCE.11365A-ME-857-DD-0022(SH2OF2)

IF DIMENSIONS GIVEN ON THIS DRG. ARE IN CONFLICT WITH THE DIMENSIONS GIVEN IN THE CORRESPONDING 3D MODEL, THE DIMENSIONS GIVEN IN THE 3D MODEL SHALL PREVAIL.

CONSTRUCTED 3D / DETAILING DETAILS ONLY.

INTERFACES, CONFINED WITHIN THESE DRGS. ARE ONLY FOR THE PURPOSE OF ASSEMBLY OF MODULES AT SHOP & SITE. THESE DRGS. ARE NOT TO BE USED FOR MANUFACTURING PURPOSES.

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT: AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

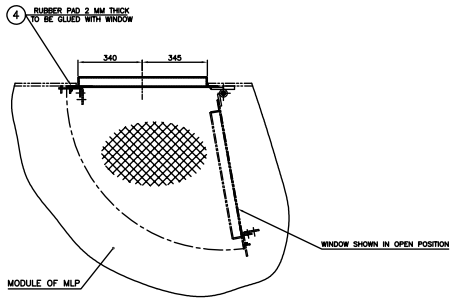
TITLE: MOBILE LAUNCH PEDESTAL (FOR GSLV MK III)
MODULE INTERCONNECTION DETAILS

SCALE: 1:25	APPROVED	DATE (RO ISSUE) 09-03-2020
DEL.CENTRE–DISCIPLINE–ME	RS	DATE (CURRENT ISSUE) 09-03-2020
DRN: ASP	MUP	RS
CHD: KSR	DWG NO: TCE.11365A-ME-857-DD-0022(SH2OF2)	ISSUE R0

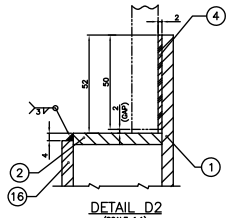
TCE FORM NO. 041 R0

TITLE: WINDOW SUBASSEMBLY AND DETAILS

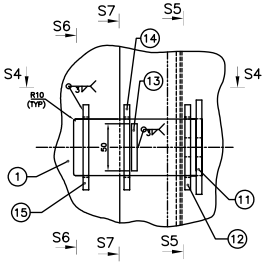
DWG NO: TCE-11365A-857-DD-0023



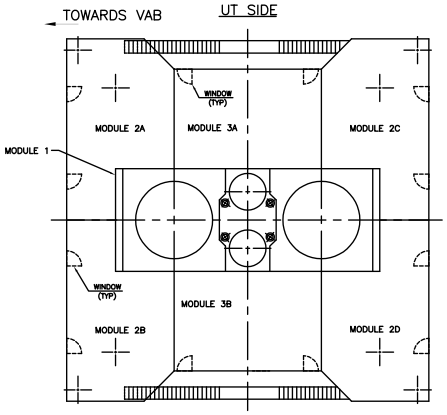
SECTION S1S1
(SCALE 1:10)



DETAIL D2
(SCALE 1:1)



DETAIL D1
(SCALE 1:2)

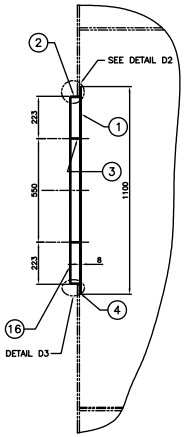


KEY PLAN
(SHOWING ALL MODULES OF MLP)
(SCALE 1:100)

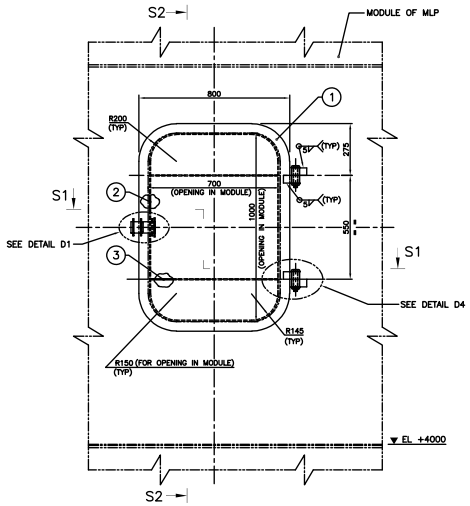
BILL OF MATERIAL					
PART NO.	DESCRIPTION	MATERIAL	QTY.	DRG. No.	REMARKS
1	PLATE 8 THK x 1100 x 800	IS:2062, GRADE A	1		CUT TO SHAPE
2	FLAT 45 x 6 x 3094	IS:2062, GRADE A	1		
3	FLAT 45 x 6 x 673	IS:2062, GRADE A	2		
4	RUBBER 2 THK x 50 x 3344	IS:809	1		
5	BAR ø 40 x 40 LG.	IS:2062, GRADE A	4		
6	PLATE 10 THK x 40 x 60	IS:2062, GRADE A	2		
7	PLATE 20 THK x 40 x 60	IS:2062, GRADE A	2		
8	HEX. HD. BOLT M20 x 110 IS:1363	CLASS 4.6 IS:1367	2		
9	HEX. NUT M20 IS:1363	CLASS 4 IS:1367	2		
10	PUNCHED WASHER 21 IS:2016	IS:2062, GRADE A	4		
11	PLATE 6 THK x 208 x 100	IS:2062, GRADE A	1		CUT TO SHAPE
12	FLAT 50 x 6 x 90	IS:2062, GRADE A	1		
13	FLAT 50 x 6 x 10	IS:2062, GRADE A	1		
14	FLAT 25 x 6 x 90	IS:2062, GRADE A	1		
15	PLATE 6 THK x 90 x 30	IS:2062, GRADE A	1		
16	PLATE 6 THK x 988 x 677	IS:2062, GRADE A	1		CUT TO SHAPE

NOTES:-

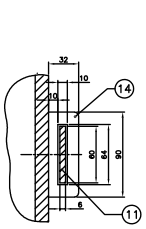
1. QUANTITY REQUIRED : 8 (4 LEFT HAND + 4 RIGHT HAND) FOR ONE MLP
2. LEFT HAND COMPONENT IS SHOWN IN THIS DRAWING. RIGHT HAND COMPONENT SHALL BE MIRROR IMAGE OF THE LEFT HAND COMPONENT.
3. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO. TCE.11365A-D-850-001
4. TOTAL WEIGHT OF FINISHED SUBASSEMBLY : 98 Kg.



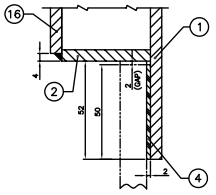
SECTION S2S2
(SCALE 1:10)



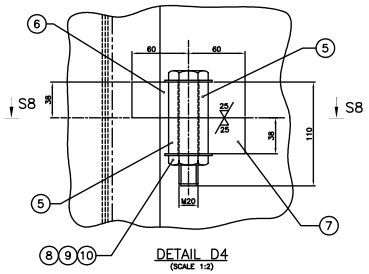
ELEVATION
(SCALE 1:10)



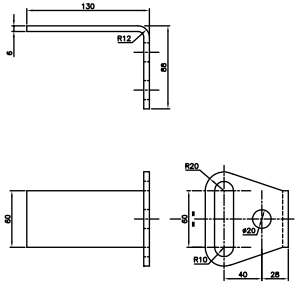
SECTION S6S6
(SCALE 1:2)



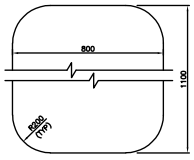
DETAIL D3
(SCALE 1:1)



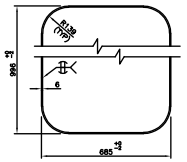
DETAIL D4
(SCALE 1:2)



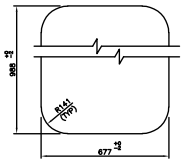
DETAILS OF ITEM No.11
(SCALE 1:2)



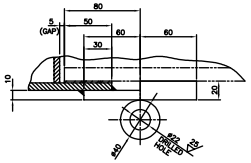
DETAILS OF ITEM No.1
(SCALE 1:10)



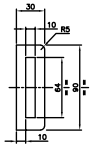
DETAILS OF ITEM No.2
(SCALE 1:10)



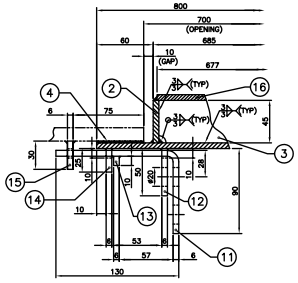
DETAILS OF ITEM No.16
(SCALE 1:10)



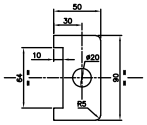
SECTION S8S8
(SCALE 1:2)



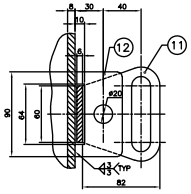
DETAILS OF ITEM No.15
(SCALE 1:2)



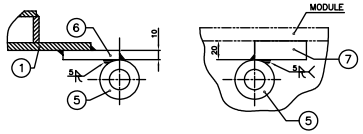
SECTION S4S4
(SCALE 1:2)



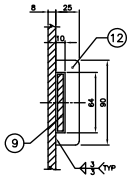
DETAILS OF ITEM No.12
(SCALE 1:2)



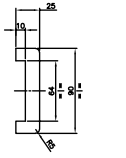
SECTION S5S5
(SCALE 1:2)



DETAILS OF HINGES FOR WINDOW (TYP)
(SCALE 1:2)



SECTION S7S7
(SCALE 1:2)



DETAILS OF ITEM No.14
(SCALE 1:2)

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT: AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

TITLE: MOBILE LAUNCH PEDESTAL (FOR GSLV MK III)
WINDOW SUBASSEMBLY AND DETAILS

SCALE: 1:10 | APPROVED | DATE (RO ISSUE) 09-03-2020 | DATE (CURRENT ISSUE) 09-03-2020

DEL.CENTRE-DISCIPLINE: ME | RS

DRN: ASP | TRS | TRS

CHD: KSR | DRG NO: TCE-11365A-857-DD-0023 | ISSUE: RO

TCE FORM NO. 041 R0

FOR RO ISSUE ONLY			ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE
	CLEARED					CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH		
DEPT	SIGNATURE	DATE	R0	FOR CLINT REVIEW AND COMMENTS.	ASP	–	–	–	–	KSR	RS	09-03-20																														
CHEM																																									
CIVIL																																									
ELEC																																									
I&C																																									
MECH																																									

FILE NAME: TCE.11365A857DD0023R0

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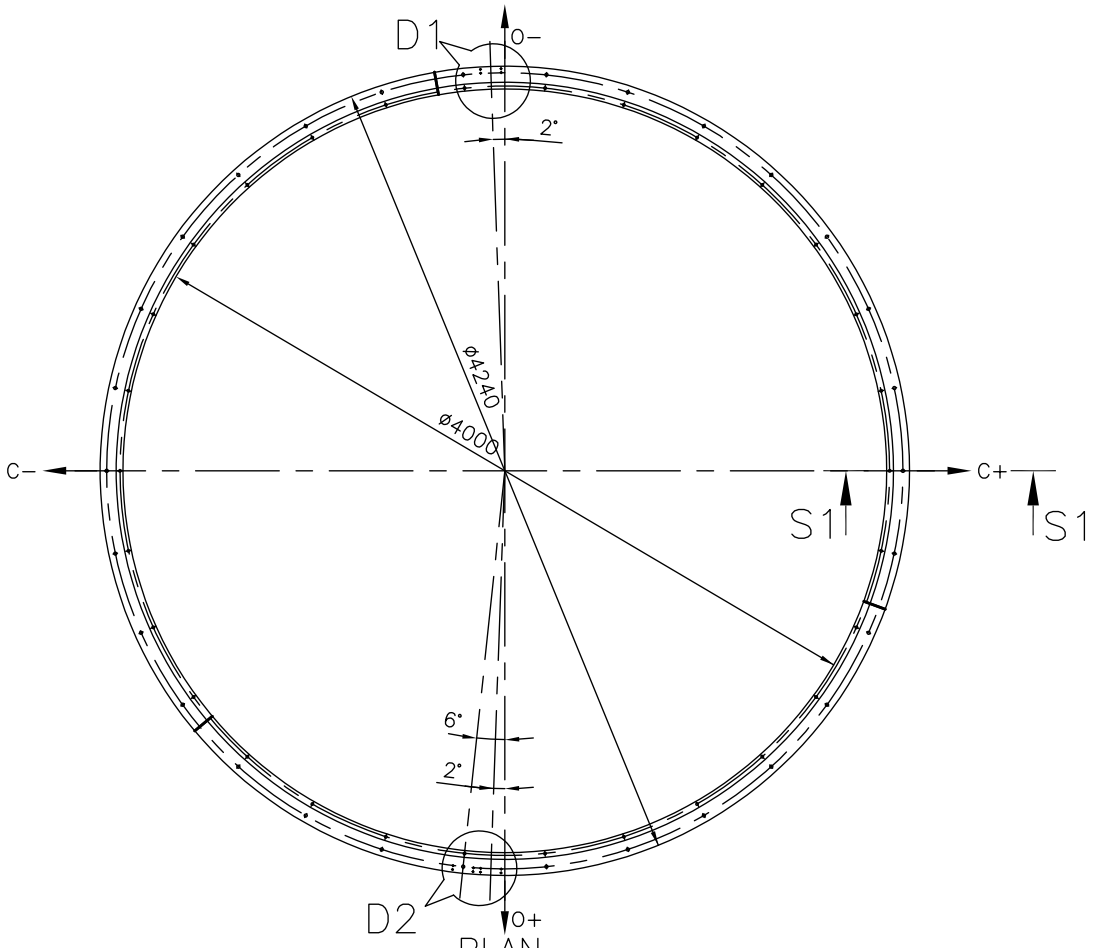
CONTRACTOR'S / SUPPLIER'S USE ONLY

APPROVED, CONFIRMED, WITH THESE COMMENTS, THAT THE DRAWING HAS BEEN REVIEWED FOR GENERAL CONFORMANCE TO THE DESIGN CONCEPT AND THE PROJECT DESIGN/MANUFACTURING RELEASE SPECIFICATIONS.

FILE NAME: F-041-Rev-R0.dwg

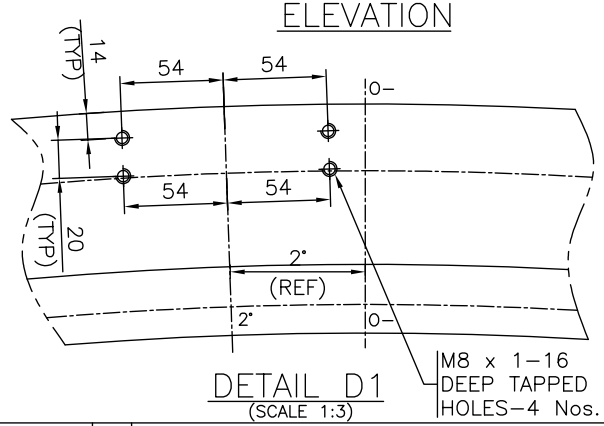
TCE FORM NO. 041 R0

PART NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	PLATE 63 THK X OD 4250 x ID 4000	GRADE–E250, QUALITY BR AS PER IS:2062	1	

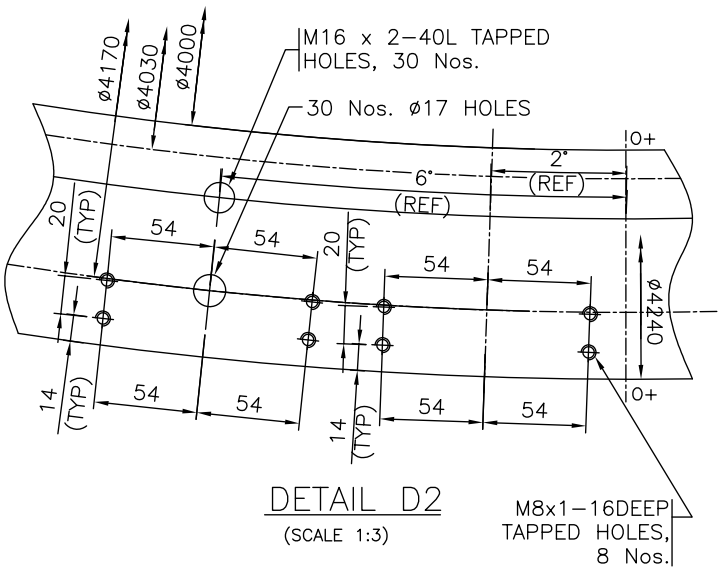


PLAN

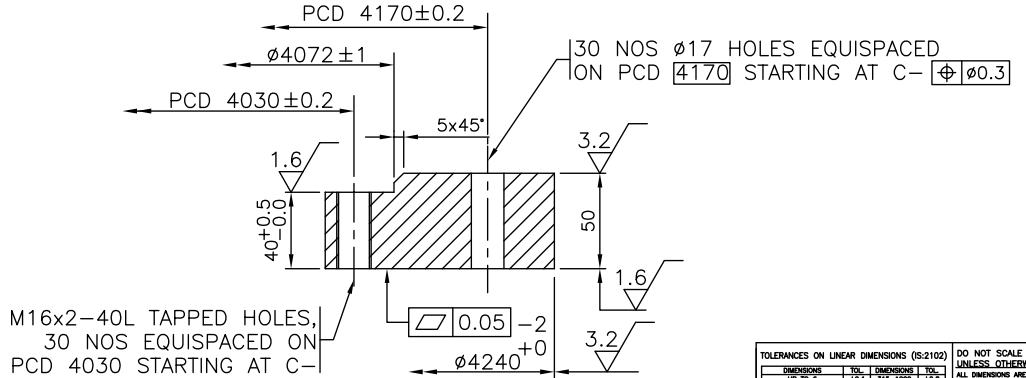
ELEVATION



DETAIL D1
(SCALE 1:3)



DETAIL D2
(SCALE 1:3)



SECTION S1S1
(SCALE 1:3)

TOLERANCES ON LINEAR DIMENSIONS (IS:2102)			
DIMENSIONS	TOL.	DIMENSIONS	TOL.
UP TO 6	±0.1	315–1000	±0.8
6–30	±0.2	1000–2000	±1.2
30–120	±0.3	2000–4000	±2.0
120–315	±0.5	4000–8000	±3.0
RADII AND CHAMFERS	0.5–3	3–6	6–30
TOLERANCE	±0.2	±0.5	±0.1

DO NOT SCALE THE DRAWING.
UNLESS OTHERWISE STATED:–
ALL DIMENSIONS ARE IN mm.
SURFACE FINISH TO BE $\sqrt{}$ OR BETTER
REMOVE ALL BURRS
REMOVE ALL EXTERNAL SHARP CORNERS AND EDGES BY CHAM.TO $^{0.15}_{0.40}$x45°
ROUND ALL INTERNAL CORNERS TO R $^{0.15}_{0.40}$

PROJECTION:

TOLERANCES ON LINEAR DIMENSIONS.		TOLERANCE ON ANGULAR DIMENSIONS
SPECIFIED DIMENSIONS	TOLERANCE	
XX	±0.40	±0°–30'
XX.X	±0.25	
XX.XX	±0.10	

DO NOT SCALE

FOR RO ISSUE ONLY		
CLEARED		
DISC.	SIGNATURE	DATE
CIVIL		
ELEC		
I&C		
MECH		

ISSUE	REVISIONS	DRN	CLEARED						APPD	DATE
			CIVIL	ELEC	I&C	MECH				
R0	FOR FABRICATION	ASP	–	–	–	KSR			RS	09-03-2020
R1	REVISED INCLUDING SPLICING SCHEME OF INTERFACE RING	ASP	–	–	–	KSR			RS	18-06-2020

FILE NAME : TCE.11365AME857D0002SH0

"R" (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION BUT ARE ISSUED FOR LIMITED PURPOSES ONLY AS INDICATED IN THE SMALL BLOCK AT THE TOP RIGHT HAND CORNER OF THE TITLE BLOCK.
CONSTRUCTION / FABRICATION WORK IS PERMITTED ON "R" (RELEASED) ISSUES ONLY.
INFORMATION CONTAINED WITHIN "HOLD" IS NOT RELEASED FOR CONSTRUCTION / FABRICATION. THE FIELD UNIT MUST GET DESIGN OFFICE TO CLEAR "HOLDS" IN TIME BEFORE PROCEEDING WITH ANY CONSTRUCTION / FABRICATION WORK RELATED TO "HOLDS".

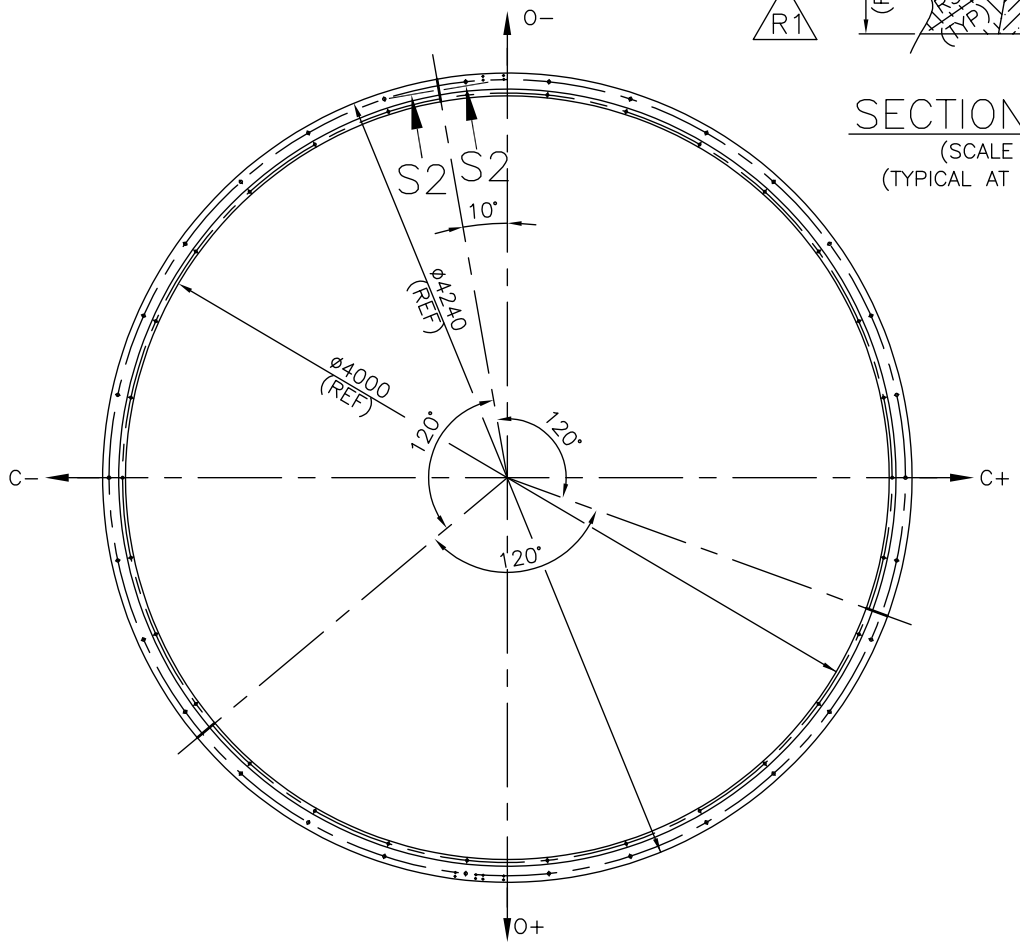
TATA CONSULTING ENGINEERS LIMITED
MUMBAI

CLIENT : INDIAN SPACE RESEARCH ORGANISATION SATISH DHAWAN SPACE CENTRE, SHAR

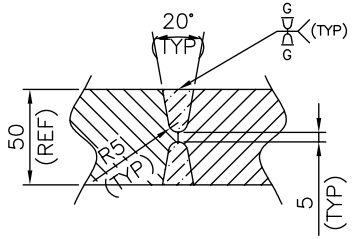
PROJECT : AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

MOBILE LAUNCH PEDESTAL (FOR GSLV MK III)
INTERFACE RING P–

SCALE: 1:30	APPROVED	RS	DATE (RO ISSUE) 09–03–2020
DEL.CENTRE– MUM–ME DISC:	MUP	RS	DATE (CURRENT ISSUE) 18–06–2020
DRN: ASP			
CHD: KSR	DWG NO	TCE.11365A–ME–857–DD–0025(SH10F2)	ISSUE R1



PLAN
(SHOWING SPLICING SCHEME)



R1

SECTION S2S2
(SCALE 1:3)
(TYPICAL AT 3 PLACES)

NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. FOR MANUFACTURING STANDARDS AND TOLERANCES, SURFACE PREPARATION AND WELDING INSTRUCTIONS REFER SPECIFICATION TCE.10977A−D−857−001.
3. ALL DIMENSIONS SPECIFIED IN THIS DRAWING ARE FINAL DIMENSIONS WHICH ARE TO BE ACHIEVED AFTER FINISH MACHINING.
4. ALL MATING SURFACES, BORES AND THREADED HOLES SHALL BE GREASED. THE REMAINING EXPOSED SURFACES SHALL BE PAINTED AS PER THE INSTRUCTIONS STATED IN SPECIFICATION. NO.TCE.11365A−D−857−001.
5. USE TEMPLATES FOR MARKING AND DRILLING HOLES. THE SAME TEMPLATE IS TO BE USED FOR DRILLING HOLES IN ALL MATING COMPONENTS.
6. UNLESS OTHERWISE SPECIFIED, ALL WELDING SHALL BE SUBJECTED TO THE FOLLOWING TESTS:

6.1. 100% MT/PT FOR FILLET WELDS AFTER FINAL PASS.

6.2. 100% PT FOR GROOVE WELDS AFTER ROOT PASS AND FINAL PASS.

6.3. 100% UT/ RT FOR GROOVE WELDS AFTER FINAL PASS

7. INTERFACE RING MAY BE FABRICATED IN SPLICES AS PROPOSED IN SHEET 2 OF 2 OF THIS DWG. HOWEVER, ALL WELDS OF SPLICE JOINTS SHALL BE SUBJECTED TO TESTS AS MENTIONED IN NOTE 6 ABOVE. ALSO, CARE SHALL BE TAKEN DURING FABRICATION TO AVOID ANY DISTORTION OF THE COMPONENT.

R1

3. STRESS RELIEVING IS TO BE CARRIED OUT AFTER COMPLETION OF ALL WELDING AND BEFORE MACHINING.
4. TOTAL WEIGHT OF FINISHED COMPONENT : 570 Kg.

TOLERANCES ON LINEAR DIMENSIONS (IS:2102)			
DIMENSIONS	TOL.	DIMENSIONS	TOL.
UP TO 6	±0.1	315−1000	±0.8
6−30	±0.2	1000−2000	±1.2
30−120	±0.3	2000−4000	±2.0
120−315	±0.5	4000−8000	±3.0
RADII AND CHAMFERS	0.5−3	3−6	6−30
TOLERANCE	±0.2	±0.5	±0.1

DO NOT SCALE THE DRAWING.
UNLESS OTHERWISE STATED:−
ALL DIMENSIONS ARE IN mm.
SURFACE FINISH TO BE $\sqrt{}$ OR BETTER
REMOVE ALL BURRS
REMOVE ALL EXTERNAL SHARP CORNERS AND EDGES BY CHAM.TO $^{0.15}_{0.40}$X45°
ROUND ALL INTERNAL CORNERS TO R $^{0.15}_{0.40}$

PROJECTION:

TOLERANCES ON LINEAR DIMENSIONS.		TOLERANCE ON ANGULAR DIMENSIONS
SPECIFIED DIMENSIONS	TOLERANCE	
XX	±0.40	±0°−30'
XX.X	±0.25	
XX.XX	±0.10	

DO NOT SCALE

FOR RO ISSUE ONLY		
CLEARED		
DISC.	SIGNATURE	DATE
CIVIL		
ELEC		
I&C		
MECH		

ISSUE	REVISIONS	DRN	CLEARED						APPD	DATE
			CIVIL	ELEC	I&C	MECH				
R0	FOR FABRICATION	ASP	−	−	−	KSR			RS	09-03-2020
R1	REVISED INCLUDING SPLICING SCHEME OF INTERFACE RING	ASP	−	−	−	KSR			RS	18-06-2020

FILE NAME :

"R" (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION BUT ARE ISSUED FOR LIMITED PURPOSES ONLY AS INDICATED IN THE SMALL BLOCK AT THE TOP RIGHT HAND CORNER OF THE TITLE BLOCK.
CONSTRUCTION / FABRICATION WORK IS PERMITTED ON "R" (RELEASED) ISSUES ONLY.
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TATA CONSULTING ENGINEERS LIMITED
MUMBAI

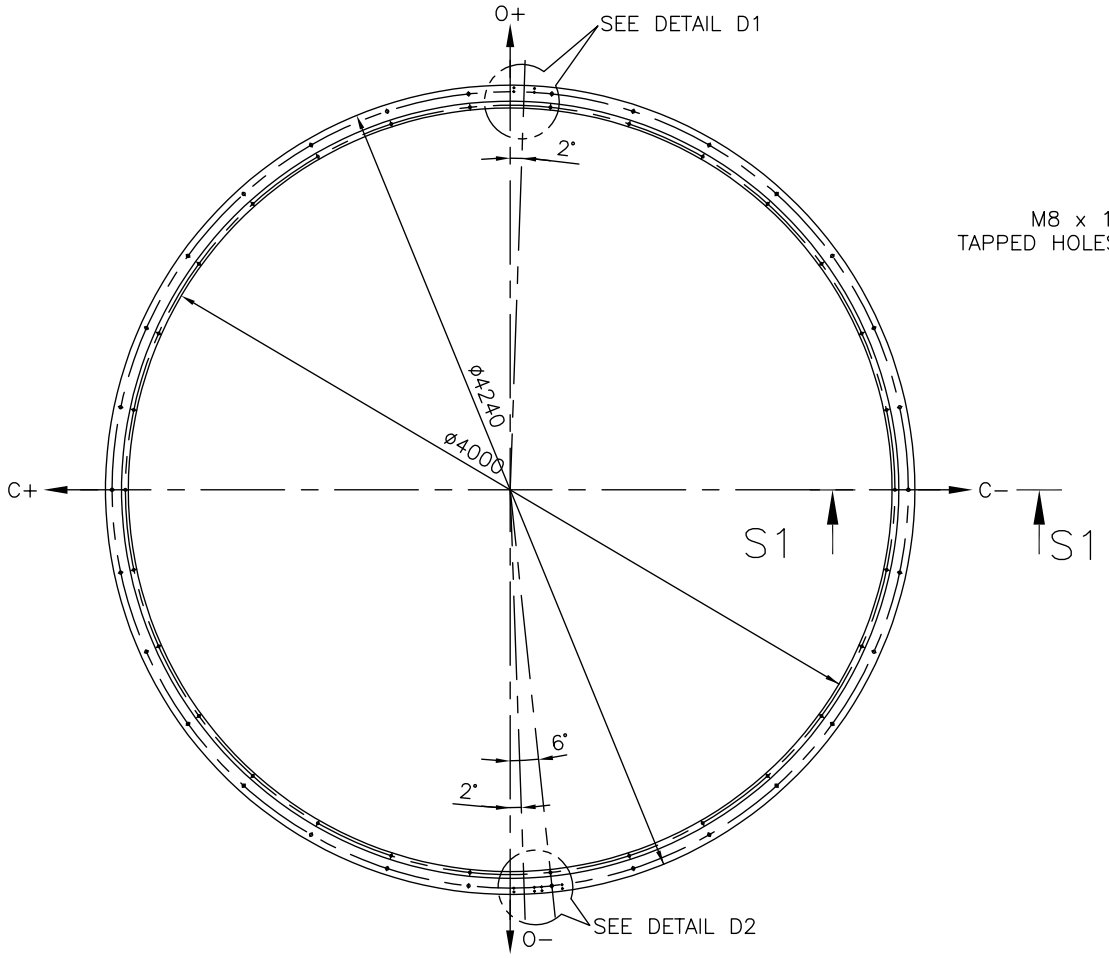
CLIENT : INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

PROJECT : AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

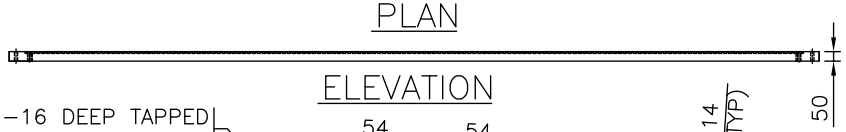
MOBILE LAUNCH PEDESTAL (FOR GSLV MK III)
INTERFACE RING P−

SCALE: 1:30	APPROVED	RS	DATE (RO ISSUE) 09−03−2020
DEL.CENTRE− MUM−ME DISC:	MUP	RS	DATE (CURRENT ISSUE) 18−06−2020
DRN: ASP			
CHD: KSR	DWG NO	TCE.11365A−ME−857−DD−0025(SH2OF2)	ISSUE R1

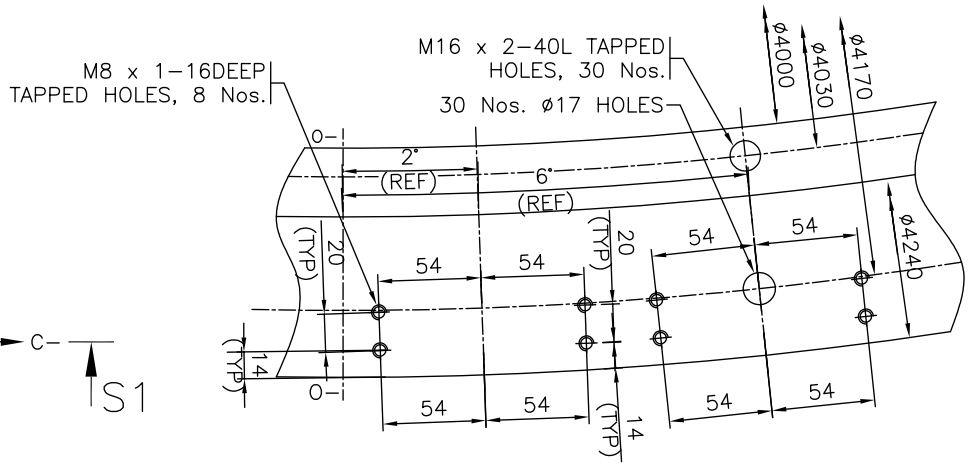
PART NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	PLATE 63 THK X OD 4250 x ID 4000	GRADE–E250, QUALITY BR AS PER IS:2062	1	



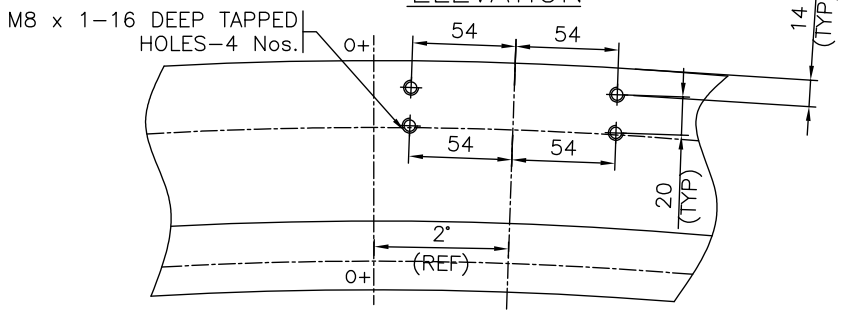
PLAN



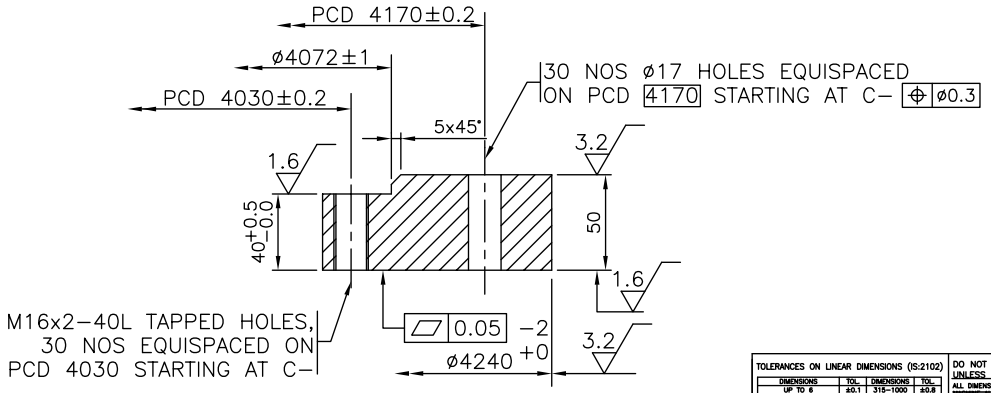
ELEVATION



DETAIL D2



DETAIL D1



SECTION S1S1

(SCALE 1:3)

TOLERANCES ON LINEAR DIMENSIONS (IS:2102)			
DIMENSIONS	TOL.	DIMENSIONS	TOL.
UP TO 6	±0.1	315–1000	±0.8
6–30	±0.2	1000–2000	±1.2
30–120	±0.3	2000–4000	±2.0
120–315	±0.5	4000–8000	±3.0
RADII AND CHAMFERS	0.5–3	3–6	6–30
TOLERANCE	±0.2	±0.5	±0.1

DO NOT SCALE THE DRAWING.
UNLESS OTHERWISE STATED:–
ALL DIMENSIONS ARE IN mm.
REMOVE ALL BURRS
REMOVE ALL EXTERNAL SHARP CORNERS AND EDGES BY CHAM.TO 0.15/0.40 x45°
ROUND ALL INTERNAL CORNERS TO R 0.15/0.40

PROJECTION:

TOLERANCES ON LINEAR DIMENSIONS.		TOLERANCE ON ANGULAR DIMENSIONS
SPECIFIED DIMENSIONS	TOLERANCE	
XX	±0.40	±0°–30'
XX.X	±0.25	
XX.XX	±0.10	

DO NOT SCALE

FOR RO ISSUE ONLY		
CLEARED		
DISC.	SIGNATURE	DATE
CIVIL		
ELEC		
I&C		
MECH		

ISSUE	REVISIONS	DRN	CLEARED						APPD	DATE
			CIVIL	ELEC	I&C	MECH				
R0	FOR FABRICATION	ASP	–	–	–	KSR			RS	09-03-2020
R1	REVISED INCLUDING SPLICING SCHEME OF INTERFACE RING	ASP	–	–	–	KSR			RS	18-06-2020

FILE NAME: TCE.11365AME857D0024R1(SH1OF2)

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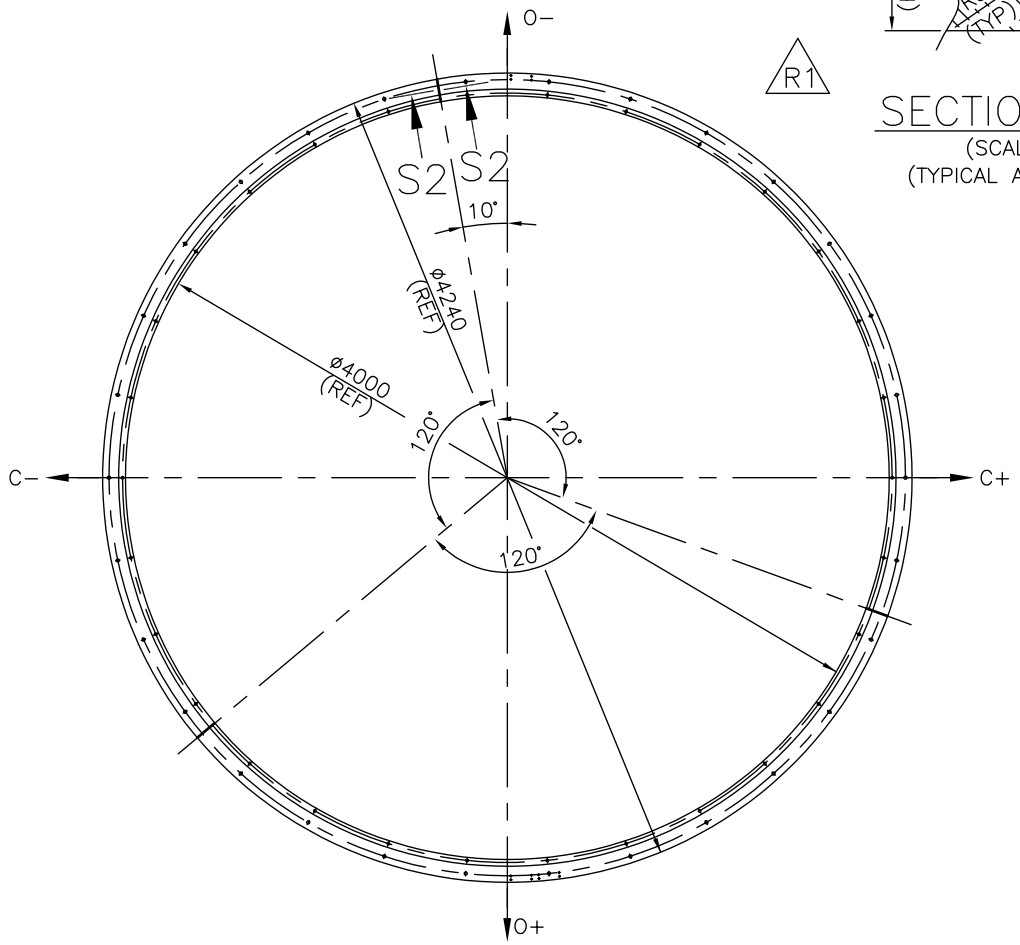
TATA CONSULTING ENGINEERS LIMITED
MUMBAI

CLIENT : INDIAN SPACE RESEARCH ORGANISATION SATISH DHAWAN SPACE CENTRE, SHAR

PROJECT : AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

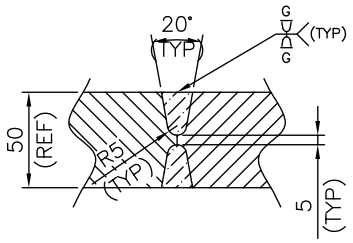
MOBILE LAUNCH PEDESTAL (FOR GSLV MK III)
INTERFACE RING P+

SCALE: 1:30	APPROVED		DATE (RO ISSUE)
DEL.CENTRE– MUM–ME DISC:		RS	09–03–2020
DRN: ASP	MUP	RS	DATE (CURRENT ISSUE) 18–06–2020
CHD: KSR	DWG NO TCE.11365A–ME–857–DD–0024 (SH1OF2)		ISSUE R1



PLAN
(SHOWING SPLICING SCHEME)

R1



SECTION S2S2
(SCALE 1:3)
(TYPICAL AT 3 PLACES)

NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. FOR MANUFACTURING STANDARDS AND TOLERANCES, SURFACE PREPARATION AND WELDING INSTRUCTIONS REFER SPECIFICATION TCE.10977A−D−857−001.
3. ALL DIMENSIONS SPECIFIED IN THIS DRAWING ARE FINAL DIMENSIONS WHICH ARE TO BE ACHIEVED AFTER FINISH MACHINING.
4. ALL MATING SURFACES, BORES AND THREADED HOLES SHALL BE GREASED. THE REMAINING EXPOSED SURFACES SHALL BE PAINTED AS PER THE INSTRUCTIONS STATED IN SPECIFICATION. NO.TCE.11365A−D−857−001.
5. USE TEMPLATES FOR MARKING AND DRILLING HOLES. THE SAME TEMPLATE IS TO BE USED FOR DRILLING HOLES IN ALL MATING COMPONENTS.
6. UNLESS OTHERWISE SPECIFIED, ALL WELDING SHALL BE SUBJECTED TO THE FOLLOWING TESTS:

6.1. 100% MT/PT FOR FILLET WELDS AFTER FINAL PASS.

6.2. 100% PT FOR GROOVE WELDS AFTER ROOT PASS AND FINAL PASS.

6.3. 100% UT/ RT FOR GROOVE WELDS AFTER FINAL PASS

7. INTERFACE RING MAY BE FABRICATED IN SPLICES AS PROPOSED IN SHEET 2 OF 2 OF THIS DWG. HOWEVER, ALL WELDS OF SPLICE JOINTS SHALL BE SUBJECTED TO TESTS AS MENTIONED IN NOTE 6 ABOVE. ALSO, CARE SHALL BE TAKEN DURING FABRICATION TO AVOID ANY DISTORTION OF THE COMPONENT.

R1

3. STRESS RELIEVING IS TO BE CARRIED OUT AFTER COMPLETION OF ALL WELDING AND BEFORE MACHINING.
4. TOTAL WEIGHT OF FINISHED COMPONENT : 570 Kg.

TOLERANCES ON LINEAR DIMENSIONS (IS:2102)			
DIMENSIONS	TOL.	DIMENSIONS	TOL.
UP TO 6	±0.1	315−1000	±0.8
6−30	±0.2	1000−2000	±1.2
30−120	±0.3	2000−4000	±2.0
120−315	±0.5	4000−8000	±3.0
RADII AND CHAMFERS	0.5−3	3−6	6−30
TOLERANCE	±0.2	±0.5	±0.1

DO NOT SCALE THE DRAWING.
UNLESS OTHERWISE STATED:−
ALL DIMENSIONS ARE IN mm.
REMOVE ALL BURRS
REMOVE ALL EXTERNAL SHARP CORNERS AND EDGES BY CHAM.TO $^{0.15}_{0.40}$X45°
ROUND ALL INTERNAL CORNERS TO R $^{0.15}_{0.40}$

PROJECTION:

TOLERANCES ON LINEAR DIMENSIONS.		TOLERANCE ON ANGULAR DIMENSIONS
SPECIFIED DIMENSIONS	TOLERANCE	
XX	±0.40	±0°−30'
XX.X	±0.25	
XX.XX	±0.10	

DO NOT SCALE

FOR RO ISSUE ONLY		
CLEARED		
DISC.	SIGNATURE	DATE
CIVIL		
ELEC		
I&C		
MECH		

ISSUE	REVISIONS	DRN	CLEARED CIVIL	ELEC	I&C	MECH	APPD	DATE
R0	FOR FABRICATION	ASP	−	−	−	KSR	RS	09-03-2020
R1	REVISED INCLUDING SPLICING SCHEME OF INTERFACE RING	ASP	−	−	−	KSR	RS	18-06-2020

FILE NAME: TCE.11365AME857D0002401(SH002)

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TATA CONSULTING ENGINEERS LIMITED
MUMBAI

CLIENT : INDIAN SPACE RESEARCH ORGANISATION SATISH DHAWAN SPACE CENTRE, SHAR

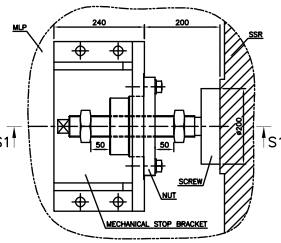
PROJECT : AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

MOBILE LAUNCH PEDESTAL (FOR GSLV MK III)
INTERFACE RING P+

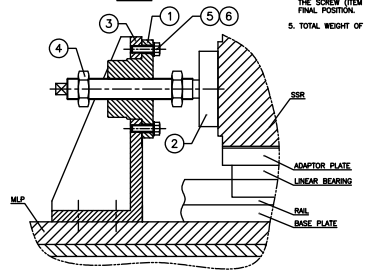
SCALE: 1:30	APPROVED		DATE (RO ISSUE)
DEL.CENTRE− MUM−ME. DISC:		RS	09−03−2020
DRN: ASP	MUP	RS	DATE (CURRENT ISSUE) 18−06−2020
CHD: KSR	DWG NO TCE.11365A−ME−857−DD−0024 (SH2OF2)		ISSUE R1

TCE-11365A-857-DD-0026

DETAILS OF SSR ADJUSTMENT COMPONENTS



PLAN



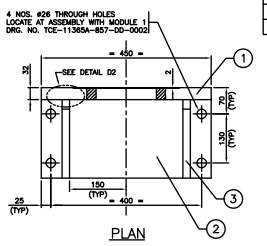
SECTION S1S1

PART NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	NUT	REFER DETAIL DRAWING	1	
2	SCREW	REFER DETAIL DRAWING	1	
3	MECHANICAL STOP BRACKET	REFER DETAIL DRAWING	1	
4	HEX. THIN NUT M56 PITCH OF THREADS : M56x2-6H (AS PER IS:4218 & IS:14962 (PART3)) ALL OTHER DETAILS AS PER IS:1364 (PART4)	CLASS 12 IS:1367	2	
5	HEX. HD. SCREW M20 x 60–5.6 IS:1364 (PART2)	CLASS 5.6 IS:1367	4	
6	PUNCHED WASHER A22 IS:2016	IS:2062, GRADE A	4	

NOTES:

1. QUANTITY REQUIRED : 8 (FOR ONE MLP)
2. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO. TCE.11365A–D–850–001.
3. THE DETAILS OF ITEM NOS 1, 2 & 3 ARE ALSO INDICATED IN THIS DRAWING.
4. AFTER COMPLETION OF SSR POSITION ADJUSTMENT, THE HEXAGONAL THIN NUT (ITEM NO.4) IS TO BE ADVANCED AND TIGHTENED AGAINST ITEM NO.1 AFTER THE SCREW (ITEM NO.2) IS ADVANCED TO BUTT AGAINST THE SSR IN ITS FINAL POSITION.
5. TOTAL WEIGHT OF FINISHED SUBASSEMBLY: 270 Kg

MECHANICAL STOP SUBASSEMBLY

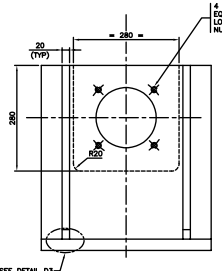


PLAN

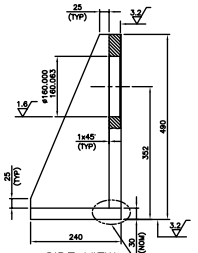
PART NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	PLATE 32 THK x 460 x 450	GRADE–E350, QUALITY BR AS PER IS:2062	1	
2	PLATE 36 THK x 450 x 240	GRADE–E350, QUALITY BR AS PER IS:2062	1	MACHINED TO 30 THK
3	PLATE 20 THK x 460 x 208	GRADE–E350, QUALITY BR AS PER IS:2062	2	CUT TO SHAPE

NOTES:

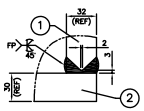
1. QUANTITY REQUIRED : 8 (FOR ONE MLP)
2. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO. TCE.11365A–D–850–001.
3. STRESS RELIEVING IS TO BE CARRIED OUT AFTER COMPLETION OF ALL WELDING AND BEFORE MACHINING.
4. ALL SCALLOPS SHALL BE 15R UNLESS OTHERWISE SPECIFIED.
5. UNLESS OTHERWISE SPECIFIED ALL WELDS SHALL BE CARRIED OUT AS PER IS 9595.
6. UNLESS OTHERWISE SPECIFIED, ALL WELDING SHALL BE SUBJECTED TO THE FOLLOWING TESTS:
   6.1 100% MT/PT FOR FILLET WELDS AFTER FINAL PASS.
   6.2 100% PT FOR GROOVE WELDS AFTER ROOT PASS AND FINAL PASS.
   6.3 100% UT/ RT FOR GROOVE WELDS AFTER FINAL PASS
7. USE TEMPLATE FOR MARKING AND DRILLING HOLES IN THE MECHANICAL STOP BRACKET. THE SAME TEMPLATE IS TO BE USED FOR DRILLING HOLES IN ALL MATING COMPONENTS.
8. TOTAL WEIGHT OF FINISHED COMPONENT: 144 Kg.



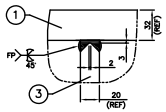
ELEVATION



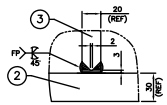
SIDE VIEW



DETAIL D1
(SCALE 1:2)

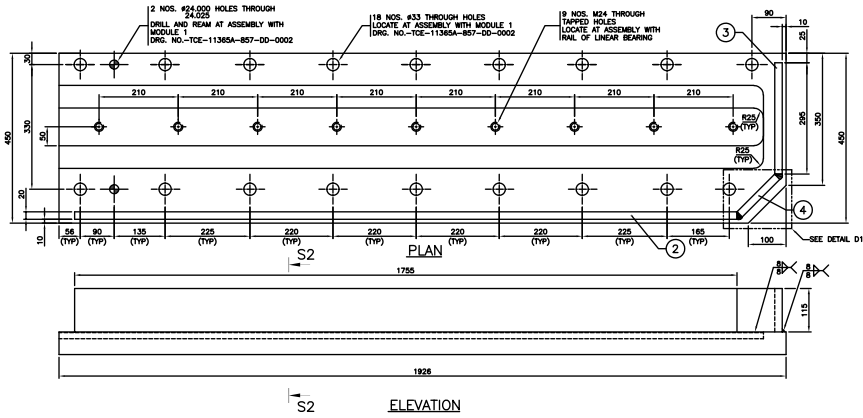


DETAIL D2 (TYP)
(SCALE 1:2)



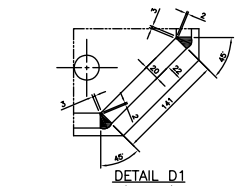
DETAIL D3 (TYP)
(SCALE 1:2)

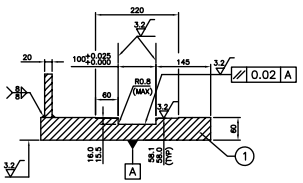
MECHANICAL STOP BRACKET



PLAN

ELEVATION





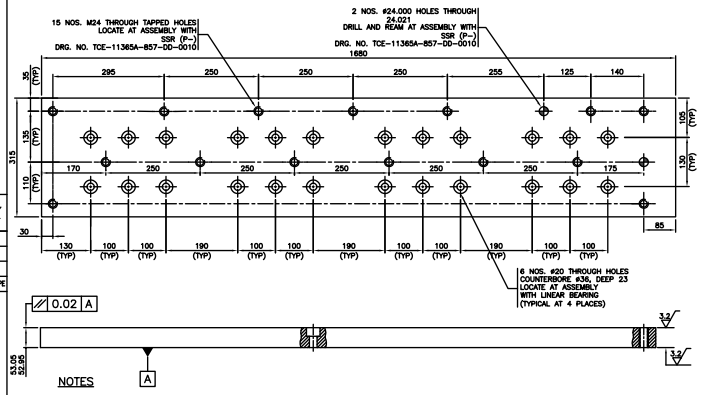
SECTION S2S2

NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	PLATE 63 THK x 1926 x 450	GRADE–E250, QUALITY BR AS PER IS:2062	1	
2	PLATE 20 THK x 1755 x 115	GRADE–E250, QUALITY BR AS PER IS:2062	1	
3	PLATE 20 THK x 295 x 115	GRADE–E250, QUALITY BR AS PER IS:2062	1	
4	PLATE 20 THK x 170 x 115	GRADE–E250, QUALITY BR AS PER IS:2062	1	

NOTES:

1. QUANTITY REQUIRED : 8 (4 LEFT HAND + 4 RIGHT HAND) FOR ONE MLP.
2. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO. TCE.11365A–D–850–001.
3. STRESS RELIEVING IS TO BE CARRIED OUT AFTER COMPLETION OF ALL WELDING AND BEFORE MACHINING.
4. UNLESS OTHERWISE SPECIFIED ALL WELDS SHALL BE CARRIED OUT AS PER IS 9595
5. UNLESS OTHERWISE SPECIFIED, ALL WELDING SHALL BE SUBJECTED TO THE FOLLOWING TESTS:
   5.1 100% MT/PT FOR FILLET WELDS AFTER FINAL PASS.
   5.2 100% PT FOR GROOVE WELDS AFTER ROOT PASS AND FINAL PASS.
   5.3 100% UT/ RT FOR GROOVE WELDS AFTER FINAL PASS
6. USE TEMPLATE FOR MARKING AND DRILLING HOLES IN THE BASE PLATE. THE SAME TEMPLATE IS TO BE USED FOR DRILLING HOLES IN ALL MATING COMPONENTS.
7. TOTAL WEIGHT OF FINISHED COMPONENT: 400 Kg.

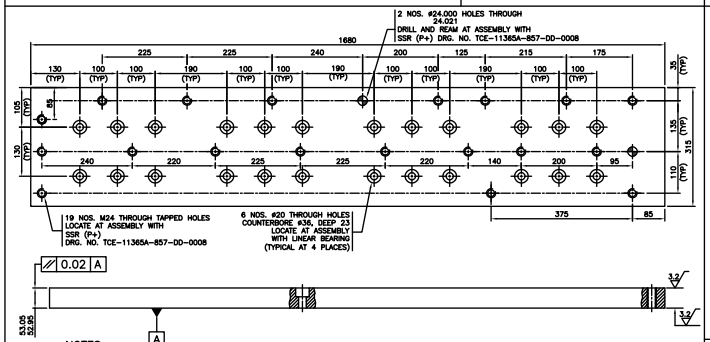
BASE PLATE



NOTES

1. QUANTITY REQUIRED : 4 (2 LEFT HAND + 2 RIGHT HAND) FOR ONE MLP.
2. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO.TCE.11365A–D–850–001.
3. USE TEMPLATE FOR MARKING AND DRILLING HOLES IN THE ADAPTOR PLATE. THE SAME TEMPLATE IS TO BE USED FOR DRILLING HOLES IN ALL MATING COMPONENTS.
4. THE PROCEDURE FOR DETERMINING THE LOCATIONS FOR THE TAPPED HOLES ON ADAPTOR PLATE FOR BOLTING IT WITH SSR SHALL BE AS FOLLOWS: ASSEMBLE THE LINEAR BEARINGS (WITH ADAPTOR PLATES) ON THE BASE PLATES. POSITION THE BASE PLATES ON MLP SO THAT THE RAILS OF LINEAR BEARINGS ARE PARALLEL WITHIN THE SPECIFIED TOLERANCE LIMITS. ASSEMBLE THE SSR ON THE ADAPTOR PLATES. ENSURE SMOOTH MOVEMENT OF SSR ON THE LINEAR BEARINGS. DETERMINE AND MARK THE LOCATION FOR THE TAPPED HOLES ON THE ADAPTOR PLATE BASED ON THE DRILLED HOLES PROVIDED ON SSR.
5. ALL MATING SURFACES, BORES AND THREADED HOLES TO BE GREASED. PAINT REMAINDER AS PER PAINTING INSTRUCTIONS STATED IN SPECIFICATION NO. TCE.11365A–D–850–001.
6. TOTAL WEIGHT OF FINISHED COMPONENT : 200 Kg.

ADAPTOR PLATE FOR SSR P–



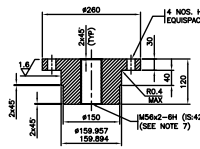
NOTES.

1. QUANTITY REQUIRED : 4 (2 LEFT HAND + 2 RIGHT HAND) FOR ONE MLP.
2. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO.TCE.11365A–D–850–001.
3. USE TEMPLATE FOR MARKING AND DRILLING HOLES IN THE ADAPTOR PLATE. THE SAME TEMPLATE IS TO BE USED FOR DRILLING HOLES IN ALL MATING COMPONENTS.
4. THE PROCEDURE FOR DETERMINING THE LOCATIONS FOR THE TAPPED HOLES ON ADAPTOR PLATE FOR BOLTING IT WITH SSR SHALL BE AS FOLLOWS: ASSEMBLE THE LINEAR BEARINGS (WITH ADAPTOR PLATES) ON THE BASE PLATES. POSITION THE BASE PLATES ON MLP SO THAT THE RAILS OF LINEAR BEARINGS ARE PARALLEL WITHIN THE SPECIFIED TOLERANCE LIMITS. ASSEMBLE THE SSR ON THE ADAPTOR PLATES. ENSURE SMOOTH MOVEMENT OF SSR ON THE LINEAR BEARINGS. DETERMINE AND MARK THE LOCATION FOR THE TAPPED HOLES ON THE ADAPTOR PLATE BASED ON THE DRILLED HOLES PROVIDED ON SSR.
5. ALL MATING SURFACES, BORES AND THREADED HOLES TO BE GREASED. PAINT REMAINDER AS PER PAINTING INSTRUCTIONS STATED IN SPECIFICATION NO. TCE.11365A–D–850–001.
6. TOTAL WEIGHT OF FINISHED COMPONENT : 200 Kg.

ADAPTOR PLATE FOR SSR P+

NOTES:

1. QUANTITY REQUIRED : 8 (FOR ONE MLP)
2. MATERIAL : AISI 4340 (40NI2CR1MO28 OF IS:1570).
3. HEAT TREAT TO :
   TENSILE STRENGTH : 100 Kg/mm NOM
   YIELD STRENGTH (0.2%STRAIN) : 80 Kg/mm MIN
   ELONGATION : 17% MIN
   HARDNESS : 28–34 HRC
4. MACHINE ALL OVER.
5. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO. TCE.11365A–D–850–001.
6. ALL MATING SURFACES, BORES AND THREADED HOLES TO BE GREASED. PAINT REMAINDER AS PER PAINTING INSTRUCTIONS STATED IN SPECIFICATION NO. TCE.11365A–D–850–001.
7. THE BASIC DIMENSIONS FOR THE SCREW THREADS SHALL BE AS PER IS:4218 (PART3). THE TOLERANCES FOR THE BASIC DIMENSIONS OF SCREW THREAD SHALL BE AS PER IS:14962 (PART3).
8. TOTAL WEIGHT OF FINISHED COMPONENT: 60 Kg.

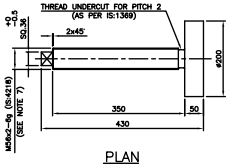


SECTIONAL ELEVATION

NUT FOR MECHANICAL STOP

NOTES:

1. QUANTITY REQUIRED: 8 (FOR ONE MLP)
2. MATERIAL : AISI 4340 (40NI2CR1MO28 OF IS:1570).
3. HEAT TREAT TO :
   TENSILE STRENGTH : 100 Kg/mm NOM
   YIELD STRENGTH (0.2%STRAIN) : 80 Kg/mm MIN
   ELONGATION : 17% MIN
   HARDNESS : 28–34 HRC
4. MACHINE ALL OVER.
5. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO. TCE.11365A–D–857–001.
6. ALL MATING SURFACES, BORES AND THREADED HOLES TO BE GREASED. PAINT REMAINDER AS PER PAINTING INSTRUCTIONS STATED IN SPECIFICATION NO. TCE.11365A–D–850–001.
7. THE BASIC DIMENSIONS FOR THE SCREW THREADS SHALL BE AS PER IS:4218 (PART3). THE TOLERANCES FOR THE BASIC DIMENSIONS OF SCREW THREAD SHALL BE AS PER IS:14962 (PART3).
8. TOTAL WEIGHT OF FINISHED COMPONENT: 56 Kg.



PLAN

SCREW FOR MECHANICAL STOP

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT: AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

TITLE: MOBILE LAUNCH PEDESTAL (FOR GSLV MK III)
DETAILS OF SSR ADJUSTMENT COMPONENTS

SCALE: 1:5 | APPROVED | DATE (WO ISSUE) | DATE (CURRENT ISSUE): 05-12-2019 | ISSUE: P0

DEL.CENTRE–DISC: MUM–ME | DRN: ASP | CHD: KSR | DWG NO: TCE–11365A–857–DD–0026 | RS

FILE NAME : TCE.11365A857DD0026P0

FOR RO ISSUE ONLY			ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE
	CLEARED					CHEM	CIVIL	ELEC	I&C	MECH		
DEPT	SIGNATURE	DATE	R0	FOR FABRICATION	ASP	–	–	–	–	KSR	RS	05-12-19
CHEM												
CIVIL												
ELEC												
I&C												
MECH												

REVISIONS | DRN | CLEARED (CHEM CIVIL ELEC I&C MECH) | APPD | DATE | ISSUE

REVISIONS | DRN | CLEARED (CHEM CIVIL ELEC I&C MECH) | APPD | DATE

TOLERANCES ON LINEAR DIMENSIONS (IS 2102)

RANGE	TOLERANCE
0.5 TO 3	± 0.05
3 TO 6	± 0.06
6 TO 30	± 0.08
30 TO 120	± 0.12
120 TO 400	± 0.20
400 TO 1000	± 0.30
1000 TO 2000	± 0.40
2000 TO 4000	± 0.50

DO NOT SCALE THE DRAWING.
UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN MM.
ALL TOLERANCES ARE ± 1/2 OF BETTER
ALL DIMENSIONS, EXCEPT THOSE OF CASTINGS & FORGINGS, TO BE MACHINED ALL ROUND.
ALL SHARP EDGES TO BE BROKEN.

TOLERANCE ON LINEAR DIMENSIONS

RANGE	TOLERANCE
UP TO 6	± 0.05
6 TO 30	± 0.10
30 TO 120	± 0.15
120 TO 315	± 0.20
315 TO 1000	± 0.30
1000 TO 2000	± 0.50

TOLERANCE ON TAPERED DIMENSIONS

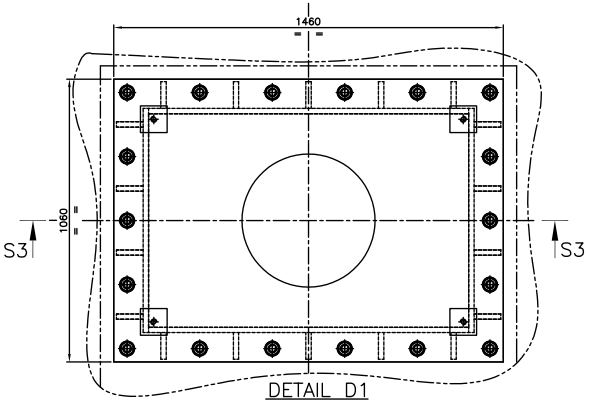
2°–30°

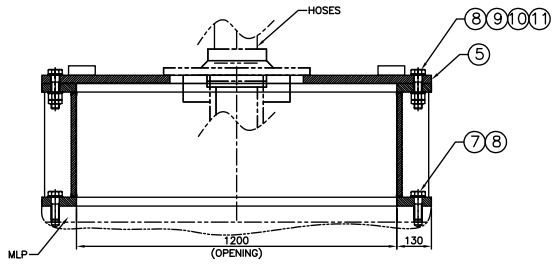
PROJECTION

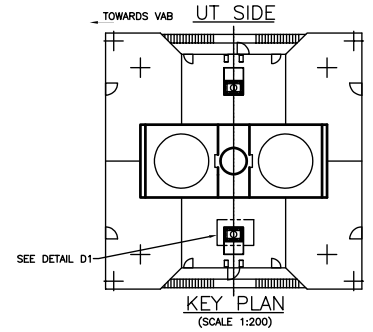
TCE FORM NO. 041 R0

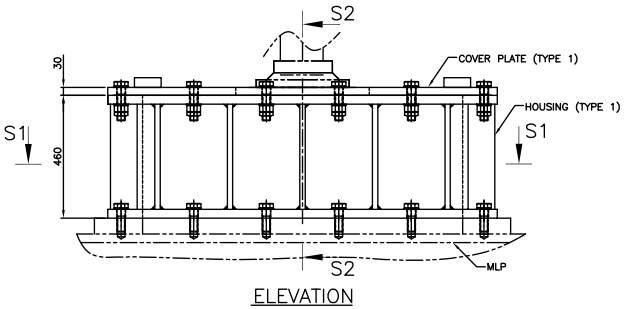
DWG NO TCE.11365A-ME-857-DD-0028

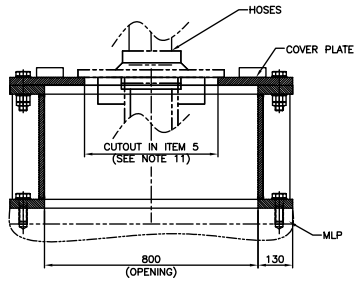
TITLE MOBILE LAUNCH PEDESTAL
ENCLOSURE FOR CRYO PIPES – TYPE 1
ASSEMBLY AND DETAILS

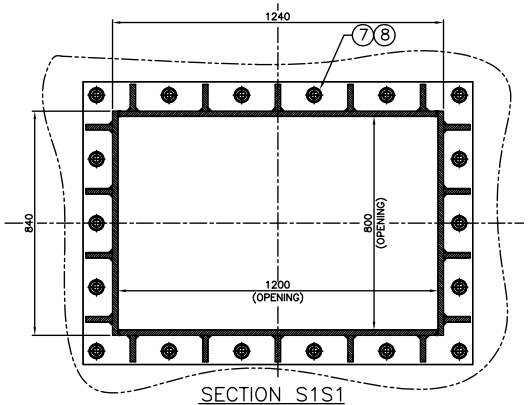


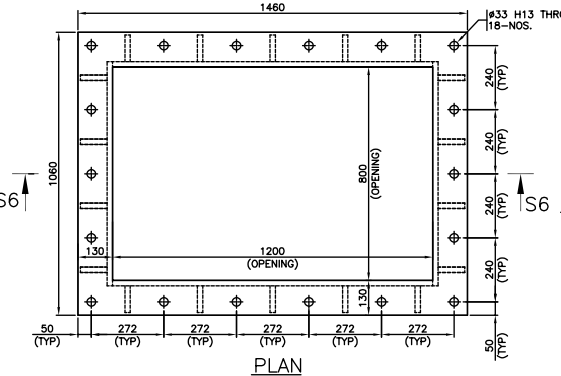


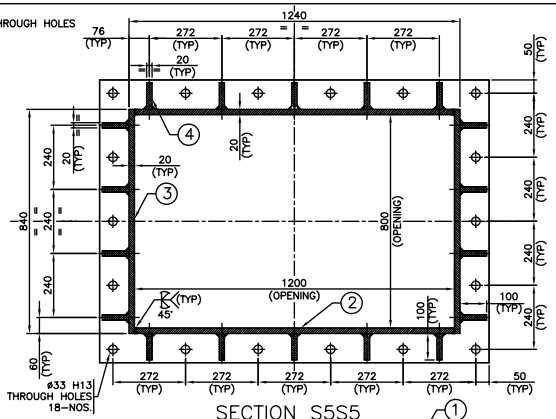


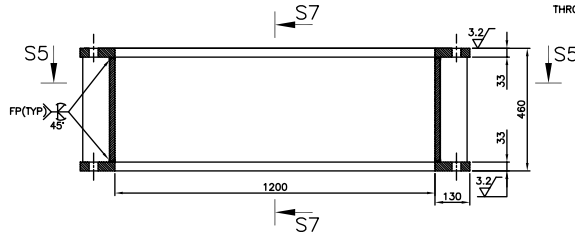


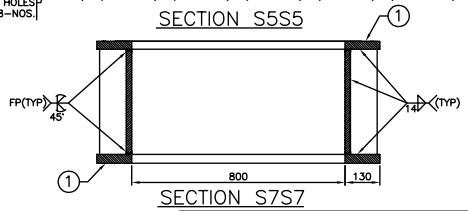


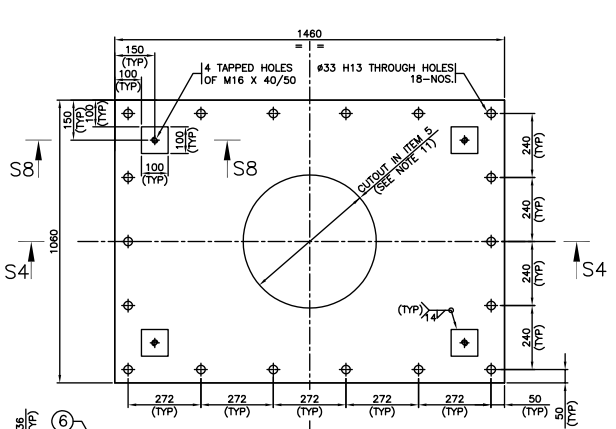


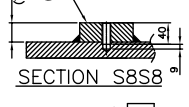


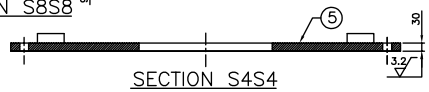












DETAILS OF HOUSING (TYPE 1)

DETAILS OF COVER PLATE (TYPE 1)

NOTES:

1. QUANTITY REQUIRED : 1 (FOR ONE MLP)
2. FOR MANUFACTURING STANDARDS AND TOLERANCES, SURFACE PREPARATION AND WELDING INSTRUCTIONS REFER SPECIFICATION NO. TCE.11365A-D-857-001.
3. UNLESS OTHERWISE SPECIFIED, ALL WELDING SHALL BE CARRIED OUT AS PER IS:9595.
4. STRESS RELIEVING IS TO BE CARRIED OUT AFTER COMPLETION OF ALL WELDING & BEFORE MACHINING.
5. UNLESS OTHERWISE SPECIFIED, ALL WELDING SHALL BE SUBJECTED TO THE FOLLOWING TESTS:

5.1.100% MT/PT FOR FILLET WELDS AFTER FINAL PASS.

5.2.100% PT FOR GROOVE WELDS AFTER ROOT PASS & FINAL PASS.

5.3.100% UT/ RT FOR GROOVE WELDS AFTER FINAL PASS

6. UNLESS OTHERWISE SPECIFIED, ALL GROOVE WELDS SHALL BE FULL PENETRATION TYPE WITH 100% RADIOGRAPHIC/ULTRASONIC TESTING.
7. ALL DIMENSIONS SPECIFIED IN THIS DRAWING ARE FINAL DIMENSIONS WHICH ARE TO BE ACHIEVED AFTER FINISH MACHINING.
8. ALL MATING SURFACES, BORES AND THREADED HOLES SHALL BE GREASED. THE REMAINING EXPOSED SURFACES SHALL BE PAINTED AS PER THE INSTRUCTIONS STATED IN SPECIFICATION. NO. TCE.11365A-D-857-001.
9. BILL OF MATERIAL SHOWS THE FINISHED SIZES OF PLATES, BARS AND OTHER SECTIONS. FOR MATERIAL PROCUREMENT, NECESSARY FABRICATION ALLOWANCE SHALL BE ADDED AS PER EXISTING SHOP PRACTICES.
10. USE TEMPLATES FOR MARKING AND DRILLING HOLES. THE SAME TEMPLATE IS TO BE USED FOR DRILLING HOLES IN ALL MATING COMPONENTS.
11. SUITABLE CUTOUT IS TO BE PROVIDED ON ITEM NO. 5 TO SUIT THE PROCURED HOSES.
12. TOTAL WEIGHT OF FINISHED COMPONENTS :

HOUSING (TYPE 1) – 680 Kg.

COVER PLATE (TYPE 1) – 320 Kg.

ITEM NO	DESCRIPTION	MATERIAL	QTY	REMARKS
11	HEX THIN NUT M30 IS:1364 (PART–4) CLASS 10		18	
10	HEX. HD. BOLT M30x130 LG. IS:1364 (PART–1) GRADE 10.9		18	
9	HEX NUT M30 IS:1364 (PART–3) CLASS 10		18	
8	MACHINED WASHER 31 IS:2016	45C8 AS PER IS:1570 PART–2	54	
7	HEX. HD. BOLT M30x90 LG. IS:1364 (PART–1) GRADE 10.9		18	
6	PLATE 36 THK X 100 X 100	GRADE–E350, QUALITY BR AS PER IS:2062	4	
5	COVER PLATE. 32 THK x 1060 x 1460	GRADE–E350, QUALITY BR AS PER IS:2062	1	
4	FLAT 20 THK x 394 x 100	GRADE–E350, QUALITY BR AS PER IS:2062	18	
3	PLATE 20 THK x 394 x 840	GRADE–E350, QUALITY BR AS PER IS:2062	2	
2	PLATE 20 THK x 400 x 1200	GRADE–E350, QUALITY BR AS PER IS:2062	2	
1	PLATE 36 THK x 1060 x 1460	GRADE–E350, QUALITY BR AS PER IS:2062	2	

BILL OF MATERIAL

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT
AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

TITLE MOBILE LAUNCH PEDESTAL
ENCLOSURE FOR CRYO PIPES – TYPE 1
ASSEMBLY AND DETAILS

SCALE: 1:10	APPROVED		DATE (RO ISSUE) 09–03–2020
DEL.CENTRE–DISC: MUM–ME		RS	DATE (CURRENT ISSUE) 09–03–2020
DRN: ASP	MUP		RS
CHD: KSR	DWG NO TCE.11365A–ME–857–DD–0028	ISSUE	RO

SIZE-A1

FOR RO ISSUE ONLY			REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE
CLEARED					CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH		
DEPT	SIGNATURE	DATE																			
CHEM			RO FOR REVIEW & COMMENTS	ASP	–	–	–	–	KSR	RS	09-03-2020										
CIVIL																					
ELEC																					
I&C																					
MECH																					

FILE NAME: F-041-Rev-R5.dwg

FILE NAME : TCE.11365AME857DD0028R0

TOLERANCES ON LINEAR DIMENSIONS (IS 2102)

DIMENSIONS	TOL.	DIMENSIONS	TOL.
UP TO 6	±0.1	31–100	± 0.5
6–30	±0.2	100–300	± 1.0
30–120	±0.3	300–1000	± 2.0
120–315	±0.5	1000–3000	± 3.0
RADII AND CHAMFERS	0.5–3	3–6	6–30
TOLERANCE	± 0.2	± 0.5	± 1.0

PROJECTION:

DO NOT SCALE THE DRAWING.
UNLESS OTHERWISE STATED:–
ALL DIMENSIONS ARE IN mm.
MACHINE FINISH TO BE 3.2 OR BETTER
REMOVE ALL BURRS
REMOVE ALL EXTERNAL SHARP CORNERS AND EDGES BY CHAMFER 0.15 AND ROUND ALL INTERNAL CORNERS TO R 0.25

TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.40
XX.X	± 0.25
XX.XX	± 0.10

TOLERANCE ON ANGULAR DIMENSIONS: ± 0°–30'

'P' (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION BUT ARE ISSUED FOR LIMITED PURPOSES ONLY AS INDICATED IN THE SMALL BLOCK AT THE TOP RIGHT HAND CORNER OF THE TITLE BLOCK.

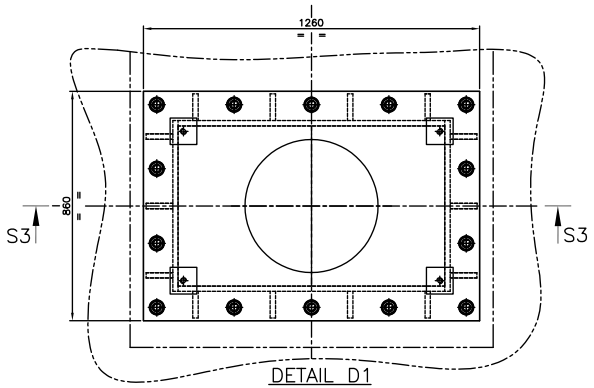
CONSTRUCTION / FABRICATION WORK IS PERMITTED ON 'R' (RELEASED) ISSUES ONLY.

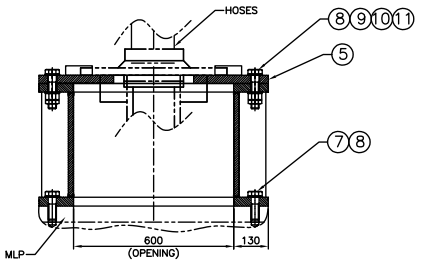
INFORMATION CONTAINED WITH 'VIOLET' COLOUR NOTES RELEASED FOR CONSTRUCTION / FABRICATION FIELD / SHOP MAY USE DESIGN OFFICE TO CLEAR 'HOLDS' IN TIME BEFORE PROCEEDING WITH ANY CONSTRUCTION/FABRICATION WORK RELATED TO 'HOLDS'.

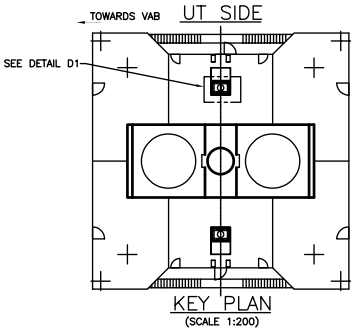
TCE FORM NO. 041 R5

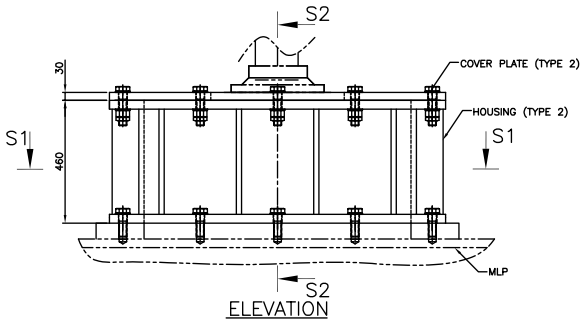
TITLE: MOBILE LAUNCH PEDESTAL
ENCLOSURE FOR CRYO PIPES – TYPE 2
ASSEMBLY AND DETAILS

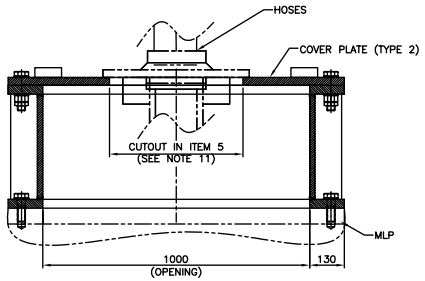
DWG NO: TCE.11365A-ME-857-DD-0028

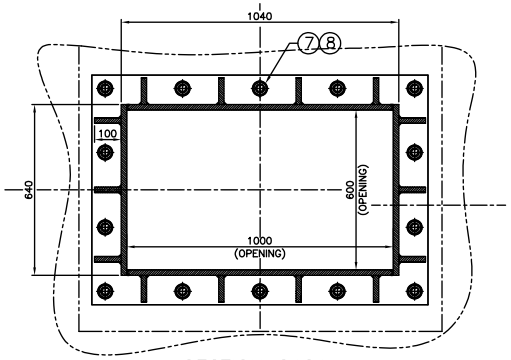












NOTES:

1. QUANTITY REQUIRED : 1 (FOR ONE MLP)
2. FOR MANUFACTURING STANDARDS AND TOLERANCES, SURFACE PREPARATION AND WELDING INSTRUCTIONS REFER SPECIFICATION NO. TCE.11365A-D-857-001.
3. UNLESS OTHERWISE SPECIFIED, ALL WELDING SHALL BE CARRIED OUT AS PER IS:9595.
4. STRESS RELIEVING IS TO BE CARRIED OUT AFTER COMPLETION OF ALL WELDING & BEFORE MACHINING.
5. UNLESS OTHERWISE SPECIFIED, ALL WELDING SHALL BE SUBJECTED TO THE FOLLOWING TESTS:

5.1.100% MT/PT FOR FILLET WELDS AFTER FINAL PASS.

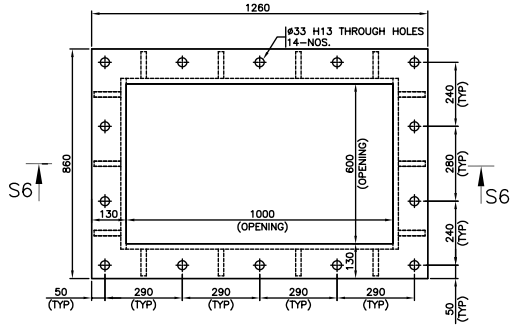
5.2.100% PT FOR GROOVE WELDS AFTER ROOT PASS & FINAL PASS.

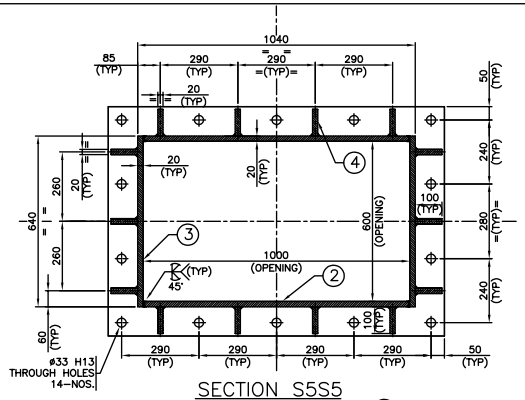
5.3.100% UT/ RT FOR GROOVE WELDS AFTER FINAL PASS

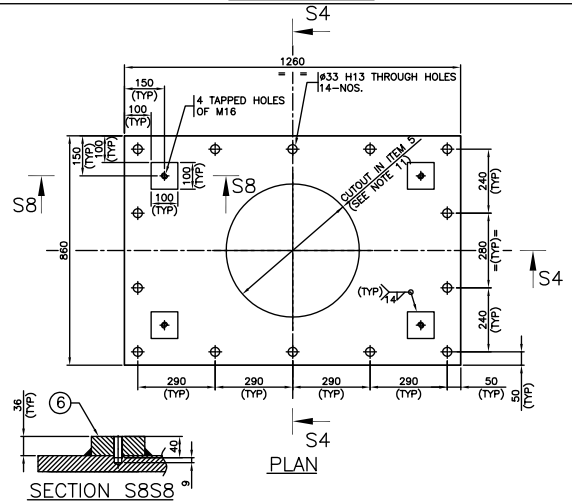
6. UNLESS OTHERWISE SPECIFIED, ALL GROOVE WELDS SHALL BE FULL PENETRATION TYPE WITH 100% RADIOGRAPHIC/ULTRASONIC TESTING.
7. ALL DIMENSIONS SPECIFIED IN THIS DRAWING ARE FINAL DIMENSIONS WHICH ARE TO BE ACHIEVED AFTER FINISH MACHINING.
8. ALL MATING SURFACES, BORES AND THREADED HOLES SHALL BE GREASED. THE REMAINING EXPOSED SURFACES SHALL BE PAINTED AS PER THE INSTRUCTIONS STATED IN SPECIFICATION. NO. TCE.11365A-D-857-001.
9. BILL OF MATERIAL SHOWS THE FINISHED SIZES OF PLATES, BARS AND OTHER SECTIONS. FOR MATERIAL PROCUREMENT, NECESSARY FABRICATION ALLOWANCE SHALL BE ADDED AS PER EXISTING SHOP PRACTICES.
10. USE TEMPLATES FOR MARKING AND DRILLING HOLES. THE SAME TEMPLATE IS TO BE USED FOR DRILLING HOLES IN ALL MATING COMPONENTS.
11. SUITABLE CUTOUT IS TO BE PROVIDED ON ITEM NO. 5 TO SUIT THE PROCURED HOSES.
12. TOTAL WEIGHT OF FINISHED COMPONENTS :

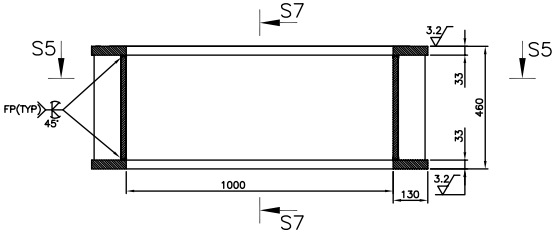
HOUSING (TYPE 2) – 550 Kg.

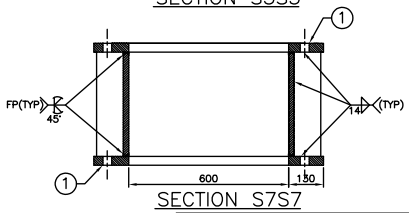
COVER PLATE (TYPE 2) – 250 Kg.

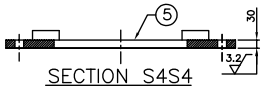












DETAILS OF HOUSING (TYPE 2)

DETAILS OF COVER PLATE (TYPE 2)

ITEM NO	DESCRIPTION	MATERIAL	QTY	REMARKS
11	HEX THIN NUT M30 IS:1364 (PART–4) CLASS 10		14	
10	HEX. HD. BOLT M30x130 LG. IS:1364 (PART–1) GRADE 10.9		14	
9	HEX NUT M30 IS:1364 (PART–3) CLASS 10		14	
8	MACHINED WASHER 31 IS:2016	45C8 AS PER IS:1570 PART–2	42	
7	HEX. HD. BOLT M30x90 LG. IS:1364 (PART–1) GRADE 10.9		14	
6	PLATE 36 THK X 100 X 100	GRADE–E350, QUALITY BR AS PER IS:2062	4	
5	COVER PLATE 32 THK x 1260 x 860	GRADE–E350, QUALITY BR AS PER IS:2062	1	
4	FLAT 20 THK x 394 x 100	GRADE–E350, QUALITY BR AS PER IS:2062	14	
3	PLATE 20 THK x 394 x 640	GRADE–E350, QUALITY BR AS PER IS:2062	2	
2	PLATE 20 THK x 400 x 1000	GRADE–E350, QUALITY BR AS PER IS:2062	2	
1	PLATE 36 THK x 1260 x 860	GRADE–E350, QUALITY BR AS PER IS:2062	2	

BILL OF MATERIAL

DO NOT SCALE

INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE, SHAR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT
AUGMENTATION OF SECOND LAUNCH PAD (ASLP)

TITLE
MOBILE LAUNCH PEDESTAL
ENCLOSURE FOR CRYO PIPES – TYPE 2 ASSEMBLY AND DETAILS

SCALE: 1:10	APPROVED	DATE (RO ISSUE)	09–03–2020
DEL.CENTRE–DISC: MUM–ME		DATE (CURRENT ISSUE)	RS 09–03–2020
DRN: ASP	MUP		RS
CHD: KSR	DWG NO: TCE.11365A–ME–857–DD–0028	ISSUE	R0

FILE NAME: TCE.11365AME857DD0028R0

'P' (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION BUT ARE ISSUED FOR LIMITED PURPOSES ONLY AS INDICATED IN THE SMALL BLOCK AT THE TOP RIGHT HAND CORNER OF THE TITLE BLOCK.

CONSTRUCTION / FABRICATION WORK IS PERMITTED ON 'R' (RELEASED) ISSUES ONLY.

INFORMATION CONTAINED WITH 'VOLET' SHOULD NOT BE RELEASED FOR CONSTRUCTION / FABRICATION FIELD. CONSULT THE DESIGN OFFICE TO CLEAR 'HOLDS' IN TIME BEFORE PROCEEDING WITH ANY CONSTRUCTION/FABRICATION WORK RELATED TO 'HOLDS'.

FOR R0 ISSUE ONLY				REVISIONS	DRN	CLEARED					APPD	DATE	ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE
CLEARED						CHEM	CIVIL	ELEC	I&C	MECH						CHEM	CIVIL	ELEC	I&C	MECH		
DEPT	SIGNATURE	DATE	R0	FOR REVIEW & COMMENTS	ASP	–	–	–	–	KSR	RS	09–03–2020										
CHEM																						
CIVIL																						
ELEC																						
I&C																						
MECH																						

TOLERANCES ON LINEAR DIMENSIONS (IS 2102)		
DIMENSIONS	TOL.	DIMENSIONS	TOL.
UP TO 6	±0.1	315–1000	± 0.8
6–30	±0.2	1000–2000	± 1.2
30–120	±0.3	2000–4000	± 2.0
120–315	±0.5	4000–8000	± 3.0
RADII AND CHAMFERS	0.5–3	3–6	6–30
TOLERANCE	± 0.2	± 0.5	± 1.0

PROJECTION:

DO NOT SCALE THE DRAWING.
UNLESS OTHERWISE STATED:–
ALL DIMENSIONS ARE IN mm.
MACHINING SYMBOL ▽
SURFACE FINISH TO BE ▽ OR BETTER
REMOVE ALL BURRS
REMOVE ALL EXTERNAL SHARP CORNERS AND EDGES BY CHAMFER 0.15 AND ROUND ALL INTERNAL CORNERS TO R 0.25

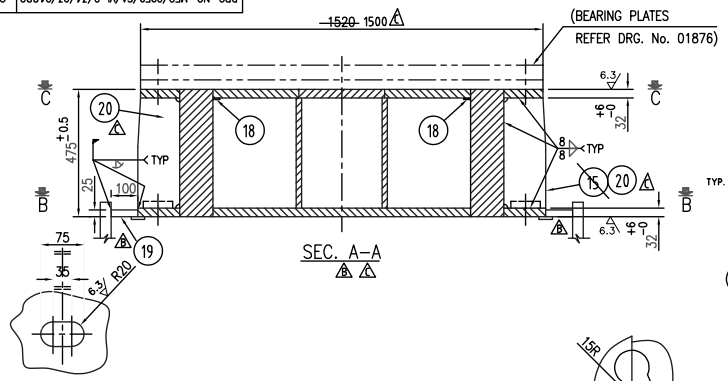
TOLERANCES ON LINEAR DIMENSIONS		TOLERANCE ON ANGULAR DIMENSIONS
SPECIFIED DIMENSIONS	TOLERANCE	
XX	± 0.40	± 0°–30'
XX.X	± 0.25	
XX.XX	± 0.10	

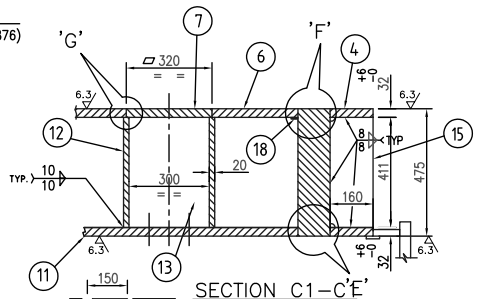
FILE NAME: F–041–Rev–R5.dwg

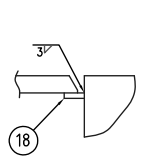
TCE FORM NO. 041 R5

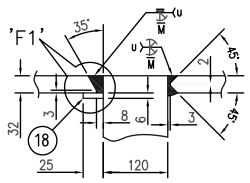
SIZE–A1

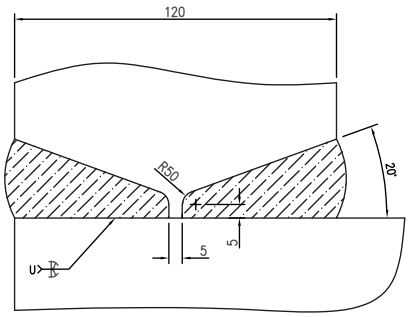
DRG. NO. MEC/09E9/SA/M-2/34/03/01880 C

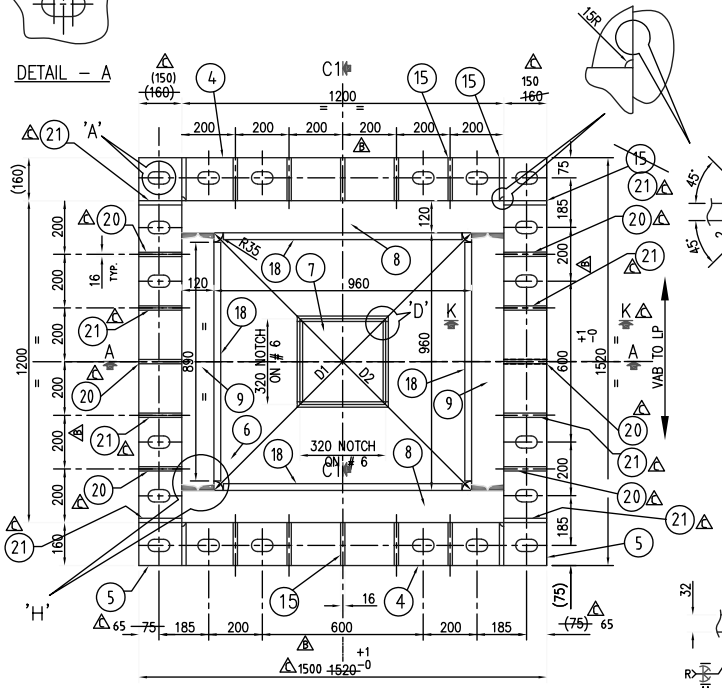


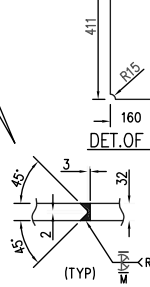


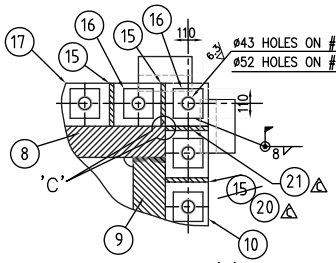


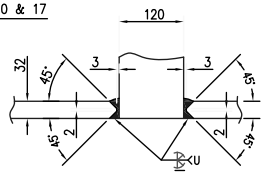


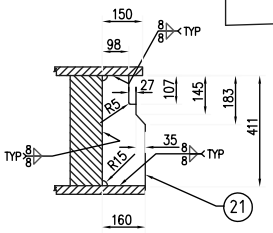


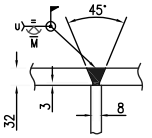


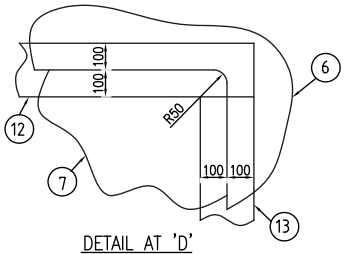


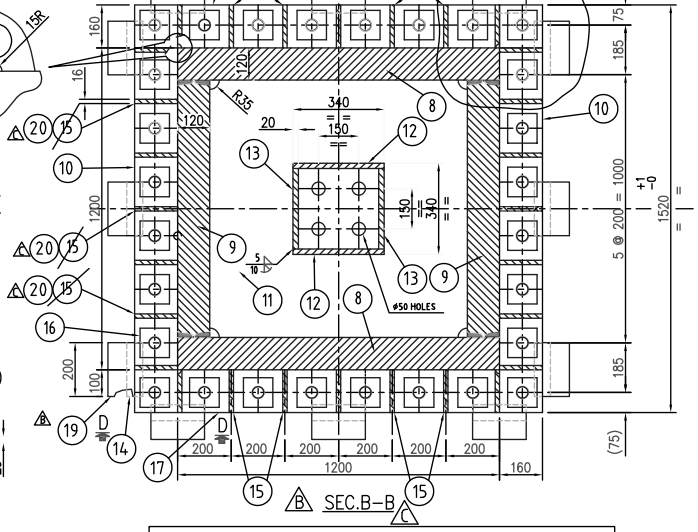


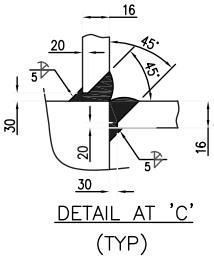


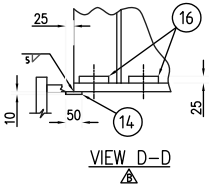












4 NOS. GROUND ANCHOR REQD. FOR ONE SET AS DRAWN MK. [GA] — 1
(TOTAL 3 SETS GROUNDS ANCHOR REQUIRED)

							BEARING PLATES	01876	DESIGNED	
B	24-02-01		LOCATION OF HOLES & STIFFNER IN SEC C-C CHANGED AND QTY. OF ITEM # 15 REVISED , ITEM # 19 DELETED.	AKD	S.K.C		ANCHOR LEG	01875	DRAWN	Z.T.S.
A	14-02-01		REVISED AS PER SHAR & MECON'S COMMENTS DATED 19-12-2K & 29-01-01 AND POINT 2 OF MECON'S E-Mail DATED 12.2.01	AKD	S.K.C		TOLERANCES ON MLP STRUCTURE	01852	CHECKED AND VERIFIED	S.K.C.
							GENERAL ARRANGEMENT	01851		
REV.NO.	DATE	ZONE	DESCRIPTION	BY	VERIFIED		MECON'S BASIC ENGINEERING DRAWING	01382 TO 01385	APPROVED	
			REVISIONS				REFERENCES	DRG. NO.		

SECOND LAUNCH PAD PROJECT
ISRO - SHAR CENTRE, SRIHARIKOTA

ASLP

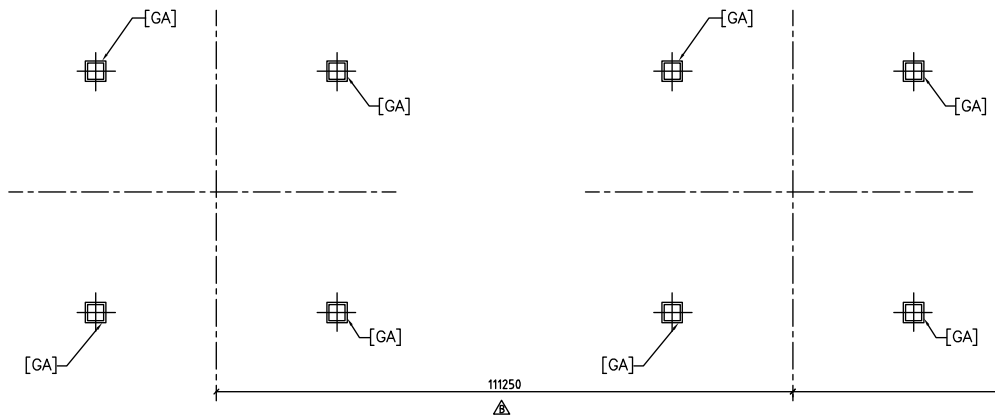
GROUND ANCHOR MK. [GA]

SIG. U.S.K. | SCALE - 1 :10 | SHEET | REV.
DATE | DRG. NO. MEC/09E9/SA/VI-2/34/03/01880 | 1 OF 2 | C

NOTES :-
1. FOR GENERAL NOTES, KEY-PLAN & BOM REFER SHEET No. 2 OF 2 OF THIS DRG.

DRG. NO. MEC/09E9/SA/M-2/34/03/01880 C

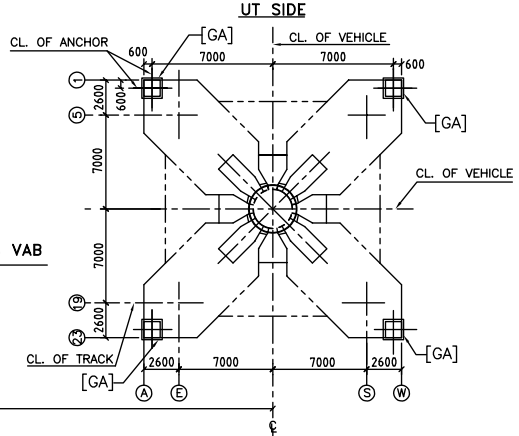
V A B LOCATION



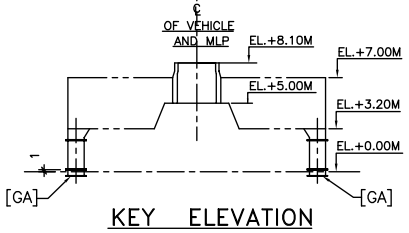
AXLE TURNING LOCATION

U T LOCATION

UT SIDE



K E Y P L A N



KEY ELEVATION

	ITEM NO	PART NO	DESCRIPTION	MATERIAL	NO. REQD.	PER PCE WT. IN KG.	TOTAL	REMARKS TISCO STD.NO.
1	1.21		PL.16X160X411	IS:2062 , NORMALISE Fe410WB	8	8	64	
1	1.20		PL.16X160X411	IS:2062 , NORMALISE Fe410WB	6	8	48	
B	1.19		PL.25X100X200	IS:2062 Fe410WB	12	4	48	
	1.18		FL 50X6X890	IS:2062 Fe410WA	4	2	8	
	1.17		PL40X160X1200 M/C. TO 32 THK.	IS:2062 NORMALISE Fe410WB	2	48	96	
	1.16		PL25X110X110	IS:2062 NORMALISE Fe410WB	28	2	56	
A B	1.15		PL16X160X411	IS:2062 NORMALISE Fe410WB	14	8	112	
	1.14		PL10X50X200	IS:2062 Fe410WA	12	1	12	
	1.13		PL20X300X411	IS:2062 NORMALISE Fe410WB	2	19	38	
	1.12		PL20X340X411	IS:2062 NORMALISE Fe410WB	2	22	44	
	1.11		PL40X960X960 M/C. TO 32 THK.	IS:2062 NORMALISE Fe410WB	1	231	231	
	1.10		PL40X160X1520 M/C. TO 32 THK.	IS:2062 NORMALISE Fe410WB	2	61	122	
	1.9		PL120X480X960 M/C. TO 475 WIDTH	REF. NOTE # 12	2	430	860	
	1.8		PL120X480X1200 M/C. TO 475 WIDTH	REF. NOTE # 12	2	537	1074	
	1.7		PL40X320X320 M/C TO 32 THK.	IS:2062 NORMALISE Fe410WB	1	26	26	
	1.6		PL40X960X960 M/C. TO 32 THK.	IS:2062 NORMALISE Fe410WB	1	206	206	
1	1.5		PL40X150X1520 M/C. TO 32 THK.	IS:2062 NORMALISE Fe410WB	2	61	122	
	1.4		PL40X160X1200 M/C. TO 32 THK.	IS:2062 NORMALISE Fe410WB	2	48	96	
B	1	[GA]	GROUND ANCHOR		4	3203	12812	

BILL OF MATERIAL

B WEIGHT OF ONE SET GROUND ANCHOR = 12812 KG (4 Nos. GROUND ANCHOR)

B TOTAL WEIGHT = 38436 KG (FOR 3 SETS OF GROUND ANCHOR)

12. MATERIAL FOR ITEM # 8 & 9 USE:-
    a) Fe410WB IS:2062 NORMALISE
    OR b) St. 44-2 DIN 17100
    OR c) ASTM A516-70
11. USE TEMPLATE FOR MARKING & DRILLING HOLES. SAME TEMPLATE TO BE USED FOR ADJOINING ASSEMBLY MK. [AL]
10. ALL SCALLOPS ARE 15R U.O.N.
9. NOTES FOR WELDING:
    a) 100 % RADIOGRAPHYCALLY TESTED WELDING SHOWN THUS.....< R
    b) 100 % ULTRASONICALLY TESTED WELDING SHOWN THUS.....< U
    C) FULL STRENGTH & FULL PENETRATION JOINTS SHOWN THUS.....< FP
8. COMPLETE SUB.-ASSY. SHALL BE STRESS RELIEVED.
   MACHINING SHALL BE DONE AFTER STRESS RELIEVING.
7. ⊥ OF $\mathbb{C}_S$ BETWEEN TOP & BOTTOM OF COLUMN ≯ 1 mm
6. DIFFERENCE BETWEEN DIAGONALS D1~ D2 ≯ 2 mm
5. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPERATION & PAINTING, AND QUALITY OF WELDING REFER GENERAL NOTES & INSTRUCTION DRG.NO.4-5426-00-001
4. FOR BILL OF MATERIALS REFER PL.5426-00-030 & SHEET No. 2 OF 2 OF THIS DRG.
3. ALL HOLES TO BE DRILLED ON ASSY. SHOWN THUS.....
2. ALL ERECTION MARK SHOWN THUS.....[ ]
1. ALL WELDING SYMBOLS ARE AS PER B.I.S.

NOTES :-

REV.NO.	DATE	ZONE	DESCRIPTION	BY	VERIFIED
			REVISIONS		REFERENCES

DRG. NO.

AS BUILT

TGS DRG. NO. 1-5426-00-030/C

SECOND LAUNCH PAD PROJECT

ISRO - SHAR CENTRE, SRIHARIKOTA

मेकन लिमिटेड

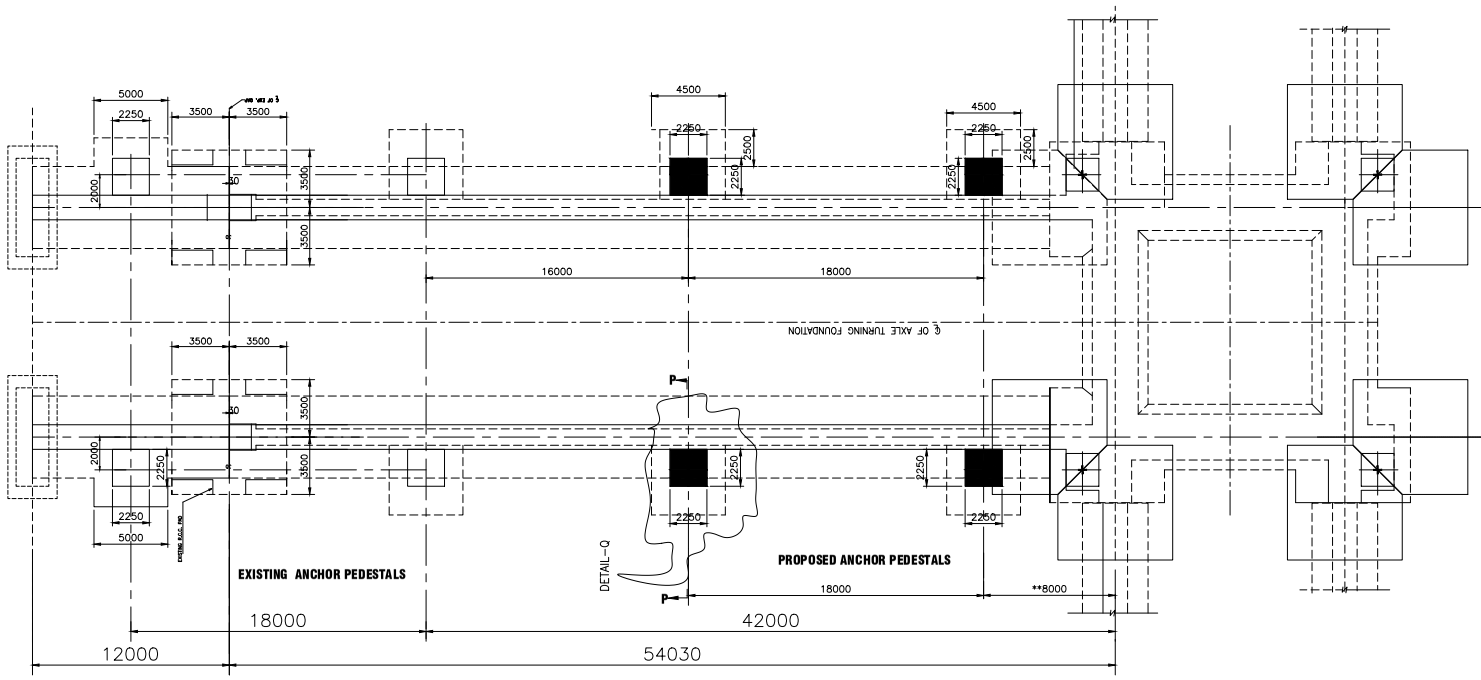
MECON LIMITED

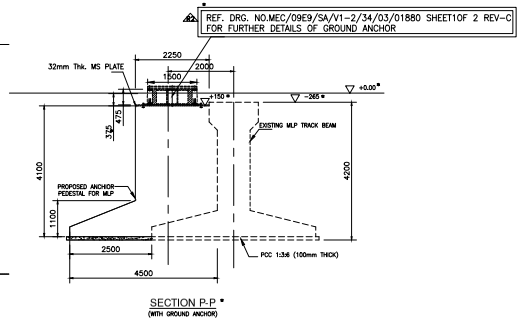
TATA STEEL-GROWTH SHOP

DESIGNED		MLP STRUCTURE
DRAWN	Z.T.S.	
CHECKED AND VERIFIED	S.K.C.	GROUND ANCHOR MK. [GA]
APPROVED	SIG. U.S.K.	SCALE - 1 :10 / SHEET 2 OF 2 / REV. C
	DATE	DRG. NO. MEC/09E9/SA/VI-2/34/03/01880

REF. DRG. NO.

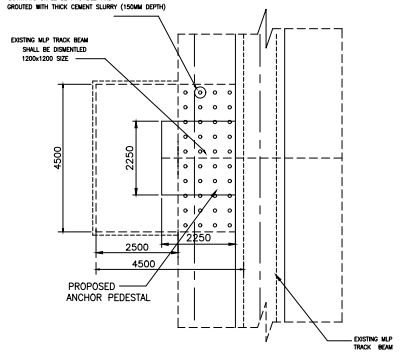
COM. FILE NO.



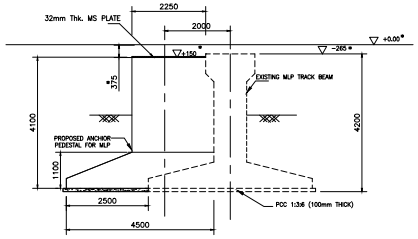


SECTION P-P *
(WITH GROUND ANCHOR)

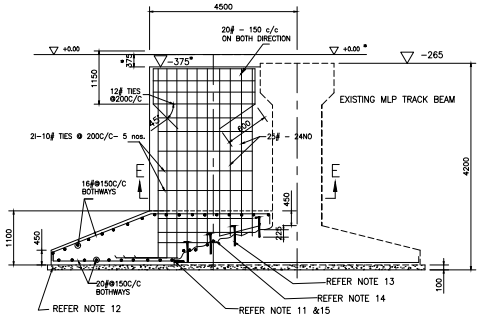
20# SHEAR KEY



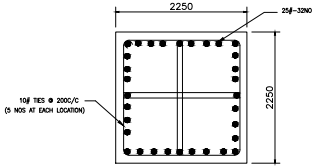
DETAIL-Q



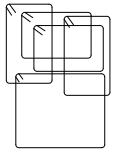
SECTION P-P



SECTION P-P



SECTION - EE



2I-10# TIES (5 nos.) @ 200 C/C

NOTE :-

1. ALL DIMENSIONS ARE IN MILLIMETRES ONLY FIGURED DIMENSION ARE TO BE FOLLOWED
2. USE M35 GRADE OF CONCRETE FOR RCC WORKS
3. EXISTING TRACK RAFT SURFACE SHALL BE CHIPPED FOR A SIZE OF 4500x2000 MM AND APPLY EPOXY BEFORE CONCRETING
4. DIMENSIONS SHALL BE CHECKED AT SITE BEFORE EXECUTION
5. USER'S CLEARANCE SHALL BE OBTAINED BEFORE EXECUTION
6. USE 43 GRADE CEMENT ONLY
7. ANCHOR BOLT DETAILS WILL BE FURNISHED BY USER (RE. DRG NO:10-03-200-01-415 FOR BOLT DETAILS)
8. REINFORCEMENTS ARE OF TMT FE 415 GRADE
9. CLEAR COVER TO REINFORCEMENT SHALL BE
   A) 75MM AT BOTTOM FACE
   B) 55MM AT SIDE AND TOP FACE
10. LAP LENGTH FOR REINFORCEMENT BARS SHALL BE45xDIA
11. DYE PENETRATION TEST SHALL BE PLANNED FOR QUALIFING ALL THE WELDS CARRIED OUT BETWEEN EXISTING AND PROPOSED RODS.
12. BED MAT SHALL BE WITH 1:3:6 PCC OF THICKNESS 100MM OVER COMPACTED EARTH.
13. SHEAR KEYS OF 20#@450C/C ON BOTHWAYS SHALL BE PROVIDED AND GROUTED WITH THICK CEMENT SLURRY.
14. THE SURFACE SHALL BE MADE ROUGH AND ONE COAT OF BONDING EPOXY SHALL BE APPLIED AT THE RATE OF 2.25 SQ.M/KG
15. THE EXISTING FOOTING SHALL BE CHIPPED OPEN AND EXISTING BARS WILL BE EXPOSED. PROPOSED REINFORCEMENT SHALL BE WELDED TO EXISTING BARS FOR A FOR A LENGTH OF 150MM(MIN) WELDING SHALL BE CARRIED OUT ON BOTH SIDES. AND IT SHALL BE CONTINUOUS AND A COAT OF BONDING EPOXY IS APPLIED BEFORE RECONCRETING.
16. SIZE OF THE WELD SHALL BE 6MM(MIN) UNLESS OTHERWISE SPECIFIED.
17. IN CASE OF DISCRIPENCES, THE SAME SHALL BE BROUGHT TO THE NOTICE OF HEAD DESIGN (STRUCTURE) BEFORE EXECUTION.
18. PROVIDED 4NOS BASE PLATES WITH LUGS AT TOP OF PEDESTAL FOR MLP LEG SUPPORT AS PER USER REQ.
19. DRAWING UPDATED AS PER USER LETTER NO: SLP – SCEND/03/21/2018 DATED 21/03/2018
20. DRAWING UPDATED AS PER USER LETTER NO: NIL DATED 01/07/2024 FROM GM/VATS ⚠2
21. KINDLY REF. THIS DRAWING ALONG WITH DRG. NO.MEC/09E9/SA/V1-2/34/03/01880 SHEET 1 OF 2 & DRG.NO.MEC/09E9/CW/CV-0/20/56/009333 SHEET 1 OF 1 & DRG.NO.MEC/09E9/SA/V1-2/34/03/01880 SHEET 1 OF 2 REV-C FOR EXACT DETAILS OF THE GROUND ANCHOR AND ITS FOUNDATION.

⚠2 * THIS DRAWING IS UPDATED BASED ON USER INPUTS VIDE LETTER DTD. 01.07.2024 FROM GM/VATS FOR CHANGE IN ANCHOR BLOCK HEIGHT. REMAINING DETAILS ARE MAINTAINED SAME AS PER THE EXISTING DRG.NO. 10-05-01-343/S01/R1/DTD. 31.10.2017

STATUS	SIGN.	DATE.
DISCUSSION / REVIEW		
ESTIMATE / TENDER PURPOSE		
EXECUTION		
UNRESTRICTED / RESTRICTED	CONFIDENTIAL.	

DO NOT SCALE THE DRAWING
ASK IF IN DOUBT
UNLESS OTHERWISE SHOWN
ALL DIMENSIONS ARE IN MILLIMETERS
REMOVE SHARP EDGES & BURRS
CHAMFER 1 M.M. X 45°
MACHINING FINISH IN MICRONS :-
▽ 8 – 25 ▽▽ 1.6 – 8
▽▽▽ 0.025 – 1.6 ▽▽▽▽ < 0.025

DEVIATION FOR NON TOLERANCED DIMENSIONS (IS -2102)

DIAMETERS & LENGTHS UPTO & INCL.			LENGTH IN M.M. OF SHORTER SIDE OF ANGLE UPTO & INCL.	
6	–	30 +0.2	1– 6	± 1°-0ϭ
30	–	120 +0.3	6– 30	± 0°-30ϭ
120	–	315 +0.5	30–120	± 0°-20ϭ
315	–	1000 +0.8	120–400	± 0°-10ϭ
1000	–	2000 +1.2		
2000	–	4000 +2.0		
4000 & ABOVE		+3.0		

SCEND

DESIGNED	BVReddy		
DES.CHKD			
DRAWN	BVR/ Sundar	31.10.2017	
DRG.CHKD			
APPROVED			
⚠2 08.08.2024	SIGN.	DATE	

S.NO	DESCRIPTION	MATERIAL	QTY	W.T	REMARKS

TITLE: PROPOSED ANCHOR PEDESTAL FOUNDATION DETAILS FOR MLP ANCHORING ADJACENT TO EXISTING AXIAL TURNING (in slp area)

GOVERNMENT OF INDIA
INDIAN SPACE RESEARCH ORGANIZATION
SATISH DHAWAN SPACE CENTRE SHAR
SRIHARIKOTA

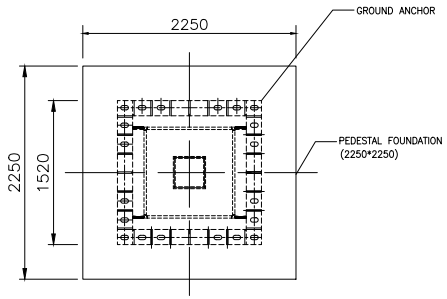
PROJECTION

SCALE: NTS | DRG. NO. 10-05-01-343/S01/R2 | SHEET -1 OF -2

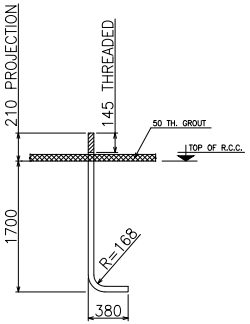
REF. DRG. NO.
COM. FILE NO.

*

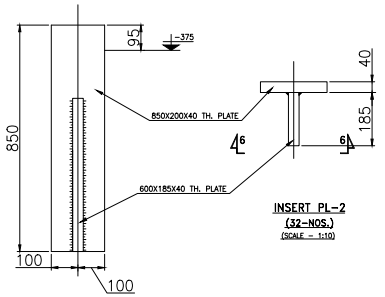
REF. DRG. NO.MEC/09E9/SA/V1-2/34/03/01880 SHEET 1OF 2 REV-C
FOR FURTHER DETAILS OF GROUND ANCHOR



TOP VIEW OF ANCHOR



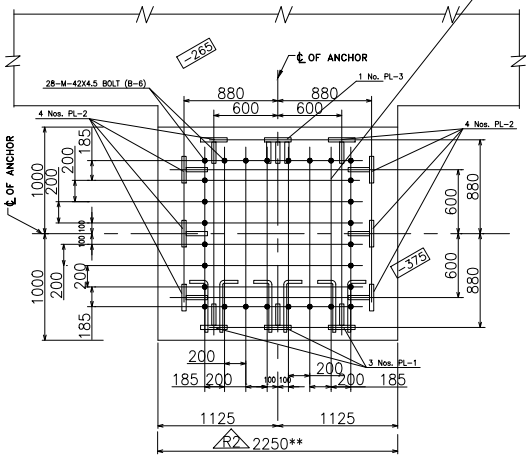
M-42X4.5 BOLT (B-6)
(8.8 CLASS STEEL)



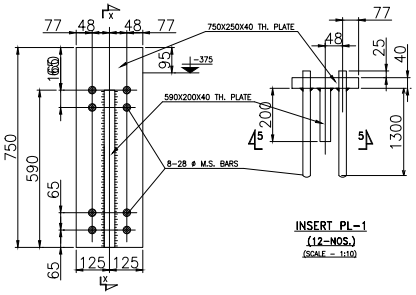
INSERT PL-2
(32-NOS.)
(SCALE - 1:10)

VIEW 6-6

REF. DRG.No.MEC/09E9/CM/CV-0/20/56/00933. 1 OF 1 REV 3
FOR FURTHER DETAILS OF GROUND ANCHOR FOUNDATION

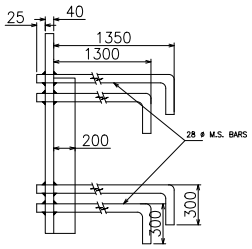


DETAIL-X
(4-OFF)
(SCALE - 1:25)

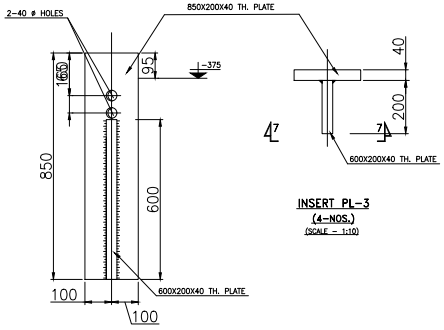


INSERT PL-1
(12-NOS.)
(SCALE - 1:10)

VIEW 5-5
INSERT PL-1(12 NOS)
ELEVATION



SECTION X-X



INSERT PL-3
(4-NOS.)
(SCALE - 1:10)

VIEW 7-7

**

IN DRG. NO.MEC/09E9/CM/CV-0/20/56/00933 SHEET1 OF 3 DIMENSION WAS 3000mm. SAME MODIFIED TO 2250 TO SUITE THE GROUND ANCHOR (2250*2250). SHALL BE CONFIRMED BY USER BEFORE THE RCC FOUNDATION WORK.

REF. DRG. NO.MEC/09E9/SA/V1-2/34/03/01880 SHEET 1 OF 2
DRG.No.MEC/09E9/CM/CV-0/20/56/00933. SHEET 1 OF 3
FOR ANY MISSING DETAILS OF GROUND ANCHOR .....ETC

GROUND ANCHOR (PART) DETAILS ARE SHOWN IN THIS DRAWING BASED ON DRG.No.MEC/09E9/CM/CV-0/20/56/00933. SHEET 1 OF 3 FOR SLP PROJECT. READ THIS DRAWING ALONG WITH ABOVE EXISTING GROUND ANCHOR DRAWINGS FOR MATERIAL, FABRICATION DETAILS & RELEVANT SPECIFICATIONS ...ETC.

DETAILS SHOWN IN THIS DRAWING SHALL BE STUDIED AS PER THE EXISTING SITE CONDITIONS SUITABILITY OF DIMENSION TOLERANCES, FINAL LEVELS BEFORE THE RCC & STEEL FABRICATION WORKS.

NOTES:-

1. ALL DIMENSIONS ARE IN mm AND ONLY FIGURED DIMENSIONS ARE TO BE FOLLOWED.
2. FOR ALL OTHER NOTES AND REFERENCES READ THIS DRAWING IN CONJUNCTION WITH DRG.No.MEC/09E9/CM/CV-0/20/PD/00931.
3. FOR DETAILS OF BOLTS B-1, B-2 & B-3, REFER DRG.No.MEC/09E9/CM/CV-0/20/56/00935.
4. THIS DRAWING IS DEVELOPED BASED ON USER LETTER NO.NIL. DTD.01/07/2024 FROM GM/VATS.

R2 DIMENSION CHANGED 3000 MM TO 2250 MM. TO SUITE GROUND ANCHOR PEDESTAL (2250*2250)

STATUS	SIGN.	DATE.
DISCUSSION / REVIEW		
ESTIMATE / TENDER PURPOSE		
EXECUTION		
UNRESTRICTED / RESTRICTED	CONFIDENTIAL.	

DO NOT SCALE THE DRAWING
ASK IF IN DOUBT
UNLESS OTHERWISE SHOWN
ALL DIMENSIONS ARE IN MILLIMETERS
REMOVE SHARP EDGES & BURRS
CHAMFER 1 M.M. X 45°
MACHINING FINISH IN MICRONS :-
▽ 8 - 25 ▽▽ 1.6 - 8
▽▽▽ 0.025 - 1.6 ▽▽▽▽ < 0.025

DEVIATION FOR NON TOLERANCED DIMENSIONS (IS -2102)

DIAMETERS & LENGTHS	
UPTO & INCL.	
6 - 30	+0.1
30 - 120	+0.2
120 - 315	+0.3
315 - 1000	+0.5
1000 - 2000	+0.8
2000 - 4000	+1.2
4000 & ABOVE	+2.0 +3.0

LENGTH IN M.M. OF SHORTER SIDE OF ANGLE UPTO & INCL.	
1- 6	± 1°-0'
6- 30	± 0°-30'
30-120	± 0°-20'
120-400	± 0°-10'

SCEND

TITLE: PART DETAILS OF GROUND ANCHOR BLOCK FOR TRACK CHANGEOVER AT SVAB.

DESIGNED		
DES.CHKD		
DRAWN	SUNDAR.P	04.06.2024
DRG.CHKD		
APPROVED		
	SIGN.	DATE

GOVERNMENT OF INDIA
INDIAN SPACE RESEARCH ORGANIZATION
SATISH DHAWAN SPACE CENTRE SHAR
SRIHARIKOTA

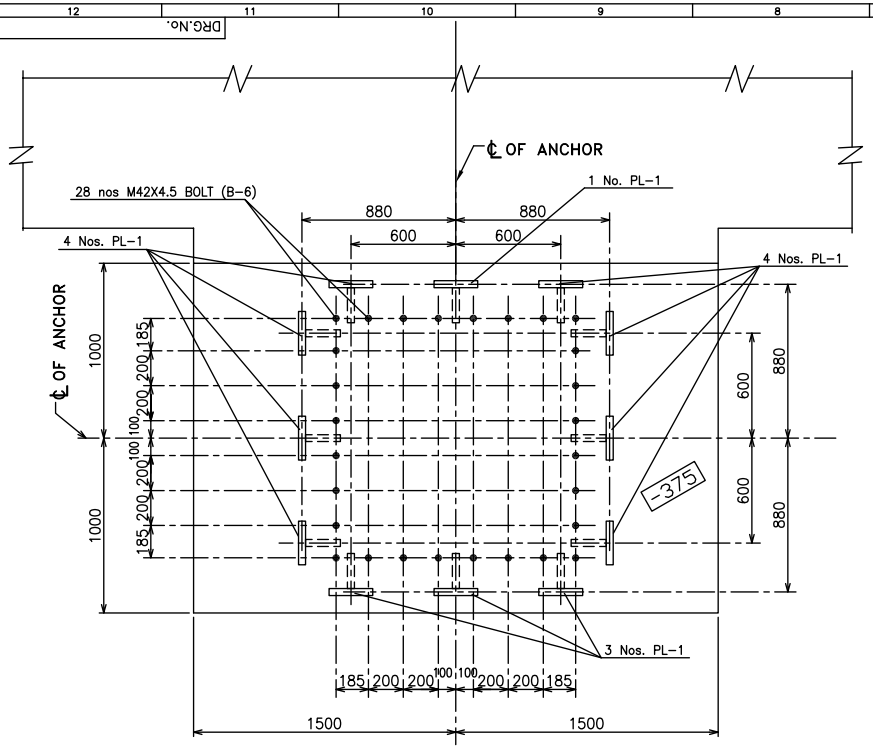
PROJECTION

SCALE 1:50, NTS

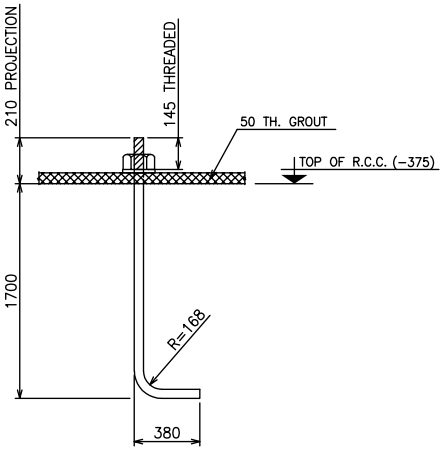
DRG. NO. 10-05-01-343/S01/R2

SHEET-2
OF -2

DRG.No.

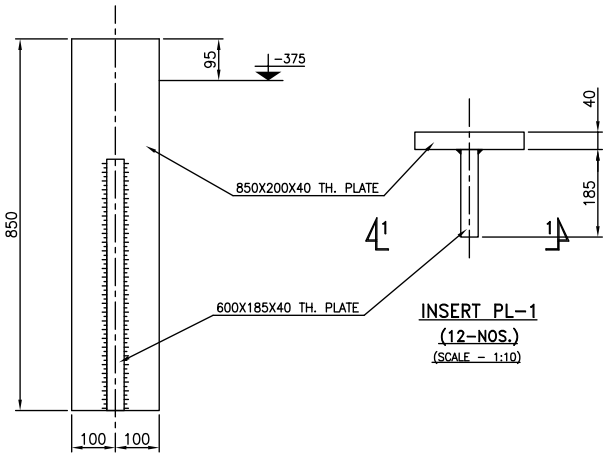


DETAIL-X
(4-OFF)
(SCALE - 1:25)



M-42X4.5 BOLT (B-6)
(8.8 CLASS STEEL)

NOTES:
1. ALL DIMENSIONS ARE IN MM
2. THE BOM SPECIFIED HERE IS FOR ONE GROUND ANCHOR ONLY. ONE MLP CONSISTS OF 4 GROUND ANCHORS



INSERT PL-1
(12-NOS.)
(SCALE - 1:10)

VIEW 1-1

ITEM	DESCRIPTION	MATERIAL	QTY	WEIGHT (kg)
			Total Weight	1898.81
02	Plate-1	Mild steel as per IS 2062	12	1058.81
01	J-Bolt with Nut	8.8 Class steel	28	840.00

BILL OF MATERIAL

INDIAN SPACE RESEARCH ORGANISATION
SDSC SHAR , SRIHARIKOTA

REV.NO.	DATE	ZONE	DESCRIPTION	BY	VERIFIED

REVISIONS | REFERENCES | DRG. NO.

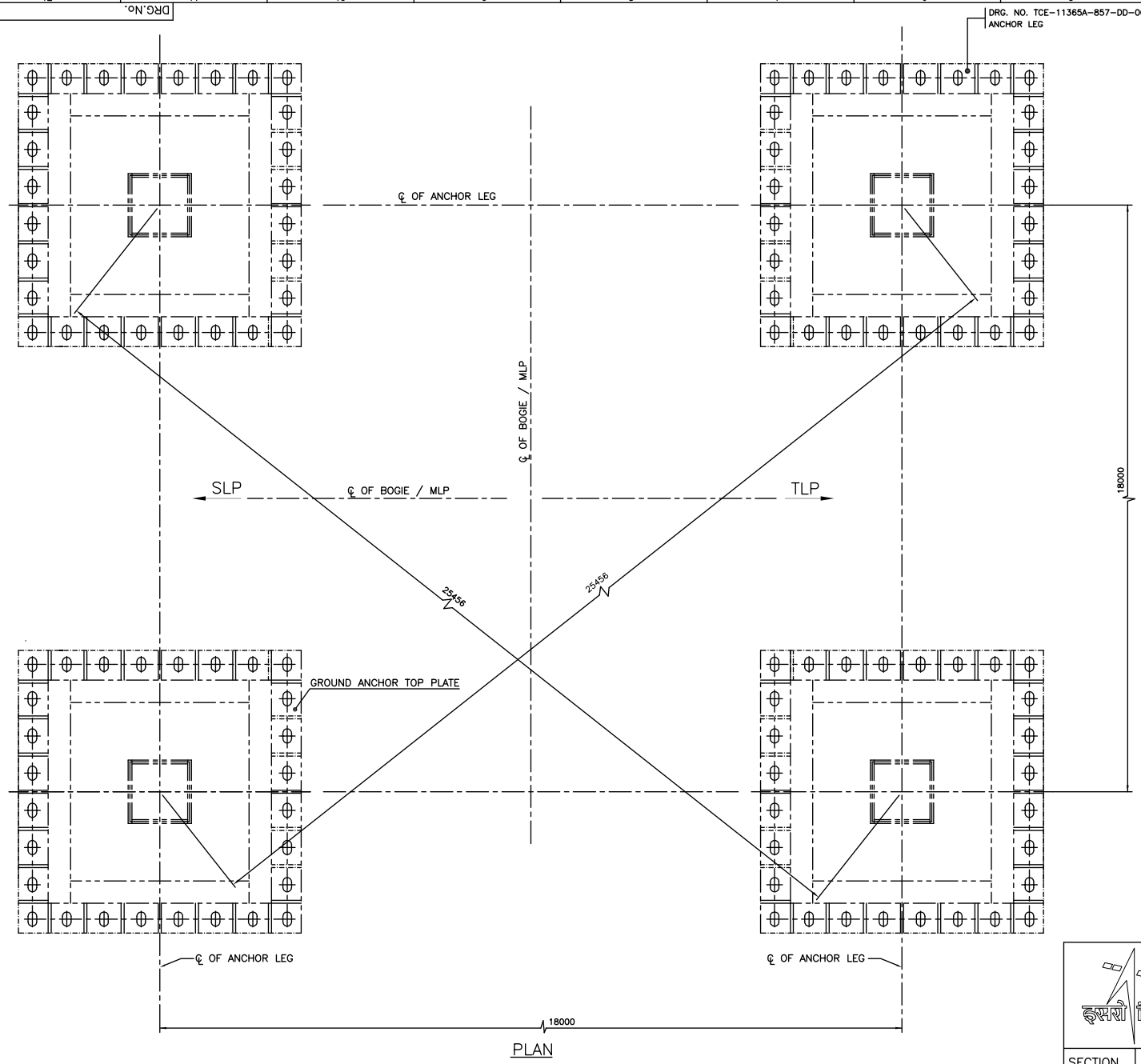
SECTION		
LOCATION		
DESIGNED		
DRAWN		09/07/2024
VERIFIED		
APPROVED		

SIG. & DATE

SECOND VEHICLE ASSEMBLY BUILDING

Title
FOUNDATION BOLTS IN GROUND ANCHOR

SCALE- NTS | SHEET | REV.
DRG.No. 2024/SVAB/ASLP/001 | Sheet 1 of 1



PLAN

NOTES:–

1. QUANTITY REQUIRED: 1 (FOR ONE MLP)
2. THIS DRAWING SHOWS THE LAYOUT OF GROUND ANCHORS
3. GROUTING AND LEVELING OF TOP SURFACE OF GROUND ANCHORS SHALL BE WITHIN ± 0.1 MM
4. GROUND ANCHOR TOP SURFACE LEVEL SHALL BE 150MM FROM RAIL TOP
5. SQUARE–NESS OF POSITIONING OF GROUND ANCHORS SHALL BE AS FOLLOWS:
   5.1. CENTER TO CENTER DISTANCE 18000±2MM
   5.2. DIFFERENCE OF BOTH DIAGONAL DISTANCES SHALL BE LESS THAN 4MM
6. FOR MANUFACTURING STANDARD & TOLERANCES, SURFACE PREPARATION & PAINTING, WELDING INSTRUCTIONS, REFER SPECIFICATION NO. TCE.11365A–D–850–001

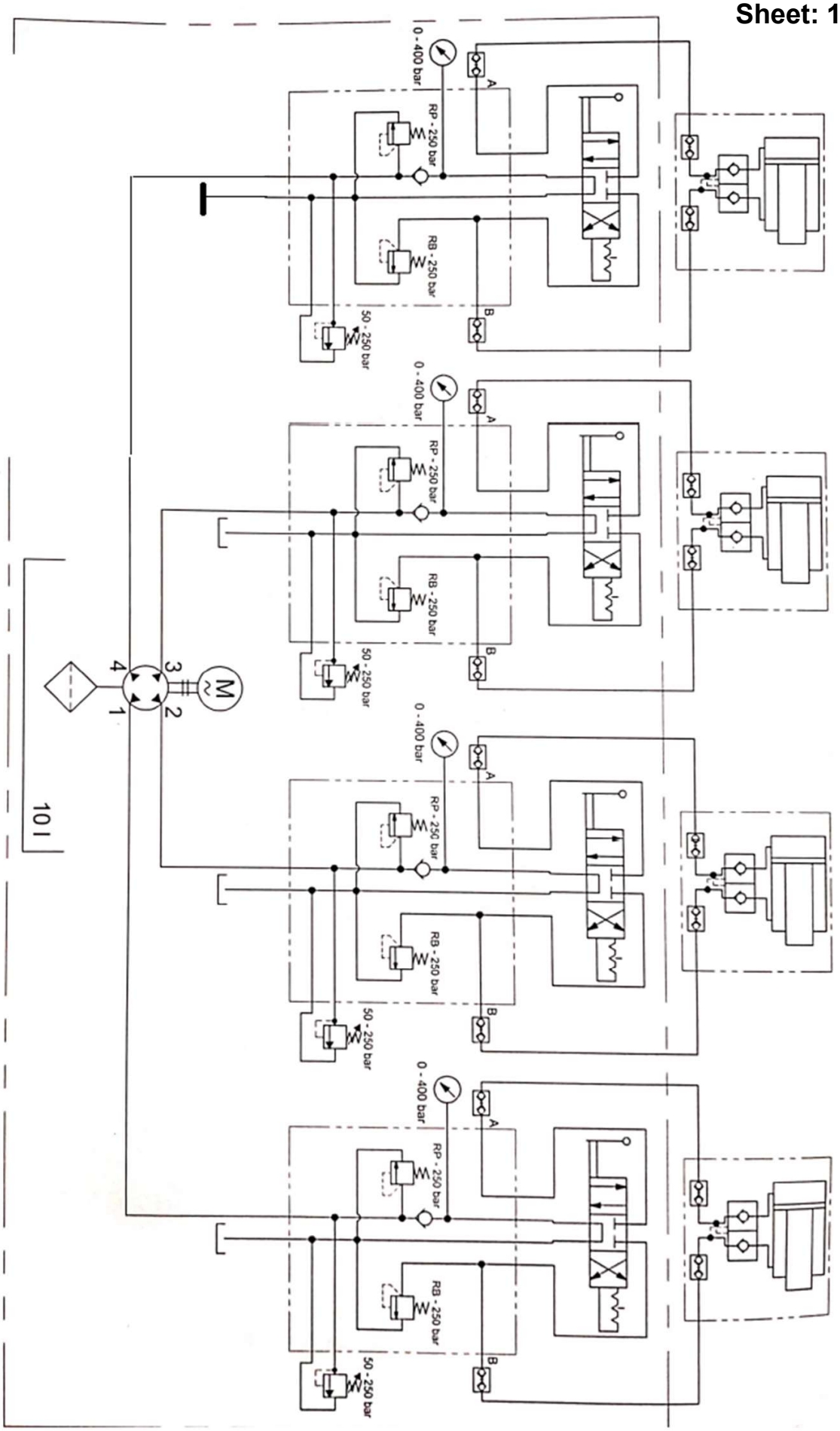
REV.NO.	DATE	ZONE	DESCRIPTION	BY	VERIFIED

REVISIONS | REFERENCES | DRG. NO.

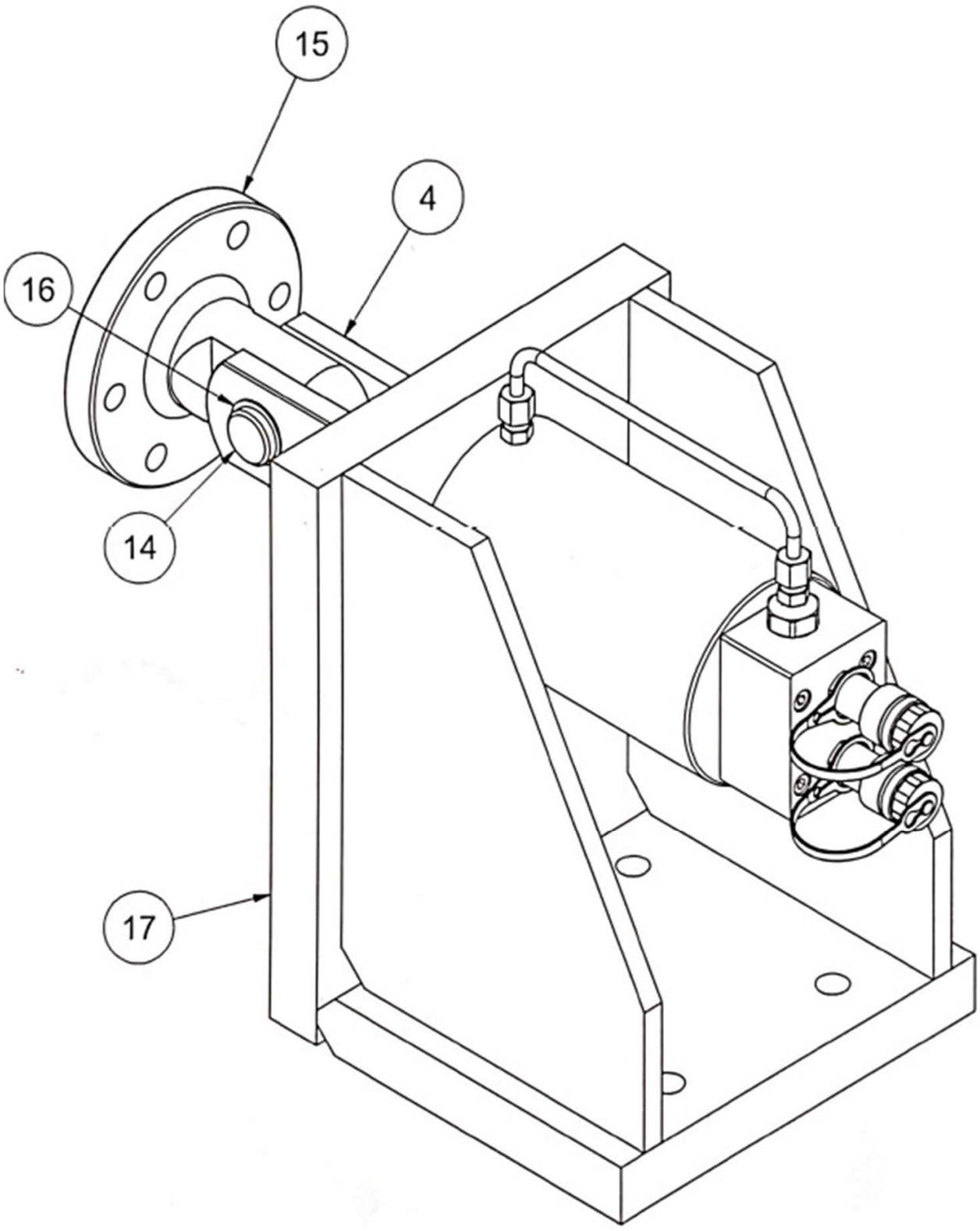
INDIAN SPACE RESEARCH ORGANISATION

SDSC SHAR , SRIHARIKOTA

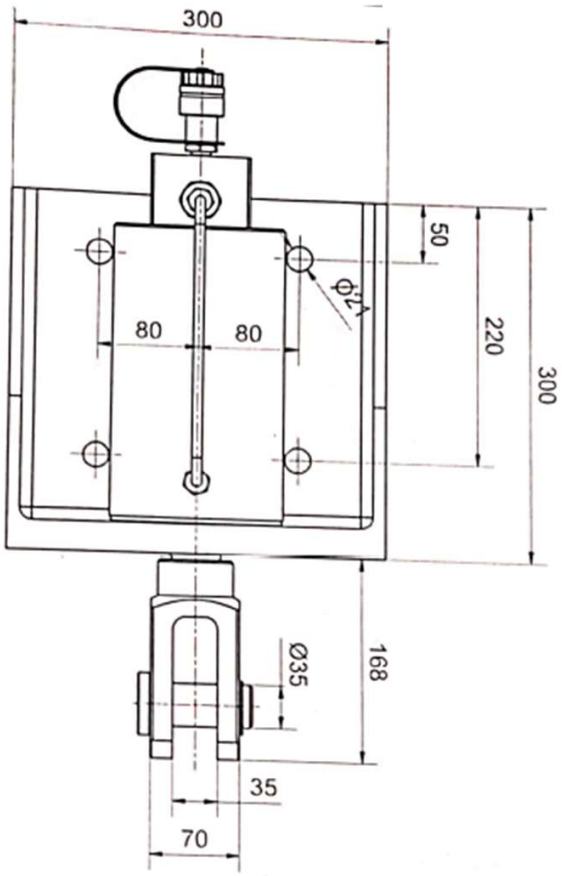
SECTION			SECOND VEHICLE ASSEMBLY BUILDING
LOCATION			
DESIGNED			
DRAWN		05/07/2024	Title: MLP GROUND ANCHORS LAYOUT
VERIFIED			
APPROVED			
		SIG. & DATE	SCALE– NTS / SHEET / REV.
			DRG.No. 2024/ASLP/MLP/002 / Sheet 1 of 1

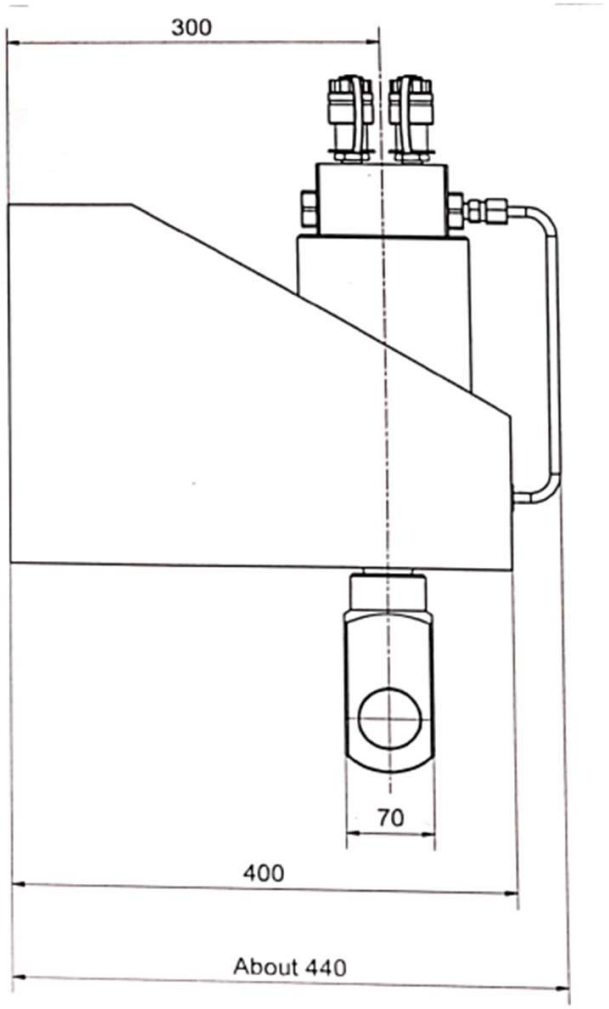


Preliminary Hydraulic circuit for SSR Linear movement

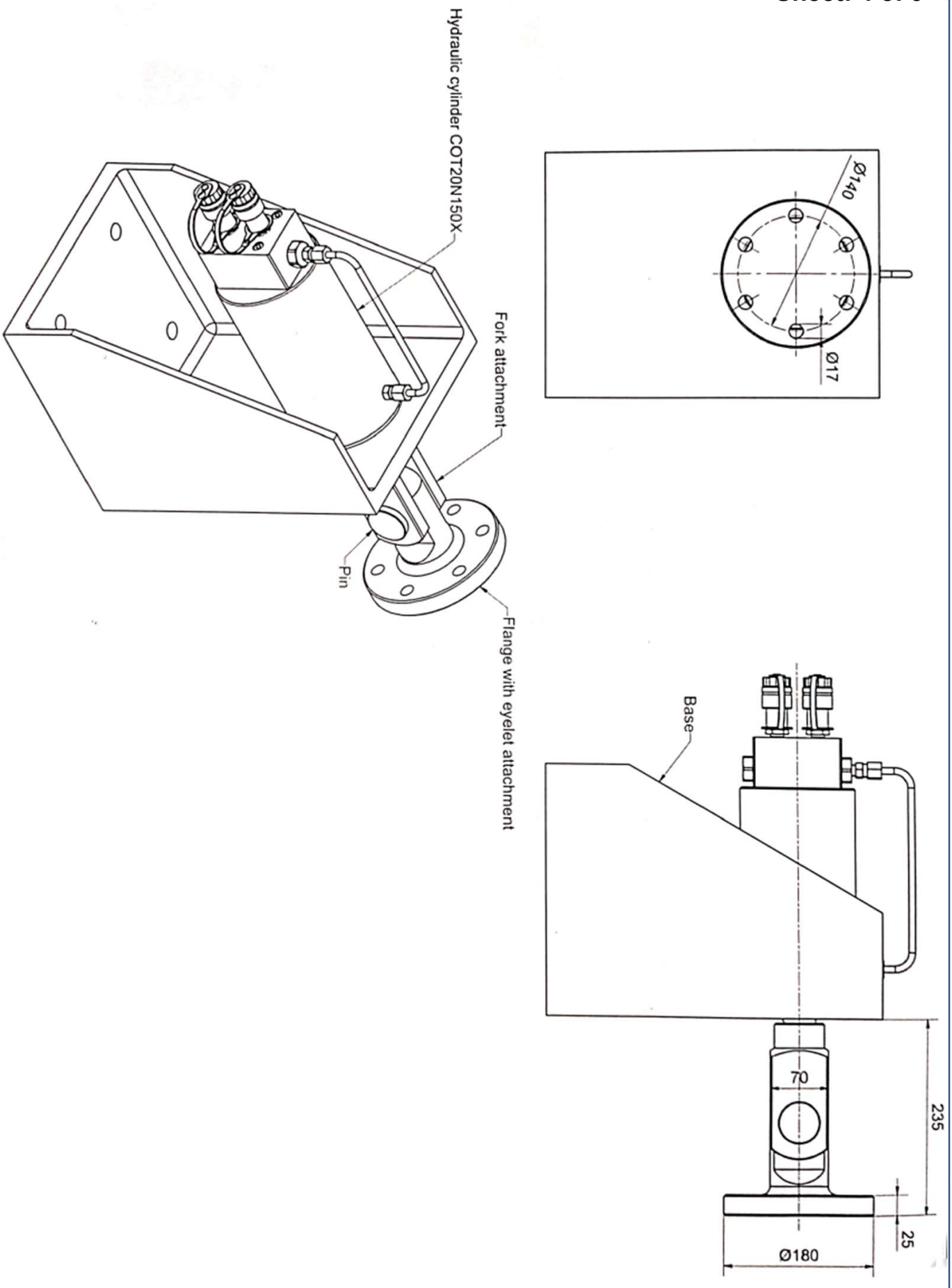


Preliminary view of hydraulic cylinder with mounting bracket.

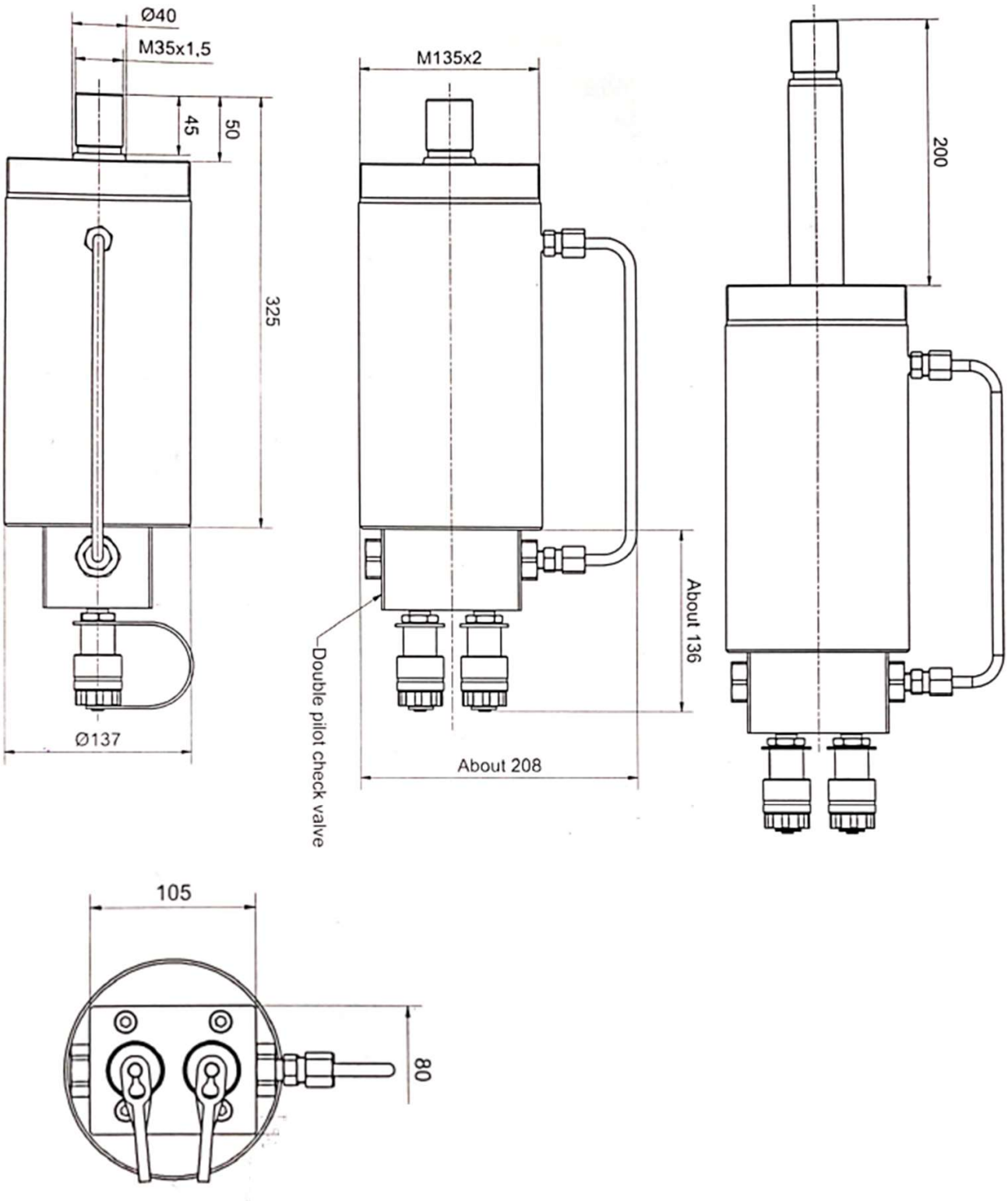




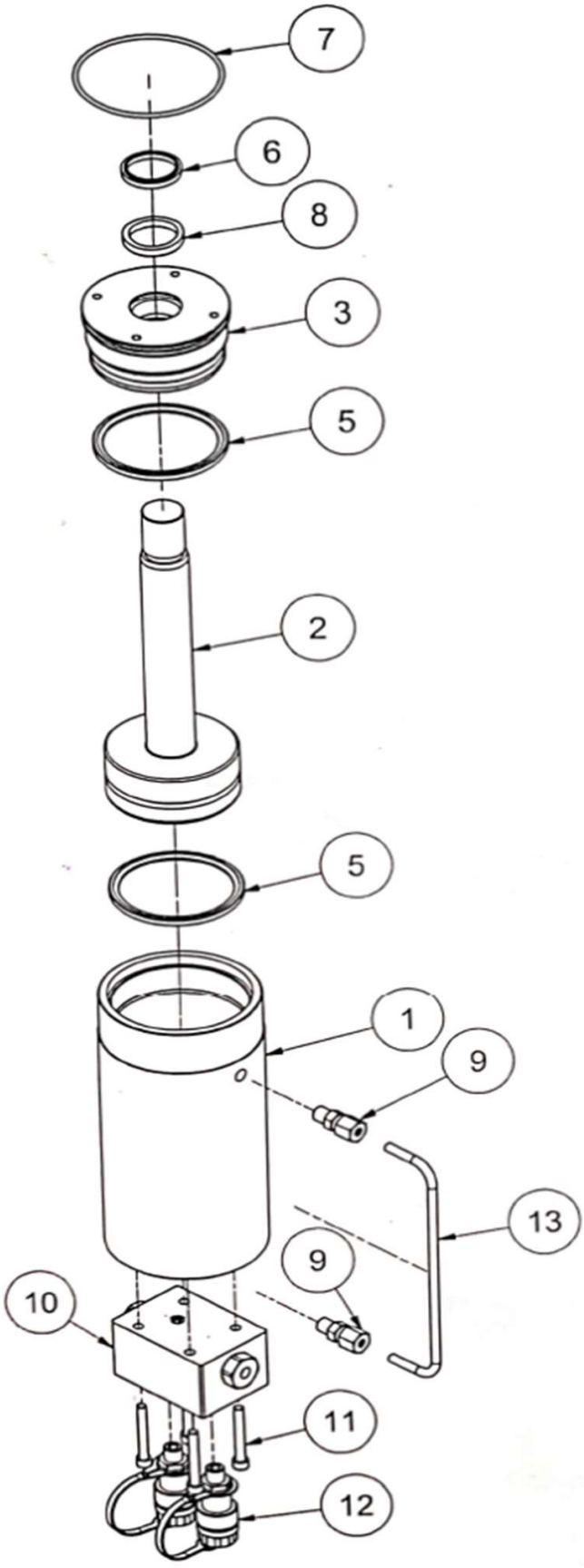
Mounting bracket dimensions



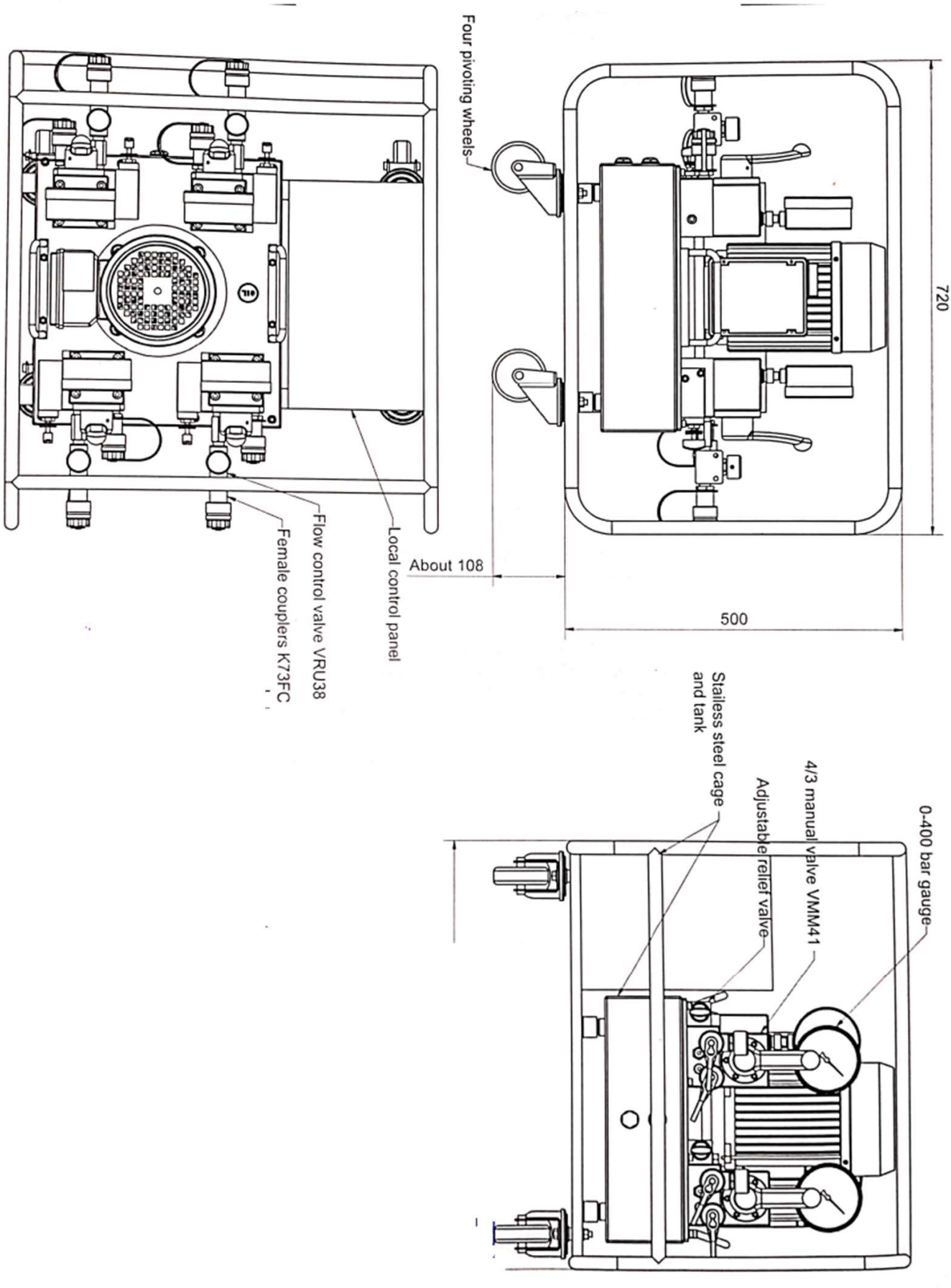
Dimensions of rod , clevis, mounting bracket etc



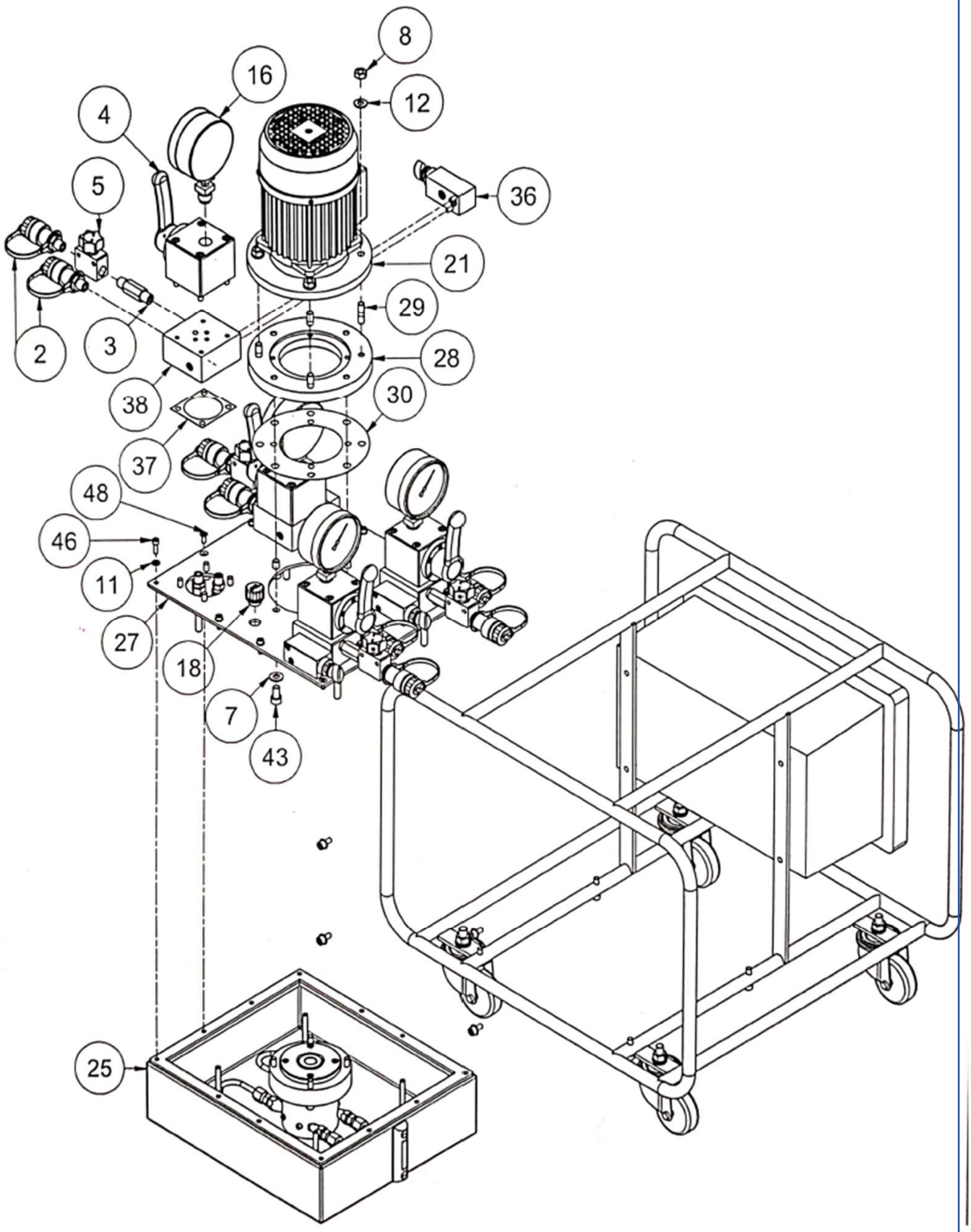
Dimensions of hydraulic cylinder



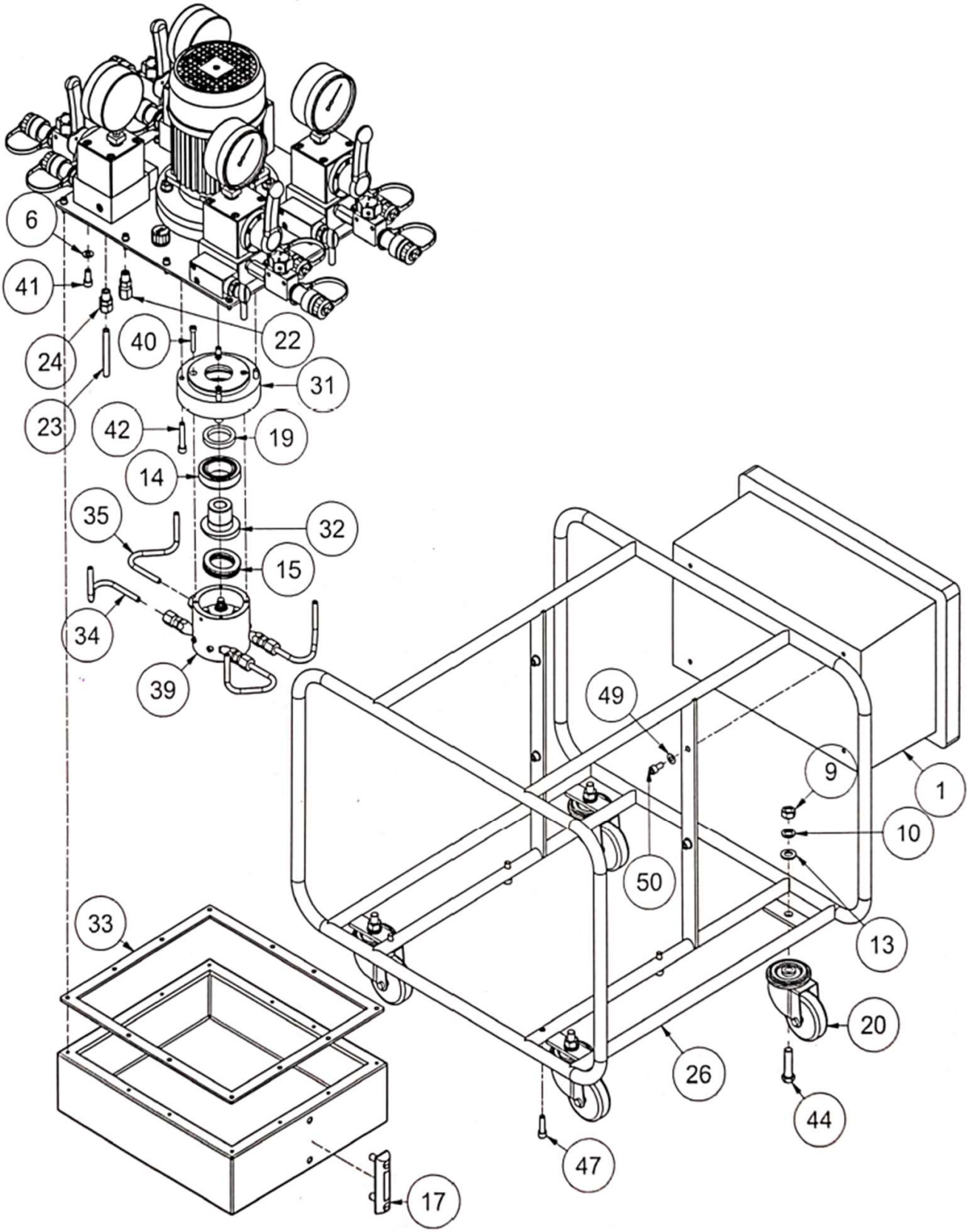
Exploded view of hydraulic cylinder



View of power pack for SSR Linear movement

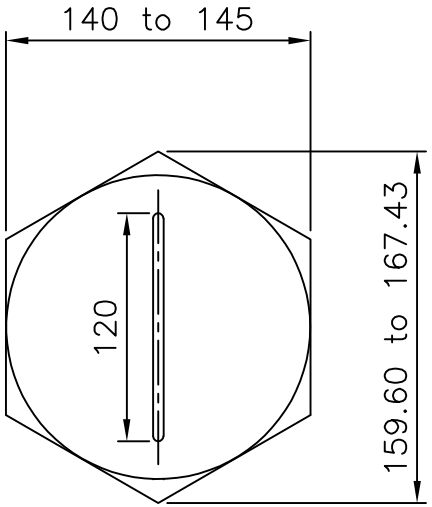


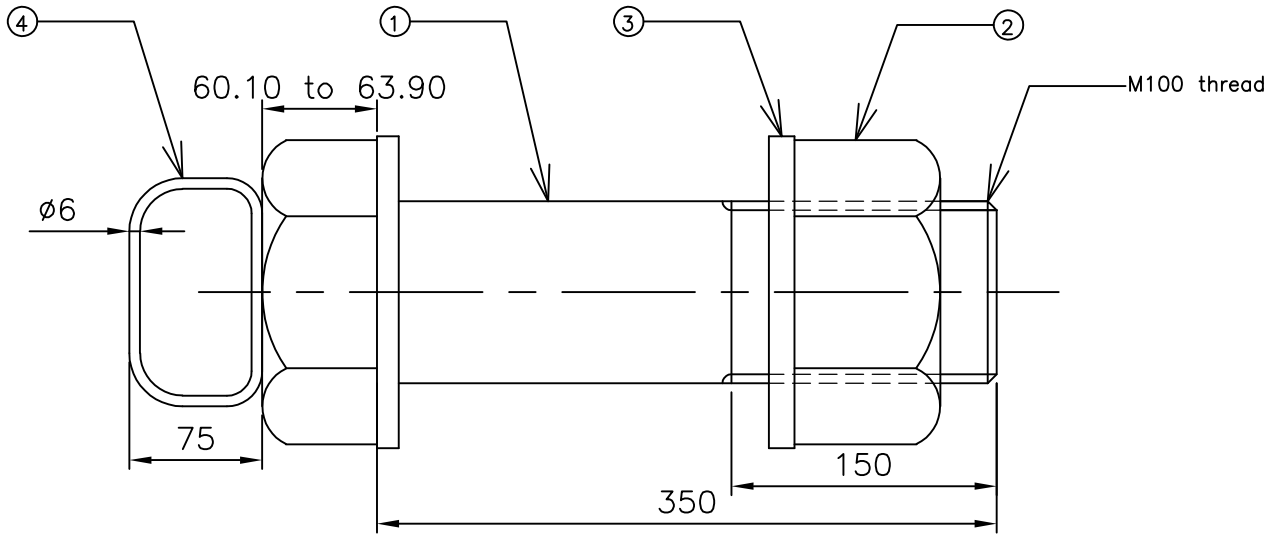
Exploded view of power pack on manifold block side



Exploded view of power pack on pump side

DRG.No.





NOTE:
1. ALL DIMENSIONS ARE IN MM
2. Fasteners shall be galvanized

ITEM	DESCRIPTION	MATERIAL	QTY	WEIGHT (kg)
		Total Weight		720.38
04	Lifting rod	Mild steel as per IS 2062	16	1.38
03	Machined Washer 104 IS:2016	45C8 As per IS 1570 (Part-2)	32	54.71
02	Hex. Nut M100 Class-10	EN 24	16	142.31
01	Hex. Head bolt M100X350 lg Class-10.9	EN 24	16	521.97

BILL OF MATERIAL

INDIAN SPACE RESEARCH ORGANISATION
SDSC SHAR , SRIHARIKOTA

REV.NO.	DATE	ZONE	DESCRIPTION	BY	VERIFIED

REVISIONS | REFERENCES | DRG. NO.

SECTION		
LOCATION		SECOND VEHICLE ASSEMBLY BUILDING
DESIGNED		
DRAWN	03/07/2024	Title: MLP LOCKING BOLT WITH BOGIE
VERIFIED		
APPROVED		
SIG. & DATE	SCALE– NTS	SHEET / REV.
	DRG.No. 2024/SVAB/Bogie/001	Sheet 1 of 1