

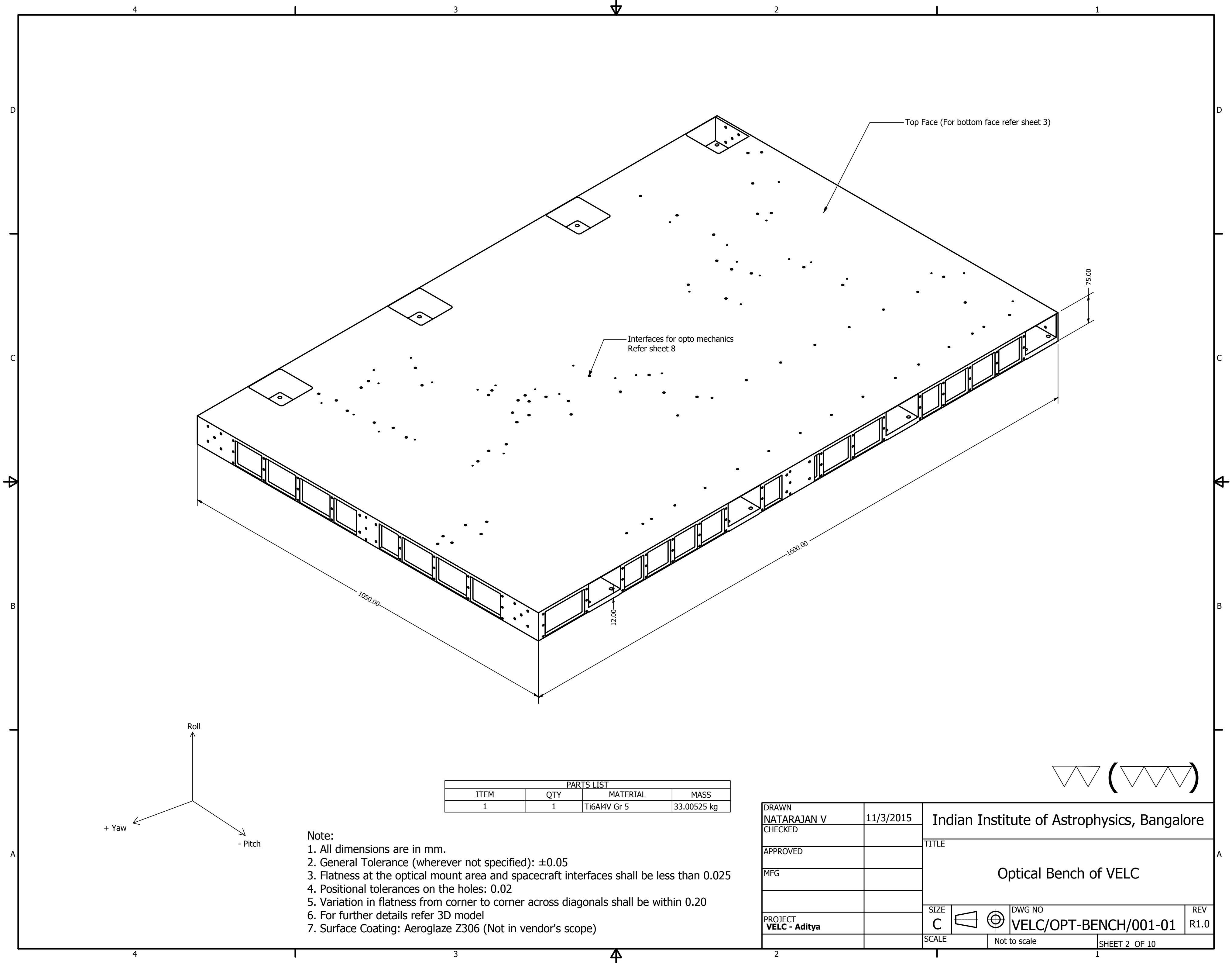


- Note:
1. All dimensions are in mm.
  2. General Tolerance (wherever not specified):  $\pm 0.05$
  3. Flatness at the optical mount area and spacecraft interfaces shall be less than 0.025
  4. Positional tolerances on the holes: 0.02
  5. Variation in flatness from corner to corner across diagonals shall be within 0.20
  6. For further details refer 3D model
  7. Surface Coating: Aeroglaze Z306 (Not in vendor's scope)


PARTS LIST					
ITEM	QTY	PART NUMBER	MATERIAL	MASS	REMARKS
1	2	Optical Bench - VELC	Ti6Al4V	33.00525 kg	For Fabrication
2	1	Bottom Plate 1mm	Ti6Al4V	7.240 kg	For Reference only

DRAWN		11/3/2015		Indian Institute of Astrophysics, Bangalore			
NATARAJAN V							
CHECKED							
APPROVED							
MFG				TITLE  Optical Bench of VELC			
PROJECT		SIZE			DWG NO	REV	
VELC - Aditya		C			VELC/OPT-BENCH/001-01	R1.0	
		SCALE		Not to scale		SHEET 1 OF 10	



PARTS LIST			
ITEM	QTY	MATERIAL	MASS
1	1	Ti6Al4V Gr 5	33.00525 kg


- Note:
1. All dimensions are in mm.
  2. General Tolerance (wherever not specified):  $\pm 0.05$
  3. Flatness at the optical mount area and spacecraft interfaces shall be less than 0.025
  4. Positional tolerances on the holes: 0.02
  5. Variation in flatness from corner to corner across diagonals shall be within 0.20
  6. For further details refer 3D model
  7. Surface Coating: Aeroglaze Z306 (Not in vendor's scope)

DRAWN		Indian Institute of Astrophysics, Bangalore							
NATARAJAN V				11/3/2015					
CHECKED									
APPROVED									
MFG									
				TITLE					
				Optical Bench of VELC					
PROJECT		SIZE		DWG NO		REV			
VELC - Aditya		C				VELC/OPT-BENCH/001-01		R1.0	
		SCALE		Not to scale		SHEET 2 OF 10			

**Bottom View**

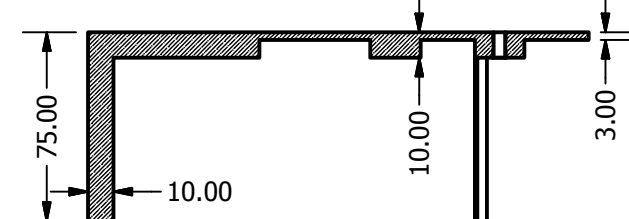
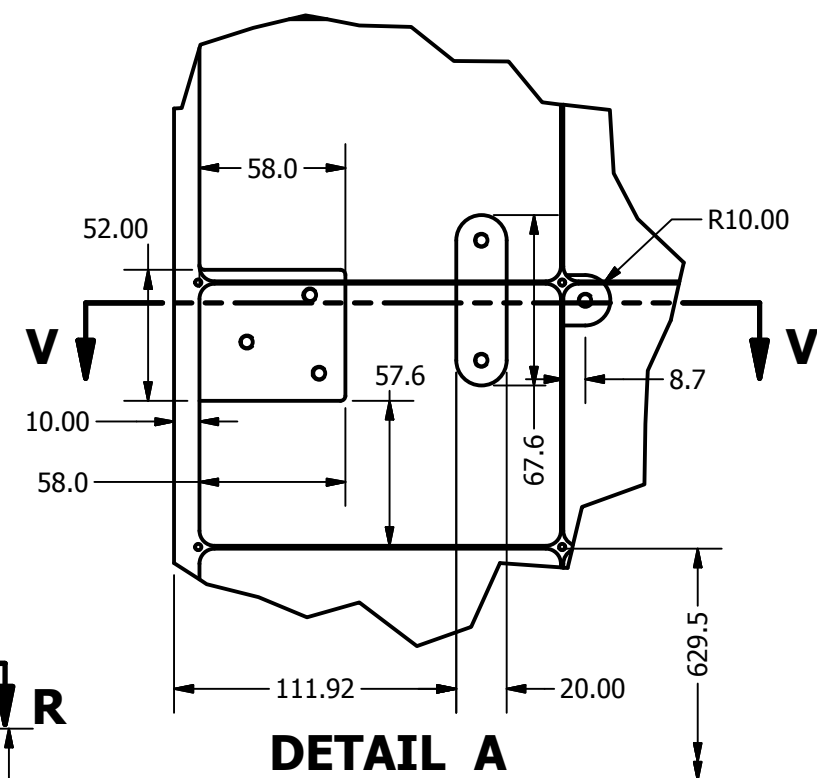
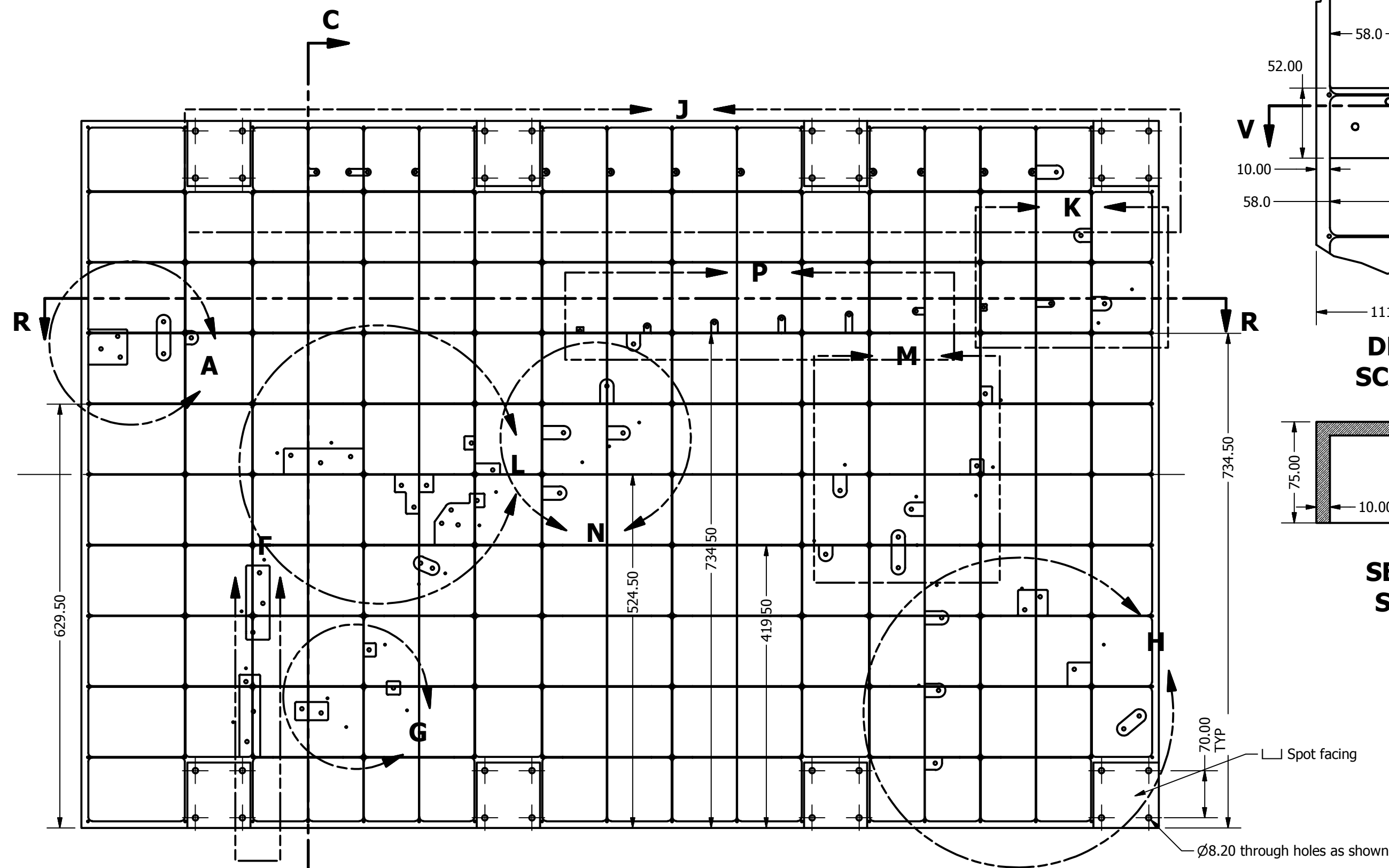
Isometric view of the bottom of a building slab. The drawing shows a grid of columns and beams. The overall dimensions are 1050.00 by 1600.00. The grid spacing is 100.50 by 101.00. The slab thickness is 12.00 TYP. The drawing includes dimensions for the column and beam layout, such as 0.50 and 1.00.

1. All dimensions are in mm.
2. General Tolerance (wherever not specified):  $\pm 0.05$
3. Flatness at the optical mount area and spacecraft interfaces shall be less than 0.025
4. Positional tolerances on the holes: 0.02
5. Variation in flatness from corner to corner across diagonals shall be within 0.20
6. For further details refer 3D model
7. Surface Coating: Aeroglaze Z306 (Not in vendor's scope)

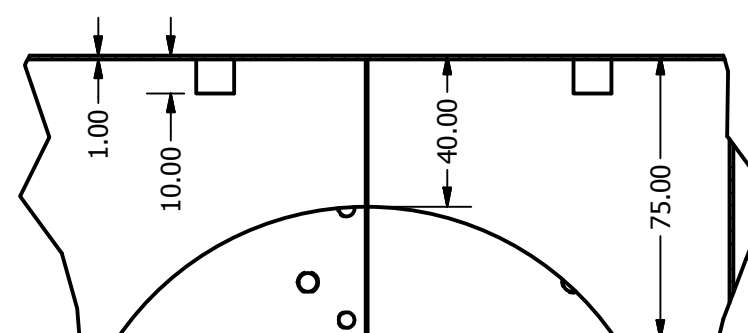
DRAWN NATARAJAN V	11/3/2015	Indian Institute of Astrophysics, Bangalore			
CHECKED		<div style="border: 1px solid black; padding: 10px; text-align: center;"> <h2>Optical Bench of VELC</h2> </div>			
APPROVED					
MFG					
PROJECT <b>VELC - Aditya</b>		SIZE <b>C</b>		DWG NO <b>VELC/OPT-BENCH/001-01</b>	REV <b>R1.0</b>
		SCALE	Not to scale	SHEET 3 OF 10	



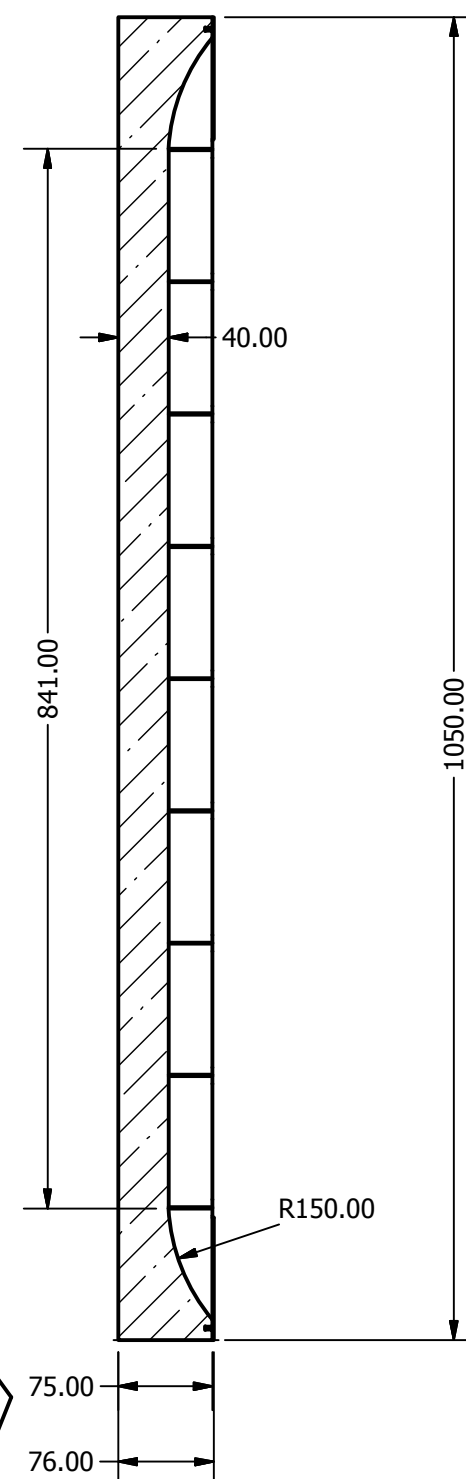
Bottom View showing the stiffened areas



SECTION V-V  
SCALE 1 / 3



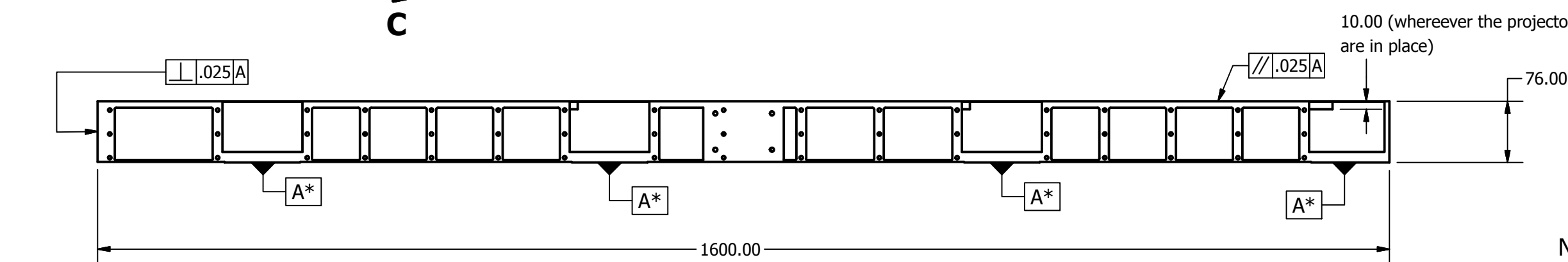
DETAIL T  
SCALE 1 / 2



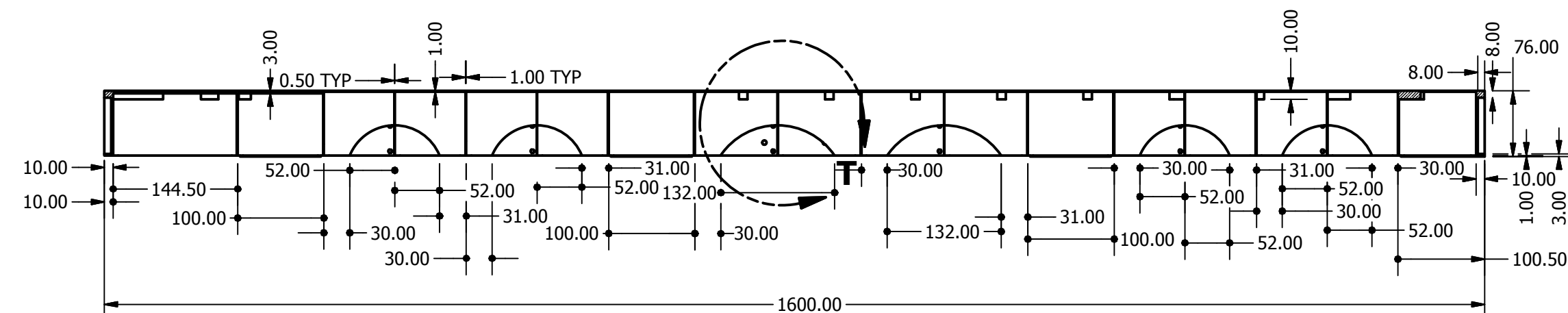
SECTION C-C  
SCALE 1 / 6

Note:

1. All dimensions are in mm.
2. General Tolerance (wherever not specified):  $\pm 0.05$
3. Flatness at the optical mount area and spacecraft interfaces shall be less than 0.025
4. Positional tolerances on the holes: 0.02
5. Variation in flatness from corner to corner across diagonals shall be within 0.20
6. For further details refer 3D model
7. Surface Coating: Aeroglaze Z306 (Not in vendor's scope)
8. \*Datum A shall be in one plane



SECTION R-R  
SCALE 1 / 6



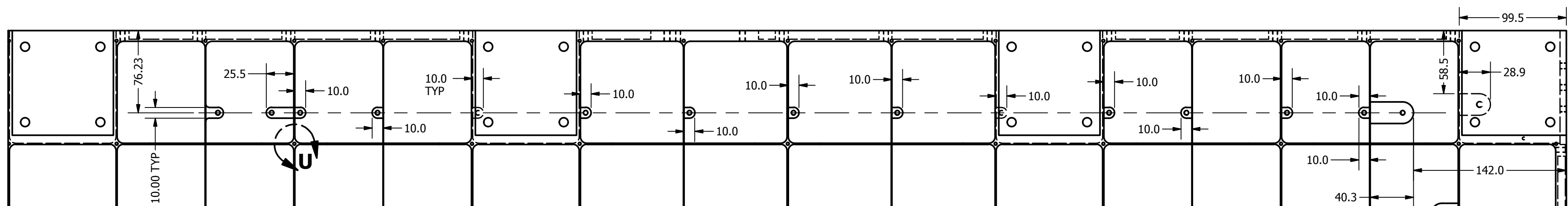
DRAWN	NATARAJAN V	11/3/2015	Indian Institute of Astrophysics, Bangalore		
CHECKED			TITLE		
APPROVED			Optical Bench of VELC		
MFG					
PROJECT	VELC - Aditya		SIZE	C	DWG NO
					VELC/OPT-BENCH/001-01
			SCALE	Not to scale	REV
					R1.0
					SHEET 5 OF 10



**DETAIL F**  
**SCALE 1 / 3**



**SECTION AD-AD**  
**SCALE 1 / 3**



**DETAIL K**  
**SCALE 1 / 3**

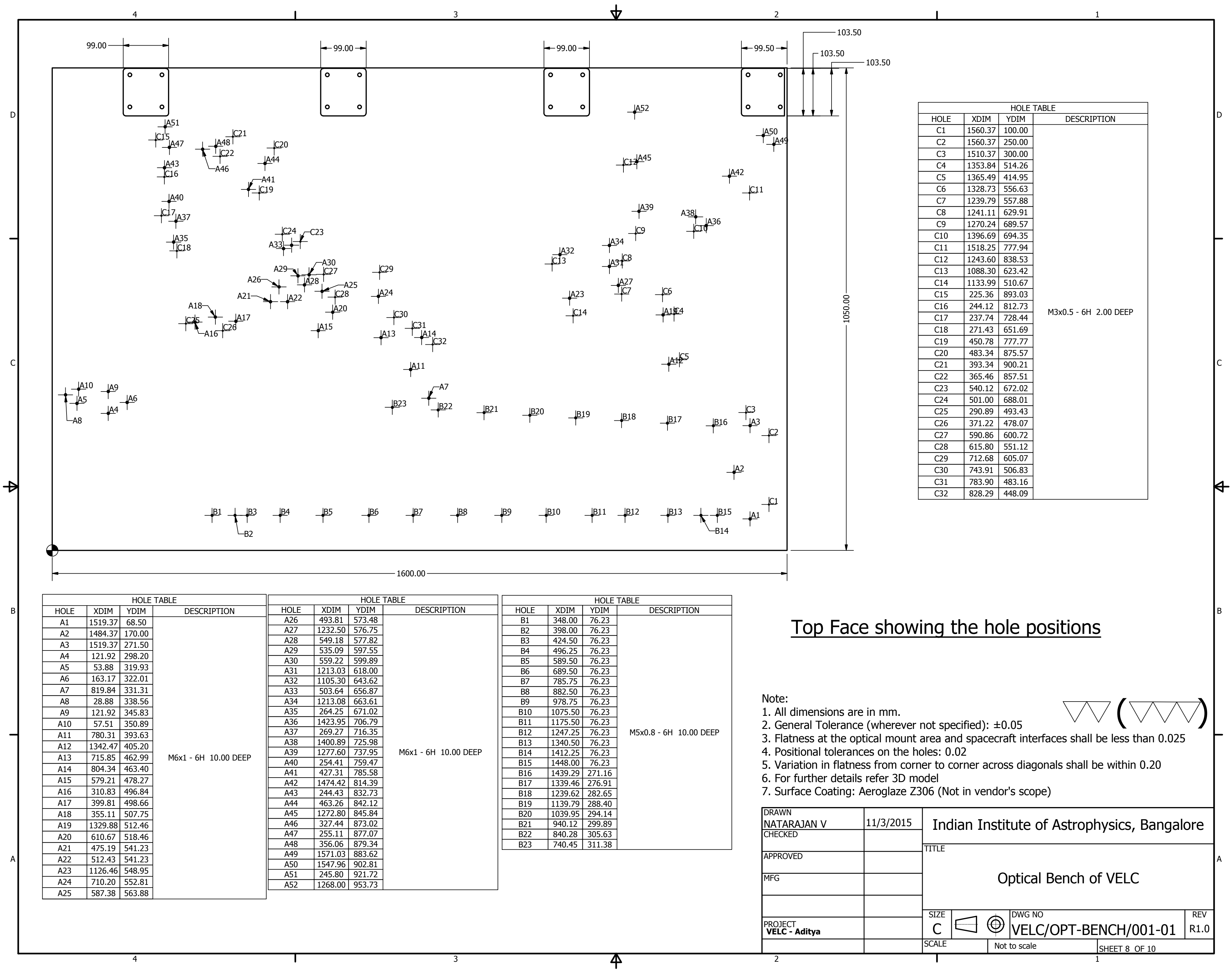


**DETAIL J**  
**SCALE 1 / 3**

1. All dimensions are in mm.
2. General Tolerance (wherever not specified):  $\pm 0.05$
3. Flatness at the optical mount area and spacecraft interfaces shall be less than 0.025
4. Positional tolerances on the holes: 0.02
5. Variation in flatness from corner to corner across diagonals shall be within 0.20
6. For further details refer 3D model
7. Surface Coating: Aeroglaze Z306 (Not in vendor's scope)

DRAWN NATARAJAN V		11/3/2015	Indian Institute of Astrophysics, Bangalore			
CHECKED			TITLE   			





HOLE TABLE			
HOLE	XDIM	YDIM	DESCRIPTION
C1	1560.37	100.00	M3x0.5 - 6H 2.00 DEEP
C2	1560.37	250.00	
C3	1510.37	300.00	
C4	1353.84	514.26	
C5	1365.49	414.95	
C6	1328.73	556.63	
C7	1239.79	557.88	
C8	1241.11	629.91	
C9	1270.24	689.57	
C10	1396.69	694.35	
C11	1518.25	777.94	
C12	1243.60	838.53	
C13	1088.30	623.42	
C14	1133.99	510.67	
C15	225.36	893.03	
C16	244.12	812.73	
C17	237.74	728.44	
C18	271.43	651.69	
C19	450.78	777.77	
C20	483.34	875.57	
C21	393.34	900.21	
C22	365.46	857.51	
C23	540.12	672.02	
C24	501.00	688.01	
C25	290.89	493.43	
C26	371.22	478.07	
C27	590.86	600.72	
C28	615.80	551.12	
C29	712.68	605.07	
C30	743.91	506.83	
C31	783.90	483.16	
C32	828.29	448.09	

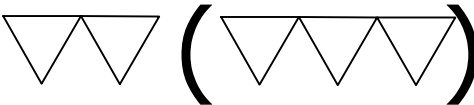
HOLE TABLE			
HOLE	XDIM	YDIM	DESCRIPTION
A1	1519.37	68.50	M6x1 - 6H 10.00 DEEP
A2	1484.37	170.00	
A3	1519.37	271.50	
A4	121.92	298.20	
A5	53.88	319.93	
A6	163.17	322.01	
A7	819.84	331.31	
A8	28.88	338.56	
A9	121.92	345.83	
A10	57.51	350.89	
A11	780.31	393.63	
A12	1342.47	405.20	
A13	715.85	462.99	
A14	804.34	463.40	
A15	579.21	478.27	
A16	310.83	496.84	
A17	399.81	498.66	
A18	355.11	507.75	
A19	1329.88	512.46	
A20	610.67	518.46	
A21	475.19	541.23	
A22	512.43	541.23	
A23	1126.46	548.95	
A24	710.20	552.81	
A25	587.38	563.88	

HOLE TABLE			
HOLE	XDIM	YDIM	DESCRIPTION
A26	493.81	573.48	M6x1 - 6H 10.00 DEEP
A27	1232.50	576.75	
A28	549.18	577.82	
A29	535.09	597.55	
A30	559.22	599.89	
A31	1213.03	618.00	
A32	1105.30	643.62	
A33	503.64	656.87	
A34	1213.08	663.61	
A35	264.25	671.02	
A36	1423.95	706.79	
A37	269.27	716.35	
A38	1400.89	725.98	
A39	1277.60	737.95	
A40	254.41	759.47	
A41	427.31	785.58	
A42	1474.42	814.39	
A43	244.43	832.73	
A44	463.26	842.12	
A45	1272.80	845.84	
A46	327.44	873.02	
A47	255.11	877.07	
A48	356.06	879.34	
A49	1571.03	883.62	
A50	1547.96	902.81	
A51	245.80	921.72	
A52	1268.00	953.73	

HOLE TABLE			
HOLE	XDIM	YDIM	DESCRIPTION
B1	348.00	76.23	M5x0.8 - 6H 10.00 DEEP
B2	398.00	76.23	
B3	424.50	76.23	
B4	496.25	76.23	
B5	589.50	76.23	
B6	689.50	76.23	
B7	785.75	76.23	
B8	882.50	76.23	
B9	978.75	76.23	
B10	1075.50	76.23	
B11	1175.50	76.23	
B12	1247.25	76.23	
B13	1340.50	76.23	
B14	1412.25	76.23	
B15	1448.00	76.23	
B16	1439.29	271.16	
B17	1339.46	276.91	
B18	1239.62	282.65	
B19	1139.79	288.40	
B20	1039.95	294.14	
B21	940.12	299.89	
B22	840.28	305.63	
B23	740.45	311.38	

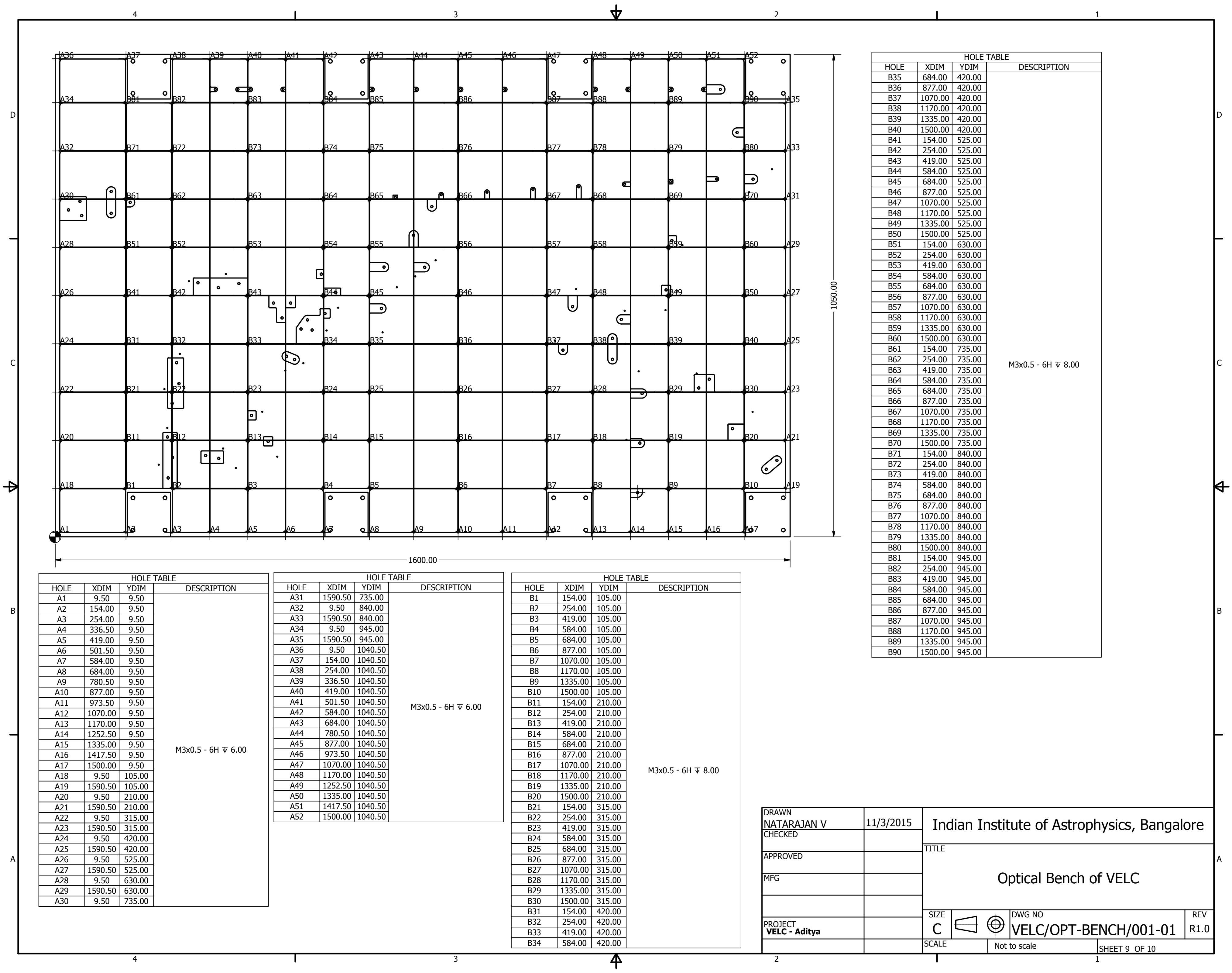
Top Face showing the hole positions

- Note:
- All dimensions are in mm.
  - General Tolerance (wherever not specified):  $\pm 0.05$
  - Flatness at the optical mount area and spacecraft interfaces shall be less than 0.025
  - Positional tolerances on the holes: 0.02
  - Variation in flatness from corner to corner across diagonals shall be within 0.20
  - For further details refer 3D model
  - Surface Coating: Aeroglaze Z306 (Not in vendor's scope)



DRAWN	NATARAJAN V	11/3/2015	Indian Institute of Astrophysics, Bangalore			
CHECKED			TITLE			
APPROVED			Optical Bench of VELC			
MFG						
PROJECT	VELC - Aditya		SIZE	C	DWG NO	VELC/OPT-BENCH/001-01
			SCALE	Not to scale	REV	R1.0
						SHEET 8 OF 10





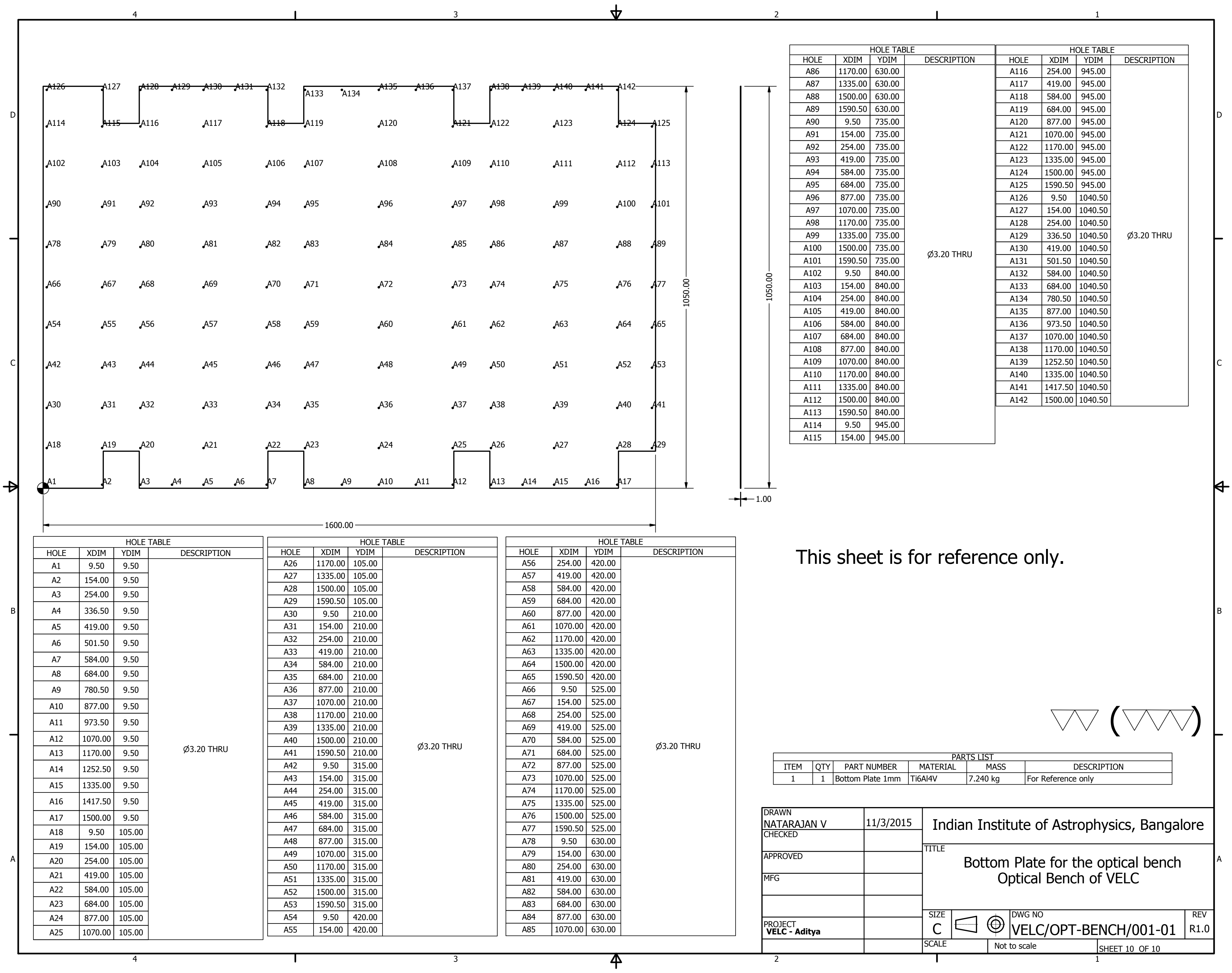
HOLE TABLE			
HOLE	XDIM	YDIM	DESCRIPTION
B35	684.00	420.00	M3x0.5 - 6H 8.00
B36	877.00	420.00	
B37	1070.00	420.00	
B38	1170.00	420.00	
B39	1335.00	420.00	
B40	1500.00	420.00	
B41	154.00	525.00	
B42	254.00	525.00	
B43	419.00	525.00	
B44	584.00	525.00	
B45	684.00	525.00	
B46	877.00	525.00	
B47	1070.00	525.00	
B48	1170.00	525.00	
B49	1335.00	525.00	
B50	1500.00	525.00	
B51	154.00	630.00	
B52	254.00	630.00	
B53	419.00	630.00	
B54	584.00	630.00	
B55	684.00	630.00	
B56	877.00	630.00	
B57	1070.00	630.00	
B58	1170.00	630.00	
B59	1335.00	630.00	
B60	1500.00	630.00	
B61	154.00	735.00	
B62	254.00	735.00	
B63	419.00	735.00	
B64	584.00	735.00	
B65	684.00	735.00	
B66	877.00	735.00	
B67	1070.00	735.00	
B68	1170.00	735.00	
B69	1335.00	735.00	
B70	1500.00	735.00	
B71	154.00	840.00	
B72	254.00	840.00	
B73	419.00	840.00	
B74	584.00	840.00	
B75	684.00	840.00	
B76	877.00	840.00	
B77	1070.00	840.00	
B78	1170.00	840.00	
B79	1335.00	840.00	
B80	1500.00	840.00	
B81	154.00	945.00	
B82	254.00	945.00	
B83	419.00	945.00	
B84	584.00	945.00	
B85	684.00	945.00	
B86	877.00	945.00	
B87	1070.00	945.00	
B88	1170.00	945.00	
B89	1335.00	945.00	
B90	1500.00	945.00	

HOLE TABLE			
HOLE	XDIM	YDIM	DESCRIPTION
A1	9.50	9.50	M3x0.5 - 6H 6.00
A2	154.00	9.50	
A3	254.00	9.50	
A4	336.50	9.50	
A5	419.00	9.50	
A6	501.50	9.50	
A7	584.00	9.50	
A8	684.00	9.50	
A9	780.50	9.50	
A10	877.00	9.50	
A11	973.50	9.50	
A12	1070.00	9.50	
A13	1170.00	9.50	
A14	1252.50	9.50	
A15	1335.00	9.50	
A16	1417.50	9.50	
A17	1500.00	9.50	
A18	9.50	105.00	
A19	1590.50	105.00	
A20	9.50	210.00	
A21	1590.50	210.00	
A22	9.50	315.00	
A23	1590.50	315.00	
A24	9.50	420.00	
A25	1590.50	420.00	
A26	9.50	525.00	
A27	1590.50	525.00	
A28	9.50	630.00	
A29	1590.50	630.00	
A30	9.50	735.00	

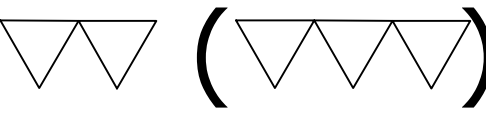
HOLE TABLE			
HOLE	XDIM	YDIM	DESCRIPTION
A31	1590.50	735.00	M3x0.5 - 6H 6.00
A32	9.50	840.00	
A33	1590.50	840.00	
A34	9.50	945.00	
A35	1590.50	945.00	
A36	9.50	1040.50	
A37	154.00	1040.50	
A38	254.00	1040.50	
A39	336.50	1040.50	
A40	419.00	1040.50	
A41	501.50	1040.50	
A42	584.00	1040.50	
A43	684.00	1040.50	
A44	780.50	1040.50	
A45	877.00	1040.50	
A46	973.50	1040.50	
A47	1070.00	1040.50	
A48	1170.00	1040.50	
A49	1252.50	1040.50	
A50	1335.00	1040.50	
A51	1417.50	1040.50	
A52	1500.00	1040.50	

HOLE TABLE			
HOLE	XDIM	YDIM	DESCRIPTION
B1	154.00	105.00	M3x0.5 - 6H 8.00
B2	254.00	105.00	
B3	419.00	105.00	
B4	584.00	105.00	
B5	684.00	105.00	
B6	877.00	105.00	
B7	1070.00	105.00	
B8	1170.00	105.00	
B9	1335.00	105.00	
B10	1500.00	105.00	
B11	154.00	210.00	
B12	254.00	210.00	
B13	419.00	210.00	
B14	584.00	210.00	
B15	684.00	210.00	
B16	877.00	210.00	
B17	1070.00	210.00	
B18	1170.00	210.00	
B19	1335.00	210.00	
B20	1500.00	210.00	
B21	154.00	315.00	
B22	254.00	315.00	
B23	419.00	315.00	
B24	584.00	315.00	
B25	684.00	315.00	
B26	877.00	315.00	
B27	1070.00	315.00	
B28	1170.00	315.00	
B29	1335.00	315.00	
B30	1500.00	315.00	
B31	154.00	420.00	
B32	254.00	420.00	
B33	419.00	420.00	
B34	584.00	420.00	

DRAWN NATARAJAN V	11/3/2015	Indian Institute of Astrophysics, Bangalore		
CHECKED		TITLE		
APPROVED		Optical Bench of VELC		
MFG				
PROJECT VELC - Aditya		SIZE C	DWG NO VELC/OPT-BENCH/001-01	REV R1.0
		SCALE	Not to scale	SHEET 9 OF 10



This sheet is for reference only.



PARTS LIST					
ITEM	QTY	PART NUMBER	MATERIAL	MASS	DESCRIPTION
1	1	Bottom Plate 1mm	Ti6Al4V	7.240 kg	For Reference only

DRAWN NATARAJAN V	11/3/2015	Indian Institute of Astrophysics, Bangalore			
CHECKED		TITLE Bottom Plate for the optical bench Optical Bench of VELC			
APPROVED					
MFG					
PROJECT VELC - Aditya		SIZE C		DWG NO VELC/OPT-BENCH/001-01	REV R1.0
		SCALE		Not to scale	
				SHEET 10 OF 10	