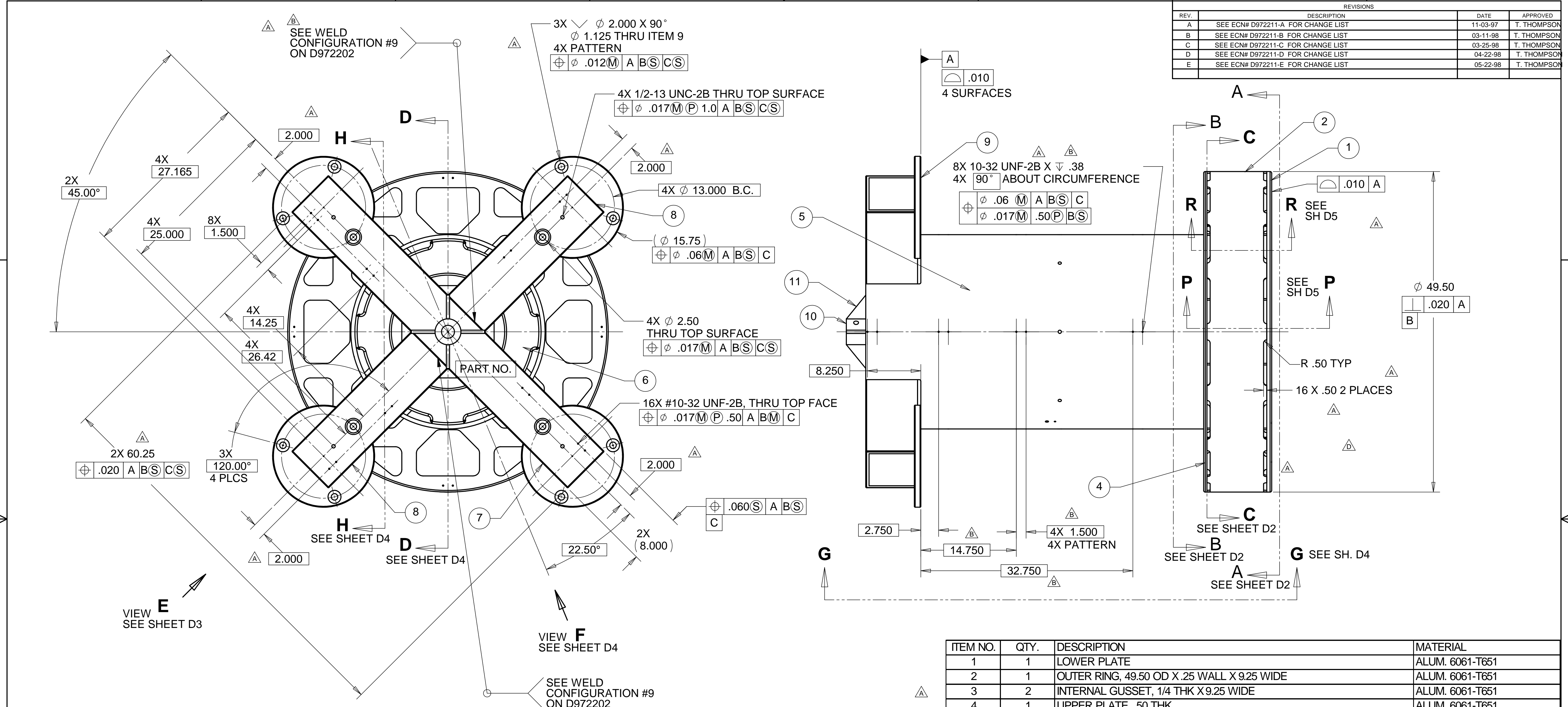


REV.	DESCRIPTION	DATE	APPROVED
A	SEE ECN# D972211-A FOR CHANGE LIST	11-03-97	T. THOMPSON
B	SEE ECN# D972211-B FOR CHANGE LIST	03-11-98	T. THOMPSON
C	SEE ECN# D972211-C FOR CHANGE LIST	03-25-98	T. THOMPSON
D	SEE ECN# D972211-D FOR CHANGE LIST	04-22-98	T. THOMPSON
E	SEE ECN# D972211-E FOR CHANGE LIST	05-22-98	T. THOMPSON



NOTES: UNLESS OTHERWISE SPECIFIED

- ALL DIMENSIONS IN INCHES
- DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
- SURFACE TEXTURE PER ANSI/ASME B 46.1-1985
- REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .015
- ALL INSIDE CORNERS TO BE .015 RADIUS MAX
- COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
- COUNTERSINK 82 DEGREES APPROXIMATELY .03/.06 DEEP ALL DRILLED HOLES
- PART NUMBER (DRAWING NO. PLUS DASH NO. PLUS SERIAL NO.) TO BE CLEARLY MARKED ON THE PART ITSELF.
- ALL FABRICATION, CLEANING, AND HANDLING MAINTAINED TO HYTEC SPECIFICATION: LIGO-TS-03 CATEGORY 1.
- ALL ALUM. WELDING DONE BY A GTAW PROCESS USING 2% THORIATED TUNGSTEN WELDING ELECTRODES AND ER4043 WELDING ROD (SPEC. PER AWS A5.10-80).
- NO SULFUR BASED CUTTING FLUIDS ALLOWED. APPROVED MACHINE LUBRICANT: HANSTERFER S-500CF.
- DIMENSIONS FOR GUSSET WELD PREP TABS & SLOTS TO BE INTERPRETED PRIOR TO WELDING.

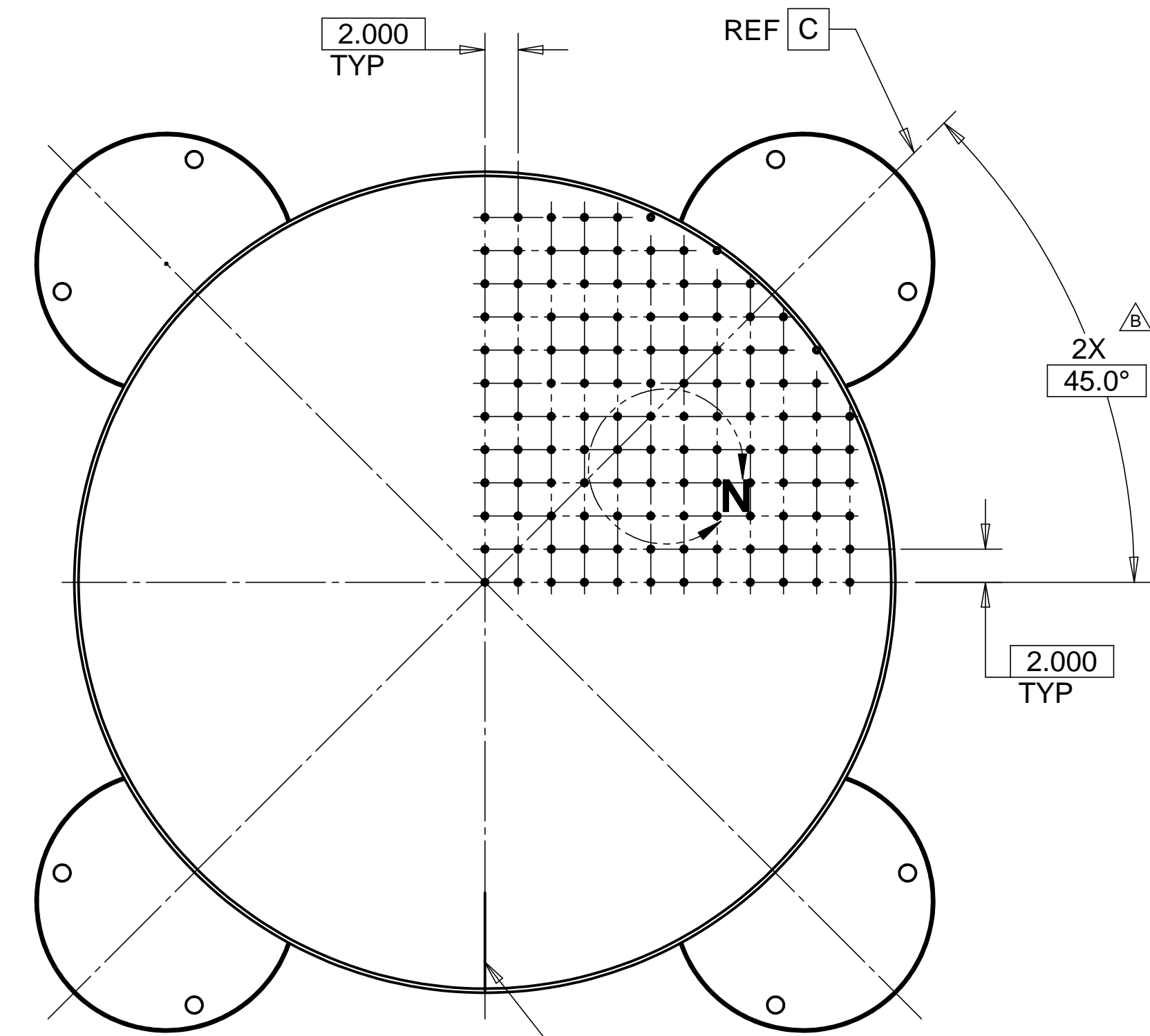
△△ WEIGHT: 856.1 lbs.

ITEM NO.	QTY.	DESCRIPTION	MATERIAL
1	1	LOWER PLATE	ALUM. 6061-T651
2	1	OUTER RING, 49.50 OD X .25 WALL X 9.25 WIDE	ALUM. 6061-T651
3	2	INTERNAL GUSSET, 1/4 THK X 9.25 WIDE	ALUM. 6061-T651
4	1	UPPER PLATE, .50 THK	ALUM. 6061-T651
5	1	DOWNTUBE, 30.0 OD X .625 WALL X (52.181 LG.)	ALUM. 6061-T651
6	2	DOWNTUBE STIFFENER, .75 THK PLT	ALUM. 6061-T651
7	1	LONG BOXBEAM, 8.0 X 8.0 X .50 WALL	ALUM. 6061-T651
8	2	SHORT BOXBEAM, 8.0 X 8.0 X .50 WALL	ALUM. 6061-T651
9	4	LEG PADS, (1.00 THK) X 15.75 DIAM. PLT	ALUM. 6061-T651
10	1	LIFTING CENTER, 4.00 DIAM. X 11.25 LG	ALUM. 6061-T651
11	4	LIFTING CENTER GUSSET, .50 THK PLT	ALUM. 6061-T651
12	4	INTERNAL GUSSET, 1/4 THK X 9.25 WIDE	ALUM. 6061-T651
13	8	INTERNAL GUSSET, 1/4 THK X 9.25 WIDE	ALUM. 6061-T651
14	2	INTERNAL GUSSET, 1/4 THK X 9.25 WIDE	ALUM. 6061-T651
15	4	INTERNAL GUSSET, 1/4 THK X 9.25 WIDE	ALUM. 6061-T651

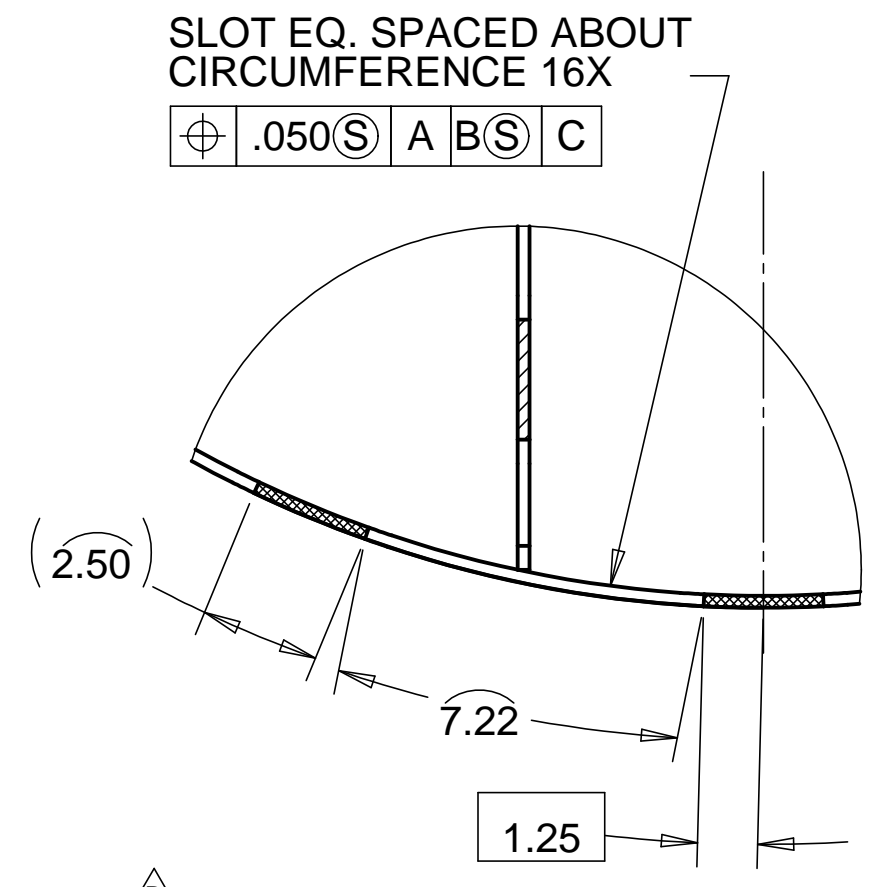
PARTS LIST

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES -TOLERANCES-		HYTEC, INC TITLE LIGO BSC DOWNTUBE WELDMENT	
DECIMALS X = +/- .1 XX = +/- .03 XXX = +/- .010	ANGULAR = +/- .30° SURFACE FINISH = 250		
FINISH ALL MACHINED SURFACES 64 RMS	DESIGNED ROGER L. SMITH 5-28-97	SIGNATURE ROGER L. SMITH	DATE 5-28-97
PART NO. D972211-1	DRAWN ROGER L. SMITH	CHECKED HARRY SALAZAR	DATE 5-28-97
	ENGR. T. THOMPSON	DATE 6-6-97	DATE 7-10-97
	APPROVED T. THOMPSON	DATE 7-10-97	DATE 7-10-97
DWG. NO. D972211		SCALE 1/8	SHEET NO. D 1 of 5

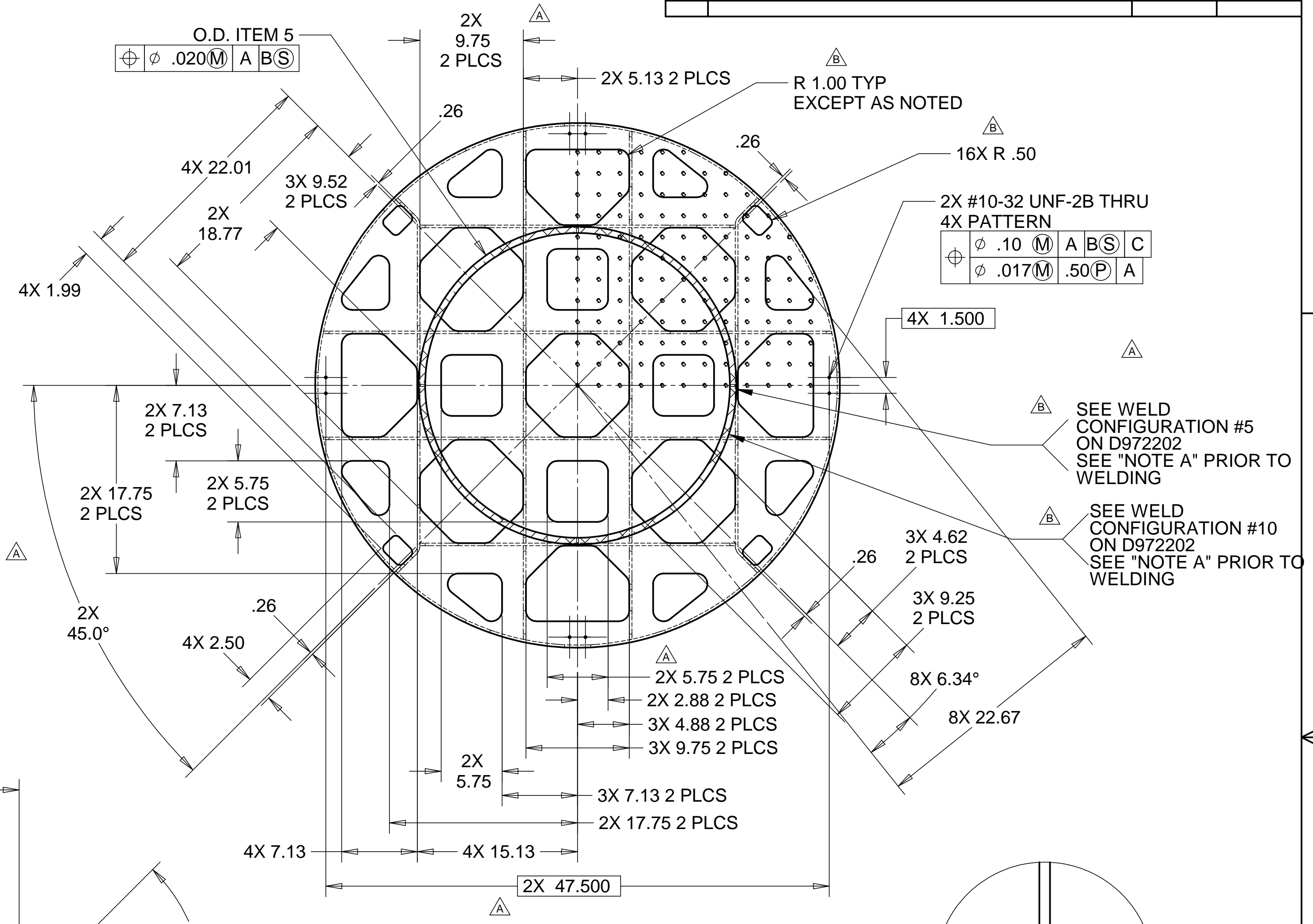
REV.	DESCRIPTION	DATE	APPROVED
A	SEE ECN# D972211-A FOR CHANGE LIST	11-03-97	T. THOMPSON
B	SEE ECN# D972211-B FOR CHANGE LIST	03-11-98	T. THOMPSON
C	SEE ECN# D972211-C FOR CHANGE LIST	03-25-98	T. THOMPSON
D	SEE ECN# D972211-D FOR CHANGE LIST	04-22-98	T. THOMPSON
E	SEE ECN# D972211-E FOR CHANGE LIST	05-22-98	T. THOMPSON



VIEW A-A FROM SHEET D1

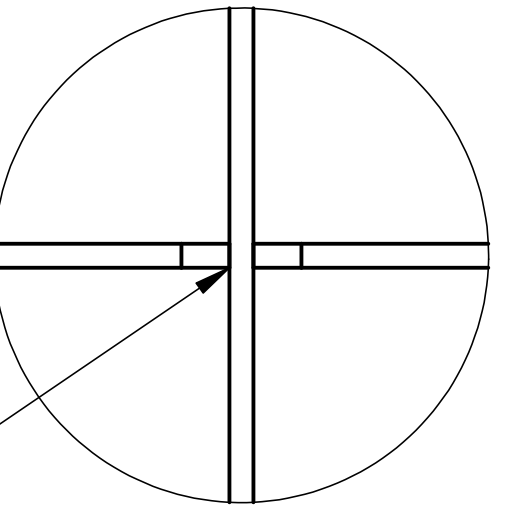


DETAIL V SCALE 1 : 4 TYP BOTH EDGES OF ITEM #2



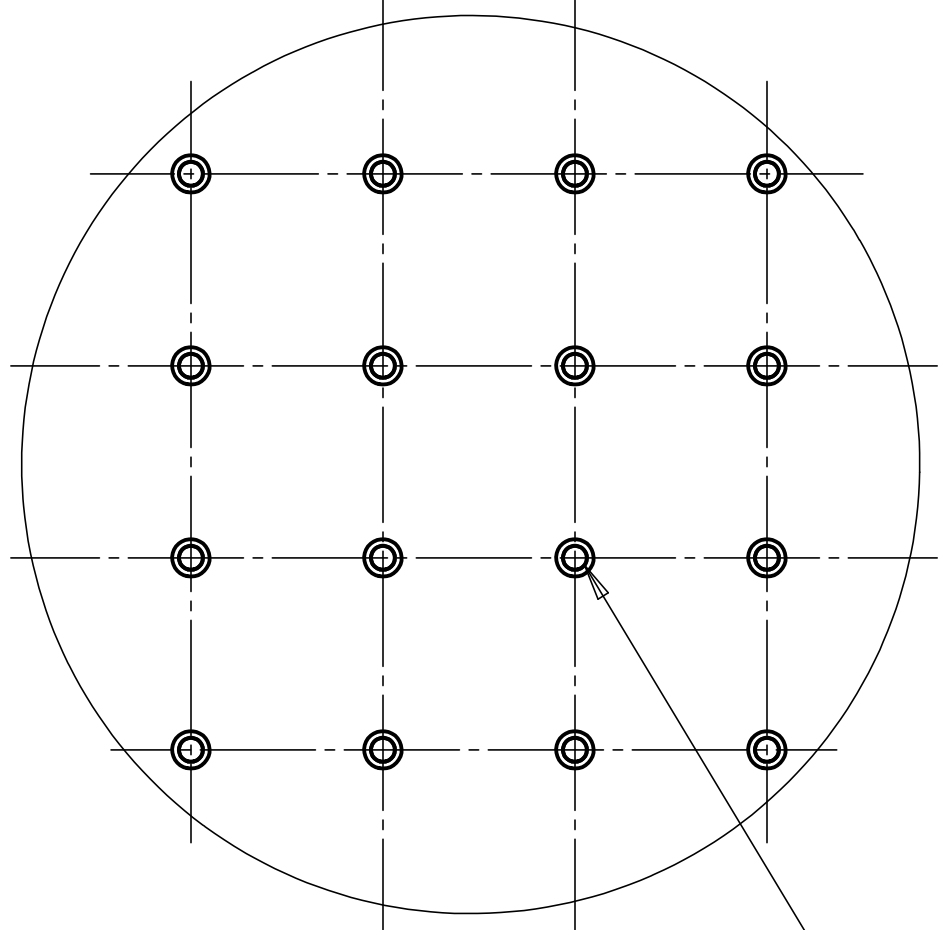
SECTION B-B FROM SHEET D1 VIEW ROTATED 90° CW

SEE WELD CONFIGURATION #4 ON D972202



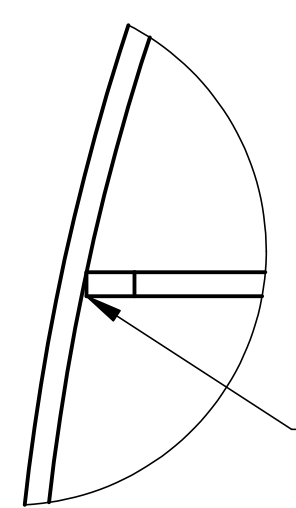
DETAIL G SCALE 1 : 2 TYP FOR ALL GUSSET INTERSECTIONS

NOTE A: PRIOR TO WELDING, BSC SUPPORT TABLE WELDMENT D972212-1 MUST BE INSTALLED. SEE D972210-1 FOR ASSEMBLY.

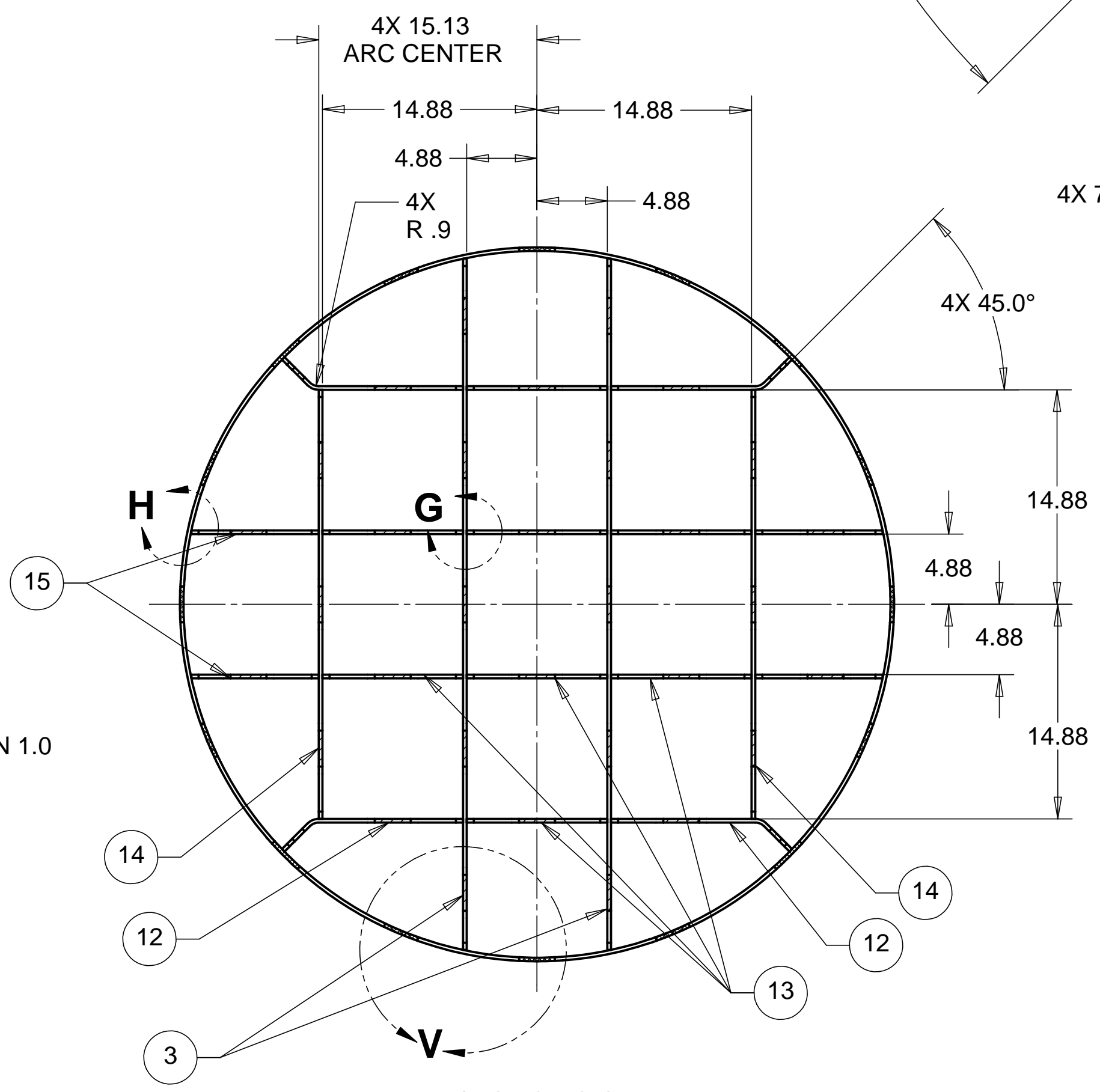


DETAIL N SCALE 1 : 2

1/4-20 UNC-2B THRU
 ϕ .390 X 82°
 2.000 X 2.000 HOLE PATTERN FILLS THE ENTIRE SURFACE
 HOLES TO BE NO CLOSER THAN 1.0 TO OUTER SURFACE
 ϕ .017 (M) (P) .50 A B C



DETAIL H SCALE 1 : 2



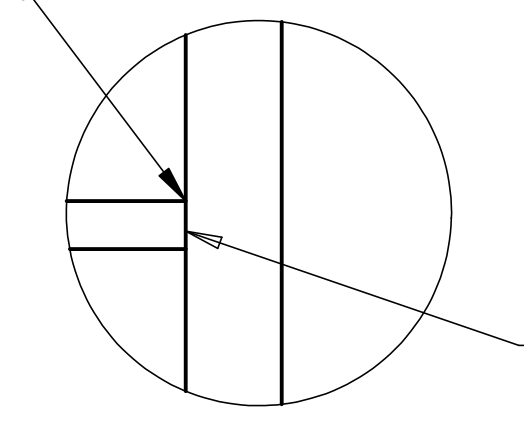
SECTION C-C FROM SHEET D1

PARTS LIST			
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES -TOLERANCES-		CAD GENERATED DRAWING. DO NOT MANUALLY UPDATE. DO NOT SCALE DRAWING.	
DECIMALS X = +/- .1 .XX = +/- .03 .XXX = +/- .010	ANGULAR = +/- .30° SURFACE FINISH = 250	<p>HYTEC, INC</p> <p>TITLE LIGO BSC DOWNTUBE WELDMENT</p>	
FINISH ALL MACHINED SURFACES 64 RMS	DESIGNED ROGER L. SMITH 5-28-97	SIGNATURE ROGER L. SMITH	DATE 5-28-97
PART NO. D972211-1	DRAWN HARRY SALAZAR	5-28-97	DWG. NO. D972211
	CHECKED T. THOMPSON	6-6-97	SIZE D
	ENGR. T. THOMPSON	7-10-97	SHEET NO. 2 of 5
	APPROVED T. THOMPSON	7-10-97	REVISION E
		SCALE 1/8	

8 7 6 5 4 3 2 1

REV.	DESCRIPTION	DATE	APPROVED
A	SEE ECN# D972211-A FOR CHANGE LIST	11-03-97	T. THOMPSON
B	SEE ECN# D972211-B FOR CHANGE LIST	03-11-98	T. THOMPSON
C	SEE ECN# D972211-C FOR CHANGE LIST	03-25-98	T. THOMPSON
D	SEE ECN# D972211-D FOR CHANGE LIST	04-22-98	T. THOMPSON
E	SEE ECN# D972211-E FOR CHANGE LIST	05-22-98	T. THOMPSON

SEE WELD CONFIGURATION #13 ON D972202



INSIDE OF ITEM 8

DETAIL K
SCALE 1:2
WELD PREP TYP 4X
ALL AROUND LEG PADS

LOWER WALL OF ITEM 8 REMOVED TO MATCH CONTOUR OF ITEM 9 FOR ITEM 9 INSERTION
WELD PREP CHAMFER ALL AROUND CUTOUT ON ITEM 8

SEE WELD CONFIGURATION #2 ON D972202

D

D

C

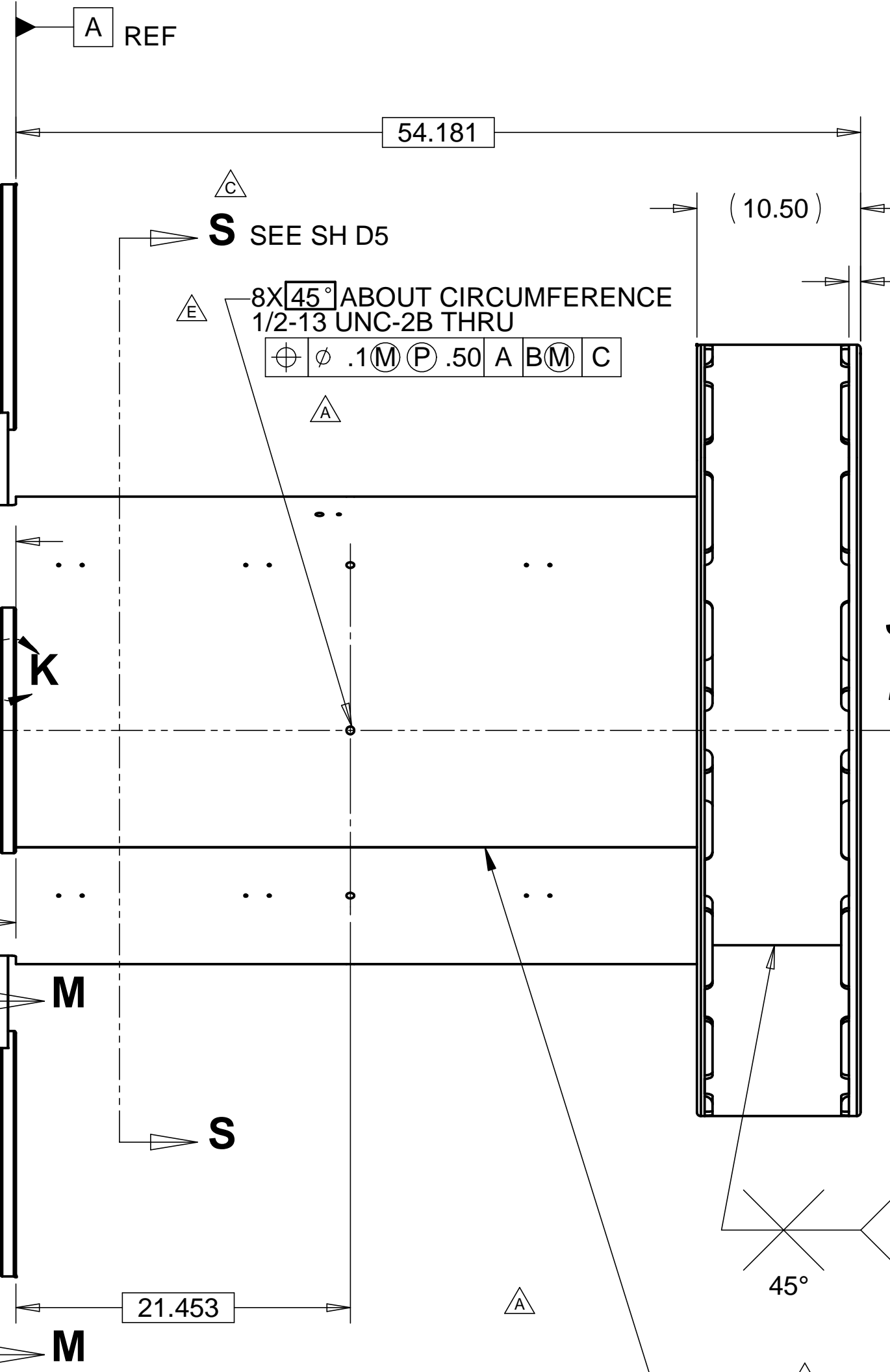
C

B

B

A

A



VIEW E FROM SHEET D1

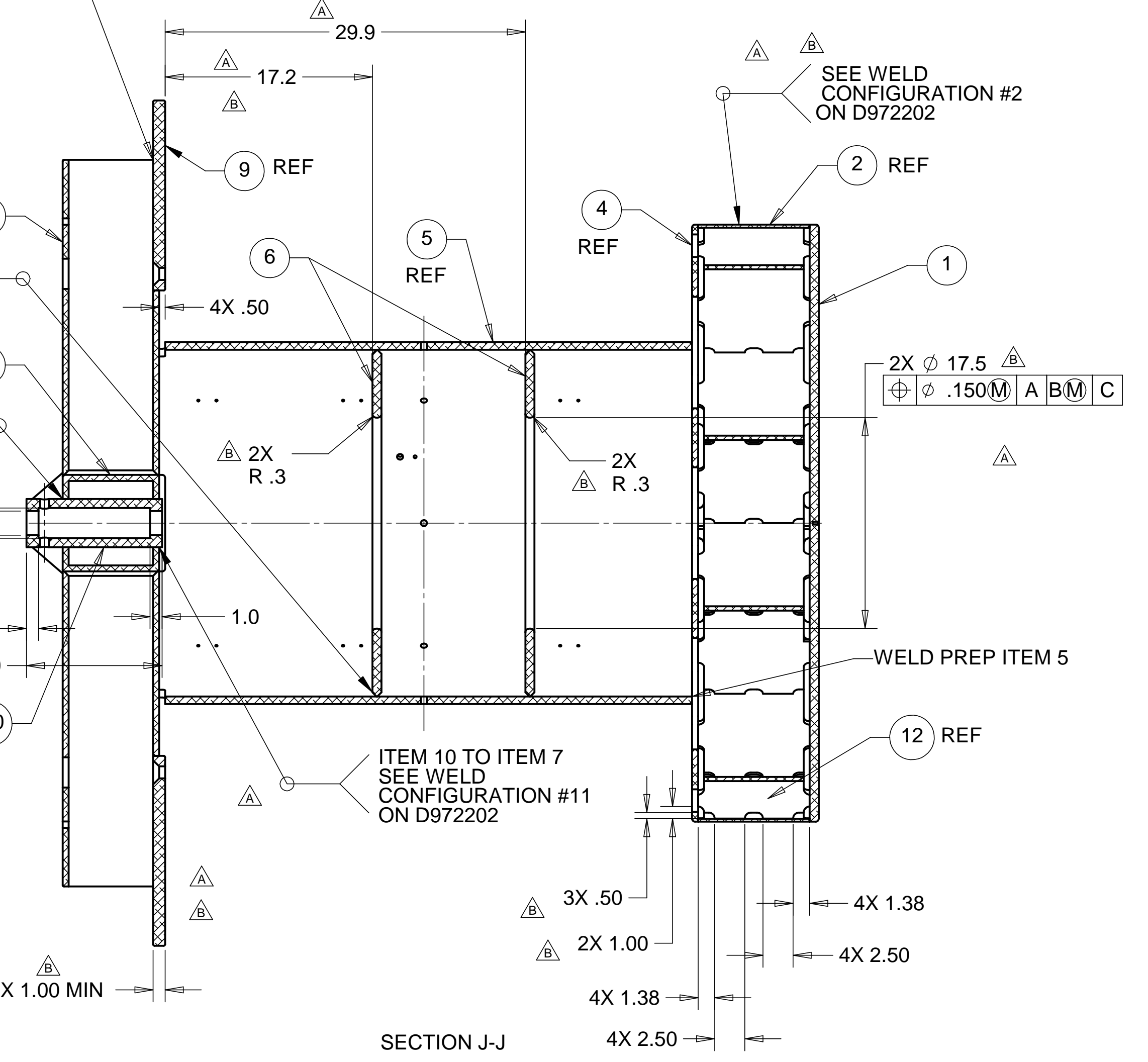
2X SEE WELD CONFIGURATION #12 ON D972202

ITEM 10 TO ITEM 7 SEE WELD CONFIGURATION #11 ON D972202

2X ϕ 2.000
 ϕ .010 M A B M C

V-PREP MINIMAL LAND
WELD 1 PASS FROM EACH SIDE ONLY.
WRAPPED FOR VIRTUAL LEAK FREE JOINT

ROLL & SKIP WELD PERMISSIBLE
V-PREP, 1/8" LAND
BETWEEN WELDS 3/8" RELIEFS
WELD 1 PASS FROM EACH SIDE, ONLY.
CENTER WELD PATTERN, WITH END
WELD ~ 3.1" LG. TO END OF TUBE



SECTION J-J

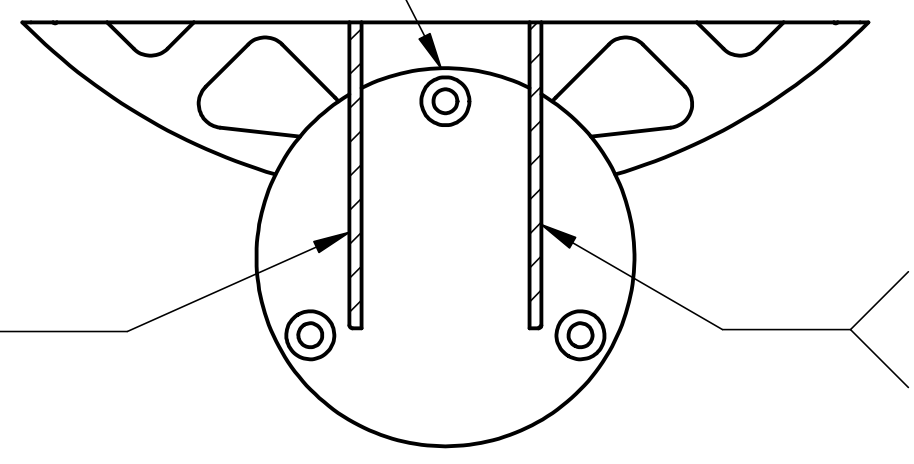
2X ϕ 17.5
 ϕ .150 M A B M C

ITEM 10 TO ITEM 7
SEE WELD CONFIGURATION #11
ON D972202

3X .50
2X 1.00
4X 1.38
4X 2.50

WELD PREP ITEM 5

12 REF



SECTION M-M

4X SEE WELD CONFIGURATION #6 ON D972202

4X SEE WELD CONFIGURATION #13 ON D972202

4X SEE WELD CONFIGURATION #16 ON D972202

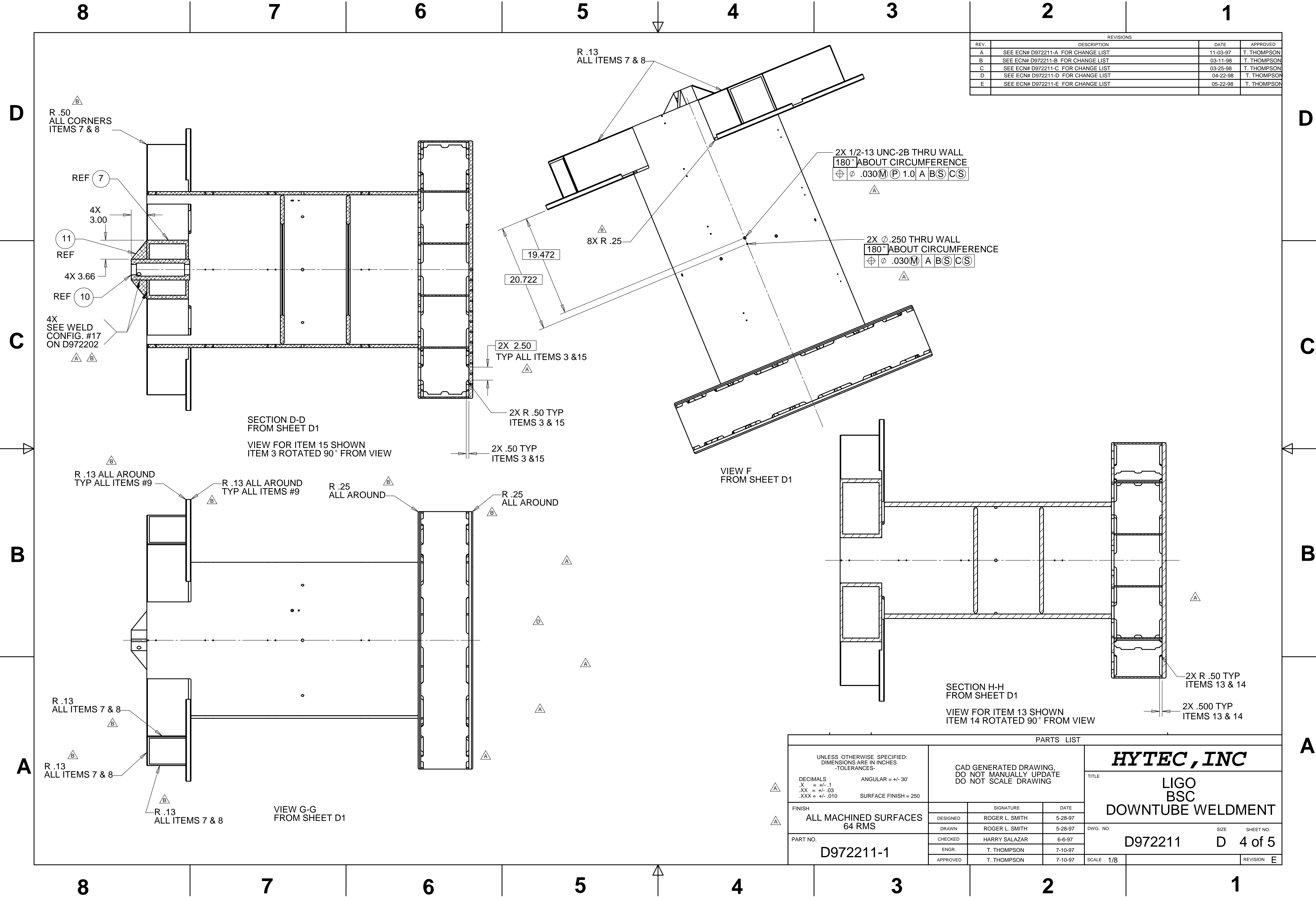
4X SEE WELD CONFIGURATION #13 ON D972202

4X SEE WELD CONFIGURATION #13 ON D972202

PARTS LIST			
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES -TOLERANCES-		CAD GENERATED DRAWING, DO NOT MANUALLY UPDATE DO NOT SCALE DRAWING	
DECIMALS .X = +/- .1 .XX = +/- .03 .XXX = +/- .010	ANGULAR = +/- .30° SURFACE FINISH = 250	TITLE HYTEC, INC LIGO BSC DOWNTUBE WELDMENT	
FINISH ALL MACHINED SURFACES 64 RMS	PART NO. D972211-1	SIGNATURE ROGER L. SMITH ROGER L. SMITH HARRY SALAZAR T. THOMPSON T. THOMPSON	DATE 5-28-97 5-28-97 6-6-97 7-10-97 7-10-97
DWG. NO. D972211		SCALE 1/8	SHEET NO. D 3 of 5 REVISION E

8 7 6 5 4 3 2 1

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	SEE ECN# D972211-A FOR CHANGE LIST	11-03-97	T. THOMPSON
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E	SEE ECN# D972211-E FOR CHANGE LIST	05-22-98	T. THOMPSON



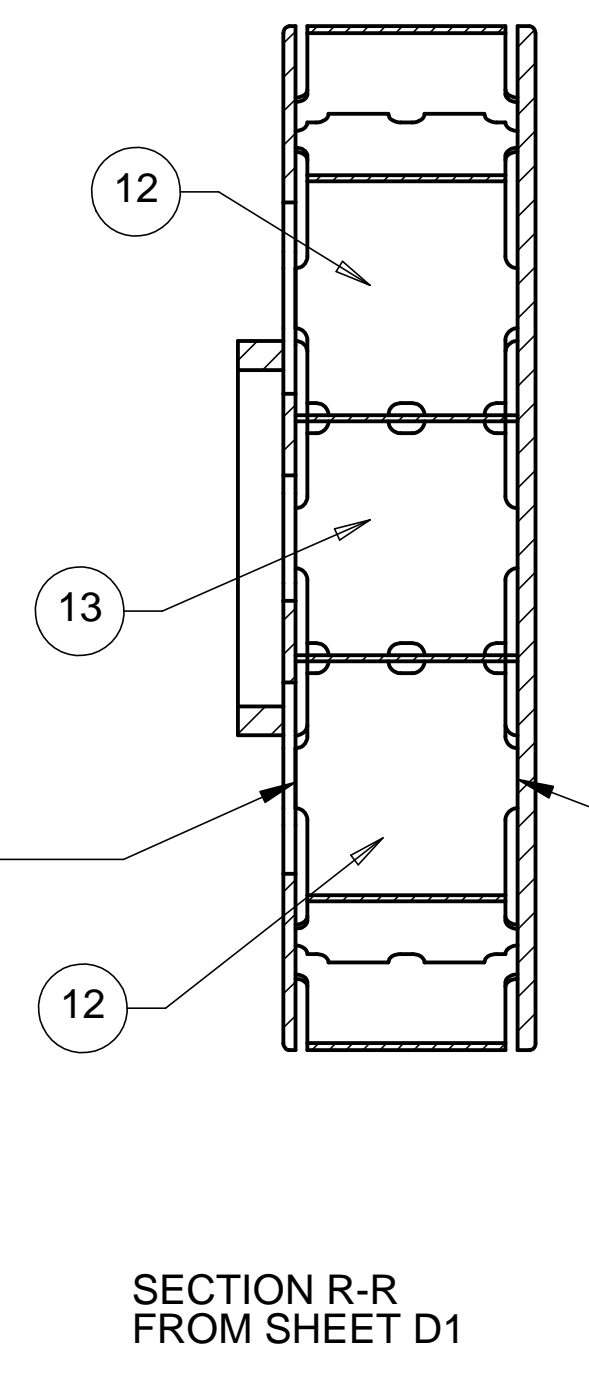
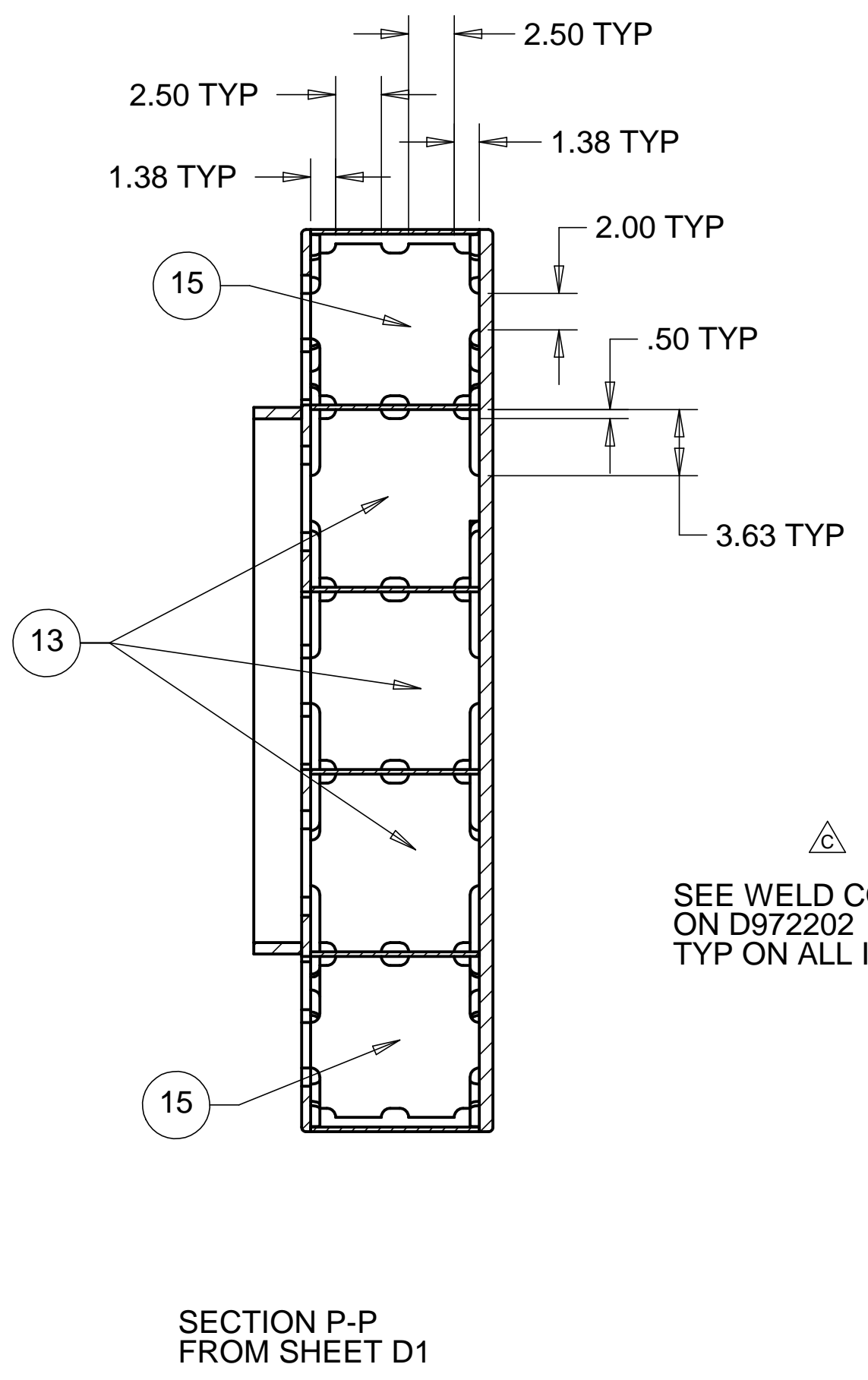
PARTS LIST			
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES -TOLERANCES-		CAD GENERATED DRAWING, DO NOT MANUALLY UPDATE DO NOT SCALE DRAWING	
TITLE HYTEC, INC LIGO BSC DOWNTUBE WELDMENT		DWG. NO. D972211	
SCALE 1/8		REVISION E	
DESIGNED	ROGER L. SMITH	DATE	5-28-97
DRAWN	ROGER L. SMITH	DATE	5-28-97
CHECKED	HARRY SALAZAR	DATE	6-6-97
ENGR.	T. THOMPSON	DATE	7-10-97
APPROVED	T. THOMPSON	DATE	7-10-97

8 7 6 5 4 3 2 1

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
B	SEE ECN# D972211-B FOR CHANGE LIST	03-11-98	T. THOMPSON
C	SEE ECN# D972211-C FOR CHANGE LIST	03-25-98	T. THOMPSON
D	SEE ECN# D972211-D FOR CHANGE LIST	04-22-98	T. THOMPSON
E	SEE ECN# D972211-E FOR CHANGE LIST	05-22-98	T. THOMPSON

D
C
B
A

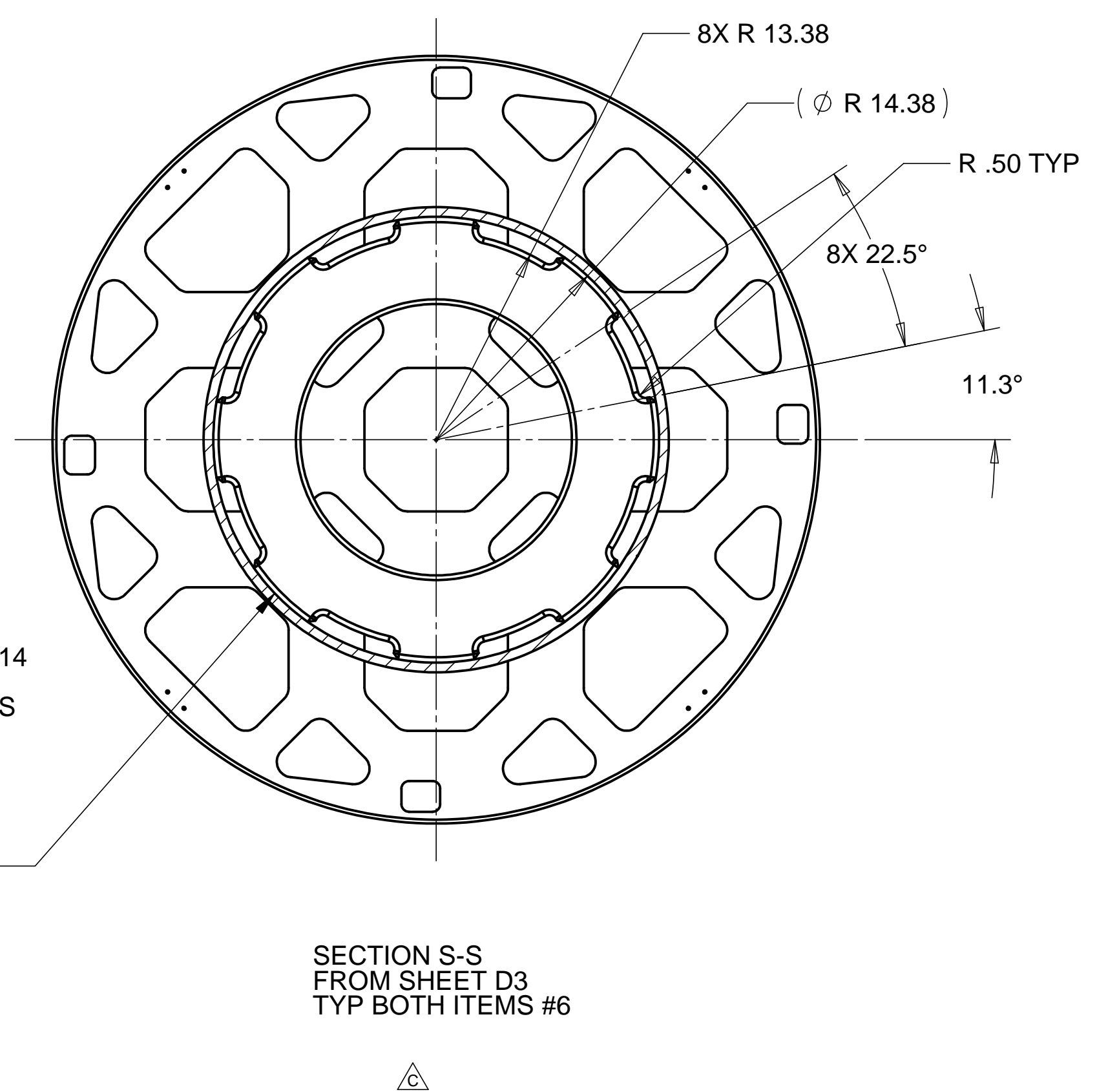
D
C
B
A



SEE WELD CONFIGURATION #14
ON D972202
TYP ON ALL INTERNAL GUSSTS

SEE WELD CONFIGURATION #14
ON D972202
TYP ON ALL INTERNAL GUSSTS

SEE WELD CONFIGURATION #12
ON D972202



PARTS LIST															
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES -TOLERANCES- DECIMALS ANGULAR = +/- .30° .X = +/- .1 .XX = +/- .03 .XXX = +/- .010 SURFACE FINISH = 250	CAD GENERATED DRAWING, DO NOT MANUALLY UPDATE DO NOT SCALE DRAWING		HYTEC, INC TITLE LIGO BSC DOWNTUBE WELDMENT												
	FINISH PART NO. D972211-1	<table border="1"> <tr> <th>SIGNATURE</th> <th>DATE</th> </tr> <tr> <td>DESIGNED ROGER L. SMITH</td> <td>02-03-98</td> </tr> <tr> <td>DRAWN ROGER L. SMITH</td> <td>02-09-98</td> </tr> <tr> <td>CHECKED HARRY SALAZAR</td> <td>02-??-98</td> </tr> <tr> <td>ENGR. T. THOMPSON</td> <td>02-??-98</td> </tr> <tr> <td>APPROVED T. THOMPSON</td> <td>02-??-98</td> </tr> </table>	SIGNATURE	DATE	DESIGNED ROGER L. SMITH	02-03-98	DRAWN ROGER L. SMITH	02-09-98	CHECKED HARRY SALAZAR	02-??-98	ENGR. T. THOMPSON	02-??-98	APPROVED T. THOMPSON	02-??-98	DWG. NO. D972211 SCALE 1/2
SIGNATURE	DATE														
DESIGNED ROGER L. SMITH	02-03-98														
DRAWN ROGER L. SMITH	02-09-98														
CHECKED HARRY SALAZAR	02-??-98														
ENGR. T. THOMPSON	02-??-98														
APPROVED T. THOMPSON	02-??-98														

8 7 6 5 4 3 2 1